SENSORS CD

PDF Catalog for Windows and Macintosh

INDUCTIVE • CYLINDER • ULTRASONIC • CAPACITIVE • UPROX® • Q-PAK™
RECTANGULAR • SPECIALTY • CORDSETS & ACCESSORIES

TURCK works

High Technology Sensors
and Automation Controls

For On-line Catalog
and More Information

Visit our website:

TIP wizard

www.turck.com

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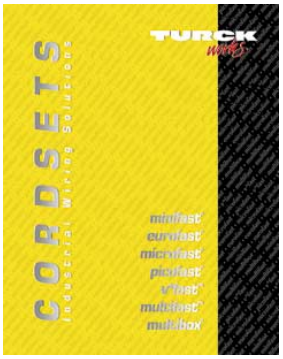
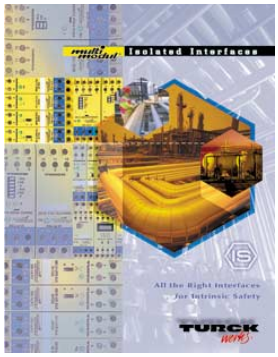
Visit **TURCK** on the Internet:
http://www.turck.com

SEND FOR THE LATEST INFORMATION ON ADVANCED TURCK SENSOR, CONNECTOR AND INTERFACE SOLUTIONS.



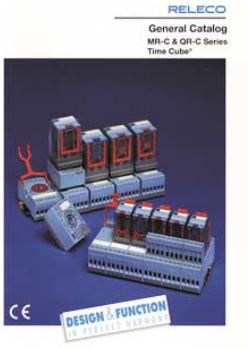
TURCK Cordset Catalog



***multimodul*®**
Isolated Interfaces

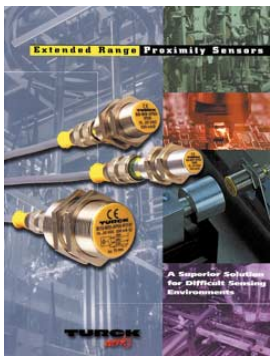
***Uprox*®**
Proximity Sensors

***Q-pak*™**
Space Saving Sensors

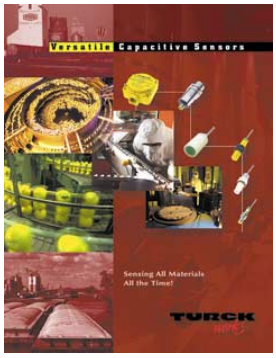


Releco Plug-In Relays

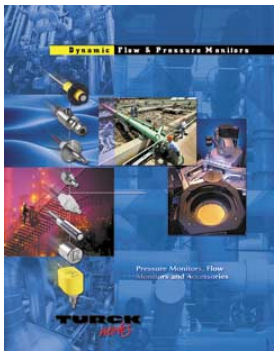
***picoprox*®**
Proximity Sensors



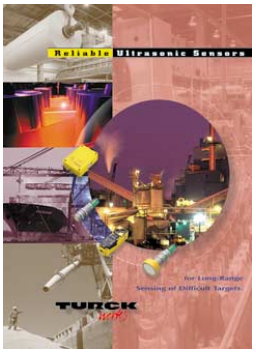
Extended Range Proximity Sensors



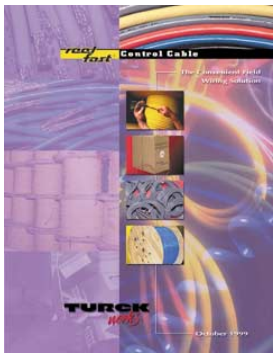
Versatile Capacitive Sensors



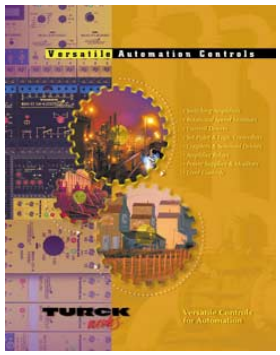
Flow Monitors & Controls



Reliable Ultrasonic Sensors

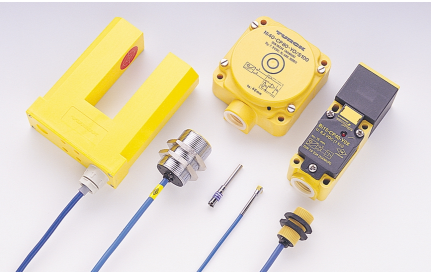


***reelfast*® Control Cables**



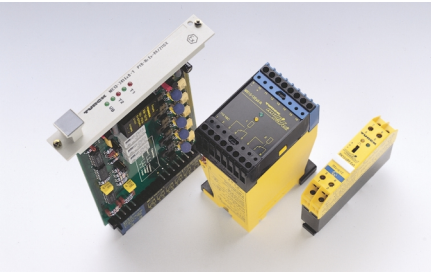
Automation Controls

Intrinsically Safe Sensors & Interface Products



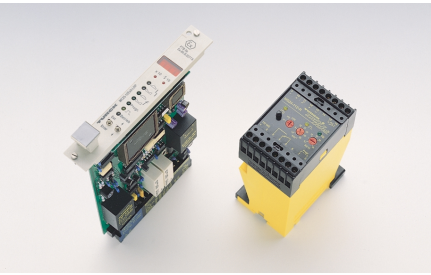
Intrinsically Safe (NAMUR) Sensors

Intrinsically safe inductive, capacitive and magnet operated inductive sensors conform to EN 50 227. Simple to use and install; more cost effective than bulky enclosures and purged air systems. These unique sensors use little thermal and electrical energy, preventing ignition in the hazardous area. They meet Factory Mutual requirements for Class I, Class II and Class III, Division I, and Division 2 environments.



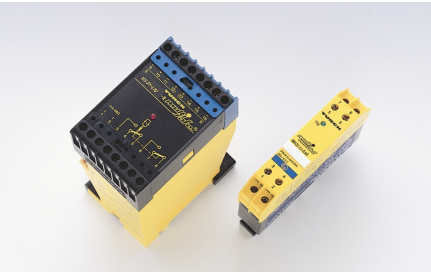
Switching Amplifiers

Intrinsically safe inputs are transformer isolated from power supply and outputs. Power, isolation, reliability and low maintenance make TURCK switching amplifiers ideal for plants that use PLCs or industrial computers. Available in three body styles as single- or multi-channel versions, AC or DC powered, with relay or transistor outputs. DIN rail mounted switching amplifiers carry FM and CENELEC approval, and CSA certification. Eurocards carry CENELEC approval.



Rotational Speed, Motion & Logic Controls

Rotational speed controls monitor for overspeed or underspeed of rotating shafts and gears. Units accept PNP, NAMUR or pulse inputs; available with discrete or analog outputs. Direction discriminator can detect counter-rotation on pumps. Logic controllers accept signals from NAMUR sensors or dry contacts (limit switches and pushbuttons). Logic functions include Set-Reset, Exclusive OR, Lockout, Sequence Control, Pump-In and Pump-Out.

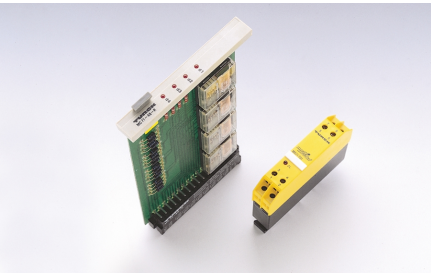


Analog Data Transmitters

User-friendly 4-20 mA and 0-10 VDC intrinsically safe data repeaters transmit temperature and pressure signals from hazardous areas without the need for a high-integrity ground. Data can be fed to a controller with complete isolation from hazardous environments. Intrinsically safe drivers isolate and transmit signals from safe areas to displays and I/P transducers in hazardous areas. For non-hazardous applications, multifunction analog data repeater isolates, converts, repeats and conditions analog signals.

Intrinsically Safe LED Pilot Lights

Special LEDs directly replace the incandescent lamps in standard industrial pilot lamps, making them intrinsically safe when used in conjunction with TURCK 24 VDC intrinsically safe power supply. These LEDs last ten times longer than standard incandescent lamps, can save several thousand dollars in installation costs by eliminating heavy explosionproof enclosures, and can eliminate the need to completely shut down a hazardous area just to change a lamp. Common base styles include T3 1/4 (9 mm) miniature bayonet and compact T1 3/4 (5 mm) midget wedge.



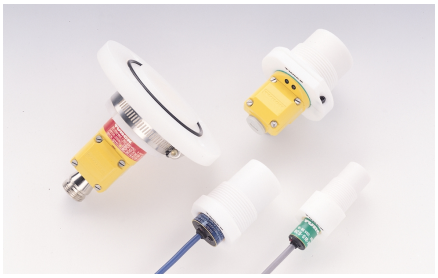
Electrical & Electronic Relays

Pilot duty controls used for isolation of different signals and conversion of signal levels . Intrinsically safe power supply isolates and transfers control signals from safe to hazardous locations. Two convenient mounting styles: 35 mm DIN rail or 19" card rack.

Level Monitoring, Specialized Sensors & Interface Products

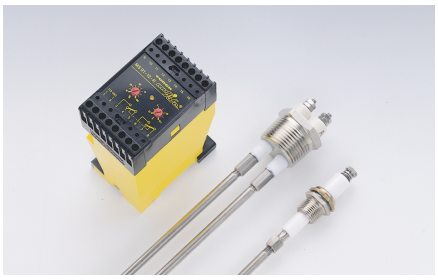
Material Level Monitoring

TURCK tank wells are used with capacitive barrel style sensors and mount in tanks, hoppers, vats or pipes to effectively sense levels of liquids, powders, grain or other materials. They provide effective sealing to the mounting surface, even in pressurized vessels. Tank wells are available for 18, 30 and 40 mm sensors in Teflon®, Delrin® and UHMW/PE materials. Screw-in models are rated at 150 psi, bolt-on models at 80 psi.



Level Controllers

Monitor and regulate the level of conductive liquids. Typically used in beverage bottling applications where a distinction between foam and liquid must be made. The output of these controllers operates pump motor starters and solenoid valves. Suitable for all water-based liquids, these units measure the resistance between two probes in the liquid. Low-level AC voltages are used in the probe circuit to eliminate build-up of deposits and corrosion. Also available for 24 VDC power supplies.

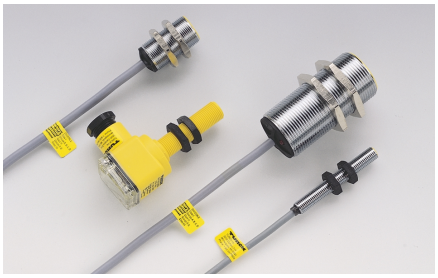


Flow Sensors

TURCK flow sensors monitor the flow of gases and liquids during industrial processes. Typical applications include monitoring of all types of refrigeration systems, run-dry protection for conveyor pumps, coolant in motors and drives, plus many more. These devices operate on a calorimetric principle, and are available in in-line styles with remote sensor and amplifier or insertion types with self-contained or remote amplifier. All models are omni-directional and feature stainless steel housings with an IP 67 pressure rating up to 870 psi. Request "Flow Controls" catalog for more information.

Division 2 Approved Sensors

TURCK's special 3-wire DC sensors are Factory Mutual approved for use in Division 2 classified areas. These are areas in which hazardous concentrations of flammable or explosive materials are handled, processed, or used, but where they are normally within closed containers or closed systems from which the materials can only escape in case of accidental rupture or breakdown. Numerous sensor sizes and styles are available. Refer to index in Section H for specific part numbers.

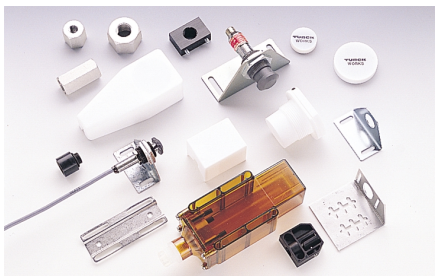


Plug-In Relays

General purpose MRC and QRC IceCube*Plus*® plug-in relays have deluxe features that promote improved relay operation and more orderly control systems. Features include mechanical flag and LED/neon status indicators, color-coded push-to-test or pull-to-lock button, interchangeable labels, relay retaining clip, universal mounting, and pin numbering on socket for faster wiring. Unique design provides higher reliability and longer relay life. Call or FAX for free sample. Request relay and timer brochures for more information.

Application Accessories

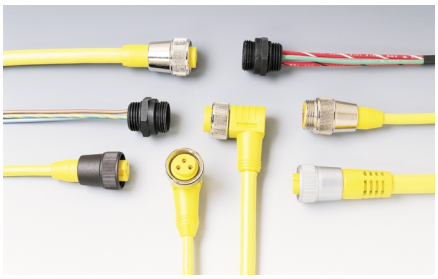
TURCK has hundreds of accessories to solve difficult or highly specific applications. They include tank wells, Teflon® protective covers, mounting brackets, waterproof housings, nuts and spring washers, conduit adapters, cable glands, metric tap sets, test boxes and much, much more. You can depend on TURCK for the accessories you need for your application.



Industry Standard Cordsets & Junctions

eurofast® Cordsets

eurofast 12 mm cordsets used on DC devices come in 2-6-pin and 8-pin versions. Available with LED on the plug to indicate output status. Connector styles include nickel plated brass, stainless steel or nylon coupling nuts. Cable options include foil or braided shield; blue PVC for intrinsic safety wiring; tough, abrasion resistant PUR or rubber; ***flexlife*** and retractile styles. CSA certified, UL recognized; NEMA 6P/IP 68 seal rating. Additional products include mating receptacles, splitters, field wireables, and connector inserts.

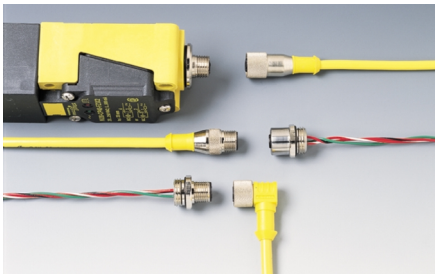


minifast® Cordsets

minifast 7/8 - 16 thread molded cordsets - the rugged choice for connections to sensors, valves, motors and other actuators. The PUR connector with cork and bottle seal around individual pins resists oil. An extra long brass coupling nut reinforces the plug body for a superior connection. CSA certified, UL recognized. Meets NEMA 6P/IP 67 standards. Options include nickel plated brass, stainless steel or nylon coupling nuts, straight or right angle connectors with 2-6 pins. Cable jacket in PVC, PUR or rubber; 300-600 V rating. Additional products: mating receptacles, splitters, tees, field wireables.

picofast® Cordsets

picofast 8 mm cordsets for miniature sensing devices. Fully molded construction withstands shock and vibration while remaining liquid-tight. CSA certified. Meets NEMA 6P/IP 67 standards. Available in 3, 4 and 6-pin styles, with or without LEDs for either PNP or NPN sensors. Options include secure snap lock or metal coupling nut in straight or right angle styles. Cable choices include oil-resistant PUR with or without foil shield, or high-grade flexible PVC. Full product line includes field wireables, receptacles, splitters, adapters and connector inserts.

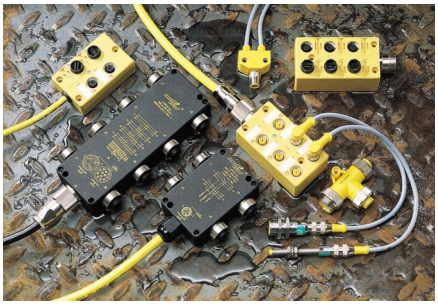


microfast® Cordsets

microfast ½ - 20 UNF thread molded cordsets are used with AC switches, sensors and actuators. Water-tight; oil-, UV- and chemical-resistant. CSA certified, UL listed; NEMA 6P/IP 67 seal rating. Dual keying prevents mismating with 12 mm DC systems. Other options include irradiated PVC cable for up to 250° C short term, PUR jacket, rubber and retractile cables. Plug styles include 3, 4 and 5-pin, straight or right angle, with stainless steel or brass hardware. Additional products include mating receptacles, field wireables, and connector inserts.

V*fast Valve Connectors

Standard DIN 43650 construction includes solid injection molded PUR plug body and standard PVC or oil- and abrasion-resistant PUR cable. Silver-plated internal contacts assure a good electrical connection. CSA certified. NEMA 6P/IP 67 seal rating. Snap-in labels, LED power indication and MOV surge suppression are standard product features. DIN plug extension cords include *eurofast* , *picofast* , *minifast* and *microfast* connectors.

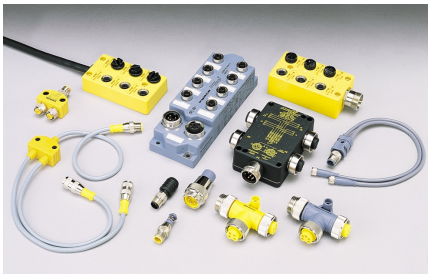


Junction Boxes

multibox® junction boxes enable you to consolidate wiring from multiple switches, solenoids, actuators and other devices into a convenient central point. *minifast* junctions are sealed cast-aluminum enclosures available in standard or series-wired versions. *eurofast and microfast* junctions are constructed from durable nylon. All meet NEMA 6P/IP 67 seal rating. *eurofast* junction options include NPN or PNP LEDs, isolated power supply, or 2 output signals per port. *microfast* junctions are available for AC applications. All junctions are available in 4, 6 or 8 ports with quick disconnect or integral cable.

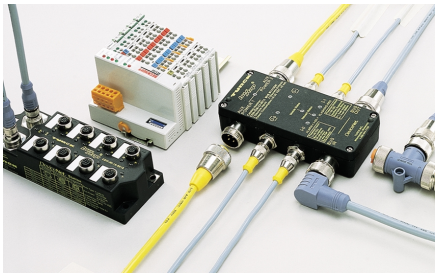
Device Level Bus Products - Available from *interlinkBT*

Bus Junctions & Components



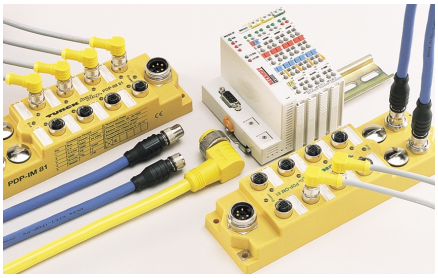
busstop® multi-port junctions, molded tees and accessories are designed to efficiently distribute data signals to "smart" devices connected to the bus. These fully encapsulated enclosures are constructed of epoxy-coated cast aluminum or rugged PA 6 plastic, meeting NEMA 13 and IP 67 standards. *busstop* stations can include bus electronics in the box, allowing the use of existing devices without the expense of purchasing and installing new intelligent devices. Request "*busstop*" catalog from ***interlinkBT***.

Bus Modules for DeviceNet™



busstop input/output modules interface standard sensors and actuators with DeviceNet open communications networks. Rugged, epoxy-potted, die-cast aluminum stations provide excellent environmental protection, meeting NEMA 13 and IP 67 standards. Modules take in discrete 3-wire inputs, automatically detecting PNP or NPN signals, and drive up to four discrete 1 Amp output devices per node. Outputs are short-circuit and overload protected. Modular terminal block I/O allows free signal mix and can be expanded in dual-channel increments.

Bus Modules for Profibus-DP™



busstop multi-channel I/O modules for PROFIBUS/DP device-level networks are designed to operate at the maximum transmission speed of 12 Mbps. Include discrete inputs for 3-wire PNP and 2-wire DC sensors, or dry contacts. Output modules have discrete, half-Amp outputs at 24 VDC. Both inputs and outputs are short-circuit protected. Advanced LED indicates bus status at all times. Modular terminal block I/O allows free signal mix and can be expanded in single-channel increments.

sensoplex®*2 & sensoplex*®*IS*

Rugged, industrially hardened remote I/O systems provide significant cost savings in the installation of sensors, actuators and other devices by providing direct interconnection of field devices to a controller via a single coaxial cable. Wiring is greatly simplified, reducing installation time, cable costs, troubleshooting and downtime. *sensoplex*® *2* monitors up to 960 I/O points, while intrinsically safe *sensoplex*® *IS* monitors up to 180 I/O points in hazardous areas, plus 780 points in non-hazardous areas. Request "Sensoplex IS" catalog from ***interlinkBT***.

Bus Terminal I/O

Universal I/O for device-level automation. Modular electronic terminal blocks have 1, 2, or 4 channels per unit, allowing users the flexibility to configure and expand their I/O to exact requirements. Single terminal strip can accomodate digital, analog, serial communications and measuring system interfaces. Unique bus couplers allow use with all open device-level buses, including DeviceNet, PROFIBUS/DP, CAN™ and specialty buses. Request "Beckhoff" catalog from ***interlinkBT***.

Bus & Data-Line Cables & Connectors

Complete line of highly flexible data bus cables and connectors engineered specifically for bus systems using quick disconnects. These products meet performance specifications including signal attenuation, impedance, shielding and correct color codes for the DeviceNet, CANbus™, Seriplex™, SDS™ and other bus protocols. Connectors and cordsets for PROFIBUS/DP and *sensoplex* are also available. Cables are constructed with fire retardant, oil resistant jackets and are UL recognized and CSA certified.

Introduction to Sensor Products

In this catalog...

Over 700 pages of our standard sensor and cordset product line. The devices are classifed and detailed in the following chapters:

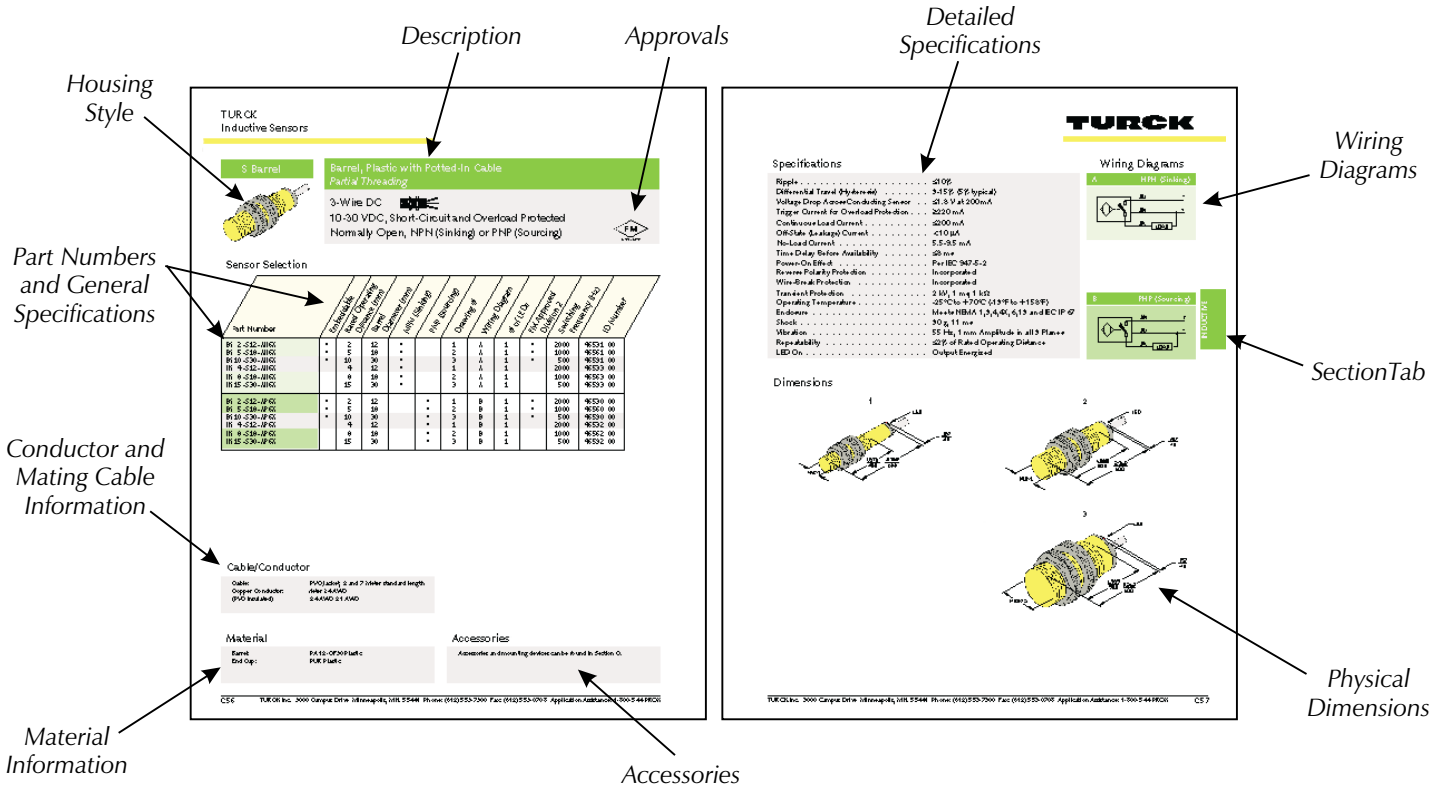
- *Specifications*
- *Rectangular Inductive Sensors*
- *Inductive Barrel Sensors*
- *Specialty Sensors*
- *Cylinder Position Sensors*
- *Capacitive Sensors*
- *Ultrasonic Sensors*
- *Mating Plugs and Cordsets*
- *Sensor Accessories*
- *Reference Tables and Index*

Structure of this catalog

All chapters have the same basic structure.
A selection table introduces each section which is classified by the following:

1. *Principle (Ex. Inductive)*
2. *Housing Style - Smallest to Largest*
3. *Electrical Output (DC, AC, NAMUR)*
3. *Type of Output (2-, 3- or 4-wire)*
4. *Connection Style*
   - *Quick Disconnect*
   - *Potted-In Cable*
   - *Terminal Chamber*
5. *Color Coding*
   - *Green = DC Output*
   - *Red = AC Output*
   - *Blue = NAMUR*

In addition to the selection guide, each chapter contains technical information giving specific details on the particular product group. Each product is described on two facing pages, the structure is shown below in reduced size.



CLICK HERE for
MAIN SELECTION GUIDE

Selection Guide - Section A

Introduction to Sensor Products

Wiring Instructions - DC (Green)

Wiring Instructions - AC (Red)

Wiring Instructions - NAMUR (Blue)

Compliances and Hazardous Locations

Enclosure Ratings and Material Properties

Important Safety Warning!

TURCK sensors and peripheral devices **DO NOT** include the self-checking redundant circuitry required to permit their use in personnel safety applications. A device failure or malfunction can result in either an energized or a de-energized output condition.

Never use these products as sensing devices for personnel protection. Their use as safety devices may create unsafe conditions that could lead to serious bodily injury or death.

Introduction

How does Proximity Sensing compare to conventional methods?

TURCK proximity sensors are entirely solid state electronic controls that contain no moving parts to wear out as do mechanical switches. They require no physical contact for actuation, no cams or linkages, have no contacts to bounce or arc and are completely encapsulated, making them impervious to most liquids, chemicals and corrosive agents. In addition, **TURCK** has a line of sensors that can be used in hazardous explosive environments without any special enclosures.
See Hazardous Area Locations in Section A.

If any of the following conditions exists, a Proximity Sensor should be used:

- The object being detected is too small, too lightweight, or too soft to operate a mechanical switch.
- Rapid response and high switching rates are required, as in counting or ejection control applications.
- Object has to be sensed through non-metallic barriers such as glass, plastic, or paper carton.
- Hostile environments demand improved sealing properties, preventing proper operation of mechanical switches.
- Long life and reliable service are required.
- Fast electronic control system requires bounce-free input signal.

Proximity Sensors are being used today in all industries:

Mining and Metallurgy
Foundries
Automatic Assembly and Robotics
Conveyor Systems in Airports and Factories
Chemical Plants and Oil Refineries
Semiconductor Equipment
Sheet Metal Fabrication
Automotive and Appliance Plants
Electroplating Installations
Can Plants, Food Processing and Breweries
Shipyards, Docks, and Off-shore Drilling Rigs
PC-board Handling Machinery

Typical applications:

Parts Detection
Parts Counting
Positioning
Motion and Speed Control
Bottle Cap or Can Lid Detection
Punch Press Feed and Ejection Control
Broken or Damaged Tool Detection
Void or Jam Control
Feed Control
Indexing
Inter-lock Control
Liquid Level Control
Leak Detection
Machine Programming
Valve Position Indication
Missing Parts Control
Parts Diverting
Coin Counting and Sorting
Edge Guide Control
Robotics and Conveyors

TURCK
Glossary of Terms

Axial Approach

The approach of the target with its center maintained on the sensor reference axis.

Axially Polarized Ring Magnet

A ring magnet whose poles are the two flat sides of the disk. Mounted on pistons for ***permaprox***® cylinder position sensing through nonmagnetic cylinder walls.

Capacitive Proximity Sensor

A proximity sensor producing an electrostatic field that senses conductive targets and nonconductive materials having a dielectric constant of >1 within its sensing zone.

Complementary Output

Two outputs, one N.O. and one N.C., that can be used simultaneously. ***The sum of both load currents cannot exceed the sensor's rated Continuous Load Current***.

Continuous Load Current

The maximum current allowed to continuously flow through the sensor output in the ON state.

Correction Factors

Percentage of Sn that represents the operating distance for targets constructed from materials other than mild steel (correction factor of 1.0).

Differential Travel (Hysteresis)

The difference between the operating point as the target approaches the sensor face, and the release point as the target moves away. Given as a percentage of Sn.

Dynamic Output

A sensor output that stays energized for a set duration of time, independent of the time the target is present (one-shot).

Embeddable (Shielded) Proximity Sensor

A sensor that can be flush-mounted in any material without that material influencing the sensing characteristics.

Free Zone

The space around a proximity sensor that must be kept free of any material capable of affecting the sensing characteristics.

Inductive Proximity Sensor

A proximity sensor producing an electromagnetic field that senses only metal targets within its sensing zone.

Inductive Magnet Operated Sensor

A solid-state sensor consisting of a sensing element susceptible to magnetic field strengths of 20-350 Gauss, and switching circuitry similar to that of an inductive proximity sensor.

Inrush Current

The maximum short-term load current that the output of a sensor can tolerate.

IP Rating

Ingress Protection rating per IEC 529.

Lateral Approach

The approach of a target perpendicular to the sensor reference axis.

Load

A device or circuit that is operated by the energy output of another device such as a proximity sensor.

M Threading

ISO 68 Metric straight threading, designated as "Nominal Size" X "Pitch", in mm. (Ex. M5X0.5)

Minimum Load Current

The minimum amount of current that is required by the sensor for reliable operation.

NAMUR

The acronym for a European standards organization.

NAMUR Sensor

A 2-wire variable-resistance DC sensor whose operating characteristics conform to DIN 19 234. Requires a remote amplifier for operation. Typically used for intrinsically safe applications.

NEMA Rating

An enclosure rating per NEMA Standard 250.

No-Load Current

The current drawn by a 3- or 4-wire proximity sensor from the power supply when the outputs are not connected to a load.

Nonembeddable (Nonshielded) Proximity Sensor

A sensor is nonembeddable when a specified free zone must be maintained around its sensing face in order not to influence the sensing characteristics.

Normally Closed (N.C.)

The output is OFF when the target is detected by the sensor.

Normally Open (N.O.)

The output is ON when the target is detected by the sensor.

NPN Output (Current Sinking)

A transistor output that switches the common or negative voltage to the load. Load is between sensor and positive supply voltage.

NPSM Threading

American National Standard Straight Pipe Thread for Free-Fitting Mechanical Parts.

NPT Threading

American National Standard Taper Pipe Thread.

Off-State (Leakage) Current

The current that flows through the load circuit when the sensor is in the OFF-state. Also known as leakage or residual current.

Operating Distance

A distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

Overload Protection

The ability of a sensor to withstand load currents between continuous load rating and short-circuit condition with no damage.

PG Threading

Steel conduit threading per German standard DIN 40 430.

PNP Output (Current Sourcing)

Transistor output that switches the positive voltage to the load. Load is between sensor and common.

Programmable Output

Sensor output whose N.O. or N.C. function can be selected by means of a jumper or specific terminal connection.

Proximity Sensor

A position switch that senses the target without mechanical contact.

Radially Polarized Ring Magnet

A ring magnet whose poles are the inner and outer diameter rings.

Rated Operating Distance (Sn)

A conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

Reference Axis

An axis perpendicular to the sensing face and passing through its center.

Repeatability

The difference between actual operating distances measured at a constant temperature and voltage over an 8-hour period. It is expressed as a percentage (%) of rated operating distance (Sn).

Response Time

The time required for the device switching element to respond after the target enters or exits the sensing zone.

Reverse Polarity Protection

Internal components that keep the sensor from being damaged by incorrect polarity connection to the power supply.

Ripple

The alternating component remaining on a DC signal after rectifying, expressed in percentage of rated voltage.

Sensing Face

The surface of the proximity sensor through which the electromagnetic (or electrostatic) field emerges.

Short Circuit Protection

The ability of a sensor to withstand a shorted condition (no current-limiting load connected) without damage.

Slew Rate

The rate of change of the output voltage with respect to a step change in input. A change in output of 0 to 10 volts at a slew rate of 1.25 V/ms would take 8 ms to slew to the new value.

Solid State

Pertains to devices using semiconductors instead of mechanical parts.

Static Output

A sensor output that stays energized as long as the target is present.

Switching Frequency

The maximum number of times per second that the sensor can change state (ON and OFF) under ideal conditions, usually expressed in Hertz (Hz).

Time-Delay Before Availability

The length of time after power is applied to the sensor before it is ready to operate correctly, expressed in milliseconds (ms).

Uprox Sensor

An inductive proximity sensor that detects all metals at the same range. Uprox sensors are inherently weld-field immune, operate over a wider temperature range and have a higher switching frequency than standard inductive sensors.

Weld-Field Immunity

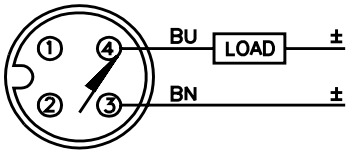
The ability of a sensor not to false-trigger in the presence of strong magnetic fields typically produced by resistance welders.

Wire-Break Protection

Results in the output being OFF on a 3- or 4-wire sensor if either supply wire is broken.

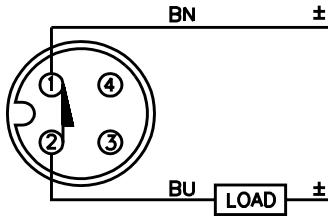
eurofast® Pinout Diagrams and Mating Cordset

AD4X-H1141



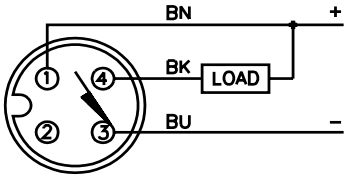
Mating Cordset: RK 4.2T-*

RD4X-H1141



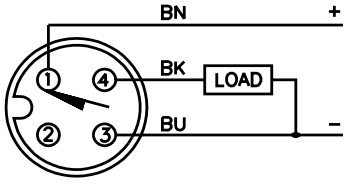
Mating Cordset: RK 4.21T-*(Y0)

AN6X-H1141



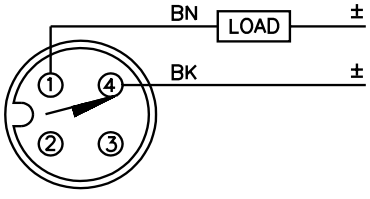
Mating Cordset: RK 4T-*

AP6X-H1141

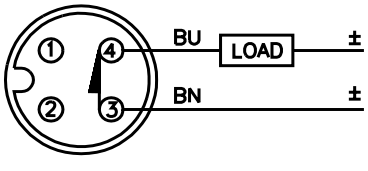


Mating Cordset: RK 4T-*

AD4X-H1144

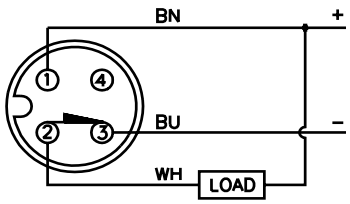


RD4X-H1143



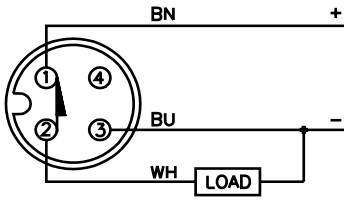
Mating Cordset: RK 4.2T-*

RN6X-H1141



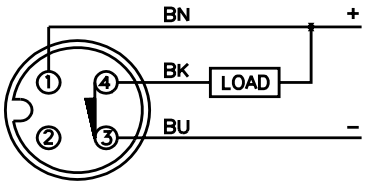
Mating Cordset: RK 4.42T-*

RP6X-H1141



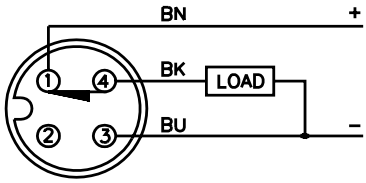
Mating Cordset: RK 4.42T-*

RN6X-H1143



Mating Cordset: RK 4T-*

RP6X-H1143



Mating Cordset: RK 4T-*

DC Outputs

Two-, three-, or four-wire proximity sensors contain, besides a transistor oscillator, a snap-action amplifier. This provides exceedingly high accuracy to a set switching point, even with very slowly approaching targets. Switching characteristics are unaffected by supply voltage fluctuations within the specified limits.

The sensors can drive electromechanical relays, counters, solenoids, or electronic modules, and interface directly with logic systems or programmable controllers without additional interface circuitry. They are available with either NPN output transistors (current sinking) or PNP output transistors (current sourcing).

Load current ratings vary from 100 mA to 200 mA depending on physical size. Standard voltage range is 10-30 VDC with certain types available for 10-65 VDC. All models incorporate wire-break, transient and reverse polarity protection. Power-On false pulse suppression is also standard.

Short-Circuit and Overload Protection

TURCK DC sensors with the Voltage Range designation "4", "6" or "8" in the part number are short-circuit and overload protected (automatic reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is turned OFF and pulse tested until the fault is removed. This added protection causes a <2.5 V drop across the output in the normal ON state. This may be a problem when interfacing with some logic low inputs (see TTL compatibility).

TTL Compatibility

Some solid-state loads requiring NPN (sinking) input signals need a ≤0.8 V signal to reliably turn ON. **TURCK** DC sensors with TTL compatibility are designated with the voltage range "7" in the part number. The output of these sensors will have a voltage drop of ≤0.7 V (0.3 V typical), which will ensure reliable operation. Do not use voltage ranges "4" and "6" when TTL compatibility is required.

Figure 1

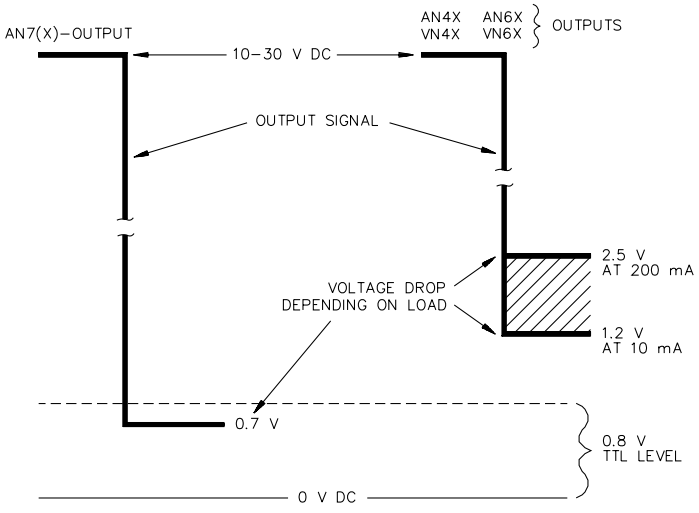
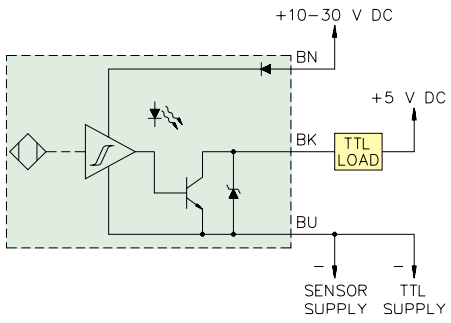


Figure 2



Voltage drop is measured from output wire black (BK) to ground wire blue (BU).

DC Sourcing and Sinking

2-Wire DC

Figure 3 *Source*

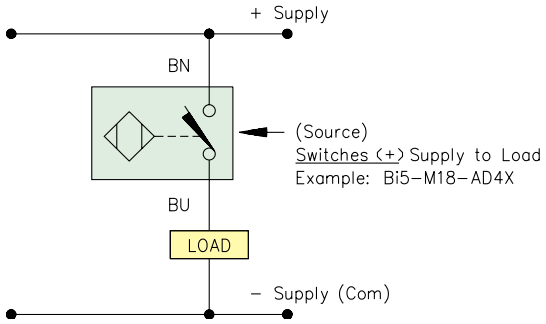
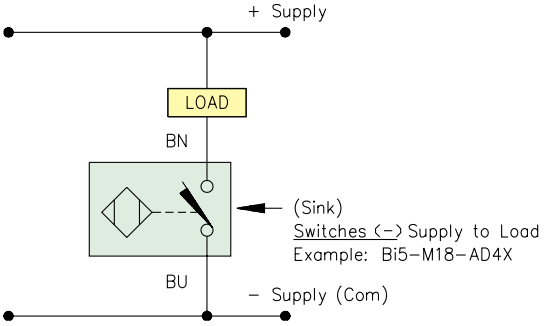


Figure 4 *Sink*



Note: **TURCK** 2-wire DC sensors are not polarity sensitive and can be used to sink or source a load.

3-Wire DC

Figure 5 *Source*

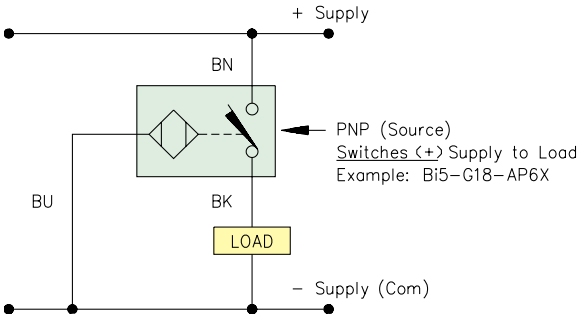
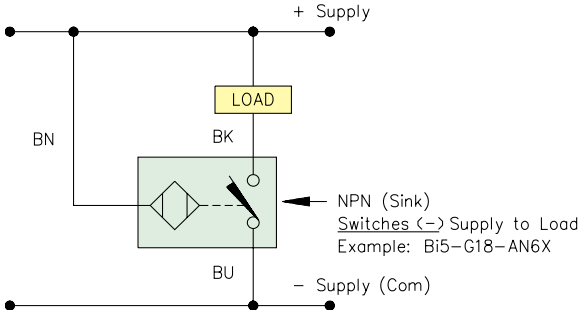


Figure 6 *Sink*



DC Outputs

"AD" 2-Wire DC Output

Figure 7 *Electronic Output Circuit*

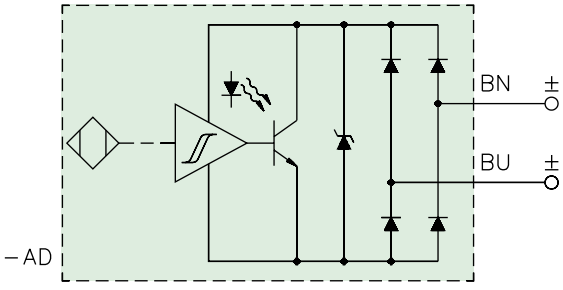
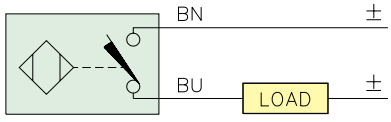


Figure 8 *Wiring Diagram*



DC Outputs

"AN4" and "AP4" 3-Wire DC Outputs

Figure 9 *Electronic Output Circuit*

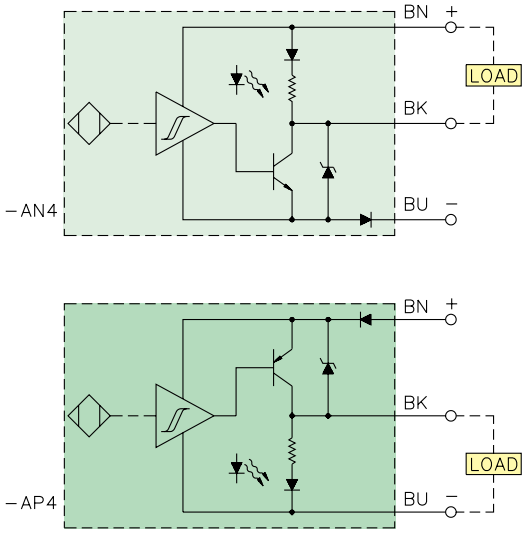
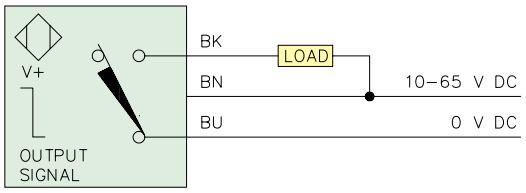
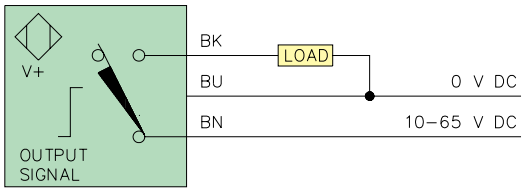


Figure 10 *Wiring Diagram*



NPN transistor
current sinking
negative switching
N.O. output



PNP transistor
current sourcing
positive switching
N.O. output

"AN6(7)" and "AP6" 3-Wire DC Outputs

Figure 11 *Electronic Output Circuit*

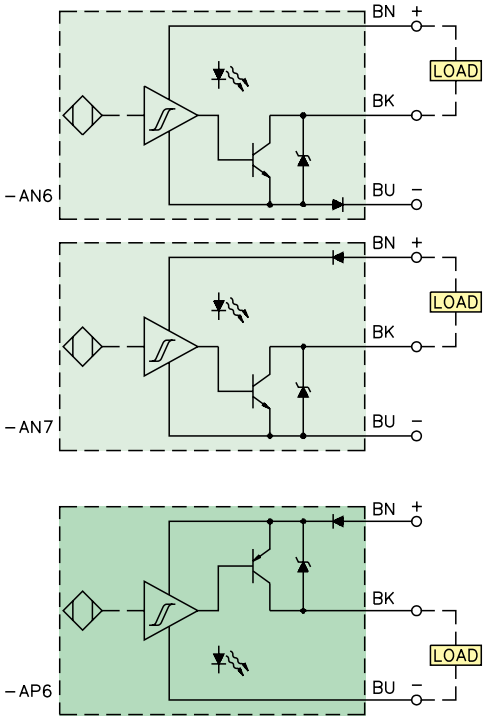
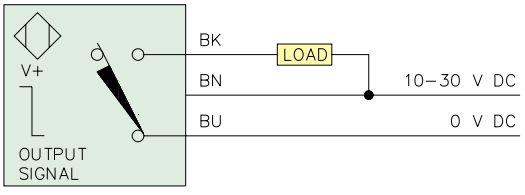
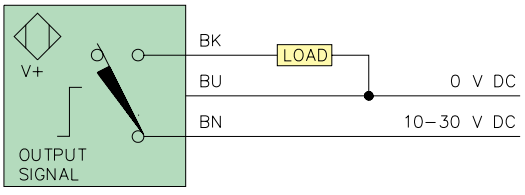


Figure 12 *Wiring Diagram*



NPN transistor
current sinking
negative switching
N.O. output



PNP transistor
current sourcing
positive switching
N.O. output

TURCK TIP

- Order current sinking (NPN) sensors with the voltage range "7" only when low voltage drop for TTL gates is required. In all other cases, order sensors with voltage ranges "4" or "6".

"VN4" and "VP4" 4-Wire DC Outputs

Figure 13 *Electronic Output Circuit*

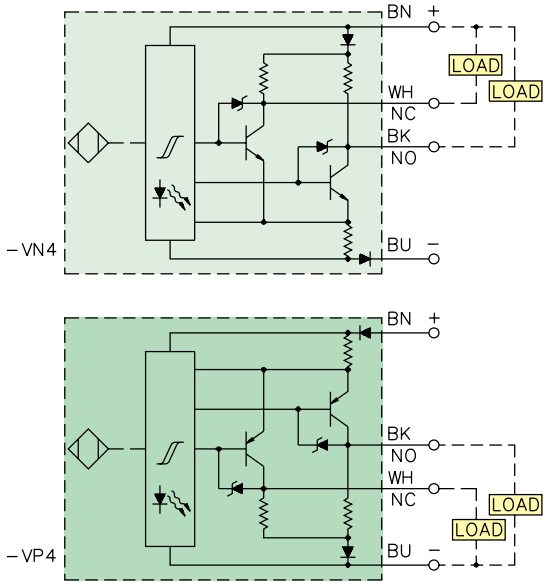
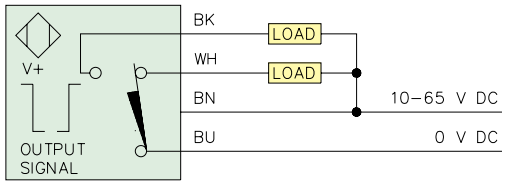
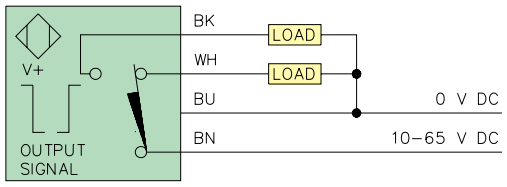


Figure 14 *Wiring Diagram*



NPN transistor current sinking negative switching complementary output (SPDT)



PNP transistor current sourcing positive switching complementary output (SPDT)

"VN6" and "VP6" 4-Wire DC Outputs

Figure 15 *Electronic Output Circuit*

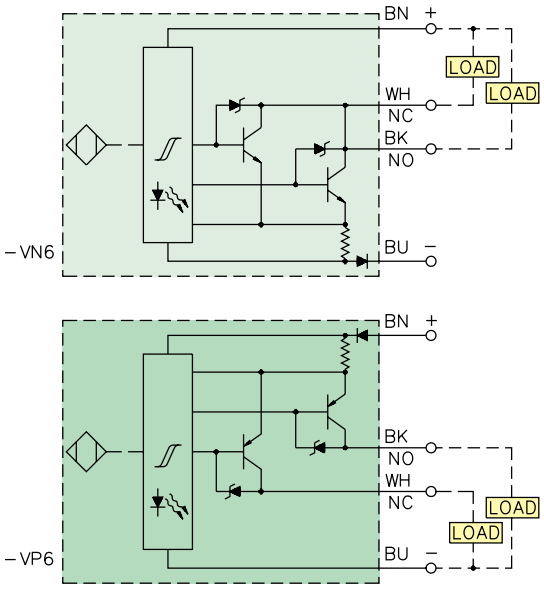
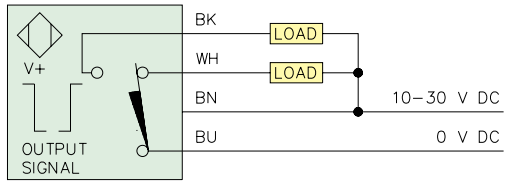
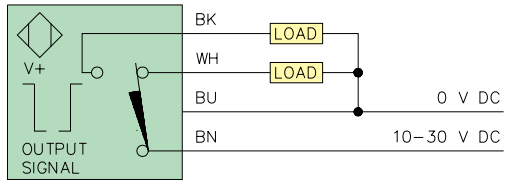


Figure 16 *Wiring Diagram*



NPN transistor current sinking negative switching complementary output (SPDT)



PNP transistor current sourcing positive switching complementary output (SPDT)

DC Outputs

"LIU" 4-Wire Linear Analog DC Output

Figure 17 *Electronic Output Circuit*

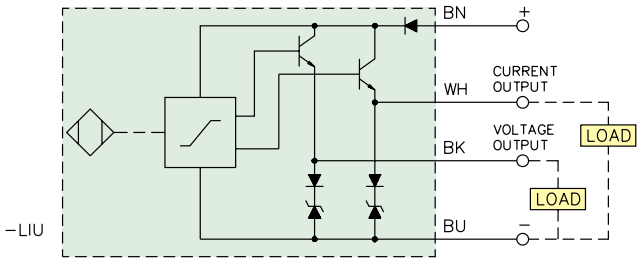


Figure 18 *Typical Response Curve*

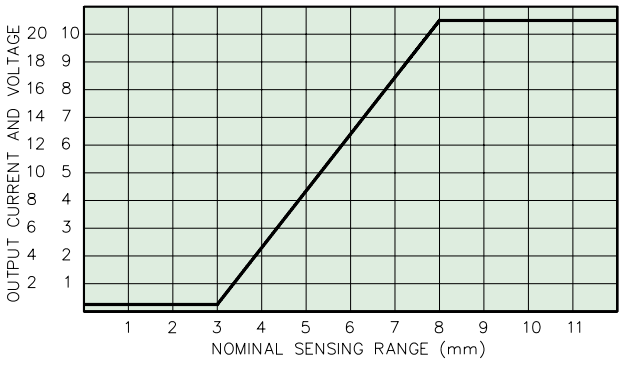
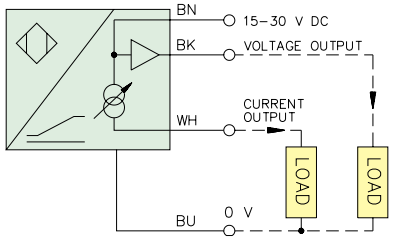


Figure 19 *Wiring Diagram*



Linear Analog Output; Current and Voltage

Series/Parallel Connection

Logic functions with DC proximity sensors:

Self-contained proximity sensors can be wired in series or parallel to perform such logic functions as AND, OR, NAND, NOR.
The wiring diagrams show the hook-up of four sensors with NPN and PNP outputs.
Take into account the accumulated no-load current and voltage drop per sensor added in the series string.

Series-connection:

N.O. sensors: AND Function
(target present, all sensors: load "on")
N.C. sensors: NOR Function
(target present, any sensor: load "off")

Parallel-connection:

N.O. sensors: OR Function
(target present, any sensor: load "on")
N.C. sensors: NAND Function
(target present, all sensors: load "off")

TURCK TIP

- To prevent the load from seeing the cumulative voltage drop of multiple 3-wire sensors in series, alternating polarity sensors can be used provided that the desired polarity is at the load.
- Wiring 3-wire sensors in series delays the load by the accumulated "time delay before availability" of all sensors in the string.

Figure 20 *NPN Connection*

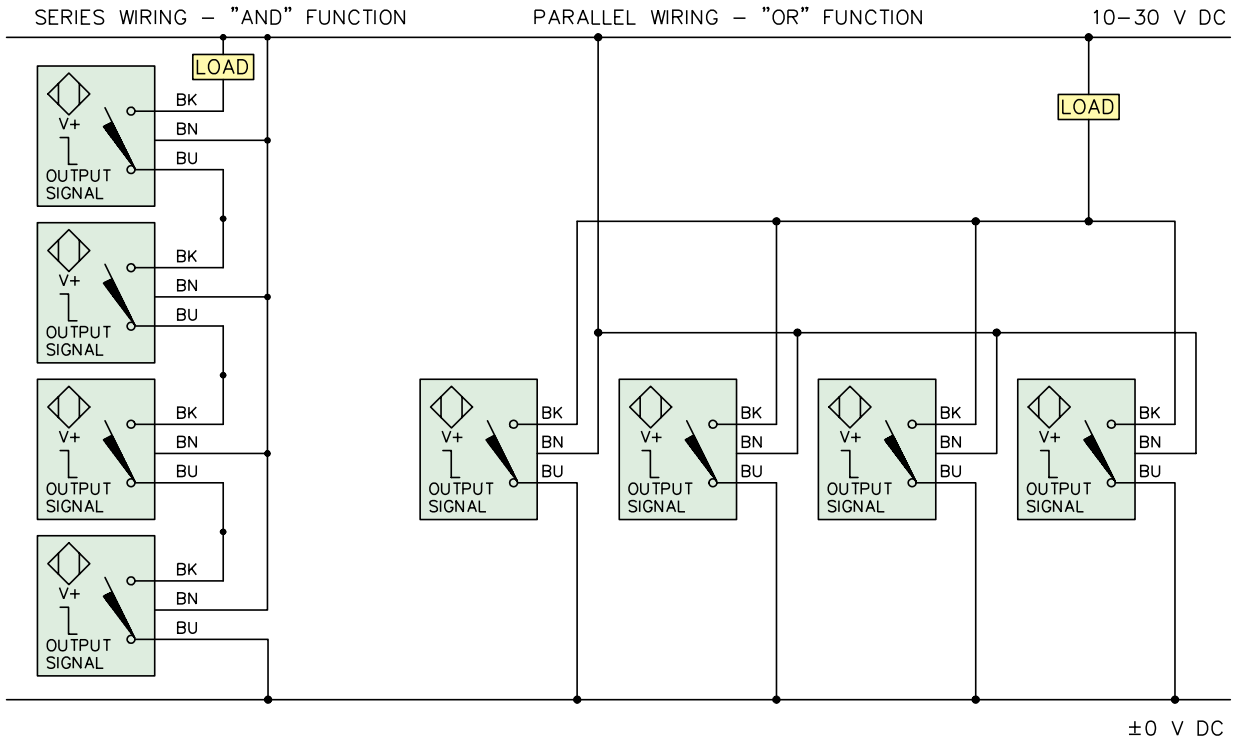
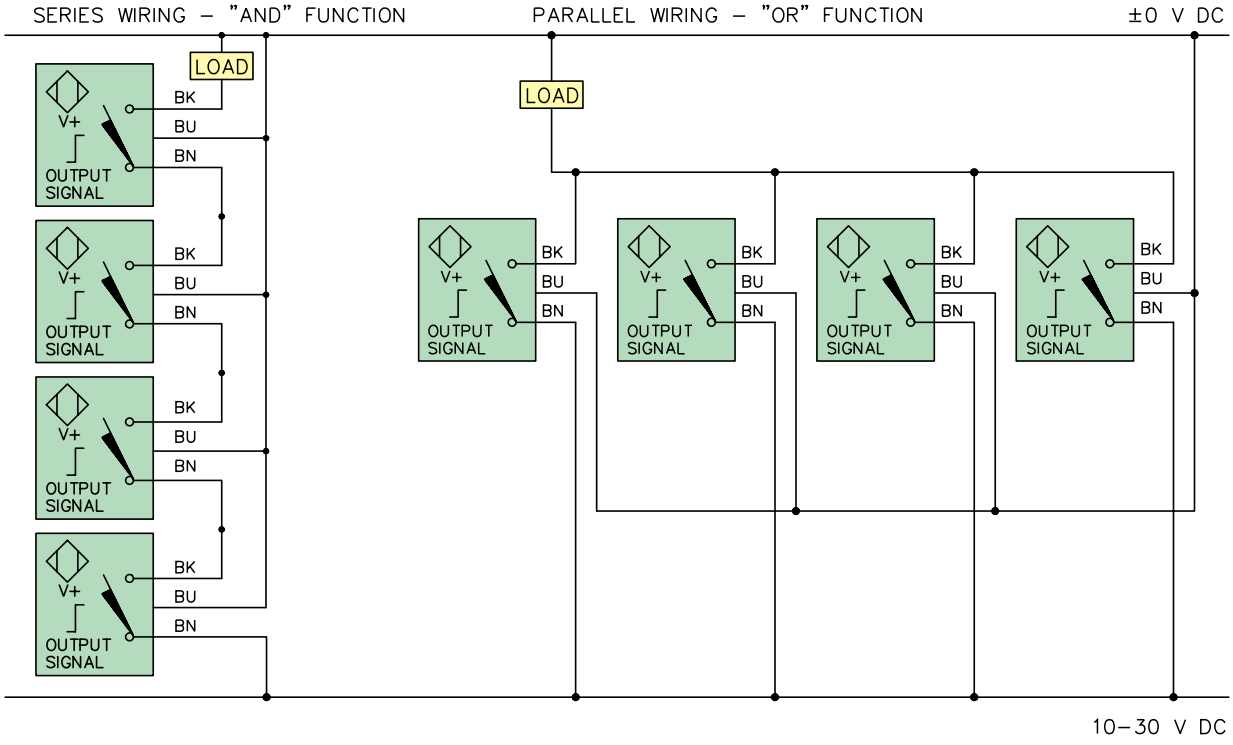


Figure 21 *PNP Connection*



AC and AC/DC Outputs

Figure 1 *AC Outputs - "3", "31", "33"*

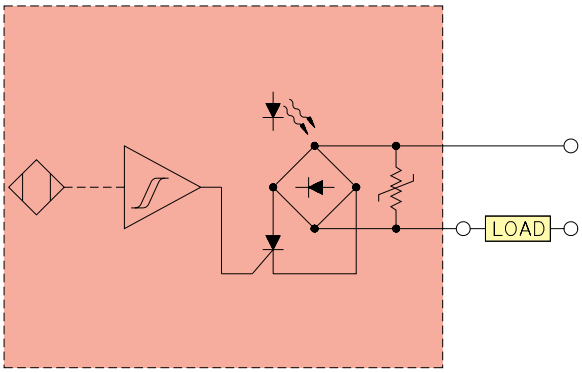
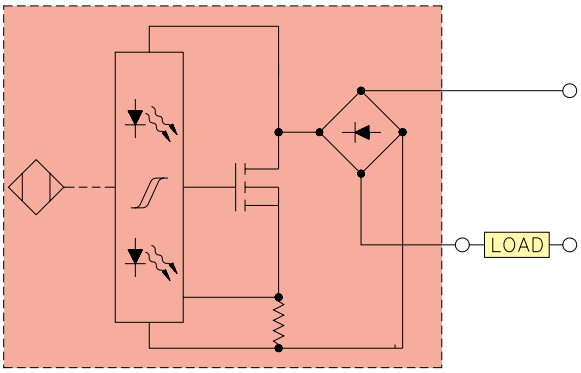


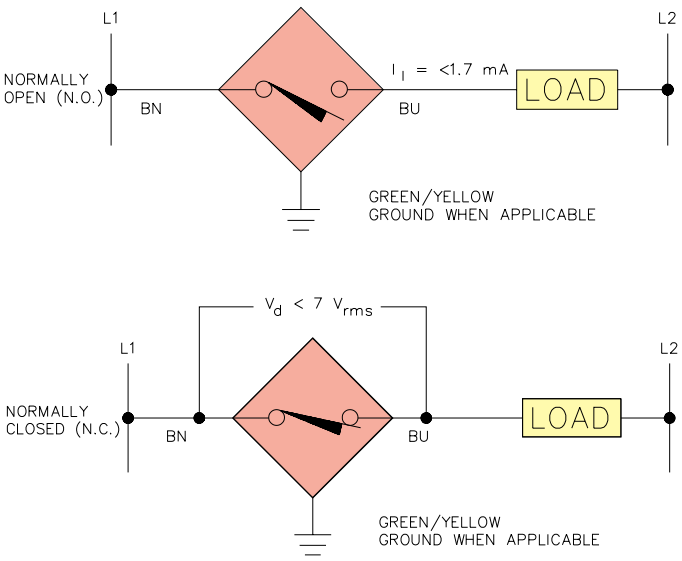
Figure 2 *AC/DC Outputs - "30", "32" SCP*



These sensors are used as pilot devices for AC-operated loads such as relays, contactors, solenoids, etc. The solid-state output permits use of the sensors directly on the line in series with an appropriate load. They, therefore, replace mechanical limit switches without alteration of circuitry, where operating speed or environmental conditions require the application of solid-state sensors.

These sensors are typically available in a voltage range of 20-250 VAC. All models are available with either normally open (N.O.), normally closed (N.C.) or programmable outputs (from N.O. to N.C.). Careful consideration must be given to the voltage drop across AC/DC sensors when used at 24 VDC.

Figure 3 *Electro-Mechanical Equivalents*



Since the sensors are connected in series with the load by means of only two leads, an off-state current flows through the load in the magnitude of approximately 1.7 mA.

This, however, does not affect the proper and reliable performance of most AC loads. Another characteristic of solid state sensors is a 5 to 7 volt drop developed across the sensor in the ON state.

All models contain a snubber network to protect against transients from inductive loads, which can cause false triggering.

Short-Circuit and Overload Protection

TURCK AC sensors with the Voltage Range designation "30", "32" or "40" are short-circuit and overload protected (manual reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is latched OFF until the power has been cycled OFF and ON again.

Always select short-circuit and overload protected sensors whenever possible.

CAUTION!

DO NOT...

operate an incandescent light bulb as a load.
The extremely high cold current will cause an overload condition.

DO NOT...

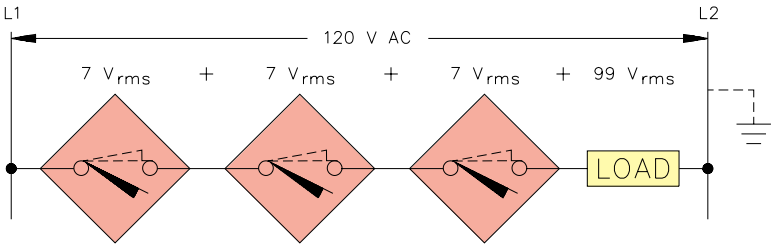
operate a proximity sensor from a wall outlet without a load.
This is considered a "dead" short and can cause catastrophic damage to nonshort-circuit protected sensors.

DO NOT...

directly operate a motor with a proximity sensor.
The inrush current can cause an overload condition.
Always use a motor starter, relay or other appropriate device.

Series Connection

Figure 4



Series-connection: (Figure 4)

N.O. sensors: AND Function
(target present, all sensors: load "on")

N.C. sensors: NOR Function
(target present, any sensor: load "off")

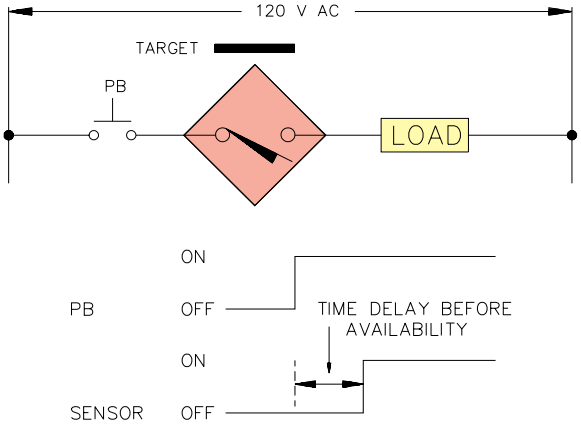
The maximum number of sensors to be operated in series depends on the stability of the line voltage and the operating characteristics of the load in question. The supply voltage minus the accumulative on state voltage drop across the series connection (approximately 7 Vrms per sensor) must be ≥ the minimum required load voltage.

Mechanical Switches in Series

Problem:

Mechanical switches in series with proximity sensors should always be avoided because they can create an open circuit, leaving the proximity sensor without power. In order to operate properly, a proximity sensor should be powered continuously. A typical problem encountered when the mechanical contact closes while the target is present is a short time delay that is experienced before the load energizes (time delay before availability).

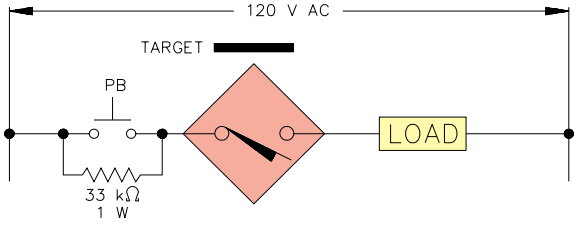
Figure 5



Solution:

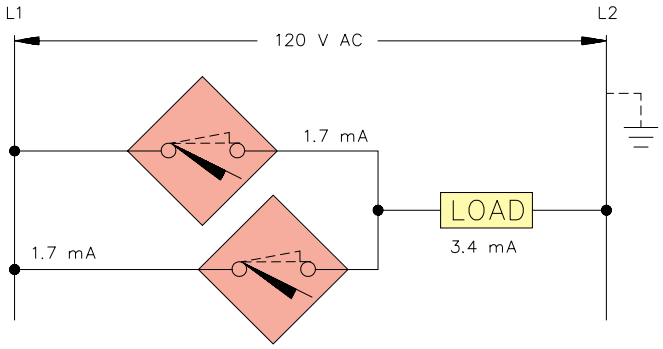
A 33 kΩ, 1W by-pass resistor can be added across the mechanical contact to eliminate the time delay before availability. This will allow enough leakage current to keep the sensor ready for instantaneous operation.

Figure 6



Parallel Connection

Figure 7



Parallel Connection: (Figure 7)

N.O. sensors: OR Function
(target present, any sensor: load "on")

N.C. sensors: NAND Function
(target present, all sensors: load "off")

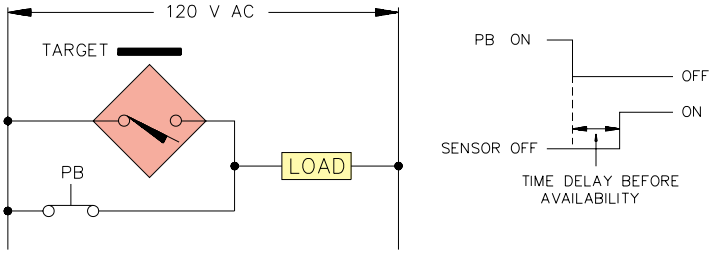
Wiring AC proximity sensors in parallel can result in inconsistent operation and should generally be avoided.

On-state voltage drop: With any sensor ON, the voltage across all other sensors is typically 7 Vrms. Since the minimum rated voltage for AC sensors is 20 Vrms, no other sensor with a target present can turn ON until the first sensor turns OFF. This transition is not instantaneous due to the time delay before availability, during which the load may drop out.

Leakage current through the load: This is equal to the total leakage of all sensors wired in parallel. Too much leakage into a solid state load can cause the input to turn ON and not turn OFF. Small relays may not drop out if the leakage current exceeds the relay's holding current.

Mechanical Switches in Parallel

Figure 8

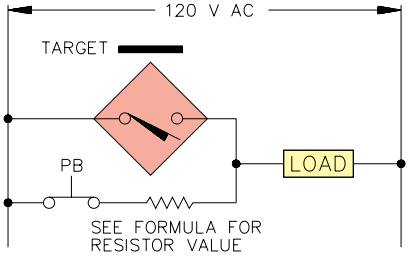


Problem:

As previously discussed, proximity sensors should be powered continuously to avoid the time delay before availability during power-up.

With mechanical switches in parallel, the sensor is shorted out every time the contact is closed, leaving it without power. If the target is present when the mechanical contact is opened, a small delay will be experienced during which the load may drop out.

Figure 9



Solution:

This delay can be avoided by adding a resistor in series with the mechanical contact. The voltage drop developed across the resistor with the contact closed will be enough to keep the sensor active. Use the formula below to determine the value and wattage.

Formula:

$$R = \frac{\text{minimum operating voltage of proximity sensor}}{\text{load current at operating voltage}}$$

Example:

$$R = \frac{20\ V}{180\ mA}$$

$$R = 110\ \Omega$$

Minimum resistor wattage rating: E x I

Example: 20 V x 180 mA = 3.6 W ≈ 5 watts recommended

NAMUR (Y0 and Y1) Output

NAMUR sensors are 2-wire sensing devices used with switching amplifiers. Because of the small amount of energy needed to operate NAMUR sensors, they can be used in intrinsically safe applications.

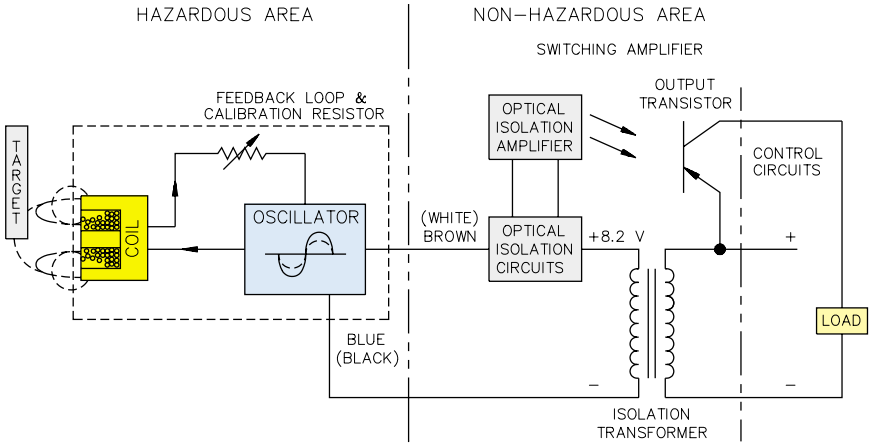
The operation of this sensor is similar to that of a variable resistor with a change in impedance as a target approaches the sensor. When no metal is being sensed, the inductive sensor is in a low impedance state and draws a current of more than 2.2 mA. When a metal target enters the high-frequency field radiated from the sensor head, the impedance increases as the target approaches. When fully damped, the sensor draws less than 1.0 mA. *For capacitive and inductive magnet operated sensors, the current change characteristics are opposite.*

The current differential from the undamped to the damped (metal present) state is used to trigger an amplifier at a defined switching point. These sensors contain a relatively small number of components, which allows the construction of small devices and also assures a high degree of reliability.

In the undamped and damped state, the devices have fairly low impedance and are therefore, unaffected by most transients. NAMUR sensor circuits operate on direct current. Therefore, cable runs of several sensors may be run parallel to one another without mutual interference.

The NAMUR (Y0 and Y1) sensor behaves like a variable resistor when a target approaches.
The impedence increases or decreases between 1 kΩ and 8 kΩ.

Figure 1



Typical Output Curves

Figure 2 *Inductive*

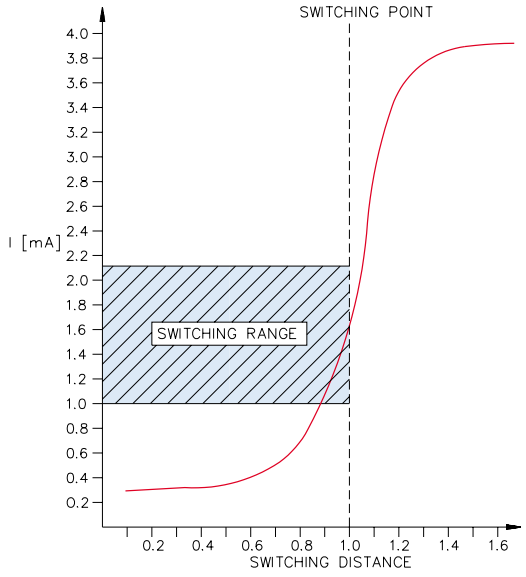
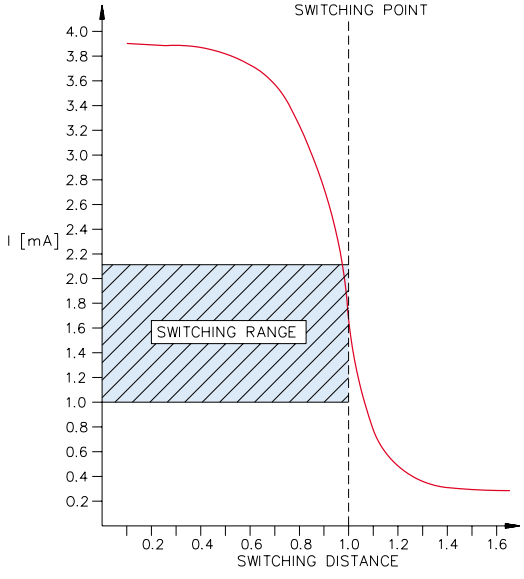


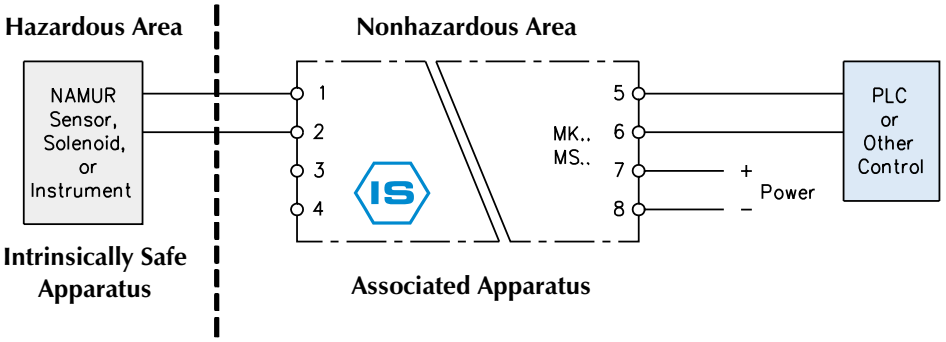
Figure 3 *Inductive Magnet and Capacitive*



Note:
The typical curve of current versus sensing distance with 8.2 V DC supply and 1 kΩ source impedence. All NAMUR (Y0 and Y1) sensors are calibrated to pass through 1.55 mA at nominal sensing range ±10%.

Typical Intrinsically Safe Installation

Figure 4



For guidance on installation of **TURCK** intrinsically safe systems, refer to the Instrument Society of America publication ISA-RP12.6-1995, "Wiring Practices for Hazardous (Classified) Locations Instrumentation".

The complete line of Intrinsically Safe and Associated Apparatus is featured in the **TURCK** "Automation" catalog.

Interface Circuits

NAMUR (Y0 and Y1) sensors are suitable for interfacing with many existing or custom electronic circuits. See Figures 5 and 6.

Figure 5

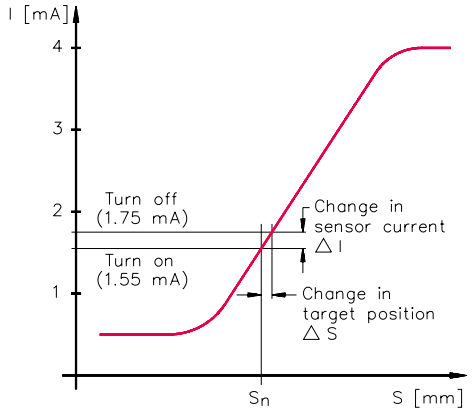
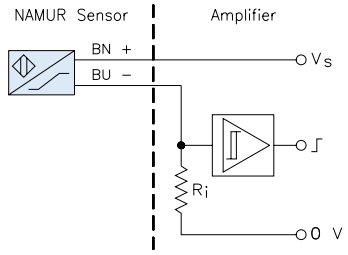


Figure 6



NAMUR sensors can operate outside the nominal operating values when the sensor is used in a nonhazardous area. The supply voltage limits are: V_{min} = 5 VDC; V_{max} = 30 VDC

Within this voltage range the load resistance R_i must be adjusted for the supply voltage. The following table gives typical values:

V_{supply} (DC)	R_i (kΩ)	I_{sn} (mA)	Δ I (mA)
5	0.39	≈0.7	≈0.1
12	1.8	≈2.3	≈0.3
15	2.2	≈2.9	≈0.4
24	3.9	≈3.8	≈0.5

If these values are used, the current I_{sn} corresponds to the rated operating distance (S_n) of the sensor. NAMUR sensors are short-circuit protected up to 15 VDC and reverse polarity protected up to 10 VDC.

Third Party Compliances

CSA - Canadian Standards Association

CSA certifies devices for use in Canadian hazardous and non-hazardous locations. Since CSA is a nationally recognized test laboratory for the US, accredited by OSHA, devices marked with this logo also meet comparable US standards.

FMRC - Factory Mutual Research Corporation

FMRC approves devices for use in explosive hazardous locations in the US. Intrinsically safe (IS) devices are approved for Division 1 areas; nonincendive (NI) devices are approved for Division 2 areas.

UL - Underwriter's Laboratories

UL is a nationally recognized US test laboratory that tests equipment to meet US standards and jurisdictional requirements. UL lists stand-alone devices, such as sensors, and recognizes system components, such as relays.

Note: **TURCK** products comply with many International standards. Consult factory for more information.

Hazardous Location Approvals

The NAMUR sensors shown in this catalog are Intrinsically Safe per the following:

EUROPE:	CENELEC Standards EN 50 014 and EN 50 020:		
-Y1(X)	PTB no. Ex-86/2177X	[EEx ia] IIC T6	zone 0
-Y0(X)	PTB no. Ex-82/2033X	[EEx ib] IIC T6	zone 1

USA, CANADA:	Class I, II, III	Division 1	Groups A, B, C, D, E, F, G*
-Y0(X), -Y1(X)	Factory Mutual file numbers:		1F1A3.AX, 0R7A2.AX,1T8A8.AX, 0T3H6.AX
	CSA file number:		LR82245-4

Any FMRC approved or CSA certified associated apparatus with the following Entity Concept parameters can be used with these sensors:

V_{OC} or $V_T \leq 15$ V	$C_a \geq C_{cable} + 220$ nF
I_{SC} or $I_T \leq 60$ mA	$L_a \geq L_{cable} + 280$ µH

* Note: CSA does not allow the use of quick disconnects in Groups E and F

Many 3-wire DC sensors are Nonincendive for Class I, Division 2 hazardous areas and Suitable for Class II and Class III, Division 2 hazardous areas. Only those 3-wire sensors identified with the FM logo have this approval.

USA:	Class I, II, III	Division 2	Groups A, B, C, D, F, G
-AN6X, -AP6X			
-RN6X, -RP6X	Factory Mutual file number:		2T3A5.AX

Nonincendive

More on Hazardous Locations

Standards for Intrinsically Safe systems in hazardous locations are found in the following publications:

United States:	National Electrical Code 1996 (ANSI/NFPA 70) Articles 504 and 505 Factory Mutual Approval Standard Class No. 3610 Underwriters Laboratory Standard UL 913
Canada:	Canadian Electrical Code C22.1-94 Section 18 and Appendix F.
Europe:	CENELEC Standards EN 50 020 and EN 50 014

Hazardous Location Definitions (U.S. and Canada)

Class I	Locations in which flammable gases or vapors exist or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.
Class II	Locations that are hazardous because of the presence of combustible dust.
Class III	Locations that are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures.
Division 1	Locations in which hazardous concentrations in the air exist continuously, intermittently, or periodically under normal operating conditions.
Division 2	Locations in which hazardous materials are handled, processed or used, but in which they are normally confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown.
Group A	Atmospheres containing acetylene.
Group B	Atmospheres containing hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume, or gases or vapors of equivalent hazard such as butadiene, ethylene oxide, propylene oxide and acrolein.
Group C	Atmospheres such as ethyl ether, ethylene, acetaldehyde, cyclopropane, or gases or vapors of equivalent hazard.
Group D	Atmospheres such as acetone, alcohol, ammonia, benzene, butane, cyclopropane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, methane, natural gas, naphtha, propane, xylene, or gases or vapors of equivalent hazard.
Group E	Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, and other combustible dusts with similarly hazardous characteristics.
Group F	Atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal and coal.
Group G	Atmospheres containing other combustible dusts, such as chemical, agricultural or plastic dusts.

Exerpt from National Electrical Code:

Intrinsically safe apparatus and wiring shall be permitted in any hazardous (classified) location for which it is approved, and the provisions of Articles 501 through 503 and 510 through 516 shall not be considered applicable to such installations except as required by Article 504.

Wiring of intrinsically safe circuits shall be physically separated from wiring of all other circuits that are not intrinsically safe. Means shall be provided to minimize the passage of gases and vapors. Installation of intrinsically safe apparatus and wiring shall be in accordance with the requirements of Article 504.

Enclosure Ratings

NEMA 250-1991

NEMA 1 Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

NEMA 3 Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust, and damage from external ice formation.

NEMA 4 Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.

NEMA 4X Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.

NEMA 6 Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation.

NEMA 6P Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth, and damage from external ice formation.

NEMA 13 Enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and non-corrosive coolant.

IEC 529

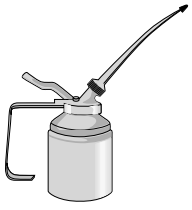
IP 40 Protection against solid bodies larger than 1 mm. No protection against liquids.

IP 65 Dust tight. Protection against water spray from all directions at 14.2 PSI through a 12.5 mm nozzle.

IP 67 Dust tight. Protection against the effects of immersion in water for 30 minutes at 1 meter.

IP 68 Dust tight. Protection against the effects of indefinite immersion in water at a pressure specified by the manufacturer. Ex. **TURCK** submersible sensor "/S139" is specified at 725 PSI.

TURCK TIP



For oily environments - Use plastic sensors with quick disconnects and **TURCK** PUR "/S90" cordsets.

For washdown environments - Use plastic sensors with quick disconnects and **TURCK** cordsets.

Plastics

ABS - Acrylonitrile-Butadiene-Styrene	Impact resistant, rigid. Resistant to aqueous acids, alkalis, salts, alcohols, oils, concentrated hydrochloric acid; disintegrated by concentrated sulfuric or nitric acids, esters, ketones.
CPE, Thermoset (rubber cables)	Excellent resistance to oils, acids, chemicals, ozone, extreme temperatures, cuts, abrasions; flame retardant in welding applications.
PA - Polyamide (nylon)	Good mechanical strength, temperature resistant.
PA, Amorphous (Trogamid T)	Similar properties to nylon, but transparent. Hard, rigid, good chemical resistance.
PA 12-GF30	Nylon 12, 30% glass filled.
PA 66-GF25-V0	Nylon 66, 25% glass filled, self-extinguishing.
PBT - Polybutylene Terephthalate (when glass reinforced, Crastin®)	Good mechanical strength; resistant to abrasion; resistant to alcohols, oils, some acids, trichloroethylene.
PBT-GF30-V0	PBT, 30% glass filled, self-extinguishing.
PEI - Polyetherimide (Ultem®)	Excellent resistance to most commercial automotive fluids, fully hydrogenated hydrocarbons, alcohols, weak aqueous solutions. Withstands higher temperatures.
POM - Polyoxymethylene / Polyacetal (Delrin®)	High impact resistance; good mechanical strength; good resistance to oils, alcohols, alkalis, gasoline, xylene, toluene. Dielectric constant 3.7.
PTFE - Polytetrafluoroethylene (Teflon®)*	Optimum resistance against high temperature and chemicals; low dielectric constant (2.0).
PUR - Polyurethane	Elastic, resistant to abrasion, impact-resistant, oil- and grease-tolerant.
PVC - Polyvinylchloride	Good mechanical strength, viscosity to impact; resistant to acids, alkalis.
PVC, irradiated	Heat and chemical resistant, withstands short-term temperatures to 482° F.
PVDF - Polyvinylideneflouride (Kynar ®)	Resistant to high and low temperatures, good resistance to chemicals (similar to PTFE), high mechanical strength.
Silicone	For use at high or low ambient temperatures (-50...+180 °C), moderate mechanical strength, average resistance against alkalis, acids, oils, and solvents.

Metals

306 Stainless Steel	Excellent atmospheric resistance.
CuZn - Brass	Generally good resistance to industrial atmospheres.
GD - AlSi12 - Aluminum, die-cast	Low specific weight, long-life characteristics.
GD - ZnAl4Cu1 (Z410) - Zinc, die-cast	Long-life characteristics.

* Teflon is a registered trademark of DuPont.

Matrix of TURCK Sensor Materials *

Housing Style	ABS	PA, Trog. T	PA	PBT	POM	PUR	PVC	PVDF	PEI	306 SS	Al	Brass	Zinc	Thermoset Plastic
CA25, CA40											X	X	X	X
CK40				X								X	X	
CP40			(X)**	X										
CP80, K90SR		X	(X)	X										
DS20				X			X							
EG			X			X	X			X				
EM			X							X				
G, M (potted-in cable)			X			X	X					X		
G, M (connector)			X									X		
G..SK		X	X									X		
G47SR	X		X									X		
INR, INT			X			X						X		
K..SK, P..SK		X	X											
K40SR, P30SR	X		(X)											
KT34								X						
M..T			X				X					X		
PCS				X		X	X					X		
P, S (potted-in cable)			X			X	X							
P, S (connector)			X											
P.../S139			X		X	X								
PT30								X						
Q06			X				X							
Q6.5 (World Clamp)				X		X						X		
Q6.5				X		X								
Q5.5, Q9.5			X			X								
Q08			X				(X)					(X)	X	
Q10S			X			X	X							
Q11S, Q12				X			X							
Q14, Q20				X		X	X					X		
Q14, Q20 Ring				X	X		X					X		
Q25, Q30				X		(X)	X							
Q26			X	X			(X)							
Q34, Q80				X								X		
S185						X	X	X						
Cable Gland			X											
Wet Suit				X				X	X					

* Does not apply to ***picoprox*** ®.

** Optional part, ie cable gland, connector, cable, bracket, etc.

Matrix of TURCK Sensor Materials *

Housing Style	ABS	PA, Trog. T	PA	PBT	POM	PUR	PVC	PVDF	PEI	306 SS	Al	Brass	Zinc	Thermoset Plastic
A23			X				(X)				X	(X)	(X)	
AKT			X				(X)			(X)	(X)		(X)	
CRS			X									X	X	
FST, NST, QST			X				(X)				X	(X)		
IKE, IKM, IKT			X				(X)				(X)	(X)	X	
KST			X				(X)			X		(X)	X	
PSM			X				(X)			X	X	(X)		
PST			X				(X)			X		X		

Chemical Compatability

The information in this chart is derived from reputable industry sources and is to be used only as a guide in selecting materials suitable for your application. **TURCK** does not warrant in any fashion that the information in this chart is accurate or complete, or that any material is suitable for any purpose.

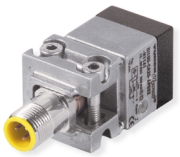
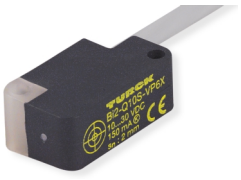
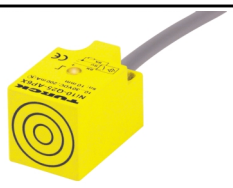
Most ratings listed here apply to a 48-hour exposure period.

Ratings: A - No effect B - Minor effect C - Moderate effect D - Severe effect
φ - No specific data, but probable rating. nd - no data

	ABS	Trog. T	PA 12	PBT	PEI	POM	PTFE	PUR	PVC	PVDF	306 SS	Al	Brass	Zinc
Ammonia, liquid	B	B	A	B	D	C/D	A	C	A	A	B	A	D	A
Chlorine anhydrous liquid	nd	nd	D	D	nd	C	A	C	D	A	C	D	D	nd
De-ionized water	nd	nd	A	nd	A	nd	A	nd	A	A	A	A	A	nd
Formic acid	D	D	D	A	nd	C	A	C	A	A	A/B	A	D	D
Gasoline	D	A	A	A	A	A	A	A	C	A	A	A	A	nd
Hydrochloric acid <40%	A	A/B	D	A	A	C	A	D	B	A	D	D	D	D
Hydrofluoric acid <50%	C	D	D	B	Aφ	D	A	C	B	A	D	D	D	nd
Methanol	D	D	B	A	A	A	A	B	A	A	A	A	A	A
Phosphoric acid <40%	B/C	D	B	A	A	D	A	Dφ	B	B	D	C	D	D
Potassium hydroxide <15%	A	A	C	B	A	B	A	C	A	A	B	D	D	nd
Sodium hydroxide <55%	A	A	C	B	A	B	A	B	A	D	B	D	D	D
Sodium hypochlorite ≤13%	B	nd	B	A	nd	C	A	B	A	A	C	D	D	A
Sulfuric acid <75%	B	A	D	A	A	D	A	C	A	A	D	D	D	D
Toluene	D	A	A	A	A	A	A	C	D	A	A	A	A	nd
Trichloroethylene	D	A	C	A	nd	B	A	D	D	B	A/B	D	A	A

TURCK
Inductive Sensors - Rectangular

Visit **TURCK** on the Internet:
http://www.turck.com

Q-PAK™ Changing the Shape of Sensing™					
Sensor Type	**Output**	**Pages**	**Sensor Type**	**Output**	**Pages**
 **Q5.5**	2-Wire DC 3-Wire DC	B23-B24 B25-B26	 **Q11S**	2-Wire DC 3-Wire DC NAMUR	B49-B50 B51-B52 B53-B54
 **Q06**	3-Wire DC	B25-B26	 **Q12**	3-Wire DC 2-Wire AC 3-Wire TTL	B55-B56 B57-B58 B59-B60
 **Q6.5**	3-Wire DC	B27-B28	 **Q14**	3-Wire DC 2-Wire AC NAMUR	B61-B62 B63-B64 B65-B66
 **Q08**	2-Wire DC 3-Wire DC 4-Wire DC NAMUR	B29-B30 B31-B34 B35-B36 B37-B38	 **Q20**	3-Wire DC NAMUR	B67-B68 B69-B70
 **Q9.5**	3-Wire DC	B39-B40	 **CA25**	3-Wire DC	B71-B72
 **Q10S**	3-Wire DC 4-Wire DC 2-Wire AC NAMUR	B41-B42 B43-B44 B45-B46 B47-B48	 **Q25**	3-Wire DC	B73-B74

Output Color Code

DC Output	AC Output	NAMUR Output
Self-Contained	*Self-Contained*	*Requires Remote Amplifier*

CLICK HERE for
MAIN SELECTION GUIDE

TURCK

Q-PAK™		
Sensor Type	**Output**	**Pages**
 **Q26**	2-Wire DC	B75-B76
 **Q30**	3-Wire DC	B77-B78
 **Q34**	3-Wire DC 2-Wire AC	B79-B80 B81-B84
 **CA40**	3-Wire DC 2-Wire AC	B85-B86 B87-B88
 **CK40**	2-Wire DC 3-Wire DC 4-Wire DC 2-Wire AC	B89-B90 B91-B94 B95-B96 B97-B102
 **CP40**	2-Wire DC 3-Wire DC 4-Wire DC 2-Wire AC 4-Wire AC NAMUR	B103-B104 B105-B108 B109-B116 B117-B122 B123-B124 B125-B126

Q-PAK™		
Sensor Type	**Output**	**Pages**
 **Q50**	2-Wire AC	B127-B128
 **CP80**	3-Wire DC 4-Wire DC 2-Wire AC NAMUR	B129-B130 B131-B134 B135-B140 B141-B142
 **Q80**	3-Wire DC 4-Wire DC	B143-B144 B145-B146
 **K90**	4-Wire DC 2-Wire AC	B149-B150 B153-B154
 **K90SR**	4-WireDC 2-Wire AC NAMUR	B151-B152 B155-B158 B159-B160

Note: All dimensions in this section are shown as: inches [mm].

Inductive Rectangular Sensor Selection Guide

Inductive Sensor Part Number Key

B	i	10	U	-		G	T	30		-	A	DZ	30	X2	Wiring Options	Special Option Codes

Mounting

B = Embeddable (Shielded)
N = Nonembeddable (Nonshielded)
S = Slot Sensor

Principle of Operation

i = Inductive

Rated Operating Distance (mm)

Sensing Characteristics

F = Front Sensing on Q26 and Q34 sensors
NF = Nonferrous Only
R = Ring Sensor
S = Side Sensing on Q26 sensors
T = Side Sensing on Q34 sensors
U = ***Uprox***® sensor

Housing Material Modifier

E = Stainless Steel

Housing Style

Barrel - Metal
G = Full Threading, Generally Chrome Plated Brass
H = Smooth, Chrome Plated Brass or Stainless Steel
M = Partial Threading, Chrome Plated Brass

Barrel - Plastic
K = Smooth
P = Full Threading
S = Partial Threading

Rectangular
Q = Metal or Plastic, Various Rectangular Styles

Limit Switch
CA = ***stubby***®, Short Aluminum Housing, Connector
CK = ***stubby***®, Short Plastic Housing, Connector
CP = ***combiprox***®, Plastic Housing, Terminal Chamber Base with Removable Sensor

Slot
K = Slot Sensor, Plastic Housing

Ring
32SR = Large Ring Sensor, Plastic Housing, Terminal Chamber
Q = Small Rectangular Plastic Housing, Static Output
W = Small Ring Sensor, Plastic Housing, Connector

Primary Barrel Modifier

T = Teflon Coated
S = Side Sensing

Secondary Barrel Modifier

E = Extended Barrel Length
H = Thermoset Plastic Front face
K = Short Length
M = Medium Length
SK = Right-Angle Terminal Chamber
SR = Straight Terminal Chamber
T = Barb Fitting at Cable Entry

Housing Diameter (mm)

Output Function

A = Normally Open (N.O.)
DA = Dynamic Output (Ring Sensor), Normally Open
F = Connection-Programmable (N.O. or N.C.)
R = Normally Closed (N.C.)
U = Jumper-Programmable (N.O. or N.C.)
V = Complementary Outputs; One N.O., One N.C.
Y0 = NAMUR Output, Requires Switching Amplifier
Y1 = NAMUR Output, Requires Switching Amplifier

Output

D = 2-Wire DC (Transistor Output)
DZ = 2-Wire AC/DC (MOS FET Output)
LIU = Linear Analog Output (Current and Voltage)
N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)
Z = 2-Wire AC (SCR Output)

Voltage Range

AC
3 = 20-250 VAC
30 = 20-250 VAC, Latched SCP, High Off-State Current
31 = 20-250 VAC, Plastic Barrel, Low Load Current
32 = 20-250 VAC, Latched SCP, Low Load Current
33 = 35-250 VAC, Grounded Metal Barrel, Low Load Current
40 = 20-140 VAC, Latched SCP, High Off-State Current

DC
4 = 10-65 VDC, Polarity Protected, Pulsed SCP
6 = 10-30 VDC, Polarity Protected, Pulsed SCP
7 = 10-30 VDC, TTL Compatible
LIU = 15-30 VDC

Number of LEDs

Examples:
Blank = No LEDs
X2 = 2 LEDs
X4 = 4 Position LED

Wiring Options

A) Connectorized Sensor

Bi 2-M12-AN6X - H1 1 4 1

Connector Family

B1 = ***minifast***®, 7/8-16UN, Metal, Male
B2 = ***minifast***®, 7/8-16UN, Plastic, Male
B3 = ***microfast***®, 1/2-20UNF, Male
H1 = ***eurofast***®, M12x1, Male
V1 = ***picofast***®, Snap and M8x1, Male (Q08: Snap only)
V2 = ***picofast***®, Snap and M8x1, Male (Q08 only)

Connector / Sensor Transition

1 = Straight
3 = Straight with Adapter
4 = Right-Angle with Adapter

Number of Pins

Factory Code

Examples:
1 = Standard
3 = N.C. DC Output on Pin 4

B) Potted Cable

Bi 2-G12-AN6X 7M

Cable Length

Blank = 2 meter cable
7M = 7 meter cable

C) Potted Cable with Molded Connector

Bi 2-G12-YOX - 0.2M - RS 4.21T

Length of Cable (M)

Examples:
0.2 = 0.2 Meters
2 = 2 Meters

Standard Cordset Connector

AC: RSM 30 = ***minifast***, 3-conductor
SB 3T = ***microfast***, 3-conductor
DC: RS 4T = ***eurofast***, 3-conductor
RS 4.2T = ***eurofast***, 2 conductor
RS 4.21T = ***eurofast***, NAMUR, 2 conductor
RS 4.4T = ***eurofast***, 4-conductor
RSM 40 = ***minifast***, 4-conductor
PSG 3 = ***picofast***, 3-conductor

Special Option Codes

Option Codes for Special or Custom Built Sensors

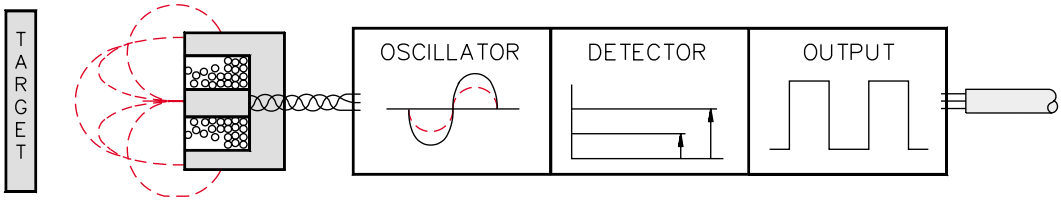
Bi 2-S12-AN7X /S100 or **Bi10R-W30-DAN6X-H1141 /F2**

Example:
/S34 = Weld Field Immune
/S97 = -40°C (-40°F) Operating Temperature
/S100 = +100°C (+212°F) Operating Temperature

Example:
/F2 = Alternate Oscillator Frequency

Operating Principle Ferrite Core

Figure 1



An inductive proximity sensor consists of a coil and ferrite core arrangement, an oscillator and detector circuit, and a solid-state output (Figure 1). The oscillator creates a high frequency field radiating from the coil in front of the sensor, centered around the axis of the coil. The ferrite core bundles and directs the electro-magnetic field to the front.

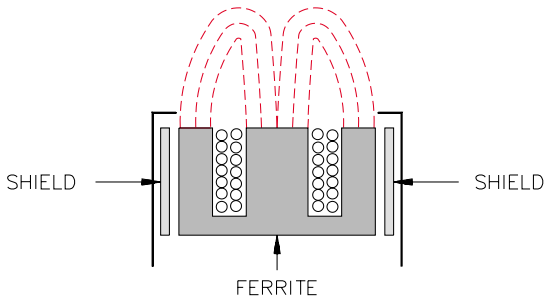
When a metal object enters the high-frequency field, eddy currents are induced on the surface of the target. This results in a loss of energy in the oscillator circuit and, consequently, a smaller amplitude of oscillation. The detector circuit recognizes a specific change in amplitude and generates a signal which will turn the solid-state output "ON" or "OFF". When the metal object leaves the sensing area, the oscillator regenerates, allowing the sensor to return to its normal state.

Embeddable (Shielded) vs. Nonembeddable (Nonshielded)

(See pages B11 - B20 for mounting guidelines)

Figure 2

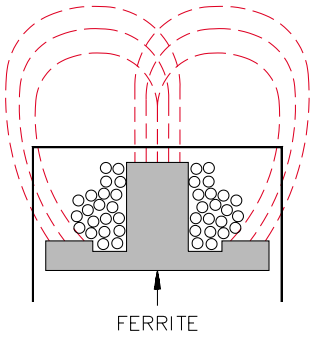
Embeddable
(Shielded Sensor)



Embeddable construction includes a metal band that surrounds the ferrite core and coil arrangement. This helps to "bundle" or direct the electro- magnetic field to the front of the sensor.

Figure 3

Nonembeddable
(Nonshielded Sensor)

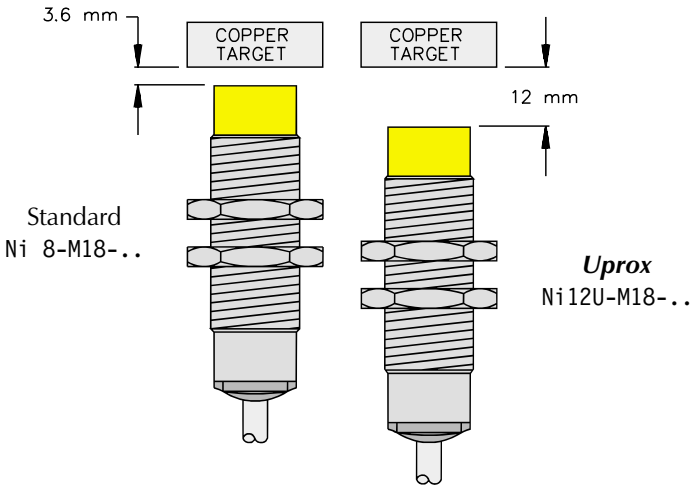


Nonembeddable sensors do not have this metal band; therefore, they have a longer operating distance and are side sensitive.

Uprox® Characteristics

- **No Correction Factor** - Same rated operating distance for all metals.
- **Extended Operating Distance** - Up to 400% greater than standard inductive sensors when using non-ferrous targets (Figure 4).
- **Weld Field Immunity** - ***Uprox*** is unaffected by strong electromagnetic AC or DC fields because of its unique patented design.
- **High Switching Frequencies** - Up to 10 times faster than standard inductive sensors.
- **Extended Temperature Range** - ***Uprox*** can withstand temperatures up to 85°C (+185°F) with a ±15% temperature drift.

Figure 4

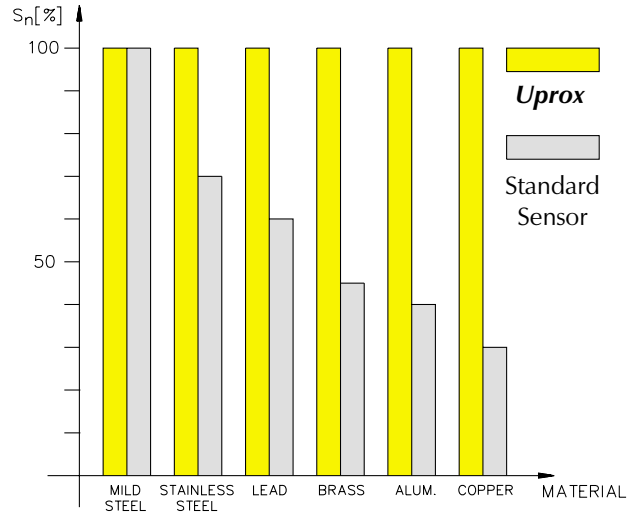


Operating Principle *Uprox*®

TURCK ***Uprox*** is a patented next generation development of inductive sensors that uses a three-coil system. One coil induces eddy currents on the metal target and the other two coils are affected by these eddy currents. Ferrous and nonferrous metals have the same effect on the two coils. Therefore, all metals, including galvanized metals, have the same rated operating distance.

TURCK standard inductive sensors use a single coil randomly wound around a ferrite core. The single coil both induces eddy currents on the metal target and is affected by these eddy currents. Ferrous and nonferrous metals affect the sensor differently, making it impossible to detect both types of metals at the same rated operating distance.

Figure 5



Operating distances comparison of ***Uprox*** sensors and standard inductive sensors.

Operating Distance (Sensing Range) Considerations

The operating distance (S) of the different models is basically a function of the diameter of the sensing coil. Maximum operating distance is achieved with the use of a standard or larger target. Rated operating distance (Sn) for each model is given in the manual. **When using a proximity sensor the target should be within the assured range (Sa).**

Standard Target

A square piece of mild steel having a thickness of 1 mm (0.04 in) is used as a standard target to determine the following operating tolerances. The length and width of the square is equal to either the diameter of the circle inscribed on the active surface of the sensing face or three times the rated operating distance Sn, whichever is greater.

Operating Distance = S

The operating distance is the distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

Rated Operating Distance = Sn

The rated operating distance is a conventional quantity used to designate the nominal operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

Effective Operating Distance = Sr $0.9\ Sn \leq Sr \leq 1.1Sn$

The effective operating distance is the operating distance of an individual proximity sensor at a constant rated voltage and 23°C (73°F). It allows for manufacturing tolerances.

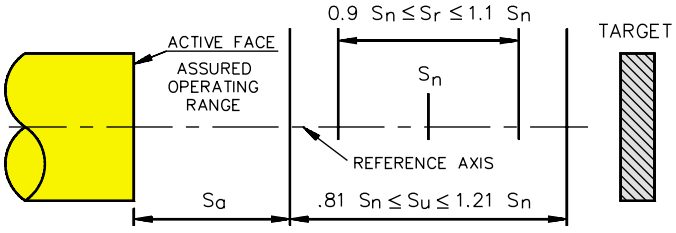
Usable Operating Distance = Su $0.81\ Sn \leq Su \leq 1.21Sn$

The usable operating distance is the operating distance of an individual proximity sensor measured over the operating temperature range at 85% to 110% of its rated voltage. It allows for external conditions and for manufacturing tolerances.

Assured Operating Range = Sa $0 \leq Sa \leq 0.81Sn$

The assured actuating range is between 0 and 81% of the rated operating distance. It is the range within which the correct operation of the proximity sensor under specified voltage and temperature ranges is assured.

Figure 1



Operating Distance (Sensing Range) Considerations

Correction Factors

These correction factors apply to standard inductive sensors when a nonferrous target is being detected.
The correction factors are nominal values. Deviations may be due to variations in oscillator frequency, alloy composition, purity and target geometry.

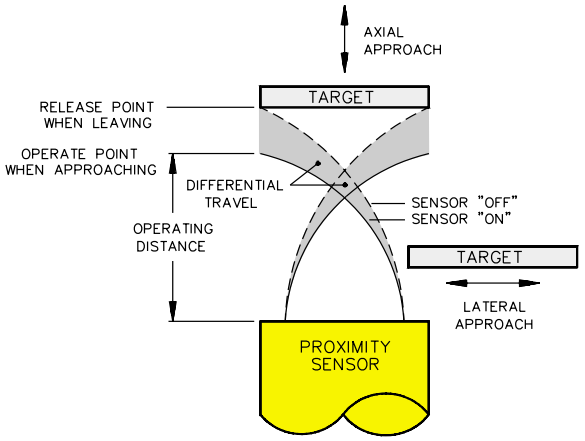
Aluminum foil	1.00
Stainless steel	0.60 to 1.00
Mercury	0.65 to 0.85
Lead	0.50 to 0.75
Brass	0.35 to 0.50
Aluminum (massive)	0.35 to 0.50
Copper	0.25 to 0.45

- Correction factors do not apply to **TURCK *Uprox*** ® sensors. These sensors see all metals at the same range.
- **TURCK** also manufactures "nonferrous only" sensors. These sensors will selectively detect nonferrous targets at the rated operating distance. They will not detect ferrous targets; however, ferrous targets positioned between them and a nonferrous target may mask the nonferrous target. The rated operating distance of these sensors is not subject to the correction factors that apply to standard inductive sensors.

Differential Travel (Hysteresis)

The difference between the "operate" and "release" points is called differential travel (See shaded area in Figure 7).
It is factory set at less than 15% of the effective operating distance.
Differential travel is needed to keep proximity sensors from "chattering" when subjected to shock and vibration, slow moving targets, or minor disturbances such as electrical noise and temperature drift.

Figure 7



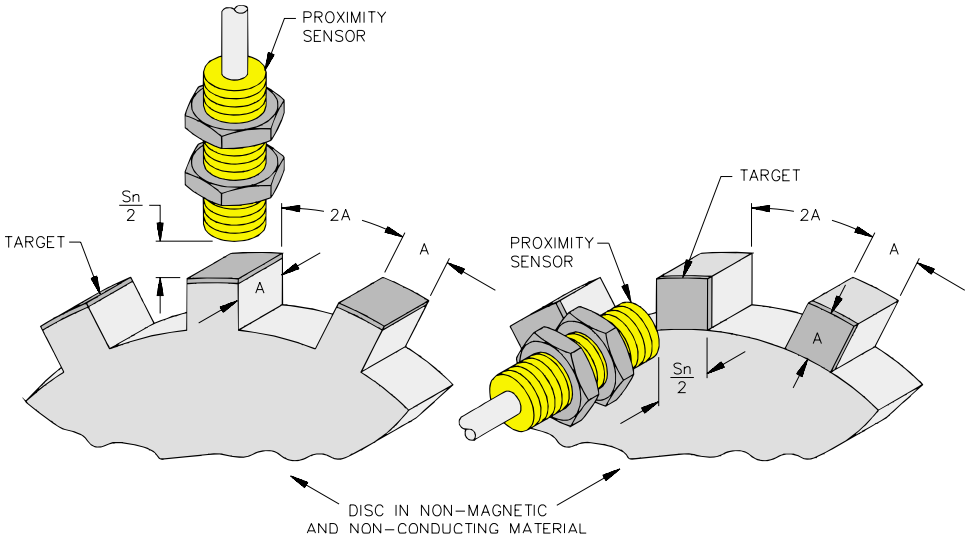
Actuation Mode

Inductive sensors can be actuated in an axial or lateral approach (See Figure 7). It is important to maintain an air gap between the target and the sensing face to prevent physically damaging the sensors.

Maximum Switching Frequency

Minimum parameters for measuring at maximum switching frequency are shown in Figure 8. Using a smaller target or space may result in a reduction of a specific sensor's maximum switching frequency and decrease sensor to target air gap tolerance. See page C8 for determining dimension "A" of **standard target**.

Figure 2



Weld Field Immunity

Many critical applications for proximity sensors involve their use in weld field environments. AC and DC resistance welders used in assembly equipment and other construction machines often require in excess of 20 kA to perform their weld function. Magnetic fields generated by these currents can cause false outputs in standard sensors.

TURCK has pioneered the design and development of inductive proximity sensors that not only survive such environments, but remain fully operative in them.

The limit of the weld field immunity depends on the kind of field (AC or DC), the housing size of the sensor and its location in the field. For example, in an AC or DC weld field, the "/S34" inductive sensors can be positioned one inch from a 20 kA current carrying bus. See Section H for a list of weld field immune sensors.

Reference values for magnetic induction:

	Distance [mm]			
I [kA]	**12.5**	**25**	**50**	**100**
5	80 mT	40 mT	20 mT	10 mT
10	160 mT	80 mT	40 mT	20 mT
20	320 mT	160 mT	80 mT	40 mT
50	800 mT	400 mT	200 mT	100 mT
100	1600 mT	800 mT	400 mT	200 mT

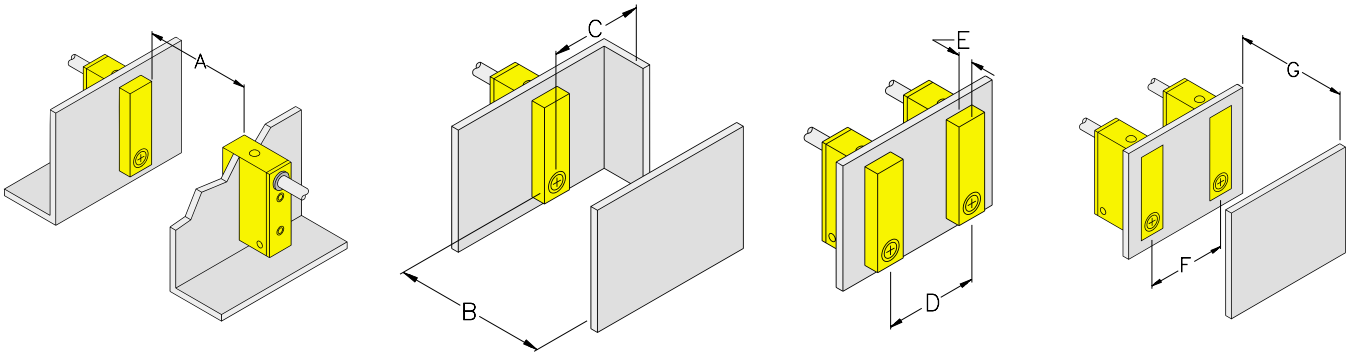
Gauss = 10 x mT

Mounting

TURCK inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number (See page B6). Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

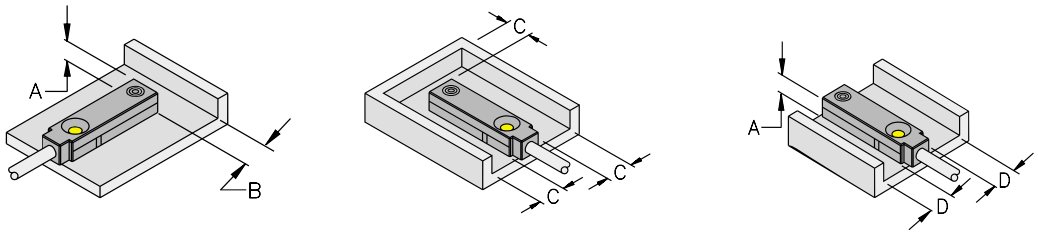
It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever possible, especially if metal filings and chips are present.

Rectangular Style Q6.5, Q9.5, Q10S, Q11S and Q12



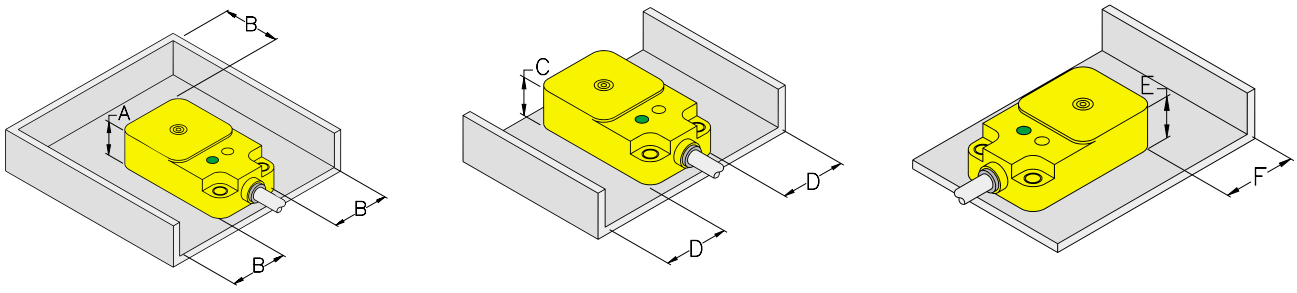
Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi 1-Q6.5...	≥6	-	-	-	-	≥13	≥3
Ni 2-Q6.5...	≥12	≥10	≥6	≥20	≥4	-	-
Bi 2-Q12...	≥12	-	-	-	-	≥24	≥6
Ni 4-Q12...	≥24	≥18	≥12	≥36	≥8	-	-
Bi 2-Q10S...	≥12	-	-	-	-	≥20	≥6
Bi 2-Q11S...	≥12	-	-	-	-	≥22	≥6
Ni 2-Q9.5...	≥12	≥10	≥6	≥20	≥4	-	-

Rectangular Style Q5.5



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)
Ni 3.5-Q5.5-...	≥5.5	≥8	≥8	≥8

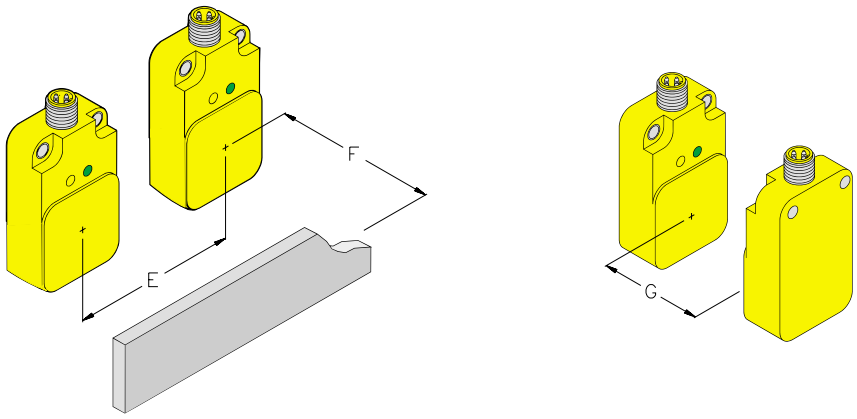
Rectangular Style Q14 and Q20



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
Ni20-Q14... Ni25-Q20...	14 20	≥40 ≥50	≥14 ≥20	≥20 ≥25	≥14 ≥20	≥20 ≥25

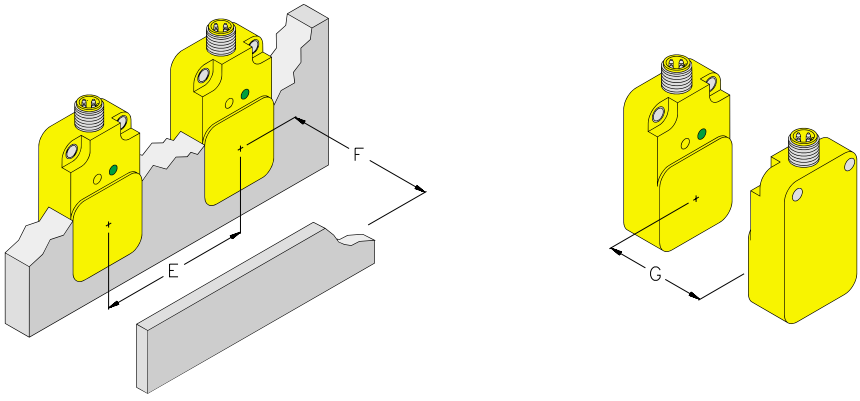
Embedded Mounting Characteristics

Rectangular Style Q5.5, Q14 and Q20



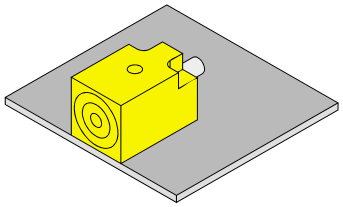
Part Numbers	E (mm)	F (mm)	G (mm)
Ni3.5-Q5.5-... Ni20-Q14-.. Ni25-Q20-..	≥16 ≥60 ≥80	≥10.5 ≥60 ≥75	≥14 ≥80 ≥100

Rectangular Style Q5.5, Q06, Q08, Q14 and Q20

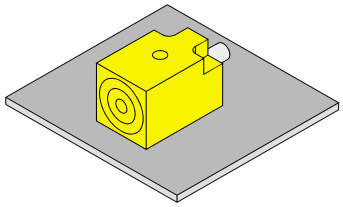


Part Numbers	E (mm)	F (mm)	G (mm)
Bi 5U-Q08... Bi10U-Q14... Bi15U-Q20... Bi 3-Q06... Bi 5-Q08... Bi 7-Q08-.. Bi 2-Q5.5-.. Bi10-Q14-.. Bi15-Q20-..	≥30 ≥45 ≥60 ≥35 ≥40 ≥21 ≥6 ≥30 ≥45	≥15 ≥30 ≥45 ≥9 ≥15 ≥40 ≥16 ≥45 ≥60	≥30 ≥40 ≥60 ≥18 ≥30 ≥42 ≥12 ≥40 ≥60

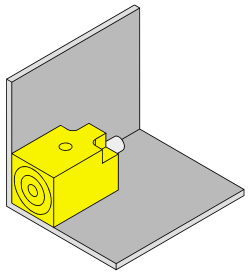
Embedded Mounting Characteristics



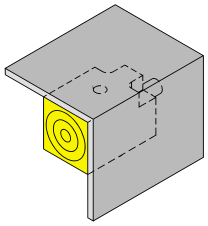
Part Numbers	Aluminum	Steel
Ni10-Q25-..	Good	Good
Ni15-Q30-..	Good	Good



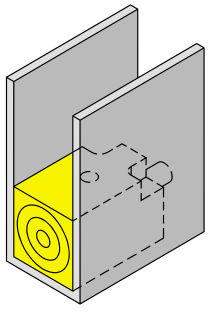
Ni10-Q25-..	Good	Good
Ni15-Q30-..	Not recommended	Not recommended



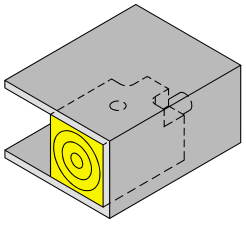
Ni10-Q25-..	Good	Good
Ni15-Q30-..	Not recommended	Not recommended



Ni10-Q25-..	Good	Good
Ni15-Q30-..	Good	Not recommended



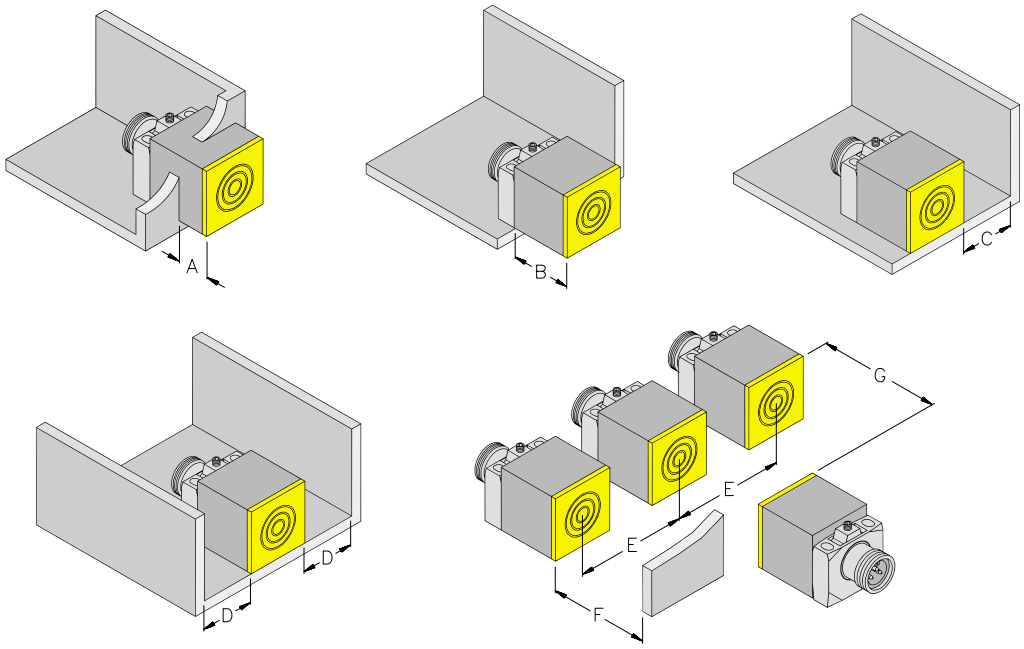
Ni10-Q25-..	Good	Not recommended
Ni15-Q30-..	Not recommended	Not recommended



Ni10-Q25-..	Good	Not recommended
Ni15-Q30-..	Not recommended	Not recommended

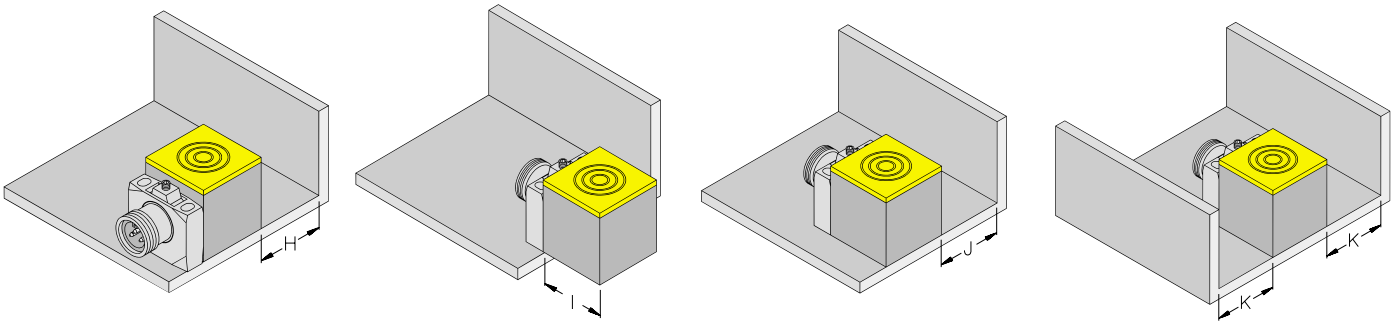
Mounting Considerations

End Sensing CK40 Style



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi15-CK40-.. Ni20-CK40-..	≥0 ≥25	≥0 ≥15	≥0 NR*	≥0 NR*	≥80 ≥120	≥45 ≥60	≥90 ≥120

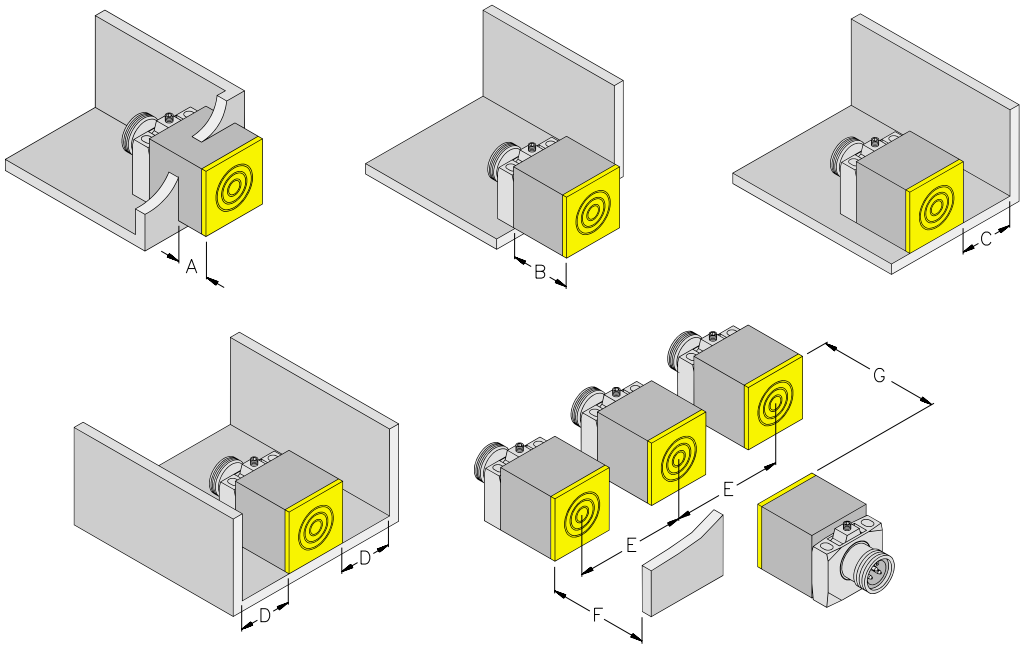
Top Sensing CK40 Style



Part Numbers	H (mm)	I (mm)	J (mm)	K (mm)
Bi15-CK40-.. Ni20-CK40-..	≥0 ≥40	≥0 ≥0	≥0 ≥40	≥0 ≥40

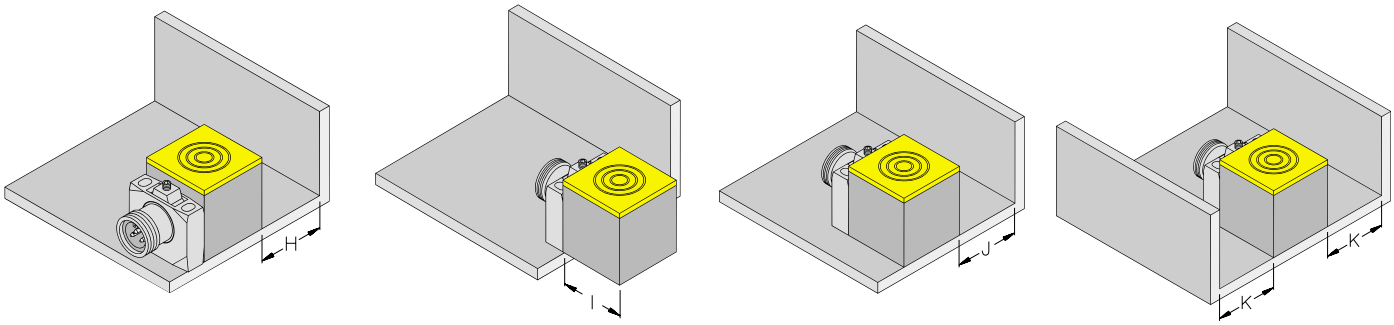
* Not Recommended

End Sensing CK40 Style *Uprox*®



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi15U-CK40-.. Ni25U-CK40-..	≥0 ≥30	≥0 ≥20	≥0 NR*	≥0 NR*	≥60 ≥160	≥45 ≥75	≥45 ≥150

Top Sensing CK40 Style *Uprox*®

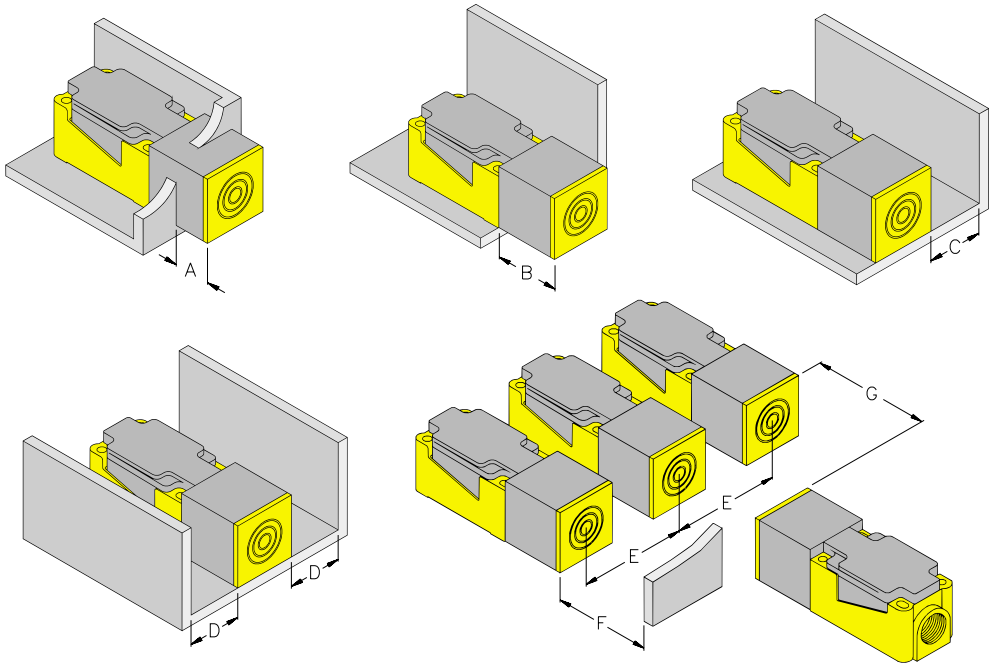


Part Numbers	H (mm)	I (mm)	J (mm)	K (mm)
Bi15U-CK40-.. Ni25U-CK40-..	≥0 ≥40	≥0 ≥0	≥0 ≥40	≥0 ≥40

* Not Recommended

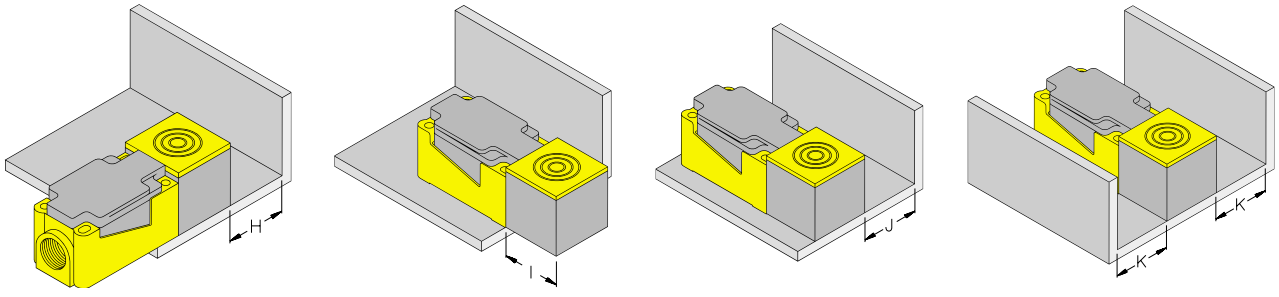
Mounting Considerations

End Sensing CP40 Style



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi15-CP40-..	≥0	≥0	≥0	≥0	≥80	≥45	≥90
Bi20-CP40-..	≥0	≥0	≥0	≥0	≥80	≥60	≥120
Ni20-CP40-..	≥25	≥15	NR*	NR*	≥120	≥60	≥120
Ni30-CP40-..	≥40	≥40	NR*	NR*	≥120	≥90	≥180
Ni35-CP40-..	≥40	≥40	NR*	NR*	≥120	≥105	≥210
Ni40-CP40-..	≥40	≥40	NR*	NR*	≥240	≥105	≥210

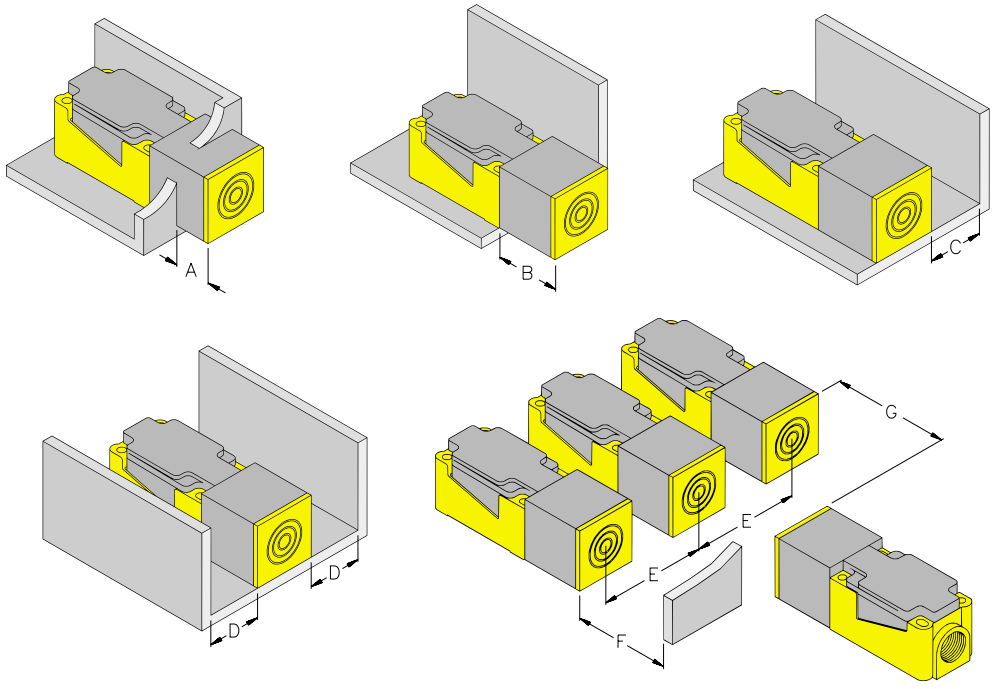
Top Sensing CP40 Style



Part Numbers	H (mm)	I (mm)	J (mm)	K (mm)
Bi15-CP40-..	≥0	≥0	≥0	≥0
Bi20-CP40-..	≥10	≥10	≥10	≥20
Ni20-CP40-..	≥40	≥0	≥40	≥40
Ni30-CP40-..	NR*	≥40	NR*	NR*
Ni35-CP40-..	NR*	≥40	NR*	NR*
Ni40-CP40-..	NR*	≥40	NR*	NR*

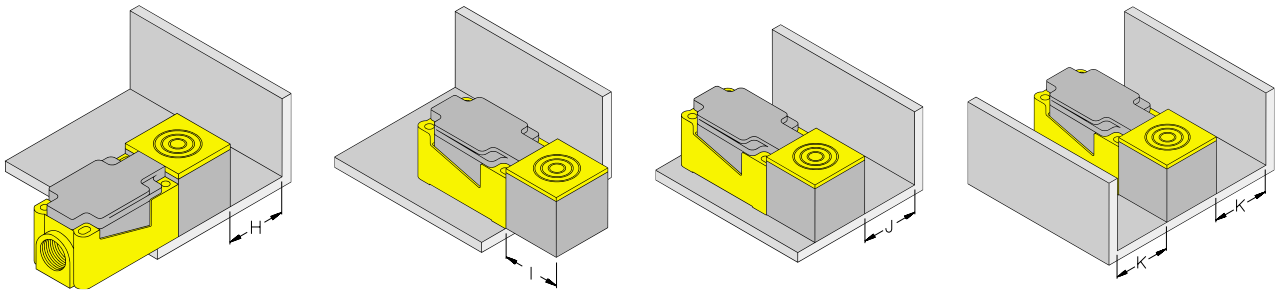
* Not recommended.

End Sensing CP40 Style *Uprox*®



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi15U-CP40-..	≥0	≥0	≥0	≥0	≥60	≥45	≥45
Ni25U-CP40-..	≥30	≥20	NR*	NR*	≥160	≥75	≥150
Ni40U-CP40-..	≥40	≥40	NR*	NR*	≥160	≥120	≥240

Top Sensing CP40 Style *Uprox*®

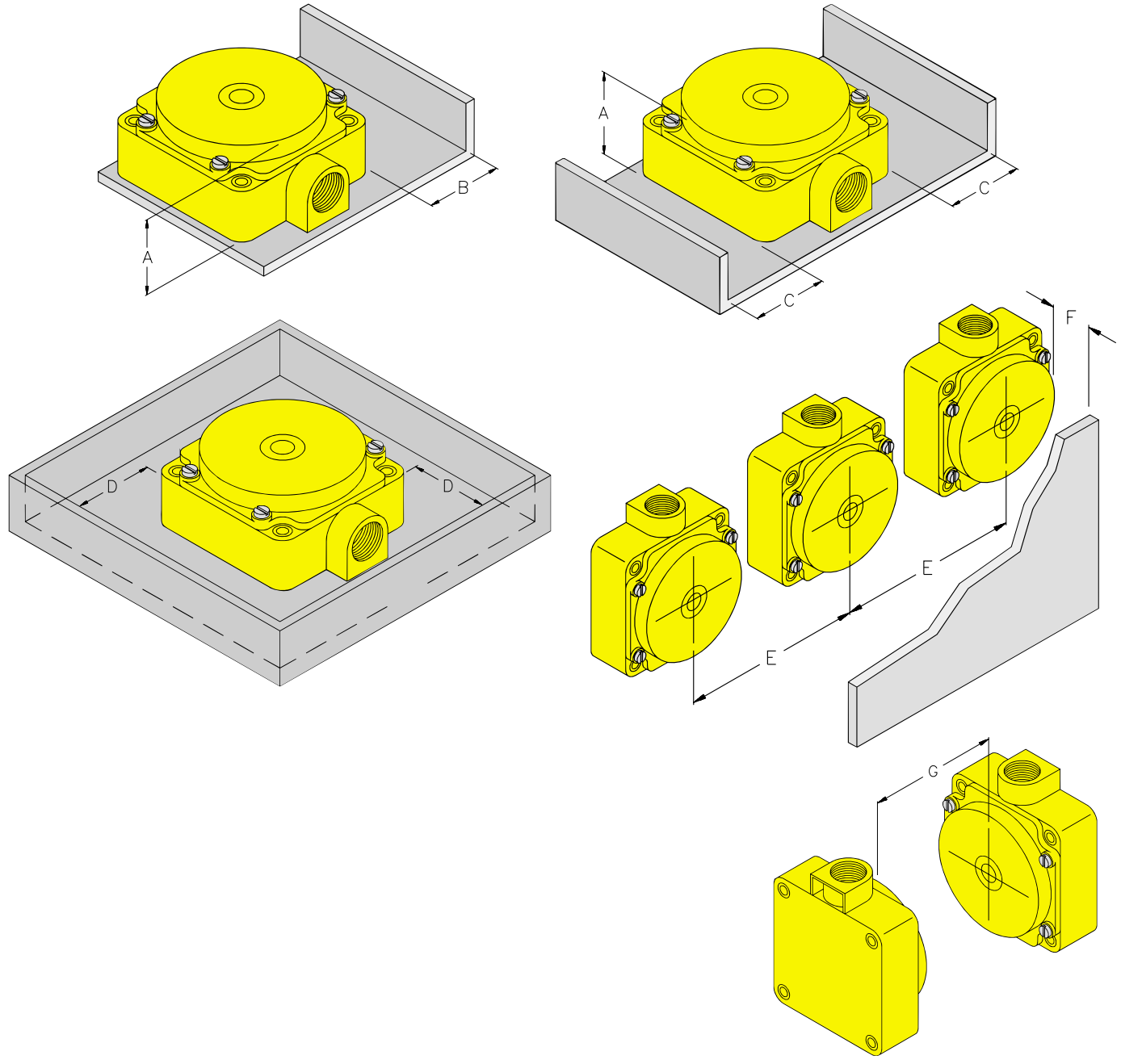


Part Numbers	H (mm)	I (mm)	J (mm)	K (mm)
Bi15U-CP40-..	≥0	≥0	≥0	≥0
Ni25U-CP40-..	≥40	≥0	≥40	≥40
Ni40U-CP40-..	≥40	≥0	≥40	≥40

* Not Recommended.

Mounting Considerations

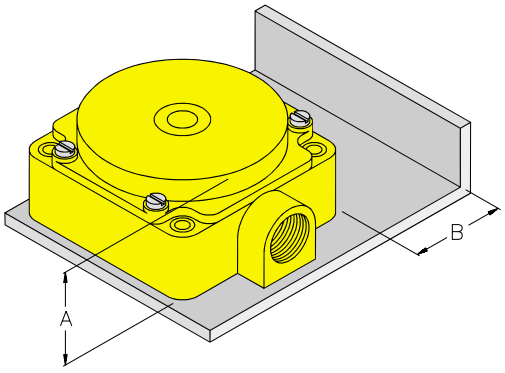
CP80 Style

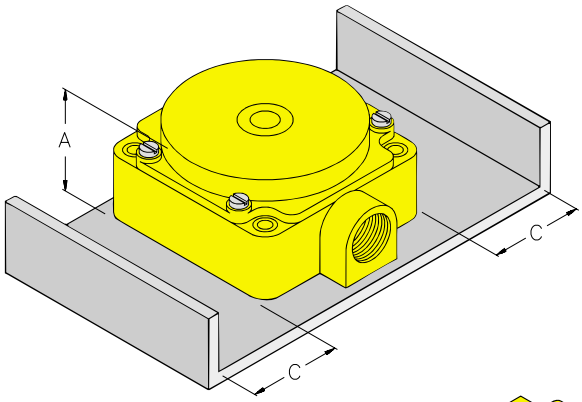


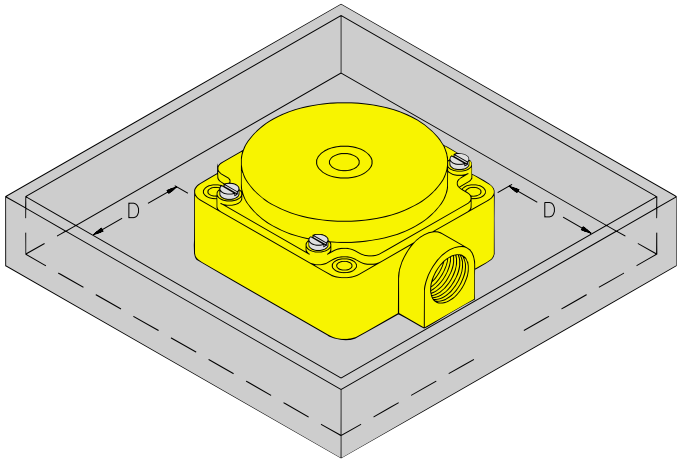
Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Bi40-CP80-..	≥40	≥0	≥0	≥0	≥160	≥120	≥240
Ni40-CP80-..	≥40	≥80	≥80	≥80	≥160	≥120	≥240
Ni50-CP80-..	≥40	≥80	≥80	≥80	≥160	≥150	≥300
Ni50-K90SR-..	≥40	≥40	≥60	≥80	≥400	≥150	≥450
Ni60-K90SR-..	≥40	≥40	≥60	≥80	≥400	≥150	≥450

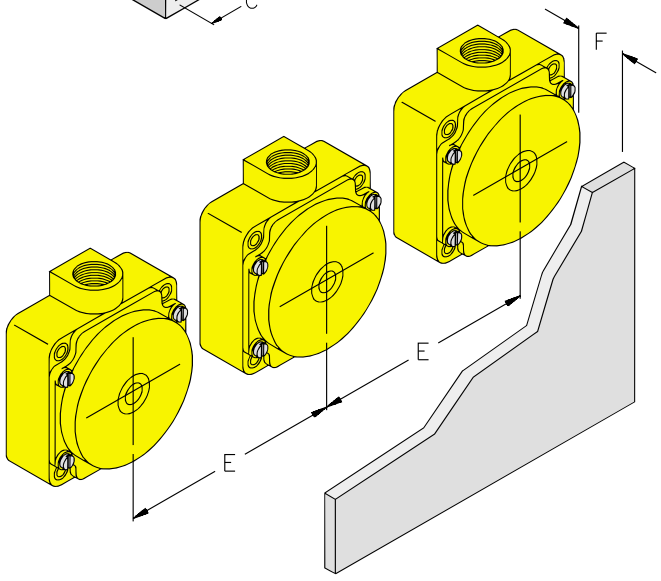
CP80 Style *Uprox*®

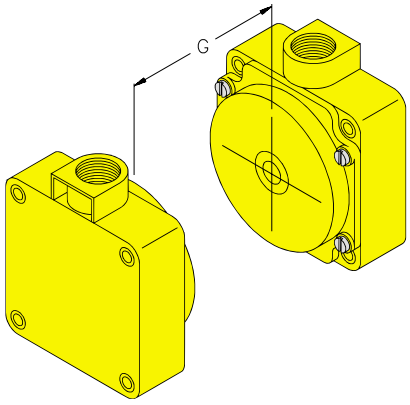
Q80 One Piece Housing *Uprox*®



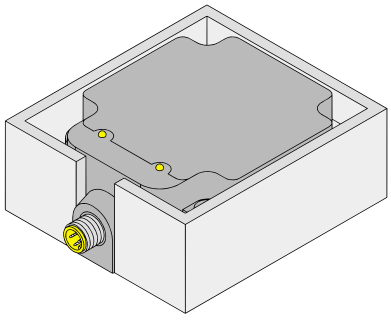








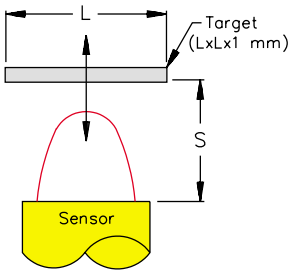
Q80 Housing



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
Ni75U-CP80-.. Bi50U-Q80-..	≥40 ≥40	≥40 ≥0	≥60 ≥0	≥80 ≥0	≥400 ≥160	≥150 ≥150	≥450 ≥200

Sensing Range Diagrams

Axial Approach

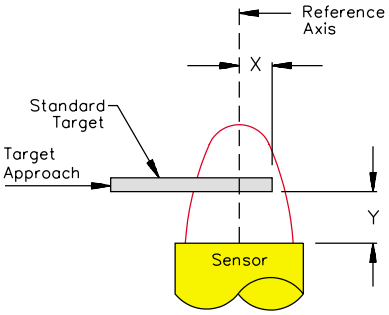


L = Diameter of target
S = Operating distance

Maximum operating distance is achieved using a standard target size or larger.

Sensing Range vs. Target Diameter (1)

Lateral Approach



X = Target leading edge position referenced to sensor center axis.

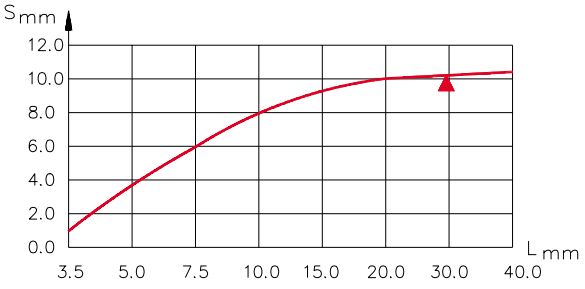
Y = Target distance from sensing face.

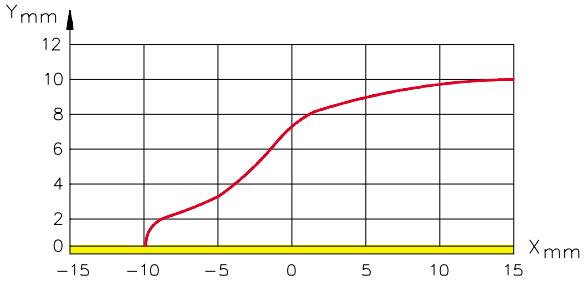
Target Distance vs. Minimum Sensor Coverage Using Standard Target (2)

Sensing Range vs. Target Diameter (1)

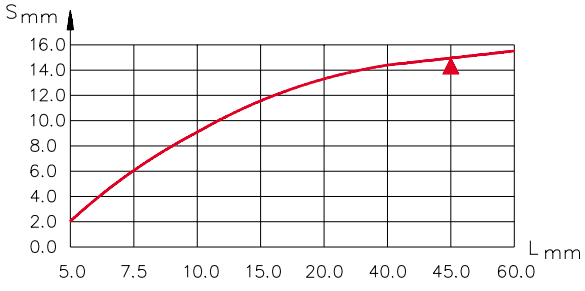
Target Distance vs. Minimum Sensor Coverage Using Standard Target (2)

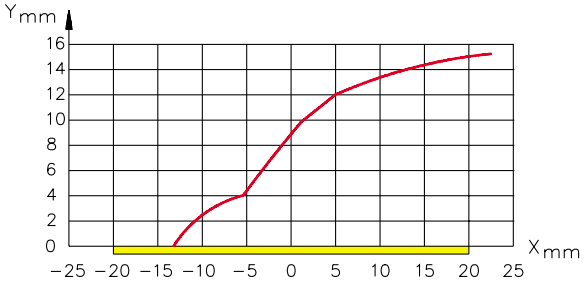
Bi10U-Q14-..





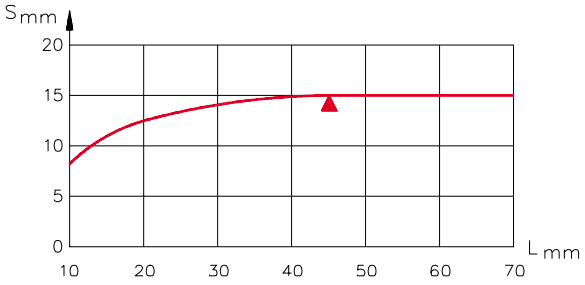
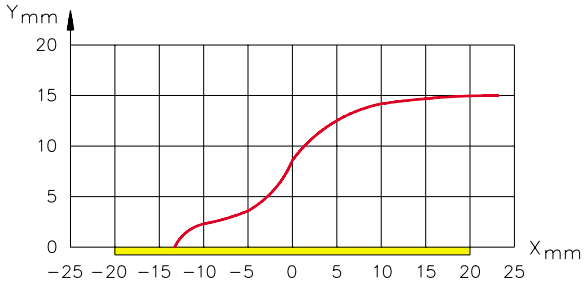
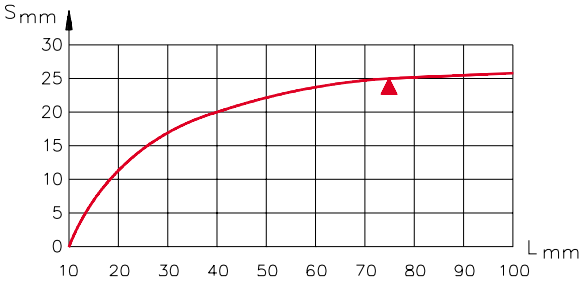
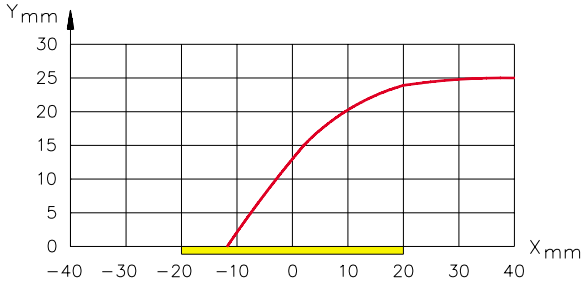
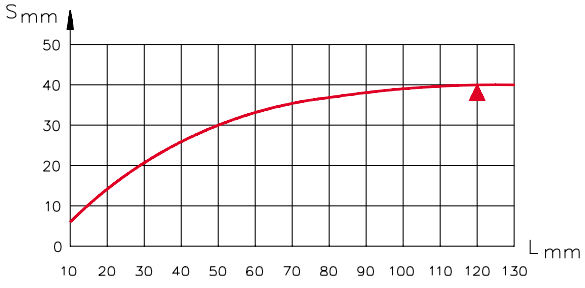
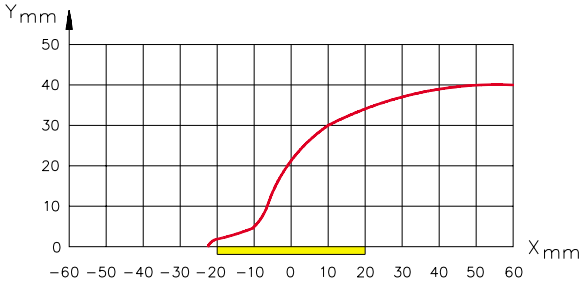
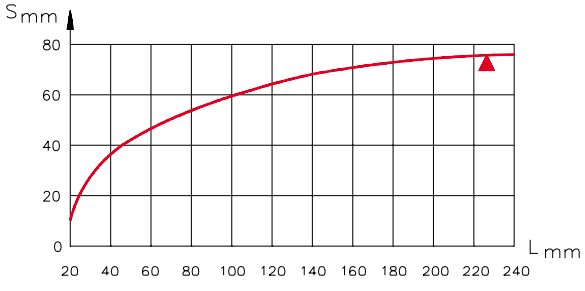
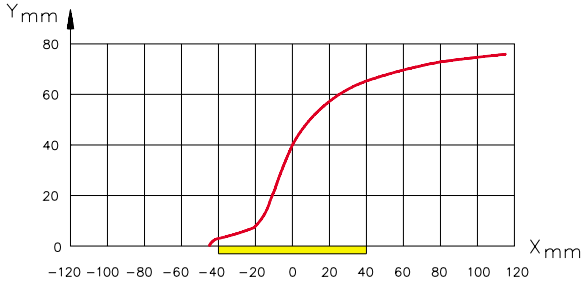
Bi15U-Q20-..





(1) Smallest value of L shown is minimum recommended target for that sensor.

(2) Yellow area represents sensing face.

	Sensing Range vs. Target Diameter [1]	Target Distance vs. Minimum Sensor Coverage Using Standard Target [2]
Bi15U-CK40-.. **Bi15U-CP40-..**		
Ni25U-CK40-.. **Ni25U-CP40-..**		
Ni40U-CP40-..		
Ni75U-CP80-..		

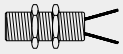
(1) Smallest value of L shown is minimum recommended target for that sensor.

(2) Yellow area represents sensing face.

Q5.5

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

2-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q5.5-AG61X	•	2	5.5	•	•	1	A	1		1000	M4405042

Cable/Conductor

Cable:	PVC Jacket; 2 Meter standard length
Copper Conductor: (PVC Insulated)	26 AWG

Material

Housing:	PA 12-GF20-V0 Plastic
Sensing Face:	PA 12-GF20 Plastic

Accessories

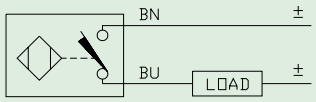
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤3.5 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤50 mA
Minimum Load Current	3.0 mA
Off-State (Leakage) Current	<0.6 mA
Time Delay Before Availability	≤3 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized (LED viewable from 3 sides)

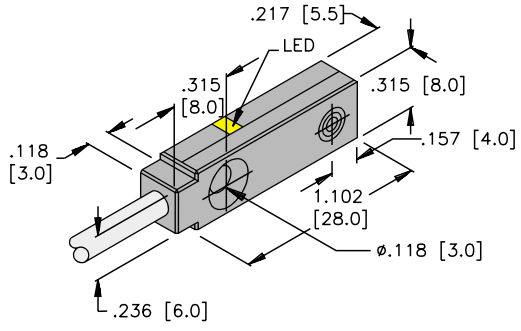
Wiring Diagram

A — Normally Open



Dimensions

1



Q5.5

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open or Normally Closed, NPN (Sinking) or PNP (Sourcing)

Q06

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q5.5-AN6X	•	2	5.5	•		1	A	1		2000	M1613100
Bi 2-Q5.5-RN6X	•	2	5.5	•		1	C	1			
Bi 3-Q06-AN6X2	•	3	6.0	•		2	A	2		1000	M1620150
Ni 3.5-Q5.5-AN6X		3	5.5	•		1	A	1			M4613610
Ni 3.5-Q5.5-RN6X		3	5.5	•		1	C	1			
Bi 2-Q5.5-AP6X	•	2	5.5		•	1	B	1		2000	M1613000
Bi 2-Q5.5-AP6X/S34	•	2	5.5		•	1	B	1	•	2000	
Bi 2-Q5.5-RP6X	•	2	5.5		•	1	D	1			
Bi 3-Q06-AP6X2	•	3	6.0		•	2	B	2		1000	M1620100
Ni 3.5-Q5.5-AP6X		3.5	5.5		•	1	B	1		2000	M4613601
Ni 3.5-Q5.5-RP6X		3.5	5.5		•	1	D	1		2000	

Cable/Conductor

Cable:	Q5.5: PUR; Q06: PVC Jacket; 2 meter standard length
Copper Conductor: (PVC Insulated)	26 AWG

Material

Housing:	PA 12-GF20-V0 Plastic
Sensing Face:	PA 12-GF20 Plastic

Accessories

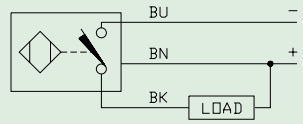
Accessories and mounting devices can be found in Section J.

Specifications

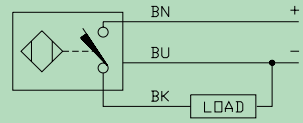
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 100 mA
Trigger Current for Overload Protection	≥170 mA
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized (LED viewable from 3 sides)

Wiring Diagrams

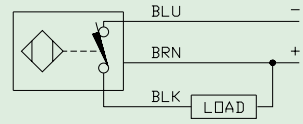
A NPN (Sinking)



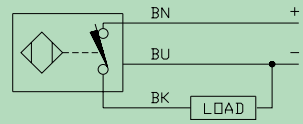
B PNP (Sourcing)



C Normally Closed NPN

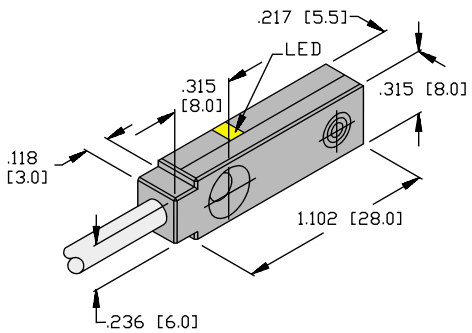


D Normally Closed PNP

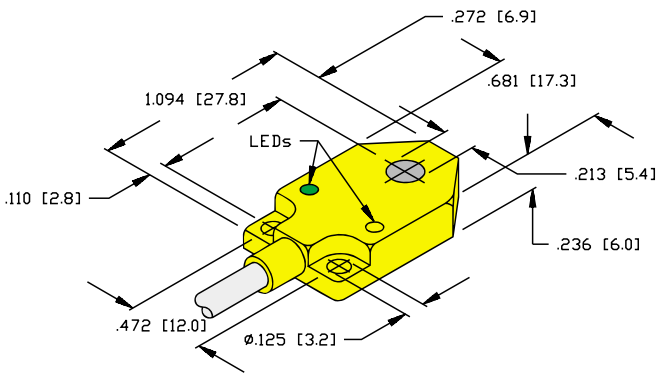


Dimensions

1



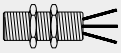
2



Q6.5

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 1-Q6.5-AN6	•	1	6.5	•		1	A	0		1000	M4613420
Ni 2-Q6.5-AN6		2	6.5	•		1	A	0		1000	M4613520
Bi 1-Q6.5-AP6	•	1	6.5		•	1	B	0		1000	M4613400
Ni 2-Q6.5-AP6		2	6.5		•	1	B	0		1000	M4613500
Bi 1-Q6.5-AP6/S34	•	1	6.5		•	1	B	0	•	30	M4613401
Ni 2-Q6.5-AP6/S34		2	6.5		•	1	B	0	•	30	M1650023

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PBT-GF30-VO Plastic

Accessories

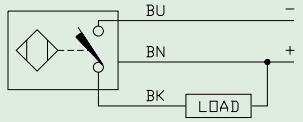
Accessories and mounting devices can be found in Section J.

Specifications

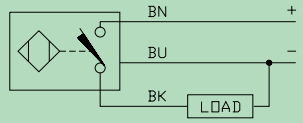
Ripple	≤10%
Differential Travel (Hysteresis)	1-15%
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA
Trigger Current for Overload Protection	≥170 mA
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤20 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%

Wiring Diagrams

A NPN (Sinking)

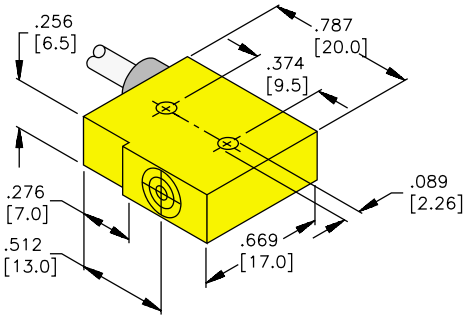


B PNP (Sourcing)



Dimensions

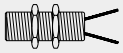
1



Q08

Rectangular Sensors, Metal

Metal Housing with Potted-In Cable

2-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 5-Q08-AD4X/S34	•	5	8	•	•	1	A	1	•	50	M4414550

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Housing:	Die-Cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

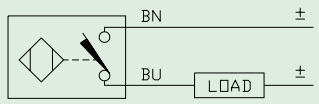
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	3.0 mA
Off-State (Leakage) Current	<0.8 mA
Time Delay Before Availability	≤16 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized

Wiring Diagram

A — Normally Open



Dimensions

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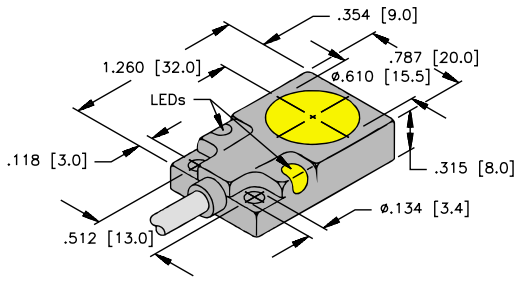


Q08

Rectangular Sensors, Metal

Metal Housing with Potted-In Cable or Quick Disconnect ***Uprox***®

3-Wire DC

picofast® ***eurofast***®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 5U-Q08-AN6X2	•	5	8	•		2	A	2	•	1000	M1608911	2 meter cable, PVC jacket
Bi 5U-Q08-AP6X2	•	5	8		•	2	B	2	•	1000	M1608901	
Bi 5U-Q08-AN6X2-V1131	•	5	8	•		3	C	2	•	1000	M1608910	***picofast*** **Mating Cordsets** PKG 3M-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5U-Q08-AP6X2-V1131	•	5	8		•	3	D	2	•	1000	M1608900	
Bi 5U-Q08-AN6X2-0.2M-RS 4T	•	5	8	•		1	E	2	•	1000	M1608991	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5U-Q08-AP6X2-0.2M-RS 4T	•	5	8		•	1	F	2	•	1000	M1608990	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC Insulated)	24 AWG

Material

Connector:	Chrome Plated Brass
Housing:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

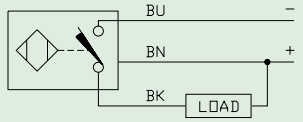
Accessories and mounting devices can be found in Section J.

Specifications

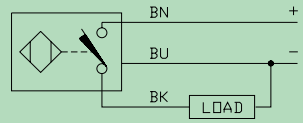
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

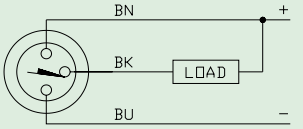
A NPN (Sinking)



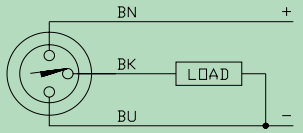
B PNP (Sourcing)



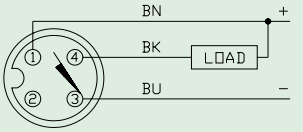
C NPN (Sinking)



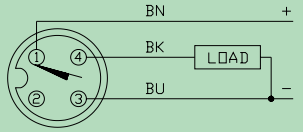
D PNP (Sourcing)



E NPN (Sinking)



F PNP (Sourcing)



Dimensions

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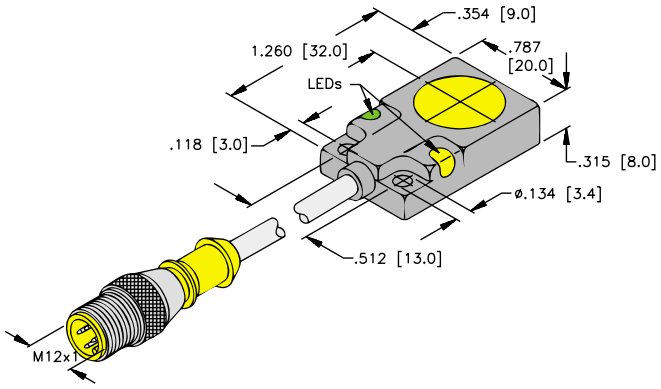

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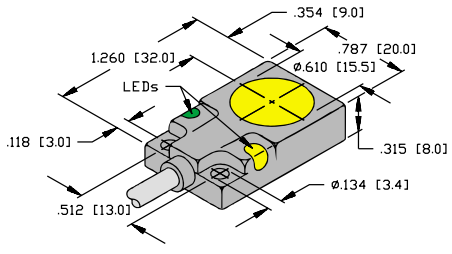

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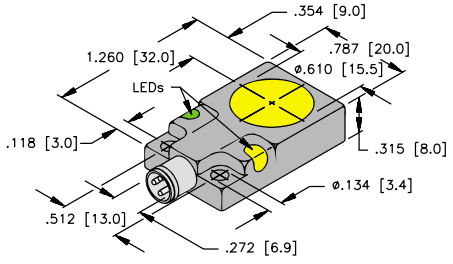


Q08

Rectangular Sensors, Metal

Metal Housing with Cable and Quick Disconnect ***THIN-PAK™***

3-Wire DC

picofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 7-Q08-AN6X2	•	7.0	8	•		1	A	2		500	M1601620	2 meter cable, PVC jacket
Bi 5-Q08-AP6X2/S34	•	5.0	8		•	1	B	2	•	300	M1600800	
Bi 7-Q08-AP6X2	•	7.0	8		•	1	B	2		500	M1601600	
Bi 5-Q08-AN6X2-V1131	•	5.0	8	•		2	C	2		1000	M1600600	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 7-Q08-AN6X2-V1131	•	7.0	8	•		2	C	2		500	M1601622	
Bi 5-Q08-AP6X2-V1131	•	5.0	8		•	2	D	2		1000	M1600500	
Bi 7-Q08-AP6X2-V1131	•	7.0	8		•	2	D	2		500	M1601602	
Bi 5-Q08-AN6X2-V2131	•	5.0	8	•		3	C	2		1000	M1600602	***picofast*** **Mating Cordsets** PKG 3M-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 7-Q08-AN6X2-V2131	•	7.0	8	•		3	C	2		500	M1601623	
Bi 5-Q08-AP6X2-V2131	•	5.0	8		•	3	D	2		1000	M1600502	
Bi 7-Q08-AP6X2-V2131	•	7.0	8		•	3	D	2		500	M1601603	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC Insulated)	24 AWG

Material

Connector:	Chrome Plated Brass
Housing:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

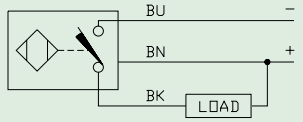
Accessories and mounting devices can be found in Section J.

Specifications

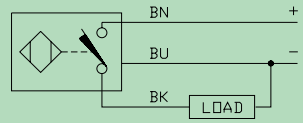
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA (100 mA for S34 style)
Trigger Current for Overload Protection	≥220 mA (≥150 mA for S34 style)
Continuous Load Current	≤200 mA (≤100 mA for S34 style)
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	Bi 5: -25°C to +70°C (-13°F to +158°F) Bi 7: 0°C to +60°C (32°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED Function (Yellow)	Output Energized
LED Function (Green)	Power On

Wiring Diagrams

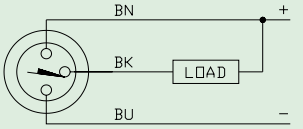
A NPN (Sinking)



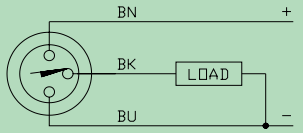
B PNP (Sourcing)



C NPN (Sinking)

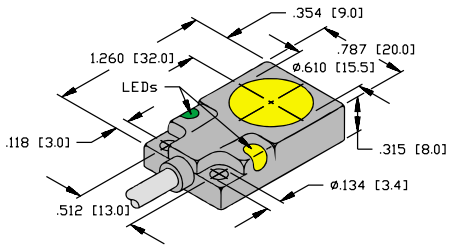


D PNP (Sourcing)



Dimensions

1



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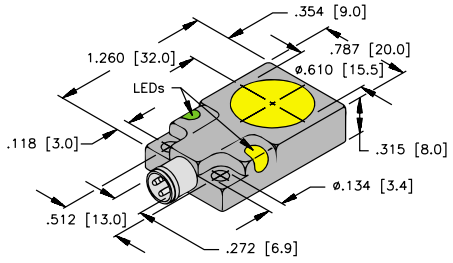

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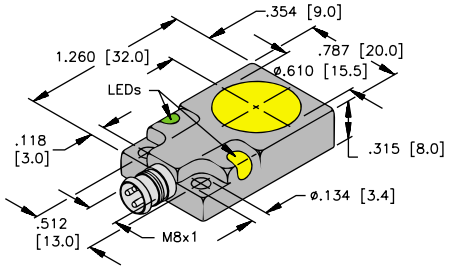


Q08

Rectangular Sensors, Metal

Metal Housing with Potted-In Cable ***THIN-PAK™***

4-Wire DC

10-30 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 5-Q08-VN6X2	•	5.0	8.0	•		1	A	2		1000	M1600200
Bi 7-Q08-VN6X2	•	7.0	8.0	•		1	A	2		500	M1600920
Bi 5-Q08-VP6X2	•	5.0	8.0		•	1	B	2		1000	M1600100
Bi 7-Q08-VP6X2	•	7.0	8.0		•	1	B	2		500	M1600900

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Housing:	Die-Cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

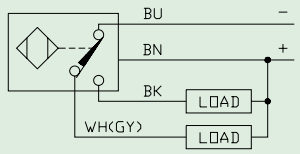
Accessories and mounting devices can be found in Section J.

Specifications

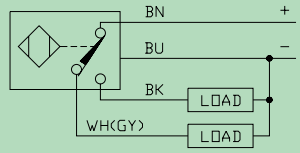
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	Bi 5: -25°C to +70°C (-13°F to +158°F) Bi 7: 0°C to +60°C (+32°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

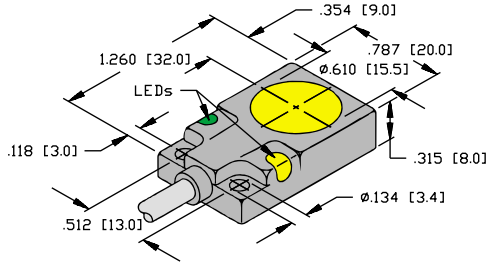


B PNP (Sourcing)



Dimensions

1



Q08

Rectangular Sensors, Metal
Metal Housing with Potted-In Cable

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 5-Q08-Y1X	•	5	8.0	1	A	1	1000		•	≤1	M4054000

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Housing:	Die-Cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

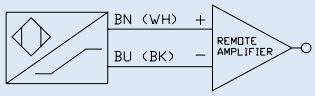
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** and ***Automation Controls*** catalogs.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

A — NAMUR Output



Dimensions

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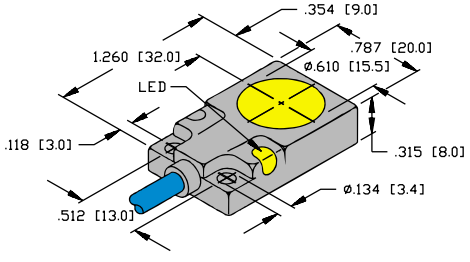
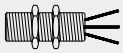


Q9.5

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable



3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Ni 2-Q9.5-AP6/S34		2	9.5		•	1	A	0	•	30	M1650077

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Housing:	PA 12-GF30 Plastic

Accessories

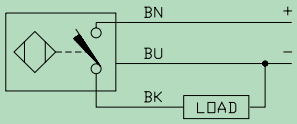
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15%
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA
Trigger Current for Overload Protection	≥170 mA
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤20 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%

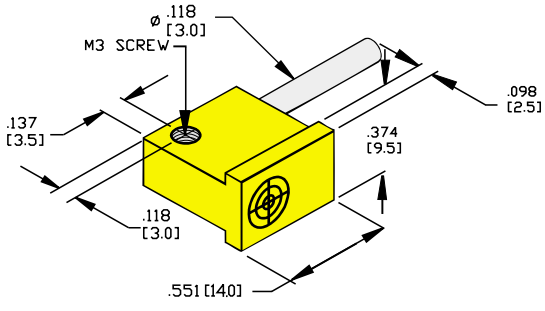
Wiring Diagram

A **PNP (Sourcing)**

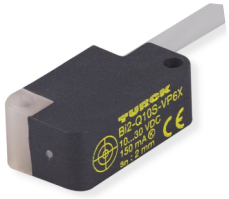


Dimensions

1



Q10S



Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

3-Wire DC

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-Q10S-AN6X	•	2	10.2	•		1	A	1		2000	S1619310	2 Meter cable, PVC jacket
Bi 2-Q10S-AP6X	•	2	10.2		•	1	B	1		2000	S1609360	

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG

Material

Housing:	PA 12-GF20 Plastic

Accessories

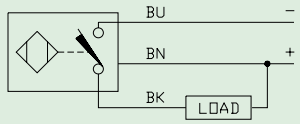
Accessories and mounting devices can be found in Section J.

Specifications

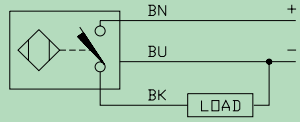
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (Visible from all 4 sides)

Wiring Diagrams

A NPN (Sinking)

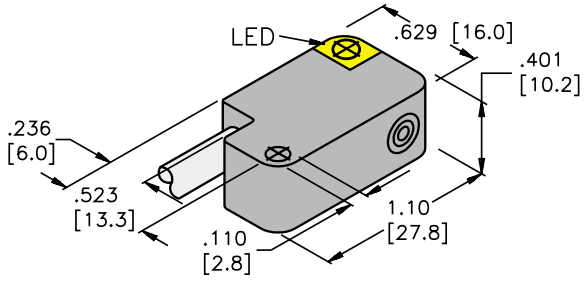


B PNP (Sourcing)



Dimensions

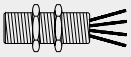
1



Q10S

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

4-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-Q10S-VN6X	•	2	10.2	•		1	A	1				2 meter cable, PVC jacket
Bi 2-Q10S-VP6X	•	2	10.2		•	1	B	1				

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG

Material

Housing:	PA 12-GF20 Plastic

Accessories

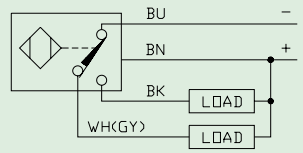
Accessories and mounting devices can be found in Section J.

Specifications

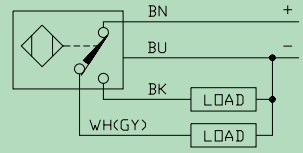
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	Bi 5: -25°C to +70°C (-13°F to +158°F) Bi 7: 0°C to +60°C (+32°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (Visible from all 4 sides)

Wiring Diagrams

A NPN (Sinking)

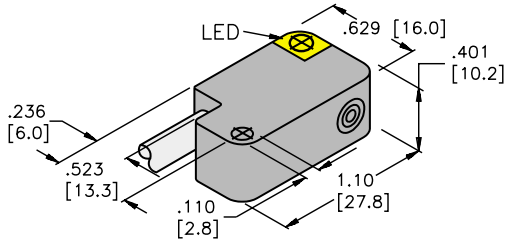


B PNP (Sourcing)

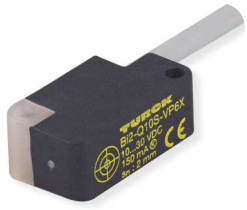


Dimensions

1

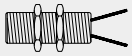


Q10S



Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

2-Wire AC/DC 

20-250 VAC, 10-300 VDC

Normally Open (AZ31X) or Normally Closed (RZ31X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q10S-AZ31X	•	2	10.2	•		1	A	1		60	S1309100
Bi 2-Q10S-RZ31X	•	2	10.2		•	1	B	1		60	S1314300

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PA-GF20 Plastic
Sensing Face:	PA-GF20-VO Plastic

Accessories

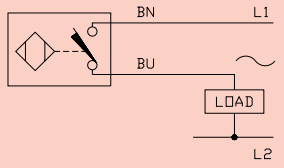
Accessories and mounting devices can be found in Section J.

Specifications

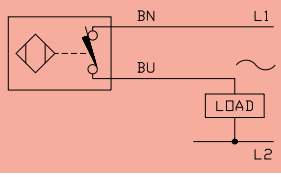
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 100 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤1.0 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized (Visible from all 4 sides)

Wiring Diagrams

A Normally Open

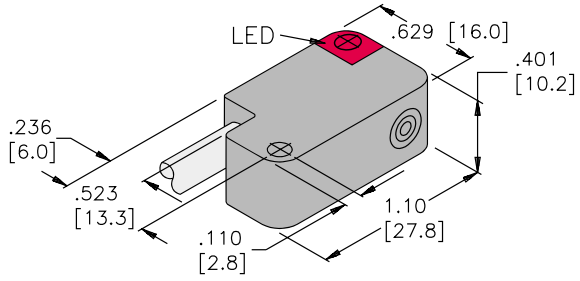


B Normally Closed



Dimensions

1

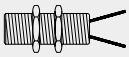


Q10S

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

2-Wire DC, Requires Remote Amplifier



5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-Q10S-Y0X	•	2	10.2	2	A	1	5000		•	≤1	S4012130

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** and ***Automation Controls*** catalogs.

Specifications

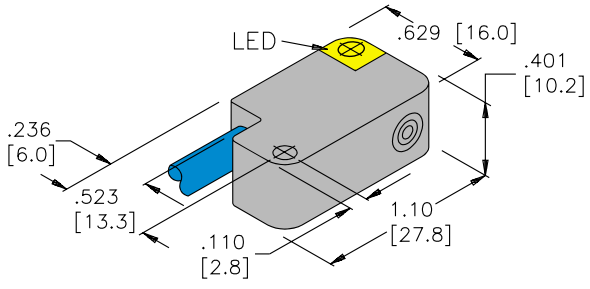
Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (Visible from all 4 sides)

Wiring Diagram

A — NAMUR Output

Dimensions

1

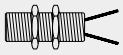


NEW

Q11S

Rectangular Sensors, Metal

Injection-Molded Plastic Housing with Potted-In Cable

2-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q11S-AD4X	•	2	10.5	•	•	1	A	1		2000	M4405040

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

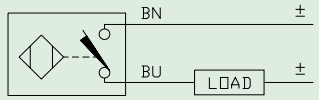
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	3.0 mA
Off-State (Leakage) Current	<0.8 mA
Time Delay Before Availability	≤16 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized

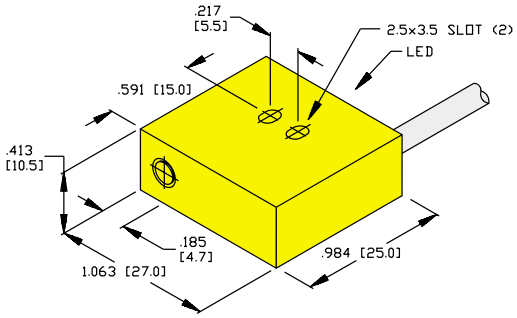
Wiring Diagram

A — Normally Open



Dimensions

1

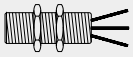


NEW

Q11S

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

3-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-Q11S-AP4X	•	2	10.5		•	1	A	1		2000	M4550100	2 meter cable, PVC jacket

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

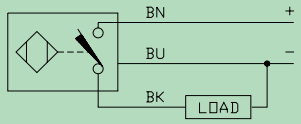
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

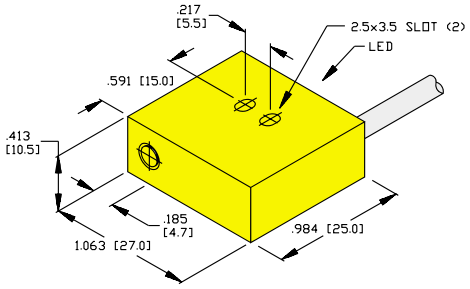
A **PNP (Sourcing)**



Rectangular

Dimensions

1



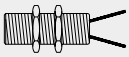
NEW

Q11S

Rectangular Sensors, Plastic

Injection-Molded Plastic Housing with Potted-In Cable

2-Wire DC, Requires Remote Amplifier



5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-Q11S-Y0X	•	2	10.5	1	A	1	5000		•		M4012131

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

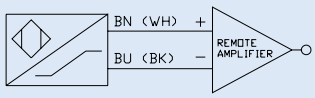
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** and ***Automation Controls*** catalogs.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

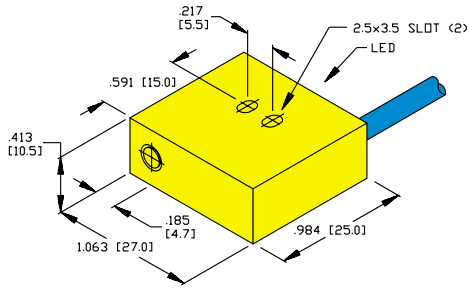
A — NAMUR Output



Rectangular

Dimensions

1



Q12

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable or Quick Disconnect

3-Wire DC

eurofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-Q12-AN6X Ni 4-Q12-AN6X	•	2.0 4.0	12 12	• •		1 1	A A	1 1		2000 2000	M1619300 M1619400	2 meter cable, PVC jacket
Bi 2-Q12-AP6X Ni 4-Q12-AP6X	•	2.0 4.0	12 12		• •	1 1	B B	1 1		2000 2000	M1609300 M1609400	
Bi 2-Q12-AN6X-H1141 Ni 4-Q12-AN6X-H1141	•	2.0 4.0	12 12	• •		2 2	C C	1 1		2000 2000	M1619000 M1619100	eurofast **Mating Cordsets** RKK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 2-Q12-AP6X-H1141 Ni 4-Q12-AP6X-H1141	•	2.0 4.0	12 12		• •	2 2	D D	1 1		2000 2000	M1609000 M1609100	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing:	PBT-GF30-VO Plastic
Connector:	PBT-GF30-VO/PA Plastic
End Cap:	PBT-GF30-VO Plastic

Accessories

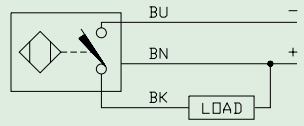
Accessories and mounting devices can be found in Section J.

Specifications

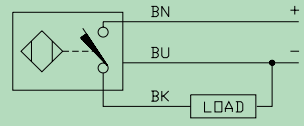
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

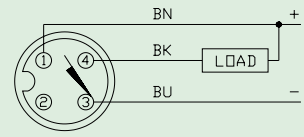
A NPN (Sinking)



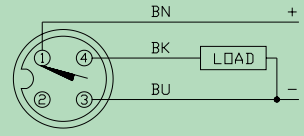
B PNP (Sourcing)



C NPN (Sinking)

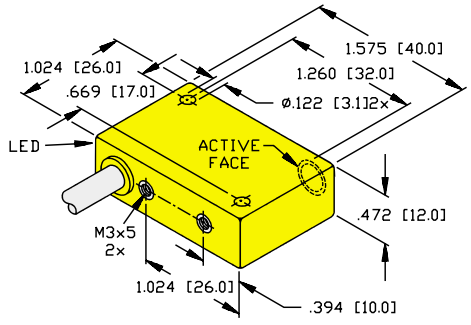


D PNP (Sourcing)

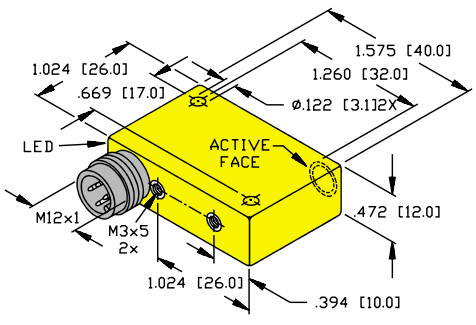


Dimensions

1



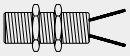
2



Q12

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable

2-Wire AC 

35-250 VAC, 10-65 VDC

Normally Open (AZ31X) or Normally Closed (RZ31X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q12-AZ31X	•	2	12	•		1	A	1		20	M1310000
Ni 4-Q12-AZ31X		4	12	•		1	A	1		20	M1310200
Bi 2-Q12-RZ31X	•	2	12		•	1	B	1		20	M1320000
Ni 4-Q12-RZ31X		4	12		•	1	B	1		20	M1320200

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

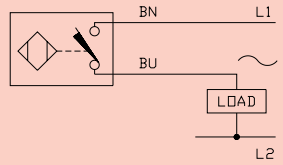
Accessories and mounting devices can be found in Section J.

Specifications

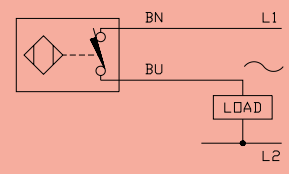
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤11.0 V at 100 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤1.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A — Normally Open

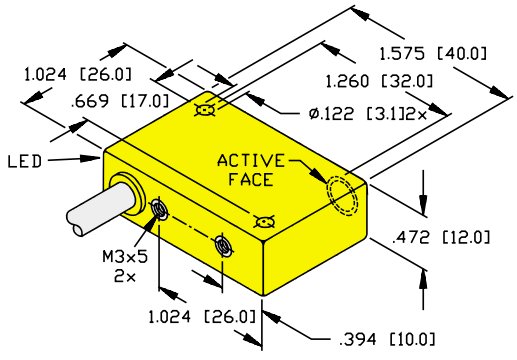


B — Normally Closed



Dimensions

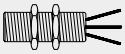
1



Q12

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable

3-Wire DC 

10-30 VDC, TTL Compatible

Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-Q12-AN7X	•	2	12	•		1	A	1		2000	M1720800
Ni 4-Q12-AN7X		4	12	•		1	A	1		2000	M1720900

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Housing:	PBT-GF30-VO Plastic
End Cap:	PBT-GF30-VO Plastic

Accessories

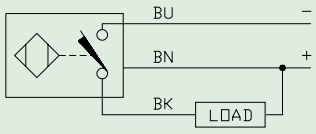
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

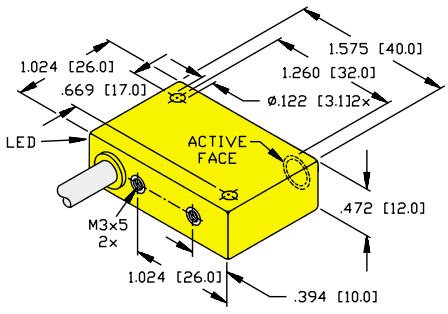
Wiring Diagram

A — NPN (Sinking)



Dimensions

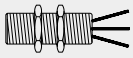
1



Q14

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable or Quick Disconnect ***Uprox***®

3-Wire DC  ***picofast***® ***eurofast***®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi1OU-Q14-AN6X2	•	10	14	•		2	A	2	•	250	M1608710	2 meter cable, PVC jacket
Bi1O-Q14-AN6X2	•	10	14	•		2	A	2		500	M1608320	
Bi1OU-Q14-AP6X2	•	10	14		•	2	B	2	•	250	M1608700	
Bi1O-Q14-AP6X2	•	10	14		•	2	B	2		500	M1608720	
Ni2O-Q14-AP6X2		20	14		•	2	B	2		500	M4690205	
Bi1OU-Q14-AN6X2-V1131	•	10	14	•		3	C	2	•	250	M1608510	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1OU-Q14-AP6X2-V1131	•	10	14		•	3	D	2	•	250	M1608500	
Ni2O-Q14-AP6X2-V1131		20	14		•	3	D	2		500	M4690210	
Bi1OU-Q14-AN6X2-O.2M-RS 4T*	•	10	14	•		1	E	2	•	250	M1608791	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1OU-Q14-AP6X2-O.2M-RS 4T*	•	10	14		•	1	F	2	•	250	M1608790	

* Potted cable sensor with pigtail and molded ***eurofast*** connector, 0.2 meter length. Other lengths available.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass

Accessories

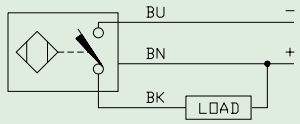
Accessories and mounting devices can be found in Section J.

Specifications

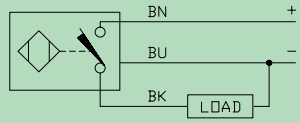
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.10 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	***Uprox:*** -30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	***Uprox:*** Short-Circuit Warning

Wiring Diagrams

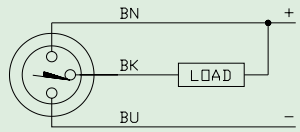
A NPN (Sinking)



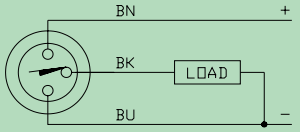
B PNP (Sourcing)



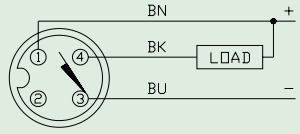
C NPN (Sinking)



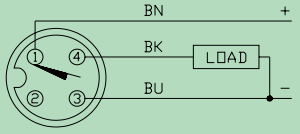
D PNP (Sourcing)



E NPN (Sinking)

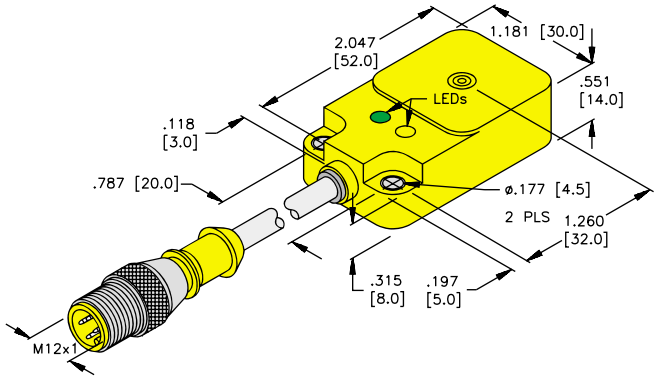


F PNP (Sourcing)



Dimensions

1



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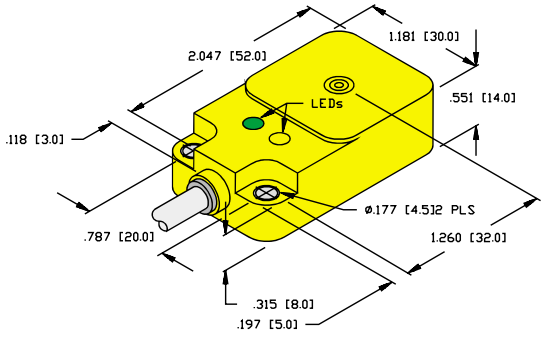
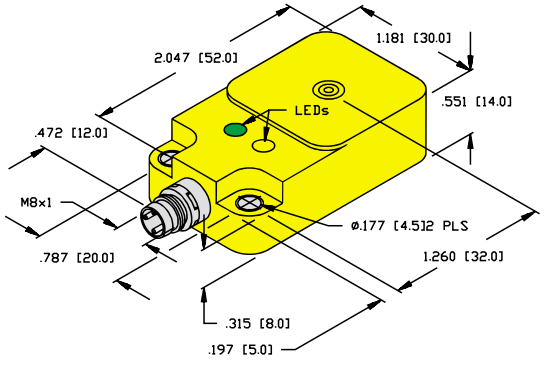


3



Q14

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable & Optional Molded Connector

2-Wire AC/DC microfast®

20-250 VAC, 10-300 VDC; Short-Circuit and Overload Protection

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi1O-Q14-ADZ32X2 Bi1O-Q14-ADZ32X2/S34	• •	10 10	14 14	• •	1 1	A A	2 2	 •	60 30	M4256220 M4256225	2 meter cable, PVC jacket; 22 AWG copper conductors, PVC insulated.
Bi1O-Q14-ADZ32X2-0.2M-SB 3T Bi1O-Q14-ADZ32X2/S34-0.2M-SB 3T	• •	10 10	14 14	• •	2 2	B B	2 2	 •	60 30	M4256290 M4256294	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass

Accessories

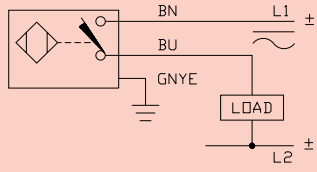
Accessories and mounting devices can be found in Section J.

Specifications

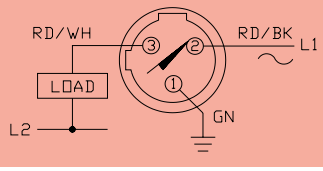
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 100 mA
Continuous Load Current	≤100 mA
Trigger Current for Overload Protection	≥220 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤1.0 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On (Green)	Power On
LED On (Red)	Output Energized

Wiring Diagrams

A **Normally Open**

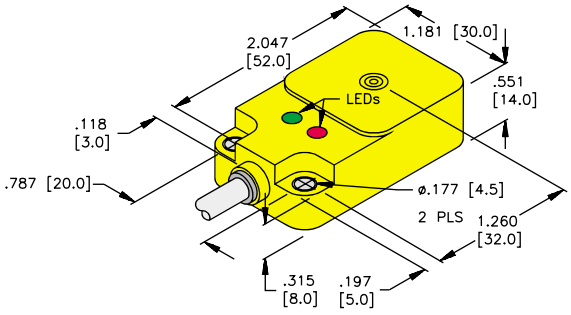


B **Normally Open**

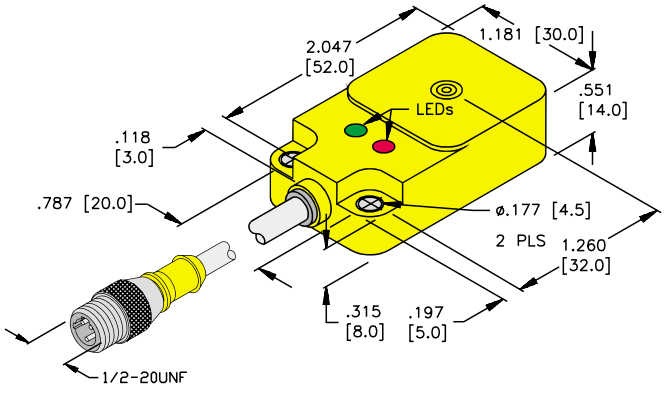


Dimensions

1



2

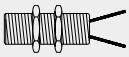


Q14

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable

2-Wire DC, Requires Remote Amplifier



5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	ID Number	Connection
Bi10-Q14-Y0X	•	10	14	1	A	1	250	•	M1608730	2 meter cable, PVC jacket; 22 AWG copper conductors, PVC insulated.

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Housing:	PBT-GF30-V0

Accessories

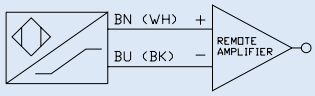
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** and ***Automation Controls*** catalogs.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

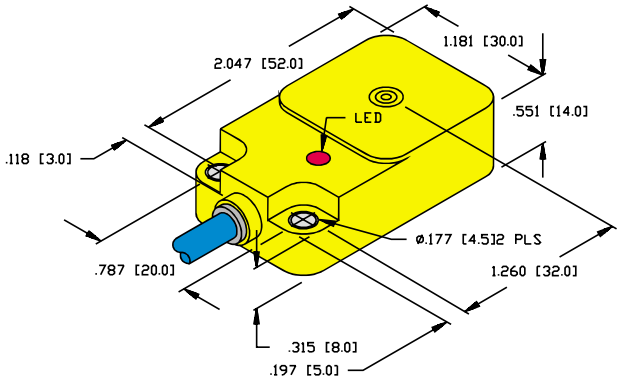
A — NAMUR Output



Rectangular

Dimensions

1



Q20

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable or Quick Disconnect ***Uprox***®

3-Wire DC

eurofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15U-Q20-AN6X2	•	15	20	•		1	A	2	•	250	M1608810	2 meter cable, PVC jacket; 22 AWG copper conductors PVC insulated.
Bi15-Q20-AN6X2	•	15	20	•		1	A	2		500	M1608310	
Bi15U-Q20-AP6X2	•	15	20		•	1	B	2	•	250	M1608800	
Bi15-Q20-AP6X2	•	15	20		•	1	B	2		500	M1608300	
Ni25-Q20-AP6X2		25	20		•	1	B	2		500	M1602700	
Bi15U-Q20-AN6X2-H1141	•	15	20	•		2	C	2	•	250	M1608610	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-Q20-AN6X2-H1141	•	15	20	•		2	C	2		500	M1608315	
Bi15U-Q20-AP6X2-H1141	•	15	20		•	2	D	2	•	250	M1608600	
Bi15-Q20-AP6X2-H1141	•	15	20		•	2	D	2		500	M1608305	
Ni25-Q20-AP6X2-H1141		25	20		•	2	D	2		500	M1602702	

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass

Accessories

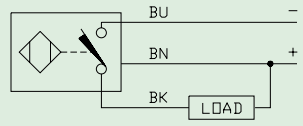
Accessories and mounting devices can be found in Section J.

Specifications

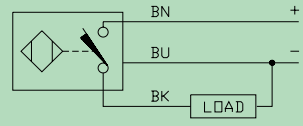
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.10 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	***Uprox:*** -30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	***Uprox:*** Short-Circuit Warning

Wiring Diagrams

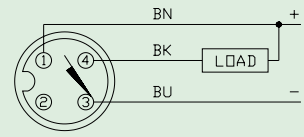
A NPN (Sinking)



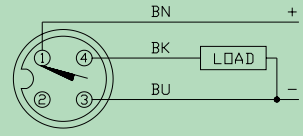
B PNP (Sourcing)



C NPN (Sinking)

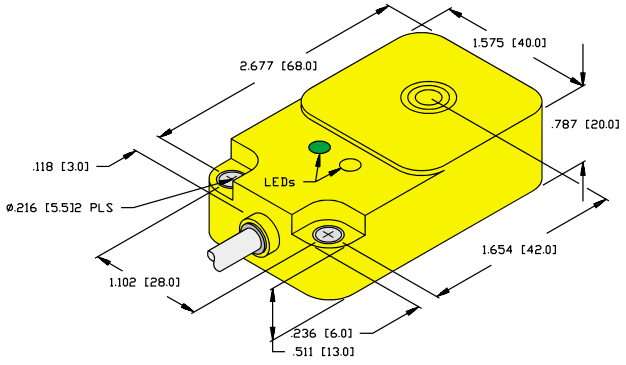


D PNP (Sourcing)



Dimensions

1



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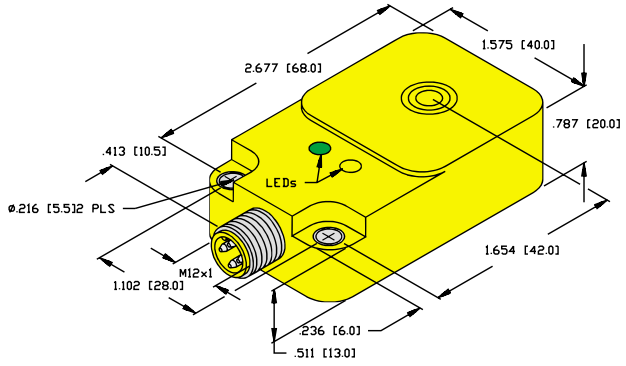


Q20

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable and Quick Disconnect

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

eurofast®
FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	ID Number	Connection
Bi15-Q20-Y0X	•	15	20	1	A	1	250	•	M1080020	2 meter cable, PVC jacket; 22 AWG copper conductors, PVC insulated.
Bi15-Q20-Y0X-H1141	•	15	20	2	B	1	250	•	M1080025	eurofast **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Housing:	PBT-GF30-V0
Connector:	Chrome Plated Brass

Accessories

Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** and ***Automation Controls*** catalogs.

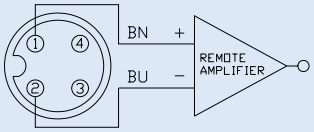
Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NAMUR Output

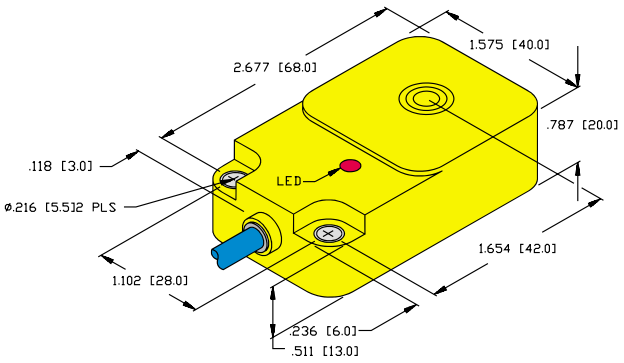
B NAMUR Output



Rectangular

Dimensions

1



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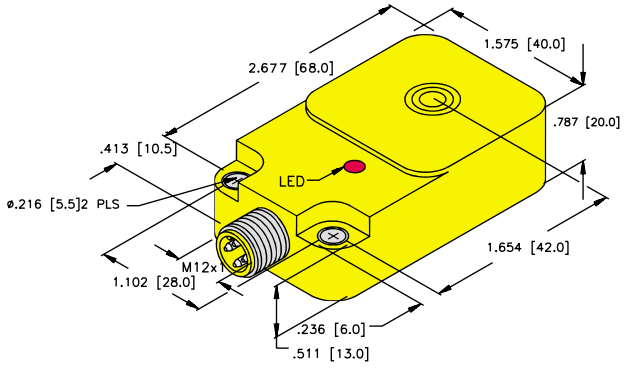
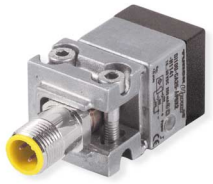


NEW

CA25



Rectangular Sensors, Aluminum Housing
***Stubby*® *Dual Color LEDs* *Uprox*®**

3-Wire DC **eurofast** ® **picofast** ®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi10U-CA25-AP6X2-H1141	•	10	25		•	1	A	1	•		M1625631	**eurofast** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10U-CA25-AP6X2-V1131	•	10	25		•	2	B	1	•			**picofast** **Mating Cordsets** PKG 3M-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing/Sensing Face:	Anodized Aluminum/Thermoset Plastic
Connector:	Chrome Plated Brass
Positioning bracket:	Die-Cast Zinc
Mounting bracket:	Die-Cast Zinc

Accessories

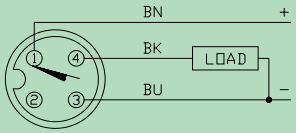
Accessories and mounting devices can be found in Section J.
Mounting bracket Included with sensor.

Specifications

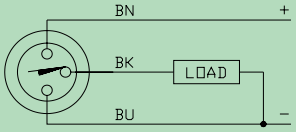
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
2-Color LED Yellow	Output Energized
2-Color LED Green	Power On
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A **PNP (Sourcing)**

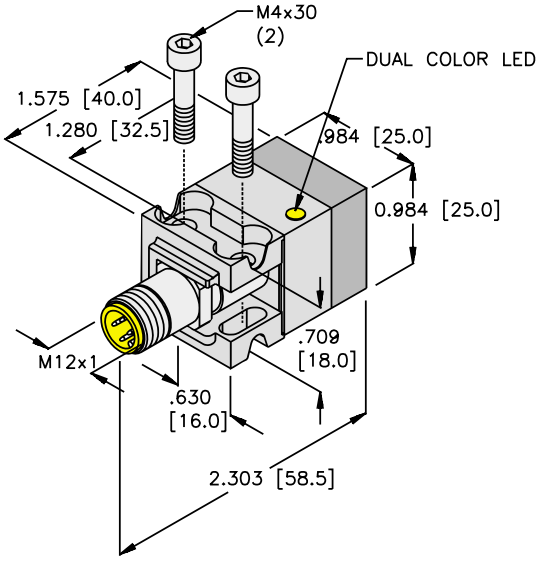


B **PNP (Sourcing)**



Dimensions

1



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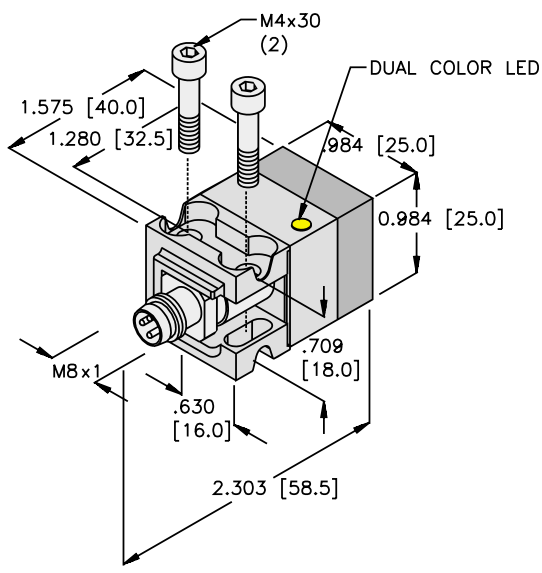


Q25

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable & Optional Molded Connector

3-Wire DC

eurofast ®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni10-Q25-AN6X		10	25.5	•		1	A	1		500	M4652330	2 meter cable, PVC jacket; 22 AWG copper conductors, PVC insulated
Ni10-Q25-AP6X		10	25.5		•	1	B	1		500	M4652225	
Ni10-Q25-AP6X-0.2M-RS 4T		10	25.5		•	2	C	1		500	M4652290	*eurofast* **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass

Accessories

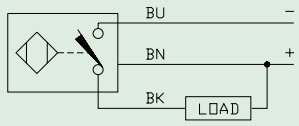
Accessories and mounting devices can be found in Section J.

Specifications

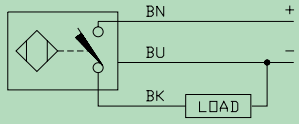
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized

Wiring Diagrams

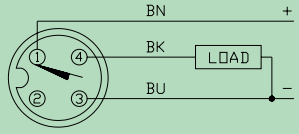
A NPN (Sinking)



B PNP (Sourcing)

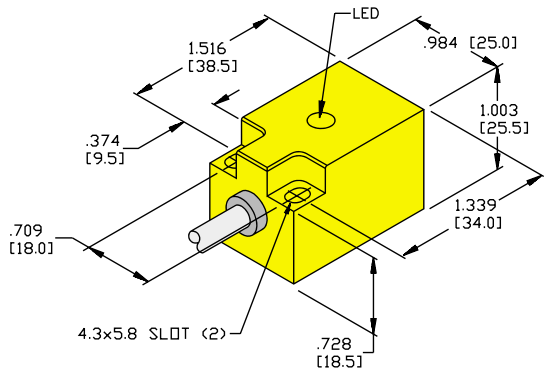


C PNP (Sourcing)



Dimensions

1



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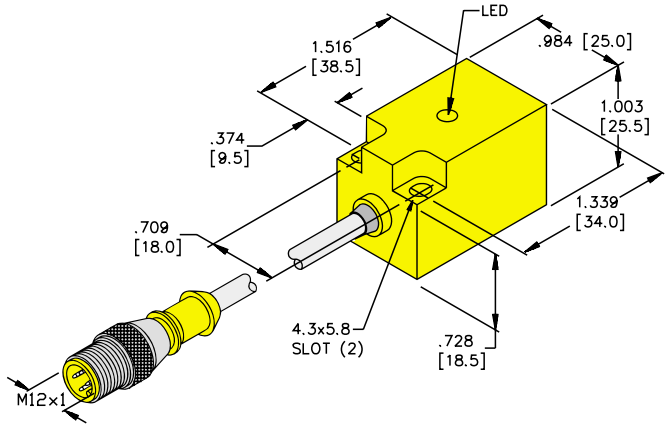


Q26

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable or Quick Disconnect

2-Wire DC

eurofast®

10-65 VDC, Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi10F-Q26-AD4X/S34	•	10	26.5	•	•	1	A	1	•	30	M4470000	2 meter cable, PVC Jacket
Bi10S-Q26-AD4X/S34	•	10	26.5	•	•	1	A	1	•	30	M4470200	
Bi10F-Q26-AD4X-H1141/S34	•	10	26.5	•	•	2	B	1	•	30	M4471000	eurofast **Mating Cordsets** RK 4.2T-2 (2 Meter) For other styles see Section H or consult "Cordsets" catalog
Bi10S-Q26-AD4X-H1141/S34	•	10	26.5	•	•	2	B	1	•	30	M4471200	

Cable/Conductor

Cable:	PVC Jacket , 2 meter standard length
Copper Conductor:	21 AWG (PVC insulated)

Material

Housing:	PBT-GF30-VO Plastic
Connector:	PBT-GF30-VO Plastic
End Cap:	PA 66-GF25-VO

Accessories

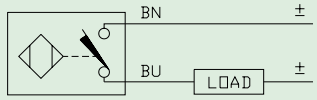
Accessories and mounting devices can be found in Section J.

Specifications

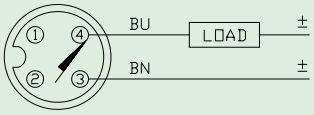
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤13 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A **Normally Open**

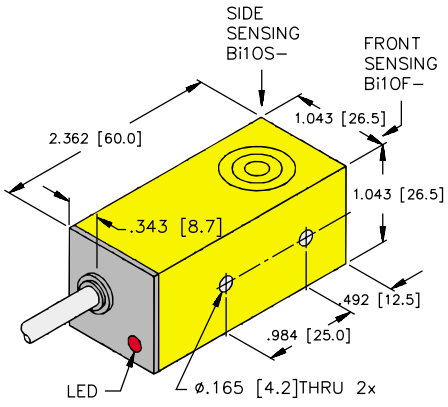


B **Normally Open**



Dimensions

1



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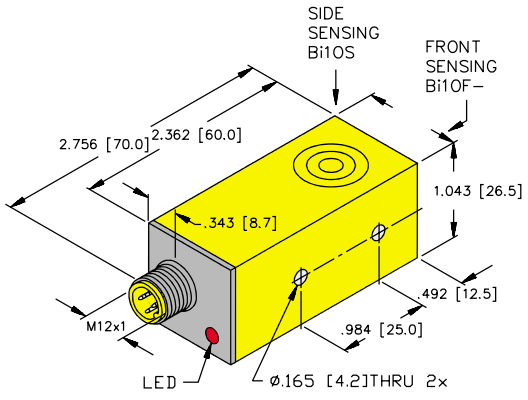


Q30

Rectangular Sensors, Plastic

Plastic Housing with Potted-In Cable & Optional Molded Connector

3-Wire DC

eurofast ®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni15-Q30-AN6X		15	30.5	•		1	A	1		500	M4659330	2 meter cable, PVC jacket
Ni15-Q30-AP6X		15	30.5		•	1	B	1		500	M4659325	
Ni15-Q30-AP6X-0.2M-RS 4T		15	30.5		•	2	C	1		500	M4659390	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	22 AWG (PVC insulated)

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass

Accessories

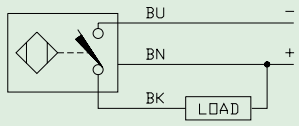
Accessories and mounting devices can be found in Section J.

Specifications

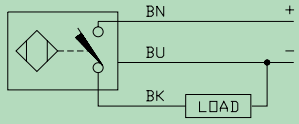
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±10%
LED On	Output Energized

Wiring Diagrams

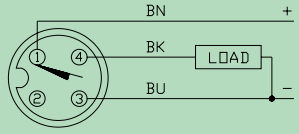
A NPN (Sinking)



B PNP (Sourcing)

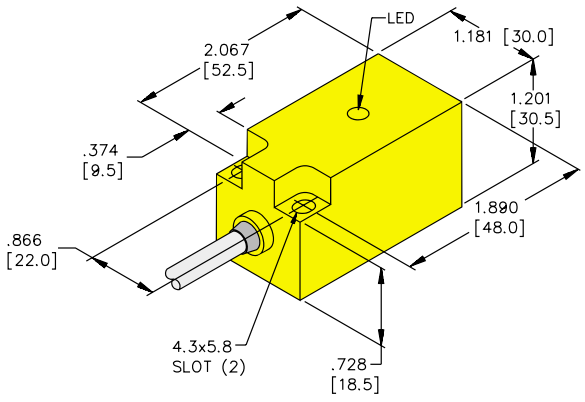


C PNP (Sourcing)



Dimensions

1



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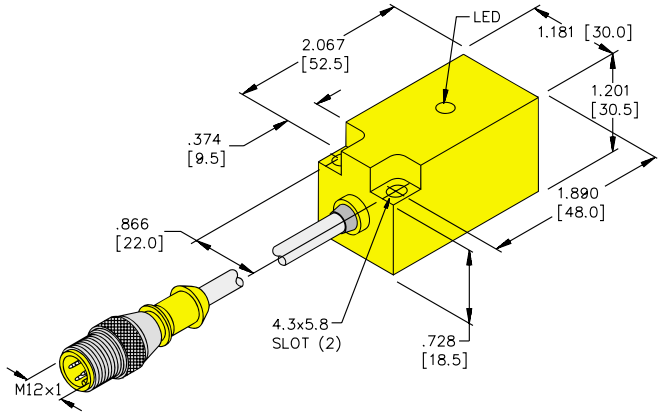


Q34

Rectangular Sensors, Plastic

Plastic Housing with Quick Disconnect

3-Wire DC **minifast®**

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi1OF-Q34-AN6X2-B1141	•	10	34	•		1	A	2		500	T4693200	minifast **Mating Cordsets** RKM 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1OT-Q34-AN6X2-B1141	•	10	34	•		1	A	2		500		
Bi1OF-Q34-AP6X2-B1141	•	10	34		•	1	B	2		500	T4693100	
Bi1OT-Q34-AP6X2-B1141	•	10	34		•	1	B	2		500	T4693300	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30 Plastic

Accessories

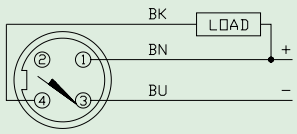
Accessories and mounting devices can be found in Section J.

Specifications

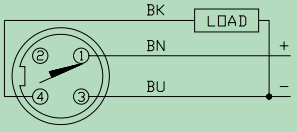
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



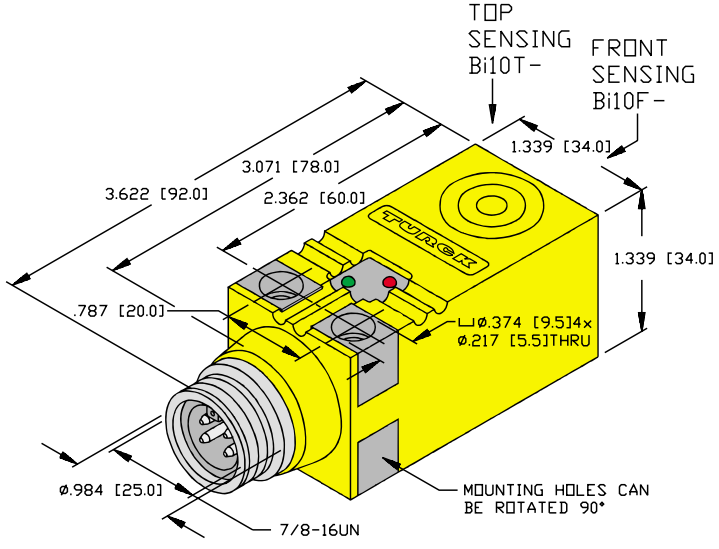
B PNP (Sourcing)



Rectangular

Dimensions

1



Q34

Rectangular Sensors, Plastic

Plastic Housing with Quick Disconnect

2-Wire AC ***minifast***® ***microfast***®

20-250 VAC/DC, Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi10F-Q34-ADZ30X2-B1131/S34	•	10	34	•		1	A	2	•	30	T4201100	***minifast*** **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10T-Q34-ADZ30X2-B1131/S34	•	10	34	•		1	A	2	•	30	T4201200	
Bi10F-Q34-ADZ30X2-B3131/S34	•	10	34	•		2	B	2	•	30	T4217000	***microfast*** **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10T-Q34-ADZ30X2-B3131/S34	•	10	34	•		2	B	2	•	30	T4217100	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30 Plastic

Accessories

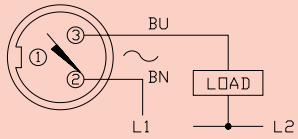
Accessories and mounting devices can be found in Section J.

Specifications

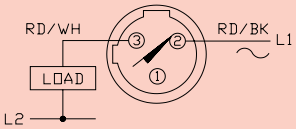
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A — Normally Open

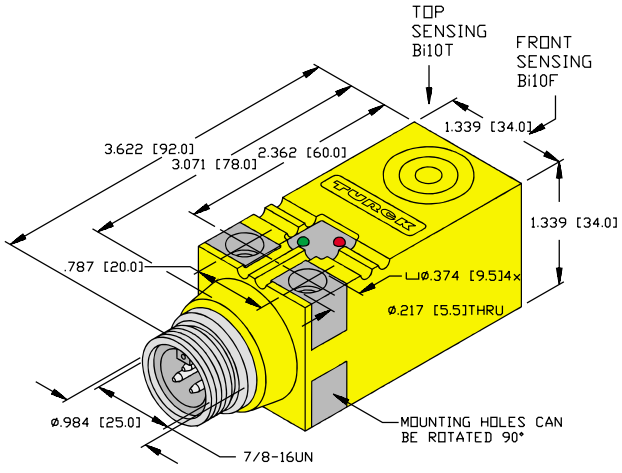


B — Normally Open



Dimensions

1



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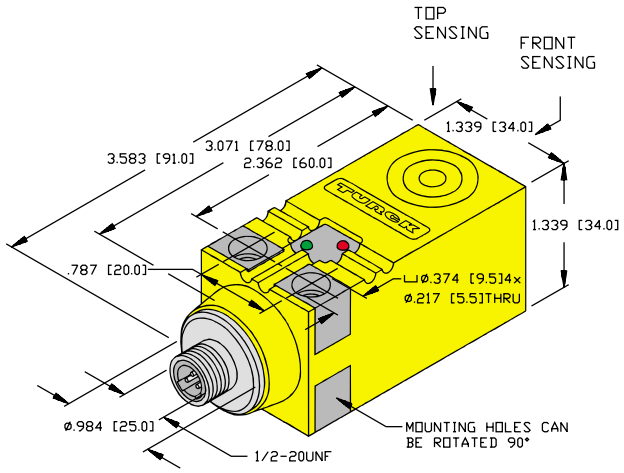


Q34

Rectangular Sensors, Plastic

Plastic Housing with Quick Disconnect

2-Wire AC
20-250 VAC
Normally Open (AZ3X2)

minifast® *microfast*®

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi1OF-Q34-AZ3X2-B1131	•	10	34	•		1	A	2	•	20	T1369200	*minifast* **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1OT-Q34-AZ3X2-B1131	•	10	34	•		1	A	2	•	20	T1369000	
Bi1OF-Q34-AZ3X2-B3131	•	10	34	•		2	B	2	•	20	T1369298	*microfast* **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1OT-Q34-AZ3X2-B3131	•	10	34	•		2	B	2	•	20	T1369098	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30 Plastic

Accessories

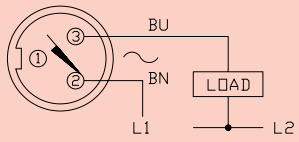
Accessories and mounting devices can be found in Section J.

Specifications

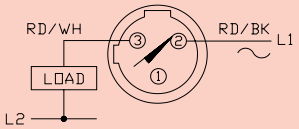
Line Frequency	40-60 Hz
Hysteresis (Differential Travel)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Leakage (Off-State) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 10% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Nominal Sensing Range
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A — Normally Open

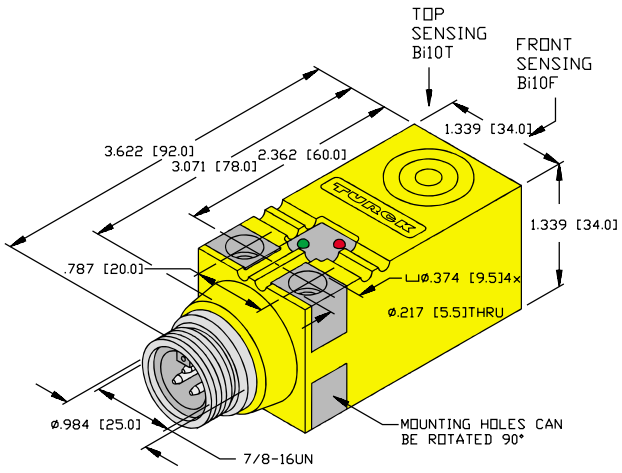


B — Normally Open



Dimensions

1



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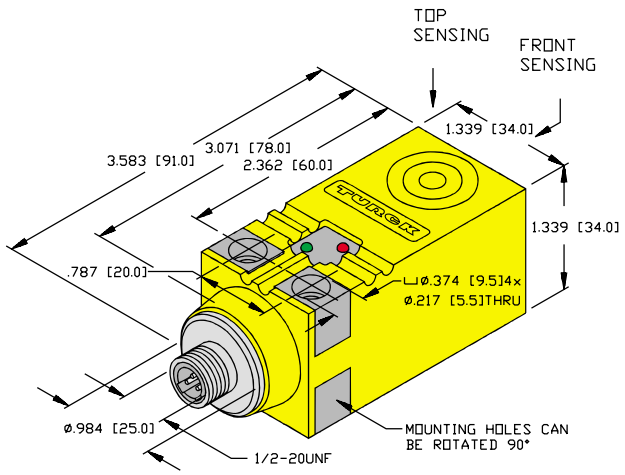


CA40

Limit Switch Style Sensors, Aluminum Housing
stubby® Uprox®

3-Wire DC *eurofast®*
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi2OU-CA40-AP6X2-H1141	•	20	40		•	1	A	2	•	260	M1627290	*eurofast* **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing/Sensing Face:	Anodized Aluminum/Thermoset Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

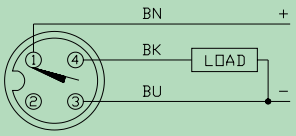
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-0°C to +70°C (-32°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Yellow)	Short-Circuit Warning

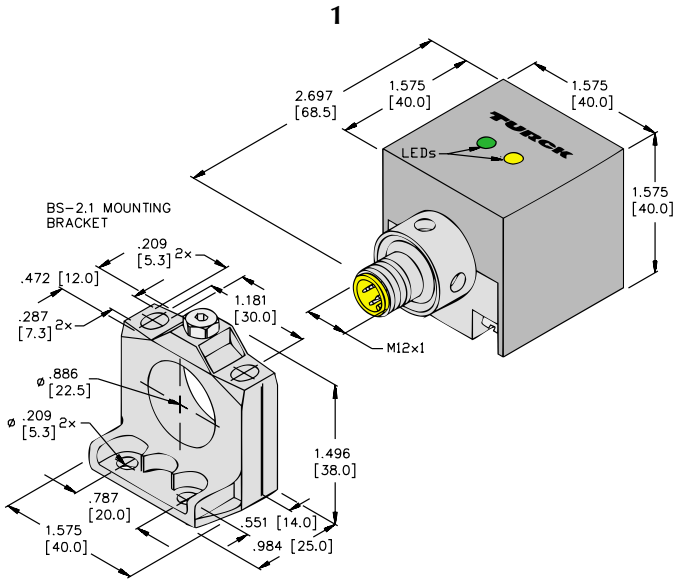
Wiring Diagram

A **PNP (Sourcing)**



Dimensions

1



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CA40

Limit Switch Style Sensors, Aluminum Housing
stubby® Uprox®

2-Wire AC/DC *minifast®* *microfast®*
20-250 VAC, 10-300 VDC; Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (IS34)	Switching Frequency (Hz)	ID Number	Connection
Bi2OU-CA40-ADZ30X2-B1131	•	20	40	•		1	A	2	•	60	M4283290	*minifast* **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi2OU-CA40-ADZ30X2-B3131	•	20	40	•		2	B	2	•	60	M4283292	*microfast* **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing/Sensing Face:	Anodized Aluminum/Thermoset Plastic
Connector/Set Screw:	Chrome-Plated Brass/Stainless Steel
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

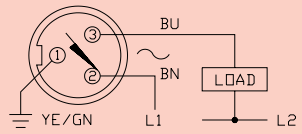
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

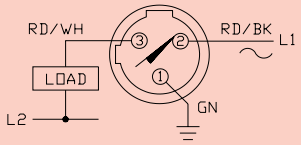
Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-0°C to +70°C (-32°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A **Normally Open**

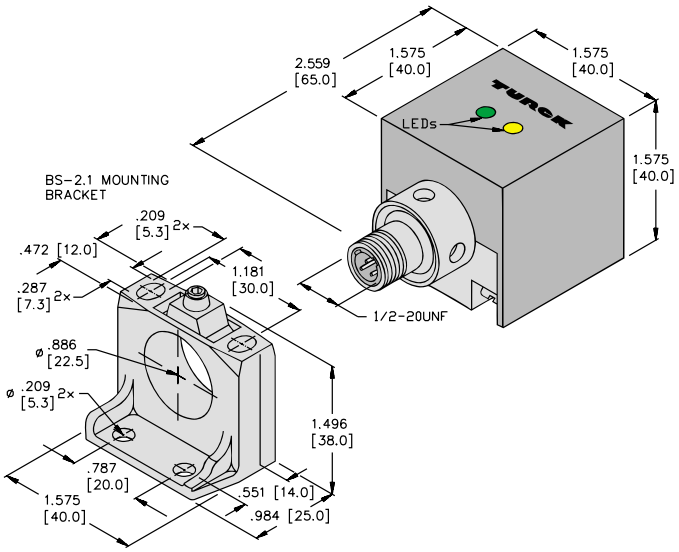


B **Normally Open**



Dimensions

1



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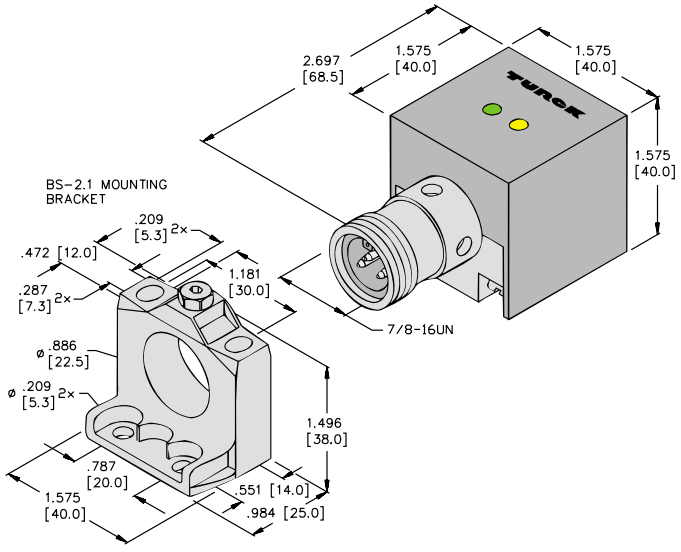


Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby®

2-Wire DC *eurofast*®
10-65 VDC, Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15-CK40-AD4X-H1141 W/BS 2.1	•	15	40	•	•	1	A	1		150	M4465090	*eurofast* **Mating Cordsets** RK 4.2T-2 (2 Meter) For other styles see Section H or consult "Cordsets" catalog
Ni20-CK40-AD4X-H1141 W/BS 2.1		20	40	•	•	1	A	1		150	M4465290	

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

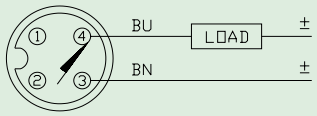
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

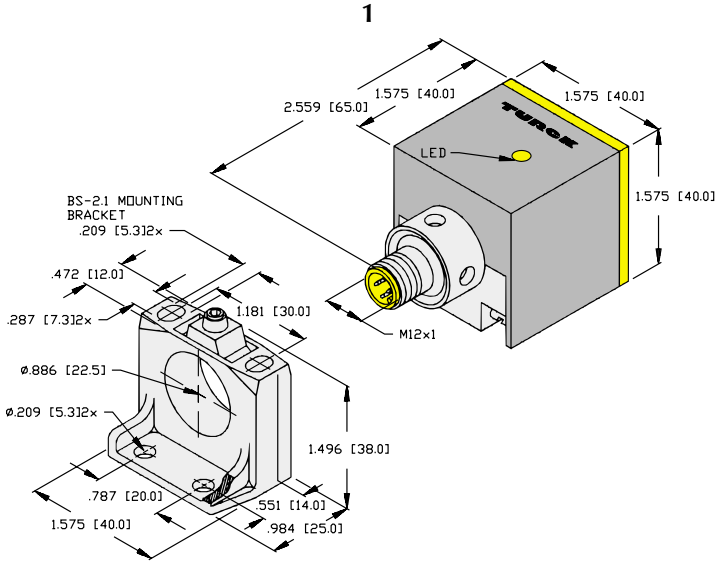
Wiring Diagram

A **Normally Open**



Dimensions

1



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby® Uprox®

3-Wire DC **eurofast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15U-CK40-AN6X2-H1141 W/BS 2.1	•	15	40	•		1	A	2	•	250	M1625690	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult"Cordsets" catalog
Ni25U-CK40-AN6X2-H1141 W/BS 2.1		25	40	•		1	A	2	•	250	M1625789	
Ni35U-CK40-AN6X2-H1141 W/BS 4		35	40	•		2	A	2	•	250	M1625810	
Bi15U-CK40-AP6X2-H1141 W/BS 2.1	•	15	40		•	1	B	2	•	250	M1625689	
Ni25U-CK40-AP6X2-H1141 W/BS 2.1		25	40		•	1	B	2	•	250	M1625790	
Ni35U-CK40-AP6X2-H1141 W/BS 4		35	40		•	2	B	2	•	250	M1625800	

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	BS 2.1: Die-Cast Zinc, BS 4: PPS-GV Plastic

Accessories

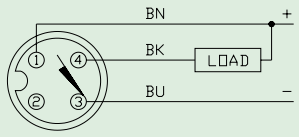
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.
Mounting Bracket BS 4 included with Ni35U-CK40 sensor.

Specifications

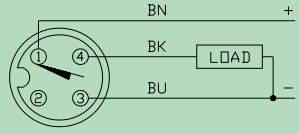
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



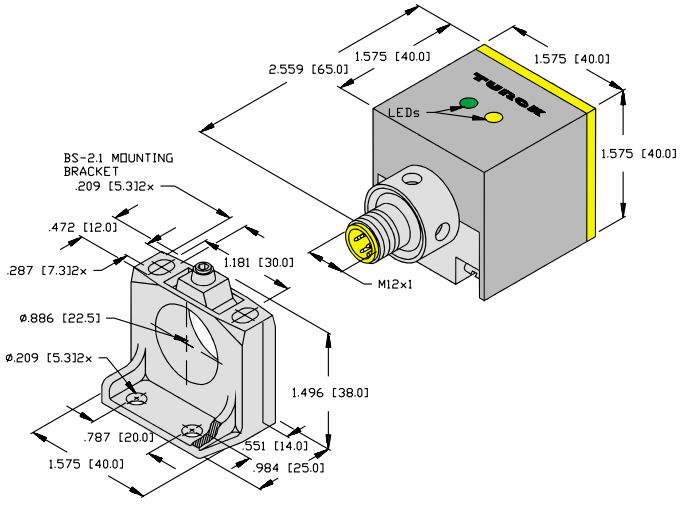
B PNP (Sourcing)



Rectangular

Dimensions

1



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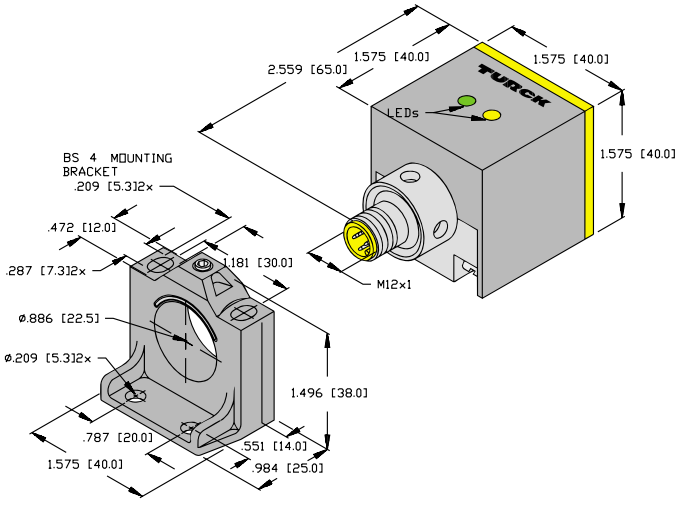


Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby®

3-Wire DC *eurofast*®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15-CK40-AN6X2-H1141 W/BS 2.1	•	15	40	•		1	A	2		150	M1625190	*eurofast*
Ni20-CK40-AN6X2-H1141 W/BS 2.1		20	40	•		1	A	2		150	M1625390	**Mating Cordsets**
Bi15-CK40-AP6X2-H1141 W/BS 2.1	•	15	40		•	1	B	2		150	M1625090	RK 4T-2 (2 meter)
Ni20-CK40-AP6X2-H1141 W/BS 2.1		20	40		•	1	B	2		150	M1625290	For other styles see Section H or consult "Cordsets" catalog

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

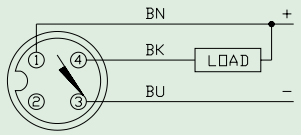
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

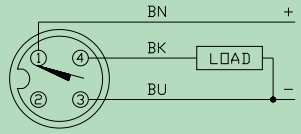
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Yellow)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

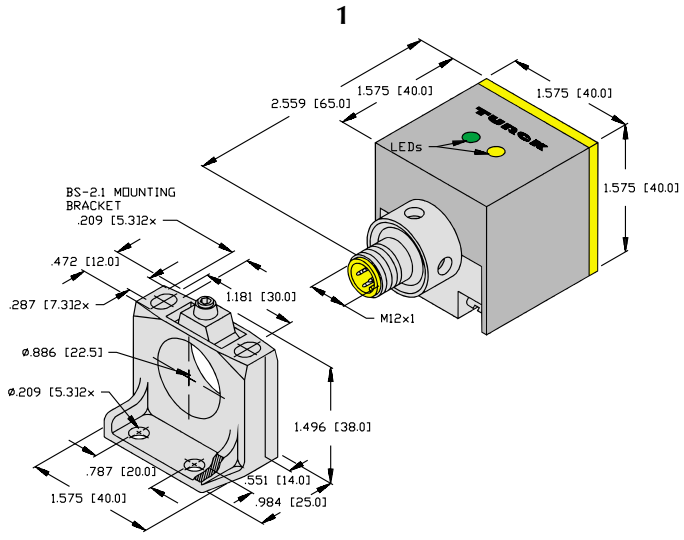


B PNP (Sourcing)



Dimensions

1



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby®

4-Wire DC *eurofast*®
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15-CK40-VN4X2-H1141 W/BS 2.1	•	15	40	•		1	A	2		150	M1550190	*eurofast* **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni20-CK40-VN4X2-H1141 W/BS 2.1		20	40	•		1	A	2		150	M1550390	
Bi15-CK40-VP4X2-H1141 W/BS 2.1	•	15	40		•	1	B	2		150	M1550091	
Ni20-CK40-VP4X2-H1141 W/BS 2.1		20	40		•	1	B	2		150	M1550290	

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

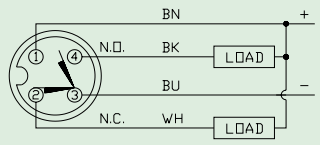
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

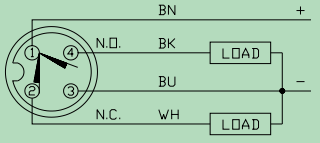
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



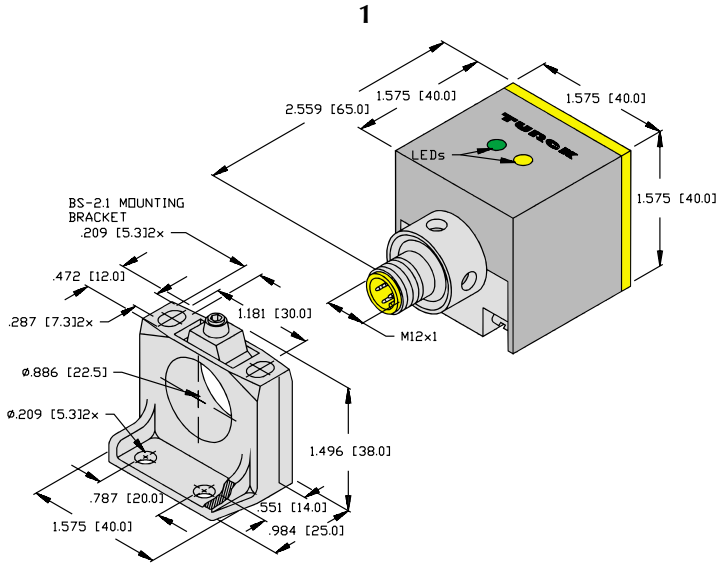
B PNP (Sourcing)



Rectangular

Dimensions

1



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby® Uprox®

2-Wire AC/DC *minifast®* *microfast®*
20-250 VAC/10-250 VDC Short-Circuit/Overload Protected
Normally Open (ADZ30X2)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15U-CK40-ADZ30X2-B1131 W/BS 2.1 Ni25U-CK40-ADZ30X2-B1131 W/BS 2.1 Ni35U-CK40-ADZ30X2-B1131 W/BS 4	•	15 25 35	40 40 40	• • •		1 1 1	A A A	2 2 2	• • •	60 60 60	M4280090 M4280290 M4280410	*minifast* **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15U-CK40-ADZ30X2-B3131 W/BS 2.1 Ni25U-CK40-ADZ30X2-B3131 W/BS 2.1 Ni35U-CK40-ADZ30X2-B3131 W/BS 4	•	15 25 35	40 40 40	• • •		2 2 2	B B B	2 2 2	• • •	60 60 60	M4280091 M4280291 M4280430	*microfast* **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

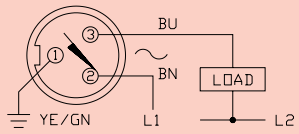
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 and BS-4 included with sensor.

Specifications

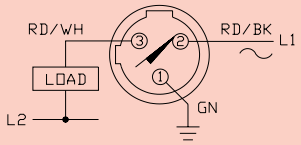
Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥440 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +70°C (-22°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A **Normally Open**

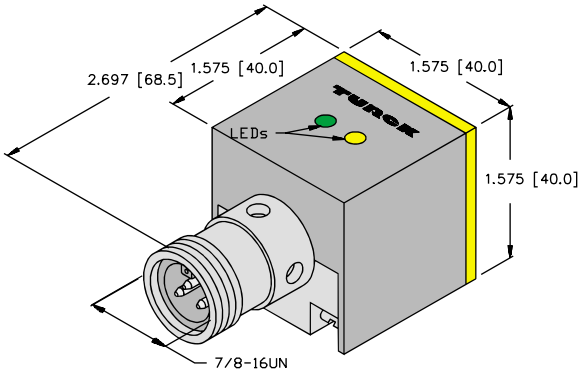


B **Normally Open**

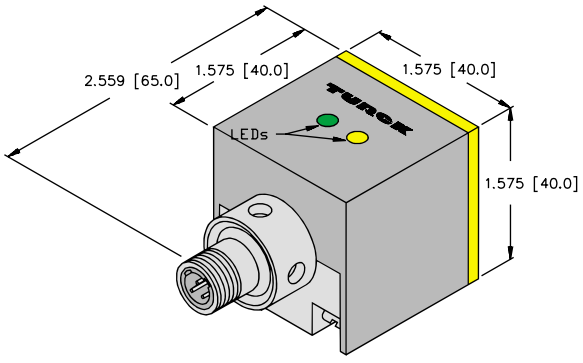


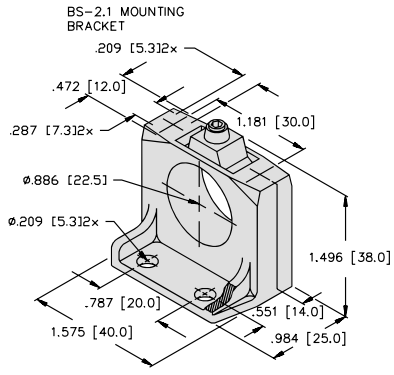
Dimensions

1



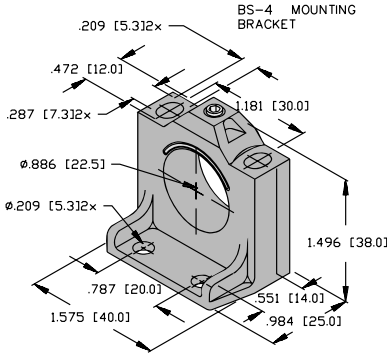
2





Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.



CK40

Limit Switch Style Sensors, Plastic Housing
stubby®

2-Wire AC/DC minifast® microfast®
20-250 VAC/DC Short-Circuit and Overload Protected
Normally Open (ADZ30X2) or Normally Closed (RDZ30X2)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15-CK40-ADZ30X2-B1131/S34 W/BS 2.1	•	15	40	•		1	A	2	•	30	M4244090	minifast **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-CK40-RDZ30X2-B1131/S34 W/BS 2.1	•	15	40		•	1	B	2	•	30	M4244190	
Bi15-CK40-ADZ30X2-B3131/S34 W/BS 2.1	•	15	40	•		2	C	2	•	30	M4244290	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-CK40-RDZ30X2-B3131/S34 W/BS 2.1	•	15	40		•	2	D	2	•	30	M4244390	

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

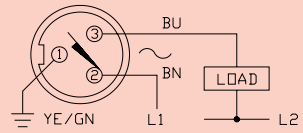
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

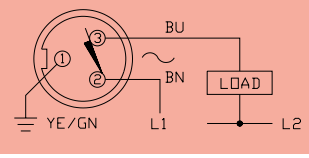
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 400 mA
Trigger Current for Overload Protection	≥700 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤2.4 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤20 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

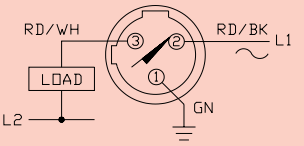
A Normally Open



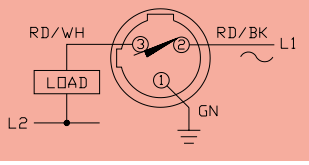
B Normally Closed



C Normally Open

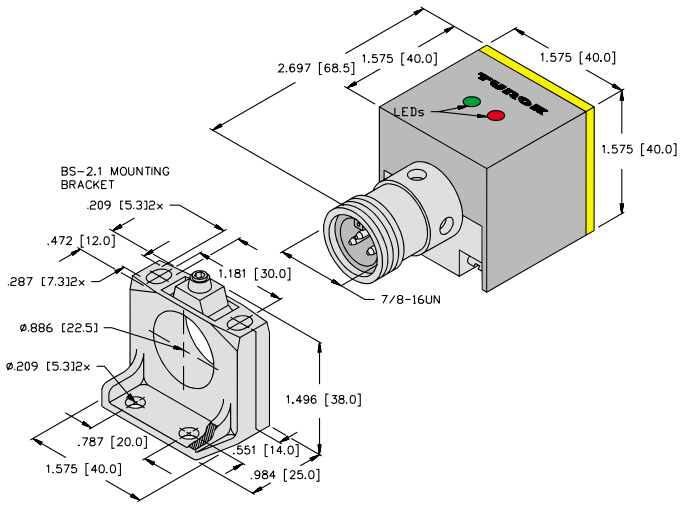


D Normally Closed

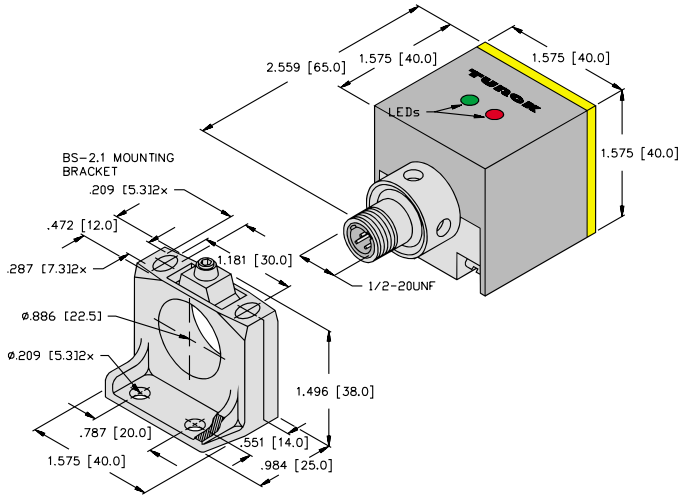


Dimensions

1



2



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CK40

Limit Switch Style Sensors, Plastic Housing
stubby®

2-Wire AC
20-250 VAC
Normally Open (AZ3X2) or Normally Closed (RZ3X2)

minifast® *microfast*®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi15-CK40-AZ3X2-B1131 W/BS 2.1	•	15	40	•		1	A	2		20	M1335091	*minifast*
Ni20-CK40-AZ3X2-B1131 W/BS 2.1		20	40	•		1	A	2		20	M1335291	**Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-CK40-AZ3X2-B3131 W/BS 2.1	•	15	40	•		2	B	2		20	M1335095	*microfast*
Ni20-CK40-AZ3X2-B3131 W/BS 2.1		20	40	•		2	B	2		20	M1335290	**Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-CK40-RZ3X2-B3131 W/BS 2.1	•	15	40		•	2	C	2		20	M1335190	
Ni20-CK40-RZ3X2-B3131 W/BS 2.1		20	40		•	2	C	2		20	M1335390	

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome-Plated Brass
Positioning Bracket:	Die-Cast Zinc
Mounting Bracket:	Die-Cast Zinc

Accessories

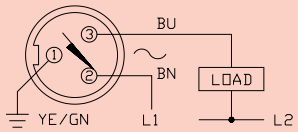
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with sensor.

Specifications

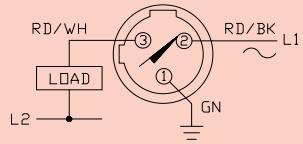
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

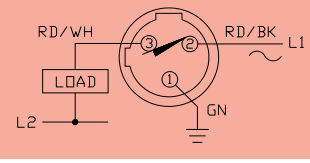
A Normally Open



B Normally Open

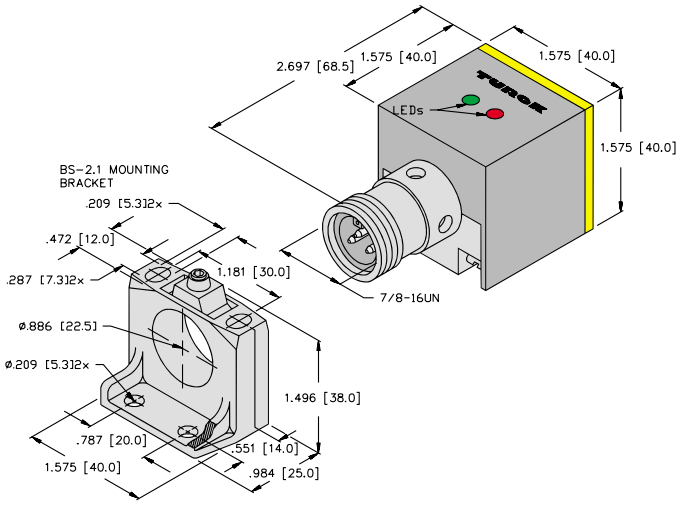


C Normally Closed

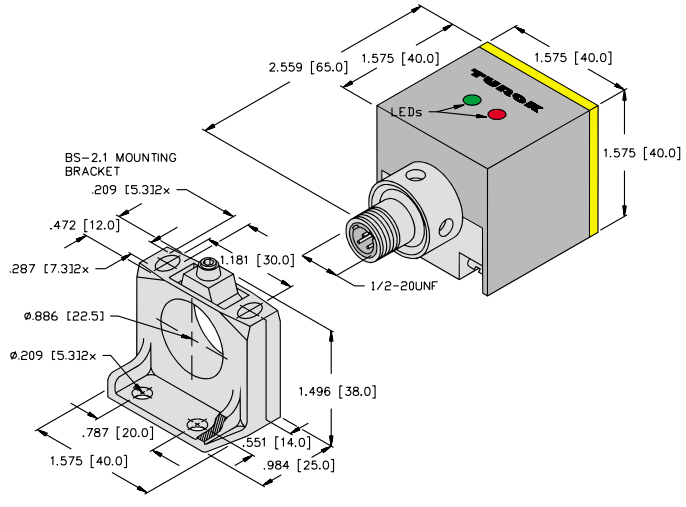


Dimensions

1



2



Note:

Sensing face can be repositioned front to top by loosening captive screws on positioning bracket. Three more side-sensing positions can be achieved by loosening set screw and removing mounting bracket.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

2-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi15-CP40-AD4X	•	15	40	•	•	1	A	1		150	M4477000
Ni20-CP40-AD4X		20	40	•	•	1	A	1		150	M4477100

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

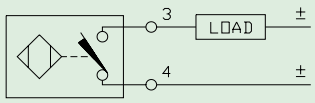
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

A **Normally Open**



Dimensions

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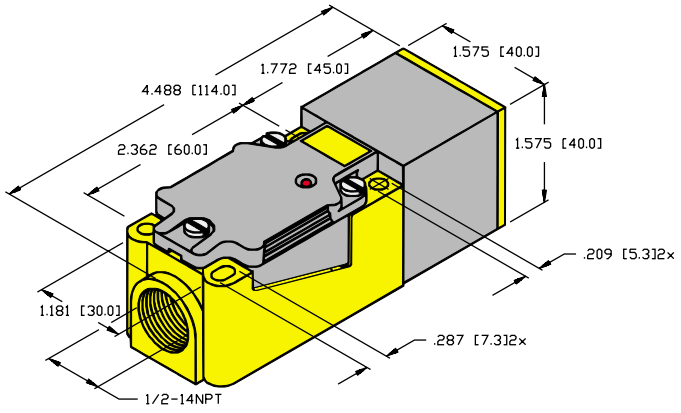


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox® Uprox®

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi15U-CP40-AN6X2	•	15	40	•		1	A	2	•	250	M1623510
Ni25U-CP40-AN6X2		25	40	•		1	A	2	•	250	M1623710
Ni40U-CP40-AN6X2		40	40	•		1	A	2	•	250	M1623610
Bi15U-CP40-AP6X2	•	15	40		•	1	B	2	•	250	M1623500
Ni25U-CP40-AP6X2		25	40		•	1	B	2	•	250	M1623700
Ni40U-CP40-AP6X2		40	40		•	1	B	2	•	250	M1623600

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

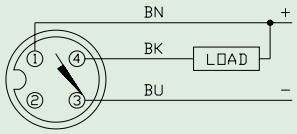
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

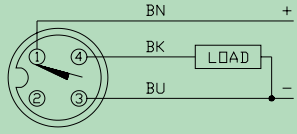
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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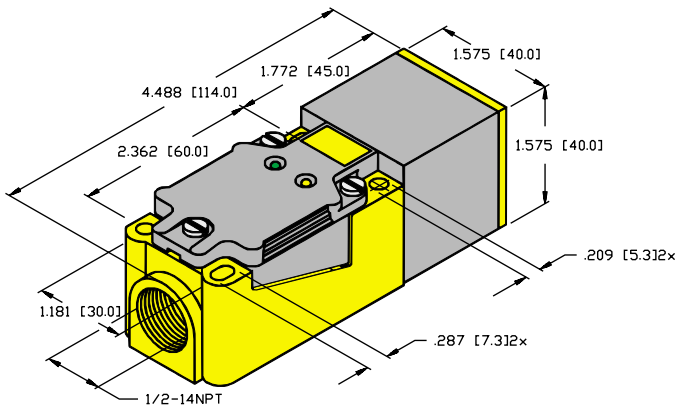


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi15-CP40-AN6X2	•	15	40	•		1	A	2		150	M1623000
Ni20-CP40-AN6X2		20	40	•		1	A	2			M1623100
Bi15-CP40-AP6X2	•	15	40		•	1	B	2		150	M1603000
Ni20-CP40-AP6X2		20	40		•	1	B	2			M1603100

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

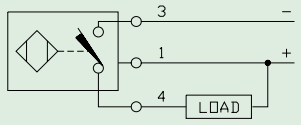
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

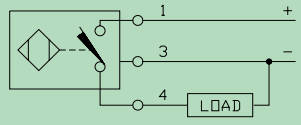
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A **NPN (Sinking)**



B **PNP (Sourcing)**



Rectangular

Dimensions

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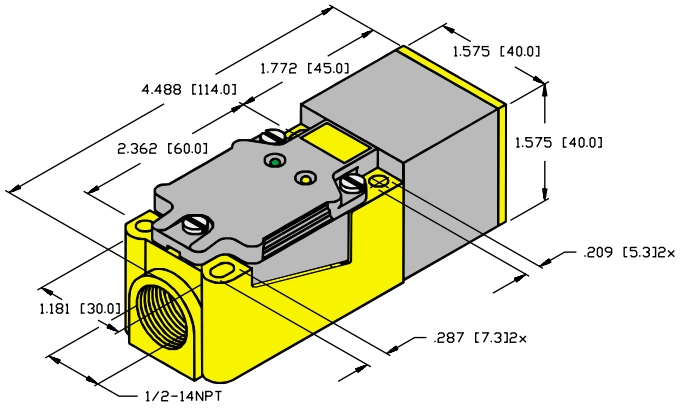


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox® Uprox®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi15U-CP40-VN4X2	•	15	40	•		1	A	2	•	2000	M1540511
Ni40U-CP40-VN4X2		40	40	•			A	2	•	1500	M1540611
Bi15U-CP40-VP4X2	•	15	40		•	1	B	2	•	2000	M1540501
Ni40U-CP40-VP4X2		40	40		•		B	2	•	1500	M1540601

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing:	PBT-GF30-VO Plastic

Accessories

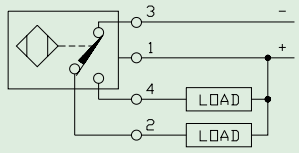
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

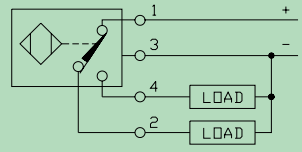
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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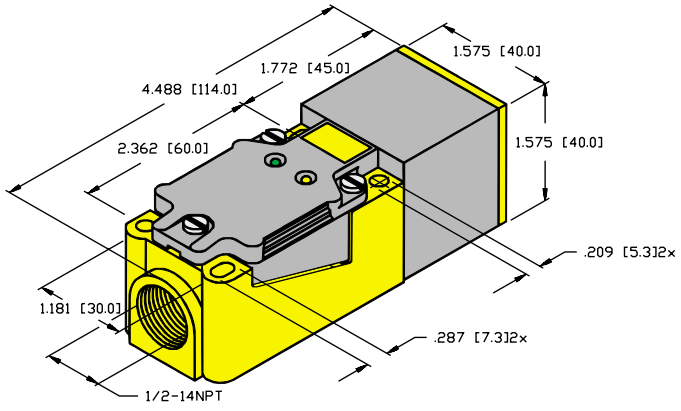


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi15-CP40-VN4X2	•	15	40	•		1	A	2		150	M1525000
Bi20-CP40-VN4X2	•	20	40	•		1	A	2		100	M1579221
Ni20-CP40-VN4X2		20	40	•		1	A	2		150	M1525100
Ni35-CP40-VN4X2		35	40	•		1	A	2		150	M1525400
Bi15-CP40-VP4X2	•	15	40		•	1	B	2		150	M1501000
Bi20-CP40-VP4X2	•	20	40		•	1	B	2		100	M1501200
Ni20-CP40-VP4X2		20	40		•	1	B	2		150	M1501100
Ni35-CP40-VP4X2		35	40		•	1	B	2		150	M1501400

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4.4T-2. See Section H for other styles.

Material

Housing: PBT-GF30-VO Plastic
Sensing: PBT-GF30-VO Plastic

Accessories

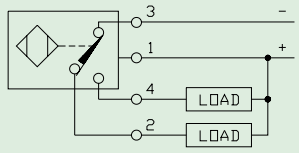
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

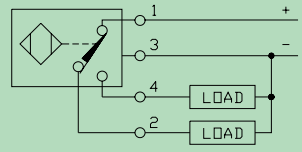
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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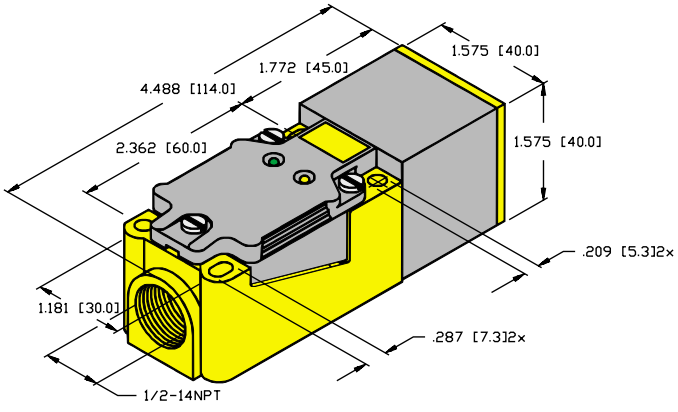


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors with Built-In Time Delay
combiprox®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	ON Delay	OFF Delay	Switching Frequency (Hz)	ID Number
Bi15-CP40-VN4X2/S109	•	15	40	•		1	A	2	•		- - -	M1526900
Ni20-CP40-VN4X2/S109		20	40	•		1	A	2	•		- - -	M1527100
Ni30-CP40-VN4X2/S109		30	40	•		1	A	2	•		- - -	M1526021
Bi15-CP40-VP4X2/S109	•	15	40		•	1	B	2	•		- - -	M1504721
Ni20-CP40-VP4X2/S109		20	40		•	1	B	2	•		- - -	M1504821
Ni30-CP40-VP4X2/S109		30	40		•	1	B	2	•		- - -	M1512521
Bi15-CP40-VN4X2/S110	•	15	40	•		1	A	2		•	- - -	M1527000
Ni20-CP40-VN4X2/S110		20	40	•		1	A	2		•	- - -	M1527300
Ni30-CP40-VN4X2/S110		30	40	•		1	A	2		•	- - -	M1526121
Bi15-CP40-VP4X2/S110	•	15	40		•	1	B	2		•	- - -	M1509821
Ni20-CP40-VP4X2/S110		20	40		•	1	B	2		•	- - -	M1509921
Ni30-CP40-VP4X2/S110		30	40		•	1	B	2		•	- - -	M1510021
Bi15-CP40-VP4X2/S179	•	15	40		•	1	B	2	•	•	- - -	M1508800
Ni20-CP40-VP4X2/S179		20	40		•	1	B	2	•	•	- - -	M1508721
Ni30-CP40-VP4X2/S179		30	40		•	1	B	2	•	•	- - -	M1508600

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4.4T-2. See Section H for other styles.

Material

Housing: PBT-GF30-VO Plastic
Sensing Face: PBT-GF30-VO Plastic

Accessories

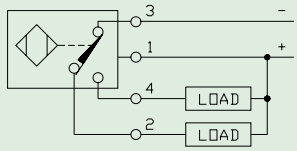
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

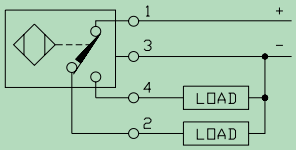
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
On/Off Delay (Adjustable)	.05-20 seconds
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.5-10.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A **NPN (Sinking)**



B **PNP (Sourcing)**



Dimensions

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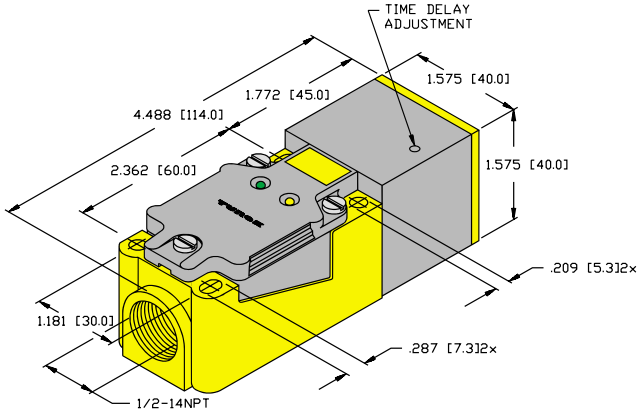
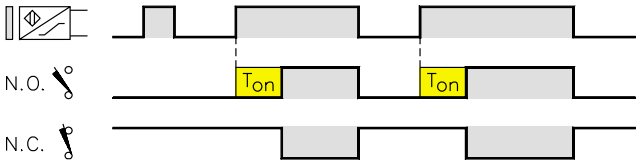
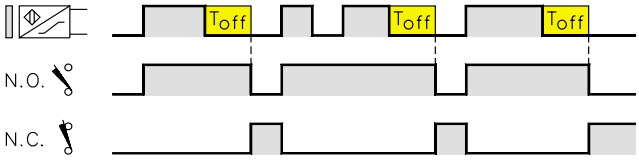


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

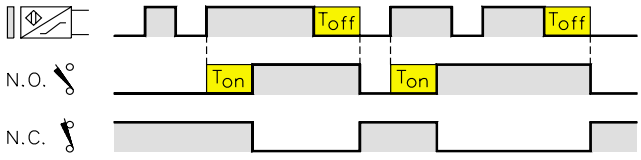
.../S109 (on-delay)



.../S110 (off-delay)



.../S179 (on- and off-delay)



CP40

Limit Switch Style Sensors, Plastic Housing
combiprox® Uprox®

4-Wire DC
10-60 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi15U-CP40-VN4X2/S585	•	15	40	•		1	A	2	•	250	M1540594
Ni40U-CP40-VN4X2/S585		40	40	•			A	2	•	250	M1540694
Bi15U-CP40-VP4X2/S585	•	15	40		•	1	B	2	•	250	M1540595
Ni40U-CP40-VP4X2/S585		40	40		•		B	2	•	250	M1540693

NI
Nonincendive

Hazardous Location Approval:
These sensors are rated Nonincendive for use in Class 1, Division 2, Groups A, B, C and D hazardous locations only.
Installation Provisions:
1) Sensor must be supplied from a power source with commercially rated output of 60 VDC or less.
2) Wiring method must be one of the types listed as suitable for Div. 2 in the National Electrical Code, Article 501-4(b).
3) Sensor not designed for use with rigid metal conduit. Maximum tightening torque is 30 lb-in due to the plastic housing.
4) Power should be disconnected before removing sensor from terminal chamber for sensing head adjustment.
For additional information on acceptable wiring practices, see Chapter 6 of "Understanding Hazardous Area Sensing" (B0120).

Material

Housing:	PBT-GF30-VO Plastic
Sensing:	PBT-GF30-VO Plastic

Accessories

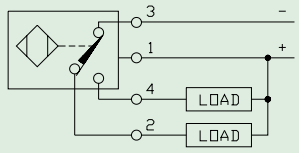
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

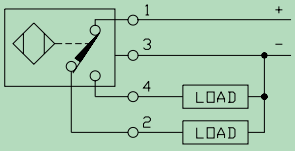
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



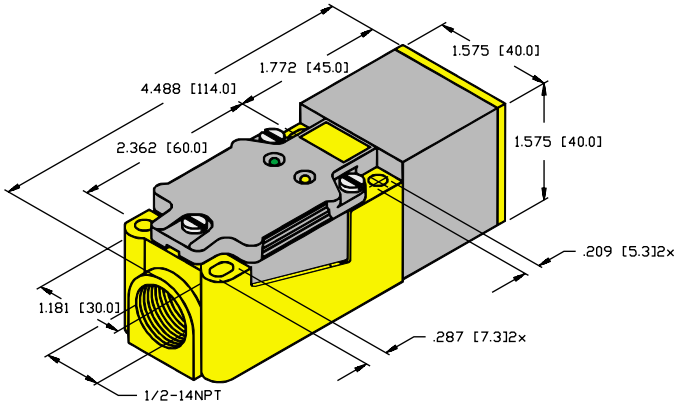
B PNP (Sourcing)



Rectangular

Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox® Uprox®

2-Wire AC

20-250 VAC/DC Short-Circuit and Overload Protected
Connection Programmable (N.O. or N.C.)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number
Bi15-CP40-FDZ30X2	•	15	40	•	•	1	A	2	•	60	M4224100
Bi15-CP40-FDZ30X2/S34 *	•	15	40	•	•	1	A	2	•	30	M4226100
Bi15-CP40-FDZ30X2/S97 **	•	15	40	•	•	1	A	2		60	M4226600
Bi15U-CP40-FDZ30X2	•	15	40	•	•	1	A	2	•	60	M4280601
Ni20-CP40-FDZ30X2		20	40	•	•	1	A	2	•	60	M4224200
Ni35-CP40-FDZ30X2		35	40	•	•	1	A	2	•	60	M4224500
Ni40U-CP40-FDZ30X2		40	40	•	•	1	A	2	•	60	M4280801

* These sensors are weld field immune.
** These sensors will operate at -40°C (-40°F).

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

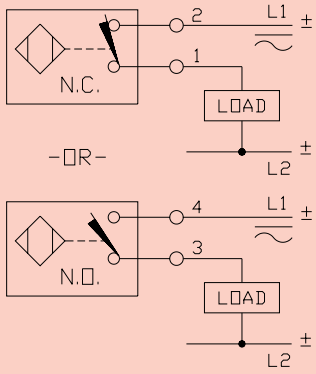
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤30 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

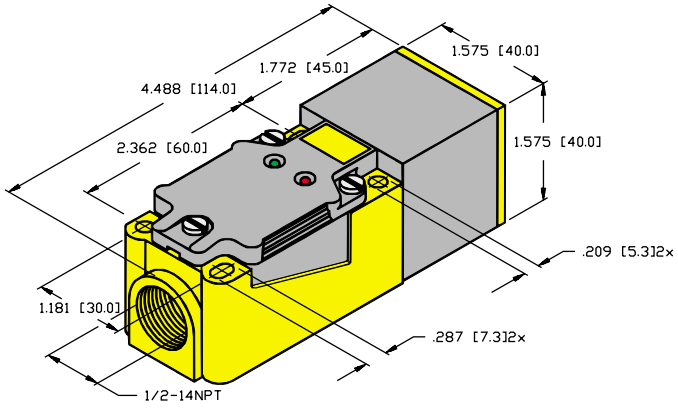
Wiring Diagram

A **Programmable**



Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number
Bi15-CP40-FZ3X2	•	15	40	•	•	1	A	2	•	20	M1341000
Bi15-CP40-FZ3X2/S97 *	•	15	40	•	•	1	A	2		20	M1341010
Ni20-CP40-FZ3X2		20	40	•	•	1	A	2	•	20	M1341100
Ni35-CP40-FZ3X2		35	40	•	•	1	A	2	•	20	M1341300

* These sensors will operate at -40°C (-40°F).

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

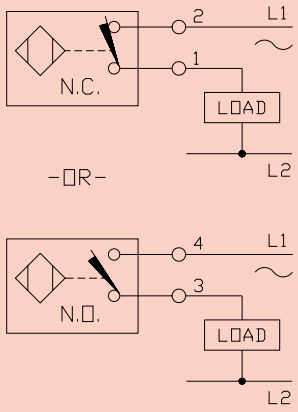
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA (100 mA for S100 style)
Continuous Load Current	≤500 mA (≤100 mA for S100 style)
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

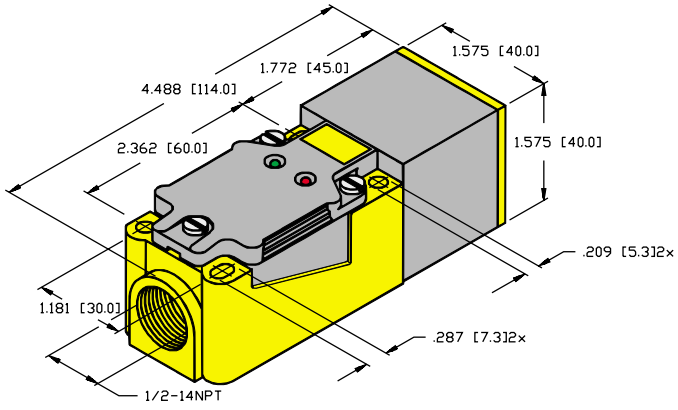
Wiring Diagram

A **Programmable**



Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors with Built-In Time Delay
combiprox®

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	ON Delay /S109	OFF Delay /S110	Switching Frequency (Hz)	ID Number
Bi15-CP40-FZ3X2/S109	•	15	40	•	•	1	A	2	•		- - -	M1373700
Ni20-CP40-FZ3X2/S109		20	40	•	•	1	A	2	•		- - -	M1374500
Ni30-CP40-FZ3X2/S109		30	40	•	•	1	A	2	•		- - -	M1374700
Bi15-CP40-FZ3X2/S110	•	15	40	•	•	1	A	2		•	- - -	M1373500
Ni20-CP40-FZ3X2/S110		20	40	•	•	1	A	2		•	- - -	M1374600
Ni30-CP40-FZ3X2/S110		30	40	•	•	1	A	2		•	- - -	M1374400

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

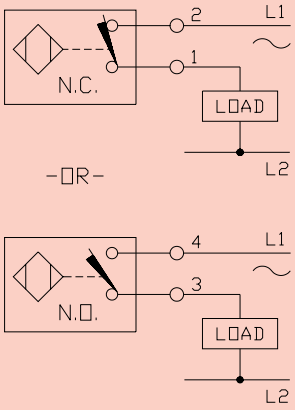
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
On/ Off Delay (Adjustable)	0.05-20 seconds
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

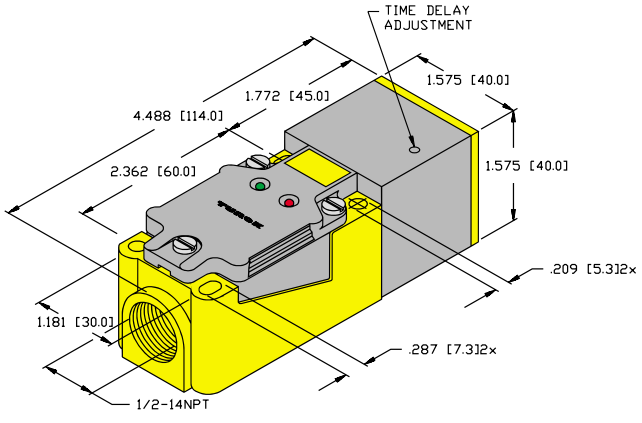
Wiring Diagram

A **Programmable**

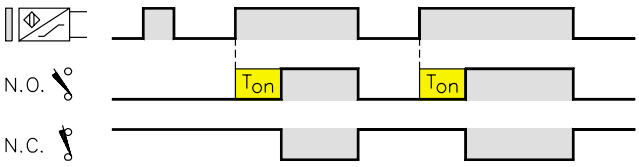


Dimensions

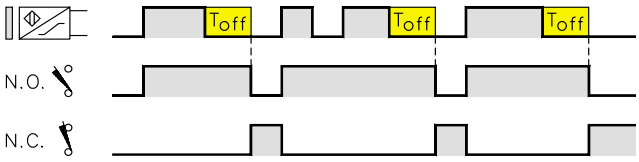
1



.../S109 (on-delay)



.../S110 (off-delay)



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

4-Wire AC\DC
20-250 VAC, 20-320 VDC
Complementary Outputs: One N.O., One N.C. (DPST)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi15-CP40-VDZ3X2	•	15	40	•	•	1	A	2		30*	M4222700

* AC Switching Frequency is 30 Hz
DC Switching Frequency is 100 Hz

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

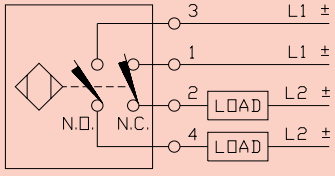
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 350 mA
Continuous Load Current	3 - 350 mA
Off-State (Leakage) Current	≤1.7 mA (110 V), <2 mA (220 V)
Minimum Load Current	≥3.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Time Delay Before Availability	≤60 ms
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Normally Open LED On	Output Energized
Normally Closed LED On	Output Energized

Wiring Diagram

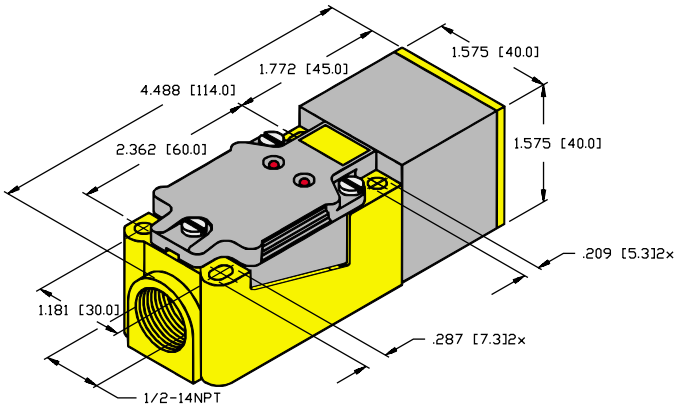
A **Complementary**



Rectangular

Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Limit Switch Style Sensors, Plastic Housing
combiprox®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi15-CP40-Y1X	•	15	40	1	A	1	150		•	≤8	M1012000
Ni20-CP40-Y1X		20	40	1	A	1	150		•	≤8	M1012100

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M with IS label (see Section J). (*)
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.21T-2 (*) See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

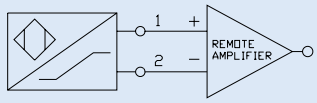
Mounting Bracket LSAP-2 and other accessories can be found in Section J. Remote Amplifier required. Consult " ***multimodul*** or ***Automation Controls***" catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

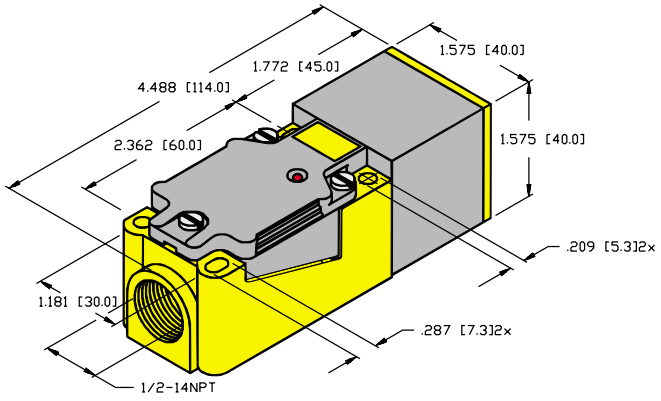
Wiring Diagram

A **NAMUR Output**



Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

Q50

Rectangular Sensors, Metal

Teflon Coated Metal Housing with Quick Disconnect

2-Wire AC/DC *minifast*® *microfast*®
20-250 VAC/DC Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni20-Q50-ADZ30X2-B1131/S34		20	50.8	•		1	A	2	•	30	T4265200	*minifast* **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni20-Q50-ADZ30X2-B3131/S34		20	50.8	•		2	B	2	•	30	T4265290	*microfast* **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Material

Connector:	Chrome Plated Brass
Housing:	Aluminum (Teflon Coated)
Sensing Face:	Teflon

Accessories

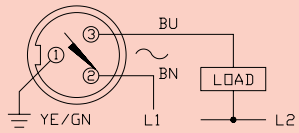
Accessories and mounting devices can be found in Section J.

Specifications

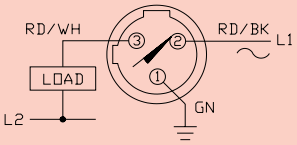
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 400 mA
Trigger Current for Overload Protection	≥700 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤2.4 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤20 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A **Normally Open**

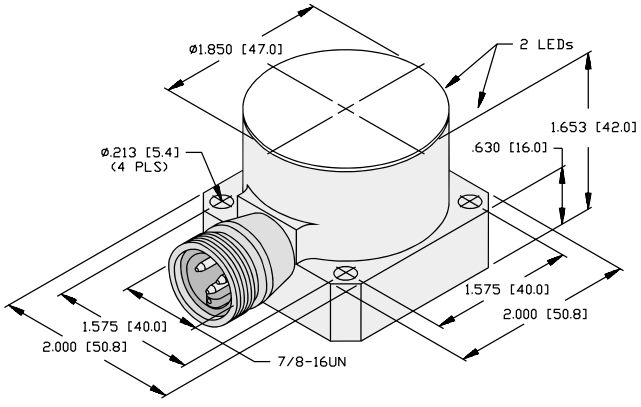


B **Normally Open**



Dimensions

1



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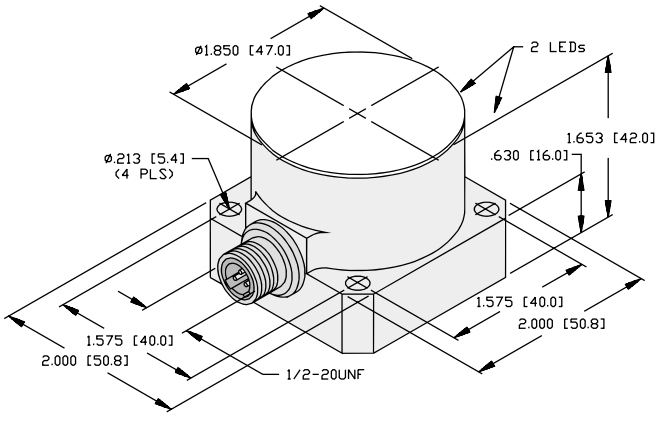


CP80

Long Range Sensors
Modular Construction ***Uprox*** ®

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Ni75U-CP80-AN6X2		75	80	•		1	A	2	•	250	M1623810
Ni75U-CP80-AP6X2		75	80		•	1	B	2	•	250	M1623800

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

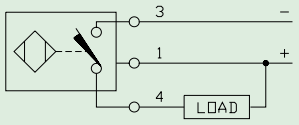
Accessories and mounting devices can be found in Section J.

Specifications

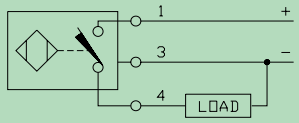
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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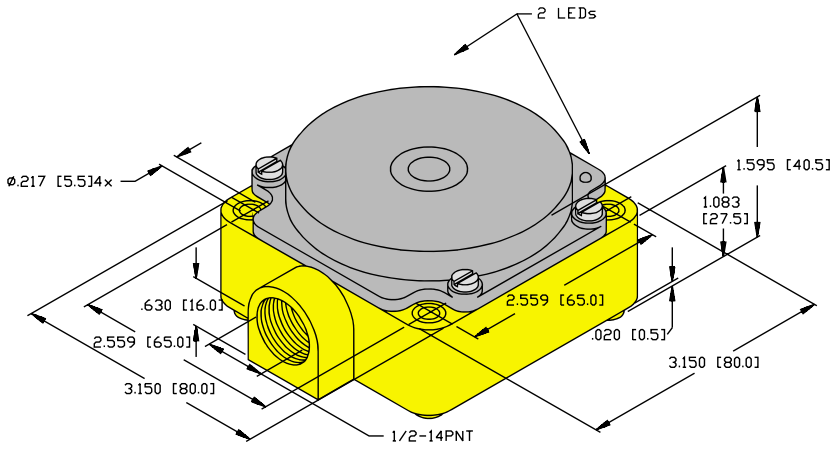


Note: ***Uprox*** base is not interchangeable with standard CP80 bases.

CP80

Long Range Sensors
Modular Construction ***Uprox*** ®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Ni75U-CP80-VN4X2		75	80	•		1	A	2	•	250	M1540811
Ni75U-CP80-VP4X2		75	80		•	1	B	2	•	250	M1540801

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

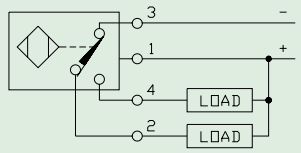
Accessories and mounting devices can be found in Section J.

Specifications

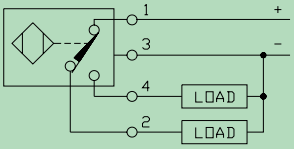
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Leakage (Off-State) Current	≤10 µA
No-Load Current	8.0-13.0 mA
Time Delay Before Availability	≤4-8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

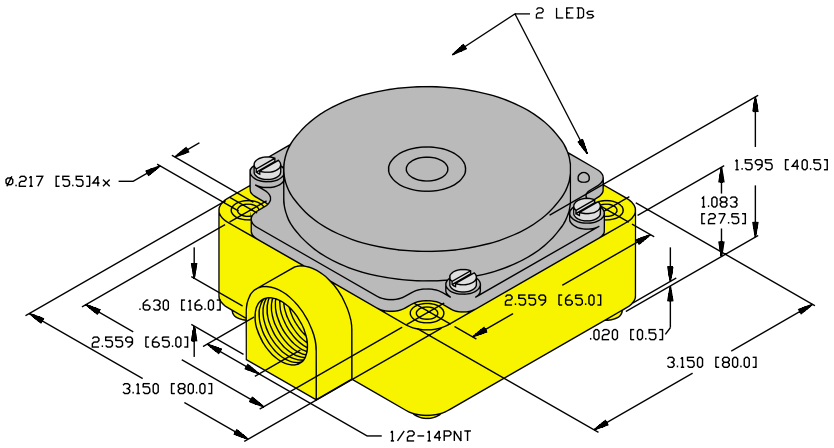


B PNP (Sourcing)



Dimensions

1



Note: ***Uprox*** base is not interchangeable with standard CP80 bases.

CP80

Long Range Sensors
Modular Construction

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi4O-CP80-VN4X2	•	40	80	•		1	A	2		100	M1579800
Ni4O-CP80-VN4X2		40	80	•		1	A	2		100	M1525500
Ni5O-CP80-VN4X2		50	80	•		1	A	2		100	M1525600
Bi4O-CP80-VP4X2	•	40	80		•	1	B	2		100	M1569800
Ni4O-CP80-VP4X2		40	80		•	1	B	2		100	M1501500
Ni5O-CP80-VP4X2		50	80		•	1	B	2		100	M1501600

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

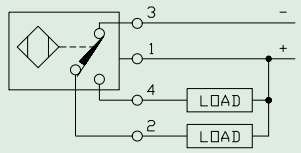
Accessories and mounting devices can be found in Section J.

Specifications

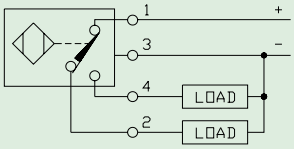
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms (≤80 ms for Bi40 style)
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow))	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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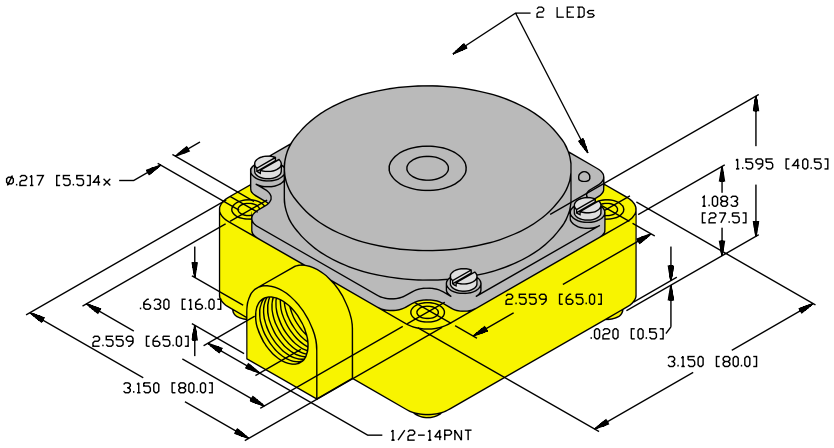


CP80

Long Range Sensors
Modular Construction ***Uprox***®

2-Wire AC/DC
20-250 VAC, 10-300 VDC; Short-Circuit/Overload Protected
Connection Programmable; Normally Open/Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Ni75U-CP80-FDZ30X2		75	80	•	•	1	A	2	•	25	M4280901

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

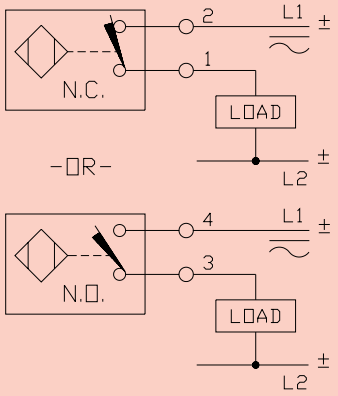
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +70°C (-22°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagram

A **Normally Open**



Dimensions

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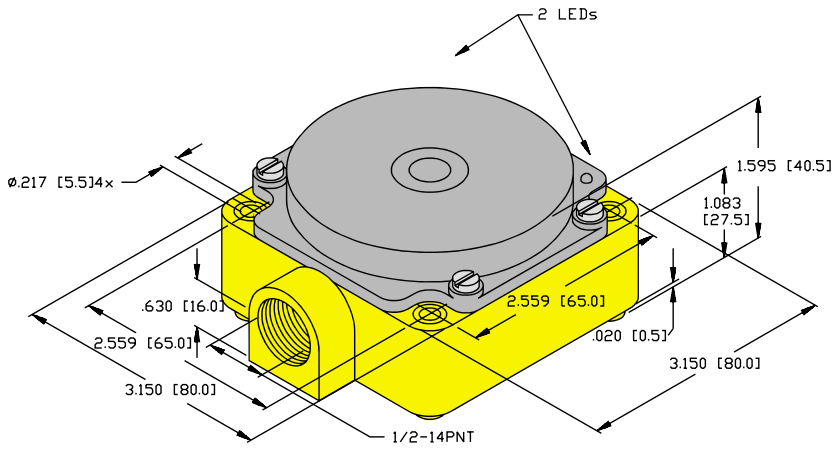


Note: ***Uprox*** base is not interchangeable with standard CP80 bases.

CP80

Long Range Sensors
Modular Construction

2-Wire AC/DC
20-250 VAC/DC Short-Circuit and Overload Protected
Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi40-CP80-FDZ30X2	•	40	80	•	•	1	A	2		60	M4230901
Ni50-CP80-FDZ30X2		50	80	•	•	1	A	2		100	M4232100

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

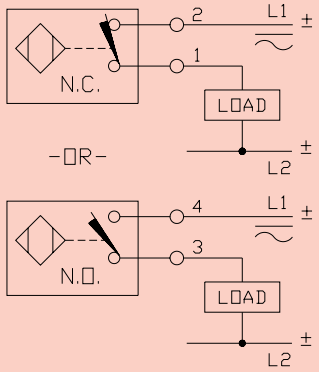
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	CP80 style: ≤30 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagram

A **Programmable**



Dimensions

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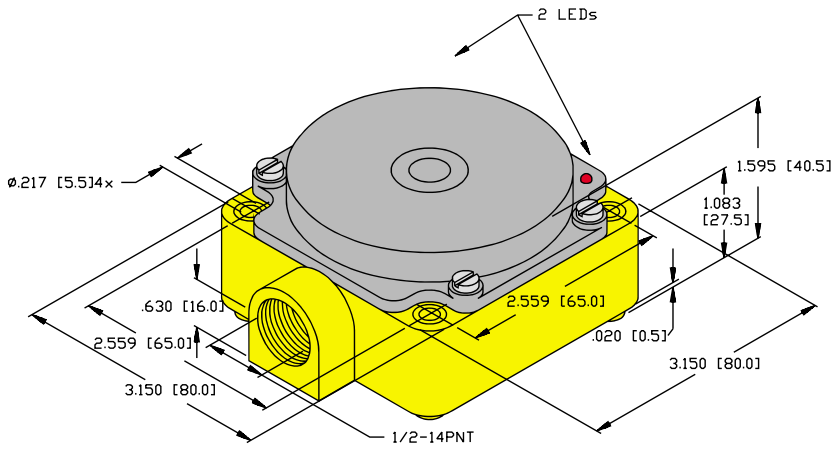


CP80

Long Range Sensors
Modular Construction

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi40-CP80-FZ3X2	•	40	80	•	•	1	A	2		20	M1340401
Ni40-CP80-FZ3X2		40	80	•	•	1	A	2		20	M1341500
Ni50-CP80-FZ3X2		50	80	•	•	1	A	2		20	M1341600

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

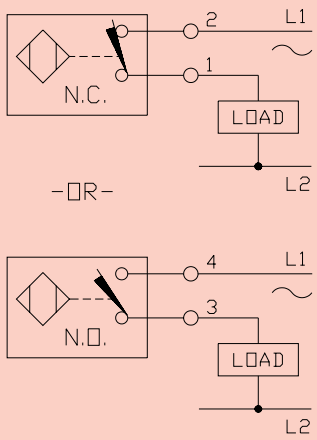
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagram

A **Programmable**



Dimensions

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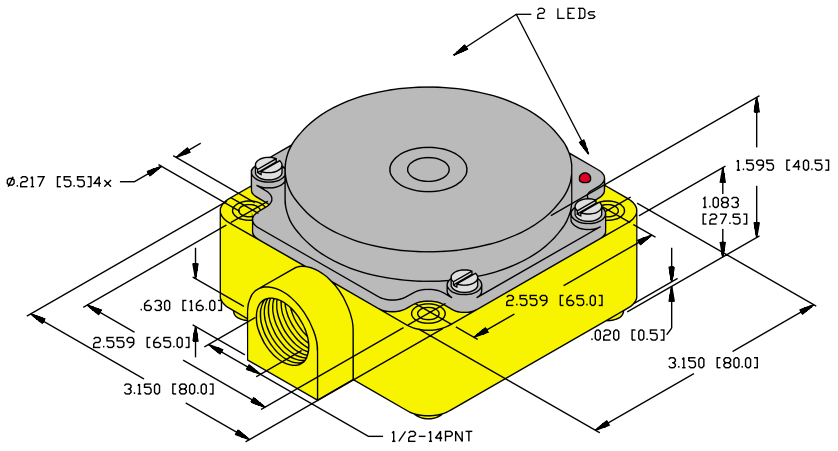


CP80

Long Range Sensors
Modular Construction

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Ni40-CP80-Y0		40	80	1	A	0	100		•	≤8	M1040000
Ni50-CP80-Y0		50	80	1	A	0	100		•	≤8	M1040100

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M with IS label (see Section J). (*)
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.21T-2 (*) See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

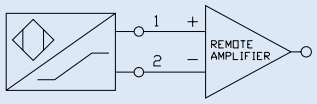
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

A — NAMUR Output



Rectangular

Dimensions

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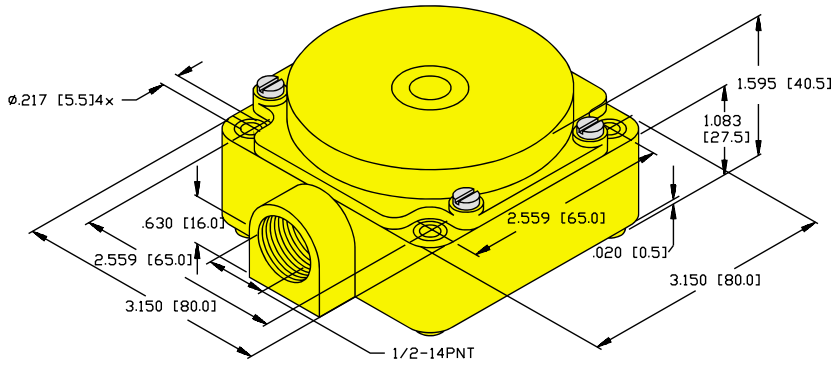


NEW

Q80

Long Range Sensors
1 Piece Housing, ***Uprox***®

3-Wire DC ***eurofast***®
10-30 VDC, Short-Circuit and Overload Protected
PNP (Sourcing); Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Width (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi50U-Q80-AP6X2-H1141	•	50	80	•		1	A	2	•	250	M1608940	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi50U-Q80-AP6X2-H1141/S1006	•	50	80	•		1	A	2	•	250		
Bi50U-Q80-RP6X2-H1143	•				•	1	B	2	•	250	M1608941	

"/S1006" Designates 500 ms OFF Delay.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

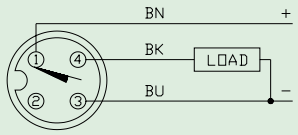
Accessories and mounting devices can be found in Section J.

Specifications

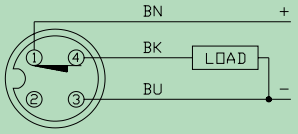
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.10 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	0°C to +50°C (32°F to +122°F)
Operating Temperature (15% temp. drift)	15°C to +65°C (59°F to +149°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A PNP (Normally Open)



B PNP (Normally Closed)



Dimensions

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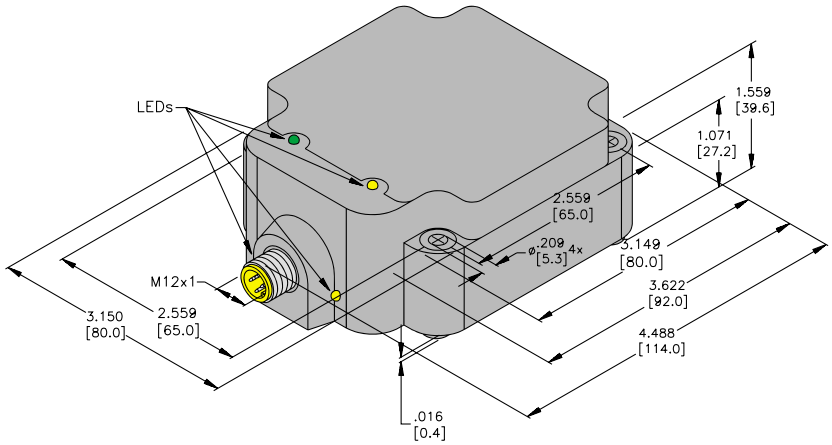


NEW

Q80

Long Range Sensors
1 Piece Housing, ***Uprox*** ®

4-Wire DC **eurofast** ®
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi50U-Q80-VN4X2-H1141	•	50	80	•		1	A	2	•	250	M1562001	**eurofast** **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi50U-Q80-VP4X2-H1141	•	50	80		•	1	B	2	•	250	M1562000	
Bi50U-Q80-VP4X2-H1141/S1006	•	50	80		•	1	B	2	•			

"/S1006" Designates 500 ms OFF Delay.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

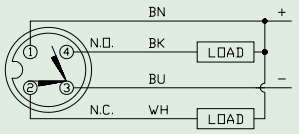
Accessories and mounting devices can be found in Section J.

Specifications

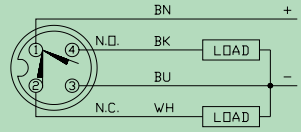
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Leakage (Off-State) Current	<1 µA
No-Load Current	8.0-13.0 mA
Time Delay Before Availability	≤4-8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	0°C to +50°C (32°F to +122°F)
Operating Temperature (15% temp. drift)	15°C to +65°C (59°F to +149°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized
LED Flashing (Yellow)	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

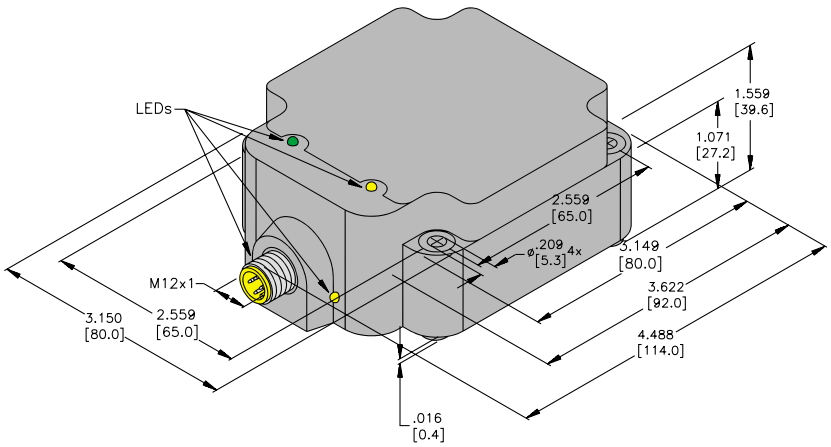


B PNP (Sourcing)



Dimensions

1



K90

Long Range Sensors
Round Construction with Quick Disconnect

4-Wire DC minifast®
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Ni60-K90-VN4X-B2141		60	90	•		1	A	1		100	M1520300	minifast
Ni60-K90-VP4X-B2141		60	90		•	1	B	1		100	M1510300	

Mating Cordsets
RKM 40-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Polyamide Plastic

Accessories

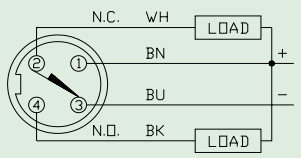
Accessories and mounting devices can be found in Section J.

Specifications

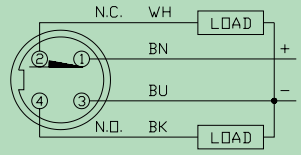
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

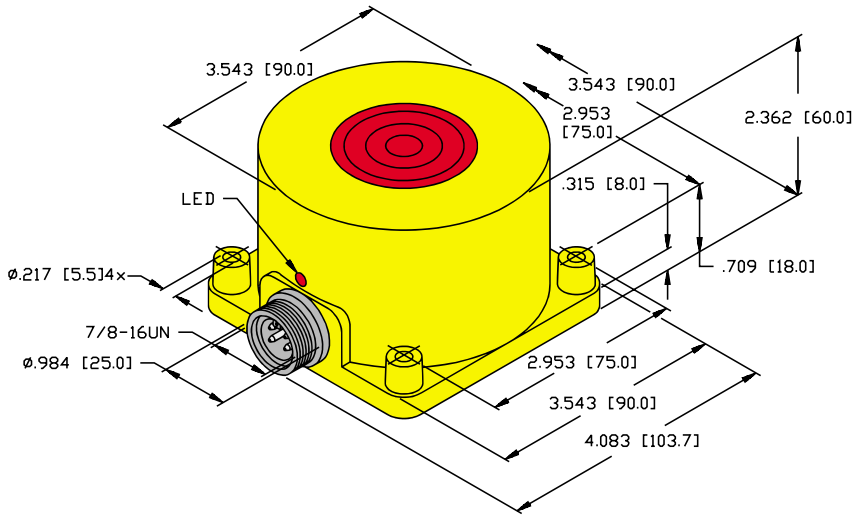


B PNP (Sourcing)



Dimensions

1



K90SR

Long Range Sensors

Round Construction with Integral Terminal Chamber

4-Wire DC

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number
Ni60-K90SR-VN4X2		60	90	•		1	A	2	•	100	M1574000
Ni60-K90SR-VP4X2		60	90		•	1	B	2	•	100	M1564000

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

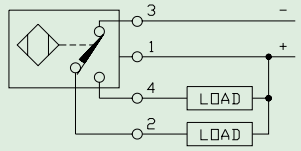
Accessories and mounting devices can be found in Section J.

Specifications

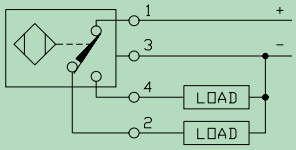
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow))	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

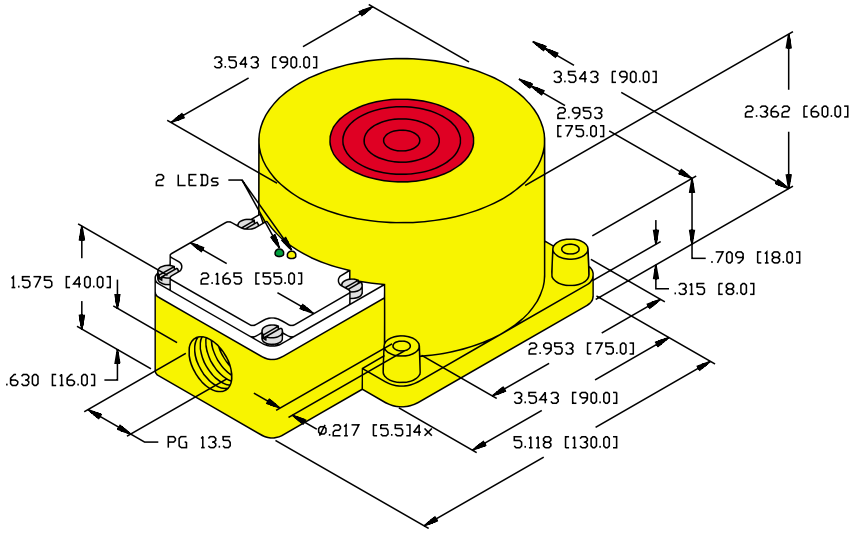


B PNP (Sourcing)



Dimensions

1



K90

Long Range Sensors
Round Construction with Quick Disconnect

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

minifast®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Ni60-K90-AZ3X-B2131		60	90	•		1	A	1		20	M1354200	minifast **Mating Cordsets** RK 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni60-K90-RZ3X-B2131		60	90		•	1	B	1		20	M1353800	

Material

Housing:	PBT-GF30-VO Plastic
Connector:	Polyamide Plastic

Accessories

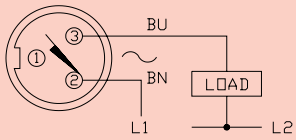
Accessories and mounting devices can be found in Section J.

Specifications

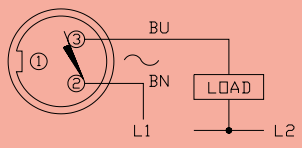
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open

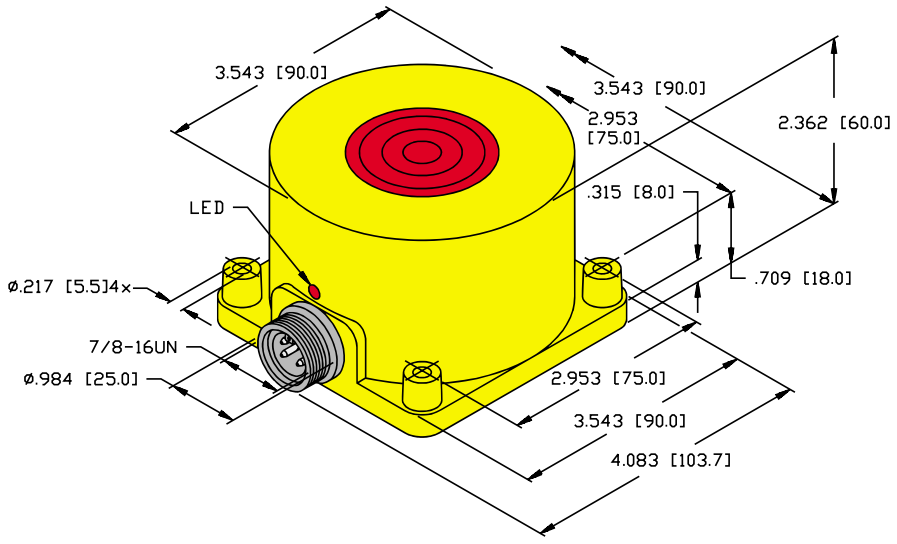


B Normally Closed



Dimensions

1



K90SR

Long Range Sensors

Round Construction with Integral Terminal Chamber

2-Wire AC/DC

20-250 VAC/DC Short-Circuit and Overload Protected

Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Ni60-K90SR-FDZ30X2		60	90	•	•	1	A	2		100	M4240200

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

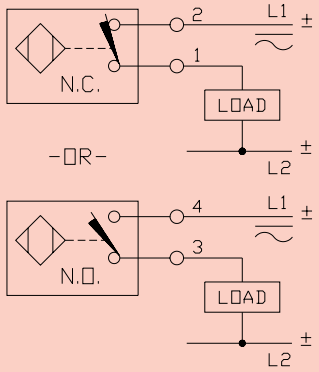
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤20 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

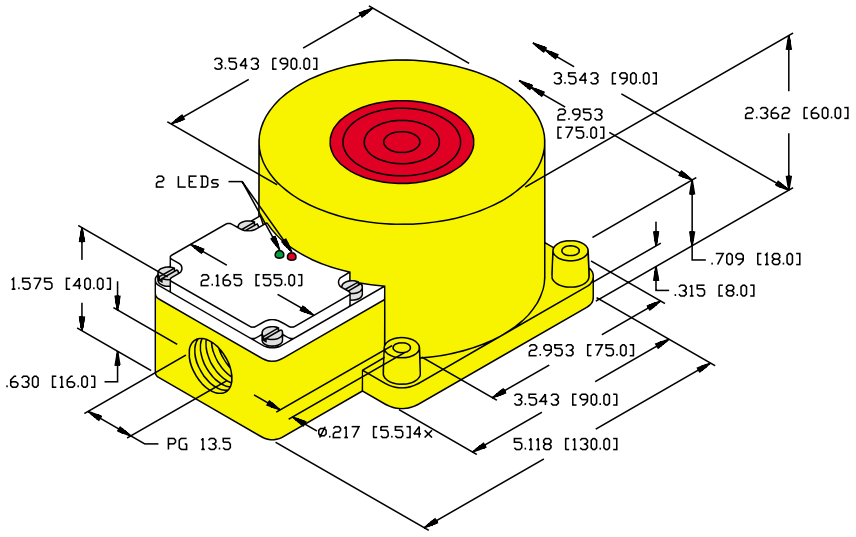
Wiring Diagram

A **Programmable**



Dimensions

1



K90SR

Long Range Sensors

Round Construction with Integral Terminal Chamber

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Ni60-K90SR-FZ3X2		60	90	•	•	1	A	2		20	M1342900

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

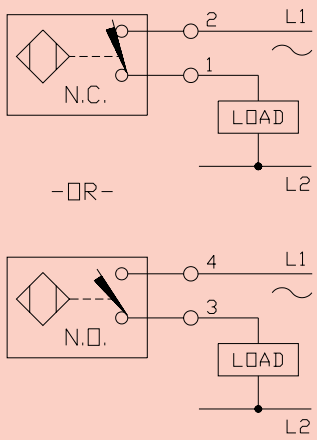
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

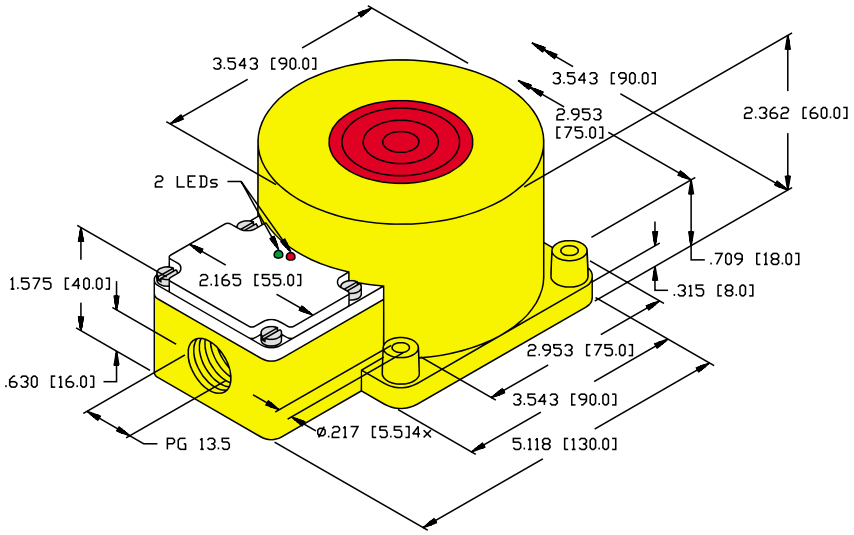
Wiring Diagram

A **Programmable**



Dimensions

1



K90SR

Long Range Sensors

Round Construction with Integral Terminal Chamber

2-Wire DC, Requires Remote Amplifier

5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Ni5O-K9OSR-Y1		50	90	1	A	0	100		•	≤8	M1007400

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M with IS label (see Section J). (*)
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.21T-2 (*) See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

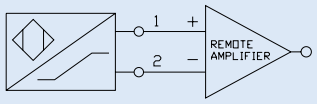
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

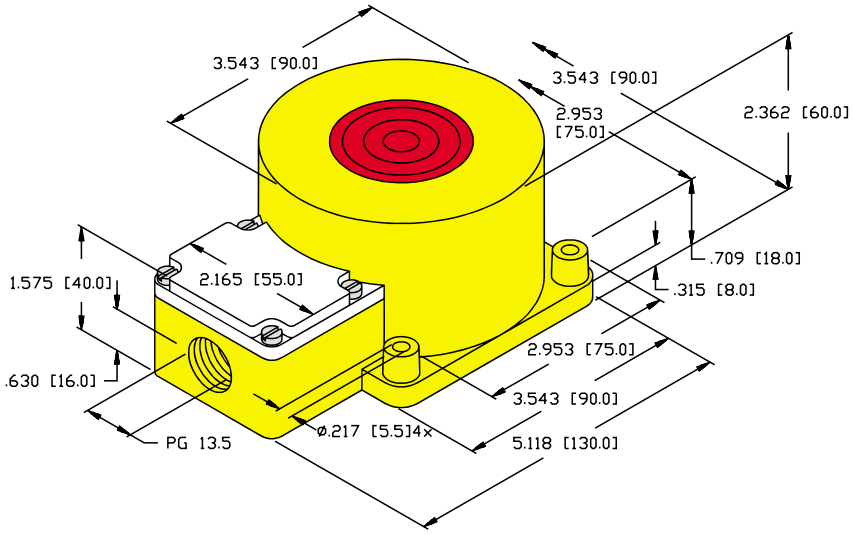
A — NAMUR Output



Rectangular

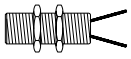
Dimensions

1

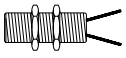


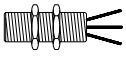
CLICK here for
MAIN SELECTION GUIDE

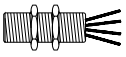
Inductive Barrel Sensor Selection Guide

2-Wire DC			
Connection Type	**Barrel Diameter**	**Standard Range**	**Extended Range**
		**Metal**	
	8 12 18 30	C17 - C18 C19 - C22 C19 - C22 C19 - C22	C19 - C20 C19 - C20 C19 - C20
		**Plastic**	
M12x1 (*eurofast*®) 	8 12 18 30	C23 - C24 C23 - C24	
		**Metal**	
	8 12 18 30	C25 - C26 C27 - C30 C27 - C30 C27 - C30	C27 - C28 C27 - C28 C27 - C28
		**Plastic**	
Potted Cable 	8 12 18 30	C31 - C32 C31 - C32 C31 - C32	

Symbol Key

 2-Wire Sensor with Potted-In Cable

 3-Wire Sensor with Potted-In Cable

 4-Wire Sensor with Potted-In Cable

 Sensor with Terminal Chamber

 Sensor with 4-Pin ***eurofast*** Connector

 Sensor with 3-Pin ***minifast*** Connector

 Sensor with 4-Pin ***minifast*** Connector

 Sensor with 3-Pin ***microfast*** Connector

 Sensor with 3-Pin ***picofast*** Connector

See Page C6 for Descriptive Selection Guide.

Note:

All dimensions in this section are shown as: inches [mm]

Output Color Code		
DC Output *Self-Contained*	**AC Output** *Self-Contained*	**NAMUR Output** *Requires Remote Amplifier*

Inductive Barrel Sensor Selection Guide

3-Wire DC					
Connection Type	**Barrel Diameter (mm)**	***Uprox*®**	**Standard Range**	**Extended Range**	**TTL Compatible**
 M8x1 (*picofast*®)	4 5 6.5 8 12	C37 - C38	C33 - C34 C35 - C36 C33 - C34 C33 - C36 C41 - C42	C35 - C36	
  M12x1 (*eurofast*®)	**Metal**				
	8 12 18 30	C37 - C38 C43 - C48 C43 - C48 C43 - C48	C39 - C40 C41 - C42, C49 - C50 C49 - C50 C49 - C50	C51 - C54 C51 - C54 C51 - C54	C101 - C102
	Plastic				
	12 18 30	C59-C60 C59-C60 C59-C60	C61-C62 C61-C62 C61-C62		
  7/8-16UN (*minifast*®)	**Metal**				
	18 30		C55 - C58 C55 - C58		
	Plastic				
	18 30		C63 - C64 C63 - C64		
  Potted Cable	**Metal**				
	4 5 6.5 8 12 18 30 47	 C69 - C70 C73 - C74 C73 - C74 C73 - C74	C65 - C68 C71 - C72 C65 - C68 C65 - C68, C71 - C72 C77 - C80, C83 - C84 C77 - C80, C83 - C84 C77 - C80, C83 - C84 C81 - C82	 C67 - C68 C71 - C72 C75 - C76, C83 - C84 C75 - C76, C83 - C84 C75 - C76, C83 - C84	 C103 - C104 C103 - C106 C107 - C108 C107 - C108 C107 - C108
	Plastic				
	11 12 18 20 30 40	 C87 - C88 C87 - C88 C87 - C88 	C85 - C86 C89 - C90 C89 - C92 C85 - C86 C89 - C90 C85 - C86		 C109 - C110 C109 - C110 C109 - C110

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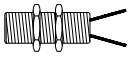
http://www.turck.com

Inductive Barrel Sensor Selection Guide

3 and 4-Wire DC Terminal Chamber				
Connection Type	**Barrel Diameter (mm)**	***Uprox*®**	**Standard Range**	**4-Wire**
		**Metal**		
	12 18 30 47	C93 - C94 C93 - C94 C93 - C94	C95 - C96 C95 - C96 C95 - C96	 C127 - C128
		**Plastic**		
	12 18 20 30 40	C97 - C98 C97 - C98 C97 - C98 	C99 - C100 C99 - C100 C99 - C100 C99 - C100 	 C129 - C130 C129 - C130
Terminal Chamber				
4-Wire DC				
Connection Type	**Barrel Diameter (mm)**	**Standard Range**	**Extended Range**	**Extended Length**
	12 18 30	C111 - C112 C113 - C114 C113 - C114	C111 - C112 C113 - C114 C113 - C114	C111 - C112 C115 - C116 C115 - C116
M12x1 (*eurofast*®)				
		**Metal**		
	30 47	C117 - C118 C117 - C118		
		**Plastic**		
	40	C119 - C120		
7/8-16UN (*minifast*®)				
		**Metal**		
	12 18 30	C121 - C122 C123 - C124 C123 - C124	C121 - C122 C123 - C124 C123 - C124	C121 - C122 C123 - C124 C123 - C124
		**Plastic**		
	18 30	C125 - C126 C125 - C126		
Potted-In Cable				

Inductive Barrel Sensor Selection Guide

2-Wire AC				
Connection Type	**Barrel Diameter (mm)**	***Uprox*®**	**Standard Range**	**Extended Range**
 1/2-20UNF (*microfast*®)	12 18 30	C135 - C136 C135 - C136 C135 - C136	C131 - C134 C137 - C140 C137 - C140	C131 - C132 C137 - C138 C137 - C138
	**Metal**			
	18 30 47	C141 - C142 C141 - C142	C143 - C148 C143 - C148 C145 - C146	C143 - C144
 7/8-16UN (*minifast*®)	**Plastic**			
	18 30 40		C149 - C150 C149 - C150 C151 - C152	
	**Metal**			
	12 18 30 47		C153 - C156 C155 - C162 C155 - C162 C159 - C160	C155 - C156 C155 - C156 C155 - C156
 Potted-In Cable 	**Plastic**			
	12 18 20 30 40		C163 - C164 C165 - C168 C169 - C170 C165 - C166 C169 - C170	
	**Metal**			
	18 30 47		C171 - C172 C171 - C172 C173 - C174	
 Terminal Chamber	**Plastic**			
	18 20 30 40		C175 - C176 C175 - C176 C175 - C178 C177 - C178	C177 - C178

Inductive Barrel Sensor Selection Guide

NAMUR Sensors				
Connection Type	**Barrel Diameter (mm)**	**Smooth**	**Threaded**	**Side Sensing**
 M8x1 (*picofast*®)	4 5 6.5 8	C179 - C180 C179 - C180	 C181 - C182 C181 - C182	
	**Metal**			
	8 12 18 30		C181 - C182 C183 - C184 C183 - C184 C183 - C184	
	**Plastic**			
M12x1 (*eurofast*®)	12 18		C185 - C186 C185 - C186	
	**Metal**			
	4 5 6.5 8 12 18 30 47	C189 - C190 C189 - C190 C189 - C190	 C191 - C192 C191 - C192 C193 - C194 C193 - C194 C193 - C194 C193 - C194	C187 - C188 C187 - C188 C187 - C188
	**Plastic**			
Potted-In Cable 	11 12 18 20 30 40	C197 - C198 C197 - C198 C197 - C198	 C195 - C196 C195 - C196 C195 - C196	
	Plastic			
 Terminal Chamber	12 18		C199 - C200 C199 - C200	

CLICK HERE for
MAIN SELECTION GUIDE

TURCK

Inductive Barrel Sensor Selection Guide

TURCK
Inductive Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

Inductive Sensor Part Number Key

B	i	10	U	-		G	T	30		-	A	DZ	30	X2	Wiring Options	Special Option Codes

Mounting

B = Embeddable (Shielded)
N = Nonembeddable (Nonshielded)
S = Slot Sensor

Principle of Operation

i = Inductive

Rated Operating Distance (mm)

Sensing Characteristics

F = Front Sensing on Q26 and Q34 sensors
NF = Nonferrous Only
R = Ring Sensor
S = Side Sensing on Q26 sensors
T = Side Sensing on Q34 sensors
U = ***Uprox***® sensor

Housing Material Modifier

E = Stainless Steel

Housing Style

Barrel - Metal
G = Full Threading, Generally Chrome Plated Brass
H = Smooth, Chrome Plated Brass or Stainless Steel
M = Partial Threading, Chrome Plated Brass

Barrel - Plastic
K = Smooth
P = Full Threading
S = Partial Threading

Rectangular
Q = Metal or Plastic, Various Rectangular Styles

Limit Switch
CA = ***stubby***®, Short Aluminum Housing, Connector
CK = ***stubby***®, Short Plastic Housing, Connector
CP = ***combiprox***®, Plastic Housing, Terminal Chamber Base with Removable Sensor

Slot
K = Slot Sensor, Plastic Housing

Ring
32SR = Large Ring Sensor, Plastic Housing, Terminal Chamber
Q = Small Rectangular Plastic Housing, Static Output
W = Small Ring Sensor, Plastic Housing, Connector

Primary Barrel Modifier

T = Teflon Coated
S = Side Sensing

Secondary Barrel Modifier

E = Extended Barrel Length
H = Thermoset Plastic Front face
K = Short Length
M = Medium Length
SK = Right-Angle Terminal Chamber
SR = Straight Terminal Chamber
T = Barb Fitting at Cable Entry

Housing Diameter (mm)

Output Function

A = Normally Open (N.O.)
DA = Dynamic Output (Ring Sensor), Normally Open
F = Connection-Programmable (N.O. or N.C.)
R = Normally Closed (N.C.)
U = Jumper-Programmable (N.O. or N.C.)
V = Complementary Outputs; One N.O., One N.C.
Y0 = NAMUR Output, Requires Switching Amplifier
Y1 = NAMUR Output, Requires Switching Amplifier

Output

D = 2-Wire DC (Transistor Output)
DZ = 2-Wire AC/DC (MOS FET Output)
LIU = Linear Analog Output (Current and Voltage)
N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)
Z = 2-Wire AC (SCR Output)

Voltage Range

AC
3 = 20-250 VAC
30 = 20-250 VAC, Latched SCP, High Off-State Current
31 = 20-250 VAC, Plastic Barrel, Low Load Current
32 = 20-250 VAC, Latched SCP, Low Load Current
33 = 35-250 VAC, Grounded Metal Barrel, Low Load Current
40 = 20-140 VAC, Latched SCP, High Off-State Current

DC
4 = 10-65 VDC, Polarity Protected, Pulsed SCP
6 = 10-30 VDC, Polarity Protected, Pulsed SCP
7 = 10-30 VDC, TTL Compatible
LIU = 15-30 VDC

Number of LEDs

Examples:
Blank = No LEDs
X2 = 2 LEDs
X4 = 4 Position LED

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Wiring Options

A) Connectorized Sensor

Bi 2-M12-AN6X - H1 1 4 1

Connector Family

B1 = ***minifast***®, 7/8-16UN, Metal, Male
B2 = ***minifast***®, 7/8-16UN, Plastic, Male
B3 = ***microfast***®, 1/2-20UNF, Male
H1 = ***eurofast***®, M12x1, Male
V1 = ***picofast***®, Snap and M8x1, Male (Q08: Snap Only)
V2 = ***picofast***®, Snap and M8x1, Male (Q08 Only)

Connector / Sensor Transition

1 = Straight
3 = Straight with Adapter
4 = Right-Angle with Adapter

Number of Pins

Factory Code

Examples:
1 = Standard
3 = N.C. DC Output on Pin 4

B) Potted Cable

Bi 2-G12-AN6X 7M

Cable Length

Blank = 2 meter cable
7M = 7 meter cable

C) Potted Cable with Molded Connector

Bi 2-G12-YOX - 0.2M - RS 4.21T

Length of Cable (m)

Examples:
0.2 = 0.2 meters
2 = 2 meters

Standard Cordset Connector

AC: RSM 30 = ***minifast***, 3-conductor
SB 3T = ***microfast***, 3-conductor
DC: RS 4T = ***eurofast***, 3-conductor
RS 4.2T = ***eurofast***, 2 conductor
RS 4.21T = ***eurofast***, NAMUR, 2 conductor
RS 4.4T = ***eurofast***, 4-conductor
RSM 40 = ***minifast***, 4-conductor
PSG 3 = ***picofast***, 3-conductor

Special Option Codes

Option Codes for Special or Custom Built Sensors

Bi 2-S12-AN7X /S100 or **Bi10R-W30-DAN6X-H1141 /F2**

Example:
/S34 = Weld Field Immune
/S97 = -40°C (-40°F) Operating Temperature
/S100 = +100°C (+212°F) Operating Temperature

Example:
/F2 = Alternate Oscillator Frequency

Notes:

Mounting

TURCK inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number (See page C7). Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever possible, especially if metal filings and chips are present.

Maximum Locknut Torque Specifications

The locknut torque should be considered for all threaded sensors to prevent the housing from being overstressed. The values below pertain to the locknut provided with each sensor. Liquid thread sealants of an anaerobic base, such as Loctite, are recommended if strong vibrations are likely.

Caution: Sensor barrels are typically brass. Consider break torque when selecting grade of thread sealant.

Barrel Size	Metal Barrel	Plastic Barrel
5 mm	5 Nm (3.7 ft-lb)	- - - -
8 mm	10 Nm (7.4 ft-lb)	- - - -
12 mm	15 Nm (11 ft-lb)	1 Nm (0.7 ft-lb)
18 mm	25 Nm (18 ft-lb)	2 Nm (1.4 ft-lb)
30 mm	90 Nm (66 ft-lb)	5 Nm (3.7 ft-lb)
47 mm	90 Nm (66 ft-lb)	- - - -

Drill Hole Sizes for Metric Threads

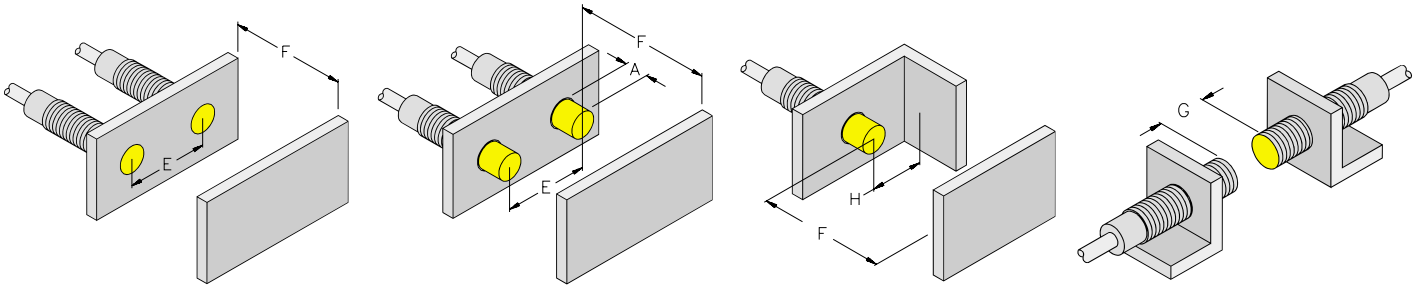
Thread Size	Pitch	Clr (mm)	Tap (mm)	Clr (in)	Tap (in)
M5 x 0.5	0.5	5.0	4.133	13/64	5/32
M8 x 1	1.0	8.0	6.27	21/64	1/4
M12 x 1	1.0	12.0	10.27	31/64	13/32
M18 x 1	1.0	18.0	16.27	23/32	41/64
M30 x 1.5	1.5	30.0	27.44	1-3/16	1-5/64
PG 9	1.41	15.2	12.76	5/8	1/2
PG 13.5	1.41	20.4	17.96	13/16	23/32
PG 36	1.59	47.0	44.24	1-7/8	1-47/64

$$\text{Tap Drill Size in Inches} = \frac{[\text{Diameter in mm} - (\text{Pitch in mm} / 0.577)]}{25.4}$$

Refer to Section J for plug taps.

Ferrite Core Mounting Considerations

Barrel Style



Rated Operating Distance (mm)	Barrel Diameter (mm)	A (mm)	E (mm)	F (mm)	G (mm)	H (mm)
Bi0.8-..	4	≥0	≥8	≥2.4	≥4.8	≥2.8
Bi0.8-..	5	≥0	≥10	≥2.4	≥4.8	≥3.3
Bi 1-..	8	≥0	≥16	≥3	≥6	≥5
Bi1.5-..	6.5	≥0	≥13	≥4.5	≥9	≥4.75
Bi1.5-..	8	≥0	≥16	≥4.5	≥9	≥5.5
Bi 2-..	8	≥0	≥16	≥6	≥12	≥6
Bi 2-..	11	≥0	≥22	≥6	≥12	≥7.5
Bi 2-..	12	≥0	≥24	≥6	≥12	≥8
Ni 2-..	8	≥4	≥24	≥6	≥12	≥12
Bi 3-..	12	≥0	≥24	≥9	≥18	
Ni 3-..	8	≥6	≥24	≥9	≥18	≥12
Bi 4-..	12	≥0	≥24	≥12	≥24	≥10
Ni 4-..	8	≥8	≥24	≥12	≥24	≥12
Ni 4-..	12	≥8	≥36	≥12	≥24	≥18
Bi 5-..	18	≥0	≥36	≥15	≥30	≥14
Ni 5-..	11	≥10	≥33	≥15	≥30	≥16.5
Ni 5-..	12	≥10	≥36	≥15	≥30	≥18
Bi 7-..	18	≥0	≥36	≥21	≥42	
Bi 8-..	18	≥2	≥36	≥24	≥48	≥17
Ni 8-..	12	≥16	≥36	≥24	≥48	≥18
Ni 8-..	18	≥16	≥54	≥24	≥48	≥27
Bi10-..	30	≥0	≥60	≥30	≥60	≥25
Ni10-..	18	≥20	≥54	≥30	≥60	≥27
Ni10-..	20	≥20	≥60	≥30	≥60	≥30
Bi12-..	30	≥0	≥60	≥36	≥72	
Ni14-..	18	≥20	≥54	≥42	≥72	≥27
Bi15-..	30	≥0	≥60	≥45	≥90	≥30
Ni15-..	30	≥30	≥90	≥45	≥90	≥45
Bi20-..	47	≥0	≥94	≥45	≥120	≥43.5
Ni20-..	30	≥20	≥90	≥60	≥120	≥45
Ni20-..	40	≥40	≥120	≥60	≥120	≥60
Bi25-..	47	≥0	≥94	≥75	≥150	≥48.5
Ni25-..	47	≥50	≥141	≥75	≥150	≥70.5
Ni30-..	40	≥60	≥120	≥90	≥180	≥60

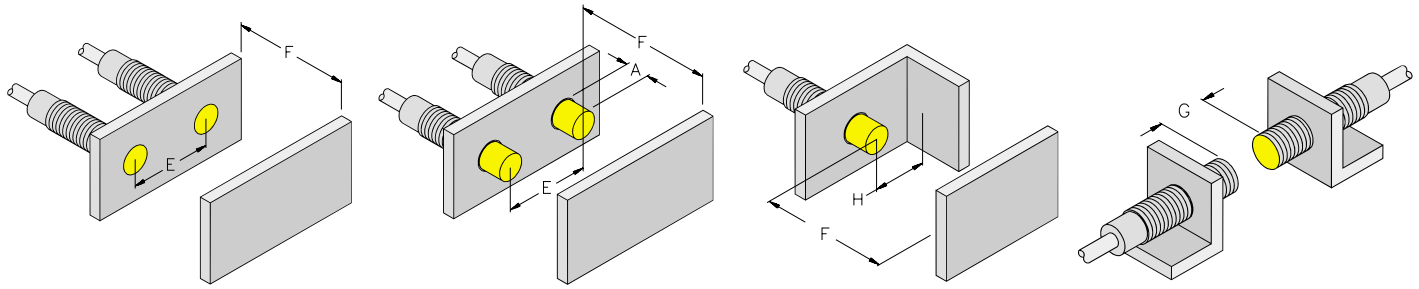
Barrel Mounting Formulas for Ferrite Core and *Uprox*

Embeddable "Bi" (Shielded)	$A \geq 0$	$E \geq 2 \times$ Barrel Diameter	$F \geq 3 \times$ Rated Operating Distance	$G \geq 6 \times$ Rated Operating Distance	$H \geq$ Rated Operating Distance $+ 0.5 \times$ Barrel Diameter
Nonembeddable "Ni" (Nonshielded)	$A \geq 2 \times S_n$	$E \geq 3 \times$ Barrel Diameter			$H \geq 1.5 \times$ Barrel Diameter

Uprox® Mounting Considerations

The performance of a sensor can be influenced by surrounding metal and nearby sensors. This is especially critical for *Uprox* sensors because of their increased sensing ranges and sensitivity to all metal types.
To ensure proper sensor operation, please refer to the following guidelines when installing *Uprox*.

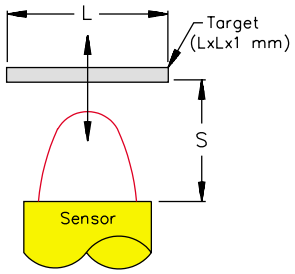
Barrel Style *Uprox*®



Part Numbers	A (mm)	E (mm)	F (mm)	G (mm)	H (mm)
Bi1.5U-EG08-..	≥0	≥16	≥4.5	≥9	≥12
Ni 4U-EG08-..	≥8	≥24	≥12	≥24	≥12
Bi 2U-M12-..	≥0	≥24	≥6	≥12	≥18
Bi 3U-M12-..	≥0	≥24	≥6	≥12	≥18
Ni 8U-M12-..	≥12	≥36	≥24	≥48	≥18
Bi 5U-M18-..	≥0	≥36	≥15	≥30	≥27
Ni12U-M18-..	≥18	≥54	≥36	≥72	≥27
Bi10U-G30-..	≥0	≥60	≥30	≥60	≥45
Ni20U-G30-..	≥20	≥90	≥60	≥120	≥45

Sensing Range Diagrams

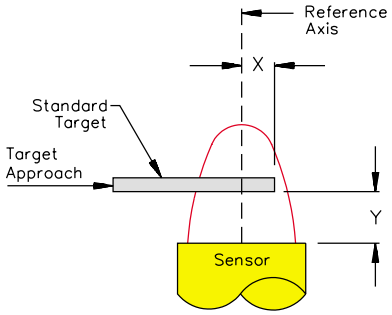
Axial Approach



L = Diameter of target
S = Operating distance

Maximum operating distance is achieved using a standard target size or larger.

Lateral Approach



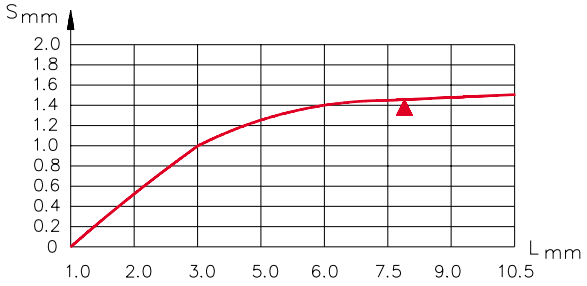
X = Target leading edge position referenced to sensor center axis.

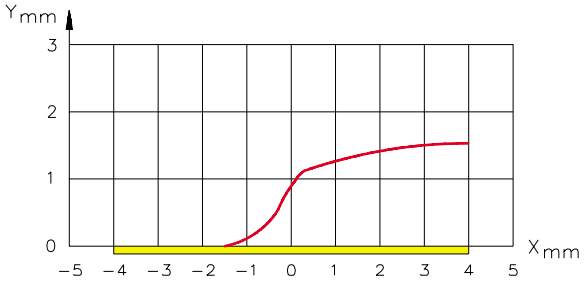
Y = Target distance from sensing face.

Sensing Range vs. Target Diameter (1)

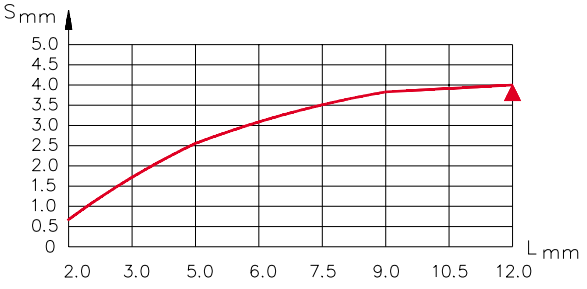
Target Distance vs. Minimum Sensor Coverage Using Standard Target (2)

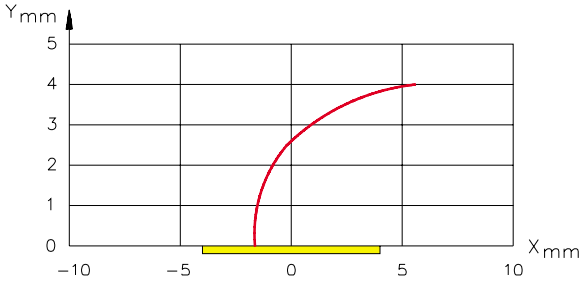
Bi1.5U-EG08-..



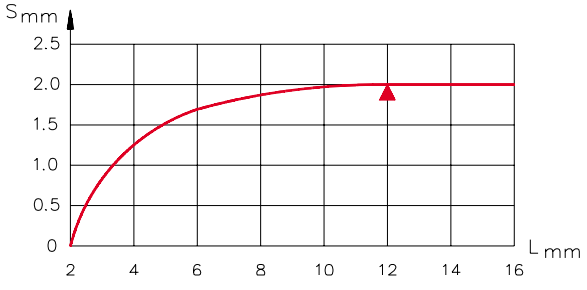


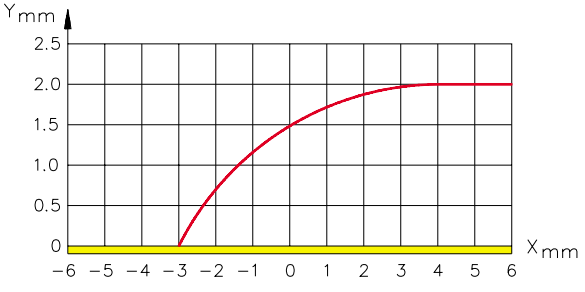
Ni 4U-EG08-..





Bi 2U-M12-..

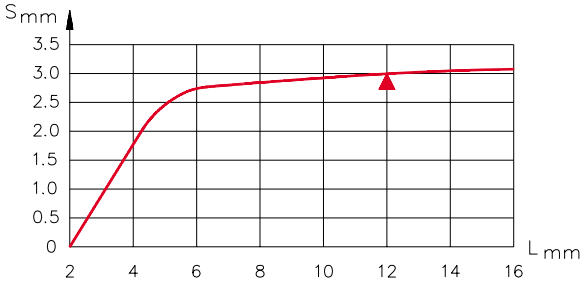
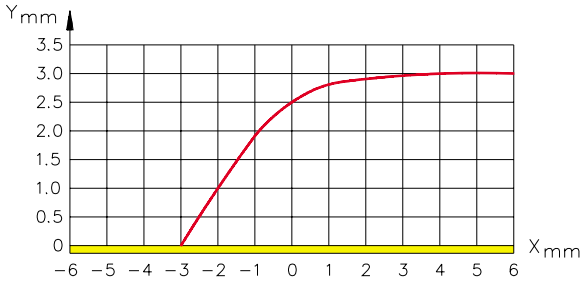
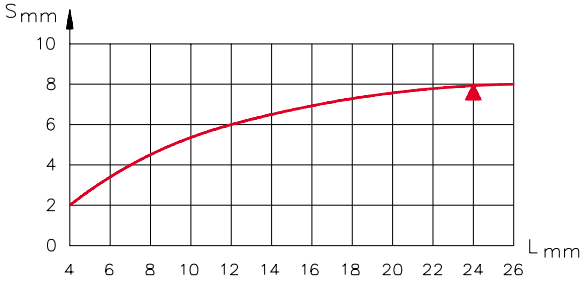
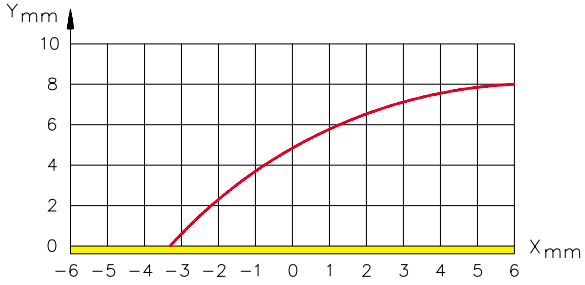
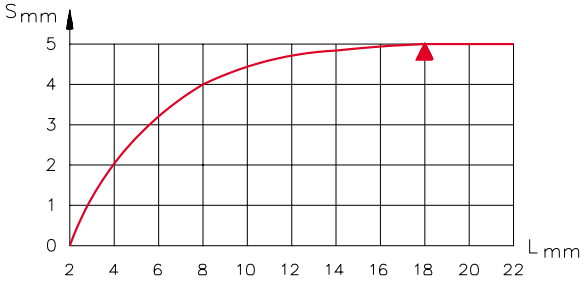
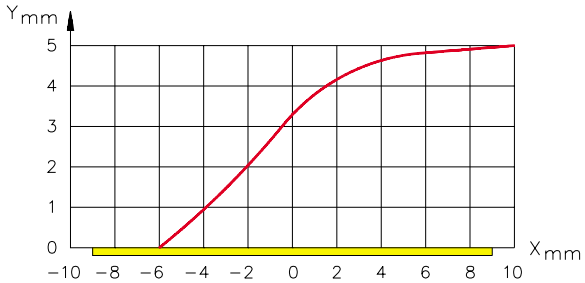
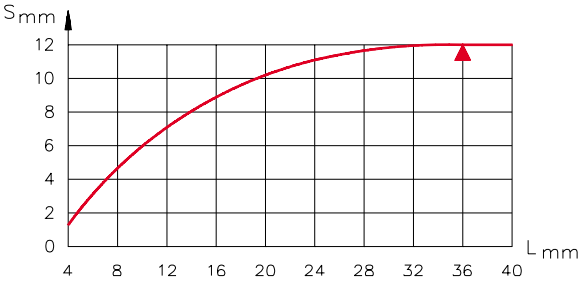
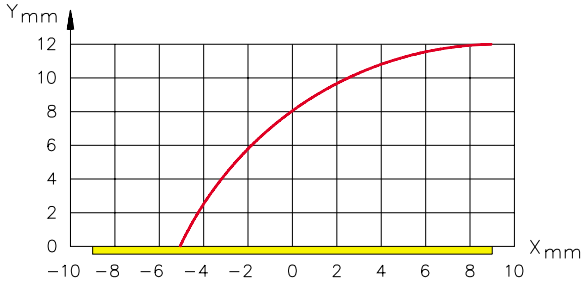




(1) Smallest value of L shown is minimum recommended target for that sensor.

(2) Yellow area represents sensing face.

Sensing Range Diagrams

	Sensing Range vs. Target Diameter [1]	Target Distance vs. Minimum Sensor Coverage Using Standard Target [2]
Bi 3U-M12-..		
Ni 8U-M12-..		
Bi 5U-M18-..		
Ni12U-M18-..		

(1) Smallest value of L shown is minimum recommended target for that sensor.

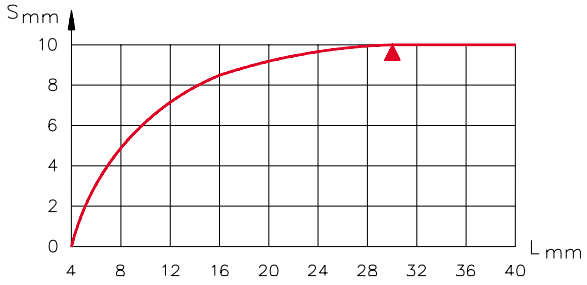
(2) Yellow area represents sensing face.

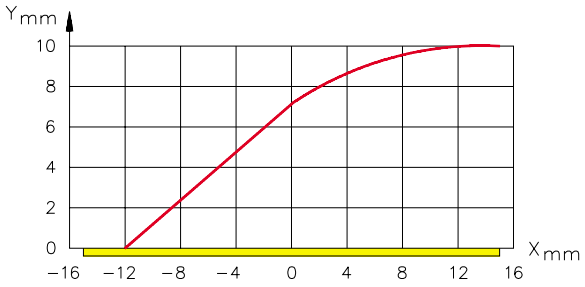
Sensing Range Diagrams

Sensing Range vs. Target Diameter (1)

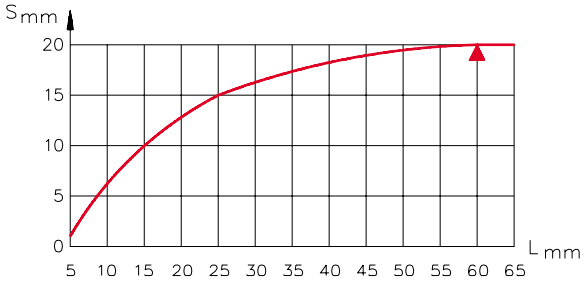
Target Distance vs. Minimum Sensor Coverage Using Standard Target (2)

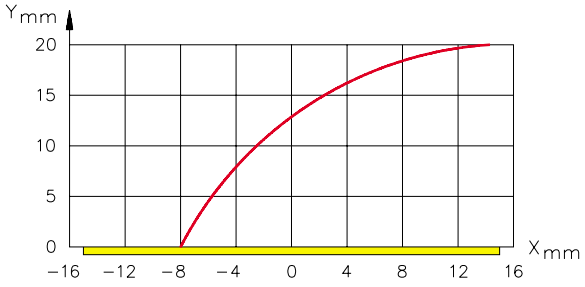
Bi10U-G30-..
Bi10U-M30-..





Ni20U-G30-..
Ni20U-M30-..





Notes:

G..M Barrel

Barrel, Metal with Quick Disconnect
Full Threading ***picoprox®***

2-Wire DC ***eurofast®***
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi1.5-G08M-AD6X-H1341	•	1.5	8.0	•	•	1	A	1		1000	S4600400	***eurofast*** **Mating Cordsets** RK 4.2T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Locknut Torque

M8x1 Barrel	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face:	PA 12-GF30 Plastic

Accessories

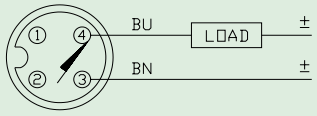
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.2 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

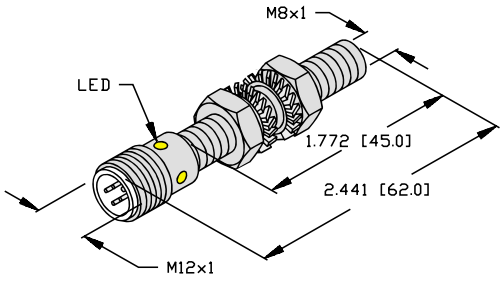
Wiring Diagram

A **Normally Open**



Dimensions

1



Barrels

M Barrel

Barrel, Metal with Quick Disconnect

Partial Threading, Standard and Extended Range

2-Wire DC **eurofast®**

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 2-M12-AD4X-H1141	•	2		12	•	•	1	A	1	1000	T4406500	eurofast
Bi 3-M12-AD4X-H1141	•	3	•	12	•	•	1	A	1	1000	M4405041	
Bi 5-M18-AD4X-H1141	•	5		18	•	•	3	A	1	1000	T4414500	
Bi 7-M18-AD4X-H1141	•	7	•	18	•	•	3	A	1	500	M4414541	
Bi10-M30-AD4X-H1141	•	10		30	•	•	5	A	1	500	T4417500	
Bi12-M30-AD4X-H1141	•	12	•	30	•	•	5	A	1	400	M4417041	
Ni 4-M12-AD4X-H1141		4		12	•	•	2	A	1	1000	T4406700	
Ni 8-M12-AD4X-H1141		8	•	12	•	•	2	A	1	1000	M4411241	
Ni 8-M18-AD4X-H1141		8		18	•	•	4	A	1	500	T4414700	
Ni14-M18-AD4X-H1141		14	•	18	•	•	4	A	1	500	M4417241	
Ni15-M30-AD4X-H1141		15		30	•	•	6	A	1	200	T4417700	
Ni20-M30-AD4X-H1141		20	•	30	•	•	6	A	1	400	M4466141	

Mating Cordsets
RK 4.2T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

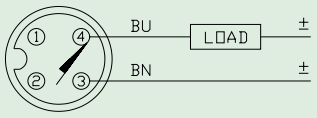
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

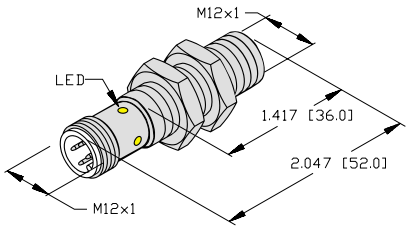
Wiring Diagram

A — Normally Open



Dimensions

1



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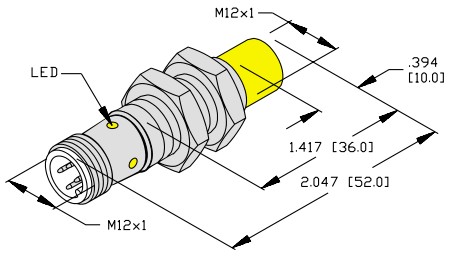

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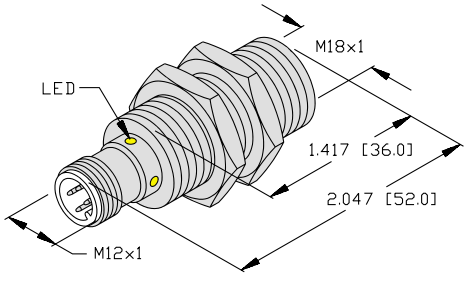

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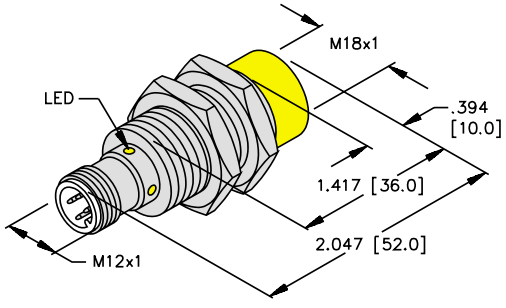

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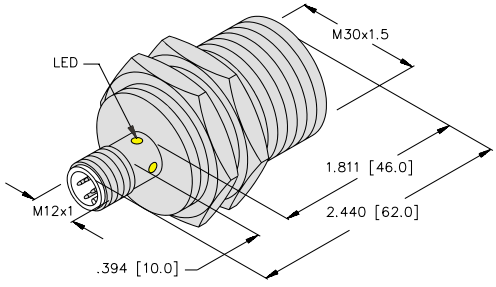

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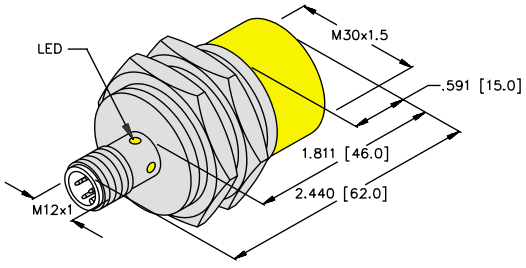


M..E Barrel

Barrel, Metal with Quick Disconnect

Partial Threading, Extended Barrel Length

2-Wire DC eurofast®

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-M12E-AD4X-H1141	•	2	12	•	•	1	A	1		1000	T4406590	eurofast **Mating Cordsets** RK 4.2T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5-M18E-AD4X-H1141	•	5	18	•	•	3	A	1		1000	T4414591	
Bi10-M30E-AD4X-H1141	•	10	30	•	•	5	A	1		500	T4417590	
Ni 4-M12E-AD4X-H1141		4	12	•	•	2	A	1		1000	T4406790	
Ni 8-M18E-AD4X-H1141		8	18	•	•	4	A	1		500	T4411210	
Ni15-M30E-AD4X-H1141		15	30	•	•	6	A	1		200	T4417790	

* Normally Closed versions available upon request, consult factory.

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

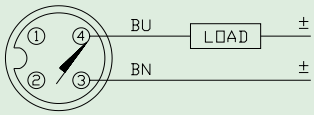
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

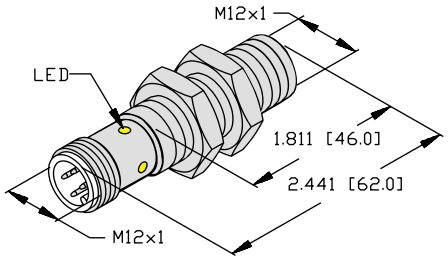
Wiring Diagram

A — Normally Open



Dimensions

1



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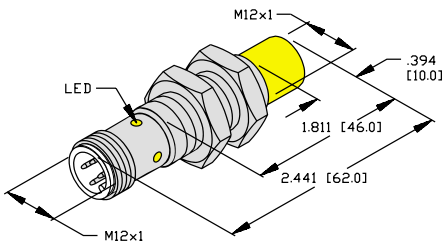

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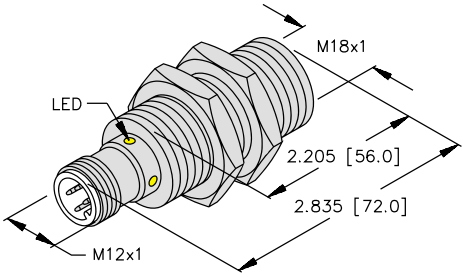

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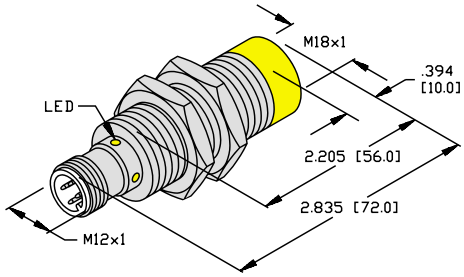

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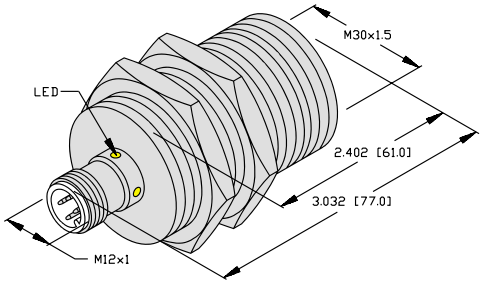

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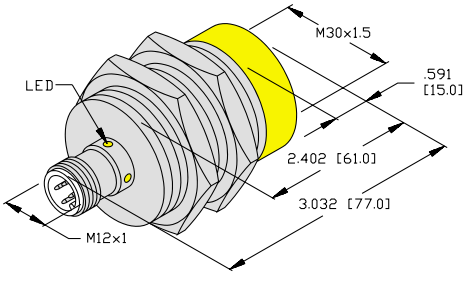


S Barrel

Barrel, Plastic with Quick Disconnect
Partial Threading

2-Wire DC eurofast®
10-65 VDC, Short-Circuit and Overload Protected
Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-S18-AD4X-H1141	•	5	18	•	•	1	A	1		1000	M4452400	eurofast **Mating Cordsets** RKK 4.2T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-S30-AD4X-H1141	•	10	30	•	•	2	A	1		500	M4458000	
Ni 8-S18-AD4X-H1141		8	18	•	•	1	A	1		500	M4452600	
Ni15-S30-AD4X-H1141		15	30	•	•	2	A	1		200	M4458200	

* Normally Closed versions available upon request, consult factory.

Material

Connector:	PA 12-GF30 Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

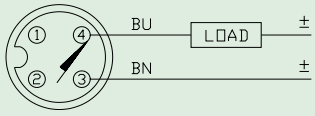
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

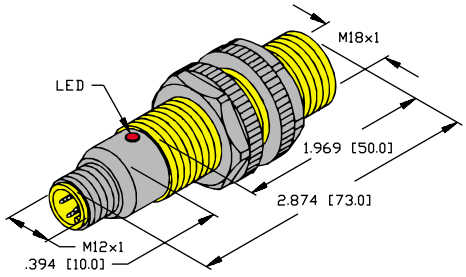
Wiring Diagram

A — Normally Open



Dimensions

1



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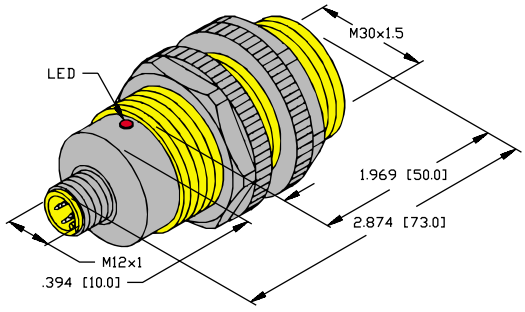
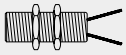


G..M Barrel

Barrel, Metal, Miniature with Potted-In Cable

Full Threading ***picoprox***®

2-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi1.5-G08M-AD6X	•	1.5	8.0	•	•	1	A	1		1000	S4600200

* Normally Closed versions available upon request, consult factory.

Conductor/Cable

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Locknut Torque

M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	Trogamid T

Accessories

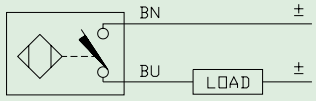
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.2 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

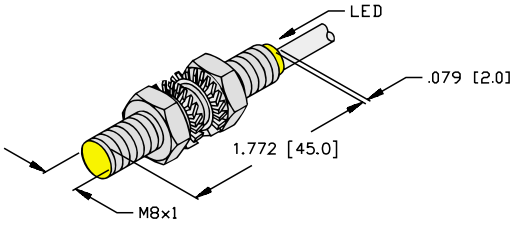
Wiring Diagram

A — Normally Open



Dimensions

1

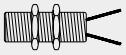


Barrels

M Barrel

Barrel, Metal with Potted-In Cable

Partial Threading, Standard and Extended Range

2-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number
Bi 2-M12-AD4X	•	2		12	•	•	1	A	1	1000	T4405000
Bi 3-M12-AD4X	•	3	•	12	•	•	1	A	1	1000	M4405035
Bi 5-M18-AD4X	•	5		18	•	•	3	A	1	1000	T4411000
Bi 7-M18-AD4X	•	7	•	18	•	•	3	A	1	500	M4414535
Bi10-M30-AD4X	•	10		30	•	•	5	A	1	500	T4417000
Bi12-M30-AD4X	•	12	•	30	•	•	5	A	1	400	M4417035
Ni 4-M12-AD4X		4		12	•	•	2	A	1	1000	T4405200
Ni 8-M12-AD4X		8	•	12	•	•	2	A	1	1000	M4411235
Ni 8-M18-AD4X		8		18	•	•	4	A	1	500	T4411200
Ni14-M18-AD4X		14	•	18	•	•	4	A	1	500	M4417235
Ni15-M30-AD4X		15		30	•	•	6	A	1	200	T4417200
Ni20-M30-AD4X		20	•	30	•	•	6	A	1	400	M4466135

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

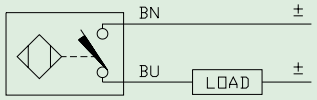
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

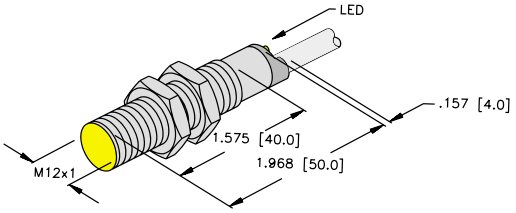
Wiring Diagram

A — Normally Open



Dimensions

1



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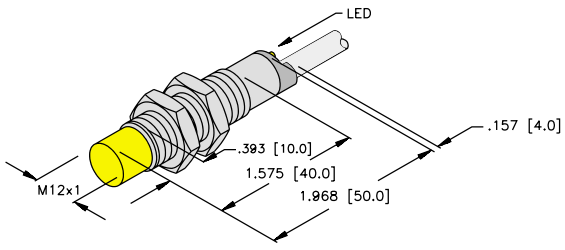

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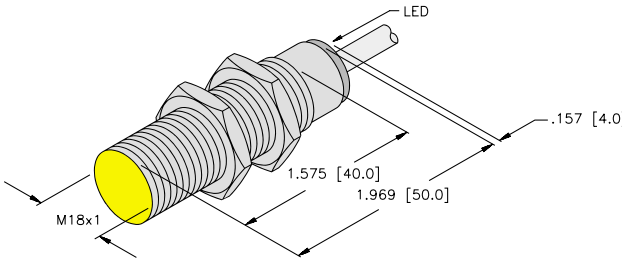

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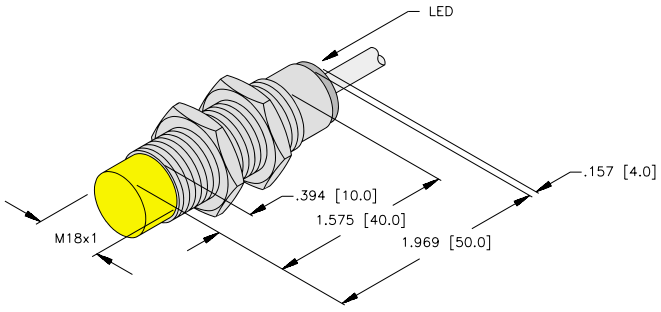

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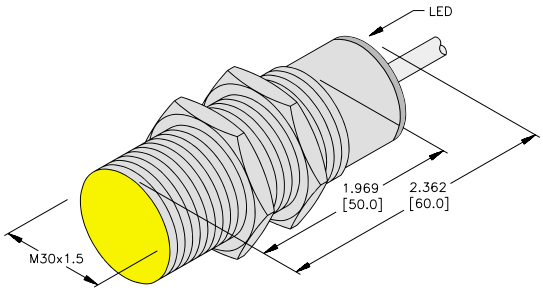

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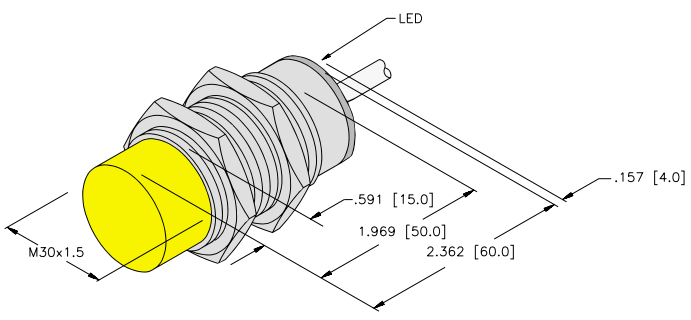
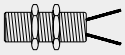


M..E Barrel

Barrel, Metal with Potted-In Cable

Partial Threading, Extended Barrel Length

2-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-M12E-AD4X	•	2	12	•	•	1	A	1		1000	
Bi 5-M18E-AD4X	•	5	18	•	•	3	A	1		1000	T4411091
Bi10-M30E-AD4X	•	10	30	•	•	5	A	1		500	
Ni 4-M12E-AD4X		4	12	•	•	2	A	1		1000	
Ni 8-M18E-AD4X		8	18	•	•	4	A	1		500	T4411292
Ni15-M30E-AD4X		15	30	•	•	6	A	1		200	

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

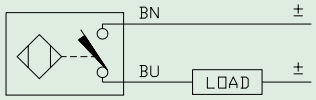
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

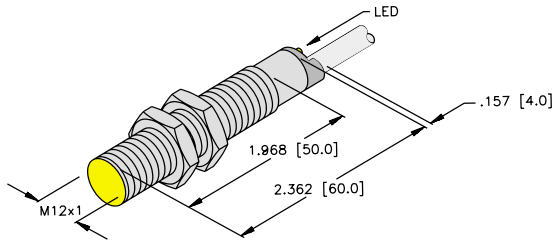
Wiring Diagram

A — Normally Open



Dimensions

1



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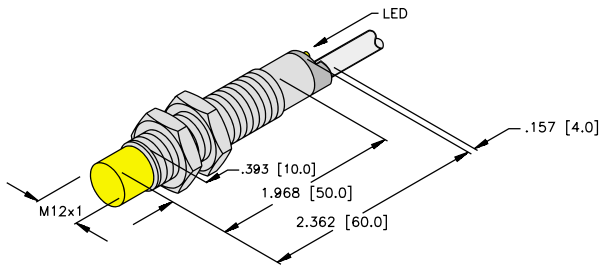

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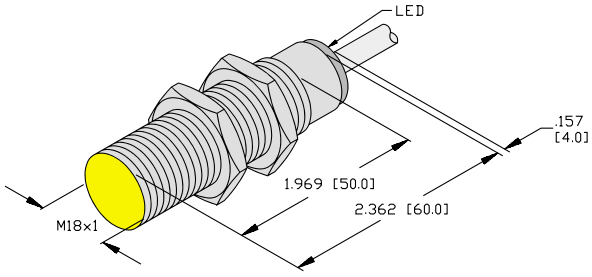

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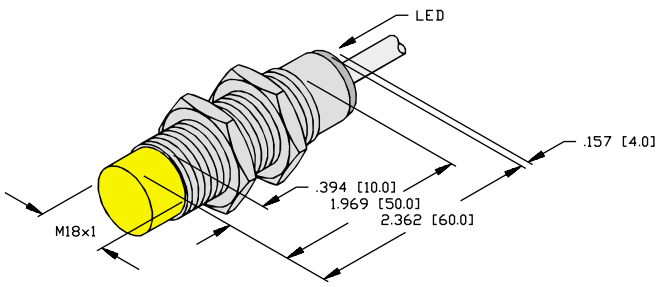

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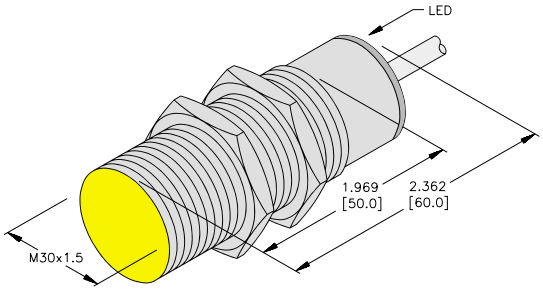

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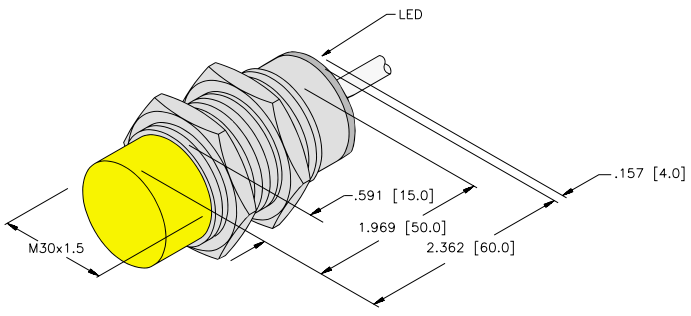
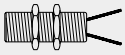


S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading

2-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 2-S12-AD4X	•	2	12	•	•	1	A	1		1000	T4453000
Bi 5-S18-AD4X	•	5	18	•	•	2	A	1		1000	T4456000
Bi10-S30-AD4X	•	10	30	•	•	3	A	1		500	T4459000
Ni 4-S12-AD4X		4	12	•	•	1	A	1		1000	T4453200
Ni 8-S18-AD4X		8	18	•	•	2	A	1		500	T4456200
Ni15-S30-AD4X		15	30	•	•	3	A	1		200	T4459200

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

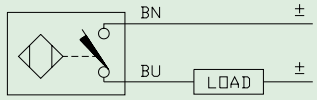
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Maximum Load Current	≤100 mA
Minimum Load Current	≥3.0 mA
Off-State (Leakage) Current	≤0.8 mA
Time Delay Before Availability	≤10 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

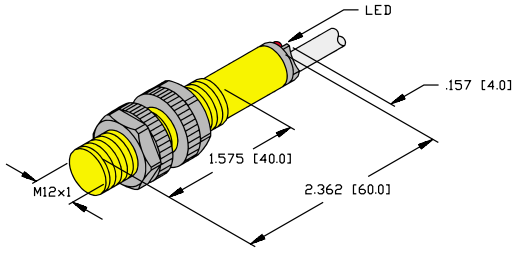
Wiring Diagram

A — Normally Open



Dimensions

1



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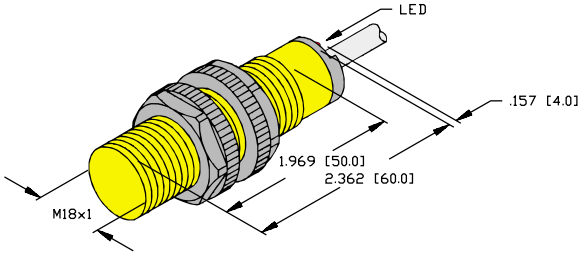

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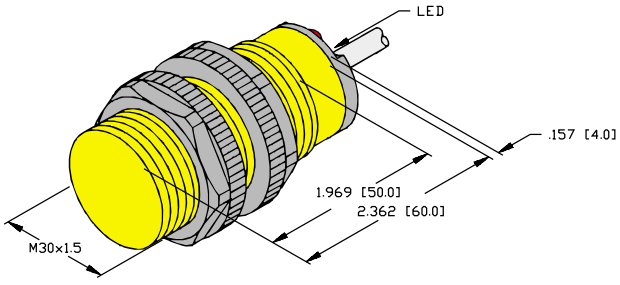


H and EH Barrel

Barrel, Metal, Miniature with Quick Disconnect
Smooth ***picoprox*** ®

3-Wire DC ***picofast*** ®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi1.5-H08K-AN6X-V1131	•	1.5		8.0	•		6	A	1	5000	S1604340	***picofast***
Ni 2 -H08K-AN6X-V1131		2.0		8.0	•		7	A	1	5000	S1614800	**Mating Cordsets**
Bi1.5-H08K-AP6X-V1131	•	1.5		8.0		•	6	B	1	5000	S1604330	PKG 3Z-2 (2 meter)
Ni 2 -H08K-AP6X-V1131		2.0		8.0		•	7	B	1	5000	S1604800	For other styles see Section H or consult "Cordsets" catalog
Bi 1 -EH04-AN6X-V1331	•	1.0		4.0	•		1	A	1	3000	S4608540	
Bi1.5-EH6.5-AN6X-V1131	•	1.5		6.5	•		2	A	1	3000	S4612120	
Bi 2 -EH6.5-AN6X-V1131	•	2.0	•	6.5	•		2	A	1	3000	S4612320	
Ni 3 -EH6.5-AN6X-V1131		3.0		6.5	•		3	A	1	3000	S4612520	
Bi 1 -EH04-AP6X-V1331	•	1.0		4.0		•	1	B	1	3000	S4608440	
Bi1.5-EH6.5-AP6X-V1131	•	1.5		6.5		•	2	B	1	3000	S4612020	
Bi 2 -EH6.5-AP6X-V1131	•	2.0	•	6.5		•	2	B	1	3000	S4612220	
Ni 3 -EH6.5-AP6X-V1131		3.0		6.5		•	3	B	1	3000	S4612420	
Bi1.5-EH6.5K-AN6X-V1131	•	1.5		6.5	•		4	A	1	3000	S4610840	
Bi 2 -EH6.5K-AN6X-V1131	•	2.0	•	6.5	•		4	A	1	3000	S4610120	
Ni 3 -EH6.5K-AN6X-V1131		3.0		6.5	•		5	A	1	3000	S4610320	
Bi1.5-EH6.5K-AP6X-V1131	•	1.5		6.5		•	4	B	1	3000	S4610740	
Bi 2 -EH6.5K-AP6X-V1131	•	2.0	•	6.5		•	4	B	1	3000	S4610020	
Ni 3 -EH6.5K-AP6X-V1131		3.0		6.5		•	5	B	1	3000	S4610220	

* Normally Closed versions available upon request, consult factory.

Material

Connector:	Chrome Plated Brass
Barrels:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

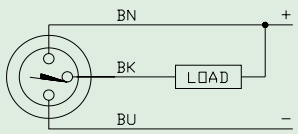
Accessories and mounting devices can be found in Section J.

Specifications

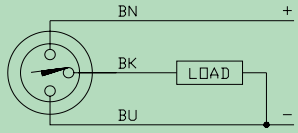
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA (≤100 mA for H04 style)
Trigger Current for Overload Protection	≥170 mA (≥120 mA for H04 style)
Continuous Load Current	≤150 mA (≤100 mA for H04 style)
Off-State (Leakage) Current	<100 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)

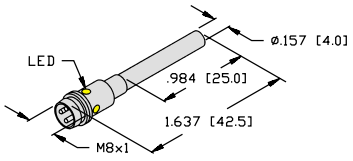


B PNP (Sourcing)



Dimensions

1



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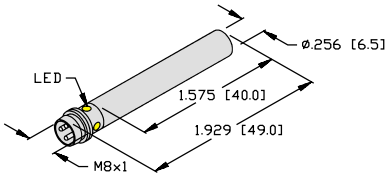

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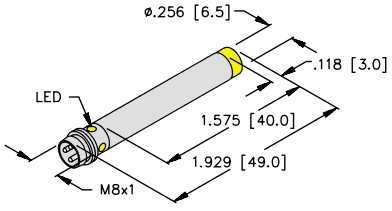

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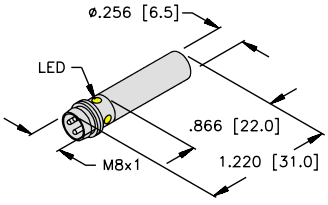
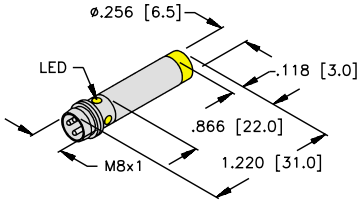


5



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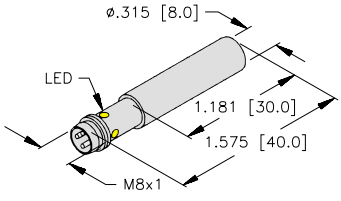

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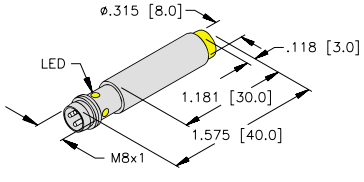


EG Barrel

Barrel, Metal, Miniature with Quick Disconnect
Full Threading ***picoprox***®

3-Wire DC ***picofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 1 -EG05-AN6X-V1331	•	1.0		5.0	•		1	A	1	3000	S4608740	***picofast***
Bi1.5-EG08-AN6X-V1131	•	1.5		8.0	•		2	A	1	3000	S4602350	**Mating Cordsets**
Bi 2 -EG08-AN6X-V1131	•	2.0	•	8.0	•		2	A	1	3000	S4602150	PKG 3Z-2 (2 meter)
Ni 3 -EG08-AN6X-V1131		3.0		8.0	•		3	A	1	3000	S4602850	For other styles see Section H or consult "Cordsets" catalog
Bi 1 -EG05-AP6X-V1331	•	1.0		5.0		•	1	B	1	3000	S4608640	
Bi1.5-EG08-AP6X-V1131	•	1.5		8.0		•	2	B	1	3000	S4602220	
Bi 2 -EG08-AP6X-V1131	•	2.0	•	8.0		•	2	B	1	3000	S4602050	
Ni 3 -EG08-AP6X-V1131		3.0		8.0		•	3	B	1	3000	S4602750	
Bi1.5-EG08K-AN6X-V1131	•	1.5		8.0	•		4	A	1	3000	S4672540	
Bi 2 -EG08K-AN6X-V1131	•	2.0	•	8.0	•		4	A	1	3000	S4669550	
Ni 3 -EG08K-AN6X-V1131		3.0		8.0	•		5	A	1	3000	S4669750	
Bi1.5-EG08K-AP6X-V1131	•	1.5		8.0		•	4	B	1	3000	S4672440	
Bi 2 -EG08K-AP6X-V1131	•	2.0	•	8.0		•	4	B	1	3000	S4669450	
Ni 3 -EG08K-AP6X-V1131		3.0		8.0		•	5	B	1	3000	S4669650	

* Normally Closed versions available upon request, consult factory.

Locknut Torque

M5x0.5 Barrel	5.0 Nm
M8x1 Barrel	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

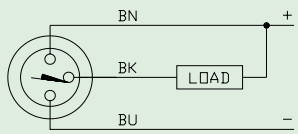
Accessories and mounting devices can be found in Section J.

Specifications

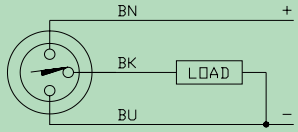
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA (≤100 mA for EG05 style)
Trigger Current for Overload Protection	≥170 mA (≥120 mA for EG05 style)
Continuous Load Current	≤150 mA (≤100 mA for EG05 style)
Off-State (Leakage) Current	<100 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)

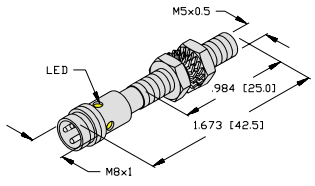


B PNP (Sourcing)



Dimensions

1



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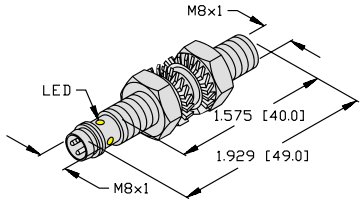

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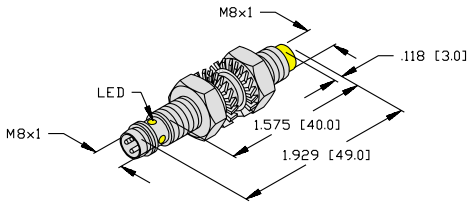

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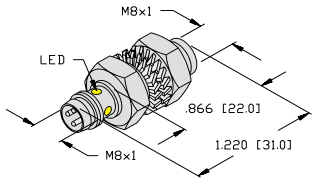

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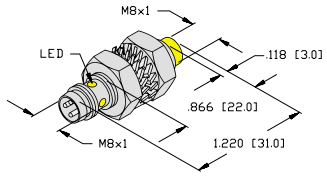


EG Barrel

Barrel, Metal, Miniature with Quick Disconnect

Full Threading ***picoprox®*** ***Uprox®***

3-Wire DC ***eurofast®*** ***picofast®***
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi1.5U-EG08-AN6X-H1341	•	1.5	8.0	•		1	A	1	•	2000	S4600550	***eurofast***
Ni 4U -EG08-AN6X-H1341		4.0	8.0	•		2	A	1	•	2000	S4600650	**Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1.5U-EG08-AP6X-H1341	•	1.5	8.0		•	1	B	1	•	2000	S4600540	
Ni 4U -EG08-AP6X-H1341		4.0	8.0		•	2	B	1	•	2000	S4600640	
Bi1.5U-EG08-AN6X-V1131	•	1.5	8.0	•		3	C	1	•	2000	S4600530	***picofast***
Ni 4U -EG08-AN6X-V1131		4.0	8.0	•		4	C	1	•	2000	S4600630	**Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi1.5U-EG08-AP6X-V1131	•	1.5	8.0		•	3	D	1	•	2000	S4600520	
Ni 4U -EG08-AP6X-V1131		4.0	8.0		•	4	D	1	•	2000	S4600620	

* Normally Closed versions available upon request, consult factory.

Locknut Torque

M8x1 Barrel	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

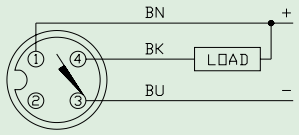
Accessories and mounting devices can be found in Section J.

Specifications

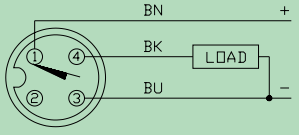
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA
Trigger Current for Overload Protection	≥180 mA
Continuous Load Current	≤150 mA
Leakage (Off-State) Current	≤0.1 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms, 1 k
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning (LED Visible Through Four Windows)

Wiring Diagrams

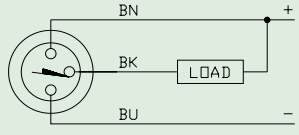
A NPN (Sinking)



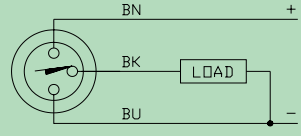
B PNP (Sourcing)



C NPN (Sinking)

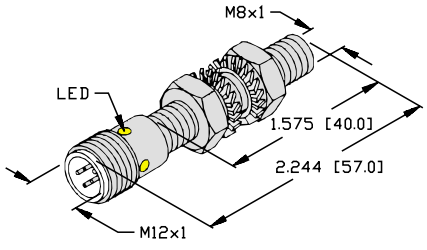


D PNP (Sourcing)



Dimensions

1



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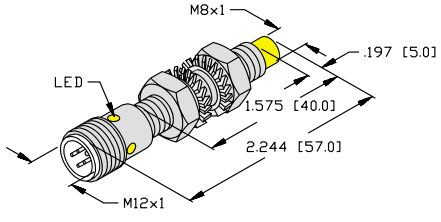

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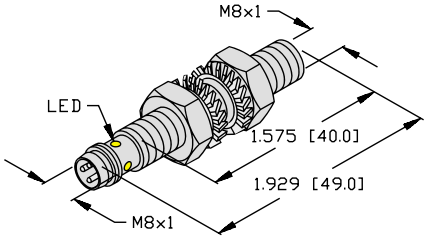

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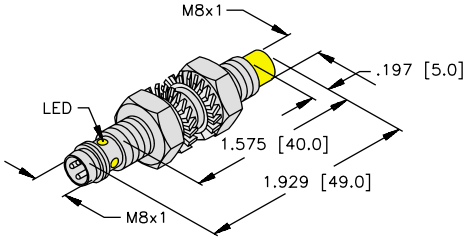


G and EG Barrel

Barrel, Metal, Miniature with Quick Disconnect
Full Threading ***picoprox***®

3-Wire DC **eurofast**®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi1.5-EG08-AN6X-H1341	•	1.5		8.0	•		1	A	1	3000	S4602360	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 2 -EG08-AN6X-H1341	•	2.0	•	8.0	•		1	A	1	3000	S4602160	
Ni 3 -EG08-AN6X-H1341		3.0		8.0	•		2	A	1		S4602860	
Bi1.5-EG08-AP6X-H1341	•	1.5		8.0		•	1	B	1	3000	S4602260	
Bi 2 -EG08-AP6X-H1341	•	2.0	•	8.0		•	1	B	1	3000	S4602060	
Ni 3 -EG08-AP6X-H1341		3.0		8.0		•	2	B	1		S4602760	
Bi1.5-EG08K-AN6X-H1341	•	1.5		8.0	•		3	A	1	3000	S4669150	
Bi 2 -EG08K-AN6X-H1341	•	2.0	•	8.0	•		3	A	1	3000	S4669560	
Ni 3 -EG08K-AN6X-H1341		3.0		8.0	•		4	A	1	3000	S4669760	
Bi1.5-EG08K-AP6X-H1341	•	1.5		8.0		•	3	B	1	3000	S4669050	
Bi 2 -EG08K-AP6X-H1341	•	2.0	•	8.0		•	3	B	1	3000	S4669460	
Ni 3 -EG08K-AP6X-H1341		3.0		8.0		•	4	B	1	3000	S4669660	
Bi1.5-G08-AN6X-H1341	•	1.5		8.0	•		5	A	1	3000	S4603700	
Bi 2 -G08-AN6X-H1341	•	2.0	•	8.0	•		5	A	1	3000	S4602600	
Ni 3 -G08-AN6X-H1341		3.0		8.0	•		6	A	1	3000		
Bi1.5-G08-AP6X-H1341	•	1.5		8.0		•	5	B	1	3000	S4603600	
Bi 2 -G08-AP6X-H1341	•	2.0	•	8.0		•	5	B	1	3000	S4602500	
Ni 3 -G08-AP6X-H1341		3.0		8.0		•	6	B	1	3000	S4602705	

* Normally Closed versions available upon request, consult factory.

Locknut Torque

M8x1 Barrel	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

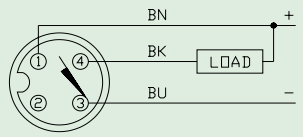
Accessories and mounting devices can be found in Section J.

Specifications

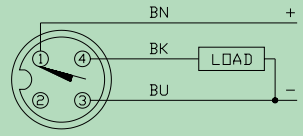
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA
Trigger Current for Overload Protection	≥170 mA
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<100 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



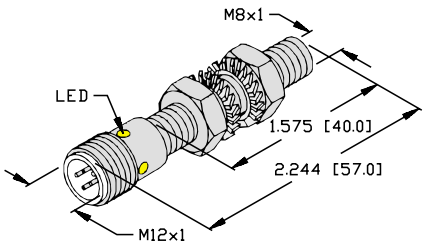
B PNP (Sourcing)



Barrels

Dimensions

1



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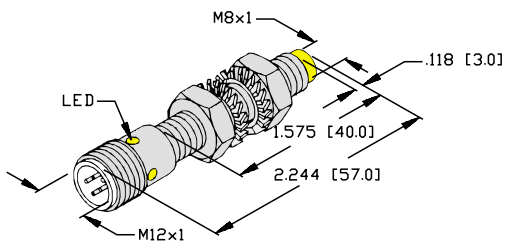

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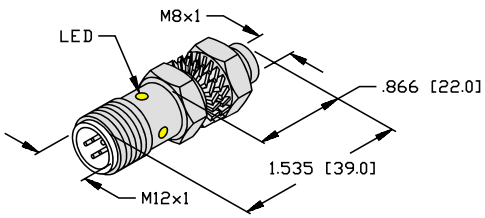

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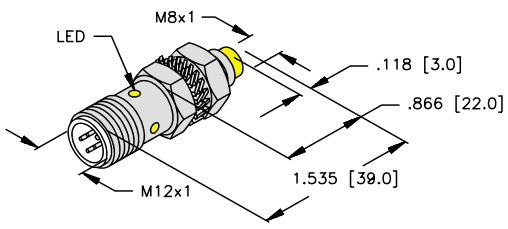

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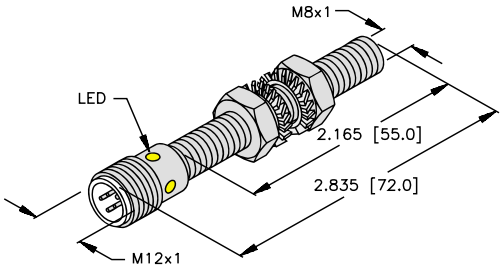

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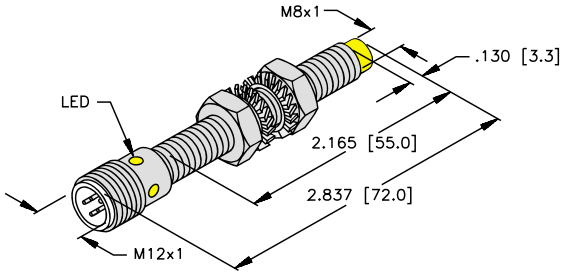


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

3-Wire DC picofast® eurofast®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number	Connection
Bi 2-G12-AN6X-V1131 Ni 5-G12-AN6X-V1131	• 	2 5	12 12	• •	 	1 2	A A	1 1	 	2000 2000	T4635583 T4635721	picofast **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 2-G12-AP6X-V1131 Ni 5-G12-AP6X-V1131	•	2 5	12 12	 	• •	1 2	B B	1 1	 	2000 2000	T4606597 T4635690	
Bi 2-G12-AN6X-H1141 Ni 5-G12-AN6X-H1141	•	2 5	12 12	• •	 	3 4	C C	1 1	• •	2000 2000	T4606693 T4635793	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 2-G12-AP6X-H1141 Ni 5-G12-AP6X-H1141	•	2 5	12 12	 	• •	3 4	D D	1 1	• •	2000 2000	T4606595 T4635692	

* Normally Closed versions available upon request, consult factory.

Material

Barrel/Locknuts:	Chrome Plated Brass
Plastic Sensing Face:	PA 12-GF30

Accessories

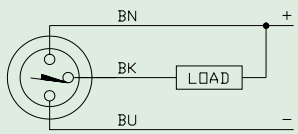
Accessories and mounting devices can be found in Section J.

Specifications

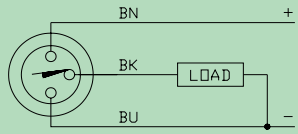
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

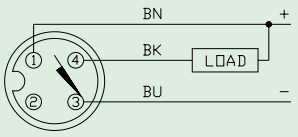
A NPN (Sinking)



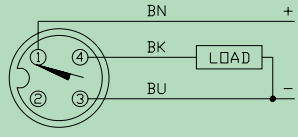
B PNP (Sourcing)



C NPN (Sinking)

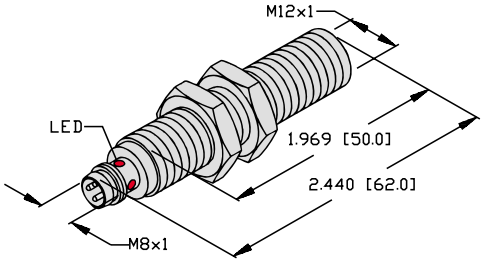


D PNP (Sourcing)



Dimensions

1



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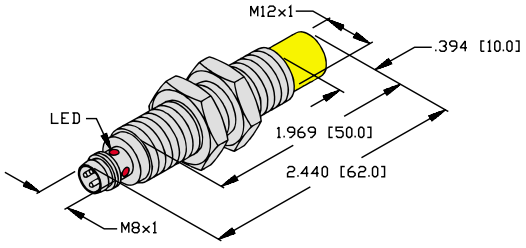

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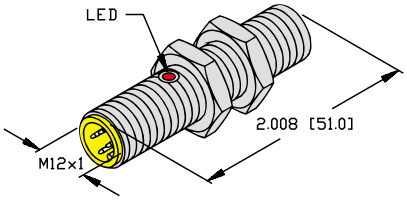

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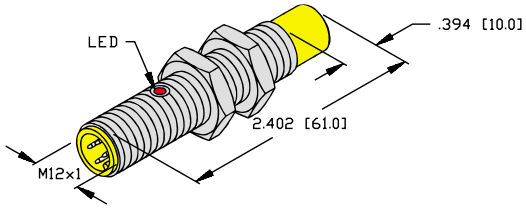


M, EM, MT Barrel

Barrel, Metal with Quick Disconnect - Standard, Stainless Steel, Teflon Coated

Partial Threading, ***Uprox*** ®

3-Wire DC **eurofast**®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi 3U-M12-AN6X-H1141	•	3	12	CPB	•		1	A	1	•	3000	M1634150
Bi 5U-M18-AN6X-H1141	•	5	18	CPB	•		3	A	1	•	2500	M1635150
Bi10U-M30-AN6X-H1141	•	10	30	CPB	•		5	A	1	•	2000	M1636150
Ni 8U-M12-AN6X-H1141		8	12	CPB	•		2	A	1	•	2000	M1644150
Ni12U-M18-AN6X-H1141		12	18	CPB	•		4	A	1	•	2000	M1645150
Ni20U-M30-AN6X-H1141		20	30	CPB	•		6	A	1	•	1500	M1646150
Bi 3U-M12-AP6X-H1141	•	3	12	CPB		•	1	B	1	•	3000	M1634140
Bi 5U-M18-AP6X-H1141	•	5	18	CPB		•	3	B	1	•	2500	M1635140
Bi10U-M30-AP6X-H1141	•	10	30	CPB		•	5	B	1	•	2000	M1636140
Ni 8U-M12-AP6X-H1141		8	12	CPB		•	2	B	1	•	2000	M1644140
Ni12U-M18-AP6X-H1141		12	18	CPB		•	4	B	1	•	2000	M1645140
Ni20U-M30-AP6X-H1141		20	30	CPB		•	6	B	1	•	1500	M1646140
Bi 3U-EM12-AN6X-H1141	•	3	12	SS	•		1	A	1	•	3000	M1634350
Bi 5U-EM18-AN6X-H1141	•	5	18	SS	•		3	A	1	•	2500	M1635350
Bi10U-EM30-AN6X-H1141	•	10	30	SS	•		5	A	1	•	2000	M1636350
Ni 8U-EM12-AN6X-H1141		8	12	SS	•		2	A	1	•	2000	M1644350
Ni12U-EM18-AN6X-H1141		12	18	SS	•		4	A	1	•	2000	M1645350
Ni20U-EM30-AN6X-H1141		20	30	SS	•		6	A	1	•	1500	M1646350
Bi 3U-EM12-AP6X-H1141	•	3	12	SS		•	1	B	1	•	3000	M1634340
Bi 5U-EM18-AP6X-H1141	•	5	18	SS		•	3	B	1	•	2500	M1635340
Bi10U-EM30-AP6X-H1141	•	10	30	SS		•	5	B	1	•	2000	M1636340
Ni 8U-EM12-AP6X-H1141		8	12	SS		•	2	B	1	•	2000	M1644340
Ni12U-EM18-AP6X-H1141		12	18	SS		•	4	B	1	•	2000	M1645340
Ni20U-EM30-AP6X-H1141		20	30	SS		•	6	B	1	•	1500	M1646340
Bi 3U-MT12-AN6X-H1141	•	3	12	TC	•		1	A	1	•	3000	M1634250
Bi 5U-MT18-AN6X-H1141	•	5	18	TC	•		3	A	1	•	2500	M1635250
Bi10U-MT30-AN6X-H1141	•	10	30	TC	•		5	A	1	•	2000	M1636250
Ni 8U-MT12-AN6X-H1141		8	12	TC	•		2	A	1	•	2000	M1644250
Ni12U-MT18-AN6X-H1141		12	18	TC	•		4	A	1	•	2000	M1645250
Ni20U-MT30-AN6X-H1141		20	30	TC	•		6	A	1	•	1500	M1646250
Bi 3U-MT12-AP6X-H1141	•	3	12	TC		•	1	B	1	•	3000	M1634240
Bi 5U-MT18-AP6X-H1141	•	5	18	TC		•	3	B	1	•	2500	M1635240
Bi10U-MT30-AP6X-H1141	•	10	30	TC		•	5	B	1	•	2000	M1636240
Ni 8U-MT12-AP6X-H1141		8	12	TC		•	2	B	1	•	2000	M1644240
Ni12U-MT18-AP6X-H1141		12	18	TC		•	4	B	1	•	2000	M1645240
Ni20U-MT30-AP6X-H1141		20	30	TC		•	6	B	1	•	1500	M1646240

Connection: **eurofast**

Mating Cordsets
RK 4T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

Materials:
Sensing Face:
M, EM: PA 12-GF30
MT: Teflon Coated

Barrels:
CPB: Chrome Plated Brass
TC: Teflon Coated Brass
SS: Stainless Steel

Barrel/Locknuts:
M: Chrome Plated Brass
MT: Teflon Coated Brass
EM: Stainless Steel

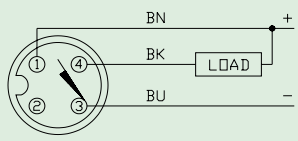
* Normally Closed Versions Available Upon Request, Consult Factory.

Specifications

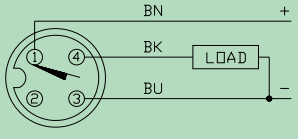
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)

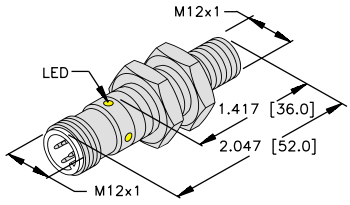


Barrels

Dimensions

Note: Teflon coated lock washers included with Teflon coated sensors.

1



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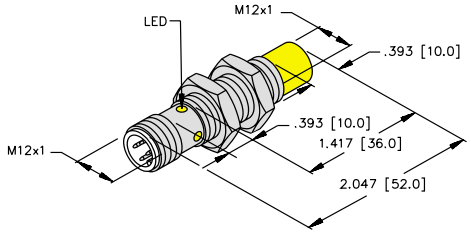

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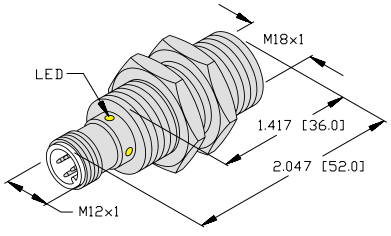

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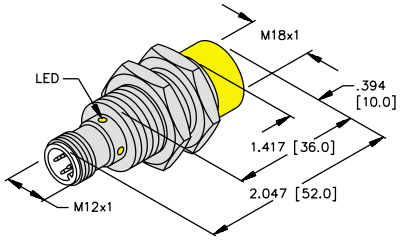

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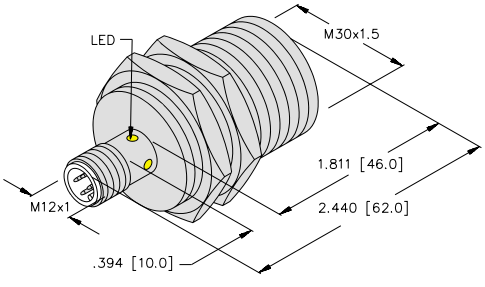

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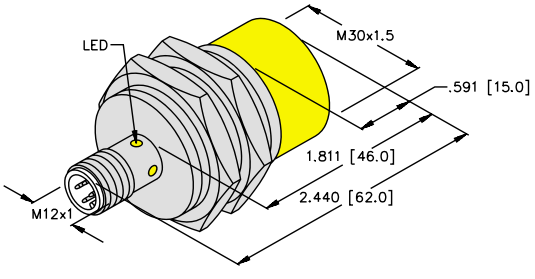


NEW

EM/MT..H(E) Style

Barrel, Metal with Quick Disconnect - Standard, Stainless Steel, Teflon Coated

Partial Threading, ***Uprox®*** ***Stoneface***

3-Wire DC ***eurofast®***

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing), Dual Color LED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 3U-EM12HE-AN6X2-H1141	•	3	12	SS	•		1	A	1	•	3000	M1634311	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 3U-MT12HE-AN6X2-H1141	•	3	12	TC	•		1	A	1	•	3000	M1634230	
Ni 8U-EM12HE-AN6X2-H1141		8	12	SS	•		2	A	1	•	2000	M1644311	
Ni 8U-MT12HE-AN6X2-H1141		8	12	TC	•		2	A	1	•	2000	M1644230	
Bi 3U-EM12HE-AP6X2-H1141	•	3	12	SS		•	1	B	1	•	3000	M1634310	
Bi 3U-MT12HE-AP6X2-H1141	•	3	12	TC		•	1	B	1	•	3000	M1634220	
Ni 8U-EM12HE-AP6X2-H1141		8	12	SS		•	2	B	1	•	2000	M1644310	
Ni 8U-MT12HE-AP6X2-H1141		8	12	TC		•	2	B	1	•	2000	M1644220	
Bi 5U-EM18H-AN6X2-H1141/S395	•	5	18	SS	•		3	A	1	•	2500	M1635146	
Bi 5U-MT18H-AN6X2-H1141/S395	•	5	18	TC	•		3	A	1	•	2500	M1635230	
Ni12U-EM18H-AN6X2-H1141/S395		12	18	SS	•		4	A	1	•	2000	M1645407	
Ni12U-MT18H-AN6X2-H1141/S395		12	18	TC	•		4	A	1	•	2000	M1645230	
Bi 5U-EM18H-AP6X2-H1141/S395	•	5	18	SS		•	3	B	1	•	2500	M1635158	
Bi 5U-MT18H-AP6X2-H1141/S395	•	5	18	TC		•	3	B	1	•	2500	M1635220	
Ni12U-EM18H-AP6X2-H1141/S395		12	18	SS		•	4	B	1	•	2000	M1645406	
Ni12U-MT18H-AP6X2-H1141/S395		12	18	TC		•	4	B	1	•	2000	M1645220	
Bi10U-EM30H-AN6X2-H1141	•	10	30	SS	•		5	A	1	•	2000	M1636407	
Bi10U-MT30H-AN6X2-H1141	•	10	30	TC	•		5	A	1	•	2000	M1636230	
Ni20U-EM30H-AN6X2-H1141		20	30	SS	•		6	A	1	•	1500	M1646407	
Ni20U-MT30H-AN6X2-H1141		20	30	TC	•		6	A	1	•	1500	M1646230	
Bi10U-EM30H-AP6X2-H1141	•	10	30	SS		•	5	B	1	•	2000	M1636406	
Bi10U-MT30H-AP6X2-H1141	•	10	30	TC		•	5	B	1	•	2000	M1636220	
Ni20U-EM30H-AP6X2-H1141		20	30	SS		•	6	B	1	•	1500	M1646406	
Ni20U-MT30H-AP6X2-H1141		20	30	TC		•	6	B	1	•	1500	M1646220	

* Normally Closed versions available upon request, consult factory.

Material

Barrel/Locknuts:	TC = Teflon Coated Brass SS = Stainless Steel
Plastic Sensing Face:	Thermoset Phenolic

Accessories

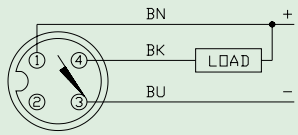
Accessories and mounting devices can be found in Section J.

Specifications

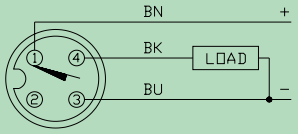
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
2-Color LED Yellow	Output Energized
2-Color LED Green	Power On
LED Flashing	Short-Circuit Warning (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



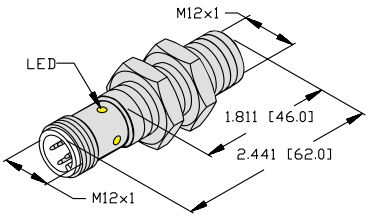
B PNP (Sourcing)



Note:
Teflon coated lock washers included with Teflon coated sensors.

Dimensions

1



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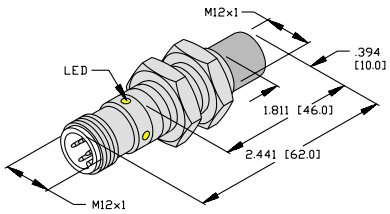

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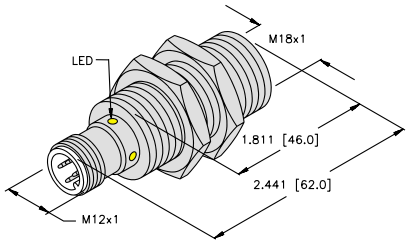

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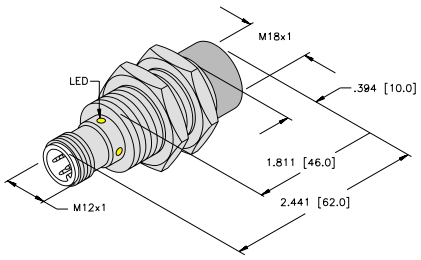

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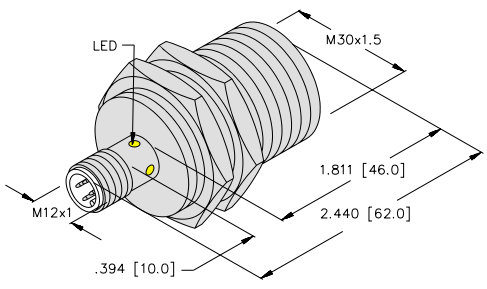

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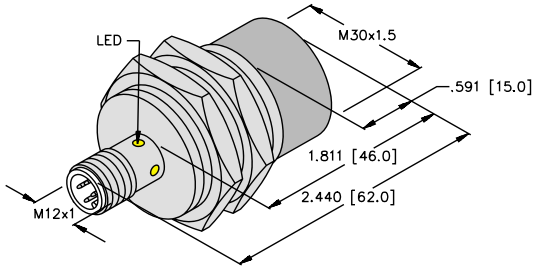


MT Barrel

Barrel, Metal with Quick Disconnect - Teflon Coated

Partial Threading, Dual-Color LED ***Uprox®***

3-Wire DC **eurofast®**

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 3U-MT12-AN6X2-H1141	•	3	12	•		1	A	1	•	3000	M1634255	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5U-MT18-AN6X2-H1141	•	5	18	•		3	A	1	•	2500	M1635255	
Bi10U-MT30-AN6X2-H1141	•	10	30	•		5	A	1	•	2000	M1636255	
Ni 8U-MT12-AN6X2-H1141		8	12	•		2	A	1	•	2000	M1644255	
Ni12U-MT18-AN6X2-H1141		12	18	•		4	A	1	•	2000	M1645255	
Ni20U-MT30-AN6X2-H1141		20	30	•		6	A	1	•	1500	M1646255	
Bi 3U-MT12-AP6X2-H1141	•	3	12		•	1	B	1	•	3000	M1634245	
Bi 5U-MT18-AP6X2-H1141	•	5	18		•	3	B	1	•	2500	M1635245	
Bi10U-MT30-AP6X2-H1141	•	10	30		•	5	B	1	•	2000	M1636245	
Ni 8U-MT12-AP6X2-H1141		8	12		•	2	B	1	•	2000	M1644245	
Ni12U-MT18-AP6X2-H1141		12	18		•	4	B	1	•	2000	M1645245	
Ni20U-MT30-AP6X2-H1141		20	30		•	6	B	1	•	1500	M1646245	

* Normally Closed versions available upon request, consult factory.

Material

Barrel/Locknuts:	Teflon Coated Brass
Sensing Face:	Teflon Coated PA 12-GF30

Accessories

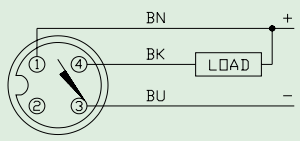
Accessories and mounting devices can be found in Section J.

Specifications

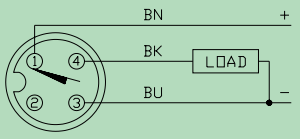
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
2-Color LED Yellow	Output Energized
2-Color LED Green	Power On
LED Flashing	Short-Circuit Warning (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)

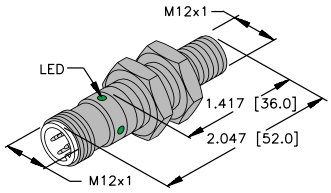


Barrels

Dimensions

Note: Teflon coated lock washers included with Teflon coated sensors.

1



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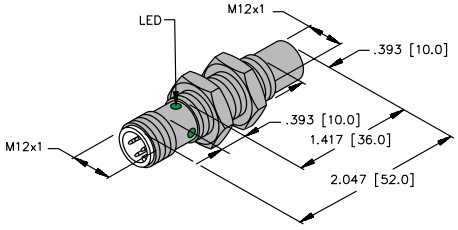

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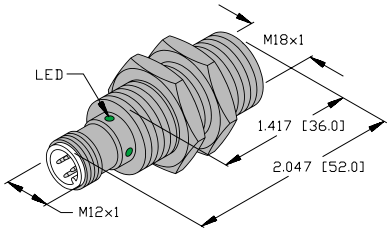

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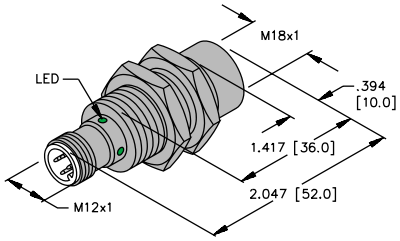

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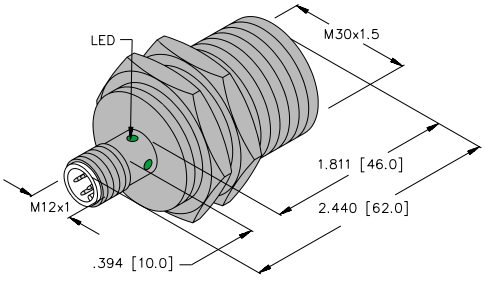

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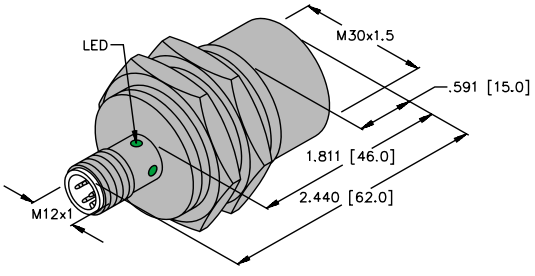


M and EM Barrel

Barrel, Metal with Quick Disconnect - Standard, Stainless Steel

Partial Threading

3-Wire DC **eurofast®**

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number	Connection
Bi 2-M12-AN6X-H1141	•	2	12	•		1	A	1	•	2000	T4606600	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5-M18-AN6X-H1141	•	5	18	•		3	A	1		1000	T4614600	
Bi10-M30-AN6X-H1141	•	10	30	•		5	A	1		500	T4617600	
Ni 4-M12-AN6X-H1141		4	12	•		2	A	1	•	2000	T4606800	
Ni 8-M18-AN6X-H1141		8	18	•		4	A	1		1000	T4614800	
Ni15-M30-AN6X-H1141		15	30	•		6	A	1		500	T4617800	
Bi 2-M12-AP6X-H1141	•	2	12		•	1	B	1	•	2000	T4606500	
Bi 5-M18-AP6X-H1141	•	5	18		•	3	B	1		1000	T4614500	
Bi10-M30-AP6X-H1141	•	10	30		•	5	B	1		500	T4617500	
Ni 4-M12-AP6X-H1141		4	12		•	2	B	1	•	2000	T4606700	
Ni 8-M18-AP6X-H1141		8	18		•	4	B	1		1000	T4614700	
Ni15-M30-AP6X-H1141		15	30		•	6	B	1		500	T4617700	
Bi 2-EM12-AN6X-H1141	•	2	12	•		1	A	1		2000	T4606601	
Bi 5-EM18-AN6X-H1141	•	5	18	•		3	A	1		1000	T4614601	
Bi 2-EM12-AP6X-H1141	•	2	12		•	1	B	1		2000	T4606501	
Bi 5-EM18-AP6X-H1141	•	5	18		•	3	B	1		1000	T4614501	

* Normally Closed versions available upon request, consult factory.

Material

Barrel/Locknuts:	M: Chrome Plated Brass EM: Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

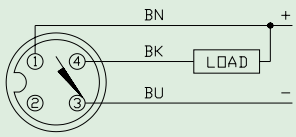
Accessories and mounting devices can be found in Section J.

Specifications

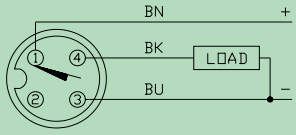
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)

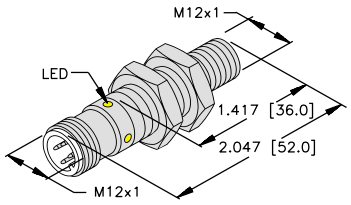


B PNP (Sourcing)



Dimensions

1



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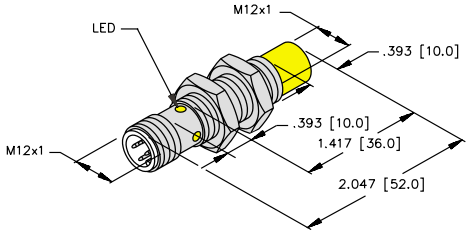

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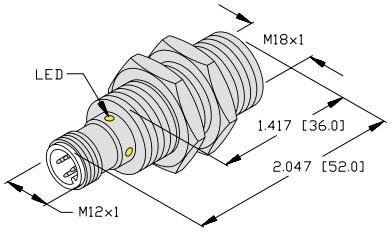

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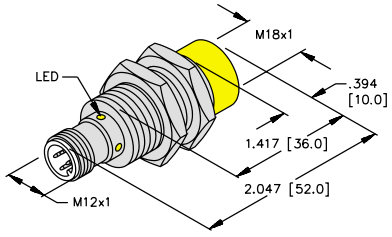

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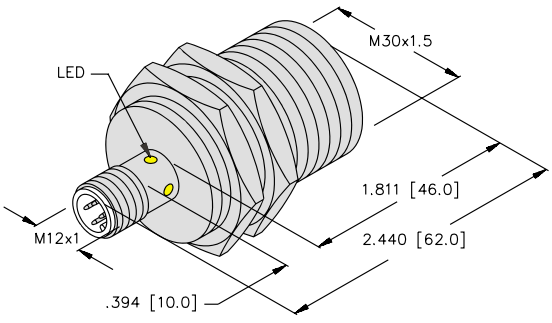

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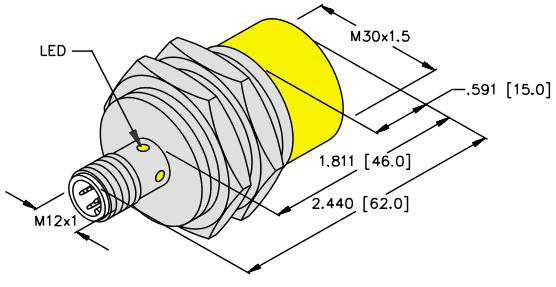


M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading, ***Extended Range***

3-Wire DC **eurofast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 4-M12-AN6X-H1141	•	4	12	CPB	•		1	A	1	2000	T4607100	eurofast **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 8-M18-AN6X-H1141	•	8	18	SS	•		3	A	1	500	T4615100	
Bi15-M30-AN6X-H1141	•	15	30	SS	•		5	A	1	500	T4618600	
Ni 8-M12-AN6X-H1141		8	12	CPB	•		2	A	1	2000	M4611315	
Ni14-M18-AN6X-H1141		14	18	SS	•		4	A	1	400	M4611410	
Ni20-M30-AN6X-H1141		20	30	SS	•		6	A	1	500	M4670515	
Bi 4-M12-AP6X-H1141	•	4	12	CPB		•	1	B	1	2000	T4607000	
Bi 8-M18-AP6X-H1141	•	8	18	SS		•	3	B	1	500	T4615000	
Bi15-M30-AP6X-H1141	•	15	30	SS		•	5	B	1	500	T4618500	
Ni 8-M12-AP6X-H1141		8	12	CPB		•	2	B	1	2000	M4611310	
Ni14-M18-AP6X-H1141		14	18	SS		•	4	B	1	400	M4611400	
Ni20-M30-AP6X-H1141		20	30	SS		•	6	B	1	500	M4670500	

* Normally Closed versions available upon request, consult factory.

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass SS = Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

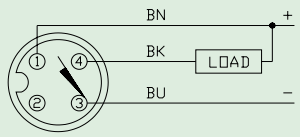
Accessories and mounting devices can be found in Section J.

Specifications

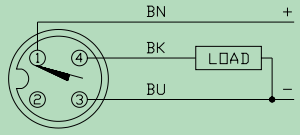
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



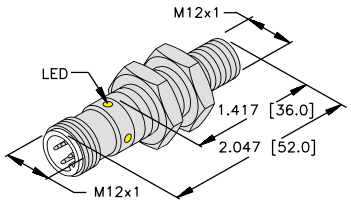
B PNP (Sourcing)



Barrels

Dimensions

1



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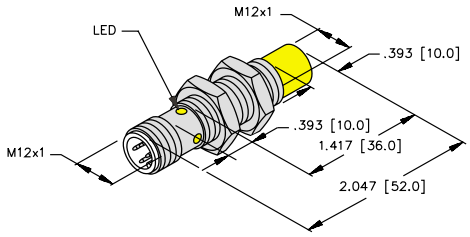

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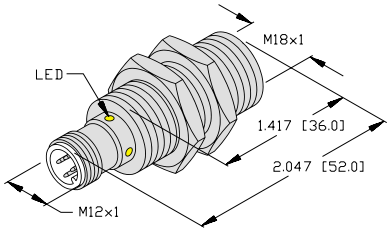

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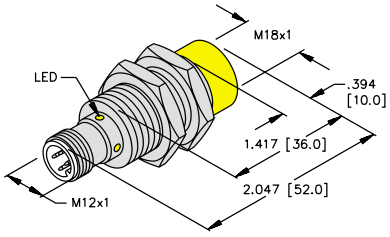

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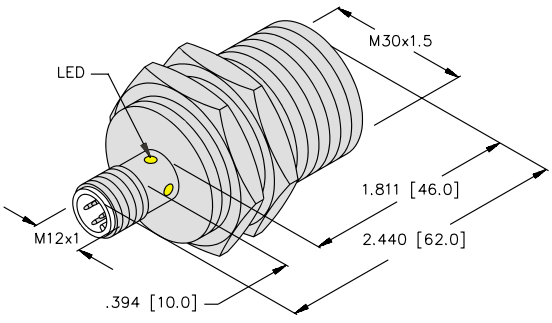

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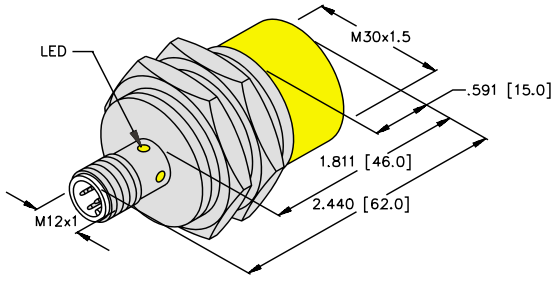


M..E Barrel

Barrel, Metal with Quick Disconnect
Partial Threading, ***Extended Barrel Length, Extended Range***

3-Wire DC **eurofast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 4-M12E-AN6X-H1141	•	4	12	CPB	•		1	A	1	2000	T4607193	**eurofast** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 8-M18E-AN6X-H1141	•	8	18	SS	•		2	A	1	500	T4615190	
Bi15-M30E-AN6X-H1141	•	15	30	SS	•		3	A	1	500	T4618690	
Bi 4-M12E-AP6X-H1141	•	4	12	CPB		•	1	B	1	2000	T4608030	
Bi 8-M18E-AP6X-H1141	•	8	18	SS		•	2	B	1	500	T4615090	
Bi15-M30E-AP6X-H1141	•	15	30	SS		•	3	B	1	500	T4618590	

* Normally Closed Versions Available Upon Request, Consult Factory.

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass SS = Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

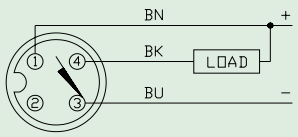
Accessories and mounting devices can be found in Section J.

Specifications

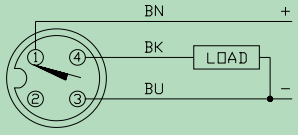
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



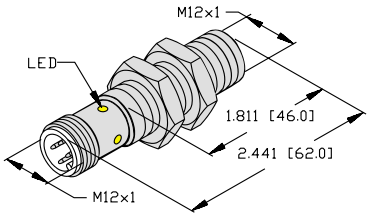
B PNP (Sourcing)



Barrels

Dimensions

1



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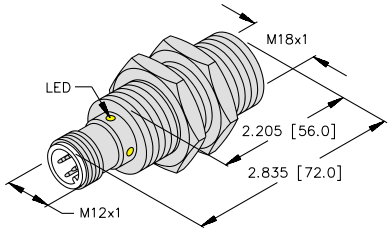

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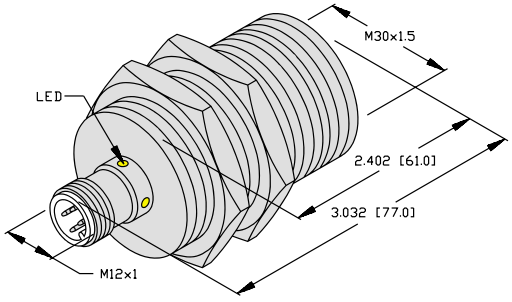


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

3-Wire DC **minifast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-AN6X-B1341	•	5	18	•		1	A	1		1000	T4695200	minifast
Bi10-G30-AN6X-B1141	•	10	30	•		3	A	1		500	T4695400	
Ni10-G18-AN6X-B1341		10	18	•		2	A	1		1000	T4695300	
Ni15-G30-AN6X-B1141		15	30	•		4	A	1		500	T4695500	
Bi 5-G18-AP6X-B1341	•	5	18		•	1	B	1		1000	T4696300	
Bi10-G30-AP6X-B1141	•	10	30		•	3	B	1		500	T4696500	
Ni10-G18-AP6X-B1341		10	18		•	2	B	1		1000	T4696400	
Ni15-G30-AP6X-B1141		15	30		•	4	B	1		500	T4696600	

Mating Cordsets
RKM 40-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Barrel Length Options

For applications requiring longer barrel lengths, consult factory on availability of the following part numbers with special lengths:
Bi 5-G18-AN(P)6X-B1341 with 50 mm threading.

Material

Connector:	Chrome Plated Brass
Barrel/Locknuts:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

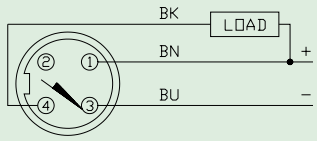
Accessories and mounting devices can be found in Section J.

Specifications

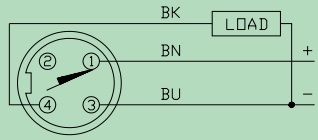
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



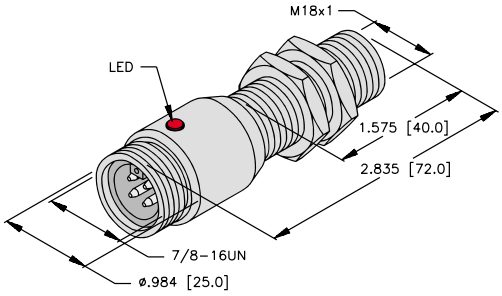
B PNP (Sourcing)



Barrels

Dimensions

1



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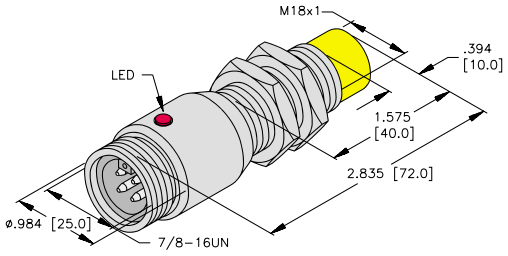

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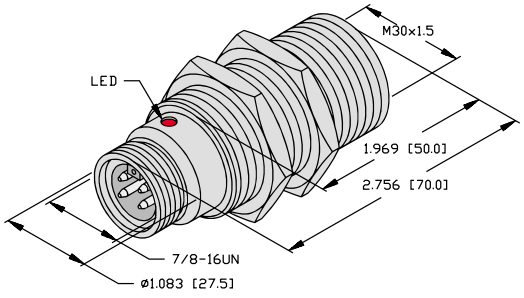

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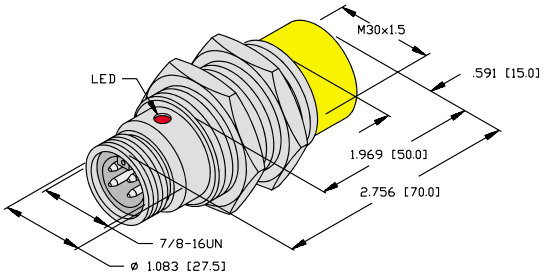


G Barrel

Barrel, Metal with Quick Disconnect

Full Threading, Angle Connector

3-Wire DC **minifast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-AN6X-B1441	•	5	18	•		1	A	1		1000	T4695600	minifast
Bi10-G30-AN6X-B1441	•	10	30	•		3	A	1		500	T4695800	
Ni10-G18-AN6X-B1441		10	18	•		2	A	1		1000	T4695700	
Ni15-G30-AN6X-B1441		15	30	•		4	A	1		500	T4695590	
Bi 5-G18-AP6X-B1441	•	5	18		•	1	B	1		1000	T4696700	
Bi10-G30-AP6X-B1441	•	10	30		•	3	B	1		500	T4696900	
Ni10-G18-AP6X-B1441		10	18		•	2	B	1		1000	T4696800	
Ni15-G30-AP6X-B1441		15	30		•	4	B	1		500	T4697000	

Mating Cordsets
RKM 40-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Barrel Length Options

For applications requiring longer barrel lengths, consult factory on availability of the following part numbers with special lengths:
Bi 5-G18-AN(P)6X-B1341 with 50 mm threading.

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

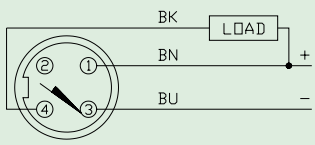
Accessories and mounting devices can be found in Section J.

Specifications

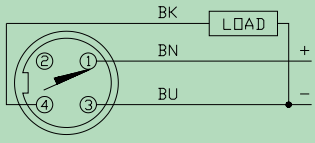
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

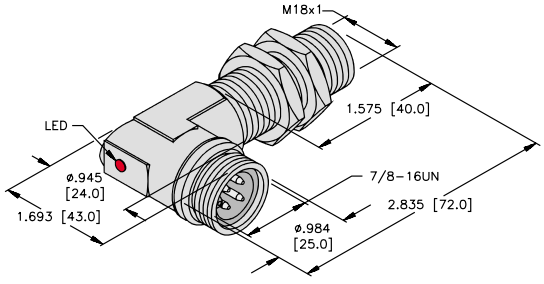


B PNP (Sourcing)



Dimensions

1



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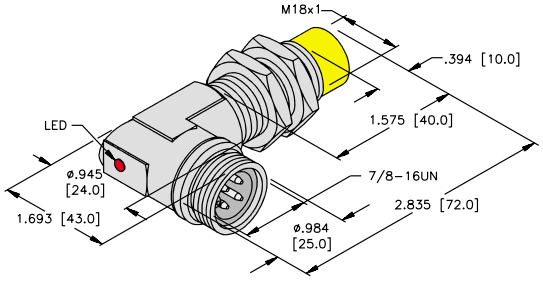

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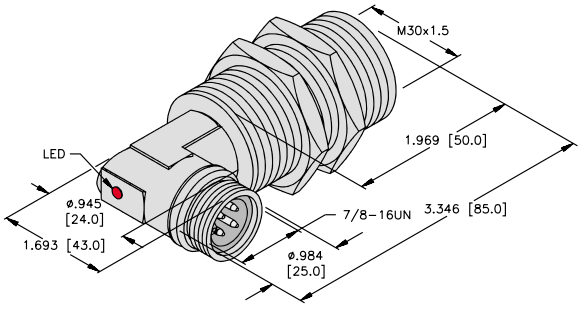

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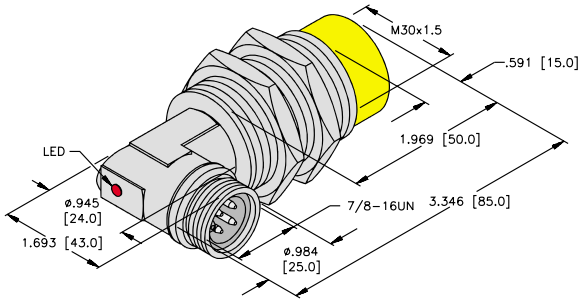


S Barrel

Barrel, Plastic with Quick Disconnect

Partial Threading ***Uprox***®

3-Wire DC ***eurofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 3U-S12-AN6X-H1141	•	3	12	•		1	A	1	•	3000	M1634620	***eurofast***
Bi 5U-S18-AN6X-H1141	•	5	18	•		2	A	1	•	2500	M1635620	**Mating Cordsets**
Bi10U-S30-AN6X-H1141	•	10	30	•		3	A	1	•	2000	M1636620	RKK 4T-2 (2 meter)
Ni 8U-S12-AN6X-H1141		8	12	•		1	A	1	•	2000	M1644620	For other styles see
Ni12U-S18-AN6X-H1141		12	18	•		2	A	1	•	2000	M1645620	Section H or consult
Ni20U-S30-AN6X-H1141		20	30	•		3	A	1	•	1500	M1646620	"Cordsets" catalog
Bi 3U-S12-AP6X-H1141	•	3	12		•	1	B	1	•	3000	M1634600	
Bi 5U-S18-AP6X-H1141	•	5	18		•	2	B	1	•	2500	M1635600	
Bi10U-S30-AP6X-H1141	•	10	30		•	3	B	1	•	2000	M1636600	
Ni 8U-S12-AP6X-H1141		8	12		•	1	B	1	•	2000	M1644600	
Ni12U-S18-AP6X-H1141		12	18		•	2	B	1	•	2000	M1645600	
Ni20U-S30-AP6X-H1141		20	30		•	3	B	1	•	1500	M1646600	

* Normally Closed versions available upon request, consult factory.

Material

Connector: PA 12-GF30 Plastic
Barrel: PA 12-GF30 Plastic

Accessories

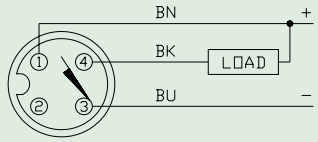
Accessories and mounting devices can be found in Section J.

Specifications

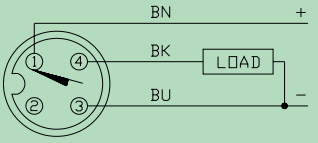
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 ms
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



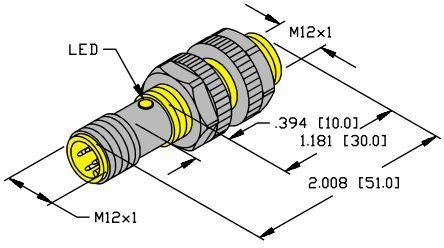
B PNP (Sourcing)



Barrels

Dimensions

1



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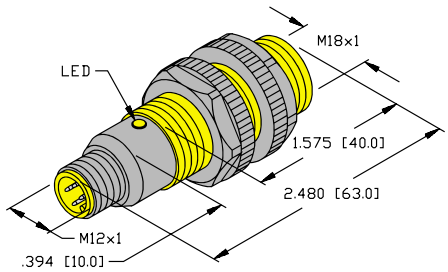

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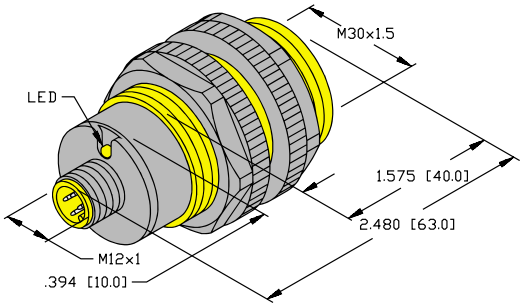


S Barrel

Barrel, Plastic with Quick Disconnect
Partial Threading

3-Wire DC eurofast®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number	Connection
Bi 2-S12-AN6X-H1141	•	2	12	•		1	A	1		2000	T4652100	eurofast
Bi 5-S18-AN6X-H1141	•	5	18	•		2	A	1		1000	T4652500	
Bi10-S30-AN6X-H1141	•	10	30	•		3	A	1		500	T4658100	
Ni 4-S12-AN6X-H1141		4	12	•		1	A	1		2000	T4652300	
Ni 8-S18-AN6X-H1141		8	18	•		2	A	1		1000	T4652700	
Ni15-S30-AN6X-H1141		15	30	•		3	A	1		500	T4658300	
Bi 2-S12-AP6X-H1141	•	2	12		•	1	B	1		2000	T4652000	
Bi 5-S18-AP6X-H1141	•	5	18		•	2	B	1		1000	T4652400	
Bi10-S30-AP6X-H1141	•	10	30		•	3	B	1		500	T4658000	
Ni 4-S12-AP6X-H1141		4	12		•	1	B	1		2000	T4652200	
Ni 8-S18-AP6X-H1141		8	18		•	2	B	1		1000	T4652600	
Ni15-S30-AP6X-H1141		15	30		•	3	B	1		500	T4658200	

Mating Cordsets
RKK 4T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Material

Connector:	PA 12-GF30 Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

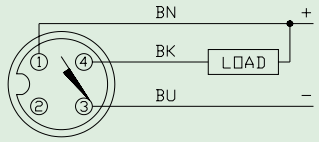
Accessories and mounting devices can be found in Section J.

Specifications

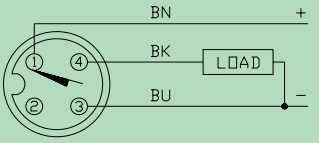
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



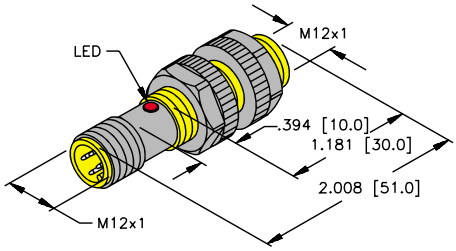
B PNP (Sourcing)



Barrels

Dimensions

1



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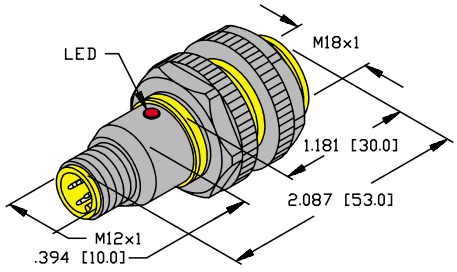

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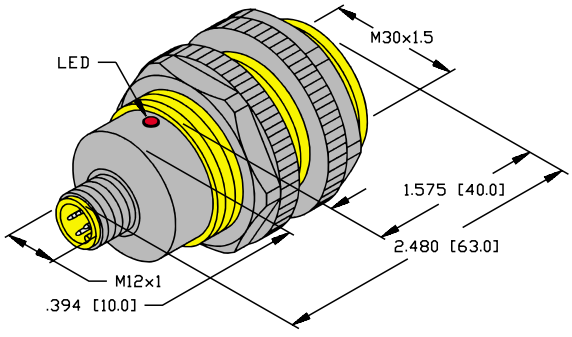


P Barrel

Barrel, Plastic with Quick Disconnect
Full Threading

3-Wire DC **minifast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-P18-AN6X-B2341	•	5	18	•		1	A	1		1000	T4697200	minifast
Bi10-P30-AN6X-B2141	•	10	30	•		2	A	1		500	T4697400	
Ni10-P18-AN6X-B2341		10	18	•		1	A	1		500	T4697800	
Ni15-P30-AN6X-B2141		15	30	•		2	A	1		500	T4697600	
Bi 5-P18-AP6X-B2341	•	5	18		•	1	B	1		1000	T4697300	
Bi10-P30-AP6X-B2141	•	10	30		•	2	B	1		500	M4697500	
Ni10-P18-AP6X-B2341		10	18		•	1	B	1		1000	T4697900	
Ni15-P30-AP6X-B2141		15	30		•	2	B	1		500	T4697700	

Mating Cordsets
RK 40-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Normally Closed versions available upon request, consult factory.

Material

Connector:	Polyamide Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

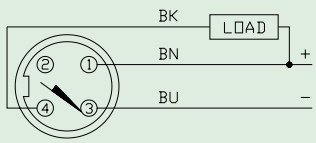
Accessories and mounting devices can be found in Section J.

Specifications

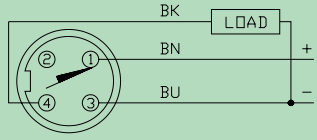
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

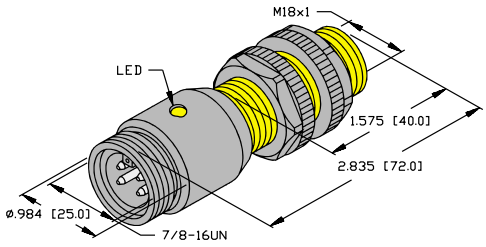


B PNP (Sourcing)



Dimensions

1



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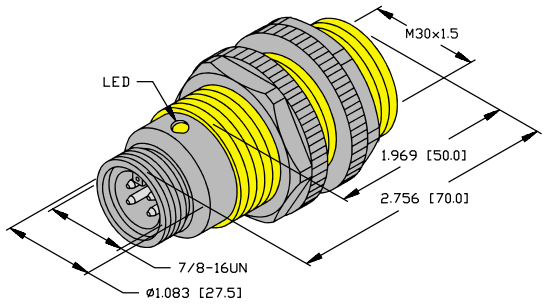
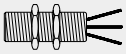


GS Barrel

HS Barrel

Side Sensing Sensors, Miniature Barrel

GS Barrel: *Full Threading* ***picoprox®***
HS Barrel: *Smooth* ***picoprox®***

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi1.5-GS880-AN6X	•	1.5	8.0	•		1	A	1		3000	S4604501
Bi1.5-GS880-AP6X	•	1.5	8.0		•	1	B	1		3000	S4604401
Bi 1 -HS540-AN6X	•	1.0	4.0	•		2	A	1		3000	S4604101
Bi1.5-HS865-AN6X	•	1.5	6.5	•		3	A	1		3000	S4604301
Bi 1 -HS540-AP6X	•	1.0	4.0		•	2	B	1		3000	S4604001
Bi1.5-HS865-AP6X	•	1.5	6.5		•	3	B	1		3000	S4604201

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	HS540: 26 AWG
(PVC insulated)	GS880/HS865: 24 AWG

Locknut Torque

M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel;
Locknuts/Lockwashers:	Stainless Steel
Side Cap:	POM Plastic; HS540: PA 12-GF30 Plastic
End Cap:	Trogamid T

Accessories

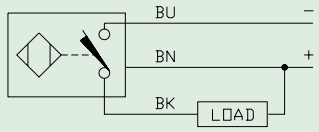
Accessories and mounting devices can be found in Section J.
Mounting Clamps BS-540 and BS-865 must be ordered separately.

Specifications

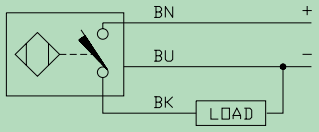
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA (100 mA for HS540 style)
Trigger Current for Overload Protection	≥170 mA (≥120 mA for HS540 style)
Continuous Load Current	≤150 mA (≤100 µA for HS540 style)
Off-State (Leakage) Current	<100 µA
No-Load Current	1.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



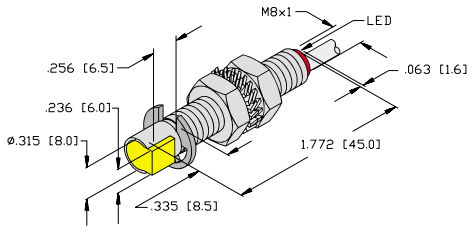
B PNP (Sourcing)



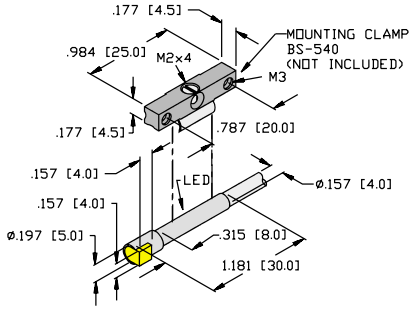
Barrels

Dimensions

1



2



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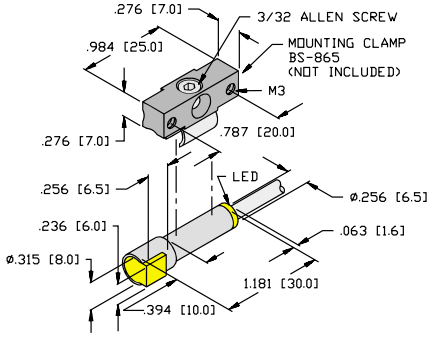
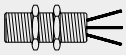


H and EH Barrel

Barrel, Metal, Miniature with Potted-In Cable

Smooth ***picoprox*** ®

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approval Division 2	Switching Frequency (Hz)	ID Number
Bi1.5-H08-AN6X	•	1.5		8.0	•		6	A	1	•	2000	S1614300
Ni 3 -H08-AN6X		3.0		8.0	•		7	A	1	•	2000	S1614900
Bi1.5-H08-AP6X	•	1.5		8.0		•	6	B	1	•	2000	S1604300
Ni 3 -H08-AP6X		3.0		8.0		•	7	B	1	•	2000	S1604900
Ni 2-H08K-AN6X		2.0		8.0	•		8	A	1	•	5000	S1614700
Ni 2-H08K-AP6X		2.0		8.0		•	8	B	1	•	5000	S1604700
Bi 1 -EH04-AN6X	•	1.0		4.0	•		1	A	1		3000	S4609640
Bi1.5-EH6.5-AN6X	•	1.5		6.5	•		2	A	1		3000	S4612100
Bi 2 -EH6.5-AN6X	•	2.0	•	6.5	•		2	A	1		3000	S4612300
Ni 3 -EH6.5-AN6X		3.0		6.5	•		3	A	1		3000	S4612500
Bi 1 -EH04-AP6X	•	1.0		4.0		•	1	B	1		3000	S4609540
Bi1.5-EH6.5-AP6X	•	1.5		6.5		•	2	B	1		3000	S4612000
Bi 2 -EH6.5-AP6X	•	2.0	•	6.5		•	2	B	1		3000	S4612200
Ni 3 -EH6.5-AP6X		3.0		6.5		•	3	B	1		3000	S4612400
Bi1.5-EH6.5K-AN6X	•	1.5		6.5	•		4	A	1		3000	S4610640
Bi 2 -EH6.5K-AN6X	•	2.0	•	6.5	•		4	A	1		3000	S4610100
Ni 3 -EH6.5K-AN6X		3.0		6.5	•		5	A	1		3000	S4610300
Bi1.5-EH6.5K-AP6X	•	1.5		6.5		•	4	B	1		3000	S4610540
Bi 2 -EH6.5K-AP6X	•	2.0	•	6.5		•	4	B	1		3000	S4610000
Ni 3 -EH6.5K-AP6X		3.0		6.5		•	5	B	1		3000	S4610200

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG (EH04: 26 AWG)
(PVC insulated)	

Material

Barrel:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30
End Cap:	Trogamid T

Accessories

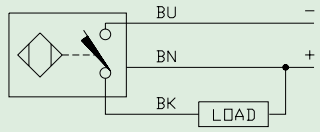
Accessories and mounting devices can be found in Section J.

Specifications

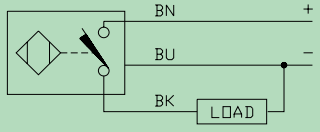
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA (100 mA for HO4 style)
Trigger Current for Overload Protection	≥170 mA (≥120 mA for HO4 style)
Continuous Load Current	≤150 mA (≤100 mA for HO4 style)
Off-State (Leakage) Current	<100 µA
No-Load Current	1.0-9.5 mA
Time Delay Before Availability	≤8.0 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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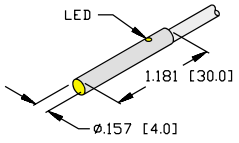

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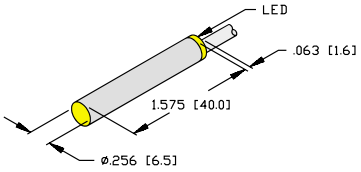

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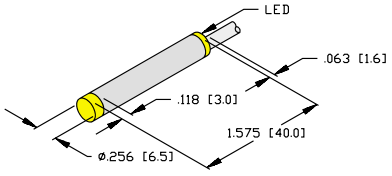

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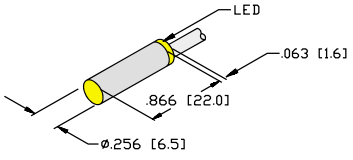

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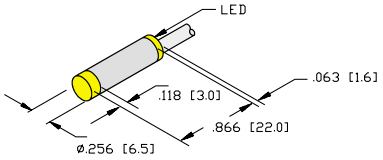

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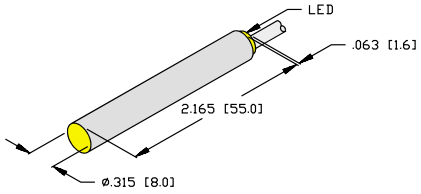

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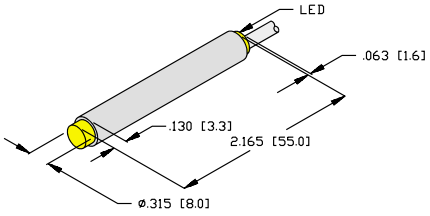

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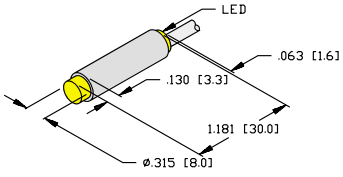
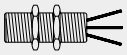


EG Barrel

Barrel, Metal, Miniature with Potted-In Cable

Full Threading ***picoprox®*** ***Uprox®***

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi1.5U-EG08-AN6X	•	1.5	8.0	•		1	A	1	•	2000	S4600510
Ni 4U-EG08-AN6X		4.0	8.0	•		2	A	1	•	2000	S4600610
Bi1.5U-EG08-AP6X	•	1.5	8.0		•	1	B	1	•	2000	S4600500
Ni 4U-EG08-AP6X		4.0	8.0		•	2	B	1	•	2000	S4600600

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Locknut Torque

M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30
End Cap:	Trogamid T

Accessories

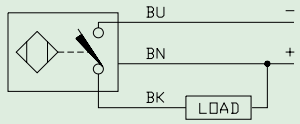
Accessories and mounting devices can be found in Section J.

Specifications

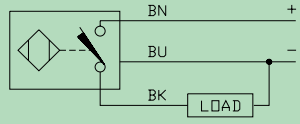
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

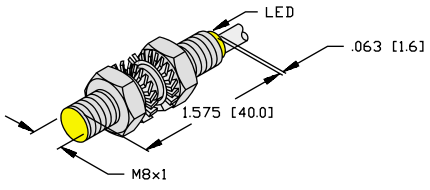


B PNP (Sourcing)



Dimensions

1



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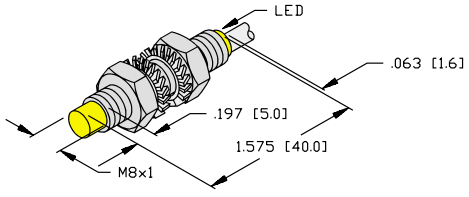
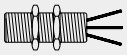


G and EG Barrel

Barrel, Metal, Miniature with Potted-In Cable

Full Threading ***picoprox*** ®

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approval Division 2	Switching Frequency (Hz)	ID Number
Bi 1 -EG05-AN6X	•	1.0		5.0	•		1	A	1	•	3000	S4609840
Bi1.5-EG08-AN6X	•	1.5		8.0	•		2	A	1	•	3000	S4602340
Bi 2 -EG08-AN6X	•	2.0	•	8.0	•		2	A	1	•	3000	S4602140
Ni 3 -EG08-AN6X		3.0		8.0	•		3	A	1	•	3000	S4602840
Bi 1 -EG05-AP6X	•	1.0		5.0		•	1	B	1	•	3000	S4609740
Bi1.5-EG08-AP6X	•	1.5		8.0		•	2	B	1	•	3000	S4602240
Bi 2 -EG08-AP6X	•	2.0	•	8.0		•	2	B	1	•	3000	S4602040
Ni 3 -EG08-AP6X		3.0		8.0		•	3	B	1	•	3000	S4602740
Bi1.5-EG08K-AN6X	•	1.5		8.0	•		4	A	1	•	3000	S4669140
Bi 2 -EG08K-AN6X	•	2.0	•	8.0	•		4	A	1	•	3000	S4669500
Ni 3 -EG08K-AN6X		3.0		8.0	•		5	A	1	•	3000	S4669700
Bi1.5-EG08K-AP6X	•	1.5		8.0		•	4	B	1	•	3000	S4669040
Bi 2 -EG08K-AP6X	•	2.0	•	8.0		•	4	B	1	•	3000	S4669400
Ni 3 -EG08K-AP6X		3.0		8.0		•	5	B	1	•	3000	S4669600
Bi1.5-G08-AN6X	•	1.5		8.0	•		6	A	1	•	3000	S4602300
Bi 2 -G08-AN6X	•	2.0	•	8.0	•		6	A	1	•	3000	S4602100
Ni 3 -G08-AN6X		3.0		8.0	•		7	A	1	•	3000	S4602800
Bi1.5-G08-AP6X	•	1.5		8.0		•	6	B	1	•	3000	S4602200
Bi 2 -G08-AP6X	•	2.0	•	8.0		•	6	B	1	•	3000	S4602000
Ni 3 -G08-AP6X		3.0		8.0		•	7	B	1	•	3000	S4602700

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	EG05: 26 AWG
(PVC insulated)	EG08/EG08K: 24 AWG

Locknut Torque

M5x0.5 Barrel:	5.0 Nm
M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30
End Cap:	Trogamid T

Accessories

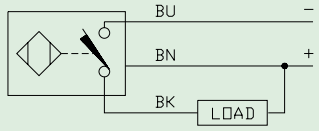
Accessories and mounting devices can be found in Section J.

Specifications

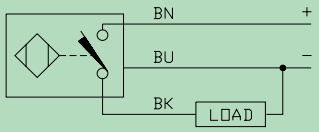
Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 150 mA (100 mA for EG05 style)
Trigger Current for Overload Protection	≥170 mA (≥120 mA for EG05 style)
Continuous Load Current	≤150 mA (≤100 mA for EG05 style)
Off-State (Leakage) Current	<100 µA
No-Load Current	1.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



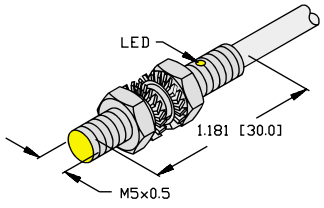
B PNP (Sourcing)



Barrels

Dimensions

1



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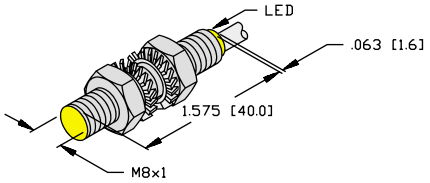

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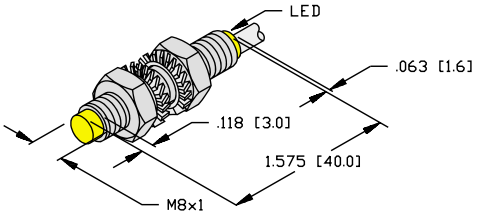

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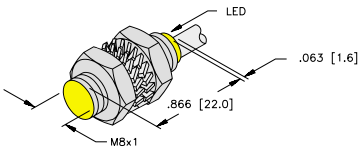

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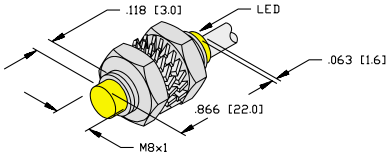

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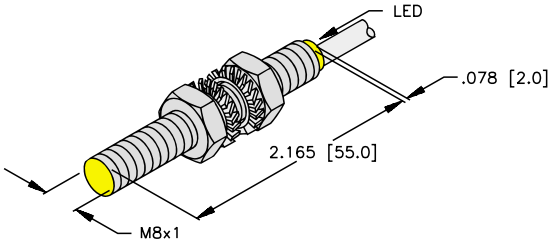

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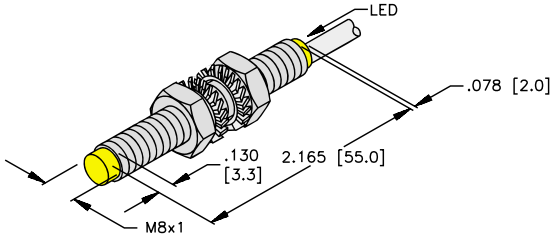
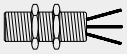


M and EM Barrel

Barrel, Metal with Potted-In Cable - Standard, Stainless Steel

Partial Threading ***Uprox***®

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi 3U-M12-AN6X	•	3	12	CPB	•		1	A	1	•	3000	M1634120
Bi 5U-M18-AN6X	•	5	18	CPB	•		3	A	1	•	2500	M1635120
Bi10U-M30-AN6X	•	10	30	CPB	•		5	A	1	•	2000	M1636120
Ni 8U-M12-AN6X		8	12	CPB	•		2	A	1	•	2000	M1644120
Ni12U-M18-AN6X		12	18	CPB	•		4	A	1	•	2000	M1645120
Ni20U-M30-AN6X		20	30	CPB	•		6	A	1	•	1500	M1646120
Bi 3U-M12-AP6X	•	3	12	CPB		•	1	B	1	•	3000	M1634100
Bi 5U-M18-AP6X	•	5	18	CPB		•	3	B	1	•	2500	M1635100
Bi10U-M30-AP6X	•	10	30	CPB		•	5	B	1	•	2000	M1636100
Ni 8U-M12-AP6X		8	12	CPB		•	2	B	1	•	2000	M1644100
Ni12U-M18-AP6X		12	18	CPB		•	4	B	1	•	2000	M1645100
Ni20U-M30-AP6X		20	30	CPB		•	6	B	1	•	1500	M1646100
Bi 3U-EM12-AN6X	•	3	12	SS	•		1	A	1	•	3000	M1634320
Bi 5U-EM18-AN6X	•	5	18	SS	•		3	A	1	•	2500	M1635320
Bi10U-EM30-AN6X	•	10	30	SS	•		5	A	1	•	2000	M1636320
Ni 8U-EM12-AN6X		8	12	SS	•		2	A	1	•	2000	M1644320
Ni12U-EM18-AN6X		12	18	SS	•		4	A	1	•	2000	M1645320
Ni20U-EM30-AN6X		20	30	SS	•		6	A	1	•	1500	M1646320
Bi 3U-EM12-AP6X	•	3	12	SS		•	1	B	1	•	3000	M1634300
Bi 5U-EM18-AP6X	•	5	18	SS		•	3	B	1	•	2500	M1635300
Bi10U-EM30-AP6X	•	10	30	SS		•	5	B	1	•	2000	M1636300
Ni 8U-EM12-AP6X		8	12	SS		•	2	B	1	•	2000	M1644300
Ni12U-EM18-AP6X		12	18	SS		•	4	B	1	•	2000	M1645300
Ni20U-EM30-AP6X		20	30	SS		•	6	B	1	•	1500	M1646300

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

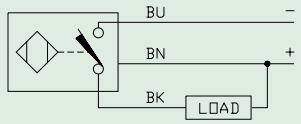
Accessories and mounting devices can be found in Section J.

Specifications

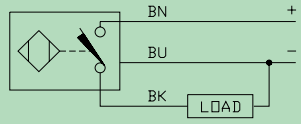
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<0.1 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)



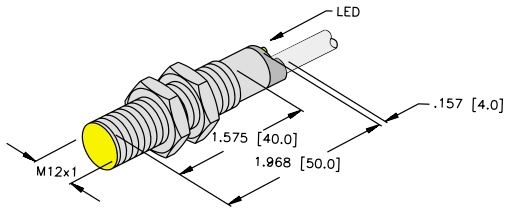
B PNP (Sourcing)



Barrels

Dimensions

1



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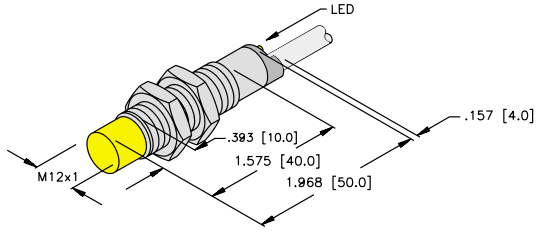

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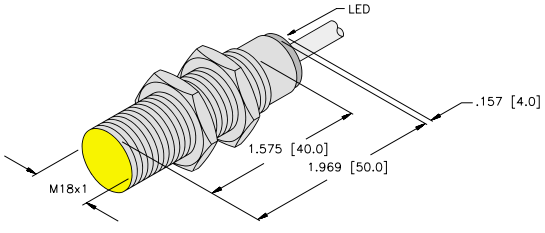

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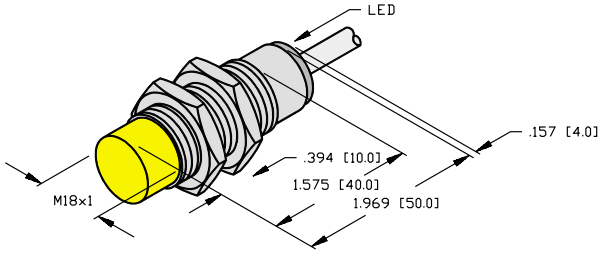

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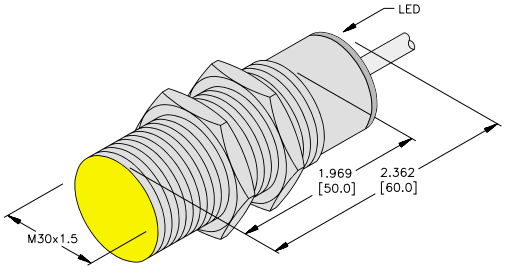

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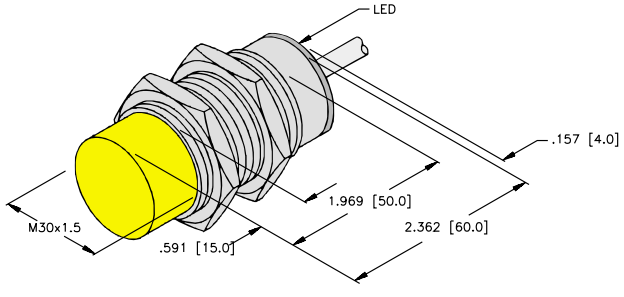
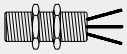


M Barrel

Barrel, Metal with Potted-In Cable
Full Threading, ***Extended Range***

3-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number
Bi 4-M12-AN6X	•	4	12	CPB	•		1	A	1	2000	T4607130
Bi 8-M18-AN6X	•	8	18	SS	•		3	A	1	500	T4615130
Bi15-M30-AN6X	•	15	30	SS	•		5	A	1	500	T4618620
Ni 8-M12-AN6X		8	12	CPB	•		2	A	1	2000	M4611318
Ni14-M18-AN6X		14	18	CPB	•		4	A	1	500	M4611411
Ni20-M30-AN6X		20	30	CPB	•		6	A	1	500	M4670516
Bi 4-M12-AP6X	•	4	12	CPB		•	1	B	1	2000	T4607006
Bi 8-M18-AP6X	•	8	18	SS		•	3	B	1	500	T4615030
Bi15-M30-AP6X	•	15	30	SS		•	5	B	1	500	T4618530
Ni 8-M12-AP6X		8	12	CPB		•	2	B	1	2000	M4611319
Ni14-M18-AP6X		14	18	CPB		•	4	B	1	500	M4611401
Ni20-M30-AP6X		20	30	CPB		•	6	B	1	500	M4670511

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	M12: 24 AWG
(PVC insulated)	M18/M30: 21AWG

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

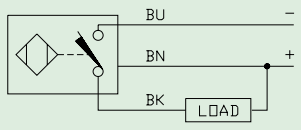
Accessories and mounting devices can be found in Section J.

Specifications

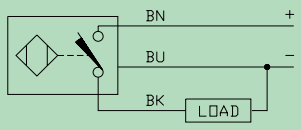
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



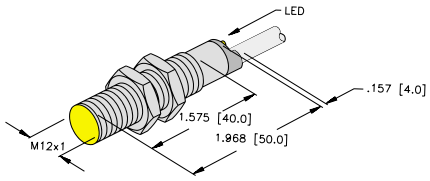
B PNP (Sourcing)



Barrels

Dimensions

1



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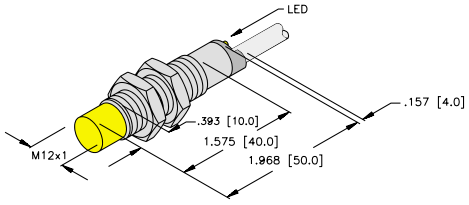

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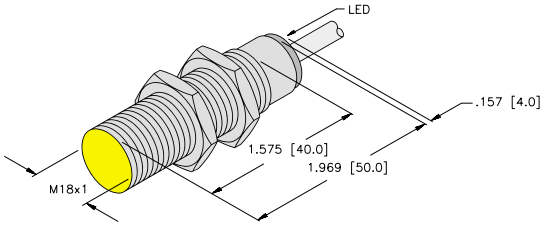

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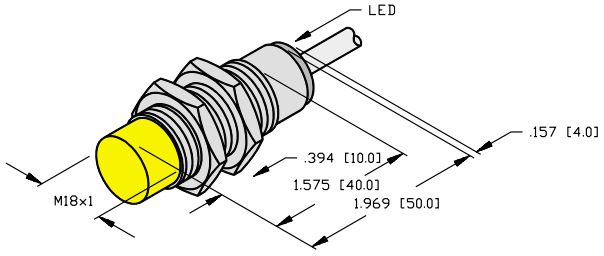

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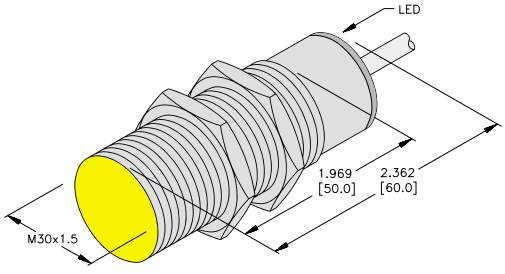

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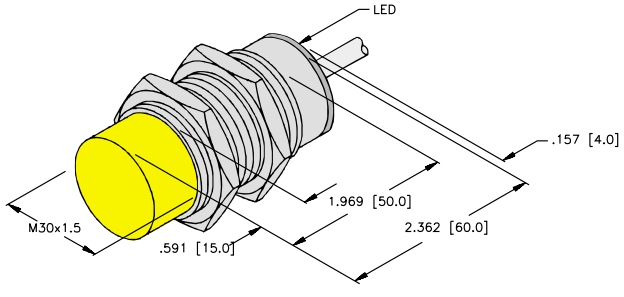
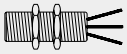


G and EG Barrel

Barrel, Metal with Potted-In Cable - Standard, Stainless Steel

Full Threading

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi 2-G12-AN6X	•	2	12	•		1	A	1	•	2000	T4635500
Bi 5-G18-AN6X	•	5	18	•		3	A	1	•	1000	T4641500
Bi10-G30-AN6X	•	10	30	•		5	A	1	•	500	T4647500
Ni 5-G12-AN6X		5	12	•		2	A	1	•	1500	T4635700
Ni10-G18-AN6X		10	18	•		4	A	1	•	1000	T4641700
Ni15-G30-AN6X		15	30	•		6	A	1	•	500	T4647700
Bi 2-G12-AP6X	•	2	12		•	1	B	1	•	2000	T4635400
Bi 5-G18-AP6X	•	5	18		•	3	B	1	•	1000	T4641400
Bi10-G30-AP6X	•	10	30		•	5	B	1	•	500	T4647400
Ni 5-G12-AP6X		5	12		•	2	B	1	•	1500	T4635600
Ni10-G18-AP6X		10	18		•	4	B	1	•	1000	T4641600
Ni15-G30-AP6X		15	30		•	6	B	1	•	500	T4647600
Bi 2-EG12-AN6X	•	2	12	•		1	A	1	•	2000	T4605101
Bi 5-EG18-AN6X	•	5	18	•		3	A	1	•	1000	T4611101
Bi 2-EG12-AP6X	•	2	12		•	1	B	1	•	2000	T4605001
Bi 5-EG18-AP6X	•	5	18		•	3	B	1	•	1000	T4611001

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	G12: 24 AWG
(PVC insulated)	G18/G30: 21AWG

Material

G Barrel/Locknuts:	Chrome Plated Brass
EG Barrel/Locknuts:	Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

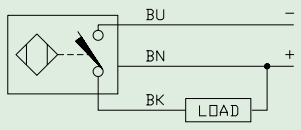
Accessories and mounting devices can be found in Section J.

Specifications

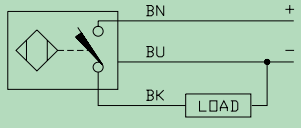
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

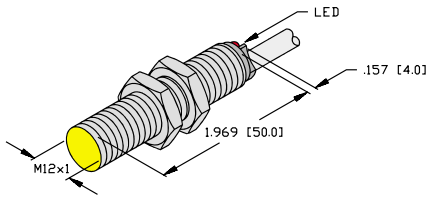


B PNP (Sourcing)



Dimensions

1



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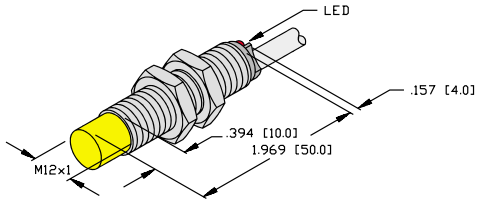

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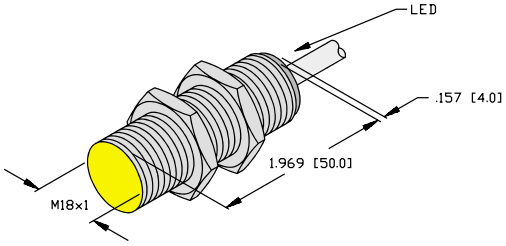

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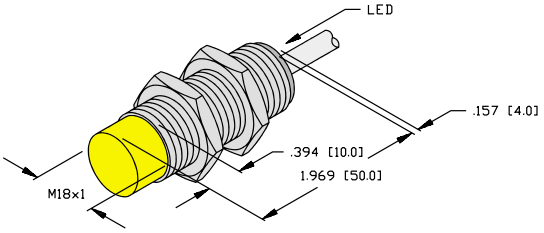

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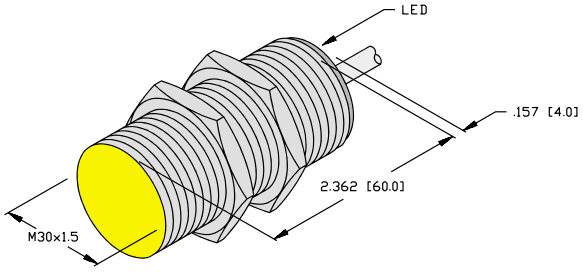

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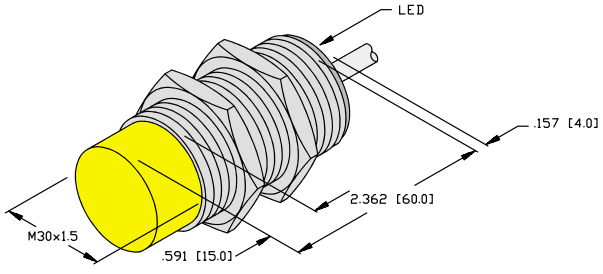
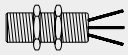


G..K Barrel

Barrel, Metal, Short with Potted-In Cable
Full Threading

3-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi 2-G12K-AN6X	•	2	12	•		1	A	1	•	2000	T4671200
Bi 5-G18K-AN6X	•	5	18	•		3	A	1	•	1000	T4671400
Bi10-G30K-AN6X	•	10	30	•		5	A	1	•	500	T4671600
Ni 5-G12K-AN6X		5	12	•		2	A	1	•	1500	T4671300
Ni10-G18K-AN6X		10	18	•		4	A	1	•	1000	T4671500
Ni15-G30K-AN6X		15	30	•		6	A	1		500	T4671700
Bi 2-G12K-AP6X	•	2	12		•	1	B	1	•	2000	T4670200
Bi 5-G18K-AP6X	•	5	18		•	3	B	1	•	1000	T4670400
Bi10-G30K-AP6X	•	10	30		•	5	B	1	•	500	T4670600
Ni 5-G12K-AP6X		5	12		•	2	B	1	•	1500	T4670300
Ni10-G18K-AP6X		10	18		•	4	B	1	•	1000	T4670500
Ni15-G30K-AP6X		15	30		•	6	B	1		500	T4670700

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	G12: 24 AWG
(PVC insulated)	G18/G30: 21 AWG

Material

Barrel/Locknuts:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

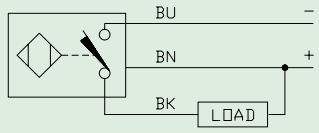
Accessories and mounting devices can be found in Section J.

Specifications

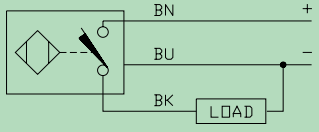
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

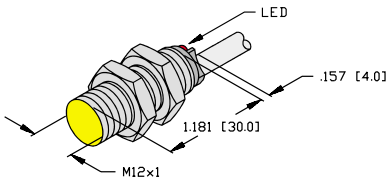


B PNP (Sourcing)



Dimensions

1



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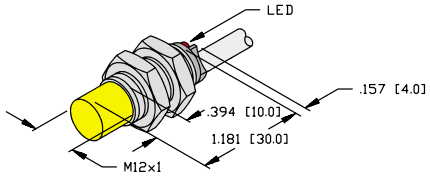

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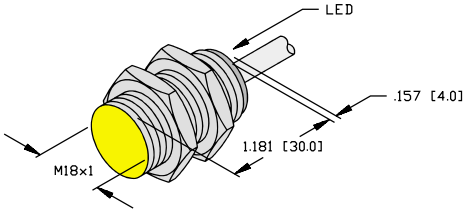

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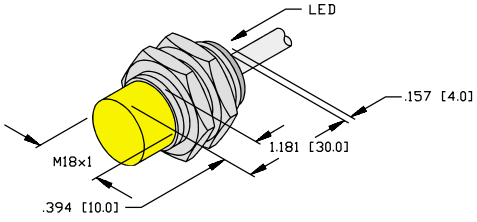

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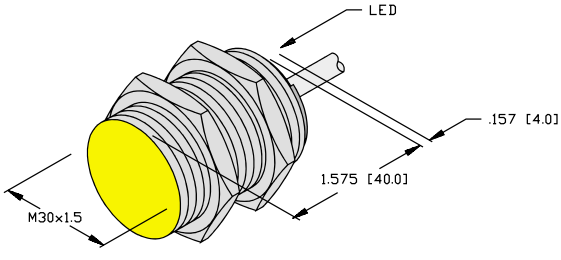

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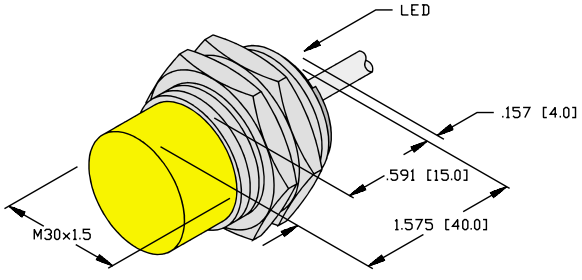
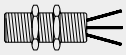


G Barrel

Barrel, Metal with Potted-In Cable

Full Threading

3-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi2O-G47-AN4X	•	20	47	•		1	A	1		100	M1574500
Ni25-G47-AN4X		25	47	•		2	A	1		100	M1574600
Bi2O-G47-AP4X	•	20	47		•	1	B	1		100	M1564500
Ni25-G47-AP4X		25	47		•	2	B	1		100	M1564600

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	19 AWG

Material

Barrel/Locknuts:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PA 66-GF25 Plastic

Accessories

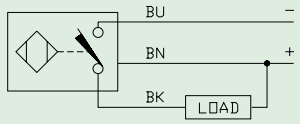
Accessories and mounting devices can be found in Section J.

Specifications

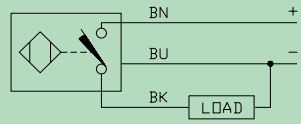
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

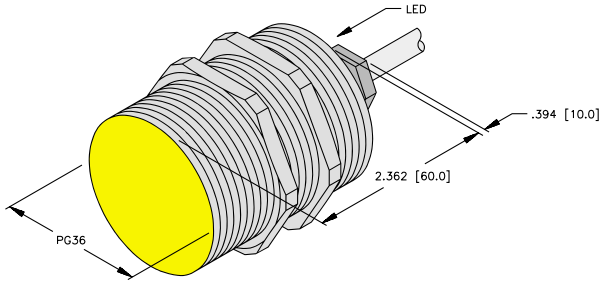


B PNP (Sourcing)



Dimensions

1



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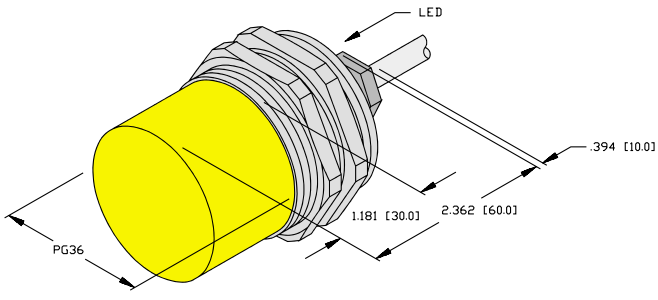
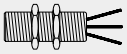


M..T Barrel

Barrel, Metal with Potted-In Cable

Partial Threading, Barb Fitting, Standard and Extended Range

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi 2-M12T-AN6X	•	2		12	•		1	A	1	•	2000	T4606100
Bi 4-M12T-AN6X	•	4	•	12	•		1	A	1	•	2000	T4608100
Bi 5-M18T-AN6X	•	5		18	•		3	A	1	•	1000	T4614100
Bi 8-M18T-AN6X **	•	8	•	18	•		3	A	1	•	400	M4616100
Bi10-M30T-AN6X	•	10		30	•		5	A	1	•	500	T4619100
Bi15-M30T-AN6X	•	15	•	30	•		5	A	1		300	M4618100
Ni 4-M12T-AN6X		4		12	•		2	A	1	•	2000	M4606300
Ni 8-M18T-AN6X		8		18	•		4	A	1	•	1000	T4614300
Ni15-M30T-AN6X		15		30	•		6	A	1		500	M4619300
Bi 2-M12T-AP6X	•	2		12		•	1	B	1	•	2000	T4606000
Bi 4-M12T-AP6X	•	4	•	12		•	1	B	1	•	2000	T4608000
Bi 5-M18T-AP6X	•	5		18		•	3	B	1	•	1000	T4614000
Bi 8-M18T-AP6X **	•	8	•	18		•	3	B	1	•	400	M4616000
Bi10-M30T-AP6X	•	10		30		•	5	B	1	•	500	T4619000
Bi15-M30T-AP6X	•	15	•	30		•	5	B	1		300	M4618000
Ni 4-M12T-AP6X		4		12		•	2	B	1	•	2000	M4606200
Ni 8-M18T-AP6X		8		18		•	4	B	1	•	1000	T4614200
Ni15-M30T-AP6X		15		30		•	6	B	1		500	M4619200

* Normally Closed versions available upon request, consult factory.
** Barrel thread is 60 mm; overall barrel length is 86 mm.

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length 2 meter only for Extended Range Sensors
Copper Conductor: (PVC insulated)	M12T: 24 AWG M18T/M30T: 21 AWG

Material

Barrel/Locknuts:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	Chrome Plated Brass

Accessories

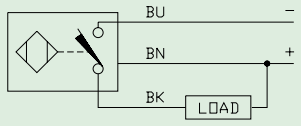
Accessories and mounting devices can be found in Section J.

Specifications

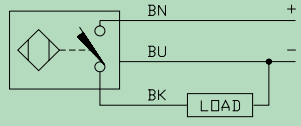
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



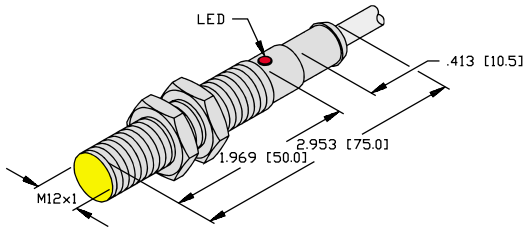
B PNP (Sourcing)



Barrels

Dimensions

1



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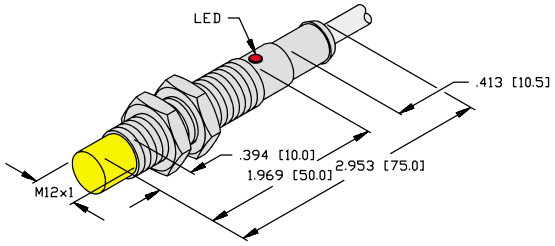

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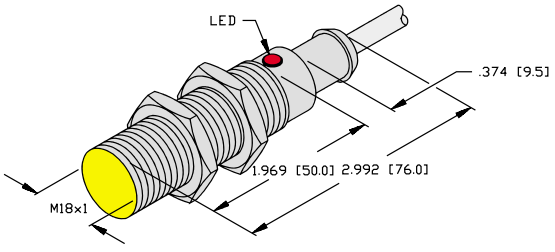

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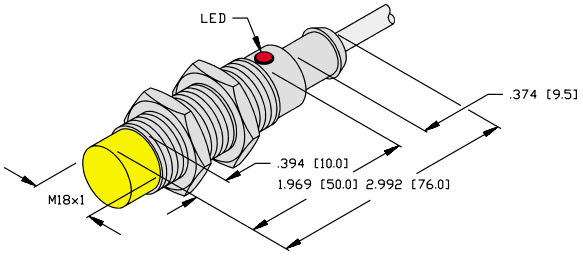

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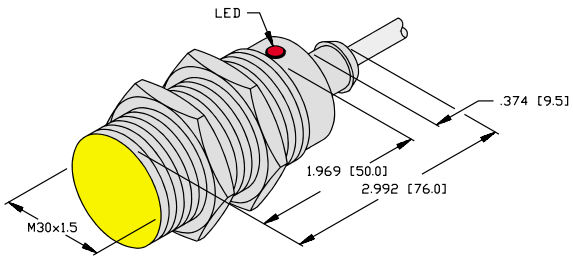

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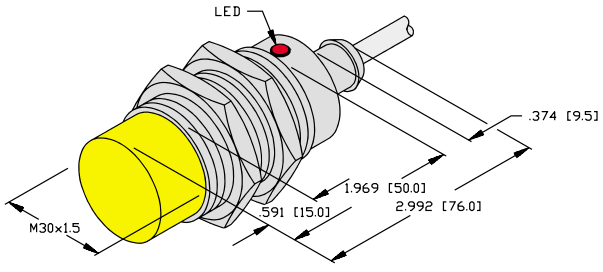
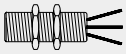


K Barrel

Barrel, Plastic with Potted-In Cable
Smooth

3-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Normally Open***, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approval Division 2	Switching Frequency (Hz)	ID Number
Bi 2-K11-AN6 *	•	2	11	•		1	A	0		2000	M4660600
Ni 5-K11-AN6 *		5	11	•		1	A	0		1500	M4660800
Ni10-K20-AN6X **		10	20	•		2	A	1		1000	M4664100
Ni20-K40-AN6X ϕ		20	40	•		3	A	1		100	M1676900
Bi 2-K11-AP6 *	•	2	11		•	1	B	0		2000	M4660500
Ni 5-K11-AP6 *		5	11		•	1	B	0		1500	M4660700
Ni10-K20-AP6X **		10	20		•	2	B	1		1000	M4664000
Ni20-K40-AP6X ϕ		20	40		•	3	B	1		100	M1655900

* Mounting Clamp BS-11 included with sensor.
** Mounting Clamp BS-20 included with sensor.
*** Normally Closed versions available upon request, consult factory.
ϕ Mounting Bracket attached to sensor.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	K11: 24 AWG
(PVC insulated)	K20/K40: 21 AWG

Material

Barrel/Clamp:	K11: PA 12-GF30 Plastic / PBT Plastic K20: PBT-GF30 Plastic / PBT Plastic
Barrel/Bracket:	K40: ABS / Cold Roll Steel, Galvanized
End Cap:	PUR Plastic

Accessories

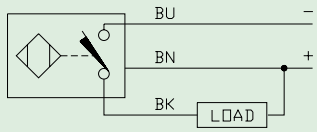
Accessories and mounting devices can be found in Section J.

Specifications

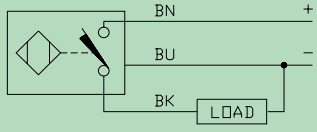
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	K11/K20 styles: ≤8 ms; K40 style: ≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



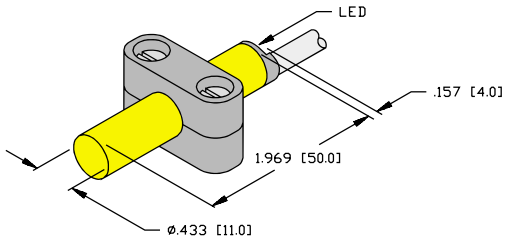
B PNP (Sourcing)



Barrels

Dimensions

1



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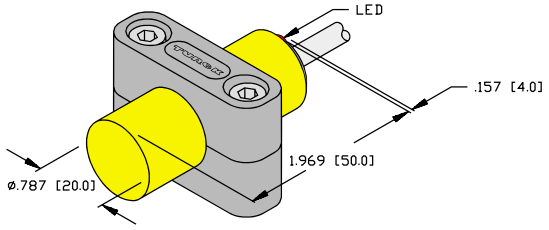

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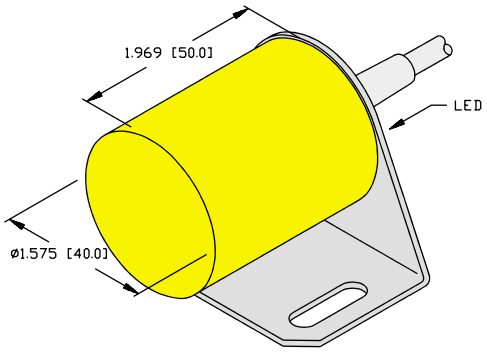
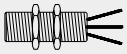


S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading ***Uprox***®

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi 3U-S12-AN6X	•	3	12	•		1	A	1	•	3000	M1634520
Bi 5U-S18-AN6X	•	5	18	•		2	A	1	•	2500	M1635520
Bi10U-S30-AN6X	•	10	30	•		3	A	1	•	2000	M1636520
Ni 8U-S12-AN6X		8	12	•		1	A	1	•	2000	M1644520
Ni12U-S18-AN6X		12	18	•		2	A	1	•	2000	M1645520
Ni20U-S30-AN6X		20	30	•		3	A	1	•	1500	M1646520
Bi 3U-S12-AP6X	•	3	12		•	1	B	1	•	3000	M1634500
Bi 5U-S18-AP6X	•	5	18		•	2	B	1	•	2500	M1635500
Bi10U-S30-AP6X	•	10	30		•	3	B	1	•	2000	M1636500
Ni 8U-S12-AP6X		8	12		•	1	B	1	•	2000	M1644500
Ni12U-S18-AP6X		12	18		•	2	B	1	•	2000	M1645500
Ni20U-S30-AP6X		20	30		•	3	B	1	•	1500	M1646500

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Barrel/Locknuts:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

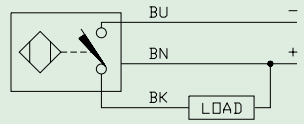
Accessories and mounting devices can be found in Section J.

Specifications

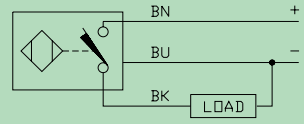
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 mA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

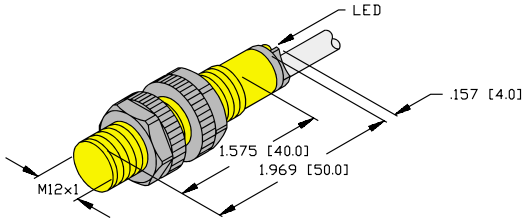


B PNP (Sourcing)

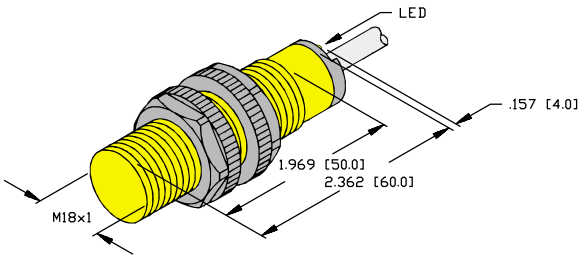


Dimensions

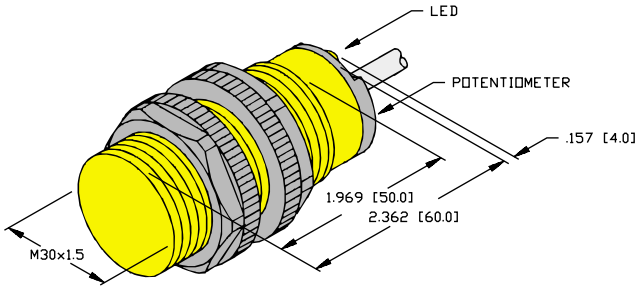
1



2



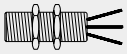
3



S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open*, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi 2-S12-AN6X	•	2	12	•		1	A	1	•	2000	T4653100
Bi 5-S18-AN6X	•	5	18	•		2	A	1	•	1000	T4656100
Bi10-S30-AN6X	•	10	30	•		3	A	1	•	500	T4659100
Ni 4-S12-AN6X		4	12	•		1	A	1	•	2000	T4653300
Ni 8-S18-AN6X		8	18	•		2	A	1	•	1000	T4656300
Ni15-S30-AN6X		15	30	•		3	A	1		500	T4659300
Bi 2-S12-AP6X	•	2	12		•	1	B	1	•	2000	T4653000
Bi 5-S18-AP6X	•	5	18		•	2	B	1	•	1000	T4656000
Bi10-S30-AP6X	•	10	30		•	3	B	1	•	500	T4659000
Ni 4-S12-AP6X		4	12		•	1	B	1	•	2000	T4653200
Ni 8-S18-AP6X		8	18		•	2	B	1	•	1000	T4656200
Ni15-S30-AP6X		15	30		•	3	B	1		500	T4659200

* Normally Closed versions available upon request, consult factory.

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	S12: 24 AWG
(PVC insulated)	S18/S30: 21 AWG

Material

Barrel/Locknuts:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

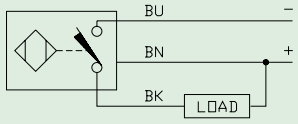
Accessories and mounting devices can be found in Section J.

Specifications

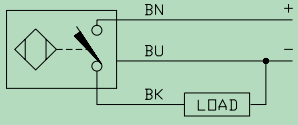
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



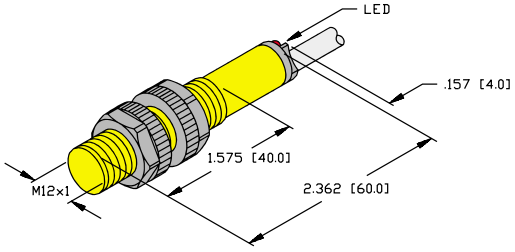
B PNP (Sourcing)



Barrels

Dimensions

1



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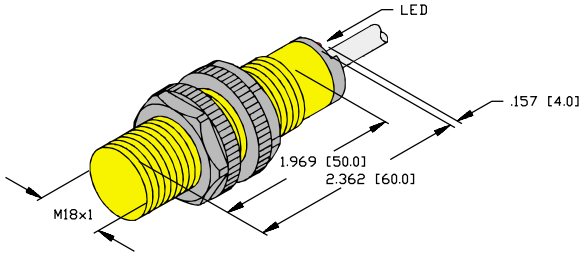

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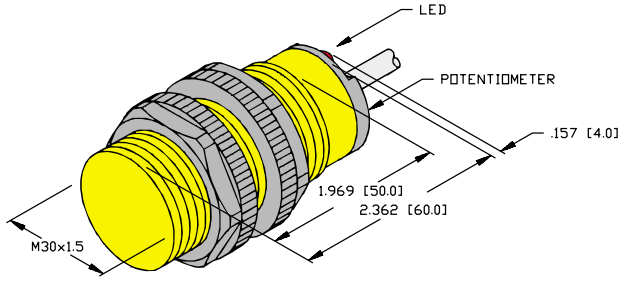
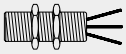


P Barrel

Barrel, Plastic Submersible Sensor

Special Plastic Housing with Potted-in Cable, Full Threading

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 5-P18-AN6/S139-S90	•	5.0	18	•		1	A	0		1000	M1660351
Bi 5-P18-AP6/S139-S90	•	5.0	18		•	1	B	0		1000	M1660350

Note:
This sensor will operate at 725 PSI and is resistant to oil and sea water at 500 meters (1641 feet).
It is also highly resistant to shock, vibration and caustic chemicals.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Barrel:	POM Plastic
End Cap:	PA 6.6-GF Plastic
Locknuts:	PA 6-GF30 Plastic

Accessories

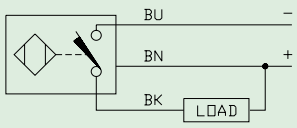
Accessories and mounting devices can be found in Section J.

Specifications

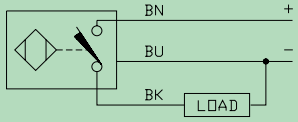
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 4,4X,6,6P,13 and IEC IP 68
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A NPN (Sinking)



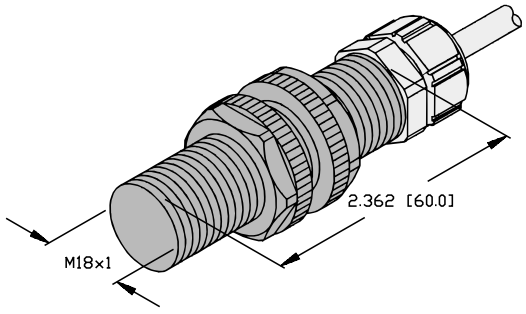
B PNP (Sourcing)



Barrels

Dimensions

1



EG..SK Barrel

Barrel, Metal with Integral Terminal Chamber
Full Threading ***Uprox***®

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi 3U-EG12SK-AN6X	•	3	12	•		1	A	1	•	3000	M1634420
Bi 5U-EG18SK-AN6X	•	5	18	•		3	A	1	•	2500	M1635420
Bi10U-EG30SK-AN6X	•	10	30	•		5	A	1	•	2000	M1636420
Ni 8U-EG12SK-AN6X		8	12	•		2	A	1	•	2000	M1644420
Ni12U-EG18SK-AN6X		12	18	•		4	A	1	•	2000	M1645420
Ni20U-EG30SK-AN6X		20	30	•		6	A	1	•	1500	M1646420
Bi 3U-EG12SK-AP6X	•	3	12		•	1	B	1	•	3000	M1634400
Bi 5U-EG18SK-AP6X	•	5	18		•	3	B	1	•	2500	M1635400
Bi10U-EG30SK-AP6X	•	10	30		•	5	B	1	•	2000	M1636400
Ni 8U-EG12SK-AP6X		8	12		•	2	B	1	•	2000	M1644400
Ni12U-EG18SK-AP6X		12	18		•	4	B	1	•	2000	M1645400
Ni20U-EG30SK-AP6X		20	30		•	6	B	1	•	1500	M1646400

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M; other styles in "Cordsets" Catalog.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4T-2; other styles in "Cordsets" catalog.

Material

Terminal Chamber: PA 12-GF30 Plastic
Terminal Chamber Cover: PEI (Ultem) Plastic
Barrel/Locknuts/Screws: Stainless Steel
Sensing Face: PA 12-GF30 Plastic

Accessories

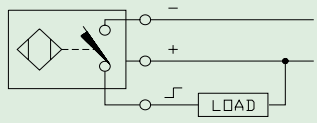
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

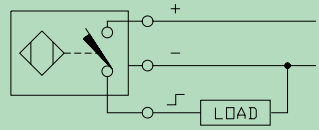
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

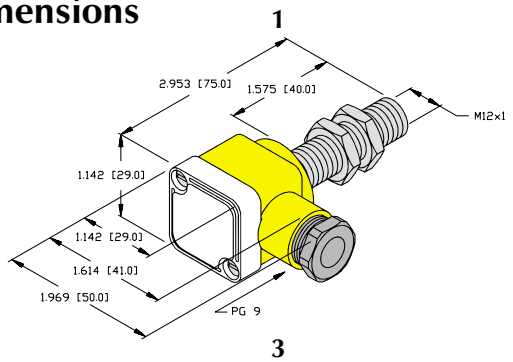


B PNP (Sourcing)



Dimensions

1



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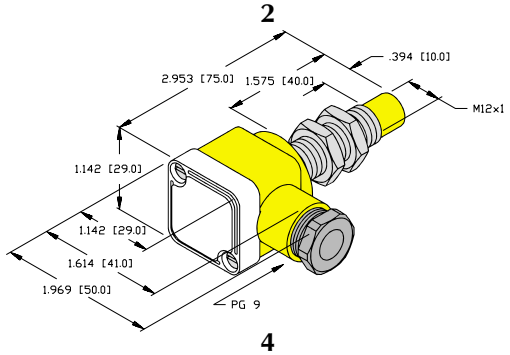

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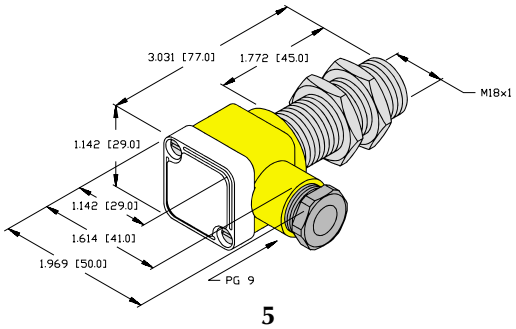

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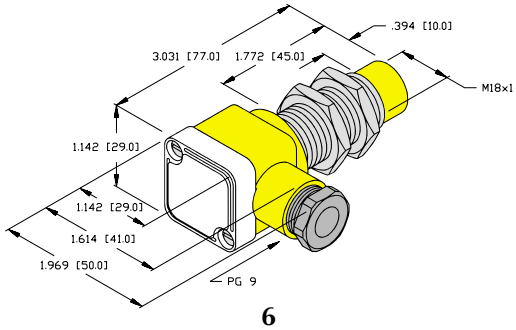

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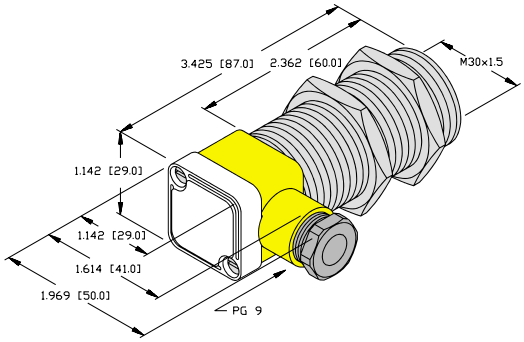

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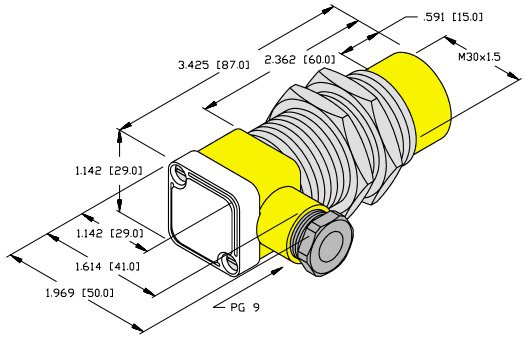


G..SK Barrel

Barrel, Metal with Integral Terminal Chamber

Full Threading

3-Wire DC

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Bi 2-G12SK-AN6X2	•	2	12	•		1	A	2	•	2000	T4636500
Bi 5-G18SK-AN6X2	•	5	18	•		3	A	2	•	1000	T4642500
Bi10-G30SK-AN6X2	•	10	30	•		5	A	2	•	500	T4648500
Ni 5-G12SK-AN6X2		5	12	•		2	A	2	•	1500	T4636700
Ni10-G18SK-AN6X2		10	18	•		4	A	2	•	1000	T4642700
Ni15-G30SK-AN6X2		15	30	•		6	A	2		500	T4648700
Bi 2-G12SK-AP6X2	•	2	12		•	1	B	2	•	2000	T4636400
Bi 5-G18SK-AP6X2	•	5	18		•	3	B	2	•	1000	T4642400
Bi10-G30SK-AP6X2	•	10	30		•	5	B	2	•	500	T4648400
Ni 5-G12SK-AP6X2		5	12		•	2	B	2	•	1500	T4636600
Ni10-G18SK-AP6X2		10	18		•	4	B	2	•	1000	T4642600
Ni15-G30SK-AP6X2		15	30		•	6	B	2		500	T4648600

Material

Terminal Chamber:	PA 12-GF30 Plastic
Terminal Chamber Cover:	Trogamid T
Barrel/Locknuts:	Chrome Plated Brass
Sensing Face/Screws:	PA 12-GF30 Plastic/Stainless Steel

Accessories

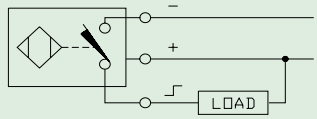
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

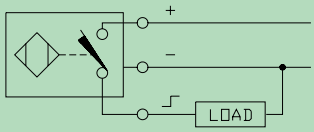
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

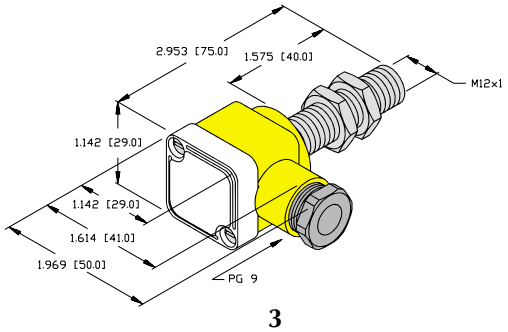


B PNP (Sourcing)



Dimensions

1



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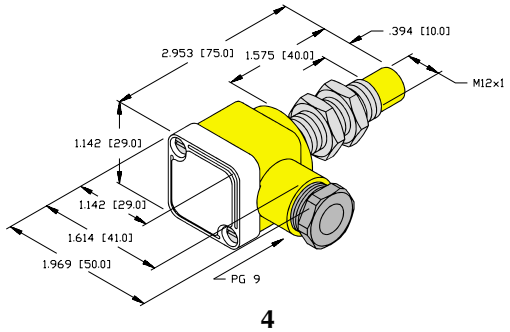

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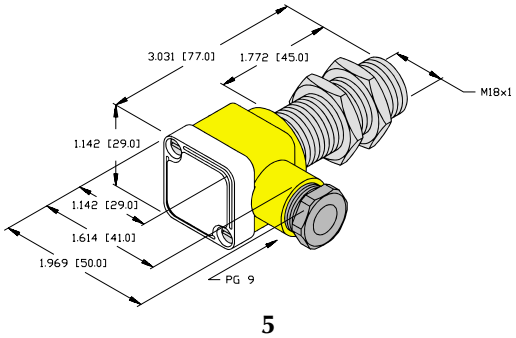

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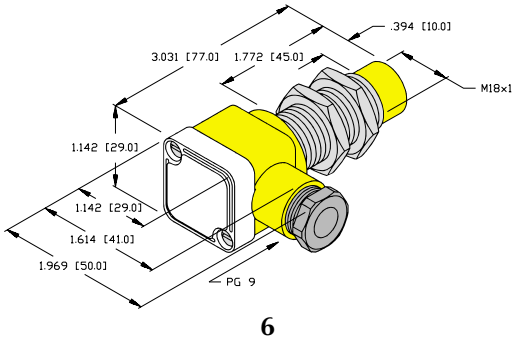

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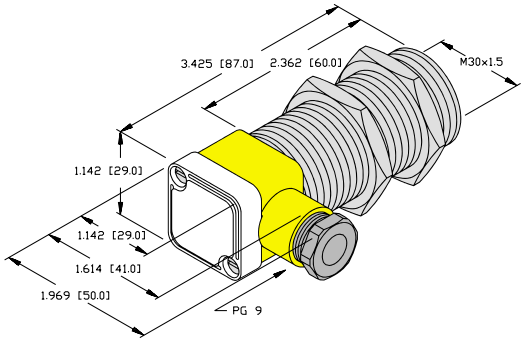

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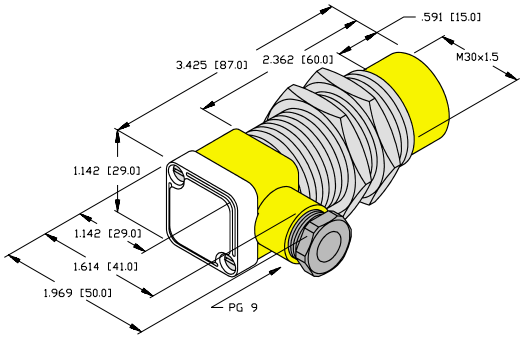


P..SK Barrel

Barrel, Plastic with Integral Terminal Chamber
Full Threading ***Uprox***®

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number
Bi 3U-P12SK-AN6X	•	3	12	•		1	A	1	•	3000	M1634720
Bi 5U-P18SK-AN6X	•	5	18	•		2	A	1	•	2500	M1635720
Bi10U-P30SK-AN6X	•	10	30	•		3	A	1	•	2000	M1636720
Ni 8U-P12SK-AN6X		8	12	•		1	A	1	•	2000	M1644720
Ni12U-P18SK-AN6X		12	18	•		2	A	1	•	2000	M1645720
Ni20U-P30SK-AN6X		20	30	•		3	A	1	•	1500	M1646720
Bi 3U-P12SK-AP6X	•	3	12		•	1	B	1	•	3000	M1634700
Bi 5U-P18SK-AP6X	•	5	18		•	2	B	1	•	2500	M1635700
Bi10U-P30SK-AP6X	•	10	30		•	3	B	1	•	2000	M1636700
Ni 8U-P12SK-AP6X		8	12		•	1	B	1	•	2000	M1644700
Ni12U-P18SK-AP6X		12	18		•	2	B	1	•	2000	M1645700
Ni20U-P30SK-AP6X		20	30		•	3	B	1	•	1500	M1646700

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M; other styles in "Cordsets" Catalog.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4T-2; other styles in "Cordsets" catalog.

Material

Terminal Chamber: PA 12-GF30 Plastic
Terminal Chamber Cover: PEI (Ultem) Plastic
Barrel/Locknuts/Screws: PA 12-GF30 Plastic / Stainless Steel
Sensing Face: PA 12-GF30 Plastic

Accessories

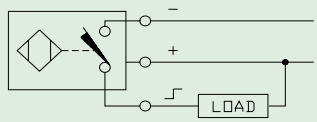
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

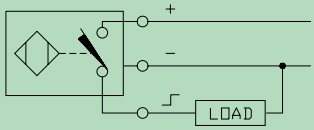
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤15 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2, Level 2
Operating Temperature (10% temp. drift)	-25°C to +70°C (-13°F to +158°F)
Operating Temperature (15% temp. drift)	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

Wiring Diagrams

A NPN (Sinking)

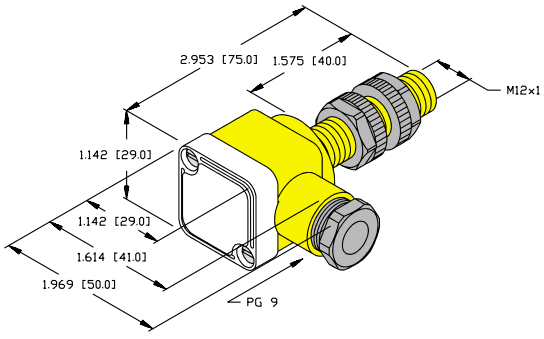


B PNP (Sourcing)

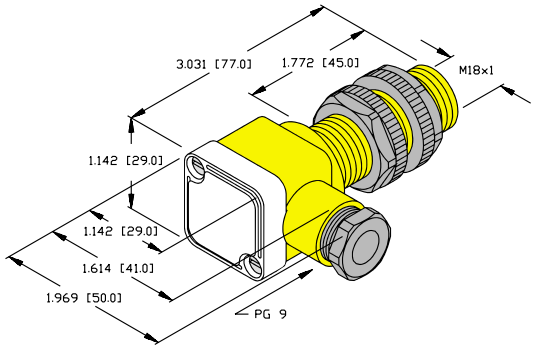


Dimensions

1



2



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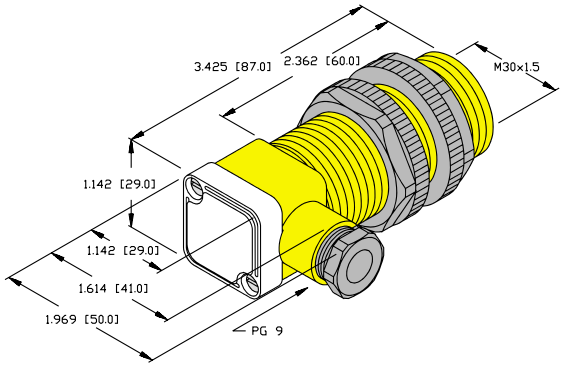


K..SK Barrel

P..SK Barrel

Barrel, Plastic with Integral Terminal Chamber

K..SK: *Smooth*
P..SK: *Full Threading*

3-Wire DC
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number
Ni10-K20SK-AN6X2 **		10	20	•		1	A	2		1000	T4664800
Ni10-K20SK-AP6X2 **		10	20		•	1	B	2		1000	T4664693
Bi 2-P12SK-AN6X2	•	2	12	•		2	A	2	•	2000	T4654000
Bi 5-P18SK-AN6X2	•	5	18	•		3	A	2	•	1000	T4657000
Bi10-P30SK-AN6X2	•	10	30	•		4	A	2	•	500	T4660000
Ni 5-P12SK-AN6X2		5	12	•		2	A	2	•	1500	T4654200
Ni10-P18SK-AN6X2		10	18	•		3	A	2	•	1000	T4657200
Ni15-P30SK-AN6X2		15	30	•		4	A	2		500	T4660200
Bi 2-P12SK-AP6X2	•	2	12		•	2	B	2	•	2000	T4653900
Bi 5-P18SK-AP6X2	•	5	18		•	3	B	2	•	1000	T4656900
Bi10-P30SK-AP6X2	•	10	30		•	4	B	2	•	500	T4659900
Ni 5-P12SK-AP6X2		5	12		•	2	B	2	•	1500	T4654100
Ni10-P18SK-AP6X2		10	18		•	3	B	2	•	1000	T4657100
Ni15-P30SK-AP6X2		15	30		•	4	B	2		500	T4660100

** BS-20 Mounting Clamp included with sensor.

Material

Terminal Chamber: PA 12-GF30 Plastic
Terminal Chamber Cover: Trogamid T
Barrel/Locknuts: PA 12-GF30 Plastic

Accessories

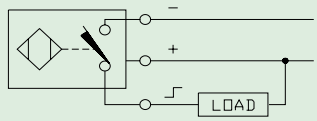
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

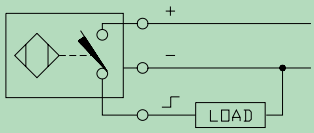
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

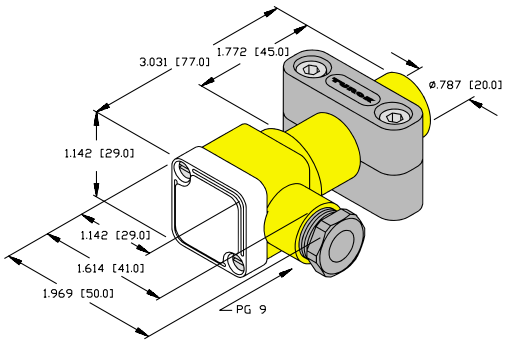


B PNP (Sourcing)



Dimensions

1



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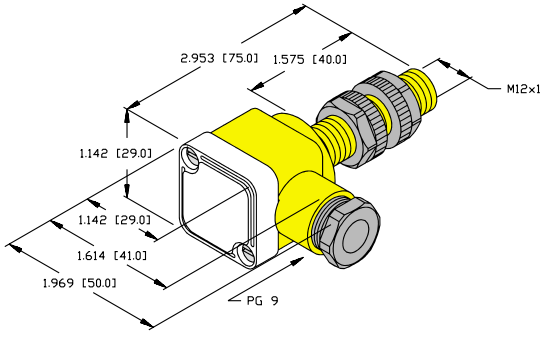

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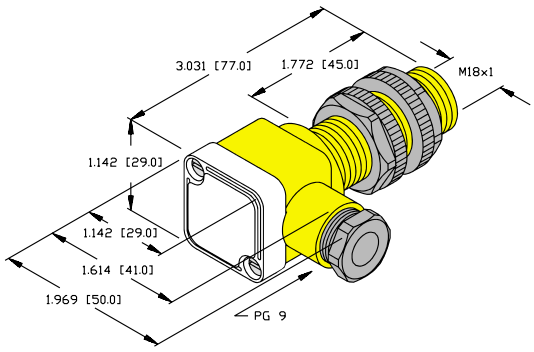

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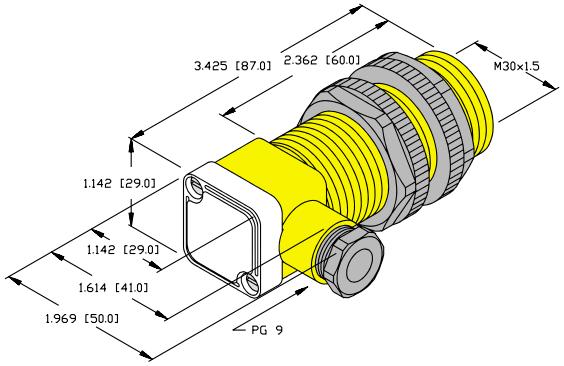


G..M Barrel

Barrel, Metal, Miniature with Quick Disconnect

Full Threading ***picoprox*** ®

3-Wire DC ***eurofast*** ®
10-30 VDC, TTL Compatible
Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 1.5-G08M-AN7X-H1341	•	1.5	8.0	•		1	A	1		2000	S4701110	***eurofast***
Ni 2-G08M-AN7X-H1341		2.0	8.0	•		2	A	1		2000	S4703700	**Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Locknut Torque

M8x1 Barrel	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face:	PA 12-GF30 Plastic

Accessories

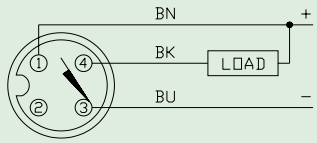
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

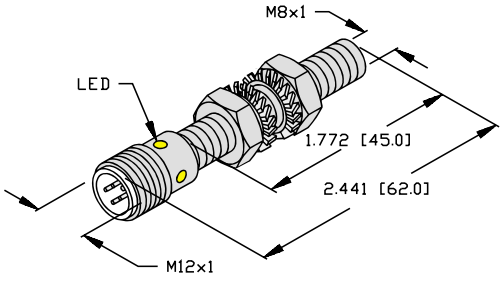
Wiring Diagram

A — NPN (Sinking)



Dimensions

1



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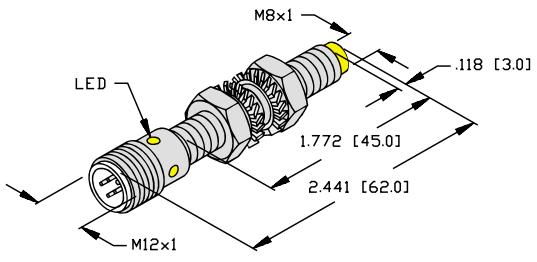
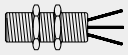


H..M Barrel

Barrel, Metal, Miniature with Potted-In Cable

Smooth ***picoprox*** ®

3-Wire DC 
10-30 VDC, TTL Compatible
Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Sensor Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 1 -H08M -AN7	•	1.0	8.0	•		1	A	0		2000	S4709100
Bi1.5-H6.5M-AN7	•	1.5	6.5	•		3	A	0		2000	S4708100
Ni 2 -H08M -AN7		2.0	8.0	•		2	A	0		2000	S4709500

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG
(PVC insulated)	

Material

Barrel:	Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	Trogamid T

Accessories

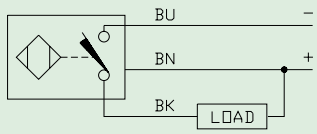
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

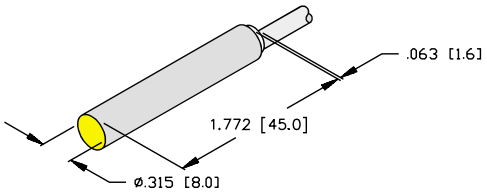
Wiring Diagram

A — NPN (Sinking)



Dimensions

1



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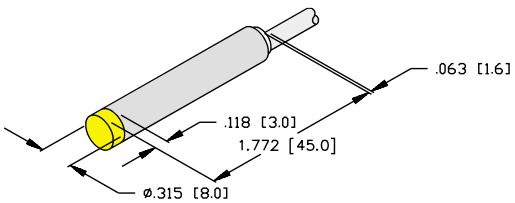

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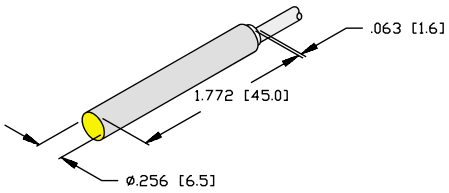
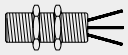


G..M Barrel

Barrel, Metal, Miniature with Potted-In Cable

Full Threading ***picoprox*** ®

3-Wire DC 

10-30 VDC, TTL Compatible

Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Sensor Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 1.5-G08M-AN7	•	1.5	8.0	•		1	A	0		2000	S4701115
Bi 1.5-G08M-AN7X	•	1.5	8.0	•		3	A	1		2000	S4701101
Ni 2-G08M-AN7		2.0	8.0	•		2	A	0		2000	S4701300
Ni 2-G08M-AN7X		2.0	8.0	•		4	A	1		2000	S4704300

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Locknut Torque

M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face:	PA 12 -GF30 Plastic
End Cap:	Trogamid T

Accessories

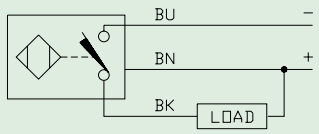
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

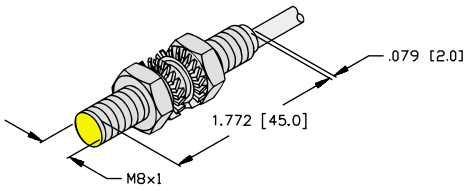
Wiring Diagram

A — NPN (Sinking)



Dimensions

1



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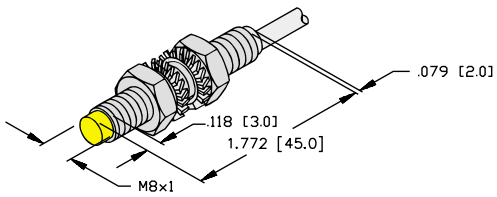

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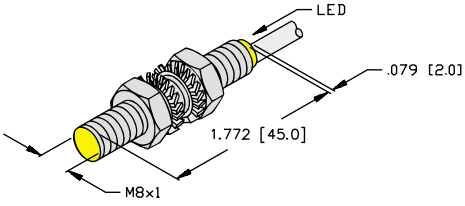

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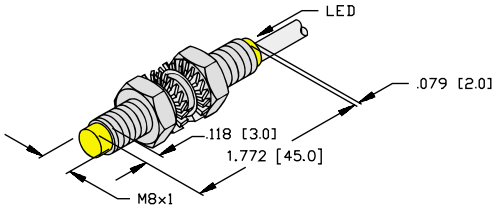
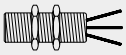


G Barrel

Barrel, Metal with Potted-In Cable

Full Threading

3-Wire DC 

10-30 VDC, TTL Compatible

Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Sensor Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-G12-AN7X	•	2	12	•		1	A	1		2000	T4730500
Bi 5-G18-AN7X	•	5	18	•		3	A	1		1000	T4740500
Bi10-G30-AN7X	•	10	30	•		5	A	1		500	T1714800
Ni 5-G12-AN7X		5	12	•		2	A	1		1500	T1714500
Ni10-G18-AN7X		10	18	•		4	A	1		1000	T4740700
Ni15-G30-AN7X		15	30	•		6	A	1		500	T1714900

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	G12: 24 AWG
(PVC insulated)	G18/G30: 21 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

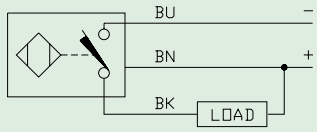
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

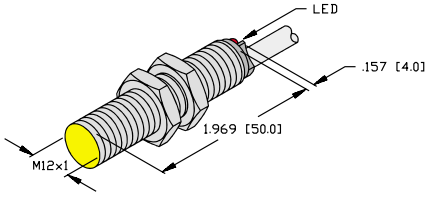
Wiring Diagram

A — NPN (Sinking)



Dimensions

1



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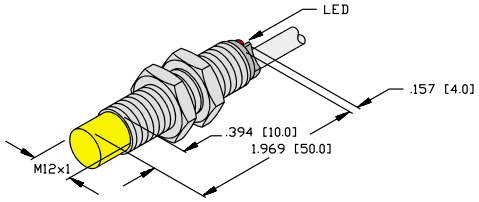
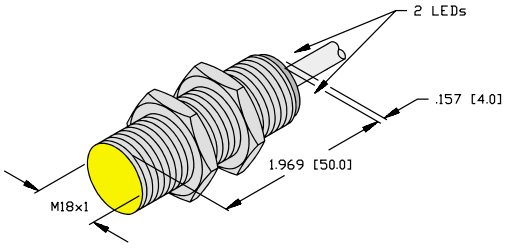
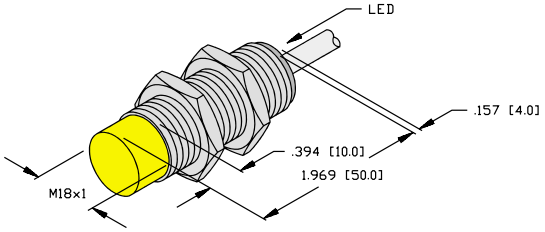


3



4



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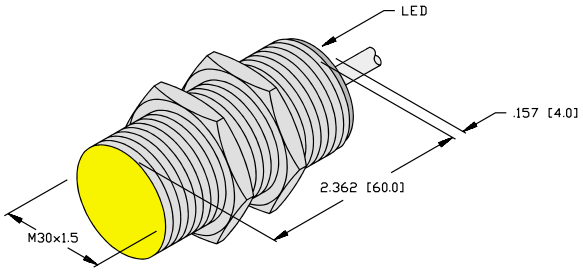

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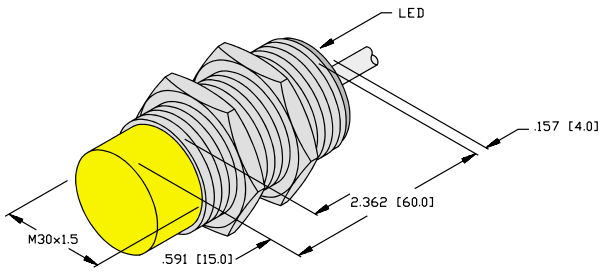
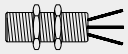


S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading



3-Wire DC
10-30 VDC, TTL Compatible
Normally Open, NPN (Sinking)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 2-S12-AN7X	•	2	12	•		1	A	1		2000	T1713800
Bi 5-S18-AN7X	•	5	18	•		2	A	1		1000	T1714000
Bi10-S30-AN7X	•	10	30	•		3	A	1		500	T1720100
Ni 4-S12-AN7X		4	12	•		1	A	1		1500	T1713900
Ni 8-S18-AN7X		8	18	•		2	A	1		1000	T1714100
Ni15-S30-AN7X		15	30	•		3	A	1		500	T1720200

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	S12: 24 AWG
(PVC insulated)	S18/S30 21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

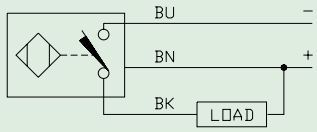
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

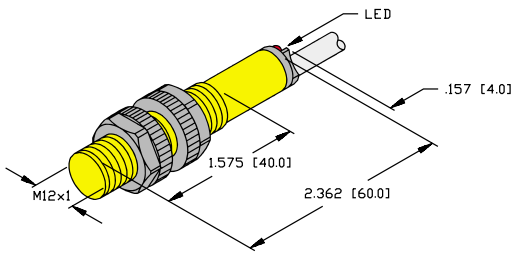
Wiring Diagram

A — NPN (Sinking)



Dimensions

1



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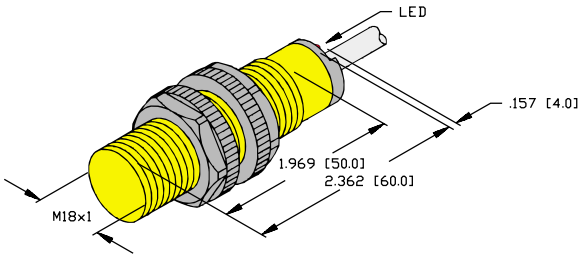

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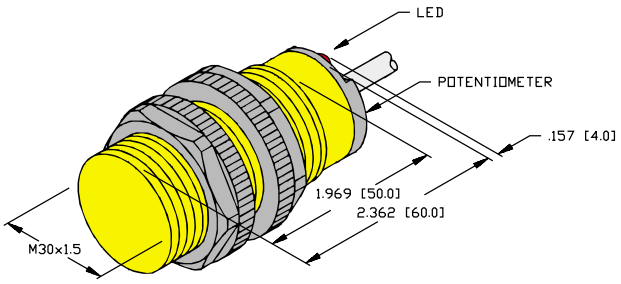


M, ME and M..E

Barrel, Metal with Quick Disconnect

Partial Threading, Optional Extended Barrel Length

4-Wire DC **eurofast®**

10-30 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 2-M12-VN6X-H1141	•	2		12	•		1	A	1	2000	T1643000	eurofast **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 4-M12-VN6X-H1141	•	4	•	12	•		1	A	1	2000	T1643200	
Ni 4-M12-VN6X-H1141		4		12	•		2	A	1	2000	T1643100	
Ni 8-M12-VN6X-H1141		8	•	12	•		2	A	1	2000	M4611323	
Bi 2-M12-VP6X-H1141	•	2		12		•	1	B	1	2000	T1633000	
Bi 4-M12-VP6X-H1141	•	4	•	12		•	1	B	1	2000	T1633200	
Ni 4-M12-VP6X-H1141		4		12		•	2	B	1	2000	T1633100	
Ni 8-M12-VP6X-H1141		8	•	12		•	2	B	1	2000	M4611324	
Bi 2-M12E-VN6X-H1141	•	2		12	•		3	A	1	2000	T1643080	
Ni 4-M12E-VN6X-H1141		4		12	•		4	A	1	2000	T1643190	
Bi 2-M12E-VP6X-H1141	•	2		12		•	3	B	1	2000	T1633080	
Ni 4-M12E-VP6X-H1141		4		12		•	4	B	1	2000	T1633190	

Material

Connector:	Chrome Plated Brass
Barrel/Locknuts:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

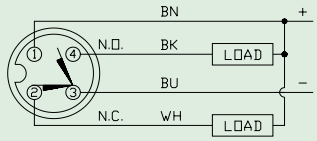
Accessories and mounting devices can be found in Section J.

Specifications

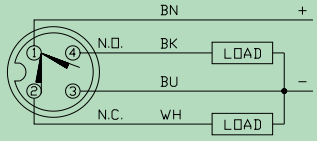
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)

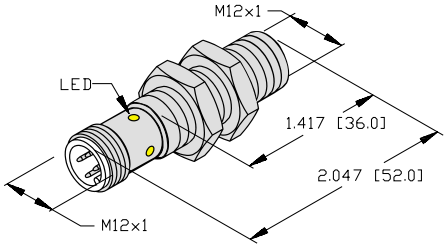


B PNP (Sourcing)



Dimensions

1



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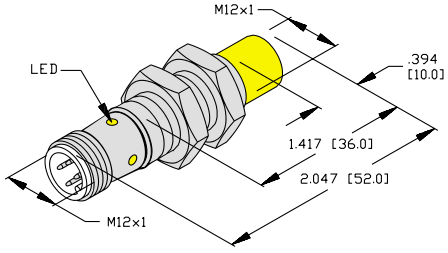

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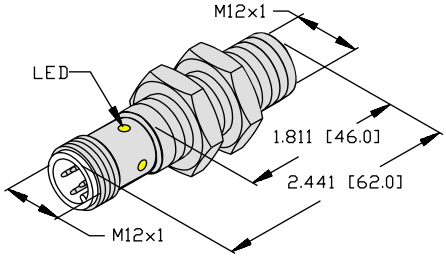

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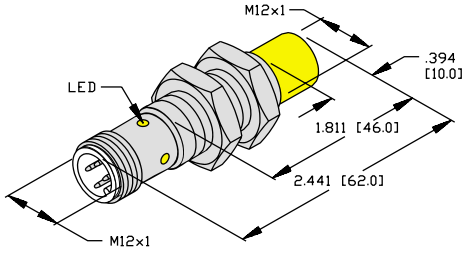


NEW

M Barrel

Barrel, Metal with Quick Disconnect

Partial Threading, Standard and Extended Range

4-Wire DC eurofast®

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
Bi 5-M18-VN4X-H1141	•	5	18	CPB	•		1	A	1	1000	T1571800	eurofast **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
★ Bi 8-M18-VN4X-H1141	•	8	18	SS	•		1	A	1	1000	M4590702	
Bi10-M30-VN4X-H1141	•	10	30	CPB	•		3	A	1	500	T1571600	
★ Bi15-M30-VN4X-H1141	•	15	30	SS	•		3	A	1	500	M4590711	
Ni 8-M18-VN4X-H1141		8	18	CPB	•		2	A	1	1000	T1571900	
★ Ni14-M18-VN4X-H1141		14	18	SS	•		2	A	1	1000	M4590603	
Ni15-M30-VN4X-H1141		15	30	CPB	•		4	A	1	500	T1571510	
★ Ni20-M30-VN4X-H1141		20	30	SS	•		4	A	1	500	M4590606	
Bi 5-M18-VP4X-H1141	•	5	18	CPB		•	1	B	1	1000	T1561800	
★ Bi 8-M18-VP4X-H1141	•	8	18	SS		•	1	B	1	1000	M4590701	
Bi10-M30-VP4X-H1141	•	10	30	CPB		•	3	B	1	500	T1561600	
★ Bi15-M30-VP4X-H1141	•	15	30	SS		•	3	B	1	500	M4590710	
Ni 8-M18-VP4X-H1141		8	18	CPB		•	2	B	1	1000	T1561900	
★ Ni14-M18-VP4X-H1141		14	18	SS		•	2	B	1	1000	M4590602	
Ni15-M30-VP4X-H1141		15	30	CPB		•	4	B	1	500	T1561700	
★ Ni20-M30-VP4X-H1141		20	30	SS		•	4	B	1	500	M4590607	

Material

Connector:	Chrome Plated Brass
Barrel:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic

Accessories

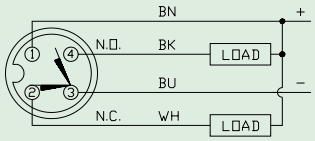
Accessories and mounting devices can be found in Section J.

Specifications

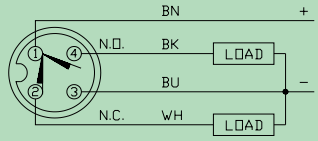
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)

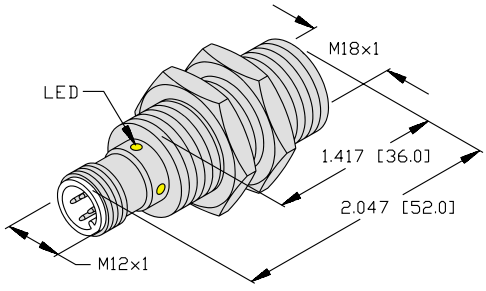


B PNP (Sourcing)



Dimensions

1



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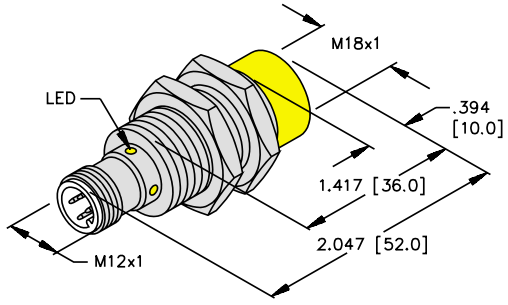

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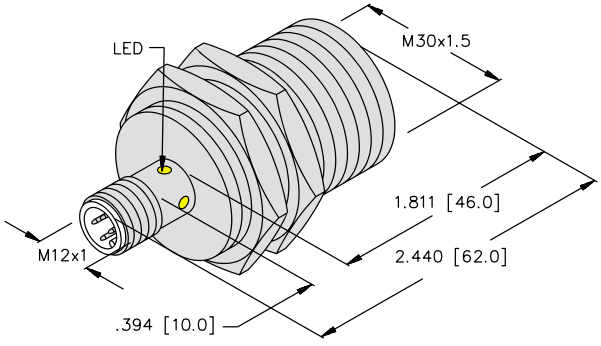

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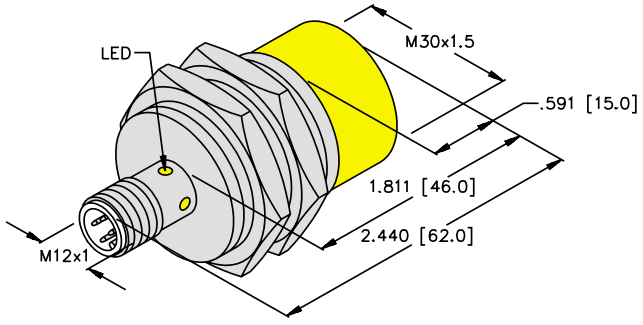


M..E Barrel

Barrel, Metal with Quick Disconnect

Partial Threading, Extended Barrel Length

4-Wire DC **eurofast®**
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-M18E-VN4X-H1141	•	5	18	•		1	A	1		1000	T1571890	eurofast
Bi10-M30E-VN4X-H1141	•	10	30	•		3	A	1		500	T1571690	
Ni 8-M18E-VN4X-H1141		8	18	•		2	A	1		1000	T1571990	
Ni15-M30E-VN4X-H1141		15	30	•		4	A	1		500	T1571590	
Bi 5-M18E-VP4X-H1141	•	5	18		•	1	B	1		1000	T1561890	
Bi10-M30E-VP4X-H1141	•	10	30		•	3	B	1		500	T1561690	
Ni 8-M18E-VP4X-H1141		8	18		•	2	B	1		1000	T1561990	
Ni15-M30E-VP4X-H1141		15	30		•	4	B	1		500	T1561790	

Mating Cordsets
RK 4.4T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

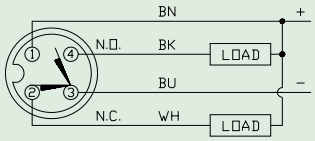
Accessories and mounting devices can be found in Section J.

Specifications

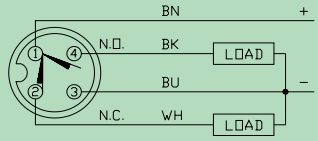
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized (LED Visible Through Four Windows)

Wiring Diagrams

A NPN (Sinking)



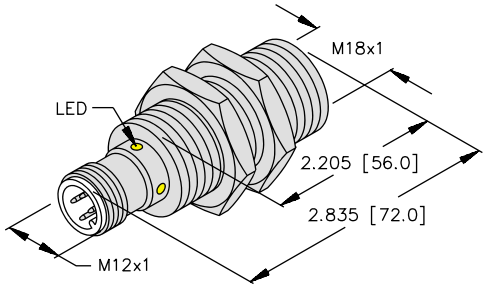
B PNP (Sourcing)



Barrels

Dimensions

1



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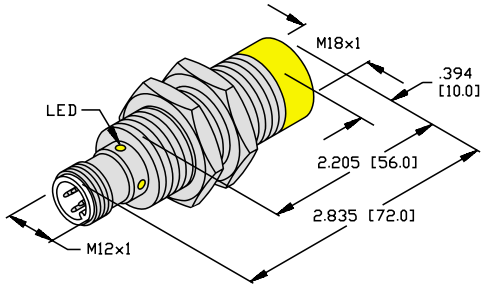

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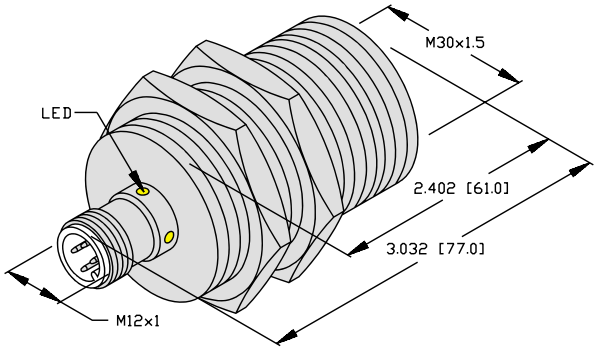

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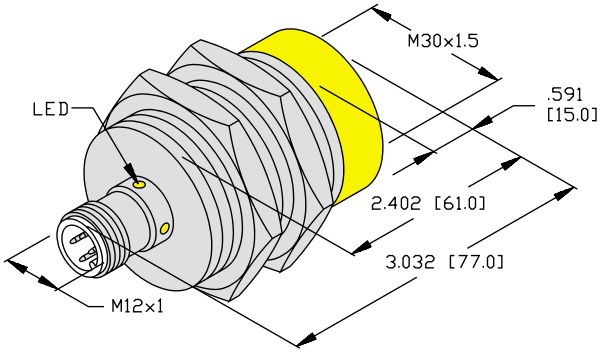


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

4-Wire DC **minifast®**
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni15-G30-VN4X-B1141		15	30	•		1	A	1		500	M4590800	minifast **Mating Cordsets** RKM 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi25-G47-VN4X-B2141	•	25	47	•		2	A	1		100	M4590300	minifast **Mating Cordsets** RK 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi25-G47-VP4X-B2141	•	25	47		•	2	B	1		100	M4590200	

Material

Connector (B2141):	Polyamide Plastic
Connector (B1141):	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

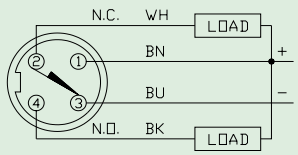
Accessories and mounting devices can be found in Section J.

Specifications

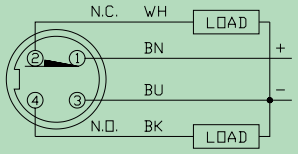
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



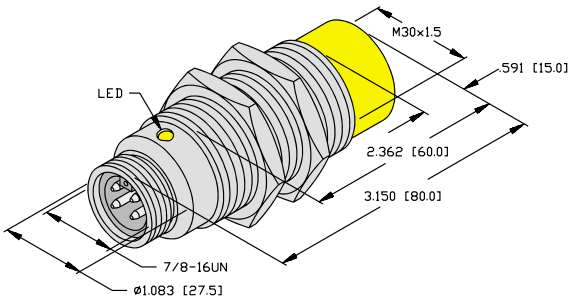
B PNP (Sourcing)



Barrels

Dimensions

1



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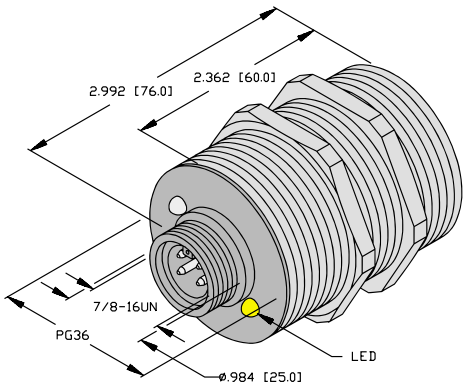


K Barrel

Barrel, Plastic with Quick Disconnect
Smooth

4-Wire DC **minifast®**
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni30-K40-VN4X-B2141 *		30	40	•		1	A	1		100	M4590400	**minifast** **Mating Cordsets** RK 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog

* Mounting clamp BS-40 included with sensor.

Material

Connector:	Polyamide Plastic
Barrel:	ABS Plastic
Mounting Clamp:	PBT Plastic

Accessories

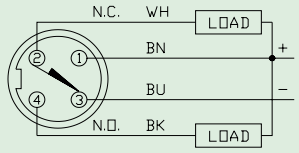
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

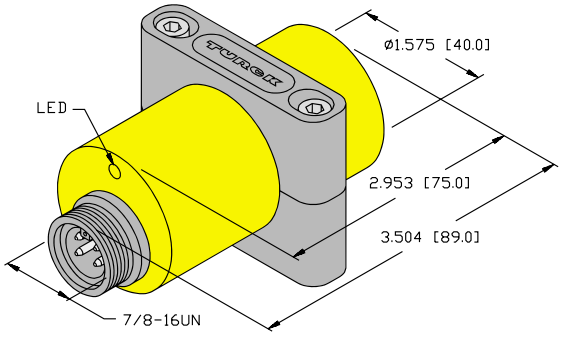
A — NPN (Sinking)



Barrels

Dimensions

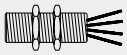
1



M and M..E Barrel

Barrel, Metal with Potted-In Cable

Partial Threading, Optional Extended Barrel Length

4-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Barrel Material	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number
Bi 2-M12-VN6X	•	2		12	CPB	•		1	A	1	2000	T1640200
Bi 4-M12-VN6X	•	4	•	12	CPB	•		1	A	1	2000	T1643300
Ni 4-M12-VN6X		4		12	CPB	•		2	A	1	2000	T1640400
Ni 8-M12-VN6X		8	•	12	CPB	•		2	A	1	2000	M4611321
Bi 2-M12-VP6X	•	2		12	CPB		•	1	B	1	2000	T1630200
Bi 4-M12-VP6X	•	4	•	12	CPB		•	1	B	1	2000	T1633300
Ni 4-M12-VP6X		4		12	CPB		•	2	B	1	2000	T1630400
Ni 8-M12-VP6X		8	•	12	CPB		•	2	B	1	2000	M4611322
Bi 2-M12E-VN6X	•	2		12	SS	•		3	A	1	2000	
Ni 4-M12E-VN6X		4		12	SS	•		4	A	1	2000	
Bi 2-M12E-VP6X	•	2		12	SS		•	3	B	1	2000	
Ni 4-M12E-VP6X		4		12	SS		•	4	B	1	2000	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Barrel:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

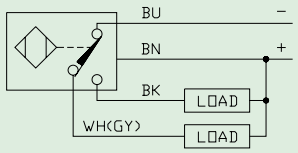
Accessories and mounting devices can be found in Section J.

Specifications

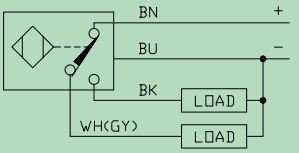
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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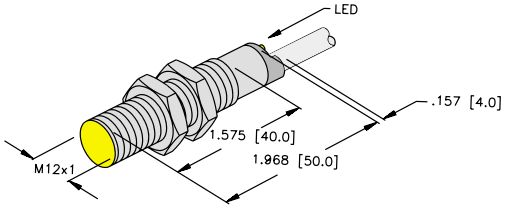

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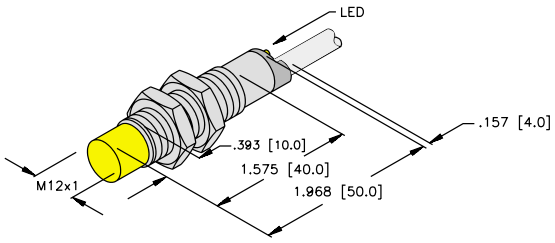

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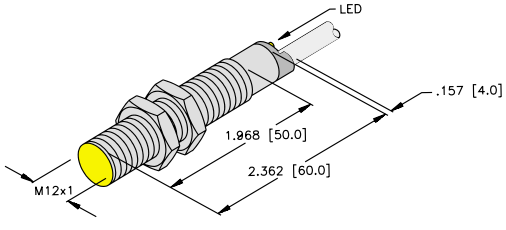

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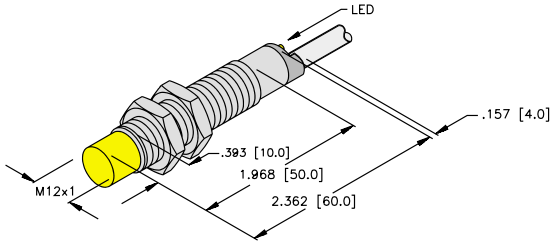
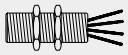


M and M..E Barrel

Barrel, Metal with Potted-In Cable

Partial Threading, Optional Extended Barrel Length

4-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Barrel Material	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number
Bi 5-M18-VN4X	•	5		18	CPB	•		1	A	1	1000	T1571100
Bi 8-M18-VN4X	•	8	•	18	SS	•		1	A	1	1000	M4590703
Bi10-M30-VN4X	•	10		30	CPB	•		3	A	1	500	T1571400
Bi15-M30-VN4X	•	15	•	30	SS	•		3	A	1	500	M4570712
Ni 8-M18-VN4X		8		18	CPB	•		2	A	1	1000	T1571200
Ni14-M18-VN4X		14	•	18	CPB	•		2	A	1	1000	M4590600
Ni15-M30-VN4X		15		30	CPB	•		4	A	1	500	T1571500
Ni20-M30-VN4X		20	•	30	CPB	•		4	A	1	500	M4590604
Bi 5-M18-VP4X	•	5		18	CPB		•	1	B	1	1000	T1561100
Bi 8-M18-VP4X	•	8	•	18	SS		•	1	B	1	1000	M4590704
Bi10-M30-VP4X	•	10		30	CPB		•	3	B	1	500	T1561400
Bi15-M30-VP4X	•	15	•	30	SS		•	3	B	1	500	M4570713
Ni 8-M18-VP4X		8		18	CPB		•	2	B	1	1000	T1561200
Ni14-M18-VP4X		14	•	18	CPB		•	2	B	1	1000	M4590601
Ni15-M30-VP4X		15		30	CPB		•	4	B	1	500	T1561500
Ni20-M30-VP4X		20	•	30	CPB		•	4	B	1	500	M4590605
Bi 5-M18E-VN4X	•	5		18	CPB	•		5	A	1	1000	T1571190
Ni 8-M18E-VN4X		8		18	CPB	•		6	A	1	1000	T1571290
Bi 5-M18E-VP4X	•	5		18	CPB		•	5	B	1	1000	T1561190
Ni 8-M18E-VP4X		8		18	CPB		•	6	B	1	1000	T1561290

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Barrel:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

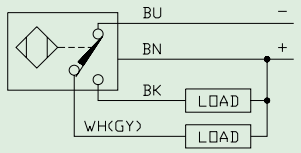
Accessories and mounting devices can be found in Section J.

Specifications

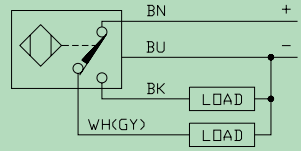
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

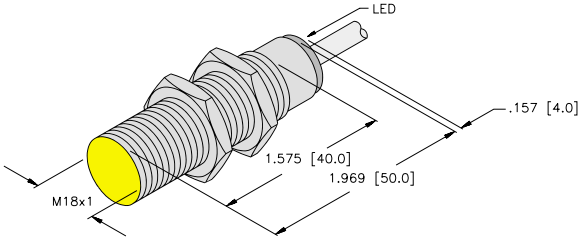


B PNP (Sourcing)



Dimensions

1



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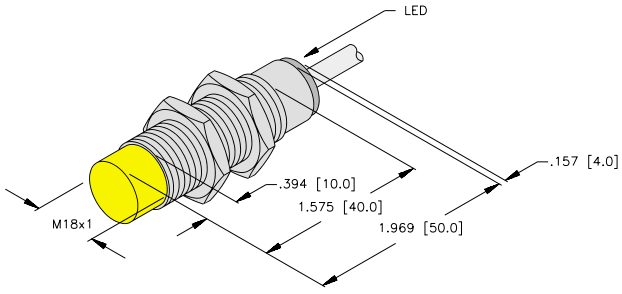

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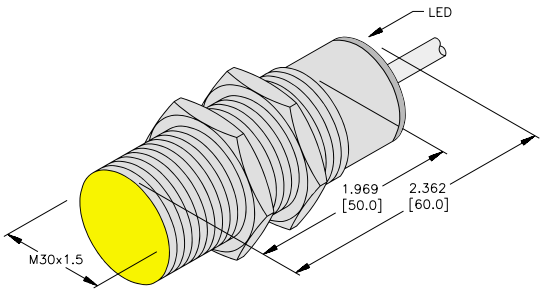

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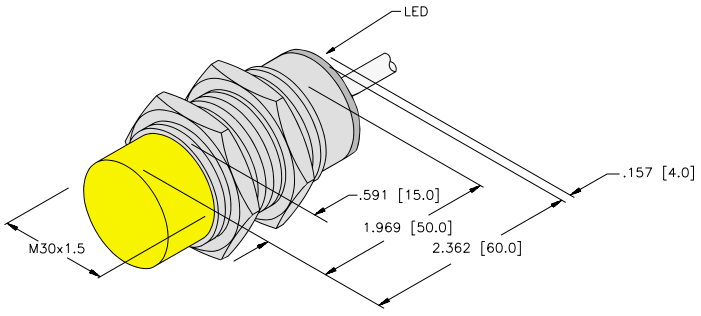

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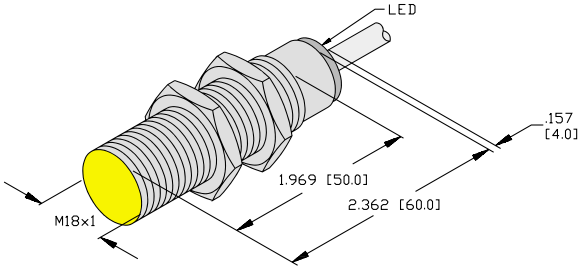

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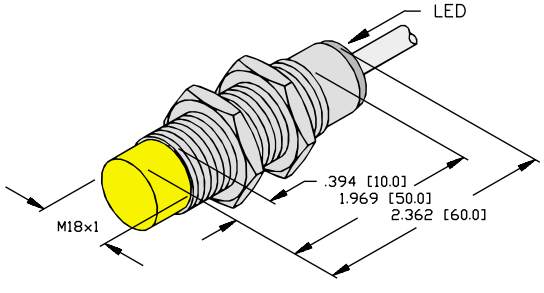
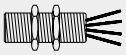


S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading

4-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 5-S18-VN4X	•	5	18	•		1	A	1		500	M1522200
Bi10-S30-VN4X	•	10	30	•		2	A	1		500	M1522300
Ni 8-S18-VN4X		8	18	•		1	A	1		500	T1522100
Ni15-S30-VN4X		15	30	•		2	A	1		500	M1522400
Bi 5-S18-VP4X	•	5	18		•	1	B	1		500	M1513400
Bi10-S30-VP4X	•	10	30		•	2	B	1		500	M1512200
Ni 8-S18-VP4X		8	18		•	1	B	1		500	M1513500
Ni15-S30-VP4X		15	30		•	2	B	1		500	M1563000

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

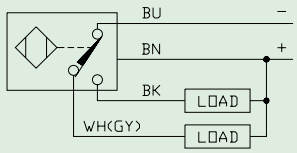
Accessories and mounting devices can be found in Section J.

Specifications

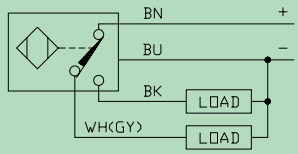
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

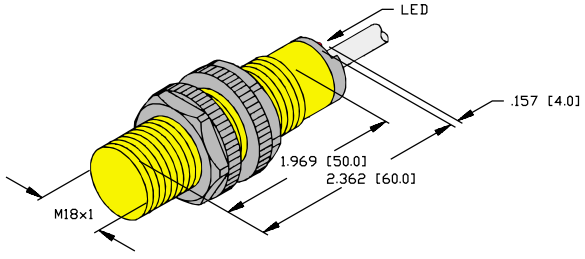


B PNP (Sourcing)



Dimensions

1



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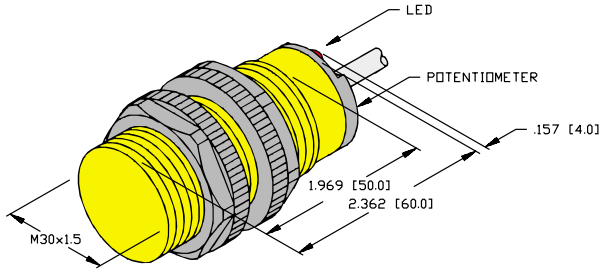


G47SR Barrel

Barrel, Metal with Integral Terminal Chamber
Full Threading

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi25-G47SR-VN4X2	•	25	47	•		1	A	2		100	M1574800
Ni40-G47SR-VN4X2		40	47	•		2	A	2		100	M1575000
Bi25-G47SR-VP4X2	•	25	47		•	1	B	2		100	M1564800
Ni40-G47SR-VP4X2		40	47		•	2	B	2		100	M1565000

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4.4T-2. See Section H for other styles.

Material

Terminal Chamber: ABS Plastic
Barrel: Chrome Plated Brass
Sensing Face: PA 12-GF30 Plastic

Accessories

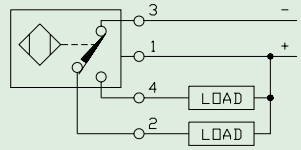
Accessories and mounting devices can be found in Section J.
PG 9 Cable Gland included with sensor.

Specifications

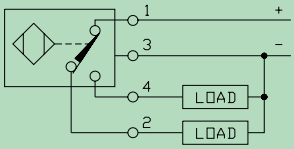
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	K40SR style: ≤25 ms; P30SR style: ≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



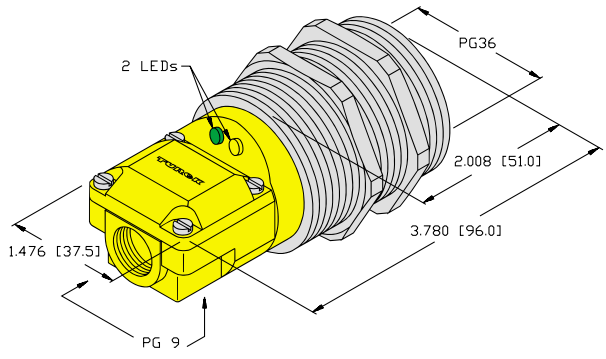
B PNP (Sourcing)



Barrels

Dimensions

1



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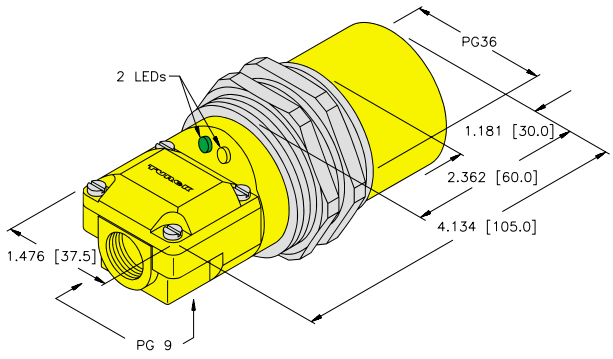


K40SR Barrel

P30SR Barrel

Barrel, Plastic with Integral Terminal Chamber

K40SR: *Smooth*
P30SR: *Full Threading*

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi15-K40SR-VN4X2 *	•	15	40	•		1	A	2		100	M1575500
Ni20-K40SR-VN4X2 *		20	40	•		1	A	2		100	M1575600
Ni30-K40SR-VN4X2 *		30	40	•		1	A	2		100	M1575800
Bi15-K40SR-VP4X2 *	•	15	40		•	1	B	2		100	M1565500
Ni20-K40SR-VP4X2 *		20	40		•	1	B	2		100	M1565600
Ni30-K40SR-VP4X2 *		30	40		•	1	B	2		100	M1565800
Bi10-P30SR-VN4X2	•	10	30	•		2	A	2		500	M1575200
Ni15-P30SR-VN4X2		15	30	•		2	A	2		500	M1575300
Bi10-P30SR-VP4X2	•	10	30		•	2	B	2		500	M1565200
Ni15-P30SR-VP4X2		15	30		•	2	B	2		500	M1565300

* BS-40 Mounting clamp included with sensor.

Quick Disconnect Option

For ***minifast*** connector: Add "-B1141" suffix to part number.
Suggested cordset: RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector: Add "-H1141" suffix to part number.
Suggested cordset: RK 4.4T-2. See Section H for other styles.

Material

Terminal Chamber: ABS Plastic
Barrel: ABS Plastic

Accessories

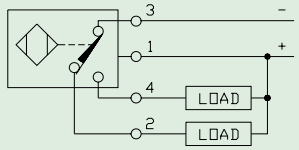
Accessories and mounting devices can be found in Section J.
PG 9 Cable Gland included with sensor.

Specifications

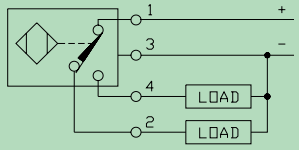
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	K40SR style: ≤25 ms; P30SR style: ≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



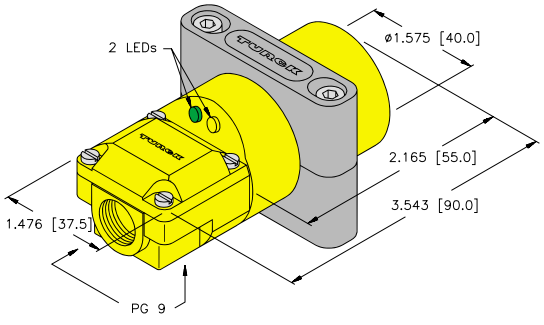
B PNP (Sourcing)



Barrels

Dimensions

1



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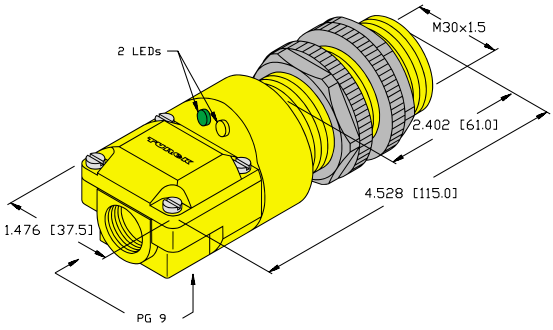


NEW

G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading, Standard and Extended Range

2-Wire AC/DC microfast®
20-250 VAC, 10-300 VDC; Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-G12-ADZ32X-B3131	•	2	12	CPB	•		1	A	1		60	T4205001	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 4-G12-ADZ32X-B3131 ★	•	4	12	CPB	•		1	A	1		60	T4205031	
Ni 4-G12-ADZ32X-B3131		4	12	CPB	•		2	A	1		60	T4205201	
Ni 8-G12-ADZ32X-B3131 ★		8	12	CPB	•		2	A	1		60	M4205401	
Bi 2-GT12-ADZ32X-B3131/S34	•	2	12	TC	•		1	A	1	•	30	T4205005	
Ni 4-GT12-ADZ32X-B3131/S34		4	12	TC	•		2	A	1	•	30	T4205205	

Material

Connector:	Chrome Plated Brass
Barrel:	CPB = Chrome Plated Brass TC = Teflon Coated
Sensing Face:	PA 12-GF30 Plastic

Accessories

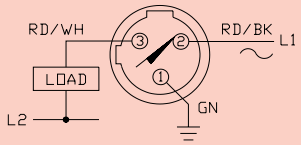
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 100 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤1.0 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized
LED Flashing	Short-Circuit Warning

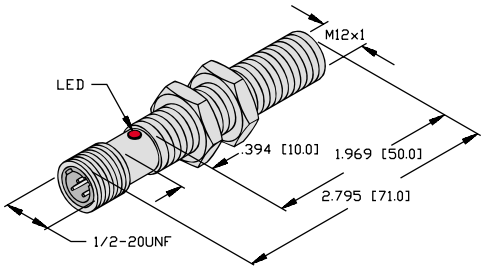
Wiring Diagram

A **Normally Open**



Dimensions

1



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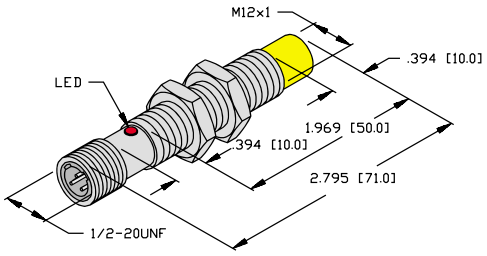


G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading

2-Wire AC microfast®
35-250 VAC, 10-300 VDC
Normally Open (AZ33X) or Normally Closed (RZ33X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2-G12-AZ33X-B3131	•	2	12	CPB	•		1	A	1		60	T1304032	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni 4-G12-AZ33X-B3131		4	12	CPB	•		2	A	1		60	T1304232	
Bi 2-G12-RZ33X-B3131	•	2	12	CPB		•	1	B	1		60	T1314032	
Ni 4-G12-RZ33X-B3131		4	12	CPB		•	2	B	1		60	T1314232	
Bi 2-GT12-AZ33X-B3131/S34	•	2	12	TC	•		1	A	1	•	60	T1304082	
Ni 4-GT12-AZ33X-B3131/S34		4	12	TC	•		2	A	1	•	60	T1304292	

Material

Connector:	Chrome Plated Brass
Barrel:	CPB = Chrome Plated Brass TC = Teflon Coated
Sensing Face:	PA 12-GF30 Plastic

Accessories

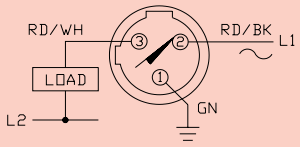
Accessories and mounting devices can be found in Section J.

Specifications

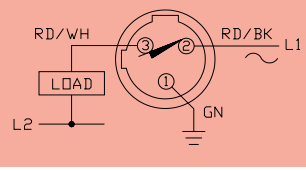
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 200 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤1.0 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



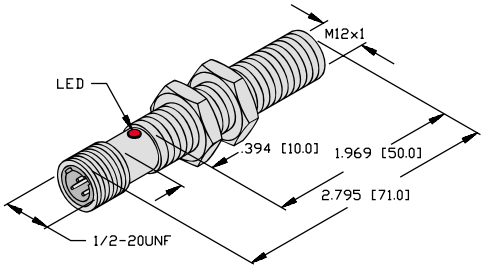
B Normally Closed



Barrels

Dimensions

1



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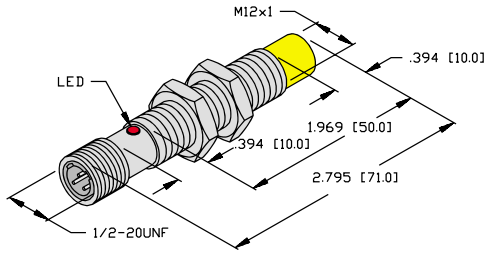


Note: Teflon coated lock washers included with Teflon coated sensors.

G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading ***Uprox***®

2-Wire AC/DC ***microfast***®

20-250 VAC, 10-300 VDC; Short-Circuit/Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 2U-G12-ADZ32X-B3131	•	2	12	CPB	•		1	A	1	•	60	M4281005	***microfast*** **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 5U-G18-ADZ30X2-B3331	•	5	18	CPB	•		3	A	2	•	60	M4281213	
Bi10U-G30-ADZ30X2-B3131	•	10	30	CPB	•		5	A	2	•	60	M4281613	
Ni 8U-G12-ADZ32X-B3131		8	12	CPB	•		2	A	1	•	60	M4281105	
Ni12U-G18-ADZ30X2-B3331		12	18	CPB	•		4	A	2	•	60	M4281413	
Ni20U-G30-ADZ30X2-B3131		20	30	CPB	•		6	A	2	•	60	M4281813	
Bi 2U-GT12-ADZ32X-B3131	•	2	12	TC	•		1	A	1	•	60	M4281015	
Bi 5U-GT18-ADZ30X2-B3331	•	5	18	TC	•		3	A	2	•	60	M4281223	
Bi10U-GT30-ADZ30X2-B3131	•	10	30	TC	•		5	A	2	•	60	M4281623	
Ni 8U-GT12-ADZ32X-B3131		8	12	TC	•		2	A	1	•	60	M4281115	
Ni12U-GT18-ADZ30X2-B3331		12	18	TC	•		4	A	2	•	60	M4281423	
Ni20U-GT30-ADZ30X2-B3131		20	30	TC	•		6	A	2	•	60	M4281823	

Material

Connector:	Chrome Plated Brass
Brass Barrel/Locknuts:	CPB = Chrome Plated TC = Teflon Coated
Plastic Sensing Face:	G: PA 12-GF30; GT: Teflon Coated
Lockwashers:	G: Plated Brass; GT: Black Chromated Steel

Accessories

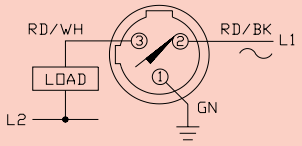
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red/Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

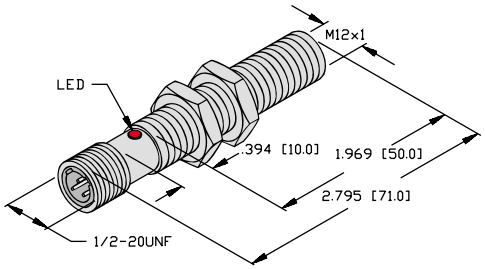
Wiring Diagram

A — Normally Open



Dimensions

1



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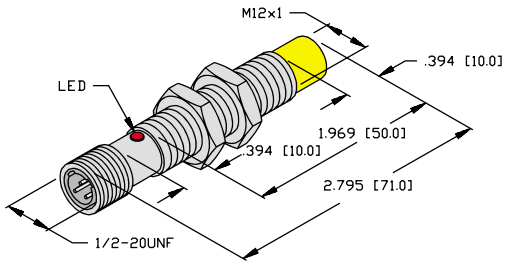

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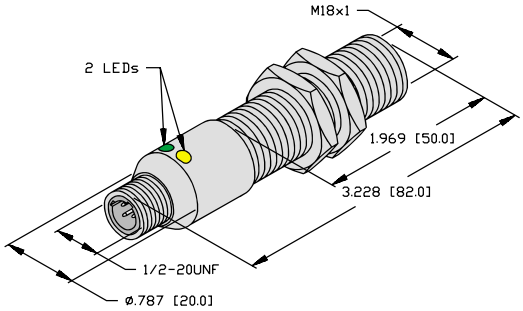

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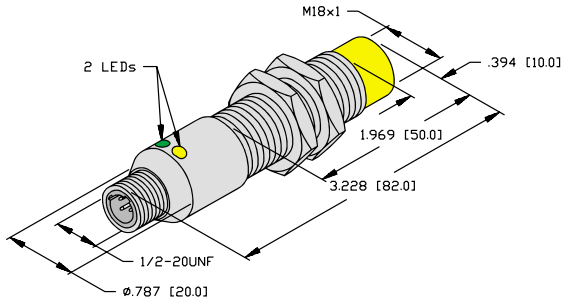

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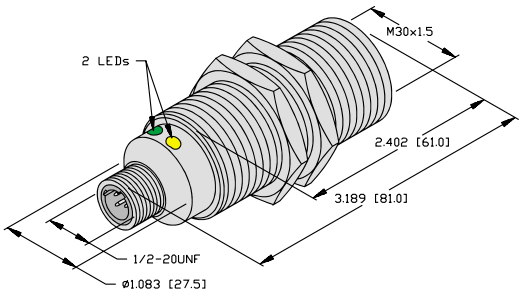

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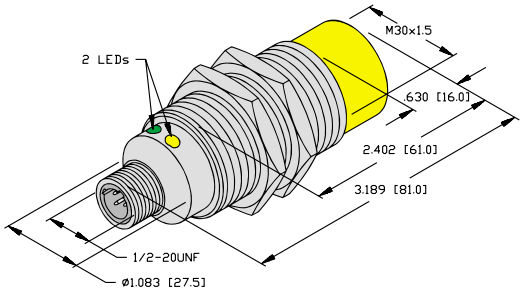


NEW

G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading, Straight and Angle Connectors, Extended Range

2-Wire AC/DC microfast®
20-250 VAC, 10-300 VDC; Short-Circuit/Overload Protected
Normally Open

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-ADZ30X2-B3331	•	5	18	CPB	•		1	A	2		60	T4208092	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 8-G18-ADZ30X2-B3331 ★	•	8	18	SS	•		1	A	2		60	T4209301	
Bi10-G30-ADZ30X2-B3131	•	10	30	CPB	•		5	A	2		60		
Bi15-G30-ADZ30X2-B3131 ★	•	15	30	SS	•		5	A	2		60	T4207201	
Ni14-G18-ADZ30X2-B3331		14	18	CPB	•		2	A	2		60	M4205403	
Ni20-G30-ADZ30X2-B3131		20	30	SS	•		6	A	2		60	M4205406	
Bi 5-GT18-ADZ30X2-B3331/S34	•	5	18	TC	•		1	A	2	•	30	T4255400	
Bi 5-GT18-ADZ30X2-B3431/S34	•	5	18	TC	•		3	A	2	•	30	T4255605	
Bi10-GT30-ADZ30X2-B3131/S34	•	10	30	TC	•		5	A	2	•	30	T4256203	
Ni 8-G18-ADZ30X2-B3331/S34		8	18	CPB	•		2	A	2	•	30	M4209100	
Ni 8-G18-ADZ30X2-B3431/S34		8	18	CPB	•		4	A	2	•	30	M4209200	

Material

Connector:	Chrome Plated Brass
Brass Barrel/Locknuts:	G: Chrome Plated; GT: Teflon Coated
Plastic Sensing Face:	G: PA 12-GF30; GT: Teflon Coated
Lockwashers:	G: Plated Brass; GT: Black Chromated Steel

Accessories

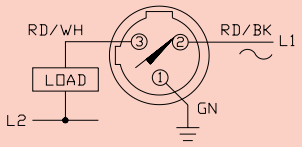
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagram

A — Normally Open

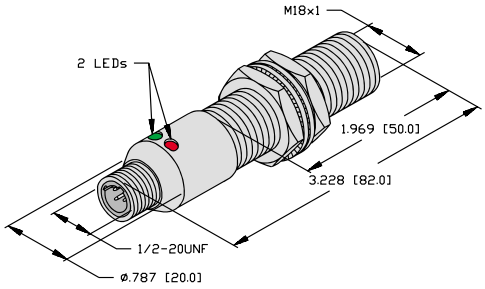


Barrels

Dimensions

Note: Teflon coated lock washers included with Teflon coated sensors.

1



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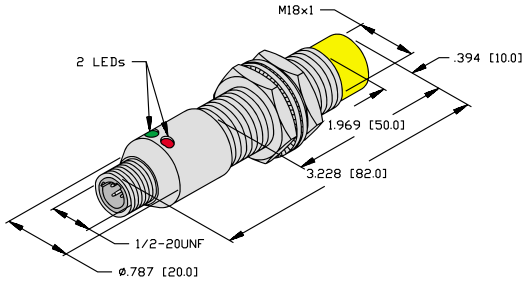

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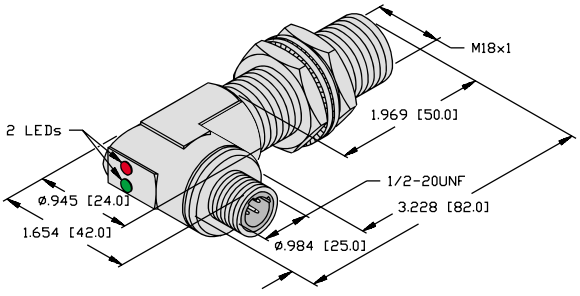

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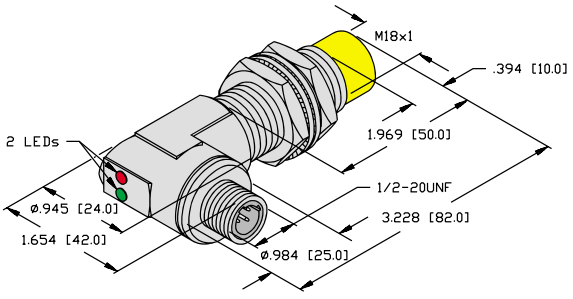

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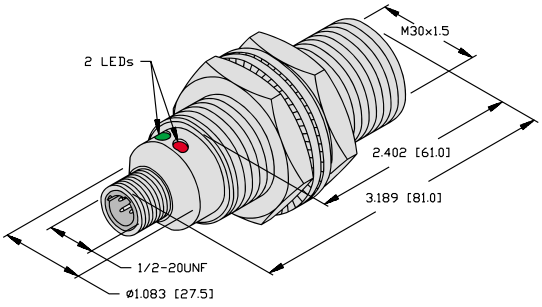

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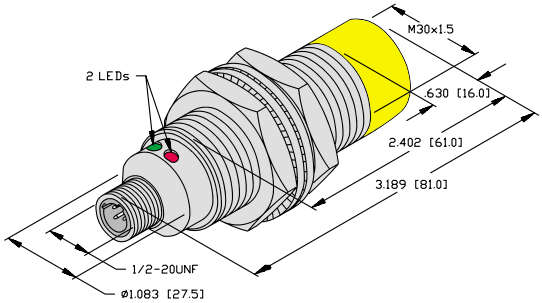


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

microfast®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-AZ3X-B3331	•	5	18	•		1	A	1		20	T4372098	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-G30-AZ3X-B3131	•	10	30	•		3	A	1		20	T4372298	
Ni10-G18-AZ3X-B3331		10	18	•		2	A	1		20	T4372192	
Ni15-G30-AZ3X-B3131		15	30	•		4	A	1		20	T1306090	
Bi 5-G18-RZ3X-B3331	•	5	18		•	1	B	1		20	T4373501	
Bi10-G30-RZ3X-B3131	•	10	30		•	3	B	1		20	T4373390	
Ni10-G18-RZ3X-B3331		10	18		•	2	B	1		20	T4330791	
Ni15-G30-RZ3X-B3131		15	30		•	4	B	1		20	T4373800	

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

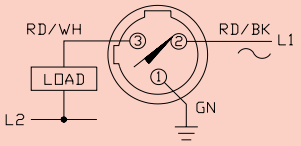
Accessories and mounting devices can be found in Section J.

Specifications

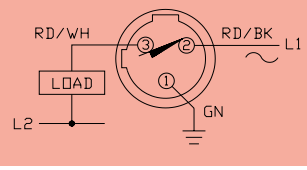
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



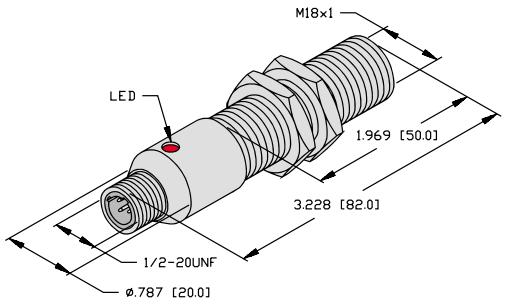
B Normally Closed



Barrels

Dimensions

1



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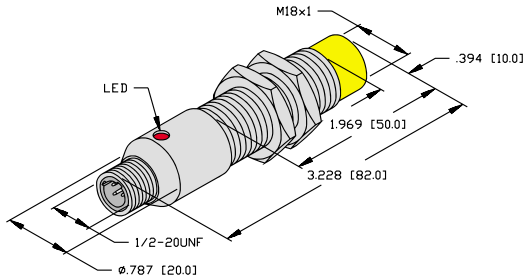

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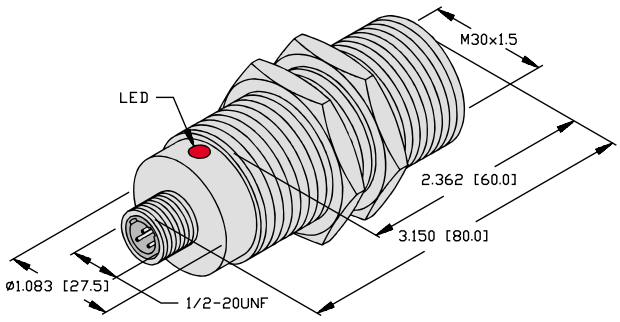

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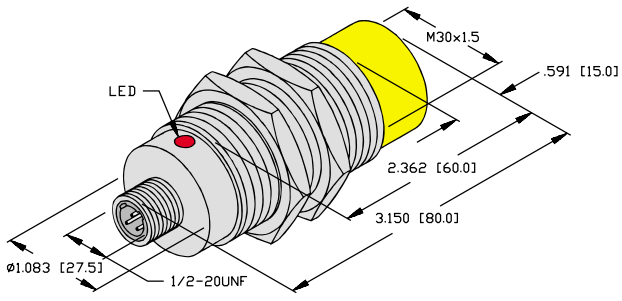


G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading, Straight and Angle Connectors ***Uprox***®

2-Wire AC/DC ***minifast***®
20-250 VAC, 10-300 VDC
Short-Circuit and Overload Protected; Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5U-G18-ADZ30X2-B1331	•	5	18	CPB	•		1	A	2	•	60	M4281212	***minifast***
Bi10U-G30-ADZ30X2-B1131	•	10	30	CPB	•		3	A	2	•	60	M4281612	**Mating Cordsets**
Ni12U-G18-ADZ30X2-B1331		12	18	CPB	•		2	A	2	•	60	M4281412	RKM 30-2M (2 meter)
Ni20U-G30-ADZ30X2-B1131		20	30	CPB	•		4	A	2	•	60	M4281812	For other styles see Section H or consult "Cordsets" catalog
Bi 5U-GT18-ADZ30X2-B1331	•	5	18	TC	•		1	A	2	•	60	M4281222	
Bi10U-GT30-ADZ30X2-B1131	•	10	30	TC	•		3	A	2	•	60	M4281622	
Ni12U-GT18-ADZ30X2-B1331		12	18	TC	•		2	A	2	•	60	M4281422	
Ni20U-GT30-ADZ30X2-B1131		20	30	TC	•		4	A	2	•	60	M4281822	

Material

Connector:	Chrome Plated Brass
Brass Barrel/Locknuts:	CPB = Chrome Plated; TC = Teflon Coated
Plastic Sensing Face:	G: PA 12-GF30; GT: Teflon Coated
Lockwashers:	G: Plated Brass; GT: Black Chromated Steel

Accessories

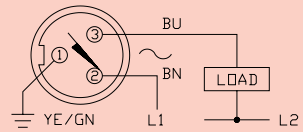
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Operating Temperature	-30°C to +85°C (-22°F to +185°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

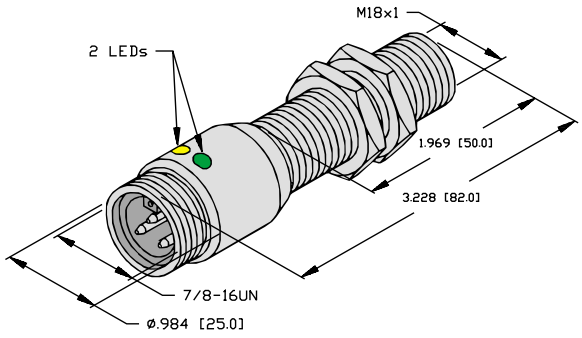
Wiring Diagram

A — Normally Open



Dimensions

1



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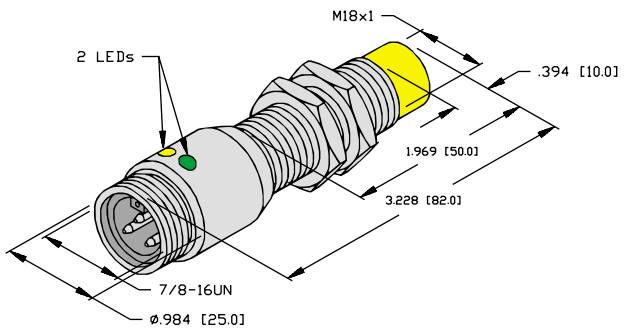

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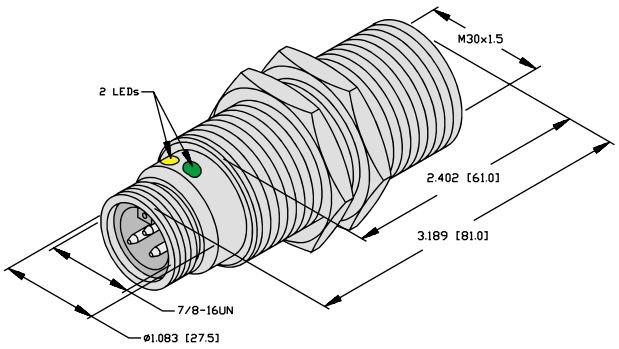

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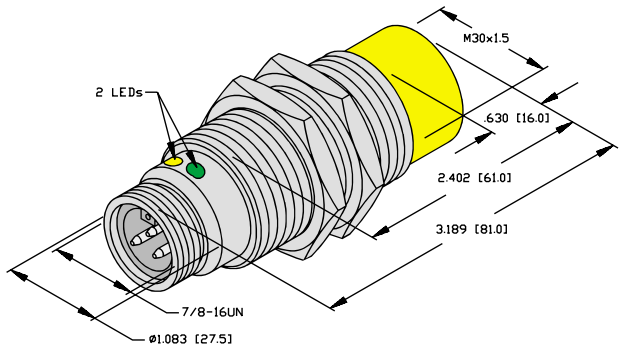


NEW

G and GT Barrel

Barrel, Metal with Quick Disconnect - Standard, Teflon Coated

Full Threading, Straight and Angle Connectors, Standard and Extended Range

2-Wire AC/DC minifast®
20-250 VAC, 10-300 VDC
Short-Circuit and Overload Protected; Normally Open

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-ADZ30X2-B1331	•	5	18	CPB	•		1	A	2		60	T4208000	minifast **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-G30-ADZ30X2-B1131	•	10	30	CPB	•		5	A	2		60		
Bi15-G30-ADZ30X2-B1131 ★	•	15	30	CPB	•		5	A	2		60	M4207202	
Ni20-G30-ADZ30X2-B1131		20	30	CPB	•		6	A	2			M4205405	
Bi 5-GT18-ADZ30X2-B1331/S34	•	5	18	TC	•		1	A	2	•	30	T4255200	
Bi 5-GT18-ADZ30X2-B1431/S34	•	5	18	TC	•		3	A	2	•	30	T4255600	
Bi10-GT30-ADZ30X2-B1131/S34	•	10	30	TC	•		5	A	2	•	30	T4256200	
Ni 8-G18-ADZ30X2-B1331/S34		8	18	CPB	•		2	A	2	•	30	M4208800	
Ni 8-G18-ADZ30X2-B1431/S34		8	18	CPB	•		4	A	2	•	30	M4208900	

Material

Connector:	Chrome Plated Brass
Brass Barrel/Locknuts:	CPB = Chrome Plated; TC = Teflon Coated
Plastic Sensing Face:	G: PA 12-GF30; GT: Teflon Coated
Lockwashers:	G: Plated Brass; GT: Black Chromated Steel

Accessories

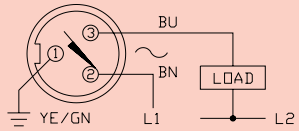
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at full rated current
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA;
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≥2% of Rated Operating Distance
LED Function (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagram

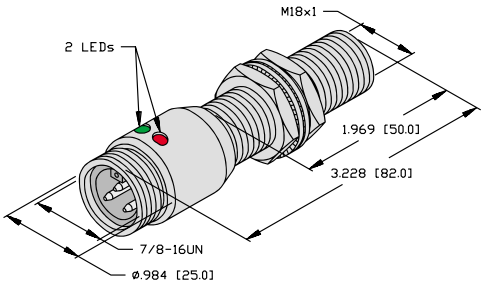
A — Normally Open



Dimensions

Note: Teflon coated lock washers included with Teflon coated sensors.

1



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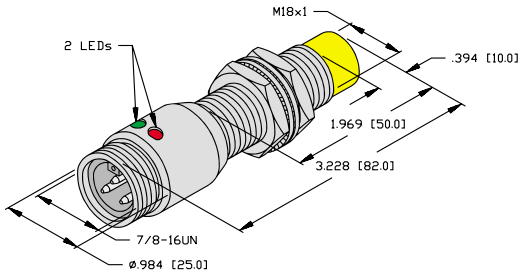

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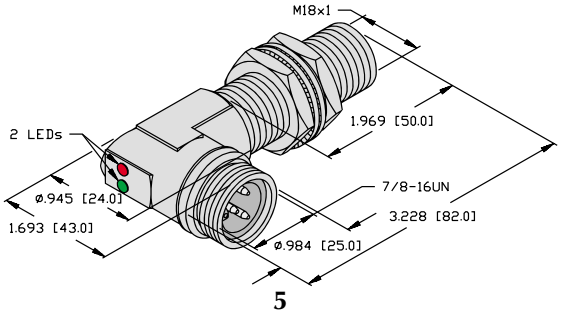

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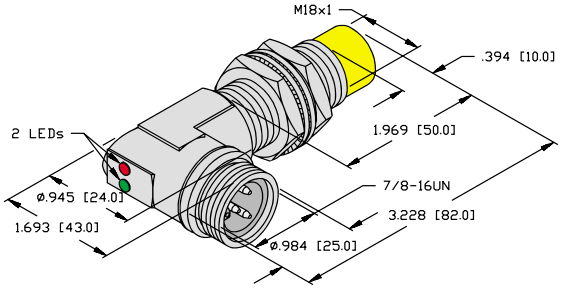

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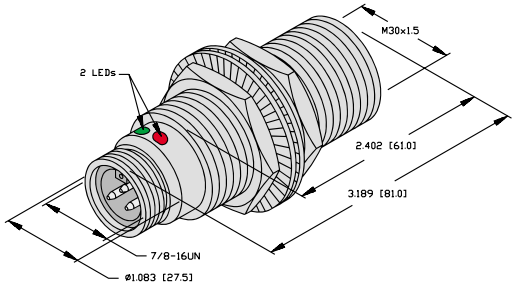

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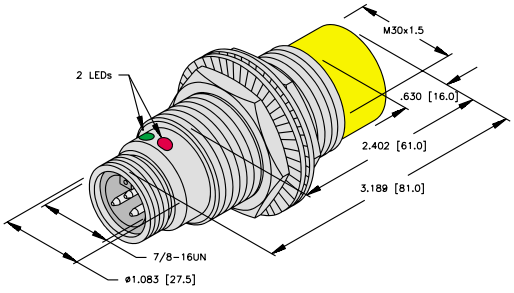


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

2-Wire AC **minifast®**
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-AZ3X-B1331	•	5	18	•		1	A	1	•	20	T4372000	**minifast** **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-G30-AZ3X-B1131	•	10	30	•		3	A	1	•	20	T4372200	
Ni10-G18-AZ3X-B1331		10	18	•		2	A	1	•	20	T4372100	
Ni15-G30-AZ3X-B1131		15	30	•		4	A	1	•	20	T4372300	
Bi 5-G18-RZ3X-B1331	•	5	18		•	1	B	1	•	20	T4373100	
Bi10-G30-RZ3X-B1131	•	10	30		•	3	B	1	•	20	T4373300	
Ni10-G18-RZ3X-B1331		10	18		•	2	B	1	•	20	T4330790	
Ni15-G30-RZ3X-B1131		15	30		•	4	B	1	•	20	T4373600	
Bi20-G47-AZ3X-B2131	•	20	47	•		5	A	1		20	M4375900	**minifast** **Mating Cordsets** RK 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi20-G47-RZ3X-B2131	•	20	47		•	5	B	1		20	M4376000	

Material

Connector (B2131):	Polyamide Plastic
Connector (B1131 & B1331):	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

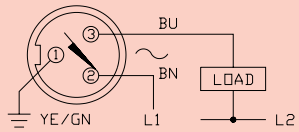
Accessories and mounting devices can be found in section J.

Specifications

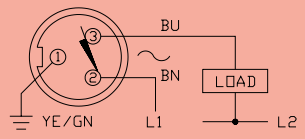
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	G18/G30 styles: ≤25 ms; G47 style: ≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



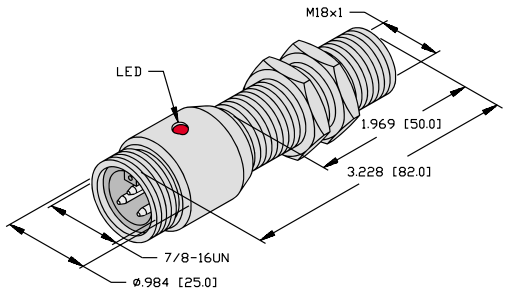
B Normally Closed



Barrels

Dimensions

1



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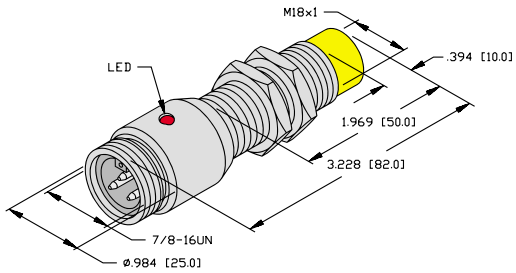

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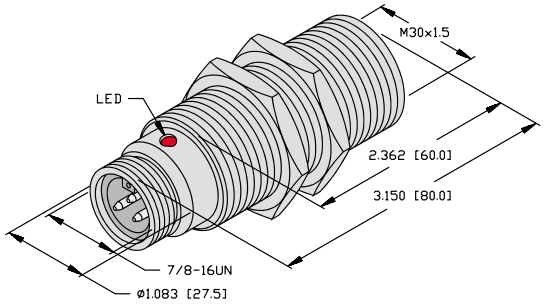

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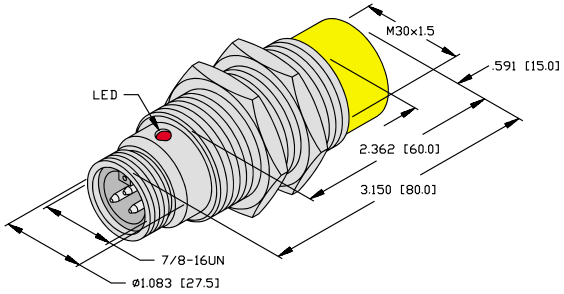

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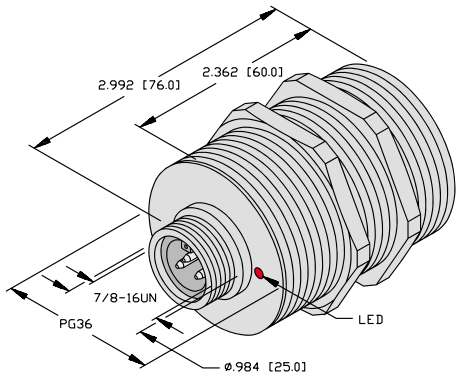


G Barrel

Barrel, Metal with Quick Disconnect
Full Threading

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

minifast®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-G18-AZ3X-B1431	•	5	18	•		1	A	1		20	T4372400	*minifast*
Bi10-G30-AZ3X-B1431	•	10	30	•		3	A	1		20	T4372600	**Mating Cordsets**
Ni10-G18-AZ3X-B1431		10	18	•		2	A	1		20	T4372500	RKM 30-2M (2 meter)
Ni15-G30-AZ3X-B1431		15	30	•		4	A	1		20	T4372700	For other styles see Section H or consult "Cordsets" catalog
Bi 5-G18-RZ3X-B1431	•	5	18		•	1	B	1		20	T4373500	
Bi10-G30-RZ3X-B1431	•	10	30		•	3	B	1		20	T4373400	
Ni10-G18-RZ3X-B1431		10	18		•	2	B	1		20	T4330792	
Ni15-G30-RZ3X-B1431		15	30		•	4	B	1		20	T4373700	

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

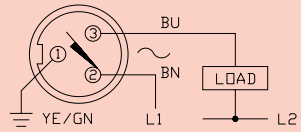
Accessories and mounting devices can be found in Section J.

Specifications

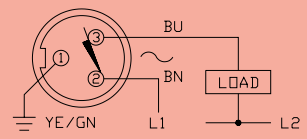
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



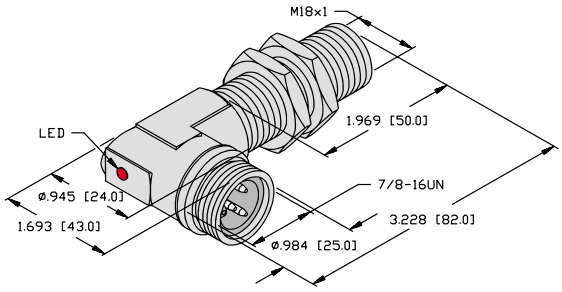
B Normally Closed



Barrels

Dimensions

1



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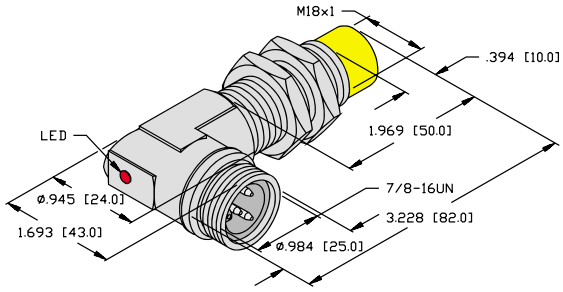

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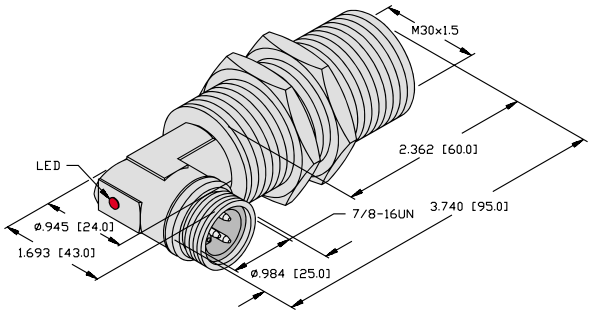

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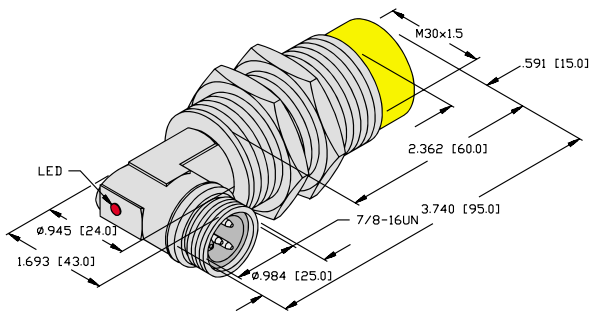


P Barrel

Barrel, Plastic with Quick Disconnect
Full Threading

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

minifast®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number	Connection
Bi 5-P18-AZ3X-B2331	•	5	18	•		1	A	1	•	20	T4374800	minifast **Mating Cordsets** RK 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-P30-AZ3X-B2131	•	10	30	•		2	A	1	•	20	T4374900	
Ni10-P18-AZ3X-B2331		10	18	•		1	A	1	•	20	T4375200	
Ni15-P30-AZ3X-B2131		15	30	•		2	A	1	•	20	T4375400	
Bi 5-P18-RZ3X-B2331	•	5	18		•	1	B	1	•	20	T4375000	
Bi10-P30-RZ3X-B2131	•	10	30		•	2	B	1	•	20	T4375100	
Ni10-P18-RZ3X-B2331		10	18		•	1	B	1	•	20	T4375300	
Ni15-P30-RZ3X-B2131		15	30		•	2	B	1	•	20	T4375491	

Material

Connector:	Polyamide Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

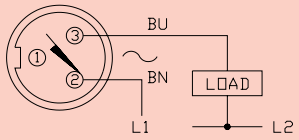
Accessories and mounting devices can be found in Section J.

Specifications

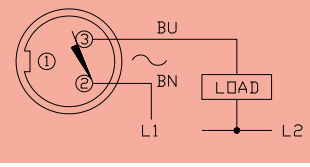
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open

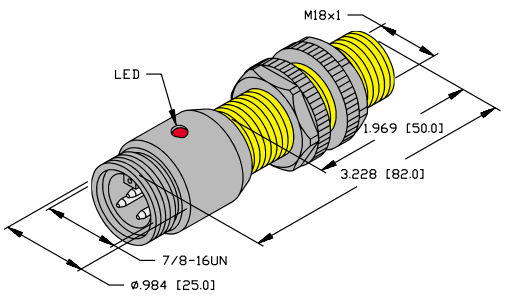


B Normally Closed



Dimensions

1



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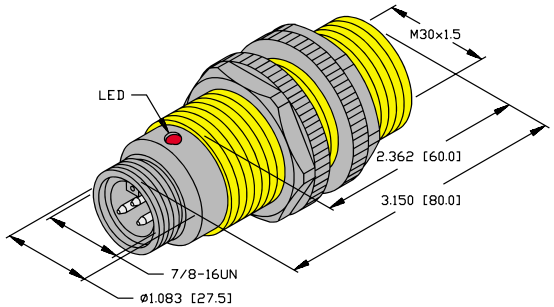


K Barrel

Barrel, Plastic with Quick Disconnect
Smooth

2-Wire AC **minifast®**
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni30-K40-AZ3X-B2131 *		30	40	•		1	A	1		20	M4375800	minifast
Ni30-K40-RZ3X-B2131 *		30	40		•	1	B	1		20	M4375700	

Mating Cordsets
RK 30-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Mounting clamp BS-40 included with sensor.

Material

Connector:	Polyamide Plastic
Barrel:	ABS Plastic
Mounting Clamp:	PBT Plastic

Accessories

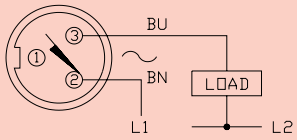
Accessories and mounting devices can be found in Section J.

Specifications

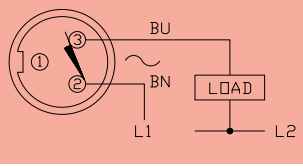
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



B Normally Closed



Dimensions

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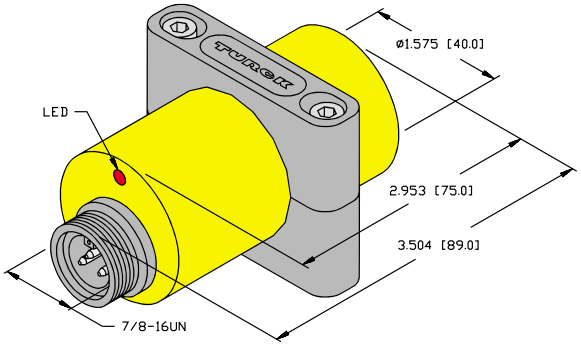
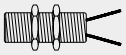


G and GT Barrel

Barrel, Metal with Potted-In Cable - Standard, Teflon Coated

Full Threading

2-Wire AC 

35-250 VAC, 10-300 VDC

Normally Open (AZ33X) or Normally Closed (RZ33X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-G12-AZ33X	•	2	12	CPB	•		1	A	1		60	T1304002
Ni 4-G12-AZ33X		4	12	CPB	•		2	A	1		60	T1304202
Bi 2-G12-RZ33X	•	2	12	CPB		•	1	B	1		60	T1314002
Ni 4-G12-RZ33X		4	12	CPB		•	2	B	1		60	T1314202
Bi 2-GT12-AZ33X/S34	•	2	12	TC	•		1	A	1	•	30	T1304052
Ni 4-GT12-AZ33X/S34		4	12	TC	•		2	A	1	•	30	T1304294
Bi 2-GT12-RZ33X/S34	•	2	12	TC		•	1	B	1	•	30	T1314052

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Brass Barrel/Locknuts:	CPB = Chrome Plated; TC = Teflon Coated
Plastic Sensing Face:	G: PA 12-GF30; GT: Teflon Coated
End Cap:	PUR Plastic

Accessories

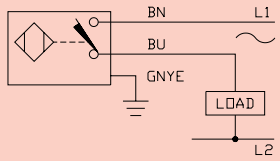
Accessories and mounting devices can be found in Section J.

Specifications

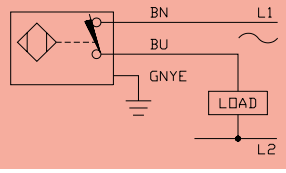
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 200 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤1.0 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A — Normally Open



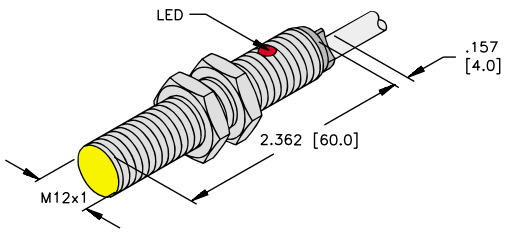
B — Normally Closed



Barrels

Dimensions

1



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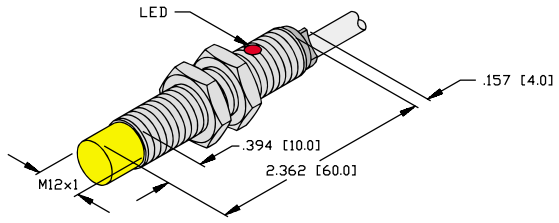


Note: Teflon coated lock washers included with Teflon coated sensors.

G Barrel

Barrel, Metal with Potted-In Cable - Standard, Stainless Steel

Full Threading, Standard and Extended Range

2-Wire AC/DC

20-250 VAC, 10-300 VDC Short-Circuit and Overload Protected

Normally Open

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Extended Range	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-GT12-ADZ32X/S34	•	2		12	TC	•		1	A	1		60	T4205210
Bi 4-G12-ADZ32X	•	4	•	12	CPB	•		1	A	1		60	T4205030
Bi 5-G18-ADZ30X2	•	5		18	CPB	•		3	A	2		60	T4212000
Bi 8-G18-ADZ30X2	•	8	•	18	SS	•		3	A	2		60	T4209320
Bi10-G30-ADZ30X2	•	10		30	CPB	•		5	A	2		60	T4207000
Bi15-G30-ADZ30X2	•	15	•	30	SS	•		5	A	2		60	T4207200
Ni 4-GT12-ADZ32X/S34		4		12	TC	•		2	A	1		60	T4205010
Ni 8-G12-ADZ32X		8	•	12	SS	•		2	A	1		60	M4205400
Ni14-G18-ADZ30X2		14	•	18	SS	•		4	A	2		60	M4205402
Ni20-G30-ADZ30X2		20	•	30	SS	•		6	A	2		60	M4205404

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass; SS = Stainless Steel
Plastic Sensing Face:	PA 12-GF30
End Cap:	PUR Plastic

Accessories

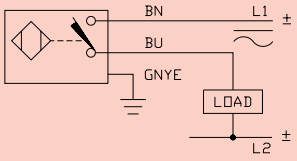
Accessories and mounting devices can be found in section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at full rated current
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤15 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

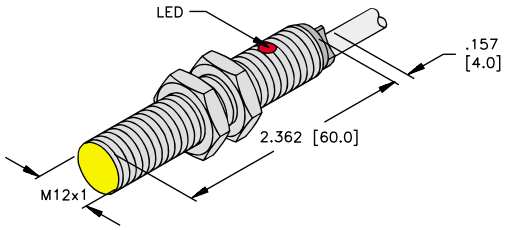
Wiring Diagram

A — Normally Open



Dimensions

1



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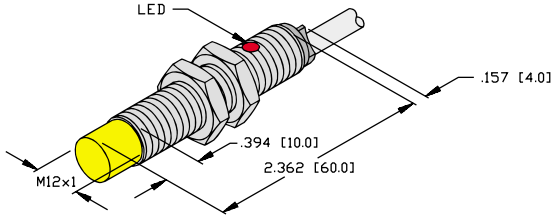

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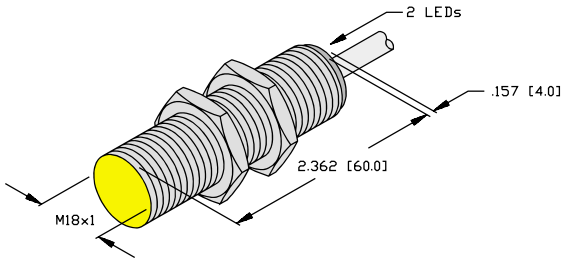

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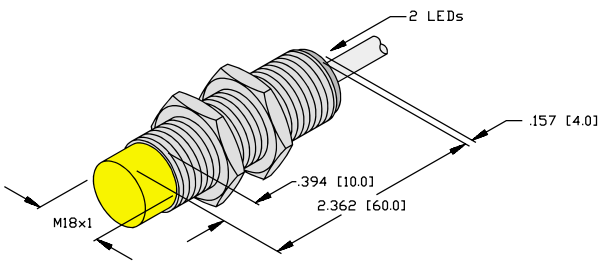

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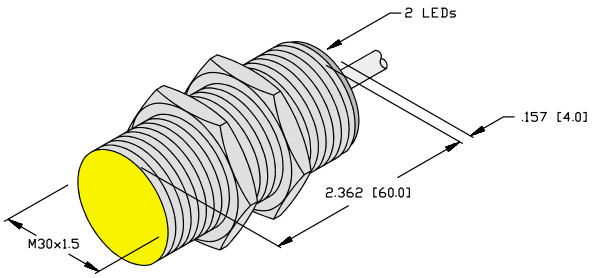

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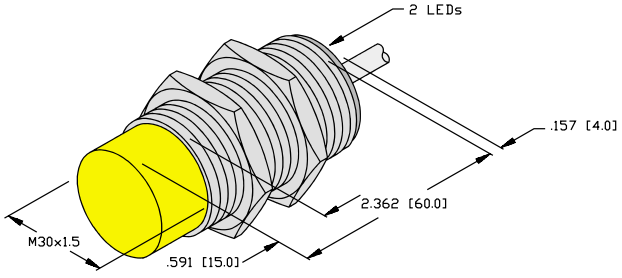


GT Barrel

Barrel, Metal with Potted-In Cable - Teflon Coated

Full Threading

2-Wire AC/DC

20-250 VAC/DC Short-Circuit and Overload Protected

Normally Open

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 5-GT18-ADZ30X2/S34	•	5	18	TC	•		1	A	2	•	30	T4255091
Bi10-GT30-ADZ30X2/S34	•	10	30	TC	•		2	A	2	•	30	T4256000

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Brass Barrel/Locknuts:	TC = Teflon Coated
Plastic Sensing Face:	Teflon Coated
End Cap:	PUR Plastic
Lockwashers:	Black Chromated Steel

Accessories

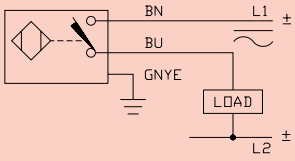
Accessories and mounting devices can be found in section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at full rated current
Trigger Current for Overload Protection	AC: ≥440 mA; DC: ≥330 mA
Continuous Load Current	AC: ≤400 mA; DC: ≤300 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤4.0 A (≤20 ms, 10% Duty Cycle)
Time Delay Before Availability	≤15 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

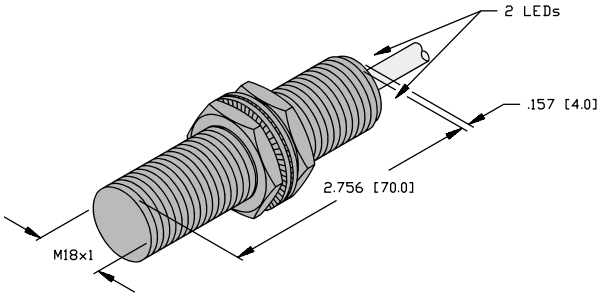
Wiring Diagram

A **Normally Open**



Dimensions

1



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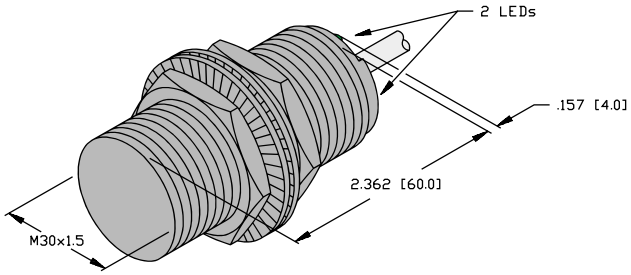
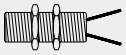


G Barrel

Barrel, Metal with Potted-In Cable

Full Threading

2-Wire AC 

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number
Bi 5-G18-AZ3X	•	5	18	•		1	A	1	•	20	T4330400
Bi10-G30-AZ3X	•	10	30	•		3	A	1	•	20	T4345400
Bi20-G47-AZ3X	•	20	47	•		5	A	1		20	M1308800
Ni10-G18-AZ3X		10	18	•		2	A	1	•	20	T4330500
Ni15-G30-AZ3X		15	30	•		4	A	1	•	20	T1306000
Ni25-G47-AZ3X		25	47	•		6	A	1		20	M1308900
Bi 5-G18-RZ3X	•	5	18		•	1	B	1	•	20	T4330600
Bi10-G30-RZ3X	•	10	30		•	3	B	1	•	20	T4345600
Bi20-G47-RZ3X	•	20	47		•	5	B	1		20	M1318700
Ni10-G18-RZ3X		10	18		•	2	B	1	•	20	T4330700
Ni15-G30-RZ3X		15	30		•	4	B	1	•	20	T1316000
Ni25-G47-RZ3X		25	47		•	6	B	1		20	M1318400

Cable/Conductor

G18/G30 Cable:	PVC Jacket; 2 and 7 meter standard length
G47 Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	G18/G30: 21 AWG
(PVC insulated)	G47: 19 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	G18/G30: PUR Plastic
	G47: PA 66-GF25 Plastic

Accessories

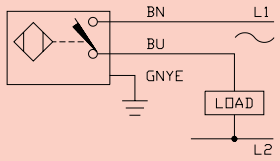
Accessories and mounting devices can be found in Section J.

Specifications

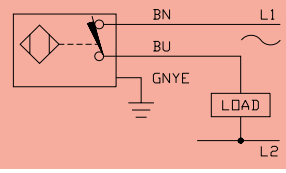
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



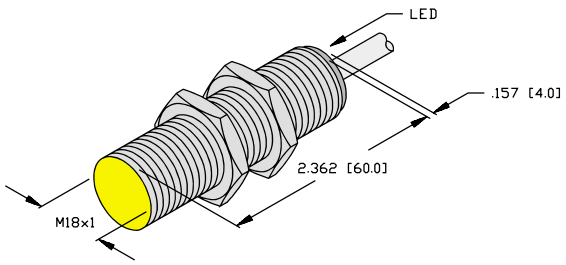
B Normally Closed



Barrels

Dimensions

1



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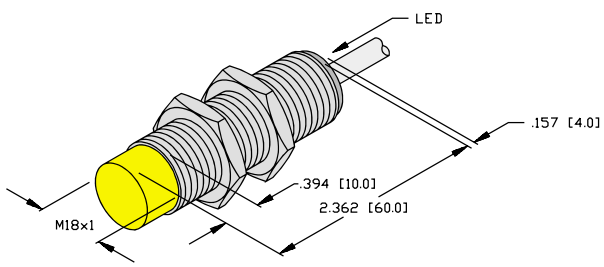

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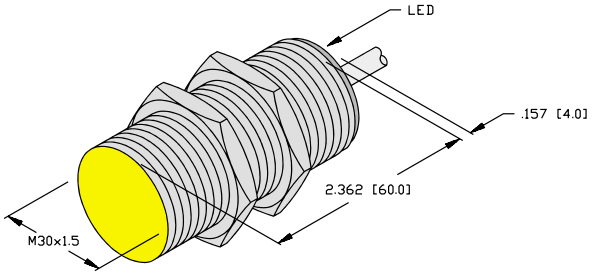

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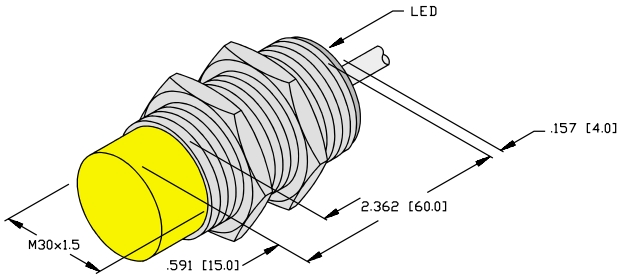

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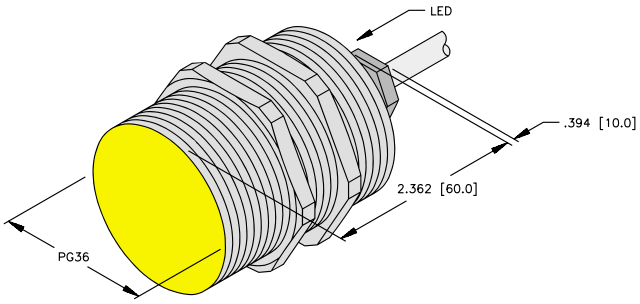

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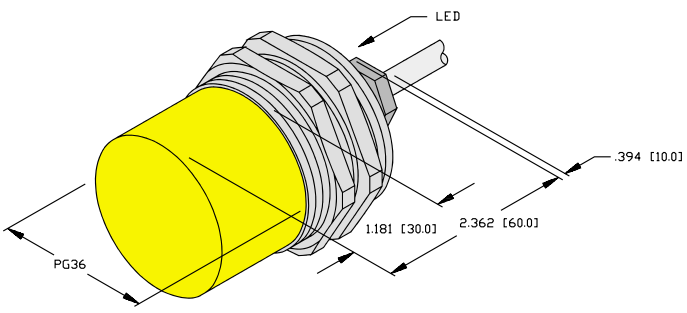
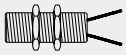


M..T Barrel

Barrel, Metal with Potted-In Cable

Partial Threading with Added Barb Fitting

2-Wire AC 

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 5-M18T-AZ3X	•	5	18	•		1	A	1		20	T4312000
Bi10-M30T-AZ3X	•	10	30	•		3	A	1		20	T4317000
Ni 8-M18T-AZ3X		8	18	•		2	A	1		20	T4312100
Ni15-M30T-AZ3X		15	30	•		4	A	1		20	T4317100
Bi 5-M18T-RZ3X	•	5	18		•	1	B	1		20	T4312200
Bi10-M30T-RZ3X	•	10	30		•	3	B	1		20	T4317200
Ni 8-M18T-RZ3X		8	18		•	2	B	1		20	T4312300
Ni15-M30T-RZ3X		15	30		•	4	B	1		20	T4317300

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	Chrome Plated Brass

Accessories

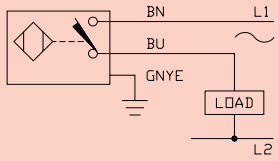
Accessories and mounting devices can be found in Section J.

Specifications

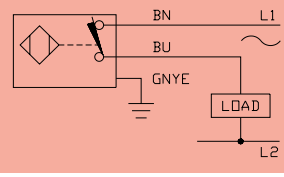
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



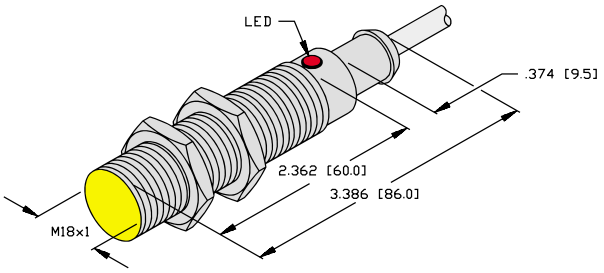
B Normally Closed



Barrels

Dimensions

1



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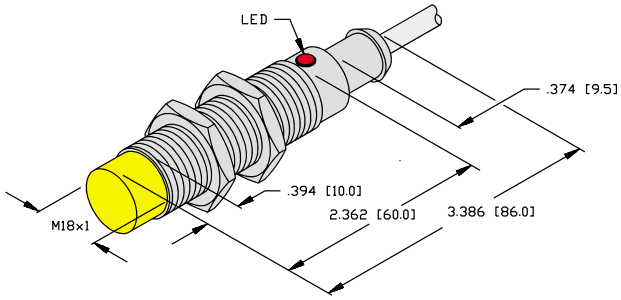

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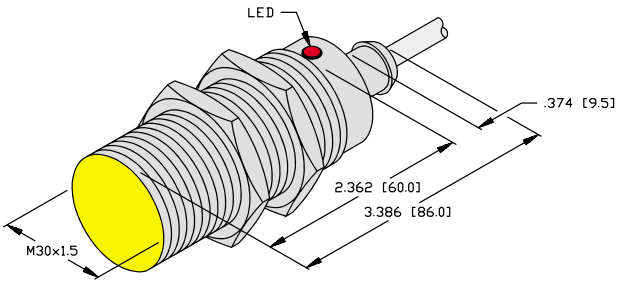

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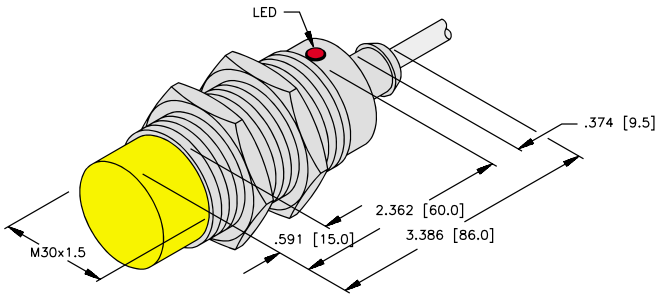
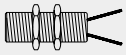


S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading

2-Wire AC 

35-250 VAC, 10-300 VDC

Normally Open (AZ31X) or Normally Closed (RZ31X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 2-S12-AZ31X	•	2	12	•		1	A	1		60	T1302000
Ni 4-S12-AZ31X		4	12	•		1	A	1		60	T1302200
Bi 2-S12-RZ31X	•	2	12		•	1	B	1		60	T1312000
Ni 4-S12-RZ31X		4	12		•	1	B	1		60	T1312200

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

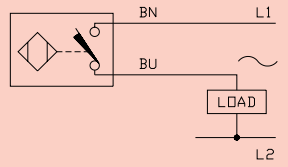
Accessories and mounting devices can be found in Section J.

Specifications

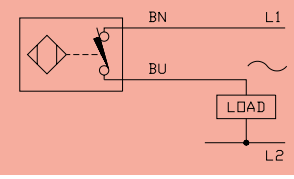
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤11.0 V at 200 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤1.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open

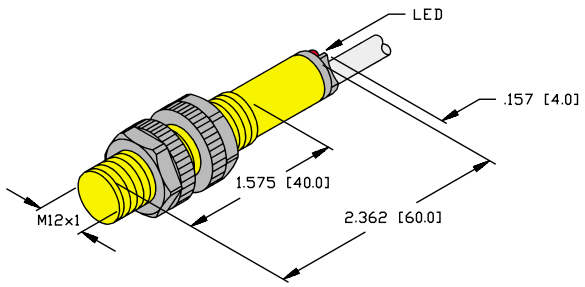


B Normally Closed



Dimensions

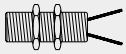
1



S Barrel

Barrel, Plastic with Potted-In Cable

Partial Threading

2-Wire AC 

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	CSA Certification	Switching Frequency (Hz)	ID Number
Bi 5-S18-AZ3X	•	5	18	•		1	A	1	•	20	T4350400
Bi10-S30-AZ3X	•	10	30	•		2	A	1	•	20	T4355400
Ni 8-S18-AZ3X		8	18	•		1	A	1	•	20	T4350500
Ni15-S30-AZ3X		15	30	•		2	A	1	•	20	T4355500
Bi 5-S18-RZ3X	•	5	18		•	1	B	1	•	20	T4350600
Bi10-S30-RZ3X	•	10	30		•	2	B	1	•	20	T4355600
Ni 8-S18-RZ3X		8	18		•	1	B	1	•	20	T4350700
Ni15-S30-RZ3X		15	30		•	2	B	1	•	20	T4355700

Cable/Conductor

Cable:	PVC Jacket; 2 and 7 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

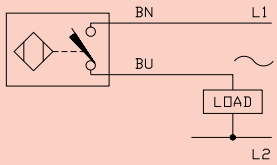
Accessories and mounting devices can be found in Section J.

Specifications

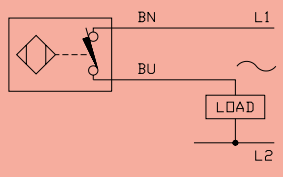
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA (100 mA for S100 style)
Continuous Load Current	≤500 mA (100 mA for S100 style)
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

A Normally Open

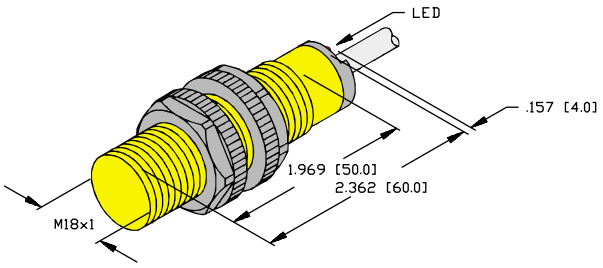


B Normally Closed



Dimensions

1



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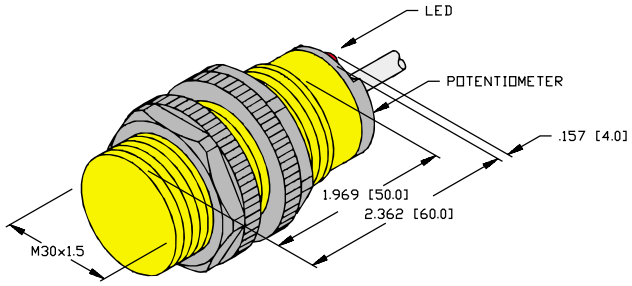
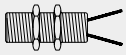


P Barrel

Barrel, Plastic Submersible Sensor

Special Plastic Housing with Potted-in Cable, Full Threading

2-Wire AC



20-250 VAC

Normally Open (AZ3)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 5-P18-AZ3/S139-S90	•	5	18	•		1	A	0		20	M1384300

Note: This sensor will operate at 725 PSI and is resistant to oil and sea water at 500 meters (1641 feet). It is also highly resistant shock, vibration and caustic chemicals.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	24 AWG

Material

Barrel:	POM Plastic
End Cap:	PA 6.6-GF Plastic
Locknuts:	PA 6-GF30 Plastic

Accessories

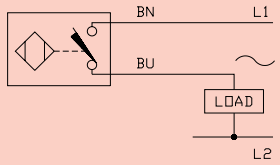
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 4,4X,6,6P,13 and IEC IP 68
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

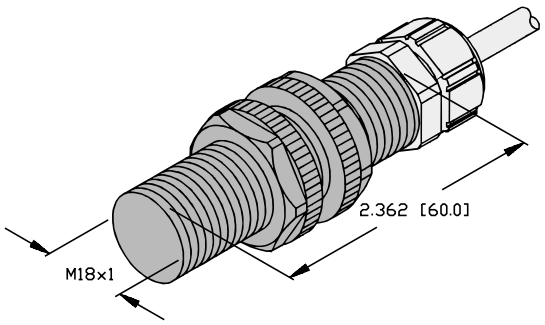
Wiring Diagram

A **Normally Open**



Dimensions

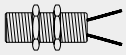
1



K Barrel

Barrel, Plastic with Potted-In Cable

Smooth

2-Wire AC 

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (IS34)	Switching Frequency (Hz)	ID Number
Ni10-K20-AZ3X *		10	20	•		1	A	1		20	M4358500
Ni20-K40-AZ3X **		20	40	•		2	A	1		20	M1306500
Ni10-K20-RZ3X *		10	20		•	1	B	1		20	M4358600
Ni20-K40-RZ3X **		20	40		•	2	B	1		20	M1316800

* Mounting Clamp BS-20 included with sensor.

** Mounting Bracket attached to sensor.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Barrel/Sensing Face:	K20: PBT-GF30-V0; K40: ABS Plastic
End Cap:	PUR Plastic
Mounting Clamp:	PBT Plastic
Mounting Bracket:	Cold Roll Steel, Galvanized

Accessories

Accessories and mounting devices can be found in Section J

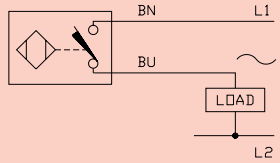
Mounting brackets included with sensors.

Specifications

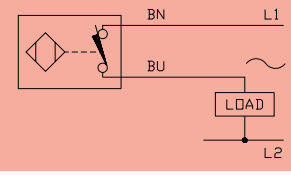
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open

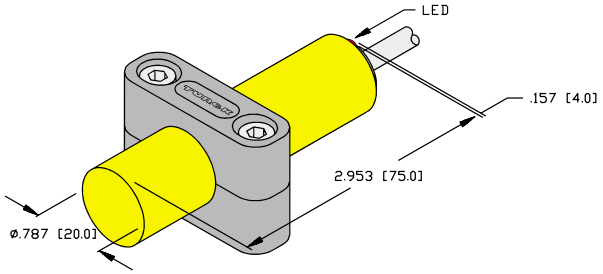


B Normally Closed



Dimensions

1



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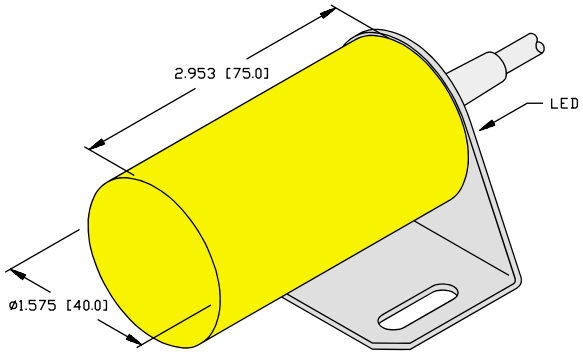


G..SK Barrel

Barrel, Metal with Integral Terminal Chamber
Full Threading

2-Wire AC
20-250 VAC
Normally Open (AZ3X2) or Normally Closed (RZ3X2)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi 5-G18SK-AZ3X2	•	5	18	•		1	A	2		20	T4331400
Bi10-G30SK-AZ3X2	•	10	30	•		3	A	2		20	T4346400
Ni10-G18SK-AZ3X2		10	18	•		2	A	2		20	T4331500
Ni15-G30SK-AZ3X2		15	30	•		4	A	2		20	T4346500
Bi 5-G18SK-RZ3X2	•	5	18		•	1	B	2		20	T4331600
Bi10-G30SK-RZ3X2	•	10	30		•	3	B	2		20	T4346600
Ni10-G18SK-RZ3X2		10	18		•	2	B	2		20	T4331700
Ni15-G30SK-RZ3X2		15	30		•	4	B	2		20	T4346700

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Material

Terminal Chamber:	PA 12-GF30 Plastic
Terminal Chamber Cover:	Trogamid T
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

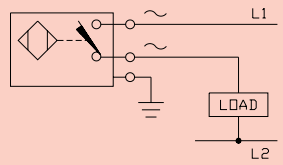
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

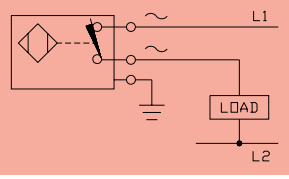
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A Normally Open

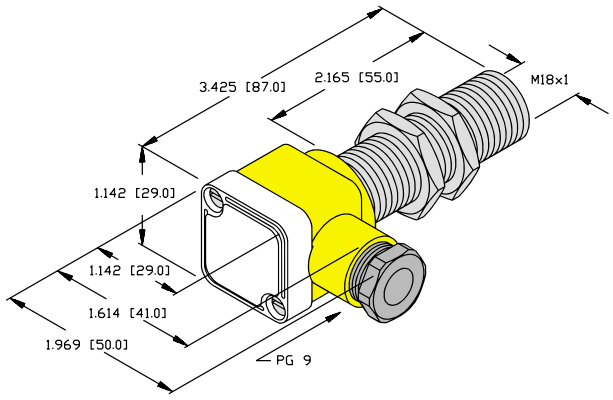


B Normally Closed



Dimensions

1



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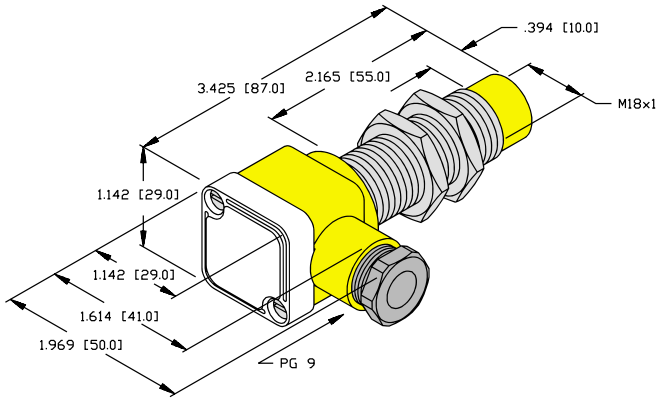

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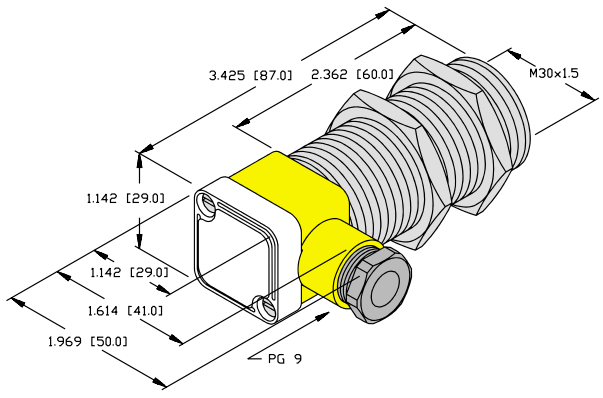

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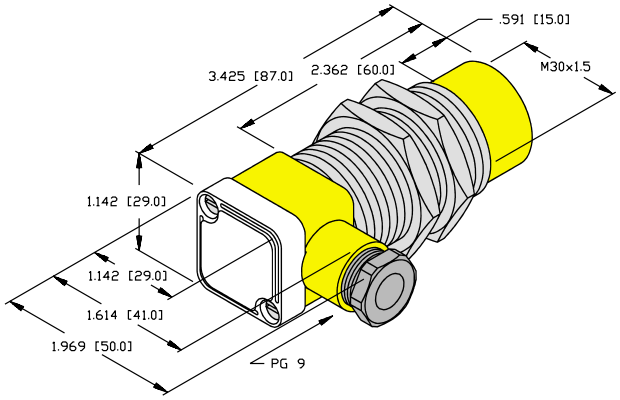


G47SR Barrel

Barrel, Metal with Integral Terminal Chamber
Full Threading

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi25-G47SR-FZ3X2	•	25	47	•	•	1	A	2		20	M1342700
Ni40-G47SR-FZ3X2		40	47	•	•	2	A	2		20	M1342800

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Terminal Chamber:	ABS Plastic
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

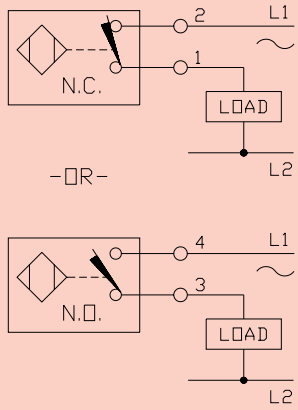
Accessories and mounting devices can be found in Section J.
PG 9 Cable Gland included with sensor.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagram

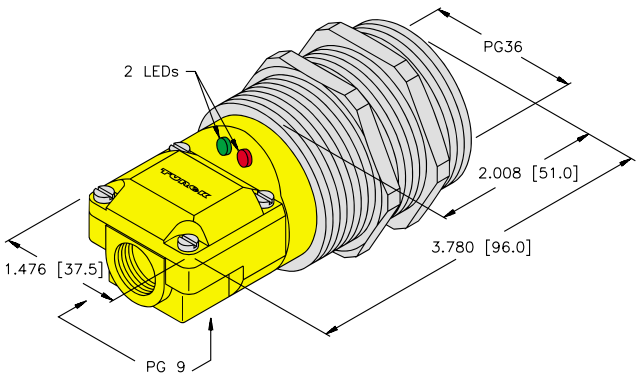
A **Programmable**



Barrels

Dimensions

1



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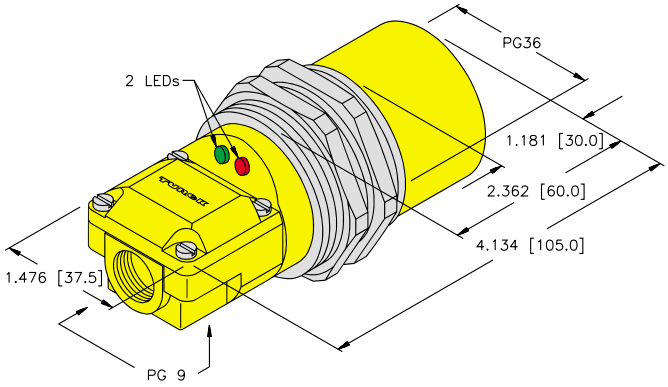


K..SK Barrel

P..SK Barrel

Barrel, Plastic with Integral Terminal Chamber

K..SK: *Smooth*
P..SK: *Full Threading*

2-Wire AC
20-250 VAC
Normally Open (AZ3X2) or Normally Closed (RZ3X2)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Ni10-K20SK-AZ3X2 *		10	20	•		1	A	2		20	T4359200
Bi 5-P18SK-AZ3X2	•	5	18	•		2	A	2		20	T4351400
Bi10-P30SK-AZ3X2	•	10	30	•		3	A	2		20	T4356400
Ni10-P18SK-AZ3X2		10	18	•		2	A	2		20	T4351500
Ni15-P30SK-AZ3X2		15	30	•		3	A	2		20	T4356500
Bi 5-P18SK-RZ3X2	•	5	18		•	2	B	2		20	T4351290
Bi10-P30SK-RZ3X2	•	10	30		•	3	B	2		20	T4356600
Ni10-P18SK-RZ3X2		10	18		•	2	B	2		20	T4351600
Ni15-P30SK-RZ3X2		15	30		•	3	B	2		20	T4356700

* BS-20 Mounting Clamp included with sensor.

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Material

Terminal Chamber:	PA 12-GF30 Plastic
Terminal Chamber Cover:	Trogamid T
Barrel:	PA 12-GF30 Plastic

Accessories

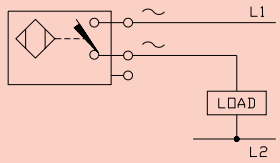
Accessories and mounting devices can be found in Section J.
Quick Disconnect Adapters available. See Section H.

Specifications

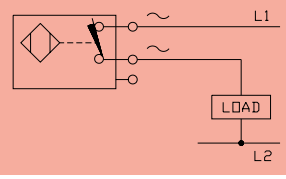
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A Normally Open

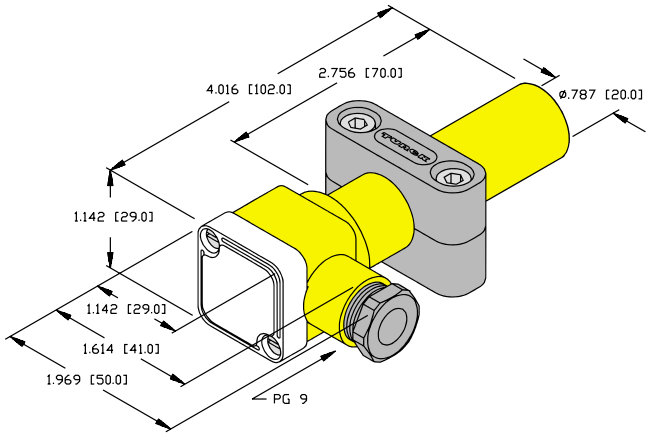


B Normally Closed



Dimensions

1



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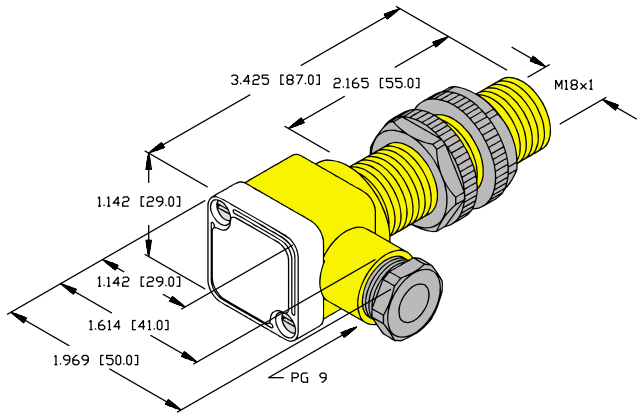

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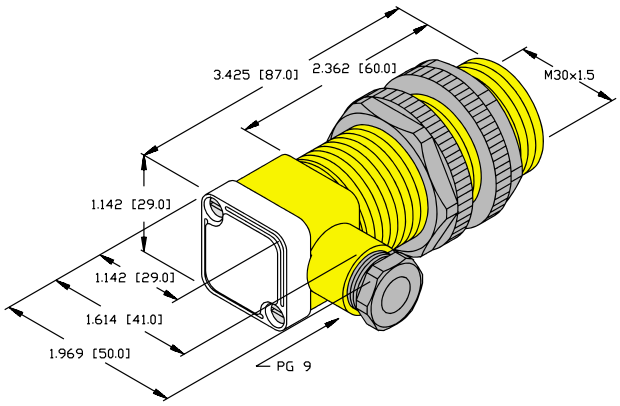


K40SR Barrel

P30SR Barrel

Barrel, Plastic with Integral Terminal Chamber

K40SR: *Smooth*
P30SR: *Full Threading*

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi15-K40SR-FZ3X2 *	•	15	40	•	•	1	A	2		20	M1342300
Ni20-K40SR-FZ3X2 *		20	40	•	•	1	A	2		20	M1342400
Ni30-K40SR-FZ3X2 *		30	40	•	•	1	A	2		20	M1342500
Bi10-P30SR-FZ3X2	•	10	30	•	•	2	A	2		20	M1342000
Ni15-P30SR-FZ3X2		15	30	•	•	2	A	2		20	M1342100

* BS-40 Mounting Clamp included with sensor.

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Terminal Chamber:	ABS Plastic
Barrel:	ABS Plastic

Accessories

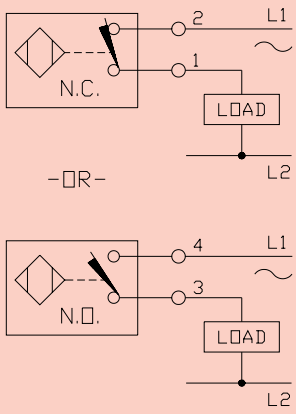
Accessories and mounting devices can be found in Section J.
PG 9 Cable Gland included with sensor.
Quick Disconnect Adapters available. See Section H.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≥500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On False Pulse Suppression	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

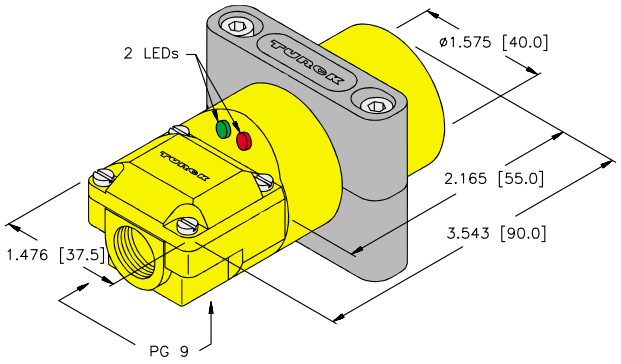
Wiring Diagram

A **Programmable**



Dimensions

1



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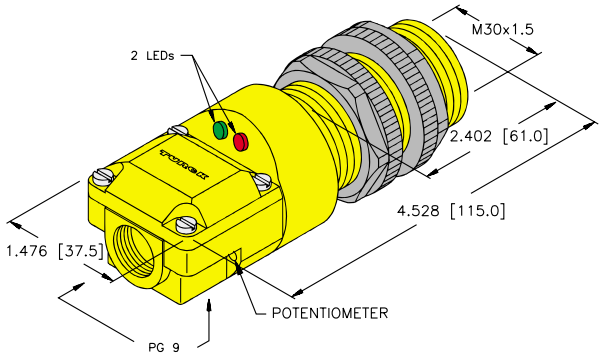


H and EH Barrel

Barrel, Metal, Miniature with Quick Disconnect
Smooth ***picoprox***®

2-Wire DC, Requires Remote Amplifier ***picofast***®
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number	Connection
Bi1.5-H6.5-Y0-V1131	•	1.5	6.5	2	A	0	5000	•	≤1	S1005100	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 1 -EH04 -Y0-V1330	•	1.0	4.0	1	A	0	5000	•	≤1	S1004621	
Bi1.5-EH6.5-Y1-V1130	•	1.5	6.5	3	A	0	5000	•	≤1		
Ni 3 -EH6.5-Y1-V1130		3.0	6.5	4	A	0	5000	•	≤1		
Bi1.5-EH6.5K-Y1-V1130	•	1.5	6.5	5	A	0	5000	•	≤1	S1004602	
Ni 3 -EH6.5K-Y1-V1130		3.0	6.5	6	A	0	5000	•	≤1		

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
** IS labels for cordsets can be found in Section J.

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

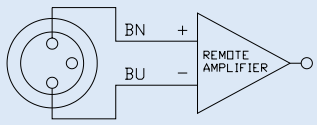
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

A — NAMUR Output



Dimensions

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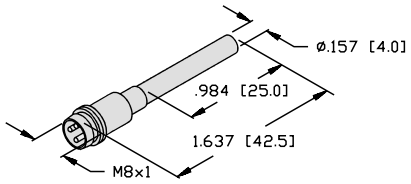

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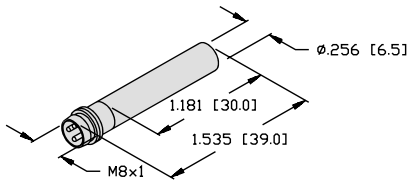

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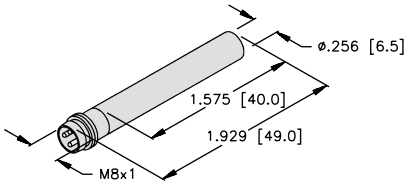

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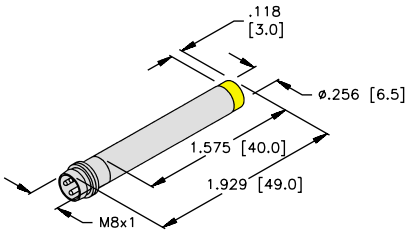

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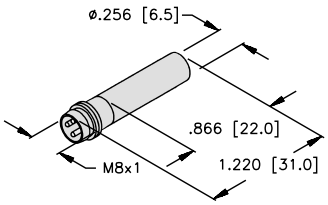

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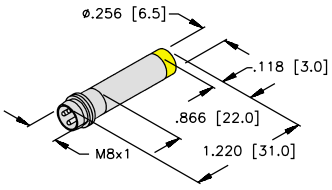


EG Barrel

Barrel, Metal, Miniature with Quick Disconnect
Full Threading ***picoprox***®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

picofast® ***eurofast***®

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number	Connection
Bi 1 -EG05-Y0-V1330 Bi1.5-EG08-Y1-V1130 Ni 3 -EG08-Y1-V1130	• •	1.0 1.5 3.0	5.0 8.0 8.0	1 2 3	A A A	0 0 0	5000 5000 5000	• • •	≤1 ≤1 ≤1	S1003241	***picofast*** **Mating Cordsets** PKG 3Z-2 **(2 meter) For other styles see Section H or consult "Cordsets" catalog.
Bi1.5-EG08K-Y1-V1130 Ni 3 -EG08K-Y1-V1130	•	1.5 3.0	8.0 8.0	4 5	A A	0 0	5000 5000	• •	≤1 ≤1	S1003630 S1003721	
Bi1.5-EG08-Y1-H1341 Ni 3 -EG08-Y1-H1341	•	1.5 3.0	8.0 8.0	6 7	B B	0 0	5000 5000	• •	≤1 ≤1		***eurofast*** **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
Bi1.5-EG08K-Y1-H1341 Ni 3 -EG08K-Y1-H1341	•	1.5 3.0	8.0 8.0	8 9	B B	0 0	5000 5000	• •	≤1 ≤1	S1003620 S1003720	

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

** IS labels for cordsets can be found in Section J. Not needed for RK 4.21T-2 style.

Locknut Torque

M5x0.5 Barrel:	5.0 Nm
M8x1 Barrel:	10.0 Nm

Material

Connector:	Chrome Plated Brass
Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Plastic Sensing Face:	PA 12-GF30

Accessories

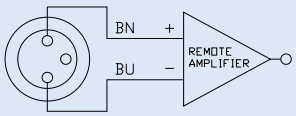
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

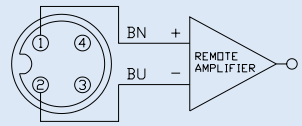
Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A NAMUR Output

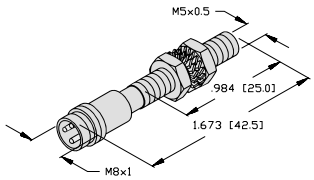


B NAMUR Output



Dimensions

1



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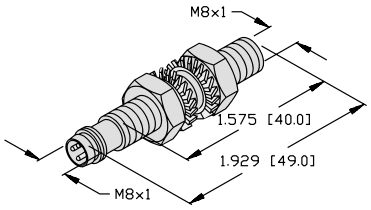

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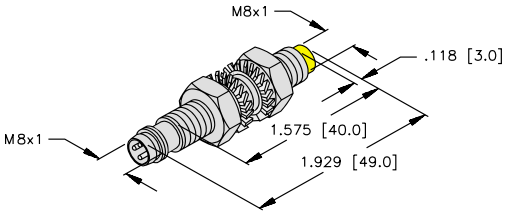

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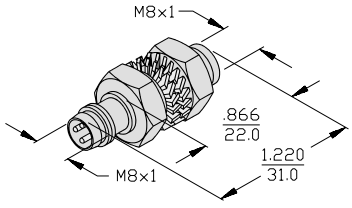

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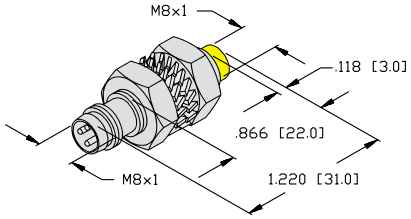

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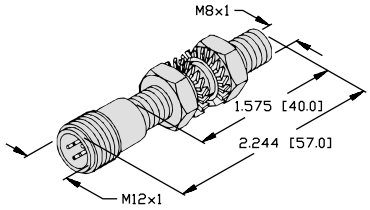

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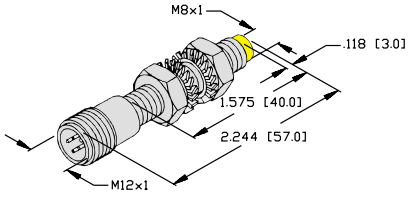

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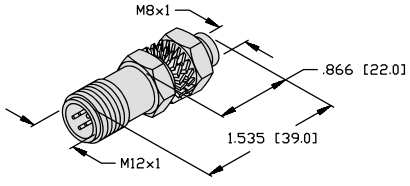

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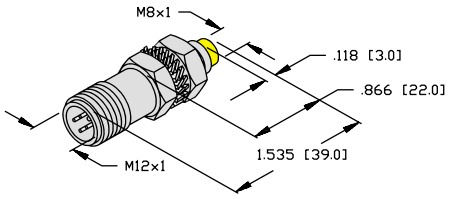


M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

2-Wire DC, Requires Remote Amplifier **eurofast**®
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number	Connection
Bi 2-M12-Y1X-H1141	•	2	12	1	A	1	5000	•	≤1	M4010200	**eurofast** **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
Bi 5-M18-Y1X-H1141	•	5	18	3	A	1	1000	•	≤2	M4015200	
Bi10-M30-Y1X-H1141	•	10	30	5	A	1	500	•	≤5	M4020200	
Ni 5-M12-Y1X-H1141		5	12	2	A	1	2000	•	≤1	M4010300	
Ni10-M18-Y1X-H1141		10	18	4	A	1	500	•	≤2	M4015300	
Ni15-M30-Y1X-H1141		15	30	6	A	1	200	•	≤5	M4020300	

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

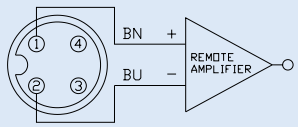
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

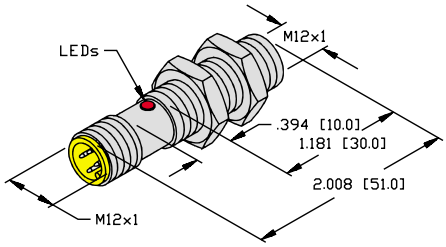
A — NAMUR Output



Barrels

Dimensions

1



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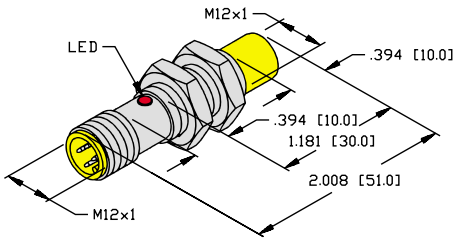

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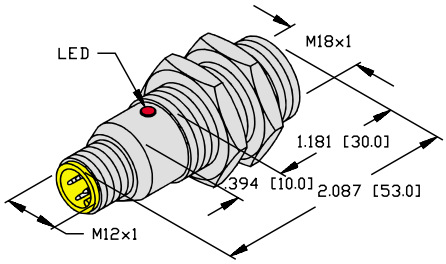

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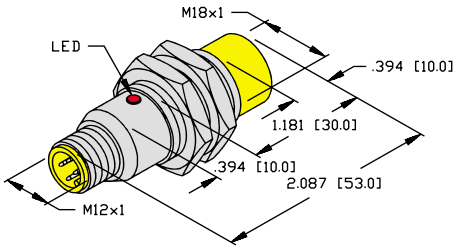

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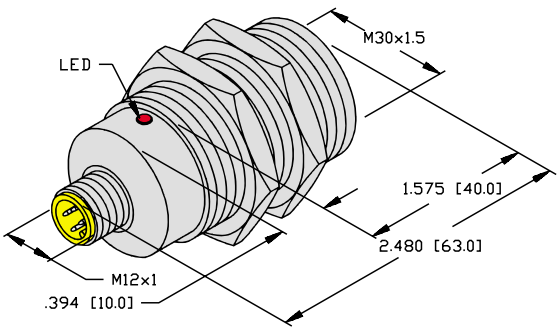

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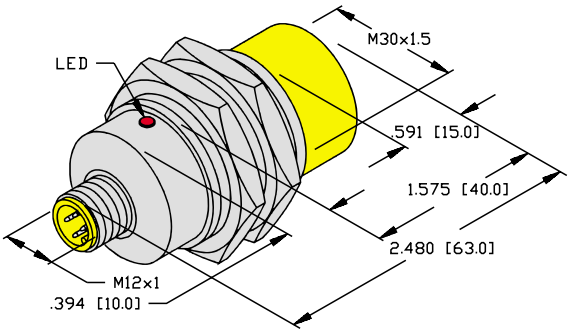


S Barrel

Barrel, Plastic with Quick Disconnect
Partial Threading

2-Wire DC, Requires Remote Amplifier **eurofast**®
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number	Connection
Bi 2-S12-YOX-H1141	•	2	12	1	A	1	5000	•	≤1	T4030090	**eurofast** **Mating Cordsets** RKK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
Bi 5-S18-YOX-H1141	•	5	18	2	A	1	1000	•	≤2	T4036095	
Ni 5-S12-YOX-H1141		5	12	1	A	1	2000	•	≤1	T4030300	

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Connector:	PA 12-GF30 Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

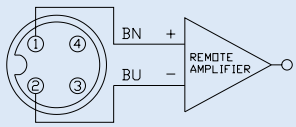
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

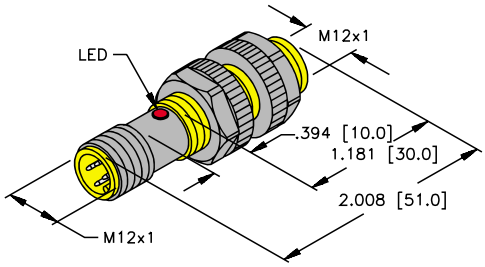
Wiring Diagram

A — NAMUR Output



Dimensions

1



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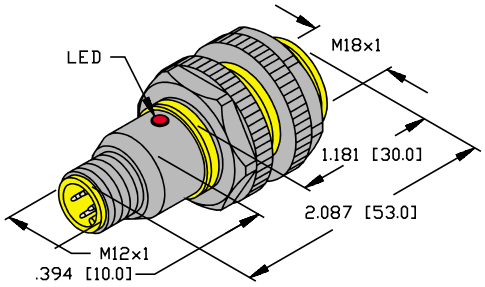


GS Barrel

HS Barrel

Side Sensing Sensors, Miniature Barrel

GS Barrel: *Full Threading* ***picoprox®***
HS Barrel: *Smooth* ***picoprox®***

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi1.5-GS880-Y0	•	1.5	8.0	1	A	0	5000	•	≤1	S1004401
Bi 1 -HS540-Y0	•	1.0	4.0	2	A	0	5000	•	≤1	S1004001
Bi1.5-HS865-Y0	•	1.5	6.5	3	A	0	5000	•	≤1	S1004201

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	HS540: 26 AWG
(PVC insulated)	GS880/HS865: 24 AWG

Locknut Torque

M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Side Cap:	POM Plastic
End Cap:	GS880/HS865: Trogamid T

Accessories

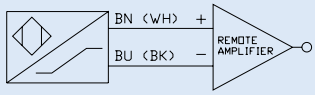
Accessories and mounting devices can be found in Section J.
Mounting Clamps BS-540 and BS-865 must be ordered separately.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalogs.

Specifications

Hysteresis (Differential Travel)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

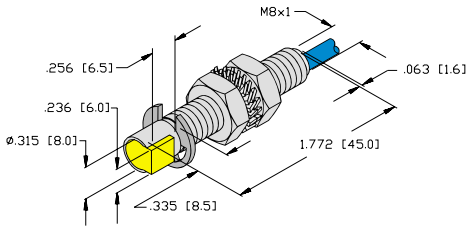
A — NAMUR Output



Barrels

Dimensions

1



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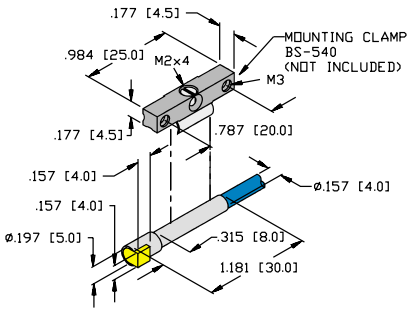

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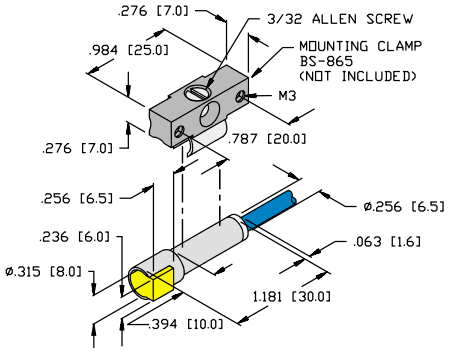
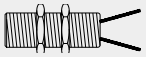


H and EH Barrel

Barrel, Metal, Miniature with Potted-In Cable

Smooth ***picoprox*** ®

2-Wire DC, Requires Remote Amplifier 

5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 1 -EH04 -Y0	•	1.0	4.0	SS	1	A	0	5000	•	≤1	S1003040
Bi1.5-EH6.5-Y1	•	1.5	6.5	SS	2	A	0	5000	•	≤1	
Bi1.5-H08 -Y1	•	1.5	8.0	CPB	6	A	0	5000	•	≤1	
Ni 2 -H08 -Y1		2.0	8.0	CPB	7	A	0	5000	•	≤1	S1021500
Ni 3 -EH6.5-Y1		3.0	6.5	SS	3	A	0	5000	•	≤1	
Bi1.5-EH6.5K-Y1	•	1.5	6.5	SS	4	A	0	5000	•	≤1	S1004600
Ni 3 -EH6.5K-Y1		3.0	6.5	SS	5	A	0	5000	•	≤1	S1004700

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
Note: Y0 and Y1 units have identical electrical properties. See Section A for differences in European approvals.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	EH04: 26 AWG
(PVC insulated)	EH6.5,H08: 24 AWG

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face/End Cap:	PA 12-GF30 / Trogamid T Plastic

Accessories

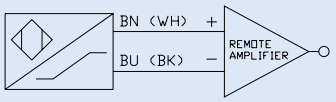
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Hysteresis (Differential Travel)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

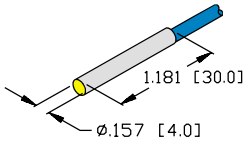
A — NAMUR Output



Barrels

Dimensions

1



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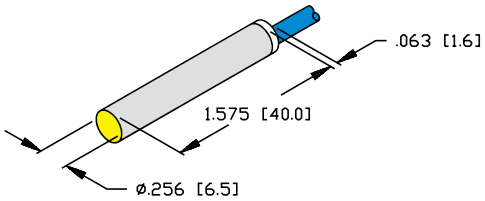

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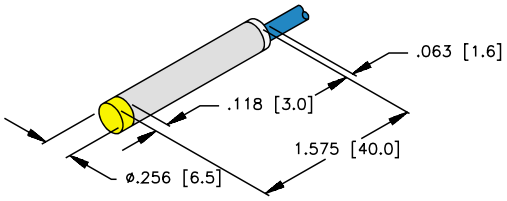

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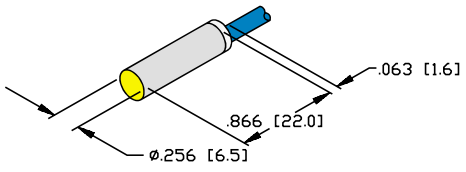

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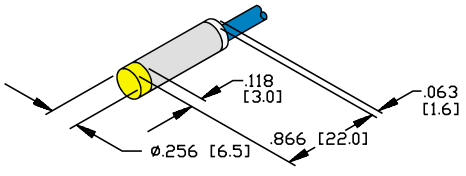

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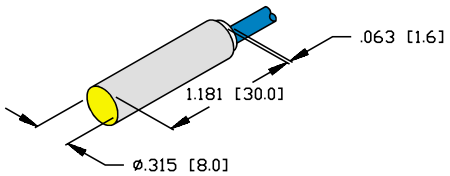

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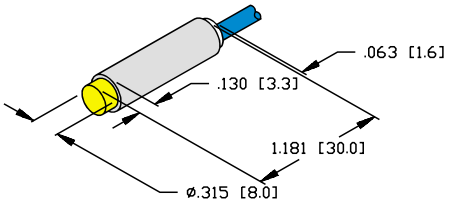


EG Barrel

Barrel, Metal, Miniature with Potted-In Cable

Full Threading ***picoprox***®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 1 -EG05-Y0	•	1.0	5.0	1	A	0	5000	•	≤1	S1003240
Bi1.5-EG08-Y1	•	1.5	8.0	4	A	0	5000	•	≤1	
Ni 3 -EG08-Y1		3.0	8.0	5	A	0	5000	•	≤1	
Bi1.5-EG08K-Y1	•	1.5	8.0	2	A	0	5000	•	≤1	S1003600
Ni 3 -EG08K-Y1		3.0	8.0	3	A	0	5000	•	≤1	S1003700

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
Note: Y0 and Y1 units have identical electrical properties. See Section A for differences in European approvals.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	EG05: 26 AWG
(PVC insulated)	EG08: 24 AWG

Locknut Torque

M5x0.5 Barrel:	5.0 Nm
M8x1 Barrel:	10.0 Nm

Material

Barrel:	Stainless Steel
Locknuts/Lockwashers:	Stainless Steel
Sensing Face/End Cap:	PA 12-GF30 / Trogamid T Plastic

Accessories

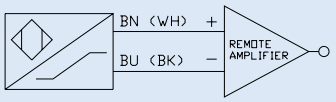
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Hysteresis (Differential Travel)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

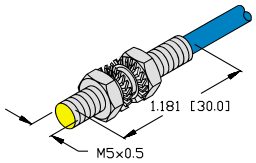
A — NAMUR Output



Barrels

Dimensions

1



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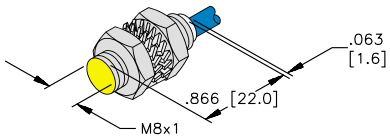

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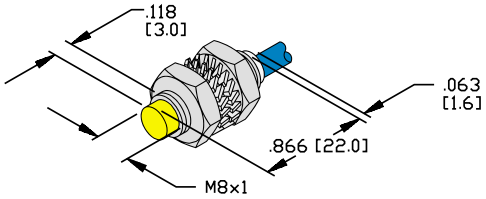

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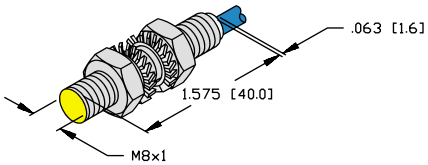

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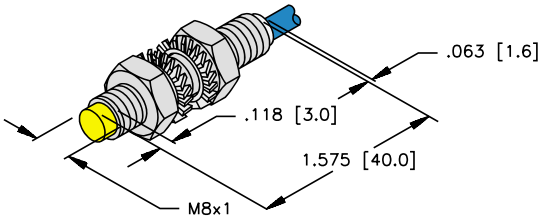
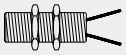


G and EG Barrel

Barrel, Metal with Potted-In Cable - Standard, Stainless Steel

Full Threading

2-Wire DC, Requires Remote Amplifier



5-30 VDC

Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Barrel Material	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-G12-Y0	•	2	12	CPB	1	A	0	5000	•	≤1	T1005400
Bi 2-G12-Y0X	•	2	12	CPB	1	A	1	5000	•	≤1	T4010000
Bi 5-G18-Y0	•	5	18	CPB	3	A	0	1000	•	≤1	T1006000
Bi 5-G18-Y0X	•	5	18	CPB	3	A	1	1000	•	≤1	T4015000
Bi10-G30-Y0	•	10	30	CPB	5	A	0	500	•	≤1	T1006200
Bi10-G30-Y0X	•	10	30	CPB	5	A	1	500	•	≤1	T4020000
Bi20-G47-Y1	•	20	47	CPB	7	A	0	200	•	≤1	M1006800
Bi20-G47-Y1X	•	20	47	CPB	7	A	1	200	•	≤1	M1020200
Ni 5-G12-Y0		5	12	CPB	2	A	0	2000	•	≤1	T1005500
Ni 5-G12-Y0X		5	12	CPB	2	A	1	2000	•	≤1	T4010100
Ni10-G18-Y0		10	18	CPB	4	A	0	500	•	≤1	T1006100
Ni10-G18-Y0X		10	18	CPB	4	A	1	500	•	≤1	T4015100
Ni15-G30-Y0		15	30	CPB	6	A	0	200	•	≤1	T1006300
Ni15-G30-Y0X		15	30	CPB	6	A	1	200	•	≤1	T4020100
Ni25-G47-Y1		25	47	CPB	8	A	0	150	•	≤1	M1006900
Bi 2-EG12-Y0X	•	2	12	SS	1	A	1	5000	•	≤1	T4012000

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
Note: Y0 and Y1 units have identical electrical properties. See Section A for differences in European approvals.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	G12: 24 AWG
(PVC insulated)	G18/G30/G47: 21 AWG

Material

Barrel/Locknuts:	CPB = Chrome Plated Brass SS = Stainless Steel
Sensing Face:	PA 12-GF30 Plastic
End Cap:	G12/G18/G30: PUR Plastic

Accessories

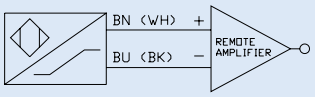
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

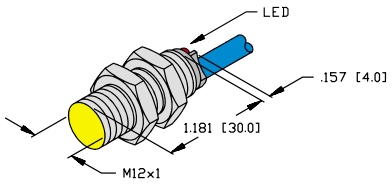
A — NAMUR Output



Barrels

Dimensions

1



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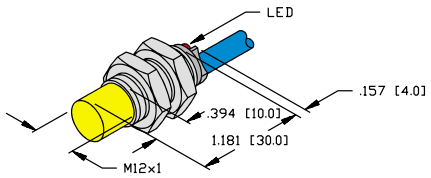

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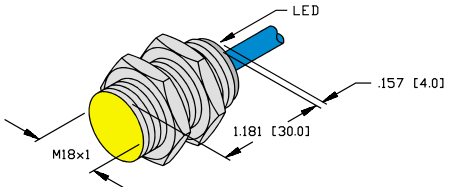

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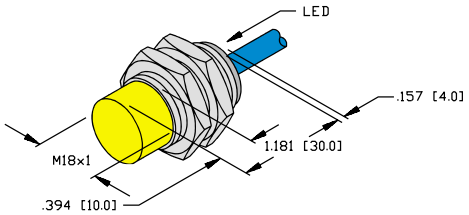

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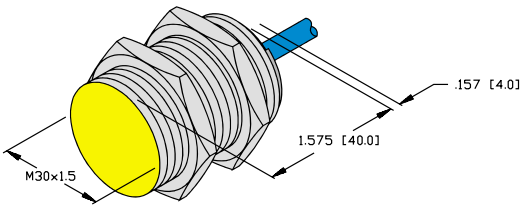

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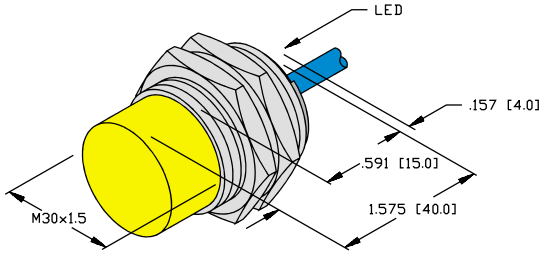

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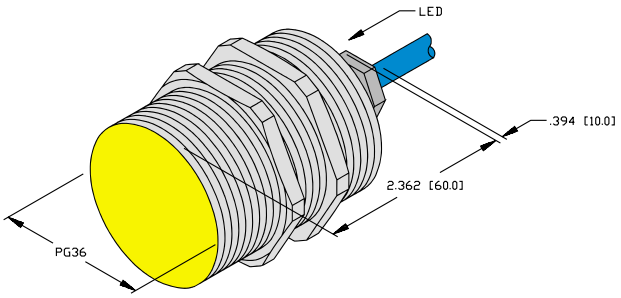

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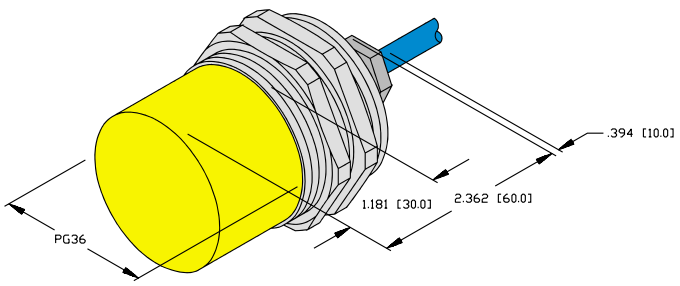


P Barrel

Barrel, Plastic with Potted-In Cable
Full Threading

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-P12-Y0	•	2	12	1	A	0	5000		•	≤1	T1009300
Bi 2-P12-Y0X	•	2	12	1	A	1	5000		•	≤1	T4030000
Bi 5-P18-Y0	•	5	18	2	A	0	1000		•	≤2	T1009500
Bi 5-P18-Y0X	•	5	18	2	A	1	1000		•	≤2	T4035000
Bi10-P30-Y1	•	10	30	3	A	0	500		•	≤2	M1009700
Bi10-P30-Y0X	•	10	30	3	A	1	500		•	≤2	T4040000
Ni 5-P12-Y1		5	12	1	A	0	2000		•	≤1	M1009400
Ni 5-P12-Y0X		5	12	1	A	1	2000		•	≤1	T4030100
Ni10-P18-Y1		10	18	2	A	0	500		•	≤2	M1009600
Ni10-P18-Y0X		10	18	2	A	1	500		•	≤2	T4035100
Ni15-P30-Y1		15	30	3	A	0	200		•	≤2	M1009800
Ni15-P30-Y0X		15	30	3	A	1	200		•	≤2	T4040100

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	P12: 24 AWG
(PVC insulated)	P18/P30 21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

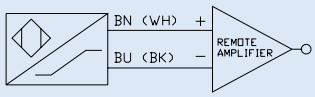
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagram

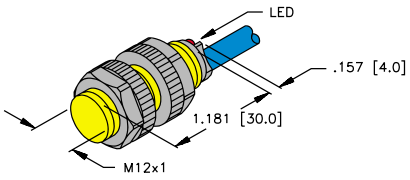
A — NAMUR Output



Barrels

Dimensions

1



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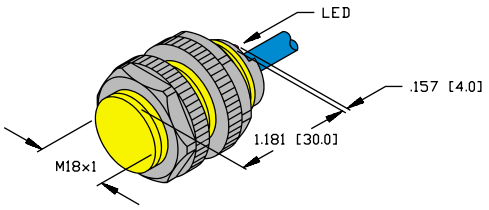

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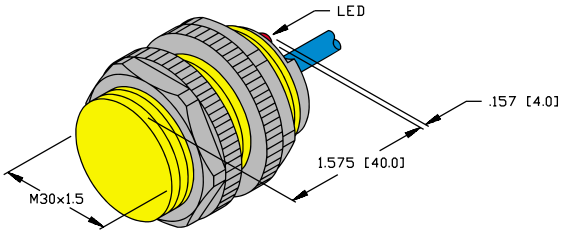


K Barrel

Barrel, Plastic with Potted-In Cable

Smooth

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-K11-Y1 †	•	2	11	1	A	0	5000		•	≤1	M1007000
Ni 5-K11-Y0 †		5	11	1	A	0	2000		•	≤1	T1007100
Ni10-K20-Y1 ††		10	20	2	A	0	500		•	≤2	M1007200
Ni20-K40-Y1 φ		20	40	3	A	0	100		•	≤8	M1007300

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
† Mounting Clamp BS-11 included with sensor.
†† Mounting Clamp BS-20 included with sensor.
φ Mounting Bracket attached to sensor.

Note: Y0 and Y1 units have identical electrical properties. See Section A for differences in European approvals.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	K11: 24 AWG
(PVC insulated)	K20/K40: 21 AWG

Material

Barrel:	K11: PA 12-GF30; K20: PBT-GF30 K40: ABS Plastic
End Cap:	PUR Plastic
Clamp/Bracket:	PBT/ Cold Roll Steel, Galvanized

Accessories

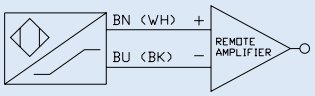
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

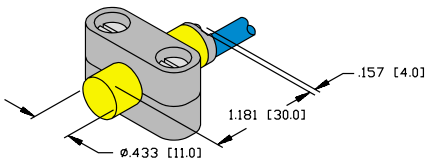
A — NAMUR Output



Barrels

Dimensions

1



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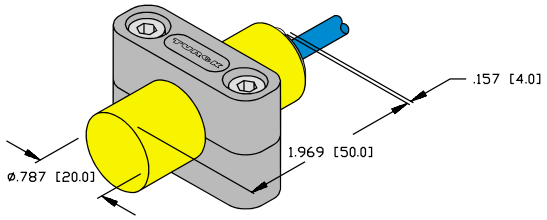

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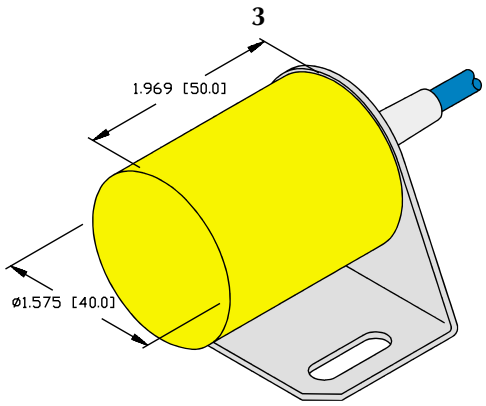


P..SK Barrel

Barrel, Plastic with Integral Terminal Chamber
Full Threading

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-P12SK-Y1X	•	2	12	1	A	1	5000		•	≤1	M4031000
Bi 5-P18SK-Y1X	•	5	18	2	A	1	1000		•	≤2	M4036000
Ni 5-P12SK-Y1X		5	12	1	A	1	2000		•	≤1	M4031100
Ni10-P18SK-Y1X		10	18	2	A	1	500		•	≤2	M4036100

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Terminal Chamber:	PA 12-GF30 Plastic
Terminal Chamber Cover:	Trogamid T
Barrel:	PA 12-GF30 Plastic

Accessories

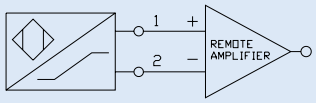
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

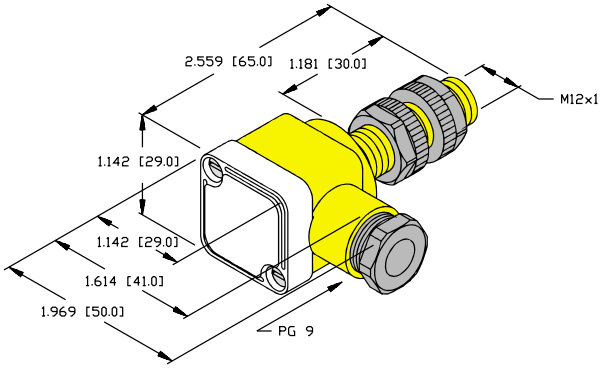
Wiring Diagram

A — NAMUR Output



Dimensions

1



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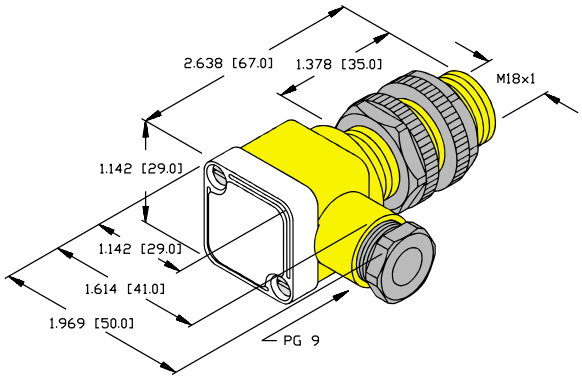


CLICK HERE for
MAIN SELECTION GUIDE

Visit **TURCK** on the Internet:
http://www.turck.com

Selection Guide

Linear Analog Sensors		
Sensor Type	**Output**	**Pages**
 Barrel Style	4-Wire DC	D5-D8
 Limit Style	4-Wire DC	D9-D10
High Temperature Sensors		
 Barrel Style	3-Wire DC 4-Wire DC 2-Wire AC NAMUR	D11-D16 D17-D18 D21-D24 D27-D28
 Limit Style	4-wire DC 2-Wire AC	D19-D20 D25-D26
 Long Range	NAMUR	D29-D30
Valve Control Sensors		
 Valve Style	4-Wire DC 5-Wire AC/DC NAMUR	D31-D32 D33-D34 D35-D36

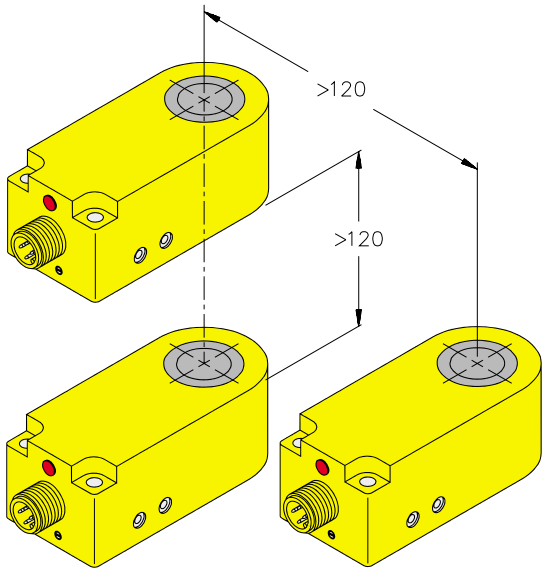
Bottle and Can Sensors		
Sensor Type	**Output**	**Pages**
 Bottle and Can Style	4-Wire DC 2-Wire AC	D37-D38 D39-D40
NonFerrous Sensors		
 Barrel Style	3-Wire DC	D41-D42
 Limit Style	4-Wire DC 2-Wire AC	D43-D44 D45-D46
Ring and Slot Sensors		
 Ring Style	3-Wire DC	D47-D52
 Slot Style	3-Wire DC 4-Wire DC 2-Wire AC NAMUR	D53-D54 D55-D58 D59-D60 D61-D62

Specialty Sensor Selection Guide

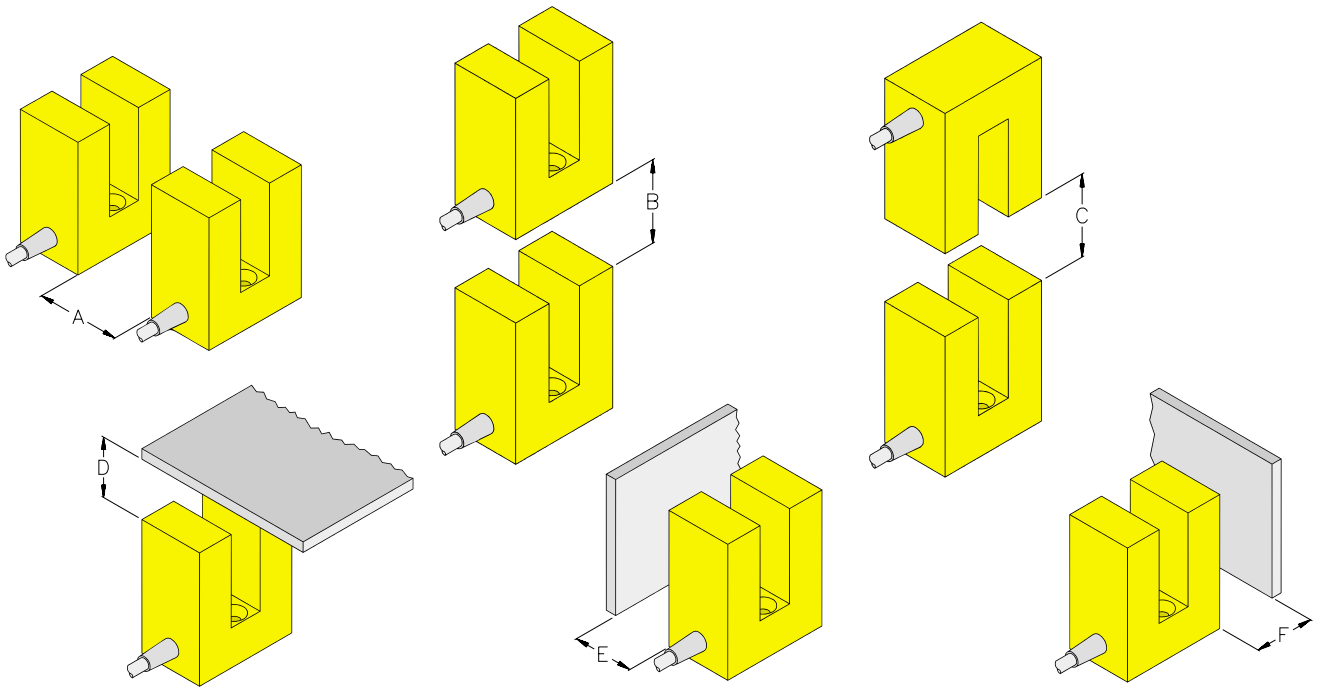
Specialty Sensor Selection Guide

Mounting Considerations

Ring Style



Slot Style



Part Numbers	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
Si3.5-..	≥15	≥5	≥15	≥0	≥0	≥0
Si 5-..	≥10	≥0	≥5	≥0	≥0	≥0
Si15-..	≥30	≥10	≥30	≥5	≥5	≥5
Si30-..	≥30	≥0	≥30	≥10	≥10	≥10

M Barrel

Linear Analog Sensors
Metal Barrel, Partial Threading

4-Wire DC **eurofast®**
15-30 VDC, Short-Circuit Protected
Linear Analog Output; Current and Voltage (LIU)

Sensor Selection

Part Number	Embeddable	Linear Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# OF LEDs	Response Frequency (Hz)	Current Output 0-20 mA	Voltage Output 0-10 V	ID Number	Connection
Bi 5-M18-LIU-H1141	•	2-4	18	1	A	0	200	•	•	M1536201	eurofast **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni 8-M18-LIU-H1141		1-5	18	2	A	0	200	•	•	M1536301	

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

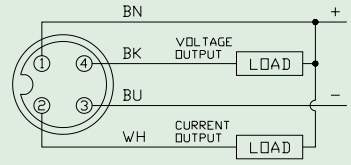
Accessories and mounting devices can be found in Section J.

Specifications

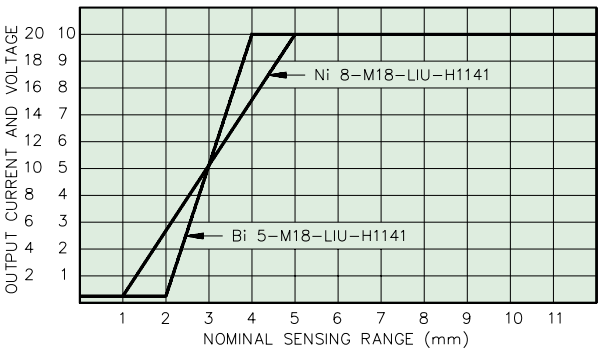
Ripple	≤10%
No-Load Current	≤8.0 mA
Voltage Output	0-10 V/R_L ≥4.7 kΩ
Current Output	0-20 mA/R_L ≤500 Ω
Linearity Tolerance	±3% of full scale
Temperature Tolerance	±5% of full scale
Reverse Polarity Protection	Incorporated
Time Delay Before Availability	M18: 8 ms; M30: 80 ms
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-10°C to +70°C (+14°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude, in all 3 planes
Repeatability	≤2% of full scale
Slew Rate	1.25 V/ms

Wiring Diagram

A — LIU Output

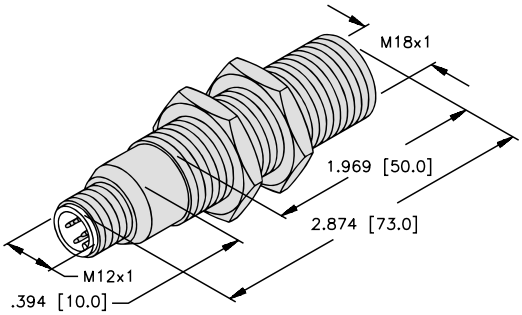


LIU Response Curve

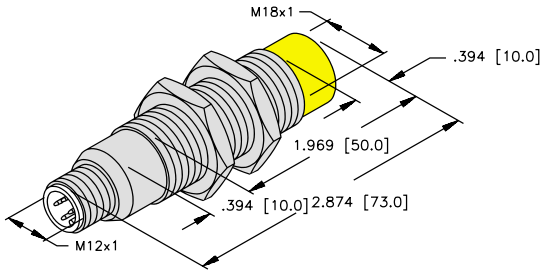


Dimensions

1



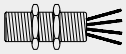
2



Specialty

M Barrel

Linear Analog Sensors
Metal Barrel, Partial Threading

4-Wire DC 
15-30 VDC, Short-Circuit Protected
Linear Analog Output; Current and Voltage (LIU)

Sensor Selection

Part Number	Embeddable	Linear Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Time Delay Before Availability (ms)	Response Frequency (Hz)	Current Output 0-20 mA	Voltage Output 0-10 V	ID Number
Bi 5-M18-LIU	•	2-4	18	1	A	0	8	200	•	•	M1536000
Bi10-M30-LIU	•	3-8	30	2	A	0	80	80	•	•	M1535500
Ni 8-M18-LIU		1-5	18	3	A	0	8	200	•	•	M1536100

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	M18: 21 AWG
(PVC insulated)	M30: 22 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

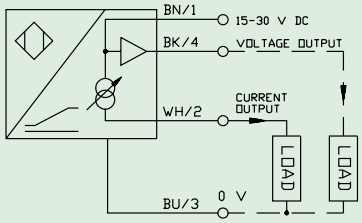
Accessories and mounting devices can be found in Section J.

Specifications

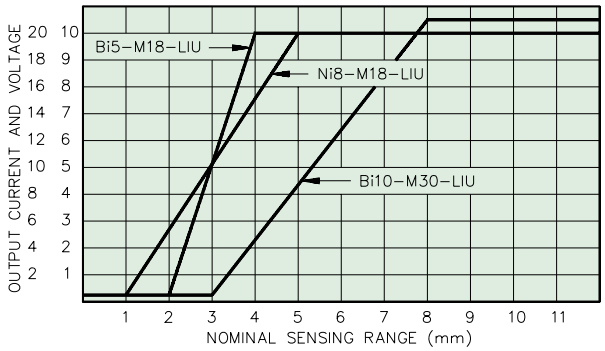
Ripple	≤10%
No-Load Current	≤8.0 mA
Voltage Output	0-10 V/R_L ≥4.7 kΩ
Current Output	0-20 mA/R_L ≤500 Ω
Linearity Tolerance	±3% of full scale
Temperature Tolerance	±5% of full scale
Reverse Polarity Protection	Incorporated
Time Delay Before Availability	M18: 8 ms; M30: 80 ms
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-10°C to +70°C (+14°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude, in all 3 planes

Wiring Diagram

A — LIU Output

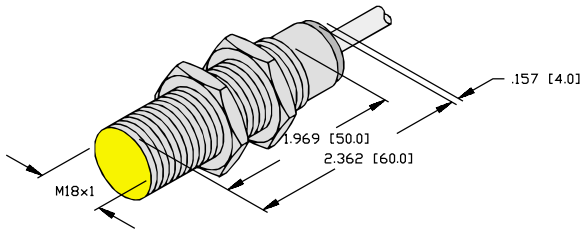


LIU Response Curve



Dimensions

1



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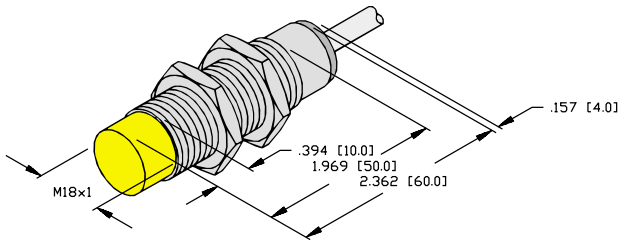

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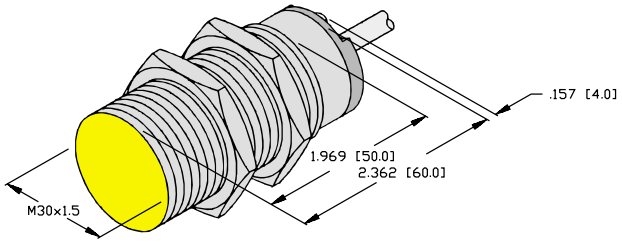


Specialty

CK40

CP40

Linear Analog Sensors

CK40: *Limit Switch Style Sensor* ***stubby®***
CP40: *Limit Switch Style Sensor* ***combiprox®***

4-Wire DC ***eurofast®***
15-30 VDC, Short-Circuit Protected
Linear Analog Output; Current and Voltage (LIU and LIU2)

Sensor Selection

Part Number	Embeddable	Linear Operating Distance (mm)	Housing Square (mm)	Drawing #	Wiring Diagram	# OF LEDs	Live-Zero Output	Response Frequency (Hz)	Current Output 0-20 mA	Voltage Output 0-10 V	ID Number	Connection
Bi15-CK40-LIU-H1141	•	4-11	40	1	A	0		80	•	•	M1537890	***eurofast***
Ni25-CK40-LIU2-H1141		5-25	40	1	A	0	•	80	•	•	M1537892	**Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi15-CP40-LIU	•	4-11	40	2	B	0		80	•	•	M1535700	**Terminal Chamber**

Quick Disconnect Option - CP40

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing/Sensing Face:	PBT-GF30-VO Plastic
CK40 Connector:	Chrome-Plated Brass
CK40 Positioning Bracket:	Die-Cast Zinc
CK40 Mounting Bracket:	Die-Cast Zinc

Accessories

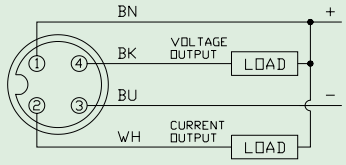
Accessories and mounting devices can be found in Section J.
Mounting Bracket BS-2.1 included with CK40 style sensor.
Mounting Bracket LSAP-2 for CP40 sensors can be found in Section J.

Specifications

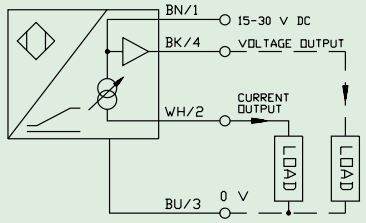
Ripple	≤10%
No-Load Current	≤8.0 mA
Voltage Output	LIU:0-10 V; LIU2:2-10V /R_L ≥4.7 kΩ
Current Output	LIU:0-20 mA; LIU2:4-20mA /R_L ≤500 Ω
Linearity Tolerance	Bi15:±3%; Ni25: ±4% of full scale
Temperature Tolerance	Bi15:±5%; Ni25: ±7% of full scale
Time-Delay Before Availability	≤80 ms
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-10°C to +70°C (+14°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude, in all 3 planes
Repeatability	≤2% of full scale
Slew Rate	1.25 V/ms

Wiring Diagrams

A LIU(2) Output

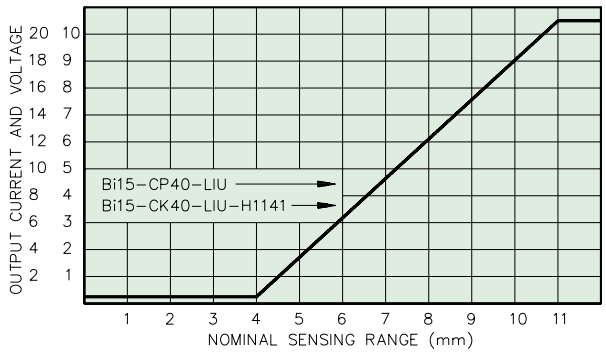


B LIU Output

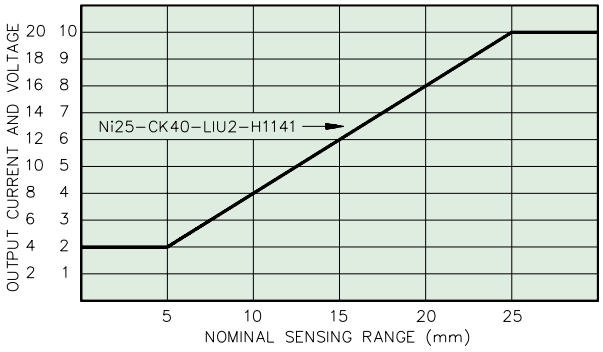


Specialty

LIU Response Curve

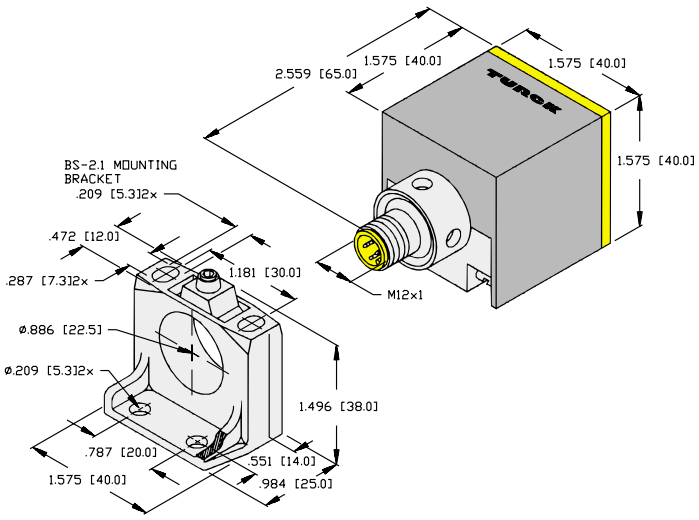


LIU2 Response Curve



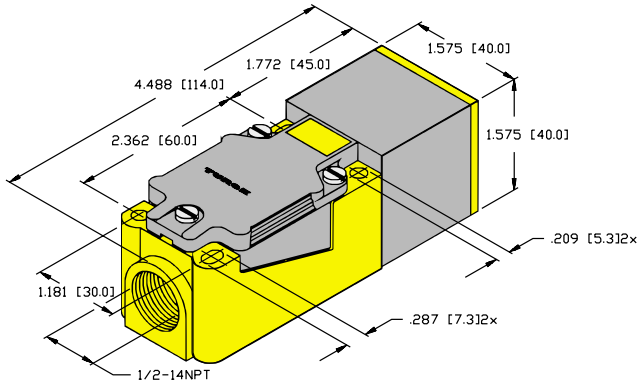
Dimensions

1



Note:
By removing bracket, sensor can be adjusted to five different sensing positions.

2



Note:
By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

P Barrel

High Temperature Sensor
Plastic Barrel, Full Threading, Quick Disconnect

3-Wire DC **minifast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-P18-AN6X-B2341/S100	•	5	18	•		1	A	1	•	1000	M1677100	minifast
Bi10-P30-AN6X-B2141/S100	•	10	30	•		2	A	1	•	500	M4697421	
Bi 5-P18-AP6X-B2341/S100	•	5	18		•	1	B	1	•	1000	M4697321	**Mating Cordsets** RK 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-P30-AP6X-B2141/S100	•	10	30		•	2	B	1	•	500	M4697521	

Material

Connector:	Polyamide Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

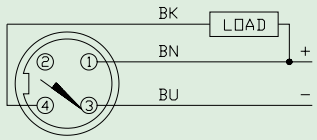
Accessories and mounting devices can be found in Section J.

Specifications

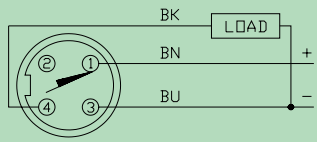
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



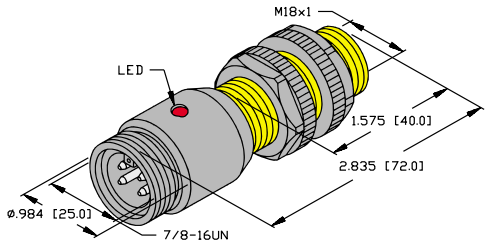
B PNP (Sourcing)



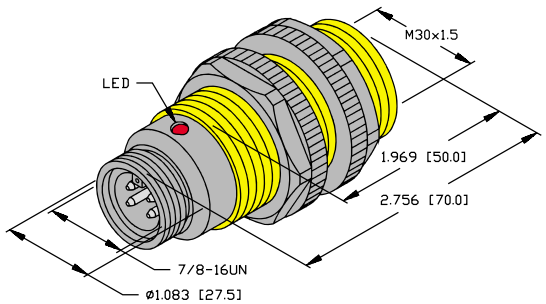
Specialty

Dimensions

1



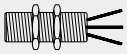
2



S Barrel

High Temperature Sensor

Plastic Barrel, Partial Threading, Potted-In Cable

3-Wire DC 

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp. (/S100)	Switching Frequency (Hz)	ID Number
Ni15-S30-AN6X/S100		15	30	•		1	A	1	•	500	M4659321

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

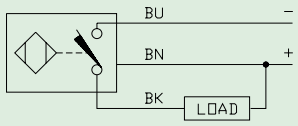
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

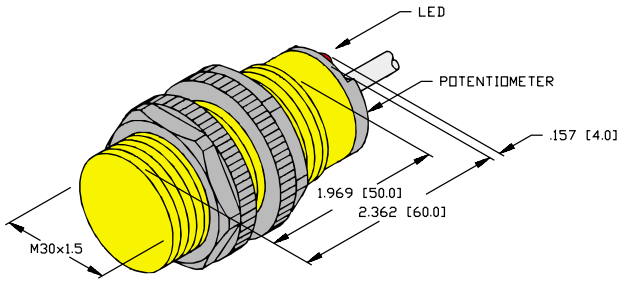
Wiring Diagram

A — NPN (Sinking)



Dimensions

1

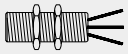


Specialty

S Barrel

High Temperature Sensor

Plastic Barrel, Partial Threading, Potted-In Cable

3-Wire DC 

10-30 VDC, TTL Compatible

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 2-S12-AN7X/S100	•	2	12	•		1	A	1	•	2000	M1773100
Bi 5-S18-AN7X/S100	•	5	18	•		2	A	1	•	1000	M1773400
Bi10-S30-AN7X/S100	•	10	30	•		3	A	1	•	500	M1777700
Ni 4-S12-AN7X/S100		4	12	•		1	A	1	•	1500	M1773000
Ni 8-S18-AN7X/S100		8	18	•		2	A	1	•	1000	M1773250
Ni15-S30-AN7X/S100		15	30	•		3	A	1	•	500	M1777600
Bi 2-S12-AP7X/S100	•	2	12		•	1	B	1	•	2000	M1755500
Bi 5-S18-AP7X/S100	•	5	18		•	2	B	1	•	1000	M1754200
Bi10-S30-AP7X/S100	•	10	30		•	3	B	1	•	500	M1752200
Ni 4-S12-AP7X/S100		4	12		•	1	B	1	•	1500	M1768100
Ni 8-S18-AP7X/S100		8	18		•	2	B	1	•	1000	M1749850
Ni15-S30-AP7X/S100		15	30		•	3	B	1	•	500	M1768501

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard
Copper Conductor:	S12: 24 AWG
(PVC insulated)	S18/S30 and all S100 sensors: 21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

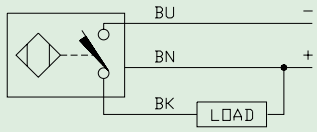
Accessories and mounting devices can be found in Section J.

Specifications

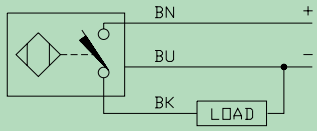
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤0.7 V at 150 mA (0.3 V typical)
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



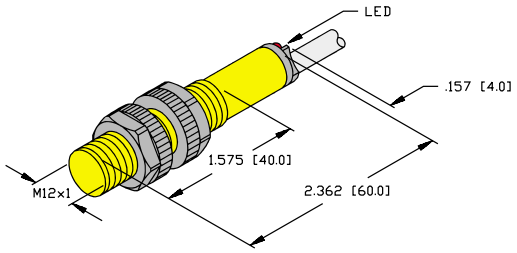
B PNP (Sourcing)



Specialty

Dimensions

1



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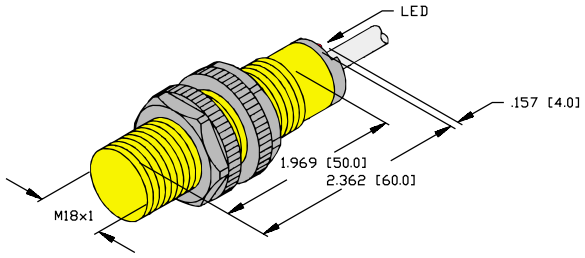

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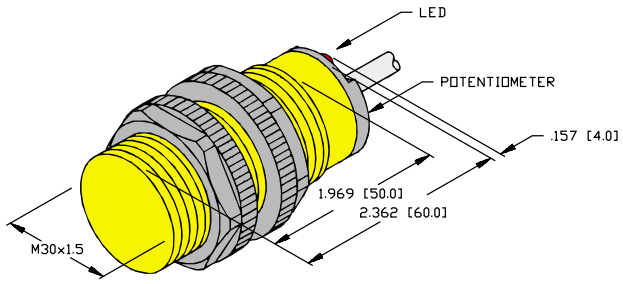
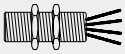


S Barrel

High Temperature Sensor

Plastic Barrel, Partial Threading, Potted-In Cable

4-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi 5-S18-VP4X/S100	•	5	18		•	1	A	1	•	500	M1513402

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

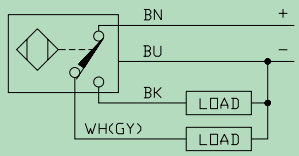
Accessories and mounting devices can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,4x,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

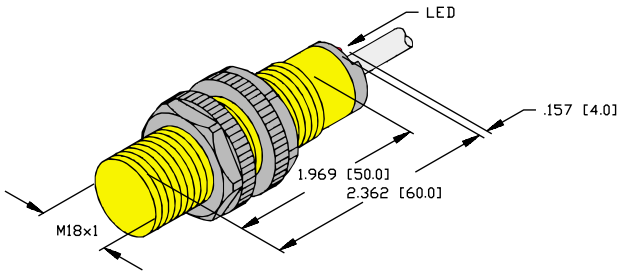
Wiring Diagram

A — PNP (Sourcing)



Dimensions

1



Specialty

CP40

High Temperature Sensors
Limit Switch Style ***combiprox*** ®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	High Temp (/S100)	Switching Frequency (Hz)	ID Number
Bi15-CP40-VN4X2/S100	•	15	40	•		1	A	2	•	150	M1514400
Ni20-CP40-VN4X2/S100		20	40	•		1	A	2	•	150	M1527200
Bi15-CP40-VP4X2/S100	•	15	40		•	1	B	2	•	150	M1501900
Ni20-CP40-VP4X2/S100		20	40		•	1	B	2	•	150	M1502000

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing:	PBT-GF30-VO Plastic

Accessories

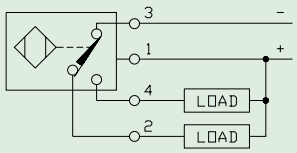
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

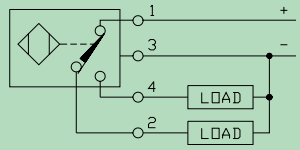
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA (100 mA for S100 style)
Trigger Current for Overload Protection	≥220 mA (≥150 mA for S100 style)
Continuous Load Current	≤200 mA (≤100 mA for S100 style)
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



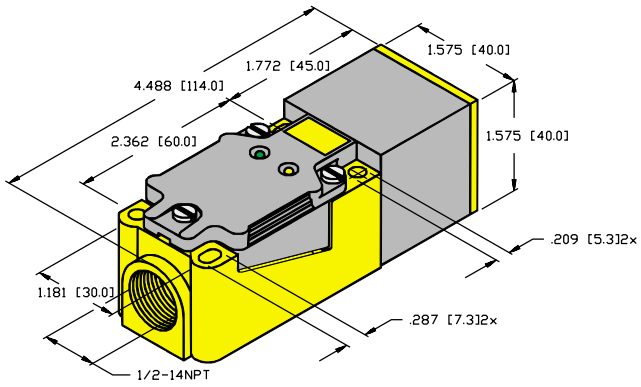
B PNP (Sourcing)



Specialty

Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

P Barrel

High Temperature Sensor

Plastic Barrel, Full Threading, Quick Disconnect

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

minifast®

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp. (/S100)	Switching Frequency (Hz)	ID Number	Connection
Bi 5-P18-AZ3X-B2331/S100	•	5	18	•		1	A	1		20	M4374801	minifast **Mating Cordsets** RK 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi10-P30-AZ3X-B2131/S100	•	10	30	•		2	A	1		20	M1352600	
Ni10-P18-AZ3X-B2331/S100		10	18	•		1	A	1		20	M4375201	
Bi 5-P18-RZ3X-B2331/S100	•	5	18		•	1	B	1		20	M4375001	
Bi10-P30-RZ3X-B2131/S100	•	10	30		•	2	B	1		20		

Material

Connector:	Polyamide Plastic
Barrel:	PA 12-GF30 Plastic

Accessories

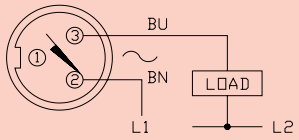
Accessories and mounting devices can be found in Section J.

Specifications

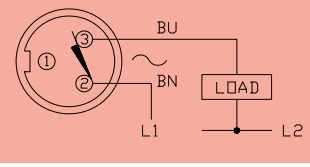
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A — Normally Open



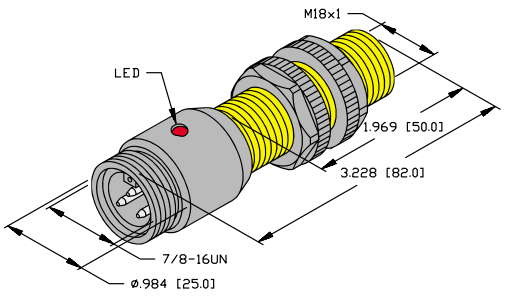
B — Normally Closed



Specialty

Dimensions

1



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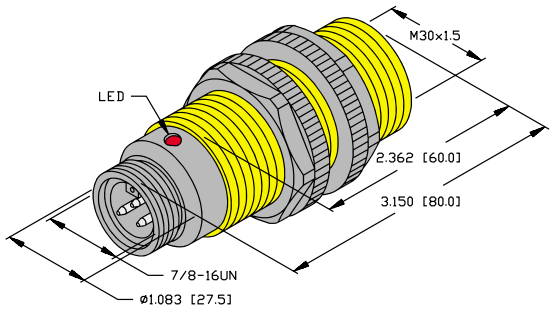
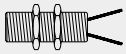


S Barrel

High Temperature Sensor

Plastic Barrel, Partial Threading, Potted-In Cable

2-Wire AC 

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp. (/S100)	Switching Frequency (Hz)	ID Number
Bi 5-S18-AZ3X/S100	•	5	18	•		1	A	1	•	20	M1373400
Bi10-S30-AZ3X/S100	•	10	30	•		2	A	1	•	20	M1371900
Ni 8-S18-AZ3X/S100		8	18	•		1	A	1	•	20	M1371800
Ni15-S30-AZ3X/S100		15	30	•		2	A	1	•	20	M1375800
Bi 5-S18-RZ3X/S100	•	5	18		•	1	B	1	•	20	M1376000
Bi10-S30-RZ3X/S100	•	10	30		•	2	B	1	•	20	M1371300

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard
Copper Conductor:	21 AWG
(PVC insulated)	

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

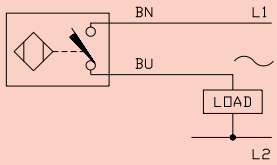
Accessories and mounting devices can be found in Section J.

Specifications

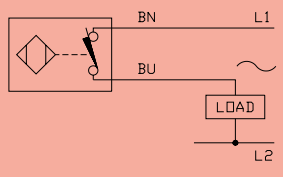
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	100 mA
Continuous Load Current	≤100 mA)
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,4X,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A Normally Open



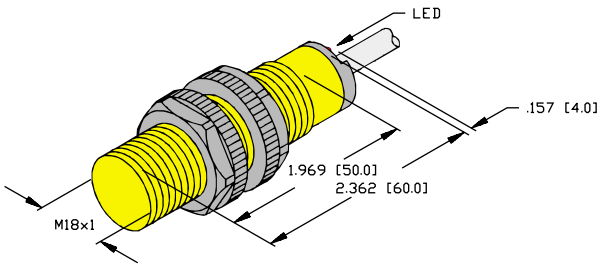
B Normally Closed



Specialty

Dimensions

1



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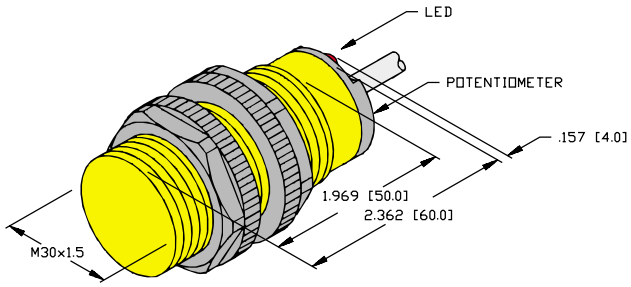


CP40

High Temperature Sensor
Limit Switch Style, ***combiprox***®

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	High Temp. (/S100)	Switching Frequency (Hz)	ID Number
Bi15-CP40-FZ3X2/S100	•	15	40	•	•	1	A	2	•	20	M1377600
Ni20-CP40-FZ3X2/S100		20	40	•	•	1	A	2	•	20	M1377500

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

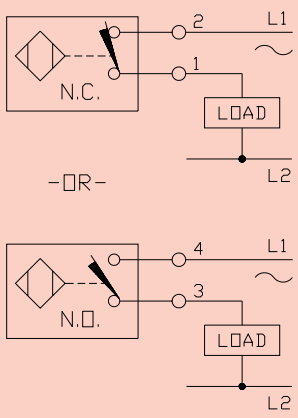
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 100 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagram

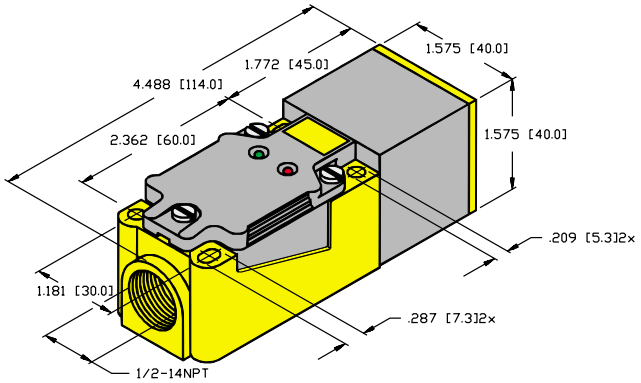
A **Programmable**



Specialty

Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

P Barrel

High Temperature Sensor

Plastic Barrel, Full Threading, Potted-In Cable

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Bi 2-P12-Y0/S100	•	2	12	1	A	0	5000	•	•	≤1	M1030200
Bi 5-P18-Y0/S100	•	5	18	2	A	0	1000	•	•	≤2	M1024500
Bi10-P30-Y0/S100	•	10	30	3	A	0	500	•	•	≤2	M1023300
Ni 5-P12-Y0/S100		5	12	1	A	0	2000	•	•	≤1	M1024200
Ni10-P18-Y0/S100		10	18	2	A	0	500	•	•	≤2	M1031700
Ni15-P30-Y0/S100		15	30	3	A	0	200	•	•	≤2	M1022700

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Note: Y0(X) and Y1 have identical electrical properties. See Section A for differences in European approvals.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

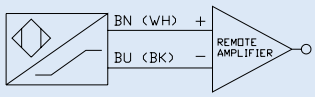
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

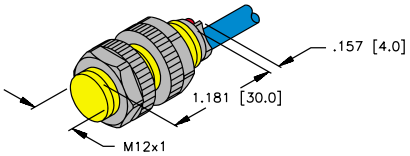
A — NAMUR Output



Specialty

Dimensions

1



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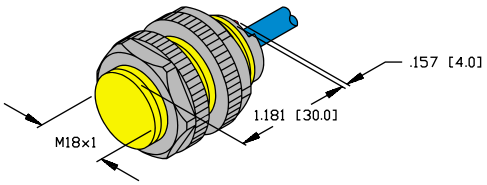

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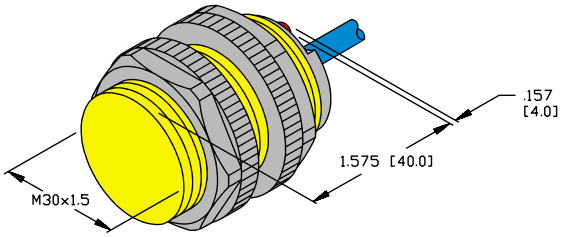


CP80

High Temperature Sensor
Modular Construction

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	High Temp (/S100)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Ni40-CP80-Y0/S100		40	80	1	A	0	100	•	•	≤8	M1040300

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Quick Disconnect Option

For ***minifast*** connector:a	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M with IS label (see Section J). (*)
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.21T-2 (*) See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

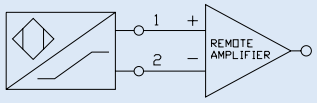
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult TURCK ***multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +100°C (-13°F to +212°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

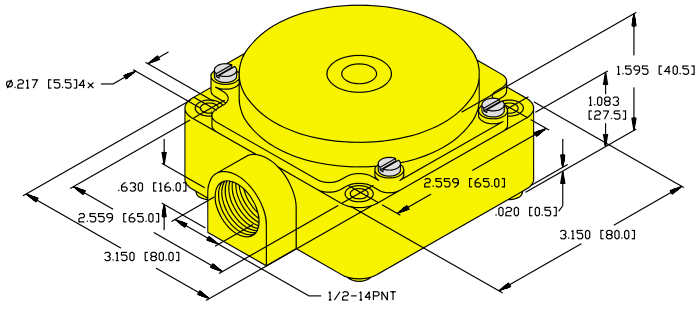
Wiring Diagram

A — NAMUR Output



Dimensions

1



Specialty

NEW

DS20

Dual Valve Sensor, Plastic Housing

Quick Disconnect, Potted-In Cable or Terminal Chamber

4-Wire DC Dual Sensor — eurofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, PNP (Sourcing)

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 2	Switching Frequency (Hz)	ID Number	Connection
Ni 4-DS20-2AP6X2-H1141		4.0	20		•	1	A	2		1000	M1650020	eurofast **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
Ni 4-DS20-2AP6X2		4.0	20		•	2	B	2		1000	M1650022	2 meter cable, PVC jacket, 22 AWG copper conductors, PVC insulated.
Ni 4-DS20-2AP6X2-H1141/S578 Ni 4-DS20-2AP6X2-H1141/S579		4.0 4.0	20 20		• •	3 4	C C	2 2	• •	1000 1000	M1650095 M1650094	terminal chamber NI Nonincendive

Factory Mutual Approved for /S578 and /S579 **ONLY**:

Class I, Div. 2, Groups A,B,C,D
Class II, Div. 2, Groups F,G
Class III, Div 1 & 2

Notes:

"/S578" designates DS20 with straight conduit adapter.
"/S579" designates DS20 with right angle conduit adapter.

Material

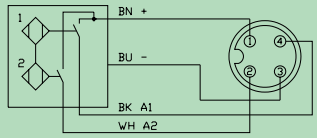
Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic
Connector:	Chrome Plated Brass
Field Wireable Connector(S578/S579):	PBT
Conduit Adapter (S578/S579):	Delrin

Specifications

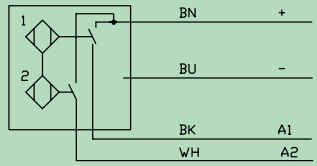
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	2.0-15.0 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED Function	Output Energized

Wiring Diagrams

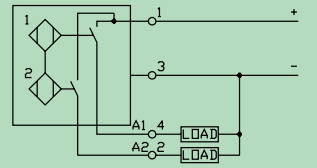
A PNP (Sourcing)



B PNP (Sourcing)



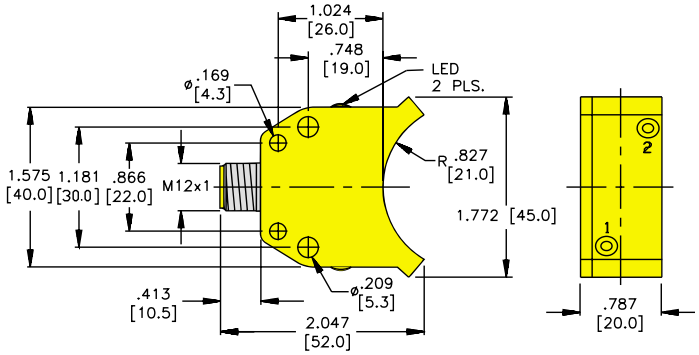
C PNP (Sourcing)



Specialty

Dimensions

1



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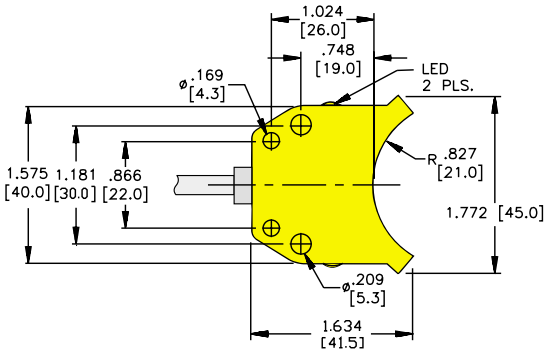

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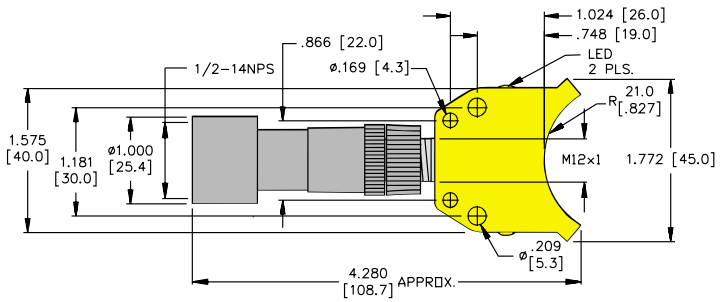

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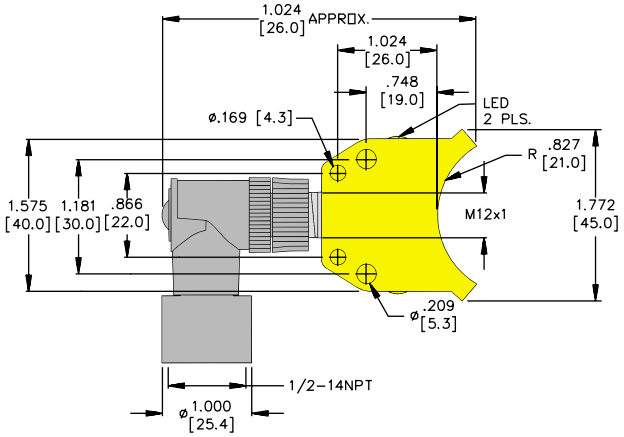


NEW

DS20

Dual Valve Sensor, Plastic Housing
with Quick Disconnect

5-Wire AC/DC Dual Sensor
20-250 VAC/DC
Normally Open

microfast®

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni 4-DS20-2AZ31X2-B3151		4.0	20	•		1	A	2		60	M1305000	microfast **Mating Cordsets** KB 5T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.

Material

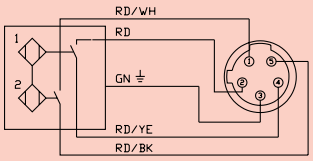
Connector:	Chrome Plated Brass
Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6 V at 100 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	<1.7 mA
No-Load Current	2.0-15.0 mA
Minimum Load Current	3 mA
Inrush Current	≤1 A (≤30 ms, 15% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Transient Protection	Incorporated
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED Function	Output Energized

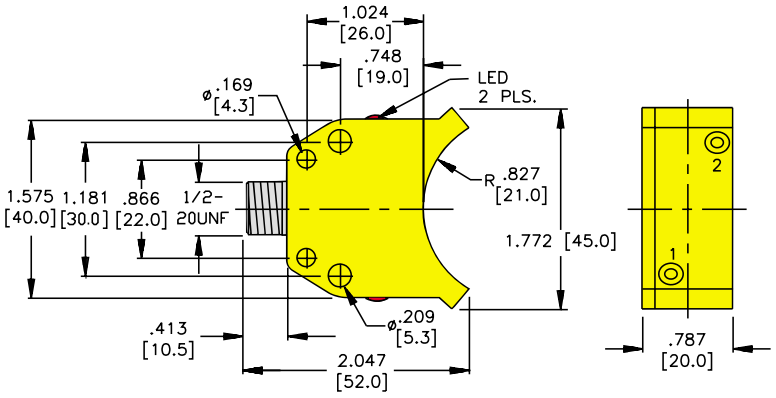
Wiring Diagram

A **Normally Open**



Dimensions

1



Specialty

NEW

DS20

Dual Valve Sensor, Plastic Housing
Potted-In Cable or Quick Disconnect

4-Wire DC Dual Sensor, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

eurofast®

FM APPROVED

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Drawing #	Wiring Diagram	# of LEDs	FM Approved Division 1 *	Switching Frequency (Hz)	ID Number	Connection
Ni 4-DS20-2Y1X2		4.0	20	1	A	2	•	1000	M1050002	2 meter cable, PVC jacket, 22 AWG copper conductors, PVC insulated.
Ni 4-DS20-2Y0X2-H1140		4.0	20	2	B	2	•	1000	M1050001	eurofast **Mating Cordsets** RK 4.41T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Factory Mutual Approved:

USA and **CANADA:**	Class I, II,III	Division 1	Groups A, B, C, D, E, F, G*
-Y0 (X), Y1(X)	FM File Numbers:		1F1A3.AX 0R7A2.AX 1T8A8.AX 0T3H6.AX
	CSA File Number:		LR82245-4

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

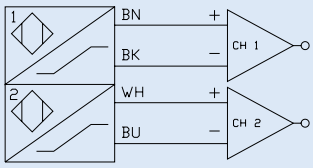
Remote Amplifier required.
Consult **TURCK *multimodul*®** and ***Automation Controls*** catalogs.

Specifications

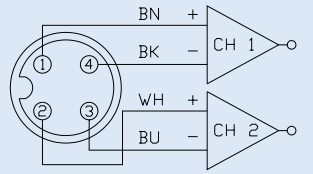
Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	1.0 kΩ to >8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Short Circuit Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A NAMUR Output



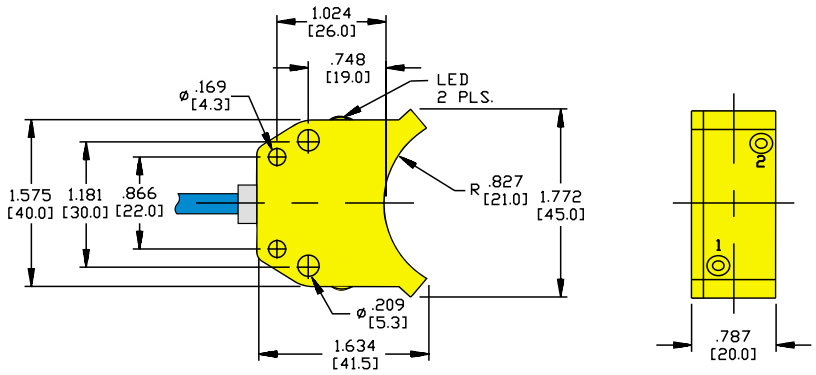
B NAMUR Output



Specialty

Dimensions

1



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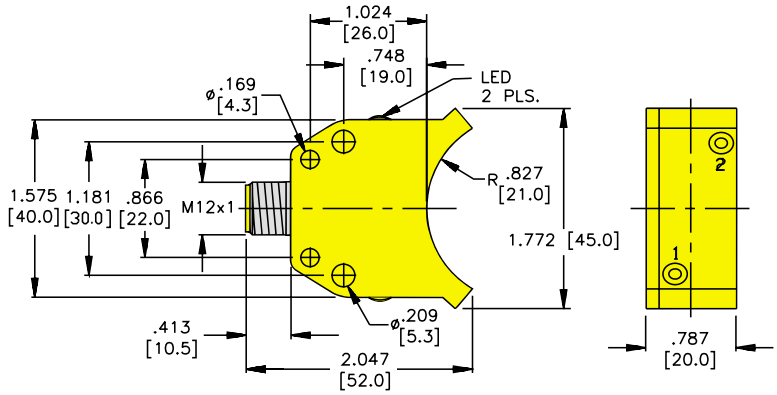


Q130

Bottle and Can Sensors

Rectangular Housing with Potted-in Cable or Quick Disconnect

4-Wire DC

minifast®

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Length (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni30-Q130-VN4X2		30	130	•		1	A	2		100	M1517800	2 meter cable PVC Jacket
Ni30-Q130-VP4X2		30	130		•	1	B	2		100	M1517900	
Ni30-Q130-VN4X2-B2141		30	130	•		2	C	2		100	M1518000	minifast **Mating Cordsets** RK 40-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni30-Q130-VP4X2-B2141		30	130		•	2	D	2		100	M1518001	

Operating Principle

The **TURCK** Q130 is a wide area inductive sensor used for bottle and can line control. The broad sensing face is designed to span the gap or valley between two capped bottles or cans. The output is continuous if bottles or cans are present, regardless if they are moving or stationary.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	22 AWG (PVC insulated)

Material

Housing:	PBT Plastic
Connector:	PA 12-GF30 Plastic

Accessories

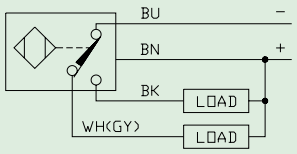
Accessories and mounting devices can be found in Section J.

Specifications

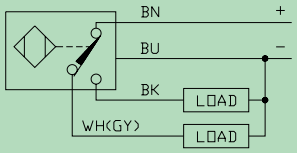
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4.0-9.5 mA
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

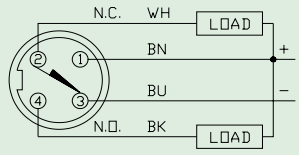
A NPN (Sinking)



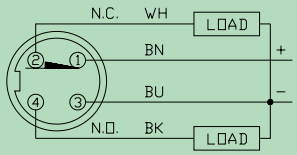
B PNP (Sourcing)



C NPN (Sinking)



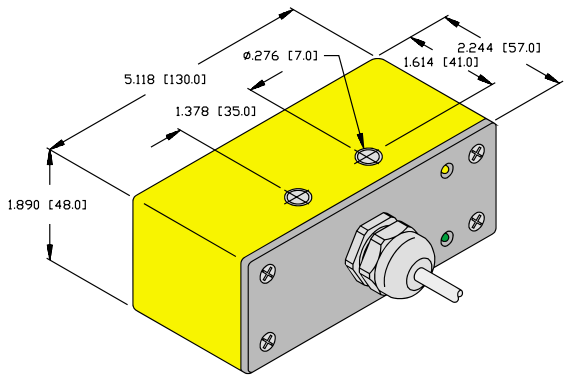
D PNP (Sourcing)



Specialty

Dimensions

1



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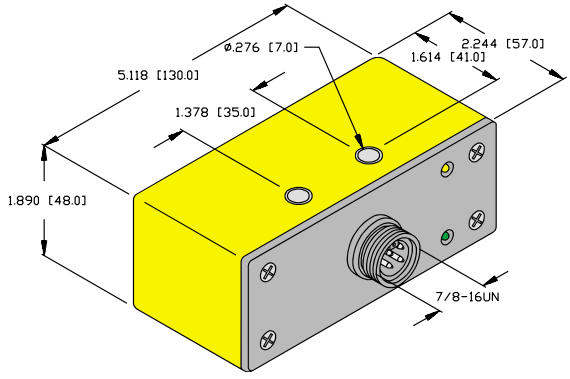
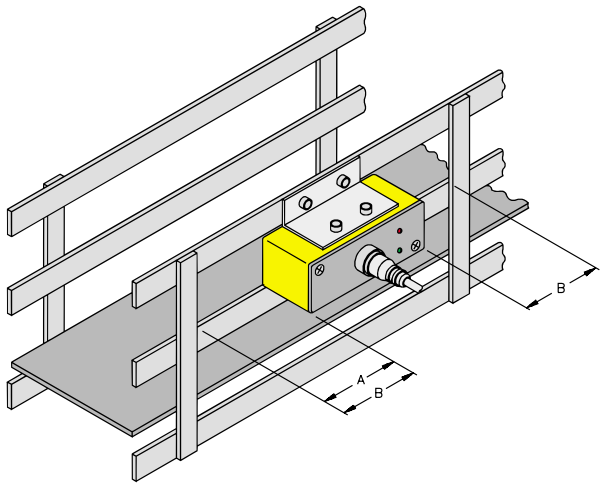


Mounting Guidelines



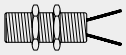
A = When only one brace is present, allow a 1/4" minimum clearance distance from edge of brace to edge of sensor.

B = When sensor must be mounted between 2 braces, allow a 3/8" minimum clearance distance between sensor and each brace.

Q130

Bottle and Can Sensors

Rectangular Housing with Potted-in Cable or Quick Disconnect

2-Wire AC  minifast®

20-250 VAC/DC Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Length (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Ni30-Q130-ADZ30X2		30	130	•		1	A	2		30*	M4209500	2 meter cable, PVC Jacket
Ni30-Q130-ADZ30X2-B1131		30	130	•		2	B	2		30*	M4210000	minifast **Mating Cordsets** RKM 30-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog

* AC Switching Frequency is 30 Hz
DC Switching Frquency is 100 Hz

Operating Principle

The **TURCK** Q130 is a wide area inductive sensor used for bottle and can line control. The broad sensing face is designed to span the gap or valley between two capped bottles or cans. The output is continuous if bottles or cans are present, regardless if they are moving or stationary.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG (PVC insulated)

Material

Housing:	PBT Plastic
Connector:	Chrome Plated Brass

Accessories

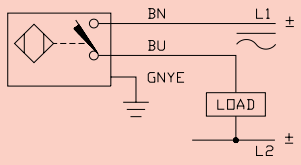
Accessories and mounting devices can be found in Section J.

Specifications

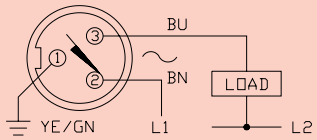
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms, 10% Duty Cycle)
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A — Normally Open



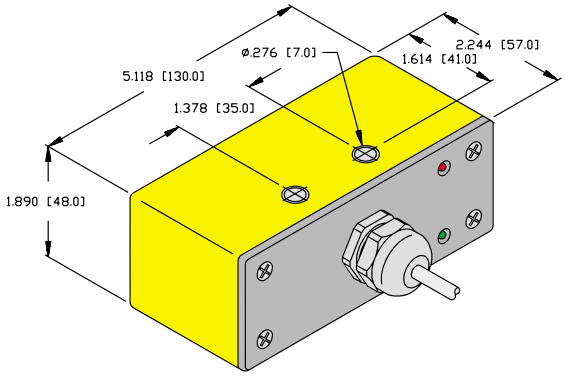
B — Normally Open



Specialty

Dimensions

1



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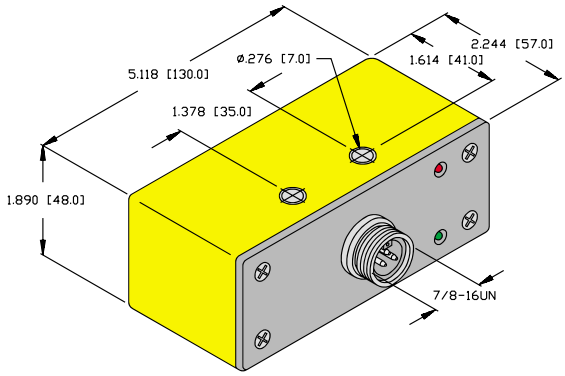
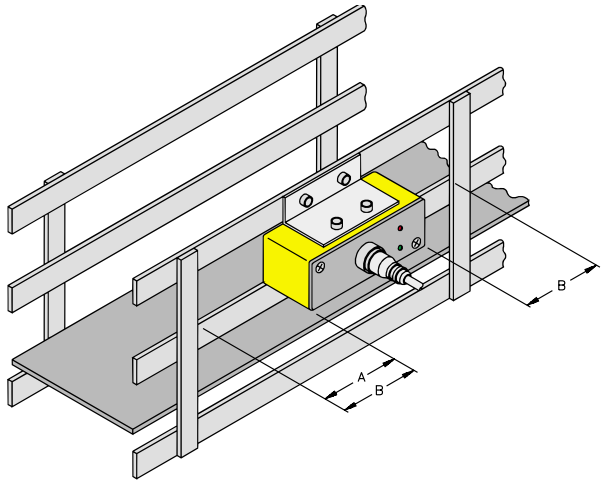


Mounting Guidelines



A = When only one brace is present, allow a 1/4" minimum clearance distance from edge of brace to edge of sensor.

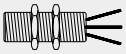
B = When sensor must be mounted between 2 braces, allow a 3/8" minimum clearance distance between sensor and each brace.

M Barrel

S Barrel

Nonferrous Only Sensors

M Barrel: *Metal Barrel with Potted-In Cable, Partial Threading*
S Barrel: *Plastic Barrel with Potted-In Cable, Partial Threading*

3-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi10NF-M30-AN6X	•	10	30	•		1	A	1		500	M1616100
Bi10NF-M30-AP6X	•	10	30		•	1	B	1		500	M1606100
Bi10NF-S30-AN6X	•	10	30	•		2	A	1		500	M1621500
Bi10NF-S30-AP6X	•	10	30		•	2	B	1		500	M1611500

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG
(PVC insulated)	

Material

M Barrel Housing:	Chrome Plated Brass
S Barrel Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

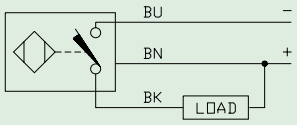
Accessories and mounting devices can be found in Section J.

Specifications

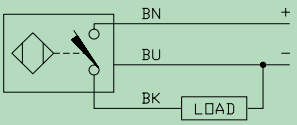
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.5-10.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +60°C (-13°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



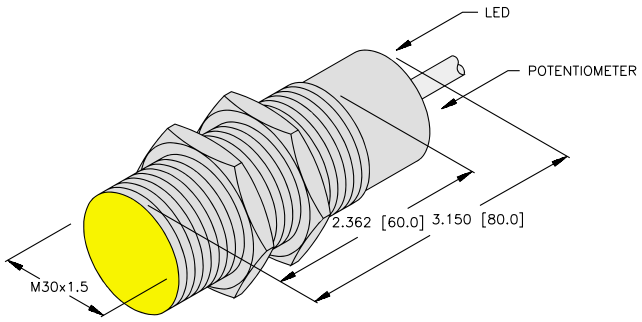
B PNP (Sourcing)



Specialty

Dimensions

1



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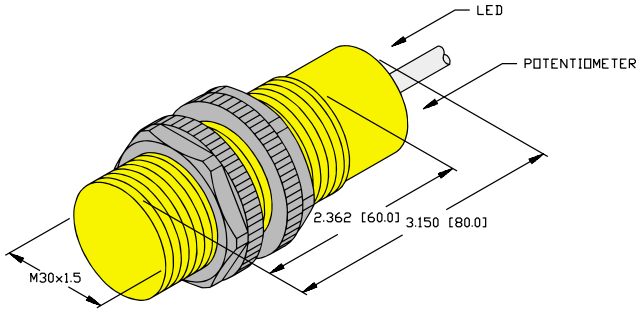


CP40

Nonferrous Only Sensors

Limit Switch Style Sensor ***combiprox***®

4-Wire DC

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs, One N.O.; One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Ni20NF-CP40-VN4X2		20	40	•		1	A	2		100	M1528200
Ni20NF-CP40-VP4X2		20	40		•	1	B	2		100	M1508200

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

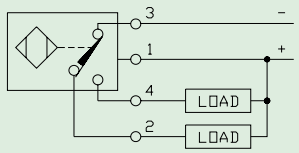
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

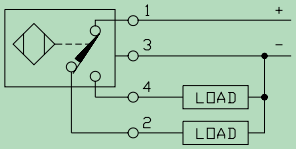
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.5-10.5 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +60°C (-13°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



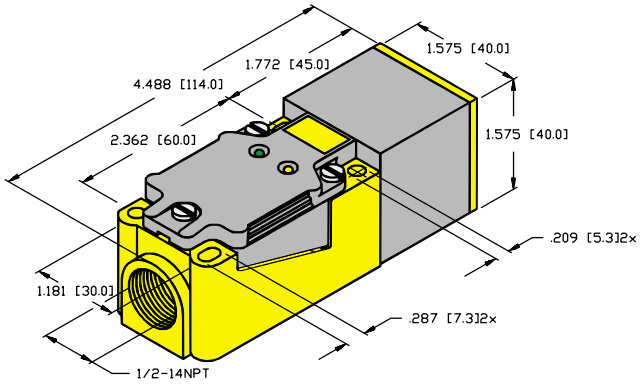
B PNP (Sourcing)



Specialty

Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

CP40

Nonferrous Only Sensors

Limit Switch Style Sensor ***combiprox***®

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Ni20NF-CP40-FZ3X2		20	40	•	•	1	A	2		20	M1378200

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

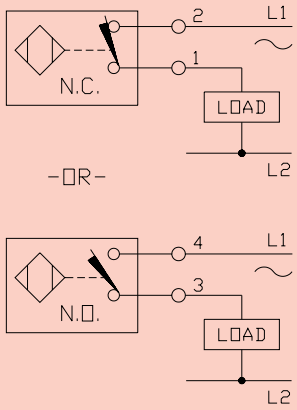
Mounting bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤80 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +60°C (-13°F to +140°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagram

A **Programmable**



Dimensions

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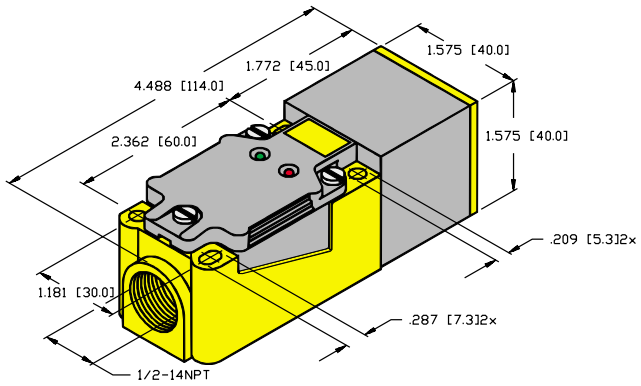


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

Specialty

NEW

Q14 and Q20

Ring Sensors, Small with Static Output

Plastic Housing with Quick Disconnect or Potted-In Cable

3-Wire DC

eurofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Ring Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 6R-Q14-AN6X2	•	6.1	14	•		1	A	2		9.95	M1406020	2 meter cable, PVC jacket; 22 AWG copper conductors, PVC insulated.
Bi10R-Q14-AN6X2	•	10.1	14	•		1	A	2		9.95	M1406120	
Bi15R-Q14-AN6X2	•	15.1	14	•		1	A	2		9.95	M1406220	
Bi20R-Q14-AN6X2	•	20.1	14	•		1	A	2		9.95	M1406320	
Bi 6R-Q14-AP6X2	•	6.1	14		•	1	B	2		9.95	M1406000	
Bi10R-Q14-AP6X2	•	10.1	14		•	1	B	2		9.95	M1406100	
Bi15R-Q14-AP6X2	•	15.1	14		•	1	B	2		9.95	M1406200	
Bi20R-Q14-AP6X2	•	20.1	14		•	1	B	2		9.95	M1406300	
Bi30R-Q20-AN6X2-H1141	•	30.1	20	•		2	C	2		9.95	M1407520	*eurofast* **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi30R-Q20-AP6X2-H1141	•	30.1	20		•	2	D	2		9.95	M1407500	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30-VO/POM Plastic

Accessories

Accessories and mounting devices can be found in Section J.

Specifications

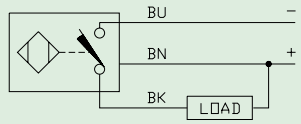
Ripple	≤10%
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
LED On (Green)	Power On
LED On (Yellow)	Output Energized

Target Specifications

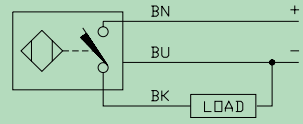
Minimum Target Diameter	Bi 6R: ≥2 mm	Bi10R: ≥2 mm
	Bi15R: ≥3 mm	Bi20R: ≥4 mm
	Bi30R: ≥6 mm	
Off Delay	100 ms	
Minimum Switching Period	100.5 ms (100 ms ON / 0.5 ms OFF)	

Wiring Diagrams

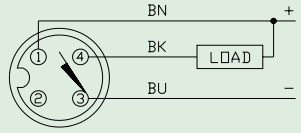
A NPN (Sinking)



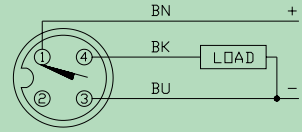
B PNP (Sourcing)



C NPN (Sinking)



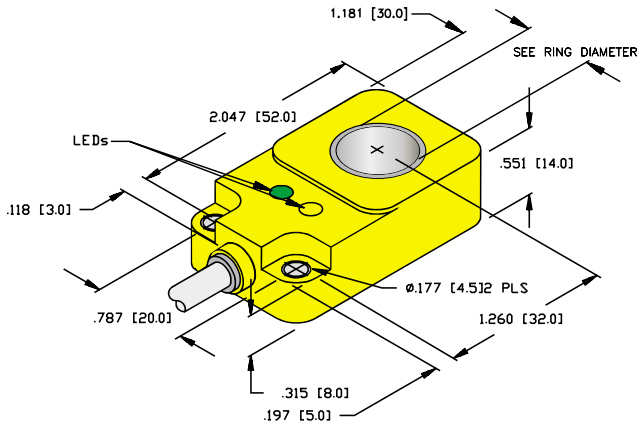
D PNP (Sourcing)



Specialty

Dimensions

1



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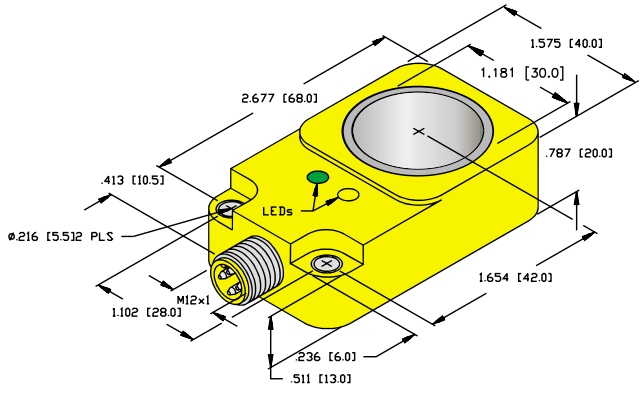


W30

Ring Sensors, Small with Dynamic Output*

Plastic Housing with Quick Disconnect

3-Wire DC **eurofast®**

10-30 VDC, Short-Circuit and Overload Protected

Dynamic Output, Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Ring Diameter (mm)	Housing Height (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi 6R-W30-DAN6X-H1141	•	6.1	30	•		1	A	1		8	M1403700	eurofast
Bi10R-W30-DAN6X-H1141	•	10.1	30	•		1	A	1		8	M1403900	
Bi15R-W30-DAN6X-H1141	•	15.1	30	•		1	A	1		8	M1404100	
Bi20R-W30-DAN6X-H1141	•	20.1	30	•		1	A	1		8	M1404300	
Bi30R-W30-DAN6X-H1141	•	30.1	30	•		1	A	1		8	M1404501	
Bi 6R-W30-DAP6X-H1141	•	6.1	30		•	1	B	1		8	M1403600	
Bi10R-W30-DAP6X-H1141	•	10.1	30		•	1	B	1		8	M1403800	
Bi15R-W30-DAP6X-H1141	•	15.1	30		•	1	B	1		8	M1404000	
Bi20R-W30-DAP6X-H1141	•	20.1	30		•	1	B	1		8	M1404200	
Bi30R-W30-DAP6X-H1141	•	30.1	30		•	1	B	1		8	M1404500	

Mating Cordsets
RK 4T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

* Dynamic sensors detect a moving target through the ring.
Output of these sensors is a 100 ms fixed pulse-width (one-shot).

Material

Connector:	PA 12-GF30 Plastic
Housing:	PA 12-GF30 Plastic
Sensing Ring:	POM Plastic

Accessories

Accessories and mounting devices can be found in Section J.

Specifications

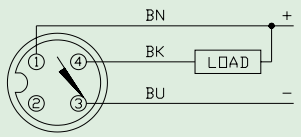
Ripple	≤10%
Voltage Drop Across Conducting Sensor	≤2.2 V at 200 mA
Trigger Current for Overload Protection	≥270 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤120 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
LED On	Output Energized

Target Specifications (See application below)

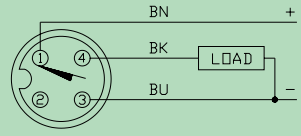
Minimum Target Diameter	Bi 6R: ≥0.6 mm	Bi10R: ≥1.0 mm
	Bi15R: ≥1.5 mm	Bi20R: ≥2.0 mm
	Bi30R: ≥3.0 mm	
Pulse Duration	100 ms	
Minimum Time Between Targets	105 ms	
Minimum Target Velocity	0.1 m/s	
Maximum Target Velocity	50 m/s	

Wiring Diagrams

A NPN (Sinking)



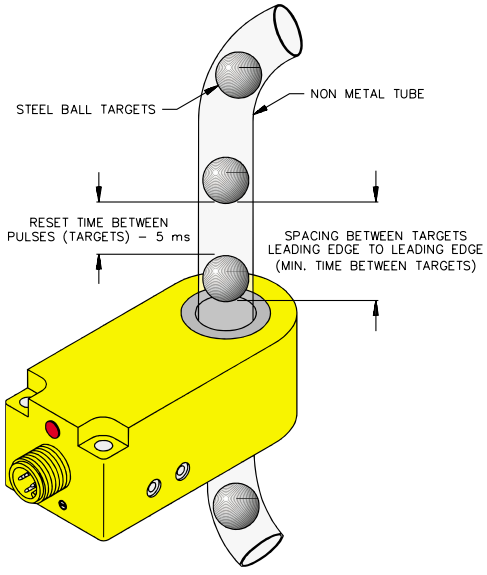
B PNP (Sourcing)



Specialty

Dimensions

Application



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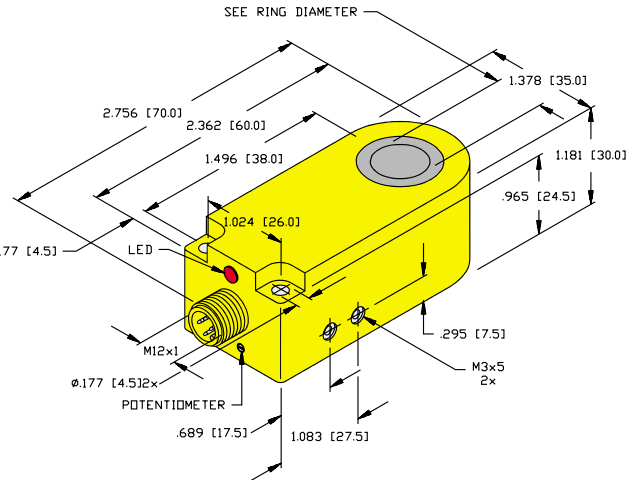


R-32SR

Ring Sensors, Large with Dynamic or Static Outputs

Plastic Housing with Integral Terminal Chamber

3-Wire DC

10-30 VDC, Short-Circuit and Overload Protected

Jumper Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Ring Diameter (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Bi2OR-32SR-UN6X *	•	20	32	•		1	A	1		75	M1480095
Bi4OR-32SR-UN6X *	•	40	32	•		1	A	1		75	M1480295
Bi6OR-32SR-UN6X *	•	60	32	•		1	A	1		75	M1480395
Bi2OR-32SR-UP6X *	•	20	32		•	1	B	1		75	M1480093
Bi4OR-32SR-UP6X *	•	40	32		•	1	B	1		75	M1480293
Bi6OR-32SR-UP6X *	•	60	32		•	1	B	1		75	M1480393

* Complete sensor

Part Number	ID Number	Drawing #	Part Number	ID Number	Drawing #
Bi2OR	M14800 00	2	32SR-UN6X	M14820 00	2
Bi4OR	M14802 00	2			
Bi6OR	M14803 00	2	32SR-UP6X	M14810 00	2

Note: Remote mounting of switching amplifier and sensor head requires an RAC-1.6M or RAC-3.0M cable (see drawing #2).

Material

Housing: PBT Plastic
Terminal Chamber Cover: Trogamid T

Accessories

Accessories and mounting devices can be found in Section J.

Specifications

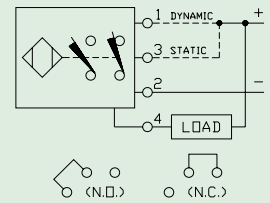
Ripple	≤10%
Voltage Drop Across Conducting Sensor	≤2.1 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	25 mA
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature for Ring Head	-25°C to +100°C (-13°F to +212°F)
Operating Temperature for Amplifier	-20°C to +70°C (-8°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
LED On	Output Energized

Dynamic and Static Specifications

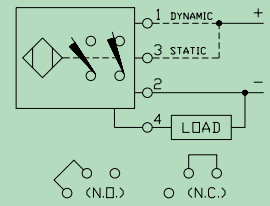
	Dynamic Mode	Static Mode
Differential Travel (Hysteresis)	- - - - - - - -	3-15%
Output Pulse Width	10 ms - 1 s	- - - - -
(Adjustable by internal one-shot potentiometer)		

Wiring Diagrams

A NPN (Programmable)



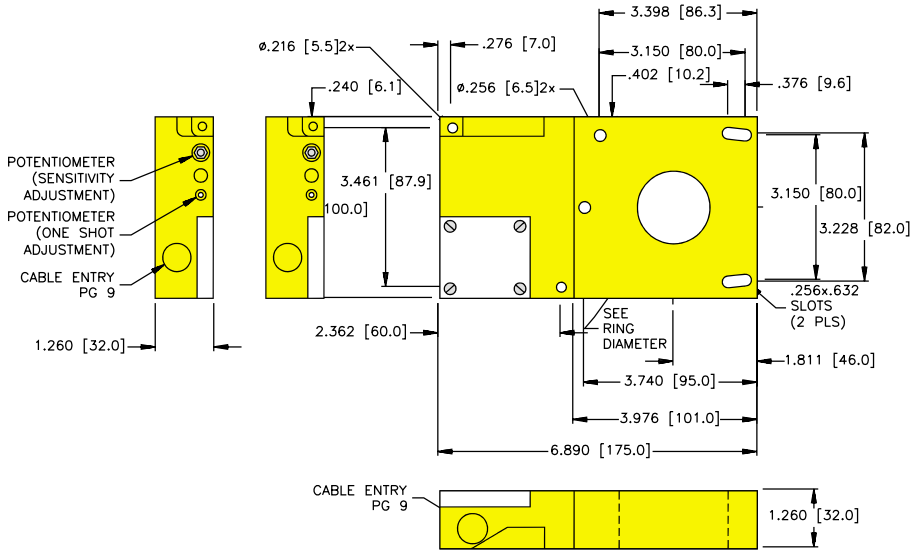
B PNP (Programmable)



Specialty

Dimensions

1



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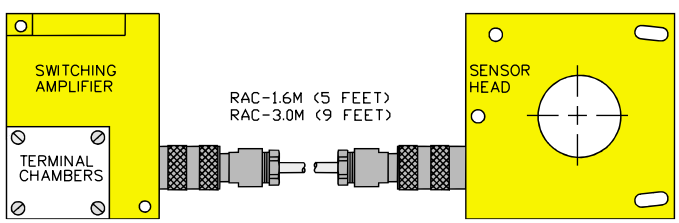
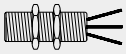


Si..-K

Slot Sensors
Plastic Housing with Potted-In Cable

3-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Slot Cap (mm)	Sensor Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Si15-K30-AN6		15	30	•		1	A	0		500	M1605002
Si15-K30-AN6X		15	30	•		1	A	1		500	M1605003
Si15-K30-AP6		15	30		•	1	B	0		500	M1605000
Si15-K30-AP6X		15	30		•	1	B	1		500	M1605001

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Housing:	PBT-GF30-VO Plastic

Accessories

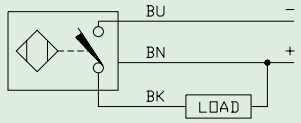
Accessories and mounting devices can be found in Section J.

Specifications

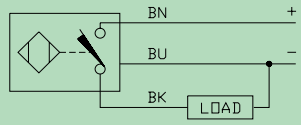
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 500 mA
Trigger Current for Overload Protection	≥550 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	4-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



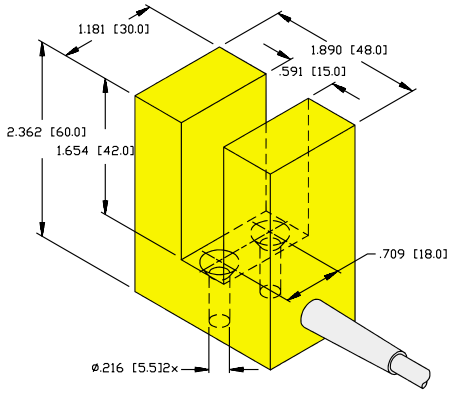
B PNP (Sourcing)



Specialty

Dimensions

1



Si..-K

Slot Sensors
Plastic Housing with Potted-In Cable

4-Wire DC 
10-30 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Slot Cap (mm)	Housing Height (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Si15-K30-VN6		15	30	•		1	A	0		350	M1605032
Si15-K30-VP6		15	30		•	1	B	0		350	M1605030

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Housing:	PBT-GF30-VO Plastic

Accessories

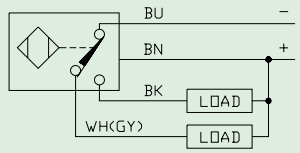
Accessories and mounting devices can be found in Section J.

Specifications

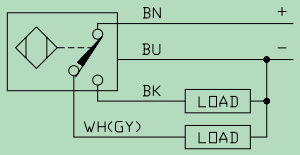
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 500 mA
Trigger Current for Overload Protection	≥520 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A NPN (Sinking)



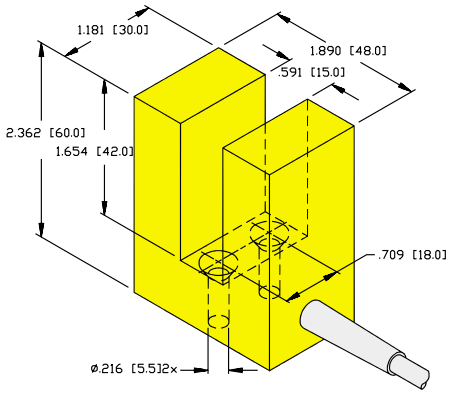
B PNP (Sourcing)



Specialty

Dimensions

1



Si..-K

Slot Sensors

Plastic Housing with Potted-In Cable

4-Wire DC 

10-30 VDC, TTL Compatible

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Slot Cap (mm)	Sensor Width (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Si30-K33-VN7		30	33	•		1	A	0		100	M1728900
Si30-K33-VP7		30	33		•	1	B	0		100	M1726900

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Housing:	PBT-GF30-VO Plastic

Accessories

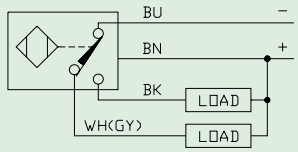
Accessories and mounting devices can be found in Section J.

Specifications

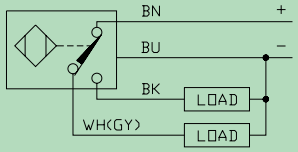
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.0 V at 250 mA (0.3 V typical)
Continuous Load Current	≤250 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	18.0 mA
Time Delay Before Availability	≤15 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A NPN (Sinking)



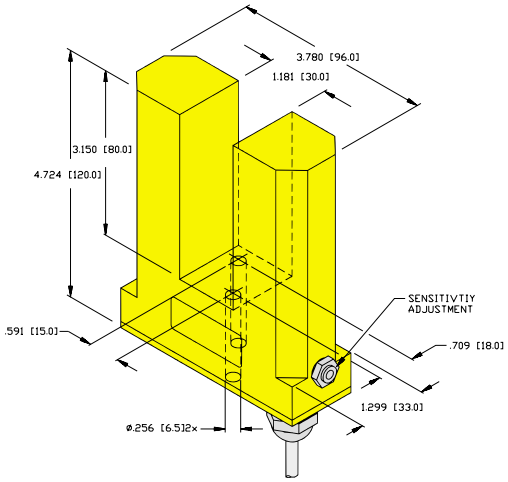
B PNP (Sourcing)



Specialty

Dimensions

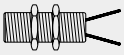
1



Si..-K

Slot Sensors

Plastic Housing with Potted-In Cable

2-Wire AC 

20-250 VAC

Normally Open (AZ3) or Normally Closed (RZ3)

Sensor Selection

Part Number	Embeddable	Slot Cap (mm)	Sensor Width (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number
Si15-K30-AZ3		15	30	•		1	A	0		20	M1306900
Si30-K33-AZ3		30	33	•		2	A	0		20	M1307000
Si15-K30-RZ3		15	30		•	1	B	0		20	M1316900
Si30-K33-RZ3		30	33		•	2	B	0		20	M1317000

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Housing:	PBT-GF30-VO Plastic

Accessories

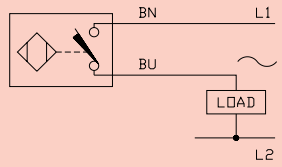
Accessories and mounting devices can be found in Section J.

Specifications

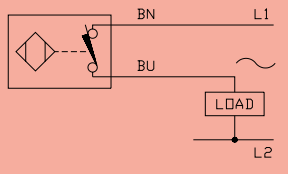
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	K30 style: ≤3.3 mA K33 style: ≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	K30 style: ≤40 ms K33 style: ≤50 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagrams

A Normally Open



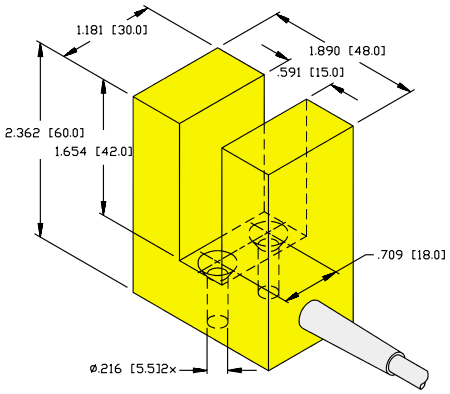
B Normally Closed



Specialty

Dimensions

1



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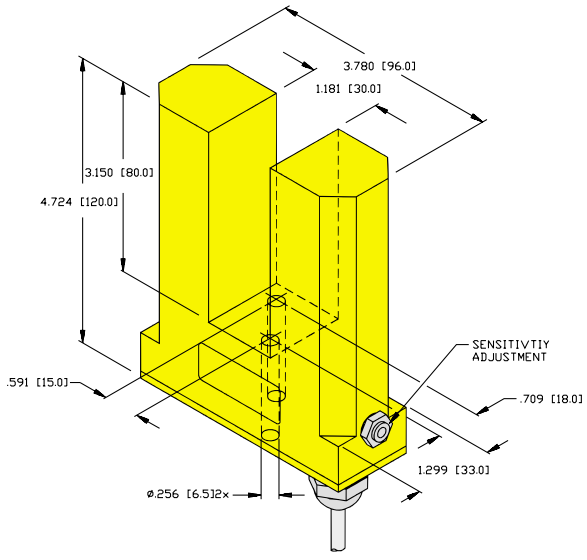
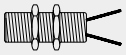


Si..-K

Slot Sensors

Plastic Housing with Potted-In Cable

2-Wire DC, Requires Remote Amplifier 
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Slot Gap (mm)	Housing Width (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
Si3.5-K10-Y1		3.5	10	1	A	0	3000	•	≤1	M1036500
Si 5-K09-Y1 †		5	9	2	A	0	5000	•	≤1	M1024000
Si 15-K30-Y1		15	30	3	A	0	500	•	≤1	M1007600

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.
† 0.5 meter cable leads.

Cable/Conductor

K09 Cable:	PVC Jacket; 0.5 meter standard length
K10/K30 Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	K09/K10: 26 AWG
(PVC insulated)	K30: 21 AWG

Material

Housing:	PBT-GF30-VO Plastic

Accessories

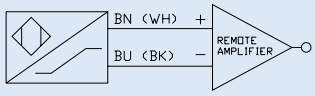
Accessories and mounting devices can be found in Section J.
Remote Amplifier required. Consult **TURCK *multimodul*** or ***Automation Controls*** catalog.

Specifications

Differential Travel (Hysteresis)	1-10% (5% typical)
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	1.0 kΩ to 8.0 kΩ
Resulting Current Change	≥2.2 mA to ≤1.0 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance

Wiring Diagram

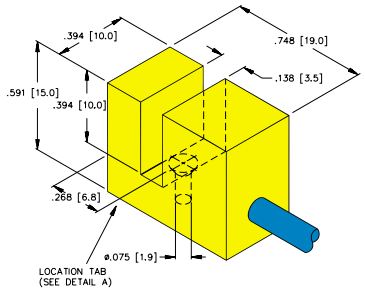
A — NAMUR Output



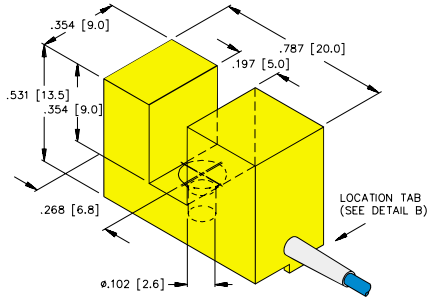
Specialty

Dimensions

1



2



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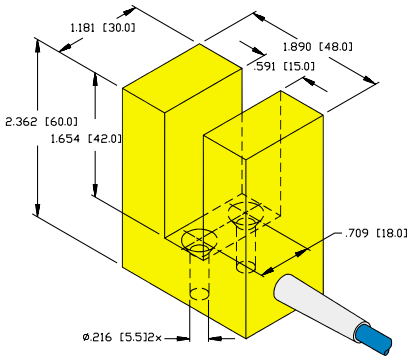
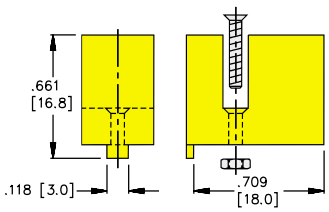
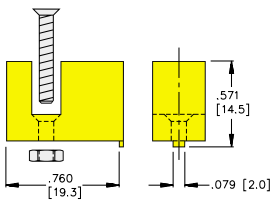


Detail A



Detail B



TURCK
Cylinder Position Sensors

Visit **TURCK** on the Internet:
http://www.turck.com

Selection Guide

Cylinder Position Sensors					
Sensor Type	**Output**	**Pages**	**Sensor Type**	**Output**	**Pages**
 **INT**	2-Wire DC 3-Wire DC NAMUR	E19 - E20 E25 - E26 E67 - E68	 **KST**	3-Wire DC	E33 - E34
 **INR**	3-wire DC	E27 - E28	 **NST**	3-Wire DC NAMUR	E45 - E46 E75 - E76
 **A23**	3-Wire DC 2-Wire DC	E43 - E44 E57 - E60	 **PSM**	3-Wire DC	E31 - E32
 **AKT**	2-Wire DC 3-Wire DC NAMUR	E23 - E24 E41 - E42 E73 - E74	 **PST**	3-Wire DC NAMUR	E29 - E30 E67 - E68
 **IKE and IKT**	2-Wire DC 3-Wire DC NAMUR	E21 - E22 E37 - E38 E71 - E72	 **QST**	3-Wire DC NAMUR	E35 - E36 E69 - E70
 **IKM**	3-Wire DC 2-Wire AC	E39 - E40 E55 - E56	 **M Barrel Style**	3-Wire DC NAMUR	E47 - E48 E77 - E78

Selection Guide

Cylinder Position Sensors		
Sensor Type	**Output**	**Pages**
 **CRS**	3-Wire DC 2-Wire AC	E49 - E50 E61 - E62
 **PCS**	3-wire DC 2-Wire AC	E53 - E54 E65 - E66

Cylinder Position Sensors		
Sensor Type	**Output**	**Pages**
 **World Clamp**	3-Wire DC 2-Wire AC	E51 - E52 E63 - E64

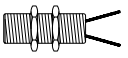
Note:

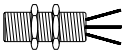
All dimensions in this section are shown as: inches [mm]

Output Color Code

DC Output	AC Output	NAMUR Output
Self-Contained	*Self-Contained*	*Requires Remote Amplifier*

Symbol Key


2-Wire Sensor with Potted-In Cable


3-Wire Sensor with Potted-In Cable


Sensor with 4-Pin ***eurofast*** Connector


Sensor with 3-Pin ***minifast*** Connector


Sensor with 4-Pin ***minifast*** Connector


Sensor with 3-Pin ***microfast*** Connector


Sensor with 3-Pin ***picofast*** Connector

CLICK HERE for
MAIN SELECTION GUIDE

Selection Guide

TURCK
Cylinder Sensor Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

permaprox® Part Number Key

B	IM	-	A23	-	A	DZ	30	X2	Wiring Options	Special Option Codes

Mounting

B = Embeddable (Shielded)

Principle of Function

IM = Inductive Magnet Operated

Housing Style

A23 = Metal, clamp-on; active face centered
AKT = Plastic, clamp-on; active face centered
IKE = Metal, clamp- or strap-on; active face on end
IKM = Metal, clamp- or strap-on; active face on end
IKT = Metal, clamp- or strap-on; active face centered
INT = Plastic Groove Mount or Strap-on; active face on end
INR = Plastic Groove Mount; active face on end
KST = Metal/Plastic Strap-on; active face centered
M12 = Metal barrel, M12 x 1 thread
NST = Plastic, clamp-on; active face centered
PSM = Metal/plastic, strap-on; active face on end
PST = Plastic, strap-on; active face on end
QST = Plastic, clamp-on; active face on end

Output Function

A = Normally Open (N.O.)
Y0 = NAMUR Output, Requires Switching Amplifier
Y1 = NAMUR Output, Requires Switching Amplifier

Output

D = 2-Wire DC (Transistor Output)
DZ = 2-Wire AC/DC (MOS FET Output)
G = 2-Wire DC
N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)
Z = 2-Wire AC

Voltage Range

AC
3 = 20-250 VAC
30 = 20-250 VAC, Latched SCP
DC
4 = 10-65 VDC, Polarity Protected, Pulsed SCP
6 = 10-30 VDC, Polarity Protected, Pulsed SCP
41 = 10-55 VDC, Polarity Protected

Number of LEDs

Examples:
Blank = 0 LEDs
X2

Cylinder Rotatable Sensor Part Number Key

B	i	2	-	CRS	260	-	A	P	4	X2	-	H1	1	4	1	/S34

Mounting

B = Embeddable (Shielded)

Principle of Function

i = Inductive

Rated Operating Distance (mm)

Housing Style

CRS = Cylinder Rotatable Sensor

Probe Length (mm = number/10)

Output Function

A = Normally Open (N.O.)
R = Normally Closed (N.C.)

Output

DZ = 2-Wire AC/DC (MOS FET) Output
N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)

Voltage Range

AC:
30 = 20-250 VAC, Latched SCP
DC:
4 = 10-65 VDC, Polarity Protected, Pulsed SCP

Number of LEDs

Example:
X2 = 2 LEDs

Connector Family

B1 = ***minifast***®
B3 = ***microfast***®
H1 = ***eurofast***®

Connector / Sensor Transition

1 = Straight

Number of Pins

Factory Code

1 = Standard

Special Option Code

Examples:
/S34 = Weld Field Immune

Wiring Options

A) Connectorized Sensor

BIM-IKM-AZ3X2 - B3 1 3 1

Connector Family

B1 = ***minifast***®, Metal, Male
B3 = ***microfast***®, Metal, Male
H1 = ***eurofast***®, Metal or Plastic, Male
V1 = ***picofast***®, Metal, Male

Connector / Sensor Transition

1 = Straight

Number of Pins

Factory Code

Example:
1 = Standard

B) Potted Cable

BIM-IKT-AP6X 7M

Cable Length

Blank = 2 meter cable
7M = 7 meter cable

C) Potted Cable with Molded Connector

BIM-QST-AP6X - 0.5M - PSG 3

Length of Cable (M)

Examples:
0.2 = 0.2 meters
2 = 2 meters

Standard Cordset Connector

AC: SB 3T = ***microfast***, 3-conductor

DC: RS 4T = ***eurofast***, 3-conductor
RS 4.21T = ***eurofast***, NAMUR, 2 conductor
PSG 3 = ***picofast***, 3-conductor, Snap
PSG 3M = ***picofast***, 3-conductor, M8x1

Special Option Codes

Option Codes for Special or Custom Built Sensors

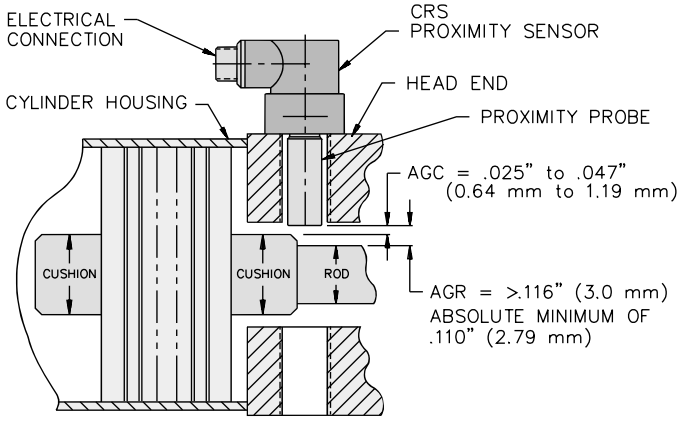
BIM-A23-ADZ30X2-B1131 /S34

Option Code

Example:
/S34 = Weld Field Immune
/S235 = Special Calibration

CRS Inductive Sensors

Figure 1



TURCK's *CRS* sensors are designed to be mounted into the head end or cap end of hydraulic and pneumatic cylinders. They operate at 1500 psi and mechanically withstand 3000 psi of continuous pressure.

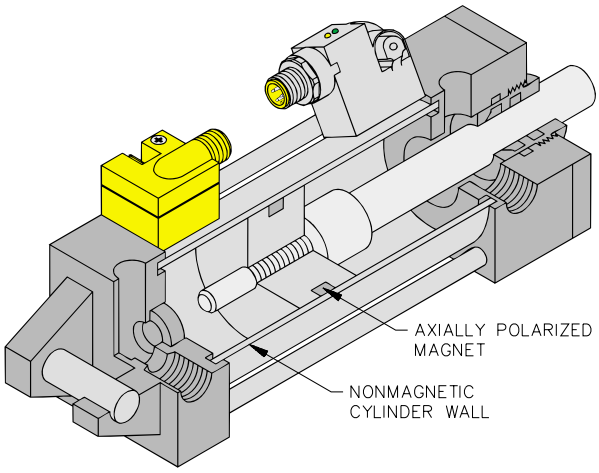
AGC - Air Gap Cushion
This dimension is recommended to allow for mechanical tolerances and wear.

AGR - Air Gap Rod
The rod-to-cushion step must be large enough to allow the sensor to turn off when the piston leaves. If the step is too small, the sensor will lock-on due to the hysteresis of the sensor.

For more information on inductive sensors refer to the Operating Principles in Section B.

Permaprox® Inductive Magnet Operated Sensors

Figure 2



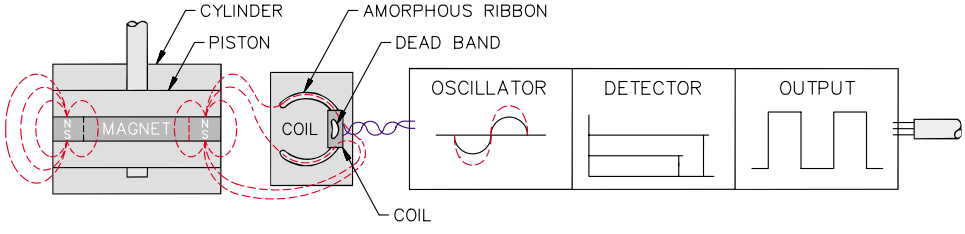
TURCK's *permaprox*® cylinder sensors are used for detection of magnet equipped pistons on pneumatic cylinders through a nonmagnetic cylinder wall.

A patented electronic magnetic circuit involving new state-of-the-art materials forms the basis of operation for these sensors.

The characteristics of this innovative technology have decided advantages over Hall effect switches and reed devices. Specific sensors no longer have to be matched to specific magnet strengths. Other features are extremely high repeatability and the elimination of multiple actuation points.

Operating Principle

Figure 3



As the axially polarized magnet-equipped piston approaches the sensor, its magnetic field saturates the highly permeable amorphous ribbon and causes a precise movement of the dead band (an area with no magnetic flux where the magnetic field leaves the ribbon). This results in a change in the oscillator current. The detector circuit monitors this change and sends a signal to the output when the current change reaches a specific level.

Actuation Area / Differential Travel

Figure 4

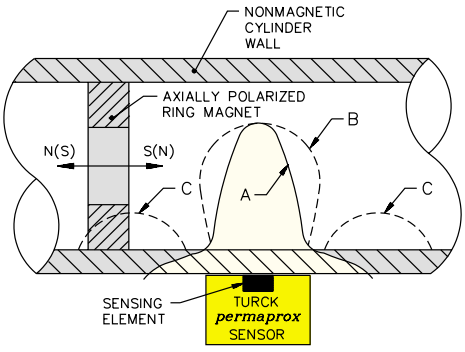
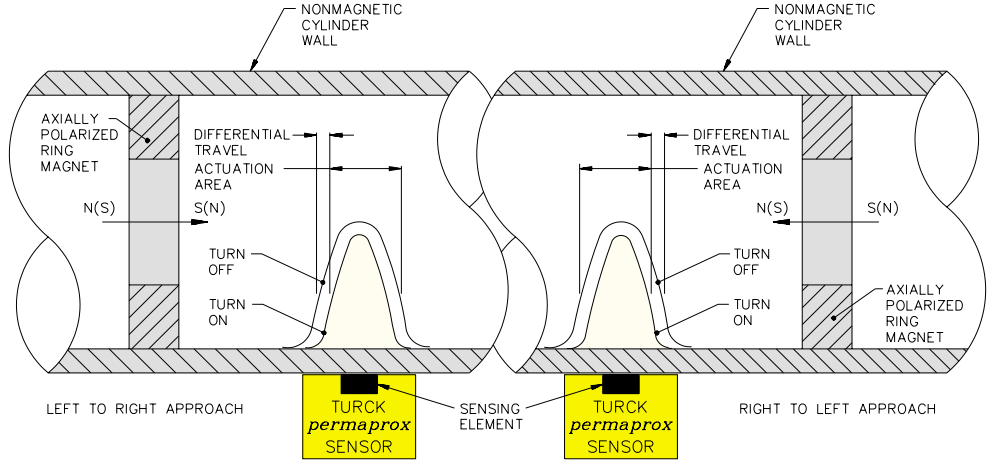


Figure 4 curve definitions:

A) Typical actuation area of ***permaprox*** ® sensors
B) Typical primary actuation area for reed switches
C) Typical secondary actuation area for reed switches

The ***permaprox*** sensors, unlike most magnet operated sensors, respond to only one component of magnetic induction, namely the component parallel to the cylinder. Figure 4 shows the typical actuation area of a ***permaprox*** sensor compared to that of reed switches. It is a common problem for reed switches to have more than one actuation area. Since these switches operate on a narrow range of magnetic field strengths, mismatching often causes multiple switching points. The ***permaprox*** sensors, however, reliably operate over a range of 20-350 gauss (2-35 mT).

Figure 5



The actuation area will depend on the width and field strength of the magnet. As shown in Figure 5, the actuation point will differ depending on the direction of piston travel. These points are not the same but are very repeatable.

Permaprox® Weld Field Immunity

All **TURCK *permaprox*** sensors that have the "S34" suffix in the part number are resistant to AC weld fields. If the field is pulsing, as with AC resistance welders, the sensor locks the output in its last known stable state. When the pulsing field subsides, the sensor updates its output accordingly.

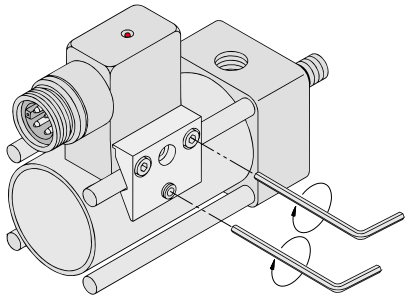
The sensors are not immune to constant magnetic fields, such as permanent magnets or DC resistance welders, and will change state.

Note: Weld field immunity specifications for standard inductive sensors can be found on page B10.

Mounting Information

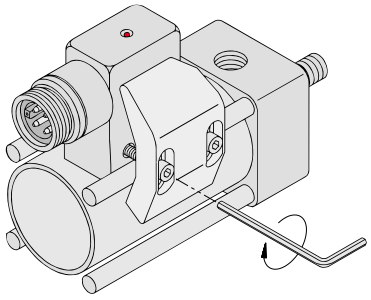
A23 Housing with KLU-1 Clamp	
Cylinder Diameter	1.26 - 3.15 inches 32 - 80 mm
Rod Diameter	0.16 - 0.35 inches 4 - 9 mm
Clamp	KLU-1 (Aluminum)

Tie Rod Cylinder



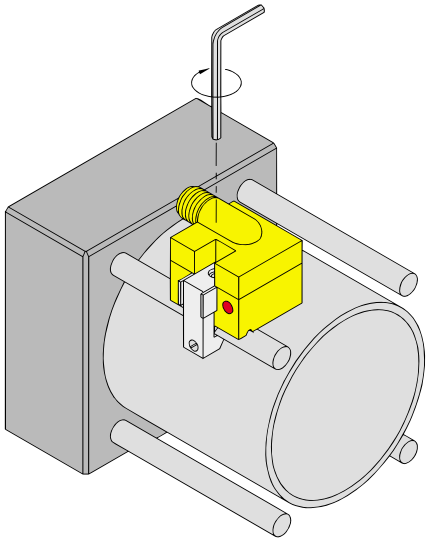
A23 Housing with KLU-2 Clamp	
Cylinder Diameter	1.57 - 7.87 inches 40 - 200 mm
Rod Diameter	0.24 - 0.63 inches 6 - 16 mm
Clamp	KLU-2 (Die-cast Zinc)

Tie Rod Cylinder



AKT Housing with KLA-1or KLA-3 Clamp	
Cylinder Diameter	1.26 - 1.97 inches 32 - 50 mm
Rod Diameter	0.16 - 0.31 inches 4 - 8 mm
Clamp	KLA-1 (Aluminum) KLA-3 (Stainless Steel)

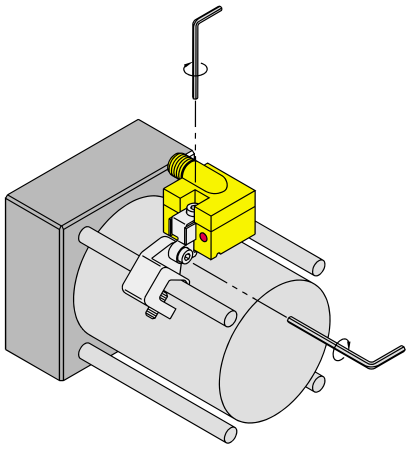
Tie Rod Cylinder



TURCK Inc. 3000 Campus Drive Minneapolis, MN 55441 Application Support: 1-800-544-PROX Fax: (763) 553-0708 www.turck.com

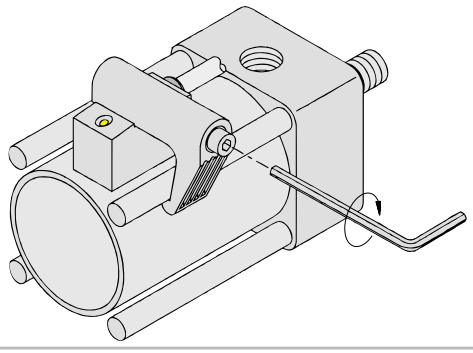
AKT Housing with KLA-2 Clamp	
Cylinder Diameter	1.57 - 4.92 inches 40 - 125 mm
Rod Diameter	0.28 - 0.51 inches 7 - 13 mm
Clamp	KLA-2 (Die-cast Zinc)

Tie Rod Cylinder



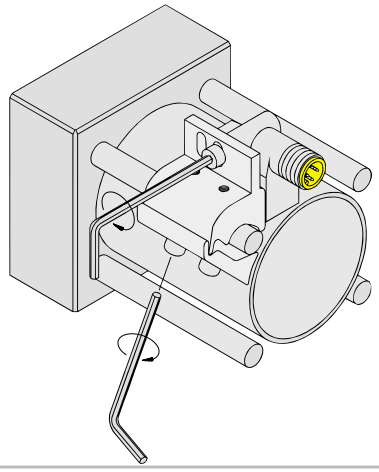
IKE, IKT and IKM Housing with KLI-1 or KLI-3 Clamp		
Cylinder Diameter	1.26 - 3.94 inches 32 - 100 mm	2.48 - 6.30 inches 63 - 160 mm
Rod Diameter	0.16 - 0.51 inches 4 - 13 mm	0.24 - 0.63 inches 6 - 16 mm
Clamp	KLI-1 (Die-cast Zinc)	KLI-3 (Die-cast Zinc)

Tie Rod Cylinder



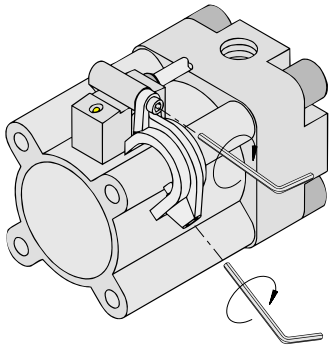
IKE, IKT and IKM Housing with KLI-5Z or KLI-6Z Clamp		
Cylinder Diameter	1.26 - 2.48 inches 32 - 63 mm	1.97 - 4.92 inches 50 - 125 mm
Rod Diameter	0.16 - 0.31 inches 4 - 8 mm	0.24 - 0.51 inches 6 - 13 mm
Clamp	KLI-5Z (Aluminum)	KLI-6Z (Aluminum)

Tie Rod Cylinder



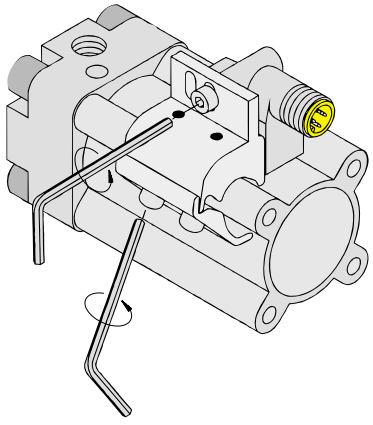
Mounting Information

IKE, IKT and IKM Housing with KLI-2 Clamp	
Cylinder Diameter	1.26 - 3.94 inches 32 - 100 mm
Rod Diameter	0.35 - 0.79 inches 9 - 20 mm
Clamp	KLI-2 (Die-cast Zinc)



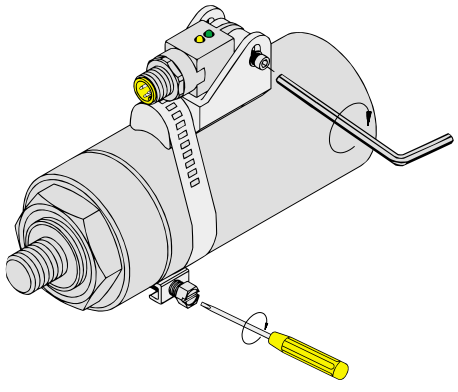
Extruded Cylinder

IKE, IKT and IKM Housing with KLI-5 or KLI-6 Clamp		
Cylinder Diameter	1.26 - 1.97 inches 32 - 50 mm	1.97 - 3.94 inches 50 - 100 mm
Rod Diameter	0.31 - 0.55 inches 8 - 14 mm	0.43 - 0.75 inches 11 - 19 mm
Clamp	KLI-5 (Aluminum)	KLI-6 (Aluminum)



Extruded Cylinder

IKE, IKT and IKM Housing with KLI-CB64 or KLI-CB124 Clamp		
Cylinder Diameter	0.79 - 2.52 inches 20 - 64 mm	0.79 - 4.88 inches 20 - 124 mm
Clamp	KLI-CB64 (Stainless Steel/Steel)	KLI-CB124 (Stainless Steel/Steel)

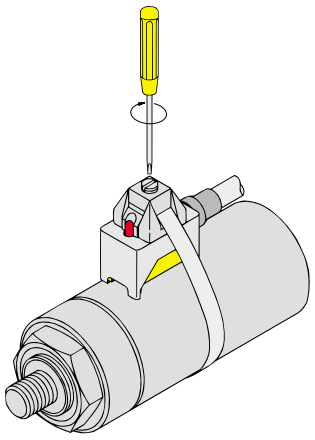


Tie Rod-less Cylinder

KST Housing with KST-SB170 and KST-SB335 Clamps		
Cylinder Diameter	0.31 - 0.99 inches 8 - 25 mm	0.31 - 3.15 inches 8 - 80 mm
Clamp	KST-SB170 (Stainless Steel)	KST-SB335 (Stainless Steel)

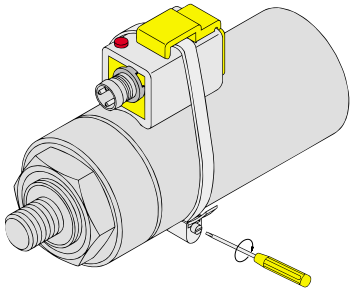
Note: Clamps included with sensor.

Tie Rod-less Cylinder



PSM Housing with ASB Style Strap			
Bore		**Clamp** (Stainless Steel)	**Cylinder Diameter**
Inches	**mm**		
5/16 3/8 7/16	8 10 12	ASB-3	0-20 mm
5/8 3/4	16 20	ASB-4	15-30 mm
1 1-1/4	25 32	ASB-5	25-40 mm
1-1/2	40	ASB-6	35-50 mm
2	50	ASB-7	45-60 mm
2-1/2	63	ASB-9	55-80 mm

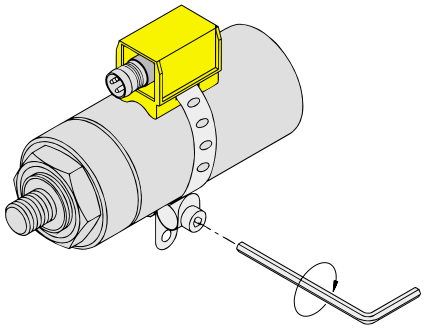
Tie Rod-less Cylinder



PST Housing with KLP80-VA and KLP200-VA Clamps		
Cylinder Diameter	0.31 - 3.15 inches 8 - 80 mm	3.15 - 7.87 inches 80 - 200 mm
Clamp	KLP80-VA* (Stainless steel band, brass nuts)	KLP200-VA (Stainless steel band, brass nuts)

* Clamp included with sensor.

Tie Rod-less Cylinder

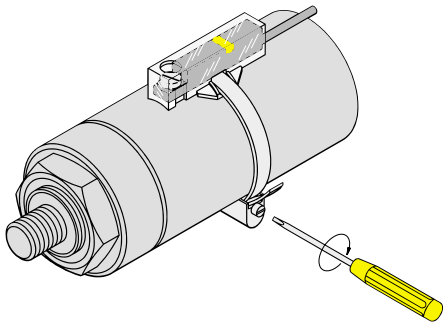


Mounting Information

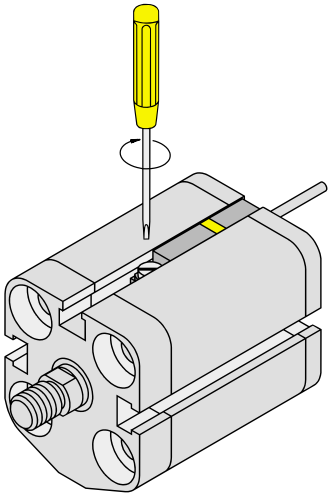
INT Housing with KLR-1 and ASB Style Strap

Bore		Clamp (Stainless Steel)
Inches	mm	
.433-.748	11-19	ASB-2
.709-1.142	18-29	ASB-3
1.102-1.535	28-39	ASB-4
1.496-1.929	38-49	ASB-5
1.890-2.323	48-59	ASB-6
2.283-2.717	58-69	ASB-7
2.677-3.504	68-89	ASB-9

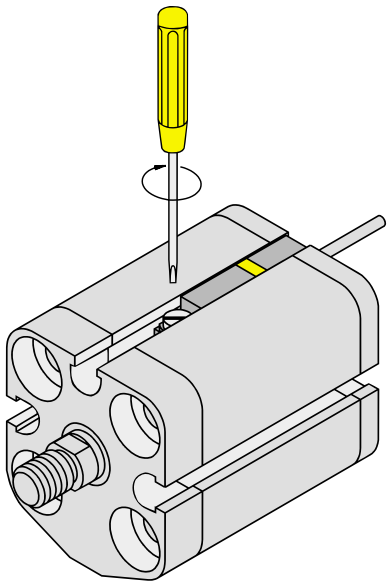
Tie Rod-less Cylinder



INT Housing with 5.2 mm "T" Groove Cylinder



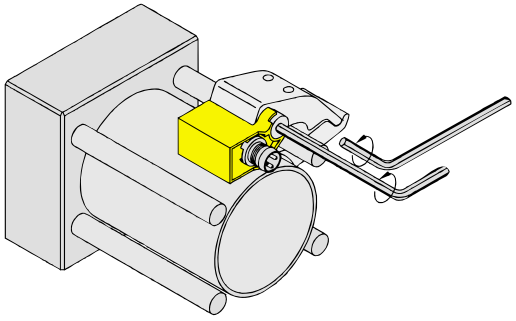
INR Housing with 4 mm "Round" Groove Cylinder



Mounting Information

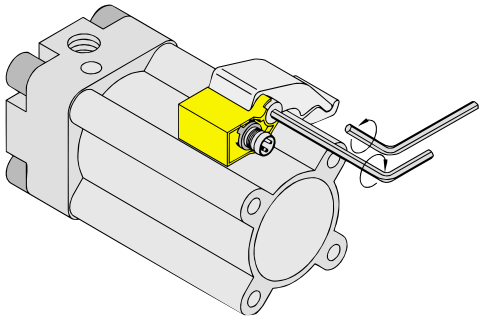
QST Housing with KLQ-1Z or KLQ-2Z Clamps		
Cylinder Diameter	1.26 - 2.48 inches 32 - 63 mm	1.97 - 4.92 inches 50 - 125 mm
Rod Diameter	0.16 - 0.31 inches 4 - 8 mm	0.24 - 0.51 inches 6 - 13 mm
Clamp	KLQ-1Z (Anodized Aluminum)	KLQ-2Z (Anodized Aluminum)

Tie Rod Cylinder



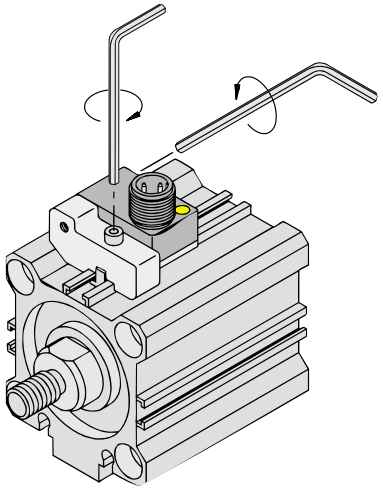
QST Housing with KLQ-1 or KLQ-2 Clamps		
Cylinder Diameter	1.26 - 1.97 inches 32 - 50 mm	1.97 - 3.94 inches 50 - 100 mm
Rod Diameter	0.31 - 0.55 inches 8 - 14 mm	0.43 - 0.75 inches 11 - 19 mm
Clamp	KLQ-1 (Anodized Aluminum)	KLQ-2 (Anodized Aluminum)

Extruded Cylinder



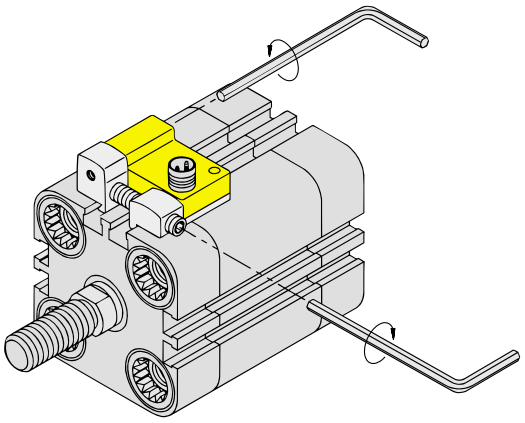
NST Housing with SMC-325 Clamp	
Cylinder Diameter	0.47 - 3.94 inches 12 - 100 mm
Cylinder Manufacturer	SMC
Cylinder Family	NCDQ2
Clamp	SMC-325 (Anodized Aluminum)

Extruded Cylinder - Notch Groove



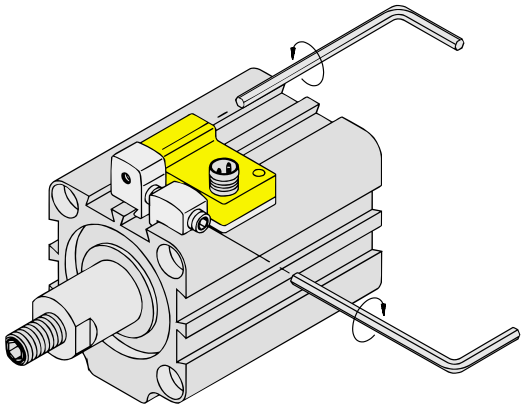
NST Housing with KLN-1 Clamp	
Cylinder Diameter	0.47 - 3.94 inches 12 - 100 mm
Groove Diameter	0.20 - 0.53 (0.83) inches 5.2 - 13.5 (21)* mm
Clamp	KLN-1 (Anodized Aluminum)
***Accessory**	Longer M5 x 35 set screw (A0050)

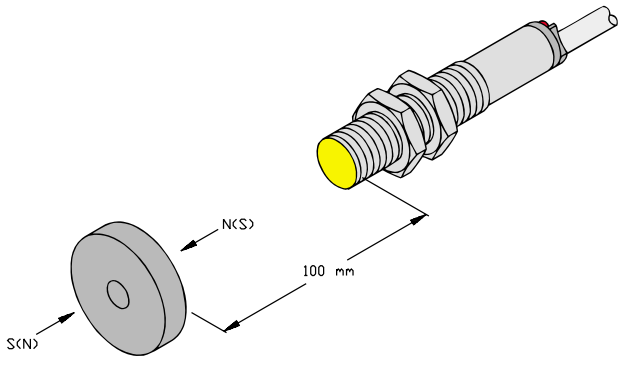
Extruded Cylinder - Notch Groove



NST Housing with KLN-1 Clamp	
Cylinder Diameter	0.47 - 3.94 inches 12 - 100 mm
Groove Diameter	0.20 - 0.53 (0.83) inches 5.2 - 13.5 (21)* mm
Clamp	KLN-1 (Anodized Aluminum)
***Accessory**	Longer M5 x 35 set screw (A0050)

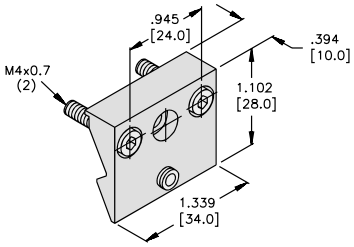
Extruded Cylinder - Dovetail Groove



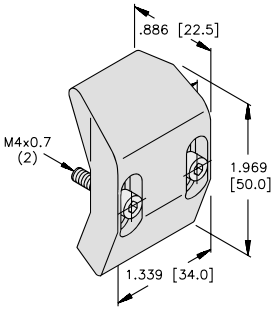
M12 Barrel Housing	
90 mm sensing range can be achieved using magnet part number DMR31-15-5. See sensor pages for magnet part numbers.	

Mounting Clamps

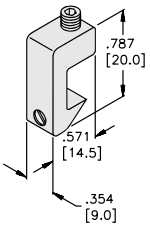
KLU-1



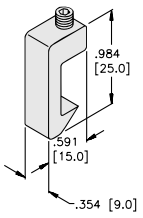
KLU-2



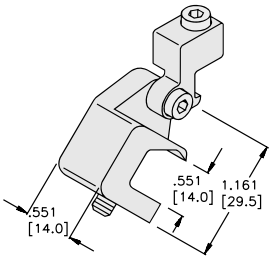
KLA-1



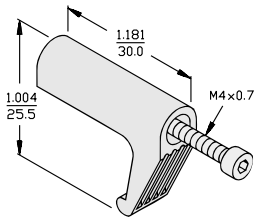
KLA-3M



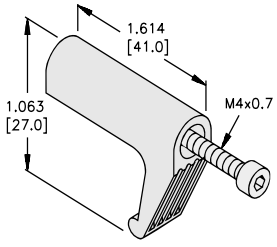
KLA-2



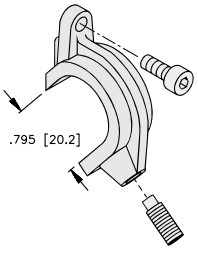
KLI-1



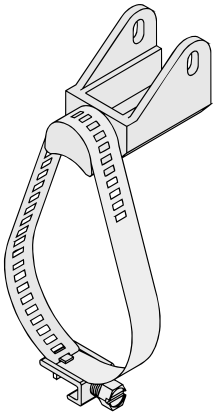
KLI-3



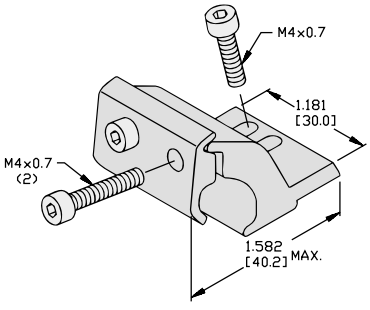
KLI-2



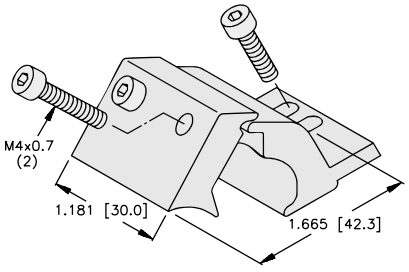
KLI-CB



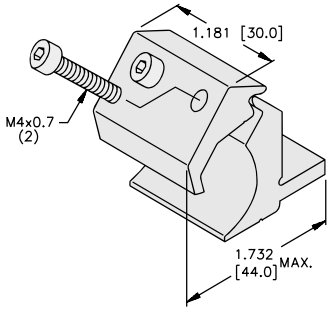
KLI-5



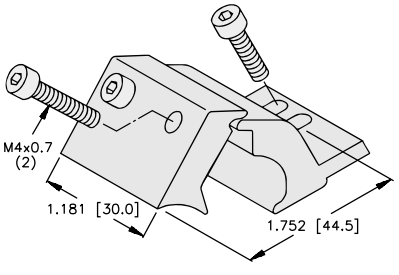
KLI-5Z



KLI-6

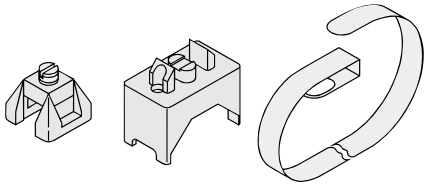


KLI-6Z

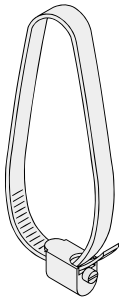


Mounting Clamps

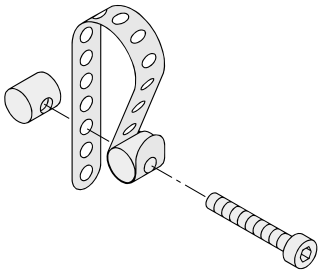
KST-SB170 and KST-SB335



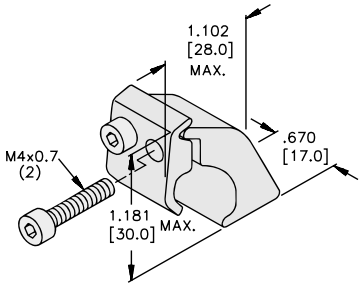
ASB Clamp



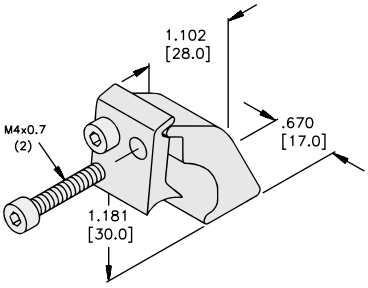
KLP80-VA and KLP200-VA



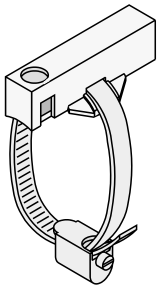
KLQ-1



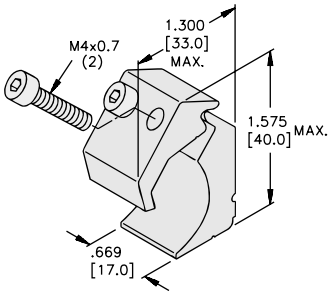
KLQ-1Z



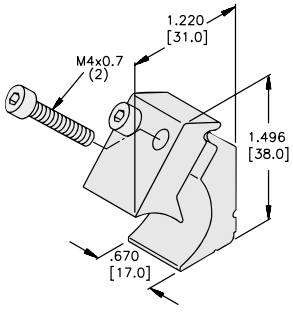
KLR-1 w/ASB-* STRAP



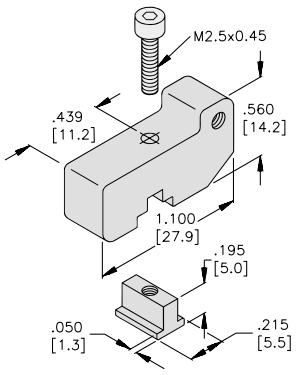
KLQ-2



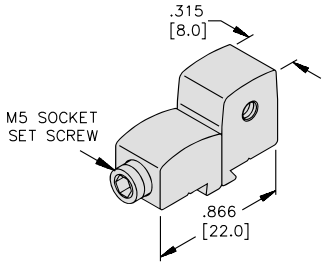
KLQ-2Z



SMC-325



KLN-1

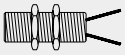


Cylinder

NEW

INT

Cylinder Position Indicators, Slot Style
Injection Molded with Cable

2-Wire DC 
10-55 VDC, Short-Circuit and Overload Protected
Normally Open

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-INT-AG41X	•	•	•	1	A	1		300	M4550000	2 meter cable, PUR Jacket

BIM-INT sensors do not require any additional accessories for mounting in a 5.2 mm T-groove. Mounting on round cylinders requires the use of mounting accessories that must be ordered seperately. See table below.

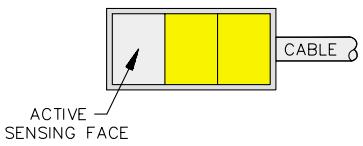
Round Cylinder Mounting Strap Part Numbers and Diameters

KLR-1 mounting bracket required for use with ASB straps.

Part Numbers	ASB-2	ASB-3	ASB-4	ASB-5	ASB-6	ASB-7	ASB-9
Cylinder Diameter (mm)	11-19	18-29	28-39	38-49	48-59	58-69	68-89

Sensing Face (Bottom view)

INT



Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing / Connector:	PA 12
Sensing Face:	PA 12
Mounting Screw:	Brass

Accessories

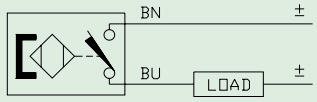
permaprox accessories can be found on pages E17 and E18.
See mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤4.0 V at 100 mA
Trigger Current for Overload Protection	≥120 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤0.8 mA
Minimum Load Current	≥3.0 mA
Maximum Approach Velocity	≤3 m/s
Time Delay Before Availability	≤3 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Switching Point Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

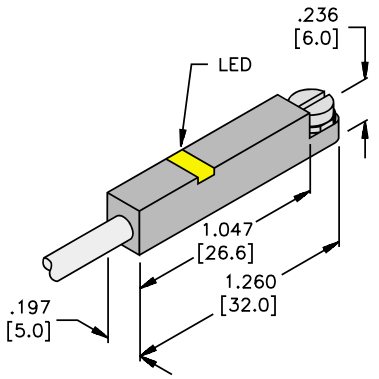
Wiring Diagram

A — Normally Open



Dimensions

1



IKE and IKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox*** ®

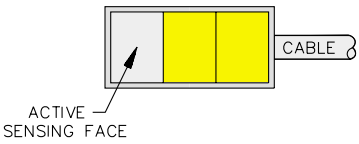
2-Wire DC ***eurofast*** ®
10-65 VDC, Short-Circuit and Overload Protected
Normally Open

Sensor Selection

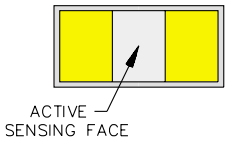
Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-IKE-AD4X BIM-IKT-AD4X	• •	• •	• •	1 1	A A	1 1		300 300	M4421490 M4482090	2 meter cable, PVC Jacket
BIM-IKE-AD4X-H1141 BIM-IKT-AD4X-H1141	• •	• •	• •	2 2	B B	1 1		300 300	M4421690 M4482290	***eurofast*** **Mating Cordsets** RK 4.2T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Sensing Face (Bottom view)

IKE



IKT



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing / Connector:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic
Mounting Clamp:	Die-cast Zinc

Accessories

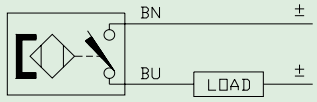
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLI-3 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

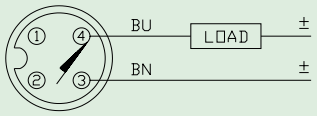
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥150 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤0.8 mA
Minimum Load Current	≥3.0 mA
Maximum Approach Velocity	≤3 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Switching Point Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

A Normally Open



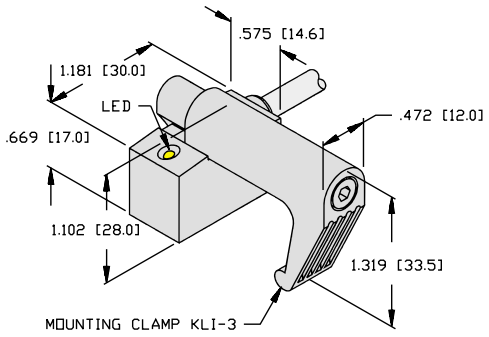
B Normally Open



Cylinder

Dimensions

1



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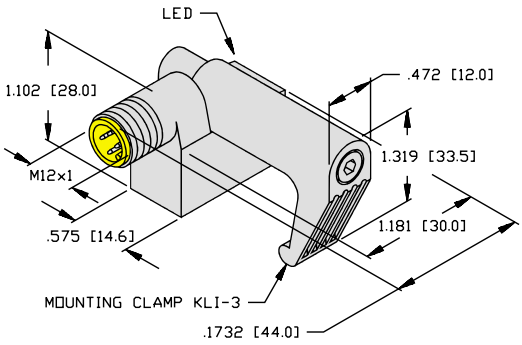
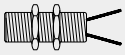


AKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox®***

2-Wire DC  ***eurofast®***

10-65 VDC, Short-Circuit and Overload Protected

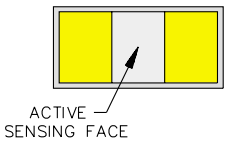
Normally Open

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-AKT-AD4X	•	•	•	1	A	1		300	M4480090	2 meter cable, PVC Jacket
BIM-AKT-AD4X-H1141	•	•	•	2	B	1		300	M4480290	***eurofast*** **Mating Cordsets** RK 4.2T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Sensing Face (Bottom view)

AKT



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector / Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Clamp:	Die-Cast Zinc

Accessories

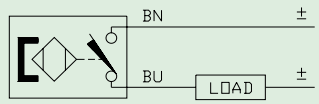
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLA-1 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

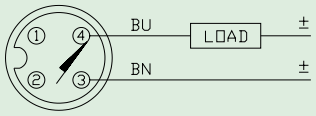
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤5.0 V at 100 mA
Trigger Current for Overload Protection	≥150 mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤0.8 mA
Minimum Load Current	≥3.0 mA
Maximum Approach Velocity	≤3 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Switching Point Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

A Normally Open



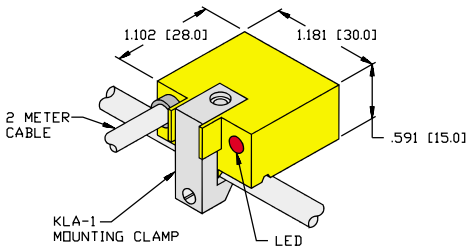
B Normally Open



Cylinder

Dimensions

1



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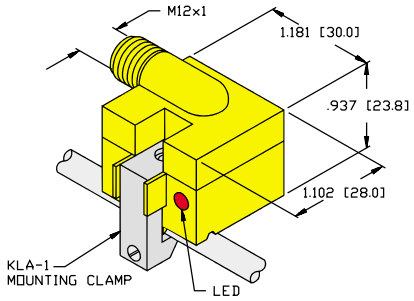
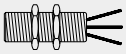


NEW

INT

Cylinder Position Indicators, Slot Style
Injection Molded with Cable and Optional Molded Connector

3-Wire DC  *picofast*®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-INT-AN6X	•	•		1	A	1		1000	M4623600	2 meter cable, PUR Jacket
BIM-INT-AP6X	•		•	1	B	1		1000	M4623500	
BIM-INT-AN6X-V1131	•	•		2	C	1		1000	M4623602	*picofast* **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-INT-AP6X-V1131	•		•	2	D	1		1000	M4623502	

BIM-INT sensors do not require any accessories for mounting in a 5.2 mm T-groove. Mounting on round cylinders requires the use of mounting accessories that must be ordered seperately. See table below.

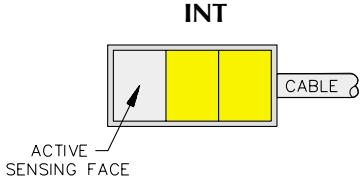
Round Cylinder Mounting Strap Part Numbers and Diameters
KLR-1 mounting bracket required for use with ASB straps.

Part Numbers	ASB-2	ASB-3	ASB-4	ASB-5	ASB-6	ASB-7	ASB-9
Cylinder Diameter (mm)	11-19	18-29	28-39	38-49	48-59	58-69	68-89

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Sensing Face



Material

Connector:	Chrome Plated Brass
Sensor Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Screws:	Brass

Accessories

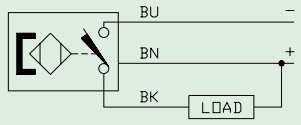
permaprox accessories can be found on pages E17 and E18.
See mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

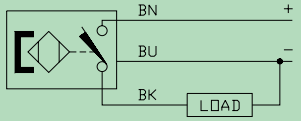
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤3 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

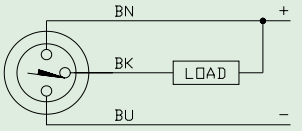
A NPN (Sinking)



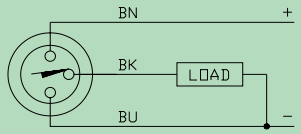
B PNP (Sourcing)



C NPN (Sinking)



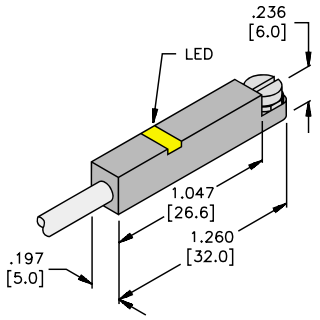
D PNP (Sourcing)



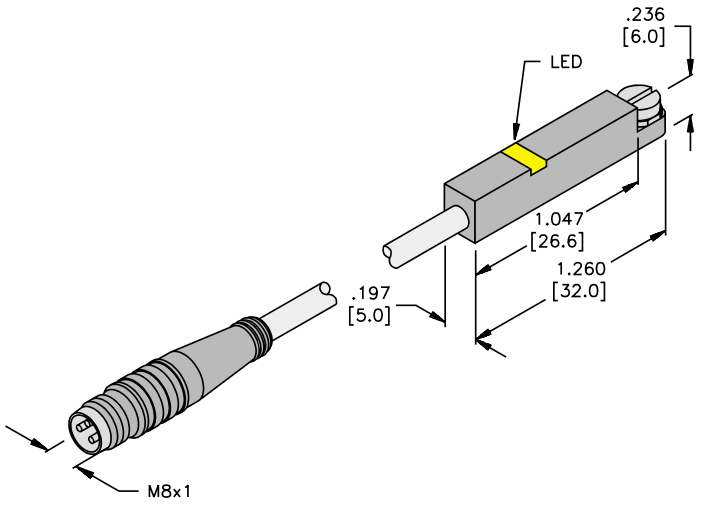
Cylinder

Dimensions

1



2



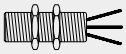
Note: "V1131" Indicates 0.3 meter pigtail length. Alternate lengths must be specified.

NEW

INR

Cylinder Position Indicators, Slot Style

Injection Molded with Cable and Optional Molded Connector

3-Wire DC  picofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

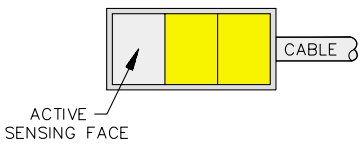
Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-INR-AN6X	•	•		1	A	1		1000	S4623800	2 meter cable, PUR Jacket
BIM-INR-AP6X	•		•	1	B	1		1000	S4623700	
BIM-INR-AN6X-V1131	•	•		2	C	1		1000	S4623802	picofast **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-INR-AP6X-V1131	•		•	2	D	1		1000	S4623702	

BIM-INR sensors do not require any accessories for mounting in a 4.0 mm round groove.

Sensing Face (Bottom view)

INR



Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector:	Chrome Plated Brass
Sensor Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Screw:	Stainless Steel

Accessories

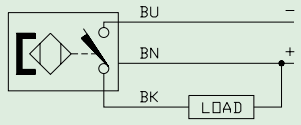
permaprox accessories can be found on pages E17 and E18.
See mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

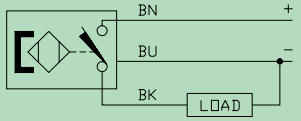
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤3 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

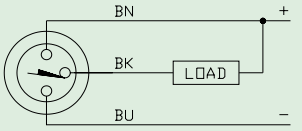
A NPN (Sinking)



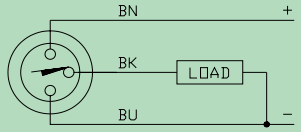
B PNP (Sourcing)



C NPN (Sinking)



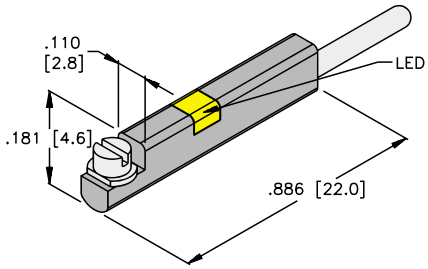
D PNP (Sourcing)



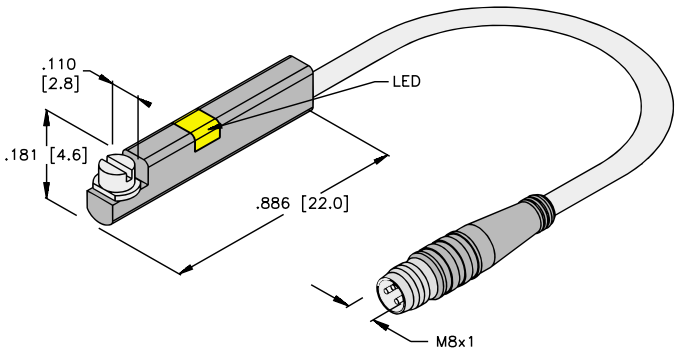
Cylinder

Dimensions

1



2



Note: "V1131" Indicates 0.3 meter pigtail length. Alternate lengths must be specified.

PST

Cylinder Position Indicators, Strap-On Style
with Cable or Quick Disconnect ***permaprox®***

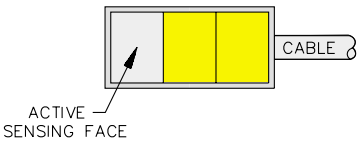
3-Wire DC ***picofast®***
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-PST-AN6X	•	•		1	A	1		1000	S4624191	2 meter cable, PVC Jacket
BIM-PST-AP6X	•		•	1	B	1		1000	S4624090	
BIM-PST-AN6X-V1131	•	•		2	C	1		1000	S4625190	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-PST-AP6X-V1131	•		•	2	D	1		1000	S4625090	

Sensing Face (Bottom view)

PST



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector:	Chrome Plated Brass
Sensor Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Bands:	Stainless Steel

Accessories

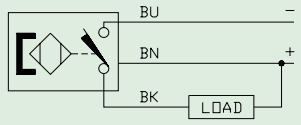
permaprox accessories can be found on pages E17 and E18.
Mounting Band KLP-80 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

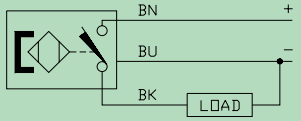
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

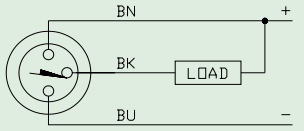
A NPN (Sinking)



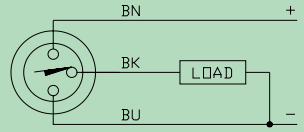
B PNP (Sourcing)



C NPN (Sinking)

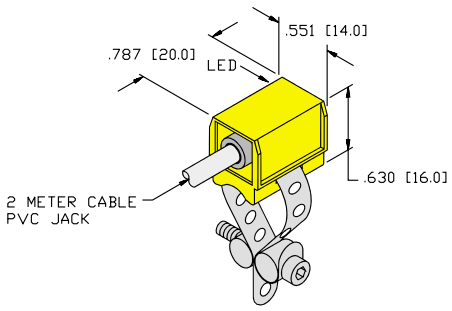


D PNP (Sourcing)



Dimensions

1



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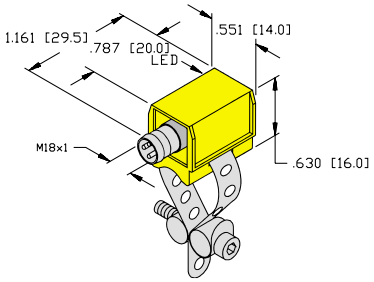
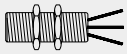


Cylinder

PSM

Cylinder Position Indicators, Strap-On Style
with Cable or Quick Disconnect ***permaprox®***

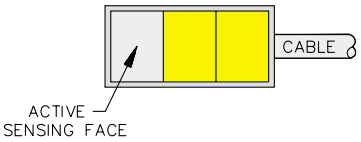
3-Wire DC  ***picofast®***
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-PSM-AN6X	•	•		1	A	1		1000	S4625500	2 meter cable, PVC Jacket
BIM-PSM-AP6X	•		•	1	B	1		1000	S4625400	
BIM-PSM-AN6X-V1131	•	•		2	C	1		1000	S4625700	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-PSM-AP6X-V1131	•		•	2	D	1		1000	S4625600	

Sensing Face (Bottom view)

PSM



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector:	Chrome Plated Brass
Sensor Housing:	Aluminum and PA 12-GF30 Plastic
Sensing Face:	Aluminum
Mounting Bands:	Stainless Steel

Accessories

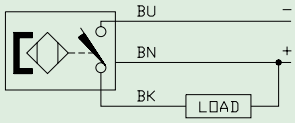
permaprox accessories can be found on pages E17 and E18.
Mounting Band not included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

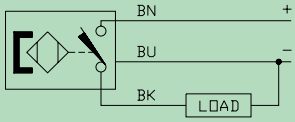
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

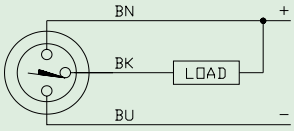
A NPN (Sinking)



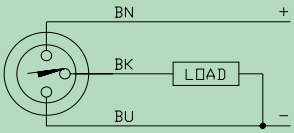
B PNP (Sourcing)



C NPN (Sinking)



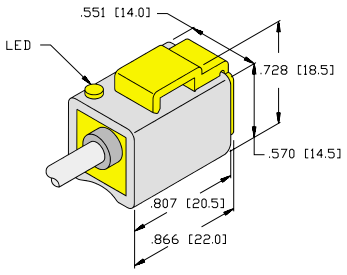
D PNP (Sourcing)



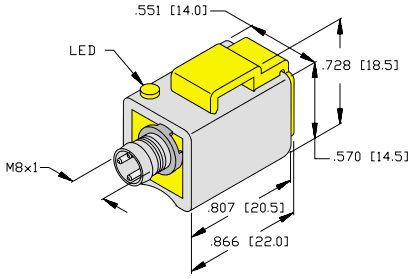
Cylinder

Dimensions

1



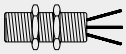
2



Note: Mounting Clamp must be ordered separately.

KST

Cylinder Position Indicators, Strap-On Style
with Cable or Quick Disconnect ***permaprox®***

3-Wire DC  ***picofast®***

10-30 VDC, Short-Circuit and Overload Protected

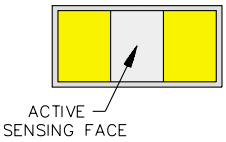
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-KST-AN6X	•	•		1	A	1		1000	M4674100	2 meter cable, PVC Jacket
BIM-KST-AP6X	•		•	1	B	1		1000	M4674000	
BIM-KST-AN6X-V1131	•	•		2	C	1		1000	M4674300	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-KST-AP6X-V1131	•		•	2	D	1		1000	M4674200	

Sensing Face (Bottom view)

KST



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector:	Chrome Plated Brass
Mounting Housing/Clamp:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic
Mounting Band:	Stainless Steel

Accessories

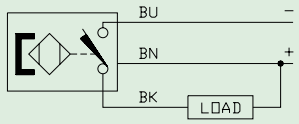
permaprox accessories can be found on pages E17 and E18.
Mounting Bands KST-SB170 and KST-SB335 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

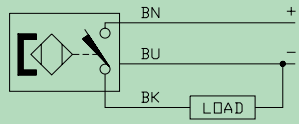
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

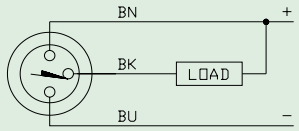
A NPN (Sinking)



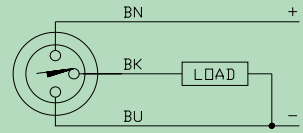
B PNP (Sourcing)



C NPN (Sinking)



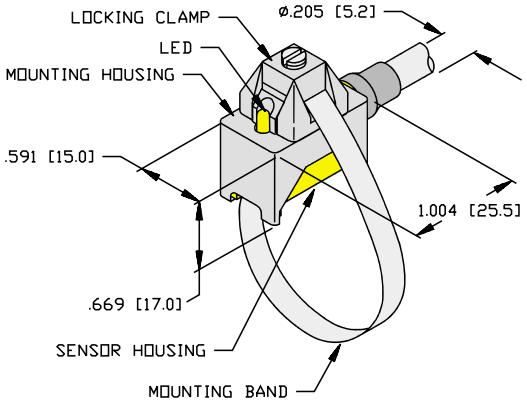
D PNP (Sourcing)



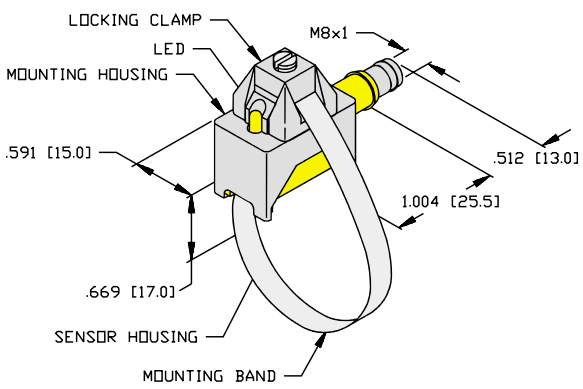
Cylinder

Dimensions

1

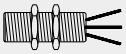


2



QST

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox***®

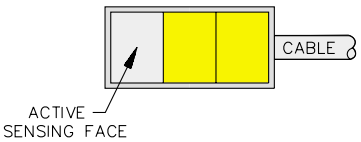
3-Wire DC  ***picofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-QST-AN6X	•	•		1	A	1		1000	M4688100	2 meter cable, PVC Jacket
BIM-QST-AP6X	•		•	1	B	1		1000	M4688000	
BIM-QST-AN6X-V1131	•	•		2	C	1		1000	M4688300	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-QST-AP6X-V1131	•		•	2	D	1		1000	M4688200	

Sensing Face (Bottom view)

QST



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Connector:	Chrome Plated Brass

Accessories

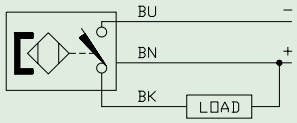
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp not included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

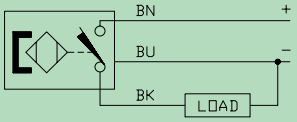
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

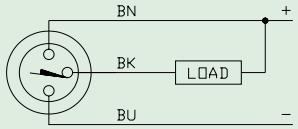
A NPN (Sinking)



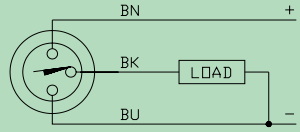
B PNP (Sourcing)



C NPN (Sinking)



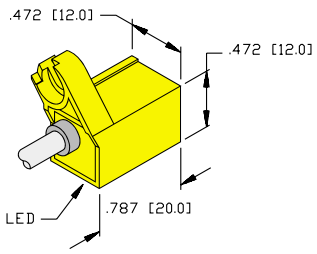
D PNP (Sourcing)



Cylinder

Dimensions

1



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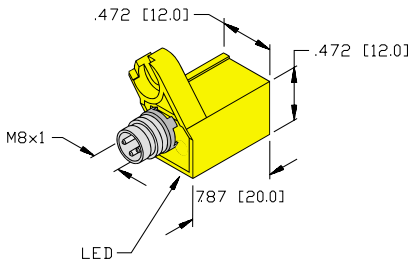


Note: Mounting Clamp must be ordered separately.

IKE and IKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox®***

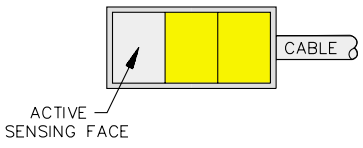
3-Wire DC **eurofast®** **picofast®**
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

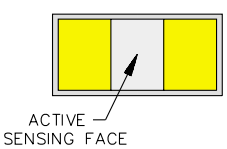
Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (IS34)	Switching Frequency (Hz)	ID Number	Connection
BIM-IKE-AN6X	•	•		1	A	1		1000	M4621590	2 meter cable, PVC Jacket
BIM-IKT-AN6X	•	•		1	A	1		1000	M4620190	
BIM-IKE-AP6X	•		•	1	B	1		1000	M4621490	
BIM-IKT-AP6X	•		•	1	B	1		1000	M4620090	
BIM-IKE-AN6X-H1141	•	•		2	C	1		1000	M4621790	**eurofast** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-IKT-AN6X-H1141	•	•		2	C	1		1000	M4621190	
BIM-IKE-AP6X-H1141	•		•	2	D	1		1000	M4621690	
BIM-IKT-AP6X-H1141	•		•	2	D	1		1000	M4621090	
BIM-IKE-AN6X-V1131	•	•		3	E	1		1000	M4621795	**picofast** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-IKT-AN6X-V1131	•	•		3	E	1		1000	M4622195	
BIM-IKE-AP6X-V1131	•		•	3	F	1		1000	M4621695	
BIM-IKT-AP6X-V1131	•		•	3	F	1		1000	M4622095	

Sensing Face (Bottom view)

IKE



IKT



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing/Mounting Clamp:	Die-cast Zinc
H1141 Connector:	Die-cast Zinc
V1131 Connector:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

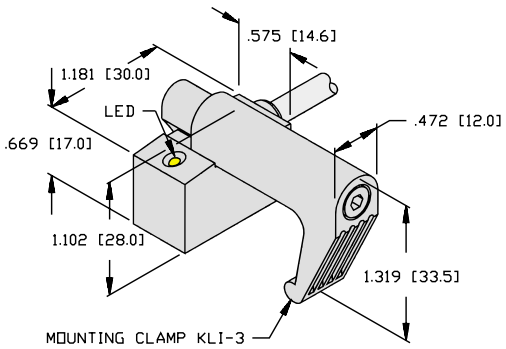
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLI-3 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Dimensions

1



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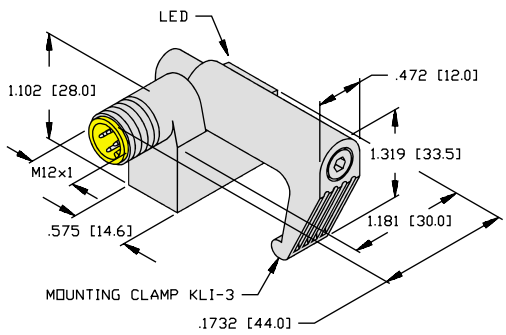

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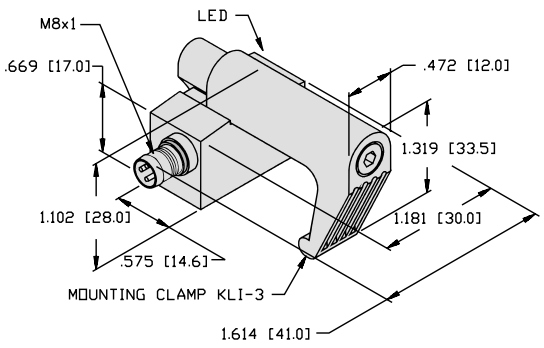
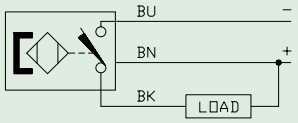
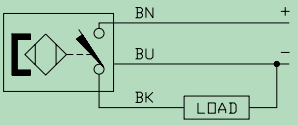


Wiring Diagrams

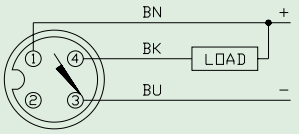
A NPN (Sinking)



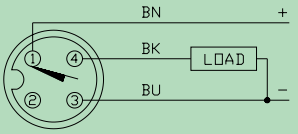
B PNP (Sourcing)



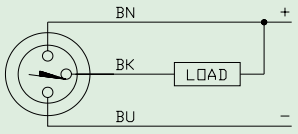
C NPN (Sinking)



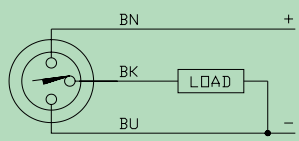
D PNP (Sourcing)



E NPN (Sinking)



F PNP (Sourcing)



Cylinder

IKM

Cylinder Position Indicators, Clamp-On Style
with Quick Disconnect ***permaprox***®

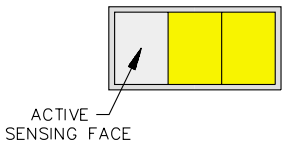
3-Wire DC ***eurofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-IKM-AN6X2-H1141/S34	•	•		1	A	2	•	20	M4627390	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-IKM-AP6X2-H1141/S34	•		•	1	B	2	•	20	M4627290	

Sensing Face (Bottom view)

IKM



Material

Housing / Mounting Clamp:	Die-cast Zinc
Connector:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

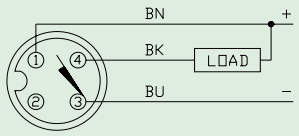
permaprox accessories can be found on page E17 and E18.
Mounting Clamp KLI-3 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

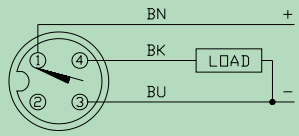
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.5 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤12.0 mA
Maximum Approach Velocity	≤1 m/s
Time Delay Before Availability	≤35 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

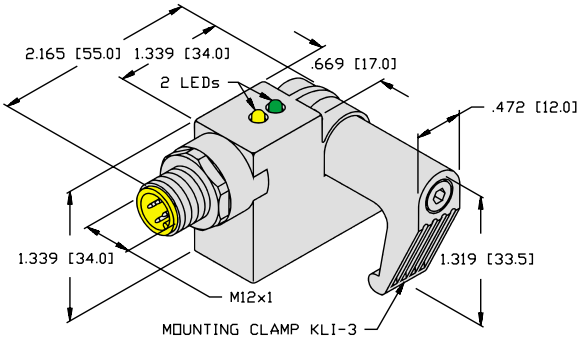


B PNP (Sourcing)



Dimensions

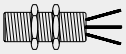
1



Cylinder

AKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox***®

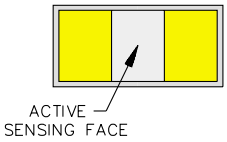
3-Wire DC  ***eurofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-AKT-AN6X	•	•		1	A	1		1000	M4675190	2 meter cable, PVC Jacket
BIM-AKT-AP6X	•		•	1	B	1		1000	M4675090	
BIM-AKT-AN6X-H1141	•	•		2	C	1		1000	M4675390	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-AKT-AP6X-H1141 BIM-AKT-AP6X-H1141/S34	• •		• •	2 2	D D	1 1	•	1000 20	M4675290 M4682090	

Sensing Face (Bottom view)

AKT



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Connector / Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Clamp:	Aluminum

Accessories

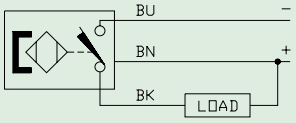
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLA-1 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

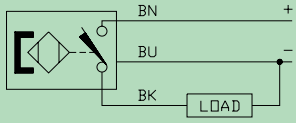
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V S34 Version: ≤2.0 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤10 m/s; S34 Version: ≤1 m/s
Time Delay Before Availability	≤5 ms; S34 Version: ≤35 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

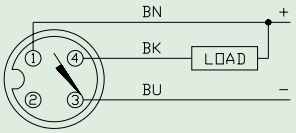
A NPN (Sinking)



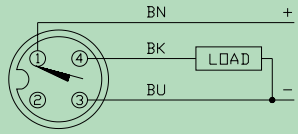
B PNP (Sourcing)



C NPN (Sinking)

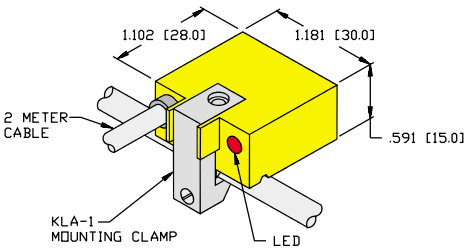


D PNP (Sourcing)

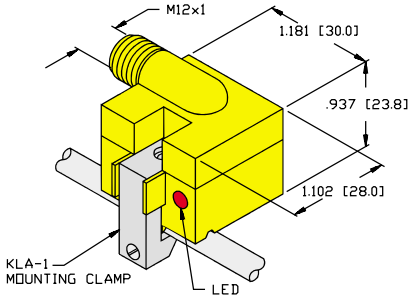


Dimensions

1



2



A23

Cylinder Position Indicators, Clamp-On Style
with Quick Disconnect ***permaprox***®

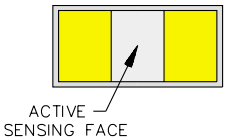
3-Wire DC ***minifast***® ***eurofast***®
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-A23-AN6X-B1141/S34	•	•		1	A	1	•	20	M4688991	***minifast*** **Mating Cordsets** RKM 40-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-A23-AP6X-B1141/S34	•		•	1	B	1	•	20	M4688891	
BIM-A23-AN6X-H1141/S34	•	•		2	C	1	•	20	M4689191	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-A23-AP6X2-H1141/S34	•		•	3	D	2	•	20	M4689291	

Sensing Face (Bottom view)

A23



Material

Connector:	Chrome Plated Brass
Housing:	Pressure Cast Aluminum
Sensing Face:	PA 12 Plastic
Mounting Clamp:	Aluminum

Accessories

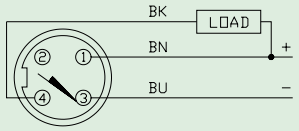
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLU-2 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

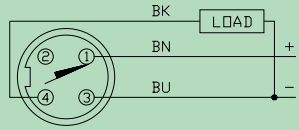
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤8.0 mA
Maximum Approach Velocity	≤1 m/s
Time Delay Before Availability	≤35 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
AN6X and AP6X: LED On (Yellow)	Output Energized
AP6X2: LED On (Yellow)	Output Energized
AP6X2: LED On (Green)	Power On

Wiring Diagrams

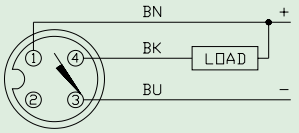
A NPN (Sinking)



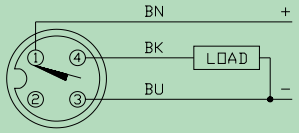
B PNP (Sourcing)



C NPN (Sinking)

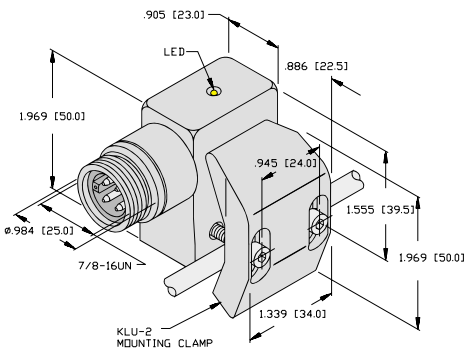


D PNP (Sourcing)

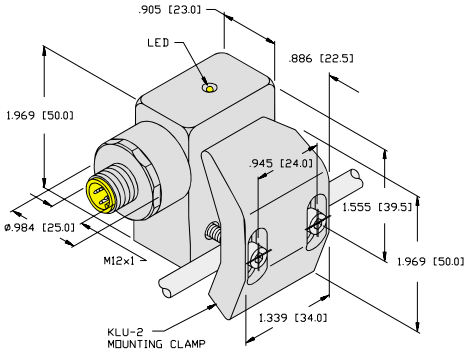


Dimensions

1



2



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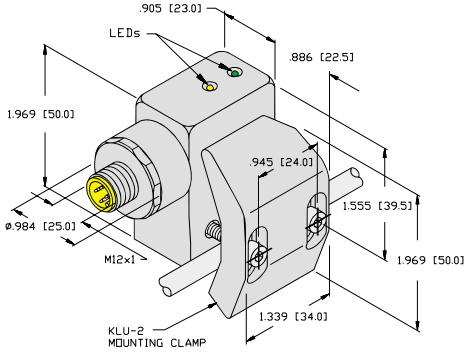
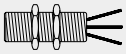


Cylinder

NST

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox®***

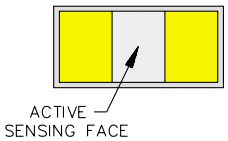
3-Wire DC  ***picofast®*** ***eurofast®***
10-30 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-NST-AN6X	•	•		1	A	1		1000	M4685700	2 meter cable, PVC Jacket, Copper Conductor 24 AWG (PVC Insulated)
BIM-NST-AP6X	•		•	1	B	1		1000	M4685600	
BIM-NST-AN6X-V1131	•	•		2	C	1		1000	M4685900	***picofast*** **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-NST-AP6X-V1131	•		•	2	D	1		1000	M4685800	
BIM-NST-AN6X-H1141/S34	•	•		3	E	1	•	20	M4685501	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-NST-AP6X-H1141/S34	•		•	3	F	1	•	20	M4685401	

Sensing Face (Bottom view)

NST



Material

Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Connector:	Chrome Plated Brass
Connector (S34):	PA 12-GF30 Plastic

Accessories

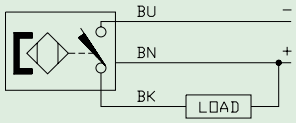
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp not included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

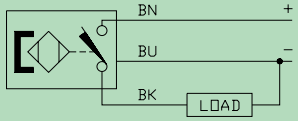
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤2.0 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤2.0 mA for /S34; ≤8.0 mA for others
Maximum Approach Velocity	≤10 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

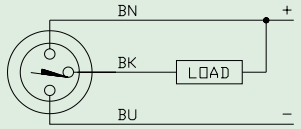
A NPN (Sinking)



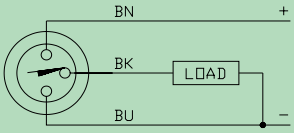
B PNP (Sourcing)



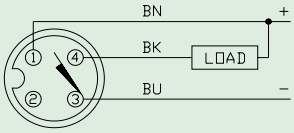
C NPN (Sinking)



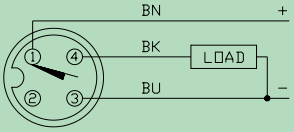
D PNP (Sourcing)



E NPN (Sinking)

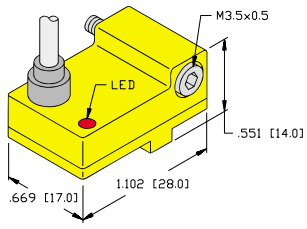


F PNP (Sourcing)



Dimensions

1



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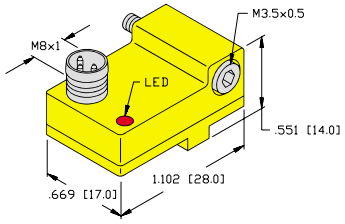

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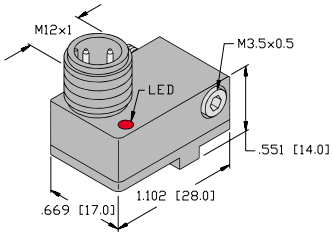


Note: Mounting Clamp must be ordered separately.

M Barrel

Cylinder Position Indicators, Barrel Style

Partial Threading, Quick Disconnect ***permaprox®***

3-Wire DC ***eurofast®***

10-65 VDC, Short-Circuit and Overload Protected

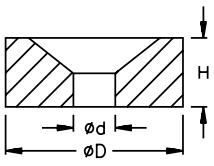
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-M12-AN4X-H1141/S235	•	•		1	A	1		1000	M1579905	***eurofast*** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-M12-AP4X-H1141/S235	•		•	1	B	1		1000	M1579900	

Note: Consult factory for availability of TTL outputs and stainless steel barrels.

Actuation Magnet Part Numbers	Diameter D (mm)	Height H	Drilling for mounting d	Switch distance (mm)	Material
DMR15-6-3	15	6	3	36	Barium Ferrite (Oxyd 300)
DMR20-10-4	20	10	4	59	
DMR31-15-5	31	15	5	90	



Material

Housing:	Chrome Plated Brass
Connector:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

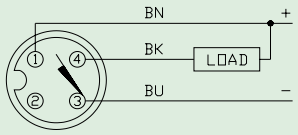
Accessories and mounting devices can be found in Section J.
See Mounting information on page E9-E16.
All other accessories can be found in Section J.
Magnets sold separately.

Specifications

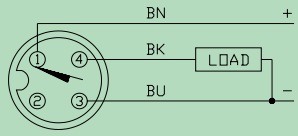
Ripple	≤10%
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	≤10.0 mA
Maximum Approach Velocity	≤1 m/s
Time Delay Before Availability	≤5 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +90°C (-13°F to +194°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)



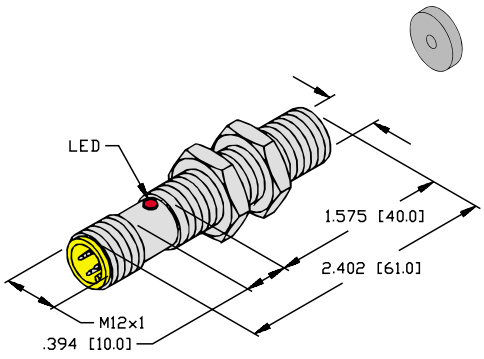
B PNP (Sourcing)



Cylinder

Dimensions

1



Note: See magnetic targets on opposite page. Must be ordered separately.

CRS

Cylinder Position Indicators *CRS Series*

Quick Disconnect

3-Wire DC *eurofast*®

10-65 VDC Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Probe Length (mm)	Probe Length (inches)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi2-CRS 232-AN4X2-H1141/S34	•	2	23.2	.915	•		1	A	2	•	30	T4570493	*eurofast*
Bi2-CRS 260-AN4X2-H1141/S34	•	2	26.0	1.025	•		1	A	2	•	30	T4580004	**Mating Cordsets**
Bi2-CRS 287-AN4X2-H1141/S34	•	2	28.7	1.130	•		1	A	2	•	30		RK 4T-2 (2 meter)
Bi2-CRS 317-AN4X2-H1141/S34	•	2	31.7	1.250	•		1	A	2	•	30	T4580093	For other styles
Bi2-CRS 343-AN4X2-H1141/S34	•	2	34.3	1.350	•		1	A	2	•	30	T4571890	see Section H or
Bi2-CRS 476-AN4X2-H1141/S34	•	2	47.6	1.875	•		1	A	2	•	30	T4568092	consult "Cordsets"
Bi2-CRS 524-AN4X2-H1141/S34	•	2	52.4	2.062	•		1	A	2	•	30	T4568096	catalog
Bi2-CRS 603-AN4X2-H1141/S34	•	2	60.3	2.375	•		1	A	2	•	30	T4580097	
Bi2-CRS 705-AN4X2-H1141/S34	•	2	70.5	2.775	•		1	A	2	•	30		
Bi2-CRS 730-AN4X2-H1141/S34	•	2	73.0	2.875	•		1	A	2	•	30	T4580088	
Bi2-CRS 959-AN4X2-H1141/S34	•	2	95.9	3.777	•		1	A	2	•	30		
Bi2-CRS1159-AN4X2-H1141/S34	•	2	115.9	4.562	•		1	A	2	•	30		
Bi2-CRS 232-AP4X2-H1141/S34	•	2	23.2	.915		•	1	B	2	•	30	T4570492	
Bi2-CRS 260-AP4X2-H1141/S34	•	2	26.0	1.025		•	1	B	2	•	30	T4570890	
Bi2-CRS 287-AP4X2-H1141/S34	•	2	28.7	1.130		•	1	B	2	•	30	T4571290	
Bi2-CRS 317-AP4X2-H1141/S34	•	2	31.7	1.250		•	1	B	2	•	30	T4571690	
Bi2-CRS 343-AP4X2-H1141/S34	•	2	34.3	1.350		•	1	B	2	•	30	T4571800	
Bi2-CRS 476-AP4X2-H1141/S34	•	2	47.6	1.875		•	!	B	2	•	30	T4580091	
Bi2-CRS 524-AP4X2-H1141/S34	•	2	52.4	2.062		•	1	B	2	•	30	T4580090	
Bi2-CRS 603-AP4X2-H1141/S34	•	2	60.3	2.375		•	1	B	2	•	30	T4580096	
Bi2-CRS 705-AP4X2-H1141/S34	•	2	70.5	2.775		•	1	B	2	•	30	T4580089	
Bi2-CRS 730-AP4X2-H1141/S34	•	2	73.0	2.875		•	1	B	2	•	30	T4580003	
Bi2-CRS 959-AP4X2-H1141/S34	•	2	95.9	3.777		•	1	B	2	•	30	T4571891	
Bi2-CRS1159-AP4X2-H1141/S34	•	2	115.9	4.562		•	1	B	2	•	30	T4570899	

Quick Disconnect Option

Consult factory for availability of sensors with ***minifast*** connectors.

Material

Housing:	Zinc Die-cast with Chromate Finish
Connector:	Chrome Plated Brass
Probe:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

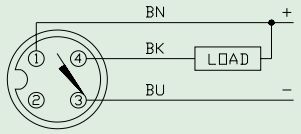
Spacer Plates SP-___- C and other accessories can be found in Section J.

Specifications

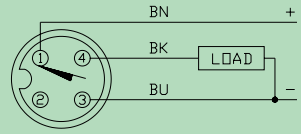
Ripple	≤10%
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤2.0 V at 200 mA
Trigger Current for Overload Protection	250-350 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	7.5 mA at 24 VDC; 10.0 mA at 65 VDC
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Response Time	15 ms (max.)
Operating Pressure	1500 PSI (max. applied 3000 PSI)
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



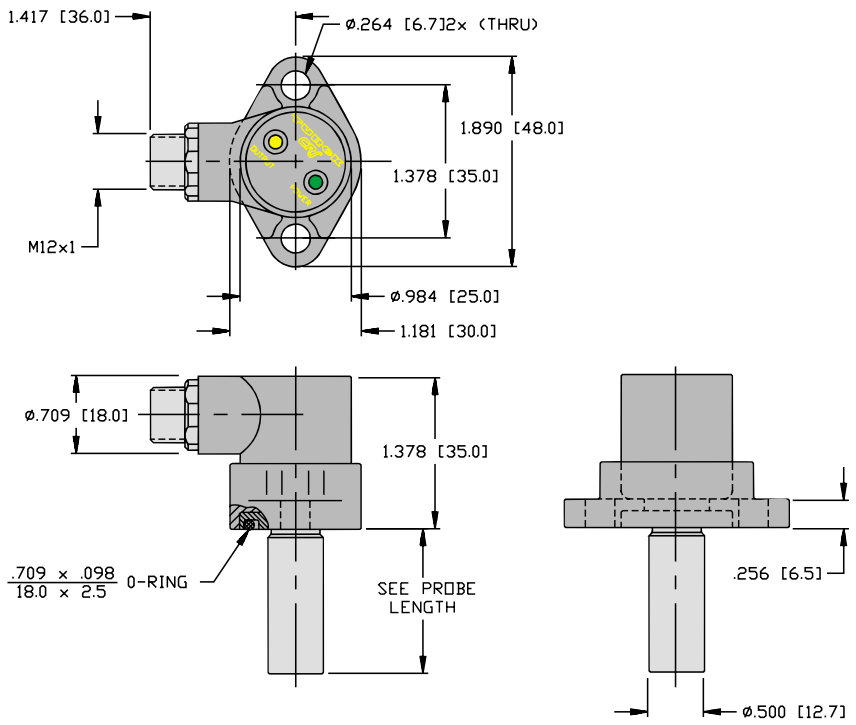
B PNP (Sourcing)



Cylinder

Dimensions

1



(2) - 1/4-20 x 5/8" socket head cap screws included with each sensor.

NEW

Q6.5 Style

World Clamp Sensors

Plastic Housing with Molded ***eurofast***® *Connector*

3-Wire DC ***eurofast***®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Ni 2-Q6.5-AP6-0.1-FS 4.4X3/S304			•	1	A	3	•	30	M1650048	***eurofast*** **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Ni 2-Q6.5-AP6-0.2-FS 4.4X3/S304			•	1	A	3	•	30	M1650047	

"-0.1-" in part number designates cable length in meters.

Material

Amplifier:	PBT-GF30
Sensors:	PA 12
Connector:	Chrome Plated Brass
Connector Housing:	PBT-GF30-VO
Cables:	PUR

Accessories

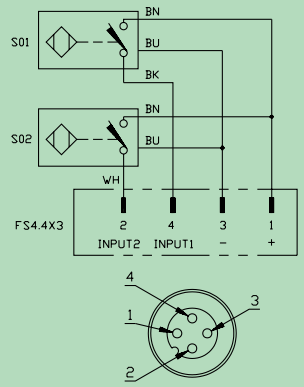
M12x1 mounting screw included.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V
Trigger Current for Overload Protection	≥170 mA
Continuous Load Current	≤150 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	5.5-9.5 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output S01 Energized
LED On (Red)	Output S02 Energized
Short-Circuit Indication	Green LED On, Yellow and Red Off

Wiring Diagrams

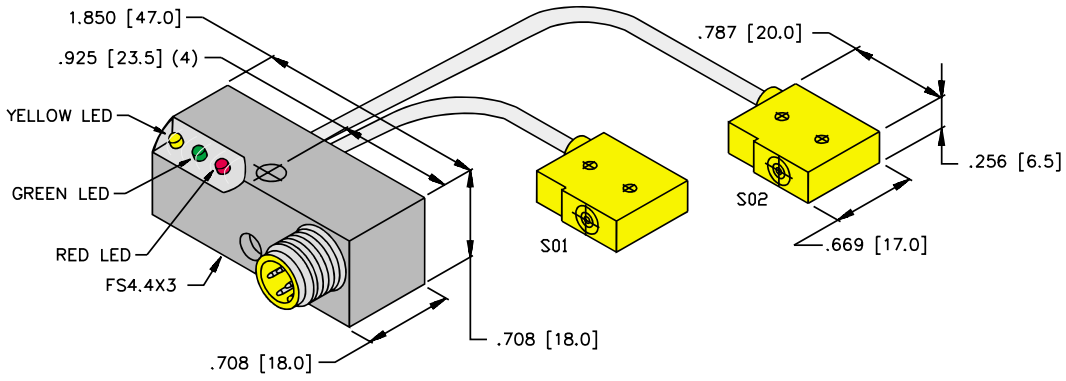
A **PNP (Sourcing)**



Cylinder

Dimensions

1



Protective Cover For LED's.

NEW

PCS Style

Power Clamp Sensors

Plastic Housing with Molded ***eurofast***® *Connector*

3-Wire DC ***eurofast***®

10-65 VDC, Short-Circuit and Overload Protected

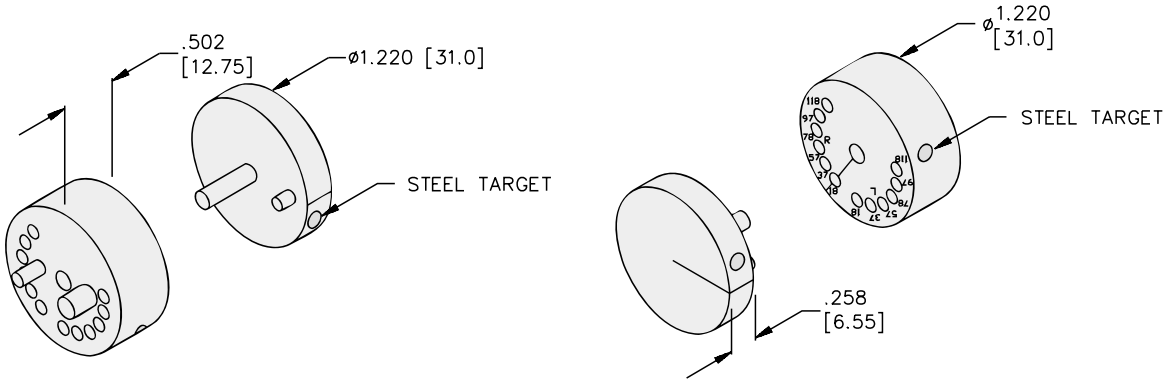
Normally Open, PNP (Sourcing) U.S. PAT. 5,694,042

Sensor Selection

Part Number	Embeddable	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 1.5-PCS-2AP4X3-.33-RS 4.43T/S34	•		•	1	A	3	•	1000	T1650042	***eurofast*** **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
Bi 1.5-PCS-2AP4X3-.33-RS 4.43T/S576	•		•	1	A	3	•	1000	T1650089	

*/S576 designates Metric mounting screws.

Programming Wheel - Part #A4330



Material

Housing:	PBT Plastic
Connector:	PUR Body, Nickel-Plated Brass Coupling Nut
Cable:	PUR

Accessories

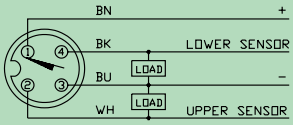
Programming wheel is required and included with these sensors.

Specifications

Ripple	≤10%
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	≤10 µA
No-Load Current	11-19 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Green)	Power On
LED On (Yellow)	Output Energized (Upper or Lower)

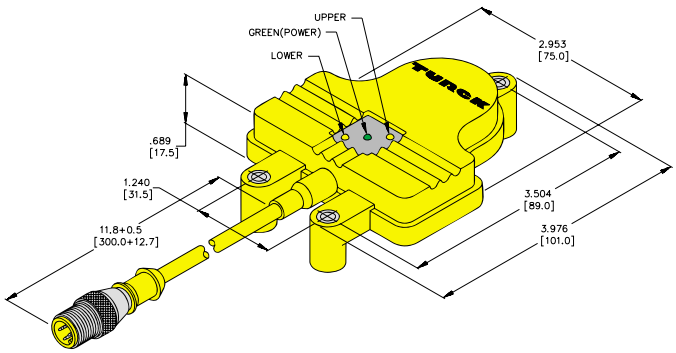
Wiring Diagram

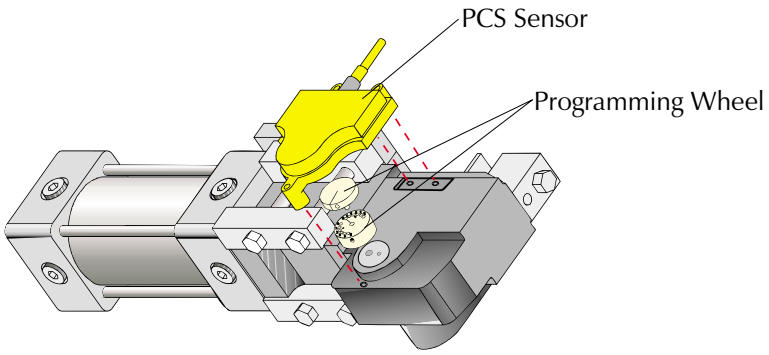
A — PNP (Sourcing)



Dimensions

1





Cylinder

IKM

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox®***

2-Wire AC
20-250 VAC
Normally Open (AZ3X2)

microfast®

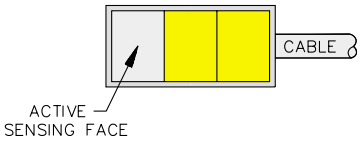
NRTL/C

Sensor Selection

Part Number	Embeddable	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-IKM-AZ3X2	•	•		1	A	2		20	M1347290	2 meter cable, PVC Jacket
BIM-IKM-AZ3X2-B3131	•	•		2	B	2		20	M1347190	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Sensing Face (Bottom view)

IKM



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG (PVC insulated)

Material

Housing:	Die-cast Zinc
Connector:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
Mounting Clamp:	Die-cast Zinc

Accessories

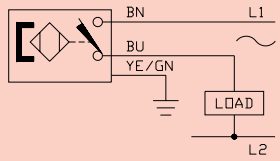
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLI-3 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

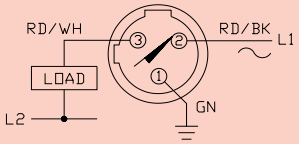
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤6.3 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Maximum Approach Velocity	≤1 m/s
Time Delay Before Availability	≤35 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A **Normally Open**



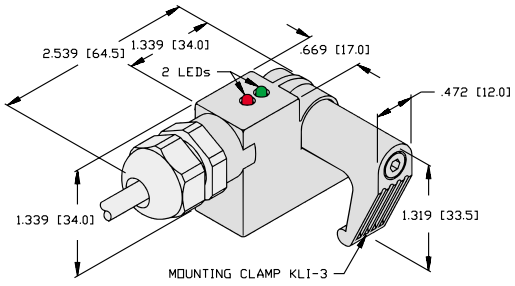
B **Normally Open**



Cylinder

Dimensions

1



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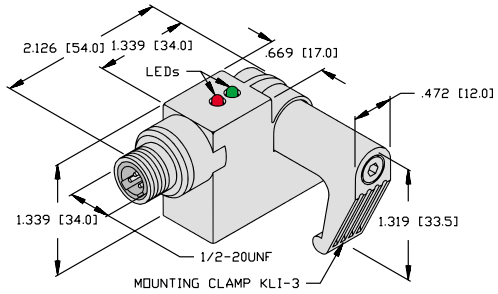


A23

Cylinder Position Indicators, Clamp-On Style
with Potted-in Cable or Quick Disconnect ***permaprox®***

2-Wire AC
20-250 VAC
Normally Open (AZ3X)

minifast® ***microfast®***

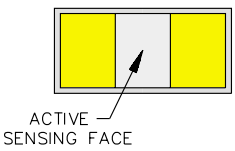
NRTL/C

Sensor Selection

Part Number	Embeddable	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-A23-AZ3X/S34	•	•		1	A	1	•	20	M1346091	2 meter cable, PVC Jacket
BIM-A23-AZ3X-B1131/S34	•	•		2	B	1	•	20	M1346191	***minifast*** **Mating Cordsets** RKM 311-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog
BIM-A23-AZ3X-B3131/S34	•	•		3	C	1	•	20	M1346291	***microfast*** **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

Sensing Face (Bottom view)

A23



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	21 AWG (PVC insulated)

Material

Connector:	Chrome Plated Brass
Housing:	Pressure Cast Aluminum
Sensing Face:	PA 12 Plastic
Mounting Clamp:	Aluminum

Accessories

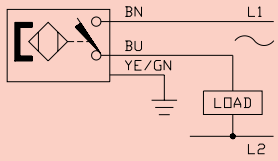
permaprox accessories can be found on page E17 and E18.
Mounting Clamp KLU-2 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

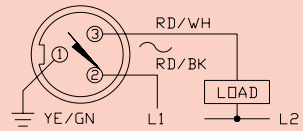
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤6.3 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Maximum Approach Velocity	≤1 m/s
Time Delay Before Availability	≤35 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

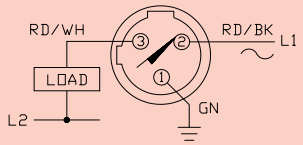
A Normally Open



B Normally Open

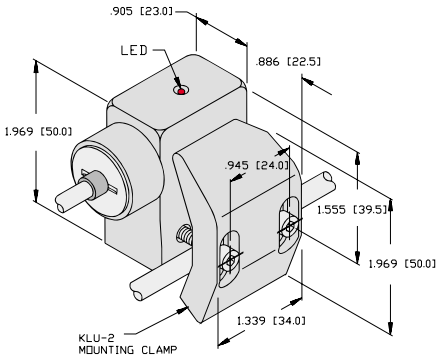


C Normally Open



Dimensions

1



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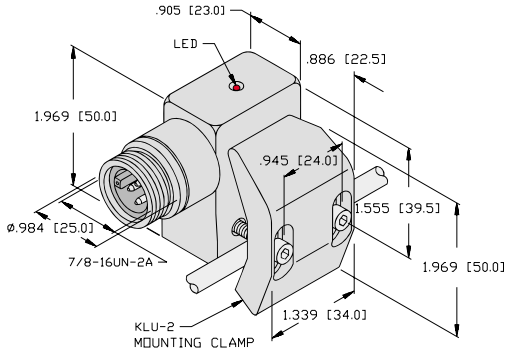

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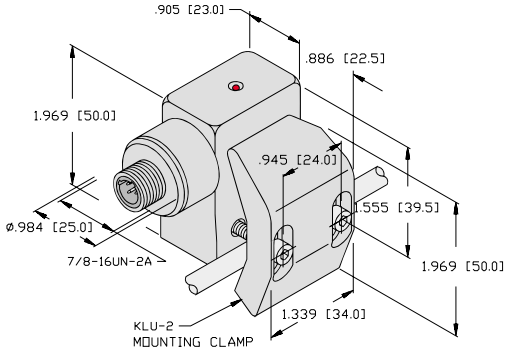


A23

Cylinder Position Indicators, Clamp-On Style
with Quick Disconnect ***permaprox***®

2-Wire AC/DC ***minifast***®
20-250 VAC/DC Short-Circuit and Overload Protected
Normally Open

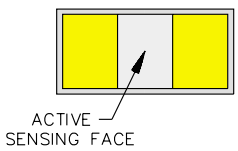
NRTL/C

Sensor Selection

Part Number	Embeddable	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BIM-A23-ADZ30X2-B1131/S34	•	•		1	A	2	•	15	M4230091	***minifast*** **Mating Cordsets** RKM 311-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog

Sensing Face (Bottom view)

A23



Material

Connector:	Chrome Plated Brass
Housing:	Pressure Cast Aluminum
Sensing Face:	PA 12 Plastic
Mounting Clamp:	Aluminum

Accessories

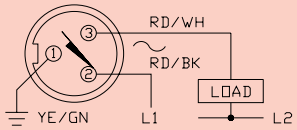
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLU-2 included with sensor.
See Mounting information on pages E9-E16.
All other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	≤1 mm
Voltage Drop Across Conducting Sensor	≤5.0 V at 400 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤2.0 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤3.0 A (≤20 ms,10% Duty Cycle)
Maximum Approach Velocity	≤0.2 m/s
Time Delay Before Availability	≤40 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On (Red)	Output Energized
LED On (Green)	Power On

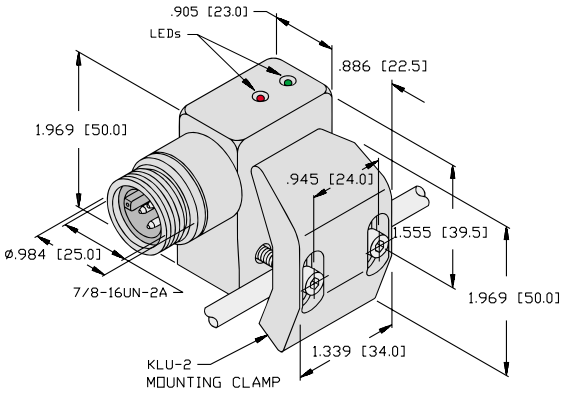
Wiring Diagram

A — Normally Open



Dimensions

1



Cylinder

CRS

Cylinder Position Indicators *CRS Series*
with Quick Disconnect

2-Wire AC *minifast*® *microfast*®
20-250 VAC/DC Short-Circuit and Overload Protected
Normally Open

NRTL/C
UL Listed File #E118717

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Probe Length (mm)	Probe Length (inches)	Normally Open	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
Bi2-CRS 232-ADZ30X2-B1131/S34	•	2	23.2	.915	•	1	A	2	•	30	T4270093	*minifast*
Bi2-CRS 260-ADZ30X2-B1131/S34	•	2	26.0	1.025	•	1	A	2	•	30	T4270493	
Bi2-CRS 287-ADZ30X2-B1131/S34	•	2	28.7	1.130	•	1	A	2	•	30	T4270893	
Bi2-CRS 317-ADZ30X2-B1131/S34	•	2	31.7	1.250	•	1	A	2	•	30	T4271293	
Bi2-CRS 343-ADZ30X2-B1131/S34	•	2	34.3	1.350	•	1	A	2	•	30	T4271493	
Bi2-CRS 476-ADZ30X2-B1131/S34	•	2	47.6	1.875	•	1	A	2	•	30	T4271693	
Bi2-CRS 524-ADZ30X2-B1131/S34	•	2	52.4	2.062	•	1	A	2	•	30	T4272093	
Bi2-CRS 603-ADZ30X2-B1131/S34	•	2	60.3	2.375	•	1	A	2	•	30	T4272493	
Bi2-CRS 705-ADZ30X2-B1131/S34	•	2	70.5	2.775	•	1	A	2	•	30	T4272893	
Bi2-CRS 730-ADZ30X2-B1131/S34	•	2	73.0	2.875	•	1	A	2	•	30	T4273293	
Bi2-CRS 959-ADZ30X2-B1131/S34	•	2	95.9	3.777	•	1	A	2	•	30	T4274093	
Bi2-CRS1159-ADZ30X2-B1131/S34	•	2	115.9	4.562	•	1	A	2	•	30	T4274493	
Bi2-CRS 232-ADZ30X2-B3131/S34	•	2	23.2	.915	•	2	B	2	•	30	T4275093	*microfast*
Bi2-CRS 260-ADZ30X2-B3131/S34	•	2	26.0	1.025	•	2	B	2	•	30	T4275493	
Bi2-CRS 287-ADZ30X2-B3131/S34	•	2	28.7	1.130	•	2	B	2	•	30	T4275893	
Bi2-CRS 317-ADZ30X2-B3131/S34	•	2	31.7	1.250	•	2	B	2	•	30	T4276293	
Bi2-CRS 343-ADZ30X2-B3131/S34	•	2	34.3	1.350	•	2	B	2	•	30	T4276493	
Bi2-CRS 476-ADZ30X2-B3131/S34	•	2	47.6	1.875	•	2	B	2	•	30	T4276693	
Bi2-CRS 524-ADZ30X2-B3131/S34	•	2	52.4	2.062	•	2	B	2	•	30	T4277093	
Bi2-CRS 603-ADZ30X2-B3131/S34	•	2	60.3	2.375	•	2	B	2	•	30	T4277493	
Bi2-CRS 705-ADZ30X2-B3131/S34	•	2	70.5	2.775	•	2	B	2	•	30	T4277893	
Bi2-CRS 730-ADZ30X2-B3131/S34	•	2	73.0	2.875	•	2	B	2	•	30	T4278293	
Bi2-CRS 959-ADZ30X2-B3131/S34	•	2	95.9	3.777	•	2	B	2	•	30	T4279093	
Bi2-CRS1159-ADZ30X2-B3131/S34	•	2	115.9	4.562	•	2	B	2	•	30	T4279493	

minifast

Mating Cordsets
RKM 311-2M (2 meter)
For other styles see Section H or consult "Cordsets" catalog

microfast

Mating Cordsets
KB 3T-2 (2 meter)
For other styles see Section H or consult "Cordsets" catalog

Material

Housing:	Zinc Die-cast with Chromate Finish
Connector:	Chrome Plated Brass
Probe:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

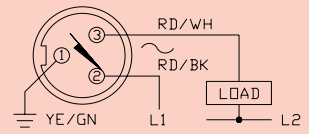
Spacer Plates SP-___- C and other accessories can be found in Section J.

Specifications

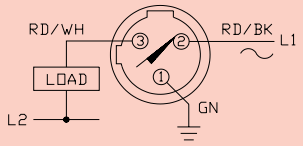
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	3-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6.0 V at 400 mA
Trigger Current for Overload Protection	≥500 mA
Continuous Load Current	≤400 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥3.0 mA
Inrush Current	≤2.4 A (≤10 ms, 5% Duty Cycle)
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Response Time	15 ms (max.)
Operating Pressure	1500 PSI (max. applied 3000 PSI)
LED On (Red)	Output Energized
LED On (Green)	Power On
LED Flashing (Green)	Short-Circuit Warning

Wiring Diagrams

A **Normally Open**

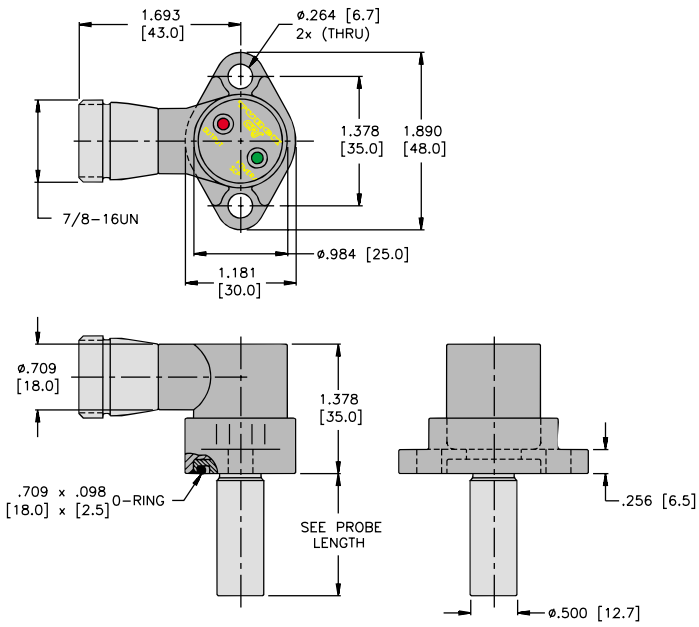


B **Normally Open**



Dimensions

1



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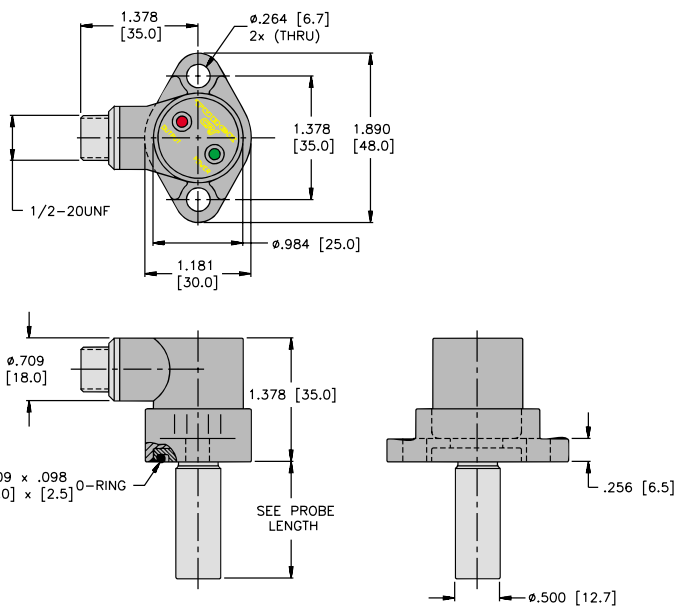


(2) - 1/4-20 x 5/8" socket head cap screws included with each sensor.

Cylinder

NEW

Q6.5 Style

World Clamp Sensors

Plastic Housing with Molded ***microfast®*** *Connector*

4-Wire AC/DC ***microfast®***

20-250 VAC/20-300 VDC; Short-Circuit and Overload Protected

Normally Open

Sensor Selection

Part Number	Embeddable	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Ni 2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304		•		1	A	4	•	20	M4200204	microfast
Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304		•		1	A	4	•	20	M4200203	
Ni 2-Q6.5-ADZ32-0.2-FSB 5.4X4/S304		•		1	A	4	•	20	M4200202	

Mating Cordsets
KB 5T (2 meter)
For other styles see Section H or consult "Cordsets" catalog

"-0.1-" in part number designates cable length in meters.

Material

Amplifier:	PBT-GF30
Sensors:	PA 12
Connector:	Chrome Plated Brass
Connector Housing:	PBT-GF30-VO
Cables:	PUR

Accessories

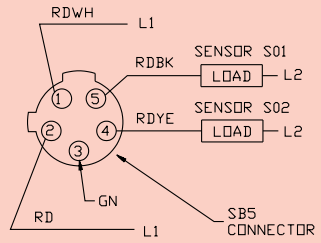
M12x1 mounting screw included.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6
Trigger Current for Overload Protection	≥220mA
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Wire-Break protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Yellow LED On	Output S01 Energized
Associated Green LED On	Power S01 On-No Target Sensed
Red LED On	Output S02 Energized
Associated Green LED On	Power S02 On-No Target Sensed
Short-Circuit Indication	Yellow or Red LED Off Associated Green LED Blinking

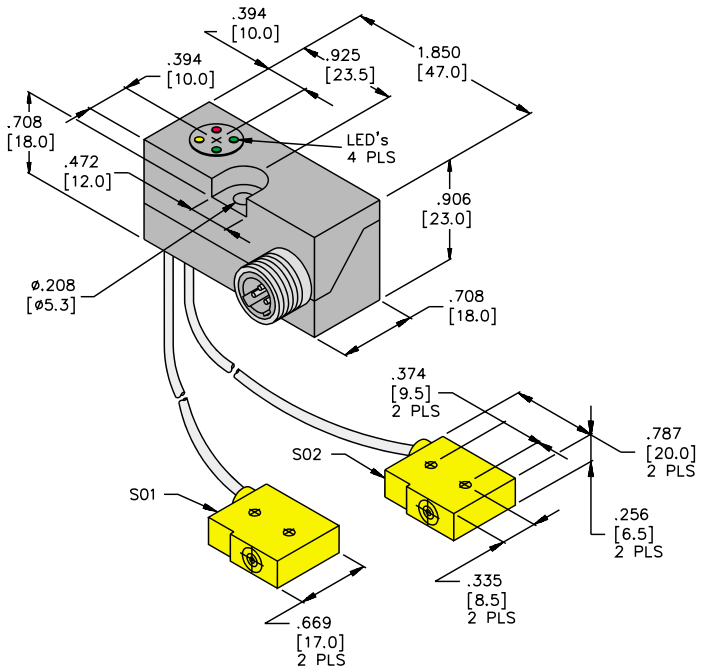
Wiring Diagram

A — Normally Open



Dimensions

1



Cylinder

NEW

PCS Style

Power Clamp Sensors

Plastic Housing with Molded ***minifast®*** *or* ***microfast®*** *Connector*

4-Wire AC/DC ***minifast®*** ***microfast®***

20-250 VAC/20-300 VDC; Short-Circuit and Overload Protected

Normally Open

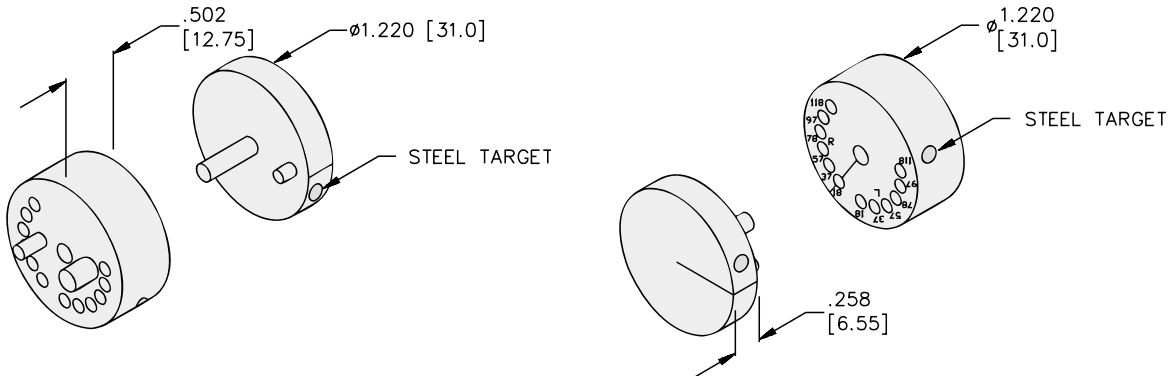
U.S. PAT. 5,694,042

Sensor Selection

Part Number	Embeddable	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune	Switching Frequency (Hz)	ID Number	Connection
Bi 1.5-PCS-2ADZ32X2-.33-RSM 50/S34 Bi 1.5-PCS-2ADZ32X2-.33-RSM 50/S576*	• •	• •		1 1	A A	2 2	• •	20 20	T4200102 T4200103	***minifast*** **Mating Cordsets** RKM 511-2M (2 meter) For other styles see Section H or consult "Cordsets" catalog.
Bi 1.5-PCS-2ADZ32X2-.33-SB 5T/S34	•	•		2	B	2	•	20	T4200101	***microfast*** **Mating Cordsets** KB 5T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.

*/S576 designates Metric mounting screws.

Programming Wheel - Part #A4330



Material

Housing:	PBT Plastic
Connector:	PUR Body, Nickel-Plated Brass Coupling Nut
Cable:	PUR

Accessories

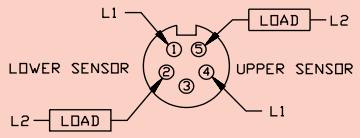
Programming wheel is required and included with these sensors.

Specifications

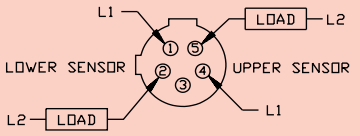
Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	1-15% (5% typical)
Voltage Drop Across Conducting Sensor	≤6
Continuous Load Current	≤100 mA
Off-State (Leakage) Current	≤1.7 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Wire-Break protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized (Upper or Lower)

Wiring Diagrams

A Normally Open

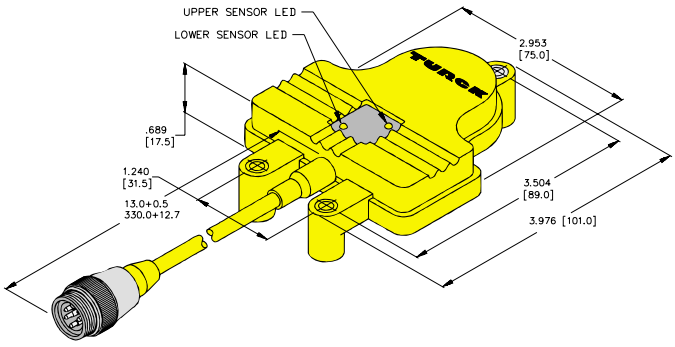


B Normally Open



Dimensions

1



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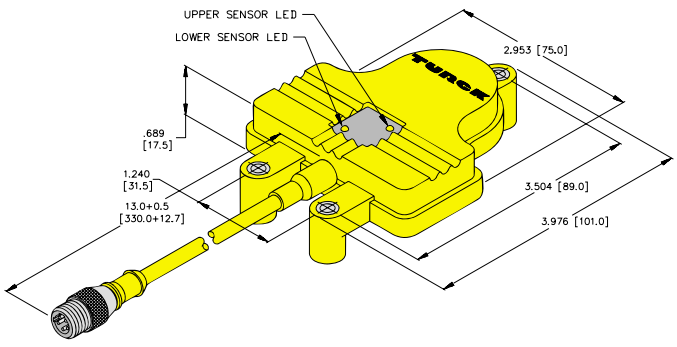
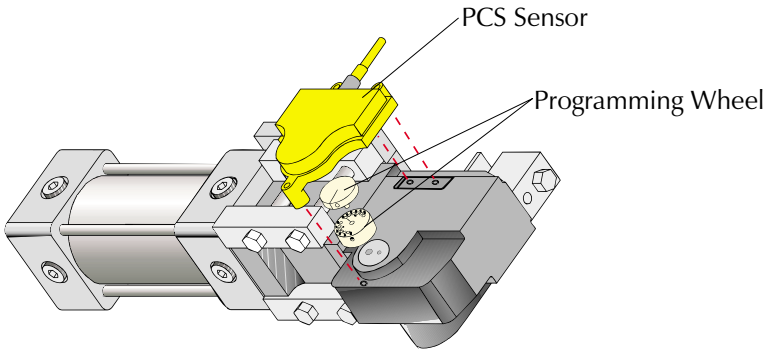




Cylinder

NEW

PST

INT

Cylinder Position Indicators, Strap-On Style

Plastic Housing with Potted-in Cable ***permaprox®***

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED NRTL/C

Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-PST-Y1X	•	1	A	1	1000	•	10	M1057090	2 meter cable, PVC Jacket
BIM-INT-Y1X	•	2	A	1	1000	•	10	M1056800	

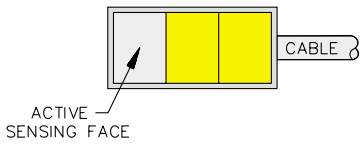
* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Round Cylinder Mounting Strap Part Numbers and Diameters (for INT style)
KLR-1 mounting bracket required for use with ASB straps.

Part Numbers	ASB-2	ASB-3	ASB-4	ASB-5	ASB-6	ASB-7	ASB-9
Cylinder Diameter (mm)	11-19	18-29	28-39	38-49	48-59	58-69	68-89

Sensing Face (Bottom view)

PST & INT



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing:	PA 12-GF30 Plastic; INT: PA 12
Sensing Face:	PA 12-GF30 Plastic; INT: PA 12
Mounting Bands:	Stainless Steel
Mounting Screw(INT):	Brass

Accessories

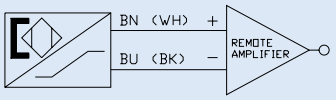
permaprox accessories can be found on pages E17 and E18.
Mounting Band KLP-80 included with sensor.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

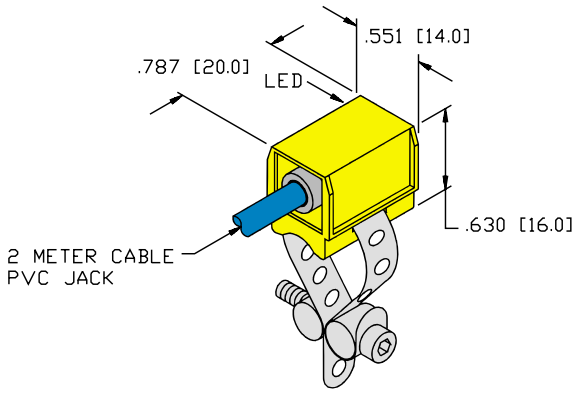
Wiring Diagram

A — NAMUR Output



Dimensions

1



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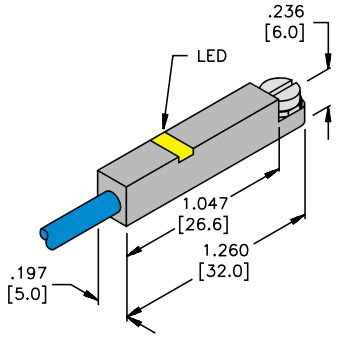


SW 2.5 mm mounting screw.

QST

Cylinder Position Indicators, Strap-On Style

Plastic Housing with Potted-in Cable ***permaprox®***

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED NRTL/C

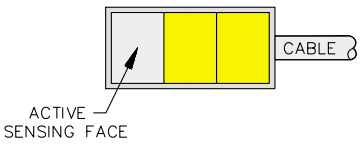
Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-QST-Y1X	•	1	A	1	1000	•	10	M1058000	2 meter cable, PVC Jacket

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Sensing Face (Bottom view)

QST



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated)

Material

Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

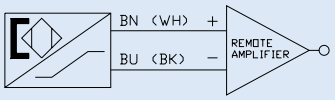
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp not included with sensor.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagram

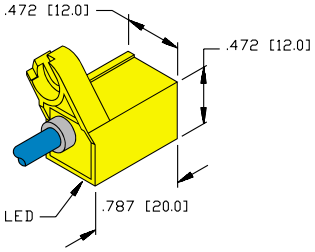
A — NAMUR Output



Cylinder

Dimensions

1



Note: Mounting Clamp must be ordered separately.

IKE and IKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox***®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

eurofast®
FM APPROVED
NRTL/C

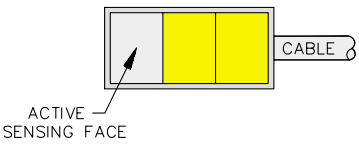
Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-IKE-Y1X	•	1	A	1	1000	•	10	M1056490	2 meter cable, PVC Jacket
BIM-IKE-Y1X-H1141 BIM-IKT-Y1X-H1141	• •	2 2	B B	1 1	1000 1000	• •	10 10	M1056690 M1056200	eurofast **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

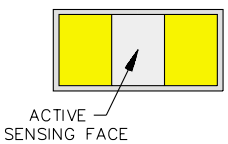
* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Sensing Face (Bottom view)

IKE



IKT



Material

Mounting Clamps/Housing:	Die-cast Zinc
Connector:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

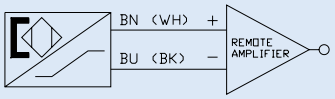
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLI-3 included with sensor.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

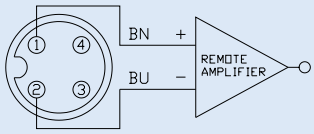
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

A NAMUR Output



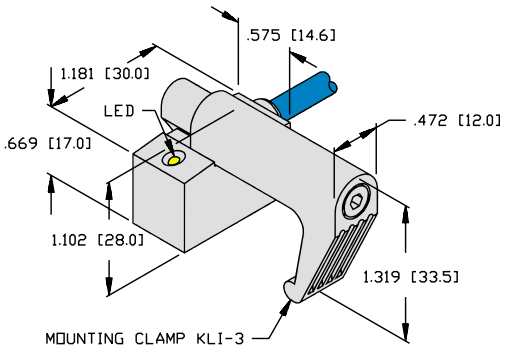
B NAMUR Output



Cylinder

Dimensions

1



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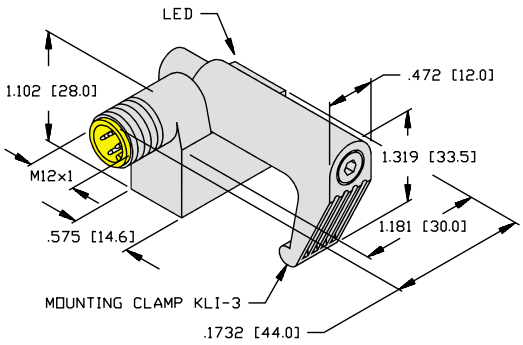


AKT

Cylinder Position Indicators, Clamp-On Style
with Cable or Quick Disconnect ***permaprox***®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

eurofast®

FM APPROVED

NRTL/C

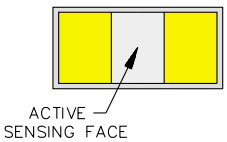
Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-AKT-Y1X	•	1	A	1	1000	•	10	M1055090	2 meter cable, PVC Jacket Copper Conductors 24 AWG (PVC insulated)
BIM-AKT-Y1X-H1141	•	2	B	1	1000	•	10	M1055290	***eurofast*** **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog

* Factory Mutual approval only applies when used with Factory Mutual approved switching amplifiers.

Sensing Face (Bottom view)

AKT



Material

Connector / Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
Mounting Clamp:	Die-Cast Zinc

Accessories

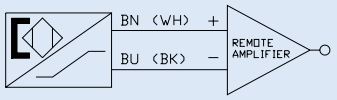
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp KLA-1 included with sensor.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

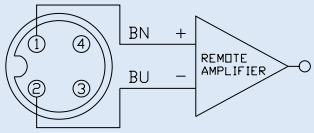
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagrams

A NAMUR Output



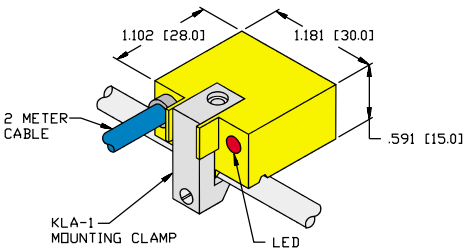
B NAMUR Output



Cylinder

Dimensions

1



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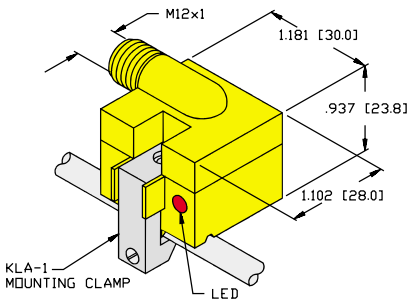
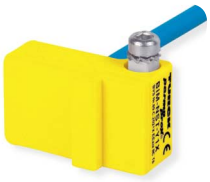


NST



Cylinder Position Indicators, Clamp-On Style

Plastic Housing with Potted-in Cable ***permaprox***®

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

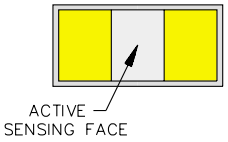
Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-NST-Y1X	•	1	A	1	1000	•	10	M1058400	2 meter cable, PVC Jacket

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Sensing Face (Bottom view)

NST



Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated).

Material

Connector / Housing:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic

Accessories

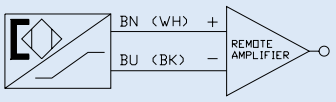
permaprox accessories can be found on pages E17 and E18.
Mounting Clamp not included with sensor.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized

Wiring Diagram

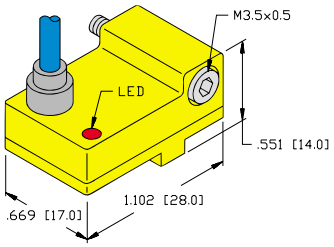
A — NAMUR Output



Cylinder

Dimensions

1



Note: Mounting Clamp must be ordered separately.

M Barrel

Cylinder Position Indicators, Barrel Style
with Cable or Quick Disconnect ***permaprox®***

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

eurofast®
FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency	FM Approved Division 1 *	Max. Approach Velocity (m/s)	ID Number	Connection
BIM-M12-Y1X/S90-S235	•	1	A	1	1000	•	10	M1070010	2 meter cable, PUR Jacket
BIM-M12-Y1X-H1141/S235	•	2	B	1	1000	•	10	M1070011	eurofast **Mating Cordsets** RK 4.21T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PUR Jacket; 2 meter standard length
Copper Conductor:	24 AWG (PVC insulated).

Material

Connector / Housing:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

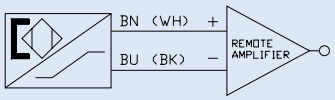
Accessories and mounting devices can be found in Section J.
See Mounting information on pages E9-E16.
Remote Amplifier required. Consult "***Automation Controls***" catalog.

Specifications

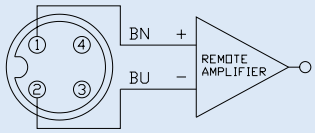
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz,1 mm Amplitude in all 3 Planes
Repeatability	≤0.1 mm (constant temperature & voltage)
Temperature Drift	≤0.1 mm
Magnetic Actuation Strength	20-350 Gauss (2-35 mT)
LED On	Output Energized
Magnet Specifications	
Direction of Magnetization	Axial
Material	Barium-Ferrite (Oxyd 300)
Operating Temperature	-25°C to +90°C (-13°F to +194°F)

Wiring Diagrams

A NAMUR Output



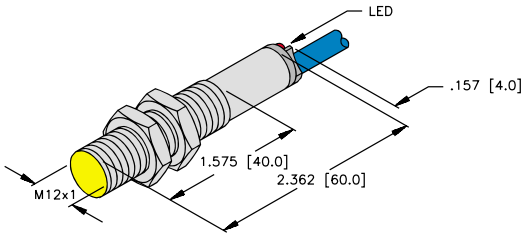
B NAMUR Output



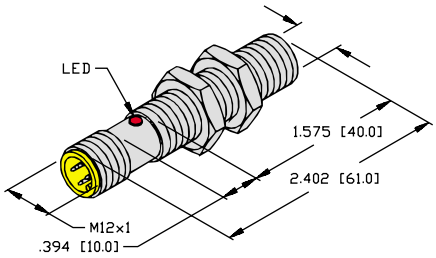
Cylinder

Dimensions

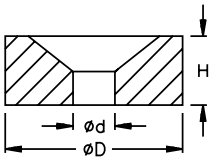
1



2



Actuation Magnet Part Numbers	Diameter D (mm)	Height H (mm)	Drilling for mounting d (mm)	Switch distance (mm)	Material
DMR15-6-3	15	6	3	36	Barium Ferrite (Oxyd 300)
DMR20-10-4	20	10	4	59	
DMR31-15-5	31	15	5	90	



Selection Guide

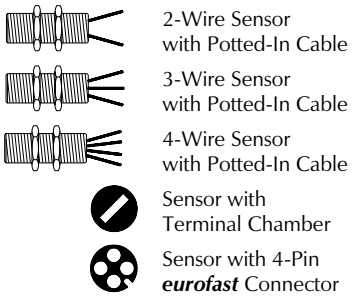
Sensor Type	Output	Pages
 12 mm Barrel Style	3-Wire DC	F13 - F14
 18 mm Barrel Style	3-Wire DC 2-Wire AC NAMUR	F15 - F16 F37 - F38 F49 - F50
 30 mm Barrel Style	3-Wire DC 4-Wire DC 2-Wire AC NAMUR	F17 - F18 F27 - F28 F39 - F40 F49 - F50
 PVDF Barrel and Cable	3-Wire DC 4-Wire DC NAMUR	F29 - F30 F29 - F30 F51 -F52
 Rectangular	3-Wire DC 2-Wire AC	F19 - F24 F41 - F42
 Terminal Chamber	4-Wire DC 2-Wire AC	F31 - F32 F43 - F44

Sensor Type	Output	Pages
 Limit Style	4-Wire DC 2-Wire AC	F33 - F34 F45 - F46
 Long Range	4-Wire DC 2-Wire AC	F35 - F36 F47 - F48

Note:

All dimensions in this section are shown as: inches [mm]

Symbol Key



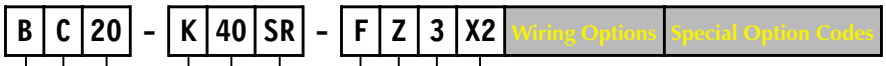
Output Color Code		
DC Output *Self-Contained*	**AC Output** *Self-Contained*	**NAMUR Output** *Requires Remote Amplifier*

Selection Guide

TURCK
Capacitive Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

Capacitive Sensor Part Number Key



Mounting

B = Embeddable (Shielded)
N = Nonembeddable (Nonshielded)

Principle of Function

C = Capacitive

Rated Operating Distance (mm)

Housing Style

Barrel
M = Metal, Partial Threading
K = Plastic, Smooth
KT = PVDF Plastic, Smooth
P = Plastic, Full Threading
PT = PVDF Plastic, Full Threading
S = Plastic, Partial Threading
Rectangular
Q = Rectangular Metal or Plastic Housing, ***Q-Pak***™
Modular
CP = Plastic Housing, Removable Sensor with Terminal Chamber Base

Sensor Diameter (mm)

Housing Modifier

SR = Straight Terminal Chamber

Number of LEDs

Examples:
Blank = 0 LEDs
X2 = 2 LEDs

Voltage Range

AC
3 = 20-250 VAC
DC
4 = 10-65 VDC, Polarity Protected, Pulsed SCP
6 = 10-30 VDC, Polarity Protected, Pulsed SCP

Output

N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)
Z = 2-wire AC (SCR Output)

Output Function

A = Normally Open
F = Connection Programmble (N.O. or N.C.)
R = Normally Closed
V = Complementary Outputs; One N.O., One N.C.
Y0 = NAMUR Output, Requires Switching Amplifier
Y1 = NAMUR Output, Requires Switching Amplifier

Wiring Options

A) Connectorized Sensor

BC10-M30-AP4X - H1 1 4 1

Connector Family

B1 = ***minifast***®, Metal, Male
B2 = ***minifast***®, Plastic, Male
B3 = ***microfast***®, Metal, Male
H1 = ***eurofast***®, Metal or Plastic, Male
V1 = ***picofast***®, Metal, Male

Connector / Sensor Transition

1 = Straight

Number of Pins

Factory Code

Example:
1 = Standard
3 = N.C. DC Output on Pin 4

B) Potted Cable

BC 5-S18-AP4X 7M

Cable Length

Blank = 2 meter cable
7M = 7 meter cable

C) Potted Cable with Molded Connector

BC 5-S18-Y0X - 0.2M - RS 4.21T

Length of Cable (m)

Examples:
0.2 = 0.2 meters
2 = 2 meters

Standard Cordset Connector

AC: RSM 30 = ***minifast***, 3-conductor
SB 3T = ***microfast***, 3-conductor
DC: RS 4T = ***eurofast***, 3-conductor
RS 4.21T = ***eurofast***, NAMUR, 2 conductor
RS 4.4T = ***eurofast***, 4-conductor
RSM 40 = ***minifast***, 4-conductor
PSG 3 = ***picofast***, 3-conductor (Snap Lock)
PSG 3M = ***picofast***, 3-conductor (Threaded)

Special Option Codes

Option Codes for Special or Custom Built Sensors

BC20-CP40-VN4X2 /S69

Option Code

Example:
/S69 = Customer Requested Option

Applications

- **Liquid Level Control** for both hazardous and non hazardous materials.
- **Package Inspection** for product content and/or fill level.
- **Wire-Break Detection** for wire sizes down to .003".
- **Plastic Pellet Level Detection** in a hopper for injection molding processes.
- **Grain or Food Products Level Detection**; intrinsically safe models available.
- **Small Metal Parts Detection**; greater sensing range than comparable inductive sensors.

Operating Principle

The active element is formed by two metallic electrodes positioned much like an “opened” capacitor (Figure 1).
Electrodes A and B are placed in a feedback loop of a high frequency oscillator. When no target is present, the sensor’s capacitance is low, therefore the oscillation amplitude is small. When a target approaches the face of the sensor, it increases the capacitance. This increase in capacitance results in an increased amplitude of oscillation.
The amplitude of oscillation is measured by an evaluating circuit that generates a signal to turn on or off the output (Figure 2).

Figure 1

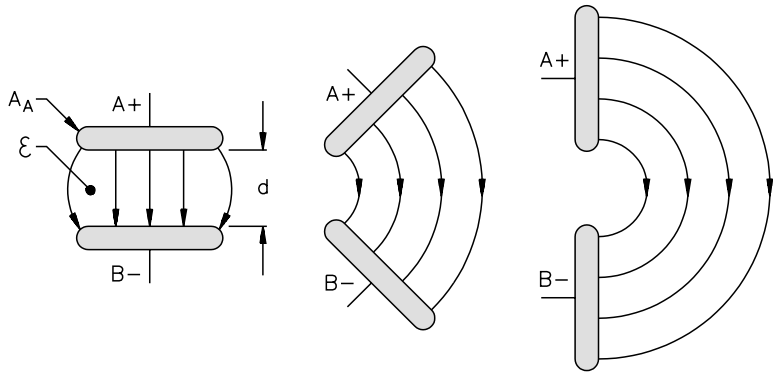
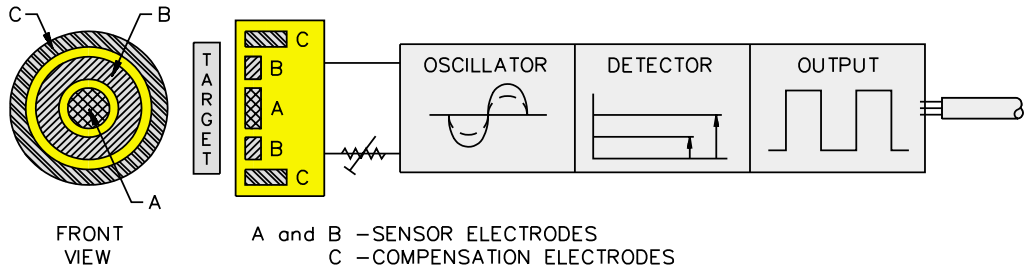


Figure 2



Operating Principle

Capacitance is a function of the surface area of either electrodes (A or B), the distance between the electrodes (d), and the dielectric constant of the material (ε) between the electrodes (Figure 1).

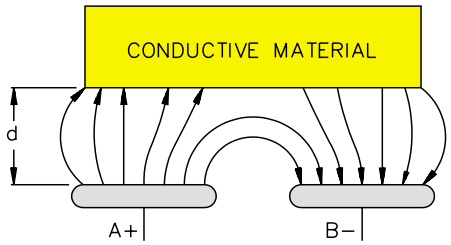
$$C = \frac{\varepsilon \times A}{d}$$

C = capacitance of sensor
A = surface area of either electrode
d = distance between two electrodes
ε = dielectric constant of material between the electrodes (found on Pages F9-F11)

When a **Conductive Target** enters the sensor's field, it forms a counterelectrode to the active face of the sensor, thus decreasing the distance between the electrodes (d), and increasing the average surface area of the electrodes.

The capacitance with a metal target present is always greater than the capacitance of the circuit in the absence of the target.

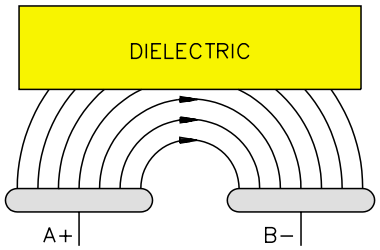
Figure 3



When a **NonConductive Target** enters the sensor's field, it acts as an electrical insulator between electrodes A and B.

The dielectric constant of the material (ε) is a measure of its insulation properties. All liquids and solids have a greater dielectric constant than air ($\varepsilon_{air} = 1$). Therefore, the capacitance with a nonmetallic target present is always greater than the capacitance of the circuit in the absence of the target.

Figure 4



Temperature and Environmental Conditions

Compensation Electrode

In practice, sensors can be affected by water droplets, humidity, dust, etc., causing false outputs. To combat this effect each **TURCK** Capacitive sensor incorporates a compensating electrode (C) which forms part of a negative feedback circuit (Figure 5).

When contaminants are on the sensor face, they affect the sensor's main field, as well as its compensation field. The negative feedback circuit detects the increase in both fields, and can filter out the effects of the contaminants.

When a large target comes into the sensor's main field, the compensation field is not affected, thus the negative feedback circuit can distinguish a difference between the two fields, and the sensor generates an output.

Figure 5

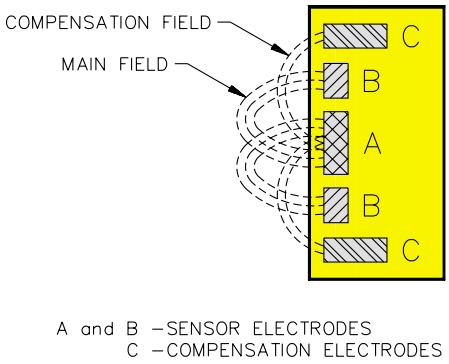
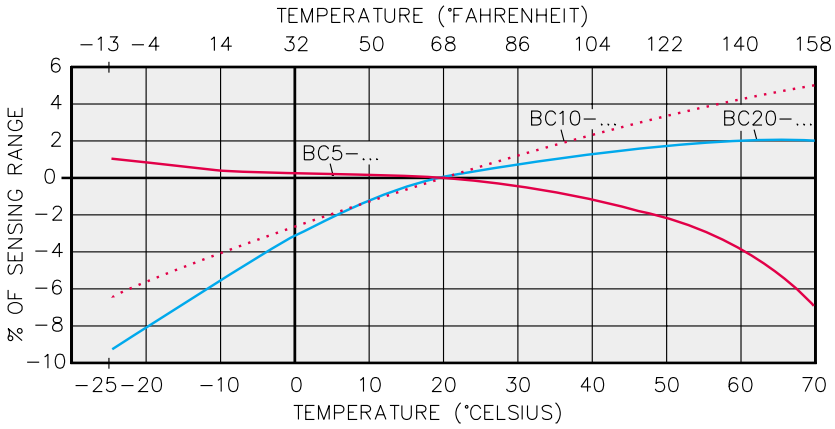
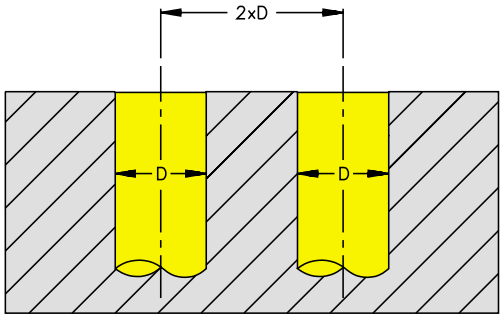


Figure 6 *Temperature Influence on Operating Distance*



Mounting

Figure 7



Most capacitive sensors manufactured by **TURCK** are embeddable, which ensures that the electric field is only effective in front of the active face. They are suitable for flush mounting at the factory setting in any material (conductive & non-conductive).

When sensors are flush mounted, the effect on the operating distance is minimal and can be overcome by adjustment of the potentiometer. Minimum separation distances must be observed to avoid the possibility of interference between the two sensors' fields.

Operating Distance (Sensing Range) Considerations

The operating distance (S) of the different models is basically a function of the diameter of the sensing coil. Maximum operating distance is achieved with the use of a standard or larger target. Rated operating distance (Sn) for each model is given in the manual.

Standard Target

An earth-grounded square piece of carbon steel having a thickness of 1 mm (0.04 in) is used as a standard target to determine the following operating tolerances. The length and width of the square is equal to three times the rated operating distance.

Operating Distance = S

The operating distance is the distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

Rated Operating Distance = Sn

The rated operating distance is a conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

Effective Operating Distance = Sr $0.9\ Sn \leq Sr \leq 1.1Sn$

The effective operating distance is the operating distance of an individual proximity sensor at a constant rated voltage and 23°C (73°F). It allows for manufacturing tolerances.

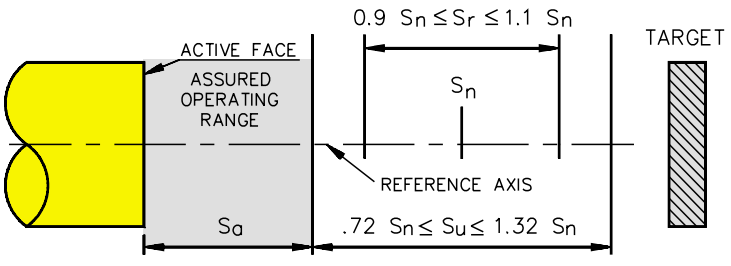
Usable Operating Distance = Su $0.72\ Sn \leq Su \leq 1.32Sn$

The usable operating distance is the operating distance of an individual proximity sensor measured over the operating temperature range at 85% to 110% of its rated voltage. It allows for external conditions and for manufacturing tolerances.

Assured Operating Range = Sa $0 \leq Sa \leq 0.72Sn$

The assured actuating range is between 0 and 72% of the rated operating distance. It is the range within which the correct operation of the proximity sensor under specified voltage and temperature ranges is assured.

Figure 8



Capacitive

Industrial Products and their Dielectric Constants

Material	Dielectric Constant
ABS resin, pellet	1.5 - 2.5
Acetone	19.5
Acetyl bromide	16.5
Acrylic resin	2.7 - 4.5
Air	1.0
Alcohol, industrial	16 - 31
Alcohol, isopropyl	18.3
Ammonia	15 - 25
Aniline	5.5 - 7.8
Aqueous solutions	50 - 80
Ash (fly)	1.7
Bakelite	3.6
Barley powder	3.0 - 4.0
Benzene	2.3
Benzyl acetate	5
Butane	1.4
Cable sealing compound	2.5
Calcium carbonate	9.1
Carbon tetrachloride	2.2
Celluloid	3.0
Cellulose	3.2 - 7.5
Cement	1.5 - 2.1
Cement powder	5 - 10
Cereal	3 - 5
Charcoal	1.2 - 1.8
Chlorine, liquid	2.0

Material	Dielectric Constant
Coke	1.1 - 2.2
Corn	5 - 10
Ebonite	2.7 - 2.9
Epoxy resin	2.5 - 6
Ethanol	24
Ethyl bromide	4.9
Ethylene glycol	38.7
Flour	2.5 - 3.0
Freon® R22 & 502, liquid	6.1
Gasoline	2.2
Glass	3.1 - 10
Glass, raw material	2.0 - 2.5
Glycerine	47
Hexane	1.9
Hydrogen cyanide	95.4
Hydrogen peroxide	84.2
Isobutylamine	4.5
Lime, shell	1.2
Marble	8.0 - 8.5
Melamine resin	4.7 - 10.2
Methane, liquid	1.7
Methanol	33.6
Mica, white	4.5 - 9.6
Milk, powdered	3.5 - 4
Nitrobenzene	36
Neoprene	6 - 9

Industrial Products and their Dielectric Constants

Material	Dielectric Constant
Nylon	4 - 5
Oil, for transformer	2.2 - 2.4
Oil, paraffin	2.2 - 4.8
Oil, peanut	3.0
Oil, petroleum	2.1
Oil, soybean	2.9 - 3.5
Oil, turpentine	2.2
Paint	5 - 8
Paraffin	1.9 - 2.5
Paper	1.6 - 2.6
Paper, hard	4.5
Paper, oil saturated	4.0
Perspex	3.2 - 3.5
Petroleum	2.0 - 2.2
Phenol	9.9 - 15
Phenol resin	4.9
Polyacetal (Delrin®)	3.6
Polyamide (nylon)	2.5
Polycarbonate	2.9
Polyester resin	2.8 - 8.1
Polyethylene	2.3
Polypropylene	2.0 - 2.3
Polystyrene	3.0
Polyvinyl Chloride resin	2.8 - 3.1
Porcelain	4.4 - 7
Press board	2 - 5

Material	Dielectric Constant
Quartz glass	3.7
Rubber	2.5 - 35
Salt	6.0
Sand	3 - 5
Shellac	2.0 - 3.8
Silicon dioxide	4.5
Silicone rubber	3.2 - 9.8
Silicone varnish	2.8 - 3.3
Styrene resin	2.3 - 3.4
Sugar	3.0
Sugar, granulated	1.5 - 2.2
Sulfur	3.4
Sulfuric acid	84
Teflon®, PCTFE	2.3 - 2.8
Teflon®, PTFE	2.0
Toluene	2.3
Trichloroethylene	3.4
Urea resin	6.2 - 9.5
Urethane	3.2
Vaseline	2.2 - 2.9
Water	48 - 88
Wax	2.4 - 6.5
Wood, dry	2 - 7
Wood, pressed board	2.0 - 2.6
Wood, wet	10 - 30
Xylene	2.4

Sensitivity Adjustment

Capacitive sensors can be adjusted two ways in order to sense a target consistently.

1. **Physical adjustment** - moving the sensor towards or away from the target is the preferred method of adjusting sensitivity when the sensor is not in direct contact with the target. This allows materials to be moved into or out of range while leaving the sensor at the factory setting or after re-calibration to the nominal operating distance Sn.
2. **Adjustment of the potentiometer** - turning the potentiometer in a clockwise direction increases the sensitivity of the sensor. The potentiometer is factory-set for an operating distance of 0.7 to 0.8 Sn to a grounded standard target (Figure 9). It should be adjusted in increments of no greater than a quarter-turn (Figure 10). Increasing the sensitivity results in a greater operating distance to both conductive and non-conductive targets.

Figure 9 *Standard Target*

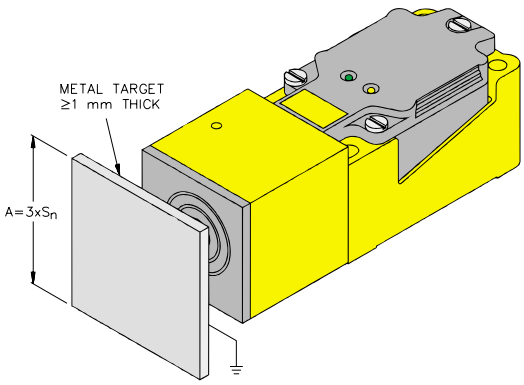
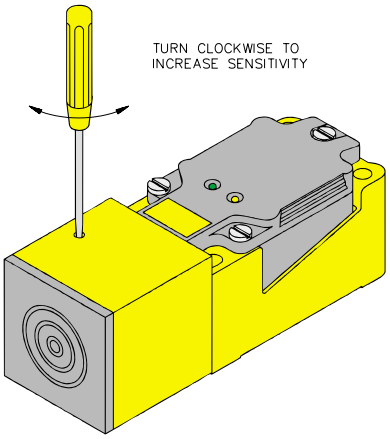
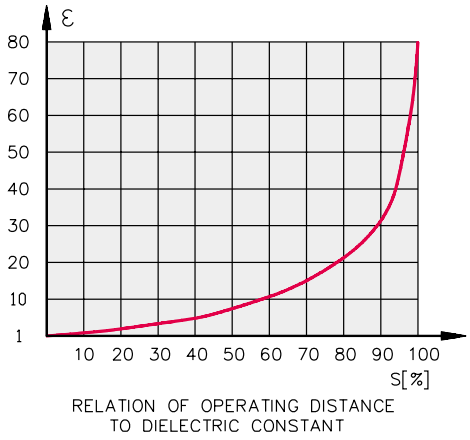


Figure 10 *Potentiometer Adjustment*



When sensing non-conductive targets, the larger the dielectric constant of a material, the greater the achievable operating distance (Figure 11). Adjusting the potentiometer affects the total curve; for example, if the potentiometer is adjusted for less sensitivity, it will have less operating distance to all materials.

Figure 11



In general terms, the larger the dielectric constant of a material, the greater the achievable operating distance.

When detecting organic materials the sensing distance will depend largely on the water content ($\varepsilon_{water} = 88$).

It should be noted that a large increase in sensitivity will cause the sensor to become nonembeddable, and may result in an unstable switching point that can be influenced by environmental changes such as temperature, humidity, dust, etc. At adjustments of S > Sn, the differential travel (hysteresis) can also increase.

Example Application 1 - Adjustment

Problem:

Can a BC20-K40SR-FZ3X2 be used to sense the presence of ammonia from behind a .125" glass panel?

Solution:

A) In this example, the potentiometer should be adjusted so that the sensing range to a grounded standard target is 20 mm (Sn), and not left at the factory setting of 0.7 x Sn, or 14 mm.

Dielectric (ε_r) of ammonia: 20
Dielectric (ε_r) of glass: 10

From Figure 11, $\varepsilon_r = 20$ corresponds to 80% Sn; $\varepsilon_r = 10$ corresponds to 60% Sn.

Since Sn = 20 mm for a BC20: S for ammonia = 16 mm
S for glass = 12 mm

The difference is 4 mm. The glass thickness = .125", or 3.1 mm. This application will work with a 0.9 mm margin. This means that the sensor should be positioned between 12 and 12.9 mm away from the glass, so that the glass is out of range, but the ammonia is not.

B) If the sensor were left at the factory setting: S for ammonia = 11.2 mm
S for glass = 8.4 mm

The difference is 2.8 mm, which is less than the thickness of the glass. This means that the sensor will detect only the glass at sensing distances ≤ 8.4 mm, and neither material at distances >8.4 mm. The glass would have to be less than 2.8 mm thick in order for the ammonia to be detected.

Example Application 2 - Mounting

Problem:

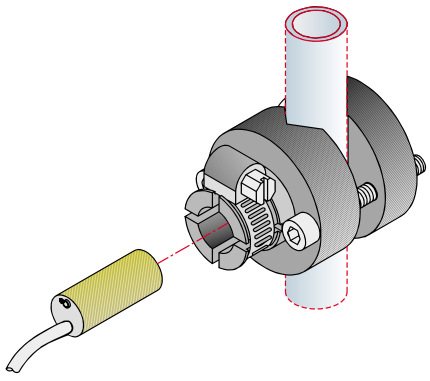
A metal tank containing a water-based solution has a 1" outside diameter sight glass. What sensor and bracket could be used for monitoring the liquid level?

Solution:

Mounting bracket TSG-18 can be used on non-conductive tubing ranging in diameter from 0.63 - 1.12 inches, and is used with 18 mm sensors such as the BC 5-S18-AP4X (Figure 12).

The bracket can be found in Section J.

Figure 12

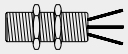


M Barrel

S Barrel

Threaded Barrel, Metal and Plastic

Potted-In Cable and Optional Molded Connector

3-Wire DC  eurofast®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC 3-M12-AN6X	•	3	12	•		•		1	A	1	100	M2601100	2 meter cable, PVC jacket, 22 AWG copper conductors, PVC insulated.
BC 3-M12-AP6X	•	3	12	•			•	1	B	1	100	M2601000	
BC 3-S12-AN6X	•	3	12		•	•		2	A	1	100	M2601300	
BC 3-S12-AP6X	•	3	12		•		•	2	B	1	100	M2601200	
BC 3-M12-AN6X-0.2M-RS 4T	•	3	12	•		•		3	C	1	100	M2601190	eurofast Cable pigtail with molded connector, 0.2 meter length **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
BC 3-M12-AP6X-0.2M-RS 4T	•	3	12	•			•	3	D	1	100	M2601091	
BC 3-S12-AN6X-0.2M-RS 4T	•	3	12		•	•		4	C	1	100		
BC 3-S12-AP6X-0.2M-RS 4T	•	3	12		•		•	4	D	1	100	M2601291	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	22 AWG

Material

Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PA 66-GF25-VO Plastic

Accessories

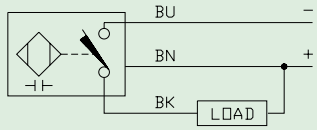
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

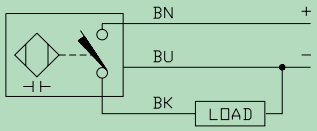
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤8 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

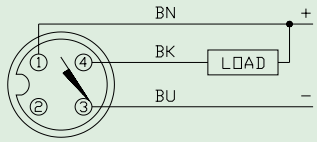
A NPN (Sinking)



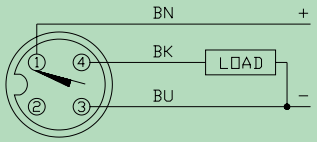
B PNP (Sourcing)



C NPN (Sinking)

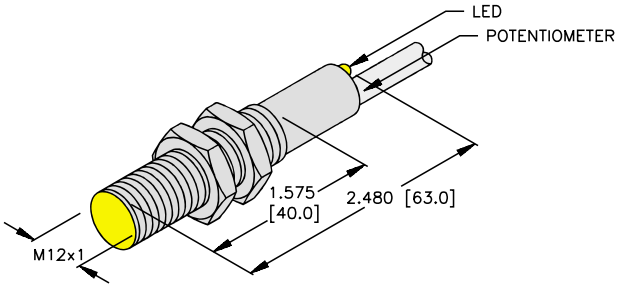


D PNP (Sourcing)



Dimensions

1



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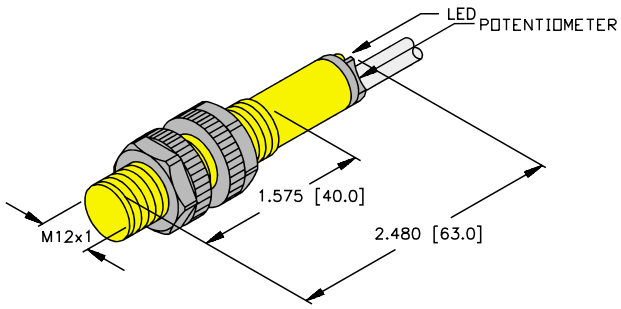
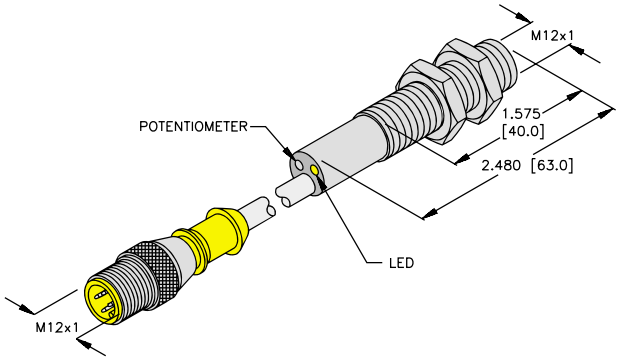


3



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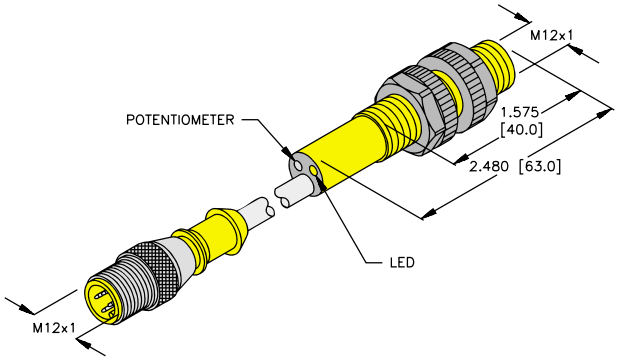


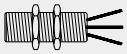
Capacitive

M Barrel

S Barrel

Threaded Barrel, Metal and Plastic

Potted-In Cable and Optional Molded Connector

3-Wire DC  eurofast®

10-65 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC 5-M18-AN4X	•	5	18	•		•		1	A	1	100	M2504002	2 meter cable, PVC jacket, 22 AWG copper conductors, PVC insulated.
BC 5-M18-AP4X	•	5	18	•			•	1	B	1	100	M2504001	
BC 5-S18-AN4X	•	5	18		•	•		2	A	1	100	M2503100	
BC 5-S18-AP4X	•	5	18		•		•	2	B	1	100	M2503000	
BC 5-M18-AN4X-0.2M-RS 4T	•	5	18	•		•		3	C	1	100	M2504091	eurofast Cable pigtail with molded connector, 0.2 meter length **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BC 5-M18-AP4X-0.2M-RS 4T	•	5	18	•			•	3	D	1	100	M2504090	
BC 5-S18-AN4X-0.2M-RS 4T	•	5	18		•	•		4	C	1	100	M2503192	
BC 5-S18-AP4X-0.2M-RS 4T	•	5	18		•		•	4	D	1	100	M2503492	

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
Sensing Face	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

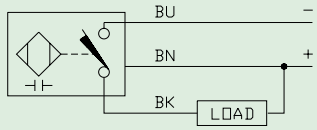
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

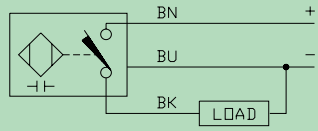
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

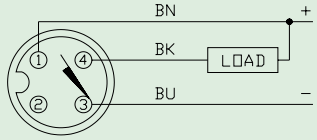
A NPN (Sinking)



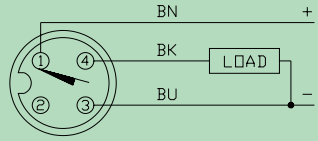
B PNP (Sourcing)



C NPN (Sinking)

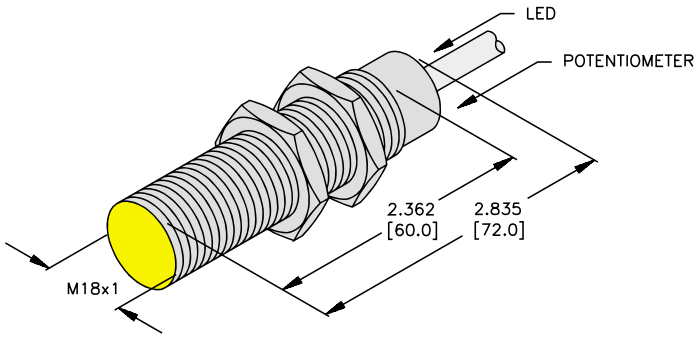


D PNP (Sourcing)



Dimensions

1



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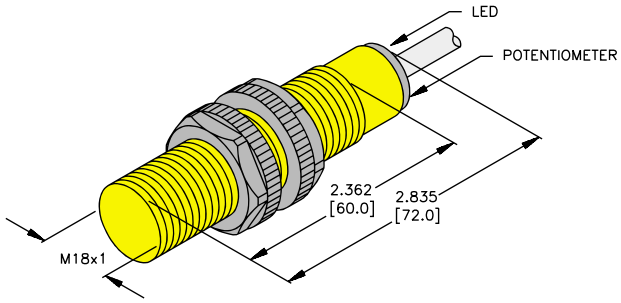

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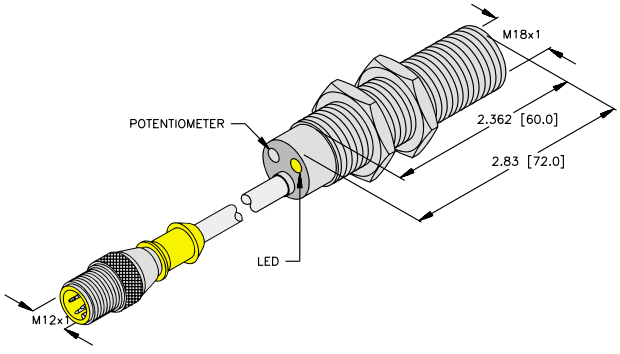

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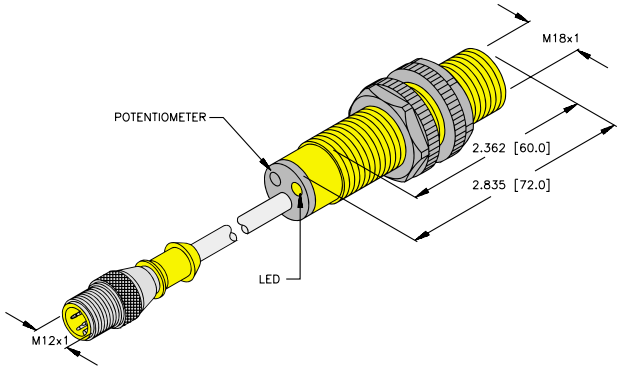


Capacitive

M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

3-Wire DC **eurofast®**
10-65 VDC, Short-Circuit and Overload Protected
Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Weld Field Immune (/S34)	Switching Frequency (Hz)	ID Number	Connection
BC 10-M30-AN4X	•	10	30	•		1	A	1		100	M2501100	2 meter cable, PVC jacket, 22 AWG copper conductors, PVC insulated.
BC 10-M30-AP4X	•	10	30		•	1	B	1		100	M2501000	
BC10-M30-AN4X-H1141	•	10	30	•		2	C	1		100	M2501300	**eurofast** **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
BC10-M30-AP4X-H1141	•	10	30		•	2	D	1		100	M2501200	

Material

Connector:	Chrome Plated Brass
Barrel:	Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic

Accessories

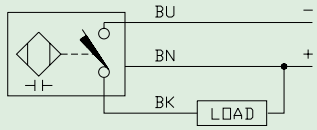
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

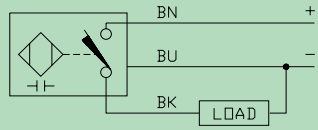
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

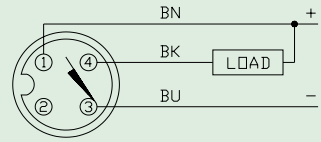
A NPN (Sinking)



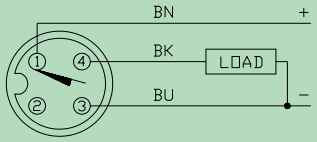
B PNP (Sourcing)



C NPN (Sinking)

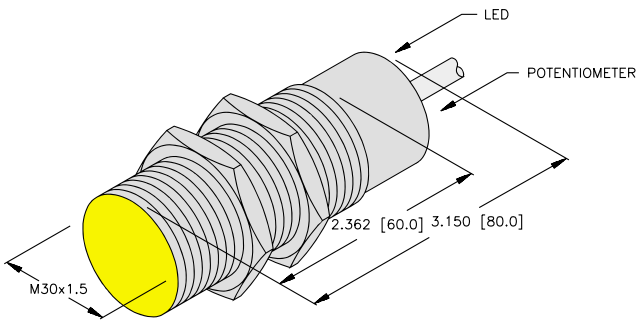


D PNP (Sourcing)



Dimensions

1



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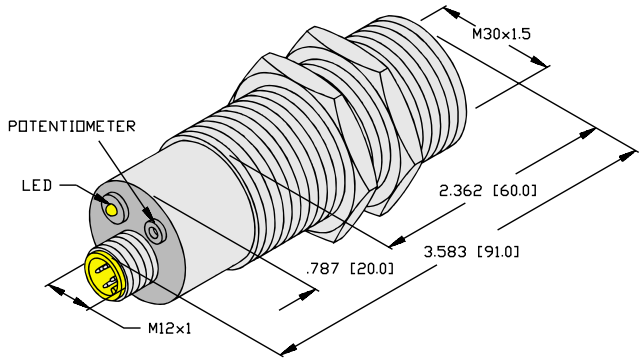


Capacitive

Q08

Q-Pak™ Rectangular Sensors, Metal

Potted-In Cable and Quick Disconnect

3-Wire DC *picofast*®

10-30 VDC, Short-Circuit and Overload Protected

Normally Open, NPN (Sinking) or PNP (Sourcing)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Metal Housing	Plastic Housing	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC 5-Q08-AN6X2	•	5	8.0	•		•		1	A	2	100	M2620100	2 meter cable, PVC Jacket; 24 AWG copper conductors, PVC insulated.
BC 5-Q08-AP6X2	•	5	8.0	•			•	1	B	2	100	M2620000	
BC 5-Q08-AN6X2-V1131	•	5	8.0	•		•		2	C	2	100	M2621100	*picofast* **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
BC 5-Q08-AP6X2-V1131	•	5	8.0	•			•	2	D	2	100	M2621000	

Material

Connector:	Chrome Plated Brass
Housing:	Die-cast Zinc
Sensing Face:	PA 12-GF30 Plastic

Accessories

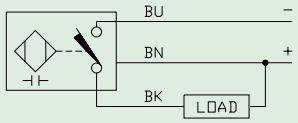
Accessories and mounting devices can be found in Section J.

Specifications

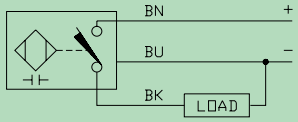
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

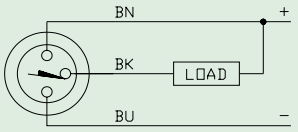
A NPN (Sinking)



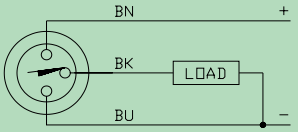
B PNP (Sourcing)



C NPN (Sinking)

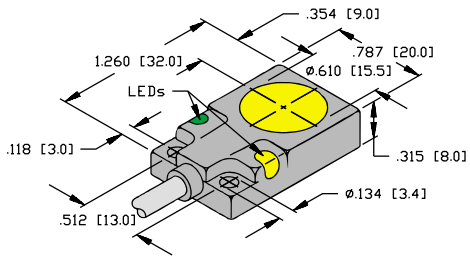


D PNP (Sourcing)

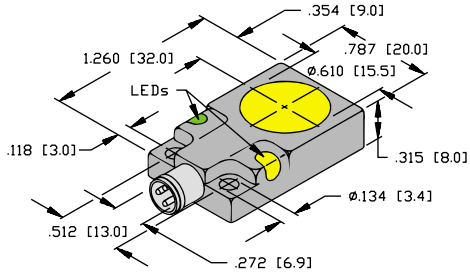


Dimensions

1



2



Capacitive

Q14

Q-pak™ Rectangular Sensors, Plastic

Potted-In Cable and Quick Disconnect

3-Wire DC

picofast® *eurofast*®

10-65 VDC, Short-Circuit and Overload Protected

Normally Open, NPN or PNP; Consult Factory for Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Metal Housing	Plastic Housing	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC10-Q14-AN4X2	•	10	14		•	•		1	A	2	100	M2530010	2 meter cable, PVC Jacket; 24 AWG copper conductors, PVC insulated.
BC10-Q14-AP4X2	•	10	14		•		•	1	B	2	100	M2530001	
BC10-Q14-AN4X2-V1131	•	10	14		•	•		2	C	2	100	M2530011	*picofast* **Mating Cordsets** PKG 3Z-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BC10-Q14-AP4X2-V1131	•	10	14		•		•	2	D	2	100	M2530002	
BC10-Q14-AN4X2-0.2M-RS 4T	•	10	14		•	•		3	E	2	100		*eurofast* Cable pigtail with molded connector, 0.2 m length. **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BC10-Q14-AP4X2-0.2M-RS 4T	•	10	14		•		•	3	F	2	100	M2530090	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30-VO Plastic

Accessories

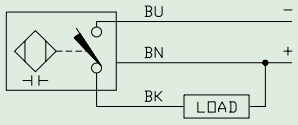
Accessories and mounting devices can be found in Section J.

Specifications

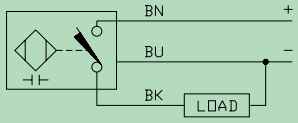
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

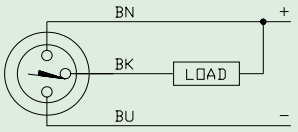
A NPN (Sinking)



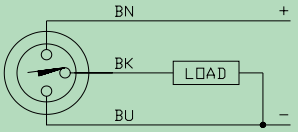
B PNP (Sourcing)



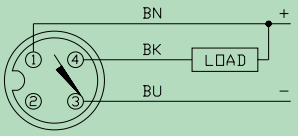
C NPN (Sinking)



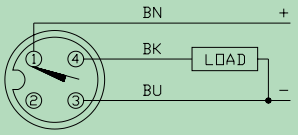
D PNP (Sourcing)



E NPN (Sinking)

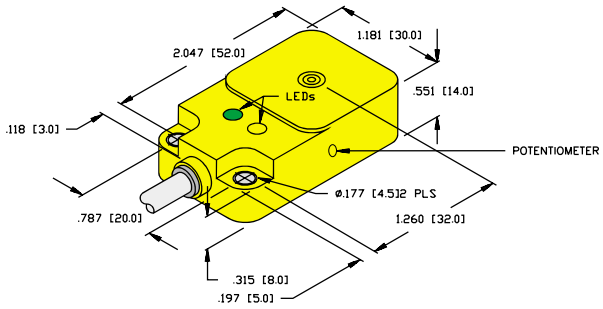


F PNP (Sourcing)



Dimensions

1



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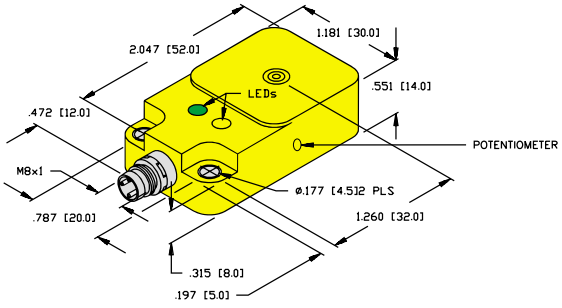

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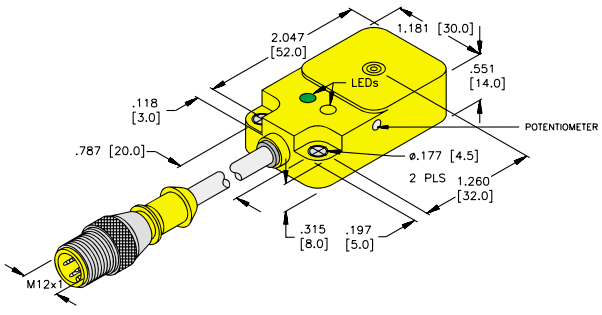


Capacitive

Q20

Q-pak™ Rectangular Sensors, Plastic

Potted-In Cable and Quick Disconnect

3-Wire DC

eurofast®

10-65 VDC, Short-Circuit and Overload Protected

Normally Open, NPN or PNP; Consult Factory for Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Metal Housing	Plastic Housing	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC20-Q20-AN4X2	•	20	20		•	•		1	A	2	100	M2530110	2 meter cable, PVC Jacket; 24 AWG copper conductors, PVC insulated.
BC20-Q20-AP4X2	•	20	20		•		•	1	B	2	100	M2530100	
BC20-Q20-AN4X2-H1141	•	20	20		•	•		2	C	2	100	M2530111	*eurofast* **Mating Cordsets** RK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
BC20-Q20-AP4X2-H1141	•	20	20		•		•	2	D	2	100	M2530101	

Material

Connector:	Chrome Plated Brass
Housing:	PBT-GF30-VO Plastic

Accessories

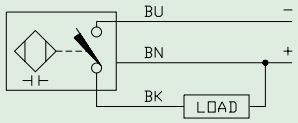
Accessories and mounting devices can be found in Section J.

Specifications

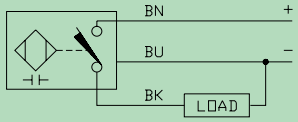
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

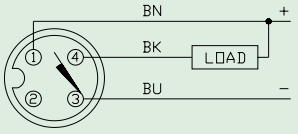
A NPN (Sinking)



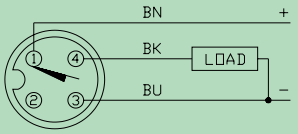
B PNP (Sourcing)



C NPN (Sinking)

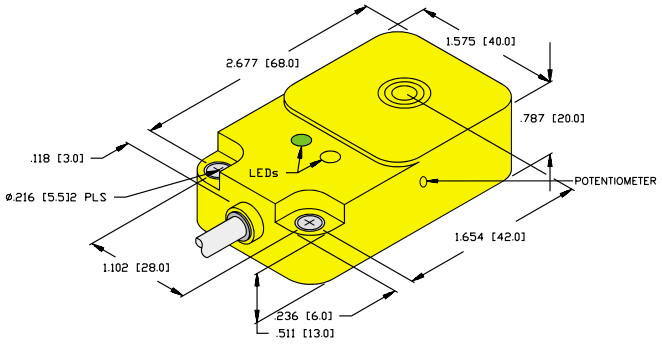


D PNP (Sourcing)



Dimensions

1



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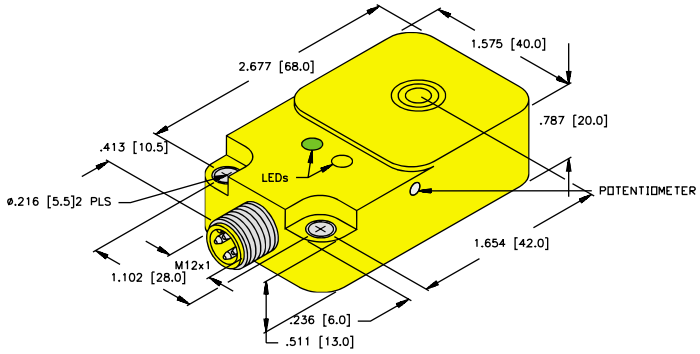


Capacitive

M Barrel

S Barrel

Threaded Barrel, Metal and Plastic
Quick Disconnect

4-Wire DC **eurofast®**
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC10-M30-VN4X-H1141	•	10	30	•		•		1	A	1	100	M2502120	**eurofast** Cable pigtail with molded connector, 0.2 meter length **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BC10-M30-VP4X-H1141	•	10	30	•			•	1	B	1	100	M2502010	
BC10-S30-VN4X-H1141	•	10	30		•	•		2	A	1	100	M2506010	
BC10-S30-VP4X-H1141	•	10	30		•		•	2	B	1	100	M2506100	

Material

Barrel:	S style: PA 12-GF30 Plastic M style: chrome Plated Brass
Sensing Face	PA 12-GF30 Plastic
End Cap:	PA 66-GF 25-VO Plastic

Accessories

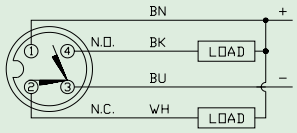
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

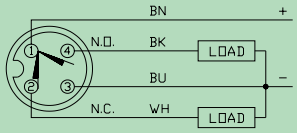
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

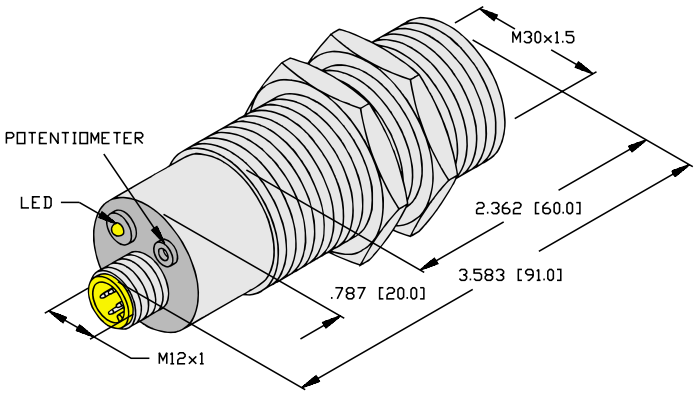


B PNP (Sourcing)



Dimensions

1



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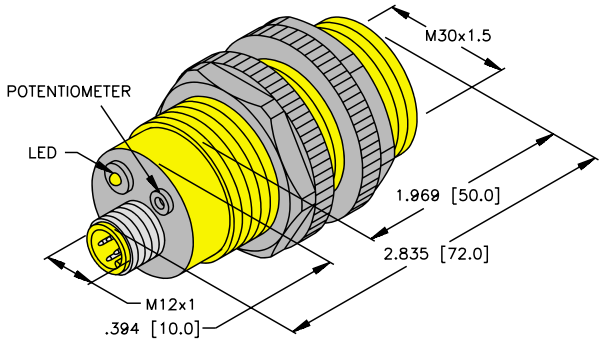


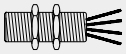
Capacitive

M Barrel

S Barrel

Barrel, Metal with Potted-In Cable

Partial Threading

4-Wire DC 

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number
BC10-M30-VN4X	•	10	30	•		•		1	A	1	100	M2502100
BC10-M30-VP4X	•	10	30	•			•	1	B	1	100	M2502000
BC10-S30-VN4X	•	10	30		•	•		2	A	1	100	M2506000
BC10-S30-VP4X	•	10	30		•		•	2	B	1	100	M2506110

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor:	22 AWG
(PVC insulated)	

Material

Barrel:	S style: PA 12-GF30 Plastic M style: Chrome Plated Brass
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PA 66-GF25-VO Plastic

Accessories

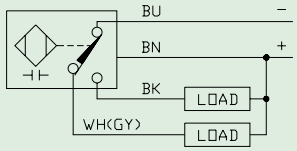
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

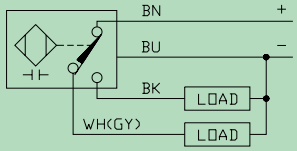
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	6.0-12.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

A NPN (Sinking)

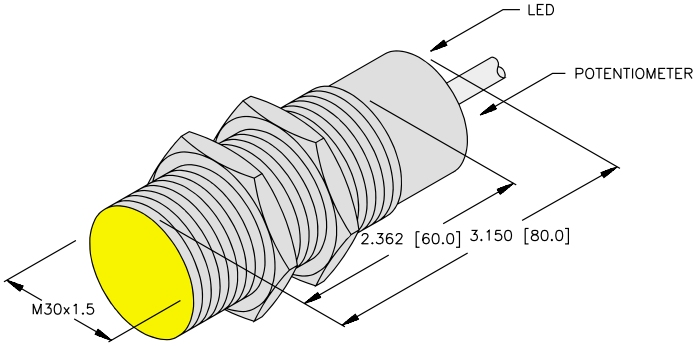


B PNP (Sourcing)



Dimensions

1



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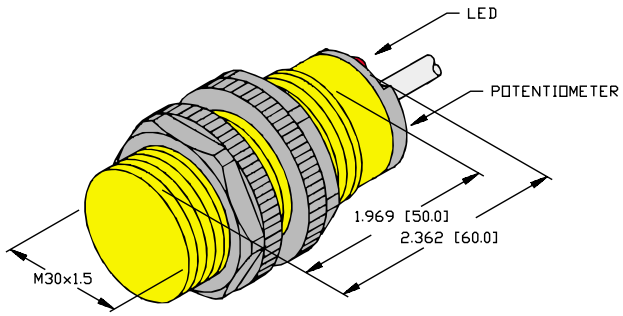


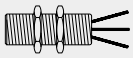
Capacitive

P Barrel

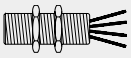
PT30 Barrel

KT34 Barrel

18 mm Self-Sealing Threaded PVDF Barrel
Potted-In Cable

3-Wire DC 
10-65 VDC, Short-Circuit and Overload Protected
Normally Open, PNP (Sourcing)

PVDF Barrel with Potted-In PVDF Cable
***PT30:** 30 mm Threaded Barrel; **KT34:** 34 mm Smooth Barrel*

4-Wire DC 
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC 5-S185-AP4X	•	5	18		•	1	A	1	100	M2503500	2 meter cable, PVC jacket, 21 AWG copper conductors, PVC insulated.
BC10-PT30-VN4X2	•	10	30	•		2	B	2	100	M2507020	2 meter cable, PVDF jacket, 22 AWG copper conductors, PVC insulated, with aluminized polyester shield and drain wire (not connected at sensor).
BC10-PT30-VP4X2	•	10	30		•	2	C	2	100	M2507010	
NC20-KT34-VN4X2		20	33.5	•		3	B	2	100	M2550100	
NC20-KT34-VP4X2		20	33.5		•	3	C	2	100	M2550300	

Material

Barrel:	PVDF Plastic
Sensing Face:	PVDF Plastic
End Cap/O-Ring(S185):	PUR Plastic/Viton
Cable Gland(PT/KT):	PVDF with Viton Gasket

Accessories

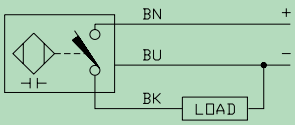
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

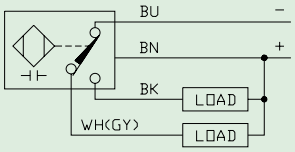
Ripple	≤10%
Differential Travel (Hysteresis)	S185/KT: 2-20% (5% typical); PT: 5-20%
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	S185/KT: 6.0-12.0 mA; PT: ≤15 mA
Time Delay Before Availability	S185/KT: ≤25 ms; PT: ≤15ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±20%
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

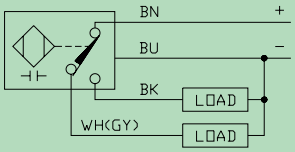
A PNP (Sourcing)



B NPN (Sinking)

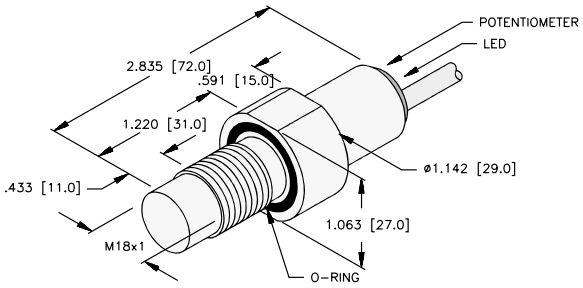


C PNP (Sourcing)



Dimensions

1



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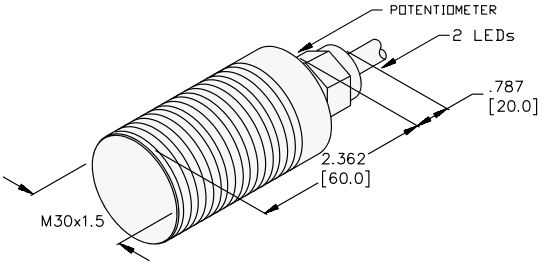

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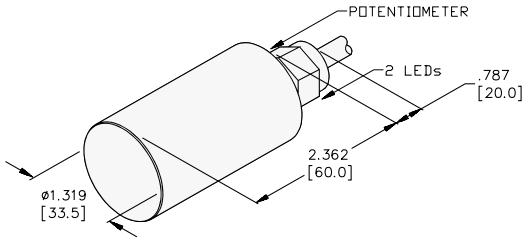


Capacitive

K40SR Barrel

P30SR Barrel

Barrel, Plastic with Integral Terminal Chamber

K40SR: *40 mm Smooth Barrel*
P30SR: *30 mm Threaded Barrel**

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

* And Optional Remote Potentiometer.

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	NPN (Sinking)	PNP (Sourcing)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC2O-K40SR-VN4X2 **	•	20	40	•		1	A	2	100	M2510100	**Terminal Chamber** with quick disconnect option (see below).
BC2O-K40SR-VP4X2 **	•	20	40		•	1	B	2	100	M2510000	
BC1O-P30SR-VN4X2	•	10	30	•		2	A	2	100	M2505100	
BC1O-P30SR-VP4X2	•	10	30		•	2	B	2	100	M2505000	
BC1O-P30SR-VP4X2/S359-2M	•	10	30		•	3	B	2	100	M2505001	

** BS-40 Mounting Clamp included with sensor.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2 See Section H for other styles.

Material

Terminal Chamber:	ABS Plastic
Barrel:	ABS Plastic
Sensing Face:	ABS Plastic

Accessories

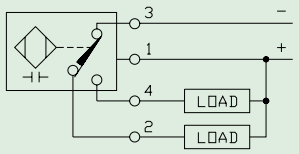
Accessories and mounting devices such as brackets and tank wells can be found in Section J.
PG 9 cable gland included with sensor

Specifications

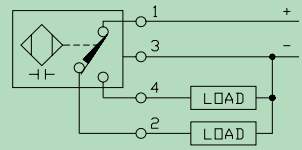
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤12.0 mA
Time Delay Before Availability	P30SR style: ≤25 ms; K40SR style: ≤60 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)

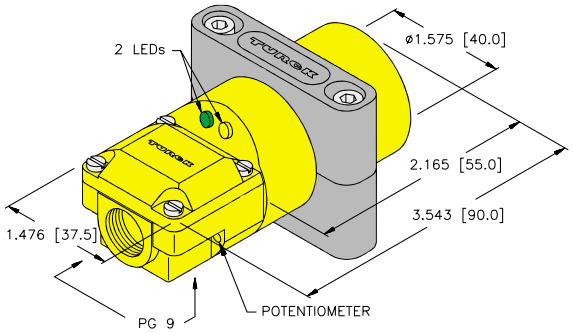


B PNP (Sourcing)



Dimensions

1



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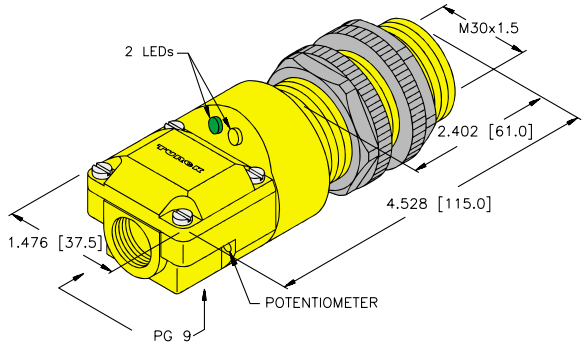

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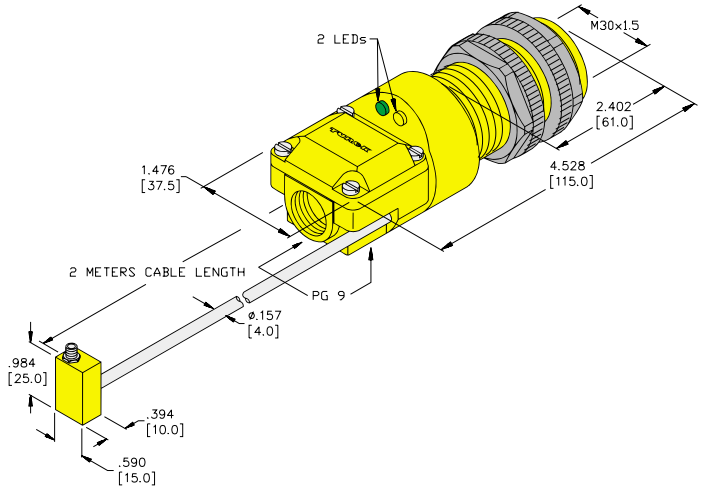


Capacitive

CP40

Limit Switch Style Sensor, Plastic Housing
combiprox®

4-Wire DC
10-65 VDC, Short-Circuit and Overload Protected
Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC20-CP40-VN4X2	•	20	40	•		1	A	2	100	M2515700	**Terminal Chamber** with quick disconnect option (see below).
BC20-CP40-VP4X2	•	20	40		•	1	B	2	100	M2515600	

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

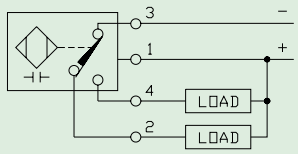
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

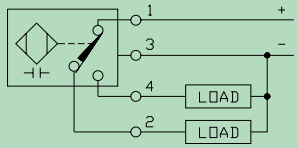
Ripple	≤10%
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA typical
Continuous Load Current	≤200 mA
Off-State (Leakage) Current	<10 µA
No-Load Current	≤10 mA
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A **NPN (Sinking)**

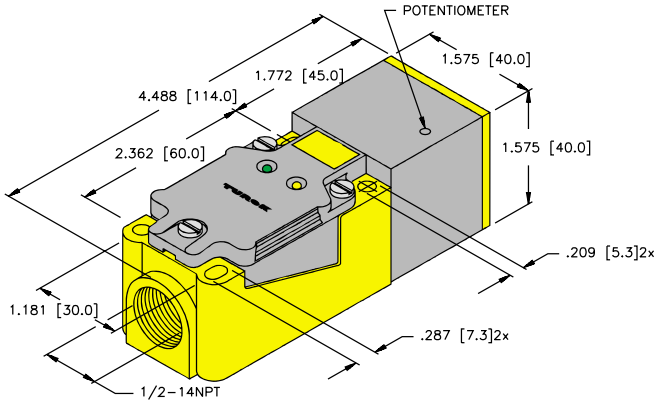


B **PNP (Sourcing)**



Dimensions

1



Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

Capacitive

CP80

Long Range Sensors with Optional Remote Potentiometer

CP80: *Modular Construction*

4-Wire DC

10-65 VDC, Short-Circuit and Overload Protected

Complementary Outputs: One N.O., One N.C. (SPDT)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Sinking	Sourcing	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
NC50-CP80-VN4X2		50	80	•		1	A	2	200	M2580112	Terminal Chamber with quick disconnect option (see below).
NC75-CP80-VN4X2/S359-1M		75	80	•		2	A	2	150	M2580512	
NC50-CP80-VP4X2		50	80		•	1	B	2	200	M2580212	

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1141" suffix to part number.
Suggested cordset:	RKM 40-2M. See Section H for other styles.
For ***eurofast*** connector:	Add "-H1141" suffix to part number.
Suggested cordset:	RK 4.4T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

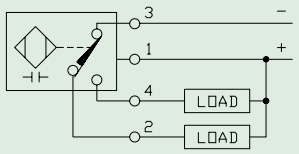
Accessories and mounting devices can be found in Section J.

Specifications

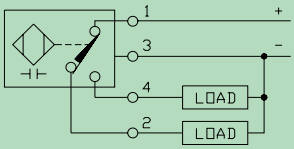
Ripple	≤10%
Differential Travel (Hysteresis)	2-20 (5% typical)
Voltage Drop Across Conducting Sensor	≤1.8 V at 200 mA
Trigger Current for Overload Protection	≥220 mA
Continuous Load Current	≤200 mA
Leakage (Off-State) Current	<10 µA
No-Load Current	10.0-15.0 mA
Time Delay Before Availability	≤25 ms
Power-On Effect	Per IEC 947-5-2
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Yellow)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A NPN (Sinking)



B PNP (Sourcing)



Dimensions

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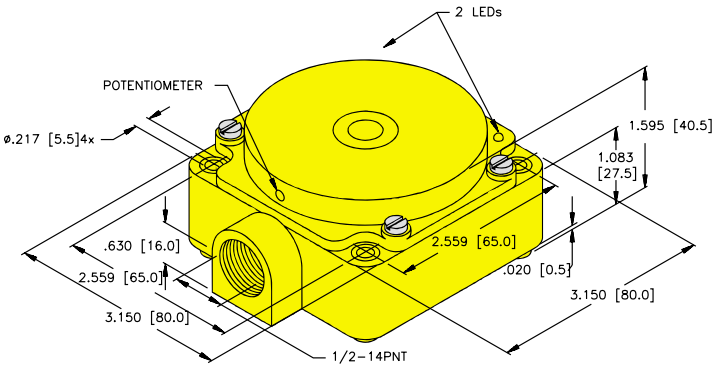

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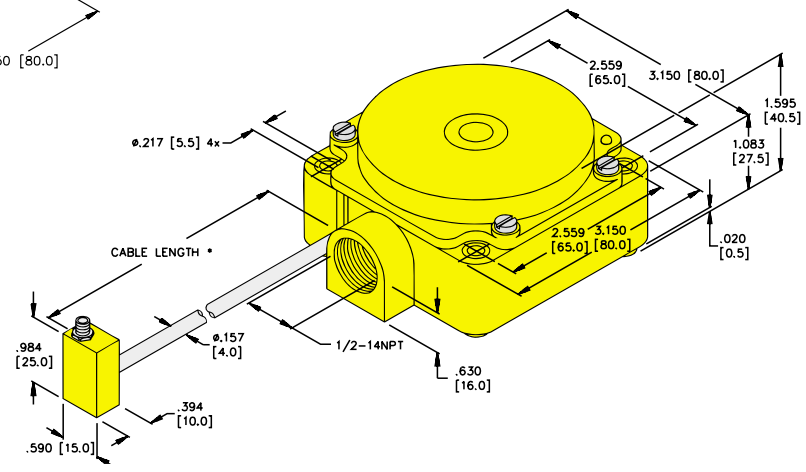


Capacitive

M Barrel

S Barrel

Threaded Barrel, Metal and Plastic

Potted-In Cable and Optional Molded Connector

2-Wire AC

20-250 VAC

Normally Open (AZ3X) or Normally Closed (RZ3X)

microfast®

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC 5-M18-AZ3X	•	5	18	•		•		1	A	1	20	M2305000	2 meter cable, PVC Jacket; 21 AWG copper conductors, PVC insulated.
BC 5-M18-RZ3X	•	5	18	•			•	1	B	1	20	M2305100	
BC 5-S18-AZ3X	•	5	18		•	•		2	A	1	20	M2305500	
BC 5-S18-RZ3X	•	5	18		•		•	2	B	1	20	M2305400	
BC 5-M18-AZ3X-0.2M-SB 3T	•	5	18	•		•		3	C	1	20	M2305090	microfast Cable pigtail with molded connector 0.2 meter length **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog
BC 5-M18-RZ3X-0.2M-SB 3T	•	5	18	•			•	3	D	1	20		
BC 5-S18-AZ3X-0.2M-SB 3T	•	5	18		•	•		4	C	1	20	M2305590	
BC 5-S18-RZ3X-0.2M-SB 3T	•	5	18		•		•	4	D	1	20		

Material

Barrel:	M style: Chrome Plated Brass S style: PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PA 66-GF25-VO Plastic

Accessories

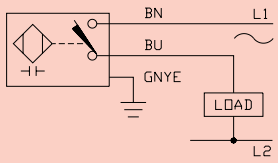
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

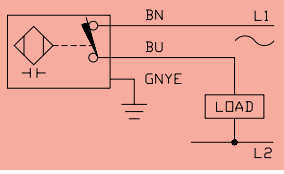
Line Frequency	40-60 Hz
Hysteresis (Differential Travel)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

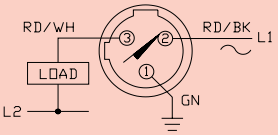
A Normally Open



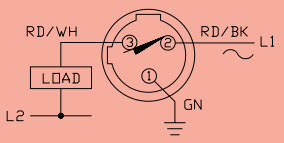
B Normally Closed



C Normally Open

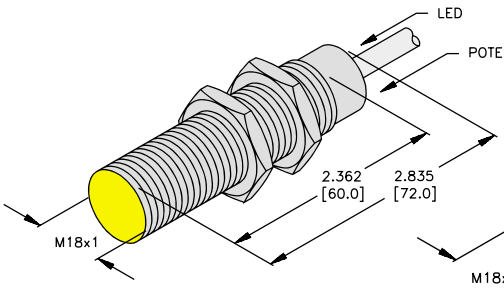


D Normally Closed



Dimensions

1



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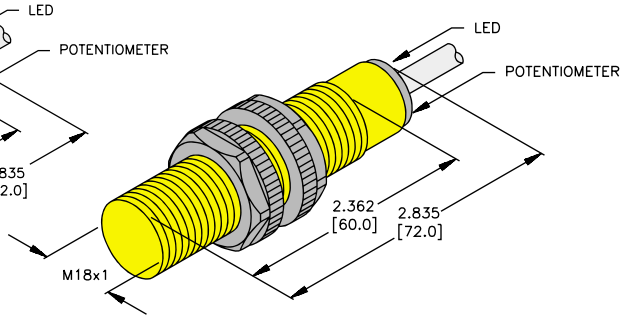

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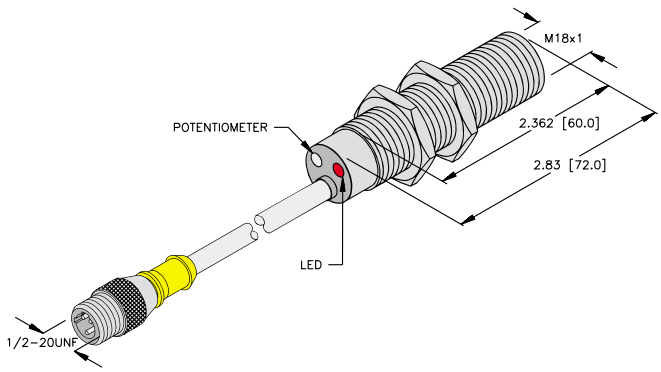

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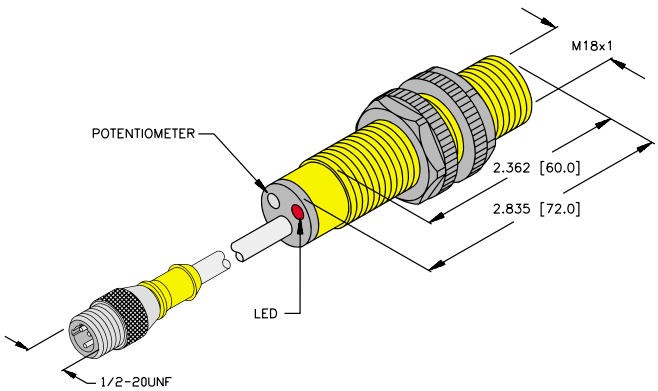


Capacitive

M Barrel

S Barrel

Threaded Barrel, Metal and Plastic
Potted-In Cable and Quick Disconnect

2-Wire AC
20-250 VAC
Normally Open (AZ3X) or Normally Closed (RZ3X)

microfast®

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Metal Barrel	Plastic Barrel	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC10-M30-AZ3X	•	10	30	•		•		1	A	1	20	M2310000	2 meter cable, PVC Jacket; 21 AWG copper conductors, PVC insulated.
BC10-M30-RZ3X	•	10	30	•			•	1	B	1	20	M2309800	
BC10-S30-AZ3X	•	10	30		•	•		2	A	1	20	M2310700	
BC10-S30-RZ3X	•	10	30		•		•	2	B	1	20	M2310800	
BC10-M30-AZ3X-B3131	•	10	30	•		•		3	C	1	20	M2310030	microfast **Mating Cordsets** KB 3T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
BC10-M30-RZ3X-B3131	•	10	30	•			•	3	D	1	20	M2310100	
BC10-S30-AZ3X-B3131	•	10	30		•	•		4	C	1	20	M2310710	
BC10-S30-RZ3X-B3131	•	10	30		•		•	4	D	1	20	M2310810	

Material

Barrel:	M style: Chrome Plated Brass S style: PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PA 66-GF25-VO Plastic

Accessories

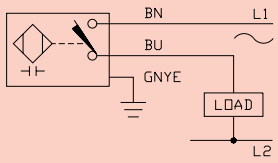
Accessories and mounting devices such as brackets and tank wells can be found in Section J.

Specifications

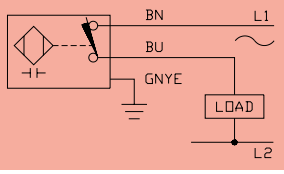
Line Frequency	40-60 Hz
Hysteresis (Differential Travel)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On	Output Energized

Wiring Diagrams

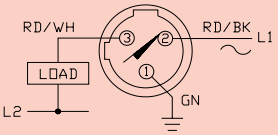
A Normally Open



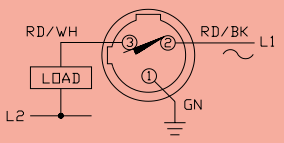
B Normally Closed



C Normally Open

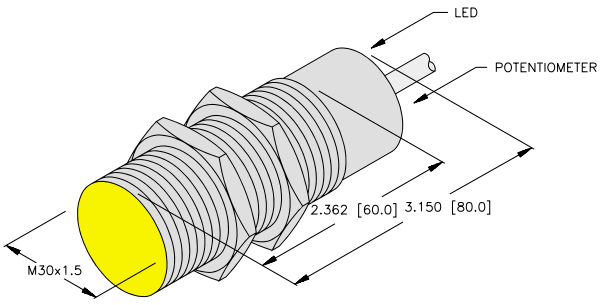


D Normally Closed



Dimensions

1



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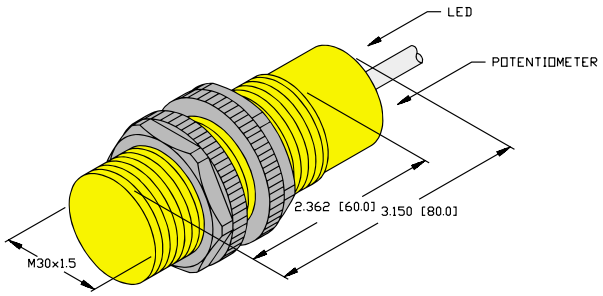

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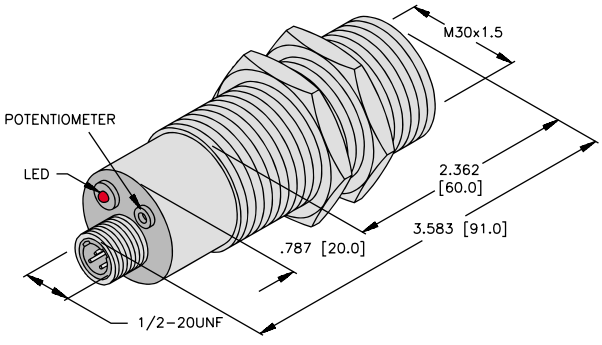

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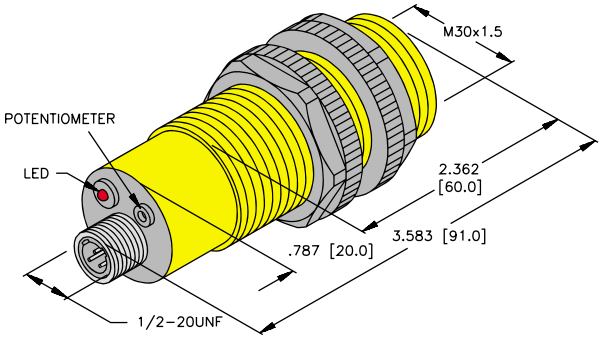
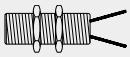


Capacitive

Q20

Q-pak Rectangular Sensor, Plastic
Potted-In Cable

2-Wire AC 
20-250 VAC
Normally Open (AZ3X)

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Height (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC20-Q20-AZ3X2	•	20	20	•		1	A	2	20	M4352000	2 meter cable, PUR Jacket; 21 AWG copper conductors, PVC insulated.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic
Cable:	PUR

Accessories

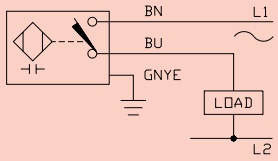
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Hysteresis (Differential Travel)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

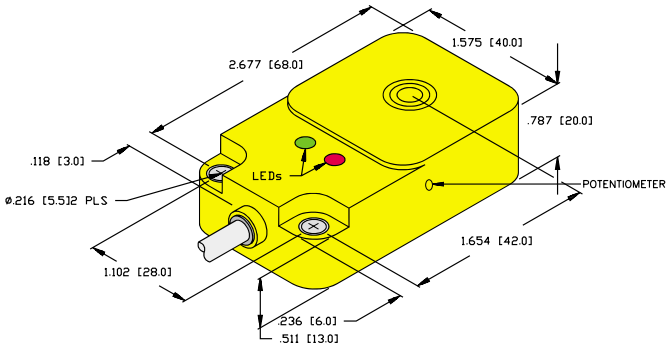
Wiring Diagram

A — Normally Open



Dimensions

1



Capacitive

K40SR Barrel

P30SR Barrel

Barrel, Plastic with Integral Terminal Chamber

K40SR: *40 mm Smooth Barrel*
P30SR: *30 mm Threaded Barrel*

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC20-K40SR-FZ3X2 *	•	20	40	•	•	1	A	2	20	M2310300	**Terminal Chamber** with quick disconnect option (see below).
BC10-P30SR-FZ3X2	•	10	30	•	•	2	A	2	20	M2310400	

* BS-40 Mounting Clamp included with sensor.

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Terminal Chamber:	ABS Plastic
Barrel:	ABS Plastic
Sensing Face:	ABS Plastic

Accessories

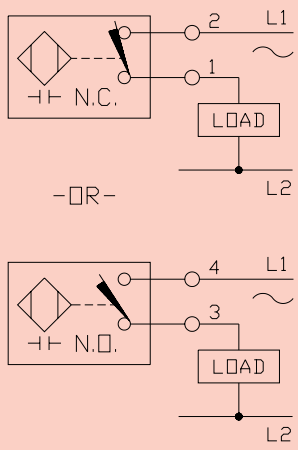
Accessories and mounting devices such as brackets and tank wells can be found in Section J.
PG 9 cable gland included with sensor.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A **Programmable**



Dimensions

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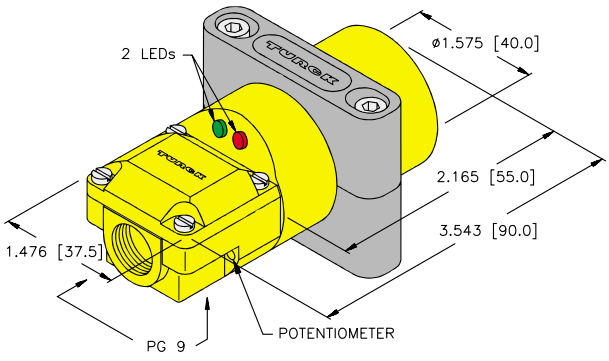

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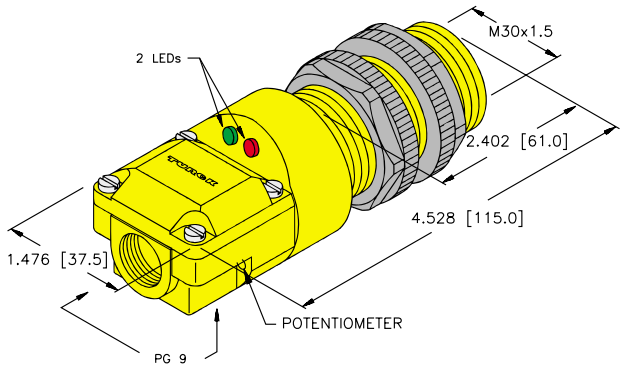


CP40

Limit Switch Style Sensor, Plastic Housing
combiprox®

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
BC20-CP40-FZ3X2	•	20	40	•	•	1	A	2	20	M2311500	**Terminal Chamber** with quick disconnect option (see below).

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Sensing Face:	PBT-GF30-VO Plastic

Accessories

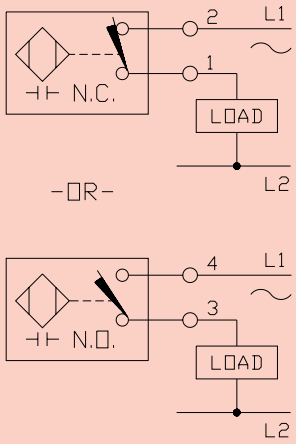
Mounting Bracket LSAP-2 and other accessories can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	35.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A — Programmable



Dimensions

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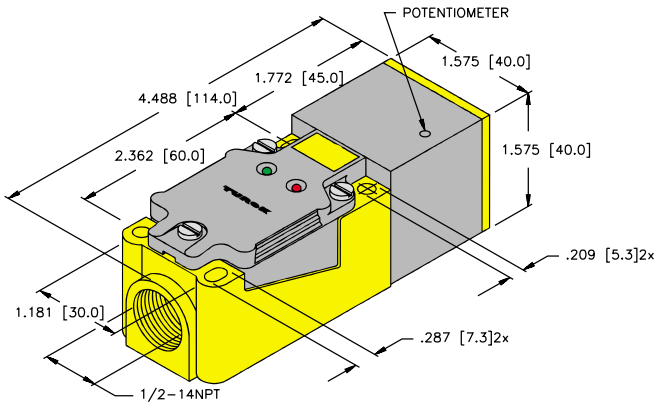


Note: By removing sensor from terminal chamber, head can be adjusted to nine different sensing positions.

Capacitive

CP80

Long Range Sensors
Modular Construction

2-Wire AC
20-250 VAC
Connection Programmable; Normally Open or Normally Closed

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Housing Square (mm)	Normally Open	Normally Closed	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	ID Number	Connection
NC50-CP80-FZ3X2		50	80	•	•	1	A	2	20	M2310610	**Terminal Chamber** with quick disconnect option (see below).

Caution

An electrical shock hazard exists inside of terminal chamber style sensors whenever power is applied. Remove all power to the sensor whenever sensor wiring is exposed.

Quick Disconnect Option

For ***minifast*** connector:	Add "-B1131" suffix to part number.
Suggested cordset:	RKM 30-2M. See Section H for other styles.
For ***microfast*** connector:	Add "-B3131" suffix to part number.
Suggested cordset:	KB 3T-2. See Section H for other styles.

Material

Housing:	PBT-GF30-VO Plastic
Terminal Chamber Cover:	Trogamid T

Accessories

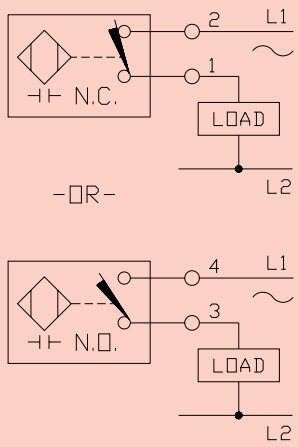
Accessories and mounting devices can be found in Section J.

Specifications

Line Frequency	40-60 Hz
Differential Travel (Hysteresis)	2-20% (5% typical)
Voltage Drop Across Conducting Sensor	≤7.0 V at 500 mA
Continuous Load Current	≤500 mA
Off-State (Leakage) Current	≤1.7 mA
Minimum Load Current	≥5.0 mA
Inrush Current	≤8.0 A (≤10 ms, 5% Duty Cycle)
Time Delay Before Availability	≤60 ms
Power-On Effect	Per IEC 947-5-2
Transient Protection	Per EN 60947-5-2
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
LED On (Red)	Output Energized
LED On (Green)	Power On

Wiring Diagrams

A — Programmable



Dimensions

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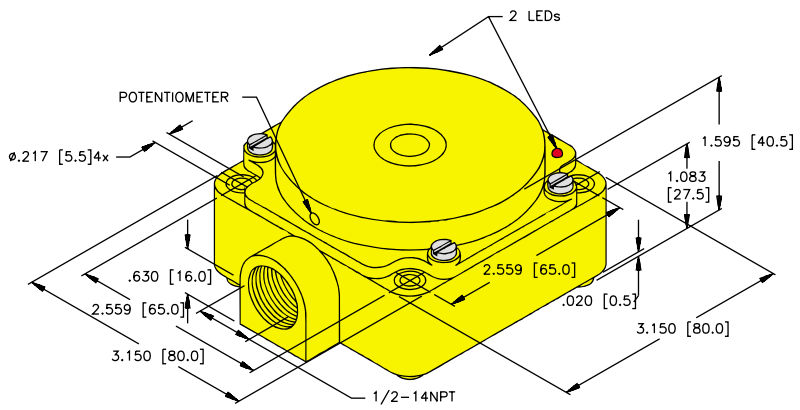


Capacitive

S Barrel

Barrel, Plastic with Potted-In Cable
Partial Threading

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number
BC 5-S18-Y0X	•	5	18	1	A	1	100	•	≤0.5	M2006000
BC10-S30-Y0X	•	10	30	2	A	1	100	•	≤0.5	M2010000

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Cable/Conductor

Cable:	PVC Jacket; 2 meter standard length
Copper Conductor: (PVC insulated)	21 AWG

Material

Barrel:	PA 12-GF30 Plastic
Sensing Face:	PA 12-GF30 Plastic
End Cap:	PUR Plastic

Accessories

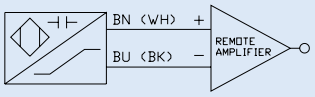
Accessories and mounting devices such as brackets and tank wells can be found in Section J. Remote amplifier required. Consult TURCK ***multimodul*** and ***Automation Controls*** catalogs.

Specifications

Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from	
Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for	
Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
LED On	Output Energized

Wiring Diagram

A — NAMUR Output



Dimensions

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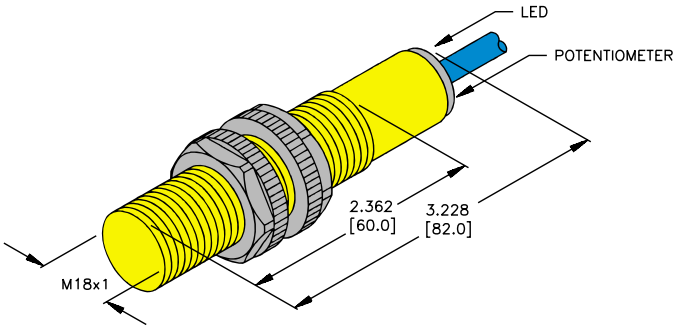

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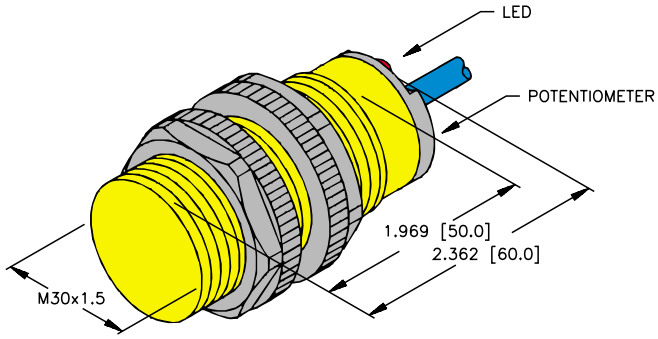


PT Barrel

30 mm Threaded PVDF Barrel
Potted-In Cable

2-Wire DC, Requires Remote Amplifier
5-30 VDC
Variable Resistance Output, NAMUR (EN 50227)

FM APPROVED
NRTL/C

Sensor Selection

Part Number	Embeddable	Rated Operating Distance (mm)	Barrel Diameter (mm)	Drawing #	Wiring Diagram	# of LEDs	Switching Frequency (Hz)	FM Approved Division 1 *	Time Delay Before Availability (ms)	ID Number	Connection
BC10-PT30-Y0X	•	10	30	1	A	1	100	•	0.5	M2020000	2 meter cable, PVDF jacket, 22 AWG copper conductors, PVC insulated, with aluminized polyester shield and drain wire (not connected at sensor).

* Factory Mutual approval applies only when used with Factory Mutual approved switching amplifiers.

Material

Barrel:	PVDF Plastic
Sensing Face:	PVDF Plastic
End Cap:	PVDF Plastic
Cable Gland:	PVDF with Viton® gasket

Accessories

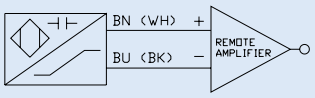
Accessories and mounting devices such as brackets and tank wells can be found in Section J. Remote amplifier required. Consult TURCK ***multimodul*** and ***Automation Controls*** catalogs.

Specifications

Hysteresis (Differential Travel)	5-20%
Nominal Voltage	8.2 VDC (EN 50227)
Resistance Change from Nonactivated to Activated Condition	>8.0 kΩ to 1.0 kΩ
Resulting Current Change	≤1.0 mA to ≥2.2 mA
Recommended Switching Point for Remote Amplifier	1.55 mA
Power-On Effect	Realized in Amplifier
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Realized in Amplifier
Transient Protection	Realized in Amplifier
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Enclosure	Meets NEMA 1,3,4,6,13 and IEC IP 67
Shock	30 g, 11 ms
Vibration	55 Hz, 1 mm Amplitude in all 3 Planes
Repeatability	≤2% of Rated Operating Distance
Temperature Drift	±20%
LED On	Output Energized

Wiring Diagram

A — NAMUR Output



Dimensions

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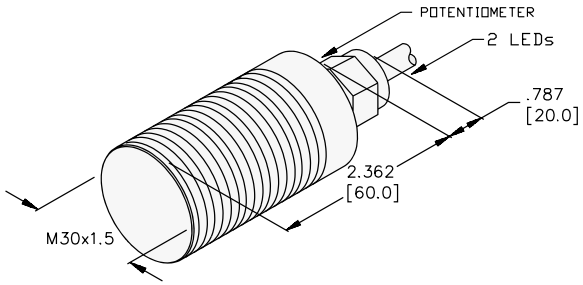


Capacitive

CLICK HERE for
MAIN SELECTION GUIDE

Selection Guide

Sensor Type	Output	Pages
 M18	4-Wire DC 4-Wire DC Linear Analog	G11 - G12 G23 - G24
 M30	3-Wire DC 4-Wire DC 5-Wire DC	G9 - G10 G11 - G12 G13 - G14
 M3047	4-Wire DC 5-Wire DC	G11 - G12 G13 - G14
 M3065	3-Wire DC 4-Wire DC 5-Wire DC	G9 - G10 G11 - G12 G13 - G14
 CP40	3-Wire DC 4-Wire DC Linear Analog	G17 - G18 G21 - G22
 Q30	4-Wire DC 4-Wire DC Linear Analog	G15 - G16 G19 - G20

Note:

All dimensions in this section are shown as: inches [mm]

Symbol Key

- Sensor with 4-pin ***eurofast*** Connector
- Sensor with 5-pin ***eurofast*** Connector
- Sensor with Terminal Chamber

Output Color Code

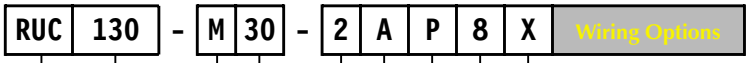
DC Output	AC Output	NAMUR Output
Self-Contained	*Self-Contained*	*Requires Remote Amplifier*

TURCK Inc. 3000 Campus Drive Minneapolis, MN 55441 Application Support: 1-800-544-PROX Fax: (763) 553-0708 www.turck.com

TURCK
Ultrasonic Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

Ultrasonic Sensor Part Number Key



Principle of Operation

RU(C) = Ultrasonic

Rated Operating Distance (mm)

Housing Style

M = Metal, Barrel, Partial Threading
Q = Plastic, Rectangular
CP = Plastic Housing, Modular, Terminal Chamber Base with Removable Sensor

Sensor Diameter/Size (mm)

Examples:
30 = 30 mm Diameter Barrel
3065 = 30 mm Diameter Barrel, 65 mm Sensing Head

Number of Switch Points

Output Function

A = Normally Open (N.O.)
LI = Linear Analog Current Output
LIU = Linear Analog Current and Voltage Output
LU = Linear Analog Voltage Output

Output

N = NPN Transistor (Current-Sinking)
P = PNP Transistor (Current-Sourcing)

Voltage Range

6 = 10-30 VDC, Polarity Protected, Pulsed SCP
8 = 18/20-30 VDC, Polarity Protected, Pulsed SCP

Number of LEDs

Examples:
Blank = No LEDs
X = 1 LED
X2 = 2 LEDs

A) Connectorized Sensor

RUC 130-M30-2AP8X - H1 1 5 1

Connector Family

H1 = ***eurofast***®, Metal or Plastic, Male

Connector / Sensor Transition

1 = Straight

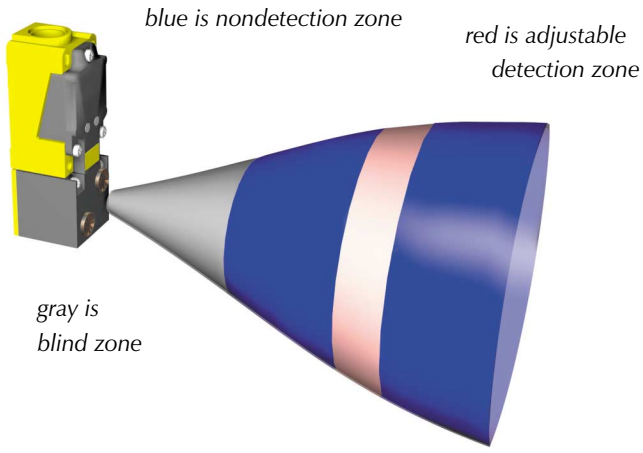
Number of Pins

Factory Code

Examples:
1 = Standard

Principle of Operation

The sensor emits an ultrasonic pulse that reflects back from any object entering the sonic cone. Because sound has a constant velocity at a given temperature and humidity, the time taken for this echo to return to the sensor is directly proportional to the distance of the object. The sensor's output status is dependent on the comparison of this time with the setting of the detection zone.



Medium

TURCK ultrasonic transducers are calibrated for use in air. The sensors can also be used in other gaseous media with a corresponding change in sensing range.

Targets

Solid, fluid, granular and powdery targets can be detected by TURCK ultrasonic sensors.

The **variations** of an "ideal" target should not exceed 0.15 mm (.006 in). Larger surface variations allow for larger alignment variations but may reduce sensing range.

Target **temperature** affects the sensing range in that hot surfaces reflect sonic waves less than cold ones.

The ultrasonic reflectivity of **liquid surfaces** is the same as that of solid, flat objects. Correct alignment should be observed.

Textiles, foams, wool, etc. absorb sonic waves, thereby reducing the sensing range.

Air pressure

Normal atmospheric pressure changes of ±5% (at a fixed reference point) can cause a ±6% deviation in sensing range.

Air temperature and humidity

Both air temperature and humidity influence the sonic pulse duration. An air temperature increase of 20°C (68°F) results in a +3.5% change in sensing distance for M18, M30 or Q30 styles and +8% for CP40s.

An increase in humidity results in an increased sound speed (max. 2%) compared with dry air.

Air streams

Air streams affect the echo propagation time, but the effects of air flow speeds of up to 10 m/s are negligible. The use of ultrasonic sensors is not recommended in turbulent areas such as above glowing metal because the sonic waves become distorted, making the echos difficult to evaluate.

Dewing

Normal concentrations of rain or snow falling in front of the sensor do not affect sensor operation.

CP40 transducers are not protected against wetting. All other ultrasonic sensors are not damaged by water, but correct functionality may be impaired when wet. Therefore, the transducers should not be subjected to direct wetting during use.

Sensor styles

M18, M30 & Q30: these sensor styles have one transducer that functions both as emitter and receiver, which results in a larger blind zone. They have a narrow sonic cone (6°) and are especially suited for detection of small objects in a small area at a long distance.

CP40 - these sensor styles have two transducers - one emitter and one receiver, which results in a smaller blind zone. They have a wide sonic cone (60°). The wide cone angle allows for a greater angle of inclination for the target. CP40 style sensors are especially suited for detecting objects in a large area.

M18

M30

Q30

CP40

ESD protection

In high-static applications such as web processing, electrostatic discharge (ESD) can cause sensors to malfunction. The CP40 style sensors have recently been redesigned to withstand up to 8000 volts air discharge without the use of an external grounding screen.

Simultaneous operation of several sensors

When several ultrasonic sensors are used, mutual interference of the sonic cones may arise. To eliminate this problem, some of the sensors have synchronization and multiplexing features. For those sensors without these features, maintaining a minimum distance between sensors will also solve this problem.

Synchronization

Synchronization of ultrasonic sensors causes the sensors to emit their sonic pulses simultaneously. Using RUC...M30, RU..-Q30 or RU..-M18 sensors, up to six sensors may be synchronized by tying their X1 lines.

Multiplexing

Multiplexing the sensors causes them to emit their pulses at pre-defined intervals, independent of one another. This eliminates the possibility of mutual interference and of sensors seeing targets that are actually in front of other sensors. The more sensors that are operated alternately, the lower the switching frequency.

The X1 line of sensors RUC..-M30, RU..-Q30 and RU..-M18 can be used as an enable input for multiplexing purposes. An X1 input of +24 V enables the sensor while an X1 input of 0 V disables it. Multiplexing via the X1 line instead of by powering down the sensors has the advantage that only the response time has to be considered and not the time delay before availability.

Range adjustments

M30 and CP40 style sensors have two potentiometers to enable both foreground and background suppression. Q30 and discrete M18 style sensors have one potentiometer to enable background suppression only.

Analog M18 sensors have a fixed range.

Sensing ranges given are at nominal conditions, i.e. Tu = +20°C (68°F) using a standard target, vertically aligned, with reflective surface (metal, 1 mm thick).

Sensors with two switch points

RUC...2AP8X - the potentiometers on these sensors set the far limits of each detection zone. Potentiometer S1 sets the far limit of Zone 1, which begins at the end of the blind zone.

Potentiometer S2 sets the far limit of Zone 2, which begins at the far limit of Zone 1 (Figure 1).

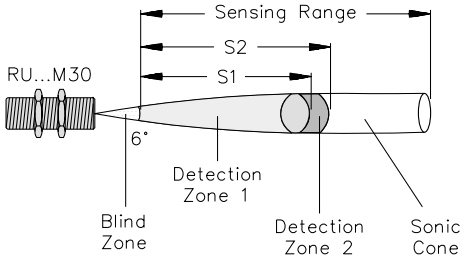


Figure 1

Sensors with one switch point

CP40 - potentiometer S1 sets the near limit while potentiometer S2 sets the depth of the detection zone. This allows both foreground and background suppression. Changes to S1 will cause the far limit to follow (Figure 2).

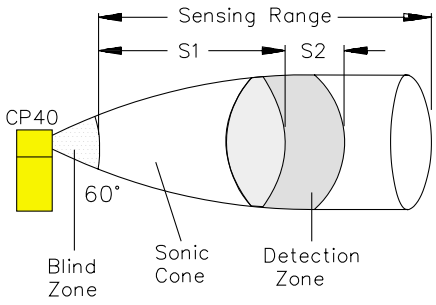


Figure 2

Q30 and discrete M18 - one potentiometer sets the far limit of the detection zone. The near limit is not adjustable, and is determined by the blind zone. This allows for background suppression only (Figure 3).

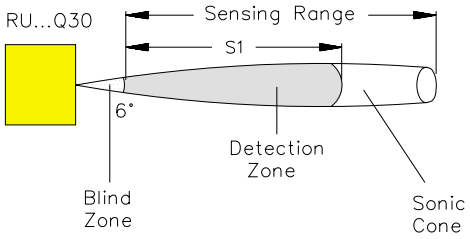


Figure 3

M30 - potentiometers S1 and S2 set the near and far limits of the detection zone. This allows for foreground and background suppression. The pots are independent of each other (Figure 4).

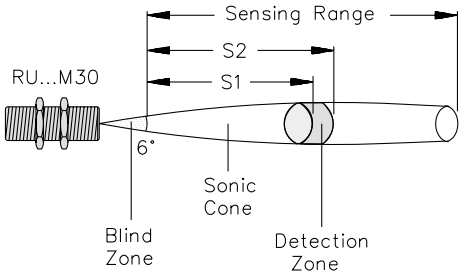
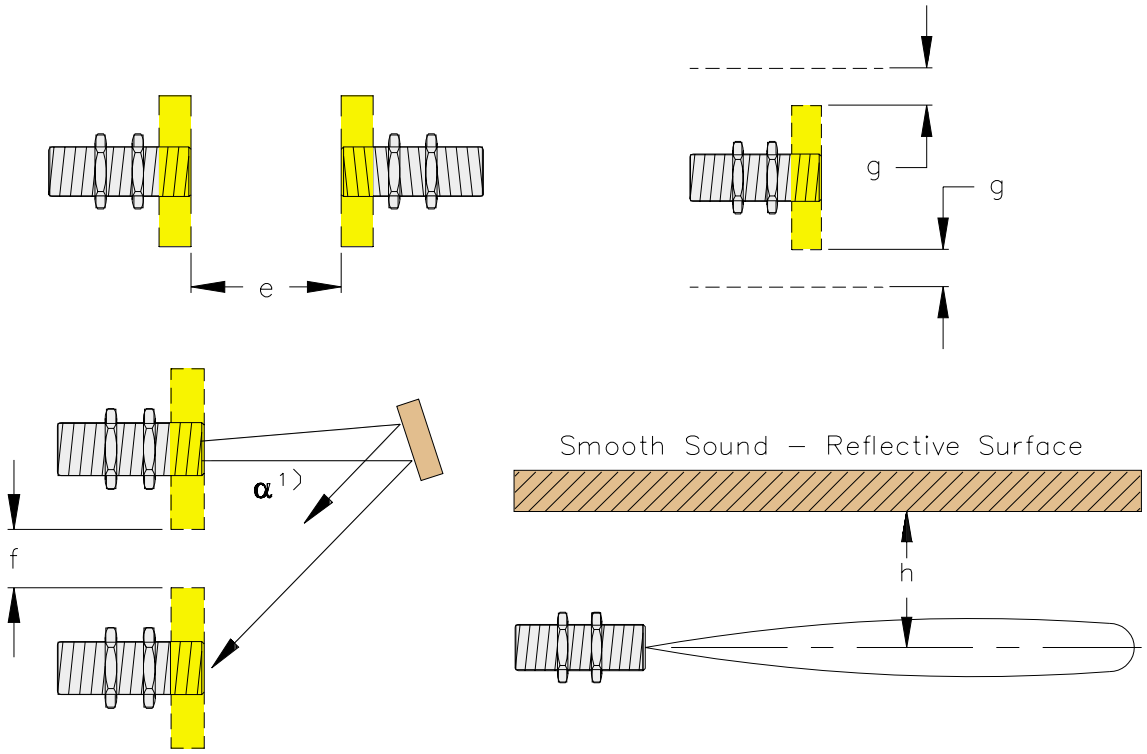


Figure 4

Mounting Considerations



Sensor Type	e (cm)	f (cm)	g (cm)	h (cm)
RU 30-M18- RU100-M18-	≥120 ≥400	≥15 ≥60	≥6 ≥30	≥3 ≥15
RU 30-M30- RU100-M30- RU600-M3065-	≥120 ≥400 ≥2500	≥15 ≥60 ≥250	≥6 ≥30 ≥80	≥3 ≥15 ≥40
RUC 30-M30- RUC130-M30- RUC300-M3047- RUC600-M3065-	≥120 ≥400 ≥1200 ≥2500	≥15 ≥60 ≥150 ≥250	≥6 ≥30 ≥60 ≥80	≥3 ≥15 ≥30 ≥40
RU 30-Q30 RU100-Q30	≥120 ≥400	≥15 ≥60	≥6 ≥30	≥3 ≥15
RU100-CP40-AP6X2 RU100-CP40-LIUX	≥600 ≥600	≥100 ≥100	≥120 ≥120	≥60 ≥60

1) The greater the angle α, the larger the distance f. The minimum f values in the table refer to α = 0°.

M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

3-Wire DC **eurofast®**
20-30 VDC, Short-Circuit and Overload Protected
Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M30-AP8X-H1141 RU100-M30-AP8X-H1141	6 - 30 20 - 100	30 30	1 1	A A		0.45 2	8 4	1 1	4 10	M1830000 M1830200	**eurofast** **Mating Cordsets** RKK 4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RU600-M3065-AP8X-H1141	60 - 600	30	2	A		9	1	6	18	M1830400	

Material

Connector:	PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	Anodized Aluminum

Accessories

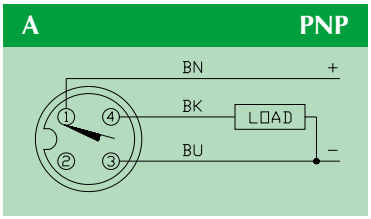
Accessories and mounting devices can be found in Section J.

Specifications

Sonic Cone Angle	6°
Standard Target	RU 30: 1 x 1 cm^2; RU100: 2 x 2 cm^2
	RU600: 10 x 10 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RU 30: 0.5 - 1.5 m/s
	RU100: 0.8 - 2.0 m/s
	RU600: 2.4 - 3.7 m/s
Ripple	≤10%
No-Load Current	≤50 mA
Continuous Load Current	≤300 mA
Voltage Drop	≤3.0 V at 300 mA
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Power-on False Pulse Suppression	Incorporated
Time Delay Before Availability *	RU 30: ≤116 ms; RU100: ≤132 ms; RU600: ≤460 ms
Response Time	RU 30: ≤76 ms; RU100: ≤92 ms; RU600: ≤420 ms
Trigger Current for Overload Protection	≥450 mA
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Temperature Drift	0.17%/K (air effect)
Enclosure	IP 65
Vibration	10 - 55 Hz, 1 mm deflection
LED Function	Yellow: Output Energized; object detected within sensing window

* Affected by target distance and potentiometer settings

Wiring Diagram



Dimensions

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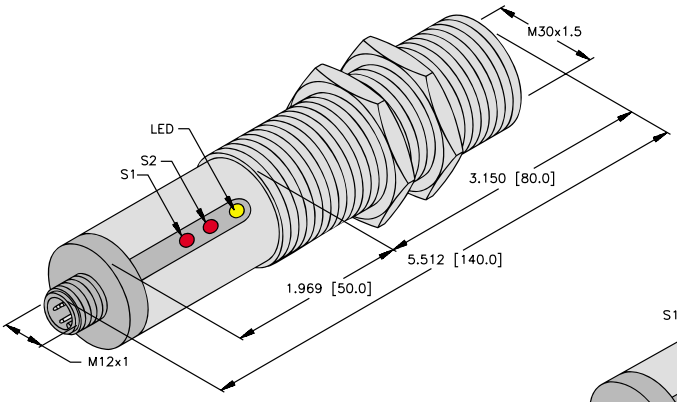

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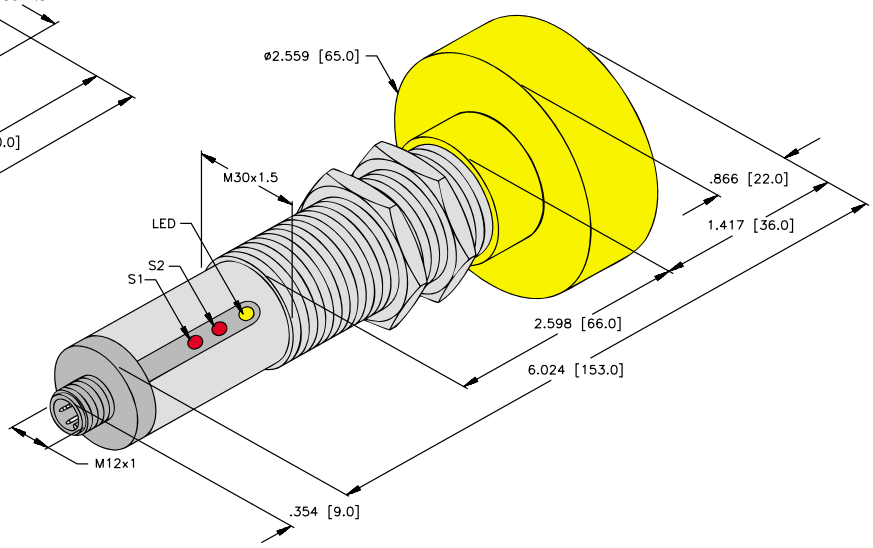


Ultrasonic

M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

4-Wire DC **eurofast®**
20-30 VDC, Short-Circuit and Overload Protected
Normally Open, PNP (Sourcing) with Synchronization

Sensor Selection

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M18-AP8X-H1141	5 - 30	18	1	A	•	0.5	8	1	4	M1810000	eurofast **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RU100-M18-AP8X-H1141	15 - 100	18	1	A	•	2	4	1	8	M1810200	
RUC 30-M30-AP8X-H1141	6 - 30	30	2	A	•	0.5	8	1	4	M1840000	
RUC130-M30-AP8X-H1141	20 - 130	30	2	A	•	2	4	1	10	M1840200	
RUC300-M3047-AP8X-H1141	40 - 300	30	3	A	•	5	2	2	16	M1840400	
RUC600-M3065-AP8X-H1141	60 - 600	30	4	A	•	9	1	6	18	M1840600	

Material

Connector:	M18: Chrome Plated Brass M30: PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	M18: Nickel Plated Brass M30(..): Anodized Aluminum

Accessories

Accessories and mounting devices can be found in Section J.

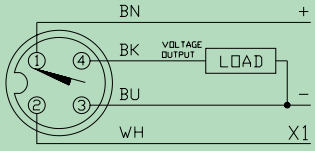
Specifications

Sonic Cone Angle	6°
Standard Target	RU(C)30: 1 x 1 cm^2 RU100/RUC130: 2 x 2 cm^2 RUC300: 5 x 5 cm^2 RUC600: 10 x 10 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RU(C)30: 0.5 - 1.5 m/s RU100/RUC130: 0.8 - 2.0 m/s RUC300: 3 - 5 m/s; RUC600: 2.4 - 3.7 m/s
Ripple	≤10%
No-Load Current	≤50 mA
Continuous Load Current	M18: ≤150 mA; M30(..): ≤300 mA
Voltage Drop	≤3.0 V
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Power-on Effect Suppression	per IEC 947-5-2
Time Delay Before Availability *	RU(C)30: ≤144/120 ms; RU100/RUC130: ≤184/140 ms; RUC300: ≤260 ms; RUC600: ≤460 ms
Response Time	RUC 30: ≤80 ms; RUC130: ≤100 ms; RUC300: ≤220 ms; RUC600: ≤420 ms
Trigger Current for Overload Protection	M18: ≥200 mA; M30(..): ≥450 mA
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Temperature Drift	M18: ±2.5% of full scale; M30(..): 0.17%/K (air effect)
Enclosure	IP 65
LED Function	Yellow: Output Energized; object detected within sensing window

* Affected by target distance and potentiometer settings

Wiring Diagram

A — PNP with Synch



Dimensions

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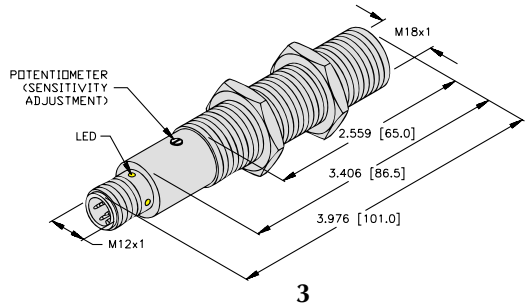

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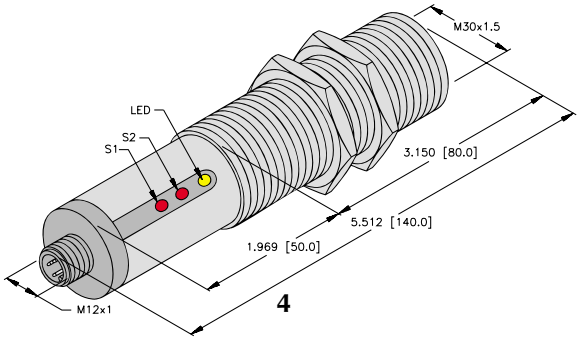

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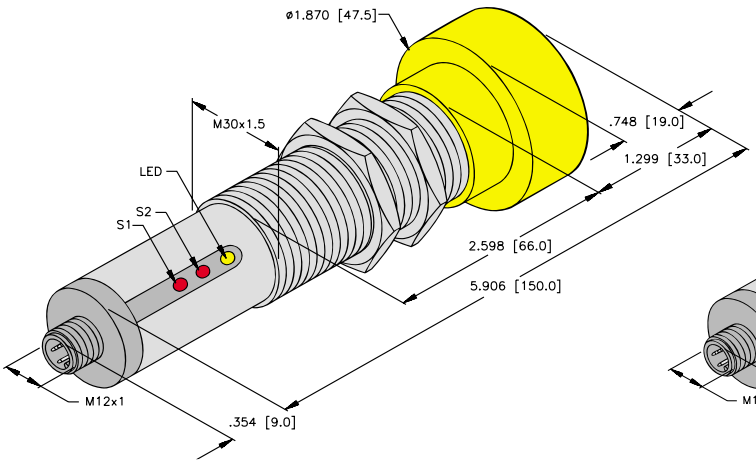

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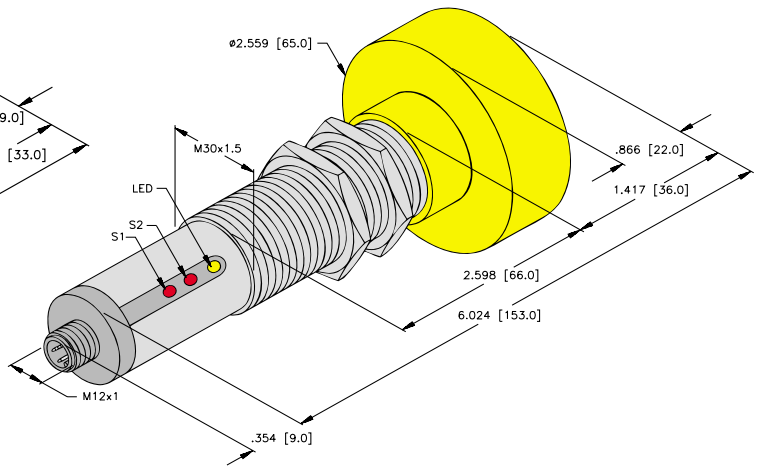


Ultrasonic

M Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

5-Wire DC **eurofast®**
20-30 VDC, Short-Circuit and Overload Protection
Normally Open, Dual Output PNP with Synchronization

Sensor Selection

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RUC 30-M30-2AP8X-H1151	6 - 30	30	3	A	•	0.45	8	1	4	M1840020	**eurofast** **Mating Cordsets** RKK 4.5T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RUC130-M30-2AP8X-H1151	20 - 130	30	3	A	•	2	4	1	10	M1840220	
RUC300-M3047-2AP8X-H1151	40 - 300	30	2	A	•	5	2	2	16	M1840420	
RUC600-M3065-2AP8X-H1151	60 - 600	30	1	A	•	9	1	6	18	M1840620	

Material

Connector:	PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	Anodized Aluminum

Accessories

Accessories and mounting devices can be found in Section J.

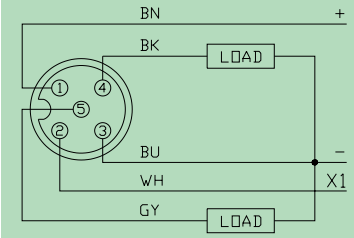
Specifications

Sonic Cone Angle	6°
Standard Target	RUC 30: 1 x 1 cm^2 RUC130: 2 x 2 cm^2 RUC300: 5 x 5 cm^2 RUC600: 10 x 10 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RUC 30: 0.5 - 1.5 m/s RUC130: 0.8 - 2.0 m/s RUC300: 3 - 5 m/s RUC600: 2.4 - 3.7 m/s
Ripple	≤10%
No-Load Current	≤50 mA
Continuous Load Current	≤300 mA
Voltage Drop	≤3.0 V at 300 mA
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Power-on False Pulse Suppression	Incorporated
Time Delay Before Availability *	RUC 30: ≤120 ms; RUC130: ≤140 ms; RUC300: ≤260 ms; RUC600: ≤460 ms
Response Time	RUC 30: ≤80 ms; RUC130: ≤100 ms; RUC300: ≤220 ms; RUC600: ≤420 ms
Trigger Current for Overload Protection	≥450 mA
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Temperature Drift	0.17%/K (air effect)
Enclosure	IP 65
Vibration	10 - 55 Hz, 1 mm deflection
LED Function	Yellow: Output Energized; object detected within sensing window

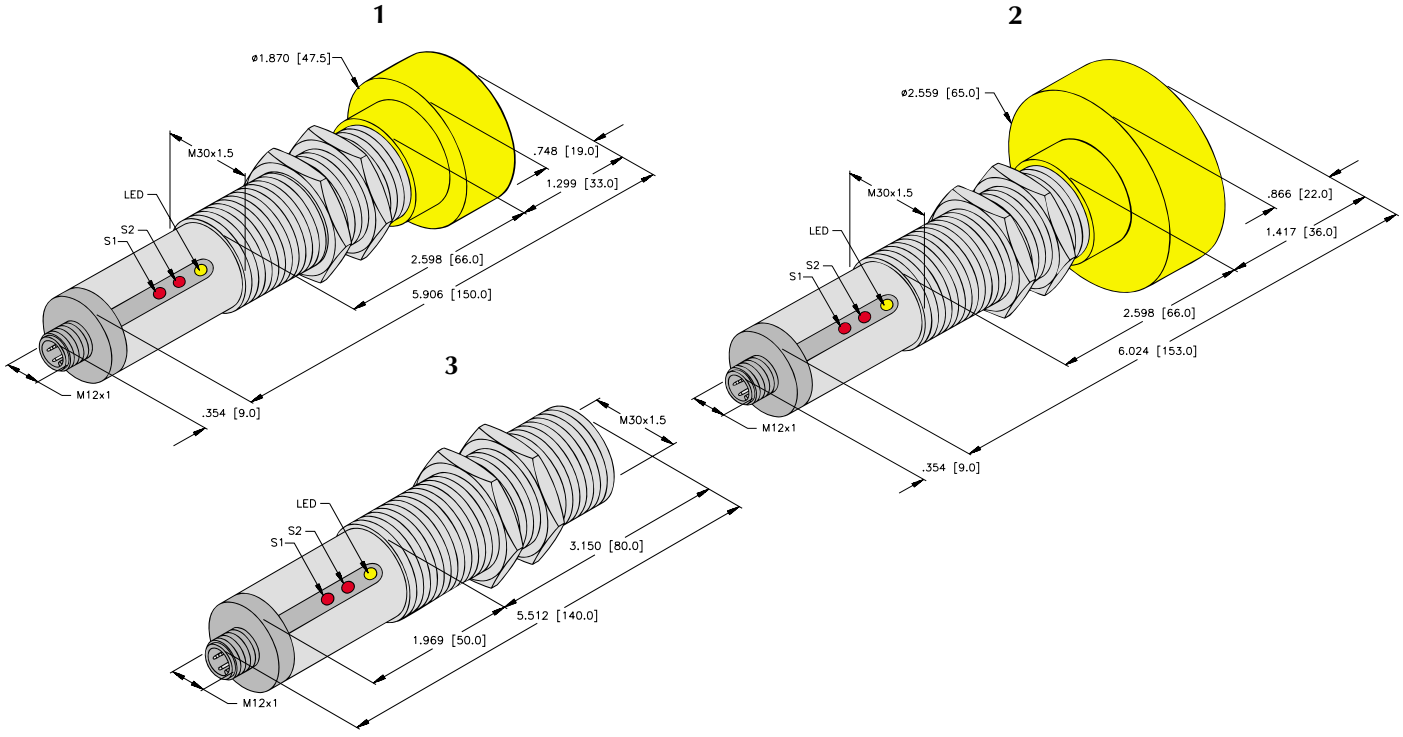
* Affected by target distance and potentiometer settings

Wiring Diagram

A Dual PNP with Synch.



Dimensions



Ultrasonic

Q30

Rectangular Sensors, Plastic

Plastic Housing with Quick Disconnect

4-Wire DC **eurofast®**
18-30 VDC, Short-Circuit and Overload Protection
Normally Open, PNP (Sourcing) with Synchronization

Sensor Selection

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-Q30-AP8X-H1141	6 - 30	30	1	A	•	0.45	8	0.5	4	M1820000	eurofast **Mating Cordsets** RKK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RU100-Q30-AP8X-H1141	20 - 100	30	1	A	•	1.5	5	1	8	M1820200	

Material

Connector:	PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	Crastin, SK 645FR

Accessories

Accessories and mounting devices can be found in Section J.

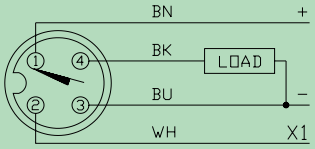
Specifications

Sonic Cone Angle	6°
Standard Target	RU 30: 1 x 1 cm^2
	RU100: 2 x 2 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RU 30: 0.5 - 1.5 m/s
	RU100: 0.6 - 1.5 m/s
Ripple	≤10%
No-Load Current	≤35 mA
Continuous Load Current	≤100 mA
Voltage Drop	≤2.0 V at 100 mA
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Power-on False Pulse Suppression	Incorporated
Time Delay Before Availability *	RU 30: 77 ms
	RU100: 97 ms
Response Time	RU 30: 70 ms
	RU100: 90 ms
Trigger Current for Overload Protection	≥300 mA
Operating Temperature	0°C to +55°C (32°F to +131°F)
Temperature Drift	0.17%/K (air effect)
Enclosure	IP 65
Vibration	10 - 55 Hz, 1 mm deflection
LED Function	Yellow: Output Energized; object detected within sensing window

* Affected by target distance and potentiometer setting

Wiring Diagram

A **PNP with Synch.**



Dimensions

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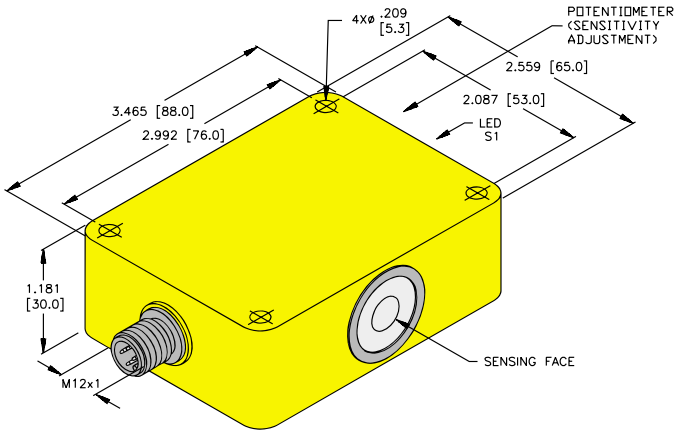


Ultrasonic

CP40

Limit Switch Style Sensor, Plastic Housing

Combiprox®

3-Wire DC

10-30 VDC, Short-Circuit and Overload Protection

Normally Open, PNP (Sourcing)

Sensor Selection

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number
RU100-CP40-AP6X2 w/ESD	5 - 180	40	1	A		5	3	2	1.2	M1610200

Material

Housing:	PBT-GF30-VO

Accessories

Accessories and mounting devices can be found in Section J.

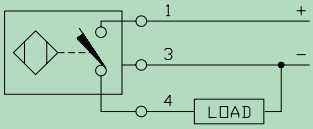
Specifications

Sonic Cone Angle	60°
Adjustable Near Limit	5 - 100 cm
Adjustable Depth of Sensing Window	10 - 100 cm
Standard Target	Distance ≤100 cm: 2 x 2 cm^2
	Distance ≤180 cm: 20 x 20 cm^2
Allowable Angle of Target Inclination	≤15°
Max. Overtravel Speed	Distance ≤100 cm: 1 m/s
	Distance ≤180 cm: 2 m/s
Ripple	≤10%
No-Load Current	≤20 mA
Continuous Load Current	≤200 mA
Voltage Drop	≤2.5 V at 200 mA
Reverse Polarity Protection	Incorporated
Wire-Break Protection	Incorporated
Power-on False Pulse Suppression	Incorporated
ESD Protection per CE	4 kV (8 kV) contact (air) discharge
Time Delay Before Availability *	≤430 ms
Response Time	≤150 ms
Trigger Current for Overload Protection	≥220 mA
Operating Temperature	0°C to +70°C (32°F to +158°F)
Temperature Drift	0.4%/K (air effect)
Enclosure	IP 40
LED Functions	Red: Output energized
	Green: Object within sonic cone

* Affected by target distance and potentiometer settings

Wiring Diagram

A **PNP (Sourcing)**



Dimensions

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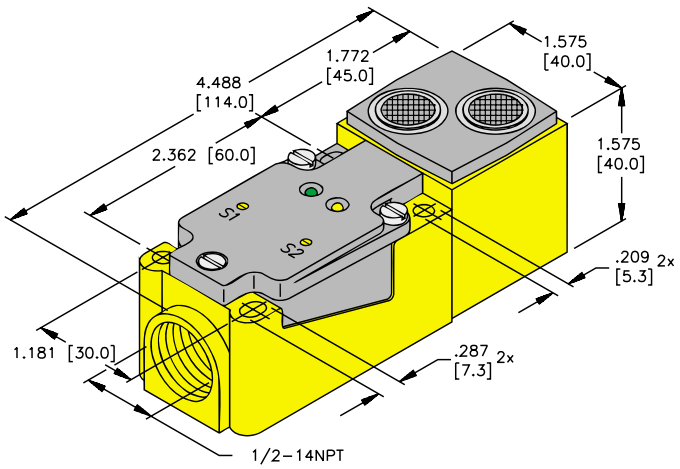


Ultrasonic

Q30

Rectangular Sensors, Plastic

Plastic Housing with Quick Disconnect

4-Wire DC **eurofast®**
18-30 VDC, Short-Circuit and Overload Protection
Linear Analog Voltage Output with Synchronization

Sensor Selection

Part Number	Rated Operating Distance (cm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-Q30-LUX-H1141	6 - 30	30	1	A	•	0.5	80	4	M1820005	eurofast **Mating Cordsets** RKK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RU100-Q30-LUX-H1141	20 - 100	30	1	A	•	1.5	80	8	M1820205	

Material

Connector:	PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	Crastin, SK 645FR

Accessories

Accessories and mounting devices can be found in Section J.

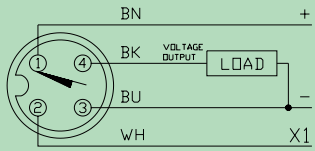
Specifications

Sonic Cone Angle	6°
Standard Target	RU 30: 1 x 1 cm^2 RU100: 2 x 2 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RU 30: 0.5 - 1.5 m/s RU100: 0.6 - 1.5 m/s
Ripple	≤10%
No-Load Current	≤35 mA
Voltage Output	0 - 10 V
Load Impedance	>1 kΩ
Power-on False Pulse Suppression	Incorporated
Time Delay Before Availability *	87 ms
Operating Temperature	0°C to +55°C (32°F to +131°F)
Temperature Drift	0.17%/K
Linearity Tolerance	±2% of full scale
Enclosure	IP 65
Vibration	10 - 55 Hz, 1 mm deflection
LED Functions	Yellow: Output energized; object within detection zone

* Affected by target distance and potentiometer setting

Wiring Diagram

A Voltage with Synch.



Dimensions

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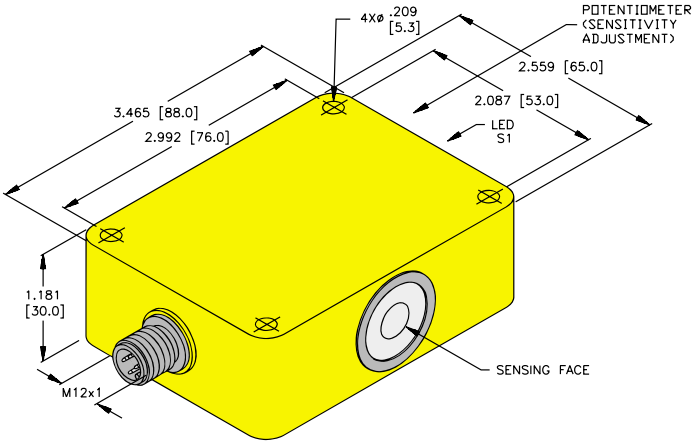
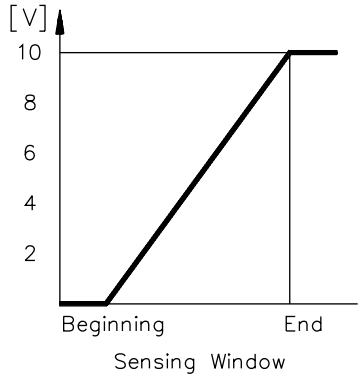


Response Curve



Ultrasonic

CP40

Limit Switch Style Sensor, Plastic Housing
Combiprox®

4-Wire DC
15-30 VDC, Short-Circuit and Overload Protection
Linear Analog Current and Voltage Output

Sensor Selection

Part Number	Rated Operating Distance (cm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number
RU100-CP40-LIUX W/ESD	5 - 180	40	1	A		5	150	1.2	M1534800

Material

Housing:	PBT-GF30-VO

Accessories

Accessories and mounting devices can be found in Section J.

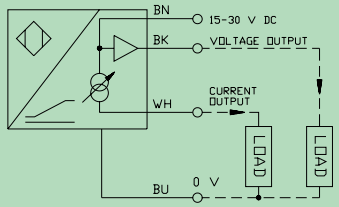
Specifications

Sonic Cone Angle	60°
Standard Target	Distance ≤100 cm: 2 x 2 cm^2
	Distance ≤180 cm: 20 x 20 cm^2
Allowable Angle of Target Inclination	≤15°
Max. Overtravel Speed	Distance ≤100 cm: 1 m/s
	Distance ≤180 cm: 2 m/s
Ripple	≤10%
No-Load Current	≤20 mA
Current Output	0 - 20 mA
- Load Impedance	≤500 Ω
Voltage Output	0 - 10 V
- Load Impedance	≥4.7 kΩ
Power-on False Pulse Suppression	Incorporated
Time Delay Before Availability *	≤430 ms
ESD Protection per CE	4 kV (8 kV) contact (air) discharge
Operating Temperature	0°C to +70°C (32°F to +158°F)
Temperature Drift	0.4%/K
Linearity Tolerance	±3% of full scale
Enclosure	IP 40
LED Functions	Red: Power ON
	Flashing: Object in detection zone

* Affected by target distance and potentiometer settings

Wiring Diagram

A Current & Voltage



Dimensions

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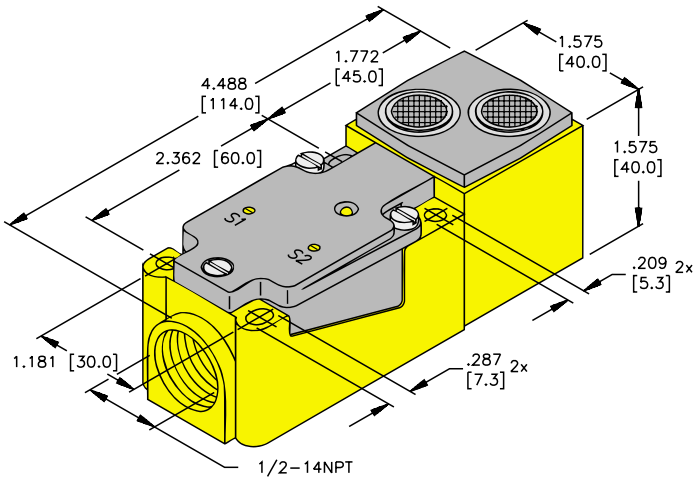
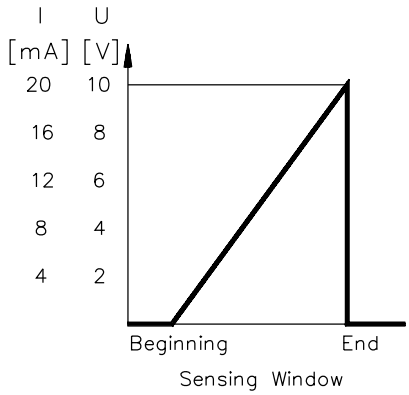


Response Curve



Ultrasonic

M18 Barrel

Barrel, Metal with Quick Disconnect
Partial Threading

4-Wire DC **eurofast®**
20-30 VDC
Linear Analog Current Output with Synchronization

Sensor Selection

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M18-LIX-H1141	5 - 30	18	1	A	•	0.5	75	4	M1810005	**eurofast** **Mating Cordsets** RK 4.4T-2 (2 meter) For other styles see Section H or consult "Cordsets" catalog.
RU100-M18-LIX-H1141	15 - 100	18	1	A	•	2	105	8	M1810205	

Material

Connector:	PBT Plastic
Sensing Face:	PBT Plastic
Barrel:	Nickel Plated Brass

Accessories

Accessories and mounting devices can be found in Section J.

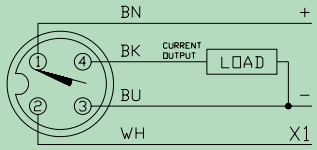
Specifications

Sonic Cone Angle	6°
Standard Target	RU30: 1 x 1 cm^2 RU100: 2 x 2 cm^2
Allowable Angle of Target Inclination	≤3°
Max. Overtravel Speed	RU30: 0.5 - 1.5 m/s RU100: 0.8 - 2.0 m/s
Ripple	≤10%
Current Output	4 - 20 mA into <500 Ω
No-Load Current	≤50 mA
Power-on Effect Suppression	per IEC 947-5-2
Time Delay Before Availability *	RU 30: ≤144 ms RU100: ≤184 ms
Response Time	RU 30: ≤75 ms RU100: ≤105 ms
Operating Temperature	-25°C to +70°C (-13°F to +158°F)
Temperature Drift	±2.5% of full scale
Linearity Tolerance	±2% of full scale
Enclosure	IP 67
LED Function	Yellow: Output Energized; object detected within sensing window

* Affected by target distance

Wiring Diagram

A Current with Synch.



Dimensions

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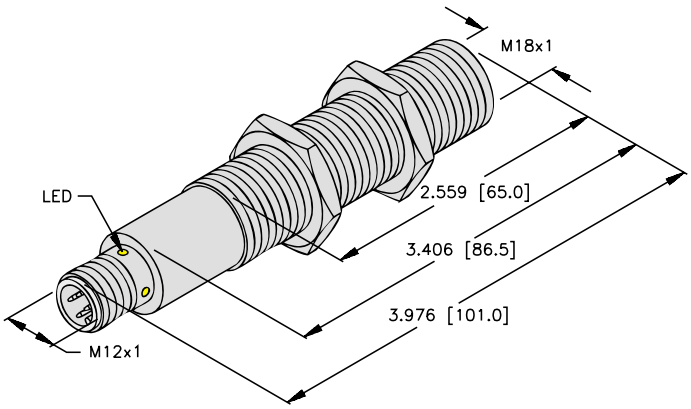
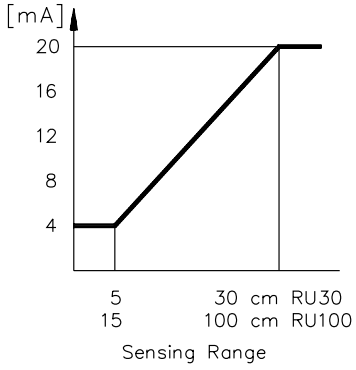


Response Curve



Ultrasonic

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MAIN SELECTION GUIDE

Visit **TURCK** on the Internet:
http://www.turck.com

Selection Guide *

eurofast® Molded Cordsets

PVC Unshielded	H9-H10
PUR, Unshielded "/S90"	H15-H16
PVC, LED Styles	H13-H14

PVC and PUR "/S90" NAMUR for Hazardous Areas	H11-H12
PVC, for Continous Flex Applications "/S101"	H11-H12
PVC "/XOR" and PUR "/S529" High Temp and Mech. Resistance	H11-H12

eurofast® Field Wireables

Convert hard wiring to quick disconnect	H17-H18

eurofast® Receptacles and Bulkhead Feed-Thru

Front Mount, Leads	H19-H22
Bulkhead Feed-Thru	H23-H24

picofast® Molded Cordsets

PVC Unshielded	H25-H26
PUR, Unshielded "/S90"	H27-H28
PVC or PUR with LEDs (right angle only)	H29-H30

picofast® Field Wireables

Convert hard wiring to quick disconnect	H31-H32

picofast® Receptacles

Front and Rear Mount, Leads	H33-H34

* Consult "Cordsets" catalog for complete product line.

Selection Guide*

minifast® Molded Cordsets

PVC, 18 AWG	H35-H36
PUR, 18 AWG "/S90"	H37-H38

minifast® Field Wireables

Convert hard wiring to quick disconnect	H43-H44

minifast® Receptacles and Bulkhead Feed-Thru

Front Mount, Leads & PCB Pins	H39-H40
Bulkhead Feed-Thru	H41-H42
Sensor Adapters	H45-H46

microfast® Molded Cordsets

PVC Unshielded	H47-H48
PUR, Unshielded "/S90"	H49-H50

microfast® Field Wireables

Convert hard wiring to quick disconnect	H53-H54

microfast® Receptacles and Adapters

Front Mount Leads	H51-H52
Sensor Adapters	H55-H56

Note: All dimensions in this section are shown as: inches [mm]

TURCK
Cordsets Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

eurofast Cordset Part Number Key

R	K		V		4.4	T	-	2	-		-	/S..

eurofast
R = Straight
W = Right Angle

Gender
K = Female Connector
S = Male Connector

Plug Body Style
(Blank) = Standard Plug Body
C = Medium Plug Body
E = Large Plug Body
L = Compact Plug Body

Coupling Nut Options
(Blank) = Nickel Plated Brass
K = Nylon
V = Stainless Steel

Number of Wires / Color Codes
4.2 = 2 Conductors, Bn, Bu
4.21 = 2 Conductors, Bn, Bu, Blue Jacket, NAMUR
4 = 3 Conductors, Bn, Bu, Bk
4.4 = 4 Conductors, Bn, Bu, Bk, Wh
4.41 = 4 Conductors, Bn, Bu, Bk, Wh, Blue Jacket, NAMUR
4.43 = 4 Conductors, Bn, Bu, Bk, Wh, Yellow Jacket
4.5 = 5 Conductors, Bn, Bu, Bk, Wh, Gy
6 = 6 Conductors, Bn, Bu, Bk, Wh, Gy, Pk
8 = 8 Conductors, Bn, Bu, Wh, Gy, Pk, Gn, Ye, Rd

Plug Options
(Blank) = No Barb Fitting, L Style Only
T = T Barb Fitting

Length in Meters

LED Options
(Blank) = No LEDs
P7X2 = 2 LEDs with Sourcing (PNP) Signal and Power
P7X3 = 3 LEDs with Sourcing (PNP) Signal and Power
N7X2 = 2 LEDs with Sinking (NPN) Signal and Power

Insertion Point of Extension Cable 2nd Prefix*
* Female Connector Listed 1st, Male Connector 2nd
Example: RK 4T-4-WS 4T

Varieties
(Blank) = PVC Jacket
/S90 = PUR Jacket
/S90-SP = PUR Coil Cord
/S101 = ***flexlife*** - High Flex Cable
/S529 = Yellow PUR Jacket, Braided Shield, PVC Inner Jacket
/S600 = Rubber Jacket
/S618 = Foil Shield & Drain Wire, Drain not Connected
/S622 = Grey PVC Jacket, 18 AWG Conductors
/S653 = Foil Shield & Drain Wire, Drain Connected
/S715 = Yellow PVC Jacket
/S .. = Consult Factory, Special
/XOR = Irradiated PVC Jacket

eurofast Receptacle Part Number Key

F	K	FD			4.4	-	0.5		/S..

Designator for Receptacle

Gender
K = Female Connector
S = Male Connector

Housing Style
(Blank) = Front Mount
D = Front Mount, Front Locknut
FD = Rear Mount
FDH = Rear Mount, Separate Housing
FDL = Rear Mount, Solder Cup
M = Front Mount, Rotating Coupling Nut
P = Back Panel Mount

Keyway Type
(Blank) = Standard Keyway
W = Reverse Keyway

Material
(Blank) = Nickel Plated Brass
V = Stainless Steel

Number of Pins
4.4 = 4
4.5 = 5
6 = 6
8 = 8

Connection Type
(Blank) = No Leads - Either PCB Pin or Solder Cup
* = Lead Length in Meters
PCB = PCB Pins

Thread Type
(Blank) = PG 9 Threads or other, See Specifications
/13.5 = PG 13.5 Threads
/14.5 = 1/2-14 NPSM Threads
/18.25 = 1/4-18 NPT Threads

Varieties
/S621 = All Grey Leads, 18 AWG
/S .. = Consult Factory, Special

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

picofast Cordset Part Number Key

P	K	W	3	Z	-	**	6	/S..

picofast

Gender
K = Female Connector
S = Male Connector

Configuration
G =Straight
W = Right Angle

Number of Wires / Color Code
3 = Bn, Bu, Bk
4 = Bn, Bu, Bk, Wh
6 = Bn, Bu, Bk, Wh, Gy, Pk

Locking Method
(Blank) = No Locking Sleeve
Z = Locking Sleeve (Snap lock)
M = M8x1 Threaded Coupling Nut

LED Options
(Blank) = No LEDs
P7X2 = 2 LEDs with Sourcing (PNP) Signal and Power
N7X2 = 2 LEDs with Sinking (NPN) Signal and Power

Length in Meters

Insertion Point of Extension Cable 2nd Prefix*
* Extension Cable, Female Connector Listed 1st,
Male Connector 2nd - Example: `PKG 3M-2-PSG 3M`

Varieties
(Blank) = PVC Jacket
/S90 = PUR Jacket
/S90-SP = PUR Coil Cord
/S90/S101 = PUR Jacket, ***flexlife***
/S90/S618 = PUR Jacket with Foil Shield and Drain Wire
/S .. = Consult Factory, Special

picofast Receptacle Part Number Key

M	F	K	S	3	F	-	0.2

picofast

Designator for Receptacle

Gender
K = Female Connector
S = Male Connector

Connection Type
(Blank) = Snap Lock
S = Threaded

Number of Poles
3
4
6

Mounting Style
(Blank) = Front Mount (Rear Thread and Locknut)
F = Rear Mount (Front Thread and Locknut)

Lead Length in Meters

TURCK
Cordsets Part Number Keys

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

minifast Cordset Part Number Key

R	K	M		30	-	4M	/S..

minifast
R = Straight
W = Right Angle

Gender
K = Female Connector, Female Threads
S = Male Connector, Male Threads
Y = Male Connector, Female Threads

Coupling Nut Material
(Blank) = Nylon
M = Nickel Plated Brass
V = Stainless Steel

Insertion Point of Extension Cable 2nd Prefix*
* Male Connector Listed 1st, Female Connector 2nd
Example: `RSM RKM 40-2M`

Varieties
(Blank) = PVC Jacket
/S90 = PUR Jacket
/S90-SP = PUR Coil Cord
/S600 = Rubber Jacket
/S .. = Consult Factory, Special

Length in Meters

Number of Wires / AWG / Conductor Colors

20	2/18 AWG	Bn, Bu
26	2/16 AWG	Bk, Wh
30	3/18 AWG	Bn, Bu, Gn/Ye
31	3/18 AWG	Bn, Bu, Bk
35	3/16 AWG	Rd/Bk, Rd/Wh, Gn
36	3/16 AWG	Bk, Wh, Gn
311	3/18 AWG	Rd/Bk, Rd/Wh, Gn
40	4/18 AWG	Bn, Bu, Bk, Wh
46	4/16 AWG	Bk, Wh, Rd, Gn
50	5/18 AWG	Bn, Bu, Bk, Wh, Gn/Ye
55	5/16 AWG	Rd/Bk, Rd/Wh, Rd/Bu, Rd/Og, Gn
56	5/16 AWG	Bk, Wh, Rd, Og, Gn
511	5/18 AWG	Rd/Bk, Rd/Wh, Rd/Bu, Rd/Og, Gn
61	6/18 AWG	Bn, Bu, Wh, Gy, Ye, Gn
66	6/16 AWG	Bk, Wh, Rd, Og, Bu, Gn
__D	Smooth Plug Body (16 AWG straight only)	

minifast Receptacle Part Number Key

R	K	F		V		30	-	1M	/S..

minifast

Gender
K = Female Connector, Female Threads
S = Male Connector, Male Threads
X = Female Connector, Male Threads

Designator for Receptacle

Mounting Style
(Blank) = Front Mount
P = Back Panel Mount

Material
(Blank) = Anodized Aluminum
K = Nylon
V = Stainless Steel

Connection Type
(Blank) = Leads or PCB Pins
L = Solder Cup

Varieties
/S .. = Consult Factory, Special

Connection Type
(Blank) = Solder Cup
__M = Lead Length in Meters
PCB = PCB Pins

Number of Wires
First Digit Represents Number of Wires
20
26
30
31
35
36
311
40
46
50
55
56
511
61
66

TURCK Inc. 3000 Campus Drive Minneapolis, MN 55441 Application Support: 1-800-544-PROX Fax: (763) 553-0708 www.turck.com

Keys are to assist in **IDENTIFICATION ONLY**.
Consult factory for catalog items not identified.

microfast Cordset Part Number Key

microfast

KB = Straight Female Connector
WKB = Right Angle Female Connector
SB = Straight Male Connector
WSB = Right Angle Male Connector

Body Style

(Blank) = Standard Plug Body
E = Large Plug Body

Coupling Nut Material

(Blank) = Nickel Plated Brass
V = Stainless Steel

Number of Wires / Color Code

3 = Rd/Bk, Rd/Wh, Gn
4 = Rd/Bk, Rd/Wh, Rd, Gn
5 = Rd/Bk, Rd/Wh, Rd/Ye, Rd, Gn

Varieties

(Blank) = PVC Jacket
/S90 = PUR Jacket
/S90-SP = PUR Coil Cord
/S105 = PVC Jacket, Mechanical Shield (Braided)
/S600 = Rubber Jacket
/XOR = Irradiated PVC Jacket
/S .. = Consult Factory, Special

Insertion Point of Extension Cable 2nd Prefix*

* Extension Cable, Female Connector Listed 1st, Male Connector 2nd; Example: `KB 3T-2-SB 3T`

Length in Meters

Plug Options

T = "T" Barb Fitting

microfast Receptacle Part Number Key

Designator for Receptacle

Gender

K = Female Connector
S = Male Connector

microfast

Mounting Style

(Blank) = Front Mount
P = Back Panel Mount

Material

(Blank) = Nickel Plated Brass
V = Stainless Steel

Mounting Threads

18.25 = 1/4-18 NPT
14.5 = 1/2-14 NPSM

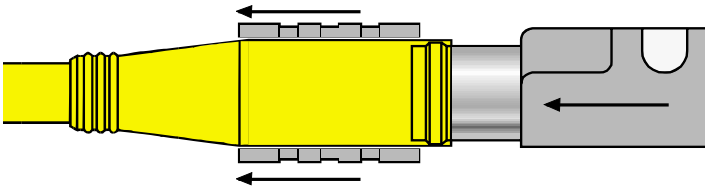
Lead Length in Meters

Number of Wires

3
4
5

picofast® "Snap Lock" Connector Instructions

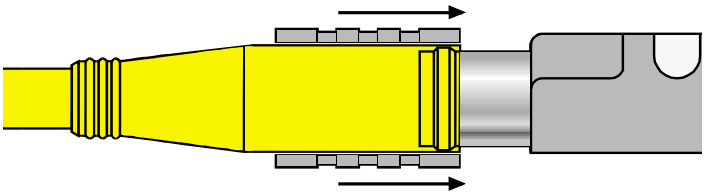
UNLOCK



With TURCK's patented Locking Sleeve pulled back, any ***picofast*** sensor slides on without any difficulty.

After sensor is connected, push Locking Sleeve forward to create a watertight connection. It's a snap!

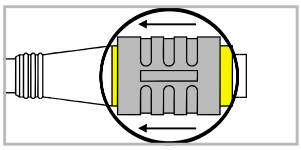
LOCK



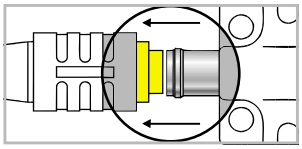
Installation Instructions

To Attach:

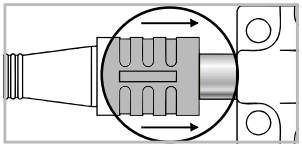
1. Be sure black locking sleeve is pulled back.



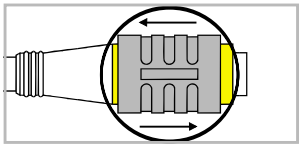
2. Line up pins and push connector onto plug. You will feel a "snap." Do not twist.



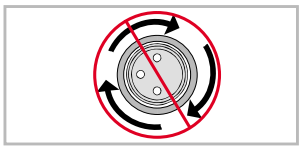
3. Push locking sleeve forward on connector until it is flush with the front of the connector.



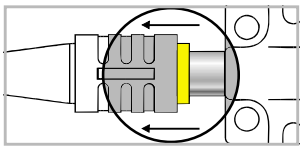
4. If sleeve is difficult to slide on a new connector, "exercise" it a few times. Do not use tools.



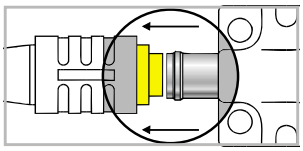
1. Do not twist.



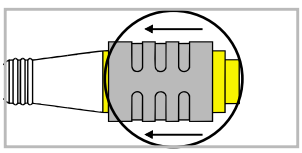
2. Pull locking sleeve back to "unlocked" position.



3. Pull connector straight off.



4. Leave locking sleeve in unlocked position.

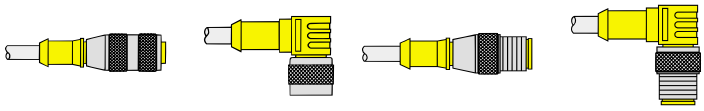


Notes:

eurofast® Standard Duty Connectors, Unshielded, PVC

- 20 - 22 AWG
- Available in 2 - 5 Conductor
- High Grade Oil and UV Resistant PVC
- Unshielded

See table below



RK .. WK .. RS .. WS ..

4-pin, 250 VAC / 300 VDC, 4 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
2-wire DC sensors UL Recognized CSA Certified	2/20 AWG Grey PVC 105°C 5.2 mm OD	1. N/C 2. N/C 3. Bn 4. Bu	RK 4.2T-*	WK 4.2T-*	RS 4.2T-*	WS 4.2T-*
3-wire DC sensors UL Recognized CSA Certified	3/20 AWG Grey PVC 105°C 5.2 mm OD	1. Bn 2. N/C 3. Bu 4. Bk	RK 4T-*	WK 4T-*	RS 4T-*	WS 4T-*
3-wire DC sensors UL Recognized CSA Certified	3/20 AWG Yellow PVC 105°C 5.2 mm OD	1. Bn 2. N/C 3. Bu 4. Bk	RK 4T-*/S715	WK 4T-*/S715	RS 4T-*/S715	WS 4T-*/S715
4-wire DC applications UL Recognized CSA Certified	4/22 AWG Grey PVC 105°C 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.4T-*	WK 4.4T-*	RS 4.4T-*	WS 4.4T-*
4-wire DC applications UL Recognized CSA Certified	4/22 AWG Yellow PVC 105°C 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.43T-*	WK 4.43T-*	RS 4.43T-*	WS 4.43T-*

5-pin, 250 V, 4 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
5-wire DC applications UL Recognized CSA Certified	5/22 AWG Grey PVC 105°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk 5. Gy	RK 4.5T-*	WK 4.5T-*	RS 4.5T-*	WS 4.5T-*
5-wire DC applications UL Recognized CSA Certified	5/22 AWG Yellow PVC 105°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk 5. Gy	RK 4.5T-*/S715	WK 4.5T-*/S715	RS 4.5T-*/S715	WS 4.5T-*/S715

* = Length in meters

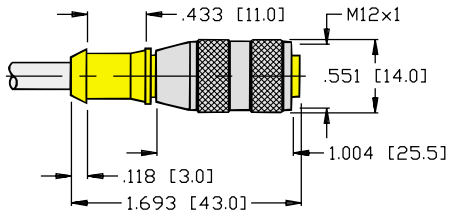
Specifications

Connector:	Oil resistant polyurethane body material, Nylon or PUR contact carrier. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass. See options below**.
Cable:	See table.
Protection:	NEMA 1,3,4,6P and IEC IP 68.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify nylon coupling nut, add a "K" to part number.
For example: RK .. to RKK .. (straight female) or WS .. to WSK .. (right angle male).
To specify stainless steel coupling nut, add a "V" to part number.
For example: RK .. to RKV .. (straight female) or WS .. to WSV .. (right angle male).

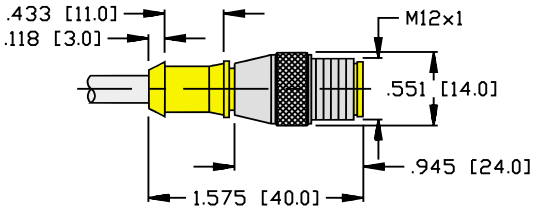
Dimensions

RK ..



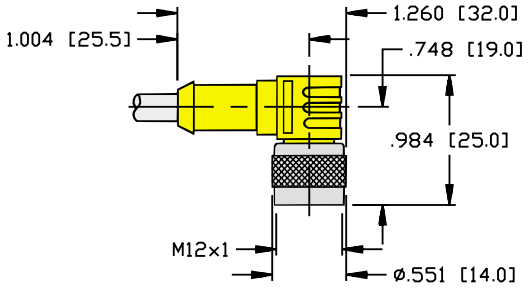
Female Connector

RS ..



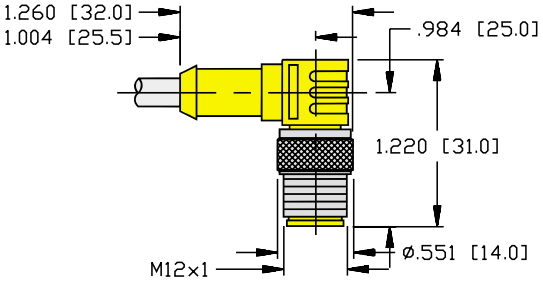
Male Connector

WK ..



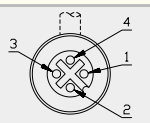
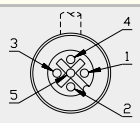
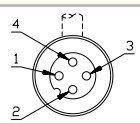
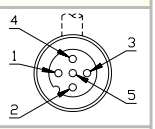
Female Connector

WS ..



Male Connector

Pinouts

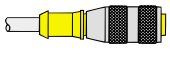
Female		Male	
			
4-pin	**5-pin**	**4-pin**	**5-pin**

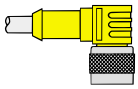
Cordsets

eurofast® Standard Duty Connectors, Special Applications

- Special Duty PVC and PUR
- NAMUR
- Flexlife
- Rough Duty Cable, Double Jacket, Internal Armor
- 20 and 22 AWG, 2 - 4 Conductor

See table below


RK ..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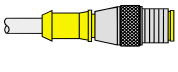
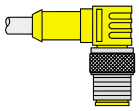

RS ..


WS ..

NAMUR - Hazardous Areas, 250 VAC / 300 VDC, 4 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
2-wire NAMUR sensors UL Recognized CSA Certified	2/20 AWG Blue PVC 105°C 5.2 mm OD	1. Bn 2. Bu 3. N/C 4. N/C	RK 4.21T-*	WK 4.21T-*	RS 4.21T-*	WS 4.21T-*
2-wire NAMUR sensors UL Recognized CSA Certified	2/20 AWG Blue PUR 80°C 5.2 mm OD	1. Bn 2. Bu 3. N/C 4. N/C	RK 4.21T-*/S90	WK 4.21T-*/S90	RS 4.21T-*/S90	WS 4.21T-*/S90
4-wire NAMUR UL Recognized CSA Certified	4/22 AWG Blue PVC 105°C 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.41T-*	WK 4.41T-*	RS 4.41T-*	WS 4.41T-*

Continuous Flex - 250 VAC / 300 VDC, 4 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
3-wire DC applications UL Recognized CSA Certified	3/20 AWG Grey PVC 105°C 5.7 mm OD	1. Bn 2. N/C 3. Bu 4. Bk	RK 4T-*/S101	WK 4T-*/S101	RS 4T-*/S101	WS 4T-*/S101
4-wire DC applications UL Recognized CSA Certified	4/22 AWG Grey PVC 105°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.4T-*/S101	WK 4.4T-*/S101	RS 4.4T-*/S101	WS 4.4T-*/S101

Heavy Duty - High Temperature or Mechanical Resilience

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Short-term high temp 4-wire DC applications Irradiated PVC cable	4/20 AWG Yellow PVC, 240 V, 4 A 80°C, 250°C short term 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.4T-*/XOR	WK 4.4T-*/XOR	RS 4.4T-*/XOR	WS 4.4T-*/XOR
High mechanical strength 4-wire DC applications PUR/PVC cable with braided mechanical shield (armor)	250 VAC / 300 VDC, 4 A 4/20 AWG, braided shield Yellow PUR 80°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.41T-*/S529	WK 4.41T-*/S529	RS 4.41T-*/S529	WS 4.41T-*/S529

* = Length in meters

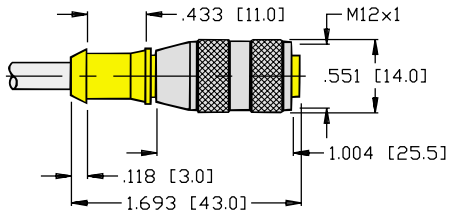
Specifications

Connector:	Oil resistant polyurethane body material, Nylon or PUR contact carrier. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass. See options below**.
Cable:	See table.
Protection:	NEMA 1,3,4,6P and IEC IP 68.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify nylon coupling nut, add a "K" to part number.
For example: RK .. to RKK .. (straight female) or WS .. to WSK .. (right angle male).
To specify stainless steel coupling nut, add a "V" to part number.
For example: RK .. to RKV .. (straight female) or WS .. to WSV .. (right angle male).

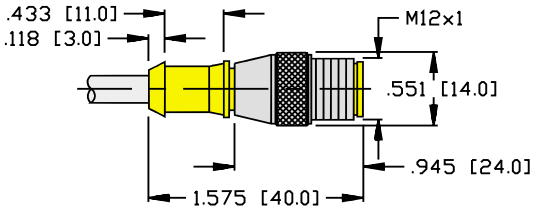
Dimensions

RK ..



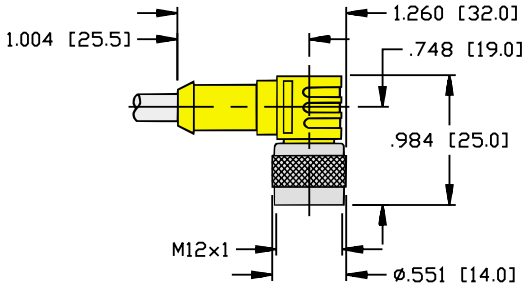
Female Connector

RS ..



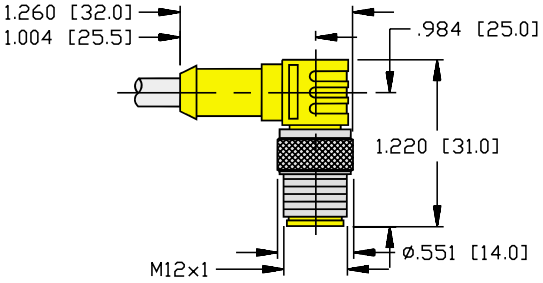
Male Connector

WK ..



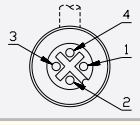
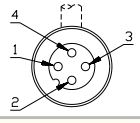
Female Connector

WS ..



Male Connector

Pinouts

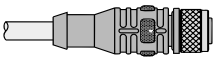
Female	Male
	
4-pin	**4-pin**

eurofast® LED Versions

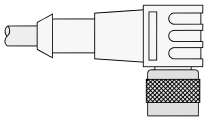
- **Standard Duty PVC**
- **Unshielded**
- **20 and 22 AWG**

NRTL/C

Right angle only



RKE ..



WK ..

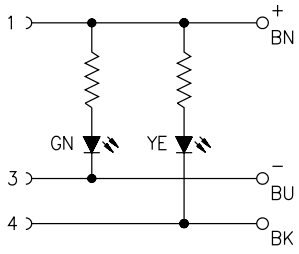
4-pin, 10-30 VDC, 4 A, LEDs - Female

Application	Cable Specs	Pinout	Straight - PNP	Right Angle - PNP	Right Angle - NPN
3-wire DC sensors 2 indicator LEDs Power and PNP or NPN signal (straight - PNP only)	3/20 AWG Grey PVC 105°C 5.2 mm OD	1. Bn 2. N/C 3. Bu 4. Bk	RKE 4T-*-P7X2	WK 4T-*-P7X2	WK 4T-*-N7X2
4-wire DC applications 3 indicator LEDs Power and 2 PNP signals	4/22 AWG Grey PVC 105°C 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	- - - -	WK 4.4T-*-P7X3	- - - -

* = Length in meters

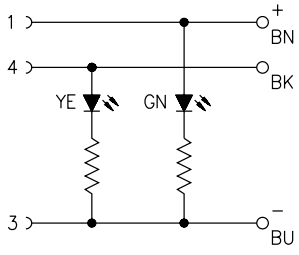
LED Diagrams

(3-wire NPN)
WK 4T-*-N7X2



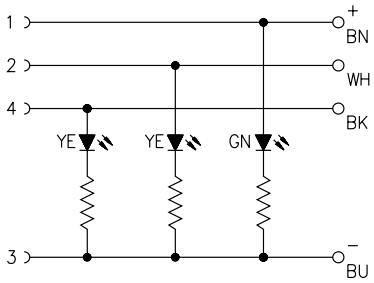
1. + Voltage (Green LED)
2. N/C
3. Common
4. Output (Yellow LED)

(3-wire PNP)
RKE 4T-*-P7X2
WK 4T-*-P7X2



1. + Voltage (Green LED)
2. N/C
3. Common
4. Output (Yellow LED)

(4-wire PNP)
WK 4.4T-*-P7X3



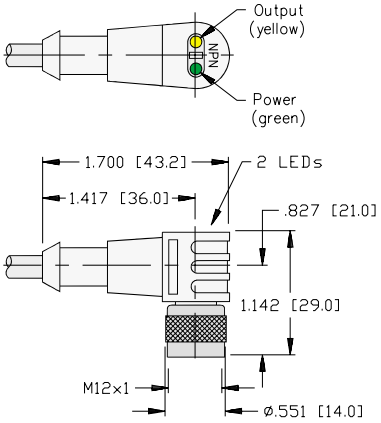
1. + Voltage (Green LED)
2. Output (Yellow LED)
3. Common
4. Output (Yellow LED)

Specifications

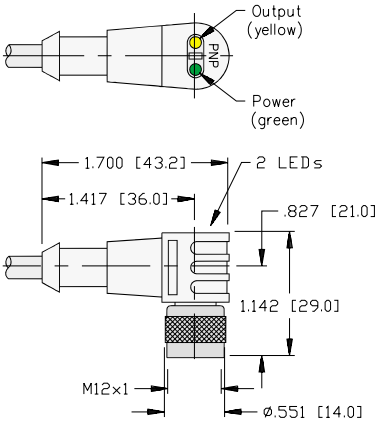
Connector:	Oil resistant polyurethane body material, PUR contact carrier, spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass.
Cable:	See table.
LED Current:	8 mA maximum at 30 VDC supply voltage (per LED).
Protection:	NEMA 1,3,4,6P and IEC IP 68.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

Dimensions

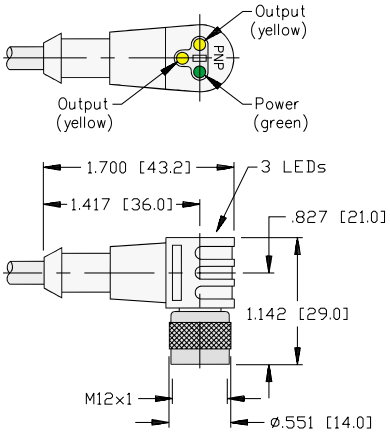
WK 4T-*-N7X2



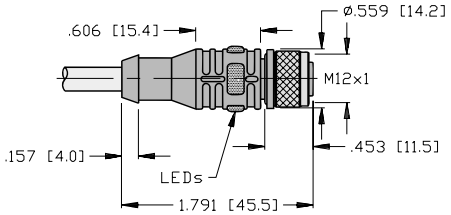
WK 4T-*-P7X2



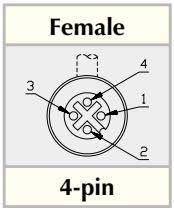
WK 4.4T-*-P7X3



RKE 4T-*-P7X2



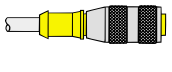
Pinouts



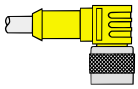
eurofast® Standard Duty Connectors, Unshielded, Polyurethane

- **Oil and Abrasion Resistant Polyurethane**
- **Unshielded**
- **22 AWG**
- **Available in 3 - 5 Conductor**

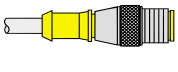
See table below



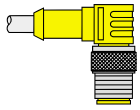
RK ..



WK ..



RS ..



WS ..

4-pin, 250 VAC / 300 VDC, 4 A

			Female		*Male*	
Application	**Cable Specs**	**Pinout**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
3-wire DC sensors UL Recognized CSA Certified	3/22 AWG Grey PUR 105°C 5.2 mm OD	1. Bn 2. N/C 3. Bu 4. Bk	RK 4T-*/S90	WK 4T-*/S90	RS 4T-*/S90	WS 4T-*/S90
4-wire DC applications UL Recognized CSA Certified	4/22 AWG Grey PUR 80°C 5.2 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.4T-*/S90	WK 4.4T-*/S90	RS 4.4T-*/S90	WS 4.4T-*/S90
4-wire DC applications UL Recognized CSA Certified	4/22 AWG Yellow PUR 105°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RK 4.43T-*/S90	WK 4.43T-*/S90	RS 4.43T-*/S90	WS 4.43T-*/S90

5-pin, 250 V, 4 A

			Female		*Male*	
Application	**Cable Specs**	**Pinout**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
5-wire DC applications UL Recognized CSA Certified	5/22 AWG Grey PUR 80°C 5.7 mm OD	1. Bn 2. Wh 3. Bu 4. Bk 5. Gy	RK 4.5T-*/S90	WK 4.5T-*/S90	RS 4.5T-*/S90	WS 4.5T-*/S90

* = Length in meters

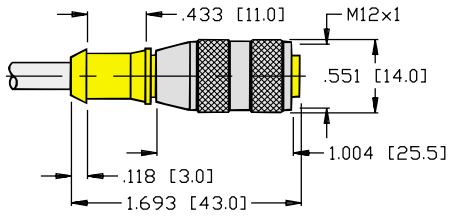
Specifications

Connector:	Oil resistant polyurethane body material, Nylon or PUR contact carrier. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass. See options below**.
Cable:	See table.
Protection:	NEMA 1,3,4,6P and IEC IP 68.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify nylon coupling nut, add a "K" to part number.
For example: RK .. to RKK .. (straight female) or WS .. to WSK .. (right angle male).
To specify stainless steel coupling nut, add a "V" to part number.
For example: RK .. to RKV .. (straight female) or WS .. to WSV .. (right angle male).

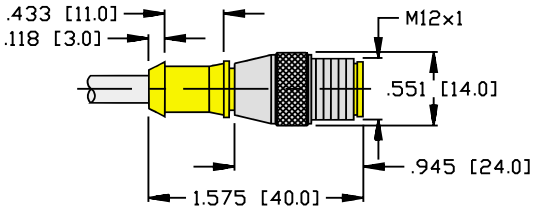
Dimensions

RK ..



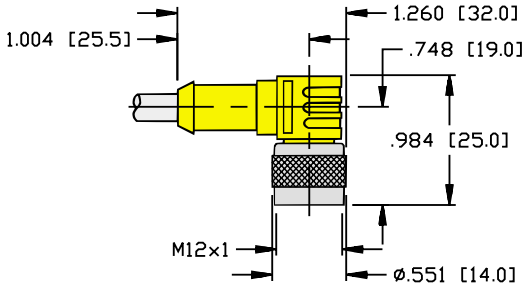
Female Connector

RS ..



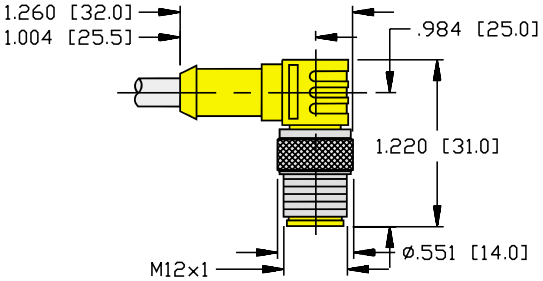
Male Connector

WK ..



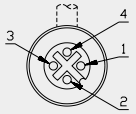
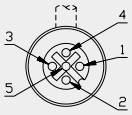
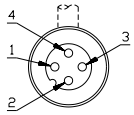
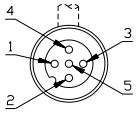
Female Connector

WS ..



Male Connector

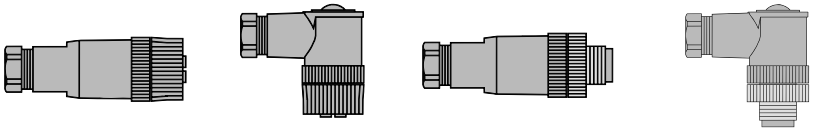
Pinouts

Female		Male	
			
4-pin	**5-pin**	**4-pin**	**5-pin**

Cordsets

eurofast® Field Wireable Connectors

- Available in Standard and Reverse Key
- Convert Hard Wiring to Quick Disconnect
- Facilitates Field Replacements
- For use with Custom Wiring, Junction Boxes and Sensors



4 and 5-pin, Standard Key (DC)

		Female		*Male*	
Application	**Specifications**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Mates with standard key 4-pin cordsets and receptacles	125 VAC / 150 VDC, 3.0 A PG 7 cable gland, accepts 4-6 mm cable Screw terminals	B 8141-0	B 8241-0	BS 8141-0	BS 8241-0
Mates with standard key 5-pin cordsets and receptacles	30 VAC / 36 VDC, 3.0 A PG 9 cable gland, accepts 4-8 mm cable Screw terminals	B 8151-0	B 8251-0	BS 8151-0	BS 8251-0

5-pin, Reverse Key (AC)

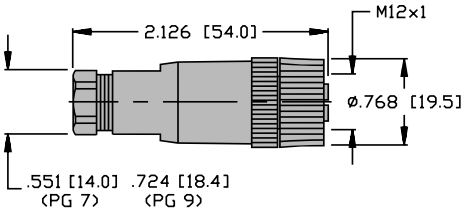
		Female		*Male*	
Application	**Specifications**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Mates with reverse key 5-pin cordsets and receptacles	30 VAC / 36 VDC, 3.0 A PG 9 cable gland, accepts 4-8 mm cable Screw terminals	BWS 8151-0	BWS 8251-0	BSWS 8151-0	BSWS 8251-0

Specifications

Housing:	PBT, Black.
Connector:	Nylon. Spacings to VDE 0110 Group C.
Contacts:	CuSnZn.
Coupling Nuts:	Female - Nylon; Male - Nickel plated brass.
Terminals:	Conductors to 18 AWG.
Temperature:	-40°C to +85°C (-40°F to +185°F)
Protection:	IEC IP 67.

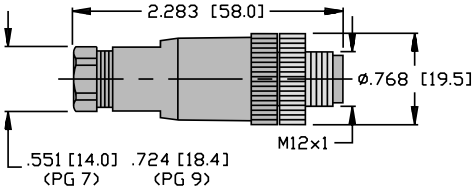
Dimensions

B 8141-0
B 8151-0
BWS 8151-0



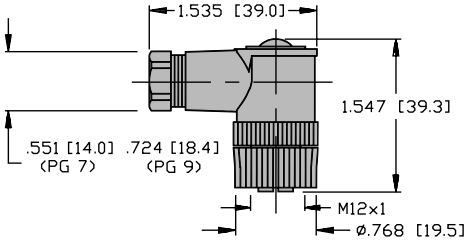
Female Connector

BS 8141-0
BS 8151-0
BSWS 8151-0



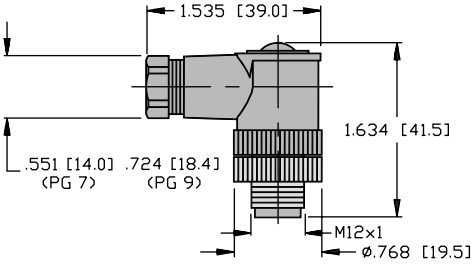
Male Connector

B 8241-0
B 8251-0
BWS 8251-0



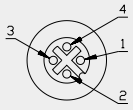
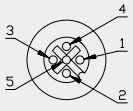
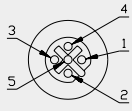
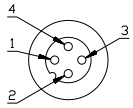
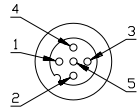
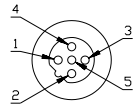
Female Connector

B S8241-0
B S8251-0
BSWS 8251-0



Male Connector

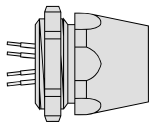
Pinouts

Female			Male		
					
4-pin	**5-pin**	**5-pin** (Reverse)	**4-pin**	**5-pin**	**5-pin** (Reverse)

eurofast® Receptacles, Front Mount

- For Use in Distribution Panels, Junction Boxes and Sensors
- Available with Leads or Solder Cups
- Machined from Solid Brass
- Lock Nuts and O-rings Included

See table below



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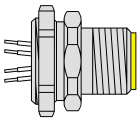


FS ..

PG 9 Threads, Leads & Solder Cups; 4, 5, 6 and 8-pin

Application	Specifications	Pinout	Female	Male
4-conductor, mates with 4-pin cordsets Leads UL Recognized, CSA Certified	4/22 AWG leads 250 VAC / 300 VDC 4.0 A	1. Bn 2. Wh 3. Bu 4. Bk	FK 4.4-0.5	FS 4.4-0.5
4-conductor, mates with "C" style, /S622 cordsets, Leads UL Recognized, CSA Certified	4/18 AWG grey leads 250 VAC / 300 VDC 4.0 A	1. Gy 1 2. Gy 2 3. Gy 3 4. Gy 4	- - - -	FS 4.4-0.5/S621
5-conductor, mates with 5-pin cordsets, Leads UL Recognized, CSA Certified	5/22 AWG leads 250 V 4.0 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu	FK 4.5-0.5	FS 4.5-0.5
6-conductor, mates with 6-pin cordsets Leads	6/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu 6. Pk	FK 6-0.5	FS 6-0.5
8-conductor, mates with 8-pin cordsets Leads	8/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Wh 5. Gy 2. Bn 6. Pk 3. Gn 7. Bu 4. Ye 8. Rd	FK 8-0.5	FS 8-0.5
4-conductor, mates with 4-pin cordsets Solder cups	Solder cups Accept 20 AWG max leads 250 VAC / 300 VDC 4.0 A	- - - -	FK 4.4	FS 4.4
5-conductor, mates with 5-pin cordsets Solder cups	Solder cups Accept 20 AWG max leads 250 V 4.0 A	- - - -	FK 4.5	FS 4.5

PG 13.5 Threads, Leads; 4 and 5-pin

Application	Specifications	Pinout	Female	Male
4-conductor, mates with 4-pin cordsets Leads	4/22 AWG leads 250 VAC / 300 VDC 4.0 Amps	1. Bn 2. Wh 3. Bu 4. Bk	- - - -	FS 4.4-0.5/13.5 W/LN
5-conductor, mates with 5-pin cordsets Leads	5/22 AWG leads 250 V 4.0 Amps	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu	- - - -	FS 4.5-0.5/13.5 W/LN

Specifications

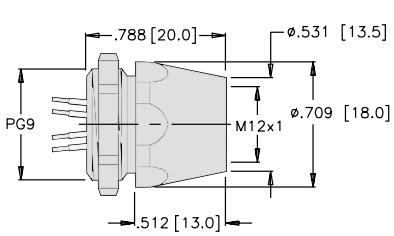
Housing:	Nickel plated brass, machined from solid stock. See options below**.
Contact Carrier:	Oil resistant Nylon or PUR. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Lock Nuts:	Nickel plated brass.
Leads:	Flexible stranding, PVC insulation.
Temperature:	-30°C to +80°C (-22°F to +176°F).
Protection:	NEMA 1,3,4,6P and IEC IP 68.

** **Options**: The following receptacles are offered in stainless steel:
PG 9 threads - male & female

Notes: PG 9 receptacles require 5/8" (16 mm) hole for panel mounting. Use PT-PG9 tap for receptacles with PG 9 threads.
PG 13.5 receptacles require 13/16" (20.6 mm) hole for panel mounting. Use PT-PG13.5 tap for receptacles with PG 13.5 threads.
O-ring included.

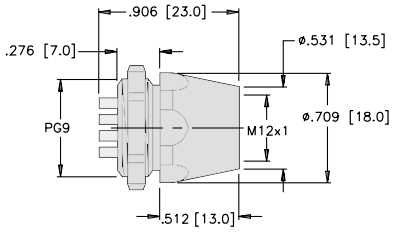
Dimensions

FK 4.4(5)-0.5
FK 6(8)-0.5



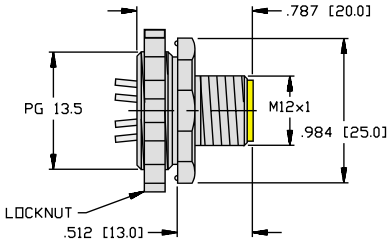
Female, Leads

FK 4.4(5)



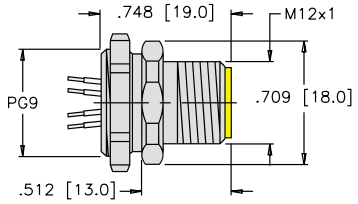
Female, Solder Cup

FS 4.4(5)-0.5/13.5 W/LN



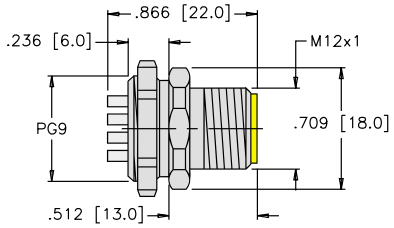
Male, Leads

FS 4.4(5)-0.5 (/S621)
FS 6(8)-0.5



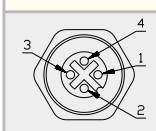
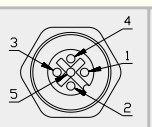
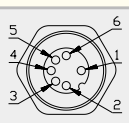
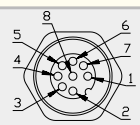
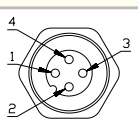
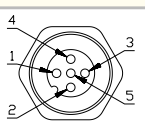
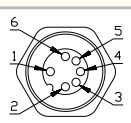
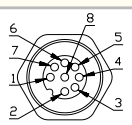
Male, Leads

FS 4.4(5)



Male, Solder Cup

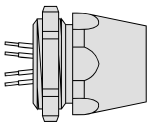
Pinouts

Female				Male			
							
4-pin	**5-pin**	**6-pin**	**8-pin**	**4-pin**	**5-pin**	**6-pin**	**8-pin**

eurofast® Receptacles, Front Mount

- For Use in Distribution Panels, Junction Boxes and Sensors
- Available with Leads or Solder Cups
- Machined from Solid Brass
- Lock Nuts and O-rings Included

See table below



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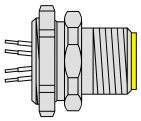


FS ..

1/4 - 18 NPT Threads, Leads & Sol- der Cups; 4, 5, 6 and 8-pin

Application	Specifications	Pinout	Female	Male
4-conductor, mates with 4-pin cordsets, Leads UL Recognized, CSA Certified	4/22 AWG leads 250 VAC / 300 VDC 4.0 A	1. Bn 2. Wh 3. Bu 4. Bk	FK 4.4-0.5/18.25	FS 4.4-0.5/18.25
4-conductor, mates with "C" style, /S622 cordsets, Leads UL Recognized CSA Certified	4/18 AWG grey leads 250 VAC / 300 VDC 4.0 A	1. Gy 1 2. Gy 2 3. Gy 3 4. Gy 4	FK 4.4-0.5/18.25/S621	FS 4.4-0.5/18.25/S621
5-conductor, mates with 5-pin cordsets, Leads UL Recognized, CSA Certified	5/22 AWG leads 250 V 4.0 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu	FK 4.5-0.5/18.25	FS 4.5-0.5/18.25
6-conductor, mates with 6-pin cordsets Leads	6/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu 6. Pk	FK 6-0.5/18.25	FS 6-0.5/18.25
8-conductor, mates with 8-pin cordsets Leads	8/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Wh 5. Gy 2. Bn 6. Pk 3. Gn 7. Bu 4. Ye 8. Rd	FK 8-0.5/18.25	FS 8-0.5/18.25
4-conductor, mates with 4-pin cordsets Solder cups	Solder cups Accept 20 AWG max leads 250 VAC / 300 VDC 4.0 A	- - - -	- - - -	FS 4.4/18.25

1/2 - 14 NPSM Threads, Leads and Solder Cups, 4, 5, 6 and 8-pin

Application	Specifications	Pinout	Female	Male
4-conductor, mates with 4-pin cordsets, Leads UL Recognized, CSA Certified	4/22 AWG leads 250 VAC / 300 VDC 4.0 A	1. Bn 2. Wh 3. Bu 4. Bk	- - - -	FS 4.4-0.5/14.5
4-conductor, mates with "C" style, /S622 cordsets Leads, UL Recognized CSA Certified	4/18 AWG grey leads 250 VAC / 300 VDC 4.0 A	1. Gy 1 2. Gy 2 3. Gy 3 4. Gy 4	- - - -	FS 4.4-0.5/14.5/S621
5-conductor, mates with 5-pin cordsets, Leads UL Recognized, CSA Certified	5/22 AWG leads 250 V 4.0 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu	- - - -	FS 4.5-0.5/14.5
6-conductor, mates with 6-pin cordsets Leads	6/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu 6. Pk	- - - -	FS 6-0.5/14.5
8-conductor, mates with 8-pin cordsets Leads	8/24 AWG leads 30 VAC / 36 VDC 1.5 A	1. Wh 5. Gy 2. Bn 6. Pk 3. Gn 7. Bu 4. Ye 8. Rd	- - - -	FS 8-0.5/14.5
4-conductor, mates with 4-pin cordsets Solder cups	Solder cups Accept 20 AWG max leads 250 VAC / 300 VDC 4.0 A	- - - -	- - - -	FS 4.4/14.5

Specifications

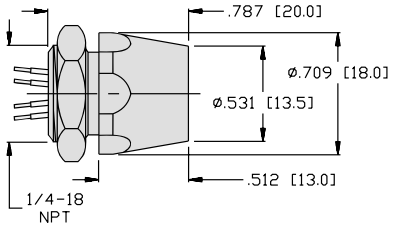
Housing:	Nickel plated brass, machined from solid stock. See options below**.
Contact Carrier:	Oil resistant Nylon or PUR. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Lock Nuts:	Nickel plated brass.
Leads:	Flexible stranding, PVC insulation.
Temperature:	-30°C to +80°C (-22°F to +176°F).
Protection:	NEMA 1,3,4,6P and IEC IP 68.

** **Options**: The following receptacles are offered in stainless steel:
1/4-18 NPT threads - male & female.

Notes: 1/4-18 receptacles require 17/32" (13.5 mm) hole for panel mounting.
1/2-14 receptacles require 13/16" (21.0 mm) hole for panel mounting.
O-ring included.

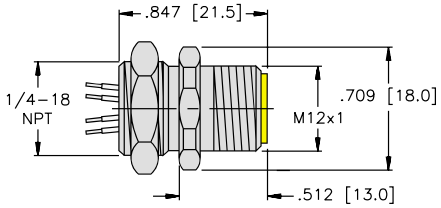
Dimensions

FK 4.4(5)-0.5/18.25(/S621)
FK 6(8)-0.5/18.25



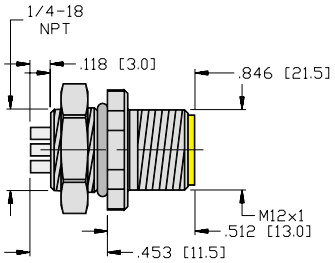
Female, Leads

FS 4.4(5)-0.5/18.25(/S621)
FS 6(8)-0.5/18.25



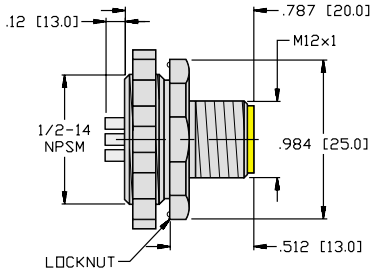
Male, Leads

FS 4.4/18.25



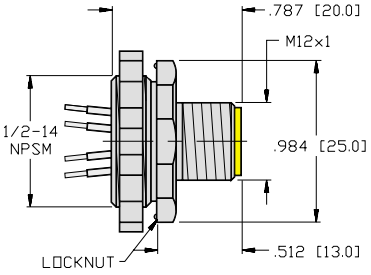
Male, Solder Cup

FS 4.4/14.5



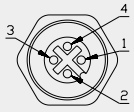
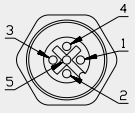
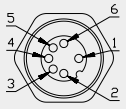
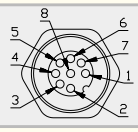
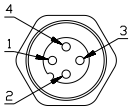
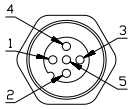
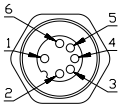
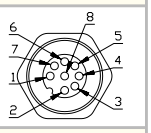
Male, Solder Cup

FS 4.4(5)-0.5/14.5
FS 6(8)-0.5/14.5



Male, Leads

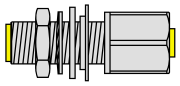
Pinouts

Female				Male			
							
4-pin	**5-pin**	**6-pin**	**8-pin**	**4-pin**	**5-pin**	**6-pin**	**8-pin**

Cordsets

eurofast® Bulkhead Feed-Thru Receptacles

- Eases Wiring or Panels by Allowing Disconnect on Both Sides
- Robust Design
- Completely Shielded
- Isolators Included



FK FS .. /M12

4-pin

Application	Specifications	Pinout	Part Number
4-conductor, mates with cordsets, for DC applications	250 V 4.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4	FK FS 4.4/M12

5-pin

Application	Specifications	Pinout	Part Number
5-conductor, mates with cordsets, for DC applications	250 V 4.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5	FK FS 4.5/M12
5-conductor, mates with reverse key cordsets, for DC applications	250 V 4.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5	FKW FSW 4.5/M12

6-pin

Application	Specifications	Pinout	Part Number
6-conductor, mates with cordsets, for DC applications	30 VAC / 36 VDC 1.5 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5 6 ⟵ 6	FK FS 6/M12

8-pin

Application	Specifications	Pinout	Part Number
8-conductor, mates with cordsets, for DC applications	30 VAC / 36 VDC 1.5 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5 6 ⟵ 6 7 ⟵ 7 8 ⟵ 8	FK FS 8/M12

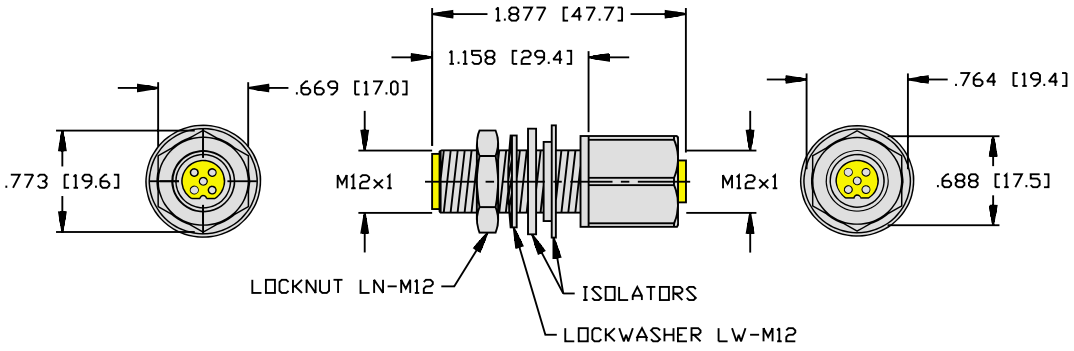
Specifications

Housing:	Nickel plated brass, machined from solid stock.
Contact Carrier:	Oil resistant Nylon or PUR. Spacings to VDE 0110 Group C.
Contacts:	Gold plated brass, machined from solid stock.
Temperature:	-40°C to +105°C (-40°F to +221°F).
Protection:	NEMA 1,3,4,6P and IEC IP 68.

Notes: M12x1 bulkhead requires 5/8" (16 mm) hole for panel mounting.

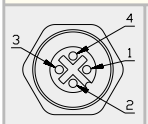
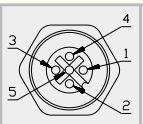
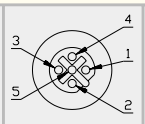
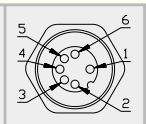
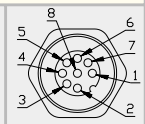
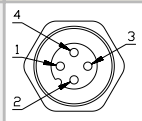
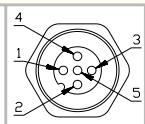
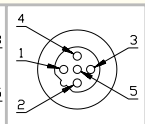
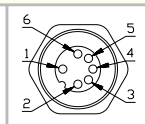
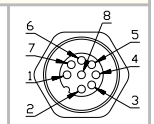
Dimensions

FK FS../M12



Note: Recommended mounting hole size is 15.9 mm.

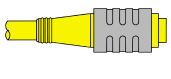
Pinouts

Female					Male				
									
4-pin	**5-pin**	**5-pin** (Rev.)	**6-pin**	**8-pin**	**4-pin**	**5-pin**	**5-pin** (Rev.)	**6-pin**	**8-pin**

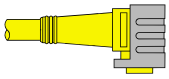
picofast® Standard Duty Cordsets, Unshielded, PVC

- High Grade Oil & UV Resistant PVC
- Unshielded
- Snap Lock or Threaded Coupling Nut
- Available in 3, 4 and 6 Conductors

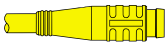
NRTL/C



PKG .. Z- ..



PKW .. Z- ..



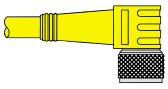
PSG ..

Snap Lock 3, 4 and 6-pin — *Female* — *Male*

Application	Cable Specs	Pinout	Straight	Right Angle	Straight	
Snap lock, 3-wire PVC cable CSA	125 VAC / VDC, 4.0 A 3/24 AWG, Yellow PVC 105°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKG 3Z-*	PKW 3Z-*	PSG 3-*	- - - -
Snap lock, 4-wire PVC cable CSA	125 VAC / VDC, 4.0 A 4/26 AWG, Yellow PVC 105°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKG 4Z-*	PKW 4Z-*	PSG 4-*	- - - -
Snap lock, 6-wire PVC cable	24 VDC, 1.0 A 6/26 AWG, Yellow PVC 105°C 4.5 mm OD	1. Bn 2. Wh 3. Bu 4. Bk 5. Gy 6. Pk	PKG 6Z-*	PKW 6Z-*	PSG 6-*	- - - -

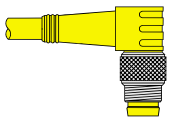
Note: See page H7 for Snap Lock connector instructions.

PKG .. - ..



PKW .. - ..

PSG .. - ..



PSW .. - ..

Threaded 3 and 4-pin — *Female* — *Male*

Application	Cable Specs	Pinout	Straight	Right Angle	Straight	Right Angle
Threaded, 3-wire PVC cable CSA	125 VAC / VDC, 4.0 A 3/24 AWG, Yellow PVC 105°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKG 3M-*	PKW 3M-*	PSG 3M-*	PSW 3M-*
Threaded, 4-wire PVC cable CSA	125 VAC /VDC, 4.0 A 4/26 AWG, Yellow PVC 105°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKG 4M-*	PKW 4M-*	PSG 4M-*	PSW 4M-*

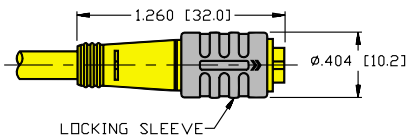
* = Length in meters

Specifications

Connector:	Oil resistant polyurethane body material.
Contact Carrier:	Nylon or PUR.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass (threaded versions only).
Locking Sleeve:	POM (snap lock version only).
Cable:	See table.
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

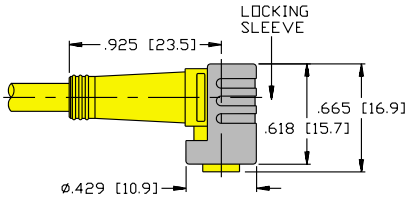
Dimensions

PKG .. Z-..



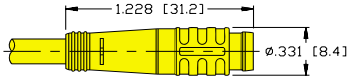
Female Connector, Snap Lock

PKW .. Z-..



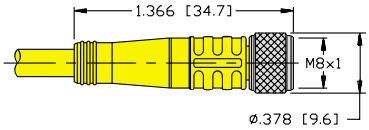
Female Connector, Snap Lock

PSG .. - ..



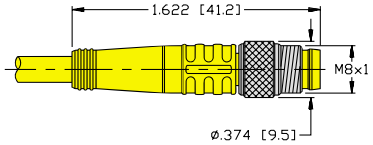
Male Connector, Snap Lock

PKG .. - ..



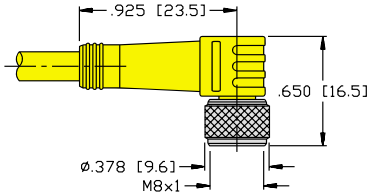
Female Connector, Threaded

PSG .. - ..



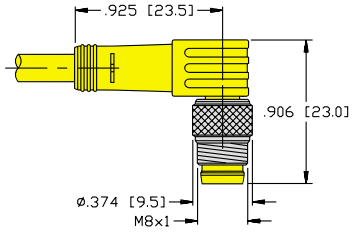
Male Connector, Threaded

PKW .. - ..



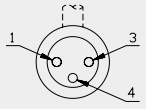
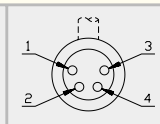
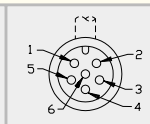
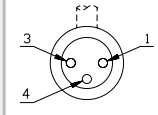
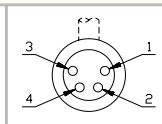
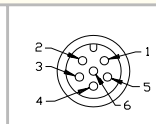
Female Connector, Threaded

PSW .. - ..



Male Connector, Threaded

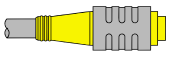
Pinouts

Female			Male		
					
3-pin	**4-pin**	**6-pin**	**3-pin**	**4-pin**	**6-pin**

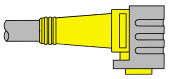
picofast® Standard Duty Cordsets, Unshielded, Polyurethane

- Standard Duty Oil Resistant Polyurethane
- Unshielded
- Snap Lock or Threaded Coupling Nut
- Available in 3 or 4 Conductors

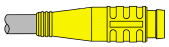
NRTL/C



PKG .. Z- ..



PKW .. Z- ..

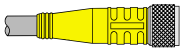


PSG ..

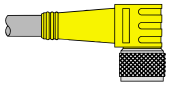
Snap Lock, 3 and 4-pin, 125 VAC/DC, 4.0 A — ***Female*** — ***Male***

Application	Cable Specs	Pinout	Straight	Right Angle	Straight	
Snap lock, 3-wire PUR cable CSA	3/24 AWG Black PUR 80°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKG 3Z-*/S90	PKW 3Z-*/S90	PSG 3-*/S90	- - - -
Snap lock, 4-wire PUR cable CSA	4/26 AWG Black PUR 80°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKG 4Z-*/S90	PKW 4Z-*/S90	PSG 4-*/S90	- - - -

Note: See page H7 for Snap Lock connector instructions.

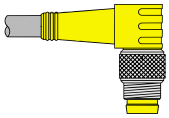


PKG .. - ..



PKW .. - ..

PSG .. - ..



PSW .. - ..

Threaded, 3 and 4-pin, 125 VAC/DC, 4.0 A — ***Female*** — ***Male***

Application	Specifications	Pinout	Straight	Right Angle	Straight	Right Angle
Threaded, 3-wire PUR cable CSA	3/24 AWG Black PUR 80°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKG 3M-*/S90	PKW 3M-*/S90	PSG 3M-*/S90	PSW 3M-*/S90
Threaded, 4-wire PUR cable CSA	4/26 AWG Black PUR 80°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKG 4M-*/S90	PKW 4M-*/S90	PSG 4M-*/S90	PSW 4M-*/S90

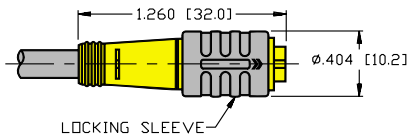
* = Length in meters

Specifications

Connector:	Oil resistant polyurethane body material.
Contact Carrier:	Nylon or PUR.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass (threaded versions only).
Locking Sleeve:	POM (snap lock version only).
Cable:	See table.
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

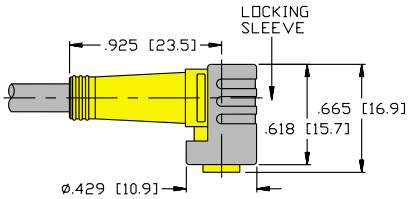
Dimensions

PKG .. Z-..



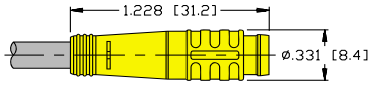
Female Connector, Snap Lock

PKW .. Z-..



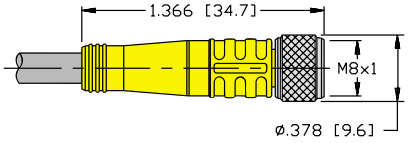
Female Connector, Snap Lock

PSG .. - ..



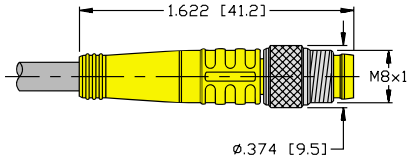
Male Connector, Snap Lock

PKG .. - ..



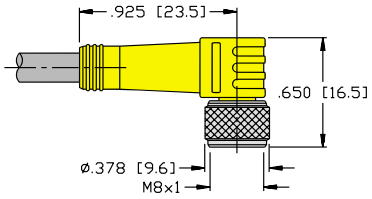
Female Connector, Threaded

PSG .. - ..



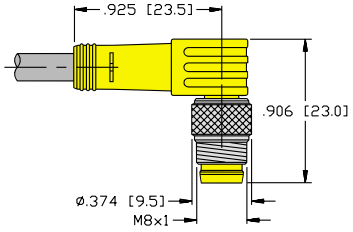
Male Connector, Threaded

PKW .. - ..



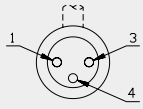
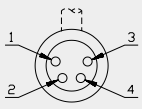
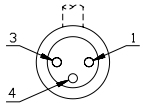
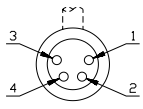
Female Connector, Threaded

PSW .. - ..



Male Connector, Threaded

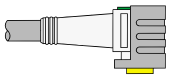
Pinouts

Female		Male	
			
3-pin	**4-pin**	**3-pin**	**4-pin**

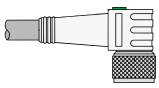
picofast® Standard Duty Cordsets with LEDs

- Standard Duty PVC or PUR
- Unshielded
- Snap Lock or Threaded Coupling Nut
- Available in 3 and 4 Conductors

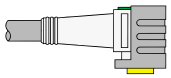
NRTL/C



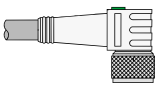
PKW .. Z- ..



PKW .. - ..



PKW .. Z- ..



PKW .. - ..

3 and 4-pin, 10 VAC/30 VDC, 4.0 A ***Female*** ***Female***

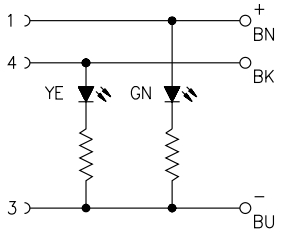
Application	Cable Specs	Pinout	PNP w/Snap Lock	PNP w/Threaded	NPN w/Snap Lock	NPN w/Threaded
Snap lock or threaded, 3-wire DC, two indicator LEDs, power and PNP or NPN signal PVC cable CSA	3/24 AWG Yellow PVC 105°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKW 3Z-P7X2-*	PKW 3M-P7X2-*	PKW 3Z-N7X2-*	PKW 3M-N7X2-*
Snap lock or threaded, 3-wire DC, two indicator LEDs, power and PNP or NPN signal PUR cable CSA	3/24 AWG Black PUR 80°C 4.4 mm OD	1. Bn 3. Bu 4. Bk	PKW 3Z-P7X2-*/S90	PKW 3M-P7X2-*/S90	PKW 3Z-N7X2-*/S90	PKW 3M-N7X2-*/S90
Snap lock or threaded, 4-wire DC, two indicator LEDs, power and PNP or NPN signal PVC cable CSA	4/26 AWG Yellow PVC 105°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKW 4Z-P7X2-*	PKW 4M-P7X2-*	PKW 4Z-N7X2-*	PKW 4M-N7X2-*
Snap lock or threaded, 4-wire DC, two indicator LEDs, power and PNP or NPN signal PUR cable CSA	4/26 AWG Black PUR 80°C 4.4 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	PKW 4Z-P7X2-*/S90	PKW 4M-P7X2-*/S90	PKW 4Z-N7X2-*/S90	PKW 4M-N7X2-*/S90

* = Length in meters

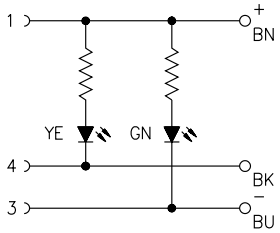
Note: See page H7 for Snap Lock connector instructions.

Wiring Diagrams

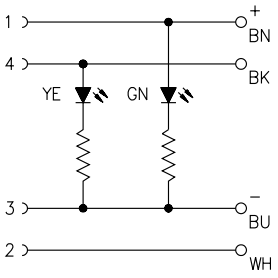
PKW 3Z-P7X2- ..
PKW 3M-P7X2- ..



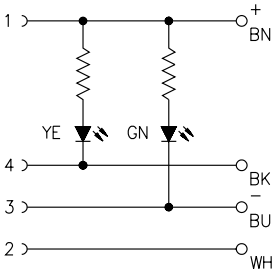
PKW 3Z-N7X2- ..
PKW 3M-N7X2- ..



PKW 4Z-P7X2- ..
PKW 4M-P7X2- ..



PKW 4Z-N7X2- ..
PKW 4M-N7X2- ..

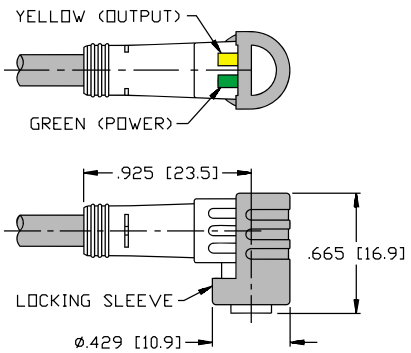


Specifications

Connector:	Oil resistant polyurethane body material.
Contact Carrier:	Nylon or PUR.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass (threaded versions only).
Locking Sleeve:	POM (snap lock version only).
Cable:	See table.
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

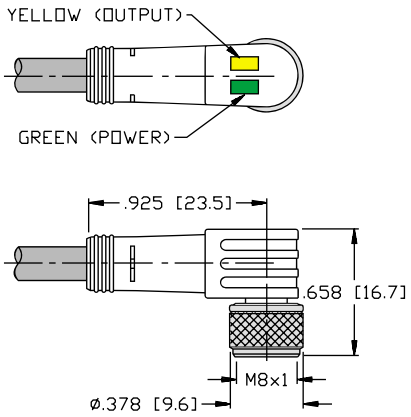
Dimensions

PKW .. Z ..



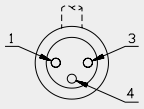
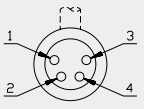
Female Connector, Snap Lock

PKW .. M ..



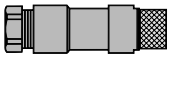
Female Connector, Threaded

Pinouts

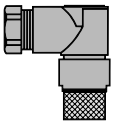
Female	
	
3-pin	**4-pin**

picofast® Field Wireable Connectors

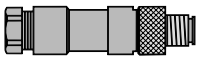
- Convert Hard Wiring to Quick Disconnect
- Facilitates Field Replacements
- For use with Custom Wiring, Junction Boxes and Sensors



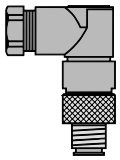
B 51 ..



B 52 ..



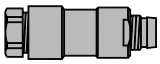
BS 51 ..



BS 52 ..

Threaded, 3 and 4-pin

		Female		*Male*	
Application	**Specifications**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Mates with 3-pin threaded cordsets and receptacles	60 VAC / 75 VDC, 3.0 A Accepts 3-5 mm cable diameter Solder terminals	B 5131-0	B 5231-0	BS 5131-0	BS 5231-0
Mates with 4-pin threaded cordsets and receptacles	30 VAC / 36 VDC, 3.0 A Accepts 3-5 mm cable diameter Solder terminals	B 5141-0	B 5241-0	BS 5141-0	BS 5241-0



Snap Lock, 3-pin

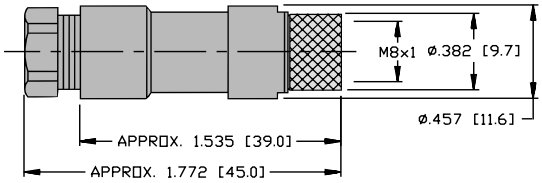
		Female		*Male*	
Application	**Specifications**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Mates with female snap-lock cordsets, receptacles and junction boxes	60 VAC / 75 VDC, 3.0 A Accepts 3-5 mm cable diameter Solder terminals	- - - -	- - - -	BS 5132-0	- - - -

Specifications

Housing:	PBT, black.
Connectors:	Nylon.
Contacts:	Au plated, (CuSn female, CuZn male).
Coupling Nuts:	Nickel plated brass (for threaded only).
Temperature:	-40°C to +85°C (-40°F to +185°F).
Protection Class:	IEC IP 67.

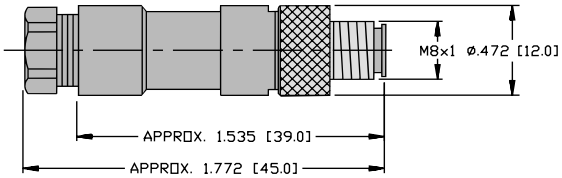
Dimensions

B 513(4)1-0



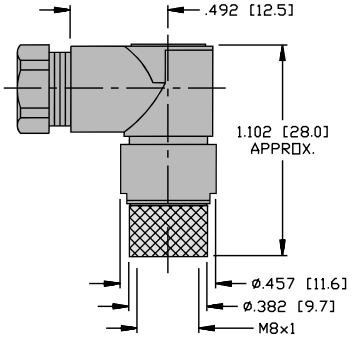
Female Connector Threaded

BS 513(4)1-0



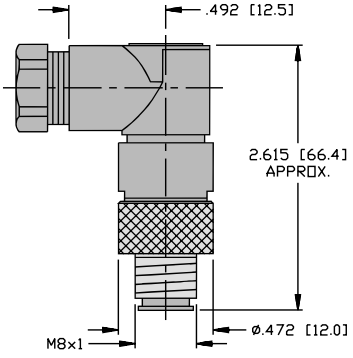
Male Connector Threaded

B 523(4)1-0



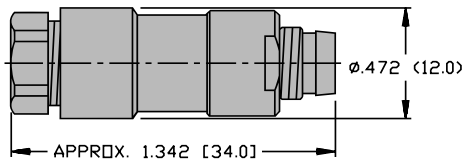
Female Connector Threaded

BS 523(4)1-0



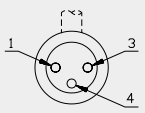
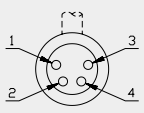
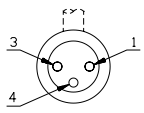
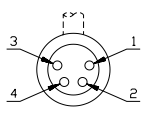
Male Connector Threaded

BS 5132-0



Male Connector Snap Lock

Pinouts

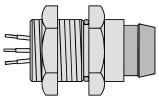
Female		Male	
			
3-pin	**4-pin**	**3-pin**	**4-pin**

picofast® Receptacles

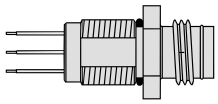
- **Snap Lock or Threaded**
- **Available in 3, 4 and 6 Conductor**
- **For Use in Distribution Panels, Junction Boxes and Sensors**

NRTL/C

See table below



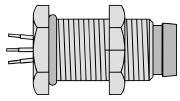
MFS ..



MFSS ..

Front Mount, Male, 3, 4 and 6 Pin, Leads

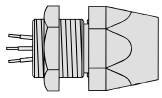
Application	Specifications	Pinout	Male
Mates with 3-pin snap lock female cordsets, CSA	3/24 AWG leads 60 VAC / 75 VDC 4.0 A	1. Bn 4. Bk 3. Bu	MFS 3-0.2
Mates with 4-pin snap lock female cordsets, CSA	4/24 AWG leads 30 VAC / 36 VDC 4.0 A	1. Bn 3. Bu 2. Wh 4. Bk	MFS 4-0.2
Mates with 6-pin snap lock female cordsets	6/24 AWG leads 24 VDC 1.0 A	1. Bn 4. Bk 2. Wh 5. Gy 3. Bu 6. Pk	MFS 6-0.2
Mates with 3-pin snap lock or threaded female cordsets	3/24 AWG leads 60 VAC / 75 VDC 4.0 A	1. Bn 4. Bk 3. Bu	MFSS 3-0.2
Mates with 4-pin snap lock or threaded female cordsets	4/24 AWG leads 30 VAC / 36 VDC 4.0 A	1. Bn 3. Bu 2. Wh 4. Bk	MFSS 4-0.2



MFS .. F ..

Rear Mount, Male, 3 and 4 Pin, Leads

Application	Specifications	Pinout	Male
Mates with 3-pin snap lock or threaded female cordsets CSA	3/24 AWG leads 60 VAC / 75 VDC 4.0 A	1. Bn 4. Bk 3. Bu	MFS 3F-0.2
Mates with 4-pin snap lock or threaded female cordsets CSA	4/24 AWG leads 30 VAC / 36 VDC 4.0 A	1. Bn 3. Bu 2. Wh 4. Bk	MFS 4F-0.2



MFKS ..

Front Mount, Female, 3 and 4 Pin, Leads

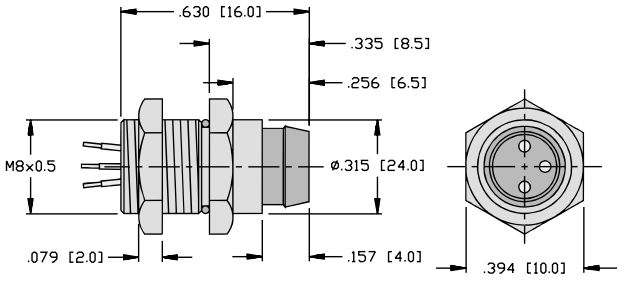
Application	Specifications	Pinout	Female
Mates with 3-pin threaded male cordsets, CSA	3/24 AWG leads 60 VAC / 75 VDC 4.0 A	1. Bn 4. Bk 3. Bu	MFKS 3-0.2
Mates with 4-pin threaded male cordsets, CSA	4/24 AWG leads 30 VAC / 36 VDC 4.0 A	1. Bn 3. Bu 2. Wh 4. Bk	MFKS 4-0.2

Specifications

Housing:	Nickel plated brass, machined from solid stock.
Contact Carrier:	Nylon or PUR.
Contacts:	Gold plated brass, machined from solid stock.
Leads:	Flexible stranding, PVC insulation
Temperature:	-30°C to +80°C (-22°F to +176°F).
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67

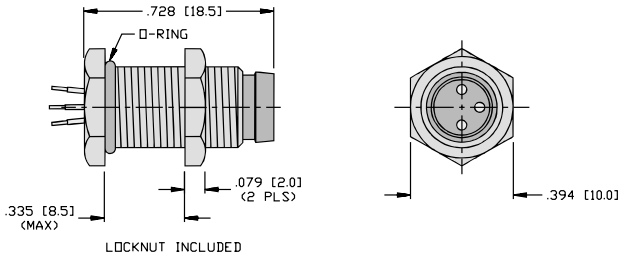
Dimensions

MFS ..



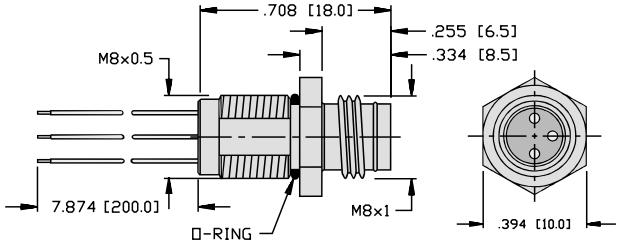
Male Connector

MFS .. F ..



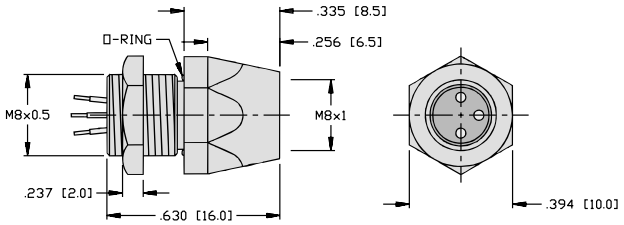
Male Connector

MFSS ..



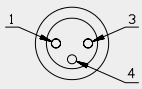
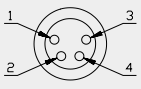
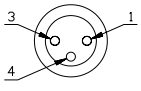
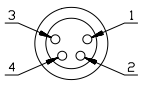
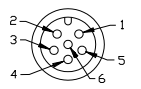
Male Connector

MFKS ..



Female Connector

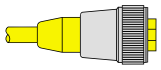
Pinouts

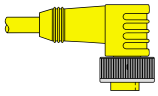
Female		Male		
				
3-pin	**4-pin**	**3-pin**	**4-pin**	**6-pin**

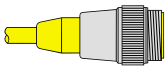
minifast® Standard Duty Cordsets, PVC

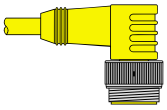
- High Grade Oil & UV Resistant PVC
- Standard Color Code
- 18 AWG
- Available in 2 - 6 Conductor

See table below


RKM ..


WKM ..


RSM ..


WSM ..

2-pin, 300 V, 9.0 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Standard duty for 2-wire applications UL Recognized CSA Certified	2/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Bn 2. Bu	RKM 20-*M	WKM 20-*M	RSM 20-*M	WSM 20-*M

3-pin, 300 V, 9.0 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Standard duty for 2-wire AC w/Ground UL Recognized CSA Certified	3/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Gn/Ye 2. Bn 3. Bu	RKM 30-*M	WKM 30-*M	RSM 30-*M	WSM 30-*M
Standard duty for 3-wire applications UL Recognized CSA Certified	3/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Bk 2. Bn 3. Bu	RKM 31-*M	WKM 31-*M	RSM 31-*M	WSM 31-*M

4-pin, 300 V, 9.0 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Standard duty for 4-wire applications UL Recognized CSA Certified	4/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RKM 40-*M	WKM 40-*M	RSM 40-*M	WSM 40-*M

5-pin, 300 V, 9.0 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Standard duty for 5-wire applications UL Recognized CSA Certified	5/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Bk 2. Bu 3. Gn/Ye 4. Bn 5. Wh	RKM 50-*M	WKM 50-*M	RSM 50-*M	WSM 50-*M

6-pin, 300 V, 9.0 A

Application	Cable Specs	Pinout	Female Straight	Female Right Angle	Male Straight	Male Right Angle
Standard duty for 6-wire applications	6/18 AWG Yellow PVC 105°C 7.3 mm OD	1. Gn 2. Wh 3. Bu 4. Gy 5. Ye 6. Bn	RKM 61-*M	WKM 61-*M	RSM 61-*M	WSM 61-*M

* = Length in meters.

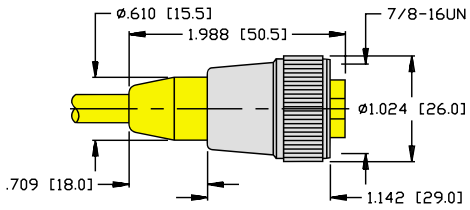
Specifications

Connector:	Oil resistant polyurethane body material, PUR contact carrier.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass. (see options below)**
Cable:	See table.
Protection:	NEMA 1, 3,4, 6P and IEC IP67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify nylon coupling nut, omit the "M" from the part number.
For example: WKM .. to WK .. (right angle female) or RSM .. to RS .. (straight male).
To specify stainless steel coupling nut, change the "M" to a "V" in the part number.
For example: RKM .. to RKV .. (straight female) or WSM .. to WSV .. (right angle male).

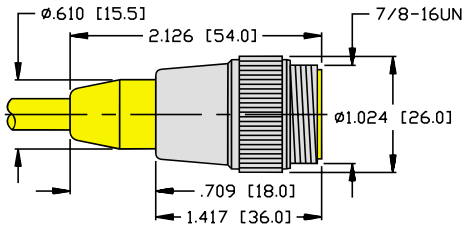
Dimensions

RKM ..



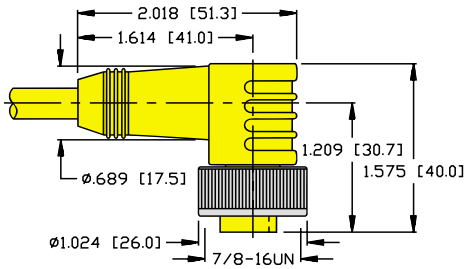
Female Connector

RSM ..



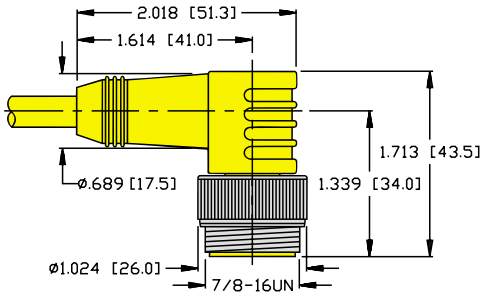
Male Connector

WKM ..



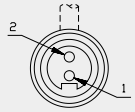
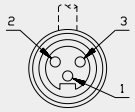
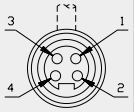
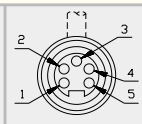
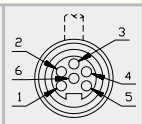
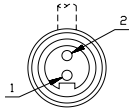
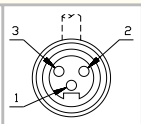
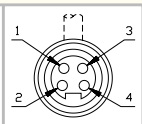
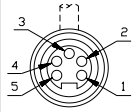
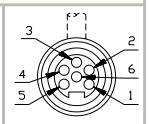
Female Connector

WSM ..



Male Connector

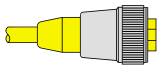
Pinouts

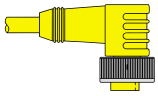
Female					Male				
									
2-pin	**3-pin**	**4-pin**	**5-pin**	**6-pin**	**2-pin**	**3-pin**	**4-pin**	**5-pin**	**6-pin**

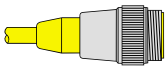
minifast® Standard Duty Cordsets and Extensions, PUR

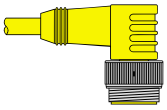
- **Standard Duty Polyurethane**
- **Standard Color Code**
- **18 AWG**
- **Available in 3 - 5 Conductor**

See table below


RKM ..

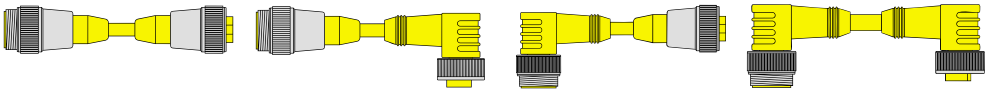

WKM ..


RSM ..


WSM ..

3, 4 and 5-pin, 300 V, 9.0 A

			Female		*Male*	
Application	**Cable Specs**	**Pinout**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Standard duty for 2-wire AC w/Ground or 3-wire applications UL Recognized CSA Certified	3/18 AWG Yellow PUR 105°C 7.3 mm OD	1. Gn/Ye 2. Bn 3. Bu	RKM 30-*M/S90	WKM 30-*M/S90	RSM 30-*M/S90	WSM 30-*M/S90
Standard duty for 4-wire applications UL Recognized CSA Certified	4/18 AWG Yellow PUR 105°C 7.3 mm OD	1. Bn 2. Wh 3. Bu 4. Bk	RKM 40-*M/S90	WKM 40-*M/S90	RSM 40-*M/S90	WSM 40-*M/S90
Standard duty for 5-wire applications UL Recognized CSA Certified	5/18 AWG Yellow PUR 80°C 7.3 mm OD	1. Bk 2. Bu 3. Gn/Ye 4. Bn 5. Wh	RKM 50-*M/S90	WKM 50-*M/S90	RSM 50-*M/S90	WSM 50-*M/S90



3, 4 and 5-pin, 300 V, 9.0 A

Application	**Cable Specs**	**Straight Male Straight Female**	**Straight Male Right Angle Female**	**Right Angle Male Straight Female**	**Right Angle Male Right Angle Female**
Standard duty for 2-wire AC w/Ground or 3-wire applications UL Recognized CSA Certified	3/18 AWG Yellow PUR 105°C 7.3 mm OD	RSM RKM 30-*M/S90	RSM WKM 30-*M/S90	WSM RKM 30-*M/S90	WSM WKM 30-*M/S90
Standard duty for 4-wire applications UL Recognized CSA Certified	4/18 AWG Yellow PUR 105°C 7.3 mm OD	RSM RKM 40-*M/S90	RSM WKM 40-*M/S90	WSM RKM 40-*M/S90	WSM WKM 40-*M/S90
Standard duty for 5-wire applications UL Recognized CSA Certified	5/18 AWG Yellow PUR 80°C 7.3 mm OD	RSM RKM 50-*M/S90	RSM WKM 50-*M/S90	WSM RKM 50-*M/S90	WSM WKM 50-*M/S90

* = Length in meters

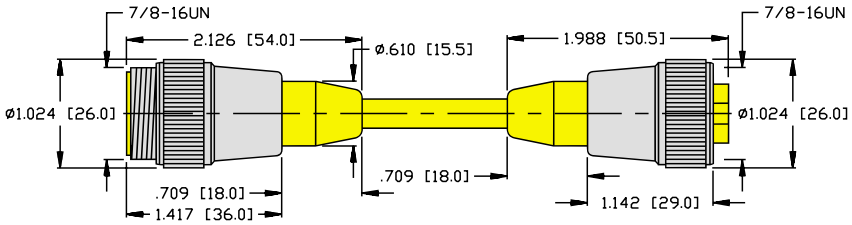
Specifications

Connector:	Oil resistant polyurethane body material, PUR contact carrier.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass. (see options below)**
Cable:	See table
Protection:	NEMA 1, 3,4, 6P and IEC IP67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

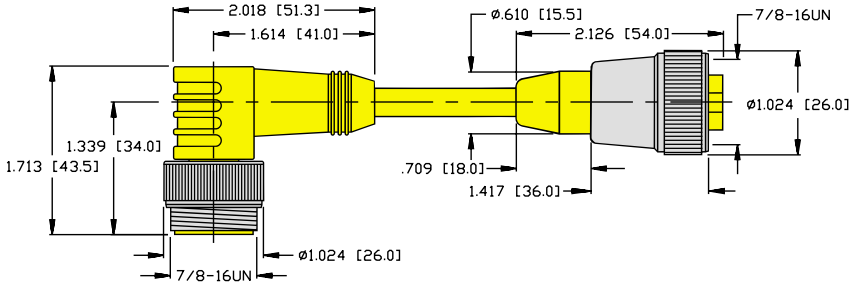
** **Options**: To specify nylon coupling nut, omit the "M" from the part number.
For example: WKM .. to WK .. (right angle female) or RSM .. to RS .. (straight male).
To specify stainless steel coupling nut, change the "M" to a "V" in the part number.
For example: RKM .. to RKV .. (straight female) or WSM .. to WSV .. (right angle male).

Dimensions

RSM RKM ..

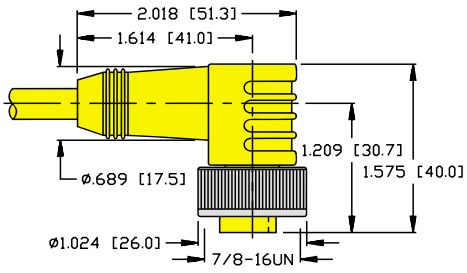


WSM RKM ..

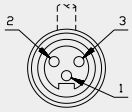
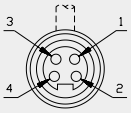
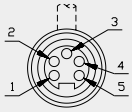
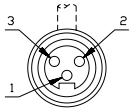
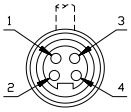
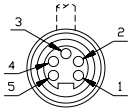


Note:
Replace right end of illustrations at left with WKM shown below for RSM WKM and WSM WKM configuration.
Dimensions for single ended styles remain the same.

.. WKM ..



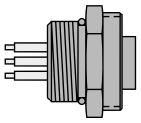
Pinouts

Female			Male		
					
3-pin	**4-pin**	**5-pin**	**3-pin**	**4-pin**	**5-pin**

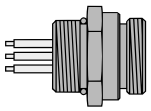
minifast® Receptacles

- Front Mount
- 18 AWG
- Available in 2 - 6 Conductor
- Standard Color Code or PCB Pins

See table below



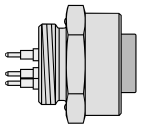
RKF ..



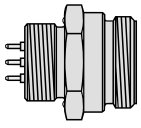
RSF ..

2-6 conductor, 600 V, 9.0 A

Application	Specifications	Pinout	Female	Male
2-conductor leads UL Recognized CSA Certified	2/18 AWG leads 600 V 9.0 A	1. Bn 2. Bu	RKF 20-0.2M	RSF 20-0.2M
3-conductor leads UL Recognized CSA Certified	3/18 AWG leads 600 V 9.0 A	1. Gn/Ye 2. Bn 3. Bu	RKF 30-0.2M	RSF 30-0.2M
3-conductor leads UL Recognized CSA Certified	3/18 AWG leads 600 V 9.0 A	1. Bk 2. Bn 3. Bu	RKF 31-0.2M	RSF 31-0.2M
4-conductor leads UL Recognized CSA Certified	4/18 AWG leads 600 V 9.0 A	1. Bn 3. Bu 2. Wh 4. Bk	RKF 40-0.2M	RSF 40-0.2M
5-conductor leads UL Recognized CSA Certified	5/18 AWG leads 600 V 9.0 A	1. Bk 4. Bn 2. Bu 5. Wh 3. Gn/Ye	RKF 50-0.2M	RSF 50-0.2M
6-conductor leads	6/18 AWG leads 600 V 9.0 A	1. Gn 4. Gy 2. Wh 5. Ye 3. Bu 6. Bn	RKF 61-0.2M	RSF 61-0.2M



RKF .. -PCB

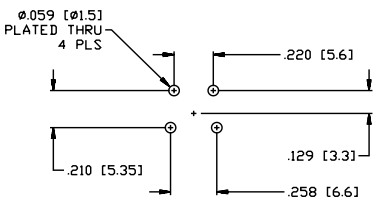


RSF .. -PCB

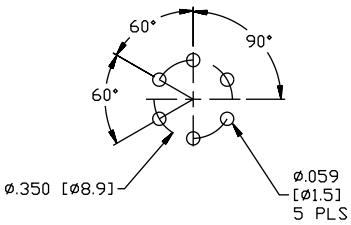
4-5 PCB pins, 600 V, 9.0 A

Application	Specifications	Female	Male
4-pin PCB pins	PCB pins 600 V 9.0 A	RKF 40-PCB	RSF 40-PCB
5-pin PCB pins	PCB pins 600 V 9.0 A	RKF 50-PCB	RSF 50-PCB

4-pin PCB Board Layout



5-pin PCB Board Layout



Specifications

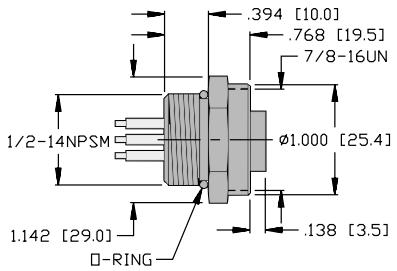
Housing:	Annodized aluminum (with leads). Nickel plated brass (with PCB pins). See options below**
Contact Carrier:	Oil resistant PUR.
Contacts:	Gold plated brass, machined from solid stock.
Leads:	High flex stranding, PVC insulation.
Temperature:	-30°C to +80°C (-22°F to +176°F).
Protection:	NEMA 1,3,4,6P and IEC IP 67.

** **Options**: (Lead style only) To specify nylon housing (leads only) add a "K" to part number.
For example: RKF .. to RKFK ..
To specify stainless housing (leads only) add a "V" to part number.
For example: RKF .. to RKFV ..

Note: Receptacles require a 13/16" (21 mm) clearance hole for panel mounting.

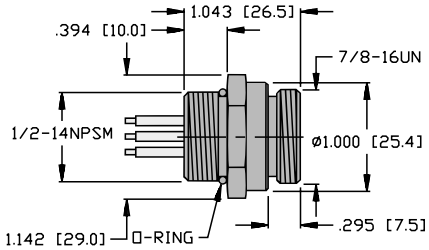
Dimensions

RKF ..



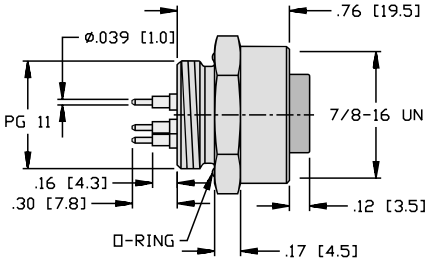
Female Connector

RSF ..



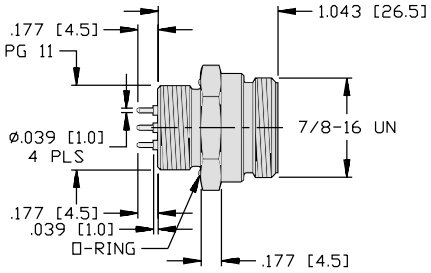
Male Connector

RKF .. -PCB



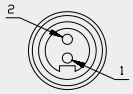
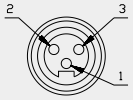
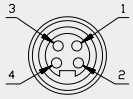
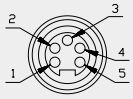
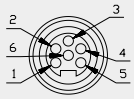
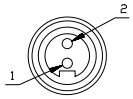
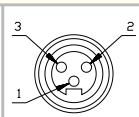
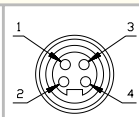
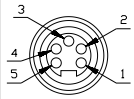
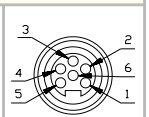
Female Connector

RSF .. -PCB



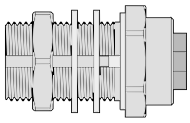
Male Connector

Pinouts

Female					Male				
									
2-pin	3-pin	4-pin	5-pin	6-pin	2-pin	3-pin	4-pin	5-pin	6-pin

minifast® Bulkhead Feed-thru Receptacles

- **Eases Wiring of Panels by Allowing Quick Disconnect on Both Sides**
- **Robust Design**
- **Mounts Through Standard Push Button Panel Cutout Size 22.5 mm**
- **Thrust Washer and Panel Keyway Prevents Rotation**



RSF RKF ..

2-pin, 600 V, 9.0 A

Application	Specifications	Pinout	Part Number
2-conductor Mates with 2-pin cordsets	600 V 9.0 A	1 ⟵ 1 2 ⟵ 2	RSF RKF 20/22

3-pin, 600 V, 9.0 A

Application	Specifications	Pinout	Part Number
3-conductor Mates with 3-pin cordsets	600 V 9.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3	RSF RKF 30/22

4-pin, 600 V, 9.0 A

Application	Specifications	Pinout	Part Number
4-conductor Mates with 4-pin cordsets	600 V 9.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4	RSF RKF 40/22

5-pin, 600 V, 9.0 A

Application	Specifications	Pinout	Part Number
5-conductor Mates with 5-pin cordsets	600 V 9.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5	RSF RKF 50/22

6-pin, 600 V, 9.0 A

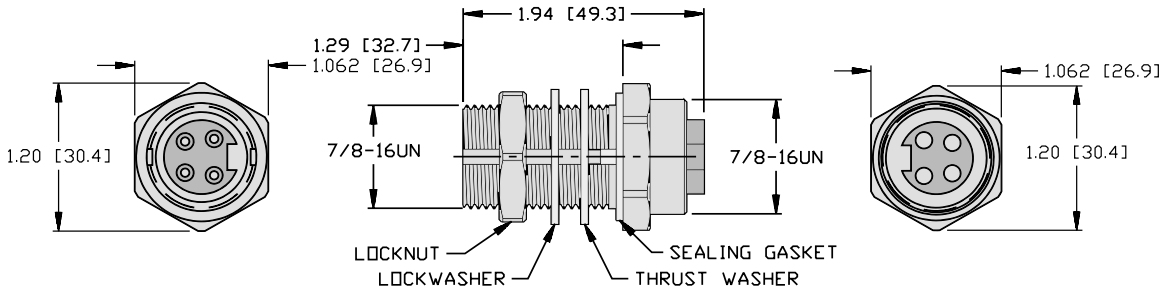
Application	Specifications	Pinout	Part Number
6-conductor Mates with 6-pin cordsets	600 V 9.0 A	1 ⟵ 1 2 ⟵ 2 3 ⟵ 3 4 ⟵ 4 5 ⟵ 5 6 ⟵ 6	RSF RKF 60/22

Specifications

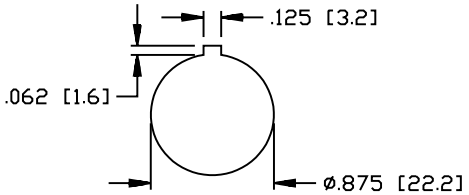
Housing:	Nickel plated brass, accommodate wall thickness 1.0 mm to 22.2 mm.
Contact Carrier:	Polyurethane.
Contacts:	Gold plated brass, machined from solid stock.
Leads:	High flex stranding, PVC insulation.
Temperature:	-30°C to +80°C (-22°F to +176°F).
Protection:	NEMA 1,3,4,6P and IEC IP 67.

Dimensions

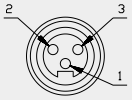
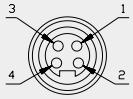
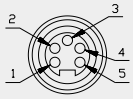
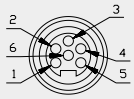
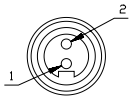
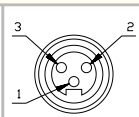
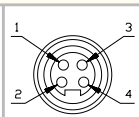
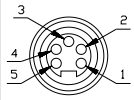
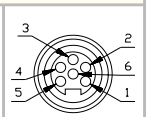
RSF RKF ..



Typical Panel Cutout

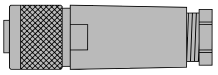


Pinouts

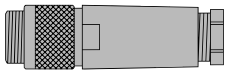
Female					Male				
									
2-pin	**3-pin**	**4-pin**	**5-pin**	**6-pin**	**2-pin**	**3-pin**	**4-pin**	**5-pin**	**6-pin**

minifast® Field Wireable Connectors

- **Available in 3-5 Pin**
- **Convert Hard Wiring into Quick Disconnect**
- **Facilitates Field Replacements**
- **For Use with Customer Wiring, Junction Boxes and Sensors**



B 41 ..



BS 41..

3-pin, 600 V, 12 A

Application	Specifications	Female	Male
Mates with all 3-pin cordsets and receptacles	PG 9 cable gland, accepts 6-8 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4131-0/9	BS 4131-0/9
Mates with all 3-pin cordsets and receptacles	PG 13.5 cable gland, accepts 10-12 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4131-0/13.5	BS 4131-0/13.5

4-pin, 600 V, 9A

Application	Specifications	Female	Male
Mates with all 4-pin cordsets and receptacles	PG 9 cable gland, accepts 6-8 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4141-0/9	BS 4141-0/9
Mates with all 4-pin cordsets and receptacles	PG 13.5 cable gland, accepts 10-12 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4141-0/13.5	BS 4141-0/13.5

5-pin, 600 V, 9 A

Application	Specifications	Female	Male
Mates with all 5-pin cordsets and receptacles	PG 9 cable gland, accepts 6-8 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4151-0/9	BS 4151-0/9
Mates with all 5-pin cordsets and receptacles	PG 13.5 cable gland, accepts 10-12 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4151-0/13.5	BS 4151-0/13.5
Mates with all 5-pin cordsets and receptacles	PG 16 cable gland, accepts 12-14 mm cable, Screw terminals Accepts up to 16 AWG conductors	B 4151-0/16	BS 4151-0/16

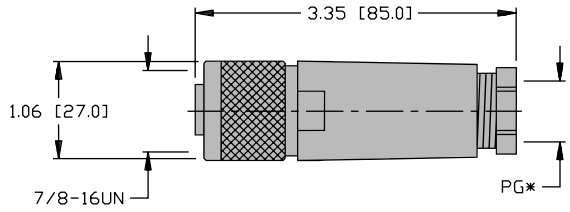
Specifications

Housing:	Glass filled nylon.
Connector:	PUR.
Contact:	Brass, gold over nickel plating.
Coupling Nut:	Anodized aluminum.
Conductor:	Accepts up to 16 AWG conductors.
Temperature:	-40°C to +90°C (-40°F to +194°F).
Protection:	NEMA 1, 3, 4, 6P and IP 67.

Options: Right angle versions available. Consult factory

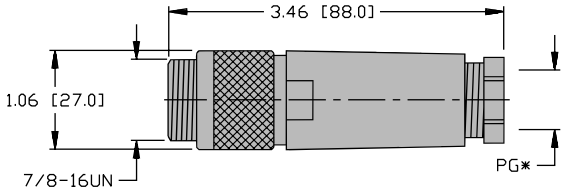
Dimensions

B 41*1-0/*



Female Connector

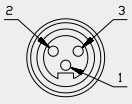
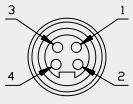
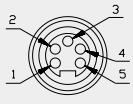
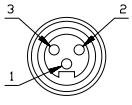
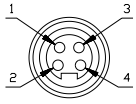
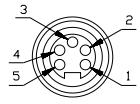
BS 41*1-0/*



Male Connector

* = Cable exit size (PG 9, PG 13.5 or PG 16).

Pinouts

Female			Male		
					
3-pin	**4-pin**	**5-pin**	**3-pin**	**4-pin**	**5-pin**

minifast® Quick Disconnect Adapters

- **Adapt to Standard *minifast* Cordsets**
- **Available with NPSM or PG 9 Threads**

3-pin, ½-14 NPSM Threads

Application	Specifications	Pinout	Part Numbers	
Mates with 3-pin cordsets	300 V / 4.0 A 3/22 AWG Nylon housing	1. Gn 2. Bn 3. Bu	B 2131-0.05M	B 2131-0.15M
Mates with 3-pin cordsets	300 V / 4.0 A 3/22 AWG Nickel plated brass housing	1. Gn 2. Bn 3. Bu	B 1131-0.05M	B 1131-0.15M

4-pin, ½-14 NPSM Threads

Application	Specifications	Pinout	Part Numbers	
Mates with 4-pin cordsets	300 V / 4.0 A 4/22 AWG Nylon housing	1. Bn 2. Wh 3. Bu 4. Bk	B 2141-0.05M	B 2141-0.15M
Mates with 4-pin cordsets	300 V / 4.0 A 4/22 AWG Nickel plated brass housing	1. Bn 2. Wh 3. Bu 4. Bk	B 1141-0.05M	B 1141-0.15M

3-pin, PG 9 Threads

Application	Specifications	Pinout	Part Numbers	
Mates with 3-pin cordsets	300 V / 4.0 A 3/22 AWG Nickel plated brass housing	1. Gn 2. Bn 3. Bu	B 1131-PG9-0.05M	B 1131-PG9-0.15M

4-pin, PG 9 Threads

Application	Specifications	Pinout	Part Numbers	
Mates with 4-pin cordsets	300 V / 4.0 A 4/22 AWG Nickel plated brass housing	1. Bn 2. Wh 3. Bu 4. Bk	B 1141-PG9-0.05M	B 1141-PG9-0.15M

5-pin, PG 9 Threads

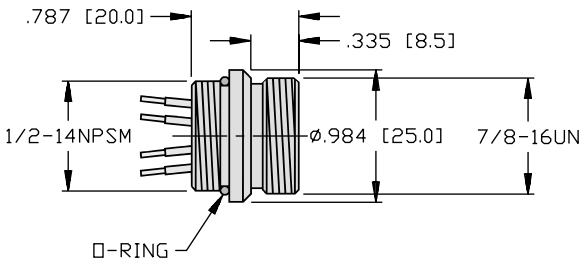
Application	Specifications	Pinout	Part Numbers	
Mates with 5-pin cordsets	300 V / 4.0 A 5/22 AWG Nickel plated brass housing	1. Bn 2. Wh 3. Bu 4. Bk 5. Gn	B 1151-PG9-0.05M	B 1151-PG9-0.15M

Specifications

Contact Carrier:	PUR (except for the B1151-PG9-* which is TPE).
Housing Material:	See table.
Contacts:	Gold plated brass, machined from solid stock.
Conductors:	PVC insulation.
Temperature:	-25°C to +70°C (-13°F to +158°F).
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67.

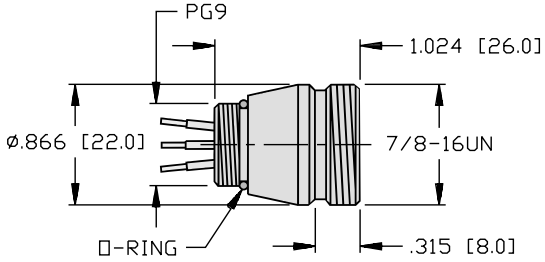
Dimensions

B1 .. / B2 .. (1/2-14 NPSM threads)



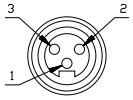
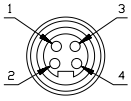
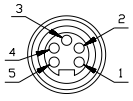
Male Connector

B1 .. (PG 9 threads)



Male Connector

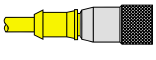
Pinouts

Male		
		
3-pin	**4-pin**	**5-pin**

microfast® Standard Cordsets and Extensions, Unshielded PVC

- **Unshielded**
- **High Grade Oil & UV Resistant PVC**
- **Standard Plug Body**
- **Available in 3 - 5 Conductor**

See table below



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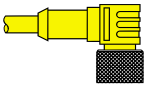

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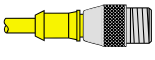
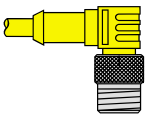


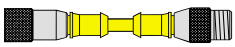
SB ..

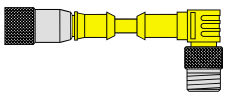


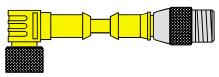
WSB ..

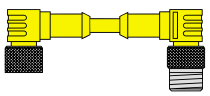
3, 4 and 5-pin, 250 V, 4.0 A

			Female		*Male*	
Application	**Cable Specs**	**Pinout**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Standard duty for 3-wire applications UL Listed CSA Certified	3/22 AWG Yellow PVC 105°C 5.2 mm OD	1. Gn 2. Rd/Bk 3. Rd/Wh	KB 3T-*	WKB 3T-*	SB 3T-*	WSB 3T-*
Standard duty for 4-wire UL Listed CSA Certified	4/22 AWG Yellow PVC 105°C 5.7 mm OD	1. Rd/Bk 2. Rd/Wh 3. Rd 4. Gn	KB 4T-*	WKB 4T-*	SB 4T-*	WSB 4T-*
Standard duty for 5-wire UL Listed CSA Certified	5/22 AWG Yellow PVC 105°C 5.7 mm OD	1. Rd/Wh 2. Rd 3. Gn 4. Rd/Ye 5. Rd/Bk	KB 5T-*	WKB 5T-*	SB 5T-*	WSB 5T-*









3, 4 and 5-pin, 250 V, 4.0 A

Application	**Cable Specs**	**Straight Female Straight Male**	**Straight Female Right Angle Male**	**Right Angle Female Straight Male**	**Right Angle Female Right Angle Male**
Standard duty for 3-wire applications UL Listed CSA Certified	3/22 AWG Yellow PVC 105°C 5.2 mm OD	KB 3T-*-SB 3T	KB 3T-*-WSB 3T	WKB 3T-*-SB 3T	WKB 3T-*-WSB 3T
Standard duty for 4-wire UL Listed CSA Certified	4/22 AWG Yellow PVC 105°C 5.7 mm OD	KB 4T-*-SB 4T	KB 4T-*WSB 4T	WKB 4T-*-SB 4T	WKB 4T-*-WSB 4T
Standard duty for 5-wire UL Listed CSA Certified	5/22 AWG Yellow PVC 105°C 5.7 mm OD	KB 5T-*-SB 5T	KB 5T-*-WSB 5T	WKB 5T-*-SB 5T	WKB 5T-*-WSB 5T

* = Length in meters

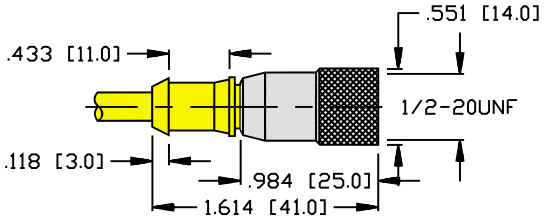
Specifications

Connector:	Oil resistant polyurethane body material, Nylon contact carrier.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass, (see options below)**.
Cable:	See table.
Protection:	NEMA 1,3,4,6P and IEC IP 67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify stainless steel coupling nut, add a "V" to part number.
For example: KB .. to KBV .. (straight female) or WSB .. to WSBV .. (right angle male).

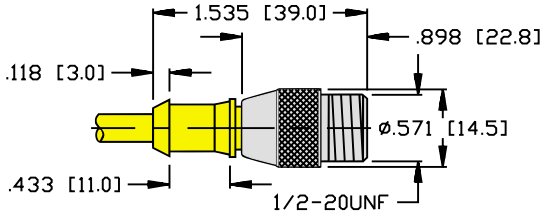
Dimensions

KB ..



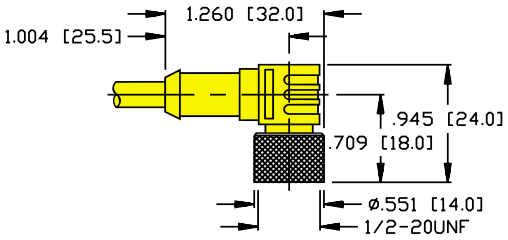
Female Connector

SB ..



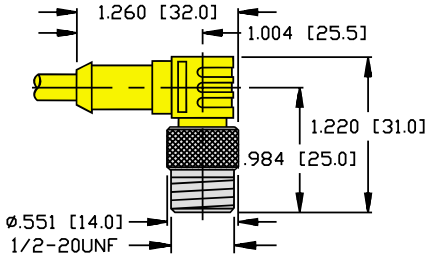
Male Connector

WKB ..



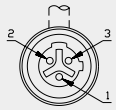
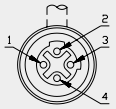
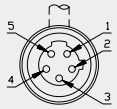
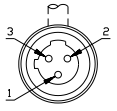
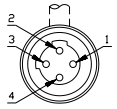
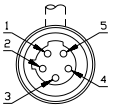
Female Connector

WSB ..



Male Connector

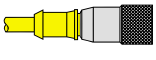
Pinouts

Female			Male		
					
3-pin	**4-pin**	**5-pin**	**3-pin**	**4-pin**	**5-pin**

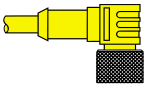
microfast® Standard Cordsets and Extensions, Unshielded PUR

- **Unshielded**
- **Oil & Abrasion Resistant Polyurethane**
- **Available in 3 & 4 Conductor**

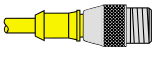
See table below



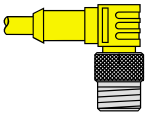
KB ..



WKB ..



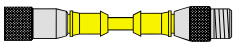
SB ..

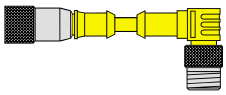


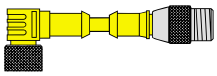
WSB ..

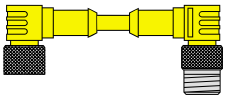
3 and 4-pin, 250 V, 4.0 A

			Female		*Male*	
Application	**Cable Specs**	**Pinout**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Standard duty for 3-wire applications UL Listed CSA Certified	3/18 AWG Yellow PUR 80°C 5.7 mm OD	1. Gn 2. Rd/Bk 3. Rd/Wh	KB 3T-*/S90	WKB 3T-*/S90	SB 3T-*/S90	WSB 3T-*/S90
Standard duty for 4-wire UL Listed CSA Certified	4/22 AWG Yellow PUR 105°C 5.7 mm OD	1. Rd/Bk 2. Rd/Wh 3. Rd 4. Gn	KB 4T-*/S90	WKB 4T-*/S90	SB 4T-*/S90	WSB 4T-*/S90









3 and 4-pin, 250 V, 4.0 A

Application	**Cable Specs**	**Straight Female Straight Male**	**Straight Female Right Angle Male**	**Right Angle Female Straight Male**	**Right Angle Female Right Angle Male**
Standard duty for 3-wire applications UL Listed CSA Certified	3/18 AWG Yellow PUR 80°C 5.7 mm OD	KB 3T-*-SB 3T/S90	KB 3T-*-WSB 3T/S90	WKB 3T-*-SB 3T/S90	WKB 3T-*-WSB 3T/S90
Standard duty for 4-wire UL Listed CSA Certified	4/22 AWG Yellow PUR 105°C 5.7 mm OD	KB 4T-*-SB 4T/S90	KB 4T-*-WSB 4T/S90	WKB 4T-*-SB 4T/S90	WKB 4T-*-WSB 4T/S90

* = Length in meters

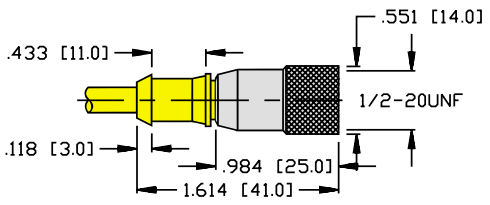
Specifications

Connector:	Oil resistant polyurethane body material, Nylon contact carrier.
Contacts:	Gold plated brass, machined from solid stock.
Coupling Nuts:	Nickel plated brass, (see options below)**.
Cable:	See table.
Protection:	NEMA 1,3,4,6P and IEC IP 67.
Cable Length:	Standard cable lengths are nominal 2, 4 and 6 meters. Other lengths available by request - consult factory.

** **Options**: To specify stainless steel coupling nut, add a "V" to part number.
For example: KB .. to KBV .. (straight female) or WSB .. to WSBV .. (right angle male).

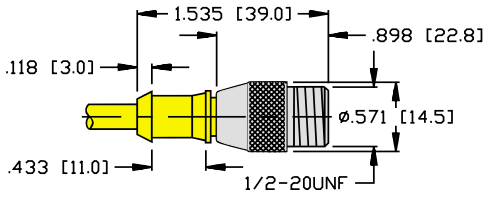
Dimensions

KB ..



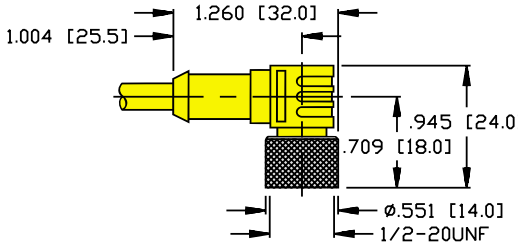
Female Connector

SB ..



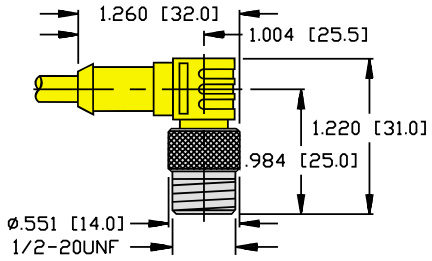
Male Connector

WKB ..



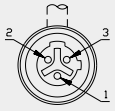
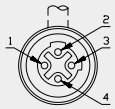
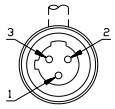
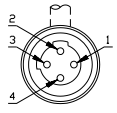
Female Connector

WSB ..



Male Connector

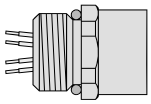
Pinouts

Female		Male	
			
3-pin	**4-pin**	**3-pin**	**4-pin**

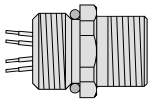
microfast® Receptacles

- Front Mount
- ½-14 NPSM or 1/4-18 NPT Threads
- Available in 3 - 5 Conductor
- Machined from Solid Brass

See table below



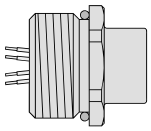
FKB .. /18.25



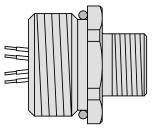
FSB .. /18.25

1/4-18 NPT Threads, 3-5 pin, Leads, 250 V, 4.0 A

Application	Specifications	Pinout	Female	Male
3-conductor, mates with 3-pin cordsets UL Listed CSA Certified	3/22 AWG leads	1. Gn 2. Rd/Bk 3. Rd/Wh	FKB 3-0.5/18.25	FSB 3-0.5/18.25
4-conductor, mates with 4-pin cordsets UL Listed CSA Certified	4/22 AWG leads	1. Rd/Bk 2. Rd/Wh 3. Rd 4. Gn	FKB 4-0.5/18.25	FSB 4-0.5/18.25
5-conductor, mates with 5-pin cordsets UL Listed CSA Certified	5/22 AWG leads	1. Rd/Wh 2. Rd 3. Gn 4. Rd/Ye 5. Rd/Bk	FKB 5-0.5/18.25	FSB 5-0.5/18.25



FKB .. /14.5



FSB .. /14.5

1/2-14 NPSM Threads, 3-5 pin, Leads, 250 V, 4.0 A

Application	Specifications	Pinout	Female	Male
3-conductor, mates with 3-pin cordsets UL Listed CSA Certified	3/22 AWG leads	1. Gn 2. Rd/Bk 3. Rd/Wh	FKB 3-0.5/14.5	FSB 3-0.5/14.5
4-conductor, mates with 4-pin cordsets UL Listed CSA Certified	4/22 AWG leads	1. Rd/Bk 2. Rd/Wh 3. Rd 4. Gn	FKB 4-0.5/14.5	FSB 4-0.5/14.5
5-conductor, mates with 5-pin cordsets UL Listed CSA Certified	5/22 AWG leads	1. Rd/Wh 2. Rd 3. Gn 4. Rd/Ye 5. Rd/Bk	FKB 5-0.5/14.5	FSB 5-0.5/14.5

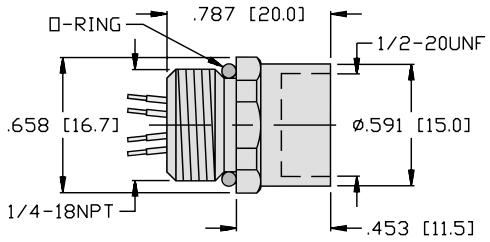
Specifications

Housing:	Nickel plated brass, machined from solid stock. (See options below)**
Contact Carrier:	Nylon.
Contacts:	Gold plated brass, machined from solid stock.
Leads:	Flexible stranding, PVC insulation.
Temperature:	-40°C to +90°C (-40°F to +194°F).
Protection:	NEMA 1,3,4,6P and IEC IP 67.
Lead length:	Standard = 0.5 meters. Other lengths available by request. Consult factory.

** **Options**: To specify stainless steel housing, add a "V" to part number. Available in 1/4-18 NPT only. For example: FSB .. to FSBV.

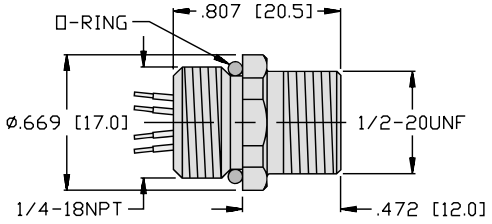
Dimensions

FKB .. /18.25



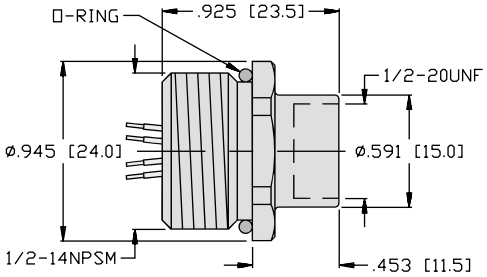
Female Connector

FSB .. /18.25



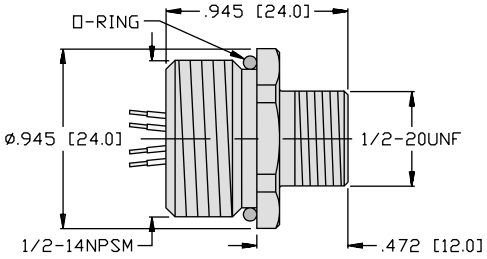
Male Connector

FKB .. /14.5



Female Connector

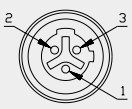
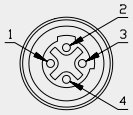
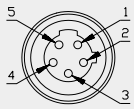
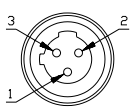
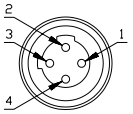
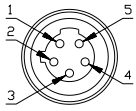
FSB .. /14.5



Male Connector

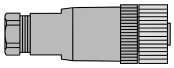
Note:
1/4-18 receptacles require 17/32" (13.5 mm) hole for panel mounting.
½-14 receptacles require 13/16" (21 mm) hole for panel mounting.

Pinouts

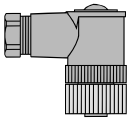
Female			Male		
					
3-pin	**4-pin**	**5-pin**	**3-pin**	**4-pin**	**5-pin**

microfast® Field Wireable Connectors

- **Available in 3-pin**
- **Convert Hard Wiring to Quick Disconnect**
- **Facilitates Field Replacements**
- **For use with Custom Wiring, Junction Boxes and Sensors**



MF 31 ..



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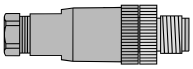

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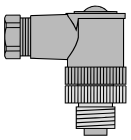


MFS 32 ..

3-pin, 250 VAC, 4.0 A

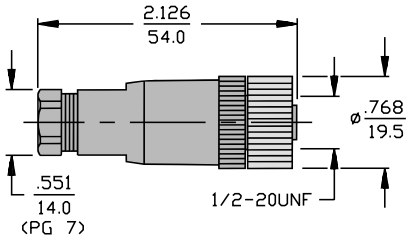
		Female		***Male***	
Application	**Specifications**	**Straight**	**Right Angle**	**Straight**	**Right Angle**
Mates with 3-pin cordsets and receptacles	PG 7 cable gland, accepts 4-6 mm cable Screw terminals	MF 3131-0	MF 3231-0	MFS 3131-0	MFS 3231-0

Specifications

Housing:	PBT, black.
Connector:	PA.
Contacts:	Cu Sn Zn.
Coupling Nuts:	Nickel plated brass.
Terminals:	Screw terminals, conductors to 18 AWG.
Temperature:	-40°C to +85°C (-40°F to +185°F)
Protection:	NEMA 1,3,4,6P and IEC IP 67.

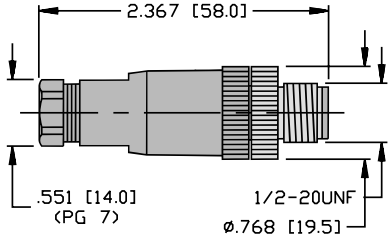
Dimensions

MF 31 ..



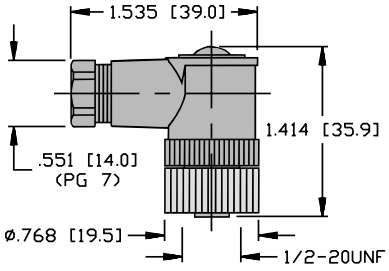
Female Connector

MFS 31 ..



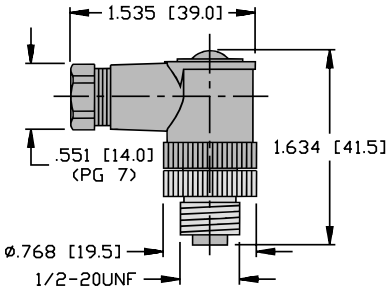
Male Connector

MF 32 ..



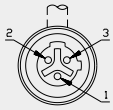
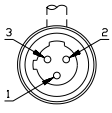
Female Connector

MFS 32 ..



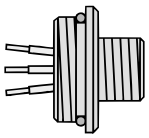
Male Connector

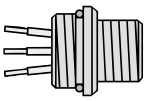
Pinouts

Female	Male
	
3-pin	**3-pin**

microfast® Adapters

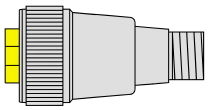
- **Adapts to Standard *microfast* Cordsets**
- **Available with PG9 or 1/2-14 NPSM Threads**
- **RKM 30/SB3 Converts *minifast* to *microfast***





3-pin, 250 V, 4.0 A

Application	Specifications	Pinout	Part Number 1/2-14 NPSM Thread	Part Number PG 9 Thread
Mates with 3-pin cordsets	3/26 AWG leads	1. Gn 2. Bn 3. Bu	B 3131-0.15	B 3131-PG9-0.15
Mates with 4-pin cordsets	4/22 AWG leads	1. Rd/Bk 4. Gn 2. Rd/Wh 3. Rd	B 3141-0.15	B 3141-PG9-0.15
Mates with 5-pin cordsets	5/26 AWG leads	1. Rd/Wh 4. Rd/Ye 2. Rd 5. Rd/Bk 3. Gn	B 3151-0.15	B 3151-PG9-0.15



Adapter, 250 V, 4.0 A

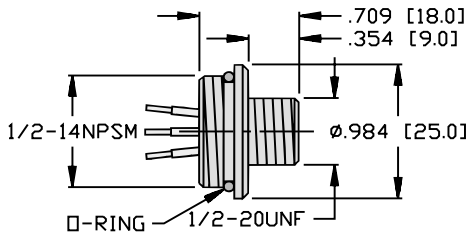
Application	Pinout	Part Number	
Female ***minifast***, to male ***microfast*** adapter, 3-pin	1 → 1 2 → 2 3 → 3	RKM 30/SB3	- - - - -

Specifications

Housing:	Nickel plated brass, machined from solid stock.
Contact Carrier:	Nylon.
Contacts:	Gold plated brass, machined from solid stock.
Leads:	Flexible stranding, PVC insulation.
Temperature:	-40°C to +90°C (-40°F to +194°F).
Protection:	NEMA 1,3,4,6P and IEC IP 67.

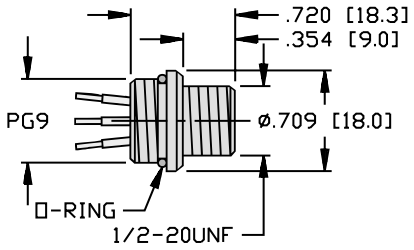
Dimensions

B31*1 ..



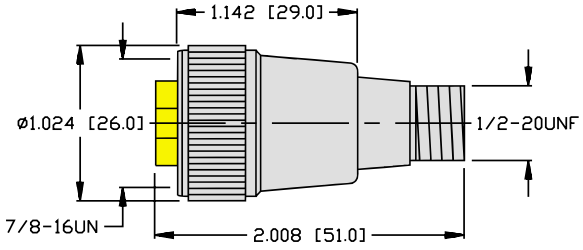
Male Connector

B31*1-PG9

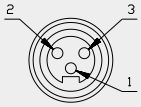
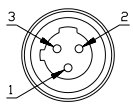
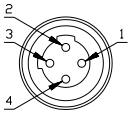
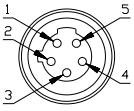


Male Connector

RKM 30/SB3



Pinouts

Female *minifast*	Male *microfast*		
			
3-pin	**3-pin**	**4-pin**	**5-pin**

CLICK HERE for
MAIN SELECTION GUIDE

Visit **TURCK** on the Internet:
http://www.turck.com

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Die Protector 	**Whisker Probe** 	**Quick Mount** 
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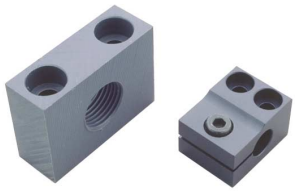
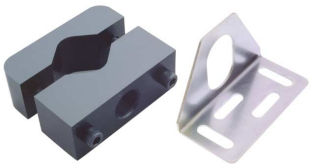
Cushion Mount 	**Mounting Blocks** 	**Mounting Brackets** 
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Mounting Clamps 	**Protective Housing - "Wet Suit"** 	**Spacer Plates** 
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Sensing Gap Gages 	**Firefast** 	**Teflon/Ceramic Caps** 
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Plastic Covers 	**Threaded and Bolt on Tank Wells** 	**Teflon Covers** 
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Selection Guide

Conduit Adapters	Cable Glands	Plug Taps
		
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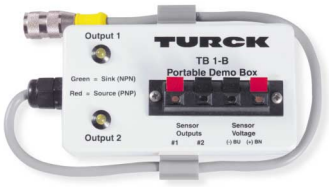
Lockwashers and Locknuts		Labels
		
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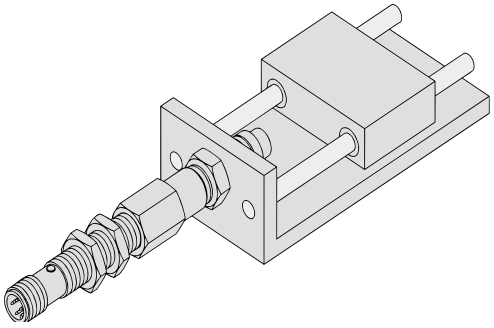
Selection Guide

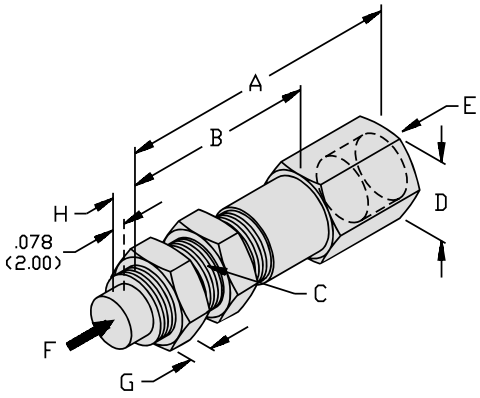
Note:

All dimensions in this section are shown as: inches [mm]

Die Protector

Part Number	ID Number	Dimensions							
		A	B	C	D	E	F	G	H
DP-08-25-08	A2521	2.25 57.2	1.00 25.4	M8x1	0.43 11.0	0.72 18.4	2000 N 450 lbft	0.20 5.08	.115 2.93
DP-12-25-12	A2519			M12x1	0.62 15.7	0.67 17.4	20500 N 4608 lbft	0.25 6.35	.166 4.22
DP-18-25-18	A2520			M18x1	0.87 22.1	0.87 22.1	45000 N 10115 lbft	0.25 6.35	.166 4.22





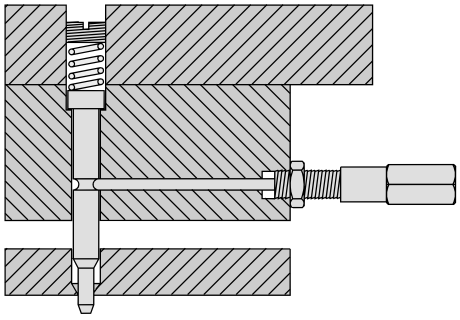
Recommended Sensors for Die Protector

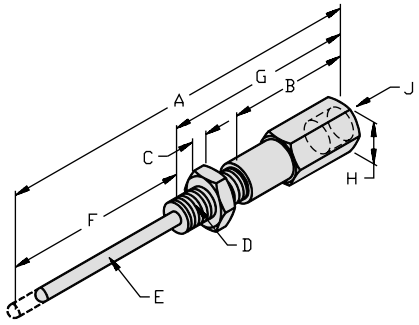
Die Protector	DP-08-25-08	DP-12-25-12	DP-18-25-18
Sensors	Bi 1.5U-EG08-AP6X Bi 2-EG08-AP6X	Bi 2-G12-AP6X-H1141 Bi 2U-EM12-AP4X	Bi 5-G18-AP6X (When not fully engaged)

Note: Works with all shielded NPN, PNP, quick disconnect or potted cable versions of the listed part numbers.

Whisker Probe

Part Number	ID Number	Dimensions									
		A	B	C	D	E	F	G	H	J	Probe Travel
WP-08-50-03	A2527	3.92 99.6	1.25 31.8	0.15 3.8	M8x1	.125 3.2	2.00 50.8	1.95 49.5	.436 11.1	M8x1 to depth of 0.86 21.8	For activation: .071(1.80) to .075(1.91) Maximum: .080(2.03)
WP-12-50-03	A2528				M12x1	.125 3.2			.623 15.8	M12x1 to depth of 0.71 18.0	For activation: .056(1.42) to .080(2.03) Maximum: .085(2.15)
WP-12-50-06	A2529					.250 6.4					





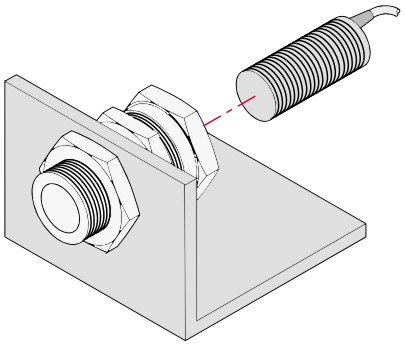
Recommended Sensors for Whisker Probe

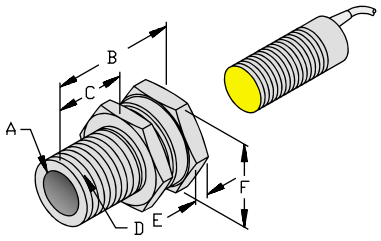
Die Protector	WP-08-50-03	WP-12-50-03	WP-12-50-06
Sensors	Bi 1-G08-AN6 Bi 1.5-G08-AP6X Bi 1.5U-EG08-AP6X Bi 2-EG08-AP6X	Bi 2-G12-AP6X-H1141 Bi 2U-EM12-AP4X Bi 3U-M12-AP6X-H1141	Bi 2-G12-AP6X-H1141 Bi 2U-EM12-AP4X Bi 3U-M12-AP6X-H1141

Note: Works with all shielded NPN, PNP, quick disconnect or potted cable versions of the listed part numbers.

Quick Mount

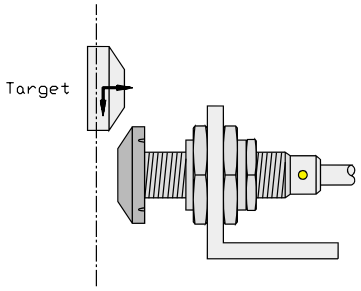
Part Number	ID Number	Dimensions					
		A	B	C	D	E	F
QM-08 QM-08L	A2511 A2512	0.32 8.18	1.28 (32.4) 1.90 (48.0)	0.69 (17.5) 1.34 (34.0)	M12x1	0.15 3.85	0.67 16.9
QM-12 QM-12L	A2513 A2514	0.48 12.1	1.34 (33.7) 1.76 (44.8)	0.77 (19.5) 1.18 (30.0)	M16x1.5	0.16 4.01	0.86 21.8
QM-18 QM-18L	A2515 A2516	0.71 18.1	1.52 (38.5) 2.28 (58.0)	0.79 (20.0) 1.57 (40.0)	M24x1.5	0.19 4.95	1.18 30.0
QM-30 QM-30L	A2517 A2518	1.19 30.1	1.50 (35.0) 2.28 (58.0)	0.79 (20.0) 1.57 (40.0)	M36x1.5	0.24 6.13	1.61 41.0

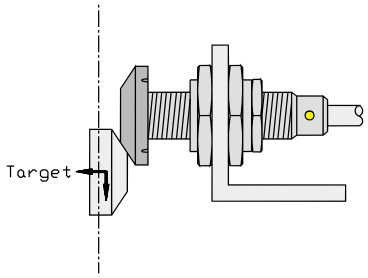


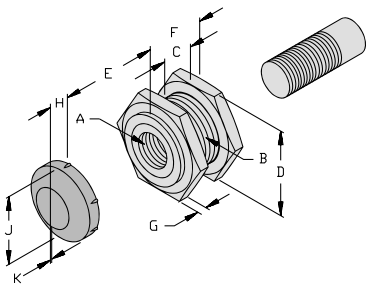


Cushion Mount

Part Number	ID Number	Dimensions									
		A (INSIDE THREAD)	B (OUTSIDE THREAD)	C (MAX.)	D (ACROSS FLATS)	E (MAXIMUM ALLOWABLE OVERTRAVEL)	F	G	H	J	K
CM-08 CM-08N	A2503 A2504	M8x1	M16x1.5	.433 11.0	.875 22.2	.395 10.0	.750 19.1	.155 3.94	.200 5.08	.600 15.2	.0004 .010
CM-12 CM-12N	A2505 A2506	M12x1	M22x1.5	.433 11.0	1.19 30.2	.395 10.0	.750 19.1	.155 3.94	.245 6.22	.860 21.8	.010 .250
CM-18 CM-18N	A2507 A2508	M18x1	M30x1.5	.598 15.2	1.38 35.1	.395 10.0	1.00 25.4	0.02 5.08	.315 8.00	1.18 30.0	.001 .035
CM-30 CM-30N	A2509 A2510	M30x1.5	M47x1.5	.972 24.7	2.05 52.1	.591 15.0	1.37 34.9	0.20 5.08	.315 8.00	1.75 44.5	.035 .890



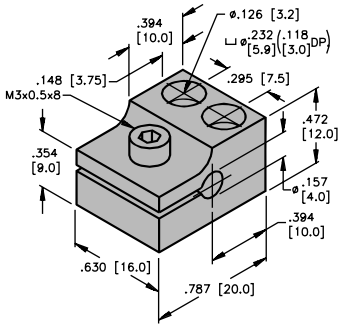




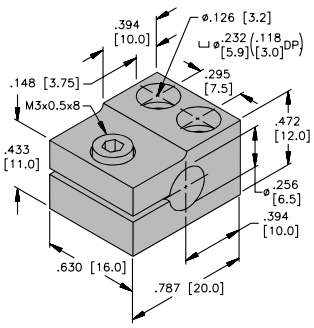
Mounting Blocks

Part Number	ID Number	Barrel Diameter
MBS-40	69477 00	4.0 mm
MBS-65	69478 00	6.5 mm
MBS-80	69479 00	8.0 mm

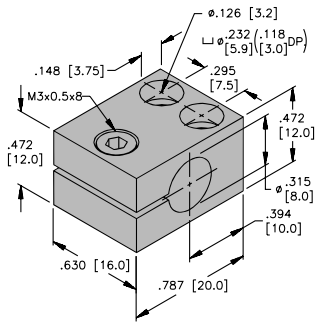
Material: Aluminum
Finish: Black Anodized



MBS-40



MBS-65

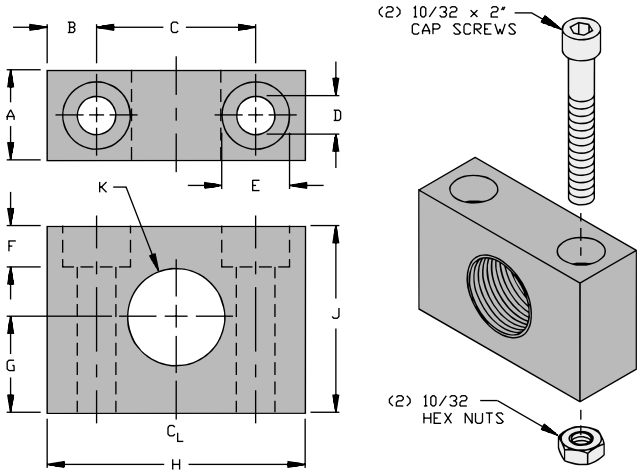


MBS-80

For use with H Barrel ***picoprox***® sensors.

Part Number	ID Number	Barrel Diameter	Dimensions									
			A	B	C	D	E	F	G	H	J	K
MB-S12	A3150	12 mm	0.44 11.2	0.24 6.2	0.77 19.6	0.20 5.0	0.34 8.7	0.20 5.0	0.45 11.4	1.26 32.0	0.91 23.0	M12x1
MB-S18	A3155	18 mm	0.63 16.0	0.30 7.6	1.20 30.5	0.22 5.5	0.38 9.6	0.25 6.4	0.57 14.5	1.80 45.8	1.15 29.3	M18x1

Material: Delrin



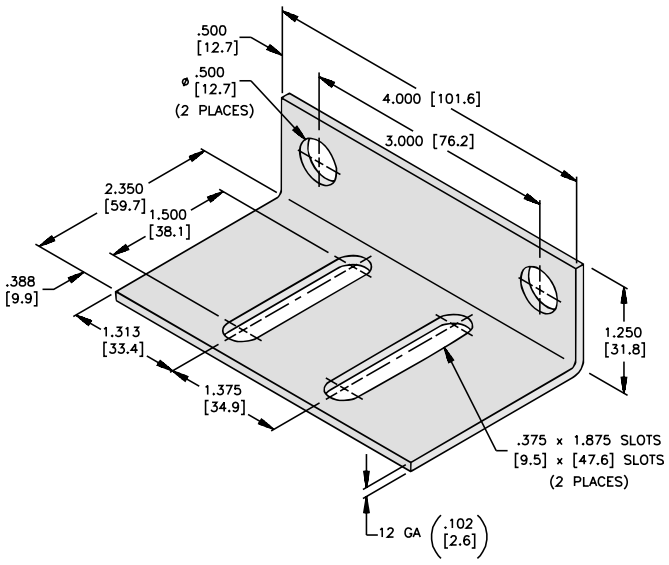
For use with 12 and 18 mm threaded barrel sensors. Mounting hardware included.

Accessories

Mounting Brackets

Part Number	ID Number
MB-Q130	A3145

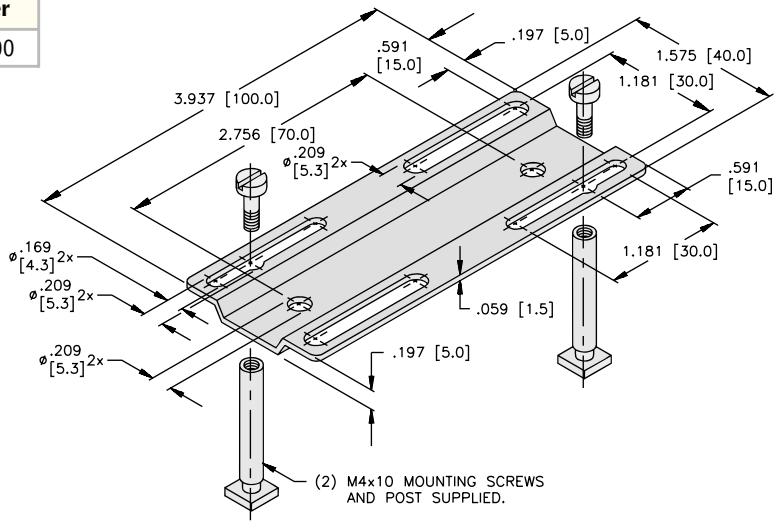
Material: Stainless Steel



For use with Bottle and Can sensors.

Part Number	ID Number
LSAP-2	M6942900

Material: Stainless Steel

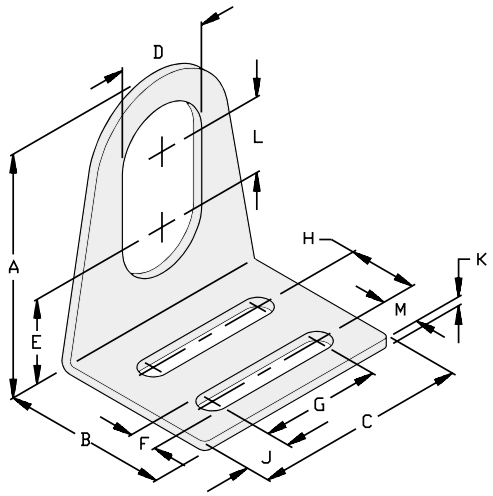


For use with Limit Switch Style ***combiprox , C*prox and multiprox*** sensors.

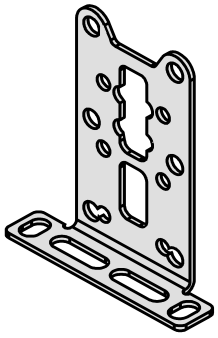
Mounting Brackets

Part Number	ID Number	Dimensions											
		A	B	C	D	E	F	G	H	J	K	L	M
MBSS-08	A2522	1.00 25.4	1.13 28.7	1.25 31.8	.344 8.74	.312 7.92	.218 5.54	.625 15.9	.468 11.9	.312 7.92	.070 1.78	.375 9.53	.281 7.14
MBSS-12	A2523	1.50 38.1	1.37 34.8	1.50 38.1	.500 12.7	.550 13.9	.218 5.54	.750 19.1	.563 14.3	.375 9.53	.070 1.78	.500 12.7	.312 7.92
MBSS-18	A2524	2.00 50.8	1.37 34.8	1.75 44.5	.750 19.1	.218 19.1	.218 5.54	1.00 25.4	.563 14.3	.375 9.53	.070 1.78	.625 15.9	.312 7.92
MBSS-30	A2525	2.50 63.5	1.75 44.5	2.25 57.2	1.18 30.5	.907 23.0	.218 5.54	1.37 34.8	.812 20.6	.440 11.2	.085 2.16	.750 19.1	.406 10.3
MBSS-47	A2526	3.50 88.9	2.00 50.8	2.50 63.5	1.87 47.5	1.50 38.1	.218 5.54	1.50 38.1	1.00 25.4	.500 12.7	.120 3.05	.750 19.1	.500 12.7

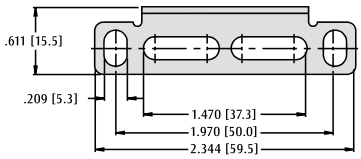
Material: 304 Stainless Steel

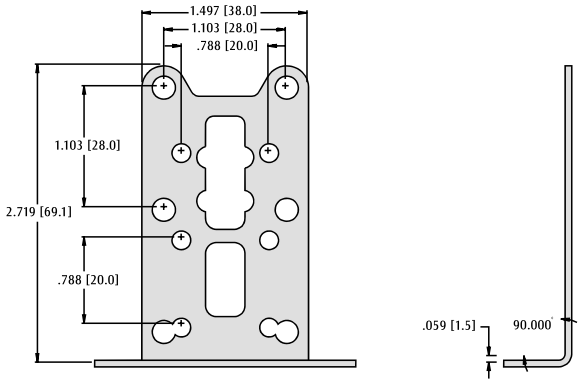


Part Number	ID Number
MB-Q14/20	A3147



ISOMETRIC VIEW
HALF SCALE



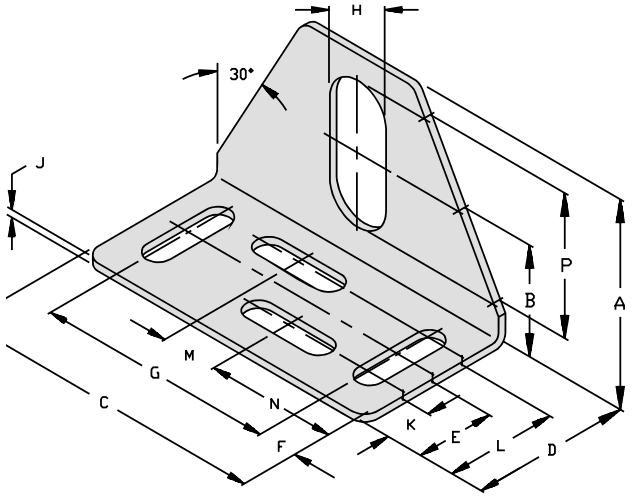


Accessories

Mounting Brackets

Part Number	ID Number	Barrel Dia.	Dimensions													
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	SLOT
MB-8	A3130-1	8 mm	1.26 32.0	0.66 16.7	2.00 50.8	1.00 25.4	0.45 11.5	0.30 7.5	1.41 35.8	0.33 8.4	0.06 1.5	0.24 6.0	0.67 17.0	0.35 8.8	0.83 21.0	.84 21.4	0.16 x 0.59 4.0 x 15.0
MB-12	A3130	12 mm	1.63 41.5	0.87 22.15	2.50 63.5	1.25 31.8	0.61 15.5	0.31 7.9	1.88 47.8	0.50 12.7	0.06 1.5	0.35 9.0	0.87 22.0	0.45 11.5	1.02 26.0	1.13 28.7	0.22 x 0.73 5.6 x 18.6
MB-18	A3135	18 mm	1.63 41.5	0.79 20.0	2.50 63.5	1.25 31.8	0.61 15.5	0.31 7.9	1.88 47.8	0.75 19.1	0.06 1.5	0.35 9.0	0.87 22.0	0.45 11.5	1.04 26.3	1.15 29.1	0.22 x 0.75 5.6 x 19.0
MB-30	A3140	30 mm	2.62 66.5	1.32 33.5	4.25 108.0	1.75 44.5	0.88 22.4	0.37 9.5	3.50 88.9	1.19 30.2	0.07 1.8	0.63 16.0	1.14 29.0	1.18 30.0	1.54 39.0	2.06 52.2	0.28 x 1.25 7.1 x 31.8

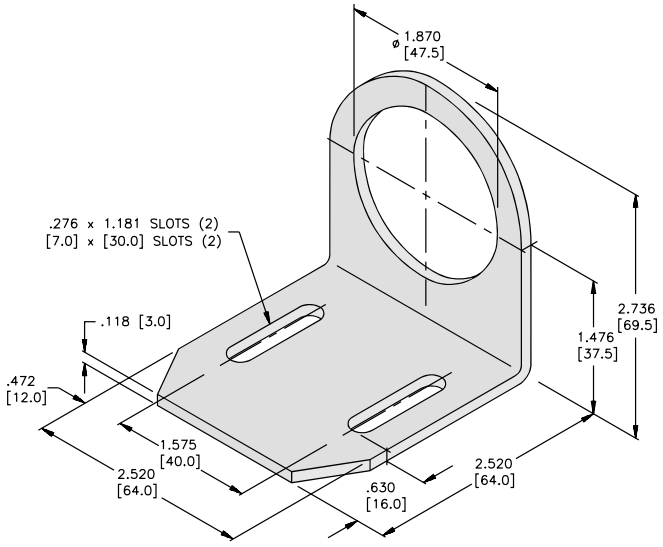
MB-8, MB-18 Material: 16 Gage Cold Roll Steel
MB-12, MB-30 Material: 14 Gage Cold Roll Steel
Finish: Galvanized



For use with 8, 12, 18 and 30 mm barrel sensors.

Part Number	ID Number
MB-47	M6945200

Material: Cold Roll Steel
Finish: Galvanized

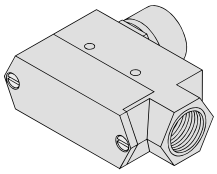


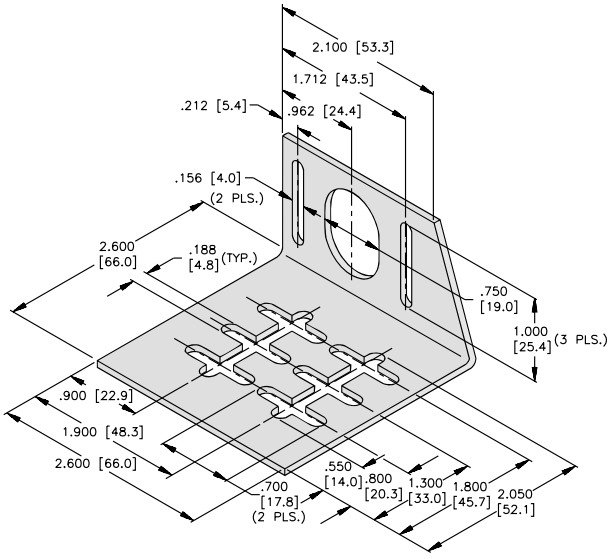
For use with 47 mm barrel sensors.

Part Number	ID Number
TBZE-L	A5150
TBZE-R	A5151

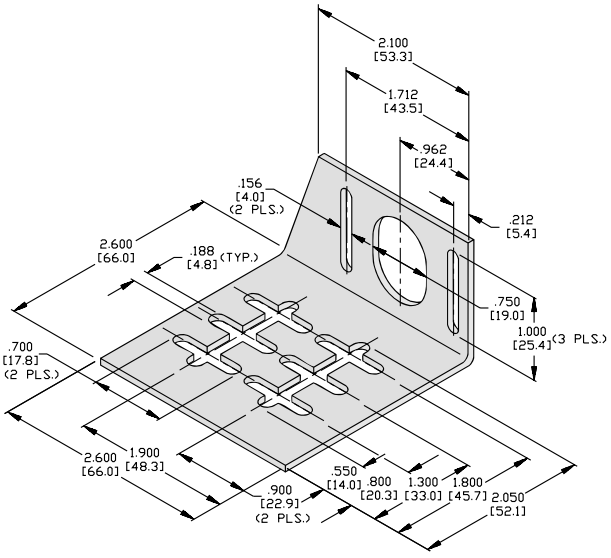
Material:
Galvanized Plated Steel

Replaces:





TBZE-L



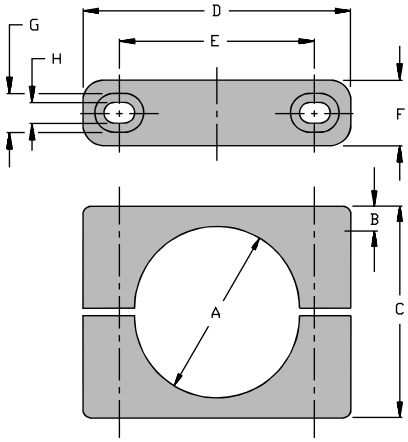
TBZE-R

For use with ***Q08*** rectangular housing and 18 mm barrel sensors.

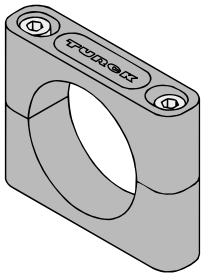
Mounting Clamps

Part Number	ID Number	Barrel Diameter	Dimensions							
			A	B	C	D	E	F	G	H
BS-11	M6946200	11 mm	0.43 11.0	0.20 5.0	0.79 20.0	1.26 32.0	0.79 20.0	0.47 12.0	0.32 8.2	0.17 4.3
BS-20	M6946400	20 mm	0.79 20.0	0.24 6.0	1.18 30.0	1.81 46.0	1.22 31.0	0.59 15.0	0.37 9.5	0.21 5.3
BS-40	M6946600	40 mm	1.57 40.0	0.24 6.0	1.97 50.0	2.56 65.0	1.87 47.5	0.63 16.0	0.37 9.5	0.21 5.3

Material:
Bracket - PBT
Screws - Galvanized Zinc



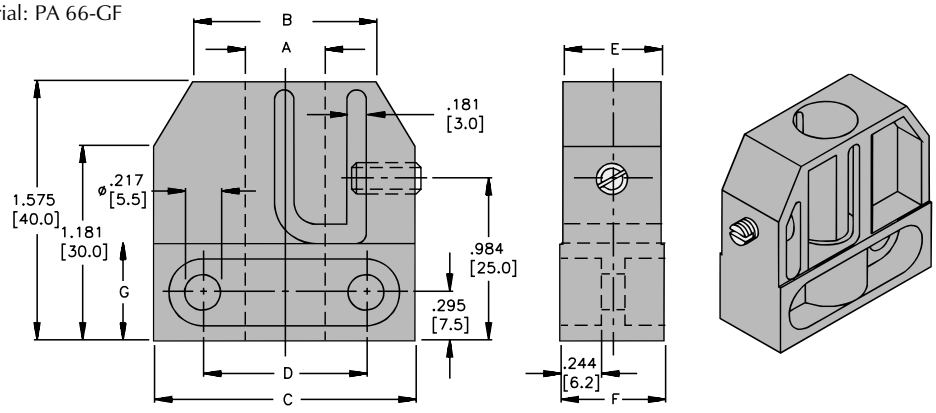
SCREWS INCLUDED:
BS-11: (2) M4x22 -SLOTTED HEAD
BS-20: (2) M5x30 -CAP SCREWS
BS-40: (2) M5x50 -CAP SCREWS



For use with 11, 20 and 40 mm smooth plastic barrel sensors.

Part Number	ID Number	Barrel Diameter	Dimensions						
			A	B	C	D	E	F	G
BS-12	M6947000	12 mm	0.48 12.2	1.10 28.0	1.57 40.0	0.98 25.0	0.59 15.0	0.63 16.0	0.59 15.0
BS-18	M6947100	18 mm	0.72 18.2	1.30 33.0	1.77 45.0	1.18 30.0	0.83 21.0	0.87 22.0	0.59 15.0

Material: PA 66-GF

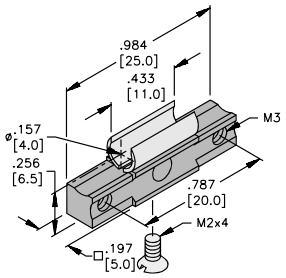


For use with 12 and 18 mm threaded barrel sensors.

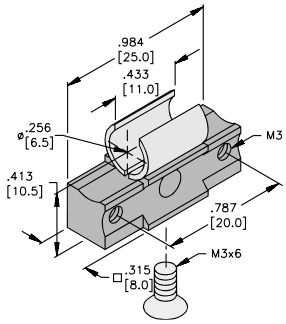
Mounting Clamps

Part Number	ID Number	Barrel Diameter
BS-540	M6947500	4.0 mm
BS-865	M6947600	6.5 mm

Block Material: Aluminum
Sleeve Material: Steel



BS-540

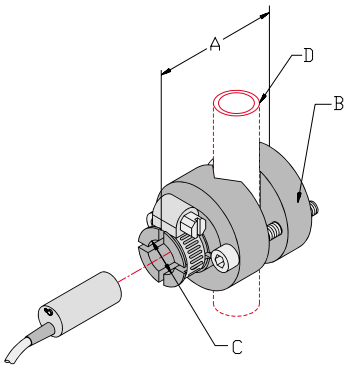


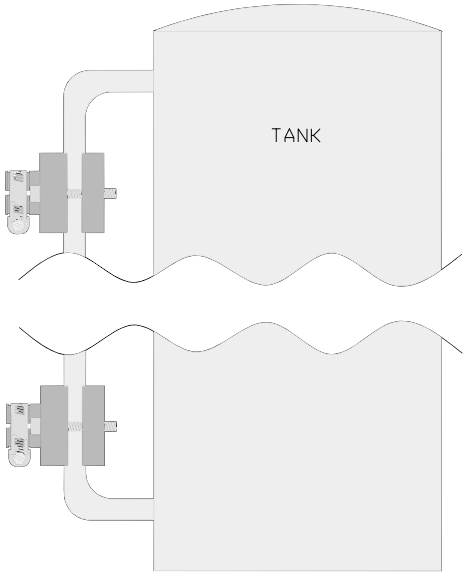
BS-865

For use with H Barrel ***picoprox***® sensors.

Mounting Clamps

Part Number	ID Number	A	B	C	D
TSG-12	A2500	1.75 [44.5]	1.25 [31.8]	12 mm (threaded or non-threaded)	0.37-0.81 [9.40-20.6]
TSG-18	A2501	1.90 [48.3]	1.48 [37.5]	18 mm (threaded or non-threaded)	0.63-1.12 [16.0-28.4]
TSG-30	A2502	3.45 [87.6]	2.00 [50.8]	30 mm (threaded or non-threaded)	1.00-1.75 [25.4-44.5]



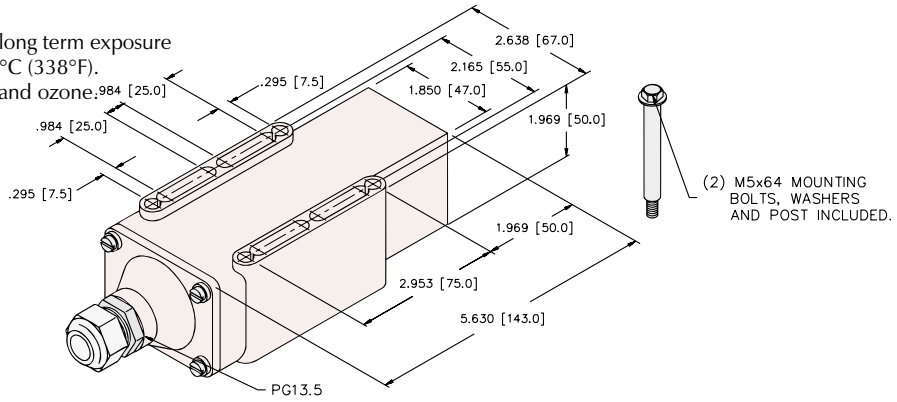


Protective Housing "Wet Suit"

Part Number	ID Number
SG40/2	M6949700

For extreme ambient conditions or long term exposure to elevated temperatures up to 170°C (338°F).
Especially resistant to UV-radiation and ozone.
IP 68, NEMA 13

Housing Material: ULTEM 1000
Cover Plate Material: PBT-GF
Cable Gland Material: PVDF
Seal Material: Viton

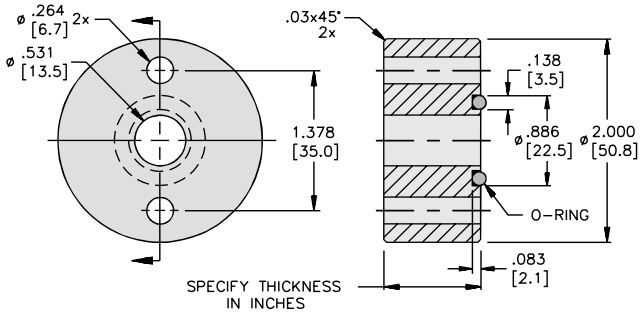


Recommended cable styles: 16-18 AWG
For use with Limit Switch Style ***combiprox, multiprox, C*prox*** and ***K40SR*** sensors.

Spacer Plates

Part Number
SP-_._____[1)]-C

Material: Aluminum

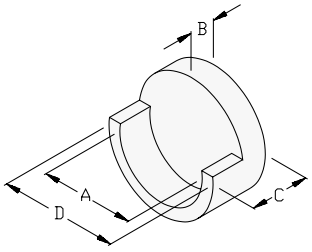


[1)] add desired thickness in inches.
Minimum thickness: 0.125", in .005 increments.
For use with Cylinder Position Indicators, ***CRS Series***

Sensing Gap Gages

Part Number	ID Number	Barrel Diameter	Dimensions			
			A	B	C	D
SG-Bi0.8-0.64	A5300	5 mm	0.197 5.0	0.025 0.64	0.378 9.6	0.252 6.4
SG-Bi 1-0.81	A5301	8 mm	0.315 8.0	0.032 0.81	0.378 9.6	0.374 9.5
SG-Bi 2-1.62	A5302	12 mm	0.472 12.0	0.064 1.62	0.500 12.7	0.630 16.0
SG-Bi 5-4.05	A5303	18 mm	0.709 18.0	0.160 4.05	0.500 12.7	0.878 22.3
SG-Bi10-8.1	A5304	30 mm	1.181 30.0	0.319 8.1	0.752 19.1	1.492 37.9
SG-Bi15-12.15	A5305	30 mm	1.181 30.0	0.478 12.15	0.748 19.0	1.492 37.9
Use above Gap Gages for embeddable (Shielded) sensors.						
SG-Ni 2-1.62	A5306	8 mm	0.315 8.0	0.064 1.62	0.347 9.5	0.378 9.6
SG-Ni 4-MG12-3.24	A5307	12 mm	0.472 12.0	0.128 3.24	0.528 13.4	0.626 15.9
SG-Ni 4-S12-3.24	A5308	12 mm	0.472 12.0	0.128 3.24	0.500 12.7	0.626 15.9
SG-Ni 5-4.05	A5309	12 mm	0.472 12.0	0.160 4.05	0.500 12.7	0.626 15.9
SG-Ni 8-6.48	A5310	18 mm	0.709 18.0	0.255 6.48	0.500 12.7	0.878 22.3
SG-Ni10-MG18-8.1	A5311	18 mm	0.709 18.0	0.319 8.1	0.500 12.7	0.878 22.3
SG-Ni10-P18-8.1	A5312	18 mm	0.709 18.0	0.319 8.1	0.756 19.2	0.752 19.1
SG-Ni15-MG30-12.15	A5313	30 mm	1.181 30.0	0.478 12.15	1.063 27.0	1.240 31.5
Use above Gap Gages for non-embeddable (Nonshielded) sensors.						

Material: White Delrin



NEW

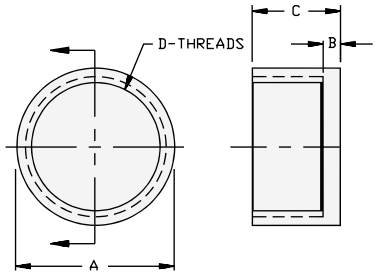
firefast™ Connector Protective Sleeving

Part Number	ID Number
FF 1/2INCH BLACK (10/BAG)	A0076
FF 3/4INCH BLACK (10/BAG)	A0075

Teflon Caps

Part Number	ID Number	Barrel Diameter	Dimensions				
			A	B	C	D	E
CAP 12-PTFE	69662 00	12 mm	0.63 (16.0)	0.03 (0.7)	0.63 (16.0)	M12x1	- - -
CAP 18N-PTFE	A3056	18 mm	0.87 (22.0)	0.04 (1.0)	0.79 (20.0)	M18x1	0.43 (11.0)
CAP 18-PTFE	A3055	18 mm	0.87 (22.0)	0.04 (1.0)	0.35 (9.0)	M18x1	- - -
CAP 30N-PTFE	A3058	30 mm	1.34 (34.0)	0.05 (1.2)	1.14 (29.0)	M30x1.5	0.71 (18.0)
CAP 30-PTFE	A3057	30 mm	1.34 (34.0)	0.05 (1.2)	0.35 (9.0)	M30x1.5	- - -
CAP 47-PTFE	A3060	47 mm	2.20 (55.8)	0.06 (1.6)	0.38 (9.7)	PG 36	- - -

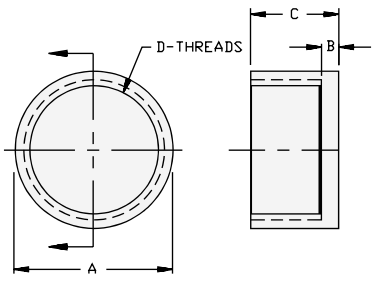
Material: PTFE

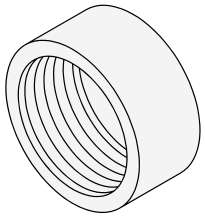


For use with metal barrel sensors.

Ceramic Caps

Part Number	ID Number	Dimensions				Max Temp.	Density	Porosity	Thermal Conductivity (@20°C)
		A	B	C	D				
CAP 12-CER	A2530	0.63 (16.0)	0.04 (1.10)	.352 (8.94)	M12x1	4172°F (2300°C)	3.2 oz/in^3 (6 g/cm^3)	Impervious	14 BTU • in/ft^2 • m• °F (2 W/m • °K)
CAP 18-CER	A2531	0.88 (22.3)	0.04 (1.10)	.352 (8.94)	M18x1				
CAP 30-CER	A2532	1.34 (34.0)	0.08 (2.00)	.352 (8.94)	M30x1.5				

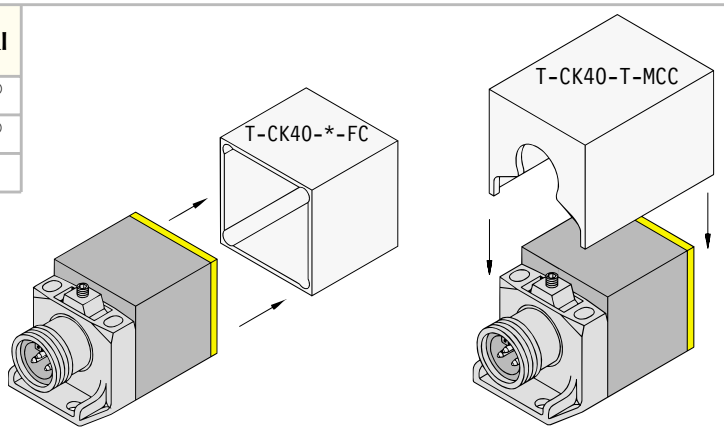




For use with embeddable metal barrel sensors.

Teflon Covers

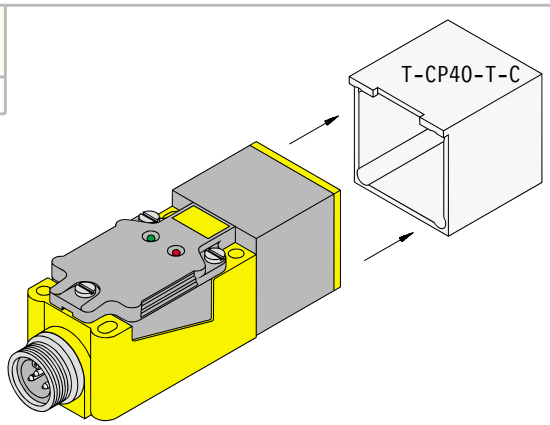
Part Number	ID Number	Material
T-CK40-T-FC	A5202	Teflon®
T-CK40-D-FC	A5160	Delrin®
T-CK40-T-MCC	A5201	Teflon



For use with ***CK40*** style sensors.

Part Number	ID Number
T-CP40-T-C	A5204

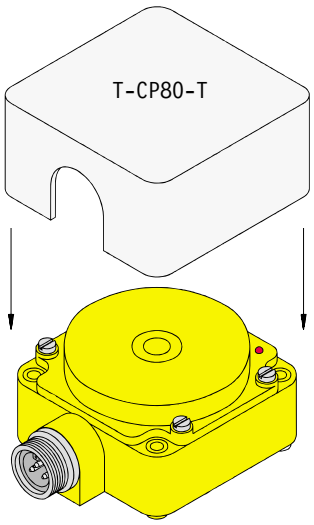
Material: Teflon



For use with ***CP40*** style sensors.

Part Number	ID Number
T-CP80-T	A5207

Material: Teflon

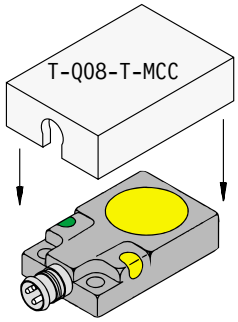


For use with ***CP80*** style sensors.

Teflon Covers

Part Number	ID Number
T-Q08-T-MCC	A5155

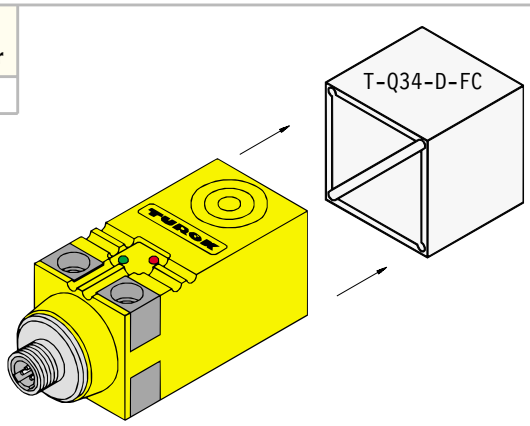
Material: Teflon®



For use with ***Q08*** style sensors.

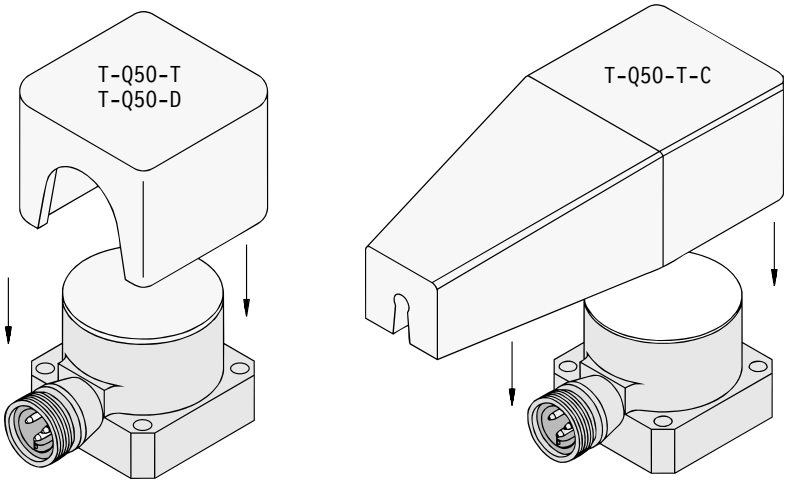
Part Number	ID Number
T-Q34-D-FC	A5210

Material: HDPE



For use with ***Q34*** style sensors.

Part Number	ID Number	Material
T-Q50-T	A5205	Teflon
T-Q50-D	A5206	HDPE
T-Q50-T-C	A5203	Teflon



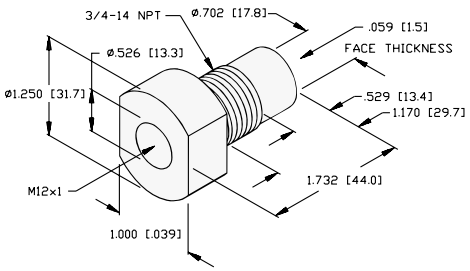
For use with ***Q50*** style sensors with quick disconnect.

Threaded Tank Wells

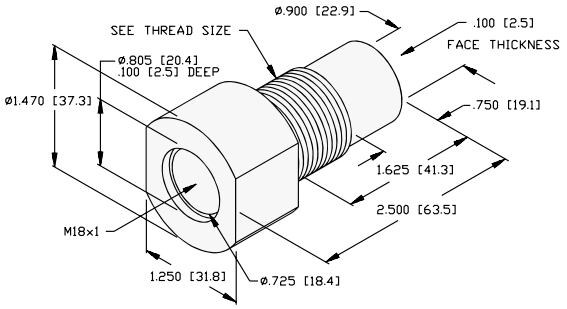
Part Number	ID Number	Material	Thread Size	Drill Size	Application
TWD-12S	A5051	Delrin	3/4-14 NPT	59/64	12 mm threaded capacitive sensors for liquid level sensing.
TWD-18S	A5055	Delrin	3/4-14 NPT	59/64	18 mm threaded capacitive sensors for liquid level sensing.
TWT-18S	A5050	Teflon	3/4-14 NPT	59/64	18 mm threaded capacitive sensors for liquid level sensing.
TWD-18S-1	A5057	Delrin	1-11 1/2 NPT	1-5/32	18 mm threaded capacitive sensors for liquid level sensing.
TWT-18S-1	A5056	Teflon	1-11 1/2 NPT	1-5/32	18 mm threaded capacitive sensors for liquid level sensing.
TWD-30S	A5065	Delrin	1 1/4-11 1/2 NPT	1-1/2	30 mm threaded capacitive sensors for liquid level sensing.
TWT-30S	A5060	Teflon	1 1/4-11 1/2 NPT	1-1/2	30 mm threaded capacitive sensors for liquid level sensing.
TWD-40S	A5075	Delrin	1 1/2-11 1/2 NPT	1-47/64	40 mm smooth capacitive sensors for liquid level sensing.
TWT-40S	A5070	Teflon	1 1/2-11 1/2 NPT	1-47/64	40 mm smooth capacitive sensors for liquid level sensing.

Pressure Rating: 150 PSI

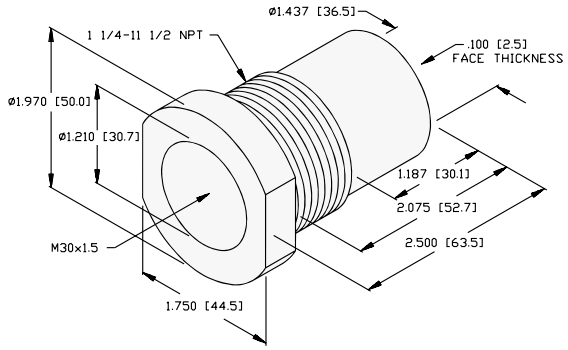
TWD-12S



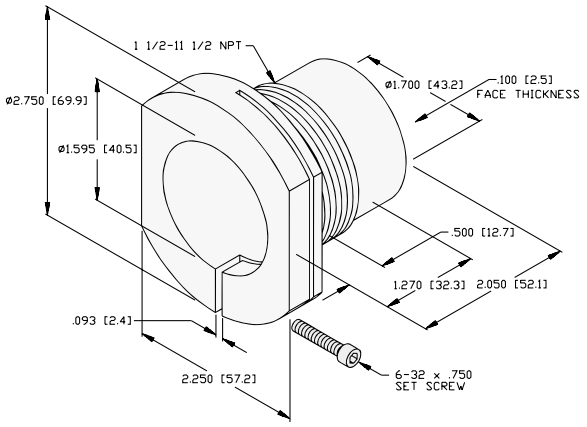
TWD-18..
TWT-18..



TWD-30S
TWT-30S



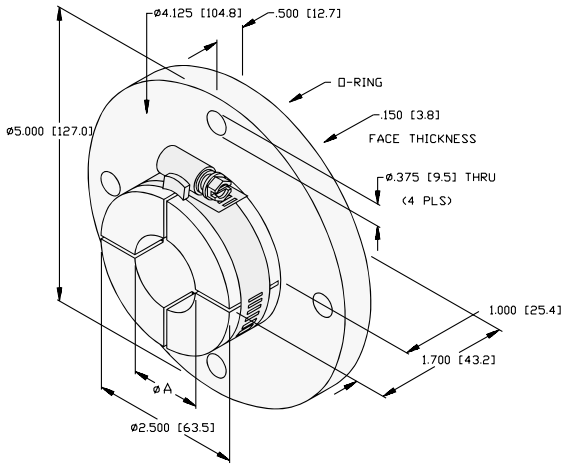
TWD-40S
TWT-40S



Bolt-on Tank Wells

Part Number	ID Number	Dimension A
TWU-30B	A5005	1.181 30.0
TWU-40B	A5000	1.575 40.0

Material: UHMW/PE
Pressure Rating: 80 PSI

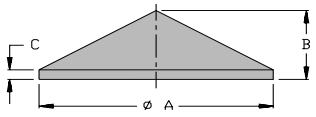


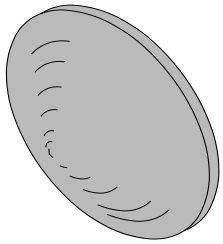
For use with 30 and 40 mm barrel sensors.

Plastic Covers

Part Number	ID Number	Sensor Diameter	Dimensions		
			A	B	C
CP80-P-CONE	A5218	80 mm	2.756 70.0	0.925 23.5	0.129 3.3
K90-P-CONE	A5220	90 mm	3.150 80.0	1.250 31.2	0.341 8.7

Material: PVC



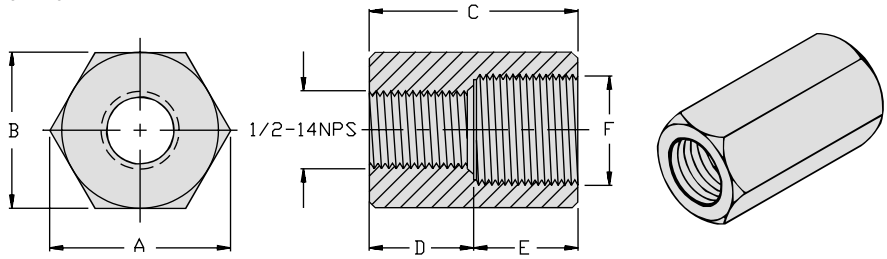


For use with ***CP80***, ***K90*** and ***K90SR*** style sensors.

Conduit Adapters

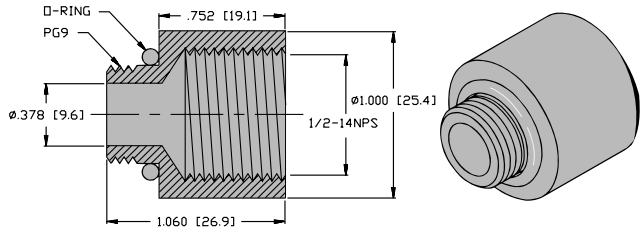
Part Number	ID Number	Barrel Diameter	Dimensions					
			A	B	C	D	E	F
TMF 12-G	A3310	12 mm	1.15 29.2	1.00 25.4	1.00 25.4	0.50 12.7	0.50 12.7	M12x1
TMF 18-G	A3320	18 mm	1.15 29.2	1.00 25.4	1.00 25.4	0.50 12.7	0.50 12.7	M18x1
TMF 30-G	A3345	30 mm	1.73 44.0	1.50 38.1	1.00 25.4	0.50 12.7	0.40 10.2	M30x1.5
TMF 47-G	A3360	47 mm	2.30 58.4	2.00 50.8	1.75 44.5	1.05 26.7	0.70 17.8	PG36
Use above Conduit Adapters with G and P Barrel sensors.								
TMF 18-MS	A3330	18 mm	1.15 29.2	1.00 25.4	2.00 50.8	1.50 38.1	0.50 12.7	M18x1
TMF 30-MS	A3355	30 mm	1.73 44.0	1.50 38.1	2.00 50.8	0.60 15.2	1.40 35.6	M30x1.5
Use above Conduit Adapters with M and S Barrel sensors.								

Material: Aluminum



Part Number	ID Number
TMF 9-14	A3290

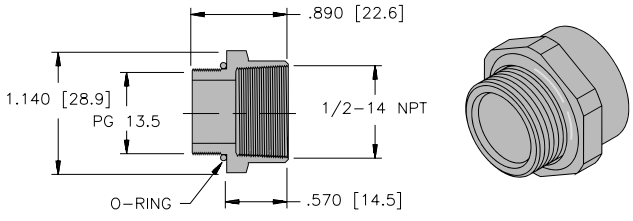
Material: Delrin



For use with Integral Terminal Chamber sensors

Part Number	ID Number
TMF 13.5-14	A4500

Material: Delrin

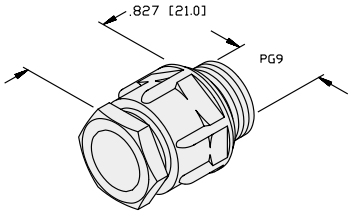


For use with Integral Terminal Chamber sensors

Cable Glands

Part Number	ID Number
PG 9	69655

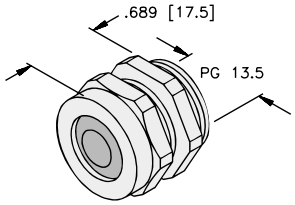
Material: Polyamide Plastic
Recommended Cable Style: 18 and 20 AWG



For use with Integral Terminal Chamber sensors

Part Number	ID Number
PG 13.5	69659

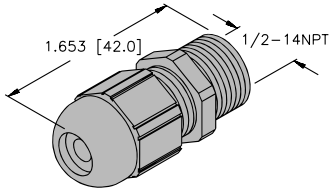
Material: Polyamide Plastic



For use with Long Range Integral Terminal Chamber sensors

Part Number	ID Number
1/2-14NPT	A3480

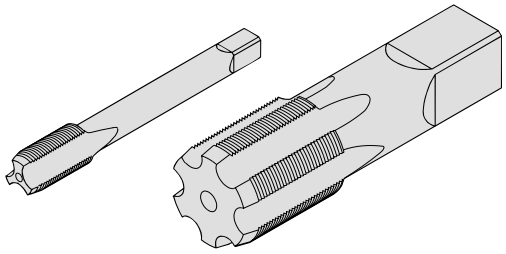
Material: Polyamide Plastic
Recommended Cable Style: 18 and 20 AWG



For use with Integral Terminal Chamber sensors

Plug Taps

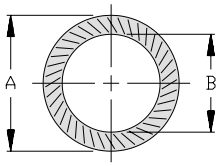
Part Number	ID Number	Thread	Drill Hole Diameter (mm)
PT-M05	A3160	M5x0.5	4.5
PT-M08	A3162	M8x1	7.0
PT-M12	A3166	M12x1	11.0
PT-M18	A3168	M18x1	17.0
PT-M30	A3170	M30x1.5	28.5
PT-PG 9	A3467	PG 9	14.0
PT-PG 13.5	A3464	PG13.5	19.0
PT-PG 21	A3466	PG21	27.0
PT-PG 36	A3468	PG36	45.5



Lockwashers

Part Number	ID Number	Barrel Diameter	Dimensions	
			A	B
LW-12	A3127	12 mm	0.70 17.8	0.52 13.2
LW-18	A3128	18 mm	1.06 26.8	0.76 19.3
LW-30	A3129	30 mm	1.76 44.8	1.26 32.0

Material: Brass
Finish: Copper, Nickel, Chrome Plating



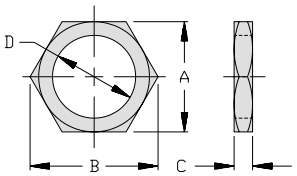
For use with threaded barrel sensors.

Locknuts

Chrome Plated Brass

Part Number	ID Number	Barrel Diameter	Dimensions			
			A	B	C	D
LN-M05	A3119	5 mm	0.28 7.0	0.32 8.0	0.10 2.5	M5x0.5
LN-M08	A3120	8 mm	0.51 13.0	0.58 14.7	0.16 4.0	M8x1
LN-M12	A3122	12 mm	0.67 17.0	0.76 19.4	0.16 4.0	M12x1
LN-M18	A3125	18 mm	0.94 24.0	1.08 27.4	0.16 4.0	M18x1
LN-M30	A3126	30 mm	1.42 36.0	1.63 41.4	0.20 5.0	M30x1.5
LN-PG36	A3440	47 mm	2.01 51.1	2.20 56.0	0.20 5.0	PG36
LN 1/4-18	A3131	—	0.43"	0.49"	0.22"	1/4-18
LN 1/2-14	A3132	—	0.74"	0.85"	0.43"	1/2-14
300 Series Stainless Steel						
LN-SS12	A3123	12 mm	0.67 17.0	0.76 19.4	0.16 4.0	M12x1
LN-SS18	A3123-0	18 mm	0.94 24.0	1.08 27.4	0.16 4.0	M18x1
LN-SS30	A3123-1	30 mm	1.42 36.0	1.63 41.4	0.20 5.0	M30x1.5
Teflon® Coated						
LN-MT12	A3109	12 mm	0.67 17.0	0.76 19.4	0.16 4.0	M12x1
LN-MT18	A3108	18 mm	0.94 24.0	1.08 27.4	0.16 4.0	M18x1
LN-MT30	A3107	30 mm	1.42 36.0	1.63 41.4	0.20 5.0	M30x1.5

For use with Teflon coated threaded metal barrel sensors.

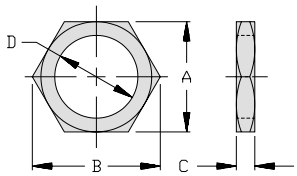


Polyamide Plastic *

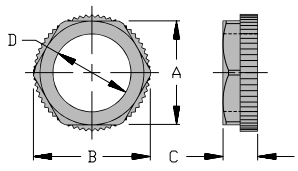
Part Number	ID Number	Barrel Diameter	Dimensions			
			A	B	C	D
LN-P05	A3443	5 mm	0.31 7.9	0.35 9.0	0.08 2.0	M5x0.5
LN-P08	A3444	8 mm	0.51 13.0	0.58 14.5	0.16 4.0	M8x1
LN-P12	A3446	12 mm	0.67 17.0	0.75 19.0	0.32 8.0	M12x1
LN-P18	A3448	18 mm	0.94 24.0	1.06 27.0	0.32 8.0	M18x1
LN-P30	A3450	30 mm	1.42 36.0	1.58 40.1	0.39 10.0	M30x1.5

For use with threaded plastic barrel sensors.
* 5 mm Plastic Nut Material: Delrin

LN-P05, LN-P08

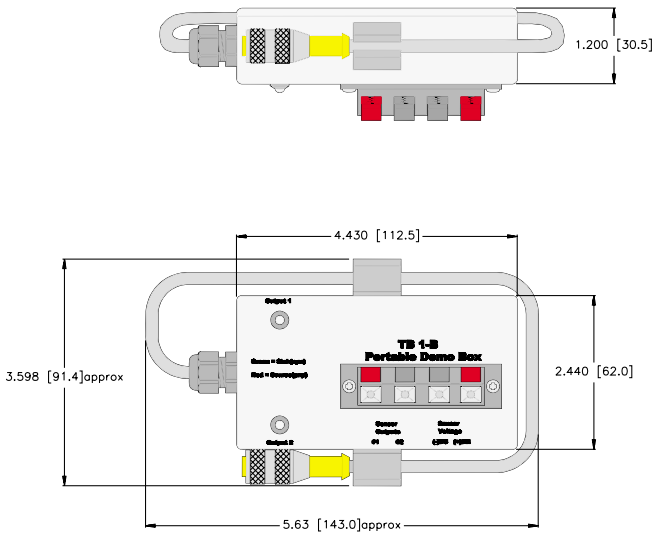


LN-P12, LN-P18, LN-P30



Test Box

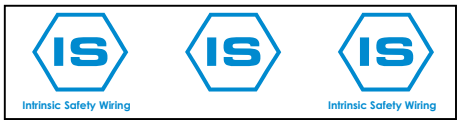
Part Number	ID Number	Description
TB 1-B	A3475-1	DC powered test box allows you to quickly test DC sensors.



Intrinsic Safety Labels

Part Number	ID Number	Description
IS Labels	A4302	IS Decal 0.59" x 2.36" (10 per sheet)
IS Labels	A4301	IS Decal 2.25" x 3.00" (10 per sheet)
IS Labels	A4300	IS Decal 4.5" x 5.5" (Individual) - Not Pictured

A4302



A4301

For identification of intrinsic safety wiring that is not color-coded blue

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Reference Tables

Visit **TURCK** on the Internet:
http://www.turck.com

Selection Guide

Reference Tables

Indexes

Additional Information

Metric to AWG Conversions and Wire Specifications

Cable Dia. (O.D.)	Cable Type	Number of Conductors x Conductor Cross Sectional Area	Number of Strands x Strand Diameter	AWG	Cable Material
3.0 mm	LifYY	2 x 0.14 mm^2	72 x 0.05 mm	26	PVC
3.0 mm	LifYY	3 x 0.14 mm^2	72 x 0.05 mm	26	
4.0 mm	LifYY	2 x 0.25 mm^2	65 x 0.07 mm	24	
4.0 mm	LifYY	3 x 0.25 mm^2	65 x 0.07 mm	24	
5.2 mm	LifYY	3 x 0.34 mm^2	90 x 0.07 mm	22	
8.8 mm	LiYY	4 x 0.34 mm^2	7 x 0.25 mm	22	
5.2 mm	LiYY	2 x 0.50 mm^2	16 x 0.20 mm	21	
5.2 mm	LiYY	3 x 0.50 mm^2	16 x 0.20 mm	21	
7.3 mm	Olflex	3 x 0.75 mm^2	24 x 0.20 mm	19	

Cable Diameters of Potted-In Cable Sensors

Barrel Styles Diameter (mm)	Cable Diameter (mm)
4	2.8
5	
6.5	3.9
8	
12	5.15
18	
30	
47	6.3
Rectangular Styles	**Cable Diameter (mm)**
Q08	5.2
Q12	5.2
Q14	5.2
Q20	
Q10S	4.0
Q5.5	3.0
Q25	5.2
Q30	5.2
Q11S	4.0
Q6.5	3.0
Q9.5	3.0
Q06	4.0

Fahrenheit to Celsius Temperature

Degrees Fahrenheit	Degrees Celsius
-70	-56.7
-65	-53.9
-60	-51.2
-55	-48.4
-50	-45.6
-45	-42.8
-40	-40.0
-35	-37.3
-30	-34.5
-25	-31.7
-20	-28.9
-15	-26.1
-10	-23.4
0	-17.8
5	-15.0
10	-12.2
15	-9.5
20	-6.7
25	-3.9
30	-1.1
*32	*0.0
35	1.7
40	4.4
45	7.2
50	10.0
55	12.8
60	15.6
65	18.3
70	21.1
75	23.9
80	26.7
85	29.5
90	32.2

Degrees Fahrenheit	Degrees Celsius
95	35.0
100	37.8
105	40.6
110	43.4
115	46.1
120	48.9
125	51.7
130	54.5
135	57.3
140	60.0
145	62.8
150	65.6
155	68.4
160	71.2
165	73.9
170	76.7
175	79.5
180	82.3
185	85.1
190	87.8
195	90.6
200	93.4
205	96.2
210	99.0
**212	**100.0

* Water Freezing Point
** Water Boiling Point

For temperature conversions not given use the following formulas:

°Celsius = (°Fahrenheit - 32) x .556
°Fahrenheit = (°Celsius x 1.8) + 32

Millimeter Equivalents of Decimals and Fractions

Millimeters	Inches	Fraction
0.10	0.0039	
0.20	0.0079	
0.30	0.0118	
0.40	0.0157	
0.50	0.0197	
0.60	0.0236	
0.70	0.0276	
0.80	0.0315	
0.90	0.0354	
1.00	0.0394	
1.59	0.0625	1/16
2.00	0.0787	
3.00	0.1181	
3.18	0.1250	1/8
4.00	0.1575	
4.76	0.1875	3/16
5.00	0.1969	
6.00	0.2362	
6.35	0.2500	1/4
7.00	0.2756	
7.94	0.3125	5/16
8.00	0.3150	
9.00	0.3543	
9.53	0.3750	3/8
10.00	0.3937	
11.00	0.4331	
11.11	0.4375	7/16
12.00	0.4724	
12.70	0.5000	1/2
13.00	0.5118	
14.00	0.5512	
14.29	0.5625	9/16
15.00	0.5906	
15.88	0.6250	5/8
16.00	0.6299	
17.00	0.6693	
17.46	0.6875	11/16
18.00	0.7087	
19.00	0.7480	
19.05	0.7500	3/4
20.00	0.7874	
20.64	0.8125	13/16
21.00	0.8268	
22.00	0.8661	
22.23	0.8750	7/8
23.00	0.9055	
23.81	0.9375	15/16
24.00	0.9449	

Millimeters	Inches	Fraction
25.40	1.000	1.000
26.00	1.024	
27.00	1.063	
28.00	1.102	
29.00	1.142	
30.00	1.181	
31.00	1.220	
32.00	1.260	
33.00	1.299	
34.00	1.339	
35.00	1.378	
36.00	1.417	
37.00	1.457	
38.00	1.496	
39.00	1.535	
40.00	1.575	
41.00	1.614	
42.00	1.654	
43.00	1.693	
44.00	1.732	
45.00	1.772	
46.00	1.811	
47.00	1.850	
48.00	1.890	
49.00	1.929	
50.00	1.969	
51.00	2.008	
52.00	2.047	
53.00	2.087	
54.00	2.126	
55.00	2.165	
56.00	2.205	
57.00	2.244	
58.00	2.283	
59.00	2.323	
60.00	2.362	
61.00	2.402	
62.00	2.441	
63.00	2.480	
64.00	2.520	
65.00	2.559	
66.00	2.598	
67.00	2.638	
68.00	2.677	
69.00	2.717	
70.00	2.756	
71.00	2.795	
72.00	2.835	

Millimeters	Inches	Fraction
73.00	2.874	
74.00	2.913	
75.00	2.953	
76.00	2.992	
77.00	3.031	
78.00	3.071	
79.00	3.110	
80.00	3.150	
81.00	3.189	
82.00	3.228	
83.00	3.268	
84.00	3.307	
85.00	3.346	
86.00	3.386	
87.00	3.425	
88.00	3.465	
89.00	3.504	
90.00	3.543	
91.00	3.583	
92.00	3.622	
93.00	3.661	
94.00	3.701	
95.00	3.740	
96.00	3.780	
97.00	3.819	
98.00	3.858	
99.00	3.898	
100.00	3.937	

Notes:

1M = 100 cm = 1000 mm

For conversions not given use the following formulas:

Millimeters = Inches x 25.4

Inches = Millimeters ÷ 25.4

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Warranty Terms and Conditions

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RISK OF LOSS

Delivery of the equipment to a common carrier shall constitute delivery to the Purchaser and the risk of loss shall transfer at that time to Purchaser. Should delivery be delayed due to an act or omission on the part of the Purchaser, risk of loss shall transfer to the Purchaser upon notification by **TURCK Inc.** that the order is complete and ready for shipment.

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1) The **18-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME** or 5-YEAR WARRANTY. No registration is required.

2) The **5-YEAR WARRANTY** is available generally for the products listed. No registration is required.

3) **A LIFETIME WARRANTY** is available for the products listed. It becomes effective when the accompanying **TURCK LIFETIME WARRANTY REGISTRATION** is completed and returned to **TURCK**.

GENERAL TERMS AND CONDITIONS FOR ALL WARRANTIES

- **18-MONTH STANDARD WARRANTY**
- **5-YEAR WARRANTY**
- **LIFETIME WARRANTY**

TURCK warrants the Products covered by the respective WARRANTY AGREEMENTS to be free from defects in material and workmanship under normal and proper usage for the respective time periods listed above from the date of shipment from **TURCK**. In addition, certain specific terms apply to the various WARRANTIES.

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TURCK warrants that the goods sold are as described, but no promise, description, affirmation of fact, sample model or representation, oral or written shall be part of an order, unless set forth in these terms and conditions, or are in writing and signed by an authorized representative of **TURCK**. These WARRANTIES do not apply to any Product which has been subject to misuse, negligence, or accident - or to any Product which has been modified or repaired, improperly installed, altered, or disassembled -except according to **TURCK's** written instructions.

These WARRANTIES are subject to the following conditions:

1) These WARRANTIES are limited to the electronic and mechanical performance only, as expressly detailed in the Product specifications and NOT to cosmetic performance.

2) These WARRANTIES shall not apply to any cables attached to, or integrated with the Product. However, the **18-MONTH WARRANTY** shall apply to cables sold separately by **TURCK**.

3) These WARRANTIES shall not apply to any Products which are stored, or utilized, in harsh environmental or electrical conditions outside **TURCK's** written specifications.

4) The WARRANTIES are applicable only to Products shipped from **TURCK** subsequent to January 1, 1988.

ADDITIONAL SPECIFIC TERMS FOR -

(18-MONTH STANDARD WARRANTY) FOR ULTRASONIC SENSORS, CABLES AND ALL NON-SENSING PRODUCTS SOLD BY TURCK INC. INCLUDING MULTI-SAFE, MULTI-MODUL, MULTI-CART AND RELATED AMPLIFIER PRODUCTS, RELAYS AND TIMERS and

5-YEAR WARRANTY FOR INDUCTIVE AND CAPACITIVE PROXIMITY SENSORS: The periods covered for the above WARRANTIES and Products shall be 18-MONTHS and 5-YEARS, respectively, from the date of shipment from TURCK.

LIFETIME WARRANTY (OPTIONAL - REGISTRATION REQUIRED): FOR INDUCTIVE, INDUCTIVE MAGNET OPERATED AND CAPACITIVE PROXIMITY SENSORS SOLD TO THE ORIGINAL PURCHASER FOR THE LIFETIME OF THE ORIGINAL APPLICATION.

The following terms apply to the LIFETIME WARRANTY in addition to the General Terms:

1) This WARRANTY shall be effective only when the LIFETIME WARRANTY REGISTRATION has been completed, signed by the End User and an authorized **TURCK** Representative or Distributor and has been received by **TURCK** no later than six (6) months after installation in the End User's Plant, or two (2) years from the date product was shipped from **TURCK**, whichever is sooner.

2) This warranty is available only to **TURCK's** authorized Representatives, Distributors and to the Original User. (Th term"Original User" means that person, firm, or corporation which first uses the Product on a continuous basis in connection with the operation of a production line, piece of machinery, equipment, or similar device.) In the event the ownership of the product is transferred to a person, firm or corporation other than the Original User, this WARRANTY shall terminate.

3) This WARRANTY is applicable only to the Original Application. In the event the machinery, equipment, or production line to which the Product is connected, or on which it is installed, is substituted, changed, moved or replaced, the WARRANTY shall terminate.

4) This WARRANTY shall be valid only if the Product was purchased by the Original User from **TURCK**, or from an authorized **TURCK** Distributor, or was an integral part of a piece of machinery and equipment obtained by the Original user from an Original Equipment Manufacturer, which itself, was purchased directly from **TURCK** or from an authorized Distributor.

PURCHASER'S REMEDIES

This Remedy shall apply to all WARRANTIES. If a **TURCK** Distributor desires to make a WARRANTY Claim, the Distributor shall, if requested by **TURCK**, ship the Product to **TURCK's** factory in Minneapolis, Minnesota, postage or freight prepaid. If the User desires to make a WARRANTY Claim, they shall notify the authorized **TURCK** Distributor from whom it was purchased or, if such Distributor is unknown, shall notify **TURCK**.

TURCK shall, at its option, take any of the following two courses of action for any products which **TURCK** determines are defective in materials or workmanship.

1) Repair or replace the Product and ship the Product to the Original Purchaser or to the authorized **TURCK** Distributor, postage or freight prepaid; or

2) Repay to the Original Purchaser that price paid by the Original Purchaser; provided that if the claim is made under the LIFETIME WARRANTY, and such Product is not then being manufactured by **TURCK**, then the amount to be repaid by **TURCK** to the Original Purchaser shall be reduced according to the following schedule:

Number of Years Since Date of Purchase by Original Purchaser	**Percent of Original Purchase Price To Be Paid by TURCK**
10	**50%**
15	**25%**
20	**10%**
More than 20	**5%**

PURCHASER'S REMEDIES SHALL BE LIMITED EXCLUSIVELY TO THE RIGHT OF REPLACEMENT, REPAIR OR REPAYMENT AS PROVIDED AND DOES NOT INCLUDE ANY LABOR COST OR REPLACEMENT AT ORIGINAL PURCHASER'S SITE. TURCK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF ANY WARRANTY, EXPRESSED OR IMPLIED, APPLICABLE TO THE PRODUCT, INCLUDING WITHOUT LIMITATION, ANY DAMAGES RESULTING FROM PROPERTY DAMAGE, PERSONAL INJURY OR BUSINESS INTERRUPTION.

CONSIDER SAFETY AND PROTECTION PRECAUTIONS

TURCK takes great care to design and build reliable and dependable products, however, some products can fail eventually. You must take precautions to design your equipment to prevent property damage and personal injury in the unlikely event of failure. As a matter of policy, **TURCK** does NOT recommend the installation of electronic controls as the sole device FOR THE PROTECTION OF PERSONNEL in connection with power driven presses, brakes, shears and similar equipment and, therefore, the customer should build in redundancy or dual control using approved safety devices for these applications.

GOVERNING LAW

The sale and purchase of Products covered hereby and all terms and conditions hereof shall be governed by the law of the State of Minnesota.

TURCK
Warranty Terms and Conditions

REGISTRATION INSTRUCTIONS

(TO BE COMPLETED BY THE END USER OF THE SENSORS)
THIS INFORMATION WILL BE KEPT IN STRICT CONFIDENCE

STEP 1: Please make a Photocopy of this form.
STEP 2: Fill in all information below.
STEP 3: Line 13 (to put this warranty into effect, it must be validated by the signature of the End-User and an authorized **TURCK** Distributor or Representative.
STEP 4: Return this Registration to **TURCK** (keep a copy for your records).

LIFETIME WARRANTY REGISTRATION
(INDUCTIVE, INDUCTIVE MAGNET & CAPACITIVE SENSORS ONLY)

Date: _____

Please Print
End User

1. Company Name: _____
2. Division: _____ Dept: _____
3. Address: _____
4. City: _____ State: _____ Zip: _____
5. Phone: ( ) _____ Your Name: _____
   Your Title: _____
6. Industry (Type of Product Manufactured or Service Performed at this Location): _____
   _____
   _____
7. Approx. Date Purchased: _____
8. Approx. Date Installed: _____
9. What is the General Application for this Product? _____
   _____
10. Which OEM Supplied the Mechanical Equipment on which the Sensors are Installed?
    Name: _____ Location: _____
11. **TURCK** Sensors Installed:

Catalog Number	Approx. Quantity
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

12. Why were **TURCK** Sensors Specified for this Application?
    _____
    _____
13. Distributor or Representative Signature: _____
    Company Name: _____ Date: _____
    End User Signature: _____ Date: _____
14. **Return to USA:**
    TURCK Inc.
    3000 Campus Drive
    Minneapolis, MN. 55441
    Attn: Warranty Department
    Phone: (763) 553-7300
    Fax: (763) 553-0708

    Return to Canada:
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TURCK Germany and **TURCK USA** supporting departments

TURCK Inc. sells its products through Authorized Distributors. These distributors provide our customers with technical support, service and local stock. **TURCK** distributors are located nationwide - including all major metropolitan marketing areas.

For Application Assistance or for the location of your nearest **TURCK** distributor, call:

1-800-544-PROX (1-800-544-7769)

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Literature and Media questions or concerns?
Contact Marketing Services TURCK USA - media@turck.com