

Retroreflectors



Sensor Mounting Brackets



Sensor Accessory—AC Sensor Tester/Demonstrator



Pilot Device—E65 Control Unit



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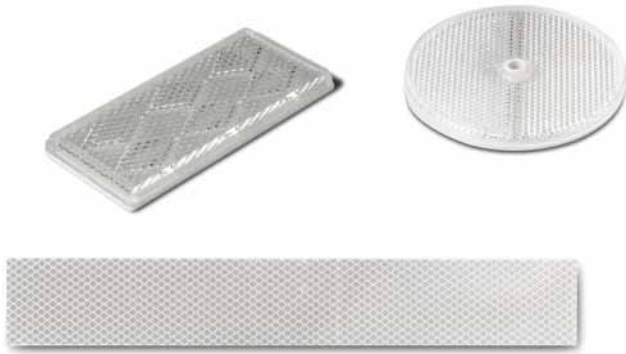
Unless otherwise noted, the products contained in this section should not be used for functional safety applications. These products were not designed or tested to IEC 60947-5-3 or recommended for functional safety.



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Retroreflectors and Retroreflective Tape



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Retroreflectors and Retroreflective Tape

Product Description

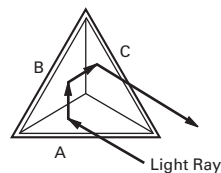
Retroreflectors from Eaton's Electrical Sector are used with reflex-type sensors. Two types of retroreflective target material are available: corner cube and embedded glass bead.

Application Description

Corner Cube Retroreflectors

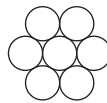
This type provides the highest signal return to the sensor, typically 2000 to 3000 times the reflectivity of white paper. Three adjoining sides are arranged at right angles to each other. When a ray of light strikes one of these sides (A), it is reflected to the second (B), then the third (C), and then back to the source parallel to its original course. Thousands of these cube shapes are molded into a rugged plastic reflector or vinyl tape material. Corner cube retroreflectors are suitable for use with both standard reflex and polarized reflex sensors.

Corner Cube



Retroreflector Size

The size of the retroreflective target has a significant effect on the excess gain and range of a reflex sensor. In general, we recommend you use the largest possible reflector in every reflex sensing application to maximize performance of the sensor and simplify alignment. To provide an even larger reflective area, multiple retroreflectors can be grouped together as shown.



7 Retroreflectors Grouped Together

Using Retroreflectors with Polarized Reflex Sensors

Only corner cube retroreflective material can be used with polarized reflex sensors. When polarized light from the sensor's light source strikes a corner cube retroreflector, it is returned to the sensor in a depolarized state. This allows some of the light to pass through the detector's polarizer, which is positioned at 90° to the source polarizer, to allow the sensor to operate.

Glass bead retroreflectors do not depolarize light and will not work with polarized reflex sensors.

Molded plastic corner cube retroreflectors are always recommended as they provide the highest signal return to the sensor.

Corner cube tape works with polarized reflex sensors but returns less light to the sensor. In all cases, Eaton recommends testing sensor and tape prior to final installation.

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Product Selection**Retroreflectors**

6200A-6507

**Corner Cube Retroreflector**

Description	Catalog Number
1.5 x 3.25 in, adhesive backed, one per package	6200A-6507

Round Retroreflectors

6200A-6501



Description	Catalog Number
3 in diameter, with mounting hole, two per package	6200A-6501
Bulk packaged version of above (ordered quantity will be bulk packaged)	6200AS6501
3 in diameter, with mounting hole, one per package	E51KR84

6200A-6506



3 in diameter, metal backed, with mounting hole, one per package	6200A-6506
--	------------

6200A-6505



2.18 in diameter, with mounting hole, one per package	6200A-6505
---	------------

6200A-6502



2.18 in diameter, adhesive backed, one per package	6200A-6502
--	------------

6200A-6504



1.25 in diameter, adhesive backed, one per package	6200A-6504
Bulk packaged version of above (ordered quantity will be sent bulk packaged)	6200AS6504
1.25 in diameter, no adhesive, one per package	E51KR32

Retroreflective Tape

6202A-XXXX

**Corner Cube Style** ^①

Description	Catalog Number
2 in wide, 1 piece, quantity is length in feet	6202A-XXXX

Note

① Although corner cube tape works with polarized reflex sensors, we recommend testing sensor and tape prior to installation.

8.1

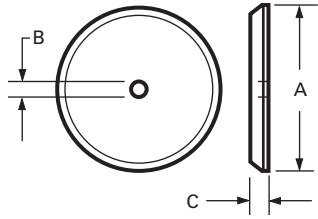
Sensor Accessories

Retroreflectors and Retroreflective Tape

Dimensions

Approximate Dimensions in Inches (mm)

Round Retroreflectors



Catalog Number	Diameter A	Hole Size B	Thickness C
6200A-6501	3.30 (84)	0.20 (5)	0.35 (9)
6200A-6502	2.40 (61)	None	0.30 (7.5)
6200A-6504	1.30 (33)	None	0.25 (6)
6200A-6505	2.40 (61)	0.25 (6)	0.30 (7.5)
6200A-6506	3.30 (84)	0.20 (5)	0.30 (7.5)
E51KR32	1.25 (32)	None	0.35 (9)
E51KR84	3.30 (84)	0.20 (5)	0.35 (9)

Sensor Mounting Brackets**Contents**

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Sensor Mounting Brackets**Product Description**

Mounting brackets by Eaton's Electrical Sector found in this section are suited for use with 8 mm to 30 mm diameter tubular sensors only. Mounting brackets designed to specifically fit other types of sensors are found in the respective "Accessories" sections for those sensor families.

Product Selection Guide

When choosing a bracket, consider:

- **Adjustability**—Do you need minimal alignment capability (mounting an inductive proximity sensor), or a high level of alignment precision (mounting a long range photoelectric thru-beam sensor)?
- **Material of Construction**—This can be dictated by the sensing environment or the type of sensor you are using

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Product Selection

Sensor Mounting Brackets

Mounting Brackets for Tubular Sensors

	Description	Size	Catalog Number	
L-Shaped Bracket 	L-Shaped Bracket—E57KM_			
	Adjustability:	Allows some adjustment in two axes	8 mm	E57KM8
	Sensor mounting:	Sensor mounts with two jam nuts and washers ^①	12 mm	E57KM12
	Material of construction:	Stainless steel	18 mm	E57KM18
	Packaging:	One per package	30 mm	E57KM30
L-Shaped Bracket 	L-Shaped Bracket—6161A_			
	Adjustability:	Allows some adjustment in one axis and allows for aiming of the sensor through a short arc	18 mm	6161A-6501
	Sensor mounting:	Sensor mounts with two jam nuts and washers ^①		
	Material of construction:	Aluminum with chromate finish		
L-Shaped Bracket 	Packaging:	Two per package		
	Packaging:	Same as 6161A-6501 (above), except: Bulk packaged (ordered quantity will be sent bulk packed)	18 mm	6161AS6501
L-Shaped Bracket 	L-Shaped Bracket—6167A			
	Adjustability:	Allows a minimum range. Suitable for 30 mm sensors.	30 mm	6167A-6501
	Sensor mounting:	Allows some adjustment in one axis		
	Material of construction:	Zinc dichromate		
L-Shaped Bracket with Slot 	L-Shaped Bracket with Slot ^②			
	Adjustability:	Allows some adjustment in one axis and allows for aiming of the sensor through a short arc	18 mm	6161AS7050
	Sensor mounting:	Sensor mounts with two jam nuts and washers ^①		
	Material of construction:	Aluminum with chromate finish		
Flat Bracket 	Packaging:	Bulk packaged (ordered quantity will be sent bulk packed)		
	Packaging:	Bulk packaged (ordered quantity will be sent bulk packed)		
Adjustable Bracket 	Adjustable Bracket—E58KAM18_ ^③			
	Adjustability:	Locking vertical and horizontal adjustments for independent adjustments in each axis	18 mm	E58KAM18
	Sensor mounting:	Sensor mounts with two jam nuts and washers ^①		
	Material of construction:	304 stainless steel		
	Packaging:	One per package		
		Same as E58KAM18 , except not electrically isolated from mounting surface	18 mm	E58KAM18U

Dimensions, see **Page V8-T8-8**.




Notes

^① Included with sensor.

^② Allows installation of sensor with jam nuts already in place on sensor body, (Comet[®] and Prism[™] sensors only).

^③ Sensor is electrically isolated from mounting surface.

Mounting Brackets for Tubular Sensors, continued

	Description	Size	Catalog Number
Adjustable Bracket 	Adjustable Bracket—E58KAM30 ①		
	Adjustability: Locking vertical and horizontal adjustments for independent adjustment in each axis	30 mm	E58KAM30
	Sensor mounting: Sensor mounts with two jam nuts ②		
	Material of construction: 304 stainless steel		
	Packaging: One per package		
	Same as E58KAM30 , except not electrically isolated from mounting surface.	30 mm	E58KAM30U
18 mm Ball Swivel Bracket 	18 mm Ball Swivel Bracket		
	Adjustability: Allows 360° rotation and 10° vertical tilt	18 mm	E58KAM18B
	Sensor mounting: Mounts directly to any 18 mm threaded sensor		
	Material of construction: 5% glass filled Valox®		
	Packaging: One per package		
Metal Ball Swivel Mount 	Metal Ball Swivel Mount ③		
	Adjustability: Allows 5.5° rotation with screw lock to fix final position	0.75 in (18 mm)	6168A-6501
	Sensor mounting: Mounts directly to any 18 mm tubular sensor		
	Material of construction: Extremely rugged, made from zinc plated steel/Celenex®		
	Packaging: One per package		
Plastic Ball Swivel Mount 	Plastic Ball Swivel Mount—6143A		
	Adjustability: Allows 10° rotation on X and Y axes with a clamping action to hold adjustment	0.375 in (8 mm)	6143A-6501
	Sensor mounting: Mounts directly to any 8 mm tubular sensor		
	Material of construction: Noryl ④		
	Operating temperature: -40° to 160°F (-40° to 71°C)		
	Packaging: One per package		
Plastic Ball Swivel Mount 	Plastic Ball Swivel Mount—6142A		
	Same as 6143A-6501 (above), except:	0.75 in (18 mm)	6142A-6501
	Sensor mounting: Mounts directly to any 18 mm tubular sensor		
Cushioned Sensor Mounts 	Cushioned Sensor Mounts		
	Precision machined, spring-loaded sleeves that hold tubular sensors to protect them from accidental impact due to overtravel of the target being sensed.	8 mm	E57KNZ8
		12 mm	E57KNZ12
	Used for inductive proximity sensors only.	18 mm	E57KNZ18
		30 mm	E57KNZ30

Dimensions, see **Page V8-T8-8**.

Notes

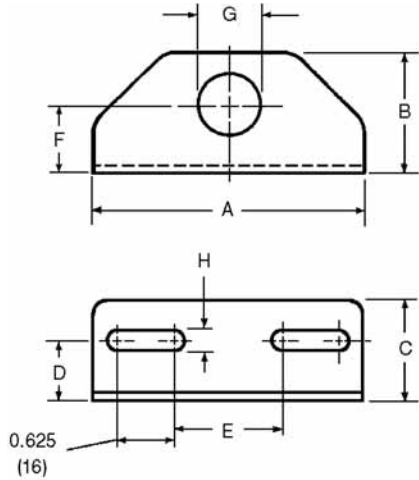
- ① Sensor is electrically isolated from mounting surface.
- ② Included with sensor.
- ③ Electrically isolates the sensor to prevent noise pick-up caused by poor grounding.
- ④ Avoid exposing to chlorinated halogenated or aromatic hydrocarbons.

Dimensions

Approximate Dimensions in Inches (mm)

Sensor Mounting Brackets for Tubular Sensors

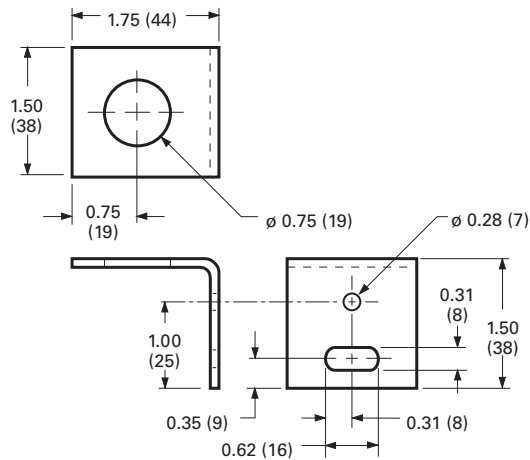
L-Shaped Bracket—E57KM



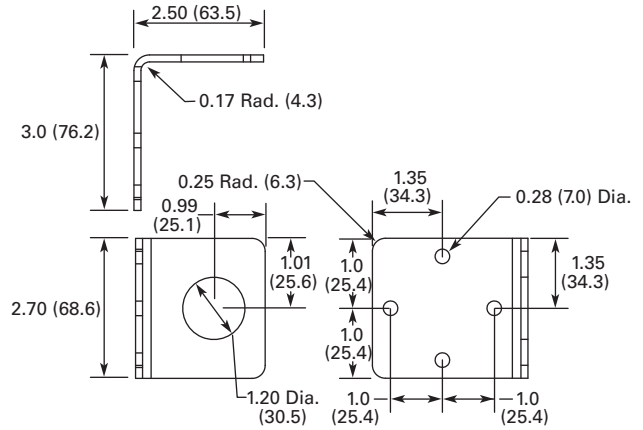
Size	A	B	C	D
8 mm	3.00 (76)	1.35 (34)	1.125 (29)	0.65 (17)
12 mm	3.00 (76)	1.35 (34)	1.125 (29)	0.65 (17)
18 mm	3.00 (76)	1.35 (34)	1.125 (29)	0.65 (17)
30 mm	4.25 (108)	2.15 (55)	1.75 (45)	1.00 (25)

	E	F	G	H
8 mm	1.20 (31)	0.75 (19)	0.323 (8)	0.218 (6)
12 mm	1.20 (31)	0.75 (19)	0.484 (12)	0.218 (6)
18 mm	1.20 (31)	0.75 (19)	0.718 (18)	0.218 (6)
30 mm	2.00 (51)	1.25 (29)	1.203 (30)	0.281 (7)

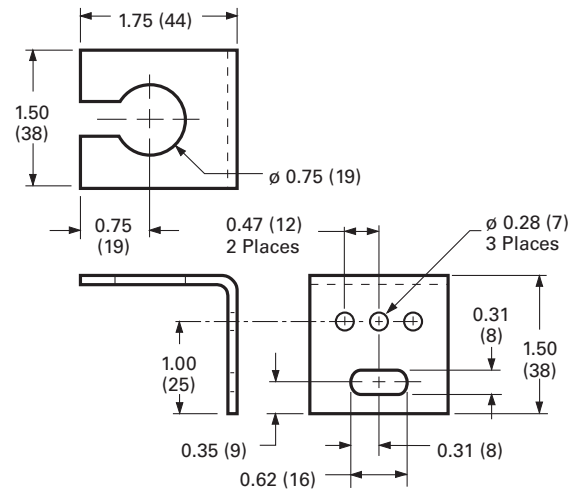
L-Shaped Bracket—6161A



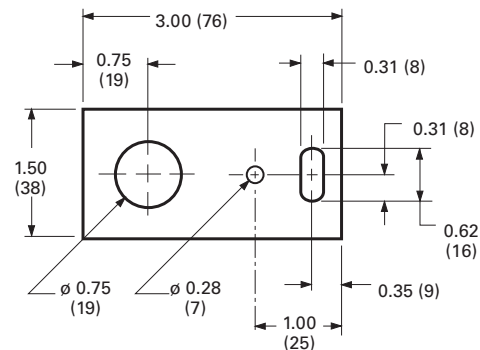
L-Shaped Bracket—6167A



L-Shaped Bracket with Slot

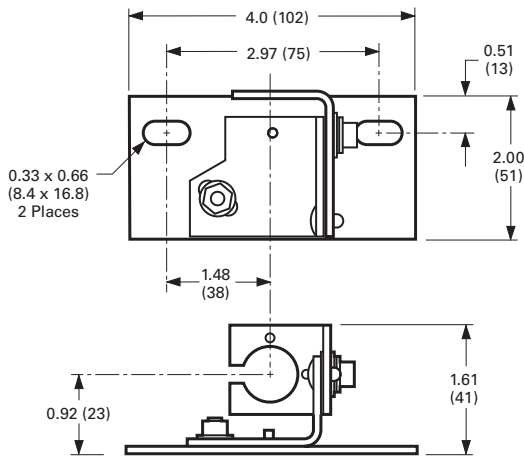


Flat Bracket

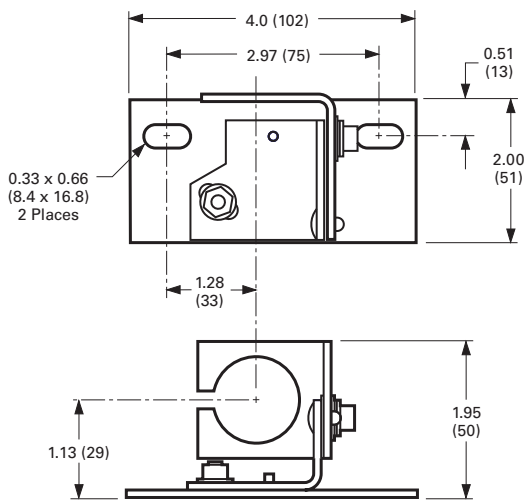


Approximate Dimensions in Inches (mm)

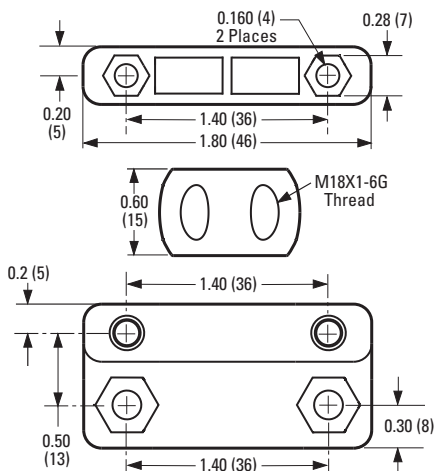
Adjustable Bracket—E58KAM18



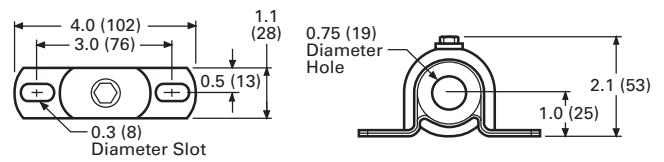
Adjustable Bracket—E58KAM30



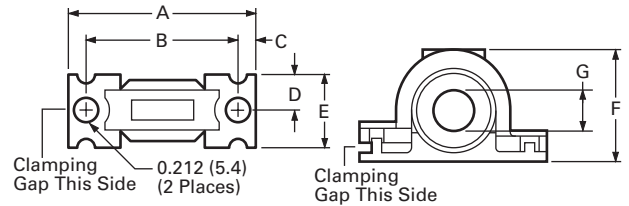
18 mm Ball Swivel Bracket



Metal Ball Swivel Mount



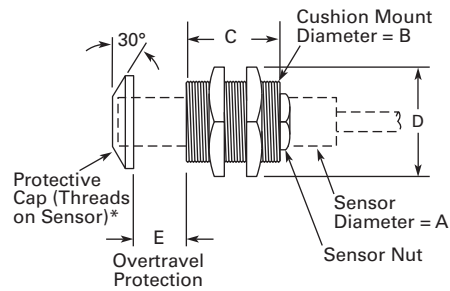
Plastic Ball Swivel Mount



Size	A	B	C	D
8 mm	1.96 (49.8)	1.56 (39.6)	0.20 (5.1)	0.40 (10.2)
18 mm	2.80 (71.1)	2.25 (57.2)	0.275 (7.0)	0.50 (12.7)

	E	F	G
8 mm	0.80 (20.3)	1.05 (26.7)	0.375 (9.5)
18 mm	1.00 (25.4)	1.64 (41.7)	0.75 (19.1)

Cushioned Sensor Mounts ①



Size	A	B	C	D	E
8 mm	M8 x 1	M16 x 1.5	0.87 (22)	0.87 (22)	0.35 (9)
12 mm	M12 x 1	M22 x 1.5	0.87 (22)	1.12 (29)	0.41 (10)
18 mm	M18 x 1	M30 x 1.5	1.17 (30)	1.41 (36)	0.49 (12)
30 mm	M30 x 1.5	M47 x 1.5	1.47 (37)	1.72 (51)	0.57 (15)

Note
 ① Sensing range will be reduced by thickness of cap's wear surface: 0.030 in (0.76 mm) maximum.

Sensor Accessories



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Sensor Accessories



Product Description

Accessories from Eaton's Electrical Sector include portable power supplies for testing or demonstrating DC sensors, a variety of

replacement mounting nuts, protective end caps for tubular proximity sensors, and conduit adapters for tubular sensors.

Product Selection

Sensor Accessories

	Description	Catalog Number
DC Sensor Tester/Demonstrator 	DC Sensor Tester/Demonstrator For two-, three- and four-wire DC sensors Provides 27 Vdc power from three 9V batteries (included) Test output connections for both NPN and PNP outputs	9902A-6501
AC Sensor Tester/Demonstrator 	AC Sensor Tester/Demonstrator For AC sensors Provides AC power from wall mount Includes AC adapter	9902A-6502
Dimensions, see Page V8-T8-12.		

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Sensor Accessories, continued

	Description	Sensor Diameter	Catalog Number
Mounting Nut, E57KN_	Replacement Mounting Nuts—Stainless Steel, E57KN_		
	Where used: Harsh environment for tubular sensors	8 mm	E57KNM8
	Material of construction: Stainless steel	12 mm	E57KNS12
	Packaging: Two per package	18 mm	E57KNS18
		30 mm	E57KNS30
Mounting Nut, E60KN18	Replacement Mounting Nuts—Brass		
	Where used: General purpose for tubular sensors ①	18 mm	E60KNS18
	Material of construction: Brass		
	Packaging: Two nuts and two wave washers per package		
Mounting Nut, E58KN_	Replacement Mounting Nuts—Stainless Steel, E58KN_		
	Where used: Harsh environment for tubular sensors	18 mm	E58KNS18
	Material of construction: Stainless steel		
	Packaging: Two per package	30 mm	E58KNS30
Mounting Nut, E57KNC18	Replacement Mounting Nuts—Plastic		
	Where used: Harsh environment for tubular and SM series sensors	18 mm	E57KNC18
	Material of construction: Plastic		
	Packaging: Two per package		
Protective Cap, E57KP_	Protective Caps—E57KP_		
	Where used: Tubular Proximity Sensors	12 mm	E57KP12
	Material of construction: Delrin	18 mm	E57KP18
	Packaging: One per package	30 mm	E57KP30
Conduit Adapter, E57KC_	Conduit Adapters—E57KC_		
	Where used: To attach electrical conduit to rear of tubular sensors	8 mm	E57KC8
	Material of construction: Die cast steel	12 mm	E57KC12
	Packaging: One adapter and nut per package	18 mm	E57KC18
		30 mm	E57KC30
Conduit Adapter, E58KC30	Conduit Adapters—E58KC30		
	Where used: To attach E58 harsh duty 30 mm sensors to half-inch conduit fittings	30 mm	E58KC30
	Material of construction: Stainless steel		
	Packaging: One per package		

Dimensions, see Page V8-T8-12.

Note

① These are the standard mounting nuts shipped with the Comet, Prism and OEM Prism photoelectric sensors.

Dimensions

Approximate Dimensions in Inches (mm)

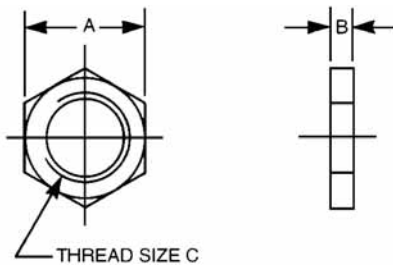
DC Sensor Tester/Demonstrator

W	H	D
2.5 (65)	4.75 (120)	2.1 (55)

AC Sensor Tester/Demonstrator

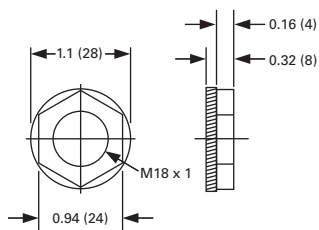
W	H	D
2.5 (65)	4.5 (114)	1.5 (38)

8 Replacement Mounting Nuts—Stainless Steel and Brass

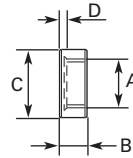


Size	A	B	C
8 mm	0.5 (13)	0.16 (4)	M8 x 1
12 mm	0.7 (17)	0.16 (4)	M12 x 1
18 mm	0.94 (24)	0.16 (4)	M18 x 1
30 mm	1.4 (36)	0.16 (4)	M30 x 1.5

Replacement Mounting Nuts—Plastic

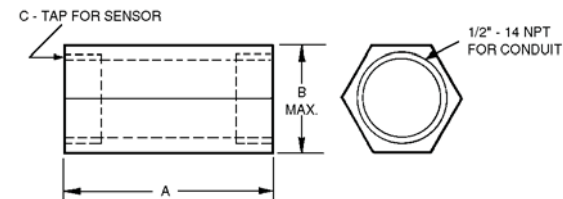


Protective Caps



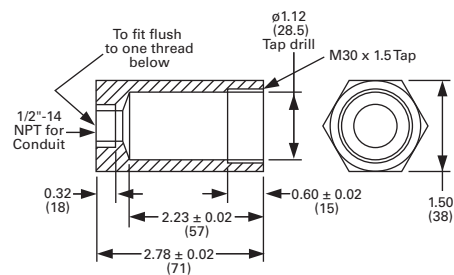
Size	Switch Size A	B	C	Thickness D
12 mm	0.47 (12)	0.39 (10)	0.63 (16)	0.04 (1.0)
18 mm	0.71 (18)	0.36 (9.2)	0.83 (21.2)	0.04 (0.9)
30 mm	1.18 (30)	0.59 (15)	1.42 (36)	0.07 (1.7)

Conduit Adapters—E57KC_



Size	Length A	Hex B	Tap C
8 mm	1.0 (25)	1.0 (25)	M8 x 1
12 mm	1.5 (38)	1.0 (25)	M12 x 1
18 mm	1.5 (38)	1.0 (25)	M18 x 1
30 mm	1.9 (48)	1.5 (38)	M30 x 1.5

Conduit Adapters—E58KC30



Pilot Devices



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Pilot Devices

Product Description

Type E65 control units from Eaton's Electrical Sector are designed for use with amplifier built-in sensors to provide an SPDT relay contact output (in addition to the solid-state output of the sensor), and to convert an

AC input voltage to stable 12 Vdc, permitting operation of a DC sensor from an AC input. Use only with NPN output sensors. A switch is provided in the output circuit for selecting either light or dark sense operation. These

control units are available with or without a selectable ON-delay, OFF-delay or one-shot timer having an adjustable timing range of 0.1 to 5 seconds. A red LED indicator glows when the output relay is energized.

Product Selection

E65 Control Unit



E65 Control Units

Voltage	Output Configuration	Features	Catalog Number
110 to 120V/220 to 240 Vac ± 10%, 50/50 Hz	Selectable light or dark sense	SPDT relay contact output	With external synchronization
			With delay timer ①
			Without delay timer

Note

① Selectable for ON-delay, OFF-delay or ONE-SHOT operation with an adjustable timing range of 0.1 to 5 seconds.

For the most current information on this product, visit our Web site: www.eaton.com

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Technical Data and Specifications

Pilot Devices

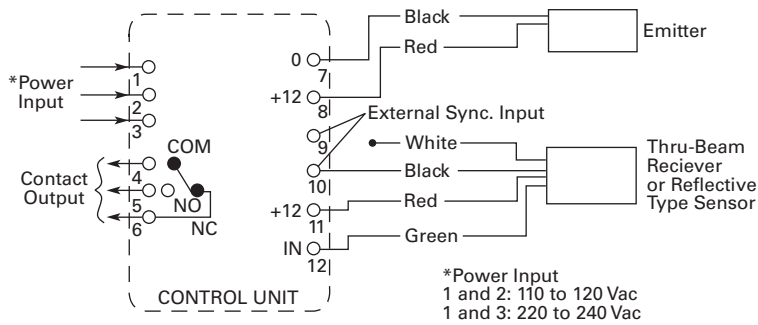
Description	Specification
Input voltage	110 to 120V/220 to 240 Vac \pm 10%, 50/60 Hz
Temperature range	14° to 122°F (-10° to 50°C)
Relative humidity	Less than 85%
Response time	Less than 20 ms
Output voltage	12 Vdc \pm 10%, 100 mA maximum
Short-circuit and polarity protection	Incorporated
Power consumption	Less than 8 VA
Terminal connections	Screw and saddle clamp to accept 14 AWG wire
Output	SPDT relay contact rated 3A resistive at 250 Vac

8

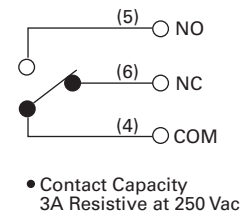
Wiring Diagrams

Pin numbers are for reference, rely on pin location when wiring.

Output Circuits and Connections



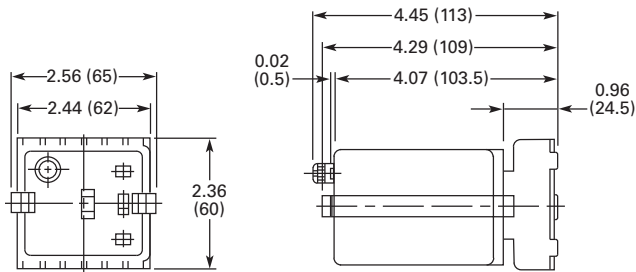
Relay Contact Output



Dimensions

Approximate Dimensions in Inches (mm)

Control Unit



Socket with Terminals

