Quick Reference Guide
INDUSTRIAL COMMUNICATIONS

Networked manufacturing environments enable seamless communication, as well as greater speed and efficiency. In addition to data transfer among equipment on the factory floor, information must be shared throughout the entire production environment. Having access to real-time data regarding productivity and throughput empowers sound and immediate decision-making throughout your entire organization.

TE's Industrial Communications solutions play a critical role in driving the efficiency of many manufacturing processes, safely and reliably.

Today, manufacturing has to be more of everything: more reliable, more automated, more flexible, more scalable, more decentralized. More connected. At TE Automation & Control, we deliver the innovative solutions to reliably connect, power and control the systems that make production more productive. From the circuit board to the harshest working environments, along the production floor and across the world, we make every connection count.

As hardware and systems become more advanced, the integration of electronics in industrial automation is becoming increasingly important. Embedding intelligence across the factory floor, for example, will ensure that all devices provide realtime data leading to an optimization of the Global Supply Chain. On the verge of Industry 4.0, the migration of more information technologies and applications in the field relies on the secure and predictable transport of data, signal and power.

Industrial communications are key to a seamless integration of all devices and to the reliable transport of a large amount of data through the network. TE Connectivity recognizes this trend and our engaged teams partner with customers around the world to identify and solve their connectivity challenges – now and in the future.

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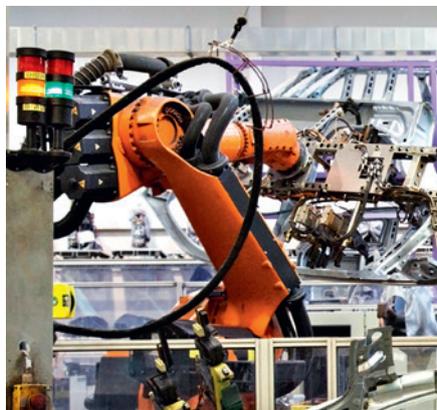
TE Product Group	Wire-to-Board	Wire-to-Wire	Wireless	IP20
	Connection Type			**Environ**
Industrial Mini I/O				
Type I	•	•		•
Type II	•	•		•
Industrial RJ45				
Industrial Ethernet	•			•
ODVA (Variant 1)		•		•
Push/Pull (Variant 14)	•	•		
Industrial USB Series				
USB Latching IP20	•			•
Circular		•		
M8/M12				
Panel Mount/Board Mount	•			
Y-Adapters	•	•		
Cable Assemblies	•	•		
M8/M12 connector	•	•		
ARISO			•	

	IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
ment	**Housing Options**							**Applications**			**Installation**

IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
		•		•			•	•	•	•
		•		•			•	•	•	•

IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
		•					•			•
•	•	•				•	•			•
•	•	•	•				•			•

IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
	•	•		•			•			
•	•	•				•	•			

IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
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IP 65/67	Metal	Plastic	Push/Pull	Latching	Screw	1/4 Turn	Data	Signal	Power	Field Installable
•	•				•		•	•	•	

Industrial Mini I/O Connector

The Industrial Mini I/O connector system is a small, compact, latching, wire-to-board I/O interface that is now also available as a vertical version, enabling you to safely and reliably connect in all angles.

TE's Industrial Mini I/O solution allows you to save up to 75 percent of space compared to conventional RJ45 plugs, giving you the flexibility to use your limited space on the PCB more efficiently.

PRODUCT OVERVIEW

- Small, compact size
- Vertical Mini I/O
- Latching feature to meet high vibration environment
- SMT and Through Hole available
- Two unique interfaces to prevent improper connection
- Cat 5E/Gigabit Ethernet support

PRODUCT FEATURES

Mechanical:

- Operating temperature: -40°C to +85°C
- Durability: 750 Cycles
- Cable retention force: 98 N

Electrical:

- 60 V rated
- Current rating: 1.5 A

Materials:

- Shell: Copper alloy
- Contact: Copper alloy
- Housing: Thermoplastic

Product Dimensions:

- SMT type (mm): 15.85 x 7.4 x 11.41
- Through hole type (mm): 19 x 7.4 x 12.35

BENEFITS

- Less downtime and reliable connections due to vibration resistance
- Space saving of up to 75% and increased design flexibility
- Polarized with two options to prevent mis-mating

APPLICATIONS

- Industrial Communications
- Motion & Drives
- PLC's
- Robotics

PART NUMBERS

Description	Part Number
Industrial Mini I/O HDR Assy, Right Angle, SMT, Type I Cable	2294417-1
Industrial Mini I/O HDR Assy, Right Angle, SMT, Type II	2294417-4
Plug Kit Mini I/O Plug Kit Type I L, Black Latch	2201855-1
Plug Kit Mini I/O Plug Kit Type I M, Black Latch	2201855-2
Plug Kit Mini I/O Plug Kit Type I LM MIX, Black Latch	2201855-3
Plug Kit Mini I/O Plug Kit Type II L, Black Latch	1-2201855-1
Plug Kit Mini I/O Plug Kit Type II M, Black Latch	1-2201855-2
Industrial Mini I/O HDR Assy, Vertical, SMT, Type I	2271656-1
Industrial Mini I/O HDR Assy, Vertical, SMT, Type II	2271656-2
Industrial Mini I/O Bypass Conn Type I	1971153-1

More information at: www.te.com/products/mini-io

TE connectivity

Industrial RJ45 Connectors

The Industrial Ethernet RJ45 connectors from TE Connectivity offer a ruggedized design for use in Industrial Ethernet applications and are equipped with a robust termination technology. With the field installation RJ45 Modular Plug Series, this solution is capable of a data transmission rate of 100Mbit/s (4POS) up to 1000Mbit/s (8POS). Designed for use in Industrial environments, the connector features rugged locks with the jack, while an optional supporting frame allows a secondary locking, resulting in a secure interconnection.

Equipped with a fast termination technology, utilizing the company's "common core" design in the RJ45 Modular Plug Series, this solution can be applied in the field without the need for any tools, significantly reducing

installation time and costs. This fast termination technology is used in all of TE's field installable connector series, including IP20, ODVA and push-pull connectors.

PRODUCT OVERVIEW

- Field-installable modular plugs
- Installation without tools
- Common core insert
- Ruggedized design for use in Industrial Ethernet applications

PRODUCT FEATURES

Mechanical:
- Metallic locking tab for locking
- Polarized for proper mating
- Operating temperature: -40°C to +70°C

Electrical:
- Rated voltage: 60 V
- Rated current: 500 mA per pin

Materials:
- Housing: UL approved
- Pass through modular jack: UL approved
- UV resistant housing material

Available as:
- Metal and Plastic
- Cat5e and Cat6A
- 4 or 8 positions

BENEFITS

- IDC version helps to reduce complexity of installation process
- IP67 version helps protect the equipment from water and dust
- Bulkhead receptacle mounts to either inside or outside of the panel cutout

PART NUMBERS

Description	Part Number
Ind. RJ45 (IP20)	
IE RJ45 Con., IP20, 4POS, 180DEG	1903526-1
IE RJ45 Con., IP20, 8POS, 180DEG	1903527-1
RJ45 Connector IP20 Cat6A, 8POS	2120892-1
Ind. RJ45 (Variant 14)	
RJ45 Plug, Push-Pull, Assy, CAT5, Shielded, 4POS	1987004-1
RJ45 Plug, Push-Pull, Assy, CAT5, Shielded, 8POS	1987004-2
Variant 14 Metal, Plug with RJ45 Cat6A, 8POS	1-2120864-1
Ind. RJ45 (Variant 1)	
KIT, Plug, Stranded Wire, Shielded	1738607-4
KIT, Plug, Common Core, 8POS	1954656-2
KIT, Receptacle, 8POS Shielded	1811689-1

APPLICATIONS

- Industrial Communications
- Motion & Drives
- PLC's
- Robotics
- Process Automation
- Machinery
- Diagnostic Equipment

Available as:
- IP20 (regular and with 45 degree angle)
- IP65/67 Push Pull (plastic and metal shell version)
- IP65/67 ODVA compliant (plastic and metal shell version)

More information at: www.te.com/products/industrial-rj45

Industrial USB connectors

The industrial USB connectors from TE Connectivity are ideal for all industrial USB applications where a high locking force or a sealed design for the use in industrial applications is required. With the introduction of a new IP20 series of industrial USB connectors that feature an integrated locking mechanism with audible and tactile feedback, TE offers an excellent interconnect solution for internal USB cable routing. The newly designed locking feature helps prevent accidental pull out of the plug, which enables customers to secure a cable internally without having to worry about the plug coming loose during transit and use.

A sealed and highly reliable version (IP65/IP67) of the industrial circular USB connectors is also available. This rugged USB connector is designed for use in harsh environments and features a quick-connect bayonet coupling mechanism.

PRODUCT OVERVIEW

- USB 2.0 standard, USB type A & B connection system
- Rugged IP20 and Sealed IP67 solution
- Integrated locking mechanism provides excellent strong lock strength
- Protective cover available for the receptacles
- Plastic and metal housing

PRODUCT FEATURES

Mechanical:
- Operating temperature: -55°C to +85°C

Electrical:
- Voltage rating: 30 VAC (rms)
- Data rate: 480 Mbits/s

Materials:
- Housing: High temperature thermoplastic, UL94V-0, black
- Contact: Brass, gold plated on contact area, nickel underplated
- Shield: Steel, nickel plated, copper underplated

BENEFITS

- Locking feature provides reliable and safe connections in all conditions for less downtime

APPLICATIONS

- Human Machine Interface (HMI) – Panels
- Barcode Readers
- Machine Vision
- Mass Storage
- Printers

PART NUMBERS

Latching USB connector:

Description	Part Number
Industrial USB Plug Conn Kit	2013798-1
Industrial USB Rec Assy R/A 1Row	1903814-1
Industrial USB Rec Assy R/A 2Row	1903815-1
Cable Assy Ind. USB Type A (1m)	2083112-2
Cable Assy Ind. USB Type A (2m)	2083112-3
Cable Assy Ind. USB Type A (3m)	2083112-4
Cable Assy Ind. USB Type A (5m)	2083112-5

Circular USB connector:

Description	Part Number
Plug Kit, USB Series A	1954637-1
Plug Kit, USB Series B	1954640-1
Recpt. Kit, Series A to Series A	1954643-1
Industrial USB Rec Assy R/A 2Row	1903815-1
Plug Kit, USB Series A, Metal Shell	2058362-1
Plug Kit, USB Series B, Metal Shell	2058363-1
Recpt. Kit, Series A to A	2058364-1
Recpt. Kit, Series B to A	2058365-1

More information at: www.te.com/products/industrial-USB-connectors

TE connectivity

Cable Assemblies

TE´s Industrial Communications solution includes standard length Industrial Ethernet cable assemblies. The PVC jacketed cable assemblies are available in 3 through 20 meter lengths. Options are available for IP20, field installable and IP67 versions.

PRODUCT OVERVIEW

- PVC jacketed cable available in PUR and PVC
- Rated to 250 V
- Shielded and non-shielded options
- Category 5e
- IP20, IP65 and IP67 options
- Standard lengths of 1.5, 3, 5, 7, 10, 15 and 20 meters

PRODUCT FEATURES

Mechanical:
- Operating temperature: -55°C to +85°C

Electrical:
- Voltage rating: 30 VAC (rms)
- Data rate: 480 Mbits/s

Materials:
- Housing: High temperature thermoplastic, UL94V-0, black
- Contact: Brass, gold plated on contact area, nickel underplated
- Shield: Steel, nickel plated, copper underplated

BENEFITS

- Complete Industrial Communications portfolio with standard length Industrial Ethernet cable assemblies from 3 through 20 meters
- Reliable connections with field installable IP20 and IP67 versions

APPLICATIONS

- Industrial Communications

More information at:
www.te.com/usa-en/products/cable-assemblies.html

PART NUMBERS

Description	Part Number
Ind. Ethernet	
4POS Ethernet cable assembly, IP20, solid	X-960927-X
4POS Ethernet cable assembly, IP20, stranded	X-960928-X
8POS Ethernet cable assembly, IP20, stranded	X-960929-X
8POS AWG26 Ethernet cable assembly Mod Plug	X-960930-X
4POS push pull Ethernet cable assembly stranded	X-960931-X
8POS push pull Ethernet cable assembly stranded	X-960932-X
Ind. Mini I/O Type I	
Mini I/O Type I, double ended	2205129-X
Mini I/O Type I, single ended	2205129-X
Ind. Mini I/O Type II	
Mini I/O Type II, double ended	2205132-X
Mini I/O Type II, single ended	2205130-X
Ind. USB	
Industrial USB double ended	2083112-X
Industrial USB single ended	2083113-X
RJ45 to Mini I/O Type I	
RJ45 to Mini I/O Type I	2205133-X
RJ45 to Mini I/O Type II	
RJ45 to Mini I/O Type II	1986530-X
M8/M12	
M8 single ended	2273000
M8 double ended	2273124
M12 single ended	2273022
M12 double ended	2273112
M12 Y-cables	2273107
M8 to M12	
M8 straight plug to m12 straight socket	2273108

M8/M12 Connector

TE Connectivity's M8/M12 Connector System for machine industrial automation and control applications provides a solution that safely and reliably ensures the communication in industrial environments. This connector system also finds applications outside of its traditional industries where a compact reliable connection system with environmental protection is required.

TE's solution includes an extensive connector range of PCB headers, cable assemblies and I/O boxes, and provides users with an interface that supports higher bandwidth needs – meeting the requirements of up to 10 Gb/s.

TE's broad product portfolio provides customers with shielded and unshielded cable assembly options in both Cat5e and Cat6A cable types. For rewiring on site a range of field serviceable connectors are provided, while the T and Y adaptors facilitate simple splitting of control

signals, allowing versatile systems to be quickly and easily established. Additional styles are available on request including alternative mounting arrangements for panel mount connectors and double ended cable assemblies.

PRODUCT OVERVIEW

- Easily installable connector system including connectors, I/O modules and cable assemblies
- Alternative mount arrangements for solder cap or PCB
- Panel Mount and distribution version available
- Shield reliable

PRODUCT FEATURES

Mechanical:

- IP67 protection level
- Operating temperature: -40˚C to +85˚C
- Retention force: 4 to 5 ways – max. 15 N, 8 ways – max. 30 N

Electrical:

- Rated voltage: 2, 3 and 4-pins: 250 V, 5-pins: 60 V, 8-pins: 30 V
- Current-carrying capacity
  A-coding: 2 to 3 ways – 4 A, 8 ways – 2 A
  B-coding: 5 ways – 4 A
  D-coding: 4 ways – 4 A

Materials:

- Brass, Copper alloy, PBT
- Alternative gold or silver finish

Standards/Specifications

- 108-104160

BENEFITS

- M8/M12 Connector System provides full solution including quick turn, prototype cable assemblies

APPLICATIONS

- Industrial Communications
- Sensor
- Machine Tools
- Process Automation

PART NUMBERS

Description	Part Number
M8 Screw, A Code, Shielded, Straight, 3P, Female	T4010019031-000
M8 Screw, A Code, Shielded, Straight, 4P, Male	T4011019041-000
M8 Screw, A Code, Shielded, R/A, 3P, Female	T4012019031-000
M8 Screw, A Code, Shielded, R/A, 4P, Male	T4013019041-000
M12 A Code, Shielded, Straight, 4P, Female	T4110012041-000
M12 B Code, Shielded, Straight, 5P, Male	T4111412051-000
M12 D Code, Shielded, R/A, 4P, Female	T4112512041-000
M12 A Code, Shielded, R/A, 5P, Male	T4113512051-000
M12 A Code, Rear Mount, Solder Wire, 4P, Female	T4131012041-000
M12 B Code, Rear Mount, Solder Wire, 5P, Male	T4130412051-000
M12 D Code, Front Mount, Solder Wire, 4P, Female	T4133512041-000
M12 A Code, Front Mount, Solder Wire, 5P, Male	T4132012051-000
M12 A Code, Rear Mount, Panel PCB, 4P, Female	T4141012041-000
M12 B Code, Rear Mount, Panel PCB, 5P, Male	T4140512051-000
M12 D Code, Front Mount, Panel PCB, 4P, Female	T4143512041-000
M12 A Code, Front Mount, Panel PCB, 5P, Male	T4142012051-000
M12 A Code, Rear Mount, 0.2m Wire, 4P, Female	T4171110004-001
M12 B Code, Rear Mount, 0.2m Wire, 5P, Male	T4171010405-001
M12 D Code, Front Mount, 0.2m Wire, 4P, Female	T4171310504-001
M12 A Code, Front Mount, 0.2m Wire, 5P, Male	T4171210005-001
M12 X Code, Panel Mount Solder PCB, Female	2232331-1
M12 X Code, Panel Mount Solder Wire, Female	2271195-1

More information at: www.te.com/m8m12

TE connectivity

ARISO Contactless Connectivity

Where traditional connectivity reaches its limits due to space restrictions, vibrations, dust and dirt, contactless connectivity can provide highest design flexibility and help reduce mainte-nance and installation efforts. ARISO Contactless Connectivity can replace complex and expensive harness constructions and slip rings – enabling connectivity where connections were not possible before. With ARISO Contactless Connectivity, issues typically affecting connectivity in harsh environments, such as water, dust or vibrations, will no longer impact the reliable de-livery of power, data and signal.

BENEFITS

- Freedom of movement that includes tilt, angle and misalignment

- Design flexibility and cost savings by transfer of power and signal through fluids and walls

- Easy, on-the-fly connections – e.g. connecting remote IOs or sensors on moving machine parts

- Rotational freedom that enables faster rotation with more than 360°

- Unlimited mating cycles in wet & dusty environments for reduced maintenance costs

- Safe & reliable connections in harsh environments through vibration resistance and fully sealed couplers

PN	Description	Power level	Number of Outputs – Connector	Size (w/o Cable)	Operational freedom	Specifications	Features
2287598-1	ARISO TxM030S012PNP2a; Transmitter, 12 W, 2 PNP	12 Watt • Operating voltage: 24 VDC • Output current: 500 mA	2 PNP Signals – M12, male a-coded, 4 pos.	M30 x 80 mm	Air Gap: max. 7 mm Mis-alignment: max. 5 mm Angle: max. 30°C	• IP67 • Ambient temp.: -20°C to 55°C • Storage temp.: -25°C - 100°C • Housing material: Ni-Plated Brass • Switching frequency f: 500 Hz • CE, RoHS	• Power input reverse polarity protection • Power output short circuit protection/ Data output short circuit protection • Data input/ output reverse polarity protection • Over-temperature protection • Foreign Object Protection • Dynamic Pairing • In operating range/Status OK Indication (12 Pos. versions)
2287598-2	ARISO RxM030S012PNP2a; Receiver, 12 W, 2 PNP		2 PNP Signals – M12, female a-coded, 4 pos.	M30 x 80 mm			
2287598-3	ARISO TxM030S012PNP8a; Transmitter, 12 W, 8 PNP		8 PNP Signals, M12, male, 12 pos	M30 x 80 mm			
2287598-4	ARISO RxM030S012PNP8a; Receiver, 12 W, 8 PNP		8 PNP Signals, M12, female, 12 pos Pinning option 1. For details please check the data sheet.	M30 x 80 mm			
2287598-5	ARISO RxM030S012PNP8b; Receiver, 12 W, 8 PNP		8 PNP Signals, M12, female, 12 pos Pinning option 2. For details please check the data sheet.	M30 x 80 mm			

Additional variants incl. power & data and form factor upon request

APPLICATIONS

But also in all applications:
- where traditional connectors reach their limit, e.g. due to mating cycles or harsh environments
- where slip rings or spring cables reach their limit, e.g. for a maintenance-free, high speed rotation
- that are completely new, e.g. like connections through walls and materials

More information at: www.arisocontactlessconnectivity.com

Robotics and Tool Changing
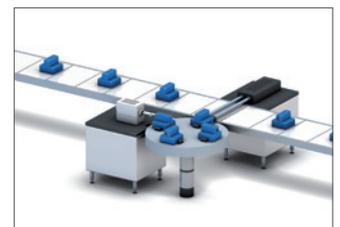
Rotary Tables and Material Handling

LET'S CONNECT

We make it easy to connect with our experts and are ready to provide all the support you need.

Just call your local support number or visit www.te.com/industrial to chat with a Product Information Specialist.

Technical Support

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