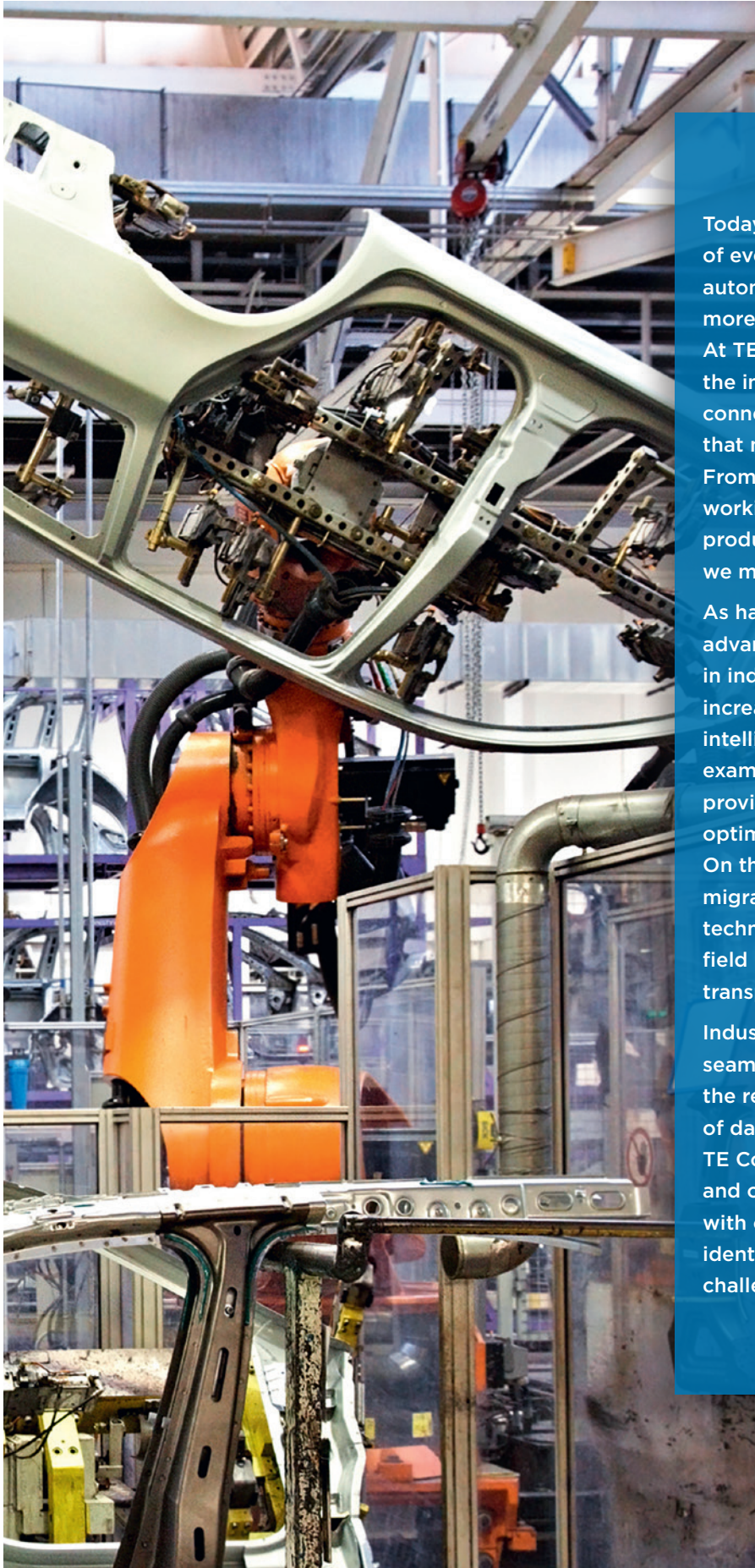




Networked manufacturing environments enable seamless communication, as well as greater speed and efficiency. In addition to data transfer among equipment on the factory floor, information must be shared throughout the entire production environment. Having access to real-time data regarding productivity 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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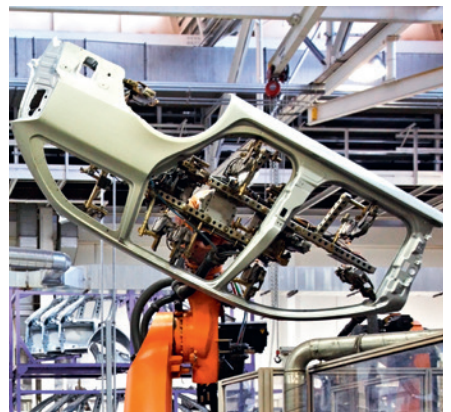
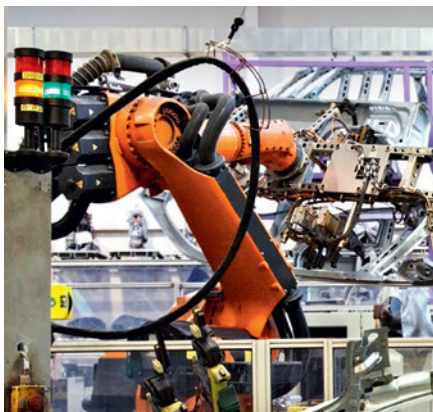
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TE's Industrial Communications Products



TE Product Group	Connection Type			IP20
	Wire-to-Board	Wire-to-Wire	Wireless	
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	

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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 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
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)

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

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

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
- Machine Tools
- Sensor
- 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, 4P, Male	T4013019041-000
M12 A Code, Shielded, Straight, 4P, Female	T4110012041-000
M12 A Code, Rear Mount, Solder Wire, 4P, Female	T4131012041-000
M12 A Code, Front Mount, Solder Wire, 5P, Male	T4132012051-000
M12 A Code, Rear Mount, Panel PCB, 4P, Female	T4141012041-000
M12 A Code, Front Mount, Panel PCB, 5P, Male	T4142012051-000
M12 A Code, Rear Mount, 0.2m Wire, 4P, Female	T4171110004-001
M12 X Code, Panel Mount Solder PCB, Female	2232331-1
M12 X Code, Panel Mount Solder Wire, Female	2271195-1

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 maintenance 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 delivery 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



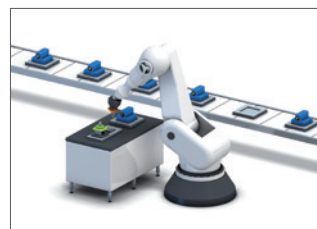
PN	Description	Power level	Number of Outputs - Connector	Size (w/o Cable)	Operational freedom	Specifications	Features
2287598-1	ARISO TxM030S012PNP2a; Transmitter, 12 W, 2 PNP	12 Watt • Operating voltage: 24 VDC	2 PNP Signals – M12, male a-coded, 4 pos.	M30 x 80 mm		<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	• Output current: 500 mA	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

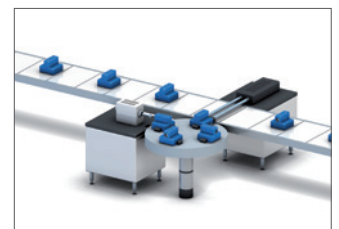
APPLICATIONS

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



Robotics and Tool Changing



Rotary Tables and Material Handling

Avnet Abacus offices

AUSTRIA

Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642 0
Fax: +43 1 86642 250
wien@avnet-abacus.eu

BELARUS

c/o Avnet Abacus Russia
Office 26, Building 2
10 Korovinskoye Shosse,
127486 Moscow
Phone: +7 (495) 737 3689
Fax: +7 (495) 737 3686
belarus@avnet-abacus.eu

BELGIUM

De Kleetlaan 3
1831 Diegem
Phone: +32 2 227 2000
diegem@avnet-abacus.eu

BULGARIA

c/o Avnet Abacus Austria
Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642 0
Fax: +43 1 86642 250
bulgaria@avnet-abacus.eu

CROATIA

c/o Avnet Abacus Slovenia
Dunajska Cesta 167
1000 Ljubljana
Phone: +386 (0)1 560 97 54
Fax: +386 (0)1 560 98 78
croatia@avnet-abacus.eu

CZECH REPUBLIC

c/o Avnet Abacus Austria
Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642-0
Fax: +43 1 86642 250
praha@avnet-abacus.eu

DENMARK

Knudlundvej 24
DK-8653 Them
Phone: +45 86 84 84 84
Fax: +45 86 84 82 44
them@avnet-abacus.eu

Lyskær 9, DK-2730 Herlev
Phone: +45 86 84 84 84
Fax: +45 43 29 37 00
herlev@avnet-abacus.eu

EGYPT

Canan Residence
Hendem Cad.
No:54 Ofis A2
Serifali Umraniye Istanbul
TR - 34775 Turkiye
Phone: +90 216 52 88 370
Fax: +90 216 52 88 377
egypt@avnet-abacus.eu

ESTONIA

Aida 5,
EE-80011 Pärnu
Phone: +372 56637737
paernu@avnet-abacus.eu

FINLAND

Pihatörmä 1 B
FI-02240 Espoo
Phone: +358 (0) 207 499 220
Fax: +358 (0) 207 499 240
espo@avnet-abacus.eu

FRANCE

Immeuble Carnot Plaza
14 Avenue Carnot
91349 Massy Cedex, Paris
Phone: +33 (0) 1 6447 2929
Fax: +33 (0) 1 6447 9150
paris@avnet-abacus.eu

8 chemin de la Terrasse
Bat D ter étage
31500 Toulouse
Phone: +33 (0) 5 6247 4787
Fax: +33 (0) 5 6247 4761
toulouse@avnet-abacus.eu

35 avenue des Peupliers
Les Peupliers2
35510 Cesson
Phone: +33 (0) 2 9983 7720
Fax: +33 (0) 2 9983 4829
rennes@avnet-abacus.eu

Parc Club du Moulin à Vent
Bât 10, 33 rue du Dr. G Lévy
F-69693 Vénissieux Cedex,
Lyon
Phone: +33 (0) 4 7877 1370
Fax: +33 (0) 4 7877 1391
lyon@avnet-abacus.eu

GERMANY

Englische Str. 27
D - 10587 Berlin
Phone: +49 (0) 30 790 997 0
Fax: +49 (0) 30 790 997 51
berlin@avnet-abacus.eu

Industriestr. 26
D-76297 Stutensee
Phone: +49 (0)7249 910 149
Fax: +49 (0)7249 910 177
stutensee@avnet-abacus.eu

Wilhelmstr. 1, D-59439
Holzwickede / Dortmund
Phone: +49 (0) 2301 2959 27
Fax: +49 (0) 2301 2959 29
dortmund@avnet-abacus.eu

Oehleckerling 9a - 13
22419 Hamburg
Phone: +49 (0) 40 608 23 59 0
Fax: +49 (0) 40 608 23 59 20
hamburg@avnet-abacus.eu

Gruber Str. 60c-60d
D-85586 Poing / Munich
Phone: +49 (0) 8121 777 03
Fax: +49 (0) 8121 777 531
muenchen@avnet-abacus.eu

Lina-Ammon-Str. 19 b
D-90471 Nürnberg
Phone: +49 (0) 911 244 250
Fax: +49 (0) 911 244 25 25
nuernberg@avnet-abacus.eu

Gutenbergstr. 15
D-70771 Leinfelden-
Echterdingen / Stuttgart
Phone: +49 (0) 711 78260 02
Fax: +49 (0) 711 78260 333
stuttgart@avnet-abacus.eu

Gaußstraße 10
D-31275 Lehrte
Phone: +49 (0) 5132 5099 0
Fax: +49 (0) 5132 5099 76
lehrte@avnet-abacus.eu

GREECE

c/o Abacus Avnet Austria
Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642-0
Fax: +43 1 86642 250
greece@avnet-abacus.eu

HUNGARY

c/o Avnet Abacus Austria
Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642-0
Fax: +43 1 86642 250
budapest@avnet-abacus.eu

IRELAND

c/o Avnet Abacus Bolton
Oceanic Building
Waters Meeting Road
Bolton BL1 8SW
Phone: +44 (0)1204 547170
Fax: +44 (0)1204 547171
bolton@avnet.eu

ISRAEL

Avnet Components Israel Ltd.
P.O. Box 48 Tel-Mond, 4065001
Phone: 972-9-7780280
Fax: 972-3-760-1115
avnet.israel@avnet.com

ITALY

Via Manzoni 44
I-20095 Cusano Milanino
(Milano)
Phone: +39 02 660 921
Fax: +39 02 66092 332
milano@avnet-abacus.eu

Viale dell'industria 23
I-35129 Padova
Phone: +39 049 7800 381
Fax: +39 049 7730 36
padova@avnet-abacus.eu

Via Zoe Fontana 220
I-00131 Roma
Phone: +39 06 4123 1952
Fax: +39 06 4192 618
roma@avnet-abacus.eu

Via Scaglia Est. 31/33
41126 Modena
Phone: +39 059 34891
Fax: +39 059 344993
modena@avnet-abacus.eu

Via Panciatichi 40/11
I-50127 Firenze
Phone: +39 055 436 1928
Fax: +39 055 428 8810
firenze@avnet-abacus.eu

LATVIA

c/o Avnet Abacus Poland
Plac Solny 16
PL-50-062 Wroclaw
Phone: +48 71 34 205 99
Fax: +48 71 34 229 10
latvia@avnet-abacus.eu

LITHUANIA

c/o Avnet Abacus Poland
Plac Solny 16
PL-50-062 Wroclaw
Phone: +48 71 34 205 99
Fax: +48 71 34 229 10
lithuania@avnet-abacus.eu

NETHERLANDS

Stadionstraat 2, 6th fl.
NL-4815 NG Breda
Phone: +31 (0) 76 57 22 300
Fax: +31 (0) 76 57 22 303
breda@avnet-abacus.eu

NORWAY

Ryensvingen 3 B
N-0680 Oslo
Phone: +47 (0) 22 70 76 60
Fax: +47 (0) 22 70 76 61
oslo@avnet-abacus.eu

POLAND

Plac Solny 16
PL-50-062 Wroclaw
Phone: +48 71 34 205 99
Fax: +48 71 34 229 10
wroclaw@avnet-abacus.eu

PORTUGAL

Tower Plaza, Rot. Eng. Edgar
Cardoso, 23, Pl. 14, Sala E
PT-4400-676 Vila Nova
de Gaia
Phone: +351 223 779502
Fax: +351 223 779503
portugal@avnet-abacus.eu

ROMANIA

c/o Avnet Abacus Slovenia
Dunajska Cesta 159
1000 Ljubljana
Phone: +386 (0)1 560 97 54
Fax: +386 (0)1 560 98 78
romania@avnet-abacus.eu

RUSSIA

Office 31, Building 2
10 Korovinskoye Shosse
127486 Moscow
Phone: +7 (495) 737 3689
Fax: +7 (495) 737 3686
Moscow@avnet-abacus.eu

SERBIA

c/o Avnet Abacus Slovenia
Dunajska Cesta 167
1000 Ljubljana
Phone: +386 (0)1 560 97 54
Fax: +386 (0)1 560 98 78
serbia@avnet-abacus.eu

SLOVAKIA

c/o Avnet Abacus Austria
Schönbrunner Str. 297-307
A-1120 Vienna
Phone: +43 1 86642-0
Fax: +43 1 86642 250
slovakia@avnet-abacus.eu

SLOVENIA

Dunajska Cesta 167
1000 Ljubljana
Phone: +386 (0)1 560 97 54
Fax: +386 (0)1 560 98 78
ljubljana@avnet-abacus.eu

SOUTH AFRICA

Ground Floor, Forrest House
Belmont Office Park
Belmont Road, Rondebosch
7700, Cape Town
Phone: +27 (0) 21 689 4141
Fax: +27 (0) 21 686 4709
sales@avnet.co.za

202 Chelmsford, 2nd Floor
Nelson Road, Essex Gardens,
Westville, 3629, Durban
Phone: +27 (0) 31 266 8104
Fax: +27 (0) 31 266 1891
sales@avnet.co.za

Block 3, Pinewood Office Park
33 Riley Road
Woodmead, 2191
Sandton, Johannesburg
Phone: +27 (0) 11 319 8600
Fax: +27 (0) 11 319 8650
sales@avnet.co.za

SPAIN

NyN Tower, C/ Tarragona,
151-157, Floor 19
ES-08014 Barcelona
Phone: +34 (0) 93 327 85 50
Fax: +34 (0) 93 425 05 44
barcelona@avnet-abacus.eu

Plaza Zabalgane
12 Bajo Izda,
Galdakao / Vizcaya
ES -48960 Bilbao
Phone: +34 (0) 94 457 0044
Fax: +34 (0) 94 456 8855
bilbao@avnet-abacus.eu

C/Chile, 10 2ª Plla.
Oficina 229
ES -28290 Las Matas / Madrid
Phone: +34 (0) 913 72 7200
Fax: +34 (0) 916 36 9788
madrid@avnet-abacus.eu

SWEDEN

Löfströms Allé 5,
Sundbyberg, Box 1830,
SE-171 27 Solna
Phone: +46 (0) 858 746200
Fax: +46 (0) 858 746 001
stockholm@avnet-abacus.eu

Smörhålevägen 3
SE-43442 Kungsbacka
Phone: +46 (0)8 58746 200
Fax: +46 (0)300 140 15
gothenburg@avnet-abacus.eu

SWITZERLAND

Bernstrasse 392
CH-8953 Dietikon
Phone: +41 (0) 43 322 49 90
Fax: +41 (0) 43 322 49 99
zurich@avnet-abacus.eu

TURKEY

Tatlisu Mahallesi,
Pakdil Sokak
No:5 B Blok Kat 2
34774 Umraniye
Istanbul Turbine
Phone: +90 216 52 88 370
Fax: +90 216 52 88 377
istanbul@avnet-abacus.eu

UK

First Floor, The Gatehouse
Gatehouse Road
Aylesbury, Bucks
HP19 8DB
Phone: +44 (0) 1296 678920
Fax: +44 (0) 1296 678939
Aylesbury@avnet.eu

Building 5
Waltham Park
White Waltham
Maidenhead
Berkshire SL6 3TN
Phone: +44 (0)1628 512900
Fax: +44 (0)1628 512999
maidenhead@avnet.eu

Avnet House
Rutherford Close
Meadway,
Stevenage
Hertfordshire SG1 2EF
Phone: +44 (0)1438 788 500
Fax: +44 (0)1438 788 250
stevenage@avnet.eu

Oceanic Building
Waters Meeting Road
Bolton
BL1 8SW
Phone: +44 (0)1204 547170
Fax: +44 (0)1204 547171
bolton@avnet.eu

UKRAINE

c/o Avnet Abacus Poland
Plac Solny 16
PL-50-062 Wroclaw
Phone: +48 71 34 205 99
Fax: +48 71 34 229 10
ukraine@avnet-abacus.eu

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