

Connectivity for Ethernet



Industrial Ethernet standards such as Modbus TCP, EtherNet/IP, PROFINET and EtherCAT® have firmly established themselves in automation technology. These real-time Ethernet solutions differ both in terms of the fieldbuses on which they are based as well as the application fields for which they are designed.

Modbus TCP relies exclusively on open standards: The combination of a versatile and widely used network (Ethernet) with an international network standard (TCP/IP) and a vendor-neutral representation of the data (Modbus) results in a truly open system for fast, flexible, and effective communication in industrial networks.

EtherNet/IP™ is the Industrial Ethernet standard ODVA (Open DeviceNet Vendor Association) and standardized in the IEC 61158 international. CIP (Common Industrial Protocol), which is well-known from DeviceNet™ and ControlNet, is used as an application protocol. EtherNet/IP™ is suitable for all standard industrial applications in the field up to the networking of PLCs or SCADA and ERP/MES systems.

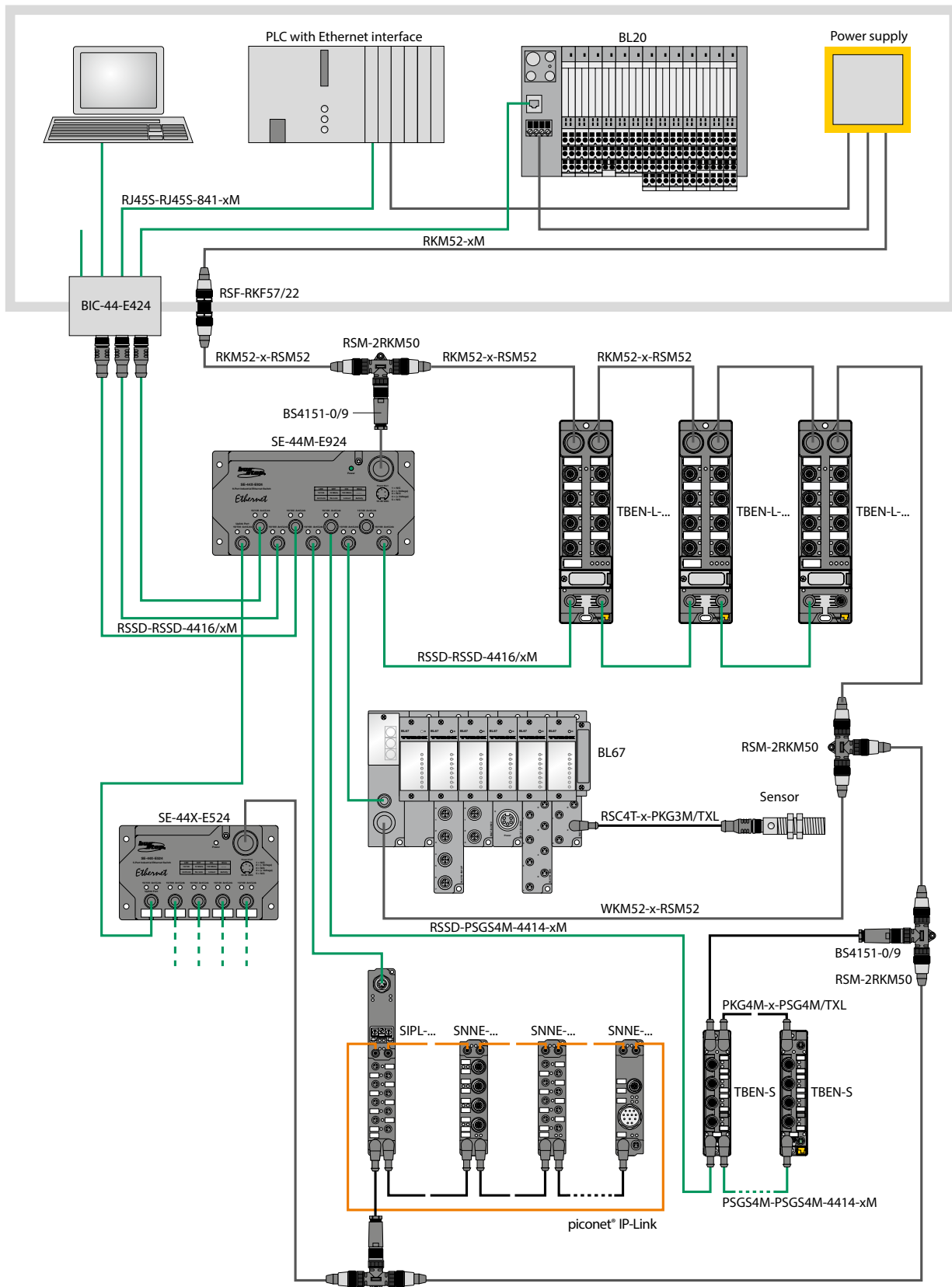
PROFINET is based on the PROFIBUS-DP model and is the open Industrial Ethernet standard of Profibus & Profinet International (PI). The modular customizable system

uses TCP/IP and IT standards and enables the integration of fieldbus systems. With PROFINET, solutions can be implemented for manufacturing technology, process automation, building automation as well as for the entire range of drive engineering right through to motion control applications.

EtherCAT® is an open standard of the EtherCAT Technology Group (ETG) and is internationally standardized in IEC 61158, IEC 61784 and ISO 15745-4. The main features include ease of use, and especially the speed of the system. As a result, EtherCAT® is particularly suitable for use in time-critical motion control applications. Typical applications include packaging machines, injection molding machines, fast presses, CNC machining, robotics and hydraulic controls.

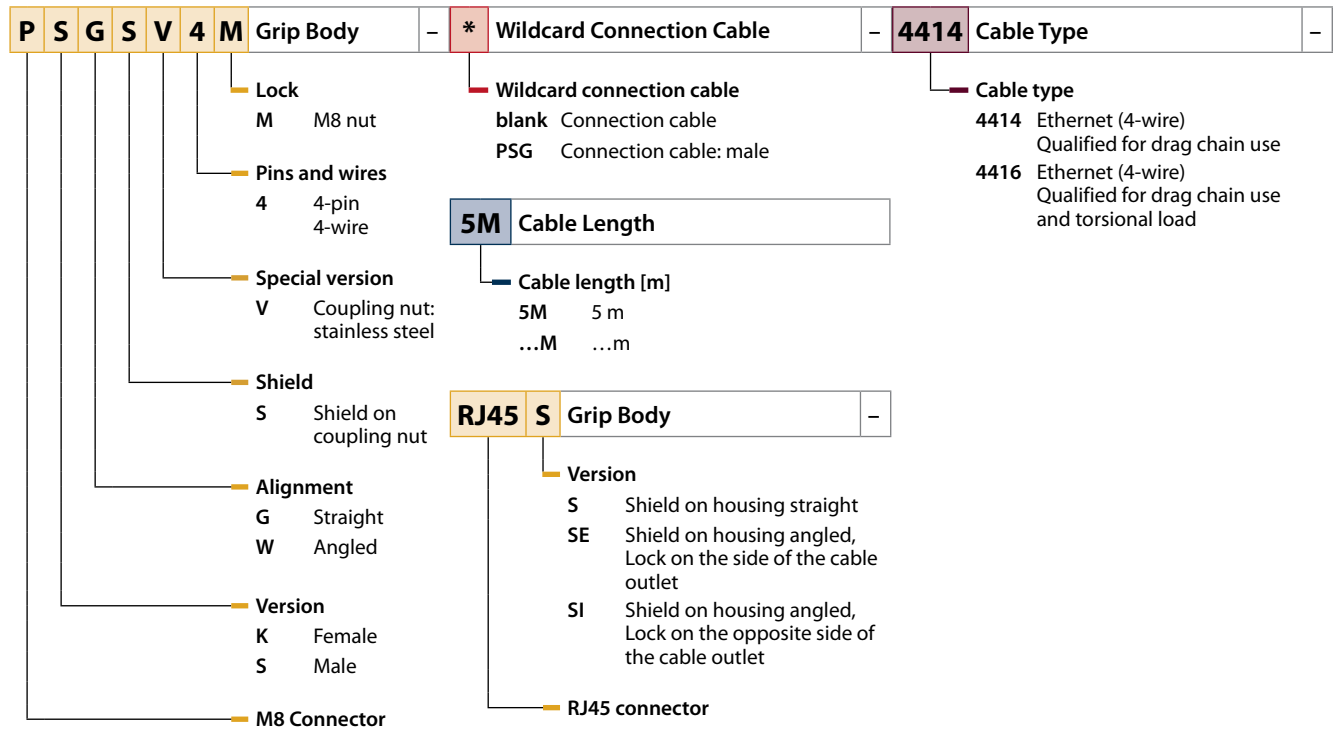
Turck provides all the necessary components for creating the network – from fieldbus stations with IP67 and IP20 protection right through to the appropriate connection technology. These include bus cables, power supply cables, hubs and switches, as well as control cabinet feed-throughs and mounting receptacles. Field-wireable connectors round off the range.

Ethernet – Application Example



Type Code – Ethernet

P S G S V 4 M - * - 4414 - 5M



R S S D V - * - 441 - 5M

R S S D V Grip Body - ***** Wildcard Connection Cable - **441** Cable Type -

- Special version
 - V Coupling nut: stainless steel
- Coding
 - D D-coded
- Shield
 - S Shield on coupling nut
- Version
 - K Female
 - S Male
- Alignment
 - R M12, straight
 - W M12, angled

- Wildcard connection cable
 - blank Connection cable
 - RKSD Connection cable: male

5M Cable Length

- Cable length [m]
 - 5M 5 m
 - ...M ...m

- Cable type
 - 441 PUR (only M12)
 - 44... (4-wire)
 - 8... (8-wire)

RJ45 S Grip Body -

- Version
 - S Shield on housing straight
 - SE Shield on housing angled, Lock on the side of the cable outlet
 - SI Shield on housing angled, Lock on the opposite side of the cable outlet
- RJ45 connector

Connectivity for Ethernet – Overview

Extension cables M8 x 1/M12 x 1 - RJ45**Page**

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**Field-Wireable Connectors M12 x 1 - RJ45****Page**

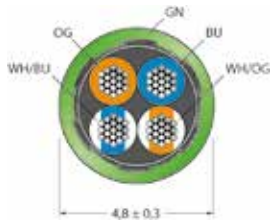
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**Accessories****Page**

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PUR Cable – Green, Type 4414



- 4-pin, 4 x 26 AWG, CAT 5E
- Qualified for drag chain use and flame-retardant
- Resistant to UV radiation and oils
- Free from halogen, silicone, PVC and LABS
- cULus approved



Female connector



- 1 = WH/OG (TX +)
- 2 = OG (TX -)
- 3 = WH/BU (RX +)
- 4 = n.c.
- 5 = n.c.
- 6 = BU (RX -)
- 7 = n.c.
- 8 = n.c.

Male connector



Connector

Contacts	Metal, CuZn, Gold-plated
Coupling nut/screw	Zinc, GD-Zn, Nickel-plated
Protection class	IP67 (only when screwed tight)
Mechanical Lifespan	> 100 mating cycles
Pollution degree	3/2

Cable

Cable	4.8 mm ± 0.30
Cable jacket	PUR, Green
Core insulation	PP (WHOG, WHBU, BU, OG)
Core cross-section	4 x 0.15 mm ²
Arrangement of strands	19 x 0.102 mm
Shield	Aluminum foil, tinned copper braid

Electrical properties at +20 °C

Current load	3 A
Rated voltage	30 V
Test voltage	700 V
Nom. Impedance	100 (1MHZ)
Nom. Capacitance	51 pF/m

Mechanical and chemical properties

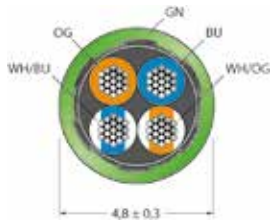
Bending radius (stationary laying)	> 15 x Ø
Ambient temperature	
Stationary usage	-40...+80 °C
Non-stationary usage	-25...+80 °C

Types and Features — Selection Table



	Cable length [m]	ID number	Type
	0.5	6932986	PSGS4M-4414-0.5M
	1	6932987	PSGS4M-4414-1M
	2	6932988	PSGS4M-4414-2M
	4	6932989	PSGS4M-4414-4M
	6	6932990	PSGS4M-4414-6M
	10	6933305	PSGS4M-4414-10M
	15	6933646	PSGS4M-4414-15M
	20	6933647	PSGS4M-4414-20M
		0.2	6932991
0.5		6932992	PSGS4M-PSGS4M-4414-0.5M
1		6932993	PSGS4M-PSGS4M-4414-1M
2		6932994	PSGS4M-PSGS4M-4414-2M
4		6932995	PSGS4M-PSGS4M-4414-4M
5		6932996	PSGS4M-PSGS4M-4414-5M
6		6932997	PSGS4M-PSGS4M-4414-6M
8		6932998	PSGS4M-PSGS4M-4414-8M
10		6932999	PSGS4M-PSGS4M-4414-10M
15		6933000	PSGS4M-PSGS4M-4414-15M
20		6933001	PSGS4M-PSGS4M-4414-20M
	0.2	6933002	PSGS4M-RJ45S-4414-0.2M
	0.5	6933003	PSGS4M-RJ45S-4414-0.5M
	1	6933004	PSGS4M-RJ45S-4414-1M
	2	6933005	PSGS4M-RJ45S-4414-2M
	4	6933006	PSGS4M-RJ45S-4414-4M
	5	6933768	PSGS4M-RJ45S-4414-5M
	6	6933007	PSGS4M-RJ45S-4414-6M
	10	6934252	PSGS4M-RJ45S-4414-10M
15	6933308	PSGS4M-RJ45S-4414-15M	
	0.5	6441421	RJ45S-RJ45S-4414-0.5M
	1	6441422	RJ45S-RJ45S-4414-1M
	2	6441423	RJ45S-RJ45S-4414-2M
	3	6441424	RJ45S-RJ45S-4414-3M
	5	6441425	RJ45S-RJ45S-4414-5M
	10	6441426	RJ45S-RJ45S-4414-10M
	15	6441427	RJ45S-RJ45S-4414-15M
	20	6441428	RJ45S-RJ45S-4414-20M
25	6441429	RJ45S-RJ45S-4414-25M	

PUR Cable – Green, Type 4414



- 4-pin, D-coded, 4 x 26 AWG, CAT 5E
- Qualified for drag chain use and flame-retardant
- Resistant to UV radiation and oils
- Free from halogen, silicone, PVC and LABS
- cULus approved



Female connector



- 1 = WH/OG (TX +)
- 2 = OG (TX -)
- 3 = WH/BU (RX +)
- 4 = n.c.
- 5 = n.c.
- 6 = BU (RX -)
- 7 = n.c.
- 8 = n.c.

Male connector



Connector

Grip	Plastic, TPU, UL 94, Black
Contacts	Metal, CuZn, Gold-plated
Contact carriers	PA, UL 94, Black
Coupling nut/screw	Brass, GD-Zn, Nickel-plated
Protection class	IP67 (only when screwed tight)
Mechanical Lifespan	> 100 mating cycles

Cable

Cable	4.8 mm ± 0.30
Cable jacket	PUR, Green
Core insulation	PP (WHOG, WHBU, BU, OG)
Core cross-section	4 x 0.15 mm ²
Arrangement of strands	19 x 0.102 mm
Shield	Aluminum foil, tinned copper braid

Electrical properties at +20 °C

Current load	3 A
Rated voltage	30 V
Test voltage	700 V
Nom. Impedance	100 (1MHZ)
Nom. Capacitance	51 pF/m


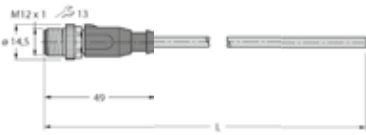

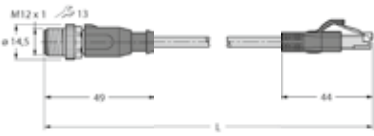
Mechanical and chemical properties

Bending radius (stationary laying)	> 15 x Ø
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Ambient temperature

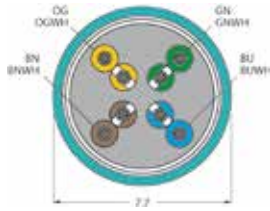
Stationary usage	-40...+80 °C
Non-stationary usage	-25...+80 °C

Types and Features — Selection Table

	Cable length [m]	ID number	Type
	1 2 5 10	6441400 6441401 6441402 6441403	RSSD-4414-1M RSSD-4414-2M RSSD-4414-5M RSSD-4414-10M
	1 2 5 7 10 15 20 25	6441404 6441405 6441406 6441407 6441408 6441409 6441410 6441411	RSSD-RSSD-4414-1M RSSD-RSSD-4414-2M RSSD-RSSD-4414-5M RSSD-RSSD-4414-7M RSSD-RSSD-4414-10M RSSD-RSSD-4414-15M RSSD-RSSD-4414-20M RSSD-RSSD-4414-25M
	1 2 5 7 8 10 12 15 20 25 30 35	6441412 6441413 6935267 6441414 6935268 6441415 6935269 6441416 6441417 6441418 6441419 6441420	RSSD-RJ45S-4414-1M RSSD-RJ45S-4414-2M RSSD-RJ45S-4414-5M RSSD-RJ45S-4414-7M RSSD-RJ45S-4414-8M RSSD-RJ45S-4414-10M RSSD-RJ45S-4414-12M RSSD-RJ45S-4414-15M RSSD-RJ45S-4414-20M RSSD-RJ45S-4414-25M RSSD-RJ45S-4414-30M RSSD-RJ45S-4414-35M

Connectivity for Ethernet

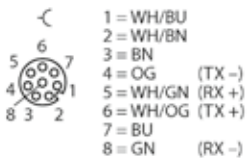
TPE Cable – Green, Type 841



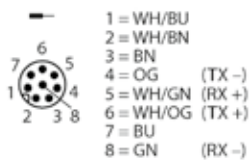
- 4-pin, D-coded, 8 x 24 AWG
- Qualified for drag chain use
- Flame-retardant
- Resistant to UV radiation and oils
- UL approved



Female connector



Male connector



- | | |
|-----------------|--------------|
| 1 = WH/OG (+Tx) | 5 = WH/BU |
| 2 = OG (-Tx) | 6 = GN (-Rx) |
| 3 = WH/GN (+Rx) | 7 = WH/BN |
| 4 = BU | 8 = BN |

Connector

Grip	Plastic, TPU, Black
Coupling nut/screw	Brass, CuZn, Nickel-plated
Protection class	IP67 (only when screwed tight)
Mechanical Lifespan	> 100 mating cycles
Pollution degree	3

Cable

Cable	7.7 mm
Cable jacket	TPE, Green
Core insulation	PE (WH/BU, WH/BN, BN, OG, WH/GN, WH/OG, BU, GN)
Core cross-section	8 x 0.21 mm ²
Shield	yes

Electrical properties at +20 °C

Current load	2 A
Rated voltage	60 V
DC resistance (loop)	94 Ω /km
Nom. Impedance	100 (1 MHz)
Nom. Capacitance	46 pF/m


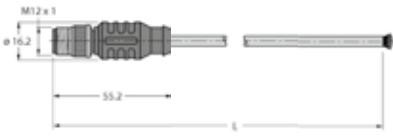
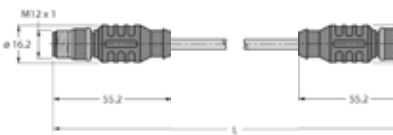

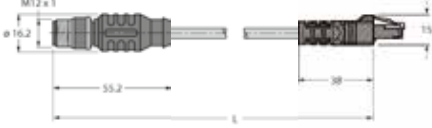
Mechanical and chemical properties

Bending cycles	> 1 mil.
Bending radius (flexible use)	> 10 x Ø

Ambient temperature


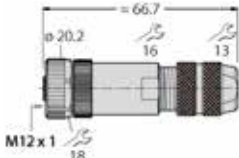
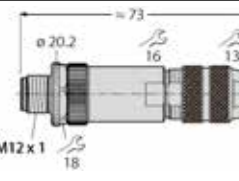
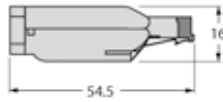
Stationary usage	-40...+80 °C
Non-stationary usage	-40...+80 °C

Types and Features — Selection Table

	Cable length [m]	ID number	Type
	6	6603696	RSS-841-6M
	10	6603697	RSS-841-10M
	15	6603698	RSS-841-15M
	30	6830997	RSS-841-30M
	1	6932354	RKS-841-1M
	2	6933329	RKS-841-2M
	5	6933369	RKS-841-5M
	6	6603699	RKS-841-6M
	10	6603700	RKS-841-10M
	0.5	6603702	RSS-RSS-841-0.5M
	1	6603703	RSS-RSS-841-1M
	2	6603704	RSS-RSS-841-2M
	3	6603878	RSS-RSS-841-3M
	4	6603705	RSS-RSS-841-4M
	5	6830949	RSS-RSS-841-5M
	6	6603706	RSS-RSS-841-6M
	10	6603707	RSS-RSS-841-10M
	15	6603708	RSS-RSS-841-15M
	0.5	6603721	RSS-RJ45S-841-0.5M
	1	6611356	RSS-RJ45S-841-1M
	2	6611338	RSS-RJ45S-841-2M
	3	6611339	RSS-RJ45S-841-3M
	4	6611550	RSS-RJ45S-841-4M
	5	6611263	RSS-RJ45S-841-5M
	10	6611008	RSS-RJ45S-841-10M
	15	6604411	RSS-RJ45S-841-15M
	0.5	6603713	RJ45S-RJ45S-841-0.5M
	1	6603714	RJ45S-RJ45S-841-1M
	2	6603715	RJ45S-RJ45S-841-2M
	4	6603716	RJ45S-RJ45S-841-4M
	6	6603717	RJ45S-RJ45S-841-6M
	10	6603718	RJ45S-RJ45S-841-10M
	15	6603719	RJ45S-RJ45S-841-15M

Connectivity for Ethernet

Field-Wireable Connectors – M12 × 1 and RJ45


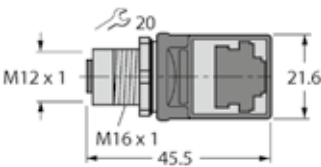
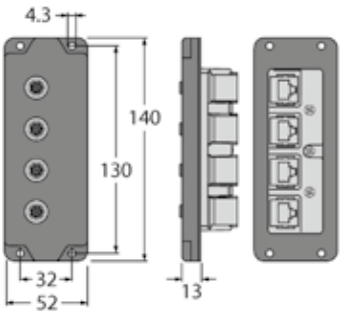
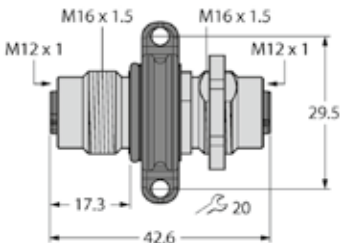
	M12 × 1				RJ45			
	Number of pins	Rated voltage [V]	ID number	Type	Number of pins	Rated voltage	ID number	Type
								
Female connector, straight	4	125	6604219	 FW-M12KU5D-G-SB-ME-SH-8				
Male connector, straight	4	125	6604218	 FW-M12ST5D-G-SB-ME-SH-8				
RJ45 male connector, straight					 6780031 6GK1901-1BB10-2AA0/FC-RJ45			
Connection mode	Screw/clamp connection				Insulation displacement connection			
Grip	Die-cast zinc, GD-Zn, Nickel-plated				Metal			
Coupling nut/screw	Die-cast zinc, GD-Zn, Nickel-plated							
Contacts	Brass, CuZn, Gold-plated							
Contact carriers	PA, Black							
Protection class	IP67				IP20			
Current load	4 A				2 A			
Terminal cross-section	0.14...0.75 mm ²							
Cable external diameter	min. 6...8 mm				min. 6...8 mm			
Storage temperature	-25...+85 °C							

M12 × 1 female connector M12 × 1 male connector RJ45 connector



Wall Feed-through

Types and Features — Selection Table

	Description	ID number	Type
	<ul style="list-style-type: none"> ■ For Industrial Ethernet ■ RJ45 on M12 × 1, 4-pin ■ Permissible wall thickness: 1.5 - 3 mm ■ Mounting thread: M16 × 1, 8-pin ■ D-coding ■ Voltage: 42 V ■ Current load: 1.5 A ■ Temperature: -40 °C...+75 °C ■ Protection class: IP20/67 ■ Scope of delivery: Wall feed-through, seal and nut 	6611523	FKSDD-RJ45SF-44
	<ul style="list-style-type: none"> ■ For Industrial Ethernet ■ RJ45 on M12 × 1, 4-port ■ 4-pin ■ Voltage: 125 V ■ Current load: 1.5 A ■ Temperature: -30 °C...+75 °C ■ D-coding ■ Protection class: IP20/67 	6604407	BIC-44-E424
	<ul style="list-style-type: none"> ■ For Industrial Ethernet ■ M12 × 1 female connector to M12 × 1 female connector, 4-pin ■ Mounting thread: M16 × 1.5 ■ D-coding ■ Voltage: 50 V ■ Current load: 4 A ■ Temperature: -25 °C...+85 °C ■ Protection class: IP67 	6932692	FKD-FKD44/M12