

M8/M12 Connector

PCA/EX9/EX500 Series



- Communication Cable/Connector

EtherNet/IP™



EtherCAT®

ETHERNET
POWERLINK

CC-Link

DeviceNet™



- Power Supply Cable/Connector

- Accessory Between the Sensor/Switch and the Input Device

- Other Accessories

- Made to Order

- Specific Product Precautions

Type 1	EX260
	EX123/124/126
Type 2	EX500
	EX600
Type 3	EX245
	EX250
Type 1	EX120/121/122
	EX140
Type 2	EX180
	EX510
M8/M12	ATEX

Communication Cable/Connector ▶ p. 222 to 228

● A lineup featuring products applicable to all communication standards

The SMC Fieldbus (SI) Unit can be connected to the PLC (controller) and communication units from other manufacturers with cables with connectors and field-wireable connectors (with shield) applicable to each of the standards.



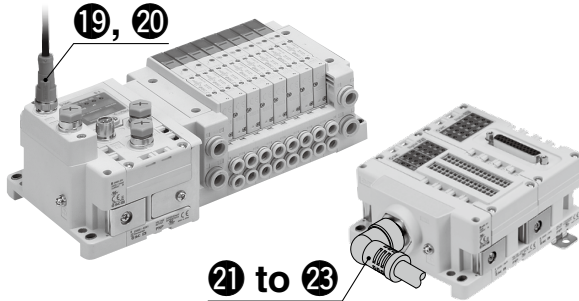
Communication cable	Field-wireable communication connector	Communication cable (With connector on both sides)
SPEEDCON Socket (Female) ④ For CC-Link ⑧, ⑩ For DeviceNet™ ⑭ For PROFIBUS DP SPEEDCON Plug (Male) ⑤ For CC-Link ⑨ For DeviceNet™ ⑮ For PROFIBUS DP ② For EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK * ② and ③ are used in combination with each other.	Plug (Male) ⑥ For CC-Link ⑪ For DeviceNet™ ⑰ For PROFIBUS DP ③ For EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK * ② and ③ are used in combination with each other.	● For EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK ● For CC-Link ● For DeviceNet™ SPEEDCON
Plug (Male) ① For EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK	Socket (Female) ⑦ For CC-Link ⑫ For DeviceNet™ ⑬ For PROFIBUS DP	Terminating resistor Connects to the communication port of the communication unit connected at the end For DeviceNet™ (Plug) For PROFIBUS DP (Plug/B-coded)
Plug (Male) ① For EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK	RJ45	

● Product Table

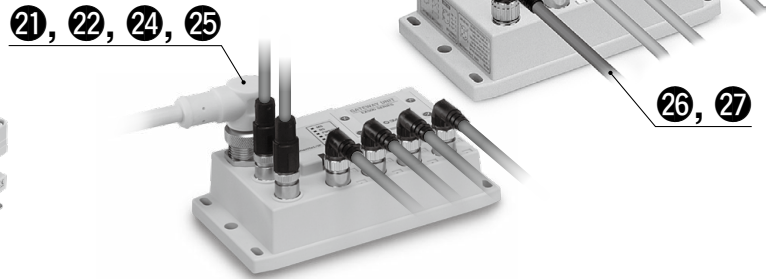
Description	Application	No.	SMC part no.	Name
Communication cable (With connector on one side)	For Fieldbus communication	①	EX9-AC□EN-PSRJ	Communication cable for EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK (Plug/D-coded/RJ45)
		②	PCA-1446566	Communication cable for EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK (Plug/D-coded)
		④	PCA-1567720	Communication cable for CC-Link (Socket)
		⑤	PCA-1567717	Communication cable for CC-Link (Plug)
		⑧	PCA-1557633	Communication cable for DeviceNet™ (Socket)
		⑩	EX500-AC□DN	
		⑨	PCA-1557646	Communication cable for DeviceNet™ (Plug)
		⑭	PCA-1557688	Communication cable for PROFIBUS DP (Socket/B-coded)
		⑮	PCA-1557691	Communication cable for PROFIBUS DP (Plug/B-coded)
Communication cable (With connector on both sides)			EX9-AC□EN-PSPS	Communication cable for EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK (Straight)
			EX9-AC□EN-PAPA	Communication cable for EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK (Angle)
			EX9-AC□MJ-SSPS	Communication cable for CC-Link (Straight)
			EX9-AC□MJ-SAPA	Communication cable for CC-Link (Angle)
			EX9-AC□DN-SSPS	Communication cable for DeviceNet™ (Straight)
			EX9-AC□DN-SAPA	Communication cable for DeviceNet™ (Angle)
Field-wireable communication connector	For Fieldbus communication	③	PCA-1446553	Field-wireable connector for EtherNet/IP™, PROFINET, EtherCAT, Ethernet POWERLINK (Plug/D-coded/Fast connection technology)
		⑥	PCA-1557617	Field-wireable connector for CC-Link (Plug/Spring-caged)
		⑦	PCA-1557620	Field-wireable connector for CC-Link (Socket/Spring-caged)
		⑪	PCA-1557659	Field-wireable connector for DeviceNet™ (Plug/Spring-caged)
		⑫	PCA-1557662	Field-wireable connector for DeviceNet™ (Socket/Spring-caged)
		⑰	PCA-1557701	Field-wireable connector for PROFIBUS DP (Plug/B-coded/Spring-caged)
		⑱	PCA-1557714	Field-wireable connector for PROFIBUS DP (Socket/B-coded/Spring-caged)
Terminating resistor	For Fieldbus communication	⑬	PCA-1557675	Terminating resistor for DeviceNet™ (M12)
		⑲	PCA-1557727	Terminating resistor for PROFIBUS DP (M12/B-coded)

Power Supply Cable/Connector ▶ p. 229 to 236

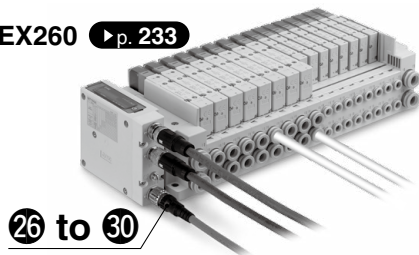
EX600 ▶ p. 229



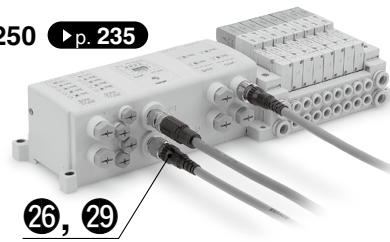
EX500 ▶ p. 231



EX260 ▶ p. 233



EX250 ▶ p. 235



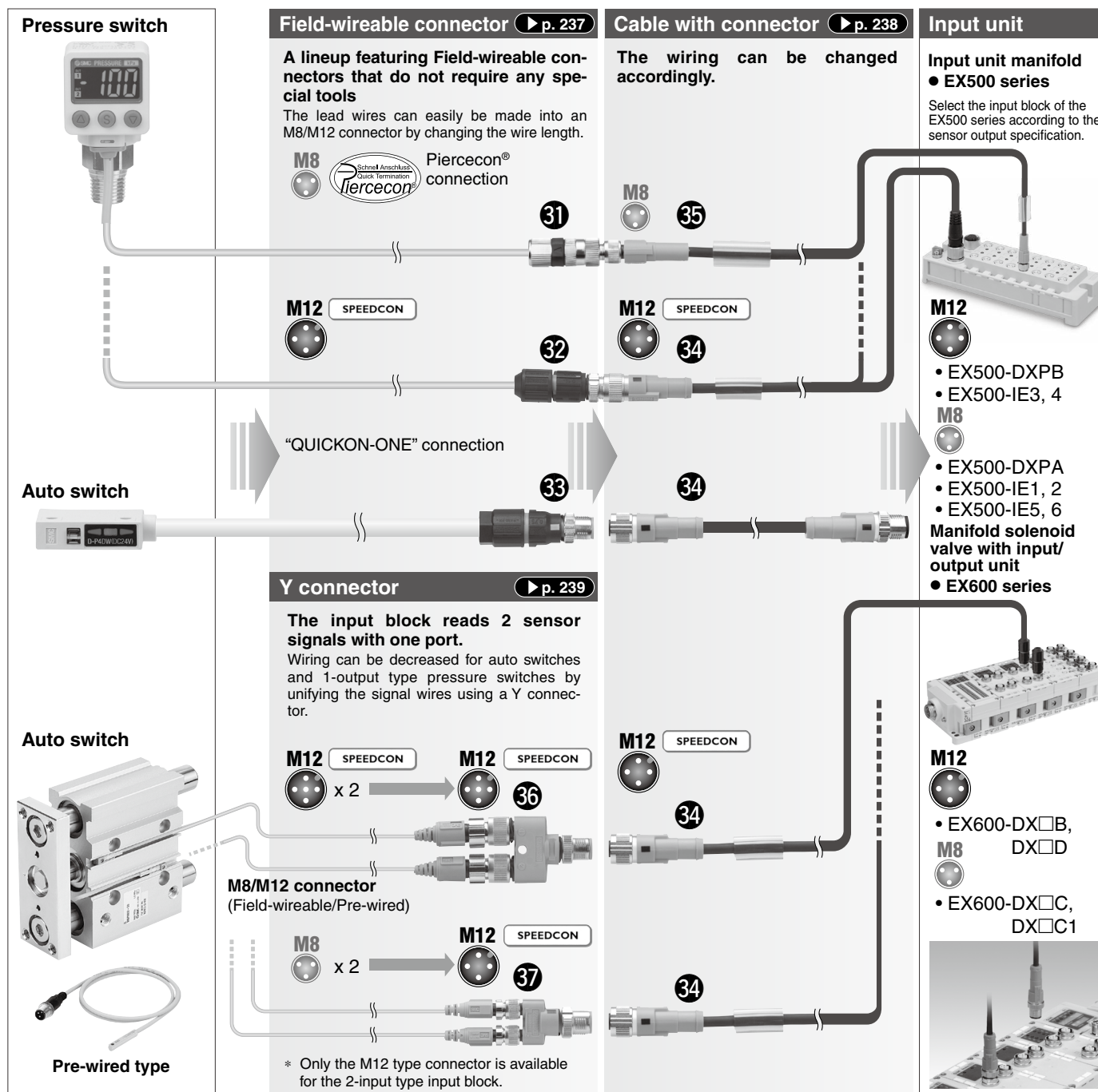
● Product Table

Series	Protocols	No.	Part no.	Connector type	Cable length
EX600	EtherNet/IP™	19	PCA-15649□	M12, 5 pins, B-coded, Socket, Straight, SPEEDCON	2 m, 6 m
	PROFINET	20	PCA-15649□	M12, 5 pins, B-coded, Socket, Angle, SPEEDCON	
	EtherCAT	21	PCA-15588□	7/8 inch, 5 pins, Socket, Straight	2 m, 6 m
	PROFIBUS DP	22	PCA-15588□	7/8 inch, 5 pins, Socket, Angle	
	DeviceNet™	23	PCA-1578081	Field-wireable connector, 7/8 inch, 5 pins, Socket, Straight	—
EX500	EtherNet/IP™	24	PCA-141□	7/8 inch, 4 pins, Socket, Straight	2 m, 6 m
		25	PCA-141□	7/8 inch, 4 pins, Socket, Angle	
	PROFINET	21	PCA-15588□	7/8 inch, 5 pins, Socket, Straight	2 m, 6 m
		22	PCA-15588□	7/8 inch, 5 pins, Socket, Angle	
	PROFIBUS DP	26	EX500-AP□-S	M12, 5 pins, A-coded, Socket, Straight	1 m, 5 m
EX260	DeviceNet™	27	EX500-AP□-A	M12, 5 pins, A-coded, Socket, Angle	
		26	EX500-AP□-S	M12, 5 pins, A-coded, Socket, Straight	1 m, 5 m
		27	EX500-AP□-A	M12, 5 pins, A-coded, Socket, Angle	
	EtherNet/IP™	28	PCA-140180□	M12, 5 pins, A-coded, Socket, Straight, SPEEDCON	1.5 m, 3 m, 5 m
	PROFIBUS DP				
EX250	CC-Link	29	EX9-AC□-1	M12, 5 pins, B-coded, Socket, Straight	1 m, 3 m, 5 m
		30	PCA-140180□	M12, 5 pins, B-coded, Socket, Straight, SPEEDCON	
	DeviceNet™	29	EX9-AC□-1	M12, 5 pins, B-coded, Socket, Straight	1 m, 3 m, 5 m
	CANopen				
	CC-Link	26	EX500-AP□-S	M12, 5 pins, A-coded, Socket, Straight	1 m, 5 m
	EtherNet/IP™				
	PROFIBUS DP				

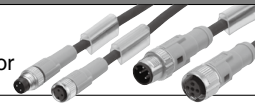
Type 1	EX260
Type 2	EX500
Type 3	EX600
Type 1	EX245
Type 2	EX250
Type 1	EX120/121/122
Type 1	EX140
Type 1	EX180
Type 2	EX510
M8/M12	
ATEX	

Accessory Between the Sensor/Switch and the Input Device ▶ p. 237 to 239

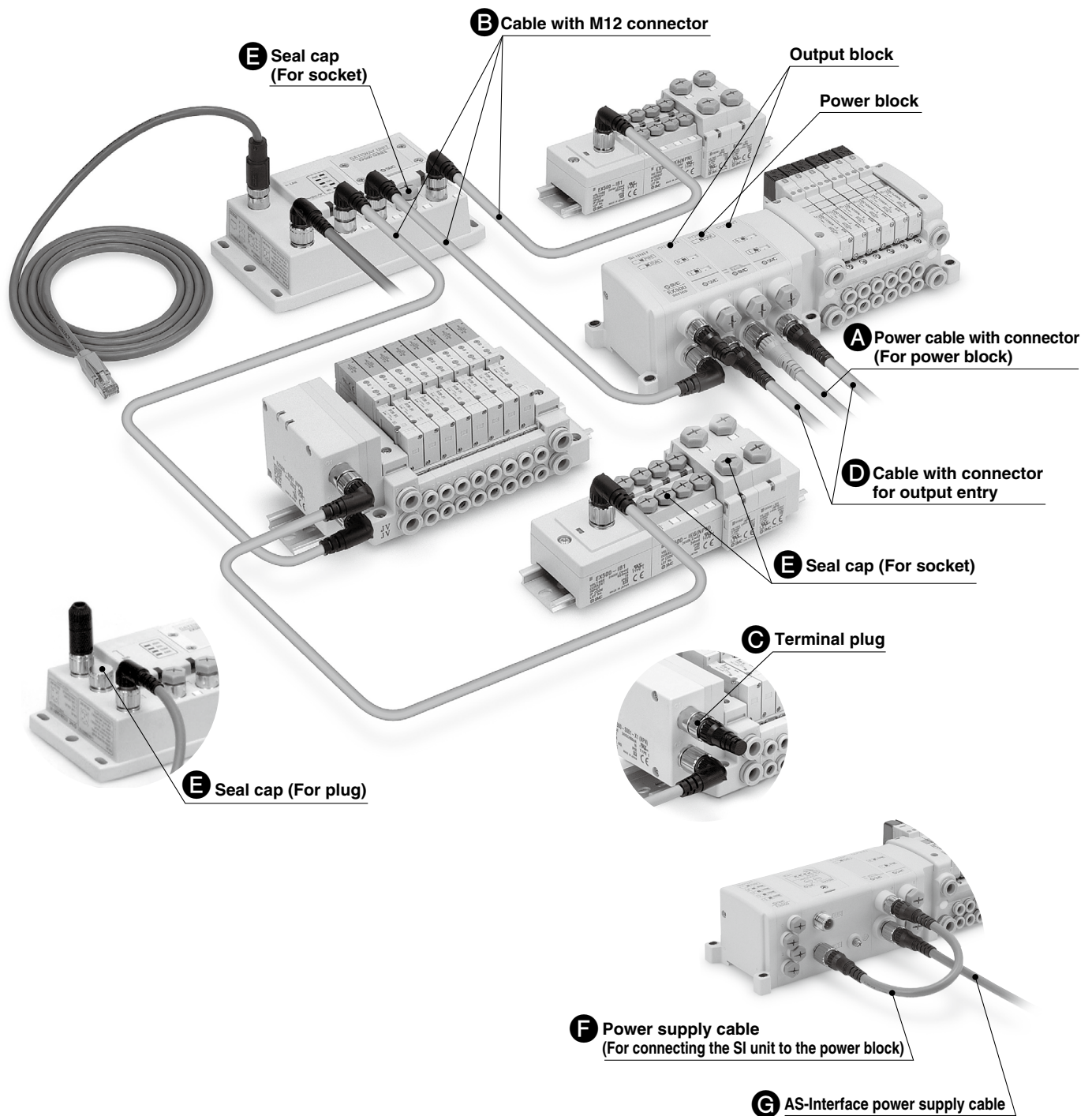
● Connection between connectors and products



● Product Table

Description	Application	No.	SMC part no.	Name
Cable with connector	For sensor 	34	PCA-1557769	Cable with M12 connector (4 pins/3 m)
		35	PCA-1557772	Cable with M8 connector (3 pins/3 m)
Field-wireable connector	For sensor 	31	PCA-1557730	Field-wireable connector (M8/3 pins/Plug/Piercecon® connection)
		32	PCA-1557743	Field-wireable connector
		33	PCA-1557756	(M12/4 pins/Plug/QUICKON-ONE connection/SPEEDCON)
Y connector	For sensor 	36	PCA-1557785	Y connector (2 x M12 (5 pins)-M12 (5 pins)/SPEEDCON)
		37	PCA-1557798	Y connector (2 x M8 (3 pins)-M12 (4 pins)/SPEEDCON)

Other Accessories (EX500/EX9) ▶ p. 240 to 242



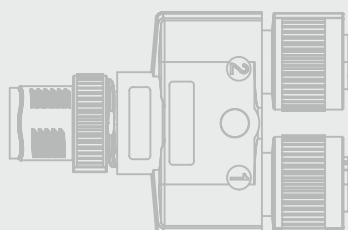
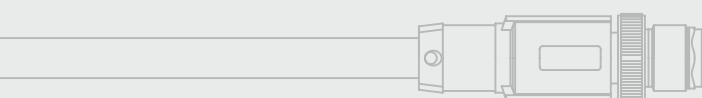
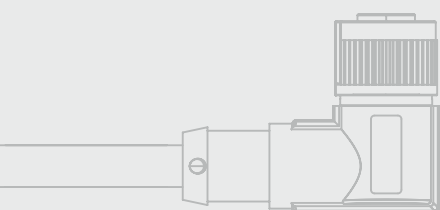
Description	Application	No.	SMC part no.	Name
Cable with connector	For power block	A	EX9-AC□□□-1	Power cable with connector (Socket/B-coded)
	For EX500	B	EX500-AC□□□-SSPS	Cable with M12 connector (8 pins/Both straight)
			EX500-AC□□□-SAPA	Cable with M12 connector (8 pins/Both angle)
	For output entry	D	EX9-AC□□□-7	Cable with M12 connector (Plug/A-coded)
Terminal plug	For EX500	C	EX500-AC000-S	Terminal plug (M12/8 pins)
Seal cap	For plug		EX500-AWTP	Seal cap (M12/For plug)
		E	EX9-AWES	Seal cap (M8/For socket)
			EX9-AWTS	Seal cap (M12/For socket)
Power supply cable	For connecting the SI unit to the power block	F	EX9-AC002-□	Power supply cable (For connecting the SI unit to the power block)
	For the AS-Interface power supply	G	EX9-AC□□□-5	AS-Interface power supply cable (5 pins/Both straight)

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Fieldbus Related Accessories

M8/M12 Connector

PCA/EX9/EX500 Series



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Power Supply Cable/Connector

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Accessory Between the Sensor/Switch and the Input Device

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Other Accessories

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Made to Order

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Communication Cable/Connector

M12

EtherNet/IP™

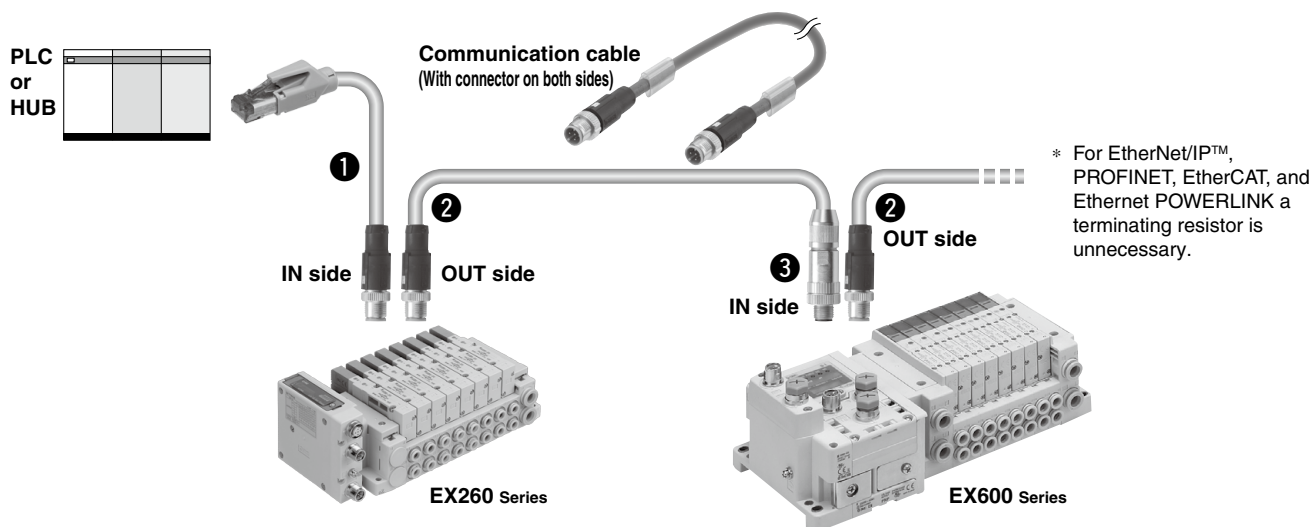
PROFI
NET

EtherCAT®

ETHERNET
POWERLINK



Example of Connection



Specifications

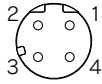
Description		Communication cable (With connector on one side)		Field-wireable connector	
Part no. (Cable length)		EX9-AC010EN-PSRJ (1 m) EX9-AC020EN-PSRJ (2 m) EX9-AC030EN-PSRJ (3 m) EX9-AC050EN-PSRJ (5 m) EX9-AC100EN-PSRJ (10 m)	PCA-1446566	PCA-1446553	
Product image		① Plug-RJ45	② Plug	③ Plug	
Number of functional poles		M12: 4 pins, RJ45: 8 pins	M12: 4 pins	M12: 4 pins	
Key type		M12: D coded			
Pin assignment		 Plug, D-coded (Viewed from the plug side)	1 (Yellow): TD+ 2 (White): RD+ 3 (Orange): TD- 4 (Blue): RD- (PCA-1446566)	1 (Orange/White): TD+ 2 (Green/White): RD+ 3 (Orange): TD- 4 (Green): RD- (EX9-AC□EN-PSRJ.PCA-1446553)	
Wiring	Fixed cable length	1 m, 2 m, 3 m, 5 m, 10 m	5 m	—	
	Cable O.D.	6.4 mm	6.5 mm	Applicable cable*1	4.0 to 8.0 mm
	Conductor nominal cross section	0.14 mm ² /AWG26	0.34 mm ² /AWG22		0.14 to 0.34 mm ² /AWG26 to 22
	Wire O.D.	0.5 mm	1.55 mm	—	
Rating/Performance	Connection type		QUICKON connection		
	Rated current		1 A	4 A	1.75 A
	Rated voltage		100 V	48 VAC/60 VDC	60 V
	Contact resistance		10 mΩ or less		
	Insulation resistance		100 MΩ or more		
	Withstand voltage		0.7 kV	1.4 kV	0.8 kV
	Ambient temperature	Connector	-25 to +60°C		-40 to +85°C
		Cable	-40 to +80°C		—
	Min. bending radius (Fixed)		26 mm	19.5 mm	—
	Protection class		M12: IP67 (Only with screw tightened), RJ45: IP20	M12: IP67 (Only with screw tightened)	
Allowable repeated insertion/withdrawal		100			
Material	Material of knurl	Zinc die-cast (Nickel alloy)	Zinc die-cast (Nickel plating)	Brass (Nickel plating)	
	Contact (Surface treatment)	M12: CuZn (Au plating (Ni underplating)) RJ45: CuSn (Au plating (Ni underplating))	CuZn (Au plating (Ni underplating))	CuSn (Au plating (Ni underplating))	
	Connector material	TPU (UL94 HB)		PA66 (UL94 V0)	
	Material of sheath (Sheath color)	PUR (Blue (RAL 5021 equivalent))	PVC (Green (RAL 6018 equivalent))	—	
Weight		1 m: Approx. 70 g 5 m: Approx. 252 g 2 m: Approx. 116 g 10 m: Approx. 479 g 3 m: Approx. 161 g	Approx. 350 g		Approx. 45.6 g

*1 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Type 1	EX260
Type 2	EX500
Type 3	EX600
Type 1	EX245
Type 1	EX250
Type 1	EX120/121/122
Type 1	EX140
Type 2	EX180
Type 2	EX510
Type 2	M8/M12
Type 2	ATEX

Communication Cable/Connector

Specifications

Description		Communication cable (With straight connector on both sides)	Communication cable (With angle connector on both sides)
Part no. (Cable length)		EX9-AC005EN-PSPS (0.5 m) EX9-AC010EN-PSPS (1 m) EX9-AC020EN-PSPS (2 m) EX9-AC030EN-PSPS (3 m) EX9-AC050EN-PSPS (5 m) EX9-AC100EN-PSPS (10 m)	EX9-AC005EN-PAPA (0.5 m) EX9-AC010EN-PAPA (1 m) EX9-AC020EN-PAPA (2 m) EX9-AC030EN-PAPA (3 m) EX9-AC050EN-PAPA (5 m) EX9-AC100EN-PAPA (10 m)
Product image		 Both straight	 Both angle
Number of functional poles		M12: 4 pins	
Key type		M12: D-coded	
Pin assignment		 Plug, D-coded (Viewed from the plug) 1 (Yellow) : TD+ 2 (White) : RD+ 3 (Orange): TD- 4 (Blue) : RD-	
Wiring	Fixed cable length	0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m	
	Cable O.D.	6.5 mm	
	Conductor nominal cross section	0.34 mm ² /AWG22	
	Wire O.D. (Including insulating material)	1.55 mm	
Rating/Performance	Rated current	4 A	
	Rated voltage	48 VAC/60 VDC	
	Contact resistance	10 mΩ or less	
	Insulation resistance	100 MΩ or more	
	Withstand voltage	1.4 kV	
	Ambient temperature	-40 to 70°C	
	Min. bending radius (Fixed)	19.5 mm	
	Protection class	M12: IP67 (Only with screw tightened)	
Material	Allowable repeated insertion/withdrawal	100	
	Material of knurl	Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)	CuSn (Au plating (Ni underplating))	
	Connector material	TPU (UL94 HB)	
	Material of sheath (Sheath color)	PVC (Green (RAL 6018 equivalent))	
Weight		0.5 m: Approx. 85g 1 m: Approx. 135g 2 m: Approx. 215g 3 m: Approx. 305g 5 m: Approx. 480g 10 m: Approx. 905g	0.5 m: Approx. 85g 1 m: Approx. 135g 2 m: Approx. 215g 3 m: Approx. 305g 5 m: Approx. 480g 10 m: Approx. 905g

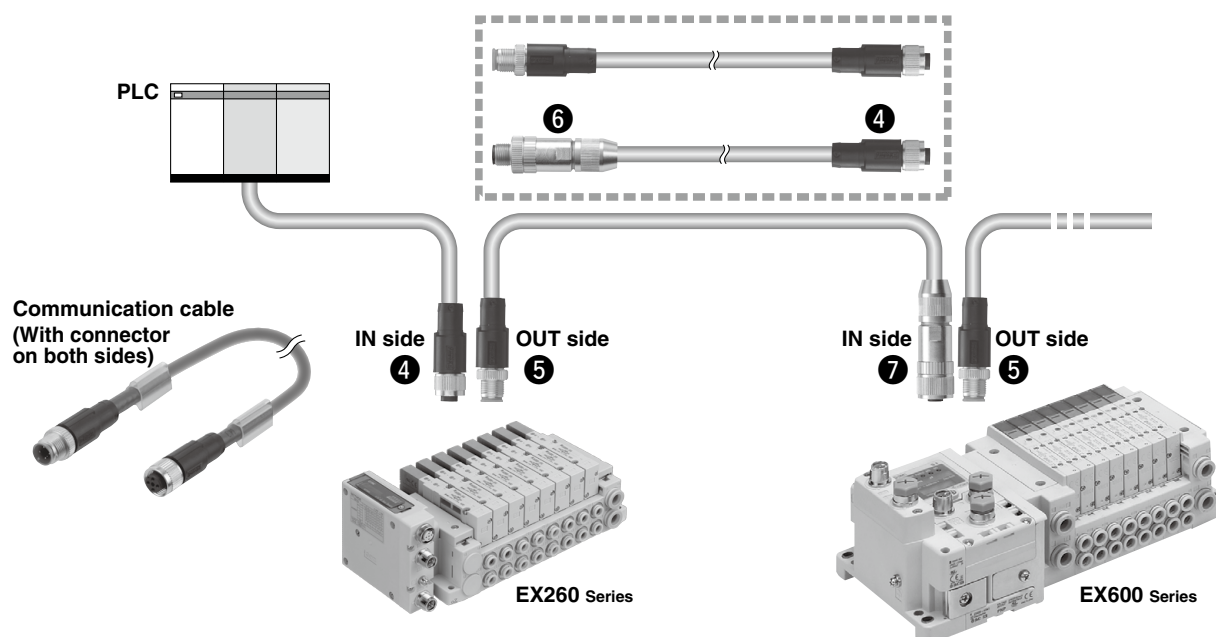
Communication Cable/Connector

CC-Link

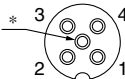
M12



Example of Connection



Specifications

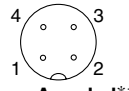
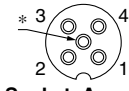
Description		Communication cable (With connector on one side)		Field-wireable connector	
Part no.		PCA-1567720	PCA-1567717	PCA-1557617	PCA-1557620
Product image		4 SPEEDCON  Socket	5 SPEEDCON  Plug	6  Plug	7  Socket
Number of functional poles		M12: 4 pins			
Key type		A-coded (Normal key)			
Pin assignment		 Plug, A-coded*1  Socket, A-coded * Number of holes: 5, Total number of pins: 4 (Viewed from the plug/socket side) 1: SLD (Shield wire) 2: DB (White) 3: DG (Yellow) 4: DA (Blue)			
Wiring	Fixed cable length	5 m		Applicable cable*2	—
	Cable O.D.	7.7 mm			4.0 to 8.0 mm
	Conductor nominal cross section	0.5 mm ² /AWG20			0.14 to 0.5 mm ² /AWG26 to 20
	Data pair	0.34 mm ² /AWG22			
	Drain	0.34 mm ² /AWG22			
Wire O.D. (Including insulating material)		2.55 mm		—	
Connection type		—		Spring-cage connection	
Rating/Performance	Rated current	4 A			
	Rated voltage	48 VAC/60 VDC		48 V	
	Contact resistance	10 mΩ or less		5 mΩ or less	
	Insulation resistance	100 MΩ or more			
	Withstand voltage	1.4 kV			
	Ambient temperature	-20 to +60°C		-40 to +85°C	
	Connector Cable			—	
	Min. bending radius (Fixed)	77 mm		—	
	Protection class	IP67 (Only with screw tightened)			
	Allowable repeated insertion/withdrawal	100		200	
Material	Material of knurl	Zinc die-cast (Nickel plating)		Brass (Nickel plating)	
	Contact (Surface treatment)	CuSn (Au plating (Ni underplating))			
	Connector material	TPU (UL94 HB)		PA66 (UL94 V0)	
	Material of sheath (Sheath color)	PVC (Red)		—	
Weight		Approx. 306 g	Approx. 308 g	Approx. 48 g	Approx. 53 g

*1 Can also be connected to an M12 5-pin socket A-coded connector

*2 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Communication Cable/Connector

Specifications

Description		Communication cable (With straight connector on both sides)	Communication cable (With angle connector on both sides)
Part no. (Cable length)		EX9-AC005MJ-SSPS (0.5 m) EX9-AC010MJ-SSPS (1 m) EX9-AC020MJ-SSPS (2 m) EX9-AC030MJ-SSPS (3 m) EX9-AC050MJ-SSPS (5 m) EX9-AC100MJ-SSPS (10 m)	EX9-AC005MJ-SAPA (0.5 m) EX9-AC010MJ-SAPA (1 m) EX9-AC020MJ-SAPA (2 m) EX9-AC030MJ-SAPA (3 m) EX9-AC050MJ-SAPA (5 m) EX9-AC100MJ-SAPA (10 m)
Product image			
Number of functional poles		M12: 5 pins	
Key type		A-coded (Normal key)	
Pin assignment		 Plug, A-coded^{*1}  Socket, A-coded 1: SLD (Shield wire) 2: DB (White) 3: DG (Yellow) 4: DA (Blue) * Number of holes: 5, Total number of pins: 4 (Viewed from the plug/socket side)	
Wiring	Fixed cable length	0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m	
	Cable O.D.	7.7 mm	
	Conductor nominal cross section	0.5 mm ² /AWG20	
	Wire O.D. (Including insulating material)	1.4 mm	
Rating/Performance	Rated current	4 A	
	Rated voltage	48 VAC/60 VDC	
	Contact resistance	10 mΩ or less	
	Insulation resistance	100 MΩ or more	
	Withstand voltage	1.4 kV	
	Ambient temperature	-20 to +60°C	
	Min. bending radius (Fixed)	77 mm	
	Protection class	IP67 (Only with screw tightened)	
Material	Allowable repeated insertion/withdrawal	100	
	Material of knurl	Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)	CuSn (Au plating (Ni underplating))	
	Connector material	TPU (UL94 HB)	
		PVC (Red)	
Weight		0.5 m: Approx. 80 g 1 m: Approx. 120 g 2 m: Approx. 200 g 3 m: Approx. 280 g 5 m: Approx. 440 g 10 m: Approx. 840 g	0.5 m: Approx. 80 g 1 m: Approx. 120 g 2 m: Approx. 205 g 3 m: Approx. 285 g 5 m: Approx. 450 g 10 m: Approx. 865 g

*1 Can also be connected to an M12 5-pin socket A-coded connector

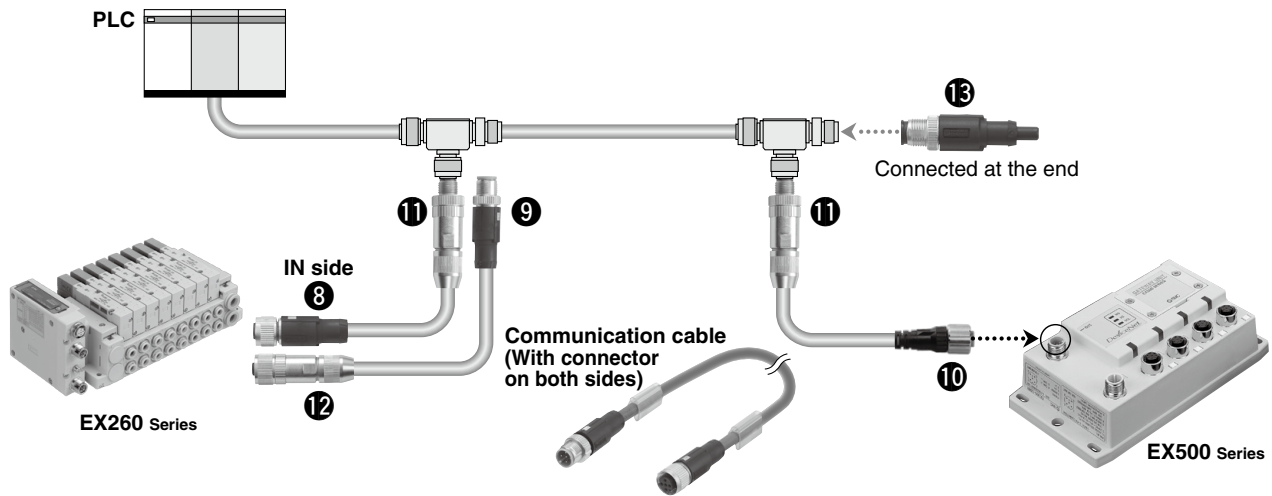
Communication Cable/Connector

M12

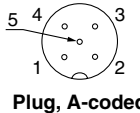
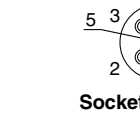


DeviceNet™

Example of Connection



Specifications

Description			Communication cable (With connector on one side)		Field-wireable connector		Terminating resistor		
Part no. (Cable length)			PCA-1557633	PCA-1557646	EX500-AC010-DN (1 m) EX500-AC050-DN (5 m)	PCA-1557659	PCA-1557662	PCA-1557675	
Product image			 Socket	 Plug	 Socket	 Plug	 Socket	 For DeviceNet™ (Plug, A-coded)	
Number of functional poles			M12: 5 pins						
Key type			A-coded (Normal key)						
Pin assignment			 Plug, A-coded (Viewed from the plug/socket side)		 Socket, A-coded (Viewed from the plug/socket side)		DeviceNet™ / CANopen*2 1: DRAIN 1: — 2: V+ (Red) 2: — 3: V- (Black) 3: CAN GND 4: CAN H (White) 4: CAN H 5: CAN L (Blue) 5: CAN L 1: DRAIN: NC 2: V+: NC 3: V-: NC 4: CAN H 5: CAN L 		
Wiring	Fixed cable length		5 m		1 m, 5 m		—		
	Cable O.D.		6.7 mm		7 mm		Applicable cable*1	4.0 to 8.0 mm	—
	Conductor nominal cross section	Power pair	0.34 mm²/AWG22		0.3 mm²/AWG22			0.14 to 0.5 mm²/AWG26 to 20	—
	Wire O.D. (Including insulating material)	Data pair	0.25 mm²/AWG24		0.2 mm²/AWG24				
	Connection type	Power pair	Data pair	1.4 mm		1.5 mm		—	
			2.05 mm		1.9 mm				
Rating/Performance	Rated current		4 A		Power supply/3 A Communication/1 A		4 A		—
	Rated voltage		48 VAC/60 VDC		125 V		48 V		
	Contact resistance		10 mΩ or less		30 mΩ or less		5 mΩ or less		
	Insulation resistance		100 MΩ or more		1000 MΩ or more		100 MΩ or more		—
	Withstand voltage		1.0 kV		1.5 kV		1.0 kV		—
	Ambient temperature	Connector temperature	-20 to +80°C		-20 to +70°C		-40 to +85°C		-25 to +90°C
	Min. bending radius (Fixed)	Protection class	67 mm		60 mm		—		
	Allowable repeated insertion/withdrawal		100		200		IP67 (Only with screw tightened)		
	Material	Material of knurl		Zinc die-cast (Nickel plating)		Brass (Nickel plating)		Zinc die-cast (Nickel plating)	
Contact (Surface treatment)		CuSn (Au plating (Ni underplating))		Phosphor bronze (Au plating (Ni underplating))		CuSn (Au plating (Ni underplating))			
Connector material		TPU (UL94 HB)		Soft PBT (UL94 V0)		PA66 (UL94 V0)		TPU (UL94 HB)	
Material of sheath (Sheath color)		PUR (Purple (RAL 4001 equivalent))		PVC (Light blue)		—			
Weight			Approx. 308 g	Approx. 306 g	1 m: Approx. 100 g 5 m: Approx. 355 g	Approx. 47 g	Approx. 53 g	Approx. 12 g	

*1 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.
*2 Can also be used for CANopen communication

Communication Cable/Connector

Specifications

Description			Communication cable (With straight connector on both sides)	Communication cable (With angle connector on both sides)
Part no. (Cable length)			EX9-AC005DN-SSPS (0.5 m) EX9-AC010DN-SSPS (1 m) EX9-AC020DN-SSPS (2 m) EX9-AC030DN-SSPS (3 m) EX9-AC050DN-SSPS (5 m) EX9-AC100DN-SSPS (10 m)	EX9-AC005DN-SAPA (0.5 m) EX9-AC010DN-SAPA (1 m) EX9-AC020DN-SAPA (2 m) EX9-AC030DN-SAPA (3 m) EX9-AC050DN-SAPA (5 m) EX9-AC100DN-SAPA (10 m)
Product image			SPEEDCON 	SPEEDCON 
Number of functional poles			M12: 5 pins	
Key type			A-coded (Normal key)	
Pin assignment			54312 Plug, A-coded (Viewed from the plug/socket side) 53421 Socket, A-coded DeviceNet™ / CANopen 1: DRAIN1: — 2: V+ (Red)2: — 3: V- (Black)3: CAN GND 4: CAN H (White)4: CAN H 5: CAN L (Blue)5: CAN L	
Wiring	Fixed cable length		0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m	
	Cable O.D.		6.7 mm	
	Conductor nominal cross section	Power pair	0.33 mm ² /AWG22	
		Data pair	0.2 mm ² /AWG24	
Wire O.D. (Including insulating material)	Power pair	1.4 mm		
	Data pair	2.05 mm		
Rating/Performance	Rated current		4 A	
	Rated voltage		48 VAC/60 VDC	
	Contact resistance		10 mΩ or less	
	Insulation resistance		100 MΩ or more	
	Withstand voltage		1.0 kV	
	Ambient temperature		-20 to +80°C	
	Min. bending radius (Fixed)		67 mm	
	Protection class		IP67 (Only with screw tightened)	
Allowable repeated insertion/withdrawal			100	
Material	Material of knurl		Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)		CuSn (Au plating (Ni underplating))	
	Connector material		TPU (UL94 HB)	
	Material of sheath (Sheath color)		PUR (Purple (RAL 4001 equivalent))	
Weight			0.5 m: Approx. 75 g 1 m: Approx. 105 g 2 m: Approx. 165 g 3 m: Approx. 225 g 5 m: Approx. 345 g 10 m: Approx. 645 g	0.5 m: Approx. 75 g 1 m: Approx. 105 g 2 m: Approx. 165 g 3 m: Approx. 225 g 5 m: Approx. 345 g 10 m: Approx. 645 g

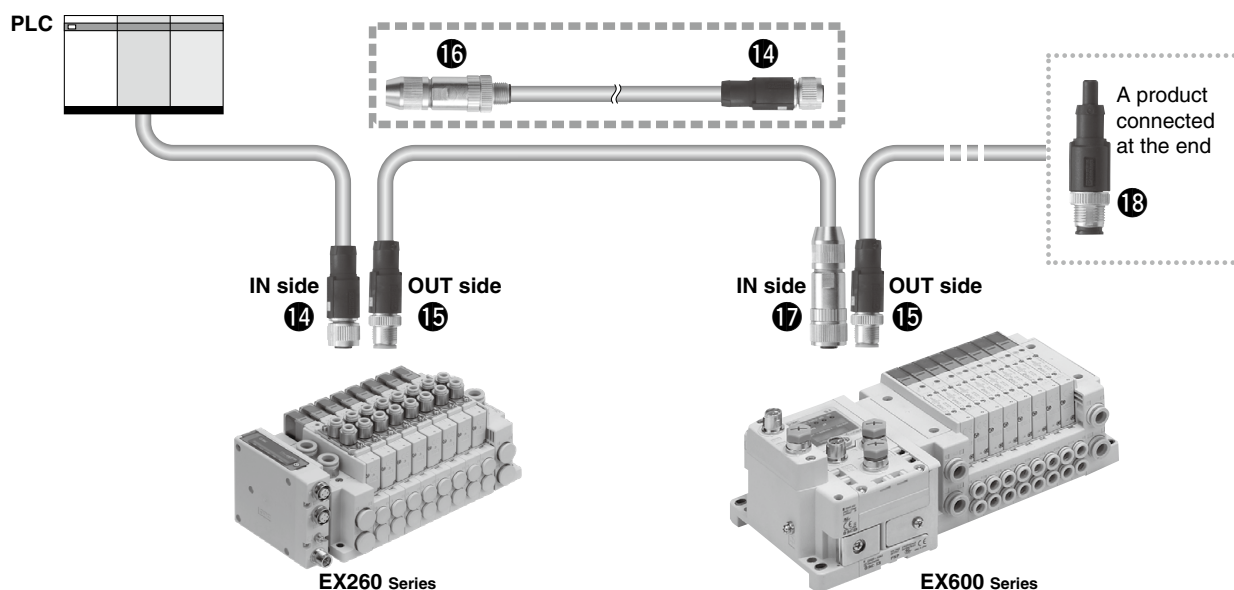
Communication Cable/Connector



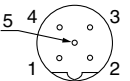
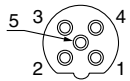
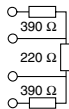
M12



Example of Connection



Specifications

Description		Communication cable (With connector on one side)		Field-wireable connector		Terminal resistor	
Part no.		PCA-1557688	PCA-1557691	PCA-1557701	PCA-1557714	PCA-1557727	
Product image		14 SPEEDCON  Socket	15 SPEEDCON  Plug	16  Plug	17  Socket	18  For PROFIBUS DP (Plug, B-coded)	
Number of functional poles		M12: 2 pins		M12: 3 pins		M12: 4 pins	
Key type		B-coded (Reverse key)					
Pin assignment		5 4 3 1 2  Plug, B-coded (Viewed from the plug/socket side) 5 3 4 2 1  Plug, B-coded (Viewed from the plug/socket side) 1: — 2: A Line (Green) 3: — 4: B Line (Red) 5: —				1: VP 4: B Line 2: A Line 3: DGND 	
Wiring	Fixed cable length	5 m		—			
	Cable O.D.	7.8 mm		Applicable cable*1	4.0 to 8.0 mm	—	
	Conductor nominal cross section	0.34 mm ² /AWG22			0.14 to 0.5 mm ² /AWG26 to 20	—	
	Wire O.D. (Including insulating material)	2.55 mm		—			
	Connection type	—		Spring-cage connection			
Rating/Performance	Rated current	4 A		—			
	Rated voltage	60 V		48 V		60 V	
	Contact resistance	5 mΩ or less					
	Insulation resistance	100 MΩ or more					
	Withstand voltage	1.4 kV					
	Ambient temperature	Connector	−25 to +90°C		−40 to +85°C		−25 to +90°C
		Cable	−40 to +85°C		—		
	Min. bending radius (Fixed)		78 mm		—		
	Protection class		IP67 (Only with screw tightened)				
	Allowable repeated insertion/withdrawal		200				
Material	Material of knurl	Zinc die-cast (Nickel plating)		Brass (Nickel plating)		Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)	CuSn (Au plating (Ni underplating))					
	Connector material	TPU/PA66 (UL94 HB)		PA66 (UL94 V0)		TPU/PA66 (UL94 HB)	
	Material of sheath (Sheath color)	PUR (Purple (RAL 4001 equivalent))		—			
Weight		Approx. 343 g	Approx. 356 g	Approx. 48 g	Approx. 54 g	Approx. 12 g	

*1 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Communication Cable

For EtherNet/IP™

For PROFINET

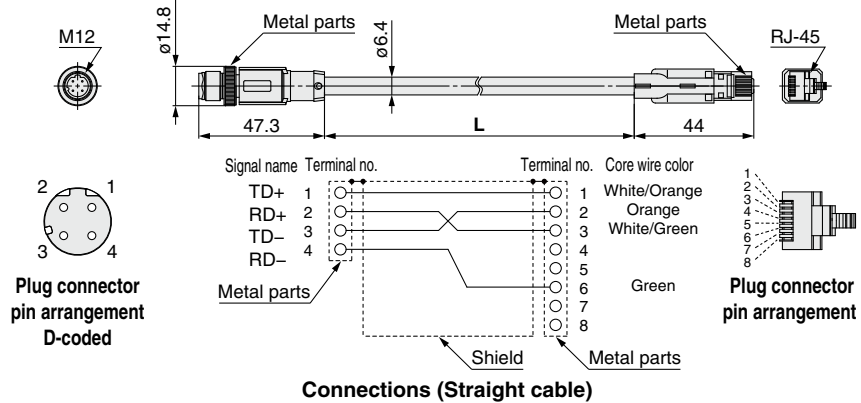
For EtherCAT

For Ethernet POWERLINK

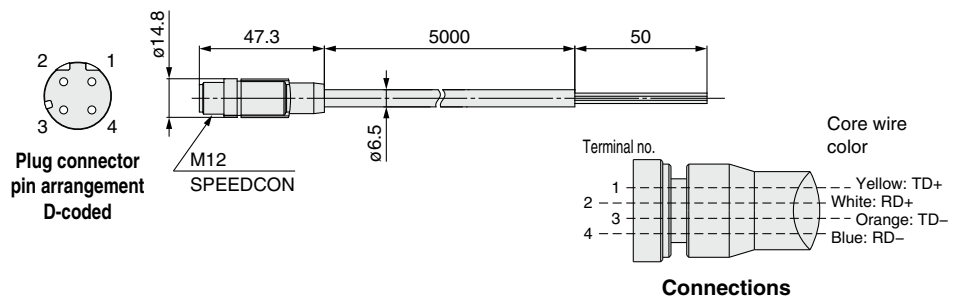
① EX9-AC 020 EN-PSRJ (Plug/RJ-45 connector)

• Cable length (L)

010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



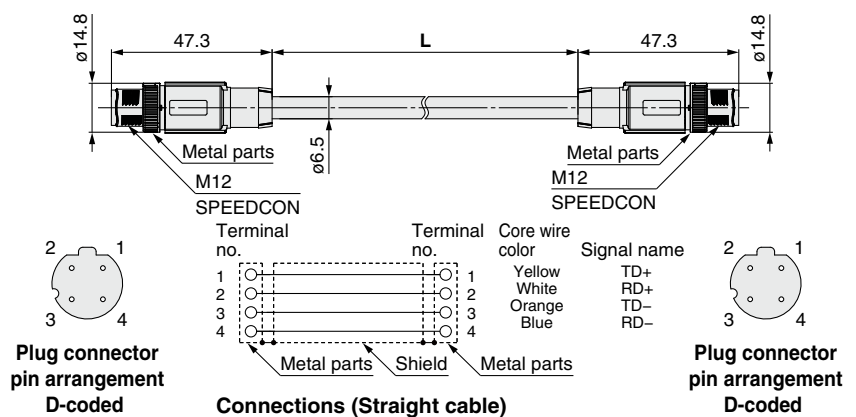
② PCA-1446566 (Plug)



EX9-AC 005 EN-PSPS (With connector on both sides (Plug/Plug))

• Cable length (L)

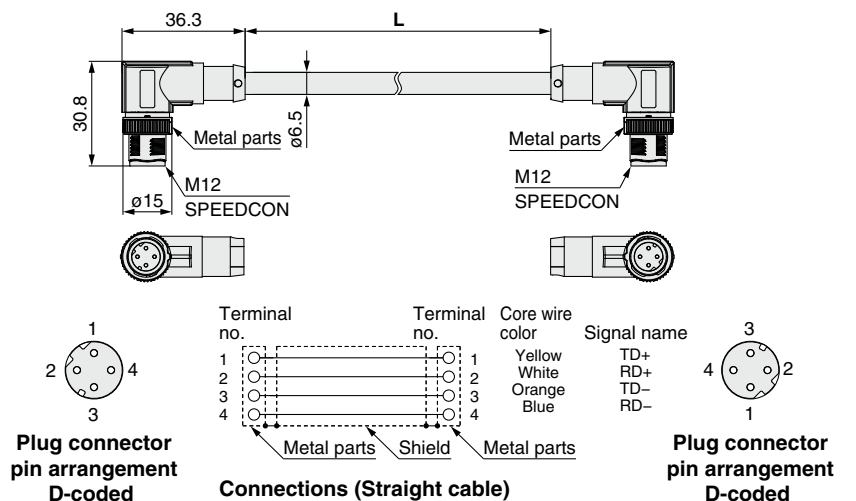
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



EX9-AC 005 EN-PAPA (With angle connector on both sides (Plug/Plug))

• Cable length (L)

005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



Type 1	EX260
Type 2	EX123/124/126
Type 3	EX500
Type 1	EX600
Type 2	EX245
Type 3	EX250
Type 1	EX120/121/122
Type 2	EX140
Type 3	EX180
Type 1	EX510
Type 2	M8/M12
Type 3	ATEX

Communication Cable/Connector

Communication Cable

For CC-Link

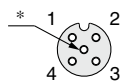
④ PCA-1567720 (Socket)



Made to Order

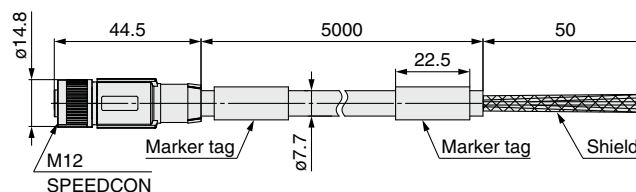
Change in the cable length

p. 245



Socket connector
pin arrangement
A-coded (Normal key)

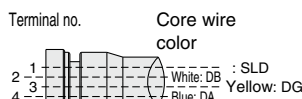
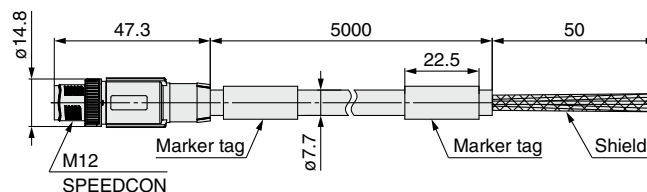
* Number of holes: 5,
Total number of pins: 4



⑤ PCA-1567717 (Plug)



Plug connector
pin arrangement
A-coded (Normal key)

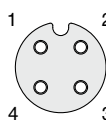
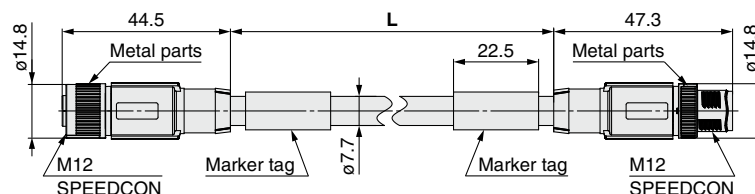


Connections

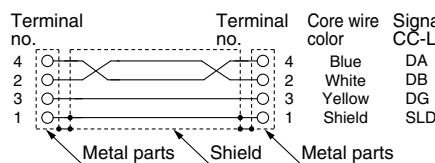
EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))

• Cable length (L)

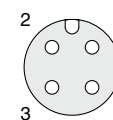
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



Socket connector
pin arrangement
A-coded (Normal key)



Connections

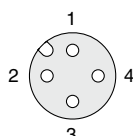
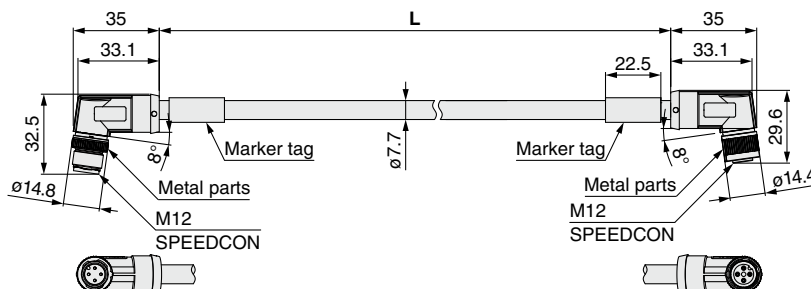


Plug connector
pin arrangement
A-coded (Normal key)

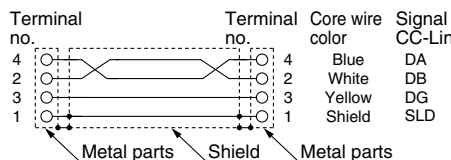
EX9-AC 005 MJ-SAPA (With angle connector on both sides (Socket/Plug))

• Cable length (L)

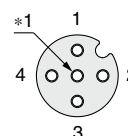
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



Plug connector
pin arrangement
A-coded (Normal key)



Connections



Socket connector
pin arrangement
A-coded (Normal key)

*1 Number of holes: 5, Total number of pins: 4

Communication Cable/Connector

Communication Cable

For DeviceNet™

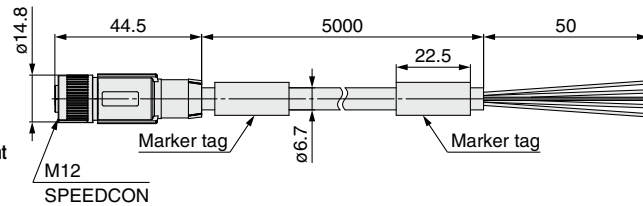
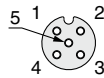
8 PCA-1557633 (Socket)



Made to Order

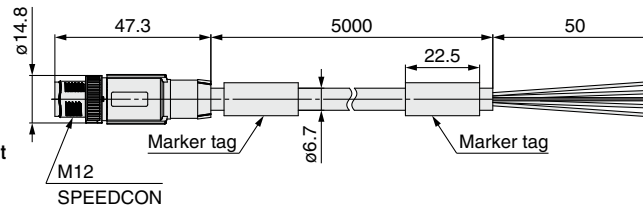
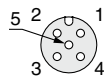
Change in the cable length

Socket connector pin assignment
A-coded (Normal key)



9 PCA-1557646 (Plug)

Plug connector pin assignment
A-coded (Normal key)

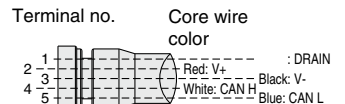
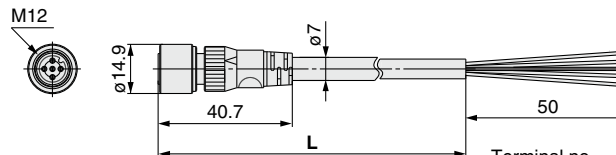
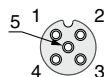


10 EX500-AC 050 - DN

Cable length (L)

010	1000 mm
050	5000 mm

Socket connector
pin assignment

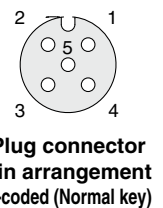
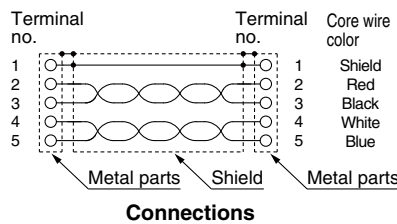
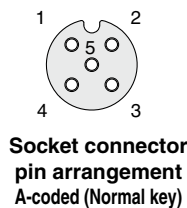
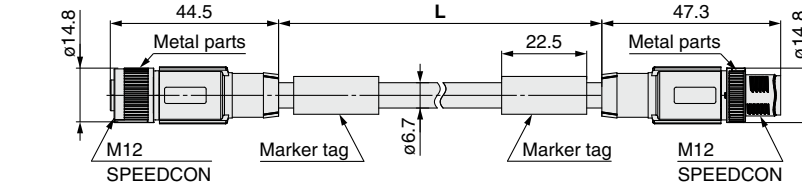


Connections

EX9-AC 005 DN-SSPS (With connector on both sides (Socket/Plug))

Cable length (L)

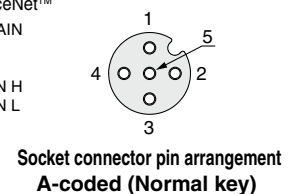
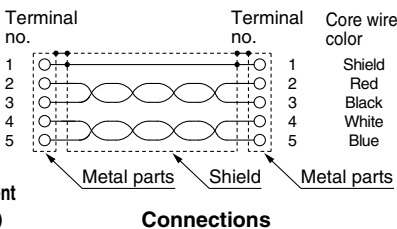
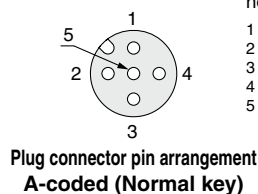
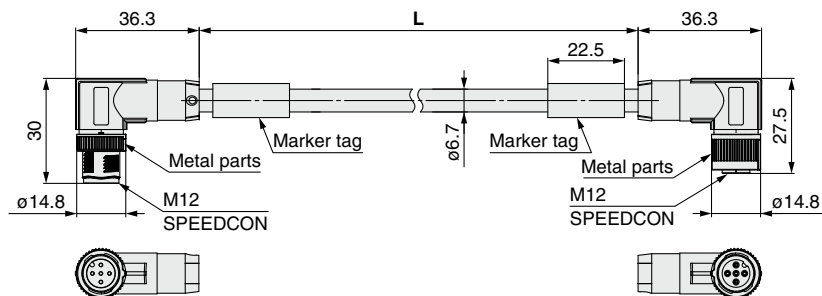
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



EX9-AC 005 DN-SAPA (With angle connector on both sides (Socket/Plug))

Cable length (L)

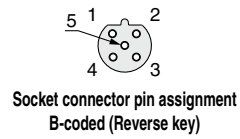
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



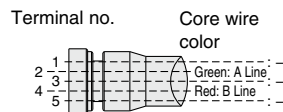
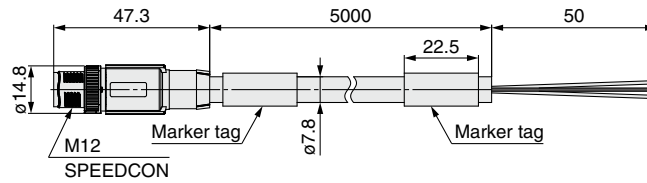
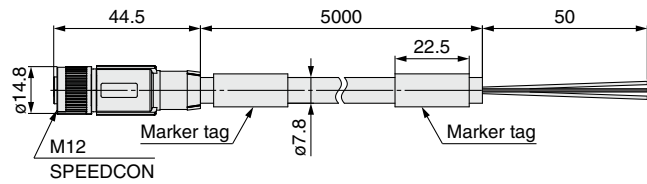
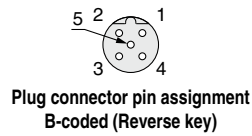
Communication Cable

For PROFIBUS DP

14 PCA-1557688
(Socket)



15 PCA-1557691
(Plug)



Shield line is connected to the knurl.

Connections

Type 1	EX260
Type 2	EX123/124/126
Type 3	EX500
Type 1	EX600
Type 2	EX245
Type 3	EX250
Type 1	EX120/121/122
Type 2	EX140
Type 3	EX180
Type 1	EX510
Type 2	M8/M12
Type 3	ATEX

Field-wireable Communication Connector

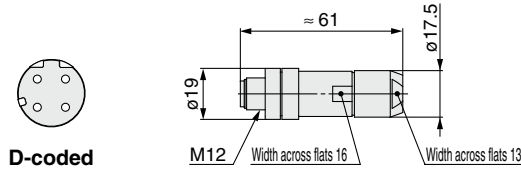
Plug

For EtherNet/IP™

For PROFINET

For EtherCAT

③ PCA-1446553



Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm ² /AWG26 to 22

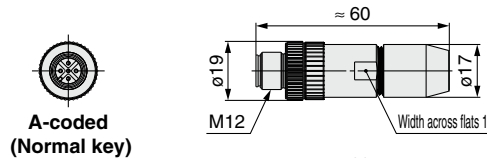
* The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

For CC-Link

For DeviceNet™

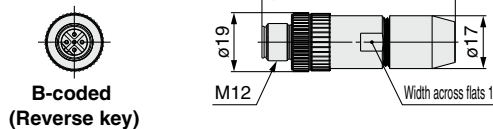
⑥ PCA-1557617

⑪ PCA-1557659



For PROFIBUS DP

⑬ PCA-1557701



Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm ² AWG26 to 20

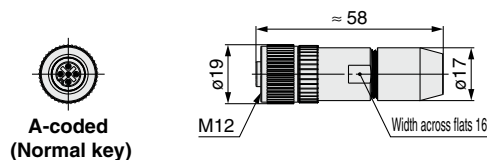
Socket

For CC-Link

For DeviceNet™

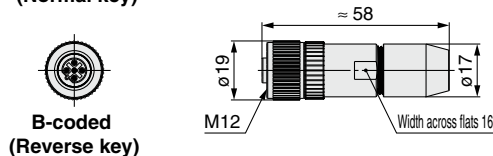
⑦ PCA-1557620

⑫ PCA-1557662



For PROFIBUS DP

⑰ PCA-1557714



Applicable Cable

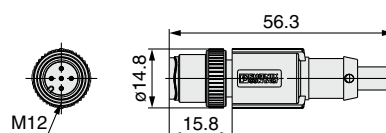
Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm ² AWG26 to 20

Terminating Resistor

For DeviceNet™

⑮ PCA-1557675

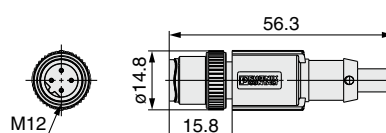
Terminating resistor for DeviceNet™



For PROFIBUS DP

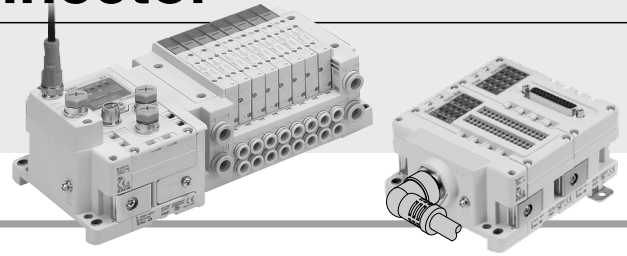
⑱ PCA-1557727

Terminating resistor for PROFIBUS DP



Power Supply Cable/Connector

EX600 Series



Specifications

Description		Power supply cable (With connector on one side)				Field-wireable connector		
Part no. (Cable length)		⑰ PCA-1564927 (2 m) PCA-1564930 (6 m)	⑳ PCA-1564943 (2 m) PCA-1564969 (6 m)	㉑ PCA-1558810 (2 m) PCA-1558823 (6 m)	㉒ PCA-1558836 (2 m) PCA-1558849 (6 m)	㉓ PCA-1578081		
Protocol		EtherNet/IP™, PROFINET, EtherCAT, PROFIBUS DP, DeviceNet™, CC-Link						
Number of functional poles		M12: 5 pins			7/8 inch: 5 pins			
Key type		B-coded			—			
Wiring	Cable O.D.	5.9 mm			12.58 mm		Applicable cable*1	12.0 to 14.0 mm
	Conductor nominal cross section	AWG22			AWG16			0.34 to 1.5 mm²/AWG22 to 16
	Wire O.D. (Including insulating material)	1.27 mm			2.35 mm		—	
	Connection type	—					Screw tightening	
Rating/Performance	Rated current		4 A			8 A		9 A
	Rated voltage		60 V			600 V		250 V
	Contact resistance		5 mΩ or less					
	Insulation resistance		100 MΩ or more					
	Withstand voltage		1.0 kV			1.4 kV		4 kV
	Ambient temperature	Connector	−25 to +90°C			−25 to +80°C		−25 to +85°C
		Cable	−25 to +80°C			−10 to +105°C		—
	Min. bending radius (Fixed)		59 mm			110 mm		—
	Protection class		IP67 (Only with screw tightened)					
	Allowable repeated insertion/withdrawal		200			100		50
Material	Material of knurl		Zinc die-cast (Nickel plating)			Brass (Nickel plating)		Zinc die-cast (Nickel plating)
	Contact (Surface treatment)		CuSn (Au plating (Ni underplating))				CuZn (Au plating (Ni underplating))	
	Connector material		TPU (UL94 HB)			PUR (UL94 HB)		PUR/PA66/PBT (UL94 HB)
	Material of sheath (Sheath color)		PUR (Black–Gray (RAL 7021 equivalent))			PVC (Yellow (RAL 1021 equivalent))		—
Weight		2 m: Approx. 113 g 6 m: Approx. 425 g	2 m: Approx. 130 g 6 m: Approx. 475 g	2 m: Approx. 446 g 6 m: Approx. 1270 g	2 m: Approx. 455 g 6 m: Approx. 1300 g	Approx. 47.6 g		

*1 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Power Supply Cable/Connector

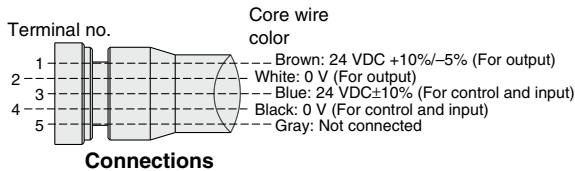
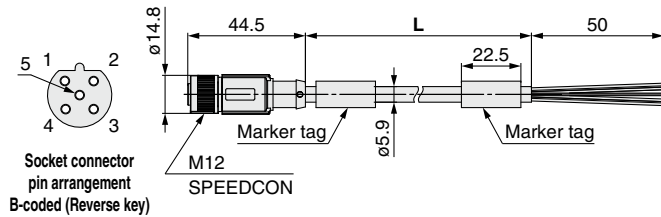
19 20 PCA-1564927

• Socket specification, Cable length (L)

1564927	Straight 2 m
1564930	Straight 6 m
1564943	Angle 2 m
1564969	Angle 6 m

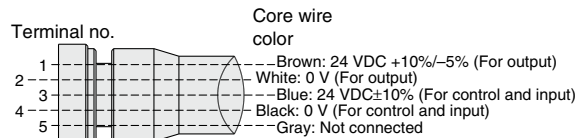
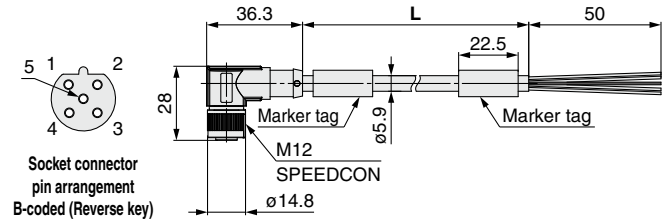
Item	Specifications
Cable O.D.	ø5.9 mm
Conductor nominal cross section	0.34 mm ² /AWG22
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	59 mm

Straight connector type



Connections

Angle connector type



Connections

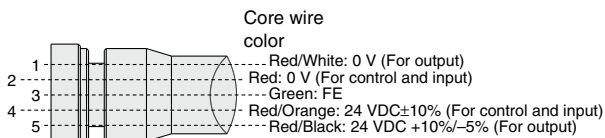
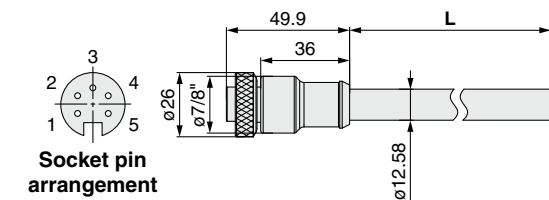
21 22 PCA-1558810

• Socket specification, Cable length (L)

1558810	Straight 2 m
1558823	Straight 6 m
1558836	Angle 2 m
1558849	Angle 6 m

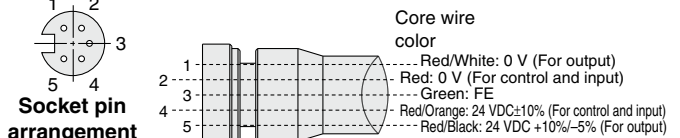
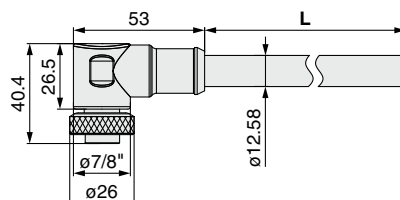
Item	Specifications
Cable O.D.	ø12.58 mm
Conductor nominal cross section	1.5 mm ² /AWG16
Wire O.D. (Including insulator)	2.35 mm
Min. bending radius (Fixed)	110 mm

Straight connector type



Connections

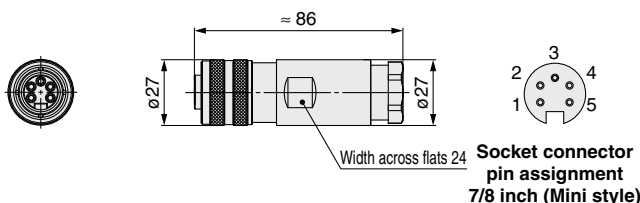
Angle connector type



Connections

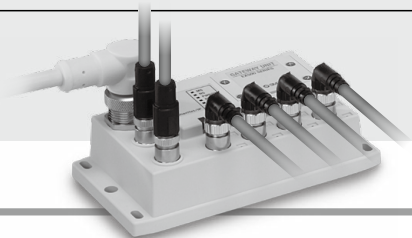
Socket

23 PCA-1578081



Power Supply Cable/Connector

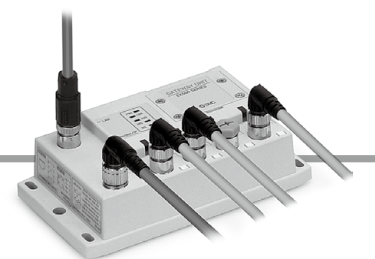
EX500 Series



Specifications/Gateway Decentralized System 2 (128 Points)

Description		Power supply cable (With connector on one side)				
Part no. (Cable length)		②④ PCA-1415999 (2 m) PCA-1415996 (6 m)	②⑤ PCA-1416000 (2 m) PCA-1415997 (6 m)	②① PCA-1558810 (2 m) PCA-1558823 (6 m)	②② PCA-1558836 (2 m) PCA-1558849 (6 m)	
Protocol		EtherNet/IP™		PROFINET		
Number of functional poles		7/8 inch: 4 pins		7/8 inch: 5 pins		
Key type		—				
Wiring	Cable O.D.		10.7 mm		12.58 mm	
	Conductor nominal cross section		1.5 mm²/AWG16		1.5 mm²/AWG16	
	Wire O.D. (Including insulating material)		2.35 mm		2.35 mm	
Rating/Performance	Rated current		10 A		8 A	
	Rated voltage		600 V		600 V	
	Contact resistance		5 mΩ or less			
	Insulation resistance		100 MΩ or more			
	Withstand voltage		1.4 kV			
	Ambient temperature	Connector	-25 to 80°C			
		Cable	-30 to +105°C		-10 to +105°C	
	Min. bending radius (Fixed)		94 mm		110 mm	
	Protection class		IP67 (Only with screw tightened)			
	Allowable repeated insertion/withdrawal		100			
Material	Material of knurl		Brass (Nickel plating)		Brass (Nickel plating)	
	Contact (Surface treatment)		CuSn (Au plating)			
	Connector material		PUR (UL94 HB)			
	Material of sheath (Sheath color)		PVC (Yellow (RAL 1021 equivalent))			
Weight		2 m: Approx. 385 g 6 m: Approx. 1065 g	2 m: Approx. 395 g 6 m: Approx. 1075 g	2 m: Approx. 446 g 6 m: Approx. 475 g	2 m: Approx. 455 g 6 m: Approx. 1300 g	

Specifications/Gateway Decentralized System (64 Points)



Description		Power supply cable (With connector on one side)	
Part no. (Cable length)		②⑥ EX500-AP010-S (1 m) EX500-AP050-S (5 m)	②⑦ EX500-AP010-A (1 m) EX500-AP050-A (5 m)
Protocol		PROFIBUS DP, DeviceNet™	
Number of functional poles		M12: 5 pins	
Key type		A-coded	
Wiring	Cable O.D.	6 mm	
	Conductor nominal cross section	0.3 mm²/AWG22	
	Wire O.D. (Including insulating material)	1.5 mm	
Rating/Performance	Rated current	3 A	
	Rated voltage	125 V	
	Contact resistance	40 mΩ or less	
	Insulation resistance	1000 MΩ or more	
	Withstand voltage	1.5 kV	
	Ambient temperature	-25 to +60°C	
	Connector	—	
	Cable	-25 to +60°C	
	Min. bending radius (Fixed)	40 mm	
	Protection class	IP67 (Only with screw tightened)	
Material	Allowable repeated insertion/withdrawal	200	
	Material of knurl	Brass (Nickel plating)	
	Contact (Surface treatment)	Phosphor bronze (Au plating)	
	Connector material	Soft PBT (UL94 V0)	
	Material of sheath (Sheath color)	PVC (Light gray)	
Weight		1 m: Approx. 80 g 5 m: Approx. 395 g	1 m: Approx. 85 g 5 m: Approx. 400 g

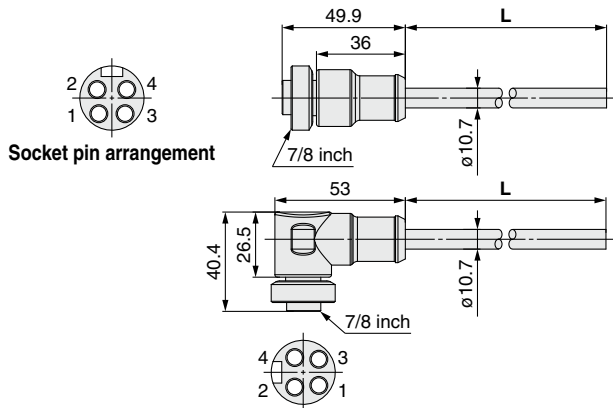
Power Supply Cable/Gateway Decentralized System 2 (128 Points)

For EtherNet/IP™

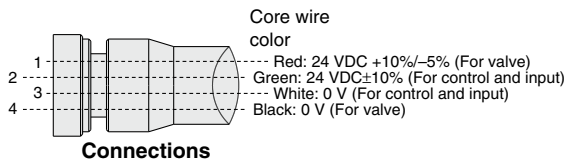
②⑤ PCA- 1416000

• Connector specification, Cable length (L)

1415999	Straight 2 m
1415996	Straight 6 m
1416000	Angle 2 m
1415997	Angle 6 m



Socket pin arrangement



Connections

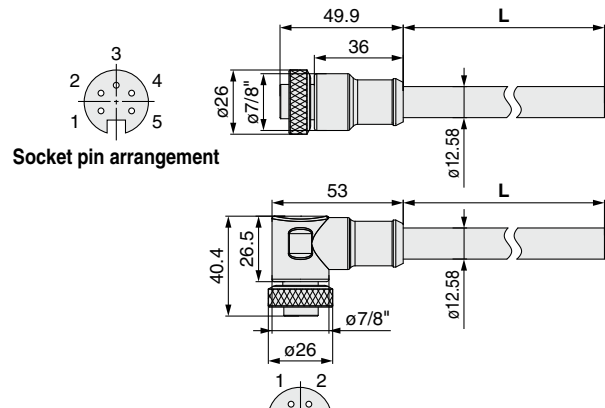
Item	Specifications
Cable O.D.	10.7 mm
Conductor nominal cross section	1.5 mm²/AWG16
Min. bending radius (Fixed)	94 mm

For PROFINET

②② PCA- 1558810

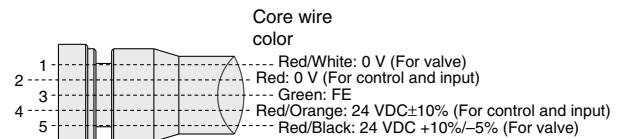
• Connector specification, Cable length (L)

1558810	Straight 2 m
1558823	Straight 6 m
1558836	Angle 2 m
1558849	Angle 6 m



Socket pin arrangement

Socket pin arrangement



Connections

Item	Specifications
Cable O.D.	12.58 mm
Conductor nominal cross section	1.5 mm²/AWG16
Wire O.D. (Including insulator)	2.35 mm
Min. bending radius (Fixed)	110 mm

Power Supply Cable/Gateway Decentralized System (64 Points)

For PROFIBUS DP

For DeviceNet™

②⑦ EX500-AP 050 - S

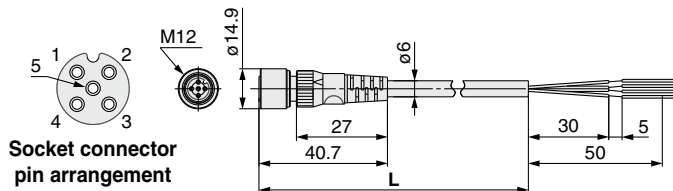
Cable length (L)

010	1000 mm
050	5000 mm

• Connector specification

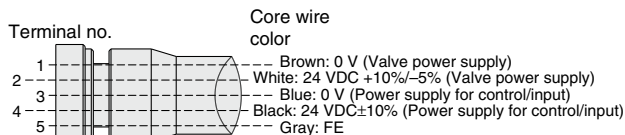
S	Straight
A	Angle

Straight connector type



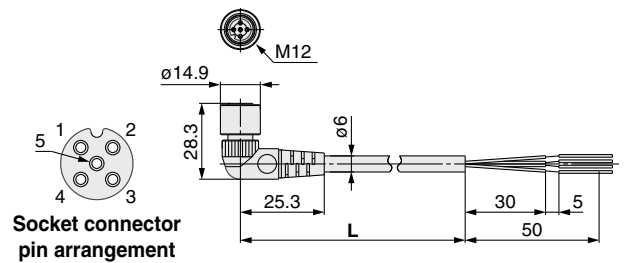
Socket connector pin arrangement A-coded (Normal key)

Item	Specifications
Cable O.D.	6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm



Connections (PROFIBUS DP, DeviceNet™)

Angle connector type



Socket connector pin arrangement A-coded (Normal key)

Item	Specifications
Cable O.D.	6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

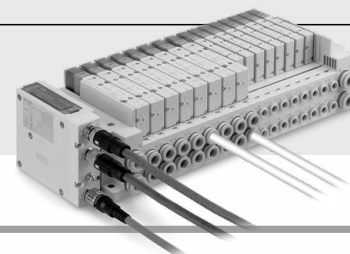


Made to Order

Cable length	10000 mm	p. 247
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Power Supply Cable/Connector

EX260 Series



Specifications

Description		Power supply cable (With connector on one side)				
Part no. (Cable length)	26 EX500-AP010-S (1 m) EX500-AP050-S (5 m)	27 EX500-AP010-A (1 m) EX500-AP050-A (5 m)	28 PCA-1401804 (1.5 m) PCA-1401805 (3 m) PCA-1401806 (5 m)	29 EX9-AC010-1 (1 m) EX9-AC030-1 (3 m) EX9-AC050-1 (5 m)	30 PCA-1401807 (1.5 m) PCA-1401808 (3 m) PCA-1401809 (5 m)	
Protocol	PROFIBUS DP, DeviceNet™, EtherCAT, PROFINET, EtherNet/IP™			CC-Link		
Number of functional poles	M12: 5 pins					
Key type	A-coded			B-coded		
Wiring	Cable O.D.	6 mm	5 mm	6.6 mm	5 mm	
	Conductor nominal cross section	0.3 mm²/AWG22	AWG22	0.3 mm²/AWG22	AWG22	
	Wire O.D. (Including insulating material)	1.5 mm	1.27 mm	1.65 mm	1.27 mm	
Rating/Performance	Rated current	3 A	4 A	3.1 A	4 A	
	Rated voltage	125 V	60 V	125 V	60 V	
	Contact resistance	40 mΩ or less	5 mΩ or less	40 mΩ or less	5 mΩ or less	
	Insulation resistance	1000 MΩ or more	100 MΩ or more	1000 MΩ or more	100 MΩ or more	
	Withstand voltage	1.5 kV	1.0 kV	1.5 kV	1.0 kV	
	Ambient temperature	Connector	-25 to +60°C	-40 to +80°C	-25 to +60°C	-40 to +80°C
		Cable	-25 to +60°C	-40 to +80°C	-25 to +60°C	-40 to +80°C
	Min. bending radius (Fixed)	40 mm	21.7 mm	40 mm	21.7 mm	
	Protection class	IP67 (Only with screw tightened)				
	Allowable repeated insertion/withdrawal	200				
Material	Material of knurl	Brass (Nickel plating)	Zinc die-cast (Nickel plating)	Brass (Nickel plating)	Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)	Phosphor bronze (Au plating)	CuSn (Au plating)	Phosphor bronze (Au plating)	CuSn (Au plating)	
	Connector material	Soft PBT (UL94 V0)	TPU (UL94 HB)	Soft PBT (UL94 V0)	TPU (UL94 HB)	
	Material of sheath (Sheath color)	PVC (Light gray)	PUR (Black-Gray (RAL 7021 equiv.))	PVC (Light gray)	PUR (Black-Gray (RAL 7021 equiv.))	
Weight	1 m: Approx. 80 g 5 m: Approx. 395 g	1 m: Approx. 85 g 5 m: Approx. 400 g	1.5 m: Approx. 65 g 3 m: Approx. 130 g 5 m: Approx. 195 g	1 m: Approx. 85 g 3 m: Approx. 215 g 5 m: Approx. 345 g	1.5 m: Approx. 65 g 3 m: Approx. 130 g 5 m: Approx. 195 g	

Power Supply Cable

For PROFIBUS DP For DeviceNet™ For EtherCAT For PROFINET For EtherNet/IP™

26 27 EX500-AP 050 - S

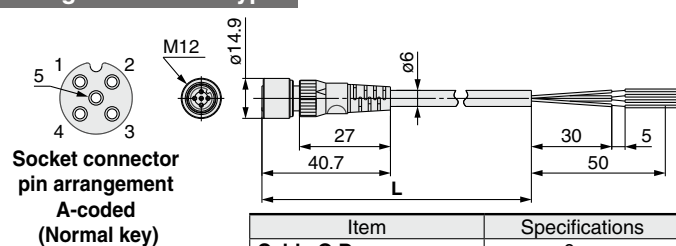
Cable length (L)

010	1000 mm
050	5000 mm

Connector specification

S	Straight
A	Angle

Straight connector type



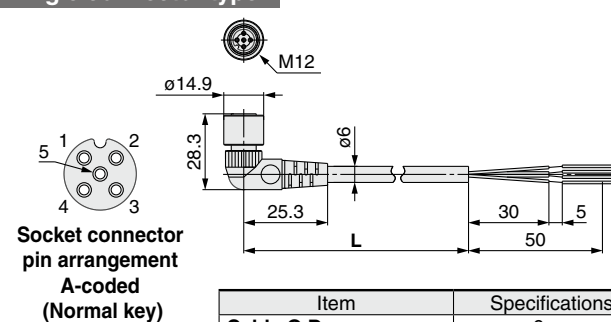
Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Terminal no.

1	Brown: 24 VDC +10%/-5% (Valve power supply)
2	White: 0 V (Valve power supply)
3	Blue: 24 VDC±10% (Power supply for control)
4	Black: 0 V (Power supply for control)
5	Gray: Not connected

Connections (PROFIBUS DP/EtherCAT/PROFINET)

Angle connector type



Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Terminal no.

1	Brown: Not connected*1, 24 VDC±10% (Power supply for control)*2
2	White: 24 VDC +10%/-5% (Valve power supply)
3	Blue: Not connected*1, 0 V (Power supply for control)*2
4	Black: 0 V (Valve power supply)
5	Gray: Not connected

Connections (DeviceNet™, EtherNet/IP™) *1 For DeviceNet™ *2 For EtherNet/IP™



Made to Order

Cable length	10000 mm	p. 247
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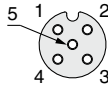
Power Supply Cable

For PROFIBUS DP For DeviceNet™ For EtherCAT For PROFINET For EtherNet/IP™

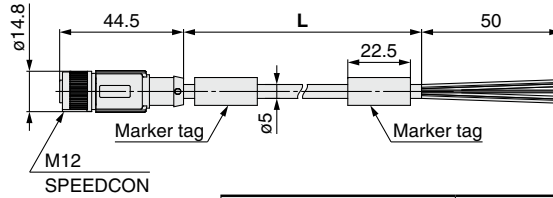
23 PCA-1401804

Cable length (L)

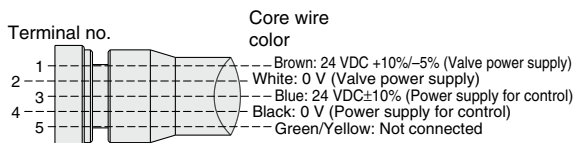
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



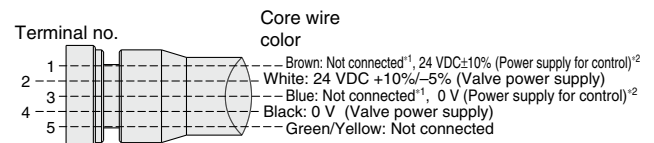
Socket connector
pin arrangement
A-coded
(Normal key)



Item	Specifications
Cable O.D.	14.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	21.7 mm



Connections (PROFIBUS DP/EtherCAT/PROFINET)



Connections (DeviceNet™, EtherNet/IP™) *1 For DeviceNet™ *2 For EtherNet/IP™

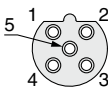
For CC-Link

Straight connector type

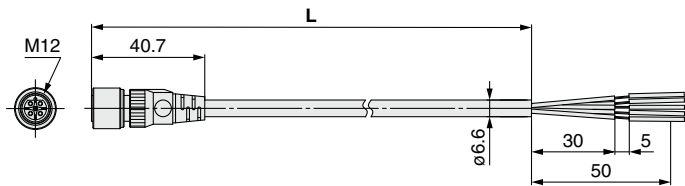
29 EX9-AC 050 - 1

Cable length (L)

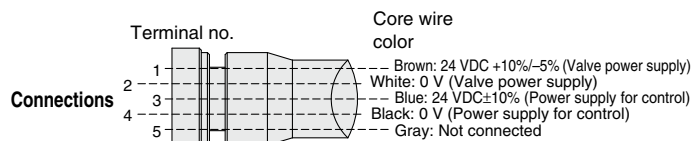
010	1000 mm
030	3000 mm
050	5000 mm



Socket connector
pin arrangement
B-coded
(Reverse key)



Item	Specifications
Cable O.D.	6.6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm



Connections



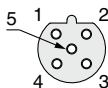
Made to Order

Cable length	10000 mm	p. 247
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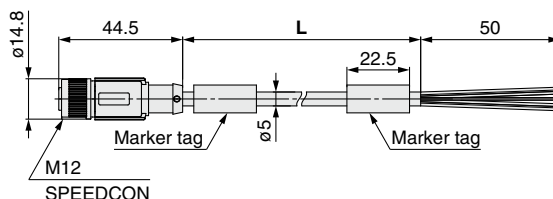
30 PCA-1401807

Cable length (L)

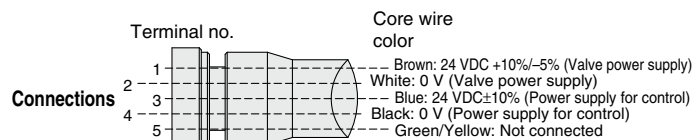
1401807	1500 mm
1401808	3000 mm
1401809	5000 mm



Socket connector
pin arrangement
B-coded
(Reverse key)



Item	Specifications
Cable O.D.	14.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	21.7 mm

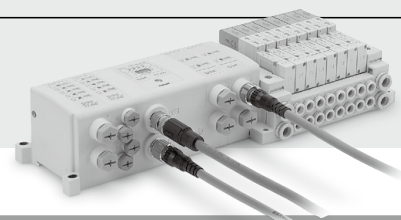


Connections



Power Supply Cable

EX250 Series



Specifications

Description		Power supply cable (With connector on one side)	
Part no. (Cable length)		EX9-AC010-1 (1 m) 29 EX9-AC030-1 (3 m) EX9-AC050-1 (5 m)	26 EX500-AP010-S (1 m) EX500-AP050-S (5 m)
Protocol		CC-Link, DeviceNet™, CANopen	PROFIBUS DP, EtherNet/IP™
Number of functional poles		M12: 5 pins	M12: 5 pins
Key type		B-coded	A-coded
Wiring	Cable O.D.	6.6 mm	6 mm
	Conductor nominal cross section	0.3 mm²/AWG22	0.3 mm²/AWG22
	Wire O.D. (Including insulating material)	1.65 mm	1.5 mm
Rating/Performance	Rated current		3.1 A
	Rated voltage		125 V
	Contact resistance		40 mΩ or less
	Insulation resistance		1000 MΩ or more
	Withstand voltage		1.5 kV
	Ambient temperature	Connector	-25 to +60°C
		Cable	-25 to +60°C
	Min. bending radius (Fixed)		40 mm
	Protection class		IP67 (Only with screw tightened)
	Allowable repeated insertion/withdrawal		200
Material	Material of knurl		Brass (Nickel plating)
	Contact (Surface treatment)		Phosphor bronze (Au plating)
	Connector material		Soft PBT (UL94 V0)
	Material of sheath (Sheath color)		PVC (Light gray)
Weight		1 m: Approx. 85 g 3 m: Approx. 215 g 5 m: Approx. 345 g	1 m: Approx. 80 g 5 m: Approx. 395 g

Power Supply Cable

For CC-Link

For DeviceNet™

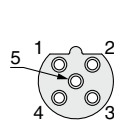
For CANopen

Straight connector type

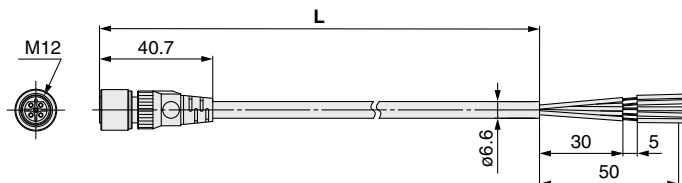
29 EX9-AC 050 - 1

• Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm



Socket connector
pin arrangement
B-coded
(Reverse key)



Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm



Made to Order

Cable length	10000 mm	p. 247
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Terminal no.	Core wire color
1	Brown: 24 VDC +10%/−5% (Valve power supply)
2	White: 0 V (Valve power supply)
3	Blue: 24 VDC±10% (Power supply for control/input) (Power supply for input)*1
4	Black: 0 V (Power supply for control/input) (Power supply for input)*1
5	Gray: Ground

Connections

*1 For DeviceNet™ and CANopen

For PROFIBUS DP

For EtherNet/IP™

Straight connector type

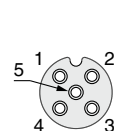
26 EX500-AP 050 - S

• Cable length (L)

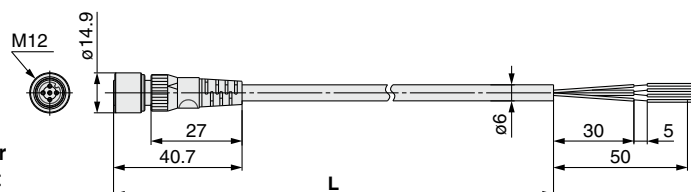
010	1000 mm
050	5000 mm

• Connector specification

S	Straight
---	----------



Socket connector
pin arrangement
A-coded
(Normal key)



Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm



Made to Order

Cable length	10000 mm	p. 247
--------------	----------	--------

Terminal no.	Core wire color
1	Brown: 24 VDC +10%/−5% (Valve power supply)
2	White: 0 V (Valve power supply)
3	Blue: 24 VDC±10% (Power supply for control)
4	Black: 0 V (Power supply for control)
5	Gray: Ground*1, Not connected*2

Connections (PROFIBUS DP, EtherNet/IP™)

*1 For PROFIBUS DP
*2 For EtherNet/IP™

Accessory Between the Sensor/Switch and the Input Device

Field-wireable Connector

Specifications

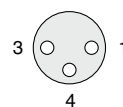
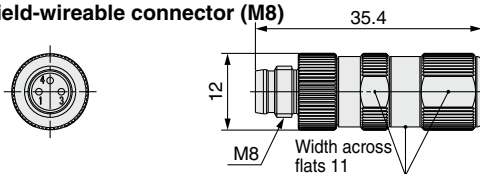
Part no.		PCA-1557730	PCA-1557743	PCA-1557756	
Product image/Pin assignment		31 M8 	32 M12 SPEEDCON 	33 M12 SPEEDCON 	
Number of functional poles		M8: 3 poles	M12: 4 poles		
Key type		—	A-coded (Normal key)		
Wiring *1	Applicable cable	Cable O.D.	3.0 to 5.0 mm	3.5 to 6.0 mm	4.0 to 8.0 mm
		Wire gauge (Stranded wire cross section)	0.14 to 0.25 mm ² /AWG26 to 24 0.25 to 0.34 mm ² /AWG24 to 22	0.14 to 0.34 mm ² /AWG26 to 22	0.34 to 0.75 mm ² /AWG22 to 18
		Core wire diameter (Including insulating material)	1.0 to 1.6 mm	0.7 to 1.3 mm	1.3 to 2.5 mm
Connection type		Piercecon® connection	QUICKON-ONE connection		
Rating/Performance	Rated current		4 A		
	Rated voltage		60 V	250 V	
	Contact resistance		5 mΩ or less		
	Insulation resistance		100 MΩ or more		
	Withstand voltage		1.0 kV	1.4 kV	
	Ambient temperature		−40 to +85°C	−25 to +80°C	
	Protection class		IP67 (Only with screw tightened)		
Allowable repeated insertion/withdrawal		100	200		
Allowable number of repeated connection between conductors of the same cross section		10			
Material	Material of knurl		Brass (Nickel plating)	Zinc die-cast (Nickel plating)	
	Contact (Surface treatment)		CuZn (Au plating (Ni underplating))		
	Connector material		PA66 (UL94 V0)		
Weight		Approx. 14 g	Approx. 13 g	Approx. 15 g	

*1 The shaded sections show the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

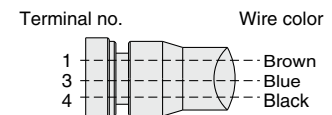
Field-wireable

31 PCA-1557730

Field-wireable connector (M8)



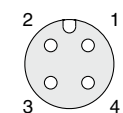
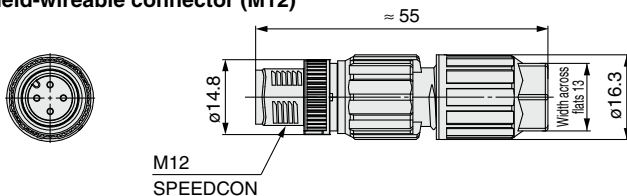
Plug connector
pin assignment



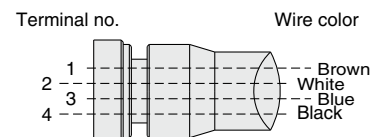
Wiring

32 PCA-1557743

Field-wireable connector (M12)



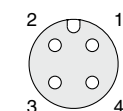
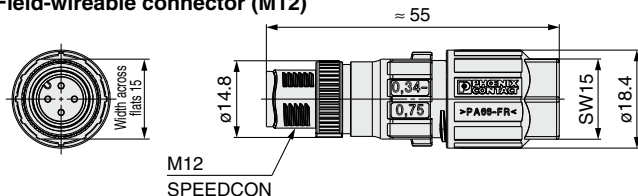
Plug connector
pin assignment
A-coded (Normal key)



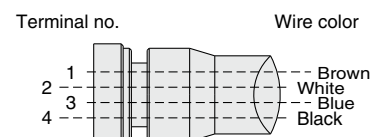
Wiring

33 PCA-1557756

Field-wireable connector (M12)



Plug connector
pin assignment
A-coded (Normal key)

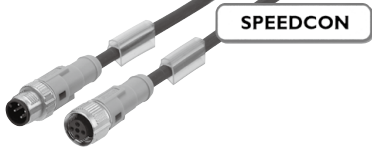


Wiring

Accessory Between the Sensor/Switch and the Input Device

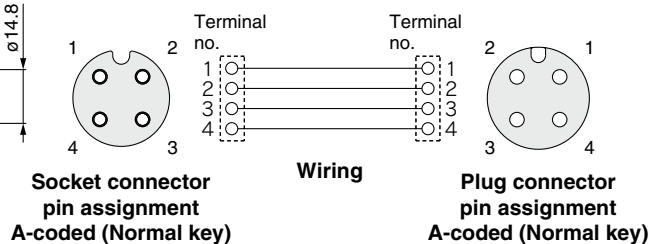
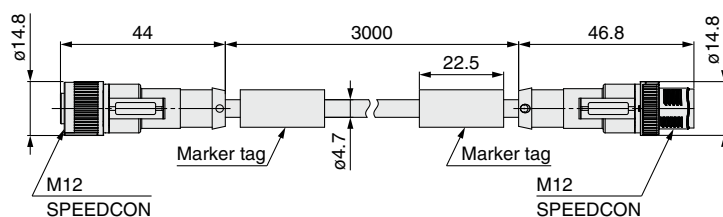
Cable with Connector

Specifications

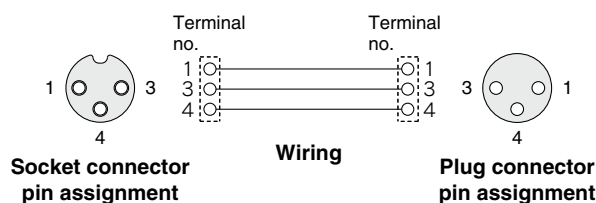
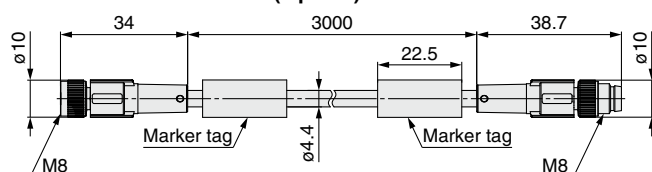
Part no.	PCA-1557769	PCA-1557772
Product image	 	 
Number of functional poles	M12: 4 poles	M8: 3 poles
Key type	A-coded (Normal key)	—
Wiring	3 m	
Fixed cable length	3 m	
Cable O.D.	4.7 mm	4.4 mm
Conductor nominal cross section	0.34 mm ² /AWG22	0.25 mm ² /AWG24
Min. bending radius (Fixed)	47 mm	44 mm
Rated current	4 A	
Rated voltage	250 V	60 V
Contact resistance	5 mΩ or less	
Insulation resistance	100 MΩ or more	
Withstand voltage	1.4 kV	1.0 kV
Ambient temperature	-25 to +90°C	
Connector	-40 to +80°C	
Cable	-40 to +80°C	
Protection class	IP67 (Only with screw tightened)	
Allowable repeated insertion/withdrawal	200	
Material of knurl	Zinc die-cast (Nickel plating)	
Contact (Surface treatment)	CuSn (Au plating (Ni underplating))	
Connector material	TPU (UL94 HB)	
Material of sheath (Sheath color)	PUR (Black-Gray (RAL 7021 equivalent))	
Weight	Approx. 111 g	Approx. 80 g

Cable with Connector

34 PCA-1557769 Cable with M12 connector (4 poles)



35 PCA-1557772 Cable with M8 connector (3 poles)



Accessory Between the Sensor/Switch and the Input Device

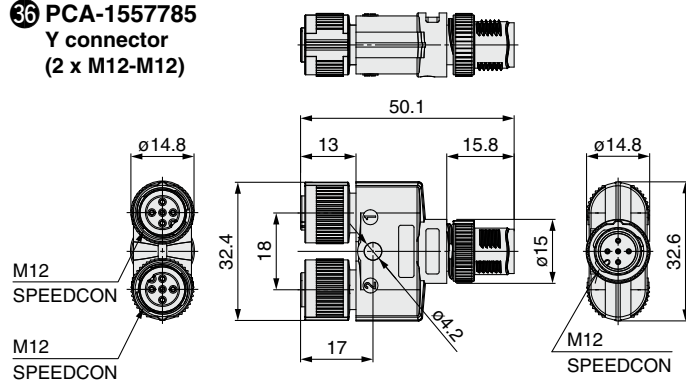
Y Connector

Specifications

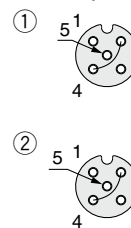
Part no.	PCA-1557785	PCA-1557798
Product image		
Number of functional poles	2 x M12: 5 poles – M12: 5 poles	2 x M8: 3 poles – M12: 4 poles
Key type	A-coded (Normal key)	
Rated current	4 A	
Rated voltage	60 V	
Contact resistance	5 mΩ or less	
Insulation resistance	100 MΩ or more	
Withstand voltage	1.0 kV	
Ambient temperature	-25 to +90°C	
Protection class	IP67 (Only with screw tightened)	
Allowable repeated insertion/withdrawal	200	
Material of knurl	Zinc die-cast (Nickel plating)	
Contact (Surface treatment)	CuZn (Au plating (Ni underplating))	
Connector material	TPU (UL94 HB)	
Weight	Approx. 29 g	Approx. 13 g

Y Connector

36 PCA-1557785
Y connector
(2 x M12-M12)



Socket connector
pin assignment
A-coded (Normal key)



Socket connector
pin assignment
A-coded (Normal key)



Socket connector
pin assignment

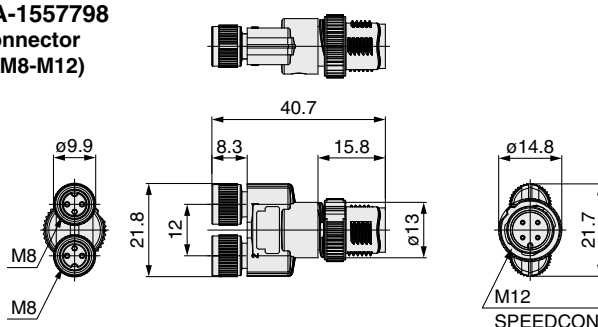


Wiring

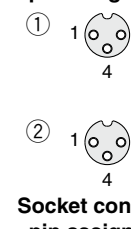
Plug connector
pin assignment
A-coded (Normal key)



37 PCA-1557798
Y connector
(2 x M8-M12)



Socket connector
pin assignment



Socket connector
pin assignment



Wiring

Plug connector
pin assignment
A-coded (Normal key)



EX9/EX500 Series Other Accessories

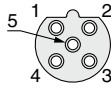
A Power Cable with Connector (For power block)

Straight connector type

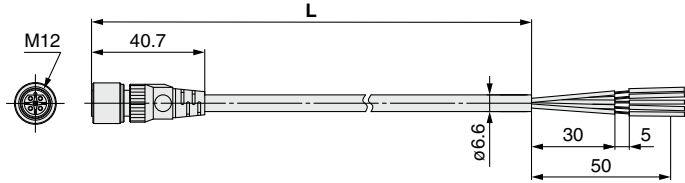
EX9-AC **050** - 1

Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm



Socket connector
pin arrangement
B-coded
(Reverse key)



Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm



Made to Order

Cable length	10000 mm	p. 247
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Terminal no.	Core wire color
1	Brown: 24 VDC +10%/-5% (Valve power supply)
2	White: 0 V (Valve power supply)
3	Blue: (24 VDC±10% (For control))
4	Black: (0 V (For control))
5	Gray: Ground

Connections

B Cable with M12 Connector

EX500-AC **030** - **SSPS**

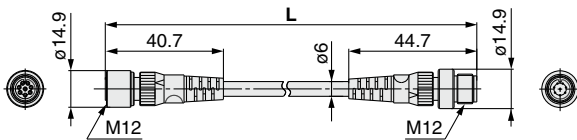
Cable length (L)

003	300 mm
005	500 mm
010	1000 mm
030	3000 mm
050	5000 mm
100	10000 mm

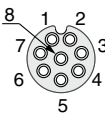
Connector specification

SSPS	Socket side: Straight, Plug side: Straight
SAPA	Socket side: Angle, Plug side: Angle

Straight connector type



A-coded

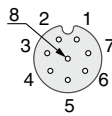


Socket
pin arrangement

Terminal no.	Core wire color
1	White
2	Brown
3	Green
4	Yellow
5	Gray
6	Pink
7	Blue
8	Shield

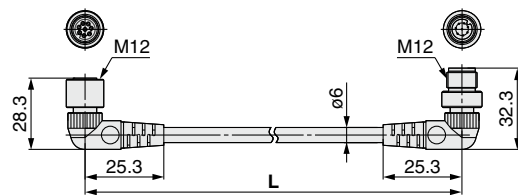
Connections

A-coded

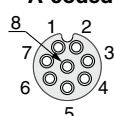


Plug
pin arrangement

Angle connector type



A-coded

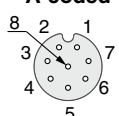


Socket
pin arrangement

Terminal no.	Core wire color
1	White
2	Brown
3	Green
4	Yellow
5	Gray
6	Pink
7	Blue
8	Shield

Connections

A-coded



Plug
pin arrangement

Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.25 mm ²
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	40 mm

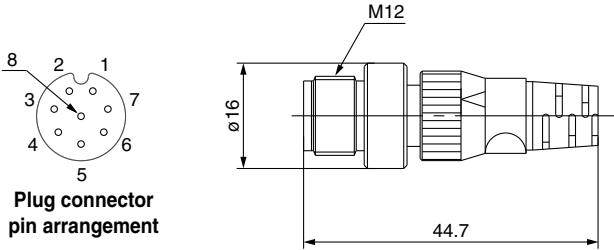
Type 1	EX260
Type 2	EX500
Type 3	EX600
Type 1	EX245
Type 2	EX250
Type 1	EX120/121/122
Type 2	EX140
Type 1	EX180
Type 2	EX510
M8/M12	
ATEX	

Other Accessories

Terminal Plug

This is used in place of an input unit manifold (input unit/input block).
(If a terminal plug is not used, the GW unit's COM LED will not light up.)

EX500-AC000-S



Cable with Connector for Output Entry

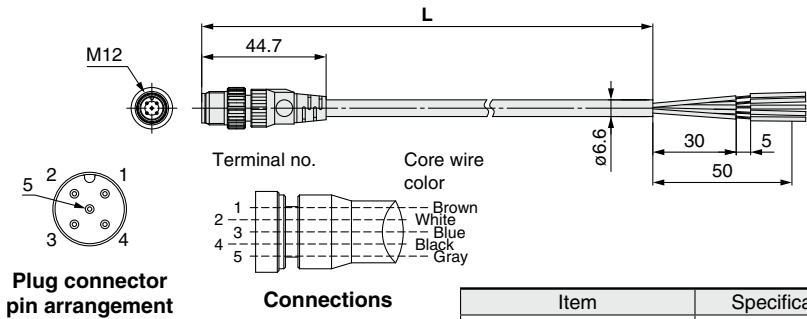
Connects the output block to the output device

Straight connector type

EX9-AC 030 -7

• Cable length (L)

010	1000 mm
030	3000 mm



Plug connector pin arrangement

Connections

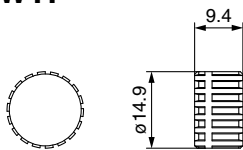
Item	Specifications
Cable O.D.	$\phi 6.6$ mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

Seal Cap: M12 Connector (For plug)

Use this on ports that are not being used for an M12 connector (plug).
Use of this seal cap maintains the integrity of the enclosure.

* Tighten the seal caps with the prescribed tightening torque. (For M12: 0.1 N·m)

EX500-AWTP



Seal Cap: M8, M12 Connector (For socket)

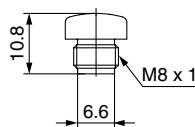
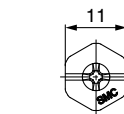
Use this on ports that are not being used for an M8 or M12 connector (socket). Use of this seal cap maintains the integrity of the enclosure.
(Seal caps are packed together with each unit.)

* Tighten the seal caps with the prescribed tightening torque. (For M8: 0.05 N·m, For M12: 0.1 N·m)

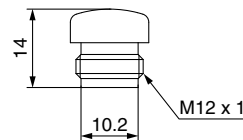
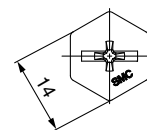
EX9-AW ES

• Connector type

ES	M8 connector (For socket), 10 pcs.
TS	M12 connector (For socket), 10 pcs.



For M8 connector socket



For M12 connector socket

Power Supply Cable (For connecting the SI unit to the power block)

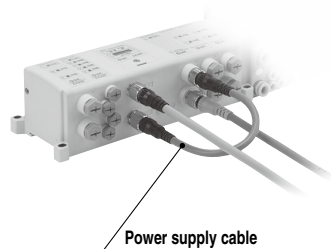
Connects between the power supply connector for the power block and the SI unit power supply connector, bridging the external power supply, which is supplied with the power block, to the SI unit.

Straight connector type

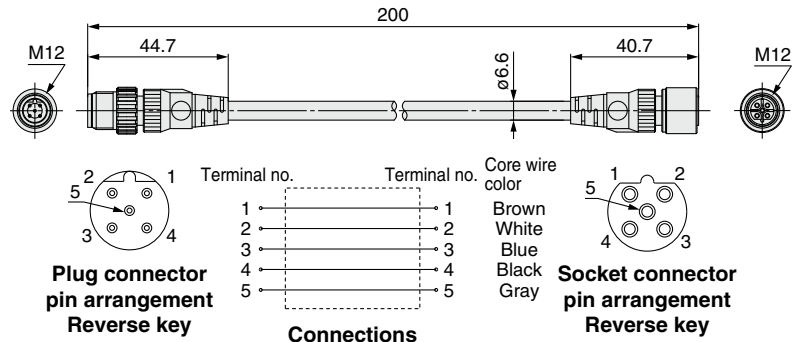
EX9-AC002-**2**

SI unit type

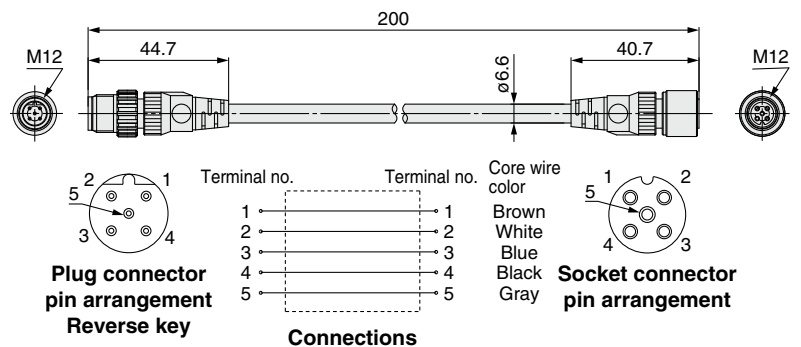
2	EX250-SDN1 EX250-SMJ2 EX250-SCA1A	Compliant
3	EX250-SPR1 EX250-SEN1	Compliant
4	EX250-SAS3/5	Compliant



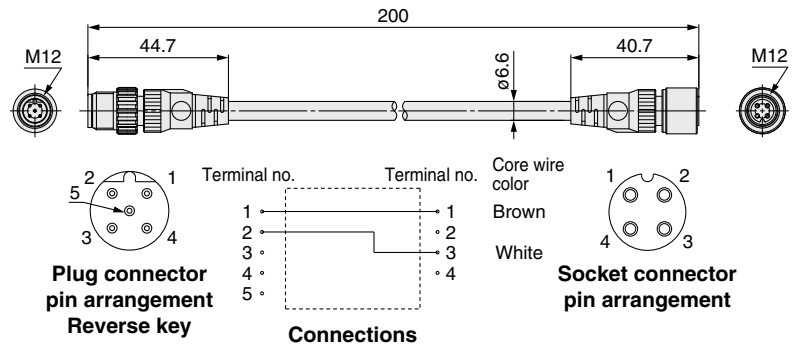
EX9-AC002-2



EX9-AC002-3



EX9-AC002-4



Item	Specifications
Cable O.D.	$\phi 6.6$ mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

AS-Interface Power Supply Cable

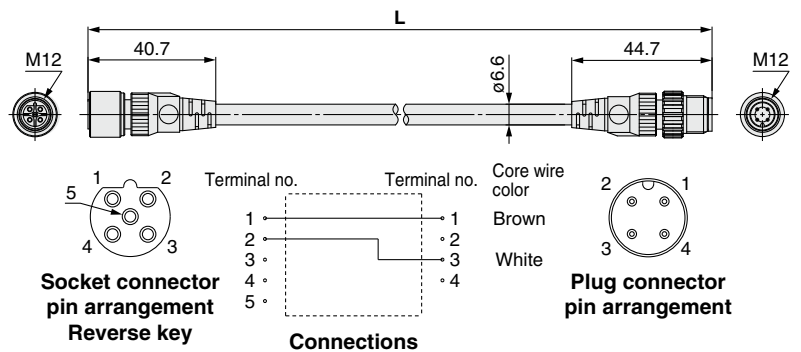
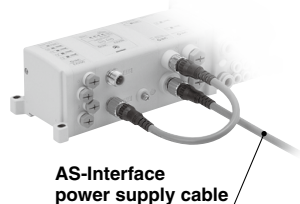
Cable connecting between AS-Interface power supply line (for external devices) branch connector (M12) and the power block's power supply input connector.

Straight connector type

EX9-AC 010 -5

Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm



Item	Specifications
Cable O.D.	$\phi 6.6$ mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

Communication Cable

With connector on one side (Socket)
Cable length: 10000 mm

For CC-Link For DeviceNet™

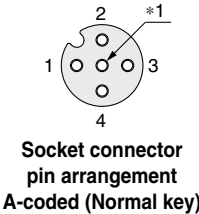
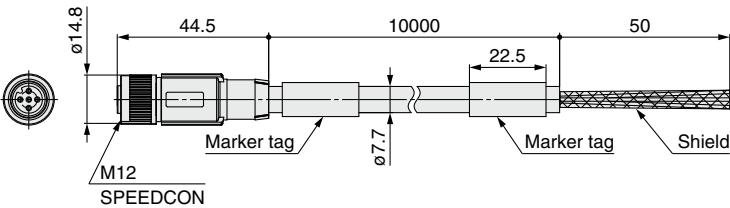
EX9-AC100 **MJ** -X12

● Applicable protocol

MJ	CC-Link
DN	DeviceNet™

Dimensions

For CC-Link

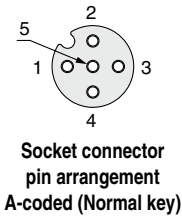
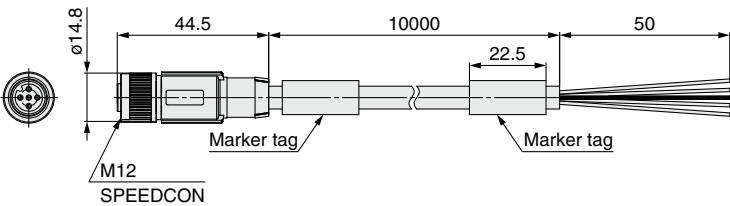


Terminal no.	Core wire color: Signal name (CC-Link)
1	Shield: SLD
2	White: DB
3	Yellow: DG
4	Blue: DA

*1 Number of holes: 5, Total number of pins: 4

Item	Specifications
Cable O.D.	ø7.7 mm
Conductor nominal cross section	Data pair 0.5 mm²/AWG20 Drain 0.34 mm²/AWG22
Wire O.D. (Including insulator)	2.55 mm
Min. bending radius (Fixed)	77 mm

For DeviceNet™



Terminal no.	Core wire color: Signal name (DeviceNet™)
1	Shield: DRAIN
2	Red: V+
3	Black: V-
4	White: CAN H
5	Blue: CAN L

Item	Specifications
Cable O.D.	ø6.7 mm
Conductor nominal cross section	Power pair 0.34 mm²/AWG22 Data pair 0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair 1.4 mm Data pair 2.05 mm
Min. bending radius (Fixed)	67 mm

Type 1	EX260
Type 2	EX500
Type 3	EX600
Type 1	EX245
Type 1	EX250
Type 1	EX120/121/122
Type 1	EX140
Type 1	EX180
Type 2	EX510
Type 2	M8/M12
Type 2	ATEX

Made to Order

Power Supply Cable

① With connector on one side (Socket)

Cable length: 10000 mm

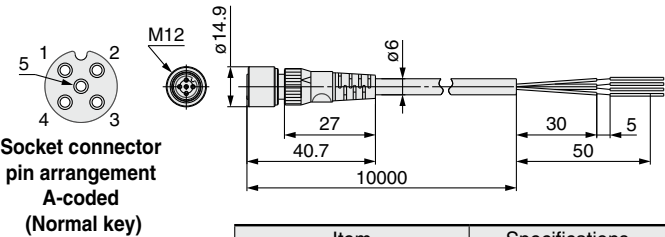
For EX250/EX260/EX500

EX500-AP100-**S**-X1

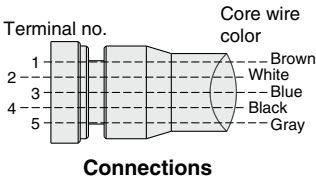
Connector specification

S	Straight
A	Angle

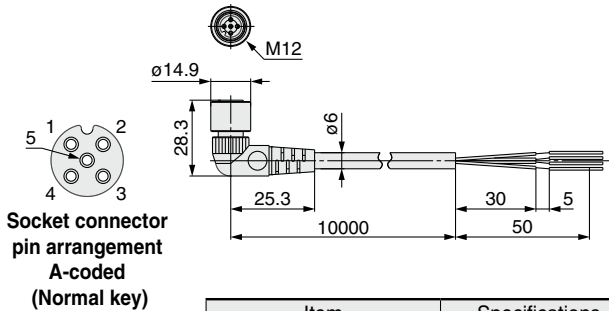
Straight connector type



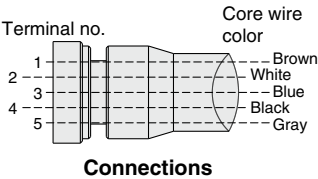
Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm



Angle connector type



Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm



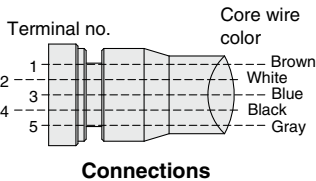
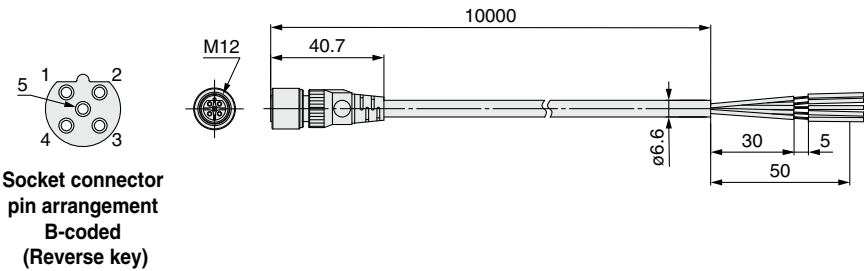
② With connector on one side (Socket)

Cable length: 10000 mm

For EX250/EX260/EX9

Straight connector type

EX9-AC100-1-X16



Item	Specifications
Cable O.D.	ø6.6 mm
Conductor nominal cross section	0.3 mm ² /AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm



PCA/EX9/EX500 Series

Specific Product Precautions 1

Be sure to read this before handling the products. Refer to page 277 for safety instructions. For fieldbus system precautions, refer to pages 278 to 280 and the "Operation Manual" on the SMC website: <http://www.smcworld.com>

Explanation of Terms

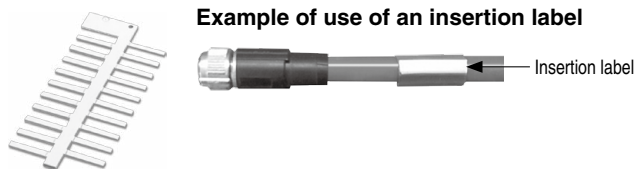
SPEEDCON

There are two types of cable with M12 connector: SPEEDCON compatible and non-compatible. If both plug and socket sides have connectors for SPEEDCON, the cable can be inserted and connected by rotating it 180°, leading to a reduction in labor hours. A non-compatible connector can be connected to a compatible connector as well as an M12.

Marker tag

By inserting the marked insertion label into the tag, the cable can be identified. For details of the insertion label, please make an inquiry to PHOENIX CONTACT.

· Part no.: 1013779 (PABA WH/23)



* If an insertion label is not to be used, the marker tag can be removed before use.

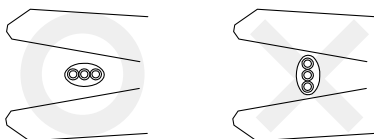
Wiring

⚠ Caution

1. Do not lay the wires while they are energized. Doing so may give you an electric shock.
2. It should be cabled according to the connection diagram.
3. Check if it can be connected when using a sensor or switch.
4. When the cable sheath is stripped, confirm the stripping direction.

(For SMC switches with oblong cables)

The insulator may be split or damaged depending on the direction.



Tightening of Screw

⚠ Caution

1. The enclosure (IP65/67) cannot be maintained and the screws may become loose if they are not tightened sufficiently.
2. Check that they are tightened enough at appropriate intervals during operation.

Connection and Disconnection of Connector

⚠ Caution

1. Be sure to turn the power off when connecting and disconnecting the connectors.
2. Do not touch the engagement surface with wet hands.
3. Do not pull the cable out by holding the cable.
4. Note the key direction.

Especially for the SPEEDCON specification, match the protrusion of the knurl (bracket) and the mark at the mold for insertion so that the SPEEDCON function can be maintained.

5. When engaging the connectors, insert the connectors until the entire engagement surface is no longer visible and tighten the screws so as not to damage the thread ridges.

Handling of Cable with Connector

⚠ Caution

1. Avoid repeatedly bending or stretching the cable and applying heavy objects or force to it.
2. Set up the cables in a place where they will not be stepped on in order to prevent them from being broken and to prevent damage to the connectors.
Install a protective cover when deemed necessary.
3. Do not pull the connector or cable unnecessarily. It may damage the connectors or break the cables.
4. Do not bend the cable at the root of the connector when installed.

Handling of Field-wireable Connector

⚠ Caution

Common Precautions

1. Follow the "Assembly Procedure" provided by SMC. If it is not followed correctly, it may not maintain IP65/67.
2. Do not use it for any purpose other than its original purpose.
3. This connector may only be operated when under no load.
4. Working with wet hands may lead to an electric shock.
5. Never attempt to repair the product yourself.

Spring-cage Connection

1. Do not use it for any purpose other than its original purpose.
2. This connector may only be operated when under no load.
3. Working with wet hands may lead to an electric shock.
4. Never attempt to repair the product yourself.

Type 1	EX260
Type 2	EX123/124/126
Type 2	EX500
Type 2	EX600
Type 3	EX245
Type 3	EX250
Type 3	EX120/121/122
Type 1	EX140
Type 1	EX180
Type 2	EX510
Type 2	M8/M12
Type 2	ATEX



PCA/EX9/EX500 Series

Specific Product Precautions 2

Be sure to read this before handling the products. Refer to page 277 for safety instructions. For fieldbus system precautions, refer to pages 278 to 280 and the "Operation Manual" on the SMC website: <http://www.smcworld.com>

Handling of Field-wireable Connector

Caution

QUICKON-ONE Connection

1. **Connection between cables** (with the same material and the same cross section) **is 10 times at max.**
2. **PVC or PE is suitable for sheath material, however fluoro resin is not suitable for sheath material.**
3. **Only for flexible cable, not for solid cable.**
4. **When you remove the cable, pull the cable. However, if you remove the cable gland, cable and the splice ring remain to the body.**

When you connect the cable again, screw the splice ring approx. two turns into the cable gland before using.

5. **When you connect the cable again, cut and strip the cable.**

Piercecon® Connection

1. **Connection between cables** (with the same material and the same cross section) **is 10 times at max.**
2. **Only for flexible cable, not for solid cable.**
3. **If you connect the cable again, cut and strip the cable.**

Operating Environment

Caution

1. **Do not use in the atmosphere and environment over the rated specifications.**
2. **Do not use in the environment of corrosive gas or liquid splash.**
3. **Do not use in an environment where oil and chemicals are used.**

Maintenance

Caution

1. **Perform periodic inspection.**