Fieldbus System

(Output device for driving 5-port solenoid valves)

CE UKCA cULus

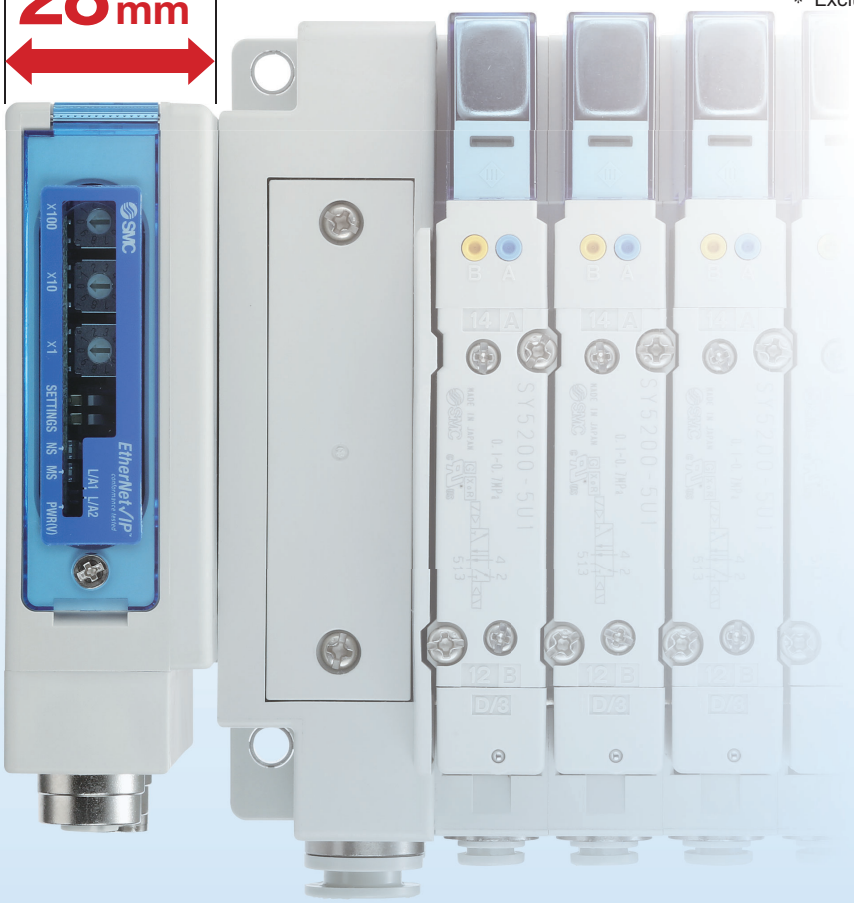
* Only the SY and SV valves are UL-compliant.

RoHS

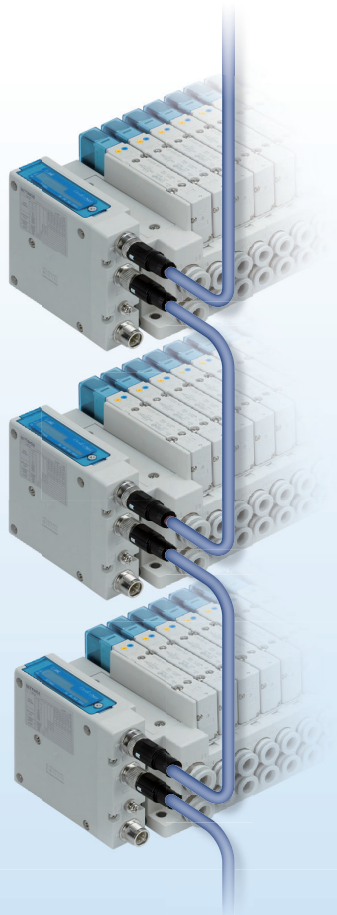
Space-saving installation

Compact
Approx.
28 mm

Actual size



- **IP67**
  * For units with a D-sub connector/RJ45 connector, and when connected to S0700 manifolds, it is IP40.
- **Drives up to 32 solenoids**
- **Daisy-chain wiring communication**
  * Excludes the units compatible with IO-Link



Compatible Protocols

Fieldbusses & Industrial Ethernet

PROFIBUS DeviceNet CC-Link PROFINET EtherNet/IP EtherCAT ETHERNET POWERLINK IO-Link CC-Link IE TSN New CC-Link IE Field

Safety Communication

PROFIsafe Safety over EtherCAT

Compliant with functional safety standards p. 5

(PROFIsafe, Safety over EtherCAT® compatible)

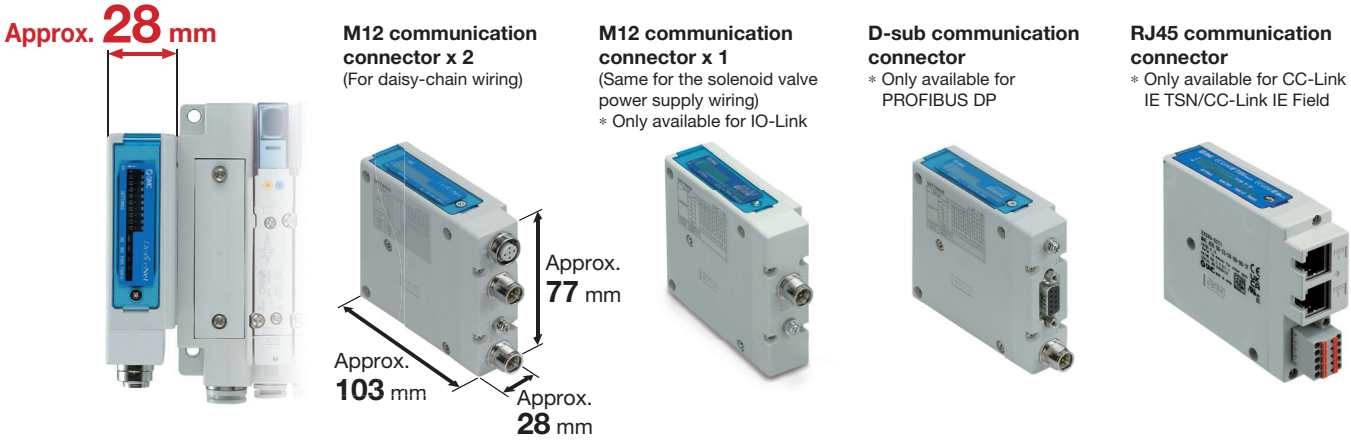
- Compatible for use up to IEC 61508/IEC 62061: SIL 3 and ISO 13849-1: PL e, Cat. 4 (certified by a third-party institution)
- Safety output for valve control

EX260 Series

SMC

CAT.EU02-25E-UK

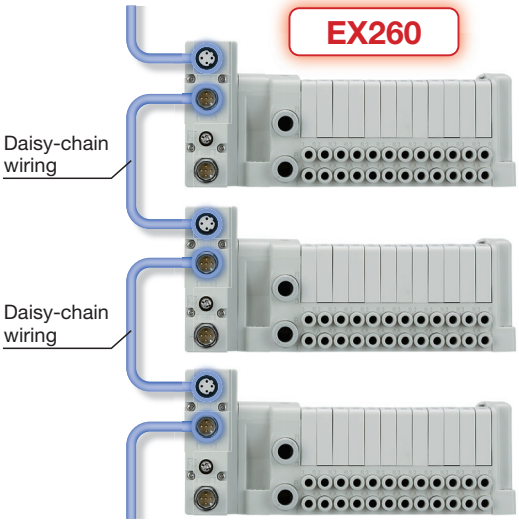
Narrow Space saving installation



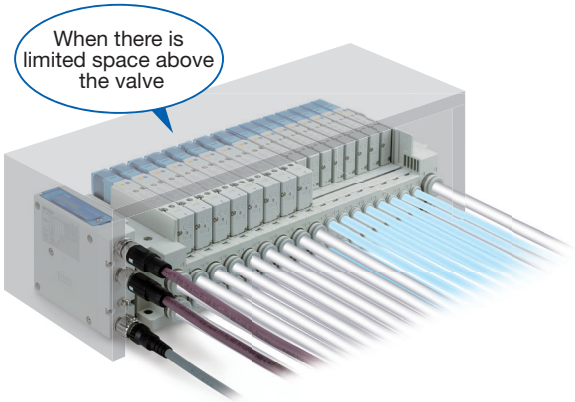
Daisy-chain wiring communication is possible.*1

A branch connector is not necessary/Reduced wiring space

∗1 Excludes the units compatible with IO-Link



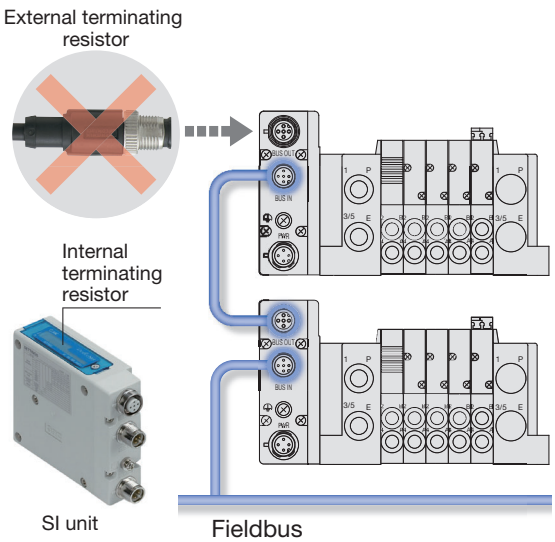
Wiring and piping from the same direction is possible.
(for side ported)



An external terminating resistor is not necessary.

(Only available for M12 PROFIBUS DP, CC-Link communication connectors)

ON/OFF switching is possible with an internal terminating resistor.
An external terminating resistor is not necessary.



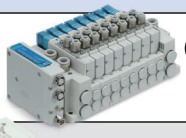
Product Specification Variations

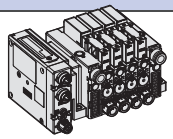
Communication connector	PROFIBUS	DeviceNet	CC-Link	PROFINET	EtherNet/IP	EtherCAT	ETHERNET POWERLINK	IO-Link	CC-Link IE TSN	New CC-Link IE Field	PROFIsafe	Safety over EtherCAT
M12	●	●	●	●	●	●	●	●			●	●
D-sub	●											
RJ45									●	●		

Applicable Valve Series and Compatible Protocols

Fieldbusses & Industrial Ethernet

PROFIBUS DeviceNet CC-Link PROFINET EtherNet/IP EtherCAT ETHERNET POWERLINK IO-Link CC-Link IE TSN CC-Link IE Field

Applicable valve		Flow rate characteristics (4/2 → 5/3) C [dm³/(s·bar)]	b	Q [l/min (ANR)]*4	Max. number of solenoids	Power consumption [W]	Applicable cylinder size
IP67 *1 	SY3000	1.6	0.19	381	32	0.35 (Standard) 0.1 (With power-saving circuit)	Ø 50
	SY5000	3.6	0.17	848			Ø 63
	SY7000	5.9	0.20	1413			Ø 80
IP67 *1, *2	JSY1000	0.91	0.48	263	32	0.2 (With power-saving circuit)	Ø 40
	JSY3000	2.77	0.27	691		0.4 (Standard) 0.1 (With power-saving circuit)	Ø 50
	JSY5000	6.59	0.22	1597			Ø 80
IP40	S0700*3	0.37	0.39	100	32	0.35	Ø 25
IP67 *1	SV1000*3	1.1	0.35	289	32	0.6	Ø 40
	SV2000*3	2.4	0.18	568			Ø 63
	SV3000*3	4.3	0.21	1036			Ø 80
IP67 *1	VQC1000	1.0	0.30	254	24	0.4 (Standard)	Ø 40
	VQC2000	3.2	0.30	814			Ø 63
	VQC4000	7.3	0.38	1958		0.95 (Standard) 0.4 (Low-wattage type)	Ø 160
	VQC5000	17	0.31	4350			Ø 180

Applicable vacuum unit		Nozzle diameter [mm]	Max. number of solenoids	Power consumption [W]	Max. vacuum pressure [kPa]
IP40 	ZK2□A	0.7	16	0.4	–91
		1.0			
		1.2			
		1.5			

Safety Communication

The use of validated products may be required for valve manifolds used in the safety-related parts of equipment which is compliant with safety standard ISO 13849. For validated products, please contact your SMC sales representative.

PROFIsafe Safety over EtherCAT

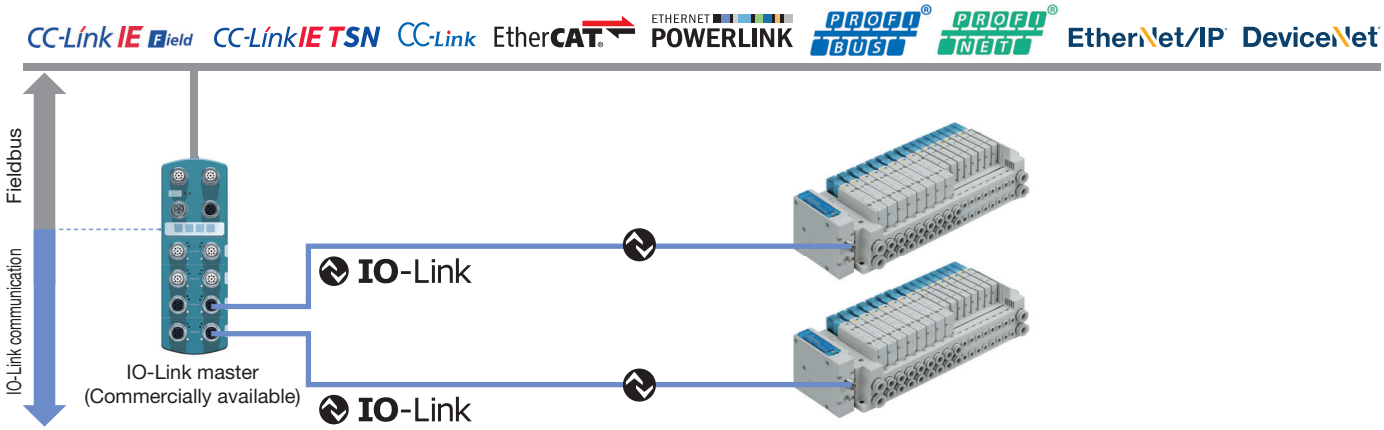
Applicable valve		Flow rate characteristics (4/2 → 5/3) C [dm³/(s·bar)]	b	Q [l/min (ANR)]*4	Max. number of solenoids	Power consumption [W]	Applicable cylinder size
IP67	SY3000	1.6	0.19	381	32	0.35 (Standard) 0.1 (With power-saving circuit)	Ø 50
	SY5000	3.6	0.17	848			Ø 63
	SY7000	5.9	0.20	1413			Ø 80
IP67 *2	JSY1000	0.91	0.48	263	32	0.2 (With power-saving circuit)	Ø 40
	JSY3000	2.77	0.27	691		0.4 (Standard) 0.1 (With power-saving circuit)	Ø 50
	JSY5000	6.59	0.22	1597			Ø 80
IP67	VQC1000	1.0	0.30	254	24	0.4 (Standard)	Ø 40
	VQC2000	3.2	0.30	814			Ø 63
	VQC4000	7.3	0.38	1958		0.95 (Standard) 0.4 (Low-wattage type)	Ø 160
	VQC5000	17	0.31	4350			Ø 180

*1 Units with a D-sub communication connector/RJ45 communication connector are IP40.
*2 The JSY1000 is IP40.
*3 There is no manifold option for IO-Link, CC-Link IE TSN, or CC-Link IE Field compatible SI units.
*4 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

IO-Link compatible

Integratable with various existing networks

IO-Link devices can be easily connected to various networks via the IO-Link master, which acts as a gateway between IO-Link communication and various Fieldbusses.
Solenoid valves can be connected for communication without relying upon a Fieldbus or PLC.



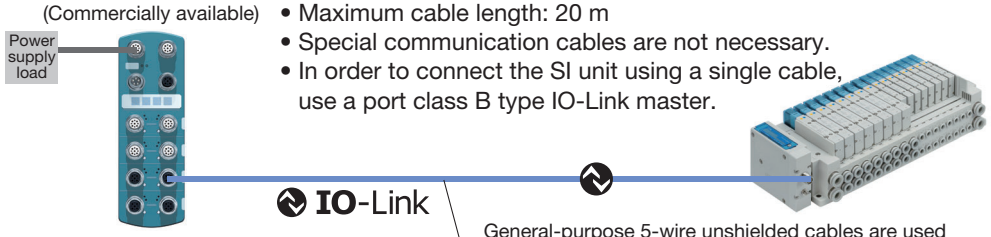
Can be connected using a single general-purpose cable, resulting in a reduction in the space required for wiring

Port class B compliant

Port class B

IO-Link master
(Commercially available)

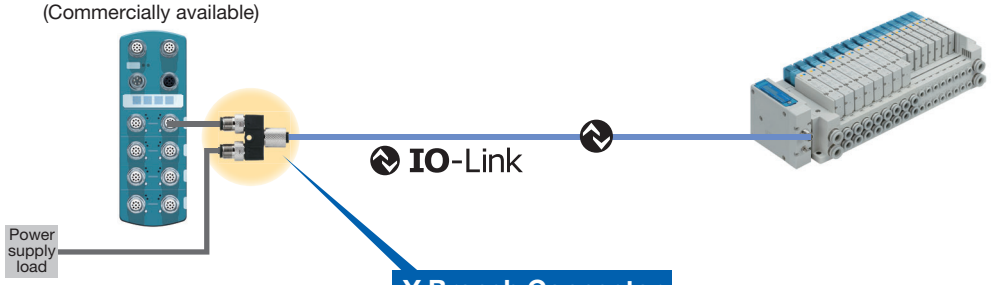
- Connect the IO-Link master port to the device using a 1:1 configuration.
- Connect using an M12 round connector.
- Maximum cable length: 20 m
- Special communication cables are not necessary.
- In order to connect the SI unit using a single cable, use a port class B type IO-Link master.



General-purpose 5-wire unshielded cables are used for connection.
The signal wire and valve power supply wire can be connected with the same cable.

Port class A

IO-Link master
(Commercially available)



SI unit/Connector pin arrangement

Pin no.	SI unit port pin function (Port class B)
1	+24 V for control unit
2	+24 V for solenoid valve
3	0 V for control unit
4	IO-Link communication
5	0 V for solenoid valve

Difference between IO-Link master port class A and class B

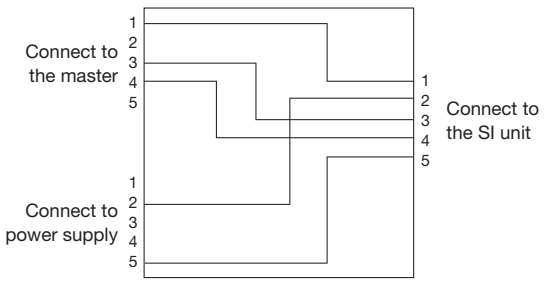
Pin no.	IO-Link master port pin function	
	Port class A	Port class B
1	+24 V	+24 V
2	NC/DI/DO	Additional power supply +24 V
3	0 V	0 V
4	IO-Link/DI/DO	IO-Link/DI/DO
5	NC	Additional power supply 0 V

Y Branch Connector

Port class A compliant

A special wiring Y branch connector is available.

Used when connecting to a port class A type IO-Link master, which is often used when connecting to an IO-Link sensor

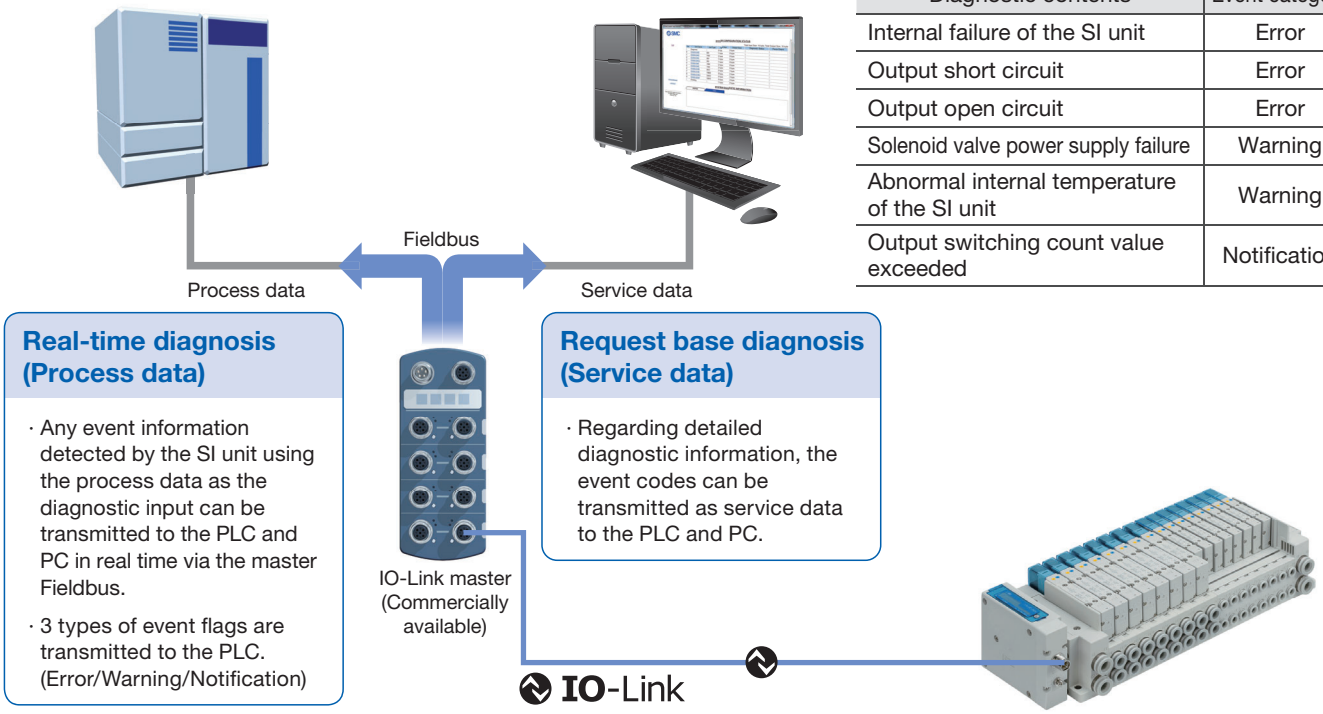


IO-Link compatible

Features an impressive self-diagnosis function

Self-diagnosis contents

Diagnostic contents	Event category
Internal failure of the SI unit	Error
Output short circuit	Error
Output open circuit	Error
Solenoid valve power supply failure	Warning
Abnormal internal temperature of the SI unit	Warning
Output switching count value exceeded	Notification



Real-time diagnosis (Process data)

- Any event information detected by the SI unit using the process data as the diagnostic input can be transmitted to the PLC and PC in real time via the master Fieldbus.
- 3 types of event flags are transmitted to the PLC. (Error/Warning/Notification)

Request base diagnosis (Service data)

- Regarding detailed diagnostic information, the event codes can be transmitted as service data to the PLC and PC.

Equipped with a solenoid valve output operation count function

The number of valve operation instructions is counted for each output of the solenoid valve.

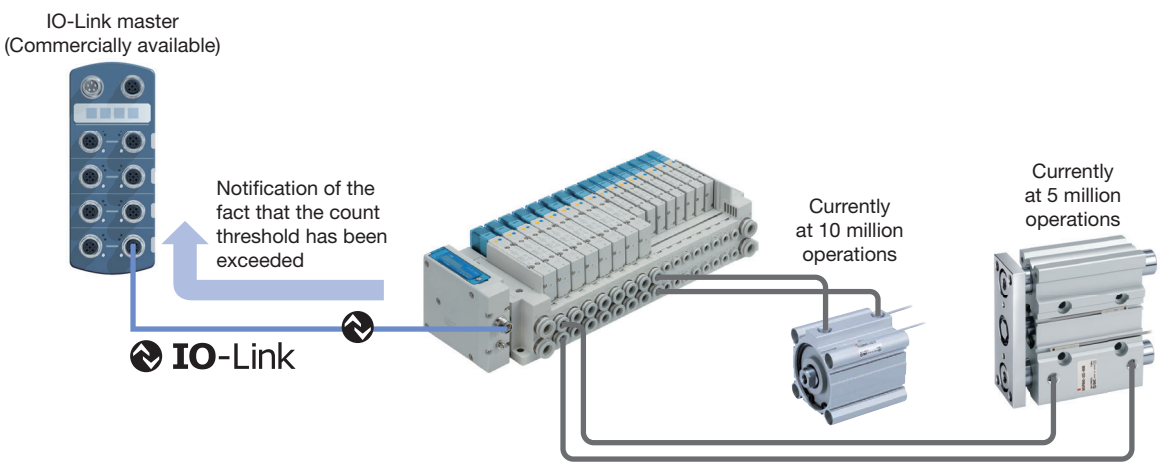
Set the count threshold value to be used as a guide for maintenance according to the operating conditions of the cylinder connected to the solenoid valve.

⬇

Once the threshold value is reached, notification of this fact will take place automatically.

⬇

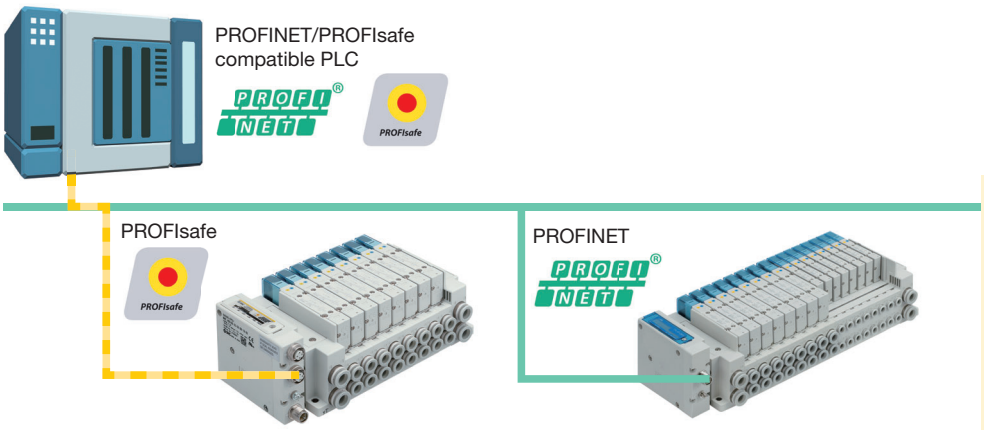
This enables periodic maintenance to be performed before any unexpected cylinder failures occur.



Supports safety communication

The safety communication protocol is a communication protocol that transmits safety-related data over a communication network and are compatible for use up to safety standard ISO 13849-1 PL e and IEC 61508/IEC 62061 SIL 3.

Examples of PROFIsafe and PROFINET compatible products.



By using a PLC (programmable Logic Controller) which supports safety communication, an SI unit compatible with safety communication (EX260-F□□□) can be installed on the communication line connecting the SI unit (EX260-S□□□) to the PLC.

Compliant with safety standards

The purpose is to facilitate the safe design (compliant with ISO/IEC standards) of the customers devices and equipment, and the products have been certified by a third party organization (such as TÜV Rheinland) to be usable up to the levels of the following standards.

EX260-FPS1

Product Safety Functional Safety
TÜVRheinland CERTIFIED
www.tuv.com
ID 0600000000

IEC 61508/IEC 62061: SIL 3
ISO 13849-1: PLe, Cat.3

EX260-FSE1

TÜV SÜD

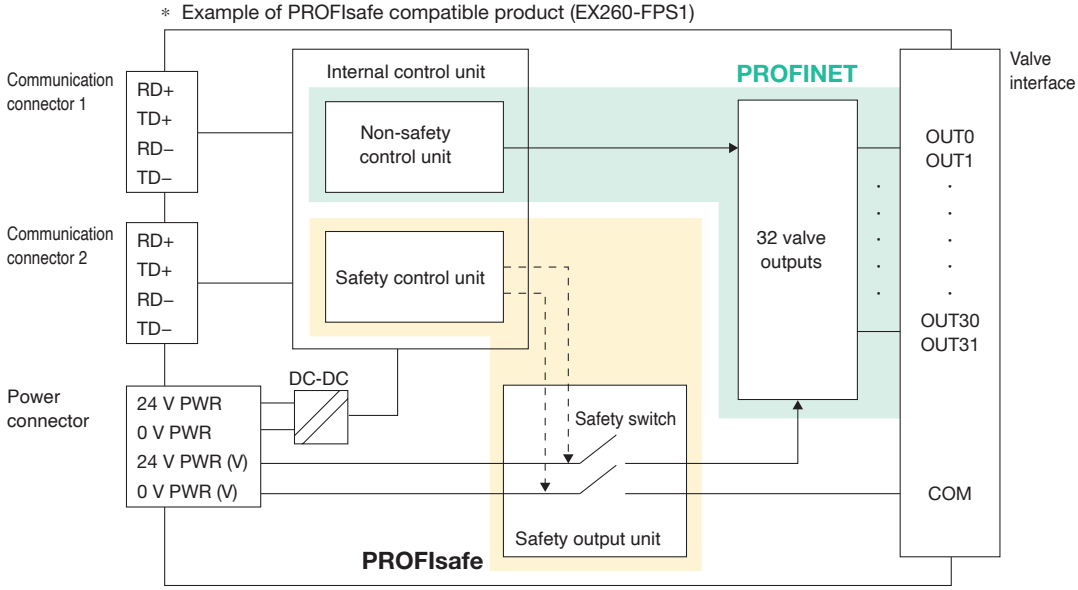
IEC 61508/IEC 62061: SIL 3
ISO 13849-1: PLe, Cat.4

- **SIL (Safety Integrity Level)**
  A safety integrity level as defined by international standard IEC 61508/62061
  There are 4 levels of safety, with the lowest being SIL 1 and the highest being SIL 4.
- **PL (Performance Level)**
  A scale used to define the capability of safety-related parts to perform a safety function as defined by international standard ISO 13849
  There are 5 levels of safety function, with the lowest being PL a and the highest being PL e.

Safety Output

The product has a safety switch inside, and by turning OFF the safety switch via a command from the PLC, the voltage supplied to the valve is turned OFF and the product enters a safe state. The safety switch inside the product has redundancy and constantly undergoes diagnosis. The safety switch is turned OFF if an error is detected.

＊ Example of PROFIsafe compatible product (EX260-FPS1)



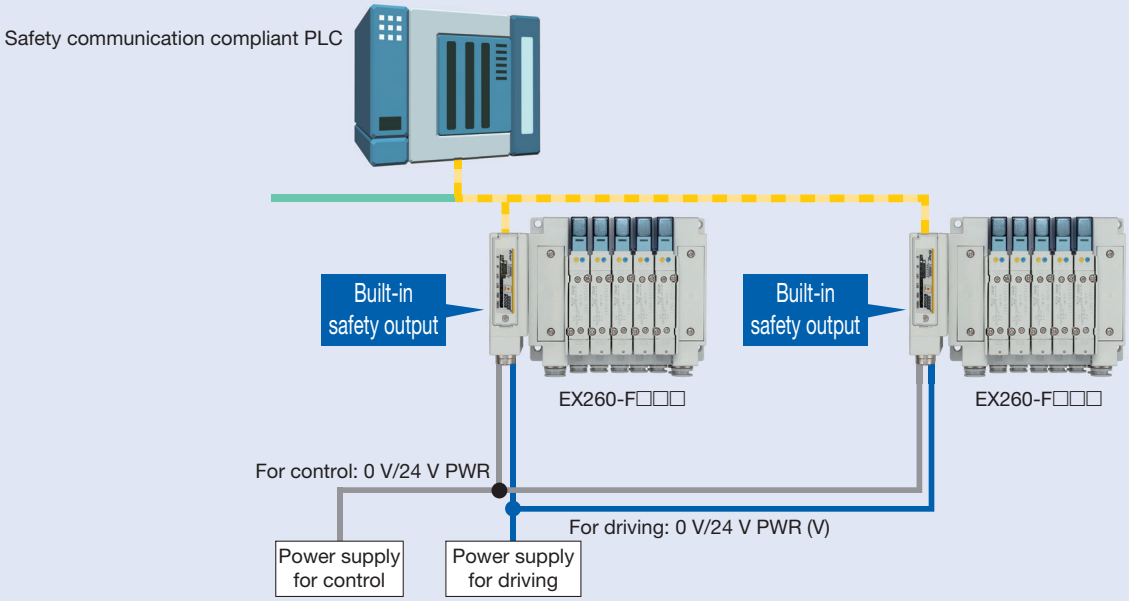
⚠Safety Definition

The safe state of this product is a condition in which the safety output described above is turned OFF to shut off the supply of power to the valve manifold. This product does not cover valve manifolds that are being used in connection with this product or the safety function and safe state of electric/air equipment that includes a peripheral circuit.

Reduced wiring, Space saving

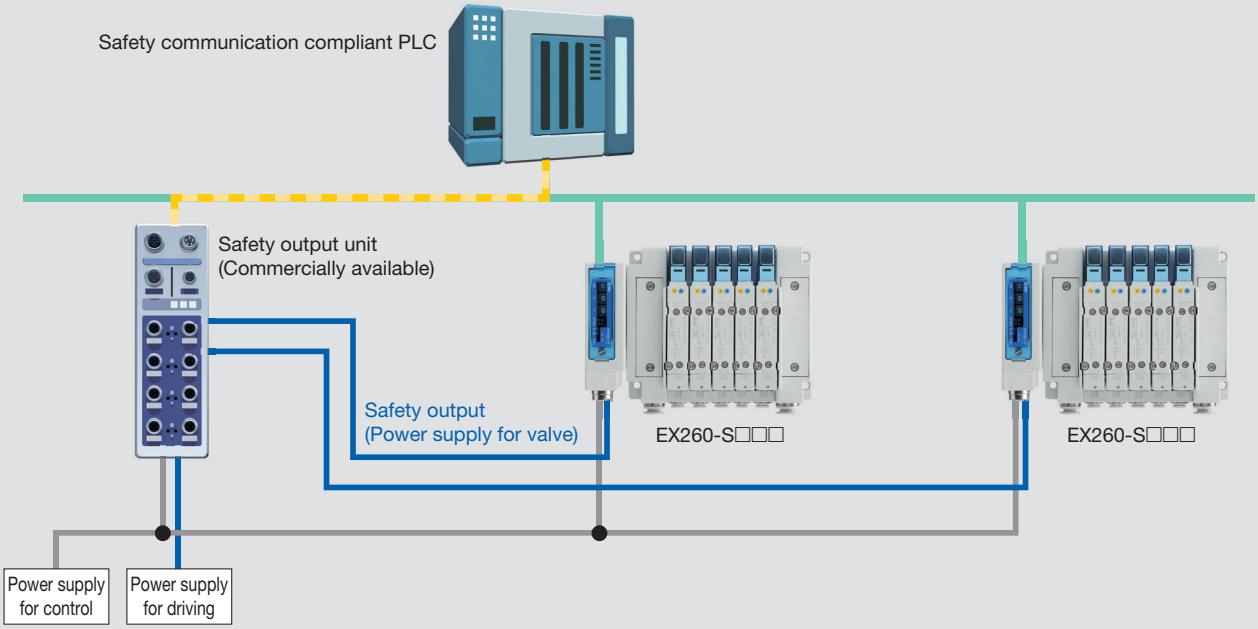
For safety communication compliant SI unit (EX260-F□□□)

- A separate safety output unit is not required. (Space saving)
- There is no need for wiring between the safety output unit and the SI unit. (Reduced wiring)



When a separate safety output unit is installed (Conventional connection example)

- A separate safety output unit is required. (Increased installation space)
- Increased wiring is required for connection with another unit. (Increased wiring)



⚠Safety of the machine or system

The manufacturer of the machine/system and its user are responsible for the safety of the machine/system. Use of this product requires machine/system safety concepts which are in accordance with the corresponding directives and standards, safety function validation, and hazard and risk analysis. Target SILs (IEC 61508/62061 compliance) and performance levels/categories (ISO 13849 compliance) are determined based on the risk analysis. For more information, refer to the “Safety of the machine or system” section in the operation manual.

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(Output device for driving 5-port solenoid valves)
EX260 Series

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Made to Order
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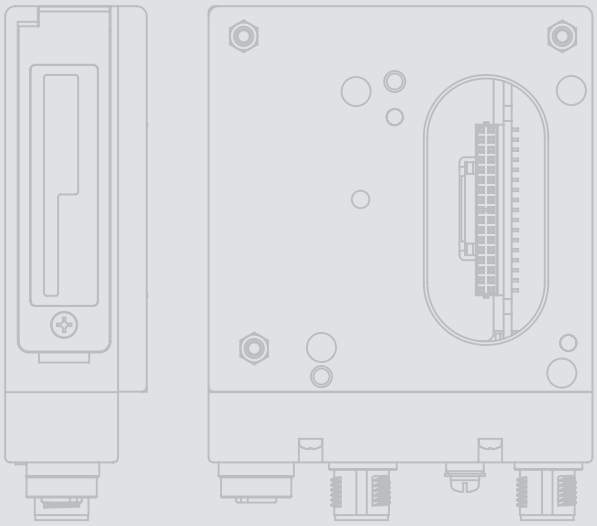
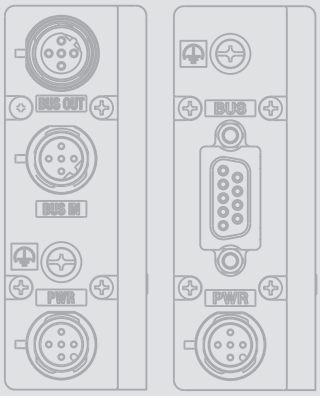




Fieldbus System For Output
EX260 Series

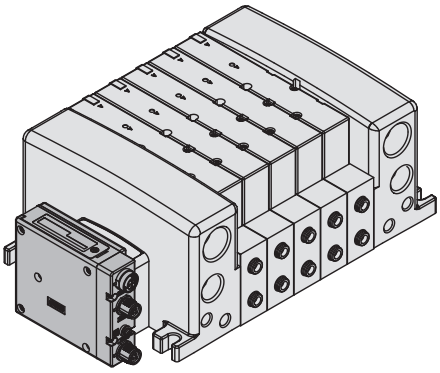
* Only the SY and SV valves are UL-compliant.

RoHS

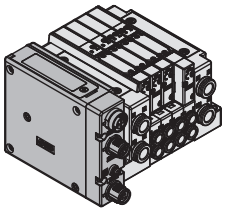
Compact design	Compact design for space saving
Number of outputs	32/16 digital output
Output polarity	Negative common (PNP)/Positive common (NPN)
Enclosure	IP67 (For units with a D-sub connector/RJ45 connector, and when connected with S0700 manifolds, it is IP40.)
Internal terminating resistor	ON/OFF switching is possible with an internal terminating resistor for communication. (Only for units compatible with M12 PROFIBUS DP, CC-Link communication connectors)

Applicable Manifold

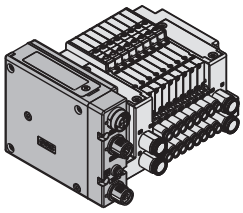
VQC1000/2000/4000/5000



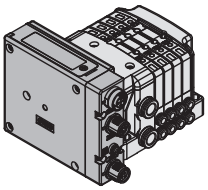
SY3000/5000/7000



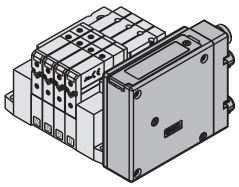
JSY1000/3000/5000



S0700

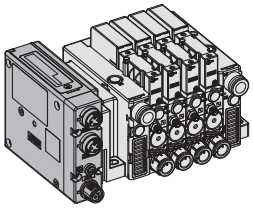


SV1000/2000/3000



Applicable Vacuum Unit

ZK2□A



How to Order SI Units

EX260 – S PR1

Communication protocol

Symbol	Protocol	Number of outputs	Output polarity	Communication connector	Manifold symbol	Applicable manifold/Vacuum unit
DN1	DeviceNet®	32	Source/PNP (Negative common)	M12	QAN	SY3000/5000/7000 JSY1000/3000/5000 VQC1000/2000/4000/5000 S0700 SV1000/2000/3000 ZK2□A
DN2			Sink/NPN (Positive common)		QA	
DN3		16	Source/PNP (Negative common)		QBN	
DN4			Sink/NPN (Positive common)		QB	
PR1	PROFIBUS DP	32	Source/PNP (Negative common)	M12	NAN	
PR2			Sink/NPN (Positive common)		NA	
PR3		16	Source/PNP (Negative common)		NBN	
PR4			Sink/NPN (Positive common)		NB	
PR5		32	Source/PNP (Negative common)	D-sub*1	NCN	
PR6			Sink/NPN (Positive common)		NC	
PR7		16	Source/PNP (Negative common)		NDN	
PR8			Sink/NPN (Positive common)		ND	
MJ1	CC-Link	32	Source/PNP (Negative common)	M12	VAN	
MJ2			Sink/NPN (Positive common)		VA	
MJ3		16	Source/PNP (Negative common)		VBN	
MJ4			Sink/NPN (Positive common)		VB	
EC1	EtherCAT	32	Source/PNP (Negative common)	M12	DAN	
EC2			Sink/NPN (Positive common)		DA	
EC3		16	Source/PNP (Negative common)		DBN	
EC4			Sink/NPN (Positive common)		DB	
PN1	PROFINET	32	Source/PNP (Negative common)	M12	FAN	
PN2			Sink/NPN (Positive common)		FA	
PN3		16	Source/PNP (Negative common)		FBN	
PN4			Sink/NPN (Positive common)		FB	
EN1	EtherNet/IP™	32	Source/PNP (Negative common)	M12	EAN	
EN2			Sink/NPN (Positive common)		EA	
EN3		16	Source/PNP (Negative common)		EBN	
EN4			Sink/NPN (Positive common)		EB	
PL1	Ethernet POWERLINK	32	Source/PNP (Negative common)	M12	GAN	
PL3		16			GBN	
IL1	IO-Link	32	Source/PNP (Negative common)	M12	KAN	SY3000/5000/7000 JSY1000/3000/5000 VQC1000/2000/4000/5000 ZK2□A
CT1	CC-Link IE TSN*2 CC-Link IE Field			RJ45*1	CAN	

*1 If the communication connector specification is a D-sub or RJ45 connector, the enclosure rating is IP40.
*2 Communication mode can be switched via the setting switch.

Made to Order
⇒ p. 28

EtherNet/IP™ LAN cable connectable RJ45 communication connectors
EtherNet/IP™ Web server function compatible

* For "How to Order Manifold Assembly," refer to the **Web Catalogue** of each valve.

Safety communication compliant SI unit

EX260 – F PS1

Communication protocol

Symbol	Protocol	Number of outputs	Output polarity	Communication connector	Manifold symbol	Applicable manifold
PS1	PROFIsafe	32	Source/PNP (Negative common)	M12	FPN	SY3000/5000/7000 JSY1000/3000/5000 VQC1000/2000/4000/5000
SE1	Safety over EtherCAT®				DPN	

* The use of validated products may be required for valve manifolds used in the safety-related parts of equipment which is compliant with safety standard ISO 13849. For validated products, please contact your SMC sales representative.

Specifications

All SI Units Common Specifications

Power supply for control	Power supply voltage	21.6 to 26.4 VDC*1
	Internal current consumption	100 mA or less*4
Power supply for output	Power supply voltage	22.8 to 26.4 VDC*5
Environmental resistance	Enclosure	IP67*2
	Operating temperature range	−10 to +50 °C
	Operating humidity range	35 to 85 % RH (No condensation)
	Withstand voltage	500 VAC for 1 minute between terminals and housing
	Insulation resistance	10 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing
Standards		CE/UKCA marking, UL (CSA) compliant
Weight		200 g
Accessories	Mounting screw	2 pcs.
	Seal cap (for M12 connector socket)	EX9-AWTS (1 pc.)*3

*1 The power supply voltage for the EX260-SDN□ is 11 to 25 VDC, for the EX260-SIL1 is 18 to 30 VDC, and for the EX260-FPS1/SCT1/FSE1 is 20.4 to 28.8 VDC.
*2 IP40 applies to EX260-SPR5/6/7/8, EX260-SCT1.
*3 Not provided for EX260-SPR5/6/7/8. The EX260-SCT1 is supplied with one dustproof cap for the RJ45 connector.
*4 The EX260-FPS1 is 200 mA or less, and the EX260-SCT1/FSE1 is 150 mA or less.
*5 The power supply for the EX260-SCT1/FPS1/FSE1 is 20.4 to 28.8 VDC. Check the specifications of the solenoid valve for the power supply details.

Model		EX260-SPR1/3	EX260-SPR2/4	EX260-SPR5/7	EX260-SPR6/8	EX260-SDN1/3	EX260-SDN2/4
Applicable system	Protocol	PROFIBUS DP				DeviceNet®	
	Version*1	DP-V0				Volume 1 (Edition 3.5) Volume 3 (Edition 1.5)	
	Configuration file*3	GSD file				EDS file	
I/O occupation area (Inputs/Outputs)		SPR1: 0/32 SPR3: 0/16	SPR2: 0/32 SPR4: 0/16	SPR5: 0/32 SPR7: 0/16	SPR6: 0/32 SPR8: 0/16	SDN1: 0/32 SDN3: 0/16	SDN2: 0/32 SDN4: 0/16
Applicable function		—				QuickConnect™	
Communication speed		9.6 k/19.2 k/45.45 k/93.75 k/187.5 k/500 k/1.5 M/3 M/6 M/12 Mbps				125 k/250 k/500 kbps	
Communication connector specification		M12		D-sub*4		M12	
Terminating resistor switch		Built-in		None			
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	SPR1: 32 points SPR3: 16 points	SPR2: 32 points SPR4: 16 points	SPR5: 32 points SPR7: 16 points	SPR6: 32 points SPR8: 16 points	SDN1: 32 points SDN3: 16 points	SDN2: 32 points SDN4: 16 points
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)					
	Supplied voltage	24 VDC					
	Supplied current	SPR1: Max. 2.0 A SPR3: Max. 1.0 A	SPR2: Max. 2.0 A SPR4: Max. 1.0 A	SPR5: Max. 2.0 A SPR7: Max. 1.0 A	SPR6: Max. 2.0 A SPR8: Max. 1.0 A	SDN1: Max. 2.0 A SDN3: Max. 1.0 A	SDN2: Max. 2.0 A SDN4: Max. 1.0 A

Model		EX260-SMJ1/3	EX260-SMJ2/4	EX260-SEC1/3	EX260-SEC2/4	EX260-SPN1/3	EX260-SPN2/4
Applicable system	Protocol	CC-Link		EtherCAT*2		PROFINET*2	
	Version*1	Ver. 1.10		Conformance Test Record V.1.1		PROFINET Specification Version 2.2	
	Configuration file*3	CSP+ file		XML file		GSD file	
I/O occupation area (Inputs/Outputs)		SMJ1: 32/32 SMJ3: 32/32 (1 station, remote I/O stations)	SMJ2: 32/32 SMJ4: 32/32 (1 station, remote I/O stations)	SEC1: 0/32 SEC3: 0/16	SEC2: 0/32 SEC4: 0/16	SPN1: 0/32 SPN3: 0/16	SPN2: 0/32 SPN4: 0/16
Applicable function		—				FSU, MRP	
Communication speed		156 k/625 k/2.5 M/5 M/10 Mbps		100 Mbps*2			
Communication connector specification		M12					
Terminating resistor switch		Built-in		None (Not required)			
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	SMJ1: 32 points SMJ3: 16 points	SMJ2: 32 points SMJ4: 16 points	SEC1: 32 points SEC3: 16 points	SEC2: 32 points SEC4: 16 points	SPN1: 32 points SPN3: 16 points	SPN2: 32 points SPN4: 16 points
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)				Solenoid valve with surge voltage suppressor 24 VDC, 1.0 W or less (SMC)	
	Supplied voltage	24 VDC					
	Supplied current	SMJ1: Max. 2.0 A SMJ3: Max. 1.0 A	SMJ2: Max. 2.0 A SMJ4: Max. 1.0 A	SEC1: Max. 2.0 A SEC3: Max. 1.0 A	SEC2: Max. 2.0 A SEC4: Max. 1.0 A	SPN1: Max. 2.0 A SPN3: Max. 1.0 A	SPN2: Max. 2.0 A SPN4: Max. 1.0 A

*1 Please note that the version is subject to change.
*2 Use a CAT5 or higher communication cable for EtherCAT, PROFINET, Ethernet/IP™, and Ethernet POWERLINK.
*3 The configuration file can be downloaded from the SMC website: https://www.smc.eu
*4 Enclosure is IP40 when the communication connector is D-sub.

Specifications

Model		EX260-SEN1/3	EX260-SEN2/4	EX260-SPL1	EX260-SPL3	EX260-SIL1	EX260-SCT1*6	
Applicable system	Protocol	EtherNet/IP™*2		Ethernet POWERLINK		IO-Link	CC-Link IE TSN	CC-Link IE Field
	Version*1	Volume 1 (Edition 3.17) Volume 2 (Edition 1.18)		EPSG DS 301 Version 1.2.0		V1.1	Class B ver. 2.0	—
	Configuration file*3	EDS file		XDD file		IODD file	CSP + file	
I/O occupation area (Inputs/Outputs)		SEN1: 16/32 SEN3: 16/16	SEN2: 16/32 SEN4: 16/16	16/32	16/16	0/32 16/32*4	32/32	
Applicable function		QuickConnect™, DLR		—		—	—	Fast Link-UP
Communication speed		10 M/100 Mbps*2		100 Mbps*2		COM3/COM2*4	100 Mbps/1 Gbps*5	1 Gbps
Communication connector specification		M12					RJ45	
Terminating resistor switch		None (Not required)						
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)				
	Number of outputs	SEN1: 32 points SEN3: 16 points	SEN2: 32 points SEN4: 16 points	32	16	32		
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)					Solenoid valve with surge voltage suppressor 24 VDC, 0.95 W or less (SMC)	
	Supplied voltage	24 VDC						
	Supplied current	SEN1: Max. 2.0 A SEN3: Max. 1.0 A	SEN2: Max. 2.0 A SEN4: Max. 1.0 A	Max. 2 A	Max. 1 A	Max. 2 A	Max. 1.3 A	

*1 Please note that the version is subject to change.
*2 Use a CAT5 or higher communication cable for PROFINET, PROFIsafe, Ethernet/IP™, and Ethernet POWERLINK.
*3 The configuration file can be downloaded from the SMC website: https://www.smc.eu
*4 A selection can be made using the setting switch.
*5 Use a CAT5e or higher communication cable for CC-Link IE TSN/CC-Link IE Field.
*6 Communication mode can be switched via the setting switch.
* In addition, it occupies input 4 bite/output 5 bite for safety.

Safety Communication Compliant SI Unit

Model		EX260-FPS1	EX260-FSE1
Applicable system	Protocol	PROFINET/ PROFIsafe*2	Safety over EtherCAT®*5
	Version*1	PROFINET Specification Version 2.3 PROFIsafe Specification Version 2.4	Conformance Test Record V.2.6.0
	Configuration file*3	GSD file	ESI file
I/O occupation area (Inputs/Outputs)		0/32*4	
Applicable function		FSU, Shared Device, MRP	—
Communication speed		100 Mbps*2	
Communication connector specification		M12	
Terminating resistor switch		None (Not required)	
Output	Output type	Source/PNP (Negative common)	
	Number of outputs	32	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 0.95 W or less (SMC)	
	Supplied voltage	24 VDC	
	Supplied current	Max. 1.3 A	

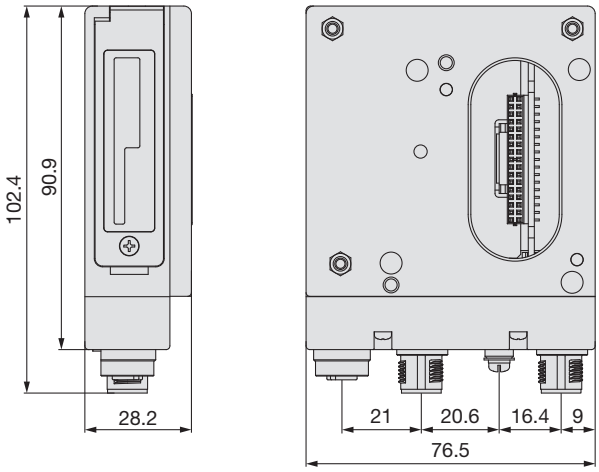
*1 Please note that the version is subject to change.
*2 Use a CAT5 or higher communication cable for PROFINET, PROFIsafe, Ethernet/IP™, Ethernet POWERLINK, and Safety over EtherCAT®.
*3 The configuration file can be downloaded from the SMC website: https://www.smc.eu
*4 In addition, it stores data for functional safety.
*5 The product may not be compatible with certain controllers. Be sure to use a controller that has passed the Safety over EtherCAT conformance test.
* A selection can be made using the setting switch.

Dimensions

M12 communication connector type (Fieldbus)

For PROFIBUS DP **For DeviceNet®**

For CC-Link

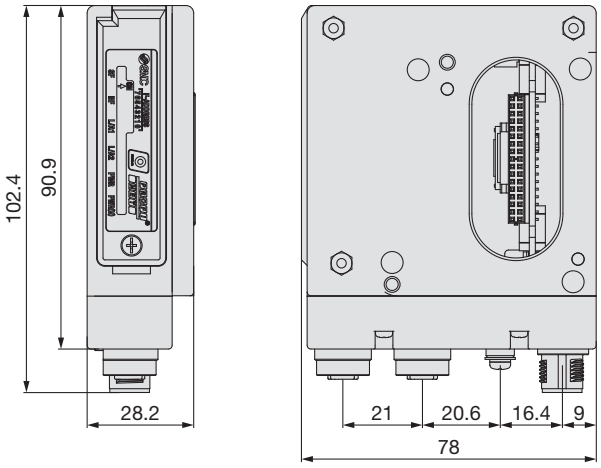


M12 communication connector type (Industrial Ethernet)

For EtherCAT **For PROFINET**

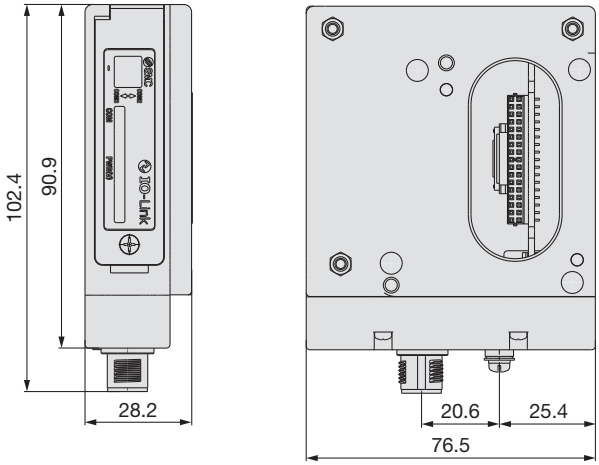
For EtherNet/IP™ **For Ethernet POWERLINK**

For PROFIsafe **For Safety over EtherCAT®**



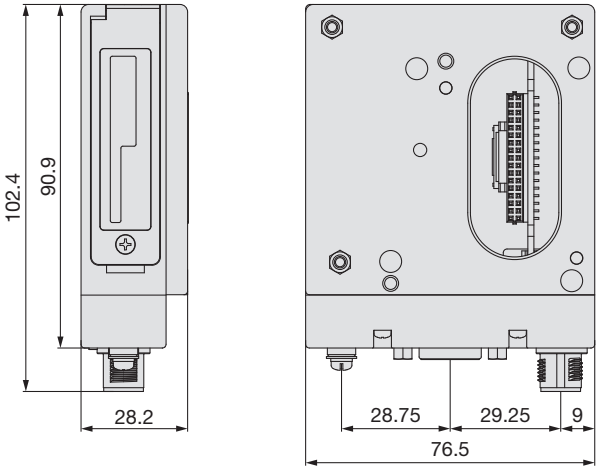
M12 communication connector type

For IO-Link



D-sub communication connector type (EX260-SPR5/6/7/8)

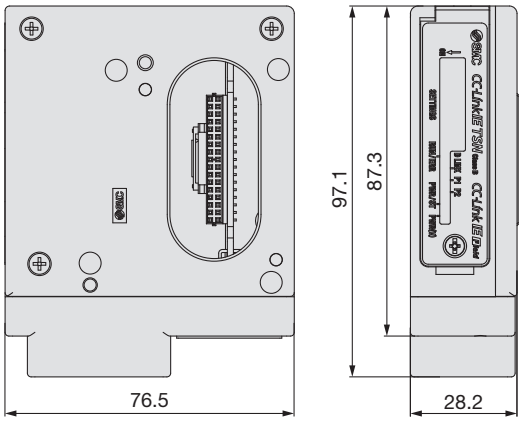
For PROFIBUS DP



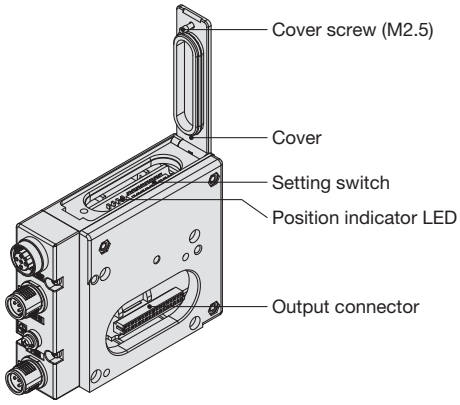
Dimensions

RJ45 communication connector type

For CC-Link IE TSN/CC-Link IE Field

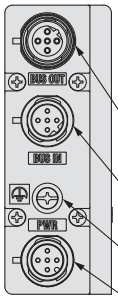


Parts Description



∗ The setting switch varies depending on the model.
Refer to the operation manual for details.
It can be downloaded via the SMC website: https://www.smc.eu

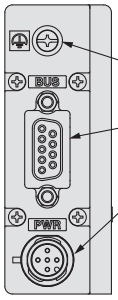
<Connector> M12 communication connector type



Part no.	EX260-SPR□	EX260-SDN□	EX260-SMJ□	EX260-SEC□ EX260-SPN□ EX260-SEN□ EX260-SPL□ EX260-FPS1 EX260-FSE1
Communication protocol	**PROFIBUS DP**	**DeviceNet®**	**CC-Link**	**EtherCAT PROFINET EtherNet/IP™ EtherNet POWERLINK PROFIsafe Safety over EtherCAT®**
Communication connector (M12) BUS OUT	5 pins, socket, B code (SPEEDCON)	5 pins, socket, A code (SPEEDCON)	5 pins, socket, A code∗1 (SPEEDCON)	4 pins, socket, D code (SPEEDCON)
Communication connector (M12) BUS IN	5 pins, plug, B code (SPEEDCON)	5 pins, plug, A code (SPEEDCON)	4 pins, plug, A code (SPEEDCON)	4 pins, socket, D code (SPEEDCON)
Ground terminal	M3			
Power connector (M12)	5 pins, plug, A code (SPEEDCON)	4 pins, plug, A code (SPEEDCON)	5 pins, plug, B code (SPEEDCON)	5 pins∗2, 4 pins∗3, plug, A code (SPEEDCON)

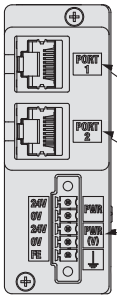
∗1 Recommended mating M12 4-pin plug part no.: PCA-1567717
∗2 For EtherCAT, PROFINET, and Ethernet POWERLINK
∗3 For EtherNet/IP™, PROFIsafe, and Safety over EtherCAT®

<Connector> D-sub communication connector type



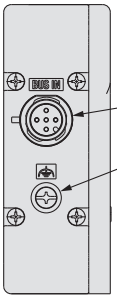
Part no.	EX260-SPR5/-SPR6/-SPR7/-SPR8
Communication protocol	**PROFIBUS DP**
Ground terminal	M3
Communication connector (D-sub) BUS IN/OUT	9 pins, socket
Power connector (M12)	5 pins, plug, A code

<Connector> RJ45 communication connector type



Part no.	EX260-SCT1
Protocol	**CC-Link IE TSN CC-Link IE Field**
Communication connector (PORT1)	RJ45 connector
Communication connector (PORT2)	
Power connector	5 pin Spring-loaded connector

<Connector>

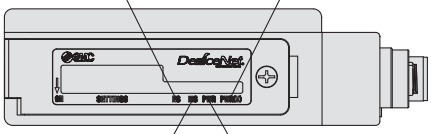


Part no.	EX260-SIL1
Communication protocol	**IO-Link**
Communication/ Power connector (M12)	5 pins, plug,∗1 A code (SPEEDCON)
Ground terminal	M3

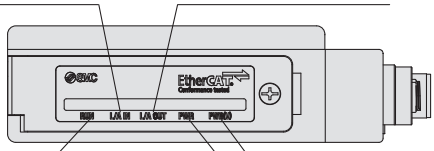
∗1 The communication line, SI unit power supply line, and the solenoid valve power supply line are connected using the same cable.

LED Indicator

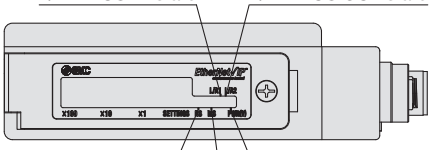
For DeviceNet® EX260-SDN□



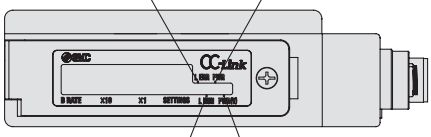
For EtherCAT EX260-SEC□



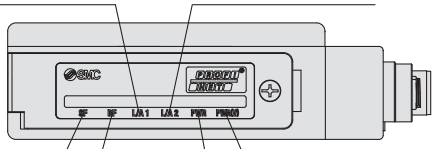
For EtherNet/IP™ EX260-SEN□



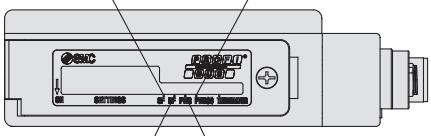
For CC-Link EX260-SMJ□



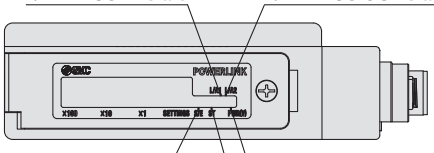
For PROFINET EX260-SPN□



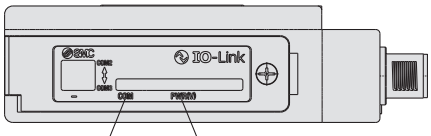
For PROFIBUS DP EX260-SPR□



For Ethernet POWERLINK EX260-SPL□

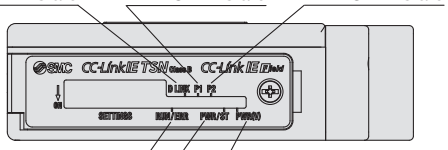


For IO-Link EX260-SIL1



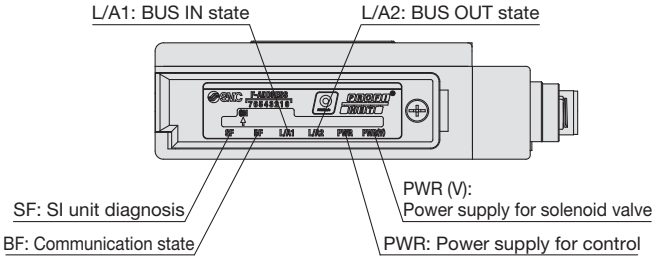
For CC-Link IE TSN/CC-Link IE Field

EX260-SCT1

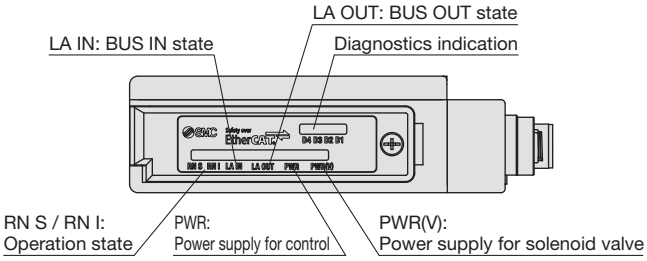


LED Indicator

For PROFIsafe EX260-FPS1



For Safety over EtherCAT® EX260-FSE1

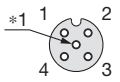


Accessories

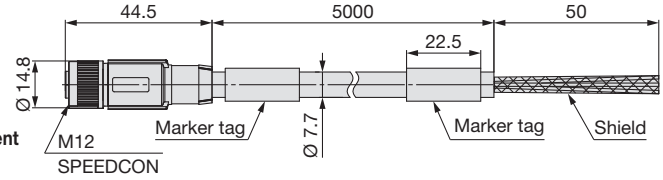
❶ Communication Cable

For CC-Link

PCA-1567720
(Socket)

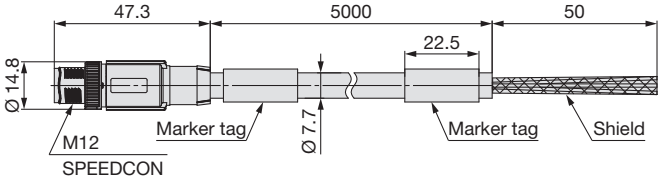


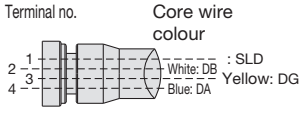
Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4



PCA-1567717
(Plug)

Plug connector pin arrangement
A-coded (Normal key)





Connections

Item		Specifications
Cable O.D.		Ø 7.7 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

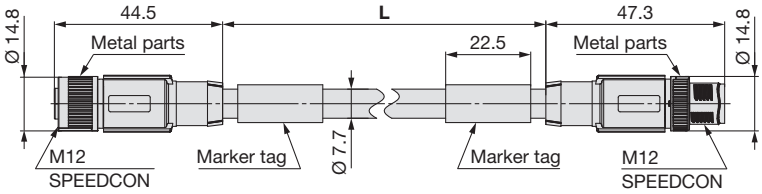
Made to Order

Cable length	10000 mm	**p. 29**

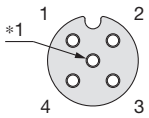
EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))

Cable length (L)

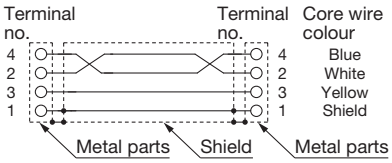
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



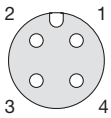
Item		Specifications
Cable O.D.		Ø 7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4



Connections

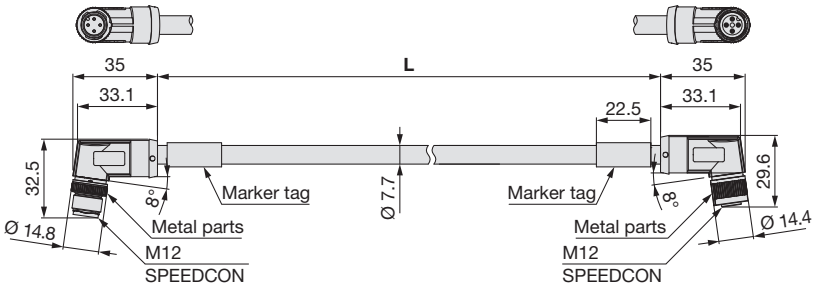


Plug connector pin arrangement
A-coded (Normal key)

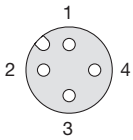
EX9-AC 005 MJ-SAPA (With angled connector on both sides (Socket/Plug))

Cable length (L)

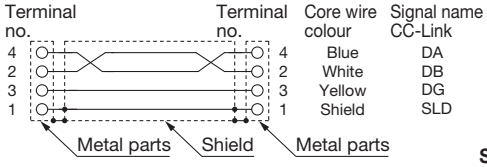
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



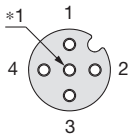
Item		Specifications
Cable O.D.		Ø 7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



Plug connector pin arrangement
A-coded (Normal key)



Connections

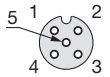


Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4

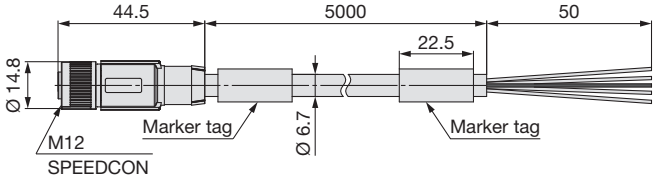
❶ Communication Cable

For DeviceNet®

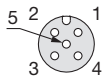
PCA-1557633
(Socket)



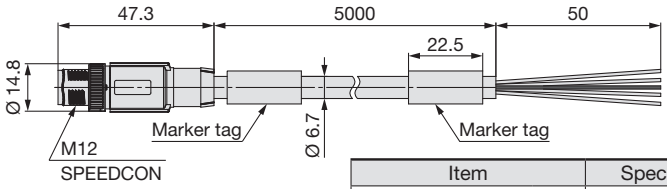
Socket connector pin arrangement
A-coded (Normal key)

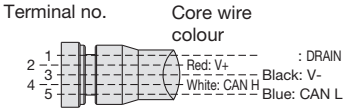


PCA-1557646
(Plug)



Plug connector pin arrangement
A-coded (Normal key)





Connections

Item		Specifications
Cable O.D.		Ø 6.7 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

Made to Order

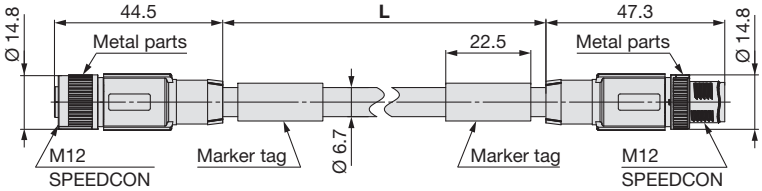
Made to Order

Cable length	10000 mm	p. 29

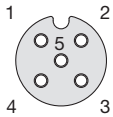
EX9-AC 005 DN-SSPS (With connector on both sides (Socket/Plug))

Cable length (L)

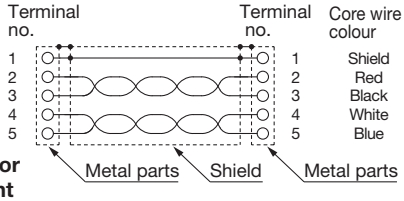
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



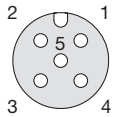
Item		Specifications
Cable O.D.		Ø 6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm



Socket connector pin arrangement
A-coded (Normal key)



Connections

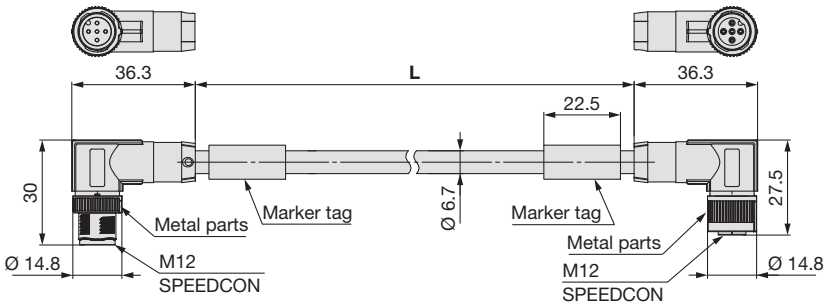


Plug connector pin arrangement
A-coded (Normal key)

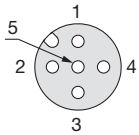
EX9-AC 005 DN-SAPA (With angled connector on both sides (Socket/Plug))

Cable length (L)

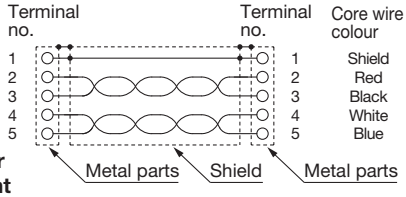
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



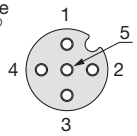
Item		Specifications
Cable O.D.		Ø 6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm



Plug connector pin arrangement
A-coded (Normal key)



Connections

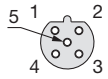


Socket connector pin arrangement
A-coded (Normal key)

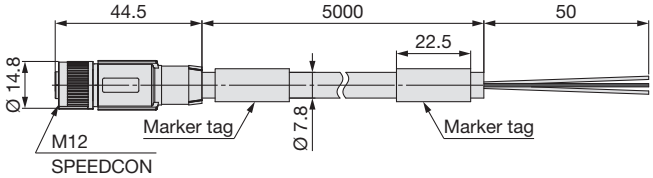
❶ Communication Cable

For PROFIBUS DP

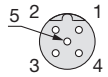
PCA-1557688
(Socket)



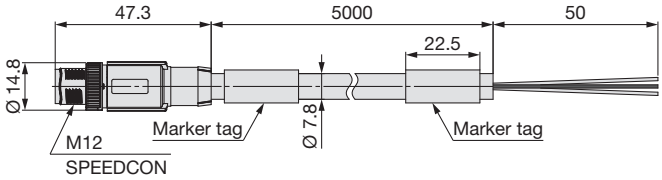
Socket connector pin arrangement B-coded (Reverse key)

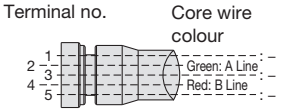


PCA-1557691
(Plug)



Plug connector pin arrangement B-coded (Reverse key)





Shield line is connected to the knurl.
Connections

Item	Specifications
Cable O.D.	Ø 7.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	2.55 mm
Min. bending radius (Fixed)	78 mm

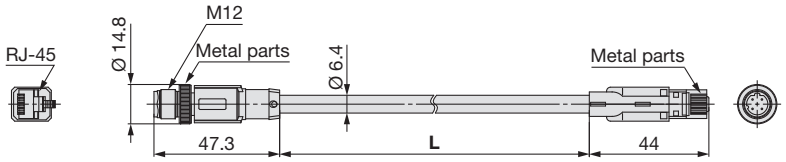
For EtherCAT **For PROFINET** **For EtherNet/IP™** **For Ethernet POWERLINK** **For PROFIsafe**

For Safety over EtherCAT®

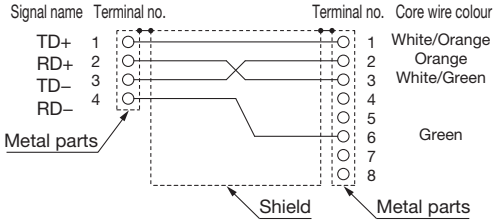
EX9-AC 020 EN-PSRJ (Plug/RJ-45 connector)

Cable length (L)

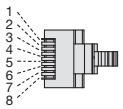
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



Plug connector pin arrangement D-coded



Connections (Straight cable)

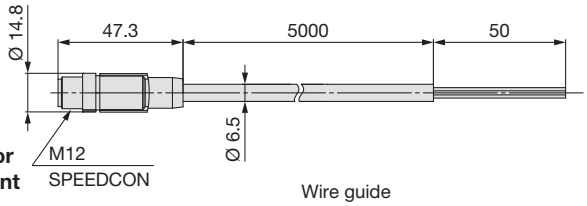


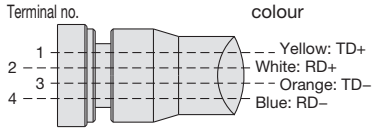
Plug connector pin arrangement

Item	Specifications
Cable O.D.	Ø 6.4 mm
Conductor nominal cross section	0.14 mm²/AWG26
Wire O.D. (Including insulator)	0.98 mm
Min. bending radius (Fixed)	26 mm

PCA-1446566 (Plug)

Plug connector pin arrangement D-coded





Connections

Item	Specifications
Cable O.D.	Ø 6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

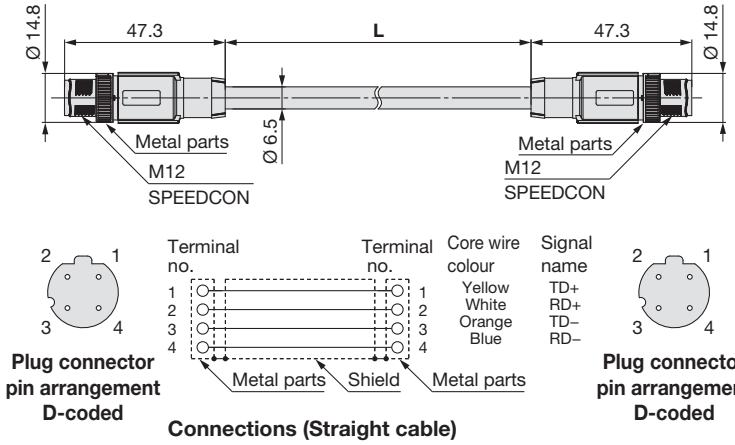
❶ Communication Cable

For EtherCAT | **For PROFINET** | **For EtherNet/IP™** | **For Ethernet POWERLINK**
For PROFIsafe | **For Safety over EtherCAT®**

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

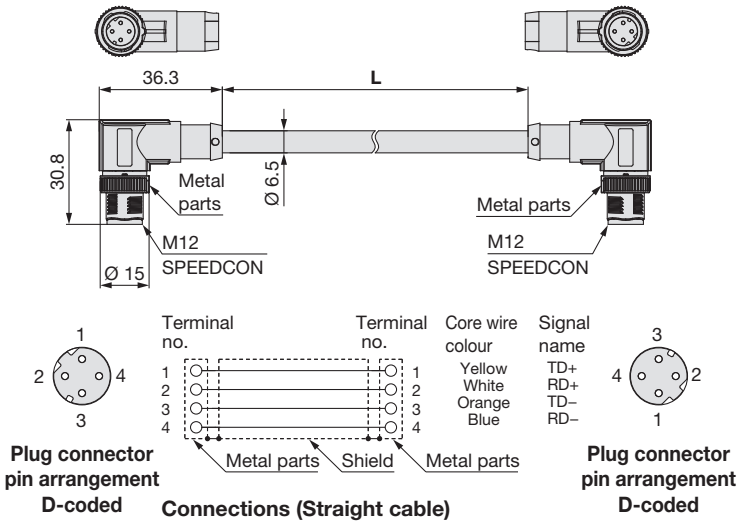


Item	Specifications
Cable O.D.	Ø 6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

EX9-AC 005 EN-PAPA (With angled 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

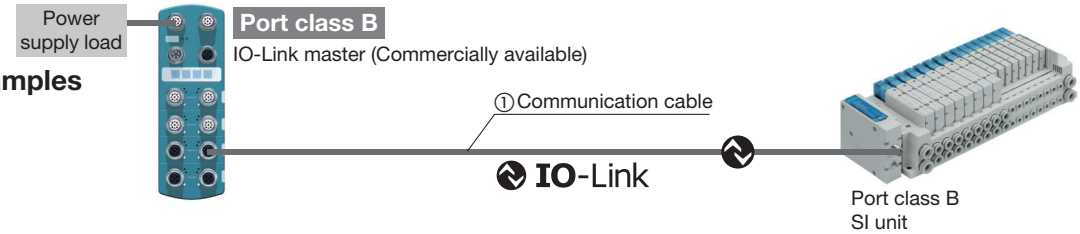


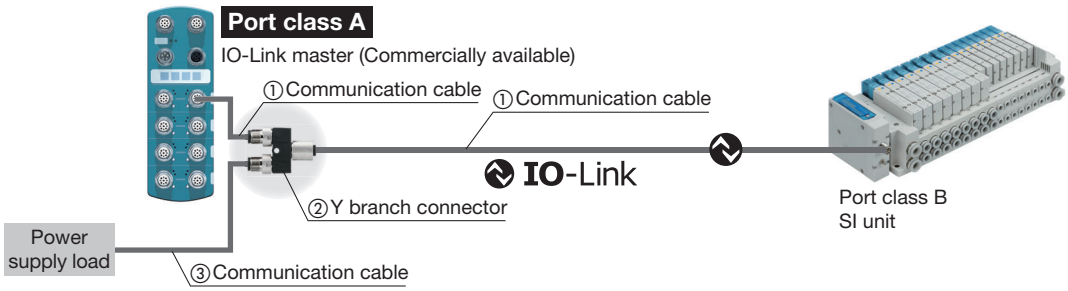
Item	Specifications
Cable O.D.	Ø 6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

❶ Communication Cable

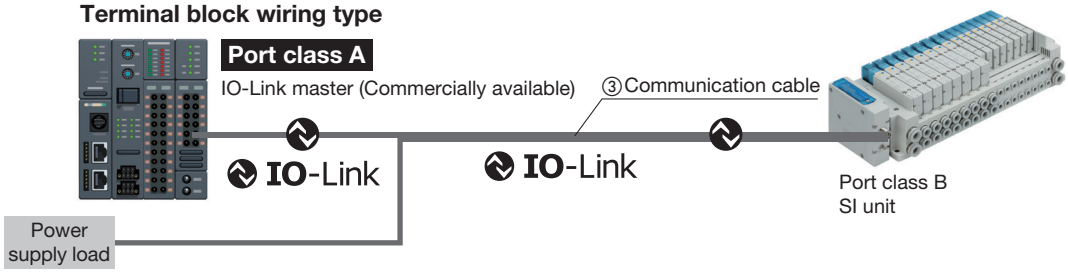
For IO-Link

Connection examples





Terminal block wiring type

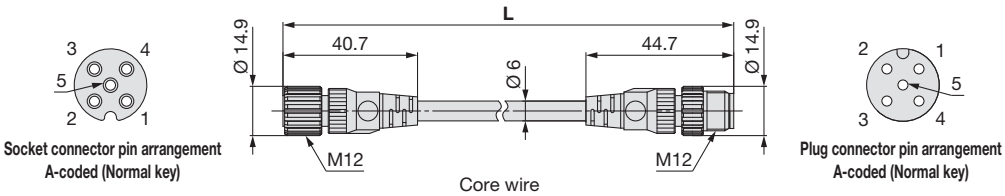


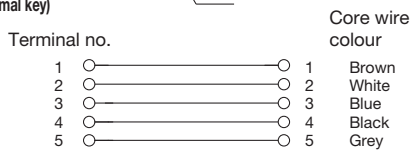
①Communication cable

EX9-AC 005 -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





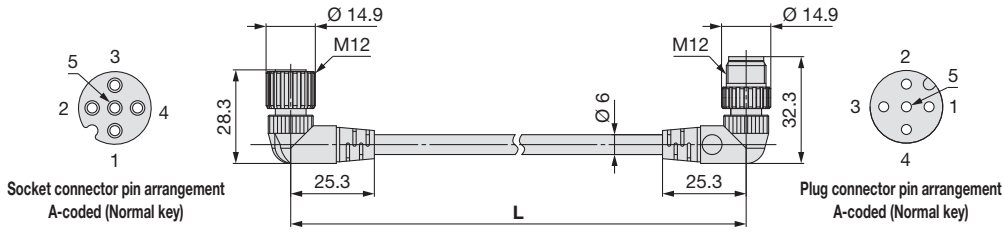
Connections

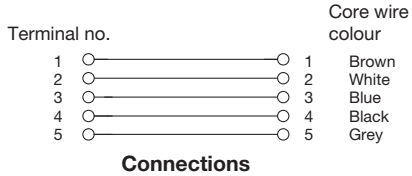
Item	Specifications
Cable O.D.	Ø 6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including conductor)	1.5 mm
Min. bending radius (Fixed)	40 mm

EX9-AC 005 -SAPA (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





Connections

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

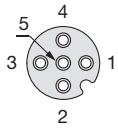
❶ Communication Cable

For IO-Link

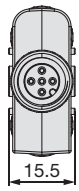
② Y branch connector

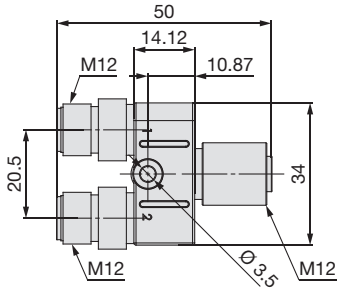
This connector is used to supply power to the valve manifold by branching the IO-Link communication cable in cases where a port class A IO-Link master is used.

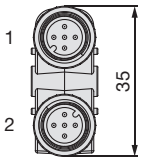
EX9-ACY02-S

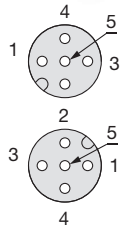


Socket connector pin arrangement
A-coded (Normal key)





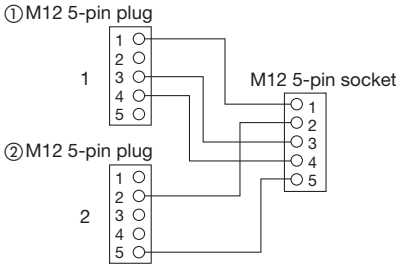




Plug connector
pin arrangement
A-coded (Normal key)

Solenoid valve power supply cable side pin arrangement when using a branch connector

1	—	Unused
2	SV24V	+24 V for solenoid valve
3	—	Unused
4	—	Unused
5	SV0V	0 V for solenoid valve



③ Communication cable

EX500-AP 050 - S

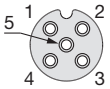
Cable length (L)

010	1000 mm
050	5000 mm

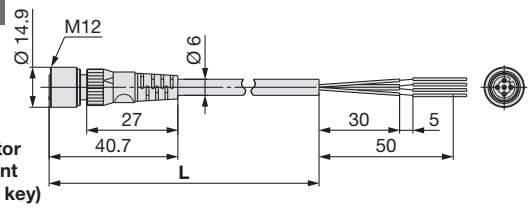
Connector specification

S	Straight
A	Angled

Straight connector type

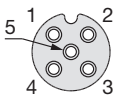


Socket connector
pin arrangement
A-coded (Normal key)

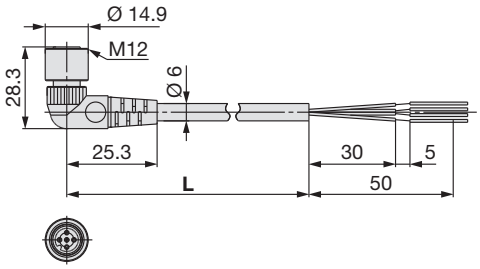


Item	Specifications
Cable O.D.	Ø 6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Angled connector type



Socket connector
pin arrangement
A-coded (Normal key)

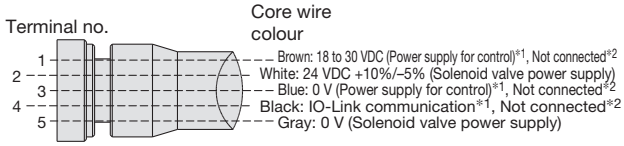


Item	Specifications
Cable O.D.	Ø 6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Made to Order

Made to Order

Cable length	10000 mm	**p. 30**



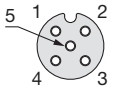
Connections (IO-Link)

*1 When used as an IO-Link communication cable
*2 When used as a solenoid valve power supply cable

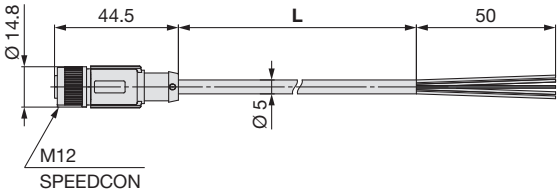
PCA- 1401804

Cable length (L)

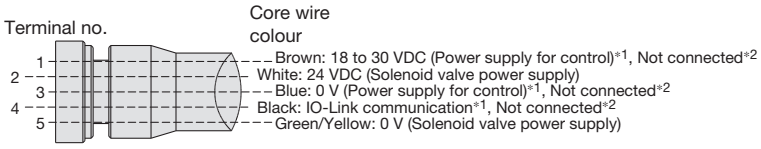
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



Socket connector
pin arrangement
A-coded (Normal key)



Item	Specifications
Cable O.D.	Ø 5 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 (IO-Link)

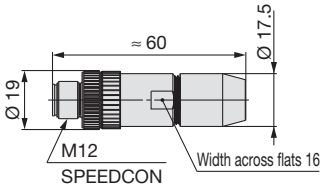
*1 When used as an IO-Link communication cable *2 When used as a solenoid valve power supply cable

❷ Field-wireable Communication Connector

Plug

For CC-Link **For DeviceNet®**

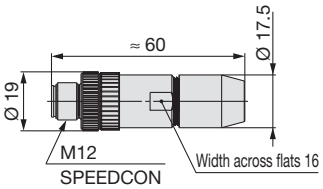
PCA-1075526 PCA-1075528



A-coded (Normal key)

For PROFIBUS DP

PCA-1075530



B-coded (Reverse key)

Applicable Cable

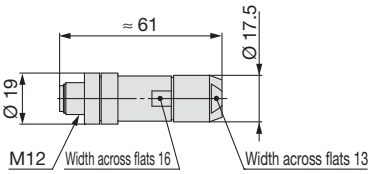
Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.75 mm²/AWG26 to 18 (Solid cable/Flexible cable) 0.08 to 0.5 mm²/AWG28 to 20 (With ferrule)

For EtherCAT **For PROFINET** **For EtherNet/IP™** **For Ethernet POWERLINK** **For PROFIsafe**

For Safety over EtherCAT®

PCA-1446553

D-coded



Applicable Cable

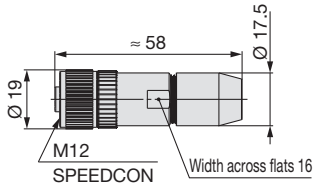
Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm²/AWG26 to 22

∗ 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.

Socket

For CC-Link **For DeviceNet®**

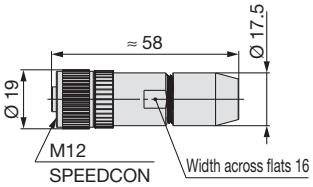
PCA-1075527 PCA-1075529



A-coded (Normal key)

For PROFIBUS DP

PCA-1075531



B-coded (Reverse key)

Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.75 mm²/AWG26 to 18 (Solid cable/Flexible cable) 0.08 to 0.5 mm²/AWG28 to 20 (With ferrule)

❸ Power Supply Cable (For SI unit)

For PROFIBUS DP | **For DeviceNet®** | **For EtherCAT** | **For PROFINET** | **For EtherNet/IP™**
For Ethernet POWERLINK | **For PROFIsafe** | **For Safety over EtherCAT®**

EX500-AP 050 - S

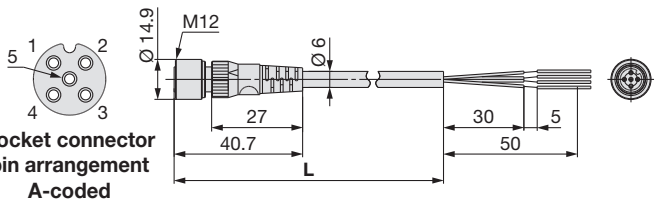
Cable length (L)

010	1000 mm
050	5000 mm

Connector specification

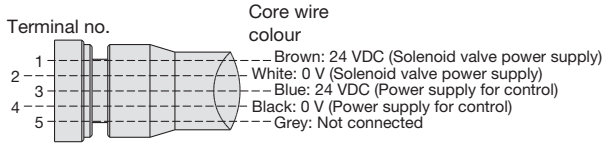
S	Straight
A	Angled

Straight connector type



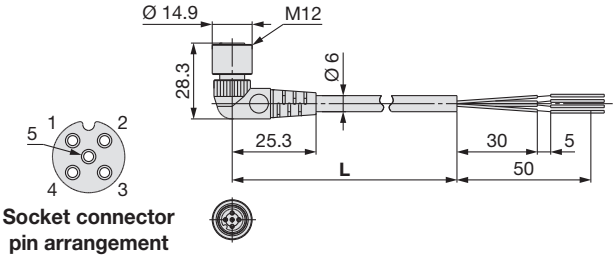
Socket connector pin arrangement A-coded

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



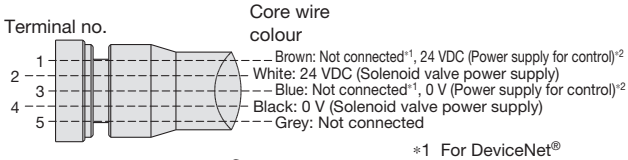
Connections (PROFIBUS DP, EtherCAT, PROFINET, Ethernet POWERLINK, PROFIsafe, Safety over EtherCAT®)

Angled connector type



Socket connector pin arrangement A-coded

Item	Specifications
Cable O.D.	Ø 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 (DeviceNet®, EtherNet/IP™)

*1 For DeviceNet®
*2 For EtherNet/IP™

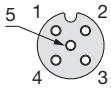
Made to Order

Cable length	10000 mm	**p. 30**

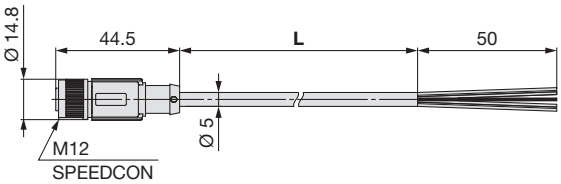
PCA- 1401804

Cable length (L)

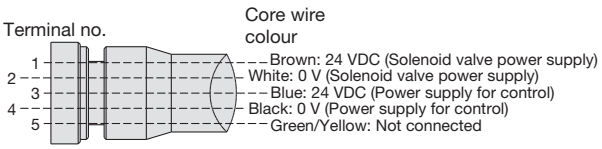
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



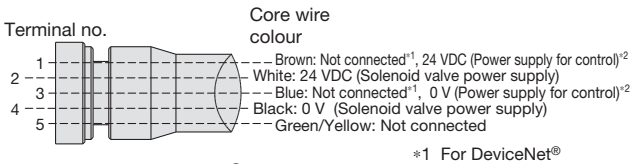
Socket connector pin arrangement A-coded



Item	Specifications
Cable O.D.	Ø 5 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, Ethernet POWERLINK, PROFIsafe, Safety over EtherCAT®)



Connections (DeviceNet®, EtherNet/IP™)

*1 For DeviceNet®
*2 For EtherNet/IP™

❹ Power Supply Cable (For SI unit/For power block)

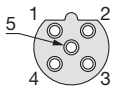
For CC-Link **For power block**

Straight connector type

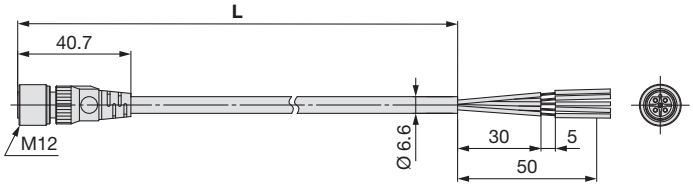
EX9-AC 050 - 1

● Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm



Socket connector pin arrangement B-coded



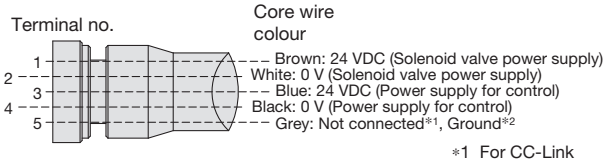
Item	Specifications
Cable O.D.	Ø 6.6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.65 mm
Min. bending radius (Fixed)	40 mm

Made to Order

Made to Order

Cable length	10000 mm	**p. 30**

Connections

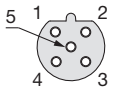


*1 For CC-Link
*2 For power block

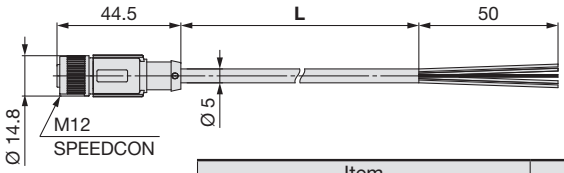
PCA- 1401807

● Cable length (L)

1401807	1500 mm
1401808	3000 mm
1401809	5000 mm

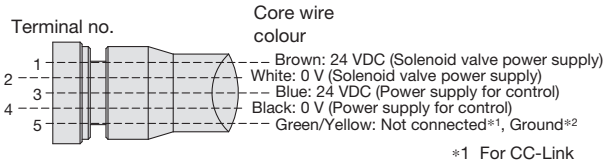


Socket connector pin arrangement B-coded



Item	Specifications
Cable O.D.	Ø 5 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



*1 For CC-Link
*2 For power block

❺ Seal Cap (10 pcs.)

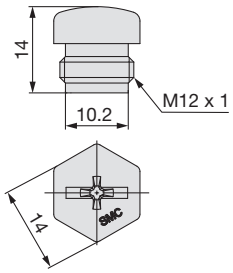
Use this on ports that are not being used for communication connector (M12 connector socket).
Use of this seal cap maintains the integrity of the IP67 enclosure.

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

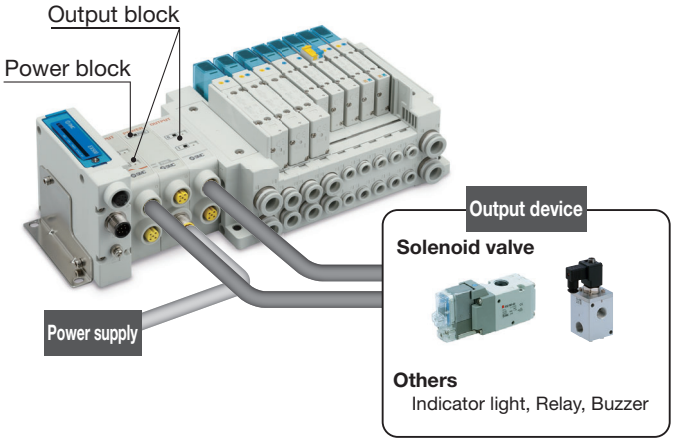
EX9-AW TS

● Connector specification

TS	For M12 connector socket (10 pcs.)



For M12 connector socket



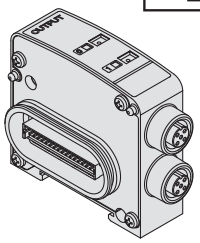
- **Output devices other than valve manifold can be operated.**
- **By using the power block and output block for high watt load, operation up to 0.5 A/point can be performed.**
- **It is possible to mount the output block and power block additionally between the SI unit and the solenoid valve (The surplus I/O points are used).**
- **2 point outputs per output block (M12 connector)**

Cannot be used with PROFIsafe compatible SI unit EX260-FPS1, or the Safety over EtherCAT® compatible SI unit EX260-FSE1.

You are requested to connect it to an SI unit and a valve manifold. For detailed specifications, refer to the operation manual that can be downloaded from SMC website: https://www.smc.eu

❻ Output Block

EX9-OE T 1



Output specification

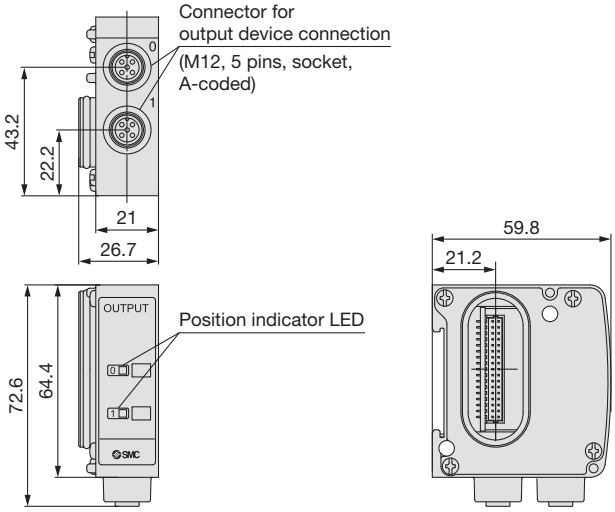
1	Source/PNP (Negative common)
2	Sink/NPN (Positive common)

Power supply type

T	Internal power supply method (for low-wattage load)
P	Integrated power supply method (for high-wattage load)*1

*1 Required to connect with a power block

Dimensions/Parts Description

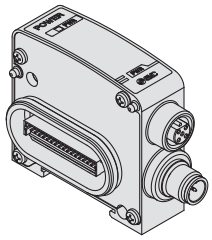


Specifications

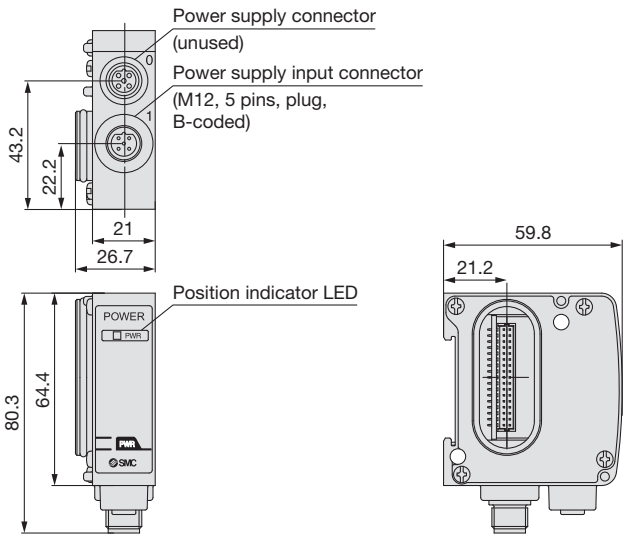
Model		EX9-OET1	EX9-OET2	EX9-OEP1	EX9-OEP2
Internal current consumption		40 mA or less			
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	2 outputs			
	Power supply method	Internal power supply method		Integrated power supply method (Power block: supplied from EX9-PE1)	
	Output device supply voltage	24 VDC			
	Output device supply current	Max. 42 mA/point (1.0 W/point)		Max. 0.5 A/point (12 W/point)	
Environmental resistance	Enclosure	IP67			
	Operating temperature range	–10 to 50 °C			
	Operating humidity range	35 to 85 % RH (No condensation)			
Standards		CE/UKCA marking, UL (CSA)			
Weight		120 g			

❼ Power Block

EX9-PE1



Dimensions/Parts Description



Specifications

Model		EX9-PE1
Connection block		Output block for high wattage load
Connection block stations		Output block: Max. 8 stations
Power supply for output and internal control	Power supply voltage	22.8 to 26.4 VDC
	Internal current consumption	20 mA or less
Supply current		Max. 3.1 A*1
Environmental resistance	Enclosure	IP67
	Operating temperature range	–10 to 50 °C
	Operating humidity range	35 to 85 % RH (No condensation)
Standards		CE/UKCA marking, UL (CSA)
Weight		120 g
Enclosed parts		Seal cap (for M12 connector) 1 pc.

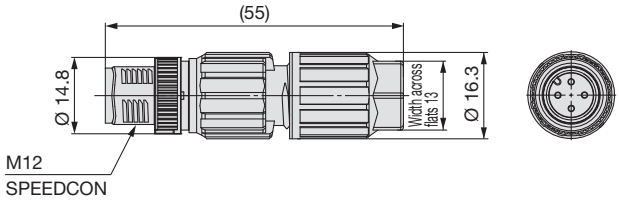
*1 When using with 3.0 to 3.1 A, the ambient temperature should not exceed 40 °C, and do not bundle the cable.

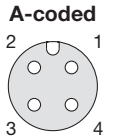
Refer to page 25 for the power supply cable for power block.

❽ Connector for Output Block Wiring

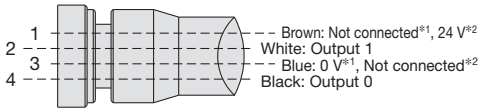
Field-wireable connector for connecting an output device to an output block

PCA-1557743





Plug pin arrangement



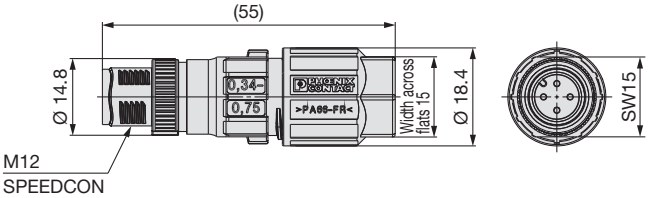
Connections

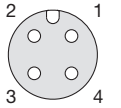
*1 When used for EX9-OE□1
*2 When used for EX9-OE□2

Applicable Cable

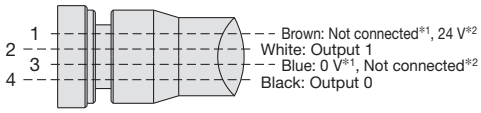
Item	Specifications
Cable O.D.	3.5 to 6.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.34 mm²/AWG26 to 22
Core wire diameter (Including insulating material)	0.7 to 1.3 mm

PCA-1557756





Plug pin arrangement



Connections

*1 When used for EX9-OE□1
*2 When used for EX9-OE□2

Applicable Cable

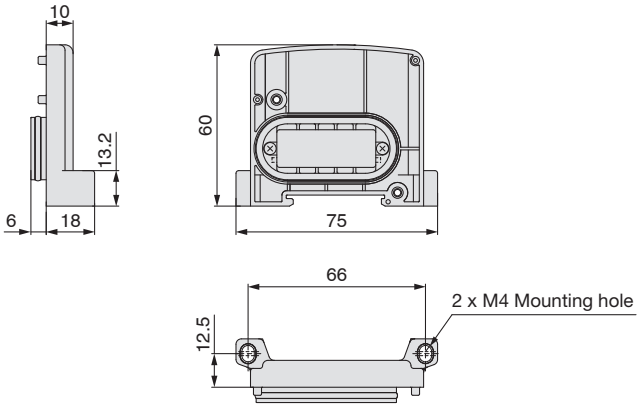
Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.34 to 0.75 mm²/AWG22 to 18
Core wire diameter (Including insulating material)	1.3 to 2.5 mm

Refer to page 25 for the power supply cable for power block.

❾ End Plate

Use when an output block is being used and a valve manifold is not connected.

EX9-EA03

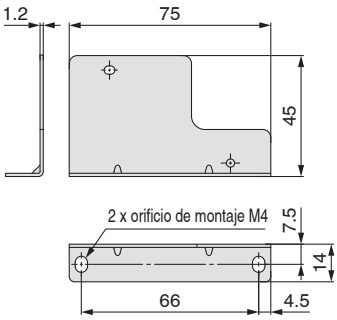


<Example of use>

❿ Bracket Plate/DIN Rail Mounting Bracket

A reinforcing brace used to mount an output block or power block onto an SI unit
To prevent connection failure between products due to deflection, use this bracket plate whenever an output block or power block is mounted.

EX9-BP1

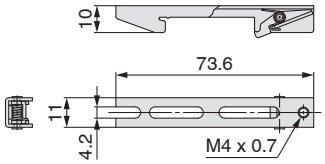


Accessory

Description	Qty.
Hexagon socket head cap screw (M3 x 35)	2

EX9-BD1

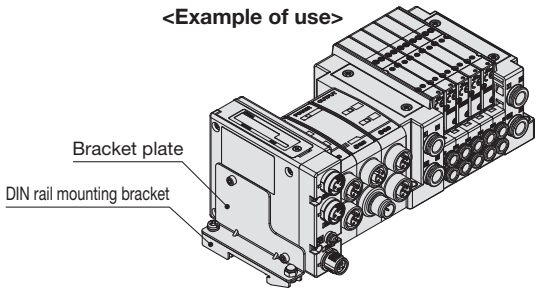
(For VQC, S0700, SV)



Accessory

Description	Qty.
Domed cap nut (M4)	1
Round head combination screw (M4 x 8)	1
Round head combination screw (M4 x 10)	1

<Example of use>



Made to Order

Please contact SMC for detailed specifications and lead times.

SI Unit

Prepare the SI unit and valve manifold (without SI unit) separately, and combine them before use.

①EtherNet/IP™ LAN cable connectable RJ45 communication connectors

EX260-S EN 2 - X205

Communication protocol

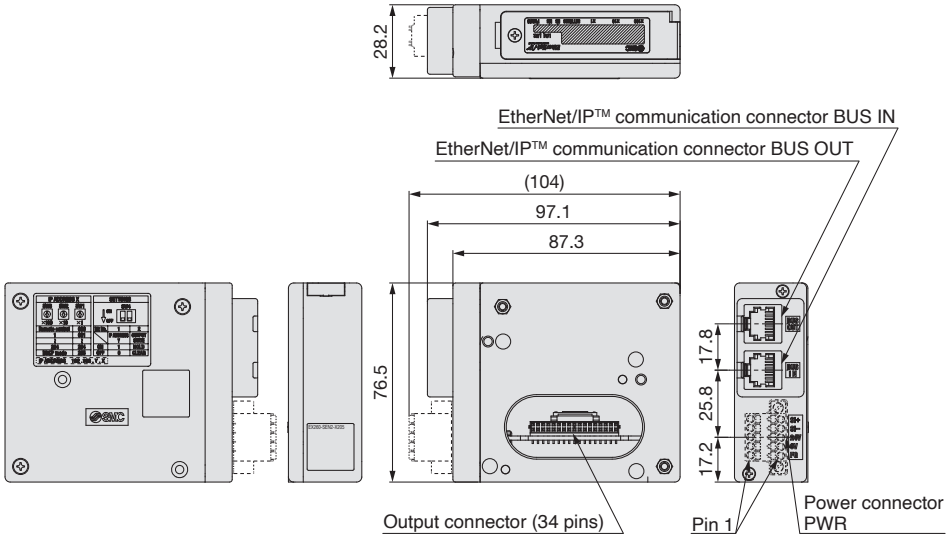
EN	EtherNet/IP™

Connector specification

X205	Communication connector: RJ45 Power connector: Spring type connector

Output specification

2	32 outputs, NPN (Positive common)/Sink



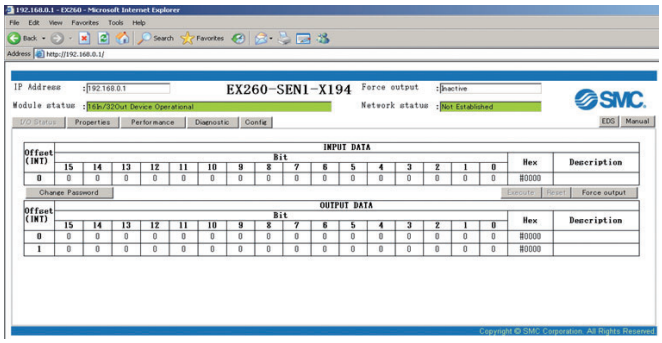
⚠Caution

The dimensions when combined with the valve manifold are the same as the dimensions of the valve manifold with a standard EX260 series unit mounted.

②EtherNet/IP™ Web server function compatible

EX260-SEN1-X194

- Web server compatible: Can conduct a solenoid valve operation test (ON/OFF), check communication state, set QuickConnect™, etc.
- Applicable to the power supply taken from Rockwell Automation's safe output module with pulse test function
- Compliant with QuickConnect™ class A specifications
- The gateway address is set to 192.168.□.001 when the IP address is set by the rotary switch.
- Dimensions are the same as those of the standard type.



Web server screen (Example)

Communication Cable

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

For CC-Link

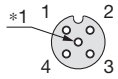
For DeviceNet®

EX9-AC100 MJ -X12

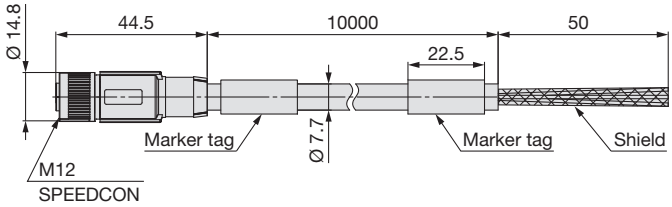
Applicable protocol

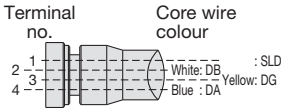
MJ	CC-Link
DN	DeviceNet®

For CC-Link



Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5, Total number of pins: 4

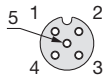




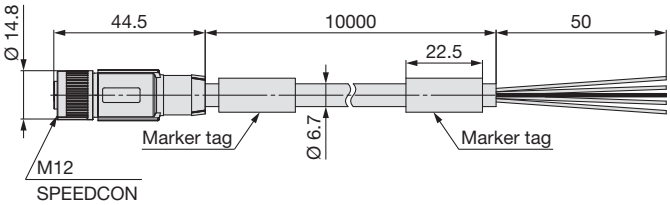
Connections

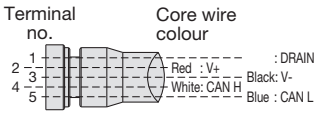
Item		Specifications
Cable O.D.		Ø 7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm

For DeviceNet®



Socket connector pin arrangement
A-coded (Normal key)





Connections

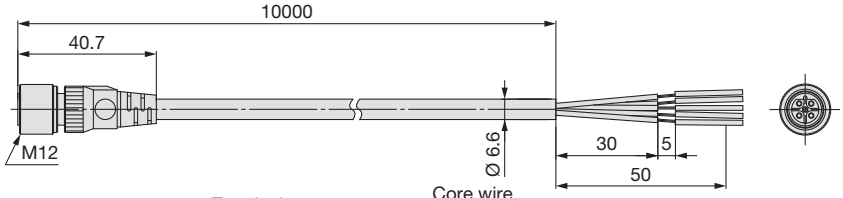
Item		Specifications
Cable O.D.		Ø 6.7 mm
Conductor nominal cross section	**Power pair**	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	**Power pair**	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm

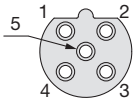
Power Supply Cable

① With connector on one side (Socket)
Cable length: 10000 mm

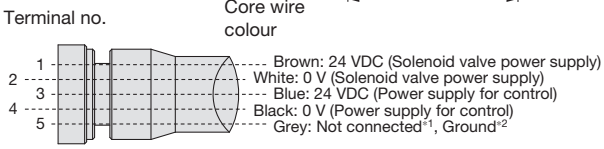
For CC-Link **For power block**

EX9-AC100-1-X16





Socket connector pin arrangement
B-coded (Reverse key)



Connections

*1 For CC-Link
*2 For power block

Item	Specifications
Cable O.D.	Ø 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

② With connector on one side (Socket)
Cable length: 10000 mm

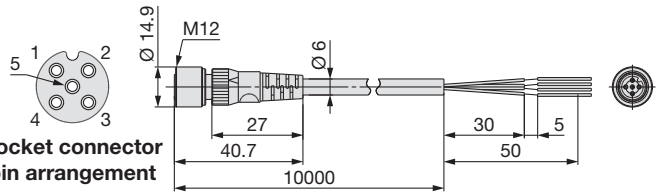
For PROFIBUS DP **For DeviceNet®** **For EtherCAT** **For PROFINET** **For EtherNet/IP™**
For Ethernet POWERLINK **For IO-Link** **For PROFIsafe** **For Safety over EtherCAT®**

EX500-AP100-S-X1

Connector specification

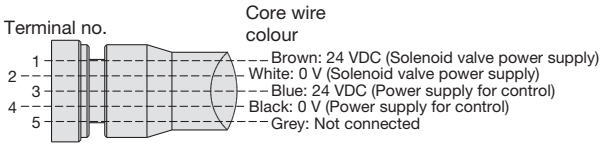
S	Straight
A	Angled

Straight connector type



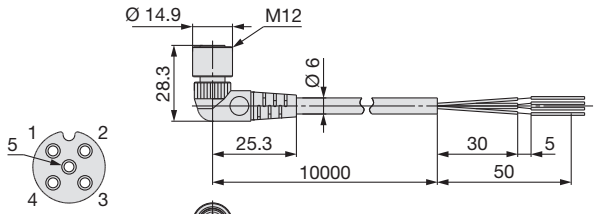
Socket connector pin arrangement
A-coded

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



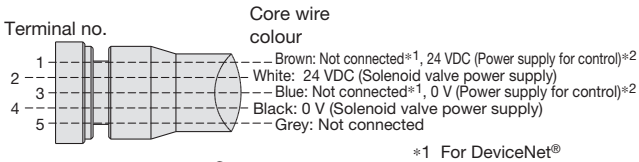
Connections (PROFIBUS DP, EtherCAT, PROFINET, Ethernet POWERLINK, PROFIsafe, Safety over EtherCAT®)

Angled connector type



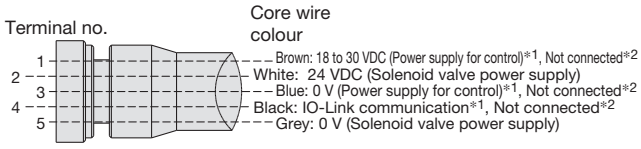
Socket connector pin arrangement
A-coded

Item	Specifications
Cable O.D.	Ø 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 (DeviceNet®, EtherNet/IP™)

*1 For DeviceNet®
*2 For EtherNet/IP™



Connections (IO-Link)

*1 When used as an IO-Link communication cable
*2 When used as a solenoid valve power supply cable

EX260 Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For fieldbus system precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smc.eu

Wiring

⚠ Caution

1. Select connectors that are ∅ 16 or less if mounting valve manifolds directly using field-wireable connectors for SI unit power supply wiring.

Using large diameter connectors causes interference with the mounting surface.
The following cables with connectors are recommended.

■ For EX260-SPR□/-SDN□/-SEC□/-SPN□/-SEN□/-SPL□/-FPS1/-FSE1

<Cable with connector>
- EX500-AP□□□-□
- PCA-1401804/-1401805/-1401806

■ For EX260-SMJ□

<Cable with connector>
- EX9-AC□□□-1
- PCA-1401807/-1401808/-1401809

Operating Environment

⚠ Caution

1. Select the proper type of enclosure according to the operating environment.

IP67 is achieved when the following conditions are met.
1) Provide appropriate wiring between all units using electrical wiring cables, communication connectors and cables with M12 connectors.
2) Appropriately mount each unit and valve manifold.
3) Be sure to mount a seal cap on any unused connectors.

If using in an environment that is exposed to water splashes, please take measures such as using a cover.
When the enclosure is IP40, do not use in an operating environment or atmosphere where it may come in contact with corrosive gas, chemical agents, seawater, water, or water vapor.
When connected to the EX260-SPR5/6/7/8 and EX260-SCT1, manifold enclosure is IP40.

Adjustment / Operation

⚠ Caution

1. For details on programming and address setting, refer to the manual from the PLC manufacturer.

The programming content related to the protocol is designed by the manufacturer of the PLC used.

2. For the EX260-SPN□, the side of the SI unit may become hot.

It may cause burns.

■ Trademark
DeviceNet® is a registered trademark of ODVA, Inc.
EtherNet/IP® is a registered trademark of ODVA, Inc.
EtherCAT® and Safety over EtherCAT® are registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
Modbus® is a registered trademark of Schneider Electric, licensed to the Modbus Organization, Inc.
QuickConnect™ is a trademark of ODVA.

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) [1], and other safety regulations.

⚠ **Caution:**	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
⚠ **Warning:**	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Danger:**	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

⚠ Warning

1. **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. **Only personnel with appropriate training should operate machinery and equipment.**
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. **Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.**
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. **The product is provided for use in manufacturing industries.**
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
   If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. [2] Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Revision History

Edition B	- EtherNet/IP™ has been added to applicable Fieldbus protocols.	QS
Edition C	- The IO-Link compatible EX260-SIL1 has been added. - Accessories and made-to-order specifications have been added. - “How to Order Manifold” and “Dimensions” pages have been deleted. - Number of pages has been decreased from 52 to 28.	XU
Edition D	- A functional safety standard compliant product has been added. - Number of pages has been increased from 28 to 32.	ZS
Edition E	- Added Safety over EtherCAT® and CC-Link IE TSN to the list of supported protocols. - Number of pages has been increased from 32 to 33.	DR

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Croatia	+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	+420 541424611	www.smc.cz	office@smc.cz
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Estonia	+372 6510370	www.smcpneumatics.ee	smc@info@smcee.ee
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Germany	+49 (0)61034020	www.smc.de	info@smc.de
Greece	+30 210 2717265	www.smchellas.gr	sales@smchellas.gr
Hungary	+36 23513000	www.smc.hu	office@smc.hu
Ireland	+353 (0)14039000	www.smcautomation.ie	sales@smcautomation.ie
Italy	+39 03990691	www.smcitalia.it	mailbox@smcitalia.it
Latvia	+371 67817700	www.smc.lv	info@smc.lv
Lithuania	+370 5 2308118	www.smclt.lt	info@smclt.lt
Netherlands	+31 (0)205318888	www.smc.nl	info@smc.nl
Norway	+47 67129020	www.smc-norge.no	post@smc-norge.no
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Slovakia	+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	+386 (0)73885412	www.smc.si	office@smc.si
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