Fieldbus System

(Output device for driving 5-port solenoid valves)

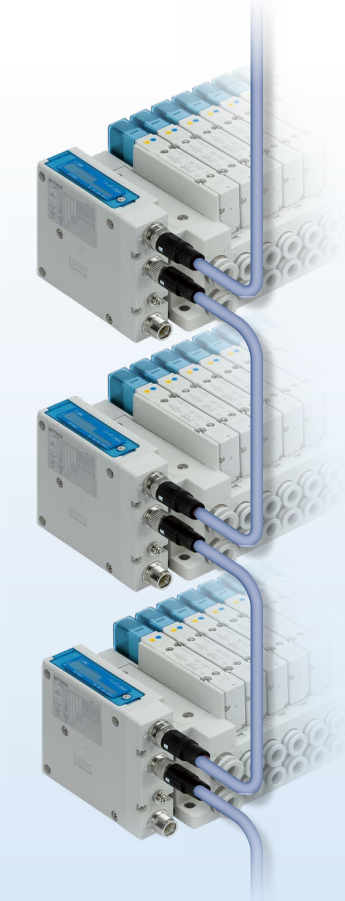
* Only the SY and SV valves are UL-compliant.

Space-saving installation

Compact
Approx. 28 mm

Actual size

- **IO-Link compatible**
- **IP67**
  - * For units with a D-sub 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>

PROFIBUS DeviceNet CC-Link IO-Link PROFINET PROFIsafe

EtherNet/IP EtherCAT ETHERNET POWERLINK

Made to Order AS-i Modbus CANopen

Please contact SMC for details on compatible products.

New **A functional safety standard compliant product has been added.**
(PROFIsafe compatible)

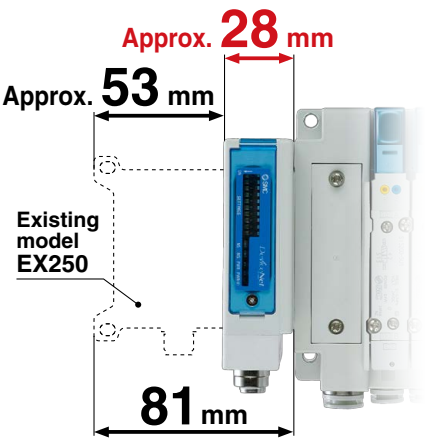
- Product certification obtained by a third party (IEC 61508/62061 SIL 3, ISO 13849 PL e Cat. 3)
- Safety output for valve control

EX260 Series

SMC

CAT.E02-25D

Manifold length reduced by approx. 53 mm



M12 communication connector x 2
(For daisy-chain wiring)

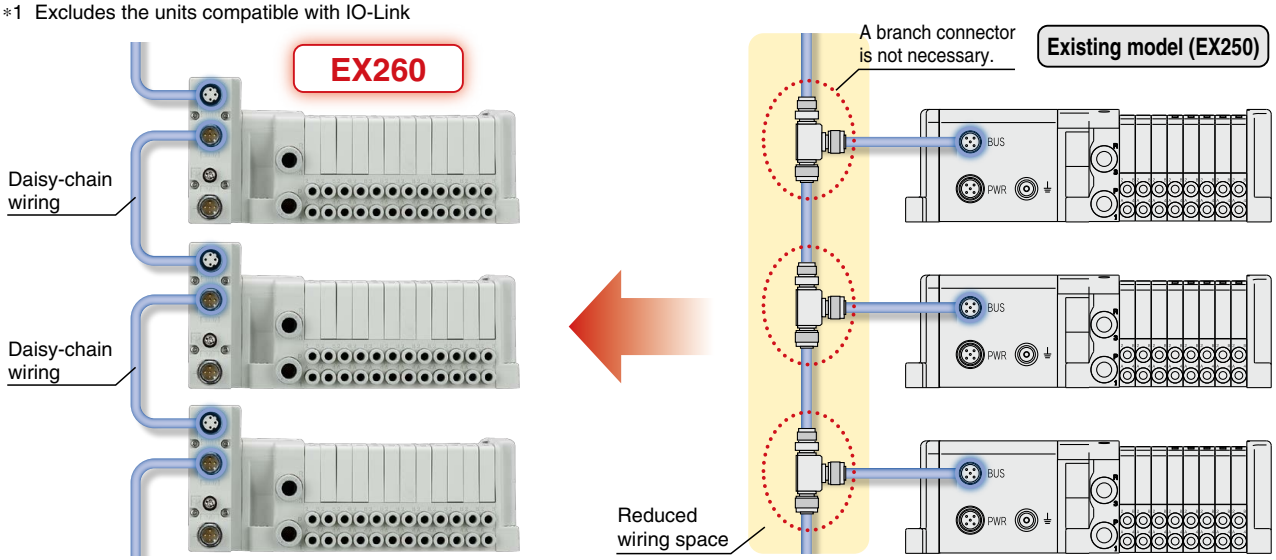
M12 communication connector x 1
(Same for the solenoid valve power supply wiring)

D-sub communication connector

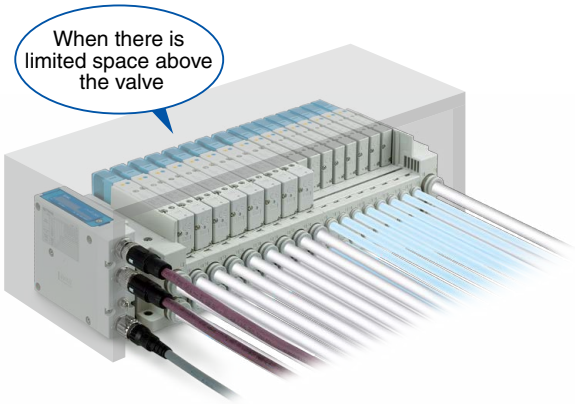
Daisy-chain wiring communication is possible.*1

A branch connector is not necessary/Reduced wiring space

*1 Excludes the units compatible with IO-Link



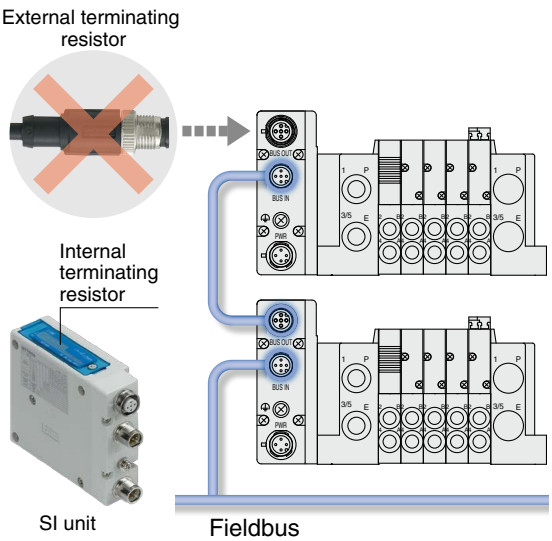
Wiring and piping from the same direction is possible. (for side ported)



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.

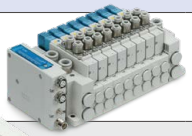
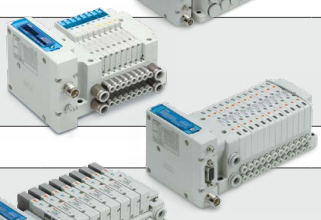


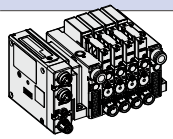
Product Specification Variations

		PROFIBUS	DeviceNet	CC-Link	PROFINET	EtherNet/IP	EtherCAT	ETHERNET POWERLINK	IO-Link	PROFIsafe
Number of outputs	16	●	●	●	●	●	●	●	●	●
	32	●	●	●	●	●	●	●		
Output polarity	PNP	●	●	●	●	●	●	●	●	●
	NPN	●	●	●	●	●	●			
Communication connector	M12	●	●	●	●	●	●	●	●	●
	D-sub	●								

Applicable Valve Series and Compatible Protocols

Fieldbusses & Industrial Ethernet — PROFIBUS DeviceNet CC-Link PROFINET EtherNet/IP EtherCAT ETHERNET POWERLINK IO-Link

Applicable valve			Flow rate characteristics (4/2 → 5/3)		Max. number of solenoids	Power consumption [W]	Applicable cylinder size
			C [dm³/(s·bar)]	b			
IP67 *1		SY3000	1.6	0.19	32	0.35 (Standard) 0.1 (With power-saving circuit)	ø50
		SY5000	3.6	0.17			ø63
		SY7000	5.9	0.20			ø80
IP67 *1, *2		JSY1000	0.91	0.48	32	0.2 (With power-saving circuit)	ø40
		JSY3000	2.77	0.27		0.4 (Standard) 0.1 (With power-saving circuit)	ø50
		JSY5000	6.59	0.22			ø80
IP40		S0700 *3	0.37	0.39	32	0.35	ø25
IP67 *1		SV1000 *3	1.1	0.35	32	0.6	ø40
		SV2000 *3	2.4	0.18			ø63
		SV3000 *3	4.3	0.21			ø80
IP67 *1		VQC1000	1.0	0.30	24	0.4 (Standard)	ø40
		VQC2000	3.2	0.30			ø63
		VQC4000	7.3	0.38		0.95 (Standard) 0.4 (Low-wattage type)	ø160
		VQC5000	17	0.31			ø180

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 — PROFIsafe

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.

Applicable valve			Flow rate characteristics (4/2 → 5/3)		Max. number of solenoids	Power consumption [W]	Applicable cylinder size
			C [dm³/(s·bar)]	b			
IP67		SY3000	1.6	0.19	32	0.35 (Standard) 0.1 (With power-saving circuit)	ø50
		SY5000	3.6	0.17			ø63
		SY7000	5.9	0.20			ø80
IP67 *2		JSY1000	0.91	0.48	32	0.2 (With power-saving circuit)	ø40
		JSY3000	2.77	0.27		0.4 (Standard) 0.1 (With power-saving circuit)	ø50
		JSY5000	6.59	0.22			ø80
IP67		VQC1000	1.0	0.30	24	0.4 (Standard)	ø40
		VQC2000	3.2	0.30			ø63
		VQC4000	7.3	0.38		0.95 (Standard) 0.4 (Low-wattage type)	ø160
		VQC5000	17	0.31			ø180

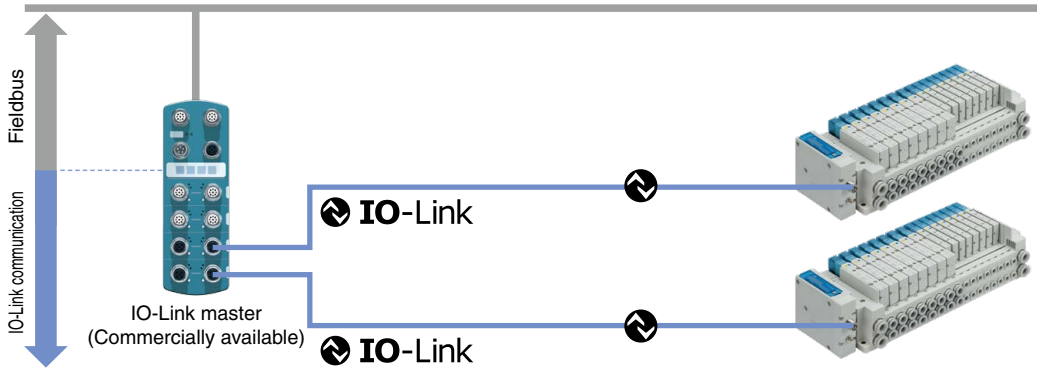
*1 Units with a D-sub communication connector are IP40.
*2 The JSY1000 is IP40.
*3 There is no manifold part number setting for the IO-Link compatible SI units.

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.

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



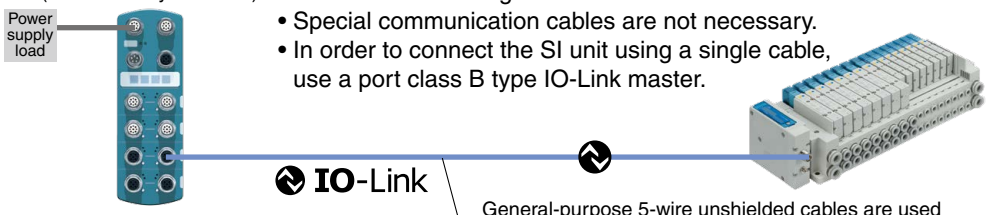
Can be connected using a single general-purpose cable, resulting in a reduction in the space required for wiring

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

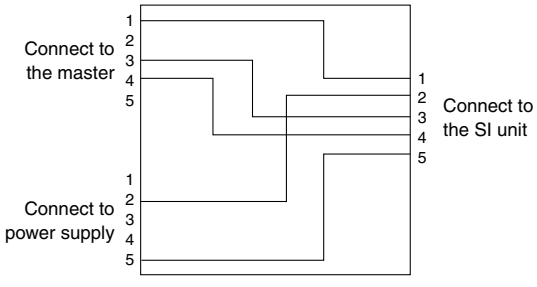
Difference between IO-Link master port class A and class B

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

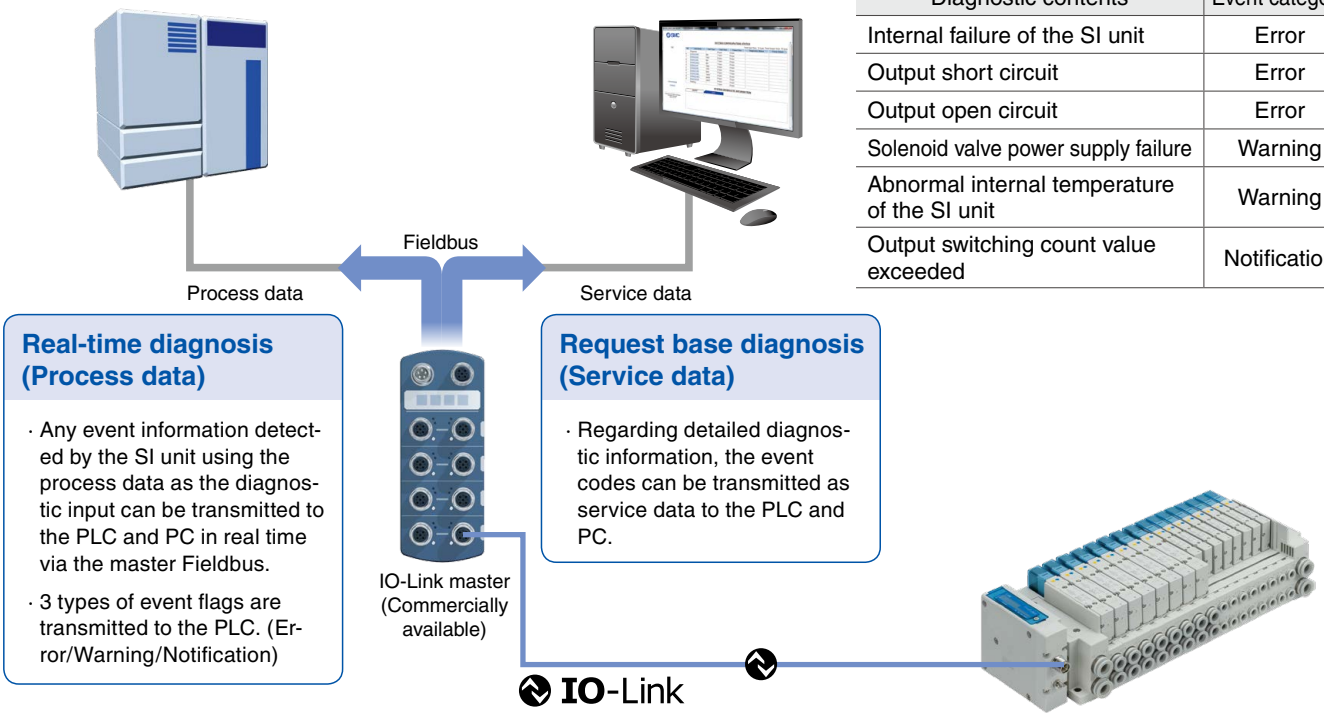
Port class A compliant
A special wiring Y branch connector is available.

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



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.

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

Equipped with a solenoid valve output operation count function

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

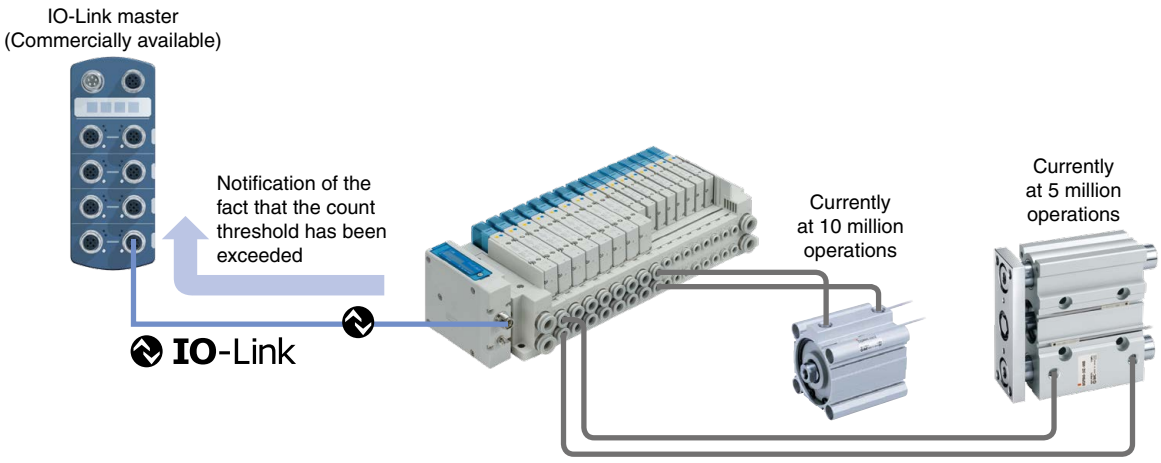
Set the count threshold value to be used as a guide for maintenance according to the operating conditions of the cylinder connected to the solenoid valve.

⬇

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

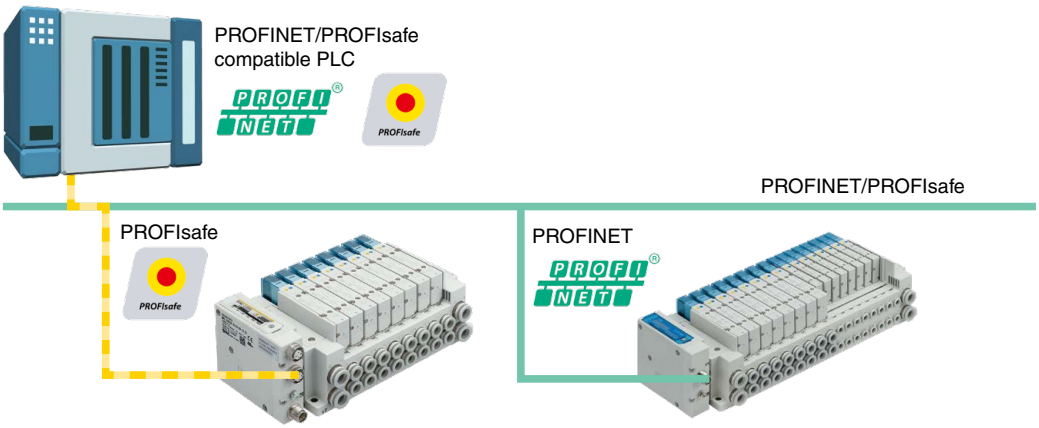
⬇

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



Supports safety communication (PROFIsafe) <EX260-FPS1>

PROFIsafe is established as an international standard (IEC 61784-3-3). It is a communication protocol that transmits safety-related data by PROFINET communication and can be used up until safety standards ISO 13849-1 PL e and IEC 61508/IEC 62061 SIL 3.



EX260-FPS1
(PROFIsafe compatible SI unit)

EX260-SPN□
(PROFINET compatible SI unit)

A PROFIsafe compatible PLC allows for the use of a PROFINET compatible SI unit and a PROFIsafe compatible SI unit to be used on one communication line at the same time.

Compliant with safety standards

This product (EX260-FPS1) is intended to facilitate safe machine and system designing (ISO/IEC standard compliance) and has been certified by a third party (TÜV Rheinland) for use up until the standards listed below.

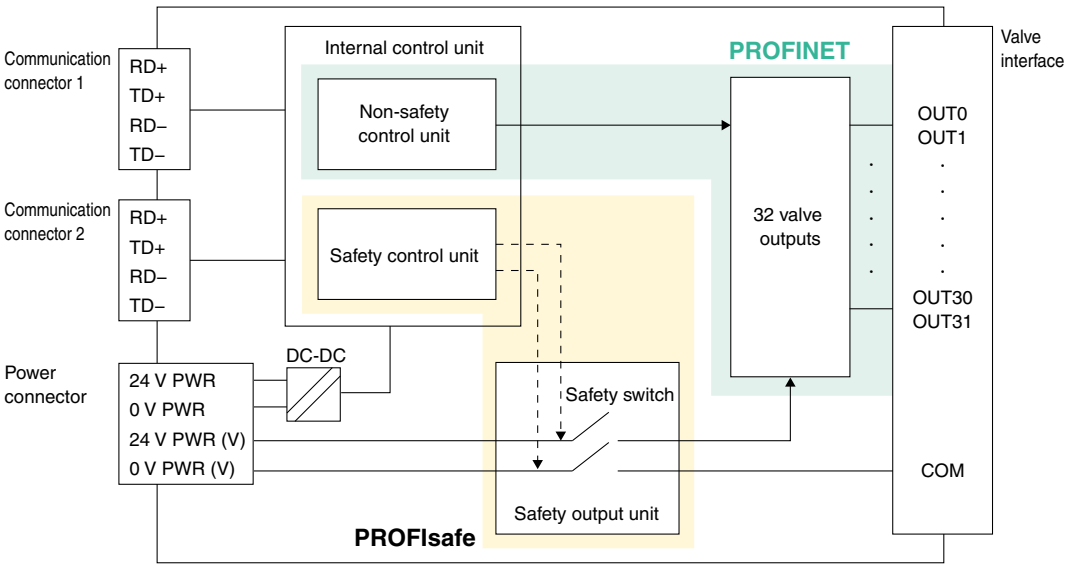
Product Safety
Functional Safety
TÜVRheinland CERTIFIED
www.tuv.com
ID 0600000000

IEC 61508/IEC 62061 SIL 3
ISO 13849 PL e/Cat. 3

- **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

This product (EX260-FPS1) has a safety switch inside the product. It shuts off the voltage supplied to the valve by turning OFF the safety switch via directive from the PLC to enter safe state. The safety switch of this product (EX260-FPS1) has two redundancies, one on the 24 V side and the other on the 0 V side. It continuously runs diagnostics. The safety switch is turned OFF in the event of an error detection.



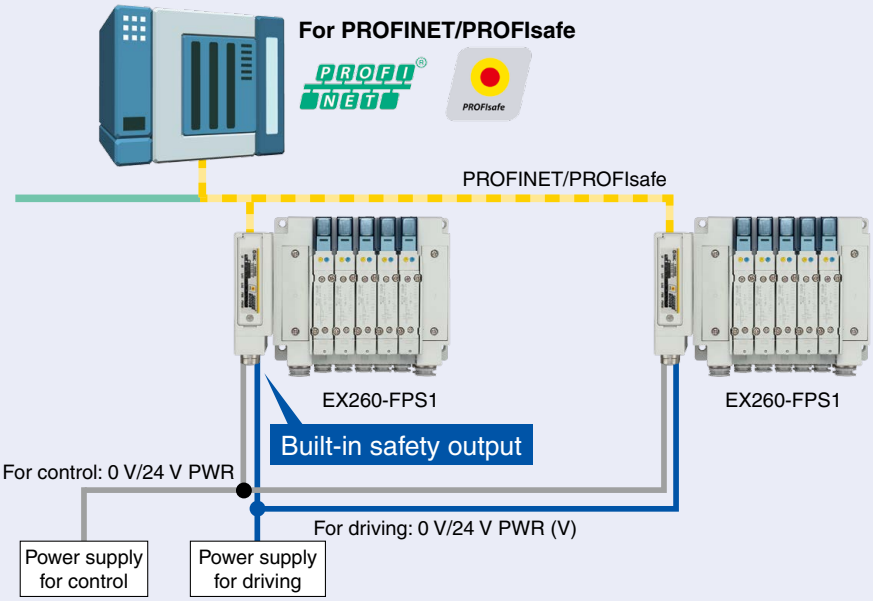
⚠Safety Definition

The safe state of this product (EX260-FPS1) 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

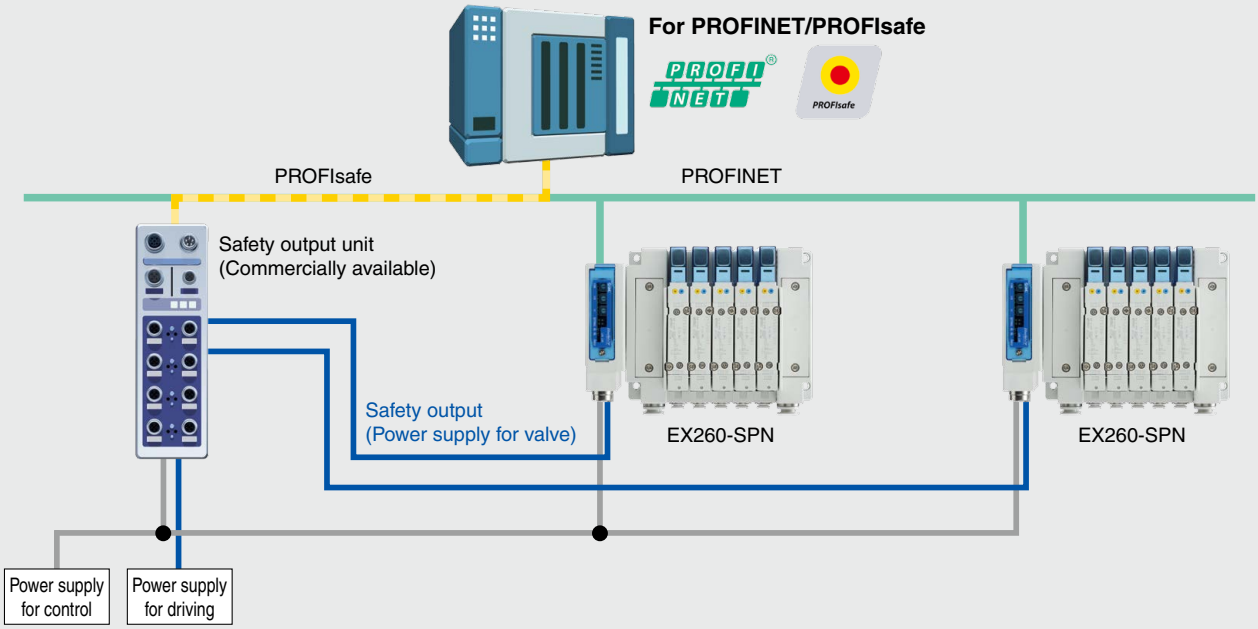
For built-in safety output (EX260-FPS1)

- A separate safety output unit is not required. (Space saving)
- There is no need for wiring between the safety output unit and the EX260-FPS1. (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 (EX260-FPS1) 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 of the EX260-FPS1.

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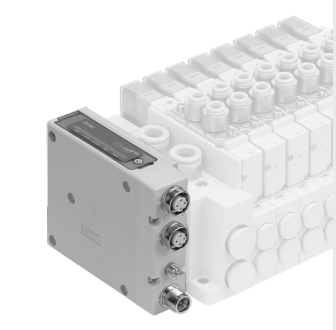
Fieldbus System
(Output device for driving 5-port solenoid valves)
EX260 Series



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Made to Order
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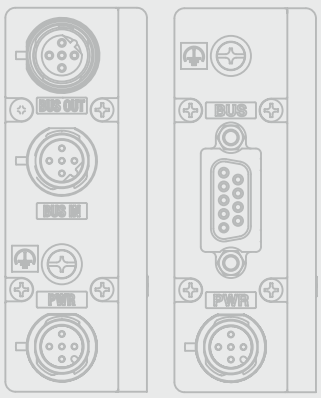


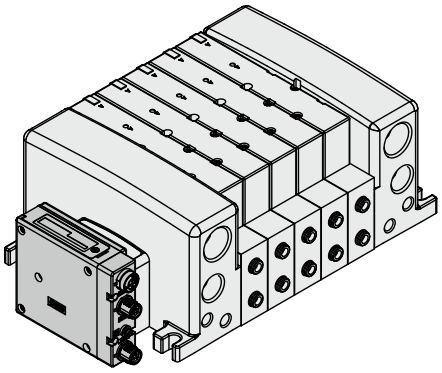
Fieldbus System For Output
EX260 Series

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

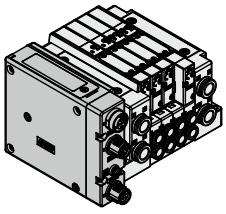
Compact design	Compact design for space saving
Number of outputs	32/16 digital output type available for each unit in the series (IO-Link and PROFIsafe are only compatible with the 32-point digital output type.)
Output polarity	Negative common (PNP)/positive common (NPN) type available for each unit in the series (Only negative common (PNP) is available for Ethernet POWERLINK, IO-Link, and PROFIsafe.)
Enclosure	IP67 (For units with a D-sub 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

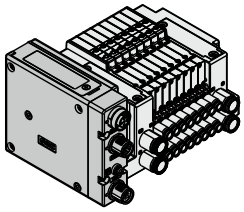
VQC1000/2000/4000/5000



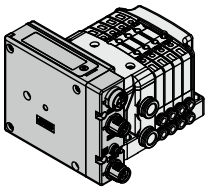
SY3000/5000/7000



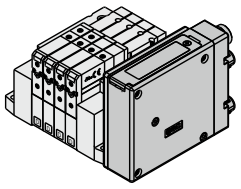
JSY1000/3000/5000



S0700

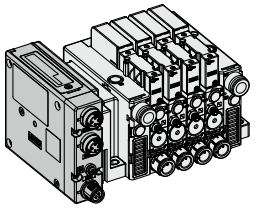


SV1000/2000/3000



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

*1 Enclosure is IP40 when the communication connector is D-sub.

Made to Order
➡ **p. 26**

EtherNet/IP™ Web server function compatible

* For "How to Order Manifold Assembly," refer to the **Web Catalog** 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

* 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
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 (EMC directive/RoHS directive), UL (CSA) compliant
Weight		200 g
Accessories	**Mounting screw**	2 pcs.
	Seal cap (for M12 connector socket)	EX9-AWTS (1 pc.)*3

*1 To serve as the power supply for communication, the power supply voltages are 11 to 25 VDC for the EX260-SDN□, 18 to 30 VDC for the EX260-SIL1, and 20.4 to 28.8 VDC for the EX260-FPS1.
*2 IP40 applies to EX260-SPR5/6/7/8.
*3 Not provided for EX260-SPR5/6/7/8
*4 200 mA or less for the EX260-FPS1

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.smcworld.com
*4 Enclosure is IP40 when the communication connector is D-sub.

Specifications

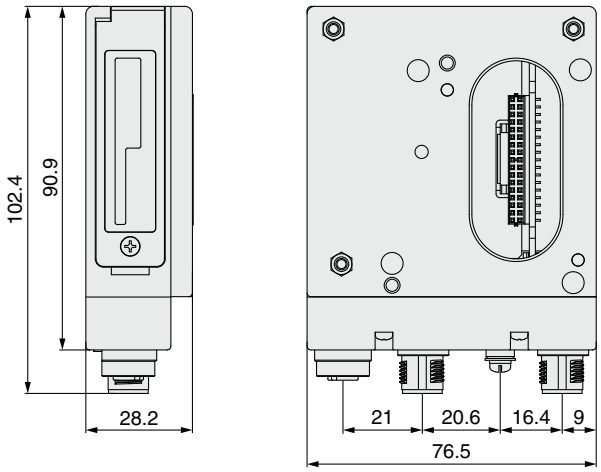
Model		EX260-SEN1/3	EX260-SEN2/4	EX260-SPL1	EX260-SPL3	EX260-SIL1	EX260-FPS1
Applicable system	Protocol	EtherNet/IP™*2		Ethernet POWERLINK		IO-Link	PROFINET/ PROFIsafe*2
	Version*1	Volume 1 (Edition 3.17) Volume 2 (Edition 1.18)		EPSG DS 301 Version 1.2.0		V1.1	PROFINET Specification Version 2.3 PROFIsafe Specification Version 2.4
	Configuration file*3	EDS file		XDD file		IODD file	GSD 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	0/32*5
Applicable function		QuickConnect™, DLR		—		—	FSU, Shared Device, MRP
Communication speed		10 M/100 Mbps*2		100 Mbps*2		COM3/COM2*4	100 Mbps*2
Communication connector specification		M12					
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.smcworld.com
*4 A selection can be made using the setting switch.
*5 In addition, it occupies input 4 bite/output 5 bite for safety.

Dimensions

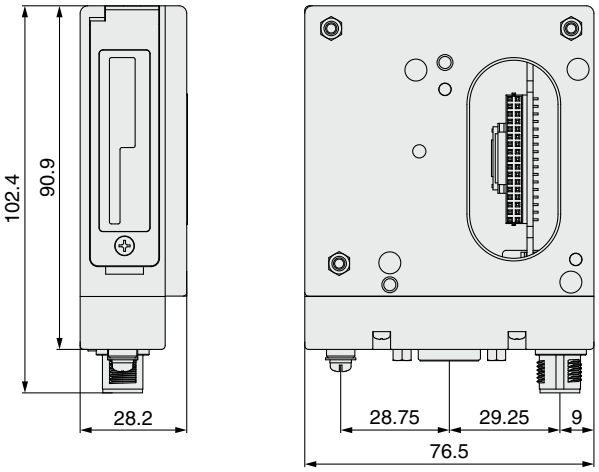
M12 communication connector type

For PROFIBUS DP **For DeviceNet®**
For CC-Link **For EtherCAT** **For PROFINET**
For EtherNet/IP™ **For Ethernet POWERLINK**



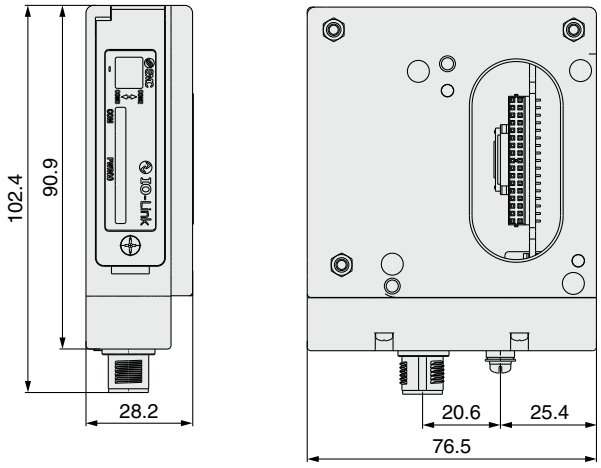
D-sub communication connector type (EX260-SPR5/6/7/8)

For PROFIBUS DP



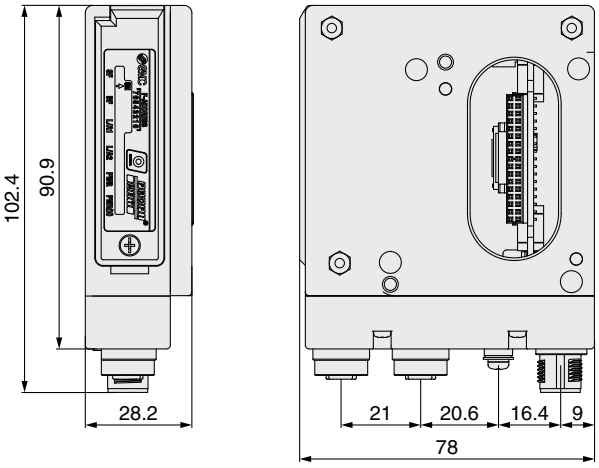
M12 communication connector type

For IO-Link



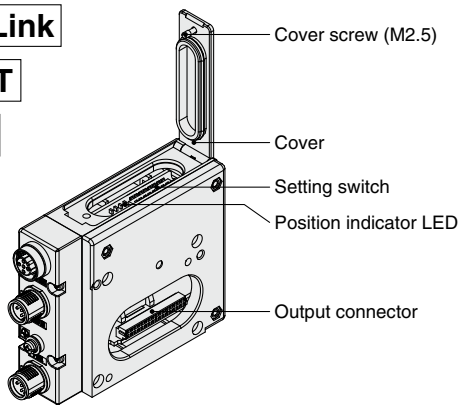
M12 communication connector type

For PROFIsafe



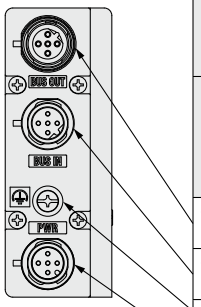
Parts Description

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



∗ 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.smcworld.com

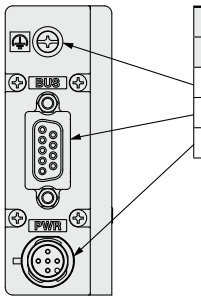
<Connector> M12 communication connector type



Part no.	EX260-SPR1/-SPR2 -SPR3/-SPR4	EX260-SDN□	EX260-SMJ□	EX260-SEC□ EX260-SPN□ EX260-SEN□ EX260-SPL□ EX260-FPS1
Communication protocol	**PROFIBUS DP**	**DeviceNet®**	**CC-Link**	**EtherCAT PROFINET EtherNet/IP™ EtherNet POWERLINK PROFIsafe**
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)

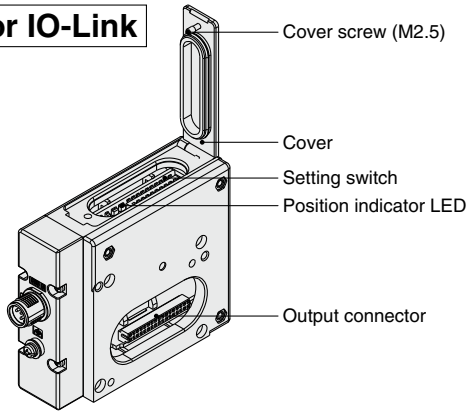
∗1 Recommended mating M12 4-pin plug part no.: PCA-1567717
∗2 For EtherCAT, PROFINET, and Ethernet POWERLINK
∗3 For EtherNet/IP™ and PROFIsafe

<Connector> D-sub communication connector type

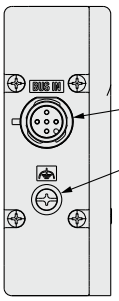


Part no.	EX260-SPR5/-SPR6/-SPR7/-SPR8
Communication protocol	**PROFIBUS DP**
Ground terminal	M3
Communication connector (D-sub) BUS IN/OUT	9 pins, socket
Power connector (M12)	5 pins, plug, A code

For IO-Link



<Connector>



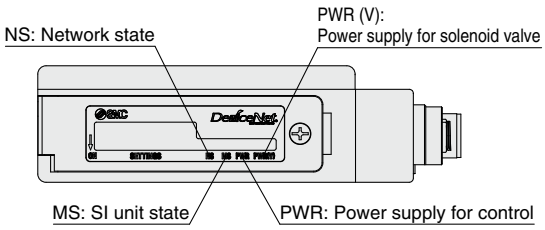
Part no.	EX260-SIL1
Communication protocol	**IO-Link**
Communication/ Power connector (M12)	5 pins, plug,∗1 A code (SPEEDCON)
Ground terminal	M3

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

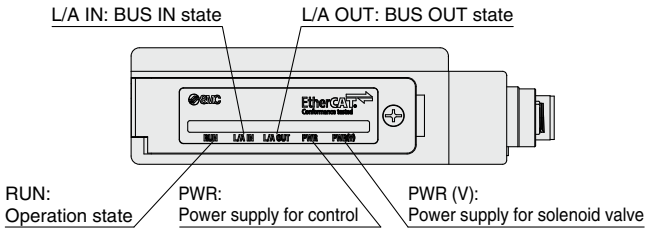
∗ The setting switch varies depending on the model.
Refer to the operation manual for details.
It can be downloaded via the SMC website: https://www.smcworld.com

LED Indicator

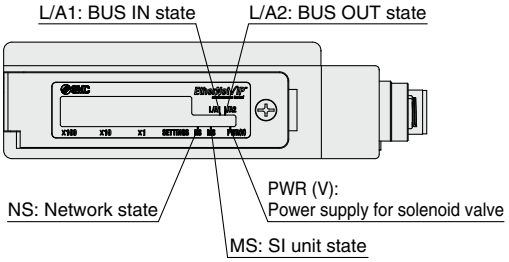
For DeviceNet® EX260-SDN□



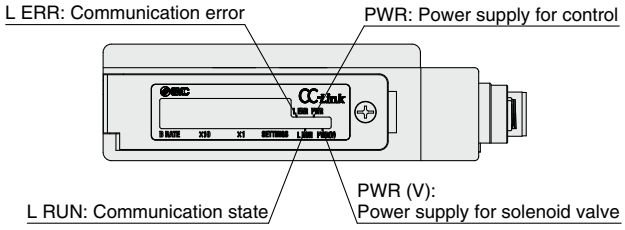
For EtherCAT EX260-SEC□



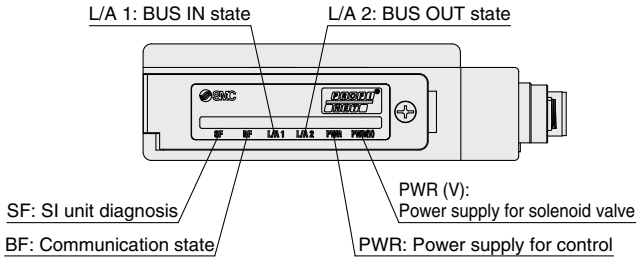
For EtherNet/IP™ EX260-SEN□



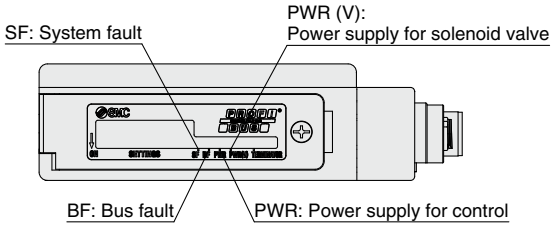
For CC-Link EX260-SMJ□



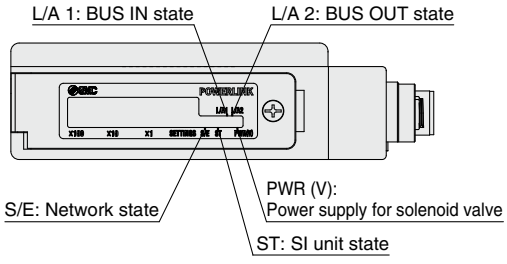
For PROFINET EX260-SPN□



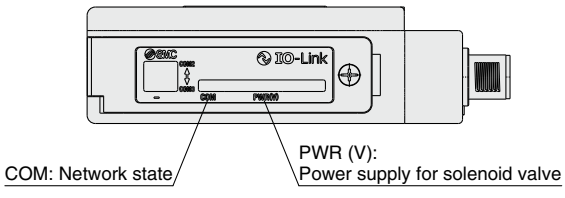
For PROFIBUS DP EX260-SPR□



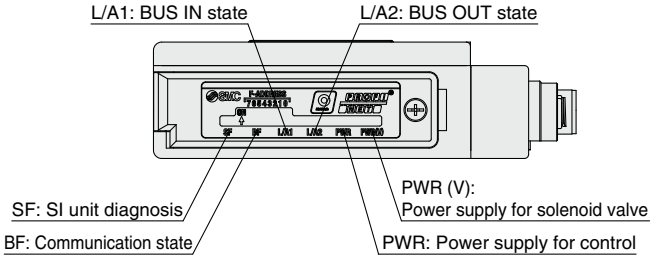
For Ethernet POWERLINK EX260-SPL□



For IO-Link EX260-SIL1



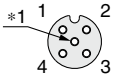
For PROFIsafe EX260-FPS1



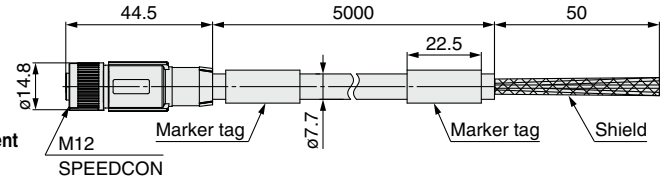
❶ Communication Cable

For CC-Link

PCA-1567720
(Socket)

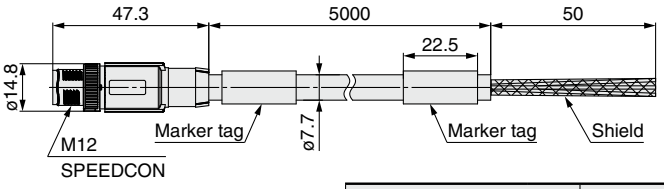


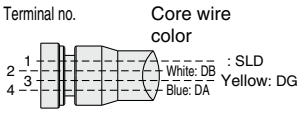
Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4



PCA-1567717
(Plug)

Plug connector pin arrangement
A-coded (Normal key)





Connections

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

Made to Order

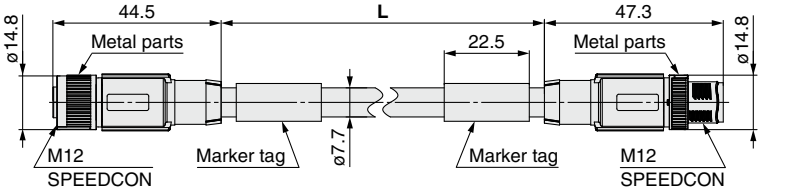
Made to Order

Cable length	10000 mm	p. 26

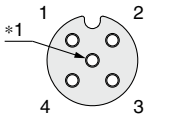
EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))

Cable length (L)

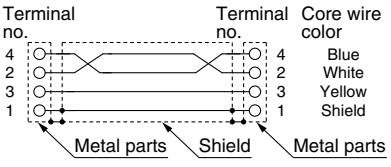
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



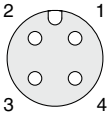
Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



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



Connections

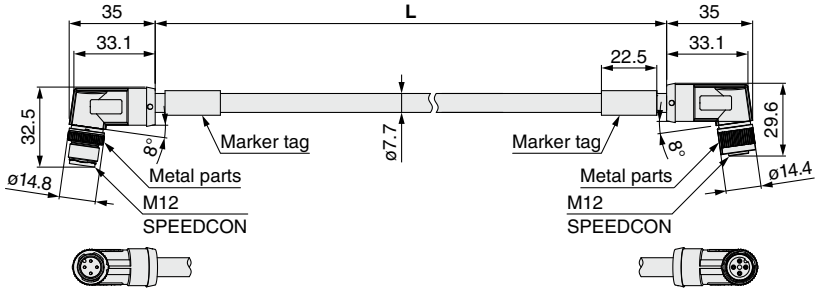


Plug connector pin arrangement
A-coded (Normal key)

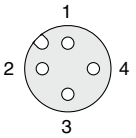
EX9-AC 005 MJ-SAPA (With angled connector on both sides (Socket/Plug))

Cable length (L)

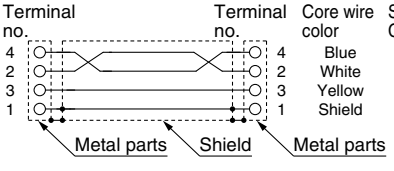
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



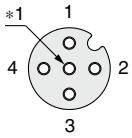
Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



Plug connector pin arrangement
A-coded (Normal key)



Connections

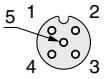


Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4

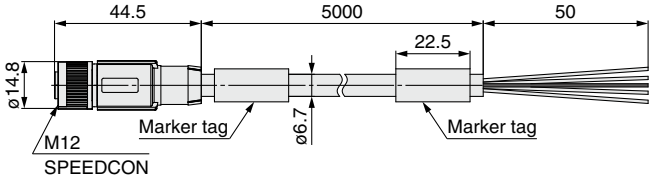
❶ Communication Cable

For DeviceNet®

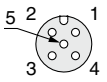
PCA-1557633
(Socket)



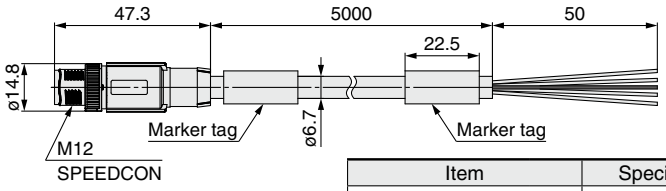
Socket connector pin arrangement
A-coded (Normal key)

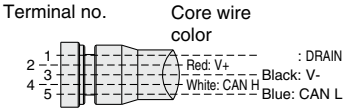


PCA-1557646
(Plug)



Plug connector pin arrangement
A-coded (Normal key)





Connections

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

Made to Order

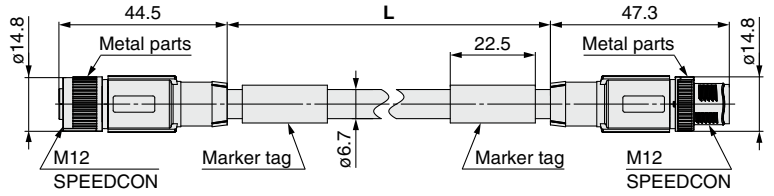
Made to Order

Cable length	10000 mm	**p. 26**

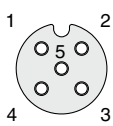
EX9-AC 005 DN-SSPS (With connector on both sides (Socket/Plug))

Cable length (L)

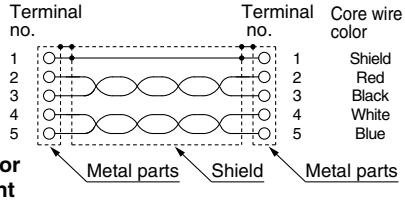
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



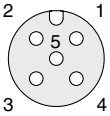
Item		Specifications
Cable O.D.		ø6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm



Socket connector pin arrangement
A-coded (Normal key)



Connections

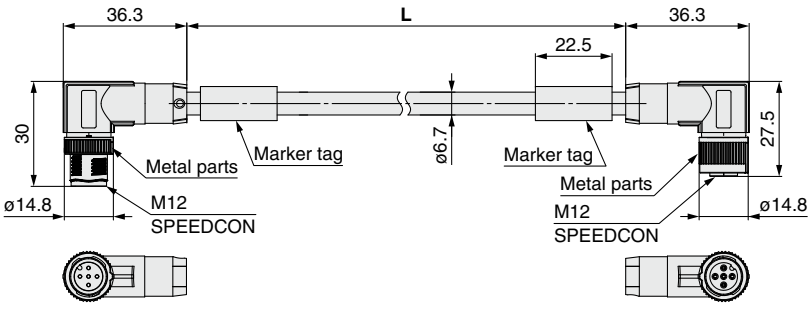


Plug connector pin arrangement
A-coded (Normal key)

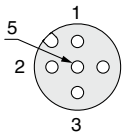
EX9-AC 005 DN-SAPA (With angled connector on both sides (Socket/Plug))

Cable length (L)

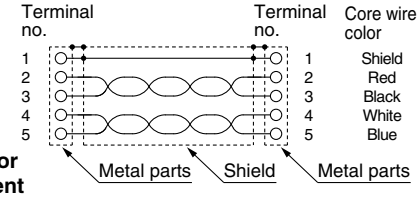
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



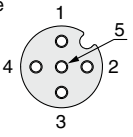
Item		Specifications
Cable O.D.		ø6.7 mm
Conductor nominal cross section	Power pair	0.34 mm²/AWG22
	Data pair	0.25 mm²/AWG24
Wire O.D. (Including insulator)	Power pair	1.4 mm
	Data pair	2.05 mm
Min. bending radius (Fixed)		67 mm



Plug connector pin arrangement
A-coded (Normal key)



Connections

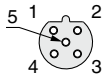


Socket connector pin arrangement
A-coded (Normal key)

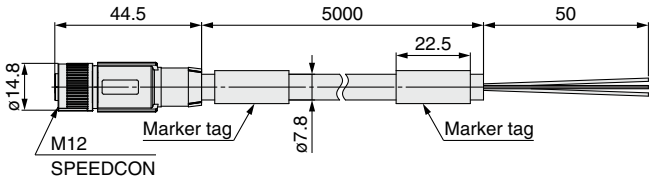
❶ Communication Cable

For PROFIBUS DP

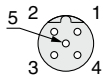
PCA-1557688
(Socket)



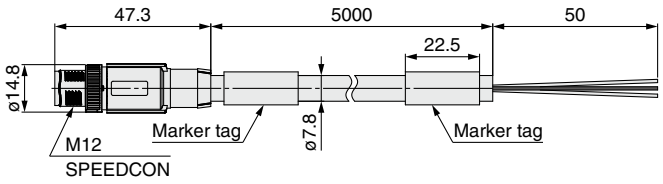
Socket connector pin arrangement B-coded (Reverse key)

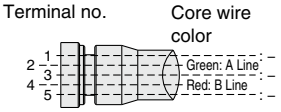


PCA-1557691
(Plug)



Plug connector pin arrangement B-coded (Reverse key)





Shield line is connected to the knurl.
Connections

Item	Specifications
Cable O.D.	ø7.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	2.55 mm
Min. bending radius (Fixed)	78 mm

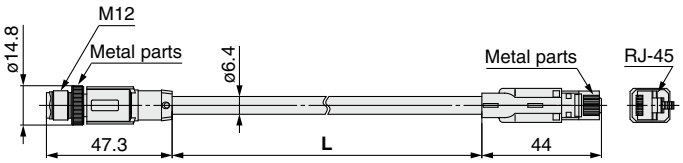
For EtherCAT | For PROFINET | For EtherNet/IP™ | For Ethernet POWERLINK | For PROFIsafe

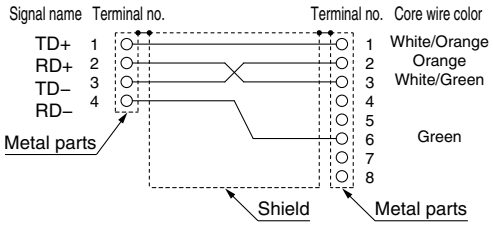
EX9-AC 020 EN-PSRJ (Plug/RJ-45 connector)

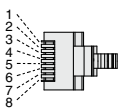
Cable length (L)

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

Plug connector pin arrangement D-coded





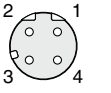


Plug connector pin arrangement

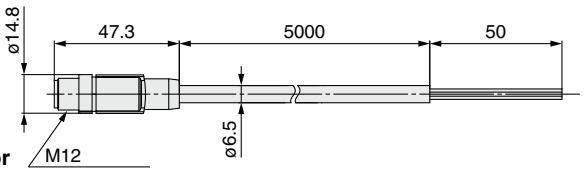
Connections (Straight cable)

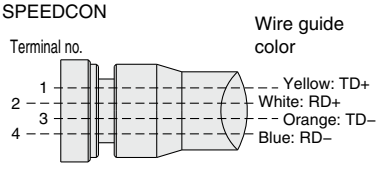
Item	Specifications
Cable O.D.	ø6.4 mm
Conductor nominal cross section	0.14 mm²/AWG26
Wire O.D. (Including insulator)	0.98 mm
Min. bending radius (Fixed)	26 mm

PCA-1446566 (Plug)



Plug connector pin arrangement D-coded





Connections

Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

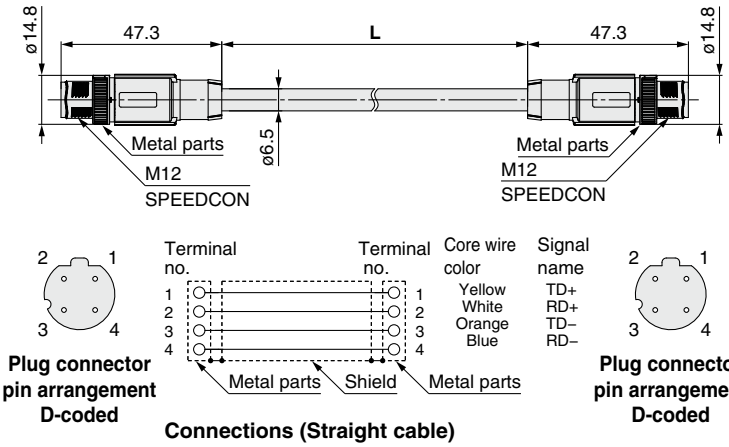
❶ Communication Cable

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

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

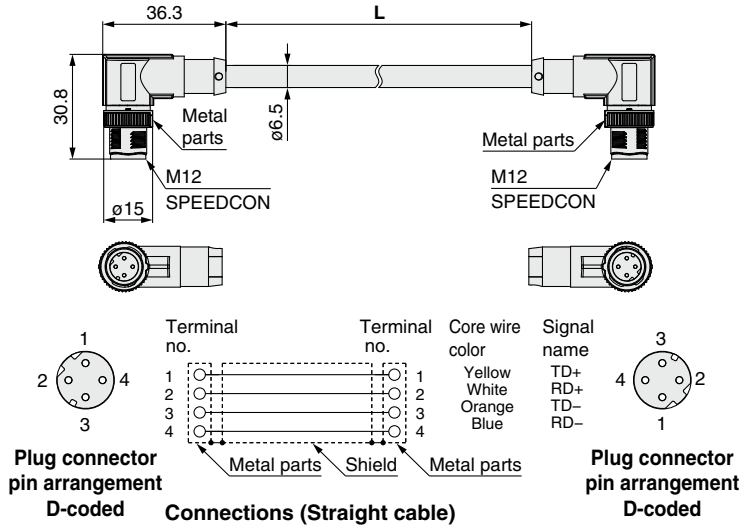


Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

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

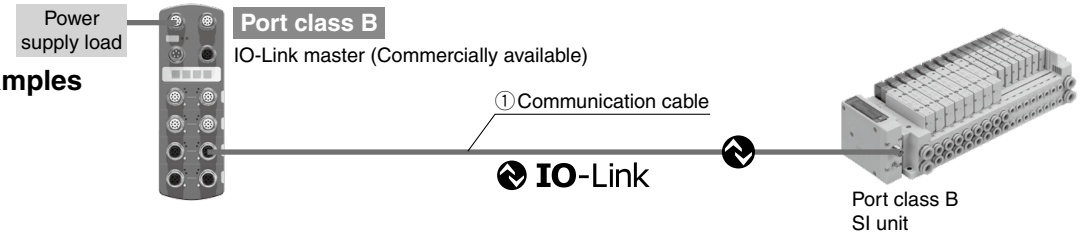


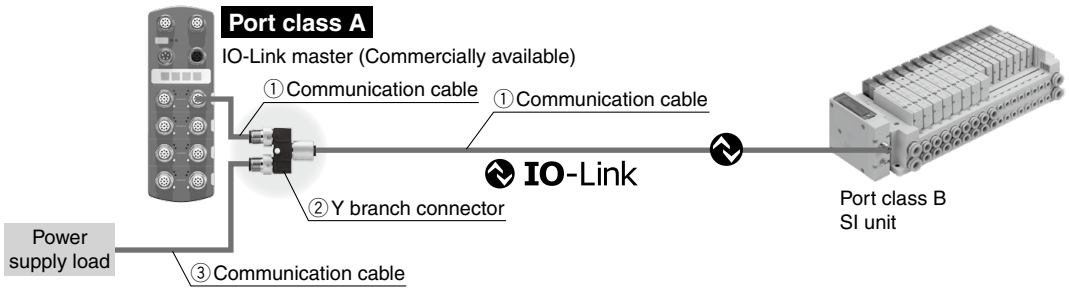
Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

❶ Communication Cable

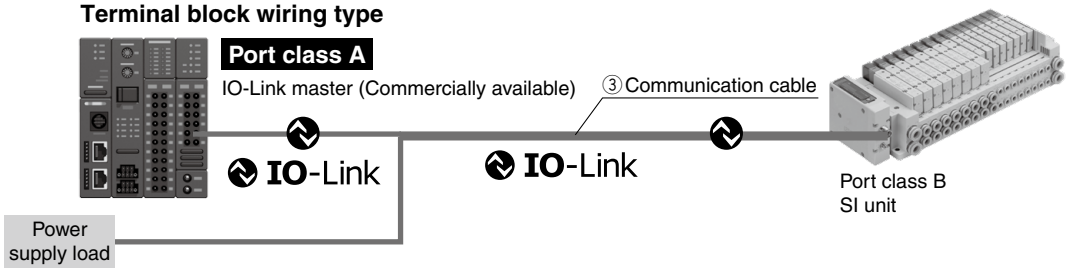
For IO-Link

Connection examples





Terminal block wiring type

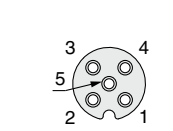


① Communication cable

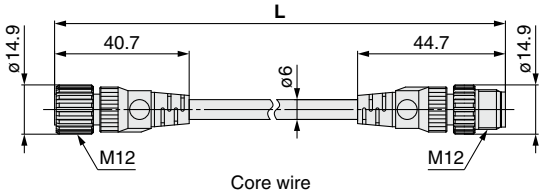
EX9-AC 005 -SSPS (With connector on both sides (Socket/Plug))

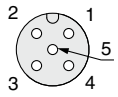
Cable length (L)

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

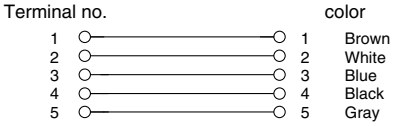


Socket connector pin arrangement
A-coded (Normal key)





Plug connector pin arrangement
A-coded (Normal key)



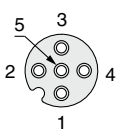
Connections

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

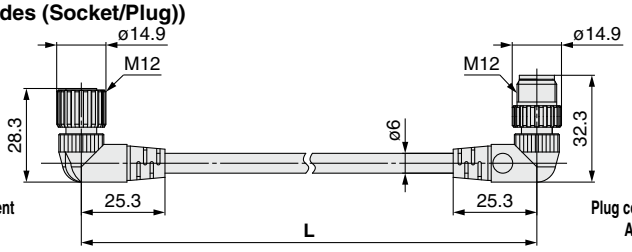
EX9-AC 005 -SAPA (With connector on both sides (Socket/Plug))

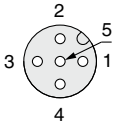
Cable length (L)

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

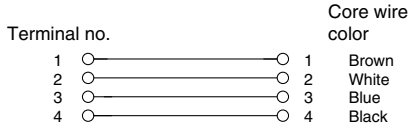


Socket connector pin arrangement
A-coded (Normal key)





Plug connector pin arrangement
A-coded (Normal key)



Connections

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

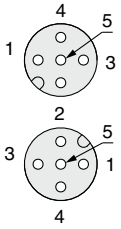
❶ Communication Cable

For IO-Link

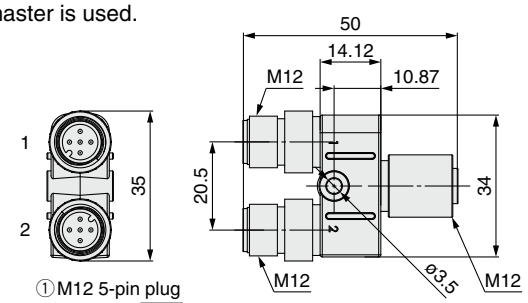
② Y branch connector

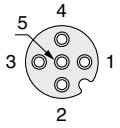
This connector is used to supply power to the valve manifold by branching the IO-Link communication cable in cases where a port class A IO-Link master is used.

EX9-ACY02-S

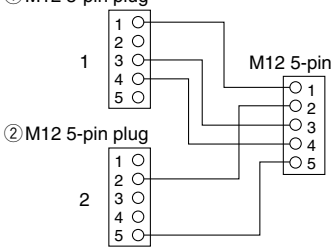


Plug connector pin arrangement A-coded (Normal key)





Socket 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

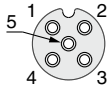
Cable length (L)

010	1000 mm
050	5000 mm

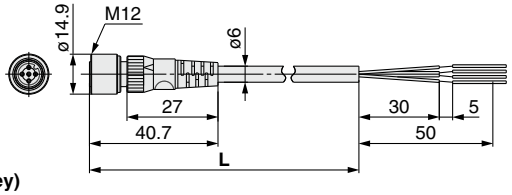
Connector specification

S	Straight
A	Angled

Straight connector type

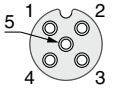


Socket connector pin arrangement A-coded (Normal key)

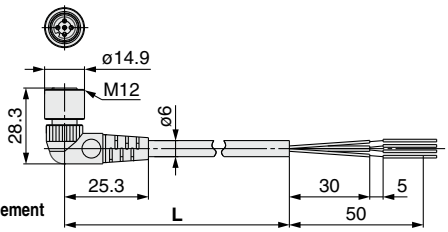


Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Angled connector type



Socket connector pin arrangement A-coded (Normal key)

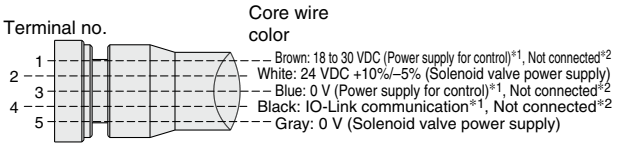


Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

Made to Order

Made to Order

Cable length	10000 mm	**p. 27**



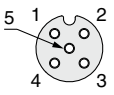
Connections (IO-Link)

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

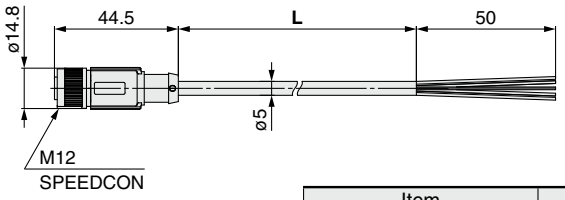
PCA-1401804

Cable length (L)

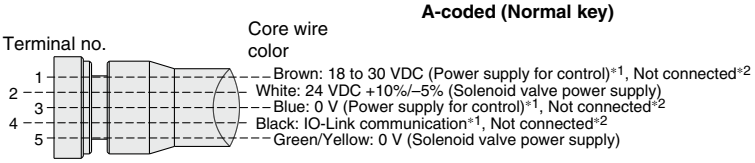
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



Socket connector pin arrangement A-coded (Normal key)



Item	Specifications
Cable O.D.	ø5 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

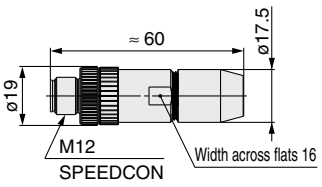
❷ Field-wireable Communication Connector

Plug

For CC-Link **For DeviceNet®**

PCA-1075526 PCA-1075528

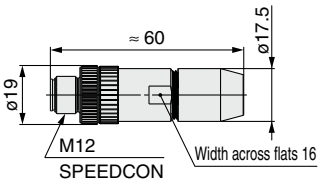
A-coded (Normal key)



For PROFIBUS DP

PCA-1075530

B-coded (Reverse key)



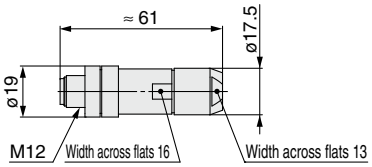
Applicable Cable

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**

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

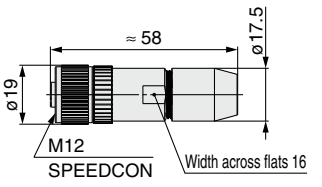
* The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Socket

For CC-Link **For DeviceNet®**

PCA-1075527 PCA-1075529

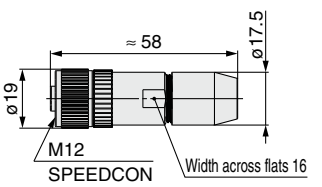
A-coded (Normal key)



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**

EX500-AP 050 - S

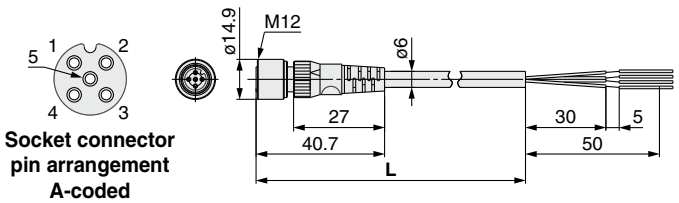
Cable length (L)

010	1000 mm
050	5000 mm

Connector specification

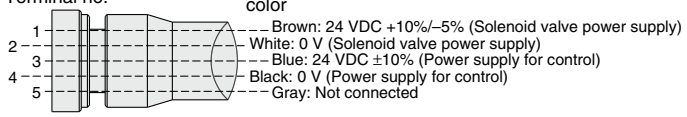
S	Straight
A	Angled

Straight connector type



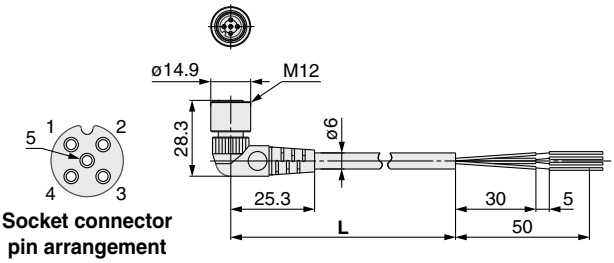
Socket connector pin arrangement A-coded

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



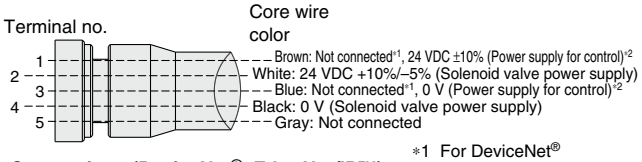
Connections (**PROFIBUS DP, EtherCAT, PROFINET, Ethernet POWERLINK, PROFIsafe**)

Angled connector type



Socket connector pin arrangement A-coded

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



Connections (DeviceNet®, EtherNet/IP™)

∗1 For DeviceNet®
∗2 For EtherNet/IP™

Made to Order

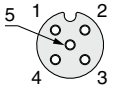
Made to Order

Cable length	10000 mm	**p. 27**

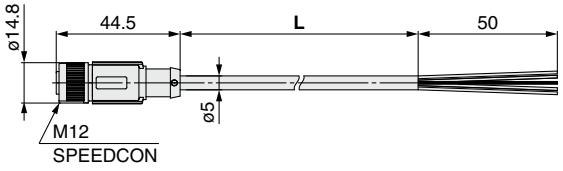
PCA-1401804

Cable length (L)

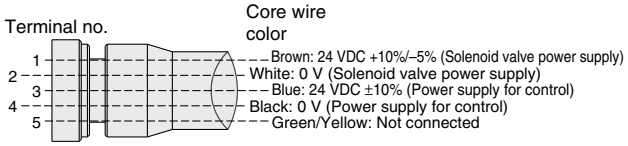
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



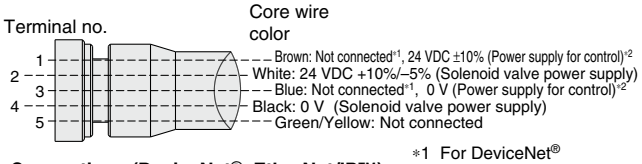
Socket connector pin arrangement A-coded



Item	Specifications
Cable O.D.	ø5 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**)



Connections (DeviceNet®, EtherNet/IP™)

∗1 For DeviceNet®
∗2 For EtherNet/IP™

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

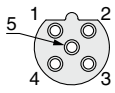
For CC-Link **For power block**

Straight connector type

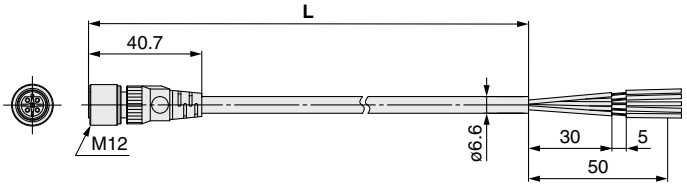
EX9-AC 050 -1

Cable length (L)

010	1000 mm
030	3000 mm
050	5000 mm



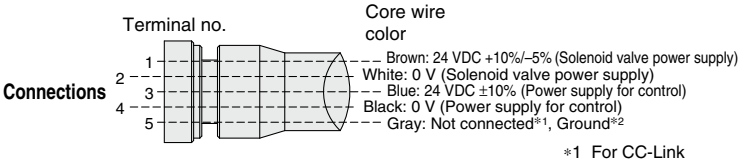
Socket connector pin arrangement B-coded



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

Made to Order **Made to Order**

Cable length	10000 mm	**p. 27**

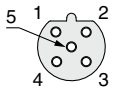


*1 For CC-Link
*2 For power block

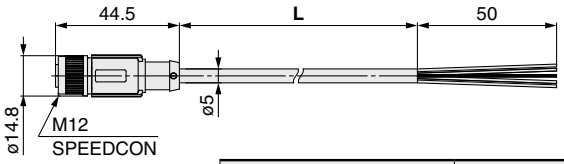
PCA-1401807

Cable length (L)

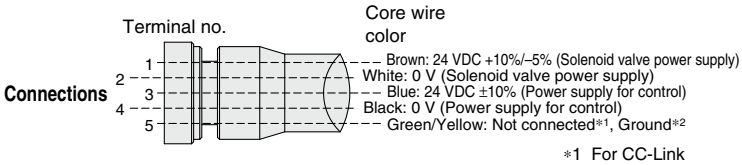
1401807	1500 mm
1401808	3000 mm
1401809	5000 mm



Socket connector pin arrangement B-coded



Item	Specifications
Cable O.D.	ø5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	21.7 mm



*1 For CC-Link
*2 For power block

❺ Seal Cap (10 pcs.)

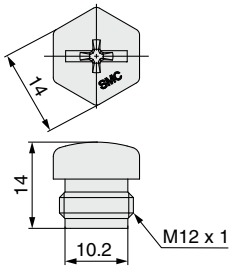
Use this on ports that are not being used for communication connector (M12 connector socket).
Use of this seal cap maintains the integrity of the IP67 enclosure.

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

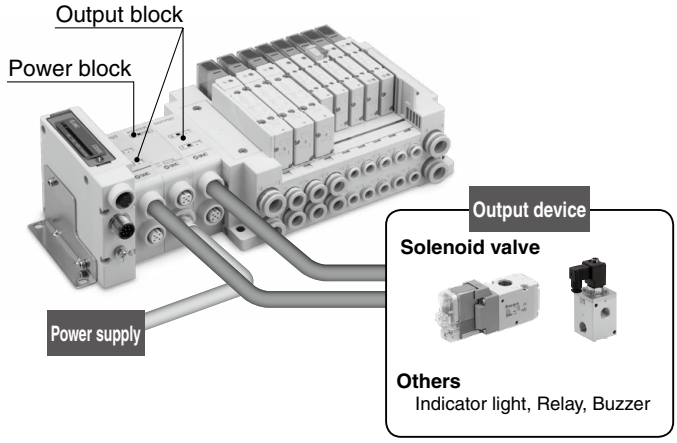
EX9-AW TS

Connector specification

TS	For M12 connector socket (10 pcs.)



For M12 connector socket



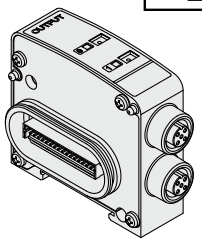
- **Output devices other than valve manifold can be operated.**
- **By using the power block and output block for high watt load, operation up to 0.5 A/point can be performed.**
- **It is possible to mount the output block and power block additionally between the SI unit and the solenoid valve (The surplus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

The output block and power block cannot be used with the PROFIsafe compatible SI unit EX260-FPS1.

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.smcworld.com

❻ Output Block

EX9-OE T 1



Output specification

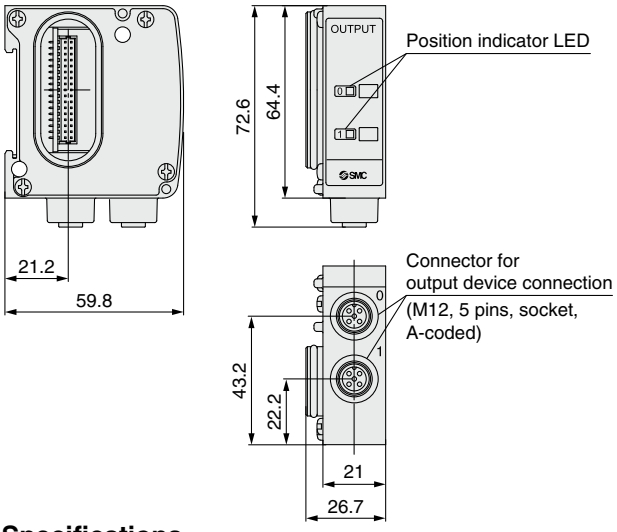
1	Source/PNP (Negative common)
2	Sink/NPN (Positive common)

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

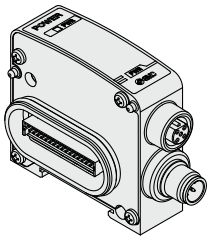


Specifications

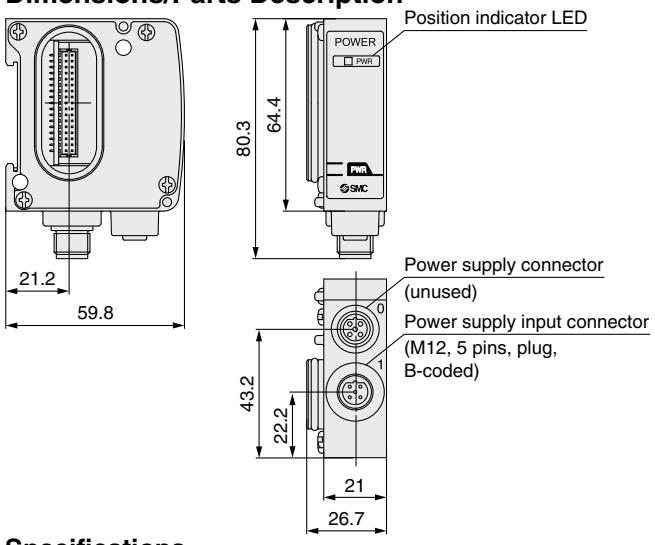
Model		EX9-OET1	EX9-OET2	EX9-OEP1	EX9-OEP2
Internal current consumption		40 mA or less			
Output	**Output type**	Source/PNP (Negative common)	Sink/NPN (Positive common)	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	2 outputs			
	Power supply method	Internal power supply method		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 (EMC directive/RoHS directive), 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 (EMC directive/RoHS directive), UL (CSA)
Weight		120 g
Enclosed parts		Seal cap (for M12 connector) 1 pc.

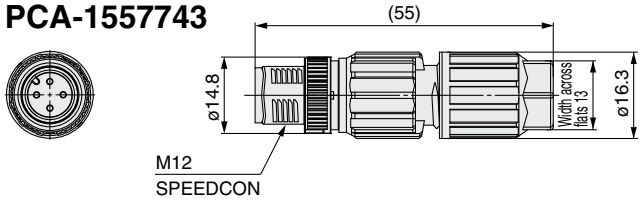
∗1 When using with 3.0 to 3.1 A, the ambient temperature should not exceed 40°C, and do not bundle the cable.

Refer to page 23 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

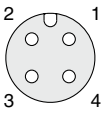
PCA-1557743



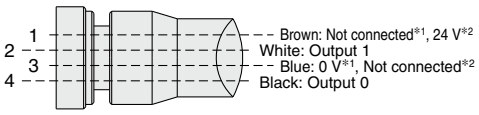
Applicable Cable

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

A-coded



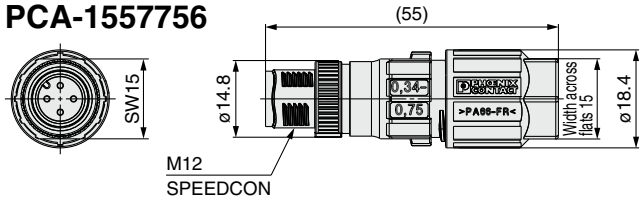
Plug pin arrangement



Connections

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

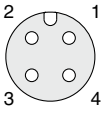
PCA-1557756



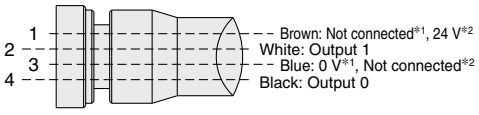
Applicable Cable

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

A-coded



Plug pin arrangement



Connections

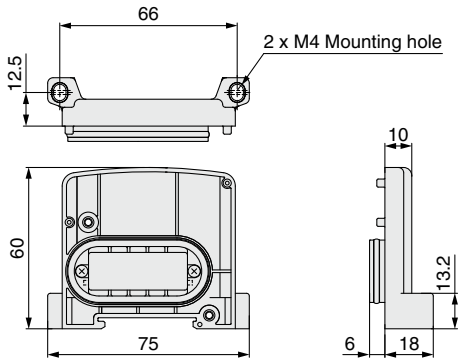
∗1 When used for EX9-OE□1
∗2 When used for EX9-OE□2

Refer to page 23 for the power supply cable for power block.

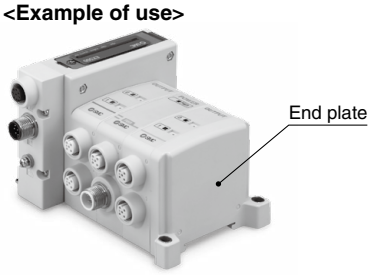
❾ End Plate

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

EX9-EA03



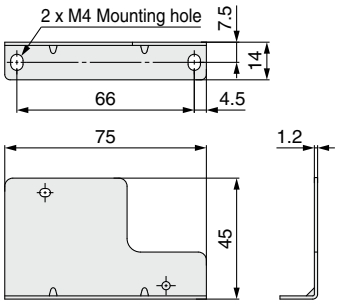
<Example of use>



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

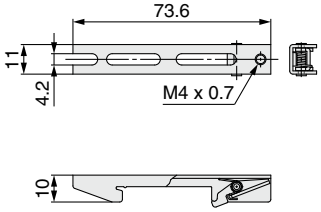


Accessory

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

EX9-BD1

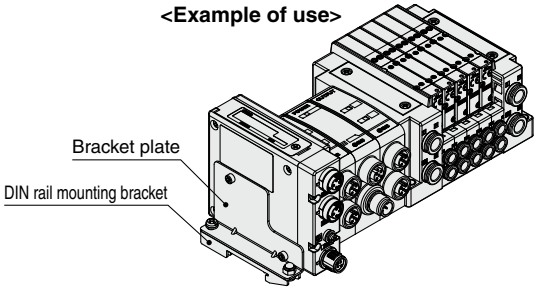
(For VQC, S0700, SV)



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>



EX260 Series
Made to Order

Please contact SMC for detailed specifications and lead times.

Made to Order

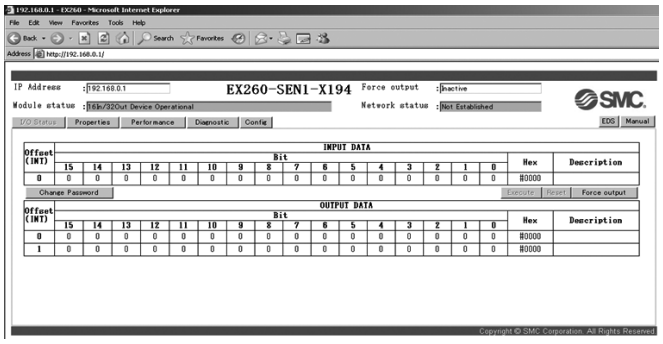
SI Unit

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

EtherNet/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

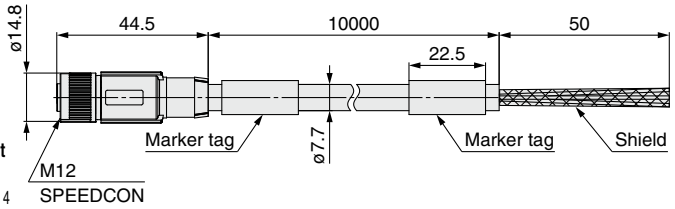
● **Applicable protocol**

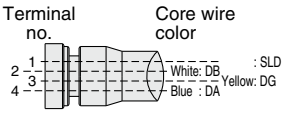
MJ	CC-Link
DN	DeviceNet®

For CC-Link

Socket connector pin arrangement
A-coded (Normal key)

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

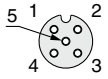




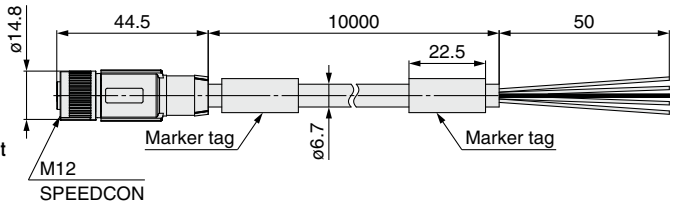
Connections

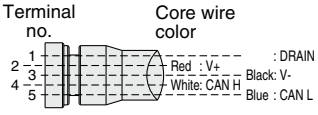
Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm

For DeviceNet®



Socket connector pin arrangement
A-coded (Normal key)





Connections

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

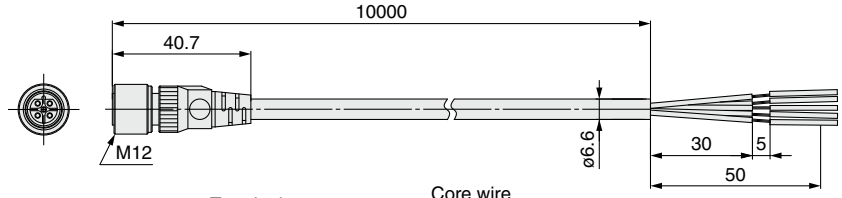
Power Supply Cable

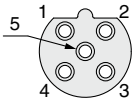
① With connector on one side (Socket)

Cable length: 10000 mm

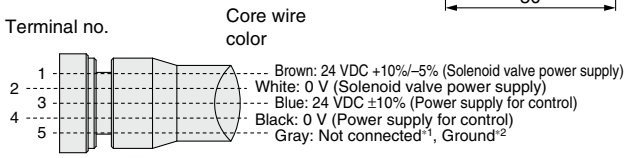
For CC-Link **For power block**

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

② With connector on one side (Socket)

Cable length: 10000 mm

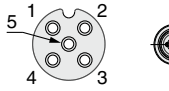
For PROFIBUS DP **For DeviceNet®** **For EtherCAT** **For PROFINET** **For EtherNet/IP™**
For Ethernet POWERLINK **For IO-Link** **For PROFIsafe**

EX500-AP100-[S]-X1

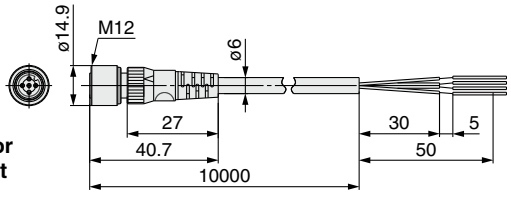
Connector specification

S	Straight
A	Angled

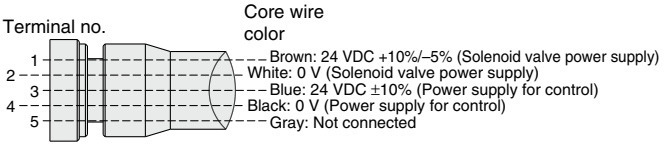
Straight connector type



Socket connector pin arrangement
A-coded

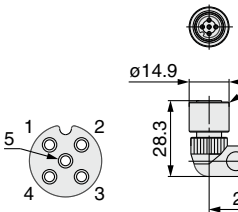


Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm

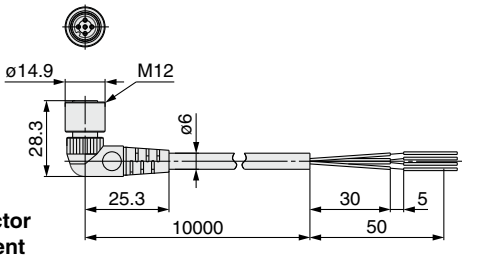


Connections (**PROFIBUS DP, EtherCAT, PROFINET, Ethernet POWERLINK, PROFIsafe**)

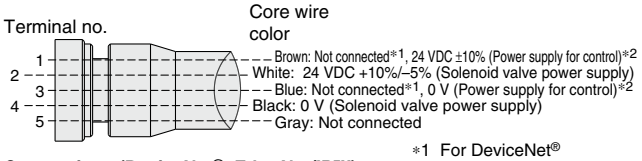
Angled connector type



Socket connector pin arrangement
A-coded

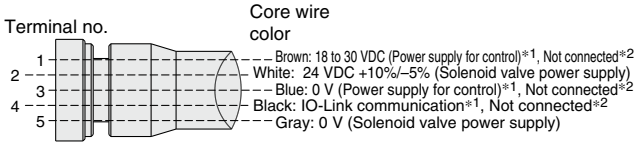


Item	Specifications
Cable O.D.	ø6 mm
Conductor nominal cross section	0.3 mm²/AWG22
Wire O.D. (Including insulator)	1.5 mm
Min. bending radius (Fixed)	40 mm



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.smcworld.com

Wiring

⚠ Caution

1. Select connectors that are ø16 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

<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, 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® is 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 catalog 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 catalog.
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 catalog 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

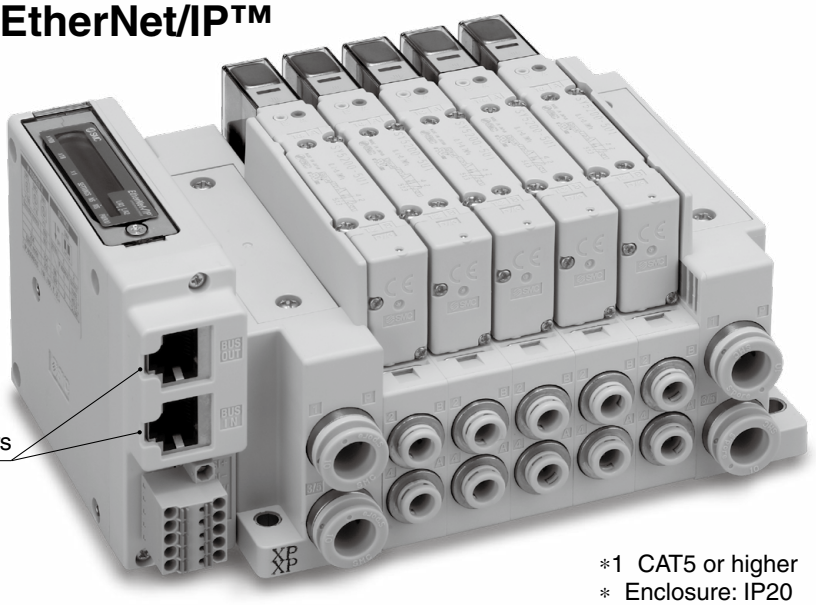
Fieldbus System *EX260 Series* SI Unit

CE RoHS

LAN cable connectable RJ45 communication connectors

Communication protocol: EtherNet/IP™

Number of outputs: 32



■**Trademark**
EtherNet/IP™ is a trademark of ODVA.
QuickConnect™ is a trademark of ODVA.

∗1 CAT5 or higher
∗ Enclosure: IP20

Applicable Valve Series

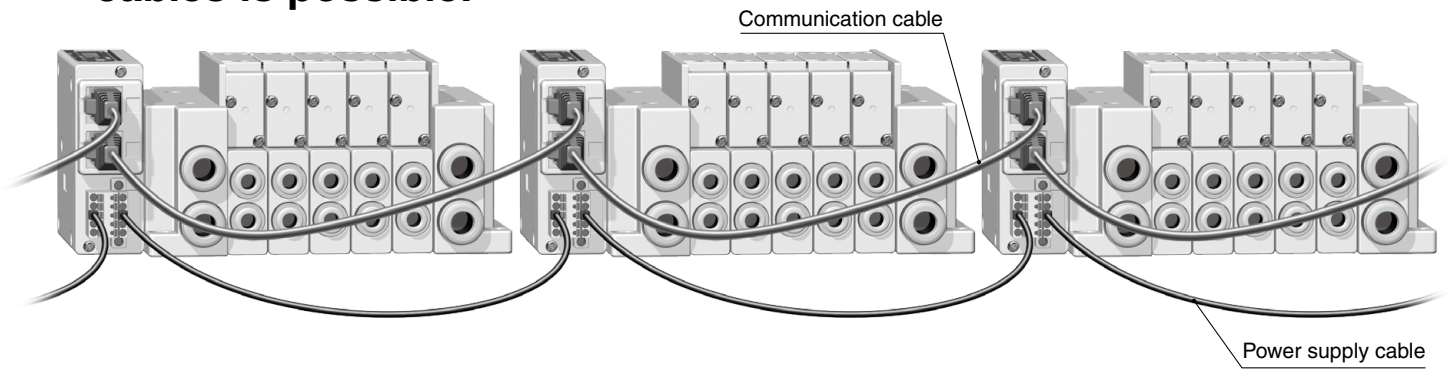
Series		Flow rate characteristics (4/2 → 5/3)		Max. number of solenoids	Power consumption [W]	Applicable cylinder size
		C [dm³/(s·bar)]	b			
JSY Series∗2	JSY1000	0.91	0.48	32	0.2 (With power-saving circuit)	ø40
	JSY3000	2.77	0.27		0.4 (Standard) 0.1 (With power-saving circuit)	ø50
	JSY5000	6.59	0.22			ø80
SY Series	SY3000	1.6	0.19	32	0.35 (Standard) 0.1 (With power-saving circuit)	ø50
	SY5000	3.6	0.17			ø63
	SY7000	5.9	0.20			ø80
VQC Series∗2	VQC1000	1.0	0.30	24	0.4 (Standard)	ø40
	VQC2000	3.2	0.30			ø63
	VQC4000	7.3	0.38		0.95 (Standard) 0.4 (Low-wattage type)	ø160
	VQC5000	17	0.31			ø180

∗2 The assembly of JSY and VQC series valves should be requested separately by the customer. Specify “without SI unit” and “positive common” or “non-polar” for the valve manifold specifications.

EX260-SEN2-X205

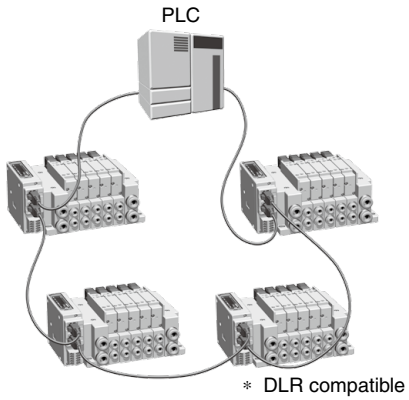
SMC

Daisy-chain wiring of communication cables and power supply cables is possible.

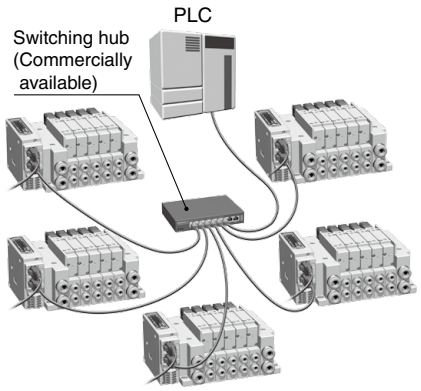


Compatible Topologies

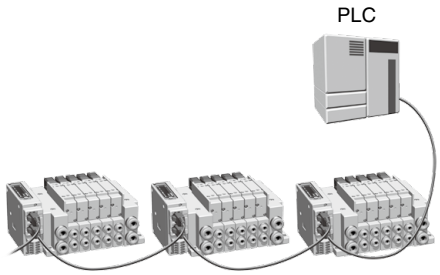
Ring type



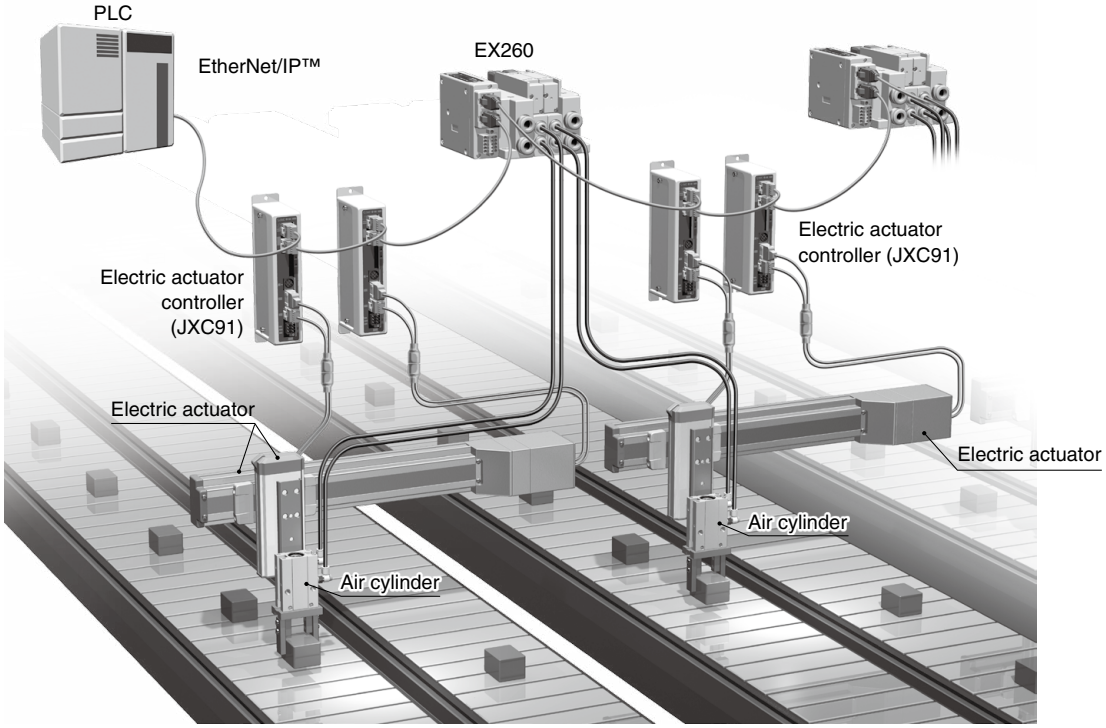
Star type



Linear type



Both air and electric systems can be constructed with RJ45 communication cables.



How to Order SI Units

EX260 – S EN 2 – X205

Communication protocol

EN	EtherNet/IP™

Output specification

2	32 outputs, NPN (Positive common)/Sink

Connector specification

X205	Communication connector: RJ45 Power connector: Spring type connector

Specifications

Item		Specifications
Protocol		EtherNet/IP™ Volume 1 (Edition 3.25) Volume 2 (Edition 1.23)
Transmission medium		Standard Ethernet cable (CAT5 or higher) (100BASE-TX)
Transmission speed		100 Mbps/10 Mbps (Automatic negotiation)
Transmission method		Full duplex/Half duplex (Automatic negotiation)
Device information		Vendor ID: 7 (SMC Corp.) Device type: 27 (Pneumatic Valve)
Applicable function		QuickConnect™ DLR
EDS file		ex260_sen2_X205_24_v*.eds
Output	**Number of outputs**	32
	Output type	Sink/NPN (Positive common)
	Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC)
	Power supply for solenoid valve	22.8 to 26.4 VDC 2.0 A or less, according to the solenoid valve station specification
	Residual voltage	0.4 VDC or less
Power supply for control		21.6 to 26.4 VDC 0.1 A or less
Enclosure		IP20 (with manifold assembled)
Weight		200 g or less (including accessories)

EtherNet/IP™ communication connector
BUS OUT: RJ45 8 pins, socket

No.	Designation	No.	Designation
1	**Tx+**	**5**	**–**
2	**Tx–**	**6**	**Rx–**
3	**Rx+**	**7**	**–**
4	**–**	**8**	**–**

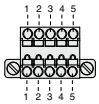
EtherNet/IP™ communication connector
BUS IN: RJ45 8 pins, socket

No.	Designation	No.	Designation
1	**Tx+**	**5**	**–**
2	**Tx–**	**6**	**Rx–**
3	**Rx+**	**7**	**–**
4	**–**	**8**	**–**

Accessory

Description	Qty.
Hexagon socket head cap screw (M3 x 30)	2
RJ45 cap	1
Power connector	1

Power connector PWR: 5 pins, socket

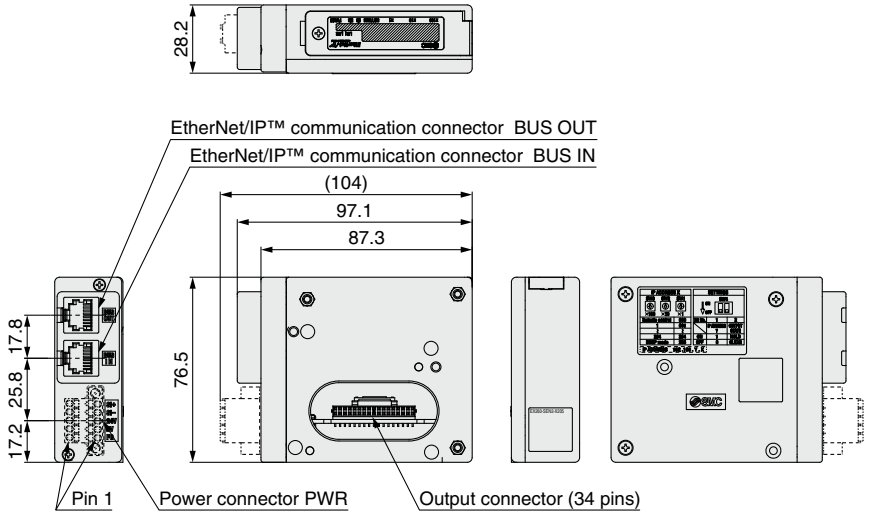


No.	Designation	Function	No.	Designation	Function
1	**FE**	Grounding	**4**	**SI0V**	0 V for control unit
2	**SV0V**	0 V for solenoid valve	**5**	**SI24V**	+24 V for control unit
3	**SV24V**	+24 V for solenoid valve			

Applicable wire for power supply connector

Wire gauge (Solid cable/Flexible cable)	0.2 to 1.5 mm^2/AWG24 to 16

Dimensions



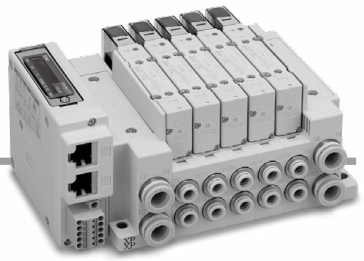
⚠Caution

· 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.
· For the JSY and VQC series, order the valve manifold separately.
Specify “without SI unit” and “positive common” or “non-polar” for the valve manifold specifications.

LED Indicator

LED	LED Status	Details
NS	OFF	Power is not being supplied or the IP address is not set.
	Green LED is ON	EtherNet/IP™ communication established
	Green LED is flashing	EtherNet/IP™ communication not established
	Red LED is flashing	EtherNet/IP™ connection time out
	Red LED is ON	IP duplicated
MS	OFF	Power is not being supplied.
	Green LED is ON	Operating normally
	Green LED is flashing	Setting error
	Red LED is flashing	Recoverable error
	Red LED is ON	Unrecoverable error
L/A1	OFF	BUS IN side: No link, No activity
	Green LED is ON	BUS IN side: Link, No activity
	Green LED is flashing	BUS IN side: Link, Activity
L/A2	OFF	BUS OUT side: No link, No activity
	Green LED is ON	BUS OUT side: Link, No activity
	Green LED is flashing	BUS OUT side: Link, Activity
PWR(V)	Yellow LED is ON	Power is being supplied to the valve.
	OFF	Power is not being supplied to the valve or is outside the tolerance range (19 V or less).

EX260-SEN2-X205



SY3000/5000/7000 Series

How to Order Manifold

Type

10	Side ported
11	Bottom ported*1

*1 The bottom-ported type is not available for the SY3000.

A, B port size
* Refer to the **Web Catalog**.

Mounting and Option
* Refer to the **Web Catalog**.

Side/Bottom ported

Type 10/11 **SS5Y 3 – 10 SEC – 05 U □ – C6 □ – X1100**

Top ported

Type 12 **SS5Y 3 – 12 SEC – 05 U □ – □□ – X1100**

Valve series

3	SY3000
5	SY5000
7	SY7000

Type

12	Top ported

Valve stations

Symbol	Stations	Note
02	2 stations	Double wiring*2
⋮	⋮	
16	16 stations	
02	2 stations	Specified layout*3 (Up to 32 solenoids available)
⋮	⋮	
24	24 stations	

P, E port entry

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 24 stations)

Mounting

Nil	Direct mounting	
D	DIN rail mounting (with DIN rail)	
D0	DIN rail mounting (without DIN rail)	
D3	For 3 stations	Specify a length longer than that of the standard rail.
⋮	⋮	
D24	For 24 stations	

P, E port size (One-touch fitting)

Symbol	SY3000	SY5000	SY7000
Nil	ø8	ø10	ø12
N	ø5/16"	ø3/8"	ø1/2"

* For N, sizes are in inches.

SUP/EXH block assembly

Nil	Internal pilot
S	Internal pilot, Built-in silencer
R	External pilot

* For the type 12 top-ported type, the P and E ports are only available on the U and D sides for the built-in silencer type. The silencer exhaust port is located on the opposite side of the P and E port entry.
(Example: When the P and E port entry is on the D side, the silencer exhaust port is on the U side.)
The 3/5(E) port on the silencer mounting side of type 10/11/12 is plugged.
* When the built-in silencer type is used, keep the exhaust port from coming into direct contact with water or other liquids.

*2 Double wiring: 2-position single, double, 3-position, and 4-position valves can be used on all manifold stations.
Use of a 2-position single solenoid will result in an unused control signal. If this is not desired, order with a specified layout.
*3 Double wiring is normally used for all the wiring of the manifold. If other wiring is required, specify on the manifold specification sheet.
* Valves do not come assembled for order no. "SS5Y□-□SEC-□□□-□□-X1100." Specify on the manifold specification sheet separately to request assembly.
* Produced upon receipt of order

How to Order Valves

SY □ □ □ □ □ □ □ □ – 5 U □ 1 – □

Enter the standard product number.

Enter the standard product number.

Light/surge voltage suppressor and common specification

Symbol	With light	Surge voltage suppressor	Common specification
R	—	●	Non-polar
U	●		
S	—		Positive common
Z	●		

⚠ Safety Instructions Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.