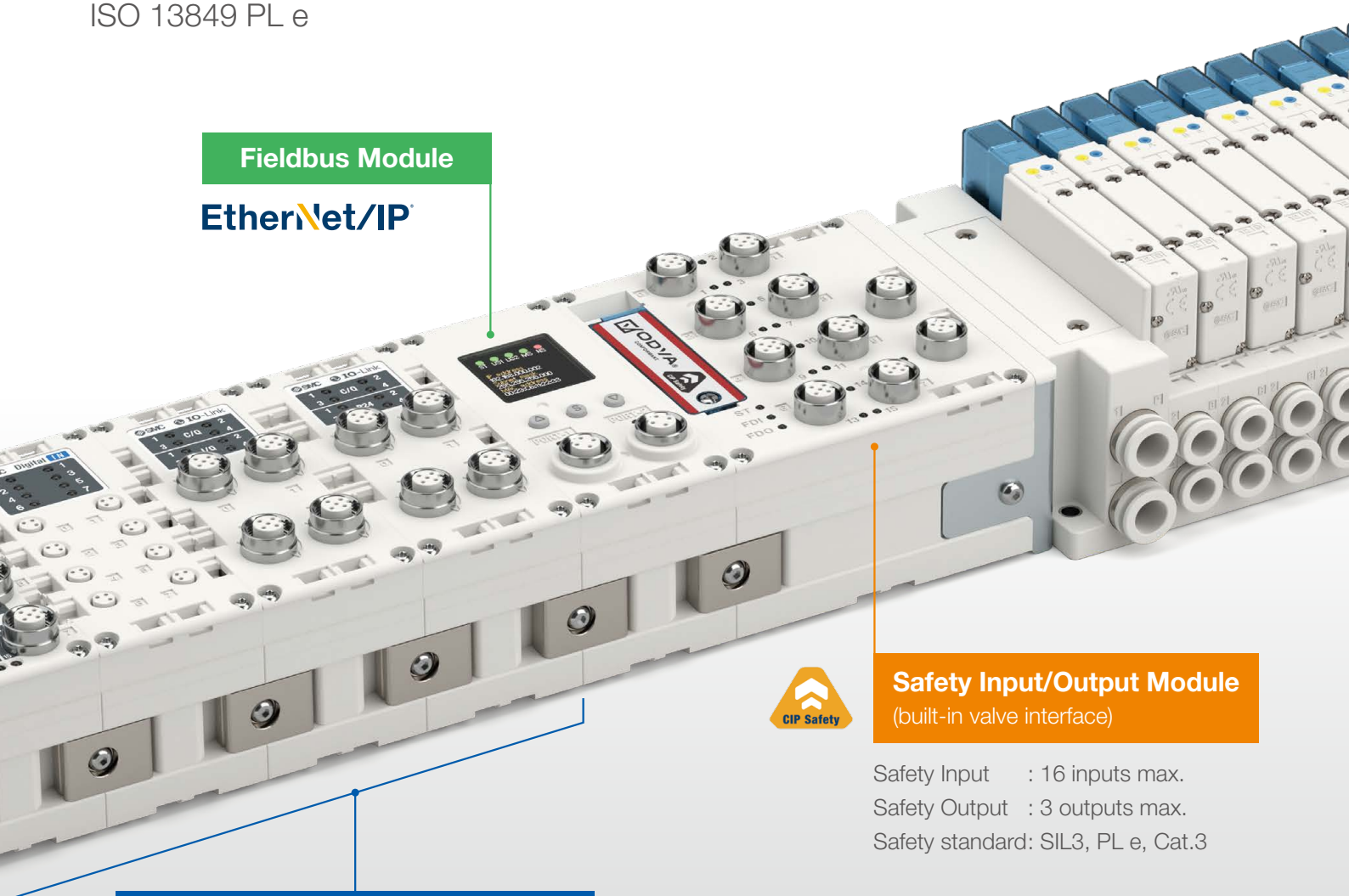
Safety Communication Fieldbus System

IP67 RoHS

Safety / General purpose I/O integrated into one manifold

IEC 61508/IEC 62061 SIL3
ISO 13849 PL e



Safety Input/Output Module
(built-in valve interface)

Safety Input : 16 inputs max.
Safety Output : 3 outputs max.
Safety standard: SIL3, PL e, Cat.3

General Purpose I/O Module

Digital Input/Output, IO-Link Module
Up to 9 modules can be connected (in any order)

***EX600* Series**

SMC

CAT.E02-30A

Safety / General purpose I/O integrated

Fieldbus Module EtherNet/IP

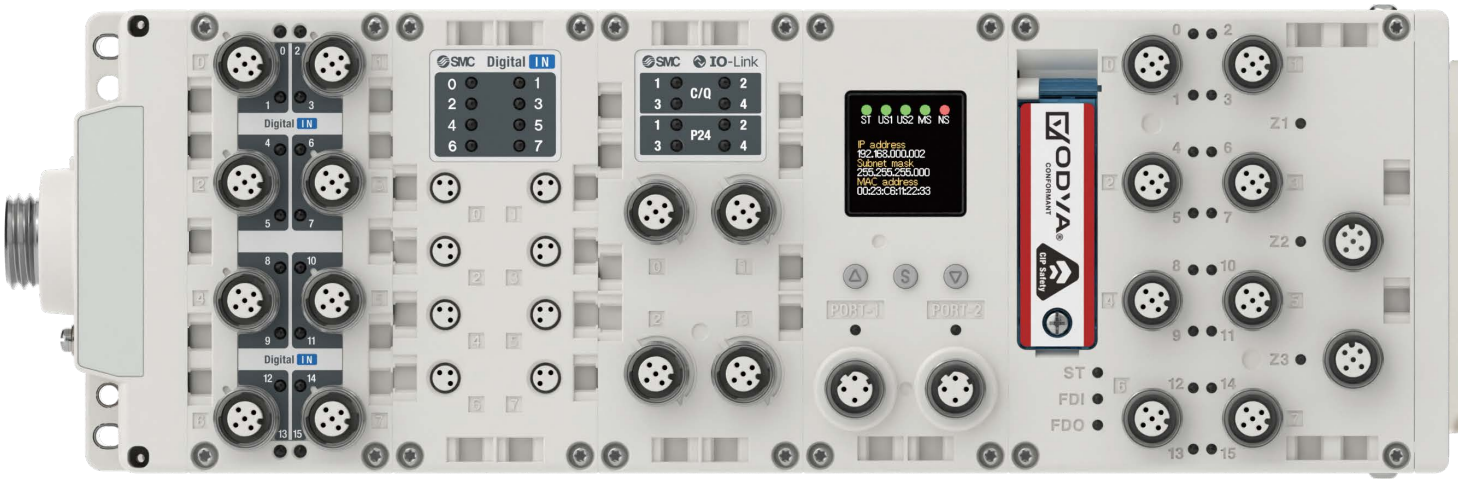
- Supports Safety communication

Safety Input/Output Module (built-in valve interface)

- Safety standards: IEC 61508/IEC 62061 SIL3,
  ISO 13849 PL e
- Safety Input : 16 inputs max.
- Safety output : 3 outputs max. (power supply to valves and external devices)
- Valve interface : Max. number of solenoids: 32 points
  : Max. number of solenoids: 128, Max. number of electro-pneumatic regulators: 4

General Input/Output Module

- Digital input, Digital output, IO-Link
- M8/M12 connector
- Up to 9 modules max. (in any order)



End plate (Power supply)

General Input/Output Module

Digital Input/Output

IO-Link

Fieldbus module

Safety Input/Output Module

Valve interface

Safety input

Safety output

Digital output device

Valve manifold (Plug lead)

Solenoid valve

Electric actuator

Ionizer

Other products
Lamps (indicators)
Relays, buzzers, etc.

Digital input device

Auto switch

Pressure switch

Flow switch

Others

Proximity sensors, photoelectric switches, Limit switches, etc.

IO-Link equipment

Actuator Position Sensor

Pressure switch

Gap checker

Terminal unit

Vacuum unit

Flow switch

Ionizer

Step motor controller (Electric actuator)

SMC

into one manifold

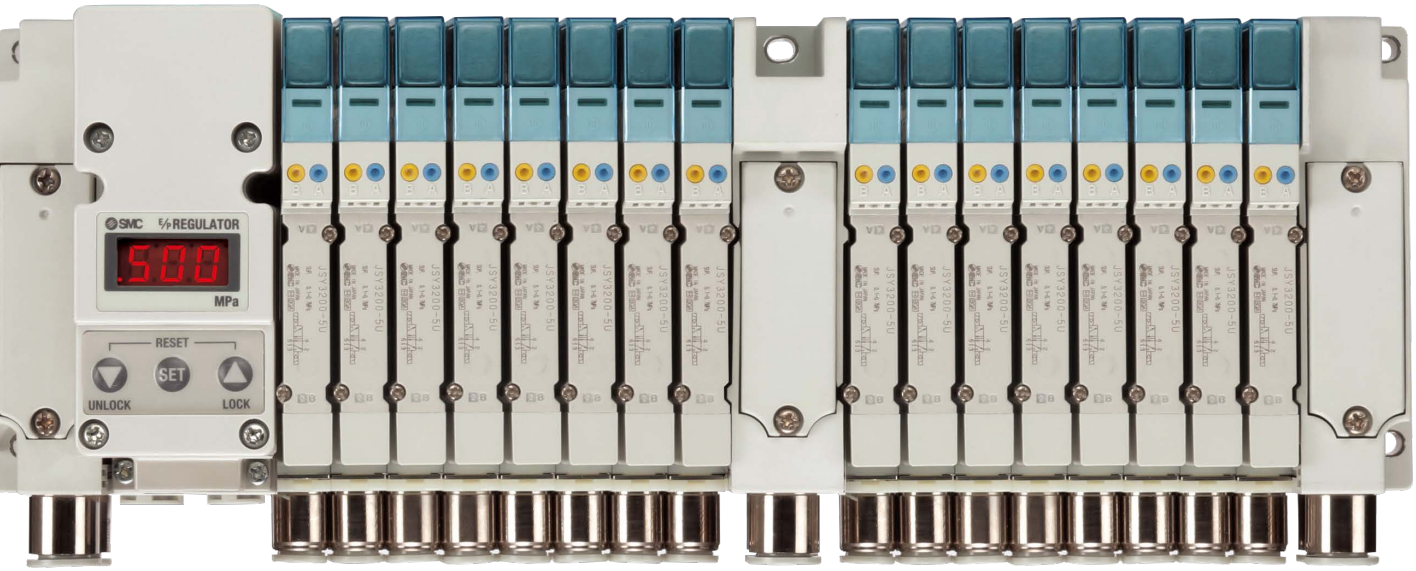
CIP Safety™ (EtherNet/IP) is compliant with the functional safety standards IEC 61508 / IEC 62061 SIL 3 and ISO 13849-1 PL e. This product (EX600-FVC□) is designed to facilitate the safety design (compliant with ISO/IEC standards) of your devices/facilities, and has been certified by a third-party organization (TÜV SÜD) up to the safety levels of the following standards.

SIL (Safety Integrity Level)

The safety level defined by the international standard IEC 61508 / IEC 62061.
The level of safety is expressed in 4 levels, from SIL 1 to 4, with SIL 1 being the lowest and SIL 4 being the highest.

PL (Performance Level)

A scale used to specify the capabilities of safety-related parts, as defined by the international standard ISO 13849. The level of safety is expressed in 5 levels, from PL a to PL e, with PL a being the lowest and PL e being the highest safety function capability.



Electro-pneumatic regulator

Valve

Power supply for valve

Safety Input/Output equipment

Residual pressure release valve

Safety Input Device

Door Switch

Laser Curtain

Laser Scanner

Examples of Safety Input connection devices (commercially available)

Safety Output

Features

Safety Output (3 outputs)

By turning off the safety output according to a command from the safety PLC, the power supply to the valve and external devices is cut off and a safe state is entered.

Redundant safety switch

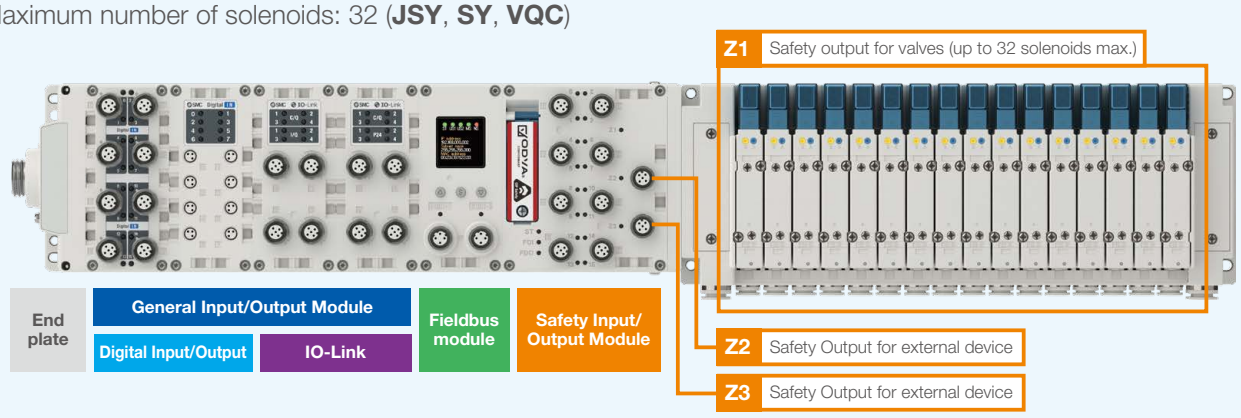
The safety output of this product is made redundant by two safety switches, one on the 24 V side and one on the 0 V side. Diagnostics is performed continuously, and if an abnormality is detected in the safety output, the safety switch is turned OFF and the system transitions to a safe state.

Variations

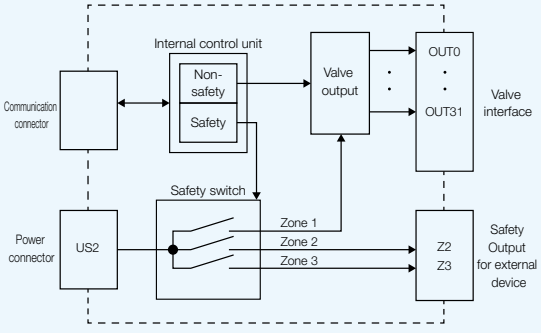
Model No.	Number of Safety inputs	Number of Safety outputs		Valve	
		For valves	For external devices	Max. number of solenoids	Connectable series
EX600-FV□1	16	1	2	32	**JSY, SY, VQC**
EX600-FV□2	16	1	2	128	**JSY3000-L/P, IITV23**

EX600-FV□1

Safety output: 1 output for valves, 2 outputs for external devices.
Maximum number of solenoids: 32 (**JSY**, **SY**, **VQC**)



Block diagram



US2: Power supply for Drive

Applicable Valve Series

Series		Max. number of solenoids
IP67	 **SY3000, SY5000, SY7000**	32
IP67 *1	 **JSY1000, JSY3000, JSY5000**	32
IP67	 **VQC1000, VQC2000, VQC4000, VQC5000**	24

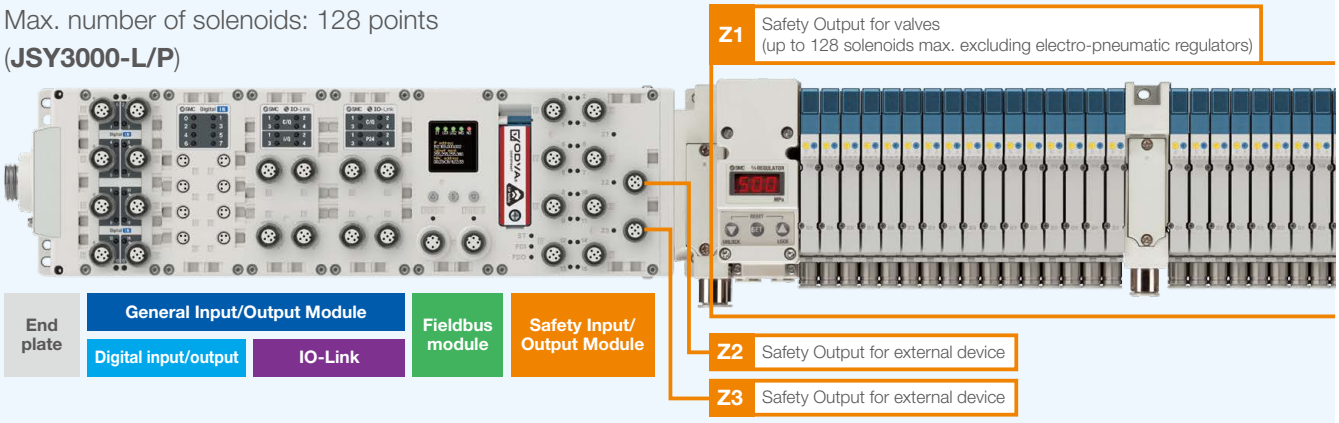
*1 JSY1000 is IP40

Safety Output Definition

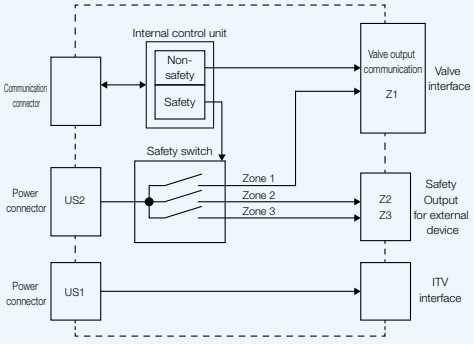
The safe state of the EX600-FV□ is a condition in which the safety output is turned OFF, to shut off the power supply to the valve manifold connected to this product. The safety functions and safety states of devices, including peripheral circuits of equipment, etc. connected to this product are not within the scope of application of this product.

EX600-FV□2

Safety output: 1 output for valves, 2 outputs for external devices.
Max. number of solenoids: 128 points
(**JSY3000-L/P**)



Block diagram



US2: Power supply for drive

Connectable solenoid valve/electro-pneumatic regulator series

Series		Max. number of solenoids	Max. number of electro-pneumatic regulators
IP67	**JSY3000-L**	128	Not compatible
IP65	**JSY3000-P**	128	4
IP65	**IITV23**	Not compatible	4

∗ Valve specifications are the same as the JSY series

Safety Input

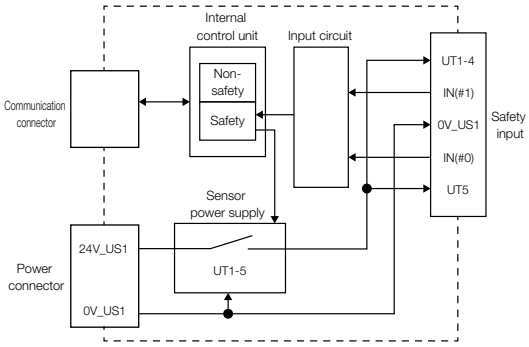
Features

Up to 16 Safety Input compatible devices can be connected, such as residual pressure exhaust valve and other main valve position detection devices, and laser curtains.
The safety input can be obtained in 2 ways:

Single Input (1oo1): 16 Safety Inputs (SIL2, PL d)
Dual Input (1oo2): 8 Safety Inputs (SIL3, PL e)

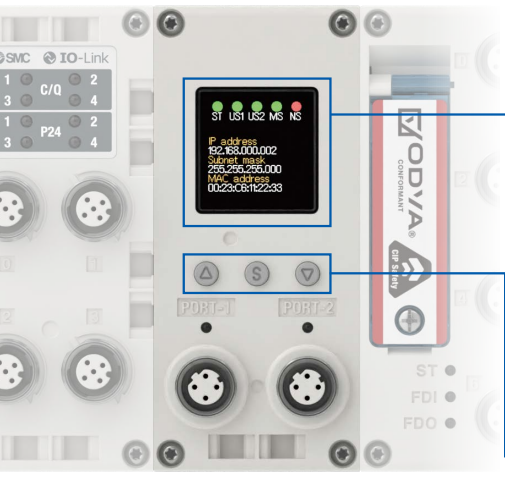
Safety Input Definition
The safe state of the EX600-FV☐ is when the safety input value is sent to the upper level device (such as a safety PLC) as "0."
The safety functions and safety states of devices, including peripheral circuits, connected to this product are not within the scope of application of this product.

Block diagram



US1: Power supply for control/Input

Improving the efficiency of equipment startup and maintenance work

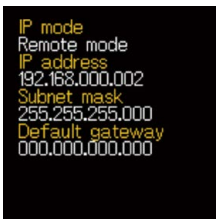


Fieldbus module

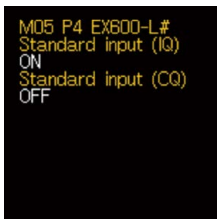
Can be configured directly on the Fieldbus module without a PLC/PC.

Display

Main menu



IP Address settings



Parameter settings

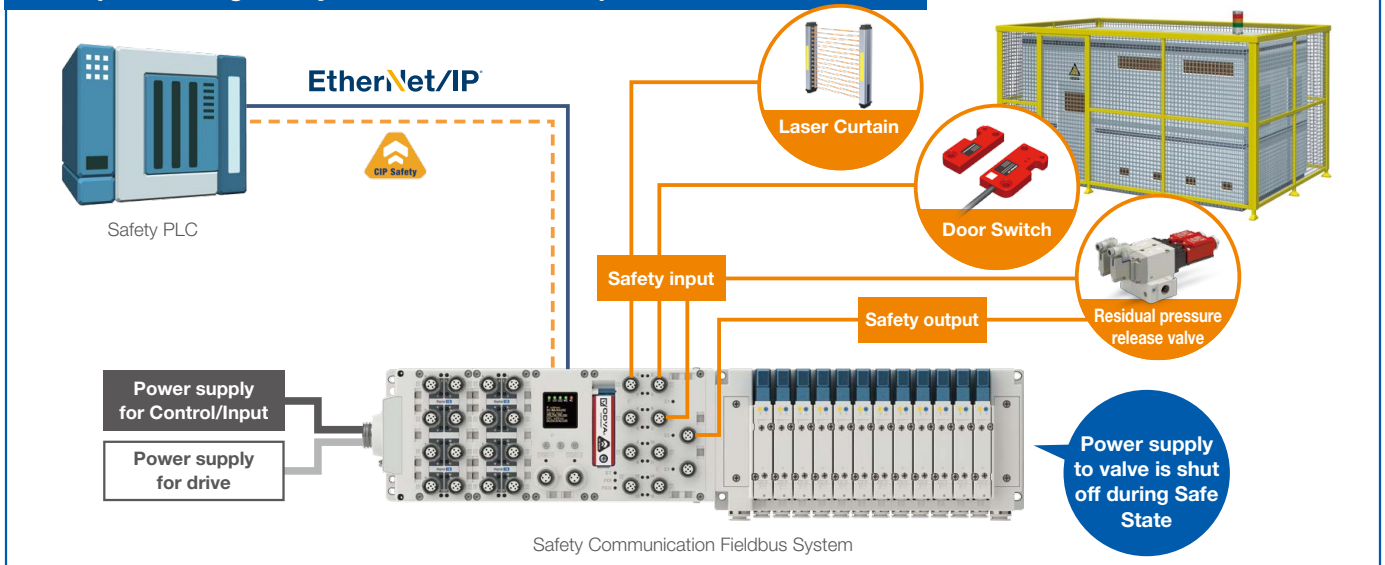
Status check

Operation buttons

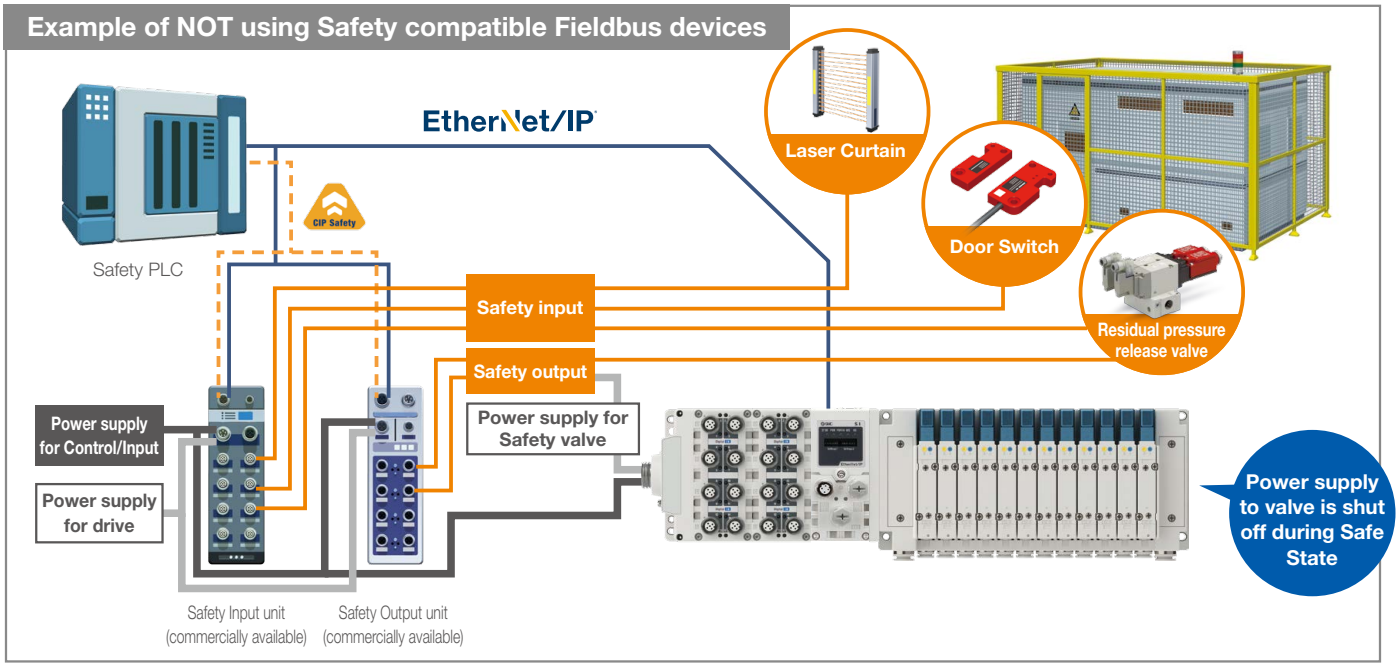
Simplified layout and reduced wiring

No need for a Safety Input/Output unit (commercially available)

Example of using Safety communication compatible Fieldbus devices



Example of NOT using Safety compatible Fieldbus devices



Safety of the machine or system

The manufacturer of the device/installation and the user are responsible for the safety of the device/installation. The use of the EX600-FV☐ requires a safety concept of the device/installation, validation of safety functions and hazard/risk analysis in accordance with the corresponding directives and standards.

The target SIL (compliant with IEC 61508 / IEC 62061) and performance level/category (compliant with ISO 13849) are determined based on the risk analysis. For more information, refer to the "Safety of the Machine or System" section in the EX600-FV☐ Operation manual.

CONTENTS

Type 3 Integrated input-output type

Fieldbus devices (Input/Output compatible)
EX600 Series

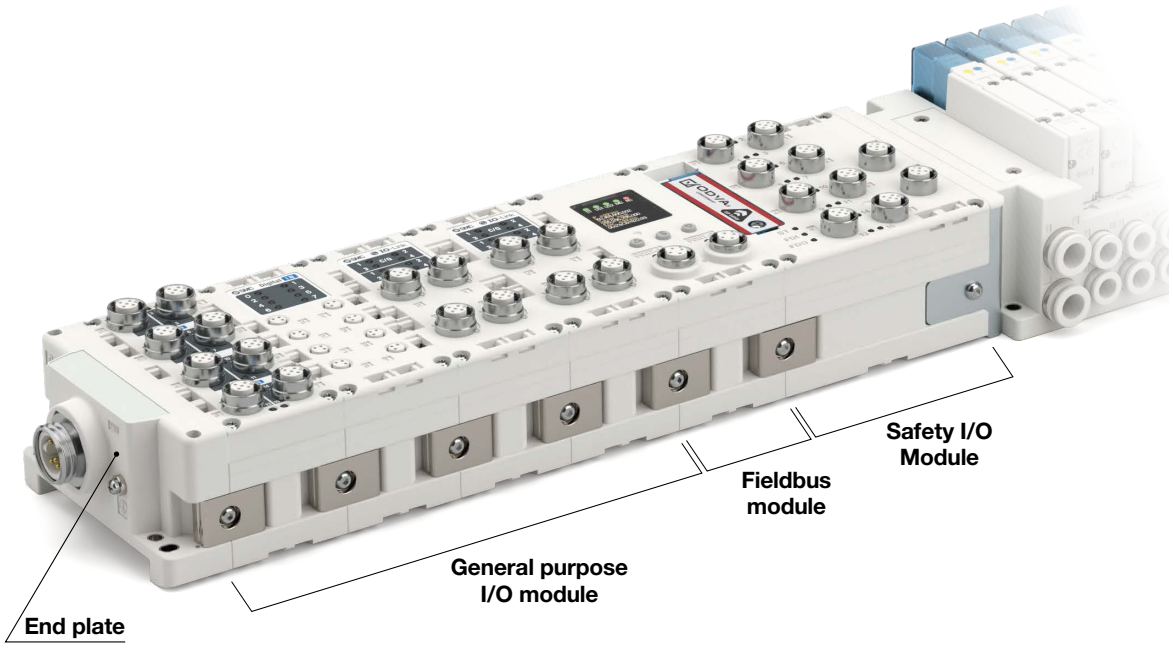
Safety Communication Fieldbus System

EX600 Series

RoHS

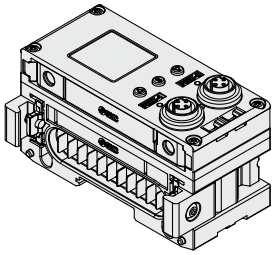
IP67

Configuration Diagram



How to Order

Fieldbus module **EX600 – B EN 1**



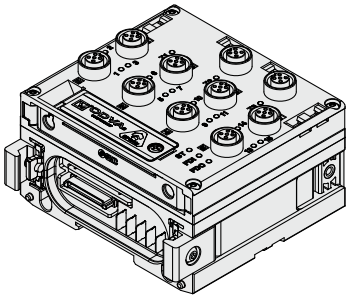
Symbol	Protocol
EN	EtherNet/IP™

∗ 1 seal cap (for an M12 connector) is included with the product.

How to Order

Safety I/O Module

EX600 – FV C 1



Symbol	Protocol
C	CIP Safety™

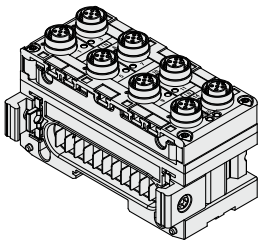
Symbol	Number of Valve outputs	Number of Safety Inputs	Number of Safety Outputs		Note
			For valve	For external device	
1	32 outputs	16 inputs	1 output	2 outputs	SY, JSY, VQC series
2	128 outputs	16 inputs	1 output	2 outputs	JSY3000-L/P, IITV23 series

* There is no seal cap included with the product. However, a seal cap should be mounted on any unused connectors.

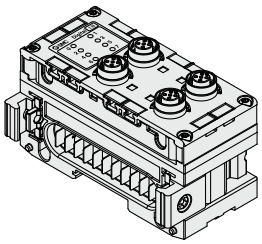
General Purpose I/O module

EX600 – DXPD – A

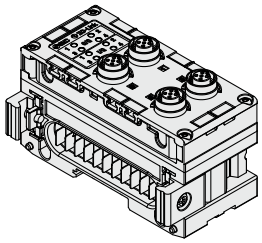
* Hexagon socket head cap screw



Digital input module



Digital output module



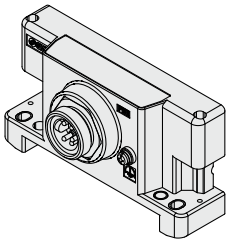
IO-Link module

Symbol	Module type	Number of Input/Output	Connector
DXPD	Digital input	16 points	M12 connector (5 pins) 8 pcs.
DXPC	Digital input	8 points	M8 connector (3 pins) 8 pcs.
DYPB	Digital output	8 points	M12 connector (5 pins) 4 pcs.
LAB1	IO-Link module class A	4 port	M12 connector (5 pins) 4 pcs.
LBB1	IO-Link module class B	4 port	M12 connector (5 pins) 4 pcs.

* There is no seal cap included with the product. However, a seal cap should be mounted on any unused connectors.
* The general-purpose input/output module EX600-□-A has been changed to screw with hexagon socket with the joint bracket.

End Plate (D side)

EX600 – ED 3 – 2



Symbol	Power supply connector
3	7/8 inch (5 pins)

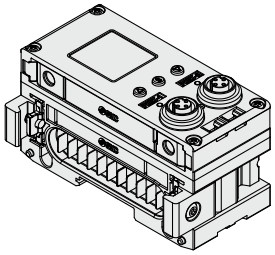
Symbol	Description	Note
Nil	Without DIN rail mounting bracket	—
2	With DIN rail mounting bracket	For VQC series
3	With DIN rail mounting bracket	For SY and JSY series

Specifications

Common Specifications

Electrical	**US1 Power supply voltage range**	24 VDC + 20%, –15%
	US2 Power supply voltage range	24 VDC + 20%, –15%
Environmental	**Operating temperature range**	–10 to + 50°C
	Storage temperature range	–20 to + 60°C
	Operating humidity range	35 to 85%RH (No condensation)
	Withstand voltage	500 VAC for 1 minute between external terminals and FE
	Insulation resistance	500 VDC, 10 MΩ or more between external terminals and FE
Standards		CE/UKCA, UL (CSA)

Fieldbus Module

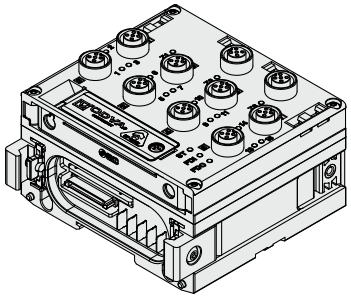


EX600-B□□1

Model		**EX600-BEN1**
Communication	**Protocol**	EtherNet/IP™
	Communication speed	10/100 Mbps
	Configuration file	EDS file*1
	QuickConnect™	●*2
	DLR	●
Enclosure rating		D-side (General Input/Output): 9 modules
Internal current consumption		150 mA max.
Enclosure rating		IP65/IP67*3
Weight		310 g max.

*1 The setting file can be downloaded from the SMC website.
*2 It is invalid when connected to EX600-FVC□.
*3 It depends on IP on manifold when conneced to manifold.

Safety Input/Output Module

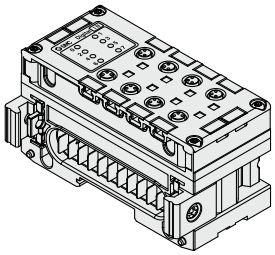


EX600-FV□1/2

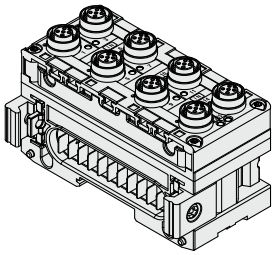
Model		**EX600-FVC1**	**EX600-FVC2**
Protocol		CIP Safety™	
Input and Output type		PNP	
Input	**Number of Safety Inputs**	16 inputs	
	Power source	US1	
	Max. Supply current	0.6 A/Connector, 2 A/Module	
	Protection	Short-circuit protection	
	ON voltage	11 V or more (Input current: 4.5 mA max.)	
	OFF voltage	5 V max.	
Output	**Number of Valve outputs**	32 outputs	128 outputs
	Manifold Electro-pneumatic Regulator	—	4 stations max.
	Number of Safety Outputs	For valve 1 point (zone 1), For external devices 2 points (zone 2 and 3)	
	Power source	US2	
	Max. Load current	Zone 1: 2 A/zone, Zones 2, 3: 0.25 A/zone	
	Protection	Short-circuit protection	
Internal current consumption		150 mA max.	
Enclosure rating		IP65/IP67*2	
Weight		540 g	

*2 It depends on IP on manifold when conneced to manifold.

Specifications



EX600-DXPC-A

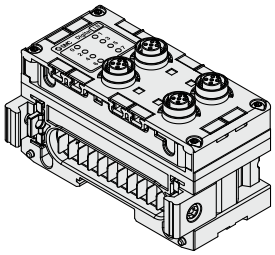


EX600-DXPD-A

Digital Input Module

Model		EX600-DXPC-A	EX600-DXPD-A
Input	Input type	PNP	PNP
	Input connector	M8 (3-pin) socket*2	M12 (5-pin) socket*1
	Number of inputs	8 inputs (1 input/Connector)	16 inputs (2 inputs/Connector)
	Supply voltage	24 VDC	
	Max. supplied current	0.25 A/Connector 2 A/Module	0.5 A/Connector 2 A/Module
	Protection	Short-circuit protection	
	Input current (at 24 VDC)	9 mA max.	
	ON voltage	17 V or more (between input terminal and 0 V when using PNP input)	
	OFF voltage	5 V or less (between input terminal and 0 V when using PNP input)	
Current consumption		55 mA max.	70 mA max.
Enclosure rating		IP67*3	
Weight		275 g	340 g

*1 M12 (4-pin) connector can be connected.
*2 When connecting the M8 plug connector, the tightening torque should be 0.2 N·m ±10%. Tightening with excessive torque may damage the connector threads of the module.
*3 It depends on IP on manifold when conneced to manifold.



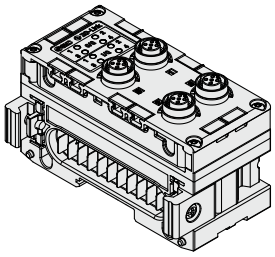
EX600-DYPB-A

Digital Output Module

Model		EX600-DYPB-A
Output	Output type	PNP
	Output connector	M12 (5-pin) socket*1
	Number of outputs	8 outputs (2 outputs/Connector)
	Supply voltage	24 VDC
	Max. Load current	0.5 A/Output 2 A/Module
	Protection	Short-circuit protection
Applicable wire		—
Current consumption		50 mA max.
Enclosure rating		IP67*2
Weight		300 g

*1 M12 (4-pin) connector can be connected.
*2 It depends on IP on manifold when conneced to manifold.

Specifications

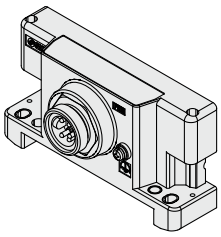


EX600-L□B1-A

IO-Link Module

Model			EX600-LAB1-A		EX600-LBB1-A
IO-Link version			Version 1.1		
IO-Link port class			Class A		Class B
Communication speed			COM1 (4.8 kBaud) COM2 (38.4 kBaud) COM3 (230.4 kBaud) ∗ Changes automatically according to the connected device		
Number of IO-Link ports			4		
Max. supply current	**Device power supply (L+)**		0.5 A/Connector (2 A/Module)		0.5 A/Connector (1 A/Module)
	External power supply (P24)		—		1.6 A/Connector (3 A/Module)
Input	**Pin no.**		2	4	4
	Input type		PNP		
	Protection		Short-circuit protection		
	Rated input current		Approx. 2.5 mA	Approx. 5.8 mA	
	ON voltage		13 V or more		
	OFF voltage		8 V or less		
Output	**Pin no.**		4		
	Output type		PNP		
	Max. load current (C/Q line)		0.25 A/Output (Supplied from the power supply for control/input)		
	Protection		Short-circuit protection		
Current consumption			50 mA or less		
Enclosure			IP67∗1		
Weight			320 g		

∗1 It depends on IP on manifold when conneced to manifold.



EX600-ED3-□

End Plate

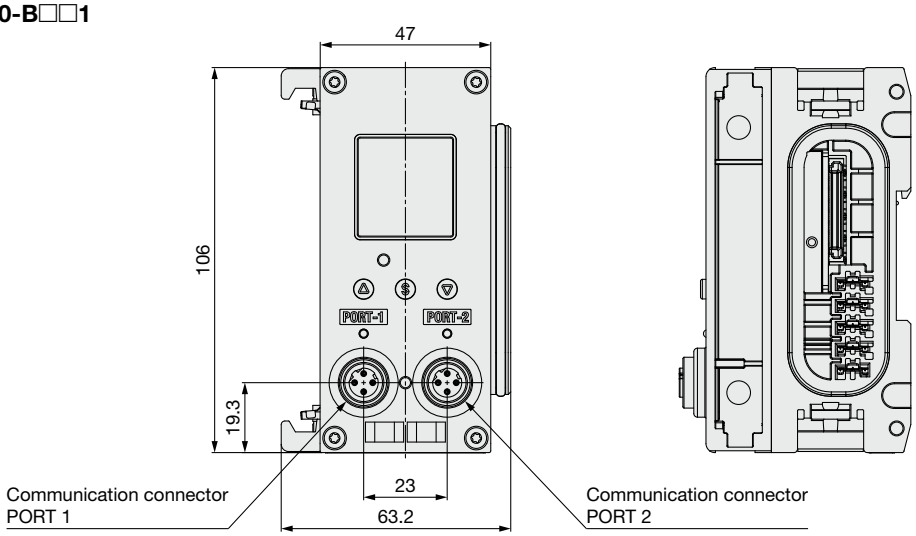
Model			EX600-ED3-□
Electrical	Power supply connector	**PWR IN**	7/8 inch (5-pin) plug
		PWR OUT	—
	Rated voltage	Power supply for Control/Input	8 A max.
		Power supply for Output	
Enclosure rating			IP67∗1
Weight			175 g

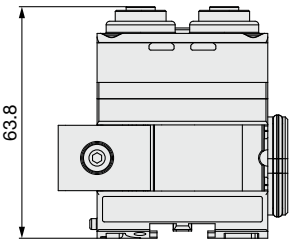
∗1 It depends on IP on manifold when conneced to manifold.

Dimensions

Fieldbus Module

EX600-B□□1



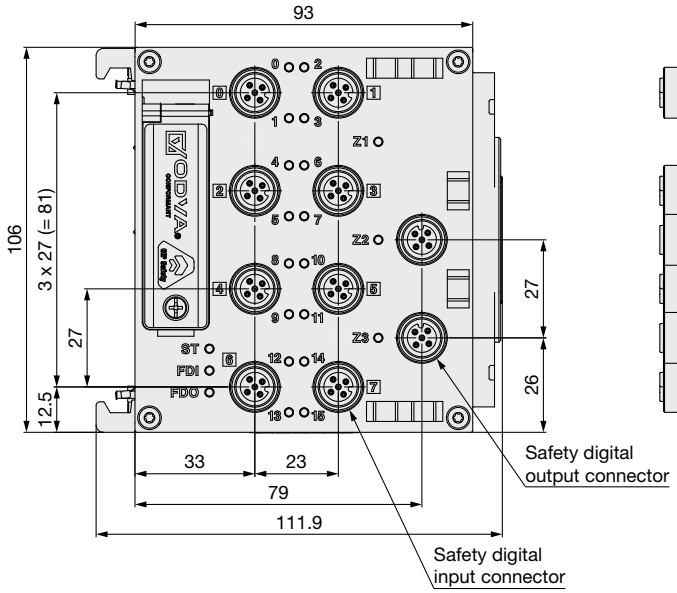


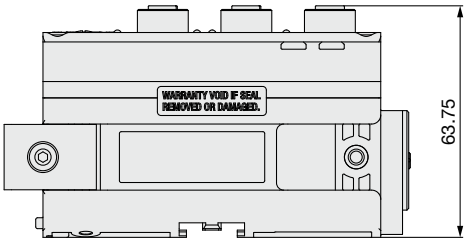
Communication connector PORT 1/2: M12 4-pin, D-coded socket

Configuration	Pin no.	Signal description
	**1**	TX+
	2	RX–
	3	TX+
	4	RX–

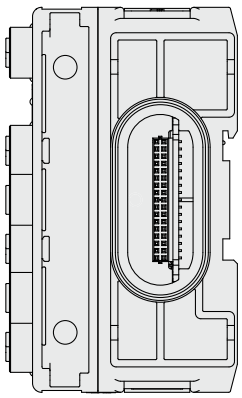
Safety Input/Output Module

EX600-FV□1
EX600-FV□2

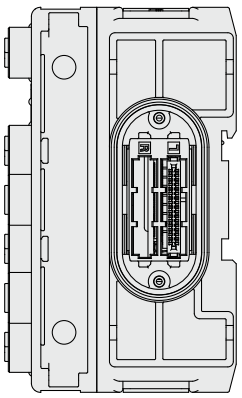




EX600-FV□1



EX600-FV□2



Safety digital input connector : M12 A code socket

Configuration	Pin no.	Signal description			
		CN0/1	CN2/3	CN4/5	CN6/7
	**1**	UT1	UT2	UT3	UT4
	2	IN (#1)			
	3	0V_US1			
	4	IN (#0)			
	5	UT5			

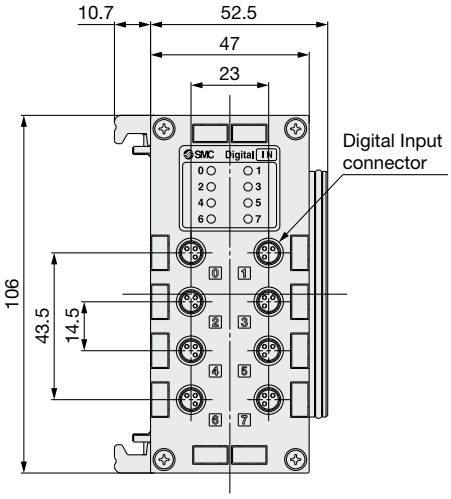
Safety Digital Output connector: M12 A coded socket

Configuration	Pin no.	Signal description	
		Z2	Z3
	**1**	N.C.	
	2	N.C.	
	3	Safety output (0 V)	
	4	Safety output 2 (24 V)	Safety output 3 (24 V)
	5	FE	

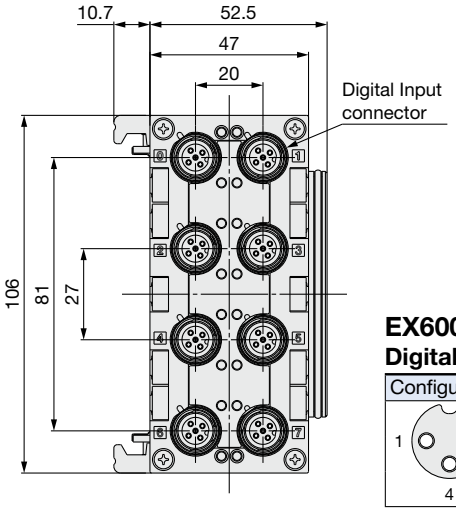
Dimensions

Digital Input Module

EX600-DXPC-A

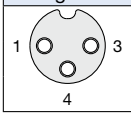


EX600-DXPD-A



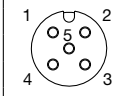
EX600-DXPC-A

Digital Input connector: M8 3-pin, socket

Configuration	Pin no.	Signal description
	**1**	24 V (US1)
	3	0 V (US1)
	4	Input

EX600-DXPD-A

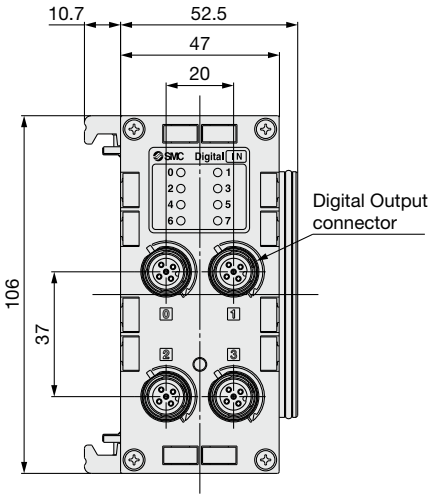
Digital Input connector: M12 5-pin A-coded socket

Configuration	Pin no.	Signal description
	**1**	24 V (US1)
	2	Input 2
	3	0 V (US1)
	4	Input 1
	5	FE

∗ M12 (4-pin) connector can be connected.

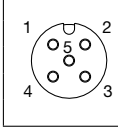
Digital Output Module

EX600-DYPB-A



EX600-DYPB-A

Digital Output connector: M12 5-pin A-coded socket

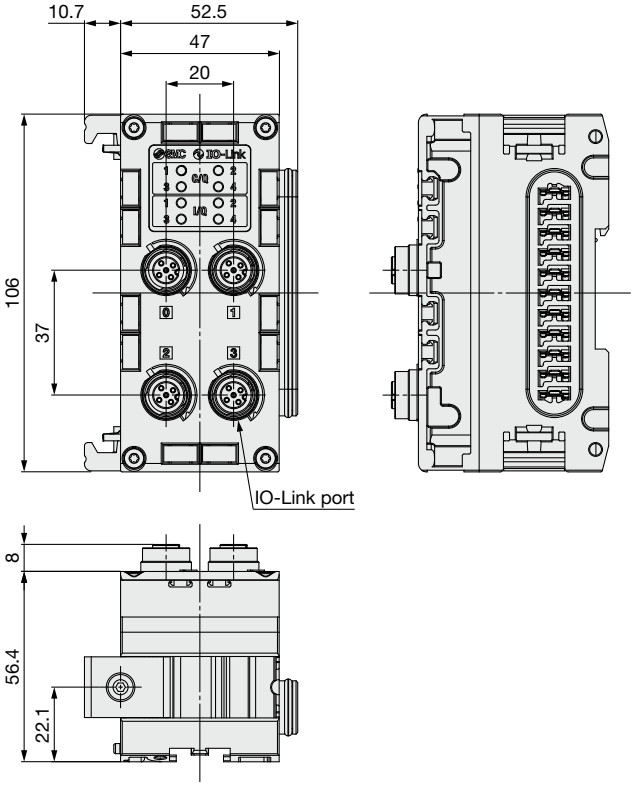
Configuration	Pin no.	Signal description
	**1**	N.C.
	2	Output 2
	3	0 V (US2)
	4	Output 1
	5	FE

∗ M12 (4-pin) connector can be connected.

Dimensions

IO-Link Module

EX600-LAB1-A
EX600-LBB1-A



EX600-LAB1-A
IO-Link port: M12 5-pin A-coded socket

Configuration	Pin no.	Signal description	Description
	**1**	L+	24 V (US1)
	2	I/Q	Digital Input (PNP)
	3	L–	0 V (US1)
	4	C/Q	IO-Link communication / Digital input (PNP) / Digital output (PNP)*1
	5	N.C.	Not used

*1 This can be selected by parameters. The power supply system for digital output is for Control/Input.

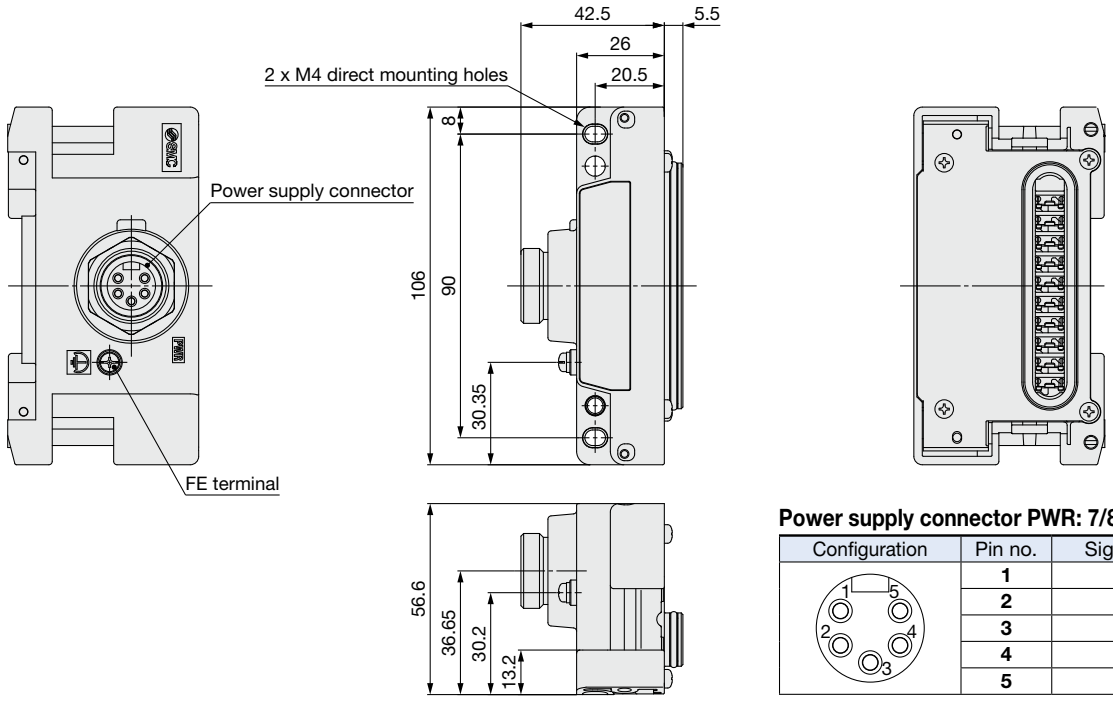
EX600-LBB1-A
IO-Link port: M12 5-pin A-coded socket

Configuration	Pin no.	Signal description	Description
	**1**	L+	24 V (US1)
	2	P24	24 V (US2)
	3	L–	0 V (US1)
	4	C/Q	IO-Link communication / Digital input (PNP) / Digital output (PNP)*1
	5	N24	0 V (US2)

*1 This can be selected by parameters. The power supply system for digital output is for Control/Input.

End Plate (D side)

EX600-ED3

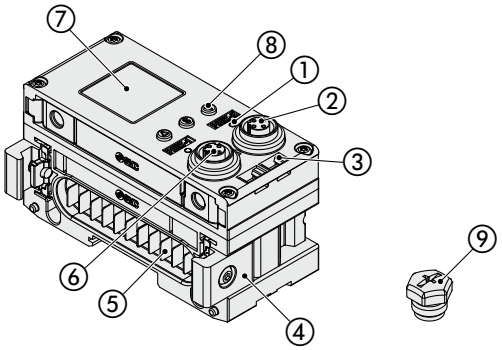


Power supply connector PWR: 7/8 inch 5-pin, plug

Configuration	Pin no.	Signal description
	1	0 V (US2)
	2	0 V (US1)
	3	FE
	4	24 V (US1)
	5	24 V (US2)

Parts Description

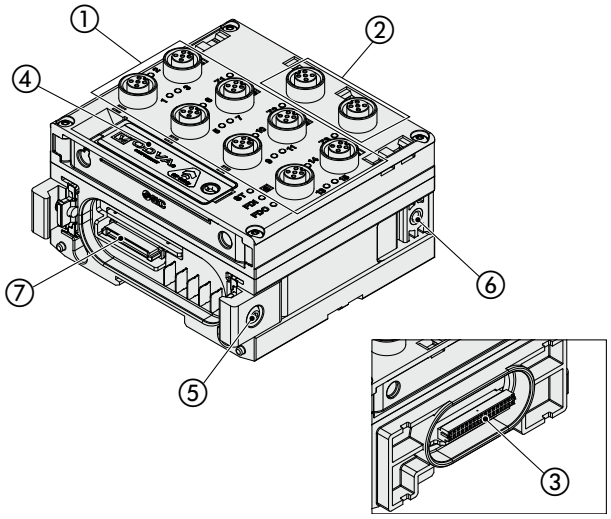
Fieldbus Module



EX600-BEN1

No.	Name	Function
1	**Communication status LED**	Displays the communication status.
2	**Connector (PORT 2)**	Connection for Communication cable
3	**Marker groove**	Can be used to mount a marker
4	**Joint bracket**	Connects the modules together
5	**Module connection connector (plug)**	Transmits signals and supplies power to adjacent modules.
6	**Connector (PORT 1)**	Connection for Communication cable
7	**LCD display**	Displays the communication status.
8	**Push button switch**	Push button switch for configuring the LCD display.
9	**Seal cap**	Attached to the connector (PORT 2) at the time of shipment.

Safety Input/Output Module

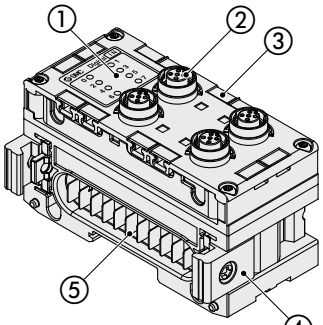


EX600-FVC□

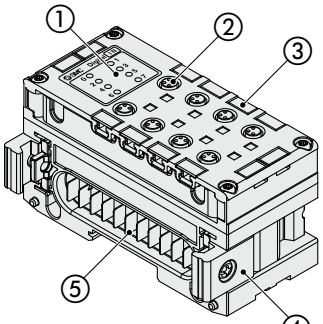
No.	Name	Function
1	**Safety Digital Input connectors**	Connector for Safety Input devices.
2	**Safety Digital Output connectors (via M12 connector)**	Connector for Safety Output devices.
3	**Valve connector**	Connector for valve manifold
4	**Switch cover**	Open for setting the switch (not used with EX600-FVC□).
5	**Joint bracket**	Connect the module together.
6	**Valve plate mounting screw holes**	For mounting the valve plate.
7	**Module connector**	Transmits signals and supplies power to adjacent module.

Parts Description

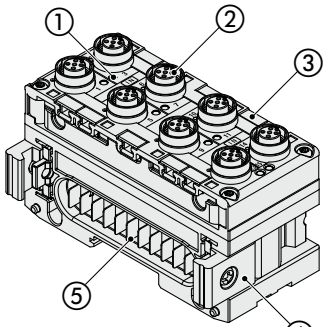
Digital Module



EX600-DYPB-A



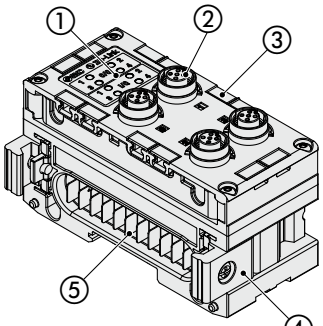
EX600-DXPC-A



EX600-DXPD-A

No.	Name	Use
1	**Status indication LED**	Displays module status
2	**Connector**	Connects with input or output devices
3	**Marker groove**	Can be used to mount a marker
4	**Joint bracket**	Links modules to one another
5	**Connector for module (Plug)**	Transmits signals to the neighboring module and supplies power

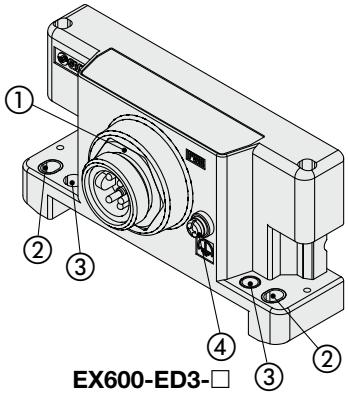
IO-Link Module



EX600-LAB1-A
EX600-LBB1-A

No.	Name	Use
1	**Status indication LED**	Displays module status
2	**Connector**	Connects with IO-Link, input, or output devices
3	**Marker groove**	Can be used to mount a marker
4	**Joint bracket**	Links modules to one another
5	**Connector for module (Plug)**	Transmits signals to the neighboring module and supplies power

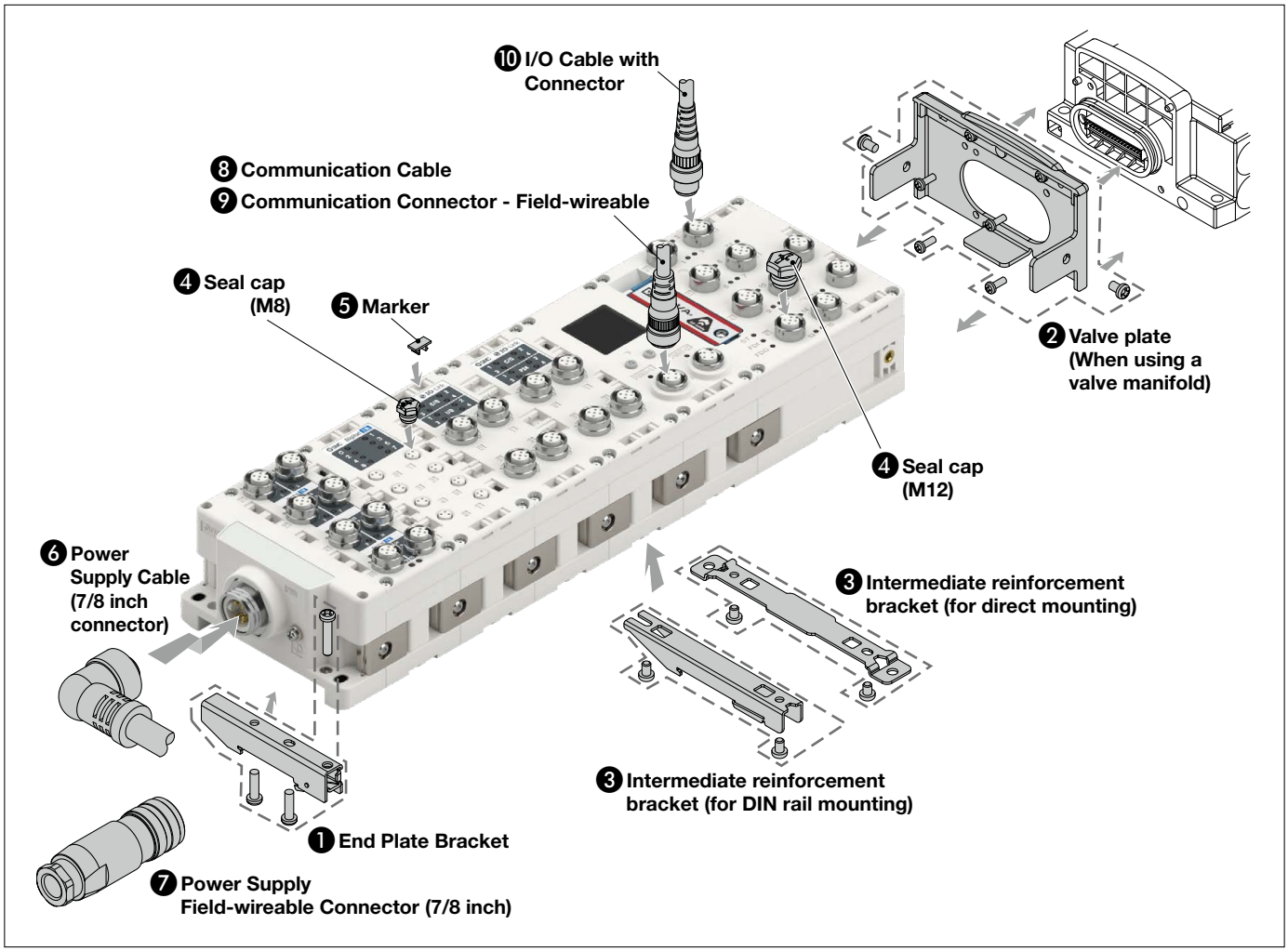
End Plate



EX600-ED3-□

No.	Name	Use
1	**Power connector (PWR IN)**	Supplies power to the module and/or input/output device
2	**Fixing hole for direct mounting**	Connects directly to equipment
3	**Fixing hole for DIN rail**	Converts to manifold or for DIN rail mounting
4	**FE terminal**	Used for grounding Ground this terminal securely to improve noise immunity.

EX600 Series
Accessories



❶ End Plate Bracket

This bracket is used for the end plate for DIN rail mounting.

EX600-ZMA2

Included parts

Round head screw (M4 x 20)	1 pc.
P-tight screw (4 x 14)	2 pcs.

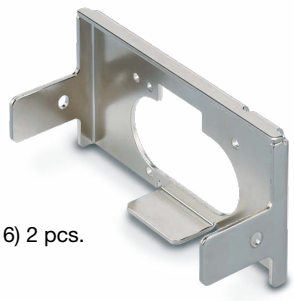
EX600-ZMA3
(Special for SY series)

Included parts

Round head screw with washer (M4 x 20)	1 pc.
P-tight screw (4 x 14)	2 pcs.

❷ Valve Plate

EX600-ZMV4



Included parts

Hexagon socket head cap screws (M4 x 6) 2 pcs.
Pan head screws (M3 x 8) 4 pcs.

❸ Reinforcing Brace

This bracket is used on the bottom of the module at the intermediate position for connecting 6 modules or more.

* Be sure to attach this bracket to prevent connection failure between the modules caused by deflection.

For Direct mounting
EX600-ZMB1

Included parts
Round head screw (M4 x 5) 2 pcs.

For DIN rail mounting
EX600-ZMB2

Included parts
Round head screw (M4 x 6) 2 pcs.

❹ Seal Cap (10 pcs.)

Be sure to mount a seal cap on any unused I/O connectors. Otherwise, the specified enclosure cannot be maintained.

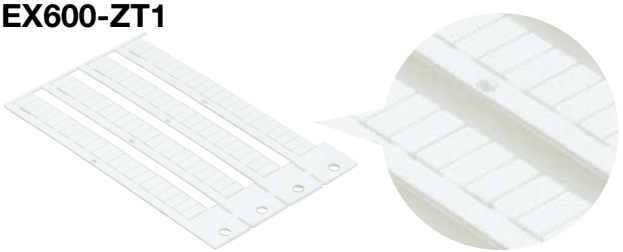
EX9-AWES
For M8

EX9-AWTS
For M12

❺ Marker (1 sheet, 88 pcs.)

The signal name of I/O device and each module address can be entered and mounted on each module.

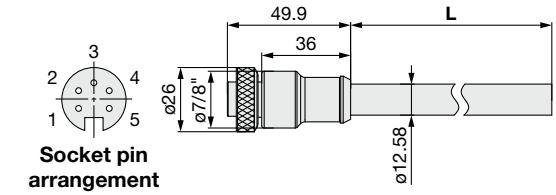
EX600-ZT1



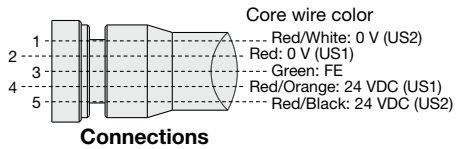
❻ Power Supply Cable (7/8 inch connector)

PCA-1558810	Straight 2 m
PCA-1558823	Straight 6 m
PCA-1558836	Right angled 2 m
PCA-1558849	Right angled 6 m

Straight connector type

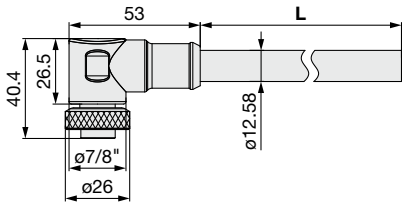


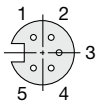
Socket pin arrangement



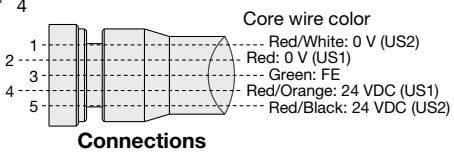
Connections

Angled connector type





Socket pin arrangement



Connections

Item	Specifications
Cable O.D.	ø12.58 mm
Conductor nominal cross section	1.5 mm²/AWG16
Wire O.D. (Including insulator)	2.35 mm
Min. bending radius (Fixed)	110 mm

❼ Power Supply Field-wireable Connector (7/8 inch)

PCA-1578081 Socket [compatible with AWG22-16]

Applicable Cable

Item	Specifications
Cable O.D.	ø12.0 to 14.0 mm
Wire gauge (Stranded wire cross section)	0.34 to 1.5 mm² AWG22 to 16

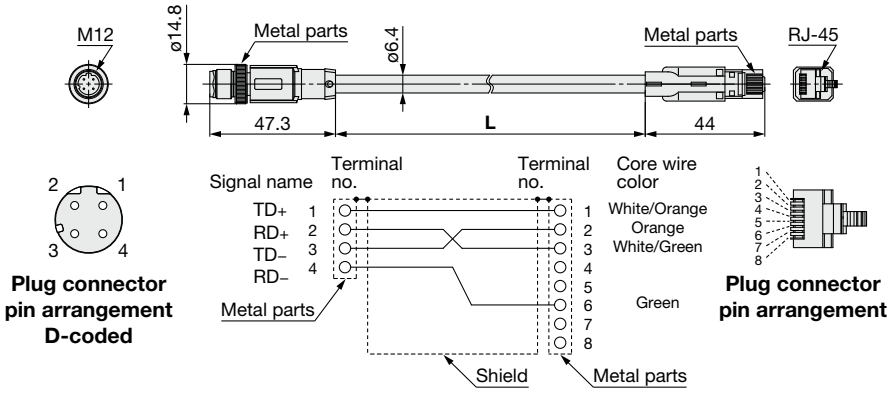
❽ Communication Cable

For EtherNet/IP™

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



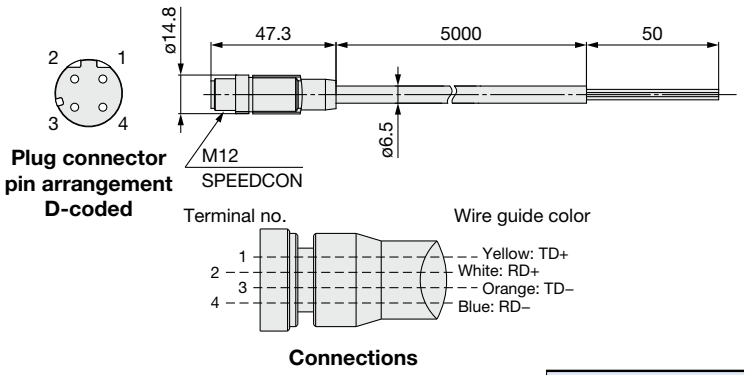
Plug connector pin arrangement D-coded

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	AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	45.5 mm

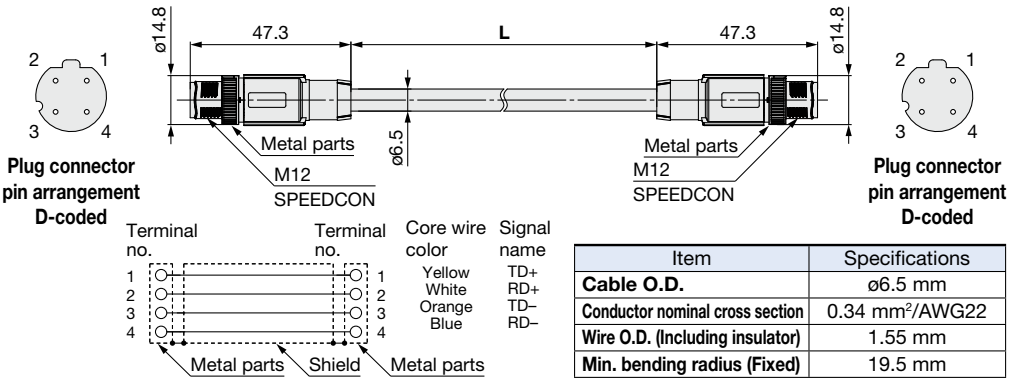
❽ Communication Cable

For EtherNet/IP™

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

Cable length (L)

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



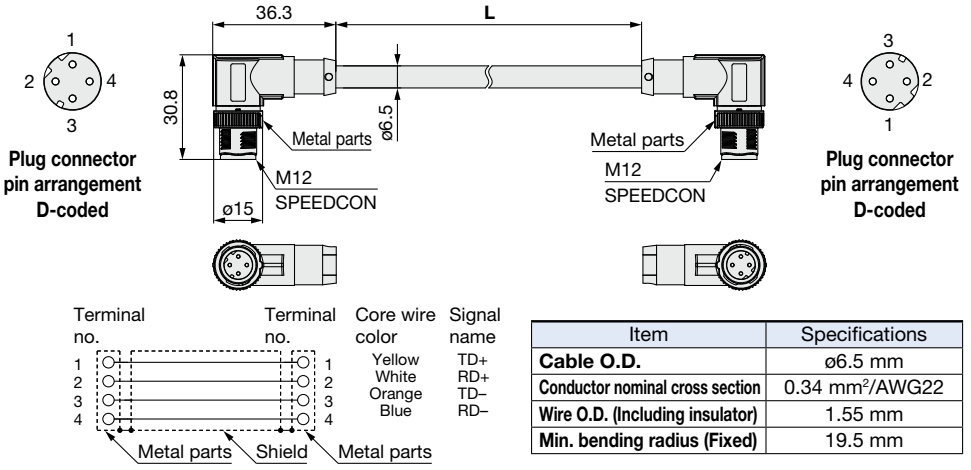
Connections (Straight cable)

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 right angled connector on both ends (Plug/Plug))

Cable length (L)

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



Connections (Straight cable)

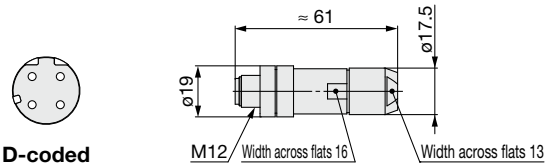
Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

❾ Field-wireable Communication Connector

Plug

For EtherNet/IP™

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

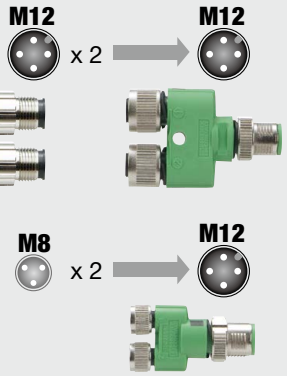
* The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

⑩ I/O Cable with Connector, I/O Connector

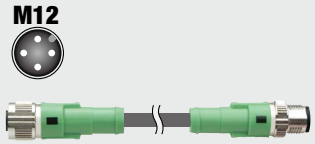
For details, refer to the **Web Catalog**.

Name	Use	Part no.	Description
Cable with connector	For sensor 	**PCA-1557769**	Cable with M12 connector (4 pins/3 m)
		PCA-1557772	Cable with M8 connector (3 pins/3 m)
Field-wireable connector	For sensor 	**PCA-1557730**	Field-wireable connector (M8/3 pins/Plug/Piercecon® connection)
		PCA-1557743	Field-wireable connector (M12/4 pins/Plug/QUICKON-ONE connection/SPEEDCON)
		PCA-1557756	
Y connector	For sensor 	**PCA-1557785**	Y connector (2 x M12 (5 pins)-M12 (5 pins)/SPEEDCON)
		PCA-1557798	Y connector (2 x M8 (3 pins)-M12 (4 pins)/SPEEDCON)

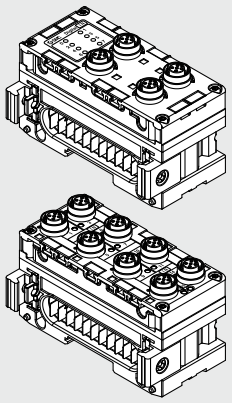
* When using the Y connector, connect it to the connector on the I/O module through the sensor cable (PCA-1557769) with the M12 connector.



Y connector



Cable with connector



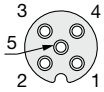
I/O module

For IO-Link Module

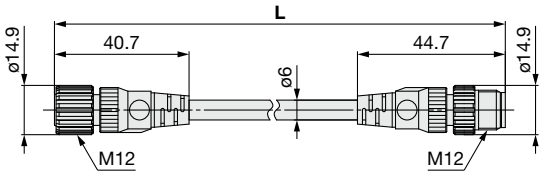
EX9-AC 005 -SSPS (With connector on both ends (Socket/Plug))

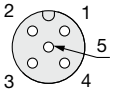
Cable length (L)

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

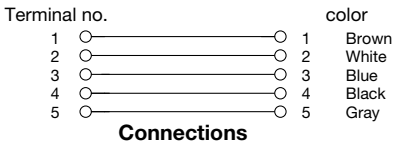


Socket connector pin arrangement
A-coded (Normal key)





Plug connector pin arrangement
A-coded (Normal key)

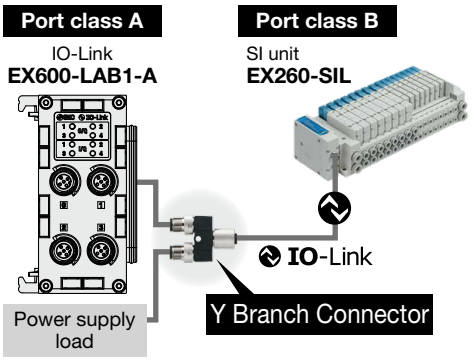


Connections

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

⑩ I/O Cable with Connector, I/O Connector

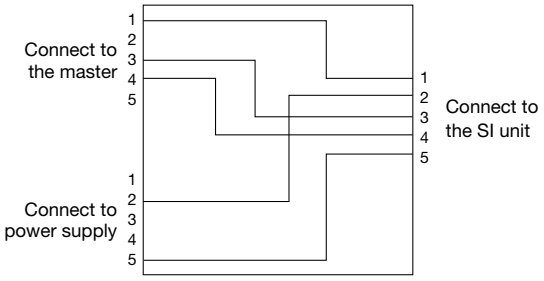
Port Class B EX260-SIL SI Unit and Port Class A IO-Link Master Connection Example



Port class A compliant

A special wiring Y branch connector is available.

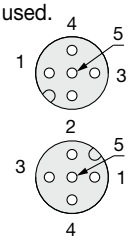
Used when connecting to a port class A type IO-Link master, which is often used when connecting to an IO-Link sensor



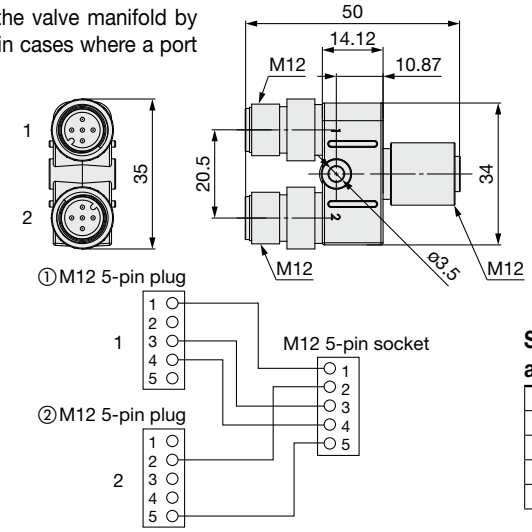
Y Branch Connector for IO-Link

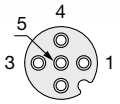
This connector is used to supply power to the valve manifold by branching the IO-Link communication cable in cases where a port class A IO-Link master is used.

EX9-ACY02-S



Plug connector pin arrangement A-coded (Normal key)





Socket connector pin arrangement A-coded (Normal key)

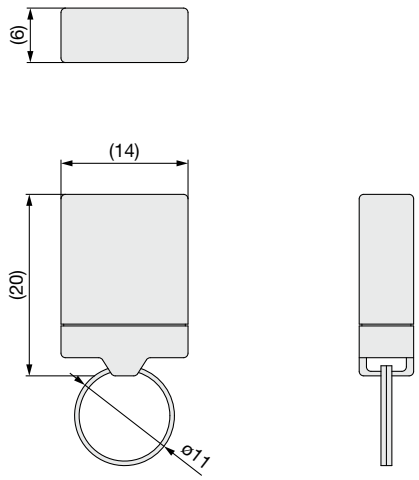
Solenoid valve power supply cable side pin arrangement when using a branch connector

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

⑪ IO-Link Device Tool License Key

USB dongle

EX9-ZSW-LDT1



* The IO-Link Device Tool V5-PE (V5 or later only) manufactured by TMG is required for setting IO-Link devices.
The IO-Link Device Tool can be downloaded for free from TMG's website. However, to use it for more than 30 days, a license key for the IO-Link Device Tool is required.

EX600 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 "Operation Manual" on the SMC website.

Mounting

⚠ Caution

1. When handling and assembling modules, do not touch the sharp metal parts of the connector or plug.

2. When connecting six stations or more, be sure to use the intermediate reinforcing brace (EX600-ZMB1 or EX600-ZMB2).

Operating Environment

⚠ Caution

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

IP65/67 is achieved when the following conditions are met.

1) Provide appropriate wiring between all modules using electrical wiring cables, communication connectors and cables with M12 connectors.
2) Appropriately mount each module 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.

⚠ 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.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
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. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not allowed.
Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country. The new Measurement Act prohibits use of any unit other than SI units in Japan.

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) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**
A suction cup (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 suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed 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.

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

SMC Corporation