Fieldbus System (For Input/Output)

EX600 Series

Compatible Protocols

CC-Link DeviceNet PROFIBUS EtherNet/IP EtherCAT PROFINET

Made to Order Modbus ETHERNET POWERLINK

Please contact SMC for details on compatible products.

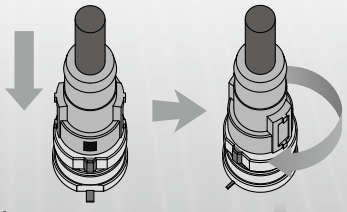
c UL us
* Only the SY and SV valves are UL-compliant.

RoHS

Dual-port SI unit (EtherNet/IP™) product

- Can be used for linear type or DLR type topology
- Supports QuickConnect™ function
- Status checks and settings can be performed on a web browser.

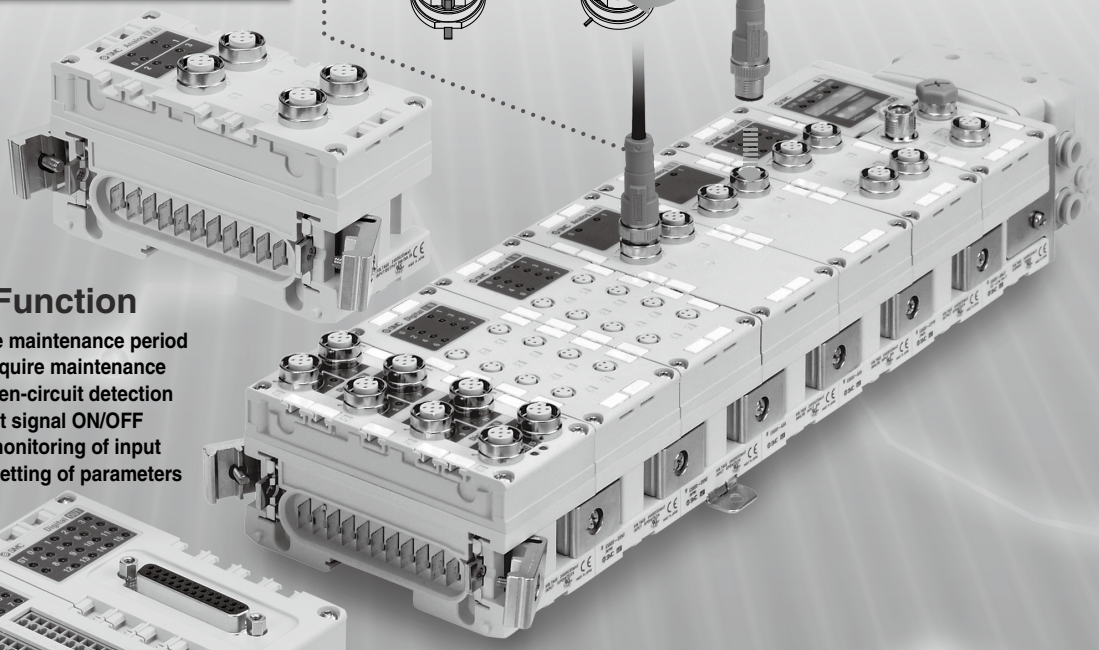
Wiring time can be reduced with SPEEDCON (Phoenix Contact). Just insert and make a 1/2 rotation!



IP67

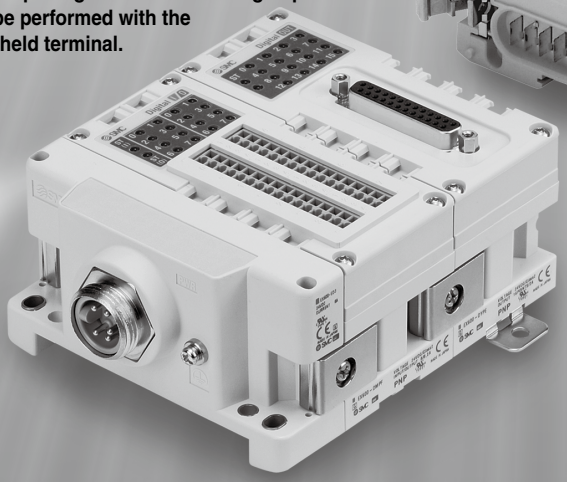
* Some products are IP40.

Handheld Terminal



Self Diagnosis Function

It is possible to ascertain the maintenance period and identify the parts that require maintenance by using the input/output open-circuit detection function and the input/output signal ON/OFF counter function. Also, the monitoring of input and output signals and the setting of parameters can be performed with the handheld terminal.



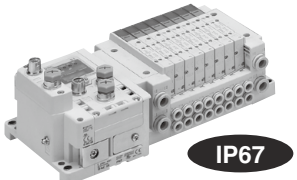
Max. 9 units*1 can be connected in any order.

The input unit to connect input devices such as auto switches, pressure switches, and flow switches, and the output unit to connect output devices such as solenoid valves, relays, and indicator lights can be connected in any order.

*1 Excludes SI units

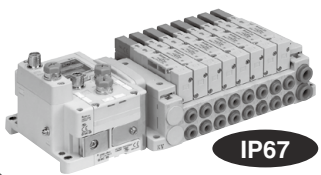
Manifold Solenoid Valves

SY3000/5000/7000 Series



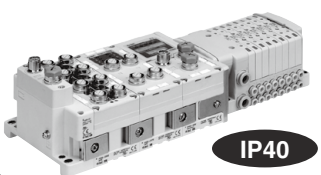
IP67

SV1000/2000/3000 Series



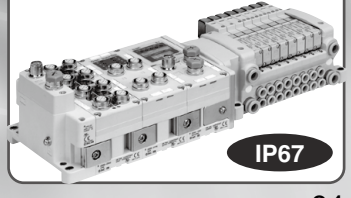
IP67

S0700 Series



IP40

VQC1000/2000/4000/5000 Series



IP67

EX600 Series Configurations

Analog Units

M12 connector (5 pins)

Input unit — 2CH

Output unit — 2CH

Input/Output unit — 2CH/2CH

IP67 IP67

Input device

Pressure sensor

Flow sensor

Output device

Electro-pneumatic regulator, etc.

SI Unit

Dual-port EtherNet/IP™ product added to compatible communication networks

▶p. 104

IP67

Handheld Terminal

Parameter setting and I/O monitor tool ▶p. 106

Units can be differentiated by color.

Power supply

Input unit (IN) — Input unit (IN) — Input unit (IN) — Output unit (OUT) — Input/Output unit (I/O) — Input unit (IN) — Input/Output unit (I/O)

End Plate | Digital Units | Analog Units | SI Unit

For detailed specifications of connectable devices, refer to the catalog of each device to select the right device for your application. If anything is unclear, please contact SMC.

Digital Units

	M12 connector (5 pins)		M8 connector (3 pins)	D-sub connector	Spring type terminal block
Input unit	8 inputs	16 inputs	8 inputs	16 inputs	16 inputs
Output unit	8 outputs			16 outputs	16 outputs
Input/Output unit				8 inputs/8 outputs	8 inputs/8 outputs
	IP67	IP67	IP67	IP40	IP40

Input device

Flow switch

Auto switch

Pressure switch

Others
Proximity sensor
Photoelectric switch
Limit switch

Output device

Solenoid valve

Others
Indicator light
Relay
Buzzer

SMC

SI Unit

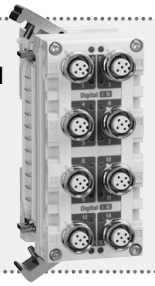
Unit to connect various Fieldbusses with the EX600 system

▶p. 104

Digital Unit

Unit to input or output digital (switch) signals

▶p. 105



Analog Unit

Unit to input or output analog (voltage/current) signals

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End Plate

Unit to supply power to the EX600 system

▶p. 106

Handheld Terminal

Parameter setting and I/O monitor tool

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Accessories

Options including a power supply cable, etc., for the EX600 series

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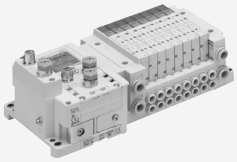
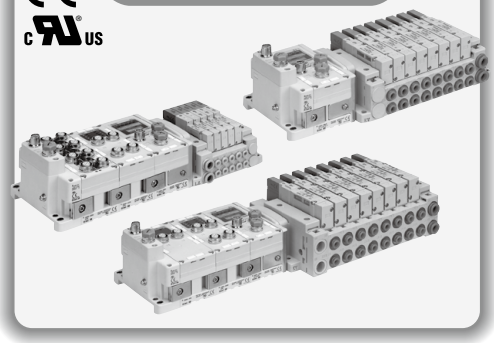
Manifold solenoid valves

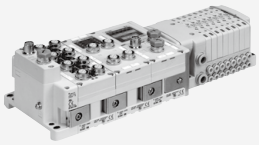
SY Series (IP67)



SV Series (IP67)



S0700 Series (IP40)



VQC Series (IP67)

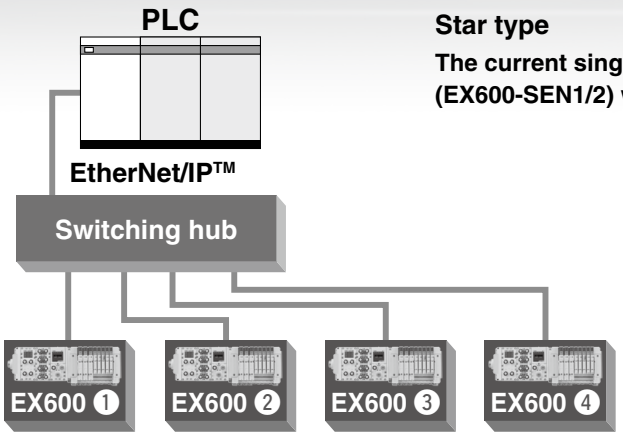
- **Made to Order** ····· ▶p. 128
  - MRP (PROFINET) compatible, Ethernet POWERLINK compatible
  - Communication cable

Latest EtherNet/IP™ Technology

The following functions are available for the dual-port EtherNet/IP™ product (EX600-SEN3/4).

Added: Compatible Topologies (Connection Configuration)

EX600-SEN1/2

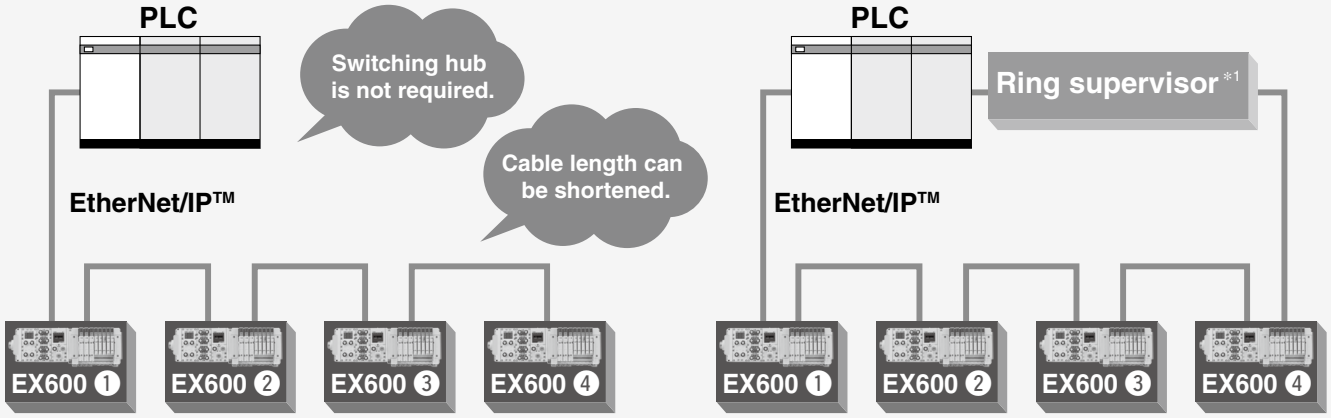


Star type

The current single-port product (EX600-SEN1/2) was only for star topology.

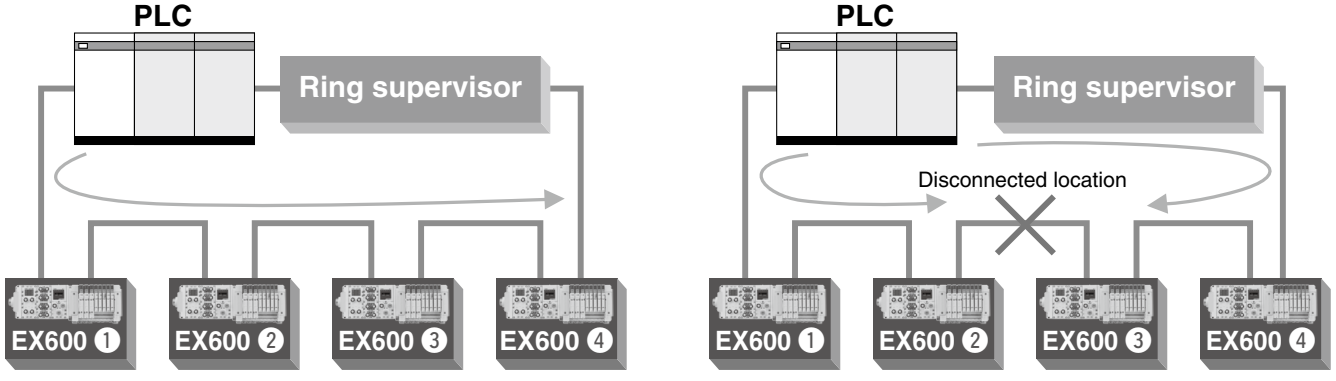
EX600-SEN3/4

The new dual-port product (EX600-SEN3/4) is available for both the linear and device level ring topologies, in addition to the star type.



*1 One or more **ring supervisors** are required.

For the device level ring type, even if the communication cable is disconnected in one location, EtherNet/IP™ communication can be continued, and the disconnected portion can be specified by the ring supervisor.

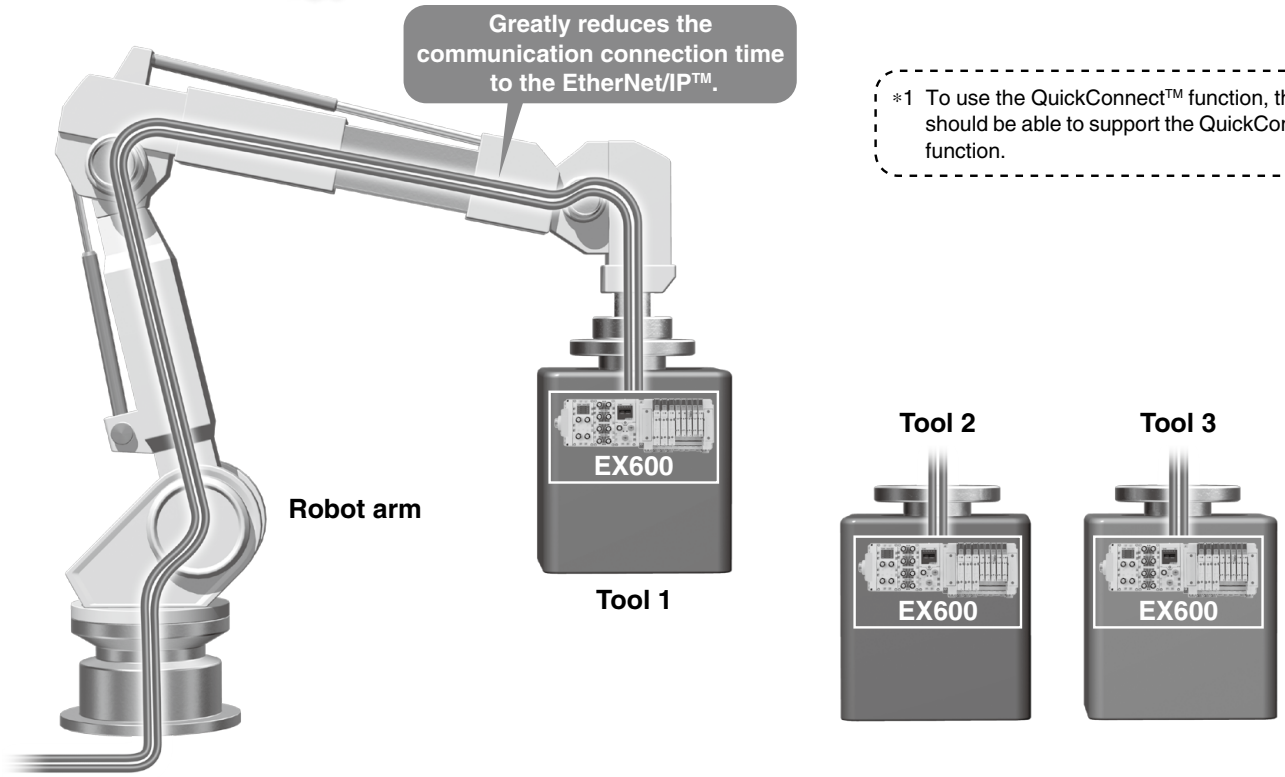


QuickConnect™ Function Available

From power ON to communication connection

10 sec. → **Approx. 0.5 sec.**

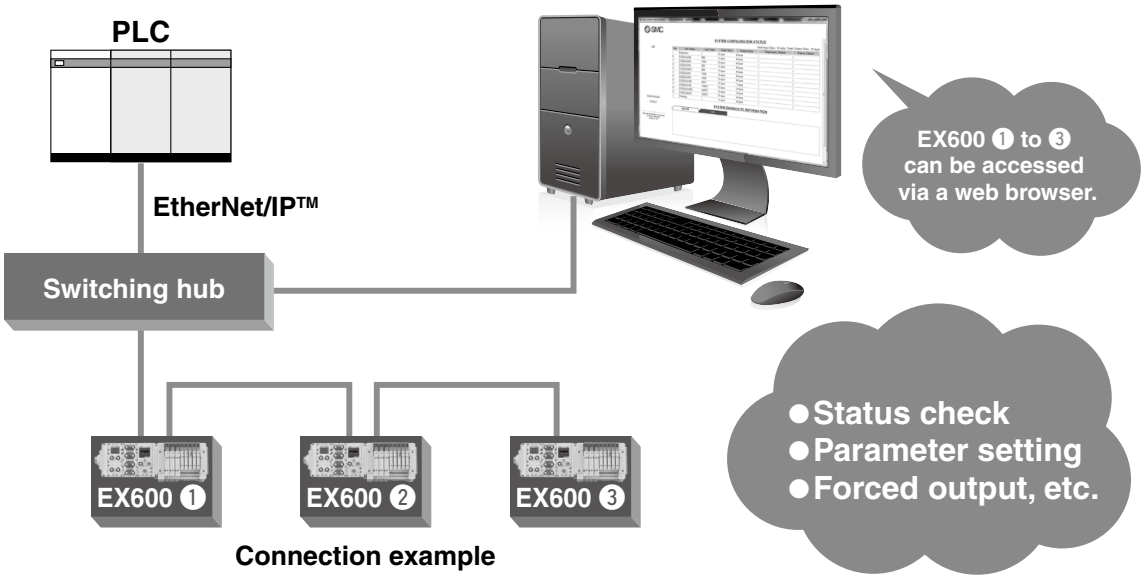
For tool changers, it takes about 10 seconds for communication to be connected in common EtherNet/IP™ products after the power of the device installed on the tool is turned ON.
Since the QuickConnect™ function*1 is available for the EX600-SEN3/4, communication can be connected in about 0.5 seconds.



*1 To use the QuickConnect™ function, the PLC should be able to support the QuickConnect™ function.

Built-in Web Server Function

The EX600-SEN3/4 has a built-in web server function, which enables status checks, parameter settings, and forced output of the EX600 using general-purpose web browsers, such as Internet Explorer. Start-up of the system and maintenance can be performed efficiently.



Connection example

D-sub Connector

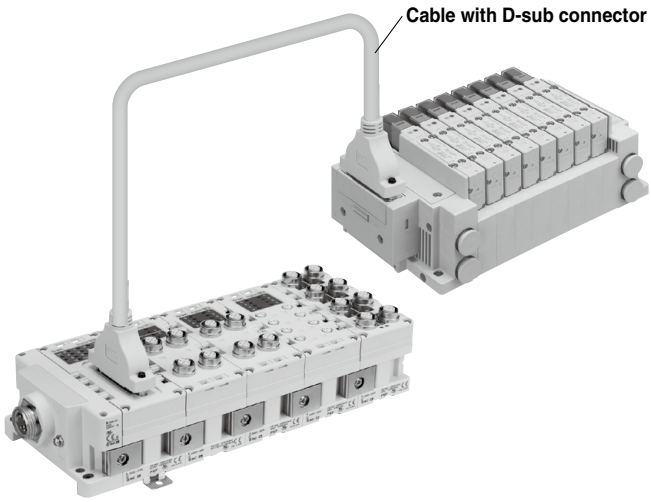
IP40

These units are capable of connection using a D-sub connector. There are three types of units: for digital input, output, and input/output. The digital output unit can be connected with an SMC manifold solenoid valve F kit (D-sub connector).

Manifold solenoid valves can be connected using a cable with a D-sub connector.

- **SY** series
- **S0700** series
- **SJ** series
- **SQ** series
- **SV** series
- **VQC** series
- **VQ** series

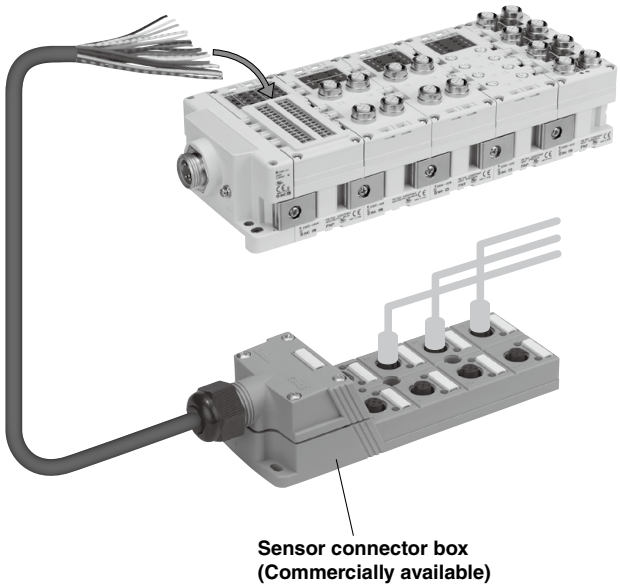
∗ Please limit the number of valve connections to 16 stations for single and 8 stations for double. Refer to the catalog of each product for pin assignment details.



Spring Type Terminal Block

IP40

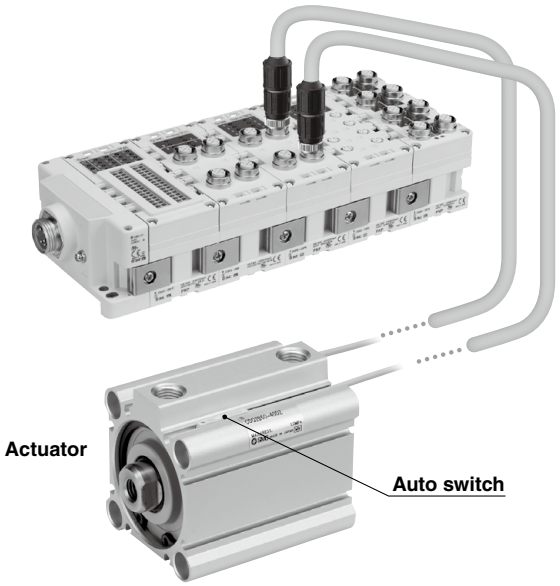
These terminal block units are compatible with individual wiring configurations. There are three types of units: for digital input, output, and input/output. Wiring connection to a sensor connector box, etc., can be carried out easily using only a flat head screwdriver.



Digital Input Unit

IP67

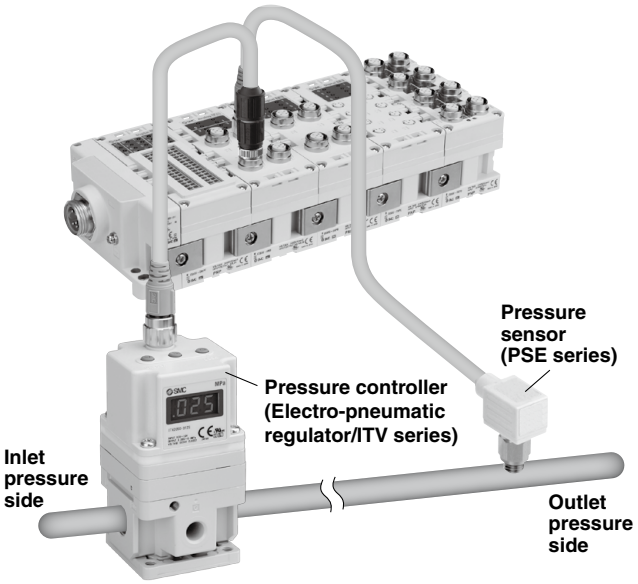
This unit is for inputting a digital signal (ON/OFF signal). The signal of a 2-wire/3-wire auto switch attached to the actuator can be acquired to feedback a signal to the PLC. The control signal of an entire system can be managed by a Fieldbus system.



Analog Input/Output Unit

IP67

These units are for inputting or outputting an analog signal (voltage/current). A single unit performs both input and output, allowing feedback control where analog signals are received from a pressure sensor and sent to a pressure controller. Installation space is minimized as well.



Self Diagnosis Function

In combination with the handheld terminal, the following two functions are available.

Short/Open-Circuit Detection Function

It is possible to detect short or open circuits of input devices such as electronic 2-wire switches and 3-wire switches and output devices such as solenoid valves. The location of the error can be identified by the indicator light and the network.

Green ON Normal

Red ON Short circuit

Red flashing Open circuit

Counter Function

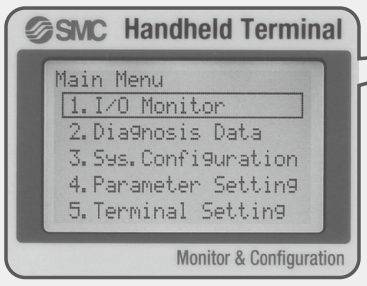
It is possible to ascertain the maintenance period and identify the parts that require maintenance by an input and output signal ON/OFF counter function. When the counter function is enabled and a certain number of contact operations is reached, the display of the counter will flash in red.

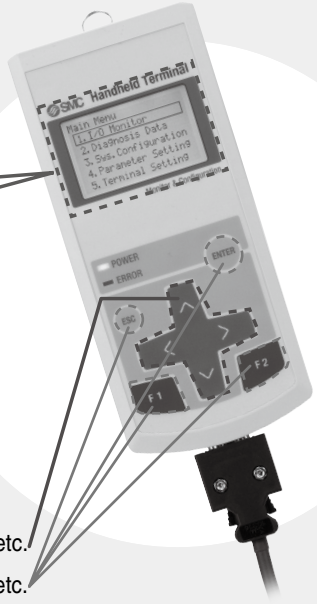
* The counter function is not provided with analog units.

Handheld Terminal

Forced Input and Output Function

The input and output signals are controlled forcedly without a PLC. The startup time after facility introduction can be shortened.





Password Setting Function

Simple Operation

Cursor button: **Mode and setting change**, etc.

Function key: **Value and command entry**, etc.

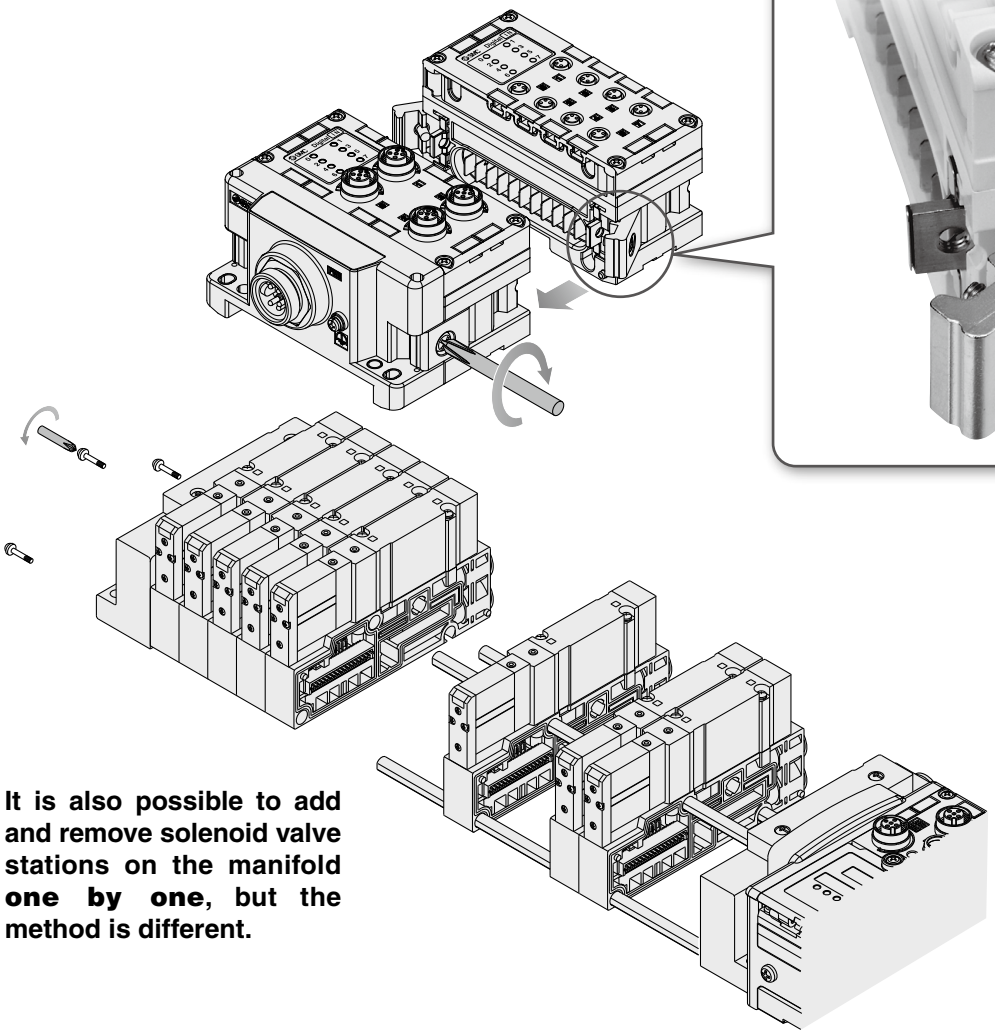
Can be used for the adjustment of internal parameters and the monitoring of input and output signal status

Parameters: **Analog data format**
Analog measurement range
Input filter selection
Counter function
Open-circuit detection function, etc.

A parameter is a set value to change the function and operation of the product through a PLC or handheld terminal. The desired operation for the customer's application is realized by the set values. There are some parameters that can only be set using the handheld terminal of this series.

Individual units can be connected and removed one by one.

A unique clamping method is adopted to prevent screws from falling out.
Units can be separated easily by loosening the joint bracket.



It is also possible to add and remove solenoid valve stations on the manifold one by one, but the method is different.

Different sizes (SY3000/5000 or SY5000/7000) can be mixed!

The installation area, amount of wiring, and number of SI units can all be reduced.

Overall length of manifold
Approx. 22% reduction

Example of SY3000 and SY5000

Installation space

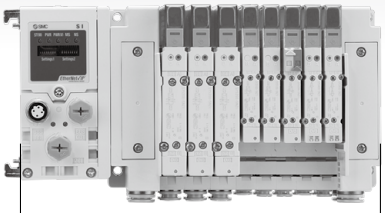
Single manifold
SY5000 3 stations

Approx. 102 mm

Single manifold
SY3000 5 stations

Approx. 117 mm

Mixed manifold
SY5000 3 stations SY3000 5 stations



Approx. 170 mm

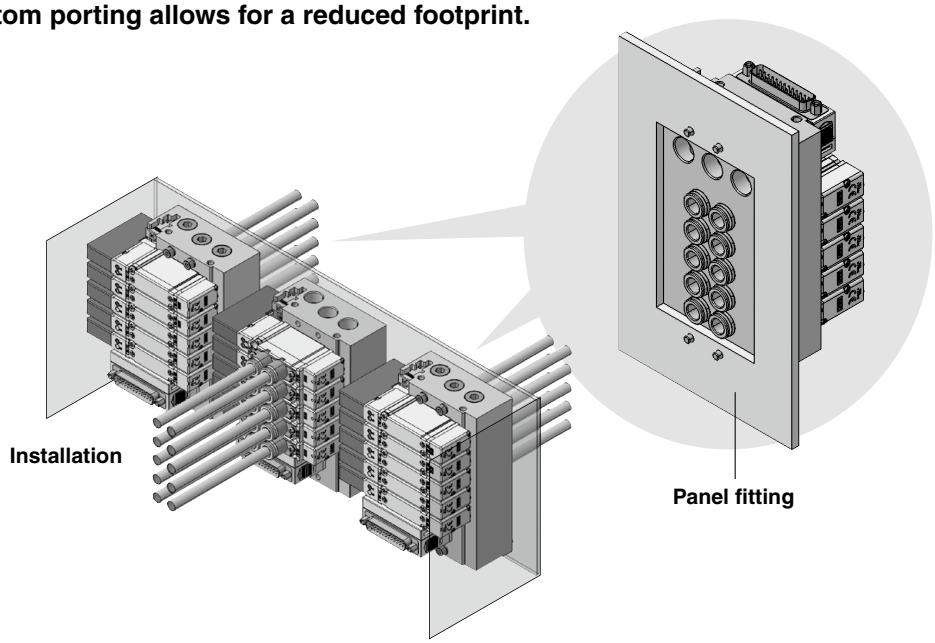
Number of SI units/ Unit cost

Manifold 2 pcs.
Serial unit 2 sets

Manifold 1 pc.
Serial unit 1 set

Bottom-ported type is available!

Top or bottom porting allows for a reduced footprint.



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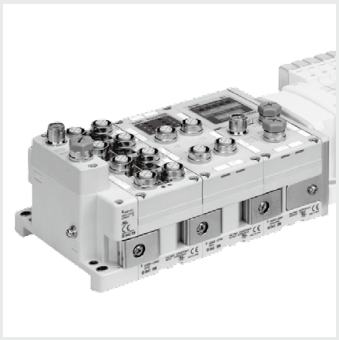
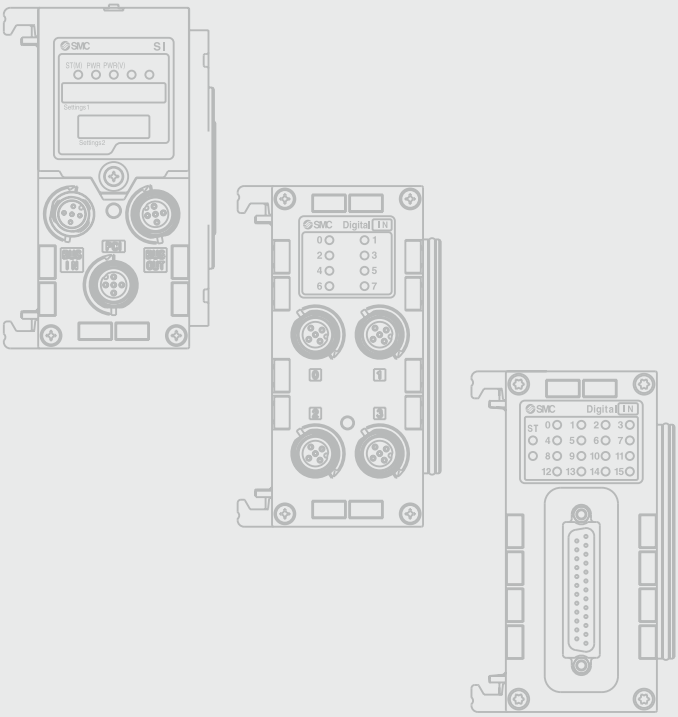
Fieldbus System (For Input/Output)
EX600 Series





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Made to Order
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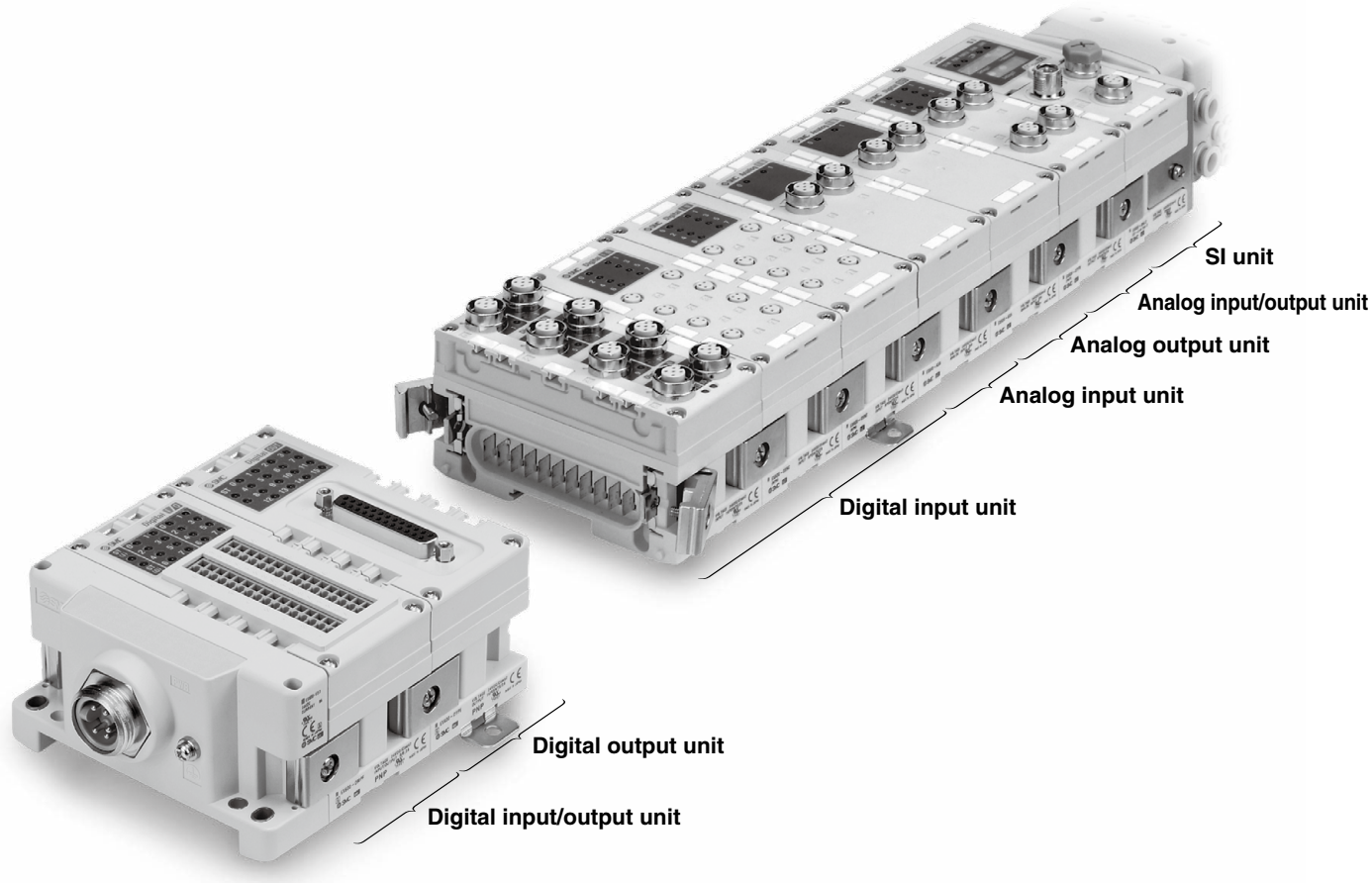
Fieldbus System For Input/Output

EX600 Series

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

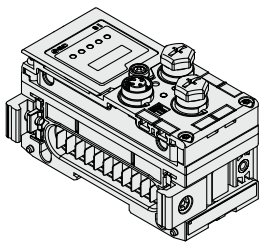
RoHS

Parts Structure



How to Order

SI Unit **EX600 – S PR1A – □**



Specifications

Symbol	Protocol	Output type	Note
PR1A	PROFIBUS DP	PNP (Negative common)	—
PR2A		NPN (Positive common)	—
DN1A	DeviceNet™	PNP (Negative common)	—
DN2A		NPN (Positive common)	—
MJ1	CC-Link	PNP (Negative common)	—
MJ2		NPN (Positive common)	—
EN1	EtherNet/IP™	PNP (Negative common)	—
EN2		NPN (Positive common)	—
EN3		PNP (Negative common)	2 ports
EN4		NPN (Positive common)	2 ports
EC1	EtherCAT	PNP (Negative common)	—
EC2		NPN (Positive common)	—
PN1	PROFINET	PNP (Negative common)	
PN2		NPN (Positive common)	

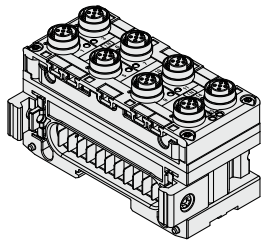
Made to Order (Refer to page 128.)

MRP (PROFINET)
Ethernet POWERLINK

How to Order

Digital Input Unit

EX600-DX[P][D]



Input type

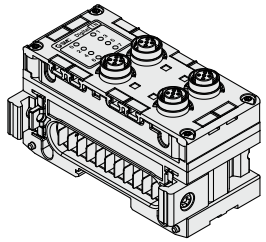
Symbol	Description
P	PNP
N	NPN

Number of Inputs, Open-circuit detection, and Connector

Symbol	Number of inputs	Open-circuit detection	Connector
B	8 inputs	No	M12 connector (5 pins) 4 pcs.
C	8 inputs	No	M8 connector (3 pins) 8 pcs.
C1	8 inputs	Yes	M8 connector (3 pins) 8 pcs.
D	16 inputs	No	M12 connector (5 pins) 8 pcs.
E	16 inputs	No	D-sub connector (25 pins)
F	16 inputs	No	Spring type terminal block (32 pins)

Digital Output Unit

EX600-DY[P][B]



Output type

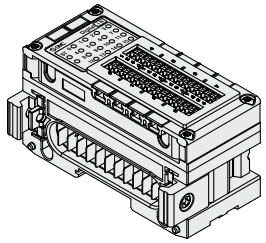
Symbol	Description
P	PNP
N	NPN

Number of Outputs and Connector

Symbol	Number of outputs	Connector
B	8 outputs	M12 connector (5 pins) 4 pcs.
E	16 outputs	D-sub connector (25 pins)
F	16 outputs	Spring type terminal block (32 pins)

Digital Input/Output Unit

EX600-DM[P][F]



Input/Output type

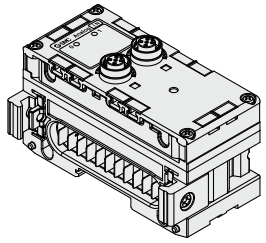
Symbol	Description
P	PNP
N	NPN

Number of Inputs/Outputs and Connector

Symbol	Number of inputs	Number of outputs	Connector
E	8 inputs	8 outputs	D-sub connector (25 pins)
F	8 inputs	8 outputs	Spring type terminal block (32 pins)

Analog Input Unit

EX600-AX[A]



Analog input

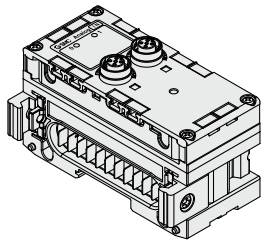
Number of Input channels and Connector

Symbol	Number of input channels	Connector
A	2 channels	M12 connector (5 pins) 2 pcs.

How to Order

Analog Output Unit

EX600 – AY A



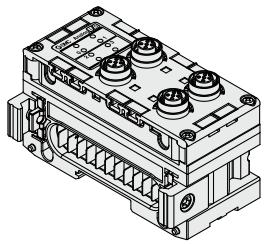
Analog output

Number of Output channels and Connector

Symbol	Number of output channels	Connector
A	2 channels	M12 connector (5 pins) 2 pcs.

Analog Input/Output Unit

EX600 – AM B



Analog input/output

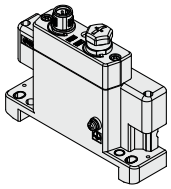
Number of Input/Output channels and Connector

Symbol	Number of input channels	Number of output channels	Connector
B	2 channels	2 channels	M12 connector (5 pins) 4 pcs.

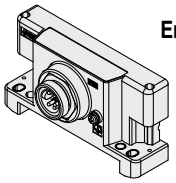
End Plate (D side)

EX600 – E D 2 – 2

EX600-ED4/5 are not yet UL-compatible.



For M12



For 7/8 inch

End plate

End plate mounting position: D side

Power supply connector

Symbol	Power supply connector	Specifications
2	M12 (5 pins) B-coded	IN
3	7/8 inch (5 pins)	IN
4	M12 (4/5 pins) A-coded*1	IN/OUT
5	M12 (4/5 pins) A-coded*1	IN/OUT

*1 The pin layout for "4" and "5" pin connector is different.
Refer to the dimensions on page 113.

Mounting method

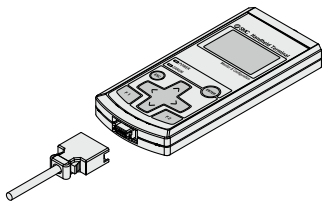
Symbol	Description	Note
Nil	Without DIN rail mounting bracket	—
2	With DIN rail mounting bracket	For SV, S0700, VQC series
3	With DIN rail mounting bracket	For SY series

* When the end plate (U side) is used, the symbol for the mounting method must be the same as the D side.

Handheld Terminal

EX600 – HT1A – 3

Handheld terminals are not yet UL-compatible.



Version

Cable length

Symbol	Description
Nil	No cable
1	1 m
3	3 m

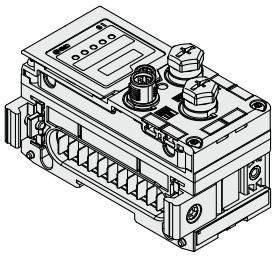
Specifications

All Units Common Specifications

Environmental resistance	**Operating temperature range**	Operating: –10 to 50°C, Stored: –20 to 60°C
	Operating humidity range	35 to 85% RH (No condensation)
	Withstand voltage∗1	500 VAC for 1 minute between external terminals and FE
	Insulation resistance∗1	500 VDC, 10 MΩ or more between external terminals and FE

∗1 Except handheld terminals

SI Unit (EX600-SPR□A)

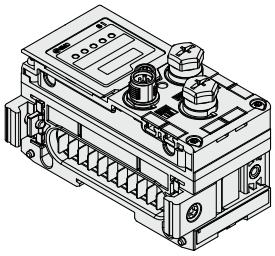


EX600-SPR□A

Model		EX600-SPR1A	EX600-SPR2A
Communication	**Protocol**	PROFIBUS DP (DP-V0)	
	Device type	PROFIBUS DP Slave	
	Communication speed	9.6/19.2/45.45/93.75/187.5/500 kbps 1.5/3/6/12 Mbps	
	Configuration file	GSD file∗2	
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs)	
Terminating resistor		Internally implemented	
Internal current consumption (Power supply for Control/Input)		80 mA or less	
Output	**Output type**	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	32 outputs (8/16/24/32 outputs selectable)	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)	
	Power supply	24 VDC, 2 A	
	Fail safe	HOLD/CLEAR/Forced power ON	
	Protection	Short-circuit protection	
Enclosure		IP67 (Manifold assembly)	
Standards		CE marking, UL (CSA), RoHS compliant	
Weight		300 g	

∗2 The setting file can be downloaded from the SMC website, http://www.smcworld.com

SI Unit (EX600-SDN□A)

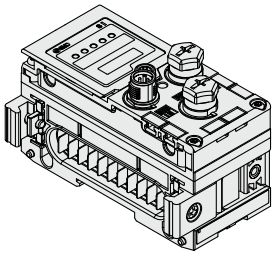


EX600-SDN□A

Model		EX600-SDN1A	EX600-SDN2A
Communication	**Protocol**	DeviceNet™: Volume 1 (Edition 2.1), Volume 3 (Edition 1.1)	
	Device type	Group 2 Only Server	
	Communication speed	125/250/500 kbps	
	Configuration file	EDS file∗3	
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs)	
	Applicable messages	Duplicate MAC ID Check Message, Group 2 Only Unconnected Explicit Message Explicit Message (Group 2), Poll I/O Message (Predefined M/S Connection set)	
	Applicable function	QuickConnect™	
DeviceNet™ power supply		11 to 25 VDC (Current consumption 50 mA or less)	
Internal current consumption (Power supply for Control/Input)		55 mA or less	
Output	**Output type**	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	32 outputs (8/16/24/32 outputs selectable)	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)	
	Power supply	24 VDC, 2 A	
	Fail safe	HOLD/CLEAR/Forced power ON	
	Protection	Short-circuit protection	
Enclosure		IP67 (Manifold assembly)	
Standards		CE marking, UL (CSA), RoHS compliant	
Weight		300 g	

∗3 The setting file can be downloaded from the SMC website, http://www.smcworld.com

SI Unit (EX600-SMJ□)

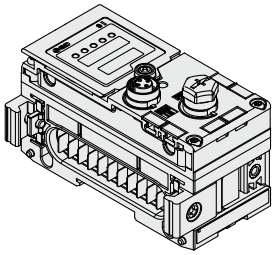


EX600-SMJ□

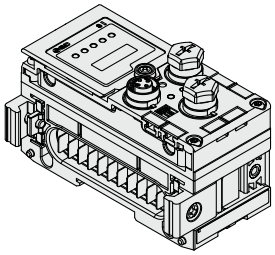
Model		EX600-SMJ1	EX600-SMJ2
Communication	**Protocol**	CC-Link (Ver. 1.10, Ver. 2.00)	
	Station type	Remote Device Station	
	Communication speed	156/625 kbps 2.5/5/10 Mbps	
	Configuration file	CSP+ file∗4	
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs) 1/2/3/4 stations occupied	
Internal current consumption (Power supply for Control/Input)		75 mA or less	
Output	**Output type**	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	32 outputs (8/16/24/32 outputs selectable)	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)	
	Power supply	24 VDC, 2 A	
	Fail safe	HOLD/CLEAR/Forced power ON	
	Protection	Short-circuit protection	
Enclosure		IP67 (Manifold assembly)	
Standards		CE marking, UL (CSA), RoHS compliant	
Weight		300 g	

∗4 The setting file can be downloaded from the SMC website, http://www.smcworld.com

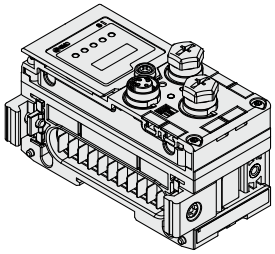
Specifications



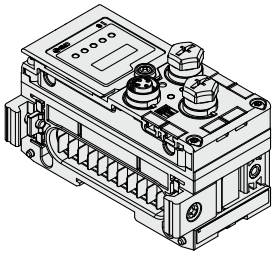
EX600-SEN1/2



EX600-SEN3/4



EX600-SEC□



EX600-SPN□

SI Unit (EX600-SEN□)

Model		EX600-SEN1	EX600-SEN2	EX600-SEN3	EX600-SEN4
Communication	Number of communication ports	1 port		2 ports	
	Protocol	EtherNet/IP™ (Conformance version: Composite 6)		EtherNet/IP™ (Conformance version: Composite 11)	
	Communication speed	10/100 Mbps			
	Communication method	Full duplex/Half duplex			
	Configuration file	EDS file*1			
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs)			
	IP address setting range	SI Unit switch settings: 192.168.0 or 1.1 to 254 Through DHCP server: Optional address			
	Device information	Vendor ID: 7 (SMC Corporation) Device type: 12 (Communication Adapter) Product code: 126		Vendor ID: 7 (SMC Corporation) Device type: 12 (Communication Adapter) Product code: 203	
	Applicable function	—		QuickConnect™ DLR Web server function	
Internal current consumption		120 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	32 outputs (8/16/24/32 outputs selectable)		32 outputs	
	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)	
	Power supply	24 VDC, 2 A			
	Fail safe	HOLD/CLEAR/Forced power ON			
	Protection	Short-circuit protection			
Enclosure		IP67 (Manifold assembly)			
Standards		CE marking, UL (CSA), RoHS compliant			
Weight		300 g			

*1 The setting file can be downloaded from the SMC website, http://www.smcworld.com

SI Unit (EX600-SEC□)

Model		EX600-SEC1	EX600-SEC2
Communication	Protocol	EtherCAT (Conformance Test Record V.1.2)	
	Communication speed	100 Mbps	
	Configuration file	XML file*2	
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs)	
Internal current consumption (Power supply for Control/Input)		100 mA or less	
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	32 outputs (8/16/24/32 outputs selectable)	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.5 W or less (SMC)	
	Power supply	24 VDC, 2 A	
	Fail safe	HOLD/CLEAR/Forced power ON	
	Protection	Short-circuit protection	
Enclosure		IP67 (Manifold assembly)	
Standards		CE marking, UL (CSA), RoHS compliant	
Weight		300 g	

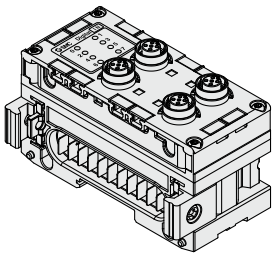
*2 The setting file can be downloaded from the SMC website, http://www.smcworld.com

SI Unit (EX600-SPN□)

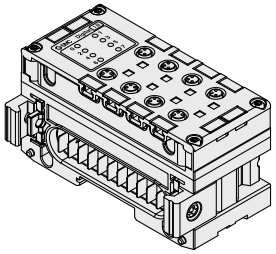
Model		EX600-SPN1	EX600-SPN2
Communication	Protocol	PROFINET IO (PROFINET RT)	
	Communication speed	100 Mbps	
	Configuration file	GSDML file*3	
	Occupation area (Number of inputs/outputs)	Max. (512 inputs/512 outputs)	
	Applicable function	Fast Start Up	
Internal current consumption (Power supply for Control/Input)		120 mA or less	
Output	Output type	Source/PNP (Negative common)	Sink/NPN (Positive common)
	Number of outputs	32 outputs	
	Load	Solenoid valve with surge voltage suppressor 24 VDC, 1.0 W or less (SMC)	
	Power supply	24 VDC, 2 A	
	Fail safe	HOLD/CLEAR/Forced power ON	
	Protection	Short-circuit protection	
Enclosure		IP67 (Manifold assembly)	
Standards		CE marking, UL (CSA), RoHS compliant	
Weight		300 g	

*3 The setting file can be downloaded from the SMC website, http://www.smcworld.com

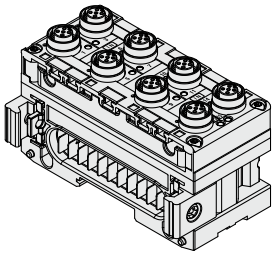
Specifications



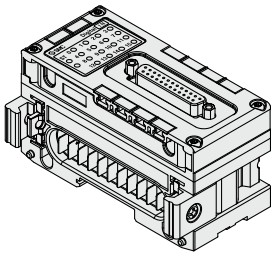
EX600-DX□B



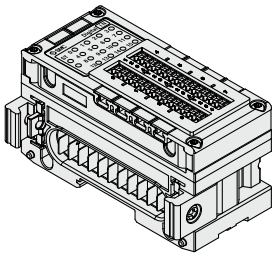
EX600-DX□C□



EX600-DX□D



EX600-DX□E



EX600-DX□F

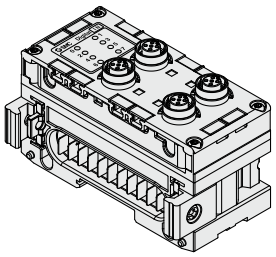
Digital Input Unit

Model			EX600-DXPB	EX600-DXNB	EX600-DXPC□	EX600-DXNC□	EX600-DXPD	EX600-DXND
Input	Input type		PNP	NPN	PNP	NPN	PNP	NPN
	Input connector		M12 (5-pin) socket*1		M8 (3-pin) socket*3		M12 (5-pin) socket*1	
	Number of inputs		8 inputs (2 inputs/Connector)		8 inputs (1 input/Connector)		16 inputs (2 inputs/Connector)	
	Supplied voltage		24 VDC					
	Max. supplied current		0.5 A/Connector 2 A/Unit		0.25 A/Connector 2 A/Unit		0.5 A/Connector 2 A/Unit	
	Protection		Short-circuit protection					
	Input current (at 24 VDC)		9 mA or less					
	ON voltage		17 V or more (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)					
	OFF voltage		5 V or less (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)					
	Open circuit detection current	2 wires	—		0.5 mA/Input*2		—	
		3 wires	—		0.5 mA/Connector*2		—	
Current consumption			50 mA or less		55 mA or less		70 mA or less	
Enclosure			IP67 (Manifold assembly)					
Standards			CE marking, UL (CSA), RoHS compliant					
Weight			300 g		275 g		340 g	

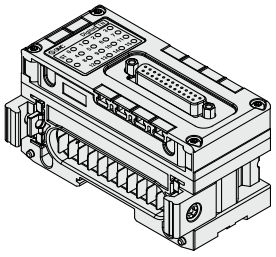
*1 M12 (4-pin) connector can be connected.
*2 Function only applies to the EX600-DX□C1.
*3 When connecting the M8 plug connector, the tightening torque must be 0.2 N·m ±10%. If tightened with an excessive tightening torque, this may cause the connector thread of the unit to break.

Model		EX600-DXPE	EX600-DXNE	EX600-DXPF	EX600-DXNF
Input	Input type	PNP	NPN	PNP	NPN
	Input connector	D-sub socket (25 pins) Lock screw: No.4-40 UNC		Spring type terminal block (32 pins)	
	Number of inputs	16 inputs		16 inputs (2 inputs x 8 blocks)	
	Supplied voltage	24 VDC			
	Max. supplied current	2 A/Unit		0.5 A/Block 2 A/Unit	
	Protection	Short-circuit protection			
	Input current (at 24 VDC)	5 mA or less			
	ON voltage	17 V or more (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)			
	OFF voltage	5 V or less (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)			
Applicable wire		—		0.08 to 1.5 mm² (AWG16 to 28)	
Current consumption		50 mA or less		55 mA or less	
Enclosure		IP40 (Manifold assembly)			
Standards		CE marking, UL (CSA), RoHS compliant			
Weight		300 g			

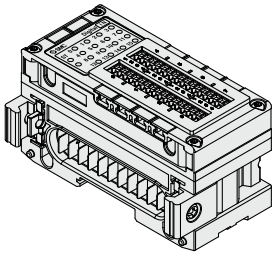
Specifications



EX600-DY□B



EX600-DY□E
EX600-DM□E



EX600-DY□F
EX600-DM□F

Digital Output Unit

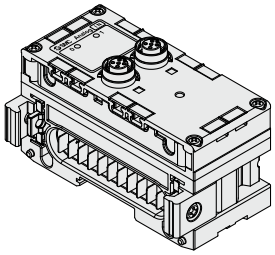
Model		EX600-DYPB	EX600-DYNB	EX600-DYPE	EX600-DYNE	EX600-DYPF	EX600-DYNF
Output	Output type	PNP	NPN	PNP	NPN	PNP	NPN
	Output connector	M12 (5-pin) socket*1		D-sub socket (25 pins) Lock screw: No.4-40 UNC		Spring type terminal block (32 pins)	
	Number of outputs	8 outputs (2 outputs/Connector)		16 outputs		16 outputs (2 outputs x 8 blocks)	
	Supplied voltage	24 VDC					
	Max. load current	0.5 A/Output 2 A/Unit					
	Protection	Short-circuit protection					
Applicable wire		—		—		0.08 to 1.5 mm² (AWG16 to 28)	
Current consumption		50 mA or less					
Enclosure		IP67 (Manifold assembly)		IP40 (Manifold assembly)			
Standards		CE marking, UL (CSA), RoHS compliant					
Weight		300 g					

*1 M12 (4-pin) connector can be connected.

Digital Input/Output Unit

Model		EX600-DMPE	EX600-DMNE	EX600-DMPF	EX600-DMNF
Input/Output type		PNP	NPN	PNP	NPN
Connector		D-sub socket (25 pins) Lock screw: No.4-40 UNC		Spring type terminal block (32 pins)	
Input	Number of inputs	8 inputs		8 inputs (2 inputs x 4 blocks)	
	Supplied voltage	24 VDC			
	Max. supplied current	2 A/Unit		0.5 A/Block 2 A/Unit	
	Protection	Short-circuit protection			
	Input current (at 24 VDC)	5 mA or less			
	ON voltage	17 V or more (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)			
	OFF voltage	5 V or less (At NPN input, between the pin for input terminal and supplied voltage of +24 V) (At PNP input, between the pin for input terminal and supplied voltage of 0 V)			
Output	Number of outputs	8 outputs		8 outputs (2 outputs x 4 blocks)	
	Supplied voltage	24 VDC			
	Max. load current	0.5 A/Output 2 A/Unit			
	Protection	Short-circuit protection			
Applicable wire		—		0.08 to 1.5 mm² (AWG16 to 28)	
Current consumption		50 mA or less		60 mA or less	
Enclosure		IP40 (Manifold assembly)			
Standards		CE marking, UL (CSA), RoHS compliant			
Weight		300 g			

Specifications

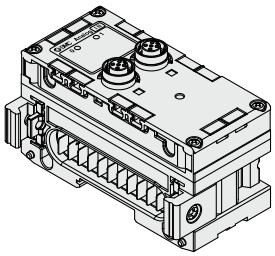


EX600-AXA

Analog Input Unit

Model			EX600-AXA	
Input	Input type		Voltage input	Current input
	Input connector		M12 (5-pin) socket*1	
	Input channel		2 channels (1 channel/Connector)	
	Supplied voltage		24 VDC	
	Max. supplied current		0.5 A/Connector	
	Protection		Short-circuit protection	
	Input signal range	12 bit resolution	0 to 10 V, 1 to 5 V, 0 to 5 V	0 to 20 mA, 4 to 20 mA
		16 bit resolution	–10 to 10 V, –5 to 5 V	–20 to 20 mA
	Max. rated input signal		±15 V	±22 mA*2
	Input impedance		100 kΩ	50 Ω
	Linearity (25°C)		±0.05% F.S.	
	Repeatability (25°C)		±0.15% F.S.	
	Absolute accuracy (25°C)		±0.5% F.S.	±0.6% F.S.
Current consumption			70 mA or less	
Enclosure			IP67 (Manifold assembly)	
Standards			CE marking, UL (CSA), RoHS compliant	
Weight			290 g	

*1 M12 (4-pin) connector can be connected.
*2 When input signal exceeds 22 mA, the protection function activates and the input signal is interrupted.



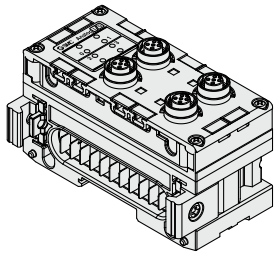
EX600-AYA

Analog Output Unit

Model			EX600-AYA	
Output	Output type		Voltage output	Current output
	Output connector		M12 (5-pin) socket*3	
	Output channel		2 channels (1 channel/Connector)	
	Supplied voltage		24 VDC	
	Max. load current		0.5 A/Connector	
	Protection		Short-circuit protection	
	Output signal range	12 bit resolution	0 to 10 V, 1 to 5 V, 0 to 5 V	0 to 20 mA, 4 to 20 mA
	Load impedance		1 kΩ or more	600 Ω or less
	Linearity (25°C)		±0.05% F.S.	
	Repeatability (25°C)		±0.15% F.S.	
	Absolute accuracy (25°C)		±0.5% F.S.	±0.6% F.S.
Current consumption			70 mA or less	
Enclosure			IP67 (Manifold assembly)	
Standards			CE marking, UL (CSA), RoHS compliant	
Weight			290 g	

*3 M12 (4-pin) connector can be connected.

Specifications

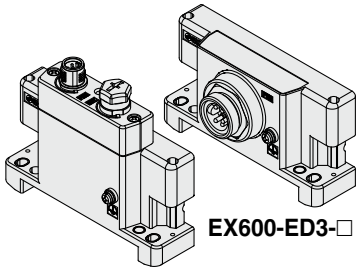


EX600-AMB

Analog Input/Output Unit

Model			EX600-AMB	
Input	Input type		Voltage input	Current input
	Input connector		M12 (5-pin) socket*1	
	Input channel		2 channels (1 channel/Connector)	
	Supplied voltage		24 VDC	
	Max. supplied current		0.5 A/Connector	
	Protection		Short-circuit protection	
	Input signal range	12 bit resolution	0 to 10 V, 1 to 5 V, 0 to 5 V	0 to 20 mA, 4 to 20 mA
	Max. rated input signal		15 V	22 mA*2
	Input impedance		100 kΩ	250 Ω
	Linearity (25°C)		±0.05% F.S.	
	Repeatability (25°C)		±0.15% F.S.	
	Absolute accuracy (25°C)		±0.5% F.S.	±0.6% F.S.
Output	Output type		Voltage output	Current output
	Output connector		M12 (5-pin) socket*1	
	Output channel		2 channels (1 channel/Connector)	
	Supplied voltage		24 VDC	
	Max. load current		0.5 A/Connector	
	Protection		Short-circuit protection	
	Output signal range	12 bit resolution	0 to 10 V, 1 to 5 V, 0 to 5 V	0 to 20 mA, 4 to 20 mA
	Load impedance		1 kΩ or more	600 Ω or less
	Linearity (25°C)		±0.05% F.S.	
	Repeatability (25°C)		±0.15% F.S.	
	Absolute accuracy (25°C)		±0.5% F.S.	±0.6% F.S.
Current consumption			100 mA or less	
Enclosure			IP67 (Manifold assembly)	
Standards			CE marking, UL (CSA), RoHS compliant	
Weight			300 g	

*1 M12 (4-pin) connector can be connected.
*2 When input signal exceeds 22 mA, the protection function activates and the input signal is interrupted.



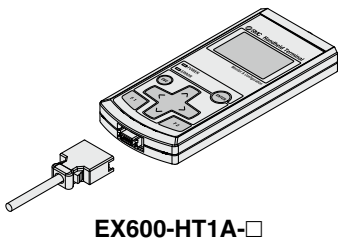
EX600-ED3-□

EX600-ED2/4/5-□

End Plate

Model			EX600-ED2-□	EX600-ED3-□	EX600-ED4/5-□
Power specifications	Power supply connector	PWR IN	M12 (5-pin) plug	7/8 inch (5-pin) plug	M12 (4-pin) plug
		PWR OUT	—	—	M12 (5-pin) plug
	Rated voltage	Power supply for control/input	24 VDC ±10%		
		Power supply for output	24 VDC +10/–5%		
	Rated current	Power supply for control/input	Max. 2 A	Max. 8 A	Max. 4 A
		Power supply for output			
Enclosure			IP67 (Manifold assembly)		
Standards			CE marking, UL (CSA), RoHS compliant*1		
Weight			170 g	175 g	170 g

*1 The EX600-ED4/5-□ is not compliant with UL (CSA) standards.



EX600-HT1A-□

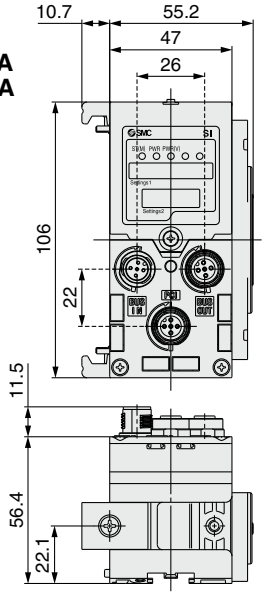
Handheld Terminal

Model	EX600-HT1A-□
Power supply	Power supplied from SI unit connector (24 VDC)
Current consumption	50 mA or less
Display	LCD with backlight
Connection cable	Handheld terminal cable (1 m ··· EX600-AC010-1, 3 m ··· EX600-AC030-1)
Enclosure	IP20
Standards	CE marking, RoHS compliant
Weight	160 g

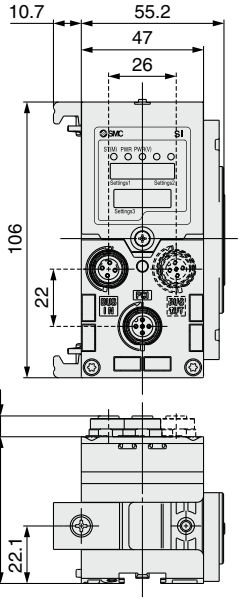
Dimensions

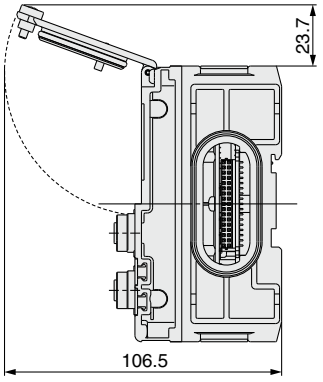
SI Unit

EX600-SPR□A
EX600-SDN□A
EX600-SMJ□



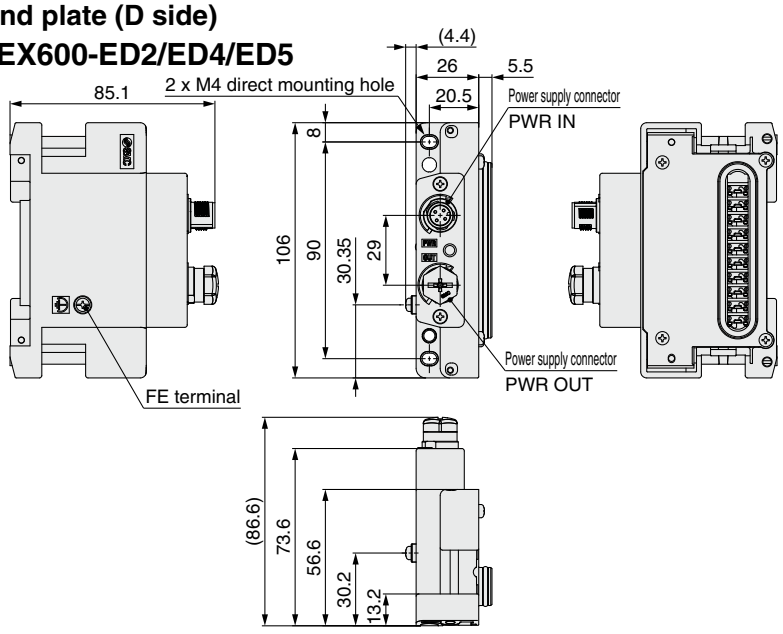
EX600-SEN□
EX600-SEC□
EX600-SPN□



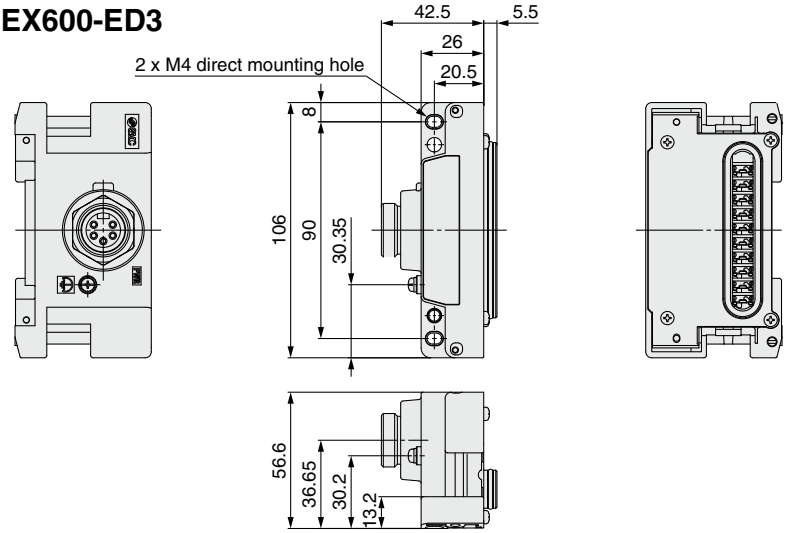


End plate (D side)

EX600-ED2/ED4/ED5



EX600-ED3



EX600-ED2

Power supply connector PWR IN: M12 5-pin plug, B-coded

Configuration	Pin no.	Description
	**1**	24 V (for output)
	2	0 V (for output)
	3	24 V (for control/input)
	4	0 V (for control/input)
	5	FE

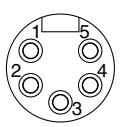
Power supply connector PWR IN: M12 4-pin plug, A-coded

Configuration	EX600-ED4 (Pin arrangement 1)		EX600-ED5 (Pin arrangement 2)	
	Pin no.	Description	Pin no.	Description
	**1**	24 V (for control/input)	**1**	24 V (for output)
	2	24 V (for output)	**2**	0 V (for output)
	3	0 V (for control/input)	**3**	24 V (for control/input)
	4	0 V (for output)	**4**	0 V (for control/input)

Power supply connector PWR OUT: M12 5-pin socket, A-coded

Configuration	EX600-ED4 (Pin arrangement 1)		EX600-ED5 (Pin arrangement 2)	
	Pin no.	Description	Pin no.	Description
	**1**	24 V (for control/input)	**1**	24 V (for output)
	2	24 V (for output)	**2**	0 V (for output)
	3	0 V (for control/input)	**3**	24 V (for control/input)
	4	0 V (for output)	**4**	0 V (for control/input)
	5	Unused	**5**	Unused

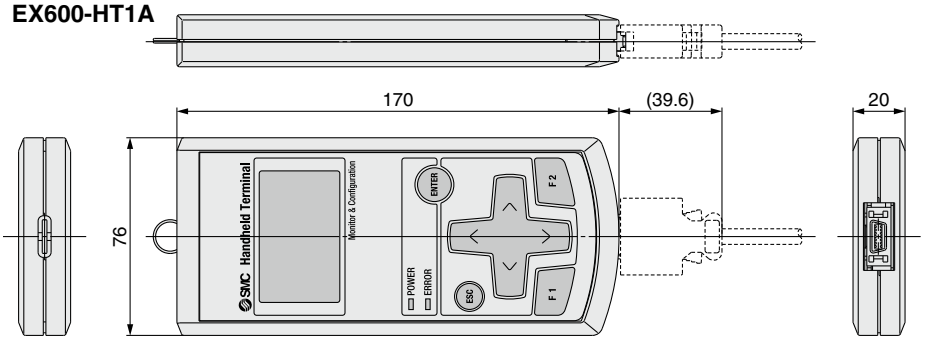
Power supply connector PWR: 7/8 inch 5-pin plug

Configuration	Pin no.	Description
	**1**	0 V (for output)
	2	0 V (for control/input)
	3	FE
	4	24 V (for control/input)
	5	24 V (for output)

Dimensions

Handheld Terminal

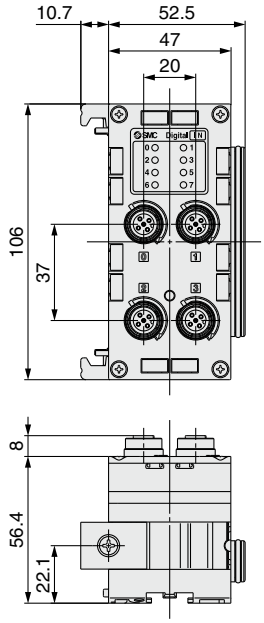
EX600-HT1A



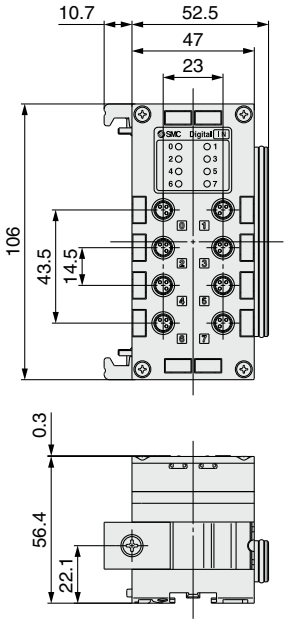
Dimensions

Digital Unit

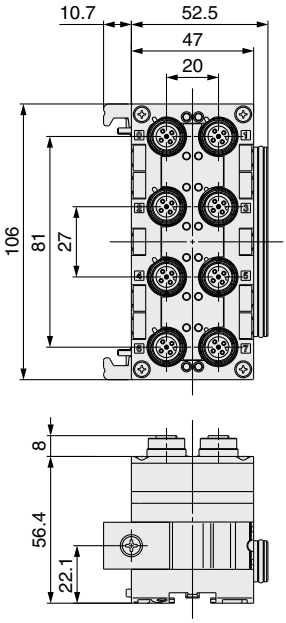
EX600-DX□B
EX600-DY□B



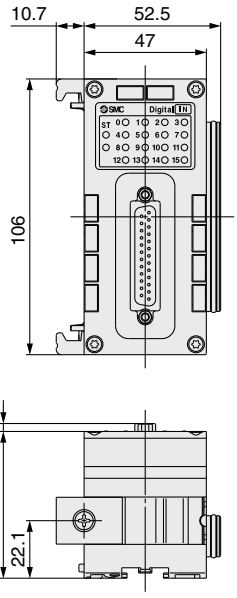
EX600-DX□C□



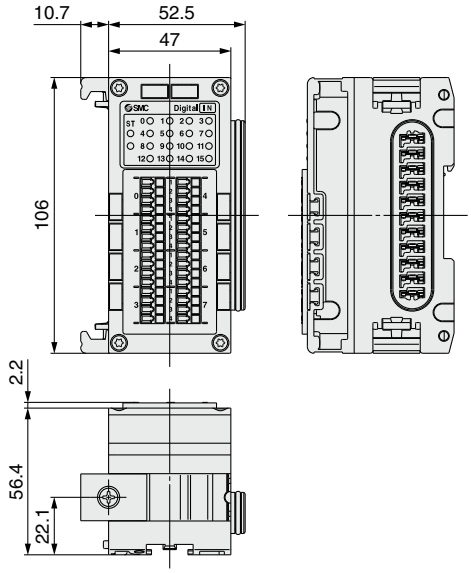
EX600-DX□D



EX600-DX□E
EX600-DY□E
EX600-DM□E

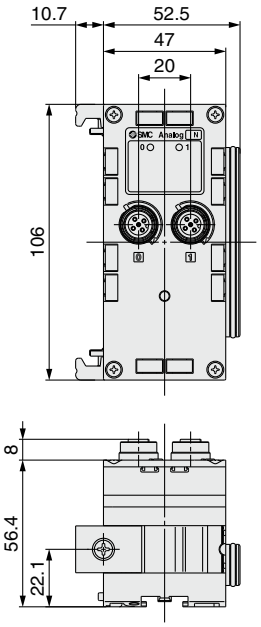


EX600-DX□F
EX600-DY□F
EX600-DM□F

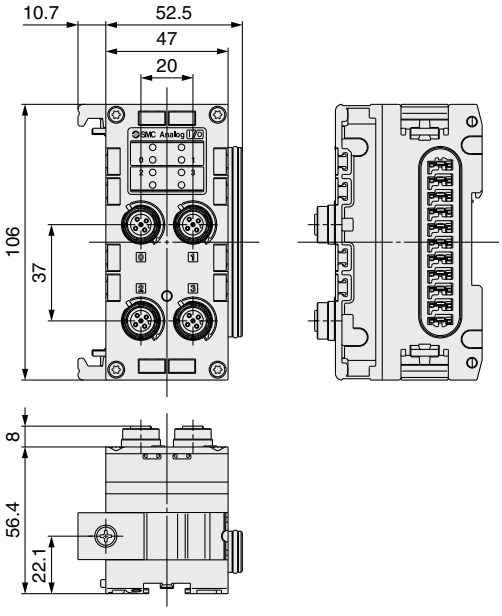


Analog Unit

EX600-AXA
EX600-AYA

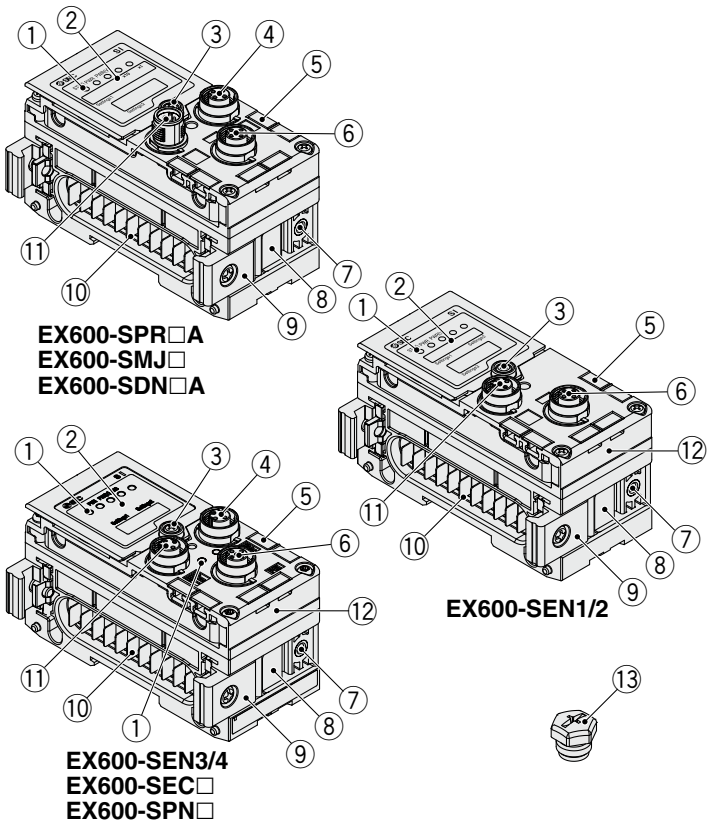


EX600-AMB



Parts Description

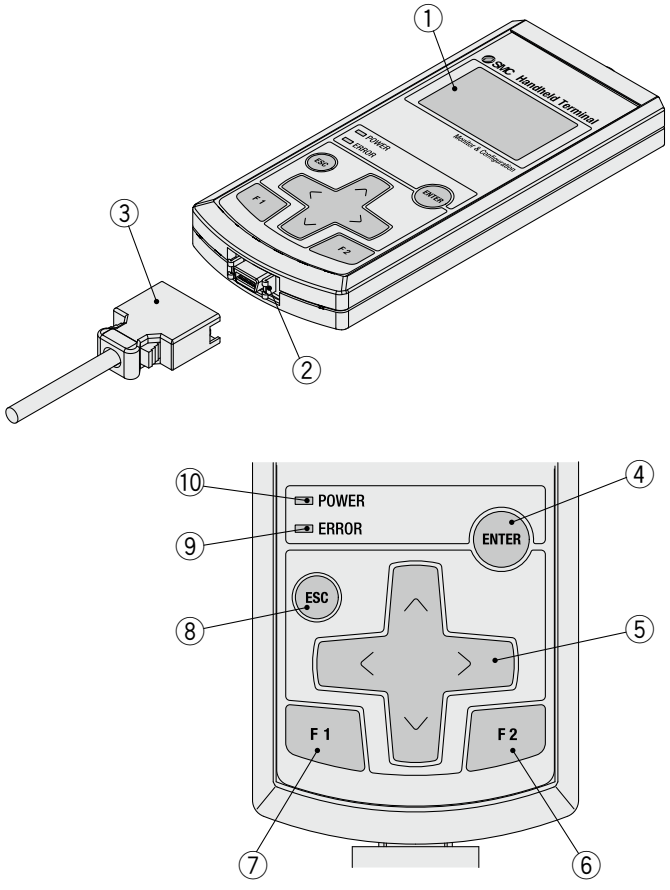
SI Unit



No.	Name	Use
1	**Status indication LED**	Displays unit status
2	**Indication cover**	Open for setting the switch.
3	**Indication cover set screw**	Loosen for opening the indication cover.
4	**Connector (BUS OUT)**	Connects to the fieldbus output cable (SPEEDCON)
5	**Marker groove**	Can be used to mount a marker
6	**Connector (PCI)**	Connects to the handheld terminal cable (SPEEDCON)
7	**Valve plate mounting holes**	Fixes a valve plate in place
8	**Valve plate mounting groove**	Inserts a valve plate
9	**Joint bracket**	Links units to one another
10	**Connector for unit (Plug)**	Transmits signals to the neighboring unit and supplies power
11	**Connector (BUS IN)**	Connects to the cable for fieldbus input (SPEEDCON)
12	**MAC address name plate**∗1	Displays a unique 12-digit MAC address for each SI unit
13	**Seal cap**	Mounted on the connectors (BUS OUT and PCI) at the time of shipment

∗1 MAC address name plate is not provided on the EX600-SEC□.

Handheld Terminal

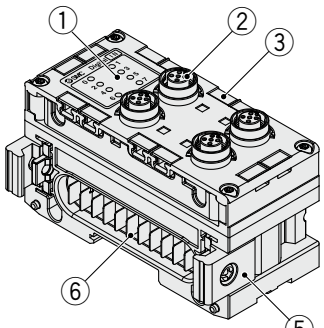


Operation buttons

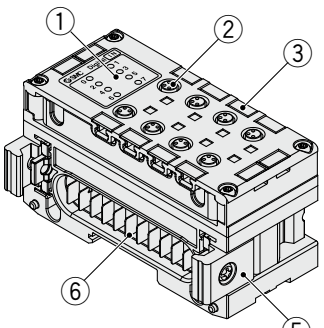
No.	Name	Use
1	**LCD**	Displays operation and unit information
2	**Connector**	Connects to the handheld terminal cable
3	**Handheld terminal cable**	Connects the SI unit to the handheld terminal
4	**Enter button (ENTER)**	From the selection screen, goes to the screen for the item selected On the settings screen, registers the settings that have been made so far
5	**Cursor button**	Moves the cursor on the LCD up, down, left or right Moves the cursor on the selection screen up, down, left or right to make selections On the settings screen, increases or decreases the value of settings or turns settings on and off
6	**F2 button (F2)**	Functions in accordance with on-screen display or instructions
7	**F1 button (F1)**	Functions in accordance with on-screen display or instructions
8	**Escape button (ESC)**	On the selection screen, goes back to the previous screen On the settings screen, cancels the settings that have been made so far and goes back to the previous screen
9	**ERROR LED**	Lights up red when the EX600 diagnosis errors occur
10	**POWER LED**	Connects to the EX600 SI unit, and lights up green when control/input power supply is on

Parts Description

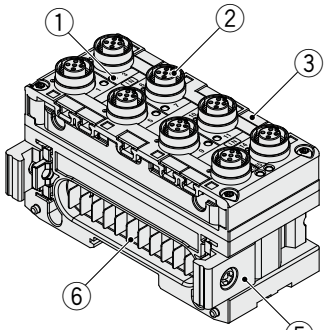
Digital Unit



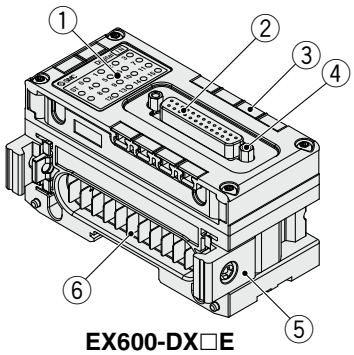
EX600-DX□B
EX600-DY□B



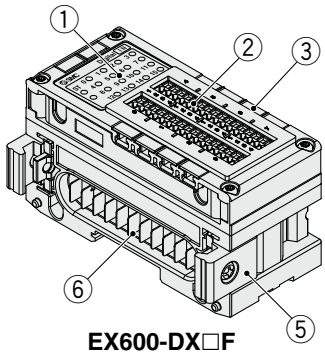
EX600-DX□C□



EX600-DX□D



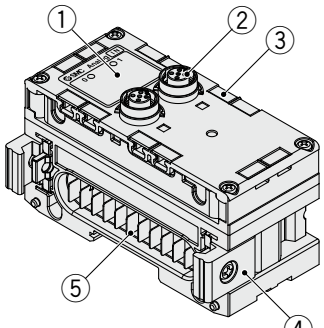
EX600-DX□E
EX600-DY□E
EX600-DM□E



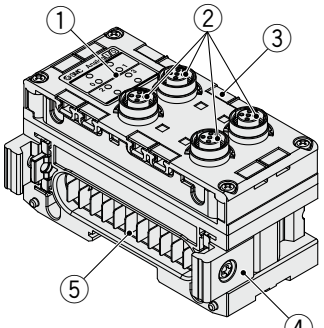
EX600-DX□F
EX600-DY□F
EX600-DM□F

No.	Name	Use
1	**Status indication LED**	Displays unit status
2	**Connector**	Connects with input or output devices (Only the EX600-D□□B and EX600-DX□D are SPEEDCON compatible.)
3	**Marker groove**	Can be used to mount a marker
4	**Lock screw**	Secures the D-sub connector in place (No.4-40 UNC)
5	**Joint bracket**	Links units to one another
6	**Connector for unit (Plug)**	Transmits signals to the neighboring unit and supplies power

Analog Unit



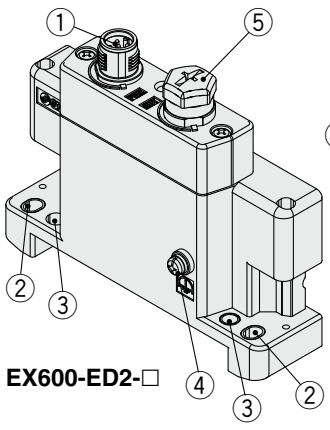
EX600-AXA
EX600-AYA



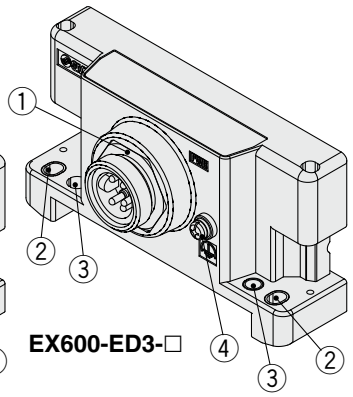
EX600-AMB

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

End Plate



EX600-ED2-□

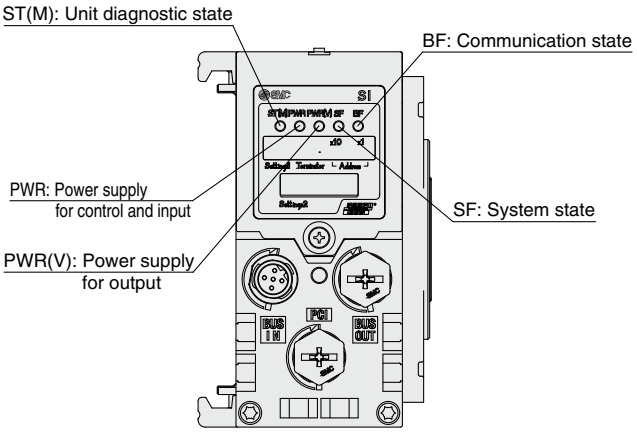


EX600-ED3-□

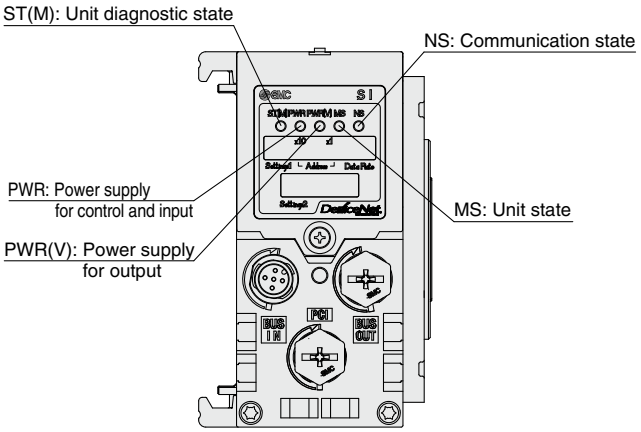
No.	Name	Use
1	**Power connector**	Supplies power to the unit and/or input/output device (Only the EX600-ED2-□ is SPEEDCON compatible.)
2	**Fixing hole for direct mounting**	Connects directly to equipment
3	**Fixing hole for DIN rail**	Converts to manifold or for DIN rail mounting
4	**FE terminal**	Used for grounding Ground this terminal securely to improve noise immunity.
5	**Connector (Unused)**	This connector has not yet been used. Do not remove the seal cap.

LED Indicator

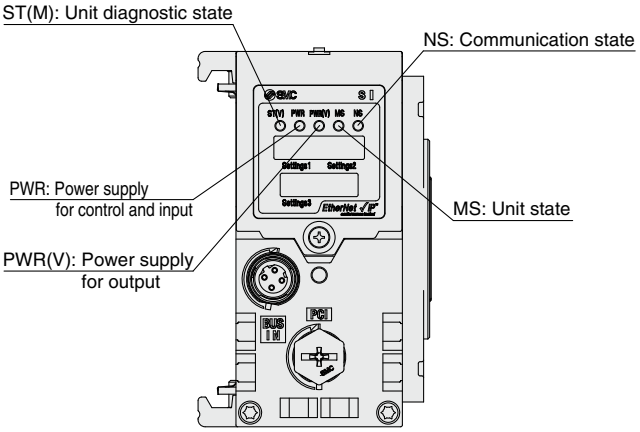
EX600-SPR□A



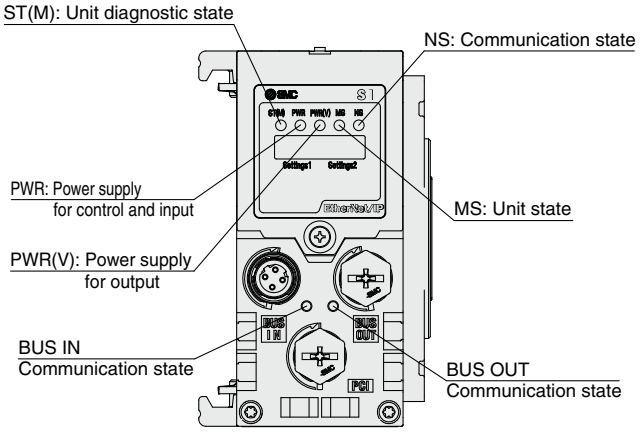
EX600-SDN□A



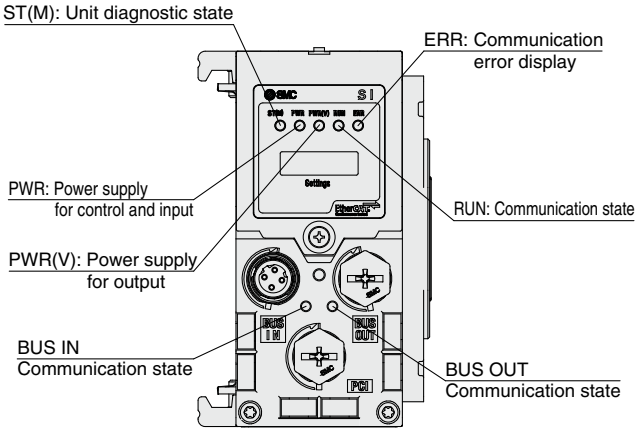
EX600-SEN1/SEN2



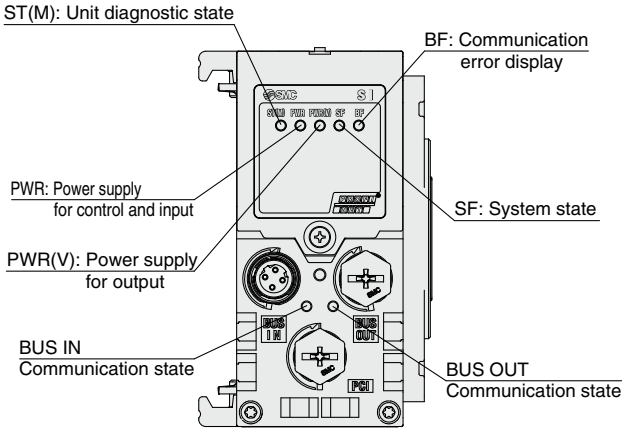
EX600-SEN3/SEN4



EX600-SEC□

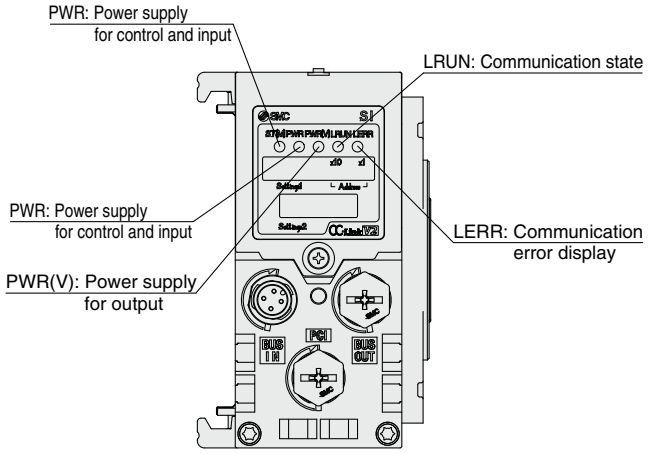


EX600-SPN□

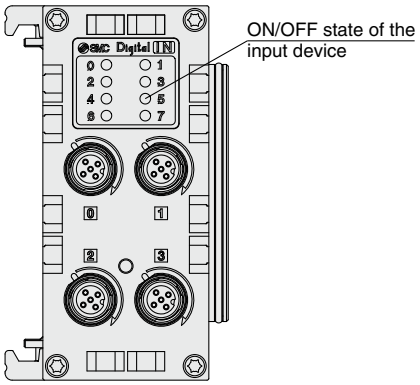


LED Indicator

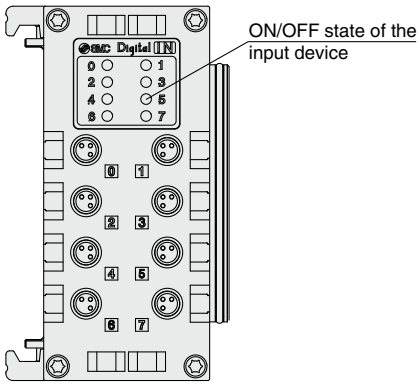
EX600-SMJ□



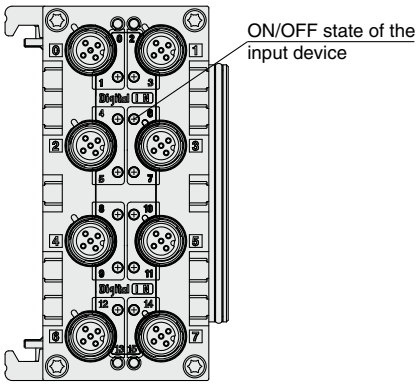
EX600-DX□B



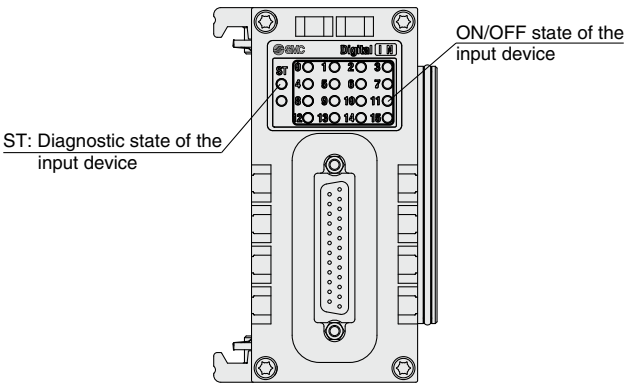
EX600-DX□C



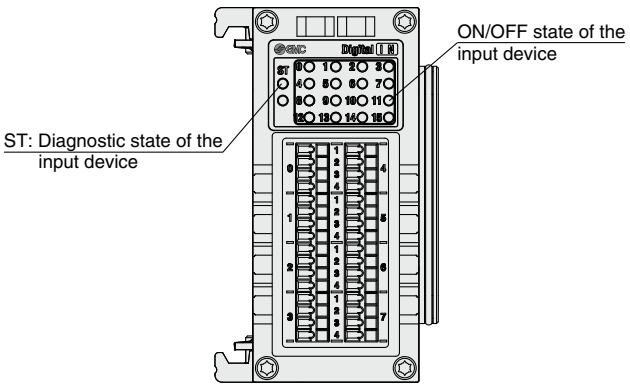
EX600-DX□D



EX600-DX□E

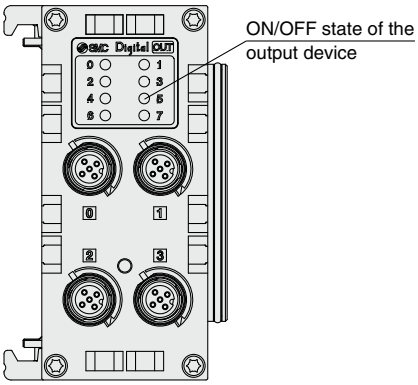


EX600-DX□F

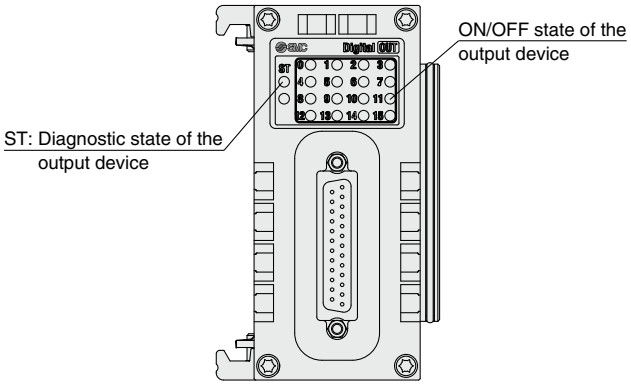


LED Indicator

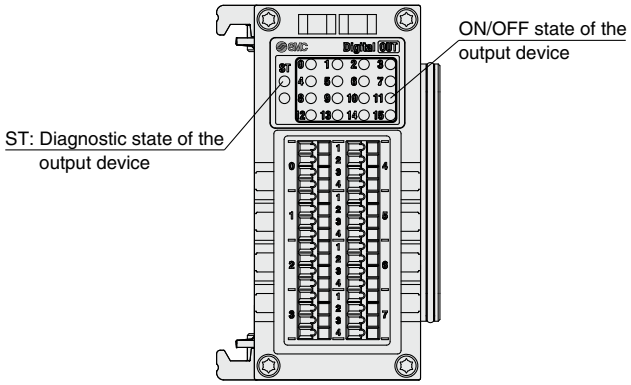
EX600-DY□B



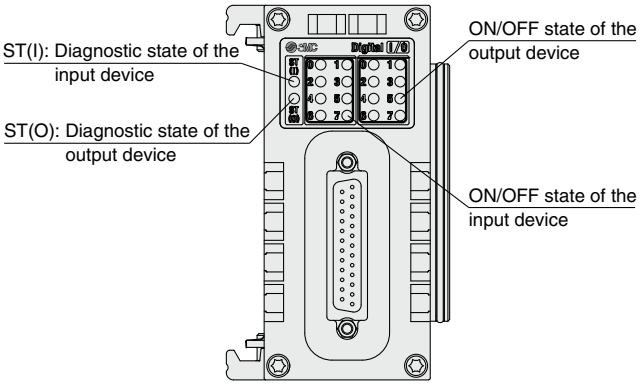
EX600-DY□E



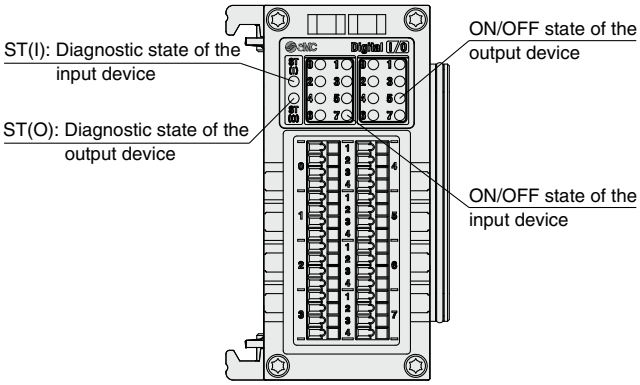
EX600-DY□F



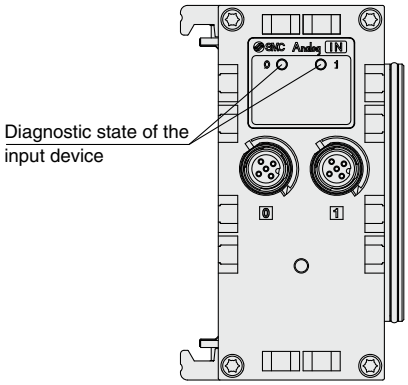
EX600-DM□E



EX600-DM□F

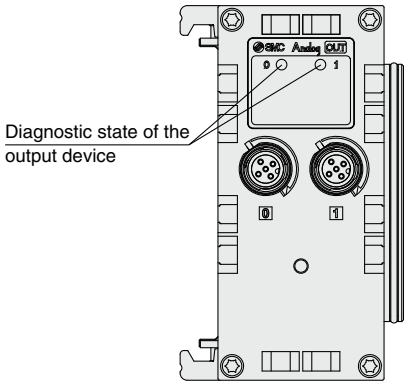


EX600-AXA

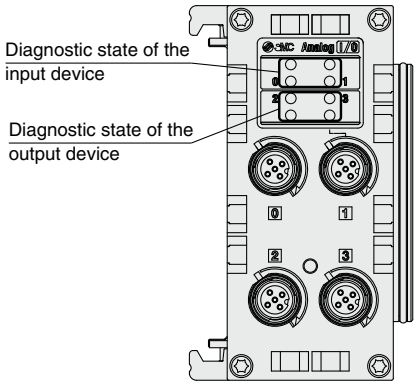


LED Indicator

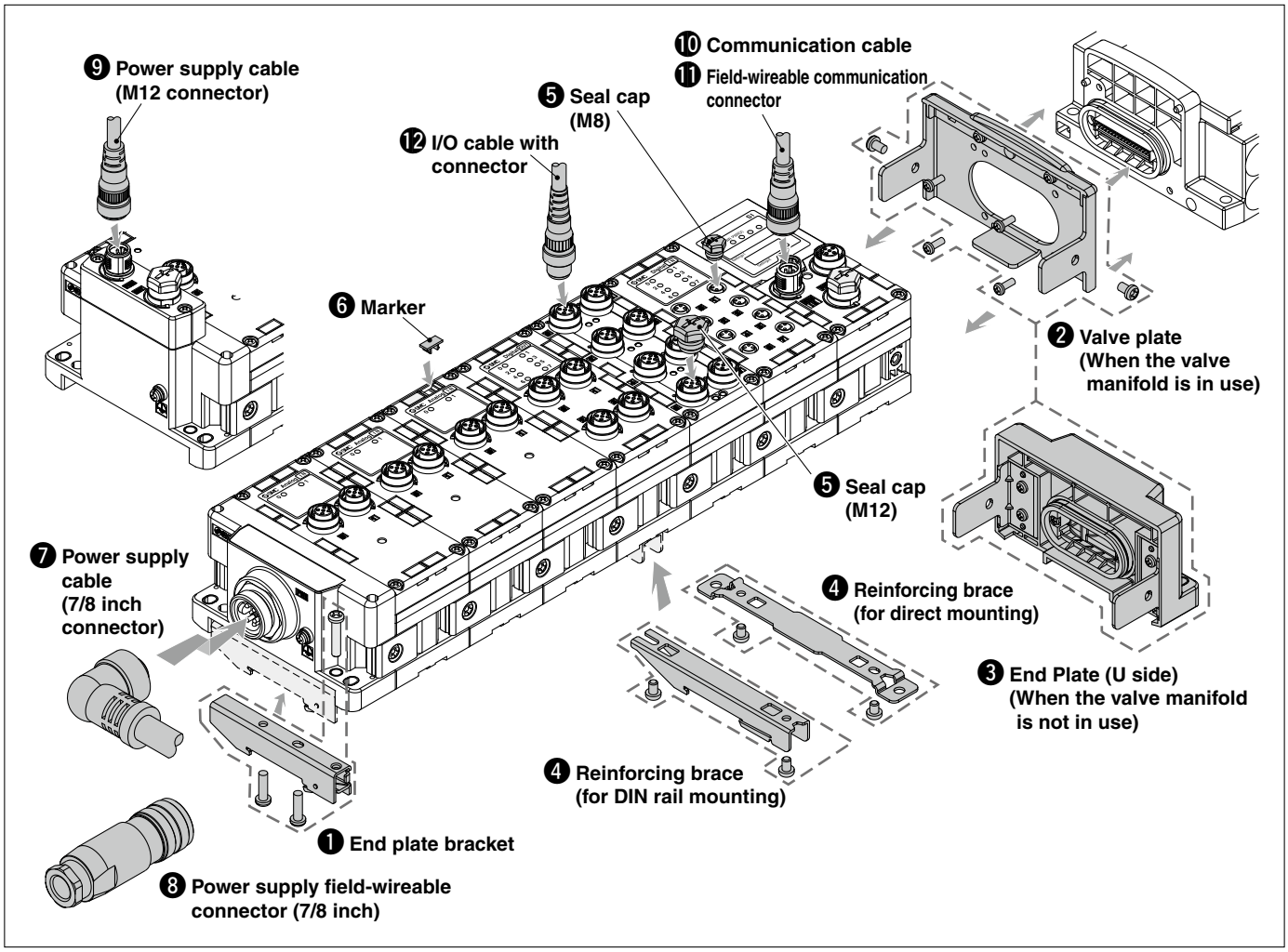
EX600-AYA



EX600-AMB



EX600 Series
Accessories



❶ End Plate Bracket

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

EX600-ZMA2

Enclosed parts

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

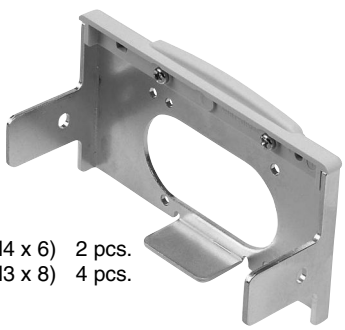
EX600-ZMA3
(Specialized for SY series)

Enclosed parts

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

❷ Valve Plate

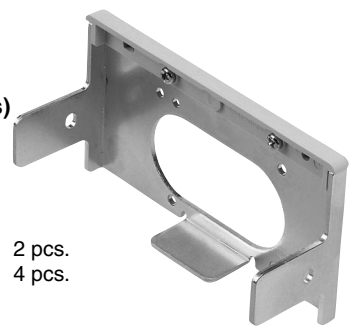
EX600-ZMV1



Enclosed parts

Round head screw (M4 x 6)	2 pcs.
Round head screw (M3 x 8)	4 pcs.

EX600-ZMV2
(Specialized for SY series)



Enclosed parts

Round head screw (M4 x 6)	2 pcs.
Round head screw (M3 x 8)	4 pcs.

❸ End Plate (U side)

The end plate is for use when the manifold valve is not connected.

EX600-E U 1 - 2

Mounting method

Symbol	Description
Nil	Without DIN rail mounting bracket
2	With DIN rail mounting bracket
3	With DIN rail mounting bracket

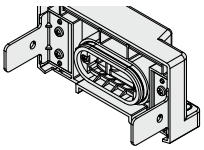
∗ Select in accordance with the symbol for the end plate (D side) mounting method.

Specifications

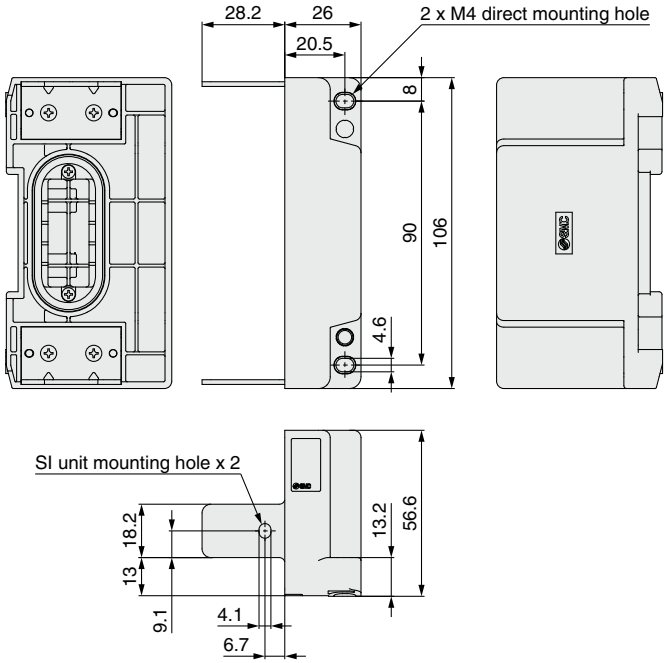
Symbol	Specifications
1	Waterproof cover

End plate mounting position: U side

End plate



EX600-EU1



Enclosed parts

Round head screw (M4 x 5) 2 pcs.

❹ Reinforcing Brace

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

∗ Be sure to attach this bracket to prevent connection failure between the units caused by deflection.

For direct mounting

EX600-ZMB1

Enclosed parts

Round head screw (M4 x 5) 2 pcs.

For DIN rail mounting

EX600-ZMB2

Enclosed parts

Round head screw (M4 x 6) 2 pcs.

❺ Seal Cap (10 pcs.)

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

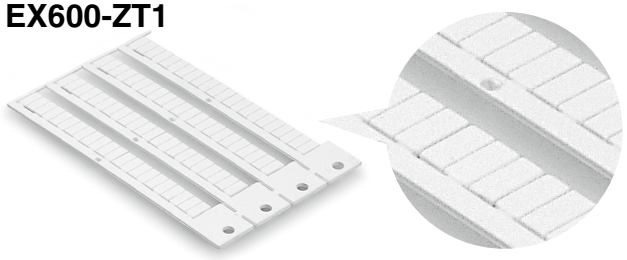
EX9-AWES
For M8

EX9-AWTS
For M12

❻ Marker (1 sheet, 88 pcs.)

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

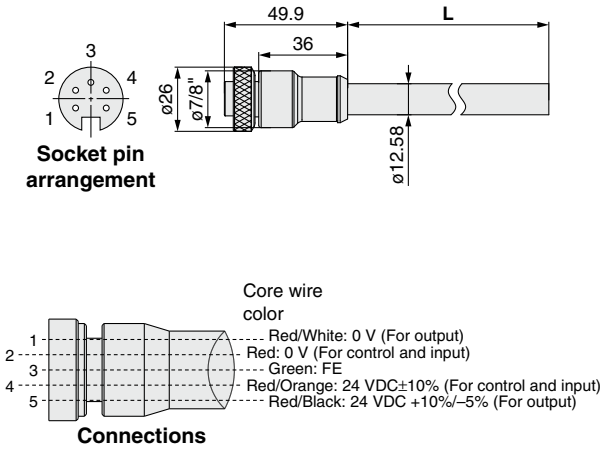
EX600-ZT1



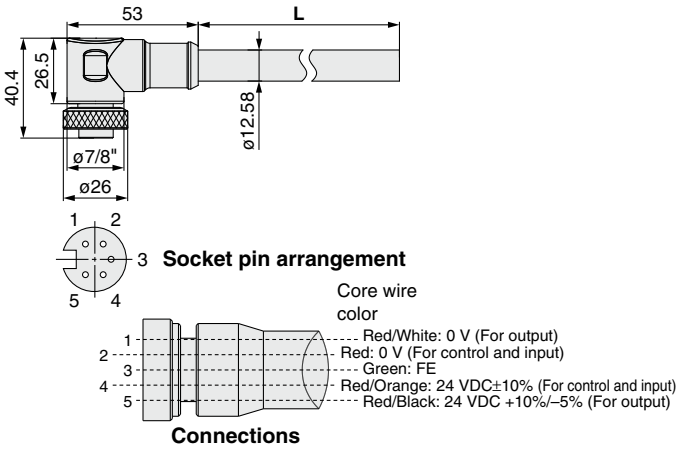
❼ Power Supply Cable (7/8 inch connector)

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

Straight connector type



Angle connector type



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

❽ 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

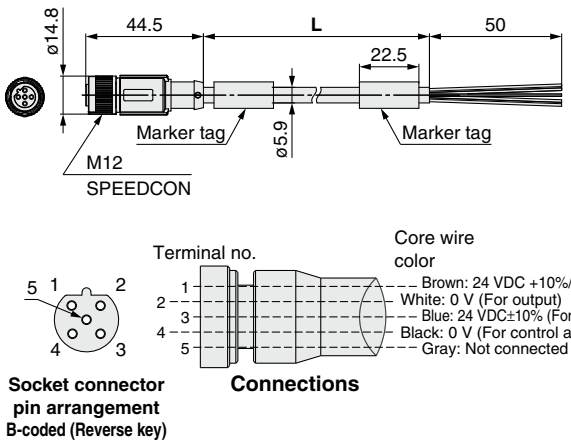
❾ Power Supply Cable (M12 connector, For EX600-ED2)

∗ The shape of the M12 connector is B-coded (Reverse key).

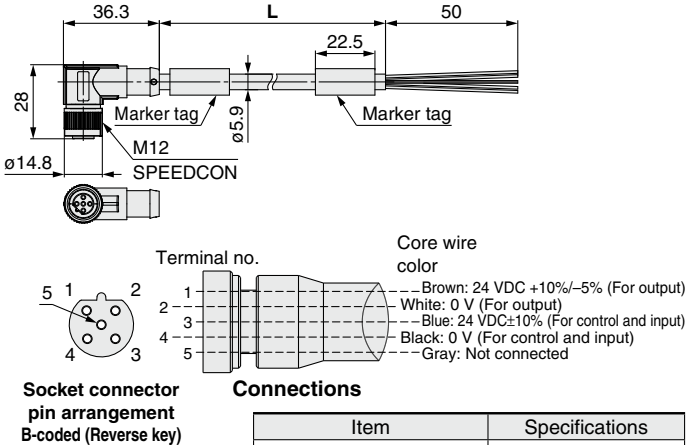
PCA-1564927 Straight 2 m
PCA-1564930 Straight 6 m
PCA-1564943 Right angle 2 m
PCA-1564969 Right angle 6 m

SPEEDCON

Straight connector type



Angle connector type



Item	Specifications
Cable O.D.	ø5.9 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.27 mm
Min. bending radius (Fixed)	59 mm

⑩ Power Supply Cable (M12 connector, For EX600-ED4/5)

＊ The shape of the M12 connector is A-coded (Reverse key).

EX500-AP 050 - S

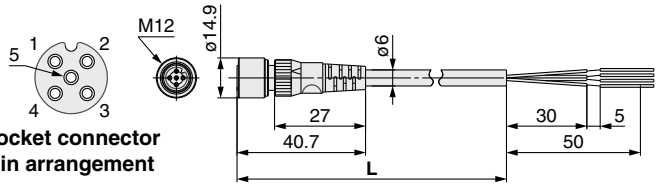
Cable length (L)

010	1000 mm
050	5000 mm

Connector specification

S	Straight
A	Angle

Straight connector type

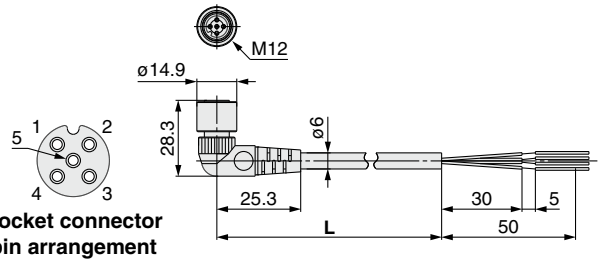


Socket connector pin arrangement

A-coded (Normal key)

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

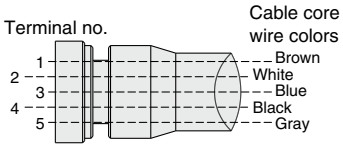
Angle connector type



Socket connector pin arrangement

A-coded (Normal key)

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



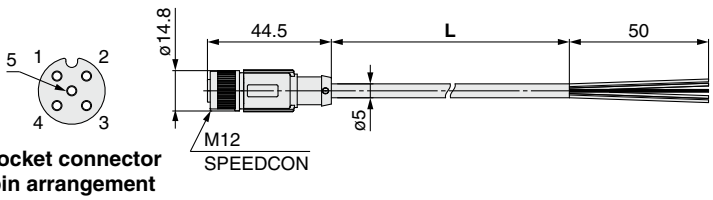
Connections

SPEEDCON

PCA- 1401804

Cable length (L)

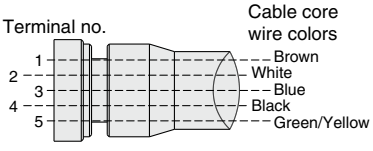
1401804	1500 mm
1401805	3000 mm
1401806	5000 mm



Socket connector pin arrangement

A-coded (Normal key)

Item	Specifications
Cable O.D.	ø5 mm
Nominal cross section	0.3 mm²/AWG22
Wire diameter (Including insulator)	1.27 mm
Min. bending radius	21.7 mm (Fixed)

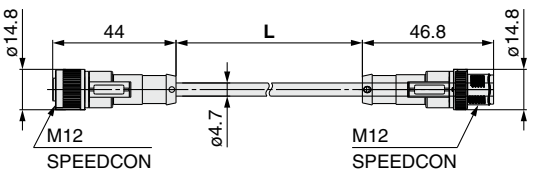


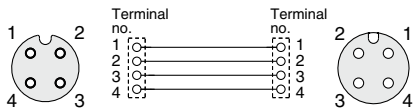
Connections

PCA- 1557769

Cable length (L)

1557769	3000 mm





Socket connector pin arrangement

A-coded (Normal key)

Connections

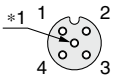
Plug connector pin arrangement

A-coded (Normal key)

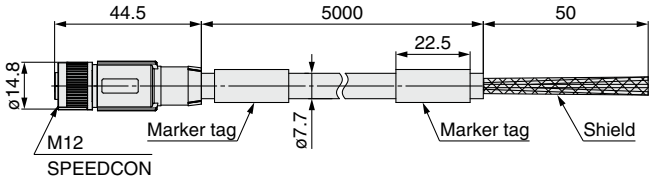
⓫ Communication Cable

For CC-Link

PCA-1567720
(Socket)

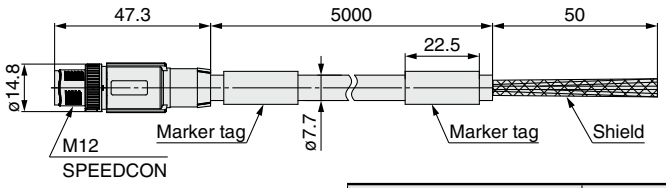


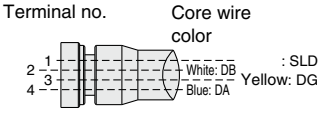
Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4



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

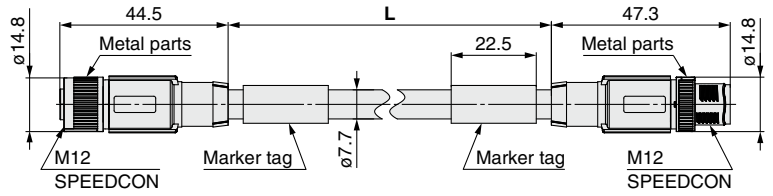
Made to Order

Cable length	10000 mm	**p. 130**

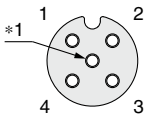
EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))

Cable length

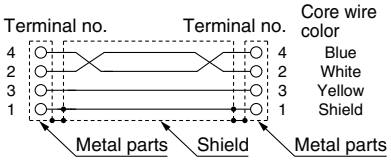
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



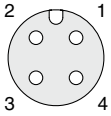
Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



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



Connections

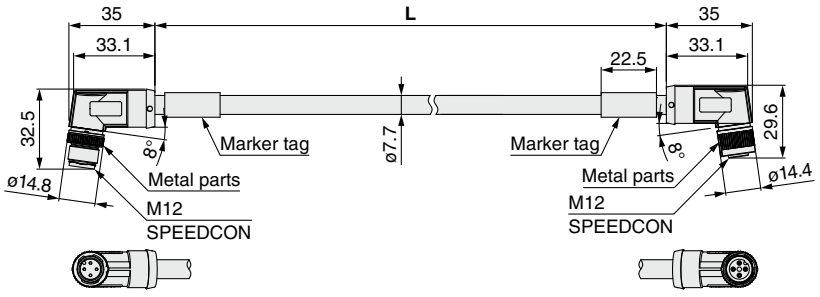


Plug connector pin arrangement
A-coded (Normal key)

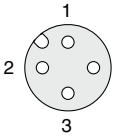
EX9-AC 005 MJ-SAPA (With angle connector on both sides (Socket/Plug))

Cable length

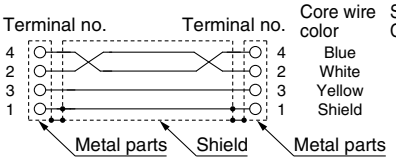
005	500 mm
010	1000 mm
020	2000 mm
030	3000 mm
050	5000 mm
100	10000 mm



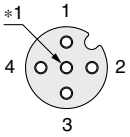
Item		Specifications
Cable O.D.		ø7.7 mm
Conductor nominal cross section	**Data pair**	0.5 mm²/AWG20
	Drain	0.34 mm²/AWG22
Wire O.D. (Including insulator)		2.55 mm
Min. bending radius (Fixed)		77 mm



Plug connector pin arrangement
A-coded (Normal key)



Connections

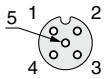


Socket connector pin arrangement
A-coded (Normal key)
*1 Number of holes: 5,
Total number of pins: 4

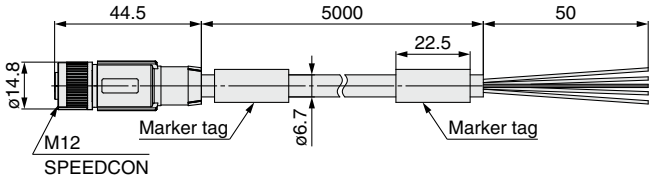
⓫ Communication Cable

For DeviceNet™

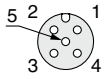
PCA-1557633
(Socket)



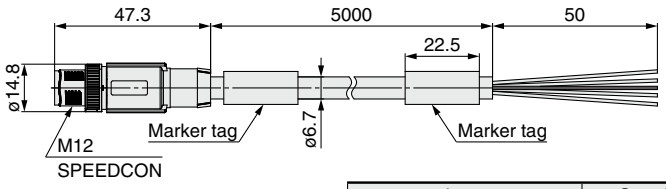
Socket connector pin arrangement A-coded (Normal key)

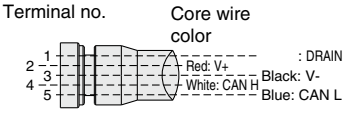


PCA-1557646
(Plug)



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

Made to Order

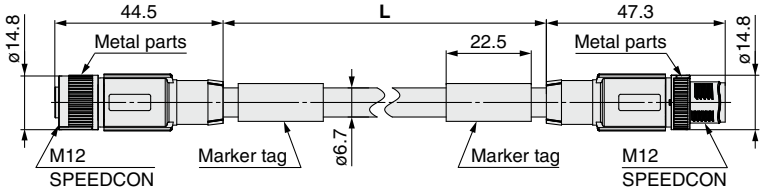
Made to Order

Cable length	10000 mm	**p. 130**

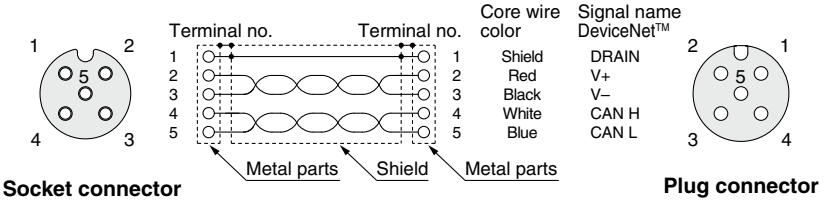
EX9-AC 005 DN-SSPS (With connector on both sides (Socket/Plug))

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)

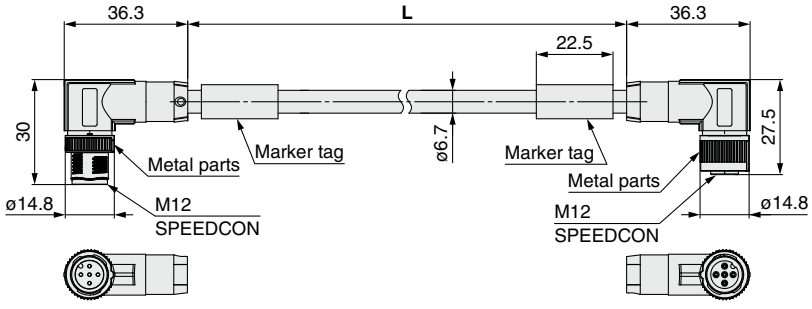
Connections

Plug connector pin arrangement A-coded (Normal key)

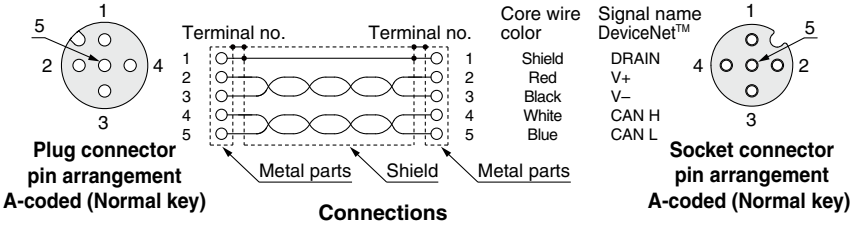
EX9-AC 005 DN-SAPA (With angle connector on both sides (Socket/Plug))

Cable length (L)

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



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)

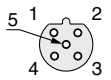
Connections

Socket connector pin arrangement A-coded (Normal key)

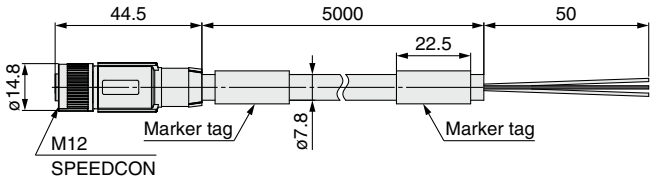
⓫ Communication Cable

For PROFIBUS DP

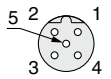
PCA-1557688
(Socket)



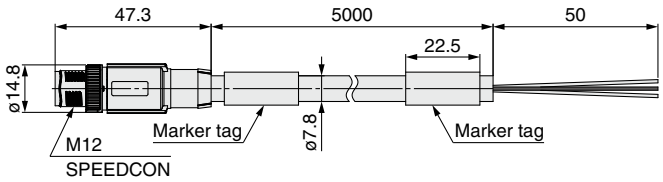
Socket connector
pin arrangement
B-coded (Reverse key)

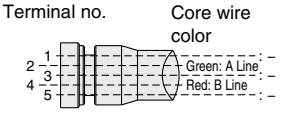


PCA-1557691
(Plug)



Plug connector
pin arrangement
B-coded (Reverse key)





Shield line is connected to the knurl.
Connections

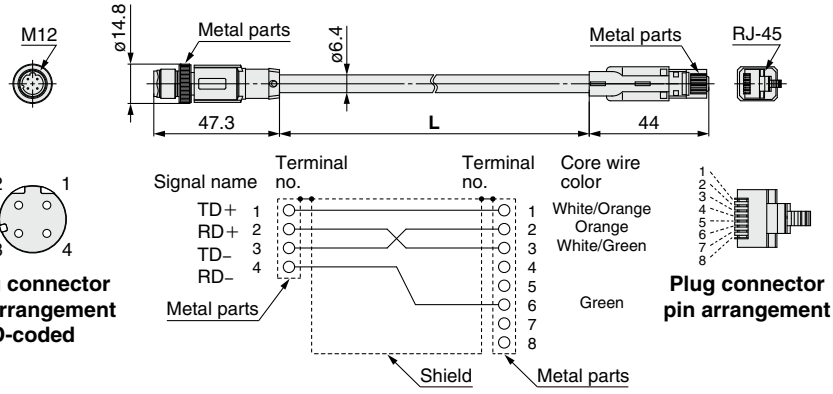
Item	Specifications
Cable O.D.	ø7.8 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	2.55 mm
Min. bending radius (Fixed)	78 mm

For EtherCAT | For PROFINET | For EtherNet/IP™

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

Cable length (L)

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



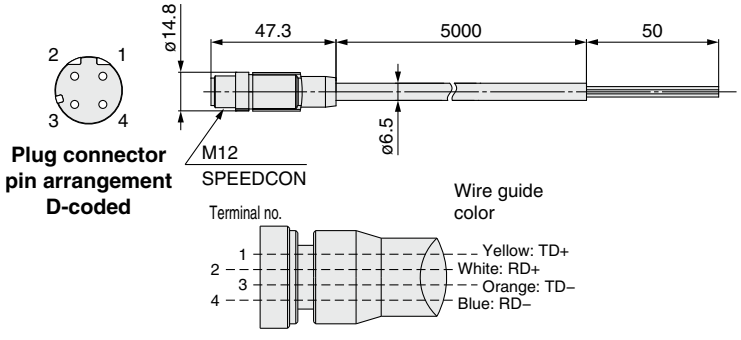
Plug connector
pin arrangement
D-coded

Connections
(Straight cable)

Plug connector
pin arrangement

Item	Specifications
Cable O.D.	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

Made to Order **Made to Order**

Change in the cable length	**p. 131**

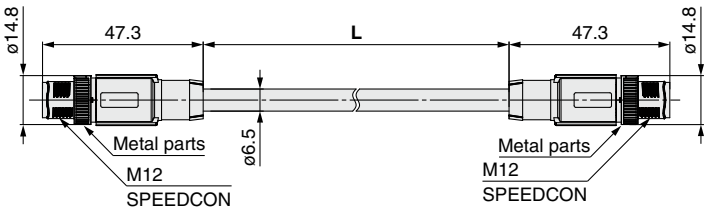
⓫ Communication Cable

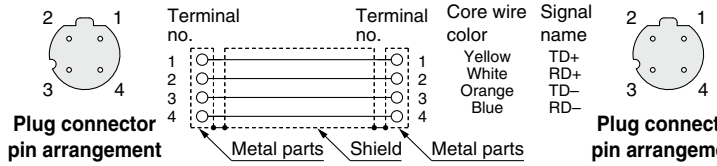
For EtherCAT® **For PROFINET** **For EtherNet/IP™**

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





Plug connector pin arrangement D-coded

Connections (Straight cable)

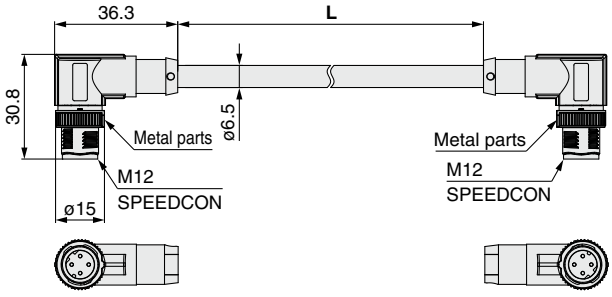
Plug connector pin arrangement D-coded

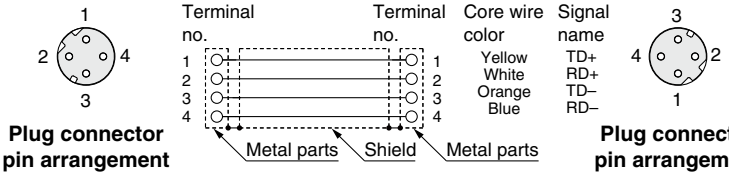
Item	Specifications
Cable O.D.	ø6.5 mm
Conductor nominal cross section	0.34 mm²/AWG22
Wire O.D. (Including insulator)	1.55 mm
Min. bending radius (Fixed)	19.5 mm

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

Cable length (L)

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





Plug connector pin arrangement D-coded

Connections (Straight cable)

Plug connector pin arrangement D-coded

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

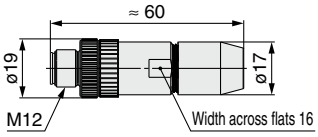
⑫ Field-wireable Communication Connector

Plug

For CC-Link **For DeviceNet™**

PCA-1557617 PCA-1557659

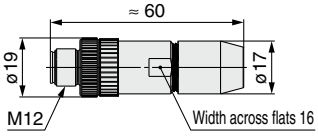
A-coded (Normal key)



For PROFIBUS DP

PCA-1557701

B-coded (Reverse key)



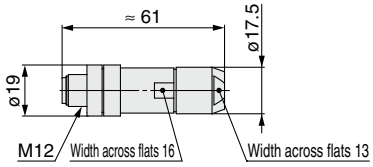
Applicable Cable

Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm² AWG26 to 20

For EtherCAT **For PROFINET** **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

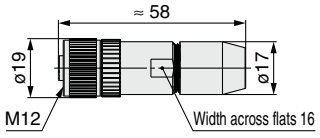
* The table above shows the specifications for the applicable cable. Adaptation for the connector may vary on account of the conductor construction of the electric wire.

Socket

For CC-Link **For DeviceNet™**

PCA-1557620 PCA-1557662

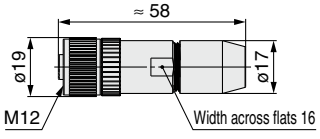
A-coded (Normal key)



For PROFIBUS DP

PCA-1557714

B-coded (Reverse key)



Applicable Cable

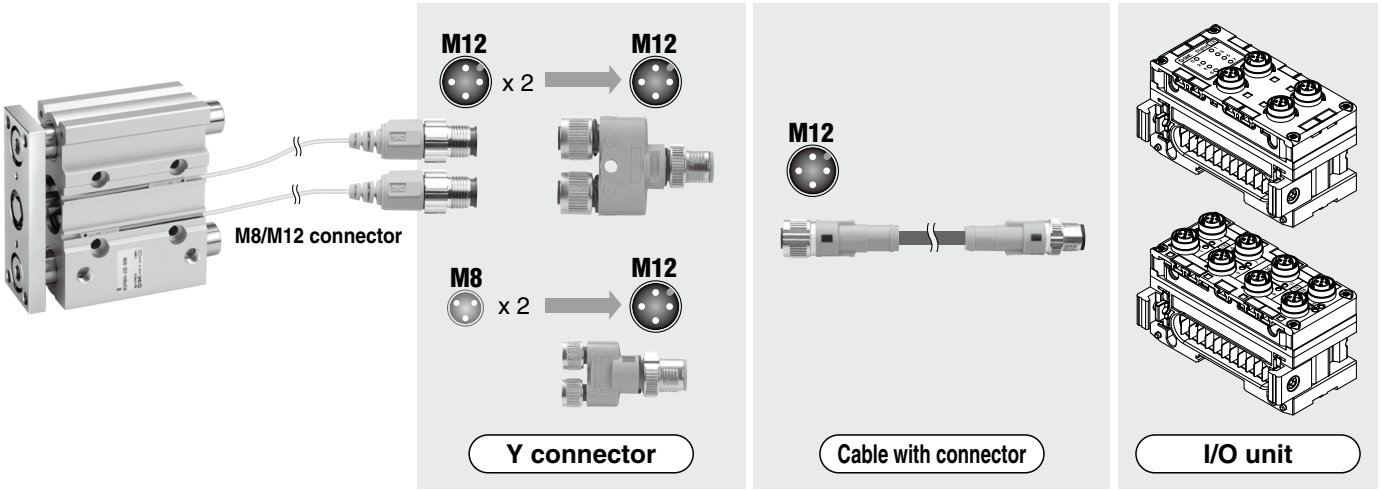
Item	Specifications
Cable O.D.	4.0 to 8.0 mm
Wire gauge (Stranded wire cross section)	0.14 to 0.5 mm² AWG26 to 20

⓭ I/O Cable with Connector /I/O Connector

For details, refer to pages 237 to 239 and later.

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 unit through the sensor cable (PCA-1557769) with the M12 connector.



EX600 Series
Made to Order

Please contact SMC for detailed specifications and lead times.

Made to Order

SI Unit

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

① MRP (PROFINET) compatible

EX600-SPN1A-X34

- Dimensions are the same as those of the EX600-SPN1.

② Ethernet POWERLINK compatible

EX600-SPL1-X26

- Dimensions are the same as those of the EX600-SEN3.

Communication Cable

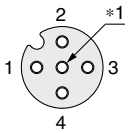
③ With connector on one side (Socket)
Cable length: 10000 mm

For CC-Link **For DeviceNet™**

EX9-AC100 MJ -X12

● **Applicable protocol**

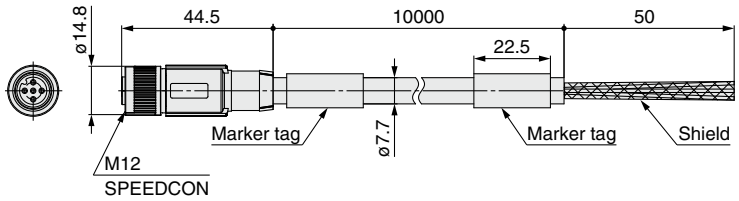
MJ	CC-Link
DN	DeviceNet™



Socket connector pin arrangement A-coded (Normal key)

For CC-Link

Dimensions



Connections

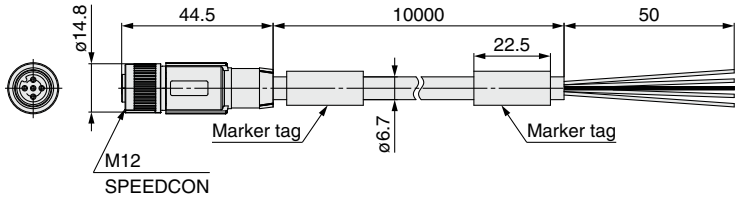
Terminal no.	Core wire color: Signal name (CC-Link)
1	Shield: SLD
2	White: DB
3	Yellow: DG
4	Blue: DA

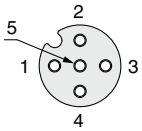
*1 Number of holes: 5, Total number of pins: 4

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

For DeviceNet™

Dimensions





Socket connector pin arrangement A-coded (Normal key)

Connections

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

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

EX600 Series
Specific Product Precautions

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

Mounting

⚠ Caution

1. When handling and assembling units, 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 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 EX600-D□□E or EX600-D□□F, manifold enclosure is IP40.

Also, the handheld terminal conforms to IP20, so prevent foreign matter from entering inside, and water, solvent or oil from coming in direct contact with it.

Adjustment / Operation

⚠ Warning

<Handheld Terminal>

1. Do not apply pressure to the LCD.

There is a possibility of the crack of LCD and injuring.

2. The forced input/output function is used to change the signal status forcibly. When operating this function, be sure to check the safety of the surroundings and installation.

This may cause, injuries or equipment damage.

3. Incorrect setting of parameters can cause a malfunction. Be sure to check the settings before use.

This may cause injuries or equipment damage.

⚠ Caution

<Handheld Terminal>

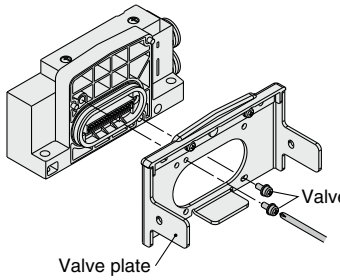
1. Do not press the setting buttons with a sharp pointed object.

This may cause damage or equipment failure.

2. Do not apply excessive load and impact to the setting buttons.

This may cause damage, equipment failure or malfunction.

When the order does not include the SI unit, a valve plate which connects the manifold and SI unit, is not mounted. Use attached valve holding screws and mount the valve plate.
(Tightening torque: 0.6 to 0.7 N·m)



Screw tightened parts
SV series: 2 places
S0700 series: 2 places
VQC1000 series: 2 places
VQC2000 series: 3 places
VQC4000 series: 4 places
SY series: 2 places

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

Contact our sales office for delivery dates and prices as this is a special model.

Specialized Product

P.G. Point to Group information

Ethernet POWERLINK Compatible Fieldbus System

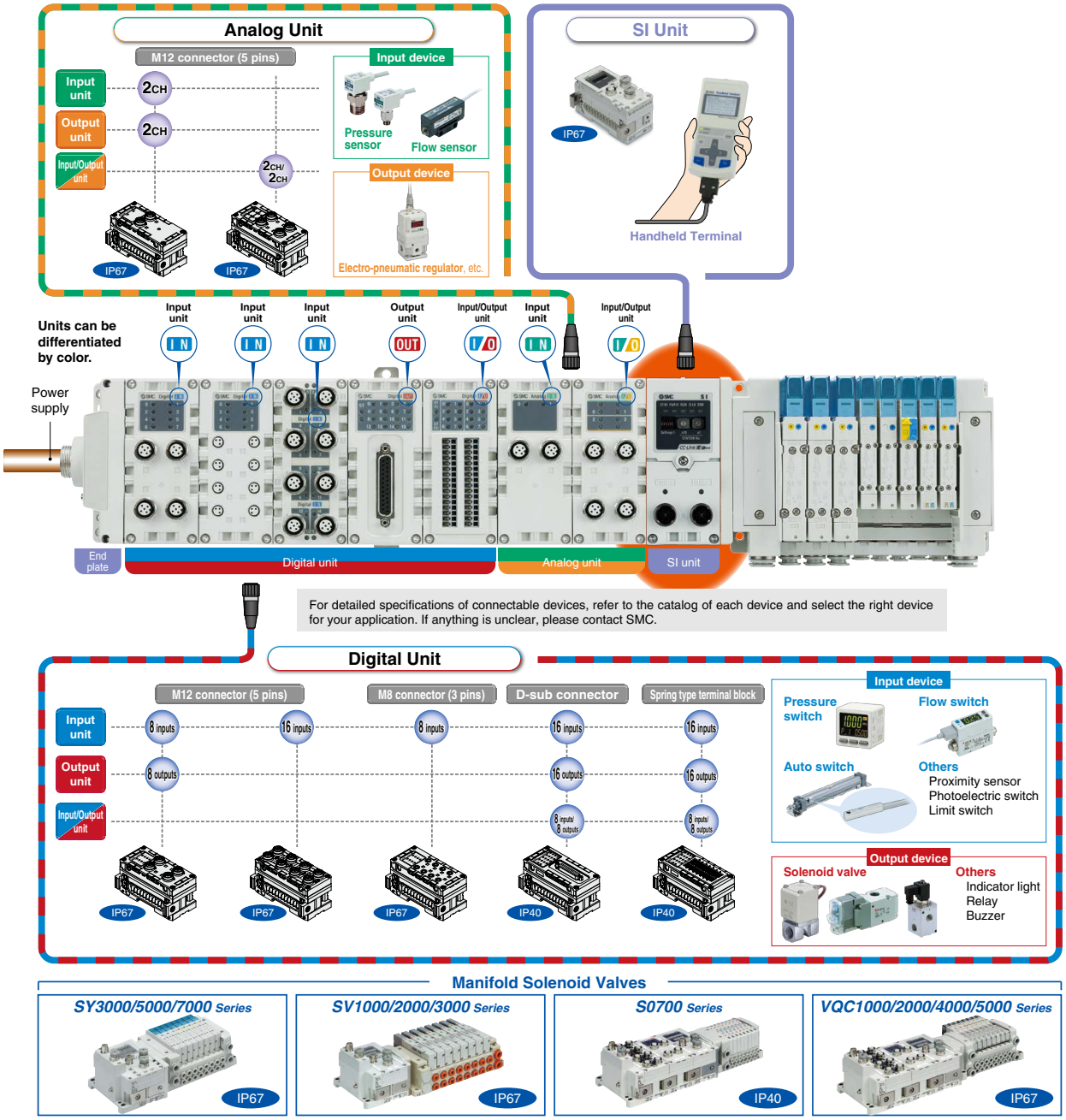
EX600-SPL1-X26

ETHERNET POWERLINK

Features

Supports the Ethernet POWERLINK communication protocol

* Ethernet POWERLINK: Industrial Ethernet that supports a communication speed of 100 Mbps



⚠ Caution To ensure the safest possible operation of this product, please be sure to thoroughly read the **"Safety Instructions"** in our "Best Pneumatics" catalog before use.

SMC Corporation 4-14-1, SOTO-KANDA, CHIYODA-KU, TOKYO 101-0021, JAPAN **URL: http://www.smcworld.com**

SP175X-026E
P: WS

Specifications

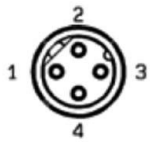
Item		Specifications
Communication	**Protocol**	Ethernet POWERLINK
	Media	100BASE-TX
	Communication speed	100 Mbps, Half duplex
	Node ID setting range	1 to 239
Internal current consumption (Power supply for control/input)		120 mA or less
Output	**Output type**	Source/PNP (Negative common)
	Number of outputs	32 points
	Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.0 W or less (made by SMC)
	Power supply	24 VDC, 2 A
	Fail safe	HOLD/CLEAR/Forced power ON
	Protection	Short-circuit protection
Enclosure		IP67 (Manifold assembly)
Standards		CE marking, UL (CSA), RoHS compliant
Weight		300 g or less

Please contact SMC for the operation manual and configuration file.
Refer to the catalog and the SMC website for other specifications of the EX600, end plate, and input/output units.

Wiring Specifications

Communication connector BUS IN/OUT

M12 4-pin socket, D-Coding



No.	Designation
1	TX+
2	RX+
3	TX–
4	RX–

Mating cable examples [M12 connector (straight) — Separate lines]
: PCA-1446566 (5 m) made by SMC, etc.

[M12 connector (straight) (Fieldwireable connector)]
: PCA-1446553 made by SMC, etc.

[M12 connector (straight) — RJ45 connector]
: EX9-AC010EN-PSRJ (1 m)
: EX9-AC020EN-PSRJ (2 m)
: EX9-AC030EN-PSRJ (3 m)
: EX9-AC050EN-PSRJ (5 m)
: EX9-AC100EN-PSRJ (10 m)
(made by SMC), etc.

[M12 connector (straight) — M12 connector (straight)]
: EX9-AC010EN-PSPS-X19 (1 m)
: EX9-AC020EN-PSPS-X19 (2 m)
: EX9-AC030EN-PSPS-X19 (3 m)
: EX9-AC050EN-PSPS-X19 (5 m)
: EX9-AC100EN-PSPS-X19 (10 m)
(made by SMC), etc.

How to Order

EX600 – S PL 1 – X26

Communication protocol

PL	Ethernet POWERLINK

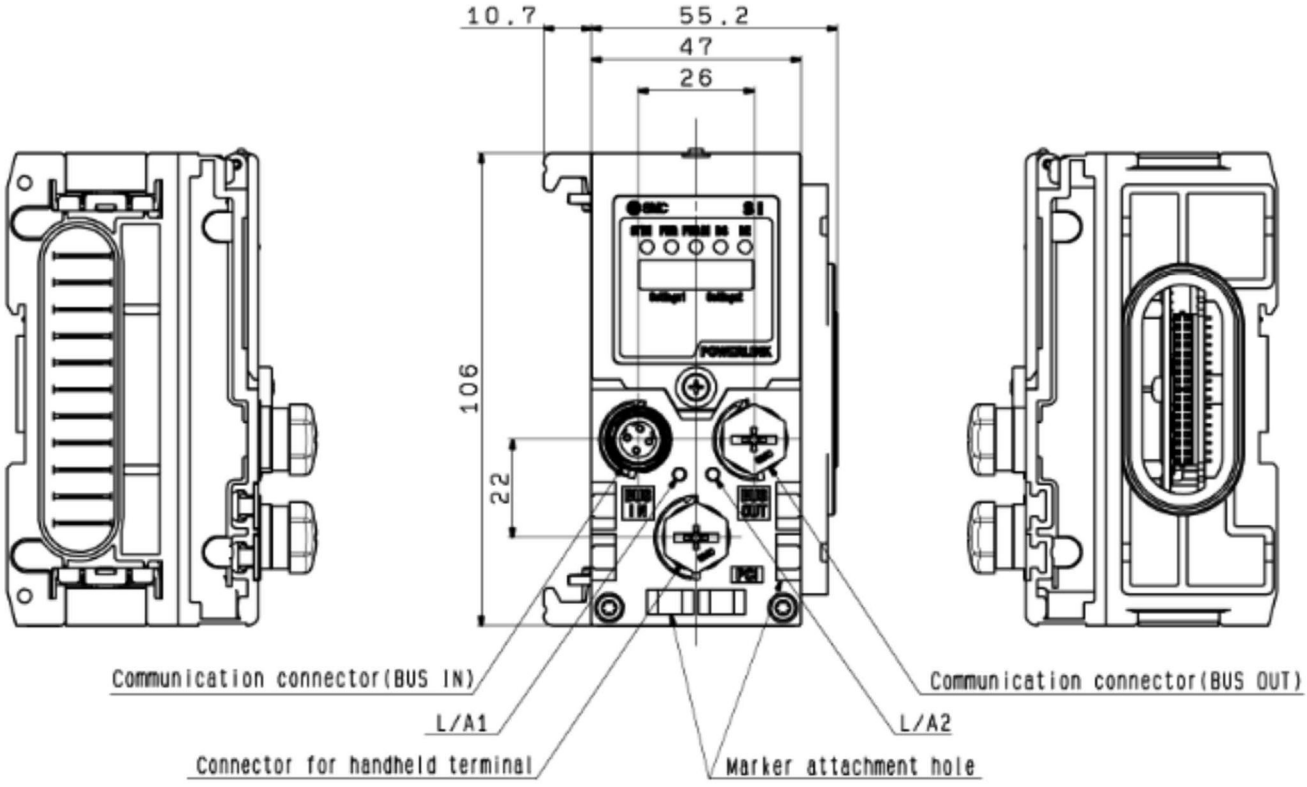
Output specification

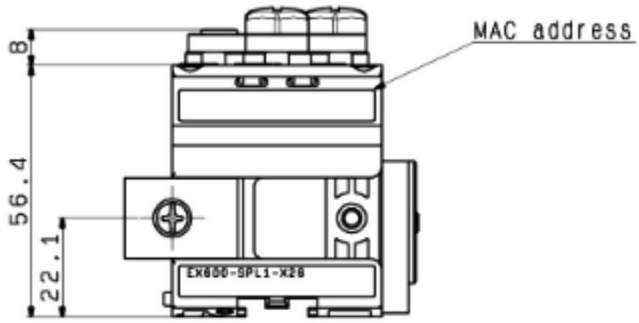
1	32 outputs, PNP (Negative common)/Source

∗ Order the end plate and input/output units as a set to be used in combination.

Dimensions

[mm]





⚠ Caution

1. For the dimensions when combined with the valve manifold, use the valve manifold dimensions of the standard EX600 series.

2. Order the valve manifold, end plate, and input/output units separately.
Specify “no SI unit” and “negative common” for the valve manifold specifications.

Contact our sales office for delivery dates and prices as this is a special model.

Specialized Product

P.G. Point to Group information

CC-Link IE Field Compatible Fieldbus System

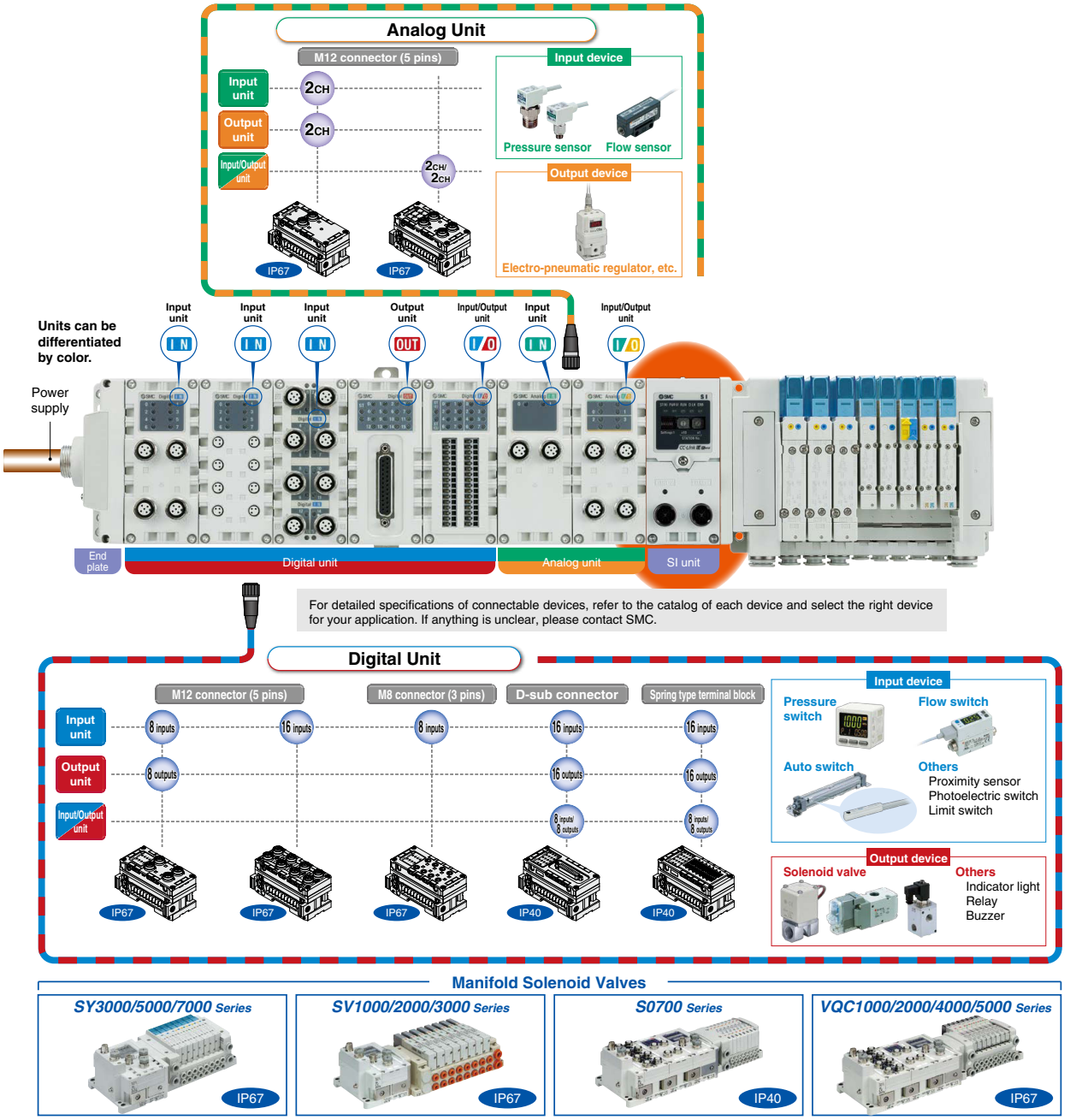
EX600-SCF1-X60

CC-Link IE Field™

Features

Supports the CC-Link IE Field communication protocol

* CC-Link IE Field: Industrial Ethernet that supports a communication speed of 1 Gbps



⚠ Caution To ensure the safest possible operation of this product, please be sure to thoroughly read the **"Safety Instructions"** in our "Best Pneumatics" catalog before use.

SMC Corporation 4-14-1, SOTO-KANDA, CHIYODA-KU, TOKYO 101-0021, JAPAN **URL: http://www.smcworld.com**

SP175X-028E
P: WR

Specifications

Item		Specifications
Communication	**Protocol**	CC-Link IE Field
	Station type	Intelligent device station
	Communication speed	1 Gbps
	Allowable station number setting	1 to 120
	Allowable network number setting	1 to 239
	Transmission method	Cyclic transmission
	Configuration file	CSP+
	Network topology	Star, Line, Ring
	Occupied input size	RX: 32 to 176 bits RWr: 32 to 608 words
	Occupied output size	RY: 32 to 176 bits RWW: 32 to 608 words
Internal current consumption (Power supply for control/input)		140 mA or less
Output	**Output type**	Source/PNP (Negative common)
	Number of outputs	32 outputs
	Connected load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.0 W or less (made by SMC)
	Applicable valve manifold	SY3000, SY5000, SY7000 VQC1000, VQC2000, VQC4000, VQC5000 SV1000, SV2000, SV3000 S0700
	Power supply	24 VDC, 2 A
	Fail safe	HOLD/CLEAR
	Protection	Short-circuit protection
Operating temperature range		–10 to 50°C
Enclosure		IP67 (Manifold assembly)
Standards		CE marking, RoHS compliant
Weight		300 g or less

Please contact SMC for the operation manual and configuration file.
Refer to the catalog and the SMC website for other specifications of the EX600, end plate, and input/output units.

Wiring Specifications

Communication connector PORT 1 (P1) & PORT 2 (P2)

M12 8-pin socket, X-Coding (Cat. 6A)

No.	Designation
1	DA+
2	DA–
3	DB+
4	DB–
5	DD+
6	DD–
7	DC–
8	DC+

Mating cable examples [M12 connector — Separate lines]
: NBC-MSX/1,0-94F SCO (Order no.: 1407467) (1 m)
: NBC-MSX/2,0-94F SCO (Order no.: 1407468) (2 m)
: NBC-MSX/5,0-94F SCO (Order no.: 1407469) (5 m), etc.
(made by PHOENIX CONTACT)

[M12 connector — RJ45 connector]
: NBC-MSX/1,0-94F/R4AC SCO (Order no.: 1407471) (1 m)
: NBC-MSX/2,0-94F/R4AC SCO (Order no.: 1407472) (2 m)
: NBC-MSX/5,0-94F/R4AC SCO (Order no.: 1407473) (5 m), etc.
(made by PHOENIX CONTACT)

How to Order

EX600 – S CF 1 – X60

Communication protocol

CF	CC-Link IE Field

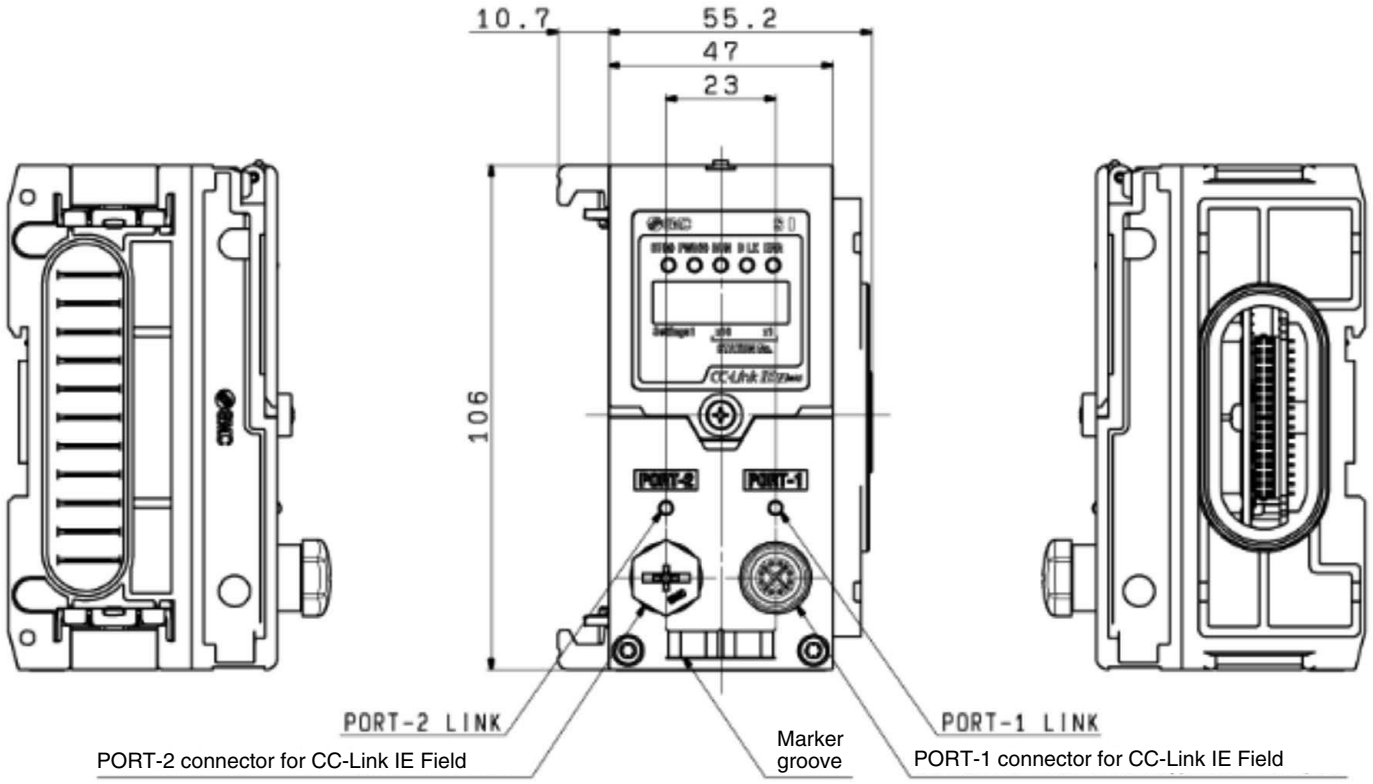
Output specification

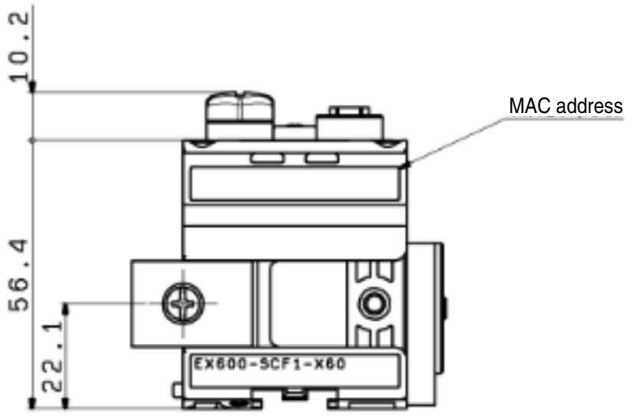
1	32 outputs, PNP (Negative common)/Source

∗ Order the end plate and input/output units as a set to be used in combination.

Dimensions

[mm]





⚠ Caution

1. **For the dimensions when combined with the valve manifold, use the valve manifold dimensions of the standard EX600 series.**
2. **Order the valve manifold, end plate, and input/output units separately.**
   Specify “no SI unit” and “negative common” for the valve manifold specifications.