

# Fieldbus System (For Input/Output)

## EX600 Series

Supports digital inputs/outputs, analog inputs/outputs, and IO-Link units



IP67

**IO-Link unit compatible SI unit**

New EtherNet/IP™

New EtherCAT

PROFINET



<Compatible Protocols>



DeviceNet

CC-Link

IO-Link



EtherNet/IP

EtherCAT

Made to order



ETHERNET POWERLINK

CC-Link IE Field

Please contact SMC for details on compatible products.

**IO-Link unit**

- 2 models (port class A and port class B)
- Diagnosis is possible from the upper level communication.
- The data can be accessed from via PC (setting tool).
- Device parameter setting function, Automatic saving/writing

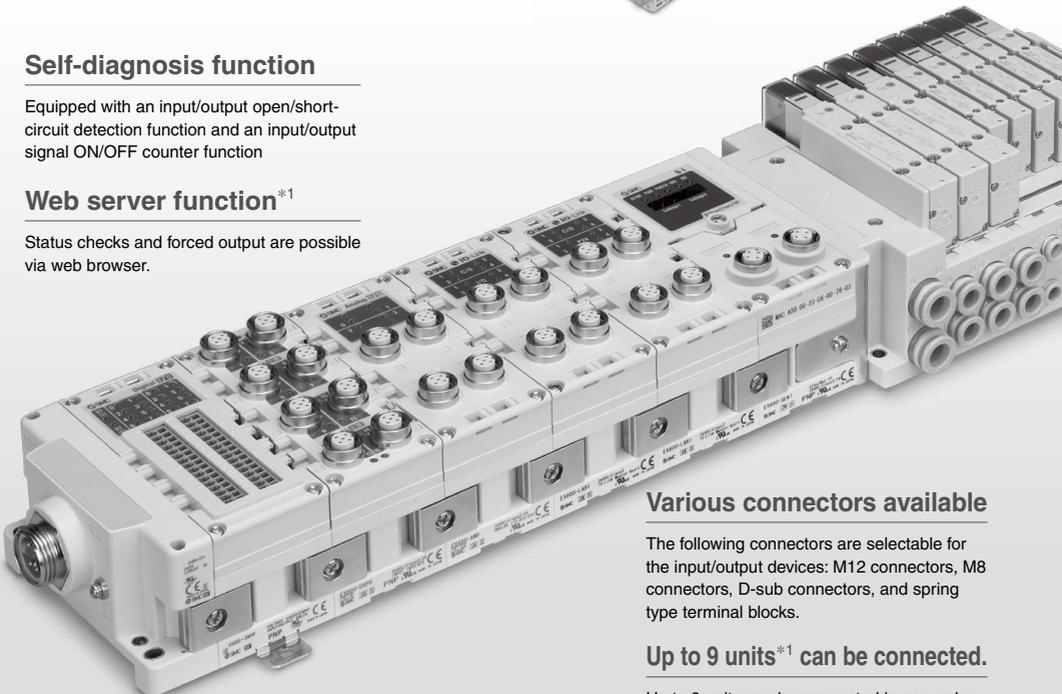


### Self-diagnosis function

Equipped with an input/output open/short-circuit detection function and an input/output signal ON/OFF counter function

### Web server function\*1

Status checks and forced output are possible via web browser.



### Various connectors available

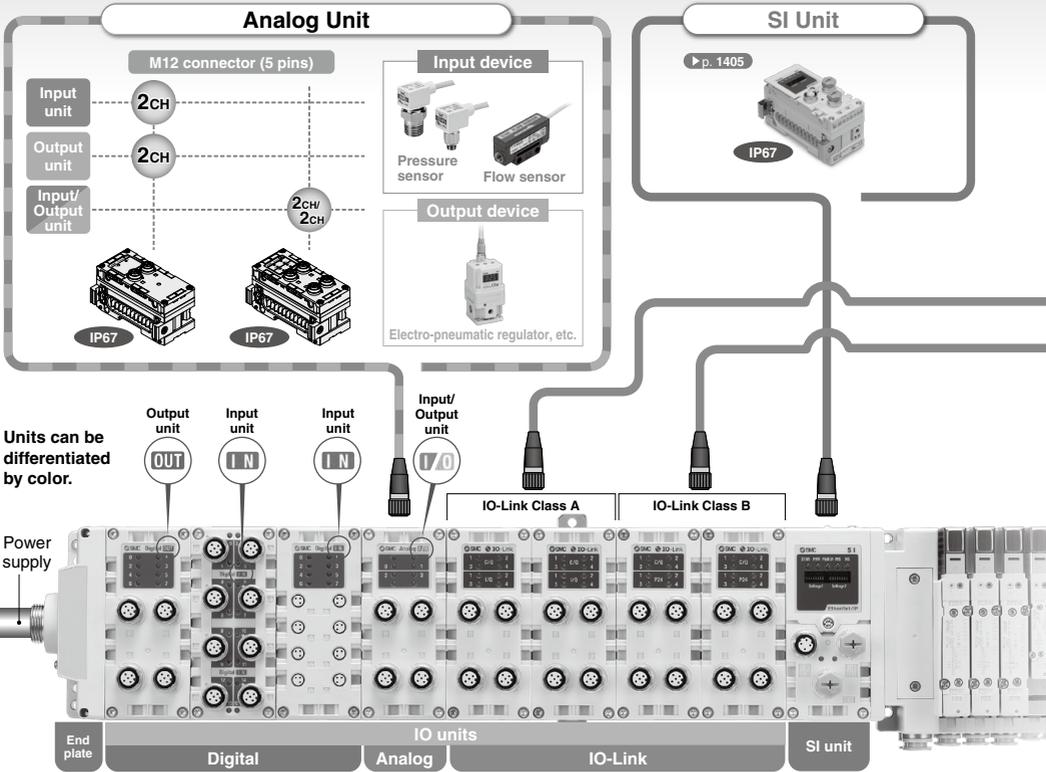
The following connectors are selectable for the input/output devices: M12 connectors, M8 connectors, D-sub connectors, and spring type terminal blocks.

### Up to 9 units\*1 can be connected.

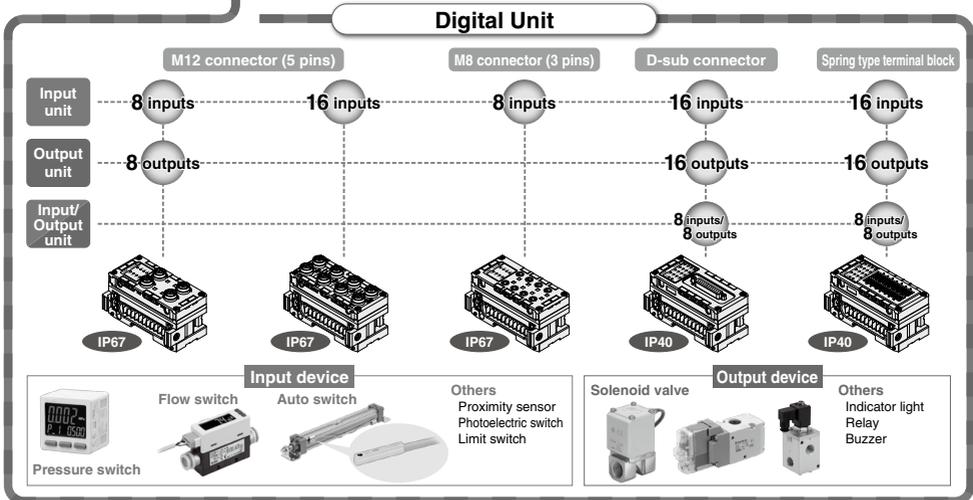
Up to 9 units can be connected in any order.

\*1 Excludes SI units

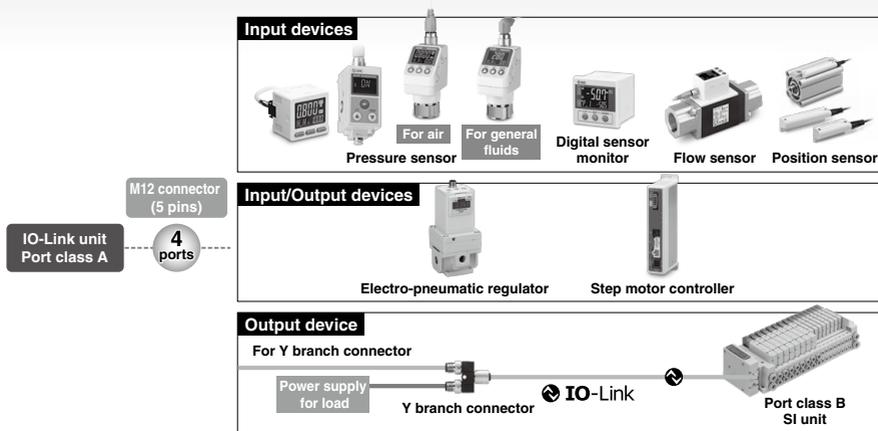
# Can be connected with digital, analog, and IO-Link units



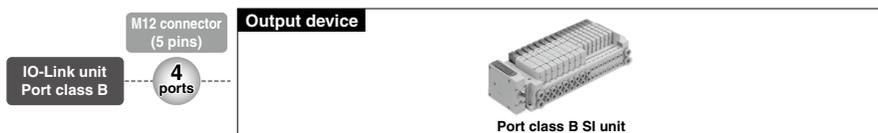
For detailed specifications of connectable devices, refer to the catalog of each device and select the right device for your application. If anything is unclear, please contact SMC.



## IO-Link Unit / Port Class A Devices



## IO-Link Unit / Port Class B Device



## Connectable Solenoid Valve/Vacuum Unit

| Applicable valve       |                      | Flow rate characteristics (4/2 → 5/3) |                     | Max. number of solenoids | Power consumption [W] | Applicable cylinder size   |  |      |
|------------------------|----------------------|---------------------------------------|---------------------|--------------------------|-----------------------|----------------------------|--|------|
|                        |                      | C [dm <sup>3</sup> /(s·bar)]          | b                   |                          |                       |                            |  |      |
| IP67 <sup>*1</sup>     |                      | CE UK CA c RU US                      | SY3000              | 1.6                      | 0.19                  | 32                         | 0.35 (Standard)<br>0.1 (With power-saving circuit)                                   | ø50  |
|                        |                      |                                       | SY5000              | 3.6                      | 0.17                  |                            |  | ø63  |
|                        |                      |                                       | SY7000              | 5.9                      | 0.20                  |                            |  | ø80  |
| IP67 <sup>*1, *3</sup> |                      | CE UK CA                              | JSY1000             | 0.91                     | 0.48                  | 32                         | 0.2 (With power-saving circuit)<br>0.4 (Standard)<br>0.1 (With power-saving circuit) | ø40  |
|                        |                      |                                       | JSY3000             | 2.77                     | 0.27                  |                            |  | ø50  |
|                        |                      |                                       | JSY5000             | 6.59                     | 0.22                  |                            |  | ø80  |
| IP40                   |                      | CE UK CA                              | S0700 <sup>*2</sup> | 0.37                     | 0.39                  | 32                         | 0.35   | ø25  |
| IP67 <sup>*1</sup>     |                      |                                       | CE UK CA c RU US    | SV1000 <sup>*2</sup>     | 1.1                   |                            |  | 0.35 |
| IP67 <sup>*1</sup>     | SV2000 <sup>*2</sup> | 2.4                                   |                     | 0.18                     | ø63                   |                            |  |      |
|                        | SV3000 <sup>*2</sup> | 4.3                                   |                     | 0.21                     | ø80                   |                            |  |      |
|                        | IP67 <sup>*1</sup>   |                                       |                     | CE UK CA                 | VQC1000               | 1.0                        | 0.30   | 24   |
| VQC2000                |                      |                                       | 3.2                 |                          | 0.30                  | ø63                        |  |      |
| VQC4000                |                      |                                       | 7.3                 |                          | 0.38                  | ø160                       |  |      |
| VQC5000                |                      |                                       | 17                  |                          | 0.31                  | ø180                       |  |      |
| Applicable vacuum unit |                      | Nozzle diameter [mm]                  |                     | Max. number of solenoids | Power consumption [W] | Max. vacuum pressure [kPa] |  |      |
| IP40                   |                      | CE UK CA                              | ZK2□A               |                          |                       |                            | 0.7  | 16   |
|                        |                      |                                       | 1.0                 |                          |                       |                            |  |      |
|                        |                      |                                       | 1.2                 |                          |                       |                            |  |      |
|                        |                      |                                       | 1.5                 |                          |                       |                            |  |      |

\*1 Units with a D-sub connector or spring type terminal block are IP40.

\*2 There are no manifold part number setting for the EX600-SPN3/4, EX600-SEN7/8, and EX600-SEC3/4. (Order it separately.)

\*3 The JSY1000 is IP40.

# IO-Link

IO-Link is a communication technology for sensors and actuators that is an international standard, IEC 61131-9.

This technology is used to send/receive device information such as manufacturer, product part number, parameters, and diagnostic data, as well as the control data including ON/OFF signals and measured values of the sensor, by connecting the IO-Link master and device in a 1:1 configuration.

IO-Link enables condition monitoring and error detection of the sensor and equipment, and it can contribute to the reduction of startup labor and recovery time and the realization of preventive and predictive maintenance.

## Reduced design and startup labor

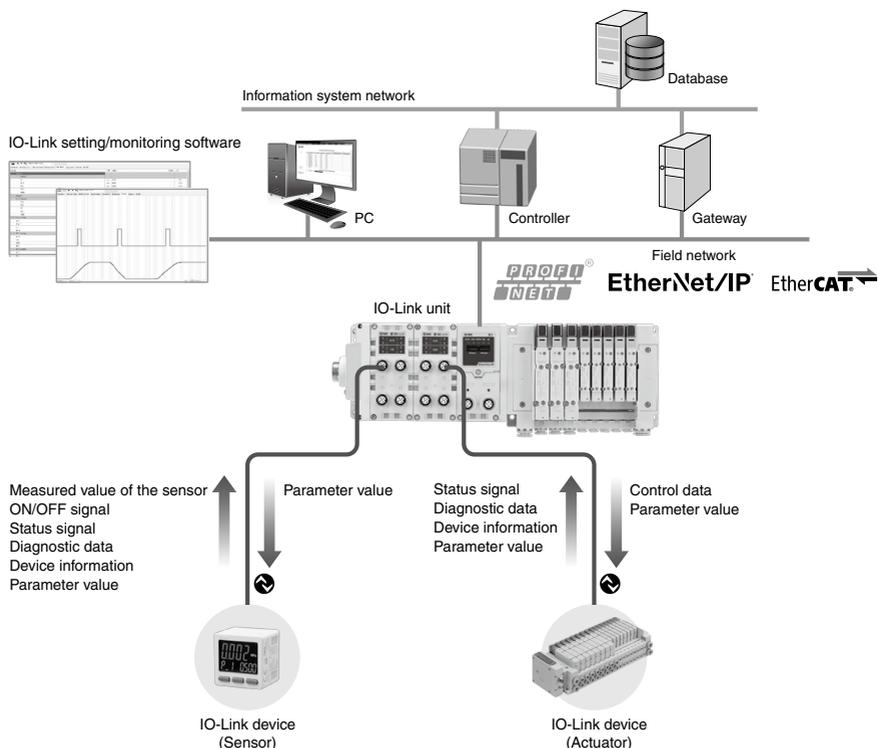
- Batch setting of device parameters from the upper level
- Remote check of device information
- Detection and remote unified check of device misconnection/non-connection

## Minimum recovery time due to error detection

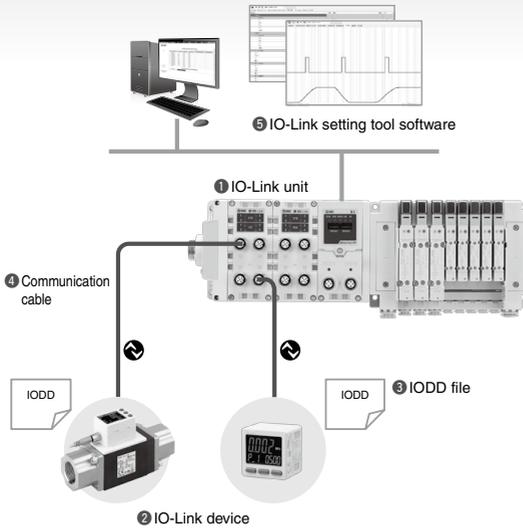
- Early detection of location where problem is occurring via communication
- Early obtaining of information on problem phenomenon via communication
- Early recovery during product replacement (automatic setting of device parameters)

## Preventive and predictive maintenance through condition monitoring

- Monitors changes in measured values of a sensor during signal ON/OFF
- Monitors the number of device operations and automatically notifies when the set number of operations has been exceeded
- Remote monitoring of device and equipment conditions via communication



# IO-Link System Configuration



## 1 IO-Link unit

- Acts as a gateway between the IO-Link communication and the upper level communication

## 2 IO-Link device

- A sensor/actuator connecting to each port of the IO-Link unit in a 1:1 configuration

## 3 IODD file

- A file in which device properties and parameters are described
- Registered to the setting tool
- Provided by the device manufacturer

## 4 Communication cable

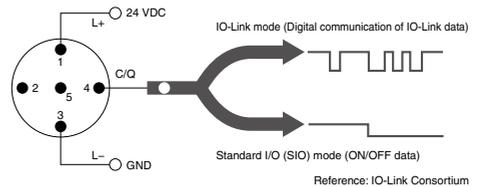
- A 4-wire or 5-wire general-purpose cable that is the same as the existing sensor cable (Unshielded cable)
- Max. cable length: 20 m

## 5 IO-Link setting tool software

- Software for the setting and monitoring of an IO-Link unit/device
- \*1 A setting tool compatible with the IO-Link units of every manufacturer is used for the SMC EX600 series IO-Link unit. (IO-Link Device Tool V5 manufactured by TMG Technologie und Engineering, Germany)

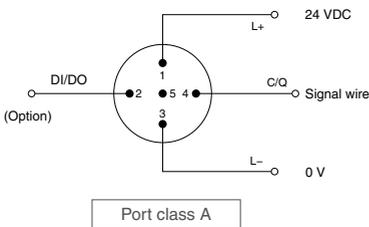
# IO-Link Interface

The connecting part between the IO-Link unit and the device is called a "port." Each port can be switched between "IO-Link mode" for digital communication and "standard I/O mode" for conventional contact input/output.

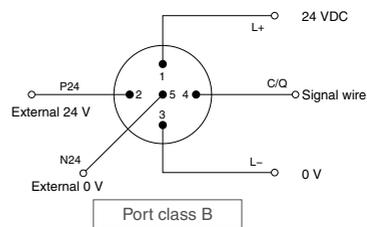


## 2 types of interfaces

There are two methods for power supply: one is for sensors, and the other is for actuators.



The control power supply wire and signal wire can be connected with one cable. (Mainly for sensors)



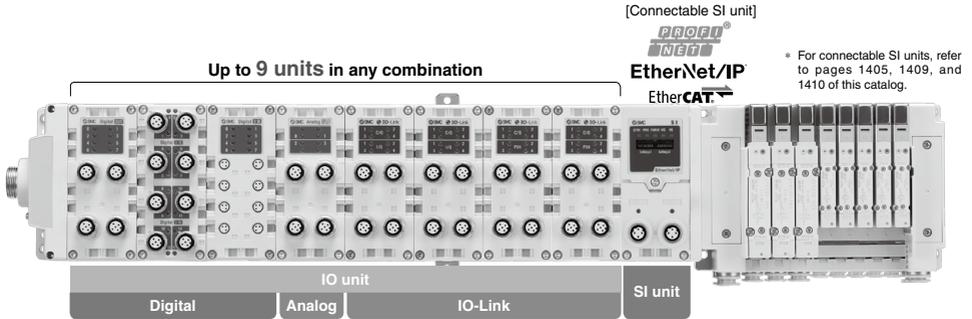
The control power supply wire, external power supply wire, and signal wire can be connected with one cable. (Mainly for actuators)

## IO-Link Unit

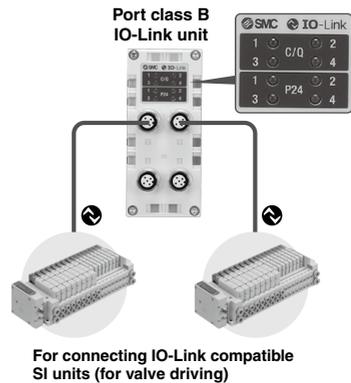
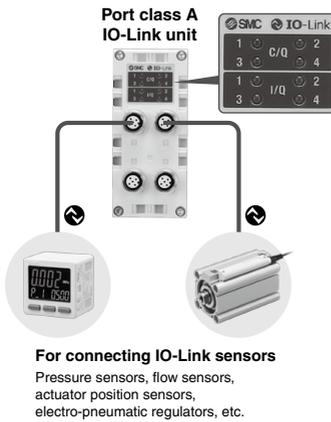
### ■ Can be connected with digital, analog, and IO-Link unit units

Up to 9 IO-Link units can be connected. (36 IO-Link devices can be connected.)

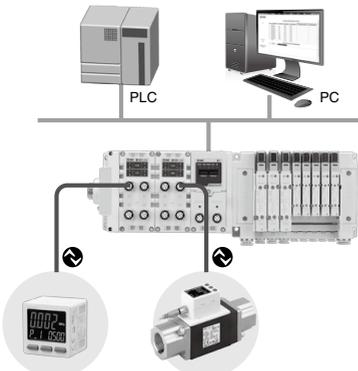
Digital units, analog units, and IO-Link units can be mixed, and up to 9 units can be connected in any order.



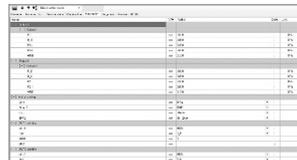
### ■ Supports both port class A and port class B



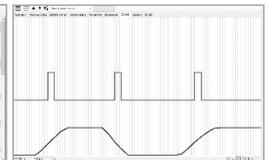
### ■ The data can be accessed from via PC (setting tool).



Setting screen



Monitoring screen



The setting and monitoring of the IO-Link unit and device are possible via PC, without using the PLC.

- Process data
- Device parameters, IO-Link unit parameters
- IO-Link unit information, Device information
- Port diagnosis, Device diagnosis

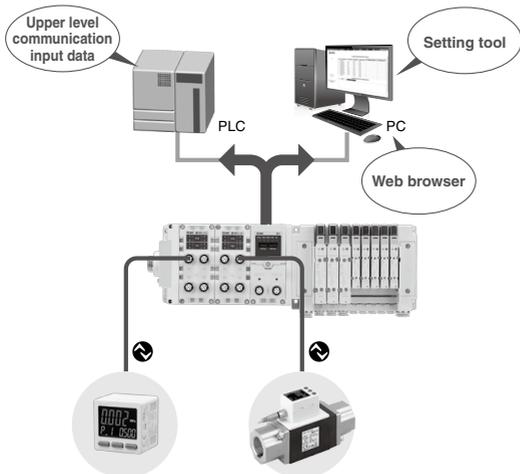
\* The PC setting tool is an IO-Link device tool manufactured by Technologie Management Gruppe (hereinafter referred to as TMG). It can be downloaded for free from the TMG website, however, for usage beyond 30 days, a license key is required.

## ■ Diagnosis function

### Diagnosis is possible from the upper level communication.

IO-Link unit (port) diagnostic information can be obtained via PLC program or PC (web browser).

Device diagnostic information can be obtained via PC (setting tool).



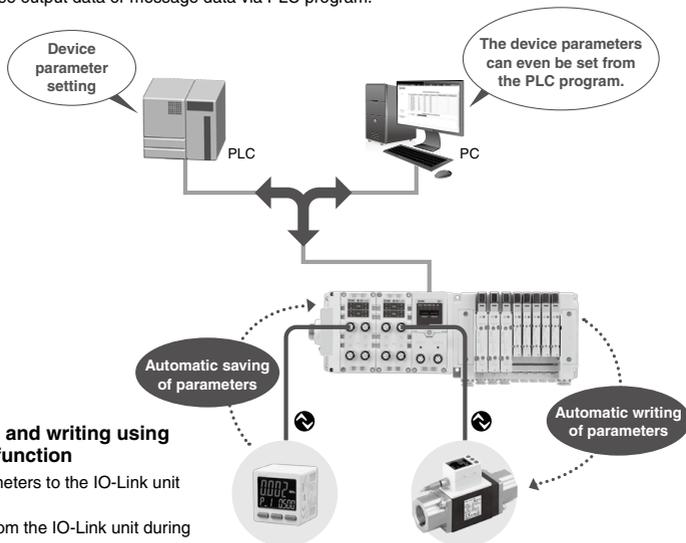
| Items of IO-Link unit (port) diagnosis  |
|---|
| Detection of port short-circuit   |
| Detection of non-connected device   |
| Detection of disconnected device (check error)  |
| Notification of port misconfiguration (excessively large input/output data)             |
| Conditions of diagnostic event (port, device)   |
| Items of device diagnosis   |
| Diagnostic results (problem phenomenon) received from devices are shown in event codes. |

## ■ Device parameter setting function, Automatic saving/writing

### The parameter setting of devices is possible from the upper level communication.

Parameter setting is possible via PC (setting tool).

It is also possible to use output data or message data via PLC program.



### Automatic saving and writing using the data storage function

- Saves device parameters to the IO-Link unit automatically
- Automatic writing from the IO-Link unit during device replacement

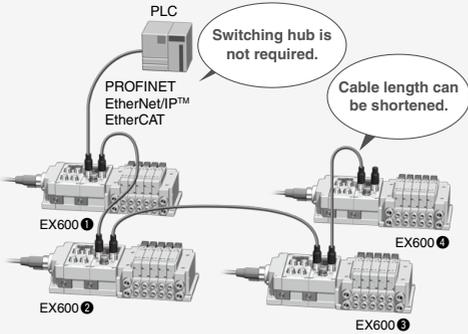
# EtherNet Fieldbus Functions

PROFINET (EX600-SPN3/4), EtherNet/IP™ (EX600-SEN3/4/7/8), and EtherCAT (EX600-SEC3/4) support the following functions.

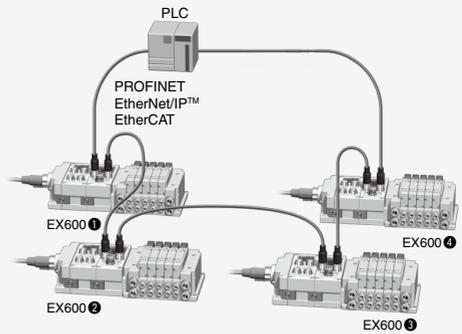
## Compatible topologies (Connection configuration)

The **EX600-SEN3/4/7/8**, **EX600-SPN3/4**, and **EX600-SEC3/4** support **star**, **linear**, and **ring** network topologies.

### Linear type



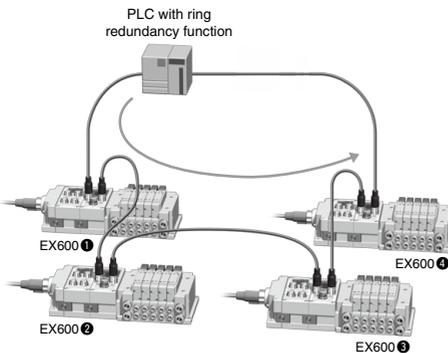
### Ring type



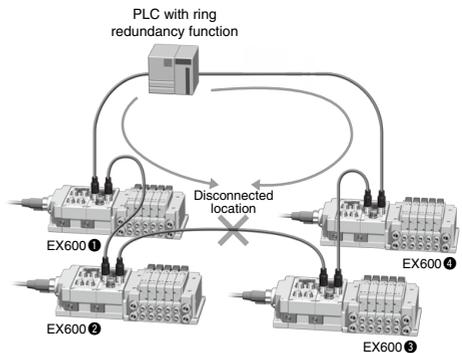
For ring networks, communication can be continued even if one of the communication cables in the network is disconnected or damaged. As the EX600-SEN3/4/7/8 supports Device Level Ring (DLR), and the EX600-SPN3/4 supports Media Redundancy Protocol (MRP), the disconnected point can be identified.

\* In order to use DLR or MRP, the PLC must be able to support it.

### Normal flow of data



### Data flow when the communication cable is disconnected



## ■ Supports the QuickConnect™ function and the Fast Start Up function

Time from power ON  
to communication connection

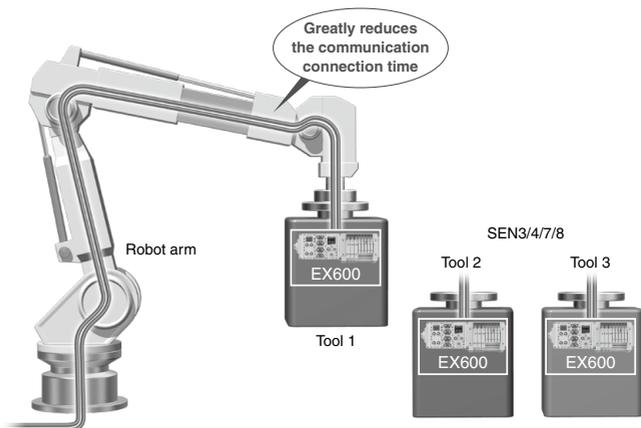
10 s →

Approx.  
**0.5 s**

In the case of a tool changer, it takes about 10 seconds for communication to be connected in some products after the power to the device installed on the tool is turned ON.

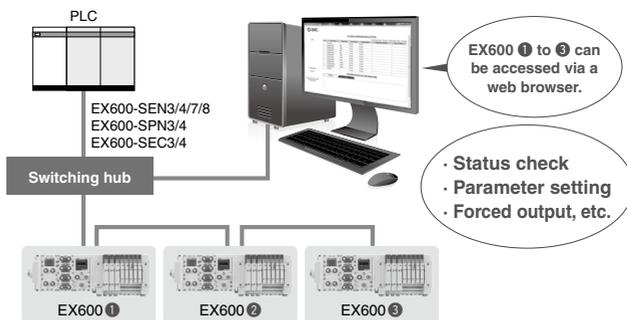
As the EX600-SEN3/4/7/8 supports the QuickConnect™ function, and the EX600-SPN3/4 supports the Fast Start Up function, communication connection in only approx. 0.5 s is possible.

\* In order to use the QuickConnect™ function or the Fast Start Up function, the PLC must be able to support it.



## ■ Built-in web server function

The EX600-SEN3/4/7/8, EX600-SPN3/4, and EX600-SEC3/4 have a built-in web server function, which enables status checks, parameter settings (EX600-SEN3/4/7/8 and EX600-SEC3/4), and forced output of the EX600 using general-purpose web browsers, such as Microsoft Edge. Start-up of the system and maintenance can be performed efficiently.



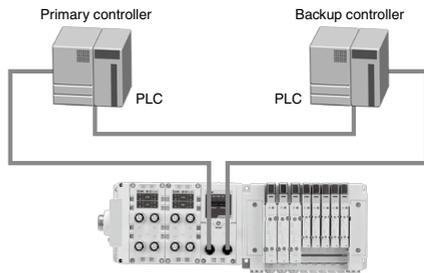
Connection example

## PROFINET Technology

### ■ System Redundancy S2

As the EX600-SPN3/4 supports System Redundancy S2, it can continue communication using the backup controller when the primary controller malfunctions. This allows for the prevention of problems caused by unexpected communication interruption.

\* In order to use System Redundancy S2, the PLC must be able to support this function.



# Fieldbus System EX600

## ■ D-sub connector

IP40

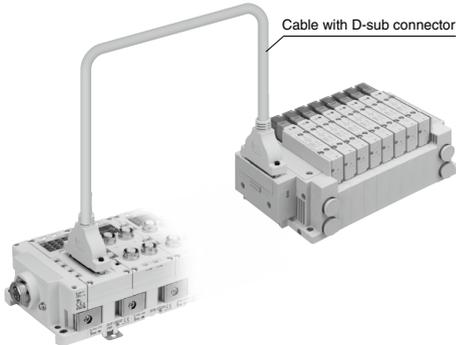
These units are capable of connection using a D-sub connector. There are three types of units: for digital input, output, and input/output. The digital output unit can be connected with an SMC manifold solenoid valve F kit (D-sub connector).

**Manifold solenoid valves/Vacuum unit 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      ● JSY series
- ZK2□A 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.

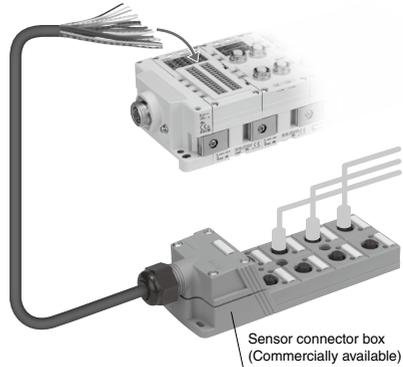
VVZS3000-21A-□-X192 (Non-waterproof cable example)



## ■ Spring type terminal block

IP40

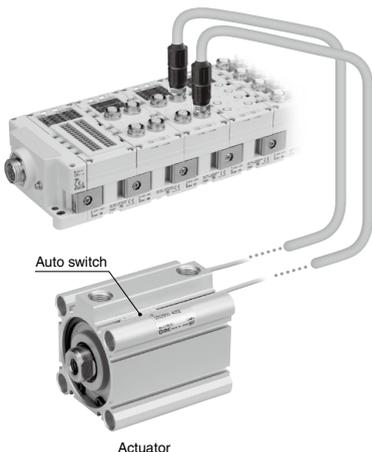
These terminal block units are compatible with individual wiring configurations. There are three types of units: for digital input, output, and input/output. Wiring connection to a sensor connector box, etc., can be carried out easily using only a flat head screwdriver.



## ■ Digital input unit

IP67

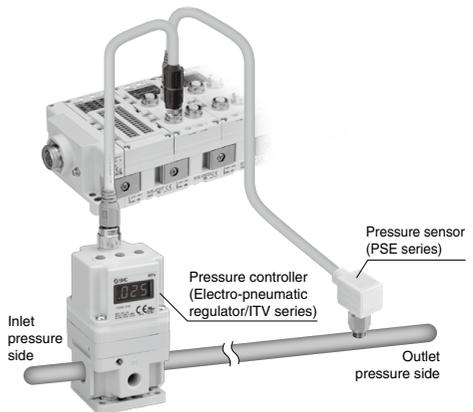
This unit is for inputting a digital signal (ON/OFF signal). The signal of a 2-wire/3-wire auto switch attached to the actuator can be acquired to feedback a signal to the PLC. The control signal of an entire system can be managed by a Fieldbus system.



## ■ 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.

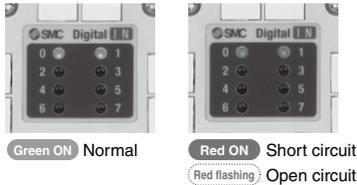


## Self-diagnosis function

The following shows examples of the self-diagnosis function.

### Short/Open-circuit detection

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.



### 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.

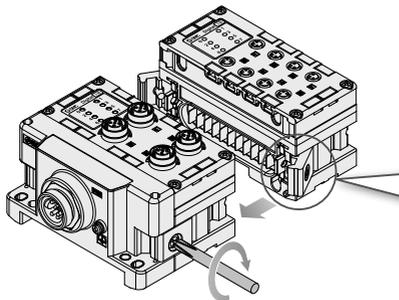
## Individual units can be connected and removed one by one.

A unique clamping method is adopted to prevent screws from falling out.

Units can be separated easily by loosening the joint bracket.

Up to 9 units can be connected in any order.

\* Excludes SI units

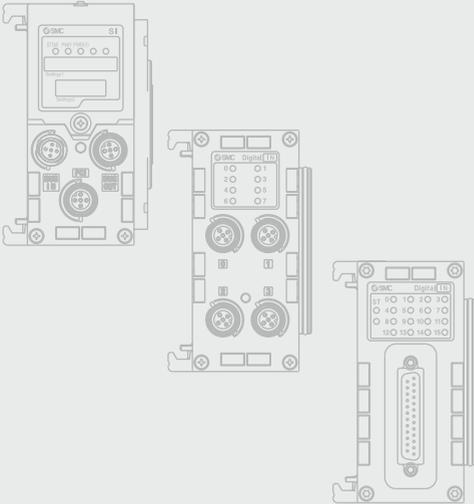
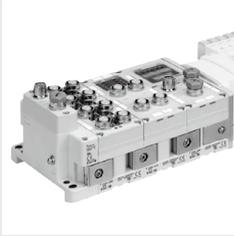


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Fieldbus System (For Input/Output)

### EX600 Series



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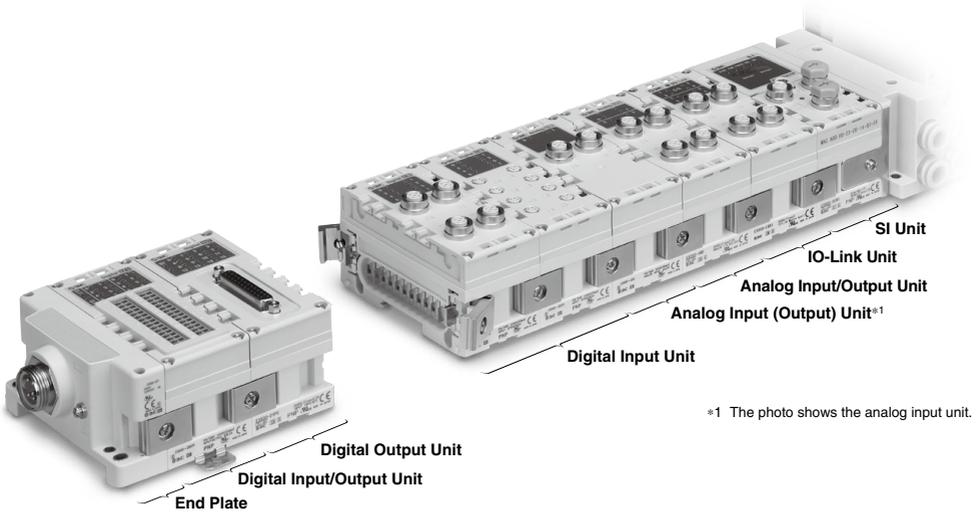
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# Fieldbus System For Input/Output

# EX600 Series



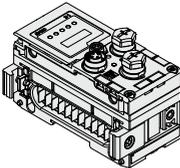
## Parts Structure



## How to Order

SI Unit

EX600-S PR1A - [ ]



### Specifications

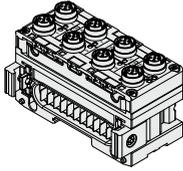
| Symbol  | Protocol         | Output type           | Note            |
|---------|------------------|-----------------------|-----------------|
| PR1A    | PROFIBUS DP      | PNP (Negative common) | —               |
| PR2A    |                  | NPN (Positive common) | —               |
| DN1A    | DeviceNet®       | PNP (Negative common) | —               |
| DN2A    |                  | NPN (Positive common) | —               |
| MJ1     | CC-Link          | PNP (Negative common) | —               |
| MJ2     |                  | NPN (Positive common) | —               |
| CF1-X60 | CC-Link IE Field | PNP (Negative common) | (Made to order) |
| EN3     | EtherNet/IP™     | PNP (Negative common) | —               |
| EN4     |                  | NPN(Positive common)  | —               |
| EN7     |                  | PNP (Negative common) | IO-Link unit    |
| EN8     |                  | NPN(Positive common)  | IO-Link unit    |
| EC3     | EtherCAT         | PNP (Negative common) | IO-Link unit    |
| EC4     |                  | NPN (Positive common) | IO-Link unit    |
| PN1     | PROFINET         | PNP (Negative common) | —               |
| PN2     |                  | NPN (Positive common) | —               |
| PN3     |                  | PNP (Negative common) | IO-Link unit    |
| PN4     |                  | NPN (Positive common) | IO-Link unit    |

• Made to order  
(Refer to page 1438.)

|                       |
|-----------------------|
| Ethernet POWERLINK    |
| Modbus TCP            |
| CC-Link IE Field      |
| NPN (Positive common) |

## How to Order

### Digital Input Unit



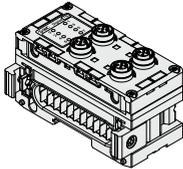
### EX600-DX P D

| 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



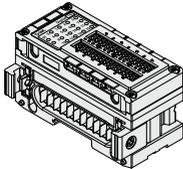
### EX600-DY P B

| 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



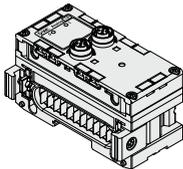
### EX600-DM P F

| 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



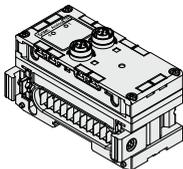
### EX600-AX A

#### Analog input

#### Number of input channels and connector

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

### Analog Output Unit



### EX600-AY A

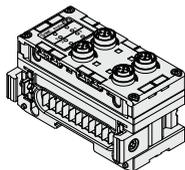
#### Analog output

#### Number of output channels and connector

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

How to Order

Analog Input/Output Unit **EX600-AM B**



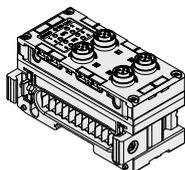
Analog input/output

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. |

IO-Link Unit

EX600-L **A** **B** 1



Port specification

| Symbol | Description  |
|--------|--------------|
| A      | Port class A |
| B      | Port class B |

Number of ports and connector

| Symbol | Number of ports | Connector                     |
|--------|-----------------|-------------------------------|
| B      | 4 ports         | M12 connector (5 pins) 4 pcs. |

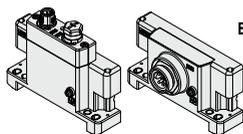
**Caution**

The compatible SI unit models are as shown below. (Refer to page 1485.)  
EtherNet/IP™: EX600-SEN7/8  
PROFINET: EX600-SPN3/4  
EtherCAT: EX600-SEC3/4

End Plate (D side)

EX600-ED **2** - **2**

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



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 the "4" and "5" pin connectors is different.  
Refer to the dimensions on page 1417.

Mounting method

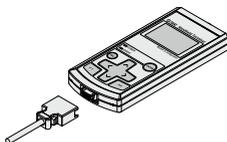
| Symbol | Description                       | Note                          |
|--------|-----------------------------------|-------------------------------|
| Nil    | Without DIN rail mounting bracket | —                             |
| 2      | With DIN rail mounting bracket    | For SV, S0700, and VQC series |
| 3      | With DIN rail mounting bracket    | For SY, JSY, and ZK2□A 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-HT1**A** - **3**

Handheld terminals are not yet UL-compliant.



Version

Cable length

| Symbol | Description |
|--------|-------------|
| Nil    | No cable    |
| 1      | 1 m         |
| 3      | 3 m         |

# EX600 Series

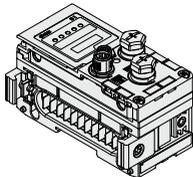
## Specifications

### All Units Common Specifications

|             |                             |  |
|-------------|-----------------------------|--|
| Environment | 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) PROFIBUS

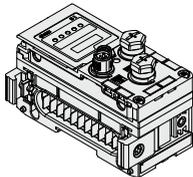


EX600-SPR□A

| 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/UKCA marking, UL (CSA)  |                            |
| Weight  |                     | 300 g  |                            |

\*2 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

### SI Unit (EX600-SDN□A) DeviceNet®

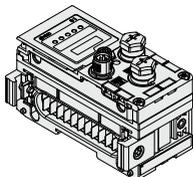


EX600-SDN□A

| Model   |  | EX600-SDN1A  | EX600-SDN2A   |  |
|---|--|--|---|--|
| Communication   | Protocol                                   | DeviceNet®: Volume 1 (Edition 2.1), Volume 3 (Edition 1.1)               |   |  |
|   | Device type                                | Communication Adapter  |   |  |
|   | 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/UKCA marking, UL (CSA)  |   |  |
| Weight  |  | 300 g  |   |  |

\*3 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

### SI Unit (EX600-SMJ□) CC-Link

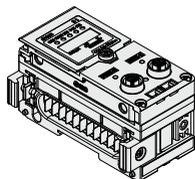


EX600-SMJ□

| 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)<br>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/UKCA marking, UL (CSA)  |                            |
| Weight  |                     | 300 g  |                            |

\*4 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

## Specifications



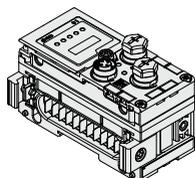
EX600-SCF1-X60

### SI Unit (EX600-SCF1-X60) CC-Link IE Field

| Model   |                                  | EX600-SCF1-X60*1  |
|---|----------------------------------|---|
| 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+ file*2   |
| Occupied input size   | RX: 32 to 176 bits               |   |
|   | RW: 32 to 608 words              |   |
| Occupied output size  | RY: 32 to 176 bits               |   |
|   | RW: 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  |
|   | Load                             | Solenoid valve with surge voltage suppressor<br>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/UKCA marking                  |   |
| Weight  | 300 g                            |   |

\*1 For details on this product, refer to the SMC website.

\*2 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>



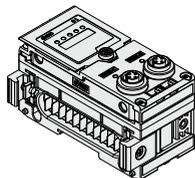
EX600-SEN3/4

### SI Unit (EX600-SEN□) EtherNet/IP™

| Model   |                           | EX600-SEN3  | EX600-SEN4   | EX600-SEN7  | EX600-SEN8   |  |
|---|---------------------------|---|--|---|--|--|
| Communication   | Protocol                  | EtherNet/IP™<br>(Conformance version: Composite 11)                                       |  | EtherNet/IP™<br>(Conformance version: Composite 18) |  |  |
|   | Communication speed       | 10/100 Mbps   |  |   |  |  |
|   | Communication method      | Full duplex/Half duplex   |  |   |  |  |
|   | Configuration file        | EDS file*3  |  |   |  |  |
|   | IP address setting range  | SI Unit switch settings: 192.168.0 or 1.1 to 254<br>Through DHCP server: Optional address |  |   |  |  |
|   | Device information        | Vendor ID: 7 (SMC Corporation)  | Vendor ID: 7 (SMC Corporation)                               |   | Vendor ID: 7 (SMC Corporation)                               |  |
|   |                           | Device type: 12 (Communication Adapter)<br>Product code: 203                              | Device type: 12 (Communication Adapter)<br>Product code: 258 |   | Device type: 12 (Communication Adapter)<br>Product code: 258 |  |
| QuickConnect  | ●                         | ●   | ●  | ●   | ●  |  |
| DLR   | ●                         | ●   | ●  | ●   | ●  |  |
| Web server function   | ●                         | ●   | ●  | ●   | ●  |  |
| IO-Link unit  | —                         |   |  |   |  |  |
| Internal current consumption (Power supply for Control/Input) |                           | 120 mA or less  |  |   |  |  |
| Output  | Output type               | Source/PNP<br>(Negative common)   | Sink/NPN<br>(Positive common)                                | Source/PNP<br>(Negative common)                     | Sink/NPN<br>(Positive common)                                |  |
|   | Number of outputs         | 32 outputs  |  |   |  |  |
|   | Load                      | Solenoid valve with surge voltage suppressor<br>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/UKCA marking, UL (CSA) |   |  |   |  |  |
| Weight  | 300 g                     |   |  |   |  |  |

\*3 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

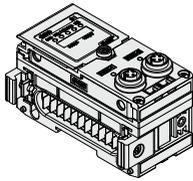
\* The occupation area (number of points) varies depending on the type of units and number of stations to be connected.



EX600-SEN7/8

# EX600 Series

## Specifications



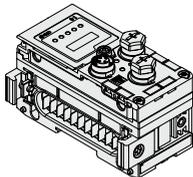
EX600-SEC3/4

### SI Unit (EX600-SEC□) EtherCAT

| Model   |                     | EX600-SEC3   | EX600-SEC4                 |
|---|---------------------|--|----------------------------|
| Communication   | Protocol            | EtherCAT (Conformance Test Record V.2.3.0)                               |                            |
|   | Communication speed | 100 Mbps   |                            |
|   | Configuration file  | XML file*1   |                            |
|   | Web server function | ●  |                            |
|   | IO-Link unit        | ●  |                            |
| 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 (8/16/24/32 outputs selectable)                               |                            |
|   | 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/UKCA marking, UL (CSA)  |                            |
| Weight  |                     | 300 g  |                            |

\*1 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

\* The occupation area (number of points) varies depending on the type of units and number of stations to be connected.



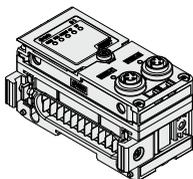
EX600-SPN1/2

### SI Unit (EX600-SPN□) PROFINET

| Model   |   | EX600-SPN1   | EX600-SPN2                 | EX600-SPN3                        | EX600-SPN4                 |
|---|---|--|----------------------------|-----------------------------------|----------------------------|
| Communication   | Protocol                                      | PROFINET IO (Conformance Class B)  |                            | PROFINET IO (Conformance Class C) |                            |
|   | Communication speed                           | 100 Mbps   |                            |                                   |                            |
|   | Configuration file                            | GSDML file*2   |                            |                                   |                            |
|   | Fast Start Up (Communication connection time) | ● (Approx. 2 s)  |                            | ● (Approx. 500 ms)                |                            |
|   | MRP   | —  |                            | ●                                 |                            |
|   | System Redundancy S2                          | —  |                            | ●                                 |                            |
| IO-Link unit  | Web server function                           | —  |                            | ●                                 |                            |
|   | IO-Link unit                                  | —  |                            | ●                                 |                            |
| Internal current consumption (Power supply for Control/Input) |   | 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   |                            |                                   |                            |
|   | Load  | Solenoid valve with surge voltage suppressor 24 VDC, 1.0 W or less (SMC) |                            |                                   |                            |
|   | Fail safe                                     | HOLD/CLEAR/Forced power ON   |                            |                                   |                            |
|   | Protection                                    | Short-circuit protection   |                            |                                   |                            |
|   | Enclosure                                     | IP67 (Manifold assembly)   |                            |                                   |                            |
| Standards   |   | CE/UKCA marking, UL (CSA)  |                            |                                   |                            |
| Weight  |   | 300 g  |                            |                                   |                            |

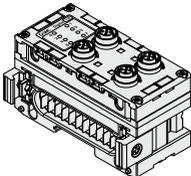
\*2 The configuration file can be downloaded from the SMC website: <https://www.smcworld.com>

\* The occupation area (number of points) varies depending on the type of units and number of stations to be connected.

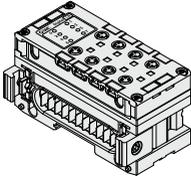


EX600-SPN3/4

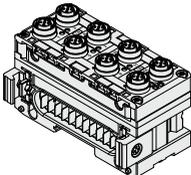
## Specifications



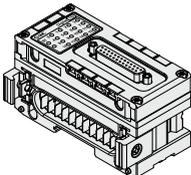
EX600-DX□B



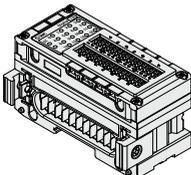
EX600-DX□C1



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<br>2 A/Unit   |            | 0.25 A/Connector<br>2 A/Unit |                    | 0.5 A/Connector<br>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)<br>(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)<br>(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/UKCA marking, UL (CSA)   |            |                              |                    |                                |            |  |
| Weight | 300 g                          |   | 275 g      |                              | 340 g              |                                |            |  |

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

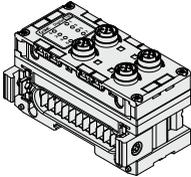
\*2 Function only applies to the EX600-DX□C1.

\*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.

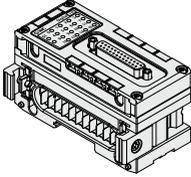
| Model |                           | EX600-DXPE  | EX600-DXNE | EX600-DXPF                                | EX600-DXNF                      |  |
|-------|---------------------------|---|------------|---|---------------------------------|--|
| Input | Input type                | PNP   | NPN        | PNP                                       | NPN                             |  |
|       | Input connector           | D-sub socket (25 pins)<br>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<br>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)<br>(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)<br>(At PNP input, between the pin for input terminal and supplied voltage of 0 V)  |            |   |                                 |  |
|       | Applicable wire           | —   |            | 0.08 to 1.5 mm <sup>2</sup> (AWG16 to 28) |                                 |  |
|       | Current consumption       | 50 mA or less   |            |   | 55 mA or less                   |  |
|       | Enclosure                 | IP40 (Manifold assembly)  |            |   |                                 |  |
|       | Standards                 | CE/UKCA marking, UL (CSA)   |            |   |                                 |  |
|       | Weight                    | 300 g   |            |   |                                 |  |

# EX600 Series

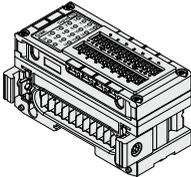
## Specifications



EX600-DY□B



EX600-DY□E  
EX600-DM□E



EX600-DY□F  
EX600-DM□F

### Digital Output Unit

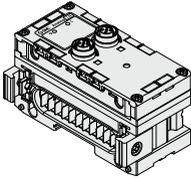
| Model               |                             | EX600-DYPB                      | EX600-DYNB | EX600-DYPE  | EX600-DYNE                                   | EX600-DYPF                              | EX600-DYNF |
|---------------------|-----------------------------|---------------------------------|------------|---|--|---|------------|
| Output              | Output type                 | PNP                             | NPN        | PNP   | NPN  | PNP                                     | NPN        |
|                     | Output connector            | M12 (5-pin) socket*1            |            | D-sub socket (25 pins)<br>Lock screw: No.4-40 UNC |  | Spring type terminal block<br>(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<br>2 A/Unit        |            |   |  |   |            |
|                     | Protection                  | Short-circuit protection        |            |   |  |   |            |
| Applicable wire     | —                           |                                 | —          |   | 0.08 to 1.5 mm <sup>2</sup><br>(AWG16 to 28) |   |            |
| Current consumption | 50 mA or less               |                                 |            |   |  |   |            |
| Enclosure           | IP67<br>(Manifold assembly) |                                 |            | IP40<br>(Manifold assembly)                       |  |   |            |
| Standards           | CE/UKCA marking, UL (CSA)   |                                 |            |   |  |   |            |
| 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)<br>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<br>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)<br>(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)<br>(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<br>2 A/Unit  |            |   |            |
|                     | Protection   | Short-circuit protection  |            |   |            |
|                     | Applicable wire  | —   |            | 0.08 to 1.5 mm <sup>2</sup> (AWG16 to 28) |            |
| Current consumption | 50 mA or less  |   |            | 60 mA or less                             |            |
| Enclosure           | IP40 (Manifold assembly)   |   |            |   |            |
| Standards           | CE/UKCA marking, UL (CSA)  |   |            |   |            |
| Weight              | 300 g  |   |            |   |            |

## Specifications



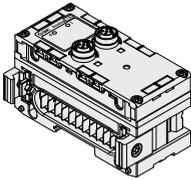
EX600-AXA

### 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/UKCA marking, UL (CSA) |                                  |                               |                        |
| 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

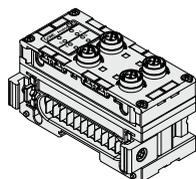
### Analog Output Unit

| 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/UKCA marking, UL (CSA)        |                               |                        |
| Weight | 290 g                    |                                  |                               |                        |

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

# EX600 Series

## Specifications



EX600-AMB

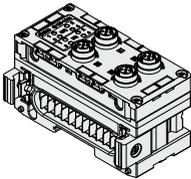
### Analog Input/Output Unit

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

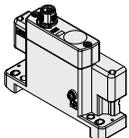
## Specifications



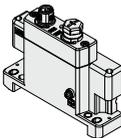
EX600-L□B1

### IO-Link Unit

| Model                         |                              | EX600-LAB1   | EX600-LBB1                 |
|-------------------------------|------------------------------|--|----------------------------|
| IO-Link version               |                              | Version 1.1  |                            |
| IO-Link port class            |                              | Class A  | Class B                    |
| Communication speed           |                              | COM1 (4.8 kBaud)<br>COM2 (38.4 kBaud)<br>COM3 (230.4 kBaud)<br>* Changes automatically according to the connected device |                            |
| Number of IO-Link ports       |                              | 4  |                            |
| Compatible SI unit (Protocol) |                              | EX600-SEN7/8 (EtherNet/IP™)<br>EX600-SPN3/4 (PROFINET)<br>EX600-SEC3/4 (EtherCAT)  |                            |
| Max. supply current           | Device power supply (L+)     | 0.5 A/Connector (2 A/Unit)   | 0.5 A/Connector (1 A/Unit) |
|                               | External power supply (P24)  | —  | 1.6 A/Connector (3 A/Unit) |
| Input                         | Pin no.                      | 2  | 4                          |
|                               | Input type                   | PNP  |                            |
|                               | Protection                   | Short-circuit protection   |                            |
|                               | Rated input current          | Approx. 2.5 mA   | Approx. 5.8 mA             |
|                               | ON voltage                   | 13 V or more   |                            |
| Output                        | OFF voltage                  | 8 V or less  |                            |
|                               | Pin no.                      | 4  |                            |
|                               | Output type                  | PNP  |                            |
|                               | Max. load current (C/Q line) | 0.25 A/Output<br>(Supplied from the power supply for control/input)  |                            |
|                               | Protection                   | Short-circuit protection   |                            |
| Current consumption           |                              | 50 mA or less  |                            |
| Enclosure                     |                              | IP67 (Manifold assembly)   |                            |
| Standards                     |                              | CE/UKCA marking, UL (CSA)  |                            |
| Weight                        |                              | 320 g  |                            |



EX600-ED2□



EX600-ED4/5□



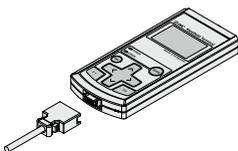
EX600-ED3□

### End Plate

| Model                |                                | EX600-ED2□                     | EX600-ED3□            | EX600-ED4/5□       |  |
|----------------------|--------------------------------|--------------------------------|-----------------------|--------------------|--|
| Power specifications | PWR IN                         | M12 (5-pin) plug               | 7/8 inch (5-pin) plug | M12 (4-pin) plug   |  |
|                      | PWR OUT                        | —                              | —                     | M12 (5-pin) socket |  |
|                      | 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*1          |                                | CE/UKCA marking, UL (CSA)      |                       |                    |  |
| Weight               |                                | 170 g                          | 175 g                 | 170 g              |  |

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

### Handheld Terminal



EX600-HT1A□

| 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<br>(1 m ... EX600-AC010-1, 3 m ... EX600-AC030-1) |
| Enclosure           | IP20  |
| Standards*1         | CE/UKCA marking   |
| Weight              | 160 g   |

\*1 The handheld terminal is not compliant with UL (CSA) standards.

\* Cannot be used with the EX600-SEN7/8, EX600-SPN3/4, EX600-SEC3/4, and EX600-L□B1

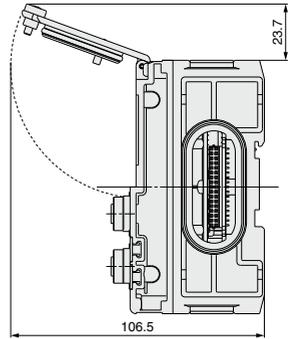
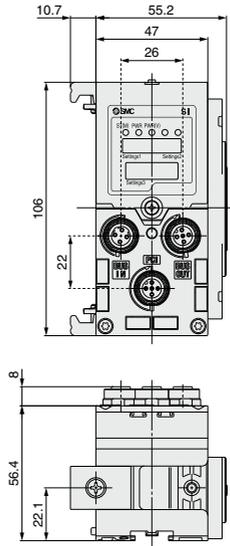
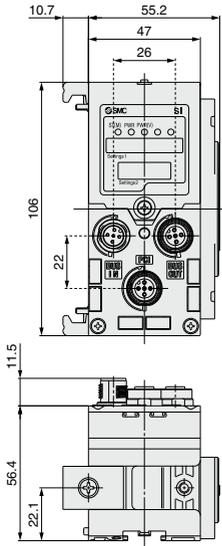
# EX600 Series

## Dimensions

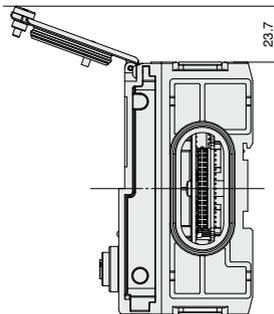
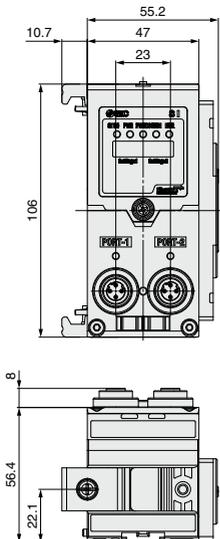
### SI Unit

EX600-SPR□A  
EX600-SDN□A  
EX600-SMJ□

EX600-SEN3/4  
EX600-SPN1/2



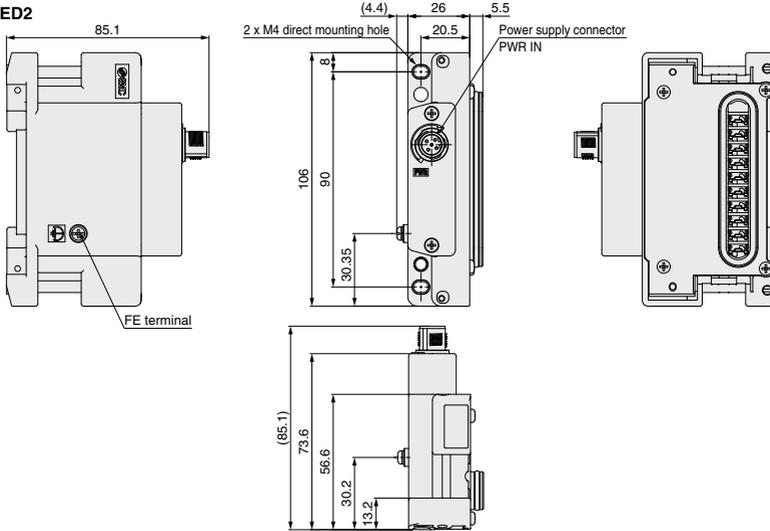
EX600-SEN7/8  
EX600-SPN3/4  
EX600-SEC3/4



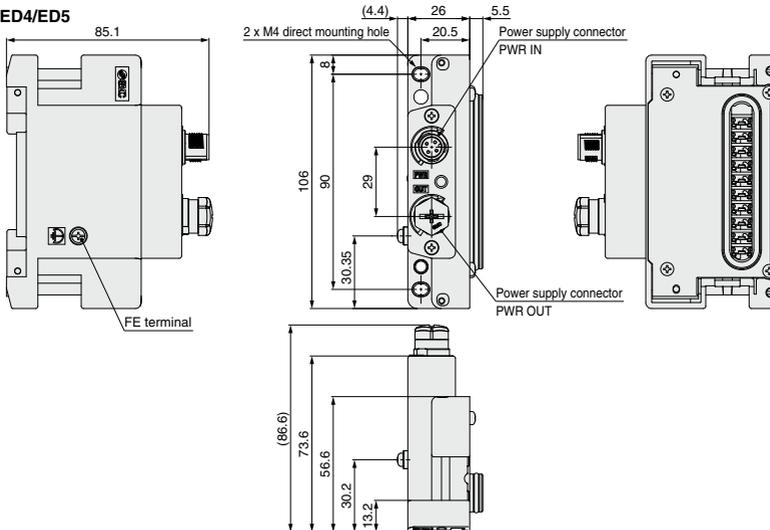
## Dimensions

### End Plate (D side)

#### EX600-ED2



#### EX600-ED4/ED5



#### 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 | 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

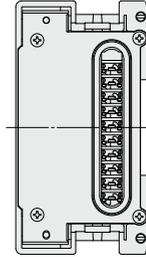
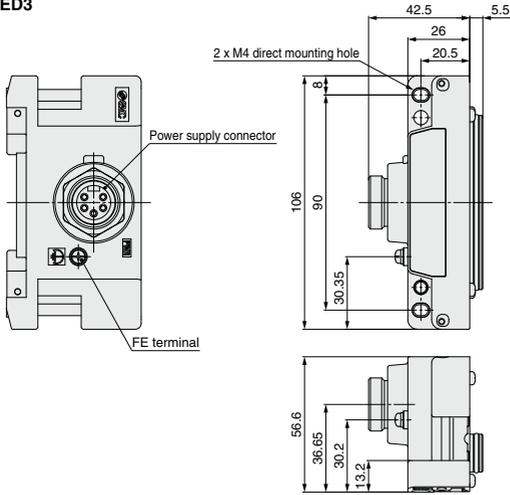
| Configuration | Pin no. | Description              | Pin no. | Description              |
|---------------|---------|--------------------------|---------|--------------------------|
|               | 1       | 24 V (for control/input) | 1       | 24 V (for output)        |
|               | 2       | 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                   |

# EX600 Series

## Dimensions

### End Plate (D side)

EX600-ED3



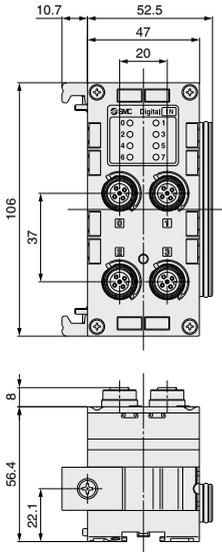
#### Power supply connector PWR: 7/8 inch 5-pin plug

| 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)        |

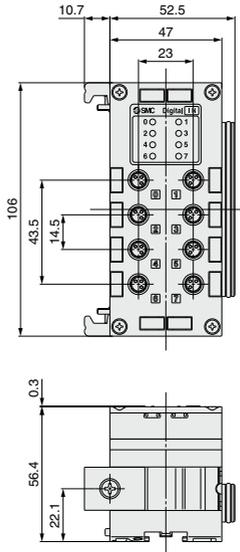
## Dimensions

### Digital Unit

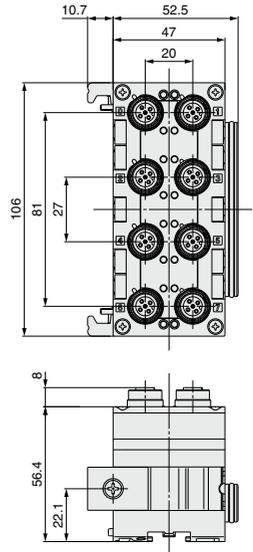
**EX600-DX□B**  
**EX600-DY□B**



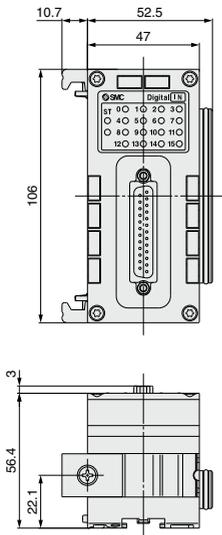
**EX600-DX□C**



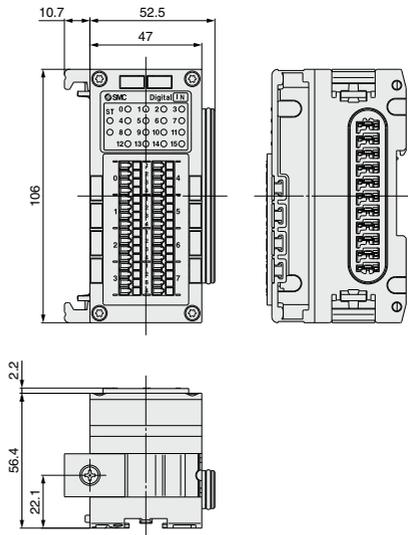
**EX600-DX□D**



**EX600-DX□E**  
**EX600-DY□E**  
**EX600-DM□E**



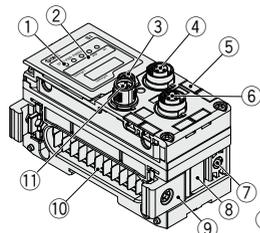
**EX600-DX□F**  
**EX600-DY□F**  
**EX600-DM□F**



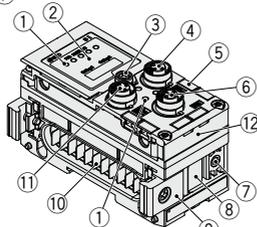


## Parts Description

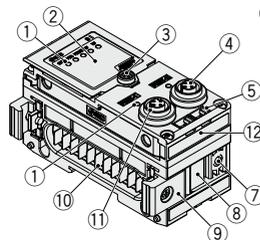
### SI Unit



EX600-SPR□A  
EX600-SMJ□  
EX600-SDN□A



EX600-SEN3/4  
EX600-SPN1/2



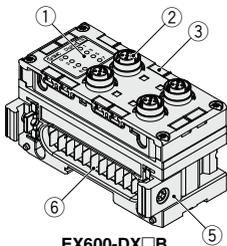
EX600-SEN7/8  
EX600-SPN3/4  
EX600-SEC3/4



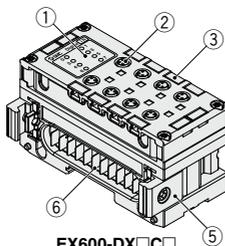
| No. | Name                        | Use   |
|-----|-----------------------------|---|
| 1   | Status indication LED       | Displays unit status  |
| 2   | Indication cover            | Open for setting the switch.  |
| 3   | Indication cover set screw  | Loosen for opening the indication cover.                            |
| 4   | Connector (BUS OUT)         | Connects to the fieldbus output cable (SPEEDCON)*1                  |
| 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)*1               |
| 12  | MAC address name plate      | 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 The EX600-SEN7/8, EX600-SPN3/4, and EX600-SEC3/4 are not SPEEDCON compatible.

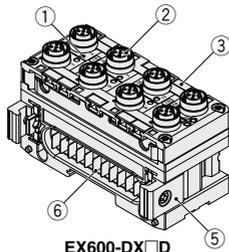
### Digital Unit



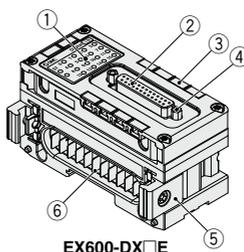
EX600-DX□B  
EX600-DY□B



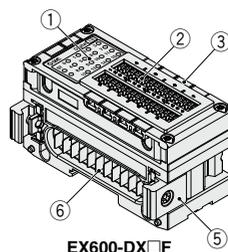
EX600-DX□C□



EX600-DX□D



EX600-DX□E  
EX600-DY□E  
EX600-DM□E



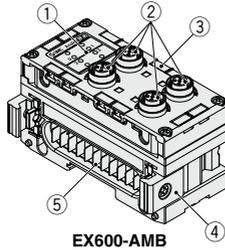
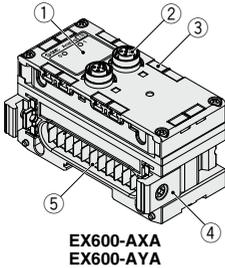
EX600-DX□F  
EX600-DY□F  
EX600-DM□F

| 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□□ 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  |

# EX600 Series

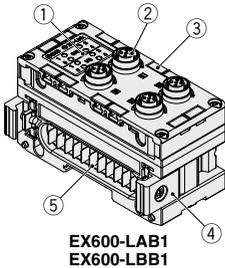
## Parts Description

### Analog Unit



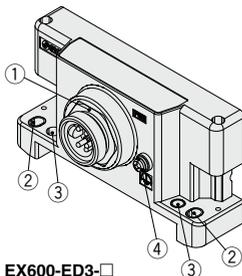
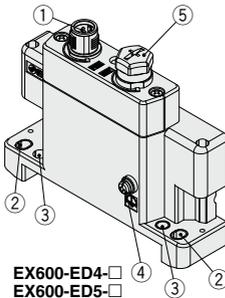
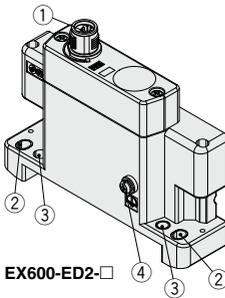
| No. | Name                             | Use  |
|-----|----------------------------------|--|
| 1   | <b>Status indication LED</b>     | Displays unit status   |
| 2   | <b>Connector</b>                 | Connects with input or output devices (SPEEDCON)             |
| 3   | <b>Marker groove</b>  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

### IO-Link Unit



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

### End Plate

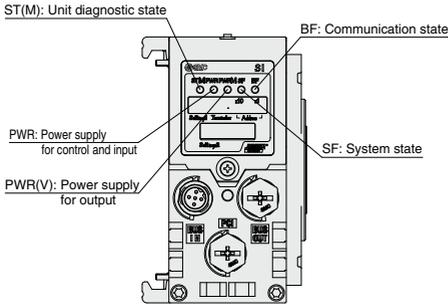


| No. | Name  | Use  |
|-----|---|--|
| 1   | <b>Power connector (PWR IN)</b>                         | Supplies power to the unit and/or input/output device (Only the EX600-ED2/ED4/ED5-□ is SPEEDCON compatible.) |
| 2   | <b>Fixing hole for direct mounting</b>                  | Connects directly to equipment   |
| 3   | <b>Fixing hole for DIN rail</b>                         | Converts to manifold or for DIN rail mounting  |
| 4   | <b>FE terminal</b>                                      | Used for grounding<br>Ground this terminal securely to improve noise immunity.                               |
| 5   | <b>Connector (Unused)<br/>Power connector (PWR OUT)</b> | Supplies power to the device on the downstream side  |

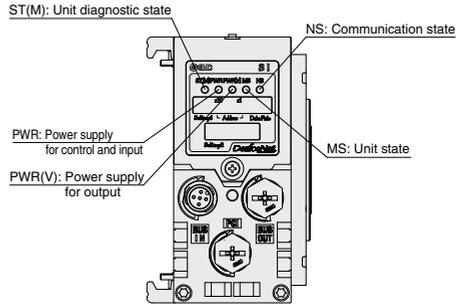
EX600-ED3-□

**LED Indicator**

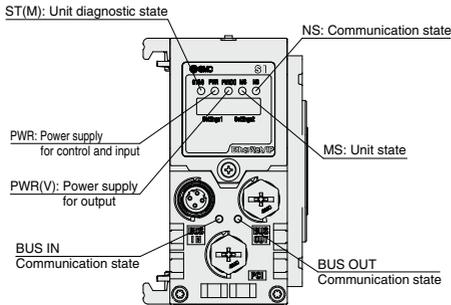
**EX600-SPR□□A**



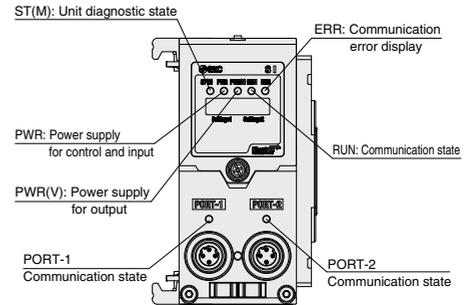
**EX600-SDN□□A**



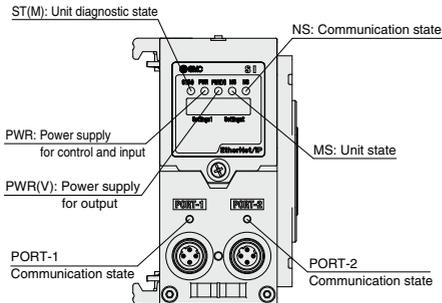
**EX600-SEN3/SEN4**



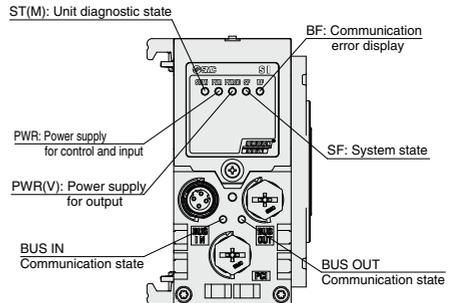
**EX600-SEC□**



**EX600-SEN7/SEN8**



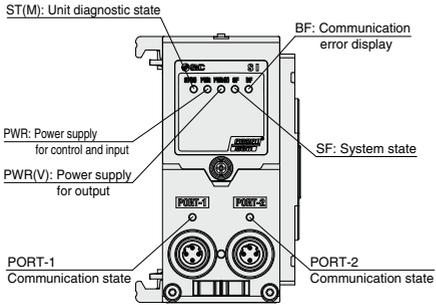
**EX600-SPN1/SPN2**



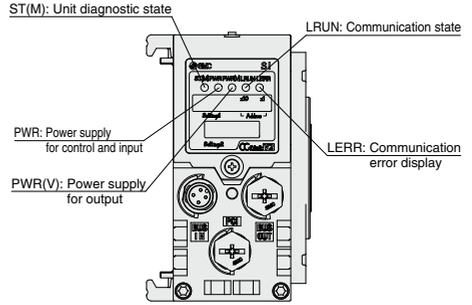
# EX600 Series

## LED Indicator

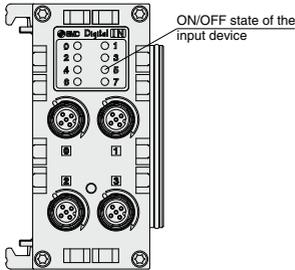
### EX600-SPN3/SPN4



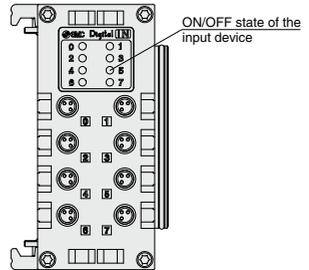
### EX600-SMJ□



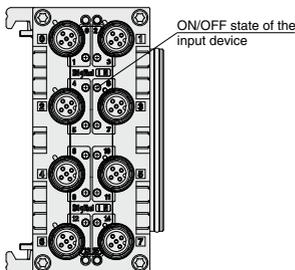
### EX600-DX□B



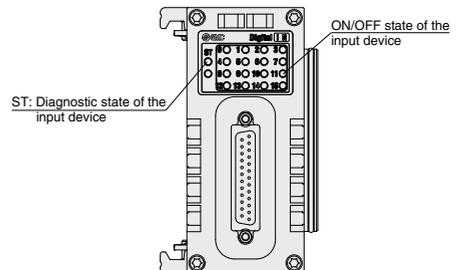
### EX600-DX□C□



### EX600-DX□D

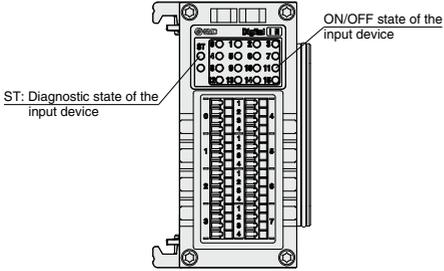


### EX600-DX□E

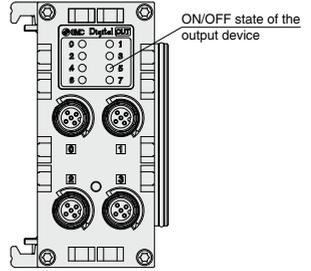


**LED Indicator**

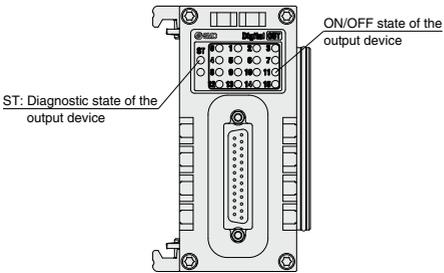
**EX600-DX□F**



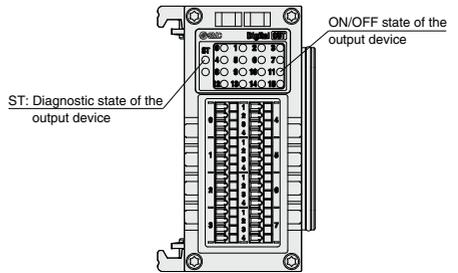
**EX600-DY□B**



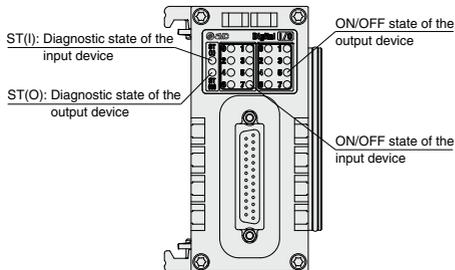
**EX600-DY□E**



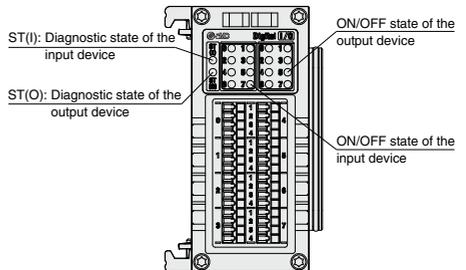
**EX600-DY□F**



**EX600-DM□E**



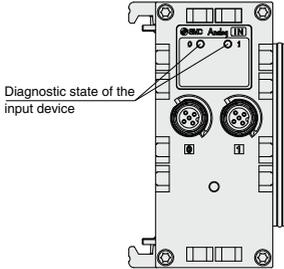
**EX600-DM□F**



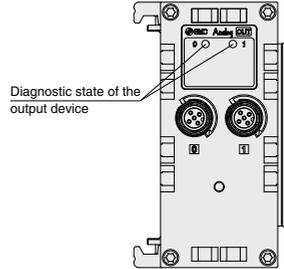
# EX600 Series

## LED Indicator

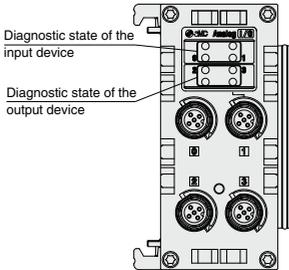
### EX600-AXA



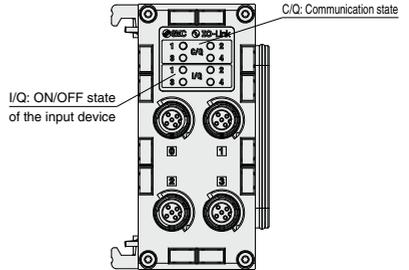
### EX600-AYA



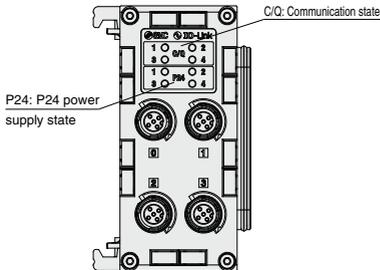
### EX600-AMB



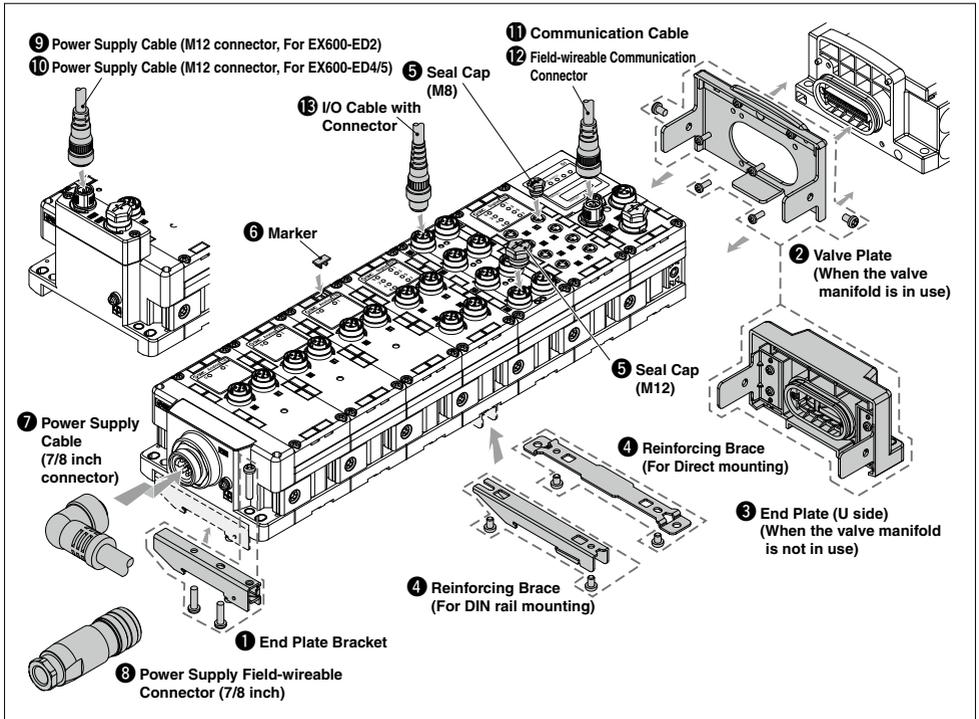
### EX600-LAB1



### EX600-LBB1



# EX600 Series Accessories



## 1 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

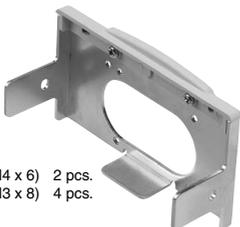
(Specialized for SY series)

#### Enclosed parts

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

## 2 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) 2 pcs.

# EX600 Series

## ③ 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                       | Note            |
|----------|-----------------------------------|-----------------|
| Nil      | Without DIN rail mounting bracket | —               |
| <b>2</b> | With DIN rail mounting bracket    | For EX600-ED□-2 |
| <b>3</b> | With DIN rail mounting bracket    | For EX600-ED□-3 |

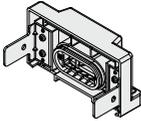
\* Select in accordance with the symbol for the end plate (D side) mounting method.

### ● Specification

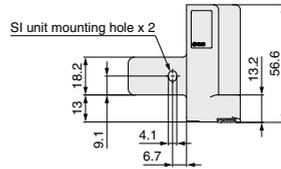
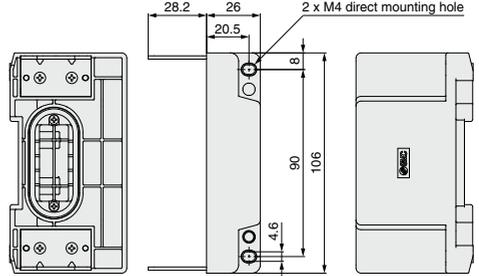
| Symbol   | Specification    |
|----------|------------------|
| <b>1</b> | Waterproof cover |

● End plate mounting position: U side

● End plate



EX600-EU1



### Enclosed parts

Round head screw (M4 x 5) 2 pcs.

## ④ 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.

## ⑤ 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



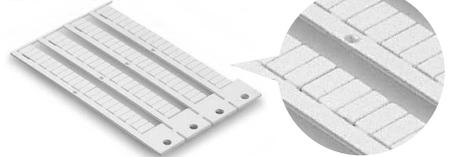
EX9-AWTS  
For M12



## ⑥ 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





# EX600 Series

## ⑩ Power Supply Cable (M12 connector, For EX600-ED4/5) \* The shape of the M12 connector is A-coded (Normal key).

### EX500-AP 050 - S

#### Cable length (L)

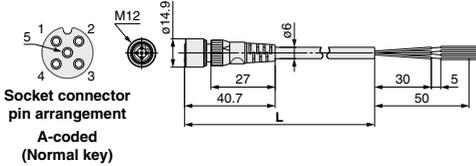
|     |         |
|-----|---------|
| 010 | 1000 mm |
| 050 | 5000 mm |

#### Connector specification

|   |          |
|---|----------|
| S | Straight |
| A | Angled   |

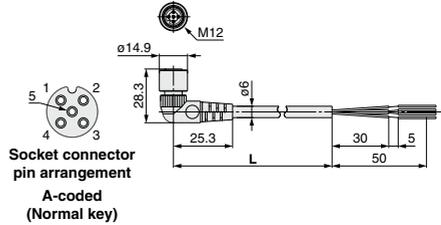


#### Straight connector type

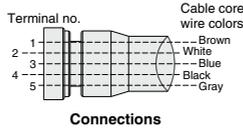


| Item                                | Specifications             |
|-------------------------------------|----------------------------|
| Cable O.D.                          | ø6 mm                      |
| Nominal cross section               | 0.3 mm <sup>2</sup> /AWG22 |
| Wire diameter (including insulator) | 1.5 mm                     |
| Min. bending radius                 | 40 mm (Fixed)              |

#### Angled connector type



| Item                                | Specifications             |
|-------------------------------------|----------------------------|
| Cable O.D.                          | ø6 mm                      |
| Nominal cross section               | 0.3 mm <sup>2</sup> /AWG22 |
| Wire diameter (including insulator) | 1.5 mm                     |
| Min. bending radius                 | 40 mm (Fixed)              |

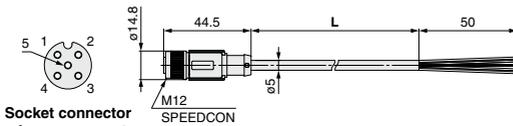


### SPEEDCON

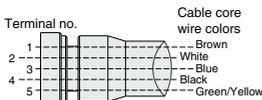
#### PCA-1401804

#### Cable length (L)

|         |         |
|---------|---------|
| 1401804 | 1500 mm |
| 1401805 | 3000 mm |
| 1401806 | 5000 mm |



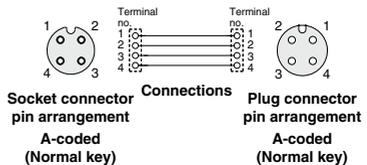
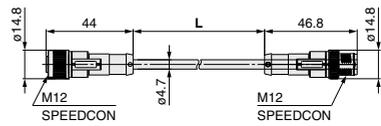
| Item                                | Specifications             |
|-------------------------------------|----------------------------|
| Cable O.D.                          | ø5 mm                      |
| Nominal cross section               | 0.3 mm <sup>2</sup> /AWG22 |
| Wire diameter (including insulator) | 1.27 mm                    |
| Min. bending radius                 | 21.7 mm (Fixed)            |



#### PCA-1557769

#### Cable length (L)

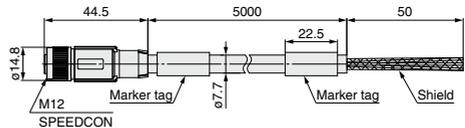
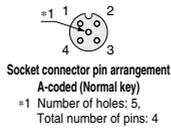
|         |         |
|---------|---------|
| 1557769 | 3000 mm |
|---------|---------|



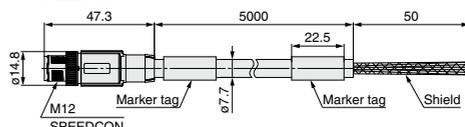
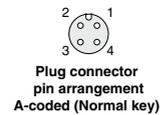
**II Communication Cable**

**For CC-Link**

**PCA-1567720**  
(Socket)

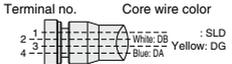


**PCA-1567717**  
(Plug)



**Made to Order**

|              |          |         |
|--------------|----------|---------|
| Cable length | 10000 mm | p. 1439 |
|--------------|----------|---------|



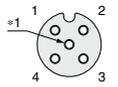
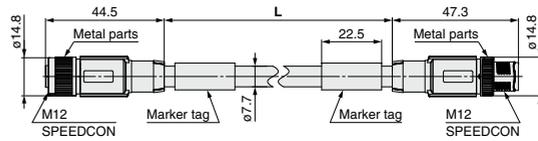
**Connections**

| Item                                   |                  | Specifications              |
|--|------------------|-----------------------------|
| <b>Cable O.D.</b>                      |                  | ø7.7 mm                     |
| <b>Conductor nominal cross section</b> | <b>Data pair</b> | 0.5 mm <sup>2</sup> /AWG20  |
|  | <b>Drain</b>     | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> |                  | 2.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     |                  | 77 mm                       |

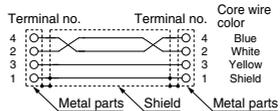
**EX9-AC 005 MJ-SSPS (With connector on both sides (Socket/Plug))**

**Cable length (L)**

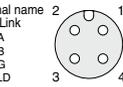
|            |          |
|------------|----------|
| <b>005</b> | 500 mm   |
| <b>010</b> | 1000 mm  |
| <b>020</b> | 2000 mm  |
| <b>030</b> | 3000 mm  |
| <b>050</b> | 5000 mm  |
| <b>100</b> | 10000 mm |



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



**Connections**



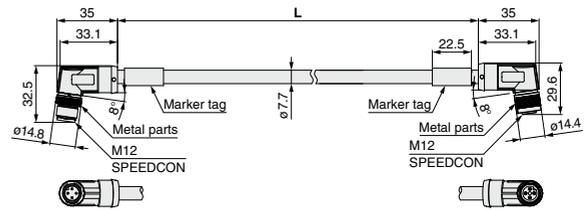
**Plug connector pin arrangement A-coded (Normal key)**

| Item                                   |                  | Specifications              |
|--|------------------|-----------------------------|
| <b>Cable O.D.</b>                      |                  | ø7.7 mm                     |
| <b>Conductor nominal cross section</b> | <b>Data pair</b> | 0.5 mm <sup>2</sup> /AWG20  |
|  | <b>Drain</b>     | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> |                  | 2.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     |                  | 77 mm                       |

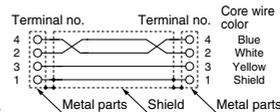
**EX9-AC 005 MJ-SAPA (With angled connector on both sides (Socket/Plug))**

**Cable length (L)**

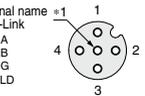
|            |          |
|------------|----------|
| <b>005</b> | 500 mm   |
| <b>010</b> | 1000 mm  |
| <b>020</b> | 2000 mm  |
| <b>030</b> | 3000 mm  |
| <b>050</b> | 5000 mm  |
| <b>100</b> | 10000 mm |



**Plug connector pin arrangement A-coded (Normal key)**



**Connections**



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

| Item                                   |                  | Specifications              |
|--|------------------|-----------------------------|
| <b>Cable O.D.</b>                      |                  | ø7.7 mm                     |
| <b>Conductor nominal cross section</b> | <b>Data pair</b> | 0.5 mm <sup>2</sup> /AWG20  |
|  | <b>Drain</b>     | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> |                  | 2.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     |                  | 77 mm                       |

# EX600 Series

## Communication Cable

For DeviceNet®

PCA-1557633  
(Socket)

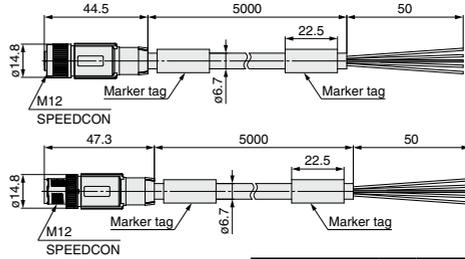


Socket connector pin arrangement A-coded (Normal key)

PCA-1557646  
(Plug)

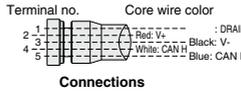


Plug connector pin arrangement A-coded (Normal key)



Made to Order

|              |          |         |
|--------------|----------|---------|
| Cable length | 10000 mm | p. 1439 |
|--------------|----------|---------|

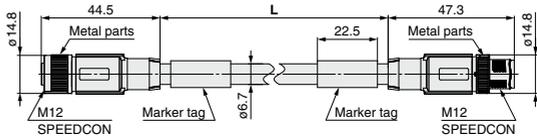


| Item                            | Specifications                         |
|---------------------------------|--|
| Cable O.D.                      | ø6.7 mm                                |
| Conductor nominal cross section | Power pair 0.34 mm <sup>2</sup> /AWG22 |
|                                 | Data pair 0.25 mm <sup>2</sup> /AWG24  |
| Wire O.D. (Including insulator) | Power pair 1.4 mm                      |
|                                 | Data pair 1.95 mm                      |
| Min. bending radius (Fixed)     | 67 mm                                  |

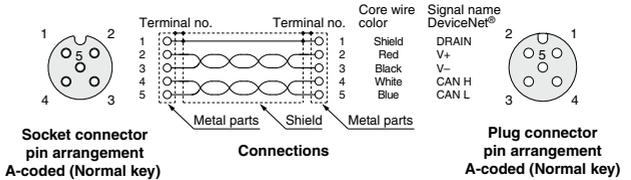
### EX9-AC [005] DN-SSPS (With connector on both sides (Socket/Plug))

• Cable length (L)

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



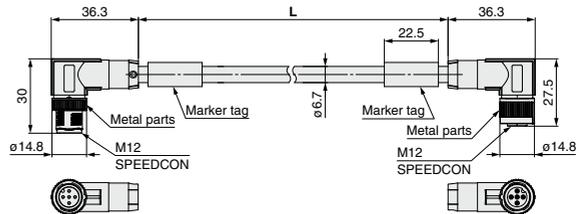
| Item                            | Specifications                         |
|---------------------------------|--|
| Cable O.D.                      | ø6.7 mm                                |
| Conductor nominal cross section | Power pair 0.34 mm <sup>2</sup> /AWG22 |
|                                 | Data pair 0.25 mm <sup>2</sup> /AWG24  |
| Wire O.D. (Including insulator) | Power pair 1.4 mm                      |
|                                 | Data pair 1.95 mm                      |
| Min. bending radius (Fixed)     | 67 mm                                  |



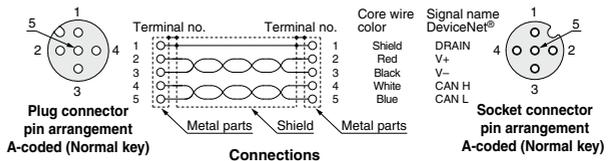
### EX9-AC [005] DN-SAPA (With angled connector on both sides (Socket/Plug))

• Cable length (L)

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



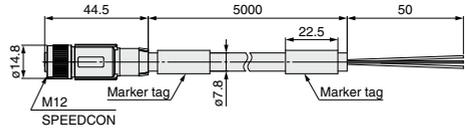
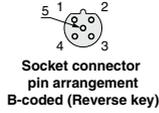
| Item                            | Specifications                         |
|---------------------------------|--|
| Cable O.D.                      | ø6.7 mm                                |
| Conductor nominal cross section | Power pair 0.34 mm <sup>2</sup> /AWG22 |
|                                 | Data pair 0.25 mm <sup>2</sup> /AWG24  |
| Wire O.D. (Including insulator) | Power pair 1.4 mm                      |
|                                 | Data pair 1.95 mm                      |
| Min. bending radius (Fixed)     | 67 mm                                  |



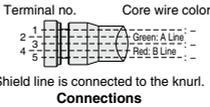
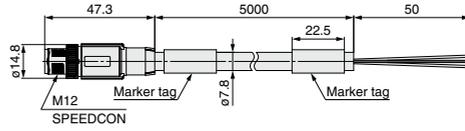
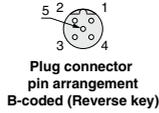
**Communication Cable**

**For PROFIBUS DP**

**PCA-1557688**  
(Socket)



**PCA-1557691**  
(Plug)



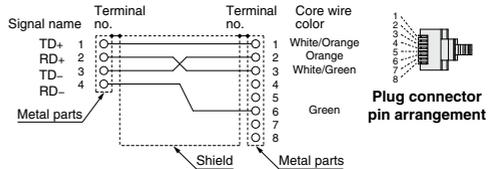
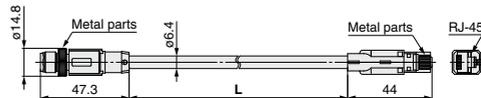
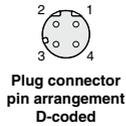
| Item                                   | Specifications              |
|--|-----------------------------|
| <b>Cable O.D.</b>                      | ø7.8 mm                     |
| <b>Conductor nominal cross section</b> | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> | 2.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     | 78 mm                       |

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

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

• Cable length (L)

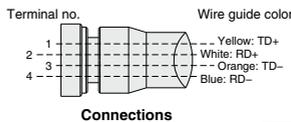
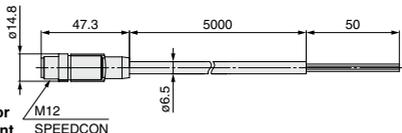
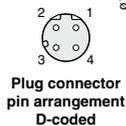
|            |          |
|------------|----------|
| <b>010</b> | 1000 mm  |
| <b>020</b> | 2000 mm  |
| <b>030</b> | 3000 mm  |
| <b>050</b> | 5000 mm  |
| <b>100</b> | 10000 mm |



**Connections (Straight cable)**

| Item                                   | Specifications              |
|--|-----------------------------|
| <b>Cable O.D.</b>                      | ø6.4 mm                     |
| <b>Conductor nominal cross section</b> | 0.14 mm <sup>2</sup> /AWG26 |
| <b>Wire O.D. (Including insulator)</b> | 0.98 mm                     |
| <b>Min. bending radius (Fixed)</b>     | 26 mm                       |

**PCA-1446566 (Plug)**



| Item                                   | Specifications |
|--|----------------|
| <b>Cable O.D.</b>                      | ø6.5 mm        |
| <b>Conductor nominal cross section</b> | AWG22          |
| <b>Wire O.D. (Including insulator)</b> | 1.55 mm        |
| <b>Min. bending radius (Fixed)</b>     | 45.5 mm        |

# EX600 Series

## Communication Cable

For EtherCAT®

For PROFINET

For EtherNet/IP™

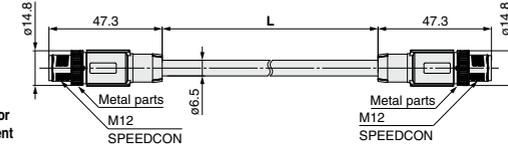
### EX9-AC 005 EN-PSPS (With connector on both sides (Plug/Plug))

#### Cable length (L)

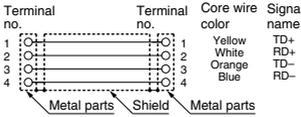
|     |          |
|-----|----------|
| 005 | 500 mm   |
| 010 | 1000 mm  |
| 020 | 2000 mm  |
| 030 | 3000 mm  |
| 050 | 5000 mm  |
| 100 | 10000 mm |



Plug connector pin arrangement D-coded



Plug connector pin arrangement D-coded



Connections (Straight cable)

| Item                                   | Specifications              |
|--|-----------------------------|
| <b>Cable O.D.</b>                      | ø6.5 mm                     |
| <b>Conductor nominal cross section</b> | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> | 1.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     | 19.5 mm                     |

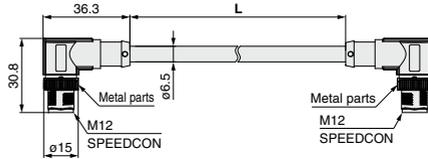
### EX9-AC 005 EN-PAPA (With angled connector on both sides (Plug/Plug))

#### Cable length (L)

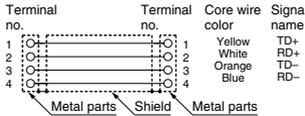
|     |          |
|-----|----------|
| 005 | 500 mm   |
| 010 | 1000 mm  |
| 020 | 2000 mm  |
| 030 | 3000 mm  |
| 050 | 5000 mm  |
| 100 | 10000 mm |



Plug connector pin arrangement D-coded



Plug connector pin arrangement D-coded



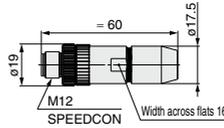
Connections (Straight cable)

| Item                                   | Specifications              |
|--|-----------------------------|
| <b>Cable O.D.</b>                      | ø6.5 mm                     |
| <b>Conductor nominal cross section</b> | 0.34 mm <sup>2</sup> /AWG22 |
| <b>Wire O.D. (Including insulator)</b> | 1.55 mm                     |
| <b>Min. bending radius (Fixed)</b>     | 19.5 mm                     |

**12 Field-wireable Communication Connector**

**Plug**

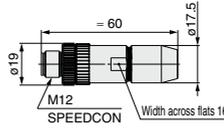
For CC-Link For DeviceNet®  
PCA-1075526 PCA-1075528



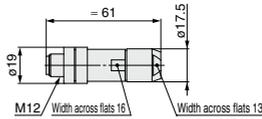
**Applicable Cable**

| Item                                     | Specifications  |
|--|---|
| Cable O.D.                               | 4.0 to 8.0 mm   |
| Wire gauge (Stranded wire cross section) | 0.14 to 0.75 mm <sup>2</sup> /AWG26 to 18 (Solid cable/Flexible cable)<br>0.08 to 0.5 mm <sup>2</sup> /AWG28 to 20 (With ferrule) |

For PROFIBUS DP  
PCA-1075530



For EtherCAT® For PROFINET For EtherNet/IP™  
PCA-1446553



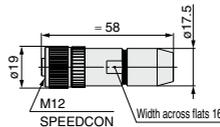
**Applicable Cable**

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

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

**Socket**

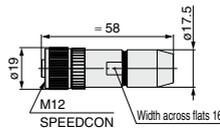
For CC-Link For DeviceNet®  
PCA-1075527 PCA-1075529



**Applicable Cable**

| Item                                     | Specifications  |
|--|---|
| Cable O.D.                               | 4.0 to 8.0 mm   |
| Wire gauge (Stranded wire cross section) | 0.14 to 0.75 mm <sup>2</sup> /AWG26 to 18 (Solid cable/Flexible cable)<br>0.08 to 0.5 mm <sup>2</sup> /AWG28 to 20 (With ferrule) |

For PROFIBUS DP  
PCA-1075531



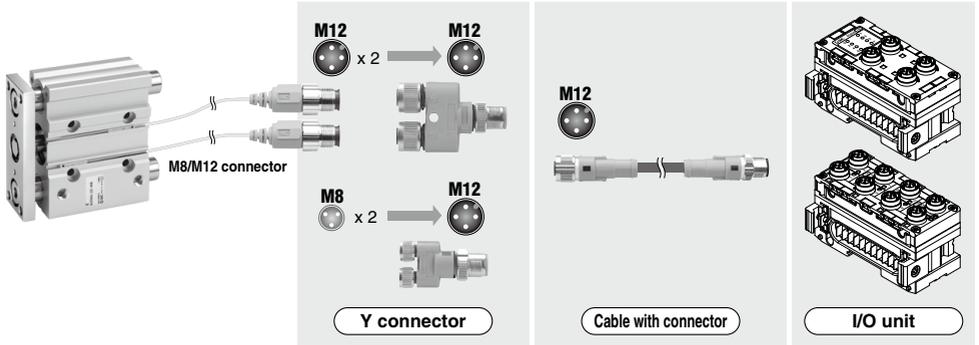
# EX600 Series

## I/O Cable with Connector, I/O Connector

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

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

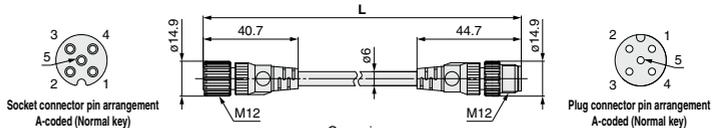


## For IO-Link Unit

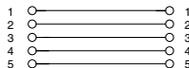
EX9-AC [005] -SSPS (With connector on both sides (Socket/Plug))

### Cable length (L)

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



### Terminal no.



### Connections

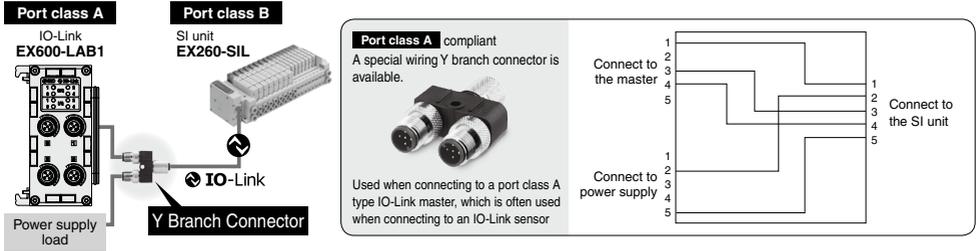
### Core wire color

|   |       |
|---|-------|
| 1 | Brown |
| 2 | White |
| 3 | Blue  |
| 4 | Black |
| 5 | Gray  |

| Item                            | Specifications             |
|---------------------------------|----------------------------|
| Cable O.D.                      | ø6 mm                      |
| Conductor nominal cross section | 0.3 mm <sup>2</sup> /AWG22 |
| Wire O.D. (including conductor) | 1.5 mm                     |
| Min. bending radius (Fixed)     | 40 mm                      |

**13 I/O Cable with Connector, I/O Connector**

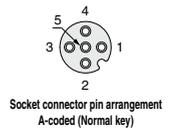
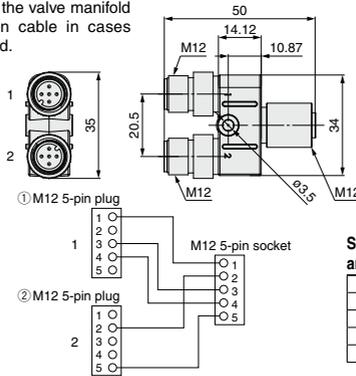
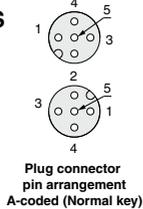
**Port Class B EX260-SIL SI Unit and Port Class A IO-Link Master Connection Example**



**Y Branch Connector for IO-Link**

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

**EX9-ACY02-S**

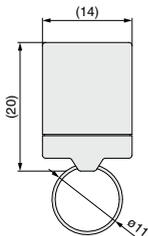


**Solenoid valve power supply cable side pin arrangement when using a branch connector**

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

**14 IO-Link Device Tool License Key**

USB dongle  
**EX9-ZSW-LDT1**



# EX600 Series

## Made to Order

Please contact SMC for detailed specifications and lead times.



### SI Unit

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

#### ① Ethernet POWERLINK compatible

##### EX600-SPL1-X26

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

#### ② Modbus/TCP compatible

##### EX600-SMT1-X25

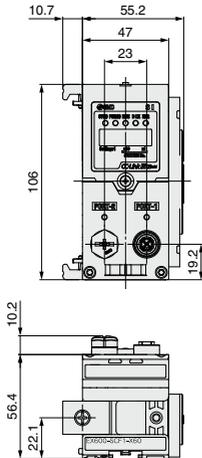
• Dimensions are the same as those of the EX600-SEN3.

#### ③ CC-Link IE Field compatible

##### EX600-SCF□1-X60

• Output polarity

|   |     |
|---|-----|
| 1 | PNP |
| 2 | NPN |



### EX600-SCF□-X60 Wiring Specifications

#### Communication connector PORT 1 & PORT 2

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+         |

Communication cable examples

[M12 connector — RJ45 connector]  
(made by PHOENIX CONTACT)

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)

(made by Mitsubishi Electric System & Service Co., Ltd.)

SC-E5EW-SX□<sup>①</sup>M (For indoor use)  
SC-E5EW-SX□<sup>②</sup>M-MV (For indoor moving parts)

\*1 The specified length (cable length) goes into the □. Units of 1 to 100 m/1 m

\*2 The specified length (cable length) goes into the □. Units of 1 to 45 m/1 m

[M12 connector — M12 connector]

(made by PHOENIX CONTACT)

NBC-MSX/1,0-94F/MSX SCO (Order No.1407483)(1 m)  
NBC-MSX/2,0-94F/MSX SCO (Order No.1407484)(2 m)  
NBC-MSX/5,0-94F/MSX SCO (Order No.1407485)(5 m)

(made by Mitsubishi Electric System & Service Co., Ltd.)

SC-E5EW-SX□<sup>①</sup>M (For indoor use)  
SC-E5EW-SX□<sup>②</sup>M-MV (For indoor moving parts)

\*1 The specified length (cable length) goes into the □. Units of 1 to 100 m/1 m

\*2 The specified length (cable length) goes into the □. Units of 1 to 45 m/1 m

#### ⚠ Caution

Communication cables need to be ordered directly from each company.

## Communication Cable

With connector on one side (Socket)

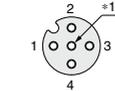
Cable length: 10000 mm

For CC-Link For DeviceNet®

EX9-AC100 MJ-X12

• Applicable protocol

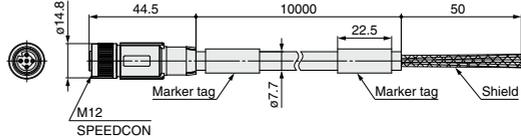
|    |            |
|----|------------|
| MJ | CC-Link    |
| DN | DeviceNet® |



Socket connector pin arrangement A-coded (Normal key)

### For CC-Link

#### Dimensions



#### Connections

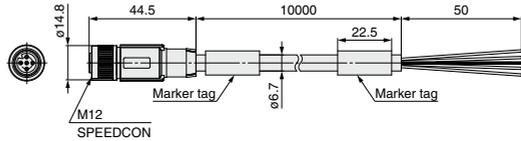
| Terminal no. | Core wire color: Signal name (CC-Link) |
|--------------|--|
| 1            | Shield: SLD                            |
| 2            | White: DB                              |
| 3            | Yellow: DG                             |
| 4            | Blue: DA                       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

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

| Item                                   | Specifications                       |
|--|--------------------------------------|
| <b>Cable O.D.</b>                      | ø7.7 mm                              |
| <b>Conductor nominal cross section</b> | Data pair 0.5 mm <sup>2</sup> /AWG20 |
|  | Drain 0.34 mm <sup>2</sup> /AWG22    |
| <b>Wire O.D. (including insulator)</b> | 2.55 mm                              |
| <b>Min. bending radius (Fixed)</b>     | 77 mm                                |

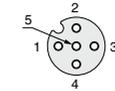
### For DeviceNet®

#### Dimensions



#### 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                               |



Socket connector pin arrangement A-coded (Normal key)

| Item                                   | Specifications                         |
|--|--|
| <b>Cable O.D.</b>                      | ø6.7 mm                                |
| <b>Conductor nominal cross section</b> | Power pair 0.34 mm <sup>2</sup> /AWG22 |
|  | Data pair 0.25 mm <sup>2</sup> /AWG24  |
| <b>Wire O.D. (including insulator)</b> | Power pair 1.4 mm                      |
|  | Data pair 2.05 mm                      |
| <b>Min. bending radius (Fixed)</b>     | 67 mm                                  |



# EX600 Series

## Specific Product Precautions

Be sure to read this before handling the products. Refer to page 7 for safety instructions and pages 15 to 17 for fieldbus system precautions.

### 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>

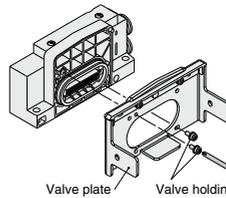
1. Do not apply pressure to the LCD.  
There is a possibility of the crack of LCD and injuring.
2. The forced input/output function is used to change the signal status forcibly. When operating this function, be sure to check the safety of the surroundings and installation.  
This may cause injuries or 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
  - VQC5000 series: 4 places
  - SY series: 2 places
  - JSY series: 2 places
  - ZK2□A series: 2 places

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