No.EX※※-OMS0027

Operation Manual

PRODUCT NAME

Fieldbus system
EtherNet/IP™ compatible SI Unit

MODEL / Series / Product Number

EX600-SEN3/4
EX600-ED#

SMC Corporation

Table of Contents

Safety Instructions 2
System Outline 8
Definition and terminology 9
Assembly 10
Mounting and Installation 12
Installation 12
Wiring 14
SI Unit
Model Indication and How to Order 15
Summary of Product parts 15
Mounting and Installation 16
Wiring 16
Setting and Adjustment 17
LED Display 21
Specification 25
Specifications 25
Dimensions 26
End Plate
Model Indication and How to Order 27
Summary of Product parts 27
Mounting and Installation 28
Wiring 28
Specification 29
Specifications 29
Dimensions 29
Maintenance 31
Troubleshooting 32
Parameter Setting 42
Parameter definition and setting 42
I/O Map 58
Diagnosis 62
Details of diagnostic data 63
Hardware Configuration 64
EDS file and icon 64
Setting using Logix Designer™ 64
Device Level Ring (DLR) function 69
QuickConnect™ function 69
EtherNet/IP™ Object 71
Web Server 77
Accessories 86

Safety Instructions

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

*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems.
ISO 4413: Hydraulic fluid power -- General rules relating to systems.
IEC 60204-1: Safety of machinery -- Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1992: Manipulating industrial robots -Safety.
etc.

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

⚠ Warning

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

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

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

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

⚠ Caution

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

Limited warranty and Disclaimer/Compliance Requirements

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

Limited warranty and Disclaimer

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

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

Compliance Requirements

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

Operator

- ♦This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ♦Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

■Safety Instructions

⚠Warning

■Do not disassemble, modify (including changing the printed circuit board) or repair.
An injury or failure can result.

■Do not operate or set with wet hands.
This may lead to an electric shock.

■Do not operate the product outside of the specifications.
Do not use for flammable or harmful fluids.
Fire, malfunction, or damage to the product can result.
Verify the specifications before use.

■Do not operate in an atmosphere containing flammable or explosive gases.
Fire or an explosion can result.
This product is not designed to be explosion proof.

■If using the product in an interlocking circuit:
•Provide a double interlocking system, for example a mechanical system.
•Check the product regularly for proper operation.
Otherwise malfunction can result, causing an accident.

■The following instructions must be followed during maintenance:
•Turn off the power supply.
•Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance.
Otherwise an injury can result.

⚠Caution

■When handling the unit or assembling/replacing units:
•Do not touch the sharp metal parts of the connector or plug for connecting units.
•Take care not to hit your hand when disassembling the unit.
The connecting portions of the unit are firmly joined with seals.
•When joining units, take care not to get fingers caught between units.
An injury can result.

■After maintenance is complete, perform appropriate functional inspections.
Stop operation if the equipment does not function properly.
Safety cannot be assured in the case of unexpected malfunction.

■Provide grounding to assure the safety and noise resistance of the Fieldbus system.
Individual grounding should be provided close to the product with a short cable.

■NOTE

○Follow the instructions given below when designing, selecting and handling the product.

●The instructions on design and selection (installation, wiring, environment, adjustment, operation, maintenance, etc.) described below must also be followed.

∗Product specifications

•The direct current power supply to combine should be UL1310 Class 2 power supply when conformity to UL is necessary.

•Use the specified voltage.
Otherwise failure or malfunction can result.

•Reserve a space for maintenance.
Allow sufficient space for maintenance when designing the system.

•Do not remove any nameplates or labels.
This can lead to incorrect maintenance, or misreading of the operation manual, which could cause damage or malfunction to the product.
It may also result in non-conformity to safety standards.

•Beware of inrush current when the power supply is turned on.
Some connected loads can apply an initial charge current which will activate the over current protection function, causing the unit to malfunction.

●Product handling

∗Installation

•Do not drop, hit or apply excessive shock to the SI unit.

Otherwise damage to the product can result, causing malfunction.

•Tighten to the specified tightening torque.

If the tightening torque is exceeded the mounting screws may be broken.

IP67 protection cannot be guaranteed if the screws are not tightened to the specified torque.

•If a large manifold valve is mounted, lift the unit so that stress is not applied to the connecting part while transporting.

The stress may cause breakage of the connecting part. The unit may become very heavy depending on the combination. Transportation/installation shall be performed by multiple operators.

•Never mount a product in a location that will be used as a foothold.

The product may be damaged if excessive force is applied by stepping or climbing onto it.

∗Wiring

•Avoid repeatedly bending or stretching the cables, or placing heavy load on them.

Repetitive bending stress or tensile stress can cause breakage of the cable.

•Wire correctly.

Incorrect wiring can break the product.

•Do not perform wiring while the power is on.

Otherwise damage to the SI unit and/or input or output device can result, causing malfunction.

•Do not route wires and cables together with power or high voltage cables.

Otherwise the SI unit and/or input or output device can malfunction due to interference of noise and surge voltage from power and high voltage cables to the signal line.

Route the wires (piping) of the SI unit and/or input or output device separately from power or high voltage cables.

•Confirm proper insulation of wiring.

Poor insulation (interference from another circuit, poor insulation between terminals, etc.) can lead to excess voltage or current being applied to the product, causing damage.

•Take appropriate measures against noise, such as using a noise filter, when the Fieldbus system is incorporated into equipment.

Otherwise noise can cause malfunction.

∗Environment

•Select the proper type of protection according to the environment of operation.

IP67 protection is achieved when the following conditions are met.

(1) The units are connected properly with fieldbus cable with M12 connector and power cable with M12 (M8) connector.

(2) Suitable mounting of each unit and manifold valve.

(3) Be sure to fit a waterproof cap on any unused connectors.

If using in an environment that is exposed to water splashes, please take measures such as using a cover.

Do not use in an environment where moisture or water vapor are present. Otherwise failure and malfunction can result.

•Do not use in a place where the product could be splashed by oil or chemicals.

If the product is to be used in an environment containing oils or chemicals such as coolant or cleaning solvent, even for a short time, it may be adversely affected (damage, malfunction etc.).

•Do not use the product in an environment where corrosive gases or fluids could be splashed.

Otherwise damage to the product and malfunction can result.

•Do not use in an area where surges are generated.

If there is equipment generating large surge near the unit (magnetic type lifter, high frequency inductive furnace, welding machine, motor, etc.), this can cause deterioration of the internal circuitry element of the unit or result in damage. Take measures against the surge sources, and prevent the lines from coming into close contact.

•When a surge-generating load such as a relay, valve or lamp is driven directly, use a product with a built-in surge absorbing element.
Direct drive of a load generating surge voltage can damage the unit.
•The product is CE marked, but not immune to lightning strikes. Take measures against lightning strikes in the system.
•Prevent foreign matter such as dust or wire debris from getting inside the product.
•Mount the product in a place that is not exposed to vibration or impact.
Otherwise failure or malfunction can result.
•Do not use the product in an environment that is exposed to temperature cycle.
Heat cycles other than ordinary changes in temperature can adversely affect the inside of the product.
•Do not expose the product to direct sunlight.
If using in a location directly exposed to sunlight, shade the product from the sunlight.
Otherwise failure or malfunction can result.
•Keep within the specified ambient temperature range.
Otherwise malfunction can result.
•Do not operate close to a heat source, or in a location exposed to radiant heat.
Otherwise malfunction can result.

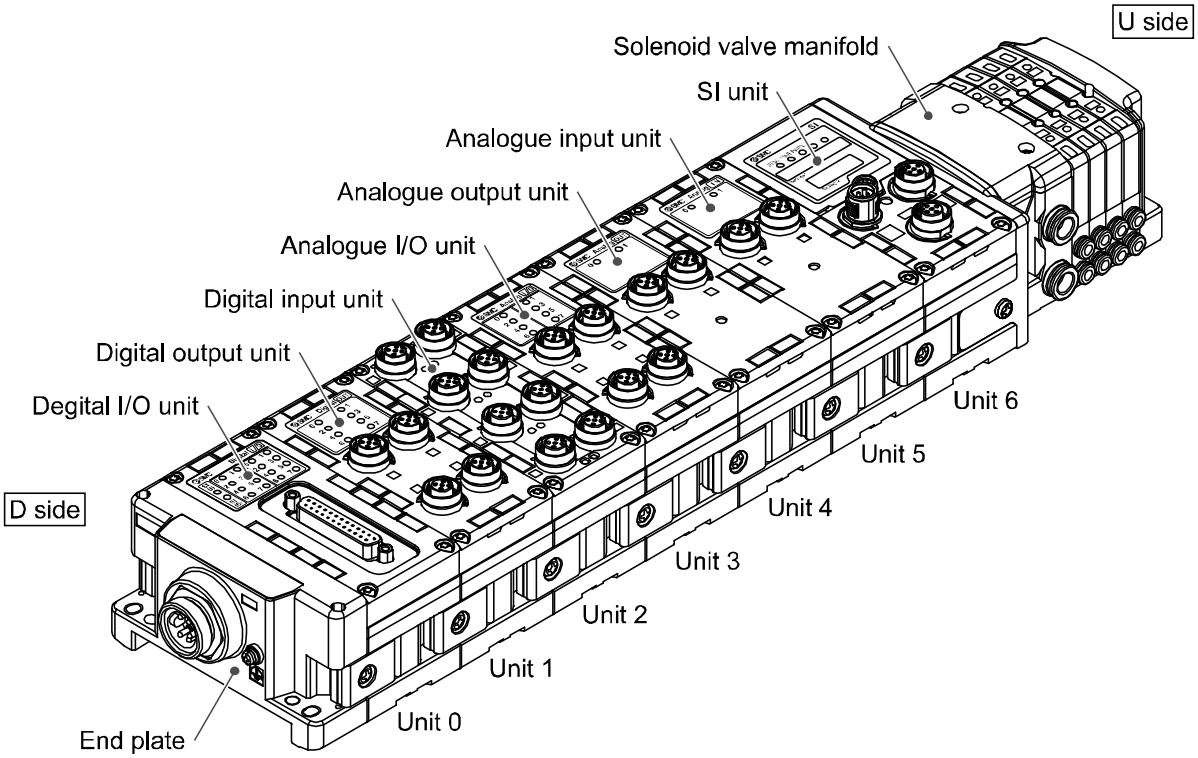
∗Adjustment and Operation
•Set the switches by using a sharp-pointed screwdriver etc. When setting the switch, do not touch other unrelated parts.
This can cause parts damage or malfunction due to a short circuit.
•Perform settings suitable for the operating conditions.
Incorrect setting can cause operation failure.
(Refer to page 17 for the Setting and Adjustment.)
•Please refer to the PLC manufacturer's manual etc. for details of programming and addresses.
For the PLC protocol and programming refer to the relevant manufacturer's documentation.

∗Maintenance
•Turn off the power supply, stop the supplied air, exhaust the residual pressure and verify the release of air before performing maintenance.
There is a risk of unexpected malfunction.
•Perform regular maintenance and inspections.
There is a risk of unexpected malfunction.
•After maintenance is complete, perform appropriate functional inspections.
Stop operation if the equipment does not function properly.
Otherwise safety is not assured due to an unexpected malfunction or incorrect operation.
•Do not use solvents such as benzene, thinner etc. to clean each unit.
They could damage the surface of the body and erase the markings on the body.
Use a soft cloth to remove stains.
For heavy stains, use a cloth soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.

System Outline

System configuration

The EX600 range of units can be connected to various types of fieldbus to realize the reduction of input or output device wiring and the distributed control system. The unit communicates with the fieldbus through the SI unit. One SI unit can be connected with manifold valves with up to 32 output s and the input • output • I/O units with maximum 10 units.



Name	Function
SI unit	Performs fieldbus communication and solenoid valve manifold ON/OFF output.
Digital input unit	For connecting sensors with switch output capability. PNP and NPN types are available.
Digital output unit	For connecting output device such as solenoid valves, lamps, buzzers, etc. PNP and NPN types are available.
Digital I/O unit	This unit has both digital input and output functions. PNP and NPN types are available.
Analogue input unit	For connecting sensors with analogue output capability.
Analogue output unit	This can be connected to the equipment which can read analogue input.
Analogue I/O unit	This unit has both analogue input and output functions.
End plate	Connected at EX600 Manifold's D side, incorporating the power supply connection.
Solenoid valve manifold	An assembly of solenoid valves. One connector is used as the electric connection to all connected valves.

■Definition and terminology

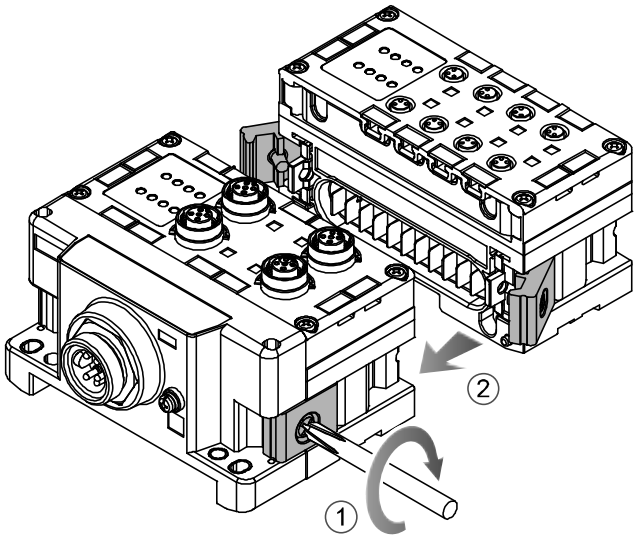
	Terminology	Definition
100	100BASE-TX	Standard of LAN transmission line with communication speed of 100 Mbps.
C	Current consumption	The current necessary to operate each unit.
D	DHCP	The protocol which automatically set the information such as IP address which needs to be registered in order to use the network. Those information are set to each equipment which are connected to TCP/IP network.
	DIN rail	A metal rail conforming with DIN (German) standard.
	DLR	An abbreviation for Device Level Ring: Performs a fast switching of the communication route when any problem occurs with the Ring network, to maintain communication.
	D Side	The side connected to the end plate when the product is connected to a manifold.
E	EDS	Settable attribute information of a device (each parameter's object address, etc.) stored on external disk.
	Enclosure (IP□□)	Abbreviation of international (ingress) protection. A standard related to the protection from external objects (hands, steel ball, steel wire, dust, water, etc.) applied to the product.
F	FE	Abbreviation of functional earth.
	Fieldbus	The protocol that uses digital communication to exchange signals between field equipment (instruments and actuators) running on site and a PLC.
	Full duplex	Communication system that can send and receive data at the same time bi-directionally.
H	Half duplex	Communication system that sends and receives data in one direction at a time.
I	Idle	Expression for PLC operation state. For details, Refer to manuals of each PLC maker. Depending on which PLC is used; the idle state might not be available.
	IP address	A 32 bit digit sequence which is assigned to identify devices which are connected to the network.
M	MAC address	A unique number inherent to all devices which are connected to EtherNet/IP™.
	Manifold	A form consisting of multiple components. A form made by combining multiple components.
N	NPN input	Takes the sensor output that uses the NPN transistor to the signal output line.
	NPN output	The output type that uses an NPN transistor to operate output device. It is also known as a positive common type since a positive potential is applied to the power supply line.
	Number of inputs	The number of points that can receive information from input device (sensor, switch, etc.).
	Number of outputs	The number of points that can operate output device (solenoid valve, light, motor, etc.).
O	Open circuit detection	A diagnosis function to detect if the input or output device wiring is disconnected.
P	PLC	Abbreviation of programmable logic controller. A digital computer used for automation of electromechanical processes.
	PNP input	Takes the sensor output that uses the PNP transistor to the signal output part.
	PNP output	The output type that uses a PNP transistor to operate output device. It is also known as a negative common type since a negative potential is applied to the power supply line.
Q	QuickConnect™	The function that reduces the time from the power being supplied to the equipment operating and communication starting.
S	Short circuit detection	A diagnosis function to detect an over current due to the short circuit of the output and/or power supply positive line with respect to the GND line.
	Short circuit protection	A function to protect the internal circuit from being broken by an over current due to the short circuit of the output and/or power supply positive line with respect to the GND line.
	SI unit	Abbreviation of serial interface unit. A unit connected to a PLC to communicate input and output data.
U	U Side	The side connected to the solenoid valve when the product is connected to a manifold.

Assembly

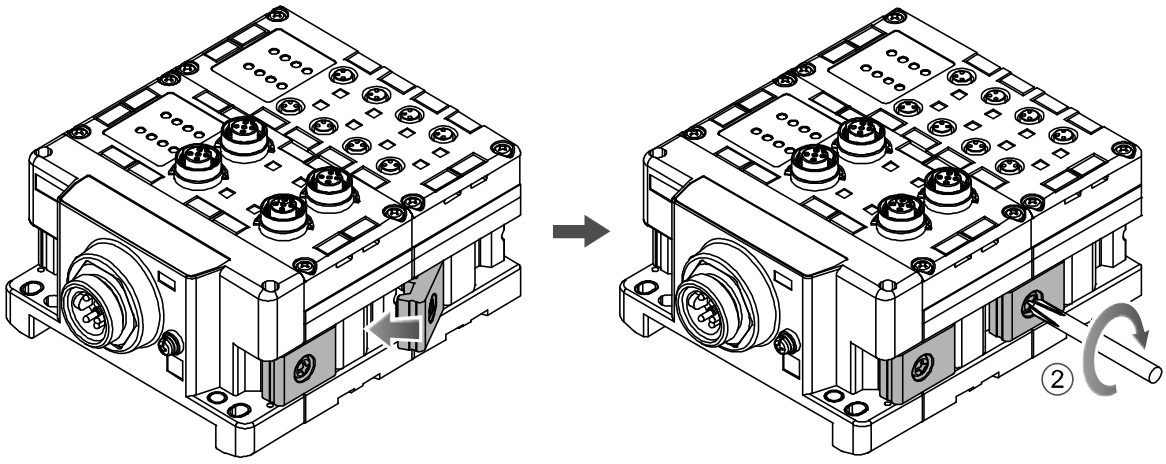
●Composing the unit as a manifold

∗: If the unit was purchased as a manifold, the work described in this section is not necessary.

(1) Connect the unit to the end plate.
The Digital unit, Analogue unit can be connected in any order.
(Tightening torque: 1.5 to 1.6Nm)



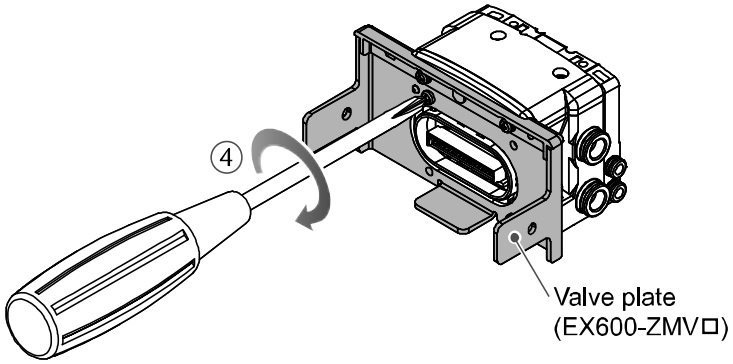
(2) Add more units.
Up to 10 units (including the SI unit) can be connected to one manifold.



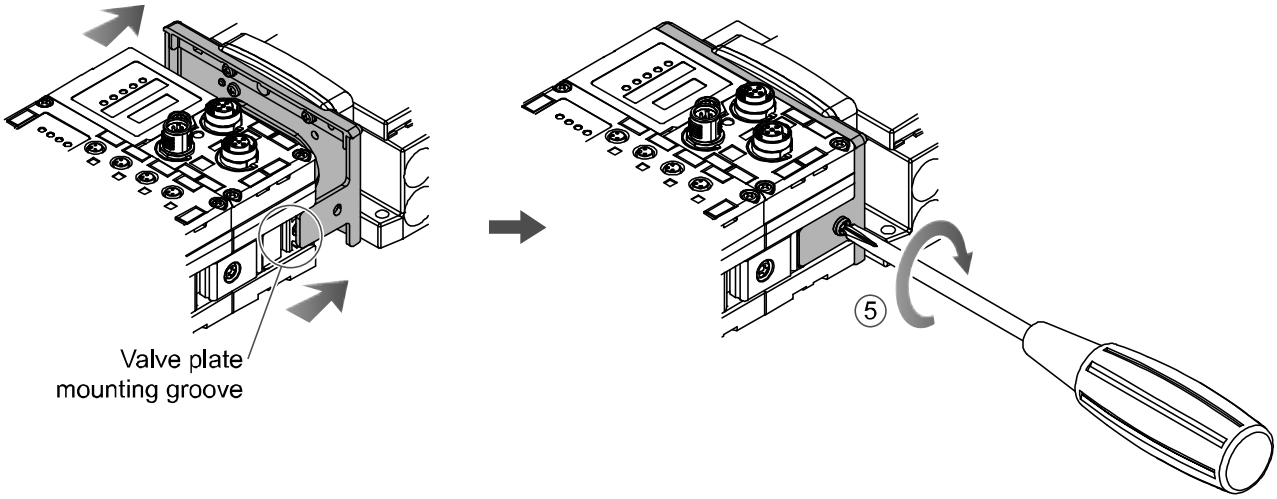
(3) Connecting the SI unit.
After connecting the necessary units, connect the SI unit.
Connecting method is the same as above (1), (2).

(4) Mounting the valve plate.
Mount the valve plate (EX600-ZMV□) to the valve manifold using the valve set screws. (M3 x 8)
(Tightening torque: 0.6 to 0.7 Nm)

Screw mounting place
SV : 2 places
S0700 : 2 places
VQC1000: 2 places
VQC2000: 3 places
VQC4000: 4 places
SY : 2 places



(5) Connect the SI unit and the valve manifold.
Insert the valve plate to the valve plate set groove on the side of SI unit.
Then, tighten it with the valve plate set screws (M4 x 6) to fix the plate.
(Tightening torque: 0.7 to 0.8 Nm)



●Precautions for handling

•Please do not connect the unit while the power supply is active. It will cause equipment damage.
•Take care not to drop the nuts of Joint bracket.
•Tighten the screws to the specified torque.
Insufficient tightening may lead to equipment malfunction, injury or equipment damage.

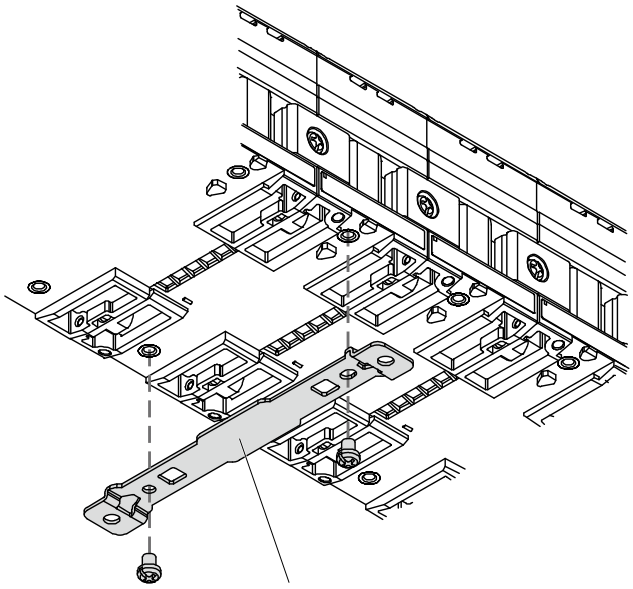
Mounting and Installation

■Installation

•Direct mounting

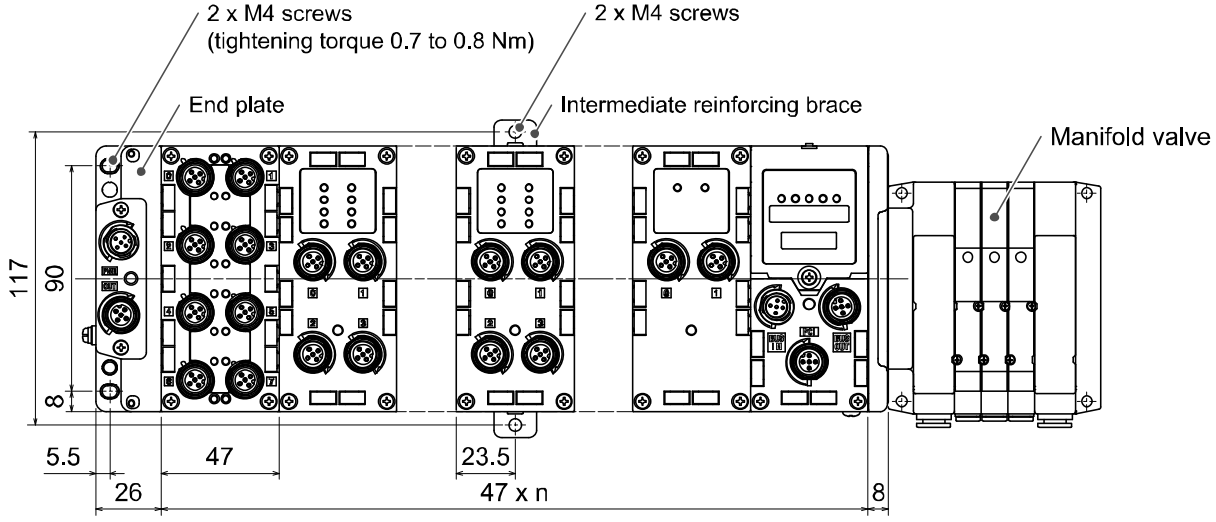
(1) Direct mounting

When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB1) before mounting using 2-M4 x 5 screws.
(Tightening torque: 0.7 to 0.8 Nm)



Intermediate reinforcing brace
(EX600-ZMB1)

(2) Fix and tighten the end plates at one end of the unit. (M4)
(Tightening torque: 0.7 to 0.8 Nm)
Fix the end plate at the valve side while referring to the operation manual of the corresponding valve manifold.



n (Number of connected Units) ≤ 10

●Precautions for handling

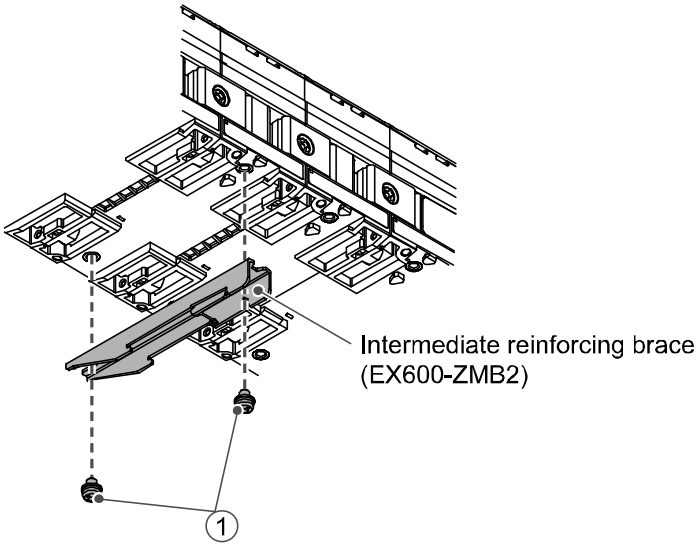
•When joining six or more units, fix the middle part of the complete unit with an intermediate reinforcing brace to prevent incorrect connection between the units due to deflection.

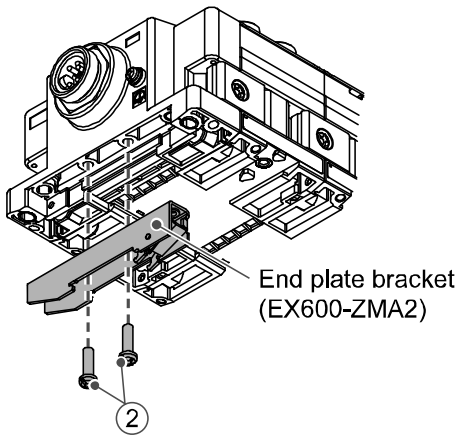
•DIN rail mounting

(Not available for SY series valves. Refer to the SY catalog.)

(1) When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB2) before mounting, using 2-M4 x 6 screws. (Tightening torque: 0.7 to 0.8 Nm)

(2) Mount the end plate bracket (EX600-ZMA2) to the end plate at the opposite end to the valves, using 2-M4 x 14 screws. (Tightening torque: 0.7 to 0.8 Nm)

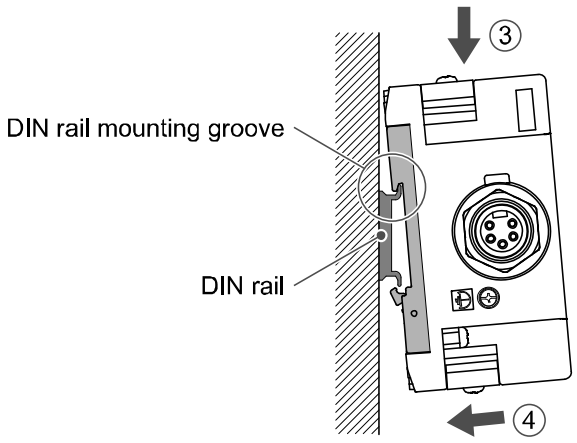


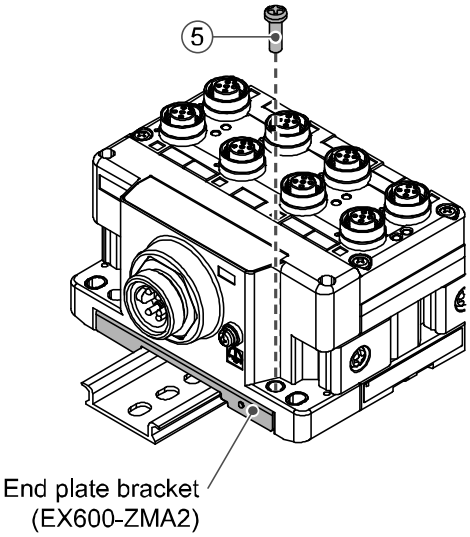


(3) Hook the DIN rail mounting groove to the DIN rail.

(4) Press the manifold using its side hooked to the DIN rail as a fulcrum until the manifold is locked.

(5) Fix the manifold by tightening the DIN rail fixing screws of the EX600-ZMA2. (M4 x 20)
(Tightening torque: 0.7 to 0.8 Nm)
The tightening torque at the valve side depends on the valve type.
Refer to the operation manual of the corresponding valve manifold.





●Precautions for handling

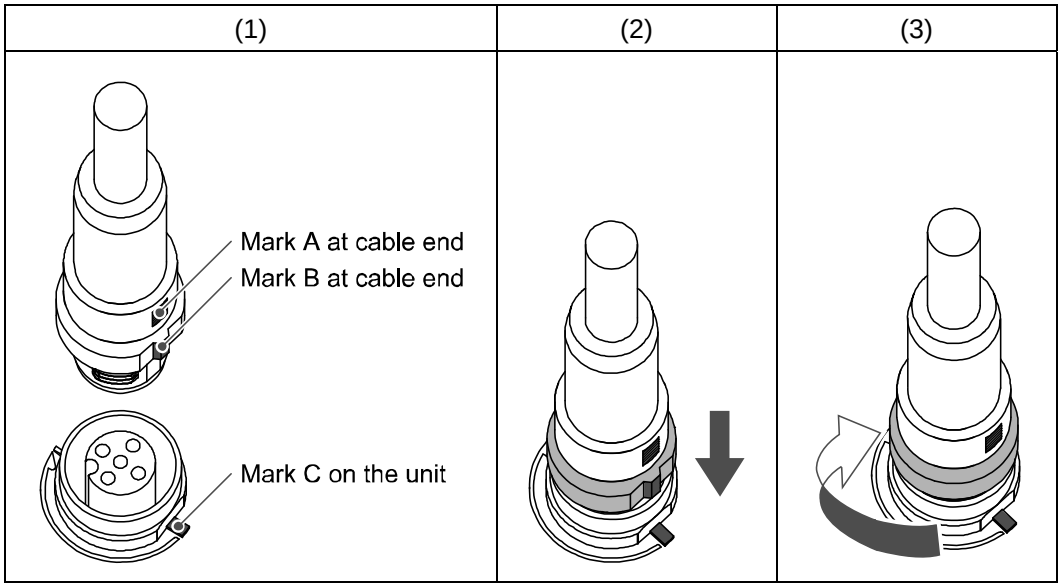
•When joining six or more units, fix the middle part of the complete unit with an intermediate reinforcing brace to prevent incorrect connection between the units due to deflection.

■Wiring

•Connect the M12 or M8 connector cable.

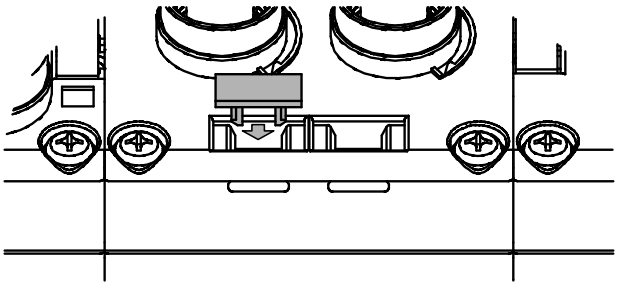
M12 connector is applicable for SPEEDCON connector. SPEEDCON connector wiring method is explained below.

(1) Align the mark B on the metal bracket of the cable side connector (plug/socket) with the mark A.
(2) Align the mark C on the unit and insert the connector into the unit vertically.
If they are not aligned, the connector cannot be joined properly.
(3) When the mark B of the connector has been turned 180 degrees (1/2 turn), wiring is completed.
Confirm that the connection is not loose. If turned too far, it will become hard to remove the connector.



•Mounting the marker

Signal name of the input or output devices and unit address can be written to the marker, and it can be installed to each unit.
Mount the marker (EX600-ZT1) into the marker groove as required.



SI Unit

Model Indication and How to Order

EX600-S EN 3

SI Unit

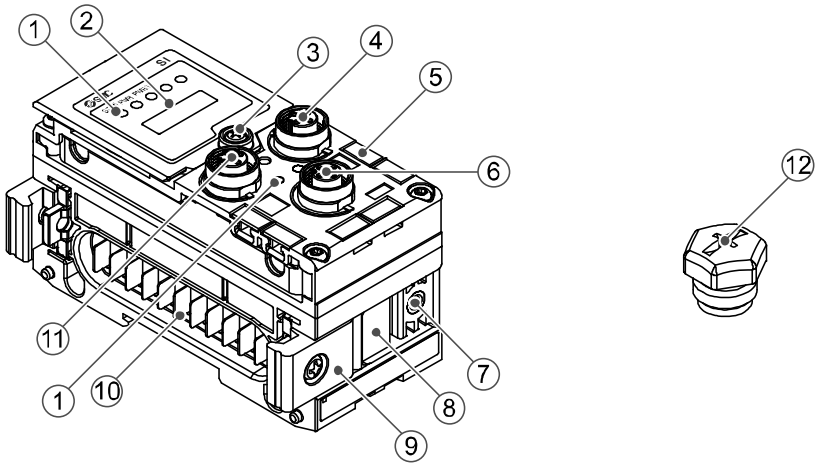
Protocol

Symbol	Content
EN	EtherNet/IP™

Output type / Number of ports

Symbol	Content
3	PNP (negative common) / 2 port
4	NPN (positive common) / 2 port

Summary of Product parts

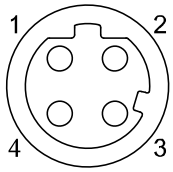


No.	Description	Function
1	Status display LED	Displays the status of the unit.
2	Display cover	Open at the switch configuration.
3	Display cover tightening screw	Loosen to open the display cover.
4	Connector (BUS OUT)	Connects the cable for fieldbus outputs. (M12, 5 pin, socket: SPEEDCON)
5	Marker groove	Groove to mount a marker.
6	Connector (PCI)	Connects the cable of the handheld terminal. (M12, 5 pin, socket: SPEEDCON)
7	Valve plate mounting screw hole	Fixes the valve plate.
8	Valve plate mounting groove	Groove to insert the valve plate into.
9	Joint bracket	Bracket for joining to adjacent units.
10	Unit connector (plug)	Transmits signals and power supplies to adjacent units.
11	Connector (BUS IN)	Connects the cable for fieldbus inputs. (M12, 5 pin, socket: SPEEDCON)
12	Seal cap (2 pcs.)	Mounted on to unused connectors (BUS OUT and PCI).

Mounting and Installation

■Wiring

Connector pin assignment

Configuration BUS IN/BUS OUT	Pin No.	Signal name
	1	TX+
	2	RX+
	3	TX-
	4	RX-

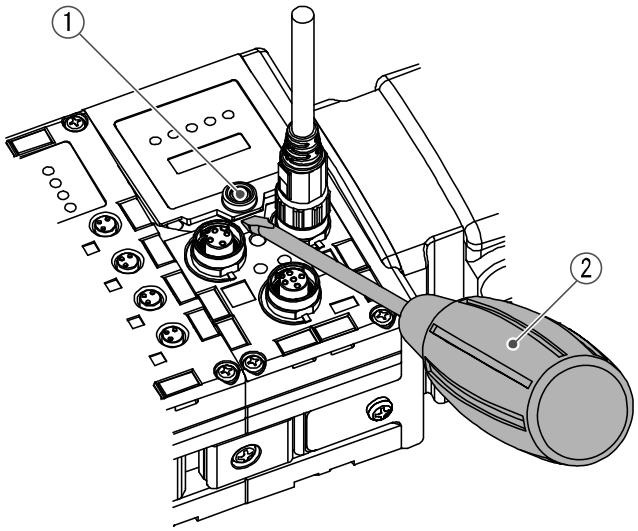
●Precautions for handling

Be sure to fit a seal cap on any unused connectors. Proper use of the seal cap enables the enclosure to achieve IP67 specification.

Setting and Adjustment

●Switch operation

(1) Loosen the display cover screw (indicated by arrow).
(2) Open the display cover using a flat head screwdriver, etc.

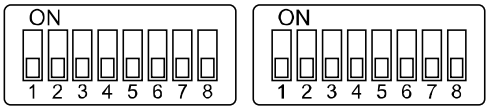


(3) Set the switch using a small watchmaker's screwdriver with a thin blade, referring to the setting of switch on the following pages.
(4) After setting the switch, tighten the display cover tightening screw in the reverse order of the above procedure. (Tightening torque: 0.3 to 0.4 Nm)

●Precautions for handling

- Turn off the power supply whilst setting the switch.
- If there is foreign matter or water droplets around the display cover, clean it off before opening the cover.
- When setting the switch, do not touch other unrelated parts. This can cause parts damage or malfunction due to a short circuit.
- All default settings are OFF. Perform the setting of the switch before using this product.
- When introducing power supply, switch setting will become effective.

●Switch setting



Settings1 Settings2

Settings1		Settings2	
1	Hold/Clear setting	1	
2	Diagnostics setting	2	
3		3	
4		4	•IP address byte 4 setting
5	Reserved	5	•DHCP mode setting
6		6	
7		7	
8	IP address byte 3 setting	8	

●Precautions for handling

•Handle the switch with care. Excessive force can break the switch.
•3 to 7 of the Settings1 switch are not used. (Never turn it ON.)

•HOLD/CLEAR switch: Sets the output status when the fieldbus has a communication error or is in idling state.

Settings1	Content
1	
OFF	Output is OFF. (default setting)
ON	Holds the output.

∗: This switch can be enabled and disabled by parameter.

•Switch for diagnosis: Allocates the diagnostic data to the input data.

Settings1	Mode	Content	Diagnostic size set for the input
2			
OFF	0	Input data only (default setting)	0 byte
ON	1	Input data + System diagnosis + Unit diagnosis	4 bytes

•IP address setting switch

Settings1	Settings2								IP address	Subnet mask
8	1	2	3	4	5	6	7	8		
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	192.168.0.1	255.255.255.0
OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	192.168.0.2	
:	:	:	:	:	:	:	:	:	:	
OFF	ON	OFF	ON	ON	ON	ON	ON	ON	192.168.0.253	
OFF	OFF	ON	ON	ON	ON	ON	ON	ON	192.168.0.254	
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	192.168.1.1	255.255.255.0
ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	192.168.1.2	
:	:	:	:	:	:	:	:	:	:	
ON	ON	OFF	ON	ON	ON	ON	ON	ON	192.168.1.253	
ON	OFF	ON	ON	ON	ON	ON	ON	ON	192.168.1.254	
ON/OFF	ON	ON	ON	ON	ON	ON	ON	ON	DHCP mode *1	
ON/OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Remote Control mode *2	

∗1: The mode to obtain IP address from DHCP server. Obtained IP address etc. is lost when the power supply is cut.

∗2: The mode to respond to the commands below of BOOTP/DHCP Server provided by Rockwell Automation.

Enable DHCP: IP address etc. can be obtained from BOOTP/DHCP Server.

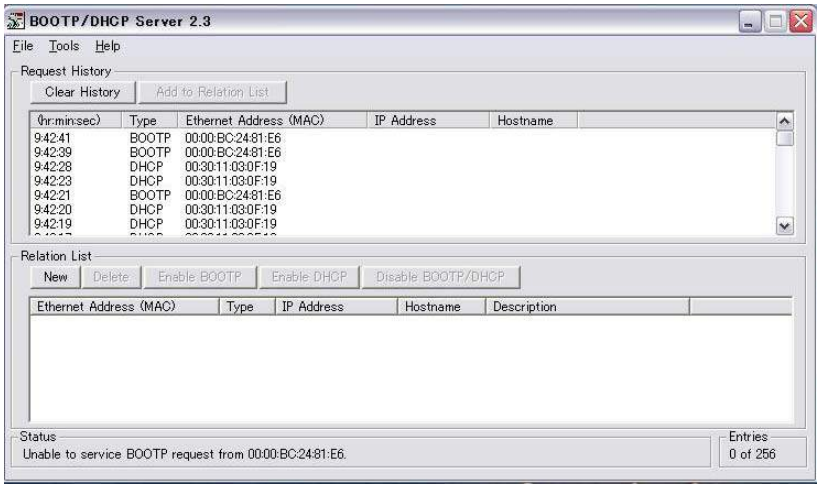
If the power is supplied again in this state, information including IP address is obtained again.

Disable DHCP: IP address etc. cannot be obtained from BOOTP/DHCP Server.

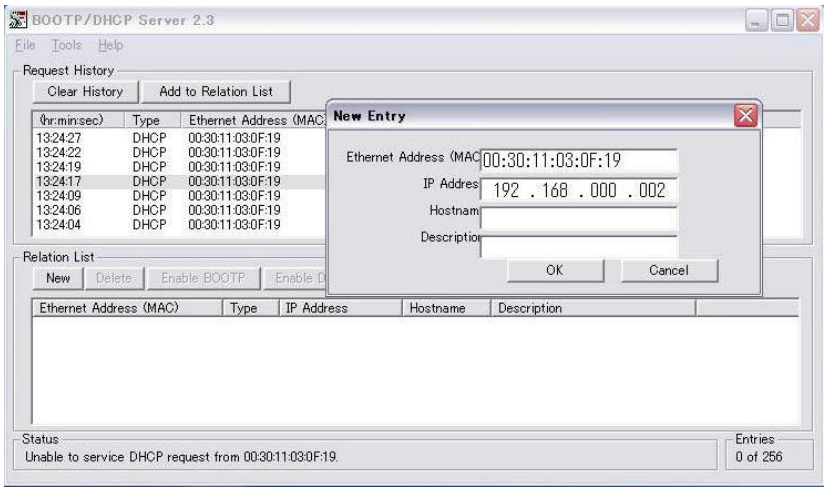
If the power is supplied again with this condition, previous setting can be held.

●Setting method of IP address by BOOTP/DHCP Server

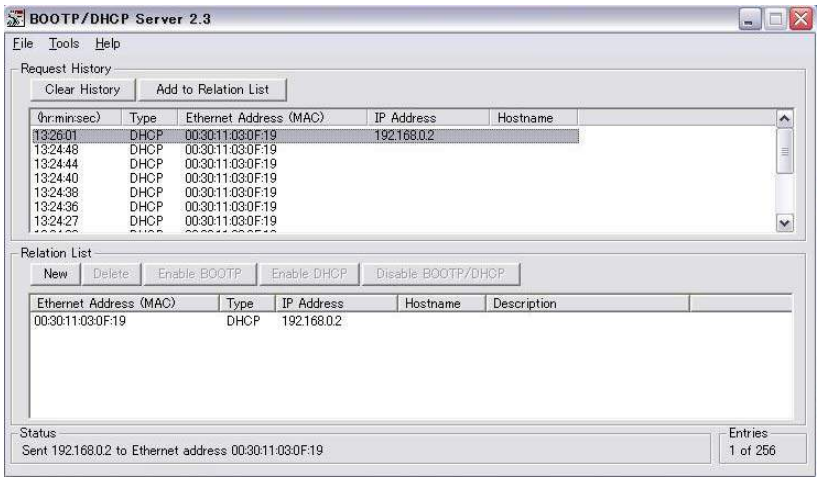
•When BOOTP/DHCP Server starts up, the Server scans the devices connected to the network.



•After selecting the MAC address of EX600, IP address is set.

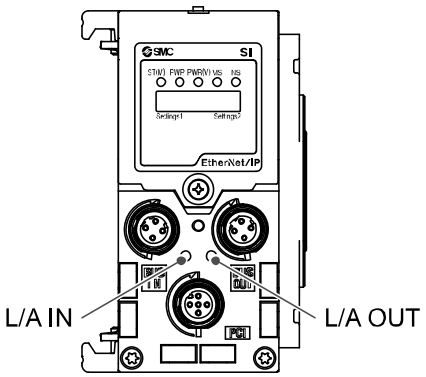


•IP address is set and added to the list.



LED Display

LED display shows the power supply and communication status.



Display	Content
ST(M)	Displays the diagnosis status of the unit.
PWR	Displays the status of the power supply voltage for control and input.
PWR(V)	Displays the status of the power supply voltage for output.
MS	Displays the module status.
NS	Displays the network status.

Display	Content
L/A IN	Displays the communication status of the BUS IN side.
L/A OUT	Displays the communication status of the BUS OUT side.

•ST(M)-LED

LED display	Content
ST(M) ○ OFF	The power supply for control and input is OFF.
ST(M) ● Green ON	Normal operation.
ST(M) Green flashing	Diagnostic error of I/O unit is detected.
ST(M) Red flashing	Either of the following diagnostic error is detected. (When diagnostic parameter is enabled) •Valve ON/OFF counter has exceeded the set value. •Valve is short circuited or disconnected.
ST(M) Red/green flashing alternately	Detect a communication error between SI unit and I/O unit.
ST(M) ● Red ON	SI unit has failed.

•PWR-LED

LED display	Content
PWR  Green ON	The power supply voltage for control and input is properly.
PWR  Red ON	The power supply voltage for control and input is out of range. (When diagnostic parameter is enabled)

•PWR(V)-LED

LED display	Content
PWR(V)  OFF	The power supply voltage for output is OFF or out of range. (When diagnostic parameter is disabled)
PWR(V)  Green ON	The power supply for output is properly.
PWR(V)  Red ON	The power supply voltage for output is OFF or out of range. (When diagnostic parameter is enabled)

•MS-LED

LED display	Content
 Green flashing	Either of the following conditions are detected: •The unit has not been configured correctly. •The master is idle state.
 Green ON	The unit is in normal operation.
 Red flashing	Diagnostic error is detected.
 Red ON	The element in SI unit is broken.

•NS-LED

LED display	Content
 OFF	IP address is not set.
 Green flashing	EtherNet/IP™ communication is not established.
 Green ON	EtherNet/IP™ communication is established.
 Red flashing	EtherNet/IP™ communication is time-out.
 Red ON	IP address is duplicated.

•Communication status

LED display		Content
L/A IN	OFF	Bus IN side :No Link, No Activity
	Green ON	Bus IN side : Link, No Activity (100 Mbps)
	Green flashing	Bus IN side : Link, Activity (100 Mbps)
	Yellow ON	Bus IN side : Link, No Activity (10 Mbps)
	Yellow flashing	Bus IN side : Link, Activity (10 Mbps)
L/A OUT	OFF	Bus OUT side :No Link, No Activity
	Green ON	Bus OUT side : Link, No Activity (100 Mbps)
	Green flashing	Bus OUT side : Link, Activity (100 Mbps)
	Yellow ON	Bus OUT side : Link, No Activity (10 Mbps)
	Yellow flashing	Bus OUT side : Link, Activity (10 Mbps)

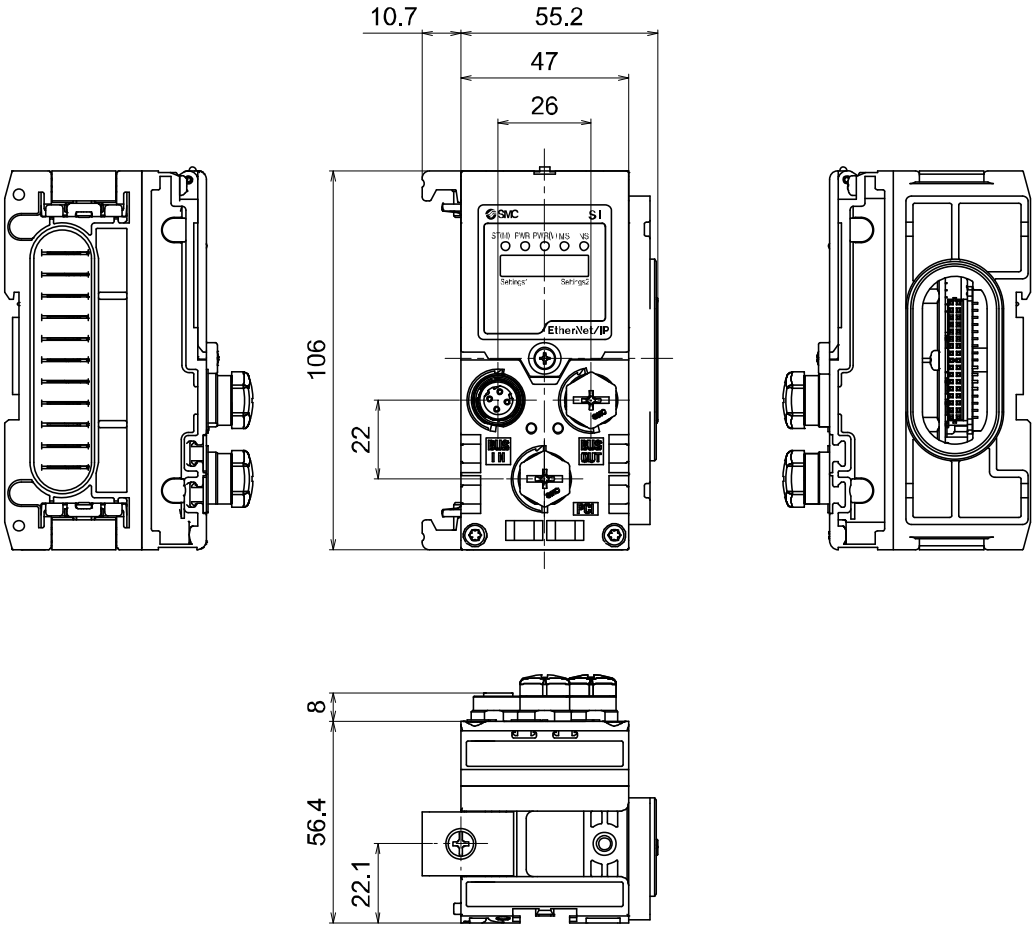
Specification

■Specifications

Model		EX600-SEN3	EX600-SEN4
Communication	Protocol	EtherNet/IP™ (Conformance version : Composite 11)	
	Transmission medium	Standard EtherNet cable (CAT5 or more, 100BASE-TX)	
	Transmission speed	10 / 100 Mbps	
	Transmission type	Full duplex / Half duplex	
	IP address setting range	Setting by SI unit switch :192.168.0 or 1.1～254	
		Via DHCP server : Arbitrary address	
	Device information	Vendor ID: 7 (SMC Corporation) Device type: 12 (Communication Adapter) Product code: 203	
	Network topology	Star: Supported Linear Bus: Supported Ring (including DLR): Supported	
	EtherNet/IP QuickConnect™	Supported	
	Web server	Supported	
Current consumption		120 mA or less	
Valve output	Output type	Source / PNP(negative common)	Sink / NPN(positive common)
	Number of solenoid valves	32 outputs	
	Applicable valve series	Solenoid valve with surge voltage suppressor of 24 VDC and 1.0 W or less (manufactured by SMC)	
	Output setting during communication fault	HOLD / CLEAR / Force ON	
	Protection	Short circuit protection	
Environment	Enclosure	IP67 (manifold assembly) *1	
	Operating temperature range	-10 to 50 °C	
	Storage temperature range	-20 to 60 °C	
	Operating humidity range	35 to 85% RH (no dew condition)	
	Withstand voltage	500 VAC for 1 minute between external terminals and FE	
	Insulation resistance	500 VDC, 10 MΩ or more between external terminals and FE	
	Vibration resistance	10 to 57 Hz: constant amplitude 0.75 mm p-p 57 to 150 Hz: constant acceleration 49 m/s^2 for 2 hours in each direction X, Y and Z respectively (De-energized)	
	Impact resistance	147 m/s^2 3 times in each directions of X, Y and Z respectively (De-energized)	
Standard		CE marking, UL (CSA), RoHS	
Weight		300 g	

*1: All unused connectors must have a seal cap fitted.

■Dimensions



End plate

Model Indication and How to Order

EX600-ED□-□

End plate at D side

Connector

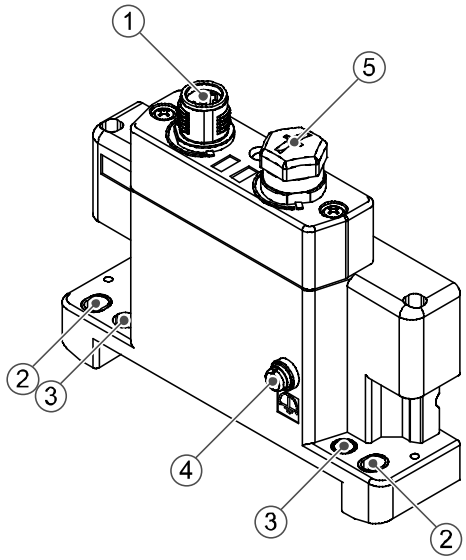
Symbol	Content
2	M12 (5 pin)
3	7/8 inch (5 pin)

Mounting method

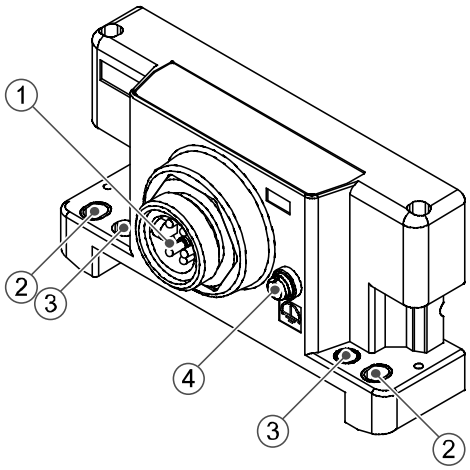
Symbol	Content
Nil	No DIN rail bracket
2	With DIN rail bracket (Except SY series)
3	With DIN rail bracket (Specified for SY series)

Summary of Product parts

•EX600-ED2-□



•EX600-ED3-□



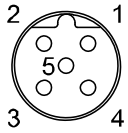
No.	Description	Function
1	Power connector	Connector for power supply to SI unit and I/O unit.
2	Fixing hole for direct mounting	Holes for direct mounting.
3	DIN rail fixing hole	Holes for fix DIN rail mounting.
4	F.E. terminal *	Functional Earth terminal - must be connected directly to system earth (ground).
5	Connector (Not used)	Unused connector. Do not remove seal cap.

*: Individual grounding should be provided close to the product with a short cable.

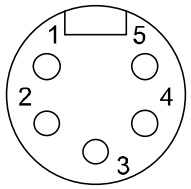
■Wiring

○Connector pin assignment

(1) EX600-ED2-□

Configuration	Pin No.	Signal name
	1	24 V (Output)
	2	0 V (Output)
	3	24 V (Control and input)
	4	0 V (Control and input)
	5	F.E.

(2) EX600-ED3-□

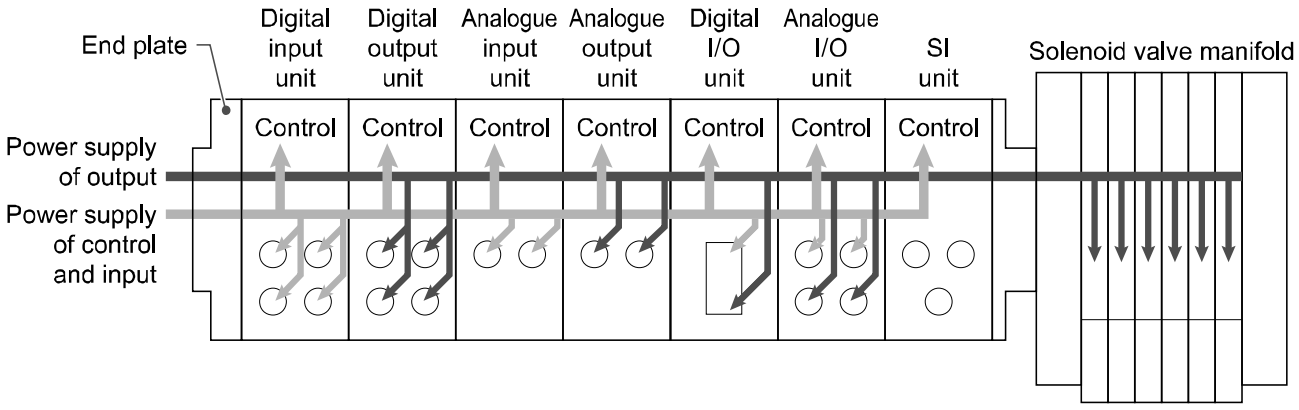
Configuration	Pin No.	Signal name
	1	0 V (Output)
	2	0 V (Control and input)
	3	F.E.
	4	24 V (Control and input)
	5	24 V (Output)

○Regarding the 2 types of power supply

The power supply consists of two power supply systems as follows:

•Power supply for control and input: Supplying power for control of each unit's power supply for control and also for device connected to input port of Digital and Analogue unit.

•Power supply for output: Supplying power for equipment connected to output port of Digital and Analogue unit, and also power supply for solenoid valve manifold.



●Precautions for handling

Be sure to fit a seal cap on any unused connectors. Proper use of the seal cap enables the enclosure to achieve IP67 specification.

Specification

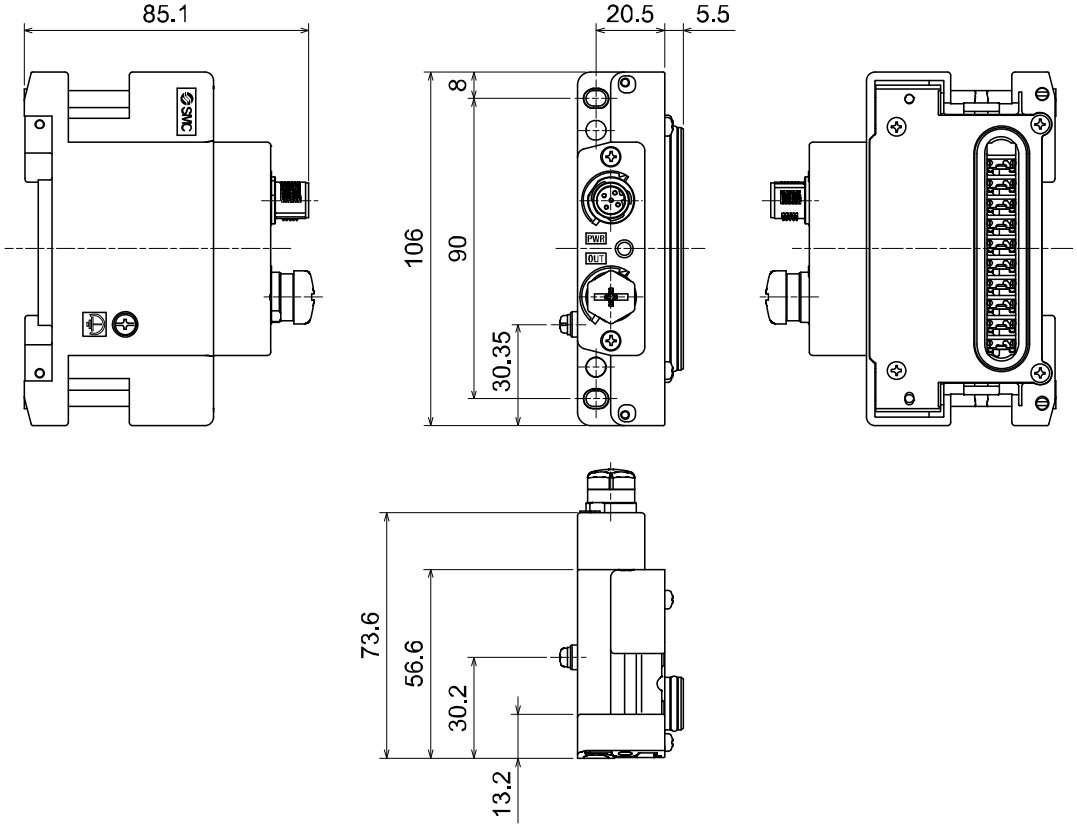
■Specifications

Model		EX600-ED2-□	EX600-ED3-□
Power	Power connector	M12 (5 pin) Plug	7/8 inch (5 pin) Plug
	Power supply (Control and input)	24 VDC ±10% Class2, 2 A	24 VDC ±10%, 8 A
	Power supply (Output)	24 VDC +10/-5% Class2, 2 A	24 VDC +10/-5%, 8 A
Environment	Enclosure	IP67 (With manifold assembled) *1	
	Operating temperature range	-10 to 50 °C	
	Storage temperature range	-20 to 60 °C	
	Operating humidity range	35 to 85%R.H. (No condensation)	
	Withstand voltage	500 VAC for 1 minute between external terminals and F.E.	
	Insulation resistance	500 VDC, 10 MΩ min. between external terminals and F.E.	
Standard		CE marking, UL (CSA), RoHS	
Weight		170 g	175 g

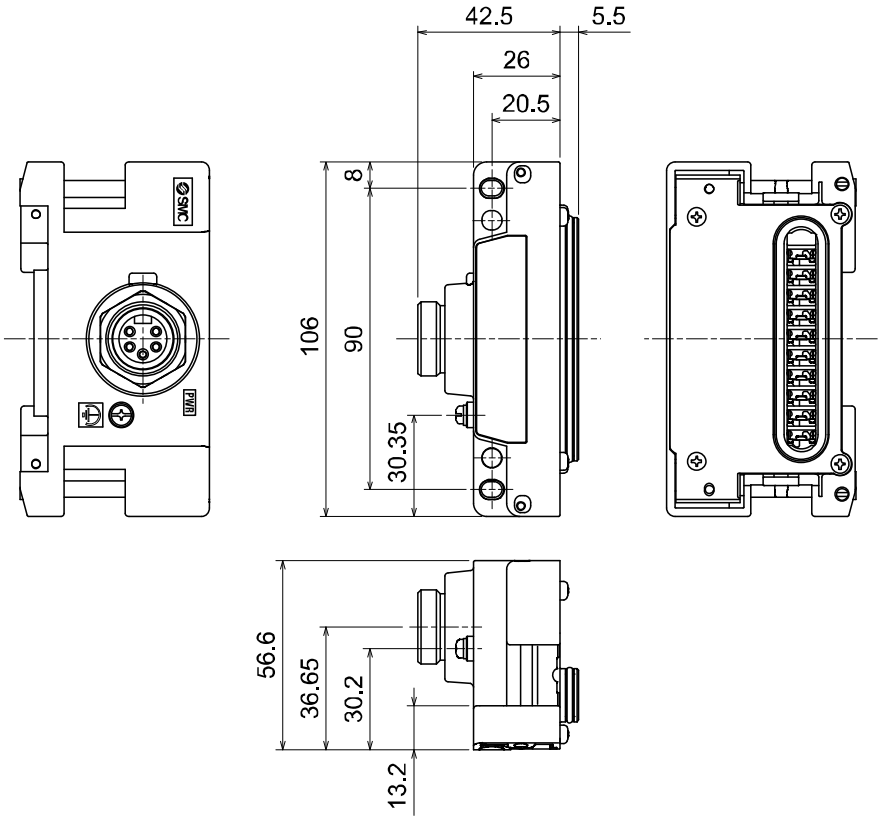
∗1: All unused connectors must have a seal cap fitted.

■Dimensions

•EX600-ED2-□



•EX600-ED3-□



Maintenance

Turn OFF the power supply, stop the supplied air, exhaust the residual pressure and verify the release of air before performing maintenance.

Cleaning method

Use a soft cloth to remove stains.
For heavy stains, use a cloth soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.
Do not use solvents such as benzene, thinner etc. to clean each unit.

Inspection item	Content of inspection
Connector/Electric wiring	Connect properly if the connection is loose.
Seal cap	Tighten properly if the connection is loose.
Thread for mounting and installation	If the thread is loose, re-tighten it to the specified torque.
Connection cables	If the cable is broken or any other abnormality is confirmed by appearance, replace the cable with a new one.
Supply source voltage	Check if source voltage within the specification range (24 VDC ±10%) is supplied.

How to reset the product for power cut or forcible de-energizing

Supply power to the product.
The output status just before the power failure is not maintained when power supply is recovered.
Start operation after confirming safety of the entire equipment.

Troubleshooting

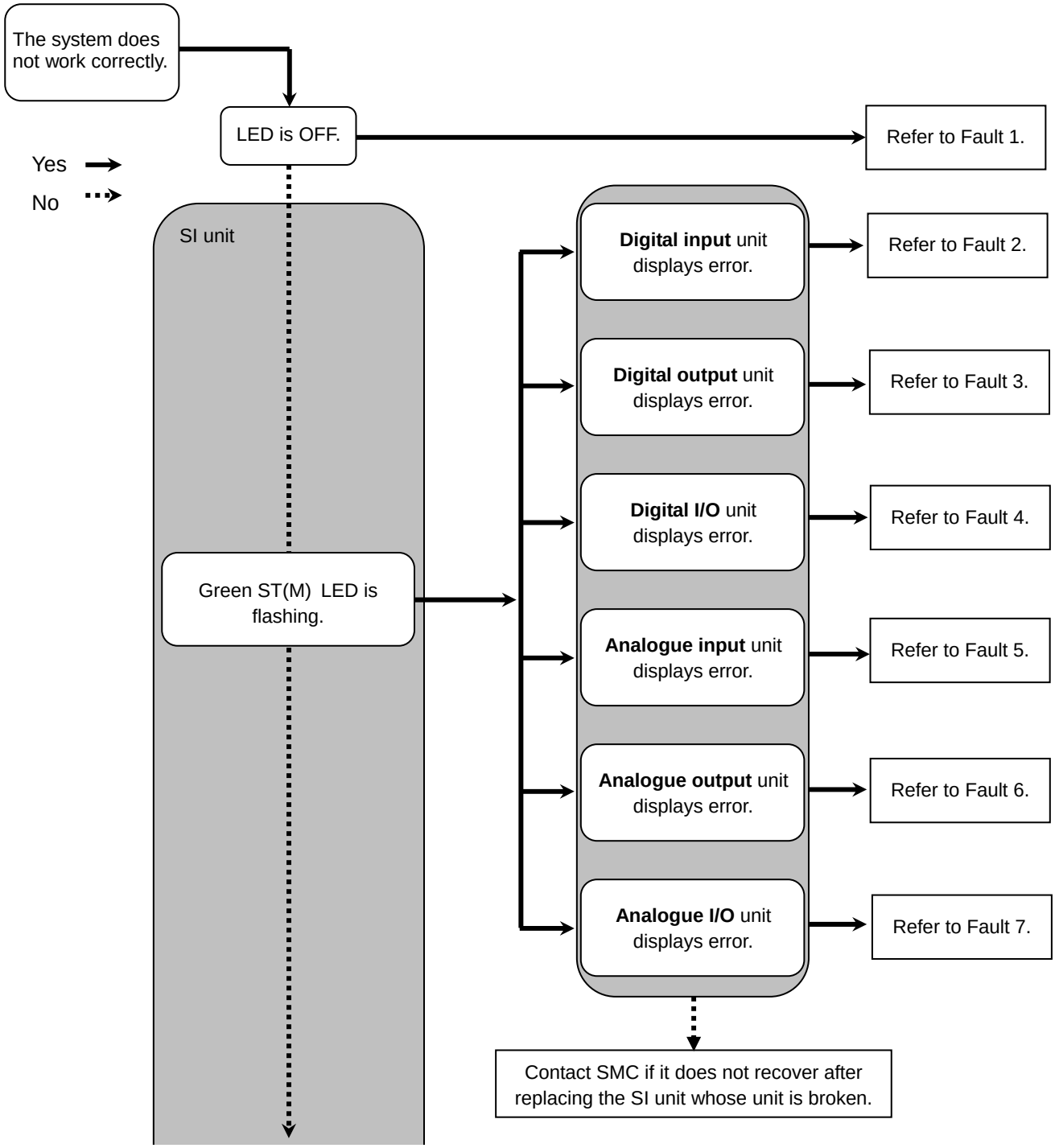
•Troubleshooting

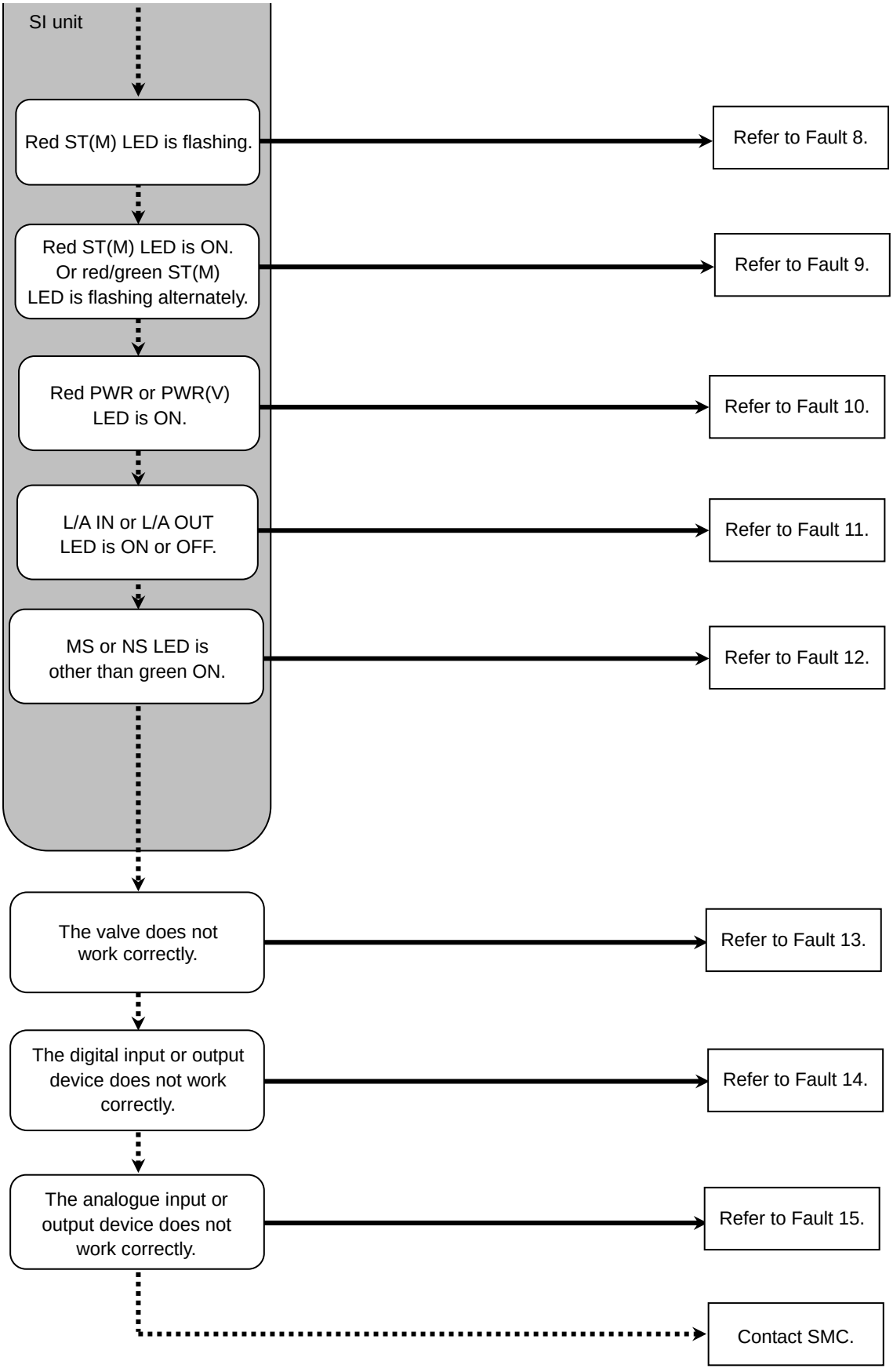
When any failure happens with this Fieldbus system, the following chart is used to identify the cause of the failure.

Error status is reflected from the parameter setting of the Fieldbus system.

When a failure occurs, take the appropriate countermeasures referring to the LED display, the troubleshooting and the parameter setting.

If a cause applicable to the failure cannot be identified, it indicates that the Fieldbus system itself is broken. The Fieldbus system breakage can be caused by the operating environment. Contact SMC separately to obtain countermeasures.




SI unit
Red ST(M) LED is flashing.
Refer to Fault 8.
Red ST(M) LED is ON.
Or red/green ST(M)
LED is flashing alternately.
Refer to Fault 9.
Red PWR or PWR(V)
LED is ON.
Refer to Fault 10.
L/A IN or L/A OUT
LED is ON or OFF.
Refer to Fault 11.
MS or NS LED is
other than green ON.
Refer to Fault 12.
The valve does not
work correctly.
Refer to Fault 13.
The digital input or output
device does not work
correctly.
Refer to Fault 14.
The analogue input or
output device does not
work correctly.
Refer to Fault 15.
Contact SMC.

•Trouble counter measure method

No.	Part No. EX600-	Problem	Presumed cause	Troubleshooting
1	-	LED is OFF.	Power supply for control and input is OFF.	Check if the power for control and input is supplied.
2	DX□B DX□C□ DX□D	Red LED is ON. (Diagnosis is activated)	Input device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and input device are normal.
		Red LED is flashing. (Diagnosis is activated)	(1)ON/OFF count of the input device has exceeded the set value. (2)The wire of the input device is broken or disconnected. (Only EX600-DX□C1)	Check the parts with error by using the LED display or unit diagnostic data* or master. (1)Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis. (2)Check if the connector is loose and if the wire is broken.
		Red/green all LEDs are flashing.	An internal memory error occurred in the Digital input unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
	DX□E DX□F	Red ST LED is ON. (Diagnosis is activated)	Input device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and input device are normal.
		Red ST LED is flashing. (Diagnosis is activated)	ON/OFF count of the input device has exceeded the set value.	Check the parts with error by using the LED display or unit diagnostic data* or master. Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis.
		Red/green ST LED is flashing.	An internal memory error occurred in the Digital input unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
3	DY□B	Red LED is ON. (Diagnosis is activated)	Output device is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and output device are normal.
		Red LED is flashing. (Diagnosis is activated)	(1)ON/OFF count of the output device has exceeded the set value. (2)The wire of the output device is broken or disconnected.	Check the parts with error by using the LED display or unit diagnostic data* or master. (1)Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis. (2)Check if the connector is loose and if the wire is broken.
		Red/green all LEDs are flashing.	An internal memory error occurred in the Digital output unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.

∗: The unit diagnostic data can be checked using EtherNet/IP object, Web server or Handheld Terminal.
Refer to "Diagnostic" (page 62) for details.

No.	Part No. EX600-	Problem	Presumed cause	Troubleshooting
3	DY□E DY□F	Red ST LED is ON. (Diagnosis is activated)	Output device is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and output device are normal.
		Red ST LED is flashing. (Diagnosis is activated)	(1)ON/OFF count of the output device has exceeded the set value. (2)The wire of the output device is broken or disconnected.	Check the parts with error by using the LED display or unit diagnostic data* or master. (1)Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis. (2)Check if the connector is loose and if the wire is broken.
		Red/green ST LED is flashing.	An internal memory error occurred in the Digital output unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
4	DM□E DM□F	Red ST(I) LED is ON. (Diagnosis is activated)	Input device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and input device are normal.
		Red ST(I) LED is flashing. (Diagnosis is activated)	ON/OFF count of the input device has exceeded the set value.	Check the parts with error by using the LED display or unit diagnostic data* or master. Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis.
		Red ST(O) LED is ON. (Diagnosis is activated)	Output device is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part or check if the cable and output device are normal.
		Red ST(O) LED is flashing (Diagnosis is activated)	(1)ON/OFF count of the output device has exceeded the set value. (2)The wire of the output device is broken or disconnected.	Check the parts with error by using the LED display or unit diagnostic data* or master. (1)Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis. (2)Check if the connector is loose and if the wire is broken.
		Red/green ST LED is flashing.	An internal memory error occurred in the Digital input/ output unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.

*: The unit diagnostic data can be checked using EtherNet/IP object, Web server or Handheld Terminal.
Refer to "Diagnostic" (page 62) for details.

No.	Part No. EX600-	Problem	Presumed cause	Troubleshooting
5	AXA	Red LED is ON. (Diagnosis is activated)	Analogue input device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part, and check if the cable and analogue input device are normal.
		"0 and 1" red LEDs are ON.	Input value has exceeded the upper limit when set to current input type range.	Check the following when the range of the Analogue input unit is set to current input. (1)Set the input value of the analogue input device so that it does not exceed the upper limit. (2)Voltage is input from the analogue input device.Ensure the range of the Analogue input unit matches the range of the analogue input device.
		Red LED is flashing. (Diagnosis is activated)	(1)Input value has exceeded the upper or lower limit of the range. (2)Input value (value set by user) has exceeded the upper or lower limit.	(1)If the input value from the analogue input device exceeds the upper or lower limit of the range, select the appropriate range so that the input value is within the range. Or invalidate diagnosis. (2)If the input value from the analogue input device exceeds the upper or lower limit of the user set value, adjust it so that the input value is within the range of the user set value. Or invalidate diagnosis.
		Red/green all LEDs are flashing.	An internal memory error occurred in the Analogue input unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
6	AYA	Red LED is ON. (Diagnosis is activated)	Analogue output device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part, and check if the cable and analogue output device are normal.
		Red LED is flashing. (Diagnosis is activated)	Output value (value set by user) has exceeded the upper or lower limit.	If the output value from the analogue output device exceeds the upper or lower limit of the user set value, adjust it so that the output value is within the range of the user set value. Or invalidate diagnosis.
		Red/green all LEDs are flashing.	An internal memory error occurred in the Analogue output unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.

*: The unit diagnostic data can be checked using EtherNet/IP object, Web server or Handheld Terminal.
Refer to "Diagnostic" (page 62) for details.

No.	Part No. EX600-	Problem	Presumed cause	Troubleshooting
7	AMB	Red LED is ON. (Diagnosis is activated)	Analogue input or output device power supply is short-circuited.	Check the parts with error by using the LED display or unit diagnostic data* or master. Re-wire the short-circuited part, and check if the cable and analogue input or output device are normal.
		"0 and 1" red LEDs are ON.	Input value has exceeded the upper limit when set to current input type range.	Check the following when the range of the Analogue input unit is set to current input. (1)Set the input value of the analogue input device so that it does not exceed the upper limit. (2)Voltage is input from the analogue input device. Ensure the range of the input unit matches the range of the input device.
		Red LED is flashing. (Diagnosis is activated)	(1)Input value has exceeded the upper or lower limit of the range. (2)Input or output value (value set by user) has exceeded the upper or lower limit.	(1)If the input value from the analogue input device exceeds the upper or lower limit of the range, select the appropriate range so that the input value is within the range. Or invalidate diagnosis. (2)If the input (output) value from the analogue input (output) device exceeds the upper or lower limit of the user set value, adjust it so that the input (output) value is within the range of the user set value. Or invalidate diagnosis.
		Red/green all LEDs are flashing.	An internal memory error occurred in the Analogue input/ output unit.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
8	Red ST(M) LED is flashing. (Diagnosis is activated)		(1)Valve is short-circuited. (2)Valve is open-circuited. (3)ON/OFF count of the valve has exceeded the set value.	Check the parts with error by using the LED display or unit diagnostic data* or master. (1)Check the operation after replacing the valve. (2)Check the operation after replacing the valve. (3)Reset the ON/OFF count to zero or change the set value. Or invalidate diagnosis.
9	Red ST(M) LED is ON.		SI unit has failed.	Turn OFF the power for the unit and then turn it ON again. If the error is not eliminated, stop the operation and contact SMC.
	Red/Green ST(M) LED is flashing alternately.		Connection error between units is detected.	Confirm that there is no loose connection between the units and connect them correctly.
10	Red PWR LED is ON. (Diagnosis is activated)		Power supply voltage for control and input is out of range.	Supply 24 VDC ±10% for control and input power source.
	Red PWR(V) LED is ON. (Diagnosis is activated)		Power supply voltage for output is out of range.	Supply 24 VDC +10/-5% for output power source.

*: The unit diagnostic data can be checked using EtherNet/IP object, Web server or Handheld Terminal.
Refer to "Diagnostic" (page 62) for details.

No.	Problem	Presumed cause	Troubleshooting
11	L/A IN and L/A OUT LEDs are OFF.	LINK has not yet been established.	Check the following and restart. (1)Check if the power is supplied to the EtherNet/IP device one level above. (When L/A IN LED is OFF.) (2)Check that the connectors of L/A IN and L/A OUT communication cables are connected and there are no broken wires. (3)Keep noise sources away from the communication cable. ∗: The L/A OUT LED will be OFF if the BUS OUT connector is not used.
	L/A IN or L/A OUT LED is ON.	LINK is established but data has not been received.	Check the following and restart. (1)Check the master condition and run the master. (2)Check that the communication connector is not loose and there are no broken wires. (3)Keep noise sources away from the communication cable.
12	MS: Green LED is flashing	(1)Configuration is not correctly. (2)The master is idle state.	(1)Set the configuration properly. Refer to "Hardware Configuration" (page 64) for details. (2)Set the PLC to RUN status.
	MS: Red LED is flashing	Diagnostic error is detected.	Check the LED status and eliminate the error by referring to countermeasure No.2 to 7.
	MS: Red LED is ON	SI unit failure.	Stop the operation and contact SMC.
	NS: OFF	IP address is not setting.	Set IP address. Refer to "IP address setting switch" (page 19) for details.
	NS: Green LED is flashing	EtherNet/IP™ communication is not established.	Check the following and restart. •Signal line is connected from PLC. •The communication speed of PLC and SI unit is appropriate. •Wire the communication line away from the noise source.
	NS: Red LED is flashing	EtherNet/IP™ communication is time-out..	Check the following, and restart. •Signal line is connected from PLC. •The communication speed of PLC and SI unit is appropriate. •Wire the communication line away from the noise source.
	NS: Red LED is ON	IP address is duplicated.	Reset IP address which has not been used yet. Refer to "IP address setting switch" (page 19) for details.

No.	Problem	Presumed cause	Troubleshooting
13	The valve dose not work correctly	Program etc. is defective.	Check if the ladder program of master, etc. is correct.
		Power supply for output is out of range.	Check if the green PWR(V) LED of the SI unit is ON. If the LED is off, or the red LED is ON, supply 24 VDC +10/-5% to the power supply for output.
		Connection between SI unit and manifold valve is defective.	Check the connectors between the SI unit and manifold valve are not damaged, such as bent pins, and connect them correctly.
		Polarity of output does not match.	IF the polarity of the SI unit and the valve are different, replace one of them to make the combination match. •EX600-SEN3 (PNP output) ⇒ -common type valve •EX600-SEN4 (NPN output) ⇒ +common type valve
		SI unit has failed.	Replace the SI unit with a normal one, and check the operation.
		Valve failure.	Replace the valve with a normal one, and check the operation. Or refer to the troubleshooting of the valve used.

No.	Problem	Presumed cause	Troubleshooting
14	The digital input device does not work correctly.	Polarity of input does not match.	If the polarity (PNP, NPN) of the input unit and the input device are different, replace one of them to make the combination match.
		Power supply for control and input is out of range.	Check if the green PWR LED of the SI unit is ON. If the LED is off, or the red LED is ON, supply 24 VDC ±10% to the power supply for control and input.
		Wiring or connection is defective.	Connect the wiring correctly between the digital input device and the Digital input unit.
		Input unit has failed.	Replace the input unit with a normal one, and check the operation.
		Input device failure.	Replace the input device with a normal one, and check the operation. Or refer to the troubleshooting of the input device used.
	The digital output device does not work correctly.	Polarity of output does not match.	If the polarity (PNP, NPN) of the output unit and the output device are different, replace one of them to make the combination match.
		Power supply for output is out of range.	Check if the green PWR(V) LED of the SI unit is ON. If the LED is off, or the red LED is ON, supply 24 VDC +10/-5% to the power supply for output.
		Wiring or connection is defective.	Connect the wiring correctly between the digital output device and the Digital output unit.
		Output unit has failed.	Replace the Output unit with a normal one, and check the operation.
		Output device failure.	Replace the output device with a normal one, and check the operation. Or refer to the troubleshooting of the output device used.
		Program etc. is defective.	Check if the ladder program of master, etc. is correct.

No.	Problem	Presumed cause	Troubleshooting
15	The analogue input device does not work correctly.	Power supply for control and input is out of range.	Check if the green PWR LED of the SI unit is ON. If the LED is off, or the red LED is ON, supply 24 VDC ±10% to the power supply for control and input.
		Analogue input signal range setting failure.	Check the analogue input device specification, and set the input signal range which satisfies the specification.
		Analogue data format does not match.	Check whether the data format of the Analogue input unit is properly set.
		Wiring or connection is defective.	Connect the wiring correctly between the analogue input device and the Analogue input unit.
		Analogue input unit has failed.	Replace the Analogue input unit with a normal one, and check the operation.
		Analogue input device failure.	Replace the analogue input device with a normal one, and check the operation. Or refer to the troubleshooting of the analogue input device used.
	The analogue output device does not work correctly.	Power supply for output is out of range.	Check if the green PWR(V) LED of the SI unit is ON. If the LED is off, or the red LED is ON, supply 24 VDC +10/-5% to the power supply for output.
		Analogue output signal range setting failure.	Check the analogue output device specification, and set the output signal range which satisfies the specification.
		Analogue data format does not match.	Check whether the data format of the Analogue output unit is properly set.
		Wiring or connection is defective.	Connect the wiring correctly between the analogue output device and the Analogue output unit.
		Analogue output unit has failed.	Replace the Analogue output unit with a normal one, and check the operation.
		Analogue output device failure.	Replace the analogue output device with a normal one, and check the operation. Or refer to the troubleshooting of the analogue output device used.
		Program etc. is defective.	Check if the ladder program of master, etc. is correct.

Parameter Setting

The EX600 parameters can be configured for the system, each unit and each channel. Parameters can be changed by EtherNet/IP™ Object or Web server.

■Parameter definition and setting

With EX600 series, parameters can be set for each unit.
The table below shows settable parameters for the SI unit and input/output units.

•System parameters

No.	Parameter	Definition	Item	Content	Default setting
1	Hold/Clear priority setting	Switch the setting of the output during communication error or communication idling to follow the setting of the SI unit or the parameters.	Via switch	Setting by SI unit switch becomes valid. OFF/Hold can be set output of all.	○
			Via software	Setting by EtherNet/IP™ object or the Web server becomes valid. OFF/Hold/Forced ON can be set per channel.	
2	Byte order of analogue values	Switch the byte sequence with which the analogue values are transferred to the controller.	LSB-MSB	The data format of all analogue units is assumed to be LSB-MSB.	○
			MSB-LSB	The data format of all analogue units is assumed to be MSB-LSB.	

•SI unit parameters (1)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
1	Power supply for control and input voltage monitor	Generated error when control and input power supply voltage goes over approx. 29 V or under 18 V.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Power supply for output voltage monitor	Generated error when output power supply voltage goes over approx. 29 V or under 19 V.	Enable	Generates an error.		Unit
			Disable	Does not generate an error.	○	
3	Short Circuit Detection	Generates error when the short circuit of the valve is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
4	Restart after short circuit	Restore the setting of short circuit detection error after the valve short circuit is cleared.	Auto	Error is automatically cleared when the short circuit is fixed.	○	Unit
			Manual	Even when the short circuit is fixed, error is not cleared until the power is supplied again.		
5	Open Circuit Detection	Generates error when the disconnection of the valve is detected.	Enable	Generates an error.		Channel
			Disable	Does not generate an error.	○	
6	Output setting during communication fault *1	Sets output when communication error is occurred.	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		
7	Output setting during communication idling *1 *2	Output setting at the time of communication idling	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		

•SI unit parameters (2)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range .
8	Valve ON/OFF counter	Generates error when the operation count exceeds the set value. *3	Enable	Generates an error. Val: 1 to 65000 *4		Channel
			Disable	Does not generate an error.	○	
9	Valve ON/OFF counter clear	Clears the valve ON/OFF counter to 0. (Refer to page 83 for the clear method).	–	–	–	–
10	BUS IN port setting	Sets the communication speed and communication method of BUS IN.	Auto	Selects the required communication speed and communication method	○	Unit
			10 HDX			
			10 FDX			
			100 HDX			
			100 FDX			
11	BUS OUT port setting	Sets the communication speed and communication method of BUS OUT.	Auto	Selects the required communication speed and communication method.	○	Unit
			10 HDX			
			10 FDX			
			100 HDX			
			100 FDX			

∗1: This function is valid only when "Hold/Clear priority" of the system parameter is set to "Via software".

∗2: Some PLC does not support an idle mode.

∗3: The count is memorized every hour. When the power supply is turned on again, counting starts from the last value memorized.

∗4: Times for setting is set value x1000 times.

•Digital input unit parameters

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
1	The power supply short circuit detection for control and input	Generates error when the short circuit of the power supply for the input device is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Open circuit detection *1	Generates error when the disconnection of the input device is detected. *2	Enable	Generates an error.		Channel
			Disable	Does not generate an error.	○	
3	Inrush current filter	Selects the over current detection for 100 msec after supplying power.	Enable	Ignores inrush current.		Unit
			Disable	Does not ignore inrush current.	○	
4	Input filtering time	Sets the time to ignore the input signal change.	0.1 ms 1.0 ms 10 ms 20 ms	Selects the time for filtering.	1.0 ms	Unit
5	Input extension time	Sets the time to hold the input signal.	1.0ms 15 ms 100 ms 200 ms	Selects the time to hold the input signal.	15 ms	Unit
6	Input ON/OFF counter	Generates error when the operation count exceeds the set value. *3	Enable	Generates an error. Val: 1 to 65000 *4		Channel
			Disable	Does not generate an error.	○	
7	Input ON/OFF counter clear	Clears the Input ON/OFF counter to 0. (Refer to page 83 for the clear method).	–	–	–	–

∗1: Disconnection detection is a function only available for digital unit (EX600-DXPC1, EX600-DXNC1) with disconnection detection.

∗2: 2-wire type input equipment cannot be correctly detected if its leakage current is 0.5 mA or less while the equipment is in the OFF state (reed sensor, etc.).
Ensure that all input equipment used has a leakage current above 0.5 mA in the OFF state.
3-wire type input equipment cannot be correctly detected if its current consumption is 0.5 mA or less.
The open circuit of input signals cannot be detected.

∗3: The count is memorized every hour. When the power supply is turned on again, counting starts from the last value memorized.

∗4: Times for setting is set value x1000 times.

•Digital output unit parameters

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range.
1	Output load short circuit detection	Generates error when the short circuit of the output device is detected. *1	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Restart after output load short circuit	Restore the setting of short circuit detection error after the output device short circuit is cleared.	Auto	Error is automatically cleared when the short circuit is fixed.	○	Unit
			Manual	Even when the short circuit is fixed, error is not cleared until the power is supplied again.		
3	Open circuit detection	Generates error when the disconnection of the output device is detected.	Enable	Generates an error.		Channel
			Disable	Does not generate an error.	○	
4	Output setting during communication fault *2	Sets output when communication error is occurred.	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		
5	Output setting during communication idling *2 *3	Sets output during communication idling.	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		
6	Output ON/OFF counter	Generates error when the operation count exceeds the set value. *4	Enable	Generates an error. Val: 1 to 65000 *5		Channel
			Disable	Does not generate an error.	○	
7	Output ON/OFF counter clear	Clears the Output ON/OFF counter to 0. (Refer to page 83 for the clear method).	–	–	–	–

∗1: Could be incorrectly recognized as short circuit depending on used load (ex.: lamp load). If detection is incorrect, disable the parameter setting.

∗2: This function is valid only when "Hold/Clear priority" of the system parameter is set to "Via software".

∗3: Some PLC does not support an idle mode.

∗4: The count is memorized every hour. When the power supply is turned on again, counting starts from the last value memorized.

∗5: Times for setting is set value x1000 times.

•Digital I/O unit parameters (1)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range.
1	The power supply short circuit detection for control and input	Generates error when the short circuit of the control or input power supply is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Inrush current filter	Select the over current detection for 100 msec after supplying power.	Enable	Ignores inrush current.		Unit
			Disable	Does not ignore inrush current.	○	
3	Input filtering time	Sets the time to ignore the input signal change.	0.1 ms	Selects the time for filtering.	1.0 ms	Unit
			1.0 ms			
			10 ms			
			20 ms			
4	Input extension time	Sets the time to hold the input signal.	1.0 ms	Selects the time to hold the input signal.	15 ms	Unit
			15 ms			
			100 ms			
			200 ms			
5	Output load short circuit detection	Generates error when the short circuit of the output device is detected. *1	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
6	Restart after output load short circuit	Restore the setting of short circuit detection error after the output device short circuit is cleared.	Auto	Error is automatically cleared when the short circuit is fixed.	○	Unit
			Manual	Even when the short circuit is fixed, error is not cleared until the power is supplied again.		
7	Open circuit detection	Generates error when the disconnection of the output device is detected.	Enable	Generates an error.		Channel
			Disable	Does not generate an error.	○	
8	Output setting during communication fault *2	Sets output when Communication error is occurred.	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		
9	Output setting for communication idling *2 *3	Sets output during communication idling.	Clear	Turn off the output	○	Channel
			Hold	Hold the output		
			ForceON	Turn on the output forcefully		

•Digital I/O unit parameters (2)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
10	Input or Output ON/OFF counter	Generates error when the operation count exceeds the set value. *4	Enable	Generates an error. Val: 1 to 65000 *5		Channel
			Disable	Does not generate an error.	○	
11	Input or Output ON/OFF counter clear	Clears the Input or Output ON/OFF counter to 0. (Refer to page 83 for the clear method).	–	–	–	–

∗1: Could be incorrectly recognized as short circuit depending on used load (ex.: lamp load). If detection is incorrect, disable the parameter setting.

∗2: This function is valid only when "Hold/Clear priority" of the system parameter is set to "Via software".

∗3: Some PLC does not support an idle mode.

∗4: The count is memorized every hour. When the power supply is turned on again, counting starts from the last value memorized.

∗5: Times for setting is set value x1000 times.

•Analogue input unit parameters

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
1	The power supply short circuit detection for the input device	Generates error when the short circuit of the power supply for the input device is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Analogue input range	Sets the analogue input device range.	-10..10 V	Selects the analogue input range.	-10..10 V	Channel
			-5..5 V			
			-20..20 mA			
			0..10 V			
			0..5 V			
			1..5 V			
			0..20 mA			
			4..20 mA			
3	Analogue data format	Sets analogue data type which is output to PLC.	Offset binary	Offset binary.	○	Unit
			Sign & Magnitude	Signed binary.		
			2s complement	2's complement.		
4	Analogue average filter	Sets analogue filtering time.	None	None		Channel
			2AVG	2 value average	○	
			4AVG	4 value average		
			8AVG	8 value average		
5	Over range detection	Generates error when the input value exceeds 0.5% of full span.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
6	Under range detection	Generates error when the input value falls below 0.5% of full span.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
7	User setting value upper limit error	Generates error when the input value exceeds the set value.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	
8	User setting value lower limit error	Generates error when the input value falls below the set value.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	

∗1: Set value shall be set per analogue input range within settable range in the table below.
When the analogue input range is changed, check the set value and change it to an appropriate value.

Table. Settable range of user set value

Range	Settable value range	
	Lower limit	Upper limit
-10..+10 V	-10.50 to +10.45 V	-10.45 to +10.50 V
-5..+5 V	-5.25 to +5.22 V	-5.22 to +5.25 V
-20..+20 mA	-21.00 to +20.90 mA	-20.90 to +21.00 mA
0..10 V	0.00 to +10.45 V	+0.05 to +10.50 V
0..5 V	0.00 to +5.22 V	+0.03 to +5.25 V
1..5 V	+0.75 to +5.22 V	+0.78 to +5.25 V
0..20 mA	0.00 to +20.90 mA	+0.10 to +21.00 mA
4..20 mA	+3.00 to +20.90 mA	+3.10 to +21.00 mA

Correspondence table for user set upper or lower limit

Range	Via E.O. *1	Via W.S. *2	Expected value
-10..+10 V	0 to 1050 32768 to 33818	0 to 1050 -0 to -1050	+0.00 to +10.50 V -0.00 to -10.50 V
-5..+5 V	0 to 525 32768 to 33293	0 to 525 -0 to -525	+0.00 to +5.25 V -0.00 to -5.25 V
-20..+20 mA	0 to 2100 32768 to 34868	0 to 2100 -0 to -2100	+0.00 to +21.00 mA -0.00 to -21.00 mA
0..10 V	0 to 1050	0 to 1050	+0.00 to +10.50 V
0..5 V	0 to 525	0 to 525	+0.00 to +5.25 V
1..5 V	75 to 525	75 to 525	+0.75 to +5.25 V
0..20 mA	0 to 2100	0 to 2100	+0.00 to +21.00 mA
4..20 mA	300 to 2100	300 to 2100	+3.00 to +21.00 mA

∗1: Follow the methods below when assigning the user set upper and lower limit by E.O.

•Assigning positive value: Input the required data x 100 in decimal system.

Example: +10.50 V is assigned --- Assign 10.50 x 100 = 1050 by E.O.

•Assigning negative value: Convert the absolute value x 100 to be assigned in 16bit binary. Then, change the most significant bit to "1" before inputting.

Example: -10.50 V is assigned --- Assign 10.50 x 100 = 1050 → 10000011010b → 1000010000011010b → 33818 by E.O.

∗2: When assigning the user set upper and lower limit by W.S., input the required data x 100 in decimal system.

•Analogue output unit parameters (1)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
1	The power supply short circuit detection for the output device	Generates error when the short circuit of the output device is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Analogue output range	Sets the range of the analogue output device.	0..10 V	Selects the analogue output range.	0..10 V	Channel
			0..5 V			
			1..5 V			
			0..20 mA			
			4..20 mA			
3	Analogue data format	Sets analogue data type which is output to PLC.	Offset binary	Offset binary.	○	Unit
			Sign & Magnitude	Signed binary.		
			2s complement	2's complement.		
			Scaled	Scale conversion type.		
4	User setting value upper limit error	Generates error when the output value exceeds the set value.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	
	Scale upper limit setting	Sets the scale upper limit. Generates error when the output value exceeds the upper limit.	Enable	Generates an error. Val: -32766 to 32767		
			Disable	Does not generate an error. Val: -32766 to 32767	○ Val: 1000	
5	User setting value lower limit error	Generates error when the output value falls bellow the set value.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	
	Scale lower limit setting	Sets the scale lower limit. Generates error when the output value falls below the lower limit.	Enable	Generates an error. Val: -32767 to 32766		
			Disable	Does not generate an error. Val: -32767 to 32766	○ Val: 0	
6	Output setting for communication error *2	Sets output when communication error is occurred.	Enable	Output will be user fault value. *1		Channel
			Disable	Output will be held last state.	○	

•Analogue output unit parameters (2)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
7	Output setting for communication idling *2 *3	Sets output during communication idling.	Enable	Output will be user idle value. *1		Channel
			Disable	Output will be held last state.	○	

∗1: Set value shall be set per analogue input range within settable range in the table below.
When the analogue input range is changed, check the set value and change it to an appropriate value.
∗2: This function is valid only when "Hold/Clear priority" of the system parameter is set to "Via software".
∗3: Some PLC does not support an idle mode.

Settable range for user set upper or lower limit and output value at communication error and idling

Range	Settable range for user set upper or lower limit		Settable range for output value at communication error and idling
	Lower limit	Upper limit	
0..10 V	0.00 to +10.45 V	+0.05 to +10.50 V	0.00 to +10.50 V
0..5 V	0.00 to +5.22 V	+0.03 to +5.25 V	0.00 to +5.25 V
1..5 V	+0.75 to +5.22 V	+0.78 to +5.25 V	+0.75 to +5.25 V
0..20 mA	0.00 to +20.90 mA	+0.10 to +21.00 mA	0.00 to +21.00 mA
4..20 mA	+3.00 to +20.90 mA	+3.10 to +21.00 mA	+3.00 to +21.00 mA

Correspondence table for user set upper or lower limit and output value at communication error and idling (E.O./W.S.)
(Data format: other than scale conversion format)

Range	Set value (Offset Binary Signed Magnitude 2's Complement)	Expected value
0..10 V	0 to 1050	0.00 to +10.50 V
0..5 V	0 to 525	0.00 to +5.25 V
1..5 V	75 to 525	+0.75 to +5.25 V
0..20 mA	0 to 2100	0.00 to +21.00 mA
4..20 mA	300 to 2100	+3.00 to +21.00 mA

∗: When the data format is a type other than scale conversion, input the desired voltage or current x 100 in decimal system.
∗: If the data format is scaled data format, set the data as follows, regardless of the range setting.

Correspondence table for user set upper or lower limit and output value at communication error and idling (E.O./W.S.)
(Data format: scale conversion format)

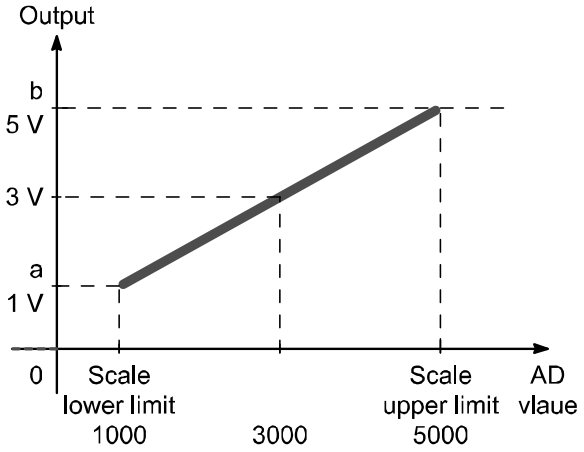
E.O. set value	W.S. set value	Expected value
0 to 32767	0 to 32767	+0 to +32767
32768 to 65535	-0 to -32767	-0 to -32767

Scaled data format

Function to set any value between "-32767 to 32767" as the AD value for output signal range. Resolution is determined by specifying the upper and lower scale limit.

$$\text{Resolution} = \frac{\text{Upper limit value of the range} - \text{Lower limit value of the range}}{\text{Upper limit value of the scale} - \text{Lower limit value of the scale}}$$

Example: when the range is 1 to 5 V output



(1)Set the range to 1 to 5 V.

(2)When the upper limit of the scale is set to 5000, and the lower limit of the scale is set to 1000, the result will be as follows.

1000･･･1 V output
2000･･･2 V output
3000･･･3 V output
4000･･･4 V output
5000･･･5 V output

(3)The resolution from 1 to 5 V is 1/1000 based on the calculation.

(5 V – 1 V) / (5000 – 1000) = 1/1000

Scale set value (AD value)		Output signal range (a to b)				
	Decimal number	Voltage [V]			Current [mA]	
		0 to 10	1 to 5	0 to 5	0 to 20	4 to 20
Scale upper limit	-32766 to 32767	10	5	5	20	20
Scale lower limit	-32767 to 32766	0	1	0	0	4

∗: If the data format is scaled data format, set the data as follows, regardless of the range setting.

Correspondence table for scale upper or lower limit and output value at communication error and idling (E.O./W.S.)

(Data format: scale conversion format)

E.O. set value	W.S. set value	Expected value
0 to 32767	0 to 32767	+0 to +32767
32768 to 65535	-0 to -32767	-0 to -32767

Example: To set the Fault Value to 4 V when the range is 1 to 5 V (analogue output range), scale upper limit 5000, and scale lower limit 1000, set 4000 to Fault Value using the PLC.

•Analogue I/O unit parameters (1)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range
1	The power supply short circuit detection for the input or output device	Generates error when the short circuit of the input device power supply or output device is detected.	Enable	Generates an error.	○	Unit
			Disable	Does not generate an error.		
2	Analogue input or output range	Sets the analogue input or output range.	0..10 V	Select the analogue input or output range.	1..5 V	Channel
			0..5 V			
			1..5 V			
			0..20 mA			
			4..20 mA			
3	Analogue data format	Sets analogue data type which is output to PLC.	Offset binary	Offset binary.	○	Unit
			Sign & Magnitude	Signed binary.		
			2s complement	2's complement.		
			Scaled	Scale conversion type.		
4	Analogue average filter	Sets analogue input filtering time.	None	None		Channel
			2AVG	2 value average	○	
			4AVG	4 value average		
			8AVG	8 value average		
5	Over range detection	Generates error when the input value exceeds 0.5% of full span.	Enable	Generates an error.		Unit
			Disable	Does not generate an error.	○	
6	Under range detection	Generates error when the input value falls below 0.5% of full span.	Enable	Generates an error.		Unit
			Disable	Does not generate an error.	○	
7	User's set value upper limit error	Generates error when the input or output value exceeds the set value.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	
	Scale upper limit setting	Sets the scale upper limit. Generates error when the input or output value exceeds the upper limit.	Enable	Generates an error. Val: -32766 to 32767		
			Disable	Does not generated an error. Val: -32766 to 32767	○ Val: 1000	

•Analogue I/O unit parameters (2)

No.	Parameter	Definition	Item	Content	Default setting	Parameter setting range .
8	User's set value lower limit error	Generates error when the input or output value falls below the lower limit.	Enable	Generates an error. *1		Channel
			Disable	Does not generate an error.	○	
	Scale lower limit setting	Sets the scale lower limit. Generates error when the input or output value falls below the lower limit.	Enable	Generates an error. Val: -32767 to 32766		
			Disable	Does not generate an error. Val: -32767 to 32766	○ Val: 0	
9	Output setting for communication fault *2	Sets output when communication error is occurred.	Enable	Output will be user fault value. *1		Channel
			Disable	Output will be held last state.	○	
10	Output setting for communication idling *2 *3	Sets output during communication idling.	Enable	Output will be user idle value. *1		Channel
			Disable	Output will be held last state.	○	

∗1: Set value shall be set per analogue output range within settable range in the table below.
When the analogue output range is changed, check the set value and change it to an appropriate value.

∗2: This function is valid only when "Hold/Clear priority" of the system parameter is set to "Via software".

∗3: Some PLC does not support an idle mode.

Settable range for user set upper or lower limit and output value at communication error and idling

Range	Settable range for user set upper or lower limit		Settable range for output value at communication error and idling
	Lower limit	Upper limit	
0..10 V	0.00 to +10.45 V	+0.05 to +10.50 V	0.00 to +10.50 V
0..5 V	0.00 to +5.22 V	+0.03 to +5.25 V	0.00 to +5.25 V
1..5 V	+0.75 to +5.22 V	+0.78 to +5.25 V	+0.75 to +5.25 V
0..20 mA	0.00 to +20.90 mA	+0.10 to +21.00 mA	0.00 to +21.00 mA
4..20 mA	+3.00 to +20.90 mA	+3.10 to +21.00 mA	+3.00 to +21.00 mA

Correspondence table for user set upper or lower limit and output value at communication error and idling (E.O./W.S.)
(Data format: other than scale conversion format)

Range	Value (Offset Binary Signed Magnitude 2's Complement)	Expected value
0..10 V	0 to 1050	0.00 to +10.50 V
0..5 V	0 to 525	0.00 to +5.25 V
1..5 V	75 to 525	+0.75 to +5.25 V
0..20 mA	0 to 2100	0.00 to +21.00 mA
4..20 mA	300 to 2100	+3.00 to +21.00 mA

∗: When the data format is a type other than scale conversion, input the required voltage or current x 100 in decimal system.
∗: If the data format is scaled data format, set the data as follows, regardless of the range setting.

Correspondence table for user set upper or lower limit and output value at communication error and idling (E.O./W.S.)
(Data format: scale conversion format)

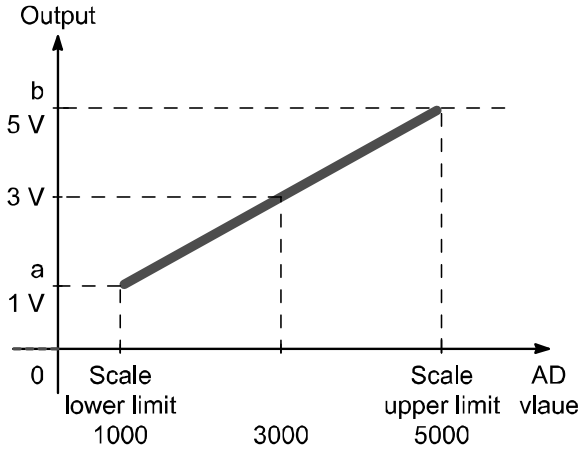
E.O. set value	W.S. set value	Expected value
0 to 32767	0 to 32767	+0 to +32767
32768 to 65535	-0 to -32767	-0 to -32767

Scaled data format

Function to set any value between "-32767 to 32767" as the AD value for I/O signal range. Resolution is determined by specifying the upper and lower scale limit.

$$\text{Resolution} = \frac{\text{Upper limit value of the range} - \text{Lower limit value of the range}}{\text{Upper limit value of the scale} - \text{Lower limit value of the scale}}$$

Example: when the range is 1 to 5 V output



(1)Set the range to 1 to 5 V.
(2)When the upper limit of the scale is set to 5000, and the lower limit of the scale is set to 1000, the result will be as follows.
1000･･･1 V output
2000･･･2 V output
3000･･･3 V output
4000･･･4 V output
5000･･･5 V output
(3)The resolution from 1 to 5 V is 1/1000 based on the calculation.
(5 V – 1 V) / (5000 – 1000) = 1/1000

Scale set value (AD value)		Input/Output signal range (a to b)				
	Decimal number	Voltage [V]			Current [mA]	
		0 to 10	1 to 5	0 to 5	0 to 20	4 to 20
Scale upper limit	-32766 to 32767	10	5	5	20	20
Scale lower limit	-32767 to 32766	0	1	0	0	4

∗: If the data format is scaled data format, set the data as follows, regardless of the range setting.

Correspondence table for scale upper or lower limit and output value at communication error and idling (E.O./W.S.)

(Data format: scale conversion format)

E.O. set value	W.S. set value	Expected value
0 to 32767	0 to 32767	+0 to +32767
32768 to 65535	-0 to -32767	-0 to -32767

Example: To set the Fault Value to 4 V when the range is 1 to 5 V (analogue output range), scale upper limit 5000, and scale lower limit 1000, set 4000 to Fault Value using the PLC.

I/O Map

Allocated input and output bytes of each unit type

Allocated input and output size is changable according to the diagnosis setting and connected EX600 unit type. The allocated input and output bytes for each EX600 unit are shown below.

Unit	Unit part number	Allocated bytes	
		Input	Output
SI unit	EX600-SEN3 / 4 (32 outputs)	0	4
	EX600-SEN3 / 4 (32 outputs) (with diagnostic data)	4	4
Digital input unit	EX600-DX□B (8 inputs)	1	0
	EX600-DX□C (8 inputs)	1	0
	EX600-DX□C1 (8 inputs) (with open circuit detection)	1	0
	EX600-DX□D (16 inputs)	2	0
	EX600-DX□E (16 inputs)	2	0
	EX600-DX□F (16 inputs)	2	0
Digital output unit	EX600-DY□B (8 outputs)	0	1
	EX600-DY□E (16 outputs)	0	2
	EX600-DY□F (16 outputs)	0	2
Digital I/O unit	EX600-DM□E (8 inputs/8 outputs)	1	1
	EX600-DM□F (8 inputs/8 outputs)	1	1
Analogue input Unit	EX600-AXA (2 channels)	4 (2 bytes per channel)	0
Analogue output Unit	EX600-AYA (2 channels)	0	4 (2 bytes per channel)
Analogue I/O Unit	EX600-AMB (2/2 channels)	4 (2 bytes per channel)	4 (2 bytes per channel)

When configuring the input and output data size, please ensure the following steps are taken;
•The minimum value of both the input and output data size is 2 bytes.
If the EX600 data size is 0 or 1byte, this must be set to 2 bytes.
•If the input or output size is an odd number, add 1 byte, to make it an even number of bytes.

The I/O map is shown with the following unit configuration as an example.

<Example 1>

	Unit 0	Unit 1	
End plate	DY□B Digital output unit 1 byte output	SEN3 SI unit 4 bytes output	Valve

Input data: None

Output data: (Unit 0) Digital output Unit (EX600-DY□B): 1 byte occupied
(Unit 1) SI Unit (EX600-SEN3): 4 bytes occupied

•When Diagnostic mode 0 is selected

	Input data	Output data	
Byte0	Padding data	DY□B (Unit 0)	Output 0 to 7
Byte1		SEN3 (Unit 1)	Output 0 to 7
Byte2			Output 8 to 15
Byte3			Output 16 to 23
Byte4			Output 24 to 31
Byte5		Padding data	
Total	2 bytes	6 bytes	

•When Diagnostic mode 1 is selected

	Input data	Output data	
Byte0	Diagnostic data byte0	DY□B (Unit 0)	Output 0 to 7
Byte1	Diagnostic data byte1	SEN3 (Unit 1)	Output 0 to 7
Byte2	Diagnostic data byte2		Output 8 to 15
Byte3	Diagnostic data byte3		Output 16 to 23
Byte4			Output 24 to 31
Byte5		Padding data	
Total	4 bytes	6 bytes	

<Example 2>

	Unit 0	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	
End plate	AXA Analogue input 4 byte Input	DY□B Digital output 1 byte Output	DY□B Digital output 1 byte Output	DX□B Digital input 1 byte Input	DX□D Digital input 2 byte Input	SEN3 SI unit 4 byte Output	Valve

Input data: (Unit 0) Analogue input Unit (EX600-AXA): 4 bytes occupied
(Unit 3) Digital input Unit (EX600-DX□B): 1 byte occupied
(Unit 4) Digital input Unit (EX600-DX□D): 2 bytes occupied

Output data: (Unit 1) Digital output Unit (EX600-DY□B): 1 byte occupied
(Unit 2) Digital output Unit (EX600-DY□B): 1 byte occupied
(Unit 5) SI Unit (EX600-SEN3): 4 bytes occupied

•When Diagnostic mode 0 and byte order of analogue value **(LSB-MSB)** are selected. *1

	Input data		Output data	
Byte0	AXA channel 0 (Unit 0)	**Lo byte**	DY□B (Unit 1)	Output 0 to 7
Byte1		**Hi byte**	DY□B (Unit 2)	Output 0 to 7
Byte2	AXA channel 1 (Unit 0)	**Lo byte**	SEN3 (Unit 5)	Output 0 to 7
Byte3		**Hi byte**		Output 8 to 15
Byte4	DX□B (Unit 3)	Input 0 to 7		Output 16 to 23
Byte5	DX□D (Unit 4)	Input 0 to 7		Output 24 to 31
Byte6		Input 8 to 15		
Byte7	Padding data			
Total	8 bytes		6 bytes	

•When Diagnostic mode 0 and byte order of analogue value **(MSB-LSB)** are selected. *1

	Input data		Output data	
Byte0	AXA channel 0 (Unit 0)	**Hi byte**	DY□B (Unit 1)	Output 0 to 7
Byte1		**Lo byte**	DY□B (Unit 2)	Output 0 to 7
Byte2	AXA channel 1 (Unit 0)	**Hi byte**	SEN3 (Unit 5)	Output 0 to 7
Byte3		**Lo byte**		Output 8 to 15
Byte4	DX□B (Unit 3)	Input 0 to 7		Output 16 to 23
Byte5	DX□D (Unit 4)	Input 0 to 7		Output 24 to 31
Byte6		Input 8 to 15		
Byte7	Padding data			
Total	8 bytes		6 bytes	

•When Diagnostic mode 1 and byte order of analogue value **(LSB-MSB)** are selected. *1

	Input data		Output data	
Byte0	Diagnostic data byte0		DY□B (Unit 1)	Output 0 to 7
Byte1	Diagnostic data byte1		DY□B (Unit 2)	Output 0 to 7
Byte2	Diagnostic data byte2		SEN3 (Unit 5)	Output 0 to 7
Byte3	Diagnostic data byte3			Output 8 to 15
Byte4	AXA channel 0 (Unit 0)	**Lo byte**		Output 16 to 23
Byte5		**Hi byte**		Output 24 to 31
Byte6	AXA channel 1 (Unit 0)	**Lo byte**		
Byte7		**Hi byte**		
Byte8	DX□B (Unit 3)	Input 0 to 7		
Byte9	DX□D (Unit 4)	Input 0 to 7		
Byte10		Input 8 to 15		
Byte11	Padding data			
Total	12 bytes		6 bytes	

•When Diagnostic mode 1 and byte order of analogue value **(MSB-LSB)** are selected. *1

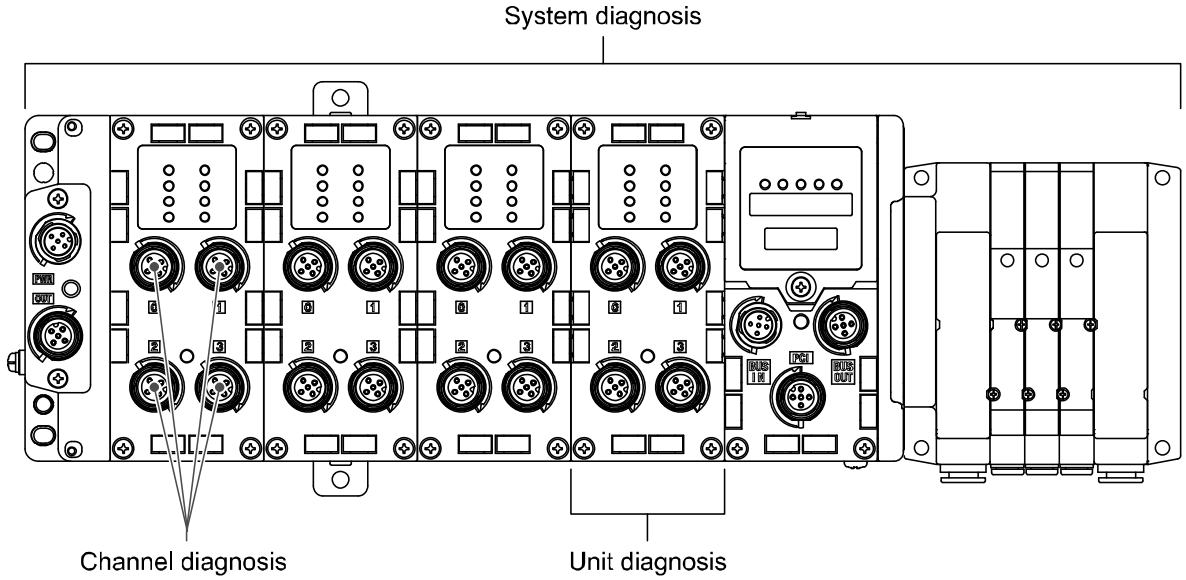
	Input data		Output data	
Byte0	Diagnostic data byte0		DY□B (Unit 1)	Output 0 to 7
Byte1	Diagnostic data byte1		DY□B (Unit 2)	Output 0 to 7
Byte2	Diagnostic data byte2		SEN3 (Unit 5)	Output 0 to 7
Byte3	Diagnostic data byte3			Output 8 to 15
Byte4	AXA channel 0 (Unit 0)	**Hi byte**		Output 16 to 23
Byte5		**Lo byte**		Output 24 to 31
Byte6	AXA channel 1 (Unit 0)	**Hi byte**		
Byte7		**Lo byte**		
Byte8	DX□B (Unit 3)	Input 0 to 7		
Byte9	DX□D (Unit 4)	Input 0 to 7		
Byte10		Input 8 to 15		
Byte11	Padding data			
Total	12 bytes		6 bytes	

*1: Refer to "Parameter Setting" (page 42) for setting the byte order of analogue value.

Diagnosis

By changing the diagnosis switch, the diagnostic data shown below is assigned to the head of input data of the I/O map. (Refer to "Setting and adjustment" for setting the switch.)

Mode	Diagnostic data	Diagnostic size
0	No diagnostic data.	0 byte
1	System diagnosis + Unit diagnosis	4 bytes



■Details of diagnostic data

Diagnostic data

Byte	Bit No.	Diagnostic content
0	0	The analogue value has fallen below the user set value.
	1	The analogue value has exceeded the user set value.
	2	The analogue input value has fallen below the set range.
	3	The analogue input value has exceeded the set range.
	4	The ON/OFF counter has exceeded the set value.
	5	The open circuit has been detected.
	6	The short circuit of the valve output or digital output has been detected.
	7	The short circuit of the power supply for the input/output device has been detected.
1	0	The power supply voltage for output device is outside of the specification.
	1	The power supply voltage for control and input device is outside of the specification.
	2	Reserved
	3	There is a connection failure between each unit (During operation).
	4	There is a connection failure between each unit (When the power supply is applied).
	5	Reserved
	6	System error occurred.
	7	Hardware error occurred.
2	0	There is an error in unit 0.
	1	There is an error in unit 1.
	2	There is an error in unit 2.
	3	There is an error in unit 3.
	4	There is an error in unit 4.
	5	There is an error in unit 5.
	6	There is an error in unit 6.
	7	There is an error in unit 7.
3	0	There is an error in unit 8.
	1	There is an error in unit 9.
	2	Reserved
	3	Reserved
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved

∗: The data of diagnostic content: "0" means No error and "1" means Error.

Hardware Configuration

■EDS file and icon

EDS file is required to configure the EX600. Furthermore, icons are necessary for the display icon of the EX600 on the configure.

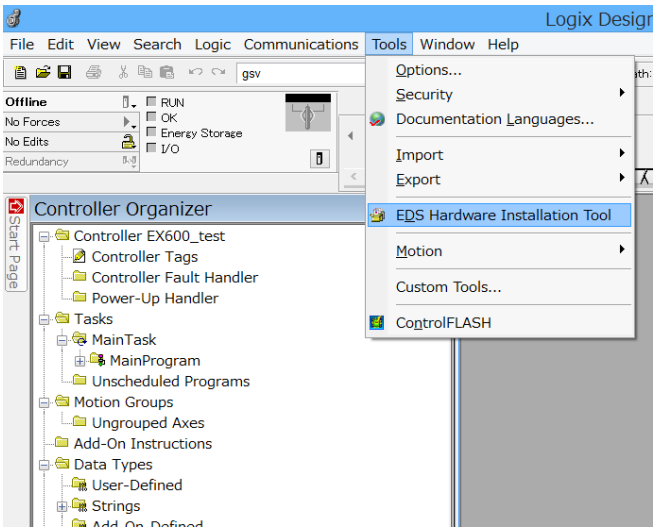
EDS file: ex600_sen_3_4_v10.eds
Icon: ex600_1.ico

■Setting using Logix Designer™

When connecting EX600 series, use Logix Designer™ software by Rockwell Automation.
Refer to the manual of Logix Designer™ for a detailed manner of operation.

1. Example of setting using EDS file

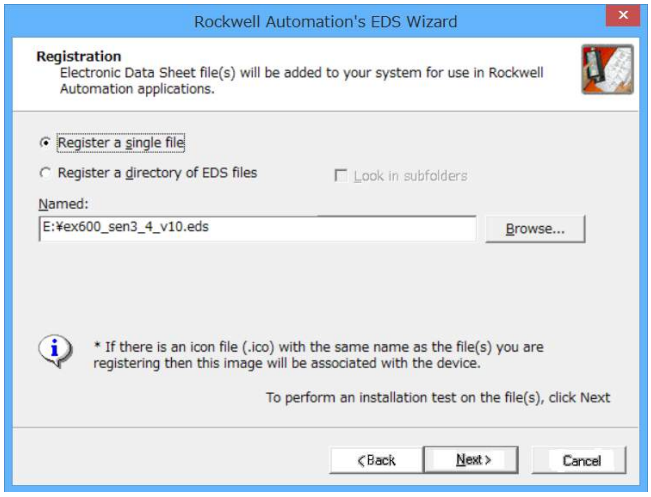
•Select [EDS Hardware Installation Tool] from the [Tools] menu.



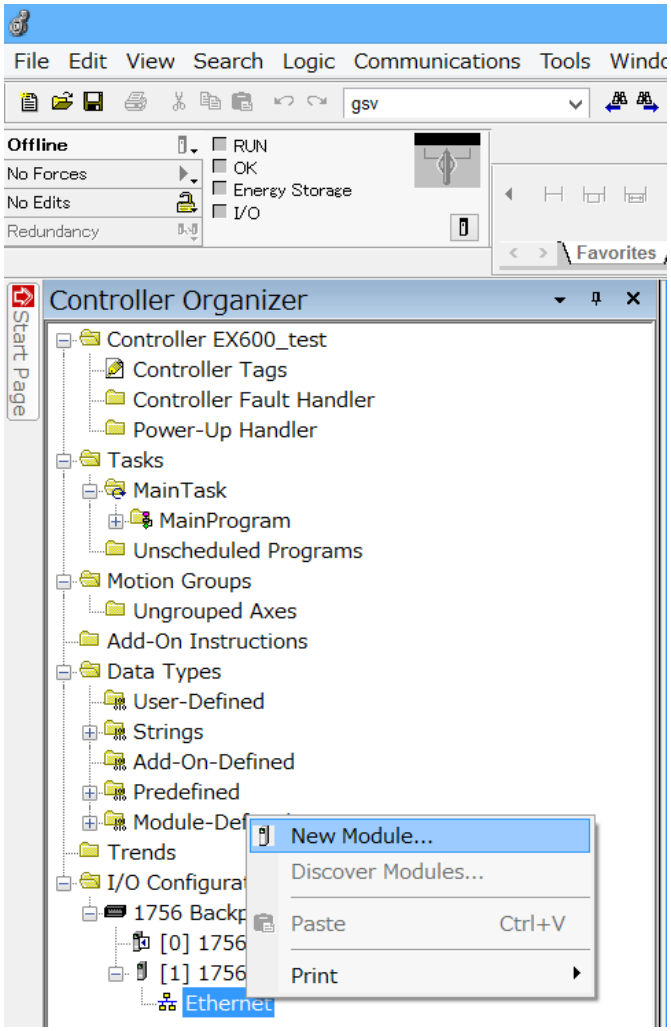
•Select [Register an EDS file(s)] from the [Options] menu. Then Select [Next].



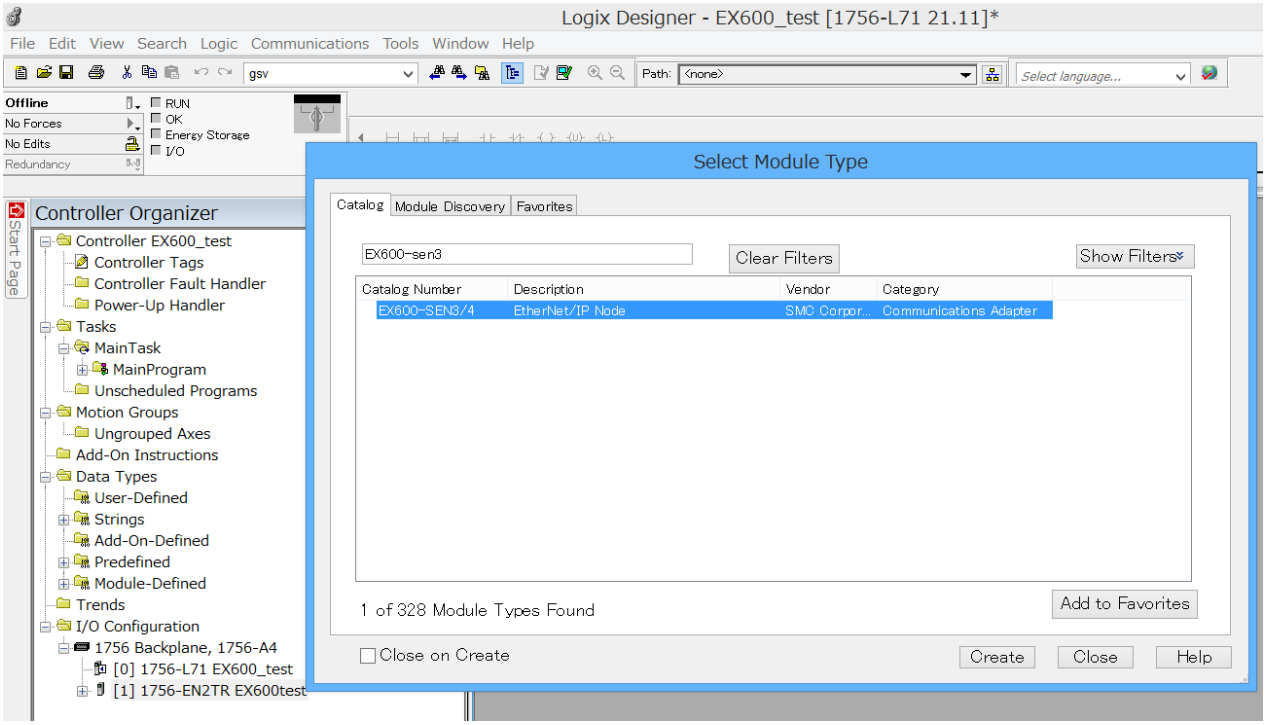
•Select the EDS file to be installed, and select [Next].



•Right-click on the selection [Ethernet] in the [I/O Configuration] folder, and select [New Module].

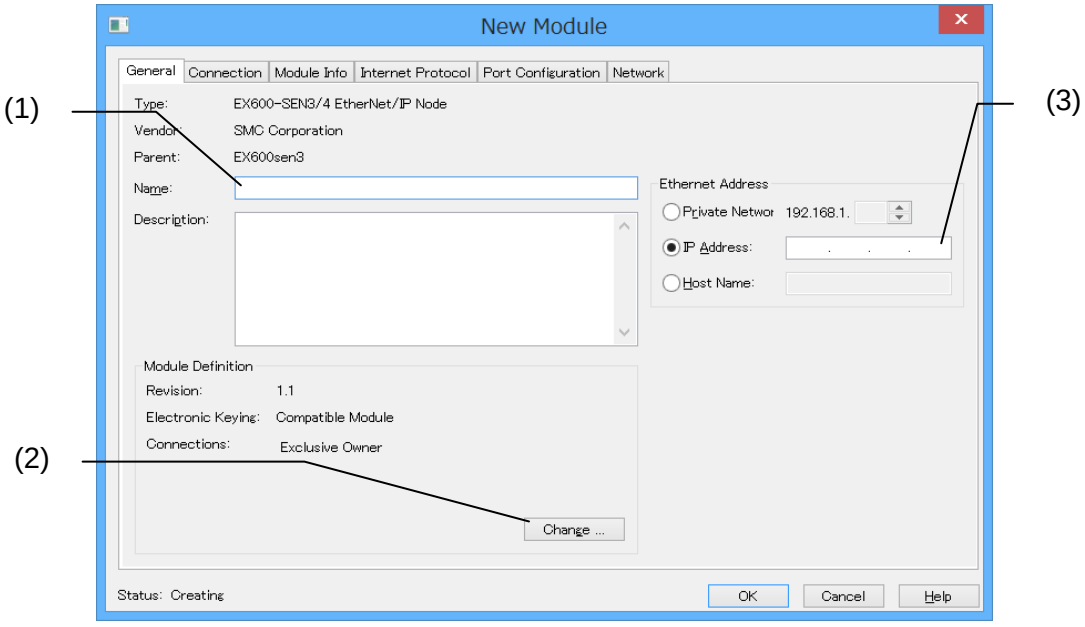


•The [Select Module Type] screen is displayed. Select [EX600-SEN3/4] and select [Create].



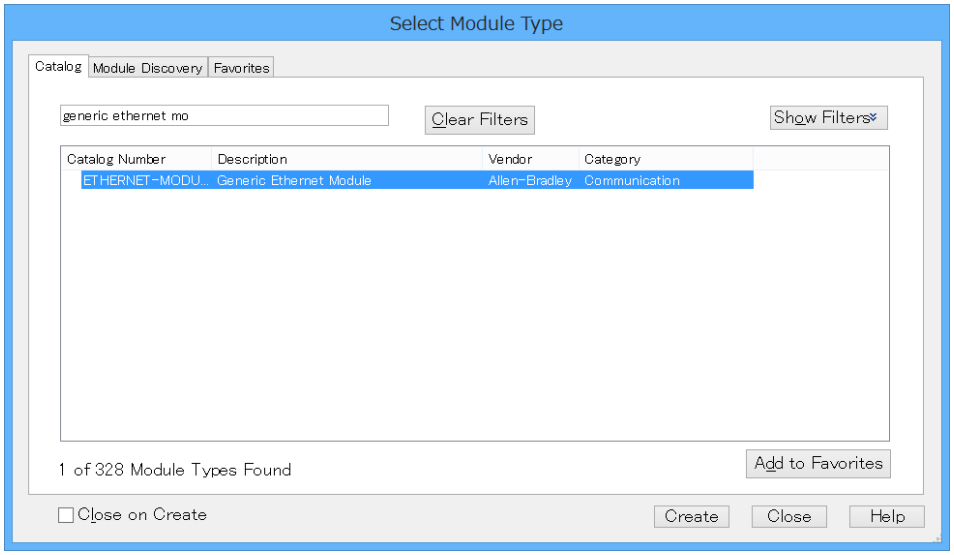
•When the [New Module] screen is displayed, input the information below.

(1) Name: Enter the required unit name.
(2) Module Description: Input/Output data size which is actually connected when the [Change] button is pressed.
(3) IP Address: The IP address setting for the SI unit.



2. Example of setting using the Generic Ethernet Module

•Right-click on the selection [Ethernet] in the [I/O Configuration] folder, and select [New Module].
•The [Select Module Type] screen is displayed. Select [Generic Ethernet Module] and select [Create].



•The [Module Properties] screen is displayed, to perform setup.

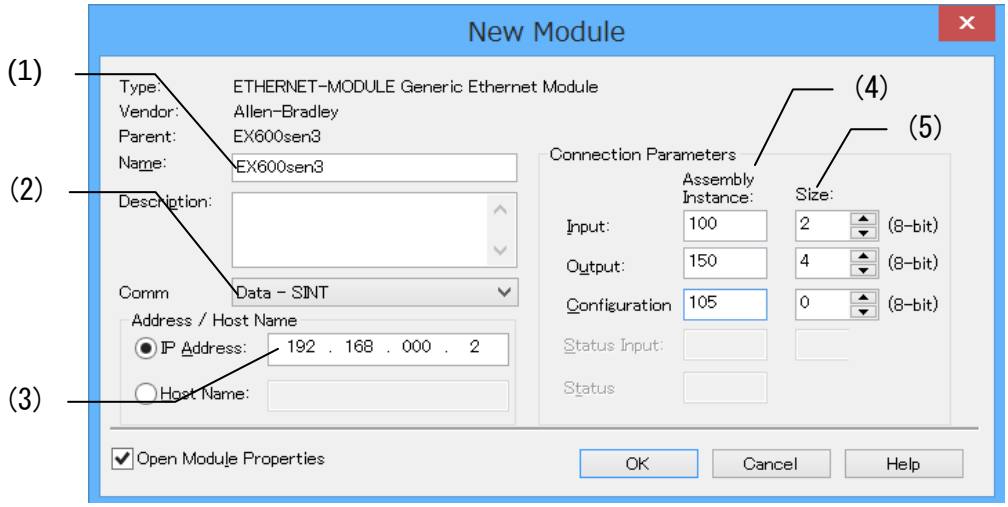
(1) Name: Enter the required unit name.
(2) Select the data format of Comm: Connection Parameters.
(3) IP Address: Enter the IP address setting for the SI unit.
(4) Assembly Instance: Perform setting as shown below.

Description	Decimal	
Common Format	"Data-INT"	"Data-SINT"
Input	100	100
Output	150	150
Configuration	105	105

(5) Size: Perform setting as shown below.

Description	Decimal	
Common Format	"Data-INT"	"Data-SINT"
Input *	MIN. 1 word MAX.32 words	MIN. 2 byte MAX.64 byte
Output *	MIN. 1 word MAX.32 words	MIN. 2 byte MAX.64 byte
Configuration	0 word	0 byte

*: Select the setting depending on the existence of diagnostic data and the unit type connected.



Device Level Ring (DLR) function

This SI unit can be used as an EtherNet/IP™ compliant node for network rings with the DLR function.
To enable the DLR function, all of the ring nodes need to be applicable to the DLR function. Since all of the DLR function settings are performed by the Ring Supervisor, there is no need to perform any settings to the SI unit. Refer to the manual for the Ring Supervisor for detailed settings.

QuickConnect™ function

This SI unit can be used as an EtherNet/IP compliant node for networks with the QuickConnect™ function.
To enable the QuickConnect™ function, it is necessary to perform communication setting and QuickConnect™ function setting to the SI units, as shown below. After satisfying these conditions, setting of the QuickConnect™ compliant EtherNet/IP module (master), must be performed according to the specified procedure,. Refer to the manual for the EtherNet/IP module (master) for the procedure.

1. Communication setting

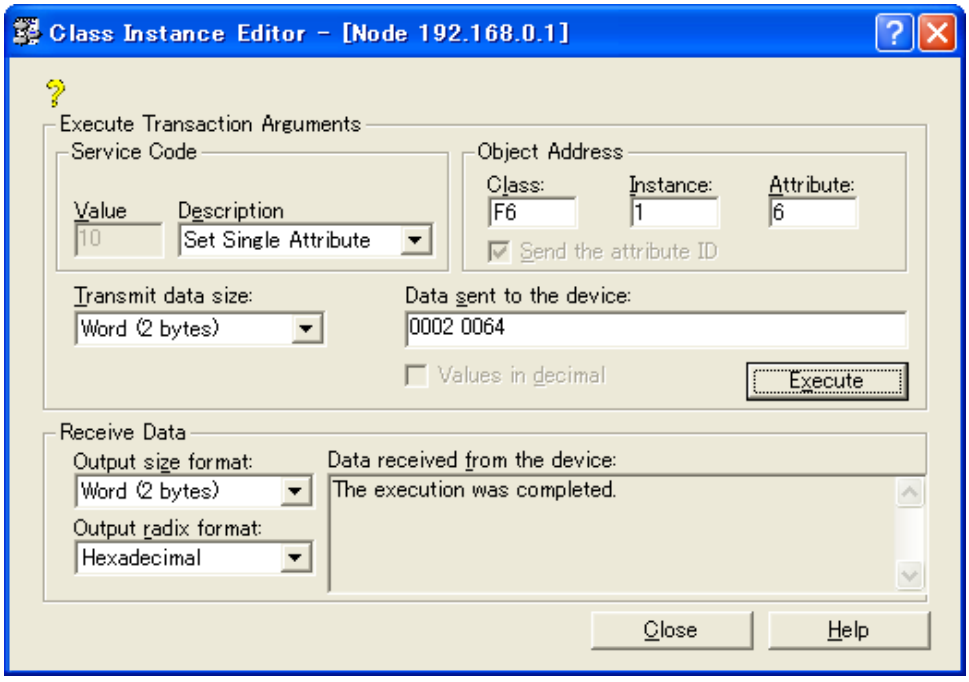
Disable the auto negotiation of the ports being used, set the communication speed to 100 Mbps, and the communication method to full duplex. Change the EtherNet Link Object to the values shown below.
Please return setting to "0001 0000", when the QuickConnect™ function unused.

(1) Bus IN port setting

Class	Instance	Attribute	Value (Word)	QuickConnect™ setting
0xF6	0x01	0X06	0001 0000: Auto-negotiation (default setting)	
			0002 0064: Force 100 Mbps/Full duplex	○

(2) Bus OUT port setting

Class	Instance	Attribute	Value (Word)	QuickConnect™ setting
0xF6	0x02	0X06	0001 0000: Auto-negotiation (default setting)	
			0002 0064: Force 100 Mbps/Full duplex	○



Ex. Configuration of the Bus IN port

2. QuickConnect™ function setting

Change the TCP/IP Object to the values shown below.
Make sure the value is set to "0" when the QuickConnect™ function is not used.

Class	Instance	Attribute	Value	QuickConnect™ setting
0xF5	0x01	0X0C	0: disabled (default setting)	
			1: enabled	○

Note) Upon configuration of QuickConnect™ functions, the polarities of the communication ports reverse, as shown in the table below. Please be aware when selecting communication cables and the polarity of the communication port of the connected device.

Quick Connect™ setting	BUS IN Port	BUS OUT Port
Disabled	AUTO MDI/MDI-X	AUTO MDI/MDI-X
Enabled	MDI	MDI-X

EtherNet/IP™ Object

System diagnostic object (Class: 66h)

Instance	Attribute	Access	Name	Type	Value
01h	64h	Get	Input data length	UINT	I/O mapping input data length (Byte)
	65h		Output data length	UINT	I/O mapping output data length (Byte)
	6Dh		Number of units connected	USINT	Number of units connected
	79h	Get/Set	Hold/Clear	BOOL	0: switch 1: Web Server or EtherNet/IP™ object
	7Ah	Get	System Diagnosis 1	BYTE	0: No error, 1: Error Bit0: The analogue value has fallen below the user set value. Bit1: The analogue value has exceeded the user set value. Bit2: The analogue input value has fallen below the set range. Bit3: The analogue input value has exceeded the set range. Bit4: The ON/OFF counter has exceeded the set value. Bit5: The open circuit has been detected. Bit6: The short circuit of the valve output or digital output has been detected. Bit7: The short circuit of the power supply for the input/output device has been detected.
	7Bh		System Diagnosis 2	BYTE	0: No error, 1: Error Bit0: The power supply voltage for output device is outside of the specification. Bit1: The power supply voltage for control and input is outside of the specification. Bit2: Reserved Bit3: There is a connection failure between each unit (During operation). Bit4: There is a connection failure between each unit (When the power supply is applied). Bit5: Reserved Bit6: System error occurred. Bit7: Hardware error occurred.
	9Ch		Unit connecting condition 1	BYTE	0: No error, 1: Error Bit0: There is an error in unit 0. Bit1: There is an error in unit 1. Bit2: There is an error in unit 2. Bit3: There is an error in unit 3. Bit4: There is an error in unit 4. Bit5: There is an error in unit 5. Bit6: There is an error in unit 6. Bit7: There is an error in unit 7.
	9Dh		Unit connecting condition 2	BYTE	0: No error, 1: Error Bit0: There is an error in unit 8. Bit1: There is an error in unit 9. Bit2: Reserved : Bit7: Reserved
	B0h	Get/Set	Analogue data endian	BOOL	0: LSB First 1: MSB First

Unit/Channel diagnosis object (Class: 67h)

Instance	Attribute	Access	Name	Type	Value
01h to 0Ah *1	6Ch	Get	Unit diagnosis	BYTE	0: No error, 1: Error Bit0: The analogue value has fallen below the user set value. Bit1: The analogue value has exceeded the user set value. Bit2: The analogue input value has fallen below the set range. Bit3: The analogue input value has exceeded the set range. Bit4: The ON/OFF counter has exceeded the set value. Bit5: The open circuit has been detected. Bit6: The short circuit of the valve output or digital output has been detected. Bit7: The short circuit of the power supply for the input/output device has been detected
	6Eh		Channel diagnosis Ch0 to Ch7	BYTE	0: No error, 1: Error Bit0: There is an error in channel 0. : Bit7: There is an error in channel 7.
	6Fh		Channel diagnosis Ch8 to Ch15	BYTE	0: No error, 1: Error Bit0: There is an error in channel 8. : Bit7: There is an error in channel 15.
	70h		Channel diagnosis Ch16 to Ch23	BYTE	0: No error, 1: Error Bit0: There is an error in channel 16. : Bit7: There is an error in channel 23.
	71h		Channel diagnosis Ch24 to Ch31	BYTE	0: No error, 1: Error Bit0: There is an error in channel 24. : Bit7: There is an error in channel 31.

*1: The instance number 01h to 0Ah is allocated to the Unit No. from 0 to 9.

Details of channel diagnosis object (Class: 77h)

Instance	Attribute	Access	Name	Type	Value
01h to 0Ah ∗1	64h to 83h ∗2	Get	Channel diagnosis Ch0 to 31	BYTE	0: No error, 1: Error Bit0: The analogue value has fallen below the user set value. Bit1: The analogue value has exceeded the user set value. Bit2: The analogue input value has fallen below the set range. Bit3: The analogue input value has exceeded the set range. Bit4: The ON/OFF counter has exceeded the set value. Bit5: The open circuit has been detected. Bit6: The short circuit of the valve output or digital output has been detected. Bit7: The short circuit of the power supply for the input/output device has been detected.

∗1: The instance number 01h to 0Ah is allocated to the Unit No. from 0 to 9.

∗2: The attribute number from 64h to 83h is allocated to the channel No. from 0 to 31.

Unit parameter object (Class: 78h)

Instance	Attribute	Access	Name	Type	Value
01h to 0Ah *1	64h	Get/Set	Short circuit detection (Power supply for input device) •Digital input, I/O •Analogue input, output, I/O	BOOL	0: Disable 1: Enable
	65h		Short circuit detection (Output) •SI •Digital output, I/O	BOOL	0: Disable 1: Enable
	66h		Analogue over range detection •Analogue input, I/O	BOOL	0: Disable 1: Enable
	67h		Analogue under range detection •Analogue input, I/O	BOOL	0: Disable 1: Enable
	68h		Inrush current filter •Digital input, I/O	BOOL	0: Disable 1: Enable
	69h		Restart after output load short circuit •SI •Digital output, I/O	BOOL	0: Manual 1: Auto
	6Ah		Input filtering time •Digital input, I/O	USINT	0: 0.1 ms 1: 1.0 ms 2: 10 ms 3: 20 ms
	6Bh		Input extension time •Digital input, I/O	USINT	0: 1.0 ms 1: 15 ms 2: 100 ms 3: 200 ms
	6Ch		Analogue data format •Analogue input, output, I/O	USINT	0: Offset binary 1: Sign and Magnitude 2: 2's complement 3: Scaled (Scaled cannot be set for analogue input)
	6Dh		Power supply for control and input voltage monitor •SI	BOOL	0: Disable 1: Enable
	6Eh		Power supply for output voltage monitor •SI	BOOL	0: Disable 1: Enable

*1: The instance number 01h to 0Ah is allocated to the Unit No. from 0 to 9.

Channel parameter object (1) (Class: 79h to 7Fh)

Class	Instance	Attribute	Access	Name	Type	Value
79h	01h to 0Ah *1	64h to 83h *2	Get/Set	Open circuit detection •SI •Digital input (DX□C1) •Digital output, I/O	BOOL	0: Disable 1: Enable
7Ah				ON/OFF count upper limit detection •SI •Digital input, output, I/O	BOOL	0: Disable 1: Enable
7Bh				ON/OFF count upper limit value •SI •Digital input, output, I/O	UINT	1 to 65000 (Times diagnosis is detected=Set value x1000)
7Ch				Analogue user setting value upper limit detection •Analogue input, output, I/O	BOOL	0: Disable 1: Enable
7Dh				Analogue user setting value of upper limit •Analogue input, output, I/O	UINT	2 bytes AD value Refer to "Parameter Setting" for details.
7Eh				Analogue user setting value lower limit detection •Analogue input, output, I/O	BOOL	0: Disable 1: Enable
7Fh				Analogue user setting value of lower limit •Analogue input, output, I/O	UINT	2 bytes AD value Refer to "Parameter Setting" for details.

∗1: The instance number 01h to 0Ah is allocated to the Unit No. from 0 to 9.

∗2: The attribute number from 64h to 83h is allocated to the channel No. from 0 to 31.

Channel parameter object (2) (Class: 83h to 8Ah)

Class	Instance	Attribute	Access	Name	Type	Value
83h	01h to 0Ah *1	64h to 83h *2	Get/Set	Output setting at communication error •SI •Digital output, I/O •Analogue output, I/O	BOOL	0: Disable (Hold) 1: Enable (Clear or Force ON)
84h				Output setting at communication error (Digital) •SI •Digital output, I/O	BOOL	0: Off (Clear) 1: On (Force ON)
85h				Output setting at communication error (Analogue) •Analogue output, I/O	UINT	2 bytes AD value Refer to "Parameter Setting" for details.
86h				Output setting at communication idling •SI •Digital output, I/O •Analogue output, I/O	BOOL	0: Disable (Hold) 1: Enable (Clear or Force ON)
87h				Output setting value at communication idling (Digital) •SI •Digital output, I/O	BOOL	0: Off (Clear) 1: On (Force ON)
88h				Output setting value at communication idling (Analogue) •Analogue output, I/O	UINT	2 bytes AD value Refer to "Parameter Setting" for details.
89h				Analogue average filter •Analogue input, I/O	USINT	0: None 1: 2 value average 2: 4 value average 3: 8 value average
8Ah				Analogue range •Analogue input, output, I/O	USINT	0: -10…+10 V (Analogue input unit only) 1: -5…+5 V (Analogue input unit only) 2: -20…+20 mA (Analogue input unit only) 3: 0…10 V 4: 0…5 V 5: 1…5 V 6: 0…20 mA 7: 4…20 mA

∗1: The instance number 01h to 0Ah is allocated to the Unit No. from 0 to 9.

∗2: The attribute number from 64h to 83h is allocated to the channel No. from 0 to 31.

Web Server

EX600 Web server functional overview

The Web server function is provided by the EX600-SEN3/4.
The functions available vary depending on the mode.

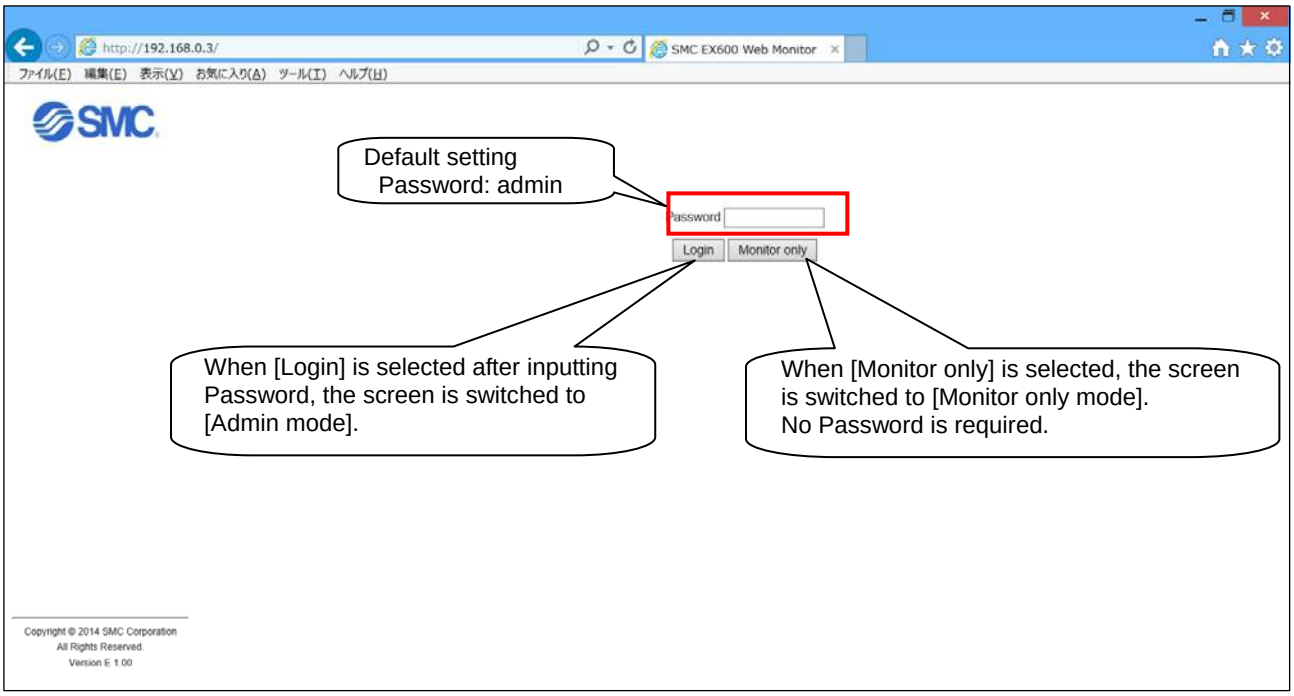
Function	Admin mode	Monitor only mode
I/O Monitor	Available	Available
Diagnostic status monitor	Available	Available
Parameter setting	Available	Not available
Force I/O setting	Available	Not available

Note

This software operates correctly using Internet Explorer 6 to 11. If the functions do not operate correctly with Internet Explorer 10 or later versions, then use Internet Explorer in compatibility mode.

Connecting to a EX600-SEN3 (Ex. Windows 8)

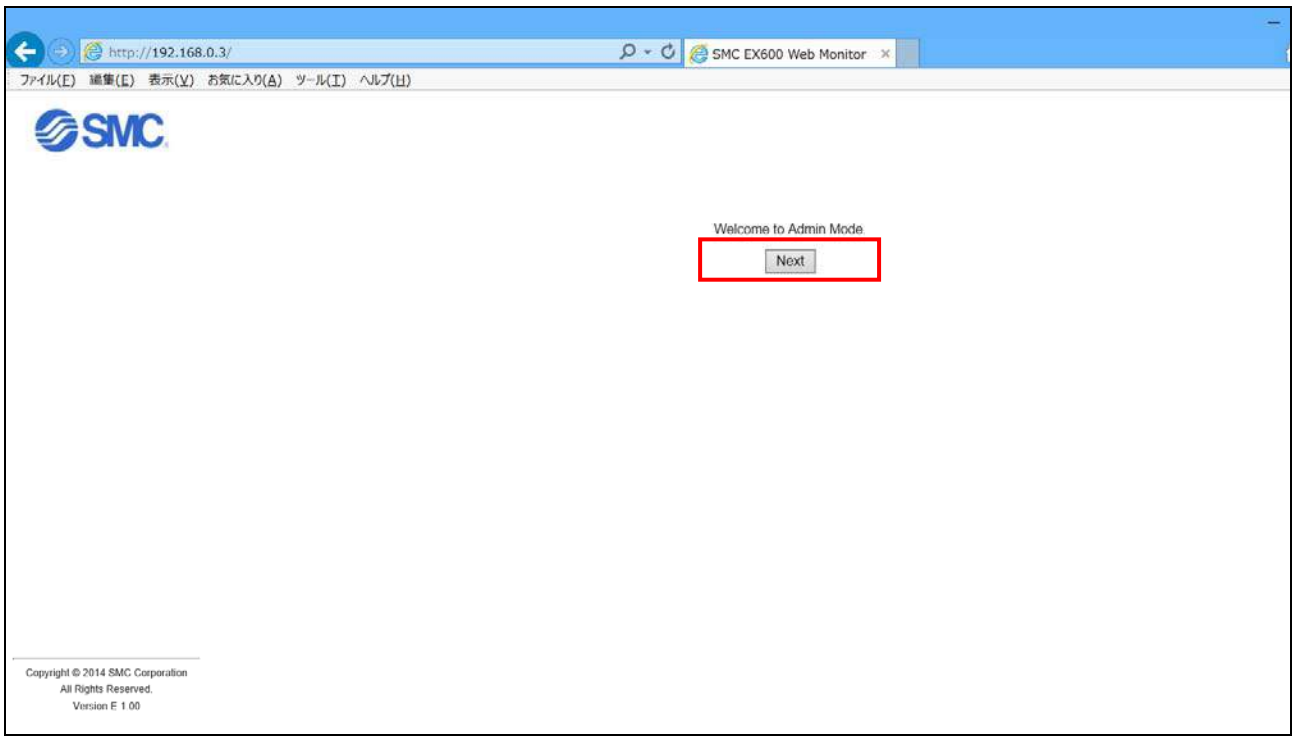
(1) Open a web browser on the PC.
(2) Type the IP address of EX600-SEN3. (Ex. http://192.168.0.3.)
(3) The EX600 webpage should load after several seconds.



Note

Connect one SI unit to one PC.

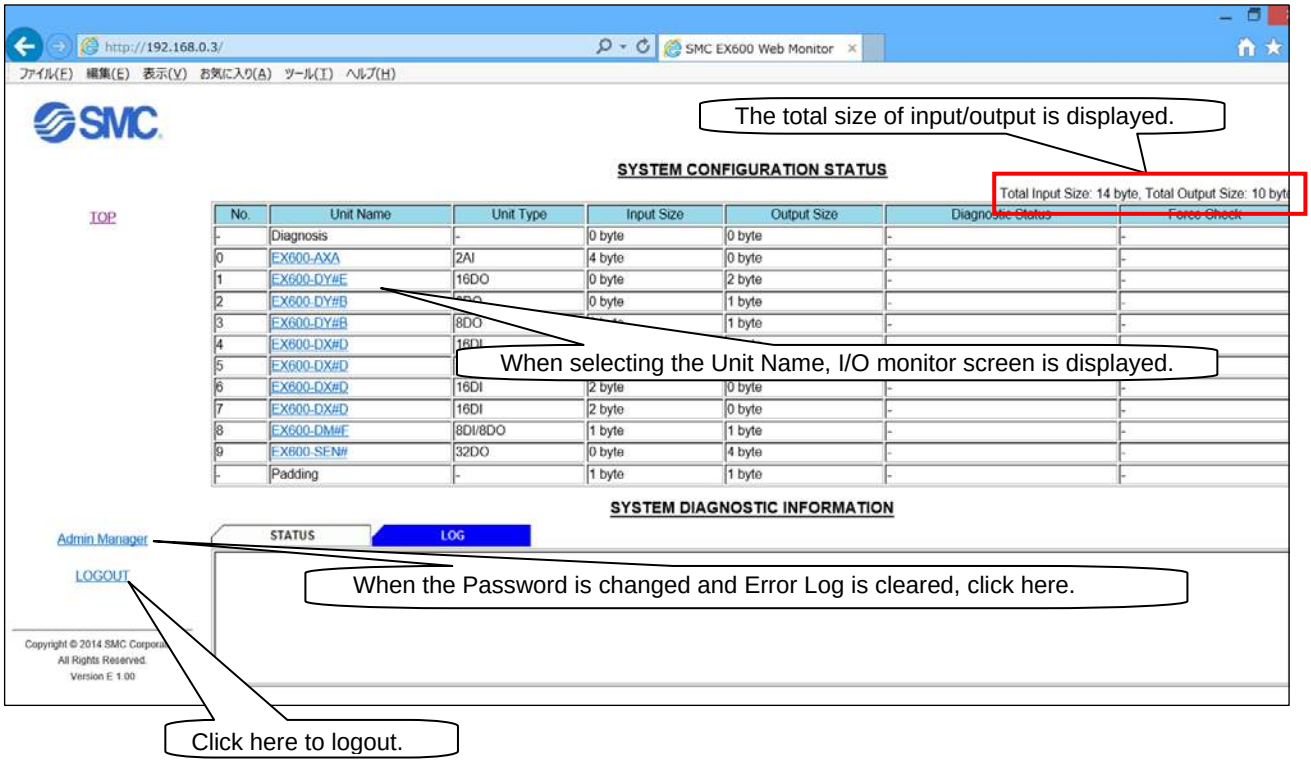
(4) When [Login] is selected after inputting Password, the screen below is displayed. Press the [Next] button.



Caution

The parameter setting is available with Admin mode only.

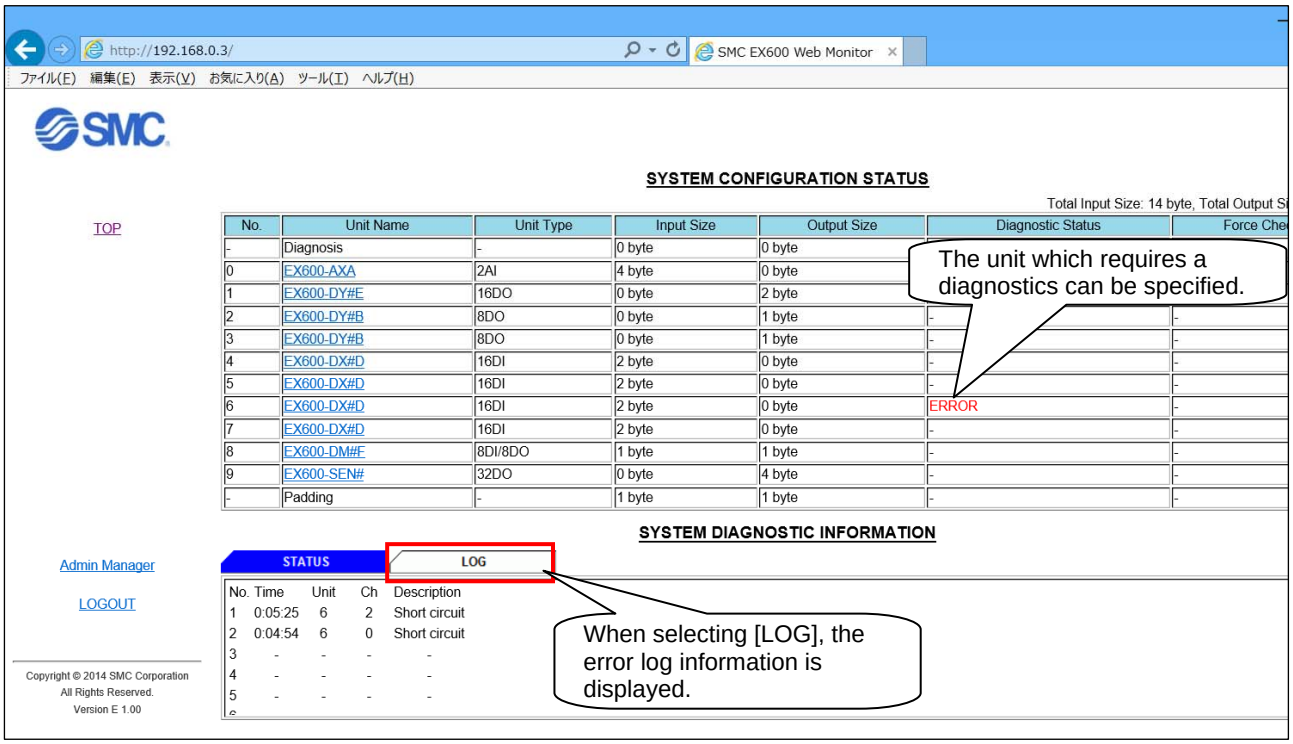
(5) After pressing the [Next] button, the [SYSTEM CONFIGURATION STATUS] screen is displayed.
This screen will be the TOP screen.



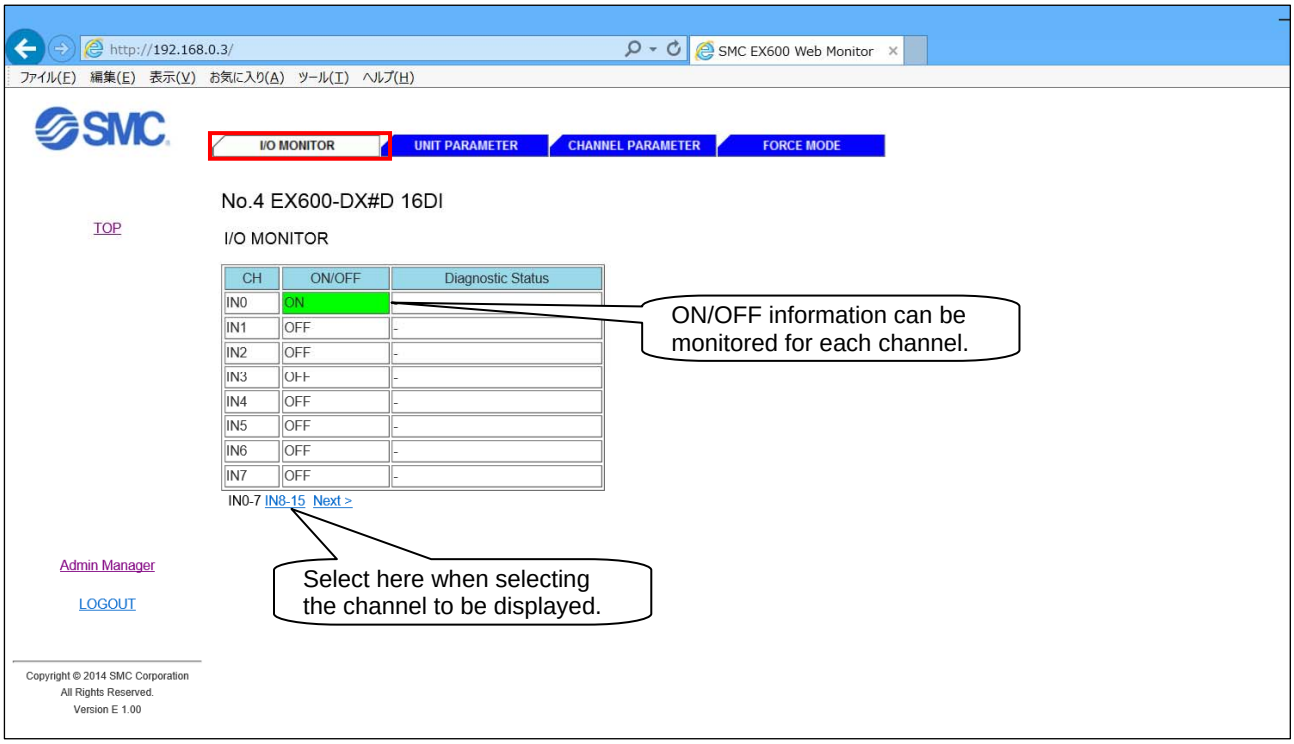
Caution
The screen above shows the case when the unit is connected as shown below.

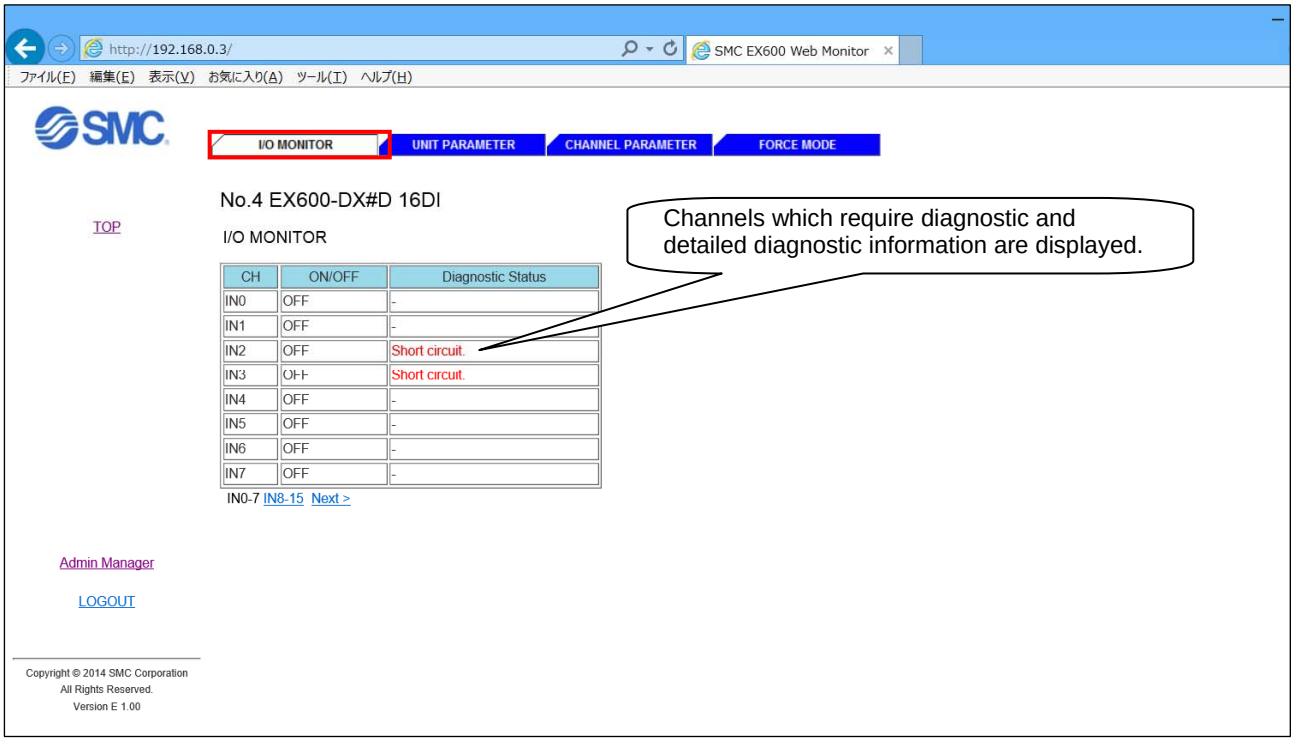
	No.0	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9
End plate	AXA	DY#E	DY#B	DY#B	DX#D	DX#D	DX#D	DX#D	DM#F	SEN

(6) When unit diagnostics is generated, the diagnostic information is displayed on the [SYSTEM CONFIGURATION STATUS] screen.

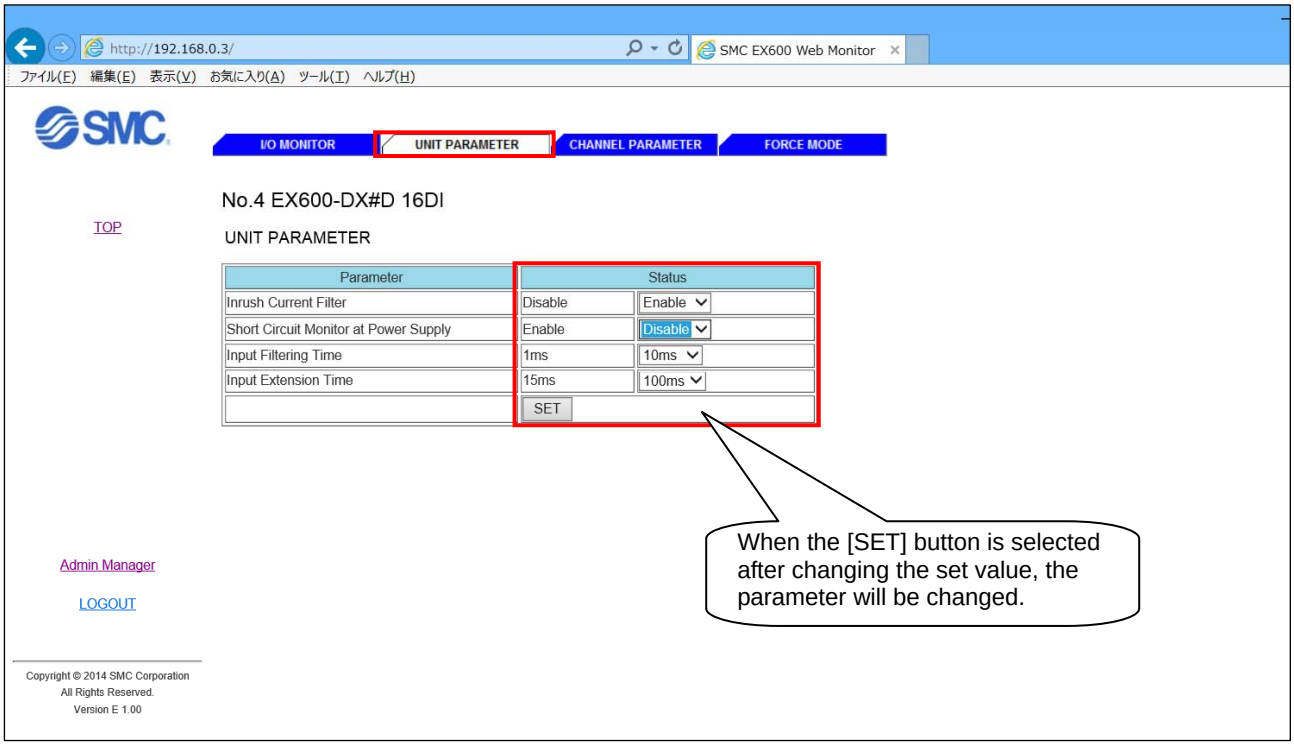


(7) When [Unit Name] is selected on the [SYSTEM CONFIGURATION STATUS] screen, the [I/O MONITOR] screen is displayed.
(EX600-DX□D)

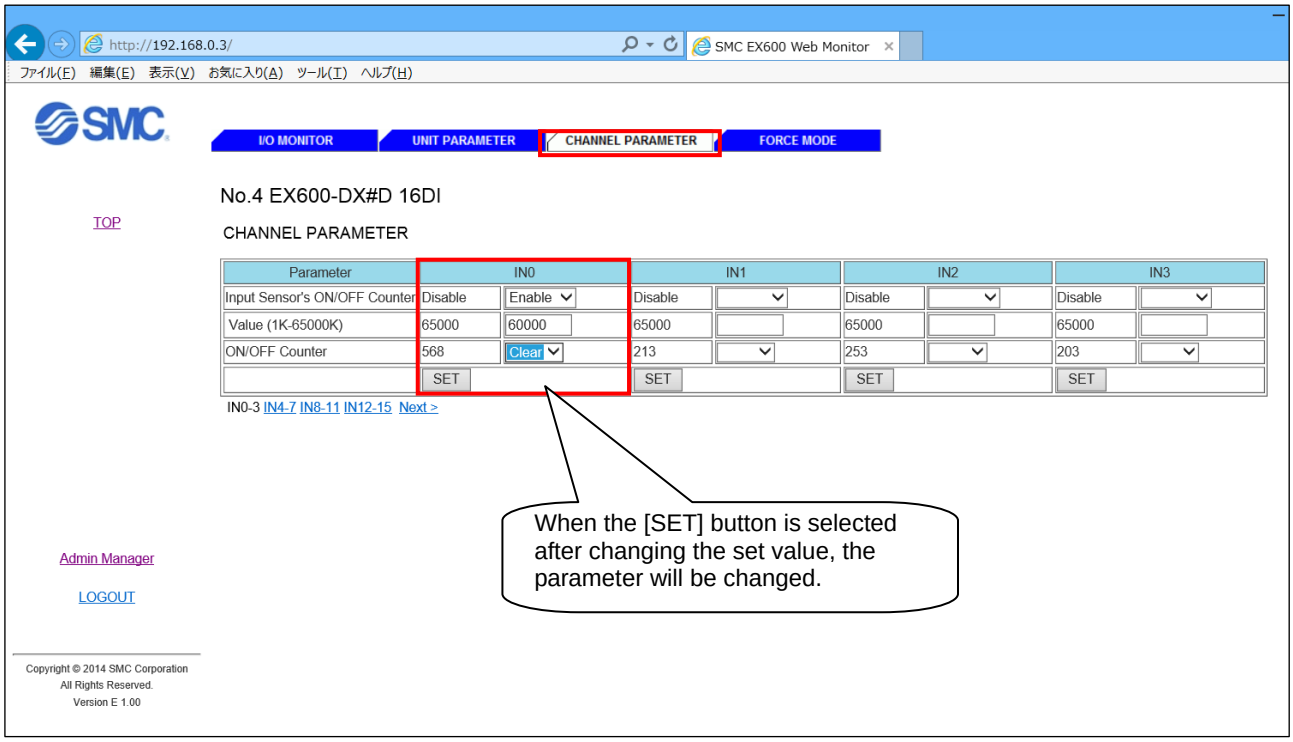




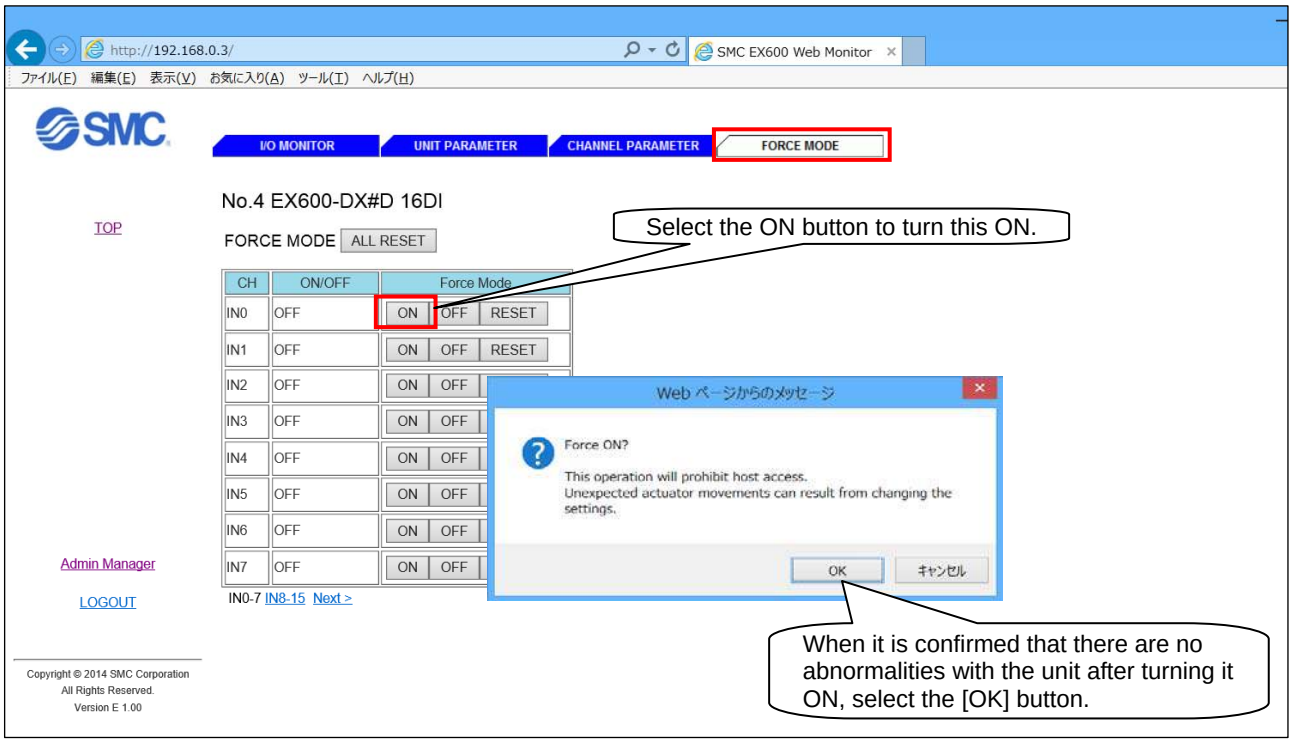
(8) Select the [UNIT PARAMETER] tab to display the [UNIT PARAMETER] screen.
(EX600-DX□D)



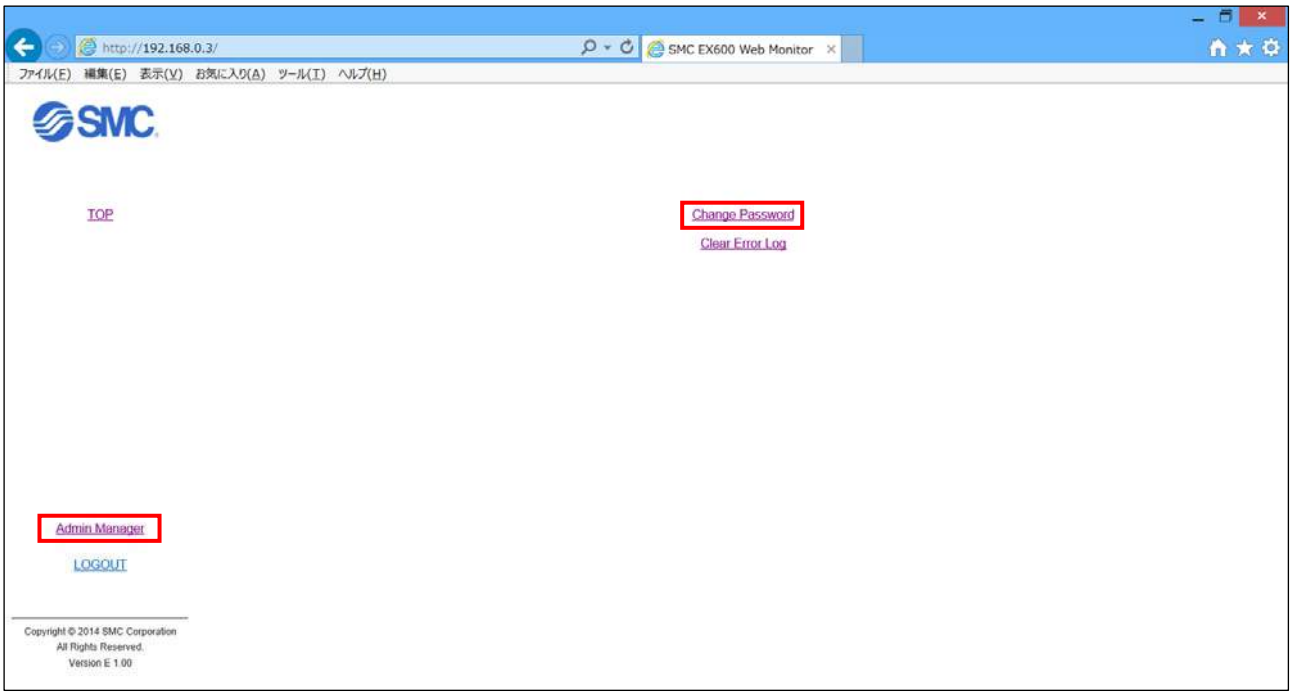
(9) Select the [CHANNEL PARAMETER] tab to display the [CHANNEL PARAMETER] screen.
(EX600-DX□D)

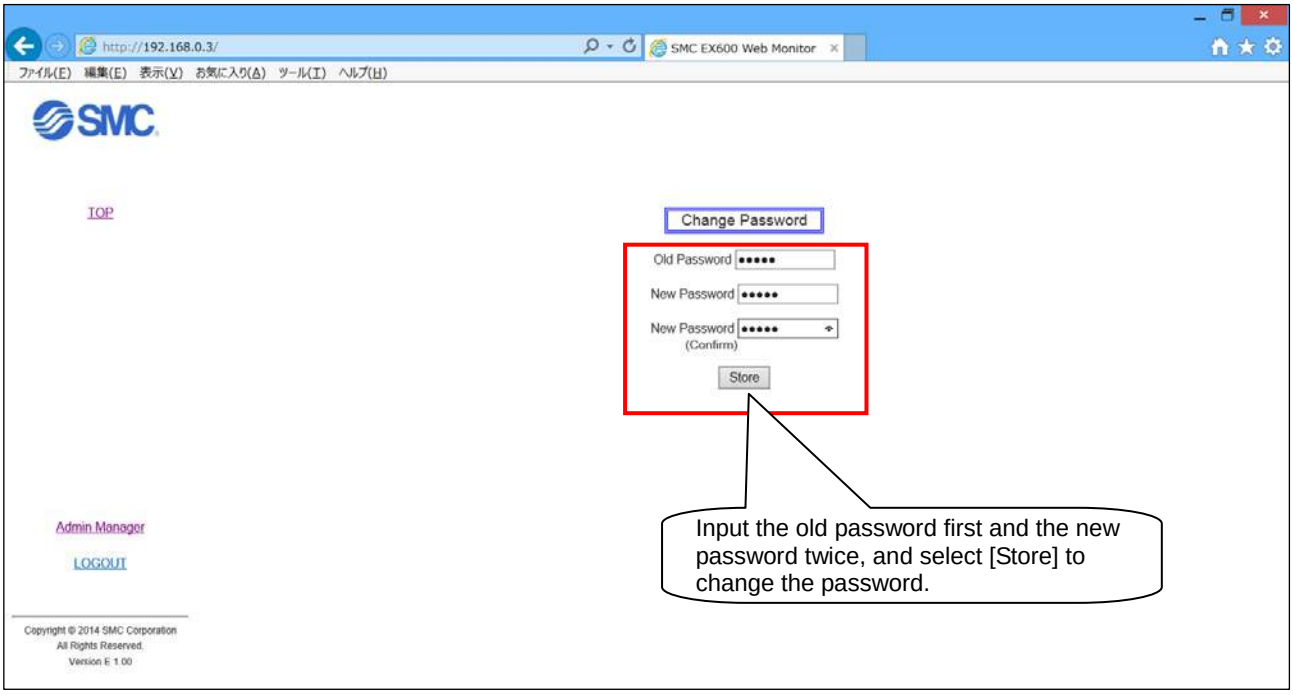


(10) Select the [FORCE MODE] tab to display the [FORCE MODE] screen.
(EX600-DX□D)



(11) To change the Password, select [Admin Manager] and select [Change Password].





Caution

Do not logout using the [x] button shown at the upper right of the screen.

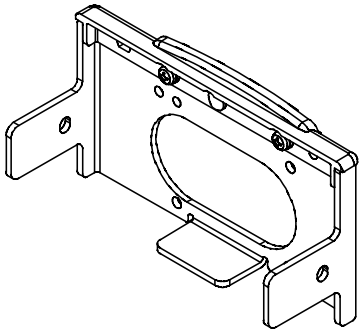
Accessories

For the selection of accessories, refer to the catalog.

(1)Valve plate

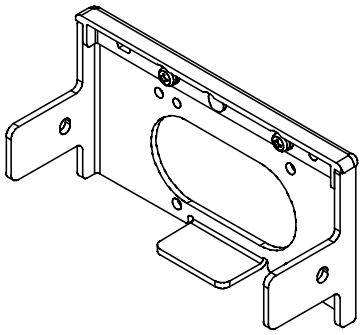
EX600-ZMV1

Enclosed parts: Round head screw (M4 x 6), 2 pcs.
Round head screw (M3 x 8), 4 pcs.



EX600-ZMV2 (Specified for SY series)

Enclosed parts: Round head screw (M4 x 6), 2 pcs.
Round head screw (M3 x 8), 4 pcs.



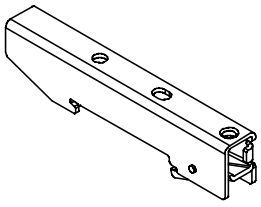
(2)End plate bracket

EX600-ZMA2

Enclosed parts: Round head screw (M4 x 20), 1 pc.
P tight screw (4 x 14), 2 pcs.

EX600-ZMA3 (Specified for SY series)

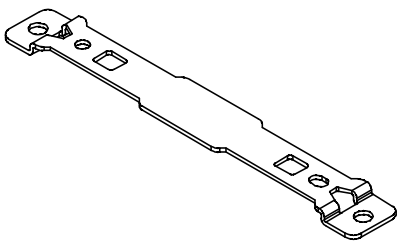
Enclosed parts: Round head screw (M4x20) with washer, 1 pc.
P tight screw (4 x 14), 2 pcs.



(3)Intermediate support bracket

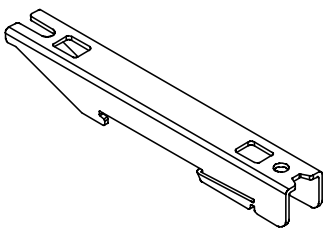
EX600-ZMB1: For direct mounting

Enclosed parts: Round head screw (M4 x 5), 2 pcs.



EX600-ZMB2: For DIN rail mounting

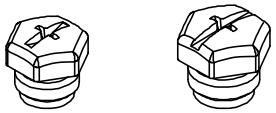
Enclosed parts: Round head screw (M4 x 6), 2 pcs.



(4)Seal cap (10 pcs.)

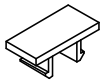
EX9-AWES: For M8

EX9-AWTS: For M12



(5)Marker (1 sheet, 88 pcs.)

EX600-ZT1



(6)Assembled type connector

PCA-1446553: For EtherNet/IP™ communication, M12 (4 pin) Plug, D code

PCA-1578078: For power supply, 7/8 inch, Plug, Cable O.D. 12 to 14 mm

PCA-1578081: For power supply, 7/8 inch, Socket, Cable O.D. 12 to 14 mm

(7)Power supply cable

PCA-1558810: Cable with 7/8 inch connector, Socket, Straight 2 m

PCA-1558823: Cable with 7/8 inch connector, Socket, Straight 6 m

PCA-1558836: Cable with 7/8 inch connector, Socket, Right angle 2 m

PCA-1558849: Cable with 7/8 inch connector, Socket, Right angle 6 m

PCA-1564927: Cable with M12 connector, B code, Socket, Straight 2 m, SPEEDCON compatible

PCA-1564930: Cable with M12 connector, B code, Socket, Straight 6 m, SPEEDCON compatible

PCA-1564943: Cable with M12 connector, B code, Socket, Right angle 2 m, SPEEDCON compatible

PCA-1564969: Cable with M12 connector, B code, Socket, Right angle 6 m, SPEEDCON compatible

(8)EtherNet/IP™ communication cable

PCA-1446566: Cable with M12 connector, D code, Plug, Straight 5 m, SPEEDCON compatible

EX9-AC010EN-PSRJ: Cable with M12 connector, D code-RJ45, Plug, Straight 1 m

EX9-AC020EN-PSRJ: Cable with M12 connector, D code-RJ45, Plug, Straight 2 m

EX9-AC030EN-PSRJ: Cable with M12 connector, D code-RJ45, Plug, Straight 3 m

EX9-AC050EN-PSRJ: Cable with M12 connector, D code-RJ45, Plug, Straight 5 m

EX9-AC100EN-PSRJ: Cable with M12 connector, D code-RJ45, Plug, Straight 10 m

Revision history

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