No.EX※※-OMF0006-C

Operation Manual

PRODUCT NAME

SI unit for CC-Link

MODEL / Series / Product Number

EX250-SMJ2

SMC Corporation

Table of Contents

Refer to the operation manual EX250-IE1/-IE2/-IE3 for the input block specifications, and EX9-OET1/-OET2/-OEP1/-OEP2/-PE1 for the output block and power block specifications.

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 catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

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

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

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

⚠ Caution

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 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

■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 SI unit.
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

•When conformity to UL is required, the SI unit should be used with a UL1310 Class 2 power supply.

•The SI unit is a UL approved product only if they have a c UL us mark on the body.

•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.

●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.

•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 I/O device can result, causing malfunction.

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

Otherwise the SI unit and/or I/O 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 I/O 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 SI unit 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.

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

•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 which generates a large amount of surge (solenoid type lifter, high frequency induction furnace, motor, etc.) close to the SI unit, this may cause deterioration or breakage of the internal circuit of the SI unit. Avoid sources of surge generation and crossed lines.

•When a surge-generating load such as a relay or solenoid is driven directly, use an SI unit with a built-in surge absorbing element.

Direct drive of a load generating surge voltage can damage the SI 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 remnant of wires from entering the SI unit to avoid failure and malfunction.

Otherwise failure or malfunction can result.

•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.

It may damage set switches.

•Perform settings suitable for the operating conditions.

Incorrect setting can cause operation failure.

For details of each setting, refer to page 14 of this manual.

•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 the SI 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.

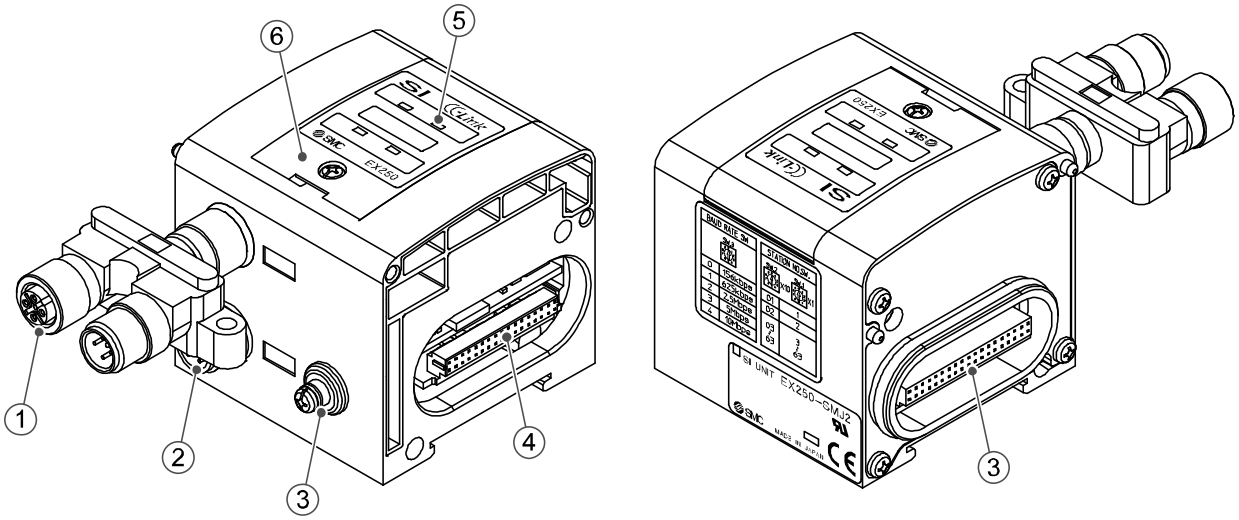
Model Indication and How to Order

EX250-SMJ2

Communication protocol

MJ2	CC-Link

Summary of Product elements



No.	Element	Description
1	Communication connector	Connect with CC-Link communication line. (Accessory) *1
2	Power supply connector	Supplies power to the solenoid valve, the output block, SI unit and the input block. *1
3	Input block connector	Connects the input block.
4	Output block connector	Connects the solenoid valve, output block and etc.
5	Display	LED display shows the SI unit status. *2
6	Switch protective cover	Set Station no. and Baud rate by using the switches under the cover. *2
7	Ground terminal (FE)	Used for grounding.

*1: Refer to page 9 for Wiring.

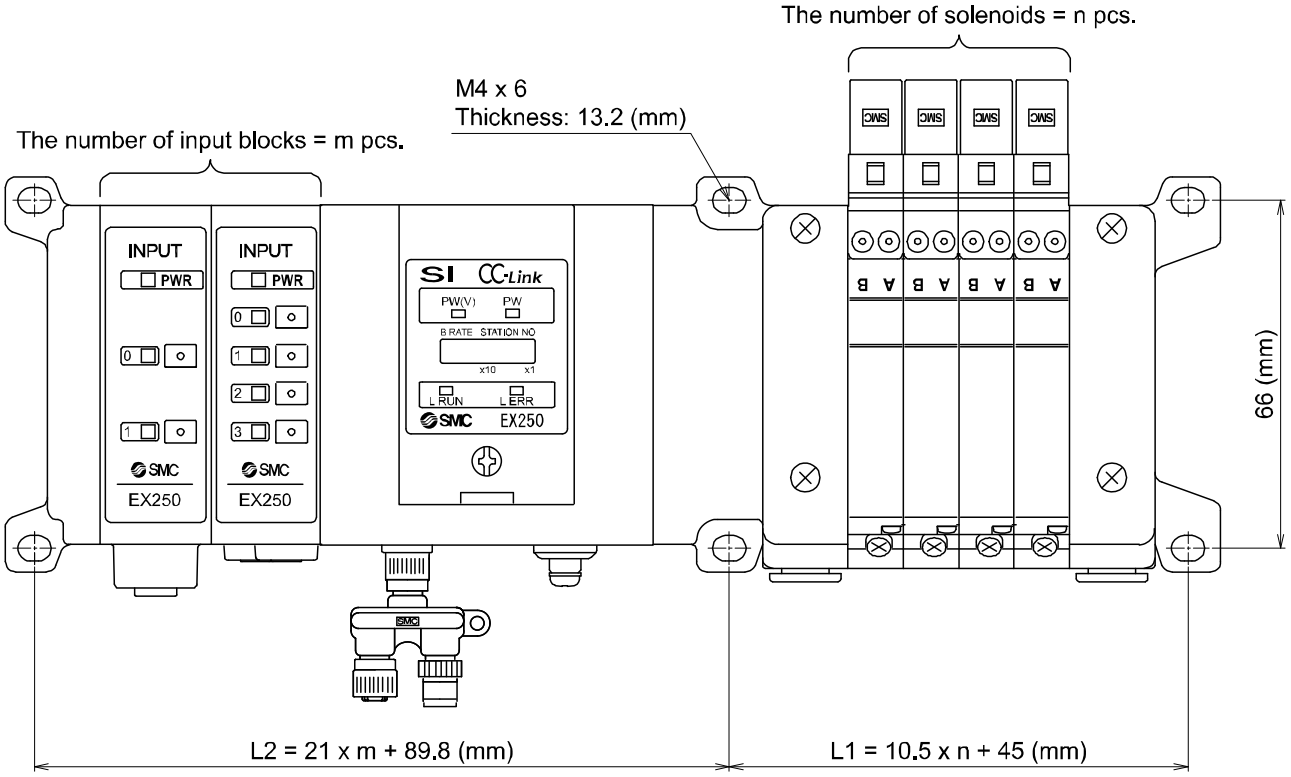
*2: Refer to page 14 for the Setting.

Mounting and Installation

■Installation

Not having mounting hole, it can not be set to BUS independently. Be sure to connect manifold to SI unit for setting.

And if input block is unnecessary, connect End plate directly to SI unit.



For example, the table below shows the size when manifold of VQC1000 series connected.
Please refer to an individual catalog for the size when other manifolds are connected.

L \ N_m	0	1	2	3	4	5	6	7	8
L1	45	55.5	66	76.5	87	97.5	108	118.5	129
L2	89.8	110.8	131.8	152.8	173.8	194.8	215.8	236.8	257.8

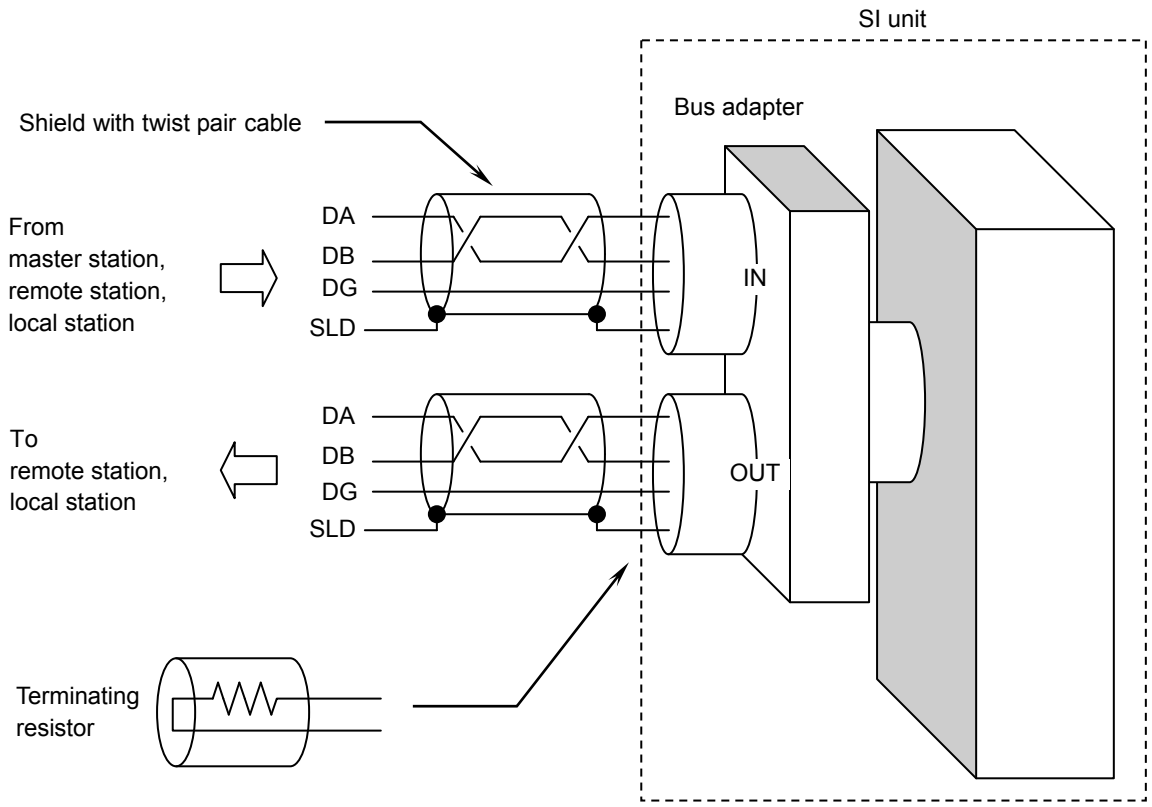
L \ N_m	9	10	11	12	13	14	15	16
L1	139.5	150	160.5	171	181.5	192	202.5	213
L2	278.8	299.8						

(mm)

Wiring (for power supply, communication and input) and piping are done on only one side.
On the side, make a space for wiring and piping.

■Wiring

○Communication wiring



Shield (SLD) is connected to the ground terminal (FE) inside of the SI unit.

○Terminating resistor

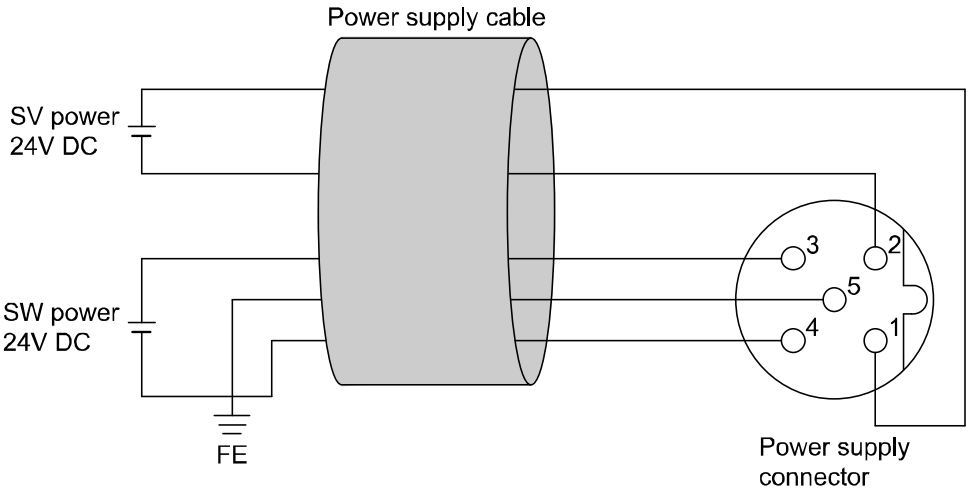
If the SI unit is the terminal of CC-Link connection, connect the terminal resistor to "OUT" side of the bus adapter.

There are two types of terminal resistors depending on the cable to use. Refer to the following table and select an appropriate terminal resistor.

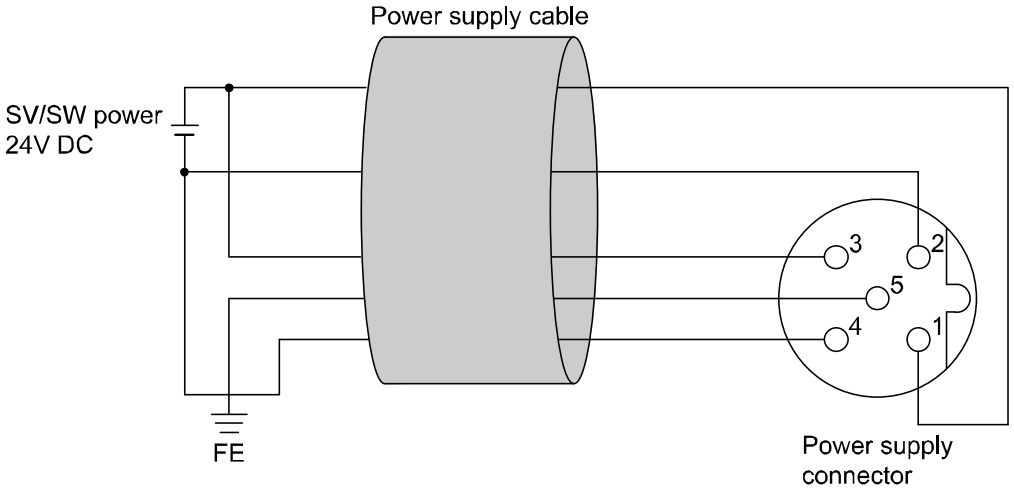
Cable to use	Ver.1.10-compatible CC-Link dedicated cable CC-Link dedicated cable (110 Ω, 1/2 W)		CC-Link dedicated high-performance cable (130 Ω, 1/2 W)	
Manufacturer	Model	Color of molded portion	Model	Color of molded portion
Correns	VA-4DCC-110	Black	VA-4DCC-130	Gray
PHOENIX CONTACT	SAC-4P-M12MS CCL TR	Black		

○Power supply wiring

Power supply line inside the SI unit has individual power supplies for solenoid valve actuation (SV power supply) and for control parts and input block (SW power supply). Supply 24 VDC for each of them.



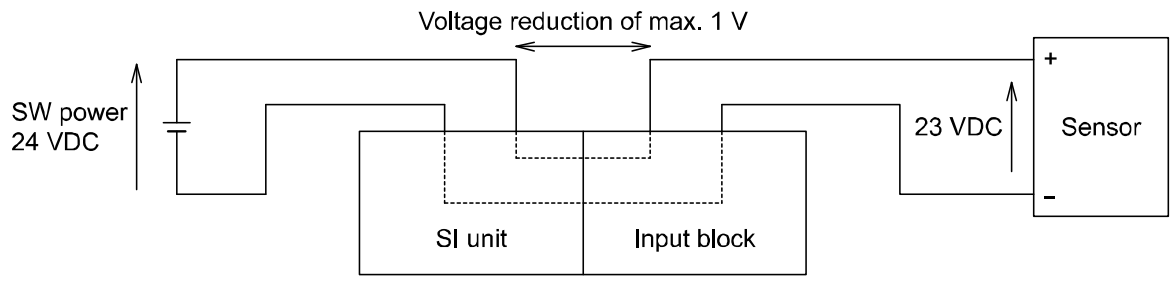
A. Dual power supply



B. Single power supply

∗: In case of single power supply, pay attention to the range of each supply voltage.

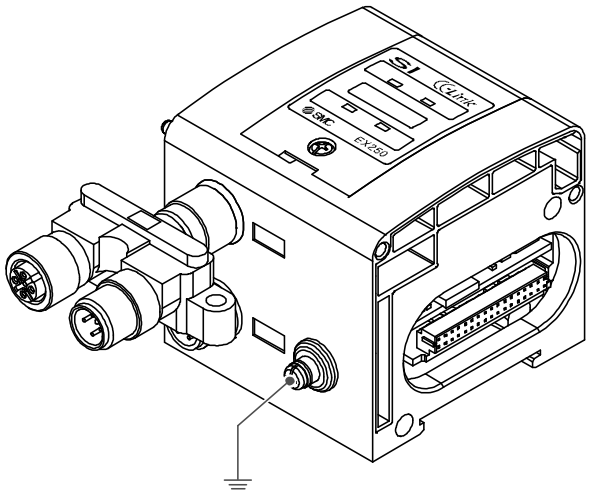
Power for sensor is supplied to sensor connected with input block. Select sensor concerning voltage drop up to maximum 1 V inside the unit at this moment.
If sensor requires 24 V, it is necessary to lower power supply voltage for sensor slightly or secure power supply for sensor separately without going through SI unit so that sensor input voltage can be 24 V with actual loading (allowable voltage of power supply: 19.2 to 28.8 V).



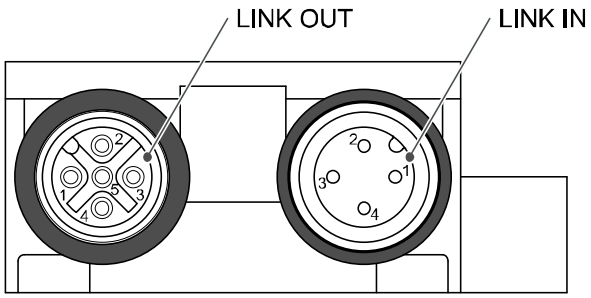
○Ground terminal

Connect the ground terminal to ground.

Resistance to ground should be 100 ohms or less.



○Communication connector (Bus adapter: EX9-ACY00-MJ)



LINK IN: M12 4-pin plug

No.	Description	Function
1	SLD	Shield
2	DB	Communication wire DB
3	DG	Communication wire DG
4	DA	Communication wire DA

Example of the cable with connector: PCA-1567720 (manufactured by SMC)
Example of the connector: PCA-1557620 (manufactured by SMC)

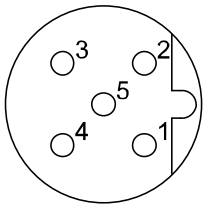
LINK OUT: M12 5-pin socket

No.	Description	Function
1	SLD	Shield
2	DB	Communication wire DB
3	DG	Communication wire DG
4	DA	Communication wire DA
5	-	Not used

Example of the cable with connector: PCA-1567717 (manufactured by SMC)
Example of the connector: PCA-1557617 (manufactured by SMC)

BUS adapter: The EX9-ACY00-MJ is a special accessory for this product. It is not suitable for use with other products.

○Power supply connector



M12 5-pin plug, reverse key

No.	Description	Function
1	SV24 V	+24 V power supply for solenoid valve
2	SV0 V	0 V power supply for solenoid valve
3	SW24 V	+24 V for power supply for control and input block
4	SW0 V	0 V for power supply for control and input block
5	FE	Earth

Example of the cable with connector: EX9-AC010-1 (1 m)
EX9-AC030-1 (3 m)
EX9-AC050-1 (5 m) etc.
(manufactured by SMC)

○Maintenance

Addition of input block

•Remove the screws from the end plate to remove the plate.
•Mount the additional tie rods (supplied with the input block).
•Connect additional input block.
•Re-mount the end plate that was removed, and tighten the screws to the specified tightening torque. (0.6 Nm)

Replacing the SI unit

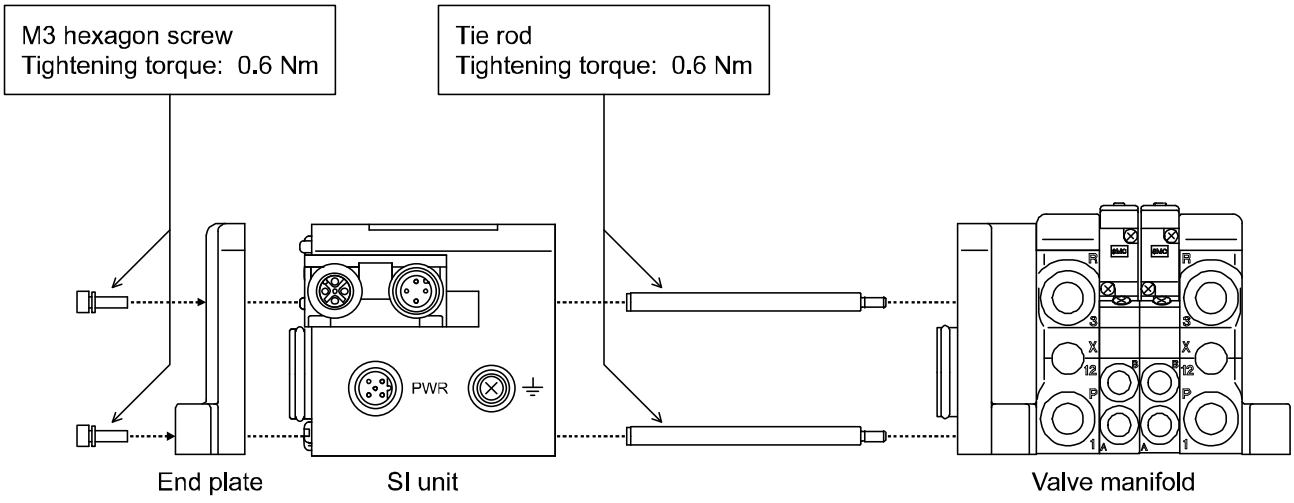
•Remove the screws from the end plate and release the connection with the valve unit.
•Replace the SI unit. (There is no need to remove the tie rod.)
•Re-mount the input block and end plate that was removed, and tighten the screws to the specified tightening torque. (0.6 Nm)

Precautions for maintenance

(1)Turn off the power supply completely.
(2)Check that there is no foreign matter inside the unit.
(3)Check that there is no damage and no foreign matter on the gasket.
(4)Tighten the screws to the specified torque.

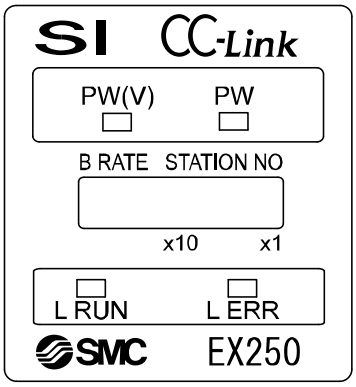
If the unit is not assembled correctly, this may cause product failure due to foreign matter such as liquid and dust which may get into the unit.

○Assembly and disconnection of unit



Setting

○LED indication

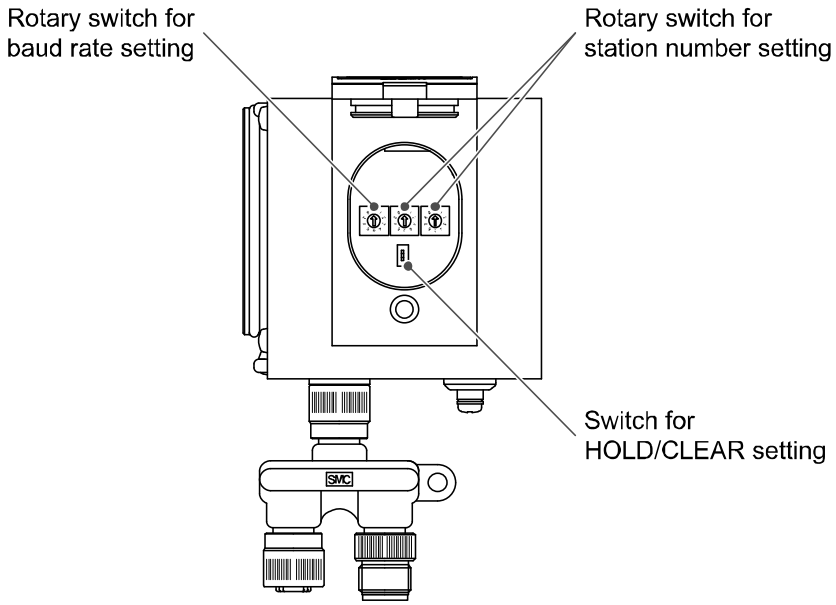


LED indication	Description
PW	Light is ON: Input and control power is ON. Light is OFF: Input and control power is OFF.
PW (V)	Light is ON: When power supply for solenoid valves is turned ON. Light is OFF: When supply voltage decreases below 19 V.
L RUN	Light is ON: Communication is normal. Light is OFF: Communication terminated. (Time over error)
L ERR	Light is ON: Communication error. Flashing: Assignment of station no. and baud rate are made during communication. (Flicker every 0.4 s) Light is OFF: Communication is normal.

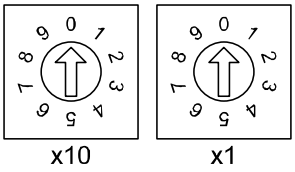
"PW", "PW(V) ", "L RUN" light while data link is normal.

○Switch setting

Station No., Baud rate and HOLD/CLEAR are set by the switch inside of the SI unit cover.
Set parameters while the power of SI unit is OFF. The setting of each switches can be fixed after power is ON.



•Station number setting

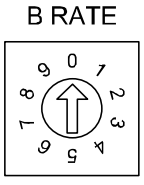


Setting	Setting range
x10	0 to 6
x1	0 to 9

∗: The station number should be set within the range of 01 to 64.
If the number is set to 00, or to 65 or above, the “L ERR” LED will turn on.
Turn the power off, and correct the setting.

∗: "L ERR" display blinks if the switch is operated which the power is ON.

•Baud rate setting



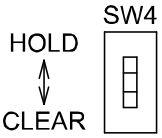
Setting	Baud rate
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps

∗: The baud rat should be set within the range of 0 to 4.
If the setting is out of range, the “L ERR” LED will turn on.
Turn the power off, and correct the setting.

∗: "L ERR" display blinks if the switch is operated which the power is ON.

∗: Set the same baud rate as the master station.

•HOLD/CLEAR setting



Setting	Description	Function
H (ON)	HOLD	Hold the output when an communication error occurs.
L (OFF)	CLEAR	Clear the output when an communication error occurs.

•Adjusted when shipped

Please refer to the table below for setting at the time of shipment from the factory.

Set parameters		Switch setting	Contents
B RATE (Baud rate)		0	156 kbps
STATION NO.	x10	0	0
	x1	0	
HOLD/CLEAR		OFF	CLEAR

○I/O memory map and diagnostic information

(1)I/O memory map (in case of station No. 1)

Ex.) “QJ61BT11N”

Buffer memory address	Remote input (RX)	Buffer memory address	Remote output (RY)
E0H	RX F to RX 0	160H	RY F to RY 0
	IN15 to IN0		OUT15 to OUT 0
E1H	RX1F to RX10	161H	RY1F to RY10
	IN31 to IN16		OUT31 to OUT16
E2H	RX2F to RX20	162H	RY2F to RY20
	Profile area *		Not available
E3H	RX3F to RX30	163H	RY3F to RY30
	Profile area *		Not available

∗: For detail of profile area, refer to “Profile area”.

(2)Profile area

The SI unit has a diagnostic function for the input block fuse and the supply voltage to the valves. The status information is sent using the profile area shown in the table below.

(a)Input block broken fuse detection 0: Normal
1: One input block fuse is disconnected

(b)Valve supply voltage lowered 0: Normal
1: Valve supply voltage is low

(c)Error status flag 0: SI unit operating
1: SI unit stopped (Not turn on “1” when detecting (a) to (b).)

(d)Remote READY 0: SI unit stopped
1: SI unit operating (Not turn off “0” when detecting (a) to (b).)

Buffer memory address	Remote input (RX)										
E2H	RX2F	…	RX2C	RX2B	RX2A	RX29	…	RX23	RX22	RX21	RX20
	Reserve								Valve supply voltage lowered	Reserve	Over current detection of input
E3H	RX3F	…	RX3C	RX3B	RX3A	RX39	…	RX33	RX32	RX31	RX30
	Reserve			Remote READY	Error state flag	Reserve					

Reserve (L): Reserved bit (0 fixing), Reserve (H): Reserved bit (1 fixing)

(3)Fuse disconnection information

SI unit solenoid valve power fuse disconnection can be recognized by the link special register at master station.

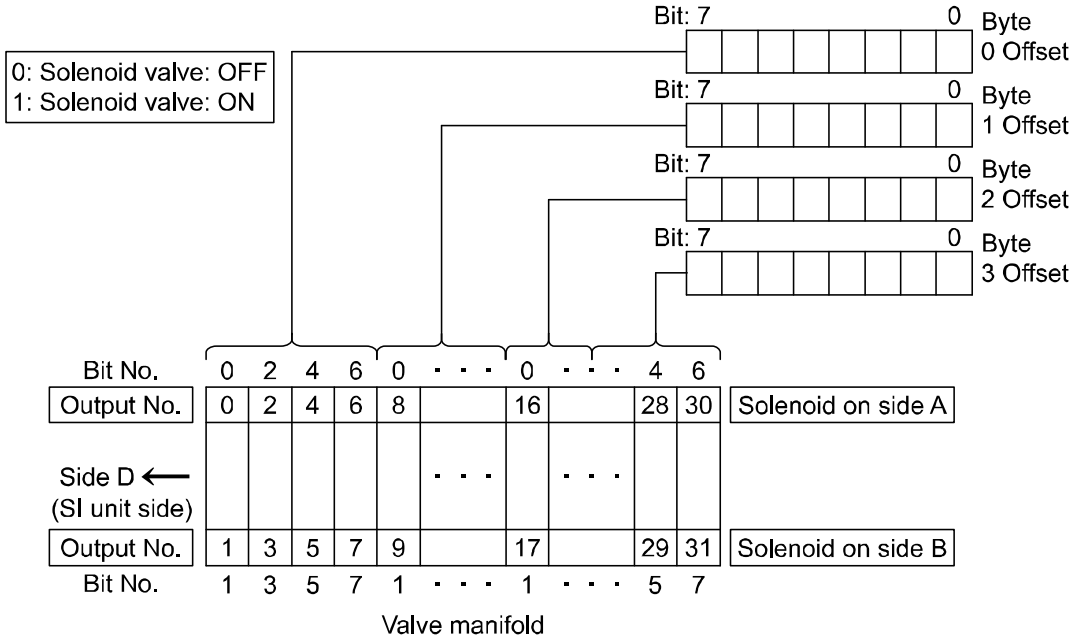
0: Normal
1: Fuse disconnected

	b15	b14	b13	b12	…	b3	b2	b1	b0
(688_H)SW0088	16	15	14	13	…	4	3	2	1
(689_H)SW0089	32	31	30	29	…	20	19	18	17
($68A_H$)SW008A	48	47	46	45	…	36	35	34	33
($68B_H$)SW008B	64	63	62	61	…	52	51	50	49

1 to 64 shows station number. Bits of occupied station turn on.

○Output number assignment

Combinations of output data and valve manifold



∗: The output numbering refers to the solenoid position on the manifold and starts at zero.

∗: Standard wiring of the manifold is for double-solenoid valves and the output number starts at the A side and then B side in that order as shown in the figure a.
If a single-solenoid valve is mounted on the standard wiring manifold, the output number for the B side valve is skipped.

∗: Custom wiring for mixed mounting single-solenoid valves and double-solenoid valves can be specified with a Wiring Specification Sheet. Example wiring is shown in the figure b.

∗: Bit status “0” and ”1” in the data corresponds to solenoid valve status OFF and ON (0: OFF, 1: ON), and the output number starts at zero from LSB (least significant bit).

fig.a

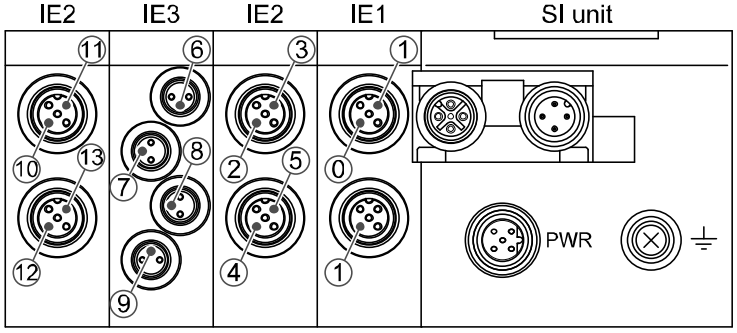
	No.	Station	No.	
Double	4	3	5	
Single	2	2	3	free
Double	0	1	1	

fig.b

	No.	Station	No.
Double	3	3	4
Single	2	2	-
Double	0	1	1

○Input number assignment

Input numbers start from 0, and will be assigned to the input blocks in order from the SI unit mounted side.



Maintenance

•Mounting and wiring

Item to inspect	Criteria	Countermeasure
Confirm the connectors (communication, power supply) of SI unit securely connected.	No looseness.	Tighten the resistance.
Confirm the terminating resistance securely connected to the both ends of the CC-Link system. (in case this system is at the end of the network)	No looseness.	Tighten the resistance.
Confirm the connecting cable broken.	No appearance error	If any error is found on the appearance, replace the cable.

•Replacement parts

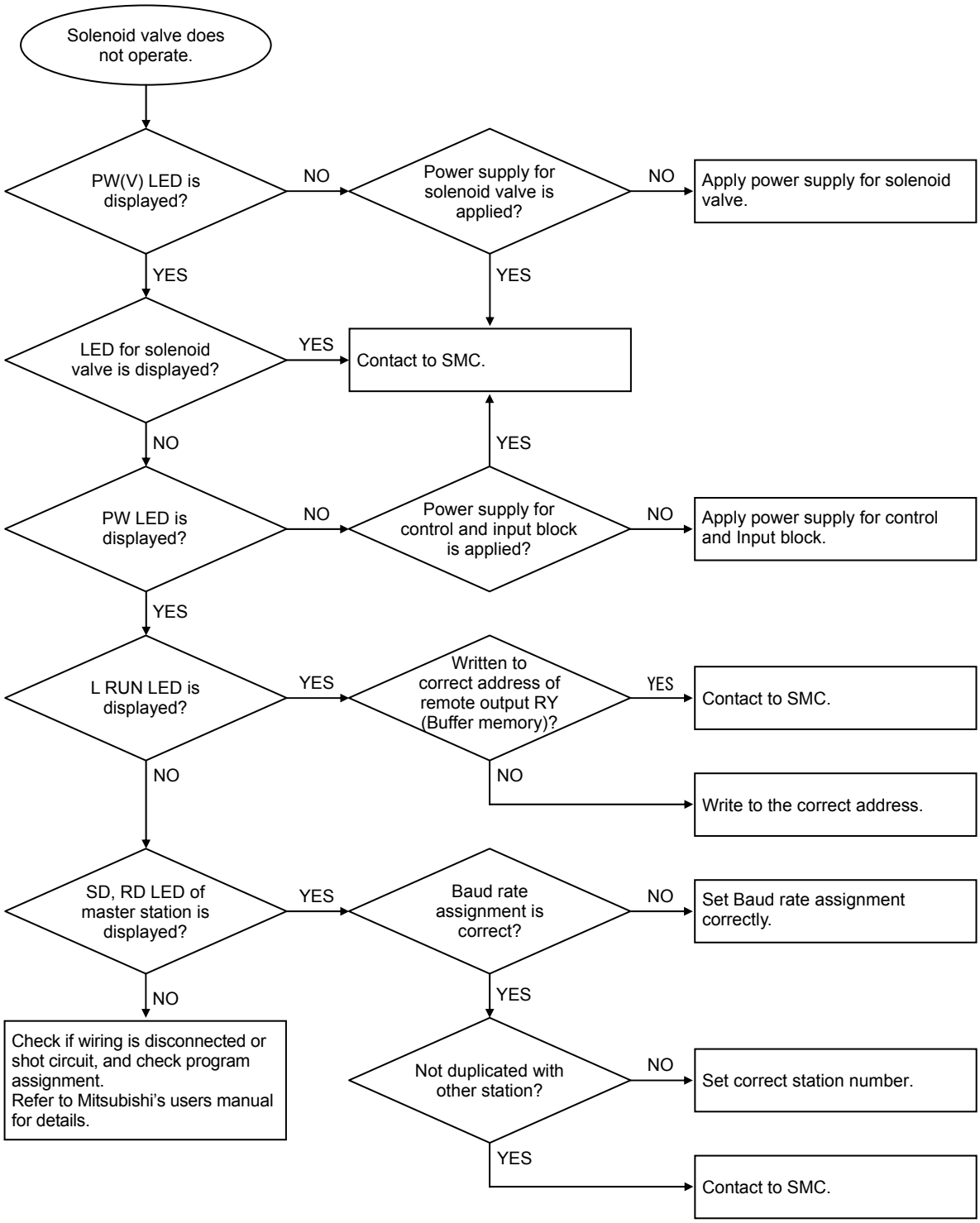
Item to inspect	Criteria	Countermeasure
CC-Link applicable cable for moving part (when used)	No error on the appearance and conductive resistance value	If any error is found on the appearance or the conductive resistance, replace the cable. See the specification of a cable to be used for the conductive resistance.
SI unit	No error in operation and display	If any error is found in the operation or on the display, replace the unit.

•Power supply

Item to inspect	Criteria	Countermeasure
Confirm the voltage satisfy the specified range. Measure the voltages at the both sides of SI unit controlling part's power supply.	24 VDC ±20%	Investigate into the cause of voltage fluctuation, and take a countermeasure against it.
Confirm the voltage satisfy the specified range. Measure the voltages at the both sides of the power supply for solenoid valves.	24 VDC +10%/-5% (Refer to “Electrical and communication specifications” on page 22.)	Investigate into the cause of voltage fluctuation, and take a countermeasure against it.

Troubleshooting

When SI unit does not operate properly, follow the flow chart below and resolve it.




Input block is not recognized.
PW LED is displayed?
NO
Power supply for SI unit and input block is applied?
NO
Apply power supply for SI unit and input block.
YES
Contact to SMC.
YES
PWR for input block is displayed?
NO
See Input block operation manual.
If Input signal is still unrecognized, contact to SMC.
YES
Sensor ON LED for input block is displayed?
NO
Turn on Input block sensor.
If Input signal is still unrecognized, contact to SMC.
YES
L RUN LED is displayed?
YES
Read from correct address of remote input RX (Buffer memory)?
YES
Contact to SMC.
NO
Write to the correct address.
NO
SD, RD LED for master is displayed.
YES
Baud rate assignment is correct?
NO
Set Baud rate assignment correctly.
NO
YES
Check if wiring is disconnected or short circuit, and check program assignment.
Refer to Mitsubishi's user's manual for details.
Not duplicated with other station?
NO
Set correct station number.
YES
Contact to SMC.

Specifications

■Specifications

General specifications

Item	Specification
Operating ambient temp.	5 to 45 °C
Operating ambient humidity	35 to 85% RH (No dew condensation)
Storage ambient temp.	-20 to 60 °C
Withstand voltage	500 VAC, 1 minute
Insulation resistance	500 VDC, 10 M ohm
Operating environment	No corrosive gas
Pollution degree	Pollution degree 3
Enclosure	IP67
Standard	CE marking, UL (CSA)
Weight	250 g or less

Electrical and communication specifications

Item		Specification
Power voltage range, current consumption	Power supply for control and input block and current consumption	24 VDC ±20% Depending on the number of input block stations and sensor specifications: 1.1 A or less (Inside SI unit: 0.1 A or less)
	Power supply for solenoid valve and current consumption	24 VDC ±10%/-5% * Depending on number of solenoid valve station and specifications: 2.0 A or less
Solenoid valve connection specification	Output type	NPN (positive common) / sink
	Connection load	Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC)
	Residual Voltage	0.3 VDC or less
	Insulation type	Photo coupler insulation type
Communication specification	Station number assignment range	1 to 63 (Assigned by the rotary switch)
	Baud rate setting range	156 k/625 k/2.5 M/5 M/10 Mbps (Assigned by the rotary switch)
	Applicable system	CC-Link Ver.1.10
	Occupied station	2 stations
	Station type	Remote device station
	I/O points	Input/32 points, Output/32 points

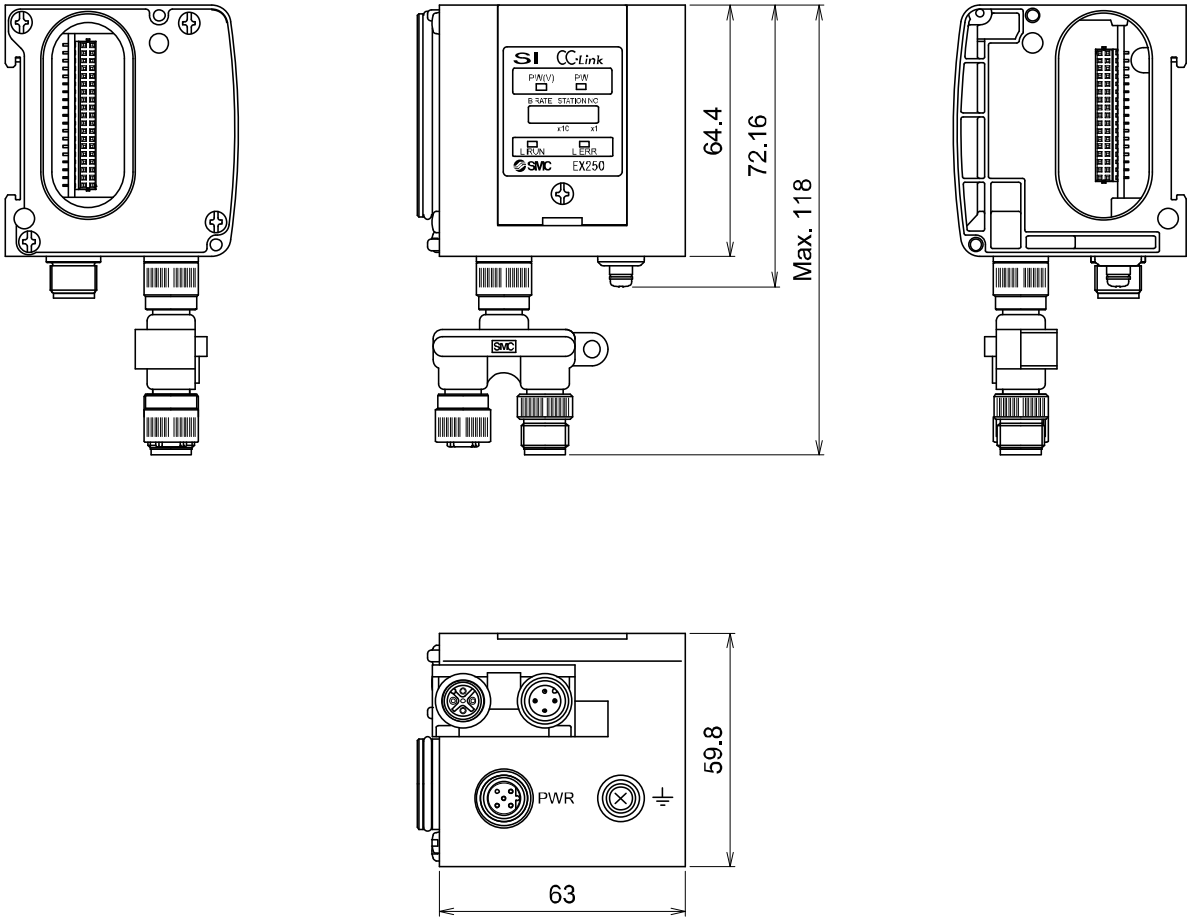
*: The condition for allowable voltage fluctuation to solenoid valve that is 24 VDC ±10%.
Please confirm the allowable voltage fluctuation range of solenoid valve that is installed in SI unit and set the power supply voltage in consideration of Max. 5% voltage drop across SI unit.

Applicable solenoid valves

Representative series	Applicable series
SY series	SY3000, SY5000, SY7000
VQC series	VQC1000, VQC2000, VQC4000
SV series	SV1000, SV2000, SV3000 (Tie rod base manifold)
S0700 series	S0700

■Dimensions

•EX250-SMJ2



Option

1. CC-Link communication connector cable

How to order

PCA-1567720

Cable specification

1567720	M12 Socket connector: 5 m SPEEDCON
1567717	M12 Plug connector: 5 m SPEEDCON

Cable O.D.	ϕ7.7
Nominal cross section area	0.5 mm^2 AWG20
Wire diameter	2.55 mm
Minimum bending radius	77 mm (Fixed)

2. CC-Link communication assembly type connector

How to order

PCA-1557620

Cable specification

1557620	M12 Socket connector
1557617	M12 Plug connector

Applicable cable

Wire outer diameter	4.0 to 8.0 mm
Wire gauge (stranded wire cross section)	0.14 to 0.5 mm^2 AWG26 to 20

3. Power supply connector cable

How to order

EX9-AC010-1

Cable length

010	1 m
030	3 m
050	5 m

Cable O.D.	ϕ6.4
Nominal cross section area	0.3 mm^2
Wire diameter	0.16 mm
Minimum bending radius	40 mm (Fixed)

4. Spare fuse (for input block)

How to order

EX9-FU05

Rating

05	0.5 A

5. Electrical entry connector cable

How to order

EX9-AC 010 -7

• Cable length

010	1 m
030	3 m

Cable O.D.	ϕ6.4
Nominal cross section area	0.3 mm^2
Wire diameter	0.16 mm
Minimum bending radius	40 mm (Fixed)

6. Power supply connector cable (for power supply to the power block)

How to order

EX9-AC 002 -3

• Cable length

002	0.2 m

Cable O.D.	ϕ6.4
Minimum bending radius	40 mm (Fixed)

7. Input block relay connector cable

How to order

PCA-1557769

• Cable specification

1557769	M12, 4-pin connector: 3 m
1557772	M8, 3-pin connector: 3 m

M12 connector

Cable O.D.	ϕ4.7
Minimum bending radius	47 mm (Fixed)

M8 connector

Cable O.D.	ϕ4.4
Minimum bending radius	44 mm (Fixed)

8. Input block assembly type connector

How to order

PCA-1557730

• Cable specification

1557730	M8, 3-pin Plug connector (AWG26 to 22)
1557743	M12, 4-pin Plug connector (AWG26 to 22)
1557756	M12, 4-pin Plug connector (AWG22 to 18)

9. End plate (on the input block side)

How to order

EX250-EA 1

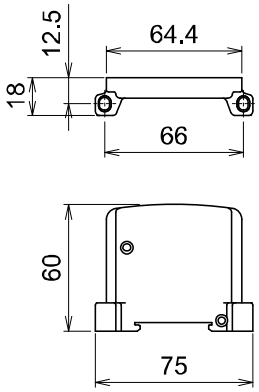
• Mounting

1	Direct mounting
2	DIN rail mounting

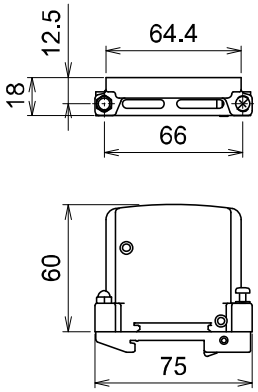
Accessory

Hexagon socket head cap screw (2 pcs.)

EX250-EA1



EX250-EA2



10. End plate R (on the output block side)

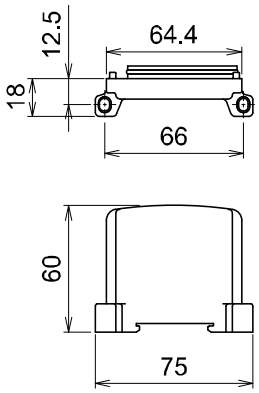
How to order

EX9-EA 03

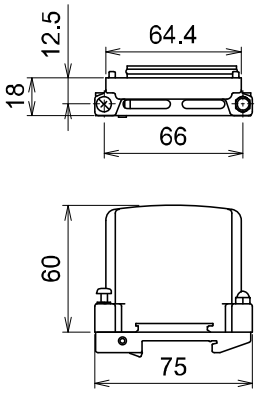
• Mounting

03	Direct mounting
04	DIN rail mounting

EX9-EA03



EX9-EA04



11. Waterproof cap

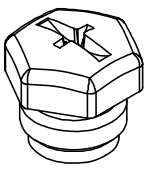
Mount this to the unused ports of the input block, output block and power block. Proper use of the waterproof cap enables the enclosure to achieve IP67 specification. (The power block is provided with the product.)

How to order

EX9-AW □

• Connector specification

ES	M8 connector (socket) / 10 pcs.
TS	M12 connector (socket) / 10 pcs.



Note

Tighten the waterproof caps to the tightening torque specified. (M8: 0.05 Nm, M12: 0.1 Nm)

Revision history
A: Correct an error in writing
B: Complete revision
C: Complete revision

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