



Operation Manual

PRODUCT NAME

CompoBus/S compatible SI unit

MODEL/ Series/ Product Number

EX12#-SCS#

SMC Corporation

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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.



Safety Instructions

Caution

1. 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 catalog 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 the replacement of the circuit board) or repair the product. Otherwise, an injury or failure can result.
- Do not operate the product outside of the specifications.
Do not use the product with flammable or harmful fluids.
Fire, malfunction, or damage to the system can result.
Please check the specifications before use.
- Do not use in an atmosphere containing flammable or explosive gases.
Fire or an explosion may result.
This SI unit 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 in piping and verify that the air is released before performing maintenance work.Otherwise, injury can result.

Caution

- After completing maintenance, perform appropriate functional checks.
Stop operation if the equipment does not function correctly.
Otherwise, an unexpected malfunction may occur and safety cannot be ensured.
- Provide grounding to improve the safety and noise resistance of the SI unit.
Grounding should be as close as possible to the product and the ground wires should be as short as possible.

■ Handling Precautions

- Follow the instructions given below for selecting and handling of the SI unit.
 - The instructions on design and selection (installation, wiring, environment, adjustment, operation, maintenance, etc.) described below must be followed.
 - *Product specifications
 - The direct current power supply to combine should be UL 1310 Class 2 power supply when conformity to UL is necessary.
The product is a UL approved product only if there is a  UL mark present on the body.
 - Use the specified voltage.
Otherwise failure or malfunction can result.
 - Reserve a space for maintenance.
When installing the products, allow access for maintenance.
 - Do not remove the label.
This can lead to incorrect maintenance, or misreading of the operation manual, which can cause damage or malfunction to the product.
It may also result in nonconformity to safety standards.

● Product handling

*Mounting

- Do not drop, hit or apply excessive shock to the product.
The product will be damaged, leading to failure and malfunction.
- Tighten to the specified tightening torque.
If the tightening torque is exceeded, the mounting screws can be broken.
- Never mount the 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 (Including connecting/disconnecting of the connectors)

- Avoid repeatedly bending or stretching the cables, or placing a heavy load on them.
Applying repeated bending and tensile stress to the cable can break the circuit.
- Wire correctly.
Incorrect wiring can cause damage the product.
- Do not perform wiring while the power is on.
Incorrect wiring can damage the SI unit and/or input/output equipment and malfunction can result.
- Do not route wires and cables together with power or high voltage cables.
The product can malfunction due to interference of noise and surge voltage from power and high voltage cables to the signal line.
Wiring of the SI unit and the input/output device and the power cable or high voltage cable should be separated from each other.
- Confirm correct insulation of wiring.
Poor insulation (interference with other circuits, poor insulation between terminals etc.) can apply excessive voltage or current to the SI unit and input/output device causing damage to them.
- When an SI unit is installed in machinery/equipment, provide adequate protection against noise by using noise filters, etc.
Noise in signal lines may cause malfunction.

*Operating environment

- Select the correct type of enclosure according to the operating environment.
For reduced wiring for IP20, do not use it in an environment where it is subject to water or oil splashes. IP65/67 protection class is achieved when the following conditions are met.
(1) The units are connected correctly using a 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 protective measures, such as using a cover.
- Do not use the product in an environment where corrosive gases or fluids can be splashed.
Otherwise damage to the SI can result, causing malfunction.
- Do not use the product in an area where surges are generated.
If there is equipment generating large surge near the SI unit (magnetic type lifter, high frequency inductive furnace, 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 or solenoid is directly driven, use the product with built in surge protection.
When a surge generating load is directly driven, the SI unit may be damaged.
- The product is CE marked, but not immune to lightning strikes. Take measures against lightning strikes in the system.
- Do not let foreign matter, such as wire debris, get inside the product.
Otherwise it can cause damage or malfunction.

- Mount the SI unit in a location that is not affected by vibration or impact.
Otherwise it can cause damage or malfunction.
- 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 SI unit.
- Do not expose the product to direct sunlight.
If using in a location directly exposed to sunlight, protect the product from the sunlight.
Failure or malfunction may occur.
- Keep within the specified ambient temperature range.
Otherwise malfunction can result.
- Do not use in a location where the product is exposed to radiant heat from surrounding heat sources.
Otherwise malfunction can result.

*Adjustment/Operation

- Set the switches using a small flat blade screwdriver.
Otherwise there is a risk of damage to the switch.
- Perform settings suitable for the operating conditions.
Incorrect setting can cause operation failure.
For details of each setting, refer to page 14 of this Operation 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 due to malfunction of the equipment.
- After maintenance is complete, perform appropriate functional inspections.
Stop operation if the equipment does not function correctly.
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 unit.
These can 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 damp cloth that has been soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.

Model Indication and How to Order

EX120-SCS 1

• Output type (Valve polarity)

1	16 outputs, NPN (positive common)/sink
2	8 outputs, NPN (positive common)/sink

• Fieldbus

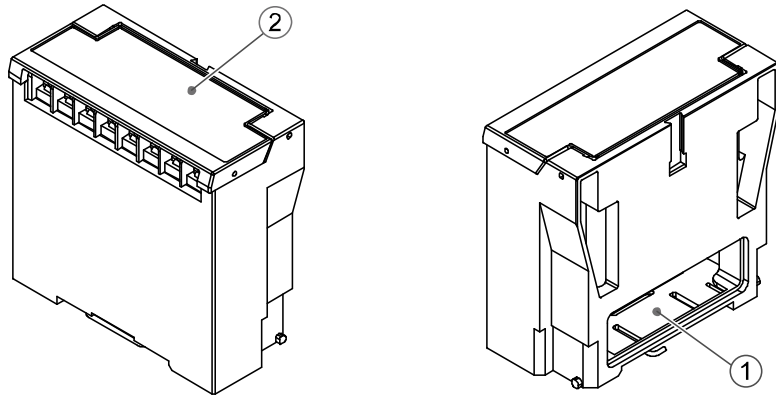
CS	CompoBus/S
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• Valve interface

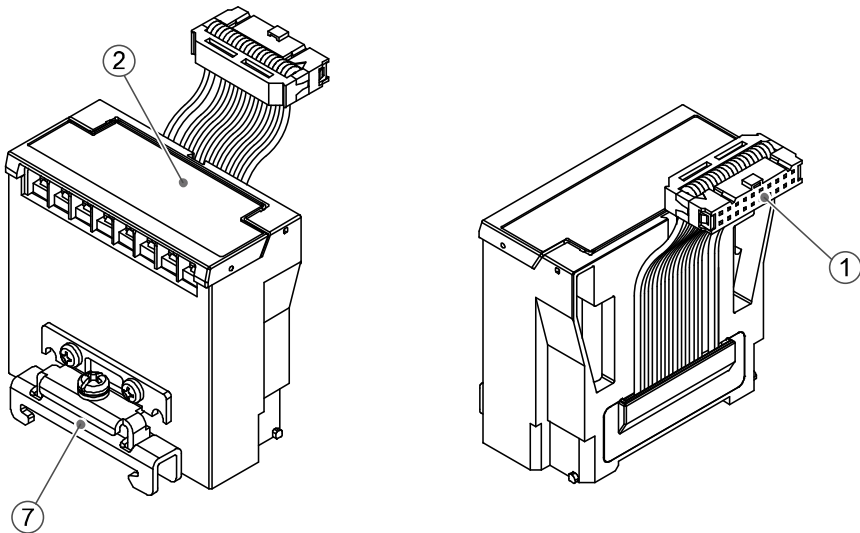
EX120	Direct mounting - Plug in
EX121	DIN rail mounting - Flat ribbon cable
EX122	DIN rail mounting- Plug in
EX124U	Direct mounting – Plug in (IP65) U-side
EX124D	Direct mounting – Plug in (IP65) D-side

Summary of Product parts

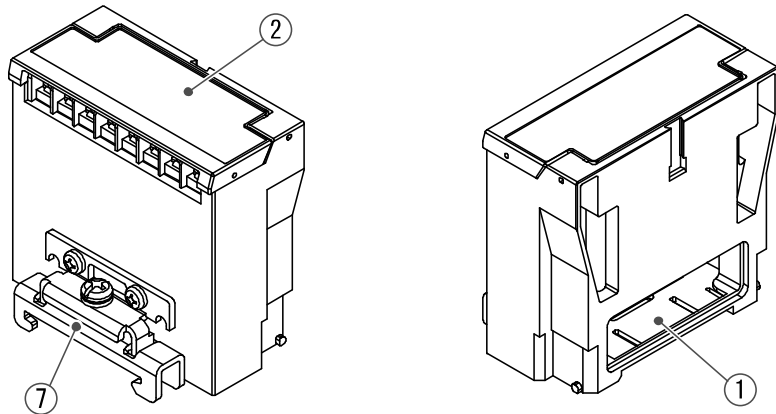
•EX120-SCS1/2



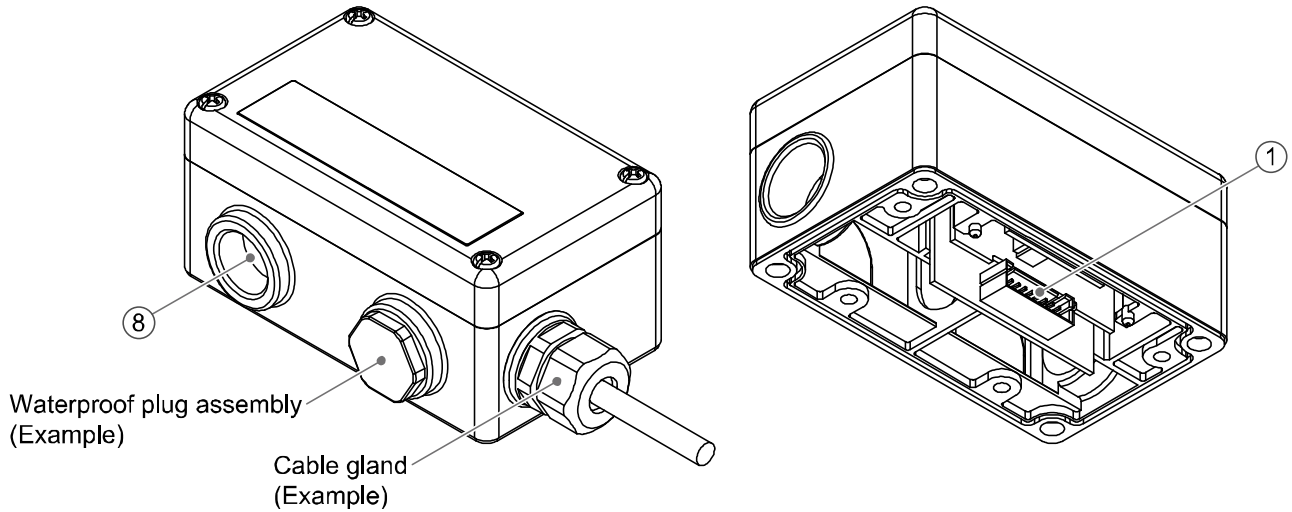
•EX121-SCS1/2



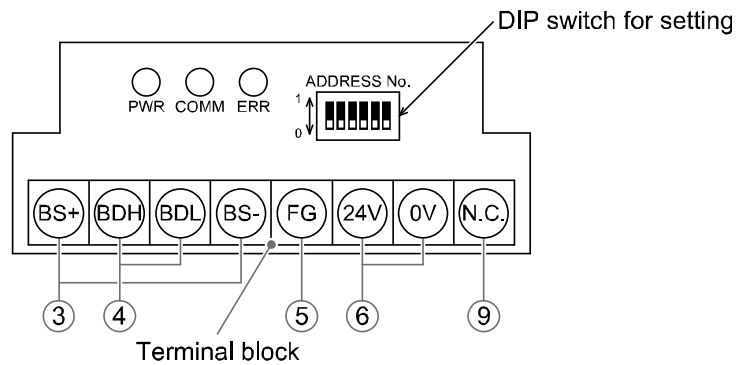
•EX122-SCS1/2



●EX124D/U-SCS1/2



○Terminal block (with switch cover open)



*: The terminal screw is an M3 round head combination screw.

No.	Element	Description
1	Output connector	Connects to the valve manifold.
2	Display and switch protection cover	LED display to indicate the SI unit status. Setup the node address and HOLD/CLEAR using the internal switches.
3	Communication power terminals (BS+, BS-)	Connect the communication power supply BS+ and BS-.
4	Communication terminals (BDH, BDL)	Connect the communication lines BDH and BDL.
5	FG terminal	Connect the grounding cable.
6	Power supply terminals for solenoid valve (24 V, 0 V)	Connect the power supply 24 V and 0 V for solenoid valve.
7	DIN rail mounting bracket	Used to mount the product on a DIN rail.
8	Wiring entry (4 places)	For connecting the communication and power supply cables to the SI unit. For wiring, use a G1/2 cable gland to achieve enclosure rating of IP65. The cable gland should conform to the wire diameter of the communication and power supply cables and should be tightened with the specified torque. Incorrect handling of the wiring entry may allow foreign matter to enter the SI unit, which will lead to a malfunction and damage to the SI unit. Use the waterproof plug assembly (part number: AXT100-B04A) for unused wiring entries.
9	Blank terminal (N.C.)	Blank terminal (N.C.)

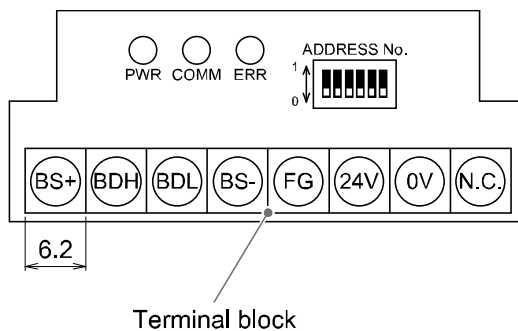
Mounting and Installation

■Wiring

The wiring method for communication and power supply cable is shown below.

The tightening torque is 0.5 to 0.6 Nm.

The terminal screw is an M3 round head combination screw.



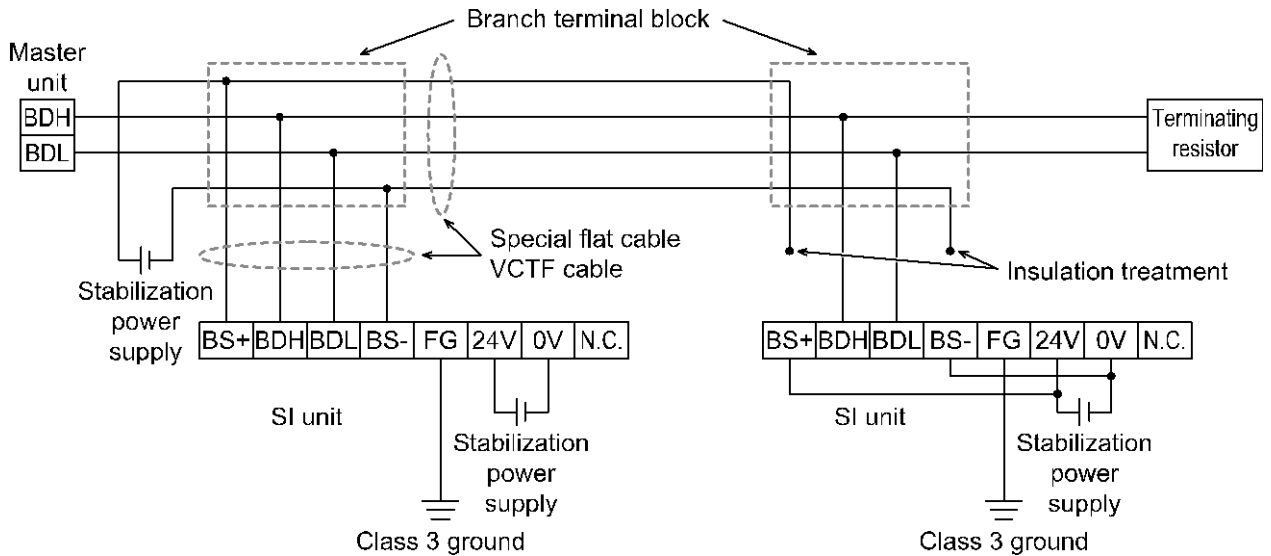
Terminal	Connection
BS+	Connect the communication power supply BS+.
BDH	Connect the communication cable BDH.
BDL	Connect the communication cable BDL.
BS-	Connect the communication power supply BS-.
FG	Connect the grounding cable.
24V	Connect the power supply cable 24 VDC for solenoid valve.
0V	Connect the power supply cable 0 VDC for solenoid valve.
N.C.	Blank terminal

○Wiring for communication cable

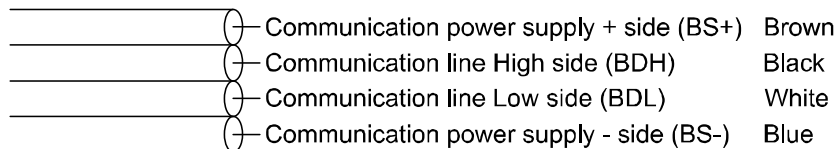
There are two methods of CompoBus/S slave connection, T branch type and Multi drop type. In T branch type, the slave is connected to the branch cable from the main cable. In multi drop type, the slave is directly connected to the main cable.

Note that it is not possible to separate the branch cable. Please use special branch crimped connector or commercially available terminal blocks when separating the main cable to the branch cable.

When connecting communication cables to the SI unit, connect the BDH and BDL communication cables to the BDH and BDL terminals. In addition, connect the communication power supply cables BS+ and BS- to the BS+ and BS- terminals.



The communication lines of the special flat ribbon cable are decided as follows.



Note

- If there is a noise generating source nearby, route the cable separately from the power cable or high voltage cable to prevent noise and surge voltage from the unit.
- Connect the cable correctly.
Wrong wiring may result in breakage of the SI unit and other devices.

○Terminating resistor

A terminating resistor should be connected to the end of the main communication cable (the furthest end from the master) to stabilize communication. An OMRON terminating resistor should be used as shown below.

- Type: SRS1-T Terminal block with terminating resistor.
This should be used with VCTF cable and the special flat ribbon cable.
- Type: SCN1-TH4T Crimped connector with terminating resistor.
This should be used with only the special flat cable.

When connecting the communication cable to the terminal block with terminating resistor, connect the BDH and BDL communication cables to each terminal.

When the slave at the end of the main communication cable has a T branch type connection, connect the terminating resistor with a cable longer than the branch cable, so that the terminating resistor position is the furthest from the master.

○Communication cable

Type	Specifications
VCTF cable (commercially available cable)	Vinyl cord VCTF JISC3306 2-core nominal area: 0.75 mm ² (signal cable x 2) Conductor resistance (20 °C): 25.1 Ω/km
Special flat cable Type SCA1-4F10 (length 100 m)	Nominal area: 0.75 mm ² x 4 (signal cable x 2, power cable x 2) Ambient temperature: 60 °C or less

○Power supply wiring

The SI unit is a multi power supply type slave. There are two power supplies, for communication and for the solenoid valves.

(1) Communication power supply

- When using VCTF cables for communication cable
The power is supplied from a cable which is separate from the communication VCTF cable to the SI unit.
- When a special flat ribbon cable is used for the communication line.
The communication power supply can be supplied to the SI unit from the special flat ribbon cable.

(2) Power supply for solenoid valves

- Connect the power supply 24 VDC +10%/-5%. Select a power supply and connected cables suitable for the solenoid valve and SI unit current consumption.
- It is possible to supply power to the communication power supply of the SI unit from the power supply for solenoid valves.

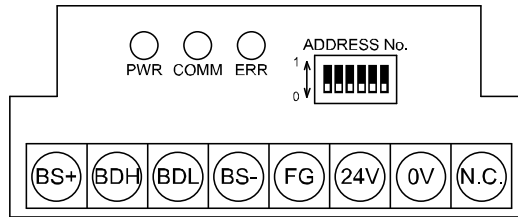
*: The power supply should have sufficient power taking into consideration the inrush current.

Caution

The remaining ends of the power supply wires of the special flat ribbon cable should be insulated.

Settings

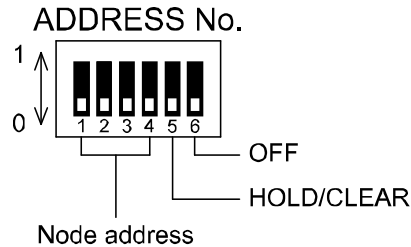
○Display



Display	Meaning
PWR	Turns ON when the communication power supply is applied, and turns OFF when no power is supplied.
COMM	Turns ON during normal communication, and turns OFF for communication error or during stand-by.
ERR	Turns ON when a communication error occurs, and turns OFF during normal communication or stand-by.

○Switch setting

Open the display/switch cover on the top of the SI unit and setup the DIP switches.
Turn off the power supply while setting the switches.



●Node address setting

Set the node address for SW1 to 4 as follows.

Node address	SW1	SW2	SW3	SW4
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0

Node address	SW1	SW2	SW3	SW4
8	0	0	0	1
9	1	0	0	1
10	0	1	0	1
11	1	1	0	1
12	0	0	1	1
13	1	0	1	1
14	0	1	1	1
15	1	1	1	1

0: OFF 1: ON

- Set the node address so that it does not duplicate the node address of other slaves. If a node address is duplicated, normal communication will not be established.
- 16 point slaves consist of two 8 point slaves and are assigned to the same channel, therefore node addresses other than the set node addresses can be used as follows.

When the set node address is odd: the previous node address can be used.

When the set node address is even: the next node address can be used.

For example, when node address 5 is set to an SI unit with 16 point slaves, the node address 4 must also be used for the SI unit.

- When an 8 point slave is connected in 4 point mode, the PLC recognises that 2 SI units are connected, so the next node address to the set node address can also be used. If the node address is duplicated with that of other slaves, area duplication occurs, so the CompoBus/S communication will not be established.

●HOLD/CLEAR setting

Set either to maintain the SI unit output condition (HOLD) or to turn off the outputs (CLEAR) when a communication error occurs.

SW5 is used for this setting.

The default setting is CLEAR.

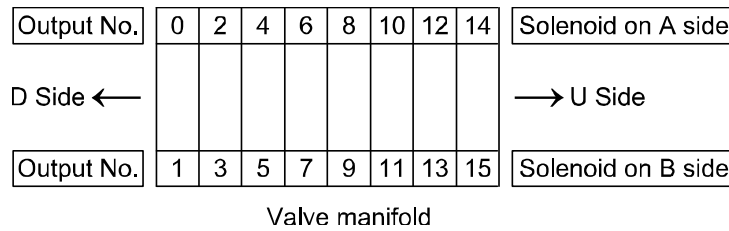
HOLD/CLEAR setting	SW5
CLEAR	0
HOLD	1

0: OFF 1: ON

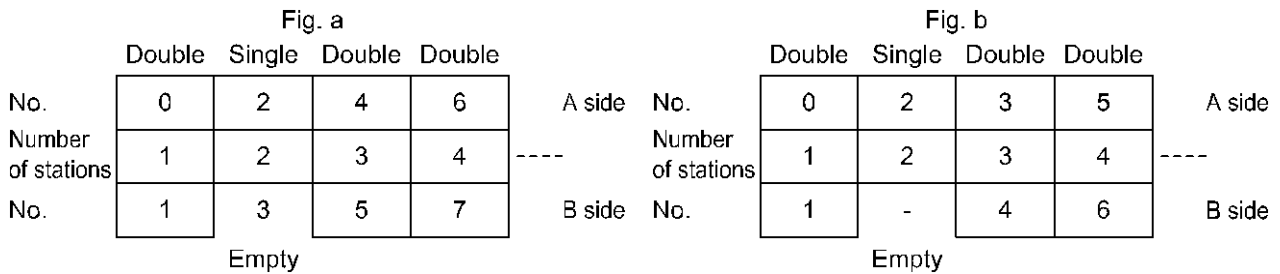
SW6 should be set to 0 (turned OFF).

○Output No. assignment

Output No. starts from 0, and will be assigned to the valves in order from the D side.



- *: Standard wiring on the manifold is for double-solenoid valves and output number starts A side and B side in that order. If the mounted valves are single solenoid valves, the output on B side will be empty. (Refer to Figure a.)
- *: Special wiring specification with a mixed wiring of single solenoid and double solenoid can be specified with a wiring specification sheet. This makes it possible to specify the output numbers without empty outputs. (Refer to Figure b.)
- *: Bit status "0" and "1" on a data corresponds to the solenoid valve status ON and OFF (0: OFF, 1: ON), and output number starts at zero from LSB (least significant bit).



Maintenance

•Mounting/Wiring

Item to inspect	Criteria	Countermeasure
Check the SI unit terminal for the communication and the power supply are connected correctly.	Not loose.	Perform extra tightening. (Refer to Mounting and Installation.)
Confirm that a terminating resistor is correctly connected to both ends of the network.	Terminating resistor should be connected correctly.	Connect terminating resistors which are suitable for the cable. (Refer to Mounting and Installation.)
Confirm that the connection cable is not broken.	No problem in the appearance.	If any problem is confirmed from the appearance, replace the cable.

•Disposables

Item to inspect	Criteria	Countermeasure
Special flat ribbon cable VCTF cable	No problem is found in the appearance or the conductor resistance value.	If any visible problem is found or the conductor resistance value is not normal, replace the cable. Please refer to the specification of the cable for the conductor resistance.
SI unit	No abnormality of the operating condition and the display.	Replace the unit if the unintended operation or abnormality is confirmed on the display.

•Power supply

Item to inspect	Criteria	Countermeasure
Measure the voltage of the power supply for communication and check if the voltage is within the specified range.	14 to 26.4 VDC	Investigate the cause of voltage fluctuation and fix the problem.
Measure the voltage of the power supply for the solenoid valve and check if the voltage is within the specified range.	24 VDC +10%/-5%	Investigate the cause of voltage fluctuation and fix the problem.

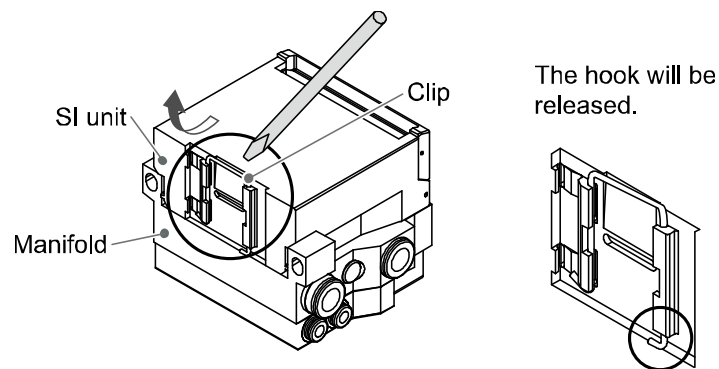
<Precautions for replacement of SI unit>

1. Be sure to turn the power OFF before replacing the SI unit.
Otherwise injury or SI unit malfunction can result.
2. Check the wiring before supplying power.
Otherwise damage to the SI unit can result in some wiring conditions, causing breakdown or malfunction.
3. The screws should be tightened to the specified torque.
4. Check the seal is not caught or left unmounted.
Otherwise, the enclosure conditions will not be satisfied (for EX124 Series).

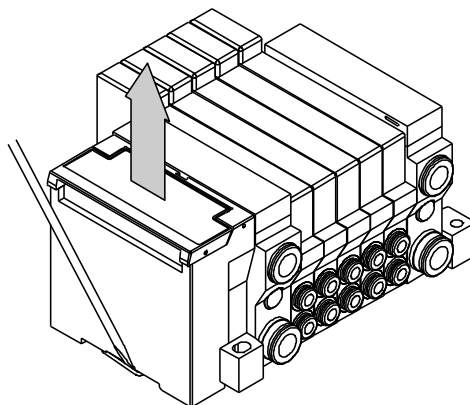
○How to replace the EX120 Series SI unit

●Removal

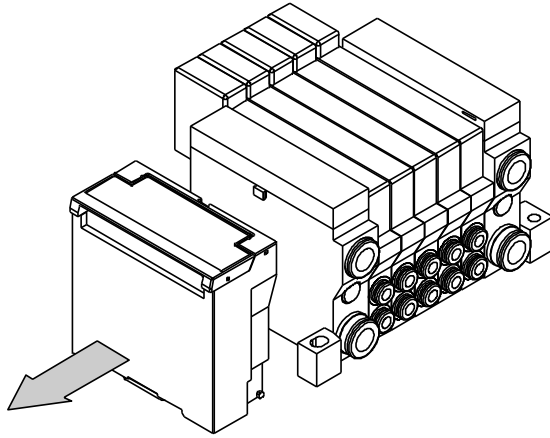
1. Lift the clip at the bottom of the SI unit with a flat blade screw driver.
By lifting the clip, the hook will be removed from the manifold, and this releases the SI unit.



2. Slide the SI unit upwards with the clip pulled.

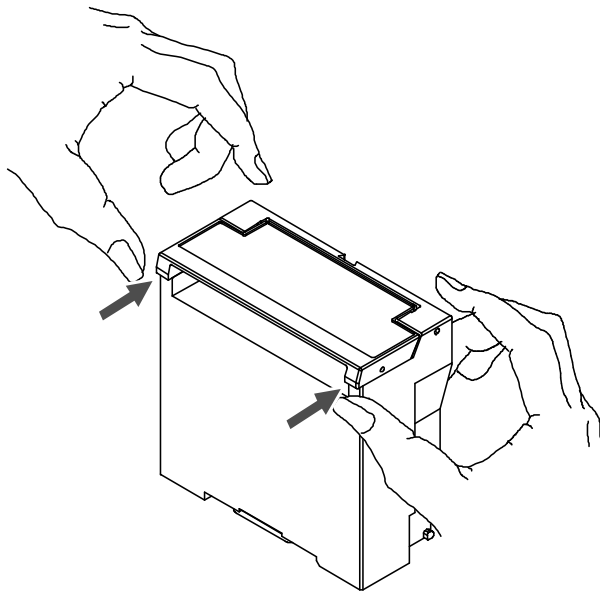


3. This releases the lock. Pull the SI unit slowly in a horizontal direction and remove from the manifold.



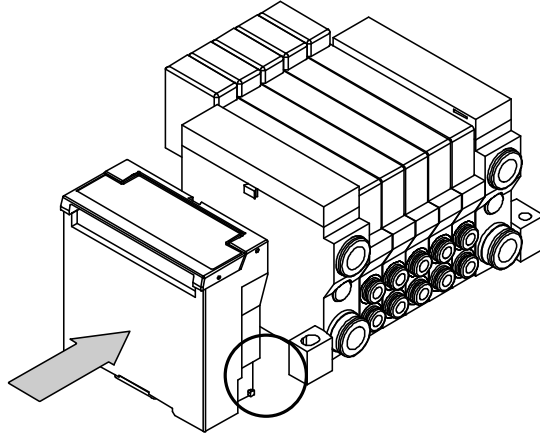
•**Precautions when opening the cover**

When opening the cover, hold both sides of the cover.

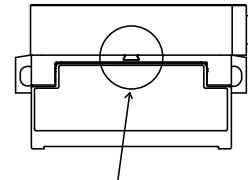
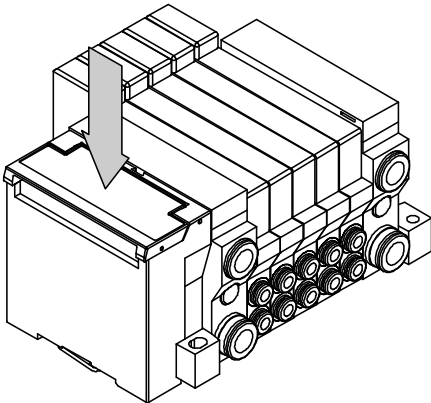


•Mounting

1. Align the raised part on the manifold side at the bottom of the SI unit with the groove of the manifold, and press it in evenly.



2. Confirm that the SI unit and manifold are securely locked together, and slide the SI unit downwards.

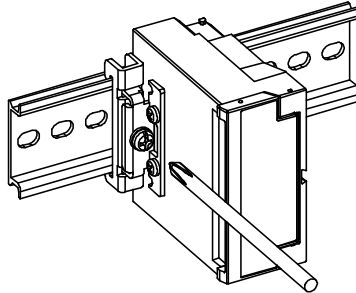


The raised part should fit into the groove in the manifold.

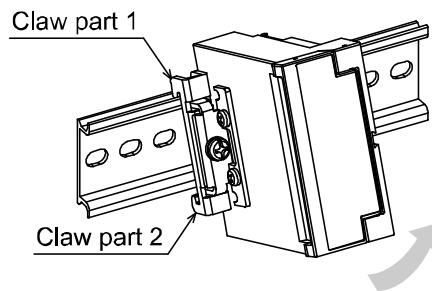
○How to replace the EX121/122 Series SI unit

●**Removal**

1. Loosen the mounting bracket screw.

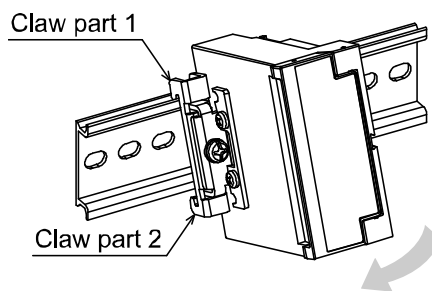


2. Remove the SI unit by unhooking claw 2 then claw 1.

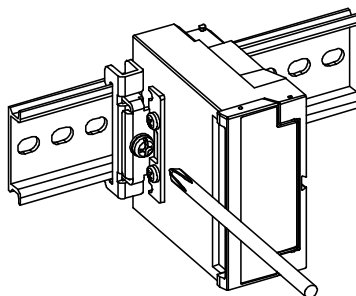


●**Mounting**

1. Hook claw 1 to the upper side of the DIN rail and claw 2 to the lower side.



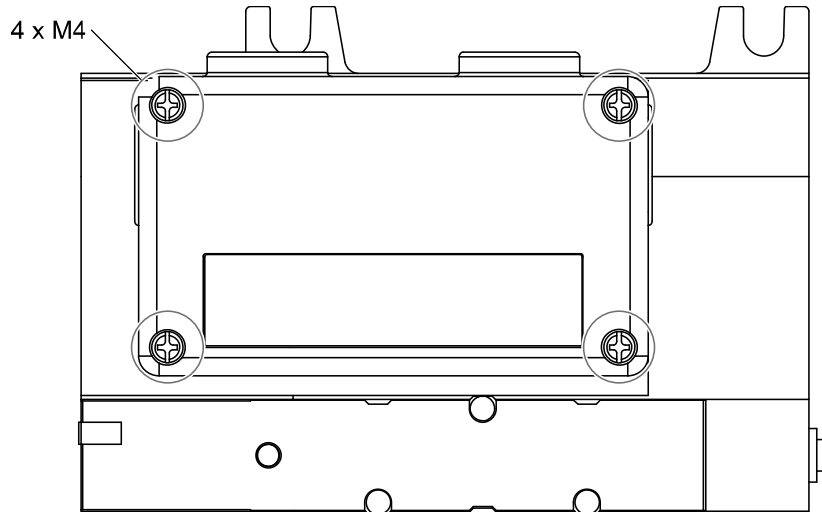
2. Tighten the mounting bracket screw, and fix the SI unit to the DIN rail. (Tightening torque: 0.6 Nm)



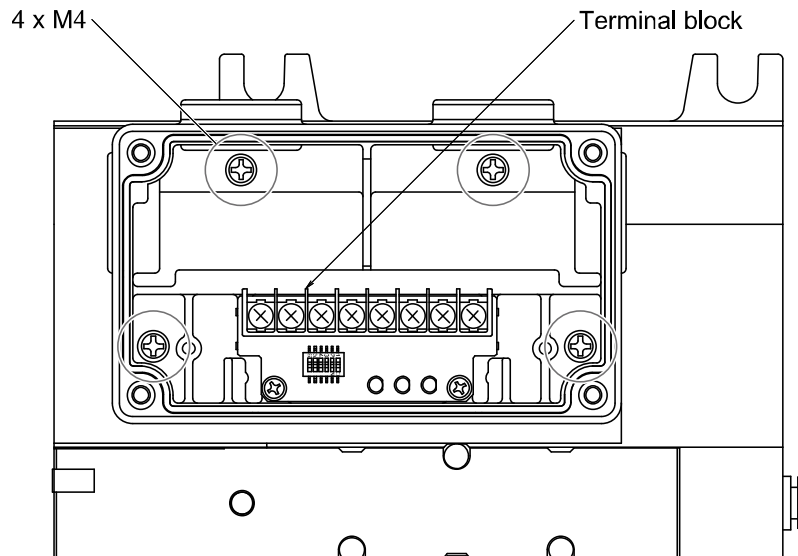
○How to replace the EX124 Series SI unit

●Removal

1. Remove the cover from the SI unit, by removing the screws (4 x M4) which hold the cover.



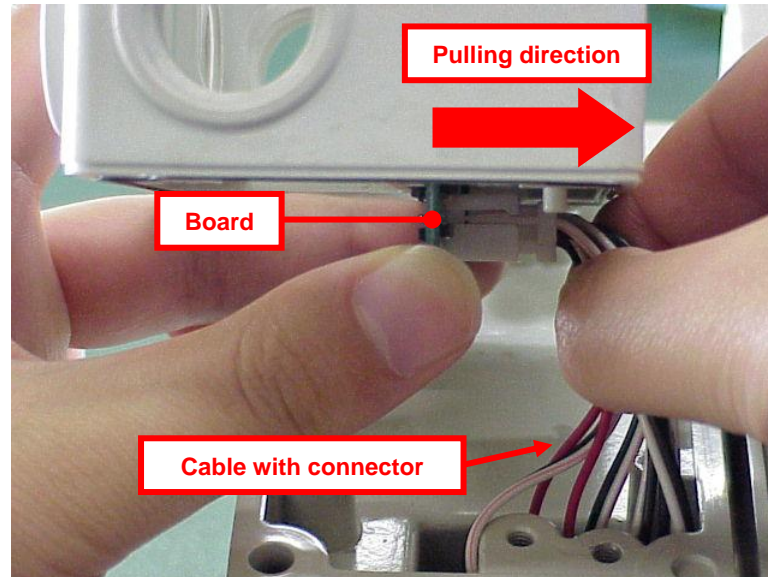
2. Disconnect the wiring from the SI unit, and remove the SI unit from the manifold.
Disconnect the wiring to the SI unit.
Remove the screws (4 x M4) which secure the SI unit to the manifold.



<EX124 Series>

3. Remove the manifold wiring from the SI unit.

Pull out the cable with connector (manifold wiring) from the manifold while holding the board of the SI unit.

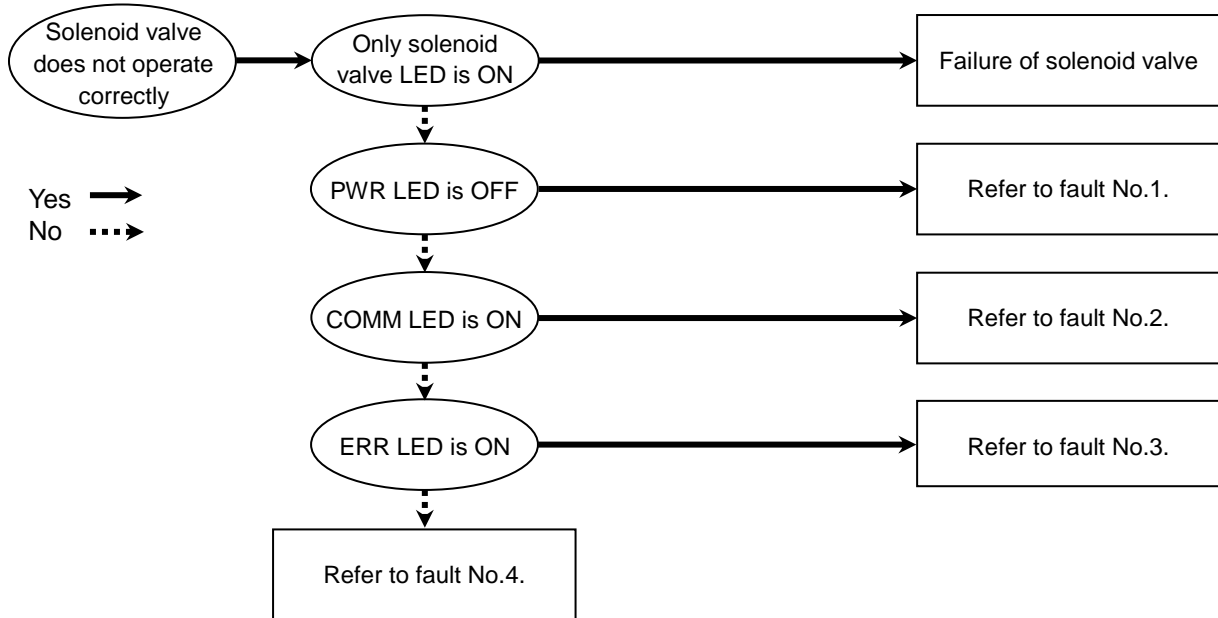


•Mounting

1. Connect the manifold wiring to the SI unit. (Follow the procedure of step 3 in reverse.)
 - Ensure the cable (manifold wiring) does not get caught between the SI unit and the manifold.
Otherwise damage to the unit can result due to cable breakage, causing breakdown or malfunction.
 - Tighten the screws diagonally so that the SI unit is securely fitted.
(Tightening torque: 0.6 Nm)
2. Mount the SI unit to the manifold, then connect the cable to the communication terminal and power supply terminal.
3. Mount the cover to the SI unit after setting the switches.
Tighten the screws diagonally so that the cover is securely fitted.
(Tightening torque: 0.6 Nm)

Troubleshooting

If the SI unit does not operate correctly, follow the troubleshooting flow diagram below.
Please refer to OMRON CompoBus/S manuals for more trouble shooting.



o Faults and countermeasures

No.	Problem	Possible causes	Investigation method	Countermeasure
1	PWR LED is OFF	Defective wiring of the power supply for communication.	Check the communication cable is not broken, and confirm that the connection between the power supply cable and the terminal is not loose. Confirm that repeated bending stress or pulling force is not applied to the cable.	Connect the power cable correctly.
		Defective power supply for communication	Confirm the wiring of the power supply for communication is correct.	Wire correctly.
			Confirm the supply voltage for the power supply for communication.	Supply 24 VDC (14 to 26.4 VDC) for the power supply for communication.
2	Solenoid valve operation failure	Incorrect address setting	Check the node address set to the SI unit and program setting.	Set correctly.
		Solenoid valve failure	Check the operation by replacing the solenoid valve. Or refer to Troubleshooting of the solenoid valve.	Check the Troubleshooting of the solenoid valve. Or contact to the department in charge of the solenoid valve
		Connection between SI unit and manifold solenoid valve is defective.	Check that there is no contact failure such as bending of the connector pins between the SI unit and solenoid valve manifold.	Connect the SI unit and the solenoid valve manifold correctly.
		Excessive number of outputs	Check the total number of outputs of the solenoid valves connected to the manifold does not exceed the maximum number of outputs of the SI unit.	The number of outputs should be not more than the maximum number of outputs of the SI unit.
		Solenoid valve power supply failure	Confirm the supply voltage for the power supply for the solenoid valve.	Supply 24 VDC +10%/-5% for the power supply for the solenoid valve.
3	PWR LED is ON COMM LED is OFF ERR LED is ON	Communication failure	Check that there is no equipment or high voltage cables which generates noise around the communication and power supply cables.	Separate the communication line and power cable away from noise sources.
		Communication line short circuited	Check the communication BDH and BDL lines for short circuit.	Wire correctly.
		Broken communication line	Check that the cable for the communication is not broken, and confirm that the connection between the communication cable and the terminal is not loose. Confirm that repeated bending stress or pulling force is not applied to the cable.	Connect the communication cable correctly.

No.	Problem	Possible causes	Investigation method	Countermeasure
4	PWR LED is ON COMM LED is OFF ERR LED is OFF	Communication failure	Check that there is no equipment or high voltage cables which generates noise around the communication and power supply cables.	Separate the communication line away from noise sources.
		Communication line short circuited	Check that the communication BDH and BDL are no short circuited.	Wire correctly.
		Breakage of communication line	Check the cable for the communication is not broken, and confirm that the connection between the communication cable and the terminal is not loose. Confirm that repeated bending stress or pulling force is not applied to the cable.	Connect the communication cable correctly.
		Communication cable wiring failure	Check that the communication cable BDH and BDL are wired correctly.	Wire correctly.
		Communication mode setting failure	Confirm that the communication mode setting of the master unit is not set to Long-distance Communications Mode.	Set the communication mode to High-speed Communications Mode.

Specification

■ Specifications

Model No.		EX120/121/122/124U/124D-SCS1	EX120/121/122/124U/124D-SCS2	
Communication specifications	Applicable system	CompoBus/S		
	Node address setting range	0 to 14	0 to 15	
	Communication speed	750 kbps		
	Cable length	Cable type	Main cable length	Branch cable length
When using VCTF cables		100 m or less	3 m or less	50 m or less
When using special flat ribbon cable *		30 m or less	3 m or less	30 m or less
Communication supply voltage		24 VDC (14 to 26.4 VDC)		
Solenoid valve supply voltage		24V DC +10%/-5%		
Output channels		16 outputs	8 outputs	
Output type		Sink/NPN (positive common)		
Connected load		Solenoid valve with surge voltage suppressor of 24 VDC and 2.1W or less (manufactured by SMC)		
Output when communication error occurs		HOLD/CLEAR (set using DIP switch)		
Internal current consumption (unit)		0.1 A or less		
Environment	Enclosure	EX120/121/122: IP20 EX124U/D: IP65		
	Withstand voltage	1500 VAC for 1 minute (Between external terminals and case)		
	Insulation resistance	2 MΩ or more (500 VDC between external terminals and case)		
	Ambient temperature	Operating temperature: 0 to +55 °C Storage: -20 to +65 °C		
	Ambient humidity	35 to 85% RH (no condensation)		
	Operating environment	No corrosive gas		
Standard		CE marking		
Weight		EX120: 110 g or less EX120: 140 g or less EX120: 130 g or less EX124U/D: 240 g or less		

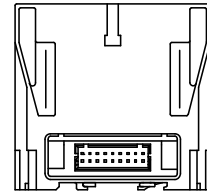
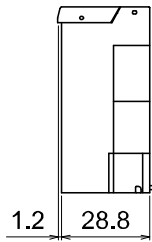
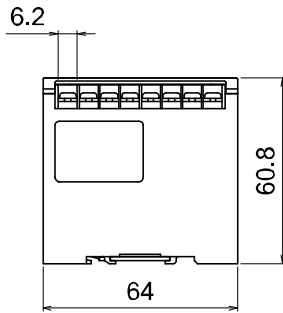
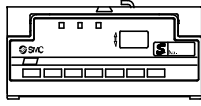
*: Even though special flat ribbon cable is used, when the number of connected slaves is 16 or less, the main cable length can be 100 m or less, and the total branch cable length can be 50 m or less.

● Applicable solenoid valve series

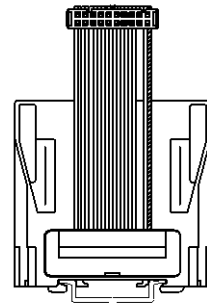
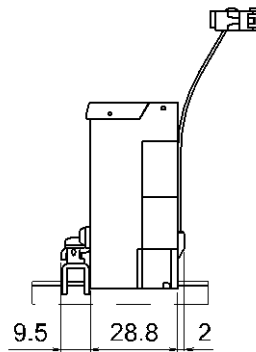
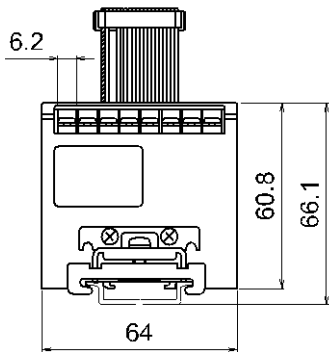
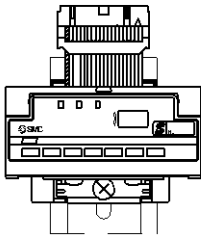
Model No.	Valve series	Enclosure	Mounting	Valve interface
EX120-SCS1/2	SV1000/2000/3000/4000 VQ1000/2000 SY3000/5000/7000	IP20	Direct	Plug-in
EX121-SCS1/2	SY3000/5000		DIN rail	Flat ribbon cable
EX122-SCS1/2	SY3000/5000			Plug-in
EX124U/D-SCS1/2	VQ2000/4000/5000	IP65	Direct	

■Dimensions

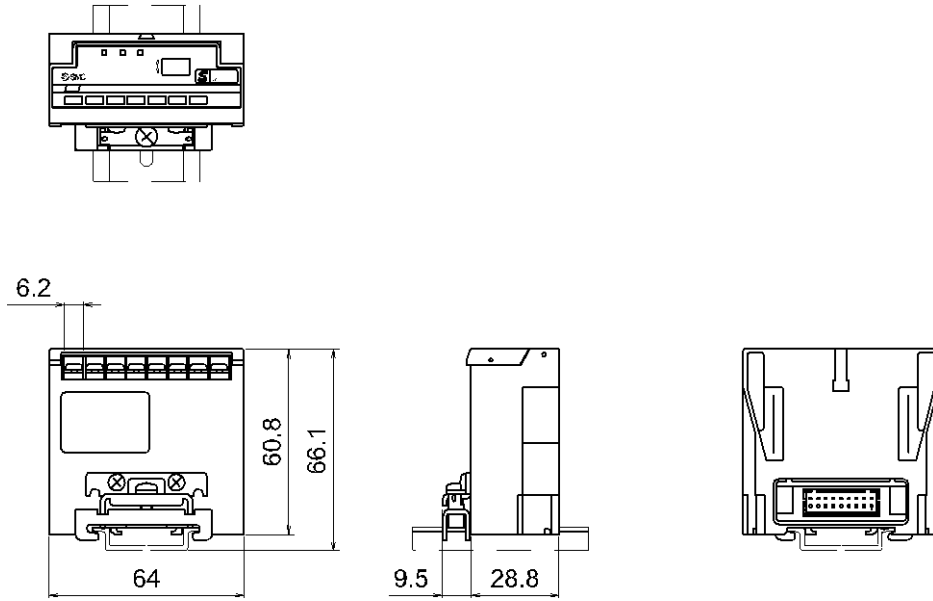
●EX120-SCS1/2



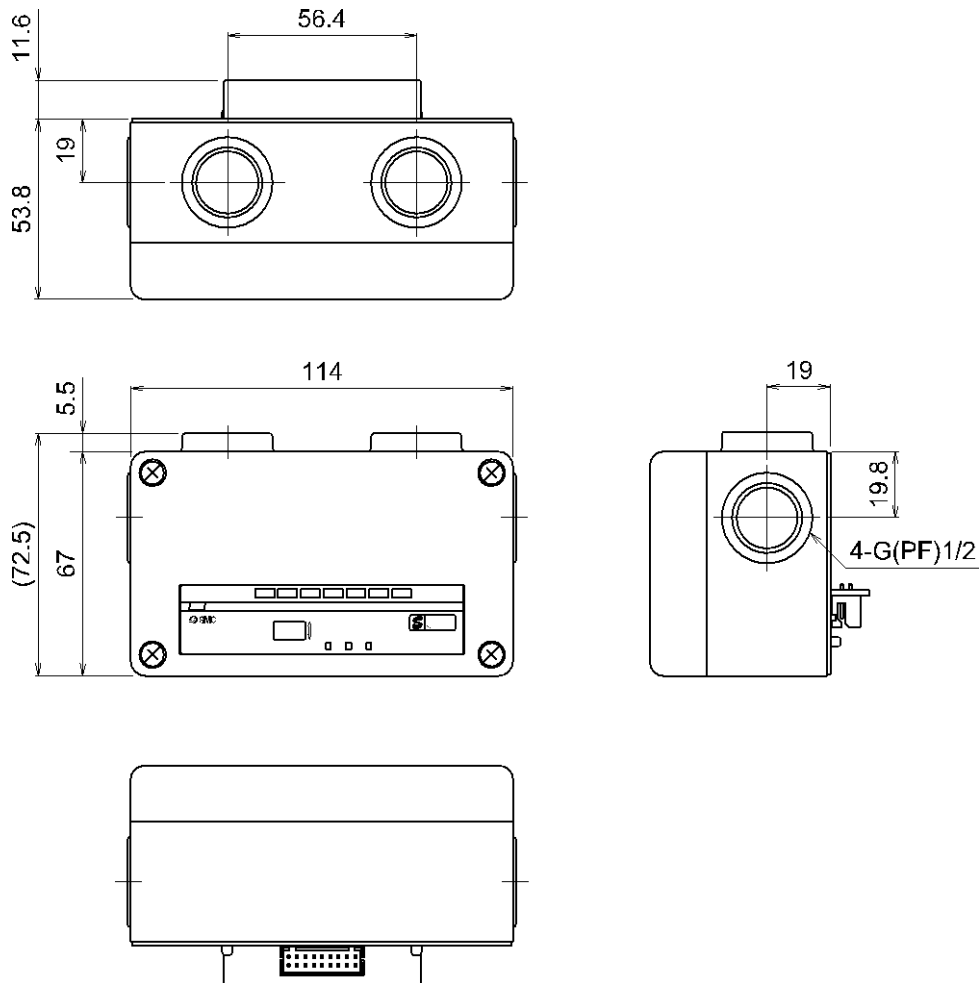
●EX121-SCS1/2



•EX122-SCS1/2



•EX124D/U-SCS1/2



Revision history

A: Contents revised in several places.
B: Contents revised in several places.
C: Contents revised in several places.

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NOTE: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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