

Fieldbus device Operation Manual



EX260 Series for CC-Link

Thank you for purchasing an SMC EX260 Series Fieldbus device (Hereinafter referred to as "SI unit"). Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain more detailed information about operating this product, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

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) and other safety regulations.

- 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.

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

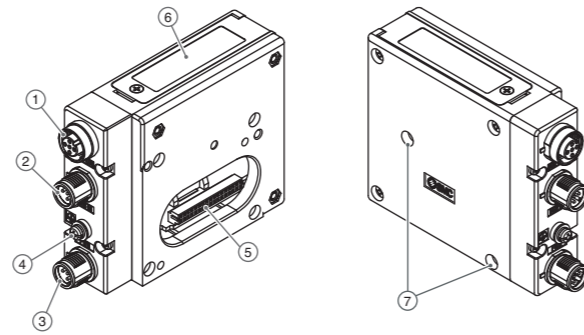
- After maintenance is complete, perform appropriate functional inspections. Stop operation if the equipment does not function properly. Safety cannot be assured in the case of unexpected malfunction.
- Provide grounding to assure the safety and noise resistance of the Fieldbus system. Individual grounding should be provided close to the product with a short cable.

NOTE

- The direct current power supply to combine should be UL1310 Class2 power supply when conformity to UL is necessary.

Summary of Product element

<EX260-SMJ1/-SMJ2/-SMJ3/-SMJ4>



No.	Element	Description
1	Fieldbus interface connector (BUS OUT)	CC-Link connection PORT 2 (M12 5-pin socket, A-coded)
2	Fieldbus interface connector (BUS IN)	CC-Link connection PORT 1 (M12 4-pin plug, A-coded)
3	Power supply connector	Power supply with load voltage for valves and operating voltage for SI unit (M12 5-pin plug, B-coded)
4	Ground terminal	Functional earth (M3 screw)
5	Output connector	Output signal interface for valve manifold
6	LED and switch	Bus status-specific and SI unit-specific LEDs
7	Mounting hole	Mounting hole for connection to the valve manifold

Accessories

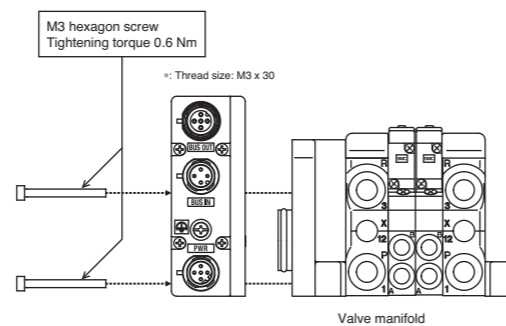
Hexagon socket head cap screw	2 pcs. M3 x 30 screw for connection to the valve manifold
Seal cap	1 pc. seal cap for unused fieldbus interface connector (BUS OUT)

Installation

General instructions on installation and maintenance

Connect valve manifold to the SI unit. Connectable valve manifolds are the same as for EX250 series SI unit. Refer to the EX250 series valve manifold section in the valve catalogue for valve manifold dimensions.

Assembly and disassembly of the SI unit



Replacement of the SI unit

- Remove the M3 hexagon screws from the SI unit and release the SI unit from the valve manifold.
- Replace the SI unit.
- Tighten the screws with the specified tightening torque. (0.6 Nm)

Precautions for maintenance

- Be sure to switch off the power.
 - Check there is no foreign matter inside the SI unit.
 - Check there is no damage and no foreign matter being stuck to the gasket.
 - Be sure to tighten the screws with the specified torque.
- If the SI unit is not assembled properly, inside PCBs may be damaged or liquid and/or dust may enter into the unit.

Connecting cables

Select the appropriate cables to mate with the connectors mounted on the SI unit.

Fieldbus interface connector layout

BUS OUT: M12 5-pin socket A-coded

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

BUS IN: M12 4-pin plug A-coded

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

Power supply connector layout

PWR: M12 5-pin plug B-coded

No.	Designation	Description
1	SV24 V	+24 V for solenoid valve
2	SV0 V	0 V for solenoid valve
3	SI24 V	+24 V for SI unit operation
4	SI0 V	0 V for SI unit operation
5	-	Unused

Ground terminal

- Connect the ground terminal to ground.
- Resistance to ground should be 100 ohms or less.

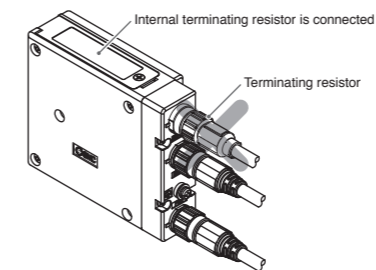
Terminating resistor

The terminating resistor to be connected to the CC-Link network depends on the type of cables used. Please refer to the table below.

Cable type	Terminating resistor
Communication cable for CC-Link With socket for BUS IN - PCA-1567720 With plug for BUS OUT - PCA-1567717	110 Ω 1/2 W Built-in terminating resistor 110 Ω Set the SI unit DIP Switch-No.2 to ON
CC-Link Ver.1.00 dedicated High-performance cable	130 Ω 1/2 W N/A

Note

- Use the internal terminating resistor only when the SI unit is placed at the end of the CC-Link main line.
- An external terminating resistor should not be used when the internal resistor is used.
- The terminating resistor value will be outside the specified range. A network communication error may occur.



Note

- When the CC-Link Ver.1.00 dedicated High-performance cable is used, disable the internal terminating resistor switch and connect a 130 Ω terminating resistor to the BUS OUT connector.

LED indication

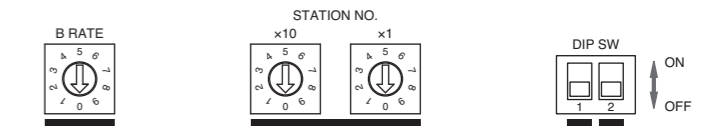


LED	LED Status	Description
L ERR	Red ON	Communication error
	Red flashing	The station number and baud rate settings have been changed during communication
	OFF	Communication is normal
L RUN	Green ON	Communication is normal
	OFF	Communication has terminated (time out error)
PWR	Green ON	Power supply for SI unit is ON
	OFF	Power supply for SI unit is OFF
PWR(V)	Green ON	Power supply for Solenoid valves is ON
	OFF	Power supply for Solenoid valves is OFF

Setting

Switch setting

The switches should only be set with the power supply turned off. Open the cover and set the rotary switches and DIP switch with a small flat blade screwdriver.



Baud rate setting

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

*: If the baud rate is set to a number above 4, the "L ERR" LED will turn on.

Setting the Number of occupied stations

Setting	Station No.	
x10	x1	
0	0	Error (Default setting)
0	1	1
0	2	2
:	:	:
6	3	63
6	4	64

*: If the number of occupied stations is set to 00 or a number above 64, the "L ERR" LED will turn on.

HOLD/CLEAR setting

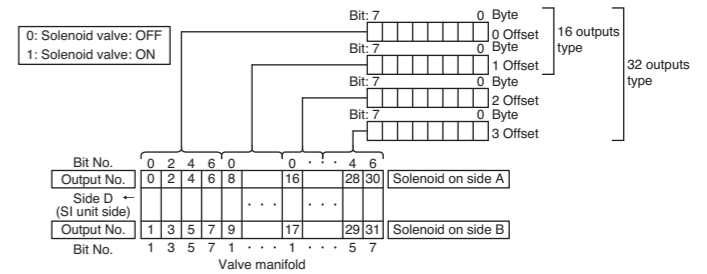
HOLD/CLR	No.1	Description
HOLD	ON	Hold the last state before communication error.
CLR	OFF	Clear all outputs.

Setting terminating resistor

Terminating resistor	No.2	Description
Enable	ON	Connect the internal terminating resistor (110 Ω).
Disable	OFF	Disconnect the internal terminating resistor.

Output number assignment

Output numbering starts at zero and refers to the solenoid position on the manifold.



Troubleshooting

Technical documentation giving detailed troubleshooting information can be found on the SMC website (URL <http://www.smcworld.com>).

Specifications

Connected load: 24 VDC Solenoid valve with surge voltage suppressor of 1.5 W or less (manufactured by SMC)
Current consumption of power supply for SI unit operation: 0.1 A max.
Ambient temperature for operation: -10 to 50 °C
Ambient temperature for storage: -20 to 60 °C
Pollution degree 3: (UL508)

Technical documentation giving detailed specification information can be found on the SMC website (URL <http://www.smcworld.com>).

Outline Dimensions

Technical documentation giving detailed outline dimensions information can be found on the SMC website (URL <http://www.smcworld.com>).

Accessories

Technical documentation giving detailed accessories information can be found on the SMC website (URL <http://www.smcworld.com>).

SMC Corporation URL <http://www.smcworld.com>

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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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