



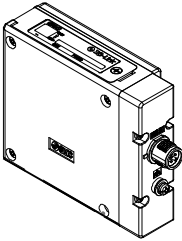
ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device - SI unit for IO-Link
EX260-SIL1



Refer to Declaration of
Conformity for relevant
Directives



The intended use of this product is to control pneumatic valves and I/O while connected to the IO-Link protocol.

1 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 10218-1: Manipulating industrial robots -Safety. etc.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	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

- Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- 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.
- 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 for correct operation.**
Otherwise malfunction can result, causing an accident.



Caution

- Provide grounding to assure the safety and noise resistance of the Fieldbus system.**
Individual grounding should be provided close to the product using a short cable.
- When conformity to UL is required the SI unit must be used with a UL1310 Class 2 power supply.**

2 Specifications

2.1 General specifications

Item	Specifications
Ambient temperature	-10 to +50 °C
Ambient humidity	35 to 85%RH (No condensate)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	500 VAC applied for 1 minute
Insulation resistance	500 VDC, 10 MΩ or more
Operating atmosphere	No corrosive gas
Enclosure	IP67
Weight	200 g or less
Standard	UL/CSA, CE marked (EMC/RoHS Directive)

2.2 Electrical specifications

Item		Specifications
Power supply voltage range / Current consumption	SI unit power supply	18 to 30 VDC 0.1 A max.
	Solenoid valve power supply	22.8 to 26.4 VDC 2.0 A or less (according to the solenoid valve specification)
Solenoid valve specification	Output type	PNP (negative common) / source
	Connected load	Solenoid valve (with surge voltage suppressor) 24 VDC and 1.5 W or less (manufactured by SMC)
	Insulation	Power supply for SI unit – Power supply for solenoid valve
	Residual voltage	0.4 VDC or less

2.3 IO-Link Communication specifications

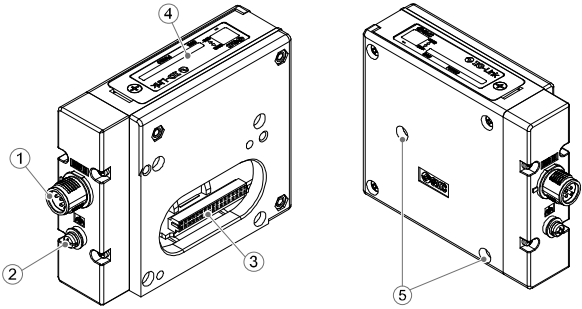
Item		Specifications
Protocol		IO-Link version 1.1
Data transmission rate		230.4 Kbps (COM3) or 38.4 kbps (COM2) selectable
Process data minimum cycle time	In/out 0/4 bytes, COM3	0.8 ms
	In/out 0/4 bytes, COM2	3.4 ms
	In/out 2/4 bytes, COM3	1 ms
	In/out 2/4 bytes, COM2	5 ms
Process data length (selectable)		0 byte input / 4 bytes output 2 bytes input / 4 bytes output (2 bytes input: Device Status)
Number of outputs		32 outputs
Vendor ID		83 hex
Device ID	EX260-SIL1 (in/out 0/4 bytes, COM3)	158 hex
	EX260-SIL1 (in/out 0/4 bytes, COM2)	159 hex
	EX260-SIL1 (in/out 2/4 bytes, COM3)	15A hex
	EX260-SIL1 (in/out 2/4 bytes, COM2)	15B hex

2.4 Applicable Valve series

Valve Series	
SY series	SY3000, SY5000, SY7000
JSY series	JSY1000, JSY3000, JSY5000
VQC series	VQC1000, VQC2000, VQC4000, VQC5000

3 Name and Function of Individual Parts

EX260-SIL1



No.	Element	Description
1	IO-Link communication/power supply connector	IO-Link communication interface for connection (Port Class B) including power supply for solenoid valves (M12 5-pin plug, A-coded)
2	Ground terminal	Functional earth (M3 screw)
3	Output connector	Output signal interface for solenoid valve manifold
4	LED and switch	LED display to indicate the status of the SI unit Switch for setting of data transmission rate (COM2 or COM3)
5	Mounting hole	Mounting hole for connection to the solenoid valve manifold

Accessories

Hexagon socket head cap screw	M3 x 30 screw for connection to the valve manifold (2 pcs).
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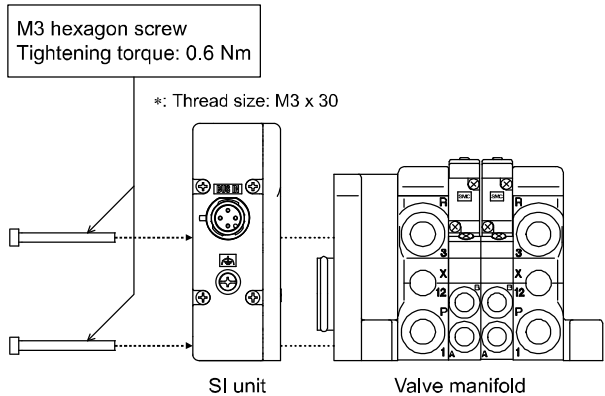
4 Installation

4.1 Installation



Warning

- Do not install the product unless the safety instructions have been read and understood.
- Assembly of the SI unit to the Valve manifold.



Caution

- Be sure to turn off the power.
- Check there is no foreign matter inside the SI unit.
- Check there is no damage and no foreign matter on the gasket.
- If the SI unit is not assembled properly, the internal PCBs may be damaged or liquid and/or dust may enter into the unit.
- Tighten the screws with the specified tightening torque (0.6 Nm).

4 Installation (continued)

4.2 Environment



Warning

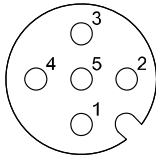
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

5 Wiring

5.1 Fieldbus Interface Connector

- IO-Link communication and power supply connector layout (Port class B).

BUS IN : M12 5-pin plug, A-coded (SPEEDCON)



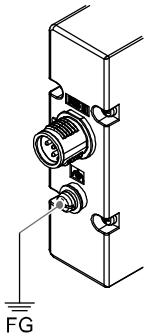
No.	Signal	Description
1	L+	+24 V for SI unit
2	SV24 V	+24 V for solenoid valve
3	L-	0 V for SI unit
4	C/Q	IO-Link communication
5	SV0 V	0 V for solenoid valve

The M12 connector cable for fieldbus connections has two types, standard M12 and SPEEDCON compatible. If both plug and socket have SPEEDCON connectors, the cable can be inserted and connected by turning it 1/2 rotation.
A standard M12 connector can be connected to a SPEEDCON connector.

- Select the appropriate cables to mate with the connectors on the SI unit. Cable accessory details can be found in the product operation manual on the SMC website (URL: <https://www.smcworld.com>).

5.2 Ground Connection

- Connect the ground terminal to ground.
Individual grounding should be provided close to the product with a short cable to assure the safety and noise resistance of the Fieldbus system.
Resistance to ground should be 100 ohms or less.



6 Settings

6.1 Switch Setting

Process data size and data transmission rate setting.

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

DIP SW

1

2

ON

OFF

Data transmission rate

COM2/COM3	No.2	Description
COM2	ON	COM2 (38.4 kbps)
COM3	OFF	COM3 (230.4 kbps)

*: Default setting is COM3 (OFF).

Process data size

No.1	Process data size
ON	2 bytes input/4 bytes output (2 bytes input: Device Status)
OFF	0 byte input/4 bytes output

*: Default setting is 0 byte input/4 bytes output (OFF).

- * The appropriate IODD file depends on the settings of the data transmission rate and process data size.
- Refer to the IODD file list below for details.

6.2 Parameter settings

• IODD file
An IODD (I/O Device Description) is a file that provides all of the necessary properties to establish communication and the necessary parameters and their boundaries to establish the desired function of a sensor or actuator.
It is the set of files of the main IODD file and image files such as a vendor logo, device picture and device icon.
The corresponding IODD files for each product are as follows:

Data Transmission rate	Process data size	IODD File *
COM3 (230.4 kbps)	0 byte input / 4 bytes output	SMC-EX260-SIL1_04_3-yyyyymmdd-IODD1.1
COM2 (38.4 kbps)		SMC-EX260-SIL1_04_2-yyyyymmdd-IODD1.1
COM3 (230.4 kbps)	2 bytes input / 4 bytes output (2 bytes input: Device Status)	SMC-EX260-SIL1_24_3-yyyyymmdd-IODD1.1
COM2 (38.4 kbps)		SMC-EX260-SIL1_24_2-yyyyymmdd-IODD1.1

*: "yyyyymmdd" in the file name indicates the date of the file creation.

For all other parameter settings refer to the Operation manual on the SMC website (URL: <https://www.smcworld.com>).

7 LED Indication

COM

PWR(V)

LED	LED Status	Description
COM	Green ON	Power ON, IO-Link communication inactive
	Green OFF	Power OFF
	Flashing Green	IO-Link communication active
PWR(V)	Green ON	Power for the solenoid valve is supplied
	OFF	Power for the solenoid valve is not supplied or outside the tolerance range (19 V or less)

8 How to Order

Refer to the product catalogue for the 'How to Order' details.

9 Outline Dimensions (mm)

Refer to the Operation manual for Outline dimensions available on the SMC website (URL: <https://www.smcworld.com>).

10 Maintenance

10.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Stop operation if the product does not function correctly.

11 Limitations of Use

8.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 Contacts

Refer to Declaration of Conformity and URL: <https://www.smcworld.com> for contacts.

SMC Corporation

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