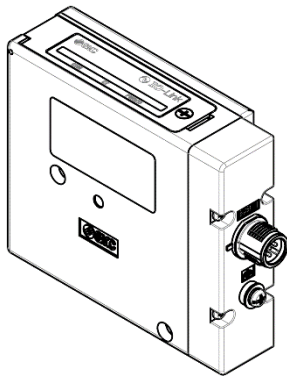




ORIGINAL INSTRUCTIONS

Instruction Manual
Fieldbus device - SI Unit for IO-Link
EX260-MIL1



The intended use of this product is to control pneumatic valves and I/O while connected to the IO-Link communication 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)^{*)}, and other safety regulations.

- ^{*)} ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components.
- ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
- IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements
- ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots

- 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.

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

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 storage temperature	-20 to +60 °C
Ambient humidity	35 to 85% RH (no condensate)
Withstand voltage	500 VAC applied for 1 minute (between FE and terminals)
Insulation resistance	500 VDC, 10 MΩ or more (between FE and terminals)
Operating atmosphere	No corrosive gas
Enclosure	IP67 (IEC 60529) when connected to valve manifold
Dimensions (W x L x H) mm	34.2 x 102.4 x 76.5
Weight	200 g

2.2 Electrical specifications

Item		Specifications
PWR for logic/input	Operating voltage	24 VDC +20%/-15%
	Current consumption	100 mA or less (at 24 VDC)
	Under voltage detection	16.8 VDC approx.
PWR(V) For output	Operating voltage *1	24 VDC +20%/-15%
	Voltage drop *1	1.2 VDC or less (at 24 VDC)
Reverse polarity protection		Yes (PWR and PWR(V))
Galvanic Isolation		Yes (between PWR and PWR(V))

^{*)} SI Unit power supply voltage specification. Supply power according to the solenoid valve used.

2.3 Communication specifications

Item	Specifications
Bus protocol	IO-Link
Version	1.1
IO-Link type	Device
IO-Link Port Class	Class B
Communication speed	COM3 (230.4 kbps)
Vendor ID	0x0083 (131)

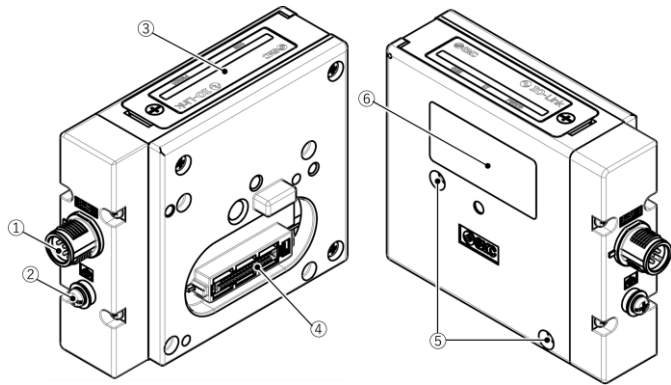
2.3.1 IODD file

- An IODD (IO Device Description) file is a profile held by an IO-Link device, which contains device specific information such as process data, parameter and default values, vendor and product name etc.
- The contents of the IODD file description is defined as the IO-Link specification.
- The IODD file is supplied with a set of image files e.g., vendor logo, device photo and device icon.
- The IODD file of the SI Unit is as follows.

IODD file	Valve stations	Number of valve outputs	Process data size	
			Input	Output
SMC-EX260-MIL1_16-yyyymmdd-IODD1.1	4...16	8...32	1 byte	4 byte
SMC-EX260-MIL1_32-yyyymmdd-IODD1.1	20...32	40...64	1 byte	8 byte
SMC-EX260-MIL1_48-yyyymmdd-IODD1.1	36...48	72...96	1 byte	12 byte
SMC-EX260-MIL1_64-yyyymmdd-IODD1.1	52...64	104...128	1 byte	16 byte

"yyyymmdd" represents the date IODD file was created, "yyyy" is the year, "mm" is the month and "dd" is the date.

3 Name and function of parts



No	Part	Description
1	Communication / Power connector	Connector for IO-Link communication and power supply to the SI Unit and valves. (M12 5-pin plug A-coded).
2	FE terminal	Functional Earth (M3 screw).
3	LED display	LED display to indicate the SI Unit status.
4	Valve manifold connection	Connection for the valve manifold.
5	Mounting hole	Mounting hole for connection to the valve manifold. Refer to valve operation manual for details on installation, mounting, etc.
6	Product information label	Information label to indicate the SI Unit details such as firmware revision or serial number etc..

- Accessories

Part	Description
Hex. socket head cap screw	M3 x 30 screw (2 pcs.) for connection to valve manifold.

4 Installation

4.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- For further details on mounting and installation to the valve manifold, refer to the valve manifold operation manual.
- The SI Unit must be connected to a valve manifold before supplying power.

4.2 Environment

Warning

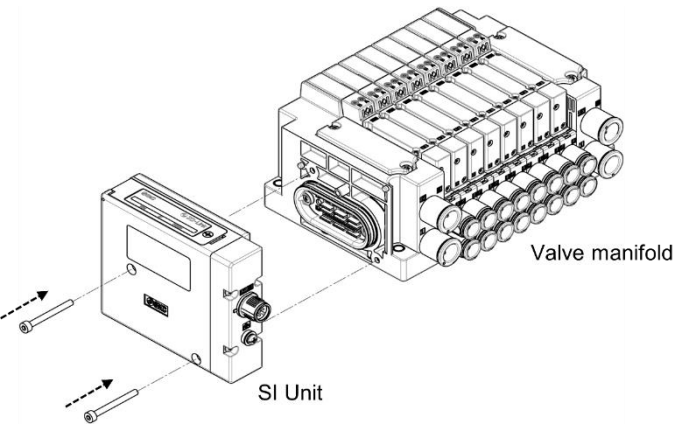
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.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

4.3 Mounting

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 correctly, the internal PCB's may be damaged or liquid and/or dust may enter into the SI Unit.
- Tighten the mounting screws to the tightening torque specified (Tightening torque: 0.6 N•m).
For a protection rating of IP67 to be assured, the recommended tightening torque must be applied.

4 Installation (continued)



4.4 Valve manifold mounting

- The SI Unit does not have any holes for mounting purposes. Refer to the relevant valve manifold operation manual for mounting details.

5 Wiring

- Connect the IO-Link communication and power cable.
- Select the appropriate cable (EX9-AC###) to mate with the M12 connector on the SI Unit.

5.1 Communication / Power connector

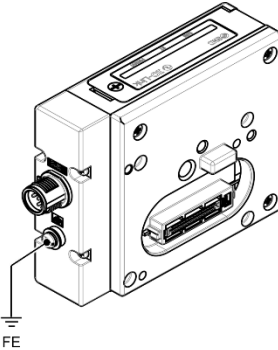
IO-Link Port class B: M12 5-pin plug, A-coded

No.	Designation	Description
1	L+	+24 V for control
2	P24	+24 V for valves
3	L-	0 V for control
4	C/Q	IO-Link communication
5	N24	0 V for valves

- The power supply for the valves and the SI Unit operation are isolated. Be sure to supply power respectively. Either single source or two different power supplies can be used.

5.2 FE Terminal

- The SI Unit must be connected to FE (Functional Earth) to divert electromagnetic interference.
- Connect a grounding cable from the FE terminal screw on the SI Unit to the nearest functional earth point.
- The grounding cable should be as thick and short as reasonably possible.
- The recommended tightening torque for the FE terminal is 0.3 N•m.



6 Setting

Refer to the operation manual on the SMC website
(URL: <https://www.smcworld.com>) for parameter setting.

7 LED Indication

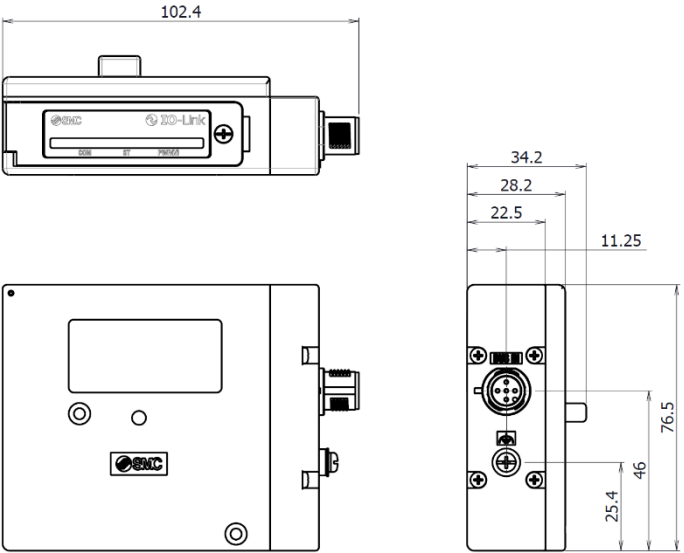
COM

ST

PWR(V)

LED	Indication	Description
COM	Green LED flashing	Power supply for control is present and IO-Link communication is active. (LED flashing 900 ms ON, 100 ms OFF).
	Green LED ON	Power supply for control is present and IO-Link communication is inactive.
	OFF	Power supply for control is not present.
ST	OFF	No diagnostic information.
	Red LED ON	One of the following may have occurred (DeviceStatus: Failure). <ul style="list-style-type: none">Valve has a short circuit.Valve manifold is not connected correctly. (The SI Unit detected that the number of valve stations is 0 or more than 64).Number of valve stations in the manifold has decreased during operation.
	Green LED flashing (1 Hz)	One of the following may have occurred (DeviceStatus: Maintenance-Required). <ul style="list-style-type: none">Power supply for control is low (< approx. 16.8 VDC).Output count exceeds the limit value.Number of valve stations in the manifold has increased during operation.
PWR(V)	Green LED ON	Power supply for valves is present.
	OFF	Power supply for valves is not present.

8 Outline Dimensions (mm)




9 How to Order

Refer to the operation manual on the SMC website
(URL: <https://www.smcworld.com>) for How to order information.

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

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

13 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL: <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
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