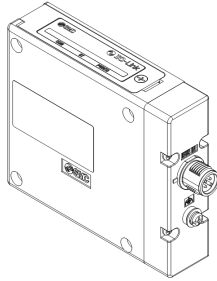




ORIGINAL INSTRUCTIONS

Instruction Manual
Fieldbus device - SI unit for Vacuum Manifold
EX260-VIL1



The intended use of this product is to control a pneumatic vacuum manifold 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)^{*)}, 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: Robotics — Safety requirements — Part 1: Industrial 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 operating temperature	0 to +50 °C
Ambient humidity	35 to 85%RH (no condensation)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	500 VAC applied for 1 minute
Insulation resistance	10 MΩ or more at 500 VDC,
Operating atmosphere	No corrosive gas
Enclosure	IP67
Enclosure material	PBT
Dimensions	25.5 x 102.4 x 76.5 mm
Weight	150 g or less

2.2 Electrical specifications

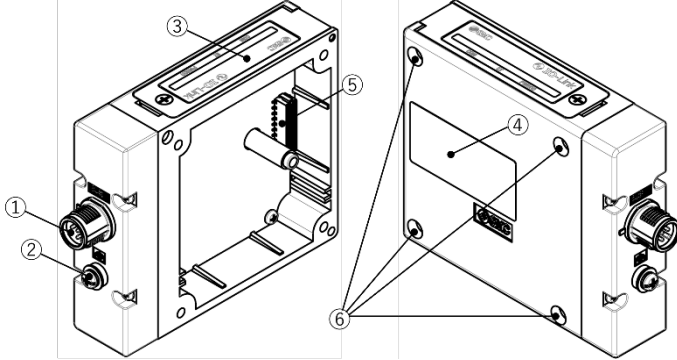
Item		Specifications
Power supply for Logic / Inputs	Operating voltage range	24 VDC ±10%
	Under voltage detection	16.8 VDC approx.
Power supply for outputs	Operating voltage range	24 VDC +10% / -5%
Internal current consumption		100 mA or less
Reversed polarity protection		Yes (Power supplies for logic / input and outputs)
Isolation		Yes (Power supplies for logic / input and outputs)
Maximum number of ejectors		16
Maximum number of sensors		16

2.3 IO-Link Communication specifications

Item		Specifications
Protocol		IO-Link version 1.1
IO-Link type		Device
IO-Link Port Class		Class B
Data transmission rate		38.4 kbps (COM2)
Firmware update function		Yes
Vendor ID		0x0083 (131)
IODD File	4 station manifold	SMC-EX260-VIL1_4-yyyymmdd-IODD1.1
	8 station manifold	SMC-EX260-VIL1_8-yyyymmdd-IODD1.1
	12 station manifold	SMC-EX260-VIL1_12-yyyymmdd-IODD1.1
	16 station manifold	SMC-EX260-VIL1_16-yyyymmdd-IODD1.1
Process Data size	4 station manifold	4 bytes Input / 2 bytes Output
	8 station manifold	5 bytes Input / 3 bytes Output
	12 station manifold	6 bytes Input / 4 bytes Output
	16 station manifold	7 bytes Input / 5 bytes Output

3 Name and Function of Parts

EX260-VIL1



No.	Element	Description
1	IO-Link communication/ power supply connector	Connector for IO-Link communication and supplying power to the SI Unit, pressure sensors and valves. (M12 5-pin plug A-coded).
2	FE terminal	Functional Earth (M3 screw).
3	LED Display	LED display to indicate the status of the SI unit.
4	Product label	Label to provide SI unit information.
5	Connector	Connector for communication with vacuum manifold.
6	Mounting holes	Mounting hole for connection to vacuum 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 vacuum manifold, refer to the vacuum manifold operation manual.
- The SI unit must be connected to a vacuum manifold before it is powered ON.

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 PCBs may be damaged or liquid and/or dust may enter into the unit.
- Tighten the screws with the specified tightening torque.

4.2 Environment

Warning

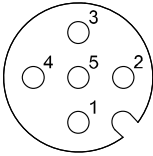
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- 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 Communication / Power Connector

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

BUS IN : M12 5-pin plug, A-coded



No.	Signal	Description
1	L+	+24 V for Logic / Inputs
2	P24	+24 V for Outputs
3	L-	0 V for Logic / Inputs
4	C/Q	IO-Link communication
5	N24	0 V for Outputs

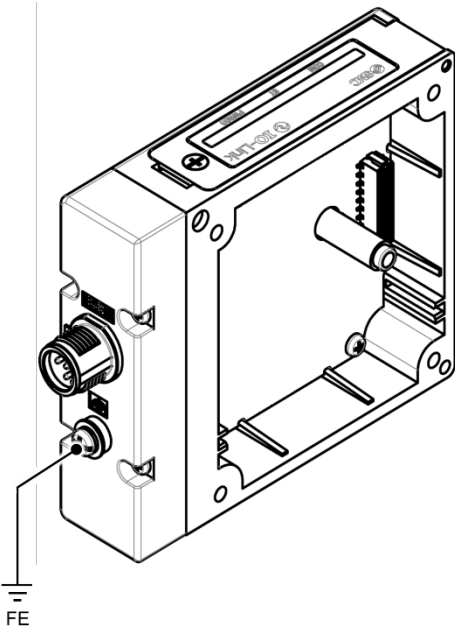
The M12 connector cable for fieldbus connections has two types, standard M12 and SPEEDCON compatible. If both plug and socket have SPEEDCON connectors, the cable can be inserted and connected by turning it 1/2 rotation.
A standard M12 connector can be connected to a SPEEDCON connector.

- The power supply for logic/input and the power supply for output are isolated.
- Select the appropriate cables to mate with the connectors on the SI unit. Cable accessory details (SMC part number EX9-AC***-S***, EX500-AP0*0-* and PCA-140180*) can be found in the operation manual on the SMC website (URL: <https://www.smcworld.com>).

5.2 Ground Connection

- Connect the FE ground terminal to ground.
The SI Unit must be connected to FE (Functional Earth) to divert electromagnetic interference.
For maximum protection, the FE cable should be as thick and short as reasonably possible.
The FE terminal and the metal parts of the fieldbus interface / power supply connector are internally connected.

- Resistance to ground should be 100 ohms or less.
- FE terminal screw tightening torque: 0.3 N•m.



6 Settings

6.1 Configuration

• 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 name and product name etc. The content 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.

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

7 LED Indication



LED	Status	Description
COM	Green flashing (900 ms ON, 100 ms OFF)	Power supply for logic / input is present and IO-Link communication is active.
	Green ON	Power supply for logic / input is present and IO-Link communication is inactive.
	OFF	Power supply for logic / input is low (< approx. 16.8 VDC) or not present.
ST	OFF	Operating normally.
	Red ON	One of the following may have occurred. (DeviceStatus: Failure) <ul style="list-style-type: none">• Valve has a short circuit.• Pressure sensor has a short circuit.• Pressure sensor has failed or a disconnection.• No connection or a disconnection between SI Unit and vacuum manifold.• There is a firmware error.
	Orange ON	One of the following may have occurred. (DeviceStatus: Maintenance-Required) <ul style="list-style-type: none">• Power supply for logic / input is low (< approx. 16.8 VDC).• Setting of supply valve type parameter has a mismatch.• Setting of Pressure / Hysteresis parameter has failed.• Valve protection function is operating.
	Green flashing (1 Hz)	A firmware update is being performed via IO-Link communications or the firmware update has failed.
PWR(V)	Green ON	Power supply for output is present.
	OFF	Power supply for output is not present.

8 How to Order

Refer to the operation manual available on the SMC website (URL: <https://www.smcworld.com>) for 'How to Order' details.

9 Outline Dimensions (mm)

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

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 of 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)
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