

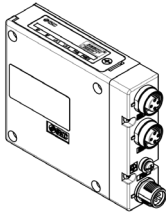


ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device – SI Unit for PROFINET

EX260-VPN1



The intended use of this product is to control pneumatic valves and I/O while connected to the PROFINET 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: 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.
- **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.
- **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.
- **The following instructions must be followed during maintenance:**
Turn off the power supply.
Stop the supply of air, exhaust the residual pressure and verify that the air is released before performing maintenance.
Otherwise an injury can result.

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.

2 Specifications

2.1 General specifications

Item	Specification
Dimensions (W x L x H) in mm	25.5 x 102.4 x 76.5
Weight	150 g
Housing materials	PBT
Maximum number of ejectors	16
Maximum number of sensors	16
Withstand voltage	500 VAC 1 min. (between FE and all accessible terminals)
Insulation resistance	10 Mohm or more (500 VDC between FE and all accessible terminals)
Ambient temperature	Operation: 0 to 50 °C Storage : -20 to 60 °C
Ambient humidity	35 to 85 %RH (non-condensing)

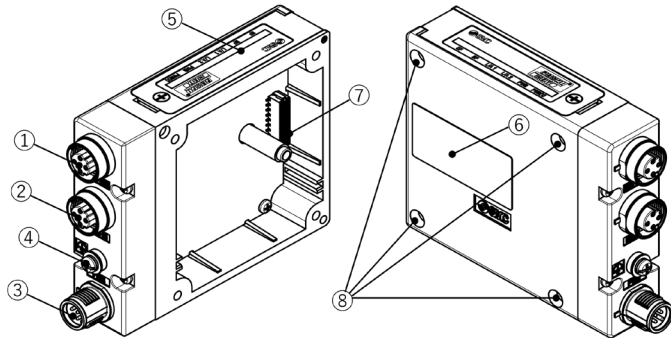
2.2 Electrical specifications

Item		Specification
Internal current consumption (PWR)		100 mA or less (at 24 VDC)
Protection against polarity reversal		Yes (PWR and PWR(V))
PWR	Operating voltage	24 VDC +10%/-10%
	Under-voltage detection	approx. 18 VDC
PWR(V)	Operating voltage	24 VDC +10%/-5%
Galvanic isolation		Yes (between PWR and PWR(V))

2.3 Fieldbus specifications

Item	Specification
Bus protocol	PROFINET I/O
Version	PROFINET Specification Version 2.3
Conformance Class C	Yes (for IRT switch function only)
FSU	Yes
MRP	Yes
MRPD	Yes
Shared device	Yes
NET load Class III	Yes
Firmware update	Yes
Vendor ID	0083 h
Device ID	0012 h
GSD file	GSDML-V2.3x-SMC-EX260-VPN1-xxxxxxx.xml

3 Name and Function of Individual Parts



No	Element	Description
1	Fieldbus interface connector (BUS OUT/Port2)	PROFINET connection Port 2. (M12 4 pin socket D-coded)
2	Fieldbus interface connector (BUS IN/Port1)	PROFINET connection Port 1. (M12 4 pin socket D-coded)
3	Power supply connector (PWR)	Power supply for logic/sensors and valves (M12 4 pin plug A-coded).
4	FE terminal	Functional earth. (M3 screw)
5	LED display	LED's to indicate the SI Unit status.
6	Product information label	Information label to provide the SI Unit information, such as MAC address and serial No. etc.
7	Signal transmitter/receiver connector	Signal interface for vacuum manifold.
8	Mounting hole	Mounting hole for connection to the vacuum manifold.

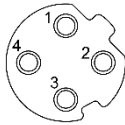
4 Installation

Refer to vacuum manifold documents on the SMC website (URL: <https://www.smcworld.com>) for installation details.

5 Wiring

5.1 PROFINET communication connectors

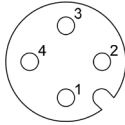
BUS IN/BUS OUT: M12 4 pin socket D-coded



Pin	BUS IN (Port 1)	BUS OUT (Port 2)
1	Transmit Data +	Receive Data +
2	Receive Data +	Transmit Data +
3	Transmit Data -	Receive Data -
4	Receive Data -	Transmit Data -

5.2 Power connector

PWR: M12 4 pin plug A-coded



Pin	Designation	Description
1	SV24 V (PWR(V))	+24 V for valves
2	SV0 V (PWR(V))	0 V for valves
3	SI24 V (PWR)	+24 V for logic/sensors
4	SI0 V (PWR)	0 V for logic/sensors

5.3 FE terminal

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. FE terminal screw tightening torque: 0.3 N•m

6 Settings

In order to configure the SI Unit with your PROFINET IO controller's software, the dedicated GSD file is required. The GSD file contains all of the necessary information to configure the SI Unit on your PROFINET IO Controller's software.

In order to represent the SI Unit in your PROFINET IO Controller's software, the dedicated symbol file is required.

The GSD file and the symbol file names are as follows.

- GSD file : GSDML-V2.3x-SMC-EX260-VPN1-xxxxxxx.xml
- Symbol file : GSDML-0083-0012-EX260-VPN1.bmp

For the latest GSD file and configuration settings refer to the Operation manual on the SMC website (URL: <https://www.smcworld.com>).

7 How to Order

Refer to the vacuum manifold catalogue on the SMC website (URL: <https://www.smcworld.com>) for 'How to Order' information.

8 Outline Dimensions

Refer to vacuum manifold drawings or catalogue on the SMC website (URL: <https://www.smcworld.com>) for outline dimensions.

9 LED Indication



SF LED and BF LED

SF	BF	Description
OFF	OFF	Operating normally.
Red ON	---	One of the following may have occurred. <ul style="list-style-type: none">• Valve coil has a short circuit.• Pressure sensor has a short circuit.• Pressure sensor has a failure or a disconnection.
Orange ON	---	One of the following may have occurred. <ul style="list-style-type: none">• Power supply for logic/sensors (PWR) is low. (< approx. 18 VDC)• The Supply valve type parameter does not match the actual ejector specification.• The Pressure parameter value does not meet the conditions.• Valve protection function is operating.
---	Red ON	One of the following may have occurred. <ul style="list-style-type: none">• There is no connection to the IO Controller, or the connection has an error.• The device name is not correct.• The IP address is not set or not correct.• The GSD file or head module is not correct.• The configuration is not correct.

9 LED Indication (continued)

SF LED and BF LED (Continued)

SF	BF	Description
Alternately flash SF Red → SF OFF BF OFF → BF Red		The SI unit is in the process of a firmware update.
Simultaneously flash SF Red → SF OFF BF Red → BF OFF		The SI unit failed to update firmware.

L/A1 LED and L/A2 LED

L/A1	L/A2	Description
Green ON	---	The SI Unit is connected to Ethernet via BUS IN/Port 1.
Orange ON	---	The SI Unit is transmitting or receiving Ethernet data via BUS IN/Port 1.
---	Green ON	The SI Unit is connected to Ethernet via BUS OUT/Port 2.
---	Orange ON	The SI Unit is transmitting or receiving Ethernet data via BUS OUT/Port 2.
OFF	OFF	The SI Unit has no connection to Ethernet.
Simultaneously flash L/A1 Orange → L/A1 OFF L/A2 Orange → L/A2 OFF		The PROFINET function "Flash LED" (show location) is operating.

PWR LED

PWR	Description
Green ON	Power supply for logic/sensors (PWR) is present.
Green flash (1 Hz)	Power supply for logic/sensors (PWR) is present but is low (< approx. 18 VDC).
OFF	Power supply for logic/sensors (PWR) is not present.

PWR(V) LED

PWR(V)	Description
Green ON	Power supply for valves (PWR(V)) is present.
OFF	Power supply for valves (PWR(V)) is not present.

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.

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, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN
Specifications are subject to change without prior notice from the manufacturer.
© SMC Corporation All Rights Reserved.
Template DKP50047-F-085O