



ORIGINAL INSTRUCTIONS

Instruction Manual
Gateway unit – PROFINET compatible
Series EX500-GPN2



The intended use of the Gateway unit is for connection to SI units and input devices for the control of pneumatic valves.

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 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.
- Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for more Safety instructions.

2 Specifications

General specifications

Item	Specifications
Ambient operating temperature	-10 to +50 °C
Ambient humidity range	35 to 85% RH (no condensate)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	1000 VAC applied for 1 minute
Insulation resistance	500 VDC, 2 MΩ or more
Weight	550 g

Electrical specifications

Item	Specifications
Power supply voltage	Control and Input: 24.0 VDC ±10%
	Solenoid valves: 24.0 VDC +10% / -5%
Rated Current	Power supply for control and input: 6.2 A (GW current consumption: 200 mA max.). Power supply for solenoid valve: 4 A
Number of Inputs / Outputs	128 Inputs / 128 Outputs

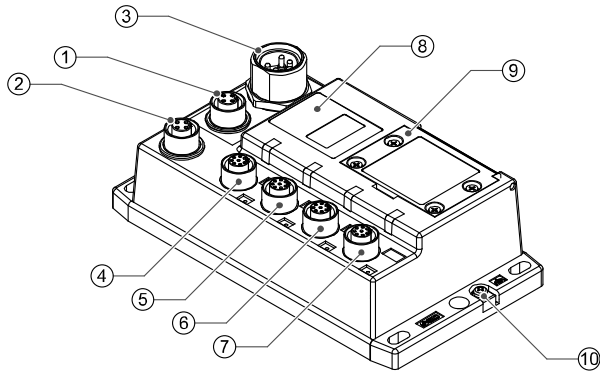
Communication specifications

Item	Specifications
Protocol	Ethernet (IEEE802.3)
Communication media	100BASE-TX (Cat5 or more)
Communication speed	100 Mbps
Communication method	Full Duplex / Half Duplex (auto. selected)
Fieldbus protocol	PROFINET IO
Device Information	Vendor ID: 0x0083 (SMC Corporation)
	Device ID: 0x000B

Low level bus specifications

Item	Specifications
Number of inputs / outputs	128 Inputs / 128 Outputs
Applicable system	Gateway distribution system 2 (128 point)
Number of branch ports	4 (input: Max. 32 points / Output: Max. 32 points per branch)
Number of connected slaves	16 max. (input unit: 2 pcs. / SI unit: 2 pcs. per branch)
Power supply for control and input	24 VDC, Max. 1.5 A per one branch port
Power supply for Solenoid valve	24 VDC, Max. 1.0 A per one branch port
Branch cable length	Total length 20 m or less per branch

3 Name and function of parts

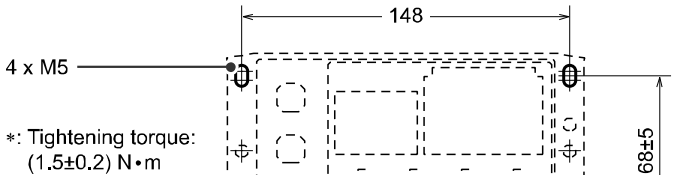


No	Part	Description
1	Port1 / IN connector	Connection to PROFINET line.
2	Port2 / OUT connector	
3	Power supply connector	Connection for power supply.
4	Branch port A (COM A)	Connection to SI units (with manifold valves) or input units using a branch cable.
5	Branch port B (COM B)	
6	Branch port C (COM C)	
7	Branch port D (COM D)	
8	LED Display	Displays the unit status.
9	Protective cover	Cover should not be opened.
10	FE terminal (M3)	Functional Earth (FE).

4 Installation

4.1 Direct mounting

Secure in position using 4 x M5 screws, 15 mm minimum thread length.



4.2 Wiring connections

• Communication Connector

Select the appropriate Ethernet cables to mate with the connectors on the SI unit. The PROFINET connection has 2 ports, PORT 1 and PORT 2, and both ports can be used for connection.

M12 4-pin Socket (D-coded)

Connector	Pin No.	Signal name
PORT 1 / PORT 2	1	TX+
	2	RX+
	3	TX-
	4	RX-

• Power Supply Connector

Connect the power supply to the power supply connector on the Gateway unit. With this cable, power is supplied to the output devices (such as solenoid valve) and the input devices and for control.

7/8 inch, 5-pin Plug

Connector	Pin No.	Signal name
	1	0 V (solenoid valves)
	2	0 V (control and input)
	3	FE
	4	24 VDC (control and input)
	5	24 VDC (solenoid valves)

- Both single and two power supply systems can be adopted, however the wiring should be made separately (for solenoid valves / outputs and for input and control) for either system.

The M12 connector cable 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 a 1/2 rotation.
A standard connector can be connected to a SPEEDCON connector.

• Branch Connector

Connect SI units (solenoid valves) and input devices to the Branch port connectors (COM A - D) using an M12 (8-pin) connector cable (EX500-AC###-S#P#).
As each cable contains power supply wiring, there is no need to supply power to the SI unit (solenoid valves) or input devices separately.

Warning

- Be sure to fit a seal cap (EX9-AWTS) on any unused connectors. Proper use of the seal cap enables the enclosure to maintain IP65 specification. Tightening torque: 0.1 N·m.

4.3 Ground Connection

- Connect the FE terminal (M3) to ground.
- Individual grounding should be provided close to the product with a short cable to assure the safety and noise resistance of the system.
- Resistance to ground should be 100 Ω or less.

4 Installation (continued)

4.4 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- 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 Setting

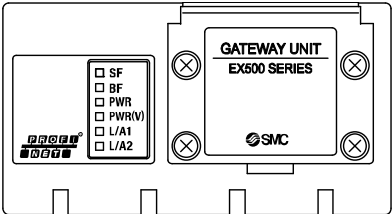
5.1 Hardware Configuration

An applicable GSDML file is required to configure the Gateway unit for the PROFINET network.
Download the latest GSDML file from the SMC website (URL: <https://www.smcworld.com>).

Model	GSDML and Symbol files
EX500-GPN2	GSDML-V2.3-SMC-EX500-*****.xml
	GSDML-0083-000B-EX500_N.bmp

Technical documentation giving detailed configuration information can be found in the operation manual on the SMC website (URL: <https://www.smcworld.com>).

6 LED Display



COM A COM B COM C COM D

• Gateway unit status

LED		Description
SF	OFF	Normal operation
	Red ON	Diagnostics error
BF	OFF	PROFINET communication established
	Red flashing	PROFINET communication not established
	Red ON	No Link (Port1 / Port2)
PWR	OFF	Power supply for control and inputs is OFF
	Green ON	Power supply for control and inputs is ON
PWR(V)	OFF	Power supply for solenoid valves is OFF
	Green ON	Power supply for solenoid valves is ON
L/A1	OFF	No Link, No Activity (Port1)
	Green ON	Link, No Activity (Port1)
	Orange flashing	Link, Activity (Port1)
L/A2	OFF	No Link, No Activity (Port2)
	Green ON	Link, No Activity (Port2)
	Orange flashing	Link, Activity (Port2)

6 LED Display (continued)

- Branch port status

LED		Description
COM A	OFF	Not connected.
	Green ON	Normal operation.
	Green flashing	Diagnostics error.
COM B	OFF	Not connected.
	Green ON	Normal operation.
	Green flashing	Diagnostics error.
COM C	OFF	Not connected.
	Green ON	Normal operation.
	Green flashing	Diagnostics error.
COM D	OFF	Not connected.
	Green ON	Normal operation.
	Green flashing	Diagnostics error.

7 Outline Dimensions (mm)

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

8 How to Order

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

9 Maintenance

9.1 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.

10 Limitations of Use

10.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

11 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.

12 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.
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