EX500-TF2Z180EN

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 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.

- 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 |

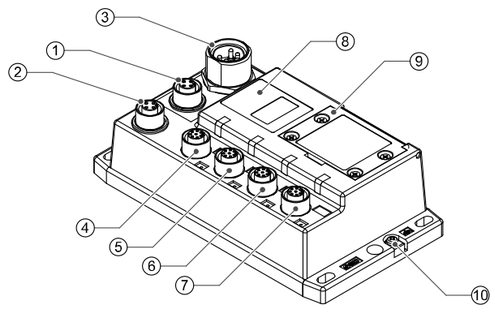
Communication specifications

| 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

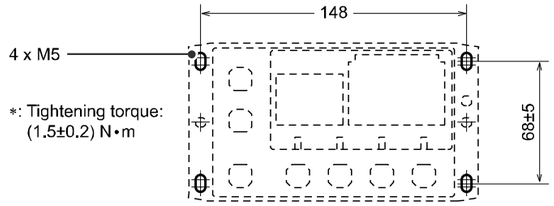



| No | Part | Description |
|---|---|---|
| 1 | Port1 / IN connector | Connection to PROFINET line. |
| 2 | Port2 / OUT connector | |
| 3 | Power supply connector | Connection for power supply. |
| 4 | Branch port A (COM A) | Connection to SI units (with manifold valves) or input units using a branch 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.

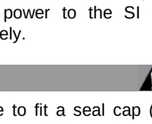



### 4.2 Wiring connections

- **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)

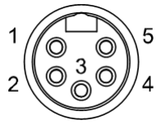
| Connector PORT 1 / PORT 2 | Pin No. | Signal name |
|---|---|---|
|  | 1 | TX+ |
| | 2 | RX+ |
| | 3 | TX- |
| | 4 | RX- |



- **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

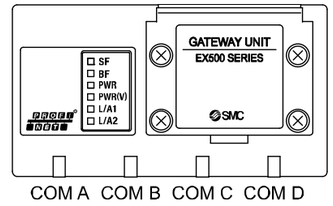
### 5.1 Hardware Configuration

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




- 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, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan

Template DKP50047-F-085M