



ORIGINAL INSTRUCTIONS

Instruction Manual

Gateway unit – EtherNet/IP™ compatible

Series EX500-GEN2



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

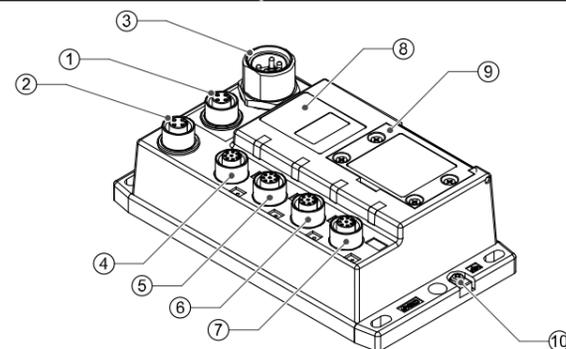
Communication specifications

Item	Specifications
Protocol	Ethernet (IEEE802.3)
Media	100BASE-TX (CAT5 or more)
Communication speed	10/100 Mbps (Automatically selected)
Communication method	Full duplex / half duplex (automatically selected)
Fieldbus protocol	EtherNet/IP™
I/O Message	Input: 20 bytes (assembly instance: 100) Output: 20 bytes (assembly instance: 150)
IP address setting range	Setting of specified address by DHCP server or internal switch. (192.168.0.1 to 192.168.0.254, 192.168.1.1 to 192.168.1.254)
Device information	Vendor ID: 7 (SMC Corp.) Product type: 12 (Communication adapter) Product code: 198
Applicable function	Quick Connect™ DLR Web server (Applicable browser: Internet Explorer6 to 11, Firefox28.0 to 31.0, Google Chrome 36.0 to 37.0)

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

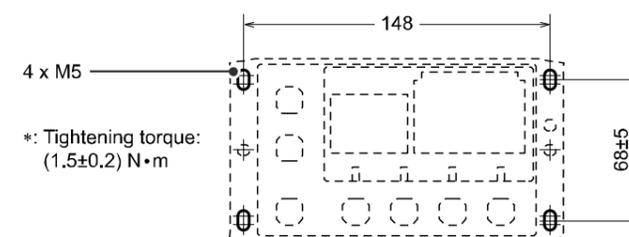


No	Part	Description
1	Port1 / IN connector	Connection to EtherNet/IP™ line.
2	Port2 / OUT connector	
3	Power supply connector	Connection for power supply.
4	Branch port A (COM A)	Connection to SI units (with manifold valves) or input units using a branch cable.
5	Branch port B (COM B)	
6	Branch port C (COM C)	
7	Branch port D (COM D)	
8	LED Display	Displays the unit status.
9	Switch cover	Switches for setting address, etc.
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 EtherNet/IP 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, 4-pin Plug

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

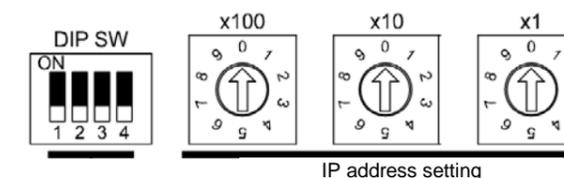
Warning

- 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 Switch setting

- Open the switch cover to set the switches using a small flat blade screwdriver.
- The power supply should be turned OFF while setting the switches.
- Whenever the switch cover has been opened, close the cover and tighten the screws to the specified tightening torque. Recommended tightening torque: 0.6 N·m.



5.2 IP address setting

Setting			Description
x100	x10	X1	
0	0	0	Remote control (DHCP) ^{*1}
0	0	1	Manual setting of IP address: 192.168.Y.X (X = 1-254) ^{*2}
0	0	2	
:	:	:	
2	5	4	DHCP mode ^{*3}
2	5	5	
2	5	6	Reserved
:	:	:	
9	9	9	

The default setting is 0.

5.3 DIP switch setting

	Description
1	Reserved (fixed to OFF).
2	HOLD / CLEAR setting ON: If EtherNet/IP communication error occurs, the output will be retained. OFF: Set the output condition during EtherNet/IP error via network. Cleared when this is not set.
3	Mode setting: ON: Gateway distribution setting (64 points). OFF: Gateway distribution setting 2 (128 points).
4	Manual setting of IP address: 192.168.Y.X (Y: OFF_0, ON_1)

The default setting is OFF.

*1: Remote control

The mode to respond to the commands below of BOOTP/DHCP Server provided by Rockwell Automation.

Enable DHCP

Information including IP address can be obtained from BOOTP/DHCP Server. If the power is supplied again in this state, EX500 tries to obtain the information including IP address again.

Disable BOOTP/DHCP

Information including IP address is not obtained from BOOTP/DHCP Server. Previous setting can be held if power is supplied under this condition.

*2: Manual setting of IP address

IP address is set within the range of 192.168.0.1 to 192.168.0.254, 192.168.1.1 to 192.168.1.254.

*3: DHCP mode

Obtain IP address from DHCP Server. Obtained IP address is lost when power supply is cut.

Default setting

"Enable DHCP" at "Remote control".

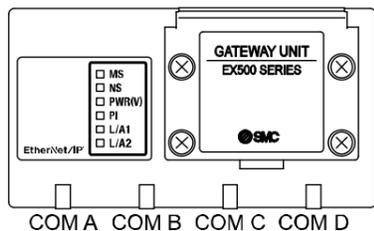
5 Setting (continued)

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

5.4 Configuration

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	
MS	OFF	Power supply for input and control OFF
	Green ON	Normal operation
	Green flashing	Parameter setting error
	Red flashing	Diagnostics error
	Red ON	Unrecoverable error
NS	OFF	IP address not set
	Green ON	EtherNet/IP™ communication established
	Green flashing	EtherNet/IP™ communication not established
	Red flashing	EtherNet/IP™ communication time out
PWR(V)	OFF	Power supply for solenoid valves is OFF
	Green ON	Power supply for solenoid valves is ON
PI	OFF	Forced output mode is disabled (Operating normally)
	Orange flashing	Ethernet UCMP Echo request (Ping command) received.
	Orange ON	Forced output mode is ON
L/A1	OFF	No Link, No Activity (Port1)
	Green ON	Link, No Activity (Port1, 100 Mbps)
	Green flashing	Link, Activity (Port1, 100 Mbps)
	Orange ON	Link, No Activity (Port1, 10 Mbps)
	Orange flashing	Link, Activity (Port1, 10 Mbps)
L/A2	OFF	No Link, No Activity (Port2)
	Green ON	Link, No Activity (Port2, 100 Mbps)
	Green flashing	Link, Activity (Port2, 100 Mbps)
	Orange ON	Link, No Activity (Port2, 10 Mbps)
	Orange flashing	Link, Activity (Port2, 10 Mbps)

• 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)
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 Template DKP50047-F-085M