



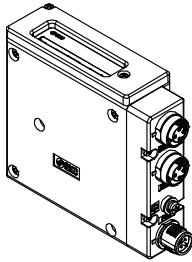
ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device - SI unit for EtherNet/IP™

Series 56-EX260-SEN1-X42

II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C
II 3D Ex tc IIIC T69°C Dc IP67



The intended use of this SI unit is 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) ^{*)}, and other safety regulations.

^{*)} 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.

| | |
|--|------------------------------------|
| ATEX Marking Description II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C II 3D Ex tc IIIC T69°C Dc IP67 | |
| Equipment Group II | tc - protected by enclosure |
| Category 3 | IIC - for all types of dust |
| Gas (G) and Dust (D) environment | T69°C - Max. surface temperature |
| Ex - European standards apply | Gc/Dc - Equipment Protection Level |
| ec – Increased safety | Ta - ambient temperature |
| IIC - for all types of gas | IP67 - Protection structure |
| T4 - Temperature classification | |

Based on the conformity assessment carried out by SMC Corporation.

Certificate Number: SMC 21.0007 X

If the Certificate number includes an X, special conditions for safe use apply as follows:-

- Protect the product from sources of heat which can generate surface temperatures higher than the temperature classification.
- Protect the product and cable connections against all impact or mechanical damage using a suitable ATEX compliant enclosure.

1 Safety Instructions (continued)

- Protect the product from direct sunlight or UV light using a suitable protective cover.
- Do not disconnect the M12 connectors before first switching off the power supply.
- Use only ATEX approved connectors and use only shielded cable to provide grounding.
- Use only a damp cloth to clean the product to avoid electrostatic discharge.

2 Specifications

General specifications

| Item | Specifications |
|-----------------------------|------------------------------|
| Ambient temperature | -10 to +50 °C |
| Ambient humidity | 35 to 85%RH (No condensate) |
| Ambient storage temperature | -20 to +60 °C |
| Withstand voltage | 500 VAC applied for 1 minute |
| Insulation resistance | 500 VDC, 10 MΩ or more |
| Operating atmosphere | No corrosive gas |
| Enclosure | IP67 |
| Weight | 260 g or less |

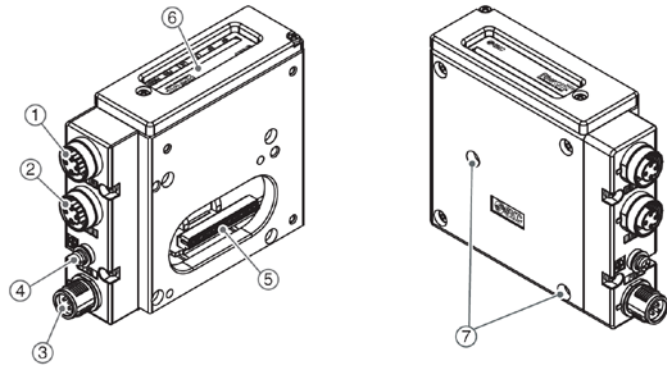
Electrical specifications

| Item | | Specifications |
|--|---|--|
| Power supply voltage range / current consumption | Controller power supply | 21.6 to 26.4 VDC 0.1 A max. |
| | Solenoid valve power supply | 22.8 to 26.4 VDC 2.0 A or less, according to the solenoid valve station specification |
| Solenoid valve specification | Output type | PNP (negative common) / source |
| | Number of outputs | 32 outputs |
| | Output condition at the time of communication error | Output HOLD/CLEAR |
| | Connected load | Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC) |
| | Insulation type | Photo coupler |
| | Residual voltage | 0.4 VDC or less |

Communication specifications

| Item | Specifications |
|--------------------------|---|
| Protocol | Ethernet (IEEE802.3) |
| Transmission medium | Standard Ethernet cable (CAT5 or more) (100BASE-TX) |
| Transmission speed | 10 Mbps / 100 Mbps (Auto negotiation) |
| Transmission method | Full duplex / Half duplex (Auto negotiation) |
| Fieldbus protocol | EtherNet/IP™ Volume1 (Edition 3.17) Volume2 (Edition 1.18) |
| Vendor ID | 7h (SMC Corporation) |
| Product type | 1Bh (Pneumatic Valve) |
| Product code | 9Ch |
| Network topology | Star, Linear Bus or Ring (including DLR). |
| IP address setting range | Manual setting using switches in SI unit: 192.168.0.1 to 254 or 192.168.1.1 to 254 Via DHCP server: Arbitrary address |
| Configuration file | EDS file (Please download from the SMC website) |
| Occupied area | 16 inputs 32 outputs |

3 Name and function of Individual parts



| No | Part | Description |
|----|------------------------------|--|
| 1 | Fieldbus connector (BUS OUT) | EtherNet/IP™ connection PORT2 (M12 4-pin socket, D-coded) |
| 2 | Fieldbus connector (BUS IN) | EtherNet/IP™ connection PORT 1 (M12 4-pin socket, D-coded) |
| 3 | Power supply connector | Power supply for valves and operation of SI unit (M12 4-pin plug, A-coded) |
| 4 | Ground terminal | Functional Earth (M3) |
| 5 | Output connector | Output signal interface for valve manifold |
| 6 | LED display | Bus status specific and SI unit status LED's |
| 7 | Mounting hole | Mounting hole for connection to the valve manifold |

4 Installation

4.1 Installation

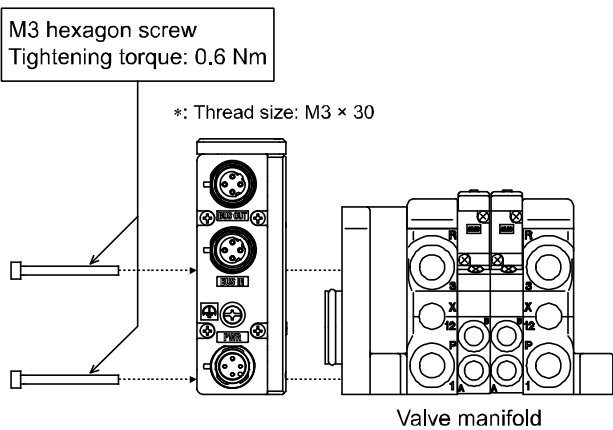
Warning

- Do not install the product unless the safety instructions have been read and understood.

• **General instructions on installation and maintenance**

Connect the valve manifold to the SI unit.

• **Assembly and disassembly of the SI unit**



4.2 Replacement of the SI unit

- Remove the M3 hexagon screws from the SI unit and release the SI unit from the valve manifold.
- Replace the SI unit.
- Tighten the screws with the specified tightening torque. (0.6 N•m)

4 Installation (continued)

4.3 Assembly Precautions

- Be sure to switch off the power.
- Check there is no foreign matter inside the SI unit.
- Check there is no damage and no foreign matter stuck to the gasket.
- Be sure to tighten the screws with the specified torque.
- If the SI unit is not assembled properly, the internal PCBs may be damaged or liquid and/or dust may enter into the unit.

4.4 Connecting Cables

Select the appropriate cables to mate with the connectors mounted on the SI unit.

○ **Fieldbus interface connector layout**

BUS OUT: M12 4-pin socket, D-coded (SPEEDCON)

| No. | Designation | Description |
|-----|-------------|-----------------|
| 1 | TD+ | Transmit Data + |
| 2 | RD+ | Receive Data + |
| 3 | TD- | Transmit Data - |
| 4 | RD- | Receive Data - |

BUS IN: M12 4-pin socket, D-coded (SPEEDCON)

| No. | Designation | Description |
|-----|-------------|-----------------|
| 1 | TD+ | Transmit Data + |
| 2 | RD+ | Receive Data + |
| 3 | TD- | Transmit Data - |
| 4 | RD- | Receive Data - |

○ **Power supply connector layout**

PWR: M12 4-pin plug, A-coded (SPEEDCON)

| No. | Designation | Description |
|-----|-------------|-----------------------------|
| 1 | SI24 V | +24 V for SI unit operation |
| 2 | SV24 V | +24 V for solenoid valve |
| 3 | SI0 V | 0 V for SI unit operation |
| 4 | SV0 V | 0 V for solenoid valve |

- The power supply for the solenoid valve and SI unit operation are isolated. Be sure to supply power respectively.
Either single source power or two different power supplies can be used.

NOTE

When conformity to UL is required the SI unit must be used with a UL1310 Class 2 power supply.

The M12 connector cable for fieldbus and power supply 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 a 1/2 of a rotation, leading to a reduction in man hours.
A standard connector can be connected to a SPEEDCON connector.

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 IP67 specification.

4.5 Ground Terminal

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

4.6 Environment

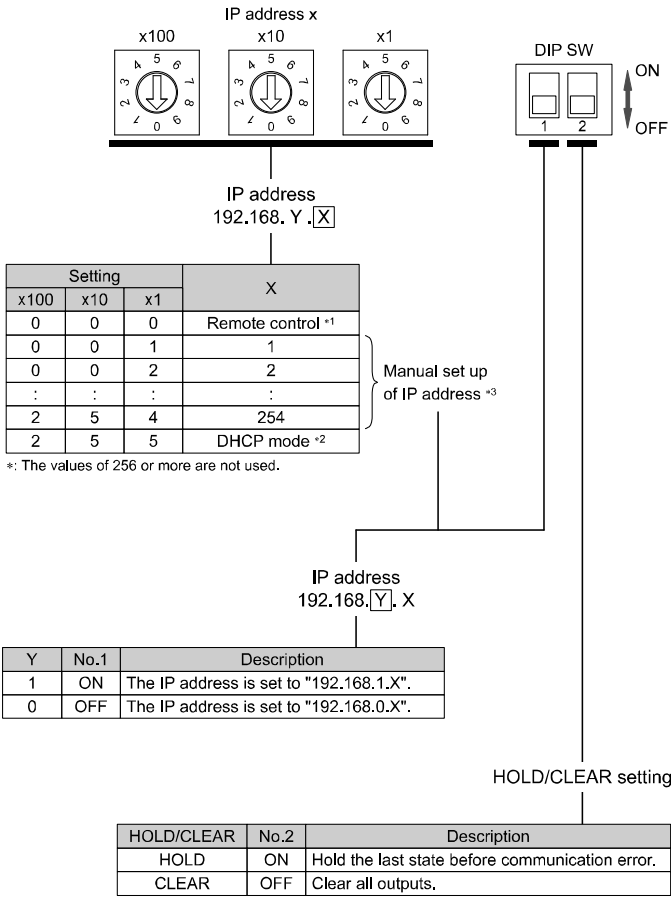
Warning

- 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.

5 Setting

5.1 Switch Setting

The switches should only be set with the power supply turned off.
Open the cover and set the rotary switches and DIP switch with a small flat blade screwdriver.



5.2 Configuration

In order to configure the SI unit for the EtherNet/IP™ network, the appropriate device master file (EDS file) for the SI unit will be required.

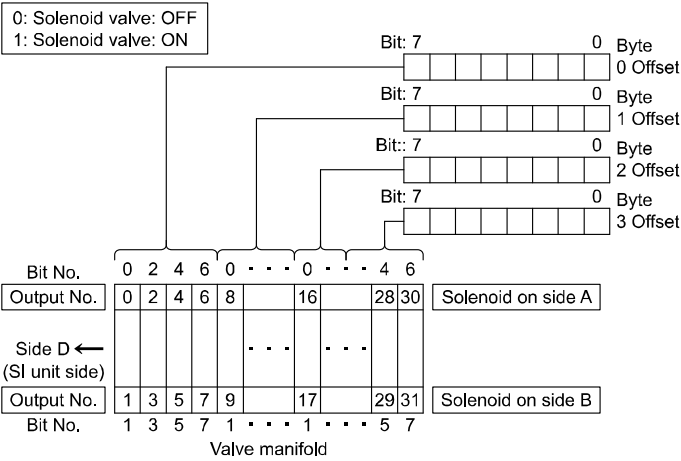
Technical documentation giving detailed configuration information and the EDS file can be found on the SMC website (URL: <https://www.smcworld.com>).

5.3 EDS File

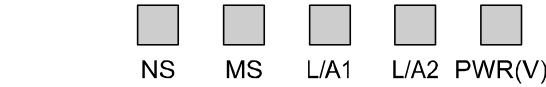
| Product number | Contents (EDS file and icon) |
|-------------------|--------------------------------------|
| 56-EX260-SEN1-X42 | ex260_sen1_24_v**.eds ex260-sen1.ico |

5.4 Output number assignment

Output numbering starts at zero and refers to the solenoid position on the manifold.



6 LED Display



| LED | Status | Description |
|--------|----------------|---|
| NS | OFF | SI unit operating voltage not supplied or IP address is not set. |
| | Green ON | EtherNet/IP™ communication established. |
| | Green Flashing | EtherNet/IP™ communication not established. |
| | Red Flashing | EtherNet/IP™ communication time out. |
| | Red ON | IP address duplicated. |
| MS | OFF | SI unit operating voltage not supplied. |
| | Green ON | Operating normally. |
| | Green Flashing | Setting Error. |
| | Red Flashing | Recoverable Error. |
| | Red ON | Unrecoverable Error. |
| L/A1 | OFF | BUS IN side: No Link, No Activity |
| | Green ON | BUS IN side: Link, No Activity |
| | Green Flashing | BUS IN side: Link, Activity |
| L/A2 | OFF | BUS OUT side: No Link, No Activity |
| | Green ON | BUS OUT side: Link, No Activity |
| | Green Flashing | BUS OUT side: Link, Activity |
| PWR(V) | Green ON | Load voltage for valves supplied. |
| | OFF | Load voltage for valves not supplied or outside tolerance range (19 V or less). |

7 How to Order

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

8 Outline Dimensions (mm)

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

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 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
Specifications are subject to change without prior notice from the manufacturer.
© 2021 SMC Corporation All Rights Reserved.
Template DKP50047-F-085M