



Installation & Maintenance Manual
Fieldbus device
Type EX180-SEC5-X230
(for EtherCAT)



EtherCAT

1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

| | |
|----------------|--|
| 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. |

This product is class A equipment that is intended for use in an industrial environment.

There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

Warning

- 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.

Verify the specifications before use.

- 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 regularly for proper operation.

Otherwise malfunction can result, causing an accident.

- The following instructions must be followed during maintenance:**

•Turn off the power supply.

•Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance.

Otherwise an injury can result.

1 Safety Instructions (continued)

Caution

- When handling, assembling or replacing the units:**
 - Avoid touching any sharp metal parts of the connectors for connecting units.
 - When disassembling units, take care to avoid excessive force.
 - When assembling units, take care not to get any fingers caught between units.
Injury can result.
- After maintenance is complete, perform appropriate functional inspections.**
 - Stop operation if the equipment does not function properly.
Safety cannot be assured in the case of unexpected malfunction.
- Provide grounding to assure the safety and noise resistance of the Fieldbus system.**
 - Individual grounding should be provided close to the product with a short cable.

NOTE

- The direct current power supply to combine should be UL1310 Class2 power supply when conformity to UL is necessary.

Refer to the operation manual.

2 Specifications

Connected load: Solenoid valve with surge voltage suppressor of 24 VDC and 1.5 W or less (manufactured by SMC)

Current consumption of power supply for SI unit operation: 0.1 A max.

Operating temperature range: -10 to 50 °C *

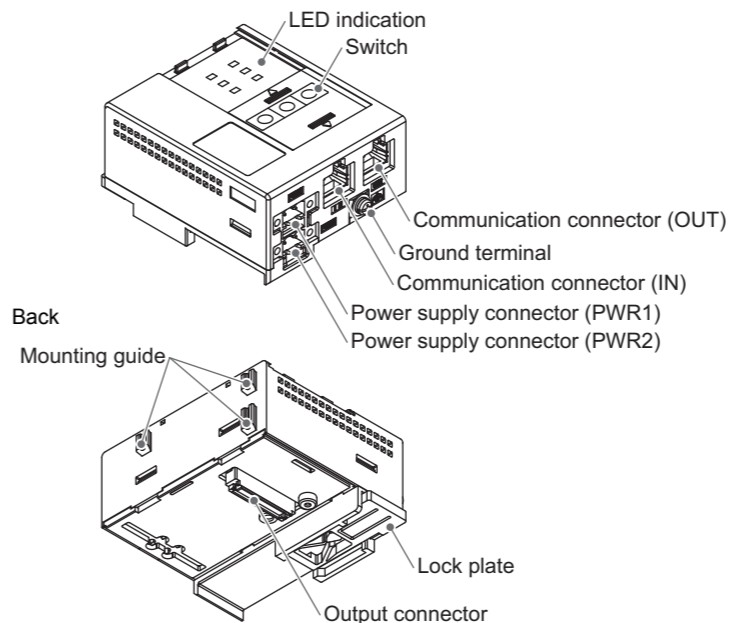
Storage temperature range: -20 to 60 °C

Pollution degree: 2(UL508)

*: The UL compliant temperature is 0 to 45 °C.

Please contact SMC directly for more information.

3 Summary of Product parts



| Element | Description |
|-------------------------------|---|
| LED indication | Bus status-specific and SI unit-specific LEDs. |
| Switch | Switches for setting of address. |
| Communication connector (OUT) | Connect to the EtherCAT communication. (OUT side) (RJ45 connector) |
| Ground terminal | Functional Earth. (M3 screw) |
| Communication connector (IN) | Connect to the EtherCAT communication. (IN side) (RJ45 connector) |
| Power supply connector (PWR1) | The power supply plug (EX9-CP6-X27) that is used to supply the power for the SI unit. |

| | |
|-------------------------------|--|
| Power supply connector (PWR2) | The power supply plug (EX9-CP6-X27) that is used to supply the power for the solenoid valve. |
| Mounting guide | Connecting parts to the groove of the valve manifold. |
| Lock plate | Used to mount (remove) the product on a DIN rail. |
| Output connector | Output signal interface for valve manifold. |

4 Installation

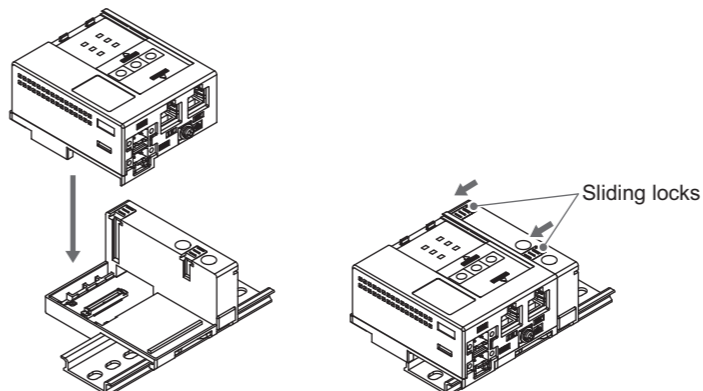
The SI unit is not designed to be a standalone device. Always use with valve manifold.

Connectable valve manifolds are SJ2000/3000, S0700 series.

Refer to the catalogues and operation manuals for details of the valve manifolds.

How to mount

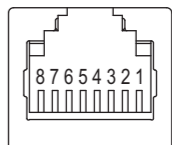
1. Mount the SI unit to the manifold so that the mounting guide of the SI unit case mates with the manifold groove.
2. Secure the SI unit using the two sliding locks.



4 Installation (continued)

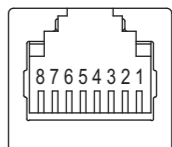
Wiring

- Communication connector (IN): RJ45 8 pin socket (CAT5e)



| No. | Designation | Description |
|-----|-------------|-----------------|
| 1 | TD+ | Transmit Data + |
| 2 | TD- | Transmit Data - |
| 3 | RD+ | Receive Data + |
| 4 | - | - |
| 5 | - | - |
| 6 | RD- | Receive Data - |
| 7 | - | - |
| 8 | - | - |

- Communication connector (OUT): RJ45 8 pin socket (CAT5e)

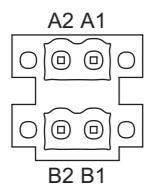


| No. | Designation | Description |
|-----|-------------|-----------------|
| 1 | TD+ | Transmit Data + |
| 2 | TD- | Transmit Data - |
| 3 | RD+ | Receive Data + |
| 4 | - | - |
| 5 | - | - |
| 6 | RD- | Receive Data - |
| 7 | - | - |
| 8 | - | - |

Connect the "Communication connector (IN)" to the upstream device (PC, PLC etc.) and connect the "Communication connector (OUT)" to the downstream device.

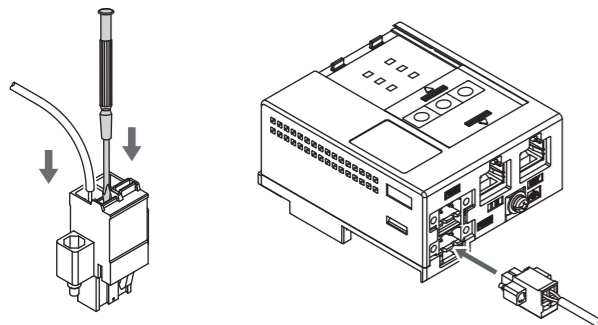
4 Installation (continued)

○ Power supply connector PWR1, PWR2: 4 pin socket



| Element | Description |
|---------|-----------------------------|
| A1 | +24 V for SI unit operation |
| A2 | 0 V for SI unit operation |
| B1 | +24 V for solenoid valve |
| B2 | 0 V for solenoid valve |

Connect the power supply to the power supply plug (EX9-CP6-X27) in accessories.
 The power supply connector is suitable for use with wire sizes from AWG24 to 16 (0.2 to 1.5 mm²).
 The tightening torque is 0.2 to 0.3 Nm.
 The EX180 power supply structure consists of two systems. These systems can operate alone or with another power supply.
 Pay attention not to exceed the tolerance range of power supply voltage.



Power supply plug EX9-CP6-X27 (50 pcs.) is not included with the product.
 Please order separately.

○ Ground terminal

Connect the ground terminal to ground.
 Resistance to ground should be 100 ohms or less.

4 Installation (continued)

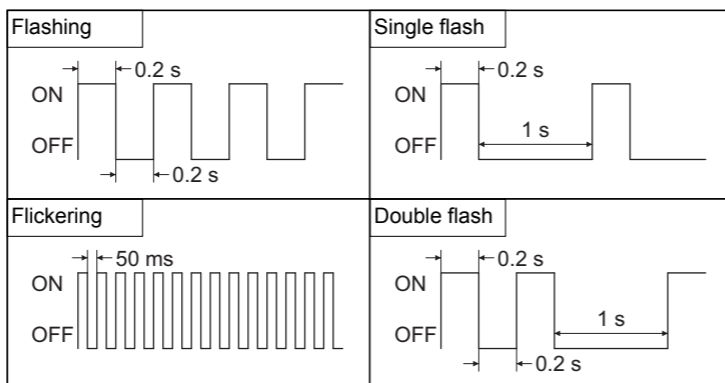
■ LED indication



| LED | LED Status | Description |
|----------------|----------------|--|
| RUN (Green) | OFF | Init |
| | Flashing * | Pre-Operational |
| | Single flash * | Safe-Operational |
| | Flickering * | Initialization or Bootstrap |
| | ON | Operational |
| ERR (Red) | ON | PDI watchdog timeout |
| | Double flash * | Application watchdog timeout |
| | Single flash * | Unsolicited state change |
| | Flashing * | Invalid configuration |
| | Flickering * | Booting error |
| | OFF | No error |
| PWR (Green) | ON | SI unit operating voltage is supplied |
| | OFF | SI unit operating voltage is not supplied |
| PWR(V) (Green) | ON | Load voltage for the valve is supplied |
| | OFF | Load voltage for the valve is not supplied or outside tolerance range (19 V or less) |
| L/A IN (Green) | OFF | IN side: No link / No activity |
| | ON | IN side: Link / No activity |
| | Flickering * | IN side: Link / Activity |

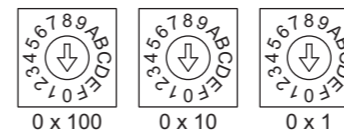
| | | |
|-----------------|--------------|---------------------------------|
| L/A OUT (Green) | OFF | OUT side: No link / No activity |
| | ON | OUT side: Link / No activity |
| | Flickering * | OUT side: Link / Activity |

※: Refer to the below for the LED status.



5 Settings

The switches should only be set with the power supply turned off.
 Set the rotary switches with a small flat blade screwdriver.



| 0 x 100 | 0 x 10 | 0 x 1 | Device ID |
|---------|--------|-------|-----------|
| 0 | 0 | 0 | 0* |
| 0 | 0 | 1 | 1 |
| 0 | 0 | 2 | 2 |
| : | : | : | : |
| 0 | F | F | 255 |
| : | : | : | : |
| F | F | D | 4093 |
| F | F | E | 4094 |
| F | F | F | 4095 |

※: Factory default setting is 0.
 The Device ID should be set in a range of 1 to 4095.

6 How to Order

Refer to the operation manual.

7 Outline Dimensions (mm)

Refer to the operation manual.

8 Maintenance

Refer to the operation manual.

9 Troubleshooting

Refer to the operation manual.

10 Commissioning

•Hardware Configuration •Parameter setting using TwinCAT®.
 Please contact SMC directly for more information about these settings.

11 Contacts

| | | | |
|------------|-------------------|----------------|-------------------|
| AUSTRIA | (43) 2262 62280-0 | LATVIA | (371) 781 77 00 |
| BELGIUM | (32) 3 355 1464 | LITHUANIA | (370) 5 264 8126 |
| BULGARIA | (359) 2 974 4492 | NETHERLANDS | (31) 20 531 8888 |
| CZECH REP. | (420) 541 424 611 | NORWAY | (47) 67 12 90 20 |
| DENMARK | (45) 7025 2900 | POLAND | (48) 22 211 9600 |
| ESTONIA | (372) 651 0370 | PORTUGAL | (351) 21 471 1880 |
| FINLAND | (358) 207 513513 | ROMANIA | (40) 21 320 5111 |
| FRANCE | (33) 1 6476 1000 | SLOVAKIA | (421) 2 444 56725 |
| GERMANY | (49) 6103 4020 | SLOVENIA | (386) 73 885 412 |
| GREECE | (30) 210 271 7265 | SPAIN | (34) 945 184 100 |
| HUNGARY | (36) 23 511 390 | SWEDEN | (46) 8 603 1200 |
| IRELAND | (353) 1 403 9000 | SWITZERLAND | (41) 52 396 3131 |
| ITALY | (39) 02 92711 | UNITED KINGDOM | (44) 1908 563888 |

SMC Corporation

URL <http://www.smcworld.com> (Global) <http://www.smceu.com> (Europe)

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