



Installation & Maintenance Manual
Fieldbus device
Type EX180-SEC5-X231
(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 *

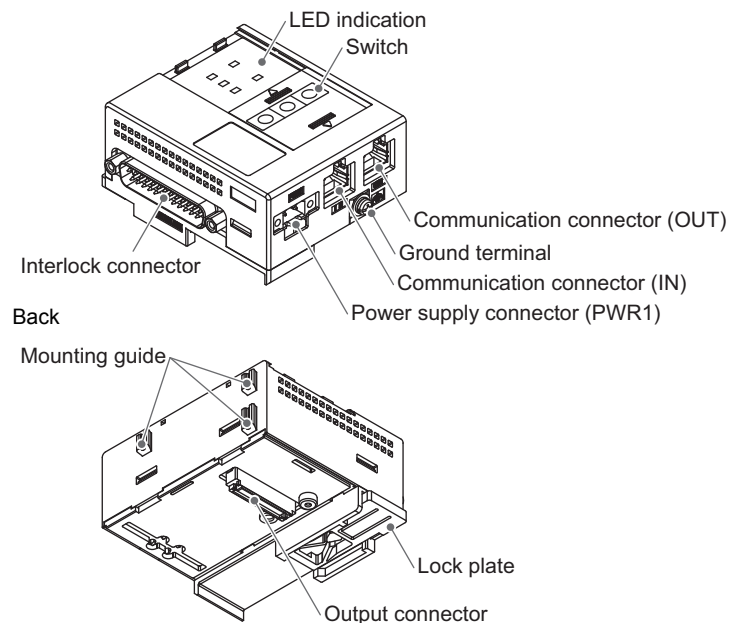
Storage temperature range: -20 to 60 °C

Pollution degree: 2(UL508)

*: The UL compliant temperature is 0 to 50 °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.

Interlock connector	Connect with an external interlock circuit. (D-sub 25 pin plug connector)
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

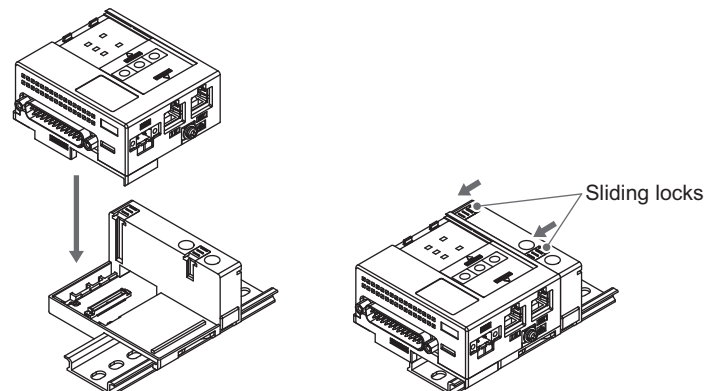
The SI unit is not designed to be a standalone device. Always use with valve manifold.

Connectable valve manifolds are SJ2000/3000, S0700 series.

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

How to mount

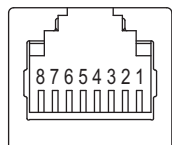
1. Mount the SI unit to the manifold so that the mounting guide of the SI unit case mates with the manifold groove.
2. Secure the SI unit using the two sliding locks.



4 Installation (continued)

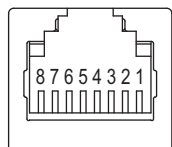
Wiring

- 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	-	-

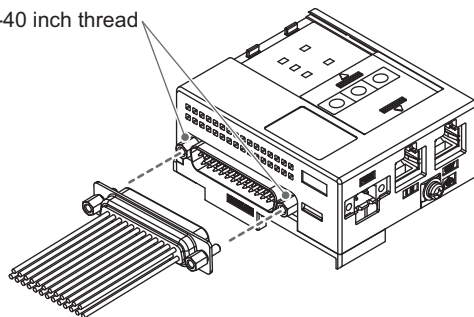
Connect the "Communication connector (IN)" to the upstream device (PC, PLC etc.) and connect the "Communication connector (OUT)" to the downstream device.

4 Installation (continued)

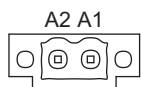
○ **Interlock connector: D-sub 25 pin plug**

Insert the connector of the cable into the D-sub connector of the unit vertically.
The tightening torque is 0.6 Nm.

Lock screw: #4-40 inch thread

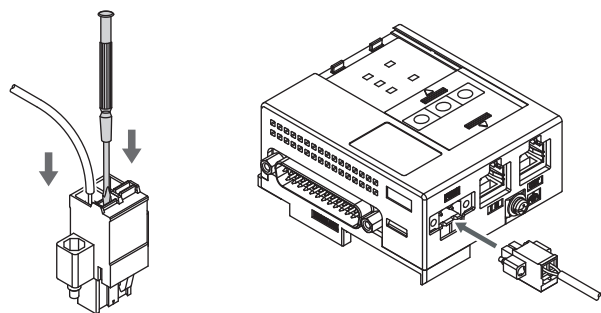


○ **Power supply connector PWR1: 2 pin socket**



Element	Description
A1	+24 V for SI unit operation
A2	0 V for SI unit operation

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.



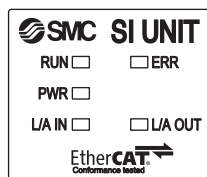
Power supply plug EX9-CP6-X27 (50 pcs.) is not included with the product.
Please order separately.

○ **Ground terminal**

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

4 Installation (continued)

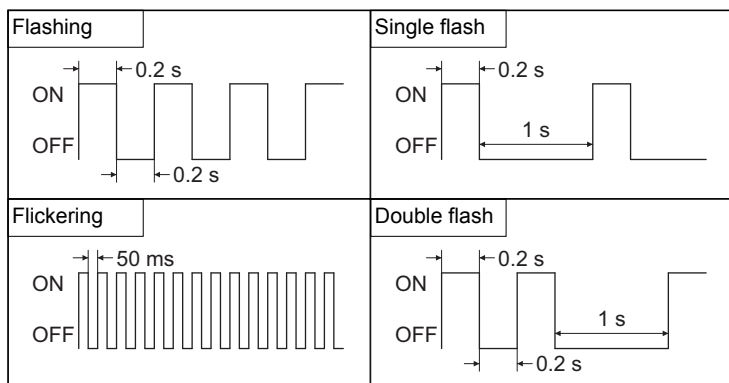
■ **LED indication**



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

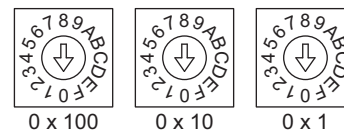
L/A OUT (Green)	OFF	OUT side: No link / No activity
	ON	OUT side: Link / No activity
	Flickering *	OUT side: Link / Activity

*: 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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