



Installation & Maintenance Manual
Fieldbus system - SI unit
Type EX180 Series for DeviceNet™
EX180-SDN3□/SDN4□/SDN5□/SDN6□



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.

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.

Caution

• **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.**

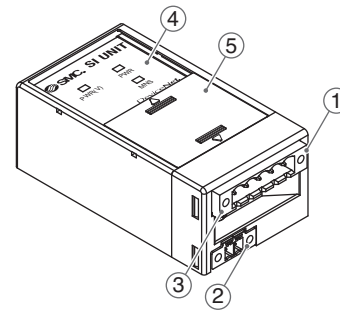
Individual grounding should be provided close to the product with a short cable.

NOTE

- When conformity to UL is necessary the SI unit must be used with a UL 1310 Class2 power supply.

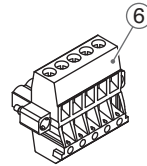
Summary of Product Parts

<EX180-SDN3□/SDN4□/SDN5□/SDN6□>

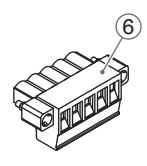


<Accessories>

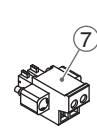
Communication connector for DeviceNet™ (1 pc.)
 EX180-SDN3/4/5/6 EX180-SDN3A/4A/5A/6A Power supply connector (1 pcs.)



(EX180-CDN1)



(EX180-CDN2)



(EX180-CP1)

No.	Item	Description
1	Fieldbus interface connector (BUS)	The connector for the DeviceNet™ bus line (⑥).
2	Power supply connector (PWR(V))	The connector for the power supply (⑦) used to supply the power for the solenoid valves.
3	FG terminal	Functional Earth.
4	Display	LED diagnostic display.
5	Setting switches	Switches to set the MAC ID and communication speed (inside the cover).

Installation

General Instructions on Installation

Applicable valve series

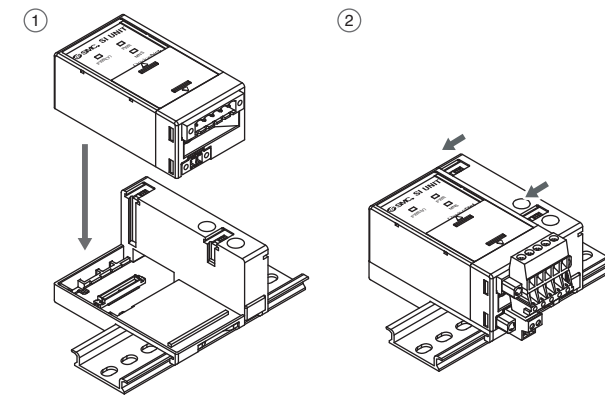
The EX180 series SI unit can be mounted on the following valve manifolds.

SJ2000/3000, S0700 series

*: Refer to the catalogues and operation manuals for details of the solenoid valves and manifolds.

How to mount the manifold

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.



Wiring

1. Wiring for communication

Wiring of the DeviceNet™ communication cable and connector is shown below.

- (1) Connect the signal wires to the assigned pins. (Figure 1)
 The required tightening torque is 0.5 to 0.6 Nm.

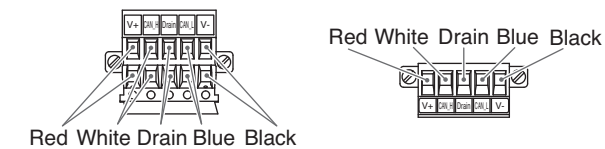


Figure 1

- (2) A bus termination is required at both ends of the DeviceNet™ bus segment as shown in Figure 2.

The specification of the terminating resistor is 121 Ω ±1%, 1/4 W.

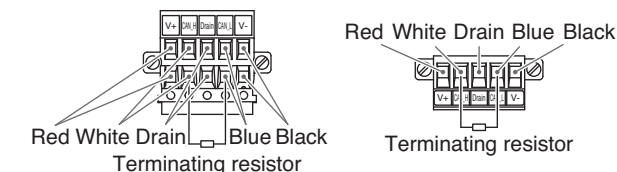


Figure 2

Installation (Continued)

(3) How to connect.

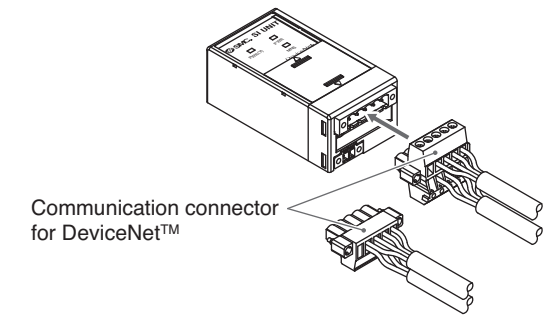


Figure 3

2. Wiring of the power supply

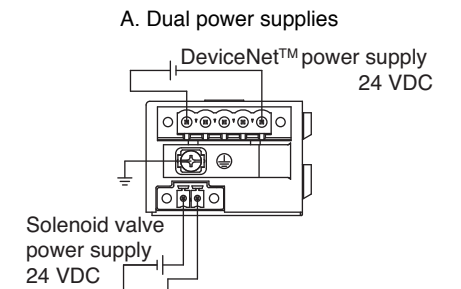
Connect the power supply to the power supply connector (1 pc.).
 The EX180 power supply structure consists of two supplies.

These supplies can be operated using a single or dual power supply system.

Connect the wires to the assigned pins. (Figure 4, Figure 5)
 The required tightening torque is 0.22 to 0.25 Nm.

Note

Connect the FG terminal to ground with a ground resistance of 100 Ω or less.



B. Single power supply

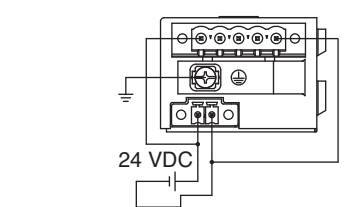


Figure 4

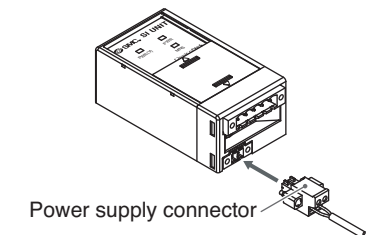
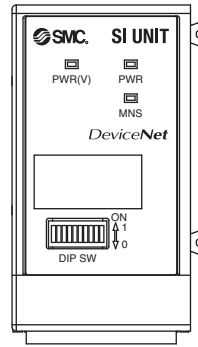


Figure 5

LED Display



LED	Description	LED status
PWR(V)	Solenoid valve power supply is supplied at the specified voltage	ON
	Solenoid valve power supply is not supplied at the specified voltage	OFF
PWR	Communication power supply for DeviceNet™ is supplied	ON
	Communication power supply for DeviceNet™ is not supplied	OFF
MNS	Communication power supply for DeviceNet™ is OFF, off line or a MAC ID duplication is present	OFF
	I/O connection is waiting (On line status)	Green flashing
	I/O connection is established (On line status)	Green ON
	I/O connection time out (Minor communication error)	Red flashing
	MAC ID duplication error or BUS OFF error (Serious communication error)	Red ON

Troubleshooting

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about troubleshooting.

Specification

Connected load: 24 VDC Solenoid valve with light and surge voltage suppressor of 1 W or less (manufactured by SMC)

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

Ambient temperature for operation: -10 to 50 °C

Ambient temperature for storage: -20 to 60 °C

Pollution degree 2: (UL508)

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about the product specifications.

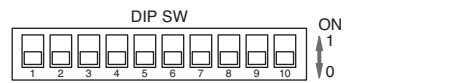
Outline Dimensions

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about outline dimensions.

Setting

Setting of the DIP switches should only be carried out with the power supply turned off.

Open the cover and set the DIP switches with a small flat blade screwdriver.



Communication speed setting

Communication speed	No.7	No.8
125 kbps	0	0
250 kbps	1	0
500 kbps	0	1
Invalid	1	1

Factory default setting is 125 kbps.

HOLD/CLR setting

HOLD/CLR	No.9	Description
HOLD	1	Hold the last state before communication error.
CLR	0	Clear all outputs.

Factory default setting is CLEAR.

It is possible to set the output condition in the event of a communication error individually via the DeviceNet™ network. If the output condition is set via the DeviceNet™ Network then the setting of DIP switch 9 is invalid.

SW/HW mode setting

SW/HW	No.10	Description
SW	1	Setting of the MAC ID and communication speed can be carried out via the DeviceNet network. DIP switches No.1 to 8 will be invalid.
HW	0	Setting of the MAC ID and communication speed can be carried out using the DIP switches No.1 to 8.

Factory default setting is HW mode.

The MAC ID and communication speed will be retained if the unit is powered off and software mode is selected (DIP switch 10).

If HW mode is selected then the settings stored using SW mode will be replaced by the HW settings.

MAC ID setting

MAC ID setting	No.1	No.2	No.3	No.4	No.5	No.6
#0	32	16	8	4	2	1
#1	0	0	0	0	0	1
#2	0	0	0	0	1	0
:	:	:	:	:	:	:
#62	1	1	1	1	1	0
#63	1	1	1	1	1	1

The default setting is all switches ON, so the MAC ID is set to 63.

The MAC ID should be set in the range of 0 to 63.

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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