

Fieldbus device Operation Manual



EX260 Series for DeviceNet™

Thank you for purchasing an SMC EX260 Series Fieldbus device (Hereinafter referred to as "SI unit"). Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain more detailed information about operating this product, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

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), Japan Industrial Standards (JIS) 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.

Operator

- ◆ This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ◆ Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

Safety Instructions

Warning

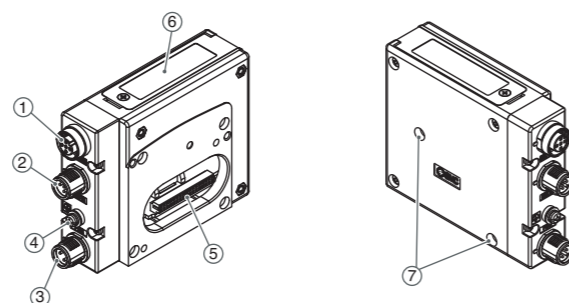
- **Do not disassemble, modify (including changing the printed circuit board) or repair.**
An injury or failure can result.
 - **Do not operate the product outside of the specifications.**
Do not use for flammable or harmful fluids.
Fire, malfunction, or damage to the product can result.
Verify the specifications 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 element

<EX260-SDN1/-SDN2/-SDN3/-SDN4>



No.	Element	Description
1	Fieldbus interface connector (BUS OUT)	DeviceNet™ connection (M12 5-pole socket, A-coded)
2	Fieldbus interface connector (BUS IN)	DeviceNet™ connection (M12 5-pole plug, A-coded)
3	Power supply connector	Power supply with load voltage for valves (M12 4-pole plug, A-coded)
4	Ground terminal	Functional earth (M3 screw)
5	Output connector	Output signal interface for valve manifold
6	LED and switch	Bus status-specific and SI unit-specific LEDs Switches for setting of node address and operating mode
7	Mounting hole	Mounting hole for connection to the valve manifold

Accessories

Hexagon socket head cap screw	2pcs. M3x30 screw for connection to the valve manifold
Seal cap	1pc. seal cap for unused fieldbus interface connector (BUS OUT)

Connecting cables

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

Fieldbus interface connector layout

BUS OUT: M12 5-pole Socket A-coded

BUS IN: M12 5-pole Plug A-coded

No.	Designation	Contact layout	
		BUS IN	BUS OUT
1	DRAIN	2 0	0 1
2	V+	5 0	1 0
3	V-	3 0	0 4
4	CAN_H		1 0
5	CAN_L		5 0

Note: If you are concerned about disruption of "downstream" devices whilst replacing the SI unit, use a DeviceNet™ tap rather than making connections to the BUS OUT connector.

Power supply connector layout

PWR: M12 4-pole Plug A-coded

No.	Designation	Contact layout
1	-	
2	+24 V for solenoid valve	2 0
3	-	0 1
4	0 V for solenoid valve	3 0

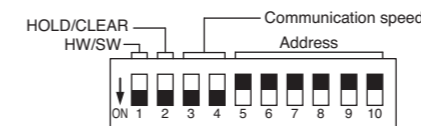
Ground terminal

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

Setting

Switch setting

Set the DeviceNet™ node address (MAC ID), DeviceNet™ communication speed and fail safe mode of the SI unit with 10-element switch.



Note: Be sure to switch off the power supply when set on the switch.

Address setting (switch No. 5 to 10)

Set the DeviceNet™ node address (MAC ID) in binary coded. Address range is 0 to 63.
Note: Factory default setting is 63.

Switch No.	0: OFF, 1: ON					
	No.5	No.6	No.7	No.8	No.9	No.10
MAC ID	32	16	8	4	2	1
0	0	0	0	0	0	0
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

Communication speed setting (switch No. 3 to 4)

Set the DeviceNet™ communication speed in binary coded.
Note: Factory default setting is 125kbps.

Switch No.	0: OFF, 1: ON	
	No.3	No.4
Communication speed	125 kbps	0
	250 kbps	0
	500 kbps	1
	-	1

HOLD/CLEAR setting (switch No.2)

Set the reaction of outputs to the communication error
(All outputs will be set under the same conditions)

Note: Factory default setting is CLEAR

Switch No.	No.2	Description	0: OFF, 1: ON	
HOLD/CLEAR	CLEAR	0	Clear all outputs	
	HOLD	1	Hold last state right before communication error	

Note: Each output can be set under individual conditions through the network.

HW/SW mode setting (switch No.1)

Set the setting method, either by local or by network, for the setting of address and speed.

Local setting: Hardware mode (Hereinafter referred to as "HW mode")

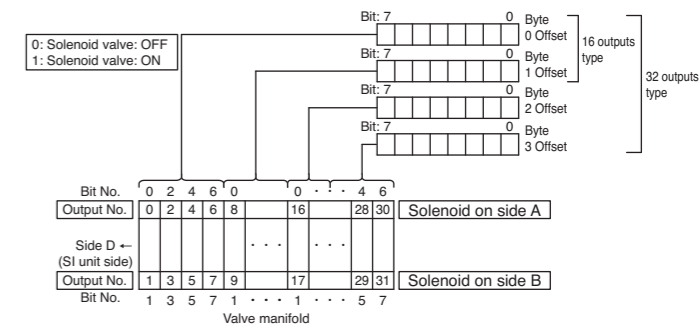
Network setting: Software mode (Hereinafter referred to as "SW mode")

Note: Factory default setting is "HW mode" setting

Switch No.	No.1	Description	0: OFF, 1: ON	
HW/SW	HW	0	Set the address and speed in a local with switch on the SI unit	
	SW	1	Set the address and speed over the DeviceNet™ network (Switch setting is invalid)	

Output number assignment

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



Setting over the DeviceNet™ network

The technical document states detail setting over the network information can be found on the SMC website (URL <http://www.smcworld.com>)

Diagnostic information

The technical document states detail diagnostic information can be found on the SMC website (URL <http://www.smcworld.com>)

LED indication



LED	Description
NS	Network status (See the table below for details)
MS	SI unit status (See the table below for details)
PWR	Turns ON in green when network power is supplied
PWR (V)	Turns ON in green when load voltage for the valve is supplied Turns OFF when load voltage for the valve is not supplied or outside tolerance range (19V or less)

NS status	MS status	Description
<input checked="" type="checkbox"/> Green On	<input checked="" type="checkbox"/> Green On	On-line state, The device has connections in the established state.
<input type="checkbox"/> Off	<input checked="" type="checkbox"/> Green On	Off-line state, The device has not completed the Dup_MAC_ID test yet
<input checked="" type="checkbox"/> Green flashing	<input checked="" type="checkbox"/> Green On	On-line state, The device has no connections in the established state
<input type="checkbox"/> Off	<input checked="" type="checkbox"/> Red On	Off-line state, Watchdog timer error
<input type="checkbox"/> Off	<input checked="" type="checkbox"/> Red flashing	Wrong switch setting, Parameter writing error
<input checked="" type="checkbox"/> Red On	<input checked="" type="checkbox"/> Green On	Bus-off state, Duplicate MAC ID
<input checked="" type="checkbox"/> Red flashing	<input checked="" type="checkbox"/> Green On	I/O Connection is in the Timed-Out state
<input type="checkbox"/> Off	<input type="checkbox"/> Off	No network power present

Troubleshooting

The technical document states detail troubleshooting information can be found on the SMC website (URL <http://www.smcworld.com>)

Specifications

Connected load: 24 VDC Solenoid valve with light and surge voltage suppressor of 1.5 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)

The technical document states detail specification information can be found on the SMC website (URL <http://www.smcworld.com>)

Outline Dimensions

The technical document states detail outline dimensions information can be found on the SMC website (URL <http://www.smcworld.com>)

Accessories

The technical document states detail accessories information can be found on the SMC website (URL <http://www.smcworld.com>)

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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