



Installation & Maintenance Manual
Fieldbus device (SI unit)
EX260 Series for DeviceNet™



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 with the labels 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.

Caution

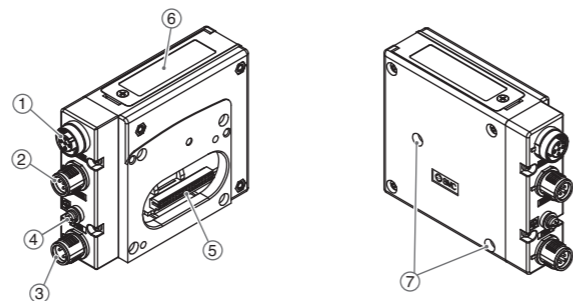
- After maintenance is complete, perform appropriate functional inspections. Stop operation if the equipment does not function properly. Safety cannot be assured in the case of unexpected malfunction.
- Provide grounding to assure the safety and noise resistance of the Fieldbus system. Individual grounding 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

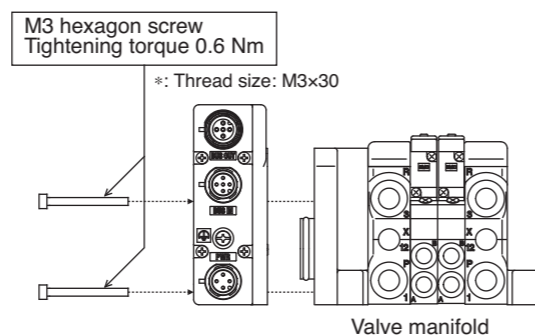
Hexagon socket head cap screw	2 pcs. M3x30 screw for connection to the valve manifold
Seal cap	1 pc. seal cap for unused fieldbus interface connector (BUS OUT)

Installation

General instructions on installation and maintenance

Connect valve manifold to the SI unit. Connectable valve manifolds are the same as for EX250 series SI unit. Refer to the EX250 series valve manifold section in the valve catalogue for valve manifold dimensions.

Assembly and disassembly of the SI unit



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 Nm)

Precautions for maintenance

- 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 being stuck to the gasket.
- Be sure to tighten the screws with the specified torque. If the SI unit is not assembled properly, inside PCBs may be damaged or liquid and/or dust may enter into the unit.

Installation (Continued)

Connecting cables

Select the appropriate cables to mate 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 01	1 0 02
2	V+	5 0 03	4 0 03
3	V-		
4	CAN_H		
5	CAN_L		

Note: To avoid causing disruption of "downstream" devices whilst replacing 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 0 01
2	+24 V for solenoid valve	
3	-	3 0 04
4	0 V for solenoid valve	

Ground terminal

Connect the ground terminal to 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 using the 10-element switch.



Note: Be sure to switch off the power supply before setting the switches.

Address setting (switch No. 5 to 10)

The DeviceNet™ address (MAC ID) is binary coded and can be set from 0 to 63

Note: Factory default setting is 63.

0: OFF, 1: ON

Switch No.	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

Setting (Continued)

Communication speed setting (switch No. 3 to 4)

The DeviceNet™ communication speed is binary coded and can be set to 125 kbps, 250 kbps and 500 kbps. Note: Factory default setting is 125 kbps.

0: OFF, 1: ON

Switch No.	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.

0: OFF, 1: ON

Switch No.	No.2	Description
HOLD/CLEAR	CLEAR	0
	HOLD	1

Note: Each output can be set individually over the network.

HW/SW mode setting (switch No.1)

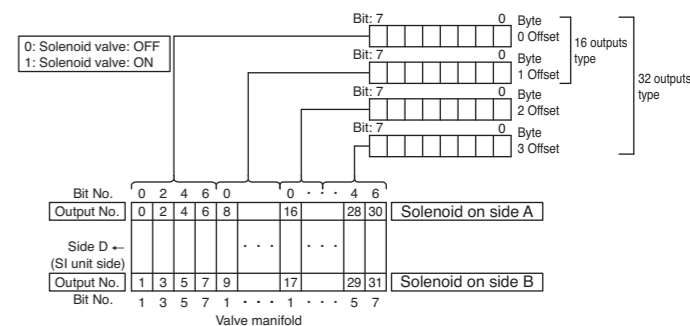
Modifications to the address and speed can be made locally or over the network. Local setting: Hardware mode (Hereinafter referred to as "HW mode") Network setting: Software mode (Hereinafter referred to as "SW mode") Note: Factory default setting is "HW mode".

0: OFF, 1: ON

Switch No.	No.1	Description
HW/SW	HW	0
	SW	1

Output number assignment

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



Setting over the DeviceNet™ network

Technical documentation giving detailed information about setting the unit over the DeviceNet™ network can be found on the SMC website (URL <http://www.smcworld.com>)

Diagnostic information

Technical documentation giving detailed 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 (19 V or less)

NS status	MS status	Description
<input type="checkbox"/> Green On	<input type="checkbox"/> Green On	On-line state, The device has connections in the established state
<input type="checkbox"/> Off	<input 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 type="checkbox"/> Green On	On-line state, The device has no connections in the established state
<input type="checkbox"/> Off	<input 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 type="checkbox"/> Red On	<input type="checkbox"/> Green On	Bus-off state, Duplicate MAC ID
<input checked="" type="checkbox"/> Red flashing	<input 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

Technical documentation giving detailed 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)

Technical documentation giving detailed specifications can be found on the SMC website (URL <http://www.smcworld.com>).

Outline Dimensions

Technical documentation giving detailed outline dimensions can be found on the SMC website (URL <http://www.smcworld.com>).

Accessories

Technical documentation giving detailed accessories information can be found on the SMC website (URL <http://www.smcworld.com>).

Contacts

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BELGIUM	(32) 3 355 1464	NORWAY	(47) 67 12 90 20
CZECH REP.	(420) 541 424 611	POLAND	(48) 22 211 9600
DENMARK	(45) 7025 2900	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	SLOVAKIA	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	SLOVENIA	(386) 73 885 412
GERMANY	(49) 6103 4020	SPAIN	(34) 945 184 100
GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
HUNGARY	(36) 23 511 390	SWITZERLAND	(41) 52 396 3131
IRELAND	(353) 1 403 9000	UNITED KINGDOM	(44) 1908 563888
ITALY	(39) 02 92711		

SMC Corporation

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

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