EX160-TFO14

Installation & Maintenance Manual
SI unit-DeviceNet™ compatible
Series EX160-SDN2

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.

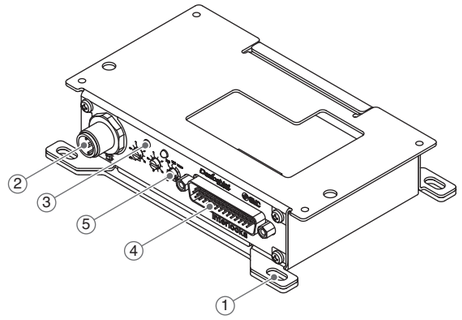
  Otherwise malfunction can result, causing an accident.
- **The following instructions must be followed during maintenance:**
  - Turn off the power supply.
  - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance.

  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.

Summary of Product elements

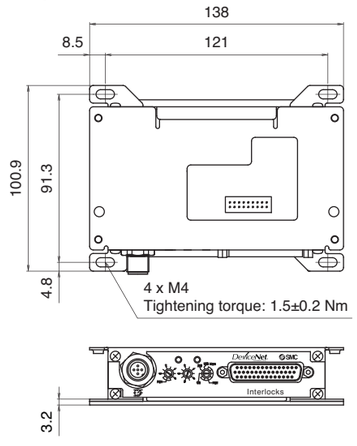


No.	Element	Description
1	Mounting hole	Mounting hole to mount the SI unit to the panel (4 positions)
2	Fieldbus interface connector	DeviceNet™ connection (M12 5-pin plug, A-coded)
3	LED display	Bus status-specific and SI unit-specific LEDs
4	Interlock connector	Connector for connecting to external interlock circuit (44-pin D-sub plug connector)
5	Switches	Switches for setting of node address and operating mode

Installation and Cabling

■**General instructions on installation and maintenance**
Mount the SI unit using the 4 mounting positions on the base with M4 screws.

Installation example



Precautions for maintenance
- Be sure to switch off the power.
- Check there is no foreign matter inside the SI unit.
- Be sure to tighten the screws with the specified torque.

If the SI unit is not assembled properly, inside PCBs may be damaged.

Installation and Cabling (Continued)

■**Connecting cables**
Select the appropriate cables to mate with the connectors mounted on the SI unit.

Fieldbus interface connector layout
The bus connector layout for DeviceNet™ is as follows.

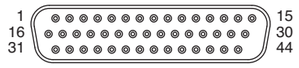
DeviceNet™ connector: M12 5-pin plug, A-coded

No.	Designation	Description
1	DRAIN	Drain/Shield
2	V+	Power supply + for DeviceNet™
3	V-	Power supply - for DeviceNet™
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)

Note
Connect terminating resistors to both ends of the DeviceNet™ trunk line

Interlock connector (power supply connector) layout
The interlock connector (power supply connector) pin allocation is as follows.

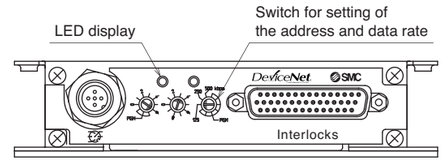
Interlock connector: 44-pin D-sub plug connector



			Pin assignment			
Valve station	Solenoid No.	Output channel	Enable	Force	Common (0 V)	Reserved
1	1A	0	13	28		
	1B	1	12	27		
2	2A	2	11	26		
	2B	3	10	25		
3	3A	4	9	24		
	3B	5	8	23		
4	4A	6	7	22		
	4B	7	6	21		
5	5A	8	5	20		
	5B	9	4	19		
6	6A	10	31	32		
	6B	11	3	18		
7	7A	12	15	30		
	7B	13	2	17		
8	8A	14	14	29		
	8B	15	1	16		
					43, 44	33-42

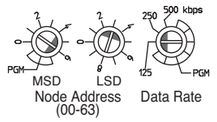
The power supply for solenoid valves should be supplied using the connector pins as given above.
The power supply for the SI unit operation is isolated. Be sure to supply power separately using the M12 5-pin connector.
Either single-source power supplies or two different power supplies can be used.
∗: Pay attention not to exceed the tolerance range of power supply voltage.

Setting



■**Switch setting**
Set the DeviceNet™ node address (MAC ID), DeviceNet™ communication speed and fail safe mode, of the SI unit with rotary switch.

Note
1. To set with switch, use a small blade screwdriver to flip the switches.
2. Be sure to switch off the power before setting the switches.
3. Be sure to set with the switch before use.



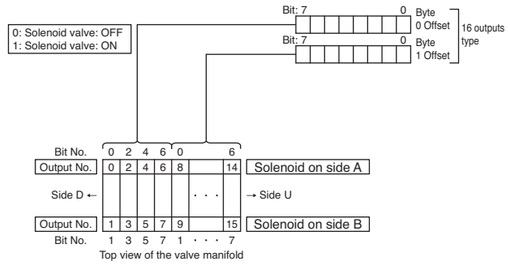
Address setting
Set the DeviceNet™ node address (MAC ID). Address range is 0 to 63.
∗: Factory default setting is 63.

Switch setting		Node Address (00-63)
MSD	LSD	
0	0	0
0	1	1
0	2	2
:	:	:
6	3	63
6	4	PGM (Software mode)
:	:	
9	9	

Communication speed setting
Set the DeviceNet™ communication speed.
∗: Factory default setting is 125 kbps.

Switch setting	Data Rate
125	125 kbps
250	250 kbps
500	500 kbps
PGM	Software mode

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



○**Setting over the DeviceNet™ network**
Refer to the operation manual for this product.

LED indication

LED Indication

LED	Description
MOD	SI unit status (See the table below for details)
NET	Network status (See the table below for details)

NET status	MOD status	Description
● Green ON	● Green ON	On-line status, The device has connections in the established state
○ OFF	● Green ON	Off-line status, The device has not completed the Dup_MAC ID test yet
◐ Green flashing	● Green ON	On-line status, The device has no connections in the established state
○ OFF	● Red ON	Off-line status, Watchdog timer error
● Green ON	◐ Red flashing	Wrong switch setting, Parameter writing error
● Red ON	● Green ON	Bus-off status, Duplicate MAC ID
◐ Red flashing	● Green ON	I/O Connection is in the Timed-Out state
○ OFF	○ OFF	No network power present

Troubleshooting

Refer to the operation manual for this product.

Specifications

Connectable valve series

Valve series	
VQ series	VQ1000/VQ2000
SJ series	SJ2000

Refer to the operation manual for this product.

Outline Dimensions

Refer to the operation manual for this product.

Accessories

Refer to the operation manual for this product.

Contacts

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
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DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
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FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
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