EX245-TFK55GB

Installation & Maintenance Manual
SI unit - DeviceNet compatible
Type EX245-SDN1/2-X35

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.
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**	Operator error could result in injury or equipment damage.
⚠ **Warning**	Operator error could result in serious injury or loss of life.
⚠ **Danger**	In extreme conditions, there is a possibility of serious injury or loss of life.

⚠ Warning

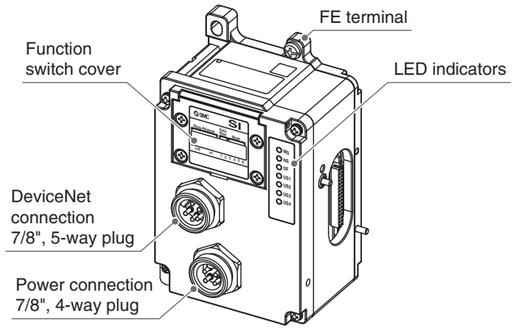
•Do not disassemble, modify (including changing of printed circuit board) or repair.
An injury or failure can result.
•Do not operate the product outside of the specifications.
Do not use for flammable or harmful fluids.
Fire, malfunction, or damage to the product can result.
Verify the specifications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

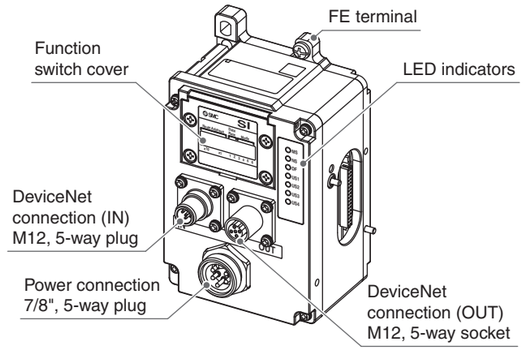
•After maintenance is complete, perform appropriate functional inspections.
Stop operation if the equipment does not function properly.
Safety cannot be assured in the case of unexpected malfunction.
•Provide grounding to assure the safety and noise resistance of the SI unit.
Individual grounding should be provided close to the product with a short cable.

Names and Functions of Individual Parts

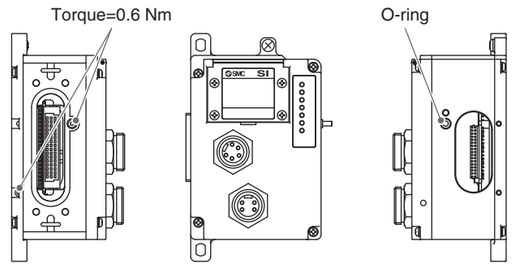
Parts and description
EX245-SDN1-X35



EX245-SDN2-X35



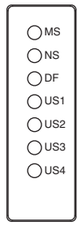
Valve manifold connection
Connect the valve manifold with the 2 screws on the SI Unit.
(hexagonal socket wrench size 2.5 mm)



⚠ Caution

For a protection rating of IP65 to be ensured, apply the recommended tightening torque and make sure that the O-ring is positioned correctly on the screw.

LED indicators
The LED indicators are arranged on the SI Unit as shown below.



Designation	Description		Colour
	SDN1	SDN2	
MS	Module status		Green/Red
NS	Network status		Green/Red
DF	Device fault		Red
US1	Supply for the logic/ sensors and DeviceNet power (V+/V-)	Supply for the logic/ sensors	Green
US2	Supply for the valves/loads		Green
US3	First additional supply for the loads		Green
US4	Other additional supplies for the loads (US4, US5, etc.)		Green

MS indicator

MS	Meaning	
	SDN1	SDN2
OFF	US1 is not applied.	DeviceNet power (V+/V-) is not applied.
Green ON	Operating status normal.	
Red flashing	Fault, which can be corrected.	
Red ON	Fault, which cannot be corrected.	
Green/Red flashing	The SI Unit is performing a self-test.	

NS indicator

NS	Meaning	
	SDN1	SDN2
OFF	The SI Unit is not online: •The Dup_MAC_ID test is not yet completed. •US1 supply is not applied.	The SI Unit is not online: •The Dup_MAC_ID test is not yet completed. •DeviceNet power (V+/V-) is not applied.
Green flashing	The SI Unit is online, the Dup_MAC_ID test is completed, but the SI Unit does not have a configured connection to a scanner.	
Green ON	The SI Unit is online and has a connection to the field-bus.	
Red flashing	One or several "I/O connections" have timed out.	
Red ON	Communication has failed: •A non-permitted station address is set. •Bus-off error.	
Green/Red flashing	The SI Unit is performing a self-test.	

DF indicator

DF	Meaning
OFF	No device faults.
Flashing at 2 Hz	At least one valve coil has a short circuit.
Flashing at 0.5 Hz	At least one valve coil has a short circuit and at least one connected module has a short circuit or the module layout has changed.
ON	At least one connected module has a short circuit or the module layout has changed.

US1 indicator

US1	Meaning
OFF	US1 is not present or is below the dropout level (< 17 VDC approx).
Flashing	US1 is below the permissible level but above the dropout level (17 to 20.4 VDC).
ON	US1 is present (> 21.6 VDC approx).

US2 indicator

US2	Meaning
OFF	US2 is not present or is below the dropout level (< 17 VDC approx).
Flashing	US2 is below the permissible level but above the dropout level (17 to 21.6 VDC).
ON	US2 is present (> 22.8 VDC approx).

US3 indicator
This indicator shows the status of the first additional supply for the loads.

US3	Meaning
OFF	First additional supply for the loads is not present or is below the dropout level (< 17 VDC approx).
Flashing	First additional supply for the loads is below the permissible level but above the dropout level (17 to 21.6 VDC).
ON	First additional supply for the loads is present (> 22.8 VDC approx).

US4 indicator
This indicator shows the status of all the additional supplies for the loads excluding the first one in common. If several EX245-DY2-X37 are present in the manifold, this indicator shows the worst status.

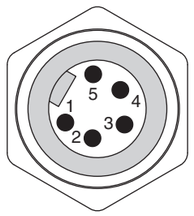
US4	Meaning
OFF	At least one of all the additional supplies for the loads excluding the first one is not present or is below the dropout level (< 17 VDC approx).
Flashing	At least one of all the additional supplies for the loads excluding the first one is below the permissible level but above the dropout level (17 to 21.6 VDC).
ON	All the additional supplies for the loads excluding the first one are present (> 22.8 VDC approx).

Wiring

Bus/Power connection
EX245-SDN1-X35
For connection to trunk line, a Mini T-Port tap is required. The thick cable can be used as DeviceNet cable for the EX245-SDN1-X35.

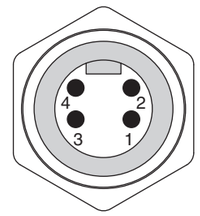
⚠ Caution
- For reasons of EMC a secure connection to the cable shield must be established on the Bus and Power.
- Power and bus lines must be installed correctly.
- To prevent manifold components of the EX245 from being damaged, the supply lines for the electronics and for the load voltage must be protected externally with a fuse.

Pin allocation of Bus connector



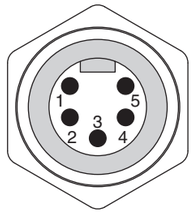
Pin	Remarks
1	DRAIN
2	V+ (US1)
3	V- (US1)
4	CAN_H
5	CAN_L

Pin allocation of Power connector



Pin	Remarks
1	24 V (US2)
2	N.C.
3	N.C.
4	0 V (US2)

Pin allocation of Power connector



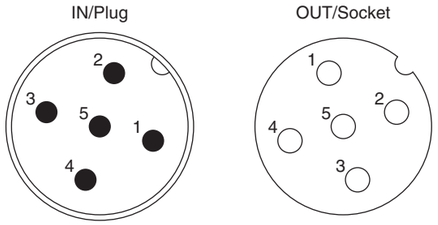
Pin	Remarks
1	0 V (US2)
2	0 V (US1)
3	FE
4	24 V (US1)
5	24 V (US2)

FE terminal
The SI Unit must be connected to FE (Functional Earth) to divert electromagnetic interference.
Connect to the grounding cable with FE terminal screw on the SI Unit (M5, torque=1.5 Nm). The other end of the grounding cable should be terminated to ground potential.

Bus/Power connection
EX245-SDN2-X35
The Bus (OUT) is used for looping through connections. If a cable is not connected to the Bus (OUT) connector, cover the connector with an M12 covering cap for the protection rating of IP65 to be ensured.

⚠ Caution
- For reasons of EMC a secure connection to the cable shield must be established on the Bus (IN/OUT) and Power.
- Power and bus lines must be installed correctly.
- To prevent manifold components of the EX245 from being damaged, the supply lines for the electronics and for the load voltage must be protected externally with a fuse.

Pin allocation of Bus connector

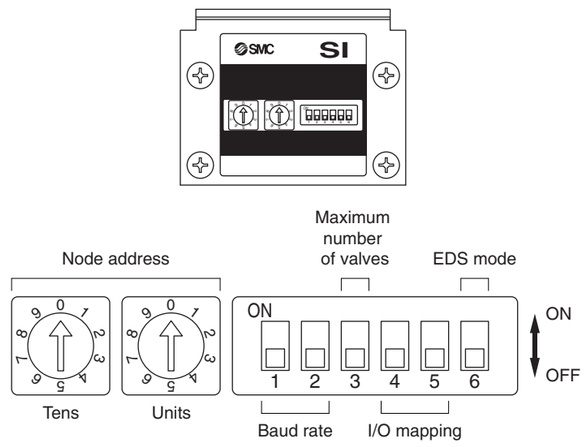


IN		OUT	
DRAIN	1	1	DRAIN
V+	2	2	V+
V-	3	3	V-
CAN_H	4	4	CAN_H
CAN_L	5	5	CAN_L

Switch setting

Switch setting
The switches are located inside the SI Unit, behind the function switch cover.
Setting the DIP/rotary switches:
- Unscrew the function switch cover and hinge it upwards.
- The DIP/rotary switches can be adjusted with a small flat-blade screwdriver. The points of the arrows on the rotary switches should be aligned with the required numbers.
- Tighten the cover again, making sure that the seals are positioned correctly (torque=0.3 Nm).

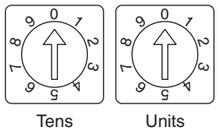
Setting the DIP/rotary switches



Switch setting (continued)

Setting the node address
Set the node address with the switches. Valid addresses are 0 to 63. Set the tens with the left-hand rotary switch and the units with the right-hand rotary switch. Changing this setting will not take effect until the SI Unit has been powered OFF and then back ON again.

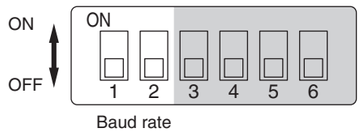
Switches for setting the node address



Tens		Units	
Switch setting	Value	Switch setting	Value
0 to 6	0 to 6	0 to 9	0 to 9

Switch No.1 and 2 for setting baud rate
Select the baud rate. Changing this setting will not take effect until the SI Unit has been powered OFF and then back ON again.

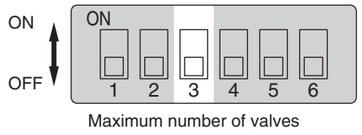
Switch No.1 and 2 for setting the baud rate



Switch setting		Description
No. 1	No. 2	
OFF	OFF	125 kbps
OFF	ON	250 kbps
ON	OFF	500 kbps
ON	ON	Invalid

Switch No.3 for setting the maximum number of valves
Select the maximum number of valves. Changing this setting will not take effect until the SI Unit has been powered OFF and then back ON again.

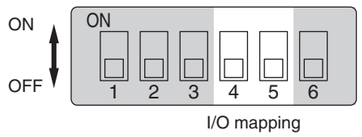
Switch No.3 for setting the maximum number of valves



Switch setting	Description
ON	Max. 32 coils
OFF	Max. 16 coils

Switch No.4 and 5 for setting the I/O mapping
The EX245-SDN1/2-X35 supports three I/O mapping modes. With this setting some diagnostic data is added to the input data (refer to the operation manual for this product). Select the I/O mapping. Changing this setting will not take effect until the SI Unit has been powered OFF and then back ON again.

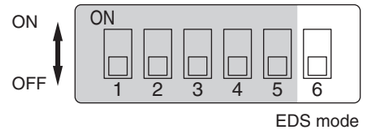
Switch No.4 and 5 for setting the I/O mapping



Switch setting		Description
No. 4	No. 5	
OFF	OFF	Mode 1: No diagnostic data is added to the input data.
OFF	ON	Mode 2: Simple diagnostic data is added to the input data.
ON	OFF	Mode 3: Detailed diagnostic data is added to the input data.
ON	ON	Invalid

Switch No.6 for setting the EDS mode
The EX245-SDN1/2-X35 supports the modular EDS. Select the EDS mode. Changing this setting will not take effect until the SI Unit has been powered OFF and then back ON again.

Switch No.6 for setting the EDS mode



Switch setting	Description
ON	Modular EDS
OFF	Standard EDS

NOTE
Not all DeviceNet tools support modular EDS. If your DeviceNet tool does not support modular EDS, select standard EDS (Modular EDS is supported by RSNetWorx for DeviceNet from version 3.21.00 (build 27)).

Troubleshooting

Refer to the operation manual for this product.

Specifications

Refer to the operation manual for this product.

Outline with Dimensions (in mm)

Refer to the operation manual for this product.

Contact

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