



Installation & Maintenance Manual

Fieldbus System - Digital input unit

Series EX600-DX □



1. Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage.

These instructions indicate the level of potential hazard by label of "DANGER", "WARNING" or "CAUTION", 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.

	DANGER	In extreme conditions, there is a possible result of serious injury or loss of life.
	WARNING	If instructions are not followed there is a possibility of serious injury or loss of life.
	CAUTION	If instructions are not followed there is a possibility of injury or equipment damage.

WARNING

Do not disassemble, modify (including change of printed circuit board) or repair this product.

Injury or failure can result.

Do not perform operation or setting with wet hands.

There is a risk of electric shock.

Do not operate the product beyond the specification range.

Do not use the product for flammable or harmful gases or liquids.

Fire, malfunction, or damage to the product can result.

Please confirm the specifications before use.

Do not operate the product in an environment where flammable or explosive gases may be present.

Fire or an explosion can result.

The product is not designed to be explosion proof.

The following instructions must be followed when using the product in an interlocking circuit:

- Provide a multiple interlocking system, such as a mechanical protection system.
- Check the product regularly to ensure 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 to atmosphere before performing maintenance.

Otherwise injury can result.

CAUTION

Perform a proper functional check after completing maintenance.

Stop operation if the equipment does not function properly.

Safety cannot be assured due to unexpected malfunction.

Provide grounding to assure the safety and noise immunity of the fieldbus system.

Individual grounding should be provided close to the product with an earth cable as short as possible.

When handling, assembling and replacing the unit:

- Do not touch any sharp metal parts of the connector or plug.
- Do not apply excessive force to the unit.

The connecting portions of the unit are firmly joined with seals.

- When joining units, take care not to get fingers caught between units.

Injury can result.

2. How to Order

Refer to the catalogue or operation manual for this product.

3. Specifications

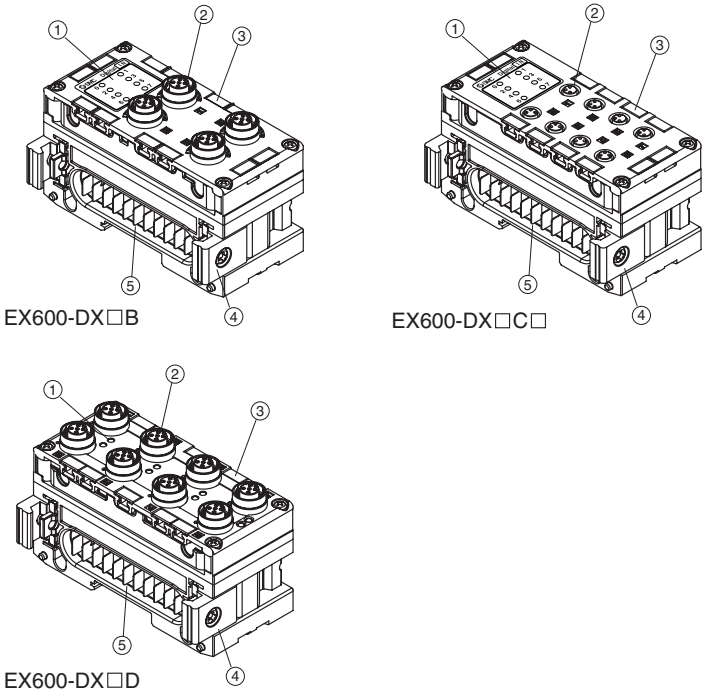
Item	Specifications
Enclosure	IP67 (Combination with valve manifold)
Environment	Pollution degree 2 (UL508)
Operating temperature	-10 to +50 °C
Ambient humidity	35 to 85%RH (No dew condensation)

Refer to the catalogue or operation manual for this product to get information about product specifications in detail.

4. Outline dimensions(mm)

Refer to the catalogue or operation manual for this product.

5. Names / Functions of individual Parts



No.	Part	Usage
1	Status indication LED	Indicates the unit status. (Refer to the "Trouble Shooting" section for further details.)
2	Connector (input)	Connector for digital inputs.
3	Marker groove	Groove to mount an indication marker.
4	Joint bracket	Joint bracket to join the adjacent unit, fixed with attached screws.
5	Connector for unit (plug)	Conveys the signals and power supplies to the adjacent unit.

6. Assembly

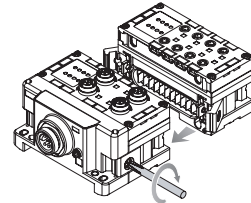
Composing the unit as a manifold.

※ : If the unit was purchased as a manifold, the work described in this section is not necessary.

Note

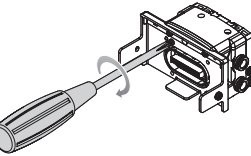
Be sure to turn off the power when carrying out the work to compose the unit as a manifold.

① Connect a unit to the end plate. Digital input units, digital output units and analog units can be connected in any order. (Tightening torque: 1.5 to 1.6 Nm)

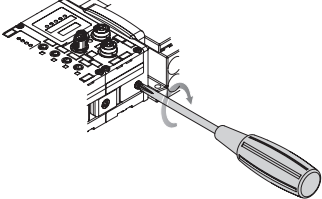


② Connection of SI unit
Connect the SI unit after connecting all of the required I/O units together.
The connection procedure is the same as the previous step ①.

③ Mounting the valve plate
Mount the valve plate to the manifold valve with valve fixing screws. (Tightening torque: 0.6 to 0.7 Nm)



④ Connect the SI unit to the manifold valves.
Insert the valve plate into the valve plate mounting groove at the side of the SI unit.
Fix using the valve plate fixing screws. (Tightening torque: 0.7 to 0.8 Nm)

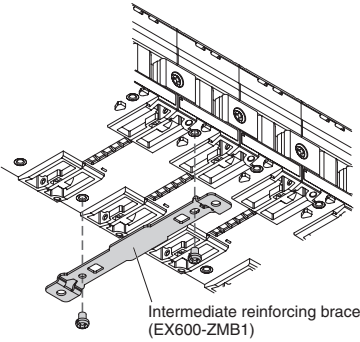


7. Installation

<Installation method>

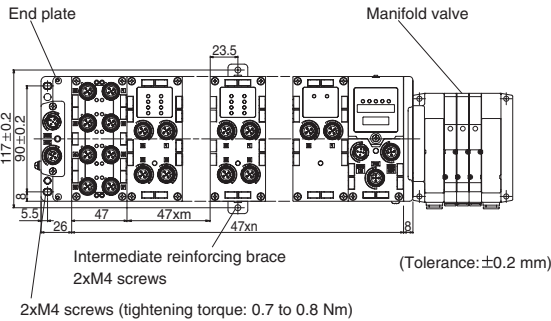
Direct mounting

① When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB1) before mounting (Refer to the figure below), using 2xM4 screws. (Tightening torque: 0.7 to 0.8 Nm)



Fix and tighten the end plates at one end of the unit as shown in the figure below. (Tightening torque: 0.7 to 0.8 Nm)

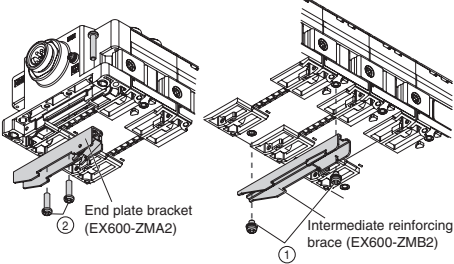
Fix the end plate at the valve side while referring to the operation manual of the corresponding manifold valve.



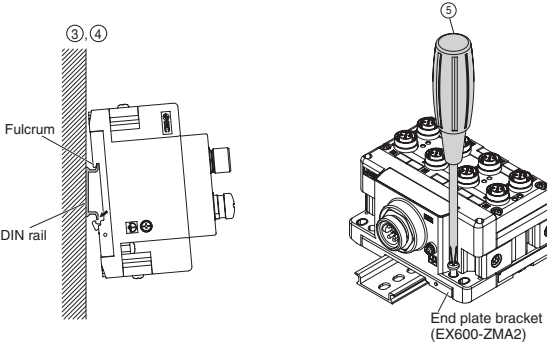
7. Installation (continued)

<DIN rail mounting>

- ① When joining six or more units, fix the middle part of the complete EX600 unit with an intermediate reinforcing brace (EX600-ZMB2) before mounting, using 2xM4 screws. (Tightening torque: 0.7 to 0.8 Nm)
- ② Mount the end plate bracket (EX600-ZMA2) to the end plate, using 2xM4 screws. (Tightening torque: 0.7 to 0.8 Nm)



- ③ Hook the DIN rail mounting groove to the DIN rail. (See the figure below.)
 - ④ Press the manifold using its side hooked to the DIN rail as a fulcrum until the manifold is locked.
 - ⑤ Fix the manifold by tightening the DIN rail fixing screws of the EX600-ZMA2. (Tightening torque: 0.7 to 0.8 Nm)
- The tightening torque at the valve side depends on the valve type.

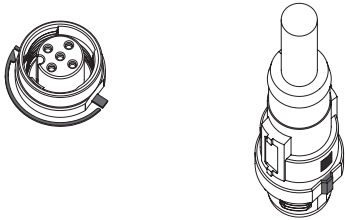


8. Wiring

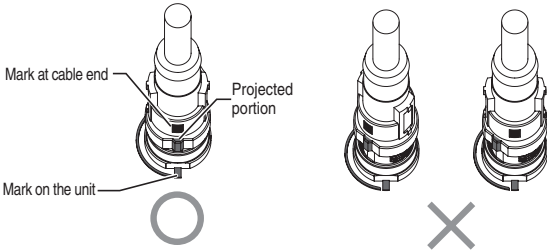
<SPEEDCON Wiring method>

The M12 connector can be mated with a SPEEDCON connector. This section does not apply to EX600-DX#C models, which has M8 connectors (not SPEEDCON).

- ① Set the projected portion of the cable connector metal ring (plug / socket) to the mark at cable end.

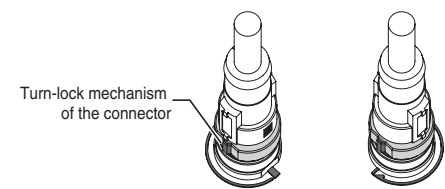


- ② Push the connector straight to insert it into the receptacle of the unit. If inserted without aligning the mark, the connector will not mate with the receptacle.



8. Wiring (continued)

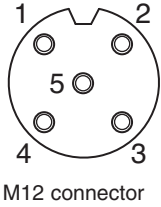
③ Turn the connector clockwise. It stops when turned 1/4 turn. Turn it further. When the connector is turned 1/2 turn from the original position, the projected portion is set at the diagonal position to the mark and the turn is completed. Check that the connector is securely locked.
If the connector is turned excessively, it will become difficult to remove.



<Connection>

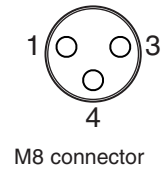
EX600-DXPB, EX600-DXNB, EX600-DXPD, EX600-DXND

Pin No.	Signal name
1	24V (for control / input)
2	Input②
3	0V (for control / input)
4	Input①
5	FE



EX600-DXPC□, EX600-DXNC□

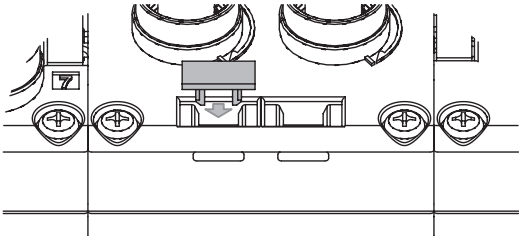
Pin No.	Signal name
1	24V (for control / input)
3	0V (for control / input)
4	Input



Note
Be sure to place a seal cap on any unused connector. Using the appropriate seal cap enables the unit to achieve IP67 protection.

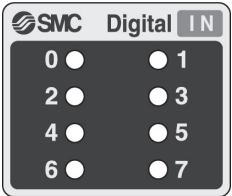
<Mounting the marker>

Mount the marker (EX600-ZT1) into the marker groove as required.








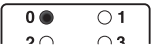
9. Trouble Shooting

Status indication LED (see figure below) displays the power supply and operation status. These can be checked according to the following:



(EX600-DX□□B/C□)

Indicator	Status
 OFF	Power supply for control and input is OFF, or input device is OFF.
 Green Light ON	Input device is ON.
 Flashing Red	Either of the following: ① Input device ON/OFF count has exceeded the set value. ② Input device not connected (for open circuit detection type only).
 All LED's flashing Red and Green alternately	Component failure inside the digital input unit. Stop using the product and contact SMC.

Indicator	Status
 Red Light ON (both adjacent LED's are ON)	<Without Open circuit Detection> Short circuit in power supply of either input device "0" or "1". Check which input device has caused the short circuit.
 Red Light ON (only one LED is ON)	<With Open circuit Detection> Short circuit in power supply of input device "0".

10. Contact

AUSTRIA	(43) 2262 62280	NETHERLANDS	(31) 20 531 8888
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
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