Installation & Maintenance Manual
Fieldbus system - SI unit
Type EX600-SEN1 / EX600-SEN2

Safety Instructions (Continued)

> When handling, assembling or replacing the unit:
  > Avoid touching any sharp metal parts of the connectors for connecting units.
  > When assembling units, take care not to get any fingers caught between units. Injury can result.
  > When disassembling units, take care to avoid excessive force. The connection parts of the unit are firmly joined with seals and injury can result.

> 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 ensure the safety and noise resistance of the Fieldbus system.
Individual grounding should be provided close to the product with a short cable.

NOTE
The direct current power supply to combine should be UL1310 Class2 power supply when conformity to UL is necessary.

Assembly

> Assembling the unit as a manifold
(1) Connect a unit to the end plate.
Digital and Analog I/O units can be connected in any order. Tighten the joint brackets to a torque of 1.5 to 1.6 Nm.
(2) Add more I/O units.
Up to 10 units (including the SI unit) may be connected to one manifold.
(3) Connecting the SI unit.
After connecting the required I/O units, connect the SI unit. The method is as above in (1), (2).
(4) Mounting the valve plate.
Mount the valve plate (EX600-ZMV) on the valve manifold using the valve set screws. (M4x6) Apply 0.6 to 0.7 Nm tightening torque to the screws.
(5) Connect the SI unit to the valve manifold.
Insert the valve plate into the valve plate mounting groove on the side of the SI unit. Fix using the valve plate screws (M4x6) supplied, to a torque of 0.7 to 0.8 Nm.

Mounting and Installation (Continued)
(3) Hook the DIN rail mounting groove on to the DIN rail.
(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. (M4x20) Tightening torque: 0.7 to 0.8 Nm. The tightening torque at the valve side depends on the valve type. Refer to the operation manual of the corresponding valve manifold.

Wiring

> Connect the M12 connector cable.
The M12 SPEEDCON connector connection method is explained below.
(1) Align mark B on the metal bracket of the cable connector (plug/socket) with mark A.
(2) Align with mark C on the unit and insert the connector vertically. If they are not aligned, the connector cannot be connected correctly.
(3) When mark B has been turned 180 degrees (1/2 turn), wiring is complete. Confirm that the connection is not loose. If turned too far, it will become difficult to remove the connector.

Mounting and Installation

> 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, using 2-M4x6 screws.
Tightening torque: 0.7 to 0.8 Nm.
(2) Mount and tighten the end plate at one end of the unit. (M4x20) 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 valve manifold.

Digital and Analogue I/O units can be connected in any order. Tighten the joint brackets to a torque of 1.5 to 1.6 Nm.

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.

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 supply power.
  - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance. Otherwise an injury can result.

Table: Summary of Product parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Status display LED</td>
<td>Displays the status of the unit.</td>
</tr>
<tr>
<td>2</td>
<td>Display cover</td>
<td>Open to access the setting switches.</td>
</tr>
<tr>
<td>3</td>
<td>Display cover screw</td>
<td>Screw to open the display cover.</td>
</tr>
<tr>
<td>4</td>
<td>Marker groove</td>
<td>Groove for fixing the valve plate.</td>
</tr>
<tr>
<td>5</td>
<td>Connector (PCI)</td>
<td>Connector for Fieldbus inputs.</td>
</tr>
<tr>
<td>6</td>
<td>Valve plate mounting hole</td>
<td>Holes for fixing the valve plate.</td>
</tr>
<tr>
<td>7</td>
<td>Valve plate mounting groove</td>
<td>Groove for mounting the valve plate.</td>
</tr>
<tr>
<td>8</td>
<td>Joint bracket</td>
<td>Bracket for joining adjacent units.</td>
</tr>
<tr>
<td>9</td>
<td>Unit connector (Plug)</td>
<td>Connector for Fieldbus inputs.</td>
</tr>
<tr>
<td>10</td>
<td>Connector (BUS IN)</td>
<td>Connector for Fieldbus inputs.</td>
</tr>
<tr>
<td>11</td>
<td>MAC address label</td>
<td>Displays the 12 digit MAC address which is different for each SI unit.</td>
</tr>
<tr>
<td>12</td>
<td>Seal cap (1 pc.)</td>
<td>Fitted to unused connectors. (PCI)</td>
</tr>
</tbody>
</table>

Digital and Analogue I/O units can be connected in any order. Tighten the joint brackets to a torque of 1.5 to 1.6 Nm.

Identification marker
The signal name of the input or output devices and unit address can be written on the marker, and can be installed on each unit. Mount the marker (EX600-ZT1) into the marker groove as required.

*(EX600-ZMA2) to the end plate at the opposite end to the valves, using 2-M4x4 screws. Tightening torque: 0.7 to 0.8 Nm.*
**Setting and Adjustment**

- **EtherNet/IP® communication setting switch.**
  - Settings 3
  - Content: Communication speed full/half duplex setting
  - OFF: ON/OFF
  - ON: OFF/ON
  - OFF ON: 10 Mbps, full duplex
  - ON OFF: 10 Mbps, half duplex
  - ON ON: 100 Mbps, full duplex
  - ON OFF: 100 Mbps, half duplex

- **LED Display (Continued)**
  - Displays the power supply and communication status.
  - Display: Content
    - PWR: Displays the status of the power voltage supply for control and module.
    - PWR(V): Displays the status of the power voltage supply for outputs.
    - MS: Displays the module status.
    - NS: Displays the network status.

- **SI unit common status**
  - **LED display**: Content
    - Red ST(M) LED is flashing: Recoverable error.
    - Green MS LED is flashing: A component failure inside the SI unit.
    - Red MS LED is flashing: The unit received an IP address, but connection is not established.
    - Green MS LED is flashing: Connection is established.

- **Specifications**
  - Power supply: 24 VDC Class2, 2 A
  - Connected load: 24 VDC Class2, 2 A
  - Operating temperature range: -10 to 60 °C
  - Storage temperature range: -20 to 60 °C
  - Pollution degree: For use in Pollution Degree 2 Environment (UL508)
  - Vibration resistance: 147 m/s² 3 times each in directions of X, Y and Z respectively (De-energized)

Refer to the product catalogue or SMC website (URL: http://www.smcworld.com) to obtain more detailed information about product specifications.

**Commissioning**
- Parameter Setting
- Hardware Configuration (EDS file)
- I/O Map
- Refer to the SMC website (URL: http://www.smcworld.com) to obtain more detailed information about these settings.

**Diagnostic**
- Refer to the SMC website (URL: http://www.smcworld.com) to obtain more detailed information about diagnostics.

**Outline with Dimensions**
- Refer to the product catalogue or SMC website (URL: http://www.smcworld.com) to obtain more detailed information about outline dimensions.

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