This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the FX0N-16NT special function block and should be read and understood before attempting to install or use the unit. Further information can be found in the FX PROGRAMMING MANUAL and FX0/FXON SERIES HARDWARE MANUAL.
**INTRODUCTION**

- The FX0N-16NT special function block connects the FX0N programmable controller to the MELSECNET/MINI-S3 network as a local station, or as a remote I/O unit of an A2C CPU.
- Use the AJ71PT32-S3 or A1SJ71PT32-S3 master unit or A2C CPU as the master station. Connect the local station to the master station using twisted pair cable.

- 8 input points and 8 output points can be transmitted on the network.
- Number of occupied stations: 1 station (Number of stations: 64 maximum)
- Number of occupied input/output points: 8 input points and 8 output points of the FX0N PC
- Maximum distance for station-to-station transmission: 100 m
1.1 External dimensions

Weight: Approx. 0.2kg (0.44lbs). Accessory: I/O number labels.

Mounting hole (2x4.5 (0.18) diam.)

Extension cable

M3 (0.12) terminal screws mm(inches)

Distance between installation holes

35-mm width DIN rail installation groove

43(1.69)
TERMINAL LAYOUTS

- **AC power supply**
- **Stabilized 24 V DC power supply for transmission power**
- **Extension cable**: connects FX0N-16NT to FX0N base unit. FX0N supplies 5V DC power.
- **From SDA terminal of previous station (Sending side)**
- **From SDB terminal of previous station**
- **From SG terminal of previous station**
- **Shielding**
- **Shielded twisted pair cables**
- **To 24V DC power terminals of next station**
- **To next extension block**
- **To RDA terminal of next station (Receiving side)**
- **To RDB terminal of next station**
- **To SG terminal of next station**
- **To FG terminal of next station**

A Series PC
2.1 Key to numbered items on Terminal Layout diagram

1. 24V DC transmission power for the network is supplied by the stabilized power supply.
2. The shielded twisted pair cables connect the FX0N-16NT to the network. The SDA/SDB terminals of the previous station should be connected to the RDA/RDB terminals of this station. The SDA/SDB terminals of this station should be connected to the RDA/RDB terminals of the next station.

*Keep these transmission cables away from all power cables. Do not allow power cables and transmission cables to share the same duct.*

3. Use one-point grounding (Class 3 ground, 100 Ω or less) for the shielding of the twisted pair cable on the sending or receiving sides.
4. See section 3.6 for use of the ECM (Emergency Clear Mode) terminal.

2.2 Use of crimp-style terminals

Use crimp-style terminals of the indicated dimensions. Tightening torque: 5 to 8 kgf.cm. Tighten the terminals carefully to avoid any malfunctions.
### 3.1 General specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>General specifications (excluding withstand voltage)</td>
<td>Same as those for the FX0N base unit</td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>500 V AC for 1 minute (between grounding terminal and all the other terminals)</td>
</tr>
</tbody>
</table>

### 3.2 Performance Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master station</td>
<td>AJ71PT32-S3, A1SJ71PT32-S3, A2C CPU</td>
</tr>
<tr>
<td>Cable</td>
<td>Shielded twisted pair cable: For detailed specifications, refer to following table.(Cross sectional area should be 0.2 to 0.5 mm(^2) or more depending on the station-to-station distance)</td>
</tr>
<tr>
<td>Maximum station-to-station distance</td>
<td>50 m for 0.2 to 0.5 mm(^2), 100 m for 0.5 mm(^2) or more</td>
</tr>
<tr>
<td>Connection to FX0N PC</td>
<td>Same as I/O extension blocks. Up to 2 unpowered blocks (including the FX0N-16NT) can be connected to each powered base or extension unit. <strong>Max. I/O of system: 128 points.</strong></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Occupied station</td>
<td>1 station. MELSECNET/MINI-S3 can support up to 64 stations.</td>
</tr>
<tr>
<td>Input points</td>
<td>8 points: Allocated to FX0N extension I/O numbers, Xn0 to Xn7. 8 points occupied during communication (A to FX0N)</td>
</tr>
<tr>
<td>Output points</td>
<td>8 points: Allocated to extension I/O numbers of FX0N, Ym0 to Ym7. 8 points occupied during communication (FX0N to A)</td>
</tr>
<tr>
<td>LED indicators</td>
<td>POWER, DC, and RUN indicators are on during normal operation.</td>
</tr>
<tr>
<td></td>
<td><strong>POWER</strong> On when 5V DC power is supplied from the FX0N PC (internal power supply).</td>
</tr>
<tr>
<td></td>
<td><strong>DC</strong> On when 24V DC power is supplied from the transmission power supply (external power supply)</td>
</tr>
<tr>
<td></td>
<td><strong>RUN</strong> On during normal communication.</td>
</tr>
<tr>
<td></td>
<td><strong>ERR</strong> On when a communication error is detected.</td>
</tr>
<tr>
<td>ECM setting (set by terminal connections)</td>
<td>Controls the behavior of the FX0N-16NT if a communications error occurs. The error causes the master station to stop I/O refresh and a communications stoppage occurs. The last data received by the FX0N-16NT will either be kept or lost.</td>
</tr>
</tbody>
</table>
### 3.3 Power supply specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission power supply</td>
<td>24V DC +30% -35%, 60 mA (from the stabilized power supply)</td>
</tr>
<tr>
<td>Interface power supply</td>
<td>5V DC (internal power supply from FX0N)</td>
</tr>
<tr>
<td></td>
<td>24 and 5V DC are insulated inside the FX0N-16NT</td>
</tr>
</tbody>
</table>

### 3.4 Recommended specification of twisted pair cable

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable type</td>
<td>Shielded twisted pair cable</td>
</tr>
<tr>
<td>Number of pairs</td>
<td>2 pairs or more</td>
</tr>
<tr>
<td>Conductor resistance (20 deg. C)</td>
<td>88.0Ω/km or less</td>
</tr>
<tr>
<td>Capacitance (1 kHz)</td>
<td>60 nF/km or less</td>
</tr>
<tr>
<td>Characteristic impedance (100 kHz)</td>
<td>110+-10Ω</td>
</tr>
</tbody>
</table>
3.5 Setting the station number

Remove the cover on top of the unit, and set the station number (#01 to #64) using the rotary switches. The FX0N-16NT can occupy only one station. The same station number is used for input and output.

Enlarged view of station number selector switch

Location of station number setting switches.

First station number digit setting switch("x10")

Second station number digit setting switch("x1")

ECM connection

Connector for next extension block
3.6 ECM setting

ECM (Emergency Clear Mode) setting:
When the MELSECNET/ MINI-S3 master station stops signal communication (I/O refresh) and is in STOP mode, the ECM terminal configuration can be selected. Set it as shown below.

<table>
<thead>
<tr>
<th>ECM terminal connection</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconnected</td>
<td>The data received just before a communication stoppage is retained.</td>
</tr>
<tr>
<td>Connected to 24G terminal</td>
<td>The data is not retained. All the FXon-16NT input points will reset.</td>
</tr>
</tbody>
</table>
3.7 Allocation of input/output numbers (on the FX0N PC)

The FX0N-16NT enables bit device data to be sent and received between the FX0N and an A Series PC using 8 input points and 8 output points. For such operation, the input/output numbers should be allocated on the FX0N PC as shown below:

<table>
<thead>
<tr>
<th>Communication direction</th>
<th>Description</th>
<th>Allocation of input/output numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>A to FX0N (Input data)</td>
<td>The FX0N will only receive the data sent by the A Series PC which corresponds to its station number.</td>
<td>Xn0-Xn7</td>
</tr>
<tr>
<td>FX0N to A (Output data)</td>
<td>The data sent by the FX0N to the A Series PC is identified by the station number of the FX0N.</td>
<td>Ym0-Ym7</td>
</tr>
</tbody>
</table>
### 3.8 Example of I/O allocation

As with other extension blocks, the I/O numbers allocated to the FX0N system should be continuously numbered in octal beginning from the base unit. This is shown in the diagram below.

The FX0N-16NT block can be connected in any position desired. The number of blocks connected to each base or extension unit (input/output extension block(s) + FX0N-16NT block(s)) should be no more than 2 blocks.

**Note:** The total number of input/output points should be 128 points or less.
4.1 Example of input/output signal allocation and operation (master unit: AJ 71PT32-S3 or A1SJ 71PT32-S3)

Note: This manual is not intended to explain how to program the A Series PC to operate a network. For a detailed description of A Series PC and A Series master unit programming, including buffer memory (BFM) assignments, please refer to the relevant A Series manuals.

Operation:
1. Input signals X000 through X007 of a FX0N-40MR will be output to Y030 through Y037 of an A Series PC.
2. Input signals X020 through X027 of the A Series PC will be output to Y000 through Y007 of the FX0N-40MR.

Please see the following diagrams for the system configuration and operation.
4.2 System configuration

Signals from the FX$_0$N to the A Series PC.

1

Station 1 (FX$_0$N)

FX$_0$N-40MR

FX$_0$N-16NT

Power supply unit

CPU

Master unit

16-point input unit

16-point output unit

A Series PC

Signals from the A Series PC to the FX$_0$N.

2

Twisted pair cable

FX$_0$N - 16NT

FX$_0$N - 40MR

Station 1 (FX$_0$N)

Signals from the FX$_0$N to the A Series PC.

1

Twisted pair cable

FX$_0$N - 16NT

FX$_0$N - 40MR

Station 1 (FX$_0$N)
4.3 Flow of signals through the network

Program section explained in the following sections
4.4 FXON-40MR ladder program

Signals X000 through X007 of the FXON PC will be sent to the A Series PC via Y020 to Y027 of the FXON-16NT.

Signals X030 -X037 received from the A Series PC by the FXON-16NT are output through Y000-Y007 of the FXON.
4.5 A Series PC ladder program

Ladder diagram for the A Series PC. Please see the next section for the explanation.
4.6 Key to the lettered items on the A Series PC ladder program

A. First two digits of the first input of the master station.
B. Total number of remote stations, K1, transferred to BFM#0.
C. Number of retries, K3, transferred to BFM#1.
D. Begin link communication.
E. BFM#110: Data received from the FX0N PC.
F. BFM#10: Data sent to the FX0N PC.

Data transfer FROM BFM#110 (data from FX0N inputs) to A Series outputs, Y030-Y037. See point E.

Data transfer TO BFM#10 (data from A Series inputs). This can then be sent to the FX0N-16NT. See point F.
5.1 Communication error detection on the FX0N PC side

To detect a communication error (i.e. communications stoppage) at the FX0N, follow this procedure.

1. Connect the FX0N-16NT ECM terminal to the 24G terminal.

   **Note:** If a communication error occurs, all the input points of the FX0N-16NT will reset.

2. Select one of the input signal points of the FX0N-16NT (Xn*), and set the A Series program so that the selected input signal point is always ON.

3. On the FX0N side, Xn* is on during normal communication. If a communication error is detected, Xn* will be turned OFF. From this ON/OFF status change, a communication error can be detected.

![Diagram showing the connection and status of Xn* and M9036.]
Guidelines for the safety of the user and protection of the FXON-16NT special function block

- This manual has been written to be used by trained and competent personnel. This is defined by the European directives for machinery, low voltage and EMC.

- If in doubt at any stage during the installation of the FXON-16NT always consult a professional electrical engineer who is qualified and trained to the local and national standards. If in doubt about the operation or use of the FXON-16NT please consult the nearest Mitsubishi Electric distributor.

- Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

- All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.