2. Specifications

<table>
<thead>
<tr>
<th>Model name</th>
<th>FX2N-ROM-E1 function expansion memory cassette</th>
<th>FX2NC-ROM-C1 function expansion memory board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable PLC</td>
<td>FX2N PLC version 3.00 or later (Serial number 15*** or later)</td>
<td>FX2NC PLC version 3.00 or later (Serial number 15*** or later)</td>
</tr>
<tr>
<td>if installed in PLC earlier than version 3.00, only 16k-step user program memory and clock function can be used.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

System memory

- Equipped with functions K10 to K13 of the EXTR (FNC 180) instruction
- K10: Inverter operation monitoring
- K11: Inverter operation control
- K12: Read of inverter parameter
- K13: Write of inverter parameter
- Memory type: EEPROM
- Allowable number of writs: Approx. 10k times (memory protect switch provided)
- Clock function: Not provided (clock is built in PLC)
- Year display in 2 or 4 digits
- Monthly difference of ±46 sec. (at 25°C)

3. Installation and Operation

- Don’t attach/remove the memory cassette or memory board before turning off the power.
- Do not touch the memory cassette or memory board before discharging static from the body of the user. When transporting, make sure to wrap it in a static-free sheet to prevent damaging its contents or element.

3.1 Installation of FX2N-ROM-E1

1) Turn off the power of the PLC and remove the cover “a”.
2) Install FX2N-ROM-E1 “b” to the port on the main unit.
3) Put back the cover “a”.

3.2 Installation of FX2NC-ROM-C1

1) Turn off the power of the PLC and remove the cover “a”.
2) Install FX2NC-ROM-C1 “b” to the port on the main unit.
3) Place cover “c”, included in the memory board product box, onto the PLC.

4. Inverter Communication Function

- When handling the PLC or inverter, follow the notices indicated in each manual which is included with the main unit in order to avoid electric shock, fire, a damage or an accident.
- Make sure to perform class D grounding of the ground terminal of communication equipment for the PLC together with that of the PLC main unit. Ground the shield of a shielded cable at one point on the PLC. Do not, however, ground at the same point as high voltage line. If grounding is imperfect, effects of noise or surge induction takes place, and it may cause a communication error or erroneous operation. Keep a safe distance of more than 100mm (3.94”) from these wires.

4.1 Outline of Functions and System Configuration

When using K10 to K13 of the EXTR (FNC 180) instruction, operation monitoring, control value write or parameter monitoring and change in the A500/E500/E510 (with RS-485 communication function) Series MITSUBISHI TRANSISTORIZED INVERTER can be performed. The details of programming and setting can be found in the FX Series User’s Manual - Data Communication Edition, JY97D/16901.

Total extension distance

- FX2N
  - FX2N-485-BD: Maximum 50m (164’)
  - FX2N-CNV-BD + FX0N-485ADP: Maximum 500m (1640’)
- FX2NC
  - FX2NC-485ADP: Maximum 500m (1640’)

Connecting with one inverter

- 1) PLC
  - FX2N/FRxnc (version 3.00 or later)
  - FX2NC
  - FX2NC-485ADP

- 2) Inverter
  - FX0N-485ADP
  - RS-485 communication module
  - FX2NC-485ADP + FX2NC-CNV-485ADP

- 3) 10 BASE-T cable

- 4) Twisted pair cable

- A020 PU connector

- A020 Optional connection

- FR-22XIR

- A020 connection

- FR-22XIR

- A020 connection

- FR-22XIR
This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the FX2N/FX2NC Function Expansion Memory. It should be read and understood before attempting to install or use the unit. Further information can be found in the FX2N or FX2NC series PLC hardware manuals.

Guidelines for the safety of the user and protection of the FX2N/FX2NC Function Expansion Memory

1) In doubt at any stage during the installation of the FX2N/FX2NC Function Expansion Memory 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 FX2N/FX2NC Function Expansion Memory please consult the nearest Mitsubishi Electric distributor.

2) 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.

3) 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.

4) Owing to the very great variety in possible application of this equipment, you must satisfy yourself as to its suitability for your specific application.

Note's on the symbology used in this manual

At various times throughout this manual certain symbols will be used to highlight points of information which are intended to ensure the user's personal safety and protect the integrity of the equipment. Whenever any of the following symbols are encountered, its associated note must be read and understood. Each of the symbols used will now be listed with a brief description of its meaning.

Hardware warnings

1) Indicates that the identified danger WILL cause physical and property damage.

2) Indicates that the identified danger COULD POSSIBLY cause physical and property damage.

3. Installation and Operation

- Don't attach/remove the memory cassette or memory board before turning off the power. Attaching/removing it while the power is on may damage its contents or element.
- Don't touch the memory cassette or memory board before discharging static from the body of the user. When transporting, make sure to wrap it in a static-free sheet to prevent damaging its contents or element.

3.1 Installation of FX2N-ROM-E1

1) Turn off the power of the PLC and remove the cover "a".
2) Install FX2N-ROM-E1 "b" to the port on the main unit.
3) Put back the cover "a".

3.2 Installation of FX2NC-ROM-CE1

1) Turn off the power of the PLC and remove the cover "a".
2) Install FX2NC-ROM-CE1 "b" to the port on the main unit.
3) Place cover "c", included in the memory board product box, onto the PLC.

4. Inverter Communication Function

- When handling the PLC or inverter, follow the notices indicated in each manual which is included with the main unit in order to avoid electrical shock, fire, a damage or an accident.

- Make sure to perform class D grounding of the ground terminal of communication equipment for the PLC together with that of the PLC main unit. Ground the shield of a shielded cable at one point on the PLC. Do not, however, ground at the same point as high voltage line. If grounding is imperfect, effects of noise or surge induction takes place, and it may cause a communication error or erroneous operation. Keep a safe distance of more than 100mm (3.94") from these wires.

4.1 Outline of Functions and System Configuration

When using K10 to K13 of the EXTR (FNC 180) instruction, operation monitoring, control value write or parameter monitoring and clock monitoring can be performed. The details of programming and setting can be found in the FX Series User’s Manual - Data Communication Edition, JY97016901.

- Total extension distance

Associated Manuals

<table>
<thead>
<tr>
<th>Manual number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JY982D6301</td>
<td>Describes the contents related to the hardware such as specification, wiring and mounting of the FX2N Series PLC.</td>
</tr>
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<td>JY982D6401</td>
<td>Describes the contents related to the hardware such as specification, wiring and mounting of the FX2N Series PLC.</td>
</tr>
<tr>
<td>JY982D601</td>
<td>Describes the instructions in the FX2N/FX2NC Programming Manual.</td>
</tr>
<tr>
<td>JY982D601</td>
<td>Describes the instructions in the FX2N/FX2NC Programming Manual.</td>
</tr>
<tr>
<td>JY987D18901</td>
<td>Describes the contents related to communication available in FX Series PLC such as wiring, communication setting and program examples. (Make sure to read this manual.)</td>
</tr>
</tbody>
</table>

1) T Turn off the power of the PLC and remove the cover "a".
2) Install FX2N-ROM-E1 "b" to the port on the main unit.
3) Put back the cover "a".

2) Indicates that the identified danger COULD POSSIBLY cause physical and property damage.

1.2 Programming Tools Applicable for EXTR (FNC 180) Instruction

<table>
<thead>
<tr>
<th>Model name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX Developer</td>
<td>3.09 or later</td>
</tr>
<tr>
<td>FX-PCS/WIN-E</td>
<td>3.10 or later</td>
</tr>
<tr>
<td>FX-10P-E</td>
<td>4.10 or later</td>
</tr>
<tr>
<td>FX-20P-E (FX-20P-MFX-E)</td>
<td>5.10 or later</td>
</tr>
</tbody>
</table>

2. Specifications

<table>
<thead>
<tr>
<th>Model name</th>
<th>FX2N-ROM-E1 function expansion memory cassette</th>
<th>FX2NC-ROM-CE1 function expansion memory board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable PLC</td>
<td>FX2N PLC version 3.00 or later (Serial number 15**** or later)</td>
<td>FX2NC PLC version 3.00 or later (Serial number 15**** or later)</td>
</tr>
<tr>
<td>System memory</td>
<td>Equipped with functions K10 to K13 of the EXTR (FNC 180) instruction</td>
<td></td>
</tr>
<tr>
<td>User program memory</td>
<td>Memory capacity: 16k steps (can be set to 2k, 4k or 8k steps also)</td>
<td></td>
</tr>
<tr>
<td>Clock function</td>
<td>Not provided (clock is built in PLC)</td>
<td></td>
</tr>
</tbody>
</table>

- Year 1980 to 2079
- Month difference of 446 sec. (at 25°C)
2. Specifications

<table>
<thead>
<tr>
<th>Model name</th>
<th>FX-2N-ROM-E1 function expansion memory cassette</th>
<th>FX-2NC-ROM-CE1 function expansion memory board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable PLC</td>
<td>FX-2N PLC version 3.00 or later(Serial number 15** or later)</td>
<td>FX-2NC PLC version 3.00 or later(Serial number 15** or later)</td>
</tr>
<tr>
<td>System memory</td>
<td>Equipped with functions K10 to K13 of the EXTR (FNC 180) instruction</td>
<td>记忆保护开关</td>
</tr>
<tr>
<td>Memory type</td>
<td>Memory capacity: 16k steps (can be set to 2k, 4k or 8k steps also)</td>
<td></td>
</tr>
<tr>
<td>EEPROM memory</td>
<td>Memory type: EEPROM</td>
<td></td>
</tr>
<tr>
<td>Clock function</td>
<td>Not provided (clock is built in PLC)</td>
<td></td>
</tr>
</tbody>
</table>

3. Installation and Operation

- Don’t attach/remove the memory cassette or memory board before turning off the power. Attaching/removing it while the power is on may damage its contents or element.
- Don’t touch the memory cassette or memory board before discharging static from the body of the user. When transporting, make sure to wrap it in a static-free sheet to prevent damaging its contents or element.

3.1 Installation of FX-2N-ROM-E1

1) Turn off the power of the PLC and remove the cover “a”.
2) Install FX-2N-ROM-E1 “b” to the port on the main unit.
3) Put back the cover “c”.

3.2 Installation of FX-2NC-ROM-CE1

1) Turn off the power of the PLC and remove the cover “a”.
2) Install FX-2NC-ROM-CE1 “b” to the port on the main unit.
3) Place cover “c”, included in the memory board product box, onto the PLC.

3.3 Operation

- The program error may flash when used for the first time because the EEPROM (user program memory) is not initialized. In the personal computer or FX-20P (off-line mode), transfer and write a program in that status. In the FX-10P or FX-20P (online mode), execute all NOP write to erase the contents.
- After writing a program, make sure to verify.
- Set the memory protect switch to OFF before writing a program. During normal operation, it is recommended to set it to ON to prevent erroneous write.
- When installed in the FX-2N or FX-2NC Series PLC version 3.00 or later, the EXTR (FNC 180) instruction and the 16k-step EEPROM and clock function can be used. When installed in the FX-2N or FX-2NC Series PLC earlier than version 3.00, only the 16k-step EEPROM and clock function can be used.

4. Inverter Communication Function

- When handling the PLC or inverter, follow the notices indicated in each manual which is included with the main unit in order to avoid electric shock, fire, a damage or an accident.
- Make sure to perform class D grounding of the ground terminal of communication equipment for the PLC together with that of the PLC main unit. Ground the shield of a shielded cable at one point on the PLC. Do not, however, ground at the same point as high voltage line. If grounding is imperfect, effects of noise or surge induction takes place, and it may cause a communication error or erroneous operation.
- The signal cables must not be laid near or bundled with the main circuit lines, high voltage power cables or load carrying wires. Otherwise effects of noise or surge induction are likely to take place, and it may cause a communication error or erroneous operation.
- Keep a safe distance of more than 100mm (3.94") from these wires.

4.1 Outline of Functions and System Configuration

When using K10 to K13 of the EXTR (FNC 180) instruction, operation monitoring, control value write or parameter monitoring and change in the A500/E500/E600 (with RS-485 communication function) Series MITSUBISHI TRANSISTORIZED INVERTER can be performed. The details of programming and setting can be found in the FX Series User's Manual - Data Communication Edition, JY970705001.

Total extension distance

1) TPLC Using Interface Extension distance
FX-2N FX-2NC-485-BD FX-2N-CNV-BD + FX0N-485ADP Maximum 50m (164')
FX-2NC FX-2NC-485ADP Maximum 500m (1640')

8) Connecting with one inverter

1) PLC FX-2N/FX-2NC (version 3.00 or later) 2) Inverter FX-2NC-485-BD FX-2NC-485ADP FX-2N-CNV-BD + FX0N-485ADP RX-2N/B+RX-420D/P
3) 10 BASE-T cable A500 PU connector
4) Twisted pair cable Printed wiring for A500 Optional connection
5) RS-485 communication module A500 PU connector
6) Printer A500 4750 (with RS-485 communication function) 7) A500 Optional connection
8) 10 BASE-T cable A500 PU connector

Hardware warnings

1) Indicates that the identified danger WILL cause physical and property damage.
2) Indicates that the identified danger COULD possibly cause physical and property damage.

Associated Manuals

<table>
<thead>
<tr>
<th>Manual name</th>
<th>Manual number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX-2N Hardware Manual</td>
<td>JY992D6301 (included with product)</td>
<td>Describes the contents related to the hardware such as specification, wiring and mounting of the FX Series PLC.</td>
</tr>
<tr>
<td>FX-2NC Hardware Manual</td>
<td>JY992D6401 (included with product)</td>
<td>Describes the contents related to the hardware such as specification, wiring and mounting of the FX-2NC series PLC.</td>
</tr>
<tr>
<td>FX-2N/FX-2NC/FX-2NC Programming Manual</td>
<td>JY992D8401 (sent separately)</td>
<td>Describes the instructions in the FX-2N/FX-2NC/FX-2NC Series PLC.</td>
</tr>
<tr>
<td>FX-2N/FX-2NC/FX-2NC Programming Manual II</td>
<td>JY992D8501 (sent separately)</td>
<td>Describes the instructions in the FX-2N/FX-2NC/FX-2NC Series PLC.</td>
</tr>
<tr>
<td>FX-2N/FX-2NC-FX-2NC Data Communication Edition</td>
<td>JY997D16001 (sent separately)</td>
<td>Describes the functions in the FX-2N/FX-2NC/FX-2NC Series PLC.</td>
</tr>
</tbody>
</table>

- Indispensable manual
- Either manual is necessary

1. Product Outline

1.1 Features
FX-2N-ROM-E1 and FX-2NC-ROM-CE1 are optional memories for the FX2N or FX2NC Series PLC to add external ROM instruction.
In the previous PLC systems, additional external ROM instruction, EXTR (FNC 180), and the EEPROM memory which can be used as a PLC program area are built in.

1.2 Programming Tools Applicable for EXTR (FNC 180) Instruction

<table>
<thead>
<tr>
<th>Model name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX Developer</td>
<td>5.00 or later</td>
</tr>
<tr>
<td>FX-PCS/WIN-E</td>
<td>3.10 or later</td>
</tr>
<tr>
<td>FX-10P-E</td>
<td>4.10 or later</td>
</tr>
<tr>
<td>FX-20P-E (FX-20P-MFX1-E)</td>
<td>5.10 or later</td>
</tr>
</tbody>
</table>

This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the FX-2N/FX-2NC Function Expansion Memory. It should be read and understood before attempting to install or use the unit. Further information can be found in the FX-2N or FX-2NC series PLC hardware manuals.

Guidelines for the safety of the user and protection of the FX-2N/FX-2NC Function Expansion Memory

- If in doubt at any stage during the installation of the FX-2N or FX-2NC Function Expansion Memory 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 FX-2N or FX-2NC Function Expansion Memory, 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.
- Owing to the very great variety in possible application of this equipment, you must satisfy yourself as to its suitability for your specific application.

Note's on the symbology used in this manual

At various times throughout this manual certain symbols will be used to highlight points of information which are intended to ensure the user's personal safety and protect the integrity of the equipment. Whenever any of the following symbols are encountered, its associated note must be read and understood. Each of the symbols used will now be listed with a brief description of its meaning.

Hardware warnings

1) Indicates that the identified danger WILL cause physical and property damage.
2) Indicates that the identified danger COULD possibly cause physical and property damage.
4.2 Wiring

Wiring for PU (RS-485) Connector

- Pin layout of PU (RS-485) connector

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Signal name</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SG</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PSB</td>
<td>Not to be used</td>
</tr>
<tr>
<td>3</td>
<td>RDA</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SDB</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SDA</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RDB</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SG</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PSB</td>
<td>Not to be used</td>
</tr>
</tbody>
</table>

Caution:
The pin number 2 and 8 are for the power supply for an operation panel or parameter unit. DO NOT use when connecting two or more inverters.

- Connecting with one inverter

- Connecting with two or more inverters (Maximum 8 inverters)

Applicable equipment
- Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
- Terminal resistor: On the inverter side, a chip for connecting terminal resistor only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Wiring for FR-A5NR

1) PLC: FX3N, FX3GC (version 3.00 or later)

RS-485 communication module
- FX3N-485-BD
- FX3GC485ADP + FX3N-CNV-BD

2) Inverter

Station number 0 Station number 1 Station number 7

Connecting with one inverter

- Class D grounding
- Terminal resistor: 1/4W prepared by the user

Connecting with two or more inverters (Maximum 8 inverters)

Applicable equipment
- Use the connectors and cables for LAN (10 BASE-T) available on the market.
  - Connector: 1/4W terminal resistor
  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, a chip for connecting terminal resistor only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Applicable equipment
- Use the connectors and cables for LAN (10 BASE-T) available on the market.
  - Connector: 1/4W terminal resistor
  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, a chip for connecting terminal resistor only to the remotest FR-A5NR from the PLC (between RDB and RDR)
Connecting with two or more inverters (Maximum 8 inverters)

1) PLC
   FX2N, FX2NC (version 3.00 or later)
   (prepared by the user) attached to
   S500 (with RS-485 communication function),
   E500, A500 series PU (RS-485) connector

2) Inverter
   A500 + FR-A5NR (optional)
   Terminal resistor: On the PLC side, 110Ω
   (version 3.00 or later)
   On the inverter side, 100Ω ready to use
   when connecting two or more inverters.

3) 10 BASE-T cable
   Use the connectors and cables for LAN (10 BASE-T) available on the market.
   - Connector: RJ45 connector
   - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
   - Terminal resistor: On the inverter side, a chip for connecting terminal resistor
     only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Wiring for FR-A5NR

- Connecting with one inverter
  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the inverter side, a chip for connecting terminal resistor
    only to the remotest FR-A5NR from the PLC (between RDB and RDR)

- Connecting with two or more inverters (Maximum 8 inverters)
  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, 110Ω
  - Terminal resistor: On the inverter side, a chip for connecting terminal resistor
    only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Applicable equipment
- Use the connectors and cables for LAN (10 BASE-T) available on the market.
  - Connector: RJ45 connector
  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, 110Ω
  - Terminal resistor: On the inverter side, a chip for connecting terminal resistor
    only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Attention
This product is designed for use in industrial applications.

Manual number: JY997D00401
Manual revision: C
Date: July 2016
4.2 Wiring

Wiring for PU (RS-485) Connector

- **Pin layout of PU (RS-485) connector**

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Signal name</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SG</td>
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<td>6</td>
<td>RDB</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SG</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PSB</td>
<td>Not to be used</td>
</tr>
</tbody>
</table>

**Caution:**

The pin number 2 and 8 are for the power supply for an operation panel or parameter unit. DO NOT use when connecting two or more inverters.

- **Connecting with one inverter**

1) PLC
   - FX0N, FX2NC (version 3.00 or later)
   - RS-485 communication module
   - FX0N-485ADP
   - FX2N-485BD

2) Inverter
   - Station number 0
   - Station number 1
   - Station number 7

- **Applicable equipment**

- Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
- Terminal resistor: On the PLC side, 110Ω
- On the inverter side, a chip for connecting terminal resistor only to the remotest
FR-A5NR from the PLC (between RDB and RDR)

- **Wiring for FR-A5NR**

- **Terminal layout**

- **Connecting with two or more inverters (Maximum 8 inverters)**

1) PLC
   - FX0N, FX2NC (version 3.00 or later)
   - RS-485 communication module
   - FX0N-485ADP
   - FX2N-485BD

2) Inverter
   - Station number 0
   - Station number 1
   - Station number 7

- **Applicable equipment**

- Cable: Use the connectors and cables for LAN (10 BASE-T) available on the market.
  - Connector: RJ45 connector
  - Cable: Twisted pair cable (0.3mm² or more, 3 pairs)
- Terminal resistor: On the PLC side, a chip for connecting terminal resistor only to the remotest
FR-A5NR from the PLC (between RDB and RDR)

**Attention**

This product is designed for use in industrial applications.
2. Specifications

<table>
<thead>
<tr>
<th>Model name</th>
<th>FX2N-ROM-E1 function expansion memory cassette</th>
<th>FX2NC-ROM-CE1 function expansion memory board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable PLC</td>
<td>FX2N PLC version 3.00 or later (Serial number 15** or later)</td>
<td></td>
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<tr>
<td>FX2NC PLC version 3.00 or later (Serial number 15** or later)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FX2NC PLC earlier than version 3.00, only 16k-step user program memory and clock function can be used.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Installation and Operation

- Don’t attach/remove the memory cassette or memory board before turning off the power. Attaching/removing it while the power is on may damage its contents or element.
- Don’t touch the memory cassette or memory board before discharging static from the body of the user. When transporting, make sure to wrap it in a static-free sheet to prevent damaging its contents or element.

3.1 Installation of FX2N-ROM-E1

1) Turn off the power of the PLC and remove the cover “a”.

2) Install FX2N-ROM-E1 “b” to the port on the main unit.

3) Put back the cover “c”.

3.2 Installation of FX2NC-ROM-CE1

1) Turn off the power of the PLC and remove the cover “a”.

2) Install FX2NC-ROM-CE1 “b” to the port on the main unit.

3) Place cover “c”, included in the memory board product box, onto the PLC.

4. Inverter Communication Function

- When handling the PLC or inverter, follow the notices indicated in each manual which is included with the main unit in order to avoid electric shock, fire, a damage or an accident.
- Make sure to perform class D grounding of the ground terminal of communication equipment for the PLC together with that of the PLC main unit. Ground the shield of a dedicated cable at one point on the PLC. Do not, however, ground at the same point as high voltage line. If grounding is imperfect, effects of noise or surge induction takes place, and it may cause a communication error or erroneous operation.
- The signal cables must not be laid near or bundled with the main circuit lines, high voltage power cables or load carrying wires. Otherwise effects of noise or surge induction are likely to take place, and it may cause a communication error or erroneous operation. Keep a safe distance of more than 100mm (3.94") from these wires.

4.1 Outline of Functions and System Configuration

When using K10 to K13 of the EXTR (FNC 180) instruction, operation monitoring, control value write or parameter monitoring and change in the A500/E500/E600 (with RS-485 communication function) Series MITSUBISHI TRANSISTORIZED INVERTER can be performed. The details of programming and setting can be found in the FX Series User’s Manual - Data Communication Edition, JY97D16901.

Total extension distance

<table>
<thead>
<tr>
<th>PLC</th>
<th>Using interface</th>
<th>Extension distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX2N</td>
<td>FX2N-485-BD</td>
<td>Maximum 50m (164’)</td>
</tr>
<tr>
<td>FX2NC</td>
<td>FX2NC-CN0-BD + FX2NC-485ADP</td>
<td>Maximum 50m (164’)</td>
</tr>
</tbody>
</table>

4.2 Programming Tools Applicable for EXTR (FNC 180) Instruction

- GX Developer SW7 or later
- GX-PCS/WIN-E 3.10 or later
- FX-10P-E 4.10 or later
- FX-20P-E (FX-20P-MFXD-E) 5.10 or later
Connecting with two or more inverters (Maximum 8 inverters)

- Inverter
  - FX2N, FX2NC
  - E500, A500 series PU (RS-485) connector
  - FX0N-485ADP + FX2N-CNV-BD

Connecting with two or more inverters (Maximum 8 inverters)

- Applicable equipment
  - Use the connectors and cables for LAN (10 BASE-T) available on the market.
    - Connector: RJ45 connector
    - Cable: Cable conforming to EIA568 (such as 10 BASE-T cable)
    - Terminal resistor: On the PLC side, 110Ω, 1/4W terminal resistor
    - On the inverter side, 100Ω and 1/4W prepared by the user

Wiring for FR-A5NR

- Terminal layout

  - Module screw size M3 (0.12"

  - Used to connect PLC RS-485 communication module

- Connecting with one inverter

  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, 110Ω, On the inverter side, a chip for connecting terminal resistor only to the remotest FR-A5NR from the PLC (between RDB and RDR)

- Connecting with two or more inverters (Maximum 8 inverters)

  - Cable: Use the twisted pair cables (0.3mm² or more, 3 pairs)
  - Terminal resistor: On the PLC side, 110Ω, On the inverter side, a chip for connecting terminal resistor only to the remotest FR-A5NR from the PLC (between RDB and RDR)

Caution:

The pin number 2 and 8 are for the power supply for an operation panel or parameter unit. DO NOT use when connecting two or more inverters.

Connecting with one inverter

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Signal name</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SG</td>
<td>Not to be used</td>
</tr>
<tr>
<td>2</td>
<td>PSB</td>
<td>Not to be used</td>
</tr>
<tr>
<td>3</td>
<td>RDA</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SOA</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SDA</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RDB</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SG</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PSB</td>
<td>Not to be used</td>
</tr>
</tbody>
</table>

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Manual revision: C
Date: July 2016

Attention
This product is designed for use in industrial applications.