1. Outline of Product

The 485BD is an insulated RS-485 communication board with an European type terminal block. Connected to the main unit of the FX2N Series PLC, it enables signal exchange between the PLC and equipment via an RS-485 port.

1.1 Communication Functions and Applicable PLC

<table>
<thead>
<tr>
<th>Communication type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>N:N network</td>
<td>V2.00</td>
</tr>
<tr>
<td>Parallel link</td>
<td>V1.04</td>
</tr>
<tr>
<td>No protocol</td>
<td>V0.00</td>
</tr>
</tbody>
</table>

(Available in indicated version or later)

1.2 Outside dimensions and name of each part

- **Unit mm (inches)**
  - **Accessories**
    - **Terminal resistor** 30/4Ω
    - **Terminal resistor** 110Ω
    - M3 screw to mount board
  - **Terminal block for RS-485 equipment**
    - M3 terminal hole (2-3.5 mm)
    - Terminal block for RS-485 equipment
    - The top face of this terminal box is higher than the top face of the PLC panel cover by approximately 7 mm (0.27")
  - **SD LED**
    - Flickers at high speed during send.
  - **RD LED**
    - Flickers at high speed during receive.
  - **Connector for PLC**

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N.

FX2N-485BD cannot be used by the plural. Other expansion boards cannot be used together with FX2N-485BD. For the system configuration, refer to the FX Series User's Manual - Data Communication Edition offered separately.

2. Installation

**Caution**

- **Use in the environments specified under the general specification in the manual.**
- **Do not use the product in environments with excessive or conductive dust, corrosive or flammable gas, oily smoke, moisture or rain, excessive heat, regular impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the product.**
- **Make sure to shut off the power outside the product before installing or wiring it.**
- **Otherwise, electric shock or serious damage to the product may occur.**
- **Never drop wire chips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakdown, or malfunction.**

Securely install the 485BD to the designated port. Poor connection may cause malfunction.

2.1 Installation procedure

- **Turn off the power of the programmable controller, and mount the 485BD using the following procedure.**
  - Remove the panel cover from the top face of the main unit.
  - Connect the connector for programmable controller provided on the 485BD to the board mounting connector provided on the main unit.
  - Fix the 485BD to the main unit using the M3 self-tapping screws supplied. Tightening torque: 0.3 to 0.6 Nm.
  - Remove the cut-out on the left side of the panel cover using a tool such as nippers or cutters so that the terminal block is accessible. The top face of this terminal box is higher than the top face of the panel cover of the programmable controller by approximately 7 mm (0.27")

3. Specifications

3.1 General specifications

The general specifications are equivalent to those of the PLC main unit. (Refer to the manual of the PLC main unit.)

3.2 Power supply specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission standard</td>
<td>In conformance to RS-485 and RS-422</td>
</tr>
<tr>
<td>Maximum transmission distance</td>
<td>50m (164ft) maximum</td>
</tr>
<tr>
<td>Communication type</td>
<td>No protocol communication, Computer-link (dedicated protocol), parallel link, N:N network</td>
</tr>
<tr>
<td>Communication method</td>
<td>Full-duplex (When the version of PLC(FX2N) is Ver. 2.00 or later) / Half-duplex (When the version of PLC(FX2N) is earlier than Ver. 2.00)</td>
</tr>
<tr>
<td>Communication procedure</td>
<td>No protocol communication, Computer-link (dedicated protocol 1, dedicated protocol 2), parallel link, N:N network</td>
</tr>
<tr>
<td>Transmission speed (Basic rate)</td>
<td>No protocol communication, Computer-link (dedicated protocol): 300/1200/2400/4800/9600/19200 (bps) Parallel link: 19200(bps) N:N network: 38400(bps)</td>
</tr>
<tr>
<td>Insulation</td>
<td>None</td>
</tr>
</tbody>
</table>

Note

- 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 the actual use of the product based on these illustrative examples.
- Please contact a Mitsubishi distributor for more information concerning applications in life critical situations or high reliability.

**Associated Manuals**

- FX/HARDWARE MANUAL
- PROGRAMMING MANUAL II

**Indispensable manual**

<table>
<thead>
<tr>
<th>Manual Name</th>
<th>Manual Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX Series User’s Manual - Data Communication Edition</td>
<td>JY992D16901</td>
<td>Describes contents related to communication available in FX Series PLC such as wiring, communication setting, and program examples.</td>
</tr>
<tr>
<td>FX/HARDWARE MANUAL</td>
<td>JY992D6301</td>
<td>Describes contents related to hardware of FX2N Series PLC such as specifications, wiring, and installation.</td>
</tr>
<tr>
<td>PROGRAMMING MANUAL II</td>
<td>JY992D88101</td>
<td>Describes contents related to instruction in FX/FR/FRNC Series PLC.</td>
</tr>
</tbody>
</table>

**Comment:**

- This manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:
  a) Any engineer using the product associated with this manual, should be of a competent nature, trained and qualified to the local and national standards. These engineers should be fully aware of all aspects of safety with regards to automated equipment.
  b) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards.
  c) All operators of the completed equipment should be trained to use this product in a safe and coordinated manner in compliance to established safety practices.

**Notes on the Symbols 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 users personal safety and protect the integrity of the equipment.

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.

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**Attention**

- This product is designed for use in industrial applications.

**Note**

- Authorized Representative in the European Community: Mitsubishi Electric Europe B.V.
- Gothard Str. 8, 40880 Ratingen, Germany

**Head Office:** TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

**Date:** April 2015

**Manual number:** JY992D74401

**Manual revision:** F

This manual conforms to industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.
1. Outline of Product

The FX2N-485-BD is an insulated RS-485 communication board with an European type terminal block. Connected to the main unit of the FX2N Series PLC, it enables signal exchange between the PLC and equipment via an RS-485 port.

1.1 Communication Functions and Applicable PLC

(Available in indicated version or later)

<table>
<thead>
<tr>
<th>Communication type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>N:N network V2.00</td>
<td>Use data transfer connecting up to eight FX Series PLCs.</td>
</tr>
<tr>
<td>Serial link V1.04</td>
<td>Use data transfer between two PLCs, specifying master/slave station.</td>
</tr>
<tr>
<td>Computer link V1.05</td>
<td>Use data transfer via protocol between PLC and computer (specified as the master station).</td>
</tr>
<tr>
<td>No protocol interface V1.06</td>
<td>Serial communication without protocol between PLC and equipment via RS-485.</td>
</tr>
<tr>
<td>Inverter communication V3.00</td>
<td>Controlling Mitsubishi’s FREQROL inverter using EXTR instruction in function expansion memory.</td>
</tr>
</tbody>
</table>

1.2 Outside dimensions and name of each part

- Unit: mm (inches)
  - Accessories: Terminal resistor 330Ω
  - Terminal resistor 110Ω
  - M3 screw to mount board
  - Station No. label for link
  - Mounting hole (2-3.5)
  - RD LED: Flickers at high speed during send.
  - RD LED: Flickers at high speed during receive.
  - Connector for PLC

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N.

FX2N-485-BD cannot be used by the plural. Other expansion boards cannot be used together with FX2N-485-BD. For the system configuration, refer to the FX Series User’s Manual - Data Communication Edition offered separately.

2. Installation

Caution

- Do not use the product in environments with excessive or conductive dust, corrosive or flammable gas, oily smoke, moisture or rain, excessive heat, regular impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the product.
- Never drop wire chips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakdown, or malfunction.
- Securely install the 485BD to the designated port. Poor connection may cause malfunction.

2.1 Installation procedure

1. Turn off the power of the programmable controller, and mount the 485BD using the following procedure.
   a) Remove the panel cover from the top face of the main unit.
   b) Connect the connector for programmable controller provided on the 485BD to the board mounting connector provided on the main unit.
   c) Fix the 485BD to the main unit using the M3 self-tapping screws supplied. Tightening torque: 0.3 to 0.6 Nm.
   d) Remove the cut-out on the left of the panel cover using a tool such as nippers or cutters so that the terminal block is accessible. The top face of this terminal block is higher than the top face of the panel cover of the programmable controller by approximately 7 mm (0.27”).

3. Specifications

3.1 General specifications

The general specifications are equivalent to those of the PLC main unit. (Refer to the manual of the PLC main unit.)

3.2 Power supply specifications

5V DC, 60 mA is supplied as the power from the PLC.

3.3 Performance specifications

- Transmission standard: In conformance to RS-485 and RS-422
- Maximum transmission distance: 50m (164 ft) maximum
- Communication type: No protocol communication, Computer-link (dedicated protocol), parallel link, N:N network
- Communication method: Full-duplex (When the version of PLC (FX2N) is Ver. 2.00 or later), Half-duplex (When the version of PLC (FX2N) is earlier than Ver. 2.00)
- Communication procedure: No protocol communication, Computer-link (dedicated protocol 1, dedicated protocol 4), parallel link, N:N network
- Transmission speed (Baud rate): No protocol communication, Computer-link (dedicated protocol): 300/600/1200/2400/4800/9600/19200 bps
- Parallel link: 19200 bps
- N:N network: 38400 bps
- Insulation: None
- Recommended screwdriver to tighten terminal screws: 0.8mm (0.02”), 3.5mm (0.13”)

4. Assorted Manuals

- FX2N HARDWARE MANUAL JY992D88101
- PROGRAMMING MANUAL II JY992D88101
- Indispensable manual

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1. Outline of Product

The 485BD is an insulated RS-485 communication board with an European type terminal block. Connected to the main unit of the FXN Series PLC, it enables signal exchange between the PLC and equipment via an RS-485 port.

1.1 Communication Functions and Applicable PLC

(Validated in indicated version or later)

<table>
<thead>
<tr>
<th>Communication type</th>
<th>Function</th>
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<tbody>
<tr>
<td>N/N network</td>
<td>V2.00</td>
</tr>
<tr>
<td>Parallel link</td>
<td>V1.04</td>
</tr>
<tr>
<td>Computer link</td>
<td>V1.05</td>
</tr>
<tr>
<td>No protocol</td>
<td>V1.06</td>
</tr>
<tr>
<td>Inverter communication</td>
<td>V3.00</td>
</tr>
</tbody>
</table>

2. Transmission method

- Half-duplex (When the version of PLC(FX2N) is earlier than Ver. 2.00)
- Full-duplex (When the version of PLC(FX2N) is Ver. 2.00 or later)

3. Specifications

3.1 General specifications

Connected to the main unit of the FX 2N Series PLC, it enables signal exchange between the PLC and equipment via an RS-485 port.

Specifications are subject to change without notice.

3.2 Power supply specifications

Available in indicated version or later

3.3 Performance specifications

- No protocol communication
- Computer link (dedicated protocol 1,
  dedicated protocol 4), parallel link, N,N network
- No protocol communication, Computer link (dedicated protocol)
  Parallel link: 1500bps
  N,N network: 38400bps

Unit: mm (inches)

- Accessory: Terminal resistor 330Ω 2
- Terminal resistor 110Ω 1
- M3 screw to mount board 2
- Station No. label for link
  - Mounting hole (2.5-3.7)
  - Terminal block for RS-485 equipment
  - The top face of this terminal box is higher than the top face of the PLC panel cover by approximately 7 mm (0.27")
  - SD LED: Flickers at high speed during send.
  - RD LED: Flickers at high speed during receive.
  - Connector for PLC

1.2 Outside dimensions and name of each part

Recommended screwdriver to tighten terminal screws

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N.
FX2N-485-BD cannot be used by the plural. Other expansion boards cannot be used together with FX2N-485-BD. For the system configuration, refer to the FX2N Series User’s Manual - Data Communication Edition offered separately.

2. Installation

2.1 Installation procedure

- Turn off the power of the programmable controller, and mount the 485BD using the following procedure.
  1. Remove the panel cover from the top face of the main unit.
  2. Connect the connector for programmable controller provided on the 485BD to the board mounting connector provided on the main unit.
  3. Fix the 485BD to the main unit using the M3 self-tapping screws supplied. Tightening torque: 0.3 to 0.6 Nm
  4. Remove the cut out on the left of the panel cover using a tool such as nippers or cutters so that the terminal block is accessible.
  5. Securely install the 485BD to the designated port. Poor connection may cause malfunction.

2.2 Notes

- Safety guidelines for the user and protection of the FXN-485-BD.
- Notes on the Symbols Used in this Manual
- Associates Manuals

- FX HARDWARE MANUAL
- PROGRAMMING MANUAL II

Related Manuals

- FX2N HARDWARE MANUAL JY992D66301
- FX2N USER’S GUIDE JY992D74401

4. Notes

- This product is designed for use in industrial applications.
- This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safety and operation of the FXN-485-BD (hereafter abbreviated to “485BD”) and should be read and understood before attempting to install or use the unit. Further information can be found in the associated manuals mentioned below.

- Specifications are subject to change without notice.

- This manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:
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  b) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards.
  c) All operators of the completed equipment should be trained to use this product in a safe and coordinated manner in compliance to established safety practices.

- The term ‘completed equipment’ refers to a third party constructed device which contains or uses the product associated with this manual.

- Notes on the Symbols Used in this Manual

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- Associated Manuals

- FX HARDWARE MANUAL
- PROGRAMMING MANUAL II
- Indispensable manual

- Turn off the power of the programmable controller, and mount the 485BD using the following procedure.

- Connect the connector for programmable controller provided on the 485BD to the board mounting connector provided on the main unit.

- Fix the 485BD to the main unit using the M3 self-tapping screws supplied. Tightening torque: 0.3 to 0.6 Nm

- Remove the cut out on the left of the panel cover using a tool such as nippers or cutters so that the terminal block is accessible.

- Securely install the 485BD to the designated port. Poor connection may cause malfunction.

- Attention

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1. Outline of Product

The FX2N-485-BD is an RS-485 communication board with an European type terminal block. Connected to the main unit of the FX2N Series PLC, it enables signal exchange between the PLC and equipment via an RS-485 port.

1.1 Communication Functions and Applicable PLC (Available in indicated version or later)

<table>
<thead>
<tr>
<th>Communication type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Inverter communication</td>
<td>V3.00</td>
</tr>
</tbody>
</table>


1.2 Outside dimensions and name of each part

Unit: mm (inches)

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N. FX2N-485-BD cannot be used by the plural. Other expansion boards cannot be used together with FX2N-485-BD. For system configuration, refer to the FX Series User’s Manual - Data Communication Edition offered separately.

2. Installation

Caution

- Use in the environments specified under the general specification in the manual.
- Do not use the product in environments with excessive or conductive dust, corrosive or flammable gas, oily smoke, moisture or rain, excessive heat, regular impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the product.
- Make sure to shut off the power outside the product before installing or wiring it. Otherwise, electric shock or serious damage can be caused to the product.
- Never drop wire chips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakdown, or malfunction.

Securely install the 485BD to the designated port. Poor connection may cause malfunction.

2.1 Installation procedure

Turn off the power of the programmable controller, and mount the 485BD using the following procedure:

1. Remove the panel cover from the top face of the main unit.
2. Connect the connector for programmable controller provided on the 485BD to the board mounting connector provided on the main unit.
3. Fix the 485BD to the main unit using the M3 self-tapping screws supplied. Tightening torque: 0.3 to 0.6 Nm
4. Remove the cut out on the left of the panel cover using a tool such as nippers or cutters so that the terminal block is accessible. The top face of this terminal block is higher than the top face of the panel cover by approximately 7 mm (0.27”).
5. LED: Flickers at high speed during send.
6. BD LED: Flickers at high speed during receive.
7. Connector for PLC

3. Specifications

3.1 General specifications

The general specifications are equivalent to those of the PLC main unit. (Refer to the manual of the PLC main unit.)

3.2 Power supply specifications

5V DC, 60 mA is supplied as the power from the PLC.

3.3 Performance specifications

Description of transmission standard

- In conformance to RS-485 and RS-422
- Maximum transmission distance: 50m (164ft) maximum
- Communication type: No protocol communication, Computer link (dedicated protocol), parallel link, N:N network
- Communication method: Full-duplex (When the version of PLC(FX3G) is Ver. 2.0 or later) / Half-duplex (When the version of PLC(FX3G) is earlier than Ver. 2.0)
- Communication procedure: No protocol communication, Computer link (dedicated protocol 1, dedicated protocol 4), parallel link, N:N network
- Transmission speed (Basic rate): 300/600/1200/2400/4800/9600/19200 (bps)
- Parallel link: 1500(bps)
- N:N network: 38400(bps)

Insulation: None