1. Outline of Product

The 232BD is an RS-232C communication board with a 9-Pin D-Sub. It is an insulated unit for signal exchange. Connected to the main unit of the FX2N Series PLC, it enables serial data transfer between the PLC and equipment via an RS-232C port.

1.1 Communication Functions and Applicable PLC

Communication type     | FX2N
---|---
Function     | Optional port available for suitable programming tool when 232BDP is connected to PLC.

1.2 Outside dimensions and name of each part

The communication connector of the 232BD is the D-sub, 9-pin socket type. The table below shows the pin arrangement.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CD</td>
<td>Receive carrier detection</td>
</tr>
<tr>
<td>2</td>
<td>RD(RXD)</td>
<td>Receive data input</td>
</tr>
<tr>
<td>3</td>
<td>SD(SD)</td>
<td>Send data input</td>
</tr>
<tr>
<td>4</td>
<td>ER(DTR)</td>
<td>Send request</td>
</tr>
<tr>
<td>5</td>
<td>SG(GND)</td>
<td>Signal ground</td>
</tr>
<tr>
<td>6</td>
<td>DR(DSR)</td>
<td>Send enabled</td>
</tr>
</tbody>
</table>

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N. FX-232 BD cannot be used by the product. Other expansion boards cannot be used together with FX2N-232-BD. For the system configuration, refer to the FX Series User’s Manual - Data Communication Edition separately.

2. Installation

Caution

- Use of the equipment is intended for the general specifications in the manual. Do not use the equipment in environments with excessive or conductive dust, corrosive or flammable gas, humid smoke, moisture or rain, excessive heat, relative impact shocks or excessive vibration, as it may result in electrical shock, fire, malfunction, damage or deterioration on the equipment.
- Make sure to shut off the power outside the equipment before installing or wiring it. Otherwise, electric shock or serious damage may occur to the equipment.
- Never drop wire clips or seizing wires into the vents slots when drilling screw holes or performing wiring. As they may cause fire, breakdown, or malfunction. Securely install the 232BD to the designated port. Poor connection may cause malfunction.

2.1 Installation procedure

Turn OFF the power of the programmable controller, and mount the 232BD in the following procedure.

1. Remove the panel cover from the top face of the main unit.
2. Connect the 232BD to the board mounting connector provided on the main unit.

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, 20 mA is supplied as the power from the PLC.

3.3 Performance specifications

- **Transmission standard**: In conformity to RS-232C
- **Maximum transmission distance**: 15 m (49ft) maximum
- **External equipment connection method**: D-sub, 9pin type (pin socket: manufactured by JST Mfg.) with JES-9P-23A (44-04NC, 4inch screw thread type)
- **Indication (LED)**: RXD, TXD
- **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 Ver. 2.00 or earlier)
- **Communication procedure**: Non-procedure, dedicated protocol procedure, dedicated protocol 4 protocol, protocol for programming tool
- **Baud rate**: Following baud rate can be specified when using computer line or no protocol communication: 300/600/1200/2400/4800/9600/19200 bps
- **Insulation**: Not insulated

4. CAUTION FOR USE

1) When programming tool is connected the 232BD, do not use any other communication format or parameters. If communication format or parameters is set, programming is not possible.

2) Only one programming tool (such as FX-10P, FX-20P, etc.) should be connected to either the programming port or the port provided on the 232BD. If a programming tool is connected to both connectors, the following may occur:
   a) The programmable controller may not be consistent with the program inside the programming tool. If the program is modified or the set value for the timer or the counter is modified, a part of the program may be damaged and the programmable controller may malfunction.
   b) When the sampling function of the programmable controller is used from both ports, the correct sampling trace result cannot be obtained.

Manual number: JY992D63201
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Attention

- This product is designed for use in industrial applications.
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This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the FX2N-232-BD (hereafter abbreviated to 232BD). It 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.

Safety guidelines for the user and protection of the FX2N-232-BD.

This manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows:

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.

- 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 contents 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

<table>
<thead>
<tr>
<th>Manual name</th>
<th>Manual No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX Series User’s Manual - Data Communication Edition</td>
<td>JY990D16901</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 Series Hardware Manual</td>
<td>JY990D86501</td>
<td>Describes instructions related to hardware of FX Series PLC such as specifications, wiring and installation.</td>
</tr>
<tr>
<td>Indoosan Manual</td>
<td>JY990D19701</td>
<td>Describes contents related to communication available in FX Series PLC such as wiring, communication setting and program examples.</td>
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</tbody>
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Mitsubishi Electric corporation Head Office: Tokyo Building, 2-7-3 Marunouchi, Chiyoda-Ku, Tokyo 100-8310, Japan

Authorized Representative in the European Community: Mitsubishi Electric Europe B.V.

Gothar Str. 8, 40880 Ratingen, Germany

This product is designed for use in industrial applications.

Note

- Authorized Representative in the European Community: Mitsubishi Electric Europe B.V.

Gothar Str. 8, 40880 Ratingen, Germany
FX2N-232-BD
USER’S GUIDE
JY992D63201G

This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the FX2N-232-BD (hereafter abbreviated to "232BD") 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.

Safety guidelines for the user and protection of the FX2N-232-BD.

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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2. Indicates that the identified danger could possibly cause physical and property damage.
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<td>Describes instructions in FX/FPx/Fx/Series PLC.</td>
</tr>
<tr>
<td>FX Programming Manual II</td>
<td>JY99D88101</td>
<td>Describes instructions in FX/FPx/Fx/Series PLC.</td>
</tr>
<tr>
<td>JY992D680101</td>
<td></td>
<td>Describes instructions related to FX/Series PLC equipment.</td>
</tr>
<tr>
<td>JY992D680101</td>
<td></td>
<td>Describes instructions related to FX/Series PLC equipment.</td>
</tr>
</tbody>
</table>

1. Outline of Product

The 232BD is an RS-232C communication board with a 9-pin D-Sub. It is an insulated unit for signal exchange. Connected to the main unit of the FX2N Series PLC, it enables serial data transfer between the PLC and equipment via an RS-232C port.

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

<table>
<thead>
<tr>
<th>Communication type</th>
<th>FX2N</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer link</td>
<td>VT-06</td>
<td>Data transfer via the link between PLC and computer (specified on the master station).</td>
</tr>
</tbody>
</table>

1.2 Outside dimensions and name of each part

The communication connector of the 232BD is the D-sub, 9-pin socket type. The table below shows the pin arrangement.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CD</td>
<td>Carrier receiver</td>
<td>Turns on when carrier for data receive is detected.</td>
</tr>
<tr>
<td>2</td>
<td>RD(RXD)</td>
<td>Receive data input</td>
<td>Receive data (RS-232C equipment → 232BD).</td>
</tr>
<tr>
<td>3</td>
<td>SD(DCD)</td>
<td>Send data input</td>
<td>Send data (232BD → RS-232C equipment).</td>
</tr>
<tr>
<td>4</td>
<td>ER(DTR)</td>
<td>Send request</td>
<td>Turns on when RS-232C equipment becomes ready for receive.</td>
</tr>
<tr>
<td>5</td>
<td>SG(GND)</td>
<td>Signal ground</td>
<td>Signal ground.</td>
</tr>
<tr>
<td>6</td>
<td>DR(DSR)</td>
<td>Send enabled</td>
<td>Turns on when send request is given to RS-232C equipment.</td>
</tr>
<tr>
<td>7,8,9</td>
<td></td>
<td>Not used</td>
<td></td>
</tr>
</tbody>
</table>

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N. FX2N-232-BD cannot be used by the prior. Other expansion boards cannot be used together with FX2N-232-BD. 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 in 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.

2.1 Installation procedure

Turn OFF the power of the programmable controller, and mount the 232BD using the following procedure.

1. Remove the panel cover from the top face of the main unit.
2. Connect the 232BD to the board mounting connector provided on the main unit.

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, 20 mA is supplied as the power from the PLC.

3.3 Performance specifications

- Transmission standard: In conformance to RS-232C
- Maximum transmission distance: 15 m (49ft) maximum
- External equipment connection method: D-sub, 9-pin type (pin socket: manufactured by JST Mfg.) with JES-9P-2A3A (#4-40UNC, inch screw thread type)
- Indication (LED): TXD, RXD
- 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: Non-procedure, dedicated protocol 1 procedure, dedicated protocol 4 procedure, protocol for programming tool
- Baud rate: Following baud rate can be specified when using computer link or no protocol communication: 300/600/1200/2400/4800/9600/19200 bps
- Insulation: Not insulated

4. CAUTION FOR USE

1. When programming tool is connected the 232BD, do not use any other communication format or parameters. If communication format or parameters is set, programming is not possible.
2. Only one programming tool (such as FX-10P, FX-20P, etc.) should be connected to either the programming port or the port provided on the 232BD. If a programming tool is connected to both connectors, the following may occur.
   a) The program inside the programmable controller may not be consistent with the program inside the PLC.
   b) The program inside the programmable controller may not be consistent with the program inside the PLC. If the program is modified or the set value for the timer or the counter is modified, part of the program may be damaged and the programmable controller may malfunction.
   c) The program inside the programmable controller may not be consistent with the program inside the PLC. The program inside the programmable controller may not be consistent with the program inside the PLC. If the program is modified or the set value for the timer or the counter is modified, part of the program may be damaged and the programmable controller may malfunction.

Manual number: JY992D63201
Manual revision: G
Date: April 2015

Attention

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This manual confers no 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.
This manual contains text, diagrams and explanations which will guide the reader in the correct installation, safe use and operation of the FX2n-232-BD (hereafter abbreviated to "232BD"). The manual 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.

### 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, 20 mA is supplied as the power from the PLC.

### 3.3 Performance specifications

- **Item**
  - Transmission standard
  - Maximum transmission distance
  - External equipment
  - Communication method
  - Communication procedure
  - Baud rate
  - Insulation
- **Description**
  - In conformance to RS-232C
  - 15 m (49ft) maximum
  - D-sub, 9-pin type (pin socket: manufactured by JST Mfg.) with JE8-3P-3A-A (ø44-Ø46, inch screw thread type)
  - Full-duplex (When the version of PLC(FX2N) is Ver. 2.00 or later)
  - Non-procedure, dedicated protocol 1 procedure, dedicated protocol 4 procedure, protocol for programming tool
  - Following baud rate can be specified when using computer link or no protocol communication: 300/600/1200/2400/4800/9600/19200 bps
  - Not insulated

### 4. CAUTION FOR USE

1) When programming tool is connected the 232BD, do not use any other communication format or parameters. If communication format or parameters is set, programming is not possible.

2) Only one programming tool such as FX-10P, FX-20P, etc. should be connected to either the programming port or the port provided on the 232BD. If a programming tool is connected to both connectors, the following may occur.

   a) The program inside the programmable controller may not be consistent with the program inside the programming tool. If the program is modified or the set value for the timer or the counter is modified, a part of the program may be damaged and the programmable controller may malfunction.

   b) When the sampling trace function of the programmable controller is used from both ports, the correct sampling trace result cannot be obtained.

---

**Manual name**
- FX Series Hardware Manual
- FX Programming Manual II
- Indispensable manual

**Manual No.**
- JY992D63201
- JY992D68501
- JY992D68101

**Description**
- Describes contents related to communication available in FX Series PLC such as wiring, communication setting and program examples.
- Describes instructions in FX/CP2, FX/CP4, FX/CP2.5 Series.

**1. System configuration**

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

The configuration system, the FX Series User's Manual - Data Communication Edition offered separately.

**2. Installation**

**Caution**

- Use in the environments specified in 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, 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 on the product may occur.
- Never drop wire clips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakage, or malfunction.
- Securely install the 232BD to the designated port.
- Poor connection may cause malfunction.

**2.1 Installation procedure**

Turn off the power of the programmable controller, and mount the 232BD using the following procedure.

1. Remove the panel cover from the top face of the main unit.
2. Connect the 232BD to the board mounting connector provided on the main unit.

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**Manual number:** JY992D63201
**Manual revision:** G
**Date:** April 2015

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  - Gothard Str. 8, 40880 Ratingen, Germany

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1. Outline of Product

The FX2N-232-BD is an RS-232C communication board with a 9-Pin D-Sub. It is an insulated unit for signal exchange. Connected to the main unit of the FX2N Series PLC, it enables serial data transfer between the PLC and equipment via an RS-232C port.

1.1 Communication Functions and Applicable PLC

Communication type | FX2N | Function
---|---|---
Serial communication without protocol between PLC and equipment via RS-232C interface | V1.06 | Optional port available for suitable programming tool when 232BD is connected to PLC.
Program transfer or monitoring enabled via modem and phone line | V1.06 |

1.2 Outside dimensions and name of each part

<table>
<thead>
<tr>
<th>Unit (mm) (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting hole (2-φ 6.35)</td>
</tr>
<tr>
<td>RXD LED: Lit during receive.</td>
</tr>
<tr>
<td>TXD LED: Lit during send.</td>
</tr>
<tr>
<td>Connector for RS-232C equipment</td>
</tr>
<tr>
<td>Accessories: Top cover for board 1 M3 screw to mount board 2 M3 screw to fix top cover 1</td>
</tr>
</tbody>
</table>

The communication connector of the 232BD is the D-sub, 9-pin socket type. The table below shows the pin arrangement.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CD</td>
<td>Receive carrier detection</td>
</tr>
<tr>
<td>2</td>
<td>RD(RXD)</td>
<td>Receive data input</td>
</tr>
<tr>
<td>3</td>
<td>SD(SD)</td>
<td>Send data input</td>
</tr>
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<td>4</td>
<td>ER(DTR)</td>
<td>Send request</td>
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<td>5</td>
<td>SG(DBD)</td>
<td>Signal ground</td>
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<td>6</td>
<td>DR(DSR)</td>
<td>Send enabled</td>
</tr>
<tr>
<td>7,8,9</td>
<td>Not used</td>
<td></td>
</tr>
</tbody>
</table>

1.3 System configuration

Only one function expansion board can be used for one main unit of FX2N. FX2N-232 BD cannot be used by the plugs. Other expansion boards cannot be used together with FX2N-232 BD. For this system configuration, refer to the FX Series User's Manual - Data Communication Edition offered separately.

2. Installation

Caution

- Use in the environments specified in 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, rain, excessive heat, heavy 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 on the product.
- Never drop wire clips or shavings into the vent slits when drilling screw holes or performing wiring, as they may cause fire, breakage, or malfunction.
- Securely install the 232BD 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 232BD using the following procedure.
2) Connect the 232BD to the board mounting connector provided on the main unit.

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, 20 mA is supplied as the power from the PLC.

3.3 Performance specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Transmission standard</td>
<td>In conformance to RS-232C</td>
</tr>
<tr>
<td>Maximum transmission distance</td>
<td>15 m (49ft) maximum</td>
</tr>
<tr>
<td>External equipment connection method</td>
<td>D-sub, 9 pin type (pin socket: manufactured by JBT Mfg.) with JEB-J3P-17A (44-UNHC, 4 wire screw type)</td>
</tr>
<tr>
<td>Indication (LED)</td>
<td>RXD, TXD</td>
</tr>
<tr>
<td>Communication method</td>
<td>Full-duplex (When the version of PLC/FX2N is Ver. 2.00 or later)</td>
</tr>
<tr>
<td>Communication procedure</td>
<td>Half-duplex (When the version of PLC/FX2N) is earlier than Ver. 2.00)</td>
</tr>
<tr>
<td>Baud rate</td>
<td>Full-duplex (When the version of PLC/FX2N is Ver. 2.00 or later)</td>
</tr>
<tr>
<td>Communication parameter</td>
<td>19.2k, 38.4 k, 74.4 k, 148.8 k, 297.6 k, 57.6 k, 115.2 k, 230.4 k, 460.8 k</td>
</tr>
<tr>
<td>Insulation</td>
<td>Not insulated</td>
</tr>
</tbody>
</table>

4. CAUTION FOR USE

1) When programming tool is connected the 232BD, do not use any other communication format or parameters. If communication format or parameters is set, programming is not possible.
2) Only one programming tool (such as FX-10P, FX-20P, etc.) should be connected to either the programming port or the port provided on the 232BD. If a programming tool is connected to both connectors, the following may occur:
   a) The program inside the programmable controller may not be consistent with the program inside the programming tool. If the program is modified or the set value for the timer or the counter is modified, a part of the program may be damaged and the programmable controller may malfunction.
   b) When the sampling function of the programmable controller is used from both ports, the correct sampling trace result cannot be obtained.

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