1. Outline of Product

The RS-485 communication board FX1N-485-BD (henceforth referred to as “485BD”) is connected to the FX1N/FX3S Series PLC basic unit, and available for the applications described below.

Only one function expansion board can be connected to one PLC basic unit. Accordingly, the 485BD cannot be used together with the FX1N-232-BD or the FX1N-422-BD.

1.1 Features

1) No protocol transmission.

The 485BD transfers the data using the RS instruction between a bar code reader, personal computer or printer. As the 485BD is not equipped with buffer memory, it sends and receives the data using data registers specified by the RS instruction.

For the RS instruction and the communication setting, refer to the FX Series User’s Manual - Communication Edition.

2) Computer link by dedicated protocol.

The 485BD transfers the data when a personal computer directly specifies devices of the PLC. For the dedicated protocol and the communication setting, refer to the FX Series User’s Manual - Data Communication Edition.

3) Parallel link.

The 485BD transfers automatically auxiliary relays and data registers when two FX1S/FX3S Series PLC’s or two FX1N Series PLC’s are connected on a one-to-one basis.

For the setting procedure and program examples, refer to the FX Series User’s Manual - Data Communication Edition.

4) N:N network.

The 485BD transfers automatically up to 64 auxiliary relays and 8 data registers when up to eight FX1S/ FX1N Series PLC units are connected. For the setting procedure and program examples, refer to the FX Series User’s Manual - Data Communication Edition.

2. Installation

2.1 Installation procedure

Make sure to turn off the power before installing the 485BD.

A) Communication board 485BD (function expansion board)

B) Connector for optional equipment

C) M3 screw to fix board (2 pieces)

D) Top cover for board (offered as an accessory of board)

E) M3 screw to fix top cover (offered as an accessory of board)

Note: Do not remove this screw of FX1S.

1. Plug the communication board A) in to the connector B).

2. Fix the board to the basic unit with two M3 screws C).

3. (Tightening torque: 0.3 to 0.6 Nm)

4. Remove the top cover of the basic unit, and attach the top cover for board D) instead.

5. During attachment, remove D) with a nipper, etc. so that the connector of the board is exposed.

6. Fix the top cover with the M3 screw E).

7. (Tightening torque: 0.3 to 0.6 Nm)

8. When the FX1N-5DM is used also, refer to the Hardware manual offered with the FX1S/FX1N Series PLC main unit.

9. Only one function expansion board is available for one FX1S/FX3S Series PLC basic unit. Never stack up two or more function expansion boards. (Even if they are stacked up, they do not function at all.)

10. The 485BD can be used with the FX1N-EEPROM-8L only for program transfer.

(The FX1N-EEPROM-8L cannot be connected continuously.)

3. Specifications

3.1 Environmental specifications

The environmental 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

<table>
<thead>
<tr>
<th>Transmission standard</th>
<th>In conformance to RS-485 and RS-422</th>
</tr>
</thead>
<tbody>
<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>Half duplex, bi-directional</td>
</tr>
<tr>
<td>Communication procedure</td>
<td>No protocol communication, Computer link (dedicated protocol)</td>
</tr>
<tr>
<td>Transmission speed (baud rate)</td>
<td>300 to 19200bps</td>
</tr>
<tr>
<td>N:N network</td>
<td>10000bps</td>
</tr>
<tr>
<td>Insulation</td>
<td>None</td>
</tr>
</tbody>
</table>

Guidelines for the safety of the user and protection of the RS-485 Communication Board FX1N-485-BD

1) 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.

2) If in doubt at any stage during the installation of the RS-485 Communication Board FX1N-485-BD 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 RS-485 Communication Board FX1N-485-BD please consult the nearest Mitsubishi Electric distributor.

3) 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.

4) 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.

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

Attention

This product is designed for use in industrial applications.

Note

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

Goltzscher Str. 8, 46880 Ratingen, Germany
1.1 Outside dimensions and name of each part

Unit: mm (inch(es))

Accessories: Top cover for board 1
- Terminal resistor 300Ω 2
- Additional terminal resistor 110Ω 1
- M3 screw to mount board 2
- M3 screw to fix top cover 1
- Station No. label for link 1

Mounting hole (2×3.5)

1.2 System configuration

For the system configuration, refer to the FX Series User’s Manual - Data Communication Edition offered separately.

2. Installation

2.1 Installation procedure

Make sure to turn off the power before installing the 485BD.

A) Communication board 485BD (function expansion board)

B) Connector for optional equipment

C) M3 screw to fix board (2 pieces) (offered as accessories of board)

D) Top cover for board (offered as an accessory of board)

E) M3 screw to fix top cover (offered as an accessory of board)

Note: Do not remove this screw of FX1S.

- Plug the communication board A) into the connector B).
- Fix the board to the basic unit with two M3 screws C). (Tightening torque: 0.3 to 0.6 Nm)
- Remove the top cover of the basic unit, and attach the top cover for board D) instead.
- During attachment, remove D) with a nipper, etc. so that the connector of the board is exposed.
- Fix the top cover with the M3 screw E). (Tightening torque: 0.3 to 0.6 Nm)
- When the FX1S-SDM is used also, refer to the Hardware Manual JY992D88101 offered separately.

3. Specifications

3.1 Environmental specifications

The environmental 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 (164ft) maximum

Communication type
No protocol communication, Computer link (dedicated protocol), parallel link, N:N network

Communication method
Half duplex, bi-directional

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 to 19200bps
Parallel link: 19200(bps)
N:N network: 38400(bps)

Insulation
None

Guidelines for the safety of the user and protection of the RS-485 Communication Board FX1N-485-BD

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.

- In doubt at any stage during the installation of the RS-485 Communication Board FX1N-485-BD 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 RS-485 Communication Board FX1N-485-BD 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.

Attention

- This product is designed for use in industrial applications.

Note

- Authorized Representative in the European Community: Mitsubishi Electric Europe B.V.
  Gothaaer Str. 8, 4680 Ratingen, Germany

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Manual number : JY992D84201
Manual revision : E
Date : April 2015

Effective April 2015
Specifications are subject to change without notice
1.2 Outside dimensions and name of each part

<table>
<thead>
<tr>
<th>Unit mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory: Top cover for board 1</td>
</tr>
<tr>
<td>Terminal resistor 300Ω 2</td>
</tr>
<tr>
<td>Terminal resistor 110Ω/1 1</td>
</tr>
<tr>
<td>M3 screw to mount board 2</td>
</tr>
<tr>
<td>M3 screw to fix top cover 1</td>
</tr>
<tr>
<td>Station No. label for link</td>
</tr>
<tr>
<td>Mounting hole (2-ø3.5)</td>
</tr>
<tr>
<td>Terminal block for RS-485 equipment</td>
</tr>
<tr>
<td>Connector for PLC</td>
</tr>
<tr>
<td>Terminal block for RS-485 equipment</td>
</tr>
<tr>
<td>Connector for display module FX-series-SDM or memory cassette FX-series-EEPROM-8L</td>
</tr>
</tbody>
</table>

1.3 System configuration

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

2. Installation

2.1 Installation procedure

Make sure to turn off the power before installing the 486BD.

A) Communication board 486BD (function expansion board)

B) Connector for optional equipment

C) M3 screw to fix board (2 pieces) (offered as accessories of board)

D) Top cover for board (offered as an accessory of board)

E) M3 screw to fix top cover (offered as an accessory of board)

Note: Do not remove this screw of FXs.

1) Plug the communication board A) to the connector B).

2) Fix the board to the basic unit with two M3 screws C).

3) Tightening torque: 0.3 to 0.6 N·m

4) During attachment, remove D) with a nipper, etc. so that the connector of the board is exposed.

5) Fix the top cover with the M3 screw E).

6) Tightening torque: 0.3 to 0.6 N·m

7) When the FX-SDM is used also, refer to the Hardware manual offered with the FX-series PLC main unit.

8) Only one function expansion board is available for one FX-series PLC basic unit. Never stack up two or more function expansion boards. (Even if they are stacked up, they do not function at all.)

9) The 486BD can be used with the FX-series-EEPROM-8L only for program transfer.

(For the FX-series-EEPROM-8L cannot be connected continuously.)

3. Specifications

3.1 Environmental specifications

The environmental 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.
1. Outline of Product

The RS-485 communication board FX1N-485-BD (henceforth referred to as "485BD") is connected to the FX1N Series PLC main unit, and available for the applications described below. Only one function expansion board can be connected to one PLC basic unit. Accordingly, the 485BD cannot be used together with the FX1N-422-BD or the FX1N-232-BD.

1.1 Features

1) No protocol transmission. The 485BD transfers the data using the RS instruction between a bar code reader, personal computer or printer. As the 485BD is not equipped with buffer memory, it sends and receives the data using data registers specified by the RS instruction. For the RS instruction and the communication setting, refer to the FX Series User’s Manual - Data Communication Edition.

2) Computer link by dedicated protocol. The 485BD transfers the data when a personal computer directly specifies devices of the PLC. For the dedicated protocol and the communication setting, refer to the FX Series User’s Manual - Data Communication Edition.

3) Parallel link. The 485BD transfers auxiliary relays and data registers when two FX1N Series PLCs or two FX1N Series PLCs are connected on a one-to-one basis. For the setting procedure and program examples, refer to the FX Series User’s Manual - Data Communication Edition.

4) N/N network. The 485BD transfers data up to six auxiliary relays and 8 data registers when up to eight FX1N/ FX1N Series PLC units are connected. For the setting procedure and program examples, refer to the FX Series User’s Manual - Data Communication Edition.

2. Installation

2.1 Installation procedure

Make sure to turn off the power before installing the 485BD.

A) Communication board 485BD (function expansion board)
B) Connector for optional equipment
C) M3 screw to fix board (2 pieces) (offered as accessories of board)
D) Top cover for board (offered as an accessory of board)
E) M3 screw to fix top cover (offered as an accessory of board)

Note: Do not remove this screw of FX1N.

Plug the communication board A) in to the connector B).
Fix the board to the basic unit with two M3 screws C). (Tightening torque: 0.3 to 0.6 Nm)
Remove the top cover of the basic unit, and attach the top cover for board D) instead.
During attachment, remove D) with a ripper, etc. so that the connector of the board is exposed.
Fix the top cover with the M3 screw E). (Tightening torque: 0.3 to 0.6 Nm)
When the FX1N-5DM is used also, refer to the Hardware manual offered with the FX1N Series PLC main unit.

3. Specifications

3.1 Environmental specifications

The environmental 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.