1. Outline
The FX3U-FHSY-ADP high-speed output special adapter (hereafter called high-speed output special adapter) is a special adapter designed for FX3U Series PLCs. It includes two high-speed output special adapters and two I/O connection terminals. Use of the adapter is limited to two of the high-speed output special adapters and two switches for output control. Be sure to turn off the power before connecting or disconnecting the adapter. 

1.1 Incorporated Models
Check if the following product item is included in the package:

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX3U-FHSY-ADP high-speed output special adapter</td>
<td>2</td>
</tr>
</tbody>
</table>

2. Installation
For connection example and wiring, refer to the following manual:
- Refer to the FX3U Series User Manual - Positioning Control Edition

2.1 Connection to the FX3U Series PLC
Refer to the FX3U Series User Manual - Programming Edition

3. Used cables and Tightening Torque on Terminal
For connection example and wiring, refer to the following manual:
- Refer to the FX3U Series User Manual - Positioning Control Edition

3.1 Connection precautions
- Install the expansion board to be connected to a FX3U Series PLC and connect the cables before turning on the power. Failure to do so may cause damage to the product.
- In case of connecting this product to a high-speed I/O special adapter on the left side of the PLC, please replace the 'main unit' in the above procedure with a high-speed I/O special adapter on the left side of the PLC. For details, refer to the FX3U Series User Manual - Positioning Control Edition.

4. Specification

4.1 Application PLC
Applicability
• \( V_{in} = 5 \text{ VDC} \) for the 5 \text{ VDC} \text{ output type}
• \( V_{in} = 12 \text{ VDC} \) for the 12 \text{ VDC} \text{ output type}

4.2 General Specifications
- For general specifications, refer to the FX3U Series User Manual of the PLC main unit.
- Additional information and warnings are provided in the sections below:
- For details, refer to the FX3U Series User Manual - Hardware Edition

4.3 Power Supply Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>( 100 \text{ VAC} ) to ( 120 \text{ VAC} ) or ( 200 \text{ VAC} ) to ( 240 \text{ VAC} ) or ( 100 \text{ VDC} ) to ( 240 \text{ VDC} )</td>
</tr>
</tbody>
</table>

4.4 Performance Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of controlled I/Os</td>
<td>8 supported I/Os</td>
</tr>
</tbody>
</table>

5) Connect the high speed I/O special adapter to the main unit.
6) Turn off the power when connecting or disconnecting the adapter. Failure to do so may cause damage to the product.

For installation of expansion board, refer to the following manual:
- Refer to the FX3U Series User Manual - Hardware Edition

6.3 Precautions
- Do not connect the FX3U-FHSY-ADP high-speed output special adapter to the PLC main unit. Failure to do so may cause damage to the product.

6.4 Precautions
- Do not install the FX3U-FHSY-ADP high-speed output special adapter on the left side of the PLC. Failure to do so may cause damage to the product.

7. Installation Precautions
- Do not install the FX3U-FHSY-ADP high-speed output special adapter on the left side of the PLC. Failure to do so may cause damage to the product.

8. Protective Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

9. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

10. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

11. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

12. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

13. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

14. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

15. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

16. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

17. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

18. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

19. Maintenance and Storage Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.

20. Precautions
- Do not connect a high-speed I/O special adapter on the left side of any equipment. Failure to do so may cause damage to the product.
## 1. Outline

The FX3U-2HSY-ADP high-speed output special adapter (hereafter called high-speed output special adapter) is a special adapter designed for FX3U Series PLC. It is designed to be connected to both the main unit and an expansion board on the left mounting part, to perform the high-speed I/O function, counting and special functions. It is equipped with a pulse output terminal that can select either of the pulse output terminal block and PLC's built-in output. It is a 2-output type and can be connected to the main unit and expansion board on the left mounting part. The adapter is designed for normal industrial use, such as machinery, transport equipment, and other equipment.

### 1.1 Incorporated Information

Check the following product items are included in the package.

- FX3U-2HSY-ADP high-speed output special adapter
- Adhesive tape: 1 roll (10m×25mm)
- User's Manual: 1 manual
- Connector: 1 set
- Fittings (6 pieces)
- Wire (5 pieces: 0.3 mm², AWG22)
- Ferrule (6 pieces)
- Insulation sleeve (5 pieces)
- Instruction sheet: 1 sheet


### 1.2 Output Number and Signal

<table>
<thead>
<tr>
<th>Signal name</th>
<th>Output type</th>
<th>Output number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>First unit</td>
<td>High-speed output special adapter</td>
<td>Y0/2+</td>
<td>+5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>High-speed output special adapter</td>
<td>Y0/2-</td>
<td>-5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>High-speed output special adapter</td>
<td>Y001-</td>
<td>-10V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>High-speed output special adapter</td>
<td>Y4/6-</td>
<td>-10V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>Left Output terminal block</td>
<td>Y001+</td>
<td>+5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>Left Output terminal block</td>
<td>Y001-</td>
<td>-5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>Left Output terminal block</td>
<td>Y4/6+</td>
<td>+5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>First unit</td>
<td>Left Output terminal block</td>
<td>Y4/6-</td>
<td>-5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>Second unit</td>
<td>High-speed output special adapter</td>
<td>Y001+</td>
<td>+5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>Second unit</td>
<td>High-speed output special adapter</td>
<td>Y001-</td>
<td>-5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>Second unit</td>
<td>High-speed output special adapter</td>
<td>Y4/6+</td>
<td>+5V output terminal block (max. 10 terminals)</td>
</tr>
<tr>
<td>Second unit</td>
<td>High-speed output special adapter</td>
<td>Y4/6-</td>
<td>-5V output terminal block (max. 10 terminals)</td>
</tr>
</tbody>
</table>

### 1.3 External Dimension, Part Names, and Wiring Layout

#### 1.3.1 External Dimension

- Width: 92.5 mm
- Depth: 21.6 mm
- Height: 121 mm

#### 1.3.2 Part Names

- Power terminal (LEAD)
- Signal terminal (LEAD)
- Connector (LEAD)
- Mounting part (LEAD)
- Terminal block (LEAD)
- Wiring (LEAD)

### 1.4 Wiring Length

- Power terminal (LEAD): 100 mm (3.94")
- Signal terminal (LEAD): 100 mm (3.94")
- Connector (LEAD): 100 mm (3.94")
- Mounting part (LEAD): 100 mm (3.94")
- Terminal block (LEAD): 100 mm (3.94")
- Wiring (LEAD): 100 mm (3.94")

### 1.5 Power Supply Specification

- Input power supply: AC 200 V (±10%)
- Output power supply: DC 5V ±5%

### 1.6 Protection Circuit

- Overcurrent protection: 200 mA
- Overvoltage protection: 500 mA

## 2. Installation

The product can be used on the DIN rail (EN50022) or directly using busbar. For connection to wiring or connection and safety precautions, refer to the following manual.


### 2.1 Connection to the FX3U Series PLC

#### Procedure

1. Refer to the procedure (1) to configure in each system.
2. Connect the programmable controller (PLC) to the main unit.
3. Make sure to install an expansion board to the PLC main unit.
4. Make sure to perform the wiring as specified in the following procedure.

#### CAUTION

- Do not use the product with an AC servomotor or stepper motor. However, do not use common grounding with heavy electrical equipment or control equipment, as a guideline, lay the control line at least 100 mm (3.94") or more away from the main unit or other equipment.
- Failure to do so may cause electric shock, equipment failures, a short-circuit, or deterioration or damage may occur.
- Never use the product in areas with excessive dust, oily smoke, conductive fumes, or explosive gases.
- Failure to do so may cause failures in the product.
- Do not use the product near water or a wet location.
- Do not drop the product or exert strong impact to it.
- Do not operate the product under conditions of extreme high temperature, humidity, or vibration.
- Failure to do so may cause electric shock, equipment failures, a short-circuit, or deterioration or damage may occur.
- Do not connect the product to the expansion board or PLC output terminal block (max. 10 terminals) or output terminal block (max. 10 terminals) or output terminal block (max. 10 terminals) or output terminal block (max. 10 terminals) or output terminal block (max. 10 terminals) or output terminal block (max. 10 terminals). Other connections or connections may cause equipment failures.
1. Outline
The FX3U-2HSY-ADP high-speed output special adapter (hereafter called high-speed output special adapter) is a special adapter designed for FX3U, FX3U-48MR/ES Series only. It is used for controlling high-speed output in a PLC, by turning ON and OFF of an AC motor or stepper motor. For this purpose, it needs to be set up in a certain system. For system configuration, refer to the FX3U Series User's Manual - Programming Edition.

1.1 Incorporated Standard
Check if the following product items are included in the package:
- High-speed output special adapter (one set)
- DIN rail mounting hook (one set)
- External cables (three sets)
- Instruction manual (one set)
- Name plate (one set)
- Terminals for special adapter (three sets)

1.2 DIN rail mounting hook

1.3 Name plate
Indicates the model name and the product name to be described in this manual are the following:

Model name: FX3U-2HSY-ADP
Product name: High-speed output special adapter

2. Installation
The product can be used on DIN rail (EN50022) or recessed directly using screw. For installation and maintenance, refer to the following manuals:

2.1 Connection to the FX3U PLC

2.2 Wiring length
- DIN rail to PLC side:
  - Maximum: 1 m (3.3 ft)
- Within the PLC:
  - Maximum: 1 m (3.3 ft)
- Before using the product for special purposes, please contact your Mitsubishi representative to determine the wiring length for such special purposes.

3. Used cables and Tensioning on Terminal
For specifications and wiring, refer to the following manual:

3.1 Used cables
The external cables for the product can be used within the following specifications:
- Single wire: 0.3 mm² to 0.5 mm² (AWG22 to 20)
- Ferrule with insulation sleeve
- Ferrule without insulation sleeve
- Conductor of copper wire: solid wire
- Conductor of stranded wire: stranded wire/single wire
- Copper coating: copper coating/Plastic coating
- Wire core: round core/square core
- Wire coating: polyurethane/PVC/PFA/EGP
- Wire length: 1 m (3.3 ft)
- Conductor: stranded wire/single wire
- Insulation thickness: 2.1 mm (0.08 in)

3.2 Tensioning on Terminal
- Terminal Layout of the special adapter side: C
- Terminal Layout of the PLC main unit side: B

4. Specification

4.1 General Specifications

4.1.1 Appearance
Applicability
- FX3U-48MR/ES Series

4.1.2 Terminals
The terminals used are rated for continual current and voltage as shown in the table below:

4.1.3 Operating condition
Each terminal can be operated at an AC voltage of 150 V (50 Hz) or less, within the temperature range of -10°C to 55°C, and a humidity level of 90% or less

4.1.4 Interference
When using a PLC with noise disturbance and/or surge induction, do not use the following terminals:
- Terminals related to high-speed output (Y0/2- Y004+

4.1.5 Shock resistance
The terminals related to high-speed output (Y0/2- Y004+) shall withstand voltage of 500 V AC for one minute.

4.2 Interface specifications

4.2.1 Main unit side

4.2.2 Special adapter side

4.3 Power Supply Specifications

4.3.1 Input power supply
- AC 200 V: 100 ± 10% off nominal voltage
- Input power supply
- DC 24 V supplied internally from the main unit

4.4 Performance Specifications

4.4.1 Number of controlled terminals

4.4.2 Non-operating time
- Terminal OFF time: 50 ms

4.4.3 Output power specifications
- AC 200 V: 100 ± 10% off nominal voltage
- DC 24 V supplied internally from the main unit

4.4.4 Unit output power
- Output power (Y0/2-Y004+)

4.4.5 Frequency response characteristics

4.4.6 Short-circuit characteristics

4.4.7 Load characteristics

4.4.8 Power consumption

4.4.9 Power consumption of main unit

4.4.10 Power consumption of special adapter

4.5 Reversing

4.5.1 Number of terminals

4.5.2 Non-operating time

4.5.3 Reversing power specifications

4.5.4 Reversing frequency characteristics

5. Reversing

5.1 Number of terminals

5.2 Non-operating time

5.3 Reversing power specifications

5.4 Reversing frequency characteristics

6. Instructions

6.1 Force output setting switch

6.2 LED indication

6.3 LED output form

6.4 High-speed output special adapter connector:
- This product is a special adapter used to connect communication special adapter or analog special adapter to the PLC main unit. For details, refer to the FX3U Series User's Manual - Programming Edition.

7. Caution