**Remark**

Compliance with all relevant aspects of the standard:
- Emission/Enclosure port
- Emission-Low voltage AC mains port
- Emission-Telecommunications/network port

**Remark**

- Generic emission standard
- Generic immunity standard

**Industrial environment**

- EN61000-6-2:2005
- EN61000-6-4:2005

**Standard Compliance with all relevant aspects of the standard.**

- Radio-frequency electromagnetic field. Amplitude modulated
- Fast transients
- Electrostatic discharge
- Surge
- Voltage dips
- Voltage interruptions
- Radio-frequency common mode
- Power-frequency magnetic field

**EN61131-2-2003**

Programmable controllers

**Equipment requirements and tests**

- Radiated Emission
- Conducted Emission
- EMI
- Radiated electromagnetic field
- Fast Transient burst
- Electrostatic discharge
- High-energy surge
- Voltage drops and interruptions
- Conducted RF
- Power-frequency magnetic field

**Requirement for Compliance with LVD directive**

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Low Voltage (2006/95/EC) when used as directed by the appropriate documentation.

- Type: Programmable Controller (Open Type Equipment)
- Models: MELSEC FX series manufactured from September 1st, 1999
- FX2N-20PSU

For the products above, PLCs manufactured before September 30th, 2013 are compliant with IEC1010-1 after October 1st, 2013 are compliant with EN61131-2-2007

3. GENERAL SPECIFICATIONS

**Item**

- Description

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 55 °C (32 to 131 °F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage Temperature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20 to 70 °C (-4 to 158 °F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Humidity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 95% Relative Humidity, No condensation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage Humidity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 to 90% Relative Humidity, No condensation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vibration Resistance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 57 Hz: 0.75 mm Half Amplitude</td>
<td></td>
</tr>
<tr>
<td>57 - 150 Hz: 9.8 ms² Acceleration</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shock Resistance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>147nm²/s², Acceleration, Action Time: 11 ms</td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Power (P.C. power supply unit)**

- Output power 24V DC ± 10%
- Output current 2A (maximum), 0.2A (minimum)
- Overvoltage protection circuit may be actuated when ambient temperature exceeds 40 °C(*)

**Protection against overcurrent**

- Actuated when current becomes 110 - 160% or more, voltage drop occurs automatic recovery

**Protection against overvoltage**

- Actuated when voltage becomes 110 - 140% or more, output shuts down, no automatic recovery (diode clamp)

**Output indication**

- Green LED (POWER) is lit while voltage is output.
- Dedicated grounding (best)
- Common grounding (grounding is not allowed)

2. EXTERNAL DIMENSION

- Load rating (%)
- Ambient temperature (°C)

- 1 The available output current varies depending on the ambient operating temperature. Use the FX2N-20PSU in the available range in accordance with the output derating graph shown above.
- 2 If the output current flows beyond the specified value, the overcurrent protection circuit is actuated and the output voltage drops. When the overcurrent status or the short-circuit status returns to acceptable levels, the output voltage automatically recovers.
- 3 If the voltage beyond the specified value is generated by an internal failure, etc., the output is shut down so that high voltage is not output. When the voltage comes from a load circuit connected to an output terminal or when overvoltage is input from the outside, the overvoltage protection circuit may be actuated. When the overvoltage protection circuit is actuated, the output is shut down and does not automatically recover. Ask for inspection and repair after such an occurrence.
FX2N-20PSU DC POWER SUPPLY UNIT

USER’S MANUAL
JY922D5101E

This manual contains text, diagrams and explanations which will guide the reader in the correct installation and operation of the FX2N-20PSU DC power supply unit. It should be read and understood before attempting to install or use the unit. Further information can be found in the FX series PLC hardware manuals.

If in doubt at any stage during the installation of the FX2N-20PSU DC power supply unit always consult a professional electrical engineer who is qualified and trained to the local and national standards.

Note
on the symbology used in this manual

At various times through out 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. 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.

Guidelines for the safety of the user and protection of the FX2N-20PSU DC POWER SUPPLY UNIT

1. INTRODUCTION

The DC power supply unit FX2N-20PSU is available as the following applications.

- Power supply of 24V DC power type PLC
- Power supply of special extension block of PLC
- Power supply of sensor connected to input of PLC
- Power supply of DC load connected to output of PLC
- Power supply of display unit such as graphic operation terminal (GOT)

2. EXTERNAL DIMENSION

Compliance with EC directive (CE Marking)

This document does not guarantee that a mechanical system including this product will comply with the following standards.

Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user/manufacturer. For more information please consult with your nearest Mitsubishi product provider.

Requirement for Compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

Type: Programmable Controller (Open Type Equipment)
Models: MELSEC FX series manufactured from September 1st, 1999 FX2N-20PSU

For the products above, PLCs manufactured before September 30th, 2013 are compliant with IEC101-1 after October 1st, 2013 are compliant with EN61131-2-2007

The equipment has been assessed as a component for fitting in a suitable enclosure which meets the requirements of IEC 1010-1-991:1992

The equipment has been assessed as a component for fitting in a suitable enclosure which meets the requirements of EN61131-2-2007

3. GENERAL SPECIFICATIONS

4. PERFORMANCE SPECIFICATIONS
3. GENERAL SPECIFICATIONS

Compliance with all relevant aspects of the standard.

Item | Description | Remark
--- | --- | ---

Operating Temperature | 0 to 55 °C (32 to 131 °F) | -
Storage Temperature | -20 to 70 °C (-4 to 158 °F) | -
Operating Humidity | 35 to 90% Relative Humidity, No condensation | -
Storage Humidity | 35 to 90% Relative Humidity, No condensation | -
Vibration Resistance | 10 - 57 Hz: 0.75 mm Half Amplitude | 57 - 150 Hz: 9.8 m/s² Acceleration
 | Sweep Count for X, Y, Z: 10 times (80 min in each direction) | -
Vibration Resistance | 10 - 57 Hz: 0.036 mm Half Amplitude | 57 - 150 Hz: 4.9 m/s² Acceleration
 | Sweep Count for X, Y, Z: 10 times (80 min in each direction) | -
Shock Resistance | 147 m/s² Acceleration, Action Time: 11 ms | -
 | 3 times in each direction X, Y, and Z | -
Noise Immunity | 1000 V p-p, Impedance: 300 - 1000 Hz, tested by noise simulator | -
Dielectric Withstand Voltage | 500 V AC - 1 min, tested between all points, terminals and ground | -
Insulation Resistance | 5 MΩ at 500 V DC, tested between all points, terminals and ground | -

4. PERFORMANCE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>100 to 240 V AC</td>
</tr>
<tr>
<td>Allowable voltage range</td>
<td>85 to 264 V AC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Fuse rating</td>
<td>250V 3.15A (built in) Time-lag Fuse</td>
</tr>
<tr>
<td>Short circuit</td>
<td>60/200 V AC maximum</td>
</tr>
<tr>
<td>Output voltage</td>
<td>24 V DC ± 10%</td>
</tr>
<tr>
<td>Output current</td>
<td>2 A (maximum), 0.2 A (minimum)</td>
</tr>
<tr>
<td>Protection function</td>
<td>Overcurrent</td>
</tr>
<tr>
<td>Protection against voltage drop</td>
<td>Actuated when current becomes 110 - 160% or more, voltage drops occur, automatic recovery</td>
</tr>
<tr>
<td>Output indication</td>
<td>Green LED (POWER) is lit while voltage is output</td>
</tr>
</tbody>
</table>

4.1. INTRODUCTION

The DC power supply unit FX2N-20PSU is available as the following applications:

- Power supply of 24 V DC power type PLC
- Power supply of special extension block of PLC
- Power supply of sensor connected to input of PLC
- Power supply of DC load connected to output of PLC
- Power supply of display unit such as graphic operation terminal (GOT)

4.2. EXTERNAL DIMENSION

[Diagram of external dimensions]

Terminals screws: M3.5
Mass: Approximately 0.3 kg
Unit: mm (inches)

[Dimensions and specifications]

Ambient temperature (°C)

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Load (% of 200 mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

*1 The available output current varies depending on the ambient operating temperature. Use the FX2N-20PSU in the available range in accordance with the above graph shown above.

*2 If the output current flows beyond the specified value, the overcurrent protection circuit is actuated and the output voltage drops.

*3 If the voltage beyond the specified value is generated by an internal failure, etc., the output is shut down so that high voltage is not output. When the voltage comes from a load circuit connected to an output terminal or when overvoltage is input from the outside, the overvoltage protection circuit may be actuated.

When the overvoltage protection circuit is actuated, the output is shut down and does not automatically recover. Ask for inspection and repair after such an occurrence.

**Note**

- Authenticated Representative in the European Community: Mitsubishi Electric Europa B.V./Goethestr. 8, 40880 Ratingen, Germany
- Type: Programmable Controller (Open Type Equipment)
- Model: MELSEC FX series
- FX2N-20PSU Series

For the products above, PLCs manufactured before September 30th, 2013 are compliant with EN1010-2 and EN1011-2 after October 1st, 2013 are compliant with EN50081-2:2007

**Guidelines for the safety of the user and protection of the FX2N-20PSU DC POWER SUPPLY UNIT**

- 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 FX2N-20PSU always consult a professional electrical engineer who is qualified and trained to the local and national standards.

- This product is designed for use in industrial applications.

- This product is designed for use in industrial applications.

- This product is designed for use in industrial applications.

- This product is designed for use in industrial applications.

- This product is designed for use in industrial applications.
5. INSTALLATION

Cautions on installation
- Use the unit in the environment for the general specifications described in Section 3 in the manual. Never use the unit in a place with dust, soot, conductive dusts, corrosive gas or flammable gas, place exposed to high temperature, dew condensation, rain and wind, or in a place exposed to vibration or impact. If the unit is used in such a place, electrical shock, fire, malfunction, damages in the unit or deterioration of the unit may be caused.
- Never drop cutting chips or electric wire chips into the ventilation window while drilling screw holes or wiring cables. Such chips may cause fire, failure or malfunction.
- After finishing installation, remove a dust preventing sheet adhered on the ventilation window. If the sheet remains attached, fire, failure or malfunction may be caused.

Note
- During the installation/wiring work, place a dust preventing sheet on the ventilation window.
- In order to prevent temperature rise, never install the unit on the floor surface, on the ceiling surface or in the vertical direction. Make sure to install the unit on a panel face in the horizontal direction as shown in the figure below.
- Use crimp-style terminals of the dimensions shown in the figure below.
- Tighten the terminals to a torque of 0.5 to 0.8 N·m. Do not tighten terminal screws with a torque outside the above-mentioned range. Failure to do so may cause equipment failures or malfunctions.

6. WIRING

Cautions on wiring
- Make sure to shut down the power supplies of all phases on the outside before starting installation or wiring. If the power supplies are not shut down, you may get electrical shock or the unit may be damaged.
- Make sure to attach terminal covers offered as accessories before supplying power and starting operation after the installation/wiring work.
- The rated temperature of the cable should be 80°C or more.
- Correctly supply power to the PLC in accordance with “Cautions on Safety” described in the manual of the PLC.
- If power is not correctly supplied, the unit may be damaged.
- Connect the wiring of the DC power supply to dedicated terminals as described in this manual. If the AC power supply is connected to a DC power terminal, the unit may be burnt.
- Never perform external wiring to unused terminals. Such wiring may damage the unit.
- Perform Class 3 grounding to the grounding terminal in the unit. However, never perform common grounding (See Section 3) with a strong power system.

6.1 When FX2N-20PSU is connected to 24V DC power type PLC

Source inputs (+ve S/S)

Sink inputs (+ve S/S)

6.2 When FX2N-20PSU is used together with 24V DC service power supply built in PLC

In the AC power type FX PLC, a 24V DC service power supply is built. When using the FX2N-20PSU and the service power supply together, connect the “24+” terminal of the FX2N-20PSU and the “COM” terminal on the minus side of the service power supply as shown in the figure below.

Source inputs (-ve S/S)

Sink inputs (-ve S/S)

6.3 Cautions

Cautions on design
- Never connect in serial nor parallel the DC output terminals of the FX2N-20PSU to another power supply unit. Such a connection may damage the unit.
- Never connect the FX2N-20PSU in parallel to another power supply unit.

7. TROUBLESHOOTING

When it is suspected that the FX2N-20PSU is not normally operating, check the following items.
- Check the POWER LED status.
  - [When the POWER LED is extinguished] Check the input voltage of the FX2N-20PSU. If any abnormality is detected, → Input the specified supply voltage.
  - Disconnect the wiring from the output terminals “24+” and “24-”.
  - If the POWER LED lights → The overcurrent protection circuit (See Section 4) is actuated. Investigate the load connected to the output terminals.
  - If the POWER LED remains extinguished → The overvoltage protection circuit (See Section 4) may be actuated. Ask for inspection and repair.

- [When the POWER LED is lit] FX2N-20PSU is normal.
  - The overcurrent protection circuit and the overvoltage protection circuit are built in the FX2N-20PSU. If such a protection circuit is actuated, the output voltage drops or is shut down. For details, refer to Section 4.

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.

Warranty
Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

For safe use
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or fail-safe functions in the system.

Manual number : JY992D85101
Manual revision : E
Date : April 2015

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

JY992D85101E
Specifications are subject to change without notice.
5. INSTALLATION

Cautions on installation
- Use the unit in the environment for the general specifications described in Section 3 in the manual. Never use the unit in a place with dust, soot, conductive dusts, corrosive gas or flammable gas, place exposed to high temperature, dew condensation, rain and wind, or in a place exposed to vibration or impact.
- If the unit is used in such a place, electrical shock, fire, malfunction, damages in the unit or deterioration of the unit may be caused.
- Never drop cutting chips or electric wire chips into the ventilation window while drilling screw holes or wiring cables. Such chips may cause fire, failure or malfunction.
- After finishing installation, remove a dust preventing sheet adhered on the ventilation window. If the sheet remains attached, fire, failure or malfunction may be caused.

Note
- During the installation/wiring work, place a dust preventing sheet on the ventilation window.
- In order to prevent temperature rise, never install the unit on the floor surface, on the ceiling surface or in the vertical direction. Make sure to install the unit on a panel face in the horizontal direction as shown in the figure below.
- Use crimp-style terminals of the dimensions shown in the figure below.
- Tighten the terminals to a torque of 0.5 to 0.8 Nm. Do not tighten terminal screws with a torque outside of the above-mentioned range. Failure to do so may cause equipment failures or malfunctions.

[Installation direction] [Crimp-style terminal]

6. Wiring

Cautions on wiring
- Make sure to shut down the power supplies of all phases on the outside before starting installation or wiring. If the power supplies are not shut down, you may get electrical shock or the unit may be damaged.
- Make sure to attach terminal covers offered as accessories before supplying power and starting operation after the installation/wiring work.
- The rated temperature of the cable should be 80°C or more.
- Correctly supply power to the PLC in accordance with “Cautions on Safety” described in the manual of the PLC.

If the AC power supply is connected to a DC power terminal, the unit may be burnt.

6.1 When FX2N-20PSU is connected to 24V DC power type PLC

Source inputs (+ve S/S)

6.2 When FX2N-20PSU is used together with 24V DC service power supply built in PLC

In the AC power type FX PLC, a 24V DC service power supply is built. When using the FX2N-20PSU and the service power supply together, connect the "24+" terminal of the FX2N-20PSU and the "COM" terminal on the minus side of the service power supply as shown in the figure below.

Source inputs (+ve S/S)

Sink inputs (+ve S/S)

6.3 Cautions on design

- Never connect in serial nor parallel the DC output terminals of the FX2N-20PSU to another power supply unit. Such a connection may damage the unit.
- Never connect the FX2N-20PSU in parallel to another power supply unit.

6.8mm (0.27”)

Max. G3.5(0.14”)

6.15mm (0.24”)

For M3.5(0.14”)

6.7mm (0.26”)

6.14mm (0.24”)

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Warranty
Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product, a backup or failsafe function is necessary.

Specifications are subject to change without notice.
5. INSTALLATION

Cautions on installation
- Use the unit in the environment for the general specifications described in Section 3 in the manual. Never use the unit in a place with dust, soot, conductive dusts, corrosive gas or flammable gas, placed exposed to high temperature, dew condensation, rain and wind, or in a place exposed to vibration or impact.
- If the unit is used in such a place, electrical shock, fire, malfunction, damages in the unit or deterioration of the unit may be caused.
- Never drop cutting chips or electric wire chips into the ventilation window while drilling screw holes or wiring cables. Such chips may cause fire, failure or malfunction.
- After finishing installation, remove a dust preventing sheet adhered on the ventilation window. If the sheet remains attached, fire, failure or malfunction may be caused.

Note
- During the installation/wiring work, place a dust preventing sheet on the ventilation window.
- In order to prevent temperature rise, never install the unit on the floor surface, on the ceiling surface or in the vertical direction. Make sure to install the unit on a panel face in the horizontal direction as shown in the figure below.
- Use crimp-style terminals of the dimensions shown in the figure below.
- Tighten the terminals to a torque of 0.5 to 0.8 N·m. Do not tighten terminal screws with a torque outside the above-mentioned range. Failure to do so may cause equipment failures or malfunctions.

[Installation direction]

6. WIRING

Cautions on wiring
- Make sure to shut down the power supplies of all phases on the outside before starting installation or wiring. If the power supplies are not shut down, you may get electrical shock or the unit may be damaged.
- Make sure to attach terminal covers offered as accessories before supplying power and starting operation after the installation/wiring work.
- The rated temperature of the cable should be 80°C or more.
- Correctly supply power to the PLC in accordance with “Cautions on Safety” described in the manual of the PLC. If power is not correctly supplied, the unit may be damaged.
- Connect the wiring of the DC power supply to dedicated terminals as described in this manual (See Section 3) with a strong power system.
- Connect the minus line to share it. Such wiring may damage the unit.
- Perform Class 3 grounding to the grounding terminal in the unit. Never perform common grounding (See Section 3) with a strong power system.

6.1 When FX2N-20PSU is connected to 24V DC power type PLC

Source inputs (+ve S/S)

6.2 When FX2N-20PSU is used together with 24V DC service power supply built in PLC

In the AC power type FX PLC, a 24V DC service power supply is built.

When using the FX2N-20PSU and the service power supply together, connect the '24-' terminal of the FX2N-20PSU and the 'COM' terminal on the minus side of the service power supply as shown in the figure below.

Source inputs (+ve S/S)

Sink inputs (+ve S/S)

6.3 Cautions

Cautions on design
- Never connect in serial nor parallel the DC output terminals of the FX2N-20PSU to another power supply unit. Such a connection may damage the unit.
- Never connect the FX2N-20PSU in parallel to another power supply unit.

6.4 When FX2N-20PSU is connected to 24V DC power type PLC

Sink inputs (+ve S/S)

7. TROUBLESHOOTING

When it is suspected that the FX2N-20PSU is not normally operating, check the following items.

- Check the POWER LED status.
  - [When the POWER LED is extinguished]
    - Check the input voltage of the FX2N-20PSU.
    - Disconnect the wiring from the output terminals "24+" and "24-".
    - If the POWER LED lights → The overcurrent protection circuit (See Section 4) is actuated. Investigate the load connected to the output terminals.
    - If the POWER LED remains extinguished → The overvoltage protection circuit (See Section 4) may be actuated. Ask for inspection and repair.
  - [When the POWER LED is lit]
    - FX2N-20PSU is normal.

- The overcurrent protection circuit and the overvoltage protection circuit are built in the FX2N-20PSU. If such a protection circuit is actuated, the output voltage drops or is shut down. For details, refer to Section 4.

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.

Warranty
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For safe use
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.
## 1. INTRODUCTION

The DC power supply unit FX2N-2PSU is available as the following applications:

- Power supply of 24V DC power type PLC
- Power supply of special extension block of PLC
- Power supply of sensor connected to input of PLC
- Power supply of DC load connected to output of PLC
- Power supply of display unit such as graphic operation terminal (GOT)

### Requirement for Compliance with LVD directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Low Voltage (2006/95/EC) when used as directed by the appropriate documentation.

- Type: Programmable Controller (Open Type Equipment)
- Models: MELSEC FX series manufactured from September 1st, 1999
- FX2N-2PSU

For the products above, PLCs manufactured before September 30th, 2013 are compliant with IEC1010-1 as of October 1st, 2013 as are compliant with EN61131-2:2007

### 2. EXTERNAL DIMENSION

![External Dimension Diagram]

- Unit:mm
- DIN rail:35mm
- Unit:mm

### Pin assignment and connection of terminals

- הדרך של טבלת התאמה
- טבלת התאמה
- טבלת התאמה

### Compliance with EC directive (CE Marking)

This document does not guarantee that a mechanical system including this product will comply with the following standards.

Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user/manufacturer. For more information please consult with your nearest Mitsubishi product provider.

### Requirement for Compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

### 3. GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 to 55 °C (32 to 131 °F)</td>
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<td>Storage Temperature</td>
<td>-20 to 70 °C (-4 to 158 °F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>35 to 90% Relative Humidity, No condensation</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>35 to 90% Relative Humidity, No condensation</td>
</tr>
<tr>
<td>Vibration Resistance*1</td>
<td>10 - 57 Hz: 0.75 mm Half Amplitude</td>
</tr>
<tr>
<td>Vibration Resistance*1</td>
<td>10 - 57 Hz: 0.035 mm Half Amplitude</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>147nm2s, Acceleration: Time: 11 ms</td>
</tr>
<tr>
<td>Noise Immunity</td>
<td>1000Vp-p, Imposed noise, 30 - 100 Hz, tested by noise simulator</td>
</tr>
<tr>
<td>Electromagnetic Withstand Voltage</td>
<td>500V AC &gt; 1 min, tested between all points, terminals and ground</td>
</tr>
<tr>
<td>Radiated Emission</td>
<td>10 - 57 Hz: 0.75 mm Half Amplitude</td>
</tr>
<tr>
<td>Conducted Emission</td>
<td>10 - 57 Hz: 0.035 mm Half Amplitude</td>
</tr>
<tr>
<td>Electrostatic discharge</td>
<td>1000Vp-p, 1microsecond, 30 - 100 Hz, tested by noise simulator</td>
</tr>
<tr>
<td>Power-frequency magnetic field</td>
<td>1000V DC, tested between all points, terminals and ground</td>
</tr>
<tr>
<td>Power frequency magnetic field</td>
<td>1000V DC, tested between all points, terminals and ground</td>
</tr>
</tbody>
</table>

### 4. PERFORMANCE SPECIFICATIONS

#### Input

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>100-240V AC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60Hz</td>
</tr>
<tr>
<td>Fuse rating</td>
<td>250V±1.5A (built) Time-lag Fuse</td>
</tr>
<tr>
<td>Current</td>
<td>60A/250V AC max</td>
</tr>
<tr>
<td>Output voltage</td>
<td>24V ± 10%</td>
</tr>
<tr>
<td>Output current</td>
<td>2A (max) 0.2A (max) (Derating is performed if ambient temperature exceeds 40 °C)</td>
</tr>
<tr>
<td>Ripple noise</td>
<td>500mV/50Hz or less</td>
</tr>
<tr>
<td>Holding time</td>
<td>10ms/100V AC</td>
</tr>
<tr>
<td>Protection against overvoltage</td>
<td>Actuated when voltage becomes 110 - 160% or more, voltage drop occurs automatic recovery</td>
</tr>
<tr>
<td>Protection against overvoltage</td>
<td>Actuated when voltage becomes 110 - 140% or more, output shuts down, no automatic recovery (diode clamp)</td>
</tr>
<tr>
<td>Other output</td>
<td>Green LED(POWER) is lit while voltage is output.</td>
</tr>
</tbody>
</table>

#### Load characteristic

- Load resistance (Ω)
- Ambient temperature (°C)

*1 The available output current varies depending on the ambient operating temperature. Use the FX2N-2PSU in the available range in accordance with the output derating graph shown above.

*2 If the output current flows beyond the specified value, the overcurrent protection circuit is actuated and the output voltage drops. When the overcurrent status or the short-circuit status returns to acceptable levels, the output voltage automatically recovers.

*3 If the output current exceed beyond the specified value, the overvoltage protection circuit is actuated and the output voltage drops. When the overvoltage status or the short-circuit status returns to acceptable levels, the output voltage automatically recovers. Ask for inspection and repair after such an occurrence.
5. INSTALLATION

Cautions on installation

- Use the unit in the environment for the general specifications described in Section 3 in the manual. Never use the unit in a place with dust, soot, conductive dusts, corrosive gas or flammable gas, placed exposed to high temperature, dew condensation, rain and wind, or in a place exposed to vibration or impact.
- If the unit is used in such a place, electrical shock, fire, malfunction, damages in the unit or deterioration of the unit may be caused.
- Never drop cutting chips or electric wire chips into the ventilation window while drilling screw holes or wiring cables. Such chips may cause fire, failure or malfunction.
- After finishing installation, remove a dust preventing sheet adhered on the ventilation window. If the sheet remains attached, fire, failure or malfunction may be caused.

Note
- During the installation/wiring work, place a dust preventing sheet on the ventilation window.
- In order to prevent temperature rise, never install the unit on the floor surface, on the ceiling surface or in the vertical direction. Make sure to install the unit on a panel face in the horizontal direction as shown in the figure below.
- Use crimp-style terminals of the dimensions shown in the figure below.
- Tighten the terminals to a torque of 0.5 to 0.8 N·m. Do not tighten terminal screws with a torque outside the above-mentioned range. Failure to do so may cause equipment failures or malfunctions.

Installation direction

6. WIRING

Cautions on wiring

- Make sure to shut down the power supplies of all phases on the outside before starting installation or wiring. If the power supplies are not shut down, you may get electrical shock or the unit may be damaged.
- Make sure to attach terminal covers offered as accessories before supplying power and starting operation after the installation/wiring work.
- The rated temperature of the cable should be 80°C or more.
- Correctly supply power to the PLC in accordance with “Cautions on Safety” described in the manual of the PLC.

If power is not correctly supplied, the unit may be damaged.
- Connect the wiring of the DC power supply to dedicated terminals as described in this manual. If the AC power supply is connected to a DC power terminal, the unit may be burnt.
- Never perform external wiring to unused terminals . Such wiring may damage the unit.
- Perform Class 3 grounding to the grounding terminal in the unit. However, never perform common grounding (See Section 3) with a strong power system.

6.1 When FX2N-20PSU is connected to 24 V DC power type PLC

Source inputs (+ve S/S)

Sink inputs (+ve S/S)

6.2 When FX2N-20PSU is used together with 24 V DC service power supply built in PLC

In the AC power type FX PLC, a 24 V DC service power supply is built. When using the FX2N-20PSU and the service power supply together, connect the “24-” terminal of the FX2N-20PSU and the “COM” terminal on the minus side of the service power supply as shown in the figure below.

Source inputs (+ve S/S)

Sink inputs (+ve S/S)

6.3 Cautions

Cautions on design

- Never connect in serial nor parallel the DC output terminals of the FX2N-20PSU to another power supply unit. Such a connection may damage the unit.
- Never connect the FX2N-20PSU in parallel to another power supply unit.

- Never connect the FX2N-20PSU serially to another power supply unit.

- When using the FX2N-20PSU and the service power supply together, connect the “24-” terminal of the FX2N-20PSU and the “COM” terminal on the minus side of the service power supply as shown in the figure below.

- In order to prevent temperature rise, never install the unit on the floor surface, on the ceiling surface or in the vertical direction. Make sure to install the unit on a panel face in the horizontal direction as shown in the figure below.

7. TROUBLESHOOTING

When it is suspected that the FX2N-20PSU is not normally operating, check the following items.

- Check the POWER LED status.

[When the POWER LED is extinguished]
- Check the input voltage of the FX2N-20PSU.
- If any abnormality is detected → Input the specified supply voltage.
- Disconnect the wiring from the output terminals “24+” and “24-”.
- If the POWER LED lights → The overcurrent protection circuit (See Section 4) is actuated. Investigate the load connected to the output terminals.
- If the POWER LED remains extinguished → The overvoltage protection circuit (See Section 4) may be actuated. Ask for inspection and repair.

[When the POWER LED is lit]
FX2N-20PSU is normal.

- The overcurrent protection circuit and the overvoltage protection circuit are built in the FX2N-20PSU. If such a protection circuit is actuated, the output voltage drops or is shut down. For details, refer to Section 4.

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Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.