

Instructions and Cautions for Safe Use of AC Servos

Table with columns: Country/Region, Sales office, Tel/Fax, and Mitsubishi Electric Automation, Inc. details for USA, Germany, China, Korea, and Japan.

2.3 Correct use
Use the MR-J4 servo amplifiers within specifications. Refer to each instruction manual for specifications such as voltage, temperature, etc.

WARNING: If you need to get close to the moving parts of the machine for inspection or others, ensure safety by confirming the power off, etc. Otherwise, it may cause an accident.

2.3.1 Peripheral device and power wiring
The following are selected based on IEC/EN 61800-5-1, UL 508C, and CSA C22.2 No. 14.

Table 2. Recommended wires. Columns: Servo amplifier (Note 7), Servo amplifier-side crimp terminals, and Manufacturer.

- 1. To connect these models to a terminal block, be sure to use the screws that come with the terminal block.
2. Alphabetical order indicates crimping tools. Refer to table 2 for the crimp terminals and crimping tools.

(2) Selection example of MCCB and fuse
Use T class fuses or molded-case circuit breaker (UL 489 Listed MCCB) as the following table. The T class fuses and molded-case circuit breakers in the table are selected examples based on rated I/O of the servo amplifiers.

Table with columns: Servo amplifier (100 V class), Molded-case circuit breaker (120 V AC), Fuse (300 V), Servo amplifier (200 V class), Molded-case circuit breaker (240 V AC), Fuse (300 V).

Table with columns: Servo amplifier (400 V class), Molded-case circuit breaker (480 V AC), Fuse (600 V).

(3) Power supply
This servo amplifier can be supplied from star-connected supply with grounded neutral point of overvoltage category III (overvoltage category II for 1-phase servo amplifiers, MR-J4-03A6, and MR-J4W2-0303B6) set forth in IEC/EN 60664-1.

(4) Grounding
To prevent an electric shock, always connect the protective earth (PE) terminal (marked with the symbol) of the servo amplifier to the protective earth (PE) of the cabinet.

2.3.2 EU compliance
The EC directives were issued to standardize the regulations of the EU countries and ensure smooth distribution of safety-guaranteed products.

2.3.3 USA/Canada compliance
This servo amplifier is designed in compliance with UL 508C and CSA C22.2 No. 14.

1. About the manuals
To use the MELSERVO-J4 series safely, read each instruction manual carefully.

2. About safety
This chapter explains safety of users and machine operators. Please read the chapter carefully before mounting the equipment. In this installation guide, the specific warnings and cautions levels are classified as follows.

CAUTION: Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

CAUTION: Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight injury to personnel or may cause physical damage.

2.1 Professional engineer
Only professional engineers should mount MR-J4 servo amplifiers.

2.2 Applications of devices
MR-J4 servo amplifiers comply with the following standards.

2.3 Residual risk
(1) Be sure that all safety related switches, relays, sensors, etc., meet the required safety standards.

(4) Only qualified personnel are authorized to install, start-up, repair or service the machines in which these components are installed.

- (5) Separate the wiring for safety observation function from other signal wirings.
(6) Protect the cables with appropriate ways (routing them in a cabinet, using a cable guard, etc.).
(7) Keep the required clearance/creepage distance depending on voltage you use.

2.6 Disposal
Disposal of unusable or irreparable devices should always occur in accordance with the applicable country-specific waste disposal regulations.

2.7 Lithium battery transportation
To transport lithium batteries, take actions to comply with the instructions and regulations such as the United Nations (UN), the International Civil Aviation Organization (ICAO), and the International Maritime Organization (IMO).

3. Mounting/dismounting
Installation direction and clearances

CAUTION: The devices must be installed in the specified direction. Do not do so may cause a malfunction.

CAUTION: Turn off the molded-case circuit breaker (MCCB) to avoid electrical shocks or damages to the product before starting the installation or wiring.

(1) 3-phase input for MR-J4 1-axis (2) 1-phase input for MR-J4 1-axis (3) Main circuit 48 V DC input for MR-J4 1-axis servo amplifier

CAUTION: The installation complies with IEC/EN 60204-1. The voltage supply to machines must be 20 ms or more of tolerance against instantaneous power failure as specified in IEC/EN 60204-1.

5. Signals
5.1 Signal
The following shows MR-J4-10B signals as a typical example. For other servo amplifiers, refer to each servo amplifier instruction manual.

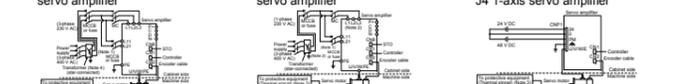


Table with columns: Symbol, Device, Connector, Pin No. for STO, STOI, STO2, and STOI2 signals.

5.2 I/O device
Input device
The following shows MR-J4-10B signals as a typical example. For other servo amplifiers, refer to each servo amplifier instruction manual.

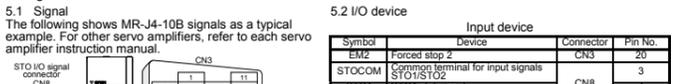


Table with columns: Symbol, Device, Connector, Pin No. for EMZ, STO, STOI, and STO2 signals.

6. Maintenance and service
6.1 Inspection items
It is recommended that the following points periodically be checked.

WARNING: To avoid an electric shock, only qualified personnel should attempt inspections. For repair and parts replacement, contact your local sales office.

Table with columns: Part name, Life guideline for Smoothing capacitor, Relay, Cooling fan, Battery backup time, and Battery life.

7. Transportation and storage
Transport the products correctly according to their mass.
Quality of the batteries degrades by the storage condition. The battery life is 5 years from the production date regardless of the storage condition.

CAUTION: Do not touch the product in a load-bearing place of servo amplifier and servo motor in accordance with the instruction manual.

Table with columns: Item, Environment for Operation, Transportation, and Storage.

8. Technical data
8.1 MR-J4 servo amplifier

Table with columns: Item, MR-J4-10, MR-J4-20, MR-J4-30, MR-J4-40, MR-J4-50, MR-J4-60, MR-J4-70, MR-J4-80, MR-J4-100, MR-J4-150, MR-J4-200, MR-J4-250, MR-J4-300, MR-J4-350, MR-J4-400, MR-J4-450, MR-J4-500, MR-J4-550, MR-J4-600, MR-J4-650, MR-J4-700, MR-J4-750, MR-J4-800, MR-J4-850, MR-J4-900, MR-J4-950, MR-J4-1000, MR-J4-1100, MR-J4-1200, MR-J4-1300, MR-J4-1400, MR-J4-1500, MR-J4-1600, MR-J4-1700, MR-J4-1800, MR-J4-1900, MR-J4-2000, MR-J4-2100, MR-J4-2200, MR-J4-2300, MR-J4-2400, MR-J4-2500, MR-J4-2600, MR-J4-2700, MR-J4-2800, MR-J4-2900, MR-J4-3000, MR-J4-3100, MR-J4-3200, MR-J4-3300, MR-J4-3400, MR-J4-3500, MR-J4-3600, MR-J4-3700, MR-J4-3800, MR-J4-3900, MR-J4-4000, MR-J4-4100, MR-J4-4200, MR-J4-4300, MR-J4-4400, MR-J4-4500, MR-J4-4600, MR-J4-4700, MR-J4-4800, MR-J4-4900, MR-J4-5000, MR-J4-5100, MR-J4-5200, MR-J4-5300, MR-J4-5400, MR-J4-5500, MR-J4-5600, MR-J4-5700, MR-J4-5800, MR-J4-5900, MR-J4-6000, MR-J4-6100, MR-J4-6200, MR-J4-6300, MR-J4-6400, MR-J4-6500, MR-J4-6600, MR-J4-6700, 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