



Model MR-CV11K to MR-CV55K MR-CV11K4 to MR-CV75K4 MR-CR55K/MR-CR55K4 MR-J4-DU700 to MR-J4-DU37K MR-J4-DU700_4 to MR-J4-DU55K_4

Instructions and Cautions for Safe Use of AC Servos

Country/Region Sales office Tel/Fax USA Mitsubishi Electric Automation, Inc. Germany Mitsubishi Electric Europe B.V. China Mitsubishi Electric Automation (China) Co., Ltd. Korea Mitsubishi Electric Automation Korea Co., Ltd.

MITSUBISHI ELECTRIC CORPORATION HEAD OFFICE: TOKYO BLDG MARUNOUCHI TOKYO 100-8310

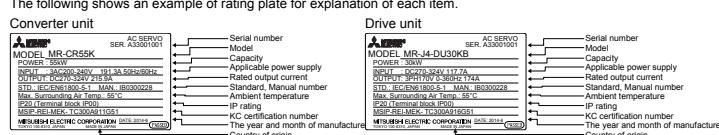
IB/NA)0300228-C(1608)/MEE Printed in Japan This guide uses recycled paper. Specifications are subject to change without notice.

Copyright©2014 Mitsubishi Electric Corporation All Rights Reserved.

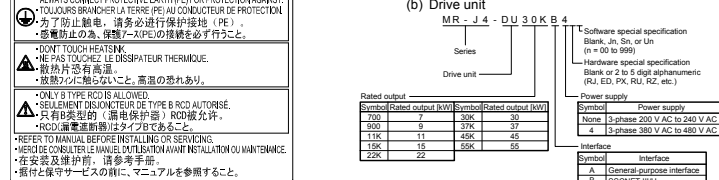
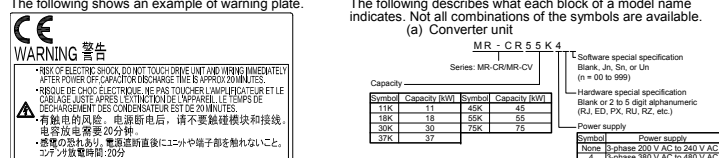
Contents of the package Unpack the product and check the rating plate to see if the servo amplifier is as you ordered.

Table with 2 columns: (1) Converter unit, (2) Drive unit. Rows include Converter unit, Eyebolt, Connector set, and MR-J4-DU/MR-CR/MR-CV instructions.

Rating plate The following shows an example of rating plate for explanation of each item.



Warning plate The following shows an example of warning plate.



1. About the manuals Converter units and drive units are written as servo amplifiers in this guide under certain circumstances.

1.1 MELSERVO-J4 relevant manuals This installation guide explains how to mount MR-J4 servo amplifiers. You can also check it with our website for free.

1.2 Purpose of this guide This installation guide explains the safe operation of MR-J4 servo amplifiers for engineers of machinery manufacturers and machine operators.

1.3 Terms related to safety 1.3.1 IEC 61800-5-2 Stop function STO function (Refer to IEC 61800-5-2: 2007 4.2.2.2 STO.)

2. About safety This chapter explains safety of users and machine operators. Please read the chapter carefully before mounting the equipment.

WARNING 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. Here, professional engineers should meet the all conditions below. (1) Persons who took a proper training of related work of electrical equipment...

2.3.1 Selection of peripheral equipment and wire The following are selected based on IEC/EN 61800-5-1, UL 508C, and CSA C22.2 No. 14. (1) Local wiring and crimping tool

Table 1. Recommended wire. Columns: Converter unit, Drive unit, AWG, L+L, L+L, L+L/W/W, L+L. Rows list various model numbers like MR-CV11K, MR-CV30K, etc.

Note 1. To connect these models to a terminal block, be sure to use the screws that come with the terminal block. 2. Alphabets in the table indicate crimping tools. For crimp terminals and applicable tools, refer to table 2.

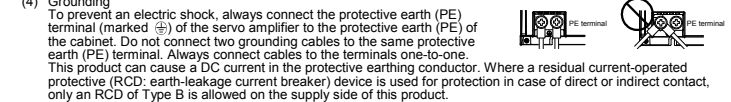
Table 2. Recommended crimp terminal. Columns: Symbol, Servo amplifier-side crimp terminals, Applicable tool, Manufacturer. Rows list symbols a through q.

Note 1. Coat the crimping part with an insulation tube. 2. Some crimp terminals may not be mounted depending on their sizes. Make sure to use the recommended ones or equivalent ones.

(2) Selection example of MCCB and fuse Use a fuse (T class) or the molded-case circuit breaker (UL 489 Listed MCCB) indicated in the table below.

Table with 2 columns: Converter unit, Molded-case circuit breaker (240 V AC), F (500 V). Rows list models like MR-CV11K, MR-CV18K, etc.

(3) Power supply This servo amplifier can be used on the condition of overvoltage category III set forth in IEC/EN 60664-1.



2.3.2 EU compliance The MR-J4 servo amplifiers are designed to comply with the following directives to meet requirements for mounting, using, and periodic technical inspections.

(1) EMC requirement MR-J4 servo amplifiers comply with category C3 in accordance with EN 61800-3. As for I/O wires (max. length 10 m), however, a 3 m length for STO cable (max. length 50 m) is used, and shields are grounded.

(2) Installation For Declaration of Conformity (DoC) Hereby, MITSUBISHI ELECTRIC EUROPE B.V., declares that the servo amplifiers are in compliance with the normative requirements and standards (2006/42/EC, 2014/30/EU, and 2014/53/IEU).

2.3.3 USA/Canada compliance This servo amplifier is designed in compliance with UL 508C and CSA C22.2 No. 14. (1) Installation The minimum cabinet size is 150% of each MR-J4 servo amplifier's volume.

2.3.4 South Korea compliance (MR-CR55K(4) and 30 kW or more of MR-J4-DU) This product complies with Law (KC mark) Please note the following to use the product.

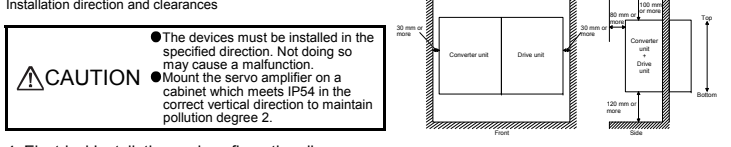
2.4 General cautions for safety protection and protective measures Observe the following items to ensure proper use of the MR-J4 servo amplifiers. (1) For safety components and installing systems, only qualified personnel and professional engineers should perform.

2.5 Residual risk (1) Be sure that all safety related switches, relays, sensors, etc., meet the required safety standards. (2) Perform all risk assessments and safety level certification to the machine or the system as a whole.

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).

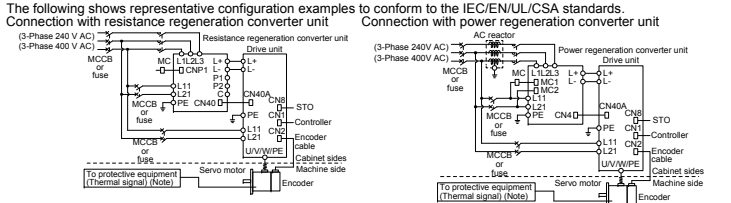
3. Mounting/dismounting Installation direction and clearances



(1) The devices must be installed in the specified direction. Not doing so may cause a malfunction. (2) Mount the servo amplifier on a cabinet which meets IP54 in the correct vertical direction to maintain pollution degree 2.

4. Electrical Installation and configuration diagram Turn off the molded-case circuit breaker (MCCB) to avoid electrical shocks or damages to the product before starting the installation or wiring.

(1) The installation complies with IEC/EN 60204-1. The voltage supply to machines must be 20 m or more of tolerance against instantaneous power failure as specified in IEC/EN 60204-1. (2) Connecting a servo motor of the wrong axis to U, V, W, or CN2, of the servo amplifier may cause a malfunction.

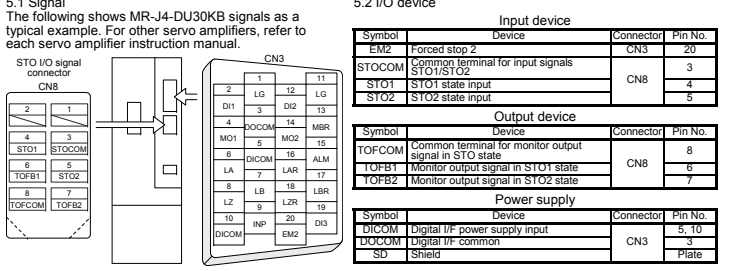


Note. Please use a thermal sensor, etc. for thermal protection of the servo motor.

The connectors described by rectangles are safely separated from the main circuits described by circles. The connected motors will be limited as follows.

- (1) HG/HH/HC/HA series servo motors (Mfg.: Mitsubishi Electric) (2) Using a servo motor complied with IEC 60034-1 and Mitsubishi Electric encoder (OBA, OSA)

5. Signals The following shows MR-J4-DU30K signals as a typical example. For other servo amplifiers, refer to each servo amplifier instruction manual.



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

6.1 Inspection items It is recommended that the following points periodically be checked.

- (1) Check for loose terminal block screws. Retighten any loose screws. Tightening torque: (N·m)

Table showing tightening torque (N·m) for Drive unit/converter unit connections. Columns: Part name, Life guideline, Tightening torque. Rows include Smoothing capacitor, Relay, Cooling fan, and Battery backup time.

- (2) Check servo motor bearings, brake section, etc. for unusual noise. (3) Check the cables and the like for scratches or cracks. Perform periodic inspection according to operating conditions.

6.2 Parts having service life Service life of the following parts is listed below. However, the service life varies depending on operating methods and environment.

Table with 2 columns: Part name, Life guideline. Rows include Smoothing capacitor, Relay, Cooling fan, and Battery backup time.

7. Transportation and storage Transport the products correctly according to their mass. Do not transport in excess of the limited number of product packages is not allowed.

CAUTION Do not transport the products correctly according to their mass. Do not transport in excess of the limited number of product packages is not allowed. Do not hold the front cover to transport the servo amplifier. Otherwise, it may drop.

Table with 2 columns: Item, Environment. Rows include Ambient temperature, Ambient humidity, Vibration resistance, Pollution degree, and IP rating.

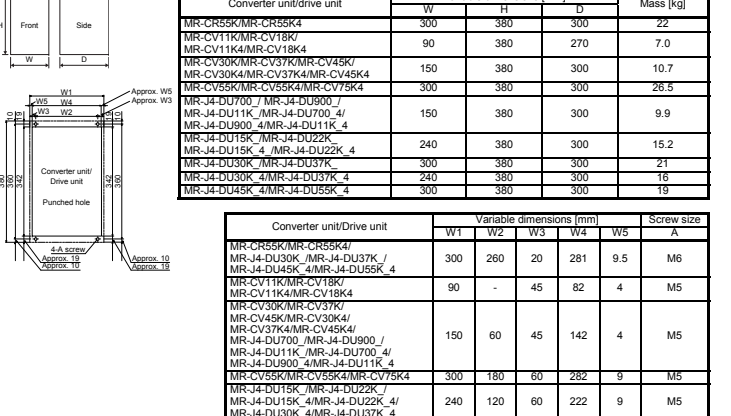
8. Technical data 8.1 Converter unit

Table with 2 columns: Item, MR-. Rows include Output (Rated voltage, Rated current), Power supply (Main circuit voltage, Frequency, Control circuit line voltage), Pollution degree, and Protective class.

8.2 Drive unit

Table with 2 columns: Item, MR-J4-DU. Rows include Output (Rated voltage, Rated current), Power supply (Main circuit voltage, Frequency, Control circuit line voltage), Safety observation function, Mean time to dangerous failure, Effectiveness of fault monitoring, Average probability of dangerous faults per hour, Mission time, Response performance, Pollution degree, and Protective class.

8.3 Dimensions/mounting hole process drawing



9. Check list for user documentation

Table with 2 columns: Item, Yes/No. Rows include 1. Is it based on directive/standard applied to the machine?, 2. Is it directive/standard contained in Declaration of Conformity (DoC)?, 3. Does the protection instrument conform to the category required?, 4. Are electric shock protective measures (protective class) effective?, 5. Is the STO function checked to the user by Failures of Mitsubishi products?

Checking the items will not be instead of the first test period of periodic inspection by professional engineers.

[Warranty]

1. Warranty period and coverage We will repair any failure or defect hereinafter referred to as "Failure" in our FA agreement hereinafter referred to as the "Product" arisen during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product or our service provider. However, we will charge the actual cost of dispatching our engineer for an on-site repair work on request by customer in Japan or overseas countries.

[Term] The term of warranty for Product is twelve (12) months after your purchase or delivery of the Product to a place designated by you or eighteen (18) months from the date of manufacture whichever comes first ("Warranty Period").

[Limitations] (1) You are requested to conduct an initial failure diagnosis by yourself, as a general rule. It can also be carried out by us or our service company upon your request and the actual cost will be charged. However, it will not be charged if we are responsible for the cause of the failure.

(2) This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual and user manual for the Product and the caution label affixed to the Product.

(3) Even during the term of warranty, the repair cost will be charged on you in the following cases. (i) a failure caused by your improper storage or handling, carelessness or negligence, etc., and a failure caused by your hardware or software problem

(4) Exclusion of loss in opportunity and secondary loss from warranty liability Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) For the use of our General-Purpose AC Servo, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in the General-Purpose AC Servo, and a backup or fail-safe function should operate on an external system to General-Purpose AC Servo when any failure or malfunction occurs.

(2) Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power generation companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used.

(3) In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway services, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used.

(4) We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.