MITSUBISHI General-Purpose AC Servo **MASENO-J3W Series**

MR-J3W-0303BN6

MR-J3W-22B to MR-J3W-1010B Instructions and Cautions for Safe Use of AC Servos

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MITSUBISHI ELECTRIC CORPORATION

This guide uses recycled paper. Specifications are subject to change without notice.

L Software special specifi Blank, Jn, Sn, or Un (n = 00 to 999)

Corresponding
Symbol Corresponding
B SSCNET III

Hardware special specification Blank or 2 to 5 digit alphanumeri (RJ, ED, PX, RU, RZ, etc.)

 Power supply

 Symbol
 Power supply

 None
 3-phase or 1-phase 200 V AC to 230 V AC

 6
 48 V DC/24 V DC

IB(NA)0300148-K(1412)MEE Printed in Japan

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

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



Warning plate

The following describes what each block of a model name indicates all combinations of the symbols are available Not all corr ATTER YORK OF LAVACIDA BISCHARE THE SAFFOX IS MUNITS ROSCEE DOOD LECTRODIE、IPA STOTUDER LUMPICATIONET 2004年度上気管になど、DETWITTINE DOPPICEL LITER - 有触由的风险、由波斯电后、请不要触碰模块和接线、 电容波电弹簧1分钟。 - 客型の飲わが「空調量」新聞にニットや場子都を触れないこと。 ンプン対量導量に15分 Series Rated output Symbol Rated output [kW] A-axis B-axis 0303 0.03 0.03 22 0.2 0.2 TOLUCURS BRANCHER LA TERRE (PE) AU CONDUCTEUR DE PRO 为了防止触电,请务必进行保护接地(PE)。 感電防止の為、保護7-ス(PE)の接続を必ず行うこと。

 NE PAS TOUCHEZ LE DISSIPATEUR INERMIQUE.
 散热片恐有高温。
 放散70に始らないこと。高温の恐れあり。 -ONLY B TYPE RCD IS ALLOWED. A - SEULEMENT DISJONCTEUR DE TYPE B RCD AUTORISÉ - 只有B类型的 (漏电保护器) RCD被允许。 RCD(漏電遮断器)はタイプBであ TO MANUAL REFORE INSTALLING NERCI DE CONSULTER LE MANUEL DUTIUSATION ANWIT INSTALLATION OU ・ 在安装及维护前,请参考手册。
 ・ 級付と保守サービスの前に、マニュアルを参照すること。

1.About the manual

1.1 MELSERVO J3W relevant manuals This installation guide explains how to mount MR-J3W servo amplifiers. You can also check it with our website for free. http://www.misubsihelectric.com/fa/ If you have any questions about the operation or programming of the equipment described in this guide, contact your local sales office. In addition, when you mount a protective device, specific technical skills which are not detailed in the guide will be required.

1.2 Purpose of this guide This installation guide explains the safe operation of MR-J3W servo amplifiers for engineers of machinery manufacturers and machine operators. For detailed information of the products, refer to each servo amplifier instruction manual.

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

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

2.1 Professional engineer Only professional engineers should mount MR-J3W servo amplifiers. Here, professional engineers are persons who took a proper engineering training or qualified persons who are engaged in electrical equipment. Check if applicable technical training is available at your local Mitsubishi Electric office. Contact your local sales office for schedules and locations.

2.2 Applications of the devices MR-J3W servo amplifiers comply with the following standards. IEC/EN 61800-5-1, IEC/EN 61800-3, IEC/EN 60204-1

2.3 Correct use Always use the MR-J3W servo amplifiers within specifications (voltage, temperature, etc. Refer to the servo amplifier instruction manual for details.). Mitsubishi Electric Co. accepts no claims for liability if the equipment is used in any other way or if modifications are made to the device, even in the context of mounting and installation.

WARNING OIL takes 15 minutes for capacitor discharging. Do not touch the unit and terminals immediately after power off.

2.3.1 Selection of peripheral equipment and wire The followings are selected based on IEC/EN 61800-5-1, UL 508C, and CSA C22.2 No.14.

Local wiring and crimping tool The following table shows the stranded wires [AWG] rated at 75 °C/60 °C.

recommended wire				
	75 °C/60 °C stranded wires [AWG]			
Servo amplifier	L1/L2/L3	L11/L21	P+/C	U/V/W/() (Note 1)
MR-J3W-0303BN6	16/- (Note 3)			19/-
MR-J3WB	14/14 (Note 2)	14/14	14/14	14/14
Note 1. Select wire sizes depending on the rated output of the servo motors. The values in the table are sizes based on rated output of the servo				

amplitiers.
 Use the crimp terminal specified as below for the PE terminal of the servo amplifier Crimp terminal: FVD2-4

- Crimp terminal: FVD2-4 Tool: YNT-1614 Manufacturer: JST (Japan Solderless Terminals) 3. This value is of 24/0/PM/ for MR-JSW-0303BN6.
- (2) Selection example of MCCB and fuse Use a fuse (Class T) or a molded-case circuit breaker (UL 489 Listed MCCB) indicated in the table below. The Class T fuses and molded-case circuit breakers in the table are selected examples based on rated I/O of the servo amplifiers. When you select a smaller capacity servo motor to connect it to the servo amplifier, you can also use smaller capacity T class fuses or molded-case circuit breakers below, refer to the servo amplifier instruction manual.

Power supply specification	Circuit protector			
	MR-J3W-0303BN6			
Main circuit power supply (48 V DC)	CP30-BA 1P 1-M 5A			
Main circuit power supply (24 V DC) CP30-BA 1P 1-M 10A				
Servo amplifier (Note)	Molded-case circuit breaker (240 V AC) Fuse (300			
MR-J3W-22B (T)	NF50-SVFU-5A (50 A frame 5 A) 10 A			
MR-J3W-22B (S)/MR-J3W-44B (T)/MR-J3W-77B (T)	NF50-SVFU-10A (50 A frame 10 A) 15 A			
MR-J3W-44B (S)/MR-J3W-1010B	NF50-SVFU-15A (50 A frame 15 A) 30 A			
MR-J3W-77B (S)	NF50-SVFU-20A (50 A frame 20 A) 40 A			

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- Note: "(5)" means 1-phase 200 V ALL power implement (1, in the phase 200 V ALL power implement (1, in the phase 200 V ALL power implement (1, in the phase 200 V ALL power (1, in the pha
- and OL listed (recognized) 46 v DC/24 v DC power supplies winch can generate more time to the LAVLA A per axis. Grounding To prevent an electric shock, always connect the protective earth (PE) of the cabinet. Do not connect two grounding cables to the same protective earth (PE) terminal. Always connect cables to the terminals one-to-one. Even when using an earth-leakage current breaker, always ground the protective earth (PE) terminal of the servo amplifier to prevent an electric shock. This product can cause a DC current in the protective earthing conductor. To protect direct/indirect contact using an earth-leakage current breaker (RCD), only an RCD of type B can be used to the power supply side of the product.
- 2.3.2 EU compliance The MR-J3W serve amplifiers are designed to comply with the following directions to meet requirements for mounting, using, and periodic technical inspections: EMC directive (2004/108/EC) and Low-voltage directive (2006/95/EC). (1) EMC requirement
- EMC requirement MR-J3W servo amplifiers comply with category C3 in accordance with EN 61800-3. As for I/O wires (max. length 10 m) and encoder cables (max. length 50 m), use shielded wires and ground the shields. Install an EMC filter and surge protector on the primary side for input and output of of the servo amplifier. The following shows recommended products.
- EMC filter: Soshin Electric HF3000A-UN series
- Surge protector: Okaya Electric Industries RSPD-250-U4 series
- Line noise filter: Mitsubishi Electric FR-BLF

MR-J3W Series are not intended to be used on a low-voltage public network which supplies domestic premises; Radio frequency interference is expected if it is used on such a network. The installer shall provide a guide for installation and use, including recommended mitigation devices. Use the DC power supply installed with the amplifiers in the same cabinet. Do not connect the other electric devices to the DC power conduct.

- (2)

- contact your local sales onice.
 23.3 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-J3W servo amplifier's volume. Also, design the cabinet so that the ambient temperature in the cabinet is 55° Cor less. The servo amplifier must be installed in a metal cabinet. In addition, the servo amplifier must be installed in a cabinet whose protective earth is correctly connected, in compliance with the IEC/EN 60204-1 standard. For environment, the units should be used in open type (UL 50) and overvoltage category shown in table in section 8.1. The servo amplifier needs to be installed at or below of pollution degree 2. For connection, use only copper wires.
 (2) Short-circuit current rating (SCCR)
- pollution degrée 2. For connection, use only copper wires.
 (2) Short-circuit current rating (SCR) Suitable For Use On A Circuit Capable Of Delivering Not More Than 100 kA rms Symmetrical Amperes, 500 Volts Maximum (Not More Than 5 kA rms Symmetrical Amperes at 48 V DC for MR-J3W-0303BN6).
 (3) Overload protection characteristics The MR-J3W servo amplifiers have the servo motor overload protective function. (It is set on the basis (full load current) of 120% rated current of the servo amplifier.)
 (4) Over-temperature protection for motor Motor Over temperature sensing is not provided by the drive. Integral thermal protection(s) is necessary for the servo motor. Refer to chapter 4 for details of the proper connections.

connections. (5) Branch circuit protection For installation in the United States, branch circuit protection must be provided, in accordance with the National Electrical Code and any applicable local codes. For installation in Canada, branch circuit protection must be provided, in accordance with the Canada Electrical Code and any applicable provincial codes.

2.3.4 South Korea compliance This product complies with the Radio Wave Law (KC mark). Please note the following to use the product. 이 기기는 업무용 (A급) 전자과적합기기로서 판 매자 또는 사용자는 이 점을 주의하시기 바라며, 가정의의 지역에서 사용하는 것을 목적으 로 합니다.

이 기기는 업무용 (A급) 전자과적합기기로서 한 매자 또는 사용자는 이 점을 주의하시기 바라며, 가정의의 지역에서 사용하는 것을 목적으로 합니다. (The product is for business use (Class A) and meets the electromagnetic compatibility requirements. The seller and the user must note the above point, and use the product in a place except for home.) In addition, use an EMC filter, surge protector, ferrite core, and line noise filter on the primary side for inputs. Use a ferrite core and line noise filter for outputs.

24. General cautions for safety protection and protective measures
Observe the following items to ensure proper use of the MR-J3W servo amplifiers.
(1) For safety components and installing systems, only qualified personnel and professional engineers should perform.
(2) When mounting, installing, and using the MELSERVO MR-J3W servo amplifier, always observe applicable standards and directives in the country.
(3) The item about noises of the test notices in the manuals should be observed.

- 2.5 Residual risk
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- 2.6 Disposal

Disposal of unusable or irreparable devices should always occur in accordance with the applicable country-specific waste disposal regulations. (Example: European Waste 16 02 14)

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). MR-BAT is lithium metal batteries contain ER17330. MR-J3BAT contains a lithium metal batteries, ER6. MR-BAT and MR-J3BAT are not subject to the dangerous goods (Class 9) of the UN Recommendations.

3. Mounting/dismounting



4. Electrical Installation and configuration diagram

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



The following shows representative configuration examples to conform to the IEC/EN/UL/CSA standards. (1) 3-phase input for MR-J3W servo (2) 1-phase input for MR-J3W servo (3) Main circuit 48 V DC input for MR-amplifier J3W servo amplifier



 Honor the wire sizes of L1 and L11 are the same, MCCB or fuse is not required.
 For 1-phase 200 V AC servo amplifiers, connect the lines to L1 and L2.
 Please use a thermal sensor, etc. for thermal protection of the servo motor. Note 1

- The connectors described by rectangles are safely separated from the main circuits described by circles. The connected servo motors will be limited as follows. (1) HG/HF 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-J3W-22B signals as a typical example. For other servo amplifiers, refer to the servo amplifier instruction manual



. Maintenance and service WARNING •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

7. Transportation and storage

Ambient temperature

ibration sistance

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8 Technical data 8.1 MR-J3W servo amp

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Side

8.2 Servo amplifier dimens

Front

8.3 Mounting h

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• a1

IP rating

Power

- Check for loose PE terminals (tightening torque: 1.2 N•m). Retighten any loose screws. (Except for MR-J3W-
- 0303BN6) Check servo motor bearings, brake section, etc. for unusual noise. Check the cables and the like for scratches or cracks. Perform periodic inspection according to operating
- $\binom{2}{3}$
- conditions. Check that the connectors are securely connected to the servo motor. Check that the wires are not coming out from the connector. Check for dust accumulation on the servo amplifier. Check for unusual noise generated from the servo amplifier. Check the servo motor shaft and coupling for connection. (4) (5)

6.2 Parts having service lives Service lives of the following p the following parts are listed below. However, the service life varies depending on operating methods nt. If any fault is found in the parts, they must be replaced immediately regardless of their service lives.

For parts replacement, please contact your local sales onice.				
Part name	Life guideline			
Smoothing capacitor	(Note 3) 10 years			
Relay	Number of power-on, forced stop, and controller forced stop times: 100000 times			
Cooling fan	10,000 hours to 30,000 hours (2 years to 3 years)			
(Note 1) Battery backup time	Approximately 20,000 hours (equipment power supply: off, ambient temperature: 20 °C)			
(Note 2) Battery life	5 years from date of manufacture			
 Time to hold data by a battery with power off. This varies depending on the number of axes for backup. Replace the batteries within three years since the operation start regardless of the power supply of the serve amplifier on/off. If the battery is used out of specification, the 				

- years since the operation start regardless of the power supply of the serve amplifer work areas no uscrup, regulate the batteries degradation, the absolute position erased alarm (25) may occur. Outsily of the batteries degrades by the storage condition. The battery life is 5 years from the production date regardless of the connection status. The characteristic of smoothing capacitor is deteriorated due to ripple currents, etc. The life of the canacter or and utdened as a public of the connection status.
- aus: e characteristic of smoothing capacitor is deteriorated due to ripple currents, etc. The life of the capacitor greatly depends on ambient mperature and operating conditions. The capacitor will reach the end of its life in 10 years of continuous operation in normal air-nditioned environment (40° C surrounding air temperature or less).

the instruction manual. ●Do not get on or put heavy load on the equipment.

MR-J3W-22B/MR-J3W-44B/ MR-J3W-77B/MR-J3W-222B/

Servo amplifier

J3W-22B/MR-J3W-44E

Servo amplifier

3W-0303BN6 3W-22B/MR-J3W-44B

When you keep or use the product, please fulfill the following environment.

ige (Note) ation, transportation

est condition

Operation, storage Transportation

Transport the products correctly according to their size and mass.
 Stacking 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.
 For detailed information on transportation and handling of the battery, refer to the servo amplifier

instruction manual. Install the product in a load-bearing place of servo amplifier and servo motor in accordance with

0 to 55 Class 3K3 (IEC/EN 60721-3-3 -20 to 65 Class 2K4 (IEC/EN 60721-3--20 to 65 Class 1K4 (IEC/EN 60721-3--20 to 65 Class 1K4 (IEC/EN 60721-3-

10 Hz to 57 Hz with constant amplitude of 0.075 mm 57 Hz to 150 Hz with constant acceleration of 9.8 m/s² to IEC/EN 61800-5-1 (Test Fc of IEC 60068-2-6)

00 m or less above sea level

Variable dimensions (mm)

6 6 156±0.5 6 6 6 156±0.5 6 48±0.3 48±0.3

ninal block: IP00

MR-J3W-0303BN6

48 V DC or 24 V DC

24 V DC

Mass (ko)

20 (IEC/EN 60529), te

MR-J3W-1010B

1-phase 200 V AC to 230 V AC, 50 Hz/60 Hz

institute a branch circuit including the power supply which endures SCCR of 5 kA r

[Warranty]

arrantly] Warranty period and coverage We will repair any failure or defect hereinafter referred to as "failure" in our FA equipment 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 causomer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trait num ta may be required after a defective unit are regaired or replaced.

Term1

Truin 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"). Warranty period for repaired Product cannot exceed beyond the original warranty period before any repair work.

[Limitations]

Interving) 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. You are reque

- 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
- Conditions and instructions that are set form in the instruction maintai and user maintain on the "in affixed to the Product. 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 storing or handling, carelesenses or negligence, etc., and a failure cau
- problem (ii) a failure caused by any alteration, etc. to the Product made on your side without our approval (iii) a failure which may be regarded as avoidable, if your equipment in which the Product is incorporated is equipped with a safety device required by applicable laws and has any function or structure considered to be indispensable according to a common sense in the indi (iv) a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and
- (v) a failure which may be regarded as avoidable in consumable parts designated in the instruction manual, etc. are duly mantamed and replaced may replacement of consumable parts (battery, fan, smoothing capacitor, etc.)
 (v) a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning and natural disasters
 (vi) a failure enerated by an unforeseeable cause with a scientific technicidgy that was not available at the time of the shipment of the Produc from our company.

- Term of warranty after the stop of production Term of warranty after the stop of production We may accept the repair at charge for another seven (7) years after the production of the product is discontinued. The announcement of the stop of production for each model can be seen in our Sales and Service, etc. Please note that the Product (including its spare parts) cannot be ordered after its stop of production.
- Service in overseas countries Our regional FA Center in overseas countries will accept the repair work of the Product. However, the terms and conditions of the repair work may differ depending on each FA Center. Please ask your local FA center for details.
- The repair work may offer depending of each PA Center. Please ask your local PA Center for dealins. Exclusion of responsibility for compensation against loss of opportunity, secondary loss, etc. Whether under or after the term of warranty, we assume no responsibility for any damages arisen from causes for which we an not responsibility any losses of opportunity and/or profit incurred by you due to a failure of the Product, any damages, secondard damages or compensation for accidents arisen under a specific circumstance that are foreseen or unforeseen by our company any damages to products other than the Product, and also compensation for any replacement work, readjustment, start-up test run of local machines and the Product and any other operations conducted by you.
- . Change of Product specifications
- Specifications listed in our catalogs, manuals or technical documents may be changed without notice
- 6. Application and use of the Product
- Application and use of the Product
 For the use of our General-Purpose AC Servo, its applications should be those that may not result in a serious damage even if a private or malfunction occurs in 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.
 Our General-Purpose AC Servo is designed and manufactured as a general purpose product for use at general industries. Therefore, applications substantially influential on the public interest for such as a domic power plants and other power plants of electric power 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.
 In addition, applications safety machines, etc. are not recommended, and we assume no responsibility for any failure abovementione ad public and the assure no responsibility for any failure abovementione ad publications, they are not recommended, and we assume no responsibility for any failure caused by these applications of the one as a more nor properties for such as a atrines, medical treatments, railway service, 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 deplications, if you agree not to require a specific quality for a specific applications. Please contact us for consultation.