MITSUBISHI General-Purpose AC Servo MELSERI/O-J4

MR-J4 Ser Model	vo amplifier	
MR-J4-10 1 to MR	14-22K_/MR-J4-60_4 to MR-J4-22K_4/ J4-40_1/MR-J4W2-22B to MR-J4W2-1010B/ <j4w3-444b mr-j4-03a6mr-j4w2-0303b6<="" th=""><th></th></j4w3-444b>	
Instructions a	and Cautions for Safe Use of AC Servos	Al
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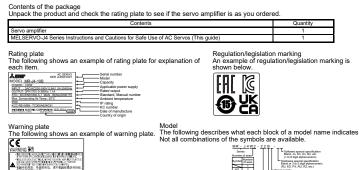
MITSUBISHI ELECTRIC CORPORATION HEAD OFFICE: T

100.8310 IADAN Specifications are subject to change without notice. Compliance with the indicated global standards and regulations is current as of the release date of this installation guide. The original instructions for Europe are in English.

AB

IB(NA)-0300175-AB(2309)MEE

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1.About the manuals

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

1.1 MELSERVO-34 series sately, read each instruction manual carefully.
1.1 MELSERVO-34 relevant manuals
This installation guide explains how to mount MR-34 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

1.2 rurpose or this guide This installation guide explains the safe operation of MR-J4 servo amplifiers for engineers of machinery manufacturers and machine operators. This installation guide does not explain how to operate machines in which safe servo system is, or will be integrated. For detailed information of the products, refer to each servo amplifier instruction manual.

1.3 Terms related to safety 1.3 Terms related to safety 1.3 Terms related to safety ST0 function (Refer to IEC 61800-5-2:2007 4.2.2.2 ST0.) The MR-J4 servo amplifiers have the STO function. The ST0 function shuts down energy to servo motors, thus removing torque. This function electronically cuts off power supply in the servo amplifier. The servo amplifiers without the CN8 connector (such as MR-J4-03A6) do not support this function. STO function does not support Stop category 1 and 2 for IEC/EN 60204-1.

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.

M 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 all the conditions below.
 (1) Persons who took a proper training of related work of electrical equipment or persons who can avoid risk based on
 nast experience.
 The training of training of the training of training of training of the training of training of the training of past experience.(2) Persons who have read and familiarized himself/herself with this installation guide and operating manuals for the

otective devices (e.g. light curtain) connected to the safety control system

Protective devices (E.g., inglit contain) connected to the safety contain system.
22. Applications of the devices
MR_J4 servo amplifiers are used to drive servo motors, and comply with the standards shown below.
IEC/EN 1600-5-1/GB 12668.501.IEC/EN 16100-3/GB 12668 3/Kh 61800-3 (KS C 9800-3). IEC/EN 61800-52 (STO) (For combinations of the servo amplifiers and MR-J30, refer to "MR-J300 Instruction Manual". For combinations of the servo amplifiers and MR-J30, refer to each servo amplifier instruction manual.)
MR_J4 servo amplifiers and bu used with the MR-D30 (functional safety unit, MR-J3-D05 safety logic unit, or safety PLCs. (except for MR-J403A6 and MR-J4W2-0303B6)

2.3 Correct use Use the MR-14 servo amplifiers within specifications. Refer to each instruction manual for specifications such as voltage, temperature, etc. 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.

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

2.3.1 Peripheral device and power wiring The following are selected based on IEC/EN 61800-5-1, UL 61800-5-1, UL 508C, and CSA C22.2 No. 274. (1) Grounding To prevent an electric shock, always connect the protective earth (PE) of the rabinet. Do not connect two grounding cables to the same protective earth (PE) terminal. Always connect cables to the same protective earth -leakage current breaker (RCD), only an RCD of type B can be used for the power supply side of the product.

product. The MR-J4-700_4 is high protective earthing conductor current equipment, the minimum size of the protective earthing conductor must comply with the local safety regulations.

(2) Power Wiring (local wiring and crimping tool) The following table shows the stranded wire sizes [AWG] and the crimp terminal symbols rated at 75 °C/60 °C.

Tab	le 1-1. Recon	nmended wir	es	-		Table 1-2. R	ecommended wire	s	
	75 °C/60 °C stranded wire [AWG] (Note 2)				Servo amplifier		75 °C/60 °C stranded wire [AWG]		
Servo amplifier (Note 1, 5)	11/2/13			U/V/W/🕀			24/0/PM/ 🛧	U/V/W/E	
	÷	L11/L21	P+/C	(Note 3, 6)	MR-J4-03A6/ MR-J4W2-0303B6		19/- (Not	e)	
MR-J4-10 (1)/MR-J4-20 (1)/ MR-J4-40 (1)/MR-J4-60 (4)/ MR-J4-70 //MR-J4-100 (4)/ MR-J4-20T (4) (T)/ MR-J4-350 (4) (T)/	14/14			14/14		selection is based o Fable 2. Recom	n UL 508C. 1mended crimp ter	minals	
MR-J4-350_4		14/14	14/14	14/14		Servo amplifier	-side crimp terminals	Manu-	
MR-J4-200_(S)	12/12				Symbol	Crimp terminal (Note 2)	Applicable tool	facturer	
MR-J4-350_				10/10 (12/12)	а	FVD5.5-4	YNT-1210S		
MR-J4-500_	10: a/10: a		14: c/14: c	8: b/8: b (10: a/10: a)	(Note 1)	8-4NS	YHT-8S		
MR-J4-700_	8: b/-: -		12: a/12: a	8: b/-: - (8: b/8: b)	с	FVD2-4	YNT-1614		
MR-J4-11K_	6: d/4: f		12: e/12: e	4: f/-: - (4: f/4: f)	d	FVD14-6	YF-1		
MR-J4-15K	4: f/3: f		10: e/10: e	2: g/-: - (3: g/2: g)	е	FVD5.5-6	YNT-1210S		
MR-J4-22K_	1: h/-: -		10: i/10: i	2/0: j/-: - (1: j/-: -)	f	FVD22-6	YF-1		
MR-J4-500_4	14: c/14: c	14: c/14: c	14: c/14: c	14 [.] c/14 [.] c	12: a/12: a (14: c/14: c)	g	FVD38-6	YF-1	JST (J.S.T. Mfg.
MR-J4-700_4	12: a/12: a				14	14. 0/14. 0	10: a/10: a (12: a/12: a)	h	R60-8
MR-J4-11K_4	10: e/8: I		14: k/14: k	8: 1/8: 1	i	FVD5.5-8	YNT-1210S		
MR-J4-15K_4	8: I/6: d		12: e/12: e	6: d/4: d (8: l/6: d)	j	CB70-S8	YF-1		
MR-J4-22K 4	6: m/4: m		12: i/12: i	4: n/-: - (6: n/4: n)	k	FVD2-6	YNT-1614		
MR-J4W2-22B/MR-J4W2-44B/					1	FVD8-6	YF-1		
MR-J4W2-77B (T)/ MR-J4W2-1010B/					m	FVD14-8	YF-1		
MR-J4W3-222B/ MR-J4W3-444B (T)	14/14 (Note 4)	14/14	14/14	14/14	Note 1 C	FVD22-8	YF-1 rt with an insulation tube		
MR-J4W2-77B (S)/ MR-J4W3-444B (S)	(NOTE 4)				2. 5	ome crimp terminal	is may not be mounted do se the recommended one	epending on the	

To connect these models to a terminal block, be sure to use the screws that come with the terminal block. The alphabetical letters in the table indicate the symbols of the recommended crimp terminals. Refer to Table 2 for recommended runn terminals. Select wire sizes depending on the rated output of the servo motors. The values in the table are sizes based or rated coulds of the servo smallflers.

for recommended crimp terminants. Steeld wire stars depending on the radie duption of the servo motors. The values in the table are size- unserv steeld wire stars depending on the radie duption of the servo motifier. Use the curing hermital C for the PE terminal of the servo amplifier. (S) (F) means (-)space 20 V AC power input, contrast the serve amplifier at 75 % of less of the effective load ratio.

6. The item indicated puperimeters comply with U. SOBC. (3) Selection example of MCCB and fuse The fuses (Class T, J, CC) 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 fuses or molded-case circuit breaker than ones in the table. For the selections that are not described in this section, refer to each servo amplifier instruction manual.

	IEC/E CSA C2	N/UL 61800-5-1, UL : 2.2 No. 274 compliant	(Note 2)	UL LISTED compliant		
Servo amplifier (Note 1)	Molded-case circu	it breaker (Note 3)	Fast-acting fuse (Class T, J, CC)	Semiconductor fuse		
4-10, MR-34-20, MR-34-40, MR-34-60, (1Y) 4-10, MR-34-20, (1W) 1440 (1SMR-34-70, (SMR-34-40, MR-34-60, (1)) 4420 (1SMR-34-70, (SMR-34-61, (1))) 4420 (1SMR-34-78, (1)) 4420 (1) MR-3442 (1)) 4420 (1) MR-	Recommended product model (Mitsubishi Electric product)	Maximum rating	Maximum rating	Recommended product model (BUSSMANN product)	Maximum rating	
R-J4-10 1/MR-J4-20 1/MR-J4-40 1	NV50-SVFU-15A	120 V, 15 A	300 V, 20 A	170M1411	700 V, 25 A	
R-J4-10_/MR-J4-20_/MR-J4-40_/MR-J4-60_ (T)/ R-J4-70_ (T)	NF50-SVFU-5A	240 V. 15 A	300 V. 15 A	170M1412	700 V, 32 A	
R-J4W2-22B (1)				170M1414	700 V, 50 A	
R-J4-60_(S)/MR-J4-70_(S)/MR-J4-100_(T)				170M1412	700 V, 32 A	
R-J4W2-22B (S)/MR-J4W2-44B (T)/ R-J4W3-222B/MR-J4W3-444B (T)	NF50-SVFU-10A	240 V, 15 A	300 V, 15 A	170M1414	700 V, 50 A	
R-J4W2-77B (T)				170M1415	700 V, 63 A	
R-J4-100_(S)				170M1412	700 V, 32 A	
8-J4-200_ (T)/MR-J4W2-44B (S)	NF50-SVFU-15A	240 V, 15 A	300 V, 30 A	170M1414	700 V, 50 A	
R-J4W2-1010B				170M1415	700 V, 63 A	
-J4-200_ (S)/MR-J4W3-444B (S)	NE50-SVEU-20A	240 V. 20 A	300 V. 40 A	170M1414	700 V, 50 A	
-J4-350_/MR-J4W2-77B (S)	NF50-3VF0-20A	240 V, 20 A	300 V, 40 A	170M1415	700 V, 63 A	
R-J4-500_	NF50-SVFU-30A	240 V, 30 A	300 V, 60 A	170M1415	700 V, 63 A	
R-J4-700	NF50-SVFU-40A	240 V, 40 A	300 V, 80 A	170M1416	700 V, 80 A	
8-J4-11K_	NF100-CVFU-60A	240 V, 60 A	300 V, 125 A	170M1418	700 V, 125 A	
R-J4-15K_	NF100-CVFU-80A	240 V, 80 A	300 V, 150 A	170M1419	700 V, 160 A	
R-J4-22K	NF250-CVU-125A	240 V, 125 A	300 V, 300 A	170M1422	700 V, 315 A	
R-J4-60_4/MR-J4-100_4	NF100-HRU-5A	480 V, 15 A	600 V, 15 A	170M1411	700 V, 25 A	
R-J4-200 4	NF100-HRU-10A	480 V, 15 A	600 V, 15 A	170M1412	700 V, 32 A	
R-J4-350 4	NF100-HRU-10A	480 V, 15 A	600 V, 20 A	170M1413	700 V, 40 A	
R-J4-500_4	NF100-HRU-15A	480 V, 15 A	600 V, 30 A	170M1413	700 V, 40 A	
R-J4-700 4	NF100-HRU-20A	480 V, 20 A	600 V, 40 A	170M1414	700 V, 50 A	
R-J4-11K 4	NF100-HRU-30A	480 V, 30 A	600 V, 60 A	170M1417	700 V, 100 A	
R-J4-15K_4	NF100-HRU-40A	480 V, 40 A	600 V, 80 A	170M1418	700 V, 125 A	
R-J4-22K 4	NF100-HRU-60A	480 V. 60 A	600 V. 125 A	170M1418	700 V. 125 A	

(3) means replicate zor vac power injour alto (1) means some zour vac power injourn are tradite. When using MR-34W series servo amplifiers for a machine that is required to comply with CSA standards, use molecular-case circuit breakers with a rating of 15 A without and the series servo amplifiers for a machine that is required to comply with CSA standards, use molecular-case circuit breakers with a rating of 15 A

a Personal strain and the star and the st I/O terminals. wide a reinforced insulation DC power supply for MR-J4-03A6 and MR-J4W2-036B6. For the main circuit wer supply, provide each axis with a UL certified power supply of 48 V DC, 1.2 A or more; or 24 V DC, 2.4 A or

more. (5) Motor overload and Over temperature protection The overload protection of the servo motor does not include a thermal memory function, and is not speed sensitive. The servo amplifier cannot detect overheating of the servo motor. The servo motors are protected by the servo motor overheat protection function of the servo amplifiers (a protection characteristic based on 120 % of the rated current). To provide the servo motor with overheat protection, use a magnetic contactor (electromagnetic witch) with a thermal relay. Alternatively, install a thermal sensor or equivalent equipment near the rating plate of ne servo motor to check that the servo motor temperature is under 105 °C with sensing device. (Refer to Chapter

2.3 2 The CE/UKCA morpliance The CE/UKCA marking proves the compliance of the servo product with the essential requirements specified in the relevant EU Directives and UK Regulations, and this marking also applies to machines and equipment incorporating

relevant EU Directives and UK Regulations, and this marking also applies to machines and equipment incorporating errors. I EMC requirement MR-U4 servo amplifiers comply with EN/BS EN IEC 61800-3. As for I/O wires (max. length 10 m. However, 3 m for STO cable for CN8.) 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 200 V class and for output of 400 V class servo amplifiers. The following shows recommended products. EMC filter: The following shows recommended products. EMC filter: Soshin Electric HF3000A-UN series, TF3000C-TX series, COEL FTB series. EMC filter: Grade and the serve amplifiers in the state of the serve amplifiers. The following shows recommended products. EMC filter: The following shows recommended products. EMC filter: Boshin Electric HF3000A-UN series, TF3000C-TX series, COEL FTB series. EMC filter: Installation instructions shall either recommended the serve amplifiers in the shale of a guide for installation and use, including recommended mitigation devices. To avoid the nisk of crosstalk to signal cables, the installation and use, including recommended that the power interface cable be segregated from signal cables, the installation instructions shall either recommend that the power interface cable be segregated from signal cables. Install the DC power supply for I/OC) We declare that the serve amplifiers are in compliance with EC directives (Machinery directive (2006/42/EC), EMC We declare that the serve amplifiers are in compliance with EC directives (Machinery directive (2006/42/EC), EMC directive (2014/30/EU), Low voltage directive (2014/35/EU), and RoHS directive (2014/35/EU), (EU) 2015/65(J) and applicable regulations of the UK. For the copy of Declaration of Conformity (Doct and the section of the section

2.3.3 USA/Canada compliance This servo amplifier is designed in compliance with UL 508C or UL 61800-5-1 for the use in the United States. For the use in Canada, the servo amplifier is designed in compliance with CSA 022.2 No. 274.

- Installation Installation The minimum cabinet size is 150% of each MR-J4 servo amplifier's volume. Also, design the cabinet so that the ambient temperature in the cabinet is 55 °C or less. The servo amplifier must be installed in the metal cabinet. Additionally, mount the servo amplifier on a cabinet that the protective earth based on the standard of IEC/EN 60204-1 is correctly connected. 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 pollution degree 2. For correction use concerving the section 8.1.
- 60204-1 is correctly connected. category shown in table in section 8.1. The servo amplituer increases a section connection, use copper wires. (2) Short-circuit current rating (SCCR) 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, 48 Volts Maximum for MR-14-03A6 and MR-14W2-030386). For SCCR (25 kA and 50 kA) when using a type E combination motor controller (motor circuit breaker), refer to each servo amplifier instruction manual. (3) Branch circuit protection For installation in 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 Canadian Electrical Code and any applicable provincial codes.

2.3.4 South Korea compliance Products that bear the KC mark comply with the Radio Wave Law. Please note the following to use the product. 이 기기는 업무용 (A) 전자파적합기로서 편매자 또는 사용자는 이 점을 주의하시기 바라며, 가정회의 지역에서 사용하는 것을 목적으로 합니다. (The product is for business use (Class A) and meets the electromagnetic compatibility requirements. The seller and the

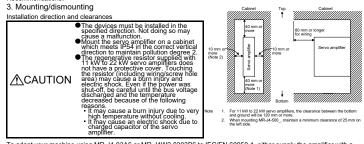
(The product is for business use (Class A) and meets the electromagnetic compatibility requirements. The seller and user must note the above point, and use the product in a place except for home.)
In addition, use an EMC filter, surge protector, ferrite core, and line noise filter on the primary side for inputs. Use a farrite core and line noise filter or untrust. Use a distance greater than 30 m between the product and third party sensitive radio communications for an MR-J4-22K_(4).
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.

- perform. (2) When mounting, installing, and using the MR-J4 servo amplifier, always observe standards and directives applicable in the country.

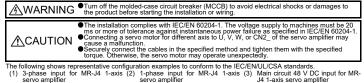
- appricable in the Country.
 25 Residual risk
 (1) Be sure that all safety related switches, relays, sensors, etc., meet the required safety standards.
 (2) Perform all risk assessments and safety level certification to the machine or the system as a whole.
 (3) If the upper and lower power module in the servo amplifier are shorted and damaged simultaneously, the servo motor may make a half revolution at a maximum.
 (4) Only qualified personnel are authorized to install, start-up, repair or service the machines in which these components are installed. Only trained engineers should install and operate the equipment. (ISO 13849-1:2015 Table F. 1 No. 5)
- Table F.1 No. 5) Separate the wiring for safety observation function from other signal wirings. (ISO 13849-1:2015 Table F.1 No. 1) Protect the cables with appropriate ways (routing them in a cabinet, using a cable guard, etc.). Keep the required clearance/creepage distance depending on voltage you use. (5) (6)

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

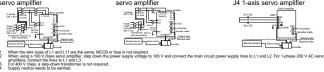
waste disposal regulations. 2.7 Lithium battery transportation To transport lithium batteries, take actions to comply with the instructions and regulations such as the United Nations (UN), the International Civil Aviation Organization (ICAO), and the International Maritime Organization (IMO). The batteries (IMR-BAT6V15ET, MR-BAT6V15ET-A, MR-BAT6V1, and MR-BAT6V1BJ) are assembled batteries from two batteries (lithium metal battery CR17335A) which are not subject to the dangerous goods (Class 9) of the UN



To adapt your machine using MR-J4-03A6 or MR-J4W2-0303B6 to IEC/EN 60950-1, either supply the amplifier with a power supply complying with the requirement of 2.5 stated in IEC/EN 60950-1 (Limited Power Source), or cover the amplifier and motors connected to the outputs with a fire enclosure. 4. Electrical Installation and configuration diagram



5.2 I/O device



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

 HG/HF/HC/HA series servo motors (Mfg.: Mitsubishi Electric)
 Using a servo motor complied with IEC 60034-1 and Mitsubishi Electric encoder (OBA, OSA) 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. CN3 STO I/O signal 1 LG D1 STOCOM DICOM 6 5 TOFB1 STO2 B 7 COM TOFB2

		input device			
Symbol		Device	Connector	Pin No.	
EM2	Forced stop 2		CN3	20	
STOCOM	Common term STO1/STO2	inal for input signals		3	
STO1	STO1 state in	put	CN8	4	
STO2	STO2 state in	put		5	
		Output device			
Symbol		Device	Connector	Pin No.	
TOFCOM	Common term STO state	inal for monitor output signal in	CN8	8	
TOFB1		t signal in STO1 state	CN8	6	
TOFB2	Monitor output	t signal in STO2 state		7	
he follow	n in norma	O state nows the STO1 and ST I state and STO1 and S			
ST01	STO2	Monitoring STO1 state	Monitoring S	TO2 state	
OFF	OFF	ON (STO state)	ON (STC) state)	
OFF	ON	ON (STO state)	OFF (STO	release)	

ON OFF OFF (STO release) ON (STO state) ON ON OFF (STO release) OFF (STO release)

Input device

6. Maintenance, service and trouble shooting

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

It is recommended that the following points periodically be checked. (1) Check for loose terminal block screws. Retighten any loose screws.(Except for MR-J4-03A6 and MR-J4W2-

0303B6)								
Servo amplifier	Tightening torque [N+m]							
	L1 L2 L3 N- P3 P4 P+ C D	L11 L21	U V W PE					
MR-J4-10_(1)/MR-J4-20_(1)/MR-J4-40_(1)/ MR-J4-60_(4)/ MR-J4-70_/			1.2					
MR-J4-100_(4)/MR-J4-200_(4)/MR-J4-350_(4)			1.2					
MR-J4-500	1.2	0.8	1.2					
MR-J4-700_(4)/MR-J4-500_4	1.2	0.8	1.2					
MR-J4-11K_(4)/MR-J4-15K_(4)	3.0	1.2	3.0					
MR-J4-22K (4)	6.0	1.2	6.0					
MR-J4WB			1.2					

W-8 5 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 conditions. Check that the vires are not coming out from the connector. Check that the vires are not coming out from the connector. Check that unusual noise generated from the servo amplifier. Check the servo motor shaft and coupling for connection. When the serve motor Make sure that the emergency stop circuit operates properly such that an operation can be stopped immediately and a power is shut off by the emergency stop switch.

6.2 Parts having service life Service life of the following parts is listed below. However, the service life varies depending on operation and environment. If any fault is found in the parts, they must be replaced immediately regardless of their service life. For

parts replacement, please contact your local s	ales office.
Part name	Life guideline
Smoothing capacitor	10 years (Note 3)
Relay	Number of times of power-on, dynamic brake activation, and forced stop: 100,000 in total Number of times that STO turns on and off: 1,000,000 in total
Cooling fan	10,000 hours to 30,000 hours (2 years to 3 years) (Note 4)
Battery backup time (Note 1)	Approximately 20,000 hours (equipment power supply: off, ambient temperature: 20 °C)
Battery life (Note 2)	5 years from date of manufacture
Note 1. The time is for using MR-J4 1-axis servo amplifier with an rota	ary servo motor using MR-BAT6V1SET, MR-BAT6V1SET-A, or MR-BAT6V1BJ. For details and other battery backup time,

- neter to exh halkoftom manual. We assuge condition. The halkny life is 5 years from the production der regardless of the connection status. 1 a 5-phase power couply is used, be service life of the capacitor of the years older of continuous operation in al controllence environment individual individual and the service of 40 °C or less at attlucter of u is 100 m and 30 °C or less at attlucter of over 100 m and u is 2000 m). The characteristic of smoothing capacitor is detionated due to proport currents, etc. The service For VR-VR-VR_2 = 3 service from the service of th

vise, it may drop.

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

26)

est condition

ation

4. For MR-4W, _B. file will reach the and a task in SULUX in CLUX in CLUX in the series of the series and the fault detected by the diagnostic function, the alarm number [AL. 68 STO diagnosis error] is displayed on the LED of the serve amplifier. 7. Transportation and storage

CAUTION
 amplifier instruction manual.
 Install the product in a load-bearing place of servo amplifier and servo motor in accordance
 with the instruction manual.
 Do not plut excessive load on the machine.
 Do not plut excessive call on the machine.
 Do not plut excessive call on the machine.
 Do not plut excessive load on th

•Transport the products correctly according to their mass. •Stacking in excess of the limited number of product packages is not allowed. •For detailed Information on transportation and handling of the battery, refer to the servo

0 to 55 Class 3K3 (IEC/EN 60721-3-3) -20 to 65 Class 2K12 (IEC/EN 60721-3--20 to 65 Class 1K4 (IEC/EN 60721-3-1

2 IP20 (IEC/EN 60529), Terminal block IP00 Open type (UL 50) Max. 2000 m above sea level

10 Hz to 57 Hz with constant amplitude of 0.075 mm 7 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)

8. Technical data 8.1 MR-J4 servo amplif

		MR-J4-10 //MR-J4-20 / MR-J4-00 //MR-J4-60 / MR-J4-100 / MR-J4-200 / MR-J4-200 / MR-J4W2-24B/ MR-J4W2-44B/ MR-J4W3-222B/ MR-J4W3-222B/ MR-J4W3-44B	MR-J4-350_/ MR-J4-500_/ MR-J4-700_/ MR-J4-700_/ MR-J4-11K_/ MR-J4-11K_/ MR-J4-15K_/ MR-J4-22K_	MR-J4-10_1/ MR-J4-20_1/ MR-J4-40_1	MR-J4-60_4/ MR-J4-200_4/ MR-J4-200_4/ MR-J4-350_4/ MR-J4-500_4/ MR-J4-700_4/ MR-J4-11K_4/ MR-J4-15K_4/ MR-J4-22K_4	MR-J4-03A6/ MR-J4W2-0303B6			
	Main circuit (line voltage)	3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz (Note 2)	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz (Note 2)	1-phase 100 V AC to 120 V AC, 50 Hz/60 Hz	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz	48 V DC or 24 V DC			
Power supply	y Control circuit (line 1-phase 200 V AC to (Note			1-phase 100 V AC to 120 V AC, 50 Hz/60 Hz	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz	24 V DC			
	Interface (SELV) 24 V DC (required current capacity: MR-J4- A_, 500 mA; MR-J4- B_, 300 MR-J4W2- B_, 350 mA; MR-J4W3- B, 450 mA; MR-J4- GF_, 300 mA								
Control me									
Safety sub									
(Notė 3)	e with standards	EN IS EN IE							
Mean time (MTTFd)	to dangerous failure								
	coverage (DC)								
Probability per hour (F	of dangerous failures PFH)								
Mission time (T _M) (Note 4)									
	performance	8 ms or less (STO input off → energy shut off)							
Pollution degree		2 (IEC/EN 60664-1) 1-phase 100 V AC/200 V AC; II (IEC/EN 60664-1).							
Overvoltage category		1-r 3-r	(IEC/EN 60664-1)						
Protective			I (IEC/EN 6	1800-5-1)		(IEC/EN 61800-5-1)			
Short-circuit current rating (SCCR)			5 kA (Note 1)						

 MR-U4--RJ also supports a power supply of 283 V DC to 340 V DC.
 Servo amplifiers manufactured in June 2015 or taker comply with SIL 3 requirements. However, MR-U4-_A_IMR-U4-_B_ servo amplifiers manufactured in June 2015 or taker comply with SIL 3 requirements. requirements from the December 2015 productor. The performance of special products within the mission time of the product is regarded as not necessary, however, the diagnostic interval is suggested as at least or months for Category 3 PL e, SIL 3 on IEC 61800-5-2:2016.

		Servo amplifier	Varia	ole dimensions	s [mm]	Mass [kg]
		Servo ampliller	W	н	D	mass [kg]
		MR-J4-03A6	30	100	90	0.2
Front	Side	MR-J4-10_(1)/MR-J4-20_(1) (Note)	40 (50)	168	135 (155)	0.8 (1.0)
	MR-J4-40_(1)/MR-J4-60_ (Note)	40 (50)	168	170 (155)	1.0	
	MR-J4-70_/MR-J4-100_	60	168	185	1.4	
		MR-J4-200 (4)	90	168	195	2.1
. W .	. D .	MR-J4-350_	90	168	195	2.3
	P4 P1	MR-J4-500_	105	250	200	4.0
		MR-J4-700	172	300	200	6.2
		MR-J4-11K_(4)/MR-J4-15K_(4)	220	400	260	13.4
		MR-J4-22K_(4)	260	400	260	18.2
		MR-J4-60 4/MR-J4-100 4	60	168	195	1.7
		MR-J4-350_4	105	250	200	3.6
		MR-J4-500_4	130	250	200	4.3
		MR-J4-700 4	172	300	200	6.5
		MR-J4W2-0303B6	30	168	100	0.3
		MR-J4W2-22B/MR-J4W2-44B	60	168	195	1.4
		MR-J4W2-77B/MR-J4W2-1010B	85	168	195	2.3
		MR-J4W3-222B/MR-J4W3-444B	85	168	195	2.3

	Servo amplifier	Variable dimensions [mm]								
	corre ampliner		a1	b	С	d	d1	e	e1	f
	MR-J4-03A6	/	/	90 ± 0.5	5			4	4	M4
	MR-J4-10_(1)/MR-J4-20_(1)/ MR-J4-40_(1)/MR-J4-60_	6	6	156 ± 0.5	6	/	/	/	/	M5
	MR-J4-70_/MR-J4-100_	12	12	156 ± 0.5	6	42 ± 0.3		/	/	M5
	MR-J4-200_(4)/MR-J4-350_	6	45	156 ± 0.5	6	78 ± 0.3		/	/	M5
t <mark>∳ P</mark>	MR-J4-500_	6	6	235 ± 0.5	7.5	93 ± 0.5	93 ± 0.5	/	/	M5
Ta d e	MR-J4-700_	6	6	285 ± 0.5	7.5	160 ± 0.5	160 ± 0.5	/	/	M5
	MR-J4-11K_(4)/MR-J4-15K_(4)	12	12	380 ± 0.5	10	196 ± 0.5	196 ± 0.5	/	/	M5
	MR-J4-22K_(4)	12	12	376 ± 0.5	12	236 ± 0.5	236 ± 0.5	/	/	M10
	MR-J4-60_4/MR-J4-100_4	12	12	156 ± 0.5	6	42 ± 0.3		/	/	M5
	MR-J4-350_4	6	6	235 ± 0.5	7.5	93 ± 0.5	93 ± 0.5	/	/	M5
	MR-J4-500_4	6	6	235 ± 0.5	7.5	118 ± 0.5	118 ± 0.5	/	/	M5
	MR-J4-700_4	6	6	285 ± 0.5	7.5	160 ± 0.5	160 ± 0.5	/	/	M5
	MR-J4W2-0303B6	6	6	156 ± 0.5	6			/	/	M5
	MR-J4W2-22B/MR-J4W2-44B	6	6	156 ± 0.5	6			/	$^{\prime}$	M5
	MR-J4W2-77B/MR-J4W2-1010B	6	6	156 ± 0.5	6	73 ± 0.3		/	/	M5
	MR-J4W3-222B/MR-J4W3-444B	6	6	156 ± 0.5	6	73 ± 0.3		/	/	M5

MR-J4 installation checklist for manufacturer/installer

MR-J4 installation checklist for manufacturer/installer
 MR-J4 installation checklist for manufacturer/installer
 responsible for checking the standards in the items.
 Maintain and keep this checklist with related documents of machines to use this for periodic inspection.
 Is it based on directive/istandard applied to the machine?
 Is directive/istandard contained in Declaration of Conformity (DoC)?
 Yes
 No
 Yes
 No
 Sore
 Sore

Warranty

Warranty 1. Warranty period and coverage We will repair any failure or defect hereinater 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 displatching our engineer for an on-site repair work on regumes by customer in Japan or overseas countins. We are not responsible for any on-site readjustment and/or that run that may be regumed after a defective unit are repaired or replaced. [Term] For terms of warranty, please contact your original place of purchas [Limitations]

- Of them of wenney, preventing the second of the second second
- us me Product. (3) Even during the term of warranty, the repair cost will be charged on you in the following cases; 1. a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure cau or software problem
- or software problem a failure caused by any alteration, etc. to the Product made on your side without our approval 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 indicenseable according to a common
- server required by approache tax's and rais any function of structure considered to be independent according to a common server in the industry . a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintaine and replaced
- and replaced is any replacement of consumable parts (battery, fan, smoothing capacitor, etc.) a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of Ocd, including without limitation enthquake, lightning and natural disasters a failure generated by an unforeseable cause with a scientific technology that was not available at the time of the shipment of the Product from or company 8. any other failures which we are not responsible for or which you acknowledge we are not responsible for

- any other faulties which we are not responsible for or which you accrowedge we are not responsible for 7.
 <u>Term of warranty after the stoo of production</u>
 (1) We may accept the repair at charge for another seven (7) years after the product in disconting anonucement of the stop of production for aech model can be seen in our Sales and Service, etc.
 (2) Please note that the Product (including its spare parts) cannot be ordered after its stop of production.
- 3. 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 you local FA center for details. **Exclusion of Ioss in opportunity and secondary loss from warranty liability**Regardless of the grafts warranty term, Mitsubahi shall not be liable for compensation to:
 (1) Damage caused by any cause found not be responsible of Mitsubahi.

- Loss in opportunity, lost profits incurred to the user by Failures of Mitsubish. Loss in opportunity, lost profits incurred to the user by Failures of Mitsubish products. Special damages and secondary damages whether foreseeable or not, compensation damages to products other than Mitsubishi products. nt by the user, maintenance of on-site equipment, start-up test run and other tasks
- 5. 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
 (1) For the use of an 40 for the Product
- Profile use of our AC Servo, its applications should be those that may not result in a serious damage even if any failure or mafunction occurs in AC Servo, and a backup or fail-safe function should operate on an external system to AC Servo when any failure or mafunction occurs.
- failure or malfunction occurs. [2] Our AC Servois designed and manufactured as a general purpose product for use at general industries. Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railways compan-and government or public offices are not recommended, and we assume no responsibility for any failure caused by these
- and government or public othoes are not recommenced, with we assume not exponentiate the responseming to with anise the second s
- application. Please contact us for consultation. Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.