

Conversion unit for SSCNET of MR-J2S-B
MR-J4-T20

Installation Guide

Country/Region	Sales office	Tel
USA	Mitsubishi Electric Automation, Inc. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100
Germany	Mitsubishi Electric Europe B.V. German Branch Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	Tel : +49-2102-486-0
China	Mitsubishi Electric Automation (China) Ltd. Mitsubishi Electric Automation Center, No.1386 Hongqiao Road, Shanghai, China	Tel : +86-21-2322-3030
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 7F to 9F, Gangseo Hangang Xi-Hower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul, Korea	Tel : +82-2-6103-9474
Japan	Mitsubishi Electric Corporation Tokyo Building, 2-7-3, Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan	Tel : +81-3-3218-2111

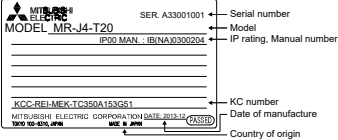
MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

IB(NA)-0300204-F(2509)MEE
Copyright©2013 Mitsubishi Electric Corporation All Rights Reserved.

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.

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



Regulation/legislation marking
An example of regulation/legislation marking is shown below.



1. About the installation guide

To use the MR-J4-T20 safely, read "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual" carefully.

1.1 MELSERVO MR-J4 relevant manuals

This installation guide explains how to mount MR-J4-T20.
If you have any questions about the operation 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 for engineers of machinery manufacturers and machine operators. For detailed information of the products, refer to "MR-J4-_B_-RJ020 MR-J4-T20 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.

 **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-T20.
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 past experience.
- (2) Persons who have read and familiarized himself/herself with this installation guide.

2.2 Correct use

Use MR-J4-T20 within specifications. Refer to chapter 7 of this installation guide 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.

2.2.1 Selection of peripheral equipment and wire

For selection example of MCCB, fuse, and wires for servo amplifiers on which MR-J4-T20 is mounted, refer to "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual".
MR-J4-T20 has a part for grounding on the frame (FG). Fix the metal part FG of MR-J4-T20 with a screw to ground.

2.2.2 Europe/UK compliance

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 servos.

(1) EMC requirement

The combination of MR-J4 servo amplifier and MR-J4-T20 complies with EN/BS EN IEC 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. Use an EMC filter and surge protector on the primary side. The following shows recommended products.
EMC filter: Soshin Electric HF3000A-UN series
Surge protector: Okaya Electric Industries RSPD series Line noise filter: Mitsubishi Electric FR-BIF
MR-J4 Series are not intended to be used on a low-voltage network which supplies domestic premises; electromagnetic interference is expected if used on such a network.
The installer shall provide a guide for installation and use, including recommended mitigation devices. To avoid the risk of crosstalk to signal cables, the installation instructions shall either recommend that the power interface cable be segregated from signal cables.

(2) For Declaration of Conformity (DoC)

We declare that the servo amplifier with MR-J4-T20 is in compliance with EC directives (Machinery directive (2006/42/EC), EMC directive (2014/30/EU), Low-voltage directive (2014/35/EU), and RoHS directive (2011/65/EU, (EU) 2015/863)) and applicable regulations of the UK. For the copy of Declaration of Conformity, contact your local sales office.

2.2.3 South Korea compliance

This product complies with the Radio Waves Act (KC mark). Please note the following to use the product.
이 기기는 업무용 (A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 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 line noise filter for outputs of 200 V class and 100 V class servo amplifiers. Use a ferrite core and line noise filter for outputs of 400 V class servo amplifiers. Use a distance greater than 30 m between the product and third party sensitive radio communications for an MR-J4-22KB_.)

2.2.4 Compliance with global standards

MR-J4-T20 complies with the following global standards.

Unit	CE/UKCA	KC
MR-J4-T20	○	○

2.2.5 Compliance with standards

MR-J4-T20 complies with the following standard.
IEC/EN 61800-3/GB 12668.3/KN 61800-3 (KS C 9800-3)

2.3 General cautions for safety protection and protective measures

Observe the following items to ensure proper use of the servo amplifiers on which MR-J4-T20 is mounted.

- (1) Only qualified personnel and professional engineers should perform system installation.
- (2) When mounting, installing, and using the servo amplifiers, always observe standards and directives applicable in the country.
- (3) The servo amplifiers fulfill the requirements to conducted emissions at the main connections in the frequency range from 150 kHz to 30 MHz. (Bases for the evaluation: Product standard IEC/EN 61800, adjustable speed electrical power drive systems, Part 3: EMC)

2.4 Disposal

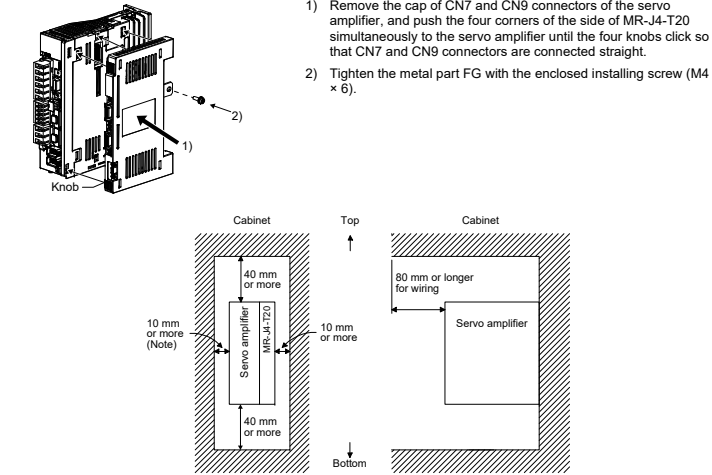
Disposal of unusable or irreparable devices should always occur in accordance with the applicable country-specific waste disposal regulations. (Example: European Waste 16 02 14)

3. Mounting/dismounting

 **CAUTION**

- The devices must be installed in the specified direction. Not doing so may cause a malfunction.
- Mount the servo amplifier on a cabinet which meets IP54 in the correct vertical direction to maintain pollution degree 2.
- The regenerative resistor supplied with 11 kW to 22 kW servo amplifiers does not have a protective cover. Touching the resistor (including wiring/screw hole area) may cause a burn injury and electric shock. Even if the power was shut-off, be careful until the bus voltage discharged and the temperature decreased because of the following reasons.
 - It may cause a burn injury due to very high temperature without cooling.
 - It may cause an electric shock due to charged capacitor of the servo amplifier.

The following shows an example of MR-J4-350B-RJ020 or less, MR-J4-200B4-RJ020 or less, and MR-J4-40B1-RJ020. For others, refer to "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual".



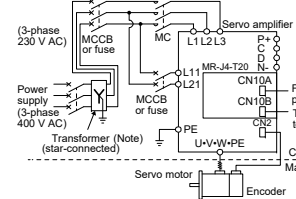
Note. For the MR-J4-500B-RJ020 servo amplifier, the clearance between the left side and wall will be 25 mm or more.

4. Electrical Installation and configuration diagram

 **WARNING**

● 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 a representative configuration example. The connectors described by rectangles are safely separated from the main circuits described by circles.
For 3-phase 230 V AC input



Note. Supply neutral needs to be earthed.

5. Maintenance and service

This chapter explains servo amplifiers mounted MR-J4-T20.

 **WARNING**

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

 **CAUTION**

- Do not perform insulation resistance test on the servo amplifier. Otherwise, it may cause a malfunction.
- Do not disassemble and/or repair the equipment on customer side.

5.1 Inspection items

It is recommended that the following points periodically be checked.

- (1) Check for loose terminal screws of the servo amplifier. Retighten any loose screws.
- (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.
- (4) Check that the connectors are securely connected to the servo motor.
- (5) Check that the wires are not coming out from the connector.
- (6) Check for dust accumulation on the servo amplifier.
- (7) Check for unusual noise generated from the servo amplifier.
- (8) Check the servo motor shaft and coupling for connection.
- (9) 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.

5.2 Parts having service lives

MR-J4-T20 has no parts for replacement.

6. Transportation and storage

 **CAUTION**

- Transport the products correctly according to their mass.
- Stacking in excess of the limited number of product packages is not allowed.
- Install the equipment in a load-bearing place in accordance with "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual".
- Do not put excessive load on the machine.

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

Item	Environment
Ambient temperature	Operation °C
	0 to 55 Class 3K3 (IEC/EN 60721-3-3)
	Transportation (Note) °C
Ambient humidity	Operation, transportation, storage °C
	5 % to 90 %RH
	Test values 10 Hz to 57 Hz with constant deviation 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)
Vibration load	Operation m/s²
	5.9 m/s²
	Transportation (Note) Class 2M3 (IEC/EN 60721-3-2)
Pollution degree	Storage Class 1M2 (IEC/EN 60721-3-2)
	2
IP rating	IP20 (IEC/EN 60529)/IP00 for MR-J4-T20 only
	Open type (UL 50)
	1000 m or less
Altitude	Operation, storage m
	1000 m or less
	Transportation 10000 m or less

Note. In regular transport packaging

7. Technical data

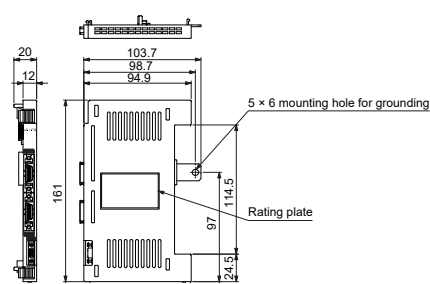
 **CAUTION**

● When MR-J4-T20 is mounted, the STO function cannot be used.

7.1 MR-J4-T20

Model	MR-J4-T20
Control circuit power supply	5 V DC (supplied from the servo amplifier)
Voltage	0.1
Rated current	SSCNET interface (CN10A connector/CN10B connector)
Network interface	Connection to a personal computer (MR Configurator (MRZJW3-SETUP161 compatible) (CN30 connector))
Communication function	RS-232C
Structure	Natural-cooling, open (IP rating: IP 00)
Pollution degree	2 (IEC/EN 60684-1)
Overvoltage category	Depends on servo amplifiers to mount
Protective class	1 (IEC/EN 61800-5-1)
Mass	140

7.2 Dimensions



[Unit: mm]

Warranty

1. 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 customer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit are repaired or replaced.

[Term]
For terms of warranty, please contact your original place of purchase.

[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:
 1. a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure caused by your hardware or software problem
 2. a failure caused by any alteration, etc. to the Product made on your side without our approval
 3. 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 industry
 4. a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced
 5. any replacement of consumable parts (battery, fan, smoothing capacitor, etc.)
 6. 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
 7. a failure generated by an unforeseeable cause with a scientific technology that was not available at the time of the shipment of the Product from our company
 8. any other failures which we are not responsible for or which you acknowledge we are not responsible for

2. Term of warranty after the stop of production

- (1) 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.
- (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 your local FA center for details.

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) Damages caused by any cause found not to be the responsibility of Mitsubishi,
 - (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products,
 - (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products,
 - (4) Replacement 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 our AC Servo, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in AC Servo, and a backup or fail-safe function should operate on an external system to AC Servo when any failure or malfunction occurs.
 - (2) Our 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 atomic 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 which may be substantially influential to human lives or properties for such as airlines, 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 when used. 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.
 - (3) 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.