2. To prevent fire, note the following.

- Install the servo amplifier and servo motor on combustible materials. Installing them directly or close to combustibles will lead to a fire.
- Always connect a circuit protector between the main circuit power supply and power input connector (CNP1) of the servo amplifier, and configure the wiring to be able to shut down the power on the side of the servo amplifier's power supply. If a circuit protector is not connected, continuous flow of a large current may cause a fire when the servo amplifier malfunctions.
- Provide adequate protection to prevent screws and other conductive matter, oil and other combustible matter from entering the servo amplifier and servo motor.
- Do not connect AC power directly to the servo motor. Otherwise, a fault may occur.
- The surge absorbing device installed to the DC relay for control output should be fitted in the specified direction. Otherwise, the emergency stop and other protective circuits may not operate.

3. To prevent injury, note the following.

- Only the voltage specified in the Instruction Manual should be applied to each terminal. Otherwise, a burn, damage, etc. may occur.
- Connect the terminals correctly to prevent a burn, damage, etc.
- Ensure that polarity (+, −) is correct. Otherwise, a burn, damage, etc. may occur.
- Always connect the control power and power input connector (CNP1) of the servo amplifier to the power source, otherwise the servo motor may not operate properly.
- Keep a steady touch on the mating parts of the servo amplifier. Doing so can cause injury.

4. Additional instructions.

The following instructions should also be fully noted. Incorrect handling may cause a fault, injury, electric shock, etc.

1. Transportation and installation

- Transport the products correctly according to their mass.
- Do not block intake and exhaust areas of the servo amplifier. Doing so may cause faults.
- Do not use sharp or slanted edge tools to remove the front cover. Use a screwdriver. Otherwise, there may be physical damage.

2. Wiring

- Wire the equipment correctly and securely. Otherwise, the servo motor may operate unexpectedly.
- Do not install a power capacitor, surge arrester or radio noise filter between the servo motor and servo amplifier.
- Connect the wires to the correct terminal (U, V, W) of the servo amplifier and servo motor.
- The servo motor does not operate properly.
- The servo motor power supply terminal (U, V, W) directly. Do not use a magnetic relay, etc. instead.

3. Test run adjustment

- Before operation, check the parameter settings. Improper settings may cause some machines to perform unexpected operation.
- The parameter settings must not be changed excessively. Operation will be unstable.

4. Usage

- A ventilated emergency stop switch to ensure that operation can be stopped and power switched off immediately.
- Any person who is involved in disassembly and repair should be fully competent to do the work.
- Before resetting an alarm, make sure that the run signal is off to prevent an accident. A sudden reset may make an alarm occur with the run signal on.
- Do not modify the equipment.
- Do not use filters, etc. to minimize the influence of electromagnetic interference, which may be caused by electromagnetic equipment near the servo amplifier.
- Use the servo amplifier with the specified servo motor.
- The electromagnetic brake on the servo motor is designed to hold the motor shaft and should not be used for ordinary braking.
- For such reasons an service life and mechanical structure (e.g. a ball screw and the servo motor are coupled via a timing belt), the electromagnetic brake may not hold the motor shaft. To ensure safety, install a stopper on the machine side.

5. Corrective actions

- When a parameter is involved in disassembly and repair should be fully competent to do the work.
- Check for damage to the equipment and connections, if any, before operating.
- Check for damage to the equipment and connections, if any, before operating.
- Before operating, check the parameter settings. Improper settings may cause some machines to perform unexpected operation.
- The parameter settings must not be changed excessively. Operation will be unstable.

- With age, the electromagnetic brake will deteriorate. To prevent a secondary accident due to a fall, it is recommended to replace the electromagnetic brake every 10 years when used in general environment.

- Please contact your local sales office.
3. COMFORMANCE WITH UL/ULC STANDARD

This servo amplifier complies with UL Standard and CCA22.2 No.14 standard. Refer to section 1.3 (2) for the servo amplifier model names described in the tables and figures. The standard models of the servo amplifiers will comply with the UL/ULC standard. When using DC power supply options and auxiliary equipment, use those which conform to the UL/ULC standard.

1. (Selection example of scales)

To comply with the UL/ULC Standard, use UL-approved copper wires rated at 60/75°C 14AWG (57027-5000(for UL1015) Molex).

2. (Terminal block tightening torque)

For connection, use copper wires. The terminal block tightening torque is 0.2 to 0.3 Nm.

3. Overload protection characteristics

An electronic thermal relay is built in the servo amplifier to protect the servo motor, servo amplifier, and servo motor power lines from overloads. The operation characteristics of the electronic thermal relay are shown below. It is recommended to use an unbreakable temperature generator, such as a vertical motion shaft, that the unbreakable torque is not more than 70% of the rated torque. Servo amplifier MB-2B series have servo motor overload protection. (The motor full load current is 125% rated current)

4. Overtemperature protection for motor

Motor Overtemperature warning is not provided by the drive.

5. About wiring 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.

6. Installation

The MB-2B series have been approved as the products which have been installed in the electrical enclosure. The minimum enclosure size is based on 1/8 of each MB-2B combination. And also, design the enclosure so that the ambient temperature in the enclosure is 5°C (32°F) or less. The servo amplifier must be installed in the metal cabinet located in the enclosure. The cabinet should be used in type SELV. The control unit and servo amplifier (drive unit) need to be installed at a location of pollution degree 2. For connection, use copper wires.

7. Short-circuit current rating (SCI)

Suitable For Use On AC Circuits Capable Of Delivering Not More Than 100A (rms) On Symmetrical, 50/60 Volt AC, 3-Phase, 4-Wire Circuits. 

8. Capacitor discharge time

To ensure safety, do not touch the charging section for 15 minutes after power-off.

4. INSPECTION

- Before starting maintenance exist or inspection, make sure that the charge lamp is off for more than 15 minutes after power-off. Then, confirm that the voltage is safe in the tester of the line. Otherwise, you may get an electric shock.
- Any person who is involved in inspection should be fully competent to do the work. Otherwise, you may get an electric shock. For repair or parts replacement, contact your sales representative.

5. 5 ALARMS AND WARNINGS

5.1 Alarms

- When any alarm has occurred, eliminate its cause, ensure safety, then remove the alarm, and reset operation. Otherwise, injury may occur.

5.2 Warnings

- Do not perform insulation resistance test on the servo amplifier as damage may result.
- Do not disassemble and/or repair the equipment on customer side.

6. EERPOM Life

The number of write times to the EEPROM, which stores parameter settings, etc., is limited to 104 or less. Writing to the EEPROM due to parameter setting changes.

- If EEPROM becomes full, RC-24G or RC-24L can be used.

7. Service

- Do not repair any failure or return the machine referred to as “failure” in our FA equipment manual referred to as the “Product” and the inside of which has been confirmed to be damaged due to damage from external causes such as dust, water, unnatural vibration, and the like, which is not related to the machine failure. Any failure caused by this should be repaired by the manufacturer or agent designated by the manufacturer, and you should report the failure to your local sales office.

- The repair work may differ depending on each FA Center. Please ask your local FA center for details.

- The warranty on Product is for twelve (12) months from the date of manufacture or the delivery date from the factory of manufacturer or warrants that “Durable Product”, shall have a guaranteed life, the warranty of such Product is covered beyond the original warranty period before any repair work.

- If the warranty period is beyond twelve (12) months from the date of manufacture or the delivery date from the factory of manufacturer or warrants that “Durable Product”, the warranty of such Product is covered beyond the original warranty period before any repair work.

- The number of write times to the EEPROM, which stores parameter settings, etc., is limited to 104 or less. The total number of the following operations exceeds 104, the servo amplifier may fail when the EEPROM becomes full. Writing to the EEPROM due to parameter settings changing.

- Home position setting in the absolute position detection system.

- Operating parameter changes due to parameter setting changes.

- Replacement of EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 104 or less.

- Writing to the EEP-ROM due to parameter setting changes.

- Replacement of EEP-ROM life

- Operating parameter changes due to parameter setting changes.

- Replacement of EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 104 or less.

- Writing to the EEP-ROM due to parameter setting changes.

- Replacement of EEP-ROM life

- Operating parameter changes due to parameter setting changes.

- Replacement of EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 104 or less.

- Writing to the EEP-ROM due to parameter setting changes.

- Replacement of EEP-ROM life

- Operating parameter changes due to parameter setting changes.

- Replacement of EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 104 or less.

- Writing to the EEP-ROM due to parameter setting changes.

- Replacement of EEP-ROM life

- Operating parameter changes due to parameter setting changes.

- Replacement of EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 104 or less.

- Writing to the EEP-ROM due to parameter setting changes.

- Replacement of EEP-ROM life

- Operating parameter changes due to parameter setting changes.