

マシンコントローラ MP3000シリーズ

## MP3100

### 取扱説明書

形式：JAPMC-MC3100-□-E

製品を安全にお使いいただくために、本書を必ずお読みください。  
また、本書をお手元に保管していただくとともに、最終的に本製品をご使用になるユーザー様のお手元に確実に届けられるよう、お取り計らい願います。

Machine Controller MP3000 Series

## MP3100

### Instructions

Model: JAPMC-MC3100-□-E

To properly use the product, read this manual thoroughly and retain for easy reference, inspection, and maintenance. Ensure the end user receives this manual.

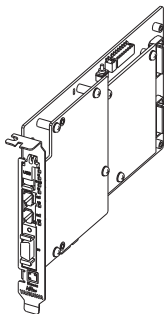
Contrôleur de Machine Série MP3000

## MP3100

### Instructions

Modèle: JAPMC-MC3100-□-E

Pour utiliser correctement le produit, lisez attentivement ce manuel. Conservez-le comme références et pour les cas d'inspections et de maintenance. Assurez-vous que l'utilisateur final reçoive ce manuel.



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# Safety Precautions

## ◆ Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.



### **DANGER**

- Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.



### **WARNING**

- Indicates precautions that, if not heeded, could result in loss of life, serious injury, or fire.



### **CAUTION**

- Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or in fire.

### **NOTICE**

- Indicates precautions that, if not heeded, could result in property damage.

## ◆ Safety Precautions That Must Always Be Observed

### ■ General Precautions



## DANGER

- Read and understand this manual to ensure the safe usage of the product.
- Keep this manual in a safe, convenient place so that it can be referred to whenever necessary. Make sure that it is delivered to the final user of the product.
- Do not remove cables or connectors while power is being supplied. There is a risk of electric shock, operational failure of the product, or burning.



## WARNING

- Always use a power supply of the specified voltage. There is a risk of burning, electric shock, or fire.
- Do not attempt to disassemble, repair, or modify the product. There is a risk of fire or malfunction. The warranty is void for the product if you disassemble, repair, or modify it.
- The installation must be suitable and it must be performed only by an experienced technician. There is a risk of electric shock or injury.
- Before connecting the machine and starting operation, make sure that an emergency stop procedure has been provided and is working correctly. There is a risk of injury.
- Do not touch anything inside the product. There is a risk of electric shock.



## CAUTION

- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch the cables. There is a risk of failure, damage, or electric shock.
- Never use the product in locations subject to water, corrosive atmospheres, or flammable gas, or near flammable objects. There is a risk of electric shock or fire.

## NOTICE

- Do not attempt to use a product that is damaged or that has missing parts.
- Install external emergency stop circuits that shut OFF the power supply and stop operation immediately when an error occurs.
- Do not touch the product with wet hands.  
There is a risk of product failure.
- Close all applications before you turn OFF the power supply to the computer.  
There is a risk of file corruption.

### ■ Storage Precautions



## CAUTION

- Do not place an excessive load on the product during storage. (Follow all instructions on the packages.)  
There is a risk of injury or damage.

## NOTICE

- Do not install or store the product in any of the following locations.
    - Locations that are subject to direct sunlight
    - Locations that are subject to ambient temperatures that exceed product specifications
    - Locations that are subject to relative humidities that exceed product specifications
    - Locations that are subject to condensation as the result of extreme changes in temperature
    - Locations that are subject to corrosive or flammable gases
    - Locations that are near flammable materials
    - Locations that are subject to dust, salts, or iron powder
    - Locations that are subject to water, oil, or chemicals
    - Locations that are subject to vibration or shock that exceeds product specifications
    - Locations near devices that generate strong magnetic fields
    - Locations that are subject to radiation
- If you store or install the product in any of the above locations, the product may fail or be damaged.

## ■ Transportation Precautions



### CAUTION

- **Hold onto the main body of the product when transporting it.**  
Holding the cables or connectors may damage them or result in injury.
- **When you handle the product, be careful of sharp parts, such as the corners.**  
Doing so may result in injury.
- **Do not place an excessive load on the product during transportation.**  
(Follow all instructions on the packages.)  
There is a risk of injury or damage.

### NOTICE

- **Do not drop the product or subject it to strong shock.**  
There is a risk of failure or damage.
- **Do not subject connectors to shock.**  
There is a risk of faulty connections or damage.
- **Never subject the product to an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine) during transportation.**  
There is a risk of failure or damage.
- **If disinfectants or insecticides must be used to treat packing materials such as wooden frames, pallets, or plywood, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.**

**Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.**

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

## ■ Installation Precautions



### CAUTION

- **Install the product in the specified orientation.**  
There is a risk of fire or failure.
- **Do not step on or place a heavy object on the product.**  
There is a risk of failure, damage, or injury.
- **Do not allow any foreign matter to enter the product.**  
There is a risk of failure or fire.
- **Do not touch the component surface or solder surface with your hands.**  
There is a risk of product failure, computer failure, and injury.

## NOTICE

- **Do not install or store the product in any of the following locations.**
  - Locations that are subject to direct sunlight
  - Locations that are subject to ambient temperatures that exceed product specifications
  - Locations that are subject to relative humidities that exceed product specifications
  - Locations that are subject to condensation as the result of extreme changes in temperature
  - Locations that are subject to corrosive or flammable gases
  - Locations that are near flammable materials
  - Locations that are subject to dust, salts, or iron powder
  - Locations that are subject to water, oil, or chemicals
  - Locations that are subject to vibration or shock that exceeds product specifications
  - Locations near devices that generate strong magnetic fields
  - Locations that are subject to radiation

If you store or install the product in any of the above locations, the product may fail or be damaged.

- **Do not drop the product or subject it to strong shock.**

There is a risk of failure or damage.
- **Never install the product in an atmosphere containing halogen (fluorine, chlorine, bromine, or iodine).**

There is a risk of failure or damage.
- **Remove all static electricity from your body before you touch the product.**

There is a risk of equipment damage due to static electricity.
- **When you install the product, press it firmly all the way to the back of the slot. If the product cannot be pressed to the back of the slot, do not force it. Remove it from the slot and try again.**

There is a risk of malfunction or failure in the product or computer.
- **Depending on the computer in which you install the product, the product may need to be secured with screws or other means after installation. If doing so is necessary, secure the product reliably. Refer to the documentation for the computer you are using for the method to secure the product.**

If the product is not secured properly, there is a risk of malfunction or failure in the product or computer.



## ■ Wiring Precautions



### DANGER

- Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.



### WARNING

- Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.



### CAUTION

- Check the wiring to be sure it has been performed correctly. There is a risk of product failure or malfunction.
- Install molded-case circuit breakers and other safety measures to provide protection against short circuits in external wiring. There is a risk of fire or failure.
- In places with poor power supply conditions, ensure that the input power is supplied within the specified voltage range. There is a risk of equipment damage.
- Provide sufficient shielding when using the product in the following locations.
  - Locations that are subject to noise, such as from static electricity
  - Locations that are subject to strong electromagnetic or magnetic fields
  - Locations that are subject to radiation
  - Locations that are near power linesThere is a risk of equipment damage.
- Configure the circuits to turn ON the power supply to the product before the 24-V I/O power supply.

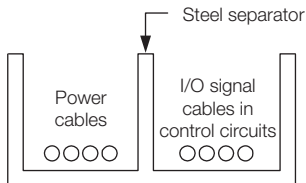
If the power supply to the product is turned ON after the external power supply, e.g., the 24-V I/O power supply, the outputs from the product may momentarily turn ON when the power supply to the product turns ON. This can result in unexpected operation that may cause injury or device damage.
- Provide emergency stop circuits, interlock circuits, limit circuits, and any other required safety measures in control circuits outside of the product.

There is a risk of injury or device damage.
- If you use MECHATROLINK I/O Modules, use the establishment of MECHATROLINK communications as an interlock output condition. There is a risk of device damage.

## CAUTION

- Select the I/O signal wires for external wiring to connect the product to external devices based on the following criteria:
  - Mechanical strength
  - Noise interference
  - Wiring distance
  - Signal voltage
- Separate the I/O signal cables for control circuits from the power cables both inside and outside the control panel to reduce the influence of noise from the power cables.  
If the I/O signal lines and power lines are not separated properly, malfunction may occur.

Example of Separated Cables



## NOTICE

- Whenever possible, use the Cables specified by Yaskawa.  
If you use any other cables, confirm the rated current and application environment of your model and use the wiring materials specified by Yaskawa or equivalent materials.

## ■ Operation Precautions



### WARNING

- Do not radically change the settings of the parameters.  
There is a risk of unstable operation, machine damage, or injury.
- For trial operation, securely mount the Servomotor and disconnect it from the machine.  
There is a risk of injury.



### CAUTION

- Design the system to ensure safety even when problems, such as signal line disconnection, occur.
- Implement interlock signals and other safety circuits external to the product to ensure safety in the overall system even if the following conditions occur.
  - Product failure or errors caused by external factors
  - Shutdown of operation due to product detection of an error in self-diagnosis and the subsequent turning OFF or holding of output signals
  - Holding of the ON or OFF status of outputs from the product due to fusing or burning of output relays or damage to output transistors
  - Voltage drops from overloads or short-circuits in the 24-V output from the product and the subsequent inability to output signals
  - Unexpected outputs due to errors in the power supply, I/O, or memory that cannot be detected by the product through self-diagnosis.There is a risk of injury, device damage, or burning.

### NOTICE

- After you complete trial operation of the machine and facilities, back up the settings of the product parameters. You can use them to reset the parameters after product replacement.  
If you do not copy backed up parameter settings, normal operation may not be possible after a faulty product is replaced, which could result in machine or equipment damage.

## ■ Maintenance and Inspection Precautions

### **DANGER**

- Do not change any wiring while power is being supplied.  
There is a risk of electric shock or injury.

### **WARNING**

- Wiring and inspections must be performed only by qualified engineers.  
There is a risk of electric shock or product failure.

### **CAUTION**

- Before you replace the product, back up the settings of the product parameters. Copy the backed up parameter settings to the new product and confirm that they were copied correctly.  
If you do not copy backed up parameter settings or if the copy operation is not completed correctly, normal operation may not be possible, possibly resulting in machine or equipment damage.
- Do not attempt to disassemble or repair the product.  
There is a risk of electric shock, injury, or device damage.

### **NOTICE**

- Discharge all static electricity from your body before you operate any of the buttons or switches on the product.  
There is a risk of equipment damage.

## ■ Troubleshooting Precautions

### **WARNING**

- The product may suddenly restart when the power supply is recovered after a momentary power interruption. Design the machine to ensure human safety when operation restarts.  
There is a risk of injury.

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## ■ Disposal Precautions

- When disposing of the product, treat it as ordinary industrial waste. However, local ordinances and national laws must be observed. Implement all labeling and warnings for the final product as required.

## ■ Other General Precautions

- Figures provided in this manual are typical examples or conceptual representations. There may be differences between them and actual wiring, circuits, and products.
- The products shown in illustrations in this manual are sometimes shown with their covers or protective guards removed to illustrate detail. Always replace all covers and protective guards before you use the product.
- If you need a new copy of this manual because it has been lost or damaged, contact your nearest Yaskawa representative or one of the offices listed on the back of this manual.
- This manual is subject to change without notice for product improvements, specifications changes, and improvements to the manual itself. We will update the document number of the manual and issue revisions when changes are made.
- Any and all quality guarantees provided by Yaskawa are null and void if the customer modifies the product in any way. Yaskawa disavows any responsibility for damages or losses that are caused by modified products.

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# Warranty

## ◆ Details of Warranty

### ■ Warranty Period

The warranty period for a product that was purchased (hereinafter called “delivered product”) is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

### ■ Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the warranty period above. This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

- Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
- Causes not attributable to the delivered product itself
- Modifications or repairs not performed by Yaskawa
- Use of the delivered product in a manner in which it was not originally intended
- Causes that were not foreseeable with the scientific and technological understanding at the time of shipment from Yaskawa
- Events for which Yaskawa is not responsible, such as natural or human-made disasters

## ◆ Limitations of Liability

- Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
- Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
- The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
- Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

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## ◆ Suitability for Use

- It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
- The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
- Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
  - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions or environments not described in product catalogs or manuals
  - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
  - Systems, machines, and equipment that may present a risk to life or property
  - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
  - Other systems that require a similar high degree of safety
- Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
- The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
- Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

## ◆ Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

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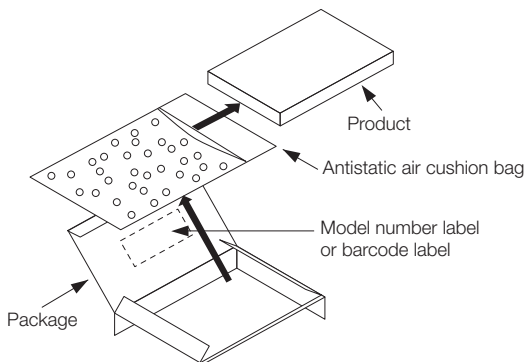
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# 1 Confirmations Upon Delivery

When you open the package, you will find the product in an antistatic air cushion bag.



Please confirm the following items as soon as you receive the product.

Item	Confirmation Method
Have you received the correct product as ordered?	Confirm that the model number on the package is the same as the model number given on the PCB. Check all accessories as well.
Is the product damaged in any way?	Check the appearance of the entire product for any damage that might have occurred during shipment.

If you find any problems with the above items, contact the place of purchase or your Yaskawa representative immediately.

## 1.1 Accessories

Name	Model Number	Remarks
Cable Tie	T18R-V0	To secure USB memory

## 2 Installation and Wiring

Refer to the following manual for details on installing and wiring the product.



Machine Controller MP3000 Series MP3100 Product Manual  
(Manual No.: SIEP C880725 24)


## 3 Inspections

Perform inspections according to the information that is provided in this section.

### 3.1 Daily Inspections

The daily inspection items are given in the following table.

Inspection Item	Description	Criteria	Correction
Connection conditions	Connectors	Connectors must not be loose.	Tighten the lock screws on the connectors.
Indicators	S1 indicator	Make sure the indicator is lit. The indicator must be lit green. (If it is not lit, the Controller is being initialized. If it is lit red or flashing red, there is an error.)	Refer to the relevant manual.*
	S2 indicator	Make sure the indicator is lit. The indicator must be lit green. (If it is not lit, the user program is stopped. If it is lit red or flashing red, there is an error.)	
	M-ALM indicator	Make sure the indicator is not lit. The indicator must not be lit. (If it is lit, there is an axis alarm.)	
	CN indicator	Make sure the indicator is lit. The indicator must be lit green. (If it is not lit, MECHATROLINK-III communications are not established.)	
	LK1 indicator	Make sure the indicator is lit. The indicator must be lit yellow. (It is lit while MECHATROLINK-III communications are active on port 1.)	
	LK2 indicator	Make sure the indicator is lit. The indicator must be lit yellow. (It is lit while MECHATROLINK-III communications are active on port 2.)	

\*  Machine Controller MP3000 Series MP3100 Product Manual  
(Manual No.: SIEP C880725 24)

## 3.2 Periodic Inspections

Perform the following inspections at least once a year.

Inspection Item		Inspection Period	Description	Correction
Ambient conditions	Ambient temperature	At least 1 or 2 times every 6 to 12 months	Measure the temperature and humidity with a hydrometer and thermometer and measure corrosive gas. They must be within specifications.	Remove sources of contamination or improve the installation environment.
	Ambient humidity			
	Atmosphere			
Cleaning PCBs	At least 1 time a year	There must be no dirt, dust, oil, or other foreign matter on the product.	Clean the product with air or a cloth.	
Visual exterior inspection				
Loose screws			There must be no looseness in terminal screws or connector lock screws.	Tighten the screws.
Abnormalities in the PCB components			There must be no discoloration due to heat, damage, or disconnections.	Contact your Yaskawa representative.

# 4 EMC Standard Compliance

The product complies with the following EMC standards: EN 55011 group 1 class A, EN 61000-6-2, and EN 61000-6-4. However, the product is an electric device that is used as part of a machine or manufacturing equipment. Therefore, the EMC performance will also depend on the configuration of the actual system, wiring conditions, and other conditions. It is the user's responsibility to confirm EMC standard compliance for the overall machine or equipment.

# Revision History

The revision dates and numbers of the revised manuals are given on the bottom of the back cover.

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Published in Japan January 2017

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## Machine Controller MP3000 Series

# MP3100

## Instructions

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# YASKAWA

YASKAWA ELECTRIC CORPORATION

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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MANUAL NO. TOMP C880725 25A <1>-0

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## 控制器中含有有害物质的信息

### コントローラの有害物質含有情報

#### Information on hazardous substances in controllers

本资料根据中国《电器电子产品有害物质限制使用管理办法》制定。

本資料は、中国「電器電子製品有害物質使用制限管理弁法」に基づいて記載しています。

This is based on the “Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products.”

产品中含有有害物质的名称及含量  
製品中の有害物質名称及び含有量  
Contents of hazardous substances in products

部件名称 部位名称 Parts Name	有害物质 有害物質 Hazardous substances					
	铅 鉛 Lead (Pb)	汞 水銀 Mercury (Hg)	镉 カドミ ウム Cadmium (Cd)	六价铬 6価クロム Hexavalent chromium (Cr VI)	多溴联苯 ポリ臭化 ビフェニル Polybromina ted biphenyls (PBB)	多溴二苯醚 ポリ臭化 ジフェニル エーテル Polybrominated diphenyl ethers (PBDE)
实装 基板 実装 基板 Circuit Board	×	○	○	○	○	○
外壳 ケース Case	○	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

本表は SJ/T 11364 の規定により作成したものです。

This table has been prepared in accordance with the provisions outlined in SJ/T11364.

○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

×

表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

- ：該当部品全ての均質材料による有害物質の含有量が GB/T 26572 に定める限量の要求以下であることを示します。
- ×：該当部品中の少なくとも1種類の均質材料における当該有害物質の含有量が、GB/T 26572 に定める限量を上回っていることを示します。
- ：Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below or equal to the limit requirement of GB/T 26572.
- ×：Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

注：本产品符合欧洲的 RoHS 指令。

上表中的“×”表示含有欧盟 RoHS 指令豁免的有害物质。

注記：本製品は欧州の RoHS 指令に適合しています。

上記表の“×”は、欧州 RoHS 指令の適用除外である有害物質を含むことを示します。

Note：This product complies with EU RoHS directives.

In the above table, “×” indicates that hazardous substances that are exempt from EU RoHS directives are contained.



한국 전파법에 관한 주의사항

韓国電波法に關連する注意事項

Precautions for Korean Radio Waves Act

针对韩国电波法的注意事项

Précautions pour la Loi coréenne relative aux ondes radio

사용자 안내문

기종별	사용자 안내문
A 급 기기 (업무용 방송 통신기 자재)	이 기기는 업무용 (A 급) 전자파 적합 기기로서 판매자 또는, 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.