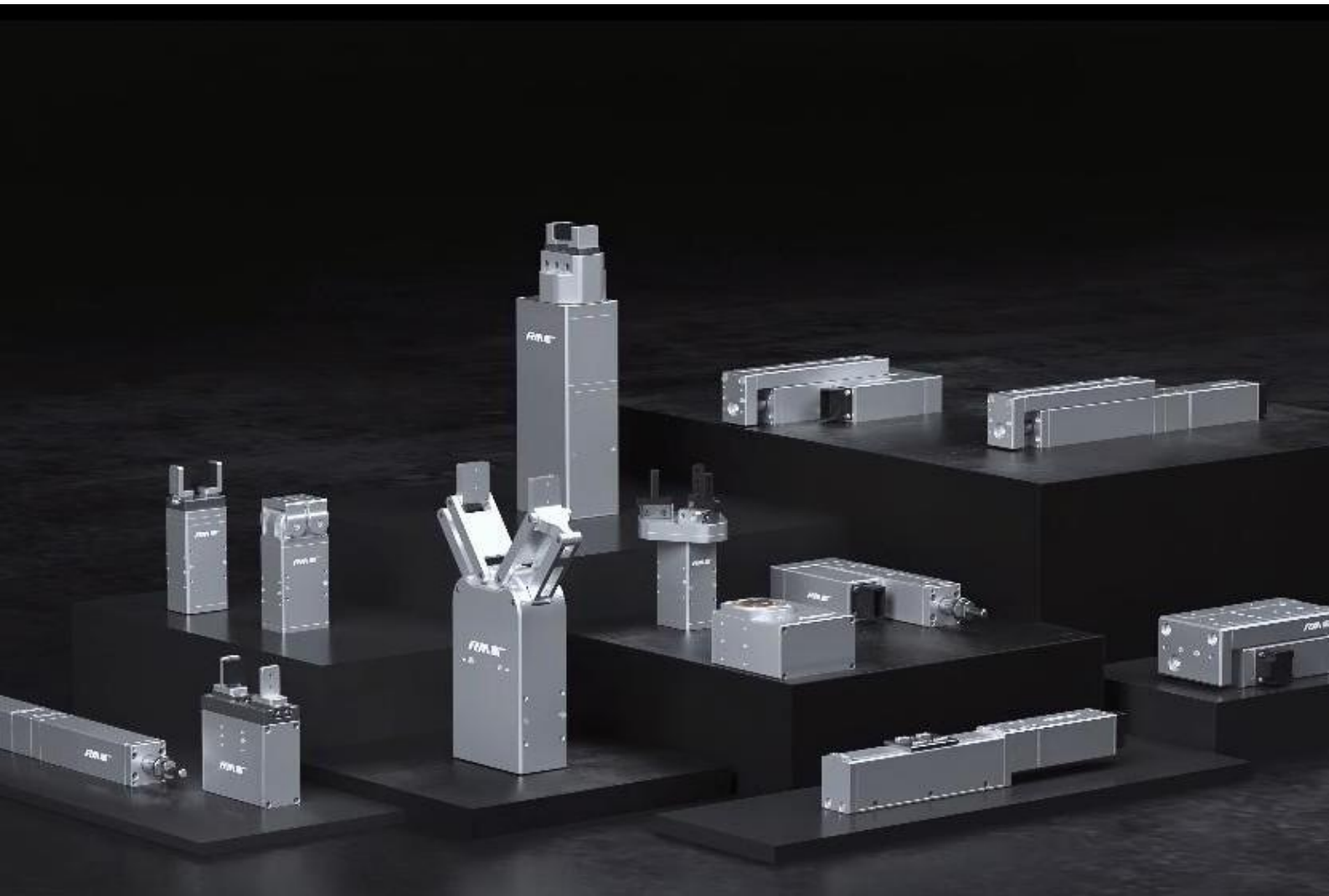


General Precautions - RM Electric Actuator

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1. Precautions for wiring and cables

1.1 Warning

1.2.1 **The power supply of the product must be cut off before adjustments, setting, inspection, wiring changes,**

There may be electric shock, malfunction, damage, etc.

1.2.2 **The cables must not be disassembled. It is absolutely forbidden to use cables not specified by the Company.**

1.2.3 **The cables and plugs must not be plugged and unplugged when the power is on.**

1.2 Notice

1.2.1 **Please correctly and firmly wire.**

Do not apply voltages other than those specified in the operating instructions to each terminal.

1.2.2 **Firmly connect the interface.**

Please fully confirm the connection object and pay attention to the direction of the plug when connecting.

1.2.3 **Please fully handle interference signals.**

If an interference signal (electronic noise) is added to the signal line, it will cause malfunction. As a countermeasure, the strong power is separated from the weak power and the wiring length is shortened.

1.2.4 **Do not use the same wiring path as power lines and high-voltage lines.**

If interference signal electronic noise and overvoltage from power lines and high-voltage lines are mixed into the signal lines, it may cause malfunctions. The wiring of the controller and peripheral equipment should be separated from the power line and high voltage line.

1.2.5 **Please avoid entanglement of cables.**

1.2.6 **Please fix the cable to avoid being moved easily during use.**

The bending angle of the cable at the cable outlet of the fixed module cannot be an acute angle.

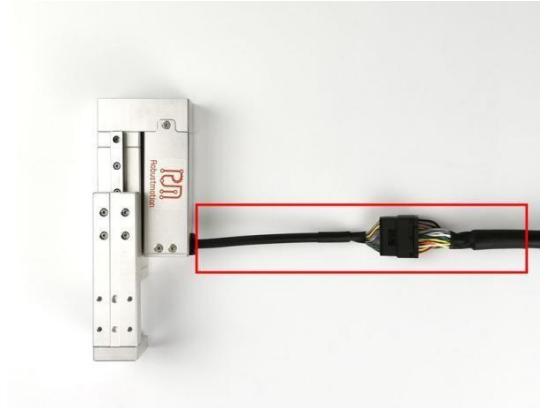
1.2.7 **Please do not distort, twist, bend and turn the cables or apply external force, and avoid the sharp-angle bending of the cables.**

There may be electric shock, cable disconnection, poor contact, loss of control, etc.

1.2.8 **Fix the cables from the module.**

The cable from the module is not a towline resistant cable.

If there is a possibility of disconnection when moving, please fix it to prevent it from moving (red box in the figure below).



1.2.9 When the CB-RM-C-ME drive cable needs to be bended repeatedly, do not store the cable in a movable wiring duct 1 with a bending radius less than 10 times (10*OD or more) of the specified cable diameter.

Repeated bending actions may cause electric shock, cable disconnection, poor contact, loss of control, etc. if it is smaller than the specified cable diameter.

1.2.10 Please confirm the insulation of the wiring.

Poor insulation (mixed contact with other paths, poor insulation between terminals, etc.) will apply excessive voltage or inflow current to the controller or peripheral equipment, which may cause damage to the controller or peripheral equipment.

1.2.11 The speed and thrust may vary according to cable length, load, installation conditions, etc.

When the cable length exceeds 5m, the speed and thrust will be reduced by a maximum of 10% every 5m. (15m: Maximum 20% reduction)

2. Handling

2.1 Notice

2.1.1 Do not carry or drag cables together.

3. Precautions/selection for design

3.1 Warning

3.1.1 Please read the module instruction manual

3.1.2 Please do not exceed the usage stated in the instruction manual or the specification range, otherwise it will cause damage to the product and malfunction.

Damages caused by use not in accordance with the requirements of the instruction manual and use beyond the specification range are not covered by the warranty under any circumstances.

3.1.3 When the mechanical sliding part of the module causes a change in the force, such as twisting,

there may be a danger of exceeding the set speed or inducing shock operation.

It may cause personal injury such as pinching hands and feet, as well as equipment damage. Therefore, the adjustment of mechanical action should be considered in the design to avoid personal injury.

3.1.4 Please install a protective cover in case of personal injury.

Please install a structure that can avoid direct contact between the part and the human body where the movable part of the driven object and module may cause personal injury.

3.1.5 Please tighten the fixed part and connection part of the connection module to avoid loosening.

Please apply a method that can firmly connect the module when it is used in a place with high operating frequency or frequent vibration.

3.1.6 Please consider the possibility of power source failure.

Please take countermeasures so that the human body and equipment will not be damaged in case of power source failure.

3.1.7 Please consider the measures in case of emergency stop of devices.

Please make corresponding design to ensure that the human body, components and devices will not be damaged due to the operation of the module when emergency stop signals of device or is received or other system anomalies require the safety device to start and stop, such as power failure.

3.1.8 Please operations of emergency stop or restarting after an abnormal stop.

Please design the device to avoid personal injury and equipment damage when restarting.

3.1.9 Please do not disassemble or modify (including follow-up processing).

It may cause personal injury or accidents.

It is possible that product performance cannot be guaranteed.

3.1.10 Please do not use the stop signal as an emergency stop of devices.

The stop command of the controller software can decelerate and stop the module. The emergency stop of the device should be set separately, which should meet the relevant specifications.

3.1.11 Install safety devices in case of vertical use.

Please install safety devices to avoid personal injury and equipment damage.

3.2 Notice

3.2.1 Please use it within the maximum range of usable travel.

If it is used beyond the maximum travel, the main body will be damaged. Please refer to the specifications of each module for the maximum travel.

3.2.2 Please perform the full travel operation more than once a day or once every 1000 reciprocating operations when the electric module repeats the reciprocating operation with a small travel.

The grease may be consumed up.

3.2.3 Please do not apply excessive external force and impact when using.

Excessive external force and impact will damage the main body. All parts including the motor are processed on the basis of precise tolerances. Therefore, even slight deformation and positional deviation will cause malfunction of electric actuator.

3.2.4 It is not possible to return to the origin during operation (positioning operation and pressing operation).

3.2.5 Please use Class 2 power supply unit that complies with UL1310 for the DC power supply for UL compliance.

4. Installation

4.1 Warning

4.1.1 Please install and use the product on the basis of carefully reading the instruction manual and understanding its content. Please keep it in a safe place for use at any time.

4.1.2 Strictly observe the connection thread and tightening torque.

Please tighten the threads according to the recommended torque in the installation.

4.1.3 Do not following process the product.

The strength of the product will be insufficient in case of follow-up processing, which will lead to product damage, personal damage, components, and equipment damage.

4.1.4 The shaft core of the rod must be consistent with the load and moving direction.

If it cannot be kept consistent, the feed screw will be clamped, causing wear and damage.

4.1.5 Please make sure that the connection between the module and the load will not be jammed at any position of the travel when the external guide is used.

Please do not collide with sliding parts or load objects to avoid knocking injuries. All parts are processed on the basis of precise tolerances, so slight deformation will cause malfunction of the electric actuator.

4.1.6 Apply grease to the rotating parts (pin shafts, etc.) to prevent burns.

4.1.7 Please do not use it before confirming that the equipment is operating normally.

Please turn on the power supply after installation and repair, and perform appropriate functional inspections to confirm whether the installation is correct.

4.1.8 Where one side is fixed

When high-speed operation is performed with one-side fixed and one-side free installation (basic type, flange type, direct mounting type), the bending torque generated by the vibration at the end of the travel may damage the functions of the module. Therefore, please install a support or reduce the speed to a level that does not cause the module to vibrate to suppress the vibration of the module. In addition,

please use the support when the module is moved or the long-stroke module is fixed on one side horizontally.

4.1.9 Please do not apply strong impact or excessive torque when the product body and workpiece are installed.

If a torque exceeding the allowable value is applied, a gap will occur in the guide part, and the sliding resistance will increase.

4.1.10 Secure maintenance space

Please ensure the space required for maintenance and inspection.

5. Precautions for use

5.1 Warning

5.1.1 Please do not touch the motor with hands during operation.

The surface temperature will rise to 65°C affected by the surface temperature and operating conditions. In addition, the surface temperature will also become high when only energized and not operating. Therefore, it is absolutely forbidden to touch the powered motor with hands to avoid burns.

5.1.2 Please cut off the power immediately in case of abnormal heating, smoke, fire, etc.

5.1.3 Please stop the operation immediately in case of abnormal sound and vibration.

Abnormal sound and vibration may be caused by improper installation of the product. If it is not handled, the components will be damaged.

5.1.4 Please do not touch the rotating part of the motor in the operation.

5.1.5 Please cut off the power of each element and take measures such as locking or installing safety plugs in the setting, adjustment, inspection, and maintenance of modules, controllers and related equipment to prevent people other than the implementer from turning on the power again.

5.1.6 The module will automatically perform phase alignment detection after it is powered on. The front and back alignment movement gap should be reserved before power-on.

(When an obstacle is encountered during the alignment detection operation, it will cause the module to fail to align and run abnormally)

5.2 Notice

5.2.1 Please keep the combination mode of the controller and module at the factory for use. The parameters of each module have been set when leaving the factory. If it is not used in combination, it may cause failures.

5.2.2 Please implement the following inspections before operation.

- a) Whether the electric wire and signal wire are damaged
- b) Is there any gap or looseness in the plugs of each power supply and signal line
- c) Is there any gap or looseness in the installation
- d) Whether there is any abnormality
- e) Emergency stop function of the device

5.2.3 Specify the operation steps, gestures, and measures for abnormalities, as well as the recovery steps from the above situations in advance in case of multi-person operation, and assign monitoring personnel other than the operators.

5.2.4 The actual speed may not reach the set speed due to different loads and resistance. Please confirm the selection method and specifications before use in the selection.

5.2.5 Please apply loads, shocks or resistance other than carrying loads when it returns to the origin.
The origin position may be shifted in case of returning to the origin by pressing.
Please do not remove the label.
Please confirm the operation of the module at a low speed, and then run at the set speed after there is no problem.

6. Grounding

6.1 Warning

6.1.1 Please implement the grounding of the module.

6.1.2 Please ground professionally.

The grounding project is D-type grounding. (Earth resistance of below 100Ω)

6.1.3 The grounding should be as close as possible to the module, and the grounding distance should be as short as possible.

7. Open the bundle

7.1 Notice

7.1.1 Please confirm whether the actual product is the ordered product.

Wrong products may cause injury, damage, etc.

8. Use environment

8.1 Warning

8.1.1 Please avoid using in the following environments.

- a) Places with foreign matter, dust, and chips.
- b) Places where the ambient temperature exceeds the specification temperature of each model (refer to the specification table).
- c) Places where the ambient humidity exceeds the specification humidity of each model (refer to the specification table).
- d) Places with corrosive gas, flammable gas, sea water, water, water vapor or where these substances adhere.
- e) Places where strong magnetic fields and electric fields occur.
- f) Places subject to direct vibration and shock.
- g) Places with a lot of dust and water or oil droplets attached.
- h) Places exposed to direct sunlight (ultraviolet rays).
- i) Places exceeding 1000m above elevation.

Heat dissipation and voltage resistance may be reduced. Please consult the Company for details.

8.1.2 Please do not use it in an environment where it is in direct contact with liquids such as cutting oil.

It may cause failures when used in an environment where cutting oil, coolant, oil mist, etc. are attached.

8.1.3 Please install a protective cover when it is used in an environment that directly contacts foreign objects such as dust, dust, cutting chips, welding slag, etc.

Otherwise, gaps will occur, and sliding resistance will be increased.

8.1.4 Please shelter it from sunlight in places exposed to direct sunlight.

8.1.5 Please take sheltering measures in case of a heat source around.

Please install a protective cover to shelter it in case of a heat source in the environment, whose radiant heat will cause the temperature of the product to rise and exceed the range value.

8.1.6 The consumption of the grease base oil may be accelerated due to differences in the external environment and operating conditions, which will reduce the lubrication performance and affect the service life of equipment.

9. Storage

9.1 Warning

9.1.1 Please do not store in places with rain, water droplets, harmful gases and liquids.

9.1.2 Please keep away from direct sunlight and meet the range requirements of temperature and humidity

Store in places (-10~60°C, 35~85% without condensation or freezing).

9.1.3 Please do not subject it to vibration or impact in the storage.

10. Precautions for maintenance and inspection

10.1 Warning

10.1.1 Please do not disassemble and repair.

It may cause fire and electric shock.

Please consult the Company for disassembly such as maintenance and inspection.

10.1.2 Please cut off the power first, and check the voltage with an electric meter after 5 minutes before proceeding in the wiring and inspection.

It may cause electric shock.

10.2 Notice

10.2.1 Please follow the steps in the instruction manual for maintenance and inspection.

Wrong use may cause personal injury and damages or malfunctions to the elements and devices.

10.2.2 Disassembly of elements

Please confirm that measures have been taken to prevent the driven body from falling and out of control, and cut off the power to the equipment before disassembling. Please confirm safety before restarting

11. Oil

11.1 Notice

11.1.1 It can be used without oil, for it has been lubricates initially.

Special grease should be added in the lubrication. Please refer to the maintenance of each module.

12. Precautions for the lock module

12.1 Warning

12.1.1 It cannot be controlled by the locking force, nor can it be used as a safety brake

The locking of the lock module is designed to prevent it from falling.

12.1.2 The lock module is recommended in case of vertical use.

If a module without locking is used, the loss of the holding force when the power is turned off will cause the workpiece to fall. Please design a device so that even if the workpiece falls, it will not cause a safety accident in case of using a module without locking.

12.1.3 The so-called falling prevention refers to the prevention of the workpiece from falling due to its own weight when the power is turned off after the module stops operating, without vibration or impact.

12.1.4 The module should not be subject to impact load and strong vibration in the locked state.

When subjected to external impact load and strong vibration, the holding force will decrease, the locking sliding part will be damaged and the service life will be reduced. If the holding force is exceeded to make it slide, it will also accelerate the wear of the sliding part of the lock and reduce the holding force and the service life of the lock mechanism. Please be careful.

12.1.5 Please do not apply liquid and grease on or near the locking part. If liquid and oily substances are attached to the sliding part of the lock, the holding force will be significantly reduced. In addition, the performance of the locking sliding part may change, which may cause unlocking failure.

12.1.6 Please install, adjust, and inspect the product after implementing measures of falling prevention and fully ensuring safety.

The workpiece may fall due to its own weight when it is unlocked in the vertical installation state.

13. Controller (including drive) and peripheral equipment

- Precautions for design and selection

13.1 Warning

13.1.1 Please use it under the specified voltage.

If a voltage other than the specified voltage is used, it may cause malfunction and damage. When the applied voltage is lower than the specified value, the load may not operate due to the drop in the internal voltage of the controller. Please check the operating voltage before use.

13.1.2 Please do not use it beyond the specification range.

It may cause fire, malfunction, and damage to the module if beyond the specification range. Please confirm the specifications before use.

13.1.3 Please set up an emergency stop circuit.

Please set up an emergency stop circuit externally to immediately stop the operation of the module and cut off the power supply.

Please build a backup system in advance, such as multi-system elements, devices, and fault-tolerant designs to prevent damage to the controller and peripheral equipment from failure and malfunction.

-
- 13.1.4 Please cut off the power supply of the main body and the system immediately if there is a risk of fire or personal injury due to abnormal heating, smoke, or fire of the controller and peripheral equipment.**

14. Precautions for use

14.1 Warning

- 14.1.1 Please do not touch the inside of the controller and peripheral devices with hands.**
It may cause electric shock or failures.
- 14.1.2 Please do not operate and set with wet hands.**
It may cause electric shock.
- 14.1.3 Please do not use products that are damaged or lack parts.◦**
It may cause electric shock, fire, and injury.
- 14.1.4 Please use the specified combination of electric module and controller.**
It may cause failures of the module or controller.
- 14.1.5 Please be careful not to get your hands caught in the workpiece, and do not touch the workpiece when the module is operating.**
It may cause personal injury.
- 14.1.6 Please confirm the safety of the moving range of the workpiece before turning on the power supply or turning on the power switch.**
An accident may occur due to the movement of the workpiece.
- 14.1.7 Please do not touch the main body during power-on and just after the power is cut off, for there will be a period of high temperature.**
It may cause burns due to high temperature.
- 14.1.8 Please cut off the power supply first and check the voltage with an electric meter, etc. after 5 minutes before proceeding in the installation, wiring and inspection.**
It may cause electric shock, fire, or injury.
- 14.1.9 Static electricity may cause malfunction and damage of the controller. Do not touch the controller when power is supplied.**
Please take anti-static measures before operating when the controller needed to be touched in the maintenance operation.
- 14.1.10 Do not use it in places with dust, dust, water, chemical liquid, or oil splashes.**
Otherwise, it may cause failure or malfunction.

- 14.1.11 Do not use it in a place where a magnetic field is generated.**
Otherwise, it may cause failure or malfunction.
- 14.1.12 Do not use it in an environment with flammable gas, explosive gas, or corrosive gas.**
Otherwise, it may cause fire, explosion, and corrosion.
- 14.1.13 Please avoid direct sunlight, or close to the heat treatment furnace, etc., to prevent radiant heat from large heat sources.**
It may cause failure of the controller or peripheral equipment.
- 14.1.14 Do not use it in an environment where the temperature cyclically changes.**
It may cause failure of the controller or peripheral equipment.
- 14.1.15 Do not use it in places where there is a source of surge voltage.**
If the installation equipment (electromagnetic crane, high-frequency induction furnace, motor, etc.) that generates a large amount of surge voltage is placed, it may cause deterioration or damage to the internal circuit elements of the controller and peripheral equipment. Therefore, please consider the countermeasures against the source of the surge, and pay attention to avoiding the mixed contact of the lines.
- 14.1.16 Do not use it in an environment free from external vibration and impact.**
Otherwise, it may cause failure or malfunction.
- 14.1.17 Please use products with built-in overvoltage to protect elements when relays and solenoid valves are directly driven to generate loads with surge voltage.**
- 14.1.18 A power supply other than the inrush current suppression specification should be used for the input power supply and input/output signal power supply of the controller, and the system should be separated and wired.**
If the power supply is an inrush current suppression type, a voltage drop may occur during acceleration.

15. Installation

15.1 Warning

- 15.1.1 The controller and peripheral equipment should be installed on non-combustible materials.**
There is a risk of fire in case of directly installing on or near flammable materials.
- 15.1.2 Please install the product in places free from vibration and impact.**
Otherwise, it may cause failure or malfunction.

15.1.3 Please install the vibration source of the controller and peripheral equipment, large electromagnetic contactor and non-fuse circuit breaker in different panels or install them separately by other methods.

15.1.4 Please install the controller and peripheral equipment on a flat surface.

If the mounting surface is uneven and deformed, applying excessive force to the housing may cause failures.

15.1.5 Please make sure that the controller and peripheral devices are cooled to the operating temperature range shown in the specifications.

In addition, the sides of the main body and the structure and parts should be set at a distance. It may cause failures or fire of the controller or peripheral equipment.

16. Power supply

16.1 Notice

16.1.1 Please use a power supply with less interference signals between the lines and the earth.

Please connect an insulating transformer in case of many interference signals.

16.1.2 Please take countermeasures to prevent surges caused by lightning and separate the grounding of the lightning overvoltage protector from the grounding of the controller and peripheral equipment.

17. Grounding

17.1 Warning

17.1.1 Please ground to ensure noise resistance.

17.1.2 Please ground professionally.

The grounding project is D-type grounding. (Earth resistance of below 100Ω)

17.1.3 The grounding should be as close as possible to the controller or the peripheral equipment, and the grounding distance should be as short as possible.

17.1.4 Please cut off the grounding in case of a malfunction due to grounding.

18. Wiring

18.1 Warning

18.1.1 Please do not make cables damaged, loaded heavily, clamped, bended repeatedly, and applied external force.

It may cause electric shock, fire, or disconnection.

18.1.2 Please do not incorrectly wiring.

Incorrect wiring may cause damage to the controller or peripheral equipment.

18.1.3 Please do not power on during wiring.

It may cause damage and malfunction to the controller or peripheral equipment.

18.1.4 Please do not handle the cables by hands.

Otherwise, it may cause injury and product failure.

18.1.5 Please do not use the same wiring path for power lines and high-voltage lines.

Noise and surge voltage mixed into signal lines from power lines and high-voltage lines will cause malfunctions.

Please separate the wiring of the controller and peripheral equipment from the power lines and high voltage lines.

18.1.6 Please confirm the insulation of the wiring.

It can cause damage to the controller or peripheral equipment if poor insulation (mixed with other circuits, poor insulation between terminals, etc.), applies excessive voltage or current to the controller or peripheral equipment.

19. Maintenance inspection

19.1 Warning

19.1.1 Please carry out maintenance inspection regularly.

Please confirm whether there is loose wiring or threads.

It may cause malfunction of system elements.

19.1.2 Otherwise, please implement appropriate functional inspections after maintenance inspection.

Please stop the operation in case of abnormalities such as the failure of the devices or elements to operate normally. Unexpected malfunction may lead to safety cannot be guaranteed. Please give emergency stop instructions for safety confirmation.

19.1.3 Please do not disassemble, modify or repair the controller and peripheral equipment.

19.1.4 Please do not allow conductive foreign objects or flammable foreign objects to enter the controller.

Otherwise, it may cause a fire.

19.1.5 Please do not conduct insulation resistance test and insulation resistance voltage test.

19.1.6 Please secure maintenance space.

Please consider the space required for maintenance inspection in the design.

20. Disclaimer

We reserve the right to change products or specifications without prior notice. The information in the manual is subject to change without notice. Detailed manuals and information can be downloaded from official website www.rmaxis.com. It is strictly prohibited to copy, disclose or use information in other ways.

21. Life assurance policy

Without the explicit written confirmation of Foshan Zengguang Intelligent Technology Co., Ltd., the Company has not authorized or guaranteed its products to be used in life support systems.

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