Peitian Robotics

AIR series industrial robot system troubleshooting and handling manual

Intelligent equipment manufacturing industry

Solution provider

Statement

Before using an industrial robot, be sure to read the relevant manual carefully and use the industrial robot correctly under the premise of understanding its content.

No content in this manual may be copied or disseminated in any way without permission.
All parameter specifications and designs are subject to change at any time without prior notice.
No responsibility is accepted for possible errors in this manual.

We have tried to describe as many situations as possible in this manual.
However, for various reasons, we have not described those situations where it is unnecessary and impossible to do.
So situations that are not described in the manual can be considered "impossible" situations.

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Logo used in this article

The common symbols and meanings in this article are detailed in Table 1.

Table 1 Logo used in this article

Logo	Name	Meaning
	Danger	If instructions are not followed, an accident may occur, resulting in serious or fatal injury to persons or serious damage to property.
	Warn	If instructions are not followed, an accident may occur, resulting in serious or fatal personal injury, or serious damage to property.
	Notice	Prompts you to pay attention to the environmental conditions and important matters, or quick operation methods
	Prompt	You are prompted to refer to other literature and instructions for additional information or more detailed operating instructions for the acquire.

General safety instructions

Thank you for purchasing our company's manipulator. This instruction manual is the content that needs to be followed for the safe use of manipulator. Before using manipulator, please be sure to read the relevant manual carefully and use manipulator correctly under the premise of understanding the content.

For detailed functions of manipulator, users are requested to fully understand its specifications through the relevant manual.

Safety Precautions

Under normal circumstances, manipulator cannot operate alone. It can only operate after the end effector is installed and the peripheral equipment and system are constructed.

When considering its security, manipulator cannot be considered independently, but should be considered within the system environment.

When using the manipulator, be sure to take appropriate measures for the safety fence.

Warnings, Cautions and Tips

This manual include ensures the personal safety of the operator and prevents damage to the manipulator. The precautions are described in the text as "warning" and "note" according to their importance in safety, and the relevant supplementary instructions are described as "tips".

Users must read the items described in these "Warnings", "Cautions" and "Tips" before using manipulator.

 Warn

Improper operation may cause death or serious injury to the operator or other workers.

 Notice

Improper operation may cause death or serious injury to the operator or other workers.

 Prompt

Indicate additional instructions other than warnings and cautions.

General precautions

Warn

When coupled or disconnecting related peripheral equipment (such as safety fence, etc.) and various signals of manipulator, be sure to confirm that manipulator is in a stopped state to avoid error coupled.

Warn

Do not use the manipulator under the conditions shown below. Otherwise, it will not only cause adverse effects on the manipulator and peripheral equipment, but may also cause casualties to the operating personnel.

- For use in flammable environments.
- For use in explosive environments.
- For use in environments where large amounts of radiation are present.
- Use in water or high humidity environments.
- Used for the purpose of transporting people or animals.

Use it as a tripod (such as climbing on top of manipulator, or hanging from below).

Warn

Workers using manipulator should wear the safety equipment shown below before working.

- Work clothes suitable for the work content
- safety shoes
- helmet

Prompt

Personnel performing programming and maintenance operations must receive appropriate training through our company's relevant training.

Things to note when installing

Warn

When transporting and installing the manipulator, be sure to follow the methods shown in our company's manual correctly. If the operation is performed in the wrong way, the operator may be injured or killed due to the manipulator tipping over.

Warn

When using manipulator for the first time after installation, be sure to do it at a low speed, then gradually increase the speed and confirm whether there are any abnormalities.

Precautions during operation

Warn

When using manipulator, be sure to confirm that no one is inside the safety fence before proceeding. At the same time, check whether there are potential hazards. When it is confirmed that there is a potential hazard, be sure to eliminate the hazard before proceeding with the operation.

Warn

When operating with a teach pendant, operating errors may occur while wearing gloves. Therefore, be sure to take off the gloves before starting the operation.

Prompt

Information such as programs and system variables can be saved in storage media such as memory cards. In order to prevent data loss due to unexpected accidents, it is recommended that users back up their data regularly.

Things to note when programming

Warn

When programming, try to do it outside the safety fence. When you need to do it inside the safety fence due to unavoidable circumstances, you should pay attention to the following matters:

- Check the situation inside the safety fence carefully and make sure there is no danger before entering the fence.
- You can press the emergency stop button at any time.
- manipulator should be run at low speed.
- Work should be carried out after confirming the status of the entire system to avoid putting workers in danger due to remote control of the instruction or movements of peripheral equipment.

Notice

After programming, the test operation must be carried out according to the prescribed steps. At this time, the operator must operate outside the safety fence.

Prompt

Workers who perform programming must receive appropriate training through our company's relevant training.

Precautions during maintenance work

Warn

When the power is turned on, some maintenance operations may involve the risk of electric shock. Maintenance operations should be performed with the manipulator and system power supplies disconnected as much as possible; professional maintenance personnel should be designated as needed to perform maintenance operations; other personnel should be prevented from contacting the power supply during maintenance operations. Turn on the power; even if the power must be turned on before work can be carried out, the emergency stop button should be pressed before work can be carried out.

Warn

When parts need to be replaced, please consult our company.

If the customer replaces parts on his own, unexpected accidents may occur, resulting in damage to manipulator and injuries to operators.

Warn

When entering the safety fence, carefully check the entire system and confirm that there is no danger before entering. If a dangerous situation exists and access to the fence is necessary, the status of the system must be understood and extreme caution must be exercised.

Warn

If parts need to be replaced, be sure to use parts designated by our company. If parts other than the specified parts are used, it may cause damage to the manipulator.

Warn

When disassembling the motor and brake, measures such as lifting with a crane should be taken before dismantling to prevent the manipulator arm from falling.

Warn

When performing maintenance operations and it is necessary to move the manipulator due to necessity, the following matters should be noted:

- Be sure to ensure that the escape route is clear, and you should first understand the operation of the entire system before proceeding to prevent manipulator and peripheral equipment from blocking the escape route.
- Always be aware of dangers around you and be ready to press the emergency stop button if needed.

Warn

When moving component units with a certain weight such as motors and reducers, auxiliary equipment such as cranes should be used to avoid placing excessive work burden on workers. At the same time, incorrect operation must be avoided, otherwise it may result in casualties of workers.

Warn

Be careful not to fall down due to lubricating oil spilled on the ground. Wipe off the lubricating oil dropped on the ground as soon as possible to eliminate possible dangers.

Warn

When working, do not place any part of your body on any part of manipulator, and do not climb on manipulator to avoid unnecessary personal injury or adverse effects on manipulator.

Warn

The following parts will generate heat and need to be paid attention to. If you have to touch the equipment under heat, you should prepare heat-resistant gloves and other protective equipment:

- Servo motor
- Reducer
- Components adjacent to the motor/reducer
- Inside the control cabinet


Warn

Parts (such as screws, etc.) that are removed when replacing parts should be correctly installed back to their original positions. If parts are found to be insufficient or there are remaining parts, they should be confirmed again and installed correctly.


Warn

When performing maintenance on pneumatic systems and hydraulic systems, be sure to release the internal pressure to 0 before proceeding.


Warn

After replacing parts, be sure to perform test operations according to the prescribed methods. At this time, workers must operate outside the safety fence.


Warn

After the maintenance work is completed, grease, debris and water spilled on the ground around manipulator and inside the safety fence should be thoroughly cleaned up.


Warn

When replacing parts, prevent dust and other foreign matter from entering the interior of manipulator.

Warn

Workers who perform maintenance and repair operations must receive training from the company and pass relevant assessments.

Warn

When performing maintenance work, appropriate lighting equipment should be equipped, but care must be taken not to cause the lighting equipment to become the source of new hazards.

Warn

Be sure to refer to this manual for regular maintenance; failure to perform regular maintenance will affect the service life of manipulator and may lead to accidents.

Safety precautions

Before running the manipulator and peripheral equipment and the manipulator system of construct, the safety precautions for the operators and the system must be fully studied. Figure 1 is a diagram of the safe working of industrial robots.

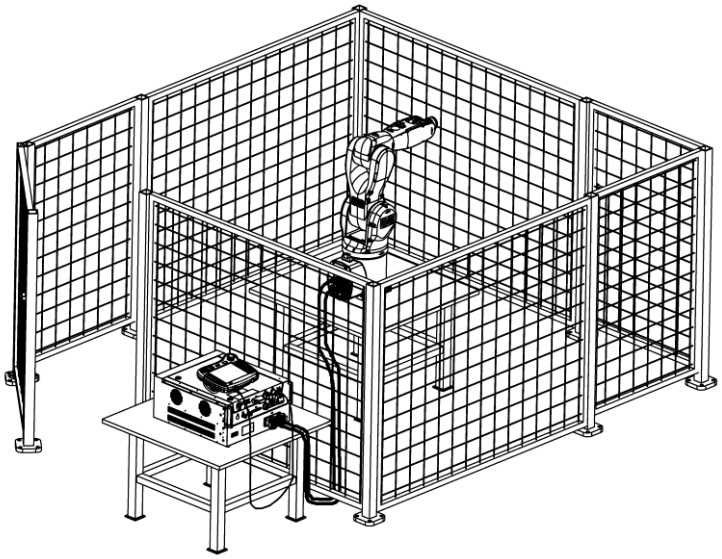

Figure1 Industrial robot safety working diagram

Worker definition

The operating personnel of manipulator are mainly divided into three types: operators, teachers, and maintenance engineers. The conditions that these three types of operating personnel need to meet are described as follows:

Operator

- Perform the manipulator power ON/OFF operation.
- Start the manipulator program through the operation panel.
- No authority to carry out work within the safety fence.

Teacher

- Have the functions of an operator.
- manipulator teaching, etc. can be performed within the safety fence.

Maintenance engineer

- Have the function of teachers.
- manipulator maintenance (repair, adjustment, replacement, etc.) operations can be performed.

Safety of workers

When operating, programming, and maintaining manipulator, operators, instructors, and maintenance engineers must pay attention to safety and at least wear the following items when working:

- Work clothes suitable for the work content
- Safety shoes
- Helmet

When using an automatic system, efforts must be made to ensure the safety of workers. It is very dangerous to enter the manipulator operating range. Measures should be taken to prevent workers from entering the manipulator operating range.

The following are general precautions. Please take appropriate measures to ensure the safety of workers:

- Operators running the manipulator system should receive training from the company and pass relevant assessments.
- When the equipment is running, even if manipulator seems to have stopped, it may be because manipulator is waiting for a start signal and is about to act. This state should also be regarded as the manipulator is in the operating state. In order to ensure the safety of workers, the manipulator should be confirmed to be in operating status by the display or sound of the warning light.
- Be sure to set up safety fences and safety doors around the system so that workers cannot enter the safety fences without opening the safety doors. The safety door should be equipped with interlock switches, safety bolts, etc., so that when the operator opens the safety door, the manipulator will stop.
- Peripheral equipment should be electrically grounded.
- Peripheral devices should be set outside the manipulator operating range as much as possible.
- The action range of manipulator should be clearly marked by drawing lines on the floor, so that the operator can clearly understand the action range of manipulator including the manipulator and other tools equipped on the include manipulator.
- A gasket switch or photoelectric switch should be installed on the floor so that when the operator is about to enter the manipulator's action range, an alarm will be issued through a buzzer and light, causing the manipulator to stop, thereby ensuring the safety of the operator.
- A lock should be set as needed so that the manipulator power supply cannot be connected except for the operator responsible for the operation.
- When performing individual debugging of peripheral devices, be sure to disconnect the power supply of manipulator.

Operator safety

The operator is not authorized to perform work inside the safety fence:

- When manipulator does not need to be operated, the power supply of the manipulator control cabinet should be disconnected or the emergency stop button should be pressed.
- manipulator system operation should be performed outside the safety fence.
- In order to prevent irrelevant personnel from accidentally entering the manipulator working range, or to prevent operators from entering dangerous places, protective fences and safety doors should be installed.
- Emergency stop buttons should be provided within the operator's reach.

Notice

The manipulator control device is designed to accept the coupled external emergency stop button. With this coupled, manipulator can be stopped when the external emergency stop button is pressed.

Teacher safety

When performing manipulator teaching operations, it is necessary to enter the manipulator working range under certain circumstances. At this time, special attention should be paid to safety:

- When there is no need to enter the manipulator action range, be sure to perform operations outside the manipulator action range.
- Before performing teaching operations, you should confirm that manipulator or peripheral equipment is in a safe state.
- When it is necessary to enter the manipulator action range for teaching operations under unavoidable circumstances, the position and status of the safety devices (such as emergency stop button, emergency automatic stop switch of the teach pendant, etc.) should be confirmed in advance.
- Teachers should pay special attention not to let other people enter the manipulator action range.
- Before starting manipulator, you should fully confirm that there are no people within the action range of manipulator and there are no abnormalities before executing it.
- After teaching is completed, be sure to perform a test run according to the following steps:

  Step1. At low speed, step through at least one loop to confirm there are no exceptions.

  Step2. At low speed, run continuously for at least one cycle to confirm that there are no abnormalities.

  Step3. At medium speed, run continuously for at least one cycle to confirm that there are no abnormalities.

  Step4. At the operating speed, run continuously for one cycle to confirm that there are no abnormalities.

  Step5. Execute the program in automatic run mode.

- Instruct the teacher to evacuate outside the safety fence when manipulator is operating automatically.

Maintenance engineer safety

In order to ensure the safety of maintenance engineers, full attention should be paid to the following matters:

- During the operation of manipulator, do not enter the action range of manipulator.
- Whenever possible, perform maintenance work with the control device powered off. The main circuit breaker should be locked with a lock, etc., as necessary to prevent other persons from connecting the power supply.
- When it is necessary to enter the manipulator working range during power-on, press the emergency stop button of the control cabinet or the teach pendant before entering. In addition, operators should hang a sign saying "Maintenance in progress" to remind other personnel not to operate manipulator at will.
- Before performing maintenance operations, make sure that the manipulator or peripheral equipment is in a safe state;
- Do not perform automatic operation when there are people within the operating range of manipulator.

- When working next to walls, equipment, etc., or when several workers are close to each other, be careful not to block the escape routes of other workers.
- When there are knives on the manipulator, and when there are movable appliances such as conveyors in addition to the manipulator, full attention should be paid to the actions of these devices.
- During operation, a person who is familiar with the manipulator system and can detect dangers should be placed next to the operation panel and operation box, so that he or she can press the emergency stop button at any time.
- When replacing parts or reassembling, care should be taken to avoid adhesion or mixing of foreign matter.
- When servicing the inside of the control device, if you need to come into contact with the unit, printed circuit board, etc., to prevent electric shock, be sure to turn off the power supply to the main circuit breaker of the control device before proceeding.
- When replacing parts, be sure to use parts designated by our company.
- When restarting the manipulator system after maintenance work, you should fully confirm in advance that there is no one within the action range of manipulator and that manipulator and peripheral equipment are in a normal state.

Peripheral device security

Notes on procedures

- In order to detect a dangerous state, detection equipment such as a limit switch should be used, and the manipulator should be stopped as necessary based on the signal from the detection equipment.
- When other manipulator or peripheral devices are abnormal, even if there is no abnormality in the manipulator, corresponding measures should be taken, such as stopping manipulator, etc.
- If it is a system in which manipulator and peripheral devices operate synchronously, special attention needs to be paid to avoid interference with each other.
- In order to control the status of all devices in the system from manipulator, manipulator and peripheral devices can be interlocked and the operation of manipulator can be stopped as needed.

Mechanical considerations

- The manipulator system should be kept tidy and used in an environment that is not affected by grease, water, dust, etc.
- Do not use cutting fluids and cleaning agents of unknown properties.
- Limit switches and mechanical brakes should be used to limit the operation of the manipulator to avoid collisions between the manipulator and peripheral devices.
- User cables, hoses, etc. are not allowed to be added to manipulator.
- When installing cables, etc. outside the manipulator, please be careful not to interfere with the movement of the machine.
- For models with manipulator internal cables exposed to the outside, please do not make modifications that would hinder the movement of the exposed cable parts.
- When installing external equipment on the manipulator, sufficient care should be taken to avoid interference with other parts of the manipulator.
- For manipulator in operation, frequent power-off and stop operations through emergency stop buttons, etc. will cause manipulator failure.

Manipulator machinery safety

Precautions during operation

When operating the manipulator in slow feed mode, no matter what the situation, the operator should remain highly vigilant and respond quickly to the occurrence of various problems.

Notes on procedures

When the operating ranges of multiple manipulator units overlap, sufficient care should be taken to avoid interference between the manipulator units.

Be sure to set the specified operating origin for the manipulator program, and create a program that starts from the operating origin and ends at the operating origin, so that it can be clearly seen from the outside whether the manipulator operation has ended.

Institutional considerations

The working environment of manipulator should be kept clean so that manipulator can be used in an environment that is not affected by grease, water, dust, etc.

End effector safety

When controlling various types of transmission devices (pneumatic, hydraulic, electrical), after issuing control instruction, the time difference between instruction and actual action should be fully considered, and control with a certain degree of flexibility should be performed.

A detection unit should be installed on the end effector to monitor the status of the end effector and control the action of manipulator.

Manipulator nameplate

Manipulator nameplate

Figure 2 Manipulator nameplate

The manipulator nameplate is shown in Figure 2. It is generally located at the base of the manipulator. The nameplate indicates the model, version number, weight, serial number, production date and other information of the manipulator.

The nameplate is located on the base of manipulator, contain, the model, version number, weight, serial number, production date and other information of manipulator.

No approaching label

Figure 3 No approaching label

No approaching label as shown in Figure 3. If workers see this sign, please stay away from the manipulator working area, otherwise the action of the manipulator may cause casualties.

No trampling label

Figure 4 No trampling label

Figure 4 shows a no trampling label. This sign reminds workers not to step on manipulator with their feet. Otherwise, it will have adverse effects on manipulator, and workers may be injured due to stepping on the air.

High temperature lable

Figure 5 High temperature identification

Places with high temperature signs (see Figure 5) may generate heat. When you see this sign, you should pay attention to avoid being burned. If you have to touch the device when it is hot, be sure to use heat-resistant gloves and other protective equipment before touching it.

Each axis movement direction

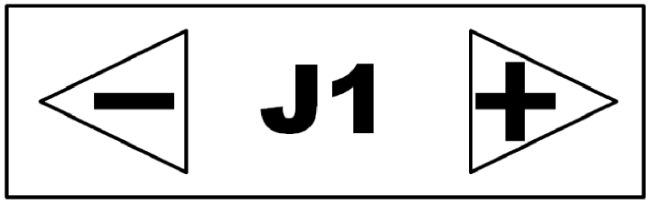

Figure 6 Movement direction diagram of each axis of manipulator

Figure 6 shows the movement direction diagram of each axis of manipulator. J1 axis to J6 axis of manipulator have positive and negative movement direction marks at the rotating or swinging coupled part. The mark "J1" in Figure 6 represents J1 axis, and the plus and minus signs represent the positive and negative directions of rotation respectively. Other axes are represented by corresponding numbers.

Contents

1 Document overview

1.1 Document purpose and content

This manual is applicable to common troubleshooting of the AIR robot system.

1.2 Document number and version

See Table 1-1 for document related information.

Table 1-1 Document related information

Document name	Document number	Document version
"AIR series industrial robot system troubleshooting and handling manual"	BJM/SS-UG-02-004	V2.5.1

1.3 Document usage object

- Operator
- Teacher
- Maintenance engineer

1.4 Related document information

The content in this article may involve the following documents, please refer to them if necessary:

- "ARCCXX Control Cabinet Manual"
- "AIRXX Industrial Robot manipulator Manual"
- "AIR-TP Teaching Pendant Operation Manual"
- "ARL Programming Manual"
- "AIR Series Industrial Robot System Packaging List"

2 Safety

2.1 Safety during troubleshooting

All normal servicing work, installation, maintenance and repair work are usually performed with all electrical, pneumatic and hydraulic power turned off.

Mechanical stops are usually used to prevent all operator movements. Troubleshooting work is different. During troubleshooting, all power can be turned on, and the robot movement can be manually controlled through a locally running robot program or a teach pendant. The dangers include:

- All electrical components must be considered live.
- The teach pendant can perform any movement operation.
- The corresponding safety circuit, such as door switch interlock, etc., must be disconnected before further troubleshooting operations can be carried out.

2.2 Precautions for safe troubleshooting

Danger of live electricity inside the control cabinet


Warn

Even when the main switch is turned off, some terminals inside the control cabinet are live.

- Countermeasures: Make sure the input main power supply is turned off, and measure the voltage with a multimeter before performing maintenance.

Burns from hot parts


Warn

During normal operation, many manipulators become hot, especially the drive motor and gears, and touching them may cause severe burns.

- Countermeasures: Before dismantling, use your hands to feel whether there is heat radiation from the components that will get hot at a distance. If disassembly is required, wait until it cools down.

3 Control system troubleshooting

Table 3-1 Control system troubleshooting

Fault phenomenon	Possible causes	Processing method
The control cabinet cannot be powered on	Power outage	Check the power wiring and check the input power voltage
The teach pendant does not light up after the control cabinet is powered on.	The teach pendant is not powered on	Check the power connection and interface of the teach pendant
	The teach pendant is damaged	Replace the teach pendant
The teach pendant cannot coupled	Network cable coupled problem	Check the network cable coupled
	The host computer is not started	Check the host computer power supply
The robot cannot be powered on	Emergency stop button is pressed	Lift the emergency stop button
The robot cannot move and has no alarm	The program is in simulation mode	Uncheck emulation mode
Axis position exceeds limit	After the software limit is removed, it is re-engaged after the movement reaches outside the software limit.	After removing the software limit, move each axis of the robot to the required range, and then hook up the software limit
	The encoder wire has been removed	Recalibrate the axis
The running path distance is inconsistent with the actual distance	Robot not calibrated correctly	Confirm that each axis of the robot is in the correct position and recalibrate
	Tool coordinate system not defined correctly	Confirm tool definition for robot
	The type of robot is inconsistent with the configuration file	Confirm that the configuration file is correct
RTEX coupled alarm	A module was not powered off during the last power outage.	The control cabinet is powered off and then restarted
	Motion control card damaged	Replace motion control card

4 Common driver alarm handling

4.1 AIR driver common alarm handling

Alarm code

Er100

- Alarm name

  Authorization expiration error.

- Possible Causes

  Authorization expired.

- Processing method

  Re-enter the authorization code from Fn012 and Fn013.

Er101

- Alarm name

  The EEPROM parameters are abnormal.

- Possible causes

  The content of address 0x3FF of EEPROM is not 0xAAAA.

- Processing method

  Write 0xAAAA to the 0x3FF address of the EEPROM, and then restart the driver.

Er102

- Alarm name

  Programmable logic configuration failure.

- Possible causes

  Continuous communication between EARM and FPGA failed. Failure of either ARM or FPGA to initialize properly will cause this fault.

- Processing method

  1. Reduce bus configuration parameter frequency.
  2. Replace the drive.

Er103

- Alarm name

Initialization failure.

- Possible causes

1. FPGA loading failed.
2. Bus chip initialization failed.

- Processing method

1. Re-program the firmware.
2. Check whether the EEPROM of the bus chip has been programmed.
3. Replace the drive.

Er105

- Alarm name

System exception.

- Possible causes

1. The FSMC transmission has not been completed when the sync signal on the FPGA arrives.
2. On ARM, more than 65 bytes can be transmitted through the serial port at one time.

- Processing method

Replace the drive.

Er110

- Alarm name

Overcurrent detection fault.

- Possible causes

1. The IPM issues an overcurrent alarm signal; short circuit of the motor power line, drive power-on angle scaling factor, current scaling factor, Iulv polarity configuration error, and motor encoder not zeroing may cause an overcurrent alarm.
2. The parameter "IGBT overcurrent protection effective level" is improperly configured.

- Processing method

1. Confirm whether the driver is working under a large load. If the load is too large, you need to replace the driver with a higher power or reduce the load of the driver.
2. Check the power line from the drive to the motor for a short circuit.
3. Check whether the relevant parameters of the drive (electrical angle scaling factor, Iulv polarity, current scaling factor) are configured correctly.
4. The motor encoder is set to zero.

5. Check if the IPM is shorted.
6. Check whether the parameter IGBT overcurrent protection effective level GateKillSns is configured correctly.

Er112

- Alarm name

  The built-in fan of the servo unit stops.

- Possible causes

  1. The fan has failed.
  2. The parameter "L/N power-down protection effective level" is improperly configured.

- Processing method

  1. Check whether the fan is blocked.
  2. Check whether the parameter L/N power-down protection effective level FSSns is configured correctly.

Er113

- Alarm name

  Control power outage.

- Possible causes

  1. L/N input voltage is insufficient.
  2. The parameter "Fan fault monitoring level" is configured improperly.

- Processing method

  1. Check whether the driver's L/N is correctly connected to the power supply.
  2. Check whether the parameter fan fault monitoring level PowerDownSns is configured correctly.

Er401

- Alarm name

  Bus parity bit failure.

- Possible causes

  Bus data check error.

- Processing method

  Improve the use environment, strengthen shielding measures, and reduce interference.

Er402

- Alarm name

  Bus ID does not match.

- Possible causes

  The slave station (driver) ID and slave station ID in the master station instruction do not match.

- Processing method

  Check to ensure whether the slave station (driver) ID in the master station instruction matches the ID of the slave station. The slave station ID is set through Pn008.

Er403

- Alarm name

  Bus command mismatch.

- Possible causes

  The working mode in instruction sent by the master station does not match the working mode set on the slave station (driver).

- Processing method

  Check to ensure that the command issued by the master station matches the working mode set on the slave station (driver).

Er404

- Alarm name

  Bus communication timed out.

- Possible causes

  1. Bus communication frames dropped.
  2. The master station and slave station are coupled.
  3. The main station is not working.

- Processing method

  1. Check the connection between the master station and the slave station.
  2. Make sure the master station is working.

Er504

- Alarm name

  Overspeed.

- Possible causes

  The actual speed of the motor exceeds the value set by the parameter "overspeed threshold".

- Processing method

  1. Check whether the servo system is working at an excessively high speed and reduce the servo speed appropriately.
  2. Set the overspeed threshold (Pn314) to a larger value.
  3. Correctly set the parameter speed scaling factor Spdscl.
  4. Confirm whether the U, V, W phase sequence of the motor is correct.

Er512

- Alarm name

  Motor overload (continuous maximum load).

- Possible causes

  Overload alarm. This alarm may be triggered only when Iq (corresponding output torque) continuously exceeds 4096 (rated value). Factors that may cause Iq to exceed 4096: excessive load, parameter configuration errors, motor encoder not zeroing, UV phase current direction error, motor power phase loss.

- Processing method

  1. Check whether the load is too large (for example, whether the holding brake is loosened and whether the external resistance is too large).
  2. Check whether the parameters "Q/D axis current scaling factor" and "overload protection threshold" are configured correctly.
  3. Check whether the Iulv polarity configuration is correct.
  4. The motor encoder is set to zero.
  5. Check the motor power electrical wiring (power electrical phase is missing).

Er515

- Alarm name

  Regeneration abnormalities.

- Possible causes

  1. The jumper wire between terminals B2-B3 of the regenerative resistor coupled came off.
  2. The external regenerative resistor is poorly wired, disconnected or disconnected.

- Processing method

  1. Check that the jumper wires for coupled are correct.

2. Check whether the external regeneration resistor is correct coupled.

Er516

- Alarm name

  Regeneration overload.

- Possible Causes

  Regenerative resistor overload alarm. Unreasonable configuration of the parameters "regeneration resistor power", "regeneration slope - falling slope" and "regeneration slope - rising slope" may cause this alarm.

- Processing method

  1. Pay attention to the operating conditions of the drive and reduce the time the drive works in the regeneration state.
  2. Increase the parameter "regeneration resistor power", or increase the parameter "regeneration slope - falling slope", or decrease the parameter "regeneration slope - rising slope".

Notice

Even when the main switch is turned off, some terminals inside the control cabinet are live.

Er530

- Alarm name

  Overheated.

- Possible causes

  1. The internal temperature of the driver is too high (IPM sends an over-temperature signal).
  2. The parameter "radiator over-temperature protection effective level" is improperly configured.

- Processing method

  1. Improve the heat dissipation environment of the IPM, such as ensuring that there are no obstructions around the fan of the control cabinet.
  2. Modify the effective level of the IPM over-temperature signal (not recommended).

Er550

- Alarm name

  The power cord is missing a phase.

- Possible causes

  The input power is single phase rather than three phase.

- Processing method

  1. Provide three-phase 220V AC power to the drive's RST terminal.
  2. Set Pn055 (phase loss protection enable) to 0 to turn off phase loss protection (not recommended).

Er551

- Alarm name

  Overvoltage.

- Possible causes

  1. The power voltage of the input drive is too high, causing the bus voltage to be higher than 410V.
  2. The regenerative braking resistor is not connected or the regenerative resistor is inappropriately selected.

- Processing method

  1. Check whether the power input voltage is normal.
  2. Check whether the coupled of the regenerative resistor is correct.
  3. Choose a regenerative resistor with smaller resistance and higher power.

Er552

- Alarm name

  Undervoltage.

- Possible causes

  1. The power voltage of the input drive is too low, causing the bus voltage to be lower than 150V.
  2. The power supply power does not match, and the bus voltage drops due to excessive load.

- Processing method

  1. Check whether the power input voltage is normal.
  2. Set Pn015 to 0 to turn off the undervoltage alarm (not recommended).
  3. Use a power supply of sufficient power to power the servo system.

Er560

- Alarm name

  The encoder frequency division pulse output is too fast.

- Possible causes

  The output frequency of frequency division pulse is too high and exceeds the limit value.

- Processing method

1. Check whether the frequency-divided pulse output is configured correctly and reduce the number of encoder frequency-divided pulses.
2. Reduce motor speed.

Er650

- Alarm name

  The position deviation is too large.

- Possible causes

  The position error exceeds the parameter setting value.

- Processing method

1. Check whether the motor is blocked and whether the servo system is in contact with the hard limit.
2. Set the excessive parameter position deviation value to a large value.
3. Reduce position command acceleration.
4. Increase the speed loop and position loop gains, and increase the speed loop feedforward coefficient.

Notice

Excessive gain may cause system instability.

5. Reduce system load.

Er660

- Alarm name

  Abnormal pulse frequency.

- Possible causes

  The input pulse frequency is too high and exceeds the specified value.

- Processing method

  Reduce the input pulse frequency.

Er800

- Alarm name

  Encoder output power supply short circuit fault.

- Possible causes

If the encoder power supply and ground are connected reversely, the components of the driver may be burned out.

- Processing method

Check whether the positive and negative connections of the encoder power cord are reversed.

Er830

- Alarm name

Encoder off-line failure.

- Possible causes

1. The encoder is not connected to the driver coupled.
2. The driver parameters do not match the encoder type.

- Processing method

1. Check whether the encoder wiring is correct and whether the wiring is damaged, and then restart the encoder (generally means restarting the entire servo system).
2. Match the configuration of the drive parameters Pn001, Pn002, and Pn003 with the motor encoder type used.
3. Clear alarm via panel or servodebugger.

Er831

- Alarm name

Encoder overspeed.

- Possible causes

The speed exceeds 6600rpm when working; or the speed exceeds 10000rpm when not working.

- Processing method

Clear alarm via panel or servodebugger.

Er832

- Alarm name

The encoder is overheated.

- Possible causes

1. The encoder temperature is too high.
2. The servo motor is operating with a load that exceeds the rated value.

- Processing method

1. Check the temperature at the motor encoder to ensure that the temperature of the encoder circuit board is less than 93°C, and then clear the alarm through the panel or servodebugger.
2. Check to make sure the load of the servo motor is below the rated value.

Er833

- Alarm name

  Battery voltage alarm.

- Possible causes

  1. The encoder battery voltage is insufficient, lower than 3.1V.
  2. The encoder battery is connected reversely.

- Processing method

  Check the battery wiring and battery voltage to make sure the wiring is correct and the battery voltage is sufficient. If there is no battery, you need to configure the encoder as single-turn in the drive parameters and clear the alarm through the panel or servodebugger.

Er834

- Alarm name

  Battery voltage failure.

- Possible causes

  The battery voltage is lower than the specified value of 2.5V.

- Processing method

  Check the battery wiring and battery voltage to make sure the wiring is correct and the battery voltage is sufficient. If there is no battery, you need to configure the encoder as single-turn in the drive parameters and clear the alarm through the panel or servodebugger.

Er835

- Alarm name

  Encoder multiturn error.

- Possible causes

  There is a trip fault during the encoder power-on process.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).

2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
3. Clear multi-turn values via Fn010 (not recommended).

Er836

- Alarm name

  Encoder multi-turn overflow.

- Possible causes

  The encoder revolution count exceeds the maximum allowed value.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
  3. Clear multi-turn values via Fn010 (not recommended).

Er837

- Alarm name

  Encoder transmission verification failure (PE failure).

- Possible causes

  PE fault.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
  3. Strengthen shielding and reduce interference.

Er838

- Alarm name

  Encoder count abnormality (CE).

- Possible causes

  Encoder position count error.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
  3. Strengthen shielding and reduce interference.

Er839

- Alarm name

  Encoder frame delimitation level error (DE).

- Possible causes

  End of frame checksum error.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
  3. Strengthen shielding and reduce interference.

Er840

- Alarm name

  Encoder CRC failure.

- Possible causes

  CRC check failure.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
  3. Strengthen shielding and reduce interference.

Er841

- Alarm name

Encoder synchronization error.

- Possible causes

Synchronization error, the correct synchronization frame cf was not received.

- Processing method

1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
3. Strengthen shielding and reduce interference.

Er842

- Alarm name

Encoder frame check error.

- Possible causes

Frame check error.

- Processing method

1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
3. Strengthen shielding and reduce interference.

Er843

- Alarm name

Encoder multi-turn failure.

- Possible causes

Single turn: full precision state; multiturn, or multiple errors.

- Processing method

1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.
3. Clear multi-turn values via Fn010 (not recommended).

Er844

- Alarm name

  Encoder storage exception (MEMERR).

- Possible causes

  Encoder EEPROM failure.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.

Er845

- Alarm name

  The battery voltage was insufficient (MTERR) when the power was turned off last time.

- Possible causes

  Nikon encoders will trigger this alarm when the battery voltage is lower than 2.45V and the encoder is not working, and the alarm is latched in the encoder.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.

Er846

- Alarm name

  Encoder internal match exception 1 (STERR).

- Possible causes

  Single lap failure.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.

Er847

- Alarm name

  Encoder internal match exception 2 (PSERR).

- Possible causes

  Encoder carry/borrow error.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.

Er847

- Alarm name

  Encoder internal matching exception 3 (PSERR+STERR+MTERR).

- Possible causes

  Insufficient encoder voltage + single turn failure + carry/borrow error.

- Processing method

  1. Check the encoder wiring and battery voltage, make sure the wiring is correct and the battery voltage is sufficient, then restart the encoder (usually means restarting the entire servo system).
  2. Check whether the drive parameter Pn001, Pn002, and Pn003 configurations match the motor encoder type used.

Er997

- Alarm name

  Serial port failure.

- Possible causes

  The baud rate used by the debugging software is inconsistent with the baud rate set by the driver serial port.

- Processing method

  Change the baud rate of the debugging software so that the baud rate of the debugging software is consistent with the baud rate of the driver serial port.

Er998

- Alarm name

  Motor encoder failure.

- Possible causes

  Motor encoder failure.

- Processing method

  Query "encoder alarm" SHEET.

Er999

- Alarm name

  The power supply is out of power.

- Possible causes

  1. The drive is not connected to the power supply.
  2. The bus voltage is lower than 60V.

- Processing method

  1. Input two-phase/three-phase 220V AC power to the RST terminal of the driver.
  2. Set Pn050 on the driver to 0 and turn off the main power shutdown monitoring (not recommended).

4.2 Introduction to common alarms of Panasonic drives

See Table 4-1 for details on common alarm handling of Panasonic drives.

Table 4-1 Introduction to common alarms of Panasonic drives

Error code		Content	Attributes		
Main code	Auxiliary code		History record	Clearable	Stop now
11	0	Control power supply insufficient voltage protection		O	
12	0	Overvoltage protection	O	O	
13	0	Main power supply insufficient voltage protection (insufficient voltage between PN)		O	O
	1	Main power supply insufficient voltage protection (AC cutoff detection)		O	O
14	0	Over current protection	O		
	1	IPM exception protection	O		
15	0	Overheating protection	O		O
16	0	Overload protection	O	O	
	1	Torque saturation abnormality protection	O	O	

Error code		Content	Attributes		
Main code	Auxiliary code		History record	Clearable	Stop now
18	0	Regeneration overload protection	O		O
	1	Regeneration transistor abnormality protection	O		
21	0	Encoder communication disconnection abnormal protection	O		
	1	Encoder abnormal protection	O		
23	0	Encoder communication data abnormality protection	O		
24	0	Excessive position deviation protection	O	O	O
	1	Excessive speed deviation protection	O	O	O
25	0	Mixing deviation excessive protection	O		O
26	0	Over speed protection	O	O	O
	1	2nd overspeed protection	O	O	
27	1	Absolute clear protection	O		
	4	instruction abnormal protection 1	O		O
	5	instruction generates abnormal protection	O		O
	6	Action instruction clash protection	O	O	
	7	Location information initialization abnormal protection	O		
28	0	Pulse regeneration limit protection	O	O	O
29	0	Counter overflow protection 1	O		
	1	Counter overflow protection 2	O		
30	0	Security input protection [only for special products]		O	
33	0	I/F input duplicate allocation abnormality 1 protection	O		
	1	I/F input duplicate allocation abnormality 2 protection	O		
	2	I/F input function model abnormality 1 protection	O		
	3	I/F input function model abnormality 2 protection	O		
	4	I/F output function model abnormality 1 protection	O		
	5	I/F output function model abnormality 2 protection	O		
	8	Clamp input assignment abnormality protection	O		
34	0	Motor movable range setting abnormality protection	O	O	
36	0~2	EEPROM parameter abnormality protection			
37	0~2	EEPROM detection code abnormality protection			
38	0	Drive prohibition input protection 1		O	
	1	Driver prohibition input protection 2		O	
	2	Driver prohibition input protection 3	O		

Error code		Content	Attributes		
Main code	Auxiliary code		History record	Clearable	Stop now
40	0	Absolute system shutdown abnormality protection	O	O	
41	0	Absolute counter overflow abnormality protection	O		
42	0	Absolute speed abnormality protection	O	O	
43	0	Incremental encoder initialization abnormality protection	O		
44	0	In the case of the absolute type, the absolute type once-rotation counter error protection is used. In the case of the incremental type, the incremental type once-rotation counter error protection	O		
45	0	·In the case of absolute type, absolute multi-rotation counter abnormality protection ·In the case of incremental type, incremental multi-rotation counter abnormality protection	O		
47	0	Absolutely state abnormality protection	O		
48	0	Incremental encoder CS phase abnormality protection	O		
50	0	External feedback scale wiring abnormality protection	O		
	1	External feedback scale communication data abnormality protection	O		
51	0	External feedback scale ST abnormal protection 0	O		
	1	External feedback scale ST abnormality protection 1	O		
	2	External feedback scale ST abnormality protection 2	O		
	3	External feedback scale ST abnormality protection 3	O		
	4	External feedback scale ST abnormality protection 4	O		
	5	External feedback scale ST abnormality protection 5	O		
55	0	A phase wiring abnormality protection	O		
	1	B phase wiring abnormality protection	O		
	2	Z phase wiring abnormality protection	O		
82	0	RTEX node address setting abnormality protection	O		
83	0	RTEX continuous communication abnormality protection 1	O	O	O
	1	RTEX continuous communication abnormality protection 2	O	O	O
84	0	RTEX timeout abnormality protection	O	O	O
	3	RTEX synchronization establishment initialization abnormality protection	O		
	5	RTEX communication cycle abnormality protection	O	O	O
86	0	RTEX cycle data abnormality protection	O	O	O
	1	RTEX cycle data abnormality protection 1	O	O	O

Error code		Content	Attributes		
Main code	Auxiliary code		History record	Clearable	Stop now
	2	RTEX cycle data abnormality protection 2	O		O
87	0	Force alarm input protection		O	O
90	2	RTEX multiple axis synchronization establishment abnormality protection	O		
91	1	RTEX instruction abnormality protection	O	O	

4.3 Common alarm handling methods for Panasonic drivers

See Table 4-2 for details on common alarm handling of Panasonic drives.

Table 4-2 Common alarm handling methods for Panasonic drives

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
11	0	Control power supply insufficient voltage protection	The voltage between P-N of the control power rectifier is lower than the specified value. 100V products: about DC70V (about AC50V) 200V products: about DC145V (about AC100V) 400V products: about DC15V. The power supply voltage is low. A momentary power outage occurs. Insufficient power supply capacity… Affected by the inrush current when the main power supply is turned on, the power supply voltage drops. Drive failure (circuit failure).	100V, 200V products: Measure the line-to-line voltage of L1C-L2C on the connector and terminal block. 400V products: Measure the 24V-0V line-to-line voltage of the connector and terminal block. Enter the correct voltage. Replace the power supply. increase power supply capacity. Replace the drive with a new one.
12	0	Overvoltage protection	The voltage between P-N of the control power rectifier is lower than the specified value. 100V products: about DC200V (about AC140V) 200V products: about DC400V (about AC280V) 400V products: about DC800V (about AC560V). The power supply voltage exceeds the required input voltage range. Voltage rebound caused by phase-shifting capacitors or UPS (Uninterruptible Power Supply Unit). Drive failure (circuit failure).	Measure the line-to-line voltage of L1, L2, and L3 of the coupled device and terminal block. Enter the correct voltage and remove the phase shifting capacitor. Use a measuring instrument to measure the resistance value of the external resistance between the driver terminals B1-B2. When it is infinite, it is considered a broken wire. The external resistor should be replaced. Change the specified regenerative resistance value to the number of W. Replace the drive with a new one.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
13	0	Main power undervoltage protection (PN)	When Pr5.08=1, the instantaneous stop time between L1-L3 exceeds the time set by Pr5.09. Or when the servo is turned on, the voltage between the main power rectifier P-N is lower than the specified value. 100V products: about DC80V (about AC55V). 200V products: about DC110V (about AC75V) 400V products: about DC180V (about AC125V).	Measure the line-to-line voltage of L1, L2, and L3 of the coupled device and terminal block. Enter the correct voltage. Replace the power supply. After eliminating the fault of the main power electromagnetic contactor falling off, turn on the power again. Try to extend the Pr5.09 setting. Properly set each phase power supply. Increase power supply capacity. Properly connect each phase of the power supply. Single-phase 100V and single-phase 200V confirm whether to use L1 and L3. Replace the drive with a new one.
	1	Main power undervoltage protection (AC)	The power supply voltage is low. The electromagnetic contactor of the main power supply is opened. A momentary power outage occurs. Insufficient power supply capacity… Affected by the inrush current when the main power supply is turned on, the power supply voltage drops. Missing phase… Drivers that should be input into three-phase specifications actually operate with single-phase power. Drive failure (circuit failure).	
14	0	Over current protection	Rectifier current exceeds specification. Driver failure (defective circuit, IGBT parts, etc.) Motor cables U, V, and W are short-circuited. Motor wire is grounded. The motor is burned out. The motor wire has poor contact. Due to frequent opening and closing, the relay of the dynamic brake melted. instruction input and servo start are synchronized, or instruction input is earlier. The dynamic brake circuit overheated causing the thermal fuse to blow.	Remove the motor cable and turn on the servo. If failure occurs immediately, replace the drive with a new one. Check whether the motor wires coupled U, V, and W are short-circuited, and whether there are burrs in the coupled device wires, etc. Correct coupled motor cable. Check the insulation resistance between U, V, W of the motor cable and the motor ground. Please replace the motor with a new one if it runs poorly. Check whether the resistance between the wires of the motor is balanced. If not, the motor needs to be replaced. Check whether the coupled terminals of U, V, and W on the coupled part of the motor have fallen off. If they are loose or fallen off, they should be tightened. Replace the drive. Do not use servo ON/OFF to control operation/stop. After turning on the servo for 100ms, enter instruction again. Replace the drive.
	1	IPM abnormality protection IPM: intelligent power module		
15	0	Overheating protection	The temperature of the driver's radiator and power components exceeds the specified value. The ambient temperature of the driver exceeds the specified value. overload.	Improve the ambient temperature and cooling conditions of the drive. Capacity of increase driver and motor. Extend the acceleration and deceleration time. Reduce load.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
16	0	Overload protection	The actual effective value of torque instruction exceeds the set value, and the overload protection is activated according to the specificity. The load is too heavy, the actual effective torque exceeds the rated torque, and the machine continues to operate for a long time. Poor gain adjustment causes oscillation and vibration. The motor vibrates and makes abnormal sounds. The set value of the inertia ratio is abnormal. The motor wiring is wrong or disconnected. The machine is subject to collision, the load suddenly becomes heavier, and the machine is distorted. Keep the brake in motion. In the wiring of multiple machines, the motor wire coupled was mistakenly connected to other axis, and the wiring was incorrect.	Use analog output or communication to check whether the torque (current) waveform oscillates or shakes up and down excessively. Confirm overload warning display and load rate via communication or front panel. Increase the capacity of the driver and motor. Extend the acceleration and deceleration time and reduce the load. Readjust the gain. Connect the motor wires correctly according to the wiring diagram. Replace the cable. Eliminate mechanical distortion factors. Reduce the load. Measure the voltage at the brake terminals. Disconnect the holding brake. Correctly connect the motor line and encoder line coupled to their corresponding axis.
	1	Torque saturation abnormality protection	The number of consecutive occurrences of torque saturation reaches the set value.	Check the operating status of the driver. Please implement the same handling as Err16.0.
18	0	Recurrent overload protection	The regenerative energy exceeds the processing capability of the regenerative resistor. The large load inertia creates regenerative energy during deceleration, causing the rectifier voltage to rise, and the insufficient energy absorption of the regenerative resistor causes the voltage to rise. The motor speed is too high and the regenerative energy cannot be fully absorbed within the specified deceleration time. The operating limit of the external resistor is set to a load rate of 10%.	Confirm the regenerative resistor load factor using the front panel detector output or communication. Continuous regeneration pass-through use is not available. Check the operation mode (speed monitor). Check the regeneration resistor load rate and over-regeneration warning display. increase motor and servo drive capacity, slow down deceleration time. External regeneration resistor. Check the operation mode (speed monitor). Check the regeneration resistor load rate and over-regeneration warning display. increase motor and servo drive capacity, slow down deceleration time. Reduce motor speed. External regeneration resistor. Set Pr0.16 to 2.
	1	Regeneration transistor abnormality protection	The regenerative drive tranistor of the servo driver is faulty.	Replace the servo drive.
21	0	Encoder communication disconnection abnormal protection	The communication between the encoder and the servo driver is interrupted after reaching a certain number of times, and the disconnection detection function is activated.	Connect the encoder cable correctly as shown in the wiring diagram. Correct the incorrect wiring of the coupled device terminals.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	1	Encoder communication abnormality protection	The data communication of the encoder is abnormal. Data anomalies mainly caused by noise. Although with encoder coupled, the communication data is abnormal.	Make sure the power supply voltage of the encoder is DC5V±5% (4.75~5.25V)… Please pay attention especially when the encoder cable is long. If the motor wires and encoder wires are bundled together, please wire them separately. Connect the shielded wire to FG.
23	0	Encoder communication data abnormality protection	The data communication of the encoder is the same, but the data content is abnormal. Data anomalies mainly caused by noise. Although it is connected to the encoder line coupled, the communication data is abnormal.	
24	0	Excessive position deviation protection	The position deviation pulse exceeds the setting of Pr0.14. The motor does not operate according to instruction. The value of Pr0.14 is too small.	Check whether the motor rotates by position instruction. Confirm that the output torque of the torque monitor does not reach saturation. Adjust gain. Pr0.13 and Pr5.22 are set to the maximum value. Connect the encoder cable correctly according to the wiring diagram to extend the acceleration and deceleration time. Reduce load and reduce speed. Increase the setting value of Pr0.14.
	1	Excessive speed deviation protection	The deviation between the internal instruction speed and the actual speed exceeds the maximum setting of Pr6.02.	Increase the setting value of Pr6.02. Lengthen the acceleration and deceleration time of the internal position instruction speed, or adjust the increase tracking performance through gain adjustment. Disable excessive speed deviation detection (Pr6.02=0).
25	0	Mixing deviation excessive abnormality protection	During fully closed-loop control, the load position of the external feedback scale does not match the motor position of the encoder, exceeding the number of pulses set in Pr3.28. In fully closed-loop control, the instruction sub-frequency doubling molecule is changed or switched.	Check the coupled of the motor and load. Check the connection between the external feedback ruler and the servo driver. When starting the load, confirm that the change in motor position and the change in load position have the same sign. In fully closed-loop control, the instruction frequency multiplier is fixed.
26	0	Over speed protection	The rotation speed of the motor exceeds the setting value of Pr5.13.	Avoid excessive speed instruction. Confirm the rotation speed, frequency division and multiplication ratio of instruction. If overshoot occurs due to poor gain adjustment, please adjust the gain. Connect the encoder wires

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	1	Second overspeed protection	The rotation speed of the motor exceeds the setting value of Pr6.15.	correctly according to the wiring diagram.
27	1	Absolute clear protection	Use USB communication (PANATERM) to perform multi-rotation clearing of absolute encoders.	Check whether USB is used to clear the multi-rotation of the absolute encoder.
	4	instruction abnormal protection	The position instruction change amount (the value after the electronic gear) exceeds the specified value.	Check whether position instruction changes rapidly during semi-closed loop position control (CP). Confirm the electronic gear ratio. Confirm whether Update Counter changes according to the correct period.
	5	Instruction generation abnormal protection	An abnormality occurred such as position instruction generation processing exceeding the calculation range.	Check whether there are any omissions in the electronic gear ratio or acceleration and deceleration restrictions.
	6	Action command conflict protection	The frequency characteristics of the driver alone are measured and RTEX communication is established during test operation.	Check whether RTEX is established during frequency measurement and test operation.
	7	Location information initialization exception protection	Attribute C of the RTEX communication reset instruction executes servo on during parameter validation mode processing.	Check the attribute C of the reset instruction of RTEX communication to see if the servo is in the on state during parameter validation mode processing.
28	0	Pulse regeneration limit protection	The output frequency of pulse regeneration exceeds the limit. (After 4 times the frequency, 5Mpps)	Confirm the setting values of Pr0.11 and Pr5.03. When the detection is invalid, set Pr5.33 to 0.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
29	1	Counter overflow protection 1	After the control power is turned on in absolute mode, when the attribute C parameter validation mode is executed, the value of the absolute encoder position/electronic gear ratio in the position information initialization process after FFT execution or test run execution exceeds ±231	Confirm and correct the electronic gear ratio within the absolute encoder position operating range.
	2	Counter overflow protection 2	The position deviation value of the pulse unit exceeds ±229. In addition, the position deviation of the instruction unit also exceeds ±230.	Confirm whether the motor is rotating according to position instruction. Use a torque detector to confirm whether the output torque is saturated. Adjust gain. Set Pr0.13 and Pr5.22 to the maximum value. Connect the encoder according to the wiring diagram.
28	0	Safe input protection	Safety input 1 or safety input 2, the input photocoupler of at least one of the two is closed.	Check the connection status of safety input 1 and safety input 2.
33	0	I/F input duplicate allocation abnormality 1 protection	The function allocation of input signals (SI1, SI2, SI3, SI4) has repeated settings.	Correctly set the functional assignment of connector pins
	1	I/F input duplicate allocation abnormality 2 protection	The function allocation of input signals (SI5, SI6, SI7, SI8) has repeated settings.	
	2	I/F input function model abnormality 1	The number is not defined in the function assignment of the input signals (SI1, SI2, SI3, SI4). In addition, there is an abnormality in the logic setting.	
	3	I/F input function model abnormality 2	The number is not defined in the function assignment of the input signals (SI5, SI6, SI7, SI8). In addition, there is an abnormality in the logic setting.	
	4	I/F output function model abnormality 1	The output signal (SO1) has an undefined number in the function assignment.	

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	5	I/F output function model abnormality 2	The output signal (SO2) has an undefined number in the function assignment.	
	8	Clamp input allocation abnormal	The function allocation of the clamping correction terminals (SI5, SI6, SI7) is abnormal. EXT1 was unexpectedly allocated in SI5, EXT2 in SI6, and EXT3 in SI7. HOME is allocated on SI6 or SI7, POT is allocated on SI5 or SI7, NOT is allocated on SI5 or SI6, and the direct allocation is not allocated in all control modes.	
34	0	Motor movable range setting abnormality protection	Regarding the position instruction input range, the motor movement range exceeds the motor movement range set by Pr5.14. The gain is inappropriate. The setting value of Pr5.14 is too small.	Confirm the gain (balance of position loop gain and speed loop gain), inertia ratio. Increase the setting value of Pr5.14. Or set Pr5.14 to 0 to disable the protection function.
36	0	EEPROM parameter abnormality protection	When the EEPROM reads data when the power is turned on, the data in the parameter storage area is damaged.	Reset all parameters. When it occurs repeatedly, there may be a fault and the servo drive need to be replaced.
	1			
	2			
37	0	EEPROM detection code abnormality protection	When the EEPROM reads data when the power is turned on, the data in the parameter storage area is damaged.	The servo driver needs to be replaced.
	1			
	2			
38	0	Drive prohibition input protection 1	When Pr5.04=0, both positive and negative direction drive prohibition inputs (POT/NOT) are open. When Pr5.04=2, both positive and negative direction drive prohibition inputs are open.	Check whether there are any abnormalities in the coupled switch, wires, and power supply of the positive/negative direction drive prohibition input. In particular, check whether the start-up of the control signal power supply (DC12~24V) is delayed.
	1	Driver prohibition input protection 2	When Pr5.04=0, when RTEX communication is cut off, that is, when POT/NOT is on, the transmission and reception is based on USB communication action instruction. On the contrary, using the USB communication action instruction opens POT/NOT in the action.	Check whether there are any abnormalities in the coupled switch, wires, and power supply of the positive/negative direction drive prohibition input. In particular, check whether the start-up of the control signal power supply (DC12~24V) is delayed.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	2	Driver prohibition input protection 3	In the state where POT is on SI6 or NOT is on SI7 for function allocation, set other than Pr5.04=1 (invalid).	When performing function assignment on POT on SI6 or NOT on SI7, confirm Pr5.04=1.
40	0	Absolute system shutdown abnormality protection	The power supply and battery power supplied to the encoder has dropped, and the internal voltage is lower than the specified value.	After connecting the battery power supply, clear the absolute encoder.
41	0	Absolute counter overflow exception protection	The encoder multi-turn counter exceeds the specified value.	Set Pr0.15 to an appropriate value. Set the movement amount from the machine origin within 32767 revolutions.
42	0	Absolute overspeed abnormal protection	After a power outage, when only the battery provides power, the motor rotation speed exceeds the specified value. During normal operation, due to various reasons, the encoder power is cut off and the rotation speed exceeds the specified value.	When there is a power outage, confirm whether there is external drive and the rotation speed at this time, and control it to be below the specified value for assembly. Switch to power outage mode from normal operation, check the power supply voltage on the encoder side (5V±5%), and check the connection status of connector X6.
43	0	Incremental encoder initialization abnormality protection	An abnormality was detected during encoder initialization.	Replace motor
44	0	Absolute type 1-turn counter abnormality protection. Incremental type 1-turn counter abnormality protection	An abnormality in the encoder one rotation counter was detected. An abnormality in the incremental value of the one-rotation counter is detected (between Z-phase signals).	Replace motor
45	0	Absolute type multi-rotation counter abnormal protection. Incremental time counter abnormal protection.	An abnormality in the encoder multi-turn counter was detected. An abnormality in the incremental counter value between CS signals is detected.	Replace motor
47	0	Absolute status abnormality protection	When the power is turned on, the encoder rotates beyond the specified value.	Prevent the motor from operating when the power is turned on.
48	0	Incremental encoder Z phase abnormality protection	The Z-phase pulse defect of the incremental encoder is detected. Encoder failure.	Replace the motor.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
49	0	Incremental encoder CS signal abnormality protection	A logic abnormality in the CS signal of the incremental encoder was detected. Encoder failure.	Replace the motor.
50	0	External feedback scale wiring abnormality protection	The communication with the servo driver of the external feedback scale is terminated after reaching a certain number of times, and the disconnection detection function is activated.	Refer to the coupled diagram for the connection of the coupled external feedback scale. Correct the connection error of the connector pins.
	1	External feedback scale communication data abnormality	Data communication from external feedback scale is abnormal. Mainly due to data anomalies caused by noise. Although the cable coupled of the external feedback scale is intact, the communication data is abnormal.	Make sure the current and voltage of the external feedback scale is DC5V±5%, especially when the cable of the coupled external feedback scale is long. If the motor cables are bundled with the cables of the coupled external feedback scale, please wire them separately. Connect the shielded wire to FG.
51	0	External feedback scale ST abnormal protection 0	Bit 0 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	After eliminating the cause of the abnormality, clear the error of the external feedback scale through USB communication. Then please cut off the control power supply and restart it.
	1	External feedback scale ST abnormality protection 1	Bit 1 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	
	2	External feedback scale ST abnormality protection 2	Bit 2 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	
	3	External feedback scale ST abnormality protection 3	Bit 3 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	
	4	External feedback scale ST abnormality protection 4	Bit 4 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	5	External feedback scale ST abnormality protection 5	Bit 5 of the external feedback scale error code (ALMC) becomes 1. Please confirm the specifications of the external feedback scale.	
55	0	A connection abnormality protection	The A-phase wiring of the external feedback scale is disconnected or otherwise abnormal.	Confirm the A-phase wire of the external feedback scale.
	1	B connection abnormality protection	The B-phase wiring of the external feedback scale is disconnected or otherwise abnormal.	Confirm the B-phase wiring of the external feedback scale.
	2	Z-connection wiring abnormality protection	The Z-phase wiring of the external feedback scale is disconnected or otherwise abnormal.	Confirm the Z-phase wiring of the external feedback scale.
82	0	RTEX network address setting abnormality protection	When the control power is turned on, the value of the rotary switch for setting the servo driver's mesh points is out of the range.	Check the value of the rotary switch for node address setting. After correctly setting (0 to 31) the rotary switch for node address setting, turn on the control power of the servo drive again.
83	0	RTEX continuous communication abnormality protection 1	Detection of anomalies (CRC anomalies) when reading the first data from the node address occurs continuously for more than the specified number of times.	Check whether excessive noise is being applied to the communication cable. Check whether there are any problems with the wiring length, routing, coupled status, etc. of the communication cable. Confirm whether the communication cable is STP (shielded twisted pair) CAT 5e or above specified by TIA/EIA-568. The communication cable has an iron core.
	1	RTEX continuous communication abnormality protection 2	Abnormality detection when reading the data sent and received from the node address occurs continuously within a predetermined time.	

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
84	0	RTEX communication timeout abnormality protection	The communication data cannot be received, and the reception distribution and processing start signal from the RTEX communication control ASIC continue to be unable to be output for a predetermined period.	Check whether the communication cable is short-circuited. Confirm whether the previous network point is in a transmittable state (power off, reset, etc.). Check whether the transmission cycle of RTEX communication data from the host device is abnormal. Check whether the communication cycle set with Pr7.20 (RTEX communication cycle setting) matches the communication cycle from the host device. Anomalies other than the above are handled in the same manner as Err83.0.
	3	RTEX synchronization establishment initialization abnormality protection	When communication and servo are simultaneously established, an error occurs in the initialization process that must be performed.	After turning off the power, turn it on again. Even so, if an error is still displayed, a malfunction may occur. Stop using it and replace the servo drive. Return to AIR after-sales service for inspection (repair).
	5	RTEX communication cycle abnormality protection	Acceptance assignments from the RTEX communication control ASIC can be output and start signals processed. However, the output cycle has a communication and private server cycle offset.	Check whether there is any abnormality in the transmission cycle of RTEX communication data from the host device. Check whether the communication cycle set with Pr7.20 (RTEX communication cycle setting) matches the conveyance cycle from the host device. For Anomalies other than the above, the same handling as Err83.0 is implemented.
86	0	RTEX cycle data abnormality protection 1	An abnormality in the data (MAC-ID or C/R) in the cycle instruction field or an abnormality in Sub_Chk in 32byte mode continues to occur during the predetermined period.	Check whether the data content in the cycle instruction field (where the test is made) is abnormal. Check whether there is any problem with the processing on the host device side. Check whether the node address setting value meets the specifications of the host device.
	1	RTEX cycle data abnormality protection 2	There is an abnormality in the data in the cycle instruction field (cycle instruction).	

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
	2	*RTEX_ Update_ Counter abnormality protection	The accumulated number of settings exceeding Pr7.38 [RTEX_Update_Counter abnormality protection setting], Update_Counter is not updated normally.	Check whether there is any problem with the processing on the host device side. Check whether there is any problem with the cycle setting of the host device and the cycle setting on the driver side. Increase the setting value of Pr7.38. This alarm is invalid when the Update_Counter whose ratio of communication cycle to instruction update cycle is 1:1 is not used.
87	0	Force alarm input protection	Enter the forced alarm input (E-STOP).	Check the wiring of the forced alarm input (E-STOP).
90	2	*RTEX multi-axis inter-cycle establishment abnormality protection	A communication error occurs or communication is interrupted during the synchronization establishment transition state in all synchronization modes.	Implement the same handling as Err83.0 or Err84.0.
91	1	RTEX instruction abnormal	The communication cycle, closed loop/fully closed loop, 16/32byte mode and control mode are inconsistent. The control mode is switched in less than 2ms. Switch to control mode during target position clamp positioning/target origin return (Type_Code=12h, 13h, 31h, 32h, 33h) action. Switching to control mode during non-periodic instruction processing (Busy=1). The origin return instruction (4h) was performed during the target position clamp positioning/target position origin return (Type_Code=12h, 13h, 31h, 32h, 33h) action. The initialization mode (Type_Code=1 h, 31h) of origin return instruction (4h) was performed during the target position positioning/target continuous rotation (Type_Code=10h, 11h, 20h) action. Changed to Type_Code during Profile Position Control (PP) operation. During speed control (CV)/torque control (CT), origin return instruction (4h) is performed. Type_Code=1 port h/2 port h. When the control mode is other than NOP, the external feedback scale position information monitoring function is valid during semi-closed loop control, and the communication cycle in 16byte mode is set to 0.1666ms or less.	Check whether there is any problem with the processing of the host device.

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
92	0	* Encoder data recovery abnormal protection	When in the absolute mode of semi-closed loop control, the internal position information cannot be initialized normally.	Make sure the power supply voltage of the encoder is DC5V±5% (4.75~5.25V)… Please pay attention especially when the encoder cable is long. If the motor wires and encoder wires are bundled together, please wire them separately. Connect the shielded wire to FG.
	1	*External feedback scale data recovery abnormal protection	When in the absolute mode of semi-closed loop control, the internal position information cannot be initialized normally.	Make sure the power supply voltage of the external feedback scale is DC5V±5% (4.75~5.25V), especially if the external feedback scale wire is long, please pay attention to it. When the motor wires and external feedback scale wires are bundled together, please wire them separately. Connect the shielded wire to the FG and connect according to the coupled diagram of the external feedback scale.
93	0	* Parameter setting abnormality protection 1	The electronic gear ratio exceeds the allowable range.	Confirm the parameter setting value. Check whether the electronic gear ratio is within the range of 1/1000 to 1000 times.
	2	* Parameter setting abnormality protection 2	The external feedback scale ratio exceeds the allowable range.	Confirm the parameter setting value. Check whether the electronic gear ratio is within the range of 1/40 to 160 times.
	3	*External feedback scale connection abnormality protection	The setting value of Pr3.23 (external feedback scale type selection) does not match the type of external feedback scale of coupled serial communication type.	Set Pr3.23 in conjunction with the type of external feedback scale connected.
	5	* Parameter setting abnormality protection 4	The matching conditions of Pr7.20 (RTEX communication cycle setting) and Pr7.21 (RTEX instruction update cycle setting) do not correspond.	Confirm the parameters setting. Correct matching conditions for Pr7.20 and Pr7.21.
94	2	Origin return abnormal protection	There is an abnormality in the target origin return operation.	Confirm whether there is any abnormality in the setting status.
95	0～4	* Motor automatically recognizes abnormality protection	The motor and servo drive do not match.	Confirm the matching between the servo driver and the motor, and replace the matching motor.
98	1	*RTEX hardware anomaly protection 1	A circuit abnormality occurred in the RTEX communication peripheral.	After turning off the power, turn it on again. Even so, if an error is still displayed, a malfunction may occur. Stop using it and replace the servo drive. Return to AIR after-sales service for inspection (repair).
	2	*RTEX hardware anomaly protection 2		
	3	*RTEX hardware anomaly protection 3		

Error code		Protective function	Reason	Processing method
Main code	Auxiliary code			
Other error codes		Other abnormalities	The control circuit may operate incorrectly due to excessive noise, etc. The self-diagnosis function of the servo drive operates and detects an abnormality inside the servo drive.	After turning off the power, turn it on again. Even so, if an error is still displayed, a malfunction may occur. Stop using it and replace the servo drive. Return to AIR after-sales service for inspection (repair).

5 Mechanical troubleshooting

Table 5-1 Manipulator possible faults and causes

Fault	Fault classification	Possible causes of failure	Treatment measures
generate vibration Anomalies occur normal noise	When manipulator moves, the manipulator base floats from the workshop base; There is a gap between the bottom seat and the base The bottom seat and base coupled screws are loose.	Fixing the base: It may be because the manipulator base is not firmly fixed on the workshop base; It may be due to loose screws, insufficient flatness of the base, or inclusion of foreign matter that when the manipulator moves, the base floats from the workshop base and the impact causes vibration.	When the screws are loose, use a torque wrench to tighten them to the appropriate torque; Trim the flatness of the base to make its tolerance meet the requirements; Check whether foreign matter is included; if foreign matter is present, remove it; You can consult our company.
	When manipulator moves, the workshop base vibrates.	Workshop base: Perhaps because the workshop base and workshop foundation are not completely fixed, the workshop base will vibrate during operation and movement; Possibly due to insufficient rigidity of the workshop base, reaction forces and moments are generated during manipulator movement, causing it to deform and vibrate.	Adopt corresponding methods to completely fix the workshop base; Processing workshop base, increase for its rigidity; The vibration of difficult-to-machine workshop bases can be mitigated by changing the movement program; You can consult our company.
	Vibration is generated in a specific posture during action; No vibration is produced when slowing down the action speed; Vibration is obvious during acceleration and deceleration; Multiple axes vibrate simultaneously.	Load is too large: It may be that the load of manipulator exceeds the allowable value and causes vibration; It may be that the action program is too strict for manipulator, causing vibration; Vibration may occur due to inappropriate acceleration.	Confirm whether the manipulator load exceeds the allowable value, reduce the load or change the action program; The vibration of specific parts can be alleviated by reducing the speed, reducing the acceleration, and changing the action program.

Fault	Fault classification	Possible causes of failure	Treatment measures
generate vibration Unusual noise occurs	Reasons that cannot be determined through mechanical parts	Controls, cables, motors: When the circuit in the control device fails and instruction is not correctly transmitted to the motor, or the motor information is not correctly transmitted to the control device, causing manipulator to vibrate; The pulse encoder failed and the position of the motor was not correctly transmitted to the control device, causing manipulator to vibrate; The main part of the motor fails and cannot exert its original performance, causing manipulator to vibrate; If the internal motor cable of manipulator is damaged, it will break, and the instruction value cannot be correctly transmitted to the motor and control system, causing manipulator to vibrate; The voltage drops and cannot guarantee the specified voltage, causing manipulator to vibrate; Incorrect motion control parameters were entered, causing manipulator to vibrate.	For control device failures, please refer to the control device manual; Replace the vibrating motor of axis and confirm whether it vibrates; Confirm whether the cables of the manipulator, the cables between the manipulator and the control cabinet, and the internal cables of the control device are damaged. If damaged, replace the cables; Confirm whether the contact at the cable joint is good. If the contact is poor or loose, tighten it again or take corresponding measures to ensure good contact; Confirm whether the action control parameters are correct. If there are errors, re-enter the correct parameters; You can consult our company.
	The mechanical action conditions near manipulator are closely related to the vibration of the robot.	Mechanical electrical noise from near manipulator: When the ground wire is not properly connected, electrical noise will mix into the ground wire, causing manipulator instruction to vibrate due to interference; If the location of the ground wire coupled is inappropriate, the grounding will be unstable, causing manipulator to vibrate due to electrical noise interference.	Connect the ground wire securely to prevent electrical noise from mixing into the manipulator. You can consult our company.

Fault	Fault classification	Possible causes of failure	Treatment measures
generate vibration Unusual noise occurs	Abnormal noise occurs after replacing grease; When the robot is operated after being shut down for a long time, abnormal noise occurs; Abnormal noise occurs during low-speed operation.	Using unspecified grease may cause the robot to make abnormal noise; Even if the specified grease is used, manipulator will produce abnormal noise at low speed just after replacement or when restarting after a long shutdown.	Please use specified grease; Abnormal noise still occurs when using the specified grease. Observe the operation of manipulator for 1-2 days, and the abnormal noise will usually disappear.
manipulator shaking	After cutting off the power of manipulator, you can shake some parts of manipulator by hand; There is a gap on the coupled side of manipulator.	Loose bolts of manipulator: Some coupled bolts on the manipulator may be loose and shake due to overload, collision, etc.	For each axis, confirm whether the bolts in the following parts are loose. If they are loose, use a torque wrench to tighten them to the appropriate torque: Motor fixing bolts Reducer housing fixing bolts Reducer output axis fixing bolt Base fixing bolts Fixing bolt between arms Housing fixing bolts End effector fixing bolt.
	Cut off the power supply of manipulator, and after confirming that the screws are tightened, shake the entire head of manipulator by hand.	It may be due to overload, collision and other reasons that the internal gears of manipulator are worn or damaged, resulting in large backlash.	If the internal gear needs to be replaced, please consult our company.

Fault	Fault classification	Possible causes of failure	Treatment measures
Motor overheated	The installation environment temperature of manipulator rises and the motor overheats; After installing the cover plate on the motor, the motor overheats; After changing the manipulator action program and load conditions, the motor overheated.	Ambient temperature: When the ambient temperature rises or the motor cover is installed, the heat dissipation of the motor deteriorates, causing the motor to overheat. Load action: It may be that the motor current value exceeds its rated value due to the load and action program.	Lowering the ambient temperature can effectively prevent motor overheating. Improving the ventilation conditions around the motor, that is, the heat dissipation of the motor, can effectively prevent motor overheating. When there is a heat source around the motor, setting up a radiation-proof shielding plate can effectively prevent the motor from overheating. By slowing down the action program and reducing the load conditions, the average current value of the motor will decrease, thereby preventing the motor from overheating. You can consult our company.
	After changing the manipulator action control parameters, the motor overheated.	Control parameters: When the input parameters are inappropriate, it will cause inappropriate acceleration and deceleration of the robot, causing the average current value of the motor to increase and the motor to overheat.	Enter the appropriate parameters according to the relevant instructions. You can consult our company.
	If the above classification is not met, the motor is overheated.	Manipulator mechanical failure: It may be that the manipulator mechanical system fails, causing the motor to bear an excessive load and causing the motor to overheat. Motor failure: It may be that the motor brake is faulty, causing the motor to always operate with the brake applied, causing the motor to bear an excessive load and causing the motor to overheat. It may be that the main body of the motor is faulty, causing the motor itself to be unable to perform its performance, causing excessive current to flow through the motor and causing the motor to overheat.	Please refer to the items of vibration, abnormal noise, and looseness to troubleshoot mechanical faults. Please confirm whether the brake is released when the motor is powered on and started. After replacing the motor, the overheating of the motor is eliminated, and this situation can be confirmed to be abnormal. You can consult our company.

Fault	Fault classification	Possible causes of failure	Treatment measures
Grease leak	Grease leaks from mechanical parts.	Poor seal: It may be that the excessive external force generated by the collision caused cracks in the casting and leakage of grease. It may be that the O-ring is damaged during disassembly and reassembly, and the grease leaks. It may be due to dust intrusion, oil seal scratches, or grease leakage. It may be that the sealing screw is loose and the grease is leaking along the thread. It may be due to poor sealing between the cover plate and the casting that the grease is leaking.	In the case of cracks in castings, sealants can be used to block the grease as an emergency measure. However, considering that the cracks may further expand, parts need to be replaced as soon as possible. Replace the sealing screws, which are used for the grease injection port and grease discharge port. You can consult our company.
Manipulator axis dropped	The brakes completely failed and axis fell rapidly. After the brake is applied, axis falls slowly.	It may be because the brake drive relay is damaged and the brake is always in the energized state and has no braking effect. It may be due to brake wear and damage to the brake body that the braking effect is reduced. It may be that lubricating oil and grease have entered the inside of the motor, causing the brake to slip.	Confirm whether the brake drive relay is damaged, if so, replace the relay. If the brake is worn, the brake body is damaged, or grease has entered the inside of the motor, replace the motor. You can consult our company.
Position offset	manipulator movement deviates from the teaching position. manipulator repeated positioning accuracy is greater than the allowed value.	Mechanical failure: Unstable repetitive positioning accuracy may be caused by mechanical system abnormalities, loose screws and other faults. After one degree of deviation, the repeated positioning accuracy is stable. It may be that the base surface, each axis casting and the reducer coupled surface slide due to excessive load such as collision. It may be caused by abnormality of the motor encoder.	If the repeat positioning accuracy is unstable, please refer to the vibration, abnormal noise, and shaking items to troubleshoot the mechanical fault. When the repeat positioning accuracy is stable, please modify the teaching program so that if collisions no longer occur, position deviation will not occur. If the motor encoder is abnormal, please replace the motor or encoder. You can consult our company.
	The position is offset only for specific peripherals.	Peripheral device position offset: It may be that the peripheral device is subject to external force, causing it to deviate relative to the manipulator.	Please change the location of the peripheral device. Please modify the teaching program. You can consult our company.

Fault	Fault classification	Possible causes of failure	Treatment measures
Position offset	After changing the parameters, a position shift occurred.	parameter: The origin of manipulator may be lost due to modification of calibration data.	Re-enter the previously correct calibration data. In case of uncertain calibration data, please recalibrate manipulator. You can consult our company.

6 Software troubleshooting

Alarm code

0

- Overview

  Plugin %1 cannot be loaded.

- Parameter

  %1=Plug-in name or plug-in path.

- Influence

  A plug-in has not been loaded and its related functions cannot be used.

- Possible causes of failure

  The installation path of the plug-in or the file name format generated by plug-in installation does not meet the requirements.

- Treatment measures

  1. Confirm that the installation path of the plug-in and the file name format generated by the installation meet the requirements for plug-in loading.
  2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.
  3. If the user can accept that the plug-in is not loaded, it does not need to be processed.

1

- Overview

  Some plugins cannot be loaded.

- Influence

  A plug-in has not been loaded, and the related functions of the plug-in cannot be used.

- Possible causes of failure

  The installation path of the plug-in or the file name format generated by plug-in installation does not meet the requirements.

- Treatment measures

  1. Confirm that the installation path of the plug-in and the file name format generated by the installation meet the requirements for plug-in loading.
  2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.
  3. If the user can accept that the plug-in is not loaded, it does not need to be processed.

2

- Overview

  The total number of server slave stations (%1) is greater than the actual total number of axis channels (%2).

- Parameter

  1. %1=total number of servo slave stations.
  2. %2=The actual total number of axes in the channel.

- Influence

  The system may not start.

- Possible causes of failure

  The total number of servo slave stations set in the configuration file does not match the actual number of servo stations configured in the system.

- Treatment measures

  1. Modify the total number of servo stations in the configuration file to make it consistent with the actual total number of axes in the channel.
  2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.
  3. If the user confirms that the inconsistency between the two is acceptable, it does not need to be processed.

3

- Overview

  If the channel number configuration changes, please confirm whether the mechanical unit model configured for each channel matches the actual one. If it does not match, it will cause unexpected movement of the robot.

- Influence

  If the model of the mechanical unit in the channel does not match the actual model, unexpected movement may occur.

- Possible causes of failure

  After the user modifies the number of channels, the default value of the mechanical unit model in each channel does not match the actual value.

- Treatment measures

  1. Confirm that the model of the mechanical unit in the channel configuration file is consistent with the actual one.
  2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

3. If the user confirms that the model of the mechanical unit is consistent with the actual model, it does not need to be processed.

4

- Overview

  Trigger statement is ignored by RPP movement.

- Influence

  The trigger statement for RPP motion instruction is invalid.

- Possible causes of failure

  The motion instruction targeted by the trigger statement is an RPP motion, causing the trigger to be invalid.

- Treatment measures

  1. Stop the program and confirm that the motion instruction pointed to by the trigger statement is not an RPP motion.
  2. After modification, reload the program and run it.
  3. If the user can accept this phenomenon, it does not need to be dealt with.

5

- Overview

  Planning based on the given time fails, and the system automatically plans a manual rate limit of %1 seconds.

- Parameter

  %1=Exercise time.

- Influence

  Motion instruction could not be completed within the given time.

- Possible causes of failure

  The time given for motion instruction is too small to complete the speed planning.

- Treatment measures

  1. Modify the given time of motion instruction and confirm that it can complete the speed planning.
  2. After modification, reload the program and run it.
  3. If the user can accept that the movement is planned according to the manual speed limit, it does not need to be processed.

6

- Overview

Channel %1: The current position of %2axis is not within the starting area restriction range.

- Parameter

1. %1=channel number.
2. %2=axis number.

- Influence

A certain axis position is not within the starting area limit, and danger may occur.

- Possible causes of failure

If the position of a certain axis exceeds the starting area limit during movement, an alarm will be issued when it starts moving again.

- Treatment measures

1. To avoid danger, manually move the target point to the area limit and then reload the program to run.
2. If the user can accept this phenomenon, it does not need to be dealt with.

7

- Overview

The enable signal fails when the robot is running.

- Influence

The robot STOP1 stops moving.

- Possible causes of failure

The operator releases the enable button while the robot is moving.

- Treatment measures

Press the enable button and restart manually or press the start button to run.

8

- Overview

Software package% 1 has only% 2 boot attempts authorized, and the robot will automatically stop after the authorization expires.

- parameter

1. %1=Software package name.
2. %2=Remaining number of boot times authorized.

- Influence

After the software package authorization expires, the robot will automatically shut down.

- Possible causes of failure

The software package has been powered on less than 10 times.

- Treatment measures

1. Contact customer service to obtain a valid authorization document.
2. Import the authorization file through the authorization import function in HMI.

9

- Overview

The total boot time authorization of software package %1 is less than %2 hours. After the authorization expires, the robot will automatically shut down.

- Parameter

1. %1=Software package name.
2. %2=The remaining accumulated authorized hours of power-on time.

- Influence

After the software package authorization expires, the robot will automatically shut down.

- Possible causes of failure

The cumulative boot time of the software package is less than 10 hours.

- Treatment measures

1. Contact customer service to obtain a valid authorization file.
2. Import the authorization file through the authorization import function in HMI.

10

- Overview

There are less than %2 hours left for the absolute time authorization of software package %1. The robot will automatically shut down after the authorization expires.

- Parameter

1. %1=Software package name.
2. %2=The number of absolute time authorization hours remaining.

- Influence

After the software package authorization expires, the robot will automatically shut down.

- Possible causes of failure

The cumulative boot time of the software package is less than 10 hours.

- Treatment measures

1. Contact customer service to obtain a valid authorization document.

2. Import the authorization file through the authorization import function in HMI.

11

- Overview

  Package %1 was not loaded due to authorization failure.

- Parameter

  %1=Software package name.

- Influence

  The functions in the software package are not loaded due to authorization failure and cannot be used normally.

- Possible causes of failure

  The software package authorization has expired or a valid authorization file has not been imported.

- Treatment measures

  1. Contact customer service to obtain a valid authorization file.
  2. Import the authorization file through the authorization import function in HMI.
  3. Restart the system.

12

- Overview

  The XYZ error in tool coordinate system calibration using the 4-point method exceeds 1mm.

- Influence

  Using a tool coordinate system with excessive errors will cause a serious decrease in robot accuracy.

- Possible causes of failure

  The 4-point method is not accurate for the reference point when calibrating the tool coordinate system; 2. The distance between the 4 points is too close.

- Treatment measures

  1. Recalibrate the tool coordinate system XYZ.
  2. Please try to keep the directions of the four points as far apart as possible.
  3. Try to be as accurate as possible with reference points.
  4. Lower the reference point appropriately.

5001

- Overview

Channel %1:%2axis super soft limit.

- Parameter

  1. %1=Channel name.
  2. %2=axis number.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The motion target point position of a robot axis exceeds the soft limit range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Modify the position of the target point, or modify the range of the soft limit while ensuring safety.
  3. The reloader runs.

5002

- Overview

  Failed to load mechanical unit body parameters.

- Influence

  The system cannot start.

- Possible causes of failure

  There is an error in the mechanical unit parameter file format.

- Treatment measures

  1. Confirm that the mechanical unit file format is correct.
  2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

5003

- Overview

  The total number of server slave stations (%1) is less than the actual total number of axis channels (%2).

- Parameter

  1. %1=total number of servo slave stations.
  2. %2=The actual total number of axes in the channel.

- Influence

  The system cannot start.

- Possible causes of failure

The total number of servo slaves set in the configuration file is smaller than the total number of actual coupled servo servers in the system.

- Treatment measures

1. Modify the total number of servo stations in the configuration file to make it consistent with the actual total number of axes in the channel.
2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

5004

- Overview

The configured IO number is inconsistent with the acquire IO number.

- Influence

The system cannot start.

- Possible causes of failure

The number of IOs set in the configuration file is inconsistent with the actual number of IOs of coupled.

- Treatment measures

1. Modify the IO number in the configuration file to make it consistent with the actual coupled IO number.
2. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

5005

- Overview

The IO mapping logical addresses overlap.

- Influence

The configuration parameters are incorrect, the system alarms, and cannot operate normally.

- Possible causes of failure

In the IO mapping parameter configuration, the same logical address is mapped to different physical addresses.

- Treatment measures

1. Remodify the IO mapping configuration parameters.
2. Restart ARCS.

5006

- Brief description

The IO mapping address exceeds the maximum range of logical space: %1.

- Parameter

%1=Maximum logical space.

- Influence

  The configuration parameters are incorrect, the system alarms, and cannot operate normally.

- Possible causes of failure

  In the IO mapping parameter configuration, a logical address mapping larger than the maximum value of the logical space appears.

- Treatment measures

  1. Remodify the IO mapping configuration parameters.
  2. Restart ARCS.

5007

- Brief description

  The start address of the IO mapping is greater than the end address.

- Influence

  The configuration parameters are incorrect, the system alarms, and cannot operate normally.

- Possible causes of failure

  In the IO mapping parameter configuration, there is a situation where the starting logical address of a logical address mapping is greater than the ending logical address.

- Treatment measures

  1. Remodify the IO mapping configuration parameters.
  2. Restart ARCS.

5008

- Brief description

  Unsupported IO device: %1.

- Parameter

  %1=Unsupported IO device name.

- Influence

  The configuration parameters are incorrect, the system alarms, and cannot operate normally.

- Possible causes of failure

  In the IO mapping parameter configuration, an IO device that is not supported by the system appears.

- Treatment measures

  1. Remodify the IO mapping configuration parameters.

2. Restart ARCS.

5009

- Overview

  Unknown mechanical unit model or type.

- Influence

  The system failed to start and is not working properly.

- Possible causes of failure

  1. The configuration file contains a mechanical unit model that is not recognized by the system.
  2. The mechanical unit type in the mechanical unit configuration file is illegal.

- Treatment measures

  1. Modify the mechanical unit model configuration parameters in the channel.
  2. Restart ARCS.

6000

- Overview

  The interpolation point exceeds the robot's motion range.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The interpolation point of the motion trajectory exceeds the robot motion range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Modify the motion instruction target point to ensure that its interpolation point is within the robot's motion range.
  3. After modification, reload the program and run it.

6001

- Overview

  Trajectory planning takes too long.

- Influence

  The system stops at STOP0.

- Possible causes of failure

The movement speed specified in the program is too small or the trajectory is too long, and the number of interpolation points exceeds the representation range of 32-bit integers.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Increase the movement speed or shorten the movement trajectory.

6002

- Overview

Look-ahead selection error, try to turn parameter: %1.

- Parameter

%1=Try to turn parameter value.

- Influence

The system stops at STOP0.

- Possible causes of failure

The position of axis determined during the forward-looking solution selection is unreasonable.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Follow the prompts to modify the turn parameter value of the target point.
3. After modification, reload the program and run it.

6003

- Overview

%1 axis is planned to exceed the maximum speed of the system, current speed: %2 degrees/s, maximum speed: %3 degrees/s.

- Parameter

1. %1=axis number.
2. %2=Current axis speed.
3. %3=Current maximum speed of axis.

- Influence

The system stops at STOP0.

- Possible causes of failure

1. The speed of forward planning exceeds the maximum speed set by the system.
2. The planned trajectory passes through the singularity.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Reduce the speed value in motion instruction.
3. If it is a singularity problem, the motion instruction needs to be modified to avoid the singularity.
4. After modification, reload the program and run it.

6004

- Overview

%1 axis plans the maximum acceleration of the super system, the current acceleration: %2 degrees/s*s, the maximum acceleration: %3 degrees/s*s.

- Parameter

1. %1=axis number.
2. %2=Current axis acceleration.
3. %3=Current maximum acceleration of axis.

- Influence

The system stops at STOP0.

- Possible causes of failure

The forward planning acceleration exceeds the maximum acceleration set by the system.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Reduce the acceleration value in motion instruction by modifying the value of the system variable $ACC_OVERRIDE.
3. After modification, reload the program and run it.

7001

- Overview

The %1st servo timed out and was not powered on.

- Parameter

%1=Servo drive number.

- Influence

The robot cannot perform movements.

- Possible causes of failure

1. The current power electrical input connection of the servo drive is not secure.

2. The contactor did not close in time before driving the servo on.

- Treatment measures

1. Try pressing the clear button or clearing the alarm through the system IO signal;
2. Confirm that the power electrical input connection of the servo drive is firm and reliable.
3. Confirm that the contactor operates normally, otherwise replace the contactor.
4. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

7002

- Overview

Servo timeout is not enabled.

- Influence

The servo drive has timed out and is not enabled, and the robot cannot perform motion.

- Possible causes of failure

The servo drive cannot respond to servo on instruction.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Check whether the servo drive is damaged.
3. Try powering on again. If the problem is not eliminated, please contact customer service.

7003

- Overview

Failed to enable servo.

- Influence

The servo drive failed to enable and the robot was unable to perform motion.

- Possible causes of failure

1. The servo communication card is damaged.
2. The servo communication card and industrial computer coupled are unreliable.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. After shutting down, confirm that coupled is reliable between the communication card and the industrial computer.
3. Restart the system. If this phenomenon is not eliminated, please contact customer service.

7004

- Overview

  Unknown bus adapter card name.

- Influence

  The system cannot start.

- Possible causes of failure

  The bus adapter card type in the configuration file exceeds the existing types.

- Treatment measures

  1. Confirm that the bus adapter card type in the configuration file is the bus adapter card type supported by the robot system.
  2. Restart the system. If this phenomenon is not eliminated, please contact customer service.

7005

- Overview

  Failed to open bus adapter card.

- Influence

  System startup failed.

- Possible causes of failure

  ARCS does not detect the bus adapter card. It may be that the bus adapter card is damaged or the coupled is faulty.

- Treatment measures

  1. After shutting down, check whether the coupled between the bus adapter card and the industrial computer is reliable.
  2. Restart the system. If this phenomenon is not eliminated, please contact customer service.

7006

- Overview

  Failed to configure bus adapter card.

- Influence

  System startup failed.

- Possible causes of failure

  An error occurred while configuring the bus adapter card during system startup.

- Treatment measures

  Restart the system. If this phenomenon is not eliminated, please contact customer service.

7007

- Overview

  Bus coupled failed.

- Influence

  System startup failed.

- Possible causes of failure

  1. The connection between the servo communication card and the driver is unreliable.
  2. The total number of configured servos is inconsistent with the actual total number of axes in the channel.

- Treatment measures

  1. Confirm that the connection between the servo communication card and the driver is firm and reliable.
  2. Confirm that the total number of configured servos is consistent with the actual total number of axes in the channel.
  3. Restart the system. If this phenomenon is not eliminated, please contact customer service.

7008

- Overview

  Bus communication error.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  Bus coupled is loose or disconnected.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. If the alarm is not cleared, shut down the machine and confirm whether bus coupled is loose or disconnected.
  3. Restart the system. If this phenomenon is not eliminated, please contact customer service.

7009

- Overview

  Drive alarm.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  Drive alarm.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. If the alarm is not cleared, query the cause of the alarm through the alarm code prompted in the alarm message.
  3. If the problem cannot be solved, please contact customer service.

7010

- Overview

  ARCS heartbeat loss alarm.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  The communication card does not detect ARCS heartbeat.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. If the problem still exists, please contact customer service.

7011

- Overview

  PLC alarm.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  Communication error between servo communication card and PLC.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. If the alarm is not cleared, query the cause of the alarm through the alarm code prompted in the alarm message.
  3. If the problem cannot be solved, please contact customer service.

7012

- Overview

  Cifx device is not open.

- Influence

  Unable to access external device via cifx device.

- Possible causes of failure

  1. The cifx communication card is not inserted into the PCI slot.
  2. The cifx device driver is faulty.

- Treatment measures

  Please contact the manufacturer's customer service personnel.

7013

- Overview

  Cifx device communication error, error code: %1.

- Parameter

  %1=cifx error code.

- Influence

  A communication alarm occurs when accessing an external device through a cifx device.

- Possible causes of failure

  1. The ifx communication card device is faulty.
  2. The slave device has failed.

- Treatment measures

  1. Restart the system.
  2. If step 1 does not solve the problem, please contact the manufacturer's customer service staff.

8000

- Overview

  The emergency stop button of the control cabinet is pressed.

- Influence

  System STOP1 shutdown.

- Possible causes of failure

  The emergency stop button of the control cabinet was pressed.

- Treatment measures

  1. Unscrew the emergency stop button of the control cabinet.
  2. Press the clear button or clear the alarm through the system IO signal.

8001

- Overview

  The emergency stop button of the teach pendant is pressed.

- Influence

  System STOP1 shutdown.

- Possible causes of failure

  The emergency stop button of the teach pendant is pressed.

- Treatment measures

  1. Unscrew the emergency stop button of the teach pendant.
  2. Press the clear button or clear the alarm through the system IO signal.

8002

- Overview

  Security module action.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  ARCS did not detect the safety IO alarm signal, causing the safety backup module to act.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. If the problem still exists, please contact customer service.

8003

- Overview

  The control cabinet door is opened.

- Influence

  System STOP1 shutdown.

- Possible causes of failure

  The control cabinet door is opened.

- Treatment measures

  1. Make sure the control cabinet door is not opened.
  2. Press the clear button or clear the alarm through the system IO signal.

8004

- Overview

  The main circuit is abnormally faulty.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  PLC_INT does not detect the feedback signal of contactor closure.

- Treatment measures

  1. Try pressing the clear button or clearing the alarm through the system IO signal.
  2. Check the feedback signal line of the main circuit of the control cabinet.
  3. If that doesn't fix the problem, try replacing the contactor.
  4. If the problem is still not resolved, please contact customer service.

8005

- Overview

  External emergency stop signal triggers.

- Influence

  System STOP1 shutdown.

- Possible causes of failure

  The external emergency stop signal is triggered, such as the external emergency stop button being pressed.

- Treatment measures

  1. Eliminate the reason why the external emergency stop signal is triggered, such as unscrewing the external emergency stop button.
  2. Press the clear button or clear the alarm through the system IO signal.
  3. Please contact customer service personnel to modify the corresponding security DI status, and then try to clear the alarm.

8006

- Overview

The external safety protection signal is triggered.

- Influence

System STOP1 shutdown.

- Possible causes of failure

The external safety protection signal is triggered, such as the safety protection door being opened.

- Treatment measures

1. Eliminate the reasons why external safety protection signals are triggered, such as closing safety protection doors.
2. Press the clear button or clear the alarm through the system IO signal.
3. Please contact customer service personnel to modify the corresponding security DI status, and then try to clear the alarm.

8007

- Overview

The operator safety confirmation signal is not confirmed.

- Influence

System STOP1 shutdown.

- Possible causes of failure

The operator's safety confirmation signal is not confirmed, such as the safety confirmation button is not pressed.

- Treatment measures

1. Confirm the operator's safety confirmation signal, such as pressing the safety confirmation button.
2. Press the clear button or clear the alarm through the system IO signal.
3. Please contact customer service personnel to modify the corresponding security DI status, and then try to clear the alarm.

8009

- Overview

The heartbeat of the communication card and PLC_INT is lost.

- Influence

The system stops at STOP0.

- Possible causes of failure

The connection between the servo communication card and PLC_INT is loose.

- Treatment measures

1. Confirm that coupled between the servo communication card and PLC_INT is firm and reliable.
2. Press the clear button or clear the alarm through the system IO signal.
3. If this phenomenon is not eliminated, please contact customer service personnel.

8010

- Overview

  The manual brake release function is enabled.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  Manual brake release is enabled.

- Treatment measures

  1. Check whether the manual brake release enable switch is pressed.
  2. Press the clear button or clear the alarm through the system IO signal.
  3. If this phenomenon is not eliminated, please contact customer service personnel.

8011

- Overview

  DPB module heartbeat is lost.

- Influence

  The system stops at STOP0.

- Possible causes of failure

  Drive failure.

- Treatment measures

  1. Restart and observe whether the alarm is eliminated.
  2. Press the clear button or clear the alarm through the system IO signal.
  3. If this phenomenon is not eliminated, please contact customer service personnel.

9000

- Overview

  The authorization file for package %1 does not exist.

- Parameter

%1=Software package name.

- Influence

The functions in the software package cannot be used properly because the authorization file does not exist.

- Possible causes of failure

Authorization file not imported.

- Treatment measures

1. Contact customer service to obtain a valid authorization file.
2. Import the authorization file through the authorization import function in HMI.
3. Clear the alarm.

9001

- Overview

The package %1 authorization file format is incorrect.

- Parameter

The package %1 authorization file format is incorrect.

- Influence

The functionality in the package does not work properly due to a malformed authorization file.

- Possible causes of failure

1. The system hardware ID number provided to the manufacturer for generating the authorization file is incorrect.
2. The authorization file name was modified manually.
3. The contents of the authorization file have been modified.
4. Illegal authorization file.

- Treatment measures

1. Contact customer service to obtain a valid authorization file.
2. Re-import the authorization file through the authorization import function in HMI.
3. Clear the alarm.

9002

- Overview

The authorization for software package %1 boot times has expired.

- Parameter

%1=Software package name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The software package boot count authorization has expired.

- Treatment measures

  1. Contact customer service to obtain a valid authorization file.
  2. Import the authorization file through the authorization import function in HMI.
  3. Clear the alarm.

9003

- Overview

  The cumulative boot time authorization of software package %1 has expired.

- Parameter

  %1=Software package name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The cumulative boot time authorization of the software package has expired.

- Treatment measures

  1. Contact customer service to obtain a valid authorization file.
  2. Import the authorization file through the authorization import function in HMI.
  3. Clear the alarm.

9004

- Overview

  The absolute time authorization for package %1 has expired.

- Parameter

  %1=Software package name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The package absolute time authorization has expired.

- Treatment measures

  1. Contact customer service to obtain a valid authorization file.
  2. Import the authorization file through the authorization import function in HMI.
  3. Clear the alarm.

10000

- Brief description

  Illegal index value.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  Access to array element is out of bounds.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the array subscript does not go out of bounds when accessing array elements.
  3. The reloader runs.

10001

- Overview

  %1: The parameter value range of parameter '%2' is wrong (%3).

- Parameter

  1. %1=Function name.
  2. %2=Parameter name.
  3. %3=Parameter value range.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The parameter value range of this function is wrong. For the correct parameter value range, please refer to the description in the parentheses of the alarm brief description.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Modify the parameter value according to the correct range of the parameter value prompted.

3. The reloader runs.

10002

- Overview

  %1: The timing clock is already in the starting state.

- Parameter

  %1=clkstart.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The timing clock of the operation is already in the start state, and it is not allowed to start the clock again until it stops.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Check whether the timing clock is already in the starting state. If so, delete the restart clock operation. If you want to use the clock again, you must first call the stop clock function to stop the clock.
  3. After modification, reload the program and run it.

10003

- Overview

  %1: The timing clock cannot be stopped before it has started.

- Parameter

  %1 = clkstop

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The timing clock for the operation is not yet in the start state, and stopping the operation is not allowed.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Check whether the timing clock is already in the starting state. If not, delete the stop clock operation. If you want to stop the timing clock, you must ensure that it is already in the starting state.
  3. After modification, reload the program and run it.

10004

- Overview

  %1: Synchronous output error.

- Parameter

  %1=Function name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The communication between the servo communication card and ARCS or PLC fails, causing the DO/AO signal to be unable to be set.

- Treatment measures

  1. Confirm that the coupled between the servo communication card and the industrial computer is firm and reliable.
  2. Confirm that the 485 bus coupled between the servo communication card and the PLC is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10005

- Overview

  %1: Synchronous output error.

- Parameter

  %1=pulsedo.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  There is a communication failure between the servo communication card and ARCS or PLC, resulting in the AO (analog voltage) signal being unable to be output.

- Treatment measures

  1. Confirm that the coupled between the servo communication card and the industrial computer is firm and reliable.
  2. Confirm that the 485 bus coupled between the servo communication card and the PLC is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10006

- Overview

  %1: Synchronous output error.

- Parameter

  %1 = setaoc

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The communication between the servo communication card and ARCS or PLC fails, resulting in the AO (analog current) signal being unable to be output.

- Treatment measures

  1. Confirm that the coupled between the servo communication card and the industrial computer is firm and reliable.
  2. Confirm that the 485 bus coupled between the servo communication card and the PLC is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10007

- Overview

  %1: Synchronous output error.

- Parameter

  %1 = setaov

- Influence

  The system stops in STOP2.

- Possible causes of failure

  There is a communication failure between the servo communication card and ARCS or PLC, resulting in the AO (analog voltage) signal being unable to be output.

- Treatment measures

  1. Confirm that the coupled between the servo communication card and the industrial computer is firm and reliable.
  2. Confirm that the 485 bus coupled between the servo communication card and the PLC is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10008

- Overview

%1: The IP or port parameter is invalid.

- Parameter

  %1=Function name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The IP or port number parameter setting of the socket is invalid.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the IP or port number parameter settings of the socket are correct and valid.
  3. After modification, reload the program and run it.

10009

- Overview

  %1: The socket socket is in an error state.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  Network coupled is not reliable.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the network interface coupled is firm and reliable.
  3. After modification, reload the program and run it.

10010

- Overview

  %1: The Boolean value of the input expression is equal to 0.

- Parameter

  %1=assert.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The Boolean value of the input expression is equal to 0.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the Boolean value of the input expression is not equal to 0.
  3. After modification, reload the program and run it.

10011

- Overview

  %1: System variable %2 does not exist.

- Parameter

  1. %1 = savesv.
  2. %2=System variable name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The system variable to be saved does not exist.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the system variable to be saved actually exists. If it does not exist, the save operation cannot be performed.
  3. After modification, reload the program and run it.

10012

- Overview

  The variable assignment is out of range, and its value range is %1.

- Parameter

  %1=Variable value range.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The value assigned to the variable exceeds the variable's value range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Make sure that the value assigned to the variable is within the value range of the variable.

3. After modification, reload the program and run it.

10013

- Overview

  $ACC_OVERRIDE is set incorrectly, the range should be 0.001~100.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  $ACC_OVERRIDE acceleration setting is wrong, its value range is 0.001~100.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the setting value of $ACC_OVERRIDE in the program is within the range of 0.001~100.
  3. After modification, reload the program and run it.

10014

- Overview

  $JERK_OVERRIDE is set incorrectly, the range should be 0.001~100.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  $JERK_OVERRIDE jerk setting is wrong, its value range is 0.001~100.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the setting value of $JERK_OVERRIDE in the program is within the range of 0.001~100.
  3. After modification, reload the program and run it.

10015

- Overview

  The divisor is 0.

- Influence

  The system stops in STOP2.

- Possible causes of failure

When performing a division operation, the divisor is 0.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that when performing a division operation, the divisor is not equal to 0.
3. After modification, reload the program and run it.

10016

- Overview

Data overflowed during type conversion.

- Influence

The system stops in STOP2.

- Possible causes of failure

Data overflowed during data type conversion.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. When confirming data type conversion, you must ensure that the numerical range of the target data covers the data value to be converted.
3. After modification, reload the program and run it.

10017

- Overview

During type conversion, data overflows, and the index of the overflow data is: %1.

- Parameter

%1=array index number.

- Influence

The system stops in STOP2.

- Possible causes of failure

When performing type conversion on array elements, the data of an element overflows.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. When confirming data type conversion, you must ensure that the numerical range of the target data covers the data value to be converted.
3. After modification, reload the program and run it.

10018

- Overview

  %1: The IO device is not open.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  When operating the serial port IO device, it was found that the serial port device was not turned on.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the open function is called in the program to open the serial port before performing serial port operations.
  3. After modification, reload the program and run it.

10019

- Overview

  %1: The IO device failed to write data.

- Parameter

  %1 = write.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The IO serial port device failed to write data.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the serial port cable coupled is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10020

- Overview

  %1: The IO device is in an error state.

- Parameter

  %1=Function name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The IO serial port device is in an error state.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the serial port cable coupled is firm and reliable.
  3. Restart the system. If this phenomenon is not eliminated after restarting, please contact customer service.

10021

- Overview

  There is no mechanical unit information in the channel.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  There is no information about mechanical units in the configuration file.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the mechanical unit information is added to the configuration file.
  3. Restart the system.

10022

- Overview

  The specified tool cannot move in the specified work object.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  In motion instruction, the reference tool coordinate system and work object coordinate system are both fixed or moving coordinate systems.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that in motion instruction, at most one of the referenced tool coordinate system and work object coordinate system can be a fixed coordinate system.

3. After modification, reload the program and run it.

10023

- Overview

  Illegal arc.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  In cir instruction, arc is illegal.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that in arc instruction, the arc to be executed is a legal arc.
  3. After modification, reload the program and run it.

10024

- Overview

  The central angle parameter value is not allowed to be equal to 0.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  In cir instruction, the central angle parameter value is not allowed to be equal to 0.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that in arc instruction, the central angle parameter value CA is not equal to 0.
  3. After modification, reload the program and run it.

10025

- Overview

  The target point attitude ABC does not allow partial defaults.

- Influence

  The system stops in STOP2.

- Possible causes of failure

In motion instruction, the target point attitude ABC can only be fully defaulted or fully specified, because a set of ABCs (Euler angles) represents a fixed attitude. When part of it is defaulted, the attitude is unclear.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that in motion instruction, the target point attitude ABC is not partially defaulted.
3. After modification, reload the program and run it.

10026

- Overview

The target point exceeds the robot's motion range.

- Influence

The system stops in STOP2.

- Possible causes of failure

In motion instruction, the target point position exceeds the robot's motion range.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that in motion instruction, the target point position is within the robot's motion range.
3. After modification, reload the program and run it.

10027

- Overview

%1 axis is out of range, its movement range is %2~%3.

- Parameter

1. %1=axis index number.
2. %2=Minimum value of axis motion range.
3. %3=Maximum value of axis motion range.

- Influence

The system stops in STOP2.

- Possible causes of failure

In motion instruction, the axis position of the target point exceeds the robot's axis motion range.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.

2. Confirm that in motion instruction, the position of target point axis is within the robot's axis motion range.
3. After modification, reload the program and run it.

10028

- Overview

  The first cir instruction does not allow specifying CA parameters. Because the first movement instruction is the home point, specifying CA parameters cannot determine the target point position.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The first cir instruction does not allow specifying CA parameters, because the first movement instruction is to return to the home point, and specifying CA parameters cannot determine the target point position.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the CA parameter is not specified in the first cir instruction.
  3. After modification, reload the program and run it.

10029

- Overview

  The first motion instruction target point is blurred because the ABC of the target point is ignored.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The first motion instruction target point is blurred because the ABC of the target point is ignored.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that in the first movement instruction, the ABC of the target point is not ignored.
  3. After modification, reload the program and run it.

10030

- Overview

  The first movement instruction target point is blurred because the target point lacks necessary parameters.

- Influence

The system stops in STOP2.

- Possible causes of failure

The target point of the first movement instruction is blurred because the parameters of the target point are incomplete.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that in the first movement instruction, all the parameters of the target point are specified and there is no default information.
3. After modification, reload the program and run it.

10031

- Overview

The time setting value of motion instruction should be greater than 0.

- Influence

The system stops in STOP2.

- Possible causes of failure

The execution time of motion instruction should be greater than 0.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. The execution time of motion instruction should be greater than 0.
3. After modification, reload the program and run it.

10032

- Overview

The interrupt name cannot be specified as empty.

- Influence

The system stops in STOP2.

- Possible causes of failure

The interrupt name cannot be specified as empty.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that the interrupt name of interrupt instruction in the program is not empty.
3. After modification, reload the program and run it.

10033

- Overview

  Interrupt name %1 does not exist.

- Parameter

  %1=Interrupt name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  Interrupt name does not exist.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Make sure that an interrupt with the corresponding interrupt name has been added to the program.
  3. After modification, reload the program and run it.

10034

- Overview

  Interrupt priority level %1 does not exist.

- Parameter

  %1=Interrupt priority.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  Interrupt priority level does not exist.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that interrupts with corresponding interrupt priority levels have been added to the program.
  3. After modification, reload the program and run it.

10035

- Overview

  The value range of user-defined interrupt priority is: %1<=priority<=%2.

- Parameter

1. %1=Minimum value of interrupt priority.
2. %2=Maximum value of interrupt priority.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The interrupt priority setting value exceeds the interrupt priority value range.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Make sure that the interrupt priority set in the program is within the interrupt priority value range.
3. After modification, reload the program and run it.

10036

- Overview

  Interrupt name %1 already exists.

- Parameter

  %1=Interrupt name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The interrupt instruction with the corresponding interrupt name already exists in the program, and the interrupt name of interrupt instruction is not allowed to be repeated.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Confirm that the interrupt name of interrupt instruction in the program is not repeated.
3. After modification, reload the program and run it.

10037

- Overview

  The number of interrupt statements that exist at the same time is not allowed to be greater than %1.

- Parameter

  %1=Interrupt declaration number.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The interrupt declaration number should not be larger than its value range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the interrupt declaration number in the program is within its value range.
  3. After modification, reload the program and run it.

10038

- Overview

  The timer interrupt interval is wrong, the interval should be %1, when %2=%3.

- Parameter

  1. %1=Interval minimum value.
  2. %2 = rmode.
  3. %3=1 or 0.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The interrupt declaration number should not be larger than its value range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the interrupt declaration number in the program is within its value range.
  3. After modification, reload the program and run it.

10039

- Overview

  Module file name %1 is duplicated.

- Parameter

  %1=Module file name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  A module file with the same name is loaded.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Modify the module name.
3. After modification, reload the program and run it.

10040

- Overview

  The speed 'PER' setting is wrong, the range should be 0.001~100.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The axis maximum speed percentage parameter in MOVEJ or PTP instruction is set incorrectly, and its value range is 0.001~100.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the per (axis speed percentage) parameter setting value in MOVEJ and PTP instruction in the program is within the range of 0.001~100.
  3. After modification, reload the program and run it.

10041

- Overview

  The speed 'TCP' setting is wrong, the range should be 0.001~%1.

- Parameter

  %1=Maximum TCP speed.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The point movement speed parameter setting in LIN or CIR instruction is incorrect and out of range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the tcp (point movement speed) parameter setting value in LIN or CIR instruction in the program is within the correct range.
  3. After modification, reload the program and run it.

10042

- Overview

  The speed 'ORI' setting is wrong, the range should be 0.001~%1.

- Parameter

  %1=ORI speed maximum value.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The point rotation speed parameter in LIN or CIR instruction is set incorrectly and is out of range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the tcp (point rotation speed) parameter setting value in LIN or CIR instruction in the program is within the correct range.
  3. After modification, reload the program and run it.

10043

- Overview

  The speed 'EXJ' setting is wrong, the range should be 0.001~%1.

- Parameter

  %1=ORI speed maximum value.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The external axis speed parameter setting in LIN or CIR instruction is wrong and out of range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the parameter setting value of point exj (external axis speed) in LIN or CIR instruction in the program is within the correct range.
  3. After modification, reload the program and run it.

10044

- Brief description

  Printout file not found when using 'print' instruction.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  When using print instruction, when printing content to a file, the output file is not found.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the file to be printed in the program exists and can be written.
  3. After modification, reload the program and run it.

10045

- Overview

  The printout string cannot be assigned a value.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  Using print instruction, the printed string cannot be assigned a value.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the string to be printed in the program can be assigned a value.
  3. After modification, reload the program and run it.

10046

- Overview

  'cfg' parameter setting error, %1cfg%2.

- Parameter

  1. %1=cfg minimum value.
  2. %2=maximum value of cfg.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The cfg parameter setting of the moving target point is wrong and exceeds its value range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.

2. Confirm that the cfg parameter of the motion target point pose in the program is set within its value range.
3. After modification, reload the program and run it.

10047

- Overview

  The scan instruction scan failed.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  When scan instruction converts a string into a variable, the formats of the two do not match.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that when the scan instruction string is converted into a variable in the program, the formats of the two matches.
  3. After modification, reload the program and run it.

10048

- Overview

  The delay time of 'waittime' instruction is less than 0.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The execution time parameter setting value of motion instruction is less than 0.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that the execution time parameter setting value of motion instruction in the program is within its value range.
  3. After modification, reload the program and run it.

10049

- Overview

  %1: Accessing unmapped IO address.

- Parameter

%1=IO function name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The IO logical address passed in the IO function is an unmapped illegal address.

- Treatment measures

  1. If it is a parameter configuration problem, re-modify the IO mapping configuration parameters and restart ARCS.
  2. If it is an ARL program problem, modify the parameters passed in the IO function in the ARL program and restart the running program.

10050

- Overview

  %1: This IO device does not support synchronous output.

- Parameter

  %1=IO function.

- Influence

  Synchronous IO output operations cannot be performed on this IO device.

- Possible causes of failure

  IO devices do not support synchronous IO output.

- Treatment measures

  1. Use asynchronous output plus delay or verification to wait for IO output to the port.
  2. If step 1 does not meet your needs, please use an IO device that supports synchronous IO output.

10051

- Overview

  %1: Accessing a non-existent IO device.

- Parameter

  %1=IO function name.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The IO device mapped to the IO logical address passed in the IO function does not exist.

- Treatment measures

1. If it is a parameter configuration problem, re-modify the IO mapping configuration parameters and restart ARCS.
2. If it is an ARL program problem, modify the parameters passed in the IO function in the ARL program and restart the running program.

12004

- Overview

The input speed is 0.

- Influence

The system stops in STOP2.

- Possible causes of failure

The speed specified in motion instruction is 0.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Modify the speed setting value of motion instruction in the program. It cannot be equal to 0.
3. After modification, reload the program and run it.

12005

- Overview

The input acceleration is 0.

- Influence

The system stops in STOP2.

- Possible causes of failure

The acceleration specified in motion instruction is 0.

- Treatment measures

1. Press the clear button or clear the alarm through the system IO signal.
2. Modify the acceleration setting value of motion instruction in the program. It cannot be equal to 0.
3. After modification, reload the program and run it.

12006

- Overview

The specified duration is too small or too large.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  The speed planning cannot be completed within the specified time. The time specified by motion instruction is too large or too small.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Modify the time setting value of motion instruction in the program to ensure that the speed planning can be completed according to this value.
  3. After modification, reload the program and run it.

12007

- Overview

  Speed planning failed.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  An error occurred while the system was planning the speed of the trajectory.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. If the problem still exists, please contact customer service.

12100

- Overview

  The target point exceeds the robot's motion range.

- Influence

  The system stops in STOP2.

- Possible causes of failure

  In motion instruction, the target point position exceeds the robot's motion range.

- Treatment measures

  1. Press the clear button or clear the alarm through the system IO signal.
  2. Confirm that in motion instruction, the target point position is within the robot's motion range.
  3. After modification, reload the program and run it.

Appendix A AIRXX periodic maintenance schedule

Attached Table AIRXX periodic maintenance schedule

Item	Maintenance cycle	First Maintenance 320h	3 months 960h	6 months 1,920h	9 months 2,880h	1 year 3,840h	15 months 4,800h	18 months 5,760h	21 months 6,720h	2 years 7,680h	27 months 8,640h	30 months 9,600h	33 months 10,560h	3 years 11,520h	39 months 12,480h	42 months 13,440h	45 months 14,400h	4 years 15,360h	51 months 16,320h	54 months 17,280h	57 months 18,240h	5 years 19,200h
Cleaning of manipulator	0.5h	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Cleaning of control cabinet vent	0.1h	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Check the timing belt for wear	0.5h	○		○	○	○		○		○		○		○		○		○		○		○
Check the manipulator cable for damage	3h	○		○	○	○		○		○		○		○		○		○		○		○
Check the manipulator cable sheath for damage	2h	○		○	○	○		○		○		○		○		○		○		○		○
Check the connecting cable of teach pendant, control	0.2h	○			○	○				○				○				○				○

Item	Maintenance cycle	First Maintenance 320h	3 months 960h	6 months 1,920 h	9 months 2,880 h	1 year 3,840 h	15 months 4,800 h	18 months 5,760 h	21 months 6,720 h	2 years 7,680 h	27 months 8,640 h	30 months 9,600 h	33 months 10,560 h	3 years 11,520 h	39 months 12,480 h	42 months 13,440 h	45 months 14,400 h	4 years 15,360h	51 months 16,320 h	54 months 17,280 h	57 months 18,240 h	5 years 19,200 h
cabinet and manipulator for damage																						
Check the connectors of motor, etc. for looseness	0.2h	○			○	○				○				○				○				○
Tighten the end effector screws	0.2h	○			○	○				○				○				○				○
Tighten the external main screws	1h	○			○	○				○				○				○				○
Check the end effector cable for damage	0.2h	○			○	○				○				○				○				○
Check the limit rubber block for damage	0.1h	○			○	○				○				○				○				○
Replacement of Synchronous Belt	1h					○				○				○				○				○
Battery	0.5h									○								○				

Item	Maintenance cycle	First Maintenance 320h	3 months 960h	6 months 1,920 h	9 months 2,880 h	1 year 3,840 h	15 months 4,800 h	18 months 5,760 h	21 months 6,720 h	2 years 7,680 h	27 months 8,640 h	30 months 9,600 h	33 months 10,560 h	3 years 11,520 h	39 months 12,480 h	42 months 13,440 h	45 months 14,400 h	4 years 15,360h	51 months 16,320 h	54 months 17,280 h	57 months 18,240 h	5 years 19,200 h
Replacement																						
Replace J1 axis grease	0.5h													○								
Replace J2 axis grease	0.5h													○								
Replace J3 axis grease	0.5h													○								
Replace the internal cables of manipulator	8h																	○				
Manipulator overhaul																						○

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