



Robot Alarm Manual

Version : v0.0.1

Date : 2026.01.22

Contents

Chapter 1 Maintenance	2
1.1 Safety Notes	3
1.2 Precautions	3
Chapter 2 Handling of Other Police	4
2.1 Inspection of different alarms	4
2.2 Overview of different alarms	5
2.3 Causes and treatment of abnormal alarm	7
Chapter 3 Handling of Warnings	27
3.1 Warning checks	27
3.2 List of warnings	28
3.3 Causes and Handling of Warning	29
Chapter 4 System Alarm Handling	
4.1 System alarm check	33
4.2 System alarm list	34
4.3 System alarm processing	35

Chapter 1 Maintenance

This Abnormal Alert Manual provides users with a comprehensive and systematic guide for handling mechanical arm controller anomalies. By detailing various alert codes, root cause analysis, and corresponding troubleshooting methods, it helps users quickly identify and resolve issues, ensuring efficient and stable operation of mechanical arms during production processes.



- 1. When an anomaly occurs, please use the ProEasyOS debugging software to check the cause of the anomaly and eliminate it.**
- 2. If the power is suddenly interrupted during operation, do not approach the manipulator after power is restored to prevent personal injury caused by the system automatically restarting!**
- 3. After the anomaly is eliminated, please first move the manipulator out of the motion range, and then reset the alarm; otherwise, personal injury may occur!**
- 4. If you need to repair the controller, please contact us. Do not disassemble it yourself, otherwise it may cause new failures.**

This manual is applicable to MRC- 100/MRC-200 series controllers. The content of this manual covers various abnormal conditions and treatment measures that may be encountered during the operation of the controller.

1.1 Safety precautions

The manual also emphasizes the safety precautions that must be observed during the use of the manipulator controller, including but not limited to:

- Make sure you read the safety manual before using the robot to learn how to use it safely.
- Obey legal rules and have the operation taught by personnel who have received operational education and training.
- Set up an emergency stop switch and place a "Teaching in progress" sign during teaching.
- Ensure that the operator is isolated from the robot by fencing or fence during operation.

1.2 Precautions

Unauthorized copying or reprinting of part or all of this manual is prohibited.

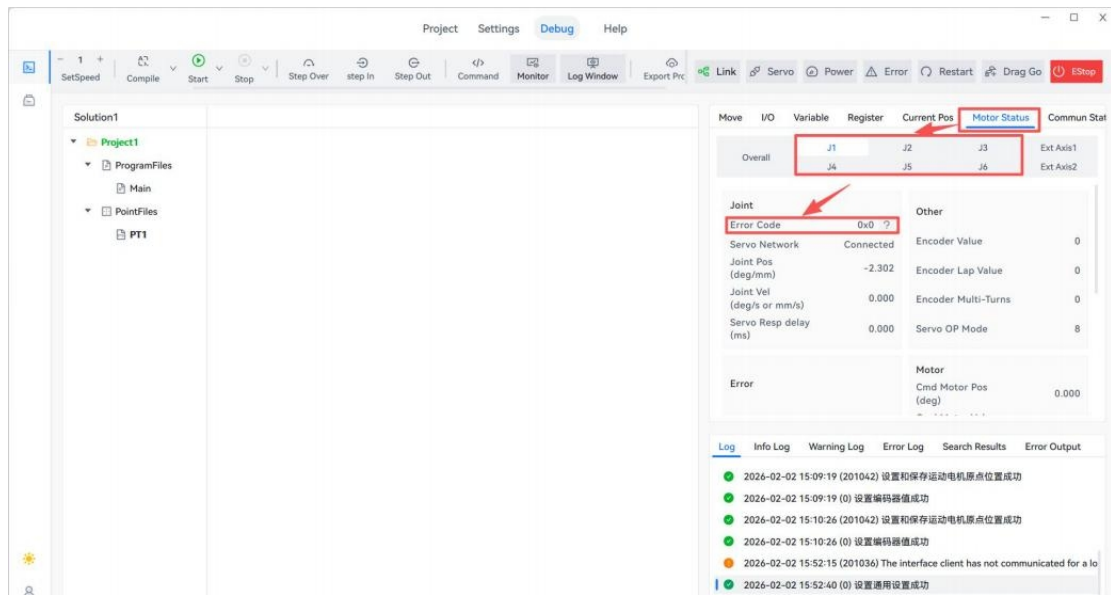
This manual may be changed at any time without prior notice. If you find any errors or improvements in this manual, please feel free to correct them.

Robot Alarm Guide

Chapter 2 Handling of different police

2.1 Inspection of different alarms

Open the OS debugging software and find "Motor Status" in the "Assist Panel". Check and deal with the abnormal problems of the single-axis motor one by one. The detection method of abnormal alarm is as follows:



2.2 Overview of different alarms

The list of exceptions describes the identifiable exceptions and their attributes, where:

Clear attributes: Used to indicate whether the exception can be shielded, Y is removable and N is not removable.

Reset attributes: When Y is true, the exception alarm can be cleared by debugging software reset command. Otherwise, the exception alarm needs to be processed before resetting and clearing.

Default group: The default grouping status of an exception alarm, which is used to display the priority level of the exception alarm.

No.	Name of fault	Fault code	Clear attributes	Reset attributes	Default grouping
1.	Drive short circuit	0x2250	N	N	0
2.	The U phase output current is too high	0x2310	Y	N	1
3.	V phase output current is too high	0x2311	Y	N	1
4.	The output current of phase W is too large	0x2312	Y	N	1
5.	Driver hardware overflow	0x2320	Y	N	0
6.	The driver output is short to ground	0x2330	N	N	0
7.	Overvoltage of DC bus	0x3210	Y	N	0
8.	DC bus undervoltage	0x3220	Y	Y	2
9.	The power module is overheated	0x4210	Y	Y	2
10.	CPU1 watchdog overflow	0x6010	Y	N	0
11.	CPU2 watchdog overflow	0x6011	Y	N	0
12.	Energy consumption resistance resistor	0x7112	Y	Y	0
13.	The motor is continuously overloaded	0x8311	Y	Y	3
14.	The position tracking error is too large	0x8611	Y	Y	4
15.	Positive soft limit	0x8612	Y	Y	2
16.	Negative soft limit	0x8613	Y	Y	2
17.	The encoder data overflowed	0x8800	N	N	0
18.	CPU1, abnormal operation	0xFF00	N	N	0
19.	CPU2, abnormal operation	0xFF01	N	N	0
20.	CPU1, memory exception	0xFF02	N	N	0
21.	CPU2, memory exception	0xFF03	N	N	0
22.	CPU memory conflict	0xFF04	N	N	0
23.	Magnetic pole positioning error	0xFF05	Y	N	0
24.	The encoder data is abnormal	0xFF06	Y	N	0
25.	The encoder communication is abnormal	0xFF07	Y	N	0
26.	Communication timeout occurred between the	0xFF08	Y	N	0
27.	Internal encoder exception 1	0xFF09	N	N	0
28.	Other drives and shafts are abnormal	0xFF10	N	N	4

29.	Control encoder overspeed	0xFF14	Y	N	0
30.	The driver is continuously overloaded	0xFF15	Y	N	1
31.	The driver output is out of phase	0xFF17	Y	N	0
32.	Motor stall	0xFF18	Y	N	0
33.	The current follows too much error	0xFF21	Y	N	0
34.	The location target value is abnormal	0xFF22	Y	N	1
35.	The encoder is powered on and data overflow	0xFF23	Y	N	0
36.	Location target value overflow	0xFF24	Y	N	1
37.	Motor brake is abnormal	0xFF25	Y	Y	2
38.	Control the power supply under voltage	0xFF26	N	N	0
39.	STO1 triggered	0xFF27	Y	N	1
40.	STO2 triggered	0xFF28	Y	N	1
41.	The forward limit switch is triggered	0xFF29	Y	N	1
42.	Trigger a negative hard limit switch	0xFF30	Y	N	1
43.	Motor overspeed	0xFF31	Y	N	1

order number	Name of fault	Fault code	Clear attributes	Reset attributes	Default grouping
44.	The emergency stop input switch is triggered	0xFF32	Y	N	1
45.	Torque monitoring saturation fault	0xFF33	Y	Y	0
46.	The speed follows the error too much	0xFF34	Y	Y	4
47.	Drive short circuit 2	0xFF35	N	N	0
48.	The quest for the origin failed	0xFF36	Y	Y	5
49.	The EtherCAT bus instruction is illegal	0xFF38	Y	Y	3
50.	EtherCAT communication cycle error	0xFF39	Y	Y	3
51.	Location planning run error	0xFF40	Y	Y	4
52.	EtherCAT illegal synchronization mode	0xFF41	Y	Y	3
53.	Instantaneous overload of phase U motor	0xFF45	Y	N	1
54.	Instantaneous overload of motor phase V	0xFF46	Y	N	1
55.	Instantaneous overload of phase W motor	0xFF47	Y	N	1
56.	Dynamic brake overload	0xFF48	N	N	0
57.	Internal driver error	0xFF49	Y	N	0
58.	Limit switch is abnormal	0xFF50	Y	Y	2
59.	EtherCAT bus communication is abnormal	0xFF51	Y	Y	3
60.	Interface encoder resolution changed	0xFF52	N	N	0
61.	The encoder is overheating	0xFF53	Y	Y	3
62.	Coding battery under-voltage fault	0xFF54	Y	Y	3
63.	The control mode is set incorrectly	0xFF57	Y	Y	3
64.	The upper power position is too far off	0xFF58	Y	Y	3

Error Handling

65.	Encoder acceleration fault	0xFF59	Y	N	0
66.	motor stalling	0xFF60	Y	Y	2
67.	Write EEPROM data exception	0xFF63	Y	N	0
68.	Read EEPROM data is abnormal	0xFF64	Y	N	0
69.	The brake control circuit is abnormal	0xFF66	Y	N	0
70.	CPU1 is overloaded	0xFF68	Y	N	1
71.	CPU2 is overloaded	0xFF69	Y	N	1
72.	CPU1, handshake failed	0xFF70	Y	N	1
73.	ESC configuration EEPROM exception	0xFF75			
74.	ESC internal access error	0xFF76	Y	Y	3
75.	Servo enable is not ready	0xFF77	Y	Y	5
76.	CPU2, handshake failed	0xFF78	Y	N	0
77.	CPU1 main task timeout	0xFF79	Y	Y	2
78.	DC bus charging relay is abnormal	0xFF81	Y	N	0
79.	CPU internal error	0xFF82	Y	N	0
80.	Location actual value overflow	0xFF83	Y	N	1
81.	Internal encoder exception 2	0xFF85	Y	N	0
82.	Internal encoder exception 3	0xFF87	Y	N	0
83.	The second position tracking error is too large	0xFF8E	Y	N	0
84.	STO wiring is abnormal	0xFF8F	Y	N	1
85.	The second velocity tracking error is too large	0xFF90	N	N	0
86.	Encoder initialization failed	0xA02	N	N	

2.3 Causes and treatment of abnormal alarm

Driver short circuit code: 0x2250	
Possible causes	<ol style="list-style-type: none"> 1. The driver UVW output cable is short circuit or ground short circuit 2. The motor UVW is short circuit or ground short circuit 3. A short circuit or ground short circuit occurs inside the driver 4. The driver is disturbed and causes false alarm
Resolution Guidelines	<ol style="list-style-type: none"> 1. When a short circuit occurs between the UVW phase of the cable and between UVW and the ground, handle or replace the cable. 2. Replace the motor when a short circuit occurs between the UVW phase and the UVW and the ground. 3. Disconnect the UVW wiring of the driver output. If the fault still occurs, replace the driver. 4. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc.

U phase output current is too large code: 0x2310	
Possible causes	<ol style="list-style-type: none"> 1. The energy consumption brake resistor is not connected or the wiring is wrong 2. The internal current sampling circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check whether the brake resistor is properly wired 2. Replace the driver

V phase output current is too large code: 0x2311	
Possible causes	<ol style="list-style-type: none"> 1. The energy consumption brake resistor is not connected or the wiring is wrong 2. The internal current sampling circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check whether the brake resistor is properly wired 2. Replace the driver

W phase output current is too large code: 0x2312	
Possible causes	<ol style="list-style-type: none"> 1. The energy consumption brake resistor is not connected or the wiring is wrong 2. The internal current sampling circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check whether the brake resistor is properly wired 2. Replace the driver

Driver hardware overcurrent code: 0x2320	
Possible causes	<ol style="list-style-type: none"> 1. The motor load is too large or the acceleration and deceleration of the motor are set too large, and the acceleration and deceleration time is set too small 2. The encoder feedback has an abnormal jump 3. Brake brake is damaged 4. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Detect and process the mechanical load transmission to ensure that there is no jamming phenomenon, and increase the acceleration and deceleration time 2. Check the motor encoder wiring and ensure that the wiring is standard and correct 3. Check whether there is any abnormality in the brake 4. Replace the controller

Drive output to ground short circuit code: 0x2330	
Possible causes	<ol style="list-style-type: none"> 1. The driver UVW output cable is short-circuited to ground 2. The motor UVW has a ground short circuit 3. A short circuit or ground short circuit occurs inside the driver

Error Handling

Resolution Guidelines	<ol style="list-style-type: none"> 1. When a short circuit occurs between the cable's UVW and the ground, handle or replace the cable. 2. Replace the motor when a short circuit occurs between the UVW and the ground of the motor. 3. Disconnect the UVW wiring of the driver output. If the fault still occurs, replace the driver.
------------------------------	---

DC bus overvoltage code: 0x3210

Possible causes	<ol style="list-style-type: none"> 1. The power input voltage of the driver is too high 2. The energy consumption of the motor is too large when it stops quickly 3. The energy consumption brake resistor is not connected or the wiring is wrong 4. The resistance value of the energy consumption brake resistor is too large 5. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Adjust the power input of the drive to the allowable range. 2. Reduce the motor stop deceleration or reduce the load. 3. Correct the wiring of energy consumption brake resistor to ensure correct wiring. 4. Appropriately reduce the resistance value of the energy consumption braking resistor (the resistance value should not be lower than the allowed minimum value) and increase the power of the energy consumption braking resistor. 5. Replace the driver.

DC bus undervoltage code: 0x3220

Possible causes	<ol style="list-style-type: none"> 1. The power input voltage of the driver is too low 2. The internal voltage sampling circuit of the driver is abnormal 3. The driver power circuit is set incorrectly, and the 220V power supply is set to 380V power supply 4. The driver power input cable is disconnected
Resolution Guidelines	<ol style="list-style-type: none"> 1. Adjust the power input power supply of the drive to the normal working range 2. Replace the driver 3. The driver power circuit is set to be consistent with the actual power supply 4. Check and handle the power input cable of the driver to ensure that the wiring is correct and

Power module overheating code: 0x4210	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. The temperature sampling circuit inside the driver is abnormal 3. The large load model is overheated due to long time of large yaw operation 4. The operating temperature of the driver exceeds the allowable working range
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor 2. Replace the driver 3. Stop the operation of the manipulator and provide a heat dissipation environment. After cooling, restart the controller and clear the exception alarm

CPU1 watchdog overflow code: 0x6010	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

CPU2 watchdog overflow code: 0x6011	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Energy consumption brake resistor overload code: 0x7112	
Possible causes	<ol style="list-style-type: none"> 1. Frequent rapid stop operation of the motor leads to excessive energy consumption and braking energy 2. The power setting of energy consumption brake resistor is inconsistent with the actual resistance
Resolution Guidelines	<ol style="list-style-type: none"> 1. Change the motion path of the manipulator to avoid frequent and rapid operation and stop of the motor, such as prolonging the stop time of the motor. Or replace it with a higher power energy consumption braking resistor. 2. Set the power of energy consumption braking resistor correctly, and set the value to be consistent with the actual power of energy consumption braking resistor.

Motor continuous overload code: 0x8311	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. The acceleration and deceleration time of the motor is set too small 3. Motor parameters are set incorrectly 4. Abnormal release of the brake 5. The motor is selected incorrectly and the power is too small (for example, a high-power driver with a low-power motor running at full speed for a long time under load) 6. The internal current sampling circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Increase the acceleration and deceleration time of the motor during operation. 3. Check the motor parameters to ensure that the motor parameters are set correctly. 4. Check the brake line to ensure that the brake action is normal. 5. Check whether the model and controller are compatible. 6. Replace the driver.

Location follow error is too large Code: 0x8611	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. Abnormal release of the brake
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Check the brake holding line to ensure that the brake holding action is normal

Positive soft limit code: 0x8612	
Possible causes	The position feedback value exceeds (positive soft limit value + positioning completion threshold)
Resolution Guidelines	The range of motion should not exceed the positive soft limit setting value.

Negative soft limit code: 0x8613	
Possible causes	The position feedback value exceeds (negative soft limit value + positioning completion threshold)
Resolution Guidelines	The range of motion should not exceed the negative soft limit setting value.

Encoder data overflow code: 0x8800	
Possible causes	In position mode, when infinite position control is not enabled, the encoder's multiple circle value exceeds the actual encoder's multiple circle bit number.
Resolution Guidelines	Perform multi-turn zeroing operation of encoder and return alarm shaft to origin.

CPU1, abnormal operation code: 0xFF00	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

CPU2, abnormal operation code: 0xFF01	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

CPU1, memory exception code: 0xFF02	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

CPU2, memory exception code: 0xFF03	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

CPU memory conflict code: 0xFF04	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

Magnet pole positioning error code: 0xFF05	
Possible causes	<ol style="list-style-type: none"> 1. The static balance moment compensation value is inconsistent with the actual load. 2. The rotor phase Angle changes due to motor abnormality. 3. The gravity load causes the motor to rotate at the instant of servo enable, and the speed exceeds the threshold value of fault detection sensitivity setting. 4. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Set the static balance moment compensation value correctly according to the actual load. 2. Replace the motor. 3. Set load parameters correctly according to actual load. 4. Replace the driver

Encoder data exception code: 0xFF06	
Possible causes	<ol style="list-style-type: none"> 1. The data of the encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc.

Communication error of encoder. Code: 0xFF07	
Possible causes	<ol style="list-style-type: none"> 1. The data of the encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. The encoder data is abnormal due to noise interference.
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 4. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc.

Communication timeout of encoder code: 0xFF08	
Possible causes	<ol style="list-style-type: none"> 1. The data of the encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc. 4. Stop reading and writing operations to the controller. After 30 minutes, attempt to restart the controller 3 to 5 times and clear the abnormal alarm.

Internal encoder exception 1 code: 0xFF09	
Possible causes	The internal state of the encoder is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reset the alarm or restart the driver. 2. Replace the driver.

Drive other shaft abnormal code: 0xFF10	
Possible causes	<ol style="list-style-type: none"> 1. Other shafts are faulty 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check other shafts and reset the faulty shaft to ensure that no other shaft is faulty. 2. Replace the driver

Control encoder overspeed code: 0xFF14	
Possible causes	<ol style="list-style-type: none"> 1. The encoder position feedback value changes too much in a position sampling cycle, exceeding 1.3 times of the maximum speed of the motor. 2. Encoder exception 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Optimize the motor parameters and control parameters. The maximum speed setting value of the motor is usually not less than the actual maximum speed of the motor. 2. Check the encoder wiring and whether the encoder is damaged. 3. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring and other measures.

Driver continues to be overloaded Code: 0xFF15	
Possible causes	<ol style="list-style-type: none"> 1. The motor load is too large or the acceleration and deceleration time is set too small 2. The actual mechanical load is too large or there is a jamming phenomenon 3. Motor brake is not released 4. Motor abnormality 5. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Set load parameters reasonably 2. Check the transmission mode of mechanical load to ensure that there is no jamming phenomenon 3. Check whether the motor brake is abnormal 4. Replace the motor 5. Replace the driver

Error Handling

Driver output is out of phase code: 0xFF17	
Possible causes	<ol style="list-style-type: none"> 1. There is a wire break or poor wiring in the output of driver U, V and W 2. Excessive motor impedance 3. The internal current sampling circuit of the driver is abnormal
Resolution Guidelines	Replace the driver

Motor stall code: 0xFF18	
Possible causes	<ol style="list-style-type: none"> 1. The encoder data changes abnormally due to electromagnetic noise interference 2. The encoder data changes abnormally due to the damage of the encoder 3. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc 2. Replace the motor or encoder 3. Replace the driver

Current follower error is too large Code: 0xFF21	
Possible causes	<ol style="list-style-type: none"> 1. The encoder data changes abnormally due to electromagnetic noise interference 2. Abnormal changes in current feedback caused by motor damage 3. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc 2. Replace the motor 3. Replace the driver

Position target value is abnormal Code: 0xFF22	
Possible causes	<ol style="list-style-type: none"> 1. When the servo is enabled, the difference between the position target value and the actual position value exceeds the preset threshold of the position following error 2. During the operation of the motor, the acceleration of the target trajectory exceeds the maximum acceleration setting threshold, and the difference between the position target value and the actual position value exceeds the excessive position following error setting threshold
Resolution Guidelines	Reset the alarm or restart the driver

The encoder power data overflow code: 0xFF23	
Possible causes	When the driver is powered on, the feedback position value exceeds the maximum range allowed by the encoder
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reset the alarm or restart the driver 2. Replace the driver

Location target value overflow code: 0xFF24	
Possible causes	In location mode, when unlimited position control is prohibited, the target value of the position exceeds the maximum allowed
Resolution Guidelines	Perform multi-turn zeroing of encoder

Motor brake abnormal code: 0xFF25	
Possible causes	<ol style="list-style-type: none"> 1. The motor brake itself is abnormal and cannot brake normally. 2. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check whether there is any abnormality in the brake. 2. Replace the driver

Control power undervoltage code: 0xFF26	
Possible causes	The driver circuit is abnormal
Resolution Guidelines	Replace the driver

STO1 trigger code: 0xFF27	
Possible causes	STO1 Trigger or poor wiring
Resolution Guidelines	Check the STO wiring to ensure that the wiring is reliable and not in a triggered state

STO2 trigger code: 0xFF28	
Possible causes	STO2 Trigger or poor wiring
Resolution Guidelines	Check STO wiring to ensure that the wiring is reliable and not in the trigger state

Error Handling

Forward hard limit switch triggered code: 0xFF29	
Possible causes	The device runs in one direction to the mechanical limit, resulting in the triggering of the hardware limit
Resolution Guidelines	The fault can be directly removed and the machine can run in reverse to the mechanical limit to recover. Note that the position planning should not exceed the hardware limit range.

Negative forward limit switch triggered code: 0xFF30	
Possible causes	The device runs in one direction to the mechanical limit, resulting in the triggering of the hardware limit
Resolution Guidelines	The fault can be directly removed and the machine can run in reverse to the mechanical limit to recover. Note that the position planning should not exceed the hardware limit range.

Motor overspeed code: 0xFF31	
Possible causes	<ol style="list-style-type: none"> 1. The actual speed feedback value of the motor exceeds 1.1 times of the maximum speed of the motor. 2. Encoder exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Optimize the driver parameters. The maximum speed setting of the motor is usually not less than the actual maximum speed of the motor. 2. Check the encoder wiring and whether the encoder is damaged.

Emergency stop input switch triggered code: 0xFF32	
Possible causes	The emergency stop input switch is triggered or the wiring is faulty
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check the wiring of the emergency stop input switch to ensure that the wiring is correct 2. Reliable and not in trigger state

Torque monitoring saturation fault Code: 0xFF33	
Possible causes	<ol style="list-style-type: none"> 1. The motor load is too large, exceeding the torque monitoring alarm threshold 2. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor or increase the acceleration and deceleration time of the motor 2. Replace the driver.

The speed follows the error is too large. Code: 0xFF34	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. Abnormal release of the brake 3. The internal parameters of the driver are abnormal

Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Check the motor brake line to ensure that the motor brake action is normal 3. Replace the driver
------------------------------	---

Driver short circuit code: 0xFF35

Possible causes	<ol style="list-style-type: none"> 1. The driver UVW output cable is short circuit or ground short circuit 2. The motor UVW is short circuit or ground short circuit 3. A short circuit or ground short circuit occurs inside the driver 4. The driver is disturbed and causes false alarm
Resolution Guidelines	<ol style="list-style-type: none"> 1. When a short circuit occurs between the UVW phase of the cable and between the UVW and the ground, handle or replace the cable. 2. Replace the motor when a short circuit occurs between the UVW phase and the UVW and ground. 3. Disconnect the UVW wiring of the driver output. If the fault still occurs, replace the driver. 4. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc.

Failed to find the origin code: 0xFF36

Possible causes	<ol style="list-style-type: none"> 1. The original point parameters are not set properly 2. When starting from the origin, the motor is in the state of triggering the limit switch 3. Switch to non-HM mode during the search for the origin
Resolution Guidelines	<ol style="list-style-type: none"> 1. Set the origin parameters correctly 2. When starting from the origin, ensure that the motor is not in the state of triggering the limit switch 3. Avoid switching control modes during the search for the origin

EtherCAT bus instruction is illegal code: 0xFF38

Possible causes	EtherCAT communication state machine and control word timing are not coordinated correctly
Resolution Guidelines	The host correctly handles the EtherCAT communication state machine and control word timing

Error Handling

EtherCAT communication cycle error code: 0xFF39	
Possible causes	Internal driver parameters are abnormal
Resolution Guidelines	Replace the driver

Position planning error code: 0xFF40	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

EtherCAT illegal synchronization mode code: 0xFF41	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Instantaneous overload of phase U of motor code: 0xFF45	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. The acceleration and deceleration time of the motor is set too small 3. Abnormal brake release action 4. The motor is selected incorrectly and the power is too small (for example, a high-power driver with a low-power motor running at full speed for a long time under load) 5. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Increase the acceleration and deceleration time of the motor during operation 3. Check the motor brake line to ensure that the motor brake action is normal 4. Replace the large capacity motor 5. Replace the driver

Instantaneous overload of phase V of motor code: 0xFF46	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. The acceleration and deceleration time of the motor is set too small 3. Abnormal brake release action 4. The motor is selected incorrectly and the power is too small (for example, a high-power driver with a low-power motor running at full speed for a long time under load) 5. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Increase the acceleration and deceleration time of the motor during operation 3. Check the motor brake line to ensure that the motor brake action is normal 4. Replace the large capacity motor 5. Replace the driver

Instantaneous overload of phase W motor code: 0xFF47	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. The acceleration and deceleration time of the motor is set too small 3. Abnormal brake release action 4. The motor is selected incorrectly and the power is too small (for example, a high-power driver with a low-power motor running at full speed for a long time under load) 5. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Increase the acceleration and deceleration time of the motor during operation 3. Check the motor brake line to ensure that the motor brake action is normal 4. Replace the large capacity motor 5. Replace the driver

Dynamic brake overload code: 0xFF48	
Possible causes	When the motor is running, the interval time between two adjacent dynamic braking stops is too short
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the running speed of the alarm shaft. 2. Replace the brake resistor.

Error Handling

Driver internal exception code: 0xFF49	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver
Limit switch exception code: 0xFF50	
Possible causes	Limiting switch is triggered or wiring is poor
Resolution Guidelines	Check the wiring of the limit switch to ensure that the wiring is reliable.
EtherCAT bus communication exception code: 0xFF51	
Possible causes	<ol style="list-style-type: none"> 1. The internal communication wiring harness falls off or is defective 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Stop reading and writing operations to the controller, and try to restart the controller 3 ~ 5 times and clear the exception alarm after 30 minutes 2. Check whether the external EtherCat communication is disconnected. 3. Replace the driver
Interface encoder resolution change code: 0xFF52	
Possible causes	The interface encoder resolution was changed
Resolution Guidelines	Reset the alarm or restart the driver
The encoder is overheated. Code: 0xFF53	
Possible causes	<ol style="list-style-type: none"> 1. The actual temperature of the encoder is too high 2. Encoder exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual working environment temperature of the encoder to the allowable range 2. Replace the motor or encoder
Encoder battery under-voltage fault Code: 0xFF54	
Possible causes	<ol style="list-style-type: none"> 1. The actual temperature of the encoder is too high 2. Encoder exception

Error Handling

Resolution Guidelines	<ol style="list-style-type: none"> 1. Remove multiple turns of the alarm shaft and remove the abnormal alarm 2. Check and handle the battery wiring to ensure that the battery wiring is correct and firm 3. Replace the encoder battery 4. Replace the motor or encoder
------------------------------	--

Control mode is set incorrectly Code: 0xFF57

Possible causes	Internal driver parameters are abnormal
Resolution Guidelines	Replace the driver

The upper power position deviation is too large. Code: 0xFF58

Possible causes	When the driver is powered on, the saved position differs from the last power failure and exceeds the set threshold
Resolution Guidelines	Reset the alarm or restart the driver

Encoder acceleration abnormal fault code: 0xFF59

Possible causes	<ol style="list-style-type: none"> 1. The data of the encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc

Motor block code: 0xFF60

Possible causes	<ol style="list-style-type: none"> 1. Mechanical load has jam or blockage phenomenon 2. Motor brake is not released
Resolution Guidelines	<ol style="list-style-type: none"> 1. Set the load parameters correctly and ensure that there is no jamming phenomenon 2. Detect and process the brake circuit to ensure normal release of the motor brake

Write EEPROM data exception code: 0xFF63

Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Error Handling

Read EEPROM data exception code: 0xFF64	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Brake control circuit is abnormal Code: 0xFF66	
Possible causes	<ol style="list-style-type: none"> 1. Motor brake wiring short circuit or poor contact 2. Short circuit or poor contact occurs inside the motor brake 3. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check the brake output wiring and ensure that the wiring is correct and reliable 2. Replace the brake 3. Replace the driver

CPU1 overload code: 0xFF68	
Possible causes	<ol style="list-style-type: none"> 1. The driver is running under noise interference 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring and other measures. 2. Replace the driver.

CPU2 overload code: 0xFF69	
Possible causes	<ol style="list-style-type: none"> 1. The driver is running under noise interference 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc. 2. Replace the driver.

CPU1, handshake failure code: 0xFF70	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

ESC configuration EEPROM exception code: 0xFF75

Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

ESC internal access error exception code: 0xFF76

Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

The servo enable is not ready code: 0xFF77

Possible causes	<ol style="list-style-type: none"> 1. When the servo is ON, the encoder communication is disconnected 2. When the servo is ON, the motor speed is higher than 30rpm 3. When the servo is ON, the STO state is not relieved. 4. The DC bus voltage is too low when the servo is ON. 5. When the servo is ON, the dynamic braking state is not relieved. 6. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check the encoder communication status to ensure that the encoder communication status is normal when the servo is ON 2. Check the running status of the motor to ensure that the motor is stationary when the servo is ON 3. Check the STO and status to ensure that the STO status has been removed when the servo is ON 4. Check the voltage status of the DC bus to ensure that the DC bus voltage meets the enabling threshold and the charging relay is engaged when the servo is ON 5. Check the dynamic braking status to ensure that the dynamic braking status has been released when the servo is ON 6. Replace the driver

CPU2, handshake failure code: 0xFF78

Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

Error Handling

CPU1 main task timeout code: 0xFF79	
Possible causes	<ol style="list-style-type: none"> 1. The driver is running under noise interference 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc. 2. Replace the driver.

DC bus charging relay is abnormal Code: 0xFF81	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

CPU internal error code: 0xFF82	
Possible causes	<ol style="list-style-type: none"> 1. The driver firmware is running abnormally 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Upgrade the driver firmware. 2. Replace the driver.

Location actual value overflow code: 0xFF83	
Possible causes	In location mode, when unlimited location control is prohibited, the actual value of the location exceeds the maximum allowable range
Resolution Guidelines	Perform encoder multi-turn zeroing operation, enable infinite position control mode, or operate in non-position mode.

Internal encoder exception 2 code: 0xFF85	
Possible causes	The internal state of the encoder is abnormal
Resolution Guidelines	Reset the alarm or restart the driver

Internal encoder exception 3 code: 0xFF87	
Possible causes	The internal state of the encoder is abnormal
Resolution Guidelines	Reset the alarm or restart the driver

The second position follows too much error code: 0xFF8E	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. Abnormal release of the brake 3. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that the machine does not get stuck. 2. Check the motor brake line to ensure that the motor brake is normal 3. Replace the driver

STO wiring exception 3 code: 0xFF8F	
Possible causes	STO1 or STO2 trigger or wiring is poor
Resolution Guidelines	Check STO wiring to ensure that the wiring is reliable and not in a triggered state.

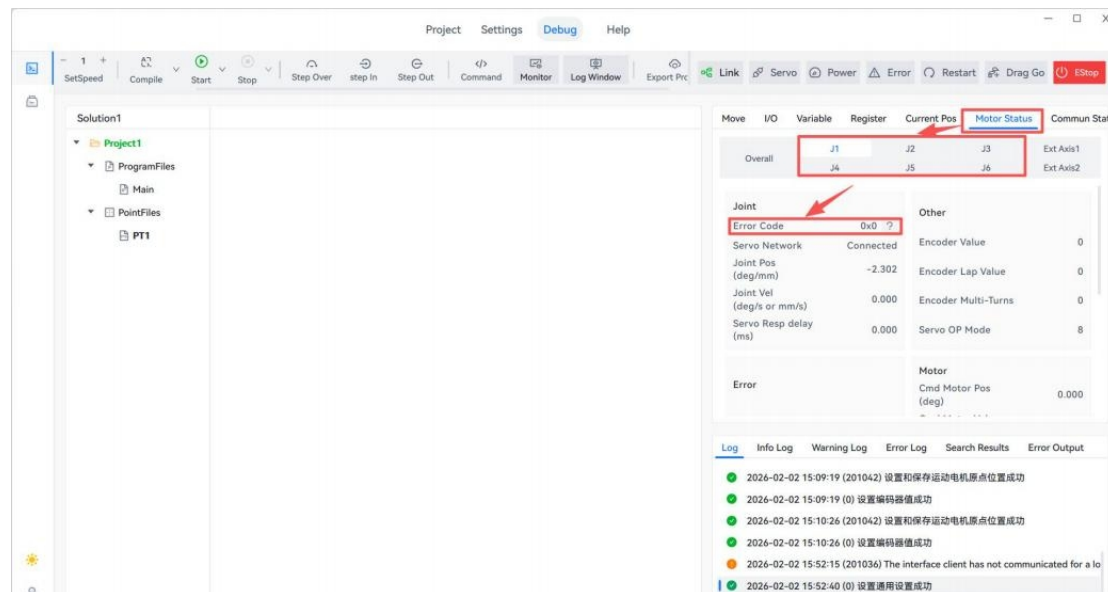
The second speed follow error is too large code: 0xFF90	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. Abnormal release of the brake 3. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Check the motor brake line to ensure that the motor brake is normal 3. Replace the driver

编码器初始化失败 代码: 0xA02	
Possible causes	<ol style="list-style-type: none"> 1. Abnormal encoder wire connection 2. Abnormal connection of motor encoder 3. The driving parameters do not match the reality
Resolution Guidelines	<ol style="list-style-type: none"> 1. Check the connection status of encoder line between robot body and robot controller. 2. Check the connection state of the encoder line of the alarm shaft to confirm whether there are abnormal phenomena such as falling off, damaged and broken 3. Check whether the robot ontology label is consistent with the controller label.

Chapter 3 Warning Handling

3.1 Warning inspection

Open the OS debugging software and find "Motor Status" in the "Assist Panel". Check and deal with the warning messages generated by the single-axis motor one by one. The warning messages can be viewed as follows:



3.2 List of warnings

This section describes the various warnings that the driver can detect.

order	Warning name	Warning code
1.	Control power undervoltage warning	0xE000
2.	STO detonate by contact	0xE002
3.	Torque monitoring saturation warning	0xE003
4.	CPU1, overload warning	0xE004
5.	CPU2, overload warning	0xE005
6.	The mechanical origin is not calibrated	0xE008
7.	Motor overload warning	0xE009
8.	Speed limit warning	0xE010
9.	DC bus undervoltage warning	0xE011
10.	The fault history record is abnormal	0xE012
11.	TheAD correction coefficient is invalid	0xE013
12.	CoE communication parameters are abnormal	0xE014
13.	The servo parameters are restored to their default values	0xE015
14.	Coding unit battery under-voltage warning	0xE017
15.	Internal driver warning	0xE019
16.	Coding device communication exception warning	0xE020
17.	Coding device communication timeout warning	0xE022
18.	Encoder data exception warning	0xE024
19.	Location limit warning	0xE026
20.	Position planning parameter exception warning	0xE027
21.	SDO write failed warning	0xE028
22.	Internal encoder warning	0xE030
23.	Overload warning for energy consumption resistance	0xE031

3.3 Causes and treatment of warning

Control power undervoltage warning code: 0xE000	
Possible causes	The driver circuit is abnormal
Resolution Guidelines	Replace the driver

STO triggered code: 0xE002	
Possible causes	STO1 or STO2 trigger or wiring is poor
Resolution Guidelines	Check the STO wiring to ensure that the wiring is reliable and not in a triggered state

Torque monitoring saturation warning Code: 0xE003	
Possible causes	<ol style="list-style-type: none"> 1. The motor load is too large, exceeding the torque monitoring alarm threshold 2. The internal parameters of the driver are abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor or increase the acceleration and deceleration time of the motor 2. Replace the driver

CPU1, overload warning code: 0xE004	
Possible causes	<ol style="list-style-type: none"> 1. The driver is running under noise interference 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc. 2. Replace the driver

CPU2, overload warning code: 0xE005	
Possible causes	<ol style="list-style-type: none"> 1. The driver is running under noise interference 2. The internal circuit of the driver is abnormal
Resolution Guidelines	<ol style="list-style-type: none"> 1. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding wire, adding magnetic ring, etc. 2. Replace the driver

The mechanical origin is not calibrated. Code: 0xE008	
Possible causes	The mechanical origin is not calibrated
Resolution Guidelines	Re-calibrate the mechanical origin

Warning Handling

Motor overload warning code: 0xE009	
Possible causes	<ol style="list-style-type: none"> 1. Motor load is too large 2. Abnormal release of the brake 3. The motor is selected incorrectly and the power is too small (for example, a high-power driver with a low-power motor running at high speed for a long time under load) 4. Abnormal current sampling circuit inside driver
Resolution Guidelines	<ol style="list-style-type: none"> 1. Reduce the actual mechanical load of the motor and ensure that there is no jamming phenomenon. 2. Check the motor brake line to ensure that the motor brake is normal 3. Replace the large capacity motor 4. Replace the driver

Speed limit warning Code: 0xE010	
Possible causes	The motor speed is limited due to the low input power voltage of the driver
Resolution Guidelines	Check the input power supply voltage

DC bus undervoltage warning code: 0xE011	
Possible causes	<ol style="list-style-type: none"> 1. The power input voltage of the driver is too low 2. The internal voltage sampling circuit of the driver is abnormal 3. The driver power circuit is set incorrectly, and the 220V power supply is set to 380V power supply 4. Driver power input power cord is disconnected
Resolution Guidelines	<ol style="list-style-type: none"> 1. Adjust the power input power supply of the drive to the normal working range 2. Replace the driver 3. The driver power circuit is set to be consistent with the actual power supply 4. Check and handle the power input cable of the driver to ensure that the wiring is correct and

The fault history record is abnormal. Code: 0xE012	
Possible causes	<ol style="list-style-type: none"> 1. Abnormal historical fault records 2. Internal driver exception
Resolution Guidelines	<ol style="list-style-type: none"> 1. Restart the drive 2. If the alarm still occurs after restarting the drive, repair or replace the drive

AD correction coefficient is invalid Code: 0xE013	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Warning Handling

CoE communication parameter exception code: 0xE014	
Possible causes	Internal driver error
Resolution Guidelines	Restart the drive. If the problem persists, replace the drive

Restore default value of servo parameters Code: 0xE015	
Possible causes	The servo parameters are restored to their default values
Resolution Guidelines	It is recommended to return to the factory for maintenance

Encoder battery under-voltage warning code: 0xE017	
Possible causes	<ol style="list-style-type: none"> 1. Encoder battery voltage is too low 2. Poor connection of encoder battery
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the encoder battery 2. Check and handle the battery wiring to ensure that the battery wiring is correct and firm

Driver internal warning code: 0xE019	
Possible causes	Internal driver error
Resolution Guidelines	Replace the driver

Coding device communication exception warning code: 0xE020	
Possible causes	<ol style="list-style-type: none"> 1. The encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the

Coding device communication timeout warning code: 0xE022	
Possible causes	<ol style="list-style-type: none"> 1. The encoder itself is abnormal 2. Encoder cable sequence error or poor contact 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the electromagnetic environment of equipment by standardizing wiring and wiring, increasing the

Encoder data exception warning code: 0xE024	
Possible causes	<ol style="list-style-type: none"> 1. The encoder itself is abnormal 2. Encoder cable sequence error or poor contact 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the electromagnetic environment of the equipment by standardizing wiring and wiring, increasing

Location limit warning code: 0xE026	
Possible causes	The device runs in one direction to the mechanical limit, resulting in the triggering of the hardware limit
Resolution Guidelines	The fault can be directly removed and the machine can run in reverse to the mechanical limit to recover. Note

Position planning parameter exception warning code: 0xE027	
Possible causes	Internal driver parameters are abnormal
Resolution Guidelines	Change the driver or return to the factory for maintenance

SDO write failure warning code: 0xE028	
Possible causes	The SDO object write failed because the set value exceeded the allowed range of the object
Resolution Guidelines	Make sure that the value is within the object's allowable range

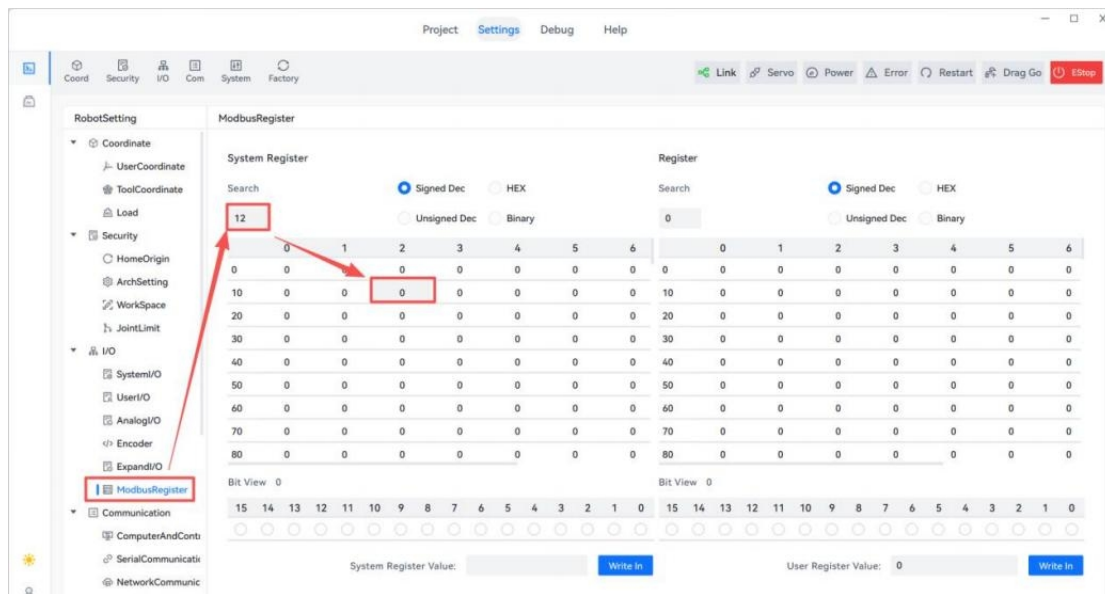
Internal encoder warning code: 0xE030	
Possible causes	<ol style="list-style-type: none"> 1. The encoder itself is abnormal 2. Encoder cable wiring is wrong or contact is poor 3. Encoder data is abnormal due to noise interference
Resolution Guidelines	<ol style="list-style-type: none"> 1. Replace the motor or encoder. 2. Correct the wiring sequence or reinforce the wiring. 3. Improve the equipment by standardizing wiring and wiring, increasing the cross-sectional area of grounding

Energy consumption brake resistor overload warning code: 0xE031	
Possible causes	<ol style="list-style-type: none"> 1. Frequent rapid stop operation of the motor leads to excessive energy consumption and braking energy 2. The energy consumption brake resistance power setting is not consistent with the actual resistance
Resolution Guidelines	<ol style="list-style-type: none"> 1. Change the motion path of the manipulator to avoid frequent and rapid operation and stop of the motor, such as prolonging the stop time of the motor. Or replace it with a higher power energy consumption braking resistor 2. Set the energy consumption brake resistance power correctly, and the setting value is consistent with the actual power of the energy consumption brake resistance

Chapter 4 System Alarm Handling

4.1 System alarm check

Open the OS debugging software and find the "register" in the "auxiliary panel". Monitor system register address 12. And query the corresponding alarm code according to the value of register address 12.



4.2 System alarm list

This section describes the system alarm information that the controller can detect.

order	Warning	Warning code
1.	There was no mistake	0
2.	Internal system error	1001
3.	Jerk	1002
4.	Autostop	1003
5.	Protection stopped	1004
6.	Collision detection stopped	1005
7.	Collision input stopped	1006
8.	ECAT bus error	2002
9.	Servo error	2003
10.	Excessive joint torque	2004
11.	Internal calculation error	3001
12.	Excessive joint space	3002
13.	The outer shaft position is out of limit	3003
14.	The X axis position of the base is out of limit	3004
15.	The Y-axis position of the base is out of limit	3005
16.	The Z axis position of the base is out of limit	3006
17.	The target position is not reachable	3008
18.	Robot singularity error	3009
19.	There was an error in the kinematics calculation	3012
20.	Tracking and calculation errors	3013
21.	Incorrect swing arc movement	3014

4.3 System alarm processing

System internal error code: 1001	
Possible causes	Internal system parameters are disordered
Resolution	1. Clear the alarm and restart the drive
Guidelines	2. Replace the driver

Emergency stop code: 1002	
Possible causes	The emergency stop signal was triggered
Resolution	Cut off the emergency stop signal and clear the alarm
Guidelines	

Automatic stop code: 1003	
Possible causes	
Resolution	
Guidelines	

Protection stopped code: 1004	
Possible causes	
Resolution	
Guidelines	

Collision detection stopped. Code: 1005	
Possible causes	The manipulator is subjected to external collision during the movement
Resolution	Rectify the motion path of the manipulator to avoid equipment collision
Guidelines	

Collision input stopped code: 1006	
Possible causes	
Resolution	
Guidelines	

ECAT bus error code: 2002	
Possible causes	An error occurred during ECAT bus communication
Resolution Guidelines	Check that the communication interface and protocol are correct

Servo error code: 2003	
Possible causes	An error is found in the servo and the program stops moving
Resolution Guidelines	Open the debugging software and check the servo error to find out each item

Joint torque exceeds limit Code: 2004	
Possible causes	1-4 joints, the torque generated during movement exceeds the parameter limit
Resolution Guidelines	Repeat the path motion, check the proportion of torque generated by the joint during the motion and modify the parameters reasonably

Internal calculation error code: 3001	
Possible causes	The controller data processing is abnormal
Resolution Guidelines	1. Clear the alarm and restart the drive 2. Replace the driver

Joint position overload code: 3002	
Possible causes	The target point is outside the range of joint motion
Resolution Guidelines	Adjust the target point position

External shaft position exceeds limit code: 3003	
Possible causes	The target position is beyond the outer axis travel
Resolution Guidelines	Adjust the outer axis position of the target point

Base X-axis position exceeds limit code: 3004	
Possible causes	The X axis coordinate of the target position exceeds the motion range of the manipulator
Resolution Guidelines	Adjust the X axis coordinate position of the target point

Base Y-axis position exceeds limit code: 3005

Possible causes	The Y-axis coordinate of the target position exceeds the motion range of the manipulator
Resolution Guidelines	Adjust the Y axis coordinate position of the target point

Base Z axis position exceeds limit code: 3006

Possible causes	The Z axis coordinate of the target position exceeds the motion range of the manipulator
Resolution Guidelines	Adjust the Z axis coordinate position of the target point

Target location is not reachable Code: 3008

Possible causes	The target point to be moved is beyond the range of the manipulator
Resolution Guidelines	Adjust the target point position

Robot singularity error code: 3009

Possible causes	A specific position or attitude of a manipulator in the range of motion
Resolution Guidelines	Drive the manipulator away from the singularity

Backward kinematics calculation error code: 3012

Possible causes	<ol style="list-style-type: none"> 1. The target position is beyond the range of joint movement 2. The manipulator is currently at the singularity position
Resolution Guidelines	Check whether the target position is beyond the limit and check whether the manipulator is in a singular point position

Tracking calculation error code: 3013

Possible causes	The conveyor belt tracked a target point beyond the range of motion of the manipulator
Resolution Guidelines	Check whether the parameters tracked by the conveyor belt are wrong

Swing arc motion error code: 3014

Possible causes	The path planning is wrong or the target location cannot be reached
Resolution Guidelines	Check the path of the moving point of the manipulator