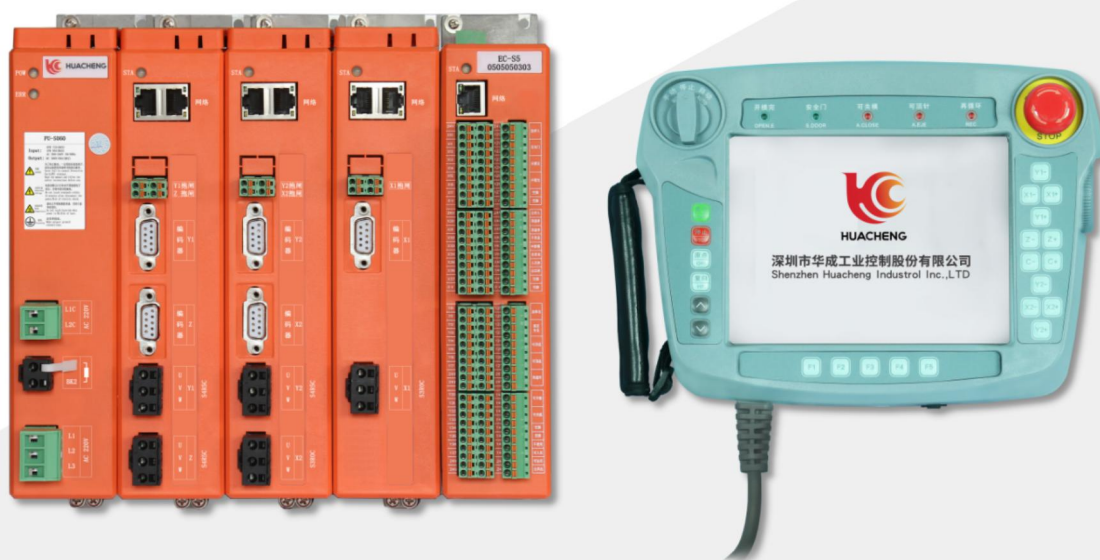


# EC-S3&S5 Series of Products User Manual

DRIVE-CONTROL INTEGRATED THREE-AXIS&FIVE-AXIS  
MANIPULATOR CONTROL SYSTEM V4.1



**深圳市华成工业控制股份有限公司**  
Shenzhen Huacheng Industrial Control Co., Ltd.



## Introduction

First of all, thank you very much for choosing the EC-S3&S5 control system of three-axis&five-axis manipulator with integrated drive-control system produced by Shenzhen Huacheng Industrial Control Co., Ltd.

This is the user manual of the system, which will provide you with relevant rules and precautions for the installation, wiring, system operation, alarms and solutions.

In order to use this control system correctly, give full play to the performance of it and ensure the safety of users and equipment, please read this manual carefully before using. Incorrect operation may lead to abnormal operation of the control system, equipment damage, personal injury or other accidents!

As our company is devoted to the continuous improvement of products, there will be no further notice if the material provided by the company is changed.

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## Chapter 1 System Configuration and Installation

### 1.1 System Basic Configuration

- 1) 8-inch color display operation panel (optional transfer cable length, 1m standard);
- 2) Drive-control integrated control box;
- 3) Servo motor (Standard 100W-1800W) ;
- 4) Brake resistance;
- 5) Power supply unit (optional part) ;
- 6) UVW power cable and encoder cable (optional part, optional length);

### 1.2 Safety Reminder and System Installation

The safety content of this manual is as following. The description of the safety mark is very important. Please abide by it.



**Attention!** The risk of not operating as required may lead to moderate or minor injury, and equipment damage.

#### 1.2.1 Precautions for Preservation and Removals

**\*Note:** Do not store, place machine in the following environment, otherwise it will cause fire, electric shock or machine damage.

- 1) Places with direct sunlight, where the temperature or relative humidity exceeds the required level, and places where the temperature difference is large and dewy.
- 2) Places close to corrosive gases, flammable gases, or with great quantity of dust, salt and metal dust; Places with water, oil and medicine drip, or where vibration or shock can be transmitted to the main part. Do not hold the cable during removals, otherwise it will cause machine damage or malfunction.

#### 1.2.2 Matters Needing Attention

- 1) Do not stack too many products, otherwise it will cause damage or malfunction.
- 2) This product is a general industrial product. Don't use to hurt people's life and health.
- 3) Please configure the safety device if applied to devices that may cause major accidents or damage due to the malfunction of this product.
- 4) If used in an environment of sulphur or high concentrations of sulfuric gas, please note that due to vulcanization, chip resistance may be broken or poor contacted.
- 5) If the input voltage far exceeds the rated range of the power supply of this product, smoke and fire may occur due to the damage of internal components, please pay full attention to the input voltage.
- 6) Please note that this product can not guarantee the use beyond the product specification.
- 7) The company is committed to the continuous improvement of products and may change some parts.

#### 1.2.3 Prohibited Operations

Except with our professional personnel, do not dismantle or carry out maintenance.

#### 1.2.4 Precautions in Abandonment

**Attention!**




When the product needs to be treated as waste after normal use, please abide by the relevant department's legal regulations on the recovery and reuse of electronic information products.



#### 1.2.5 System Installation

- 1) Wiring work must be carried out by a professional electrician.
- 2) Make sure that the power supply is disconnected before starting work.
- 3) Please install on metal and other flame retardants and away from combustible.
- 4) Be sure that the machine is well grounded while using.

- 5) If the external power supply is abnormal, the control system will fail. Please set a safety circuit outside the control system to make the control system work safely.
- 6) Please be familiar with the contents of this manual before installation, wiring, operation and maintenance. Please be familiar with related machinery and electronics knowledge and all relevant safety precautions while using.
- 7) The electric box where the controller is installed should be well ventilated, oilproof and dustproof. If box is airtight, it needs to install ventilation fan to prevent the controller from abnormal work caused by high temperature. The appropriate temperature is under 50°C. Do not use in frozen or dewy places.
- 8) Avoid to place the controller too close to contactor, frequency converter and other AC devices while installing, in case of unnecessary surge interference.

### 1.2.6 Safety Precautions

  <b>Attention!</b>	<p>Encoder must use shielded cable and shielding layer must be single-end well grounded!</p> <p>Do not install frequency converter or other devices that generate electromagnetic waves or interference near the servo driver, otherwise the servo driver will have the wrong action. If there is a need, set an anti-jamming shield between it and the servo driver.</p>
	<p>Please follow the steps specified in the electrostatic precautions (ESD) when operating the servo driver, otherwise the internal circuit of the servo driver will be damaged by static electricity.</p> <p>Please follow the local standard for branch and short circuit protection. If the protection measures are improper, it may cause servo driver damage.</p> <p>Do not share ground wires with welding machines or power machines requiring high current, otherwise the servo driver or machine will not work well.</p> <p>When using several servo drivers, please follow the contents of this manual. Do not wrap the ground wire into a circle, otherwise it will cause abnormal operation of servo driver or machine.</p> <p>Do not connect or operate if there are parts lost or obviously damaged. Wiring, inspection and other operations should be done by the professional.</p>
	<p>Rotating motor would feed power to servo drivers so that the servo driver is still live even after the motor is cut off and stops. Make sure the motor servo driver is safely disconnected before maintenance.</p>

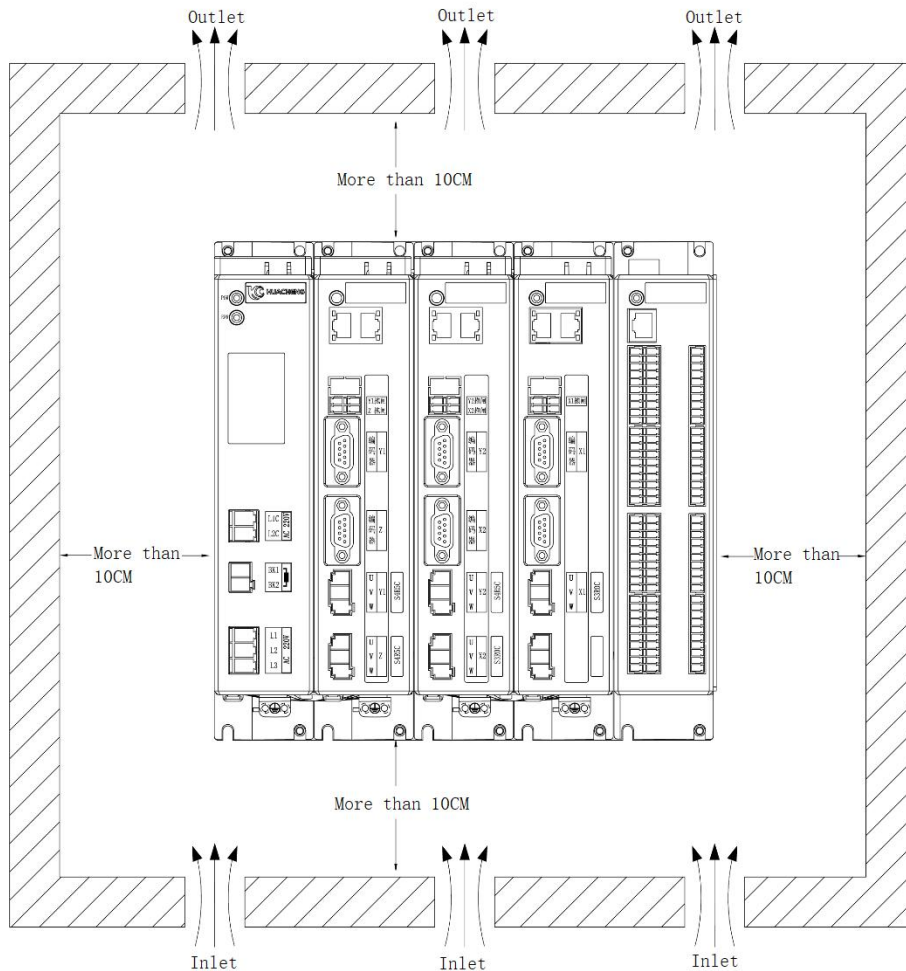
 <p><b>Danger!</b></p>	<p>Do not do wiring with power on, otherwise there will be a risk of electric shock. Please cut off the power of all equipment before checking. Even if the power supply is cut off, there is residual voltage in the internal capacitor. After cutting off the power, please wait at least 10 minutes.</p> <p>Contact current of servo driver is more than 3.5 mA. Please make sure servo driver is well grounded, otherwise there will be a risk of electric shock.</p> <p style="text-align: center;"><b>Power on</b></p> <p>Do not open the cover plate after power on, otherwise there will be a risk of electric shock!</p> <p>Do not touch any input and output terminals of the servo driver, otherwise there will be a risk of electric shock!</p> <p>Do not remove the cover plate of the servo driver or touch the printed circuit board with power on, otherwise there will be a risk of electric shock.</p> <p>Do not arbitrarily change the manufacturer parameters of servo driver, otherwise it may cause damage to the equipment!</p> <p style="text-align: center;"><b>In service</b></p> <p>Do not detect signals in operation if not professional, otherwise it may cause personal injury or equipment damage!</p> <p>Do not touch the cooling fan and discharge resistance to test the temperature, otherwise it may cause burns!</p> <p>Avoid there is anything falling into the equipment in operation, otherwise it may cause equipment damage!</p> <p style="text-align: center;"><b>Maintenance</b></p> <p>Do not repair or maintain servo drivers without professional training, otherwise it may cause personal injury or equipment damage!</p> <p>Do not repair or maintain with power on, otherwise there will be a risk of electric shock! Confirm that the input power of the servo driver is cut off and wait for 10 minutes before repairing or maintenance, otherwise the residual charge on the capacitor will do harm to people!</p> <p>Make sure the servo driver is safely disconnected from all power sources before performing maintenance work.</p> <p>All pluggable units must be plugged with power off!</p> <p>The parameters must be set and checked after changing the servo driver.</p> <p>Do not power up the damaged machine, otherwise it will expand the damage.</p>
 <p><b>Warn!</b></p>	<p>Ensure that the phase sequence of the motor terminal is consistent with the servo driver terminal. If not, the motor will rotate in reverse.</p> <p>Do not connect the power with the output terminal of the servo driver, otherwise it will cause damage to the servo driver and even fire.</p> <p>Some systems may act suddenly when electrified, with a risk of death or serious injury.</p> <p>Before turning on the servo driver, make sure the cover is firmly installed and the motor is allowed to restart.</p> <p>Before turning on the servo driver, please confirm that the rated voltage is consistent with the power supply. If the main circuit power supply voltage is used incorrectly, it may cause fire.</p> <p>Do not connect the input power with the output terminal (U、V、W) of the servo driver, otherwise the servo driver will be damaged!</p> <p>Do not carry out installation, maintenance, inspection or replacement of components if not professional electrical construction crew, otherwise there will be a risk of electric shock.</p>

**Note: Improper handling may cause risks, including personal injury or equipment accidents.**

## 1.3 Installation and External Wiring Requirements

### 1.3.1 Installation Direction and Space Requirements

**Installation direction:** The normal installation direction of the servo driver is vertical and upright. Servo driver, chassis space and intervals between other equipment must be  $\geq 10$  CM. Please refer to the figure below and note that the diagram indicates the minimum size. Please keep adequate installation intervals to ensure the performance and life of the driver.



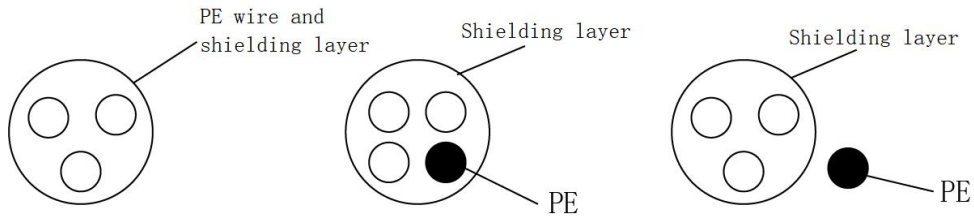
**\*Note:** Installation of drive-control three-axis robot is the same as five-axis.

**Heat elimination:** The servo driver uses the fan to abstract heat. It is best to install a ventilation slot or a heat dissipation fan in the electrical control cabinet to ensure that the drive-control integrated machine in the chassis is in a place where is cool and airy.

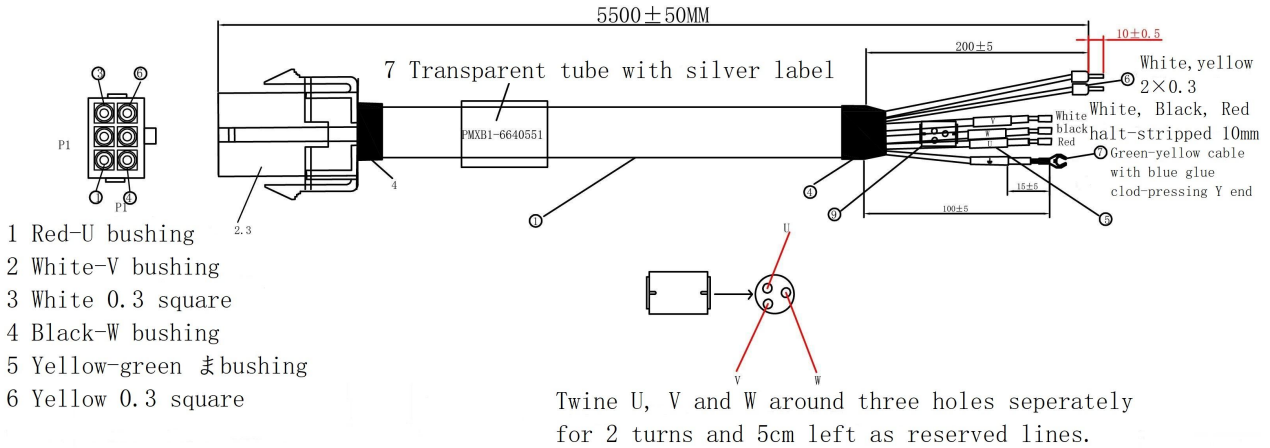
### 1.3.2 Cable Requirements and Wiring

#### 1.3.2.1 Shielded Cables

To meet the requirements of EMC, it must use shielded cables with shielding layer for encoder cable. It's recommended to use shielded cables with shielding layer for power cable or install a magnetic ring (suggested spec is R3H 22×28×7.0). Shielded cable is shown as P1. Power cable with magnetic ring is shown as P2. As we suggest, installing magnetic ring is more recommended.

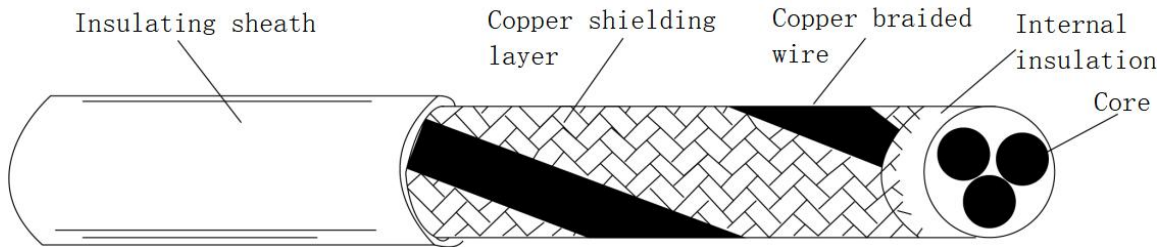


**P1 Shielded cable requirements(for encoder cable)**



**P2 Power cable with magnetic ring**

In order to suppress RF interference emission and conduction effectively, the shielding layer of the shielding wire is composed of coaxial copper braided wire. To increase the shielding efficiency and conductivity, the braid density of the shield layer should be greater than 90% as the following picture.



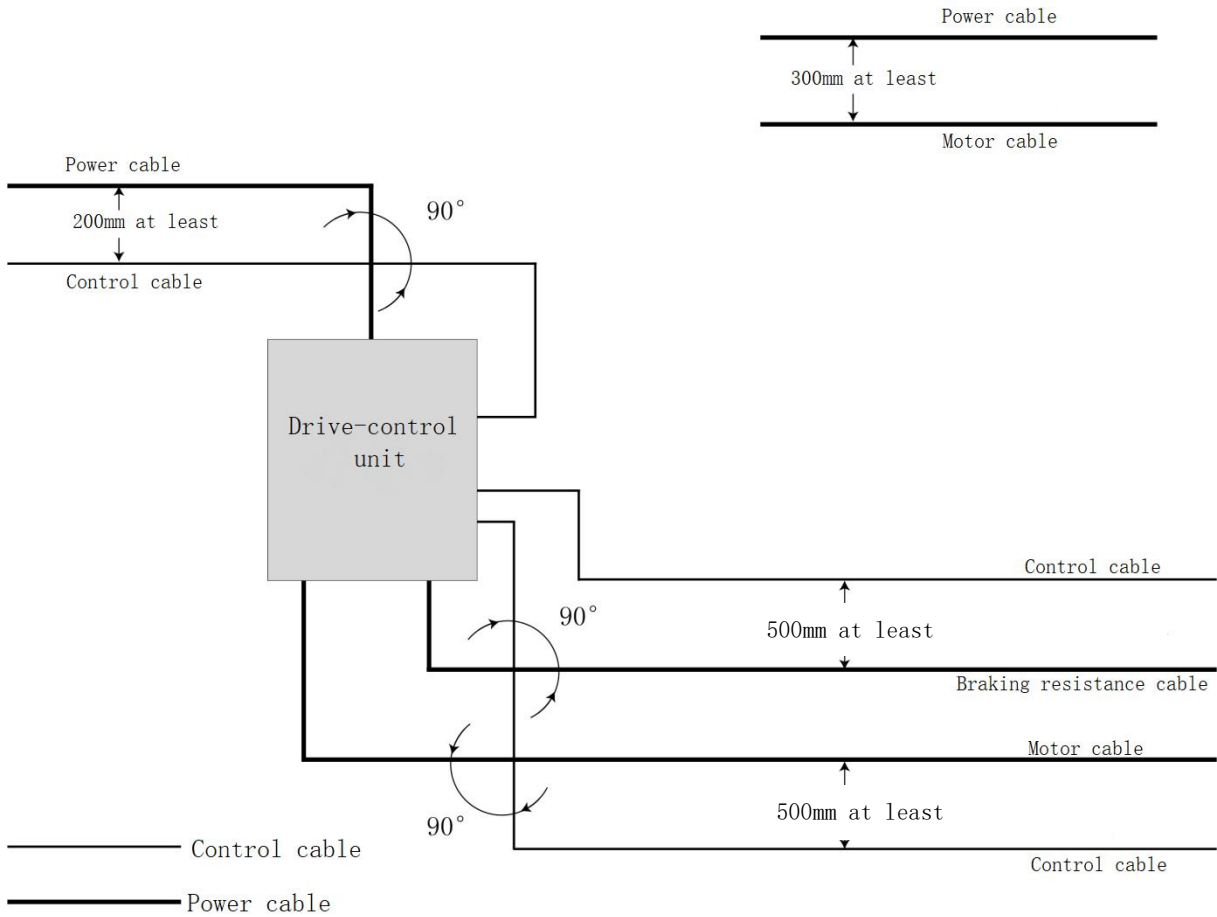
**Woven density of shielding layer**

Installation considerations:

- Shielded symmetrical cables are recommended for all shielded cables, and four-core cables can also be used as input cables ;
- Cables and PE shielded conductor(stranded shield)should be as short as possible to decrease EMR, stray current and capacitive current outside;
- It is recommended to use shielded cable as control cables;
- It is recommended to use shielded cables or steel pipe shielded power cables as output power cable of driver with the shielding layer well grounded. Cables for equipment under interference shall use shielded twisted-pair with the shielding layer well grounded.

### 1.3.2.2 Cable Wiring Requirements

- 1) Motor cables should be far away from others; Motor cables of drivers can be wired paralleled.
- 2) It is recommended to place motor cables, input power cables and control cables in different chutes. Long-distance parallel wiring should be forbidden to avoid EMR caused by fast change of driver's output voltage.
- 3) Try to keep perpendicular if the control cable has to cross power cable. Do not let other cables cross the driver.
- 4) Try not to wire input power cable, output power cable of driver and weak signal cables such as control cables paralleled, perpendicular if possible.
- 5) Chutes must be well connected and grounded. Aluminium chutes can improve equipotential.
- 6) Filter, driver and motor should be well connected with system( machine or equipment). The installed part should be painted and make conductive metal fully contacted.
- 7) Wiring diagram is shown as bellow:





### 1.3.2.3 Common EMC problems and solutions

Driver products can cause strong interference. It may happen if there are problems in wiring or grounding. Solutions in this chart can be used.

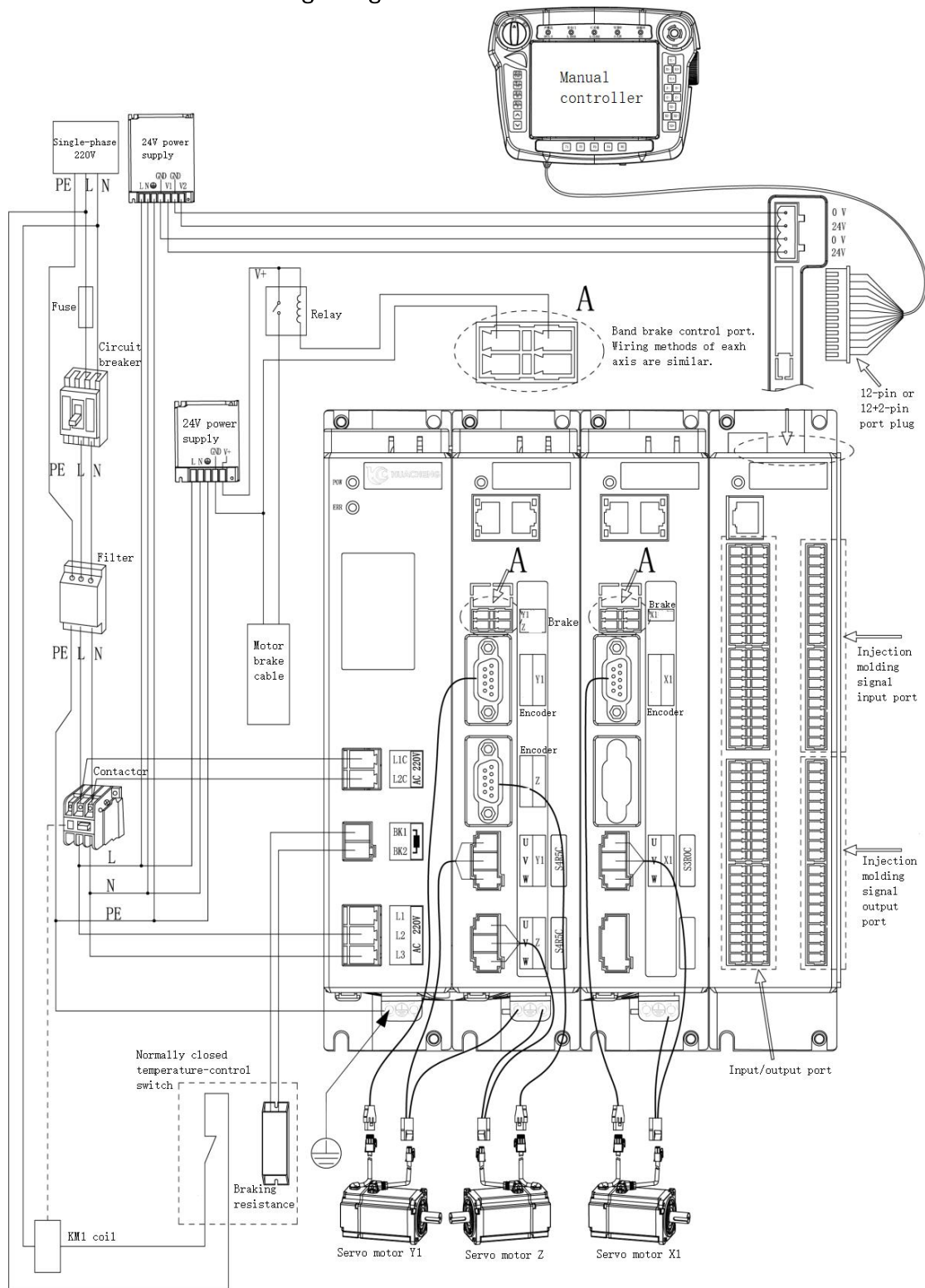
**Common EMC Interference Problems and Solutions**

Interference type	Solutions
Trip of current leakage protection circuit breaker	<p>Lower the carrier frequency;  Shorten the drive cable;  Add wound magnetic ring to the input drive cable(not PE cable);  Disconnect the larger capacitance in input port if trip happens the moment power on; (disconnect the ground terminals of internal or external filter and earth Y capacity in input port)  For running or enable trip, it needs to take current leakage restraining measures (current leakage filter, safety guage capacitor + wound magnetic ring);</p>
Interference caused by driver running	<p>Connect motor' s shell with PE terminal of driver;  Connect PE terminal of driver with PE of electric net;  Add wound magnetic ring to the input power cable;  Add capacitance or wound magnetic ring to interfered signal port;  Additional common-ground connection between devices;</p>
Communication interference	<p>Connect motor' s shell with PE terminal of driver;  Connect PE terminal of driver with PE of electric net;  Add wound magnetic ring to the input power cable;  Add matching resistance to communication cable source and load terminal;  Connect differential cable of communication cable with communication common-ground wire outside;  Use shielded cables as communication cables and connect the shielding layer with communication common-ground wire;  Use daisy chain in multi-point communication wiring and the length of branches should be less than 30cm;</p>

## Chapter 2 System Installation and Wiring Instructions

### 2.1 System Wiring Diagram

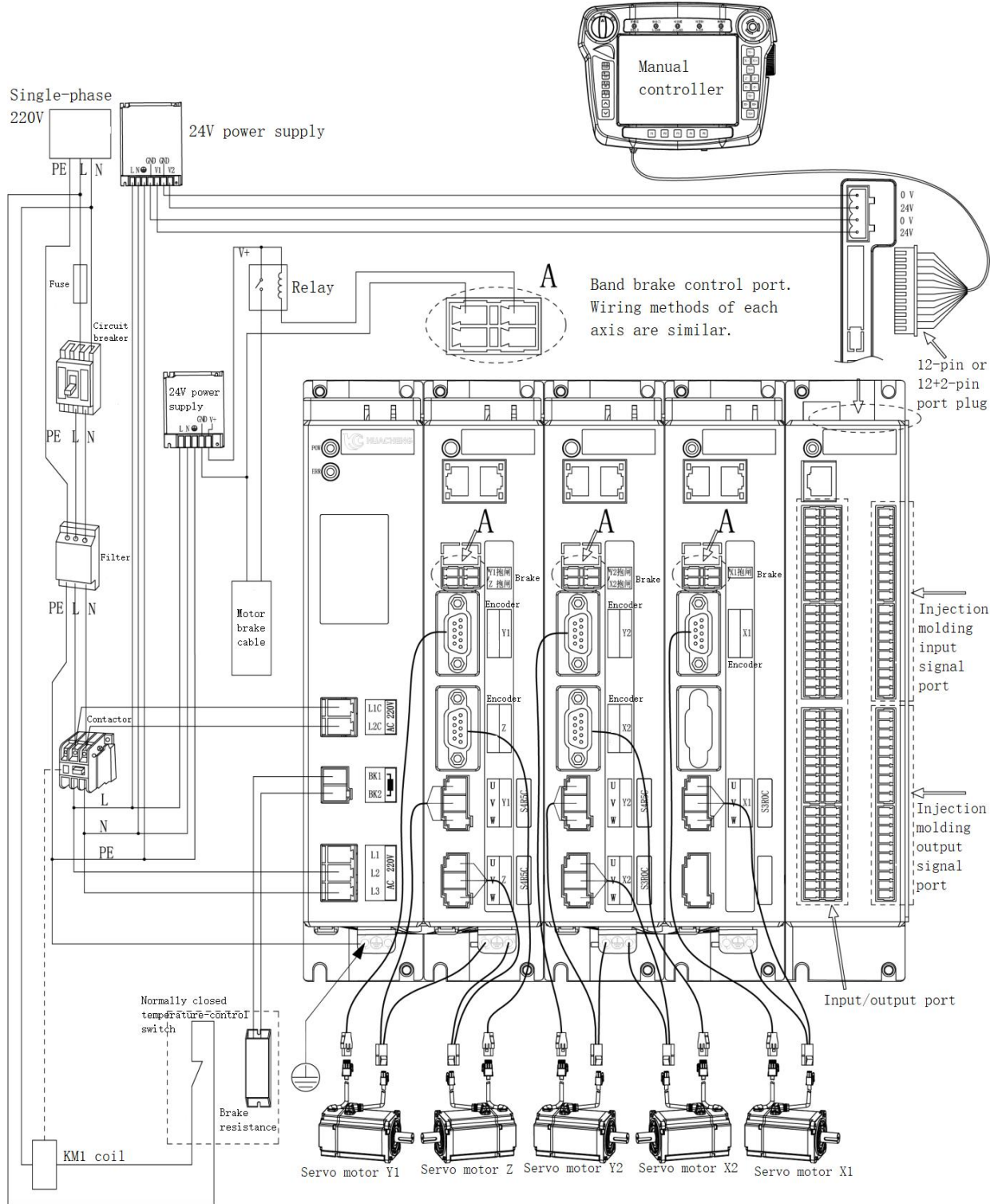
#### 2.1.1 EC-S3 Machine Wiring Diagram



**\*Note:**

- 1) Users need to evaluate whether the IO power supply exceeds the standard 50W, if it exceeds, they need to replace the high-power power supply.
- 2) Solutions to alarms in manual controller after wiring are listed in 8.4 Alarms and Solutions.

### 2.1.2 EC-S5 Machine Wiring Diagram

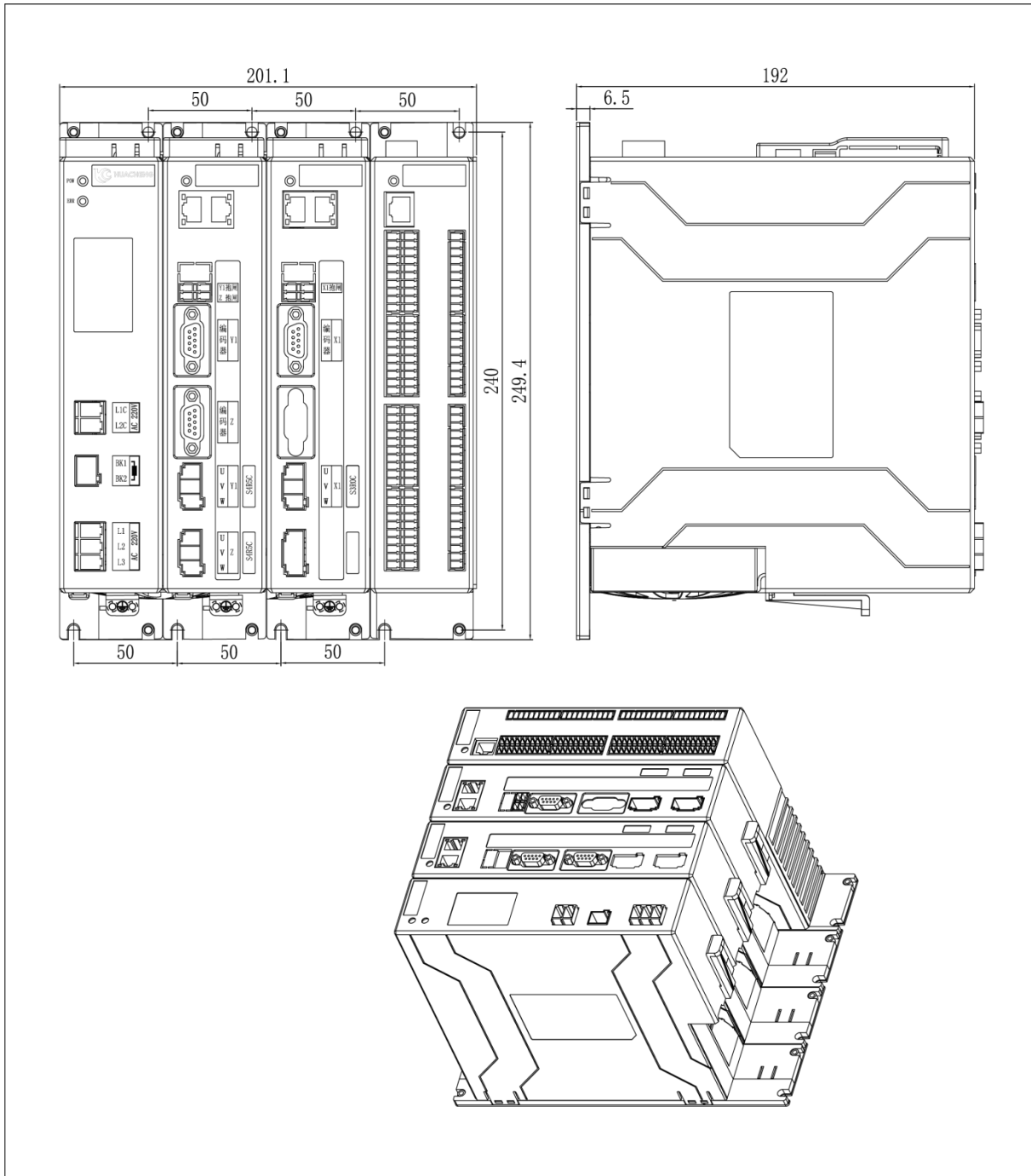


**\*Note:**

- 1) Users need to evaluate whether the IO power supply exceeds the standard 50W, if it exceeds, they need to replace the high-power power supply.
- 2) Solutions to alarms in manual controller after wiring are listed in 8.4 Alarms and Solutions.

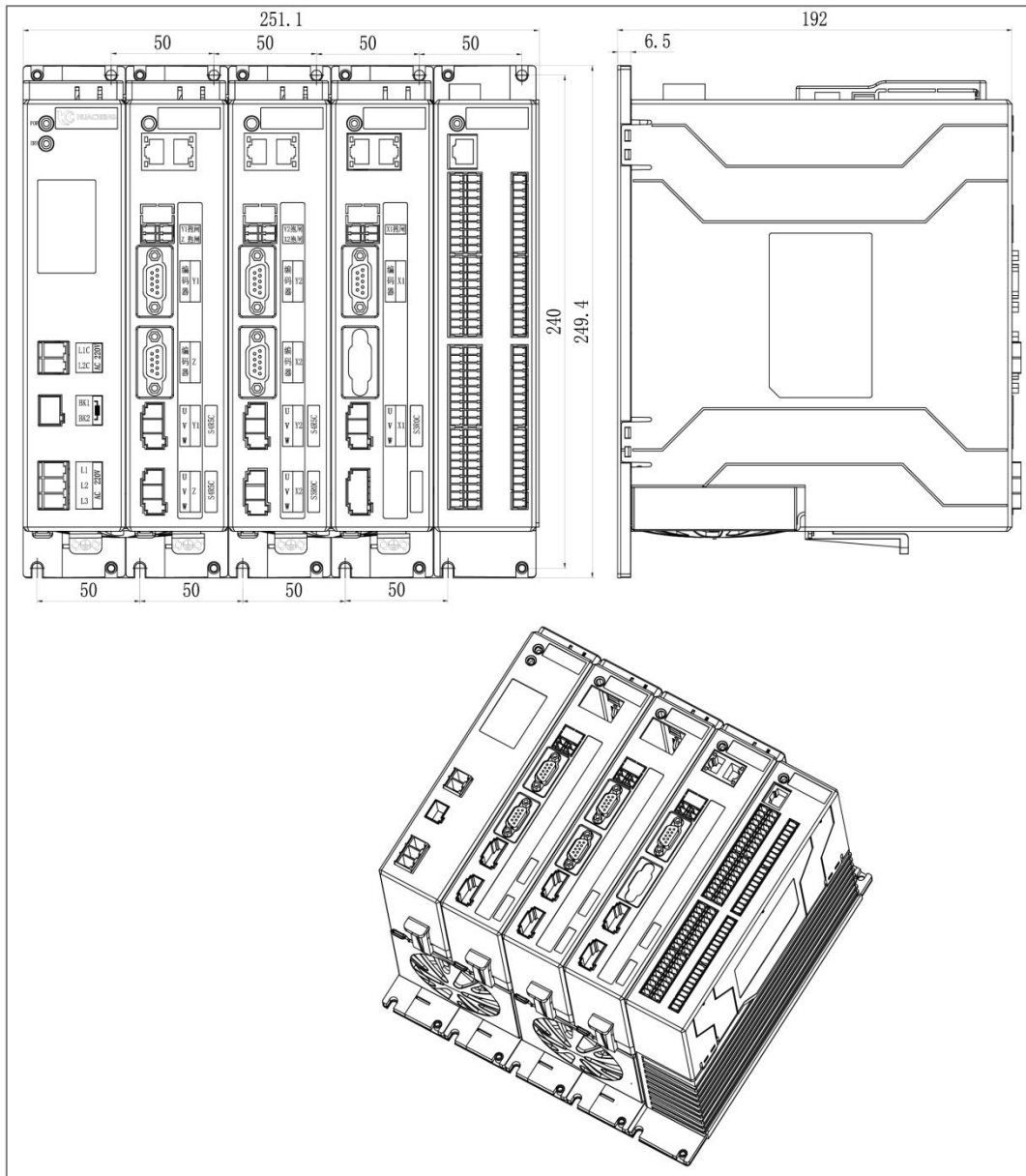
## 2.1.3 Dimensional Drawings

### 2.1.3.1 EC-S3 Main Control Dimensions



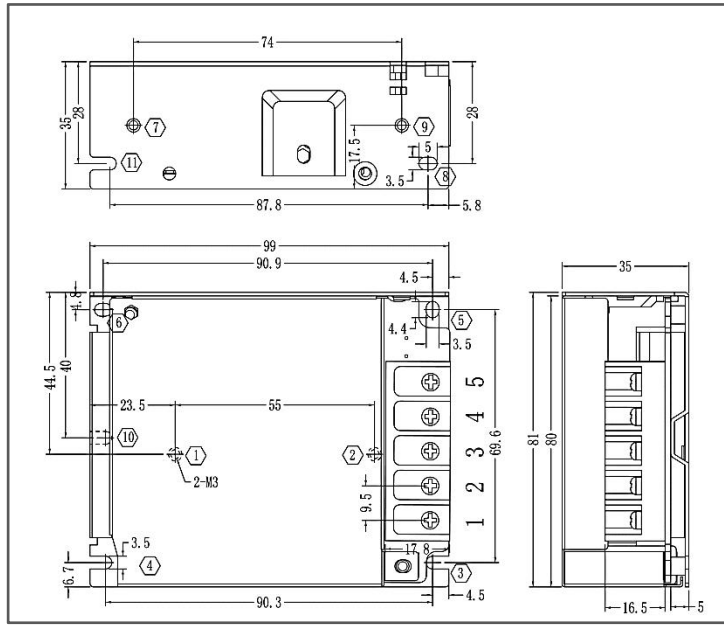
Installation	Screw Spec	Length(max)	Torque(max)
Fixed by screw	M5	8mm	7.5kgf. cm

### 2.1.3.2 EC-S5 Main Control Dimensions



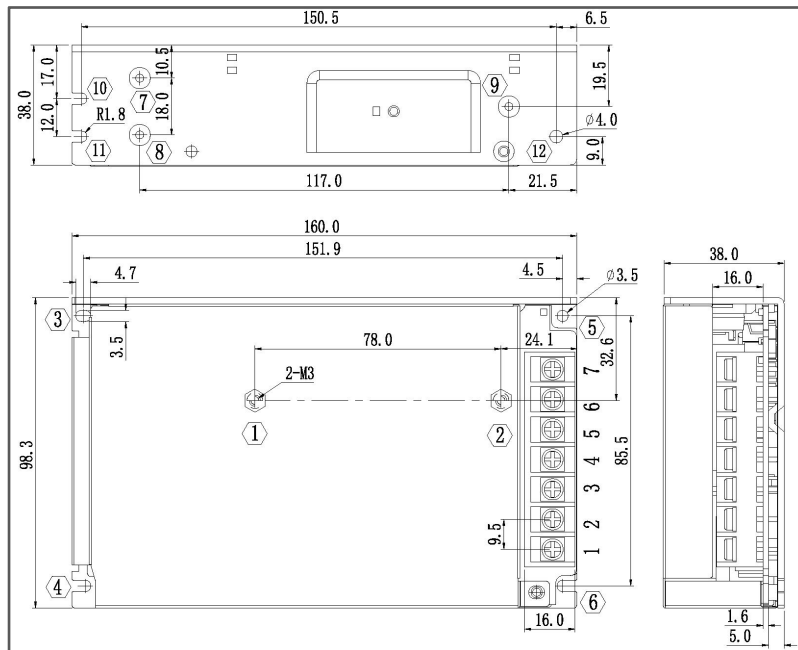
Installation	Screw Spec	Length(max)	Torque(max)
Fixed by screw	M5	8mm	7.5kgf.cm

### 2.1.3.3 Single Switch Power Supply



Installation	Number	Screw spec	Length(max)	Torque(max)
Fixed by screw	①--② ⑦--⑨	M3	5mm	6.5kgf.cm
	③--⑥ ⑩--⑫	M3	3mm	7kgf.cm

### 2.1.3.4 Two-way Switch Power Supply



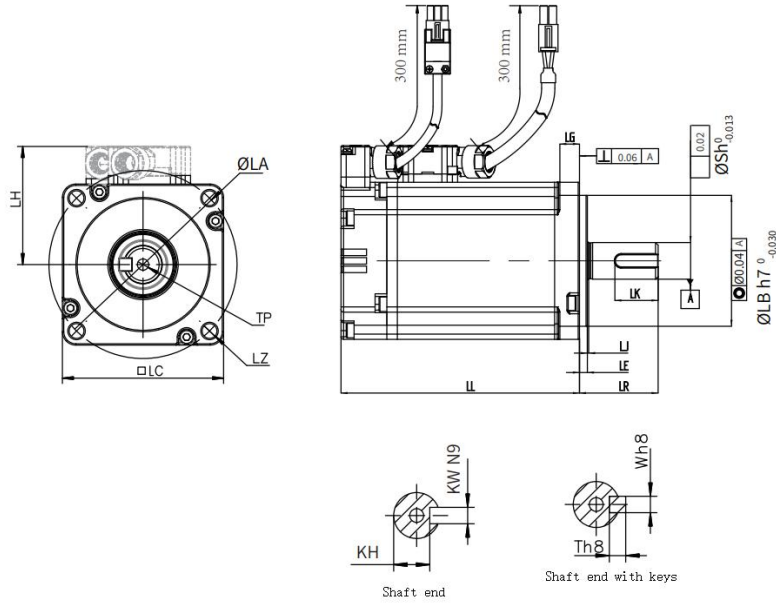
Installation	Number	Screw spec	Length(max)	Torque(max)
Fixed by screw	①--② ⑦--⑨	M3	5mm	6.5kgf.cm
	③--⑥ ⑩--⑫	M3	3mm	7kgf.cm





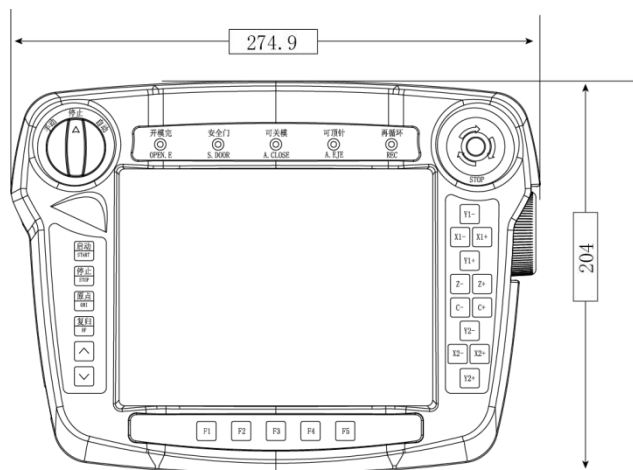
750W motor parameters and dimensions:

750W motor parameters										
Model \ Spec	LL	LC	LR	LA	LZ	LH	LG	LE	LJ	
750W with Brakes	<190	80	35	90	4- φ7	≤55	NA	3±0.5	1±0.35	
750W No brakes	<140	80	35	90	4- φ7	≤55	NA	3±0.5	1±0.35	
Model \ Spec	S	LB	TP	LK	KH	KW	W	T	Weight (kg)	
750W with Brakes	19	70	M6*12	25	16.5	6	6	6	NA	
750W No brakes	19	70	M6*12	25	16.5	6	6	6	NA	



(750W Motor Dimensional Drawing)

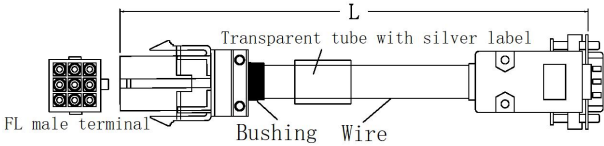
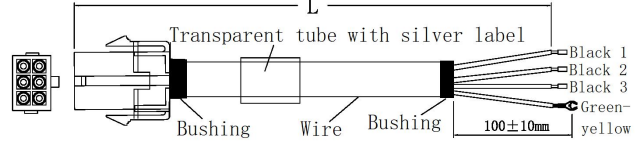
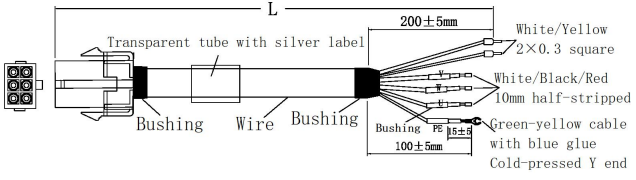
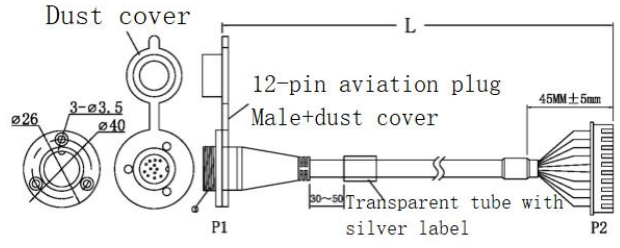
2.1.3.7 Dimensions of Manual Controller



**\*Note:** The dimensions of manual controller of EC-S3 control system are the same with controller of EC-S5 system.



2.1.3.8 Supporting Cable and Model

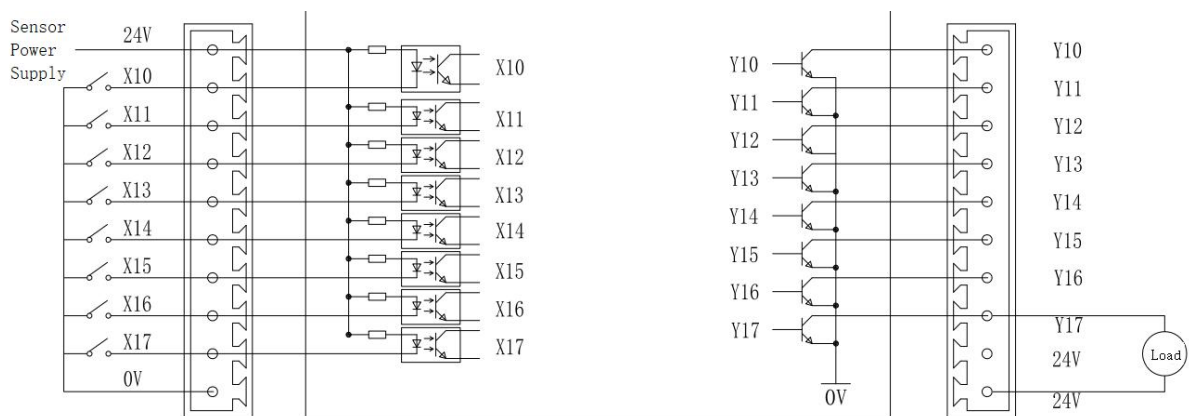
Name	Model	L cable length	Appearance
Encoder cable (4*0.25)	PMXB1-5610054	0.5M	
	PMXB1-5610254	2.5M	
	PMXB1-5610304	3 M	
	PMXB1-5610454	4.5M	
	PMXB1-5610554	5.5M	
	PMXB1-5610604	6 M	
	PMXB1-5610704	7 M	
Power cable (4*0.75)	PMXB1-5640051	0.5M	
	PMXB1-5640091	0.9M	
	PMXB1-5640301	3 M	
	PMXB1-5640451	4.5M	
	PMXB1-5640551	5.5M	
Power brake cable (4*0.75+ 2*0.3)	PMXB1-6640251	2.5M	
	PMXB1-6640451	4.5M	
	PMXB1-6640551	5.5M	
	PMXB1-6640601	6M	
	PMXB1-6640701	7M	
Manual controller cable	PMXB1-1301050	0.5M	
	PMXB1-1301100	1M	
Drag chain manual controller cable	PMXB1-1302250	2.5M	

## 2.2 Power Input Definitions

Single phase 220 V power supply connection			
L1	NULL	L1C	220V-L
L2	220V-L	L2C	220V-N
L3	220V-N		

Terminal identification	Terminal name	Function declaration	Remarks
L1C	Auxiliary Power Terminal	AC single phase 220V 50/60HZ/ Supply voltage range 200VAC~240VAC	The auxiliary power supply is for internal control circuit. Main power supply cable uses 3-core multi-stranded copper cable, of which single core cross-sectional area is 2.5 mm <sup>2</sup> and insulation voltage is ≥600 V
L2C			
BP	Brake Resistance Terminal	External brake resistance access point	External resistance (33 Ω 200W).
L1	Main Circuit Power Terminal	AC single phase 220V 50/60HZ/ Input voltage range 200VAC~240VAC	The main circuit high-voltage power supply is for internal power. Main power supply cable uses 3-core multi-stranded copper cable, of which single core cross-sectional area is 2.5 mm <sup>2</sup> and insulation voltage is ≥600 V
L2			
L3			
U	Servo Motor Access Terminal 1-2	Connect three-phase servo motor	Connect according to the UVW corresponding access, otherwise the motor does not turn or has galloping problem.
V			
W			
PE	Ground point	Security protection access point	This point must be grounded.

## 2.3 I/O Port Wiring Diagram



Other input signals: X20~X27, X30~X37, X40~X47

The connection is the same as in the picture above: X10~X17,

Other output signals: Y20~Y27, Y30~Y37, Y40~Y47,

The connection is the same as in the picture above: Y10~Y17.

Three-axis injection molding (X1,Y1,Z as servo axis, X2, Y2, C as pneumatic axis)

### IO Definitions

Input	Definitions	Output	Definitions
X10	Horizontal 1 limit	Y10	Horizontal 1 vale
X11	Vertical 1 limit	Y11	Vertical 1 vale
X12	Clip 1	Y12	Clip 1 vale
X13	Clip 2	Y13	Clip 2 vale
X14	Suction 1	Y14	Suction 1 vale
X15	Suction 2	Y15	Suction 2 vale
X16	X1 end Limit	Y16	Main arm Forward vale
X17	Suction 3	Y17	Reserve 1
X20	X1 origin	Y20	Clip 4 vale
X21	Clip 4	Y21	Alarm
X22	Y1 Beginning limit	Y22	Reserve 2
X23	X23	Y23	Aid cylinders
X24	External safety zone	Y24	Horizontal 2 vale
X25	Z origin	Y25	Paint Oil
X26	X026	Y26	Standby output 5
X27	Air pressure	Y27	Mold Close Sp
X30	Sub arm forward limit	Y30	Vice Forward Valve
X31	Sub arm backward limit	Y31	Reserve 3
X32	Sub arm up limit	Y32	Reserve 4
X33	Sub arm down limit	Y33	Vice drop valve
X34	Clip 3	Y34	Clip 3 vale
X35	Y1 origin	Y35	Suction 3 vale
X36	Suction 4	Y36	Suction 4 vale
X37	X37	Y37	Conveyor
X40	X040	Y40	Reserve 7
X41	Z Beginning limit	Y41	Reserve 8
X42	Z End limit	Y42	Reserve 9/Stop
X43	Wait X43	Y43	Reserve 10/Run
X44	Wait X44	Y44	Y044
X45	Y suction stop	Y45	Y045
X46	Wait X46	Y46	Y046
X47	External descent safety signal	Y47	Material Supply Machine
	Input emergency stop signal		Mold Open Permit
	Mold Opened		Mold Close Permit
	Mold Closed		Recycle
	Safety door		Ejection Forward Permit
	Ejection Forward		Ejection Backward Permit
	Ejection Backward		Output emergency stop signal
	Mold Inter		Core Out
	IMM Reject		Core In
	IMM Auto		
	Core Out		
	Core I		

Five-axis injection molding (X1, X2, Y1, Y2, Z as servo axis, AC as pneumatic axis, no AB axes)

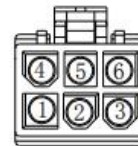
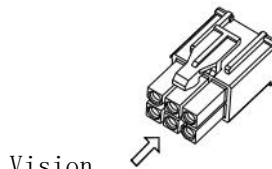
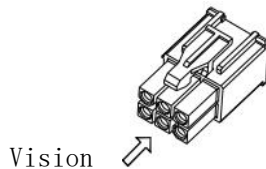
### IO Definitions

Input	Definitions	Output	Definitions
X10	Horizontal 1 limit	Y10	Horizontal 1 vale
X11	Vertical 1 limit	Y11	Vertical 1 vale
X12	Clip 1	Y12	Clip 1 vale
X13	Clip 2	Y13	Clip 2 vale
X14	Suction 2	Y14	Suction 1 vale
X15	Suction 1	Y15	Suction 2 vale
X16	X1 end limit	Y16	Main arm Forward vale
X17	Suction 3	Y17	Reserve 1
X20	X1 origin	Y20	Clip 4 vale
X21	Clip 4	Y21	Alarm
X22	Y1 Beginning limit	Y22	Reserve 2
X23	Horizontal 2 limit	Y23	Aid cylinders
X24	External safety zone	Y24	Horizontal 2 vale
X25	Z origin	Y25	Paint Oil
X26	X026	Y26	Standby output 5
X27	Air pressure detection	Y27	Mold Close Sp
X30	X2 beginning Limit	Y30	Vice Forward Valve
X31	X2 origin	Y31	Reserve 3
X32	Y2 origin	Y32	Reserve 4
X33	Y2 Beginning limit	Y33	Vice drop valve
X34	Clip 3	Y34	Clip 3 vale
X35	Y1 origin	Y35	Suction 3 vale/Motor reverse
X36	Suction 4	Y36	Suction 4 vale
X37	Vertical 2 limit	Y37	Conveyor
X40	X040	Y40	Reserve 7
X41	Z Beginning limit	Y41	Reserve 8
X42	Z end limit	Y42	Reservation 9/Stop
X43	Standby input 5	Y43	Reserve 10/Run
X44	Standby input 6	Y44	Y044
X45	Y suction stop	Y45	Y045
X46	Pause	Y46	Vertical 2 vale
X47	External descent safety signal	Y47	Material Supply Machine
Input emergency stop signal		Mold Open Permit	
Mold Opened		Mold Close Permit	
Mold Closed		Recycle	
Safety door		Ejection Forward Permit	
Ejection Forward		Ejection Backward Permit	
Ejection Backward		Output emergency stop signal	
Mold Inter		Core Out	
IMM Reject		Core In	
IMM Auto			
Core Out			
Core In			

Terminal	Definitions	Explain	Remarks
24V power port	24V	24V power	Usually used as digital input power supply 24 V±10%, maximum output current 100 mA.
	0V	Digital Input Optical Coupling Common	X10-X47 input Optical Coupling Common Interface
Input terminal	X10-X47	Connection to optical coupling	The negative electrode of 24 V power supply is effective(0 V).
Output terminal	Y10-Y47	MOS tube leakage output	Through the load to 24 V of power supply, single output protection current 350 mA, voltage 65 V. More current loads require relay isolation control
Injection molding machine output port	relay output	Always open relays	5A/250VAC/30VDC
Communication port (by type)	CAN port	Reserve	
USB monitoring port	DP/DM	USB monitoring, debugging ports	Please use manufacturer's special cable, USB electrical interface, for servo system high-performance debugging, monitoring.

## 2.4 Servo Motor Connection Definition

### 2.4.1 Power Cable Definition

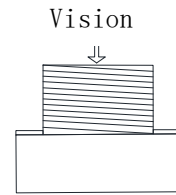
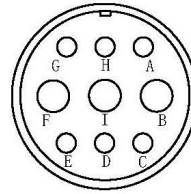
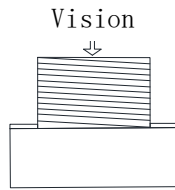
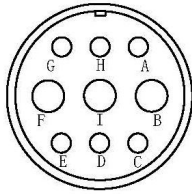


Plug: MOLEX-50361672 Pin: MOLEX-39000059						
No.	1	2	4	5	3	6
DEF	U	V	W	PE ground	NC air	NC air
Color	Red	Blue	Black	Yellow & Green		

750W below Motor power cable - without brake

Plug: MOLEX-50361672 Pin: MOLEX-39000059						
No.	1	2	4	5	3	6
DEF	U	V	W	PE ground	Br brake	Br brake
Color	Red	Blue	Black	Yellow & Green	Brown	White

750W below Motor power cable - with brake



Plug model		MS3102A 20-18P/9-pin				
No.	B	I	F	G		
DEF	U	V	W	FG ground		

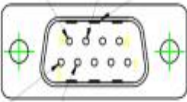
850W above Motor power cable - without brake

Plug model		MS3102A 20-18P/9-pin				
No.	B	I	F	G	C	E
DEF	U	V	W	FG ground	Brake +	Brake -


850W above Motor power cable - with brake

## 2.4.2 Encoder Cable Definition

Host encoder DB9 interface		Motor encoder AMP-TE/ female terminal/170361-1	
Pin number	Description	Pin number	Description
8	SD+	3	SD+
4	SD-	6	SD-
9	5V	9	5V
5	0V	8	0V
		7	FG
		1	Battery+
		4	Battery-



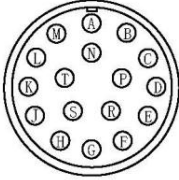
D89 Interface

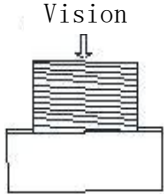


Motor encoder

**Note: 95、84 twisted pair**  
Motor encoder cable under 750W

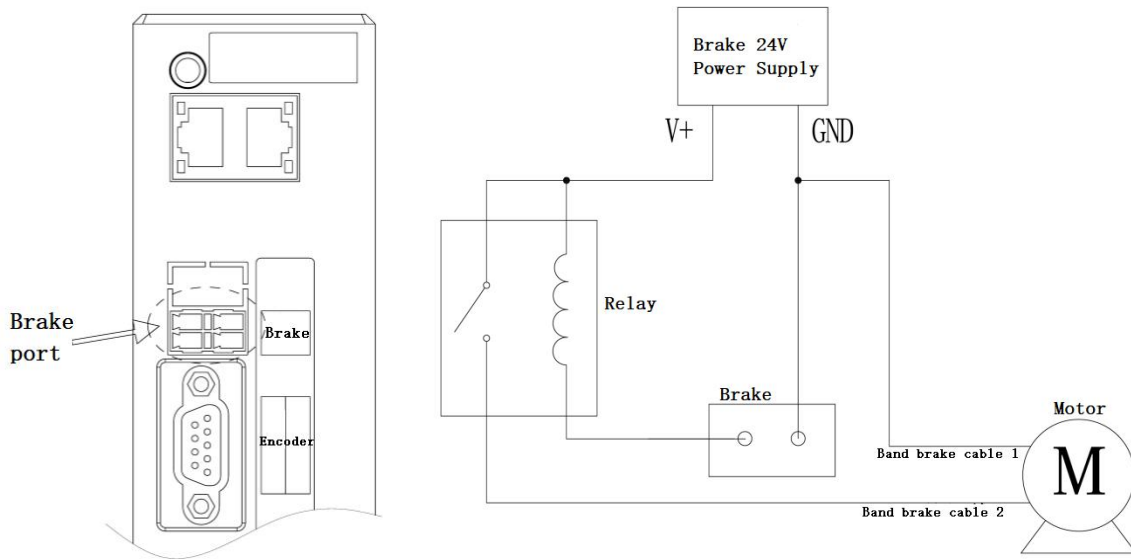
Host encoder DB9 interface		Motor encoder 17-pin aviation plug interface	
Pin number	Description	Pin number	Description
8	SD+	A	SD+
4	SD-	B	SD-
9	5V	G	5V
5	0V	H	0V
		J	FG
		E	Battery+
		F	Battery-





**Note: 95、84 twisted pair**  
Motor encoder cable above 850W

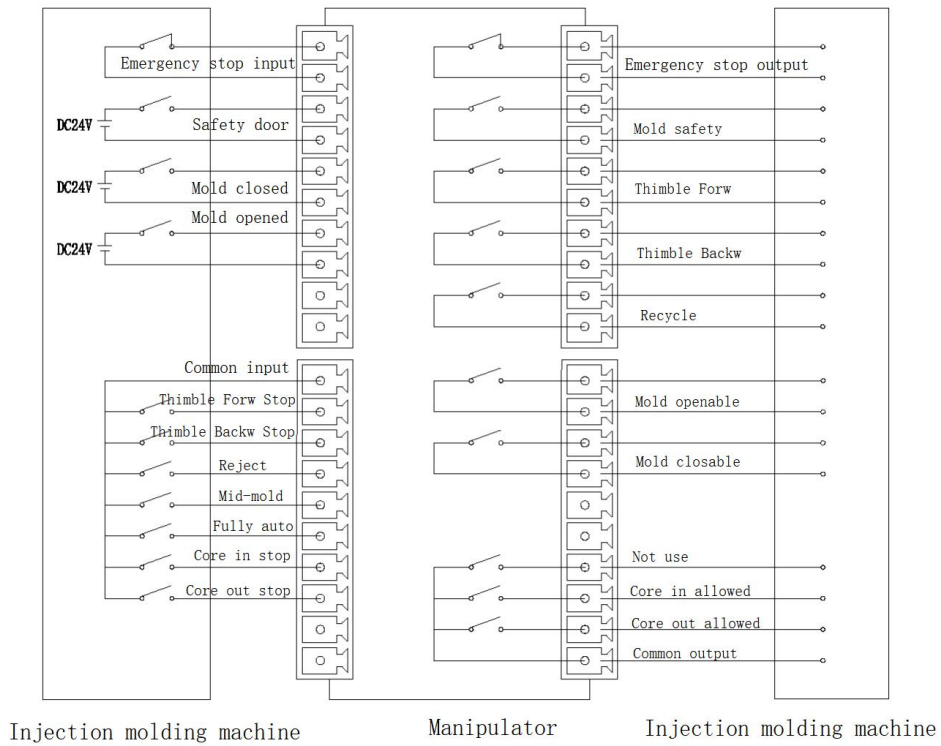
### 2.4.3 Wiring Diagram of Motor Band Brake



**\*Notice:** It needs to connect external relay with brake port to control band brake.

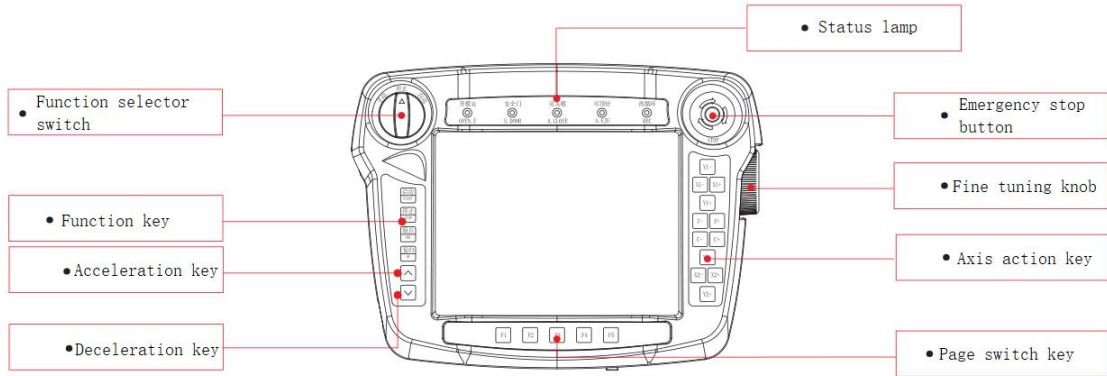
### 2.5 Connection between Manipulator and IMM

#### Signal wiring diagram of IMM



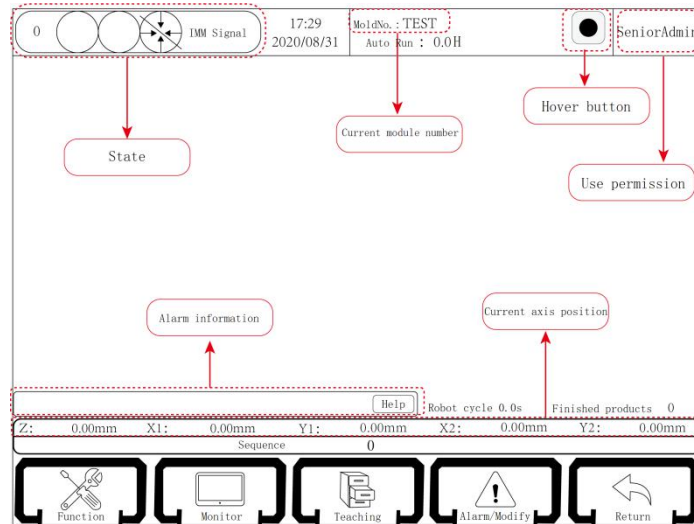
## Chapter 3 Commissioning and Operation Mode

### 3.1 Appearance and Description



\*Note: Please refer to “4.1 Basic Function” for detailed descriptions of keys.

### 3.2 Main Screen



\*Note: Please refer to “4.2 Main Screen” for details.

### 3.3 Operation Mode

#### 3.3.1 Pre-run Inspections

To ensure safe and correct operation, please confirm and check the following items before running.

##### 3.3.1.1 Control Host

1. Check connection terminals of the host and ensure them connected correctly and tightly.
2. Check external power supply such as input voltage and output voltage. Ensure the voltage kept in normal range.
3. Check the power cable, encoder cable and band brake cable between the host and the servo to ensure that the wiring is correct and tight.

##### 3.3.1.2 Servo Motor

1. Check fixed parts of the servo motor and ensure them connected tightly.
2. Check the axis to ensure smooth rotation. (It's normal for servo motor with oil seal that the axis is tight.)
3. Check the power cable, encoder cable and band brake cable between the host and the servo to ensure that the wiring is correct and tight.



### 3.3.1.3 Connection of Input and Output Terminals

1. Check wiring of input/output terminals and ensure it correct and tight. 24V terminals and IO terminals are forbidden to access 220V.
2. Power on check. Enter system after the host is power on, and then confirm if there is any alarm in manual controller. If it is, clear the faulty before continuing. For servo motor with brake, please do power on check with the motor and machine apart to avoid misoperation cause by gravity or external force such as vertical axis dropping
3. Check output signal of band brake. Enter system after the host is power on and press the emergency stop button on the manual controller. Check whether the brake output signal is off. Then release the emergency stop button and press “STOP” to clear the alarm. Check again to confirm the brake output signal is on. When the band brake action operated correctly, connect the servo motor and machine to continue running.

### 3.3.2 Test Run of Servo Axis

In order to ensure the running of manipulator, it needs to confirm that the servo axes can run correctly before the first power on. Please follow these steps:

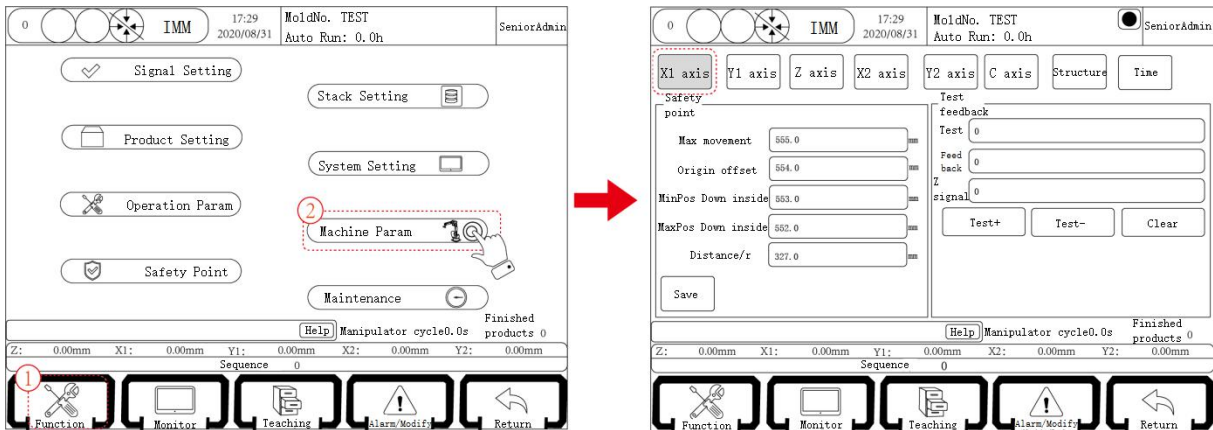
Step 1, Log in as senior administrator(Refer to 4.2.1 Log-in Permission).

Step 2, Turn on servo axis and turn status knob to STOP. Click Function to get mechanical parameters. Then open structure page to select axis definition to set X1, Y1, Z as servo axes and C as pneumatic axis. Click Save and exit. (**\*Note:** Other actions in test run of three-axis are the same as five-axis)

Step 3, Create a new program(Refer to 6.1 Program Management), named as TEST, then load it and cut the power to restart.

Step 4, Carry out motor positive/negative rotation test.

**Motor positive/negative rotation test:** Click “Machine Param” on the function setting page to enter the machine parameters setting page, where you can set the parameters of each axis. After entering the page, go directly to the X axis parameter setting. As shown below:



**Motor positive/negative rotation test scheme:** Click “Positive” and motor will rotate a positive circle, at the same time the feedback shown is 1000; Click “Negative” and the motor will rotate a negative circle, at the same time the feedback shown is -1000.

**Deal with “Motor code inconformity” :** It is common that alarm of motor code inconformity occurs at the first time when new machine is power on after connecting motor power cable and encoder cable. If restarted, that is to choose motor code stored as default selection. For products adopting absolute value mode, set Param9 as 1 after putting battery into encoder and restart.

**Servo parameters adjustment:** Move each shaft slowly by hand. If it swings back and forth, enter servo parameter page to increase Param21 and Param22 in same ratio. If there is any abnormal sound from motor or high frequency axis vibration, decrease Param21 and Param22 in same ratio till there is only light or no vibration. 50% is commonly proper. When adjusting Param41 to eliminate vibration, increase 50% every time and 250% at most. If there is still any vibration, you can choose set Param23 as 3 or increase Param42 for 50% each time after that. When the teaching position is in automatic mid-speed running, check if there is any vibration. Execute high-speed running if without vibration, otherwise continue to adjust parameters according to step2 or increase acceleration/deceleration time of action control.

**Optional optimization step:** Check position deviation of servo monitoring in automatic high-speed running. Modify Param28, the max is 50 and 30 in common, to diminish deviation, that is to improve servo following performance. If there is vibration after modification, subtract 1 from Param23 and check servo torque. Increase Param30 if the torque is not over 7500, 20 at each time and 100 as default value to avoid abnormal sound from motor.

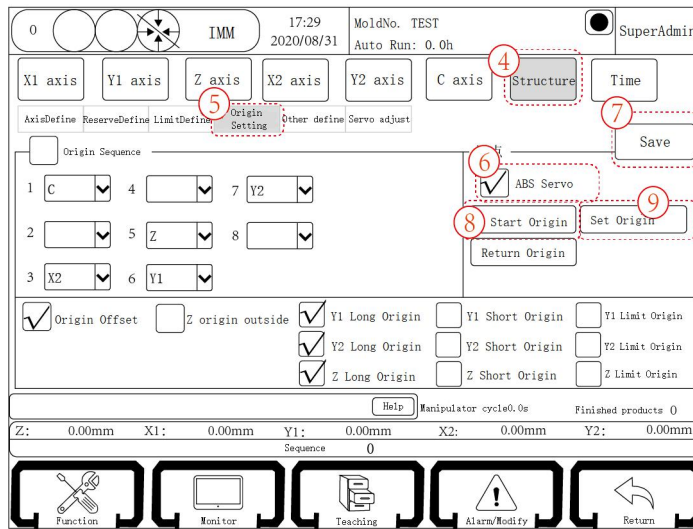
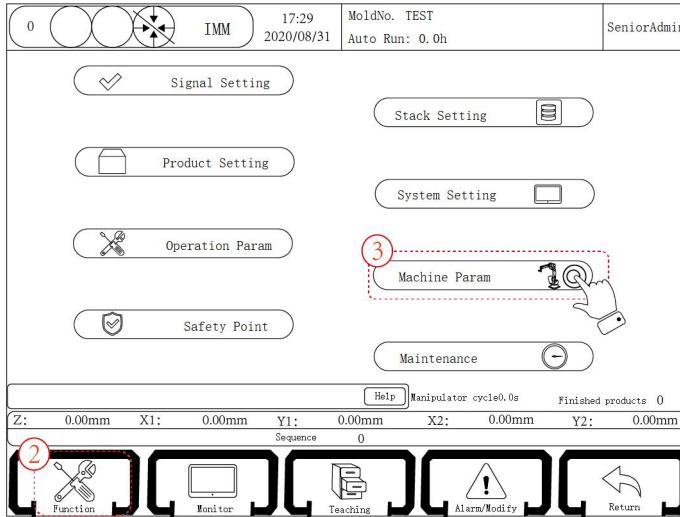
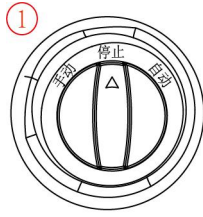
### 3.3.3 Origin Point Reset

In order to make the manipulator run automatically and correctly, the origin reset action will let the electric shaft of robot back to origin position, and the vacuum and fixture will return to the closed state. The ways back are divided into absolute value and incremental modes. Absolute value mode is to enter “Function—Machine Param—Structure—Origin Setting” and check ABS servo; if not checked, it is incremental way. It needs to click “Save” after changing reset way and turn switch to third gear to make it effective. Ensure that each axis has accurate origin position before running automatically.

#### (1) Absolute value mode

In manual state, use axis action button to move manipulator to the target position. In stop state, enter “Function—Machine Param—Structure—Origin Setting” and click “Start Origin”, then click “Set origin” to set the target position as origin and all coordinate positions are 0. The system will record positions of each axis automatically before power off and it will show the recorded position after restarting, so there is no need for repeated reset. Repeat steps above to set new origin position.

**Steps:** In stop state: Function→Machine Param→Structure→Origin Setting→Choose ABS Servo→Save→Start Origin→Set origin




**\*Note:** Absolute value way back to origin can only use the “Start origin” and “Set origin” buttons in Function-Machine Param-Structure-Origin Setting, not the “Origin” and “Start” buttons on panel.

**(2) Incremental mode**

After confirming that all parts of machine are normal with power on, turn the state knob to Stop and press origin button, then click start key or enter Machine Param-Structure-Origin Setting page. Click “Start origin” and press Start button on manual controller, then the manipulator will return to origin as Y1,Y2→X1,X2→Z by default. To customize the way to return, enter Machine Param-Structure-Origin Setting page to set.

When all axes, vacuums and fixtures return to the origin position, automatic operation

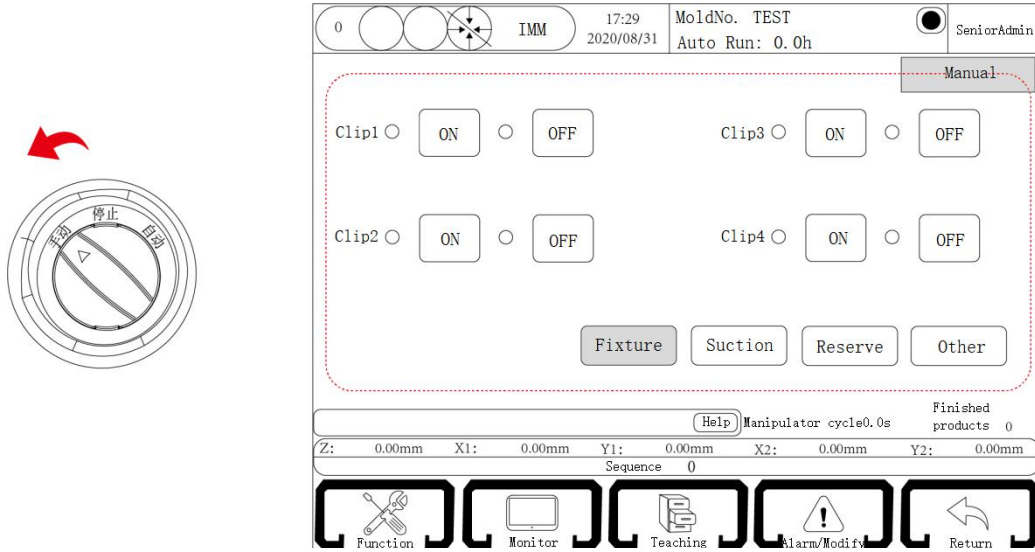
and manual electric shaft operation can be carried out after the icon  at the top right of the screen turns green.

The user can not carry out manual, auto operation and set parameters while origin reset. Press Stop button to stop origin rest or press emergency stop key in case of emergency.

**\*Note:** Incremental way back to origin can use “Start origin” in Machine Param-Structure-Origin Setting and “Start” button on panel to execute, as well as using “Origin” and “Start” buttons on panel.

### 3.3.4 Manual Operation

Turn the status selector switch to the manual gear, and the manipulator enters the manual page, as shown below;



After rotating the state knob, enter the manual screen to carry on the manual operation, operate the manipulator to do separate action, and adjust each part of the machinery (confirm that there is a mold opened signal in manual state, and ensure that the mold is not touched). In order to ensure the safety of manipulator and injection molding machine, there are following restrictions:

- The manipulator can not do vertical or horizontal action after descending in the shape.
- After the manipulator drops, can not do horizontal action in the non-safe zone.
- Without mold opened signal, manipulator can not do internal descending.

#### 3.3.4.1 Axis Manual Operation

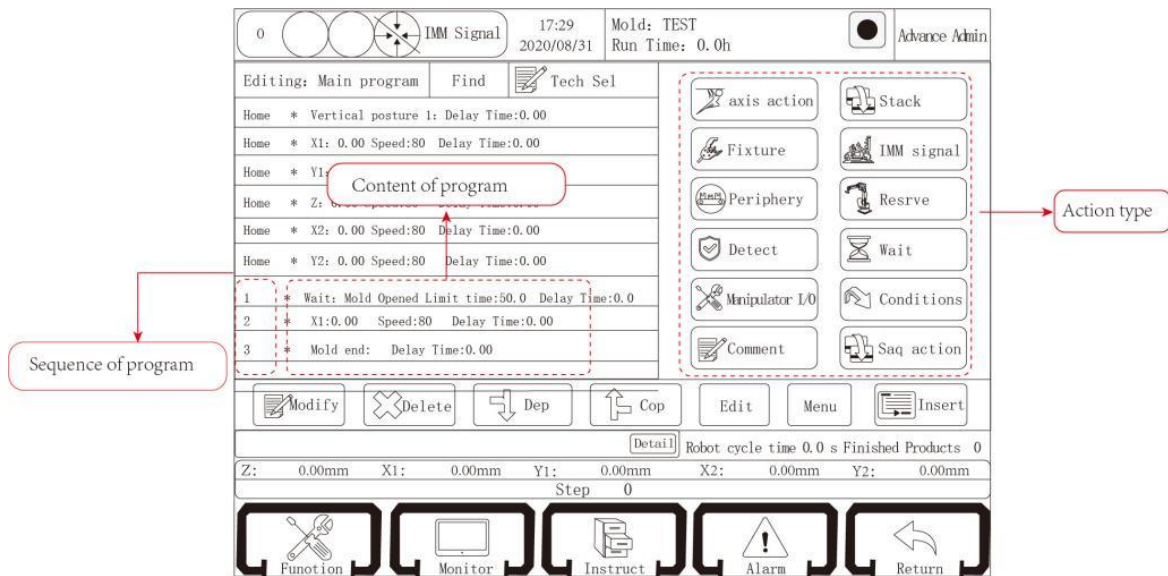
For single-board system, the servo axis of manipulator cannot be operated before origin reset, because the positions of electric control axes are not accurate, but manual operation to pneumatic actions is allowed. For drive-control system and RTEX, both are allowed before origin rest. The max speed of servo axis in manual state can be set to 50.

- |       |  |
|-------|--|
| ◇ Y1- | <u>Pneumatic: in use, the main arm rises to the starting position.</u><br>Electric: hold the key, main arm move up, and release to stop.               |
| ◇ Y1+ | <u>Pneumatic: press the key and the main arm drops to the end point.</u><br>Electric: hold the key, the main arm moves down, release to stop.          |
| ◇ Y2- | <u>Pneumatic: press the key and the jib rises to the start position.</u><br>Electric: hold the key, the arm moves up, release to stop.                 |
| ◇ Y2+ | <u>Pneumatic: press the key and the accessory arm drops to the end point.</u><br>Electric: hold the key, the arm moves down, release to stop.          |
| ◇ X1- | <u>Pneumatic: press the key, the main arm back to the start position.</u><br>Electric: hold the key, the main arm moves backward, release to stop.     |
| ◇ X1+ | <u>Pneumatic control: press the key, the main arm forward to end position.</u><br>Electric: hold the key, the main arm moves forward, release to stop. |
| ◇ X2- | <u>Pneumatic: press the key, the accessory arm back to the start position.</u><br>Electric: hold the key, the arm moves backward, release to stop.     |
| ◇ X2+ | <u>Pneumatic: press the key and the accessory arm advances to the end point.</u><br>Electric: hold the key, the arm moves forward, release to stop.    |

- C+** Pneumatic: press the key and turn the fixture vertical until the stop position.  
Electric: hold the key, the fixture moves vertically, release to stop.
- C-** Pneumatic: press the key and turn the fixture horizontal until the stop position.  
Electric: hold the key, the fixture moves horizontally, release to stop.
- Z-** Cross back key: hold the key manipulator moves to origin, and release to stop.
- Z+** Cross out key: hold the key manipulator moves to the end, and release to stop.

### 3.3.5 Teaching Page

Turn the status selection button to the manual state, then click “Teaching” to enter the program teaching page, as shown below:



**\*Note:** Please refer to 5.2 Teaching Page for details of teaching methods and actions.



### 3.3.5.1 Teaching of Axis Action

Click the “axis action” button to enter the servo axis action teaching page, where the X1, X2, Y1, Y2, Z, C axis (side pose) actions can be edited. As shown below:

Set=	Check axis	Speed (%)	Delay (s)	
<input checked="" type="checkbox"/>	X1	0.00	80	0.00
<input type="checkbox"/>	Y1	0.00	80	0.00
<input checked="" type="checkbox"/>	Z	0.00	80	0.00
<input type="checkbox"/>	X1	0.00	80	0.00
<input checked="" type="checkbox"/>	Y2	0.00	80	0.00
<input type="checkbox"/>	C	<input checked="" type="checkbox"/> Horizon-1	<input type="checkbox"/> Vertical-1	0.00

### 3.3.6 Automatic Status

The state selection switch is rotated to the automatic gear and the manipulator enters the automatic standby state. Press Start button again and the manipulator will start to run automatically. The operation data of the manipulator can be monitored in automatic state. The Auto Run page is shown below:

Steps of auto program	Delay Time
1	* Wait: Mold end Delay Time: 0.00
2	* X1: 0.00 Speed:80 Delay Time:0.00
3	* Chek: ON Defective Products Go toFlag[0]Limit time:0.00
4	* Label[0]: Comment:

Injection cycle	0.00
Fetch Time	0.00
Setted products	1000
Good products	0
Stackd products	0

**Injection cycle:** Automatically record the molding time of the previous cycle.

**Fetch Time:** Time from mold opened signal detected to program of mold-locked finished, that is time from the mold closable signal lamp on to off.

**Setting products:** Number of target output set currently.

**Good products:** Number of qualified products that the robot has fetched. (If no reject signal shows before mold opened, that means good product.)

**Stacked products:** Number of products the manipulator has stacked when using stack.

### 3.4 Procedure of Fast Operation

#### 3.4.1 Test Run Program of Three-axis

The procedure in the chart below is for internal fetching and external placement. The mold number is default and no modification to default mechanical settings.

Actions taught	Note
Start* Posture vertical 1: Delay time: 0.00	Standby point
Start*X1: 100.00 Speed:80 Delay time:0.00	
Start*Y1: 0.00 Speed:80 Delay time:0.00	
Start*Z: 200.00 Speed:80 Delay time:0.00	
1 * Wait: Mold opened limit time:60.0 Delay time:0.0	Wait mold opened
2 *X1:400.00 Speed:80 Early end enable: End: 150 Delay time: 0.00	Fetch point
3 *Y1: 250.00 Speed:80 Early deceleration enable: Speed:5 End :100 Delay time: 0.00	
4 * Suction1 ON: Delay time:0.00	Fetch
5 * Suction2 ON: Delay time:0.00	
6 *Wait thimble in place ON limit time:10.0	
7 *Clip 1 ON: Delay time:0.00	
8 *Clip 2 ON: Delay time:0.00	Rise to outside
9 *X1:50.00 Speed:80 Delay time:0.00	
10 *Y1: 0.00 Speed:80 Delay time:0.00	Fetch test
11 * Suction1 test ON Delay time:0.00	
12 * Suction2 test ON Delay time:0.00	
13 *Fixture 1 test ON Delay time:0.00	
14 *Fixture 2 test ON Delay time:0.00	Mold closable
15 *Mold lock ON: Delay time:0.50	
16 *Z:1400.00 Speed:80 Delay time:0.00	Placement point
17 *X1:213.00 Speed:80 Delay time:0.00	
18 *Y1:352.00 Speed:80 Delay time:0.00	
19 *Clip 1 OFF: Delay time:0.00	Put
20 *Clip 2 OFF: Delay time:0.00	
21 * Suction1 OFF: Delay time:0.00	
22 * Suction2 OFF: Delay time:0.00	
23*Y1: 00.00 Speed:80 Delay time:0.00	Manipulator rises. Conveyor works.
24 *Conveyor ON: Mold interval :5 Action time:2.00	
25*Module ends : Delay time:0.00	

**\*Note:**

1. This is a common procedure of “Internal fetching-External placement” action. Some parameters shall be modified according to facts.
2. Alarms in running can be removed according to 8.4 Alarms and Solutions.

### 3.4.2 Test Run Program of Five-axis

The procedure in the chart below is for internal fetching and external placement. The mold number is default and no modification to default mechanical settings.

Actions taught	Note
Start* Posture vertical 1: Delay time: 0.00	Standby point
Start*X1: 100.00 Speed:80 Delay time:0.00	
Start*Y1: 0.00 Speed:80 Delay time:0.00	
Start*X2: 100.00 Speed:80 Delay time:0.00	
Start*Y2: 0.00 Speed:80 Delay time:0.00	
Start*Z: 200.00 Speed:80 Delay time:0.00	
1 * Wait: Mold opened limit time:60.0 Delay time:0.0	Wait mold opened
2 *X1:400.00 Speed:80 Delay time: 0.00	Fetch point
3 *Y1: 250.00 Speed:80 Deceleration enable: Speed:5 End :100 Delay time: 0.00	
4 *X2:500.00 Speed:80 Delay time: 0.00	
5 *Y2: 350.00 Speed:80 Deceleration enable: Speed:5 End :100 Delay time: 0.00	
6* Suction1 ON: Delay time:0.00	
7 * Suction2 ON: Delay time:0.00	Fetch
8 *Wait thimble in place ON limit time:10.0	
9 *Clip 1 ON: Delay time:0.00	
10 *Clip 2 ON: Delay time:0.00	
11 *X1:50.00 Speed:80 Delay time:0.00	Rise to outside
12 *Y1: 0.00 Speed:80 Delay time:0.00	
13 *Y2: 0.00 Speed:80 Delay time:0.00	
14 *X2:50.00 Speed:80 Delay time:0.00	
15 * Suction1 test ON Delay time:0.00	Fetch test
16 * Suction2 test ON Delay time:0.00	
17 *Fixture 1 test ON Delay time:0.00	
18 *Fixture 2 test ON Delay time:0.00	
19 *Mold lock ON: Delay time:0.50	Mold closable
20 *Z:1400.00 Speed:80 Delay time:0.00	Placement point
21 *X1:213.00 Speed:80 Delay time:0.00	
22 *Y1: 352.00 Speed:80 Delay time:0.00	
23 * X2: 210.00 Speed:80 Delay time:0.00	
24 * Y2: 362.00 Speed:80 Delay time:0.00	
25 *Clip 1 OFF: Delay time:0.00	Put
26 *Clip 2 OFF: Delay time:0.00	
27 * Suction1 OFF: Delay time:0.00	
28 * Suction2 OFF: Delay time:0.00	
29 *Y1: 00.00 Speed:80 Delay time:0.00	Manipulator rises. Conveyor works.
30 * Y2: 00.00 Speed:80 Delay time:0.00	
31 *Conveyor ON: Mold interval :5 Action time:2.00	
32 *Module ends : Delay time:0.00	

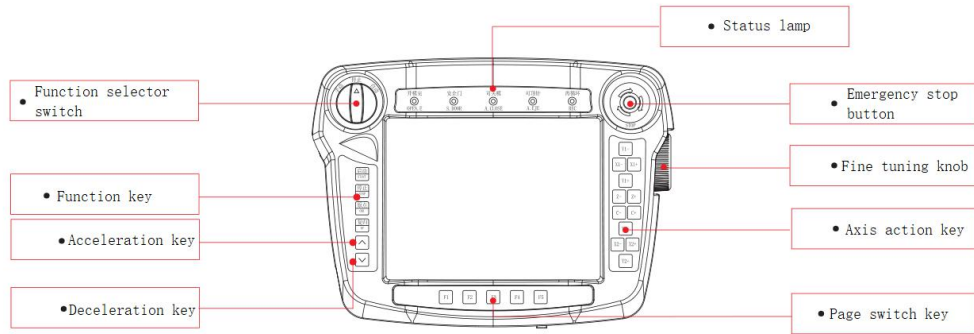
**\*Note:**

1. This is a common procedure of “Internal fetching-External placement” action. Some parameters shall be modified according to facts.
2. Alarms in running can be removed according to 8.4 Alarms and Solutions.



## Chapter 4 Function and Main Screen

### 4.1 Basic Function



#### 4.1.1 Function Keys

##### Start:

Function 1: Press “Start” button in automatic state, the manipulator enters automatic running state;

Function 2: Press “Origin” in stop state, and then press “Start” key to find the origin of the manipulator;

Function 3: Press “Reset” key and then press “Start” key to reset the origin.

##### Stop:

Function 1: Press this key in automatic state, then the program runs until module stops.

Function 2: Press this key twice in automatic state, then the program runs this step and pauses.

Function 3: Press this key in stop state to clear the resolved alarm when alarm appears.

**Origin:** Only for origin reset action. Please refer to 3.3.3 Origin Point Reset.


**Reset:** Press this key and then press “Start” key, then all axes return to point in Y1, Y2, Z, X1, X2 order. Y1, Y2 back to 0 position, Z, X1 and X2 axes back to the starting point of the program.

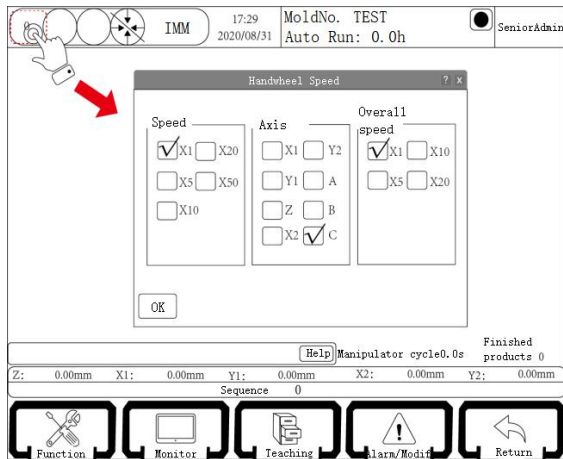
**Acceleration/deceleration key:** These two keys can be used to adjust the overall speed in manual and automatic states.

**Emergency stop button:** Press the emergency stop button in case of emergency, it will break all the shaft energy and the system sends “emergency stop” alarm. Turn out the knob and press “stop” button to eliminate the alarm.

#### 4.1.2 Fine Tuning Knob

**Function:** Used to move shafts in accurate positioning under manual state.

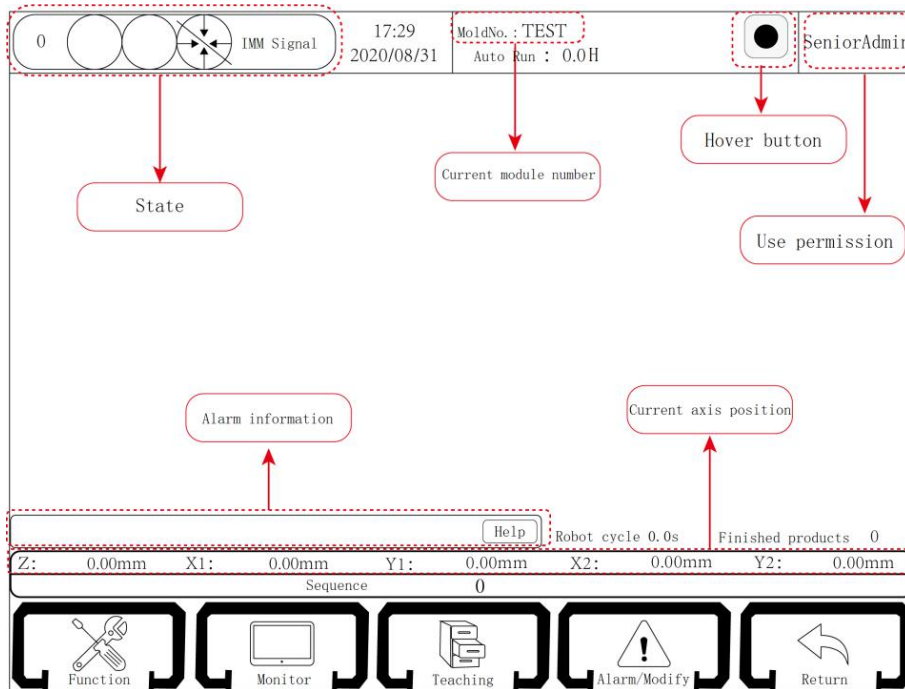
**How to operate:** Click the button  and check “Handwheel selection” to select the hand wheel speed and the axis that needs to be fine-tuned, or press the axis key that needs to be fine-tuned (on the manual controller). Then scroll the fine-tuned knob to move the axis to the target point.



#### Hand wheel speed description:

- X1:** move a lattice axis translation 0.01 mm or axis rotation 0.01 degrees.
- X5:** move a lattice axis flat 0.05 mm or axis rotation 0.05 degrees.
- X10:** move a lattice axis flat 0.1 mm or axis rotation 0.1 degrees.
- X20:** move a lattice axis flat 0.2 mm or shaft rotation 0.2 degrees.
- X50:** move a lattice axis flat 0.5 mm or axis rotation 0.5 degrees.

## 4.2 Main Screen



**State:** Gray indicates that not return to origin, green indicates that has returned to origin.

**Current module number:** Display according to the mold number established by different processes. Can be created, copied, deleted, loaded, exported in the file. (Refer to 6.1 Program Management for details)

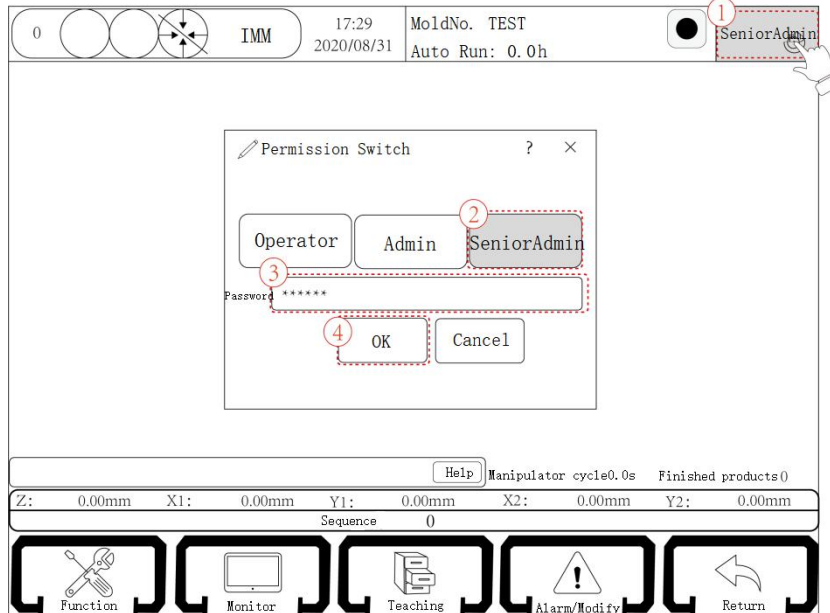
**Hover button:** Auxiliary buttons are virtual keys to provide auxiliary measures. There are start, stop, origin, return, acceleration, deceleration, hand wheel-, hand wheel+, manual, stop, automatic and servo parameter monitoring keys.

**Current axis position:** Display the coordinate of the current machine in real time.

**Alarm information:** Display alarm information when alarm occurs. Press the help button then it will pop up the solution dialog box. Follow the notice to solve.

### 4.2.1 Login Permission

**Permission to login:** Click “logon” to enter the login screen. First select the user type, enter the password, and then click “login”. If you need to exit to the lowest permission, directly click “logout”, and the operation diagram is shown as following:



**\*NOTE:** Please login first before set system for that different user name contains different admissions.

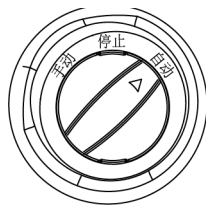
**Operator:** This permission can only move the axis in manual state and cannot enter the teaching page. In automatic state, it can start the manipulator and adjust the speed. In the stop or manual state, it can reset the origin.

**Admin:** This permission can only move the axis in the manual state and cannot enter the teaching page for teaching. In the automatic state, it can start the manipulator and adjust the speed. In other states, it can reset the origin.

**Senior admin:** All operations except user management can be performed.

### 4.3 State Knob

The manipulator has three operating states: manual, stop and automatic. The state selection switch is rotated to the left gear as manual state, in which the manipulator can be manually operated; the state selection switch is rotated to the middle gear as stop state, and the manipulator stops all actions in this state. Turn the state selection switch to the right gear and press the start button once, then the manipulator enters the automatic running state.

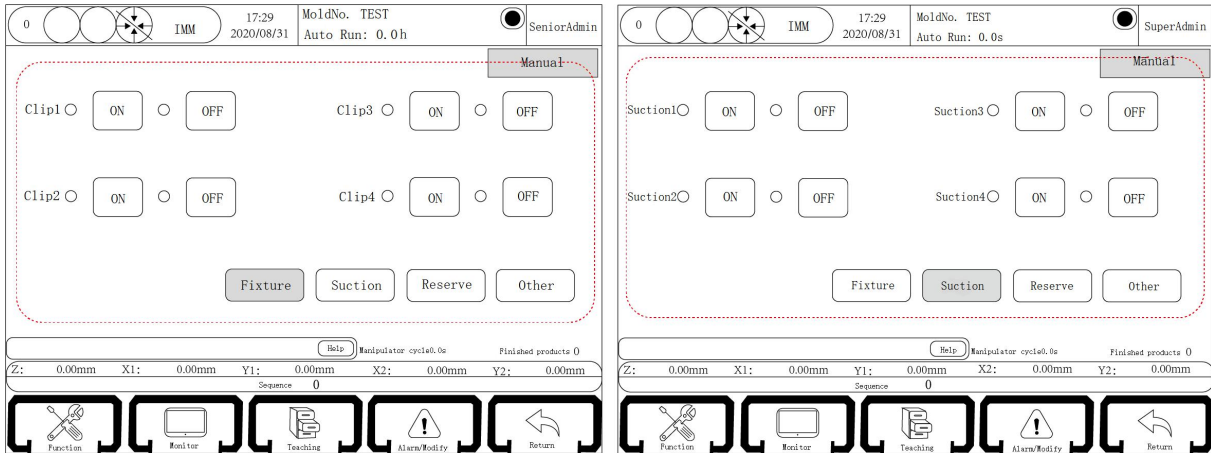


## Chapter 5 Manual Status

### 5.1 Operation of Manual Pages

#### 5.1.1 Fixture Page

Click “fixture” and “suction” buttons in the lower right corner of the touch screen to enter the manual operation page of the fixture, as shown below:



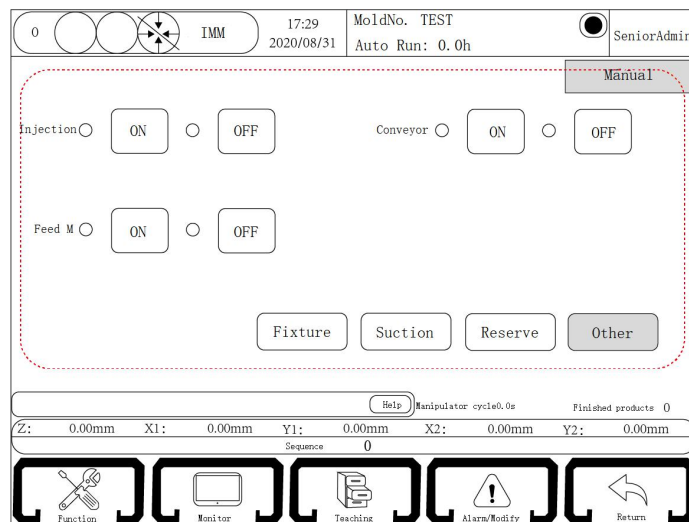
There are two kinds of fixtures, “fixture” and “suction”, four groups for each. Click “ON” and the corresponding tool signal output. Click “OFF” and the corresponding tool signal is disconnected.

**Note:** The red light is the input limit signal and the green light is the output signal.

If there is no signal input or output, the indicator is gray.

#### 5.1.2 Manual Operation of Auxiliary Equipment

Click “Other” button in the lower right corner of the touch screen to enter the manual operation page of the auxiliary device, as shown below:



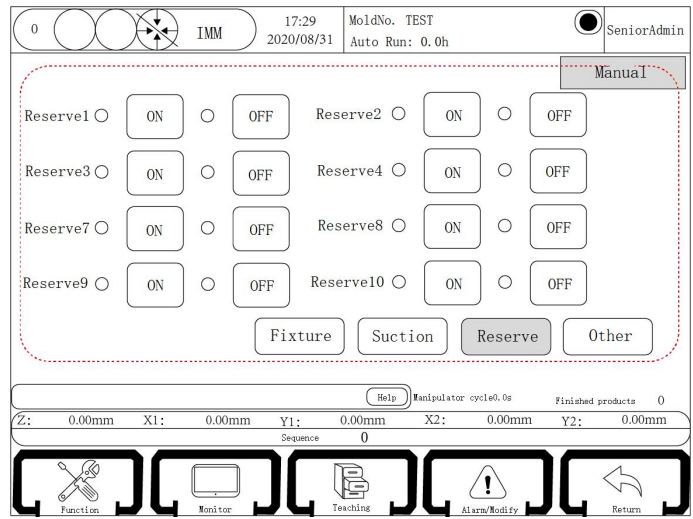
Click the injection button “ON” and the injection output point is ON. Click the button “OFF” and the injection output point is disconnected.

Click the conveyor belt button “ON” and the conveyor belt output point is ON. Click the button “OFF” and the conveyor belt output point is disconnected.

Click the Feed Machine button “ON” and the Feed Machine output point is ON. Click the button “OFF” and the Feed Machine output point is disconnected.

### 5.1.3 Manual Operation of Reserve Action

Click “Reserve” button in the lower right corner of the touch screen to enter the manual operation page of reserve action, as shown below:

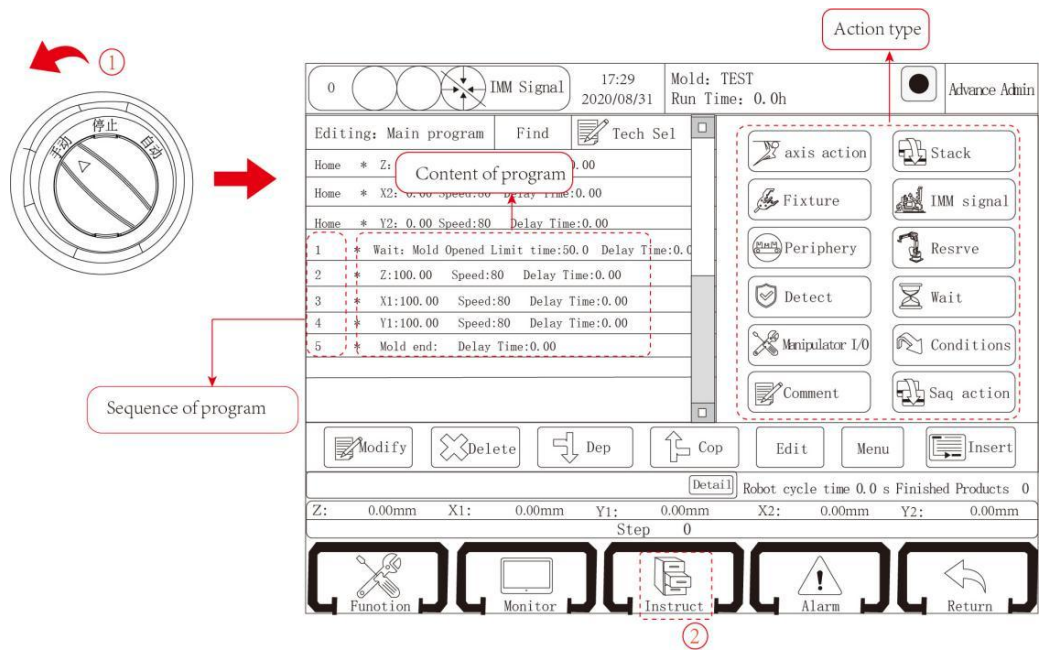


Click “ON” and the corresponding reserved point signal output is on. Click “OFF” and the corresponding reserved point signal output is off. The system has six sets of fixed reservation and two sets of optional reservation (Reserve 9 and Reserve 10 can be set in the reservation setting. Refer to 6.2.6.2 Reserve Define Page of Structure for details). Users can choose according to their needs.

**Warn:** Reserve 1 and Reserve 2 can be checked without interlocking and the output of one does not affect the other. If not checked, the default Reserve 1 and Reserve 2 interlock, that is, the output of Reserve 1 will be cut off if Reserve 2 is on after Reserve 1. Please connect carefully if there is a need!(Interlocking and reservation functions can be set in reservation settings. Refer to section 6.2.6.2 Reserve Define Page of Structure for details.)

### 5.2 Teaching Page

Turn the status selection button to the manual state, then click “Teaching” button to enter the program teaching page, as shown below:



**Main Menu:** The action menu divides the program editing into 12 kinds. Click corresponding button to enter the teaching page for that type of action, and click “Main Menu” button to return to the main screen of the teaching action. (If there are no condition and sequence action buttons in the main menu and no quick settings on the left side of the teach selection, please set them in the advanced administrator. Refer to 6.2.10 System Setting for details.)

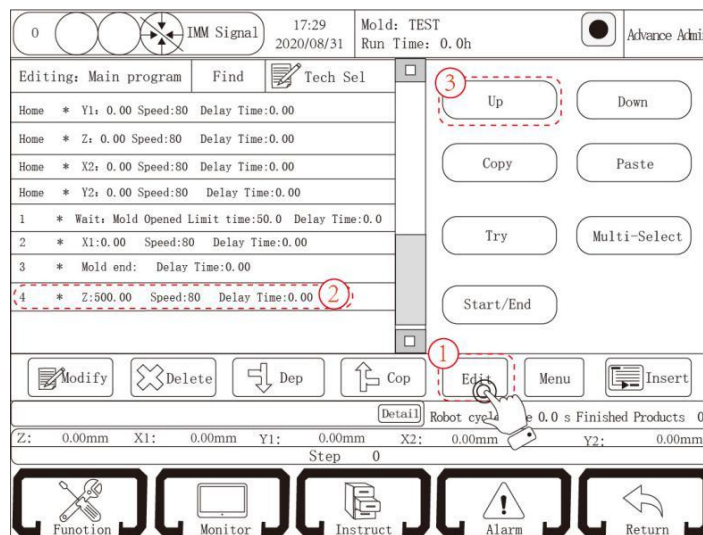
**Edit:** Select the action and click the Edit button to modify the parameters of the action.

**Delete:** Select action, click Delete button, then this action is deleted. (\*Notice: The starting point can be edited but cannot be deleted.)

**Cop:** Select Y1, click Cop in the figure above, then the Y1 axis step order becomes 3. Y1 and X1 axis start running at the same time in automatic running. (\*Notice: Do not combine the same actions or it will alarm, such as two X axis action, two wait actions.)

**Dep:** After decomposing two actions, actions running together will run as sequence.

**Function:** Click the Function button to enter the function page, as shown below:



**Up:** Select step4 above, click “up” button, it will move up, step order turns to 3.

**Down:** Select step2 above, click “down” button, it will move down, step order turns to 3.

**Copy, Paste:** Select step4 above, click “copy” button, then select step2 and click paste button, it will be above step2.

**Try:** Click one action, hold “Try” button to execute the action and release to stop. (Due to the trial run function can not follow the sequence of procedures. Please pay attention to anti-collision when using!)

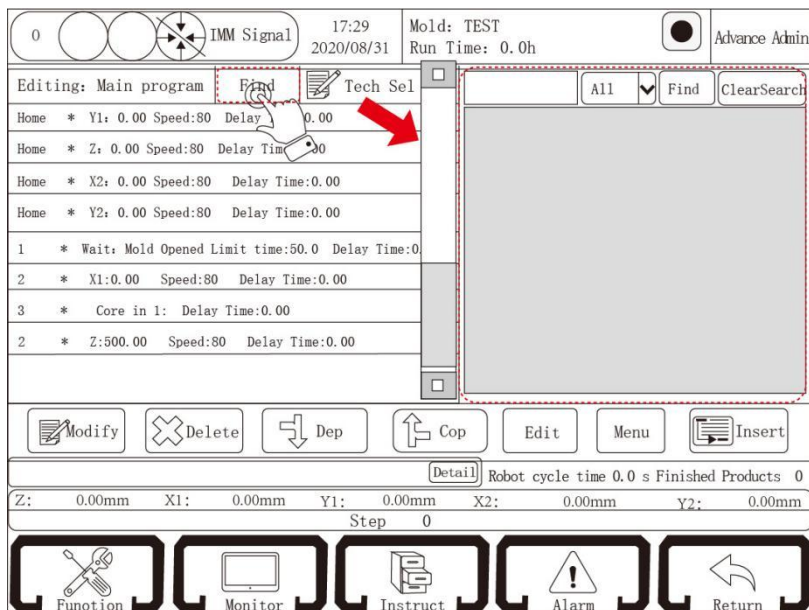
**Multi select:** Click Multi-Select. “start/end” button are able to click. Select step2, click start key, click step4, and click end key, step2-4 are selected.

**Insert:** Check an action, select the position to insert, click the insert button to teach the action to the desired position. (Note: The position of inserting is above the action selected.)

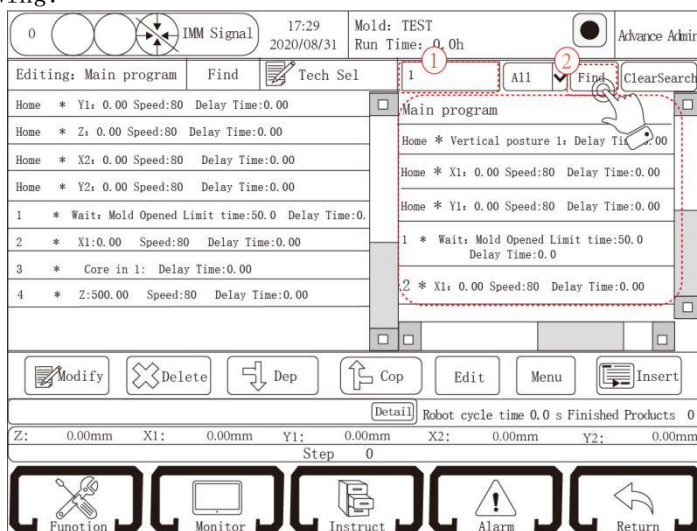
**Find:**

- 1) Click the Find button and enter the Find page, as shown below:





- 2) Enter the keyword you want to find in the left input box. To browse all actions related to 1, you can enter “1” directly, then select the search range as all, and then click the “Find” button to appear all the actions related to 1, as following:



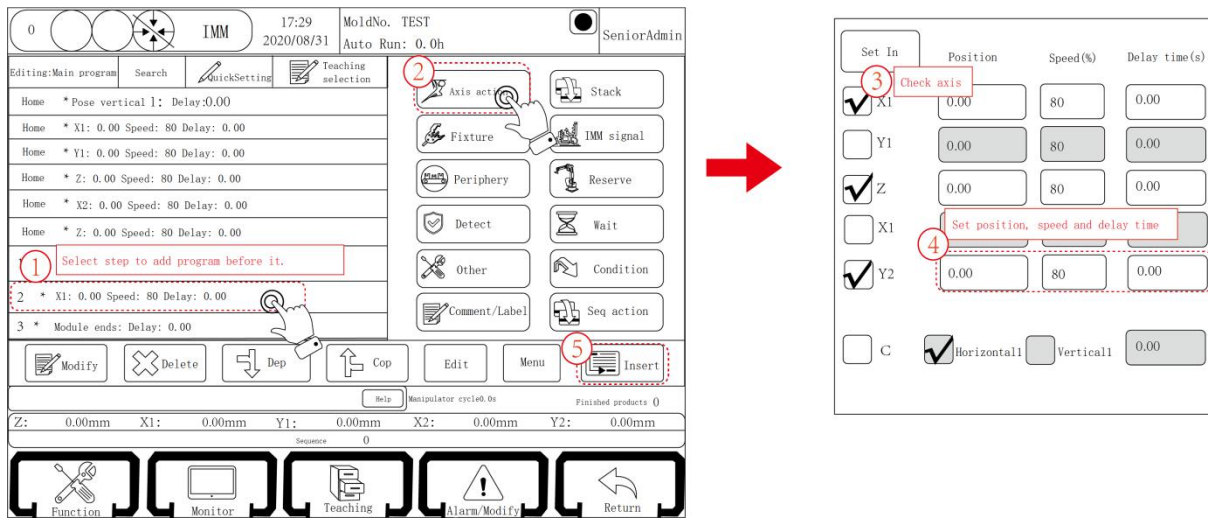
- 3) Click the action searched, you can jump directly to the action where the program and click the Clear Search button to clear the content.
- 4) In this system, we need to teach a action to the program, check the box on the left side of the action, select the program step on the left side, and click “insert”. The indicator is green to indicate the corresponding valve output.

**\*Notice:** If there are no special circumstances, please note the following two points:

1. The time set by the delay is the time to wait before the action is performed, and when waiting for the action, the next program will not be run.
2. The interval modules is to perform an action once every few molds in the automatic state running time.

### 5.2.1 Teaching of Axis Actions

Click “axis action” to enter the teaching page of the servo axis action, where the X1, X2, Y1, Y2, Z, C axis (side pose) action can be edited. As shown below:

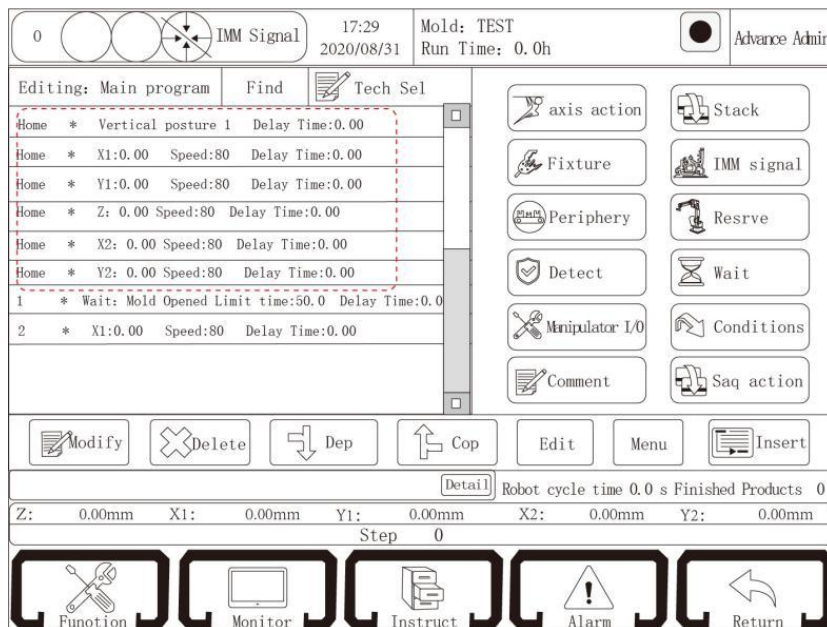


The position, speed and delay time of the servo axis can be taught on this page, and the horizontal or vertical state of the pneumatic axis can be selected.

**There are two ways to set the position of the servo shaft:**

1. Enter the coordinate value of the target position directly in the text box of the position.
2. Press the manual axis action key to move the axis to the target position, then click the “set in” button to set the current position of the axis to the text box.

### 5.2.2 Teaching of Program Starting Point



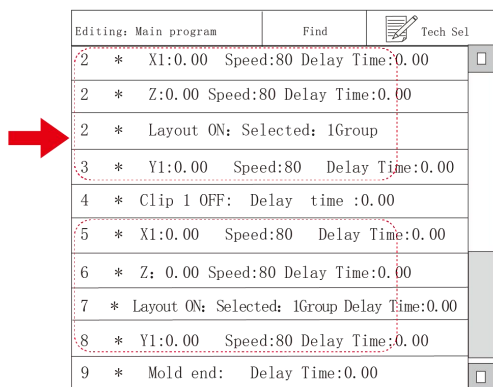
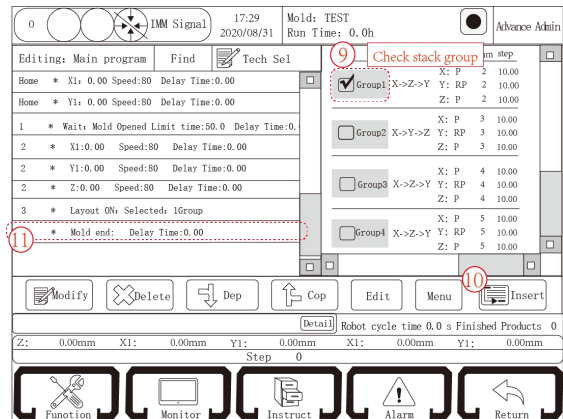
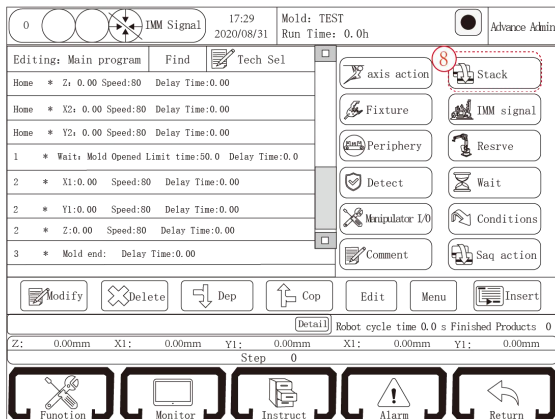
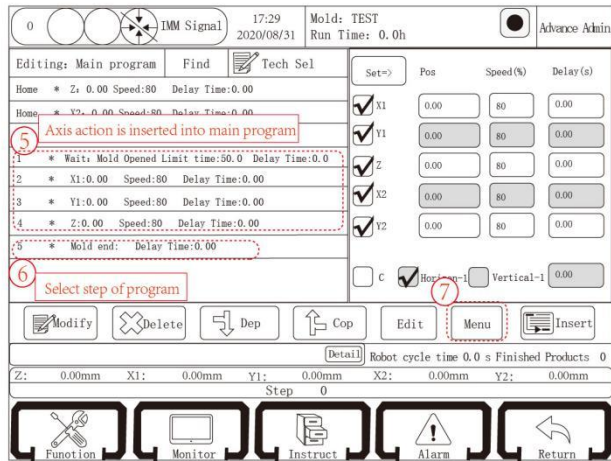
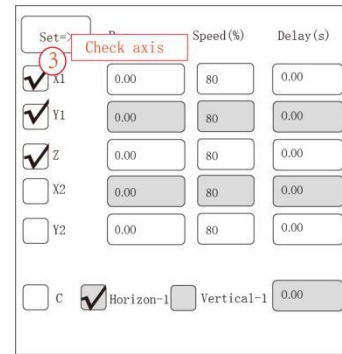
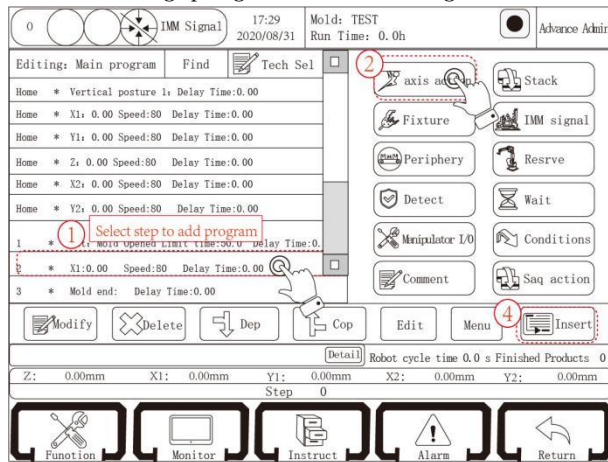
The starting point displayed corresponds to “Safety Point” in Axis definition, that is, the number of chosen starting points is the same as number of axes. If the numbers or types of axes in starting point and axis definition are different, it will alarm “standby point position error”. Then it needs to create new mold number or choose correct axis definition.

**\*Note:** The starting program can be edited but can not be deleted.



### 5.2.3 Stack Instruction

The teaching program of stacking is shown as below:



By Function, Up, Down, Decompose, Compose and other keys, the stack program can be set as two kinds shown on the left:  
 Notice:  
 1. Z axis, X axis and stack program must be combined together.  
 2. Y axis action must be next step to stack program.



Scan the QR code for accurate stacking course.

Check the box on the left of the stacking program to be inserted, e.g. select the 1st stacking program, then click “Insert” button to insert the stacking program before the program step that is going to start stacking, and the robot will stack the discharges according to this stacking program when it runs automatically. If you want to use the Y axis for stacking, be sure to insert the stacking program one step before the Y axis descent action. Each automatic program can insert 7 groups of stacking programs, which can be stacked in 7 different positions to discharge products; when using stacking 7 groups of stacking, the starting position of all 7 groups of stacking should be 0. **Important:** The Y axis is selected in the system design as the end between stacks. The stacking procedure must be inserted before the Y axis action. If there are multiple stacks, the Y axis must be inserted between the multiple stacks to isolate them.

### 5.2.4 Teaching of Fixture and Detection Program

The following are “Fixture” and “Detect” pages, “Fixture” and “Detect” functions are usually used together, where actions can be set. As shown below:

The process involves the following steps:

- Select fixture action:** In the main program editor, click the "Fixture" button. This opens the "Fixture action" dialog box.
 

Enable	Setting
<input checked="" type="checkbox"/>	● Fixture1
<input type="checkbox"/>	○ Fixture2
<input type="checkbox"/>	○ Fixture3
<input type="checkbox"/>	○ Fixture4
<input type="checkbox"/>	○ Sucker1
<input type="checkbox"/>	○ Sucker2
- Check the fixture to be detected:** In the "Detect" dialog box, select the desired detection option.
 

Enable	Setting
<input checked="" type="checkbox"/>	● Fixture1
<input type="checkbox"/>	○ Fixture2 detect
<input type="checkbox"/>	○ Fixture3 detect
<input type="checkbox"/>	○ Fixture4 detect
<input checked="" type="checkbox"/>	● Sucker1 detect
<input type="checkbox"/>	○ Sucker2 detect
- Final Program Steps:** The actions are now integrated into the main program sequence.
 

Step	Action
Home	* Y1: 0.00 Speed:80 Delay Time:0.00
Home	* Z: 0.00 Speed:80 Delay Time:0.00
Home	* X2: 0.00 Speed:80 Delay Time:0.00
Home	* Y2: 0.00 Speed:80 Delay Time:0.00
1	* Wait: Mold Opened Limit time:50.0 Delay Time:0.00
2	* Clip 1 ON: Delay time :0.00
3	* Sucker 1 OFF: Delay Time:0.00
4	* Fixture1 BeginDetect Delay Time:0.00
5	* Sucker1 BeginDetect Delay Time:0.00
6	* Mold end: Delay Time:0.00

The controller can control four groups of fixture, four groups of suction cup action and the teaching of fixture and fixture detection function. For coaxial action teaching, detection program should be taught after the fixture action.

When running to the jig on in automatic running, the jig fetches the item, and when running to the action of “jig start to detect”, if the corresponding jig confirms that the limit signal state is correct, the program continues to run, otherwise the alarm “take the item failed” and a pop-up box appear. If click the “Give up” button in the pop-up box (at this time the Y axis is at the home position), the program will return to the starting position and fetch the item again. If click “Continue” button, the program will continue to run to the next step. When running to jig off, the tool will put the item, and the “Jig off” action will detect relative confirmation limit signal in about 0.5s. If the signal is correct, the program will continue, otherwise the alarm will be “Fetching failure”.

**Important:** When the output of the fixture is cut off, the system will delay 0.5S before detecting the signal. If there is still a signal in the fixture detection, the system will alarm. If the teaching program is finished, the system no longer detects whether the fixture has a signal. When the detection signal is normal, there is no need to teach the detection end signal!

**Warn:** If the same fixture action in the program requires several on/off actions, the end detection must be taught.

**For example:** In Suction 1 ON, Suction 1 OFF, Suction 1 ON, Suction 1 OFF, it needs to teach end detection in the first Suck 1 OFF. Please do teach fixture and suction cup detection, otherwise the module may be damaged.

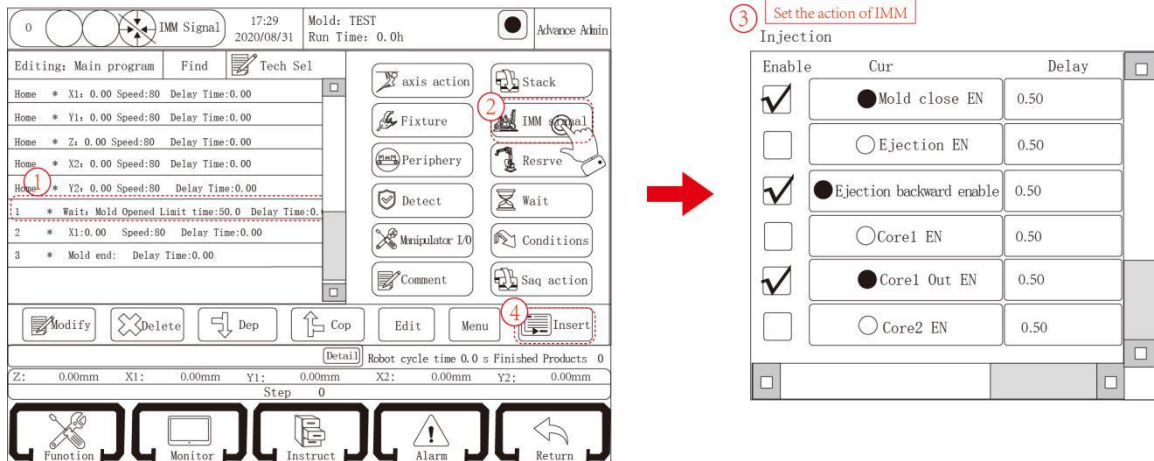
**Tip:** Because the negative pressure detection switch action takes time, and the program running speed is within 1  $\mu$ s, if to teach the detection action immediately after the fixture action, the system will alarm the failure of fetching.

**Solutions:**

1. Put the detection action after the rise (after a few steps).
1. Delay start detection, generally more than 0.5S. It does not affect the cycle.

### 5.2.5 Teaching of IMM Signal

Click the “IMM Signal” button to enter the signal editing page of the control injection molding machine, where the control injection molding machine lock, thimble, core pulling action can be set. As shown below:

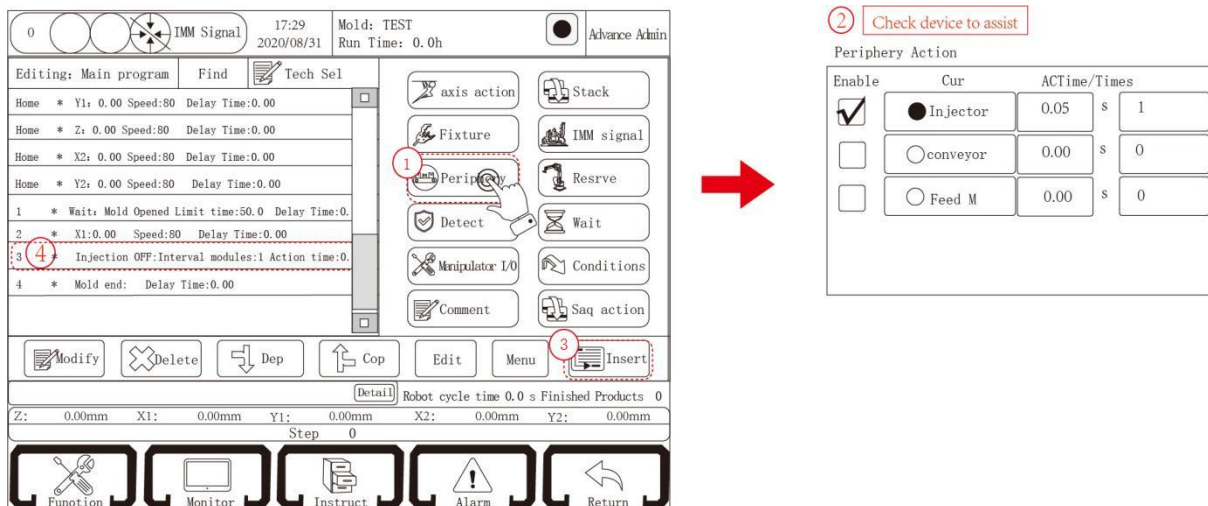


The indicator light is green for ON and gray for OFF. Teach an action on, then the signal starts to output. Teach an action off, then the signal stops output. “Ejection EN” and “Ejection backward enable” don’t cost cycle time.

**E.g.** Set the “Ejection EN” delay to 5s, then program will not stay in this step but directly run to the next program and start output after 5s.

### 5.2.6 Teaching of Auxiliary Equipment

Click Periphery button to enter the edit page of the auxiliary device. As shown below:



**Time:** Set the execution time of this auxiliary device, the auxiliary device is all time control, just teach the through action and reach the set execution After reaching the set execution time, the output will be automatically disconnected(the time will not occupy the cycle time at this time).

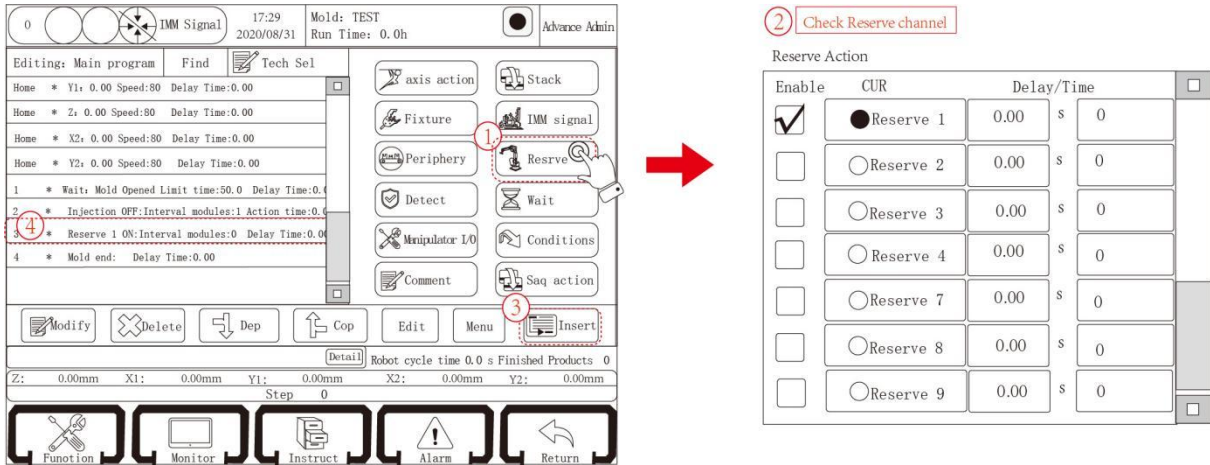
**The number of interval modules:** The auxiliary device outputs every few modules during the automatic operation. If the interval module is set as 3 and the execution time is 5s, the auxiliary device will output every 3 modules during the automatic operation, and will be automatically disconnected after every 5s.

**\*Note:** The actual count of the conveyor belt is related to the conveyor belt counter. For details, refer to the description of the belt counter in 6.2.2 Product Settings.



### 5.2.7 Reserve

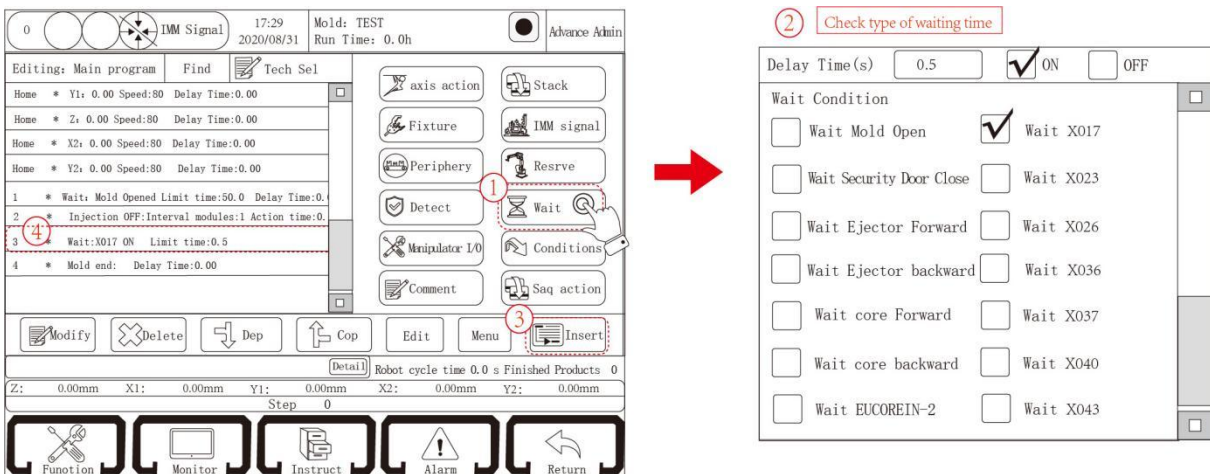
Click “Reserve” to enter the teaching page for reserve actions, as shown below:



This system sets up 8 groups of reserve output points. If the program teaches the reserved action, when running automatically, after running to the reserved pass action, the reserve point starts to output, after running to the reserve break action, the reserve point disconnects the output.

### 5.2.8 Wait

Click “Wait” button to enter the teaching page waiting for the input signal, insert the waiting input signal, automatically run to the step, only when the input point has signal input or no signal input can perform the next action. As shown below:



Each automatic running program must contain “Wait Mold Opened” program step. A new program already contains this program step by default and it cannot be deleted.

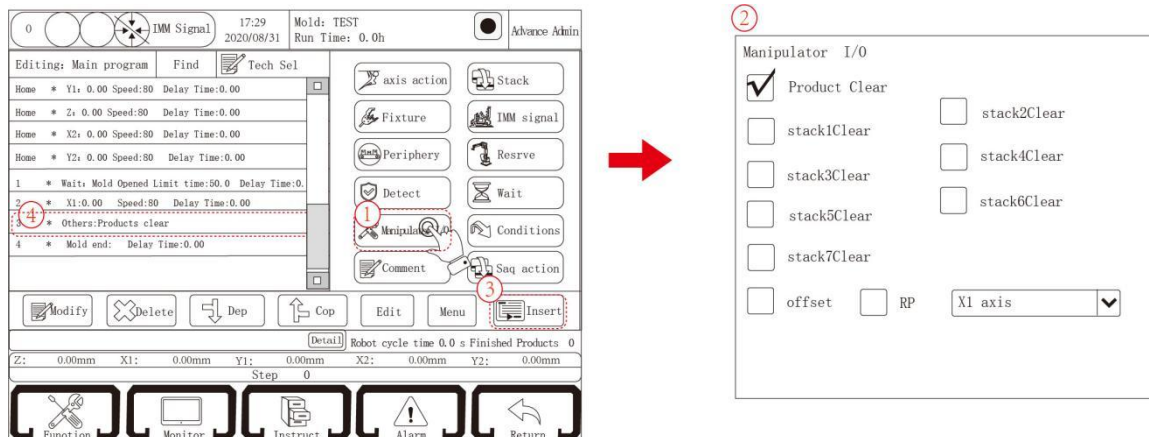
The waiting action can be inserted into the main program after the waiting time, ON or OFF is set in the delay box of the waiting page, or after the waiting action is inserted into the program, the waiting action can be selected, and then the edit button can be clicked to modify the time limit.

**Limit Time:** When program executes the waiting step, if the waiting signal is on and the limit time is set as 10 s, it will alarm after the waiting signal keeps longer than 10s in automatic running. If there is a signal input within 10s, the program continues.

**\*Notice:** Wait mold opened limit time can only be set in “Edit” - “Product Settings” - “Wait Mold Opened Limit Time” function.

### 5.2.9 Other

Click “Other” button to enter other pages for teaching.



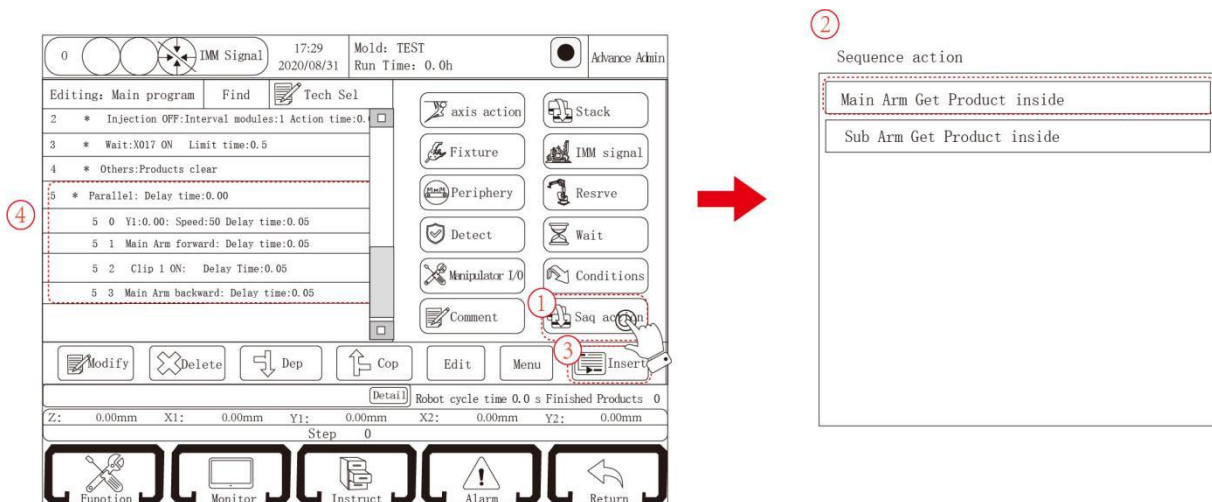
**Product clear:** This function is inserted into the program, automatically run, each time this step, the system will complete the product number zero, start counting again.

**Stack clear:** If this function is inserted into the program, automatically run, each step, the system will set the corresponding stack group zero, start counting again.

**Deviation preparation:** Select offset preparation and set offset positive/negative direction(positive if negative is not checked). Select axis that needs to be offset, such as X1 axis, then click insert to teach X1 axis action after bias action. The action here is to move a relative position.

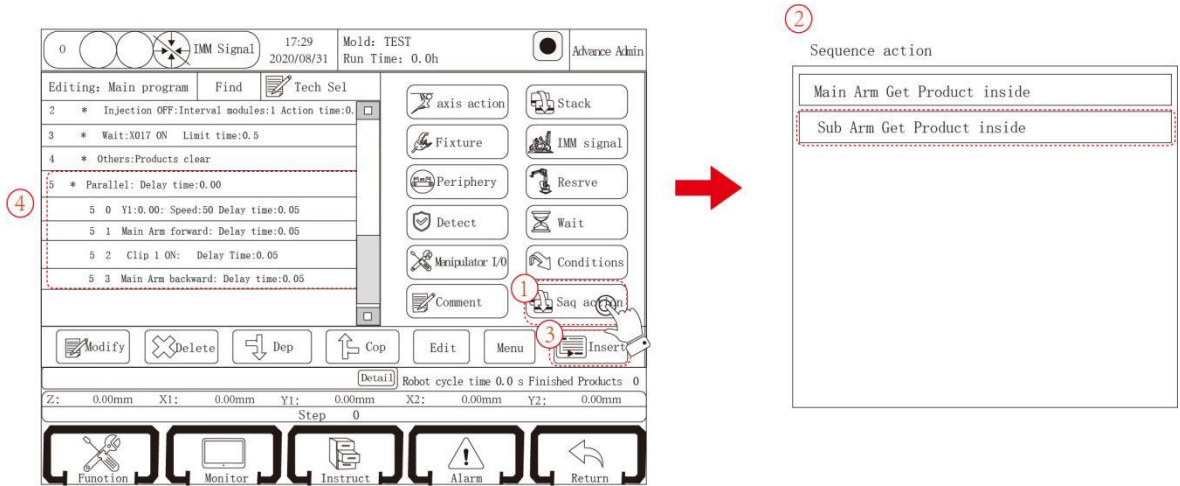
### 5.2.10 Sequence Action

Click “Sequence action” to enter the page.



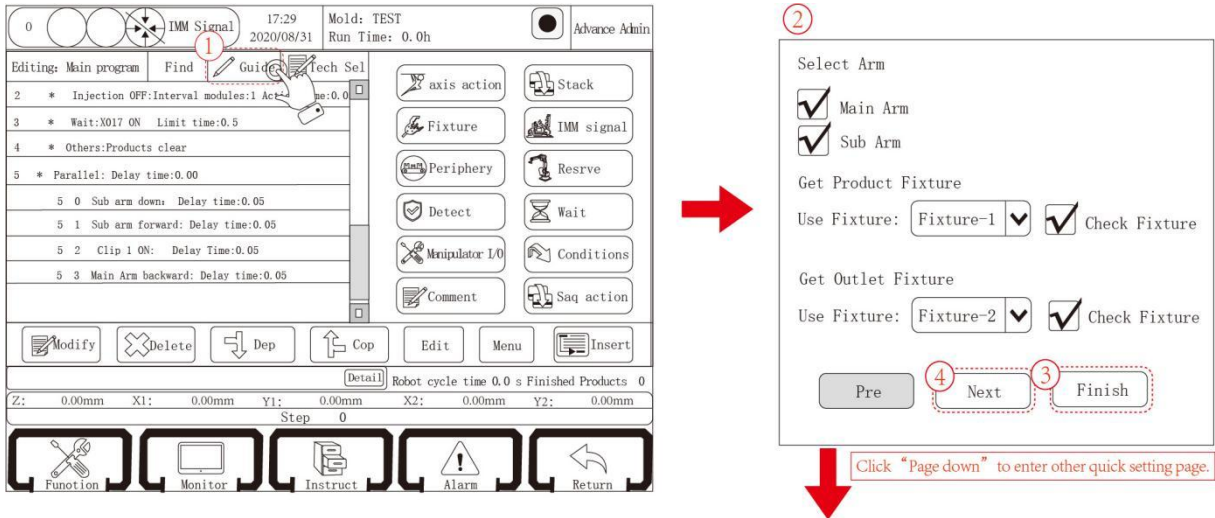
The sequence action is divided into the main arm internal fetching and the sub arm internal fetching, as shown below. This function is to take a series of actions of internal fetching as a secondary program to form a program block, in which the complete movement of internal fetching can be done.

The common use is to combine the two sequence actions as shown in the following figure. Because each sequence completes a series of actions, the two series of actions are executed at the same time, and the secondary program in the sequence does not interfere with each other, the main and sub arms can be independent but complete the fetching action at the same time.



### 5.2.11 Program Quick Setting

Click “Quick Setting” to enter the quick settings page. (This function needs to be turned on in System Settings – Senior Administrator. Refer to 6.2.9 System Settings for details.)





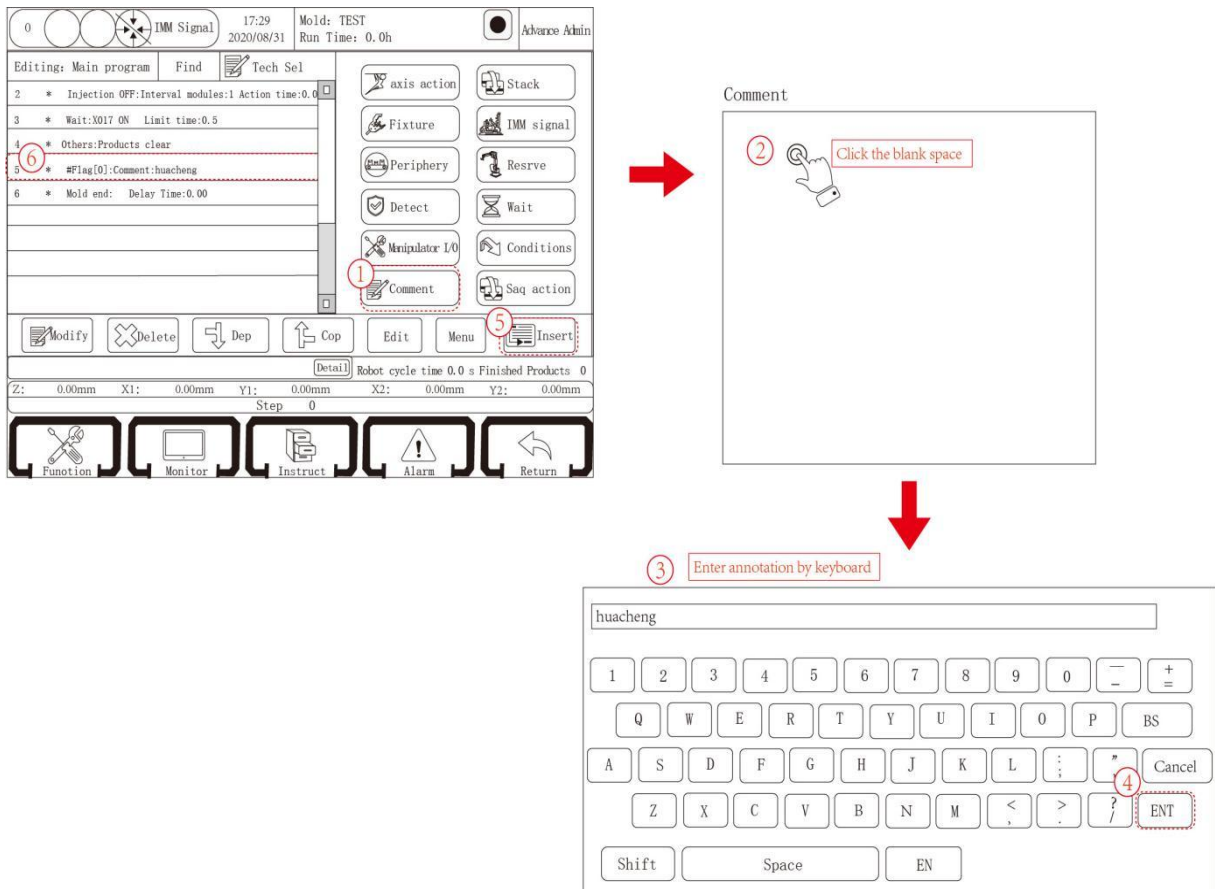
As shown above, it can only set the position and select actions. The program can automatically generate executable programs, eliminating the tedious teaching.

**Warning:** If this function is pressed by mistake, it is possible to make the position all set as 0. Please pay attention to distinguish and inform the customer!

### 5.2.12 Comment/Label

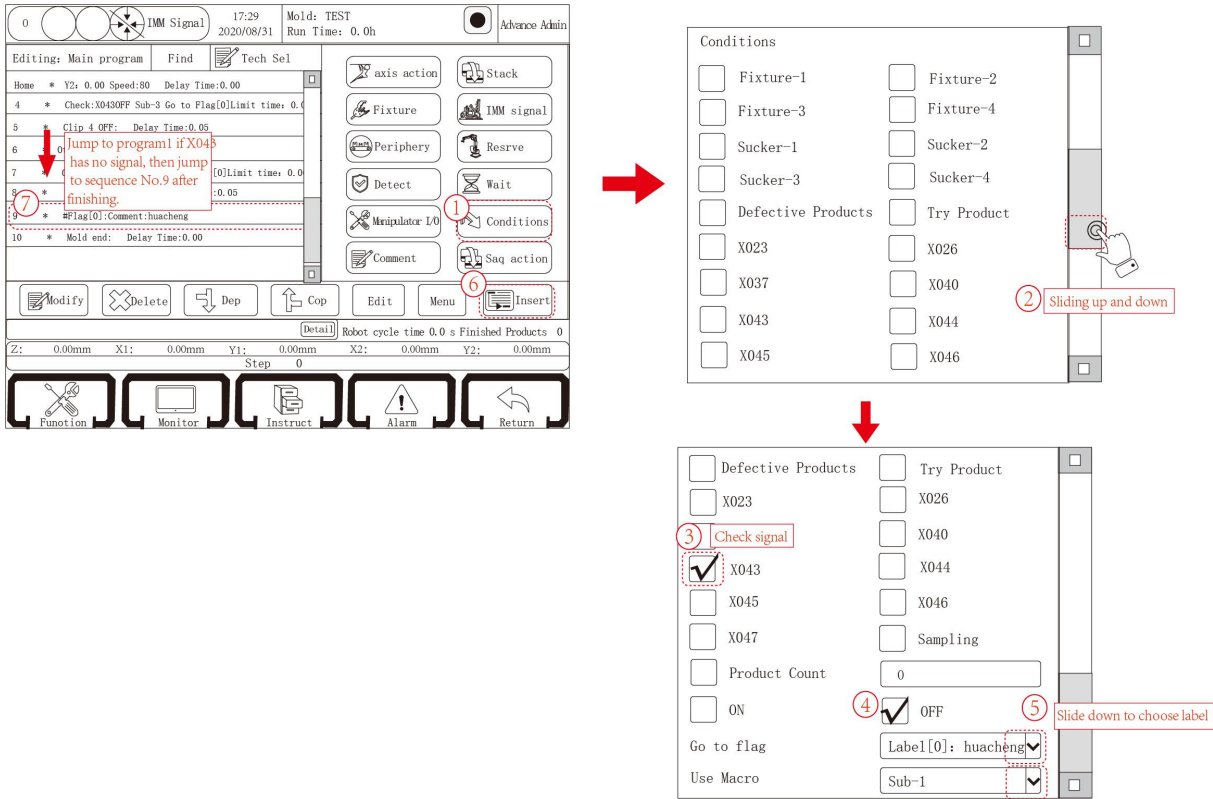
Click “Comment” button to enter comment/label teaching page. After inserting the annotation, it can explain the previous program or the next program. At the same time, you must insert “Comment” before inserting the condition into the main program. (If conditions of use must insert “Comment” )

Click on the blank bar of the comment, the input box will automatically pop up, enter the comment content in the box (click CH to switch between Chinese and English), then click the ENT key, and then insert the comment before the corresponding program step. The input box is shown as below:



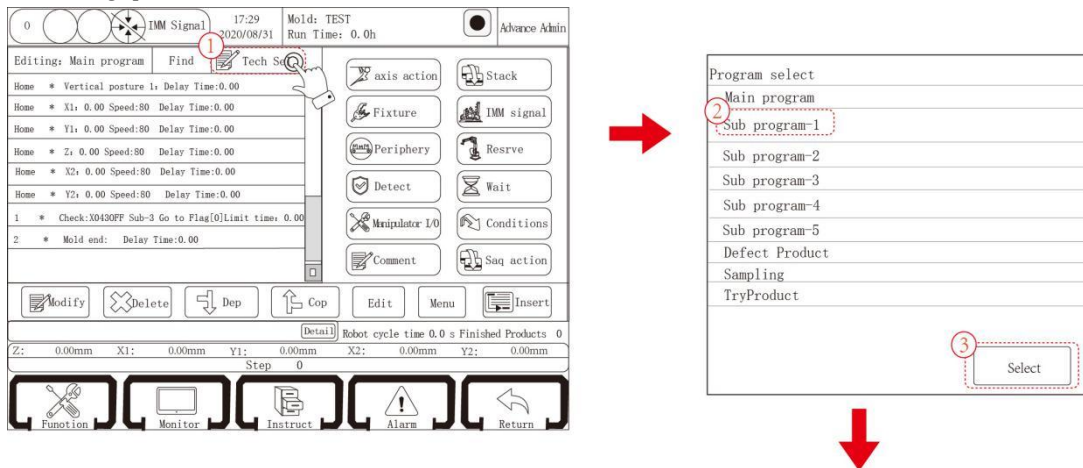
### 5.2.13 Condition

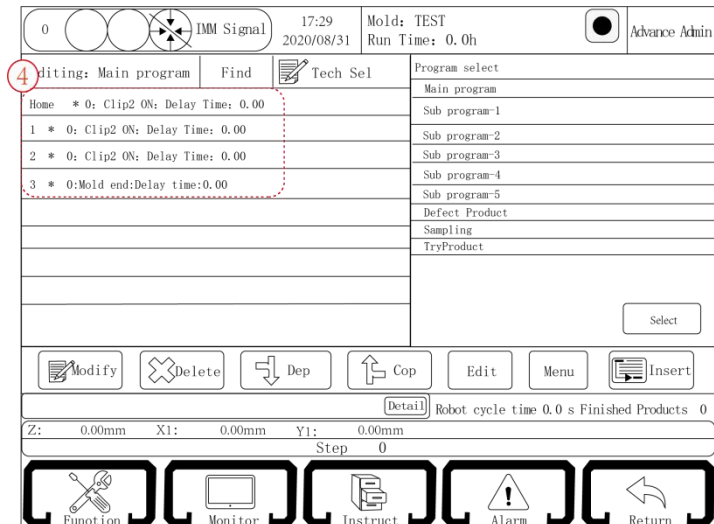
Condition is as an action here, used to judge current state in program and decide to activate subprogram or not. As following pictures:



**Important:** Set the label annotation teaching before condition teaching, otherwise the condition can not be inserted into the main program.

- (1) The teaching of condition involves three aspects: Comment, Condition and Sub program, which are respective but indispensable.
- (2) Use: When a condition is satisfied, the system jumps into the subroutine, and after the subroutine is executed, the system jumps back to the position of the main program label.
- (3) Conditions are divided into three types: input point ON/OFF, trial production, interval modules, reject and sampling.
- (4) You must insert a label before you can insert a condition program.
- (5) Click on the instruct selection, select the subroutine to be used, click the selection button, and enter the corresponding subroutine or main program to teach, as shown in the following pictures:





The following are examples of three types of conditions.

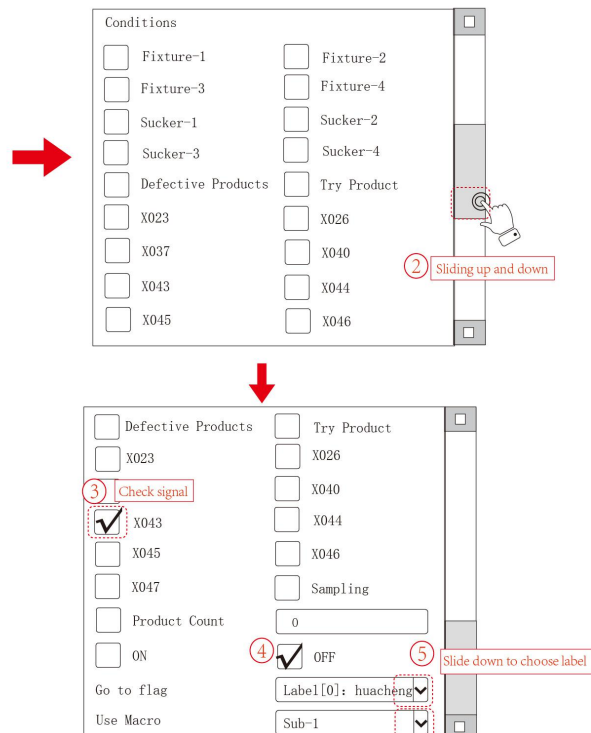
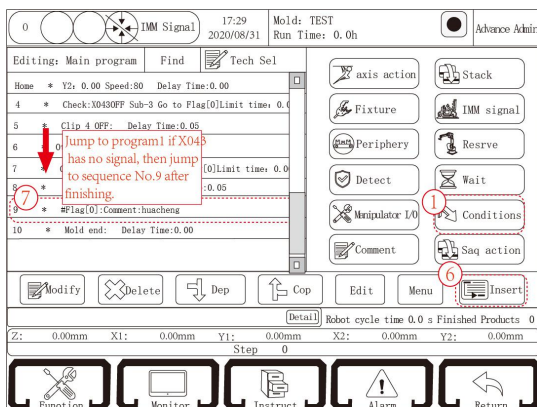
(1) IO input signal detection

According to the classification of conditional content, it can be divided into I/O signal class and system setting class. In the system setting classification, there are two conditions to set up in the stop state. The following is a list.

Type of classification	Specific circumstances
Signal class	Fixture (1, 2, 3, 4), suction (1, 2, 3, 4), X023、X026、X037、X040、X043、X044、X045、X046、X047、bad products
System Setting Class	Interval modules, trial production(need to be set to stop status-function-product setting page), sampling (need to be set to stop status-function-product setting page)

**Signal classification:** As the name implies, ON-OFF of the signal is used as the judgment condition, which is more flexible than the system setting classification.

**System setting classification:** By setting a certain operation logic, according to the setting of regular operation. Do not detect the signal, by judging the module of the program to judge.



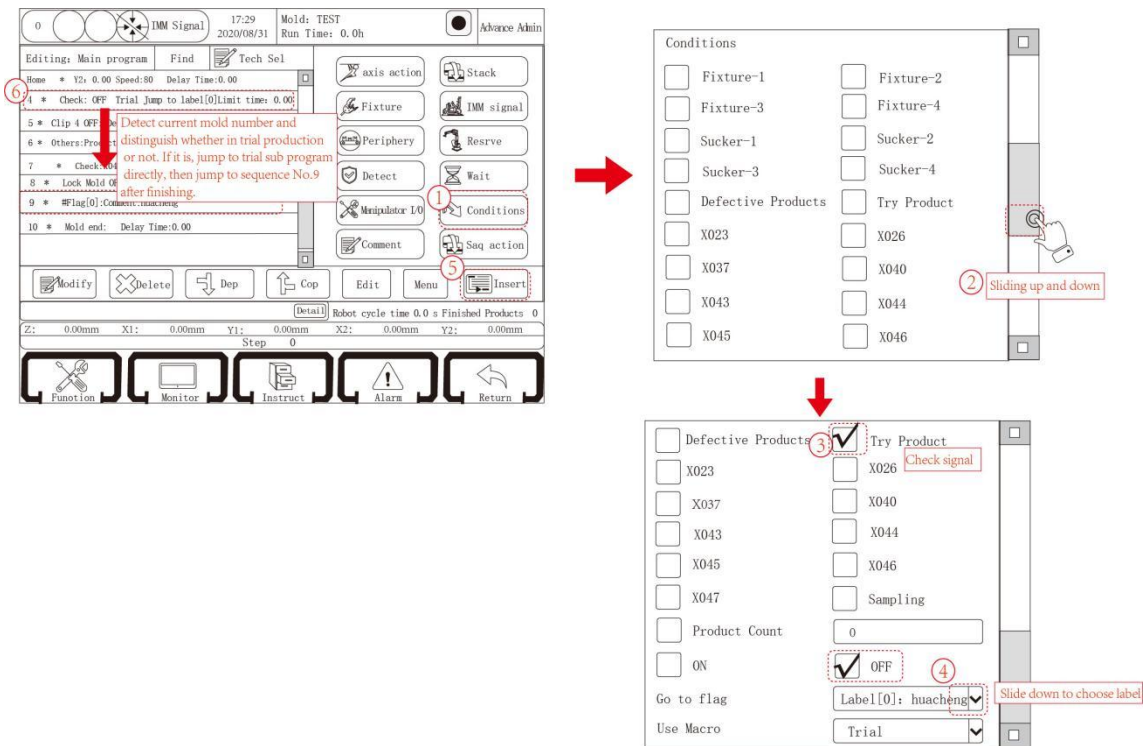
The above picture takes ON-OFF of the signal as the judgment condition, click “condition” button to enter the teaching page of the condition, select the signal “X43” and check the restriction condition “OFF” as the judgment condition, then insert the condition into the main program position.

**(2) Trial Production and Sampling**

Trial production and sampling are more special conditions, they can only jump to a special subroutine and only in the stop state-function-product setting page, more special, so they are classified as a class.

**Trial production:** Set the modulus in the stop state- Edit--Product Settings page, this module is run automatically after the end of the trial production. When running trial production, the number of finished products will be remembered, and only after the trial production will be remembered.

**Sampling:** A modulus is set in the stop state- Edit--Product Setting, which is sampled by a conditional jump look program at each interval.

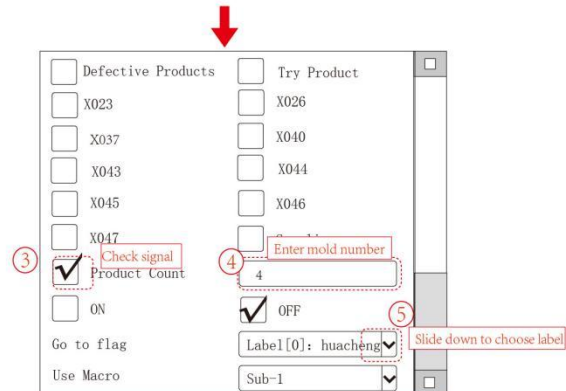
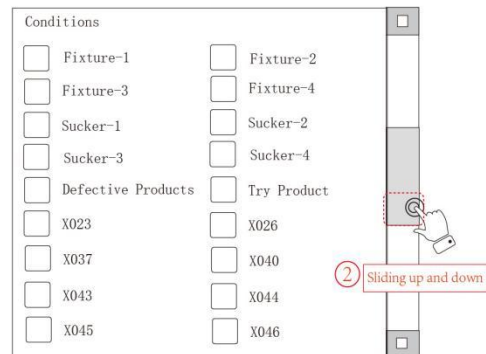
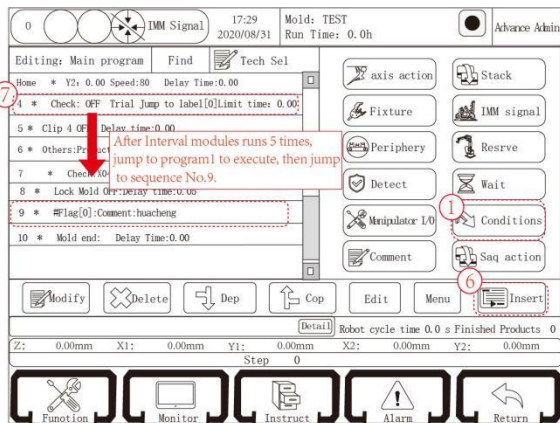


The above picture takes trial production as the judgment condition, click “condition” button to enter the teaching page of the condition, select trial production and insert the condition into the main program position. Set N modules for trial in products settings. (Refer to 6.2.2 Product Settings for details.)When it is time to be executed, previous N modules will jump to trial subprogram and back to Comment in main program after finishing. Only the N+1 module will not jump to the subprogram.

The logic of sampling is similar to trial production. There will be no further description.

**\*Notice:** Sampling and trial production can only jump to “sampling” and “trial production” subprogram.

### (3) Interval module



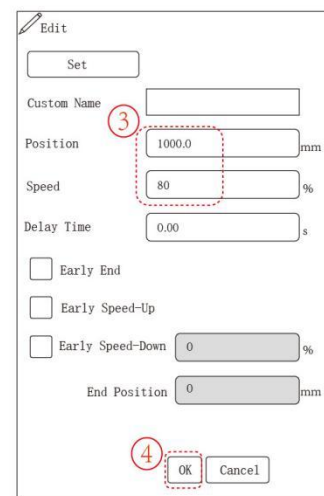
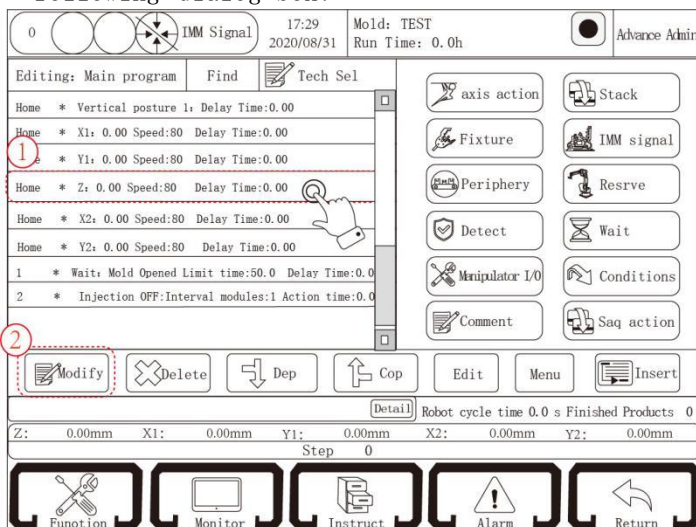
The above picture takes ON/OFF of interval modules as the judgment condition, click “condition” button to enter the teaching page of the condition, select interval modules and set n modules in text box after interval modules, then insert the condition into the main program. When it is time to be executed, it will jump to subprogram when the mold number is n+1 or times of it. Then jump back to Comment in main program after finishing. Other module will not jump to the subprogram.

**Tips:** 1. After the program runs to the end of the module, the number of completed products+1.

2. Interval module number can be set as 0, and it will jump in each module.

#### 5.2.14 Modification of Program Parameters

Click the program step to be modified, and then click “Edit” button to pop up the following dialog box:



Z Axis Edit Page



On the edit page, you can modify the Position, Speed, Delay Time and Early End Position of the current action or use the Early Speed-Up, Early Speed-Down, to modify the parameters to be modified, then click “OK” .

**Early end:** If the early end position is set as 200, and the position is set as 1000, the axis goes to the position of 800 to jump to the next step, and this step of the program will continue to execute to 1000.

**Early speed-down:** If the early end position is set as 200, the deceleration speed is 5%, the position is set as 1000, and the speed is set as 80%, then the axis runs from 0-800 at 80% speed and 800-1000 at 5% speed.

**Early speed-up:** If the early end position is set as 200, the acceleration speed is 5%, the position is set as 1000, and the speed is set as 80%, then the axis runs from 0-200 at 5% speed and 200-1000 at 80% speed.

**Reject enable:**

1. When not checked, in automatic running, the Z axis moves to 1500 position and then runs to 1300 position.
2. When checked, that is to use reject enable, if the reject signal is detected, Z axis moves to 1300 mm position while running external; if not, the Z axis moves to 1500 mm position. This function is unique to the Z axis.

**Note:** Reject enable function can only be used outside, can not be used inside!

## 5.3 Examples of Teaching Program

The following teaching programs will help you understand and practice the programming of the manipulator. When teaching the manipulator program of the mould by self, please set the position of the servo shaft and control the injection molding machine according to your actual situation.

### 5.3.1 Requirements

The program is used to take out the injection molding product and material head. The manipulator stops above the injection molding machine mold and waits for the injection molding machine to open the mold. The starting position of the five electric shafts of the manipulator is 0, and the fixture is vertical. After the injection molding machine opens the mold, the manipulator takes out the finished product and the material head, puts the material head into the crusher, puts the finished product into the conveyor belt, and the conveyor belt moves once per mold.

### 5.3.2 Procedures

- Adjust the manipulator to automatic state.
- The manipulator runs to the start point and waits for the injection molding machine to open the mold.
- Fetch the finished product with Sucker 1.
- By moving the X, Y axis, the manipulator leaves the module area and outputs the mold closable signal after detecting signal of fetching finished.
- The manipulator puts the material head and the finished product on exact position respectively.
- Every time a finished product is put on the conveyor belt, it is started and runs for 3 seconds.
- The manipulator returns to the starting position standby.

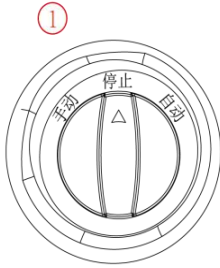
Action taught	Note
Start*Posture vertical 1: Delay time :0.00	Standby point
Start*X1: 100.00 Speed:80 Delay time :0.00	
Start*Y1: 0.00 Speed:80 Delay time :0.00	
Start*X2: 100.00 Speed:80 Delay time :0.00	
Start*Y2: 0.00 Speed:80 Delay time :0.00	
Start*Z: 200.00 Speed:80 Delay time :0.00	
1 *Wait: mold opened limit time:60.0 Delay time :0.0	Wait mold opened
2 *X1:400.00 Speed:80 Early end enable, End position:150 Delay time : 0.00	Fetch point
3 *Y1: 250.00 Speed:80 Early deceleration enable: Speed:5 End position:100 Delay time : 0.00	
4 *X2:500.00 Speed:80 Early end enable, End position:150 Delay time : 0.00	
5 *Y2: 350.00 Speed:80 Early deceleration enable: Speed:5 End position:100 Delay time : 0.00	Fetch
6*Suck1 ON: Delay time :0.00	
8 *Wait: thimble in place ON limit time:10.0	Rise to outside
9 *Y1: 0.00 Speed:80 Early end enable, End position:250 Delay time :0.00	
10 *X1:50.00 Speed:80 Delay time :0.00	
11 *Y2: 0.00 Speed:80 Early end enable, End position:350 Delay time :0.00	
12 *X2:50.00 Speed:80 Delay time :0.00	Fetch test
13 *Suck1 start detecting Delay time :0.00	
14 *Mold lock ON Delay time :0.50	Mold closable
15 *Z:1400.00 Speed:80 Delay time :0.00	Placement point
16 *X1:213.00 Speed:80 Delay time :0.00	
17 *Y1: 352.00 Speed:80 Delay time :0.00	
18 * X2: 210.00 Speed:80 Delay time :0.00	
19 * Y2: 362.00 Speed:80 Delay time :0.00	
20 *Suck1 OFF: Delay time :0.00	Manipulator rises. Conveyor works.
21 *Y1: 00.00 Speed:80 Delay time :0.00	
22 * Y2: 00.00 Speed:80 Delay time :0.00	
23 *Conveyor ON: Interval module: 0 Action time :3.00	
24 *End Module: Delay time :0.00	



## Chapter 6 Stop Status

### 6.1 Program Management

Under the stop state, click “Record” button to enter the file page, where the mold number can be New, Copy, Load and Delete.



0	IMM Signal	17:29 2020/08/31	Mold: TEST Run Time: 0.0h	Advance Admin
All select	All unselect	Inverse	<input checked="" type="checkbox"/> Local	<input type="checkbox"/> USB Export
	Find		<input type="checkbox"/> USB Import	Clear
Mold Name		Create Date		
1: KK		2020/12/07	10:57:44	New
2: KL		2020/12/07	10:57:44	Copy
3: TEST		2020/12/07	10:57:44	Load
Existing modules				Delete
				Export
				EX Print
				Import
Original File Name	New File Name			
				[Detail] Robot cycle time 0.0 s Finished Products 0
Z: 0.00mm	X1: 0.00mm	Y1: 0.00mm	Step 0	
Function	Monitor	Record	Alarm	Return

**New:** Enter the name of the new mold number in “new file name” text box, then click the “New” button to create a new blank mold number program. Letters and numbers can be used in file names.

**Copy:** After entering the new name in “new file name” text box, click the stored mold number name, and then click “Copy” button to copy the stored mold number program into the new mold number file.

**Load:** Click the existing mold number program and click “load” to load selected program. Current mold number will be changed to the name of loaded program after loading completed.

**Delete:** Click the stored mold number program, and then click “Delete” button to delete the mold number.

**Note:** The mold number being in use can not be deleted.

**Export:** After inserting the USB, check the “USB Export” box. Click the stored module program, and then click the “Export” button to export the selected program to USB flash drive.

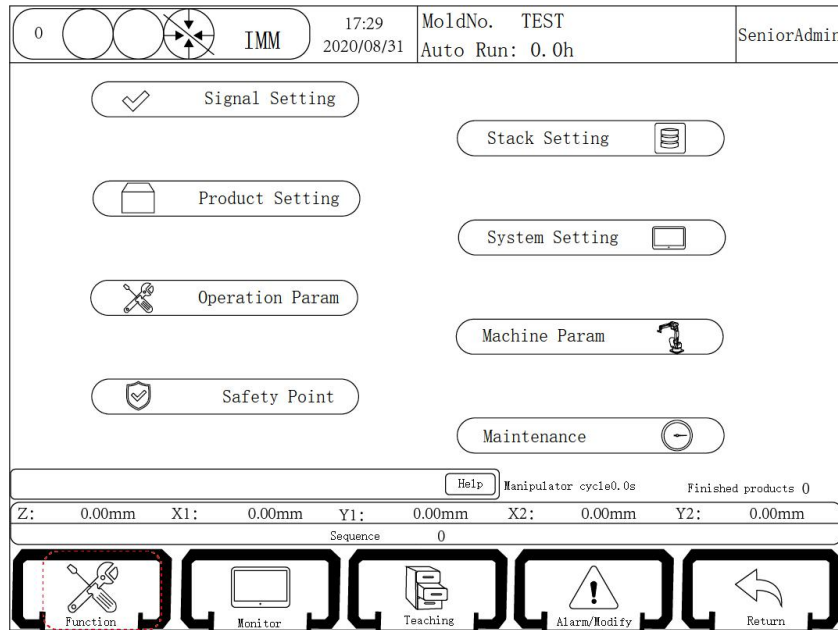
**Import:** After inserting the USB, check “USB import” to see the program in the USB. Check the program to be imported and click “Import” then you can import the program from the USB flash drive to the manual controller. If the import is successful, the imported mold number will appear in “Local Mold Number” .

**Search:** Enter the required mold number name in the box, click search to find required mold number.

**Clear:** Clear the search records.

## 6.2 Function Setting

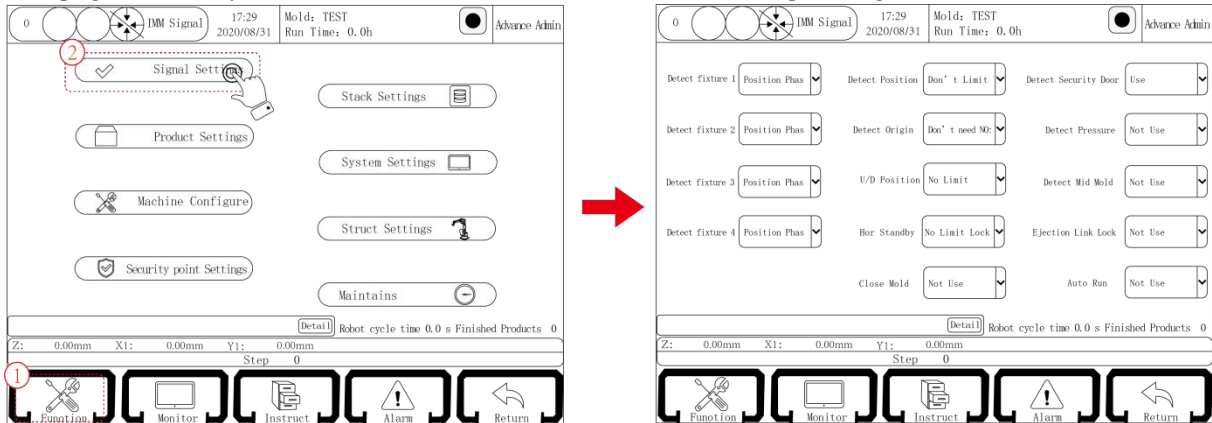
Click “Function” button in the lower left corner of the screen in stop state to enter the function setting page. As shown below:



The function settings page contains eight sub pages including “Signal Setting”, “Product Setting”, “Operation Param”, “Safety Point”, “Stack Setting”, “System Setting”, “Machine Param” and “Maintenance”.

### 6.2.1 Signal Setting

Click “Signal Settings” button on the screen to enter the signal detection settings page, where you can set whether to detect certain input signals or not.



#### (1) Fixture(1, 2, 3, 4) detection

**Positive phase:** The corresponding fixture switch positive phase detection, when the fixture confirms the limited signal input, it represents the fixture has taken the object successfully; when the corresponding fixture confirms no limit signal input, it represents the fixture has failed to take the object.

**Negative phase:** The corresponding fixture switch negative phase detection, when the fixture confirms no limit signal input, it represents the fixture has taken the object successfully; when the corresponding fixture confirms the limit signal input, it represents the fixture has failed to take the object.

- Important:** ① No matter the positive or negative phase is selected, the detection can not have signal input when the fixture has no action.  
 ② If the fixture has no teaching detection, the output is not influenced by confirmation signal.
- (2) **Transverse posture**  
**Horizontal:** When manipulator crossing in/out manually, the fixture must be in a horizontal state. When teaching automatic program, transverse posture must be horizontal.  
**Vertical:** When manipulator crossing in/out manually, the fixture must be in a vertical state. When teaching automatic program, transverse posture must be vertical.  
**No limit:** When manipulator crossing in/out manually, there is no limit to fixture state. When teaching automatic program, transverse posture can be taught as needed.
- (3) **Origin reset**  
**Not need mold opened signal:** When the origin is reset, no matter whether there is a mold opened signal, the origin reset action can be carried out.  
**Need mold opened signal:** When the origin is reset, it needs mold opened signal to execute origin reset.
- (4) **Up/Down posture**  
**Horizontal:** To start origin rest, the fixture must be horizontal when the arm moves up and down.  
**Vertical:** To start origin rest, the fixture must be vertical when the arm moves up and down.  
**No limit:** There is no limit to the posture of fixture.
- (5) **Horizontal standby**  
**Limit lock mold:** In horizontal standby, arm should rise and be horizontal before locking.  
**Not limit lock mold:** In horizontal standby, once the arm rises, the mold is locked.
- (6) **Mold lock**  
**Use:** There is a “Mold closed” signal after the “Mold Opened” signal, the manipulator will descend to fetch, otherwise it will alarm that mold lock is not in place.  
**Not use:** Do not detect the “Mold closed” signal.
- (7) **Safety door detection**  
**Use:** When the manipulator runs automatically, the safety door signal is detected all the time. If there is nor signal, alarm immediately.  
**Not use:** When the manipulator runs automatically, the safety door signal is detected only when the arm descends inside. If there is no safety door signal, alarm immediately.  
**\*Note:** When checking “Not use”, as the manipulator descending inside, the system must detect the safety door signal, too. This is a safety mandatory measure.
- (8) **Pressure detection**  
**Use:** The manipulator detects the gas pressure. If the pressure does not reach the set value, it will alarm.  
**Not use:** The manipulator does not detect the gas pressure. No matter whether the air pressure reaches the set value or not, it will not alarm.
- (9) **Mid-mold board**  
**Use:** The manipulator detects the signal of the mid-mold board, and it will alarm if no signal is detected while the arm is descending inside. Please select “Use” if the mold is three-board.  
**Not use:** The manipulator does not detect the signal of the mid-mold board.
- (10) **Thimble link lock**  
**Not use:** Allow the thimble signal to be output all the time.

**Use:** After the mold is in place, the thimble signal will be off. When the program teaches the thimble step, the thimble will be output.

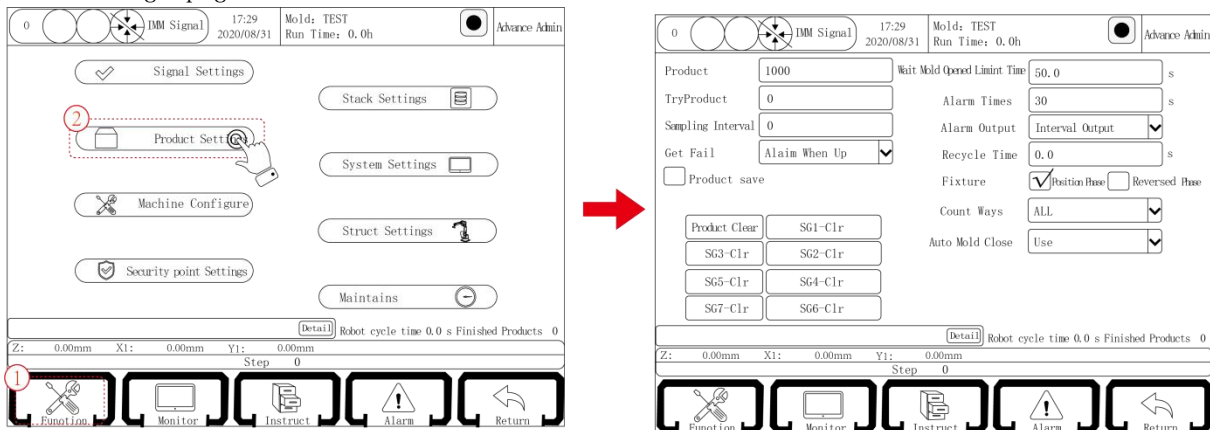
### (11) Fully automatic

**Not use:** The manipulator does not detect the automatic signal of the injection molding machine.

**Use:** The manipulator detects the automatic signal of the injection molding machine, and if there is no automatic signal in automatic state, the alarm will be sent.

## 6.2.2 Product Setting

Click “Product Setting” button on the function settings page to enter the product settings page. As shown below:



**Product:** The number of products planned to be produced. When the actual production is up to this value, alarm will be sent; if the value is set as 0, it will not alarm.

**Trial product module:** Set the number of products for trial production.

**Sampling interval:** Set the interval modulus for product sampling.

**Wait mold opened limit time:** The manipulator waits for the opening signal time, no opening signal in the set time, then alarm.

**Fetch fail:**

**Internal up alarm:** After detecting the failure, send an alarm when arm rises inside.

**Real time alarm:** Send an alarm the moment detecting the failure.

**Alarm time:** When an alarm occurs, the time when the warning device makes a sound.

**Alarm output:**

**Interval output:** When alarm occurs, the alarm lamp flashes.

**Long output:** When the alarm occurs, the alarm lamp is always output.

**Cycle time:** When selecting the lock mode in place function, time taken from when the system receives the mode-locked signal (that is, the mold closed signal) to when the mold closable signal is off.

**Fixture:**

**Positive:** The fixture is the posture of the moving die product.

**Negative:** The fixture is the position of the mould product, and the horizontal and vertical of the fixture will automatically reverse.

**Product clear:** Click this button to zero the number of finished products.

**Conveyor counter:** Conveyor counter must be selected as all.

**Product save:** The current output can be remembered after power failure.

**Stack clear:** Click the button to zero the number of stacks that the stack group completes.

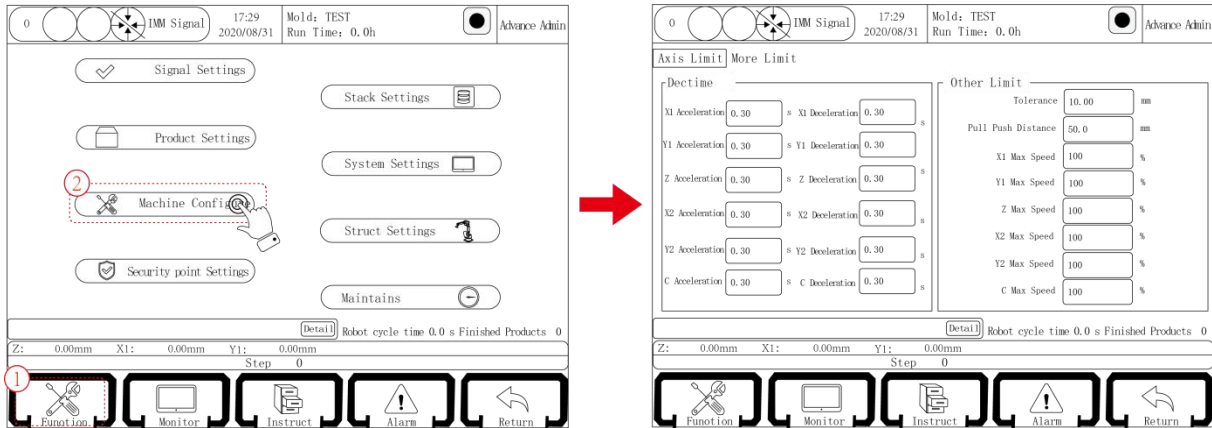
**Auto Mold Close:**

**Use:** After the third switch hits the automatic state, the die can be output immediately.

**Not use:** After the third shift switch hits the automatic state, the switch mode will not output automatically. When the switch automatically runs to the lock mode action, the switch mode can only start the output.

### 6.2.3 Operation Parameter

Click “Operation Param” button on the function setting page to enter the run parameter setting page. As shown below:



**Tolerance:** The difference between the distance from the instruction run and the distance from the actual run feedback. (This parameter does not affect system positioning accuracy)

**Crosswise space:** If the X1, X2 are servo shafts, set the safe distance between the main arm and the auxiliary arm.

**Internal acceleration/deceleration time:** Set the acceleration/deceleration time of servo motor in type.

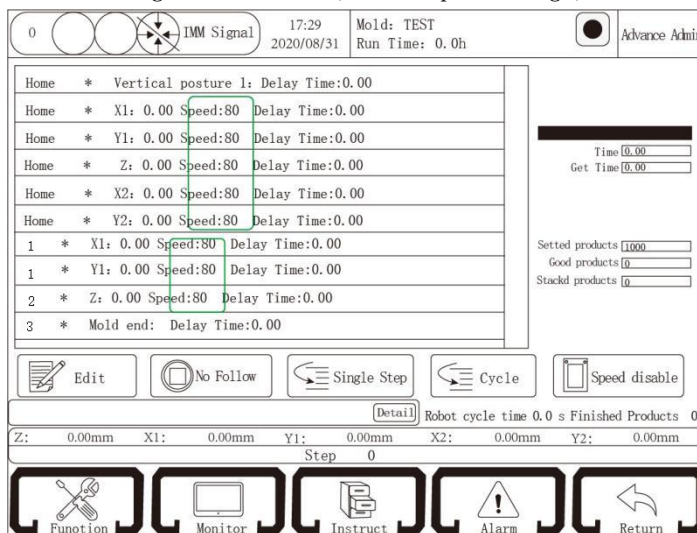
**External acceleration/deceleration time:** Set the acceleration/deceleration time of servo motor outside the type.

**Manual acceleration/deceleration time:** Set the acceleration and deceleration time of servo motor in manual state.

**Speed limit:** Set the maximum operating speed of the servo motor in %.

### 6.2.4 The Relationship between Several Speeds

At full automatic operation, the speed depends on the **overall speed** of the red circle and the **step speed** of the green circle. (all in percentage)



$$1. \text{ Real Speed} = \text{Overall Speed} \times \text{Step Speed}$$

- (1) If the actual operating speed is 100 %, the pulse is 500 . The general corresponding servo speed is 3000 rpm.
- (2) Assuming a overall speed of 80 and a step speed of 80, if the actual running speed is 64 %, that is, the corresponding pulse is 320 KHz, the corresponding speed is 1920 rpm.

(3) In Function-Running parameters, you can adjust the maximum speed of each axis. (The actual speed can not exceed the maximum speed)

Supposed that the maximum speed of the X axis is set as 50, the overall speed is 80 and the X axis step speed is 80.

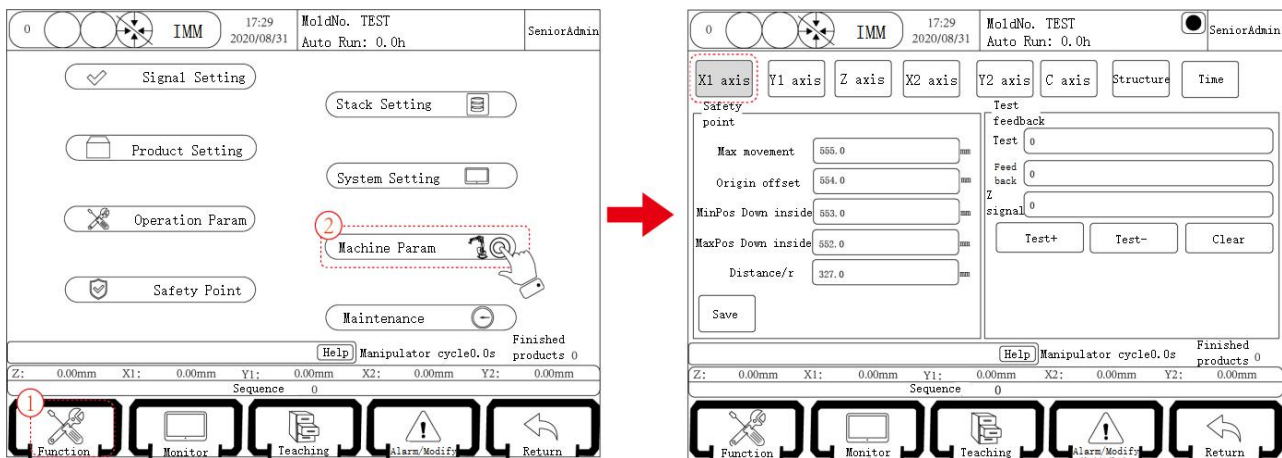
The actual running speed of X axis is 64% and this value is greater than the maximum speed, then the X axis still runs at the highest speed 50 and the corresponding pulse is 250 KHz, corresponding rotational speed is 1500 rpm.

### 6.2.5 Safety Point

In Security Point Settings page the parameters of the axis are set uniformly, except for the restricted pages set by the security point, the same pages will no longer be introduced further.

#### 6.2.5.1 X1, X2 Axis Parameters

Click “Machine Setting” button on the function setting page to enter the machine parameter setting page, where you can set the parameters of each axis. After entering the page, go directly to the X axis parameter settings:



**Motor reverse:** When motor rotates anticlockwise by default, the axis moves away from the origin; if checking motor reverse, the motor rotates anticlockwise and to the origin.

**Max movement:** Set the maximum distance of X axis movement.

**Origin offset:** (This feature should check the origin bias in the structure-origin definition, otherwise the value can not be set) If the bias is positive, continue to move a certain value away from the origin after returning to the origin. If it is negative, continue to move a certain value to the origin after returning to the origin. Assuming that the rotation distance is 20 and the bias value is -40, the motor continues to take two turns to the origin after returning to the origin.

**Note:** After the offset is completed, the coordinates are still shown as 0.

**MinPos Down inside:** When the Y axis descends into the mold, the minimum position of the X axis can be moved.

**MaxPos Down inside:** When the Y axis descends into the mold, the maximum position of the X axis can be moved.

**Test+:** Carry out motor positive rotation test. Normally, test and feedback show 10000.

**Test-:** Carry out motor reverse test. Normally, test shows 10000 and feedback shows -10000.

**Tip:** If the feedback is not correct, modify the parameters of the servo feedback pulse direction.

**Important:** The moving position of the X axis also depends on the parameters in the limit. If the maximum movement of the X axis is adjusted, the limit also needs to be adjusted, otherwise the maximum movement can not be reached.

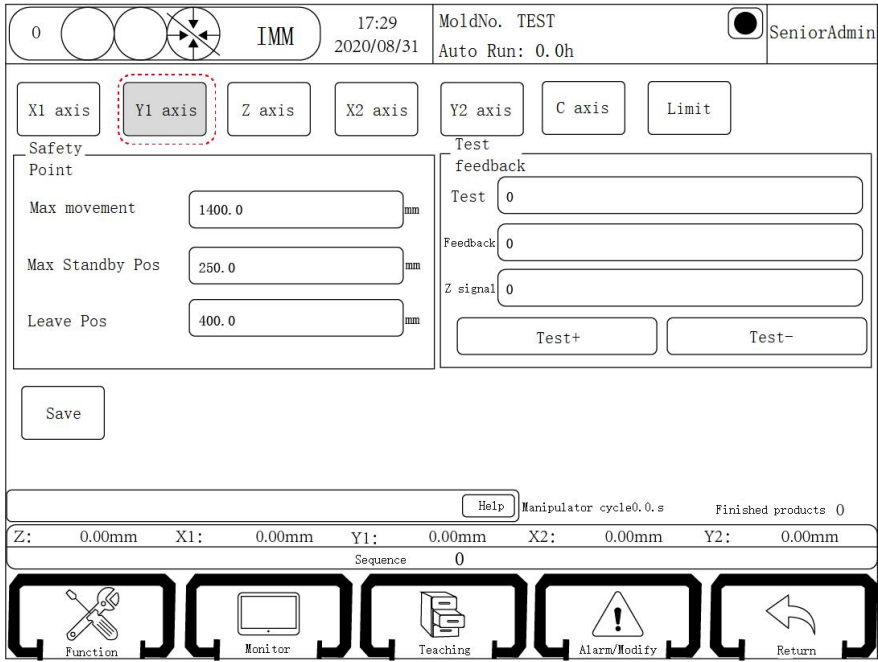


**Distance per rotation:** Set the distance of each servo shaft motor running in one turn. Click positive rotation of the motor to measure the distance from the actual operation of the corresponding shaft, which is the distance from which the shaft motor rotates in a circle.

**Warn:** If set incorrect, it may cause machine malfunction.

Motor forward and reverse rotation is an important measure to test motor direction, that is, to confirm the direction of origin. It is the first step of debugging the machine. The reverse direction of all axes is the direction of origin.

**6.2.5.2 Y1, Y2 Axis Parameters**



**Max Standby:** Set the max standby position of Y axis.

**Leave Pos:** Position where Y axis descends and leaves the origin point. If set as 400, it will send alarm if the Y origin switch still has signal when the axis descends below 400.

**Tip:** This param ensures the operation of Y axis motor. (normal structure) Please set a large value because of delay time of switch action (Larger than length of origin iron sheet)

**Test+:** Carry out motor positive rotation test. Normally, test and feedback show 10000.

**Test-:** Carry out motor reverse test. Normally, test shows 10000 and feedback shows -10000.



### 6.2.5.3 Z Axis Parameters

0		IMM		17:29 2020/08/31		MoldNo. TEST Auto Run: 0.0h		SeniorAdmin	
X1 axis	Y1 axis	Z axis	X2 axis	Y2 axis	C axis	Limit			
Safety Point				Test feedback					
Internal safety zone 1400.0 mm				Test 0		Feedback 0		Z signal 0	
External safety zone 250.0 mm				Test+		Test-			
Distance per rotation 400.0 mm				Save					
				Help		Manipulator cycle0.0.s		Finished products 0	
Z:	0.00mm	X1:	0.00mm	Y1:	0.00mm	X2:	0.00mm	Y2:	0.00mm
Sequence 0									
Function		Monitor		Teaching		Alarm/Modify		Return	

**Internal safety zone:** Set the location of the internal fetching safety zone.

**External safety zone:** Set the location of the external placement safety zone.

### 6.2.5.4 C Axis Parameters

0		IMM		17:29 2020/08/31		MoldNo. TEST Auto Run: 0.0h		SeniorAdmin	
X1 axis	Y1 axis	Z axis	X2 axis	Y2 axis	C axis	Limit			
Safety Point				Test feedback					
Transverse safe range (less than) 20.0 mm				Test 0		Feedback -1		Z signal -1	
Transverse safe range (more than) 400.0 mm				Test+		Test-			
Save									
				Help		Manipulator cycle0.0.s		Finished products 0	
Z:	0.00mm	X1:	0.00mm	Y1:	0.00mm	X2:	0.00mm	Y2:	0.00mm
Sequence 0									
Function		Monitor		Teaching		Alarm/Modify		Return	

**Max Rotation:** A maximum range of C axis rotation is 360 degrees.

**Origin offset:** The range is (-90,+90).

If the value is positive, keep moving toward the origin for a distance.

If the value is negative, move back to the max displacement for a distance.

**\*Note:** The coordinate is still zero after completing offset.

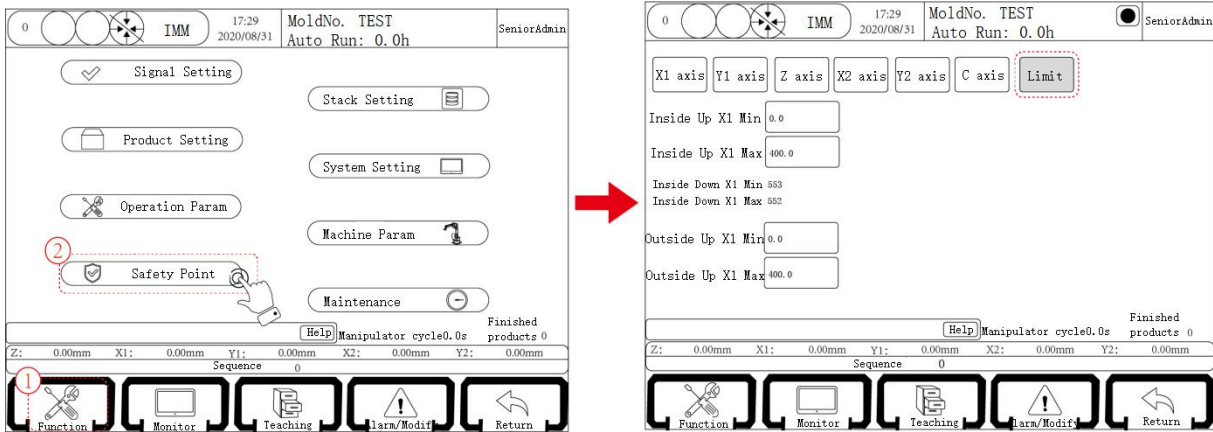
**Transverse safe range:** Limit the safety angle of the fixture during horizontal action.

As shown above, (0-20;300-360) is the safety range of the C axis, that is the horizontal state.

**\*Notice:** This parameter is valid only when the C is a servo shaft. This parameter is invalid when the C is a pneumatic shaft.

**Tip:** After the C axis returns to the original point, it is in a vertical state.

### 6.2.5.6 Limit



**X axis Min position when up internal:** A minimum position allowed of the X1 axis when the arm rises inside mold.

**X axis Max position when up internal:** A maximum position allowed of the X1 axis when the arm rises inside mold.

**X axis Min position when up external:** A minimum position allowed of the X1 axis when the arm rises outside mold.

**X axis Max position when up external:** A maximum position allowed of the X1 axis when the arm rises outside mold.

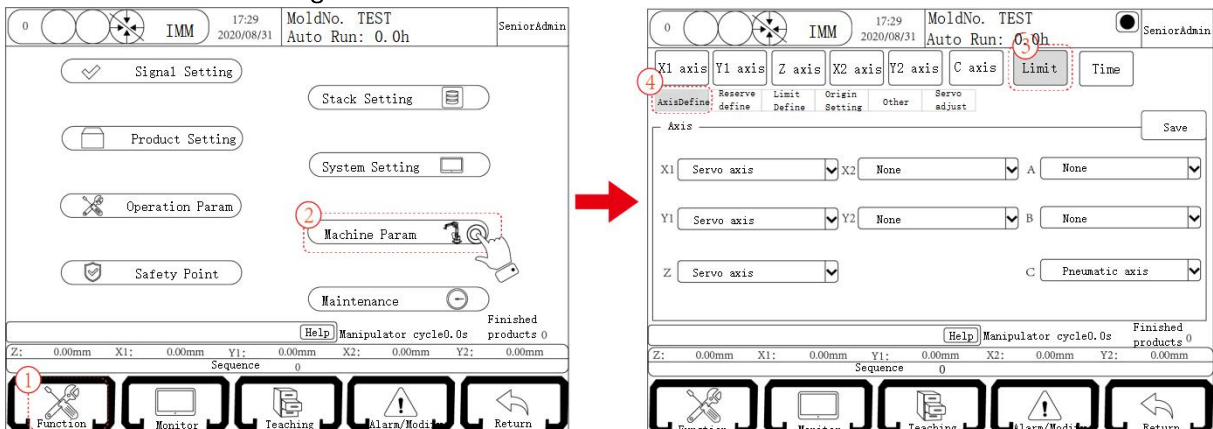
**Note:** The minimum and maximum position of X1 axis descending inside the mold are modified in the mechanical parameter page or the safety point setting page X1 axis.

**E.g.** The X1 and X2 axes are at both ends of the drawing beam by default, so their mechanical length is the same as the maximum displacement. In order to prevent the collision between the two axes, the drawing distance X1 the maximum displacement of the current coordinate value of the axis X2 the current coordinate value of the axis, that is:

If the length of the beam is 400, the maximum movement of the X1,X2 is 400. When the current position of the X1 is 200, the maximum X2 can only reach 150 200 150 50 (drawing distance)=400.

### 6.2.6 Machine Parameter Structure

#### 6.2.6.1 Axis Define Page of Structure:



**Structure:** It is divided into “Axis Define”, “Reserve Define”, “Limit Define”, “Origin Setting”, “Other Define” and “Servo adjust”.

**Axis define:** Each axis can be set to be pneumatic/servo/step/none. Each should be selected as servo shaft or pneumatic shaft according to machine condition.

**Tips:**

1. This system is 5-axis system by default, that is, X1、X2、Y1、Y2 and Z axes should be selected as servo axis, otherwise, it may cause system faulty.
2. If the machine is bilateral, the A shaft should be selected as pneumatic shaft.

**6.2.6.2 Reserve Define Page of Structure:**

Please check “Reserve” for all the options because this product no longer uses position adjustment function.

**Y042:** Check Stop lamp. Monitor output page displays as stop lamp, Reserve checked displays as Reserve 9.

**Y043:** Check Run lamp. Monitor output page displays as running lamp. Reserve checked displays as Reserve 10.

**Reserve 1 Reserve 2 Not interlocked:**

**Check:** Reserve 1 and Reserve 2 outputs do not affect each other.

**Unchecked:** Reserve 1 and Reserve 2 interlocking, that is, if Reserve 1 has output, Reserve 1 output signal will be off when Reserve 2 has output; if Reserve 2 has output, Reserve 2 output signal will be off when Reserve 1 has output. These two signals cannot output at the same time.

**6.2.6.3 Limit Define Page of Structure:**

Limit definition is divided into single/double arm selection and limit switch signal selection.

**Single Arm:** In the manual state, only teach main arm action, and the buttons “X2+” , “X2- ” , “Y2+” , “Y2- ” are invalid.

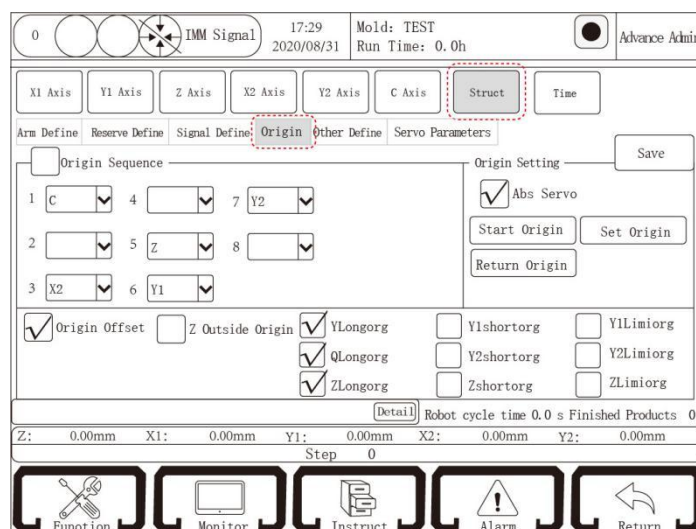
**Double Arms:** In the manual state, the main arm and the sub arm actions can be taught, and the sub arm key is valid.

Main arm: Descending limit, backward limit, forward limit.

Sub arm: Descending limit, backward limit, forward limit. If the sub arm is an pneumatic shaft, the limit is effective. When the corresponding pneumatic shaft is operated, the limit signal must be given before the program can perform the next step, otherwise the alarm will be sent.

**\*Note: Limit definition is valid only for pneumatic axis and invalid for servo axis.**

#### 6.2.6.4 Origin Define Page of Structure:



#### ABS servo:

**Check:** Absolute value way back to origin.

**Not checked:** Incremental way back to origin.

**\*Notice:** After modifying the return origin mode and saving, it needs to exit the current page that the new return origin mode can work.

**Origin Sequence Enable:** Check the origin sequence enable and save. Return to origin in incremental way as axis order that is set. Set 1 as X1, 2 as Y1, 3 as Z and 4/5/6/7/8 as none to return in X1-Y1-Z. If set 1 as none, 2 as X1, 3 as none, 4 as Y1, 5 as none and 6/7/8 as none or other axis, it is unable to return.

**Origin Offset:** Check “Save”, the origin offset function is effective. If not, the function will not work. (Origin offset dialog in each axis page is executable and can be modified if checking “Save” . If not, values cannot be entered into the dialog.)

#### Z Outside Origin:

**Not checked:** X25 is the back to origin signal, after returning to the origin, the starting position is in the type.

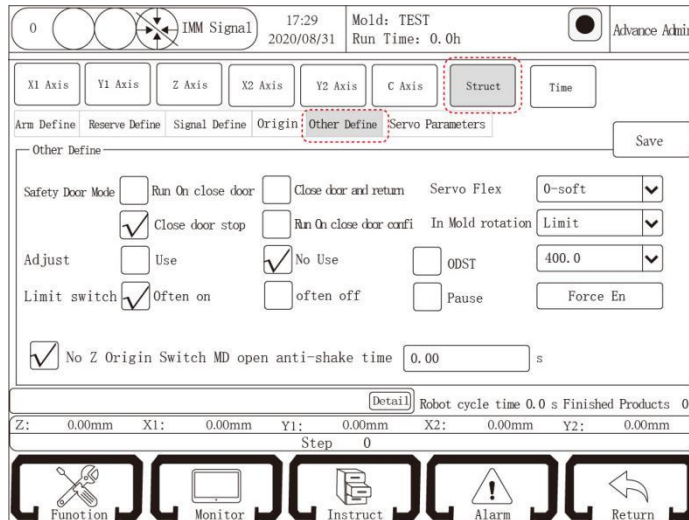
**Check:** X24 is the back to origin signal, after returning to the origin, the starting position is out of type.

**Long Origin:** If checked, way back to the origin is the way long origin returns.

**Short origin:** If checked, way back to the origin is the way short origin returns.

**Limit Origin:** If checked, way back to the origin is the way limit signal returns.

### 6.2.6.5 Other Define Page of Structure:



After modifying the parameters, click the save button so that the parameters remain unchanged after power-down restart.

#### Safety Door Mode:

**Run On close door:** After the manipulator failed to fetch, the safety door is opened and then closed. The manipulator continues to perform the program of this mold.

**Close door and return:** After the manipulator failed to fetch, the safety door is opened and then closed. The manipulator executes the program before mold opened again. After moving to the start point, wait for the next mold opened signal..

**Close door stop:** After the manipulator failed to fetch, the safety door is opened and then closed. The manipulator stops in the current position and exits automatic state.

**Run On close door confirm:** After the manipulator failed to fetch, the safety door is opened and then closed. Click “Continue” in the dialog popped up, then the robot continues executing program of this mold. Click “Give up”, then the manipulator returns to the origin and fetches again.

**Adjust:** Choose to use or not to use the electric position adjustment function. (Existing models are generally not in use)

#### Limit switch:

**Often on:** The limit switch is on by default. When the limit switch has a signal, the limit switch is disconnected; if beyond the limit position, the limit switch has signal input and it will alarm immediately; if limit switch has no signal input, there will be no alarm.

**Often off:** The limit switch is off by default. When the limit switch has a signal, the limit switch is turned on; if beyond the limit position, the limit switch has signal input, there will be no alarm; if the switch has no signal input, it will alarm immediately.

#### In Mold rotation:

**Limit:** Limit the internal descending posture as vertical and side posture is forbidden.

**No Limit:** No limit for internal descending posture and side posture is allowed.

**ODST:** After checking, the external descending safety signal is on, and it will alarm when it is over the safety time; if not checked, this function is invalid.

**Servo Flex:** To improve the curve of motion planning. (Optional, not available for standard)

**Force En:** When the servo enable is abnormal, it is recommended.

**No Z Safety Switch:**

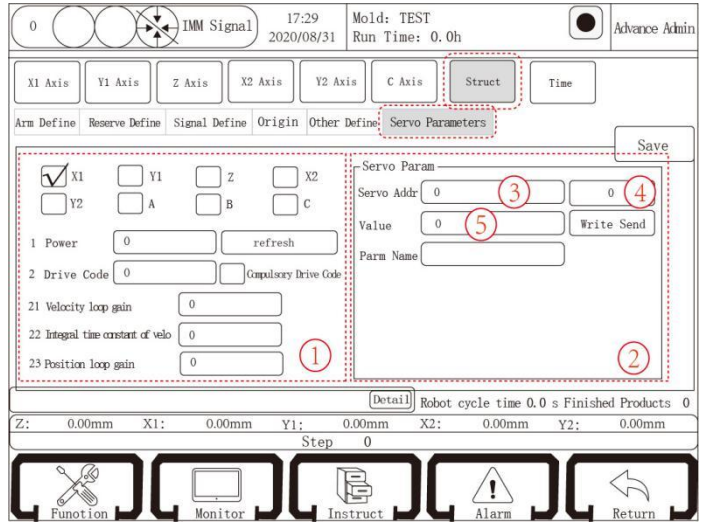
**Not check:** It needs X25 signal to descend in the internal safety area.

**Check:** No need for X25 to descend in the internal safety area. It is only taken as the origin signal.

**MD open filter time:** If the signal stability is poor, set a larger value.

**6.2.6.6 Servo Parameter Adjustment**

Enter Machine Param - Structure - Servo Adjust page to set the servo parameters. (Only for RTEX and drive-control series, not available in single-board.)



**\*Notice:** In box 1, to check the servo parameters of the exact axis, click the refresh button, the servo parameter value will be displayed in the corresponding box.

If you need to modify the parameter value, you can enter a new value directly in the text box. Servo parameters can also be set in box 2 on the right.

**Servo Addr:** Set the servo parameter number in box 3 ; the current servo parameter value is displayed in box 4.

**Value:** Box 5 is the servo parameter target value that needs to be set.

**Param Name:** The function corresponding to the current servo parameter number

**Setting Steps:**

1. Press the emergency stop button. (Modify the servo parameters in this state)
2. Enter the servo parameter number in orange box 3.
3. Enter the servo parameter target value in the green text box 5 after “parameter value” and click “Send” .
4. Check whether the values in box 4 are the same as the target parameter value. If it is, the parameters are set successfully; otherwise it needs to be reset.
5. After the parameter setting is successful, restart the servo and manual controller, the new parameters will work.



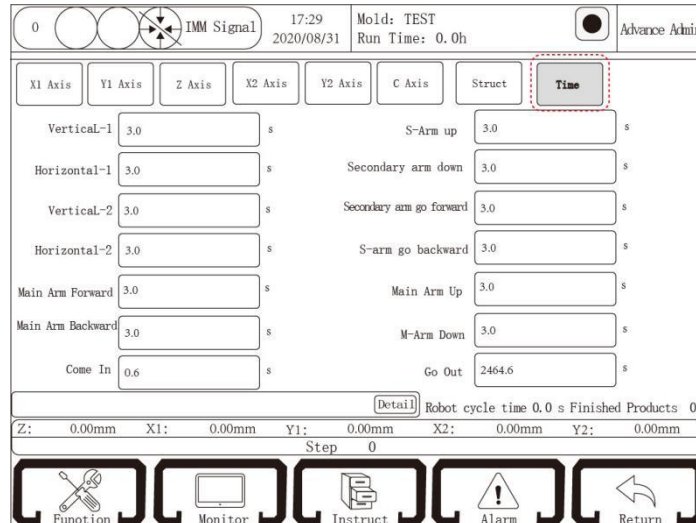
**6.2.6.7 Servo Parameter Table**

Function Code	Mapping Address	Function Code Name	Parameter description	Scope	Unit	Default
00	0x2E00	Software Version/ Reactivation	Write 8051 to restore factory settings	0~65535		Version number
01	0x2E01	Driver type	2:100~200w; 3:400w; 4:750w; 5:850~1300w 6:1800w	2~6		4
02	0x2E02	Motor code		1000~ 1600		1400
03	0x2E03	Parameter management	Write 256 to restore factory settings (11xx series) 1: Senior mode. Jam param check. Able to clear overload. Encoder error alarm	0x0000~ 0x1111		0x0000
04	0x2E04	Mandatory motor code	1: mandatory			
15	0x2E0F	Motor overload protection factor	10~100	10~100	%	50
19	0x2E13	Single/Double Axis Selection	0: biaxial 1: uniaxial			
21	0x2E15	Velocity loop gain	Larger value means faster response. May cause shock if too large. Synergistic adjustment of position mode with position loop gain	0~500	Hz	90
22	0x2E16	Velocity loop integral time constant	Smaller value means stronger integral ability and stronger speed tracking ability. Need to match velocity loop gain and position loop gain	0~300	ms	25
23	0x2E17	Position loop gain	Larger value means faster response. May cause shock if too large. Synergistic adjustment of position mode with position loop gain	0~20	1/s	4



28	0x2E18	Speed feedforward gain	Increase to reduce the steady-state position deviation, and the overshoot is caused by excessive assembly	0~100	%	0
30	0x2E1E	Camping coefficient	Position loop damping coefficient	100~500		100
31	0x2E1F	Speed feedback low pass coefficient		100~20000		20000
32	0x2E20	Current feedback low pass coefficient	Detect actual current direction	100~20000		20000
33	0x2E21	Torque feedforward coefficient		0~100		0
34	0x2E22	Velocity loop differential gain (low frequency)		0~1000		0
41	0x2E29	Moving average filter constant	0~200.0	0~200.0	ms	0
42	0x2E2A	First-order low-pass filter constants	0~6000.0	0~6000.0	ms	0
49	0x2E31	Position Deviation Limit	0.1~50.0r	0.1~50.0		5.0
69	0x2E45	Torque instruction low pass coefficient		100~20000		20000
71	0x2E47	Action Command	1: the current position set as zero	0~255		0
72	0x2E48	Frequency of notch filter		0~10000		0
73	0x2E49	Frequency width of notch filter		0~1000		0
99	0x2E63	version number	version number	0x0000~0xFFFF		0x0000

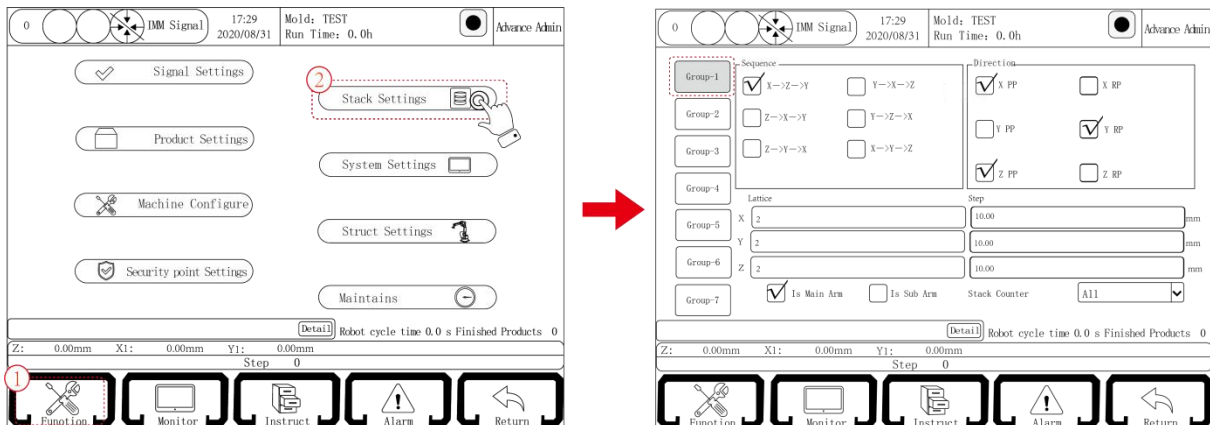
### 6.2.7 Pneumatic Detection Time



Under this page, the limit time of each axis action can be set, and the time of each axis action exceeds this set value and there is no corresponding input signal to alarm. (only valid for pneumatic shaft)

### 6.2.8 Stack Setting

The product stacking function of the manipulator can arrange the finished products neatly on the conveyor belt or loading box in some way. The system is equipped with 7 groups of stacking, the first 6 groups are regular stacking, and the seventh group is free stacking.



**Regular stack:** Click on the stack group to be used (such as group 1), select the order in which the product is stacked in the sequence bar, and set the number of stacked products per axis and the stacking spacing of the product.

**Lattice:** The number of products to be stacked in a certain axis direction.

**Space:** In a certain axis, the distance between two adjacent objects.

**Sequence:** In the order in which several axes are stacked upward.

Four types of stacking order are defined the same, taking X-Z-Y order as an example, the rest are not described.

**X-Z-Y:** The stacking program first arranges the product on the X axis, then arranges the Z axis, and finally stacks the Y axis.

**Direction:**

**PP:** That is, the stacking position is getting larger and larger.

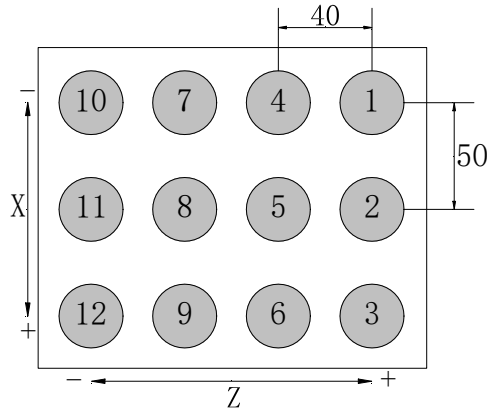
**RP:** That is, the stacking position is getting smaller and smaller

**Sub arm stack:**

- (1) The program defaults to the main arm stack, that is, only the main arm stack, the secondary arm does not stack.
- (2) The X1、Y1 and X2、Y2 are stacked at the same time. The stacking sequence, direction, number and spacing are the same.

**Stack counter:** In this system, there are 9 methods in this system. For each group of stacking, there are 3 options, such as stacking 1 group, stacking counter can choose all, good products and stacking 1 group. If you choose another stacking counter, the program may be abnormal.

**Examples of stack program settings**



**Set value:** use group 1 stack

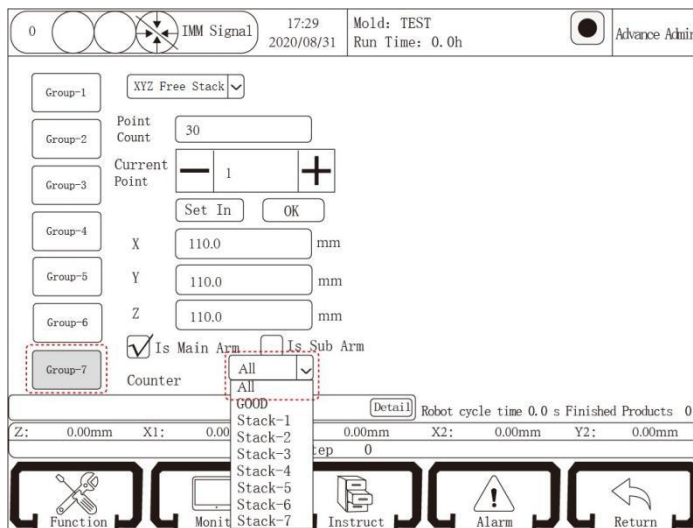
**Order:** (X-Z-Y)     **Direction:** X positive Z negative Y negative

**X axis:** spacing 50/3 product     **Z axis:** spacing 40/4 product     **Y axis:** spacing 30/2 layers

**Operation description:** According to this setting, the manipulator places products with 50 mm as interval along the X+ direction. Three products (①②③) are in the first line. Then move along the Z- direction for 40 mm and place products. Three products (④⑤⑥) are in the second line. After placing the 12<sup>th</sup> product in this way, rise for 30mm along Y- direction and repeat the action from the position of ① to place products on the second floor. Therefore, these 24 products can be placed in a cargo box.

**Free Stack:** You can either set it on this page or set it in Manual-Teaching-Main menu-Stack-Group 7. Free stack is divided into XYZ free stack and XZ free stack.

**XYZ free stack:**



**Point number:** the total number of stacks, range (3-30).

**X axis:** X axis stack position

**Y axis:** Y axis stack position

**Z axis:** Z axis stack position

**Current Point:** The order number of the stack point. As shown above, if set as 1, the position of the first stack point(X, Y, Z) is (110mm, 110mm, 110mm).

**Set In:** Click to set the current coordinates as the nth stack position.

**OK:** After modifying the stack position, click OK button, or the modification fails.

**Sub Arm:**

- (1) The program defaults to the main arm stack, that is, only the main arm stacks, the sub arm does not stack.
- (2) The X1、Y1 and X2、Y2 are stacked at the same time, with the same number and position.

**XZ free stack:** The XZ axes are free stack, same way to set as the free stack; Y axis is regular stack, same way to set as the regular stack.

Enter teaching mode and click “Stack” button to enter the page below:

Setting and teaching of stack are regardless of order.

Order	Axis:Direction	Number	Interval
<input checked="" type="checkbox"/> Group 1	X->Z->Y	2	10.00
	Y: RP	2	10.00
	Z: P	2	10.00
<input type="checkbox"/> Group 2	X->Y->Z	3	10.00
	Y: RP	3	10.00
	Z: P	3	10.00
<input type="checkbox"/> Group 3	X->Z->Y	4	10.00
	Y: RP	4	10.00
	Z: P	4	10.00
<input type="checkbox"/> Group 4	X->Z->Y	5	10.00
	Y: RP	5	10.00
	Z: P	5	10.00

Select the box on the left of the stack program to insert, such as select Group 1, and then click the “insert” button to insert the stack into the program step to start stacking. When running automatically, the manipulator stacks the discharge product according to this stack. When using the Y axis, be sure to insert the stack program into the previous step of the Y axis descending action.

Each automatic program can insert 7 groups of stack programs, which can stack and place products in 7 different locations, and when stacking 7 groups of products, the starting positions should be all 0.

**Important:** Select the Y axis as the end between the stacks in the system design. Stack program must be inserted before Y axis action. If there are multiple stacks, the Y axis must be inserted between multiple stacks for partition.

For more live stacking examples, please pay attention to the official account.

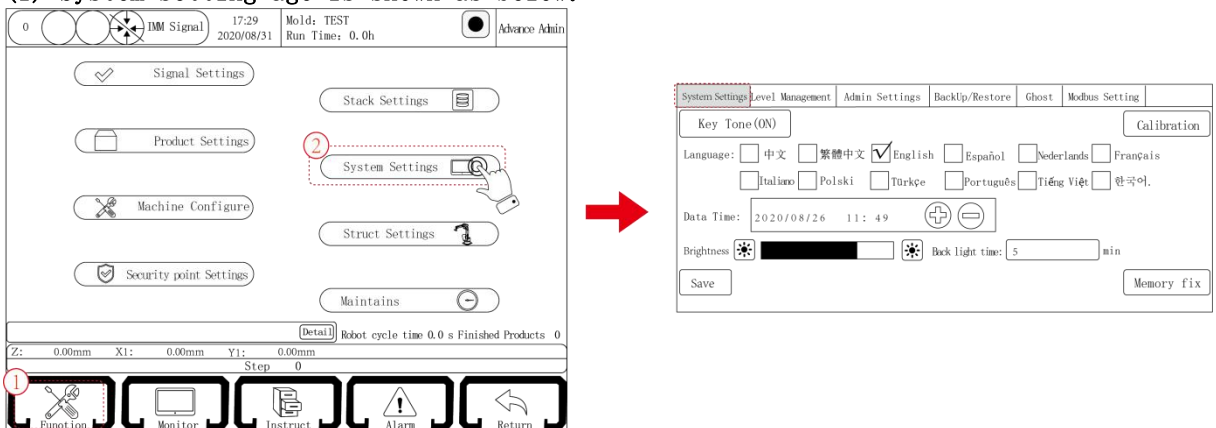


Scan the QR code to check particular stack course.

### 6.2.9 System Setting

“System Setting” contains six pages: “System Setting”, “Permission Management”, “SeniorAdmin”, “BackUp/Restore”, “Ghost” and “Modbus Setting”.

(1) System setting page is shown as below:



**Tip:** If not able to copy or delete program into the file, click “Storage Repair”. The system will automatically restart the function.

**Key Tone:** Open/close key tone.

**Language:** 12 languages for customers to choose, default in Chinese.

**Date:** Date and time displayed. Select and press or subtract key to change and click save, after about 2 minutes, then it will be updated to a new time.

**Back light time:** The screen turns dark if the time set is over and “Senior Admin” permissions becomes “Admin” permissions.

**Brightness:** Adjust the brightness of the display screen, click the left screen is dimmed out, and click the right screen turns bright.

**Version mode:** Show the version of manual controller and the host.

**Touch calibration:** When the screen cursor is inaccurate, it can be calibrated.

**Operation:** If the cursor deviates from the page, use the key sequence to correct.

1. After the system is fully started, twist the third switch to stop.

2. Press F5 F1 F4 F1 F3 F1 F2 F5, system will automatically restart into the correction screen page.

**\*Note:** Rotate status switch to clear if the key sequence is wrong.

**Memory fix:** When pressed, the storage repair will be started automatically. (for case that unable to start a new mold number)

(2) Permission management page is shown as below:

**Permissions:** Divided into administrator and senior administrator; administrators can change basic parameters, but have no right to teach programs, change mechanical parameters, and enter maintenance pages, and senior administrators can change any parameters.

**Old password/new password:** Enter the old password, and then enter the new password , press the change key to change the password. (If you modify the administrator password . If under advanced administrator permission, enter the new password directly)

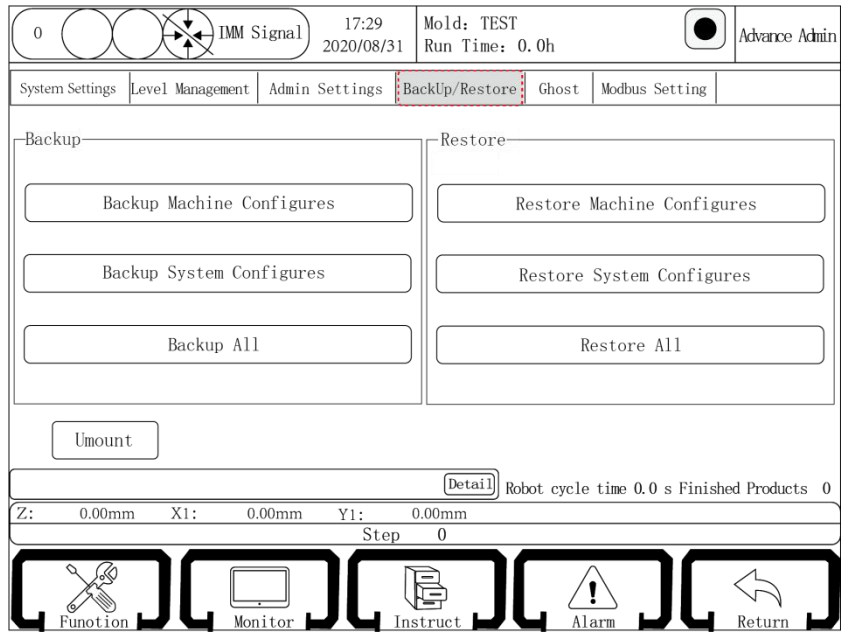
(3) SeniorAdmin page is shown as below:

**Verify:** Enter \*\*\*\*\* in the text box next to the validation button, and then click Button. The “function extension”, “quick instruction” and “registration” change from gray to black.

**Extent:** When checked, the main menu of the edit page in manual state has 12 sub-pages; if not checked, the “condition” and “sequence action” of the main menu page will be hidden and the function can not be used.

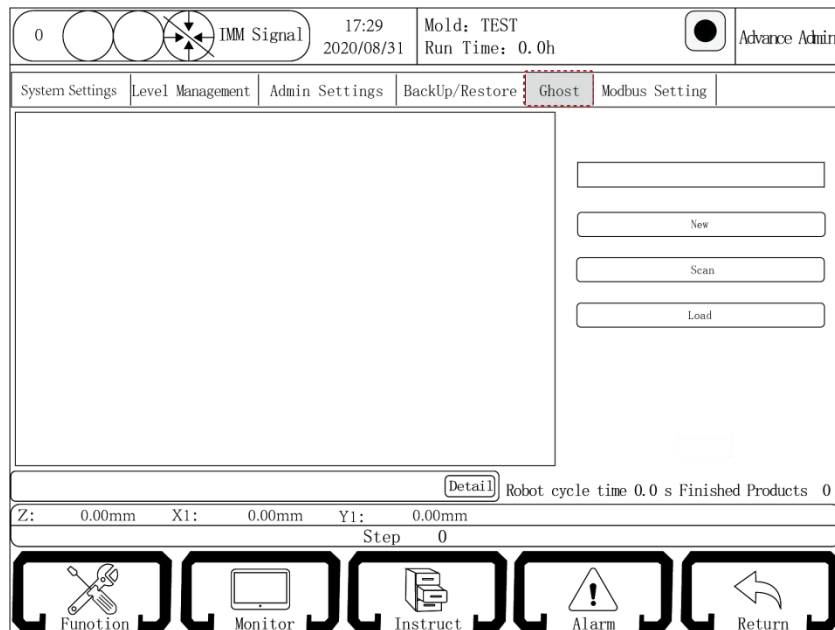
Please contact with our technical personnel if you need to register.

(4) Backup/restore page is shown as below:



USB can be used under this page to backup and restore machine parameters, system parameters, and all parameters, respectively. After the parameter is restored, the controller will restart automatically.

(5) Ghost function is shown as below:



**New:** Enter a name in the red box and click the new button to backup all the parameters on the manual controller, including the manual program, to the USB(insert the USB first).

**Scan:** Scan the backup Ghost file (insert USB) and the backup file appears in the blue box.



**Load:** Select the file, click load and a dialog box will pop up when completed. Then click confirm in the box, the system will restart and current program will return to backup program in Ghost file. (If the current manual control program is 6.6.6, back up the Ghost file and then upgrade to 6.7.2. After loading the backup Ghost file, the system will reboot and the manual control program will be 6.6.6 )

(6) Modbus function is shown as below:

**Device IP:** Set visit IP of the host system. It is the IP used in requesting the visit to data of the manipulator host.

**Device Num:** Used to identify several manipulators in Modbus request.

Baud rate, data bit, stop bit and check code are connected with devices. Please set the computer same as the manipulator to keep communication.

## 6.2.10 Maintenance

(1) Repairment page is shown as below:

Under this page, the system can upgrade and renew pictures.

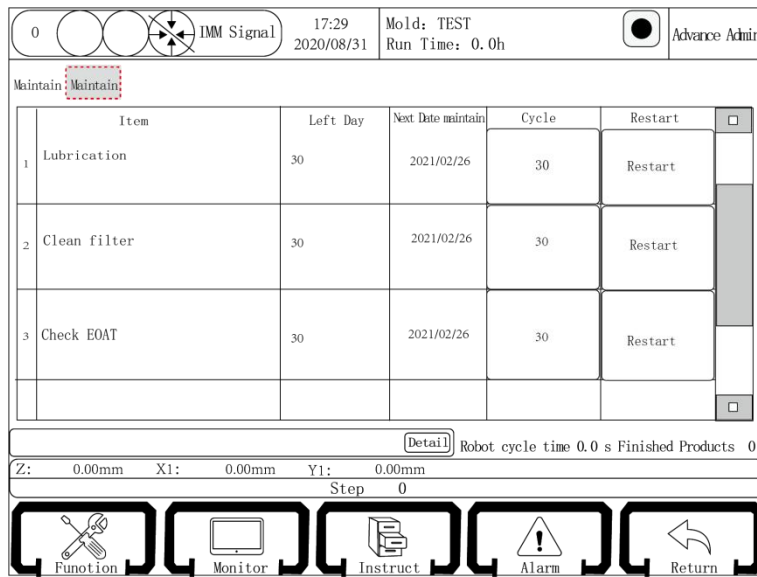
**Update description:** The upgrade program is copied into the USB disk. Insert USB after the controller is power on. Log on senior administrator and turn the knob to Stop, then enter Function — Maintenance. Click scan update package, after the version number shows, select the version and then click to start updating. The system will automatically restart. Pull out USB.

**Start page and standby page update description:**

1. Start new HCUpdate\_pic in the root directory in USB to copy the images to be shown on the home screen into the folder; (Note: start page picture needs 800\*600, standby page picture needs 800\*400, png format)
2. Insert the USB onto the manual controller;
3. Click update picture, pop up picture update box, click scan picture;
4. Select the picture for standby page, click “choose”, it will pop up “set up successfully, effective after restart”. Select the picture for start page, click “choose”, it will pop up “set up successfully, effective after restart”. Then exit and restart the system.

**Factory reset:** This function is not in standard configuration.

(2) Maintenance page is shown as below:

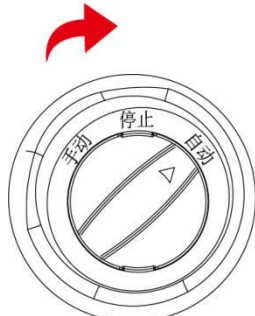
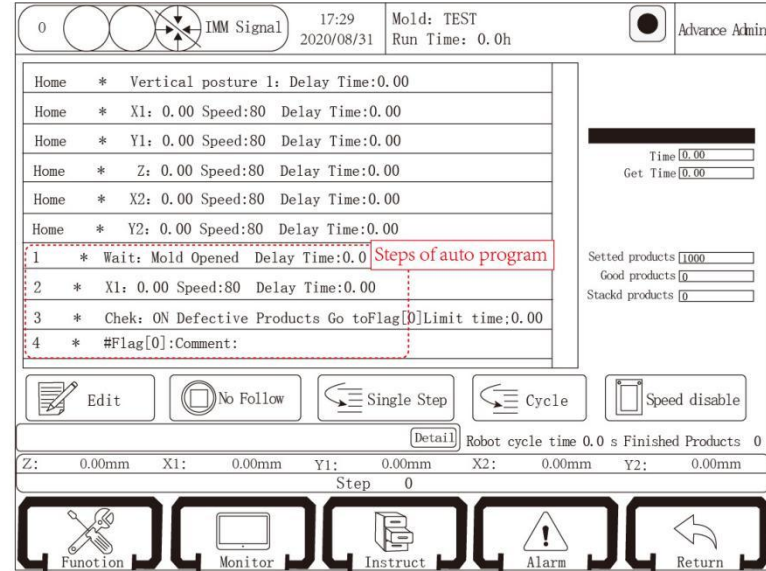


In this page, set the maintenance cycle and the cycle is calculated by natural days. If a certain maintenance period is reached, the system will prompt, after maintenance, click “restart” to re-timing.

## Chapter 7 Automatic Status

### 7.1 Monitoring of Auto-running Data

Turn the status selection switch to the automatic gear, then the robot enters the automatic standby state. Press the start button again and the robot will start to run automatically. It is able to monitor the robot's operation data in automatic state. The automatic operation page displays the following:

Step	Command	Speed	Delay Time
Home	* Vertical posture 1:		Delay Time:0.00
Home	* X1: 0.00	Speed:80	Delay Time:0.00
Home	* Y1: 0.00	Speed:80	Delay Time:0.00
Home	* Z: 0.00	Speed:80	Delay Time:0.00
Home	* X2: 0.00	Speed:80	Delay Time:0.00
Home	* Y2: 0.00	Speed:80	Delay Time:0.00
1	* Wait: Mold Opened		Delay Time:0.0
2	* X1: 0.00	Speed:80	Delay Time:0.00
3	* Chek: ON Defective Products Go toFlag[0]		Limit time:0.00
4	* #Flag[0]:Comment:		

**Time:** Record the molding cycle time of the last period.

**Fetch time:** Time from when the mold opened signal is on to when the program of mold locked ends, that is, from when the mold closable signal is off to on.

**Set output:** The target output set currently.

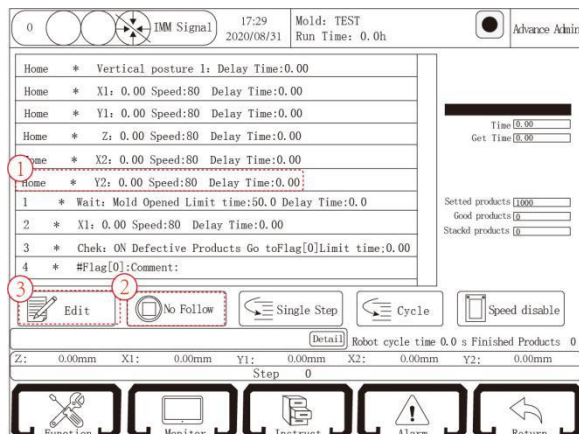
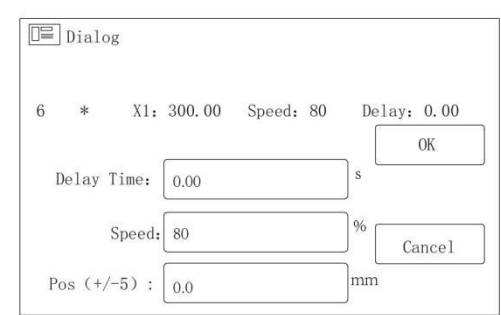
**Good products:** The number of qualified products that have been taken by the robot. (If there is no reject signal before the mold is finished, it is good product)

**Stacked products:** Number of products stacked by the robot when operating stack.

### 7.2 Modification of Parameters in Automatic Operation

In automatic running state, the time of action, speed and position of the electric shaft can be modified according to the current running condition. To facilitate the modification of parameters, click “do not follow” button to stop the program running indicator bar movement.

Click the line where the action locates to modify the parameter. Select and then click “Edit” to pop up the following dialog box:

In this dialog box, you can modify the delay time of the action, speed and position of the electric shaft. Change the parameters and click OK, then the parameters will be accepted online and it will operate according to the changed parameters in the next cycle. Press Cancel key to cancel the action.

To ensure that the modification of the position of the electric shaft will not damage the manipulator, injection molding machine and modules, the change is limited within  $\pm 5$  mm each time.

### 7.3 Single Step Operation

Turn the knob to automatic state, click “Single Step” button, and then press “Start” button to enter the single-step operation mode. In this mode, every time the “Single Step” button is clicked, the program of automatic action will be executed by a step. The automatic program executed is the automatic program currently taught.

The single-step running mode can be used to confirm step by step whether the program being taught is correct.

### 7.4 Single Cycle

In automatic state, click “Cycle”, and then press “Start” to enter the single cycle operation mode, automatic mode after the automatic operation.

### 7.5 Speed Adjustment during Automatic Operation

When running automatically, click “Speed Disable” to make it “Speed Enable”. The upper and lower speed adjustment keys on the selection panel can increase or decrease the overall speed of the automatic running. The overall speed can be adjusted to 200 at most.

## Chapter 8 Monitor and Alarm Record

### 8.1 I/O Monitor

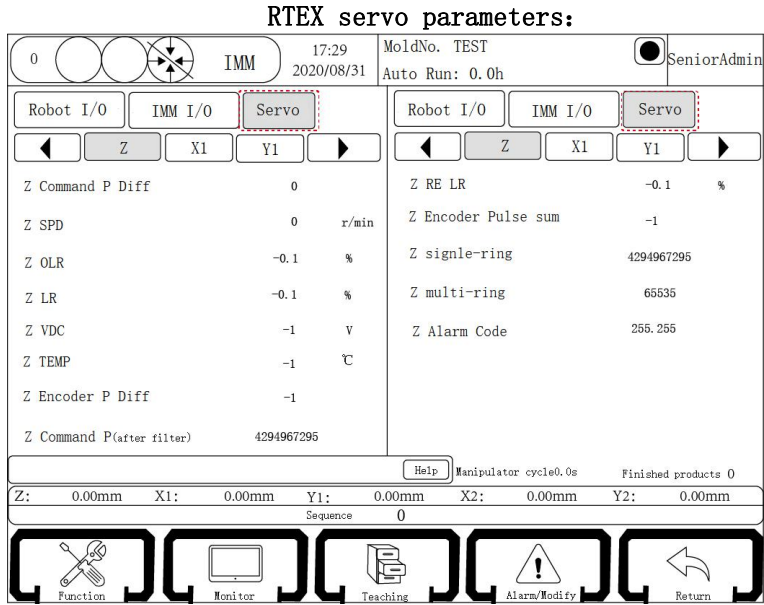
Click “Monitor” at the bottom to enter I/O monitoring page. It is divided into manipulator I/O signal, IMM I/O signal and servo parameters. The I/O states are shown as below:

0		IMM Signal		17:29 2020/08/31	Mold: TEST Run Time: 0.0h	●		Advance Admin
Robot I/O			IMM I/O			Servo		
◀ Input			Output ▶			◀ X Y Z ▶		
X010	Horizon-1 Limit			○	X P Diff	1	1	pu
X011	Vertical-1 Limit			○	X SPD	1	1	RPM
X012	Fixture1			○	X OLR	1	1	%
X013	Fixture2			○	X LR	1	1	%
X014	Sucker2			○	X TEMP	0.1	0.1	°C
X015	Sucker1			○	X VDC	0.1	0.1	V
X016	X1 end Limit			○	X Feedback	0	0	pu
X017	Sucker3			○	X TRQ	0.04	0.04	%
[Detail] Robot cycle time 0.0 s Finished Products 0								
Z: 0.00mm		X1: 0.00mm		Y1: 0.00mm		Step 0		
Function		Monitor		Instruct		Alarm		Return

#### ECS3/ECS5 servo parameters:

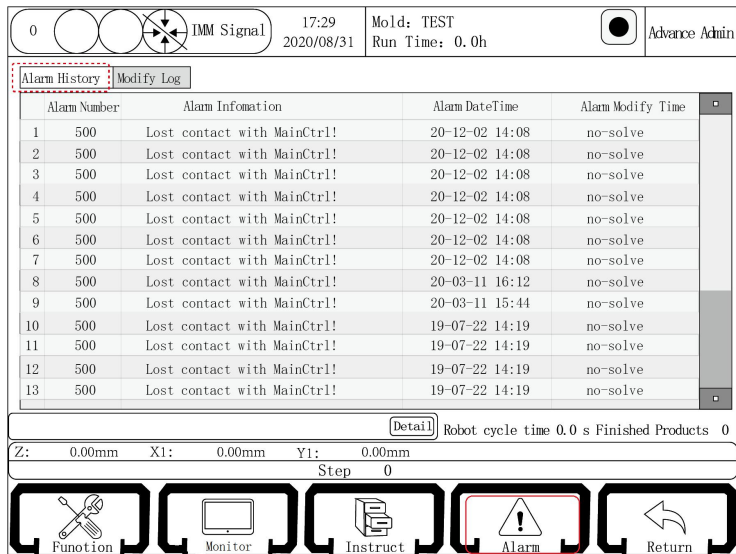
0		IMM Signal		17:29 2020/08/31	Mold: TEST Run Time: 0.0h	●		Advance Admin
Robot I/O			IMM I/O			Servo		
◀ X			Y			Z ▶		
X P Diff		1	1	pu	X P Diff	1	1	pu
X SPD		1	1	RPM	X SPD	1	1	RPM
X OLR		1	1	%	X OLR	1	1	%
X LR		1	1	%	X LR	1	1	%
X TEMP		0.1	0.1	°C	X TEMP	0.1	0.1	°C
X VDC		0.1	0.1	V	X VDC	0.1	0.1	V
X Feedback		0	0	pu	X Feedback	0	0	pu
X TRQ		0.04	0.04	%	X TRQ	0.04	0.04	%
[Detail] Robot cycle time 0.0 s Finished Products 0								
Z: 0.00mm		X1: 0.00mm		Y1: 0.00mm		Step 0		
Function		Monitor		Instruct		Alarm		Return

The position command deviation, speed and load ratio of each axis can be monitored in this page.



## 8.2 Alarm History

Click “Alarm” at the bottom to enter alarm record page, shown as below:



Then the alarm appears, click on the help in the alarm bar, and it will automatically pop up the prompt box, alarm details and solutions. As shown below:

The control system can record the latest 200 alarms, which is convenient for users to find alarm information before.

☐ Alarm Details
?
✕

Alarm ID:

Alarm Text:

Alarm Reason:

Alarm Solution:
 

1. Please check whether there is any loose on the handheld and the connection between the host
2. Replace the mainboard
3. Replace the hand control

### 8.3 Modify Log

Click “Modify Log” to enter modification record page, shown as below:

0

○

○

○

⊗

IMM Signal

17:29  
2020/08/31

Mold: TEST  
Run Time: 0.0h

●
Advance Admin

Alarm History

Modify Log

Log	
1	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
2	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
3	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
4	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
5	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
6	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
7	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
8	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
9	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
10	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
11	21-01-27 15:02:43 Current permissions[1] from Machine Operator to Advance Admin
12	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator
13	21-01-27 15:02:43 Current permissions[1] from None Level to Machine Operator

Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm Step 0

Function

Monitor

Instruct

Alarm

Return

The control system can record the latest 200 alarms, which is convenient for users to find modification information before.



## 8.4 Alarms and Solutions

### 8.4.1 Function Alarms and Solutions

No.	Information	Reason	Solutions
1	Virtual error	Internal error of system	Please contact our technicians
2	Strange Characters	Internal error of system	Please contact our technicians
3	Program no end	Internal error of system	Please contact our technicians
4	Ignored characters	Internal error of system	Please contact our technicians
5	Coord chaos	Internal error of system	Please contact our technicians
6	No end position	Internal error of system	Please contact our technicians
7	Arc definition	Internal error of system	Please contact our technicians
8	Order	Internal error of system	Please contact our technicians
9	Radius mismatch	Internal error of system	Please contact our technicians
10	Over speed	Instruction output pulse frequency > 600 k	Decelerate
11	Double IO definitions	Internal error of system	Please contact our technicians
12	No IO definition	Internal error of system	Please contact our technicians
13	Group action error	The same action steps are combined.	Decompose the same action or delete one
14	Group standby points error	The standby point group contains the same actions	Decompose the same action or delete one
15	Fetch next order error	The teaching steps are abnormal	Delete the action
16	Check end out of range	Internal error of system	Please contact our technicians
17	Register contact is wrong	Internal error of system	Please contact our technicians
18	Check main action end	Internal error of system	Please contact our technicians
19	Register NUM contact error	Internal error of system	Please contact our technicians
20	Register SUB contact error	Internal error of system	Please contact our technicians
21	Register action finished	Internal error of system	Please contact our technicians
22	X is still running when generating action	The same group of actions contain two X axis action commands	Decompose X axis actions or delete one
23	Y is still running when generating action	The same group of actions contain two Y axis action commands	Decompose Y axis actions or delete one

24	Z is still running when generating action	The same group of actions contain two Z axis action commands	Decompose Z axis actions or delete one
25	The timer has been cleared when G has delay time	Axis action has a delay, but because the counter is 0, the counter cannot delay	Please contact our technicians
26	X action over-speed	Instruction output pulse frequency > 600 k	Decelerate
27	Y action over-speed	Instruction output pulse frequency > 600 k	Decelerate
28	Z action over-speed	Instruction output pulse frequency > 600 k	Decelerate
29	Memory write timeout	Fault in writing stored parameters	Please contact our technicians
30	Debugging fault	Internal error of system	Please contact our technicians
60	A action over-speed	Instruction output pulse frequency > 600 k	Decelerate
61	B action over-speed	Instruction output pulse frequency > 600 k	Decelerate
62	C action over-speed	Instruction output pulse frequency > 600 k	Decelerate
63	A is still running when generating action	The same group of actions contain two A axis action commands	Decompose A axis actions or delete one
64	B is still running when generating action	The same group of actions contain two B axis action commands	Decompose B axis actions or delete one
65	C is still running when generating action	The same group of actions contain two C axis action commands	Decompose C axis actions or delete one
70	X2 action over-speed	Instruction output pulse frequency > 600 k	Decelerate
71	Y2 action over-speed	Instruction output pulse frequency > 600 k	Decelerate
72	X2 is still running when generating action	The same group of actions contain two X2 axis action commands	Decompose X2 axis actions or delete one
73	Y2 is still running when generating action	The same group of actions contain two Y2 axis action commands	Decompose Y2 axis actions or delete one

100	X axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
101	Y axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
102	Z axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
103	X axis Z pulse deviation	Internal error of system	Please contact our technicians
104	Y axis Z pulse deviation	Internal error of system	Please contact our technicians
105	Z axis Z pulse deviation	Internal error of system	Please contact our technicians
106	X axis servo driver alarm	X axis driver alarm	<p>1. If the servo driver alarms, find reason and solve it.</p> <p>2. If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</p> <p>3. If the servo driver has no alarm and the wires are normal, replace the main board.</p>

107	Y axis servo driver alarm	Y axis driver alarm	<ol style="list-style-type: none"> <li>1.If the servo driver alarms, find reason and solve it.</li> <li>2.If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</li> <li>3.If the servo driver has no alarm and the wires are normal, replace the main board.</li> </ol>
108	Z axis servo driver alarm	Z axis driver alarm	<ol style="list-style-type: none"> <li>1.If the servo driver alarms, find reason and solve it.</li> <li>2.If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</li> <li>3.If the servo driver has no alarm and the wires are normal, replace the main board.</li> </ol>
109	X not moved in place	Act before X axis moves to the expected position	Please contact our technicians
110	Y not moved in place	Act before Y axis moves to the expected position	Please contact our technicians
111	Z not moved in place	Act before Z axis moves to the expected position	Please contact our technicians
112	X-Max alarm	The X axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
113	X-Min alarm	The X axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
114	Y-Max alarm	The Y axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
115	Y-Min alarm	The Y axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
116	Z-Max alarm	The Z axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
117	Z-Min alarm	The Z axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
118	X-Pos too large	The current position is greater than the max X axis movement	<ol style="list-style-type: none"> <li>1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position.</li> <li>2.Move toward opposite direction after removing the alarm.</li> </ol>

119	X-Pos too small	The current position is smaller than the min X axis movement	1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2. Move toward opposite direction after removing the alarm.
120	Y-Pos too large	The current position is greater than the max Y axis movement	1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2. Move toward opposite direction after removing the alarm.
121	Y-Pos too small	The current position is smaller than the min Y axis movement	1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2. Move toward opposite direction after removing the alarm.
122	Z-Pos too large	The current position is greater than the max Z axis movement	1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2. Move toward opposite direction after removing the alarm.
123	Z-Pos too small	The current position is smaller than the min Z axis movement	1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2. Move toward opposite direction after removing the alarm.
124	X axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
125	X axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
126	Y axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
127	Y axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
128	Z axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
129	Z axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals

130	X axis memory error	X axis parameters memory error	Function-Machine param-Save "X axis" page again
131	Y axis memory error	Y axis parameters memory error	Function-Machine param-Save "Y axis" page again
132	Z axis memory error	Z axis parameters memory error	Function-Machine param-Save "Z axis" page again
133	Structure memory error	Host axis parameters memory error	Function-Machine param-Save parameters of all axes
134	X axis comparison	Host X axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "X axis" page again
135	Y axis comparison	Host Y axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "Y axis" page again
136	Z axis comparison	Host Z axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "Z axis" page again
137	Structure comparison	Host axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save parameters of all axes and structure parameters
138	X is not servo	X axis is not servo axis	1. Function - Machine param - set X axis as servo axis in axis definition page. 2. Delete actions of X axis in teaching.
139	Y is not servo	Y axis is not servo axis	1. Function - Machine param - set Y axis as servo axis in axis definition page. 2. Delete actions of Y axis in teaching.
140	Z is not servo	Z axis is not servo axis	1. Function - Machine param - set Z axis as servo axis in axis definition page. 2. Delete actions of Z axis in teaching.
141	X axis not enabled	X axis enable is cut off	X axis enable
142	Y axis not enabled	Y axis enable is cut off	Y axis enable
143	Z axis not enabled	Z axis enable is cut off	Z axis enable
160	X2 axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft (dynamic following is bad) 2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)



161	Y2 axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
162	X2 axis Z pulse deviation	Internal error of system	Please contact our technicians
163	Y2 axis Z pulse deviation	Internal error of system	Please contact our technicians
164	X2 axis servo driver alarm	X2 axis driver alarms	<p>1. If the servo driver alarms, find reason and solve it.</p> <p>2. If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</p> <p>3. If the servo driver has no alarm and the wires are normal, replace the main board.</p>
165	Y2 axis servo driver alarm	Y2 axis driver alarms	<p>1. If the servo driver alarms, find reason and solve it.</p> <p>2. If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</p> <p>3. If the servo driver has no alarm and the wires are normal, replace the main board.</p>
166	X2 not moved in place	Act before X2 axis moves to the taught position	Please contact our technicians
167	Y2 not moved in place	Act before Y2 axis moves to the taught position	Please contact our technicians
168	X2-Max alarm	The X2 axis end limit has no signal	<p>1. Check the limit switch.</p> <p>2. The limit is normally closed, check whether the short connection is normal.</p>
169	X2-Min alarm	The X2 axis starting limit has no signal	<p>1. Check the limit switch.</p> <p>2. The limit is normally closed, check whether the short connection is normal.</p>
170	Y2-Max alarm	The Y2 axis end limit has no signal	<p>1. Check the limit switch.</p> <p>2. The limit is normally closed, check whether the short connection is normal.</p>
171	Y2-Min alarm	The Y2 axis starting limit has no signal	<p>1. Check the limit switch.</p> <p>2. The limit is normally closed, check whether the short connection is normal.</p>

172	X2-Pos too large	The current position is greater than the max X2 axis movement	<ol style="list-style-type: none"> <li>1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position.</li> <li>2. Move toward opposite direction after removing the alarm.</li> </ol>
173	X2-Pos too small	The current position is smaller than the min X2 axis movement	<ol style="list-style-type: none"> <li>1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position.</li> <li>2. Move toward opposite direction after removing the alarm.</li> </ol>
174	Y2-Pos too large	The current position is greater than the max Y2 axis movement	<ol style="list-style-type: none"> <li>1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position.</li> <li>2. Move toward opposite direction after removing the alarm.</li> </ol>
175	Y2-Pos too small	The current position is smaller than the min Y2 axis movement	<ol style="list-style-type: none"> <li>1. Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position.</li> <li>2. Move toward opposite direction after removing the alarm.</li> </ol>
176	X2 axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
177	X2 axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
178	Y2 axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
179	Y2 axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
180	X2 axis memory error	X2 axis parameters memory error	Function-Machine param-Save "X2 axis" page again
181	Y2 axis memory error	Y2 axis parameters memory error	Function-Machine param-Save "Y2 axis" page again
182	X2 axis comparison	Host X2 axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "X2 axis" page again
183	Y2 axis comparison	Host Y2 axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "Y2 axis" page again

184	X2 is not servo	X2 axis is not servo axis	<p>1. Function - Machine param - set X2 axis as servo axis in axis definition page.</p> <p>2. Delete actions of X2 axis in teaching.</p>
185	Y2 is not servo	Y2 axis is not servo axis	<p>1. Function - Machine param - set Y2 axis as servo axis in axis definition page.</p> <p>2. Delete actions of Y2 axis in teaching.</p>
200	A axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
201	B axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
202	C axis feedback pulse deviation is too large	Difference of counter between pulse command and feedback pulse command is larger than tolerance.	<p>1. If the alarm can be removed, please check whether the tolerance is too small (Function - Operation Param - increase "tolerance" parameter), or that servo rigidity is too soft. (dynamic following is bad)</p> <p>2. If the alarm cannot be removed, please use the positive/negative pulse test, there may be a connection problem causing pulse missing or servo feedback pulse direction is not correct. (motor forward feedback is 10000, reverse feedback is -10000)</p>
203	A axis Z pulse deviation	Internal error of system	Please contact our technicians
204	B axis Z pulse deviation	Internal error of system	Please contact our technicians

205	C axis Z pulse deviation	Internal error of system	Please contact our technicians
206	A axis servo driver alarm	A axis driver alarms	<ol style="list-style-type: none"> <li>1.If the servo driver alarms, find reason and solve it.</li> <li>2.If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</li> <li>3.If the servo driver has no alarm and the wires are normal, replace the main board.</li> </ol>
207	B axis servo driver alarm	B axis driver alarms	<ol style="list-style-type: none"> <li>1.If the servo driver alarms, find reason and solve it.</li> <li>2.If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</li> <li>3.If the servo driver has no alarm and the wires are normal, replace the main board.</li> </ol>
208	C axis servo driver alarm	C axis driver alarms	<ol style="list-style-type: none"> <li>1.If the servo driver alarms, find reason and solve it.</li> <li>2.If the servo driver has no alarm, check whether the main board and servo driver connection is loose or has welding problem.</li> <li>3.If the servo driver has no alarm and the wires are normal, replace the main board.</li> </ol>
209	A not moved in place	Act before A axis moves to the expected position	Please contact our technicians
210	B not moved in place	Act before B axis moves to the expected position	Please contact our technicians
211	C not moved in place	Act before C axis moves to the expected position	Please contact our technicians
212	A-Max alarm	The A axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
213	A-Min alarm	The A axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
214	B-Max alarm	The B axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
215	B-Min alarm	The B axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
216	C-Max alarm	The C axis end limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>
217	C-Min alarm	The C axis starting limit has no signal	<ol style="list-style-type: none"> <li>1.Check the limit switch.</li> <li>2.The limit is normally closed, check whether the short connection is normal.</li> </ol>

218	A-Pos too large	The current position is greater than the max A axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
219	A-Pos too small	The current position is smaller than the min A axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
220	B-Pos too large	The current position is greater than the max B axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
221	B-Pos too small	The current position is smaller than the min B axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
222	C-Pos too large	The current position is greater than the max C axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
223	C-Pos too small	The current position is smaller than the min C axis movement	1.Please check the relative safety point setting. The alarm may appear when turning tuning knob in max/min position. 2.Move toward opposite direction after removing the alarm.
224	A axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
225	A axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
226	B axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
227	B axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
228	C axis position is set too large when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals

229	C axis position is set too small when running	Stack points interval is set wrong and over the max or min position	Check settings of stack points and intervals
230	A axis memory error	A axis parameters memory error	Function-Machine param-Save "A axis" page again
231	B axis memory error	B axis parameters memory error	Function-Machine param-Save "B axis" page again
232	C axis memory error	C axis parameters memory error	Function-Machine param-Save "C axis" page again
233	SPI NULL	Internal error of system	Please contact our technicians
234	A axis comparison	Host A axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "A axis" page again
235	B axis comparison	Host B axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "B axis" page again
236	C axis comparison	Host C axis parameters do not agree with the parameters in manual controller	Function-Machine param-Save "C axis" page again
237	COMPARE NULL	Internal error of system	Please contact our technicians
238	A is not servo	A axis is not servo axis	1.Function - Machine param - set A axis as servo axis in axis definition page. 2.Delete actions of A axis in teaching.
239	B is not servo	B axis is not servo axis	1.Function - Machine param - set B axis as servo axis in axis definition page. 2.Delete actions of B axis in teaching.
240	C is not servo	C axis is not servo axis	1.Function - Machine param - set C axis as servo axis in axis definition page. 2.Delete actions of C axis in teaching.
300	X axis set wrong	Machine param of X axis is wrong	Function-Machine param-Save "X axis" page again
301	Y axis set wrong	Machine param of Y axis is wrong	Function-Machine param-Save "Y axis" page again
302	Z axis set wrong	Machine param of Z axis is wrong	Function-Machine param-Save "Z axis" page again
303	Action check sum error	Modification of teaching is not sent to the host in automatic state.	Please contact our technicians
304	Emergency stop input	Emergency stop signal has input	1. Retract emergency stop button on manual controller 2. Check whether the connection between manual controller and main board is loose. 3. Check whether emergency stop signal of IMM has input. 4. Check main board power supply.



305	Main cycle error	Host initialization error	Restart the host
306	Standby point position error	Starting point in mold number does not agree with axis definition in Function - Machine param - Structure	1.Create a new model number. 2.Y standby position should be less than the max standby position.
307	Fetching module error	Program error	Restart
308	Too large tolerance	If the tolerance is more than 10 mm, it will send an alarm.	1.The touch tolerance must be less than 10mm. 2.Three-axis/Five-axis system tolerance must be less than 100mm.
309	Mold Function parameter error	Mold parameter between host and manual controller are inconsistent	Create new module number
310	iSub too large	Abnormal subprogram	Create new module number
311	iSub nesting	Abnormal subprogram	Create new module number
312	Illegal stack	Stack without teaching	Please contact our technicians
313	Overlapping stack	Steps of stack are combined	Decompose stack action steps
314	Wrong actions order	Sequence in running does not agree with sequence stored	Please contact our technicians
315	System parameter	In two axis touch system, operation parameters - tolerance is too large, no more than 10	The tolerance is set less than 10mm
316	Wrong actions order	Sequence in running does not agree with sequence stored	Please contact our technicians
317	Wrong actions order	Sequence in running does not agree with sequence stored	Please contact our technicians
318	Single command juxtaposed	Steps of wait and condition program are combined	Discompose these steps
319	Only run in auto	Allow teaching in non-automatic state	Switch to automatic state when running
320	Call abnormal SEQ	Value of return step number that exceeds the last step of program overflows	Check return step number when using condition function
321	Wrong checksum in calling	Checksum is inconsistent with host while running	Please contact our technicians

322	Wrong GM checksum in call	Checksum is inconsistent with host while running	Please contact our technicians
323	Wait Mold Opened	No step of "Wait mold opened" in mold number program	Inset the step into the program
324	Wrong GEM in auto adjustment	Manual controller does not agree with host while operating axis action	Please contact our technicians
325	Clip action is duplicated	The action steps of the same fixture are combined	Decompose the synchronous action steps
326	Repeated actions	The action steps of the same axis are combined	Decompose the synchronous action steps
327	Only call in level one	Teaching program fault	Check teaching program. Commands of detection, waiting, track and module ending can only be used in main program.
328	Detect condition when acting	Steps of condition and action are combined	Discompose steps of condition and action
329	Clip/suck detection param	The parameters of fixture and main board are inconsistent	Please contact our technicians
330	Posture is chosen, please restart	Fixture definition is changed in Function - Product setting page	Restart
331	Posture selection param is wrong	Internal profile posture parameters are inconsistent with the host	Save in other definitions in Function-Machine param-Structure
332	Output chosen, please restart	Output definition in Function-Machine param-Structure is changed	Restart
333	Axis definition is changed, please restart	Axis definition in Function-Machine param-Structure is changed	Restart
334	Macro param checksum is wrong	Parameters of manual controller do not fit main board	Save in Struct param in Function-Machine param
360	X2 axis parameter check	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
361	Y2 axis parameter check	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param

362	A axis parameter check	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
363	B axis parameter check	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
364	C axis parameter check	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
365	Structure parameter check	Parameters of manual controller do not fit main board	Save in Struct param in Function-Machine param
400	Read X axis Param, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
401	Read Y axis Param, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
402	Read X axis Param, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
403	Param initialization, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
404	Mode initialization, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
405	Macro initialization, error	Parameters of manual controller do not fit main board	Save axis param in Function-Machine param
406	Function initialization, error	Param in manual controller and host are inconsistent	Save axis param in Function-Machine param
499	EU/EC board communication overtime	Main board cannot contact EU board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and EU board</li> <li>2. Check the line order between main board and EU board</li> <li>3. Replace main board</li> <li>4. Replace EU board</li> </ol>
500	Lost contact with host	Main board cannot contact manual controller	<ol style="list-style-type: none"> <li>1. Check the connection between manual controller and the host</li> <li>2. Replace main board</li> <li>3. Replace manual controller</li> </ol>
501	Abnormal I/O board communication	Main board cannot contact I/O board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and I/O board</li> <li>2. Check the line order between main board and I/O board</li> <li>3. Replace main board</li> <li>4. Replace I/O board</li> </ol>

502	Output completed	Number of products is up to output set	<ol style="list-style-type: none"> <li>1. Clear to zero in Function-Product setting page</li> <li>2. Set output as zero in Function-Product setting page if no longer used</li> </ol>
503	Low pressure	No signal in air pressure detection	<ol style="list-style-type: none"> <li>1. Check air pressure signal</li> <li>2. Set as Not use in Function-Signal setting page if no longer used</li> </ol>
504	Communication Watchdog	Abnormal communication between main board and I/O board	Check the connection between main board and I/O board
505	Program synchronization error	Program in manual controller is not consistent with the host	Load module number again.
506	Wait timeout for signal	Wait timeout for the mold opened signal	<ol style="list-style-type: none"> <li>1. Check the mold opened signal</li> <li>2. Set a longer time of waiting for mold opened in Function-Product setting page</li> </ol>
507	Modify param in non-stop state	Modify function param in non-stop state	Switch to stop state
508	Servo 1 communication fault	Main board cannot communicate with servo board 1	<ol style="list-style-type: none"> <li>1. Check network cable of servo board 1</li> <li>2. Replace the host</li> </ol>
509	Servo 2 communication fault	Main board cannot communicate with servo board 2	<ol style="list-style-type: none"> <li>1. Check network cable of servo board 2</li> <li>2. Replace the host</li> </ol>
510	Servo 3 communication fault	Main board cannot communicate with servo board 3	<ol style="list-style-type: none"> <li>1. Check network cable of servo board 3</li> <li>2. Replace the host</li> </ol>
511	EUIO communication fault	Main board cannot communicate with EUIO	<ol style="list-style-type: none"> <li>1. Check the connection between main board and EU board</li> <li>2. Check the line order between main board and EU board</li> <li>3. Replace main board</li> <li>4. Replace EU board</li> </ol>
512	Slave PRODUCT_ID error	The version of slave is not consistent with the host	Upgrade slave version to match the host
530	ZSIO board communication fault	Main board cannot communicate with ZSIO	<ol style="list-style-type: none"> <li>1. Check the connection between main board and ZSIO board</li> <li>2. Check the line order between main board and ZSIO board</li> <li>3. Replace main board</li> <li>4. Replace ZSIO board</li> </ol>
531	Communication fault of IO board 1	Main board cannot communicate with IO1 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>

532	Communication fault of IO board 2	Main board cannot communicate with IO2 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
533	Communication fault of IO board 3	Main board cannot communicate with IO3 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
534	Communication fault of IO board 4	Main board cannot communicate with IO4 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
535	Communication fault of IO board 5	Main board cannot communicate with IO5 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
536	Communication fault of IO board 6	Main board cannot communicate with IO6 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
537	Communication fault of IO board 7	Main board cannot communicate with IO7 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
538	Communication fault of IO board 8	Main board cannot communicate with IO8 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
539	Communication fault of IO board 9	Main board cannot communicate with IO9 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and IO board</li> <li>2. Check the line order between main board and IO board</li> <li>3. Replace main board</li> <li>4. Replace IO board</li> </ol>
540	Abnormal EU67 board communication	Main board cannot contact EU67 board	<ol style="list-style-type: none"> <li>1. Check the connection between main board and EU67 board</li> <li>2. Check the line order between main board and EU67 board</li> <li>3. Replace main board</li> <li>4. Replace EU67 board</li> </ol>

550	X1, X2 set beyond boundary	Distance between X1, X2 axis is shorter than drawing distance	Move axis position of X1 and X2 to make the distance is longer than drawing distance
580	X1 Port Alarm	Internal error of system	Please contact our technicians
581	Y1 Port Alarm	Internal error of system	Please contact our technicians
600	Z moves to external safe zone, internal safe zone on	When the manipulator is in the external safety zone, internal safety signal is still on (only in the condition of automatic detection)	1. Check Z external safety position setting in Function - Machine parameter 2. Check Z external safety zone switch
601	Z moves to external safe zone, external safe zone off	When the manipulator is in the internal safety zone, external safety signal is cut off (only in the condition of automatic detection)	1. Check Z external safety position setting in Function - Machine parameter 2. Check Z external safety zone switch
602	Z moves to internal safe zone, external safe zone on	When the manipulator is in the internal safety zone, external safety signal is still on (only in the condition of automatic detection)	1. Check Z external safety position setting in Function - Machine parameter 2. Check Z external safety zone switch
603	Z moves to internal safe zone, internal safe zone off	When the manipulator is in the internal safety zone, internal safety signal is cut off (only in the condition of automatic detection)	1. Check Z external safety position setting in Function - Machine parameter 2. Check Z external safety zone switch
604	Origin is light, Y is not in safety zone	When the main arm descends to detection position (parameters defined in Y safety zone), Y origin signal is still on	1. Check Y axis setting in Function - Machine parameter 2. Check Y origin switch
605	Origin is not light, Y is in safety zone	When the main arm is in safety zone, Y origin signal is off	Check Y origin signal.
606	Origin is light, B is not in safety zone	B origin is light when B is not in safety zone	Check B origin.
607	Origin is not light, B is in safety zone	B origin is not light when B is in safety zone	Check B origin.
608	Origin is light, Y2 is not in safety zone	When the sub arm is in safety zone, Y2 origin signal is off	Check Y2 origin signal.
700	Wait timeout for X043	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.

701	Wait timeout for X044	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
702	Wait timeout for Clip 1	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
703	Wait timeout for Clip 2	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
704	Wait timeout for Clip 3	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
705	Wait timeout for Clip 4	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
706	Wait timeout for Suction 1	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
707	Wait timeout for Suction 2	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
708	Wait timeout for thimble forward to position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
709	Wait timeout for thimble back to position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
710	Wait timeout for core in in position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
711	Wait timeout for core out in position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
712	Wait timeout for core in 2 in position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
713	Wait timeout for core out 2 in position	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
714	Wait timeout for X045	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
715	Wait timeout for X046	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
716	Wait timeout for X047	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
717	Wait timeout for X026	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
718	Wait timeout for X040	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
719	Wait timeout for X023	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
720	Wait timeout for X037	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
721	Wait timeout for X017	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.
722	Wait timeout for X036	Wait timeout for signal	1. Check the signal waiting for. 2. Increase the limit time of waiting.



1000	Mid-board signal is off while arm descending	<ol style="list-style-type: none"> <li>1. When pneumatic sub arm falls, internal mid-board signal in rising limit is off.</li> <li>2. When Y1 falls, mid-board signal outside Y1 safety zone or in other places except rising limit is off(except finding origin)</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the mid-board signal.</li> <li>2. If not use mid-board mold functions, please set mid-board mold as not use in Function-Signal.</li> </ol>
1001	Mold opened signal is off while arm descending	<ol style="list-style-type: none"> <li>1. When Y1 falls, mold opened signal outside Y1 safety zone or in other places except rising limit is off(except finding origin)</li> </ol>	<ol style="list-style-type: none"> <li>1. Check mold opened signal</li> <li>2. Check the steps of program</li> </ol>
1002	Safety door is opened when arm descends	<ol style="list-style-type: none"> <li>1. When Y1 falls, safety door opens in automatic state outside Y1 safety zone or in other places except rising limit.</li> <li>2. When pneumatic sub arm falls, safety door signal is not detected in internal sub arm rising limit. (except automatic step)</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the safety door signal</li> <li>2. Check the steps of program</li> </ol>
1003	Vertical and horizontal signals are both on	Vertical and horizontal spacing limit have signals at the same time	Check the horizontal limit switch and vertical limit switch
1004	Z axis origin signal and external safety zone signal are both on	Z origin switch and external safety zone switch are on at the same time	Check Z origin switch and external safety zone switch
1005	Mold opened signal is off when Arm descends in the type	<ol style="list-style-type: none"> <li>1. In internal area or other places except external area, main rising limit is off or sub rising limit is off, or Y1 is not in safety zone</li> <li>2. Mold opened signal is off in auto state</li> <li>3. When mold locked is allowed in other states, mold opened signal is off</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the mold opened signal</li> <li>2. Check the steps of program</li> </ol>
1006	Posture 1 is wrong while descending internal	<ol style="list-style-type: none"> <li>1. Press main arm descending button in manual state. Posture 1 vertical signal is not detected in internal safety area or other places except external safety area</li> <li>2. In autostate, posture 1 vertical signal is not detected in internal safety area, other places except external safety area or other places except rising limit</li> <li>3. Posture 1 vertical signal is not detected in internal safety area when pneumatic main arm descends</li> </ol>	<ol style="list-style-type: none"> <li>1. Check whether posture 1 is vertical</li> <li>2. Check vertical limit switch</li> </ol>

1007	Arm descends internal but not in Z axis internal safety zone	When Y1 falls, out of the Y1 internal safety area or in other places except rising limit, internal safety zone signal is detected but the position is not in the zone	1.Check whether the Z axis internal safety zone is set correct in Function - Mechanical param
1008	Arm descends external but not in Z axis external safety zone	When Y1 falls, out of the Y1 internal safety area or in other places except rising limit, external safety zone signal is detected but the position is not in the zone	1.Check whether the Z axis internal safety zone is set correct in Function - Mechanical param
1009	Do not detect safety zone signal when descending	When Y1 falls, out of the Y1 internal safety area or in other places except rising limit, internal/external safety zone signal is not detected	1.Check whether the Y1 axis descending position is in safety zone 2.Check Z origin switch and external safety zone switch
1010	Y1 is not in Z axis safety zone when descending	When Y1 falls, in other places except rising limit, internal/external safety zone signal is not detected	1.Check whether the Y1 axis descending position is in safety zone 2.Check Z origin switch and external safety zone switch
1011	Y1 is not in X axis safety zone when descending	When Y1 falls, in other places except rising limit, X axis safety zone signal is not detected	Check setting of X axis in Function-Machine param.
1012	Tow groups of profile posture are horizontal at the same time	Posture 1 and posture 2 are horizontal at the same time	1.Check whether posture 1 and posture 2 have horizontal action at the same time 2.Check switches of level limit 1 and level limit 2
1013	Sub forward/backward limit is both on	Sub forward/backward limit signal lamps are on at the same time	Check the sub forward/backward limit switch
1014	Sub up/down limit is both on	Sub up/down limit signal lamps are on at the same time	Check the sub up/down limit switch
1015	Main forward/backward limit is both on	Main forward/backward limit signal lamps are on at the same time	Check the main forward/backward limit switch
1016	Main up/down limit is both on	Main up/down limit signal lamps are on at the same time	Check the main up/down limit switch
1017	Safety door opens when running	Safety door opens when running automatically	1.Check whether the safety door is opened 2.Check the safety door signal
1018	Y2 is not in X2 axis safety zone when descending	When Y2 falls, in other places except rising limit, X2 axis safety zone signal is not detected	Check setting of X2 axis in Function-Machine param.

1019	The mold opened signal is off when origin is reset	Mold opened signal is off when the origin is reset	<ol style="list-style-type: none"> <li>1. Check signal setting in Function</li> <li>2. If checking mold opened as no use in finding origin, the system will alarm once when mold opened signal is off, and it can continue finding origin after removing the alarm</li> </ol>
1020	The mid-mold signal is off when origin is reset	Mid-mold signal is off when the origin is reset	<ol style="list-style-type: none"> <li>1. Check mid-mold signal</li> <li>2. Check No use of mid-mold in Function-Signal setting if no need of this function</li> </ol>
1021	The posture is not vertical when origin is reset	The vertical limit has no signal when the origin is reset	<ol style="list-style-type: none"> <li>1. Check relative limit switches</li> <li>2. Check No limit of reset posture in Function-Signal setting if no need of this function</li> </ol>
1022	The posture is not horizontal when origin is reset	The horizontal limit has no signal when the origin is reset	<ol style="list-style-type: none"> <li>1. Check relative limit switches</li> <li>2. Check No limit of reset posture in Function-Signal setting if no need of this function</li> </ol>
1023	The posture is not vertical in transverse movement	The vertical limit has no signal in transverse movement	<ol style="list-style-type: none"> <li>1. Check relative limit switches</li> <li>2. Check No limit of transverse posture in Function-Signal setting if no need of this function</li> </ol>
1024	The posture is not horizontal in transverse movement	The horizontal limit has no signal in transverse movement	<ol style="list-style-type: none"> <li>1. Check relative limit switches</li> <li>2. Check No limit of transverse posture in Function-Signal setting if no need of this function</li> </ol>
1025	Posture 2 is wrong while descending internal	<ol style="list-style-type: none"> <li>1. Press main arm descending button in manual state. Posture 2 vertical signal is not detected in internal safety area or other places except external safety area</li> <li>2. In auto state, posture 2 vertical signal is not detected in internal safety area, other places except external safety area or other places except rising limit</li> <li>3. Posture 2 vertical signal is not detected in internal safety area when pneumatic main arm descends.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check whether posture 2 is vertical</li> <li>2. Check vertical limit switch</li> </ol>
1026	Horizontal 2 limit and vertical 2 limit are both on	Horizontal 2 limit and vertical 2 limit have signal at the same time	Check vertical limit switch and horizontal limit switch
1027	Mold locked is not finished	Mold closed signal is not detected	<ol style="list-style-type: none"> <li>1. Check mold closed signal</li> <li>2. Check No use of mold locked in Function-Signal setting if no need of this function</li> </ol>
1028	Trouble clearing	Internal error of system	Please contact our technicians

1029	No fully automatic signal	Fully automatic signal is off.	1. Check fully automatic signal 2. Check No use of fully automatic state in Function-Signal setting if no need of this function
1030	Posture 2 is not vertical in transverse movement	Vertical 2 signal is off when the Z axis is moving transversely	Check vertical 2 signal.
1031	Posture 2 is not horizontal in transverse movement	Horizontal 2 signal is off when the Z axis is moving transversely	Check horizontal 2 signal.
1038	Z axis is not in external area in Reject	Z axis is not in external area in Reject period	Check setting of Z axis.
1039	Z axis is not in external area in Reject	Z axis is not in external area in Reject period	Check setting of Z axis.
1040	Previous action is not Z axis	Reject enable is checked	Remove the check or teach an Z axis before
1052	Spinning in, spinning out and main rising limit signals are off	X24, X25, X35, X32 signals off	Detect origin switches of Z axis and Y axis.
1053	Not rising in safety zone	Internal error of system	Please contact our technicians
1054	No X axis but has X action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1055	No Y axis but has Y action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1056	No X2 axis but has Z action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1057	No X axis but has X2 action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1058	No Y2 axis but has Y2 action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1059	No A axis but has A action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.
1060	No B axis but has B action	Axis is not in Function - Machine param - Structure - Axis definition, but there is an action in mold number program	Delete axis action that is not defined.

1061	No C axis but has C action	Axis is not in Function - Machine param - Structure-Axis definition , but there is an action in mold number program	Delete axis action that is not defined.
1062	Sequence of X1 axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple X1 axes for "origin order enable"	Delete redundant X1 axes in Function - Machine param - Structure - Other - origin order enable
1063	Sequence of Y1 axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple Y1 axes for "origin order enable"	Delete redundant Y1 axes in Function - Machine param - Structure - Other - origin order enable
1064	Sequence of Z axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple Z axes for "origin order enable"	Delete redundant Z axes in Function - Machine param - Structure - Other - origin order enable
1065	Sequence of X2 axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple X2 axes for "origin order enable"	Delete redundant X2 axes in Function - Machine param - Structure - Other - origin order enable
1066	Sequence of Y2 axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple Y2 axes for "origin order enable"	Delete redundant Y2 axes in Function - Machine param - Structure - Other - origin order enable
1067	Sequence of A axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple A axes for "origin order enable"	Delete redundant A axes in Function - Machine param - Structure - Other - origin order enable
1068	Sequence of B axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple B axes for "origin order enable"	Delete redundant B axes in Function - Machine param - Structure - Other - origin order enable
1069	Sequence of C axis back to origin is set repeatedly	Function - Machine param - Structure - Other, choose multiple C axes for "origin order enable"	Delete redundant C axes in Function - Machine param - Structure - Other - origin order enable
1070	Use returning in order but order of X1 axis is not set	Not choose X1 axis in Function - Machine param - Structure - Other - origin order enable	Choose X1 axis in Function - Machine param - Structure - Other - origin order enable
1071	Use returning in order but order of Y1 axis is not set	Not choose Y1 axis in Function - Machine param - Structure - Other - origin order enable	Choose Y1 axis in Function - Machine param - Structure - Other - origin order enable
1072	Use returning in order but order of Z axis is not set	Not choose Z axis in Function - Machine param - Structure - Other - origin order enable	Choose Z axis in Function - Machine param - Structure - Other - origin order enable
1073	Use returning in order but order of X2 axis is not set	Not choose X2 axis in Function - Machine param - Structure - Other - origin order enable	Choose X2 axis in Function - Machine param - Structure - Other - origin order enable

1074	Use returning in order but order of Y2 axis is not set	Not choose Y2 axis in Function - Machine param - Structure - Other - origin order enable	Choose Y2 axis in Function - Machine param - Structure - Other - origin order enable
1075	Use returning in order but order of A axis is not set	Not choose A axis in Function - Machine param - Structure - Other - origin order enable	Choose A axis in Function - Machine param - Structure - Other - origin order enable
1076	Use returning in order but order of B axis is not set	Not choose B axis in Function - Machine param - Structure - Other - origin order enable	Choose B axis in Function - Machine param - Structure - Other - origin order enable
1077	Use returning in order but order of C axis is not set	Not choose C axis in Function - Machine param - Structure - Other - origin order enable	Choose C axis in Function - Machine param - Structure - Other - origin order enable
1078	No main up limit signal when X axis returns to origin point	No X35 signal when back to the origin	Check whether main up limit is normal
1079	No sub up limit signal when X2 axis returns to origin point	No X32 signal when back to the origin	Check whether sub up limit is normal
1080	No main up limit signal when Z axis returns to origin point	No X35 signal when back to the origin	Check whether main up limit is normal
1081	No sub up limit signal when Z axis returns to origin point	No X32 signal when back to the origin	Check whether sub up limit is normal
1100	Safety zone is not detected when the main arm descends	When pneumatic main arm descends, internal /external safety zone signal is not detected	1.Check Z origin switch and external safety zone switch 2.Check whether the steps of program are correct
1101	Safety zone is not detected when the sub arm descends	When pneumatic sub arm descends, internal /external safety zone signal is not detected	1.Check Z origin switch and external safety zone switch 2.Check whether the steps of program are correct
1102	Mold-opened signal is off when main arm descends	When pneumatic main arm descends, mold opened signal is not detected in internal safety zone	Check mold opened signal.
1103	Mold-opened signal is off when sub arm descends	When pneumatic sub arm descends, mold opened signal is not detected in internal safety zone	Check mold opened signal.
1104	Main up limit is on after main arm descended	After pneumatic main arm descends, main up limit switch has signal	1.Check whether the main arm descends 2.Check main up limit switch

1105	Sub up limit is on after sub arm descended	After pneumatic sub arm descends, sub up limit switch has signal	1.Check whether the sub arm descends 2.Check sub up limit switch
1106	Descending limit is off after main arm descends	After pneumatic main arm descends, main down limit has no signal	1.Check whether the main arm descends 2.Check main down limit switch 3.Choose No use of Main down limit in Function-Machine param-Structure if there is no descending limit
1107	Descending limit is off after sub arm descends	After pneumatic sub arm descends, sub down limit has no signal	1.Check whether the sub arm descends 2.Check sub down limit switch 3.Choose No use of Main down limit in Function-Machine param-Structure if there is no descending limit
1108	Mid-mold signal is off when main arm descends	Mid-mold signal is off when pneumatic main arm is descending	1.Check mid-mold signal 2.Check No use of mid-mold in Function-Signal setting if no need of this function
1109	Mid-mold signal is off when sub arm descends	Mid-mold signal is off when pneumatic sub arm is descending	1.Check mid-mold signal 2.Check No use of mid-mold in Function-Signal setting if no need of this function
1120	When main arm is rising, internal/external safety zone signal is not detected	When pneumatic main arm is rising, Z origin and external safety zone have no signal	Check Z origin switch and external safety zone switch
1121	When sub arm is rising, internal/external safety zone signal is not detected	When pneumatic main arm is rising, Z origin and external safety zone have no signal	Check Z origin switch and external safety zone switch
1122	Main arm rises too fast	When pneumatic main arm is rising, main up limit signal can be detected for a while after the main down valve is closed	Check whether the main up limit is normally on
1123	Sub arm rises too fast	When pneumatic sub arm is rising, sub up limit signal can be detected for a while after the main down valve is closed	Check whether the sub up limit is normally on
1124	Mold-opened signal is off when main Arm rises	Mold opened signal is off when pneumatic main arm is rising	Check mold opened signal.
1125	Mold-opened signal is off when sub arm rises	Mold opened signal is off when pneumatic sub arm is rising	Check mold opened signal.



1126	Main up limit is off after main arm rises	After pneumatic main arm rises, main up limit has no signal	1.Check whether the main arm rises 2.Check main up limit switch
1127	Sub up limit is off after sub arm rises	After pneumatic sub arm rises, sub up limit has no signal	1.Check whether the sub arm rises 2.Check sub up limit switch
1140	Main backward limit is on after main arm moves forward	Main backward limit has signal after pneumatic main arm moves forward	1.Check whether the main arm moves forward 2.Check main backward limit switch 3.Choose No use of Main backward limit in Function-Machine param-Structure if there is no main backward limit
1141	Sub backward limit is on after sub arm moves forward	Sub backward limit has signal after pneumatic sub arm moves forward	1.Check whether the sub arm moves forward 2.Check sub backward limit switch 3.Choose No use of Sub backward limit in Function-Machine param-Structure if there is no sub backward limit
1142	Main backward limit is off after main arm moves backward	Main backward limit has no signal after pneumatic main arm moves backward	1.Check whether the main arm moves backward 2.Check main backward limit switch 3.Choose No use of Main backward limit in Function-Machine param-Structure if there is no main backward limit
1143	Sub backward limit is off after sub arm moves backward	Sub backward limit has no signal after pneumatic sub arm moves backward	1.Check whether the sub arm moves backward 2.Check sub backward limit switch 3.Choose No use of Sub backward limit in Function-Machine param-Structure if there is no sub backward limit
1144	Main forward limit is off after main arm moves forward	Main forward limit has no signal after pneumatic main arm moves forward	1.Check whether the main arm moves forward 2.Check main forward limit switch 3.Choose No use of Main forward limit in Function-Machine param-Structure if there is no main forward limit
1145	Sub forward limit is off after sub arm moves forward	Sub forward limit has no signal after pneumatic sub arm moves forward	1.Check whether the sub arm moves forward 2.Check sub forward limit switch 3.Choose No use of sub forward limit in Function-Machine param-Structure if there is no sub forward limit
1146	Main forward limit is on after main arm moves backward	Main forward limit has signal after pneumatic main arm moves backward	1.Check whether the main arm moves backward 2.Check main forward limit switch 3.Choose No use of main forward limit in Function-Machine param-Structure if there is no main forward limit
1147	Sub forward limit is on after sub arm moves backward	Sub forward limit has signal after pneumatic sub arm moves backward	1.Check whether the sub arm moves backward 2.Check sub forward limit switch 3.Choose No use of sub forward limit in Function-Machine param-Structure if there is no sub forward limit

1160	Main up limit signal is not detected when Posture 1 changes	1. In internal safety zone, Posture 1 is vertical when main up limit signal is off 2. Not in external safety zone, Posture 1 is vertical /horizontal when main up limit signal is off 3. Z position is less than value set of Z internal safety zone. Posture 1 is vertical/horizontal when main up limit signal is off	Check main up limit switch
1161	Sub up limit signal is not detected when Posture 1 changes	1. In internal safety zone, Posture 1 is vertical when sub up limit signal is off 2. Not in external safety zone, Posture 1 is vertical /horizontal when sub up limit signal is off 3. Z position is less than value set of Z internal safety zone. Posture 1 is vertical/horizontal when sub up limit signal is off	Check sub up limit switch
1162	Mold-opened signal is off when Posture 1 changes	Posture 1 is vertical in internal safety zone. Mold opened signal is off when selecting external standby or horizontal standby	Check mold opened signal
1163	Horizontal 1 limit is off after Posture 1 is horizontal	Horizontal 1 limit switch has no signal after Posture 1 is horizontal	1. Check whether Posture 1 is horizontal 2. Check horizontal 1 limit switch
1164	Vertical 1 limit is off after Posture 1 is vertical	Vertical 1 limit switch has no signal after Posture 1 is vertical	1. Check whether Posture 1 is vertical 2. Check vertical 1 limit switch
1165	Not in safety zone when posture is horizontal	Not in Z origin or external safety zone when posture is horizontal	1. Check Z origin switch and external safety zone switch 2. Check whether steps of program are correct
1170	Main up limit signal is not detected when Posture 2 changes	1. In internal safety zone, Posture 2 is vertical when main up limit signal is off 2. Not in external safety zone, Posture 2 is vertical/horizontal when main up limit signal is off 3. Z position is less than value set of Z internal safety zone. Posture 2 is vertical/horizontal when main up limit signal is off	Check main up limit switch

1171	Sub up limit signal is not detected when Posture 2 changes	1. In internal safety zone, Posture 2 is vertical when sub up limit signal is off 2. Not in external safety zone, Posture 2 is vertical/horizontal when sub up limit signal is off 3. Z position is less than value set of Z internal safety zone. Posture 2 is vertical/horizontal when sub up limit signal is off	Check sub up limit switch
1172	Mold-opened signal is off when Posture 2 changes	Posture 2 is vertical in internal safety zone. Mold opened signal is off when selecting external standby or horizontal standby	Check mold opened signal.
1173	Horizontal 2 limit is off after Posture 2 is horizontal	Horizontal 2 limit switch has no signal after Posture 2 is horizontal	1. Check whether Posture 2 is horizontal 2. Check horizontal 2 limit switch
1174	Vertical 2 limit is off after Posture 2 is vertical	Vertical 2 limit switch has no signal after Posture 2 is vertical	1. Check whether Posture 2 is vertical 2. Check vertical 2 limit switch
1180	Main up limit is off during pneumatic transverse in/out	Main up limit point has no signal during pneumatic transverse in/out	Check main up limit
1181	Sub up limit is off during pneumatic transverse in/out	Sub up limit point has no signal during pneumatic transverse in/out	Check sub up limit
1182	Spin in limit is off after spin in	Spin in limit has no signal after pneumatic transverse entry	1. Check whether transverse entry is carried out 2. Check spin in limit switch
1183	Spin out limit is off after spinning out	Spin out limit has no signal after pneumatic transverse exit	1. Check whether transverse exit is carried out 2. Check spin out limit switch
1184	The posture is not the same as instruction when spinning out	The posture of fixture is not the same as taught after spinning out	Check whether the fixture is loose
1185	Mold-opened signal is off when spinning in	When transverse entry Z decreases in external standby, mold opened signal is off out of external safety zone or position of Z is less than external safety area.	Check whether mold opened signal is normal

1186	Main up limit is off during transverse movement out of safety zone	When not in internal/external safety zone, or Z does transverse movement between internal and external area that has been set, main up limit is not detected	Check whether main up limit is normal
1187	Sub up limit is off during transverse movement out of safety zone	When not in internal/external safety zone, or Z does transverse movement between internal and external area that has been set, sub up limit is not detected	Check whether sub up limit is normal
1188	Y1 is not in safety zone during transverse movement out of safety zone	When not in internal/external safety zone, or Z does transverse movement between internal and external area that has been set, position of Y1 is larger than internal safety zone.	Check setting of Y axis in Function-Machine param.
1189	Spin in from external place when main/sub up limit are not both on	Main/sub up limit are not both on when Z moves. The current position is larger than internal safety area while target position is less than it.	Check whether main/sub up limit is normal
1190	Spin out of internal place when main/sub up limit are not both on	Main/sub up limit are not both on when Z moves. The current position is less than internal safety area while target position is larger than it.	Check whether main/sub up limit is normal
1191	Rising limit is not detected during manual transverse movement out of safety area	Main/sub up limit are not both on or position of Y1 is larger than internal safety zone during manual transverse movement out of safety area	1. Check whether main/sub up limit is normal 2. This alarm occurs if Y axis standby position is 0 or distance per rotation is 0
1192	Current position is less than safety area allowed move to	The current position is less than safety area allowed move to during manual transverse entry	Check setting of Z axis in Function-Machine param.
1193	Current position is larger than safety area allowed move to	The current position is larger than safety area allowed move to during manual transverse entry	Check setting of Z axis in Function-Machine param.
1194	Y2 axis is not in rising position	When not in internal/external safety zone, or Z does transverse movement between internal and external area that has been set, position of Y1 is larger than internal safety zone.	Check setting of Y2 axis in Function-Machine param.

1195	Wait overtime for Y1, Y2 up limit signals in transverse movement	Wait timeout for signal	Check whether main/sub up limit is normal
1200	Clip 1 valve signal is on; Clip 1 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1201	Clip 1 valve signal is off; Clip 1 confirm signal is on	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1202	Clip 2 valve signal is on; Clip 2 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1203	Clip 2 valve signal is off; Clip 2 confirm signal is on	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1204	Clip 3 valve signal is on; Clip 3 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1205	Clip 3 valve signal is off; Clip 3 confirm signal is on	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1206	Clip 4 valve signal is on; Clip 4 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1207	Clip 4 valve signal is off; Clip 4 confirm signal is on	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1208	Suck 1 valve signal is on; Suck 1 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1209	Suck 1 valve signal is off; Suck 1 confirm signal is on	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit
1210	Suck 2 valve signal is on; Suck 2 confirm signal is off	1. The valve acts when relative limit has no signal 2. The valve does not act when relative limit has signal	Check valve and limit

1211	Suck 2 valve signal is off; Suck 2 confirm signal is on	1.The valve acts when relative limit has no signal 2.The valve does not act when relative limit has signal	Check valve and limit
1212	Suck 3 valve signal is on; Suck 3 confirm signal is off	1.The valve acts when relative limit has no signal 2.The valve does not act when relative limit has signal	Check valve and limit
1213	Suck 3 valve signal is off; Suck 3 confirm signal is on	1.The valve acts when relative limit has no signal 2.The valve does not act when relative limit has signal	Check valve and limit
1214	Suck 4 valve signal is on; Suck 4 confirm signal is off	1.The valve acts when relative limit has no signal 2.The valve does not act when relative limit has signal	Check valve and limit
1215	Suck 4 valve signal is off; Suck 4 confirm signal is on	1.The valve acts when relative limit has no signal 2.The valve does not act when relative limit has signal	Check valve and limit
1250	X037 signal is not detected	Wait timeout for signal	1.Check whether the signal waiting for is normal. 2.Set a longer wait limit time.
1251	X023 signal is not detected	Wait timeout for signal	1.Check whether the signal waiting for is normal. 2.Set a longer wait limit time.
1300	Check standby point posture	Wrong standby posture	Check vertical/horizontal limit
1301	Check standby point main arm rising limit	1.Position of standby point is larger than the max Y1 axis standby position. 2.Main arm is not in Y1 origin and cannot do transverse movement when returning to standby point.	1.Check whether Y1 axis is set correct in Function-Machine param. 2.Manually move Y1 axis to origin point.
1302	Check standby point sub arm rising limit	1.Position of standby point is larger than the max Y2 axis standby position. 2.Main arm is not in Y2 origin and cannot do transverse movement when returning to standby point.	1.Check whether Y2 axis is set correct in Function-Machine param. 2.Manually move Y2 axis to origin point.

<p>1303</p>	<p>Check standby point X position</p>	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step0 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
<p>1304</p>	<p>Check standby point Y position</p>	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step1 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
<p>1305</p>	<p>Check standby point Z position</p>	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step2 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>



1306	Check standby point Clip1	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step3 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1307	Check standby point Clip2	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step4 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1308	Check standby point Clip3	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step5 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>

1309	Check standby point Clip4	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step6 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1310	Check standby point Suck1	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step7 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1311	Check standby point Suck2	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step8 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>

1312	Check standby point A	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step9 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1313	Check standby point B	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step10 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1314	Check standby point C	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step11 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>

1315	Check standby point X2	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step12 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1316	Check standby point Y2	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step13 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>
1333	Check standby point suck3	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step14 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>

1334	Check standby point suck4	<p>When teaching, suck/clip action signal of standby point is off by default. Insert Clip ON action into step15 standby position if needed.</p> <p>System will return to standby point automatically after a cycle, except for clip/suck actions.</p> <p>If clip signal is off in standby point, but it is on after a cycle ended, the alarm will occur;</p> <p>If clip signal is on in standby point, but it is off after a cycle, the alarm will also occur.</p> <p>Internal insert teaching begins from the upper horizontal part of the arm. Steps are fetching inserts, transverse entry, waiting for mold opened, moving downward and embedding, fetching product, moving upward and allowing mold locked, crossing out and placing, moving upward. According to these steps, clip/suck signal in standby point is off, so it is when the cycle ends.</p>	
1400	Do not detect rising limit	<p>In auto mode, press the start key, system do return action and back to standby point. While reset, the main and sub arms must be on the up limit point, or it will alarm</p>	<ol style="list-style-type: none"> <li>1. Check whether the auxiliary up limit is normal.</li> <li>2. Manually move the sub arm to the origin.</li> </ol>
1401	Not internal at the same time	<p>When reset, the main and sub arms must be on the up limit point, or it will alarm</p>	<ol style="list-style-type: none"> <li>1. Check whether the auxiliary up limit is normal.</li> <li>2. Manually move the sub arm to the origin.</li> </ol>
1402	Not external at the same time	<p>When reset, the main and sub arms must be on the up limit point, or it will alarm</p>	<ol style="list-style-type: none"> <li>1. Check whether the auxiliary up limit is normal.</li> <li>2. Manually move the sub arm to the origin.</li> </ol>
1403	Cannot check the Y2 rising limit	<p>In auto mode, press the start key, system do return action and back to standby point. While reset, the main and sub arms must be on the up limit point, or it will alarm</p>	<ol style="list-style-type: none"> <li>1. Check whether the auxiliary up limit is normal.</li> <li>2. Manually move the sub arm to the origin.</li> </ol>
1410	Wait overtime for external descending safety signal	<p>Wait timeout for signal</p>	<ol style="list-style-type: none"> <li>1. Check whether the signal waiting for is normal.</li> <li>2. Set a longer limit time of waiting.</li> </ol>
1411	External descending safety signal off	<p>Wait timeout for signal</p>	<ol style="list-style-type: none"> <li>1. Check whether the signal waiting for is normal.</li> <li>2. Set a longer limit time of waiting.</li> </ol>
1412	Relative position of shaft error	<p>The current running axis is inconsistent with the axis in teaching</p>	<p>Check whether the taught axis deviation in waiting is correct.</p>
1420	Servo board 1 offline	<p>Main board cannot communicate with servo board 1</p>	<p>Check whether the network cable of servo board 1 is loose.</p>
1421	Servo board 2 offline	<p>Main board cannot communicate with servo board 2</p>	<p>Check whether the network cable of servo board 2 is loose.</p>
1422	Servo board 3 offline	<p>Main board cannot communicate with servo board 3</p>	<p>Check whether the network cable of servo board 3 is loose.</p>
1423	Servo board 4 offline	<p>Main board cannot communicate with servo board 4</p>	<p>Check whether the network cable of servo board 4 is loose.</p>

### 8.4.2 ECS5/ECS3 Servo Alarms

Rules of servo alarm codes in drive-control series: first two XX represent axis number and range is (27-38), 27 means in servo board 1, 28 means in servo board 2, 29 means in servo board 3, 30 means in servo board 4, 31 means X axis, 32 means Y axis, 33 means Z axis, 34 means X2 axis, 35 means Y2 axis, 36 means A axis, 37 means B axis, 38 means C axis; The last two XX represent type of servo alarm and if they are same number, it means same type of alarm. 0 axis refers to axis in general, not specific one.

**Axis 1:** Axis 1 represents Y1, Y2, X1.

**Axis 2:** Axis 2 represents Z, X2.

If the program cannot recognize the exact axis that alarms, it will send a blank alarm without information, but the servo board alarm code will inform the user.

**E.g.** 2702 Alarm: from Y1 servo in servo board 1;

2803 Alarm: from X2 servo in servo board 2.

Alarm Number	Alarm Information	Alarm Reason	Alarm Solution
XX01	Emergency stop alarm	Servo has emergency stop signal input	1. Turn out the manual controller emergency stop knob 2. Make the host emergency stop signal short connected
XX02	Axis 1 over-current	IPM module over-current protection	1. Check whether the motor is blocked. 2. Pull off the power cable and brake cable and power on again. If it alarms, it is host malfunction, then replace it. Otherwise check the motor and wiring.
XX03	Axis 2 over-current	IPM module over-current protection	1. Check whether the motor is blocked. 2. Pull off the power cable and brake cable and power on again. If it alarms, it is host malfunction, then replace it. Otherwise check the motor and wiring.
XX04	Axis 0 external generatrix cut off	Generatrix signal is not received	1. 3pin white terminal is loose on the top. 2. Host malfunction
XX05	Axis 1 over-load	Over the max load	1. Check the load. 2. Check whether the motor is blocked or the brake is loose. 3. Check whether Param 1 is the corresponding power.
XX06	Axis 2 over-load	Over the max load	1. Check the load. 2. Check whether the motor is blocked or the brake is loose. 3. Check whether Param 1 is the corresponding power.
XX07	Initialization of Axis 1 current sampling module failed	Power on initialization of driver is not over	1. Press STOP to clear. 2. Power on again. 3. Host malfunction. Replace it.

XX08	Initialization of Axis 2 current sampling module failed	Power on initialization of driver is not over	<ol style="list-style-type: none"> <li>1. Press STOP to clear.</li> <li>2. Power on again.</li> <li>3. Host malfunction. Replace it.</li> </ol>
XX09	Axis 1 UVW phase current abnormality	Current is over the alarm value	<ol style="list-style-type: none"> <li>1. Line sequence is wrong.</li> <li>2. Phase loss.</li> <li>3. Motor code does not match.</li> </ol>
XX10	Axis 2 UVW phase current abnormality	Current is over the alarm value	<ol style="list-style-type: none"> <li>1. Line sequence is wrong.</li> <li>2. Phase loss.</li> <li>3. Motor code does not match.</li> </ol>
XX11	Axis 0 VDC under-voltage	Detected voltage is lower than 195V	<ol style="list-style-type: none"> <li>1. Too much load and too large acceleration lead to too much voltage-drop.</li> <li>2. External input voltage is too low.</li> <li>3. Host malfunction. Replace it.</li> </ol>
XX12	Axis 0 VDC over-voltage	Detected voltage is higher than 405V	<ol style="list-style-type: none"> <li>1. Too much load and too large deceleration lead to too much voltage-rising.</li> <li>2. Brake resistor fault.</li> <li>3. Host malfunction. Replace it.</li> </ol>
XX13	Axis 1 over-speed	Over the maximum speed	<ol style="list-style-type: none"> <li>1. Internal communication is off. Check whether it is well grounded.</li> <li>2. Param 50 is set wrong.</li> </ol>
XX14	Axis 2 over-speed	Over the maximum speed	<ol style="list-style-type: none"> <li>1. Internal communication is off. Check whether it is well grounded.</li> <li>2. Param 50 is set wrong.</li> </ol>
XX15	Axis 0 driver over-heat	Internal temperature is over 75°C	<ol style="list-style-type: none"> <li>1. Check the fan.</li> <li>2. Host malfunction. Replace it.</li> </ol>
XX16	Axis 1 fails to write IIC	Storage chip fault	Replace the host
XX17	Axis 2 fails to read IIC	Storage chip fault	Replace the host
XX18	Axis 1 position deviation is too large	Deviation between command value and actual encoder value is larger than param 49.	<ol style="list-style-type: none"> <li>1. Set servo param 49 to increase the deviation range.</li> <li>2. Acceleration/deceleration is set too small.</li> <li>3. System fault.</li> </ol>
XX19	Axis 2 position deviation is too large	Deviation between command value and actual encoder value is larger than param 49.	<ol style="list-style-type: none"> <li>1. Set servo param 49 to increase the deviation range.</li> <li>2. Acceleration/deceleration is set too small.</li> <li>3. System fault.</li> </ol>
XX20	Axis 1 encoder error	Encoder communication error	<ol style="list-style-type: none"> <li>1. Encoder cable fault.</li> <li>2. Encoder port is not well connected.</li> <li>3. Motor encoder is abnormal.</li> </ol>



XX21	Axis 1 abnormal speed test	Abnormal motor rotation	1.Motor code is set wrong. 2.Unreasonable gain parameter. 3.Random rotation caused by motor malfunction.
XX22	Axis 1 encoder in initialization	Encoder initialization	1.Encoder cable fault. 2.Encoder port is not well connected. 3.Motor encoder is abnormal.
XX23	Axis 0 hardware over-voltage	Internal hardware over-voltage protection	1.Too much load and too large deceleration lead to too much voltage-rising. 2.Brake resistor fault. 3.Host malfunction. Replace it.
XX24	Axis 0 external generatrix ERR	Generatrix signal is not received	1.3pin white terminal is loose on the top. 2.Host malfunction
XX25	Axis 1 position buffer is full	System fault	
XX26	Axis 2 position buffer is full	System fault	
XX27	XEEPROM param detection fault	Storage chip fault	Replace the host
XX28	Axis 2 encoder error	Encoder communication error	1.Encoder cable fault. 2.Encoder port is not well connected. 3.Motor encoder is abnormal.
XX29	Axis 2 abnormal speed test	Encoder feedback value is abnormal	1.Motor code is set wrong. 2.Unreasonable gain parameter. 3.Random rotation caused by motor malfunction.
XX30	Axis 2 encoder in initialization	Encoder initialization	1.Encoder cable fault. 2.Encoder port is not well connected. 3.Motor encoder is abnormal.
XX31	Axis 0 servo driver alarms	Clear alarms too frequently	
XX32	Axis 0 servo driver alarms	Check error of storage parameters	Write 8051 through param 0. Wait for 10s and power on again.
XX33	Axis 0 communication time-out	Generatrix communication time-out	Replace the host
XX34	Power failure of Axis 1 encoder battery	Encoder has battery power failure sign.	Ensure the battery is well connected.Set param 13 as 0 to clear.
XX35	Power failure of Axis 2 encoder battery	Encoder has battery power failure sign.	Ensure the battery is well connected.Set param 13 as 0 to clear.

XX36	Low voltage of Axis 1 encoder battery	Encoder has battery low-voltage sign.	Encoder voltage is too low.
XX37	Low voltage of Axis 2 encoder battery	Encoder has battery low-voltage sign.	Encoder voltage is too low.
XX38	Axis 1 motor code does not match	Motor code read from encoder does not match the set value.	1. Check whether param 2 is the correct motor code. If it is, restart to clear. 2. If not, set param 4 as 1 and manually set param 2 as correct motor code.
XX39	Axis 2 motor code does not match	Motor code read from encoder does not match the set value.	1. Check whether param 2 is the correct motor code. If it is, restart to clear. 2. If not, set param 4 as 1 and manually set param 2 as correct motor code.
XX40	Axis 1 illegal motor code	Motor code is not supported by system	Set param 4 as 1, and manually set param 2 as correct motor code.
XX41	Axis 2 illegal motor code	Motor code is not supported by system	Set param 4 as 1, and manually set param 2 as correct motor code.
XX42	Value of Axis 1 encoder does not update	Encoder value does not change	Motor encoder fault
XX43	Value of Axis 2 encoder does not update	Encoder value does not change	Motor encoder fault
XX44	Axis 1 encoder multi-ring value error		Cut the power, pull out battery and reset encoder/set param 13 as 0
XX45	Axis 2 encoder multi-ring value error		Cut the power, pull out battery and reset encoder/set param 13 as 0
XX46	Power of 1 motor not fit	Param1 (motor power) does not match param2 (motor code)	Check param 2 and whether motor code matches param 1 power
XX47	Power of 2 motor not fit	Param1 (motor power) does not match param2 (motor code)	Check param 2 and whether motor code matches param 1 power
XX48	Axis 1 parameter set wrong	Unreasonable parameter configuration	Check whether parameter is within the range: 5(1, 6000), 6(1, 300), 7(1~300), 11(10, 5000), 15(10, 100), 21(1, 1000), 22(0, 300), 23(1, 20), 31(20000), 32(2000/20000), 69(4096), 71(0), 72(0), 73(0)
XX49	Axis 2 parameter set wrong	Unreasonable parameter configuration	Check whether parameter is within the range: 5(1, 6000), 6(1, 300), 7(1~300), 11(10, 5000), 15(10, 100), 21(1, 1000), 22(0, 300), 23(1, 20), 31(20000), 32(2000/20000), 69(4096), 71(0), 72(0), 73(0)

## Appendix Modbus Address and Parameter Definitions

1-999 for readable address ,1000 for write address: product clear, most capital address is 2000.

**Note:** The data requesting “feedback of each axis” is different from other data in that it is byte-ordered to the small end and word-ordered to the end.

**Description:** The data of address number 4 is enabled when the data of address 3 is full, so the data of address 4 is always zero when address 3 does not exceed 65535.

No.	Description	Unit or definition of data
1	Device status	32 represents stop status. 96 represents automatic status. 128 represents manual status
2	Production period	Data*0.1, Unit: s
3	Output	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit:1
4	Output	Data*65535
5	Operation param tolerance	Data*0.01, Unit: mm
6	Operation param pull distance	Data*0.1, Unit: mm
7	Operation param X1 acceleration time	Data*0.01, Unit: s
8	Operation param X1 deceleration time	Data*0.01, Unit: s
9	Operation param X1 external acceleration/deceleration time	Data*0.01, Unit: s
10	Operation param X1 manual acceleration/deceleration time	Data*0.01, Unit: s
11	Operation param Y1 acceleration time	Data*0.01, Unit: s
12	Operation param Y1 deceleration time	Data*0.01, Unit: s
13	Operation param Y1 external acceleration/deceleration time	Data*0.01, Unit: s
14	Operation param Y1 manual acceleration/deceleration time	Data*0.01, Unit: s
15	Operation param Z acceleration time	Data*0.01, Unit: s
16	Operation param Z deceleration time	Data*0.01, Unit: s
17	Operation param Z manual acceleration/deceleration time	Data*0.01, Unit: s
18	Operation param X1 max speed	Unit: %
19	Operation param Y1 max speed	Unit: %
20	Operation param Z max speed	Unit: %
21	Operation param X2 acceleration time	Data*0.01, Unit: s
22	Operation param X2 deceleration time	Data*0.01, Unit: s
23	Operation param X2 external acceleration/deceleration time	Data*0.01, Unit: s

24	Operation param X2 manual acceleration/deceleration time	Data*0.01, Unit: s
25	Operation param Y2 acceleration time	Data*0.01, Unit: s
26	Operation param Y2 deceleration time	Data*0.01, Unit: s
27	Operation param Y2 external acceleration/deceleration time	Data*0.01, Unit: s
28	Operation param Y2 manual acceleration/deceleration time	Data*0.01, Unit: s
29	Operation param A acceleration time	Data*0.01, Unit: s
30	Operation param A deceleration time	Data*0.01, Unit: s
31	Operation param A external acceleration/deceleration time	Data*0.01, Unit: s
32	Operation param A manual acceleration/deceleration time	Data*0.01, Unit: s
33	Operation param B acceleration time	Data*0.01, Unit: s
34	Operation param B deceleration time	Data*0.01, Unit: s
35	Operation param B external acceleration/deceleration time	Data*0.01, Unit: s
36	Operation param B manual acceleration/deceleration time	Data*0.01, Unit: s
37	Operation param C acceleration time	Data*0.01, Unit: s
38	Operation param C deceleration time	Data*0.01, Unit: s
39	Operation param C external acceleration/deceleration time	Data*0.01, Unit: s
40	Operation param C manual acceleration/deceleration time	Data*0.01, Unit: s
41	Operation param X2 max speed	Unit: %
42	Operation param Y2 max speed	Unit: %
43	Operation param A max speed	Unit: %
44	Operation param B max speed	Unit: %
45	Operation param C max speed	Unit: %
46	Machine param X1 axis max movement	Data*0.1, Unit: mm
47	Machine param X1 axis origin offset	Data*0.1, Unit: mm
48	Machine param X1 axis internal min movement	Data*0.1, Unit: mm
49	Machine param X1 axis internal max movement	Data*0.1, Unit: mm
50	Machine param X1 axis distance per rotation	Data*0.01, Unit: mm
51	X1 axis feedback in monitoring page	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
52	X1 axis feedback in monitoring page	Data*65535, Unit: pu
53	Machine param Y1 axis max movement	Data*0.1, Unit: mm
54	Machine param Y1 axis origin offset	Data*0.1, Unit: mm
55	Machine param Y1 axis max standby position	Data*0.1, Unit: mm

56	Machine param Y1 axis leaving origin position	Data*0.1, Unit: mm
57	Machine param Y1 axis distance per rotation	Data*0.01, Unit: mm
58	Y1 axis feedback in monitoring page	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
59	Y1 axis feedback in monitoring page	Data*65535, Unit: pu
60	Machine param Z axis max movement	Data*0.1, Unit: mm
61	Machine param Z axis origin offset	Data*0.1, Unit: mm
62	Machine param Z axis internal safety	Data*0.1, Unit: mm
63	Machine param Z axis external safety	Data*0.1, Unit: mm
64	Machine param Z axis distance per rotation	Data*0.01, Unit: mm
65	Z axis feedback in monitoring page	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
66	Z axis feedback in monitoring page	Data*65535, Unit: pu
67	Machine param X2 axis max movement	Data*0.1, Unit: mm
68	Machine param X2 axis origin offset	Data*0.1, Unit: mm
69	Machine param X2 axis internal min movement	Data*0.1, Unit: mm
70	Machine param X2 axis internal max movement	Data*0.1, Unit: mm
71	Machine param X2 axis distance per rotation	Data*0.01, Unit: mm
72	X2 axis feedback in monitoring page	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
73	X2 axis feedback in monitoring page	Data*65535, Unit: pu
74	Machine param Y2 axis max movement	Data*0.1, Unit: mm
75	Machine param Y2 axis origin offset	Data*0.1, Unit: mm
76	Machine param Y2 axis max standby position	Data*0.1, Unit: mm
77	Machine param Y2 axis leaving origin position	Data*0.1, Unit: mm
78	Machine param Y2 axis distance per rotation	Data*0.01, Unit: mm
79	Y2 axis feedback in monitoring page	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
80	Y2 axis feedback in monitoring page	Data*65535, Unit: pu
81	Machine param A axis max rotation	Data*0.1, Unit: °
82	Machine param A axis origin offset	Data*0.1, Unit: °
83	Machine param A axis rampant safety range (less than )	Data*0.1, Unit: °
84	Machine param A axis rampant safety range (more than )	Data*0.1, Unit: °


85	Machine param A axis motor per rotation	Data*0.01, Unit: °
86	Machine param A axis feedback	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
87	Machine param A axis feedback	Data*65535, Unit: pu
88	Machine param B axis max rotation	Data*0.1, Unit: °
89	Machine param B axis origin offset	Data*0.1, Unit: °
90	Machine param B axis rampant safety range (less than )	Data*0.1, Unit: °
91	Machine param B axis rampant safety range (more than )	Data*0.1, Unit: °
92	Machine param B axis motor per rotation	Data*0.01, Unit: °
93	Machine param B axis feedback	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
94	Machine param B axis feedback	Data*65535, Unit: pu
95	Machine param C axis max rotation	Data*0.1, Unit: °
96	Machine param C axis origin offset	Data*0.1, Unit: °
97	Machine param C axis rampant safety range (less than )	Data*0.1, Unit: °
98	Machine param C axis rampant safety range (more than )	Data*0.1, Unit: °
99	Machine param C axis motor per rotation	Data*0.01, Unit: °
100	Machine param C axis feedback	The upper limit is 65535, after breaking the upper limit, count again and enter 1 to next address, unit: pu
101	Machine param C axis feedback	Data*65535, Unit: pu
102	Machine param time vertical 1	Data*0.1, Unit: s
103	Machine param time horizontal 1	Data*0.1, Unit: s
104	Machine param time vertical 2	Data*0.1, Unit: s
105	Machine param time horizontal 2	Data*0.1, Unit: s
106	Machine param time auxiliary arm down	Data*0.1, Unit: s
107	Machine param time auxiliary arm up	Data*0.1, Unit: s
108	Machine param time auxiliary arm forward	Data*0.1, Unit: s
109	Machine param time auxiliary arm backward	Data*0.1, Unit: s
110	Machine param time main arm forward	Data*0.1, Unit: s
111	Machine param time main arm backward	Data*0.1, Unit: s
112	Machine param time main arm up	Data*0.1, Unit: s
113	Machine param time main arm down	Data*0.1, Unit: s
114	Machine param time transverse in	Data*0.1, Unit: s
115	Machine param time transverse out	Data*0.1, Unit: s
116	Alarm code	Data is the code, No unit
117	Version code	
...	...	
1000	Clear products	
...	...	
2000	...	



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