



# 伯朗特：机器人 “重新定义”者

3 & 5 AXIS IMM ROBOT MANUAL

BRT-Manipulator.S3/5.V1.0\_2020-05



# 伯朗特：机器人 “重新定义”者

【普通】

## 营销中心文件

伯管发[2020] 006号 签发人：尹荣连

告知非伯朗特一级、二级、三级应用商！

第一条 范围 非伯朗特一级、二级、三级应用商

第二条 内容

- 伯朗特机器人、机械手出厂价是裸机价，不包含包装和运输费。安装应用服务费，伯朗特一级、二级、三级应用商的管运费；所有非伯朗特一级、二级、三级应用商均需在伯朗特官方机械出厂价基础上自2020年1月13日起涨价5%；自2021年1月11日起涨价15%；自2022年1月11日起涨价20%；自2023年1月11日起涨价30%。
- 若有违约者，伯朗特取消该伯朗特一级应用商当年的季度、年度返点及取消伯朗特一级应用商的资格。机器人和机械手的安装应用服务费与伯朗特一级、二级、三级应用商另行双方协商签约。
- 首个带编号的伯朗特一级应用商若在伯朗特应用商群汇报违约者的，将由董事长尹荣连先生亲自在群里裁决并立即奖励其100万元现金。
- 此文件自生效之日起伯管发[2020] 004号和伯管发[2020] 005号营销中心文件终止执行。

第三条 生效日期：2020年02月21日。

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【普通】

## 营销中心文件

伯管发[2020] 007号 签发人：尹荣连

伯朗特二级应用商备案奖励方案

第一条 目的 为了鼓励每家伯朗特一级应用商开发108家伯朗特二级应用商，特制订本制度。

第二条 范围 伯朗特一级应用商

第三条 备案奖励标准

签约二级应用商数量	奖励金额	累计最高奖励金额	备案时间	奖励时间
10家二级应用商	10万元	214万元	2020年01月13日以前完成备案的二级应用商。	一旦备案成功，马上兑现返点当天公示宣传。
28家二级应用商	28万元			
68家二级应用商	68万元			
108家二级应用商	108万元			

第四条 备案二级应用商的条件：

- 1) 下单285万元以上机器人或机械手给伯朗特一级应用商；
- 2) 买卖合同投资时间：一个季度完成；
- 3) 2020.1.13之前备案的二级应用商必须提供签约的送货单和委托书作为附件或告知被取消协议也可以按新的算。
- 4) 提供二级应用商协议、担保合同、买卖合同书、首次授信申请表、营业执照、开票资料、担保人身份证复印件、财产证明（有就提供）给市场部审核；

第五条 生效日期：2020年02月24日。

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【普通】

## 营销中心文件

伯管发[2020] 008号 签发人：尹荣连

伯朗特三级应用商备案奖励方案

第一条 目的 为了鼓励每家伯朗特二级应用商开发108家伯朗特三级应用商，特制订本制度。

第二条 范围 伯朗特二级应用商

第三条 备案奖励标准

签约三级应用商数量	奖励金额	累计最高奖励金额	奖励时间
10家三级应用商	1万元	21.4万元	一旦备案成功，马上兑现返点当天公示宣传。
28家三级应用商	2.8万元		
68家三级应用商	6.8万元		
108家三级应用商	10.8万元		

第四条 备案三级应用商的条件：

- 1) 下单28.5万元以上机器人或机械手给伯朗特二级应用商；
- 2) 买卖合同投资时间：一个季度完成；
- 3) 2020.1.13之前备案的三级应用商必须提供签约的送货单和委托书作为附件；
- 4) 提供三级应用商协议、担保合同、买卖合同书、首次授信申请表、营业执照、开票资料、担保人身份证复印件、财产证明（有就提供）给市场部审核；

第五条 生效日期：2020年02月26日。

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伯朗特机器人股份有限公司成立于2008年，注册资本2.25亿，研发、生产、销售机器人、机械手及其零部件，伯朗特的核心竞争力是在“完成伯朗特2049就是造福全人类”的“伯朗特的千年文化”引领下通过伯朗特应用商模式和伯朗特供应链规则“重新定义”机器人。

BORUNTE ROBOT CO., LTD. was founded in 2008. The registered capital is 225 million RMB. BORUNTE is also a enterprises of R&D, production, sales of industrial robots, IMM robot and its parts. The core competence of BORUNTE is to “redefine” robot through the BORUNTE integrator style and the BORUTNE supply chain rules under the guidance of “BORUNTE millennium culture” , which to to achieve annual sell 40,000,000 robots to supply 40,000,000 global labor and break the revenue of trillions by 2049. The completion of produce 40 million robots and break the revenue of trillions will benefit the whole mankind.a

天人合一

造福全人类

千年文化

## 《伯朗特梦》

我们的梦想	我们的梦想	我们的梦想
从伯朗特启航	在伯朗特发光	和伯朗特一起飞翔
不管再大的风浪	万亿目标的战略	伯朗特大学的崛起
携起手来勇敢去闯	要成为机器人的领头羊	有您有我有爱的力量

尹荣造始于2013年11月05日 定于2020年3月30日

## 《1.11伯朗特文化节是机器人的“伯朗特宣言”》

伯朗特文化节	伯朗特文化节	伯朗特文化节	1.11伯朗特文化节
它是宣言书	它是播种机	它是指明灯	一场机器人的饕餮盛宴
向机器人发出呐喊	在机器人播洒希望	为机器人指明方向	机器人，世界大同
王侯将相宁有种乎？	星星之火，可以燎原！	路途遥远、行则将至！	同心者同路！

释义：2019年开始每年的1月11日是伯朗特员工+伯朗特供应商+伯朗特应用商的狂欢节日；

尹荣造始于2018年11月17日 定于2020年3月30日

## 《伯朗特的千年文化》

The millennium culture of BORUNTE

原唱：尹贵超

词曲：尹荣造

1=G  $\frac{4}{4}$

0 0 0 6 7 | 1 - - 5 | 3 3 2 1 - 1 | 3 3. 2 1 2 | 2 - 0 6 7 | 1 1 - 1 2 |  
伯朗特的千年文化凝成一条路我将无我

3 3 2 1 - 0 | 2 2 1 2 4 | 3 - 6 7 | 1 - - 2 | 3 3 2 1 1 | 1 - - - |  
天人合一，我们尽管努力，伯朗特自有安排，

1 - 0 0 | 3 5 5 6 5 | 5 - - - | 6 5 1 3 2 | 2 - - 6 | 6 - - 3 | 5 6 5. 4 5 |  
保证完成坚决完成，世界的机器人，我们

6 5 6 - 6 | 6 - 1 - | 7 - - - | 7 - 0 0 | 0 6 7 1 | 4. 3. 2 1 | 1 - - - |  
道远任重，（机器人，世界大同

1 - - 0 | 5 5 5 1 2 | 2 - - 2 3 | 4. 3. 4 | 5 - - - | 5 - 4 5 || 6 5 6 - - |  
创新促永续，勇攀行业巅峰，）完成伯朗特

1 5 5. 1 | 4 4. 3 1. | 3 4 5 - | 4 4 4 3 2 1 | 1 - - - | 6 5 3 5 1 0 |  
2 0 4 9 就是造福全人类就是在践行，构建人类

5 5 4 3 1 | 2 - - - | 2 0 4 5 | 5 5 4 3 2 | 1 - - - | 1 - - - ||  
命运共同体，完成命运共同体。

释义：伯朗特的千年文化是指：伯朗特的“伯朗特的千年文化”的魂是“我将无我、天人合一”其落脚点就是“完成伯朗特2049就是造福全人类”。

尹荣造始于2013年11月5日 定于2020年4月11日

永将无我

## 伯朗特2049破万亿营业收入路径图分三步走

第一步：完成年销售40万台机器人；（营收百亿级）

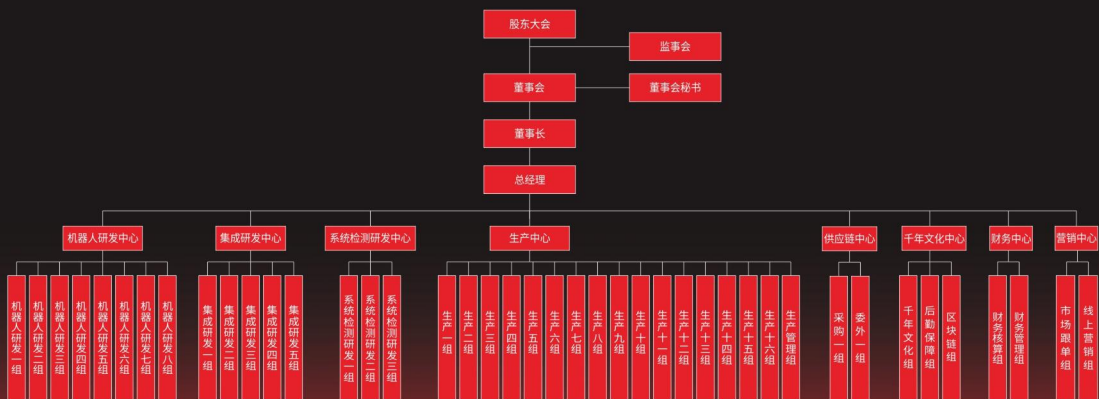
第二步：完成年销售400万台机器人；（营收千亿级）

第三步：完成年销售4000万台机器人。（营收万亿级）

释义：完成伯朗特2049就是造福全人类是指：伯朗特的目标到2049年完成年销售破4000万台BORUNTE机器人补给全球4000万以上劳工营收破万亿就是造福全人类且在践行“构建人类命运共同体”。

尹荣造始于2018年7月28日 定于2020年3月10日

## 伯朗特机器人股份有限公司 组织架构图



尹荣造始于2018年12月24日 定于2020年3月29日

## 伯朗特：机器人“重新定义”者

① 伯朗特的核心竞争力是在“完成伯朗特2049就是造福全人类”的“伯朗特的千年文化”引领下通过伯朗特应用商模式和伯朗特供应链规则“重新定义”机器人。伯朗特的目标是通过伯特应用商模式和伯朗特供应链规则到2049年要培养11772家伯朗特应用商和108家伯朗特供应商挂牌新三板实现资产证券化，伯朗特与伯朗特应用商或伯朗特供应商之间都是相互独立的法人单位，与伯朗特是对等的法律主体且相互之间不存在持股的关系。

② 伯朗特应用商的门槛：一级应用商下单1000台0805A，二级应用商下单285万元以上机器人和机械手，三级应用商下单28.5万元以上机器人和机械手；授信额度：一级应用商20万~2850万（最终最高授信28.5亿），二级应用商20万~285万，三级应用商不超过28.5万；交期：90天；区域：不限；返点方式：一级应用商下单6倍的返点金额，二级应用商下单10倍的返点金额，三级应用商下单20倍的返点金额。

③ 伯朗特供应链规则：成本、品质、交期，新进入供应商必须比老供应商成本下降20%以上才能通过研发中心品质和生产中心交期的验证才能成为该产品80%的主流供应，只要您具备足够的成本、品质、交期，伯朗特的大门永远都是开放的，这就是规则的力量。

④ 伯朗特员工们加入的是一家到2049年要通过伯朗特应用商模式和伯朗特供应链规则培养11880个亿万富翁且伯朗特董事长要培养11880个公众公司董事长届时伯朗特2049必定实现，我将无我、天人合一，我们尽管努力，伯朗特自有安排，我们想成为亿万富翁和公众公司董事长就去做伯朗特应用商或伯朗特供应商，期待伯朗特成就我们的梦想。

尹荣造始于2018年11月3日 定于2020年4月24日

2049就是完成伯朗特

伯朗特

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## CHAP 1 SPECIFICATION AND INSTALLATION

### 1.1 SPECIFICATION

### 1.2 INSTALLATION NOTES

1. Wiring must be performed by a professional electrician.
2. The job can only be started after confirming that the power is off.
3. Please install on metal and other flame retardants and keep away from combustibles.
4. It must be safely grounded during use.
5. If the external power supply is abnormal, the control system will malfunction. To make the entire system work safely, be sure to install a safety circuit outside the control system.
6. Before installation, wiring, operation and maintenance, you must be familiar with the contents of this manual; when using it, you must also be familiar with related mechanical and electronic common sense and all relevant safety precautions.
7. The electrical box where the controller is installed should be well ventilated, oil-proof, and dust-proof. If the electric control box is closed, the temperature of the controller will be too high, which will affect the normal operation. An exhaust fan must be installed. The suitable temperature in the electric box is below 50°C. Do not use it in a place with condensation or freezing.
8. The controller should be installed as close as possible to contact accessories, transformers and other AC accessories, to avoid unnecessary surge interference.

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

## CHAP 2 OPERATION PANEL

### 2.1 APPEARANCE



#### Controller

##### 2.1.1 SWITCH

The status of the controller is divided into three types, manual, stop, and auto.

**【Manual】** : Turn the state selection switch to the left to enter the manual state

**【Stop】** : Turn the state selection switch to the middle to enter the stop state, in this state you can set the parameters.

**【Auto】** : Turn the state selection switch to the right to enter the automatic state, in this state can be fully automatic and corresponding settings.

##### 2.1.2 BUTTON FUNCTION

**【Start】** button:

Function 1: Press the "Start" button in the automatic state, the robot will enter the automatic running state;

Function 2: In the stop state, first press "origin" and then "start" to build the robot to find the origin;

Function 3: In the stop state, first press the "Return" key and then "Start" to build the robot to perform the return to origin operation.

**【Stop】** button:

Function 1: Under full-automatic state, press this key, the program will stop after the module runs.

Function 2: When an alarm occurs, press this key in the stop state to clear the resolved alarm display.

**【Origin】** button: Only used for homing operation, please refer to section 2.2.3, homing method.

**【Return】** button: Press the [Return] key and then press the [Start] key. All the axes follow the sequence

Y1、Y2 → Z、X1、X2, Y1 and Y2 return to the origin position, and Z, X1 and X2 axes return


to the starting point of the program.

**【Speed+/Speed-】** button: These two buttons can be used to adjust the global speed in manual and automatic.

**【emergency button】** : Pressing the emergency stop button in an emergency will cut off the enable of all axes. The system alarms "emergency stop". After turning the knob out, press the [Stop] key to clear the alarm.

### 2.1.3 ADJUSTMENT KNOB

Function: When the manual position is adjusted accurately, you can use this knob to move the axis accurately.

Operation method: Click  button, click to select the [Hand-wheel Selection] option, select the hand-wheel speed, select the axis to be fine-tuned, or press the axis button (on the hand controller) to be fine-tuned and then roll the fine-tuning knob to make The axis moves to the target point little by little.



#### Description of hand-wheel speed:

X1: Move one grid axis to translate by 0.01mm or rotate the axis by 0.01 degree.

X5: Move a grid axis to translate 0.05mm or rotate the axis by 0.05 degrees.

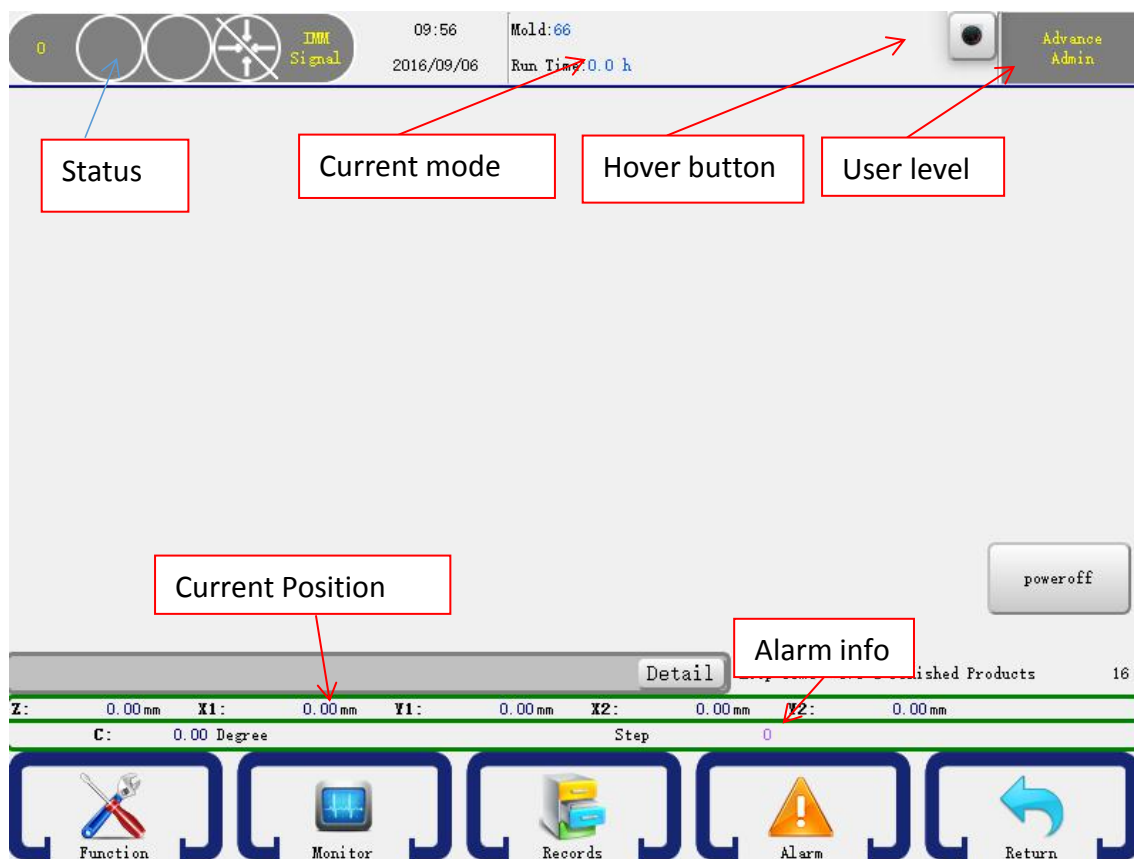
X10: Move a grid axis to translate 0.1mm or rotate the axis 0.1 degree.

X20: Move the grid by 0.2 mm or the axis by 0.2 degrees.

X50: Move a grid axis to translate 0.5mm or rotate the axis 0.5 degrees.

## 2.2 MAIN PAGE AND DEFINITION

### 2.2.1 MAIN PAGE



**Status:** Gray indicates that the origin has not been returned, and green indicates that the origin has been returned.

**Current mode:** Display according to the model number established by different processes. It can be created, copied, deleted, loaded and exported in the file. See section 4.1 for details.

**Hover button:** The auxiliary buttons are virtual buttons. There are start, stop, origin, return, speed up, speed down. It is an auxiliary measure for the physical keys of the controller.

**User rights:** Can log in operator, administrator and senior administrator permissions. The initial passwords are all 123. Please refer to section 4.2.9 for details on changing the authorization password.

**Current axis position:** Real-time display of the current machine coordinate position.

**Alarm information:** The alarm message is displayed during an alarm. Pressing the help button will bring up a dialog box for the solution, and you can follow the prompts to solve the problem.

### 2.2.2 OPERATION MODE

In order to enable the robot to operate automatically, each time the power is turned on, the homing operation is performed in the stopped state. The homing action will return each axis of the driving manipulator to the home position.

#### Return to origin operation method:

The method of returning to the origin of this system is divided into absolute value and incremental

##### (1) Absolute value return to origin

Each time the power is turned off, the system will automatically memorize the position of each axis

before power off, and automatically set the position before power off as the origin position when power is turned on. If you need another position as the origin, you can first move the manipulator to the target position, and then enter the machine parameters-structure-other definition page, click [start origin], and then click [set origin] to set the target position. The origin position, at this time, the coordinate positions are all displayed as 0.

#### (2) Incremental homing method

After the hand controller is started, after confirming that all aspects of the machine are normal, turn the status knob to the stop state, click the origin and start button successively, and the robot will return to the origin position in the order of Y1, Y2 → X1, X2 → Z.

#### 2.2.4 RETURNING ACTION

Click [Reset] [Start], the robot will reset in the order of Y1, Y2, Z, X1, X2. The Z, X1, X2 axes travel to the starting point of the current module number, and Y1, Y2 travel to the origin.

### 2.3 TRIAL RUNNING

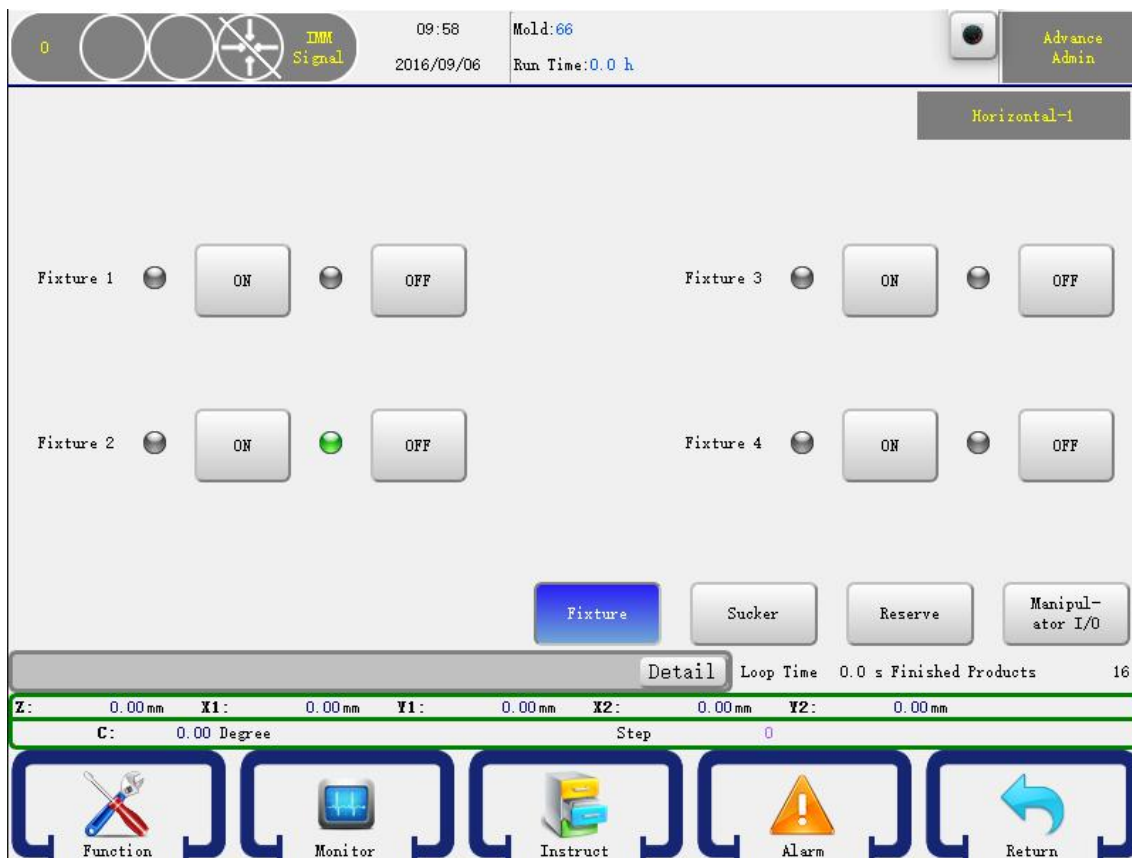
Before using this control system to operate, please connect according to the wiring method described above, and then let the manipulator perform a simple test operation. After the test operation is normal, program and teach the operating program according to your own needs.

The steps of trial operation are as follows:

Step	Operation
1	Check that all wiring is correct (see Chapter 7 for details) and whether the wiring is damaged
2	Check if the servo parameters are correct
3	Set the motor parameters (see section 4.2.5 for details), and power on again.
4	Test whether the motor's forward and reverse directions and pulse feedback are normal (see section 4.2.5 for details)
5	Perform homing operation (see section 2.2.3 for details)
6	Switch to manual state, press the axis action key of each axis to check whether each axis moves normally
	Switch to manual state, teach program 3
	Switch to automatic state, run program 5

## CHAP 3 MANUAL MODE

Turn the state selection switch to manual gear, the manipulator will enter the manual page, as shown in the following figure:



### 3.1 MANUAL OPERATION OF AXIS

Since the position data of each electric control axis is not correct before the homing is performed, the servo axis of the manipulator cannot be operated before the homing is performed, and the normal pneumatic operation can be performed manually.

The servo axis speed can be adjusted up to 50 in manual state

Button	Function
	Electric control: Press and hold the key, the main arm moves up, and release the key to stop.
	Electric control: Press and hold the key, the main arm moves down, and release the key to stop.
	Electric control: press and hold the key, the jib moves up, and release the key to stop.
	Electric control: press and hold the key, the jib moves down, and release the key to stop.
	Electric control: Press and hold the key, the main arm moves forward, and release the key to stop.
	Electric control: press and hold the key, the main arm moves backwards, and stop when the key is released
	Electric control: press and hold the key, the jib moves forward, and release the key to stop.



Electric control: press and hold the key, the jib moves backward, and the key stops when the key is released.



Electric control: press and hold the key, the main arm is stretched out, and stop when the key is released.



Electric control: press and hold the key, the main arm enters horizontally, and release the key to stop



Pneumatic control: Press the key once, the jig will turn flat.



Pneumatic control: press the button once, the jig turns straight.

## 3.2 MANUAL PAGE OPERATION

### 3.2.1 PAGE OF JIG

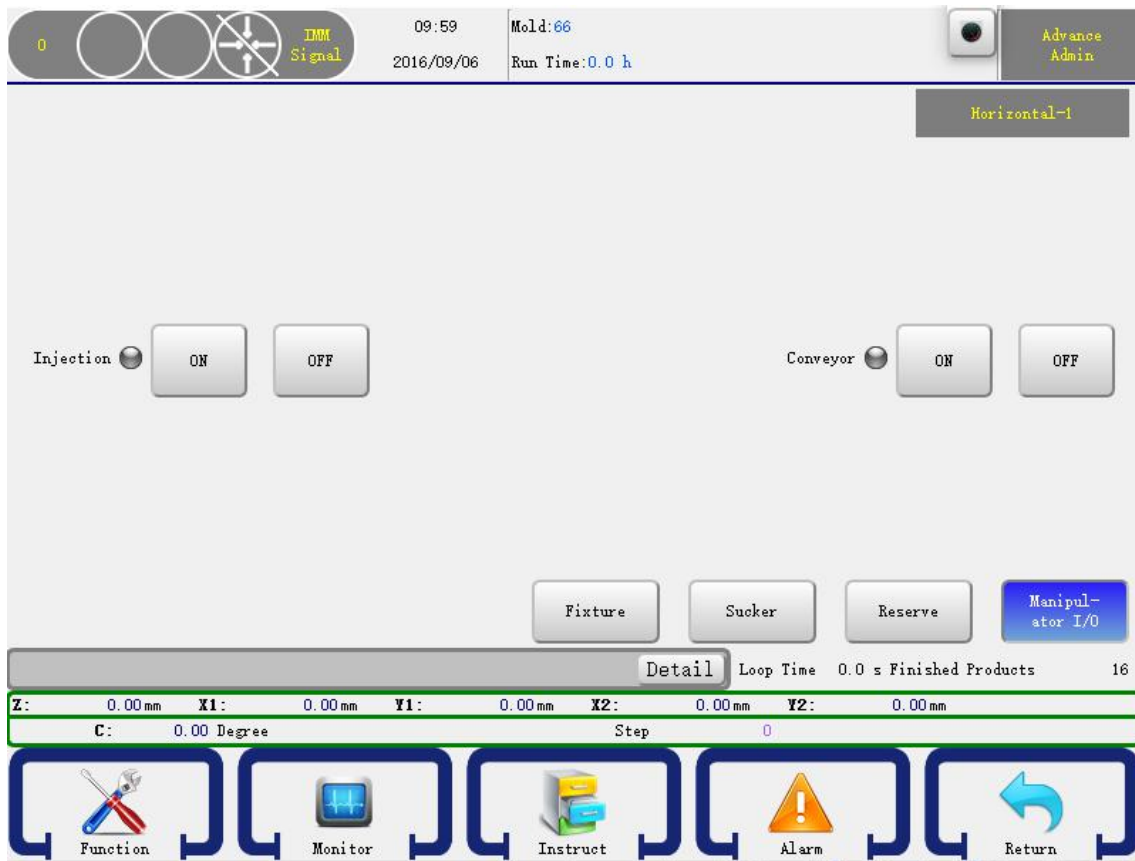
Click the buttons [fixture] and [suction] in the lower right corner of the touch screen to enter the manual operation page of the jig, as shown below:



There are two types of fixtures: [fixture] and [sucking fixture], four groups each. Click the button [ON] to output the corresponding fixture signal, and click the button [OFF] to disconnect the corresponding fixture signal.

**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.

### 3.2.2 MANUAL OPERATION OF AUXILIARY EQUIPMENT

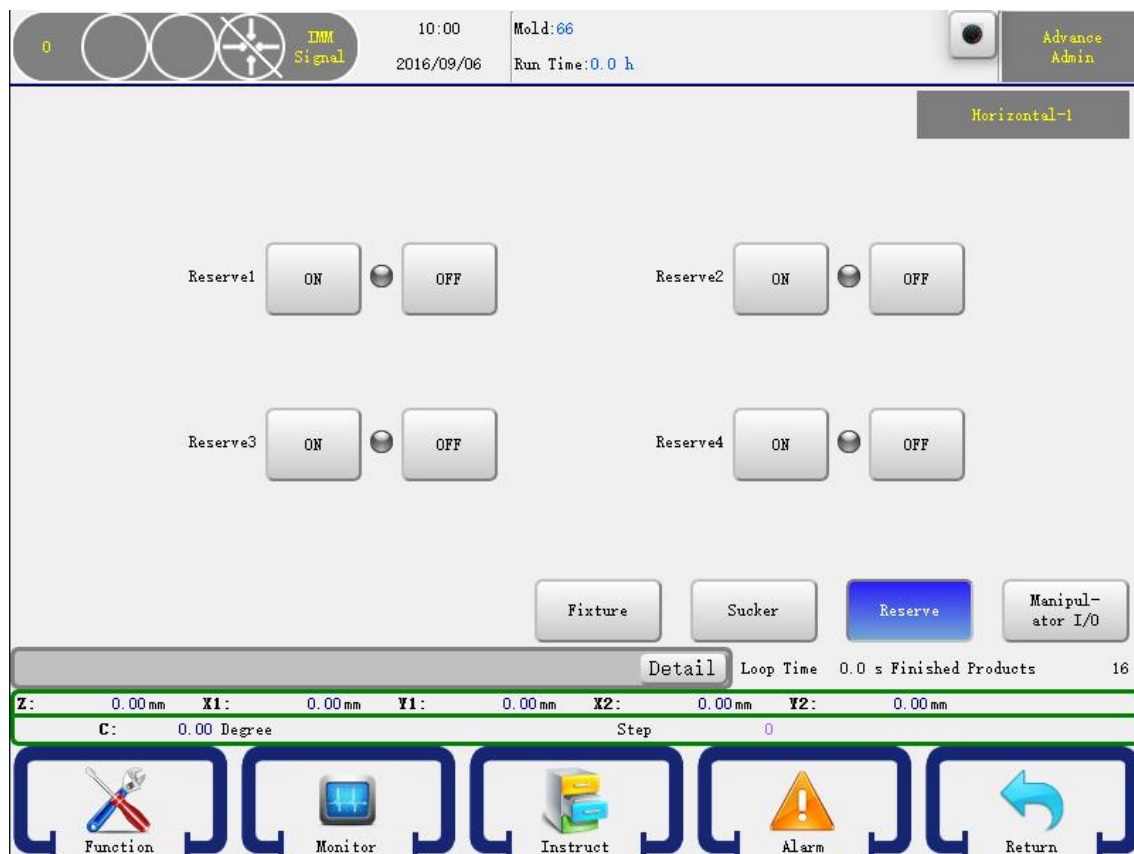


Clicking the fuel injection button [Pass] means that the fuel injection output point is on, and clicking the button [Break] means that the fuel injection output point is off.

Clicking the conveyor belt button [ON] means that the injection output point is ON, and clicking the button [OFF] means the conveyor belt output point is disconnected.

### 3.2.3 MANUAL OPERATION OF RESERVED ACTIONS

Click the [Reserved] button in the lower right corner of the touch screen to enter the manual operation page of the reserved action. The control system reserves four sets of actions, which can be set by the user, as shown below:

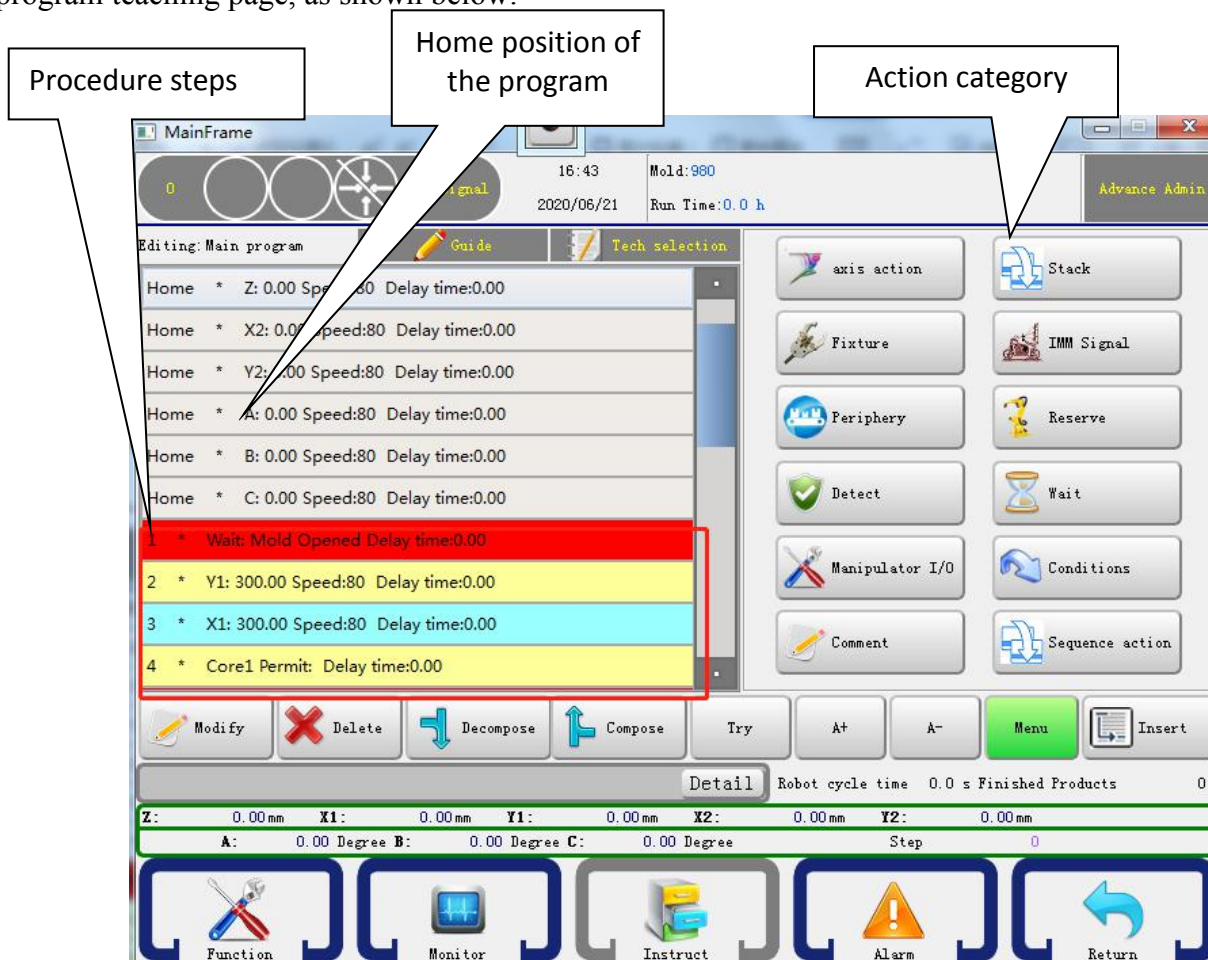


There are four groups reserved. Click the button [ON] to output the corresponding reserved point signal, and click the button [OFF] to disconnect the corresponding reserved point signal.

**Warning:** Reserve 1 and Reserve 2 are interlocked signals. That is, after Reserve 1 is turned on, Reserve 2 is turned on again, and the output of Reserve 1 will be cut off. Please connect carefully as needed!

### 3.3 TEACHING PAGE

Rotate the state selection button to manual state, and then click the "Teach" button to enter the program teaching page, as shown below:



**Main menu:** The action menu divides the editing of the program into 12 types. Click the corresponding button to enter the teaching page of this type of action. Click the [Main Menu] button to return to the main screen of the teaching action.

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

**Delete:** Select the action and click the delete button to delete the action.

**Decomposition:** If the Y2 axis action of step 2 in the above figure is selected, click decomposition, the step sequence of Y2 axis becomes 3, and in automatic operation, Y1 axis first runs to 600mm, and Y2 axis starts to run.

**Combination:** If step 3 in the above figure is selected, and click combination, the step sequence of X1 axis will become 2. During automatic operation, Y1, Y2 and X1 axes will start running at the same time.

**Trial:** Click an action, press and hold the trial button to execute the action, and release the button to stop the action.

**Warning:** Because of the trial function, it is not necessary to follow the sequence of the program. Please pay attention to anti-collision when using!

**Insert:** Select an action, select the position to be inserted, and click the insert button to teach the action to the desired position.

In this system, if you need to teach an action to the program, you must click on the left side of the action to be ☒. Select the program step on the left of the page, and then click [Insert]. If there is an

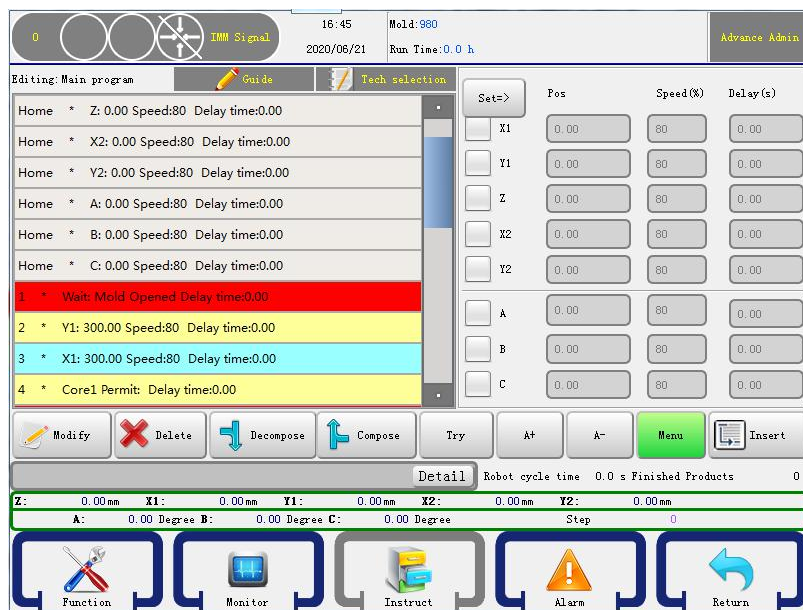
indicator next to the action name, the indicator light is green to indicate that the corresponding valve will be output after performing the action; The indicator light is gray, indicating that after performing this action, the corresponding valve is disconnected from the output.

If no special instructions

1. The time set by the delay is the time to wait before performing this action, and when waiting for this action, the next program will not run.
2. The interval modulus is an interval of several modes to perform an action once when running in the automatic state.

### 3.3.1 TEACHING OF AXIS MOVEMENTS

Click the [Axis Action] button to enter the servo axis action teaching page, where you can edit the X1, X2, Y1, Y2, Z, and C axis (side posture) actions. As shown below:

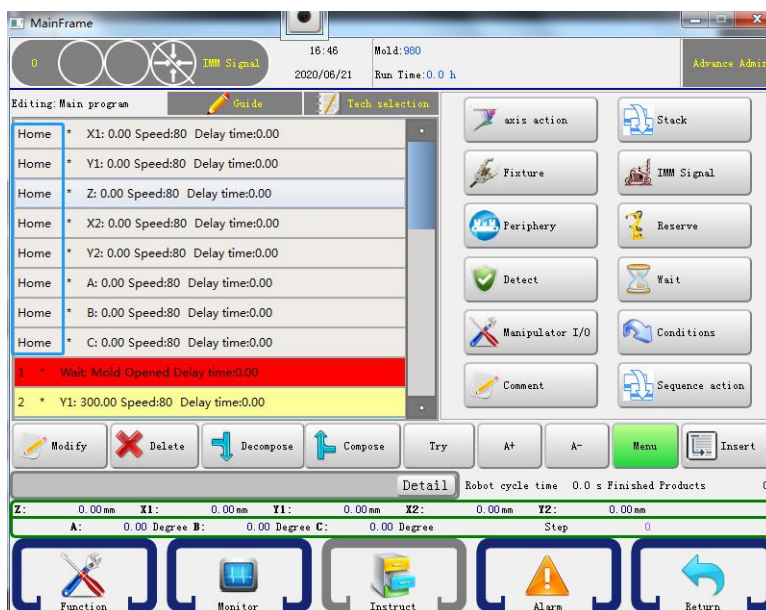


On this page, you can teach the position, speed and delay time of the servo axis, and select the horizontal or vertical state of the pneumatic axis.

There are two methods for setting the position of the servo axis:

1. Enter the coordinate value of the target location directly in the location text box.
2. Press the manual key to move the axis to be set to the target position, and then click the [Set] button to set the current position of the axis to the text box.

### 3.3.2 PROGRAM START POINT

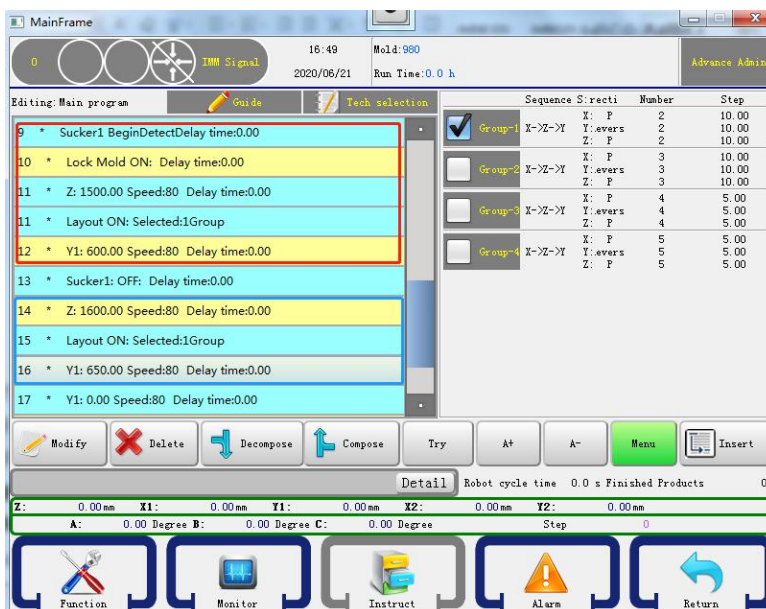


The starting point display corresponds to the selection of the axis definition (Section 4.2.5), that is, if you select several axes, the corresponding starting point will have several axes. If the number and type of axes in the starting point and axis definition are different, the alarm "Standby point position error" will be reported. ", you need a new model number or choose the correct axis definition.

**Note: The starting point program can be edited, but cannot be deleted.**

### 3.3.3 STACKING

Click the [Stack] button to enter, as shown below:



When using the stacking function, the stacking program should be used in combination with the X and Z axis actions, and the Y axis descent action (as shown in the figure above) is taught in its next step. During automatic operation, the X and Z axes are moved into place first, and then the Y axis begin to drop.

Each automatic program can be inserted into four sets of stacking programs, which can be stacked and discharged in four different positions.

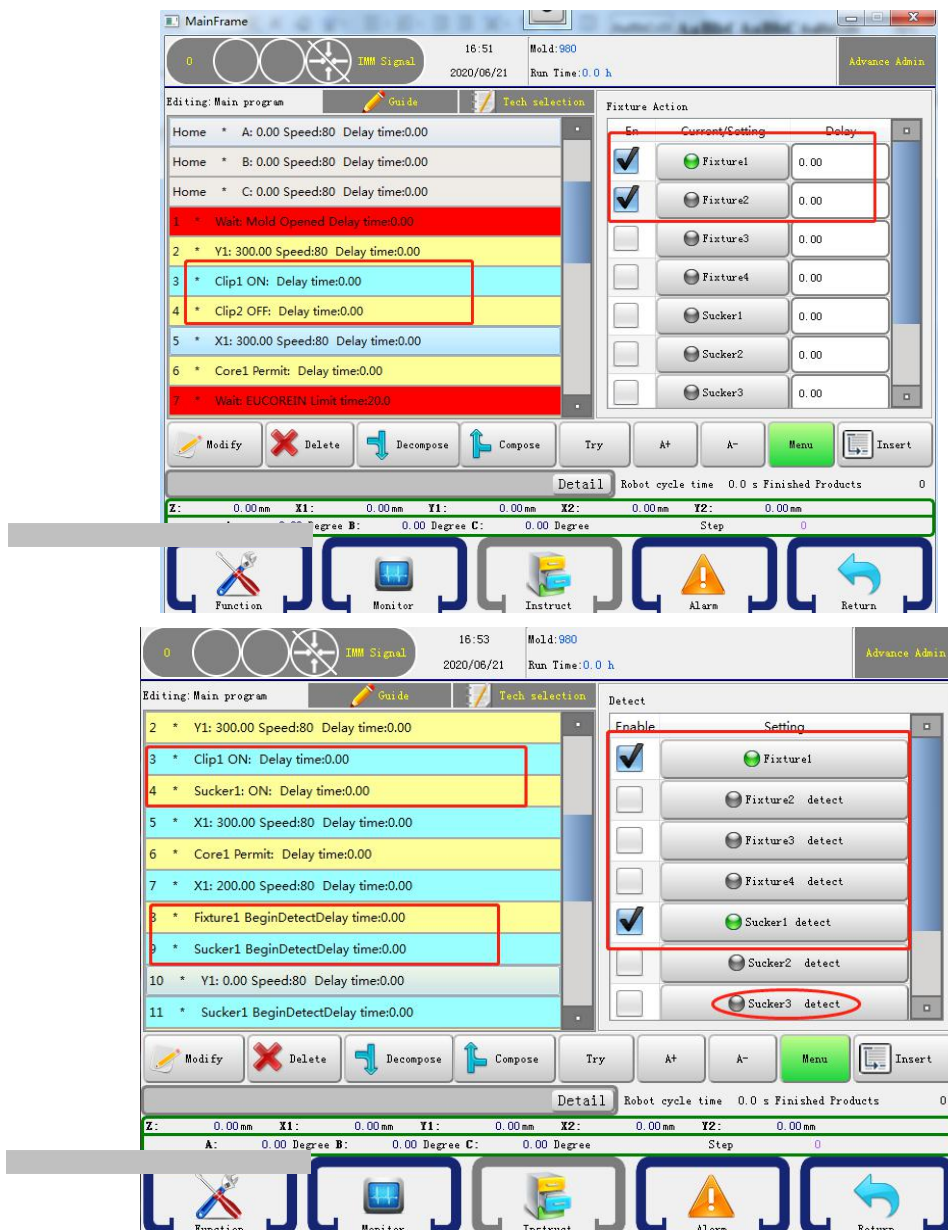
**Important: The Y-axis rise is selected as the end of the stack in the system design. The stacking program**

must be inserted before the Y-axis action.

If there are multiple stacks, the Y axis must be inserted between the multiple stacks to partition.

### 3.3.4 JIG AND TESTING

The following figure shows the pages of [Fixture] and [Test]. The functions of [Fixture] and [Test] are usually used together, and their actions can be set on these two pages. As shown below:



The controller can control four sets of fixtures and four sets of suction cup movements, the teaching of the jig and jig detection function and the coaxial movement teaching, and the detection program should be taught after the jig movement.

During automatic operation, when the jig is running, the jig takes the items, and when it runs to the "tool start detection" action, if the corresponding jig confirms that the limit signal is turned on and off correctly, the program continues to run, otherwise, the alarm "fetching failed" "A pop-up box appears. If you click the [Abandon] button in the pop-up box (the Y axis is at the origin position), the program will return to the starting point and retrieve the object again. If you click the [Continue] button, the program will continue to the next step. , When the jig is broken, the jig releases the item. [Jig off] automatically detects the corresponding confirmation limit signal after about 1S. If the signal is correct, the program continues to run, otherwise it will alarm "fetching failed".

**Important:** When the jig (suction or clip) is broken, the system detects the jig is broken after a delay of 0.5S. If there is still a signal in the jig detection, the system alarms. If the teaching ends, the system no longer detects whether the fixture has a signal.

When the detection signal is normal, there is no need to teach the signal to end the detection!

**Warning:** If the same jig action needs to be turned on and off multiple times in the program, you must teach to end the test.

**Such as: suction 1 pass, suction 1 break, suction 1 pass, suction 1 break. Need to end the detection at the first suck 1 break teaching**

**Be sure to teach the inspection of the fixture and suction cup, otherwise, the mold may be damaged!**

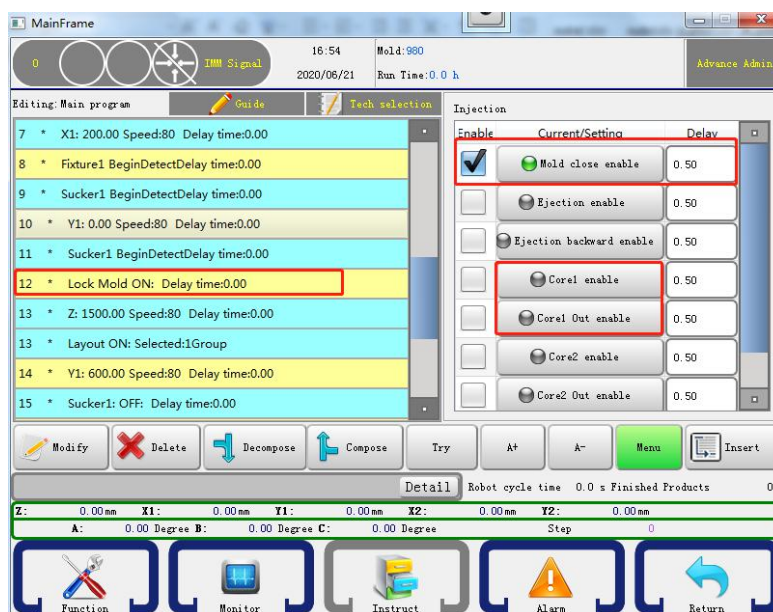
**Tips:** The action of the negative pressure detection switch takes a certain time, and the program running speed is within 1μs. Therefore, if the detection action is taught immediately after the jig action, the system will alarm that the object retrieval has failed.

Solution:

1. Put the detection action after the rise (that is, every few steps) and then check again.
2. The detection delay will start, generally above 0.5S. This delay does not affect the cycle time.

### 3.3.5 SIGNALS OF IMM

Click the [Plastic Machine Signal] button to enter the signal teaching page for controlling the injection molding machine. On this page, you can set the control of the injection molding machine's mold clamping, thimble, and core pulling actions. As shown below:



The indicator is green on and gray off. When an action is taught, the signal starts to output, and when an action is taught, the signal is turned off. [Advance to allow] and [Allow to retreat] will not occupy the cycle time.

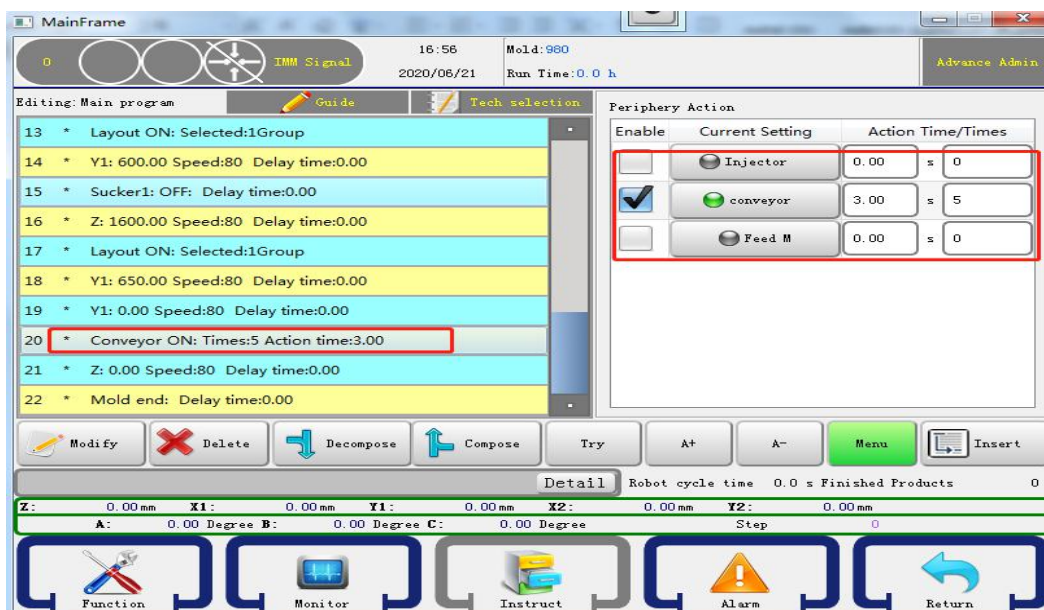
For example: set the [Allow Jacking] delay to 5S

When the program runs to [Allow Topping], it will not stop at this step, but directly run the following program. After 5S of [Allow Topping], [Allow Topping] will start to output.

### 3.3.6 AUXILIARY EQUIPMENT

Click the [Auxiliary Equipment] button to enter the teaching page of auxiliary equipment for fuel

injection, conveyor belt and feeder. On this page, you can set auxiliary equipment. As shown below:



Time: Set the execution time of the auxiliary equipment. The auxiliary equipment is all controlled by time. It only needs to teach the action. When the set delay time is reached, the output will be automatically disconnected (the time will not occupy the cycle time).

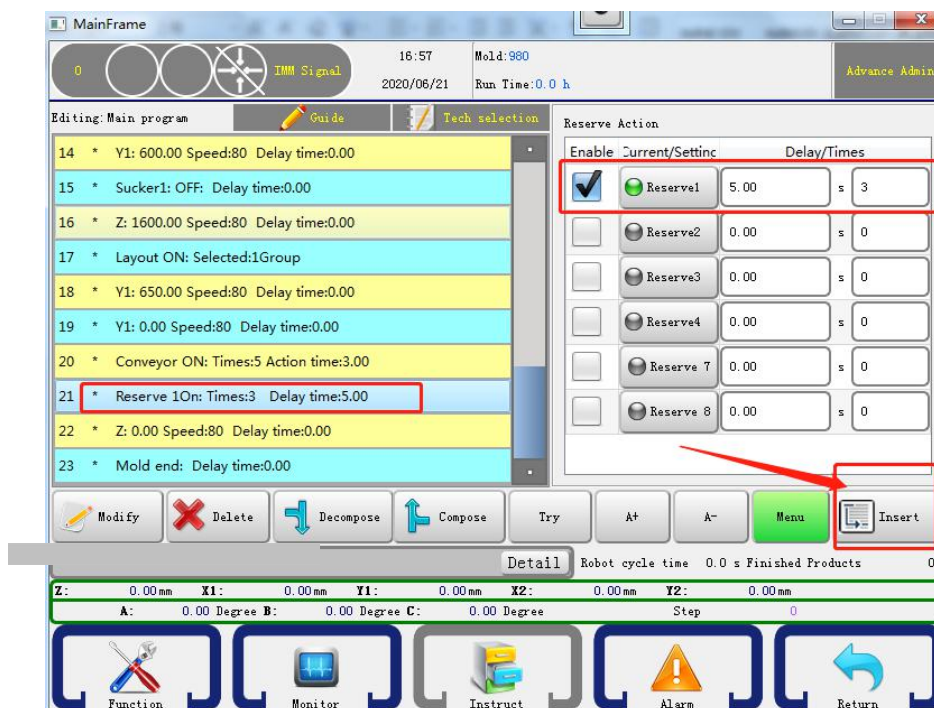
Interval modulus: Auxiliary equipment outputs several modules at intervals during automatic operation.

If the interval modulus is set to 3, and the delay is 5S, when it runs automatically, it will output once every 3 modules, and automatically disconnect after each output of 5S.

**Note: The actual count of the conveyor belt is related to the conveyor counter. For details, see the description of the conveyor counter in 5.2 Product Settings.**

### 3.3.7 RESERVED

Click the [Reserve] button to enter the reserved action teaching page, as shown below:



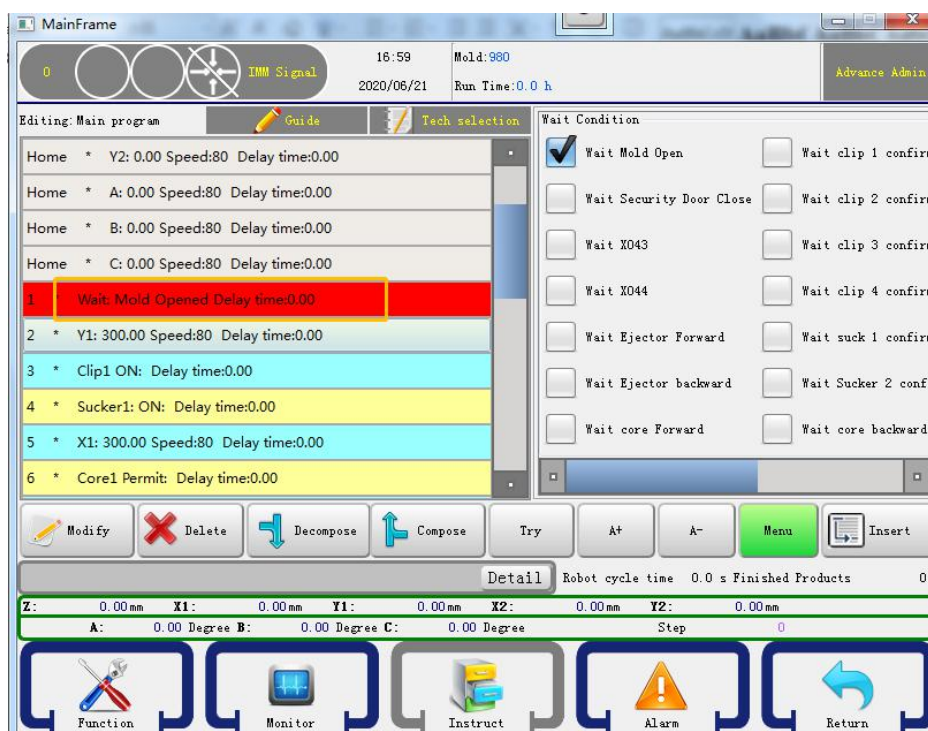
The system sets 4 sets of reserved output points. If the reserved action is taught in the program, the

reserved point will start to output after the reserve-on action is run during automatic operation, and the reserved point will be off after the reserve-off action is run.

**Warning: Reserve 1 and Reserve 2 are interlocked signals. That is, after Reserve 1 is turned on, Reserve 2 is turned on again, and the output of Reserve 1 will be cut off. Please connect carefully as needed!**

### 3.3.8 WAIT

Click the [Wait] button to enter the teaching page of waiting for input signal. After inserting the waiting input signal, it will automatically run to this step sequence. Only when there is signal input at this input point can the next step be executed. As shown below:



Each program must include the "waiting for mold opening" step. A new program contains this step by default and cannot be deleted.

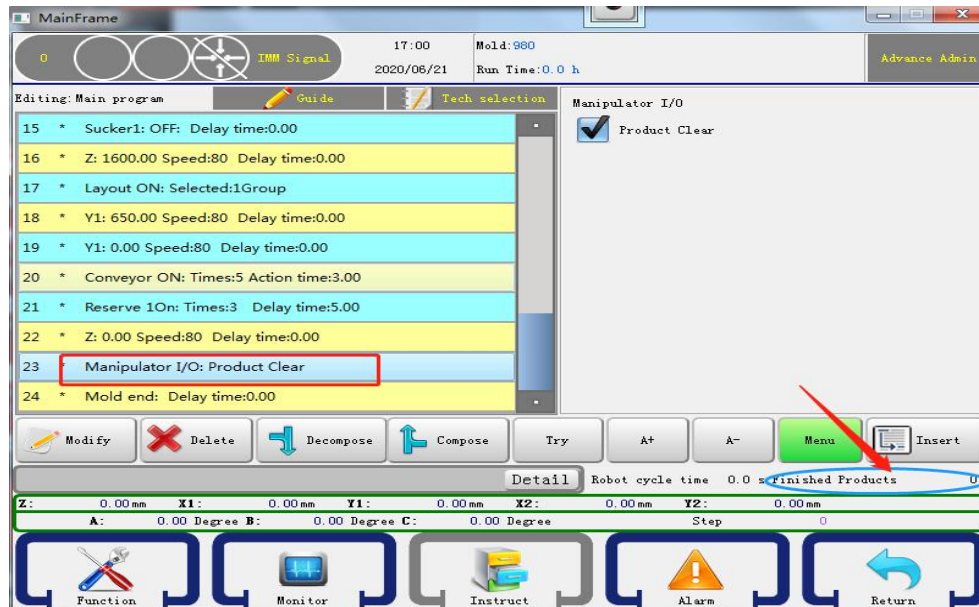
After inserting the wait action into the main program, the limit time of the wait action is 0 by default. If you need to set another limit time, you can select the wait action and click the edit button to modify the limit time.

The limit time is: the time that the program will wait when there is no input signal when the program executes to the waiting step. If the limit time is set to 10s, the automatic waiting time will be alarmed after the waiting signal of this step exceeds 10s. If there is a signal input within 10s, the program continues to execute.

**Please set the limit time after the mold opening in [Function]-[Product Settings]. (This time is also the longest time limit for all teaching)**

### 3.3.9 OTHER PAGE

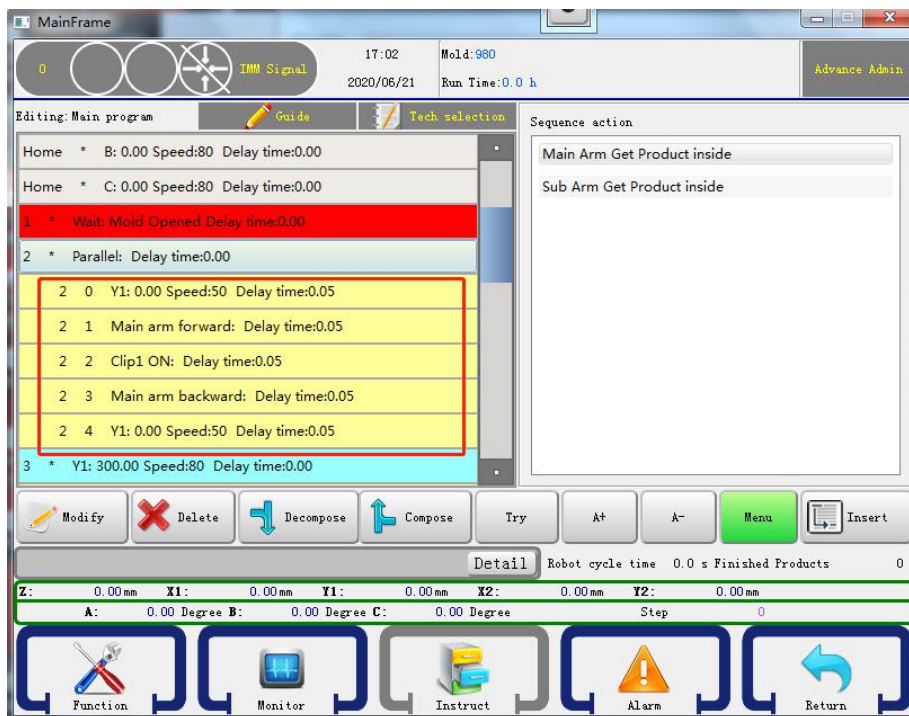
Click the [Other] button to enter other pages for teaching.



Product reset: If this function is inserted into the program, the system will reset the number of completed products to zero and restart counting every time this step is executed.

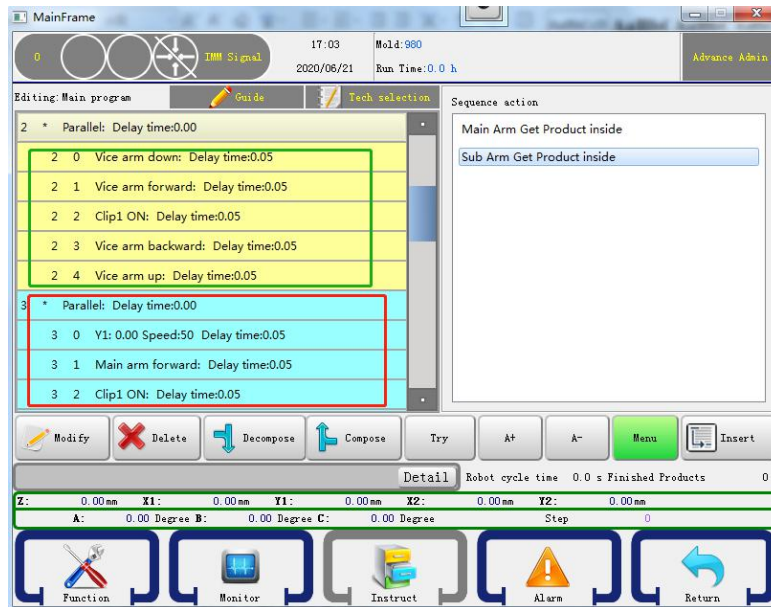
### 3.3.10 SEQUENCE ACTION

Click [Sequence Action] to enter the page.



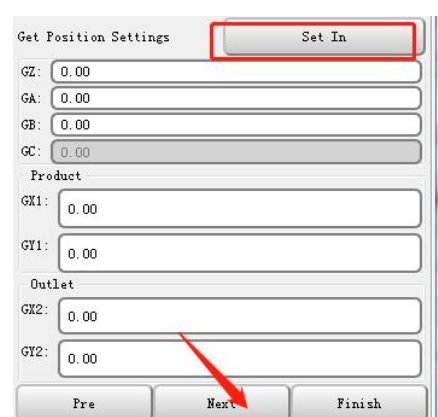
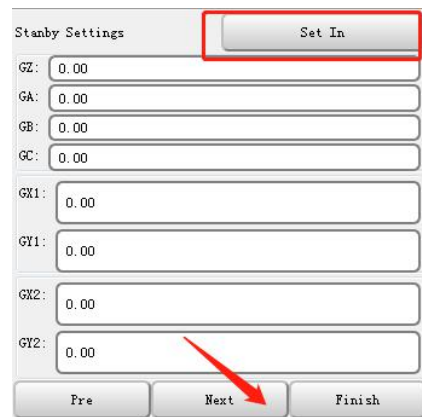
The sequence action is divided into the main arm mold product and the secondary arm mold product, as shown above. This function is mainly to take a series of actions of taking products in the mold as a two-level program to form a program block. The entire in-mold fetching action can be completed in this sequence block.

The general usage is to combine two sequence actions as shown in the figure below. Because each sequence completes a series of actions, the combined two series of actions are performed simultaneously. And because the two-level program in the sequence does not interfere with each other, the main and auxiliary arms can be independent but simultaneously complete the fetching action.



### 3.3.11 QUICK SETTING

Click the icon to enter the program quick setting.



As shown in the figure above, the program is set quickly, you can only set the position and select the action. The program can automatically generate an executable program. Save the tedious teaching step by step!

**Warning: When the customer mistakenly presses this function, it is possible that all the positions will become 0. Please pay attention to distinguish and inform customers!**

### 3.3.12 NOTES/TAGS

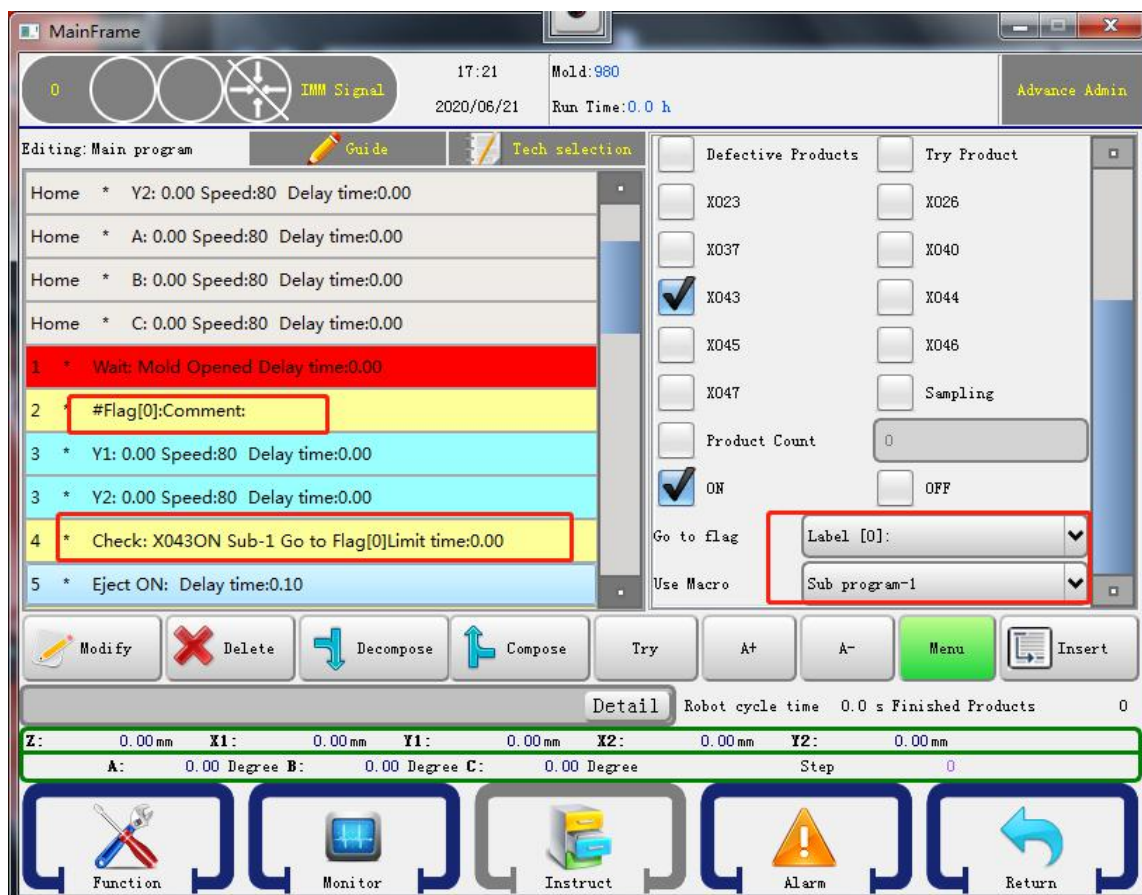
Click the [Comment/Label] button to enter the instruction page of the comment/Label. After inserting the comment, the previous step program or the next step program can be explained. At the same time, when executing the subprogram jump, the comment must be inserted before the condition can be changed. Insert into the main program. (If conditions are used, labels/comments must be inserted) As shown below:

Click the blank field of the comment, an input box will pop up automatically, enter the content of the comment (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 as follows:



### 3.3.13 Conditional teaching

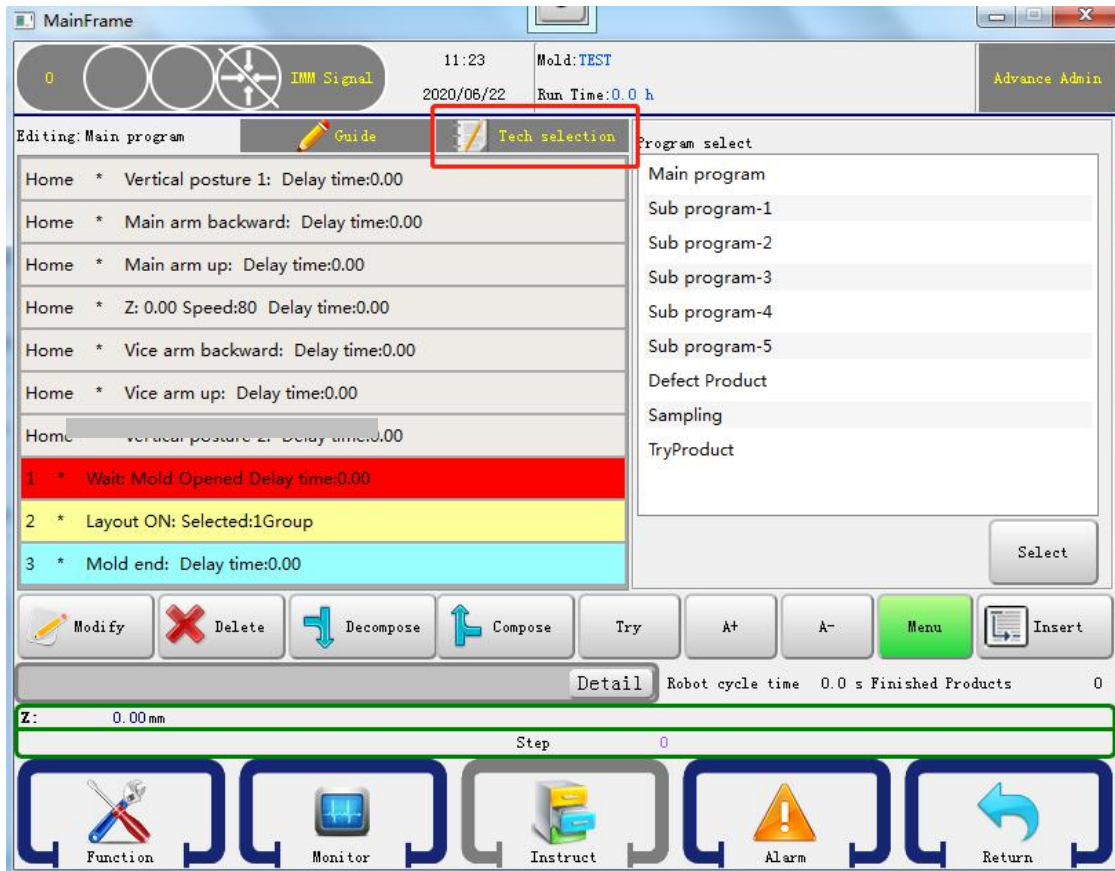
Click the [Condition] button to enter the conditional teaching page, select the signal (such as **X43**) as the judgment condition, and insert the condition into the corresponding position of the main program. When the program reaches the sequence number, if a signal is detected, it enters the subroutine to execute the subroutine. After the actions in the program are completed, jump back to the comment label of the main program. If no signal is detected, continue to execute the actions of the main program without jumping. As shown below:



**Note: When teaching conditions, first teach label comments, otherwise the conditions cannot be inserted into the main program.**

- 1、The three aspects of conditional teaching design are label, condition and subroutine. The three complement each other and are indispensable.
- 2、Conditional use: When a certain condition is met, the system jumps to the subprogram. After the subprogram 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 modulus and sampling.

4、The label must be inserted before the conditional program can be inserted.



The following uses three types of conditions as examples and the way to use conditions.

### 1、Input Point ON/OFF



As shown above, clip 1-clip 4; suction 1-suction 4 enters the subroutine when OFF signal. X43,X44, bad products enter the subroutine when ON signals

1. As above program, when clip 1 has no signal, the program runs to this step, into subroutine 1 to execute, after execution, jump to the label [0] to continue execution. Step 4-6 is no longer executed.

2.As above program, when clip 1 has signal, X43 also has signal. When the program runs to serial

number 5, it is executed in subroutine 2. After execution, it jumps to tag [0] to continue execution. That serial number 6 is no longer implemented.

3. As above program, when clip 1 has signal, X43 no signal. Program sequence to complete the program. No jump.

## 2、Try Product



As shown above, the trial production has a special subroutine to jump. Trial production has modulus can be set, see 5.2.2 product set. setting of trial production modulus.

- 1.when the trial production module is set to 10 modules, as shown in the above lock instruction program. The first 10 modules of the program will enter the trial production subroutine, after the completion of the trial production subroutine, jump to label 0, that is, step order 3-5 are not executed. Direct module over.
- 2.the trial production modulus is related to the number of finished products. If you do not enter the trial production process, please clear the product. Re-automatically.
- 3.Trial production can only be done by trial production.

### 3、Product Count and Sampling



Product Count and the sampling are after the manipulator runs the N mode, the trigger condition enters the subroutine.

- 1.the modulus of sampling is set in section 5.2 product setting. such as setting 10. the system enters the sampling subroutine in mode 10. Perform skip to tag [0].
- 2.Sampling can only be done using the sampling subroutine
- 3.If in module 5, the program executes the serial number 5 program, enters the subroutine 1. Jump to tag [0] after execution。

**Tip: After the program runs to the end of the module, complete the number of products 1.**

#### 3.3.14 Teaching of Inset Procedures

起点	*	姿势垂直1: 延时:0.00
起点	*	X1: 0.00 速度:80 延时:0.00
起点	*	Y1: 0.00 速度:80 延时:0.00
起点	*	Z: 1500.00 速度:80 延时:0.00
1	*	Y1: 600.00 速度:80 延时:0.00
2	*	夹1通: 延时:0.00
3	*	Y1: 0.00 速度:80 延时:0.00
4	*	Z: 50.00 速度:80 延时:0.00
5	*	等待: 开模完 延时:0.00
6	*	Y1: 500.00 速度:80 延时:0.00
7	*	X1: 200.00 速度:80 延时:0.00
8	*	吸1通: 延时:0.00
9	*	Y1: 600.00 速度:80 延时:0.00
10	*	夹1断: 延时:0.00
11	*	X1: 0.00 速度:80 延时:0.00
12	*	Y1: 0.00 速度:80 延时:0.00
13	*	锁模通: 延时:0.50

Insert program, the steps to take the insert before the mold is finished. The following figure shows a simple insert extraction program.

- 1.starting point of programing, horizontal axis Z outside the type.
- 2.After the arm takes the insert outside the type, the Z runs across to 50 standby. Waiting for opening.
- 3.After the mold is finished, absorb the product first, then release the insert in the clip break.

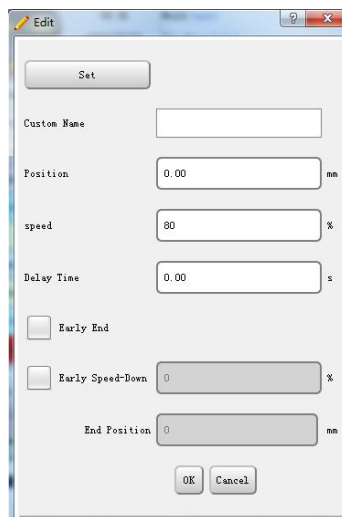
13	*	锁模通: 延时:0.50
14	*	姿势水平1: 延时:0.00
15	*	Z: 2000.00 速度:80 延时:0.00
16	*	Y1: 800.00 速度:80 延时:0.00
17	*	吸1断: 延时:0.00
18	*	Y1: 0.00 速度:80 延时:0.00
19	*	模组结束: 延时:0.00

4. cross out drop release product. This is the end of the program. The system will automatically return to the starting point, i.e. continue to take the inserts outside the mold and perform the next cycle.

**A small tip: the external standby system is automatic judgment, is to take and open the mold after the nearest Z value to judge. If this procedure is to take serial number 4: Z50. to judge as in-mode standby. If after the starting point is waiting to open the mold, then take the Z value on the starting point for standby position judgment.)**

### 3.3.15 Modification of program parameters

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



After modifying the parameters in this dialog box, click OK. <Edit> setup can modify the position, speed, delay and other parameters of the current action.

**Advance End Position:** If the advance position is set to 200 and the position is set to 1000, the next step will be taken when the axis reaches 800(1000-200), and the procedure will continue to 1000.

**Advance deceleration:** if the advance position is set to 200, the advance deceleration speed is 5%, the position is set to 1000, and the speed is set to 80%. The axis runs from 0 to 800 at 80% and 800 to 1000 at 5%

## 3.4 Examples of Instruction Procedures

The following instruction program will help you further understand and practice the programming of the manipulator. Please set the position of the servo shaft and control the injection machine according to your actual situation when teaching the manipulator program of the mould by yourself.

### 3.4.1 Program requirements

The program is used to take out the product and runner product, the manipulator stops above the injection molding machine mold and waits for the mold opened, 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 runner product. transversely puts the runner product into the crusher, puts the finished product into the conveyor belt, and the conveyor belt moves once per mold..

#### 3.4.2 Program step

- Switch the robot to auto status.
- The robot runs to the starting position, waiting for the injection molding machine to open the mold
- Take out the product with sucker one
- Robot leaves the mold range through the motion of the X、Y axis, and the output of the detected object is allowed to close the mold signal after successful detection.
- The robot puts the runner arm product and finished product into the specified position respectively
- Start the conveyor belt for 3 seconds with each finished product.
- Robot returns to starting position standby.

#### 3.4.3 Teaching program

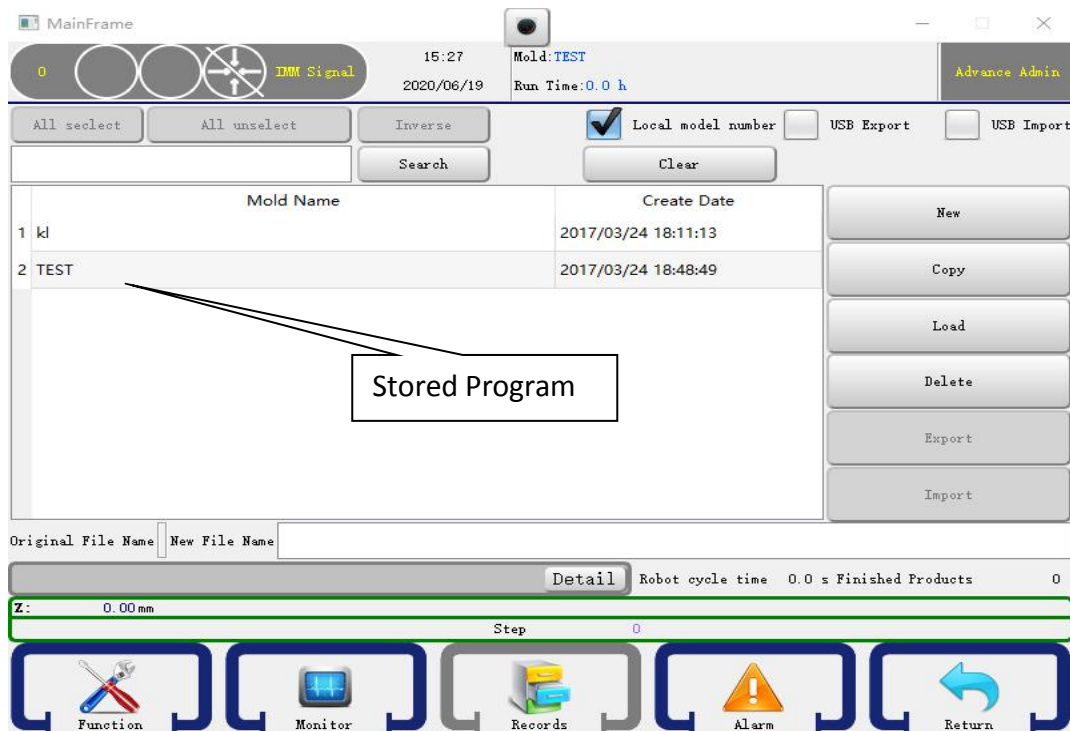
Start point * X1: 0.0	Speed: 30	Delay time: 0.00
Start point * Y1: 0.0	Speed: 30	Delay time: 0.00
Start point * Z: 0.0	Speed: 30	Delay time: 0.00
Start point * X2: 0.0	Speed: 30	Delay time: 0.00
Start point * Y2: 0.0	Speed: 30	Delay time: 0.00
Start point * Vertical position	Delay time: 0.00	
Wait: Open mould finished		
1 * Y1: 850.0	Speed: 90	Delay time: 0.00
1 * Y2: 850.0	Speed: 90	Delay time: 0.00
2 * X1: 400.0	Speed: 90	Delay time: 0.00
2 * X2: 300.0	Speed: 90	Delay time: 0.00
3 * Suck 1 ON	Delay time: 0.00	
4 * Fixture 1 ON	Delay time: 0.00	
5 * X2: 0.0	Speed: 90	Delay time: 0.35
6 * Y1: 0.0	Speed: 90	Delay time: 0.00
6 * Y2: 0.0	Speed: 90	Delay time: 0.00
7 * Suck 1 Starting test		
8 * Fixture 1 Starting test		
9 * Mode Locked	Delay time: 0.00	
10 * Horizontal Position	Delay time: 0.00	
11 * Z: 1000.0	Speed: 90	Delay time: 0.00
12 * Y2: 600.0	Speed: 90	Delay time: 0.00
13 * Fixture 1 OFF	Delay time: 0.00	
14 * Y2: 0.0	Speed: 90	Delay time: 0.00
15 * Z: 1300.0	Speed: 90	Delay time: 0.20

16 * Y1: 800.0	Speed: 90	Delay time: 0.00
17 * Suck 1 OFF	Delay time: 0.00	
18 * Y1: 0.0	Speed: 90	Delay time: 0.25
19 * Conveyor Belt ON	Interval modulus: 1	Move time: 3.00
20 * Z: 0.0	Speed: 90	Delay time: 0.00
21 * Module End	Delay time: 0.00	

## CHAP 4 Stop Status

### 4.1 Create and Load Program

On the stop status and then click the record button on the menu bar to go into the record management page. You can maintain your programs in this page. As shown below:



**Create Program:** Input a program name in the file name box and then click the new button to create a new program.

**Copy Program:** Input a program name in the file name box and then click the copy button to copy a program to a new program.

**Load Program:** Select a program and then click the load button to load a program.

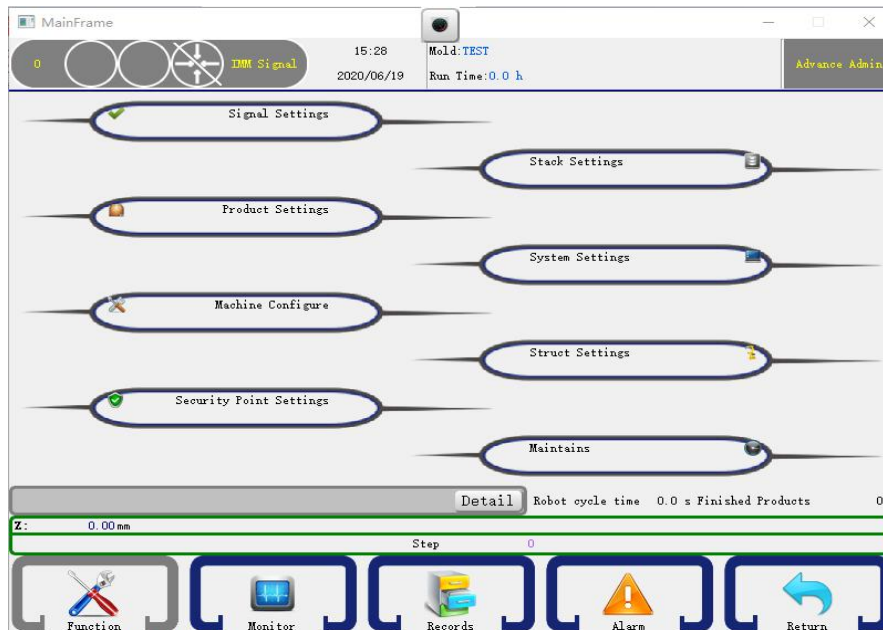
**Delete Program:** Select a program and then click the delete button to delete a program. (Remark: The current used program can not be deleted.)

**Export Program:** Select a program and then click the export button to move out a program

**Import program :** Insert the U disk, and click the USB, We can see the program in the U disk. Tick selected program and the click the import button. It means that Program have been imported successfully once program appear in the machine module number.

## 4.2 Function Configures

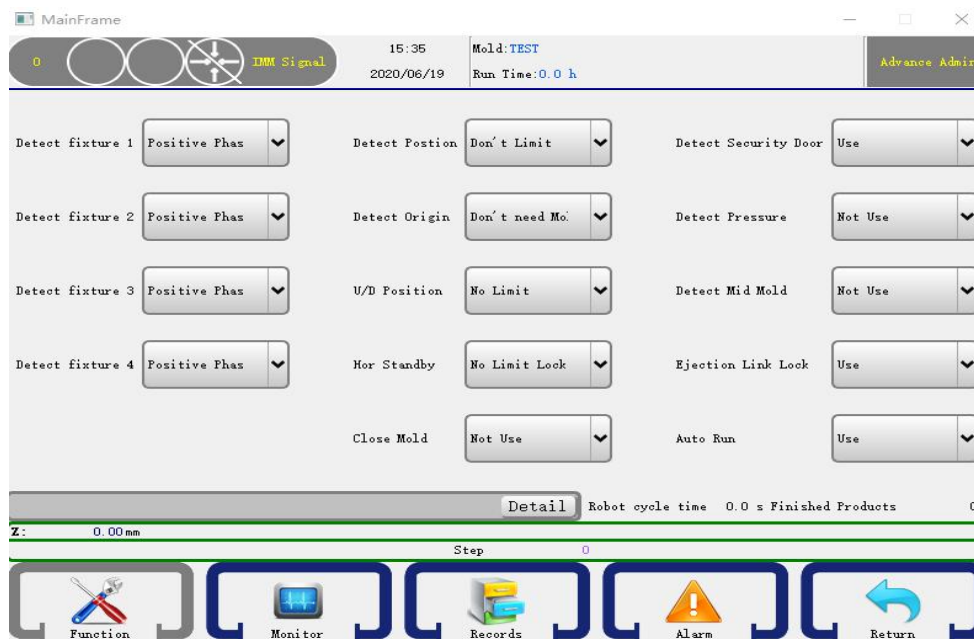
In the stop status and then click the function menu item on the main menu bar to go into function configures page. As shown below:



You can select function group in this page. Click the item will open the corresponding detail settings page. The Structure Settings can only set by the **Advance Administrator**.

### 4.2.1 Signal Settings

Click the Signal Settings item to go into the signal setting page, as shown below:



**Detect Fixture 1-4:**

Positive: Check if the fixture input signal is on when the valve working.

Reverse: Check if the fixture input signal is off when the valve working.

**Emergency Stop:**

Not Use: The robot does not check the emergency stop signal.

Use: Check the signal and when there is no signal, Alarm shows “Emergency Stop”.

**Detect Position:** Detect the pose when executing traverse action.

**Horizontal:** Must be horizontal pose when executing traverse action.

**Vertical:**

Must be vertical pose when executing traverse action.

No Limit: Does not detect.

**Detect Origin:** Detect the mold-opened signal when origin.

Need: Must have the mold-opened signal when origin.

No Need: Do not need the mold-opened signal when origin.

**Origin Position:** Detect the pose when origin.

**Horizontal:** C axis must be horizontal pose when origin.

**Vertical:** C axis must be vertical pose when origin.

No Limit: Do not detect.

**Horizontal:**

Limited : Mold close is not enable when C axis not in horizontal at standby position.

Mold locked allowed: mold close is enable when C axis in horizontal position.

**Mold locked:**

Use: A mold locked signal comes means mold open signal.

Not Use: Mold open signal is finished means mold open signal.

**Detect Security Door:**

Use: pause when the security door is open when the robot is auto running, no matter which action.

No Use: Alarm when the security door is open when executing the arm down action.

**Detect Pressure:**

Use: The robot will check the pressure, if is low and then will alarm.

No Use: Not check the pressure.

**Detect Mid Mold:**

Use: The robot will check the mid mold plate signal, if there is no mid mold signal when arm down inside the mold, will alarm.

No Use: Not check the mid mold signal.

**Ejection Link Lock:**

Use: System will control the ejector permit signal.

No Use: the ejector permit signal is always on.

**Automatic:**

Use: The robot will check the Auto signal from Injection Molding Machine during auto cycle.

No Use: Not check the signal.

### 4.2.2 Product Settings

Click the **Product Settings** item to go into the product setting page, as shown below:

**Product:** Setting the product count, when over the number you setting, it alarms.

**Trial production:** The number you are trying to produce.

**Sampling:** setting take products out every other 1 or 2 etc,.

**Wait Mold Opened Limit Time:** The limit time to wait mold-opened signal when auto running.

**Failed extract:**

Arm up alarm: Arm up and alarm when checked the failure signal.

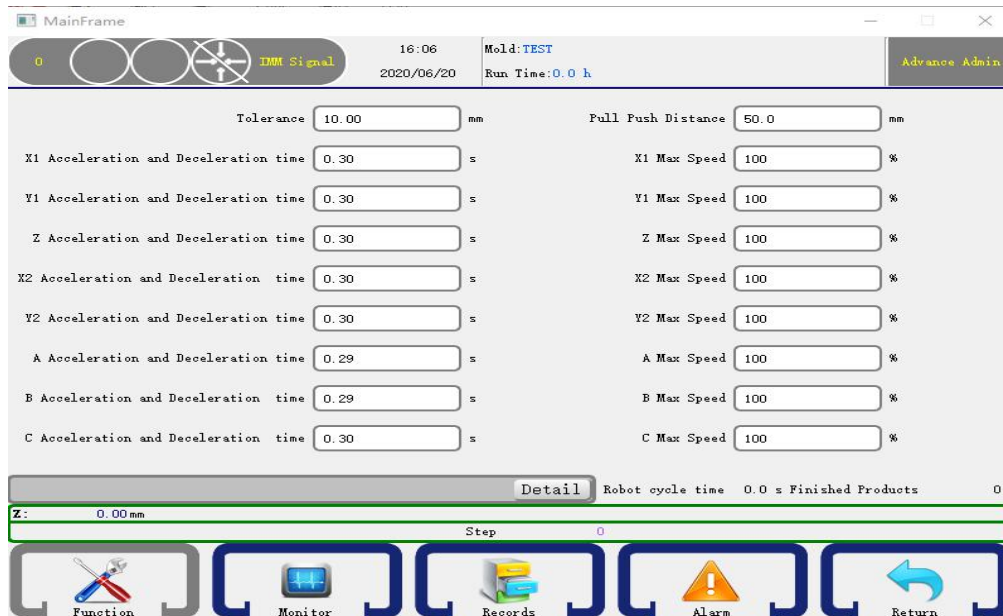
Alarm: Alarm when checked the failure signal.

Alarm Times: The time of alarm.

**Product Clear:** Clear the finished product count.

### 4.2.3 Machine Configure

Click the **Machine Configure** item to go into the machine configure page, as shown below:



**Tolerance:** The tolerance between the sent pulse and feedback pulse of servo.

**Safety Zone:** A safety zone between main arm and sub arm.

X,Y,Z Acceleration and Deceleration: The servo axis acceleration and deceleration time.

X,Y,Z Max Speed: The max speed of the servo axis.

#### 4.2.4 Relationship between several velocities

When the system is under auto mode, the speed depends on the global speed of the red circle and the step speed of the green circle. (Percentage)



**Actual speed = global speed \* step speed**

- 1) 、 A pulse of 500 KHz. when the actual operating speed is 100% General servo speed 3000 rpm.
- 2) 、 assuming a global speed of 80 and a step speed of 80. If the pulse is 320 KHz, the speed is 1920 rpm.
- 3) 、 Function - The maximum speed of each axis can be adjusted in the running parameter, section 5.3.

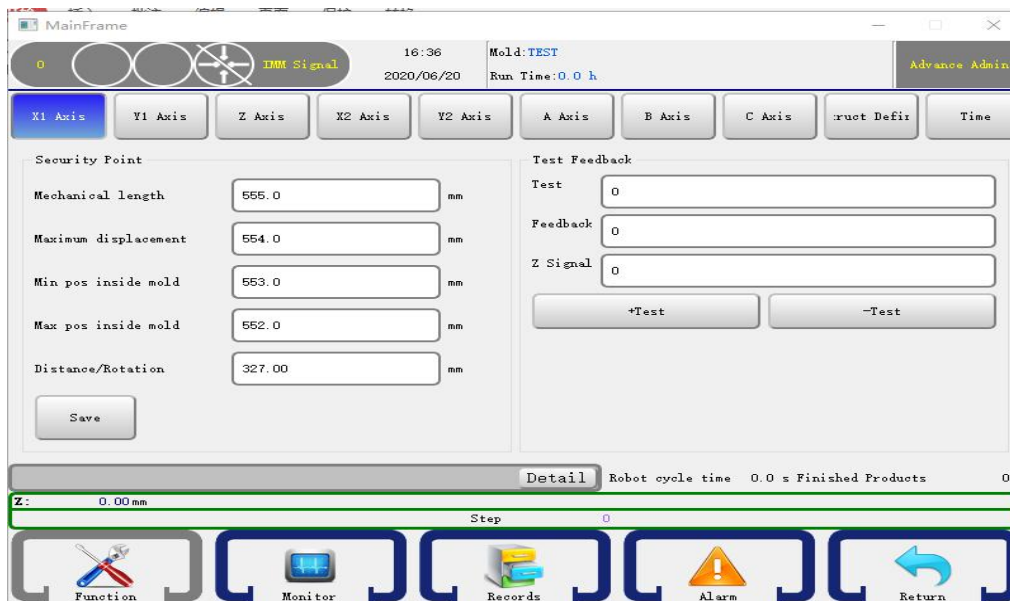
**The actual speed can not exceed the maximum speed.**

Suppose the maximum velocity of the X axis is set to 50. Suppose the global velocity is 80 and the X axis step velocity is 80.

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

## 4.2.5 Structure Settings

**(1) Click the Struct Settings item to go into the structure settings page, as shown below:**



**-Test:** When the default motor rotates counterclockwise, the axial direction moves away from the origin; if the motor is checked to reverse, the motor moves counterclockwise to the direction near the origin.

**Mechanical Length:** The axis mechanical length. **【 Warning: This modification may cause machine malfunction 】**

**Maximum displacement:** Sets the maximum distance X the axis moves.

**Min Pos Inside mold:** When the Y axis enter into the mold, the max range which X axis can move.

**Max Pos Inside mold:** When the Y axis enter into the mold, the max range which X axis can move.

**+Test:** Carry on the motor positive turn test. Normally, the test and feedback show 10000.

**+Test:** Perform motor reversal test. Normally, the test shows 10000, the feedback shows 55536.

**Tip: If the feedback is not correct, adjust the servo feedback pulse direction parameters**

**important: the moving position of the X axis also depends on the parameters inside the limit. If the maximum movement of the X axis is adjusted, the limit also needs to be adjusted, otherwise it can not go to the maximum movement position.**

**Distance/Rotation:** Set the distance of each servo shaft motor running every turn. Click on the motor's positive rotation to measure the actual running distance of the corresponding axis, which is the distance that the rotation of the axis motor to run in a circle

**[WARNING: This setting error may cause the machine to fail] Parameter The forward and reverse rotation of the motor is an important measure to test the direction of the motor, that is, to confirm**

the direction to the original point. belongs to the first step of debugging machine. The reverse direction of all axes is the return to the origin direction.]

【Restrictions】 page

**The minimum position of X1 axis in the mold rising:** The minimum position of the X1 axis allowed by the robot arm in the mold rising action.

**The maximum position of X1 axis in the mold rise:** The maximum position of the X1 axis allowed by the robot arm during the upward movement in the mold.

**X1 axis minimum position outside the mold:** the minimum position of the X1 axis that the robot arm is allowed to move outside the mold.

**Maximum position of X1 axis outside the mold:** the maximum position of the X1 axis allowed by the robot arm during the upward movement of the mold.

**Note:** The minimum and maximum positions of the X1 axis in the mold drop are modified on the X1 axis of the machine parameter page or the safety point setting page.

The X1 and X2 axis default to the two ends of the crosswise beam, so their mechanical length is the same as the maximum displacement. To prevent the two axis from colliding, the crosswise distance + X1 axis current coordinate value + X2 axis current coordinate value  $\leq$  maximum displacement ,which is:

If the length of the beam is 400, the maximum movement of X1 and X2 is also 400.

If the current position of X1 is 200, then X2 can only go up to 150

$200 + 150 + 50$  (crosswise distance)  $= 400$

## (2) The Y axis parameter page, as shown below:

0 17:47 Mold: test1 2020/06/22 Run Time: 0.0h Advance Admin

X1 Axis **Y1 Axis** Z Axis X2 Axis Y2 Axis C Axis Struct Defir Time

Security Point

☒ Motor Reversal

Mechanical length 1400.0 mm

Origin Offset 1300.0 mm

Max standby pos 250.0 mm

Leave origin pos 400.0 mm

Distance/Rotation 20.00 mm

Save

Test Feedback

Test 0

Feedback 0

Z Signal 0

+Test -Test

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm

Step 0

**Maximum standby position:** Set the Y1 axis maximum standby position.

**Leave the origin position:** The Y1 axis descends away from the origin switch position. If set to 400, when the Y1 axis drops more than 400, and the Y1 origin switch still has a signal, the system alarms.

**Tips:** This parameter is to ensure that the Y-axis motor is moving (that is, the structure is normal). Because there is a certain delay in the on and off of the switch, please set this parameter to a larger value (greater than the length of the origin iron plate).

**Motor forward:** Carry out the motor forward test. Both test and feedback show 10000.

**Motor reversal:** Perform the motor reversal test. The test shows 10000 and the feedback shows 55536.

## (3) Z axis parameter page, as shown below:

X1 Axis Y1 Axis **Z Axis** X2 Axis Y2 Axis C Axis Struct Defir Time

Security Point

☐ Motor Reversal

Mechanical length 2130.0 mm

Origin Offset 2000.0 mm

Internal security zone 300.0 mm

External security zone 900.0 mm

Distance/Rotation 20.00 mm

Save

Test Feedback

Test 0

Feedback 0

Z Signal 0

+Test -Test

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm

Step 0

**Inner safety zone:** Set the location of the safe area for fetching objects.

**Outside safety zone:** Set the location of the safe area for external objects.

## (4) C axis parameter page, as shown below:

0 17:48 Mold: test1 Advance Admin  
2020/06/22 Run Time: 0.0h

X1 Axis Y1 Axis Z Axis X2 Axis Y2 Axis **C Axis** Struct Defir Time

Security Point  
☐ Motor Reversal  
 Max Rotate 360.0 degree  
 Origin Offset 90.0 degree  
 Transever security zone (Less) 20.0 degree  
 Transever security zone (Lagger) 400.0 degree  
 Machine Per 20.0 degree  
 Save

Test Feedback  
 Test 0  
 Feedback -1  
 Z Signal -1  
 +Test -Test

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm  
 Step 0

**Maximum rotation:** The maximum range of C axis rotation is 360 degrees

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

The offset is a positive value. After returning to the origin, continue to move a certain value in the direction of the origin.

The offset is negative, and after returning to the origin, it will move a certain value in the reverse direction to the maximum displacement.

**Note:** After completing the offset, the coordinates are still displayed as 0.

**Transever security range:** Limit the safety angle of the fixture when running sideways. As shown in the figure above, (0-20; 300-360) is the traverse safety range of the C axis [ie horizontal state]

**Note:** This parameter is only valid when C is the servo axis, and it is invalid when C is the pneumatic axis.

The C axis is vertical after returning to the origin.

## (5) [Axis Define] page of [Structure Define]:

X1 Axis Y1 Axis Z Axis X2 Axis Y2 Axis **C Axis** Struct Defir Time

Arm Define Reserve Define Signal Define Other Define Servo Parameters

Arm Define  
 X1 Servo X2 Servo A None  
 Y1 Servo Y2 Servo B None  
 Z Servo C Pneumatic axis  
 Save

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm  
 Step 0

**Structure Define:** Divided into "arm define", "reserve define", "single define", "other define" and "servo

parameters".

**Arm Define:** Each axis can be set to pneumatic axis/servo axis/none. Need to choose each axis as servo axis or pneumatic axis according to the machine situation.

**Tip:** This system defaults to a dual-arm 5-axis system, that is, X1, X2, Y1, Y2, and Z axis must be selected as servo axis, otherwise, it may cause system abnormalities. If it is a double-sided machine, the A axis needs to be selected as the pneumatic axis.

**【Reservation Definition】:** Therefore, the model basically does not use the adjustment function, please check all the options to reserve.

#### (6) [Structure Define] [Arm Limit Define] page:

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

**Tick Single Arm:** In the manual state, only the action of the main arm can be taught, and the buttons [X2+], [X2-], [Y2+], and [Y2-] are invalid.

**Tick Double Arm:** In the manual state, both the main arm and the sub arm can be taught, and the sub arm button is in the effective state.

**Main arm:** Lower limit, backward limit, forward limit.

**Sub arm:** Lower limit, backward limit, forward limit. If the sub arm is a pneumatic axis, the limit is valid. When the corresponding pneumatic axis is in motion, a limit signal must be issued before the program can perform the next step. Otherwise alarm.

**NOTE:** The limit definition is only valid for the pneumatic axis, not for the servo axis.

## (7) [Other Define] page of [Structure Define]:

The screenshot displays the 'Other Define' configuration page. At the top, there are tabs for 'X1 Axis', 'Y1 Axis', 'Z Axis', 'X2 Axis', 'Y2 Axis', 'C Axis', 'Structure Define' (highlighted), and 'Time'. Below these are sub-tabs: 'Arm Define', 'Reserve Define', 'Signal Define', 'Other Define' (selected), and 'Servo Parameters'. The 'Other Define' section contains several settings:

- Safety Door Mode:** Four checkboxes are present. 'Close door stop' is checked, while 'Run On close door', 'Close door and return', and 'Run On close door confirm' are unchecked.
- Adjust:** Two checkboxes. 'No Use' is checked, while 'Use' is unchecked.
- Servo Flex:** A dropdown menu is set to '0-soft'. Next to it is an unchecked 'ODST' checkbox and a text input field containing '400.0' with a unit 's'.
- In Mold rotation:** A dropdown menu is set to 'Limit'. Next to it is an unchecked 'Abs Servo' checkbox and three buttons: 'Start Origin', 'Set Origin', and 'Force En'.

A 'Save' button is located in the bottom right corner. At the very bottom, a status bar shows 'Robot cycle time 0.0 s' and 'Finished Products 0'. Below this is a table with columns for Z, X1, Y1, X2, and Y2, all showing '0.00mm'. A 'Step' indicator shows '0'.

**Safety door mode:**

**【Closed to continue】** : The manipulator failed to take the object, open and close the safety door. The manipulator continues to execute this model procedure.

**【Return to home】** : The manipulator failed to take the object, open and close the safety door. The manipulator re-executes the procedure before the completion of mold opening, and after reaching the starting point, waits for the signal of completion of mold opening for the next mold.

**【Closed and stopped】** : The manipulator failed to take the object, open and close the safety door. The manipulator stops at the current position and exits the automatic state.

**Transposition** : Choose to use or not to use the electric adjustment function. (Existing models are generally not used)

**Inside posture:**

**【Limit】** : The vertical posture in the mold is restricted, and the side posture is not allowed in the mold.

**【Not limited】** : In-mold lowering posture is not limited, side posture is allowed in the mold.

After modifying the parameters, click the save button in the lower right corner, so that the parameters will remain unchanged after power off and restart.

**Kinematic rigidity**: Curves that can improve motion planning. (This is an optional function, the standard program does not have this function)

**Absolute servo:**

**Modify the homing method and save it, you need to exit the current page for the new homing method to work.**

**4.2.6 Servo parameter adjustment**

Enter the [Machine Parameter]-[Structure Define]-[Servo Parameters] page to set the servo parameters

**Parameter address:** Set the servo parameter number in box 1; the current servo parameter value in the second box.

**Parameter value:** Servo parameter target value to be set.

**Parameter name:** The function corresponding to the current servo parameter number.

Parameter setting steps:

1. Photograph the emergency stop button (Modify the parameters in this state)
2. Enter the servo parameter number in box 1.
3. Enter the servo parameter target value in the text box after [Parameter Value], and then click the [Send] button.
4. Check whether the value in Box 2 is the same as the target parameter value. If they are the same, the parameter setting is successful; otherwise, the parameter setting fails and needs to be reset.
5. After the parameter setting is successful, restart the servo and manual control, the new parameter will take effect.

Parameter address	Parameter description	Is it necessary to modify turn off servo enable	Do you need to restart	Proposed changes
2	Motor code	Yes	no	Can be modified
6	Forward maximum torque	no	no	Can be modified
7	Reverse torque	no	no	Can be modified
8	Motor direction	Yes	no	Can be modified
11	Brake ON delay	Yes	no	Can be modified
12	Delay from holding brake OFF to servo OFF	Yes	no	Can be modified
15	Overload protection factor	no	no	Can be modified
20	Rigidity factor	no	no	Can be modified
21	Speed loop gain	no	no	Can be modified
22	Speed loop integral	no	no	Can be modified
23	Position loop gain	no	no	Can be modified
39	S curve smoothness level	Yes	no	Can be modified
49	Position deviation	Yes	no	Can be modified

## 4.2.7 Machine time

X1 Axis	Y1 Axis	Z Axis	X2 Axis	Y2 Axis	C Axis	Struct Defir	Time
Vertical-1	3.0	s	S-arm up	3.0	s		
Horizontal-1	3.0	s	Secondary arm down	3.0	s		
Vertical-2	3.0	s	Secondary arm go forward	3.0	s		
Horizontal-2	3.0	s	S-arm go backward	3.0	s		
Main Arm Forward	3.0	s	Main Arm Up	3.0	s		
Main Arm Backward	3.0	s	M-Arm Down	3.0	s		
Come In	0.6	s	Go Out	2464.6	s		

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm

Step 0

Under this page, you can set the limited time for each axis action. If the action time of each axis exceeds this setting value, there is no corresponding input signal, there will be an alarm. (Pneumatic axis is effective)

## 4.2.8 Stacking settings

0 10:32 Mold:00 2016/09/06 Run Time:0.0h Advance Admin

Sequence

Group-1 ☒ X-Z-Y ☐ Y-X-Z

Group-2 ☐ Z-X-Y ☐ Y-Z-X

Group-3

Group-4

Lattice

X 2

Y 2

Z 2

☐ Is Sub Arm

Direction

☒ X PP ☐ X RP

☐ Y PP ☒ Y RP

☒ Z PP ☐ Z RP

Step

X 10.00 mm

Y 10.00 mm

Z 10.00 mm

Stack Counter All

Detail Loop Time 0.0 s Finished Products 16

Z: 0.00mm X1: 0.00mm Y1: 0.00mm X2: 0.00mm Y2: 0.00mm

Step 0

Function Monitor Record Alarm Return

The product stacking function of the robot can arrange the finished products on a conveyor belt or loading box in a certain arrangement. Click on the stacking program group to be used (eg group 1), Select the order in which the products are stacked in the order bar, Set the number of stacked products and the stacking spacing of products for each axis.

**Number:** Number of items to be stacked in a certain axis.

**Spacing:** The distance between two adjacent items in a certain axis.

**Sequence:** Stacking order in several axis directions.

The definition of the four stacking orders is the same, taking the X-Z-Y order as an example, The rest are not described one by one.

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

**Forward:** That is, the stacking position is getting bigger and bigger. **Reverse:** That is, the stacking position is getting smaller.

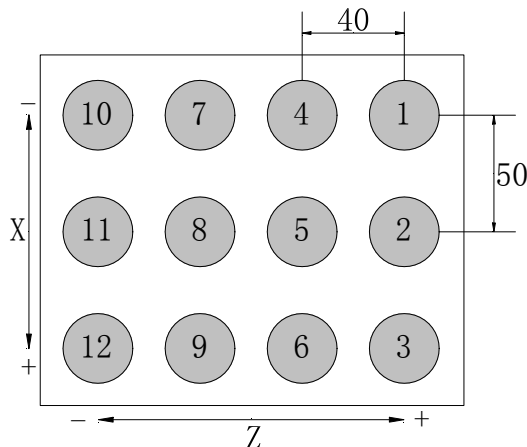
**Sub arm stack:**

(1) The program defaults to stacking the main arm, that is, only the main arm is stacked, the sub arm is not stacked.

(2) After checking the stacking of the sub arm, X1, Y1 and X2, Y2 are stacked at the same time, the stacking order, direction, number and spacing are the same.

**Stacking counter:** There are 6 stack counting methods in this system. For each stack, 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 stacking program settings:



Set value: Use group 1 stacking

Sequence: (X-Z-Y) Direction: X forward Z reverse Y reverse

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

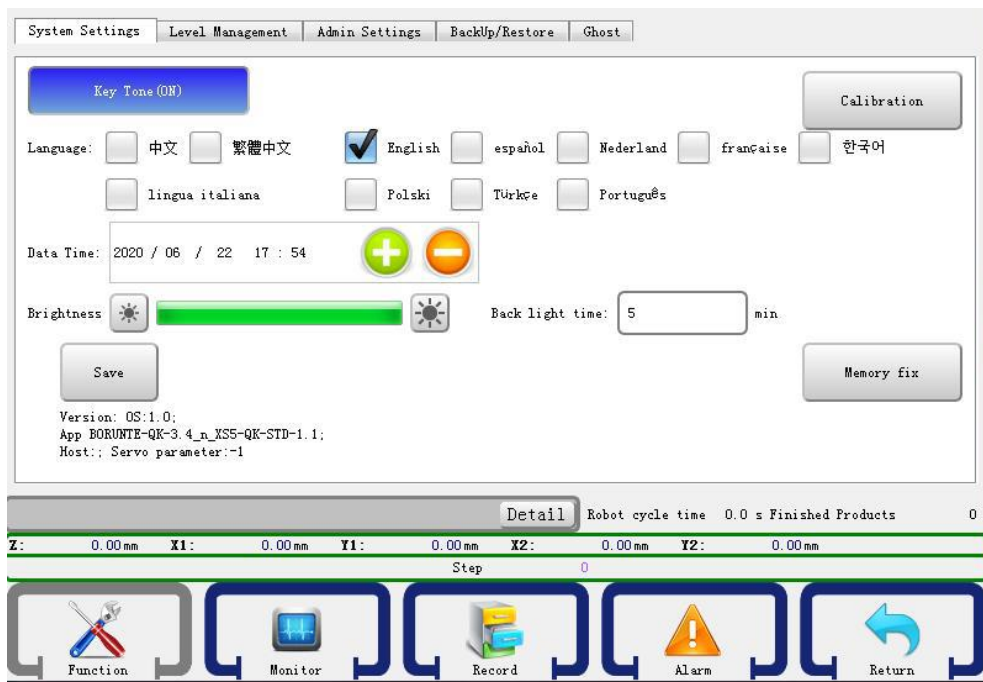
According to this setting, the manipulators are arranged at intervals of 50mm along the X+ axis direction (①②③) The three products are in the first column on the right. Then move along the Z-axis direction 40mm arrangement (④⑤⑥) three products in the second column on the right, by analogy, after arranging the 12th product, the manipulator rises 30mm in the Y-axis direction, Then repeat the second layer of products at the first point. Since the products are arranged in two layers, a total of 24 products can be discharged in the cargo box.

Stacking setting and stacking teaching in no particular order. For instructions on stacking, please refer to Section 4.2.8.

## 4.2.9 System settings

【 System Settings 】 Contains 5 pages, namely "System Settings", "Level Management", "Admin Settings", "Backup/Restore" and "Machine Config"

( I )System settings page, as shown below:





**Tip :** If it cannot be created in the file, copy and delete the program. Please click the [Storage Repair] function. The system will automatically restart to repair the storage.

**Key Tone:** Button sound on and off.

**Language:** The system sets 6 languages for customers to choose, the default is Chinese.

**Date Time:** Date time displayed by the system, select date and time, press the plus and minus keys to make changes and click save. After about 2 minutes, will be updated to a new time.

**Back Light Time:** Exceeded the set time, the screen changes from bright to dark, and the "admin settings" authority becomes "administrator" authority.

**Screen brightness:** Adjust the brightness of the display, click  screen dimmed, click  screen brightens.

**Version number:** Display manual control system and host version.

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

**Important :** If the cursor deviates, you cannot go to this page , the key sequence can be used to calibrate the screen.

- 1、 After the system is fully started, turn the third gear switch to the stop state.
- 2、 Press F5 F1 F4 F1 F3 F1 F2 F5 , the system will automatically restart to enter the calibration screen page.

**Storage repair:** After pressing, the system will automatically restart to repair the storage. (Applicable when new model number cannot be created)

## (II) Level management page. As shown below:

**Level:** Divided into Machine Admin and Advance Admin. The administrator can change basic parameters, but do not have the right to teach programs, change mechanical parameters and enter maintenance page, advance admin can change any parameters.

**Old password/New password:** Enter the old password, then enter the new password, and press the change key to change the password. (If you change the administrator password. If you have advanced administrator rights, just enter the new password)

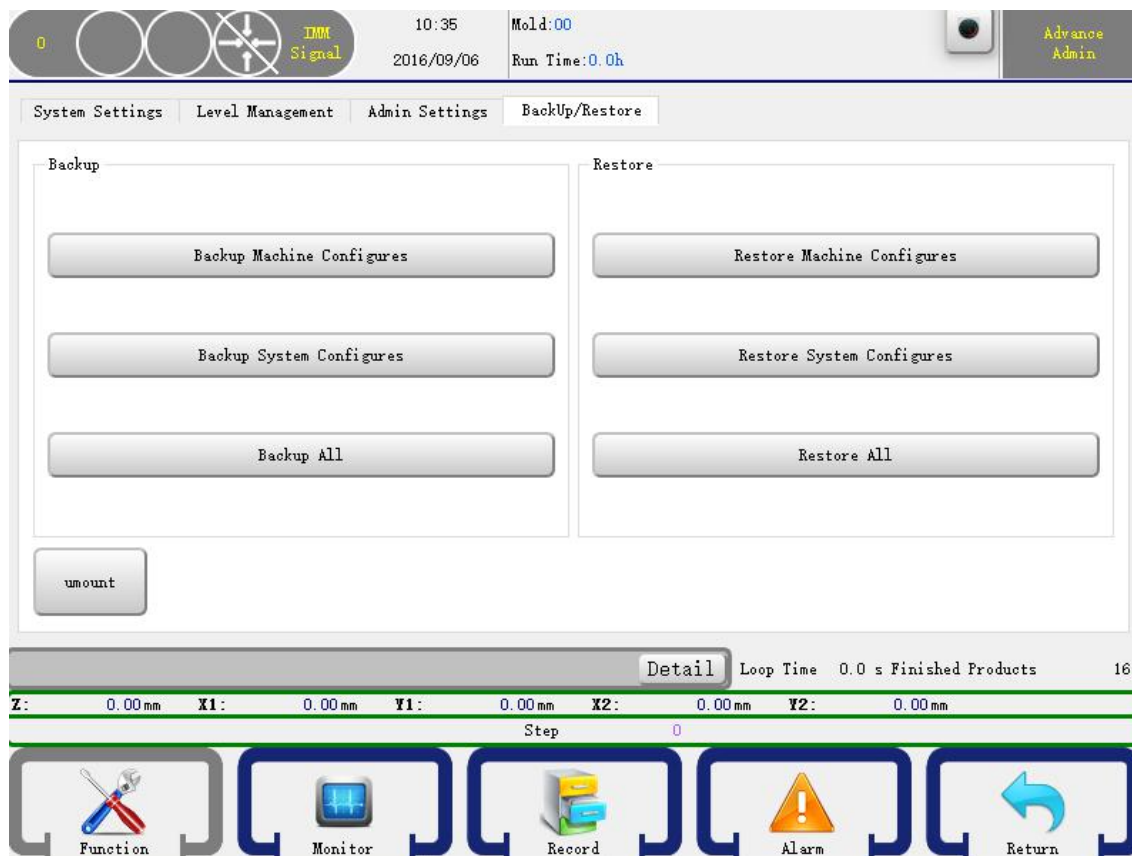
## (III) Advanced administrator options page, picture:

**Verification:** Enter szhc2a in the text box after the verify button, click again [Verification] button, [Function extension] and [Registration function] change from gray to black.

**Function extension:** When checked, there are 12 sub-pages in the main menu of the [Edit] page in manual state. If unchecked, [Condition] and [Sequence Action] on the main menu page will be hidden, function is not available.

If you need to register, please contact the company's technical staff.

## (IV) Backup/Restore page. As shown below:

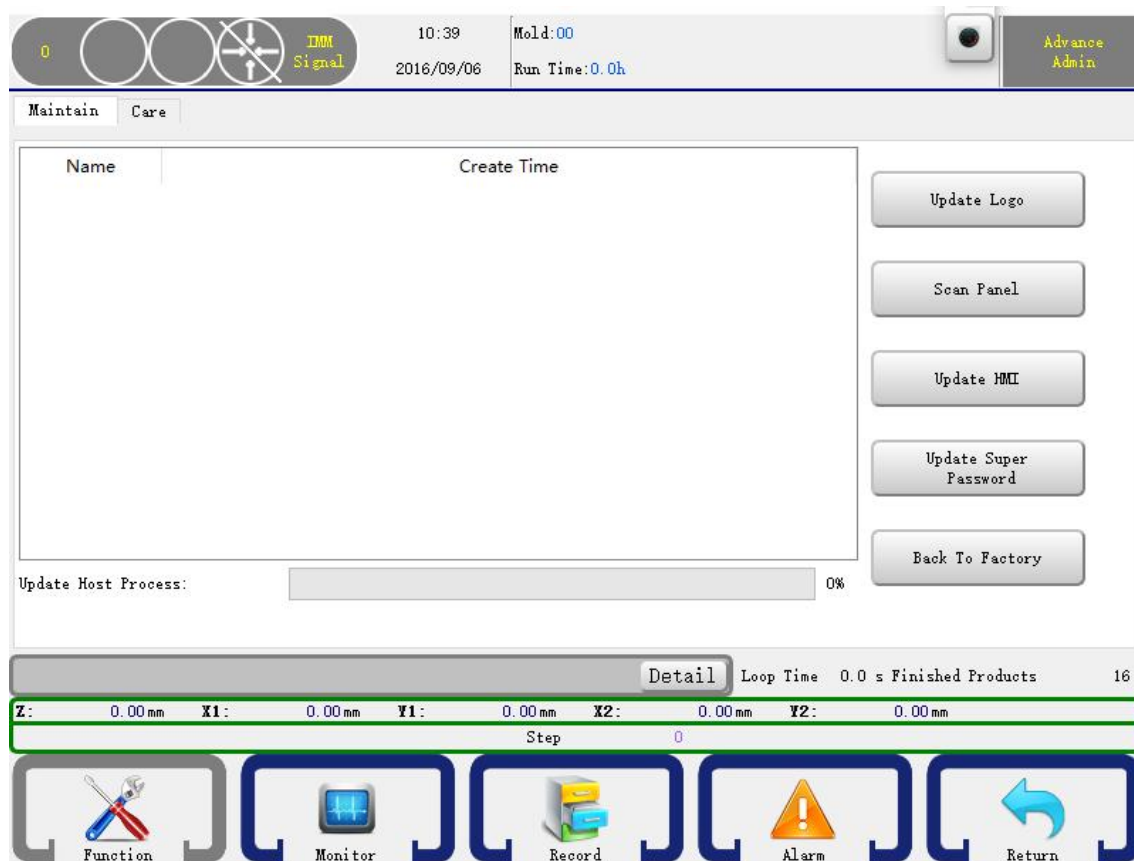


Under this page, you can use the U disk to backup and restore "machine parameters", "system parameters", and "all parameters" respectively.

After the parameters are restored, the hand controller will automatically restart.

## 4.2.10 Maintenance

( I )Maintenance page, as shown below:



Under this page, you can upgrade the system and update the pictures.

**Upgrade Instructions:** Copy the upgrade program into the U disk, insert the USB flash drive after powering on the hand controller, log in to the senior administrator, select the knob to stop, access function-maintenance, click to scan for update packages. After the version number appears, choose this version, then click to start the update. The system will automatically restart, and then pull out the U disk.

**Restore Factory: This feature is not a standard feature.**

**Maintain page, as shown below**

Item	Left Day	Next date maintain	Cycle	Restart
1 Lubrication	30	2020/07/22	30	Restart
2 Clean filter	30	2020/07/22	30	Restart
3 Check EOAT	30	2020/07/22	30	Restart

Detail Robot cycle time 0.0 s Finished Products 0

Z: 0.00 mm X1: 0.00 mm Y1: 0.00 mm X2: 0.00 mm Y2: 0.00 mm

Step 0

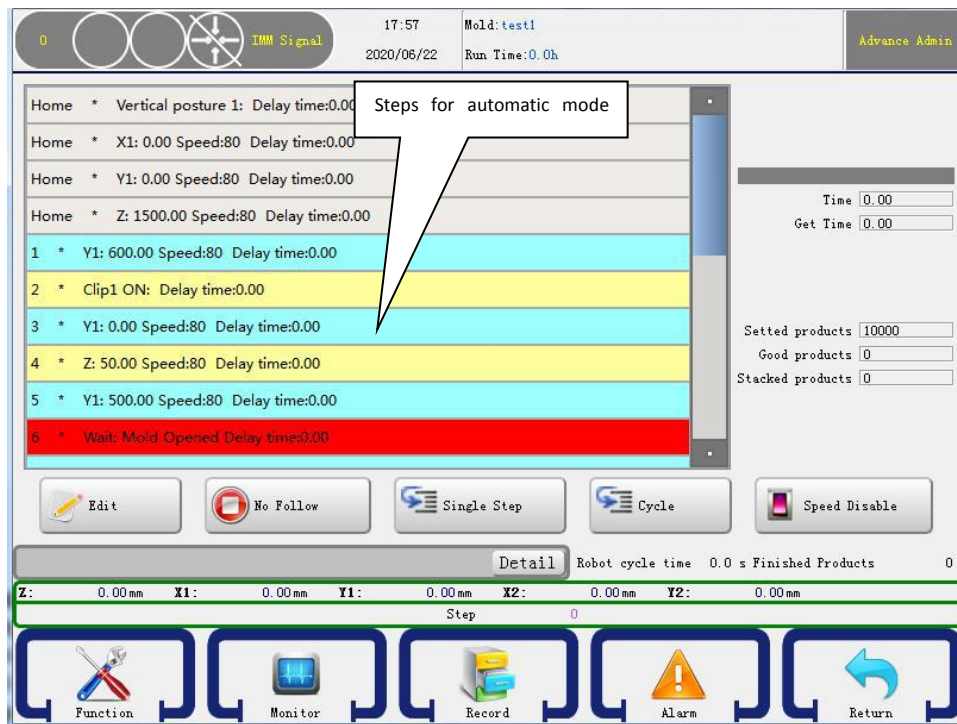
Function Monitor Record Alarm Return

The maintenance period can be set under this page, and the period is calculated according to natural days. If the maintenance period of a certain item is reached, the system will prompt you. After the maintenance is completed, you need to click [Restart] to restart the timer.

## Chapter 5 Automatic Mode

### 5.1 Monitoring of automatic operation data

Rotate the state selection switch to the automatic gear position, the manipulator enters the automatic standby state, press the start button again, the manipulator will start automatic operation, and the operation data of the manipulator can be monitored in the automatic operation state. The automatic operation page is displayed as follows:



**Molding cycle:** automatically record the molding cycle time of the last cycle injection molding machine.

**Fetching time:** In full-automatic operation, the timing starts from the completion of the mold opening signal, and the time between the execution of the mold closing signal and the end of the time until the completion of the program.

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

**Number of good products:** The manipulator has taken out the quantity of qualified products. (If there is no defective product signal before the mold is opened, it is a good product)

**Number of stacks:** When using stacking, the number of products that the robot has stacked.

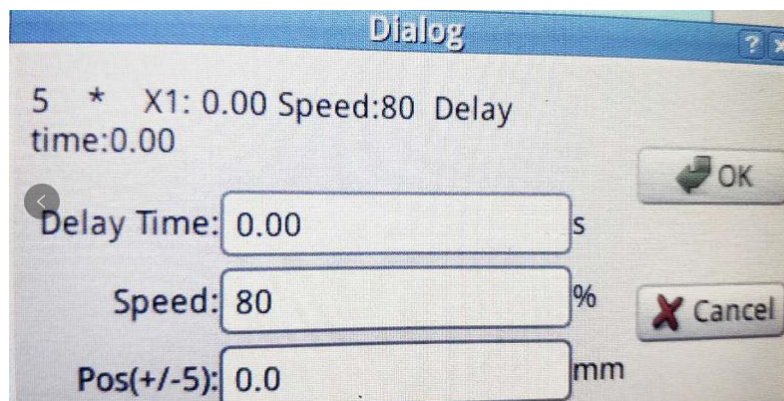
**Manipulator cycle:** The time of each automatic cycle of the manipulator.

**Number of products completed:** The number of products that the robot has taken out.

## 5.2 Modification of parameters during automatic operation

In the automatic running state, the time of action in the automatic program, the speed and position of the electric axis can be modified according to the current operating conditions. In order to facilitate the modification of parameters, you can click the [Do not follow] button to stop the movement of the program operation indication bar.

Click the line of the action to modify the parameter, select it and then click the [Edit] button to pop up the following dialog box:



In this dialog box, you can modify the delay time of the action, the speed and position of the electric axis. After changing the parameters, click the [OK] button, the parameters will be accepted online, and will run according to the changed parameters from the next cycle. To cancel the action, press the [Cancel] key.

In order to ensure that the modification of the position of the electric shaft will not damage the manipulator, injection molding machine, and mold, each modification can only be within  $\pm 5$  mm. Click the [Speed Control Prohibited] button and change it to [Speed Control Allowed]. You can press the up and down arrow keys in the lower left corner of the panel to adjust the global speed, which can increase or decrease the speed of each electric axis.

### 5.3 Single step operation

Rotate the status selection button to the automatic gear position, click the [Single Step] button, and then press the [Start] key to enter the single step operation mode. In this mode, click the [Single Step] button to execute the one-step automatic action program. And so on. The executed automatic program is the currently taught automatic program.

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

### 5.4 Single cycle

In the automatic state, the motor [single cycle], then press the [start] key to enter the single cycle operation mode, the automatic operation ends after one mode of automatic operation.

### 5.5 Speed adjustment during automatic operation

In the automatic running state, click the [Speed Control Prohibition] button to change it to [Speed Control Allowable], and select the up and down speed adjustment keys on the panel to increase or decrease the global speed during automatic operation. The global speed can be adjusted up to 200.

## Chapter 6 Monitoring and Alarm Record.

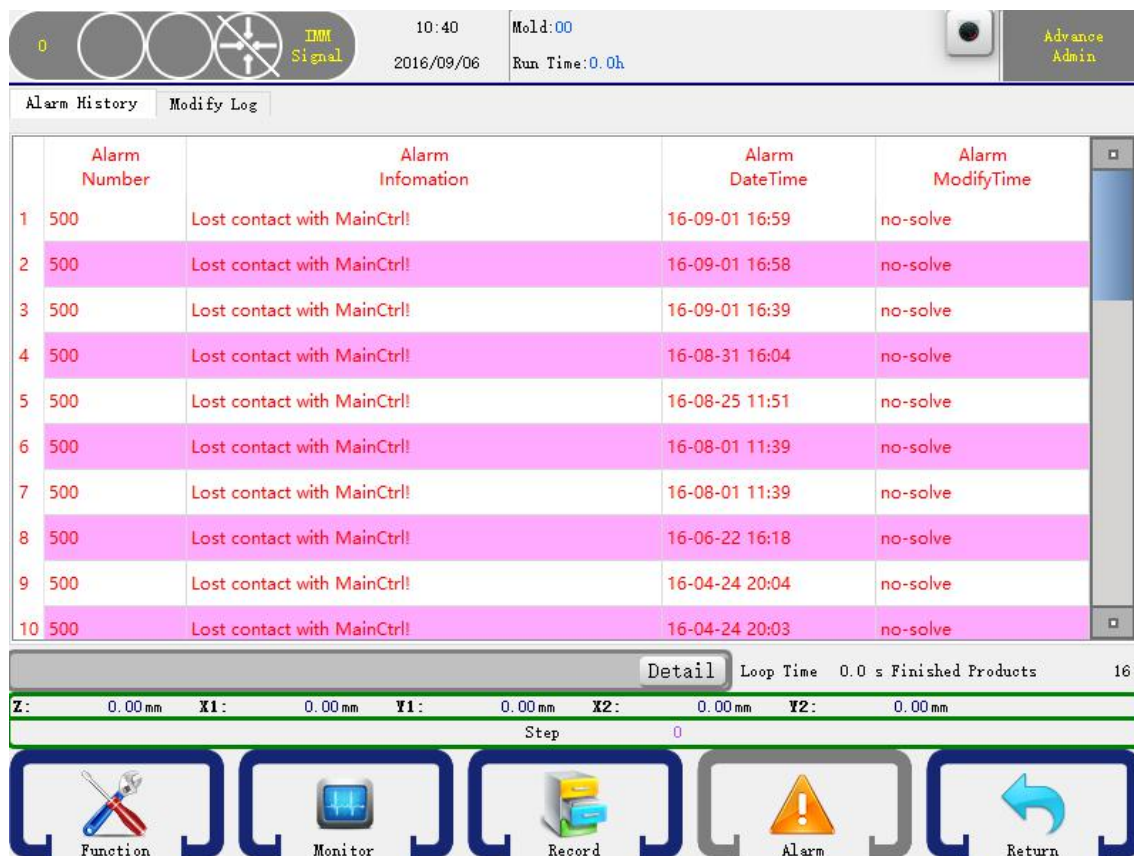
### 6.1 I/O monitoring

Click the [Monitor] button at the bottom of the screen to enter the I/O signal monitoring page. This page is divided into robot I/O signals, injection molding machine I/O signals and servo parameters. The I/O status is as follows:

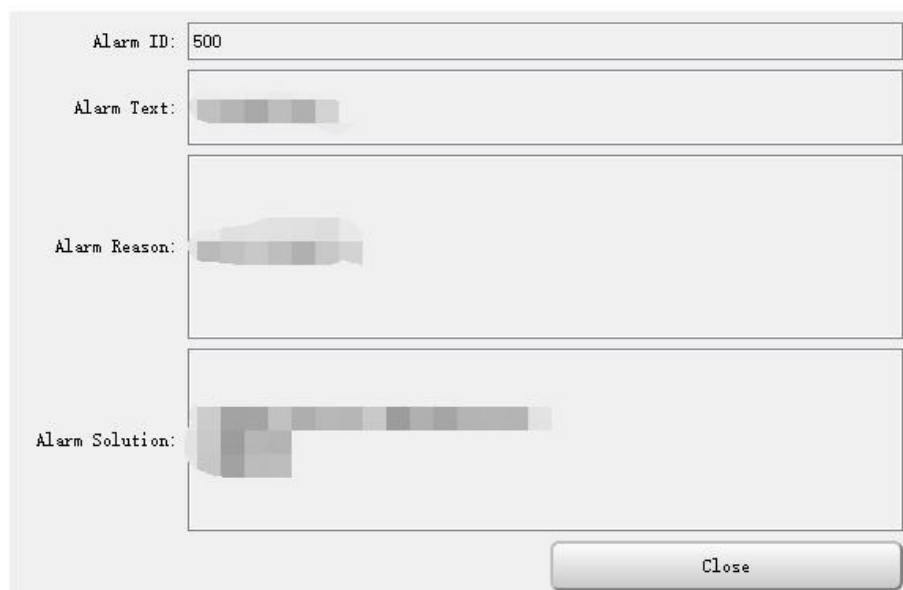
You can monitor the position command deviation, speed and load rate of each axis on this page.

### 6.2 Alarm History

Click the [Alarm History] button at the bottom of the screen to enter the alarm information recording screen. As shown below:



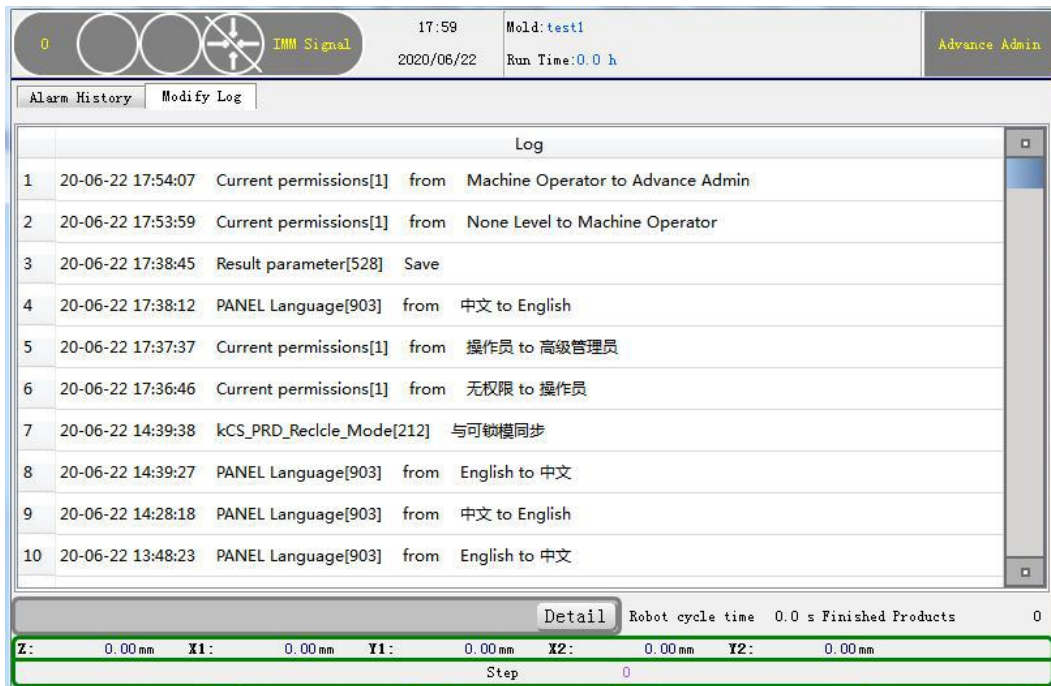
When an alarm occurs, click the help in the alarm bar, and a prompt box will pop up automatically with detailed information and solutions for the alarm. As shown below:



The control system can record the last 200 alarm records, which is convenient for users to search the historical alarm information of the manipulator.

## 6.3 Modify Log

Click the [Modify Log] button at the bottom of the screen to enter the modify record screen. As shown below:



The control system can record the last 200 modification records, which is convenient for users to find the historical modification information of the manipulator.

## 6.4 Alarm and its solution

Alarm content	Cause of alarm	Solution
22:X is still running when the action is generated	Two X-axis motion commands are included in the same combined motion	Decompose or delete an X-axis action
23:Y is still running when generating the action	Two Y-axis motion commands are included in the same combined motion	Decompose or delete a Y-axis action
24:Z is still running when generating action	Two Z-axis motion commands are included in the same combined motion	Decompose or delete a Z-axis action
26:X movement too fast	Output pulse command frequency>600K	Operating parameter -X maximum speed cannot be greater than 100
27:Y movement too fast	Output pulse command frequency>600K	Operating parameter -Y maximum speed cannot be greater than 100
28:Z motion too fast	Output pulse command frequency>600K	Running parameter -Z maximum speed cannot be greater than 100
60:A Over speed	Output pulse command frequency>600K	Operating parameter -A maximum speed cannot be greater than 100
61:B too fast	Output pulse command frequency>600K	Operating parameter -B maximum speed cannot be greater than 100
62:C Over speed	Output pulse command frequency>600K	Operating parameter -C maximum speed cannot be greater than 100
63: A is still running when generating an action	Two of A-axis motion commands are included in the same combined motion	Decompose or delete the A axis action

64: B is still running when generating action	Two of B-axis motion commands are included in the same combined motion	Decompose or delete a B-axis action
65: C is still running when generating action	Contains two C axis action instructions in the same combined action	Decompose or delete a C axis action
70: X2 movement is too fast	Output pulse instruction frequency >600 K	Operating parameters - X2 maximum speed not greater than 100
71: Y2 movement is too fast	Output pulse instruction frequency >600 K	Operating parameters - Y2 maximum speed not greater than 100
72: X2 is still running when the action is generated	Contains two X2 axis action instructions in the same combined action	Decompose or delete a X2 axis action
73: Y2 is still running when generating action	Contains two Y2 axis action instructions in the same combined action	Decompose or delete a Y2 axis action
100: X axis feedback pulse deviation is too large	Larger tolerance setting between pulse instruction count and feedback pulse instruction count	1. If the alarm can be cleared, please check if the tolerance is too small (function-run parameter-[ tolerance] parameter is adjusted), if the servo rigidity is too soft (dynamic follow is not good) 2. If the alarm can not be cleared, please use the positive and negative pulse for testing, it is possible that the connection problem causes the pulse to be lost or the servo feedback pulse is positive and reverse wrong. (Motor forward feedback is 10000, motor reverse feedback is 55535)
101: Y axis feedback pulse deviation is too large		
102: Z axis feedback pulse deviation is too large		
106: X axis servo drive alarm	X shaft driver alarm	1. Servo driver alarm, find the cause, solve servo driver alarm. 2. Servo driver no alarm, check motherboard and servo driver connection line is loose, welding error. 3. Servo driver no alarm, wire normal. Replace the motherboard.
107: Y-axis servo drive alarm	Y shaft driver alarm	
108: Z axis servo driver alarm	Z shaft driver alarm	
112: X axis has passed the end point limit	No signal at the end of X axis	No signal at X axis starting point limit No signal at end point of Y axis No signal at the starting limit of Y axis No signal at the end of Z axis No signal at the starting limit of Z axis Current position is greater than X axis maximum movement
113: X axis has passed the starting point limit	No signal at X axis starting point limit	
114: Y axis has passed the end point limit	No signal at end point of Y axis	
115: Y axis has passed the starting point limit	No signal at the starting limit of Y axis	
116: Z axis has passed the end point limit	No signal at the end of Z axis	
117: Z axis has passed the starting point limit	No signal at the starting limit of Z axis	

118: The current X value is too large	Current position is greater than X axis maximum movement	The current position is less than the X axis minimum movement
119: The current X value is too small	The current position is less than the X axis minimum movement	
120: The current Y value is too large	The current position is greater than the maximum movement of the Y axis	
121: The current Y value is too small	The current position is less than the minimum movement of the Y axis	
122: The current Z value is too large	The current position is greater than the maximum movement of the Z axis	
123: The current Z value is too small	The current position is less than the minimum movement of the Z axis	
124: X axis position is set too large during operation	The stacking point spacing is set incorrectly, exceeding the maximum or minimum position	Check the setting of stacking points and spacing
125: The X axis position is set too small during operation		
126: The Y-axis position is set too large during operation		
127: The Y-axis position is set too small during operation		
128: Z-axis position is set too large during operation		
129: Z-axis position is too small during operation		
130: X-axis memory error	X axis parameter memory error.	Function-mechanical parameters- 【X axis】 page re-save
131: Y-axis memory error	Y axis parameter memory error.	Function-mechanical parameters- 【Y axis】 page save again
132: Z-axis memory error	Error in Z axis parameter memory.	Function-mechanical parameters- 【Z axis】 page re-save
133: Structural memory error	Error in main axis parameter memory	Function-machine parameter page saves all axis parameters.
134: X axis comparison	The X-axis parameters of the host and the X-axis parameters in the manual control are inconsistent	Function-mechanical parameters- 【X axis】 page re-save
135: Y axis comparison	The Y-axis parameters of the host are not consistent with the Y-axis parameters of the manual control	Function-mechanical parameters- 【Y axis】 page save again
136: Z axis comparison	The Z-axis parameters of the host are inconsistent with the Z-axis parameters of the manual control	Function-mechanical parameters- 【Z axis】 page re-save
137: Structural comparison	The parameters of the central axis of the main unit and the parameters of the central axis of the manual control are inconsistent	Function-Mechanical Parameters page saves all axis parameters and structural parameters.

160: X2 axis feedback pulse deviation is too large		1. If the alarm can be cleared, please check whether the tolerance is too small (Function-Operation Parameters-[Tolerance] parameter is adjusted to be large), and whether the servo rigidity is too soft (dynamic follow-up is not good)
161: Y2 axis feedback pulse deviation is too large	The pulse command count and the feedback pulse command count are greater than the tolerance setting	
164: X2 axis servo drive alarm	X2 axis drive alarm	1. Servo drive alarm, find the cause and solve the servo drive alarm. 2. There is no alarm for the servo drive. Check whether the connection cable between the main board and the servo drive is loose or the welding is wrong.
165: Y2 axis servo drive alarm	Y2 axis drive alarm	
168: X2 axis has passed the end point limit	No signal at X2 axis end limit	3. The servo drive has no alarm and the wire is normal. Replace the motherboard.
169: X2 axis has passed the starting point limit	No signal at X2 axis starting point limit	
170: Y2 axis has passed the end point limit	No signal at Y2 axis end limit	1. Check whether the limit switch is normal. 2. The limit is normally closed, check whether the short wiring is normal.
171: Y2 axis has passed the starting point limit	No signal at Y2 axis starting point limit	
172: The current X2 is too large	Current position is greater than X2 axis maximum movement	1. Please check the setting of the corresponding safety point. When the fine adjustment knob is turned at the maximum and minimum positions, the above alarm may appear.
173: The current X2 is too small	Current position is less than X2 axis minimum movement	
174: The current Y2 is too large	Current position is greater than Y2 axis maximum movement	
175: The current Y2 is too small	The current position is less than the minimum movement of Y2 axis	
176: The X2 axis position is set too large during operation	The stacking point spacing is set incorrectly, exceeding the maximum or minimum position	2. After clearing the alarm, move in the opposite direction
177: X2 axis position setting is too small during operation		
178: The Y2 axis position is set too large during operation		
179: Y2 axis position setting is too small during operation		
180: X2 axis memory error	X2 axis parameter memory error.	Function-mechanical parameters-【x2 axis】page re-save
181: Y2 axis memory error	Y2 axis parameter memory error.	Function-mechanical parameters-【Y2 axis】page re-save

182: X2 axis comparison	The X2 axis parameter of the host is inconsistent with the X2 axis parameter in the manual control	Check the setting of stacking points and spacing
183: Y2 axis comparison	The Y2 axis parameter of the host is not consistent with the Y2 axis parameter in the manual control	
200: A-axis feedback pulse deviation is too large	The pulse command count and the feedback pulse command count are greater than the tolerance setting	1. If the alarm can be cleared, please check whether the tolerance is too small (Function-Operation Parameters-[Tolerance] parameter is adjusted to be large), and whether the servo rigidity is too soft (dynamic follow-up is not good)
201: B axis feedback pulse deviation is too large		
202: C axis feedback pulse deviation is too large		
206: A axis servo drive alarm	A axis drive alarm	1. Servo drive alarm, find the cause and solve the servo drive alarm. 2. There is no alarm for the servo drive. Check whether the connection cable between the main board and the servo drive is loose or the welding is wrong. 3. The servo drive has no alarm and the wire is normal. Replace the motherboard.
207: B axis servo drive alarm	B axis drive alarm	
208: C axis servo drive alarm	C axis drive alarm	
212: A axis has passed the end point limit	No signal at the end of A axis	1. Check whether the limit switch is normal. 2. The limit is normally closed, check whether the short wiring is normal.
213: A axis has passed the starting point limit	No signal at the starting limit of A axis	
214: B axis has passed the end point limit	No signal at the end of B axis	
215: B axis has passed the starting point limit	No signal at the starting limit of B axis	
216: C axis has passed the end point limit	No signal at the end of C axis	
217: C axis has passed the starting point limit	No signal at the starting limit of C axis	
218: The current A is too large	The current position is greater than the maximum movement of the A axis	1. Please check the setting of the corresponding safety point. When the fine adjustment knob is turned at the maximum and minimum positions, the above alarm may appear. 2. After clearing the alarm, move in the opposite direction
219: The current A is too small	The current position is less than the minimum movement of the A axis	
220: The current B is too large	The current position is greater than the maximum movement of the B axis	
221: The current B is too small	The current position is less than the minimum movement of the B axis	
222: The current C is too large	The current position is greater than the maximum movement of the C axis	
223: The current C is too small	Current position is less than C axis minimum movement	
224: A-axis position is set too large during operation	The stacking point spacing is set incorrectly, exceeding the maximum	

225: A-axis position is too small during operation	or minimum position	Check the setting of stacking points and spacing
226: The B axis position is set too large during operation		
227: B axis position setting is too small during operation		
228: The C axis position is set too large during operation		
229: C axis position set too small during operation		

230: A-axis memory error	A axis parameter memory error.	Function-mechanical parameters- 【A axis】 page re-save Function-mechanical parameters- 【B axis】 page re-save Function-mechanical parameters- 【C axis】 page re-save Function-mechanical parameters- 【Z axis】 page re-save
231: B-axis memory error	B axis parameter memory error.	
232: C axis memory error	C axis parameter memory error.	
234: A axis comparison	The host A axis parameters are inconsistent with the manual control A axis parameters	Function-mechanical parameters- 【A axis】 page re-save Function-mechanical parameters- 【B axis】 page save again Function-mechanical parameters- 【C axis】 page save again
235: B axis comparison	The host B axis parameter is inconsistent with the manual control B axis parameter	
236: C axis comparison	The C-axis parameters of the main unit are inconsistent with the C-axis parameters of the manual control	
300: X axis setting is wrong	X axis mechanical parameter setting is wrong	Function-Mechanical parameters-[X axis] page reset Function-Mechanical parameters-[Y axis] page reset Function-Mechanical parameters-[Z axis] page reset
301: Incorrect Y axis setting	Y axis mechanical parameter setting is wrong	
302: Z axis setting is wrong	Z axis mechanical parameter setting is wrong	
304: Emergency stop input	Emergency stop signal input	1. Check whether the emergency stop switch on the manual control is turned out 2. Check if the connection between the hand control and the motherboard is loose 3. Check whether the emergency stop of the injection molding machine is input 4. Check whether the power of the motherboard is normal

306: The position of the standby point is wrong	The starting step and function in the module number-mechanical parameters-the axis definition in the structure is not correct	1. Create a new model number 2. The Y standby position needs to be less than the maximum standby position
308: Tolerance is too large	If the tolerance is greater than 10mm, it will alarm once	Two-axis touch tolerance must be less than 10mm <sup>2</sup> . The tolerance of the three or five axis system must be less than 100mm
315: System parameters	Two-axis touch system, the operating parameter-the tolerance is too large, the tolerance can not exceed 10	Set the tolerance to less than 10mm <sup>1</sup> .
318: Separate instructions in parallel	Wait, the conditional program steps are combined	Decompose the waiting step from the command
320: Call abnormal SEQ	The return step value exceeds the value of the last step of the program.	Check if the flag return to the right step
323: Wait for mold opening	There is no step waiting for the mold opening in place in the module number program	Insert one command of wait mold open in the program
326: Repeated action	The action steps of the same axis are combined together.	Decompose the synchronization action steps.
328: Condition detection when there is action	Conditional action steps are combined	Decompose the detect command
330: Posture has been selected and must be restarted	Function-Fixture definition on product setting page was changed	Restart
332: The output has been selected and must be restarted	Function-machine parameter-structure output definition was changed	Restart
333: The axis definition has been changed and must be restarted	Function-machine parameter-structure axis definition changed	Restart
360: X2 axis parameter verification	The manual control parameters are not consistent with the motherboard parameters.	Functionality - mechanical parameters of the corresponding axis parameters are saved
361: Y2 axis parameter verification		
362: A axis parameter verification		
363: B axis parameter verification		
364: C axis parameter verification		
365: Structural parameter verification		
500: Contact with the host is interrupted	The motherboard and the manual control cannot communicate	1. Please check whether the connection between the panel and the host is loose 2. Replace the motherboard 3. Replace the teach panel

501: I/O board communication is abnormal	The motherboard and IO board cannot communicate	<ol style="list-style-type: none"> <li>1. Please check whether the connection between the motherboard and the IO board is loose</li> <li>2. Please check whether the wiring sequence of the motherboard and IO board is correct</li> <li>3. Replace the motherboard</li> <li>4. Replace the IO board</li> </ol>
502: The set output has been reached	The number of products reaches the set output	<ol style="list-style-type: none"> <li>1. Clear the counter of the product finished</li> <li>2. If you do not use this function, set the output of the function-product setting page to 0</li> </ol>
503: Low air pressure	No signal for air pressure detection	<ol style="list-style-type: none"> <li>1. Please check whether the air pressure detection signal is normal</li> <li>2. If this function is not used, set the air pressure detection on the function-signal setting page to not used</li> </ol>
504: Communication watchdog	Abnormal communication between host and IO board	Please check the Board and IO Board connections for loose
505: Program synchronization error	The program in the manual control is inconsistent with the host	Please reload the program again
506: Waiting for signal timeout	Timeout waiting for mold opening in place	<ol style="list-style-type: none"> <li>1. Check the opening signal is normal</li> <li>2. Production - set page waiting for opening time adjustment</li> </ol>
When 600:Z moves to the outside safety zone, the inside safety zone is open	When the manipulator is in the position of the external safety zone, the signal of the internal safety zone is still on (only detected in the automatic state)	<ol style="list-style-type: none"> <li>1. Please check - machine parameter z position outside the security zone settings are correct</li> <li>2. Please check the z- point switch is working correctly</li> </ol>
602: When Z moves to the internal safety zone, the external safety zone is open	When the manipulator is in the position of the safety zone in the model, the signal of the safety zone outside the model is still on (only detected in the automatic state)	<ol style="list-style-type: none"> <li>1. Please check - machine parameter z inside the security zone settings are correct</li> <li>2. Please check the z -type external safety switch is properly</li> </ol>
604: Y unsafe area but originally lit	When the main arm descends to the detection position (parameters are defined in the Y safety zone), the Y origin signal remains on	<ol style="list-style-type: none"> <li>1. Please check - machine parameter y axis settings are correct</li> <li>2. Please check the y origin switch is working correctly</li> </ol>
605: Y safe area but the origin is not bright	When the main arm is in the safety zone, the Y origin signal is off	
608: Y2 non-safe area but originally lit	When: the secondary arm descends to the detection position (parameters are defined in the Y2 safety zone), the Y2 origin signal remains on	Y2 moved away from the origin position.

700: Waiting for X043 to time out	Waiting for signal timeout	<ol style="list-style-type: none"> <li>1. Check the wait signal if is normal</li> <li>2. Waiting time too long that over the limit time</li> </ol>
701: Waiting for X044 to time out		
702: Timeout waiting for pin 1 confirmation		
703: Wait for pin 2 to confirm timeout		
704: Timeout waiting for pin 3 confirmation		
705: Timeout waiting for pin 4 confirmation		
706: Waiting for suction 1 to confirm timeout		
707: Wait for suction 2 to confirm timeout		
708: Timeout waiting for the thimble to be in place		
709: Timeout waiting for the thimble to retract		
710: Timeout waiting for core entry		
711: Timeout waiting for core to be in place		
1000: The mid-board signal is broken when the arm is lowered	<ol style="list-style-type: none"> <li>1. When the pneumatic arm is lowered, the signal of the middle plate mold is broken at the rising limit of the model</li> <li>2. When Y1 falls, the signal of the middle plate is broken outside the Y1 safety zone or at the non-rising limit (except for the origin)</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check whether the signal of the middle plate is normal</li> <li>2. If you do not use the mid-plate mold function, please select the function-signal set mid-plate mold as unused</li> </ol>
1001: When the arm is lowered, the mold opening signal is off	Z origin switch and type safe area switch are lit simultaneously	<ol style="list-style-type: none"> <li>1. Please check whether the signal after mold opening is normal</li> <li>2. Please check whether the program steps are written correctly</li> </ol>
1002: Safety door opens when descending	<ol style="list-style-type: none"> <li>1. When Y1 falls, the safety door is opened in the automatic operation state outside the Y1 safety zone or at the non-rising limit</li> <li>2. When the pneumatic sub-arm is lowered, no safety gate signal is detected at the sub-up limit of the model (except for automatic single step)</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check whether the safety door signal is normal</li> <li>2. Please check whether the program steps are written correctly</li> </ol>
1003: Posture horizontal and vertical signals simultaneously	Signals for horizontal limit and vertical limit	Please check whether the horizontal and vertical limit switches are normal
1004: The Z-axis origin signal and the external safety zone signal are simultaneously communicated	Z origin switch and type safe area switch are lit simultaneously	Please check whether the Z origin switch and the external safety zone switch are normal

1005: In-model descent and mold opening in place	<ol style="list-style-type: none"> <li>1. Inside or outside the type, the main ascent limit or auxiliary ascent limit or Y1 is not in the safety zone</li> <li>2. Mold opening and breaking in automatic state</li> <li>3. In other states, the mold opening is allowed to be in place when the mold is locked.</li> <li>4. The maximum standby position of Y is set to 1mm (or set too small). When the machine vibrates, the vibration of the feedback pulse exceeds 1mm.</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check if the open mode signal is normal</li> <li>2. Please check that the program steps are written correctly</li> <li>3. Reset Y maximum standby position</li> </ol>
1006: Posture 1 error when descending within the model	<ol style="list-style-type: none"> <li>1. In the manual state, press the lower button of the main arm, and no vertical signal of posture 1 is detected in the internal safety zone or non-external safety zone</li> <li>2. In the automatic state, no vertical signal of posture 1 is detected in the inner safety zone or the non-type outer safety zone, at the non-ascending limit</li> <li>3. When the pneumatic main arm is lowered, no vertical signal of posture 1 is detected in the safety zone within the model</li> </ol>	<ol style="list-style-type: none"> <li>1. Please check if posture 1 is vertical</li> <li>2. Please check if vertical limit switch is normal.</li> </ol>
1007: Descent within the model but the position is not within the safety zone within the Z-axis model	When Y1 falls, outside the safety zone within Y1 or at the non-rising limit, the signal within the safety zone within the model is detected but the position is not within the safety zone within Z	<ol style="list-style-type: none"> <li>1. Please check the function-machine parameter Z the shaft type inner safety zone setting is correct</li> </ol>
1008: The outside of the model falls but the position is not within the range of the Z-axis outside safety zone	When Y1 falls, outside the safety zone within Y1 or at the non-rising limit, the signal of the outside safety zone is detected but the position is not outside the safety zone of Z	<ol style="list-style-type: none"> <li>1. Please check the function-machine parameter Z the shaft type safe area setting is correct</li> </ol>
1009: No safety zone signal detected during descent	When Y1 falls, no signal is detected inside or outside the safety zone outside the safety zone within Y1 or at the non-rising limit	<ol style="list-style-type: none"> <li>1. Please check whether the descending position of Y1 axis is in the safe zone</li> <li>2. Please check whether the Z origin and the external safety zone switch are normal</li> </ol>
1010: Y1 is not in the Z-axis safe range when descending	When Y1 falls, at the non-rising limit, no signals within the safety zone and outside the safety zone are detected	<ol style="list-style-type: none"> <li>1. Please check whether the Y1 axis drop position is in the safe area</li> <li>2. Please check whether the Z origin and type safe area switch is normal.</li> </ol>
1011: Y1 is not in the X-axis safe range when descending	When Y1 falls, no X-axis safe zone signal is detected at the non-rising limit	Please check the function-machine parameter X axis setting is correct

1012: Two sets of side poses are level at the same time	Pose 1 and Pose 2 are level at the same time	1. Please check if Pose 1 and Pose 2 have done horizontal movement at the same time 2. Please check whether the level 1 limit and level 2 limit switches are normal
1013: The front and rear limits are opened simultaneously	Vice forward and backward limit lights simultaneously	Please check that the secondary forward and backward limit switch is normal.
1014: The upper and lower limits are opened simultaneously	The secondary rise and fall limits are on at the same time	Please check whether the secondary rise and fall limit switch is normal
1015: The main front and back limits are opened at the same time	The main forward and backward limit lights simultaneously	Please check whether the main forward and backward limit switches are normal
1016: The main upper and lower limits are opened at the same time	The main ascent and descent limit are on	Please check whether the main ascent and descent limit switch is normal
1017: Safety door opens during operation	Safety door opens during automatic operation	1. Please check whether the safety door is open 2. Please check whether the safety gate signal is normal
1019: When the origin is returned, the mold is opened and broken in place	When returning to the origin, there is no signal after mold opening	1. Please check the signal setting in the function, the mold needs to be in place at the origin 2. If you choose to find the origin, you do not need to open the mold in place. If you find the origin when the mold is in place, the system will report an alarm. After clearing, you can continue to find the origin.
1020: During the return-to-origin, the signal of the middle plate is off	There is no signal from the mid-plate mold during the return-to-origin	1. Please check whether the signal of the middle plate is normal 2. If you do not use the mid-plate mold function, please select the function-signal set mid-plate mold as unused
1021: When returning to origin, the posture is not vertical	There is no signal in the vertical limit during homing	1. Please check whether the corresponding limit switch is normal
1022: When returning to the origin, the posture is not level	There is no signal at the horizontal limit when returning to the origin	2. If the posture is not restricted, please select the function-signal origin return posture as unrestricted
1023: When running horizontally, the posture is not vertical	When running horizontally, there is no signal in the vertical limit	1. Please check whether the corresponding limit switch is normal
1024: Posture is not level when running horizontally	When running horizontally, there is no signal in the horizontal limit	2. If the posture is not restricted, please select the function-signal horizontal posture as unrestricted

1025: Posture 2 error when descending within the model	<p>1. In the manual state, press the lower button of the main arm, and no vertical signal of posture 2 is detected in the internal safety zone or non-external safety zone</p> <p>2. In the automatic state, no posture 2 vertical signal is detected in the internal safety zone or non-external safety zone, at the non-ascending limit</p> <p>3. When the pneumatic main arm is lowered, no vertical signal of posture 2 is detected in the safety zone within the model</p>	<p>1. Please check if posture 2 is vertical</p> <p>2. Please check whether the vertical limit switch is normal</p>
1027: Mold clamping is not in place	The signal was not detected after the mode was closed	<p>1. Please check whether the signal after mold closing is normal</p> <p>2. If you do not use this function, please select the function-signal setting mode locking in place as not used</p>
1038: Z axis is not out of shape when defective product	When the product is defective, the Z axis is not out of shape	Check Z axis setting is correct
1039: The Z axis setting is not out of shape when the product is defective		
1040: The last step is not the Z axis	The defective product is enabled.	Need to remove the hook. Or teach another Z axis in front
1054: No X axis but X motion	Function-machine parameter-structure axis definition does not have this axis, but this axis action in the module number program	Please delete the undefined axis action
1055: No Y axis but Y motion		
1056: No Z axis but Z action		
1057: No X2 axis but X2 motion		
1058: No Y2 axis but Y2 motion		
1059: No A axis but A motion		
1060: No B axis but B action		
1061: No C axis but C action		
1100: No safety zone detected when the boom is lowered	When the pneumatic main boom is lowered, no signals of the inner and outer safety zones are detected	<p>1. Please check whether Z origin switch and outside safety zone switch are normal</p> <p>2. Please check the program steps are correct</p>
1101: No safety zone detected when the jib is lowered	When the pneumatic sub-boom is lowered, the signals of the inner and outer safety zones are not detected	<p>1. Please check whether Z origin switch and outside safety zone switch are normal</p> <p>2. Please check the program steps are correct</p>

1102: When the main arm is lowered, the mold is opened and broken in place	When the pneumatic main arm is lowered, in the safety zone of the model, no mold opening in-position signal is detected	Please check whether the signal after mold opening is normal
1103: When the jib is lowered, the mold is opened and broken in place	When the pneumatic jib is lowered, in the safety zone of the model, no mold opening in-position signal is detected	Please check whether the signal after mold opening is normal
1104: After the main arm is lowered, the main ascent is limited	After the pneumatic main boom is lowered, the main rise limit switch has a signal	1. Please check if the main arm is lowered 2. Please check whether the main ascent switch is normal
1105: After the secondary arm is lowered, the secondary ascent is limited	After the pneumatic sub-arm is lowered, the sub-up limit switch has a signal	1. Please check if the main arm is lowered 2. Please check whether the main ascent switch is normal
1106: After the main descent, the descent limit is cut off	After the pneumatic main boom descends, there is no signal for the main descending limit	1. Please check if the main arm is lowered 2. Please check whether the main lower limit switch is normal 3. If there is no descent limit, please select function-machine parameter-structure main descent limit as unused
1107: Decline limit after deputy decline	After the pneumatic jib is lowered, there is no signal for the sub-descent limit	1. Please check if the main arm is lowered 2. Please check whether the main lower limit switch is normal 3. If there is no descent limit, please select function-machine parameter-structure main descent limit as unused
1108: The plate signal of the middle arm is down	When the pneumatic main boom is lowered, there is no signal from the middle plate mold	1. Please check whether the signal of the middle plate is normal 2. If you do not use the mid-plate mold function, please select the function-signal set mid-plate mold as unused
1109: The signal of the plate model is broken during the drop of the jib	When the pneumatic jib is lowered, there is no signal from the middle plate	1. Please check whether the signal of the middle plate is normal 2. If you do not use the mid-plate mold function, please select the function-signal set mid-plate mold as unused
1120: In-model and out-of-model safety zones are not detected when the main boom is raised	No signal at the Z origin and outside safety zone when the pneumatic boom is raised	Please check whether the Z origin switch and the external safety zone switch are normal
1121: In-model and out-of-model safety zones are not detected when the jib is raised	No signal at Z origin and outside safety zone when the pneumatic jib is raised	

1122: The boom rises too fast	When the pneumatic main arm is raised, the main ascent limit is detected in a short time after closing the main descent valve	Please check if the main ascent limit is always on
1123: The jib rises too fast	When the pneumatic sub-arm rises, the secondary rise limit is detected within a short time after closing the main descending valve	Please check if the deputy rise limit is always on
1124: When the main arm is raised, the mold is opened and broken in place	When the pneumatic main arm is raised, there is no signal after the mold is opened	Please check whether the signal after mold opening is normal
1125: When the jib is raised, the mold is opened and broken in place	When the pneumatic sub-arm rises, there is no signal after mold opening	
1126: After the main arm is raised, the main ascent limit is cut off	After the pneumatic main boom rises, there is no signal for the main rise limit	1. Please check if the main arm is raised 2. Please check whether the main ascent switch is normal
1127: After the secondary arm rises, the secondary rise limit is cut off	After the pneumatic sub-arm rises, there is no signal for the secondary rise limit	1. Please check if the main arm is raised 2. Please check whether the main ascent switch is normal
1140: After the main arm moves forward, the main back is restricted	After the pneumatic main boom is advanced, there is a signal for the main backward limit	1. Please check whether the main arm is advancing 2. Please check whether the main back limit switch is normal 3. If there is no main back limit, please select function-machine parameter-structure main back limit as not used
1141: After the forearm advances, the main retreat is restricted	After the pneumatic sub-arm advances, there is a signal for the sub-backward limit	1. Please check if the jib is advancing 2. Please check whether the vice back limit switch is normal 3. If there is no secondary back limit, please select function-machine parameter-structure secondary back limit as not used
1142: When the main arm moves backward, the main backward limit is cut off	Pneumatic main boom back, no signal for main back limit	1. Please check if the main arm is back 2. Please check whether the main back limit switch is normal 3. If there is no main back limit, please select function-machine parameter-structure main back limit as not used

1143: The secondary arm retreats and the secondary backward limit is broken	Pneumatic sub-arm retracts, no signal for sub-reverse limit	<ol style="list-style-type: none"> <li>1. Please check if the jib is back</li> <li>2. Please check whether the vice back limit switch is normal</li> <li>3. If there is no secondary back limit, please select function-machine parameter-structure main back limit as unused</li> </ol>
1144: After the main arm is advanced, the main advance is limited	After the pneumatic main boom advances, there is no signal for the main advance limit	<ol style="list-style-type: none"> <li>1. Please check whether the main arm is advancing</li> <li>2. Please check whether the main forward limit switch is normal</li> <li>3. If there is no main advancement limit, please select the function-machine parameter-structure main advancement limit as unused</li> </ol>
1145: After the secondary arm advances, the secondary advancement is limited	After the pneumatic jib advances, there is no signal for the secondary advance limit	<ol style="list-style-type: none"> <li>1. Please check if the jib is advancing</li> <li>2. Please check whether the auxiliary forward limit switch is normal</li> <li>3. If there is no sub-advance limit, please select function-machine parameter-structure sub-advance limit as unused</li> </ol>
1146: After the main arm moves backward, the main advance is limited	When the pneumatic main arm moves backwards, there is a signal for the main advance limit	<ol style="list-style-type: none"> <li>1. Please check if the main arm is back</li> <li>2. Please check whether the main forward limit switch is normal</li> <li>3. If there is no main advancement limit, please select the function-machine parameter-structure main advancement limit as unused</li> </ol>
1147: The secondary arm retracts and the secondary forward limit	After the pneumatic sub-arm moves backward, there is no signal for the sub-advance limit	<ol style="list-style-type: none"> <li>1. Please check if the jib is back</li> <li>2. Please check whether the vice back limit switch is normal</li> <li>3. If there is no secondary back limit, please select function-machine parameter-structure main back limit as unused</li> </ol>
1160: When the posture 1 changes, the main ascent limit is not detected	<ol style="list-style-type: none"> <li>1. In the safety zone of the model, when the main rising limit signal is off, the posture 1 is vertical</li> <li>2. Outside the safety zone, when the main ascent signal is off, the posture 1 is horizontal/vertical</li> <li>3. The Z position is less than the Z-type internal safety zone setting, when the main rising limit signal is off, the posture 1 is horizontal/vertical</li> </ol>	Please check that the main lift switch is normal.

1161: When the posture 1 changes, the secondary ascent limit is not detected	<ol style="list-style-type: none"> <li>1. In the safety zone of the model, when the auxiliary rising limit signal is off, the posture 1 is vertical</li> <li>2. Not in the safety zone outside the model, when the secondary rise limit signal is off, posture 1 horizontal/vertical</li> <li>3. The Z position is less than the Z-type internal safety zone setting, when the secondary rise limit signal is off, the posture 1 is horizontal/vertical</li> </ol>	Please check that the secondary lift switch is normal.
1162: When the posture 1 changes, the mold is opened in place and broken	When the posture 1 in the safety zone in the model is vertical, and the external standby or horizontal standby is selected, the mold opening signal is off	Please check that the signal is normal
1163: After posture 1 level, level 1 is cut off	After posture 1 level, level 1 limit switch has no signal	<ol style="list-style-type: none"> <li>1. Please check if posture 1 is level</li> <li>2. Please check whether the level 1 limit switch is normal</li> </ol>
1164: After posture 1 is vertical, vertical 1 is limited	After posture 1 vertical, vertical 1 limit switch has no signal	<ol style="list-style-type: none"> <li>1. Please check if pose 1 is vertical</li> <li>2. Please check whether the vertical 1 limit switch is normal</li> </ol>
1165: When the posture is level, it is not in the safe area	When the posture is level, it is not in the Z origin or outside the safety zone	<ol style="list-style-type: none"> <li>1. Please check whether Z origin switch and outside safety zone switch are normal</li> <li>2. Please check the program steps are correct</li> </ol>
1170: The main ascent limit is not detected when posture 2 changes	<ol style="list-style-type: none"> <li>1. In the safety zone of the model, when the main rising limit signal is off, the posture 2 is vertical</li> <li>2. Outside the safety zone, when the main ascent signal is off, posture 2 horizontal/vertical</li> <li>3. The Z position is less than the Z-type internal safety zone setting, when the main rising limit signal is off, the posture 2 is horizontal/vertical</li> </ol>	Please check that the main lift switch is normal.
1171: When the posture 2 changes, the secondary ascent limit is not detected	<ol style="list-style-type: none"> <li>1. In the safety zone of the model, when the secondary rise limit signal is off, the posture 2 is vertical</li> <li>2. Not in the safety zone outside the model, when the secondary rise limit signal is off, posture 2 horizontal/vertical</li> <li>3. The Z position is less than the Z-type internal safety zone setting, when the secondary rise limit signal is off, the posture 2 is horizontal/vertical</li> </ol>	Please check that the secondary lift switch is normal.

1172: When the posture 2 changes, the mold is opened and broken in place	When the posture 2 in the safety zone in the model is vertical, and the standby or horizontal standby mode is selected, the mold opening in place signal is off	Please check that the signal is normal
1173: After posture 2 level, level 2 is cut off	After posture 2 level, level 2 limit switch has no signal	1. Please check if posture 2 is level 2. Please check whether the level 2 limit switch is normal
1174: Posture 2 vertical, vertical 2 cut off	After posture 2 vertical, there is no signal for vertical 2 limit switch	1. Please check if posture 2 is vertical 2. Please check whether the vertical 2 limit switch is normal
1180: When the pneumatic cross in and out, the main ascent limit is broken	There is no signal for the main ascent limit when pneumatically moving in and out	Please check if the main ascent limit is normal
1181: When the pneumatic cross in and out, the vice rise limit is cut off	There is no signal for the secondary ascent limit when pneumatically moving in and out	Please check whether the deputy rise limit is normal
1182: After crossing, the crossing limit is broken	After pneumatic cross-in, no signal at the limit	1. Please check if you cross 2. Please check whether the limit switch is normal
1183: After traversing, traverse the limit	After the pneumatic traverse, there is no signal at the traverse limit	1. Please check if it is traversed 2. Please check whether the limit switch is normal
1185: When entering, the mold is opened and broken in place	In the standby mode, when the transverse Z decreases, at the non-type external safety zone or when the Z position is less than the set value of the external safety zone, the mold is opened in place and broken	Please check that the signal is normal
1186: The main ascent limit is cut when running in the unsafe zone	The main ascent limit is not detected when the safety zone is not inside or outside the model, or the Z position is running between the inside and outside setting values	Please check if the main ascent limit is normal
1187: When running in the unsafe area, the deputy rise limit is cut off	No secondary rise limit is detected when it is not inside or outside the safety zone of the model, or the Z position traverses between the setting values inside and outside the model	Please check whether the deputy rise limit is normal
1188: Y1 is not in the safe zone when running in the unsafe zone	When it is not inside or outside the safety zone, or the Z position runs between the inside and outside setting values of the model, the Y1 position is greater than the setting value of the inside safety zone	Please check the function-machine parameter Y axis setting is normal

1189: When the main ascent limit is not fully connected, enter from outside	When Z moves, the main and auxiliary ascent limits are not fully closed, the current Z position is greater than the outside safety zone, and the destination position is less than the setting value of the outside safety zone	Please check whether the main and auxiliary rise limit is normal
1190: When the main ascent limit is not fully connected, it is traversed from the inside of the model	When Z moves, the main and auxiliary ascent limits are not fully closed, the current Z position is less than the safety zone in the model, and the destination position is greater than the set value of the safety zone in the model	Please check whether the main and auxiliary rise limit is normal
1191: Manually traverse the non-safe area, no ascent limit is detected	When manually traversing the non-safety zone, the main and auxiliary ascent limits are not fully connected, or the Y1 position is greater than the position of the inner safety zone	1. Please check whether the main and auxiliary rise limit is normal 2. The position of the Y-axis standby point is 0 or the distance per revolution is 0 will cause this alarm
1192: The current position is less than the movable safe position	When entering manually, the current position is already smaller than the movable safe position	Check function - machine parameter Z axis setting is ok?
1193: The current position is greater than the movable safe position	When manually traversing, the current position is already greater than the movable safe position	
1200: Clip 1 valve is open, clip 1 is broken	1. When the corresponding valve is activated, there is no signal at the corresponding limit 2. The corresponding valve has no action and the corresponding limit signal	1, Please check if the valve and limit are normal, the connection to the io module 2, check if the switches are working or not 3, check if the signals blinks
1201: The valve of clip 1 is broken, and the clip 1 is indeed connected		
1202: Clip 2 valve is open, clip 2 is broken		
1203: Clamp 2 valve is off, clamp 2 is indeed open		
1204: Clip 3 valve is open, clip 3 is broken		
1205: Clamp 3 valve breaks, clamp 3 is connected		
1206: Clip 4 valve is open, clip 4 is broken		
1207: Clamp 4 valve is off, clamp 4 is connected		
1208: Suction 1 valve is on, suction 1 is off		
1209: Suction 1 valve is off, suction 1 is sure		
1210: Suction 2 valve is on, suction 2 is off		
1211: Suction 2 valve is off, suction 2 is sure		

1212: Suction 3 valve is on, suction 3 is off		
1301: Please check the rising limit of the main arm at the standby point	1. The set standby point position is greater than the maximum standby position of the Y1 axis 2. When returning to the standby point, the main arm is not at the Y1 origin position and cannot run sideways	1. Please check the function-machine parameter Y1 axis setting is correct 2. Please move the Y axis to the origin manually
1213: Suction 3 valve is off, Suction 3 is sure		
1214: Suction 4 valve is on, Suction 4 is off		
1300: Please check the posture of the standby point	Standby posture error	Please check whether the vertical and horizontal limits are normal
1215: Suction 4 valve is off, Suction 4 is sure		

1302:please check the standby Y2 up limit	1.Set the standby position greater than Y2 axis position of maximum standby 2.In standby, and main boom not Y2 origin cannot run amok	1.Please check - machine parameters Y2 axis settings are correct  2.Manually move Y2 axis to the origin
1303: Please check the standby x-position	Starting point for x axis position second value after the decimal point	Please set the starting x position the second decimal places is set to 0
1304 :Please check standby Y location	Automatic start,y axis is not the origin	Manually the y axis to the origin position
1305: Please check the standby z position	Starting z axis position second value after the decimal Point	Please set the starting z axis position of second place after the decimal point is set to 0
1306: Please check the standby clip 1	<p>When you teach, standby position of the default folder full off, if you need to clip through, and in part 0 standby position.</p> <p>When a robot after the cycle is complete, the system will automatically return to standby,</p> <p>but except for the clip.</p> <p>If standby clip off , caught after a cycle is through, appears above alarm;</p> <p>If Clip through standby point and clip is broken after a cycle, will also appear above the alarm.</p> <p>Die inline guidance from the arm horizontal upper started, Access inserts cross in, waiting for the finished mold,</p>	Please refer to the alarm causes
1307: Please check the standby clip 2		
1308:Please check the standby clip 3		
1309:Please check the standby clip 4		
1310: Please check the standby suction 1		
1311:Please check the standby suction 2		
1312:Please check standby A		
1313:Please check standby B		
1314:Please check standby C		

1315:please check standby X2		
1316:Please check standby Y2	Down into, take the product, upstream allows the clamping cross products, up-ends. According to the above process can be seen, stand clamp is broken at the point where, after the end of the loop is broken.	
1400:Does not detect rising limit	Automatic State by pressing the start key, the system reverted back to standby. When you return, boom jib must increase limit, or alarm	1.Check whether the rise limited the normal 2.Manually move the main boom to the origin
1403:Y2 Does not detect rising limit	Automatic State by pressing the start key, the system reverted back to standby. When you return, boom jib must increase limit, or alarm	1.Check whether the Deputy rise limit normal 2.Manually move the jib to the origin
3501:Emergency stop	There is servo emergency stop output	1、 release the emergency stop button; 2、 Short the emergency stop signal of the host.
3502:X axis over current	Electricity is over the Max current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it。
3503:Y axis over current	Electricity is over the Max current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it,
3504:X axis,Y axis Bus bar off	Poor contact	Host error, change it
3505:X axis overload	overload	1、 Check loading condition 2、 Whether motor is blocked;

3506:Y axis overload	overload	1、 Check loading condition 2、 Whether motor is blocked;
3507:X axis motor initializing	drive initializing not finished	1、 press stop button to solve 2、 restart robot; 3、 host error,change it.
3508:Y axis motor initializing	drive initializing not finished	1、 press stop button to solve 2、 restart robot; 3、 host error,change it.
3509:X axis UVW phase current error	electronic current is over	1、 wire sequence error 2、 lack of phase,
3510:Y X axis UVW phase current error	electronic current is over	1、 wire sequence error 2、 lack of phase,
3511:Y axis DC under voltage	220V under voltage	Check 220V voltage。
3512:Y axis VDC over voltage	220V over voltage	1、 check 220V ; 2、 overload; 3、 The acceleration and deceleration settings are too small
3513:X axis over speed	Over max speed	
3514:Y axis over speed	Over max speed	
3515:Y axis drive over heat	Temperature is too high	Change fan。
3516:X axis write IIC fail	Abnormal memory chip	Change host。
3517:Y axis write IIC fail	Abnormal memory chip	Change host。
3518:X axis Position deviation is too large	Encoder value is abnormal	1. Set the servo parameters and increase the deviation range; 2. The acceleration and deceleration settings are too small; 3、 system abnormal。

3519:Y axis position deviation is too big	Encoder value is abnormal	1.Set the servo parameter and increase the deviation range; 2. The acceleration and deceleration settings are too small; 3、 system abnormal。
3520:X axis encoder error	Encoder communication failed	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3521:X axis abnormal speed	Encoder feedback value is abnormal	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3522:X axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.

3524:X axis,Y axis external bus ERR	Poor contact	Host error, change it
3525:X axis buffer overflow	System abnormal	
3526:Y axis buffer overflow	System abnormal	
3527:EEPROM parameter inspection abnormal	Memory chip error	Change host.
3528:Y axis encoder error	encoder communication fail	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3529:Y axis speed abnormal	encoder feedback value abnormal	
3530:Y axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3533:Y axis communication overtime	bus communication over time	Change host.
3601:emergency stop alarm	There is emergency stop signal in servo	1、 release the emergency stop button; 2、 Short the emergency stop signal of the host.
3602:Z axis over current	Over current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it
3603:X2 axis over current	Over current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it
3604:X2 axis,Z axis external bus disconnect	Poor connection	Host error, change it
3605:Z axis overload	overload	1、 check the loading condition 2、 motor if it blocked.

3606:X2 axis overload	overload	1、 check the loading condition 2、 motor if it blocked.
3607:Z axis motor initializing	drive initializing not finish	1、 press stop button to solve、 if not working,restart robot; 2、 host error,change it.
3608:X2 axis motor initializing	drive initializing not finish	1、 press stop button to solve、 if not working,restart robot; 2、 host error,change it.
3609:Z axis UVW phase current abnormal	Current overload	1、 wire sequence error; 2、 lack phase.
3610:X2 axis UVW phase current abnormal	Current overload	1、 wire sequence error; 2、 lack phase.
3611:X2 axis DC under voltage	220V under voltage	Check 220V voltage .

3612:X2 axis VDC over voltage	Voltage is too high	1、check 220V voltage; 2、overload; 3、The acceleration and deceleration settings are too small。
3613:Z axis over speed	Maximum speed exceeded	
3614:X2 axis over speed	Maximum speed exceeded	
3615:X2 axis drive over heat	High temperature	Change fan
3616:X2 axis write IIC fail	memory chip abnormal	Change fan
3617:X2 axis write IIC fail	memory chip abnormal	Change fan
3618:Z axis position deviation is too big	encoder value abnormal	1.Set the servo parameter and increase the deviation range; 2. The acceleration and deceleration settings are too small; 3、system abnormal。
3619:X2 axis position deviation is too big	encoder value abnormal	1.Set the servo parameter and increase the deviation range; 2. The acceleration and deceleration settings are too small; 3、system abnormal.
3620:Z axis encoder error	encoder communication fail	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3621:Z axis speed abnormal	encoder feedback value abnormal	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3622:Z axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3624:X2 axis ,Z axis external bus ERR	Poor connection	Host error, change it
3625:Z axis buffer overflow	System abnormal	
3626:X2 bumper over limit	System abnormal	
3627:EEPROM parameter inspection abnormal	memory chip abnormal	Change host。

3628:X2axis encoder error	encoder communication fail	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3629:X 2axis speed abnormal	encoder feedback value abnormal	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.

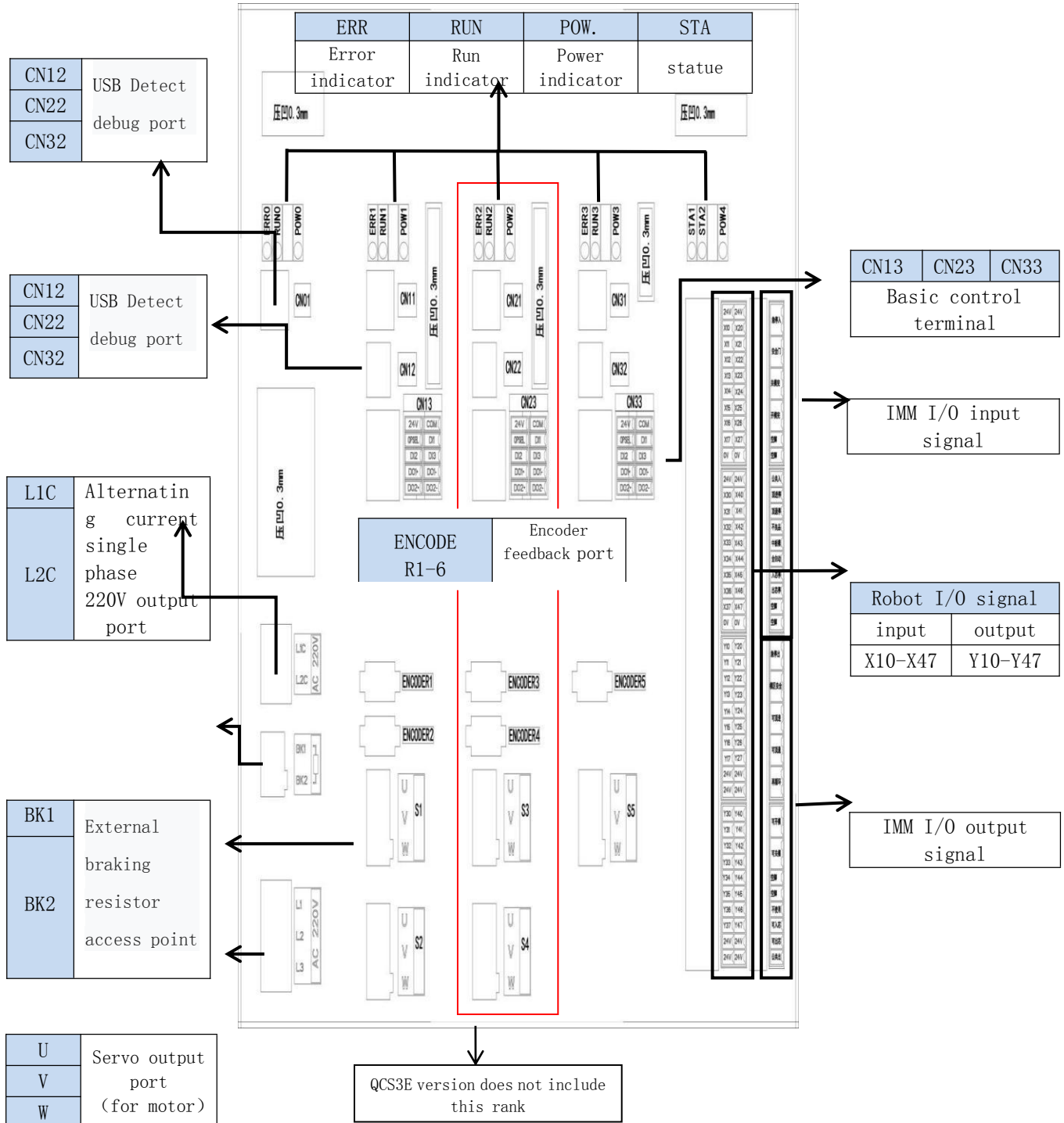
3630:X2 axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3633:X2 axis communication over time	bus communication over time	Change host
3701:emergency stop alarm	There is servo emergency stop output	1、 release the emergency stop button; 2、 Short the emergency stop signal of the host.
3702:Y2axis overload	over the max current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it
3703:A axis over current	over the max current	1、 Whether motor is blocked; 2、 motor error, change it; 3、 host error, change it .
3704:Y2 axis external bus disconnect	Poor contact	host error, change it
3705:Y2 axis overload	over the max load	1、 check loading condition 2、 whether motor is blocked
3706:A axis overload	over the max load	1、 check loading condition 2、 whether motor is blocked
3707:Y2 axis motor initializing	drive initializing not finish	1、 press stop button to solve、 if not working, restart robot; 2、 host error, change it.
3708:A axis motor initializing	drive initializing not finish	1、 press stop button to solve、 if not working, restart robot; 2、 host error, change it.
3709:Y2 axis UVW phase current abnormal	current overload	1、 wire sequence error; 2、 lack phase.
3710:A axis UVW phase current abnormal	current overload	1、 wire sequence error; 2、 lack phase.
3711:Y2 axis DC under voltage	220V under voltage	Check 220V source.
3712:Y2 axis VDC over voltage	220V is too high	1、 check 220V voltage; 2、 overload 3、 The acceleration and deceleration settings are too small;
3713:Y2 axis over speed	over the max rotating speed	
3714:A axis over speed	over the max rotating speed	
3715:Y2 axis drive over heat	Temperature is too high	Change fan
3716:Y2 axis edit IIC failed	Memory chip abnormal	Change host
3717:Y2 axis edit IIC failed	Memory chip abnormal	Change host

3718:Y2 axis position deviation is too big	encoder value abnormal	1、set servo parameter, increase deviation range 2、The acceleration and deceleration settings are too small; ; 3、system abnormal
3719:A axis position deviation is too big	encoder value abnormal	1、set servo parameter, increase deviation range 2、The acceleration and deceleration settings are too small; ; 3、system abnormal
3720:Y2 axis encoder error	encoder communication failed	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3721:Y2 axis abnormal speed	encoder feedback value abnormal	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3722:Y2 axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3724:Y2 axis external bus ERR	Internal poor connection	Host error, change it
3725:Y2 axis buffer overflow	System abnormal	
3726:A axis buffer overflow	System abnormal	
3727:Y2 axis servo drive alarm	memory chip abnormal	change host
3728:A axis encoder error	encoder communication failed	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3729:A axis speed abnormal	encoder feedback value abnormal	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3730:A axis encoder initializing	encoder initializing	1. There is a problem with the encoder line; 2. Poor contact of the encoder connector; 3. The motor encoder is abnormal.
3733:Y2 axis communication over time	Bus communication over time	Change host
3800:X axis buffer overflow	system abnormal	
3801:Y axis buffer overflow	system abnormal	
3802:Z axis buffer overflow	system abnormal	
3803:X2 axis buffer overflow	system abnormal	
3804:Y2 axis buffer overflow	system abnormal	

## Chapter 7 wire connection

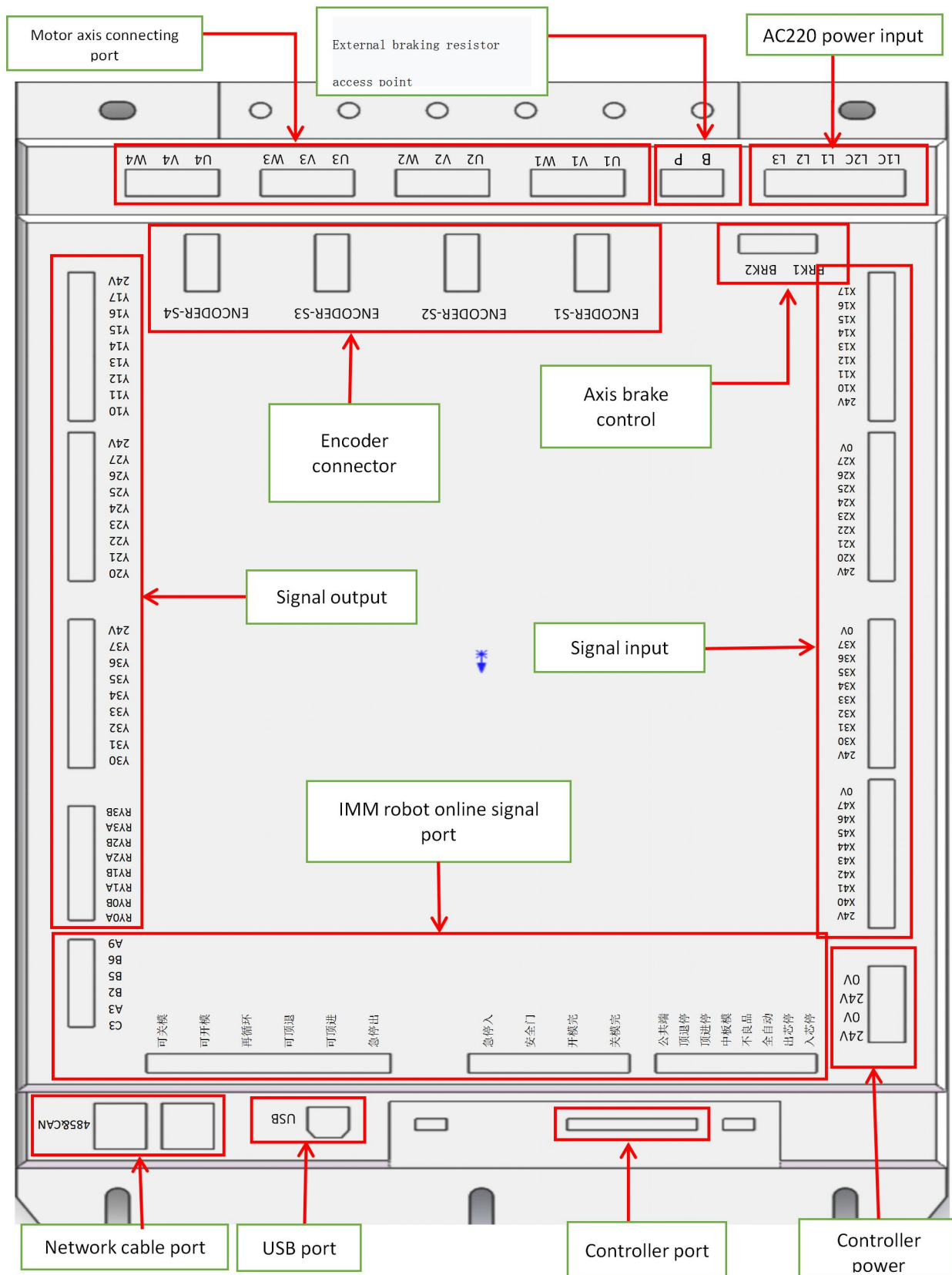
### 7.1 Drive and control integration cabinet instruction

#### 7.1.1 QC-S5E Drive and control integration exterior instruction



type		Power port (UVW)	Encoder port	Brake signal
5 axis	3 axis			
Y1	Y1	S1	ENCODER1	CN13 (D01)
Z	Z	S2	ENCODER2	CN13 (D02)
Y2	X1	S3	ENCODER3	CN23 (D01)
X2	free	S4	ENCODER4	CN23 (D02)
X1	free	S5	ENCODER5	CN33 (D01)

### 7.1.2 QC-S3G Drive and control integration exterior instruction



type	Power wire port (UVW)	Encoder port	Brake signal
3/4 axis			
Z	U1 V1 W1	ENCODER-S1	BRK1
*	U2 V2 W2	ENCODER-S2	
X	U3 V3 W3	ENCODER-S3	BRK2
Y	U4 V4 W4	ENCODER-S4	

**NOTE:** here is only the reference for version QC-S3G port

### 7.1.3 Main circuit signal definition

position	Port mark	Port item	function	remark
Front of cabinet, lower left	L1C	Auxiliary power port	Alternating current, single phase 220V 50/60HZ	Auxiliary power is internal control circuit power
	L2C			
Front of cabinet, lower left	BK1	Braking resistor port	External braking resistor access point	External resistance (30Ω120W)。
	BK2			
Front of cabinet, lower left	L1	Main circuit power port	Alternating current single /three phase 220V 50/60HZ	Main circuit power is internal 主 power high voltage power
	L2			
	L3			
Front of cabinet, mid bottom	U	Servo motor port	Connect 3 phase servo motor	Connect it according to UVW, otherwise the motor will not rotate or speeding。
	V			
	W			
Front of cabinet, bottom	PE	Earth/ground port	Security protection port	Connecting port must connect to the ground

### 7.1.4 Controlling loop port signal definition

Port mark	item	function	remark
ERR1 ERR2 ERR3	Status indicator	Error indicate	Running error indicate
RUN1 RUN2 RUN3		running indicate	System running indicate
POW1 POW2 POW3		Power indicate	Power indicate
SAT1		Status indicate	Software application status indicate
SAT2			Software core layer status indicate
CN01 CN11 CN21	485-	Servo parameter adjustment port	Communication differential signal negative

CN31	485+		Communication differential signal positive
	GND		Output 5V negative electrode
	5V		Output 5V positive electrode
	GND		Output 5V negative electrode
	5V		Output 5V positive electrode
CN12 CN22 CN32	ID	USB inspection, test port	USB identify signal
	D-		Data differential signal negative
	D+		Data differential signal positive
	GND		Differential signal ground

CN13 CN23 CN33	24V	Basic control port	Machine internal power supply 24V positive
	COM		Machine internal power supply 24V negative
	OPENSEL		Optocoupler public power 24V
	DI1		Optocoupler input, 0V effective
	DI2		Optocoupler input, 0V effective
	DI3		Optocoupler input, 0V effective
	DO1+		Internal NPN Transistor collector
	DO1-		Internal NPN transistor emitter
	DO2+		Internal NPN Transistor collector
	DO2-		Internal NPN transistor emitter
ENCODER1 -6	5V+	Encoder feedback port	5V power positive electrode
	5V-		5V power negative electrode
	D+		Data difference signal positive electrode
	D-		Data difference signal negative electrode

### 7.1.5 Port description of electrical characteristics

Communication port	485+	R485 communication port	Max speed 115200bps, External parallel termination matching resistor
	485-		
USB inspection port	DP/DM	USB inspection, test port	Please use the manufacturer-specific cable and USB electrical interface for high-performance debugging and monitoring of the servo system.
24V power port	24V-COM	24V power	Generally used as a digital input power supply, 24V ± 10%, maximum output current 100mA.
	OPENSEL	Digital input optocoupler common	DI1~DI3 photocoupler common terminal can be connected to the driver +24V power supply, Or connect an external 24V power supply.

Input port	X10-X47	Turn on optocoupler	It is effective to connect the negative pole of 24V power supply (0V).
Input port	Y10-Y47	MOS pipe Open drain output	Connected to 24V power supply through load, protection current 500mA, withstand voltage 65V
IMM output port	Relay output	Normally open relay	5A/250VAC/30VDC

### 7.1.6 Definition for input and output port (IO)

definition for input and output port		S5
Universal output and input port	Input signal port	24V
		24V power positive electrode
		X10
		Level 1 limit
		X11
		Vertical 1 limit
		X12
		Clip 1 confirmation limit
		X13
		Clip 2 confirmation limit
		X14
		Suction 2 confirmation limit
		X15
		Suction 1 confirmation limit
		X16
		X1 axis end limit
		X17
		Suction 3 confirmation limit
		0V
		Power 24V negative electrode
		24V
		24V power positive electrode
		X20
		X1 axis origin
		X21
		Clip 4 confirmation limit
		X22
		Y1 axis starting point limit
		X23
		Level 2 limit
		X24
		Z axis outside safety zone
		X25
		Z axis origin
		X26
		X26
		X27
		Pressure inspection
		0V
		Power 24V negative electrode
		24V
		24V power positive electrode
		X30
		X2 axis starting point limit
		X31
		X2 axis origin
		X32
		Y2 axis origin
		X33
		Y2 axis starting point limit
		X34
		Clip 3 confirmation limit
		X35
		Y1 axis origin
		X36
		Suction 4 confirmation limit
		X37
		vertical 2 limit
		0V
		Power 24V negative electrode
		24V
		24V power positive electrode
		X40
		B axis origin
		X41
		Z axis starting point limit
		X42
		Z axis ending point limit
		X43
		X43
		X44
		X44
		X45
		X45
		X46
		X46
		X47
		X47
		0V
		Power 24V negative electrode
		Y10
		horizontal 1 valve

		Y11	Vertical 1 valve
		Y12	Clip 1 valve
		Y13	Clip 2 valve
		Y14	Suction 2 valve
		Y15	Suction 1 valve
		Y16	product arm forward valve
		Y17	Reserved 1
		24V	24V power positive electrode
		24V	
		Y20	Clip 4 valve
		Y21	alarm status
	output signal port		

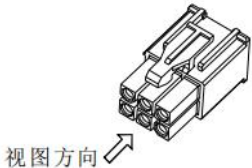
### 7.1.7 IMM control port signal definition

please take 7.2IMM and robot arm connection as reference.

IMM signal port	IMM input signal	Emergency stop input	External emergency stop input signal
		GND	/
		Safety door	/
		Mold close finished	/
		Mold open finished	/
		NC	Empty script, no need to connect
		NC	Empty script, no need to connect
		Public entry	/
		Ejection forward stop	/
		Ejection backward stop	/

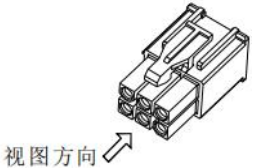
		Defective product	/
		Mid plate	/
		automatic	/
		Core in limit	/
		Corn out limit	/
		NC	empty, no need to connect
		NC	empty, no need to connect
	IMM output signal	emergency stop output	/
		Mold area free	/
		Ejector forward enable	/
		Ejector backward enable	/
		Cycle start	/
		mold open enable	/
		Mold close enable	/
		NC	Empty, no need to connect
		NC	Empty, no need to connect
		B2	robot arm not use
		Core in enable	/
		Core out enable	/

7.1.8 Motor power wire definition



Pin No	1	2	4	5	3	6
definition	U	V	W	PE	NC	NC
color	white	black	red	yellow w green		

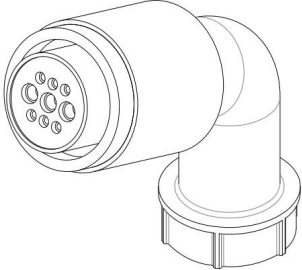
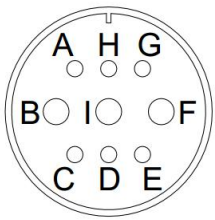
Pic 1 motor power wire that is under 750W-no brake



Pin no	1	2	4	5	3	6
definition	U	V	W	PE	Br	Br
color	white	black	red	Yellow w green	brown	blue

picture 2 motor power wire under-750W-with brake

20-18航插



MIL-DTL-5015 series 3108E20-18S military regulation						
pin no	G	B	I	F	C	E
definition	FG	U	V	W	Br+	Br-
Wire color	yellow green	white	black	red	brown	blue

Pic 3 above 850W motor power wire - disconnect C, E wire when without brake

7.1.9 Encoder line definition

Host-side encoder definition			Motor side AMP-TE/Female terminal/170361-1	
1394 Pin	DB9 Pin	Signal descriptio n	Pin	Signal description
5	8	SD+	3	SD+
6	4	SD-	6	SD-
1	9	+5V	9	+5V
2	5	GND	8	GND
Shielded shell			7	Shielded
			1	battery+
			4	battery-


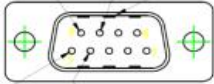
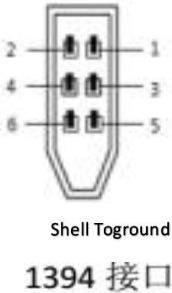
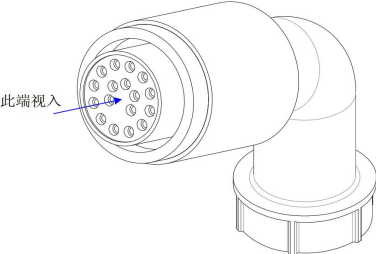
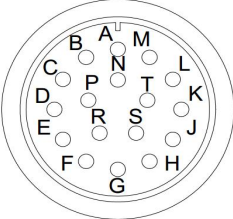
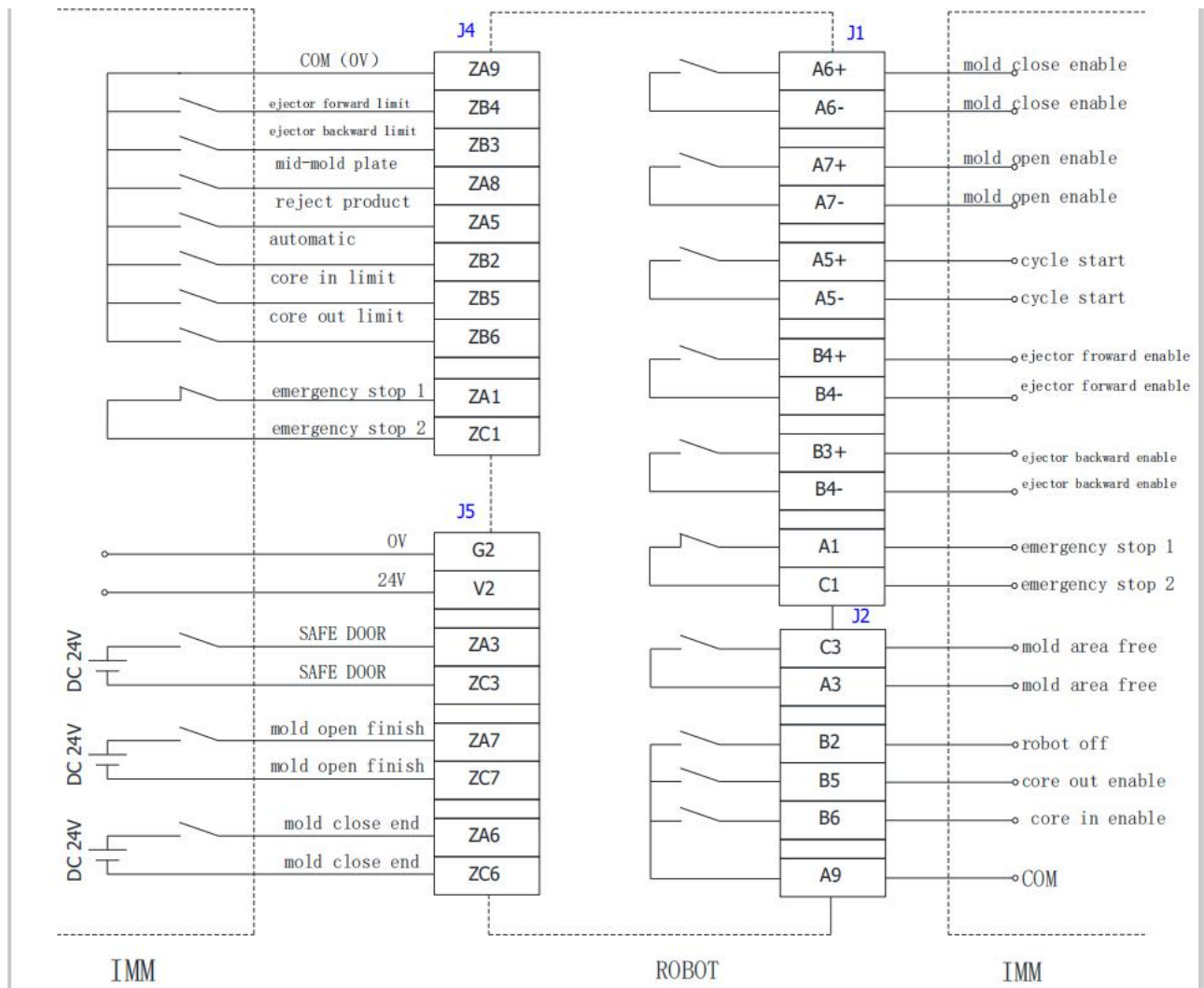


图 4 Motor encoder line under 750W

Host encoder 1394 connector		MIL-DTL-5015 Series 3108E20-29S Military regulation	
1394 pin	DB9 pin	pin	Signal descripti on
5	8	A	SD+
6	4	B	SD-
1	9	G	+5V
2	5	H	GND
shell	shell	J	Shielded



### 7.2.2 The signals of mold opening, safety door and mold closing are voltage signal input



## 7.3 Peripheral accessories wiring

### 7.3.1 Analog input and output board connection

Pin	Power port definition
①	+24V
②	0V

Pin	RS485Communication port
③	main control board RS485 GND
④	main control board RS485 A
⑤	main control board RS485 B

pin	Port definition
⑬	Public side
⑭	Aisle 6
⑮	Aisle 5
⑯	Aisle 4
⑰	Aisle 3
⑱	Aisle 2
⑲	Aisle 1

### 7.3.2 Single-channel switching power supply wiring

1, 交流输入端子的安装使用

AC input

位号	功能	端子	线材安装规格	最大扭矩
1	N	9.5带翻盖端子排	22-14AWG	12Kgf.cm (max)
2	L			
3	⊕			

2, 直流输入端子的安装使用

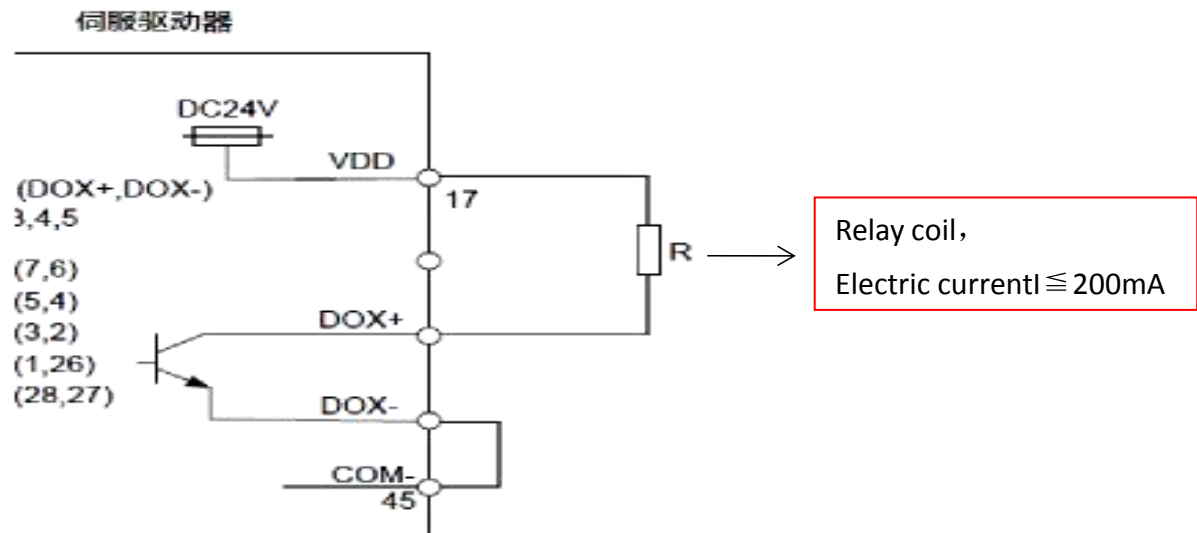
DC input

位号	功能	端子	线材安装规格	最大扭矩
4	+V	9.5带翻盖端子排	22-14AWG	12Kgf.cm (max)
5	-V			

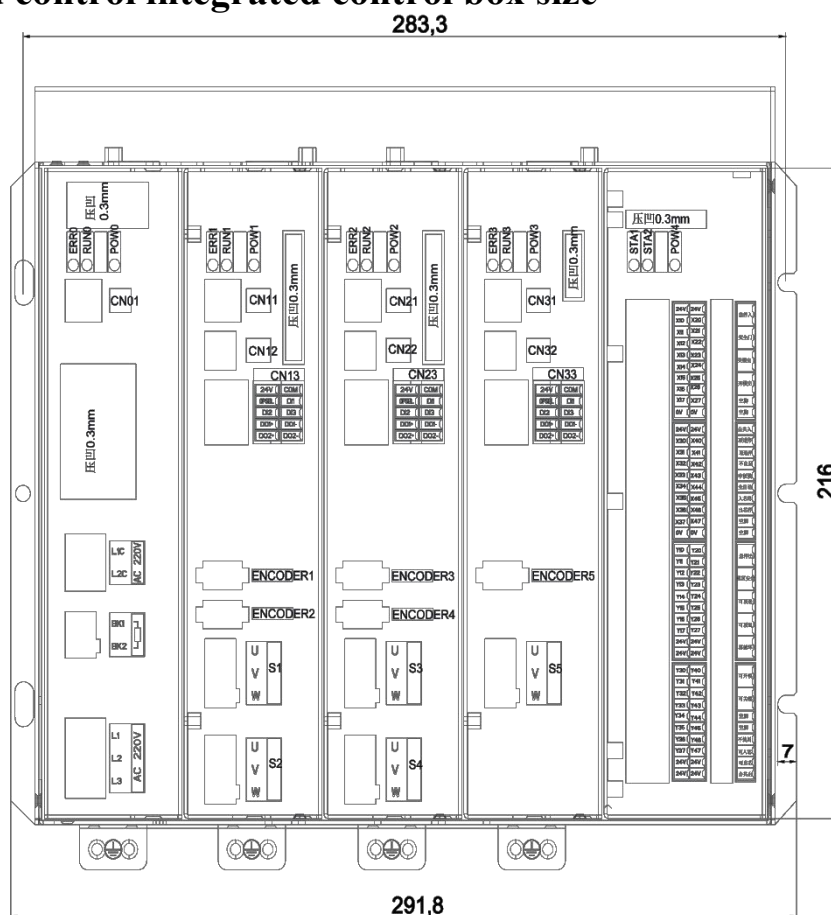
### 7.3.3 Installation dimensions and connection of dual switching power supply

Note: The dual power supply is separately connected to the logic and IO power supply of the system, and the independent power supply is connected to the holding brake.

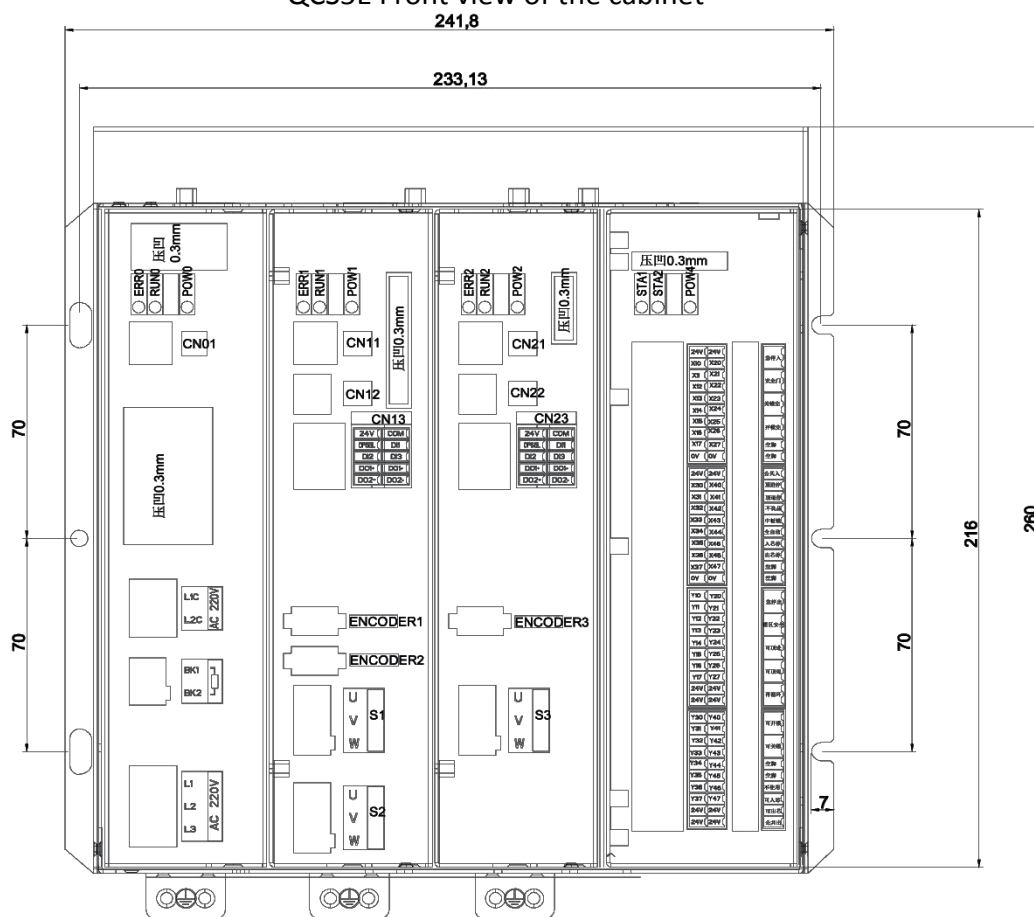
### 7.3.4 Schematic diagram of servo IO connecting coil



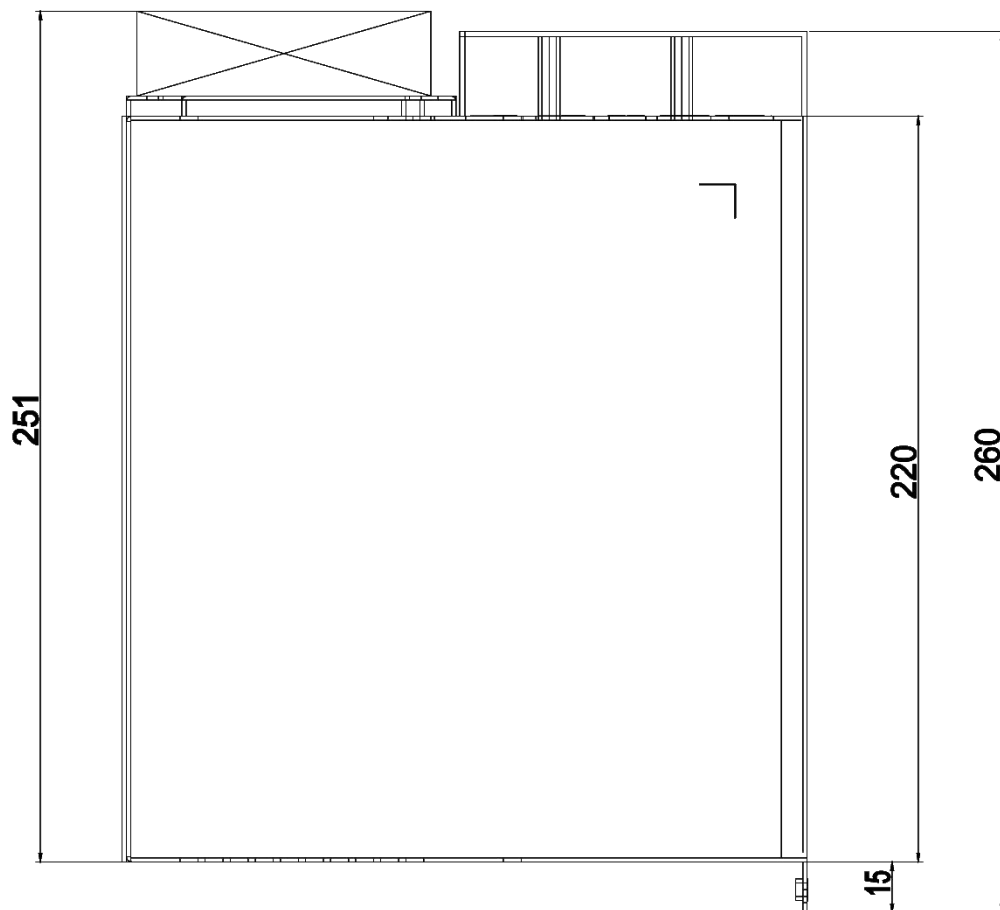
### 7.3.5 Drive and control integrated control box size



QCS5E Front view of the cabinet



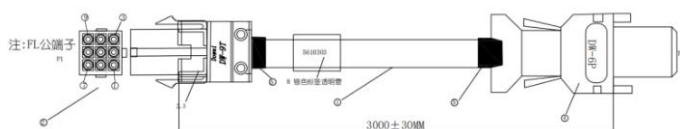
QCS3E Front view of the cabinet



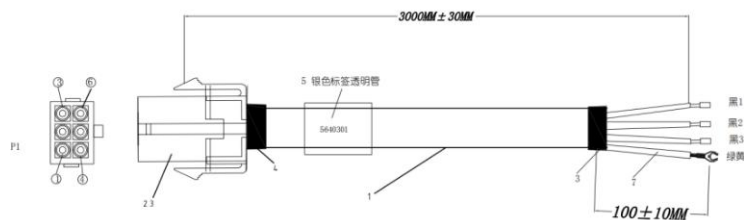
QC 3/5 axis Side view of cabinet

### 7.3.6 Power line (UVW) And encoder wire size

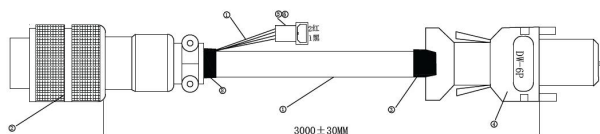
Encoder line size above 750W



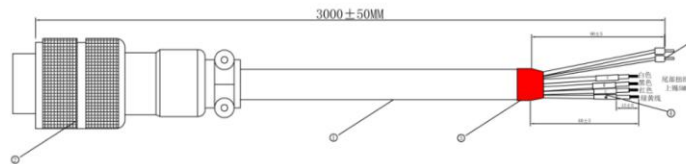
Encoder line size under 750W



Encoder line size above 850W



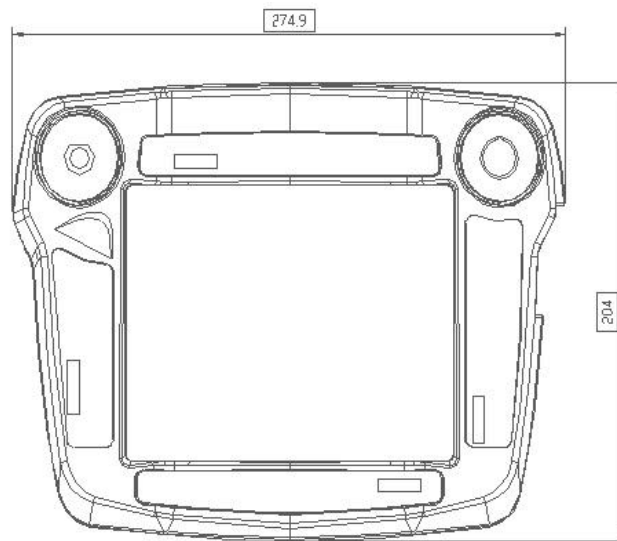
## UVWPower line size above 850W

**Wire size (optional accessory)**

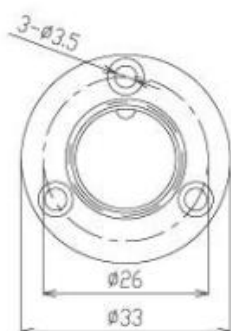
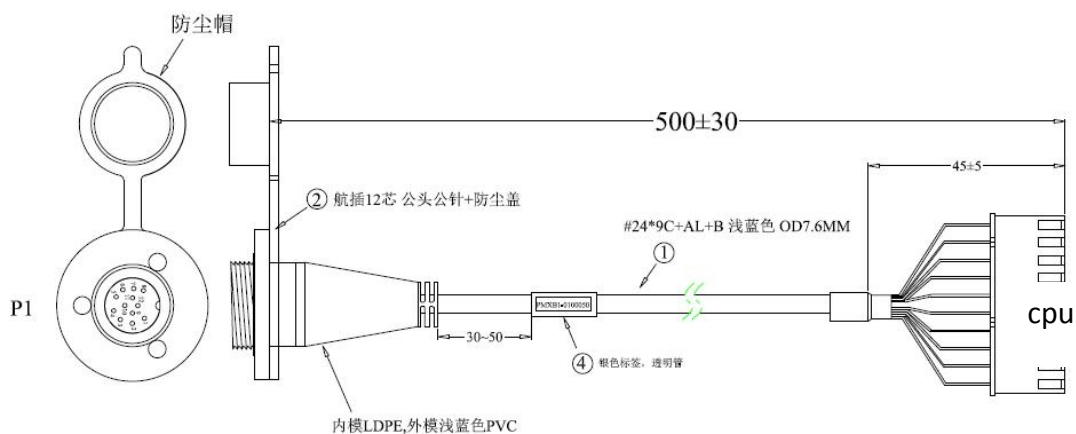
The wire has different lengths, please consult the sales if you need other specifications.

The length shown in this section is the standard wiring length.

### 7.3.7 Dimensional drawing of the hand controller and the size of the aviation head of the hand controller



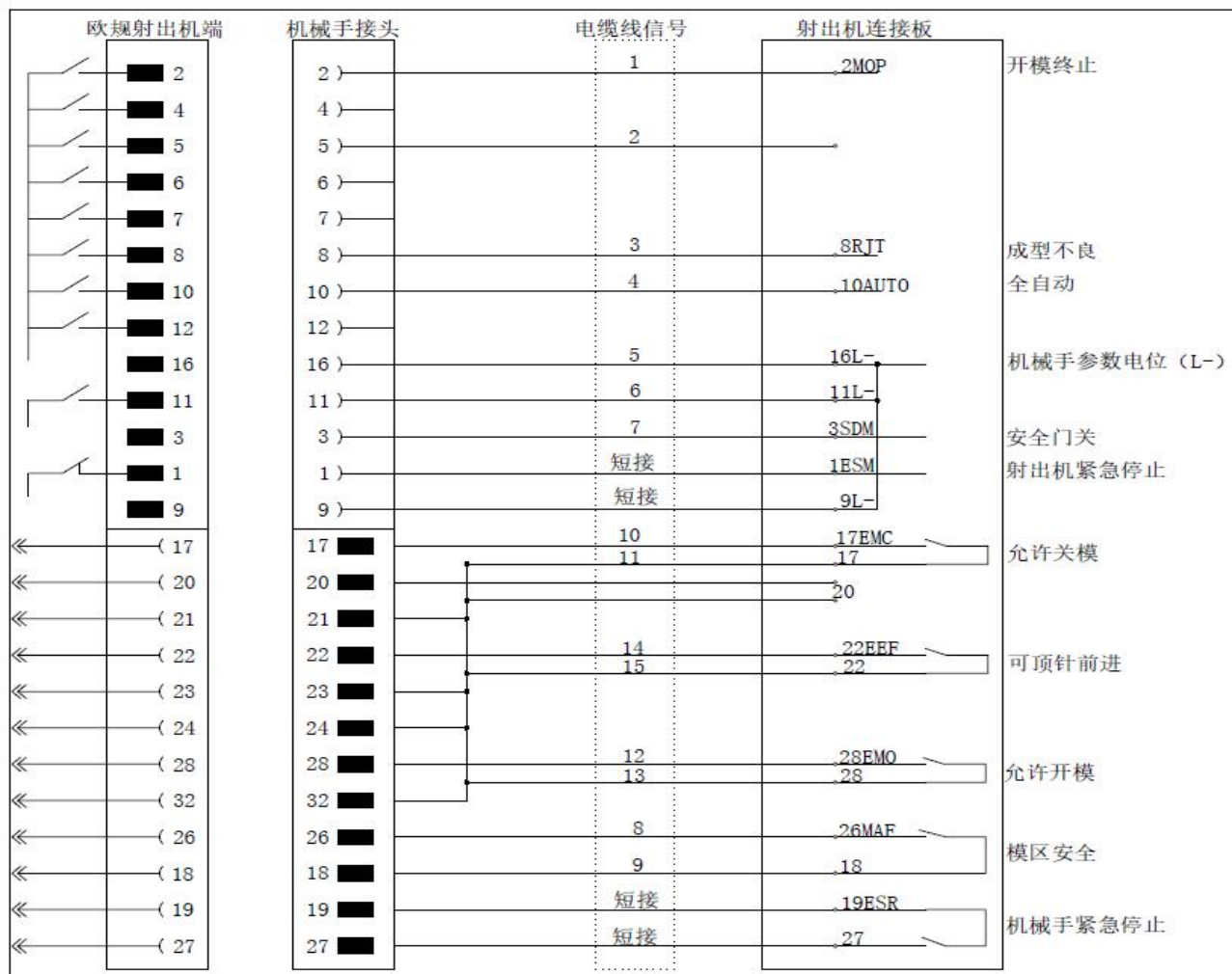
品名：12P航空头转接线 L=0.5M



Remarks: 1. This extension cable is the extension cable from the integrated drive and control to the external electric box.

2. If you need different lengths, please consult the sales staff first.

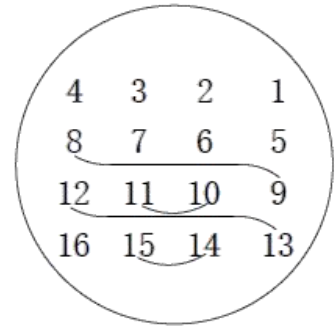
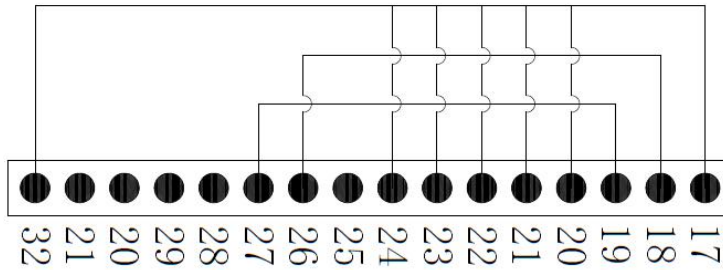
## Chapter 8 Standard connection with injection machine



### Resetting instructions for injection machine signal

- 1) If the manipulator is not in use, the ejector signal can be reset in the following two ways:
- 2) When the manipulator does not turn on the power, you can set "manipulator not used" under the system function.
- 3) The signal of the injection machine will not be controlled by the robot. If you want to use it, please press the "Reset" button.
- 4) Remove the metal connector connected to the injection machine and connect it with the "reset connector" attached at random. The circuit diagram of the "reset connector" is as follows.
- 5) If the manipulator is not used, the machine should be moved to a safe position outside.
- 6) The air source should be removed if the manipulator is not used.

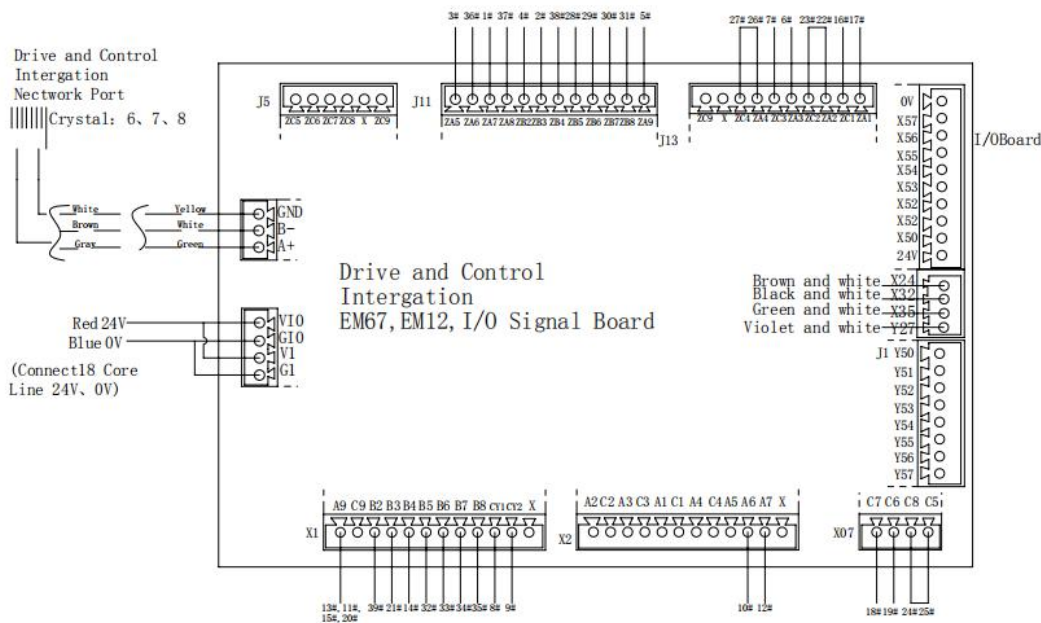
European jumper joint or round metal joint



## Chapter 9 Wiring Of Euro-map

### 1. Wiring diagram of Euro map 67

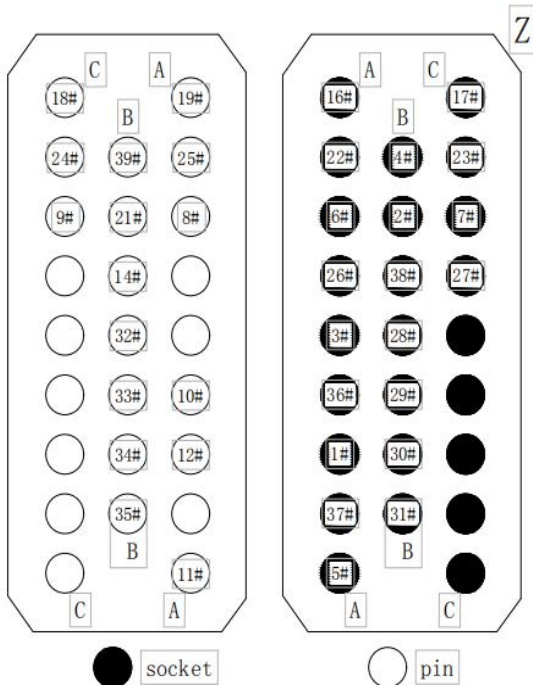
40 core wire European standard 67 connector definition wiring



EM12 (32PIN) Definition  
 22# 23#Short Circuit  
 24# 25#Short Circuit  
 26# 27#Short Circuit  
 30#31#34#35#No Circuit

To Robot Signal	To I. M. M. Signal
Plug Line	Plug Line
ZA1 16#	I. M. M. A1 19#
ZC1 17#	E-stop1 C1 18#
ZA2 22#	I. M. M. A2 25#
ZC2 23#	E-stop2 C2 24#
ZA3 6#	Safety Door1 A3 8#
ZC3 7#	Safety Door2 C3 9#
ZA4 26#	Safety Door2 A4
ZC4 27#	Defective product C4
ZA5 3#	Defective product A5
ZA6 36#	Hold close finished signal A6 10#
ZA7 1#	Hold open finished signal A7 12#
ZA8 37#	Middle plate A8
ZA9 5#	Robot COM A9 13#
ZB2 4#	Automatic State B2 39#
ZB3 2#	Ejector backward finished B3 21#
ZB4 38#	Ejector forward finished B4 14#
ZB5 28#	Core 1 backward B5 32#
ZB6 29#	Core 1 forward B6 33#
ZB7	B7
ZB8	B8
ZC5	C5
ZC6	C6
ZC7	C7
ZC8	C8
ZC9	Robot ODC C9

EM67 pin and socket



EM 67 SIGNAL BOARD DENOTE

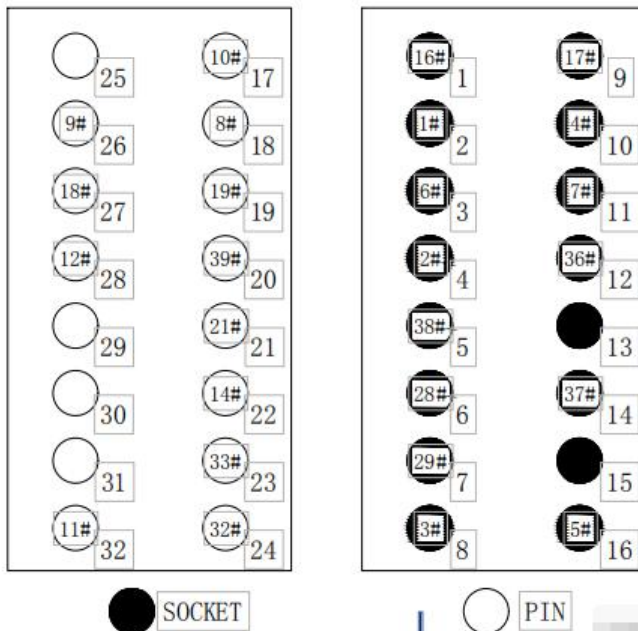
SIGNAL TO ROBOT			SIGNAL TO IMM		
PIN	LINE NO.	DENOTE	PIN	LINE NO.	DENOTE
ZA1	16#	IMM E-STOP 1	A1	19#	ROBOT E-STOP 1
ZC1	17#		C1	18#	
ZA2	22#	IMM E-STOP 2	A2	25#	ROBOT E-STOP 2
ZC2	23#		C2	24#	
ZA3	6#	SAFETY DEVICE 1	A3		MOLD AREA
ZC3	7#		C3		
ZA4	26#	SAFETY DEVICE 2	A4		EXTRAL SIGNAL
ZC4	27#		C4		
ZA5	3#	DEFECTIVE PRODUCTS	A5		EXTRAL SIGNAL
ZA6	36#	MOLD CLOSED	A6	10#	MOLD CLOSE ENABLE
ZA7	1#	MOLD OPENED	A7	12#	MOLD OPEN ENABLE
ZA8	37#	MOLD OPEN IN MIDDLE PLATA8	A8		EXTRAL SIGNAL
ZA9	5#	ROBOT 24V DC	A9	11# 13# 15# 20#	IMM 24V DC
ZB2	4#	AUTO	B2	39#	CONNECT TO IMM
ZB3	2#	EJECTOR BACKWARDED	B3	21#	EJECTOR BACKWARD ENABLE
ZB4	38#	EJECTOR FORWARDED	B4	14#	EJECTOR FORWARD ENABLE
ZB5	28#	CORE 1 BACKWARDED	B5	32#	CORE 1 BACKWARD ENABLE
ZB6	29#	CORE 1 FORWARDED	B6	33#	CORE 1 FORWARD ENABLE
ZB7	30#	CORE 2 BACKWARDED	B7	34#	CORE 2BACKWARD ENABLE
ZB8	31#	CORE 2 FORWARDED	B8	35#	CORE 2 FORWARD ENABLE
ZC5		EXTRAL SIGNAL	C5		EXTRAL SIGNAL
ZC6			C6		
ZC7			C7		
ZC8			C8		
ZC9		ROBOT 0 V DC	C9		IMM 0V DC

**Note:** This wiring is defined by the injection molding robot connection. This wiring will be used only if it is matched. If there is any change, it will be defined separately.

## 2. Wiring diagram for Euro map 12

40 core wire European standard 12 connector definition wiring

EM12 WIRING



EM 67 SIGNAL BOARD DENOTE

SIGNAL TO ROBOT			SIGNAL TO IMM		
PIN	LINE NO.	DENOTE	PIN	LINE NO.	DENOTE
ZA1	16#	IMM E-STOP 1	A1	19#	ROBOT E-STOP 1
ZC1	17#		C1	18#	
ZA2	22#	IMM E-STOP 2	A2	25#	ROBOT E-STOP 2
ZC2	23#		C2	24#	
ZA3	6#	SAFETY DEVICE 1	A3		MOLD AREA
ZC3	7#		C3		
ZA4	26#	SAFETY DEVICE 2	A4		EXTRAL SIGNAL
ZC4	27#		C4		
ZA5	3#	DEFECTIVE PRODUCTS	A5		EXTRAL SIGNAL
ZA6	36#	MOLD CLOSED	A6	10#	MOLD CLOSE ENABLE
ZA7	1#	MOLD OPENED	A7	12#	MOLD OPEN ENABLE
ZA8	37#	MOLD OPEN IN MIDDLE PLATA8	A8		EXTRAL SIGNAL
ZA9	5#	ROBOT 24V DC	A9	11# 13# 15# 20#	IMM 24V DC
ZB2	4#	AUTO	B2	39#	CONNECT TO IMM
ZB3	2#	EJECTOR BACKWARDED	B3	21#	EJECTOR BACKWARD ENABLE
ZB4	38#	EJECTOR FORWARDED	B4	14#	EJECTOR FORWARD ENABLE
ZB5	28#	CORE 1 BACKWARDED	B5	32#	CORE 1 BACKWARD ENABLE
ZB6	29#	CORE 1 FORWARDED	B6	33#	CORE 1 FORWARD ENABLE
ZB7	30#	CORE 2 BACKWARDED	B7	34#	CORE 2BACKWARD ENABLE
ZB8	31#	CORE 2 FORWARDED	B8	35#	CORE 2 FORWARD ENABLE
ZC5		EXTRAL SIGNAL	C5		EXTRAL SIGNAL
ZC6			C6		
ZC7			C7		
ZC8			C8		
ZC9		ROBOT 0 V DC	C9		IMM 0V DC

EM12 (32PIN)Definition

22# 23#Short Circuit

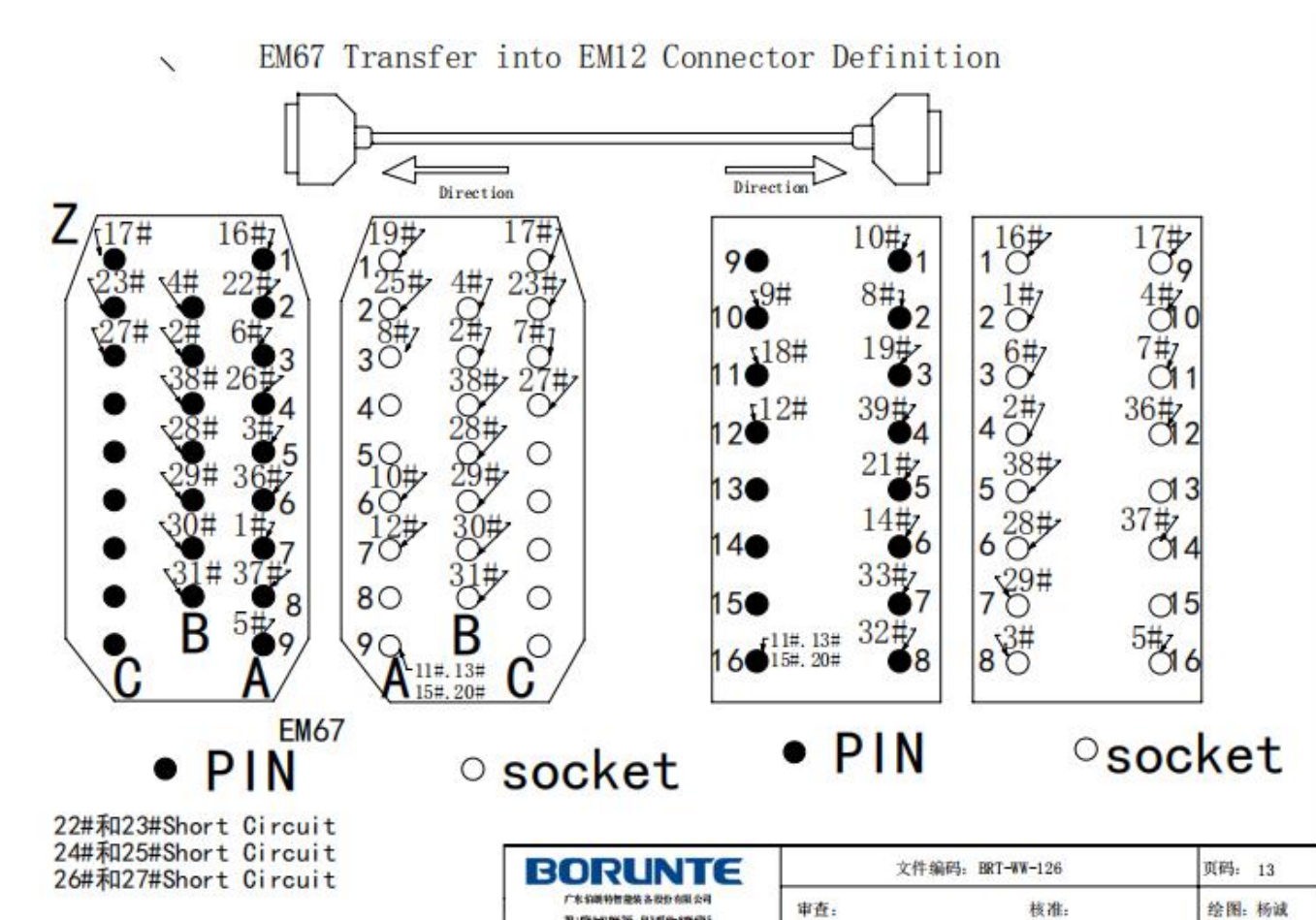
24# 25#Short Circuit

26# 27#Short Circuit

30#31#34#35#No Circuit

**Note: This wiring is defined by the injection molding robot connection. This wiring will be used only if it is matched. If there is any change, it will be defined separately.**

### 3. Wiring diagram for Euro map 67 to 12



The above wiring is the wiring defined for the European regulation 67 to 12 accessories

Note: For other wires that need to be short-circuited, please short-circuit at the wiring side, such as manipulator access emergency stop or injection molding machine access emergency stop.

## Chapter 10 Servo Parameter

BRTR12WDS5PC HC integration drive and control (3*750+2*400W)						
Motor power	400W	750W	750W	400W	750W	
Parameter address	X1 axis	Y1 axis	Z axis	X2 axis	Y2 axis	definition
21	85	90	150	60	90	Speed loop gain
22	17	20	20	8	20	Position loop bonus
23	4	4	4	4	4	Position loop bonus
30	100	100	100	100	100	Damping coefficient
41	150	150	150	100	100	Moving smoothing filter
1	3	4	4	3	4	Motor power
4	0	0	0	0	0	
19	1	0	0	0	0	Block next axis
69	4096	4096	4096	4096	4096	
Acceleration and deceleration time	0.3	0.3	0.3	0.3	0.3	/
Max speed	80	80	80	80	80	/

BRTR10WDS5PCHC integration drive and control (3*750W+2*400W)						
Motor power	400W	750W	750W	400W	750W	
Parameter address	X1 axis	Y1 axis	Z axis	X2 axis	Y2 axis	definition
21	80	75	120	60	70	Speed loop gain
22	25	18	20	8	14	Position loop bonus
23	4	4	4	4	4	Position loop bonus
30	100	100	100	100	100	Damping coefficient
41	150	150	150	100	100	Moving smoothing filter
1	3	4	4	3	4	Motor power
4	0	0	0	0	0	
19	1	0	0	0	0	Block next axis
69	4096	4096	4096	4096	4096	
Acceleration and deceleration time	0.3	0.3	0.3	0.3	0.3	/
Max speed	80	80	80	80	80	/

BTR08WD/IDS5PCHC integration drive and control (3*750W+2*400W)						
Motor power	400W	750W	750W	400W	750W	
Parameter address	X1 axis	Y1 axis	Z axis	X2 axis	Y2 axis	definition
21	80	60	120	80	100	Speed loop gain
22	5	15	20	15	20	Position loop bonus
23	4	4	4	4	4	Position loop gain
30	100	100	100	100	100	Damping coefficient
41	150	150	150	100	100	Moving smoothing filter
1	3	4	4	3	4	motor power
4	0	0	0	0	0	
19	1	0	0	0	0	Block next axis
69	4096	4096	4096	4096	4096	
Acceleration and deceleration time	0.3	0.3	0.3	0.3	0.3	/
Max speed	80	80	80	80	80	/

### integration drive and control motor code chart

motor model	motor code	power
BRT060R20G30JOHE	1205	200W
BRT060R20G30J2HE		
BRT060R40G30JOHE	1321	400W
BRT060R40G30J2HE		
BRT080R75G30JOHE	1413	750W
BRT080R75G30J2HE		
BRT130R85G15JOBE	1503	850W
BRT130R85G15J2BE		
BRT1301R3G15JOBE	1507	1300W
BRT1301R3G15J2BE		
BRT1301R8G15JOBE	1603	1500W
BRT1301R8G15J2BE		

### NOTE:

After replacing the motor, please check carefully: The No. 2 parameter in the machine parameters-structure-servo parameter is the corresponding code of the motor, see the motor code marked on the motor nameplate (40G30JOAD: 1302, 75G30J2HE: 1413, 40G30JOHE: 1321, 75G30JOHE: 1413) . If there are other types of motors, please consult our customer service.

Note on debugging parameters:

The above parameter table is a calibrated parameter, for reference only, if there is an exception, it can be fine-tuned:

1. If there is current noise (buzzing), the parameter 21 can be adjusted down by 10 each time, and the parameter 22 can be adjusted down by 3 each time;
2. If there is vibration (return to the origin or when parking), you can increase the No. 21 parameter by

10, the No. 22 parameter jumps by 3, or the No. 41 parameter up to 200.

3. If the deviation is frequently reported, in addition to the appropriate increase in tolerance, the No. 23 parameter can also be appropriately increased according to the actual situation, and the effect is tested after adding 1 each time.

If the above parameters are not fine-tuned, please consult our customer service customer service. Note that in standby mode, if a certain motor is abnormal, please check whether the corresponding parameters are correct, otherwise the motor may be abnormal or the driver module may be abnormal, etc., you can do the same power motor cross test verification.

## 1、BRTR08IDS5PC EXPLODED DRAWING



## 1.1、BRTR08IDS5PC TRAVERSE AXIS EXPLODED DRAWING

项目号	零件号	数量
1	PAR1R08A0130 拱	1
2	PAR2B00A0110 横行端盖	2
3	PAR2B00A0250 横行主动皮带轮	1
4	PAR1R08A0140 横行滑板	1
5	PAR2B00C0250 O形感应片	2
6	MBG01024047A 24X47免键轴承	1
7	MLG00251900C 滑轨	2
8	ESN01NC024D0 伺服近接开关	2
9	MLK02250001T 滑块	4
10	PET010300001 3000双点组合	1
11	ESN01KN024D0 近接开关	2
12	MCN125057001 保护链条25-57横行	1
13	PAR1R08A0210 横行保护链条托板	1
14	PAR2B00A0080 惰轮销	2
15	MBG05020042A 6004轴承	4
16	PAR1R08A0030 伺服马达板	1
17	MBT133200801 皮带 (OPT)	1
18	PAR2B00A0020 皮带拉座	1
19	PAR2B00A0030 横行皮带固定夹板	2
20	PAR2B00A0050 横入端皮带固定座	1
21	PAR2B00A0010 横出端皮带固定座	1
22	PAR2B00C0200 上位感应片	1
23	PAR2B00A0350 横行安全感应片	1
24	PAR1R00A0180 基座	1
25	MMJ01075009D 98ZR9-750T1	1
26	EMDA075H1JB1	1
27	华成驱动一体系统通用伺服马达	1
28	PAR1R08B0650 气阀箱整体	1
29	PAR1R08B0640 驱动器安装板	1
30	PAR1R08B0120横行拖链固定板	1
31	EBD02S50H100 驱动一体系统控制盒	1
32	电源供应器 100W	1
33	PAR2B00A0190 电源供应器封盖	1
34	EPW0201A2201 50W电源供应器	1
35	EPW0503A2200 刹车电阻	1
36	ERY0105D0240 继电器	2
37	MET001200102 防撞胶头	2
38	PAR1R08A0220 电箱盖子	1
39	PAR1R08A0230 固线钣金	1
40	断路器	1
41	PAR1R00G0040断路器基座	1
42	EPW0300A2201滤波器 (台达200KCS5B)	1

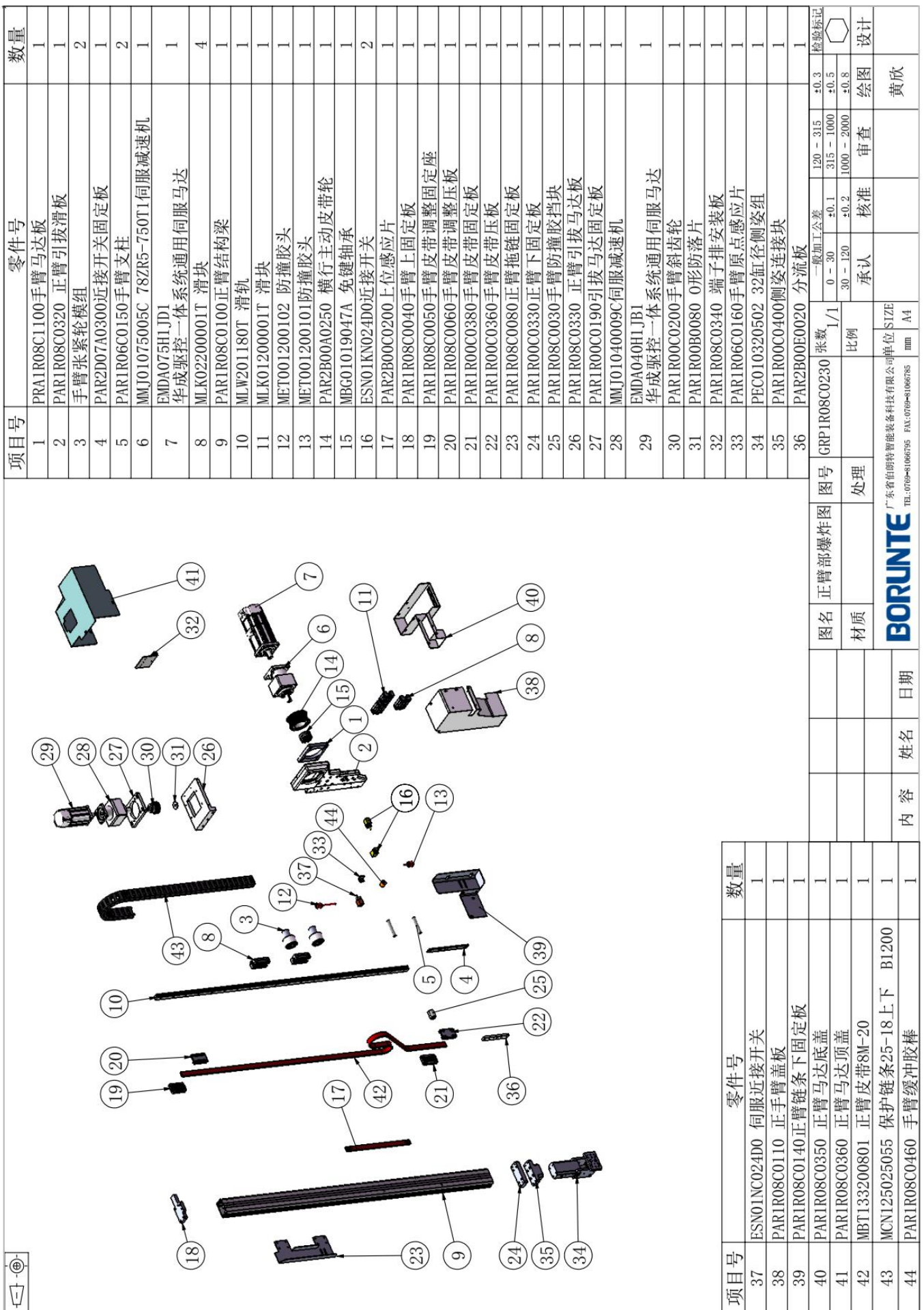
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材质		处理		比例		0 - 30 30 - 120	±0.1 ±0.2		审核	黄欣
版次	内容	姓名	日期	单位	mm	A4	mm	mm	mm	mm

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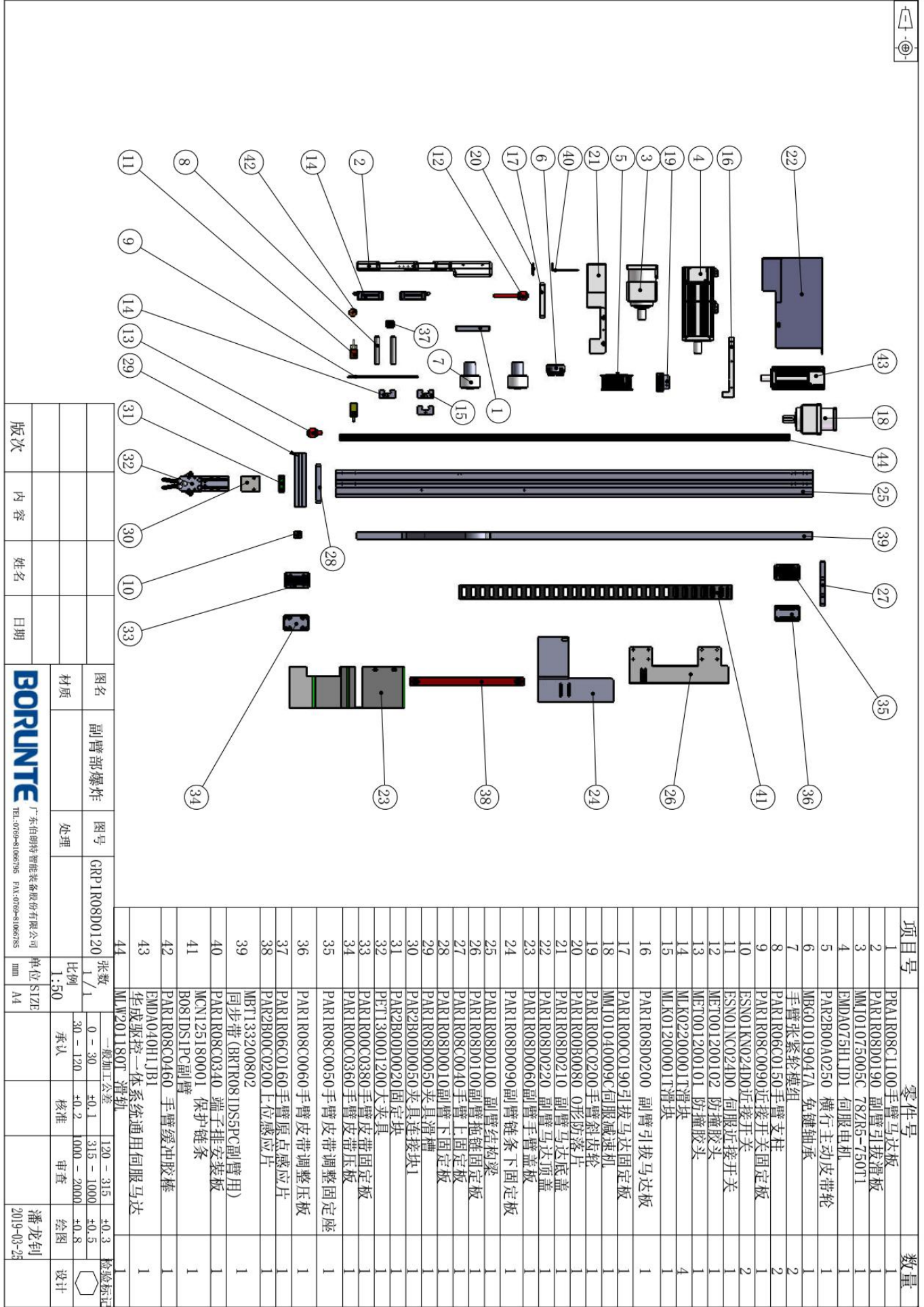
项目号	零件号	数量
1	PAR1R08B0660 引拔臂	1
2	PAR2B00C0250 O形感应片	2
3	MLW04200880T 滑轨	2
4	PAR2B00A0280 手臂防撞座	2
5	PAR1R08B0690 引拔链条托板	1
6	PSV02S066060 六连体电磁阀组	1
7	PAR2B00B0030引拔护套板固定支架	2
8	PET020000100 负压开关	2
9	ELT02DC02401 指示灯.	1
10	ELT03DC02401 蜂鸣器	1
11	MET001200101 防撞胶头	2
12	PET030001000 真空产生器	2
13	PET110000100 压力开关	1
14	PAR1R08B0670 引拔端盖	1
15	ISO - Rack-spur - rectangular 2M 20PA 25FW 20PH 1600L---SAI1	1
16	副臂引拔保护链条	1
17	正臂引拔保护链条	1
18	PAR1R08B0700 电磁阀盖板	1

图名	引拔部爆炸图	图号	GRP1R08B0170	张数	1/1	一般加工公差	±0.3	检验标记	设计
材质		处理		比例	30 - 120	±0.1	±0.5		
版次	内容	姓名	日期	单位 SIZE	A4	承认	核准	审查	绘图
BORUNTE 广东佰朗特智能装备科技有限公司 TEL:0709-81065735 FAX:0709-81065735									

### 1.3、BRTR08IDS5PC PRODUCT AXIS EXPLODED DRAWING



1.4、BRTR08IDS5PC RUNNER AXIS EXPLODED DRAWING





2.1、BRTR10WDS5PC TRAVERSE AXIS EXPLODED DRAWING

项目号	零件号	数量
1	PAR1R10A0030 横行拱	1
2	PAR2B00A0060 横入端皮带固定座	2
3	PAR2B00A0020 皮带拉座	1
4	PAR2B00A0040 横行皮带固定夹板	2
5	PET010300001 3000双点组合	1
6	PAR2B00A0110 横行端盖	2
7	PAR2B00A0250 横行主动皮带轮	1
8	MBG01024047A 24X47免键轴承	1
9	PAR1R00A0120 伺服马达板	1
10	PAR1R10A0020横行滑板	1
11	ESN01NC024D0 伺服近接开关	2
12	PAR2B00C0250 O形感应片	2
13	ESN01KN024D0近接开关	2
14	PAR2B00A0370 横行感应器座	2
15	MLW04252080T滑轨	2
16	MLW04252080T 滑轨滑块套件（滑块）	4
17	PAR1R00A0130 皮带压轮	2
18	PAR1R00A0140 惰轮销	2
19	PAR2B00C0200 上位感应片	1
20	PAR2B00A0350 横行安全感应片	1
21	PAR1R00A0180 底座	1
22	PAR1R08A0220 电箱盖子	1
23	PAR1R08A0230 固线钣金	1
24	PAR1R10A0040 横行保护链条托板	1
25	MET001200102 防撞胶头	2
26	MCN125057001 保护链条25-57横行	1
27	MMJ01075009D 减速机	1
28	EMDA075H1JB1	1
29	华成驱动一体系统通用伺服马达	1
30	MBT133250803 皮带M8-25	1
31	MBG05020042A 6004轴承	4
32	EBT17BB22001 断路器	1
33	PAR1R00G0040断路器底座	1
33	EPW0300A2201滤波器台达20DKCS5B	1

图名	横行部爆炸图	图号	GRP1R10A0070
材质		处理	
版次		内容	
姓名		日期	

张数1/1

比例

单位mm

SIZEA4

一般公差	120 - 315	±0.3
0 - 30	315 - 1000	±0.5
30 - 120	1000 - 2000	±0.8

检验标记

设计

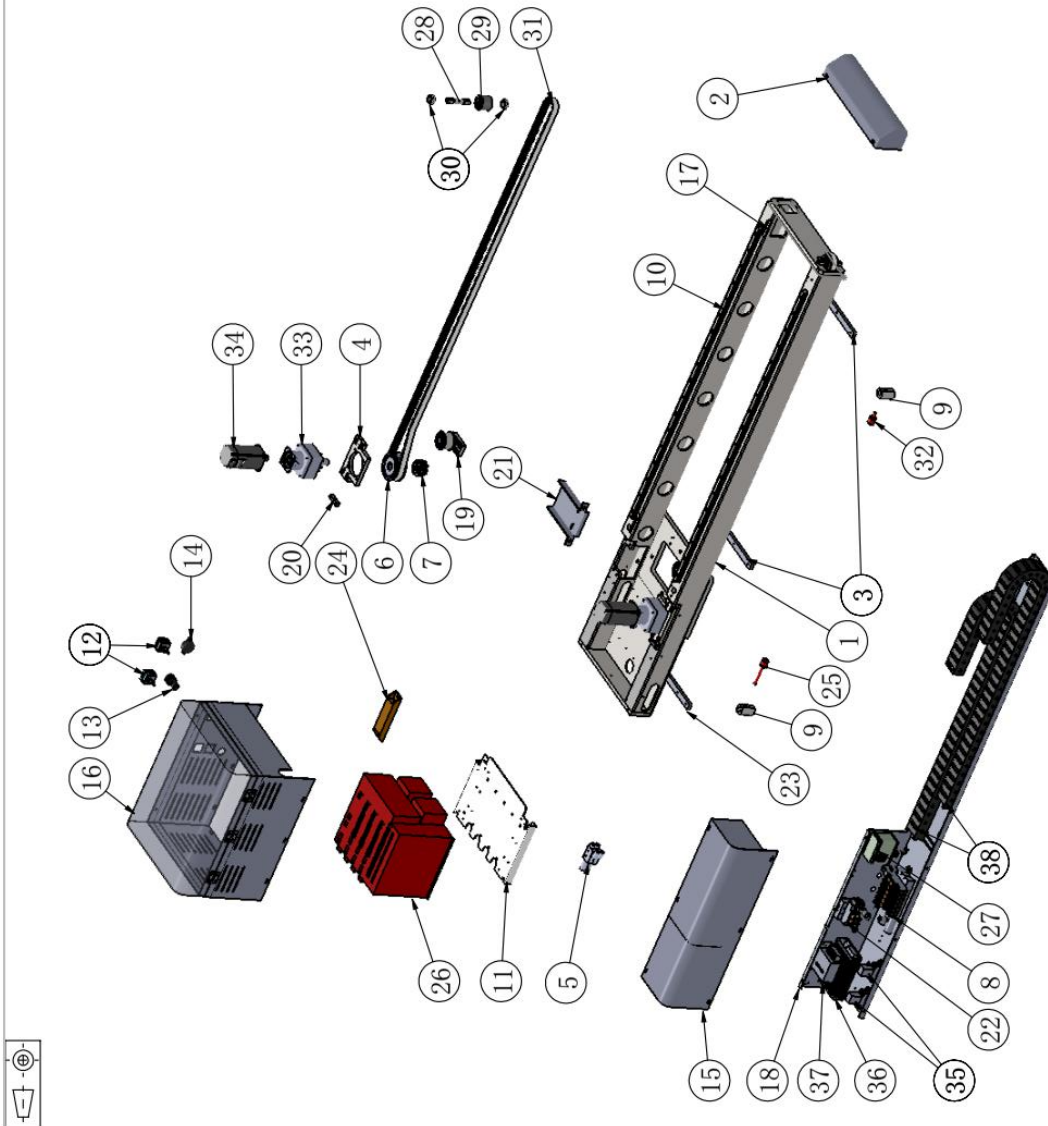
审核

绘图

黄欣

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## 2.2、BRTR10WDS5PC CROSSWISE AXIS EXPLODED DRAWING



项目号	零件号	数量
1	PARIR10B0010引拔横梁	1
2	PARIR00B0110引拔端盖	1
3	PARIR00B0070引拔护套板固定架	2
4	PARIG00B0020引拔马达安装板	2
5	PET030001000真空产生器	2
6	PAR2B00A0250 横行主动皮带轮	2
7	MBG01019047A 免键轴承	2
8	PSV02S066060 六连体电磁阀组	1
9	PARIR00B0060 防撞块	2
10	MLW062010650T滑轨	2
11	PARIR00B0140三五轴驱动一体安装板	1
12	PET020000100 负压开关	2
13	ELT02DC02401 指示灯.	1
14	ELT03DC02401 蜂鸣器	1
15	PARIR08B0320 电磁阀封盖	1
16	PARIR10B0030气阀箱整体	1
17	PARIR00B0050引拔原点感应片	2
18	PARIR10B0050引拔链条护套板	1
19	PARIR00B0090引拔皮带压轮组	2
20	PARIG00B0030引拔调整块	2
21	PARIG00B0010横行链条固定板	1
22	PSV0102ST28二连体电磁阀组	1
23	PARIR10B0020引拔护套板固定架	1
24	EPW0503A2200 刹车电阻	1
25	MET001200102 防撞胶头	1
26	EBD02S50H100 驱控一体系统控制盒	1
27	ESN05KN024D1 压力开关	1
28	PARIR08B0200从动轮轴	2
29	PARIT00C0050皮带轮	2
30	MBG05015032B轴承 6002 GB 276-94	4
31	MBT133200802 皮带	2
32	MET001200101 防撞胶头	1
33	MMJ01040009C 伺服减速机	2
34	EMDA040F1PB0 伺服马达	2
35	ERY0105D0240 继电器	2
36	EPW0202A2202 电源供应器 100W	1
37	EPW0201A2201 电源供应器 50W	1
38	MCN125038001 保护链条 25-38	2

图号 GRP1R10B00070

处理

张数 1/1

比例

单位 SIZE

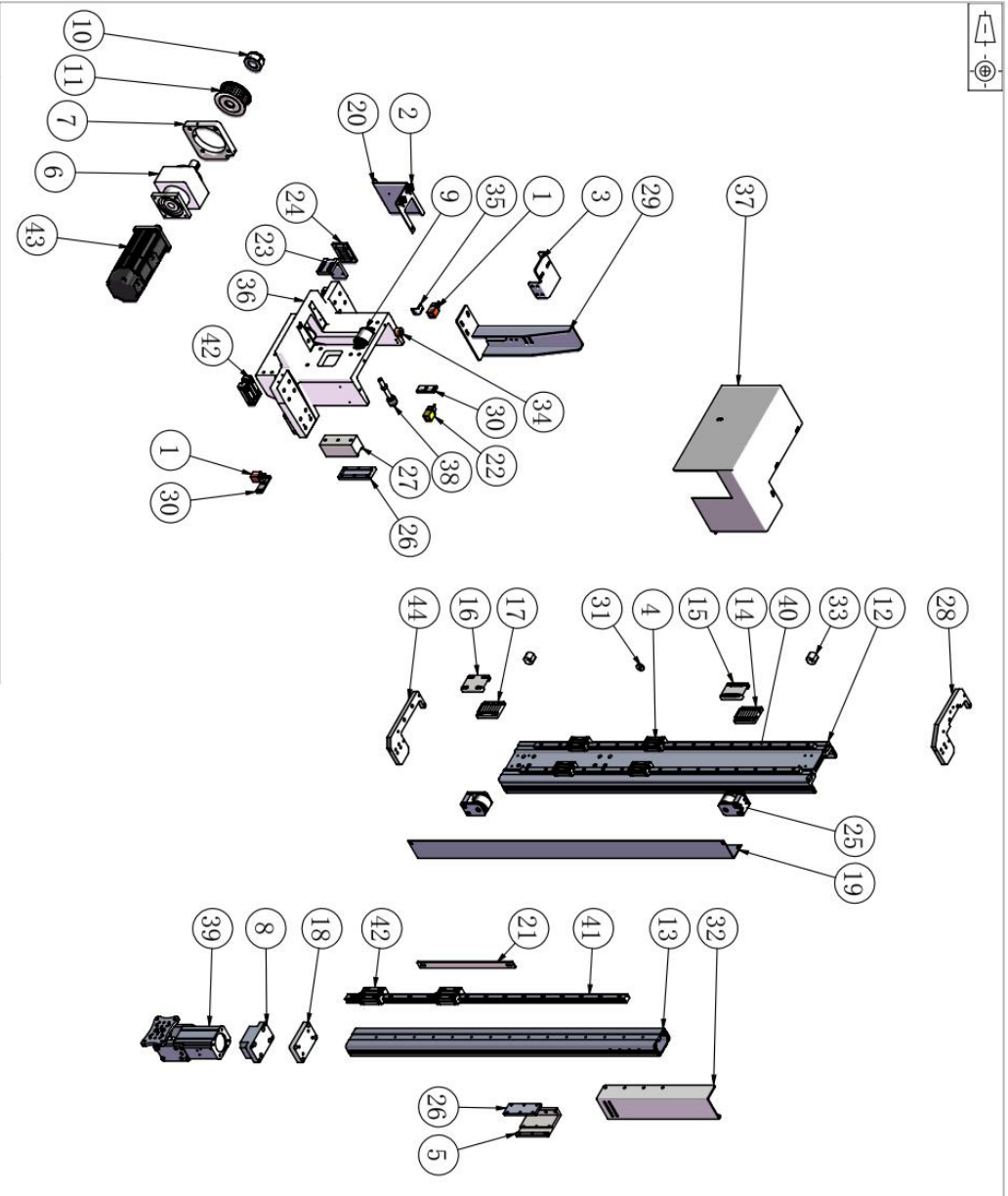
mm A4

公差	120 ~ 315	±0.3
一般加工公差	315 ~ 1000	±0.5
0 ~ 30	±0.1	
30 ~ 120	±0.2	±0.8
承认	核准	审查
设计	绘图	黄欣

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[illegible]

2.3、BRTR10WDS5PC PRODUCT AXIS EXPLODED DRAWING



项目号	零件号	数量
38	ME7001200102 防撞胶头	1
39	PEC010501003 侧姿组 (50缸径)	1
40	MLW04150880T 滑轨	2
41	MLW04200880T 滑轨	1
42	MLW06201060T 滑轨滑块套件 (滑块)	6
43	EMDA075H1JDI 华成驱动一体系统通用伺服马达	1
44	PAR1R00C0290正臂下固定板	1

项目号	零件号	数量
1	ESN01NC024D0 伺服近接开关	2
2	EXH2S0100001 扎带固定座	2
3	PAR1R00C0040引拨拖链支架B	1
4	MLW04150880T 滑轨滑块套件 (滑块)	4
5	PAR2B00C0210手臂倍速皮带固定板	1
6	MLJ01075009D 减速机	1
7	PAR1R00C1000 电机安装板	1
8	PAR2B00C0300侧姿连接块	1
9	PAR1R00C0010皮带压紧轮总成	2
10	MBG01024047A 24X47免键轴承	1
11	PAR2B00A0250 横行主动皮带轮	1
12	PAR1R10C0010正臂上截结构梁	1
13	PAR1R10C0030正臂下截结构梁	1
14	PAR1R00C0340手臂皮带调整固定座	1
15	PAR1R00C0350手臂皮带调整压板	1
16	PAR1R00C0370手臂皮带压板	1
17	PAR1R00C0390手臂皮带固定板	1
18	PAR1R00C0100正臂下固定板	1
19	PAR1R10C0060正臂手臂封板	1
20	PAR1R10C1400 正臂端子排固定板	1
21	PAR1G08C0400 正臂感应片	1
22	ESN01KN024D0 近接开关	1
23	PAR1R00C0230引拨皮带固定板	1
24	PAR1R00C0240引拨皮带夹板	1
25	皮带轮组	2
26	PAR1T00C0020手臂皮带夹板	2
27	PAR1R10C0020正臂倍速皮带固定板	1
28	PAR1R00C0280正臂上固定板	1
29	PAR1R08C0230拖链固定端支架	1
30	PAR1R00C0300正臂下结构梁近接开关过渡板	2
31	PAR2B00C0250 O形感应片	1
32	PAR1R08C0240正臂拖链固定板	1
33	PAR1R00C0270手臂防撞胶挡块	2
34	PAR1R00B0120缓冲胶棒	2
35	PAR2B00C0320近接开关座	1
36	PAR1R10C1200 正臂上下座	1
37	PAR1R10C1300 正臂马达罩	1

图名	正臂部爆炸图	图号	GRP1R10C0080	张数	1/1
图名	处理	比例	0 - 30 ±0.1	315 - 1000 ±0.5	120 - 315 ±0.3
图名	承认	核准	30 - 120 ±0.2	1000 - 2000 ±0.8	检查标记

材料	材质	单位	尺寸	mm	A4
材料	处理	比例	承认	核准	审查

黄欣 绘图 设计

## 2.4、BRTR10WDS5PC RUNNER AXIS EXPLODED DRAWING

项目号	零件号	数量
1	PAR1R10D0020 手臂上结构梁	1
2	PAR1G00C0030 手臂结构梁固定板	2
3	PAR1G00C0040 手臂皮带固定板	2
4	PAR1G00C0050 手臂皮带压板	2
5	PAR2B00C0170 手臂皮带轮组	2
6	PAR1R08D0260 电机安装板	1
7	PAR2B00A0250 横行主动皮带轮	1
8	PAR1R10D0150 副臂端子排固定板	1
9	ESN01NC024D0 伺服近接开关	2
10	PAR2B00C0250 O形感应片	1
11	PAR1G00C0070 正臂倍速皮带固定板	1
12	PAR1R00D0030 侧姿连接板	1
13	PAR2B00D0030 夹具滑槽	1
14	PAR2B00D0050 夹具连接块I	1
15	PAR1R10D0080 手臂封板	1
16	PAR1R00D0040 拖链固定端支架	1
17	PAR1R00D0050 副臂引拨拖链支架	1
18	PAR1R10D0010 副臂下截结构梁	1
19	MLW04200820T 滑轨	1
20	PAR1R08D0120 正臂倍速皮带固定板	1
21	PAR1G00C0060 手臂皮带固定夹板	1
22	PAR1G00C0090 手臂皮带固定夹板	1
23	PAR2B00C0200 上位感应片	1
24	ESN01KN024D0 近接开关	1
25	PAR1R00D0060 引拨近接开关过渡板	1
26	EXH280100001 扎带固定座	2
27	接线端子三	1
28	PAR1R00D0070 副臂马达罩	1
29	PAR2B00C0190 近接开关座	1
30	PAR1R00C0270 手臂防撞胶挡块	2
31	PAR1R00C0300 正臂下结构梁近接开关过渡板	1
32	PAR1R10D0050 上下座垫板A	1
33	PAR1R10D0060 上下座垫板B	1
34	MET001200102 防撞胶头	1
35	PAR1R10D0040 副臂引拨皮带固定板	1
36	PAR1R00C0240 引拨皮带夹板	1
37	PAR1R10D0070 副臂引拨夹板固定块	1
38	PAR1R10D0020 手臂上结构梁	1
39	PAR1R00D0020 副臂链条上固定板	1
40	PAR1R08D0250 副臂上下座	1
41	MLW04200880T 滑轨	1
42	MLW04200880T 滑轨滑块套件(滑块)	4
43	PAR1R08C0450 手臂张紧轮销	2
44	PAR1T00C0050 皮带轮	2
45	MBG05015032B 轴承 6002 GB 276-94	4
46	MMD030750C05 中大750W减速机 1-5	1
47	MBG01019047A 免键轴承	1
48	EMDA075H1JD1 华成驱动一体系统通用伺服马达	1
49	MBT133250803 皮带	1
50	MLW06201060T 滑轨滑块套件(滑块)	4
	MBT133150802 皮带	1

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							
姓名							
内容							

项目号	零件号	数量
38	PAR1R00D0020 副臂链条上固定板	1
39	PAR1R08D0250 副臂上下座	1
40	MLW04200880T 滑轨	1
41	MLW04200880T 滑轨滑块套件(滑块)	4
42	PAR1R08C0450 手臂张紧轮销	2
43	PAR1T00C0050 皮带轮	2
44	MBG05015032B 轴承 6002 GB 276-94	4
45	MMD030750C05 中大750W减速机 1-5	1
46	MBG01019047A 免键轴承	1
47	EMDA075H1JD1 华成驱动一体系统通用伺服马达	1
48	MBT133250803 皮带	1
49	MLW06201060T 滑轨滑块套件(滑块)	4
50	MBT133150802 皮带	1

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							
姓名							
内容							

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材质				1/1		mm	A4
日期							
姓名							
内容							

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材质				1/1		mm	A4
日期							
姓名							
内容							

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							
姓名							
内容							

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
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日期							
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材质				1/1		mm	A4
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材质				1/1		mm	A4
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材质				1/1		mm	A4
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材质				1/1		mm	A4
日期							
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材质				1/1		mm	A4
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材质				1/1		mm	A4
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材质				1/1		mm	A4
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材质				1/1		mm	A4
日期							
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材质				1/1		mm	A4
日期							
姓名							
内容							

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日期							
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内容							

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材质				1/1		mm	A4
日期							
姓名							
内容							

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材质				1/1		mm	A4
日期							
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材质				1/1		mm	A4
日期							
姓名							
内容							

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							
姓名							
内容							

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							
姓名							
内容							

图名	副臂部爆炸图	图号	处理	张数	比例	单位	尺寸
材质				1/1		mm	A4
日期							



## 3.1、BRTR12WDS5PC TRAVERSE AXIS EXPLODED DRAWING

项目号	零件号	数量
1	PAR1R12A0040 横行拱	1
2	PAR2B00A0060 横入端皮带固定座	2
3	PAR2B00A0020 皮带拉座	1
4	PAR2B00A0040 横行皮带固定夹板	2
5	PET010300001 3000双点组合	1
6	PAR2B00A0250 横行主动皮带轮	1
7	MBG01024047A24X47 免键轴承	1
8	PAR1R12A0020 横行滑板	1
9	ESN01KN024D0 近接开关	2
10	ESN01NC024D0 伺服近接开关	2
11	PAR2B00C0250 0形感应片	2
12	PAR2B00A0370 横行感应器座	2
13	PAR1R00A0130 皮带压轮	1
14	PAR1R00A0140 惰轮销	2
15	MBG05020042A 6004轴承	4
16	MCN125057001 保护链条25-57横行	1
17	PAR1R00A0120 伺服马达板	1
18	PAR2B00C0200 上位感应片	1
19	PAR2B00A0350 横行安全感应片	2
20	PAR1R00A0160 基座	1
21	MET001200102 防撞胶头	2
22	MMJ01075009D 98ZR9-750T1	1
23	PAR1R08A0220 电箱盖子	1
24	PAR1R08A0230 固线钣金	1
25	PAR1R12A0050 横行保护链条托板	1
26	EMDA075H1JB1	1
27	MLW05252260T 滑轨滑块套件 (滑轨)	2
28	MLW05252260T 滑轨滑块套件 (滑块)	6
29	MBT133250803 皮带M8-25 BRTM08IDS5PC 横行部用	1

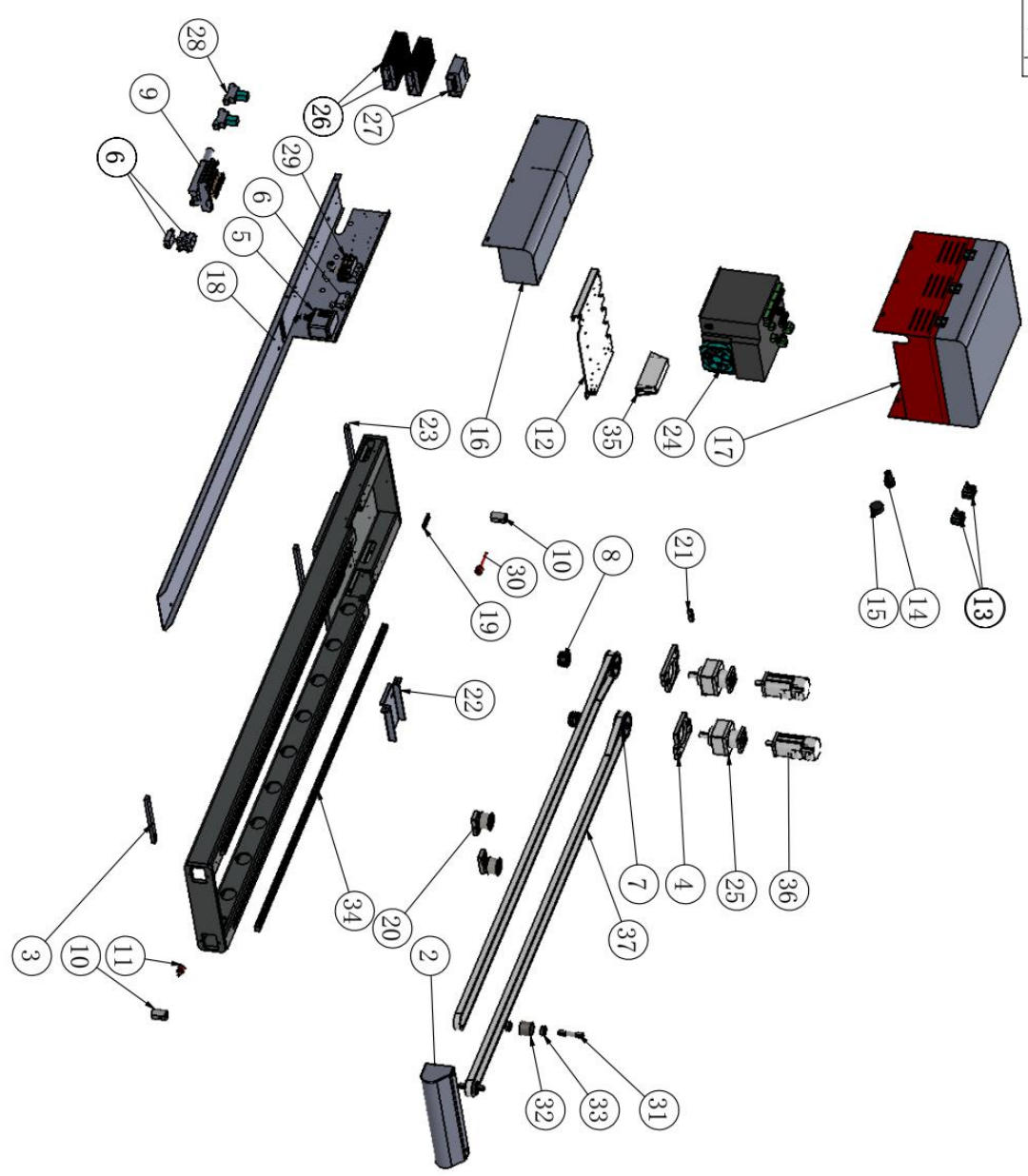
  

张数	1/1	一般加工公差	120 - 315	±0.3	检验标记
比例		0 - 30	±0.1	315 - 1000	±0.5
单位	mm	30 - 120	±0.2	1000 - 2000	±0.8

图名	横行部爆炸图	图号	GRP1R12A0070	处理	
材质				审查	设计
版次	内容	姓名	日期	黄欣	

3.2、BRTR12WDS5PC CROSSWISE AXIS EXPLODED DRAWING



Exploded drawing of the BRTR12WDS5PC crosswise axis assembly, showing various components numbered 1 through 37.

项目号	零件号	数量
1	PAR1R12B0010引拔横梁	1
2	PAR1R00B0110引拔端盖	1
3	PAR1R00B0070引拔护套固定架	2
4	PAR1G00B0020引拔马达安装板	2
5	ESN05KN024D1 压力开关	1
6	PET030001000 真空产生器	4
7	PAR2B00A0250横杆主动皮带轮	2
8	MBG0402 免键轴承	2
9	PSV0106ST2644六连体电磁阀组	1
10	BB10B250防撞块	2
11	MET001200101 防撞胶头	1
12	PAR1R00B0140 三五轴驱动一体安装板	1
13	PET020000100 负压开关	2
14	ELT02DC02401 指示灯	1
15	ELT03DC02401 蜂鸣器	1
16	PAR1R08B0320 电磁阀封盖	1
17	PAR1R10B0030气阀箱整体	1
18	BB10B080引拔链条护套板	1
19	BB10B160引拔原点感应片	1
20	PAR1R00B0090引拔皮带压轮组	2
21	PAR1G00B0030引拔调整块	2
22	PAR1G00B0010横杆链条固定板	1
23	PAR1R10B0020引拔护套固定架	1
24	EBD02S30H100 华成驱动一体三轴控制系统 (QC-S3 XI 400W YI 750W ZI 750W)	1
25	MN101040009C伺服减速机	2
26	电源供应器 100W	2
27	EPW0201A2201 50W电源供应器	1
28	ERY0105D0240 继电器	2
29	PSV0102ST28二连体电磁阀组	1
30	MET001200102 防撞胶头	1
31	PAR1R08B0200从动轮轴	2
32	PAR1T00C0050皮带轮	2
33	MBG05015032B轴承 6002 GB 276-94	4
34	MLW06201360T 滑轨滑块套件 (滑轨)	2
35	EPW0505A2201 刹车电阻 (立式) 400W 25欧	1
36	EMDA040H1JB1	2
37	皮带4-4 GRP1R12B0090 引拔部	2

图名

引拔部爆炸图

图号

GRP1R12B0090

材质

处理

版本

内容

姓名

日期

BORUNTE

广东省伯朗特智能装备科技有限公司  
TEL: 0769-81006795 FAX: 0769-81006785

单位

mm

比例

1/1

承认

核准

审查

绘图

黄欣

设计

### 3.3、BRTR12WDS5PC PRODUCT AXIS EXPLODED DRAWING

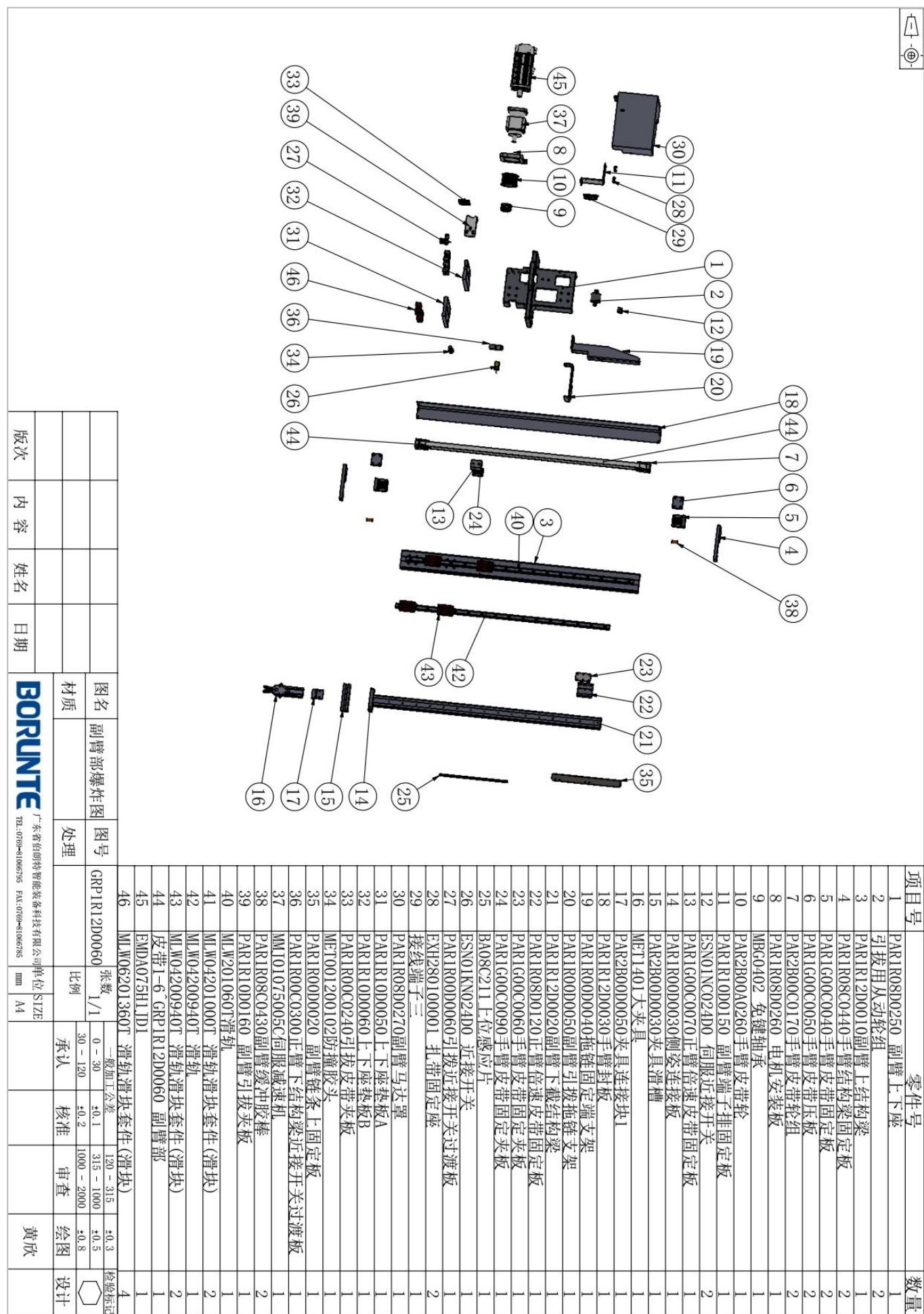
项目号	零件号	数量
1	PAR1R00C0040引拨拖链支架B	1
2	MLW04151000T 滑轨滑块套件 (滑块)	4
3	BA08C290手臂倍速皮带固定板	1
4	PAR1R10C0130 电机安装板	1
5	引拨用从动轮组	2
6	MBG01024047A24X47免键轴承	1
7	PAR2B00A0250横行主动皮带带轮	1
8	PAR1R00C0250正臂上截结构梁	1
9	PAR1R12C0010正臂下截结构梁	1
10	PAR1R00C0340手臂皮带调整固定座	1
11	PAR1R00C0350手臂皮带调整压板	1
12	PAR1R00C0370手臂皮带压板	1
13	PAR1R00C0390手臂皮带固定板	1
14	PAR1R00C0100正臂下固定板	1
15	PAR1R00C0260正臂手臂封板	1
16	PAR1R10C0140 正臂端子排固定板	1
17	BA08C211上位感应片	1
18	ESN01KN024D0 近接开关	1
19	PAR1R00C0230引拨皮带固定板	1
20	PAR1R00C0240引拨皮带夹板	1
21	皮带轮组	2
22	PAR1T00C0020手臂皮带夹板	2
23	PAR1R10C0020正臂倍速皮带固定板	1
24	PAR1R00C0280正臂上固定板	1
25	PAR1R00C0290正臂下固定板	1
26	PAR1R08C0230拖链固定端支架	1
27	PAR1R00C0300正臂下结构梁近接开关过渡板	1
28	PAR2B00C0250 O形感应片	1
29	PAR1R08C0240正臂拖链固定板	1
30	PAR1R00C0270手臂防撞胶挡块	2
31	PAR1R10D0030副臂缓冲胶棒	2
32	PAR2B00C0300侧姿连接块	1
33	MMJ01075009D 98ZR-750T1	1
34	PAR1R10C0120 正臂上下座	1
35	PAR1R10C0150 正臂马达罩	1
36	MLW04151000T 滑轨滑块套件 (滑轨)	2
37	MLW201060T滑轨	1
38	MLW04201000T 滑轨滑块套件(滑块)	2
39	PEC010501003 侧姿组 (50缸径)	1
40	EMDA075H1JD1	1
41	皮带1~5`GRP1R12C0090 正臂部	1
42	MLW06201360T 滑轨滑块套件(滑块)	4

张数 1/1	一般加工公差	±0.3	120 - 315	±0.5
比例	0 - 30	±0.1	315 - 1000	±0.5
承认	30 - 120	±0.2	1000 - 2000	±0.8
审核				
设计				

图名	正臂部爆炸图	图号	GRPIR12C0090
材质		处理	
版次	内容	姓名	日期

广东省伯朗特智能装备科技有限公司  
**BORUNTE**  
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黄欣

### 3.4、BRTR12WDS5PC RUNNER AXIS EXPLODED DRAWING



The above models are for reference only to view parts and configurations. For more details, or to purchase/replace parts, please consult our marketing department.

## Chapter 12 Maintenance

### 12.1 Maintenance safety

Note: Before servicing the manipulator, the maintenance personnel should read the following safety regulations in detail to avoid danger.

- 1) Before checking the injection machine, please turn off the power.
- 2) Before adjustment and maintenance, please turn off the power of the injection machine and the robot and the residual pressure of the robot.
- 3) Except for proximity switches, poor suction clips, and solenoid valve failures, they can be repaired by themselves. Others should be repaired by professionally trained personnel, otherwise they should not be modified without authorization.
- 4) Please do not replace or modify original parts at will.
- 5) During the adjustment or replacement of the mold, please pay attention to safety to avoid being injured by the robot.
- 6) After completing the adjustment or maintenance of the manipulator, please leave the dangerous work area before testing the machine.
- 7) During the maintenance process, never turn on the power or connect the air source to the robot.

### 12.2 Maintenance inspection items and expiration

	the inspection scope	expires
1	1 Confirm whether the functions of suction cup, clamp and jig are normal	daily
2	drainage water from the filter	daily
3	screws for fixtures	daily
4	Air compressor drainage	daily
5	Injection machine connection cable, operator connection cable connector	daily
6	Check if the parts are loosened	daily
7	Lubrication of guide rods and slide rails	weekly
8	Lubrication of upper and lower rails, sliders	monthly
9	Air pipeline connection, whether the speed adjustment is normal	monthly
10	Clean and organize the appearance	weekly
11	Vacuum generator function check	monthly
12	Base fixing screw inspection	monthly
13	Oil buffer inspection	monthly
14	Air tube and wires	Every 3 years

**Note:** When any abnormality of the machine is found, it must be shut down for inspection, and the maintenance can be used only after it is confirmed that there is no abnormality. The above table is for reference only.



**The product is being improved ,there is no further notice about the latest change.**

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因改良等原因，规格及外观有所变更时，不另行通知，敬请谅解。  
因拍摄需要，某些部件有所增减，请按实际订单为准。

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