TOOLCEN

intelligen

multi axis servo robot controller instruction

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Shenzhen TOOLCEN Automation Equipment Co., Ltd

Shenzhen TOOLCEN Automation Equipment Co., Ltd. is located in the country's largest economic zone ---- Shenzhen City. Is a collection research and development, design, manufacture, sales and service in the integration of integrated enterprise.

The company is committed to packaging, electrical appliances, daily necessities, medical and other fields, R & D and production of single-axis, two-axis, three-axis, five-axis servo injection molding, the company has a number of industries, Machine tool, further development and production of IML in-mold labeling system, IMD mold inlay system, PET preforms to take special robots, and CNC lathe loading and unloading manipulator, CNC machining center loading and unloading manipulator, punch - forging manipulator, more Joint robot applications, for the automation industry to provide professional intelligent equipment.

We uphold the "innovation as the driving force, market-oriented, customer-centric to serve as a fundamental" concept, is a new technology services company, to provide customers with the best overall automation program.

CONTENTS

1.Specification and Installation

1.1 Specification

1. 8” colored LCD display with touch screen
2. 3-axis servo control board
3. I/O Board
4. Power Supply(2 suits)
5. Communicating cable

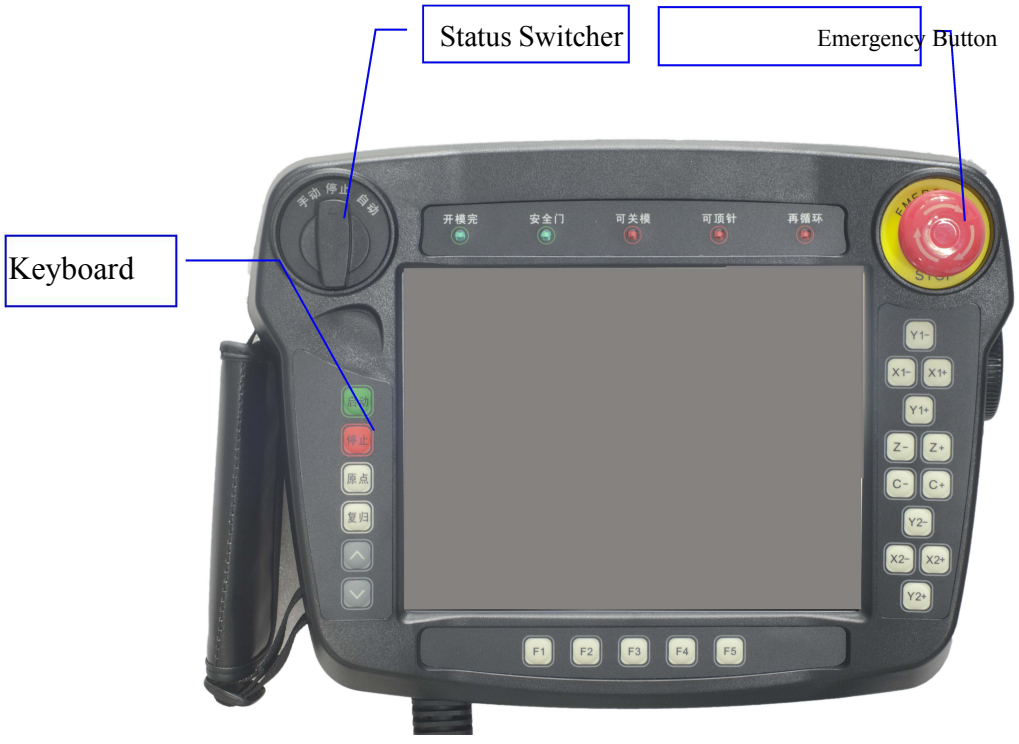
1.2 Installation Notes

1. The wiring work must be done by a professional electrician.
2. Confirming the power off when you are working.
3. Please installed on metal flame retardants and must be away from combustible materials.
4. Ground connection is needed for your safe.
5. When there is something wrong with external power supply, which may make control system out of work, you must set a safety circuit.
6. Be familiar with the Instructions before installing, wiring, operating and maintaining. Have a good knowledge of mechanical, electronic may help a lot when you use.
7. Installing the controller should have well ventilated, defending the oil and dust. If the electronic controller is installed in a close room, to prevent environment temperature goes high, a fan is necessary to make sure temperature inside the box is below 50 ℃.
8. The controller shouldn't be installed near to the relay, transfer etc., for these are disturb source.

Notice: Improper operation may cause hazards, including personal injury or equipment accidents.

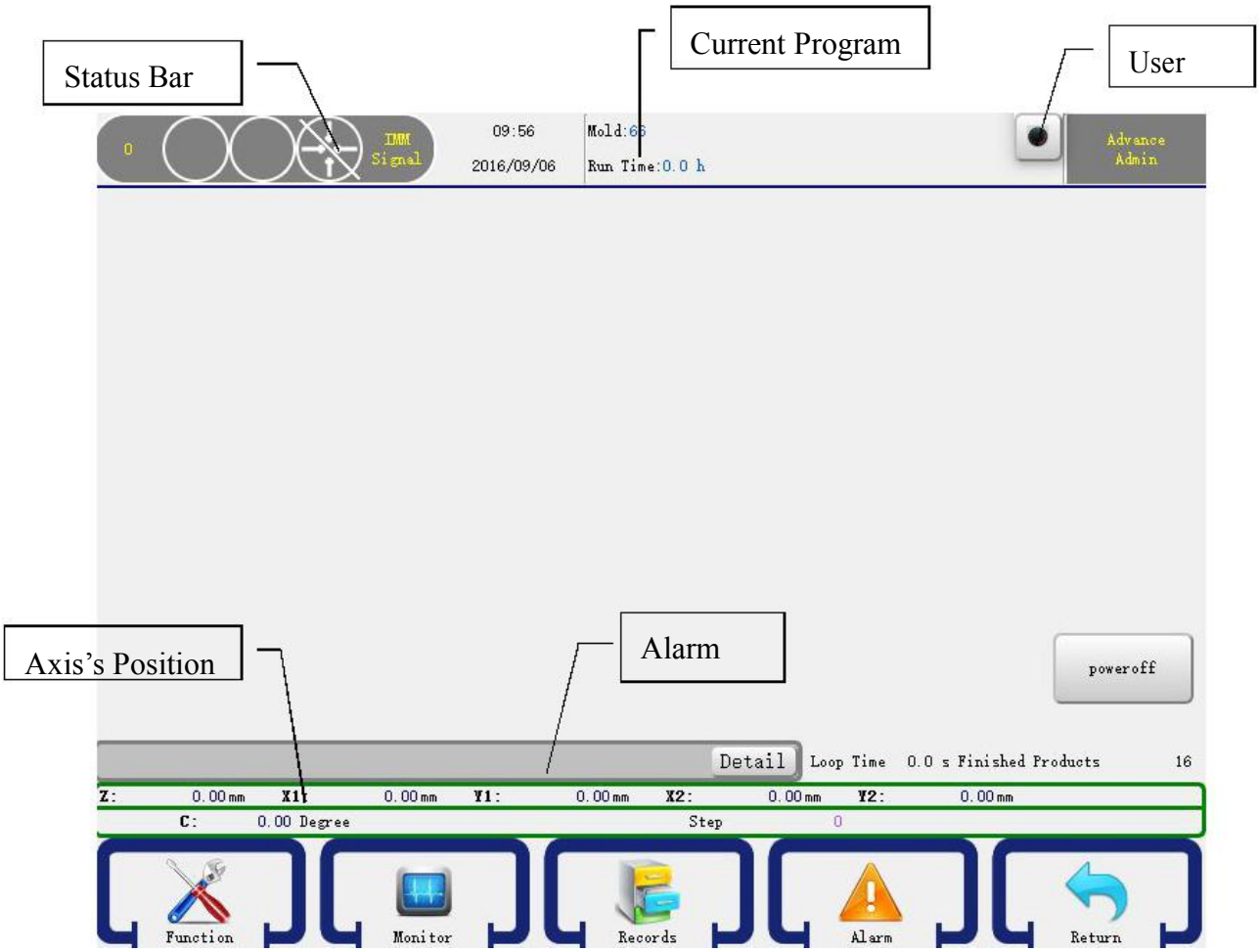
2.Operate panel

2.1 Appearance



2.1 Main Frame

2.2.1 Main page



2.2.2 Axis Definitions

Z：Traverse in/out.

X1：Main arm forward/backward.

Y1：Main arm up/down.

X2：Vice arm forward/backward.

Y2：Vice arm up/down.

C： Pose Horizontal/Vertical.Operation

3.Operation

Manipulator manual, stop, automatic are three operating status, the selection switch on the left of the gear is manual mode, in which the robot can be operated manually; the stop switch only to be used by homing robot operation is to the middle position of selection switch to stop all action. When the selection switch is to the right, pressed a "start" button, the robot enters the automatic operation.

3.1 Origin Position Returned

To make the robot can run automatically correctly after power on, an Origin Position Returned(OPR), driving the robot return to the home position for each axis, sucker and fixture return to the closed is needed.

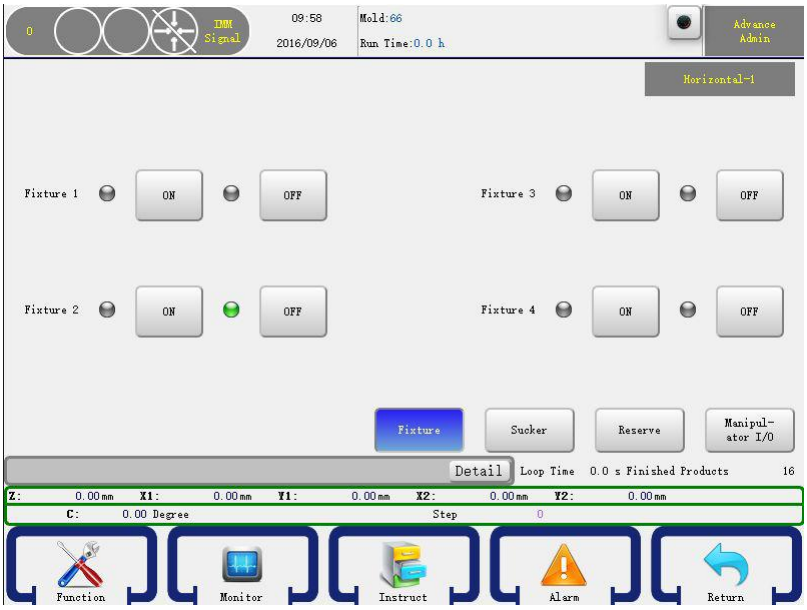
In the stop mode, press the "Home" button once, then press the "Start" button to return to the home position with each axis Y1 (Y2) X1 (X2) Z by order. At the same time, a page box comes to remind you that you are ongoing OPR operation and all back to their origin that each electric axis position is 0.

When all axes, sucker and fixture return to the home position, there is a  icon on the top right of the screen , you can operate automatic and manual mode.

You can not operate manual, automatic and modify setting when OPR, please press the stop button or emergency stop button in case of emergency to stop the OPR.

3.2 Manual Operation

Turn the knob to left , the robot will go into **Manual Status**. As shown below



3.2.1 Axis Action

Users can not move the arms before set origin. But can operate pneumatic valves.

Pneumatic control: Main arm up with pressed once.

Electric control: Main arm up with pressed. When you stop pressing, it stops moving.

Pneumatic control: Main arm down with pressed once.

Electric control: Main arm down with pressed. When you stop pressing, it stops moving.

Pneumatic control: Vice arm up with pressed once.

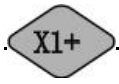
Electric control: Vice arm up with pressed. When you stop pressing, it stops moving.

Pneumatic control: Vice arm down with pressed once.

Electric control: Vice arm down with pressed. When you stop pressing, it stops moving.

Pneumatic control: Main arm backward with pressed once.

Electric control: Main arm backward with pressed. When you stop pressing, it stops moving.



Pneumatic control: Main arm forward with pressed once.

Electric control: Main arm forward with pressed. When you stop pressing, it stops moving.

Pneumatic control: Sub arm backward with pressed once.

Electric control: Sub arm backward with pressed. When you stop pressing, it stops moving.

Pneumatic control: Sub arm forward with pressed once.

Electric control: Sub arm forward with pressed. When you stop pressing, it stops moving

Pneumatic control: Pose vertical with pressed once.

Electric control: Moving towards vertical position with pressed. When you stop pressing, it stops moving.

Pneumatic control: Pose horizontal with pressed once.

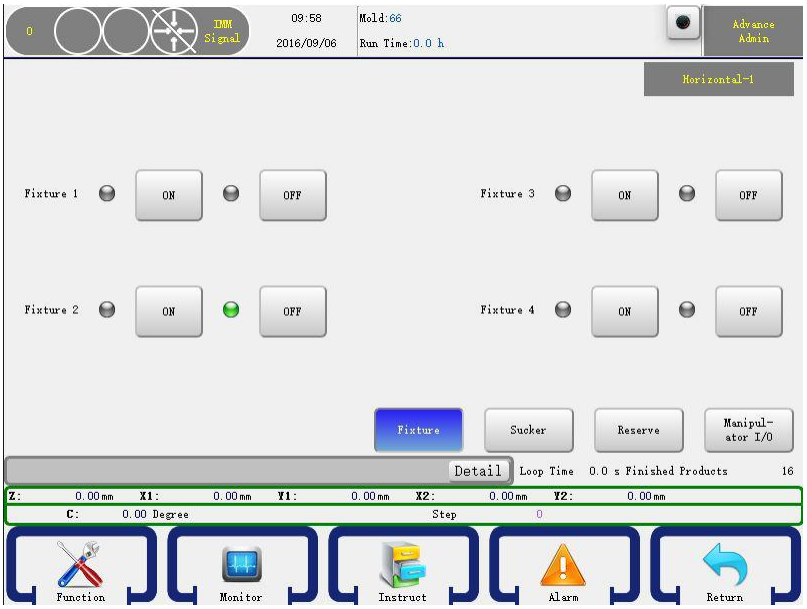
Electric control: Moving towards horizontal position with pressed. When you stop pressing, it stops moving.

Traverse In

Traverse Out

3.2.2 Fixture Action

In the manual page click the Fixture button on the bottom right to go into the manual fixture page. As shown below:

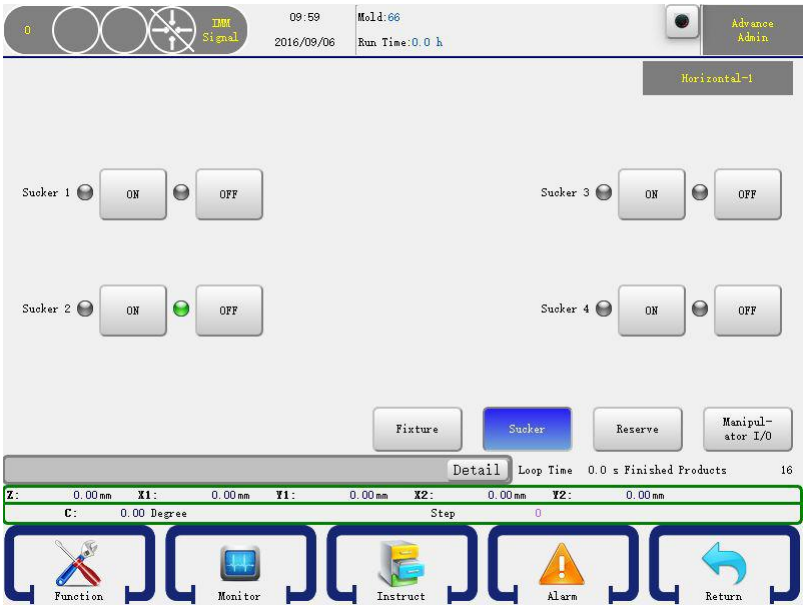


There are four fixtures. Press the On button to turn it on and press the OFF button to turn it off.

Attention: Input signal shows red and output signal shows green. The input or output indicator is off if there is no signal.

3.2.3 Sucker Action

In the manual page click the Sucker button 【Sucker 】on the bottom right to go into the manual sucker page. As shown below:

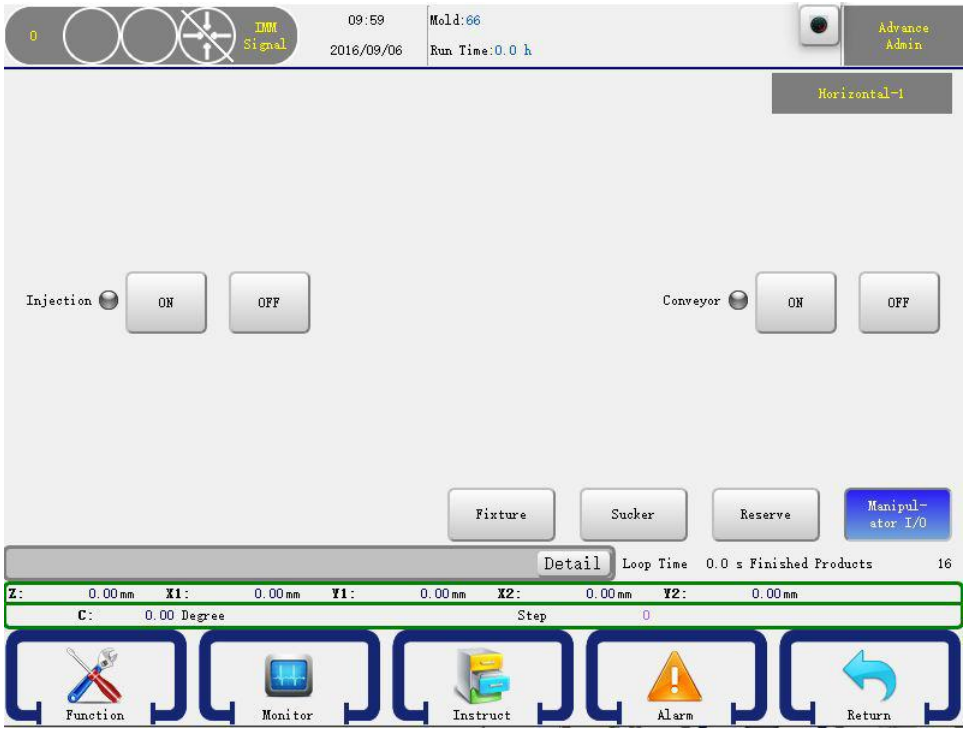


There are four suckers. Press the On button to turn it on and press the OFF button to turn it off.

Attention: Input signal shows red and output signal shows green. The input or output indicator is off if there is no signal.

3.2.4 Auxiliary Action

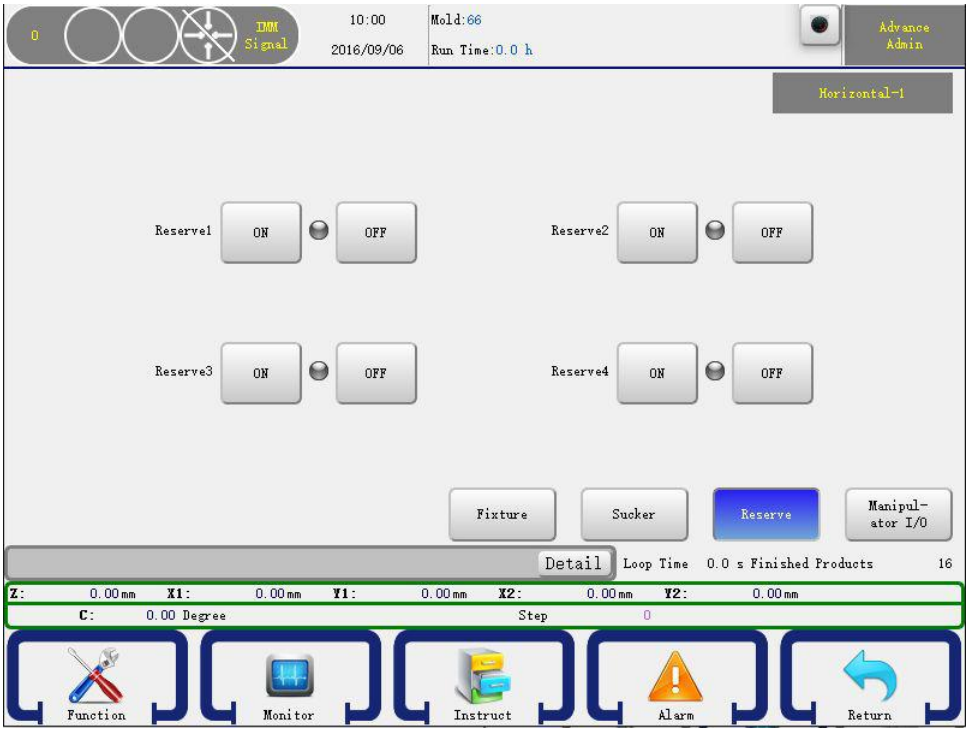
In the manual page click the Other button on the bottom right to go into the manual other page. As shown below:



The operation is the same as fixture.

3.2.5 Reserve Action

In the manual page click the Adjust button on the bottom right to go into the manual Adjust page. There are six adjust reserve action, you can set as what you want. As shown below:

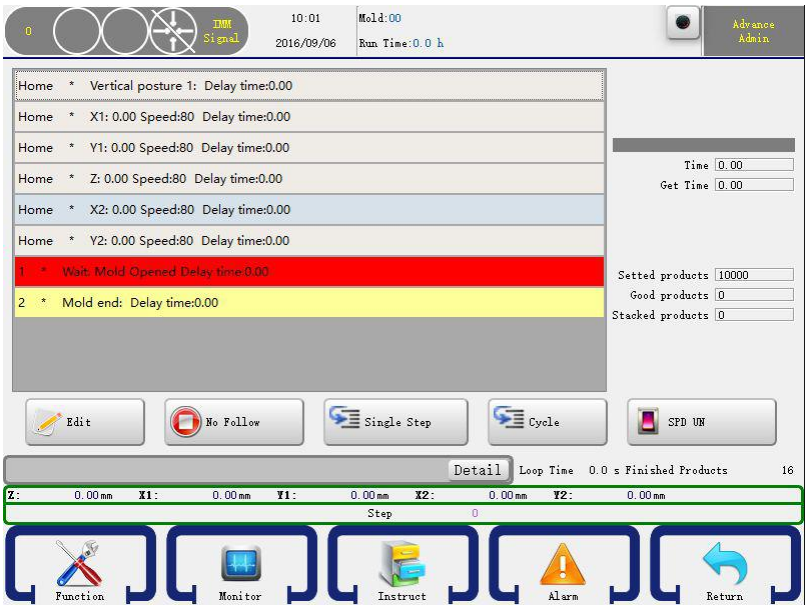


The operation is the same as fixture.

3.3 Auto Mode

3.3.1 Monitor Auto Running Status

Turn the knob to the right to go into the auto run page. The robot will turn to **Auto Ready Status**. In this status, press the start button will let the robot turn to **Auto Running Status.** You can monitor the running status , as shown below



Period：Time suspend in the Auto carry out cycle.

Extract Time: The time that robot dropped to get and take out the product in the Auto

Setted Products：The mount of product per-set. Alarm occurs when product counter reached.

Qualified：The number of chi ban took out by robot.

Stacking Number: The number of products have been stacked by robot.

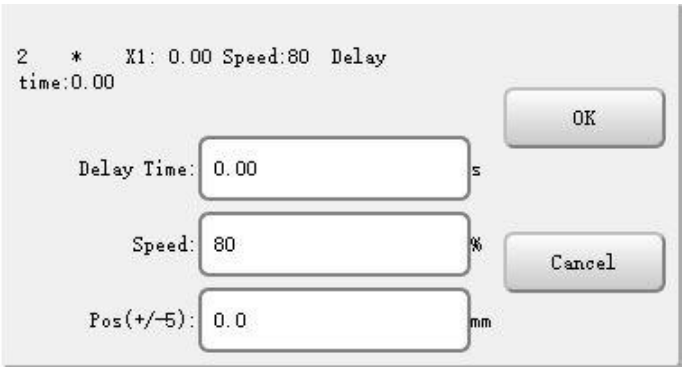
Loop Time: Time after a carry out cycle in the Auto.

Finished Count：the number of finished products.

3.3.2 Adjust Running Configures

In the auto running status, you can modify the action of program configures. Just select a step and then click the edit button will show a editor dialog, after you click “OK”, those data will be accepted and in the next cycle will be run according to your setting, if you press “Cancel” to cancel the operation.

To ensure that those setting won't make the robot, machine, mold damage, within 5 mm range is allowed. As shown below:



After you finished, just click the OK button to confirm your change.

3.3.3 Single Step Running

On the auto running status, you can click the single button to run a step. Click again will run the next step, as so on. This feature is very useful when debug you program.

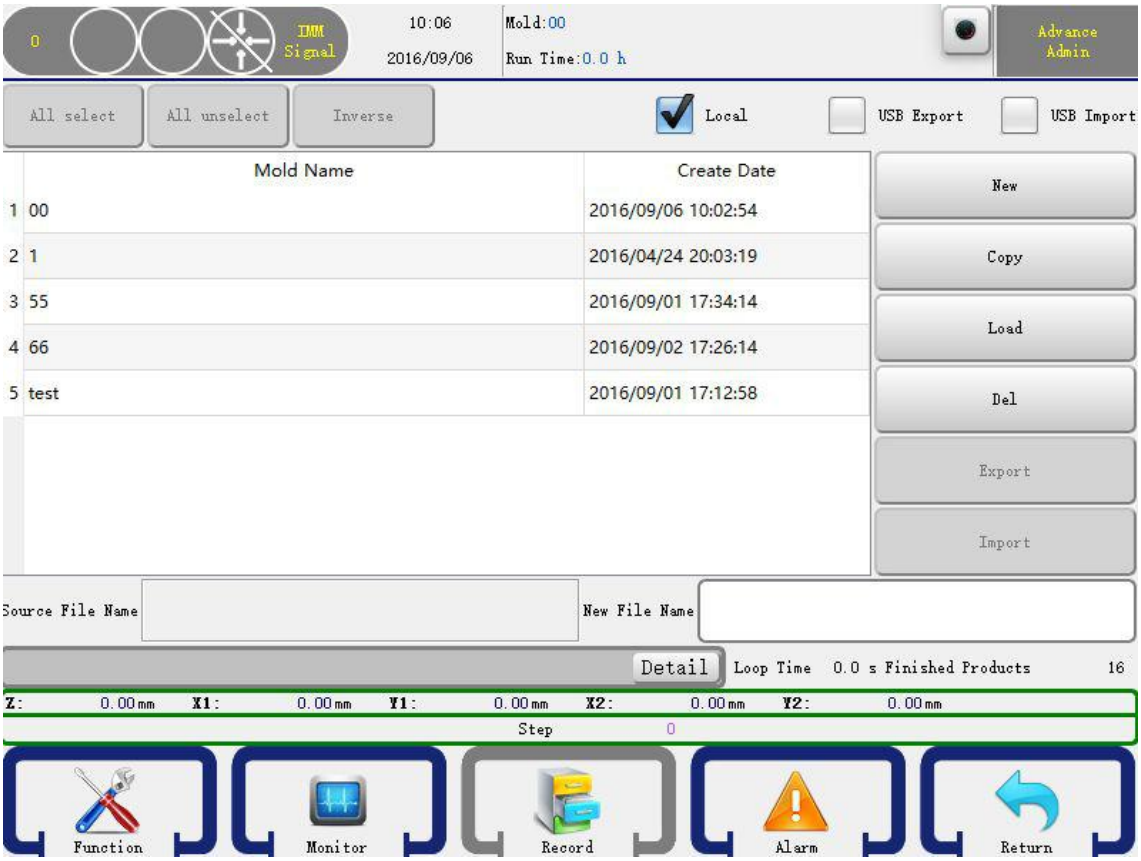
3.3.4 Speed Adjustment

Click “Speed”button so that it becomes “Speed display” to adjust the overall speed by pressing “Speed adjustment” on the Key board and the the panel on the lower left corner.

4.Record Management

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.

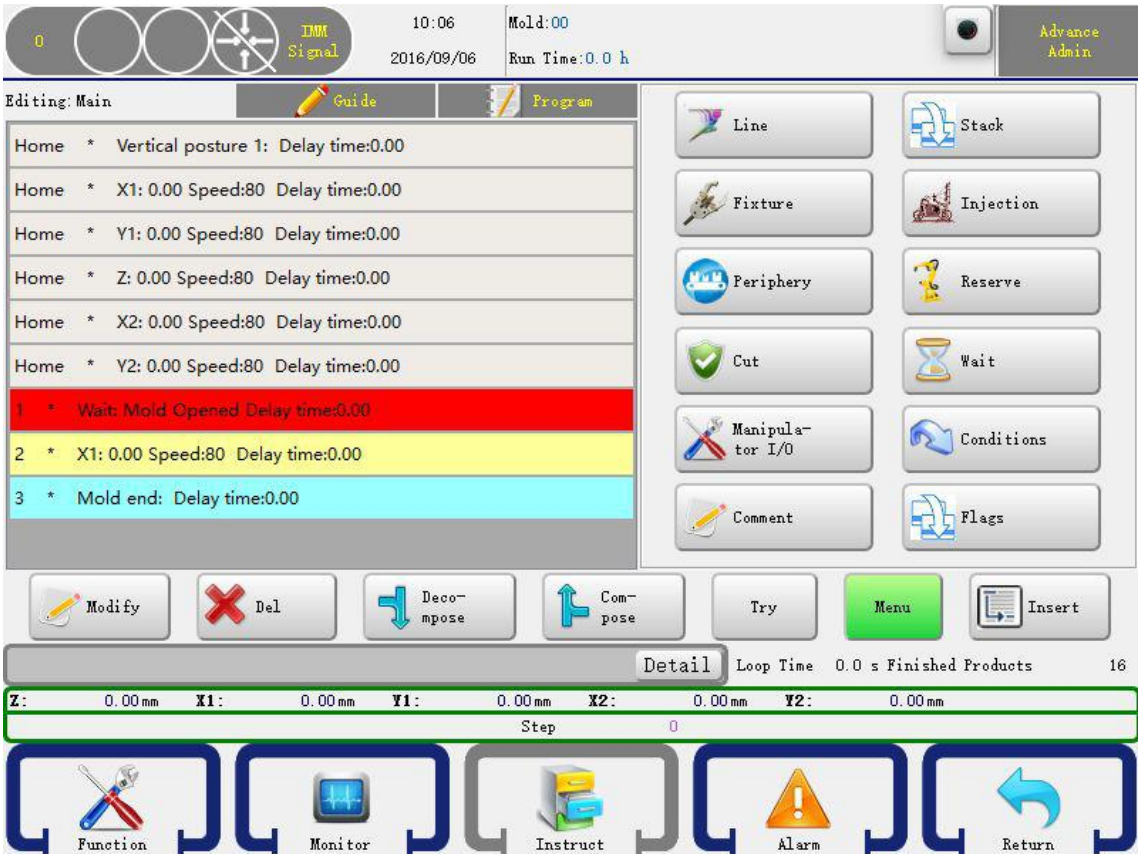
Load Program： Select a program and then click the load button to load a program.

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

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

4.2 Program instruct

Turn the knob to the left to go into manual status and then click the teach button on the main menu bar to open the program editor. As shown below:

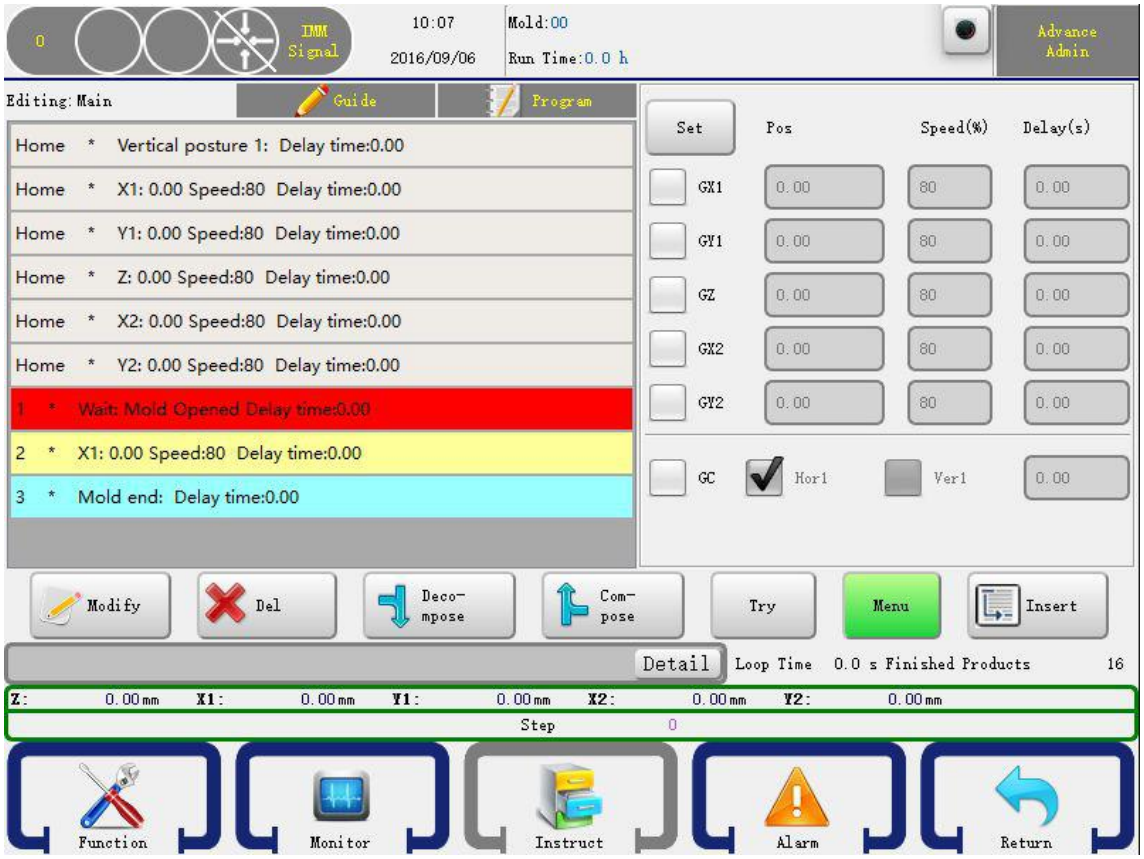


Servo action,Stack action, Fixture action, Injection, Auxiliary action, Reserve action, Check action, Wait action, Series action, Periphery are included in “Teach” button. Clicking those buttons to edit a program. Press “Teach” to back to menu.

In teaching mode, after selecting the actions you want to combine with, click “Combination” and you will get a same action step which is working at the same time when Auto operation. You can also separate a combined step into several steps by pressing “Break” button.

4.2.1 Servo Action

Click the Line button to go into servo action editor, you can set the X1(X2), Y1(Y2),Z,C(Pose) axis status ,as shown below:



In this page, you can set X1(X2),Y1(Y2),Z axes' position, operating speed and delay time. After clicking, the icon √ comes on the left, then set up the parameters of axes, select and click “Insert” button so that the corresponding settings are confirmed and inserted into the program steps.

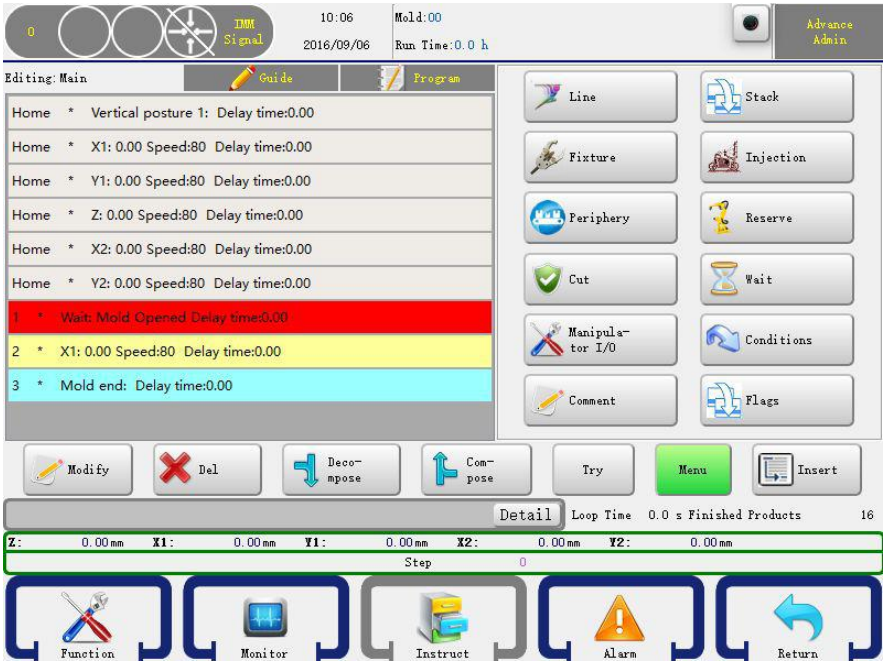
There are two ways to set the axis position:

1)Input the position you wanted in the editor box.

2) Press the axis button on the keyboard to let the arm locate to the position you wanted and then click the set button.

4.2.2 Program Starting point

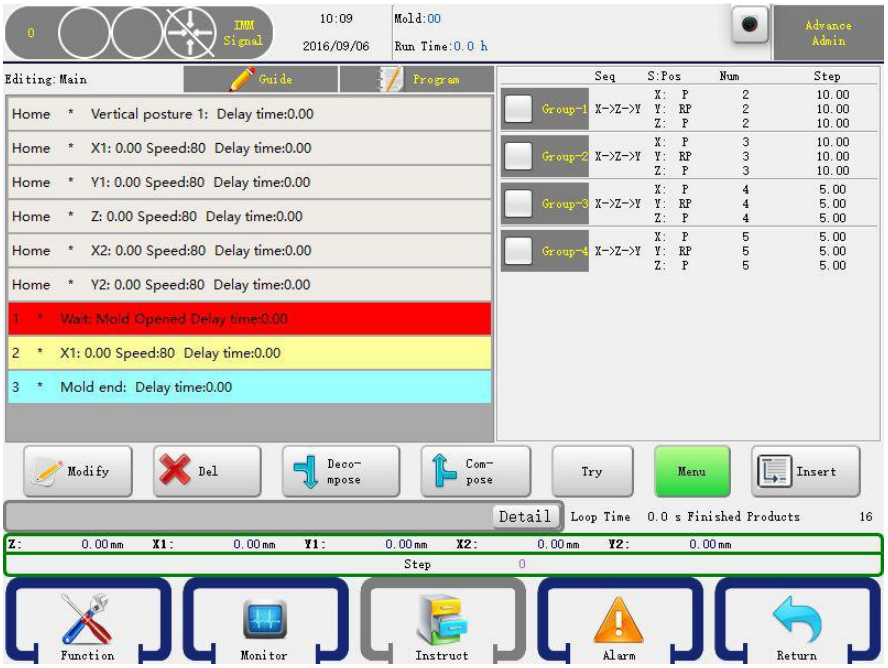
The six steps are shown as six axes' origin position and pose.



Six steps of [Home] status above, which are default steps status in a new program, can just be edited by click "Edit" to modify the starting position, operating speed and delay time of axes, not be deleted.

4.2.3 Stack action

Click the Stack button to go into stack action editor, as shown below:

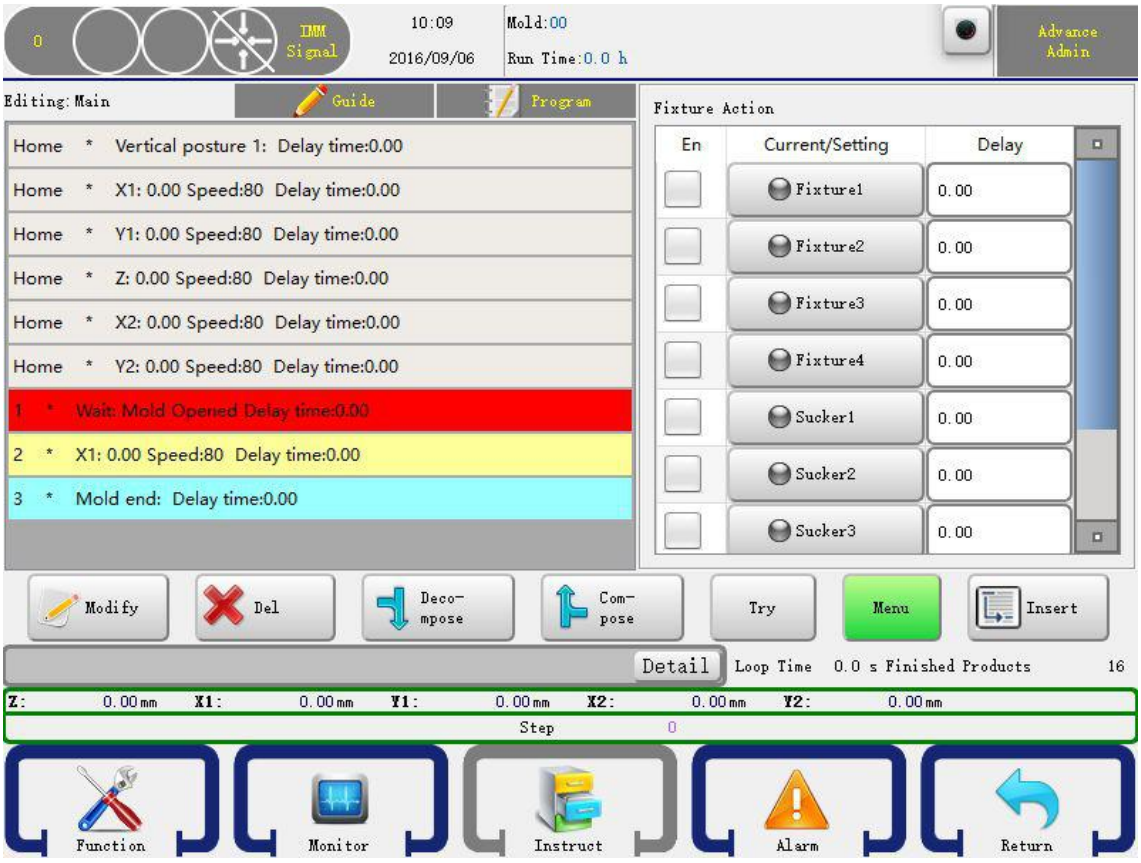


Select the left side of the stack to insert the program group, set the group and then click Insert button in front of the stacking step. The robot will stack products as order when Auto operation.

If you want to use the Y axis to stack, you should make sure the stack is inserted before Y-axis is lowering operation.

4.2.4 Fixture action

Click the Fixture button to go into fixture and sucker action editor, as shown below:

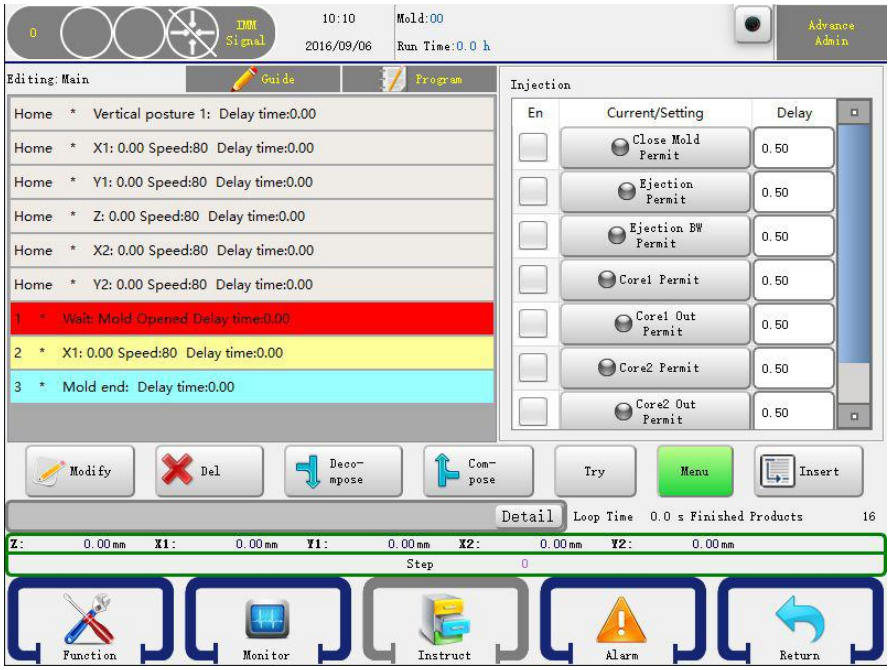


Controller can set four fixtures and two sucker action, clicking the button to be controlled and the indicator turns red when output. Then click on the left so that it becomes √, clicking “Insert” the action step is inserted into the front steps of the selection procedure.

After inserting fixture and sucker action, be sure to insert Check action, or the program does not test their conformation signal. If you do not acknowledge signal, you don't need the Check action.
You'd better have Check action to protect machine.

4.2.5 IMM Action

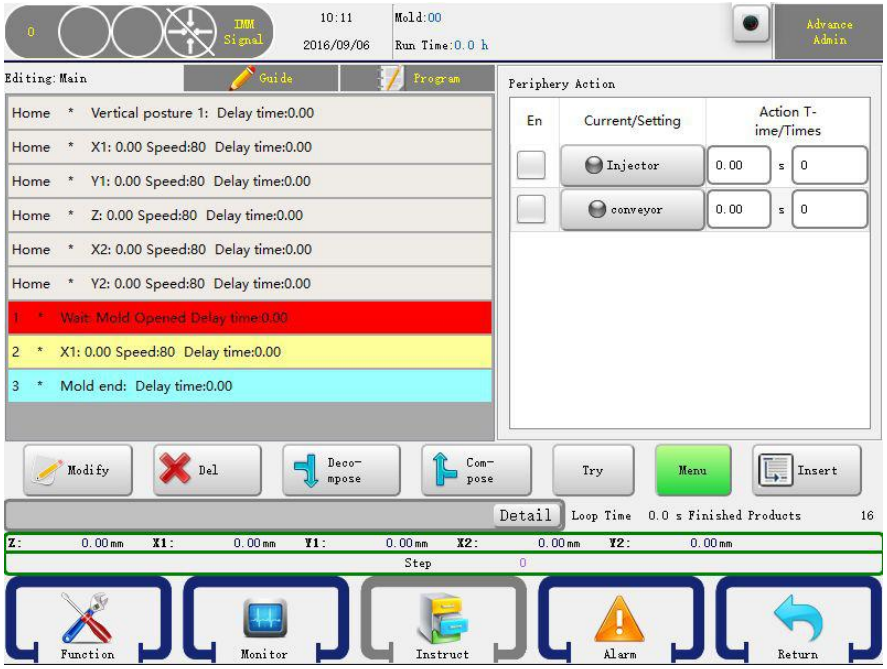
Click the Injection button to go into injection action editor, as shown below:



The operation is the same with program fixture action. See 4.2.4.

4.2.6 Auxiliary Action

Click the Auxiliary button to go into periphery action editor, you can find injector, conveyor, reserve point and stack action in this editor, as shown below:



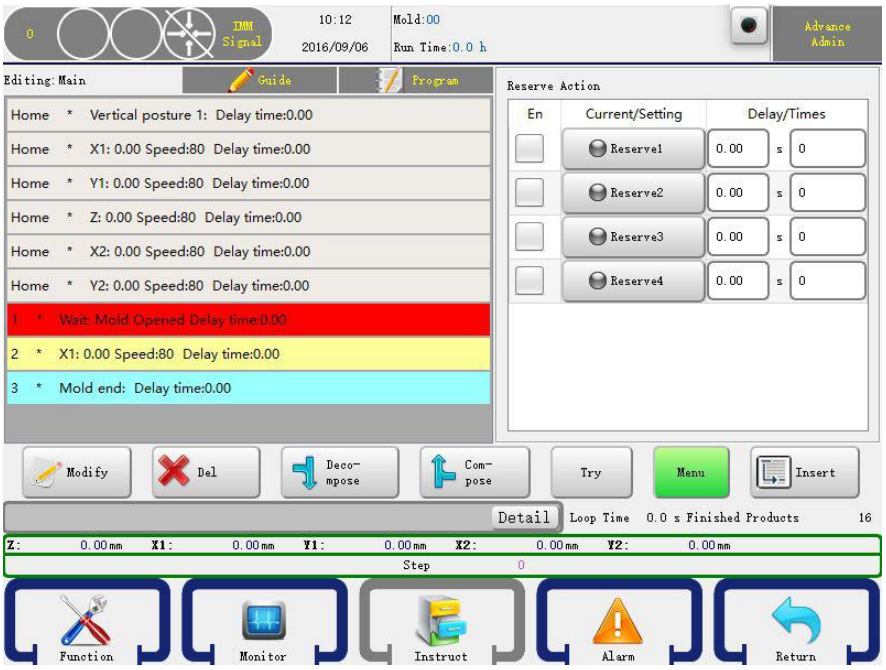
The operation is the same with program fixture action. See 4.2.4.

Times: Means how long to execute the action in a cycle.

Delay: Set how many molds in Auto when output, maybe every other 1 or two,etc.,

4.2.7 Reserve Action

Click the Reserve button to go into action editor. As shown below:



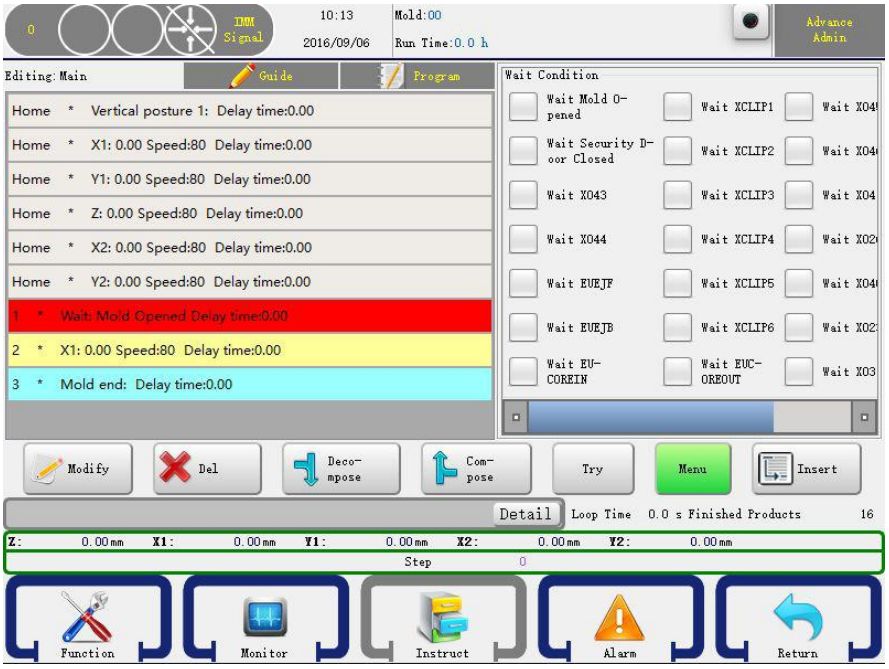
There have four reserves on the system.

Times: Means how long to execute the action in a cycle.

Delay: Set how many molds in Auto when output, maybe every other 1 or two,etc.,

4.2.8 Wait Action

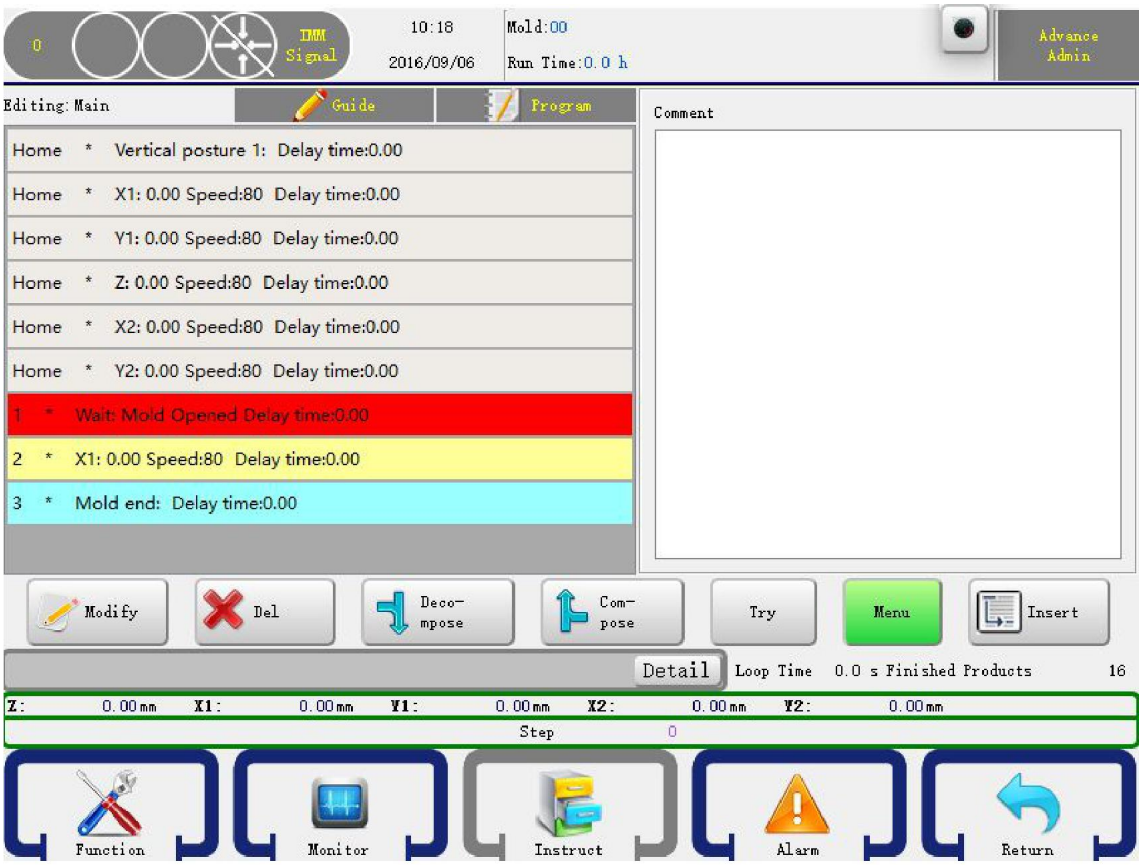
Click the wait button to go into wait action editor. This type of action means the program will stop before the input signal you want to wait is on. The editor is as shown below：

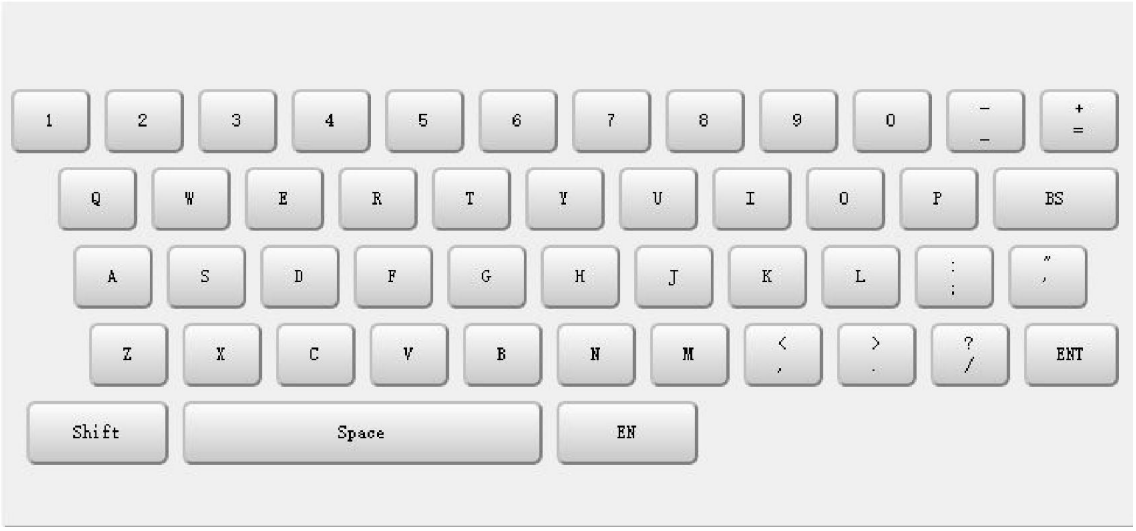


Just check the signal you want to wait and click the insert button to confirm your change.

4.2.9 Comment

Click the Comment button to go into Comment editor. It can be have some comment on the program

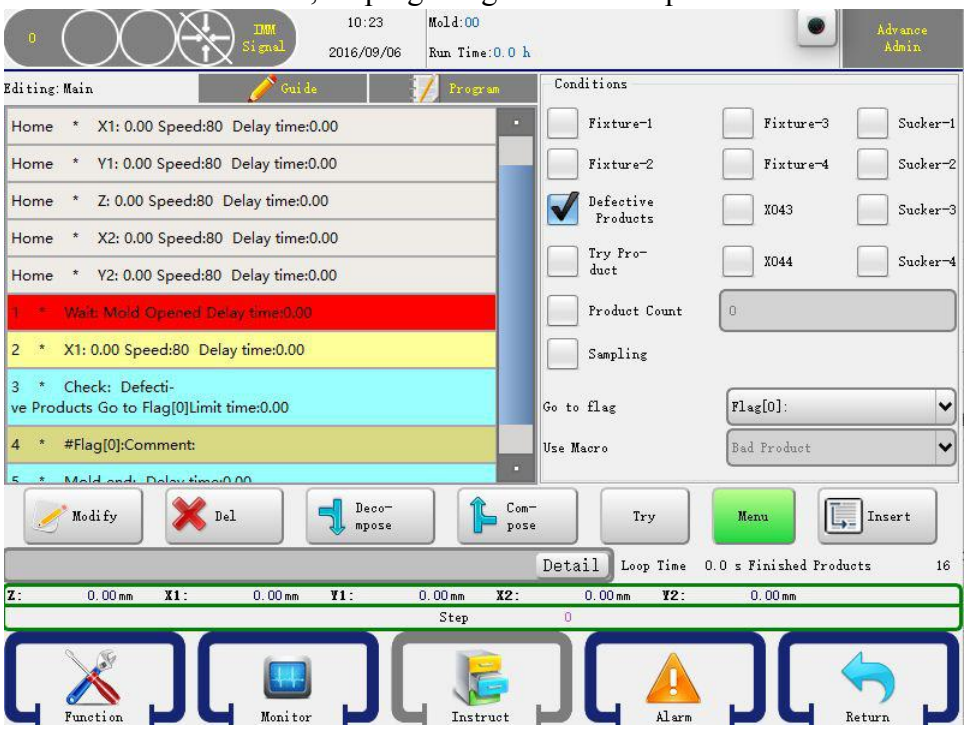




Keyboard can input the information.

4.2.10 Conditions

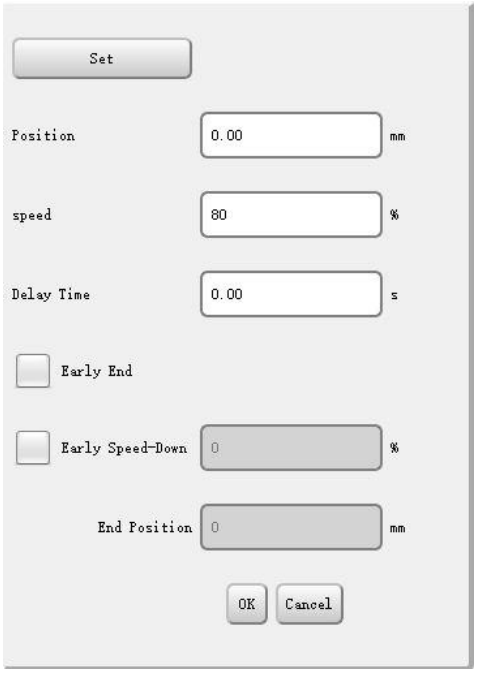
If have some conditions,the program go to some step.



Attention:The program should have a Comment ,then can use the conditions.

4.2.11 Modify Program

Select the step you want to modify and then click the modify button it will open the modify dialog, as shown below:



You can modify the action configure and press OK to confirm.

4.3 Demo

The following procedure will help to teach you to learn and practice robot programming. In the actual mold robot program, depending on your actual situation and set the servo axis position, and setting the correct sequence with the injection molding machine.

4.3.1 command

The procedure used to pick products and feed tail, the robot stays at the top of the mold injection molding machine and waits for the mold opened signal. When injection molding machine mold opened, arms go down and pick products and feed tail, then lay feed tail to the crusher, put down the product to the conveyor belt, which moving every mold cycle.

4.3.2 actions

1)Turn to auto-mode.

2)Arms run to start point waiting for mold opened signal.

3)Suck1 for product，fixture1 for feed tail.

4)Arms go outside injection mold machine, and enable mold close signal.

5)Lay feed tail.

6) Put down the product to conveyor and start moving for 3 seconds. 7)Arms return to waiting point.

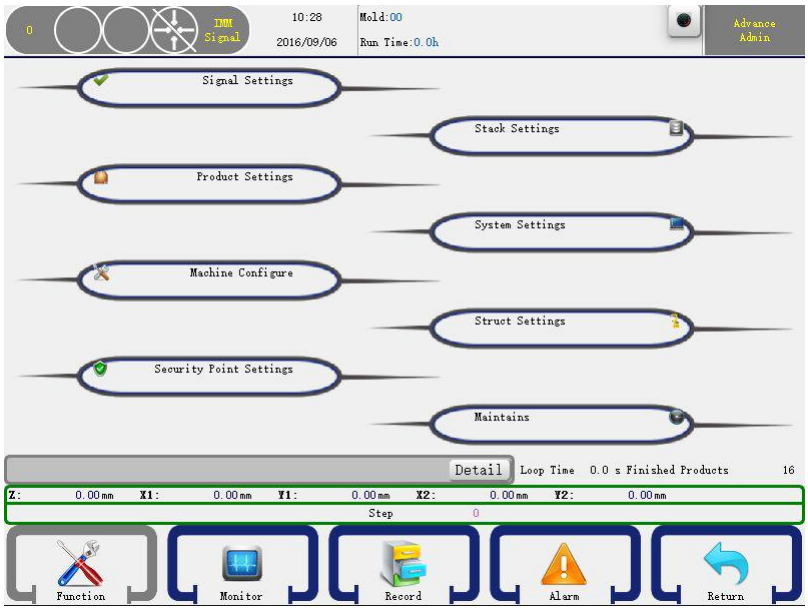
4.3.3 program

Home X1： 0.0 Speed：30 Delay time：0.00
Home Y1： 0.0 Speed：30 Delay time：0.00
Home Z： 0.0 Speed：30 Delay time：0.00
Home X2： 0.0 Speed：30 Delay time：0.00
Home Y2： 0.0 Speed：30 Delay time：0.00
Home Vertical posture Delay time：0.00
Wait：Mold Opened Delay time 0.00
1.Y1：850.0 Speed：90 Delay time：0.00
2.X1：400.0 Speed：90 Delay time：0.00
3.Y2：850.0 Speed：90 Delay time：0.00
4.X2：400.0 Speed：90 Delay time：0.00
5.Sucker1 On Delay time：0.00
6.X1：0.0 Speed：90 Delay time：0.35
7.Y1：0.0 Speed：90 Delay time：0.00
8.X2：0.0 Speed：90 Delay time：0.35
9.Y2：0.0 Speed：90 Delay time：0.00
10.Sucker1 Begin-cut
11.Lock Mold On Delay time：0.00
12. Horizontal posture Delay time：0.00
13.Z：1000.0 Speed：90 Delay time：0.00
14.Y1：800.0 Speed：90 Delay time：0.00
15.Y2：800.0 Speed：90 Delay time：0.00
16.Sucker1 OFF Delay time：0.00
17.Y1：0.0 Speed：90 Delay time：0.25

18.Y2：0.0　Speed：90　Delay time：0.25
19.Conveyor On　Times：1　Action time：3.00
20.Z：0.0　Speed：90　Delay time：0.00
21.Vertical posture　Delay time：0.00
22.Mold End　Delay time：0.00

5.Function Configures

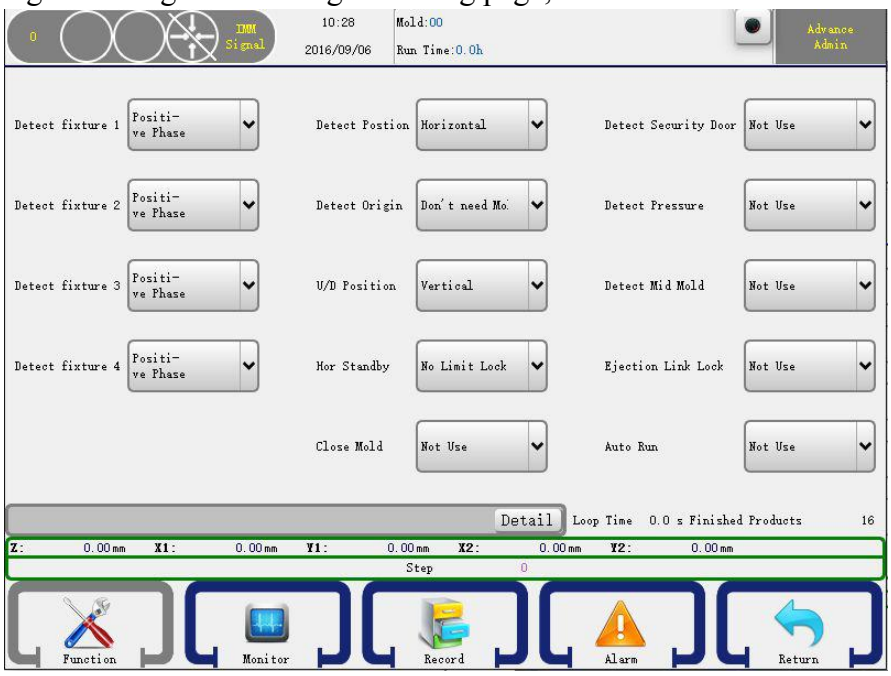
In the stop status and then click the function menu item on the main menu bar to go into function configures page. As shown below:



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**.

5.1 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.

Reverse: Check if the fixture input signal is off.

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: Must be horizontal pose when origin.

Vertical: Must be vertical pose when origin.

No Limit: Do not detect.

Horizontal:

Limited : Mold locked until arm goes up horizontal.

Mold locked allowed: Arm up to be mold locked.

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: Alarm 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 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 ejection permit signal.

No Use: the ejection permit signal is always on.

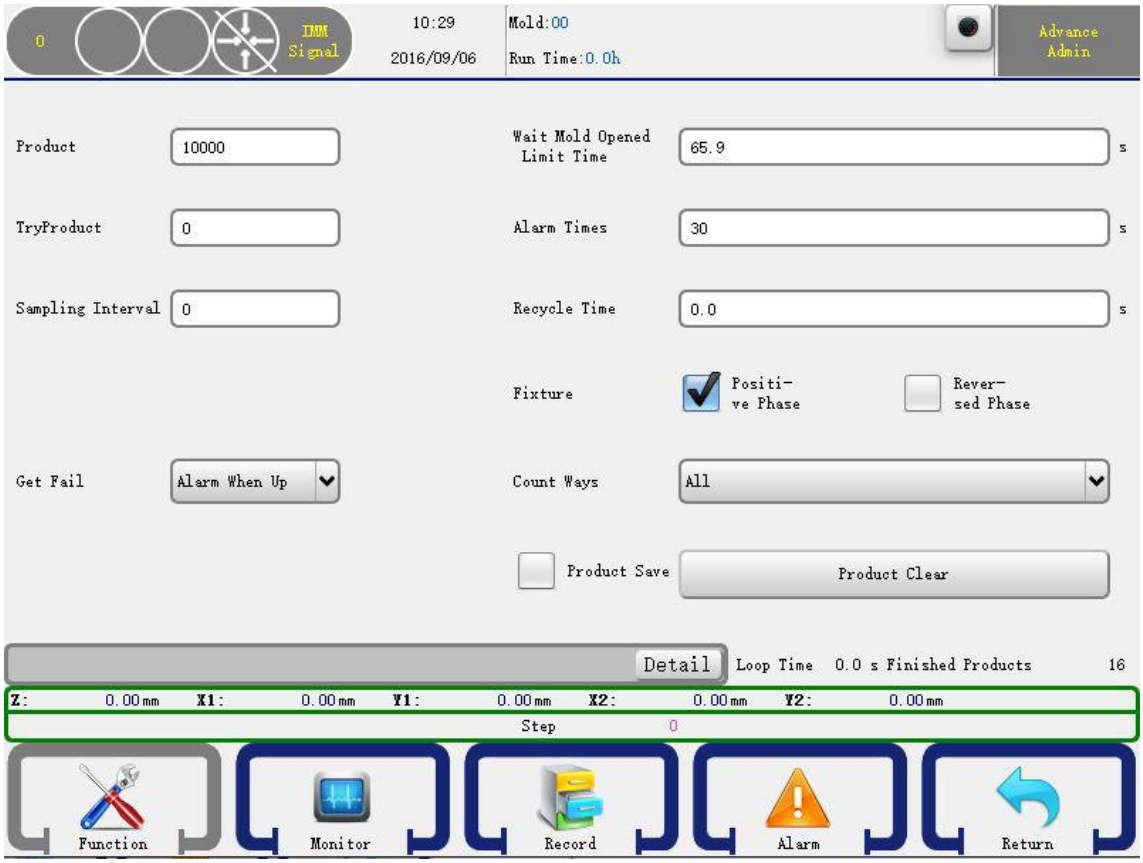
Automatic:

Use: The robot will control check the Auto signal from Injection Molding Machine.

Not Use: Not check the signal.

5.2 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.

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

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

Failed extract:

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

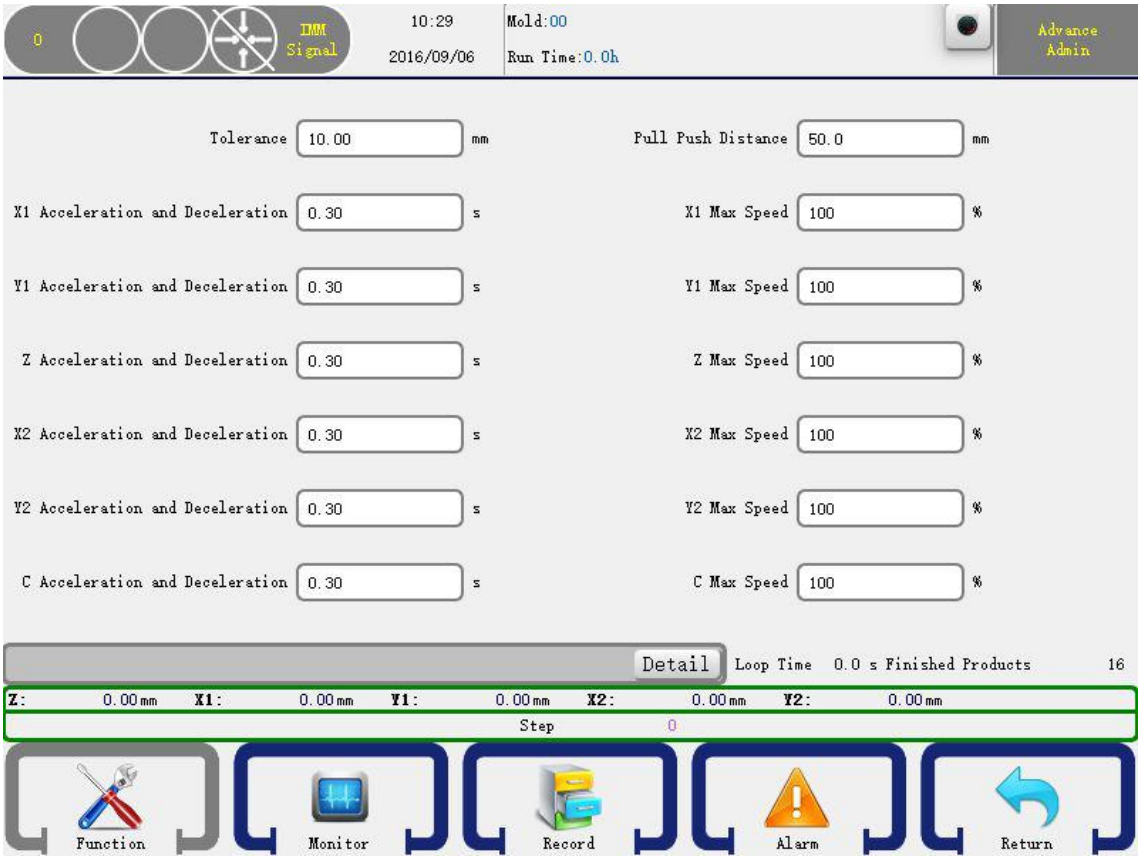
Alarm: Alarm when checked the failure signal.

Alarm Times: The time of alarm.

Product Clear: Clear the finished product count.

5.3 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.

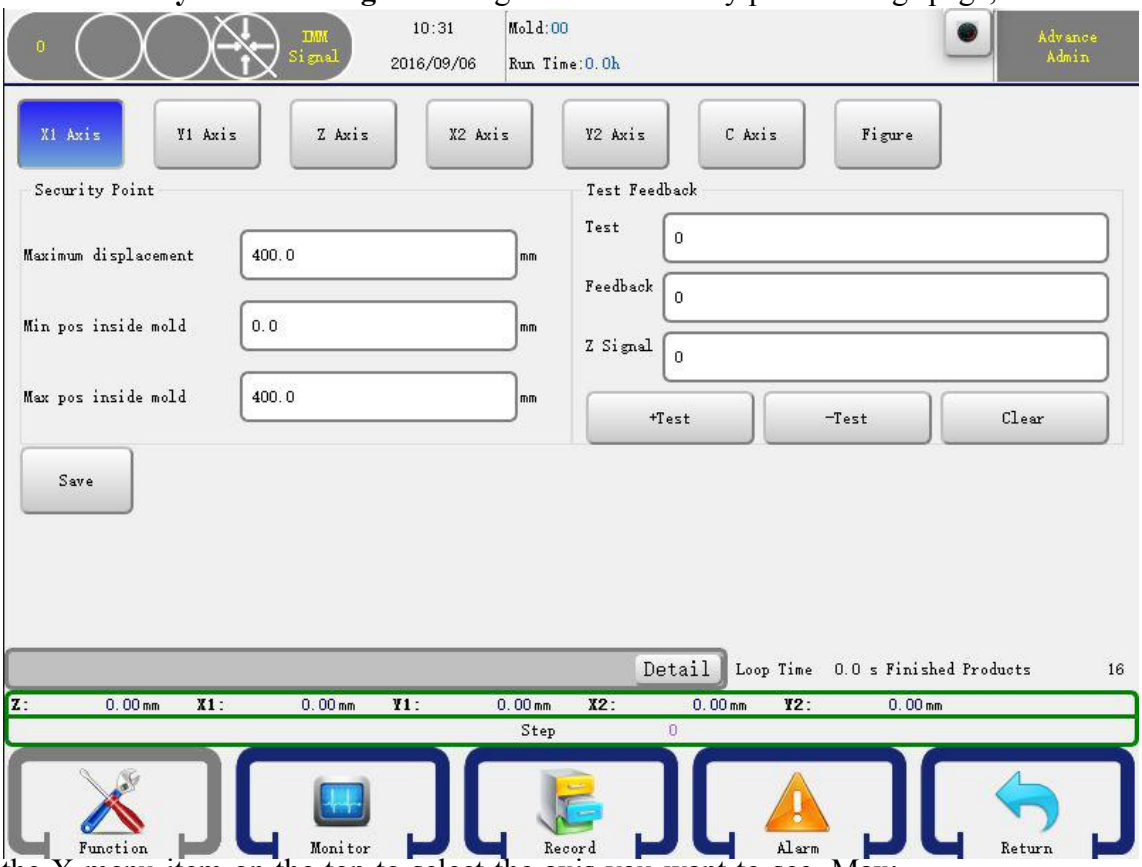
Safety Zone: A safety zone between arms and sub arms.

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.

5.4 Security Point Settings

Click the **Security Point Settings** item to go into the security point settings page, as shown below:



1. Press the X menu item on the top to select the axis you want to see. Max:

The max for axis to move.

Maximum inside: The maximum position that the axis could move in machine.

Minimum inside: The minimum position that the axis could move in machine.

+Test: Test the servo positive pulse.

-Test : Test the servo reverse pulse.

Clear: Clear the test data.

When you have done, just click the set in button to confirm.

2. Press the Y1 menu item on the top to select the axis you want to see.

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

Distance back to origin: Y1's position before OPR operation

Press the Y1 menu item on the top to select the axis you want to see.

3. Press the Z menu item on the top to select the axis you want to see.

Safety zone inside:Setting a number which is safety zone inside of machine.

Safety zone outside: A safety distance number out of the machine.

4. Press the C menu item on the top to select the axis you want to see.

Transverse safe range: A safety angle when move towards transverse.

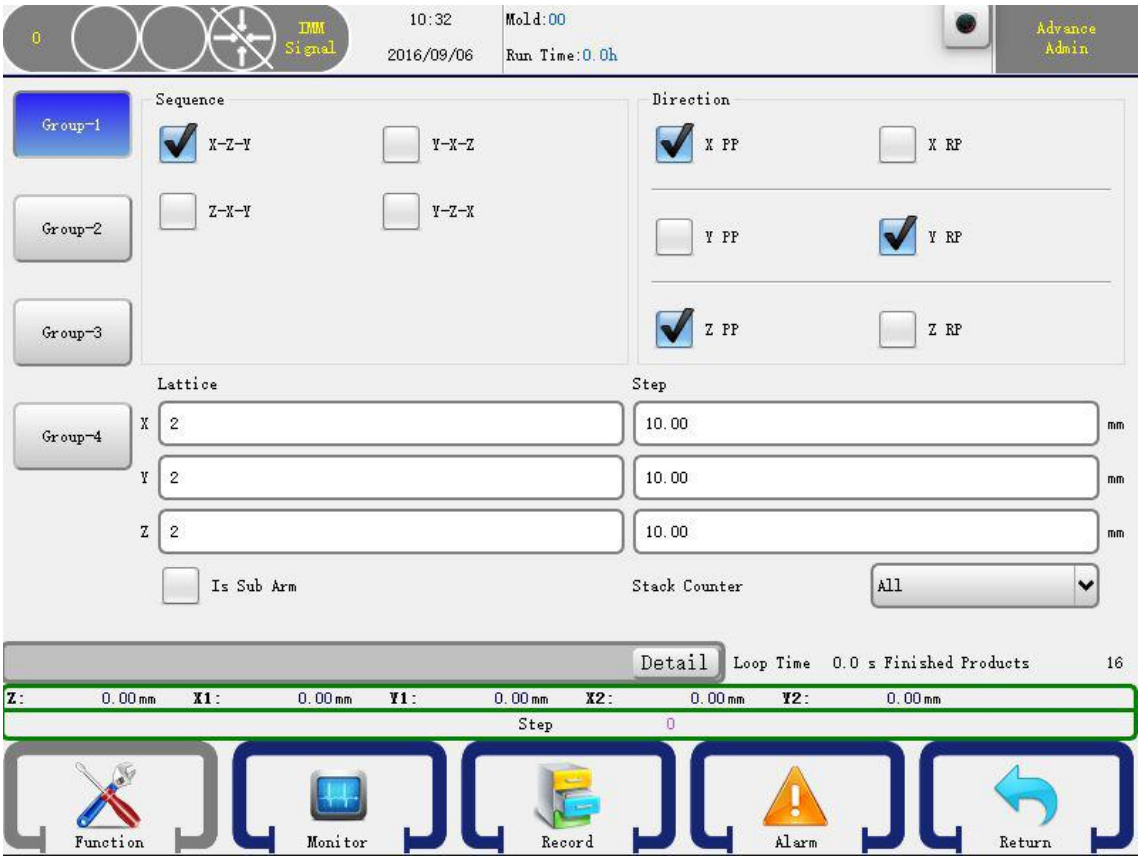
5. Press the Structure menu item on the top. As shown below:

Min increase inside of X axis: Min position for X when arm rise in machine.
Max increase inside of X axis: Max position for X when arm rise.
Min increase outside of Y axis: Min position for Y when arm rise out of machine.
Max increase outside of Y axis: Max position for Y when arm rise.

Attention: You can modify the X's minimum, maximum position in the mechanical parameters page X axis parameter field.

5.5 Stack Settings

Click the **Stack Settings** item to go into the stack settings page, as shown below:



There four group stack setting in our system.

Sequence: Select the stack sequence

X RP: If checked, the robot will stack reverse on the X axis.

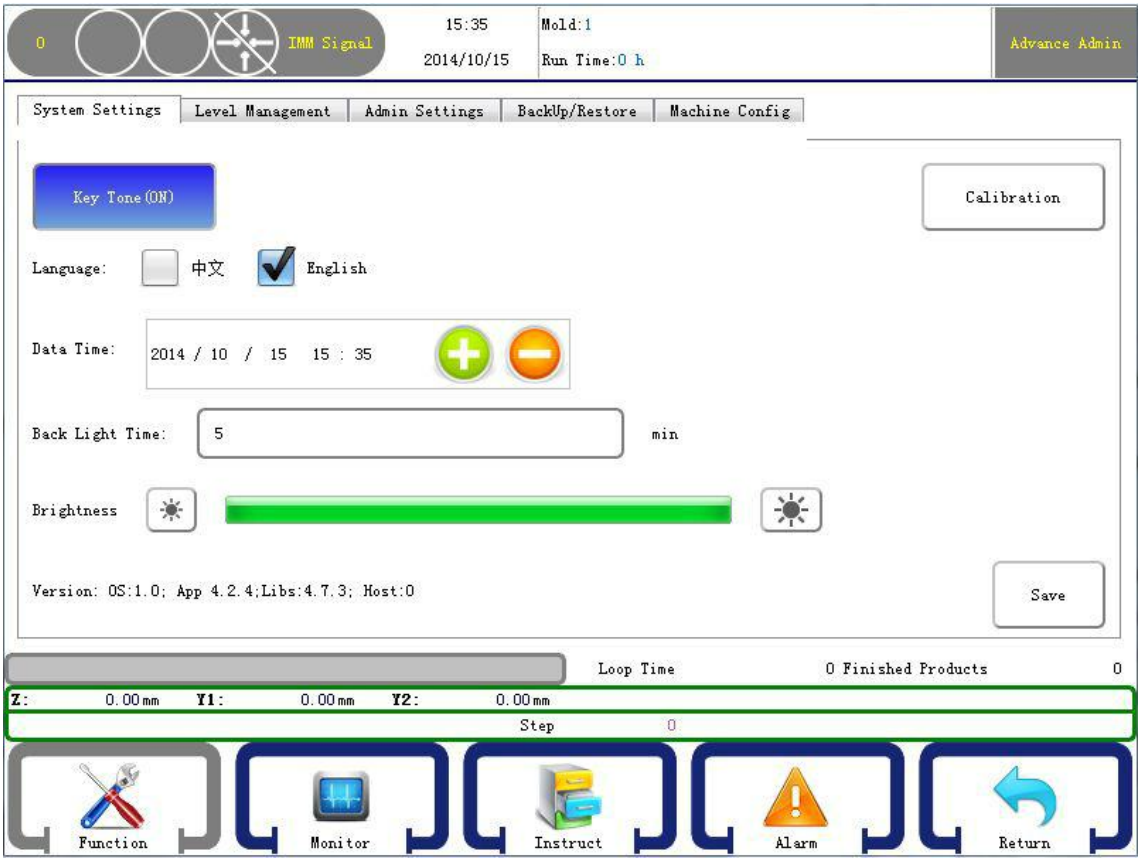
Y RP: If checked, the robot will stack reverse on the Y axis.

Z RP: If checked, the robot will stack reverse on the Z axis.

5.6 System Settings

5.6.1 Setting

Click the **System Settings** item to go into the system settings page, as shown below:



Key Tone: When press the keyboard will beep if on.

Language: Select the Interface language.

Data Time: Set the current data time.

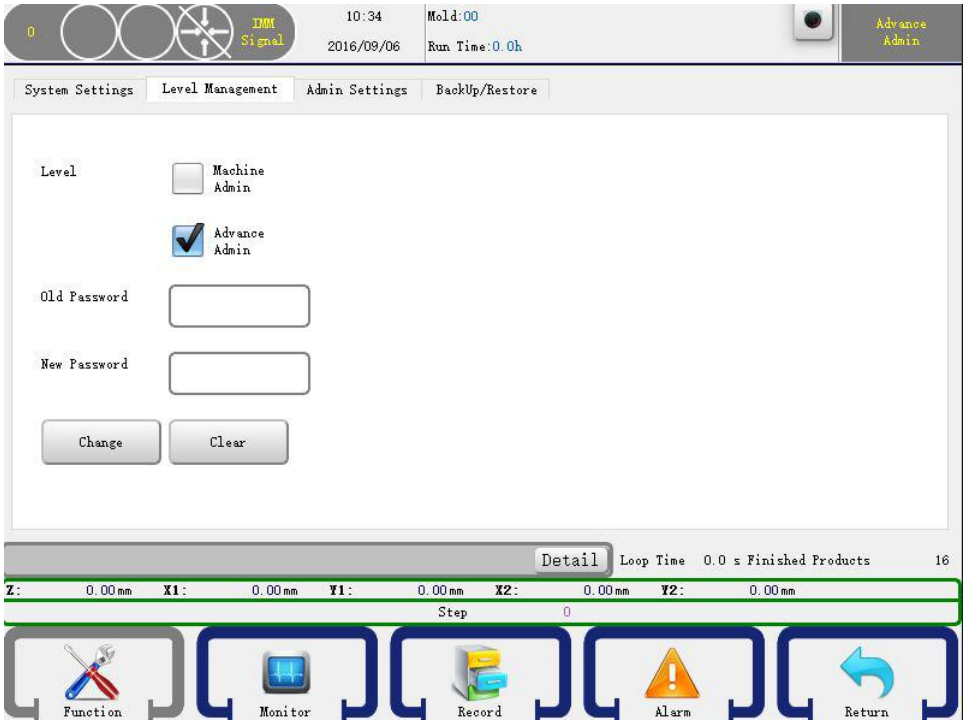
Back Light Time: If no action in the setting time, the back light will turn off.

Version: The version for the system

When you have done, just click the save to confirm.

5.6.2 Level Management

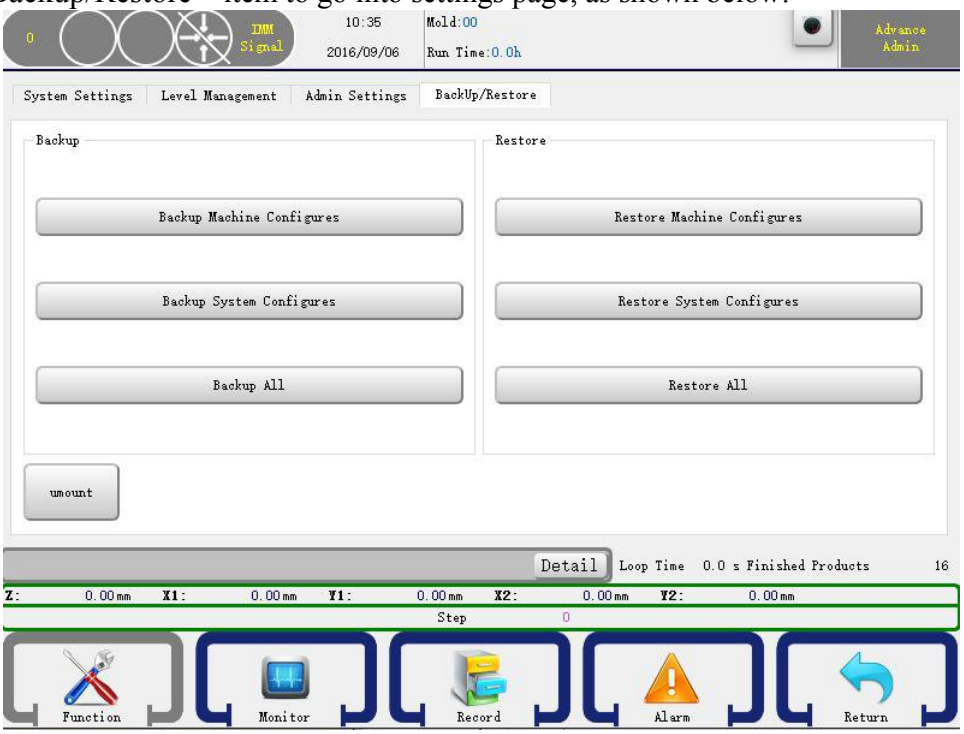
Click the **Level Management** item to go into settings page, as shown below:



Level management can change the basic information while administer can modify any parameters. Enter the old password and then input a new one, the moment you confirmed, you change the password.

5.6.3 Backup/Restore

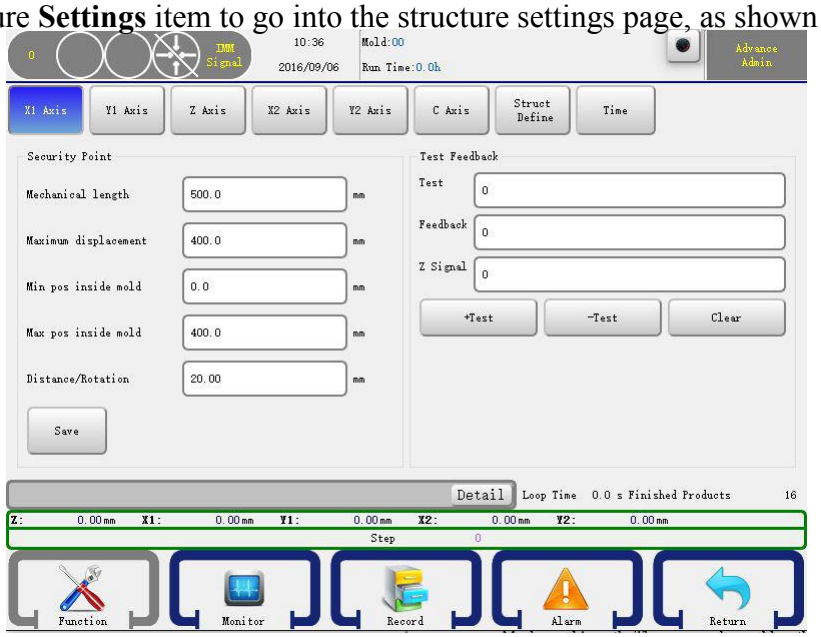
Click the Backup/Restore item to go into settings page, as shown below:



You can use USB to backup or restore “Machine parameters”, ”System Parameters” and “mold parameter” or select all to backup/restore.

5.7 Structure Settings

Click the Structure **Settings** item to go into the structure settings page, as shown below:



Mechanical Length: The axis mechanical length.

Distance/Rotation: The distance of one rotation of the servo.

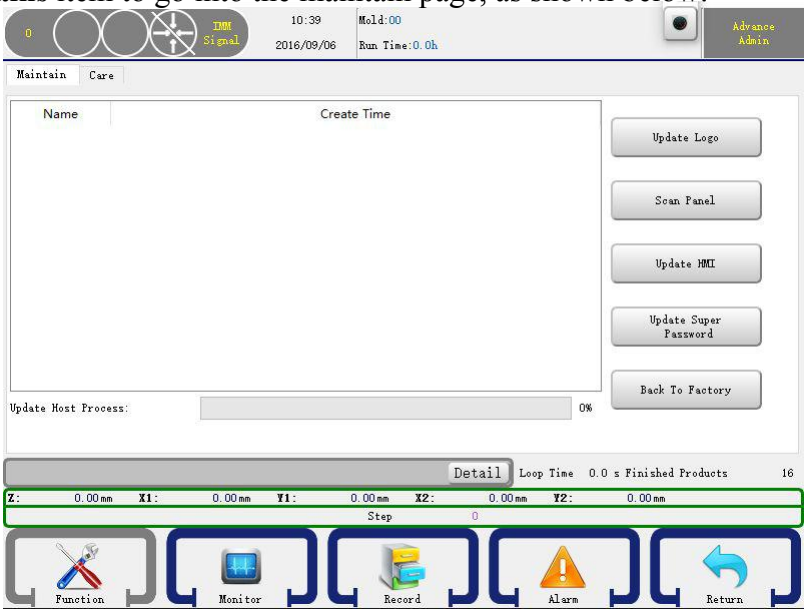
You can also set other parameters as 5.4 please press the save button to confirm your change.

WARING: Structure Define may cause damage to the machine and personal injury!

Please contact the manufacturer

5.8 Maintains

Click the **Maintains** item to go into the maintain page, as shown below:

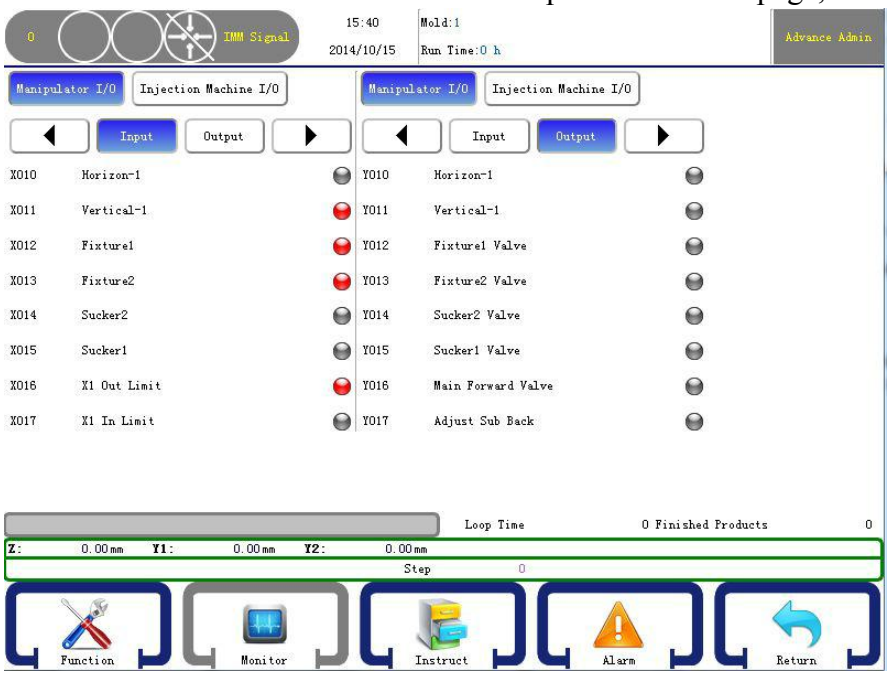


You can update the control panel system by a USB. Put the system update packet to a U disk. Click the Refresh button and wait for a while the page will show the system version if it can check the system update packet from the disk. If it can't , just press the refresh button again or use another U disk. If it check the system update packet, just click the Update button to start update system. After finish will show a message and the system will restart and then you can unplug-in your U disk.

6.I/O Monitor and Alarm History

6.1 I/O Monitor

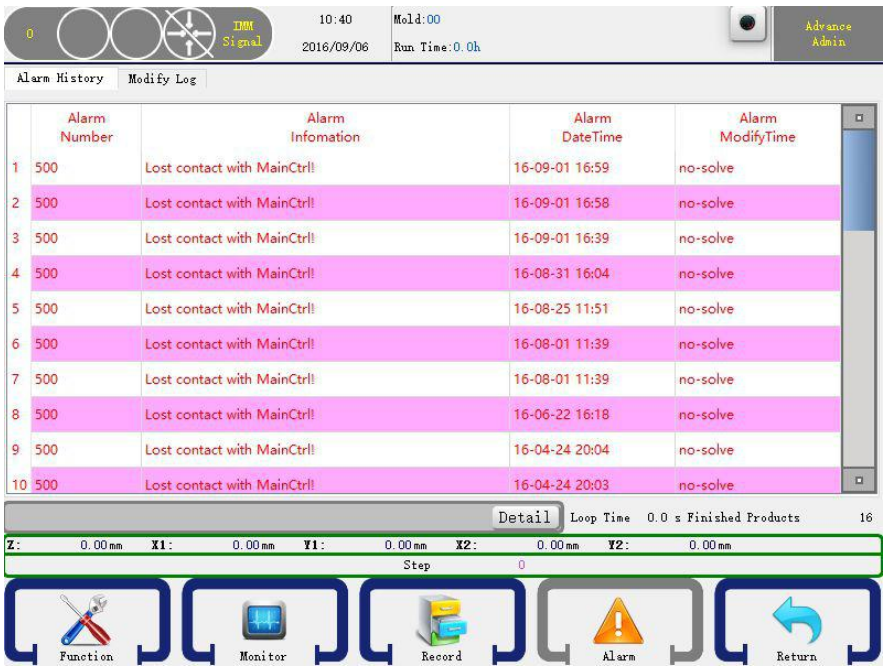
Click the Monitor menu item in the main menu bar will open the monitor page, as shown below：



The left side and the right side are independent. You can view the input and output signal in the same time. Click the Injection Machine I/O button will open the IMM signal monitor.

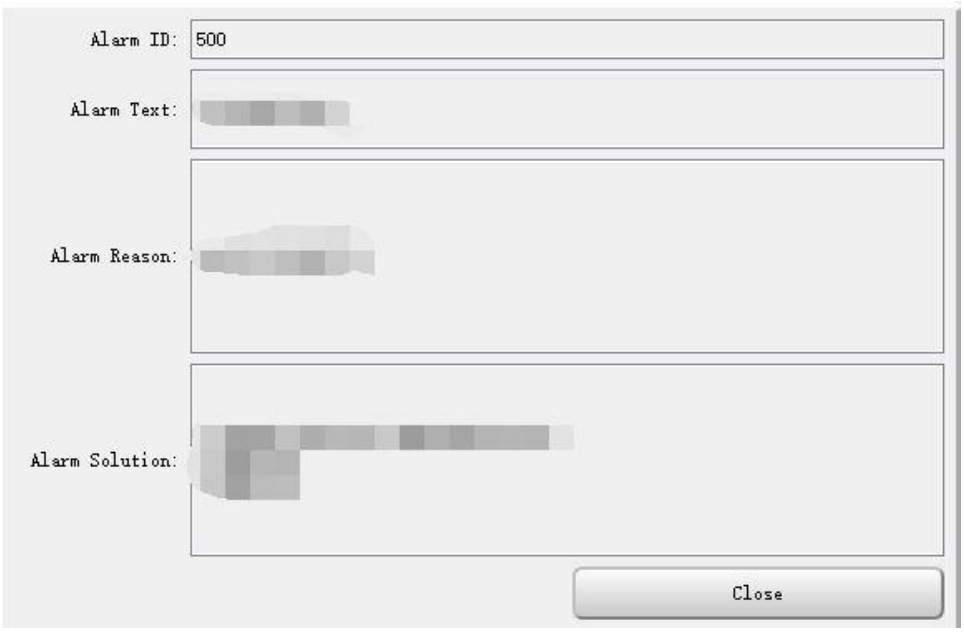
6.2 Alarm History

Click the Alarm menu item in the main menu bar will open the alarm history page, as shown below：

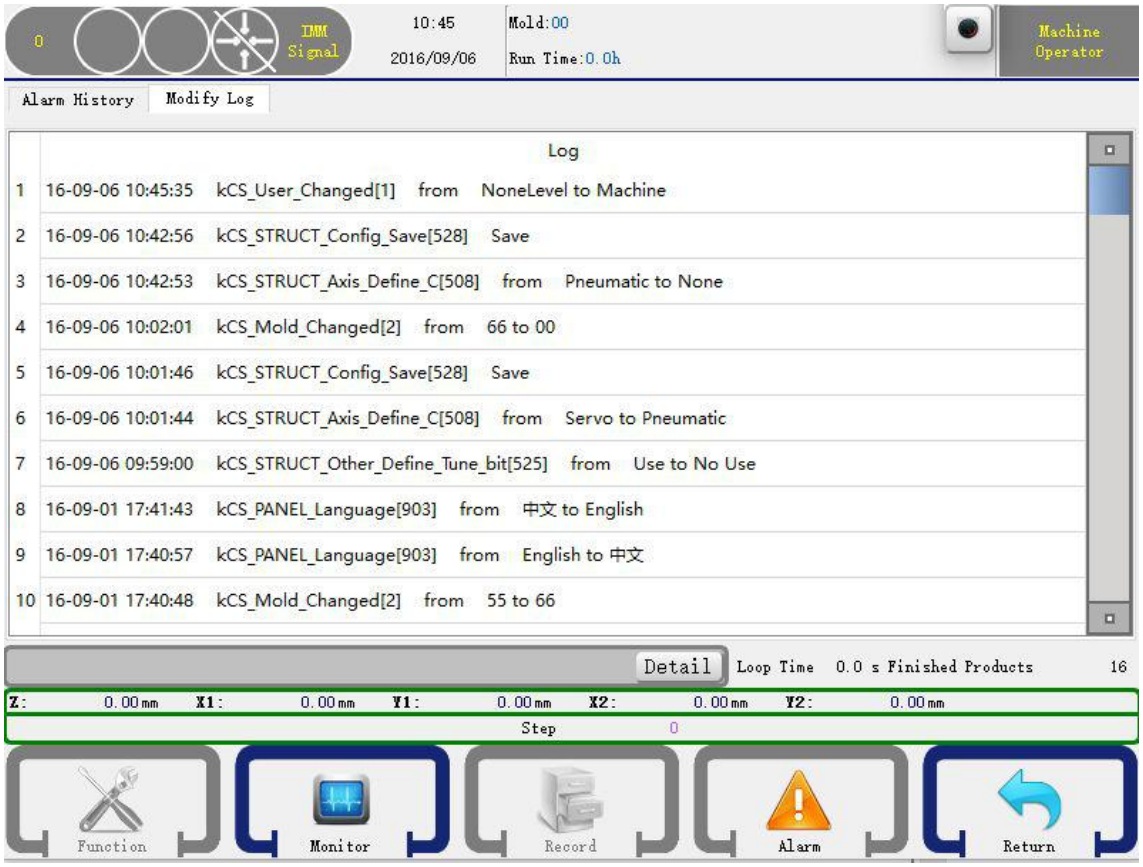


The top 50 alarm records will show in this page.

If the machine has a alarm,click the “detail” button.



6.3 Modify Log



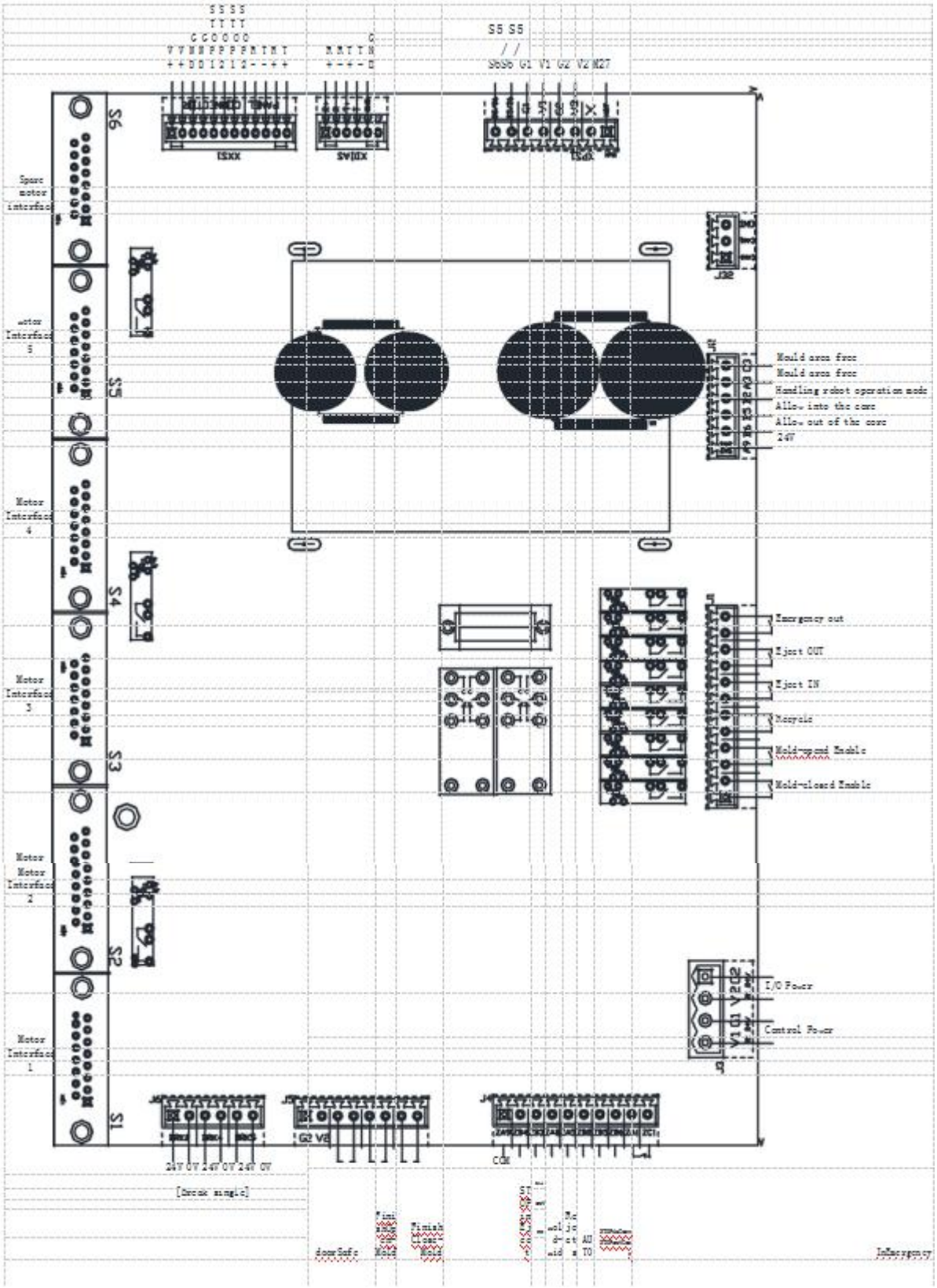
6.4 Alarm Information

Code	**Alarm Information**	**Alarm Reason**
1000	Mid-mold signal is off when Arm descend	The detecting mid-mold signal is enabled but Mid-mold signal is off when Arm descend.
1001	Mold Opened signal is off when Arm descend	The mold-opened signal is off when Arm descend
1002	Safety door is opened when Arm descend	Safety door is opened when Arm descend
1003	Vertical and horizontal signal is both on.	Vertical and horizontal signal is both on.
1005	Mold Opened signal is off when Arm descend inside mold	Mold Opened signal is off when Arm descend inside mold
1006	Position is horizontal when Arm descend inside mold	Position is horizontal when Arm descend inside mold
1007	Arm descend inside mold but position is not inside Z in security zone.	The origin signal is checked but z axis position is out of z axis security zone when arm down.
1008	Arm descend inside outer but position is not inside Z out security zone	The outside security zone signal is checked but z axis position is not in the security zone when arm down.
1009	Can not check the security zone signal when Arm descend	Can not check the security zone signal when Arm descend
1105	Sub upper limit is on after Sub Arm descended	Sub upper limit is on after Sub Arm descended
1122	It's too fast when Main Arm ascend	It's too fast when Main Arm ascend.
1123	It's too fast when Sub Arm ascend	It's too fast when Sub Arm ascend.
1160	Can not check the main upper limit when position changing	Z axis is inside the security zone but can not check the main upper limit when position changing.
1162	Mold-opened signal is off when position changing	Mold-opened signal is off when position changing.
1163	horizontal limit is off after position change to horizon	The horizontal limit is off after position change to horizon.
1164	Vertical limit is off after position change to vertical	Vertical limit is off after position change to vertical
1184	The position is not the same with the instruction when Traverse out	The position is not the same with the instruction when Traverse out.
1185	Mold-opened signal is off when Traverse in	Mold-opened signal is off when Traverse in.
1186	Main upper limit is off when Traverse in the inside dangerous zone	Main upper limit is off when Traverse in the inside dangerous zone
1187	Sub upper limit is off when Traverse in the inside dangerous zone	Sub upper limit is off when Traverse in the inside dangerous zone.
1189	Main upper limit is not both on when	Z axis traverse from outside security zone to inside

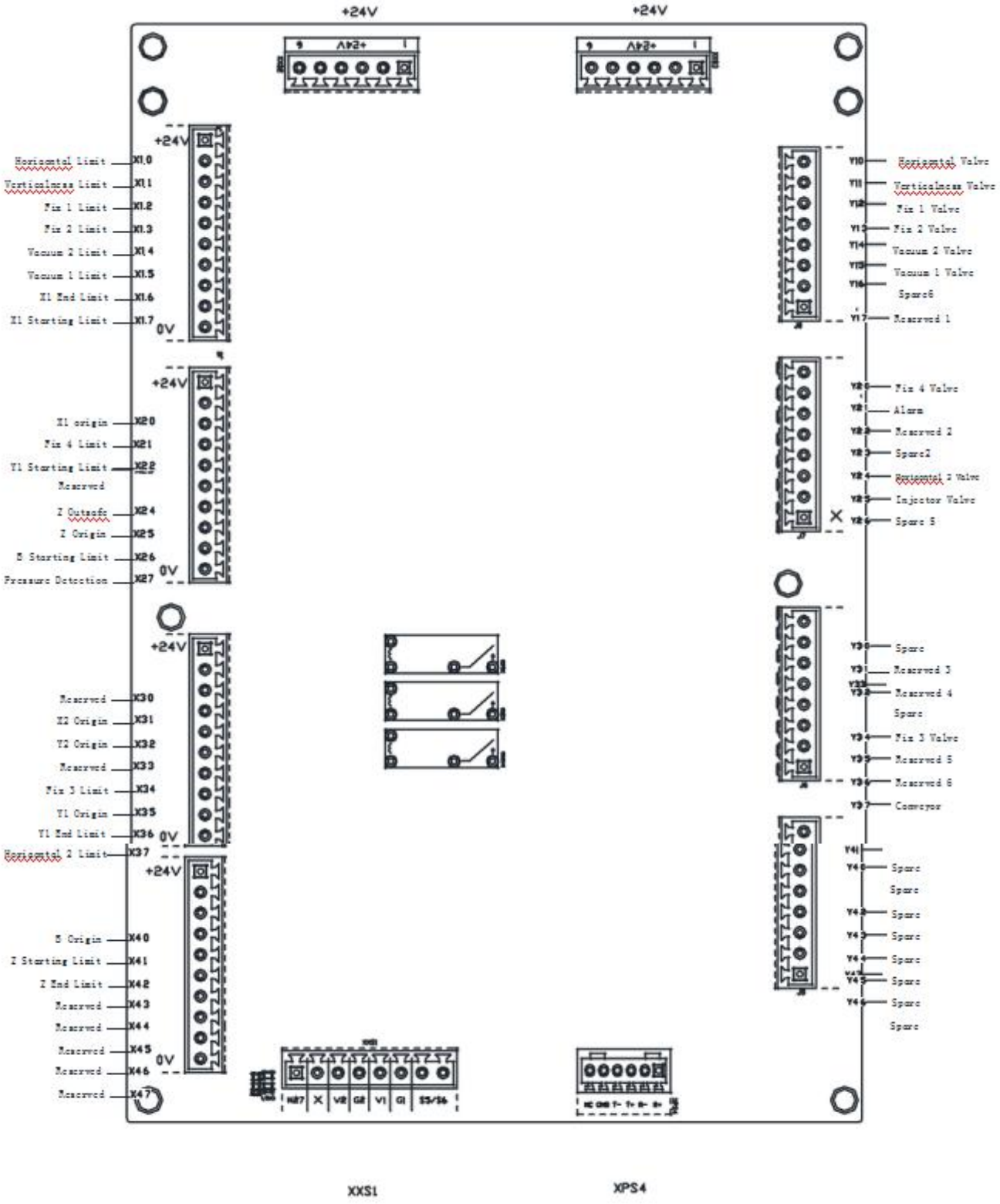
	traverse in to out	security zone, main arm upper limit is off.
1190	Main upper limit is not both on when	Z axis traverse from inside security zone to outside
	Traverse out to in	security zone, main arm upper limit is off
1192	Current position is less than the permit security position	Current position is less than the permit security position
1193	Current position is larger than the permit security position	Current position is larger than the permit security position
1200	Confirmation signal's error with Fixture 1 ON	Signal checking error after Fixture 1 ON
1201	Confirmation signal's error with Fixture 1 OFF	Signal checking error after Fixture 1 OFF
1202	Confirmation signal's error with Fixture 2 ON	Signal checking error after Fixture 2 ON
1203	Confirmation signal's error with Fixture 1 OFF	Signal checking error after Fixture 2 OFF
1204	Confirmation signal's error with Fixture 3 ON	Signal checking error after Fixture 3 ON
1205	Confirmation signal's error with Fixture 3 OFF	Signal checking error after Fixture 3 OFF
1206	Confirmation signal's error with Fixture 4 ON	Signal checking error after Fixture 4 ON
1207	Confirmation signal's error with Fixture 4 OFF	Signal checking error after Fixture 4 OFF
1208	Confirmation signal's error with Sucker 1 ON	Signal checking error after Sucker 1 ON
1209	Confirmation signal's error with Sucker 1 OFF	Signal checking error after Sucker 1 OFF
1210	Confirmation signal's error with Sucker 2 ON	Signal checking error after Sucker 2 ON
1211	Confirmation signal's error with Sucker 2 OFF	Signal checking error after Sucker 2 OFF
1306	Please check the standby point Fixture 1	Fixture 1 must be OFF when standby, Please check.
1307	Please check the standby point Fixture 2	Fixture 2 must be OFF when standby, Please check.
1308	Please check the standby point Fixture 3	Fixture 3 must be OFF when standby, Please check.
1309	Please check the standby point Fixture 4	Fixture 4 must be OFF when standby, Please check.
1310	Please check the standby point Sucker 1	Sucker 1 must be OFF when standby, Please check.
1311	Please check the standby point Sucker 2	Sucker 2 must be OFF when standby, Please check.
1400	Y-axis is not detected limit when rise	Main arm isn't in the up position in Auto, you should make it origin manually.
1403	Y2-axis is not detected limit when rise	Sub arm isn't in the up position in Auto, you should make it origin manually.

7.Board port definition

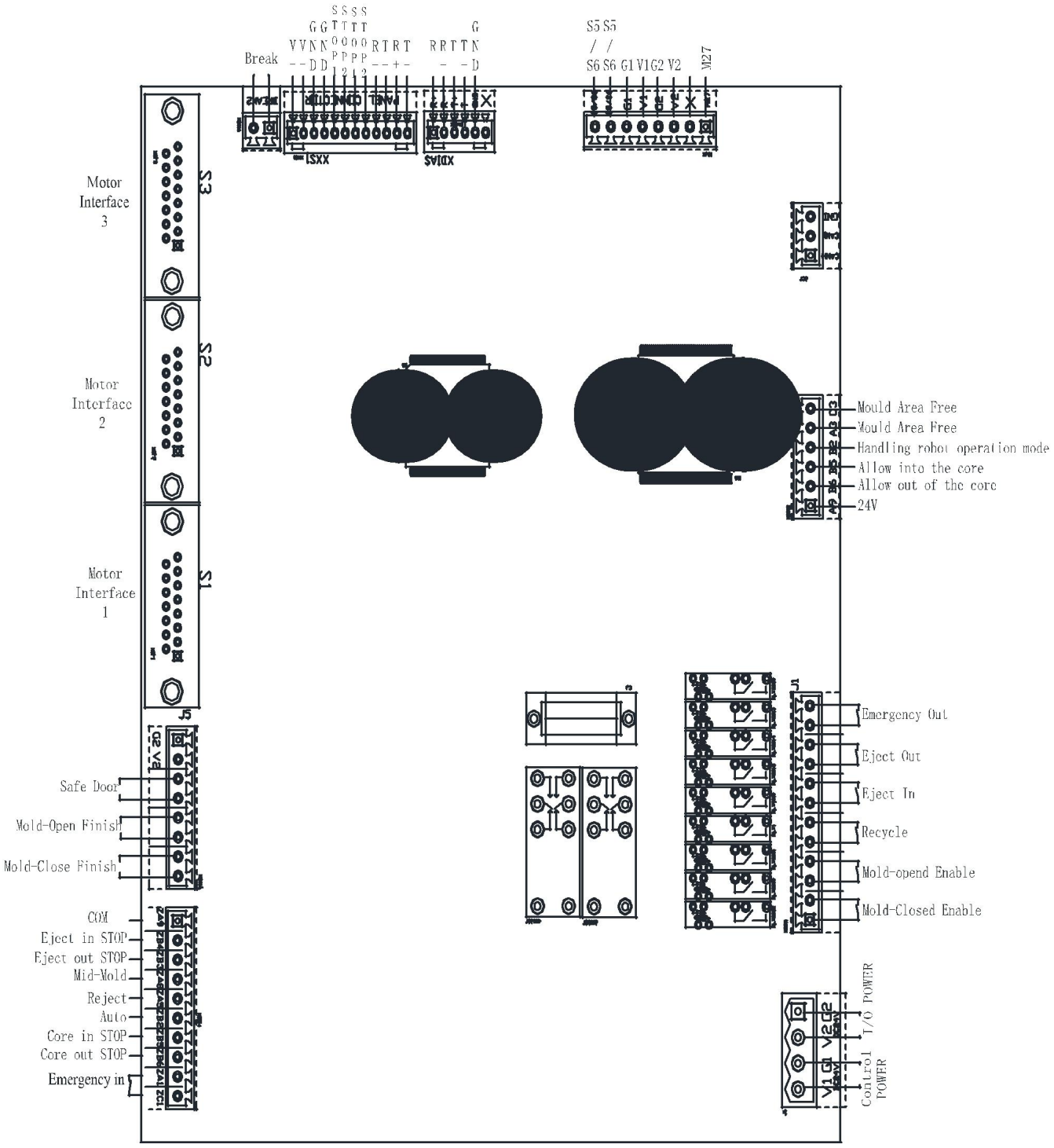
7.1 HC-S5 Main Board



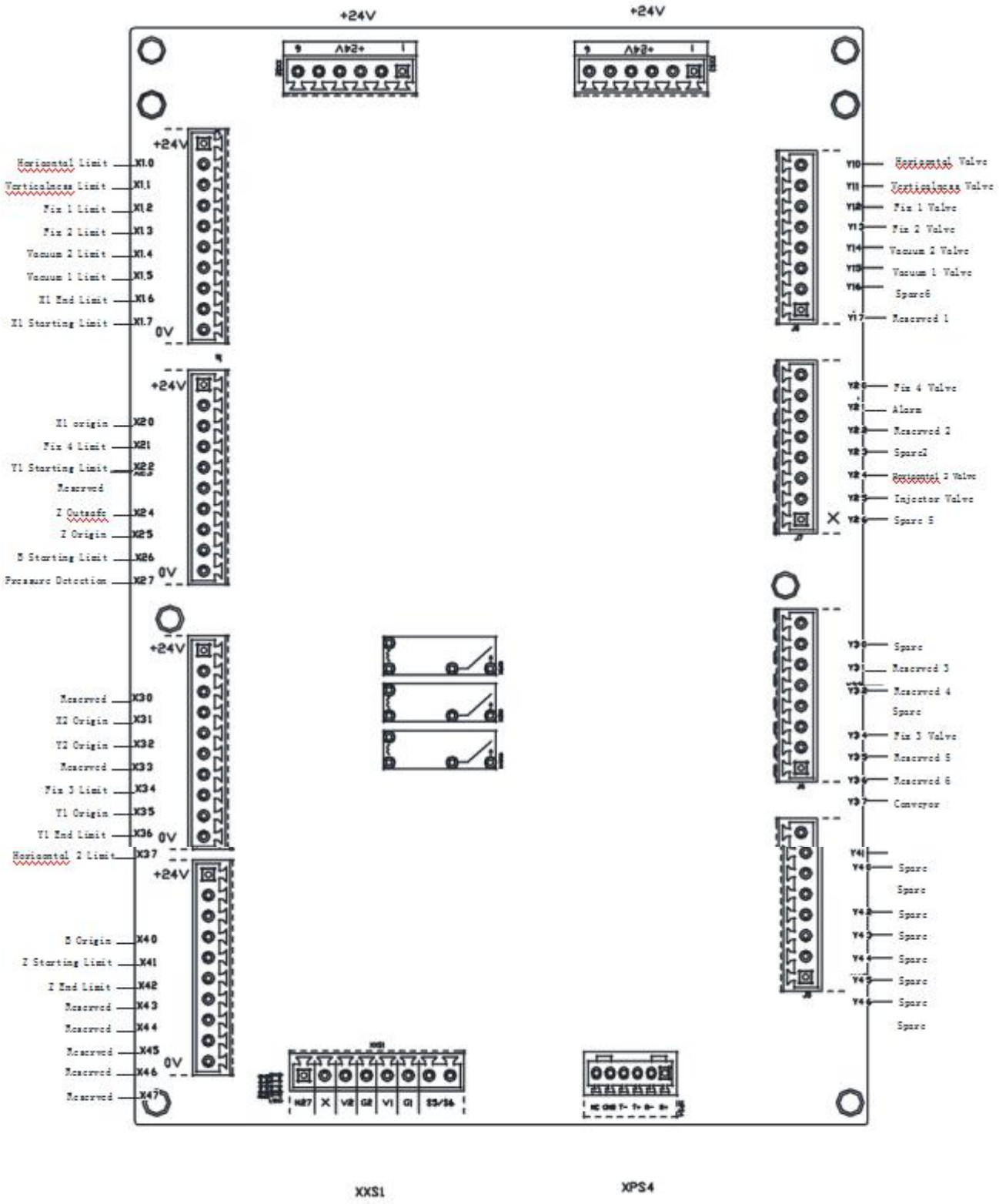
7.2 HC-S5 I/O Board



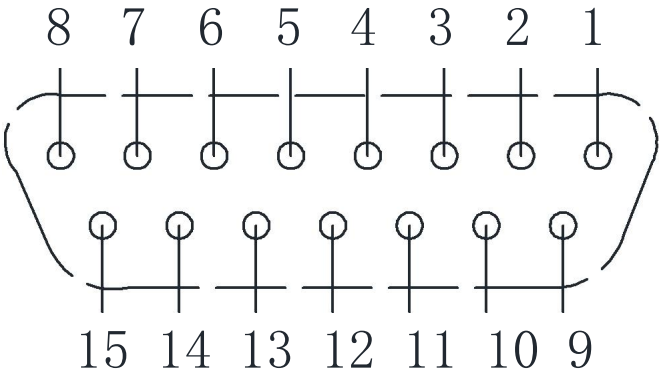
7.3 HC-S3 Main Board



7.4 HC-S3 I/O Board



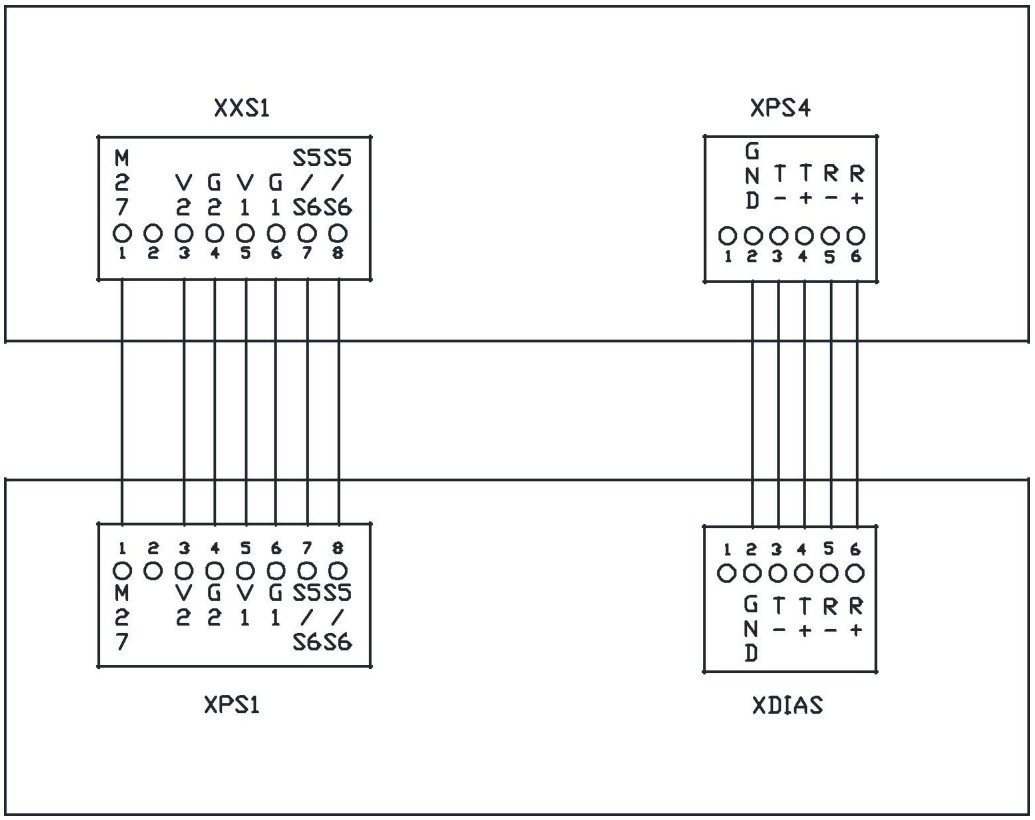
7.5 Servo connector



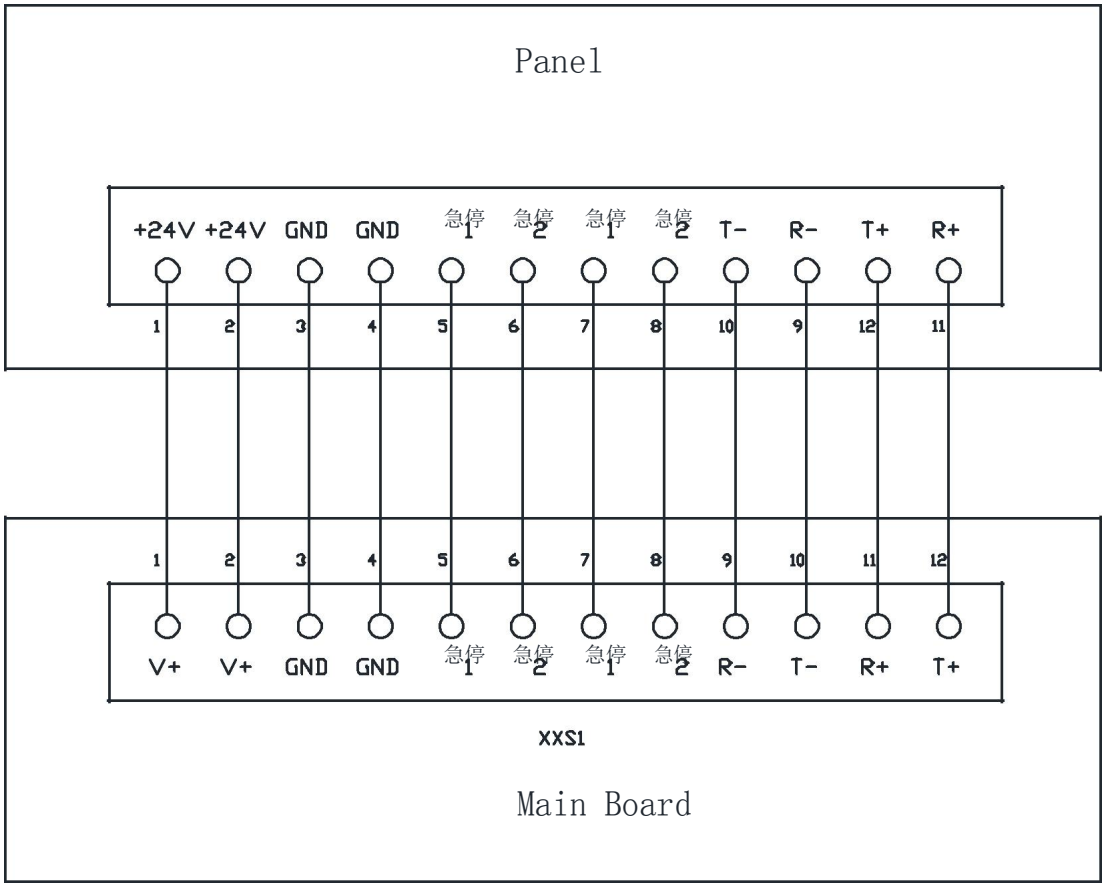
Pin No.	Terminal definition	Pin No.	Terminal definition
1	+24V	9	0V
2	OA+	10	P+
3	OA-	11	P-
4	OB+	12	BRAKE
5	OB-	13	N+
6	OZ+	14	N-
7	OZ-	15	ALM
8	SON		

8.Wiring Diagram

8.1 Main board to I/O Board



8.2 Main board to Panel



8.3 Main board to Servo

Please choose position mode for servo system. The command pulse type is forward and reverse pulses. The maximum frequency is 500Kpps.

8.3.1 Connect to Panasonic A5

A5 Servo settings

No.	name	set
Pr0.01	Control mode	0
Pr0.05	Input pulse select	1
Pr0.06	Input pulse positive	0
Pr0.07	Input pulse mode	1
Pr0.08	Pulses of molter circle	10000
Pr0.11	Pulse out for circle	2500

Main Board			Panasonic A4/A5		
pin	define		pin	define	
1	P+	Positive pulse	3	PULS1	Pulse 1 input
2	P-		4	PULS2	
3	S+	Negative pulse	5	SIGN1	Pulse 2 input
4	S-		6	SIGN2	
5	A+	Feedback pulse phase A	21	OA+	Phase A output
6	A-		22	OA-	
7	B+	Feedback pulse phase B	48	OB+	Phase B output
8	B-		49	OB-	
9	Z+	Feedback pulse phase Z	23	OZ+	Phase Z output
10	Z-		24	OZ-	
13	GND	Signal ground	13	GND	Signal ground
26	+24V	+24V power supply	7	COM+	External power+
25	0V	power ground	41	COM-	External power-
			36	ALM-	alarm
15	ALRM	alarm	37	ALM+	
23	SON	Servo-on	29	SRV-ON	Servo-on

8.3.2 Connect to MITSUBISHI MR-E

MR-E Servo settings

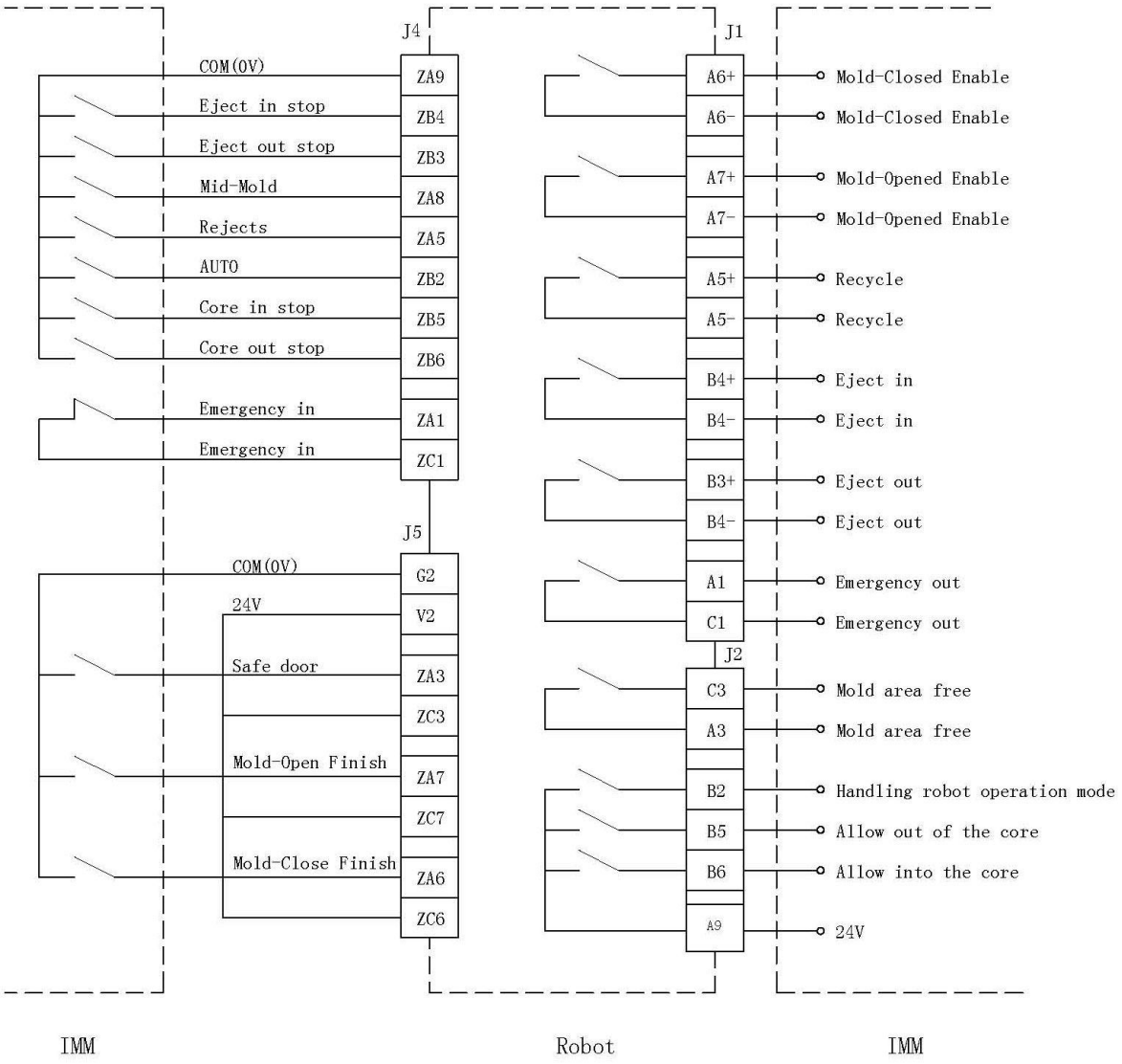
(For 131072pulses/cycle molter)

No	Name	Set
No.0	Control mode	***0
No.1	Brake selection	0012
No.3	numerator	14
No.4	Denominator	1
No.21	Pulse mode select	0000
No.27	Pulse out	14
No.54	Pulse out	1***

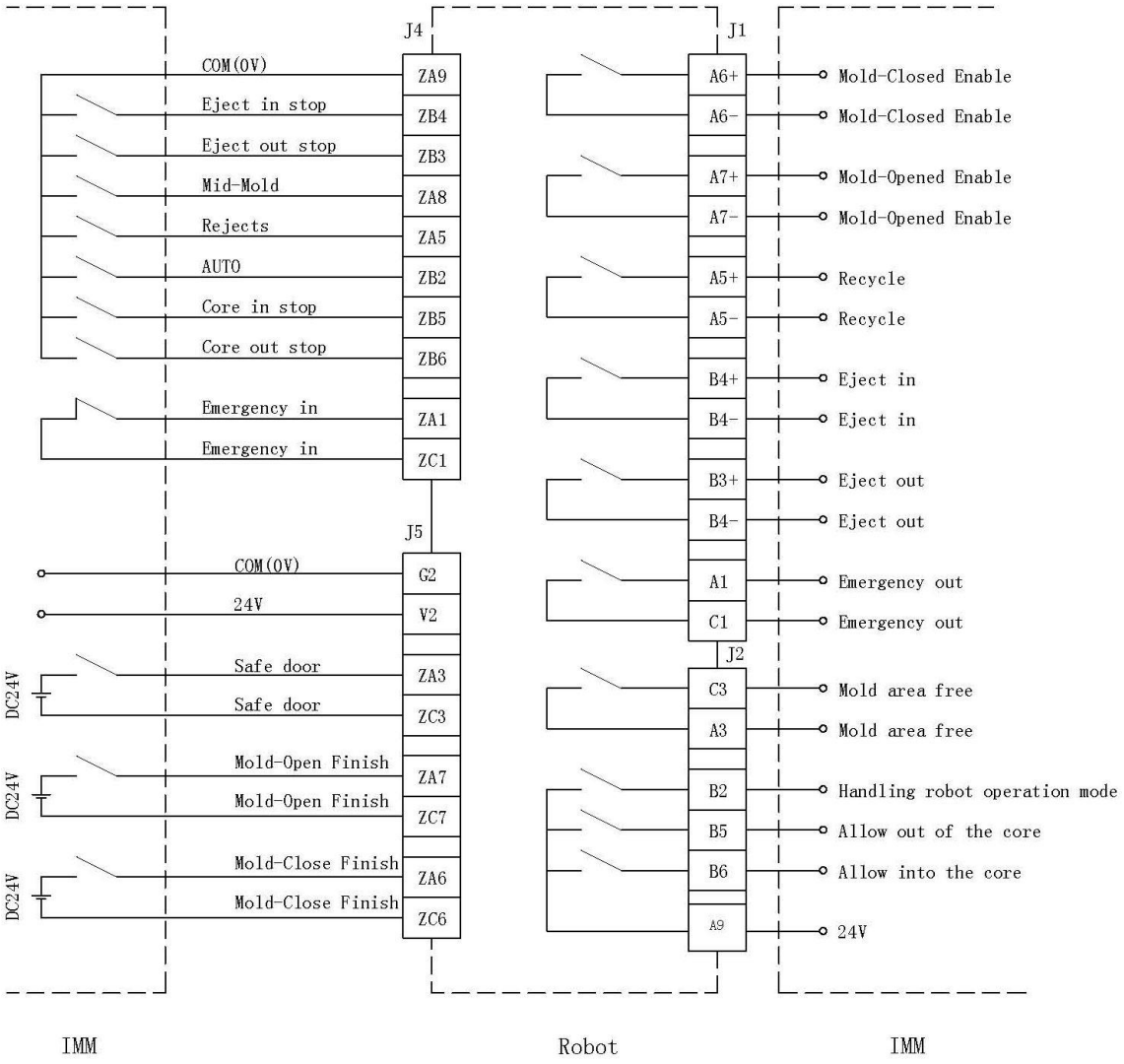
Main Board			MISUBISHI MR-E		
pin	define		pin	define	
1	P+	Positive pulse	23	PP	Pulse 1 input
2	P-		22	PG	
3	S+	Negative pulse	25	NP	Pulse 2 input
4	S-		24	NG	
5	A+	Feedback pulse phase A	15	LA	Phase A output
6	A-		16	LAR	
7	B+	Feedback pulse phase B	17	LB	Phase B output
8	B-		18	LBR	
9	Z+	Feedback pulse phase Z	19	LZ	Phase Z output
10	Z-		20	LZR	
13	GND	Signal ground	14	LG	Logic ground
26	+24V	+24V power supply	1	VIN	DC24V power+
25	0V	power ground	13	SG	DC24V power-
15	ALRM	Alarm	9	ALM	alarm
23	SON	Servo-on	4	SON	Servo-on

8.4 Robot connect to IMM

Mold-Open Finis、Safe door and Mold-Close Finish signal to switching signal input.

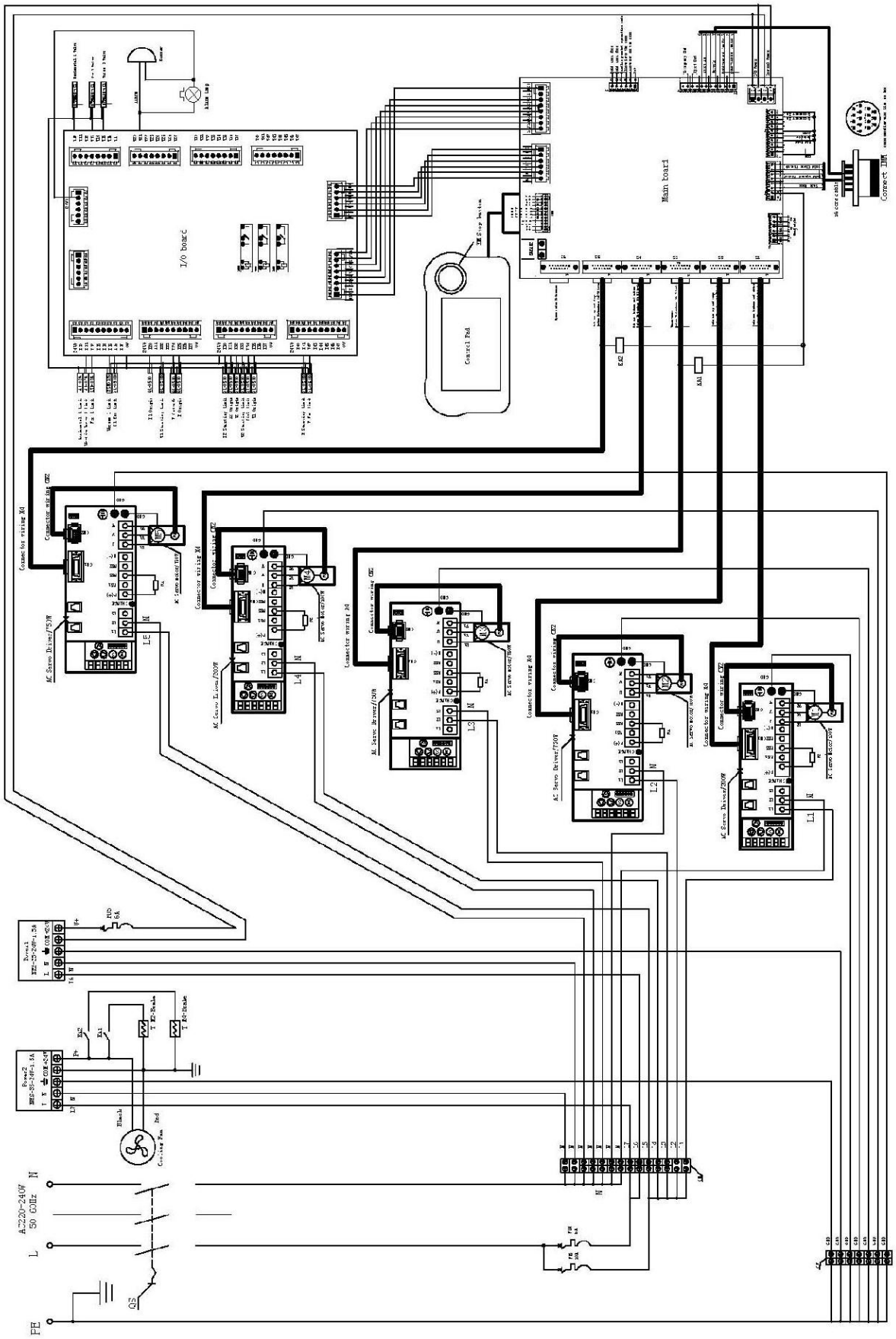


Mold-Open Finis、Safe door and Mold-Close Finish signal to voltage signal input.

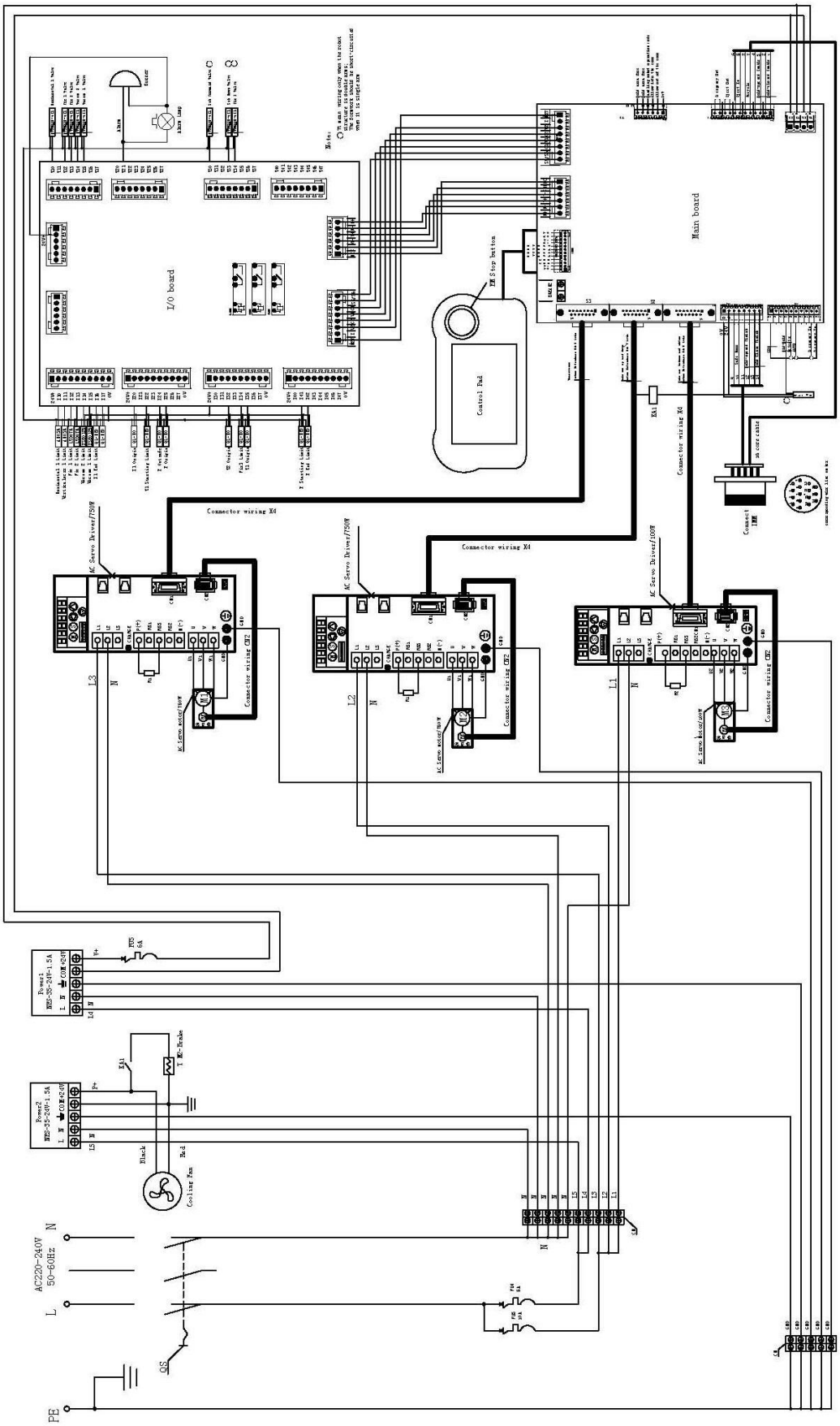


9.Circuit wiring diagram

9.1 S5 Circuit wiring diagram



9.2 S3 Circuit wiring diagram



Thanks for reading.
The information is subject to change WITHOUT notice while update.