SS3

Robot Manual

Date: August, 2024

Version: Ver.A

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1. General Description

 Please read through the manual carefully before installing and using the machine to avoid personal injury or machine damage due to improper operation.

For detailed instructions, it removes the covers or safety protectors in some illustrations of this manual when drawing the pictures. In practical operation, make sure to install the cover or safety protector to original position as per the requirement, and then operate the machine according to the instruction in the user manual.

The illustrations in this manual are representative samples, which may be different from the products you received.

The information in this manual is mainly the general description or characteristic that may not be completely consistent with the practical machine, or applicable due to product further development.

During system debugging and running, please set up relevant safety protectors. The Company will not be responsible for any damages caused by miss operation or disobeying the operation procedures.

1.1 All Robots Safety Regulations

1) The operator, maintainer and relevant personnel must read through the manual, and make sure to understand the contents of the manual.
2) The series of robot is designed for injection moulding machine (IMM) ONLY.
3) Any modification or altering against to the original design of the robot is not allowed.
4) Any improper installation and operation may result in injury to personnel and/or damage to equipment.
5) Please contact the manufacturer or your agent immediately if there is any problem with robot.
6) Please note that our robot must be cooperated with other safety device (i.e. safety door) in order to operate in normal condition.
7) Ensure all installations meet with safety requirements before operating.
8) Without the written agreement of the manufacturer, for any loss or injury

caused by improper modification or misuse of the rotor, the manufacturer will not be liable for any loss or human injury.

1.2 Safety Concerns

1) The maintenance, overhaul and etc., must be executed by professionally trained personnel.
2) Any unrelated personnel should keep away from robot working area while it is running. All electrical wiring must be completed by professionals, and in accordance with design of specifications and wiring instructions.
3) Use safety fence to indicate working area while installation.
4) For the safety operation, the hand controller should be placed outside the robot working area.
5) Ensure bolts and nuts are tightened to the right torque while installation.
6) Ensure there is no following matter with the compressed air: phosphate-containing oil, organic solvents, sulfite gas, chlorine, acids and stale compressor oil.
7) The air pressure should be kept at 6MPa ±0.1MPa while operation.
8) When robot is operating, it may have little vibration, please remove any on the top of robot.
9) Press EMERGENCY STOP button immediately when accident occurs.
10) Do not modify the robot structure and control box. Please contact manufacturer or your agent if any modification is needed.
11) Turn off power supply and compressed air before maintenance and adjustment. Also set up warming singles and safety fences.
12) Please use SHINI original parts if there is any replacement.
13) Our robots apply to all safety standards which are required.
14) Please read the user manual carefully as a safety guideline.
15) Unauthorized personnel must inform the relative supervisor, and understand all safety rules before entering robot working area.
16) All maintenance, operation, repair and service must be done by professional technicians.
17) Please order a new user manual from the manufacturer or your agent if the user manual is damaged. Safety must be the first consideration.

 Attention!

Product owner has the responsibility to ensure the operators, maintenance staff and relative staffs have read user manual thoroughly.

Attention!

Any modifications or other applications onto robot should obtain the written consent from the manufacturer, for safety purpose.

Attention!

Electricity system!

If not obey the safety recommendations and hazard signs or warning symbols stuck on the robot, it may result in electric shock to personnel.

The user and operator should ensure the safety standard requirementtothe robot was satisfied. We don't provide those safety equipments in our standard robot due to different situations and requirements owned by each user (except special equipment or which has been mentioned in this manual). Please acknowledge that the safety equipment must be installed prior to the testing and running of the robot, if such safety equipment is provided by user.

No.	Marks	Meaning
4.1		Don't touch!
4.2		Caution! Danger!

4.3		Danger! Electric Shock Risk!
5.4		Caution! Cause Injury!
4.5		Caution! High temperature!
4.6		No burning

1.2.1 Emergency Stop Button

The emergency stop button is at the upper right corner of controller.

When the emergency stop button was pressed, the robot will stop running immediately. To prevent the products falling down from the grippers (jigs) or suction cups (vacuum device) of the EOAT, the compressed air will not be turning off when the robot was in emergency stop situation. In addition, the robot and the controller will still display the indication of error messages.

The emergency stop circuits of the robot and of the injection molding machine are connected together by the Euromap12 or Euromap67 interface. Therefore, when pressing the emergency stop button on the injection molding machine, the robot will be involved in emergency stop condition.

1.2.2 Transportation and Storage

 Attention!

Don’t stay under the robot, when moving or hanging it!

 Attention!

If you have to move and re-install the robot, must ask for assistance from the manufacturer or your agent. If you do not comply with this mandatory requirement, result in the injury to any person and robot broken or malfunction, the manufacturer and your agent will not have any responsibility.

1.2.2.1 Transportation

1) These series of robots were put in the crates before shipping and at the bottom of the crate with space left for forklift truck to move it.
2) Before the transporting, fasten the arm anti-falling and anti-sliding bolts to prevent the arm falling or sliding.
3) The robot will move up and down without power supply, make it in upper position before packaging to ensure that the anti-drop cylinder locked the robot arm and the arm won't fall down.
4) During transporting, prevent collision causing damage to the robot.
5) Must wrap the robot with water proof plastic cover and canvas cover outside during long-distance transportation, and if necessary vacuum pumping and put desiccant in it.
6) The temperature between -25℃ to 55℃during the transportation will be good to robot. For short transportation (within 24 hours),the temperature cannot higher than 70℃.

The robot you order before shipping out from the manufacturer, it is been confirmed in good working condition, please check whether there is any damage during carrying, hanging and transporting. Please carefully dismantle the components and packaging, if you found any damage of the robot, you can use the package to wrap it again.

Any damage caused by transportation, please:

1) Feedback immediately to the transportation companies, your agent or manufacturer.
2) Claim to the shipping company, and fill in the file to request compensation.

3) Retain damaged items for testing and checking. During the wait for testing and checking, do not return it.

1.2.2.2 Unpacking Transportation

1) After dismantling outer crate and cover, check if the model number and serial number on the nameplate is the same as what it wrote on the tag on the outer crate and cover. After confirming the model number and serial number, then unpacking package, disassemble, assemble and hoist the robot.

   Loosen the bolts that fixed the adaptor and robot base on the support plate, and remove the adapter and robot base. (See the packaging diagram 1-1).

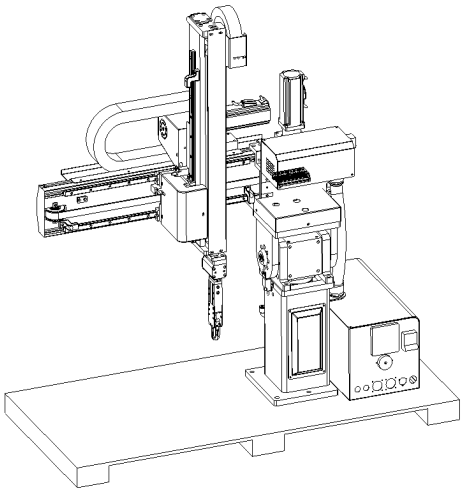
   Use the movable hoist ring in the accessory box and fix it at the indicated position of robot, then hoist it according to the picture 1-2.

   Note:

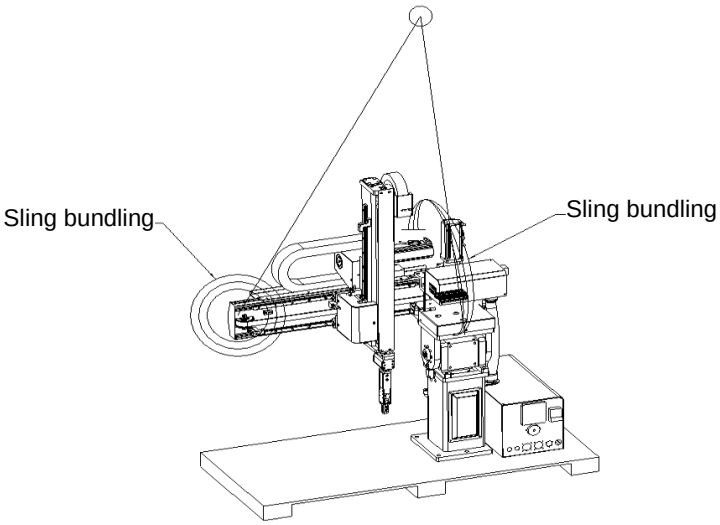
   1) Remove the packing support plate should be careful to prevent the arm wrist and the machine damage or personal injury.

   2) When hoisting the machine, it's necessary to adjust the sling length to achieve machine balance before lifting and moving.

2) After dismantling, bundle up the hoist ring, and hoist with the robot's support point. Then, loosen the hoist ring after all screws are fixed tightly.



Picture 1-1: SS3 Robot Packing Illustration



Picture 1-2: SS3 robot hoisting illustration

1.2.2.3 Storage

1) Remove the compressed air supply and shut down the power, if the robot won't be use for a long time.
2) Robots should be stored in ventilated, dry room to prevent rusty and electrical components get damp.
3) The robot should be carried out anti-rust, and need to be place cover on it to prevent dust and rain erosion, if robot do not use for a long time.

1.2.3 Work Conditions

1) Temperature: Between +5℃ to +40℃
2) Humidity: Temperature +40℃, relative humidity 50%
3) Elevation: Under 1000 meters above sea level.
4) Do not use the machine when the power wire was broken.
5) Do not use the machine when the air tube was broken.
6) Do not use the machine when the air pressure is not enough or too high.
7) Do not use the machine when the robot goes wrong or dismantles without professional, before the professional overhauling.
8) Do not use the machine when there are organic solvent, acidic phospholipids, sulfurous acid, chlorine and flammable and explosive dangerous matter in air.

Disposal of Robot

Dismantle the robot, when it went to the end service life and it's no longer used. When dismantle the robot to component parts, separate it (metal, oil and lubricants, plastics, rubber, etc.) by different ways. Entrust the authorized commission company and abide the local laws and regulations of solid industrial waste treatment.

1.3 Exemption Clause

The following statements clarify the responsibilities and regulations borne by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

1) Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2) Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3) Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4) Employing consumables or oil media that are not appointed by Shini.
5) If there's any problem during the application, please contact the company or local vendor.

Shini HotlineService:
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Tel: +86 (0)573 8522 5288
Shinden Precision Machinery (Chongqing), Inc.:
+86 (0)23 6431 0898

1.4 Features

1) Adopt mature servo drive architecture to ensure stable performance;
2) Highly modular design and card-type spliced structure, which only needs to replace corresponding modules during after-sales service, so as to avoid the whole unit disassembling and replacement when repairing the drive-control integrated system.
3) Common DC bus makes the drives work more stably and with better overload capacity, and it only needs one regeneration resistor which saves the space of installation;
4) The main control module and servo module use a unified connection plate, which avoids redundant wiring and improves the system stability and reliability;
5) The servo parameters are set automatically by the control panel centrally, no need to separately set each drive;
6) The bus controlled IMM interface is suitable for various types of injection moulding machines (China standard, European standard, Japanese standard....).
7) It features not only the reliability of traditional servo motor/drive configuration, but also the reduced wiring complexity and the compact control box size.

SS3 series of robot feature compact size, decent outline, stable and easy operation, which are used for rapid and precise removal of products inside the mould and place them in the desired position.

Picture 1-3: Robot SS3

2. Touch Panel Description

Home point: press the "Home" button, and then press the "Start" button, the system will return to the home point.

Stop: press the stop button to stop the system during auto running. Press the stop button to reset the alarm if the system alarms.

Reset: the main and sub arms vertical axes moves to 0, and other axes move to the start point of the program.

Axis control button: control the corresponding axis for manual operation.

Status selecting switch: switch the system between the manual, auto and stop status.

Speed adjustment button: adjust the system running speed. Adjust the manual speed in manual mode, and adjust the auto speed in auto mode.

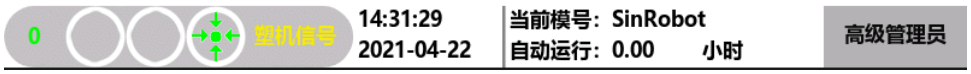
Rotary encoder: servo axis movement can be adjusted manually.

3. Introduction of Basic Screen

3.1 Stop Screen

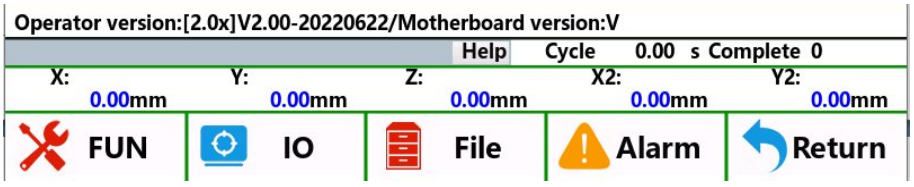
Turn the status selecting button to stop to enter the stop screen

3.1.1 Status Bar:



Display the speed, system status, system time, current mould number and current user in turn.

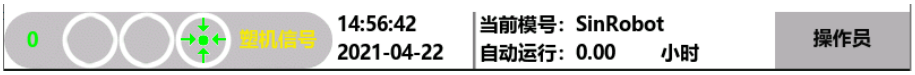
3.1.2 Switching Screen



Current operator version and version will be displayed at the bottom of the stop screen.

Press the bottom button to switch to the corresponding screen.

3.1.3 User Management



Click the operator button, and the system will pop up the login dialog box.

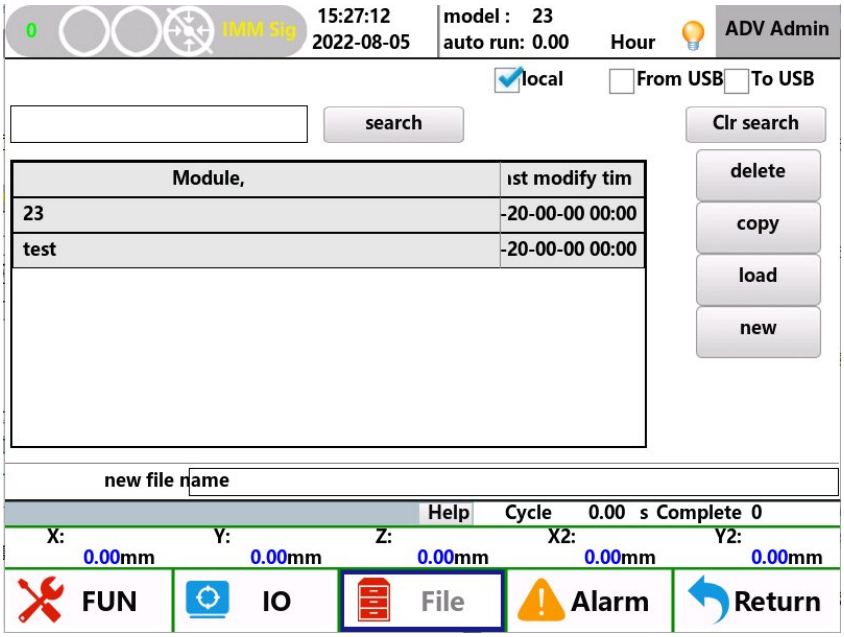
Select corresponding permission button, click the password box, and enter the corresponding password.

Administrator: default password ******; Senior administrator: default password *******.

Modify password path: function - system setting - permission management;

4. System Program Management

4.1 Enter the Program Management Screen



Rotate the operator selection button to the stop status, and click the file button at the screen bottom to enter the mould number management screen.

4.2 Create New Mould Number

Click the new file name **new file name** , input the mould number, and click the new button on the right.

4.3 Copy the Mould Number

Select the mould number to be copied in the list, click the new file name **new file name** , and input the new name. Click the copy button to copy theselected mould number and name it as the new file name.

4.4 Loading

Select the mould number program to be loaded in the list and click load button to load the file as the current mould number.

4.5 Deletion

Select the mould number program to be deleted in the list, and click delete button to delete the selected file.

4.6 Search the Mould Number

Enter corresponding contents in the search input box in left upper corner, click search button, and the system will automatically screen out the qualified mould number program.

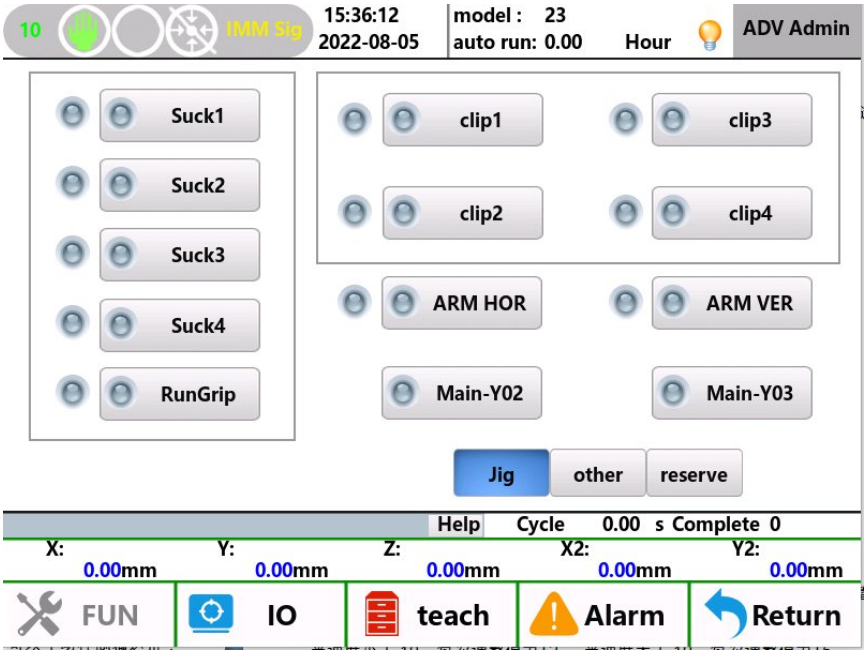
4.7 U Disk Import/Export

Check corresponding options to export the mould number to the U disk or import it from the U disk to the system.

5. Manual Operation

Turn the button switch to the manual status to enter the manual screen.

5.1 Fixture and Jig Operation



Click the corresponding 

button on the screen to operate corresponding fixture and jig, and flipping cylinder.

5.2 Other Outputs

Click 

button to enter other output screen. On this screen, it can manually control the opening and closing of conveyor belt, oil replenishment and other output ports

5.3 Reserve the Outputs

Click the 

button to enter the output reservation screen, where it can manually control the opening and closing of the reservation port.

5.4 Servo Manual Control

When the button switchis under the manual status, click the axis control button on the right side of the manipulator to operate the servo by manual.

Click the button in the status bar to enter the speed adjustment percentage screen, and it also can press the rotary encoder to enter this screen.

Press the up and down buttons on the left side of the manipulator to adjust the manual speed and display it in the status bar.

Manual speed adjustment: Turn the selection button to manual first, and press the up and down speed adjustment button. When the speed is less than 2, each adjustment value is ± 1.

When the speed is less than 10, each adjustment value is ± 2. When the speed is greater than 10, each adjustment value is ± 5.

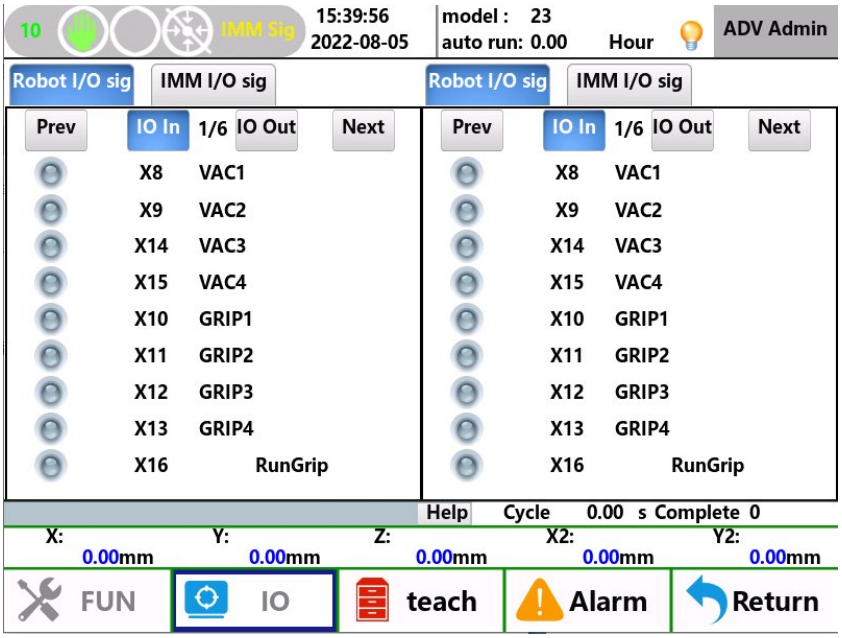
Note: The maximum speed by manual is 50, and the corresponding servo driver speed is 1500rad/min.

Auto speed adjustment: Turn the selection button to automatic first, and change the “speed adjustment prohibited” on the screen to “speed adjustment permitted”, and then press the up (plus) and down (minus) speed adjustment buttons on the left side of the panel, and each adjustment value is global speed rate. As shown in the picture, it is the ± 5 rotary encoder: it can be used to fine tune the servo axis movement manually. For rotating each scale, it adjusts the distance of the corresponding servo axis (hand-wheel axis selected) as following: hand-wheel ratio X global ratio/100mm.As shown in above picture: rotate the rotary encoder one scale, the distance of corresponding hand wheel X axis will move 1X5/100=0.05mm. It can be seen from the above picture that the resolution of the encoder is 0.01-10.00mm.Hand-wheel axis selection: select the corresponding axis to decide the rotating axis when moving rotary encoder in manual mode.

6. IO Monitoring

Click the 

button at the bottom of the screen to enter the monitoring page.



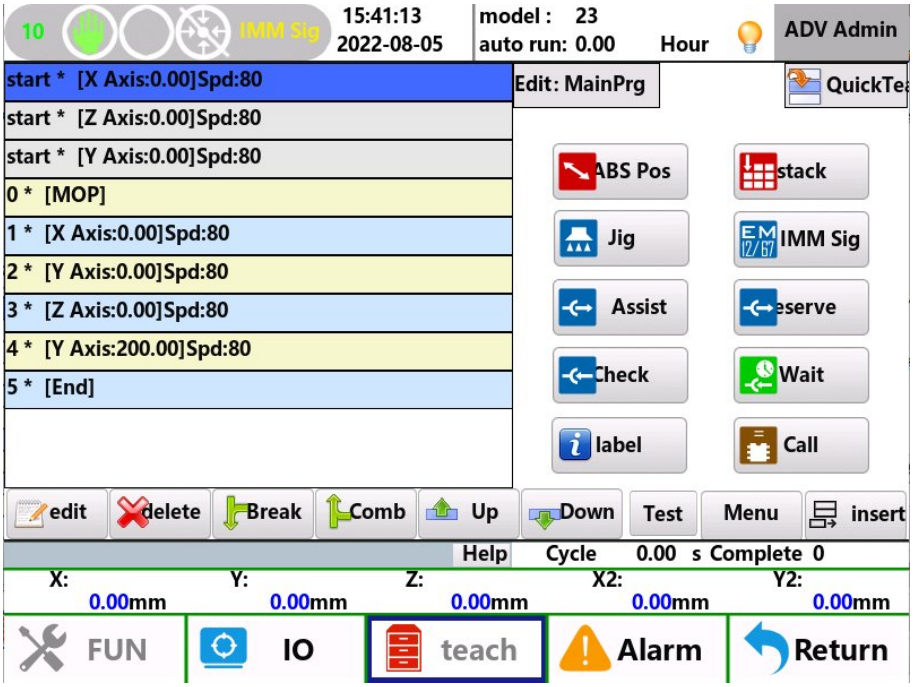
It can check the robot signal and IMM’s signal on the monitoring page.

7. Teaching Program

Turn the button switch of the manipulator to manual status, and click the 

button at the screen bottom to enter the teaching screen.

7.1 Screen Introduction



Edit and modify the current program loaded by the system on the teaching screen.

Teaching related operation

Edit: Click edit to modify more parameters of the currently selected row in the pop-up window.

Delete: Click delete to delete the instruction of the currently selected row.

Break: Break the selected combined instructions into separate instructions (In auto mode, execute according to the sequence number).

Comb. : Combine the currently selected row with the previous instruction (In auto mode, perform the combined instructions at the same time).

Up: Move the instruction of the currently selected row up a row

Down: Move the instruction of the currently selected row down a row

Test: In currently selected instruction, press the “Test” button to perform the instruction, and release it to stop immediately.

Note: Not all instructions support the test run function.

7.2 Program Instruction List

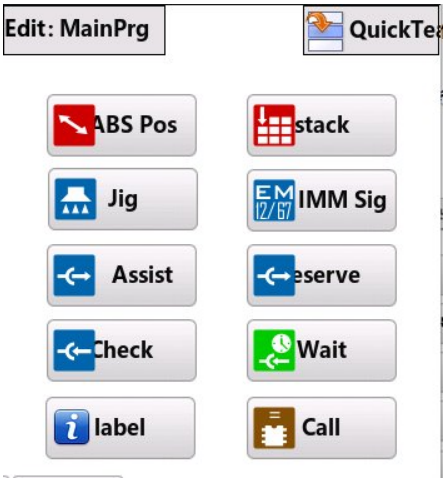
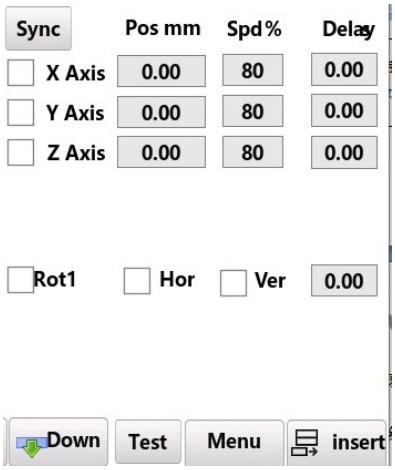


Table 7-1: Instruction List Provided by Current System

No.	1	2	3	4	5	6	7	8	9	10
Instruction Name	Axis Action Instruction	Fixture & Jig Instruction	Auxiliary Equipment	Detection	Tag	Stack-ing	IMM signal	Reserved	Wait	Conditions. Main program’s subprogram and quick teaching.

7.3 Axis Action Instruction

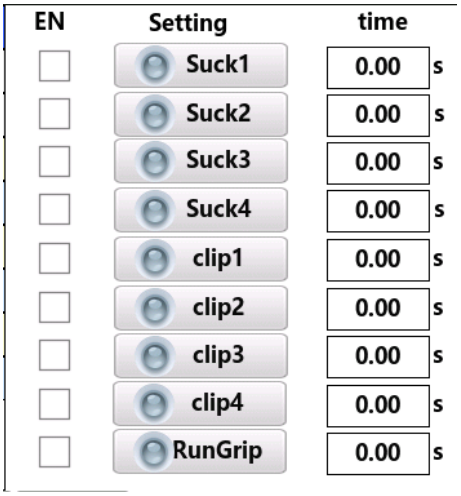


Select the corresponding option and click insert button to complete an instruction teaching. Select several options, insert them at the same time, which can form the combined instruction.

Note:

The delay time is executed before the instruction; It means there is a delay before the action, and the instruction action will not be executed until it reaches the time.

7.4 Fixture and Jig Instruction



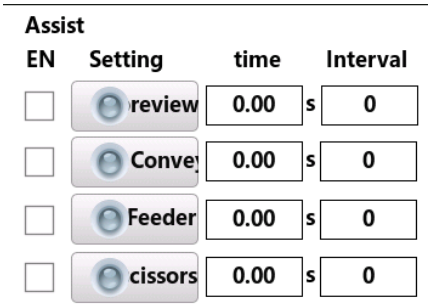
Select the corresponding option, click the corresponding button, and select the output status. The indicator light on means it is powered on, the indicator light off

means it is powered off. Finally, click the insert button to complete an instruction teaching. Select several options, insert them at the same time, which can form the combined instruction.

Note:

The delay time is executed before the instruction; It means there is a delay before the action, and the instruction action will not be executed until it reaches the time.

7.5 Auxiliary Equipment Instruction



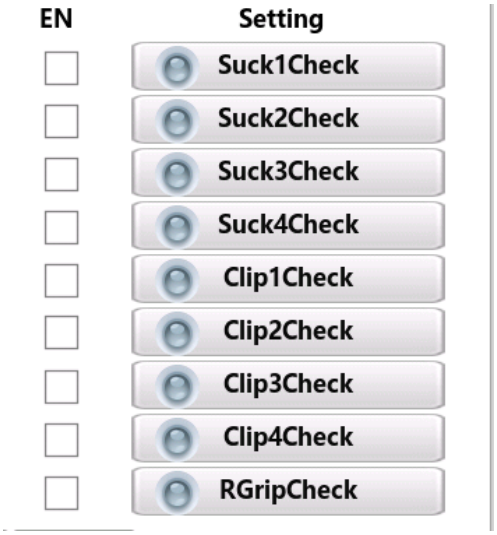
Select the corresponding option, click the corresponding button, and select the output status. The indicator light on means it is powered on, the indicator light off means it is powered off. Finally, click the insert button to complete an instruction teaching. Select several options, insert them at the same time, which can form the combined instruction.

Interval of moulding: the instruction executed every time when moulding interval is met. Set 0 to execute in each moulding.

Note:

The delay time is executed before the instruction; It means there is a delay before the action, and the instruction action will not be executed until it reaches the time.

7.6 Detection Instruction



Select the corresponding option, click the corresponding button, and select the output status. The indicator light on means it is powered on, the indicator light off means it is powered off. Finally, click the insert button to complete an instruction teaching. Select several options, insert them at the same time, which can form the combined instruction.

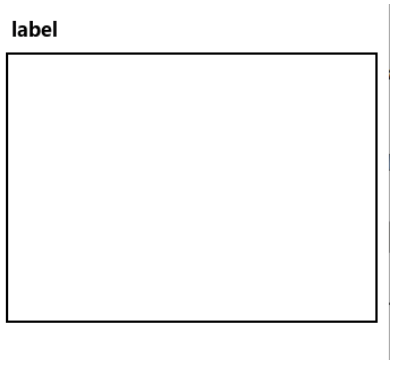
Start detection: detect the signal from current row until it the detection instruction ended (Alarm in case of no signal).

Stop the detection: stop the detection signal (no alarm in case of signal)

Note:

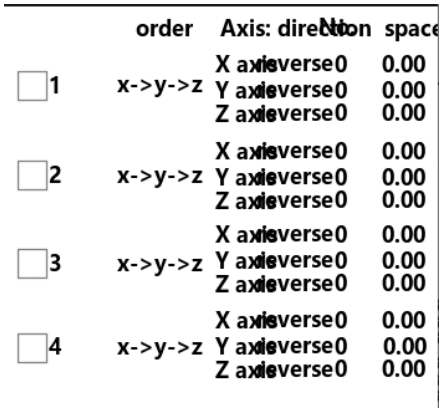
The delay time is executed before the instruction; It means there is a delay before the action, and the instruction action will not be executed until it reaches the time.

7.7 Tag



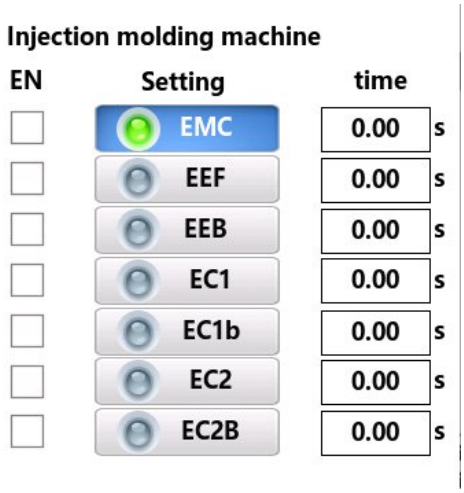
The user can customize the tag name to the program. When the conditions are met, the program will jump to the tag position.

7.8 Stacking Instruction



Select the corresponding option, and click the insert button to complete an instruction teaching.

7.9 IMM's Signal Instruction



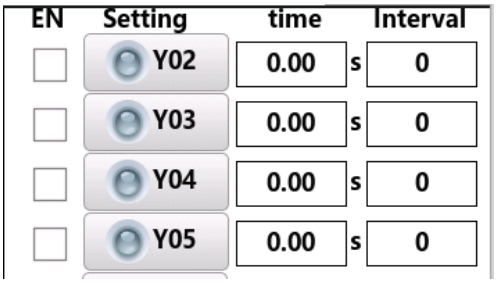
Select the corresponding option, click the corresponding button, and select the output status. The indicator light on means it is powered on, the indicator light off means it is powered off. Finally, click the insert button to complete an instruction teaching.

Note:

The delay time is executed before the instruction; It means there

is a delay before the action, and the instruction action will not be executed until it reaches the time.

7.10 Output Reservation Instruction

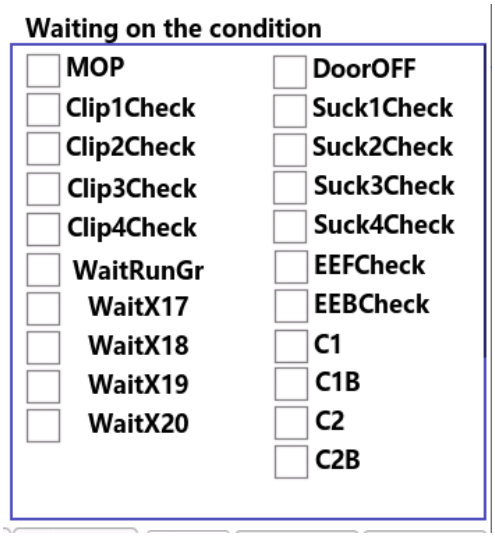


Select the corresponding option, click the corresponding button, and select the output status. The indicator light on means it is powered on, the indicator light off means it is powered off. Finally, click the insert button to complete an instruction teaching. Select several options, insert them at the same time, which can form the combined instruction.

Interval of moulding: the instruction executed every time when moulding interval is met. Set 0 to execute in each moulding.

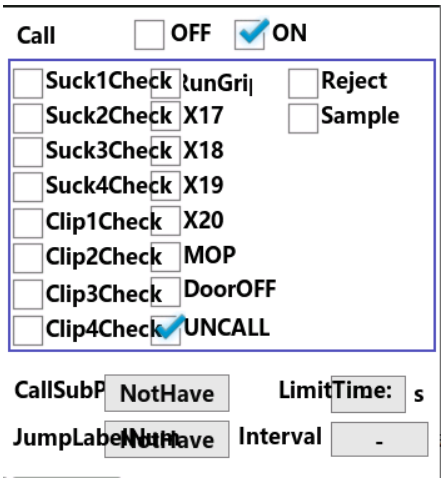
Note: The delay time is executed before the instruction;

7.11 Wait For the Instruction Teaching

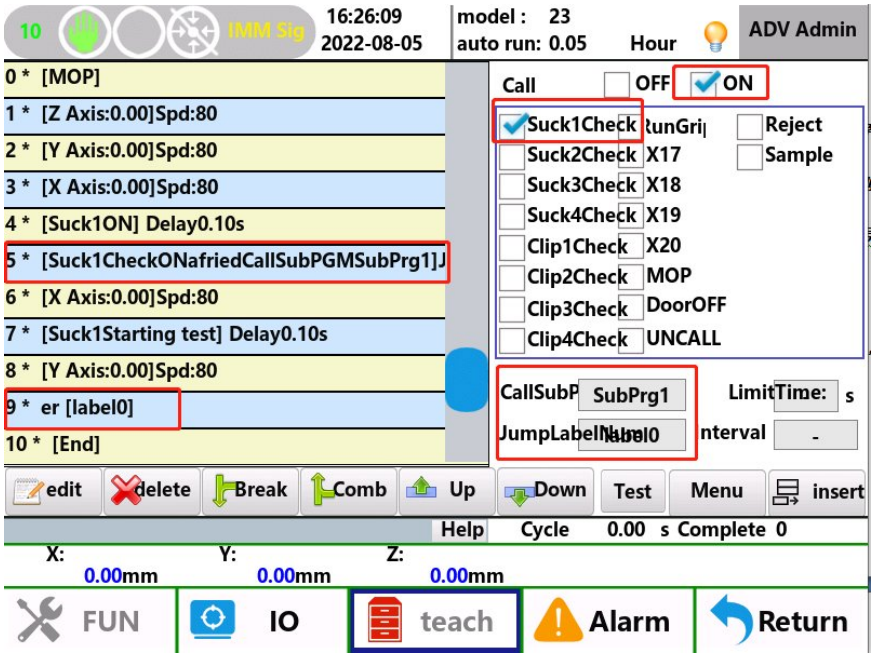


Select the corresponding option, and click the insert button to complete an instruction teaching.

7.12 Conditional Judgment Instruction



Set the conditional judgment according to the actual demands. When it meets a conditional instruction, execute the preset program, such as:

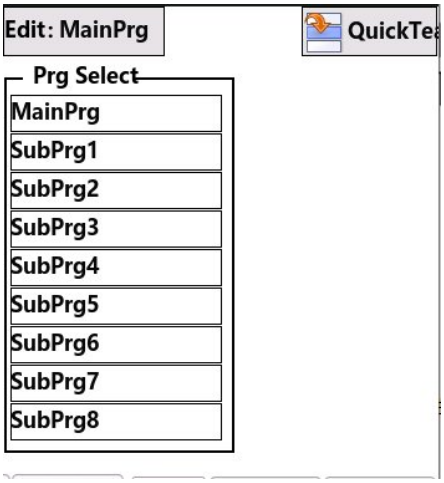


When it meets the "suction 1 signal valid", the system will call and execute the actions taught in the process 1. Then, jump to the tag 0 position to execute the instructions after it. If it doesn't meet the condition, execute the program normally without subprogram.

7.13 Program Selection

Click 

to select the program.



As shown in the picture, you can select to edit max six subprograms, can be for trial production or sampling programs. The teaching method is the same as that of the main program, and these programs can be called and executed by the main program.

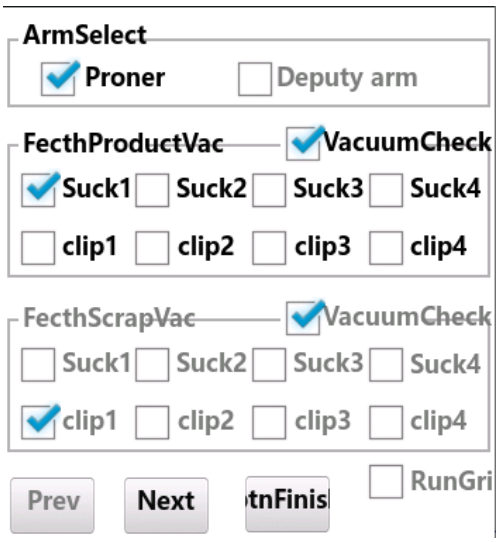
7.14 Quick Teaching

Notice:

1. Before entering the quick teaching, it's necessary to confirm whether the program taught in current mould number is useful. If yes, it needs to enter the file screen to create a new program. Otherwise, after setting each parameter in the quick teaching screen, press the "Complete" button, it will delete all the programs in the mould number and create a complete set of programs.

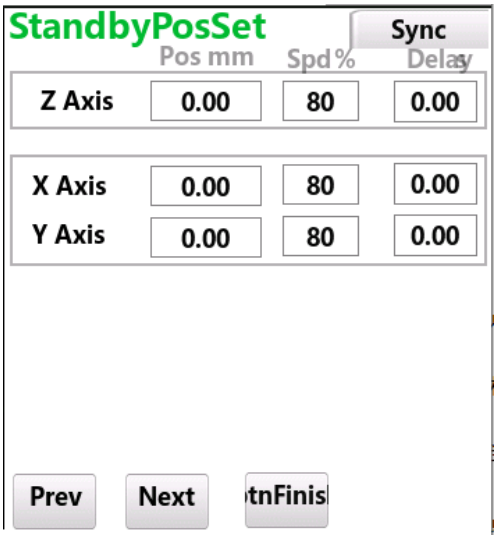
2. Exit the quick teaching screen. When entering the quick teaching screen again, it will initialize all quick teaching previously set values without records.

7.14.1 Arm Selection Screen



1) When the mechanical structure is 3-axis, the options of "sub arm" will turn to grey automatically, which can't be selected. The sub arm can only be selected when there are 5 or 3 axes plus 2 pneumatic sub arm.
2) By default, the "finished product fixture" and " sprue fixture" only have one corresponding fixture. If multiple fixtures are required, it can select several.

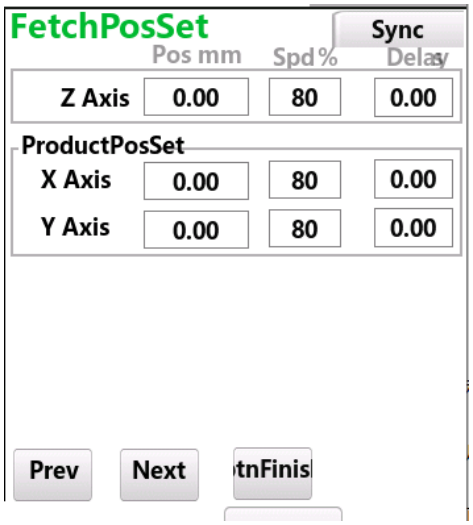
7.14.2 Standby Points Setting Screen



The standby point is the starting point in the program. Generally, it refers to the position, out of the mould, where the robot arm waiting for the mould open signal to enter the in mould area. The position value can be manually entered or you can

manually control the corresponding axis to reach the desired position, and then press the set button to set current actual position value to the corresponding axis position.

7.14.3 Fetch Points Setting Screen



The fetching position refers to the position where products are fetched in mould. At this position you can enable the holder or sucker to pick up the product directly. The position value can be manually entered or you can manually control the corresponding axis to reach the corresponding position. Then, press the set button to set current actual position value to the corresponding axis position.

7.14.4 Setting Screen of Finished Products Placement Points

1) The finished product placement position refers to the position where the

product is placed out of the mould. At this position, you can close the holder or sucker to place the finished products directly; The position value can be manually entered or you can manually control the corresponding axis to reach the desired position, and then press the set button to set current actual position value to the corresponding axis position.

2) When in "Function - Signal setting – Flipping cylinder position while traverse movement - Select unlimited" mode, the settings of flipping cylinder position during Z2 traverse in and out in above picture can be selected. Otherwise, it can't be set. It is determined according to the vertical or horizontal position in "Function - Signal setting - Flipping cylinder position while traverse movement ".
3) When "Stacking use" is checked for placing the finished products, the red word prompt of "The finished product position value will be written to the first point of the stacking group". It means the first stacking point's X/Y/Z position values will be written to the N th stacking group and saved. The specific position is in "Function - Stacking setting – the N th group - corresponding X/Y/Z position values of the first point"; The specific stacking order, direction, number, spacing, speed and other corresponding parameters must also be set in the "Function - Stack Setting – the N th group.

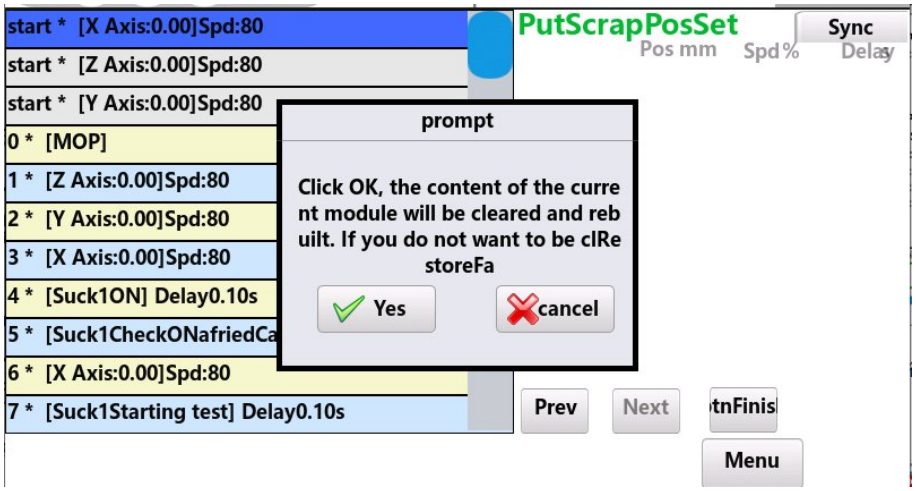
Note:

All these specific works must be executed after pressing the "Complete" button to generate a quick teaching program. Otherwise, if you exit the quick teaching screen and enter again. All previously set quick teaching values will be lost.

7.14.5 Setting Screen of Sprue Placement Points

1) Relevant options are only available when there is sprue fixture on the sub arm of 5-axis robot. As the sub arm is not used in the above picture, relevant options are hidden.
2) The sprue placement position refers to the out of mould sprue placement position where sprue can be placed directly after closing the holder or sucker. Relevant position values can be entered manually, or the corresponding axis can be controlled manually to reach the target position, and then press the set button to set the current actual position value to the corresponding axis position.

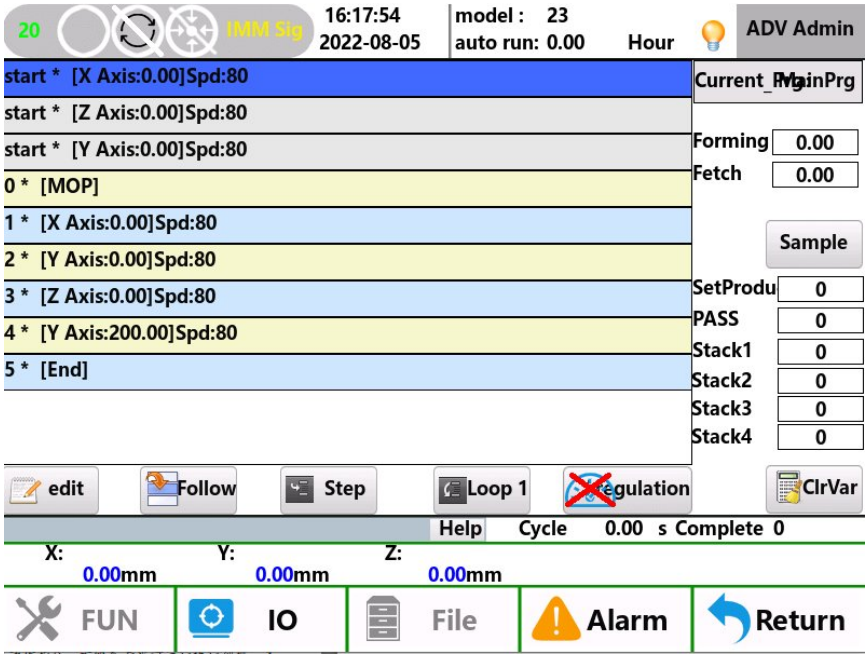
7.14.6 Press the “Finish” button to the prompt screen



If the "Confirm" button is pressed, all the programs generated on the left will be deleted, and a set of completed programs will be created according to the settings and relevant parameters of quick teaching. Otherwise, press the "Cancel" button to close the prompt window without any changes.

8. System Program Operation

After complete the teaching in the screen, turn the selection switch to auto status to enter the auto running screen.



In this screen, it can operate the system to run, stop, run in single step, run in single cycle, and adjust the running speed automatically.

Edit: When the system is running automatically, if you want to adjust the parameters, it can cancel the following, it means when "Do not follow", select the corresponding instruction and click edit to enable it. In the pop-up editing window, it can fine tune the position instruction parameter ± 5 and other simple delayed time parameters.

Follow: During auto running, select whether the cursor follows the action instruction to make it convenient to check which instruction is executed by the current program. When it needs to check the whole window program, click and select "Don't follow", and scroll the right bar to adjust and check.

Single step: The system only executes current row of instructions, which has to keep pressing the "Single step" button all the time. Loose the button, it stops executing current instruction, and there will be no effect if the auto speed is too fast. When it executes current instruction, the cursor will automatically jump to the next row of instruction for selection.

Single loop: the system will execute the entire teaching instruction again.

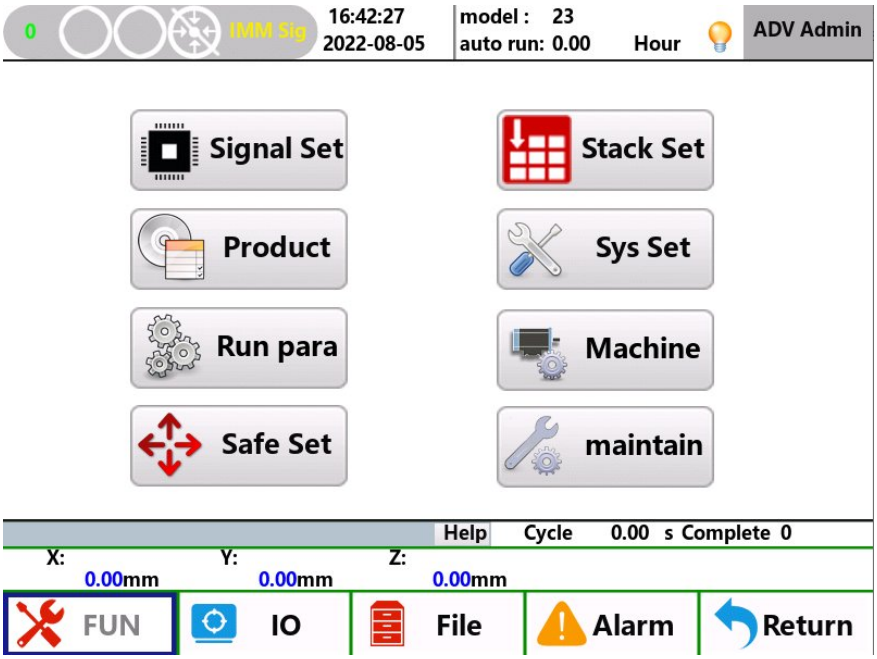
Speed adjustment prohibited: When prohibiting the speed adjustment, it can't adjust the speed by pressing the up and down buttons on left manipulator of the auto screen.

Click the speed adjustment prohibited button, and when the icon changes to 

, it can adjust the speed by pressing up and down buttons on left side of the manipulator in auto status.

Reset to 0: It can choose to clear the production count, stacking count, and interval variables. Select the corresponding count value and click OK button to reset the selected count number to 0 and start counting again.

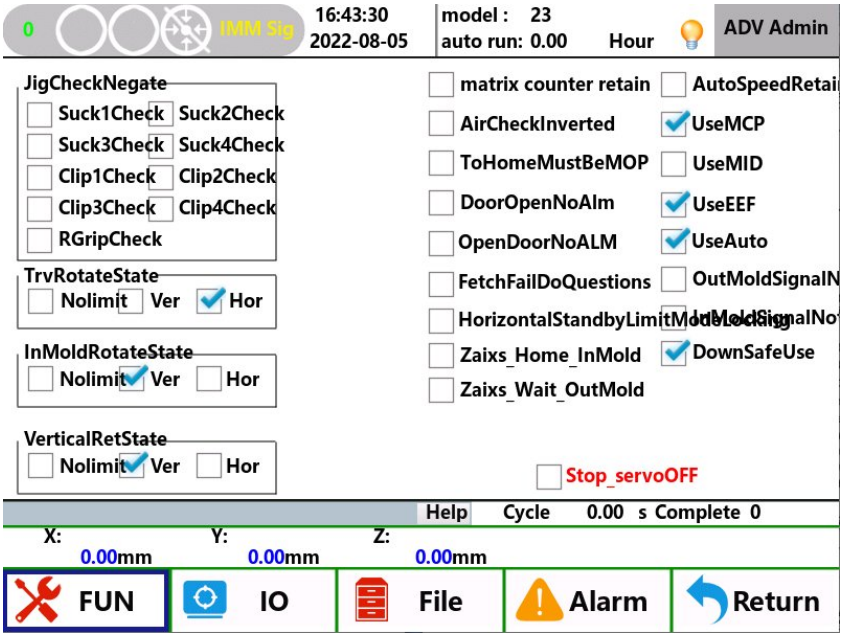
9. System Function Screen



Turn the selection switch to stop screen, and click 

to enter the functional screen.

9.1 Signal Setting



In the "Signal Setting" screen, it can select necessary options according to the demand and mechanical structure.

Fixture detection phase reversed: adjust the detection port to make the valid phase to be high or low.

Flipping cylinder’s position when traversing: stipulate the flipping cylinder’s position when the robot is traversing. The flipping cylinder’s position at the start point (standby point) is based on it.

In mould flipping cylinder’s position: stipulate the flipping cylinder’s position when the robot is in mould.

Up and down reset position: When homing, the flipping cylinder must be in current setting status.

Air pressure detection phase reversed: select according to the actual air pressure sensor signal.

The homing must after mould opening: when homing, it can only be executedafter the mould opening signal.

The safety door detection is not used: It doesn’t detect the safety door signal in auto status, please be noted that the arm can also descend in the mould when the safety door is opened.

No alarm when the safety door is opened: When it is selected, it will not alarm when the safety door is opened in auto mode.

Fetching failure inquiry: After the fetching failure and the safety door is opened, the system will pop up a window to inquire whether to continue to run and execute following programs or return to the standby point and wait for the next cycle mould opening.

Fully auto use: The robot detects the full auto signal of the IMM. If there is no full auto signal during the auto running, it will give the alarm.

The horizontal standby forbid mould locking: It's prohibited to lock the mould in the safety area in mould when standby with horizontal flipping position.

The traverse Z-axis home point is mould: The home point is in mould after selection, and the home point is out of the mould without the selection.

The traverse Z-axis out of mould standby: If checked, the machine will be standby

out of mould, and will standby in mould if not checked.

Stacking counter power-off maintained: After it is selected, the current number of stacking products will be recorded after power failure and restart

Use after mould closing: whether to use the mould closing signal.

Middle mould use: whether to use the middle mould signal.

Ejector control use: whether to use the system to control the ejector.

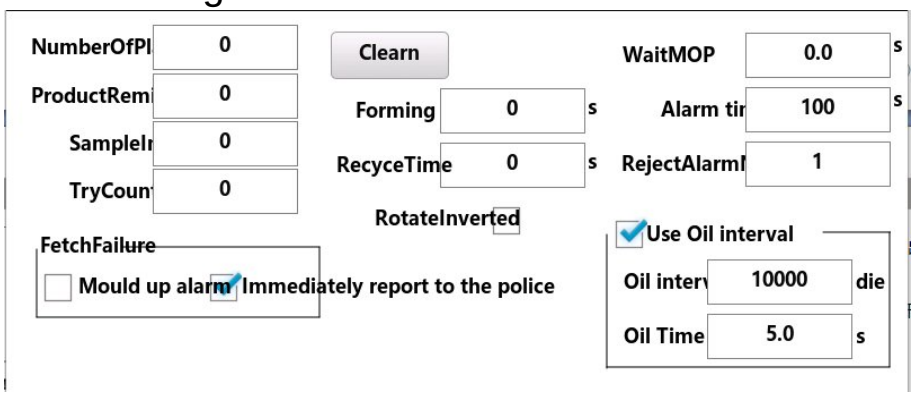
Fully automatic use: When the robot detects the fully auto signal of the IMM, if there's no auto signal in auto status, it will give alarm.

The out of the mould safety area signal not used: The input signal of out of the mould safety area is not used. The out of mould safety area can be set only through the software parameter range corresponding to the traverse axis. The safety factor is relatively lower when not used it.

The safety area in mould is not used: The input signal of safety area in mould is not used, which can set the out of mould safety area only through the software parameter range corresponding to the traverse axis. The safety factor is relatively low when it is not used.

Downward safety use: whether to use the downward safety signal and work with external safety signal.

9.2 Product Setting



Planned product quantity: The system will remind the user when the auto running reaches the set value, which can restart and count automatically after stops it by manual. It's invalid when set it to 0.

The production quantity reminder: the system will remind after the auto running

reaches the set value, open and close the safety door or press start button to restart the counting. It's invalid when set it to 0.

Sampling interval: set the interval moulding count of product sampling. It's invalid when set it to 0.

Fetching failure: No product picking signal of sucker or holder detected during fetching in mould, it can choose whether to give an alarm after the arm rises or give an alarm immediately in the mould.

Recirculation mode:

Delay time to turn off signal after the mould is locked: When it reaches the set recirculation time after outputting the mould area safe signal, the mould area safe signal will turn off.

Synchrone with enable mould lock signal: synchronous on and off of the mould area safety and enable mould close signals.

Time waiting for the mould opened signal: Under auto running when the program executed to the {Wait for mould opening} instruction. If the waiting time exceeds the set time, it will give an alarm. It’s invalid when it is set to 0.

Alarm time: set the alarm output buzzing time. No output when it is set to 0.

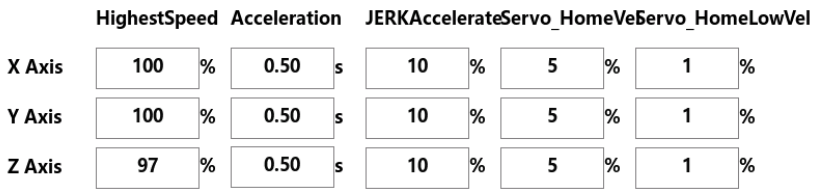
Alarm for defective products count: Set the number of defective products. When the number of defective products reaches the set number, it will alarm. It’s invalid when it is set to 0.

Moulding cycle: After selecting to use the mould closing function, after receiving the mould closing completion signal of IMM, cut off the enable mould close signal after it reaches the set time.

Recirculation mode: Select the recirculation mode as the {Delay closing after the mould is locked}, and disconnect the mould area safety when it reaches the set time.

Oil replenishment as per moulding number: Set to send signal for oil replenishment as per interval of moulding number and control the signal output time.

9.3 Running Parameters



Max. speed: set the maximum running speed. When it is set to 100%, the corresponding motor speed is 3000 rpm.

Actual running speed=max. speed * global speed * program step speed. If the max. speed is set at 100%, the global speed is set at 50%, and the program step speed is set at 50%, then the actual motor speed is 750 rpm.

Acceleration: Set the servo's acceleration and deceleration time.

JERK acceleration: Set the S-type acceleration and deceleration time of the servo. The smaller the setting percentage, the more stable the start and stop of servo. It's equivalent to the servo smooth filtering parameter.

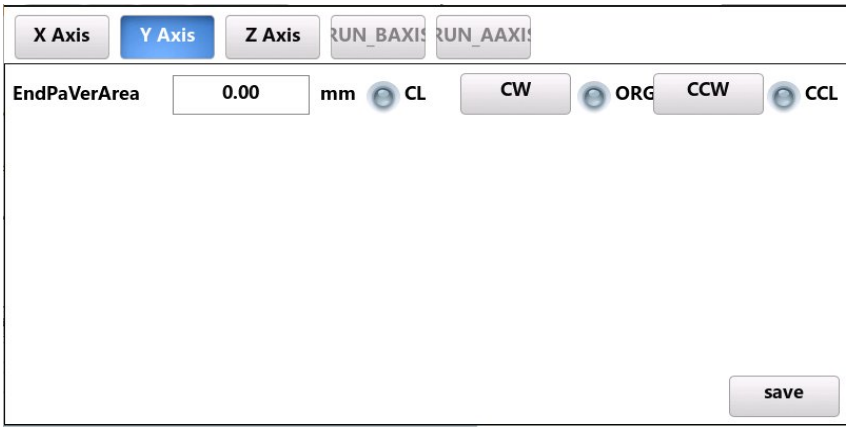
Quick homing: the speed of homing before receiving the signal of actuator plate sensed.

Slow homing: the speed of homing after receiving the signal of actuator plate sensed.

9.4 Safety Point Setting

Main arm crosswise in mould start point: Set the start point of in mould safety area of the crosswise axis.

Main arm crosswise in mould terminal point: Set the terminal point of in mould safety area of the crosswise axis. In the mould range, the arm can only move in this range.

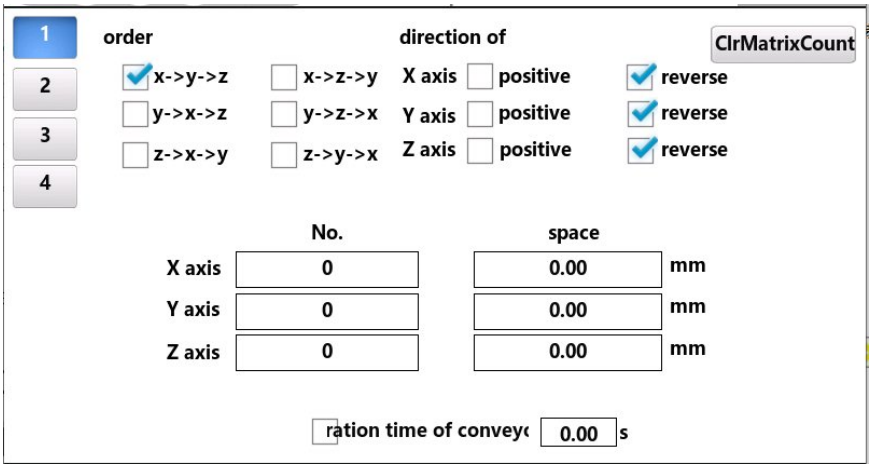


Main arm upward limit: When the arm is in mould, and there is no mould opening completion signal, the safe area of arm downward for standby.

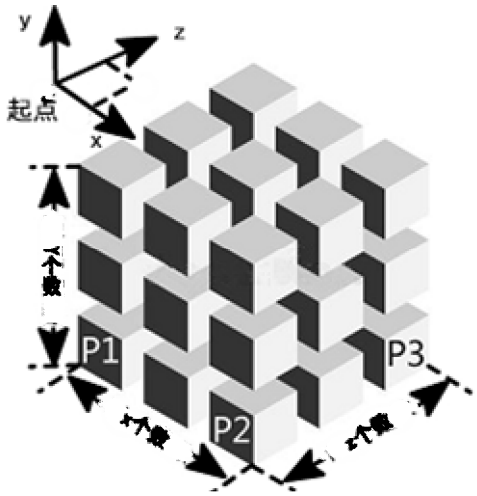
Traverse out of mould starting point: Set the placement safety area start point, and the end point is the software stroke limit. The downward placement is available between the start and end points.

Traverse in mould end point: set the fetching safety area end point, and the starting point is the homing point. The downward fetching is available between the start and end points.

9.5 Stacking Setting



The system supports the settings of 4 stacking groups. After entering the parameters on this screen, select the corresponding group in the teaching screen.



Order: Set the order of stacking axes and there are six groups for selection.

Direction: Select the axis direction of product stacking, stacking from small to large in the positive direction and from large to small in the negative direction.

Number: Set the number of product stacking of corresponding axes.

Distance: set the distance between products.

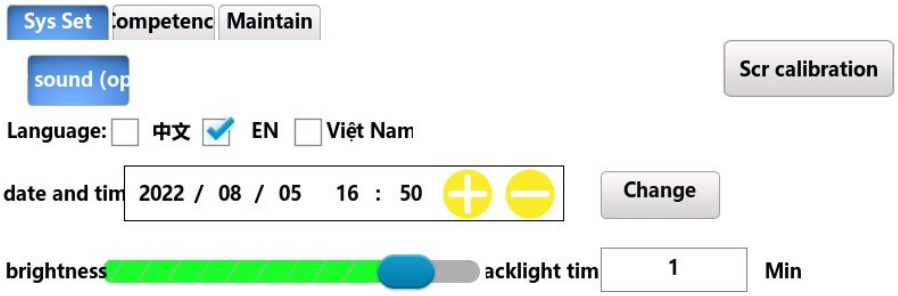
Sub arm stacking: use the sub arm to stack after selection

Using the belt conveyor: the belt conveyor will be automatically used for stacking after selecting it, and there is no need to teach the belt conveyor again in the teaching program.

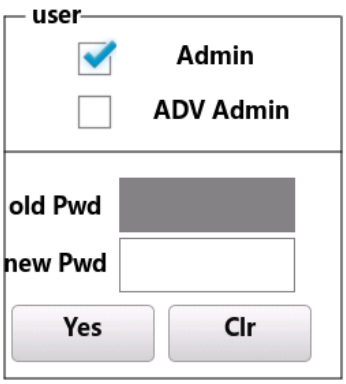
Action time: the action time of the belt conveyor.

9.6 System Setting

9.6.1 System Setting:

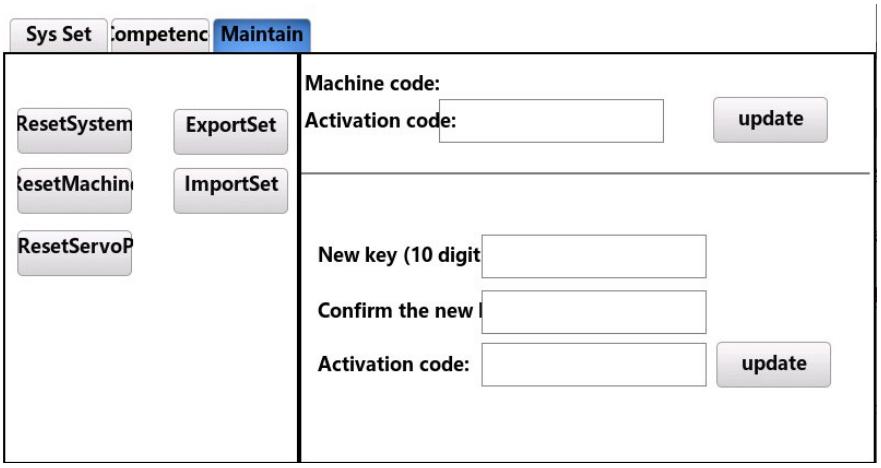


9.6.2 Permission Management:



It can modify the administrator and senior administrator passwords.

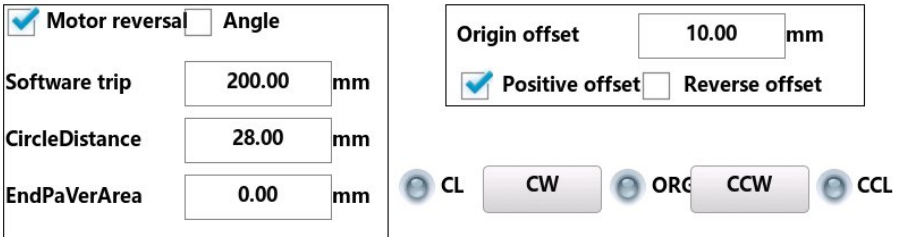
9.6.3 System Maintenance:



Reset the system parameter sand locking function in operation.

9.7 Machine Parameter

9.7.1 Axis Parameter Screen



Modify the parameters of each axis:

Motor reverse running: when it is found that corresponding axis of the main arm

and sub arm are running to opposite direction against direction buttons during machine adjustment, the motor reverse setting can be selected and no need to set the motor reverse parameters in the servo drive.

oftware stroke limit: The maximum stroke limit that the software can travel from the origin point after homing.

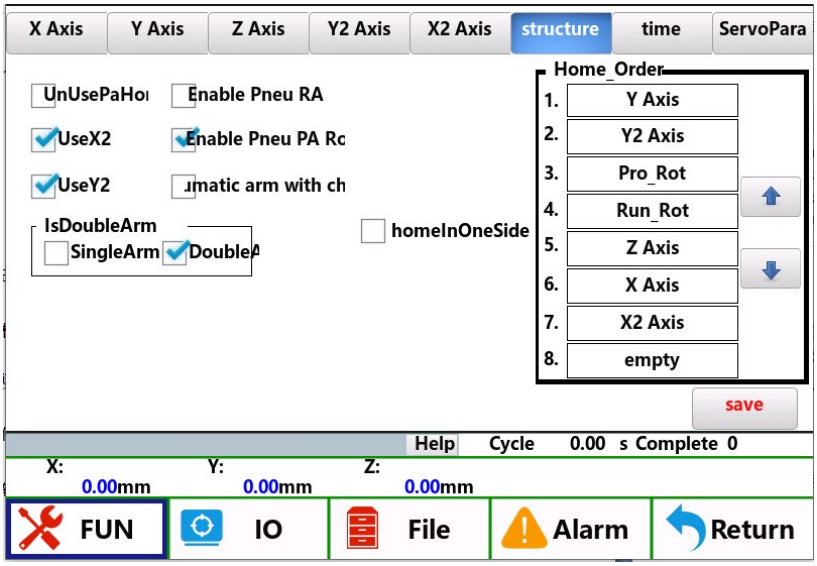
Distance per rotation: the actual travel distance of the robot when the servo motor is connected to the gearbox and rotated one around; That is the perimeter length of the synchronous wheel, and this value determines the effective precision and accuracy of the mechanical stroke.

Distance per rotation: This value is determined by the system and cannot be set. Its meaning is that 5000 pulses correspond to the distance per rotation.

Origin offset: While homing the arm will move to the set offset value and take it as origin position. You can select positive or negative offset.

Forward running/reverse running: Before it starts homing after startup, press this button to adjust without safety restriction. The reverse rotation is close to the origin, and forward rotation is far from the origin. It also can check the input signal status of the origin point and positive and negative limits.After homing, press this button is only used for common manual operation, which is the same as the operation of buttons on right panel.

9.7.2 Structure Screen



Don't use the X axis: Turn X axis off. Use at least two axes.

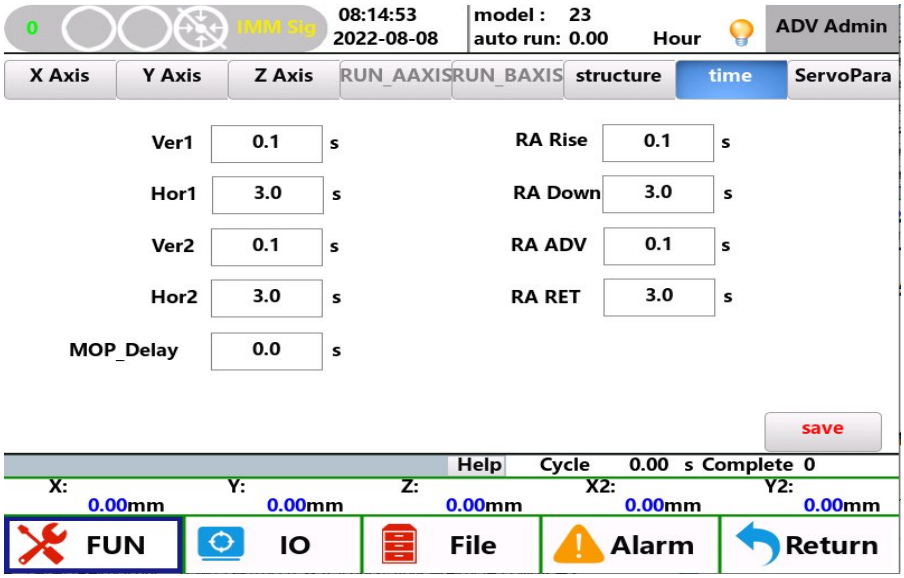
Use X2 axis, Y2 axis, pneumatic sub arm and pneumatic main arm’s flipping cylinder: check according to actual situation of the machine.

Pneumatic sub arm descended, retreat, forward limit: adjust according to the actual mechanical conditions.

Servo axis single arm and double arm selection: select the single arm or double arm according to the mechanical structure.

Homing sequence setting: set the homing sequence of each axis

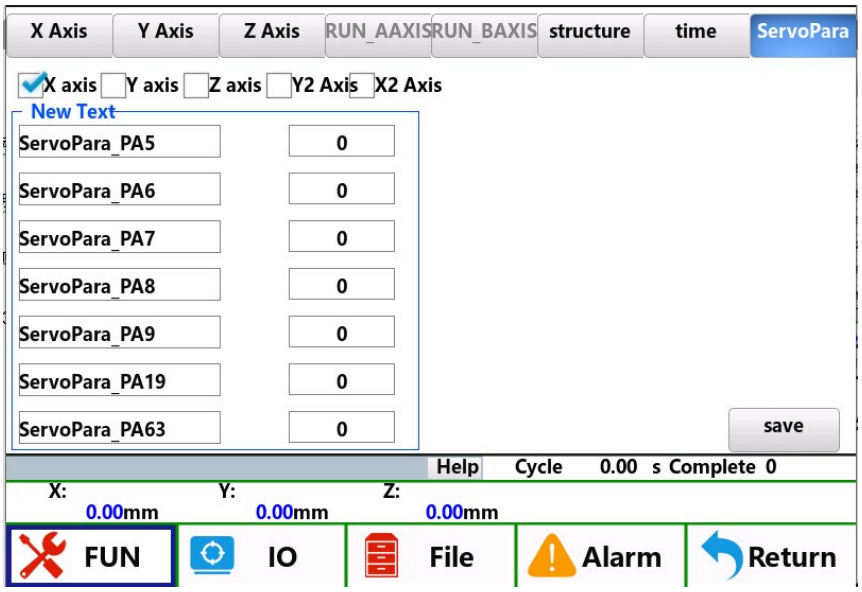
9.7.3 Time Screen

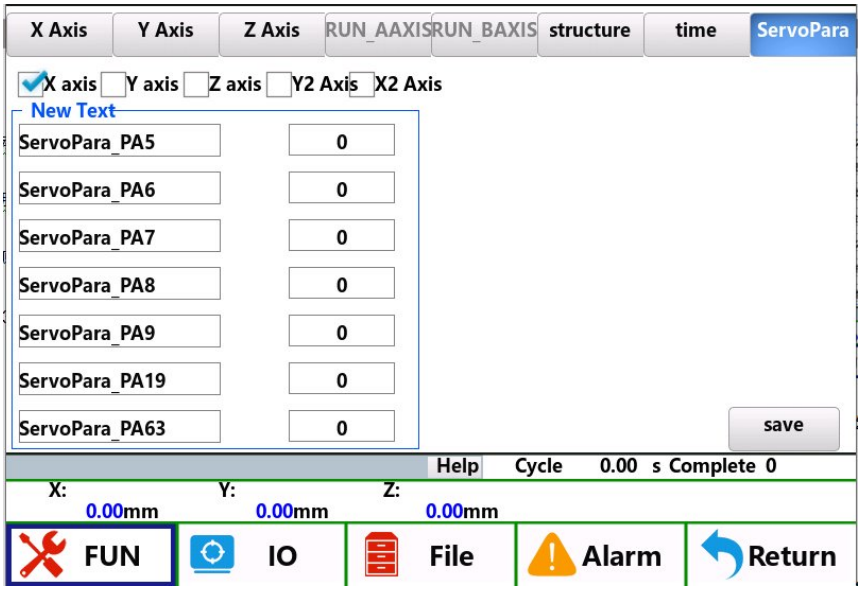


Shockproof delay after mould opening: This function is mainly for unstable signal after mould opening of the robot, during the set time the robot will ignore the mould opening completion signal blinking issue.

Set the pneumatic movement in place time, if it doesn’t receive the signal at the set time after the port output signal, the alarm will trigger.

9.7.4 Drive Parameter





On this screen, it can select all the axes of the machine and set the drive's common parameters, such as rigidity, inertia, etc., through the manipulator.

Parameter Description:

PA5: Speed proportional gain (Parameter Range: 5~2000; Factory default: 150)

1) Set the proportional gain of the speed loop regulator.
2) The greater the set value, the higher the gain and the rigidity. The parameter value is determined according to the specific servo drive

system model and load.

3) In general, the greater the load inertia, the greater the set value.
4) Under the condition of no system oscillation, set it as large as possible.

PA6: Speed integration constant (Parameter Range: 1~3000; Factory default:75)

1) Set the integral time constant of the speed loop regulator.
2) The smaller the set value, the faster the integration speed, the stronger the system resistance deviation, and the greater the rigidity, and it's easy to cause overshoot if too small.

PA7: Torque filter (Parameter Range: 20~500; Factory default:100)

1) Set the torque instruction filter characteristics.
2) Used to restrain the resonance generated by torque.
3) The smaller the value, the lower the cut-off frequency, and the smaller the vibration and noise generated by the motor. If the load inertia is large, it can reduce the set value appropriately. Too small the value will result in slow response and may be the oscillation.
4) The higher the value, the higher the cut-off frequency and the faster the response. If higher torque response is required, it can increase the set value appropriately.

PA8: Speed detection filter (Parameter Range: 20~500; Factory default:100)

1) Set the characteristics of the speed detection filter.
2) The lower the value, the lower the cut-off frequency, and the lower the noise generated by the motor. If the load inertia is large, you can reduce the set value appropriately. Too small the value will result in slow response and may cause oscillation.
3) The larger the value, the higher the cut-off frequency and the faster the feedback response. If a higher speed response is required, you can increase the set value appropriately.

PA9: Position proportional gain (Parameter Range: 1~1000; Factory default: 80)

1) Set the proportional gain of the positioning loop adjuster.
2) The larger the set value, the higher the gain and the rigidity, the smaller the position hysteresis under the same frequency and instruction pulse. However, too large the value may cause oscillation.
3) The parameter value is determined according to the specific servo drive

system model and load.

PA19: Position instruction smoothing filter (Parameter Range: 0-1000; Factory default: 100)

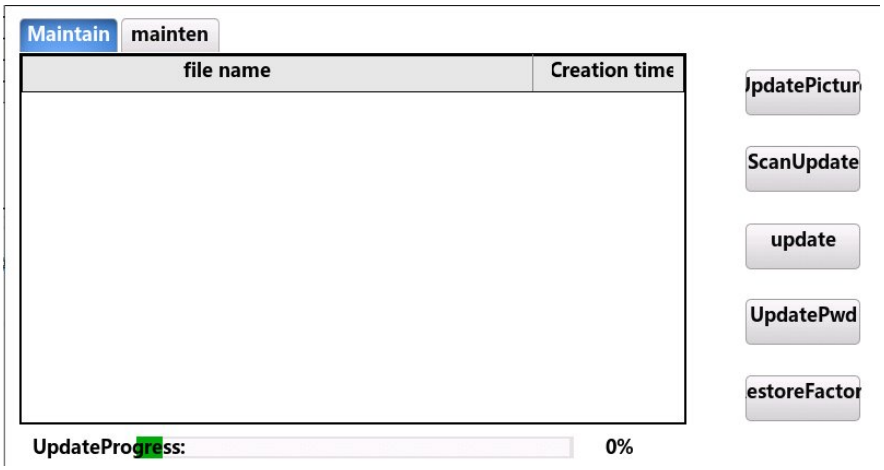
1) The instruction pulse is smoothed and filtered, with exponential acceleration and deceleration, and the numerical value stands for the time constant.
2) The filter will not lose the input pulse, but the instruction will delay.
3) The filter is used for:
   a)The upper controller without acceleration and deceleration function;
   b)The frequency division/multiplication of the electronic gear is large (>10);
   c)The instruction frequency is low.
4) The motor has step jump and unstable performance when running.
5) When it is set to 0, the filter doesn't work.

PA63: Load inertia ratio (Parameter Range:1~500; Factory default:100)

1) Set the load inertia ratio of the corresponding motor moment of inertia.
2) Set value:=((load inertia+moment of inertia)/moment of inertia) × 100

9.8 Repair/Maintenance

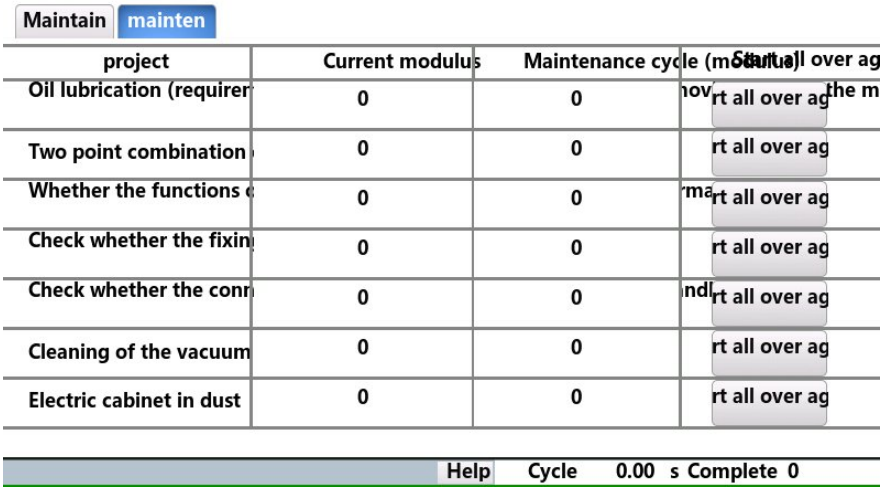
9.8.1 Maintenance



Update the picture: After clicking the update picture button, it can update the system startup and standby pictures in the pop-up window.

Start updating: select the corresponding file to upgrade the manipulator or main board (the manipulator suffix is. hex, and the main board suffix is. h75)

9.8.2 Maintenance



Set the maintenance cycle of each item. When it reaches the set value, the system will remind.

10. Alarm Information

Alarm Information	Solutions
[001]Invalid action of main arm.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[002]Invalid action of IMM.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[003]Invalid IF condition.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[004] Invalid system running type.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[005]Invalid system status.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[006] Invalid parameters of instruction.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[007]Invalid instruction.	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[008] Extended styles	If the new instruction is still invalid when the invalid instruction deleted, please contact the agent/manufacturer.
[010]FOR instruction unpaired, no ENDFOR	In the program, a “FOR” instruction (loop start) must go with a “ENDFOR” instruction (loop end). Check if there is any extra of “FOR” or lack of “ENDFOR” in the program.

[011]FOR instruction unpaired, no FOR	In the program, a “ENDFOR” instruction (loop start) must go with a “FOR” instruction (loop end). Check if there is any extra of “ENDFOR” or lack of “FOR” in the program.
[012]IF instruction unpaired, no ENDIF	In the program, a “ENDFOR” instruction (loop start) must go with a “FOR” instruction (loop end). Check if there is any extra of “ENDFOR” or lack of “FOR” in the program.
[013]Without end of program instruction.	Check the current program and add a “Program End” (in the Action selection) instruction in it.
[014]More than 10 instructions in combine action.	Check programming and make the instructions less than 10 lines.
[015]Without end of combine action.	In the program, a “ENDFOR” instruction (loop start) must go with a “FOR” instruction (loop end). Check if there is any extra of “ENDFOR” or lack of “FOR” in the program.
[016]System variables can’t be written.	Please check the program, and prohibit other variables to be written in the system variables.
[017] User variable beyond the scope.	Please check the program, if user variables exceed max. value.
[019]Safety door no signal.	Check whether there’s signal in the port monitoring page, and the function of using safety door signal has been selected. Check whether there is 24V potential on the two SDM ports of the main board. If not, check the peripheral circuits.
[020]Medium plate mould no signal.	Check whether there’s signal in the port monitoring page, and the function of using mid mould signal has been selected. Check whether there is 0V potential on the MID ports of the main board. If not, check the peripheral circuits.
[021]The production plan has completed.	Planned production quantity is reached. Please check it.
[022]The sum of rejects exceed standard.	Defective products quantity alarm, please check the mould.

[027]Forbid mould close when the vertical position of sub arm out of safety area.	Please check if the main arm is within the safe area or not. Check and see if the home signal of main arm is normal or not, and the standby setting is in mould standby or out of mould standby.
[028]Forbid mould close if vertical position of main arm out of safe area.	Please check if the main arm is within the safe area or not. Check and see if the home signal of main arm is normal or not, and the standby setting is in mould standby or out of mould standby.
[029]The system setup do not allow rotate action inside mould.	Please operate the robot correctly. If have to flip within the mould area, please allow “Rotate in mold” in System Setup of Menu. See 【Structure】in 【Machine Parameter】
[030]Cannot enter auto status when main arm home signal is not on.	Please manually move the main arm to safe position or homing before switching to auto-run mode.
[031]Cannot enter auto status when sub arm home signal is not on.	Please manually move the robot to safe position or homing before switching to auto-run mode.
[036]No servo homing operation (Start up without homing)	Please do homing and then operate.
[037]Z axis travelling is not safe, and the main arm is not in the upper position.	Please check if the sub-armis within the safe area or not. If it doesn’t, please move it to safe area before closing the mould. If it is, check the s arm safety area signal where may have problem.
[038] Z axis travelling is not safe, and the sub arm is not in the upper position.	Please check if the sub-arm is within the safe area or not. If it doesn’t, please move it to safe area before traversing. If it is, check the sub arm home signal where may have problem.
[041]The vertical movement of sub arm is not safe without mould opening signal.	Please confirm that the injection moulding machine has opened the mould before starting the vertical movement. If the mould has been opened, check whether there is 24V potential at two MOP ports on the main board.

[042]The vertical movement of sub arm is not safe without middle mould signal.	Please confirm that the injection moulding machine has opened the middle mould before starting the vertical movement. If the mould has been opened, check whether there is 0V potential at two MID ports on the main board.
[043]The vertical movement of main arm is not safe without completing signal of mould opening.	Please confirm that the injection moulding machine has opened the mould before starting the vertical movement. If the mould has been opened, check whether there is 24V potential at two MOPports on the main board.
[044]The vertical movement of main arm is not safe without middle mould signal.	Please confirm that the injection moulding machine has opened the middle mould before starting the vertical movement. If the mould has been opened, check whether there is 0V potential at two MID ports on the main board.
[045]The vertical movement of main arm is not safe as the horizontal axis is not in safe area.	Please check that the traverse safety area setting is correct. Confirm whether current position of traverse axis is in safe area before starting the vertical movement.
[046]The vertical movement of sub arm is not safe as the horizontal axis is not in safe area.	Please check that the traverse safety area setting is correct. Confirm whether current position of traverse axis is in safe area before starting the vertical movement of sub arm.
[047]The crosswise movement of main arm is not safe and the in mould exceeds the safe area.	Please check that the crosswise axis in mould safety area setting is correct. Confirm whether current position of crosswise axis is in safe area.
[049] The sub arm is not in the upper position	Please confirm whether the vertical axis of pneumatic sub arm is at original position. If not, move it to home position by manual before auto start.
[050] The system needs maintenance.	The number of mould produced by the system has reached the value for maintenance. Please contact the manufacturer for maintenance.
[054] Program pointer error.	Please contact the manufacturer.

[059]The main arm crosswise position exceeds the software stroke limit.	Please check current position and see whether the crosswise axis position taught in the program is within the software stroke limit.
[060]The main arm vertical position exceeds the software stroke limit.	Please check current position and see whether the vertical axis position taught in the program is within the software stroke limit.
[061]The horizontal position exceeds the software stroke limit.	Please check current position and see whether the horizontal axis position taught in the program is within the software stroke limit.
[062]The sub arm vertical position exceeds the software stroke limit.	Please check current position and see whether the sub vertical axis position taught in the program is within the software stroke limit.
[063]The sub arm crosswise position exceeds the software stroke limit.	Please check current position and see whether the sub arm crosswise position taught in the program is within the software stroke limit.
[064]Extended axis position exceeds the software stroke limit.	Please check current position and see whether the extended axis position taught in the program is within the software stroke limit.
[065]Traverse movement is within the safe area in mould, but the in mould signal is not on.	Please check whether the in mould safety area signal of traverse axis is normal. If it is, please check whether the traverse safety area setting range is within sensed signal range.
[066]Traverse movement is within the safe area out of the mould, but the in mould signal is not on.	Please check whether the outside mould safety area signal of traverse axis is normal. If it is, please check whether the traverse safety area setting range is within sensed signal range.
[069]The main arm vertical movement is within standby safe area, but the standby signal is not on.	Please check whether the main arm vertical axis home signal is normal. If it is, please check whether the vertical safety area setting range is within sensed signal range.
[070]The sub arm vertical movement is within standby safe area, but the standby signal is not on.	Please check whether the sub arm vertical axis home signal is normal. If it is, please check whether the vertical safety area setting range of sub arm is within sensed signal range.

[072]Invalid loop positioning points setting.	Please check whether the loop positioning setting is normal. If not, please contact the manufacturer.
[075]Main arm flip cylinder at horizontal position but horizontal position signal not on.	Please check whether the main arm horizontal signal in port monitoring page is normal. Check whether there is 0V input at theX12 port of the main board CN4. If not, check whether the external signal input is normal.
[076]Main arm flip cylinder at horizontal position but vertical position signal not on.	Please check whether the main arm horizontal signal and vertical signal in port monitoring page is normal. Check the wiring at theX12 port of the main board CN4. If not, check whether the external signal input is normal.
[077]Main arm flip cylinder at vertical position but vertical position signal not on.	Please check whether the main arm vertical signal in port monitoring page is normal. Check whether there is 0V input at theX13 port of the main board CN4. If not, check whether the external signal input is normal.
[078]Main arm flip cylinder at vertical position but horizontal position signal is on.	Please check whether the main arm horizontal signal and vertical signal in port monitoring page is normal. Check the wiring at the X13 port of the main board CN4.If not, check whether the external signal input is normal.
[079]Main arm crosswise servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.
[082]Main arm vertical servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.
[084] Overtime when waiting for mould opening.	While waiting for the mould opening signal, the time reaches the set time, please check whether the mould opening signal is normal. If no need to alarm for it, set the waiting time of mould opening to be 0 in the production setting.
[085]Traverse servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.
[088]Sub arm vertical servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.
[091]Sub arm crosswise servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.

[094]Extended servo axis alarms	Please check the servo drive alarms, and reset the system alarm after the servo drive alarm is dismissed.
[097]Injection moulding machine stops emergently, please check the IMM.	Please check whether the emergency stop signal of the IMM in port monitoring is normal, check whether there is 0V signal at the ESM port of the main board CN2. If not, check whether the external signal is normal.
[098] Robot stops emergently	Please check whether the emergency stop switch button of the manipulator is down, and then turn it on after confirming its safety.
[099]Low air pressure	Please check whether the low pressure signal in port monitoring is normal, check whether there is 0V signal at the X7port of the main board CN3. If not, check whether the external signal is normal.
[100] Sub arm has no mould opening completion signal in mould.	Please check whether the mould opening completion signal of the IMM blinks, and confirm whether current position of sub arm vertical axis is within safe area.
[101] Sub arm has no middle mould signal in mould.	Please check whether the middle mould signal of the IMM blinks, and confirm whether current position of sub arm vertical axis is within safe area.
[102] Main arm has no mould opening completion signal in mould.	Please check whether the mould opening completion signal of the IMM blinks, and confirm whether current position of main arm vertical axis is within safe area.
[103] Main arm has no middle mould signal in mould.	Please check whether the middle mould opening signal of the IMM blinks, and confirm whether current position of main arm vertical axis is within safe area.
[104]The main arm crosswise movement reached the positive limit.	Please check whether the main arm's crosswise axis positive limit signal is normal. If yes, confirm the position of main arm's crosswise position and then enter safety setting page to set and move the crosswise position reversely to safe area.

[105] The main arm crosswise movement reached the negative limit.	Please check whether the main arm's crosswise axis negative limit signal is normal. If yes, confirm the position of main arm's crosswise position and then enter safety setting page to set and move the crosswise position forwardly to safe area.
[106] The main arm vertical movement reached the negative limit.	Please check whether the main arm's vertical axis negative limit signal is normal. If yes, confirm the position of main arm's vertical position and then enter safety setting page to set and move the vertical position forwardly to safe area.
[107]The main arm vertical movement reached the positive limit.	Please check whether the main arm's vertical axis positive limit signal is normal. If yes, confirm the position of main arm's vertical position and then enter safety setting page to set and move the vertical position reversely to safe area.
[108]Traverse movement reached the positive limit.	Please check whether the traverse axis positive limit signal is normal, If yes, confirm the traverse position and then enter safety setting page to set and move the traverse position reversely to safe area.
[109]Traverse movement reached the negative limit.	Please check whether the traverse axis negative limit signal is normal, If yes, confirm the traverse position and then enter safety setting page to set and move the traverse position forwardly to safe area.
[110]The sub arm vertical movement reached the positive limit.	Please check whether the vertical axis positive limit signal is normal. If yes, confirm the position of sub arm’s vertical position and then enter safety setting page to set and move the sub arm’s vertical position reversely to safe area.
[111]The sub arm vertical movement reached the negative limit.	Please check whether the sub arm's vertical axis negative limit signal is normal. If yes, confirm the position of sub arm’s vertical position and then enter safety setting page to set and move the sub arm’s vertical position forwardly to safe area.

[112]The sub arm crosswise movement reached the negative limit.	Please check whether the sub arm's crosswise axis negative limit signal is normal. If yes, confirm the position of sub arm’s crosswise position and then enter safety setting page to set and move the sub arm’s crosswise position forwardly to safe area.
[113]The sub arm crosswise movement reached the positive limit.	Please check whether the sub arm's crosswise axis positive limit signal is normal. If yes, confirm the position of sub arm’s crosswise position and then enter safety setting page to set and move the sub arm’s crosswise position forwardly to safe area.
[114]Extended axis movement reached the positive limit.	Please check whether the extended axis positive limit signal is normal. If yes, confirm the extended axis position and then enter safety setting page to set and move the extended position reversely to safe area.
[115]Extended axis movement reached the negative limit.	Please check whether the extended axis negative limit signal is normal. If yes, confirm the extended axis position and then enter safety setting page to set and move the extended position forwardly to safe area.
[117]Servo positioning overtime	Please check the current instruction to delete the program and teach again. If it can’t be solved, please contact the manufacturer.
[118]Invalid positioning instruction axis index	Please check the current instruction to delete the program and teach again. If it can’t be solved, please contact the manufacturer.
[119]Communication error of extended IO board 1.	Check whether the comm. cables of IO board and main control board are normal, IO board dial switch is correct, and IO board has been powered on.
[120]Communication error of extended IO board 2.	Check whether the comm. cables of IO board and main control board are normal, IO board dial switch is correct, and IO board has been powered on.
[121]Communication error of extended IO board 3.	Check whether the comm. cables of IO board and main control board are normal, IO board dial switch is correct, and IO board has been powered on.

[122]Communication error of extended IO board 4.	Check whether the comm. cables of IO board and main control board are normal, IO board dial switch is correct, and IO board has been powered on.
[123]Downward movement is prohibited without out of mould downward safety signal.	Please check the port monitoring page and see if the out of mould downward safety signal is normal, and whether there are 0V inputs in the SAF port of SCN2 and the SAF port of SCN4 on the main board. If not, check the wiring.
[124]Unsafe traverse movement while flipping.	Please check current position of pneumatic flipping cylinder. If it needs to traverse vertically, need to enter the signal setting page and set the flip cylinder position to be vertical or no limit while starting traverse movement.
[125]Unsafe crosswise movement of sub arm, and the sub arm is not in upper position.	Please check that the sub arm's crosswise axis in mould safety area is correct. Confirm whether current position of sub arm's crosswise axis is in safe area.
[126]Unsafe crosswise movement of sub arm, and in mould exceeds the safe area.	Please check that the sub arm's crosswise axis in mould safety area is correct. Confirm whether current position of sub arm's crosswise axis is in safe area.
[128]Medium plate mould no signal after mould opening.	Check whether the middle mould signal of injection moulding machine in the port monitoring page is normal. Check whether there is 0V input on the MID ports of the main board CN2. If not, check whether the external signal is normal.
[129]No full automatic signal of the injection moulding machine during automatic operation.	Check whether the full automatic signal of injection moulding machine in the port monitoring page is normal. Check whether there is 24V potential on the two ports of AUTO on the main boardCN1. If not, check the circuits.
[130]Crosswise axis movement will collide.	Please check whether the set crosswise software stroke limits of the main arm and sub arm are correct, and confirm whether current crosswise positions of main arm and sub arm are safe.

[131]The actions can’t be used in combination programming.	Please check the current instruction to delete the program and teach again. If it can’t be solved, please contact the manufacturer.
[132]No mould opening completion signal while the arm is in mould (out of mould standby)	Check whether the mould opening completion signal of injection moulding machine in the port monitoring page is normal. Check whether current position of arm is out of the mould, and the set standby mode is correct.
[133]No middle mould signal while the arm is in mould (out of mould standby)	Check whether the mould opening completion signal of injection moulding machine in the port monitoring page is normal. Check whether current position of arm is out of the mould, and the set standby mode is correct.
[134]The Z axis traverse movement is not safe, no mould opening completion signal (out of mould standby)	Check whether the mould opening completion signal of injection moulding machine in the port monitoring page is normal. Confirm whether current position of traverse movement is out of mould, and the set standby mode is correct.
[135]The Z axis traverse movement is not safe, no middle mould signal (out of mould standby)	Check whether the middle mould signal of injection moulding machine in the port monitoring page is normal. Confirm whether current position of traverse movement is out of mould, and the set standby mode is correct.
[136]Invalid sub arm movement	Cancel the program and teach again. If the problem can’t be addressed, please contact the manufacturer.
[137]Sub arm downward position reached but the position signal not on.	Please confirm whether the parameter is set to use pneumatic sub arm's downward position signal and check the sub arm's downward action. And check if there is 0V input in the X20 of the main board's CN5 and check the concerned circuit.
[138]Sub arm downward position reached but the upward position signal is on.	Please confirm whether the parameter is set to use pneumatic sub arm and check the sub arm's actions. And check if the sub arm's upward position signal is normal or not.

[139]Sub arm upward position reached but the upward position signal not on.	Please confirm whether the parameter is set to use pneumatic sub arm and check the sub arm's upward action. And check if there is 0V input in the X21 of the main board's CN5 and check the concerned circuit.
[140]Sub arm upward position reached but the downward position signal is on.	Please confirm whether the parameter is set to use the pneumatic sub arm's downward position signal, check the sub arm's downward action. And check if there is 0V input in the X21 of the main board's CN5 and check the concerned circuit.
[141]Neither in the product picking point nor in the placing point, and the sub arm downward action is not safe.	Please check that the traverse safety area setting is correct. Confirm whether current position of traverse axis is in safe area before starting the vertical movement.
[142]No mould opening completion signal in mould, and the sub arm downward action is not safe.	Check whether the mould opening completion signal of injection moulding machine in the port monitoring page is normal. Check whether there is 24V potential in the two ports of MOP on the main board’s CN1. And check whether the mould opening completion signal blinks.
[143]No middle mould signal in mould, and the sub arm downward action is not safe.	Check whether the middle mould signal in the port monitoring page is normal. Check whether there is 0V potential in the MID port on the main board’s CN2. And check whether the signal blinks.
[151]Invalid activation code	Please enter a valid activation code, and please contact the manufacturer.
[152]JOG mode can only be converted to manual mode.	Please contact the manufacturer.
[153] Valid activation code	The activation code is valid.
[155]Both in mould and out of mould safety area signals are there!	Please check whether the out of mould signal and traverse home signal in the port monitoring page are normal, and confirm whether current position of traverse movement is within corresponding safety area.
[156]The variable operation can’t be 0.	Please check whether the teaching program is correct.
157]Activation code expired	Activation code has expired. Please contact the manufacturer.

[158] Arm downward movement is not safe, and the main crosswiseX axis is out of the in mould safe area.	Please check that the crosswise axis in mould safety area setting is correct. Confirm whether current position of crosswise axis is in safe area before starting the vertical movement.
[159]Arm downward movement is not safe, and the sub main crosswiseX2 axis is out of the in mould safe area.	Please check that the sub arm's crosswise axis in mould safety area setting is correct. Confirm whether current position of sub arm's crosswise axis is in safe area before starting the vertical movement.
[162]In mould pneumatic crosswise forward reached forward position, but the position signal is not on.	Please check whether the parameter is set to use the pneumatic sub arm forward position signal, and the sub arm works normally. Check whether there is 0V input in the X24 on main board's CN5, and check the circuits.
[163]In mould pneumatic crosswise forward in position, but the retreat signal is on.	Please check whether the parameter is set to use the pneumatic sub arm retreat position signal, and the sub arm works normally. Check whether there is 0V input in the X25 on main board's CN5, and check the circuits.
[164]Pneumatic retreat reached in mould, but the retreat signal is not on.	Please check whether the parameter is set to use the pneumatic sub arm retreat position signal, and the sub arm works normally. Check whether there is 0V input in the X25 on main board's CN5, and check the circuits.
[165]In mould pneumatic crosswise forward in position, but the retreat signal is on.	Please check whether the parameter is set to use the pneumatic sub arm retreat position signal, and the sub arm works normally. Check whether there is 0V input in the X24 on main board's CN5, and check the circuits.
[167]The arm downward movement is not safe, and the rotation B axis is not in safe area in mould.	Please check whether the rotation axis inmould safety area setting is correct. Confirm whether current position of rotation axis is in safe area before starting the vertical movement.
[168]The arm downward movement is not safe, and the A axis (flipping cylinder) is not in safe area in mould.	Please check whether the flipping cylinder in mould safety area setting is correct. Confirm whether current position of flip cylinder axis is in safe area before starting the vertical movement.

[169]The flipping action is not safe as the main arm vertical Y axis is not in upper position	Please check whether the flipping cylinder in mould safety area setting is correct. Confirm whether current position of vertical axis is in 0 position before starting the flipping cylinder axis movement.
[170]The arm rotation movement is not safe, and the main arm vertical Y axis is not in upper position	Please check whether the rotation axis in mould safety area setting is correct. Confirm whether current position of vertical axis is in 0 position before starting the rotation axis movement.
[171]The arm traverse movement is not safe, and the sub arm vertical Y2 axis is not in safe position	Please check whether the traverse movement safety area setting is correct. Confirm whether current position of upward axis is in 0 position before starting the traverse movement.
[172]The flipping action is not safe as it exceeds the safe area in mould.	Please check whether the flipping cylinder in mould safety area setting is correct. Confirm whether current position of flip cylinder axis is in safe area before starting the flipping cylinder axis movement.
[173]The arm rotation is not safe, which can't exceed the safe area in mould.	Please check whether the rotation axis in mould safety area setting is correct. Confirm whether current position of rotation axis is in safe area before starting rotation axis movement.
[174]The position of flipping cylinder axis exceeds the software stroke limit.	Please check the current position, and whether the position of flipping cylinder axis taught in the program is within the software stroke limit.
[175]The position of rotation axis exceeds the software stroke limit.	Please check the current position, and whether the position of rotation axis taught in the program is within the software stroke limit.
[176]The arm traverse movement is not safe as the X2 axis is not in the safe position	Please check whether the X2 axis safety area setting is correct. Confirm whether current position of the X2axis is in safe area before starting the traverse axis movement.
[177]The arm traverse movement is not safe as the Z2 axis is not in the safe position	Please check whether the Z2 axis safety area setting is correct. Confirm whether current position of the Z2 axis is in safe area before starting the traverse axis movement.

[178]The arm Z2 axis is not safe, which can't exceed the safe area in mould.	Please check whether the Z2axissafety area setting is correct. Confirm whether current position of the Z2axis is in safe area before starting the Z2 axis movement.
[179]The arm traverse movement is not safe as the main crosswise axis is not in the safe position	Please check whether the crosswise axis safety area setting is correct. Confirm whether current position of the crosswise axis is in safe area before starting the traverse axis movement.
[180]The sub arm at horizontal position but the horizontal position signal not on.	Please check the sub arm horizontal signal in the port monitoring page is normal. Check whether there is 0V input at the horizontal signal port of the X20 on the main board's CN5. If no, check whether the external signal input is normal.
[181]The sub arm at horizontal position but the vertical position signal is on.	Please check the sub arm horizontal and vertical signals in the port monitoring page are normal. Check the wiring of horizontal signal port of the X20 on the main board's CN5. If no, check whether the external signal input is normal.
[182]The sub arm at vertical position but the vertical position signal is not on.	Please check the sub arm vertical signal in the port monitoring page is normal. Check whether there is 0V input at the vertical signal port of the X21 on the main board's CN5. If no, check whether the external signal input is normal.
[183]The sub arm at vertical position but the horizontal position signal is not on.	Please check the sub arm horizontal and vertical signals in the port monitoring page are normal. Check the vertical signal port of the X21 on the main board's CN5. If no, check whether the external signal input is normal.
[184] The absolute encoder not supported by the main crosswise axis.	Please check the set encoder type of the main crosswise axis and confirm whether its cable for communicating with the servo drive is normal.
[185]The absolute encoder not supported by the main vertical axis.	Please check the set encoder type of the main vertical axis and confirm whether its cable for communicating with the servo drive is normal.

[186]The absolute encoder not supported by the main traverse axis.	Please check the set encoder type of the traverse axis and confirm whether its cable for communicating with the servo drive is normal.
[187]The absolute encoder not supported by the main vertical axis.	Please check the set encoder type of the sub arm's vertical axis and confirm whether its cable for communicating with the servo drive is normal.
[188]The absolute encoder not supported by the sub crosswise axis.	Please check the set encoder type of the sub arm's crosswise axis and confirm whether its cable for communicating with the servo drive is normal.
[189]The absolute encoder not supported by the extended axis.	Please check the set encoder type of the sub arm's extended axis and confirm whether its cable for communicating with the servo drive is normal.
[190]Comm. error of main crosswise absolute encoder.	Please check the set encoder type of the main crosswise axis and confirm whether its cable for communicating with the servo drive is normal.
[191]Comm. error of main vertical absolute encoder.	Please check the set encoder type of the main vertical axis and confirm whether its cable for communicating with the servo drive is normal.
[192]Comm. error of traverse absolute encoder.	Please check the set encoder type of the traverse axis and confirm whether its cable for communicating with the servo drive is normal.
[193]Comm. error of sub arm's vertical absolute encoder.	Please check the set encoder type of the sub arm's vertical axis and confirm whether its cable for communicating with the servo drive is normal.
[194]Comm. error of sub arm's crosswise absolute value encoder.	Please check the set encoder type of the sub arm's crosswise axis and confirm whether its cable for communicating with the servo drive is normal.
[195]Comm. error of extended absolute value encoder.	Please check the set encoder type of the extended axis and confirm whether its cable for communicating with the servo drive is normal.
[196]Oil replenishment alarm	Please check whether the oil replenishment feedback signal is normal, and confirm whether there is 0V signal in the X08 of main board's CN3.

[197]Paused due to external safety door open	Please check whether the external safety door signal is normal.
[199]The traverse axis has overlaps in the in mould and out of mould safety areas.	Please check whether the signals of traverse in mould and out of mould safety areas are normal, and confirm whether the traverse in mould and out of mould safety area settings are correct.
[200]The flipping cylinder position is not correct while performing vertical reset action.	Please check whether current state of the flipping cylinder position is correct, and confirm whether the selection of vertical reset position and the signals are correct.
[201]The horizontal standby limit mould locked.	Please check whether current state of the flipping cylinder position is correct, and confirm whether the selection of horizontal standby limiting the locking of mould is correct.
[202]At standby position detected the fixture and jig opened.	Please check whether current state of the fixture and jig is closed.
[208]Piracy	Please contact the manufacturer.
[209]The Z axis traverse action is not safe as the crosswise axis is not in the safe area in mould.	Please check whether the crosswise axis safety area setting is correct, and confirm whether current position of crosswise axis is in safe area before starting the traverse axis movement.
[210]Not safe to flip horizontally when not out of mould.	Please check whether the traverse axis safety area setting is correct, and confirm whether current position of traverse axis is in safe area before starting the flipping cylinder traverse movement.
[211]The battery power down.	Please check whether the main board battery voltage is normal.
[212]The system battery power down.	Please check whether the system voltage is normal.
[213]Low battery voltage of the main crosswise absolute encoder.	Please check whether the battery voltage of main crosswise servo encoder is normal.
[214]Low battery voltage of the main vertical absolute encoder.	Please check whether the battery voltage of main vertical servo drive encoder is normal.

[215] Low battery voltage of the traverse absolute encoder.	Please check whether the battery voltage of traverse servo drive encoder is normal.
[216] Low battery voltage of the sub vertical absolute encoder.	Please check whether the battery voltage of sub arm's vertical servo drive encoder is normal.
[217] Low battery voltage of the sub crosswise absolute encoder.	Please check whether the battery voltage of sub arm's crosswise servo drive encoder is normal.
[218]Low battery voltage of the extended absolute encoder.	Please check whether the battery voltage of extended servo drive encoder is normal.
[220]The flipping action is not safe, which can't exceed the traverse safe area (current traverse position is not in safe area)	Please check whether the traverse axis safety area setting is correct, and confirm whether current position of traverse axis is in safe area before starting the flipping cylinder movement.
[221]The rotation movement is not safe, which can't exceed the safe area during traverse movement (current traverse position is not in safe area)	Please check whether the traverse axis safety area setting is correct, and confirm whether current position of traverse axis is in safe area before starting the rotation axis movement.
[222]The extended movement is not safe, which can't exceed the safe area during traverse movement (current traverse position is not in safe area)	Please check whether the traverse axis safety area setting is correct, and confirm whether current position of traverse axis is in safe area before starting the extended axis movement.
[223]The main arm crosswise movement is not safe, which can't exceed the safe area during traverse movement (current traverse position is not in safe area).	Please check whether the traverse axis safety area setting is correct, and confirm whether current position of traverse axis is in safe area before starting the crosswise axis movement.
[230]Invalid visual number.	Please check whether the visual setting is correct.
[231]Invalid matching number.	Please contact the manufacturer.
[232]Visual system busy.	Please check whether the visual setting is correct.
[233]Network error	Please check whether the IP address setting is correctly.
[234]Visual overtime	Please check whether the visual setting is correct.

[235]The main arm vertical Y axis is not at the upper safe area.	Please confirm whether the main arm's vertical position is in the safe area, check whether the main arm's vertical home signal is normal, and confirm whether the upward limit position of main arm's vertical safety area setting is correct.
[236]The sub arm vertical Y2 axis is not at the safe area in upper position	Please confirm whether the subarm's vertical position is in the safe area, check whether the subarm's vertical home signal is normal, and confirm whether the upward limit position of subarm's vertical safety area setting is correct.
[240] The counter 0 needs maintenance.	Please check whether the maintained moulding count of counter 0 is correct.
[241] The counter 1 needs maintenance.	Please check whether the maintained moulding count of counter 1 is correct.
[242] The counter 2 needs maintenance.	Please check whether the maintained moulding count of counter 2 is correct.
[243] The counter 3 needs maintenance.	Please check whether the maintained moulding count of counter 3 is correct.
[244] The counter 4 needs maintenance.	Please check whether the maintained moulding count of counter 4 is correct.
[245]The counter 5 needs maintenance.	Please check whether the maintained moulding count of counter 5 is correct.
[246]The counter 6 needs maintenance.	Please check whether the maintained moulding count of counter 6 is correct.
[247]The counter 7 needs maintenance.	Please check whether the maintained moulding count of counter 7 is correct.

11. Drive Alarm Message and Toubleshooting

Code	Meaning	Faults	Solutions
Err 1	Over-speed	When connecting the power supply, it prompts: 1) Circuit fault inside the servo 2)Motor fault	When this fault occurs, check whether the motor encoder cable has good contact at first. If there are new servos or other servos in the machine, it can verify by exchanging. It's probable the motor fault if there's still the failure after replacing the servo.
		In the motor running, it prompts: 1) The input pulse frequency is too high, the acceleration and deceleration time is too short, and the electronic gear ratio is too large. 2) Encoder fault	1) Check the pulse frequency, increase the acceleration and deceleration time, and check if the electronic gear ratio of PA-12.PA-13 is reasonable. 2) Check whether the encoder connection wire is in good contact, replace the encoder wire, replace the servo motor, and check whether related parameters are set properly, such as PA-6 and PA-63 for overshoot.
		When motor starts, it prompts: 1) Large load inertia, and motor encoder zero error. 2) Motor U V W phase lead error, and motor encoder wiring fault.	1) Check whether the load inertia ratio is overshoot, such as (PA-5 PA-6 PA-9 PA-63) and other parameters. 2) Check whether the leads of the motor power cable in phase U V W are sequenced correctly, and it can exchange the positions of U, V, and W phases one by one. Check whether the motor encoder wire connection and sequence are correct. If there's still the problem, it needs to be returned to the factory for repair.

Err 2	Main circuit over-voltage	When connecting the power supply, it prompts: Too high input power voltage and unstable.	Check whether the municipal input power voltage is too high. It can use a multi-meter to measure the AC 750V voltage and check whether the measured voltage fluctuations are normal. For example: The measured voltage is 220V-230V-235V, and it indicates that external network voltage is extremely unstable. Turn on the P-UDC in servo db mode to monitor (i.e. 220X1.414=311V, 380V drive is the same as 380X1.414=537V).If the P-UDC value is not within the normal range or exceeds 400V during P-UDC running (380V driver P-UDC exceeds 800V), it will result in the servo inner voltage increase gradually and generate an alarm. If the voltage is from a single phase of three-phase 380V in the control box, it can measure the voltage of the other two phases. Take the phase with the lowest measured voltage as the servo input voltage.
		In the motor running, it prompts: The brake circuit capacity is insufficient, the brake resistor is burnt out, and the servo inner circuit fault.	Check whether the brake resistor has burned out, and replace it with a higher power brake resistor, such as (25Ω, 2000W - 30Ω, 2000W), and it is generally determined as per the on-site load inertia. If it still can't be used after replacement, it's possible that the fault of servo inner resistance. It's recommended to return it to the factory for repair.

Err 3	Main circuit under - voltage	When connecting the power supply, it prompts: 1) Input voltage is too 2) Temporary power failure above 20MS.	Check the servo input power voltage, and it can use a AC 750V multi-meter to measure and check whether the voltage is normal. The municipal power is generally around 210-225V. It's suggested to install the isolation transformer and AC filters. If there's still problem after ascertain above issues, it is possible the fault of servo inner circuit, and it's suggested to return it to the factory for repair.
		During motor running, it prompts: 1) Insufficient power capacity. 2) Radiator overheat;	Check the power supply, such as whether it has been converted by a transformer, and whether the transformer power is sufficient. Insufficient driver power results in radiator overheat.
Err 4	Position deviation	When connecting to the power supply, it prompts: 1) Encoder zero offset. 2) Encoder fault. 3) Circuit board fault.	Readjust the encoder zero point, and if the problem persists, replace the servo motor and driver.
		In the motor running, it prompts: 1) The detection range of the set position deviation is too small. 2) Position ratio gain is too small. 3) Insufficient torque. 4) Pulse command too high frequency.	Position out of tolerance inspection range. Check whether the parameters of PA-17 (position deviation inspection range) are set too low. Check whether the parameter of PA-9 (position loop ratio gain) is set too low. If these two parameters are too low, it's necessary to increase the parameter settings for PA-9 and PA-17. Check the load inertia ratio PA-63 can slightly increase this parameter. Check whether the frequency of input pulse command is too high, and reduce the pulse command frequency. Readjust the encoder zero point. If the above faults are resolved and the problem still persists, it's recommended to return to the factory for repair.

Err 5	Overheat	In the motor running, it prompts: 1) Too high drive temp. 2)Circuit board fault.	Check whether the drive temperature is too high and if the fan on the servo is working. Install a cooling and exhaust fan in the control cabinet. If the above checks are correct, it is possible the fault of drive inner circuit, and it's recommended to return it to the factory for repair.
Err 6	Speed amplifier saturation failure	In the motor running, it prompts: 1) Large motor load. 2)The motor is mechanically stuck	Firstly, reduce the load. If the load has exceeded the drive output power, check whether there is any jamming of motor in the mechanical part. If the above is correct, replace the servo driver and motor with a higher power one.
Err 7	Drive inhibit abnormal	CCW/CW drive inhibit input terminals all break	Check the connection wires of CCW/CW, and they may be loose or disconnected.
Err 8	Position deviation counter overflow	1) The motor is mechanically stuck. 2)Abnormal pulse command input.	Check whether there is any jamming of the servo motor in the load's mechanical part. Check whether there is interference in the pulse input command, the ground wire is connected properly, and whether the CN1 signal wire of input terminal has a shielding layer. Open the P-CPO in db mode and monitor the current location information. If the numerical difference is too large, there's a possibility of external interference, and it's important to check whether the contact of each ground wire is good.
Err 11	IPM modular fault fault	When connecting to the power, it prompts: Circuit board fault.	If this alarm occurs after the servo is powered on, it is likely that there is a malfunction inside the servo circuit. It's recommended to return it to the factory for repair.

		In the motor running, it prompts: 1) Low power voltage. 2) Overheat 3) Short circuit between drive U V W phases. 4) Poor grounding. 5) Motor insulation broken. 6)Affected by the influence.	Firstly, check whether the power voltage is normal. It can use an AC 750V multi-meter to measure the servo's power voltage and check whether if it is within a normal range (such as whether 220V power supply is 220V, whether 308V power supply is 380V, etc.). Check whether the motor U V W phase is disconnected or if the terminals are loose without good contact, or if there is the short circuit between the three-phase. Check whether the output port at motor end leads is in contact with the motor housing. Check whether the earth wire is properly grounded. Consider the external interference, it's recommended to add a wire filter or isolation transformer. The signal wire should be separated from the power wire and kept away from interference sources, such as high-power frequency converters. If there's still the problem after above troubleshooting, it's recommended to return to the factory for repair.
Err 13	Overload	When connecting to the power, it prompts: Circuit board fault.	Solution: If this alarm occurs after the servo is powered on, it is likely that there is a fault inside the servo circuit. It's recommended to return to the factory for repair.

		In the motor running, it prompts:1. Running beyond rated torque.2. Holding brake is open or not. 3. Motor unstable oscillation. There is one phase in 4 U V W phases disconnected.4. Encoder connection error.	Solution: First, check the holding brake (that is, whether the motor brake is open and whether the wiring is correct.). Check if the loading amount has exceeded the output power of the drive itself, reduce the start stop frequency, and increase the parameters of PA-5, PA-9, and PA-63.（If the fault becomes more obvious after increasing the load, it is likely that the load is over. It's suggested to replace the servo drive and servo motor with higher power or reduce the load）to reduce the acceleration and deceleration time. Check whether the connecting wires of motor phase U V W are loose or disconnected, and check from the motor end to the input port of drive phases U V W one by one. Check whether the motor encoder cable is in good contact. If there's still the problem after above troubleshooting, it's suggested to return to the factory for repair.
Err 14	Braking fault	When connecting to the power, it prompts: brake circuit fault.	It's probably that the customer didn't plug in the brake terminal on the servo drive. If the problem still can't be solved by plugging it in, then there is a problem inside the servo circuit, and it's recommended to return to the factory for repair.
Err 15	Encoder counting fault	In the motor running, it prompts: 1) Encoder broken. 2) The number of encoder wires is incorrect. 3) Encoder connecting wire error 4) Poor grounding. Encoder has false Z signal.	It's probably that the customer didn't plug in the brake terminal on the servo drive. If the problem still can't be solved by plugging it in, then there is a problem inside the servo circuit, and it's recommended to return to the factory for repair

Err 18	Relay switch fault	When connecting to the power, it prompts: 1. Relay damage	If this alarm occurs after the servo is powered on, it is likely that there is a fault inside the servo circuit. It is suggested to return it to the factory for repair.
Err 19	Brake not open after set delay time	The PA-94 parameter is set too large, and the brake doesn't open when the control pulse arrives.	Check parameter PA-94 and reduce this parameter value.
Err 20	EEPROM error	Servo inner circuit fault.	It needs to replace the drive, and it's suggested to return it to the factory for repair.
Err 21	FPGA Module fault	Servo inner circuit fault.	It needs to replace the drive, and it's suggested to return it to the factory for repair.
Err 23	Current acquisition circuit fault	Servo inner circuit fault.	It needs to replace the drive, and it's suggested to return it to the factory for repair.
Err 29	User torque overload alarm	The PA-30, PA-31 parameters are set inappropriate.	It's necessary to modify these two parameters properly and check whether there is a over load in the mechanical part that exceeds the output capacity of the driver itself.
Err 30	Encoder Z pulse loss	1) Z pulse doesn't exist, encoder is broken. 2) Poor cable connection. 3)Encoder interface circuit fault.	Firstly, check whether the encoder cable is in good contact and whether the shielding layer of the encoder cable is properly grounded. If necessary, replace the encoder cable and try it out. If there's still the problem after above troubleshooting, it's suggested to replace the encoder or return to the factory for repair.
Err 31	Encoder UVW signal error	1) Encoder UVW signal damaged. 2) Poor cable connection. 3) Encoder Z signal damaged. 4)Encoder interface circuit fault.	Firstly, check whether the encoder cable is in good contact and whether the shielding layer of the encoder cable is properly grounded. If necessary, replace the encoder cable and try it out. If there's still the problem after above troubleshooting, it's suggested to replace the encoder or return to the factory for repair.

Err 32	Encoder UVW abnormal signal encoding	1) Encoder UVW signal damaged. 2) Poor cable connection. 3) Encoder Z signal damaged 4)Encoder interface circuit fault.	Firstly, check whether the encoder cable is in good contact and whether the shielding layer of the encoder cable is properly grounded. If necessary, replace the encoder cable and try it out. If there's still the problem after above troubleshooting, it's suggested to replace the encoder or return to the factory for repair.
Err 33	Wire-saving encoder alarm	It is resulted in the parameter of PA-62 (encoder selection) is set incorrectly.	
Err 34	UVW signal unstable	UVW signal unstable	Firstly, check the motor power wire for good contact and whether there is disconnection or looseness. Check whether the feedback of encoder cable UVW signal has good contact. If conditions permit, it can try to replace the power wire or encoder wire. If there's still the problem after above troubleshooting, it's suggested to return to the factory for repair.
Err 36	Abnormal state too long when using wire-saving encoder	Abnormal state too long when using wire-saving encoder.	Firstly, check whether the encoder cable is too long, as it may interfere the signal and encoder signal attenuation. It's suggested to shorten the length of the encoder line and keep away from interference sources, etc. Such as away from the frequency converters, high-frequency lasers, and other equipment.
Err 38	Read and written encoder EEPROM comm. failure	Read and written encoder EEPROM comm. failure	Firstly, check whether the encoder cable is in good contact and if there is any disconnection or looseness. If necessary, replace the encoder cable for testing. If there's still the problem, it's suggested to return to the factory for repair.

Err 39	Motor no written parameters	Motor no written parameters	If the alarm reports 39 as soon as it is powered on, it needs to change the parameter PA-98 to 0, then power off and restart. After restarting, change PA-0 to 385. After confirmation, return to PA-1 and select the motor model (if the motor model is 80-02430). First, select 80, press the SET key to confirm the entry, select 02430, long press the SET key, wait for the number flashing, and then power off and restart.
Err 40	Model not supported	Model not supported	The drive doesn't support this model and it needs to be returned to the factory to match the motor and drive.
Err 41	Need to switch the motor model	Need to switch the motor model	(For example, if the motor model on site is 80-02430), first change PA-0 to 385, then press the SET key twice to return and find PA-1. Press the SET key to enter and find 80. Press the SET key again to enter the next step and find 02430. Then, long press the SET key and wait for the number flashing a few times before releasing it. Power off and restart the servo.
Err 42	AC low input voltage	When running at power OFF state, it prompts: 1) Normal 2)External AC voltage input is too low	Check the servo input power voltage, and it can use an AC 750V multi-meter to measure and check whether the voltage is normal. The municipal power is generally around (210-225V). If the fluctuation is significant, it may be influenced by other devices and unstable voltage of the external network. It's suggested to install the isolation transformer and AC filters. If there's still problem after ascertain above issues, it is possible the fault of servo inner circuit, and it's suggested to return it to the factory for repair.
Err 44	Phase shortage	Phase shortage	Change parameter PA-56 to 1.

Err 47	Too high main circuit voltage when switching on	Fault analysis: 1) External AC voltage input is too high. 2) Main circuit fault.	Check the servo input power voltage, and it can use an AC 750V multi-meter to measure and check whether the voltage is normal. The municipal power is generally around 210-225V. If the fluctuation is significant, it may be influenced by other devices and unstable voltage of the external network. It's suggested to install the isolation transformer and AC filters. If there's still problem after ascertain above issues, it is possible the fault of servo inner circuit, and it's suggested to return it to the factory for repair.
Err 50	Encoder comm. fault	No comm. connected between the drive and encoder.	Check whether the encoder cable is connected properly and if the terminals are loose or disconnected. If necessary, replace the encoder cable and try again. After confirming that there are no errors, power on again. If there's still the problem after above troubleshooting, it's suggested to replace the encoder or return to the factory for repair.
Err 51	Encoder comm. fault	After the encoder comm. is connected, there is an interruption and disconnection.	Check whether the encoder cable is connected properly and if the terminals are loose or disconnected. If necessary, replace the encoder cable and try again. After confirming that there are no errors, power on again. If there's still the problem after above troubleshooting, it's suggested to replace the encoder or return to the factory for repair.
Err 52	Encoder battery voltage is low	Alarm for insufficient encoder battery voltage, the information is not lost but it needs to be replaced ASAP.	Replace with a new battery.

Err 53	Encoder battery voltage error alarm	Alarm for wrong encoder battery voltage, the saved information is wrong, and it needs to reset the encoder.	It can clear this alarm, change parameter PA-63 to 1, and then power off and restart. If there's still the problem after powering off and restart, it's suggested to replace the battery as soon as possible.
Err 54	Encoder error alarm	Encoder non-battery alarm, but it needs to reset the encoder.	Reset the encoder (power off and restart the servo drive).
Err 55	CRC verification error for 5 consecutive times	The CRC validation of the data received by the encoder has been wrong for 5 consecutive times.	Firstly, check whether the encoder cable is in good contact and if the terminals of the encoder cable are firmly inserted. It's suggested to replace it with another encoder wire for testing or exchange the drive for testing. If there's still the problem with the motor, there's may be a problem with the motor encoder, and it needs to be returned to the factory for repair.
Err 56	Too long MODBUS frame error	Fault analysis: 1) Communication protocol mismatch. 2) Affected by external interference.	First, confirm whether the ground wire is in good contact and ensure that the ground wire is properly grounded. Check whether the parameters are set correctly, such as (PA-71-MODBUS address, PA-72-MODBUS comm. baud rate, PA-73-MODBUS communication protocol selection). Check whethre the MODBUS network cable is relatively close to the interference source and it should be connected independently in a cable slot alone (such as the inverter power wire, and the serve motor power wire). Confirm the MODBUS frame length. If there's still the problem after troubleshooting, it's suggested to return to the factory for repair.

Err 57	MODBUS comm. format error	Fault analysis: 1) The comm. parameters are set improper. 2) The comm. address or value is incorrect.	Firstly, check whether the comm. address parameters are set correctly, such as (PA-71-MODBUS address, PA-72-MODBUS comm. baud rate, PA-73-MODBUS comm. protocol selection). Check whether the network cable is in good condition and try to replace it with a new one. If there's still the problem after troubleshooting, it's suggested to return to the factory for repair.
Err 58	Single-loop position value error	The single-loop position offset saved by the driver exceeds the encoder resolution.	Power off and restart the servo drive.
Err 59	Encoder alarms for CF error	Encoder alarms for CF or errors continuously.	Reset the encoder (power off and restart the servo drive).