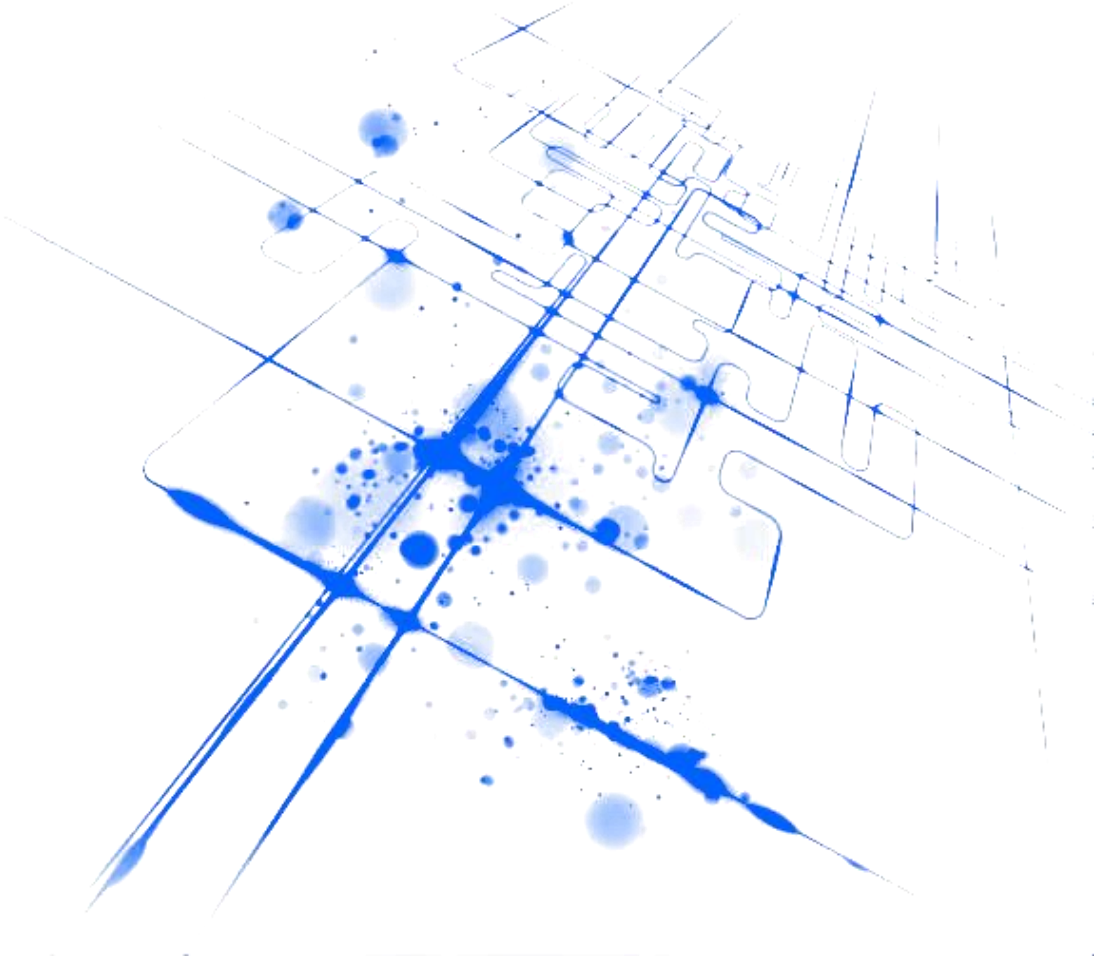
Operation Manual for 3/5-Axis Touch Screen Control System

Special Manipulator Control System for Injection Molding Machine



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1. 8-inch HMI Overview



Origin： Press "Origin" then "START" for automatic homing. Homing is complete when the screen shows "Homing Successful".

STOP： When the system is in automatic operation or homing, press the STOP button to stop the system operation. When an alarm occurs on the system, press the STOP button to reset the alarm.

Revert： All axes return to zero position at a faster speed

Status Selector Switch: Switches the system between Manual, Automatic, and Stop modes.

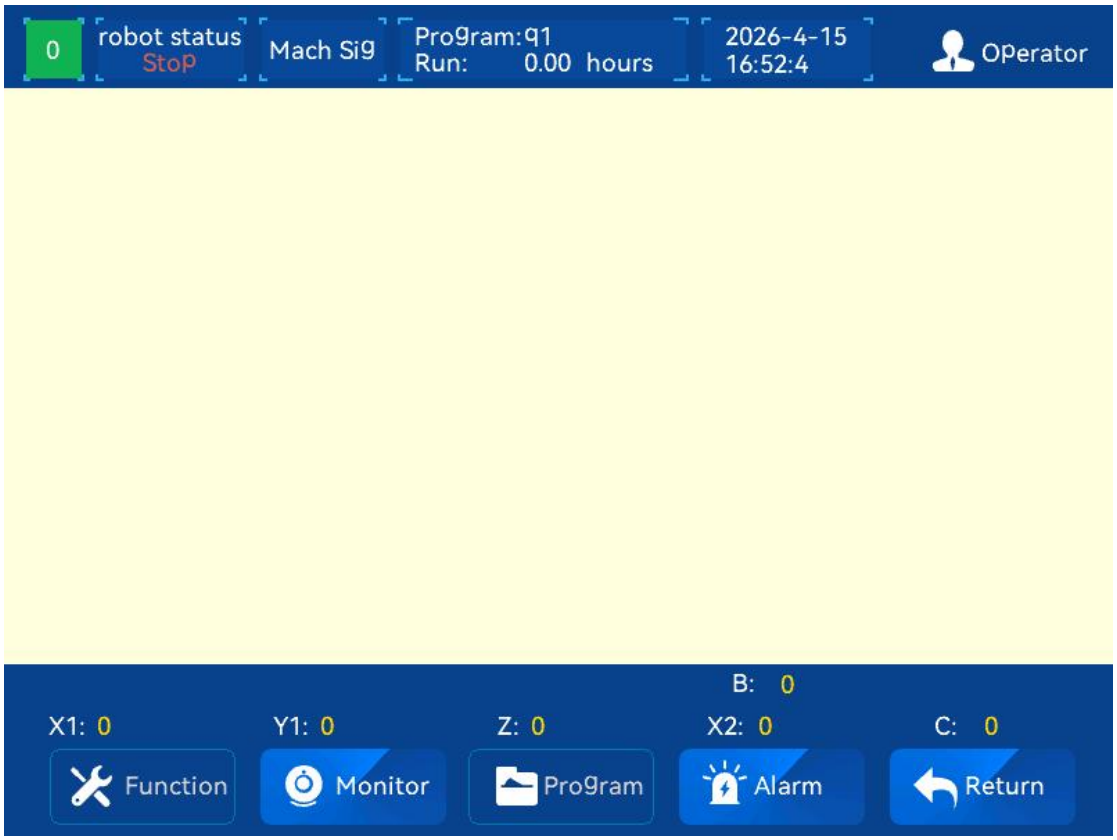
Speed Adjustment Button: Adjusts the system operating speed. Adjusts manual speed in manual mode, and automatic speed in automatic mode.

Rotary Encoder: Press to open the fine-tuning menu; rotate to adjust servo axis movement.

2. Basic Screen Introduction

2.1 Stop Screen

Rotate the mode selector switch to STOP to enter the Stop screen.



2.2Status Bar



Displays speed, system status, injection machine signal, current mold number & running time, system time and current user authority in sequence.

Note: The speed box in the upper left corner is red when the origin has not been set, and blue when the origin has been returned successfully.

2.3 Switch Interface:



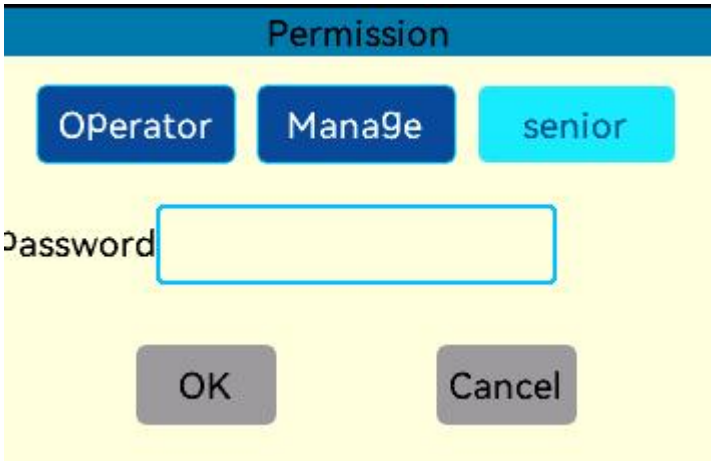
The current system version and mainboard version will be displayed at the bottom of the Stop interface.

The bottom buttons can be used to switch to the corresponding interface.

2.4 User Management:



Click the <Operator> button in the upper right corner, and the system will pop up the login dialog box.**



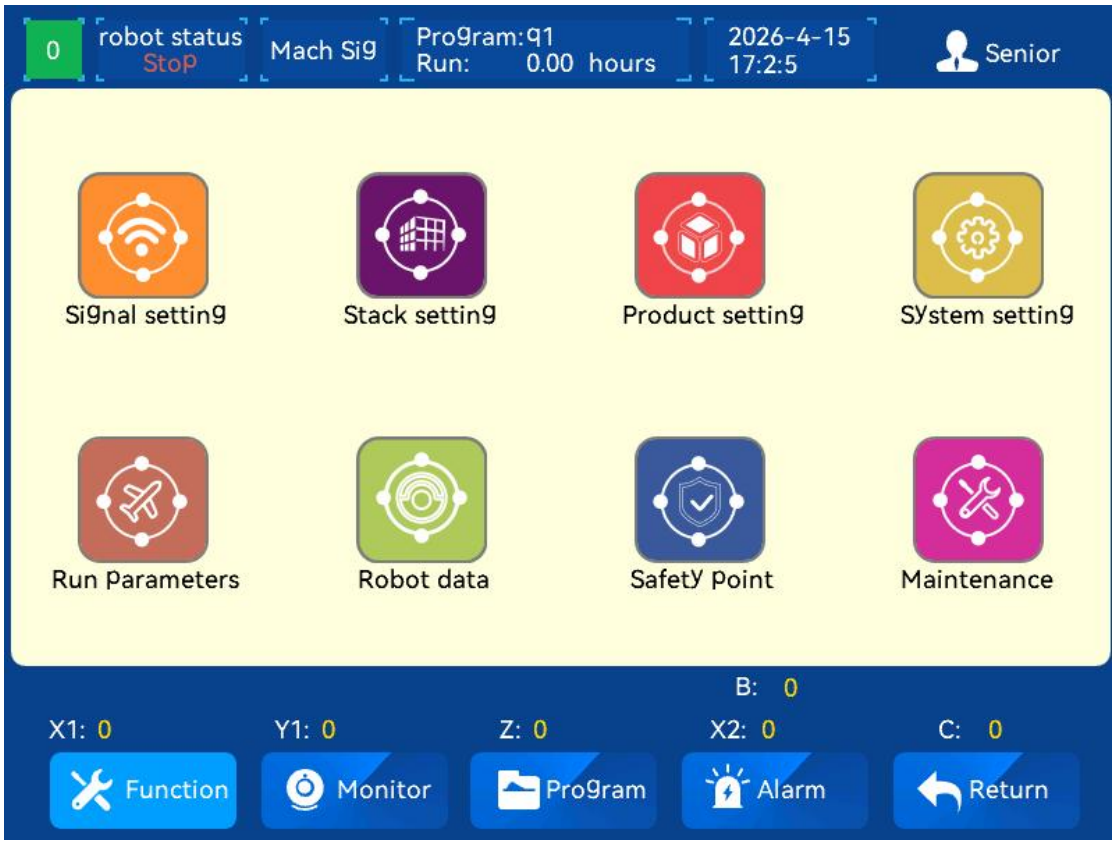
Select the corresponding authority button, click the password box, and enter the correct password.

Administrator: Default password 888;

Senior Administrator: Default password ****.

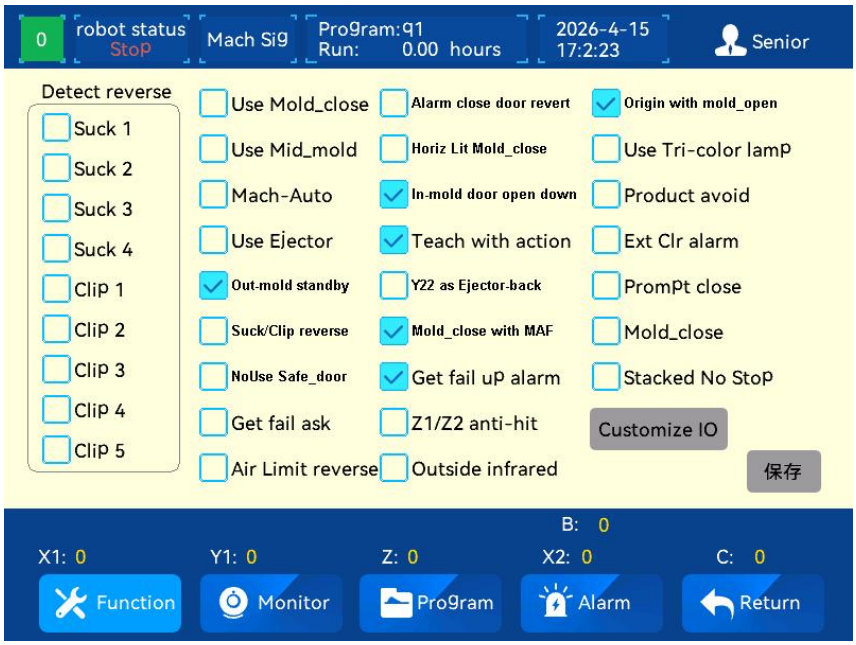
Password change path: Function → System Setting → Authority Management;

3. System Function Interface



Rotate the Mode Selector Knob to the STOP / MANUAL position, then press Function to enter the Function interface.

3.1 Signal Setting



Fixture Detection Inversion: Sets the detection port to active high or active low.

Mold Close Completed Enable: Enables or disables the mold close completed signal.

Mid-mold check：Enables or disables the mid-mold signal.

Automatic FB：The manipulator detects the automatic signal of the injection molding machine, and if there is no automatic signal in automatic state, the alarm will be sent。

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

Standby outside mold：During operation, the manipulator waits at the outside-mold position for mold opening to complete. A mold open completed signal is required before entering the in-mold safety zone。

Pose reverse：When the fixture switches to the fixed mold product picking position, its horizontal and vertical directions will automatically reverse.。

Disable Safedoor Check：Safety door signal will not be monitored during automatic operation.

Note: Opening the safety door will not pause the manipulator.

Pickup failure query：After pickup failure, when the safety door is closed, the system will pop up a prompt asking whether to continue running the subsequent programor return to the standby position to wait for the next mold opening cycle。

Air pressure NC detection：Option for using normally closed air pressure sensor。

Close door and return：After a pickup failure alarm, opening and closing the safety door will not continue subsequent actions, but will perform a reset action instead。

Mold close with horizontal pose：When the manipulator is above the mold and the side rotation unit is in vertical state, mold clamping is prohibited。

Mold close with horizontal pose：Allow the manipulator to perform descending movement inside the mold when the safety door is open。

Y28-Ejector Retract Interlock：Whether to control ejector retract action via manipulator system Y8 output。

EMC-MAF Coordinated Output：Must satisfy EMC and MAF output conditions。

Fetch fail Internal up alarm：Trigger alarm when arm rises inside mold after pickup failure detected;

Uncheck to trigger alarm immediately.

Outside Mold Safety Pause： Used with outside mold detector. Pause the manipulator if no signal input when leaving the mold。

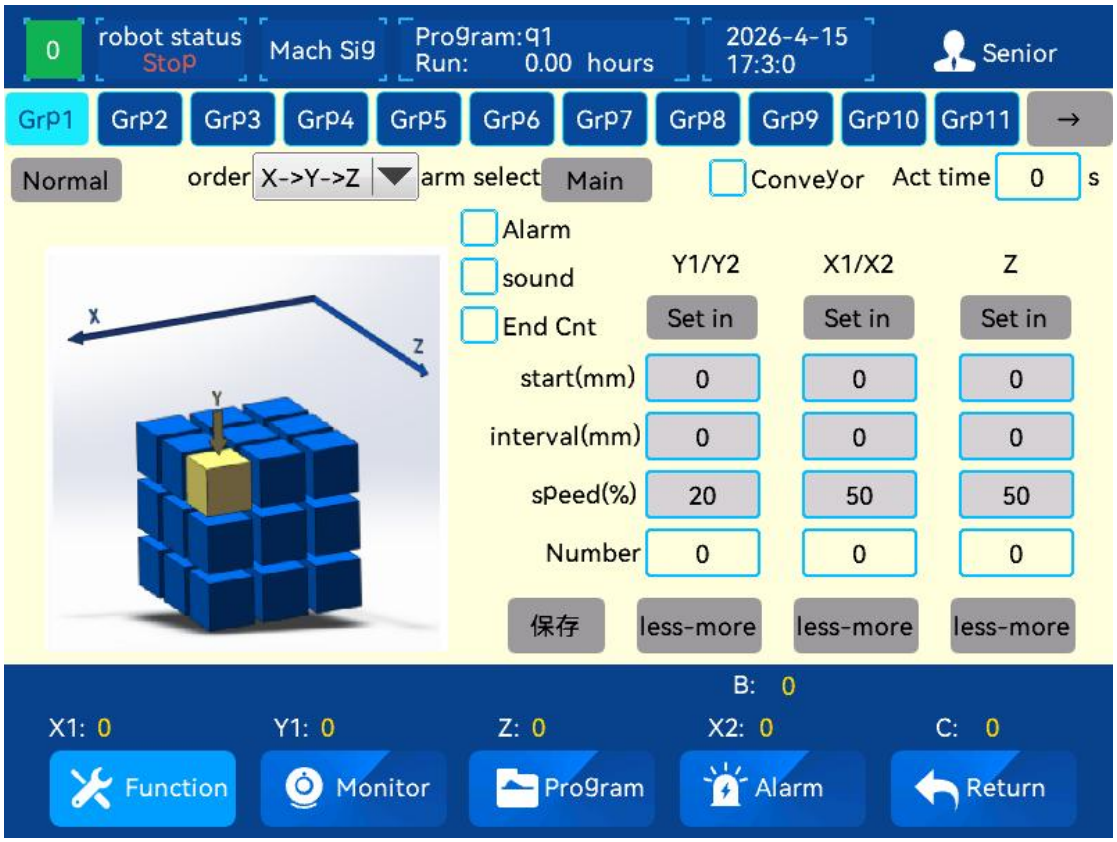
Origin reset Need mold opened signal： When the origin is reset, it needs mold opened signal to execute origin reset.

Three color lamp： Open wiring terminals for red, green and yellow indicator lights.。

Product Avoidance： Cooperate with the "Avoidance" subroutine to realize 100% collision-free for densely arranged products on the conveyor。

External Alarm Reset： Alarms such as <Wait Timeout> and <Stack Complete> can be reset by external buttons。

3.2 Stack Setting



The system supports settings for 16 stacking groups. After entering parameters on this interface, select the corresponding group in the teaching interface。

Stacking Order: Axis stacking order during product stacking; 6 groups available for selection。

Direction：Descending: Arrange from large position values to small position values。

Ascending: Arrange from small position values to large position values。

Quantity: Set stacked product count per axis.。

Spacing: Set the distance between products。

Main/Sub Arm Selection: Select the main arm or sub arm for stacking。

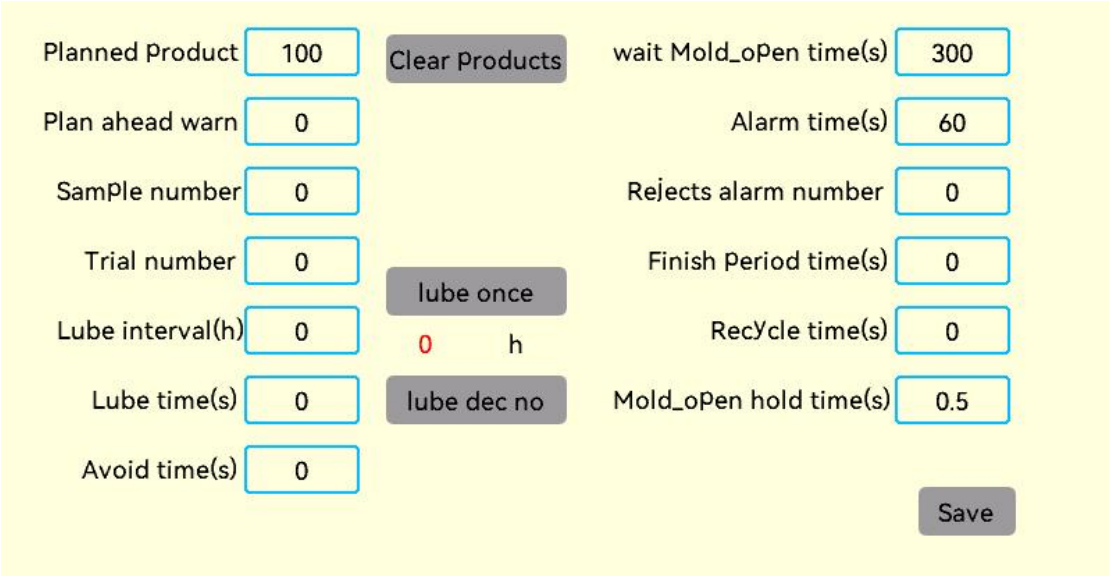
Use Conveyor: When checked, the conveyor will run automatically after stacking is completed。

Operation Time: Conveyor running time。

Stacking Alarm: An alarm prompt will be triggered when this group of stacking is completed. You can check the box to enable synchronous horn output. Cooperating with the "External Alarm Reset" function, you can install an additional button to reset the alarm and continue operation。

End Count: Count one shot after completing the stacking action and running to the end of the program。

3.3 Product Setup



Planned Product Quantity: When the system's automatically running

<Completed Product Count> reaches the set value, it will alarm and shut down. You must manually <Reset Product Count> before starting Full Automatic mode again to restart counting. This function is disabled when set to 0.

Planned Early Warning: When the system's automatically running <Completed Product Count> reaches the set pre-warning quantity, it will trigger an alarm without shutting down。

Sampling Interval: Set the interval of shots for product sampling, i.e., how many shots of products are produced before executing the <Sampling> subroutine. (Cooperating with the sampling conditions in [Conditions] under [Teaching], the subroutine can be activated to meet different customer process requirements.)。

Trial Production Quantity: Set the number of shots for trial production. (Cooperating with the trial production condition actions in [Conditions] under [Teaching], the <Trial Production> subroutine can be activated to meet different customer process requirements)。

Lubrication Interval: Set the interval time for lubrication output. The countdown will continue even after power off once the value is set. Automatic lubrication will be performed when the countdown reaches 0. No teaching action is required. This function is disabled when set to 0。

Lubrication Time: Set the lubrication output duration (Unit: Seconds)。

Lubricate Once: Manually perform one lubrication action (Unit: Seconds)。

Mold Open Waiting Time: During automatic operation, this is the waiting time for the {Wait Mold Open} command. An alarm will be triggered if the waiting time exceeds the set value. Setting to 0 disables this function。

Alarm Time: Set the buzzer output duration. No output when set to 0。

Defective Alarm Count: Set the number of defective products. An alarm

will be triggered when the defective count reaches the set value. Disabled when set to 0。

Molding Cycle: When the Mold Close Complete function is enabled, the mold close permission will be cut off after the set time elapses upon receiving the mold close complete signal from the injection molding machine。

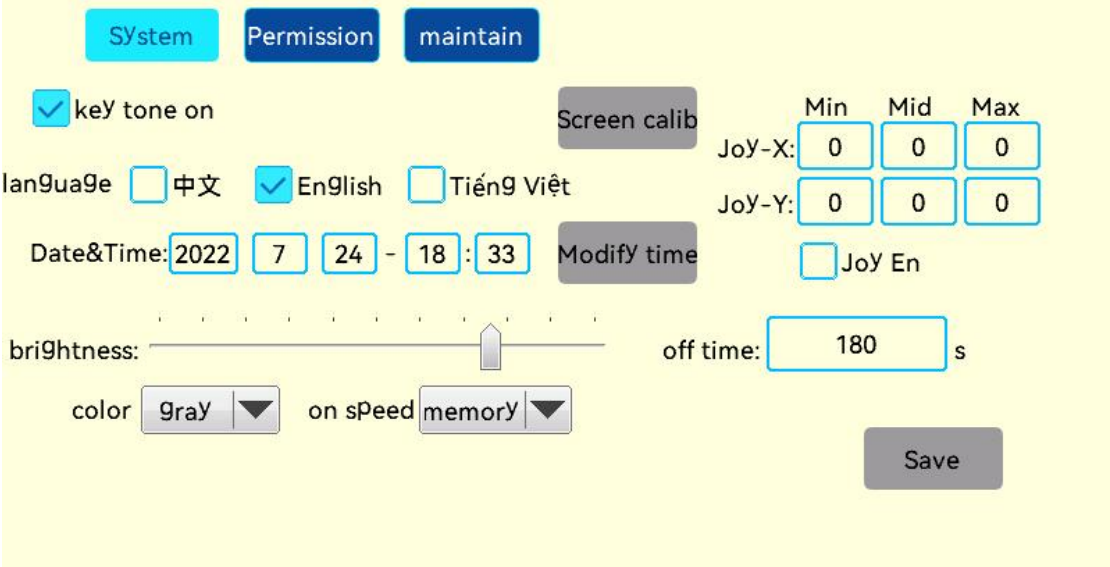
Recycle Time: When the recycle mode is set to {Delay Off After Clamp Enabled}, mold area safety will be disabled after the set time expires。

Mold Open Self-Hold: Set the hold time after receiving the mold open complete signal. (Prevents intermittent signal dropout when mold reaches full open position.)

Avoidance Time: Duration of the self-hold avoidance signal (valid only when avoidance function is enabled)

3.4 System Settings

3.4.1 System Settings:



Touch Screen Calibration: Enter the touch screen calibration page。

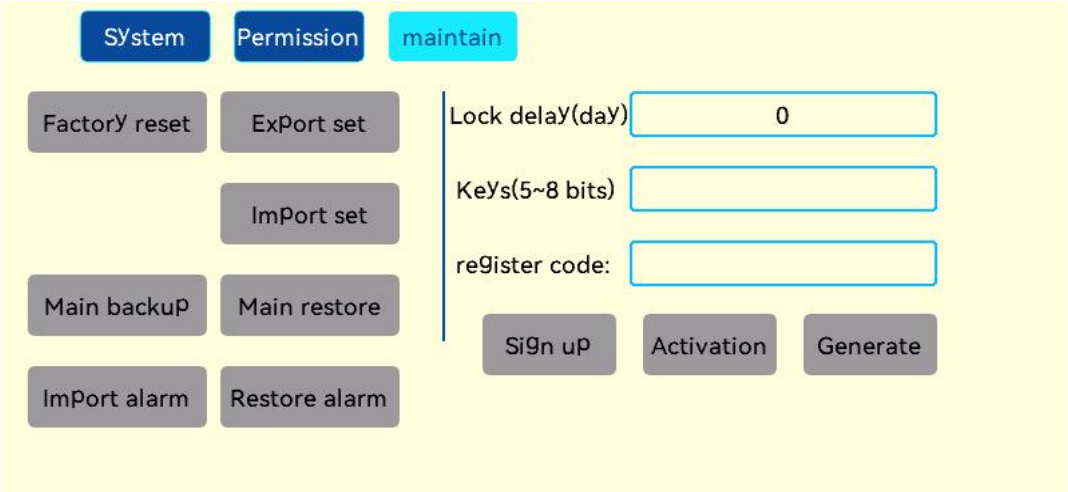
Power-On Memory: You can select 25%－50% of the automatic speed after power-on or when changing the current mold number. If memory is enabled, the automatic speed remains unchanged。

3.4.2 Authority Management:

Allows modifying the login passwords for Administrator and Advanced Administrator。



3.4.3 System Maintenance:



Reset System Parameters: Restore factory default settings。

Reset Machine Parameters: Restore machine settings to default。

Export Settings: Export configuration parameters to USB flash drive。

Import Settings: Restore parameters backed up on USB drive to the handheld controller。

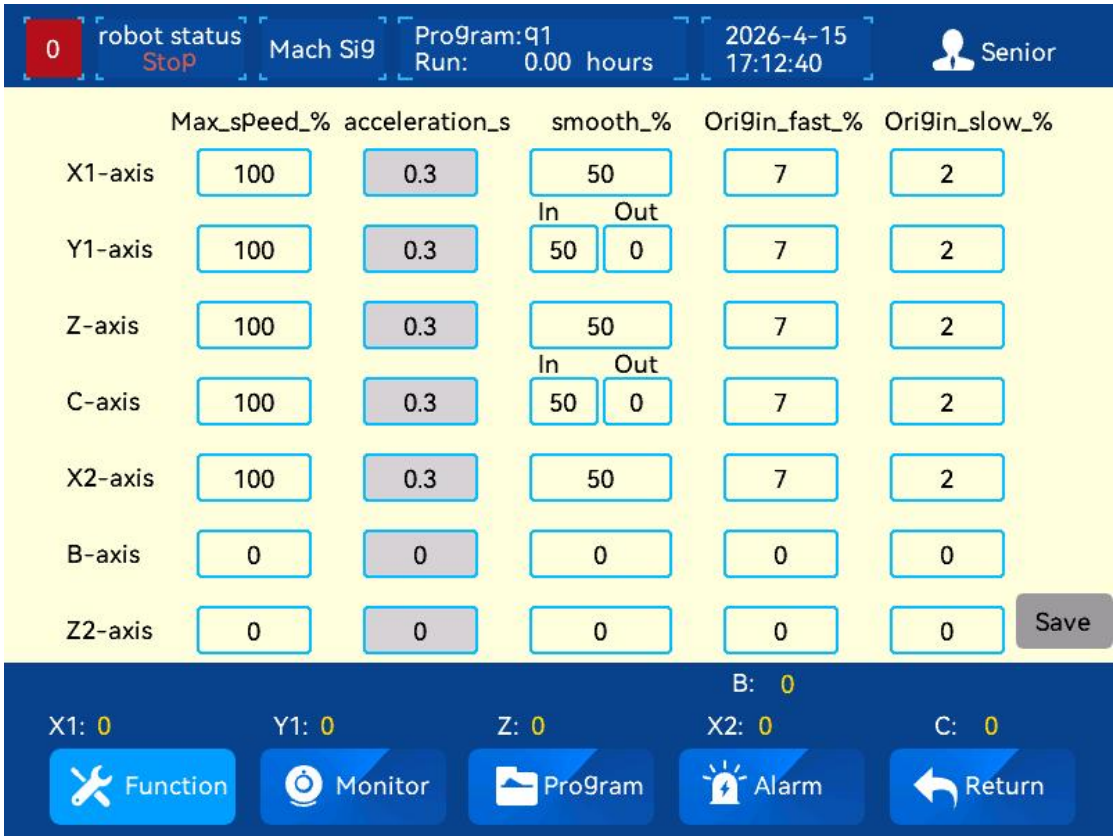
Mainboard Save Parameters: Back up handheld controller parameters to the mainboard。

Restore from Mainboard: Restore backup parameters from mainboard to handheld controller。

Import Alarms: Import custom alarm content files from a USB drive。

Restore Alarms: Restore default alarm content。

3.5 Operating Parameters



Maximum Speed: Sets the maximum operating speed. When set to 100%, the corresponding motor speed is 3000 rpm。

Actual Operating Speed = Maximum Speed × Global Speed × Program Step Speed. For example: if maximum speed is set to 100%, global speed to 50%, and program step speed to 50%, the actual motor speed will be 750 rpm。

Acceleration: Sets the acceleration and deceleration time of the servo。

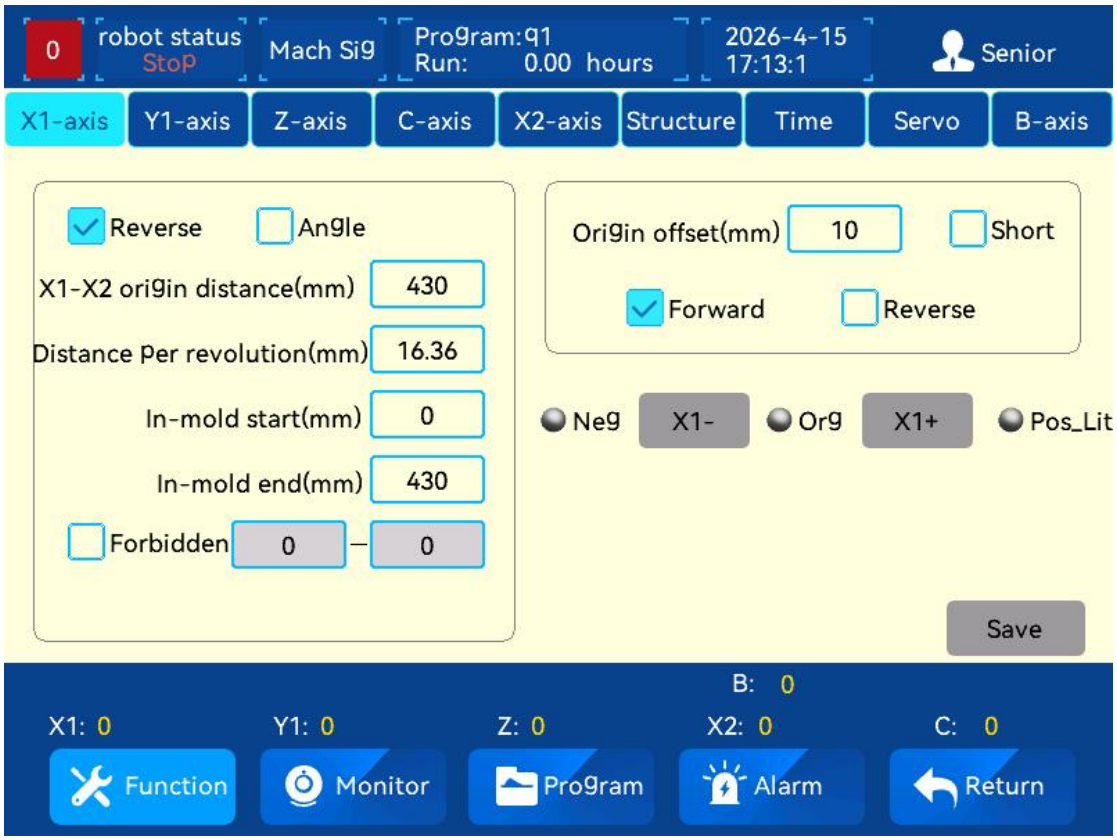
Smoothing: Sets the S-curve acceleration/deceleration time of the servo. A higher percentage results in smoother servo start and stop。

Origin Fast Speed: Homing speed when the signal light is not in contact with the induction metal sheet。

Origin Slow Speed: Homing speed when the signal light is in contact with the induction metal sheet。

3.6 Machine Parameters

3.6.1 X Axis Parameter Interface



Modify X-axis parameters:

Motor Reverse: If the positive/negative direction of the corresponding axis is opposite to the actual key operation during setup, you can check this option to reverse the motor direction without changing the motor reverse parameters in the servo driver。

Main / Sub Arm Origin Distance: The maximum safe travel distance for the main arm and sub arm after homing is completed。

Distance Per Revolution: The actual distance traveled by the machine for one full rotation of the gearbox output shaft, i.e., the circumference of the synchronous pulley. This setting determines the effective precision and accuracy of the machine travel。

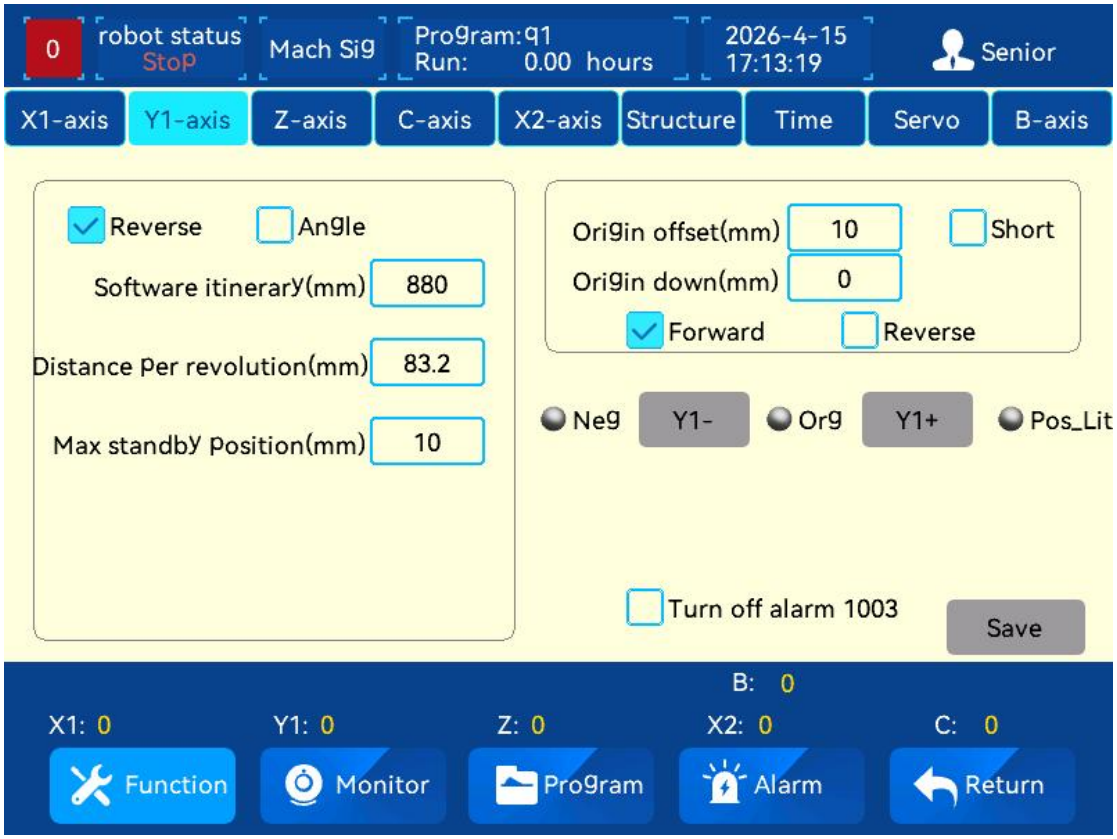
Pulses Per Revolution: Sets the number of pulses per motor revolution。

Pulses Per Revolution: Sets the number of pulses per motor revolution。

Short Origin: If checked, the homing mode is short origin (unchecked defaults to long origin)

Prohibited Zone: For longitudinal traversing machines, set the tie-bar area for the X1 axis. The arm can move down freely outside the tie-bar area。

3.6.2 Y Axis Parameter Interface



Modify Y-axis parameters：

Motor Reverse: If the positive/negative direction of the corresponding axis is opposite to the actual key operation during setup, you can check this option to reverse the motor direction without changing the motor reverse parameters in the servo driver。

Software Stroke: The maximum software travel distance the arm can move from the home position (0) after homing is completed。

Distance Per Revolution: The actual distance traveled by the machine for one full rotation of the gearbox output shaft, i.e., the circumference of the synchronous pulley. This setting determines the effective precision and accuracy of the machine travel。

Max Standby Point: Sets the maximum standby distance for the arm axis when in standby mode。

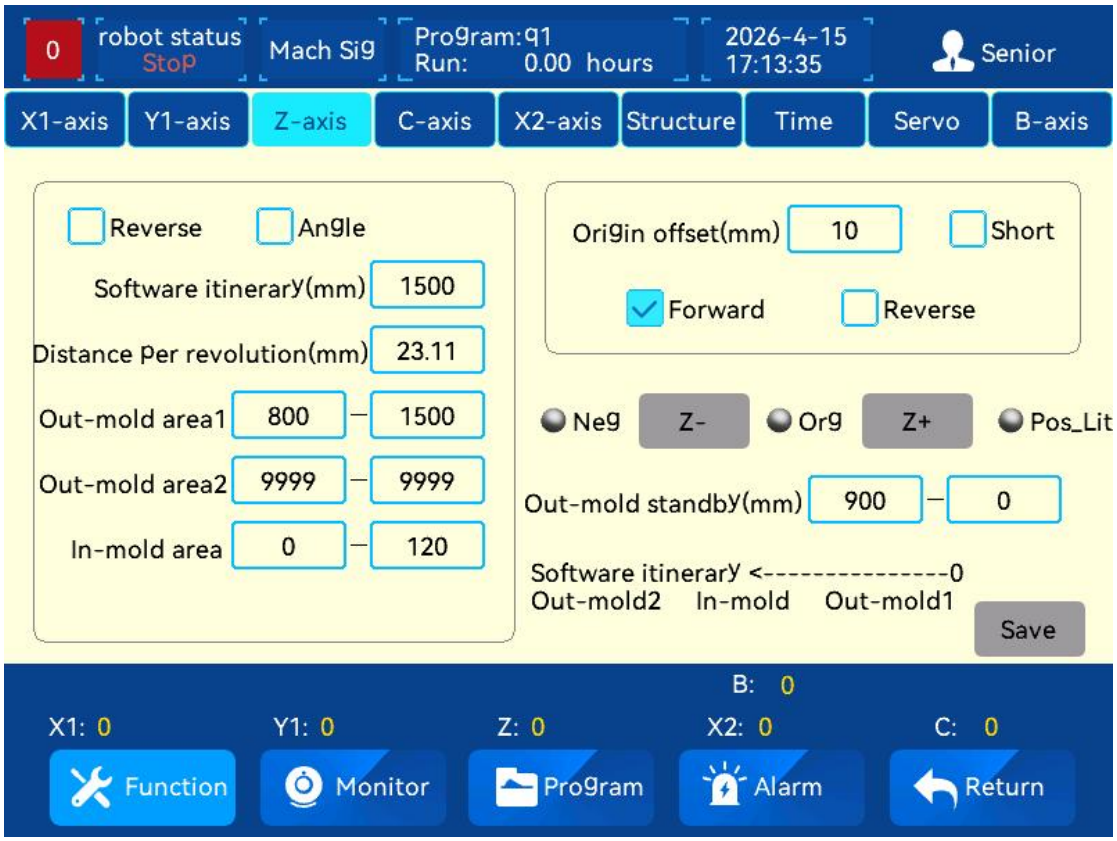
Pulses Per Revolution: Sets the number of pulses per motor revolution。

Home Offset: After homing, the set offset value is used as the home position. Check Positive Offset or Negative Offset as required。

Short Origin: If checked, the homing mode is short origin (unchecked defaults to long origin)。

No Prompt If Main Arm Not At Zero: If checked, no prompt will be displayed when the arm is not at the zero position。

3.6.3 Z Axis Parameter Interface



Modify Z-axis parameters:

Motor Reverse: If the positive/negative direction of the corresponding axis is opposite to the actual key operation during setup,you can check this option to reverse the motor direction without changing the motor reverse parameters in the servo driver。

Software Stroke: The maximum software travel distance the arm can move from the home position (0) after homing is completed。

Distance Per Revolution: The actual distance traveled by the machine for one full rotation of the gearbox output shaft, i.e., the circumference of the synchronous pulley.This setting determines the effective precision and accuracy of the machine travel。

Traverse Outside-Mold Safety Zone 1: Position value of the proximity sensor detection area for the placement point when the traverse axis is in the outside-mold placement area。

Traverse Outside-Mold Safety Zone 2 (T-type machine): Position value of the proximity sensor detection area for the second placement point when the traverse axis is in the second outside-mold placement area。

Traverse Inside-Mold Safety Zone: Position value of the proximity sensor detection area for the pickup point when the traverse axis is in the pickup area above the mold。

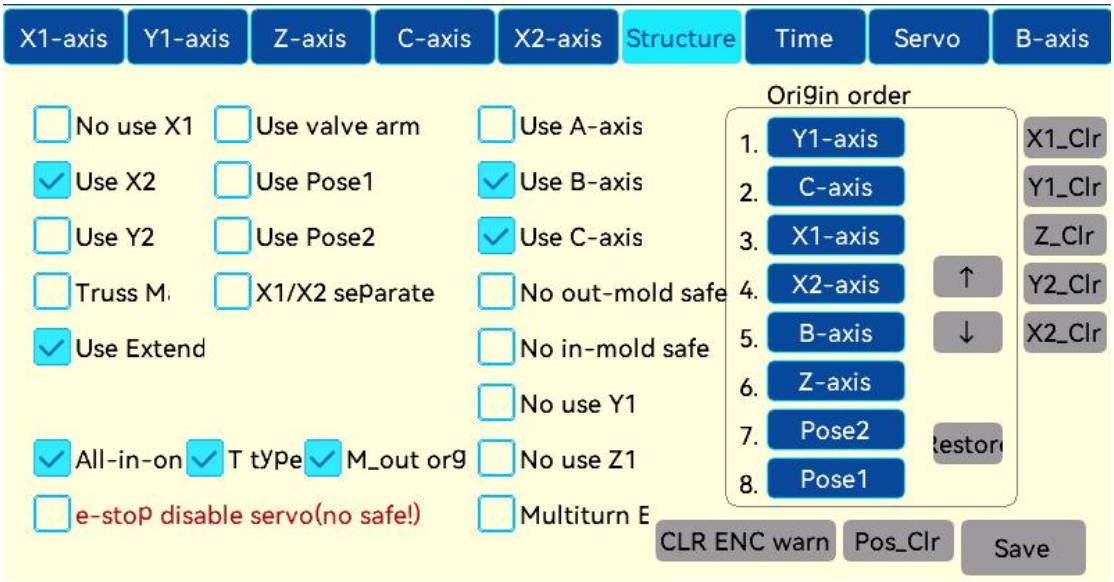
Pulses Per Revolution: Sets the number of pulses per motor revolution。

Home Offset: After homing, the set offset value is used as the home position.Check Positive Offset or Negative Offset as required。

Short Origin: If checked, the homing mode is short origin (unchecked defaults to long origin)。

Outside-Mold Standby Point: Limits the safe standby position of the Z-axis when using outside-mold standby(the Z-axis standby step in teaching programming must be greater than the set position)。

3.6.4 Structure Interface:



Disable X1 Axis: Turn off the X1 axis。

Use X2 axis, use Y2 axis, enable pneumatic sub-arm, enable pneumatic main arm chamfering Check according to actual machine conditionsDisable Y1 axis: Turn off the Y1 axis。

Disable Z1 axis: Turn off the Z1 axis。

Integrated Drive and Control: Check for integrated drive-control mode, uncheck for separate mode (restart required after changing settings)。

T-Type Machine: Pickup point is in the middle with two outside-mold safety zones。

Home Outside Mold: Z-axis home position is outside the mold。

E-Stop Disable Enable: When enabled, pressing the emergency stop switch will disconnect the enable output (convenient for modifying driver parameters); re-homing is required to clear the emergency stop alarm。

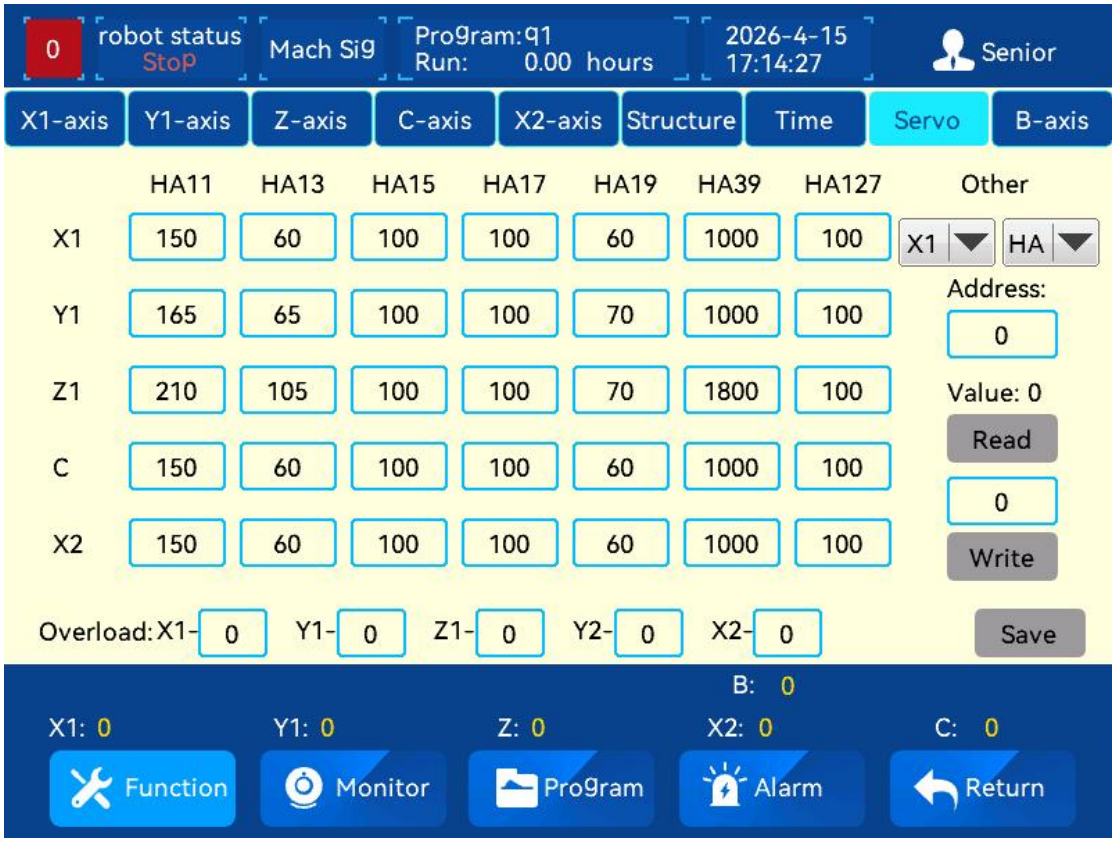
Home Sequence Setting: Set the homing order of each axis (place enabled axes first)

Disable Outside-Mold Safety Zone: Disable the input signal (induction bar) for the outside-mold safety zone; the zone is only set by the software parameter range of the traverse axis, with relatively low safety when disabled。

Disable Inside-Mold Safety Zone: Disable the input signal (induction bar) for the inside-mold safety zone; the zone is only set by the software parameter range of the traverse axis, with relatively low safety when disabled。

Note: Restart is required after changing mechanical structure functions

3.6.5 Integrated Drive-Control Servo Parameter Interface



HA11: Speed Proportional Gain **HA13:** Speed Integral Constant

HA15: Torque Filter **HA17:** Speed Detection Filter

HA19: Position Proportional Gain **HA39:** Smoothing Filter

HA127: Inertia Ratio

After modifying servo parameters, return to the function page and

click Save to save the servo parameters。

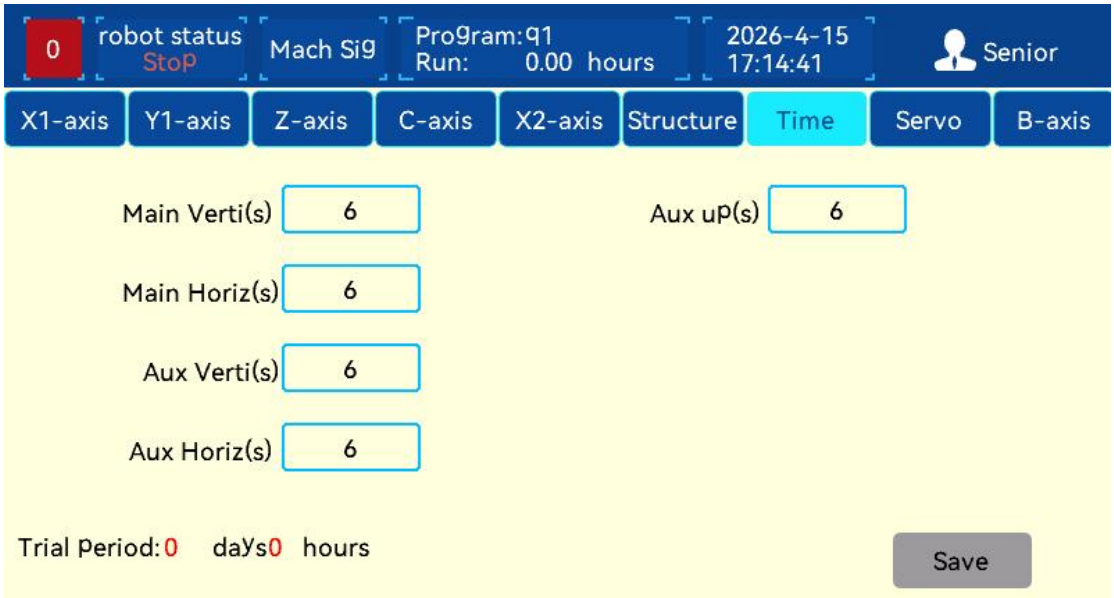
Motor Power: If not checked, default is 400W servo motor. Check the corresponding axis when configuring 750W servo motor。

Other Parameters: View /modify other servo parameters。

Motor vibration during homing can be improved by decreasing HA11 and HA13 parameters。

Homing Overload Ratio: During axis homing, if the feedback load ratio exceeds the set value (set to 0 to disable this function), the motor will run in reverse to avoid servo overload alarm. The axis will trigger <Homing Failed> alarm after two reverse operations。

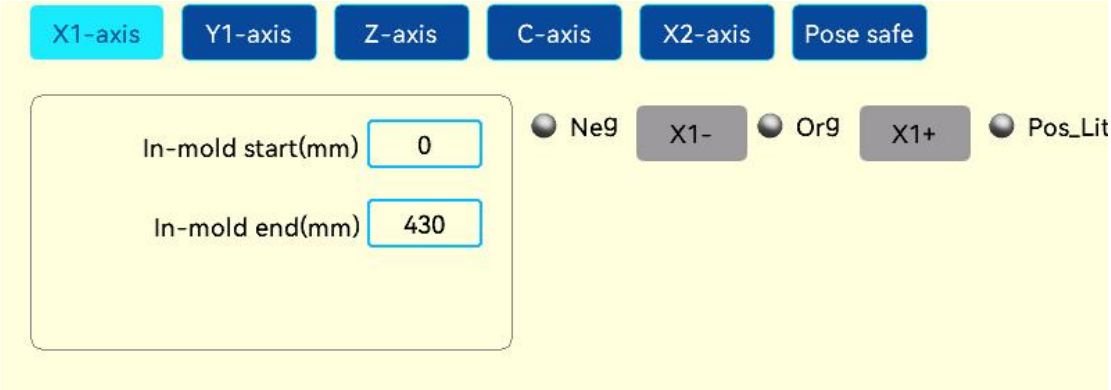
3.6.6 Time Interface



Set the feedback time for pneumatic component signal alarms

3.7 Safety Point Setting

3.7.1 X-axis Safety Point Setting

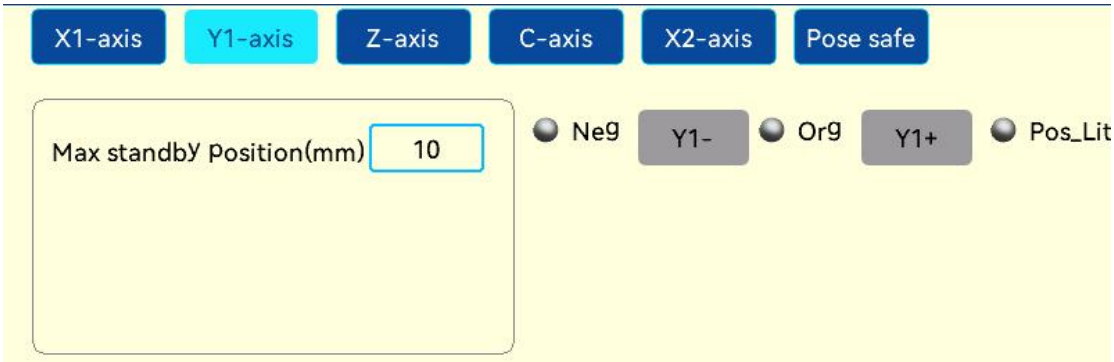


In-mold Up/Down Start Point: Minimum descending distance of the pull axis inside the mold。

In-mold Up/Down End Point: Maximum descending distance of the pull axis inside the mold。

X1+/X1-: Use these buttons for unrestricted position adjustment, same as physical key operation。

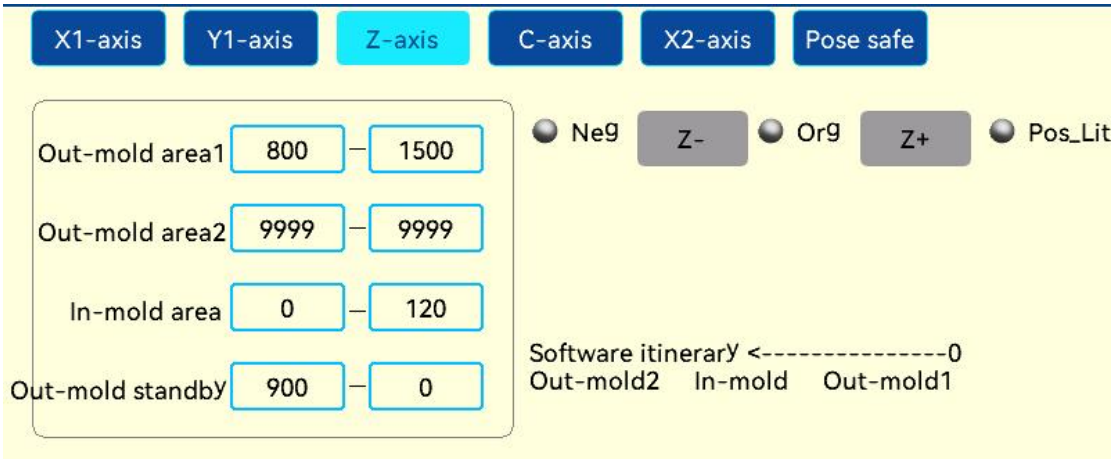
3.7.2 Y-axis Safety Point Setting



Maximum Standby Point: Set the maximum standby distance of the arm axis during standby。

Y1+/Y1-: Use these buttons for unrestricted position adjustment, same as the right-side physical keys。

3.7.3 Z-axis Safety Point Setting



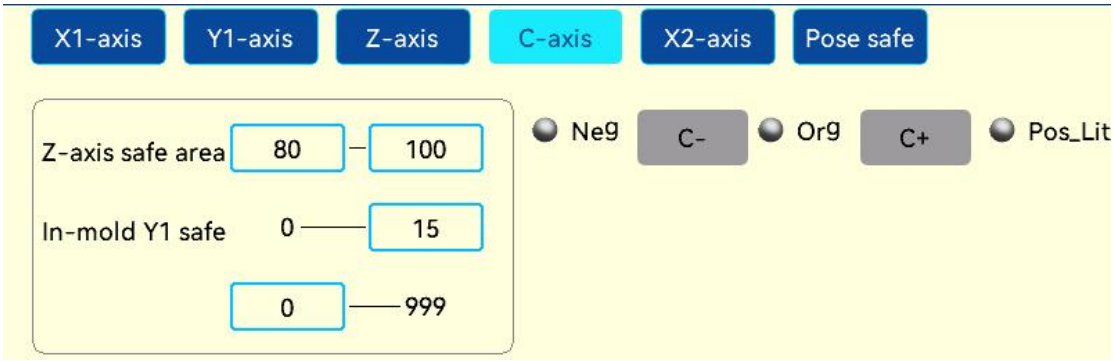
Traverse Outside-Mold Safety Zone 1: Position value of the proximity switch sensing area for the placement point when the traverse axis is in the outside-mold placement zone。

Traverse Outside-Mold Safety Zone 2: (For T-type machine) Position value of the proximity switch sensing area for the second placement point when the traverse axis is in the second outside-mold placement zone。

Traverse Inside-Mold Safety Zone: Position value of the proximity switch sensing area for the pickup point within the traverse axis pickup zone above the mold。

Outside-Mold Standby Zone: When using outside-mold standby, set the Z-axis mold-clampable area (mold clamping is prohibited if the traverse axis position is outside the "Outside-Mold Standby Zone").

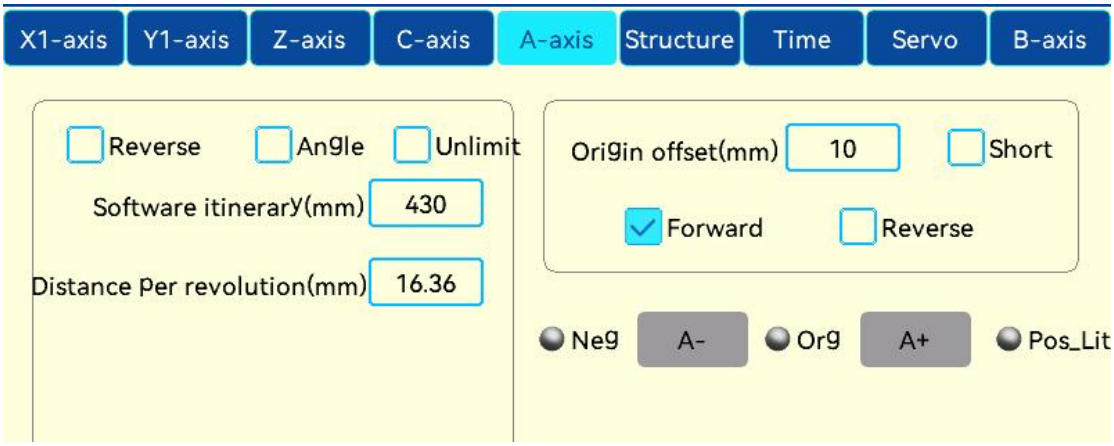
3.7.4 C-axis Safety Point Setting



Traverse Safety Zone: Safe angle range allowed for C-axis during Z-axis traverse in/out。

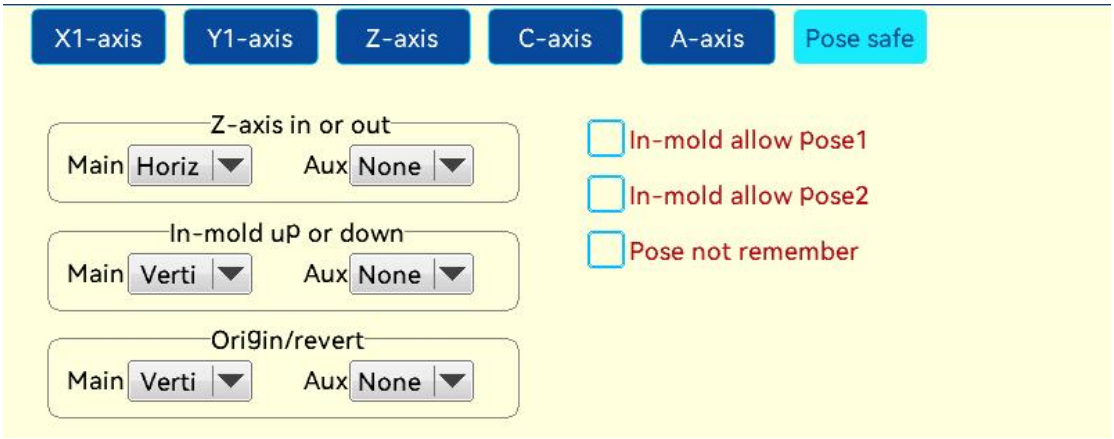
In-Mold Y1 Safety Zone: Safe flip angle allowed for C-axis during Y-axis up/down and in-mold pickup

3.7.5 A-axis Safety Point Setting



Infinite Function: When the A-axis moves in automatic operation, the real-time coordinate of the A-axis will be automatically cleared after completion

3.7.6 Posture Safety



Chamfering Posture During Traverse: Specifies the chamfering posture of the manipulator during traversing. The chamfering posture of the auto-taught program is generated according to this setting.

In-Mold Up/Down Chamfering Posture: Specifies the chamfering posture of the manipulator when picking up parts in the mold。

Up/Down Reset Posture: During homing/reset, the chamfering state must be in the currently set state。

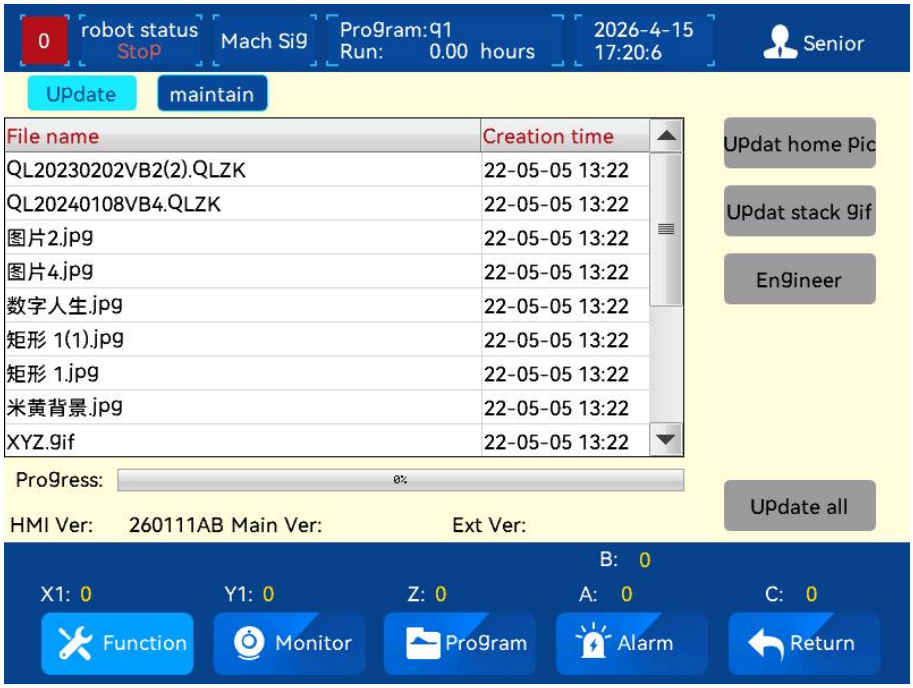
Allow Main Arm Chamfering in Mold: Main arm can perform jig flipping inside the mold (low safety factor)。

Allow Sub Arm Chamfering in Mold: Sub arm can perform jig flipping inside the mold (low safety factor)。

Chamfering Not Memorized: When checked, default to vertical state on power-on/power-off。

3.8 Maintenance / Servicing

3.8.1 Maintenance:

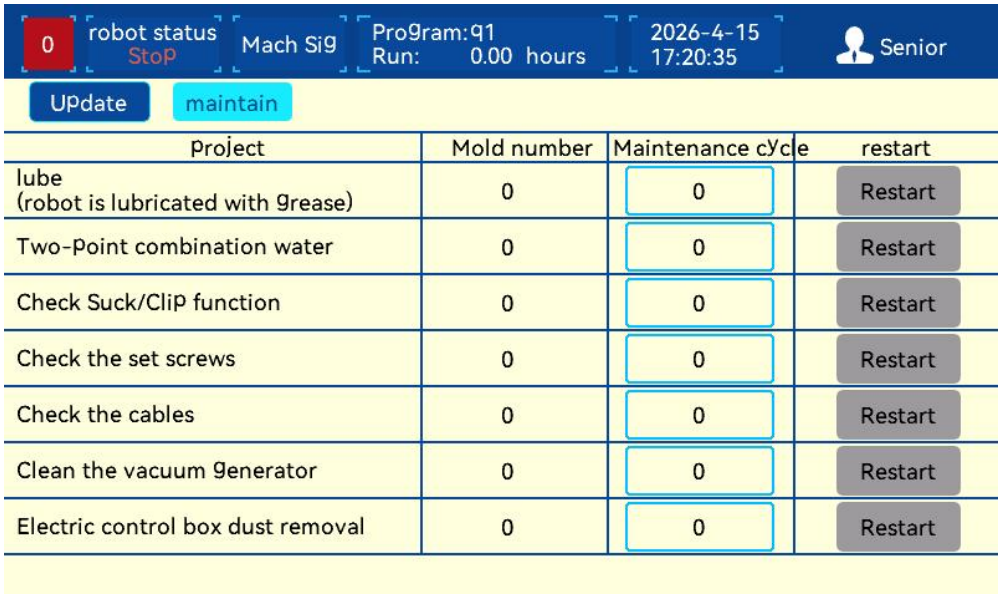


Update Image: After clicking Update Image, you can update the system startup and standby images in the pop-up window。

Start Update: Select the corresponding file to upgrade the operator or mainboard

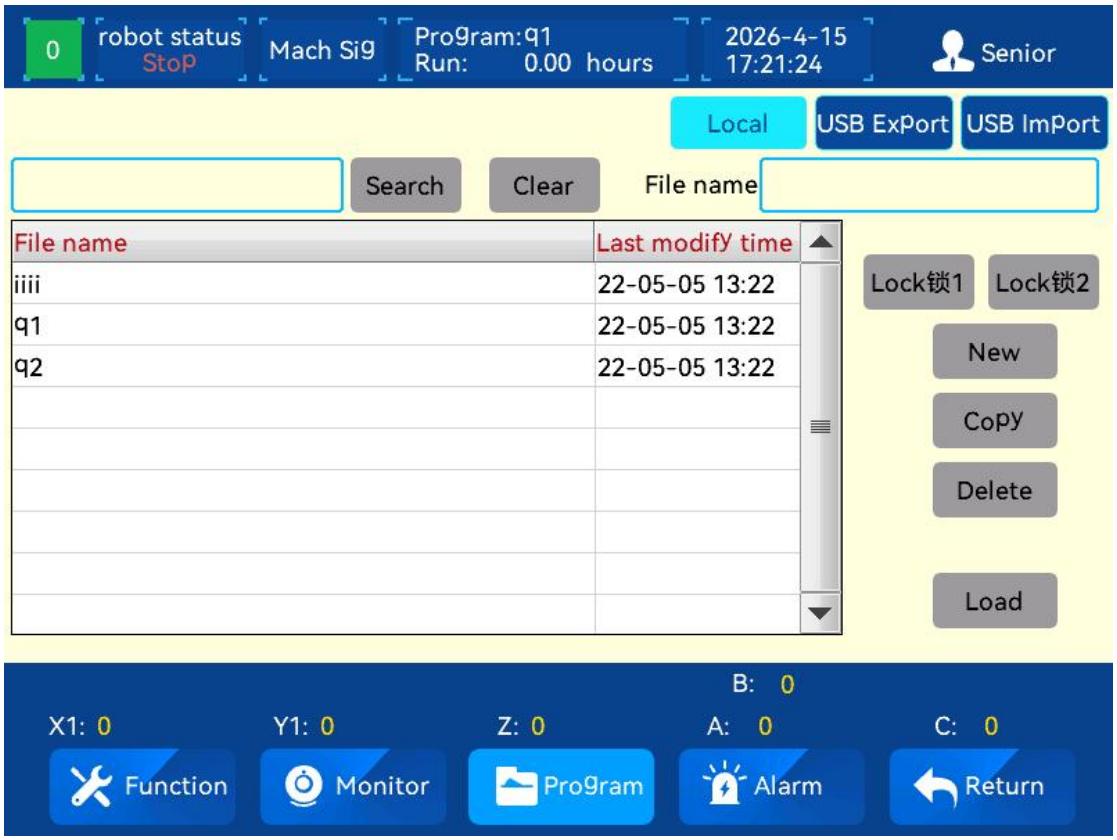
3.8.2 Maintenance:

Set the maintenance cycle for each item. The system will alert when the set value is reached。



4. System Program Management

4.1 Enter the program management page



Turn the operator selector knob to the STOP position, then press the FILE button at the bottom of the interface to enter the mold number management page。

4.2 Create New Mold Number

Click the new file name input box, enter the mold number name, then click the New button on the right。



4.3 Copy Mold Number

Select the original mold number to be copied from the list, click the new file name input box, enter a new name, and click Copy, The selected



mold number will be copied and saved under the new file name

4.4 Load

Select the mold number program to be loaded in the list and click **Load** to load the file as the current mold number。

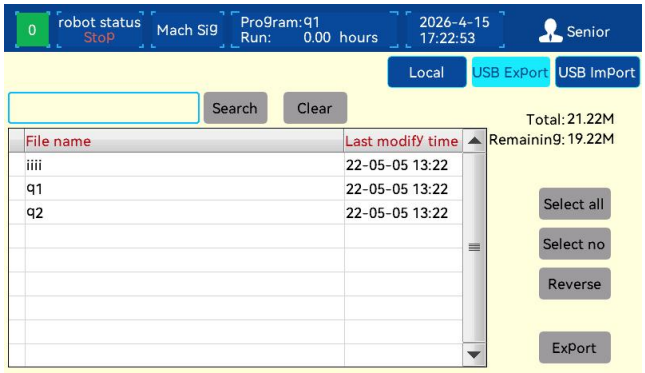
4.5 Delete

Select the mold number program to be deleted in the list and click Delete to delete the selected file。

4.6 Search Mold Number

Enter the corresponding content in the search input box at the top-left corner and click **Search**. The system will automatically filter out the mold number programs that meet the requirements.。

4.7 USB Import & Export

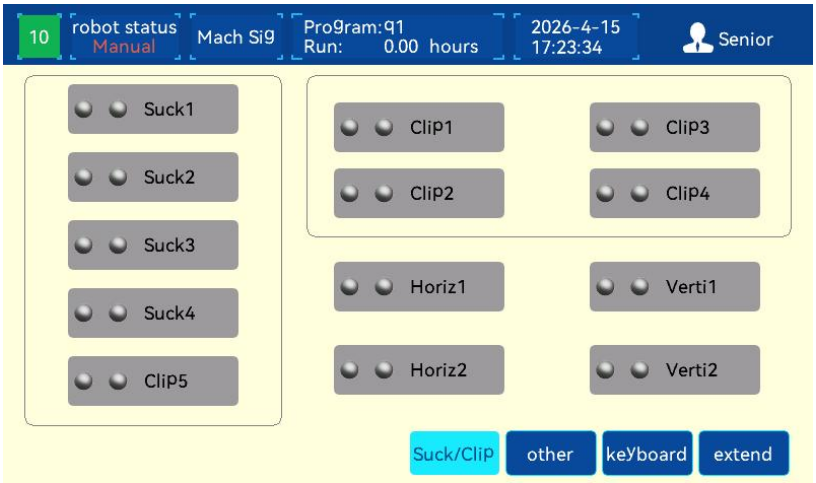


5. You can export mold number programs to a USB drive or import them from the USB drive into the system。

6. Manual Operation

Turn the knob switch to the MAN position to enter the manual interface。

6.1 Fixture Operation





Click the corresponding button on the screen to operate the corresponding output。

6.2 Virtual Keyboard Operation

The virtual keyboard buttons have the same functions as the physical buttons。

Extended Output Operation

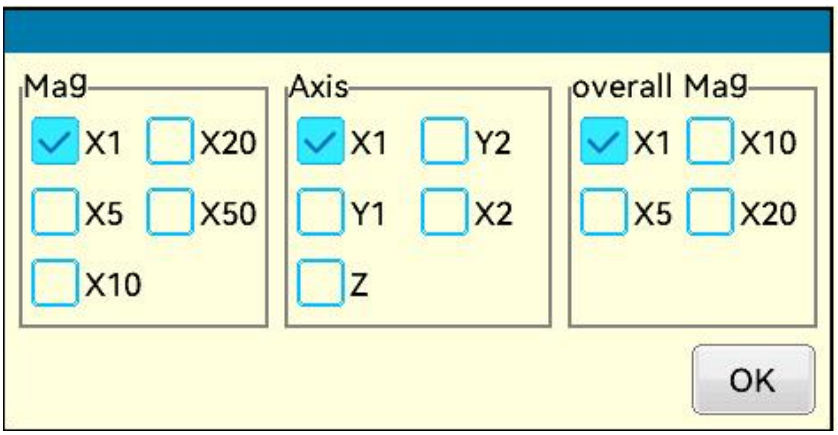
Extended Output Operation InterfaceOn this screen, you can manually control the opening and closing of the reserved ports on the expansion board。

6.3 Servo Manual Control

With the rotary switch in Manual mode, press the right-side buttons on the manual operator to control servo movement manually.

Click the speed button in the upper-left corner to open the speed adjustment ratio interface; this interface can also be opened by pressing the right scroll wheel。





Press the up and down buttons on the left side of the manual operator to adjust the manual speed, which will be displayed in the upper-left status bar。

Manual Speed Adjustment:First turn the selector switch to Manual, then press the up/down speed adjustment keys.

- When speed < 5: each adjustment is ±1
- When speed < 10: each adjustment is ±25
- When speed > 10: each adjustment is ±10

Note: The maximum manual speed is 50, corresponding to a servo drive speed of 1500 rad/min at this setting。

Automatic Speed Adjustment:First turn the selector switch to Auto. Change "Speed Adjustment Prohibited" to "Speed Adjustment Enabled" on the interface.Then press the up (increase) / down (decrease) speed keys on the left panel. Each adjustment is applied to the global speed override。

Rotary Encoder (Right Scroll Wheel):Allows manual fine adjustment of servo axis movement. Each scale rotation moves the selected servo axis (handwheel axis selection) by a distance of:Handwheel Multiplier × Global Multiplier / 100 mm

As shown in the diagram above:One grid rotation of the rotary encoder corresponds to a movement of the X- axis (handwheel axis) of:1 × 5 / 100 = 0.05 mm

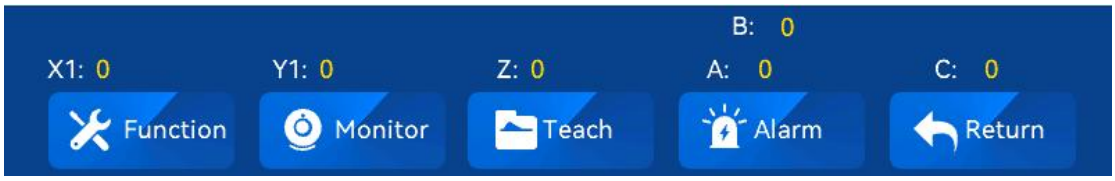
It can be seen from the diagram that the resolution range of the encoder is: 0.01 - 10.00 mm

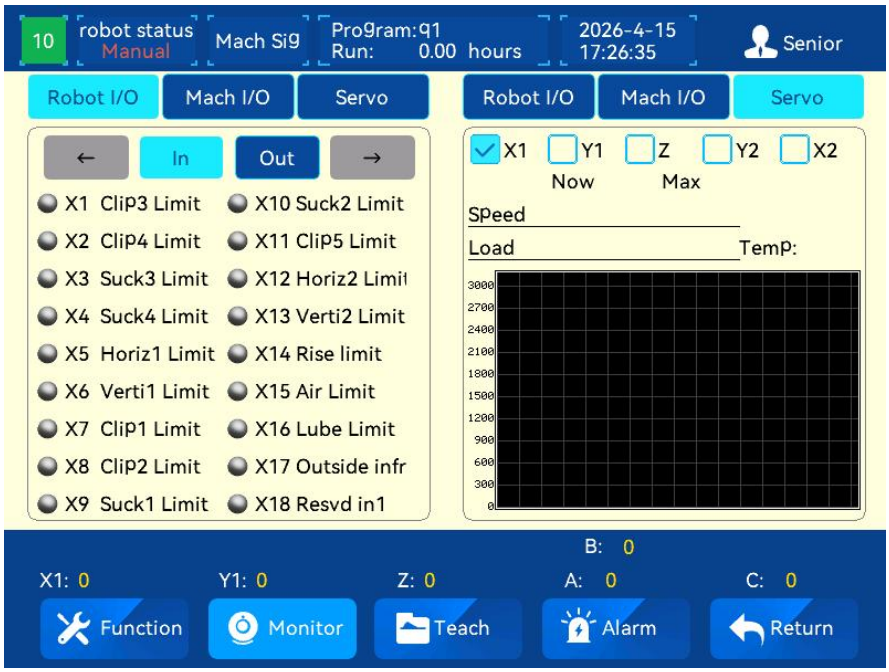
Handwheel Axis Selection:Select the corresponding axis. In manual mode, the rotary encoder will actuate the selected axis when rotated。

Note: On the Auto / Teach page, turning the rotary encoder can flip pages to view programs。

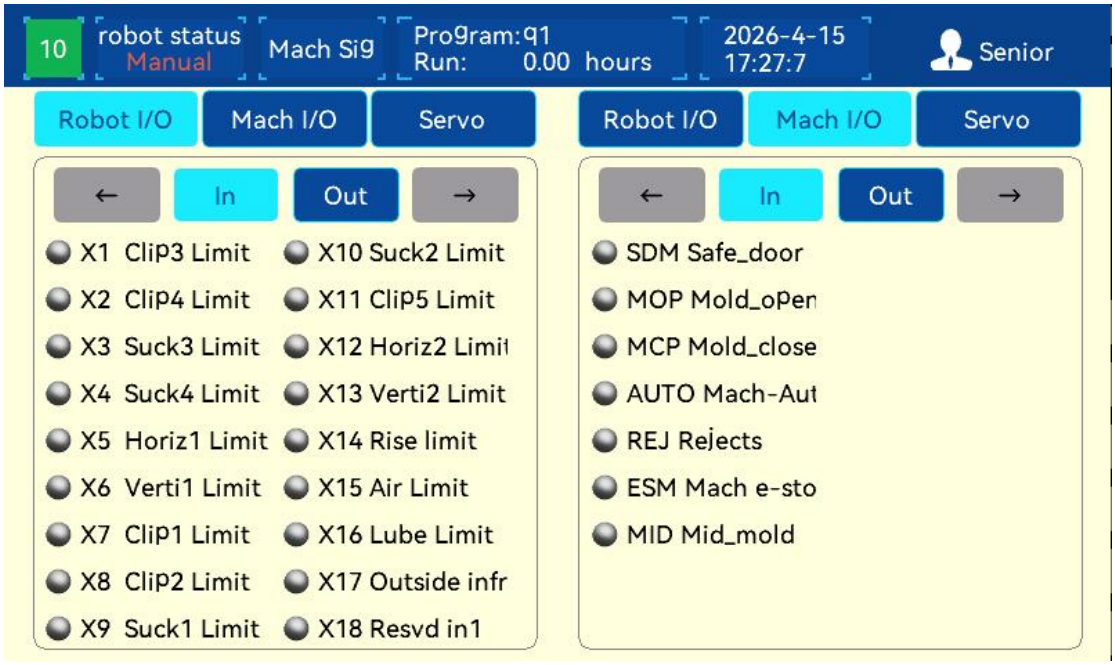
7. IO Monitoring

Click the monitoring button at the bottom of the screen to enter the monitoring interface。





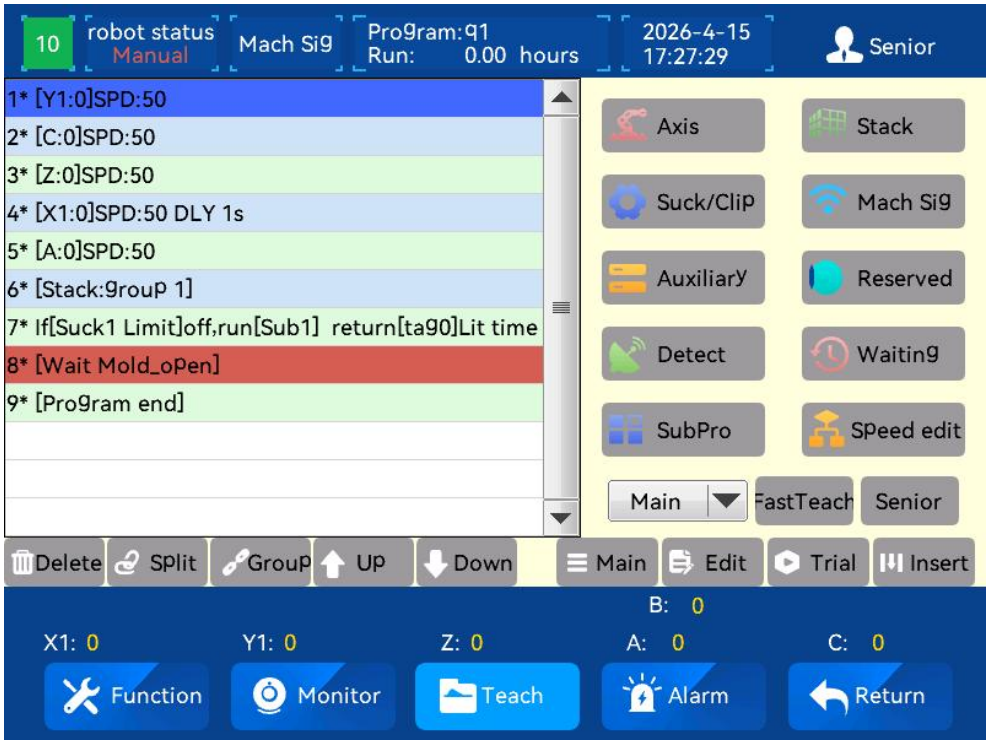
Monitoring Interface:You can view manipulator signals, servo status, and molding machine signals。



8. Teach Program

Turn the manual operator knob switch to Manual mode, then click the Teach button at the bottom of the screen to enter the teaching interface。

7.1 Interface Introduction



In the teaching interface, edit and modify the current program loaded by the system。

7.2 Teaching Command Entry Operation



Delete: Tap Delete to delete the instruction on the currently selected line。

Decompose: Decompose the selected combined instruction into individual instructions. (In auto mode, executed in sequence by number)。

Combine: Combine the currently selected line with the previous instruction. (In auto mode, combined instructions run simultaneously)。

Move Up: Move the instruction on the currently selected line up by one row。

Move Down: Move the instruction on the currently selected line down by one row。

Edit: Tap Edit to modify more parameters of the currently selected line in the pop-up window。

Test Run: For the currently selected instruction, press Test Run to execute it; release to stop immediately。

Insert: Select the function step to be inserted and add it into the program。

Note: Only axis motion and port change commands support the test run function。

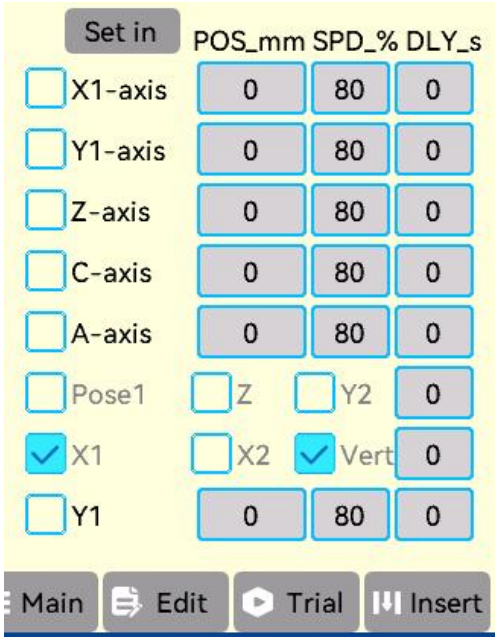
7.3 Program Instruction List





Functions are divided into Main Menu and Advanced Menu。

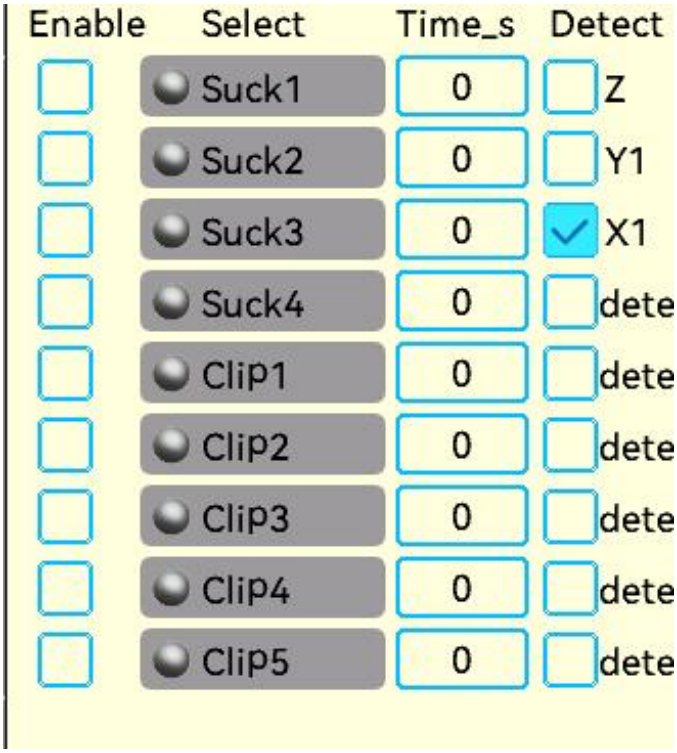
7.4 Axis Motion Command



Check the corresponding options and click Insert to complete one axis command teaching. Multiple selections can be inserted at the same time. Only Y1 & Y2, X1 & X2 will form combined commands。

Note: All delay times are executed before the command;if there is a delay before this action, the command will only be executed after the time has elapsed。

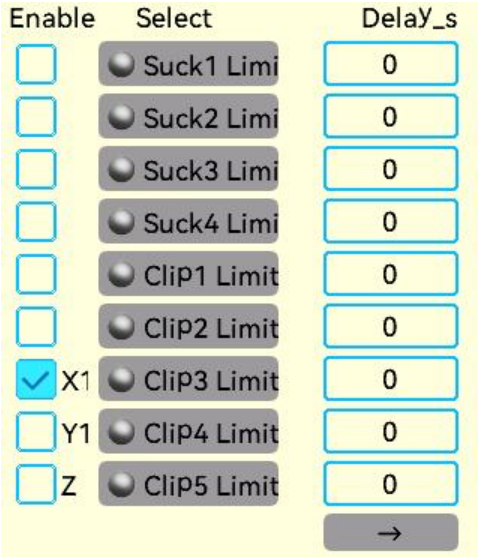
7.5 Fixture Command



Check the corresponding options, click the corresponding button, and select the output status. The indicator light on means ON, and the indicator light off means OFF. Finally, click Insert to complete one fixture command teaching. Multiple selections can be inserted at the same time to form combined commands.

Note: All delay times are executed before the command;the command action will only be executed after the delay time has elapsed。

7.6 Detection Command



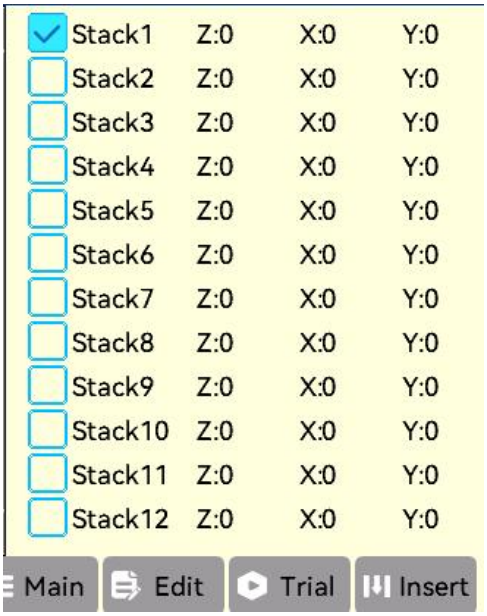
Check the corresponding options, click the corresponding button, and select the output status. Indicator light ON means connected, indicator light OFF means disconnected .

Finally, click **Insert** to complete one detection command teaching. Multiple selections can be inserted at the same time to form combined commands

Start Detection: Detects signals starting from the current line until the End Detection command. (No signal detected will trigger an alarm.)

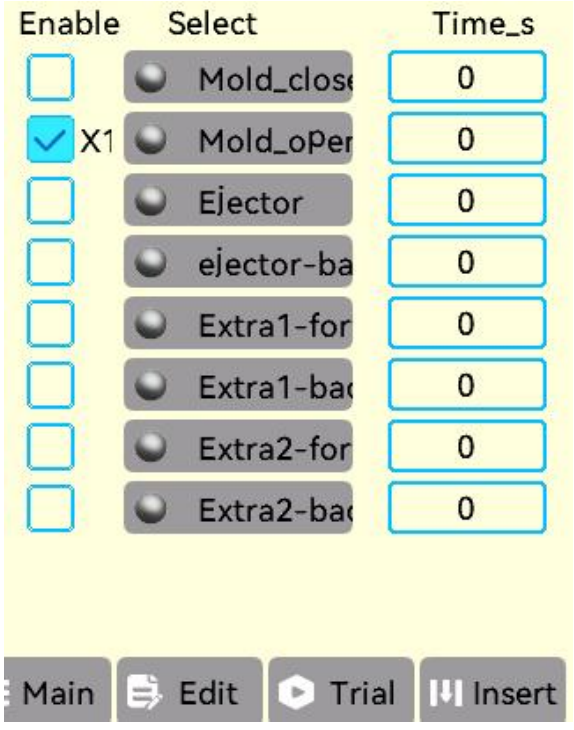
End Detection: Stops signal detection. (No signal detected will not trigger an alarm.)

7.7 Stacking Command



Check the corresponding options and click Insert to complete one matrix command teaching。

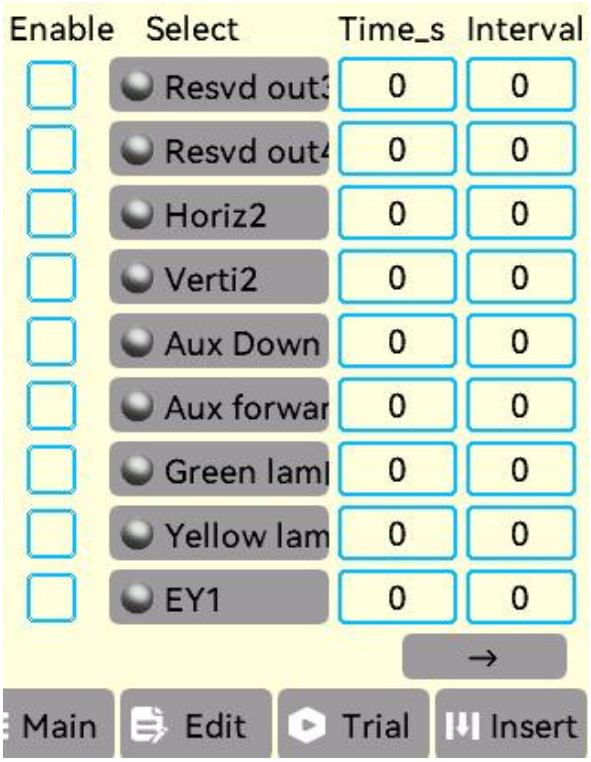
7.8 Molding Machine Signal Command



Check the corresponding options, click the corresponding button, and select the output status. Indicator light ON means connected, indicator light OFF means disconnected. Finally, click **Insert** to complete one molding machine command teaching。

Note: The delay time is always executed **before** the command. If a delay is set before this action, the command will only be executed after the delay time expires。

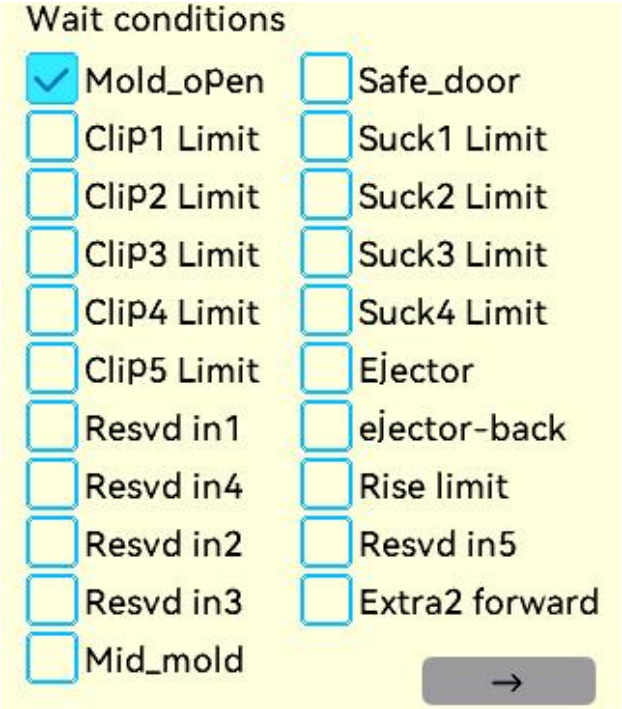
7.9 Reserved Output Command



Check the corresponding options, click the corresponding button, and select the output status. Indicator light ON means connected, indicator light OFF means disconnected. Finally, click **Insert** to complete one reserved command teaching. Multiple selections can be inserted at the same time to form combined commands。

Interval Mold Count: This command is executed once every set number of cycles. Entering 0 means executing every mold (no interval)。

7.10 Wait Command Teaching



Check the corresponding options and click Insert to complete one wait command teaching。

Note: Edit parameters such as "Wait Time" after inserting the command。

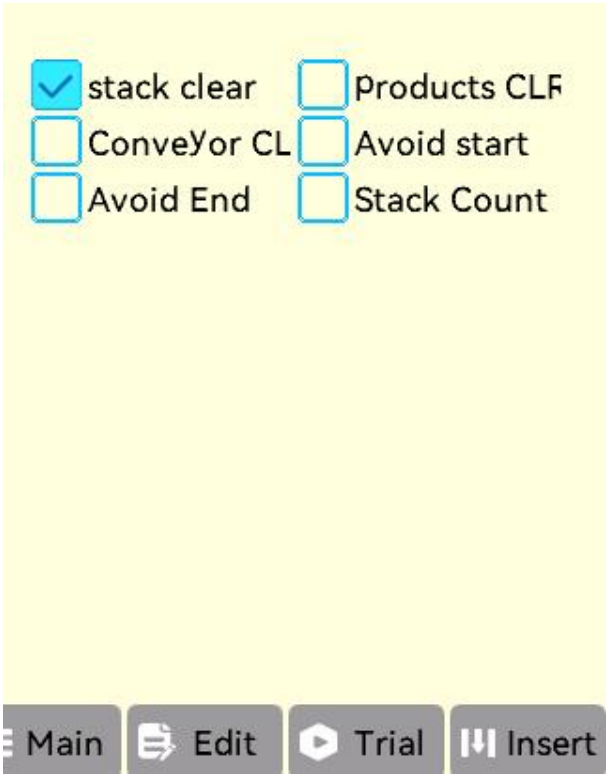
7.11 Auxiliary Equipment Command



Check the corresponding options, click the corresponding button, and select the output status. Indicator light ON means connected, indicator light OFF means disconnected. Finally, click **Insert** to complete one auxiliary equipment command teaching.

Interval Mold Count: This command is executed once every set number of molds. Entering 0 means executing every mold。

7.12 Special Command



Stacking Reset: Automatically resets stacking in full auto mode。

Product Count Reset: Automatically resets product count in full auto mode。

Conveyor Belt Reset: Automatically resets the conveyor belt in full auto mode。

Stacking Reset: Automatically resets the conveyor belt

Start Detection Avoidance: Dedicated command for product avoidance function。

End Detection Avoidance: Dedicated command for product avoidance function。

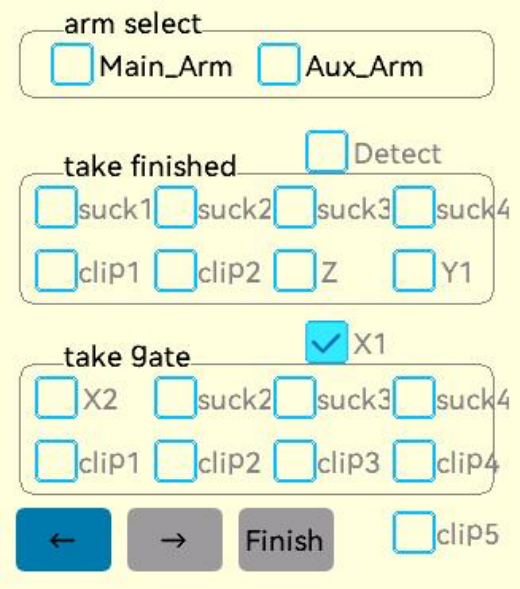
Stacking Count: Counts at any position after stacking is completed (check to enable counting at end)。

7.13 Quick Teaching

Note:

1. Before entering Quick Teaching, confirm whether the programmed content in the current mold number is useful.If useful, create a new program in the File interface first.Otherwise, after setting various parameters in the Quick Teaching interface and pressing the Finish button,all programs in the current mold number will be deleted and a complete set of new operation programs will be created。

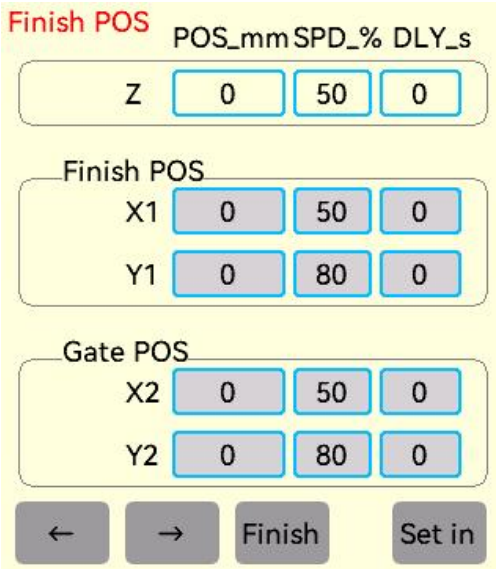
7.13.1 Arm Selection Interface



1. When the mechanical structure is 3-axis, the "Sub-arm" option and "Water Sprue Gripper" option will be grayed out automatically and unavailable for selection. The sub-arm can only be selected for 5-axis systems or 3-axis systems with pneumatic sub-arms.

2. By default, there is only one corresponding gripper for "Product Gripper" and "Sprue Gripper". If multiple grippers are required, you can select multiple options。

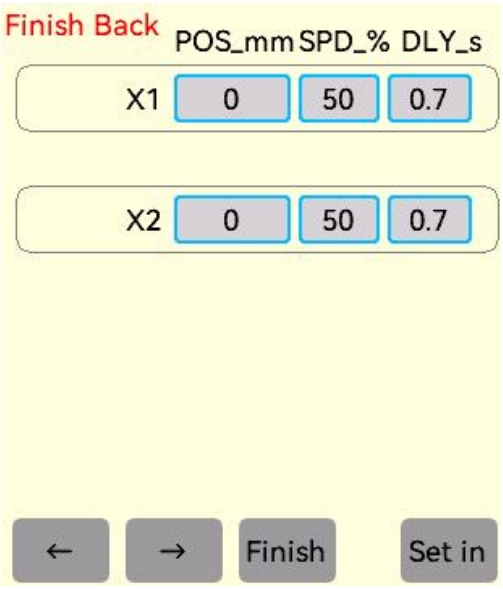
7.13.2 Pick Position Setting Interface



Pick Position refers to the position inside the mold where parts are picked up. At this position, activating the clamp or suction tool allows direct gripping of the part。

Position values can be entered manually, or you can manually move the corresponding axis to the target position, then press the Set button to load the current actual position value into the axis input field。

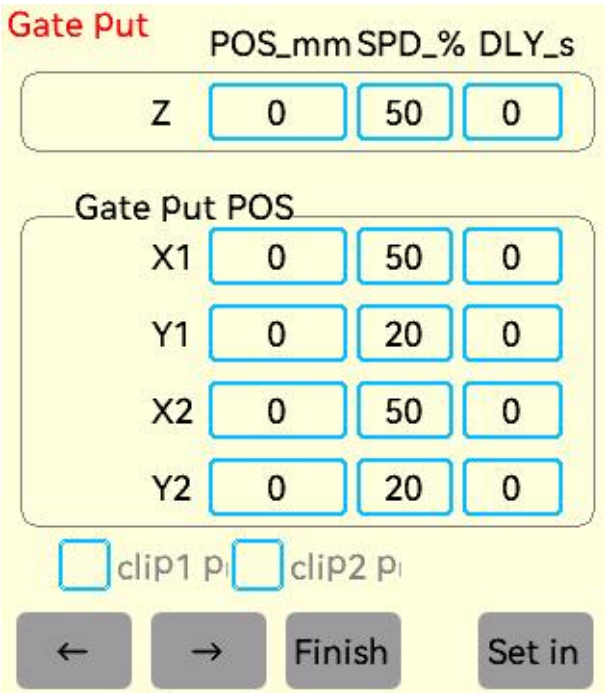
7.13.3 Pick Retreat Position Setting Interface



Pick Retreat Position mainly refers to the position reached after retracting the product upon completion of in-mold picking。

Pick Retreat Position mainly refers to the position reached after retracting the product upon completion of in-mold picking。

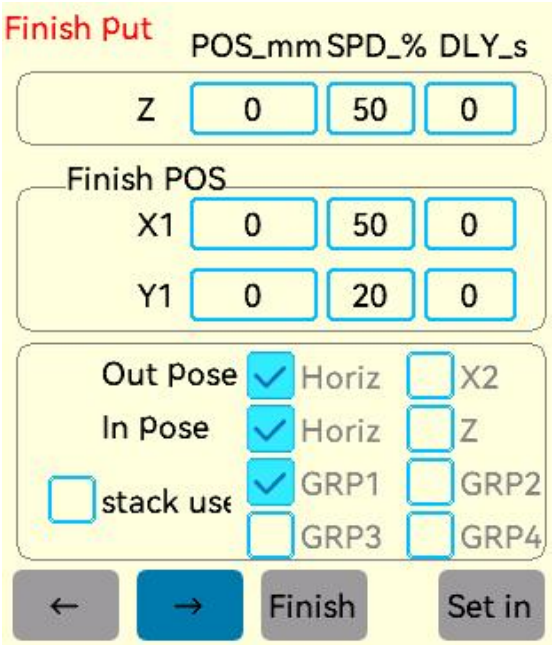
7.13.4 Sprue Discharge Position Setting Interface



1、Sprue Discharge Position Setting InterfaceRelevant options are displayed only when using Main Arm Clamp 1/Clamp 2 function or Sub-arm Sprue Gripper. When the main arm clamps the sprue, you can check Discharge Clamp 1 / Discharge Clamp 2 to achieve cavity separation of sprue and product。

2、Sprue Discharge Position refers to the position outside the mold for placing the sprue. At this position, closing the clamp or suction tool will release the sprue waste directly. Position values can be entered manually, or you can manually move the corresponding axis to the target position, then press the Set button to load the current actual position value into the corresponding axis input field

7.13.5 Product Discharge Position Setting Interface



1.Product Discharge Position refers to the position outside the mold for placing products.At this position, closing the clamp or suction tool releases the product directly.Position values can be entered manually,or you can manually move the corresponding axis to the target position,then press the Set button to load the current actual position value into the corresponding axis position。

2.When **Function → Signal Setting → Chamfer Posture in Traverse → No Limit** is selected,the **Z2 In/Out Chamfer Posture** in the figure above can be checked and set; otherwise, it cannot be set.The posture is determined by **Vertical** or **Horizontal** in **Function → Signal Setting → Chamfer Posture in Traverse**。

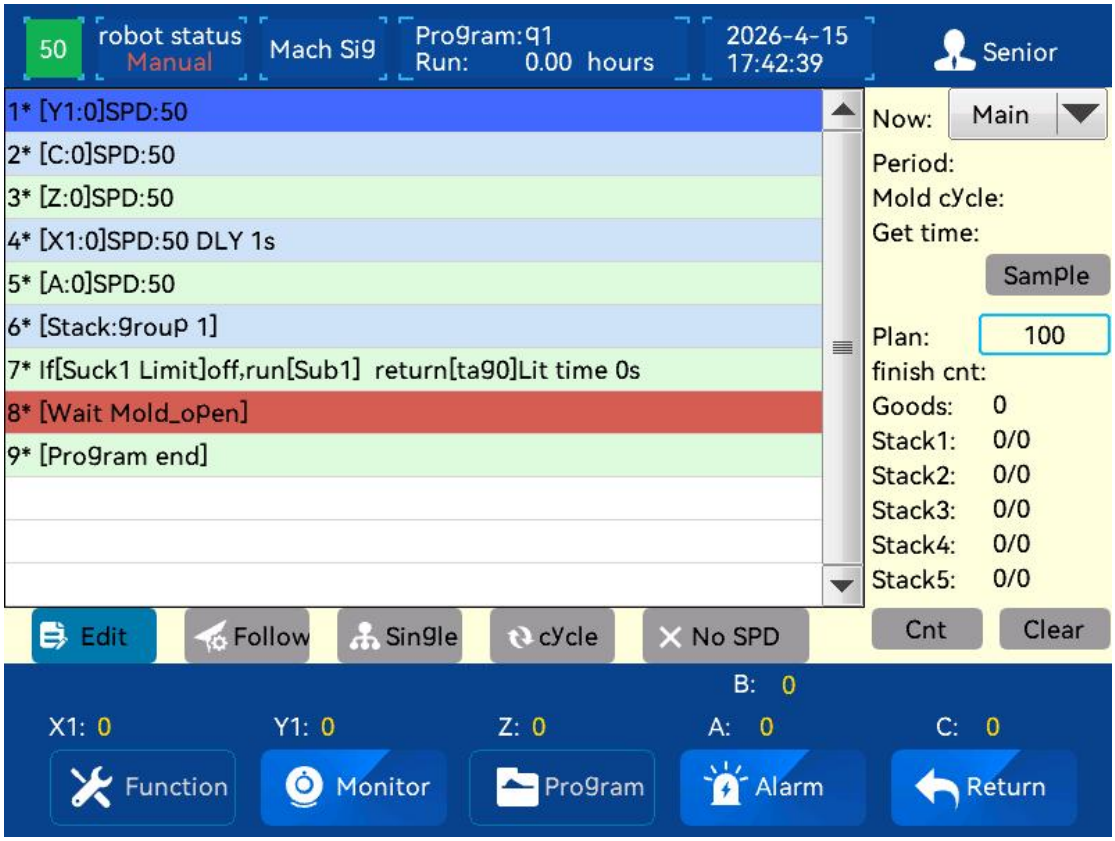
3.When **Stacking Use** is checked for product discharge,the X, Y, Z axis coordinates will be automatically written into the starting point input field of the selected stacking group upon completion.
The specific location is:**Function → Stacking Setting → Group N → Starting Point Input Fields for X/Y/Z** Detailed parameters such as stacking sequence, direction, quantity, spacing and speedmust also be configured in **Function → Stacking Setting → Group N**。

7.13.6 Press "Finish" Button Prompt Interface

1.If the Confirm button is pressed,the existing program on the left will be completely overwritten,and a complete set of program will be generated according to the Quick Teaching settings and related parameters.Otherwise, press the Cancel button to close the prompt window without any changes。

8. System Program Operation

fter programming is completed in the teaching interface, turn the selector switch to AUTO mode to enter the automatic operation interface.



On this interface, you can operate the system forauto run, stop, single-step operation, single-cycle operation, auto speed adjustment, etc。



Edit: When the system is in automatic operation, if you need to adjust command parameters, you can disable Follow (set to Not Follow). Only then can you select the corresponding command and click Edit to take effect. In the pop-up edit window, you can fine-tune position command parameters by ±5 and other simple delay time parameters。

Follow: During automatic operation, this selects whether the cursor follows the active command for easy viewing of the currently executing instruction. When you need to view the full program window, click and select Not Follow, so you can scroll and view using the right scroll bar。

Single Step: The system executes only the current line command. The Single Step button must be held down continuously; releasing it stops the current command. If the automatic speed is too high, the execution effect will not be visible. When the current line command is completed, the cursor automatically jumps to and selects the next line command.

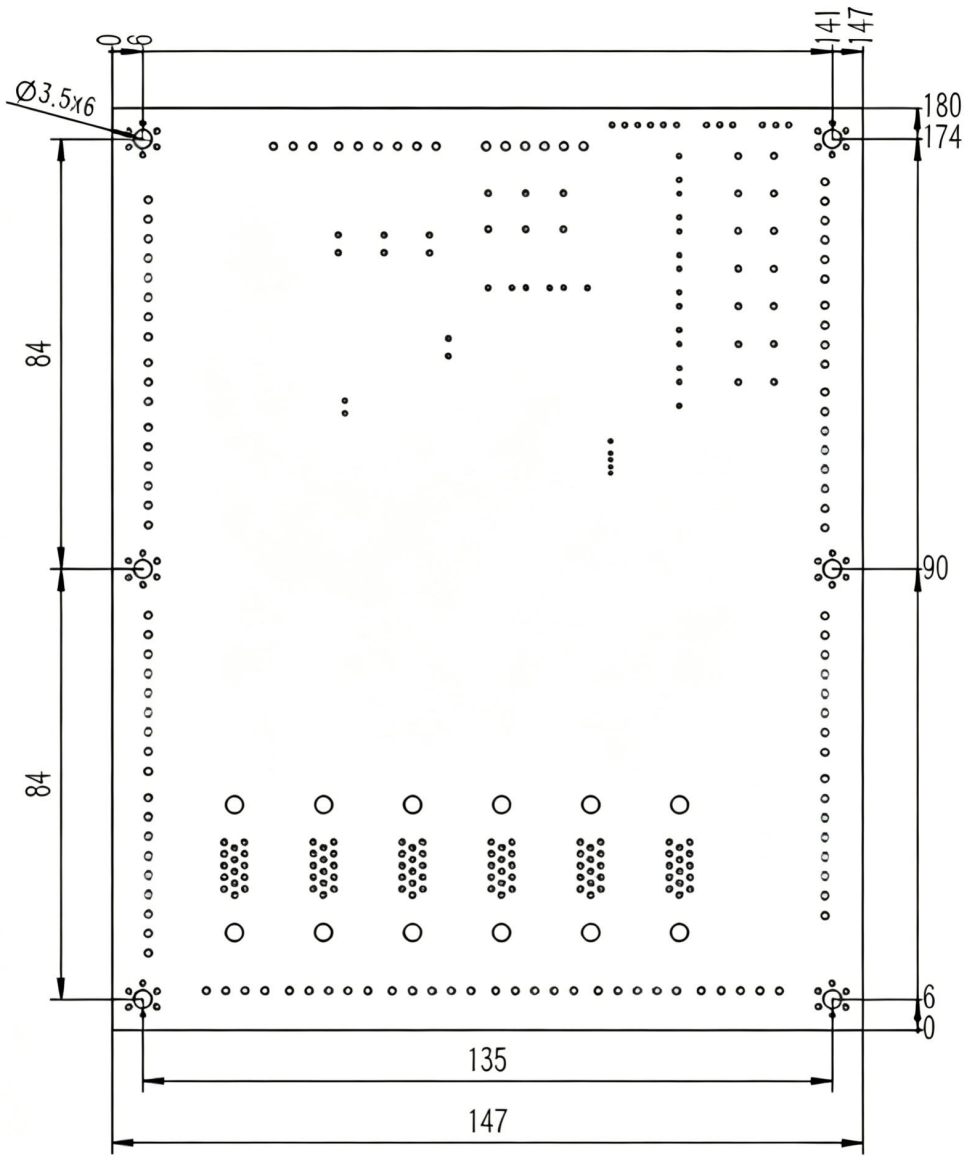
Single Cycle: The system executes all taught commands once。

Speed Adjust Disable: When speed adjust is disabled, the up and down keys on the left side of the operator cannot be used to adjust speed on the auto interface.Click **Speed Adjust Disable**; when the icon changes, speed can be adjusted using the left up and down keys of the operator in automatic mode。

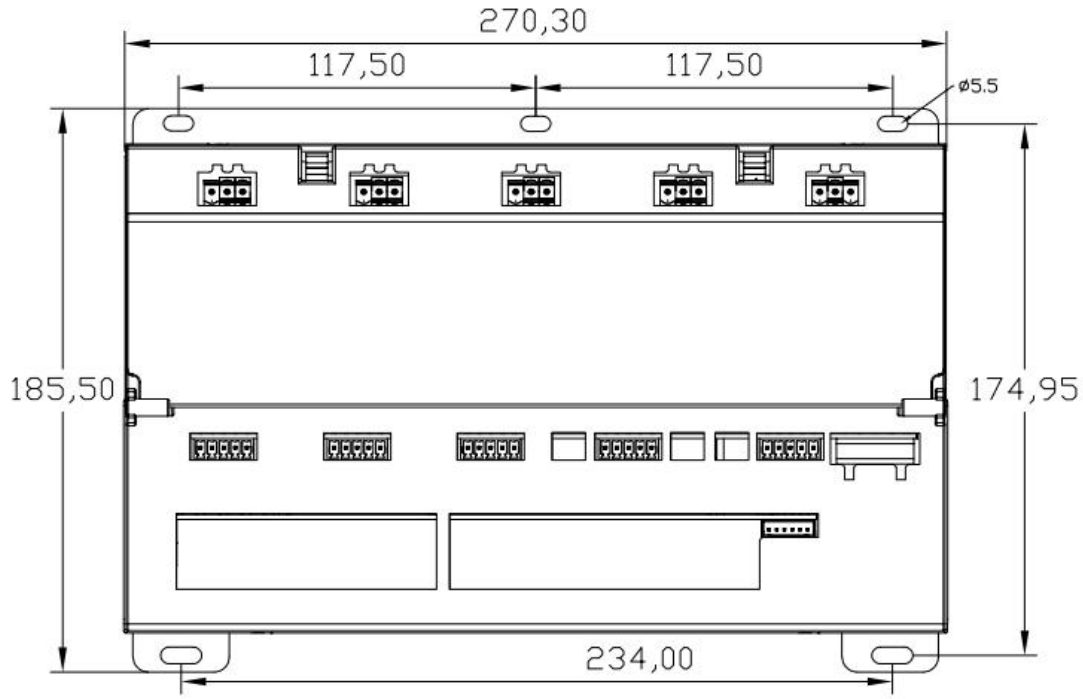
Reset: You can select to clear the production count, stacking count, and interval variable count. Select the corresponding count and click OK; the selected count will be reset to zero and start counting again。

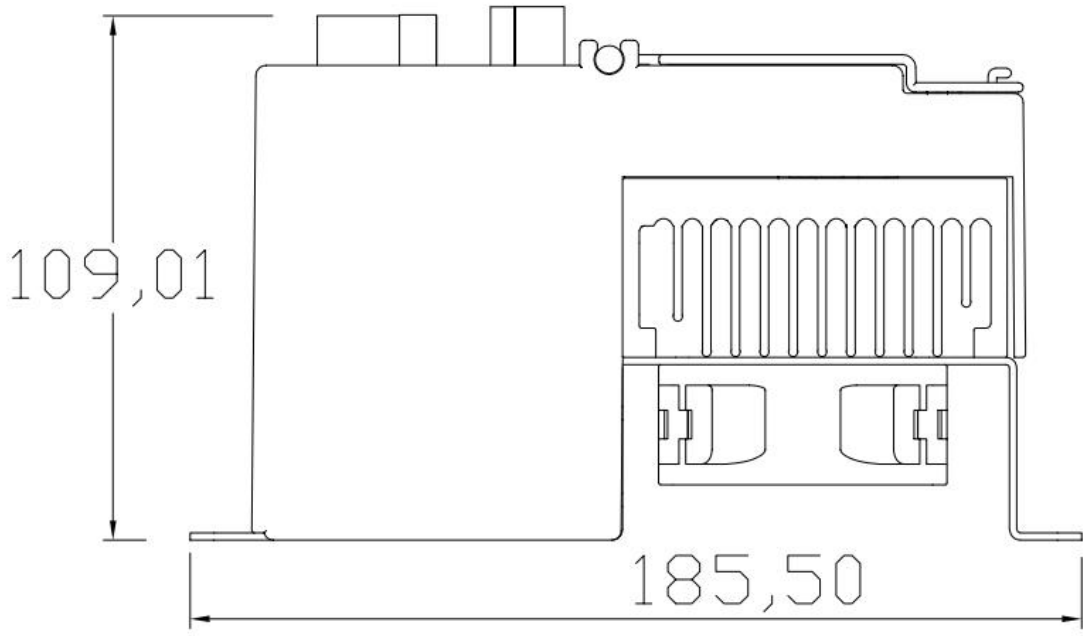
9. Installation Dimension Drawing

9.1 Split Motherboard Mounting Dimensions Drawing



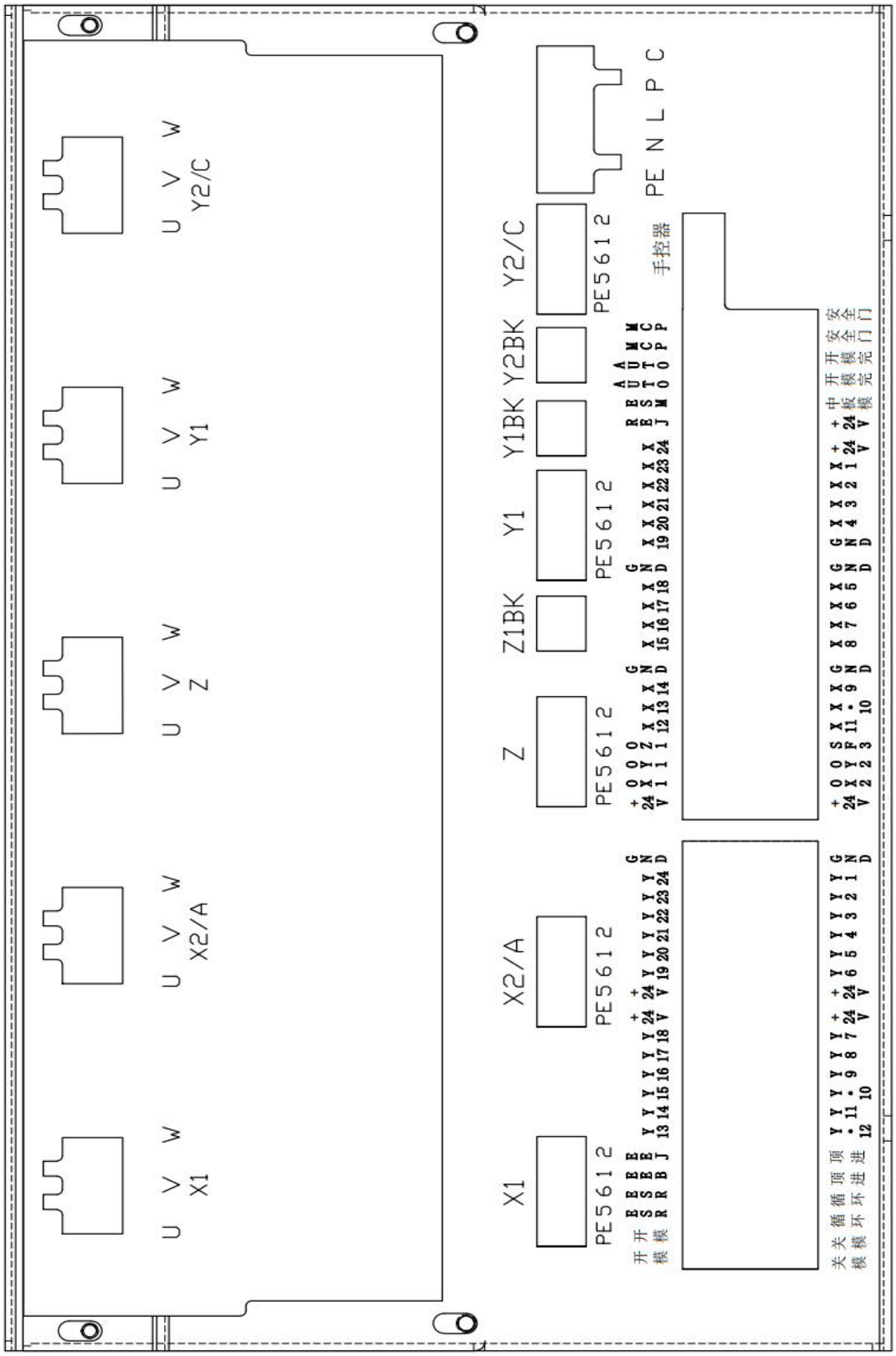
9.2 All-in-One Unit Dimensions Drawing





10. Port Wiring Detail Diagram

10.1 All-in-One Unit Wiring Diagram



A轴
X1轴
Y1轴
Z轴
Y2轴
X2轴
SON1
SON2
SON3
SON4
SON5
SON6
SAF ORG CL CCL BRK
DC0V电源输入
DC24V电源输入
DC0V电源输出
DC24V电源输出
手控盒连接端口
出轴0V
Z轴刹车输出
Y2轴刹车输出
Y1轴刹车输出
安全门
模具完
开模完
允许开模
允许顶针
允许锁模
模具区安全
急停
手动
自动
机械手
吸1阀
吸2阀
抱1阀
抱2阀
副夹阀
喇叭
输送带
主水阀
副垂直阀
副水平阀
运行绿灯
报警红灯
油下降阀
上升阀
送料阀
剪刀阀
吸3阀
吸4阀
抱3阀
抱4阀
保留
A轴负限
A轴正限
A轴原点
副臂引拔刹车
副臂引拔负限
副臂引拔正限
副臂引拔原点
副臂引拔安全
副臂上下刹车
副臂上下负限
副臂上下正限
副臂上下原点
副臂上下安全
横行刹车
横行负限
横行正限
横行原点
横行模外安全
主臂上下刹车
主臂上下负限
主臂上下正限
主臂上下原点
主臂上下安全
主臂引拔刹车
主臂引拔负限
主臂引拔正限
主臂引拔原点
主臂引拔安全

10.3 All-in-One Unit Wiring Diagram

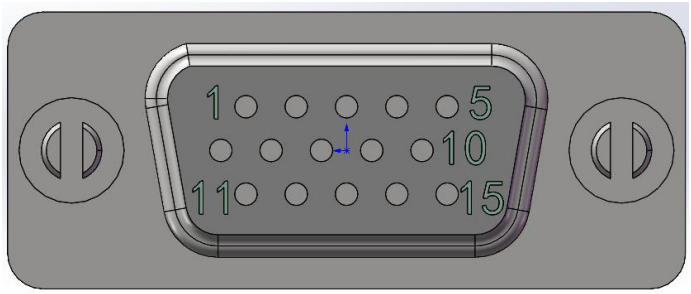
Input Port	Port Definition	Output Port	Port Definition
X1	Clip 3 Limit	Y1	Suck 1 Valve
X2	Clip 4 Limit	Y2	Suck 2 Valve
X3	Suck 3 Limit	Y3	Clip 1 Valve
X4	Suck 4 Limit	Y4	Clip 2 Valve
X5	Main Arm Horizontal	Y5	Clip 5 Valve
X6	Main Arm Vertical	Y6	Main Horizontal Valve
X7	Clip 1 Limit	Y7	Main Vertical Valve
X8	Clip 2 Limit	Y8	Horn 叭
X9	Suck 1 Limit	Y9	Suck 3 Valve
X10	Suck 2 Limit	Y10	Suck 4 Valve
X11	Clip 5 Limit	Y11	Clip 3 Valve
X12	Auxiliary Horizontal Limit	Y12	Clip 4 Valve
X13	Auxiliary Vertical Limit	Y13	conveyor
X14	Auxiliary Up Limit	Y14	Auxiliary Horizontal Valve / Reserved
X15	Air Pressure Detection	Y15	Auxiliary Vertical Valve / Reserved
X16	Lubrication	Y16	Cutter / Scissors
X17	Outside Mold Safety Pause	Y17	Lubrication Valve
X18	Reserved 1 in / Avoidance	Y18	Feeder
X19	Reserved 2 in / External Mold Safety 2	Y19	Auxiliary Down Valve / Reserved
X20	Reserved 3 in / External Device Button	Y20	Auxiliary Lead-in Valve / Reserved
X21	Reserved 4 in / Z1-Z2 Anti-Collision	Y21	Reserved

X22	Reserved 5 in / Servo Stop	Y22	Reserved / Red Light
X23	Reserved 6 in	Y23	Run Green Light / Reserved
X24	Reserved 7 in	Y24	Yellow Light / Reserved
OZ1	Z Origin	EMO	Enable Mold Open
OY1	Y1 Origin	EMC	Enable Mold Close
OY2	Y2 Origin	ESR	Emergency stop output
OX1	X1 Origin	MAF	mold safety
OX2	X2 Origin	EEB	Eject Back
SF3	External Mold Safety	EEF	Eject Forward
MCP	Mold Closeed	ZZJ	Middle Plate In
SDM	Safety Door	Y1BK	Y1 Brake (No Polarity)
MOP	Mold Opened	Y2BK	Y2 Brake (No Polarity)
AUYO	fully auto	Z1BK	Z1 Brake (No Polarity)
ESM	Emergency Stop input		
MID	Mid-mold check		
REJ	Rejects		

Input is active when short- circuited to OV, and output points are OV(NPN)。

10.4 Split Servo Drive Interface Definition

DB15-VGA Connector



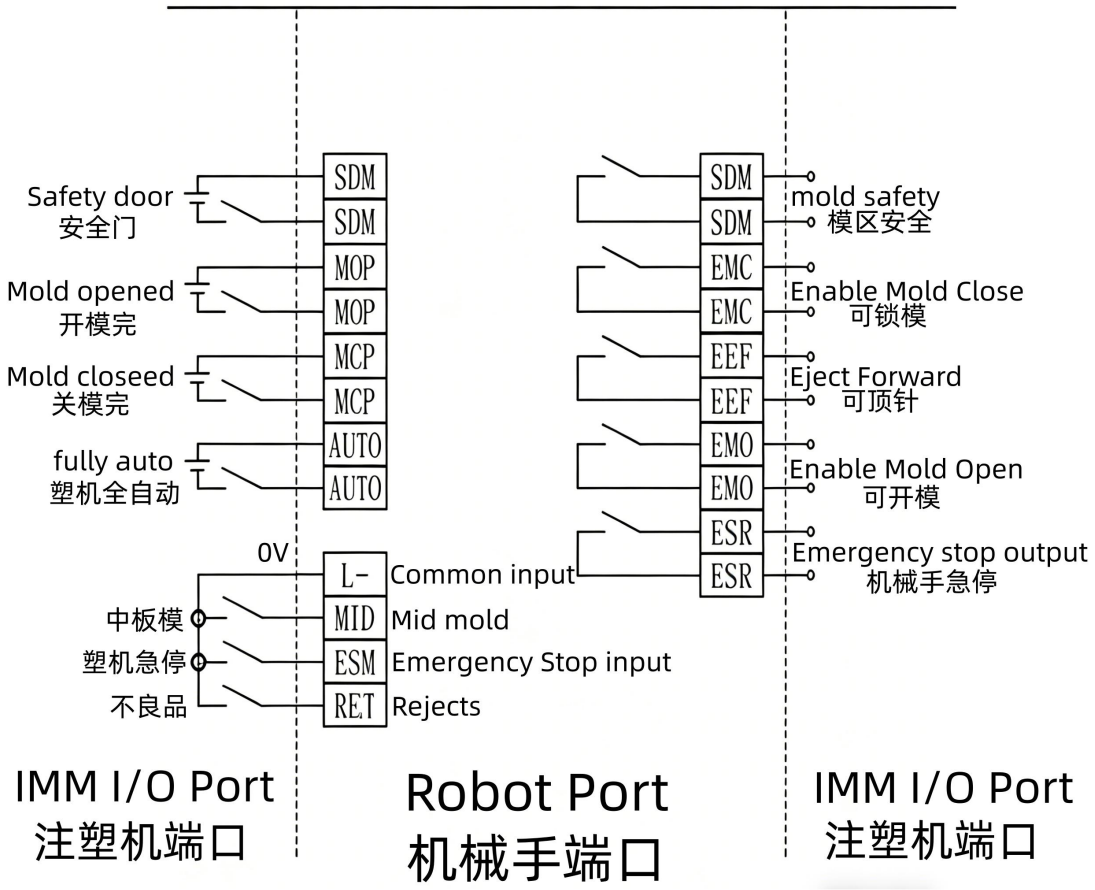
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15

Pin Number	Terminal Definition	Pin Number	Terminal Definition
1	24V	2	DIR-
3	DIR+	4	PUL-
5	PUL+	6	0V
7	/	8	/
9	/	10	/
11	ALM	12	BRK
13	SON	14	/
15	/		

10.5 Handheld Pendant and Split Motherboard Wiring Definition

Handheld Terminal			Main Board Terminal	
			RS422 port an ESTP Port	
5	Handheld Pendant Receive R-	←	6Pin T-	Main Board Transmit T-
4	Handheld Pendant Receive R+	←	5Pin T+	Main Board Transmit T+
3	24V Power Ground	↙	4Pin GND	24V Power Ground
2	24V Power Supply		3Pin 24V	24V Power Supply
1	Emergency Stop	→	2Pin GT	Emergency Stop
	--		1Pin	FG

10.6 Manipulator-Injection Molding Machine Connection



11. Servo Connection

100 Series Servo Drive General Connection Table

1、**LW-XP Series：** Pn001 Pulse Input Mode, set to 0 (Pulse + Direction)
Pn003 Rigidity Level 13
Pn004 Inertia Ratio 4
Pn008 Pulses per Motor Revolution 5000
Pn223 Acceleration/Deceleration Time 200
Fn002 Factory Reset 65535
Un027 Load Monitor
Un000 Speed Monitor

2、**RC-P100S Series：**
PA5 Speed Proportional Gain 150 (equivalent to inertia)
PA6 Speed Integral Constant 60 (equivalent to rigidity)
PA9 Position Proportional Gain 60
PA11 Pulses Per Motor Revolution 5000
PA14 Pulse Input Mode set to 0 (Pulse + Direction)
PA19 Smoothing Filter set to 1000
PA63 Load Inertia Ratio

Note: The control system performs position control on the servo motor by outputting position commands. The command pulse type is Pulse + Sign (Direction). The maximum pulse output frequency is 500 Kpps. Please set the servo driver parameters correctly to match。

Mainboard				Servo Driver		
Interface	Pin	Function	Status	Interface	Pin	Servo Definition
SVCN	1	DC24+	→	CN1	16	DC24+
SVCN	2	SIGN-	→	CN1	22	SIGN-
SVCN	3	SIGN+	→	CN1	6	SIGN+
SVCN	4	PULSE-	→	CN1	21	PULSE-
SVCN	5	PULSE+	→	CN1	5	PULSE+
SVCN	6	DC24-	⊥	CN1	34.38	DO2-(ALM-),DO4-(BRK-)
SVCN	7	Reserved				
SVCN	8	Reserved				
SVCN	9	Reserved				
SVCN	10	Reserved				
SVCN	11	ALM+	←	CN1	33	DO2+（ALM+）
SVCN	12	BRK	←	CN1	37	DO4+(BRK+)
SVCN	13	SON	→	CN1	20	SON
SVCN	14	Reserved				
SVCN	15	Reserved				

External Brake Connection: Connect pin 38 of the driver to 0V, and connect pin 37 to the control relay。

Panasonic A5/A6 Series Servo Driver Connection

Note: The control system performs position control on the servo motor by outputting position commands. The command pulse type is Pulse + Sign (Direction). The maximum pulse output frequency is 500 Kpps. Please set the servo driver parameters correctly to match。

Motherboard Pin	Motherboard Definition	Status	Servo pin	Servo Definition
1	DC24+	↗→	7	DC24+
2	SIGN-	→	5	SIGN-
3	SIGN+	→	6	SIGN+
4	PULSE-	→	3	PULSE-
5	PULSE+	→	4	PULSE+
6	DC24-	⊥	41	COM-（24VDC-）
			36	ALM-
			10	BRK-
			13	GND
7	Reserved			
8	Reserved			
9	Reserved			
10	Reserved			
11	ALM+	←	37	ALM+
12	BRK	←	11	BRK+
13	SON	→	29	SON
14	Reserved			
15	Reserved			

External brake: Connect pin 10 of the driver to 0V, pin 11 to the control relay。

Panasonic A5/A6 Series Servo Drive Parameter Setting

Parameter Code	Parameter Name	Set Value	Factory Value	Remarks
Pr0.01	Control Mode	0	0	0: Manual 1: Auto
Pr0.02	Auto Tuning	1	11	Not adjusted in auto mode
Pr0.03	Rigidity Level	7---13	13	Not adjusted in auto mode

Pr0.04	Inertia Ratio	250---3000	250	Not adjusted in auto mode
Pr0.05	Pulse Input Selection	0	0	
Pr0.06	Pulse Direction	1	0	
Pr0.07	Pulse Mode	3	1	
Pr0.08	Pulses per Revolution	5000	10000	
Pr0.11	Feedback Pulse	2500	2500	
Pr0.14	Position Deviation	100000	100000	
Pr0.16	External Resistor	1	0	
6	Monitor Input Pulse Count			
1	Monitor Motor Speed			
15	Monitor Overload Rate			

Inovance IS630P / IS660P / IS600P Servo Drive Connection

Note: The control system performs position control on the servo motor by outputting position commands. The command pulse type is Pulse + Sign (Direction). The maximum pulse output frequency is 500 Kpps. Please set the servo driver parameters correctly to match.。

Motherboard Pin	Motherboard Definition	Status	Servo pin	Servo Definition
1	DC24+	↗→	11	DC24+
2	SIGN-	→	39	SIGN-
3	SIGN+	→	37	SIGN+
4	PULSE-	→	43	PULSE-
5	PULSE+	→	41	PULSE+
6	DC24-	⊥	26	DO4-
			14	COM-(DC24-)
			27	DO5-
7	Reserved			
8	Reserved			
9	Reserved			
10	Reserved			
11	ALM+	←	1	DO4+
12	BRK	←	28	DO5+
13	SON	→	33	DI5（SRV-ON）

14	Reserved			
15	Reserved			

External brake: Connect pin 27 of the driver to 0V, pin 28 to the control relay。

Inovance IS630P/IS660P/IS600P

Series Servo Drive Parameter Setting

Parameter Code	Parameter Name	Set Value	**Factory Value**
H02-00	Control Mode	1	1
H02-25	Brake Resistor Setting	1	0
H02-26	External Brake Resistor Power	Actual Resistance Power	
H02-27	External Brake Resistor Value	Actual Resistance Power	
H04-07	Alarm Logic Modification	1	0
H04-08	Brake Function	9	16
H05-01	Pulse Input Command Selection	0	0
H05-02	Pulses per Revolution Setting	5000	10000
H05-15	Pulse Command Form	0	0
H08-15	Load Inertia Ratio	0---120	1
H09-00	Rigidity Mode	1	0
H09-01	Rigidity Level	7---15	15
H0B-12	Monitor Load Rate		
H0B-13	Monitor Input Pulse Count		

12. Alarm Information and Alarm Handling Methods

12.1 Integrated Servo Alarms

1: --04 Alarm Name: 【Over Speed】

When power is turned on: 1 Servo internal circuit fault; 2 Motor fault。
Solution: When this fault occurs, first check whether the motor encoder cable is in good contact, and verify by swapping the servo small board with another axis. If the fault code remains unchanged after swapping, the motor is most likely faulty。
During motor operation: 1 Acceleration/deceleration time is too short; 2 Encoder fault; 3 Poor encoder cable connection。
Solution: Increase acceleration/deceleration time; check whether the encoder cable is in good contact, replace the encoder cable, replace the servo motor, and check whether relevant parameters are set properly, such as overshoot in HA-13 and HA-127.。
When motor starts: 1 Excessive load inertia; 2 Incorrect UVW wiring; 3 Motor encoder zero point error。
Solution: Check whether the load inertia ratio is overloaded, such as parameters (HA-11, HA-13, HA-19, HA-127)。
Incorrect motor UVW phase wiring or motor encoder wiring:
Solution: 1 Check whether the UVW phase sequence of the motor power cable is correct; 2 Verify that the pin positions of the UVW connector are consistent, check for wrong connection and correct wire sequence of the motor encoder cable. If the problem still exists, return the unit to the factory for repair。

2: --05 Alarm Name: 【Main Circuit Overvoltage】

When power is turned on: 1 Input power voltage is too high and unstable。
Solution: Check whether the mains input voltage is too high. Use a multimeter in AC 750V range to measure the voltage between neutral line and live line, and check if the measured 220V voltage fluctuation (200-240V) is normal. If single-phase voltage is taken from three-phase 380V in the control cabinet, measure the voltages of the other two phases and use the phase with the lowest voltage as the servo power input.。
During motor operation: Insufficient braking circuit capacity, burned brake resistor, servo internal circuit fault.。
olution: Check if the brake resistor is burned out and replace it with a higher-power one, such as (25Ω 400W - 30Ω 600W), which is generally determined according to the on-site load inertia. If it still cannot work normally after replacement, the internal resistance of the servo is most

likely faulty, and factory repair is recommended.。

3：--06 Alarm Name：【Main Circuit Undervoltage】

When power is turned on: 1 Input voltage is too low. 2 Instant power loss for more than 20ms。
Solution: Check the servo input voltage with a multimeter in AC 750V range by measuring neutral line to live line, and verify if the voltage (200-240V) is normal. Large voltage fluctuation may be caused by interference from other equipment or unstable external power supply. It is recommended to install an isolation transformer and AC filter. If all the above checks are normal but the problem still exists, the servo internal circuit may be faulty, and factory repair is recommended。

During motor operation: 1 Insufficient power supply capacity. 2 Heatsink overheating。
Solution: Check the power supply capacity. If voltage is converted through a transformer, verify whether the transformer power is sufficient. A faulty servo small board may cause overheating alarm.。

4：--07 Alarm Name：【Position Deviation Overrun】

When power is turned on: 1 Encoder zero point offset. 2 Encoder fault. 3 Circuit board fault。
Solution: Readjust the encoder zero point. If the problem still exists, replace the servo motor and servo small board。
During motor operation: 1 Detection range of position deviation overrun is set too small. 2 Position proportional gain is too small. 3 Insufficient torque。
Solution: Check if parameter HA-35 (position deviation check range) is set too low, and check if parameter HA-19 (position loop proportional gain) is set too low. If both values are too low, increase HA-19 and HA-35. Check load inertia ratio HA-127 and increase it appropriately. Readjust the encoder zero point. If the problem remains after troubleshooting above, factory repair is recommended。

5：--08 Alarm Name：【Overheat】

During motor operation: 1 Excessively high heatsink temperature. 2 Circuit board fault.。
Solution: Check the temperature value on the "Monitor" page, check whether the fan on the main unit is working, and whether the main unit exhaust outlet is unobstructed. Install cooling exhaust fans for the electrical cabinet. If all the above checks are normal, the internal circuit of the main unit may be faulty, and factory repair is recommended。

6：--09 Alarm Name：【Speed Amplifier Saturation Fault】

During motor operation: 1 Excessive motor load. 2 Motor mechanically jammed。
Solution: Check the load rate on the "Monitor" page, reduce the load, check whether the load exceeds 290 output power, and check whether the mechanical part jams the motor. If all the above are normal, replace the motor with a higher-power one.。

7：--10 Alarm Name：【Drive Prohibition Abnormality】

Both CCW/CW drive prohibition input terminals are disconnected。
Solution: Check the CCW/CW connection wires for looseness or disconnection.。

8：--11 Alarm Name：【Position Deviation Counter Overflow】

1 Motor mechanically jammed。
Solution: Check whether the load mechanism jams the servo motor, check for power supply interference, and focus on checking whether all ground wires are in good contact。

9：--13 Alarm Name：【Power Cable Disconnection】

Solution: Check whether the UVW power cables are correctly connected, whether the connector pins are loose, and whether the ports are fully inserted。

10：--14 Alarm Name：【IPM Module Fault】

When power is turned on: 1 Servo small board fault。
Solution: If the alarm occurs at power-on, the servo small board circuit is likely faulty; it is recommended to replace the servo small board。
During motor operation: 1 Low supply voltage. 2 Overheat. 3 Short circuit between UVW phases of the drive. 4 Poor grounding. 5 Motor insulation damage. 6 Interference。
Solution: First check whether the supply voltage is normal with a multimeter in AC 750V range (200－240V). Check for UVW disconnection, loose terminals, or inter-phase short circuit, and whether the motor tail lead touches the motor housing. Check proper grounding. Install line filters or isolation transformers to reduce interference. Route signal cables separately from power cables and away from high-power inverters. If the problem persists, factory repair is recommended。

11：--16 Alarm Name：【Overload】

When power is turned on: 1 Servo small board circuit fault.。
Solution: If the alarm occurs at power-on, the servo small board circuit is likely faulty; it is recommended to replace the servo small board。
During motor operation: 1 Operation exceeding rated torque. 2 Brake not

released. 3 Motor instability and oscillation. 4 One UVW phase disconnected. 5 Encoder connection error。
Solution: First check the holding brake (whether the motor brake is released and correctly wired). Check the load rate on the "Monitor" page; if it exceeds 290, reduce start-stop frequency and increase parameters HA-11, HA-19, HA-127 (if increasing these parameters worsens the fault, the load is likely too heavy; replace with a higher-power servo motor or reduce load). Increase the "Operation Parameter" smoothing time. Check UVW connections from the motor tail to the drive for looseness or disconnection. Check the encoder cable connection. If the problem persists after troubleshooting, factory repair is recommended。

12：--17 Alarm Name：【Brake Fault】

When power is turned on: Brake circuit fault.
Solution: Likely caused by improper connection of the external resistor PC brake terminal. If the problem remains after reconnecting, the servo internal circuit is faulty and factory repair is required。

13：--18 Alarm Name：【Encoder Count Error】

During motor operation: 1 Encoder damaged. 2 Incorrect encoder line count. 3 Wrong encoder connection. 4 Poor grounding. False encoder Z signal。
Solution: First check whether the ground wire is well connected and properly grounded, and whether the shield layer of the encoder cable is soldered to the metal shell of the terminal. If possible, replace the encoder cable or swap the servo small board to test. If the fault follows the motor, replace the motor; if it follows the drive, replace the drive。

14：--21 Alarm Name：【Relay Switch Fault】

When power is turned on: 1 Relay damaged.。
Solution: If the alarm occurs at power-on, the internal circuit of the main unit is likely faulty; factory repair is recommended。

15：--22 Alarm Name：【Brake Delay Not Released】

Solution: Parameter HA-189 is set too large, causing brake release timeout after enabling. Check parameter HA-189 and reduce its value。

16：--23 Alarm Name：【EEPROM Error】

Solution: This alarm indicates main unit circuit failure; the main unit needs to be replaced. Factory repair is recommended。

17：--24 Alarm Name：【FPGA Module Fault】

Solution: This alarm indicates main unit circuit failure; the main unit needs to be replaced. Factory repair is recommended。

18：--27 Alarm Name：【Current Acquisition Circuit Fault】

Solution: This alarm indicates main unit circuit failure; the main unit needs to be replaced. Factory repair is recommended。

19：--32 Alarm Name：【User Torque Overload Alarm】

Solution: Parameters HA-61 and HA-63 are improperly set and need to be reasonably adjusted. Check the load rate on the "Monitor" page; if it exceeds 290, check whether the mechanical part jams the motor。

20：--33 Alarm Name：【Encoder Z Pulse Loss】

Fault symptoms: 1 No Z pulse, encoder damaged. 2 Poor cable. 3 Encoder interface circuit fault。
Solution: First check whether the encoder cable is well connected and its shield is properly grounded. Replace the encoder cable if necessary. If the problem persists, replace the motor or return the main unit for repair。

21：--34 Alarm Name：【Encoder UVW Signal Error】

Fault symptoms: 1 Encoder UVW signal damaged. 2 Poor cable. 3 Encoder Z signal damaged. 4 Encoder interface circuit fault。
Solution: First check whether the encoder cable is well connected and its shield is properly grounded. Replace the encoder cable if necessary. If the problem persists, replace the motor or return the main unit for repair。

22：--35 Alarm Name：【Encoder UVW Signal Illegal Coding】故障现象：1

Fault symptoms: 1 Encoder UVW signal damaged. 2 Poor cable. 3 Encoder Z signal damaged. 4 Encoder interface circuit fault。
Solution: First check whether the encoder cable is well connected and its shield is properly grounded. Replace the encoder cable if necessary. If the problem persists, replace the motor or return the main unit for repair。

23：--37 Alarm Name：【UVW Signal Unstable / Jitter】

Solution: First check the motor power cable for good connection, no disconnection or looseness. Check the encoder UVW signal feedback connection. If possible, replace the power cable or encoder cable. If the problem persists, return the main unit for repair。

24：--39 Alarm Name：【Excessively Long Illegal State When Connecting Wire-Saving Encoder】
Solution: The encoder cable may be too long, causing signal interference and attenuation. Keep the encoder cable as short as possible and away from interference sources such as inverters and high-frequency lasers。

25：--41 Alarm Name：【Encoder EEPROM Read/Write Communication Failure】

Solution: First check the encoder cable connection for looseness or disconnection. Replace the encoder cable if necessary. If the problem remains, return the main unit for repair.

27：--43 Alarm Name：【Unsupported Model】

Solution: Motor model mismatch; replace the servo small board or motor.

28：--44 Alarm Name：【Motor Model Switch Required】

Solution: Replace the servo small board or motor.

28：--45 Alarm Name：【AC Input Voltage Too Low】

During power failure operation: 1 Normal. 2 External AC input voltage too low。
Solution: Check the input voltage with a multimeter in AC 750V range (200－240V). Large fluctuation may be caused by other equipment or unstable mains. Install an isolation transformer and AC filter. If the problem persists, the main unit internal circuit may be faulty; factory repair is recommended。

29：--47 Alarm Name：【Phase Loss】

Solution: Set parameter HA-113 to 1.

30：--50 Alarm Name：【Main Circuit Voltage Too High at Power-On】

Fault analysis: 1 External AC input voltage too high. 2 Main circuit fault。
Solution: Check the servo input voltage with a multimeter in AC 750V range (210－240V). Large fluctuation may be caused by other equipment or unstable mains. Install an isolation transformer and AC filter. If the problem persists, the main unit internal circuit may be faulty; factory repair is recommended。

31：--53 Alarm Name：【Encoder Communication Fault】

Fault analysis: No communication connection established between drive and encoder。
Solution: Check the encoder cable connection and terminals for looseness or disconnection. Replace the encoder cable if necessary, then repower on. If the problem persists, the main unit internal circuit may be faulty; factory repair is recommended。

32：--54 Alarm Name：【Encoder Communication Abnormality】

Fault analysis: Communication interruption or disconnection after successful establishment.。
Solution: Check the encoder cable connection and terminals for looseness or disconnection. Replace the encoder cable if necessary, then repower

on. If the problem persists, the main unit internal circuit may be faulty; factory repair is recommended。

33：--55 Alarm Name：【Encoder Battery Voltage Low】

Fault analysis: Encoder battery voltage low alarm; data not lost but replacement required soon。
Solution: Replace with new batteries。

34：--56 Alarm Name：【Encoder Battery Voltage Error Alarm】

Fault analysis: Encoder battery voltage error; stored data corrupted, encoder reset required。
Solution: Clear the alarm, set parameter HA-127 to 1, then power off and restart. If the problem recurs, replace the battery as soon as possible。

35：--57 Alarm Name：【Encoder Error Alarm】

Fault analysis: Non-battery encoder alarm requiring encoder reset。
Solution: Reset the encoder (power off and restart)

36：--58 Alarm Name：【5 Consecutive CRC Check Errors】

Fault analysis: 5 consecutive CRC errors in received encoder communication data。
Solution: Check the encoder cable connection and secure terminals. Replace the encoder cable or swap the servo small board for testing. If the fault follows the motor, the motor encoder may be faulty; replace the motor or return for repair。

37：--61 Alarm Name：【Single-Turn Position Value Error】

Fault analysis: Single-turn position offset stored in the drive exceeds encoder resolution。
Solution: Power off and restart。

38：--62 Alarm Name：【Encoder Reports Continuous CF Error】

Fault analysis: Encoder continuously reports CF or error.
Solution: Reset the encoder (power off and restart).

12.2 System Alarm Information

Alarm Code	Alarm Information	Handling Method
0001	Suck 1 detection started, Suck 1 limit not detected	1. Check if there is a signal at【X14 Suck 1 Limit】; 2. Observe whether 【Suck 1 Limit】 flashes during operation; 3. Check if the vacuum gauge is normal.
0002	Suck 2 detection started, Suck 2 limit not detected	1. Check if there is a signal at【X15 Suck 2 Limit】; 2. Observe whether 【Suck 2 Limit】 flashes during operation; 3. Check if the vacuum gauge is normal.
0003	Suck 3 detection started, Suck 3 limit not detected	1. Check if there is a signal at 【X9 Suck 3 Limit】; 2. Observe whether 【Suck 3 Limit】 flashes during operation; 3. Check if the vacuum gauge is normal.
0004	Suck 4 detection started, Suck 4 limit not detected	1. Check if there is a signal at【X10 Suck 4 Limit】; 2. Observe whether 【Suck 4 Limit】 flashes during operation; 3. Check if the vacuum gauge is normal.
0005	Clip 1 detection started, Clip 1 limit not detected	1. Check if there is a signal at【X16 Clip 1 Limit】; 2. Observe whether 【Clip 1 Limit】 flashes during operation; 3. Check if the wiring is correct.
0006	Clip 2 detection started, Clip 2 limit not detected	1. Check if there is a signal at【X17 Clip 2 Limit】; 2. Observe whether 【Clip 2 Limit】 flashes during operation; 3. Check if the wiring is correct.
0007	Clip 3 detection started, Clip 3 limit not detected	1. Check if there is a signal at【X22 Clip 3 Limit】; 2. Observe whether 【Clip 3 Limit】 flashes during operation; 3. Check if the wiring is correct.
0008	Clip 4 detection started, Clip 4 limit not detected	1. Check if there is a signal at【X23 Clip 4 Limit】; 2. Observe whether 【Clip 4 Limit】 flashes during operation; 3. Check if the wiring is correct.
0009	Sub-clip detection started, Sub-clip limit not detected	1. Check if there is a signal at 【X18 Sub-clip Limit】; 2. Observe whether 【Sub-clip Limit】 flashes during operation; 3. Check if the wiring is correct.
0104	Lubrication Alarm	No feedback signal received within the set time after lubrication output (X8).

0106	Overlap between traverse axis in-mold safe zone and out-mold safe zone position	Check if the positions of 【In-mold Safety End Point】 and 【Out-mold Safety Start Point】 in the safety point setting overlap.
0116	Horizontal standby limit mode lock	1. Check whether the 【Horizontal Standby Limit Lock】 function is enabled; 2. Check whether the in-mold position chamfer in the program is horizontal (vertical will trigger alarm).
0121	Mold opening completed signal received, no middle plate signal	1. Check whether the 【Middle Plate Mold Usage】 function is enabled; 2. Check if there is a signal at the middle plate mold.
0122	Main arm lead position exceeds software stroke	1. Check all 【X1】 axis positions in the program to see if they exceed the maximum stroke.
0123	Main arm up/down position exceeds software stroke	1. Check all 【Y1】 axis positions in the program to see if they exceed the maximum stroke.
0124	Traverse position exceeds software stroke	1. Check all 【Z1】 axis positions in the program to see if they exceed the maximum stroke.
0125	Sub-arm up/down position exceeds software stroke	1. Check all 【Y2】 axis positions in the program to see if they exceed the maximum stroke.
0126	Sub-arm lead position exceeds software stroke	1. Check all 【X1】 axis positions in the program to see if they exceed the maximum stroke.
0127	Lead axis movement will cause collision	1. Check the positions of adjacent 【X1】+【X2】 axes in the program to see if they exceed the 【Main/Sub-arm Origin Distance】 stroke.
0331	Axis or chamfer function not selected for use	1. Check if there are unused axis functions or chamfer functions in the program.
0333	Conveyor belt reused, check if stacking is enabled	1. Check if 【Use Conveyor Belt】 is checked in 【Stacking Setting】.
0336	Stacking duplicate	1. Check if there are duplicate stacking groups in the program.
0346	Mold lock forced output in progress	1. Check if forced output is enabled.

1000	Arm up/down not in safe position, cannot close mold	1. Confirm whether main/sub-arm up/down is within 【Maximum Standby Point】; 2. Check if main/sub-arm up/down origin signal is normal.
1001	Z axis not outside out-mold standby point, no mold opening completed signal	1. Check if 【Out-mold Standby】 function is enabled; 2. Check if Z axis position is greater than out-mold standby point; 3. Check if mold opening completed signal is normal.
1002	Arm in-mold chamfer is unsafe	1. Rotating the tooling in the mold is not allowed by default. For non-standard applications requiring in-mold chamfer, check 【Allow Main Arm In-mold Chamfer】 in 【Safety Point Setting】-【Posture Safety】 page.
1003	Main arm not at zero point	1. Check if the main arm is at zero point.
1004	Sub-arm not at zero point	1. Check if the sub-arm is at zero point.
1006	Z-axis traverse movement is unsafe, arm not at upper position	1. Confirm whether the arm up/down is in the safe area; if not, move to the safe position and then traverse; if yes, check the positive/negative up/down origin signal.
1007	Arm traverse axis not in safe position, cannot close mold	1. Check if the arm up/down is in the safe area; if not, move to the safe position. 2. If 【Out-mold Standby】 is used, check if the traverse axis is in the safe position; if not, move to the safe position.
1008	Arm up/down movement is unsafe, no mold opening completed signal	1. Check if there is a mold opening completed signal.
1009	Arm down movement is unsafe, traverse axis not in safe area	1. Check if the traverse axis is in the safe area; if not, move to the safe position. If yes, check the Z origin or object detection signal.
1012	Sub-arm not at upper position	
1013	Main arm lead position exceeds software stroke	1. Check if all X1 axis positions in the program are within the software stroke.

1014	Main arm up/down position exceeds software stroke	1. Check if all Y1 axis positions in the program are within the software stroke.
1015	Traverse position exceeds software stroke	1. Check if all Z1 axis positions in the program are within the software stroke.
1016	Sub-arm up/down position exceeds software stroke	1. Check if all Y2 axis positions in the program are within the software stroke.
1017	Sub-arm lead position exceeds software stroke	1. Check if all X2 axis positions in the program are within the software stroke.
1018	Expansion axis position exceeds software stroke	1. Check if all expansion axis positions in the program are within the software stroke.
1019	Traverse in in-mold safe zone but mold	1. Check if the in-mold safe zone signal is normal. If normal,
1020	Traverse in out-mold safe zone but out-mold signal is off	1. Check if the out-mold safe zone signal is normal. If normal, check if the 【Out-mold Safe Zone】 setting range in the safety point setting is within the induction signal range.
1021	Main arm up/down in standby safe zone but standby signal is off	1. Check if the main arm up/down origin point signal is faulty. If normal, check if the 【Maximum Standby】 setting range in the safety point setting is within the induction signal range.
1022	Sub-arm up/down in standby safe zone but standby signal is off	1. Check if the sub-arm up/down origin point signal is faulty. If normal, check if the 【Maximum Standby】 setting range in the safety point setting is within the induction signal range.
1024	Main arm horizontal output is on but horizontal in-place signal is off	1. Check if the main arm horizontal signal on the port monitoring page is normal, and check if there is 0V input at the X12 main arm horizontal port of the main board. If there is no 0V input, check if the external signal input is normal. 2. Check if the 【Main Arm Horizontal】 time setting on the 【Time】 page of 【Machine Parameters】 is too short.

1025	Main arm horizontal output is on but vertical in-place signal is on	1. Check if the main arm horizontal signal and main arm vertical signal on the port monitoring page are normal, and check if the wiring of the X12 main arm horizontal port on the main board is correct. If there is no error, check if the external signal input is normal.
1026	Main arm vertical output is on but vertical in-place signal is off	1. Check if the main arm vertical signal on the port monitoring page is normal, and check if there is 0V input at the X13 main arm vertical port of the main board. If there is no 0V input, check if the external signal input is normal. 2. Check if the 【Main Arm Vertical】 time setting on the 【Time】 page of 【Machine Parameters】 is too short.
1027	Main arm vertical output is on but horizontal in-place signal is on	1. Check if the port monitoring page shows that the main arm vertical signal and main arm horizontal signal are normal, and check if the wiring of the X13 main arm vertical port is incorrect. If there is no error, check if the external signal input is normal.
1028	Mold opening waiting timeout	1. Check if the mold opening completed signal is normal when the set time is reached. If normal, increase the 【Waiting Mold Opening】 time setting in the 【Product Setting】; if no alarm is needed, set it to 0.
1029	Injection machine emergency stop, please check the injection machine	1. Check if the injection machine emergency stop signal on the port monitoring page is normal. Check if there is 0V input at the emergency stop port of the main board. If there is no 0V input, check if the external signal is normal.
1030	Low air pressure	1. Confirm whether the 【Air Pressure Detection】 function is enabled. 2. Check if the low air pressure signal on the port monitoring page is normal. Check if there is 0V input at the X7 port of the main board. If there is 0V input, check if the external signal is normal.

1031	Mold opening completed signal lost	1. Check if the mold opening completed signal is normal and if it is flashing. 2. Confirm whether the 【Recycle】 time setting in the injection machine is sufficient for the manipulator to complete the object retrieval. If not, increase the 【Recycle】 time setting.
1046	Expansion IO board 1 communication error	Check if the communication line between the expansion IO board and the main control board is normal. Check if the IO board has normal power supply.
1047	Expansion IO board 2 communication error	Check if the communication line between the expansion IO board and the main control board is normal. Check if the IO board has normal power supply.
1050	Chamfer vertical traverse is unsafe	1. Check the current state of the vertical chamfer. To perform vertical traverse, you need to enter the 【Safety Point Setting】 - 【Posture Safety】 interface and set the traverse posture as unrestricted or vertical before performing the operation.
1051	Chamfer horizontal traverse is unsafe	
1052	No injection machine automatic signal during automatic operation	1. Check if the injection machine automatic signal on the port monitoring page is normal. Check if there is 24V voltage at the two AUTO ports of the main board. If there is no 24V voltage, check the injection machine output and wiring.
1053	Sub-chamfer vertical traverse is unsafe	1. Check the current state of the pneumatic sub-chamfer. To perform vertical traverse, enter the 【Safety Point Setting】 - 【Posture Safety】 interface, set the traverse chamfer posture to unrestricted or vertical, and then perform the operation.
1054	Sub-chamfer horizontal traverse is unsafe	
1055	Z-axis traverse in is unsafe, no mold opening completed signal (out-mold standby)	1. Confirm whether the 【Out-mold Standby】 function is enabled; if not, uncheck it. If enabled, check if the traverse standby step position in the program is greater than the 【Out-mold Standby Point】 safe position.

1057	Sub-arm down output is on but up in-place signal is on	1. Check if the pneumatic sub-arm is in the lowered state. If the arm is not lowered, check if the solenoid valve and main board wiring are normal. If the arm is already lowered, check if the upper limit signal switch is normal.
1058	Sub-arm up is on but up in-place signal is off	1. Check if the Y2 upper limit signal is normal. If normal, increase the【Sub-arm Up】time on the【Time】page of【Machine Parameters】.
1059	Both in-mold safe zone and out-mold safe zone have signals	1. If the Z-axis is in the in-mold safe zone, check if the out-mold safety signal is normal; 2. If the Z-axis is in the out-mold safe zone, check if the in-mold safety signal (Z origin) is normal.
1061	Main arm down movement is unsafe, main lead X1 axis not in in-mold safe zone	1. When the current traverse axis position is in the in-mold safe zone, the X1 axis position exceeds the set minimum/maximum range when executing main arm descent. (Adjust the setting in【Safety Point Setting】 if the position is inappropriate.)
1062	Sub-arm down movement is unsafe, sub lead X2 axis not in in-mold safe zone	1. When the current traverse axis position is in the in-mold safe zone, the X2 axis position exceeds the set minimum/maximum range when executing sub-arm descent. (Adjust the setting in【Safety Point Setting】 if the position is inappropriate.)
1063	Arm chamfer movement is unsafe, main arm up/down Y1 axis not at upper position	1. Confirm whether the main arm is at the zero position. If not, move the arm to the zero position before rotating the tooling. If at the zero position, check if the Y1 origin signal is normal.
1064	Arm chamfer movement is unsafe, sub-arm up/down Y2 axis not at upper position	1. Confirm whether the sub-arm is at the zero position. If not, move the arm to the zero position before rotating the tooling. If at the zero position, check if the Y2 origin signal is normal.
1066	Chamfer posture incorrect during up/down homing	1. Check the current state of the pneumatic chamfer. To change the homing chamfer posture, enter the【Safety Point Setting】-【Posture Safety】 interface to

		modify.
1068	Manipulator emergency stop	1. Confirm whether the teach pendant emergency stop button is pressed. Release the stop to clear the alarm. If the alarm cannot be cleared, check the emergency stop switch and wiring.
1074	Vertical chamfer in-mold up/down is unsafe	1. Confirm the current state of the pneumatic chamfer. To change the in-mold up/down chamfer posture, enter the 【Safety Point Setting】-【Posture Safety】 interface to modify.
1075	Horizontal chamfer in-mold up/down is unsafe	1. Confirm the current state of the pneumatic chamfer. To change the in-mold up/down chamfer posture, enter the 【Safety Point Setting】-【Posture Safety】 interface to modify.
1076	Sub horizontal output is on but horizontal in-place signal is off	1. Check if the sub horizontal signal on the monitoring page is normal, and check if there is 0V input at the X20 sub horizontal port of the main board. If there is no 0V input, check if the external signal input is normal. 2. Check if the 【Sub Horizontal】 time setting on the【Time】page of【Machine Parameters】is too short.
1077	Sub horizontal output is on but vertical in-place signal is on	1. Check if the sub horizontal signal and sub vertical signal on the port monitoring page are normal, and check if the wiring of the X20 sub horizontal port is incorrect. If there is no error, check if the external signal input is normal.
1078	Sub vertical output is on but vertical in-place signal is off	1. Check if the sub vertical signal on the monitoring page is normal, and check if there is 0V input at the X21 sub vertical port of the main board. If there is no 0V input, check if the external signal input is normal. 2. Check if the 【Main Arm Vertical】 time setting on the 【Time】 page of 【Machine Parameters】 is too short.

1079	Sub vertical output is on but horizontal in-place signal is on	1. Check if the sub vertical signal and sub horizontal signal on the port monitoring page are normal, and check if the wiring of the X21 sub vertical port is incorrect. If there is no error, check if the external signal input is normal.
1080	Waiting timeout	1. When the set time of the wait instruction in the program is reached, set the wait to 0 to disable the alarm.
1081	Sub chamfer vertical in-mold up/down is unsafe	1. Confirm the current state of the pneumatic sub chamfer. To change the in-mold up/down chamfer posture, enter the 【Safety Point Setting】-【Posture Safety】 interface to modify.
1082	Sub chamfer horizontal in-mold up/down is unsafe	1. Confirm the current state of the pneumatic sub chamfer. To change the in-mold up/down chamfer posture, enter the 【Safety Point Setting】-【Posture Safety】 interface to modify.
3000	Main arm lead servo axis alarm	1. Check the servo alarm status of the corresponding axis and clear the servo alarm; 2. Check if the 24V power supply is normal; 3. Check if the connection line between the corresponding servo and the main board is normal; 4. Check if the servo signal port and logic settings are correct.
3001	Main arm up/down servo axis alarm	
3002	Traverse axis servo alarm	
3003	Sub-arm up/down servo axis alarm	
3004	Sub-arm lead servo axis alarm	
3005	Expansion axis servo alarm	