SMV

User Manual

Date：Jul. 2022

Version：Ver. A (English)

Contents

Table Index

Picture Index

1. Safety

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

1.1 Safety Regulations

- Please review this manual thoroughly and familiarize yourself with the operation of the SMV, before starting up the SMV for the first time. Maintenance should be performed by qualified personnel only.
- Any modification or change to the original design of SMV is forbidden.
- Any improper installation and operation may result in injury to personnel and/or damage to equipment.
- Please contact the manufacturer or local agent immediately if there is any problem with SMV when operate it.
- Please note that SMV must be connected with IMM signal (i.e. safety door) in order to operate in normal condition
- Ensure all installations are met with safety requirements before operating.
- Without the written consent of the manufacturer, any damage or lost caused by the modification or use beyond the user manual, the manufacturer will not have any responsibility.

1.2 Safety Concerns

- The maintenance, repair, etc, must be executed by professionally trained personnel.
- Any unrelated personnel should keep away from SMV working area while it is operating. All electrical wiring must be completed by professionals, and in accordance with design of specifications and wiring instructions.
- Remove anything from the top of the SMV to prevent falling due to vibration

- Do not modify the SMV. Please contact manufacturer or vendor if any change is required.
- Turn off power supply before maintenance and adjustment. Also set up warming signs and safety fences.
- Please use parts of SHINI if there is any replacement is required. If the machine is damaged due to using accessories not provided by SHINI, takes no responsibility for it.
- SMV meet all corresponding safety standards.
- Please review the manual thoroughly before operate it.
- Please order a new user manual from the manufacturer or vendor if the user manual is damaged.

Attention!

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

Attention!

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

Attention!

As a result of non-compliance with safety recommendations electrical system symbols described, will lead to risk of electric shock persons in the event.

Marks			

Meaning	Do Not Touch	Caution, danger !	Caution! Electric shock
Marks			
Meaning	Caution! Mechanical injury	No Flame!	Caution! High temperature

1.3 Transportation

Before transporting, fasten the parts to prevent machine damage due to any collision. Should increase plastic bag out of the SMV, and if necessary, pumping vacuum and put desiccant in the packing during the long-distance transportation
The SMV you order before sending out the factory, it is confirmed in good working condition, please check whether there is any damage during carrying or transporting.

If there is any damage caused by transport, please：

1) Feedback immediately to the transportation companies and our company.
2) Claim damages to the shipping company; file a request for compensation.
3) Retain the damaged items stand-by for examination. Do not return the damaged items before the examination is completed.

1.3 Storage

1) Switch off the main air source and power, if SMV is not in use for a long time.
2) SMVs should be stored in ventilated, dry room to prevent rust and damping.
3) If not use for a long time, please anti-rust, and if necessary place film to prevent dust and erosion.

1.4 Retirement

1) When the SMV goes to its end of service life, it should be demolished according to different martial (metal, oil, lubricants, plastics, rubber, etc.) to split in different ways. Deal with the machine according to local requirements; ensure the commission company as the best.

2) Please contact the manufacturer or local agent immediately if there is any problem with SMV when operate it.

Shini Hotline Service:
Headquarter and Taipei factory：
Tel: + 886 (0)2 2680 9119
Shini Plastics Technologies (Dongguan), Inc.：
Tel: +86 (0)769 8331 3588
Shini Plastics Technologies (Pinghu), Inc.：
Tel: +86 (0)573 8522 5288
Shinden Precision Machinery (Chongqing), Inc.:
+86 (0)23 6431 0898

2. Installation

2.1 Hardware

Monitor (front)

Monitor (10")

I/O Connector

Camera

Light source

Alarm light

Power supply

2.2 Specification

Models		TT-MPS-10	TT-MPS-12
Main Controller	Working Temperature	0~60C	0~60C
	Voltage	220VAC/12VDC	220VAC/12VDC
	Dimension	258x148x60 (W*D*H)	313x235x55 (W*D*H)
	Min Cycle Time	20ms	20ms
	Power	65W	65 W /100W
	Screen Size	10.1" LCD	12.1" LCD
	Resolution	1280*800	1024*768
	Weight	<2.2kg	<2kg
Camera	Number	1～2	1～6
	Resolution	500 million 5M Pixels	500 million 5M Pixels
	Interface	USB	USB
Lens	Quantity	1~2	1~6
	Focus Length	Standard: 10-50mm	Standard: 10-50mm
Light source	Quantity	1~2	1~6
	Type	infrared ray 850nm IR	infrared ray 850nm IR
Camera, light source Magnetic stand	Quantity	2~4	2~12
	Suction (standard) Magnetic Force	80kg	80kg
I/O Interface	Quantity	1	1
	Specification	3input /4 output 3DI / 4DO	3 input /4 output 3DI / 4DO
	Working Voltage	12~24VDC	12~24VDC

2.3 Feature

1) Linux OS, make sure the system stable.
2) Fast, the shortest cycle time up to 0.02s.
3) Allow multiple sample pictures, up to 40 pics.
4) Precisely detecting.
5) Every alarm will be recorded, convenient for checking.
6) Mould opening position calibrating function
7) Independent I/O status displaying for checking

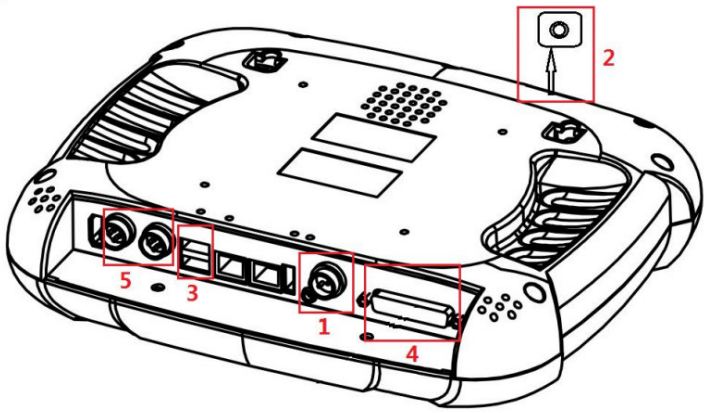
8) Can be updated up to 6 cameras (option).
9) Supported ethernet and production management (option)
10) Equipped with short connection plug, convenient for changing and testing.

2.4 Equipped Installation

2.4.1 10’’ Controller

2.4.1.1 Interface Specification

10 寸主机:

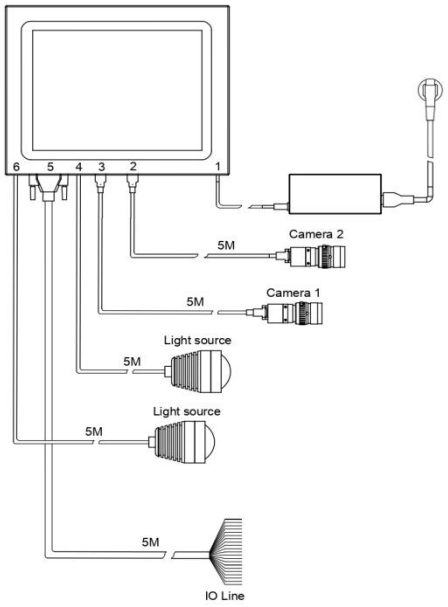


Picture 2-1：10’’ Controller Installation Diagram

1) Power connector, connect to 12V adaptor.
2) Power switch, the system will automatically start when powered on by default. After manual shutdown, press this button to start the machine.
3) Camera port, connect to camera 1 ~ 2.
4) IO signal port
5) Light source port

Picture 2-2：Fixed Camera USB Wire

2.4.1.2 How to connect ?

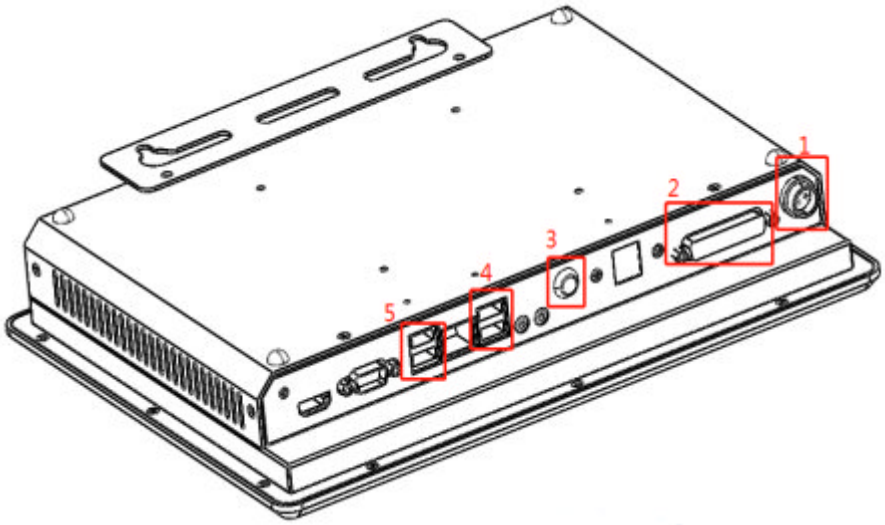


Picture 2-3：Connection Instruction

1) Connect the main power to 1 in picture 2-3.
2) Connect the camera to the controller, as 2 in picture 2-3.
3) Connect the second camera to the controller if double camera is needed, as 3 in picture 1;
4) Connect the I/O signal wire to the controller, as 5 in picture;
5) Connect the light source to the controller, as 4 and 6 in picture;

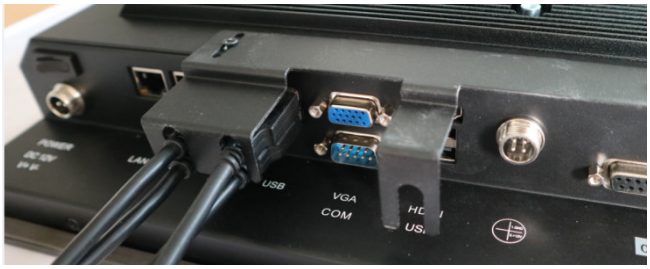
2.4.2 12’’ Controller (4 cameras):

2.4.2.1 Port Specification



Picture 2-4：12’’ Controller (4 cameras) Installation Diagram

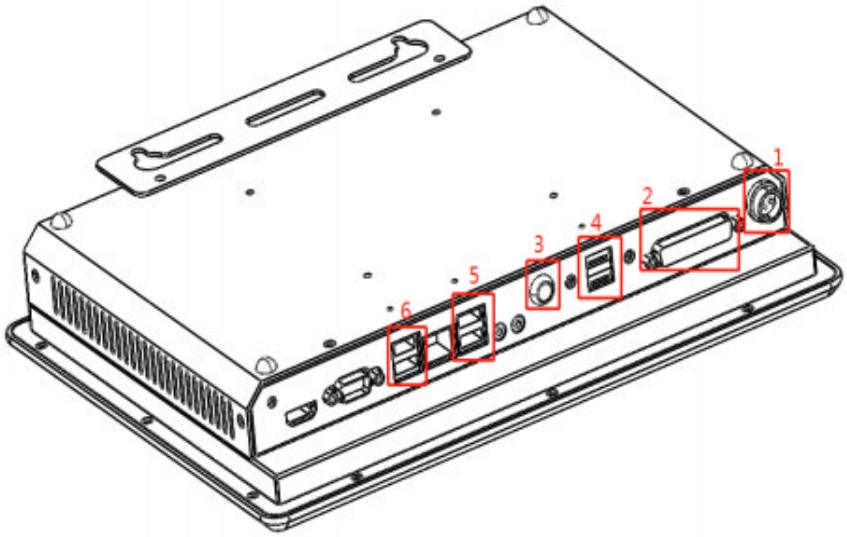
1) 1 is the power connector, connect to 12V adaptor.
2) 2 is the I/O signal port
3) 3 is the power switch, the system will automatically start when powered on by default. After manual shutdown, press this button to start the machine.
4) 4 and 5 are the camera ports, connect to camera 1~4.



Picture 2-5：Fixed Camera USB Wire

2.4.3 12’’ Controller (6 cameras):

2.4.3.1 Port Specification

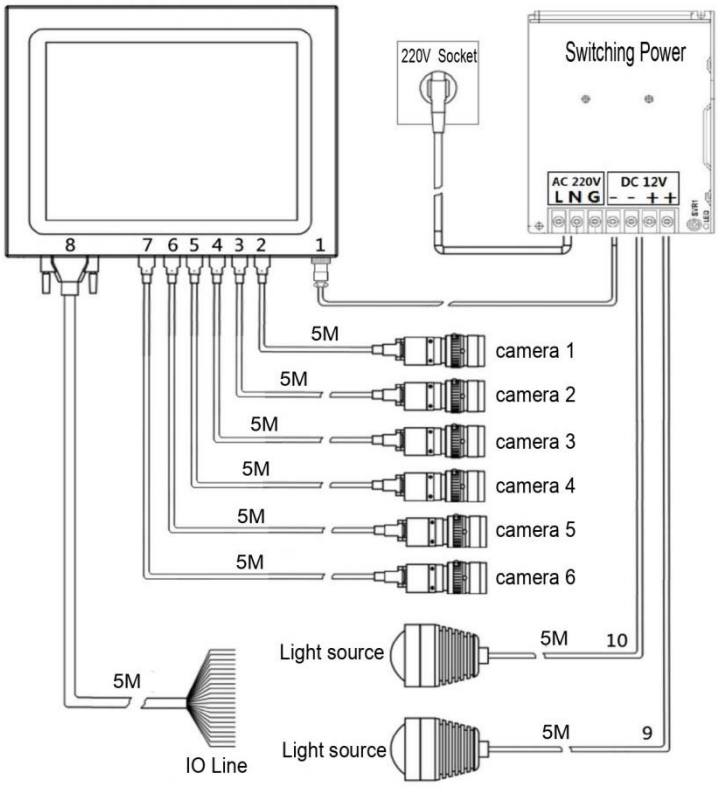


Picture 2-6：12’’ Controller (6 cameras) Installation Diagram

1) 1 is the power connector, connect to 12V adaptor.
2) 2 is the I/O signal port
3) 3 is the power switch, the system will automatically start when powered on by default. After manual shutdown, press this button to start the machine.
4) 4, 5 and 6 are the camera ports, connect to camera 1-6.

Picture 2-7：Fixed Camera USB Wire

2.4.3.2 How to connect ?



Picture 2-8：Connection Instruction

1) Connect the controller power to the power switch, as 1 in the picture;
2) Connect the camera to the controller, as 2-7 in the picture;
3) Connect the I/O signal wire to 8 on main controller, as 8 in the picture;
4) Connect the light source to the power switch, as 9 and 10 in the picture;

2.4.4 Camera Fixation

Picture 2-9：Camera Installation Diagram

Note: Light and camera should be fixed on the magnetic base

Picture 2-10：Camera

1) Camera should be fixed on the magnetic base as shown in picture 2-9 and turn on the light, as shown in picture 2-1~2-8; placing the magnetic base on the IMM in place to make sure the light is on the mould and the camera can cover the scope of mould. Change the aperture ring to adjust the light, focus for sharpness, and zoom for scope, as shown in picture 2-10;
   a) Adjust the zoom to an appropriate view of camera
   b) Adjust the focus to adjust the sharpness of picture
   c) Adjust the brightness of the aperture on the lens; If the whole picture can’t be focused clearly (one side is clear, and the other side is

blurred), it can reduce the aperture appropriately to improve the depth of field (Adjust to the C end to reduce the picture's brightness);

Note: Loose the fixing bolt before adjusting the camera. After the adjusting to the right position, fix the bolt and don't loosen it again!

2.5 IO Signal

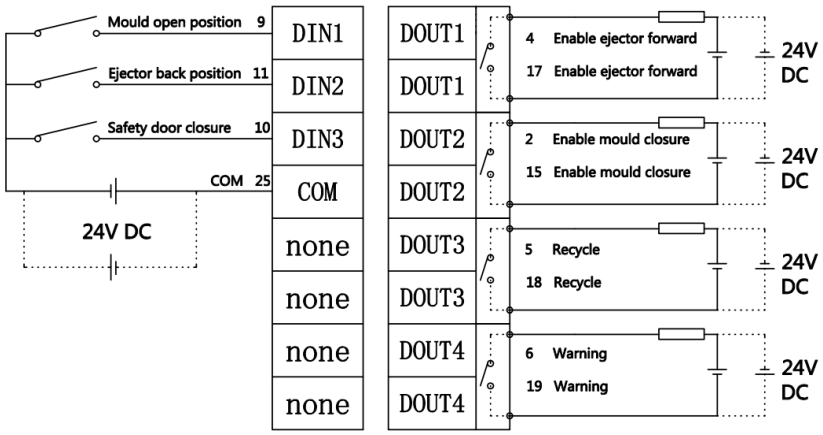
The connection between IMM and SMC through I/O connection as following chart.

2.5.1 Signal Port

Table 2-1：Signal Port Specification

Signal Name	Port No.
Enable mould close output(O)	2
	15
Enable ejector forward output(O)	4
	17
Cycle start output(O)	5
	18
Alarm(O)	6
	19
Mould open input(I)	9
Safety door close input(I)	10
Ejector forward input (I)	11
Clear alarm(I)	12
COM	25

2.5.2 Electrical Diagram and Signal



Picture 2-11：Electrical Diagram and Signal

2.5.2.1 Input

Note: 24VDC signal, resistance 5.1KΩ, 2-way input.

1) Mould open (9), COM (25), connect to IMM mould open signal.

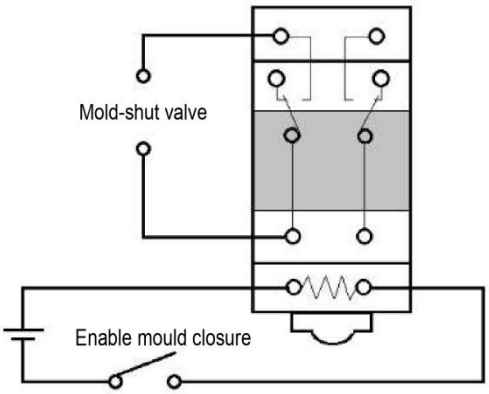
Ejector forward (11), COM (25), connect to IMM ejector forward signal.
Safety door (10), COM (25), connect to IMM safety door signal, the recheck signal after alarm.
For the 3 signals above, If COM connect to 0V, then input connect to 24V；If COM connect to 24V, then input connect to 0V, 2-way input.

2.5.2.2 Output：

Note：Max. voltage - 60V， Max. current - 0.5A.

1) Enable mould close output (2,15), connect to IMM enable mould close signal.
2) Enable ejector forward output (4,17), connect to IMM enable ejector forward signal.
3) Alarm (6,19), switching output, connect to alarm, outsource 24V is needed.
4) Note: switching output. When connecting the load, it needs outsource power supply, as shown in 2-11. This signal cannot be directly connected in series with high current circuits such as solenoid valves (the max. current is 0.25A).

If it needs to be connected in series with the solenoid valve such as the mode closing valve, or the current of the circuit cannot be determined, an intermediate relay should be added to prevent damage to the IO board. **If it needs to be connected in series with solenoid valves such as mould closing valves, or the circuit current can't be determined,** a middle relay is needed to protect the IO board.



Picture 2-12：Relay Installation Diagram

Testing process

First testing(comparison I): Mould open is detecting signal. If the detecting is OK, the enable ejector forward signal will connect; if the detecting is NG, the enable ejector forward signal will disconnect;

Second testing (comparison II): Ejector forward is detecting signal. If the detecting is OK, the enable mould close signal will connect; if the detecting is NG , the enable mould close signal will disconnect;

2.5.3 Related Sample

Sample 1:

Requirement: Checking the product is complete or not and any remaining part on fixed plate after mold open. If the result is OK, the enable mould close signal will turn on; if the result is NG, the enable mould close signal will turn off;

Note: In this sample, only one testing is used. Both comparison I (mould open and enable ejector forward) and comparison II (mould open and enable mould close) can be used

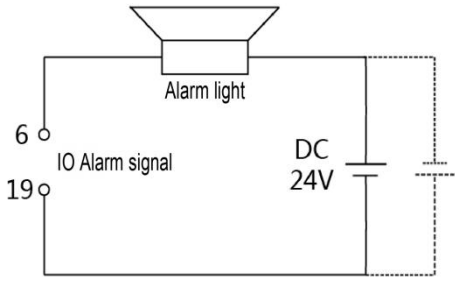
Sample 2：

Requirement: Check any remaining part on fixed plate after mould open, then checking the product dropping from the mould or not after ejector forward. If the both results are OK, the enable mould close signal will turn on; if the one of the result is NG, the enable mould close signal will turn off;

Note: In this sample, two comparisons are used, (I and II) but the only “enable mould close” signal is worked. The “mould open” and “ejector forward” should be connected to IMM. If there is only one signal, ex: only “mould open” but no “ejector forward”, both of the signal of SMV can connect to the IMM mould open signal port. Then, adjust the comparison delay to the appropriate time; Since there is only one output signal, the “enable mould close” and “ejector forward” should be connected in series and then connected to the “mould open” signal of the IMM.

2.5.4 Alarm

Combining with IO signal, 24V DC, MAX current: 25mA



Picture 2-13：Alarm Light Circuit

2.5.5 Short Connecting Port

When SMV is not using, the IMM cannot working due to the signal. Using the short connecting plug can make the IMM working.

Picture 2-14：Short Connecting Port

3. Software Setting

3.1 Interface

3.1.1 Main Page

Picture 3-1：Main Page Screen

For setting camera, reference image, detecting area, parameter, and I/O as shown in picture 3-1.

3.1.2 Image Display Area

Showing the collected pictures and detecting result; left up corner displays current status (protection on/off); left down corner is camera switching area; right down is magnified button, clicking for full screen.

3.1.3 Current Status

Showing the SMV current working status (green), "wait" means the SMV waiting for signal, "comparison I" and "comparison II" represent the comparison process of I or II of SMV.

3.1.4 Status bar

Prompt current test results, and total number of products, qualified and unqualified times of the day.

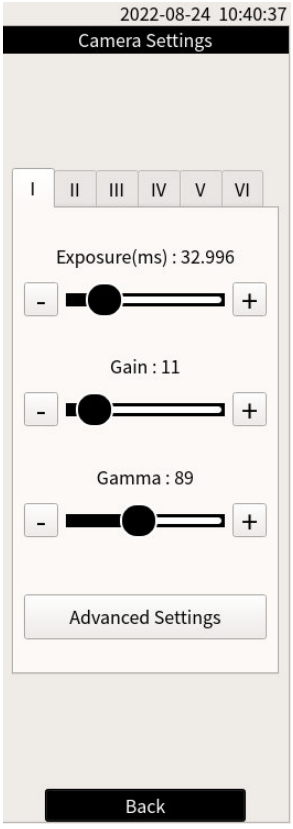
3.2 Main Page Instruction

3.2.1 Start (Stop) Detecting

Click the button to start (stop) detecting.

3.2.2 Camera

【Setting】 Setting the camera parameter (Picture 3-2).



Picture 3-2：Setting Screen

【Selecting】Switching camera on main screen

【Expose】Adjusting the exposing time of camera, the longer the time, the higher the brightness, and the more obvious the moving image smear.

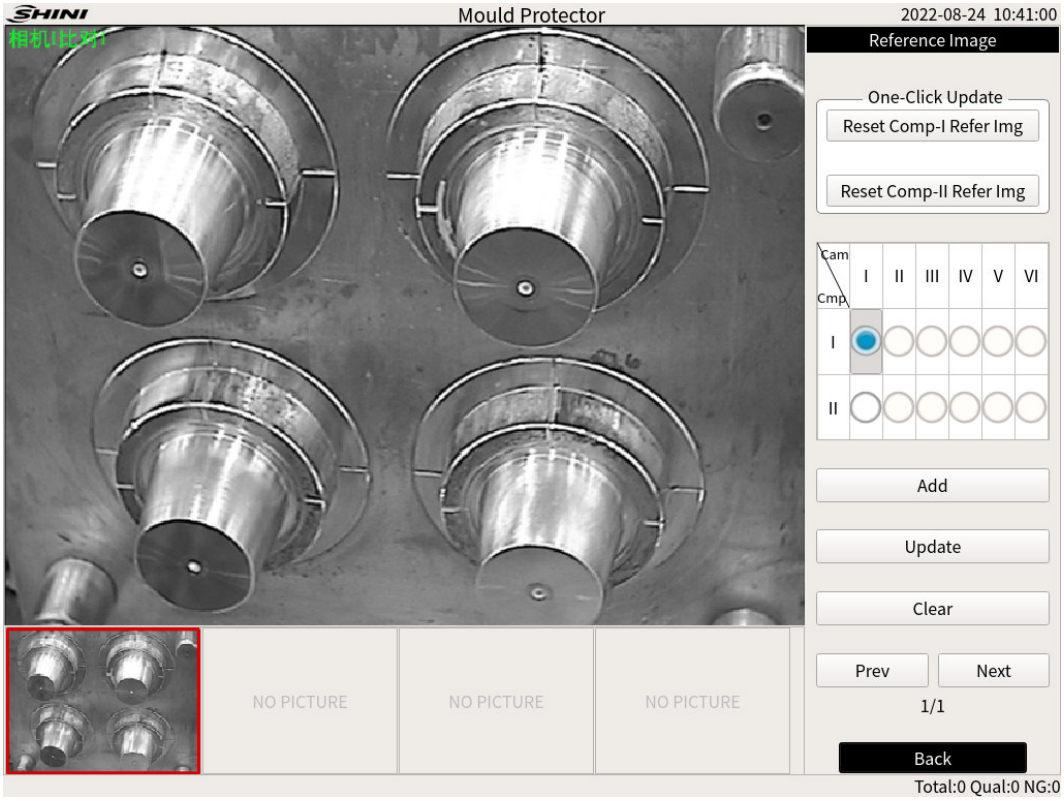
【Gain】Adjust the magnification of current camera's image brightness. The higher the value, the brighter the image; however, the greater the image noise, the lower the image quality.

【Gamma】Adjusting the image curve, the lightness is average when setting is below 128 (original - 70); the curve is clearer when it is over 128;

【Advance】Setting the advance camera parameter.

【Back】Back to main page.

3.2.3 Standard Image



Picture 3-3：Standard Image Screen

【Reset comparison I reference image】One click to delete all reference images of all camera comparison I, and add a current real-time image.

【Reset comparison II reference image】One click to update all reference images of camera comparison II.

【Camera x/comparison x】After the mould opening of IMM, select comparison I, and click [Add] to collect the standard image of comparison I before product de-moulding; After the ejector forwarding, select comparison II, click [Add] to collect the reference image of comparison II after product de-moulding, and the settings of other five cameras are the same as that of camera I.

【Add】add standard image,【Update】delete all standard images and save current standard images；【Delete】delete selected standard image. 【Previous】and 【Next】to view all standard images.

3.2.4 Detecting Area

For setting the scope of protecting area, the setting includes【mould area】, 【detecting area】, and【NG area】.

3.2.4.1 Detecting area setting

Picture 3-4：Detecting Area Setting Screen

Detecting area setting. Click【Add】, it pops up the window as shown in the picture in the center of image window, select the corresponding shape to set the detection area. After setting, if clicking the【Detecting area】, the area frame turns to dark blue, it finishes setting, and this area will be detected after being protected; If you want to modify the settings, click the【Delete】or【Reset】, and then click the【Save】.

【Add】is used to add a detecting area. There are four tags for selection, including【Rectangle】, 【Polygon】,【Circle】 and【Copy】. The first three methods are to directly draw the corresponding area after selecting the tags;

For using the【Copy】, if there is at least one detecting area, click【Add】, and click【Copy】, and then click the area to be copied. Then, move the area, it will display a new area with the same shape.

【Delete】 is used to delete a single detecting area. After selecting an area, the area frame will turn to cyan from blue, and then click delete button to delete.

【Reset】is used to delete all detecting areas and reset the detecting areas again.

【Clear & Ignore NG】 is used to clear the NG area ignored during alarming, and this area will not be detected during protection. Clear the corresponding area by switching camera tags.

Note：The area is up to 20.

3.2.4.2 Mould Area Setting

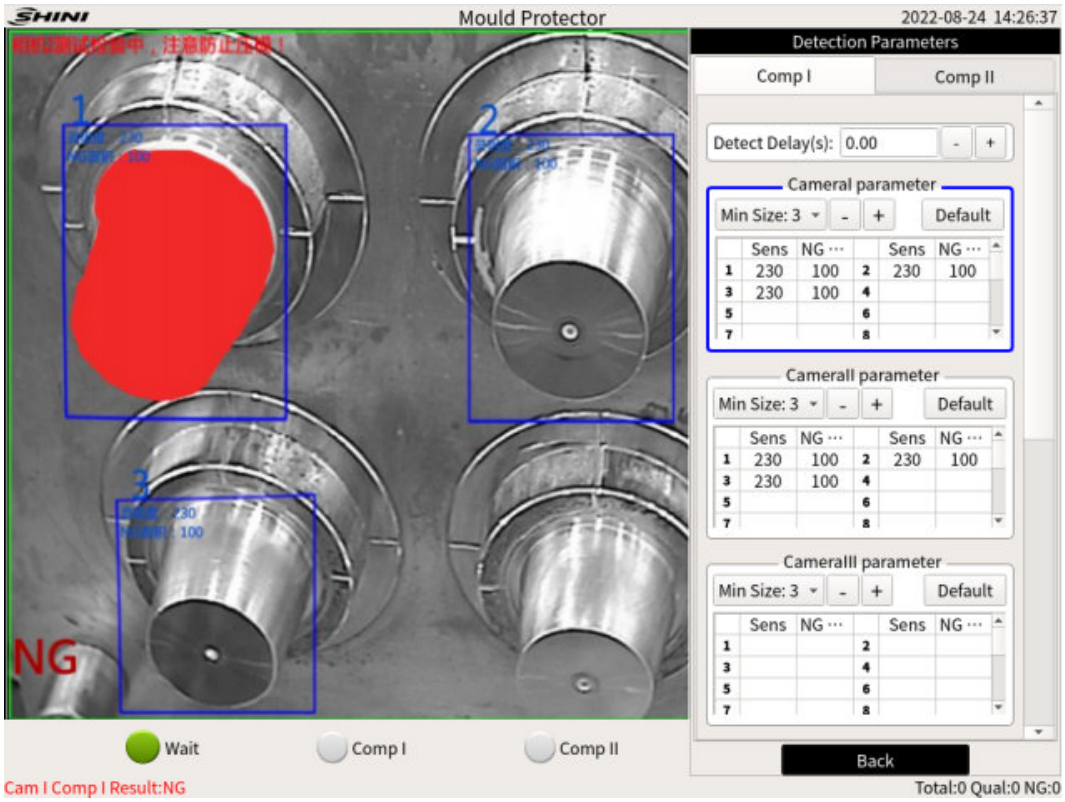
Picture 3-5：Mould Area Setting Screen

Picture 3-6：Mould Protector Screen

【Mould area】is for setting working area (ROI), the default is【Whole area】(red frame in pic. 3-5), clicking【OK】to finish setting in this page (red frame becoming green in pic. 3-5); or customize the working area, clicking【New】(as shown in pic. 3-6) to set the working area by user. After the area is selected, clicking【OK】to finish setting.【Reset】 is for reset the mould area, whole area of the screen is recommended.

3.2.5 Detecting the Parameter

In this page, (PW: 123456) user can set the parameter and the system will check the function in real time but not sending output IO signal. This function is used to set parameters that meet the detecting requirements.



Picture 3-7：Mould Protector Screen Description

【Delay Detection】Setting delay time for detecting after receiving signal

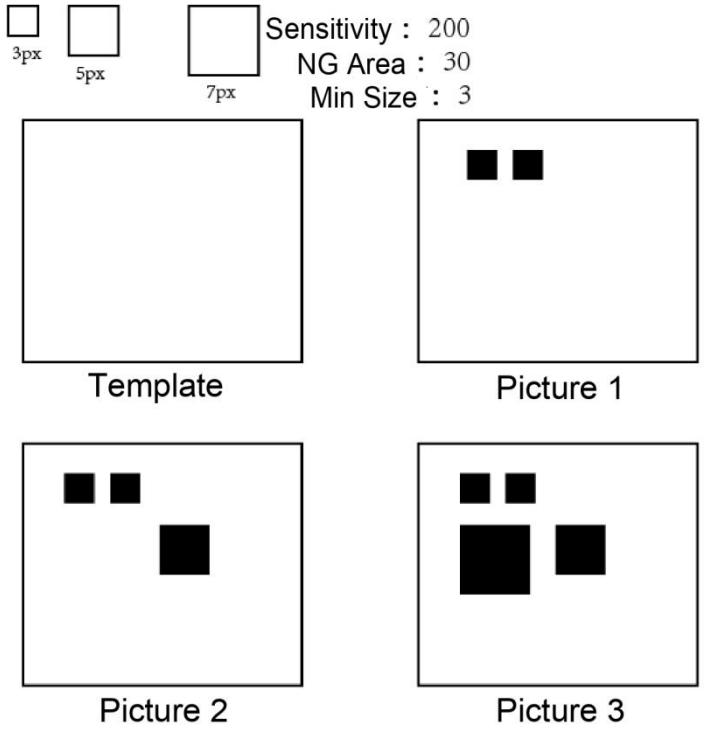
【Sensitivity】Default is 230, setting the acceptable difference between current image and standard image（Black and white）， higher value for higher sensitivity, from 1-255.

【NG area】Default is 100. A green reference token will show on the left up corner (as show in pic. 3-9). Unit: pixel, from 1 -2000.

【Min dimension】Default is 3， 3 means a area of 3×3 pixel, can be set from 1-9.

【Default】Reset all parameter to default setting.

NG：Every single dot in the area, which is smaller than minimum dimension, will be ignored. NG area testing function will calculate the sum area of the dot. If the sum of areas exceeds the setting value of NG area, it will alarm.



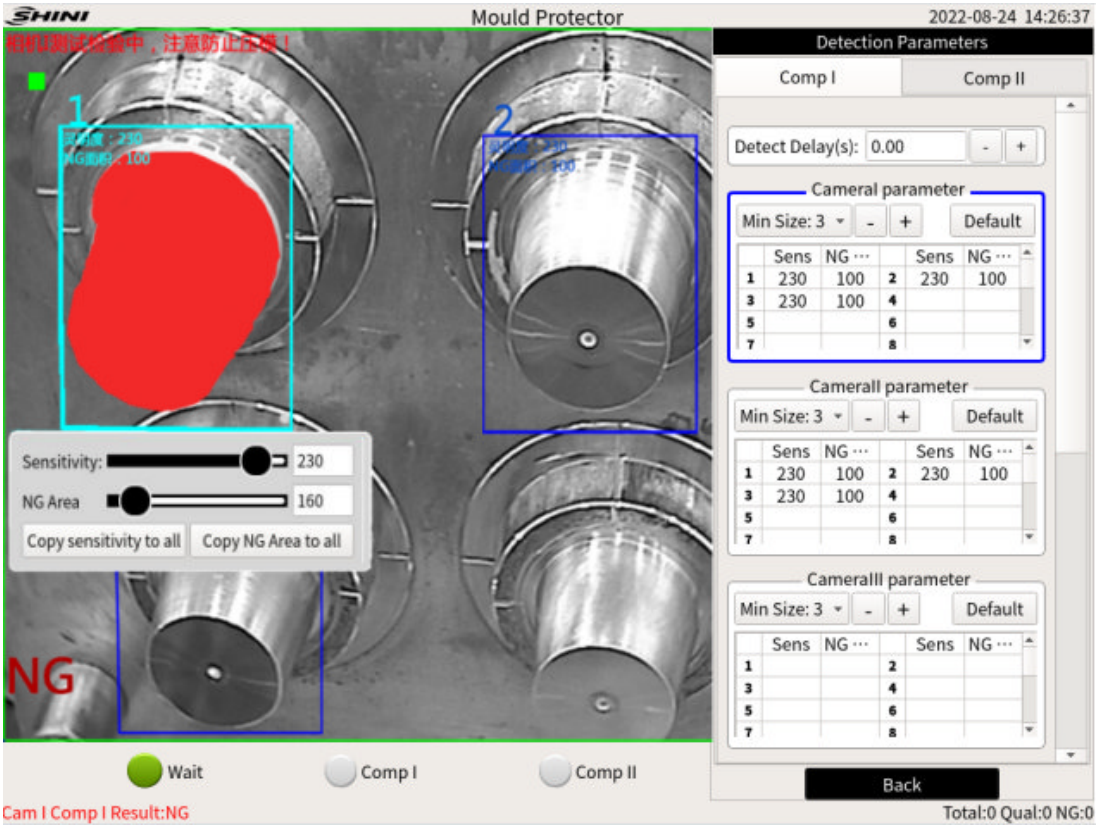
Picture 3-8：Picture Description

Picture description： Sample is a white picture, and 3 different pictures nearby. The 3 squares on the left up corner represent 3PX, 5PX, and 7PX; the parameters are on the picture.

Picture 1 Alarm: It won't alarm. There are two alarm dots. Each alarm dot is not greater than the minimum size, ignore, without alarm.

Picture 2 Alarm: It won't alarm. There are three alarm dots. Two alarm dots are not greater than the minimum size, ignore the two alarm dots. Although another alarm dot is greater than the minimum size, its area is only 5 * 5=25, less than the NG area of 30, so it won't alarm.

Picture 3 Alarm: It won't alarm. There are four alarm dots. Two alarm dots are greater than the minimum size, and they are 5 * 5px and 7 * 7px, respectively. The sum of the two is 74, which is larger than the NG area of 30, so it will alarm.



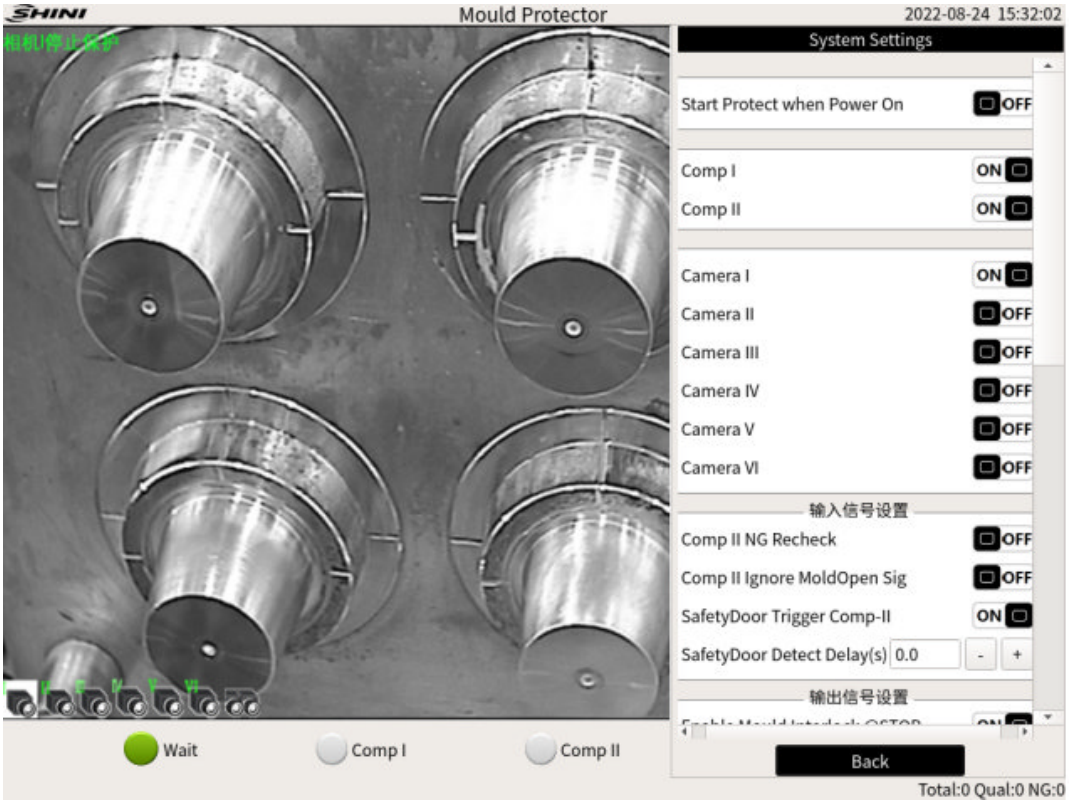
Picture 3-9：Practical Detection Effect Diagram

The actual detection effect picture, as the red area in above picture is the effect of NG detection, because there is a white disposable cup in this place; There are alarm prompts in the lower left corner, including specific cameras and comparisons.

Click "Apply sensitivity to all areas" and "Apply NG area to all areas" to apply current area settings to the camera and other areas currently compared.

3.2.6 System Setting

In this page, (PW: 123456) user can set the system related function.



Picture 3-10：Protection Stop Screen of Camera

【Start protecting when power on】 Auto run the last mission when turn on the machine.

【Comparison I】Turn ON/OFF comparison I.

【Comparison II】See the setting of comparison I.

【Camera I】Using camera I or not，so as “Camera II - VI”

【Manual comparison I】Set the ON/OFF of manual comparison. 【ON】is to turn on the manual comparison. After starting the protection, it can click the [Comparison I] and [Comparison II] in the status bar manually to detect;【OFF】is to turn off the manual comparison. [Comparison I] and [Comparison II] in above status bar are unavailable.

【Remove all alarms】When this setting is 【ON】, 【Clear all alarms】 in detecting NG alarm page will activate and allow to clear all alarms. Please use this function carefully in case damaging the mould.

【Enable mould close and stop after stop protecting】Allow mould closing when no mould protector is operation.【ON】means when SMV is not operated, mould close is permitted. 【OFF】means mould closing is not allowed while SMV is not operated.

Enable mould close after stop Allow mould closing when no mould protector is operation. 【ON】 means when SMV is not activated, mold close is permitted. 【OFF】means mold closing is not allowed while SMV is not operated.

【Enable ejector forward after mould open】 After comparison II is OK, the enable ejector forward signal will be send when this setting is ON and signal will be send when this setting is【OFF】. If the ejector directly forward during mould opening, due to the comparison I is not complete, the comparison II will not start; after the comparison I is finished, the comparison II still not start and enable mould close signal will not be sent, causing the IMM stop. When this setting is ON, the ejector is not allowed forward before the comparison I is completed; after the comparison I is finished, the ejector is allowed forward then the comparison II will start after receiving the ejector forward signal.

【Comparison I detection NG without alarm window】is used to set whether NG window pops up in comparison I alarm.【ON】is open. When NG is detected by comparison I, only alarm will be prompted without alarm window. Enable ejector forward signal without alarm signal output; [OFF] is closed. At this time, there is an alarm window, enabling no ejector forward signal, but has alarm signal output. The system default is【OFF】status.

【Comparison II ignore mould open signal】When this setting is【ON】, comparison II will be triggered after receiving ejector forward signal without receiving mould opening signal. When it is “OFF”, both of the signals are needed.

【Comparison II NG recheck】When the setting is ON, If the comparison II is NG, IMM will auto trigger the comparison II detecting when next ejected. The alarm will be cleared automatically when the detection is OK.

【Safety door close detect comparison II】To set comparison II works or not during auto mode when the safety door is closed condition.【ON】means if the safety door is closed, comparison II will activate during auto cycle; 【OFF】means if the safety

door is closed, comparison II will disable during auto cycle; the default setting is 【ON】.

【High resolution detect】If alarm happened during multiple area checking, the whole image will compare again with others reference image when this setting is 【ON】. When this setting is 【OFF】condition, only error area will compare again with other references. The default setting is【ON】

【Image stabilizer】For adjust the mould position, and it's not allowed to start this function at the mould stop position of hydraulic injection molding machine.

【NG auto recheck】For setting how many times to re-check before it defined as error. The default is 2, range from 0~5.

【Ejector counting】When comparison II is NG, enables ejector process and checking again. The default is 0 (function disabled), range from 0~20.

【Reference image number】Default is 10, can be set from 1-40. Increasing the numbers of standard image will reduce the system operation speed. The default settings can be used only in special cases.

【Comparison II NG reject times】When comparison II is NG, rejecting signal will be sent. The default is 0 (function disabled), range from 0~20

【Other setting】Go to other parameter setting

3.2.7 Other Settings

After entering the【System Settings】, click the【Other Settings】to switch language packs, set passwords, upgrade software and check work logs, as shown in the picture below.

Picture 3-11：Other Settings Screen

【Language】Chinese (simplified), Chinese (traditional), and English for choosing.

【Change password】Enter the new passwords twice to change the password.

【Run/stop password】 When running/stopping the protection, user needs to enter the password or not.【ON】is activated. You need to enter a password when stopping the protection (default password: 123456);【OFF】is closed, and no password is required to stop protection.

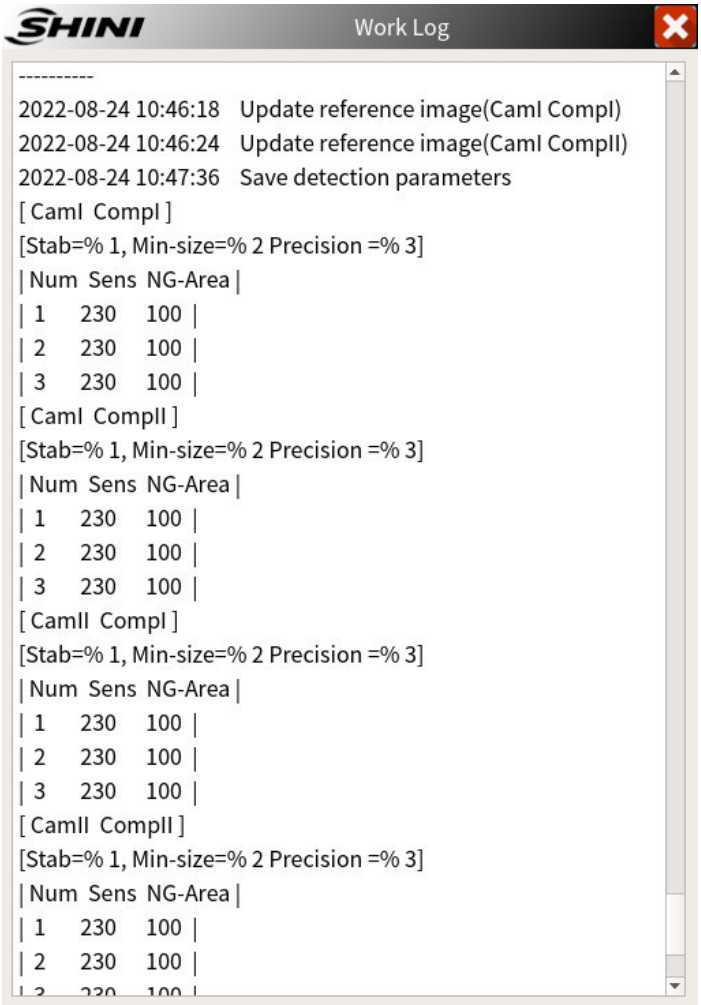
【Detection Parameter Password】When setting the detection parameter, user needs to enter the password or not.【ON】is activated. You need to enter a password when detecting the parameters(default password: 123456);【OFF】is closed, and no password is required to detect the parameters.

【System setting password】When changing the system setting, user needs to enter the password or not.【ON】is activated. Users need to enter a password when entering the system settings (default password: 123456);【OFF】is closed, and no password is required when entering system settings.

【Reference password】When setting reference image and adding reference image for alarm, user needs to enter the password or not.【ON】is activated. Users need to enter a password when entering reference image and adding reference image for alarm (default password: 123456);【OFF】is closed, and no password is required when entering reference image and adding reference image for alarm

【Software Upgrade】When upgrading the system with a U disk, insert the U disk into the U port, click OK, it will pop up a window for confirmation. If clicking OK, the system will restart immediately and upgrade the software; If clicking Cancel, the system will upgrade the software after the next restart.

3.2.8 Work Logs



Picture 3-12：Work Logs

【Work Logs Review】includes: time for software startup and shutdown; time for

starting and stopping protection; records added, updated and deleted from the reference image; detection area saving; Records of detecting time delay time, anti-shake, sensitivity, minimum size and NG area; NG comparison records. Refer to above picture for details, and the description is as follows:

【Program Power on】Record the software start time; Generally, it will be recorded when the machine is powered on.

【Program Power off】Record the software stop time ; Generally, it will be recorded when the machine is powered off.

【Start Protection】Record the start protection time, and record previous OK and NG times.

【Stop Protection】Record the stop protection time, and record previous OK and NG

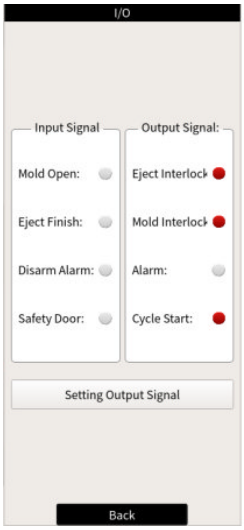
【Standard Image】One click to update, add, delete, and record the time, and corresponding camera and comparison.【Save Detecting Parameter】The camera has camera I comparison I and camera I comparison II; camera II comparison I, and camera II comparison II four parts, which record all camera and comparison parameter changes at the moment; Anti- shake=1, indicating that enabling this function, anti-shake=0, indicating that disabling this function; High precision=1, indicating the high precision switch in the system setting is ON; and high precision=0, indicating the high precision switch in the system setting is OFF; The number is the detecting area number; Refer to relevant sections for minimum dimensions, sensitivity and NG area.

【Detecting Result】Record corresponding camera and comparison when comparing NG. If adding a reference image, it will record corresponding camera and comparison.

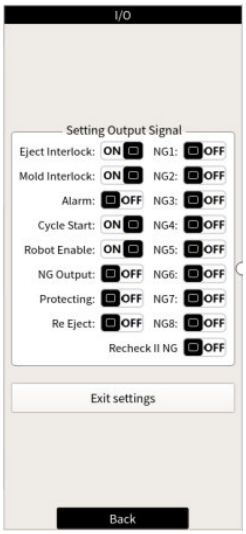
3.2.9 Checking I/O

Check the current I/O status of mould protector. White represents low level and red represents high level on and there are 4 common signals both for input and output.

【Setting output signal】Setting output signals manually.



Picture 3-13：Check current I/O of mould protector



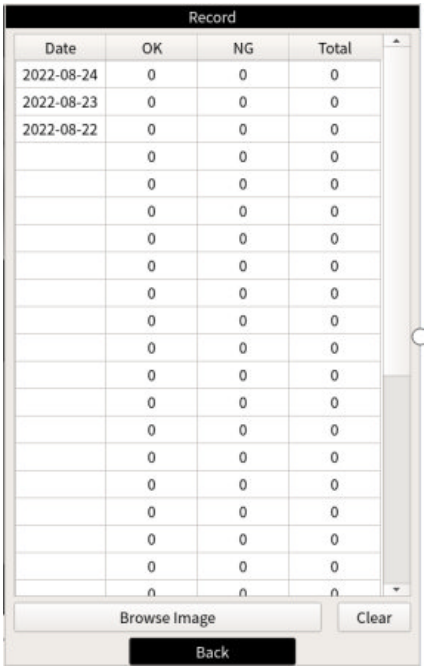
Picture 3-14：Output Signal Setting

3.2.10 Record

SMV will record the information which included numbers of OK, NG, and total number of detecting in one month.

【Clear counting】Clear all records.

【View the image】View the saved images，including NG and OK images，clicking 【Camera I - V】 to switch camera. NG image up to 200，OK image up to 400 for each camera.



Picture 3-15：Mould Protector Record

Ex: A white cup on left up corner, which is NG area. This area will be in red if NG is displayed.

Picture 3-16：NG Area

3.2.11 Power

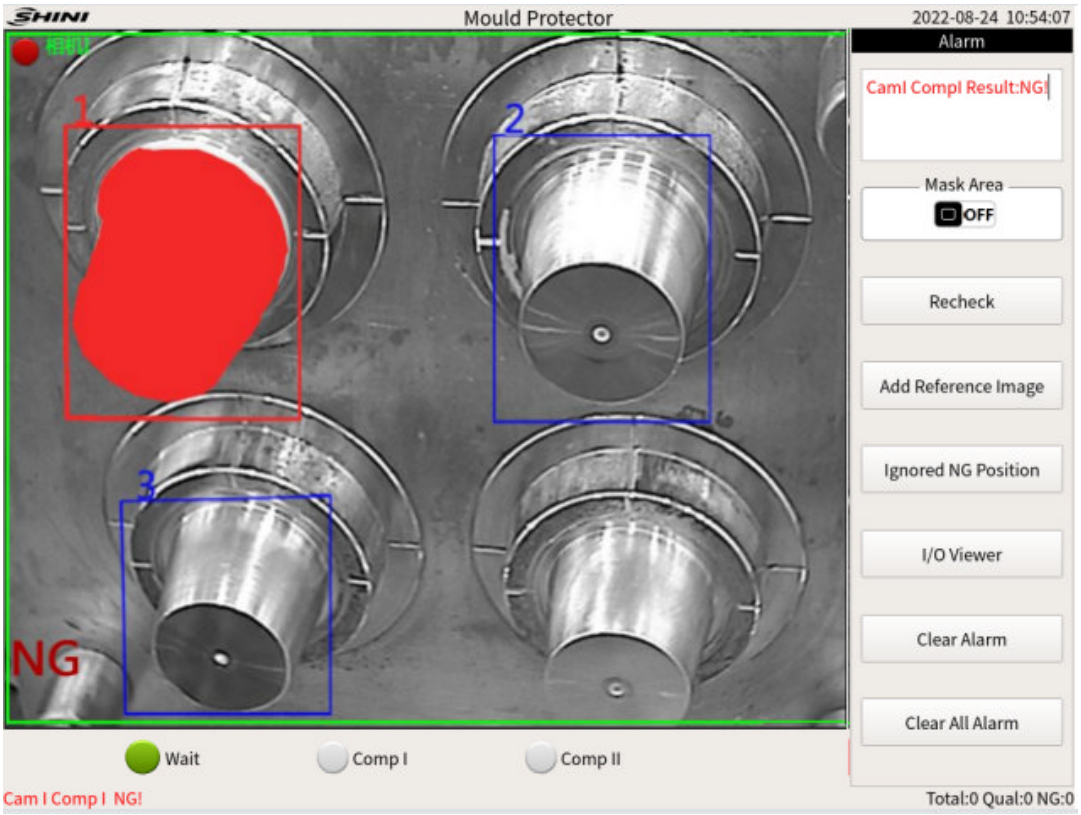
【Turn off】Turn off the mould protector.

【Restart system】Restart the mould protector.

【Return】Return to main page.

Picture 3-17：Power Screen

4. Alarm



Picture 4-1：Alarm Screen

【Display blocking area】is used to open and close the shielded area.【ON】is open status, displaying the set shielding area and NG detection ignored area. 【OFF】is close status, without displaying the set shielding area and NG detection ignored area.

【Recheck】Re-check current comparison.

【Add standard image】For false alarm, add current detecting image as reference image.

【Ignore NG】Ignoring some part of NG area, the detecting will automatically ignore those selected area. Mostly used in some area where alarm frequently.

【I/O】Check current I/O status.

【Clear alarm】Clear current alarm.

【Clear all alarm】Clear all alarms.

Please follow the steps while alarming:

1) When it alarms, please click [Recheck] first.
2) If the recheck alarm occurs, check the red alarm area and check whether there is any abnormality in the area on the mould.
3) After clearing the error, click 【Recheck】. If the recheck is passed, the injection moulding machine will run automatically; If the recheck fails, please confirm that the error has been dismissed and it can add the reference image after troubleshooting.
4) If the standard image in comparison I is a complete product, the product will drop after clearing the error. Meanwhile, clicking 【Check】will trigger the alarm. In this situation, please click【clear all alarm】.

5. Adjusting Process

5.1 Hardware

1) Connect the device：Connect the all parts by chapter 2.4.

2) Camera: Open the mould, adjusting the light source to the surface of the mould and set the adaptor focus, lightness properly (chapter 2.4).

3) Light source: Connect the light to the main controller, turn on the light, and confirm the light is the weak red light.

4) IO signal： Connect the signal to IMM according to chapter 2.5.

5.2 Software Setting

1) Setting camera parameter: The setting of camera parameters includes two parts: lens and camera adjustment. The lens adjustment refers to the chapter of hardware installation; Camera adjustment: enter this screen, and adjust the【Expose】and【Gain】for camera to make bright and clear picture, so as camera II~ VI.

2) Add standard image: is used to compare the standard pictures, including camera I comparison I, camera I comparison II, and other five cameras with camera I. The general operation steps are, for example, camera I, to produce the one mould protects, and click comparison I [Add] before product de-moulding; After de-moulding, click Comparison II [Add], and so as camera II~ VI.

3) Setting the detecting area: In most of the situation, only part of the mould needs to be detected. Click 【Add】 and 【Detecting area】to set the detecting area, the number of area can be set up to 20. Then, click [Save] after setting, and so as camera II~ VI.

4) Set the detecting parameters: Set proper detecting parameters, such as camera I-V and comparison I-V. Ex: After setting the parameter, the current image of camera I will be compared with comparison I. If there were difference, the alarm will be triggered. Based on the result setting each parameter:【Sensitivity】and 【NG area】. Use this real-time

comparison to set each detection parameter. The Method: click the detection area, and it pops up the [Sensitivity] and [NG Area]. Click right menu bar to set the delay detection time, anti-shake and minimum size. The setting of camera I comparison II is the same as above.

5) Activate：Finish the previous steps, clicking activate to start auto running.

6) Alarm：When detecting is NG. (Details in chapter 4)

6. Error

Phenomenon	Reason	Solution
No photos on the monitor	Camera connection error	Check and reconnect the wire of camera.
	Improper camera aperture setting	Adjust aperture setting (toward C- off, toward 2.8 - on)
	Light disconnected	Check infrared light connection and connection. (make sure the dim red light on the bulb)
Touch screen no response or inaccurate clicking	Touch screen calibration error	Connect the U port computer keyboard to the mould protector host, press the Ctrl + k buttons on the keyboard, and click the calibration points at the four screen corners according to the prompts to finish calibration.
	Touch panel damaged.	If the touch screen still can't work normally after the calibration, please contact the after-sales service to repair the host.
IMM not working	I/O connection error	Check connection of I/O
	Stop using the SMV	1.The controller doesn't power on, and power on to start the mould protector. 2. Unplug the I/O wire connector and connect it to the short circuit terminal
The IMM can't stop when the comparison 1 is error.	【System setting 】comparison 1 "off"	In【System setting】switch comparison 1 ''ON''.
	【ejector forward】signal error	Check the I/O connection.
	Comparison 1 NG result is neglected	In【System setting】, switch "Ignore comparison 1 warning window" off.
The IMM mould close when the comparison II is error.	In【System setting 】, the comparison II setting is "OFF".	Set the comparison II in system setting to "ON".
	【mould close】signal error	Check the I/O connection.

The mould of IMM doesn’t close when the detection is OK.	No detection triggered of comparison II.	1. Check whether the "ejector complete" signal is connected correctly. 2. If no need of Comparison II , please close the menu in [System Setting] .
	Enable mould close signal error.	Same as the above.
No auto photographing after protection is activated.	O connection is error. Robot no start.	Check IO connection. The robot has IO signal, and it needs to start the robot.
It often alarms when turning off the safety door rechecking.	The machine is shaking when turning off the safety door.	Enter 【System parameter】to increase the “safety door detection delay” properly.
Frequently alarm	After cleaning the mould	Add standard image after the mold position is right.
	Detecting time too short, camera doesn’t taking the picture of mould fully opening or robot inside the mould	In【Detecting parameter】increase number of “Delay time”
	Too sensitive	In【Detecting parameter】 decrease number of “Sensitivity” .
	Mold opening position not accurate makes the reflection unstable	1.In【Alarm】add standard image. 2. Change the light direction to other side of the mould(using reflection from other side as light source), then adjust the brightness
	Abnormally of too many small dots on detecting area	1. Enter the【Detecting parameter] menu, and appropriately increase the "minimum size" setting to filter small interference dots. 2. Increase the【NG Area】, and it will not alarm if the total area is less than NG area.

	External light interference such as sun light, directly or indirectly irradiate on the mold.	1. Block the interference light source. EX: Close the window, Cover the window of IMM with black cover… 2. Contact the supplier to replace a higher power infrared light source to reduce the impact of sunlight on the mould protector

*Note: If the fault can’t be troubleshot, please contact us.

7. Warranty

1. The warranty period is 12 month since the day of delivery.

2. The following situations are not consider as warranty:

    1) Any careless or man-made installations, operation (improper plugging, installing, adding or replacing accessories);

    2) Damage by operational actions that are not authorized by Shini (user manual);
    3) Damage by connecting to unauthorized equipment;
    4) Damage through transportation or other related accident;
    5) Unauthorized maintenance or modification to the original design;
    6) Damage through incidents beyond human reasonable controls (Natural disasters, unstable voltage);