YOUNGLEY TECH CO., LTD.

PRODUCT TECHNICAL DOCUMENTATION

Mold Monitor Operation Manual

V18.0.1.X | Industrial Vision Inspection System

Model	V18.0.1.X (8MP 4K Industrial Camera)
Resolution	3840 × 2160 (4K UHD)
Detection	ARM Linux	RS485 / Analog / Relay
Power	12V–24V DC	Industrial Grade
Certifications	CE / FCC / RoHS

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Mold Monitor
Operation Manual

Ver： V18.0.1.X

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Preface

- Before using this product, please carefully read this operation manual and familiarize yourself with its contents。 This operation manual provides you with detailed information on the safety instructions, installation methods, operating procedures, maintenance, and after-sales service of this product, ensuring that you can use the product correctly and protect your rights after receiving it。
- To ensure personal and product safety and ensure optimal performance of the product, please follow the safety instructions in this operating manual and use it accordingly。
- If there are any quality issues with the product, please contact our company promptly。 Our company does not assume any responsibility for equipment damage or human injury caused by self disassembly and maintenance。
- Equipment damage caused by failure to follow the instructions in this manual is not covered by our company's warranty。 We do not assume any responsibility for personal injury caused by failure to follow the instructions in this manual。
- If you have any questions about using this product beyond the instructions in this manual, please contact our company。
- Our company may update the content of the operation manual due to software or hardware upgrades。 All updated content will be included in the new version of the operation manual without further notice。。

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一、 Safety Precautions

Thank you for choosing our mold monitoring and testing equipment。 This operation manual provides important safety, operation, maintenance, and other information。Please read this operation manual carefully before using this product。Carefully read the contents marked with "Warning" and "Caution" in this operation manual, and follow the following precautions and warnings as well as other information in this manual to ensure safe operation and optimal product performance。

	【WARN】This symbol indicates that failure to follow proper procedures may result in serious personal injury or even life-threatening situations。
	【BE CAREFUL】This label refers to the possibility of personal injury or damage to equipment if the equipment is not operated according to regulations。

1、Optical Protection

If there is dust or oil on the lens and light source lens of the device, it may affect the effectiveness of use, and cleaning and protection should be carried out if necessary。

2、Electrical Safety

Before using this product, it is necessary to connect the product to a reliable ground wire to prevent abnormal operation of the equipment。

【Warning】This product is only suitable for indoor operation and should not be used in places with high humidity or excessive dust。

3、Installation and Debugging

Please read the installation instructions carefully before installing and setting up this device, and keep them properly after reading。 If necessary, you can continue to use them。 Please let professional technicians implement it when using。

4、Product Usage Environment

- Environmental temperature： 30%~80%, no condensation;
- Ambient temperature： between 10° C and 45° C;
- Working environment：free of dust, fumes, and corrosive gases; There should be no strong electromagnetic signal interference near the equipment。 When using the equipment, avoid the presence of radio or relay station transmitting points in the vicinity。

5、Other Safety Matters

- All maintenance should be carried out by the professional personnel of our company。 To prevent accidents, please do not damage the labels or open the product casing。 Otherwise, any damage to the product will not be covered by the warranty。
- When cleaning the lens to keep it clean, special lens cleaning tools should be used。 When the product is not in use, please take good dust-proof measures for the visual device to avoid the device being contaminated by dust。
- The device is equipped with a heat dissipation outlet and an air inlet。 It is necessary to ensure that there is sufficient airflow for heat dissipation。 Make sure that there are no items piled up in front of and behind the device, and there are no sundries around it。

二、Equipment Configuration

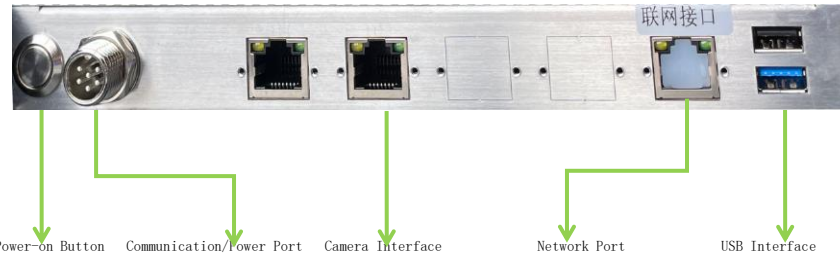
1、Standard Configuration List: (Single Camera, Single Light Source)

NO.	Parets name	Quantity	Unit
1	Industrial Control All - in - One Host	1	Piece
2	Host P Host Power Supply/Communication Adapterower Supply/Communication	1	Piece
3	Industrial Camera	1	Piece
4	Industrial Network Cable	1	Piece
5	Industrial Lens	1	Piece
6	Infrared Light Source	1	Piece
7	Host Power Cord	1	Piece
8	Magnetic Base	2	Pieces
9	Host Rotating Wall - Mount Bracket	1	Piece
10	Wall - Mount Bracket Magnet	4	Pieces
11	IO Cable/220V Power Cord	1	Set
12	Relay	2	Sets
13	Instruction Manual	1	Copy

2、Core Accessories

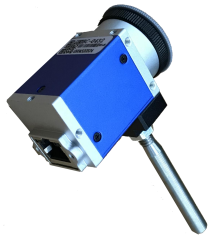
1) Industrial Control All-in-one Machine

(2-1) shows the main interface



(2-2) Device Interface

2) Other Accessories



(2-3) Camera

(2-4) Communication IO Box

(2-5)Lens

(2-6)Infrared Source

(2-7) Magnetic base

三、Overview of Software Interface

(3-1) Software Operation Interface

1、 Interface Viewing Area： Displays the monitoring status。

2、 Menu Bar： Relevant settings for system parameters。

3、 I/O Communication Status： Displays the communication indication of input and output signals during the monitoring process。

4、 CCD Camera Display： Displays the camera number currently being detected and other related information。

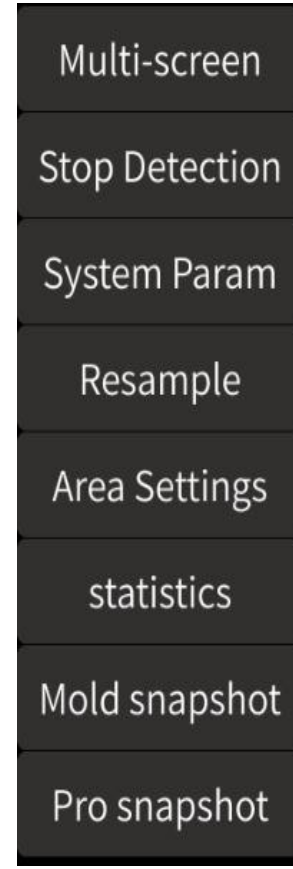
5、 NG/Total Monitoring Times： Displays and records the total number of monitoring times and the number of NG cases。

6、 Mode/Version Number： Displays the current program mode and the corresponding version number。

四、Software Operations

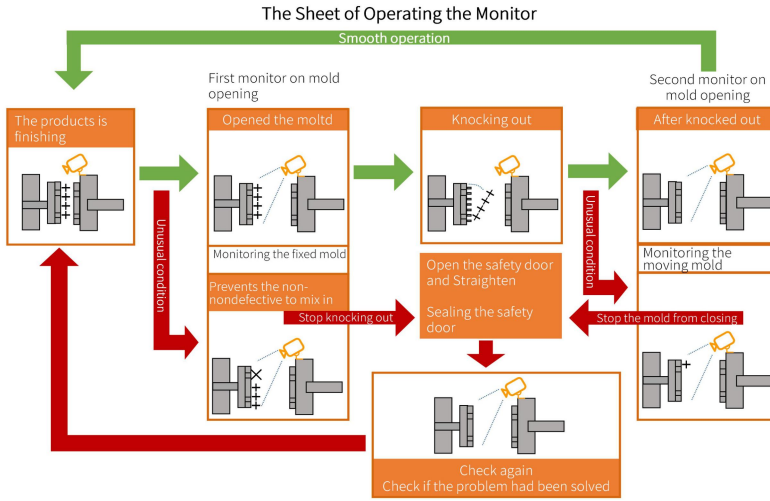
1、Menu Bar

- Multi-screen Display： When multiple cameras are connected to the system, you can switch the camera numbers through this button。
- Stop Detection/Start Detection： When starting the detection, the monitoring system is in the normal monitoring state； when stopping the detection, the monitoring system is in the stopped monitoring state。
- System Param： It mainly includes some function settings such as delay, camera system settings, password settings, etc。 For details, please refer to the functional overview of system parameters。
- Resample： Re-learn the template of the detection screen。
- Area Settings： Draw the number of detection regions and ROI (Region of Interest) parameters。
- Statistics： Record data related to the production cycle。(Hidden by default
- Pro snapshot/Mold snapshot： Manually test the current detection surface。



(4-1)

2、Operation Procedures



(4-2)

Adjust the angle of the camera and the light source --> Adjust the brightness --> Set the delay parameter/Set the number of detections --> Resample --> Region setting --> ROI parameter setting --> Completion of the setting

1) Adjust the Angle of the Camera and Light Source

First, lock the camera and the light source onto the magnetic base, and then fix them at an appropriate position on the machine。 Next, finely adjust the position of the magnetic base that fixes the camera and the light source, ensuring that the position to be detected is within the imaging field of view of the camera。 After that, finely adjust the aperture and focal length of the lens to make sure that the monitored image is clearly visible。

2) Brightness Adjustment

When using an infrared light source to enhance the illumination intensity of the detection area, you can first adjust the aperture of the lens to adjust the brightness effect of the detection screen。If the brightness of the light source and the lens aperture is adjusted to the maximum value but the brightness of the detection screen is still insufficient, you can adjust the camera parameters。

(4-3)

The specific operation for adjusting the camera parameters is as follows: Click **"System Param"** in the menu bar, and among the following function options, select **"Camera Param"** to adjust the exposure and gain of the camera。

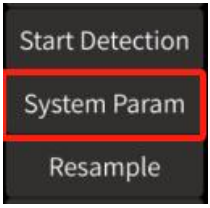
When modifying the parameters, you can make the settings by changing the values such as **-5, -1, +1, +5** to the left or right。 You can also directly click on the input box and enter the numerical value directly on the pop-up numeric keypad。 **(The methods for modifying other parameters are similar。)**

Simple D: When you need to check the brightness change effect of the entire detection screen in real time after adjusting the camera parameters, you can click **"Simple D"**, and other parts of the system parameter interface will be automatically hidden。 If you need to display it in full view, just click **"Complete D**。

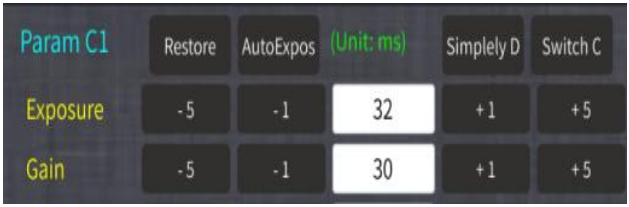
Switch C: In the case of multiple cameras, click this button to switch the camera numbers。

Exposure: The larger the value, the higher the brightness of the picture, the longer the dynamic response time, and the worse the picture effect。 The default value of the exposure time is 45, and the reference value is 30-60。

Gain： Adjust the brightness。 The larger the value, the more noise there will be。 The default value of the gain adjustment is 7, and the reference value is 7-25。 **(4-4, 4-5)**



（4-4）



（4-5）

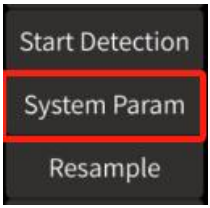
3) Set the Delay Parameter

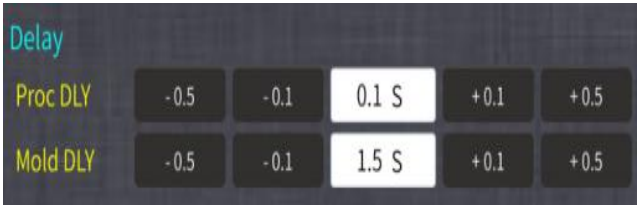
The delay duration should be adjusted according to the system's trigger signal for taking photos, generally taking the mold opening end signal as the standard。 And the number of monitoring times can be selected according to the actual situation。

When monitoring the mold opening in place (that is, monitoring the finished product), if the equipment vibrates during mold opening due to aging, a delay of about 0.1S can be set before capturing the detection image to ensure that the equipment is in a relatively stable state before detection。

When monitoring the mold closing (that is, monitoring the mold cavity), the length of the delay depends on the signal that triggers the monitor to take photos of the mold cavity。 In fact, it should be adjusted according to the product production cycle。

The specific operation for adjusting the delay parameter is as follows： Click **"System Parame"** in the menu bar and modify the **"Delay "**。 The set parameter value is multiplied by 0.1S。 For example, if the parameter is 5, it means 0.5 seconds。 **(4-6, 4-7)**



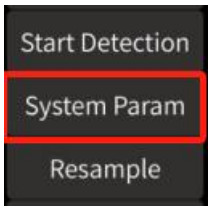


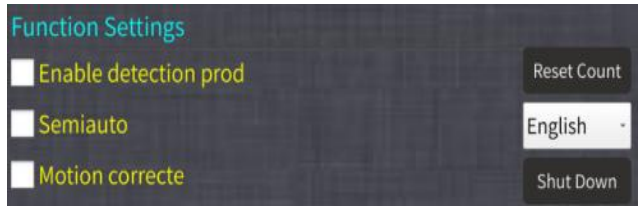
(4-6) (4-7)

4) Set the Detection Frequency

Under normal circumstances, the monitor conducts two detections, that is, it detects the finished product after the mold is opened and then detects the mold cavity before the mold is closed。 However, the detection of the finished product can be enabled or disabled according to actual needs。 The system enables it by default。 If you don't need to enable it, you can cancel it through settings。

The specific operation for setting the number of detections is as follows： Click **"System Param"** in the menu bar, and then remove the checkmark in front of **"Enable detection Prod"** in the function settings。 **(4-8, 4-9)**





(4-8) (4-9)

5) Resample

After setting the delay time and the number of monitoring times, you can start the re-sampling (detection sampling)。

Remarks： The following are the situations where detection sampling needs to be carried out again：

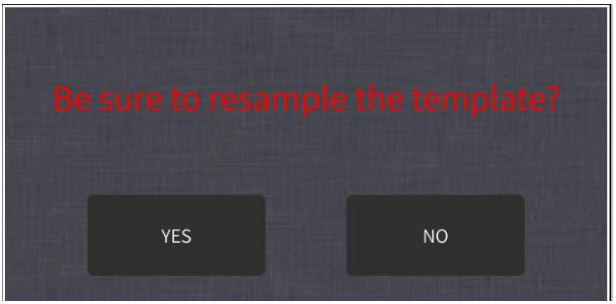
A、Adjust the angles of the camera and the light source;

B、Replace the production mold on site;

C、The reference template is incorrect (such as in the case of an abnormal screen);

D、Modify the exposure of the camera itself and the exposure of the camera parameters, resulting in a change in the brightness of the detected image;

Specific settings for re-sampling: First, click the **"Resample"** button。Then, in the pop-up dialog box that says **"Be sure to resample the template" (as shown in 4-10)**, select **"Yes"**。 After the mold opening is in place and after the delay time for the finished product/mold cavity ends, the system will automatically collect and save the image, which will serve as the reference template for detection。



(4-10)

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(4-11) Resampling screen

Tips: When resampling, it may be necessary to correspondingly extend or reduce the delay time. The delay time should neither be too long nor too short. Regarding monitoring the status when the mold opening is in place and before the mold closing:

Excessive delay: It means that the ejector pins have returned to their original positions and the manipulator has moved out of the monitoring area, but the system's delay has not ended yet. This situation is considered an excessive delay. An overly long delay will affect the entire cycle time of the production process. In this case, you should re - enter the delay setting dialog box and shorten the delay time.

Insufficient delay: It means that the ejector pins or the manipulator are still in motion, but the delay time has already ended. This situation is regarded as an insufficient delay. At this time, you need to extend the cavity delay time and then perform the detection sampling again.

During the sampling process, after the delay time elapses, the system will directly jump to the area setting interface. At this time, you need to manually confirm whether all cameras and relevant templates are correct. After confirming that everything is

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correct, click "Finish setting", and the system will output the mold - closing signal。If the template is abnormal, you need to make relevant adjustments and then perform the sampling again。

6) Area Settings

After sampling and confirming that there are no abnormalities in the template, the next step is to carry out the area setting。

The specific operation of the area setting: Click the **"Area Settings"** button in the menu bar, and you will enter the area setting screen (template setting), as shown in 4-12:

(4-12)

Template/Live image/Records of OK and NG Pictures:

(4-13)

- **Template:** The template collected and added by the current camera。
- **Live image:** You can switch to the actual detection screen。
- **Recent NG:** You can view the pictures of the most recent 10 NG cases, and manually add them as templates。
- **OK Picture:** Records of OK pictures corresponding to the camera number。
- **NG Picture R:** Records of NG pictures corresponding to the camera number。**(4-13)**

Tool buttons on the menu bar:

- **Arrow:** You can switch the position of the menu bar to display it on the left or right side。
- **Camera No. N:** When there are multiple cameras, you can click to switch between cameras。
- **Prod /Mold :** Switch the detection template。 The default is the template for finished product detection。
- **End Set:** After setting the area and area parameters, click this button to save and exit to the monitoring state。
- **Draw quadrilateral:** Drag from the upper left corner at a 45-degree angle to draw a quadrilateral。 You can also drag it to make an irregular quadrilateral。 Double-clicking the detection area can end the

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continuous drawing of quadrilaterals **(4-15)。**

- **Draw Circle：** Drag from the upper left corner at a 45-degree angle to draw a circle。 Double-clicking the detection area can end the continuous drawing of quadrilaterals **(4-16)**。
- **Draw Polygon：** After clicking, the button will switch to "End Polygon"。 Click clockwise or counterclockwise respectively at the edge of the area to be detected。 After the drawing is completed, click the "End Polygon" button, and the area will form an irregular shape **(4-17)。**
- **Draw a Gesture：** You can draw a detection frame of any shape。 After the starting point and the ending point intersect, the area will automatically close。
- **Copy Current:**After selecting the existing area, click this button to quickly copy.

(4-14)

- **Delete This ROI：** Delete the selected ROI (Region of Interest) area。
- **Delete All ROI：** Delete all ROI areas of the current detection screen。
- **Previous/Next Tem：** When there are multiple templates, click to browse and view the templates。
- **Delete Temp：** You can delete the templates that are not needed or are incorrect。

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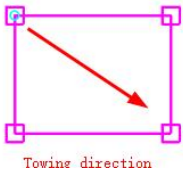
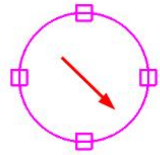
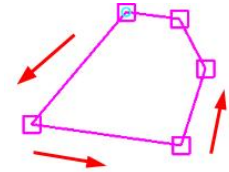


(4-15)



(4-16)



(4-17)

After each monitoring area is drawn or a certain area is clicked, the system will automatically pop up an ROI parameter setting window。 At this time, the ROI parameters of the detection area can be set。 Clicking outside the area will automatically hide the setting window。

7) ROI Parameter Setting

When setting the ROI, the function selection for each corresponding detection area includes three options: "Defect Detection", "Speckle Detection", and "Ignored Area"。 The system defaults to **"Defect Detection"。 "Speckle Detection" and "Ignored Area"** are hidden items。 When you need to use them, you can set them in "System Parameters" - **"Camera Parameters"** to make them visible。

When modifying the parameters, you can directly slide the slider to increase or decrease the values。 You can also use the **"-1" or "+1"** buttons at both ends of the slider for modification。 Alternatively, you can directly click on the parameter value, enter the value on the pop - up numeric keypad, and then click "OK"。

- **Defect:** It is the default function after the ROI is drawn and there is no need to select it。 **(4-18)**

(4-18)

- **Sensitivity:** It is used to set the grayscale value between the detection area and the reference screen。 The smaller the value, the higher the sensitivity; the larger

the value, the lower the sensitivity。 The magnitude of the value depends on the color difference between the mold and the product。 The greater the color difference, the larger the sensitivity parameter can be。 Conversely, the smaller the sensitivity value。 The parameter range is generally between 40 and 80。

- **Area:** It is the size of the minimum defect area for detection。 The default initial value of the system is 50, and the size of the parameter is set according to the difference between the actually detected object and the mold surface。 The detection reference is that the NG (alarm) point should be larger than the set value。 Taking the default value of 50 as an example, when comparing the detection image with the reference template, if the area value of the different parts of the two images is greater than 50, the system determines that this monitoring is abnormal and issues an alarm, and the mold closing signal of the injection molding machine will be cut off, waiting for the on-site personnel to make corresponding handling。 If, when comparing the detection image with the reference template, the area value of the different parts of the two images is less than 50, the system determines that this monitoring is qualified and directly detects the next mold (or the next cycle)。 The parameter range is generally between 50 and 200。
- **Filter Size:** It is the area of a single speckle for detecting effective alarms。 The default size is 3*3 pixels, that is, an area of 9 pixels。 During detection, if the area change value of a single speckle is greater than the set value, the system determines this area as an abnormal point; otherwise, it is ignored and not calculated。 The parameter range is generally between 3 and 5。

Note: The filter size and alarm area can generally be adjusted uniformly in the system parameters during regular operations。 In most cases, only the sensitivity needs to be modified。 If you need to adjust these two parameters for each ROI area individually, you can tick the "Show detailed algorithm parameters" option in the camera parameters and then make the adjustments。

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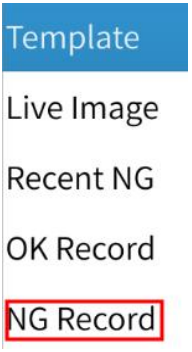
After drawing the detection area, has 5 parameters, and the 5 parameters respectively correspond to:

Defect Detection: The serial number of this ROI, the set value of Sensitivity, the set value of the area, filet Size/ the change value of the judgment result, For example-1: 45, 100, 5/0。

View OK Images: In the area settings, switch the template in the upper right corner to **"OK Reconrd"**。 Use the **"Previous/Next Tem"** buttons to switch, as shown in **(4-19)**。

View NG Images: Select **"NG Record"** and use the **"Previous/Next Tem"** buttons to switch, as shown in **(4-20)**。

(4-19)



(4-20)

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五、System Param

The system parameters mainly include functional modules such as system parameters, camera parameters, network parameters, input and output, and advanced parameters。

1、System Param

(5-1)

- **Delay：** Set the delay time, with the unit time being 0.1 seconds。
- **NG Redetect Times：** When the result is NG, the system allows you to set the number of automatic retries。Within the set number of retries, the system will only issue an alarm if the result remains NG。 The minimum number of retries is 1 time, and the maximum is 5 times。
- **Use the same filter Size and Max Area：** In the area settings, when using defect detection, this refers to the range of allowable false positive values that can be set for the size of defect spots。
- **Reset Count：** Every time the system conducts a detection, the number

of finished products displayed at the top of the monitoring screen will increase by 1。 When the result is NG, the number of NG occurrences among the finished products will also increase by 1。 When you need to clear the count or start counting anew, you can manually reset the monitoring count to zero。

- **English：** This is for switching between Chinese and English versions。 The system needs to be restarted for the switching to take effect。
- **Shut Down：** When exiting the monitoring system, you can manually turn off the power and choose whether to restart it according to your needs。

Note： Please do not frequently cut off the power supply directly to turn off the main unit。

Basic Functions：

- **Enable detection prod：** When the device needs to detect whether the finished product is incomplete or stuck on a different surface, this function can be enabled。 **Note： When detecting finished products, in principle, the detection accuracy on the mold cannot be very precise, and only relatively large defects can be detected**
- **Semiauto：** If the injection molding machine is in semi - automatic production, the triggering mode of the mold cavity detection is different, and you need to tick this option。 For example, if the entire cycle cannot be fixed, when triggering the mold cavity to capture an image, if you use a delayed capture based on the mold - opening completion signal, it may happen that the delay ends before the mechanical action is completed。 As a result, the captured image is different from the actual standard template, causing false alarms

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- **Motion Correcte:** For aged machine platforms or hydraulic presses, due to the inaccurate position of the mold opening stroke of the equipment itself, there will be deviations in template matching during system detection。 Motion correction can be enabled。 The system will first perform horizontal positioning and then conduct comparative processing。 This operation helps to reduce false alarms caused by stroke deviations。 However, if the problem is not caused by position deviations, please do not enable this function, otherwise it will occupy a large amount of system resources。
- **Two same parameters:** This means that the parameters set for cavity detection and finished product detection, including sensitivity, the position of the detection area, the number of areas, etc。, are exactly the same。 The parameters for finished product detection shall prevail, and modifying the cavity parameters will be ineffective。
- **Enable Password:** When it is necessary to prevent unauthorized personnel from operating at will, this function can be enabled。 The default password is 1234。 (This password can be modified in the advanced parameters。)
- **Template auto Update:** When there are regular changes in the light, this function can be enabled。 When the current detection result is judged as OK, the system will automatically replace the master template with it, which will be used as the basic image for the next cycle。

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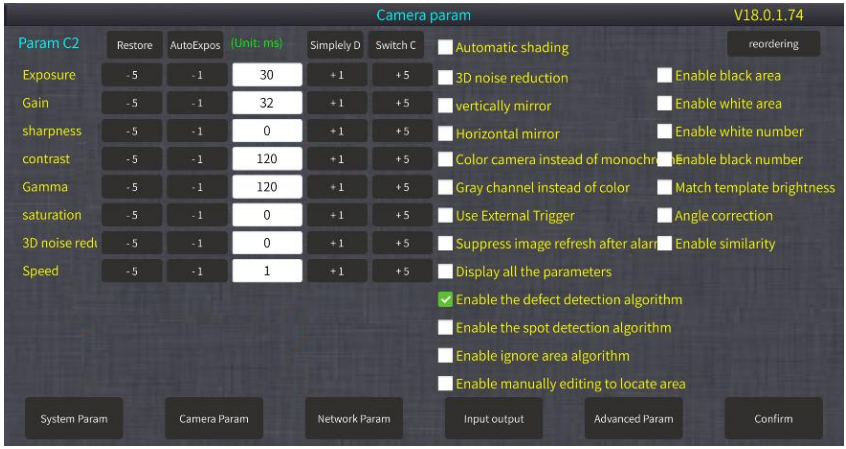
2、Camera Parameters



(5-2)

- **Restore:** When the imaging effect seems abnormal, you can click the "Restore Default" button to restore the factory settings with just one click。
- **Simple D:** You can hide other function options and view them in real time while adjusting the corresponding parameters。
- **Switch C:** In the case of multiple cameras, clicking this option allows you to switch to other camera numbers to adjust the parameters。
- **Exposure:** The larger the parameter value, the higher the brightness of the detected image, but the longer the dynamic response time will be。
- **Gain:** The larger the parameter value, the higher the brightness of the detected image。 However, it will also result in more noise points and a less clear image。

The following three functions are hidden by default and can only be operated with the manufacturer's permission:

- **Sharpness:** It refers to the clarity of the image display。 The default value of 0 is usually sufficient。
- **contrast:** It represents the fidelity of the image。 The default value of 120 is appropriate。
- **Gamma:** It is a parameter of the grayscale value of the image。Changing the value can make the black and white levels more distinct。 The default value is 120。
- **Saturation:** It means the frequency at which the camera acquires images。 The parameter values vary for different camera models。
- **Automatic shading:** According to the actual brightness of the on-site detection, the system will adjust the brightness value of the detection surface by itself。 It is not recommended to enable this function by default。
- **Vertical mirror:** If the image is inverted vertically during debugging, you can tick this option to restore it to the normal orientation。
- **Horizontal mirror:** If the image is reversed horizontally during debugging, you can tick this option to revert it to the correct state。
- **Color camera instead of monochr:** It means that the color camera can be switched to be used in black-and-white mode。
- **Gray channe instead of color:** This refers to the algorithm used when detecting defects。
- **Use External Trigger:** In special scenarios where the camera needs to be directly triggered by the shooting signal, this option can be

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used。

- **Suppress image refresh after Alarm：** When a detection result is NG, the system will stay on the alarm screen and will not refresh according to subsequent actions。
- **Display All the parameters：** By default, for the ROI detection area, only the sensitivity needs to be adjusted。When this option is ticked, the filtering size and the alarm area also need to be adjusted。
- **Enable the defect detection algorithm：** The default detection algorithm of the system mainly relies on the identification of image grayscale differences。
- **Enable the spot detection algorithm/Enable black Spot and white area：** When conducting detection, if you only need to detect the imaging effects where the NG image is either black or white compared to the OK image, you can use this type of algorithm。
- **Enable ignored area algorithm：** When there are many false alarms within the detection area and certain parts can be left undetected, this algorithm can be applied。
- **Enable manual editing to locate are：** You can manually draw the positioning frame。By default, the system has already carried out the positioning。
- **Enable white number：** Calculate the number of white spots (with characteristic points being white or close to white) on the detection surface through the grayscale value。
- **Enable black number：** Calculate the number of black spots (with characteristic points being black or close to black) on the detection surface through the grayscale value。

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- **Match template brightness:** This function will take into account the overall brightness of the template and adjust it according to the changes in ambient light during the detection process. It is only effective for overall changes and ineffective for local brightness changes.
- **Angle correction:** It can be enabled when detecting products that will undergo angle rotation during the detection. However, this algorithm may consume relatively high performance and affect the detection cycle, so use it with caution.
- **Enable similarity:** The detection algorithm matches the product contour for detection. This algorithm has high requirements for the detection imaging effect.

3、Network Parameters:NO explanation provided

4、Input Output

(5-4)

- **Re inspec：** When the system fails to detect the mold opening completion signal within the set time, the system will issue a prompt and cut off the mold closing。 Setting it to 0 means this function is not enabled。
- **Pre-Cut：** This follows the normal communication logic of the system, that is, when the system receives the mold opening completion signal, it will immediately cut off the mold closing signal and will only output the mold closing signal when the judgment result is OK。 However, this can be set in case of anomalies such as the device not ejecting the ejector pin or the mold not rotating when the mold closing is cut off, which are caused by interlocking with the mold closing signal。 The parameter of this function is that the mold closing will be cut off only when the delay time set in the mold cavity minus the currently set value。 Remember not to set it casually, otherwise, it may cause mold crushing。 Setting it to 0 means this function is not enabled。
- **Ejector P：** When the system cuts off the ejector pin signal within the set time。 Setting it to 0 means this function is not enabled (this function requires ticking the "Timed Ejector Pin and Mold Closing after Finished Product Detection is OK" on the right side)。
- **Clamp P：** When the system cuts off the mold closing signal within the set time。 Setting it to 0 means this function is not enabled (this function requires ticking the "Timed Cut-off of Mold Closing after Mold Cavity Detection is OK" on the right side)。
- **Output 4：** This is a reserved output。In combination with the corresponding functions, the corresponding output duration can be

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set。

- **Shake era：** It can be set when there is communication interference in the device。
- **OK number：** After a certain number of consecutive molds with OK results in the mold cavity, the system will prompt for machine shutdown, and manual intervention and confirmation of the mold are required。
- **Shield pir：** When the semi-automatic mode is enabled, if the detection is triggered by the ejector pin retraction signal, it can be set to filter the ejector pin retraction signal for a certain number of times before triggering the detection。

The following functions are hidden by default and can only be operated with the permission provided by the manufacturer：

- **Input 4 used for：** When there are abnormalities **in the mold opening end, safety door, or tray retraction end,** the spare point synchronization can be enabled。
- **Output 4 used for：** When there are abnormalities **in mold closing, ejector pin operation, or the alarm,** the spare point synchronization can be enabled。
- **Output 1 initial stare：** It is closed by default。 You can change the output level (high or low)。
- **Output 2 initial stare：** It is closed by default。 You can change the output level (high or low)。
- **Alarm initial state：** It is open by default。 You can change the output level (high or low)。
- **Output 4 initial stare：** It is closed by default。 You can change the output level (high or low)。

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- **When the finished product is detected as NG, the ejector pin is not output, and the alarm does not stop the machine:**When the finished product inspection is NG, the top pin signal is disconnected and an alarm sound is emitted, but the equipment can operate normally for production。
- **Ejector pulse when NG in prod,don’ t alarm ：** Combined with the action of the robotic arm, when the finished product is abnormal, a defective product signal can be output to distinguish it, and the equipment can operate normally。
- **when the mold cavity detects NG,the mold closes and outputs:**
- **Stop clamping when stoping detected：** When the monitoring system is set to the stop state, it prohibits the injection molding machine from closing the mold。
- **Stop clamping when stoping detected**
- **OK and NG output pulses:**When detecting the mold cavity, provide OK and NG signals respectively, and the equipment will not stop。
- **Cut ejector when clamping：** Set to cut off the ejector pin signal in advance after the injection molding machine closes the mold。
- **Cut the clamping at fixed time after ok:**After the mold cavity detection is OK, set the duration of the mold closing output.
- **Cut the ejector at fixed time after ok:**fter the finished product inspection is OK, set the duration of the mold closing output。

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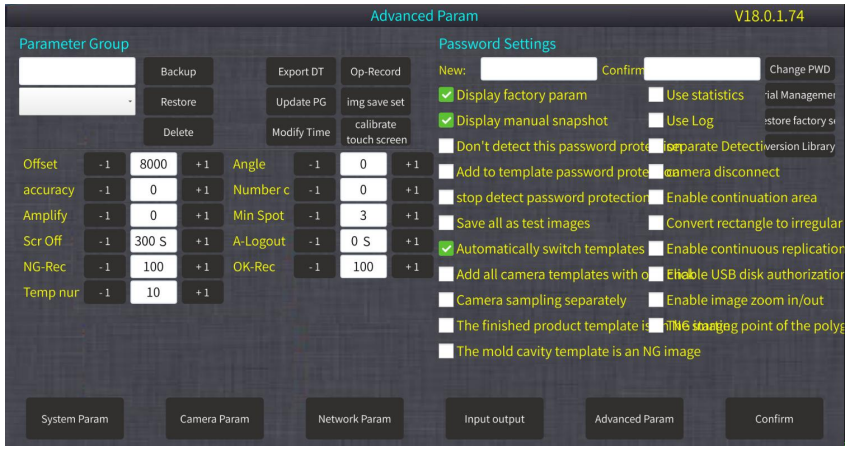
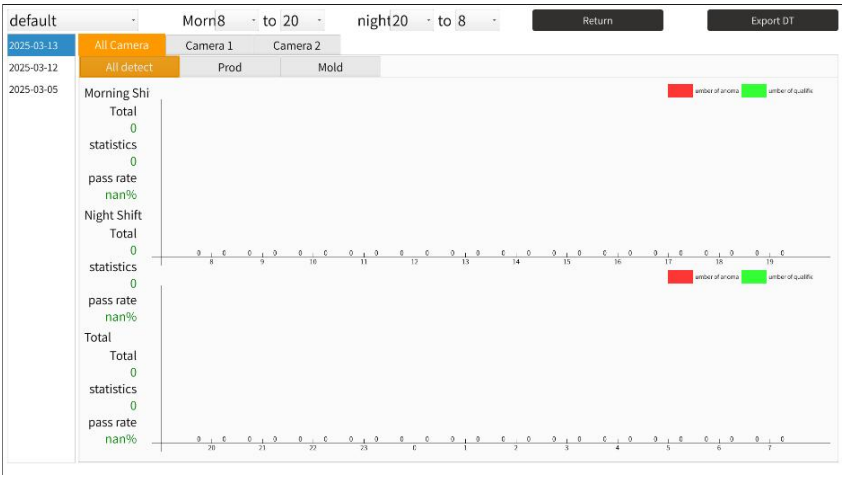
5、Advanced Parameters



(5-5)

- **Parameter Group:** It enables the backup and restoration of the parameters debugged for different molds, reducing operations。
- **Export DT:** Export all relevant data in the system, including pictures, area parameters, camera parameters, etc。
- **Update PG:** Operate when the system needs to be upgraded or the configuration file needs to be repaired。
- **Modify Time:** Operate when the system time is not synchronized with the actual time。
- **Op-Recond:** It records all the operation records of the current system during all time periods and saves them classified by date。 It includes relevant data such as starting/stopping the detection, modifying the area parameters, adding or deleting templates, etc。 The operation records cannot be deleted, as shown in **(5-6)**。



(5-6)

- **Img save set:** External mobile storage drive, set OK and NG images, and save them by date。
- **Calibrate touch Screen:** When the cursor position does not match the actual touch point during the operation of the touch screen, you can perform the calibration operation on the touch screen。
- **Offset, Angle, aAccuracy, Number c:** Modify these settings when performing positioning。 The default values are usually fine, and do not modify them unless necessary。
- **Amplify, Min Spot:** You can set these when the fine details cannot be detected during the detection。 The default values are usually appropriate, and do not modify them unless necessary。
- **Scr off:** When there is no operation on the software for a long time, the screen will enter the sleep state within the set time to reduce power consumption。

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- **A-Logout:** When password protection is enabled, you can set the time duration for automatically exiting the logged-in state。
- **NG/OK Rec：** The system records the historical images of OK/NG detections。 By default, there are 100 images, and the upper limit is 500 images。 Note: If the number of recorded images is too high, it will reduce the service life of the storage disk。
- **Temp num：** By default, the system allows adding 10 templates。 According to the actual detection requirements, the number of templates can be modified。 Note: Having too many templates may increase the risk of a longer detection cycle and lower detection accuracy。 Be cautious when operating。 The default number is 10 templates。
- **Password Setting:** When the password is enabled, you can modify the password here。 The default password is 1234。 After entering the new password and confirming it, click the "Modify Password" button behind to complete the operation。
- **Display factory param:** For special functions, they are hidden by default under normal circumstances。 When ticked, they can be displayed。
- **Display manual snapshot:** Set whether to display the manual test capture button in the system menu。
- **Don’ t detech this password protection/Add to template password protection/stop detect password protection:** When password protection is enabled, after ticking the corresponding functions, you need to enter the permission password to perform the operation。

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六、Alarm Operations

1、False Alarm Operations

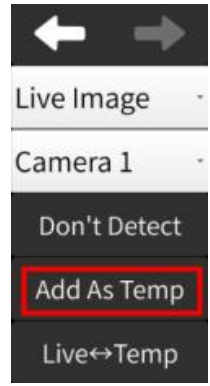
➢ Operation 1： Don’ t Detect

After adjusting the sensitivity, if false alarms still occur, or when there are changes in some individual areas during the cycle, or when it is determined manually that there are special circumstances in a certain detection that lead to an alarm, you can click this function **(6-1)。**

➢ Operation 2： Add As Temp

Due to factors of the mold itself, such as the deviation of the mold opening position, the reflectivity of the mold surface, and the characteristics of the product itself (such as position deviation) and other factors that affect the detection, when there is only one master template, you can use the "Add as a Template" function。 Select "Yes" to add it in the pop-up confirmation dialog box **(6-2)。**

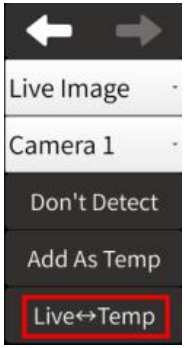
（6-1）



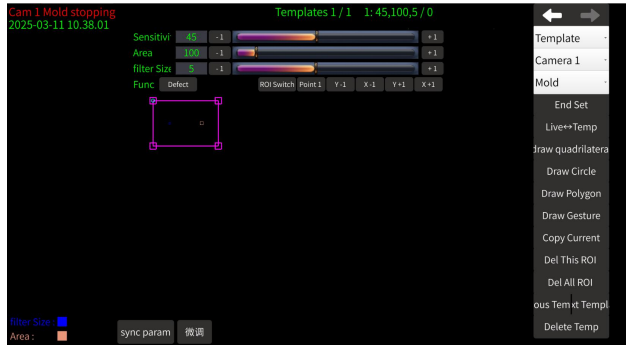
（6-2）

➢ Operation 3: Live <--> Temp, Modify Region Parameters

When an alarm occurs, you can check the flashing red area。 If it is determined to be a false alarm, you can click **"Live <-> Temp"** in the menu bar **(6-3)**, select the false alarm area, increase the sensitivity value (you can also increase the filtering size and alarm area values, which can be modified in the system parameters)。 After clicking to complete the setting, the system will re-enter the monitoring state。 This process may require repeated adjustments and operations several times to achieve an ideal effect。



(6-3)

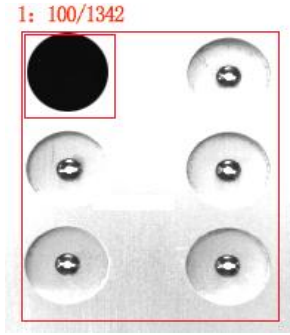


(6-4)

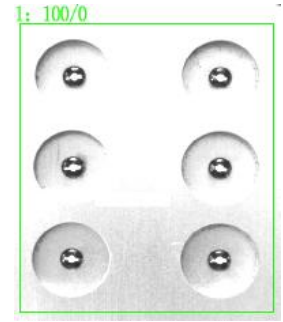
Note: In case of mold sticking without an alarm, such as situations where the product has not completely fallen off, the ejector pin has not retracted to the proper position, or other abnormal conditions, and the system fails to correctly detect the abnormalities, it is necessary to enter the region settings and reduce the sensitivity value (you can also reduce the filtering size and alarm area values, which can be modified in the system parameters)。

2、Abnormal Alarm Operations

When the system starts monitoring, in case of abnormal situations such as mold sticking, the ejector pin not retracting to the proper position, or the slider not retracting to the proper position, you can open the front safety door or clear the abnormal alarm。 Then, close the safety door, and the system will conduct a self-check again 。 You can also click "Re-detected" in the menu bar until the abnormality is resolved (6-5) (6-6)。



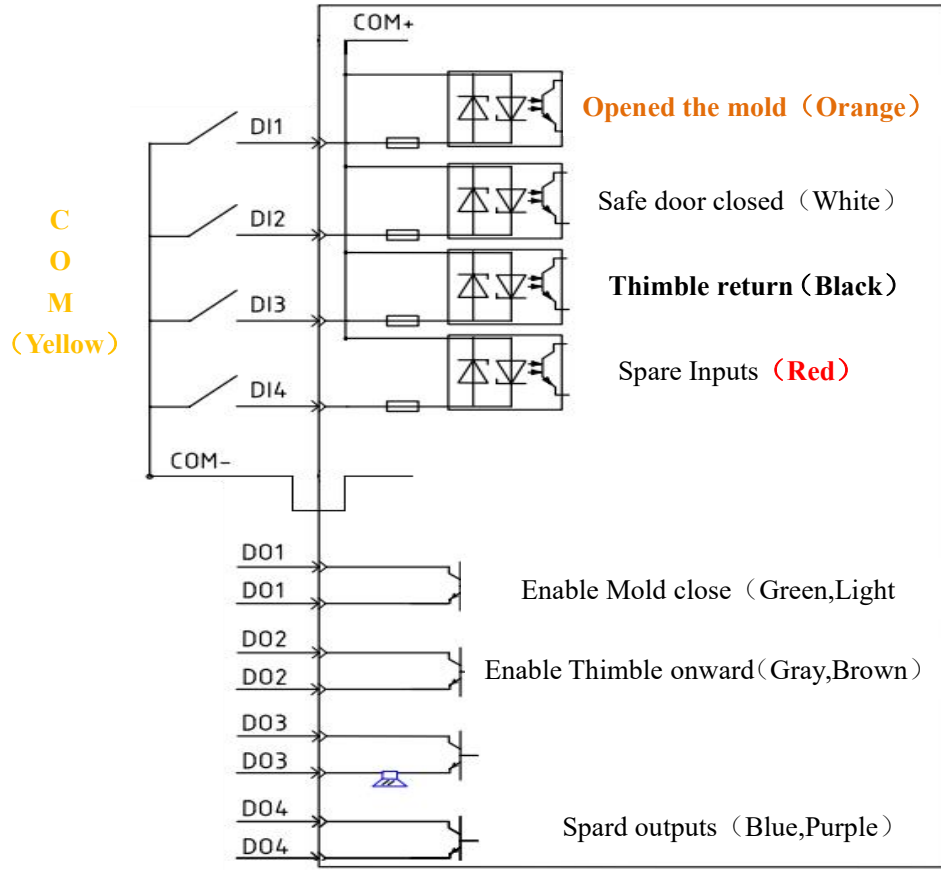
(6-5) NG image



(6-6) OKimage

七、IO Signal and 220V Wiring Diagram

The IO signal input adopts optocoupler isolation, and the output adopts the normally open contact of the relay。 When wiring, please refer to the signal identification on the wire label。



220V：Red-L、Blue-N、Yellow-PE

八、Fault Analysis and Troubleshooting

Due to the usage environment or other factors, the mold monitor may malfunction during operation。 In order to promptly diagnose and troubleshoot some simple faults, the following lists common fault phenomena and corresponding solutions, which are for reference only。

NO.	Troubleshooting Phenomenon	Possible Causes of the Fault,	Troubleshooting Methods
1	The device indicator light is not on。	The power cord is not connected	Check the power source and plug the connector firmly。
2		The power-on button has not been pressed	Press the power-on button when the power supply is normal
3		Device failure: Hardware problem	Replace the display screen and try to turn on the device
4	The device prompts: No available camera detected。	Camera failure	Replace the camera and try to reconnect it
5		Camera cable failure: The cable is crushed and broken or there is a poor connection。	Thoroughly replace the camera cable and try to reconnect it

6		Device failure: Port abnormality	Replace the display screen and try to solve the problem
7	There is no communication during the use	The device IO is short-circuited	Check whether the IO cable of the communication box is plugged into the short connector
8		Device communication port setting error	Set the corresponding communication port according to the device specifications: For models 130, 132, and 146: COM1 For models 133 and 135: COM6
9		Device failure: The communication IC is damaged	Replace the display screen and try to solve the problem。
10	The imaging quality is bad。	There is dirt on the surface of the lens	Wipe it with industrial alcohol
12		There is no adapter ring or there are multiple adapter rings between the lens and the camera	Differentiate the interfaces of the camera and the lens: For some cameras and lenses, an adapter ring is not required for imaging。 It is necessary to try adding or removing the adapter ring to determine the situation。

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