东莞市德诚机电科技有限公司

DE CHENG MECHANICAL ELECTRICAL TECH.CO.LTD.

DC-900

Mold monitoring protector

Operating instructions

感谢您使用德诚仪器

Thanks for selecting DeCheng

请在使用仪器前仔细阅读用户手册

Please read the User's Manual carefully

before using the instrument.

●请将用户手册作为仪器的一部分妥善保管，便于操作人员随时参阅。

Please take this users'manual as important part of the instrument and keep it near the instrument for reference at any time.

●本用户手册虽经认真审阅，但纰漏在所难免，如有不明之处，请联系德诚公司客服中心或代理商。

Although the users'manual is checked very carefully,there will still remain some mistake.Any questions,please contant Decheng Comtomer Service Center or our agents.

●德诚公司一直致力于产品的不断改进，本用户手册内容如有更新，恕不另行通知。

Decheng devote us to continuous improvement of products.This User's Manual is subject to change without prior notice.

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目 录

Chapter I Introduction to mold monitor DC-900

1.1 Summary

Mold monitor dc-900 is specially developed for mold protection of forming machine. The system can detect the mold cavity surface many times in a complete cycle.

1.2 Function introduction

During the operation of the injection molding machine, there may be the risk of damage to the mold due to abnormalities such as residual products or slider dislocation in each working cycle. Decheng dc-900 monitor adopts visual detection method to protect the mold and prevent the continuous occurrence of defective products.

Main purpose:

1. Confirm mold cavity, mold cavity and product residue before mold closing;
2. Confirm the return position of sliding block and thimble;
3. Confirm whether there is any error in plug-in insertion;
4. Confirm quickly that the thimble is not ejected or broken;
5. Check whether there is material shortage or burr of the product;
6. Check whether the multi-hole mold product is missing or the material channel is blocked;
7. Prevent the continuous occurrence of defective products;
8. Reduce redundant ejection actions.

1.3 Product features

1. The fixing method of magnet adsorption is adopted, which is convenient and fast to install;
2. It can be linked with the machine to realize unattended work;
3. It has standard mode and insert mode, and can realize two-time detection and three-time detection functions;
4. You can arbitrarily select multiple areas and customize the areas separately;
5. Using embedded system design, the fastest processing speed can reach (0.02s) and high stability;
6. With remote monitoring service function;
7. It has the function of single template and multi template;
8. Adopt million HD camera and infrared light source to improve detection accuracy and stability;
9. Light weight, small size and low power consumption.

Chapter II Safety precautions

2.1 Safety precautions

1. Please carefully read the safety precautions before use.

2. Please use the designated camera stand and lighting stand. If the stand is selected incorrectly, it may fall, damage and personal injury.

3. The camera stand and light source stand shall be kept at a certain distance from the mold to prevent damage to the equipment.

4. Please do not disassemble or modify the machine, which may cause personnel electric shock and equipment damage.

5. If it is used under abnormal conditions such as smoking and peculiar smell, it will cause fire and electric shock.

6. In case of abnormality, please shut down immediately and find out the cause. If the cause is not found out, please contact the manufacturer.

2.2 Installation and use instructions

1. This equipment is used indoors and cannot be used outdoors.

2. Please use the equipment within the specified allowable temperature range, otherwise it will damage the equipment and cause fire, etc.

3. Please do not use it in too humid and dusty environment, otherwise it will cause electric shock, fire, etc.

4. Please do not use it around the strong magnetic field device to avoid wrong action due to strong electromagnetic wave interference.

5. Please read the operation manual carefully before installation and setting, and keep it carefully after reading.

6. The installation and commissioning of the equipment shall be operated by professionals to ensure the safety of personnel and equipment.

2.3 Equipment maintenance

1. The environment of the equipment may be dusty. Please clean it regularly to ensure that the equipment can be used normally.

2. Please use professional cleaning tools to clean the camera, lens, display screen, etc.

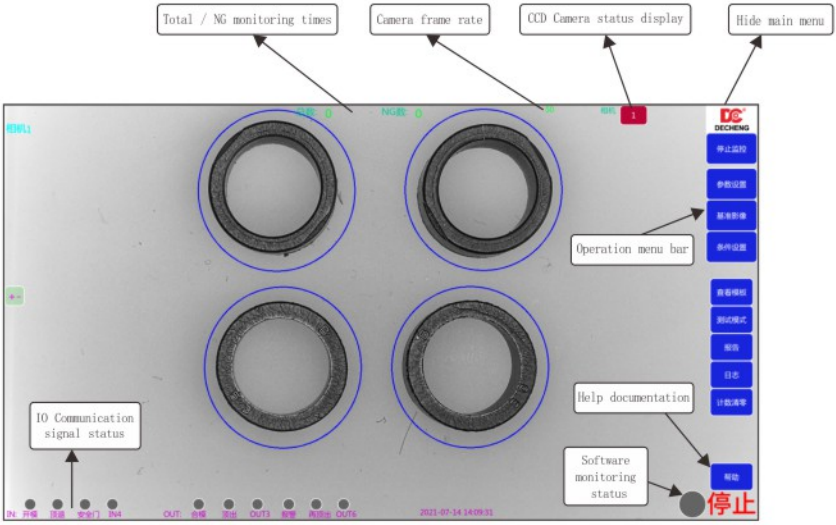
3. Before power failure, please shut down the host according to the normal process and then cut off the power supply, otherwise the equipment parameters may be abnormal, resulting in failure to start normally.

Chapter III Operation method

3.1 Startup interface

Turn on the power switch, enter the startup interface, select the language type, and click the "enter" key to enter the main interface.

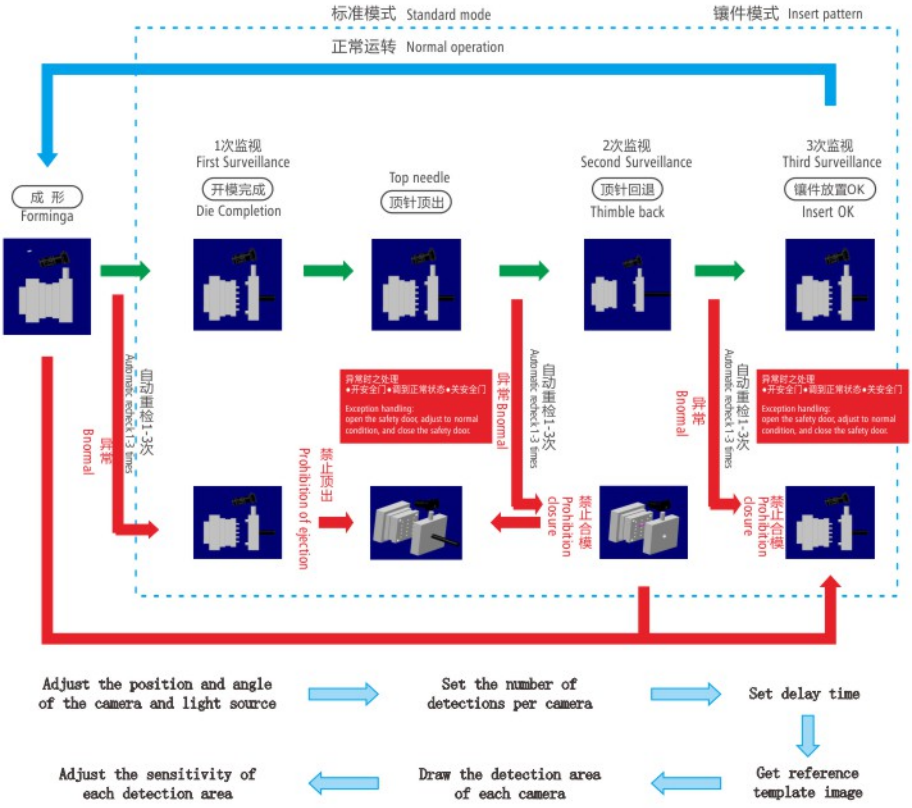
3.2 Software main interface



- Logo area: click the logo to hide the menu bar.
- Stop monitoring / monitoring: software start monitoring and stop monitoring switch.
- Parameter setting: mainly including detection area setting, sensitivity, delay time and other functions.
- Reference image: collect the correct image as the template image.
- Condition setting: it mainly includes camera setting, detection times, signal setting and other advanced functions. For details, see the overview of condition setting functions.
- Common operations: including view template, test mode, report, log and count clearing functions.

3.3 Operation process

Monitor flowchart



1) Adjust the position and angle of the camera and light source

First lock the camera and light source on the magnetic base, then fix them at the appropriate position of the injection molding machine, then fine tune the position or angle of the camera and light source, present the position to be detected within the imaging field of view of the camera, and fine tune the aperture and focal length of the lens to ensure that the picture in the monitor is clearly visible.

2) Set the number of detections per camera

Under normal circumstances, the monitor detects twice. The first time is to detect the finished product after mold opening; Conduct the second inspection before mold closing to detect whether the mold cavity is abnormal; The first finished product inspection can be enabled or disabled according to the actual demand. The system is enabled by default. If you don't need to enable it, you can cancel it by setting the switch.

Set detection times. Specific operations: Click **"condition setting"** in the menu bar to enter the setting interface, and remove the tick in front of **"first inspection switch"** under the corresponding camera list. (as shown in the right figure)

The system can detect twice by default. If it needs to detect three times under special circumstances, it needs to enter the **"advanced setting"** setting.

3) Set delay time

The delay time is adjusted according to the trigger photographing signal, which is generally based on the mold opening completion signal.

The first detection is the detection when the mold is opened in place (i.e. finished product detection). If the collected image is blurred, it may be the vibration after mold opening, resulting in the unclear collected image. The **"first inspection delay time"** can be set to a delay of about 0.1s to ensure that the mold is relatively stable and then collect the image.

The secondary detection is the detection before mold closing (i.e. mold cavity detection). The delay time depends on the signal triggered by the secondary inspection and photography, and then it is adjusted according to the actual production cycle.

To set the delay time: Click **"parameter setting"** in the menu bar to enter the submenu, and then click **"delay time"** to enter the setting interface (as shown below)

4) Get reference template image

- **Note: in case of any of the following situations, click "reference image" again to re acquire the template.**
- **Adjusted the position or angle of the camera and light source.**
- **The wrong template image was collected.**
- **The production mould was replaced on site.**
- **The relevant parameters of the camera have been adjusted in "advanced settings", resulting in imaging changes.**

How to obtain the reference image template: First click the **"reference image"** in the menu bar to enter the sampling interface. The prompt **"waiting for in1 signal"** will be displayed at the top, and the prompt **"no signal required"** will be displayed on the right. If the signal is normally waiting for, it will be ignored (required is automatically selected by default). If the trigger signal needs to be simulated manually, click "no need"; When the system receives the mold opening in place signal, and after the first inspection and second inspection delay, the system will collect and save the image, click **"Determine"** to complete the sampling, and the system will directly jump to the monitoring state.

Note: when acquiring the reference image, the "delay time" shall be extended or shortened according to the actual situation, which shall not be too long or too short.

- **Too long:** When the product is falling off or has fallen off after the mold is opened in place, it means that the first inspection delay is too long, which will lead to false alarm; When the ejector pin has returned and the manipulator has moved out of the monitoring area, and the delay time has not ended, it means that the second inspection delay is too long, which will affect the whole cycle time of the production process.
- **Too short:** When the first inspection and photographing are carried out after the mold is opened in place, the mold is still vibrating and the photographing image is blurred, it means that the first inspection delay is too short, and the first inspection is too short, which will lead to false alarm; When the thimble or manipulator is still operating and the delay time has ended, it means that the delay time of the second inspection is too short. If the delay time of the second inspection is too short, it will lead to false alarm or failure to detect abnormalities.

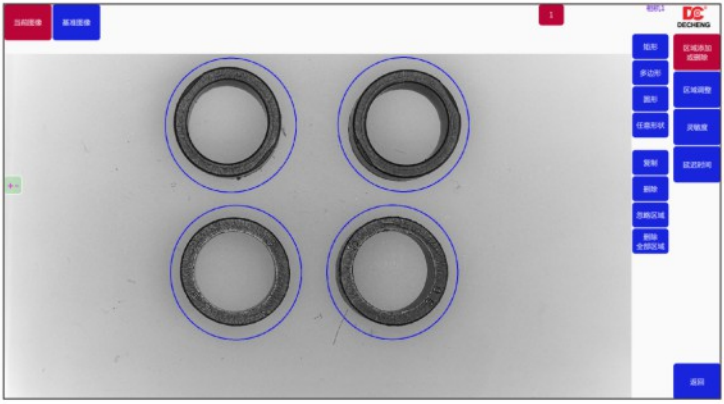
During the sampling process, after the delay time is over and the image acquisition is completed, we can click **"View reference image"** in the right menu bar to confirm whether the collected template is correct. If the template image is incorrect due to too long or too short delay time, we can click **"delay time"** to reset, and then click **"login again"** to re collect the template. If the template image is normal, Click **"OK"** to directly enter the monitoring status. (as shown in the right figure)

5) Draw the detection area of each camera

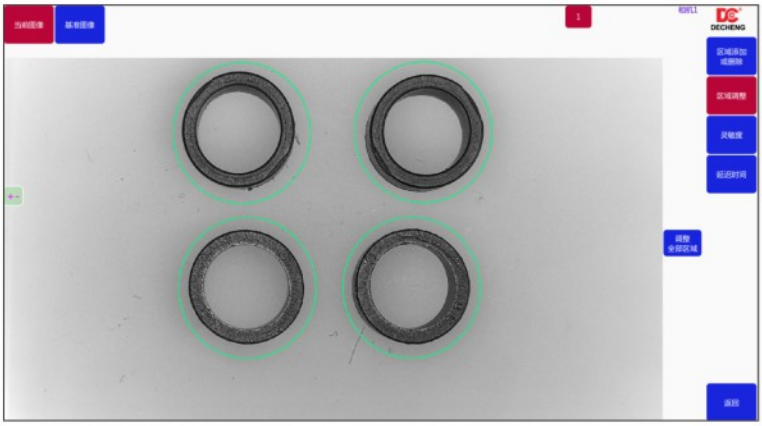
After the sampling is completed and the template is confirmed to be normal, the next step is to set the detection area of each camera, including **"area addition or deletion"** and **"area adjustment"**.

Specific operations for adding and deleting settings in the area: Click **"parameter setting"** in the menu bar to enter the parameter setting interface, select the corresponding **camera**, and click **"area add or delete"** to select the tool for drawing the detection area (as shown below). The current version can draw up to 100 areas.

- **Current image:** The current camera displays images in real time.
- **Reference image:** The template image collected by the current camera.
- **Rectangle:** After clicking, draw a rectangular area at the position to be detected.
- **Polygon:** After clicking, click respectively on the edge of the position to be detected, connect two points into a line, and the last point coincides with the starting point to complete the drawing and form an irregular figure.
- **Circular:** After clicking, draw a circular area at the position to be detected.
- **Arbitrary shape:** After clicking, you can draw an area of any shape through gestures.
- **Copy / Paste:** After clicking, select the area to be copied, press and hold to make the copy effective, drag an area to another detection position, and release to finish the paste.
- **Delete:** After clicking the delete menu, select the area to be deleted and click. The area disappears to complete the deletion.



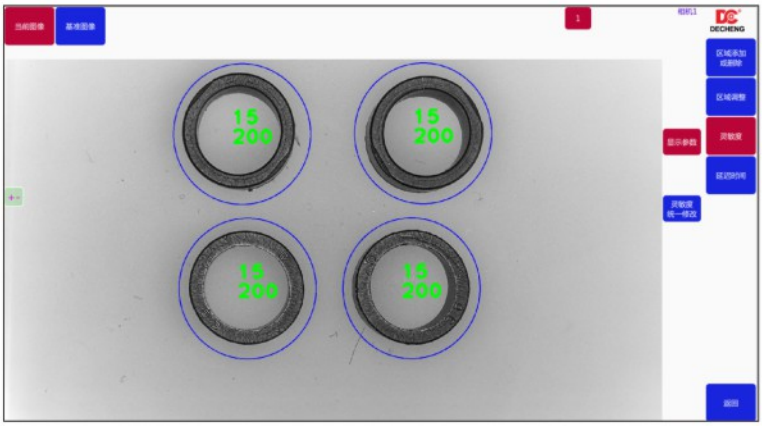
Specific operation of regional adjustment settings: Click **"parameter setting"** in the menu bar to enter the parameter setting interface, select the corresponding **camera**, click **"area adjustment"** to select the area to be adjusted, click Select, select one of the points or the whole graphics center, and adjust the area by dragging, or through the moving operation menu below. If you need to move the area as a whole, you can click "Adjust all areas" moves the adjustment together. (as shown below).



6) Sensitivity parameter setting

Sensitivity Including **"sensitivity"** and **"NG value"**, which is the standard to judge whether the system gives an alarm during detection.

Specific operation of sensitivity setting: Click **"parameter setting"** in the menu bar to enter the parameter setting interface, select the corresponding **camera**, click **"sensitivity"**, select the area to be set, and click Select to pop up the sensitivity setting menu. (as shown below)



Sensitivity (adjustment range 1-99): the pixel gray value comparison standard between the detection image and the reference image in the current region. The smaller the value, the higher the accuracy, and the larger the value, the lower the accuracy. The value depends on the color difference between the tested object (such as product, thimble, insert, etc.) and the mold. The larger the color difference is, the greater the sensitivity can be set. The smaller the color difference is, the smaller the sensitivity needs to be set. The parameter setting range is no more than 35.

NG value（Adjustment range **10-100000**）：When comparing with the reference template, the area of abnormal pixels and the detection result value is greater than the set value, it indicates that the detection is abnormal, the monitor alarms, and the mold closing signal of the injection molding machine will be cut off, waiting for the on-site technicians to deal with the abnormality; If the detection result value is less than the set value, it indicates that the detection is normal, and the monitor outputs the clamping signal. The value depends on the difference between the detected object in the detection area and the whole die surface.

- **Display parameters：** Displays sensitivity parameters for all areas.
- **Unified modification of sensitivity：** The sensitivity parameters of all areas are modified uniformly.

3.4 Common operation

1) View template

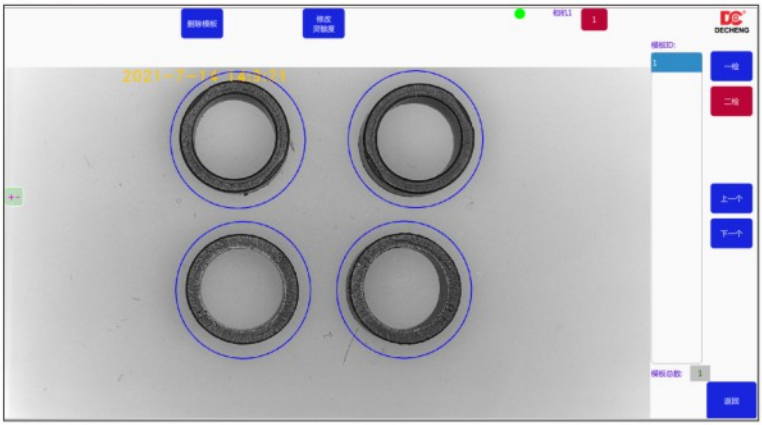
Click **"View template"** to view all the added reference templates of each camera to confirm whether there are error templates.

View the specific operation of the template： Click **"view template"** in the menu bar, select the corresponding camera, and then select **"primary inspection"** or **"secondary inspection"** on the right to view the template images of **primary inspection** and **secondary inspection** respectively. (as shown below)

TemplateID： You can manually select the added template to view.

Total number of templates： The total number of templates added to the current detection.

Delete template： In the template ID menu, select a template and click **"Delete template"** to delete the corresponding template.



2) Test mode

Test mode You can manually click the **"first inspection"** or **"second inspection"** menu to compare the real-time image with the template image. If there is any difference, the red alarm point will be displayed and the alarm NG value will be displayed.

Test mode Generally, for some inconspicuous die surface abnormalities, the sensitivity does not know how to set appropriate parameters. We can manually set the abnormality on the die surface, then simulate the trigger, observe the red alarm point of the real-time image, adjust the sensitivity or ng value appropriately according to the red alarm point information, and then click the trigger to confirm the sensitivity parameters.

Specific operation of test mode： Click **"test mode"** in the menu bar, first select the corresponding **camera**, and then select **"first inspection"** or **"second inspection"** on the right (as shown in the figure below). The system will receive the analog signal, compare the real-time image with all template images in the template library, match a template with the smallest difference for comparison detection, and according to the difference point information displayed after comparison, Determine whether the sensitivity parameters are set correctly.

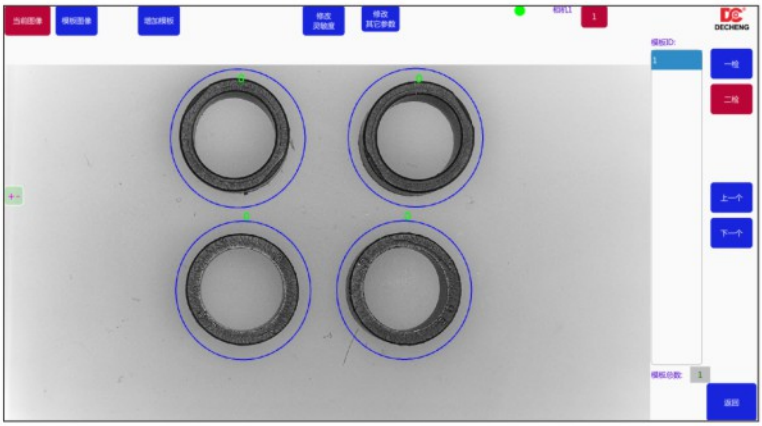
Current image： Switch to the current real-time display image.

Template image： Switch to the reference template image.

Add template： Adds the current live image as a template image.

Modify sensitivity： Pop up the sensitivity menu and modify the parameters.

Modify other parameters： Jump to the **"parameter setting"** interface.

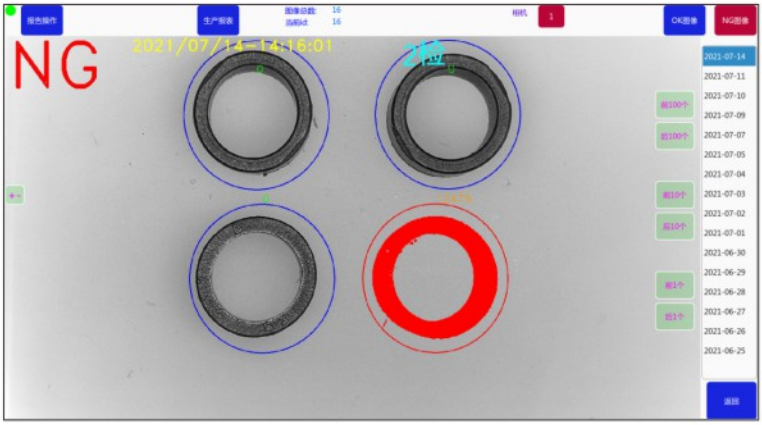


3) Report

You can view the saved "**OK image**" and "**NG image**" picture records, and select date query in the right menu bar. (as shown below)

OK image: The OK pictures of each molding cycle are saved for 3 days by default. If you need to adjust the saving days, you need to enter the "**condition setting**" to adjust the saving days.

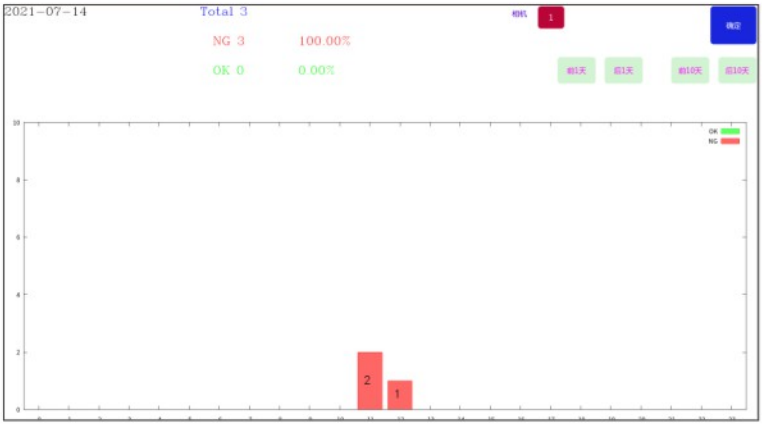
NG image: You can save about 10W pictures continuously. (default cannot be changed)



- **Report operation:** Contain"**Export Report**" and "**Empty report**". (as shown in the right figure)

Export Report: You can export all the currently saved **OK** and **NG images** to the USB flash disk.
Empty Report: Clear all currently saved **OK** and **NG image** reports.

- **Production report:** Record the production report generated every day. You can view the yield of the day and the number of OK and ng per hour to facilitate on-site control of equipment. You can select to view the report of **the previous day** or **the next day** through the menu on the right.



4) Diary

- The operation records of all time periods of the current system are recorded and saved by date.
- The saving function includes: start / stop monitoring, modify area parameters, modify sensitivity, add / delete templates, error messages and other related operations. (as shown below)

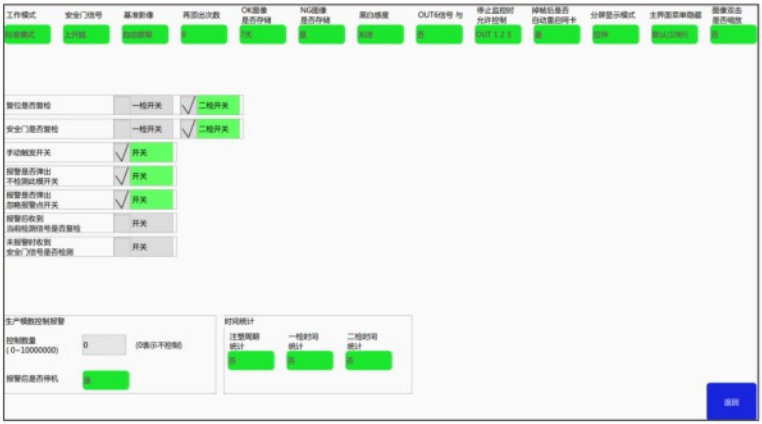
5) Count reset

- Every time the system completes the detection, the **total** number of detection on the top of the monitor main interface will be increased by 1. If the monitor alarms NG, The **NG number** will be increased by 1 accordingly, When it needs to be cleared or recalculated, all counts can be cleared manually. Long press the **"count clearing"** menu for two seconds.

3.5 Condition setting

- **Number of cameras:** Select the corresponding number according to the current actual number of cameras. If the number of cameras is different from the actual number, the system main interface will prompt that the number of cameras is different.
- **Signal mode:** Full automatic, semi-automatic and free modes can be selected.
- **When monitoring is stopped:** Whether the mode closing signal is continuously given when the monitor is in the stop monitoring state; In order to prevent die pressing caused by misoperation, it is recommended to select **"prohibit die clamping"** in the normal production process. If it is to change the die and adjust the machine, you can select **"allow die clamping"**.
- **Information display switch:** Whether the alarm value in the OK area and the sensitivity display parameter switch are displayed during detection.
- **Open mode signal (IN1) :** The first inspection detection signal is generally connected to the mold opening completion signal, which is "connected" by default and cannot be disconnected.
- **Thimble signal (IN2) :** If the second inspection detection signal is **"connected"**, the second inspection detection takes this signal as the starting point to run the second inspection delay time.
  If **"disconnected"**, it means that the second inspection delay time will be run immediately after the first inspection is completed.
- **IN4 Signal:** When only two tests are performed, the default is "reset signal". When the "three test switch" is turned on, it can be used as the three test signal switch.
- **Whether the first inspection and the second inspection share the area and parameters:** Under normal circumstances, the first inspection and the second inspection detect the same area, so the system selects **"shared"** by default. When the detection positions of the first inspection and the second inspection are inconsistent, we can select **"not shared"**, and the parameters and detection area are set separately.
- **Screensaver time:** The default is 5 minutes, that is, the monitor will automatically stop screen protection after 5 minutes. After stopping screen, it will not affect the normal operation of the monitor. After alarm, the monitor will automatically open the display screen. (setting 0 means closing the screensaver)
- **Camera 1: First inspection switch:** This function can be turned on when the equipment needs to detect whether the finished product is incomplete or stuck to the front mold. (when testing finished products, in principle, the testing accuracy on the mold is generally not high, and only relatively large defects can be detected.)
  Secondary inspection switch: Before closing the mold, check whether the ejector pin in the mold cavity is not in place and whether the insert is in place.

1) Advanced setting:

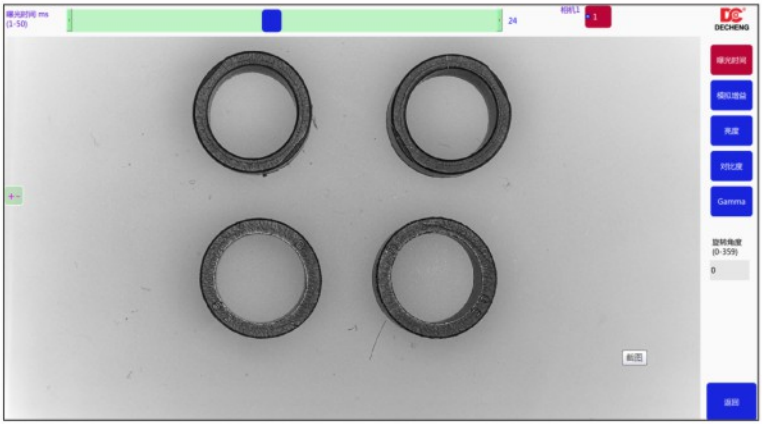


- **Working mode:** Standard mode / insert mode. By default, the standard mode can be tested twice; The insert mode can be tested three times.
- **Safety door signal:** The rising edge indicates that the moment when the received signal is pulled high is the start signal; The moment when the falling edge is pulled low is the start signal.
- **Reference image:** Automatic acquisition / manual acquisition, automatic acquisition means that when taking the reference image, the reference template is obtained by signal photographing; Manual acquisition means that the reference template is obtained by manually triggering photographing.
- **Re ejection times:** The ejector pin ejection times can be controlled by controlling the ejector pin ejection signal. (default 0 is not on)
- **OK Is the image stored:** Set the number of days to store pictures in the report.
- **NG Is the image stored:** Whether the ng picture in the report is stored.
- **Black and white sensitivity:** Whether the sensitivity in the sensitivity parameter is divided into black and white sensitivity.
- **OUT6 Signal and:** OUT6 Signal extension function.
- **Allow control when monitoring is stopped:** OUT 1 2 3 is controlled by default. You can choose to control OUT 1 only.
- **Whether reset is rechecked:** After the system alarm, click Reset to check whether the camera takes pictures again. (the second inspection is enabled by default)
- **Whether the safety door is rechecked:** After the system alarm, when the safety door is reset, whether the camera takes pictures again for detection. (the second inspection is enabled by default)
- **Manual trigger switch:** After opening, the menu "manual trigger" will appear in the menu bar of the main interface. Click this menu to manually trigger photographing.
- **Whether the alarm pops up does not detect this mode switch:** When this switch is turned on, this menu will pop up when the system gives an alarm.
- **Whether the alarm pops up and ignores the alarm point switch:** When this switch is turned on, this menu will pop up when the system gives an alarm.
- **Whether to recheck the current detection signal after alarm:** After this switch is turned on, the system will take another photo to detect when the system receives the mold opening in place signal in the alarm state.
- **Check whether the safety door signal is received when there is no alarm:** When this switch is turned on, it will detect every time the safety door signal is received.

2) Algorithm settings:

- **Detection acceleration:** When the whole detection cycle is used, it must be very short. In order to improve the detection speed, this function can be turned on. (Note: the imaging effect will be reduced when this function is turned on)
- **Whether the alarm is automatically rechecked:** When this switch is turned on, when the system detects that an alarm is triggered, the system will take pictures again in a very short time by default. (this function is generally used to prevent false positives caused by jitter during detection)
- **Maximum number of templates:** Sets the maximum number of base templates that can be added.
- **Is there a function switch:** Can open whether there is function. (whether the function is available only for special scenarios)
- **Is there any function other template ng proportion:** After the function is turned on, add a template to detect the reference of the algorithm. (no adjustment is required by default)
- **Dynamic mode drift level:** This function is mainly used for aging machine and hydraulic press. Due to the inaccurate opening stroke position of its own equipment, false alarm will occur during system detection; After this function is turned on, the system will conduct positioning before detection, and then conduct comparative detection, which will help to reduce false alarms caused by travel deviation. (the higher the level, the greater the allowable offset position, but it will slow down the detection speed accordingly)
- **De false alarm level:** This function is generally used to detect a single and simple scene. The edge contour pixels can be filtered out. The higher the level, the larger the filtered pixel area. (Note: this function is not enabled by default. If the detection accuracy requirements are high, it cannot be enabled, otherwise smaller defects may not be detected.)
- **Filter area block size:** The area of a single spot for detecting an effective alarm is composed of pixels. During detection, if the area of a single spot is greater than the set value, the system will recognize this area as an abnormal point. If it is less than the set value, it will be ignored and not calculated.
- **Default parameters:** The default value of sensitivity parameter can be set.

3) Camera settings



- **Time of exposure:** The larger the value, the higher the brightness of the image, the longer the dynamic response time, and the image effect will deteriorate accordingly.
- **Analog gain:** Adjust the brightness. The larger the value, the more noise.
- **Brightness:** The higher the value, the higher the brightness of the image.
- **Contrast ratio:** The difference between the brightest and darkest parts of the image. The higher the value, the greater the difference, and the more vivid and prominent the imaging display will be.
- **Sharpness:** The higher the value, the higher the detail contrast and the clearer the image, but the corresponding imaging will be distorted.
- **Gamma:** The auxiliary function of brightness and contrast. This value adjusts the brightness and contrast of the image.

4) Time setting

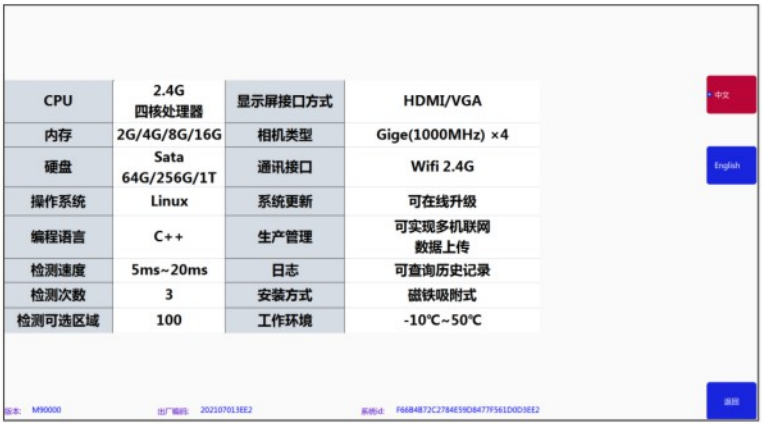
- **Signal filtering interval:** It is used to filter pulse noise and other signals. If the pulse time is less than this value, the pulse signal will be filtered, and the value range is 5-20 milliseconds.
- **Recording time:** The video start time starts from the mold opening in place signal, and the set time ends after running. (default 0 is not on)

- **Alarm output hold time:** After the system gives an alarm, the signal will be output by default until the next cycle mold opening completion signal arrives and ends. We can also set the output holding time here, and the signal will end automatically after the time.
- **Abnormal recheck delay time:** When "yes" is selected for "automatic recheck of alarm" in the "algorithm parameters" menu, the delay time needs to be set here.
- **Filtering time of mold opening in place:** The interval time between two in1 mold opening in place cannot be less than the set time, otherwise it will be regarded as an invalid signal, the value range is 0-1000ms, and 0 means to cancel filtering.
- **After the second inspection: ejector manipulator signal cancellation mode:** Delay cancellation / follow the mold opening in place signal cancellation. The ejector pin manipulator signal is cancelled immediately after the second inspection and detection is completed by default. In some special scenarios, when the manipulator is still acting after the second inspection and detection, you can choose to follow the mold opening in place signal cancellation, that is, the system detects that the mold opening in place in1 signal disappears before canceling the ejector pin and manipulator signals.

  Clamping signal output delay time: After the second inspection is completed, the mode closing signal is output after running the set time. By default, 0 is output immediately.

  Signal cancellation delay time of thimble manipulator: By default, 0 can be undone immediately, or it can be undone after running the set time.

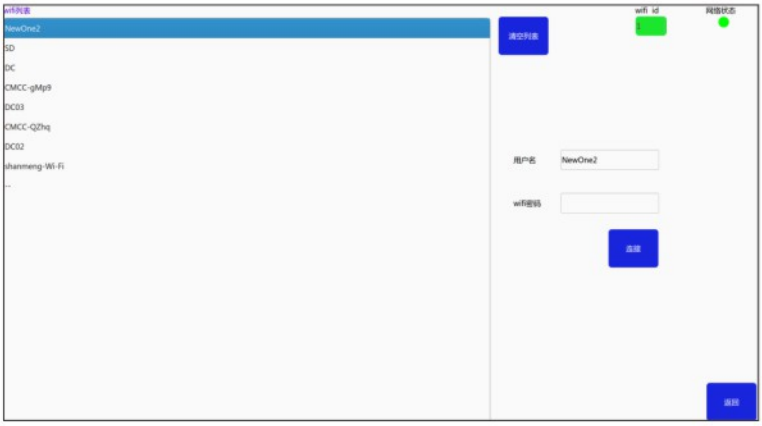
5) Native information



- **Edition:** The version number of the current system.
- **Factory code:** Factory information code.
- **System Id:** The unique factory code of the monitor is used to identify identity and authority when upgrading the system remotely.

6) Upgrade

- **Upgrade operation process:** First, you need to successfully connect the external network. Click **"connect"** to enter the sub interface (as shown in the figure below), find the connectable network in the WiFi list, enter the password and click **"connect"**. After the network connection is successful, the **"network status"** in the upper right corner will display a green light **(due to the site environment problems, we usually open the mobile phone hotspot and connect our own mobile phone hotspot to the network)**. Then return to the upgrade interface, click **"send ID"**, and then contact the manufacturer's technology side to upload the corresponding version. After confirming that the upload is completed, click "download". After that, click the menu "upgrade" to confirm that the upgrade is completed. (Note: the power supply cannot be interrupted during the upgrade process, otherwise system errors may occur)



- **USB flash disk upgrade:** Upgrade the system through USB flash disk, which is specially used by the manufacturer

7) Configuration

- When the molds used by the injection molding machine have the same size, height and detection requirements, and the camera and light source remain unchanged, we can save the current whole algorithm parameters in the configuration table, and directly export the corresponding parameters for the next mold change. (Note: if the camera or light source position changes, a false alarm will be issued when using the exported configuration parameters)

8) Password settings

- Set whether a password is required for the use of common operation functions. Click tick to indicate that it is required.

9) System settings：Manufacturer function, not set by default.

Alarm operation

● False alarm operation

Operation 1: Reset the sensitivity or ng value of the detection area

During system detection, there may be frequent false alarms due to too sensitive sensitivity setting and too many local bright spots. There may also be abnormalities, and the system does not alarm. In case of the above situations, it can be solved by modifying the sensitivity or ng value of the detection area.

1. No abnormality, false alarm: Observe the alarm screen, the current alarm point will flash uniformly and display as a red area. After confirming the false alarm area, click "sensitivity" to enter the setting interface, modify the sensitivity value of the alarm area, or increase the ng value. This process may require repeated adjustment several times to achieve the detection effect we need.

2. No alarm in case of abnormality: Observe the picture taken. If the system fails to correctly detect the abnormal alarm when the product does not fall off completely, the thimble does not return in place, the insert position is wrong, etc., we also need to readjust the parameters in the "sensitivity" menu. The smaller the sensitivity value, the higher the accuracy; The smaller the ng value, the higher the accuracy.

Operation2: Add as benchmark template

For some molds, the mold surface is complex or there is deviation in the mold opening position. For this part of the detection requirements, one template is not enough. At this time, we can add the false alarm images caused by these external factors to the template library by adding templates. Then, when the same situation occurs again during detection, the system will not give an alarm.

Operation process: When the system sends an alarm, this menu will pop up at the bottom of the main interface. Click **"add template"** to pop up a confirmation message. Click OK to add the picture to the template library.

Operation3: Do not detect this mode

When it is manually confirmed that this module can not be tested, click to end the detection cycle.

Note: this function is not enabled by default. You need to enter the "advanced settings" interface to open this function.

Operation4: Ignore alarm points

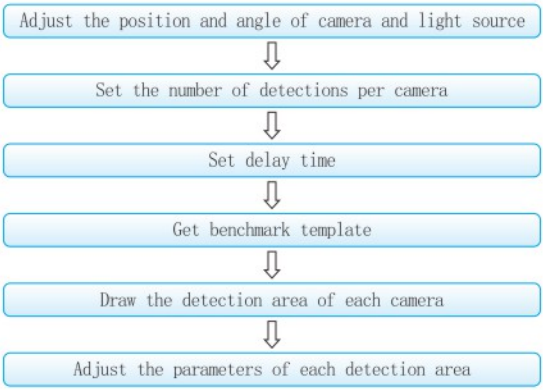
After adjusting the sensitivity parameters, false alarms will also appear. We observe the alarm screen. If these red alarm points are in positions that do not need to be detected, we can click ignore, and the position of the red alarm point will not be detected in the future **(this function is used with caution. Incorrect operation may lead to abnormal non alarm and die stamping)**

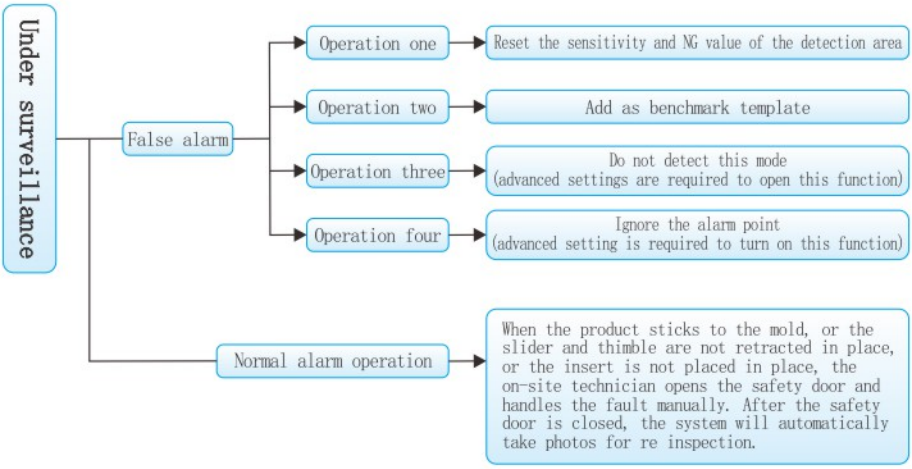
Note: this function is not enabled by default. You need to enter the "advanced settings" interface to open this function.

● Normal alarm operation

When we adjust all the parameters and the system starts normal monitoring, the system will judge as abnormal because the product does not fall off, the thimble does not return in place, the insert is not placed well, and then cut off the clamping signal. At this time, the operator can open the safety door and deal with the abnormality. After closing the safety door, the system will re detect and take pictures, Send the clamping signal when there is no abnormality.

Operation flow chart



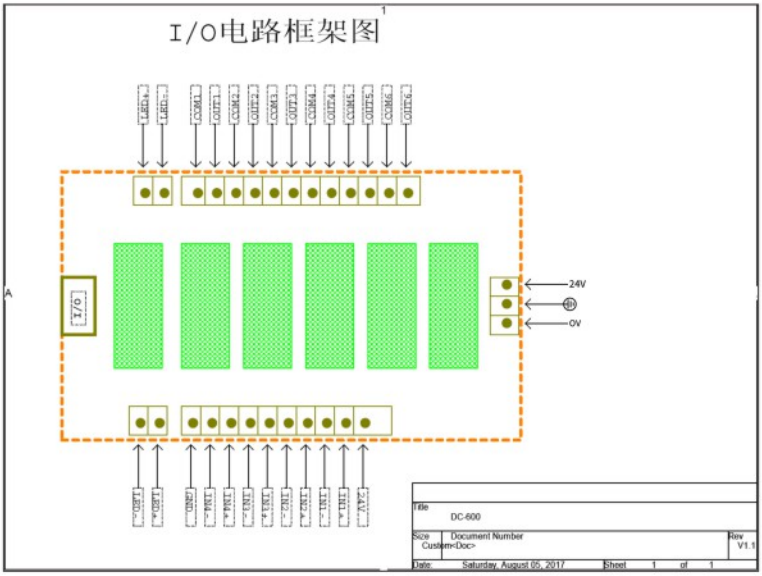


Chapter IV Signal connection description

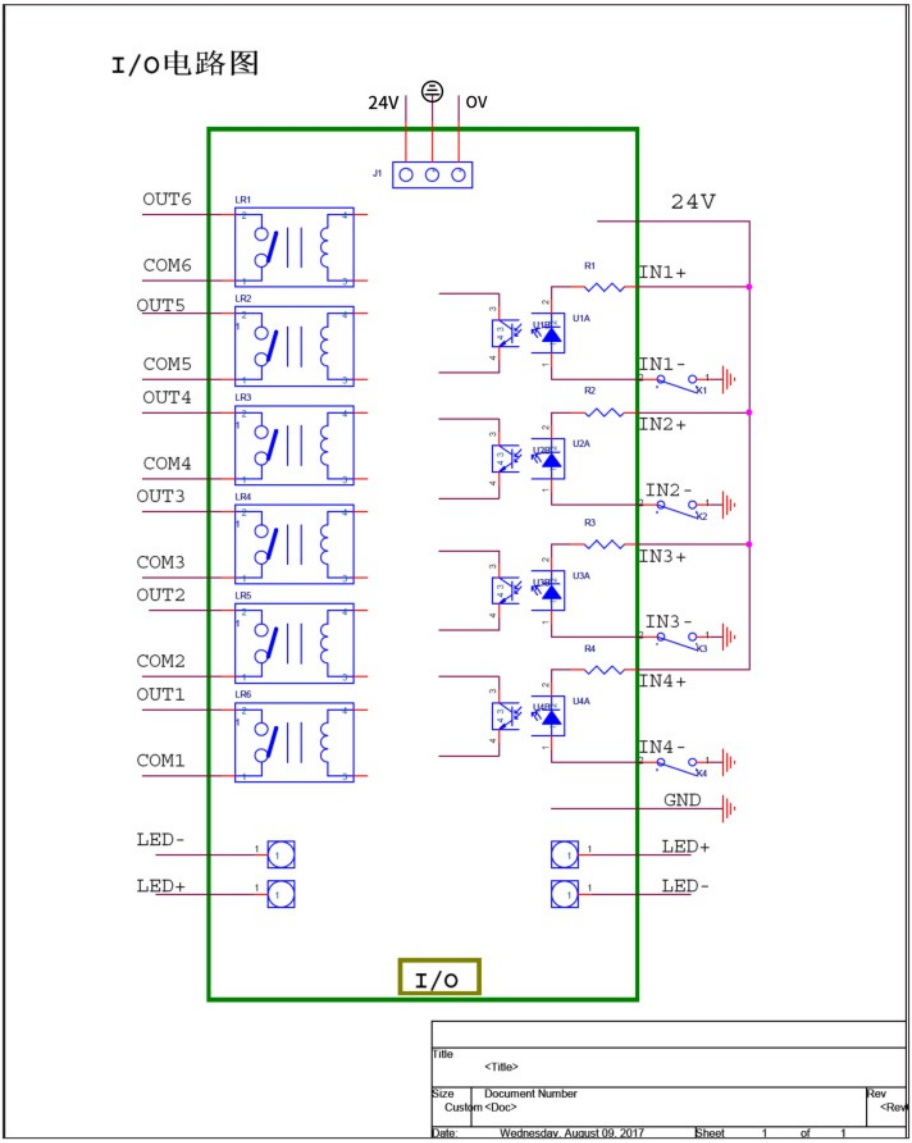
Signal interface description

Signal interface description			
Terminal port number	Port action principle	Terminal port number	Port action principle
24V	Voltage input positive	OUT1	Closed mode interlocking control output
0V	Voltage input negative stage	COM1	Output 1 common
LED+	Light source output voltage positive stage	OUT2	Ejection action output
LED-	Negative level of light source output voltage	COM2	Output 2 common
24V	Voltage output positive	OUT3	Manipulator interlock control output
IN1+	After mold opening	COM3	Output 3 common
IN1-	Common end after mold opening	OUT4	External fault alarm output
IN2+	End of top retreat	COM4	Output 4 common
IN2-	Push back end common end	OUT5	Output standby point
IN3+	emergency door	COM5	Output 5 common
IN3-	Common end of safety door	OUT6	Output standby point
IN4+	Triple check signal / reset signal	COM6	Output 6 common
IN4-	In4 common terminal		
GND	Voltage output negative		

I / O circuit frame diagram



I/O Circuit diagram



Chapter V Product specifications and accessories

Monitor specifications:

Monitor specifications	Operation mode	Touch type
	Overall dimension	350x218x36mm
	display	13.3 inches
	Display resolution	1920*1080
	Camera pixel	2 million
	Detection speed	0.01s
	supply voltage	DC24V
	power	20W
	Installation mode	Magnet adsorption type
	quality	2.2Kg
	working temperature	-10℃～50℃
	Working humidity	Relative humidity below 85%

Standard hardware configuration:
(taking single camera and single light source as an example)

Serial number	Fitting name	Quantity	Company
1	13.3-inch industrial integrated host	1	platform
2	Industrial camera	1	individual
3	Industrial lens	1	individual
4	Infrared light source	1	individual
5	Magnetic base	2	set
6	I / O mainboard + wiring	1	set
7	Camera line + light extension line	1	set
8	24V switching power supply + wiring	1	set
9	Short joint + hook	1	set
10	instructions	1	book

Chapter VI Points for attention

1. Other precautions

1) The variation range of power supply voltage is within 10%
2) Be sure to connect the ground wire
3) Do not place near the welding machine
4) Do not place in the strong magnetic field and near the device that can generate strong magnetic field
5) The ambient temperature is within - 10 ℃ ~ 50 ℃
6) Please confirm whether there are residual molded products on the mold surface before closing the mold
7) Please clean the through hole of the body once a month
8) In case of abnormality, for safety, please manually set the molding machine to stop and remove the residue on the die surface before operation.

2. Guarantee provisions

This product is qualified after our strict inspection
If the customer has a fault under normal use, it shall be handled according to the after-sales service regulations.

1) Guarantee period
The warranty period is within 18 months after installation
2) Items beyond warranty
Beyond the warranty period, the following situations are paid repair
a. In case of failure or damage due to improper use such as falling and impact during customer transportation.
b. In case of failure and damage due to natural disasters such as fire, earthquake and flood and abnormal electric voltage.
c. Connect machines other than those designated by our company to the product in case of failure.
d. In case of failure due to operation methods other than those specified in the operation manual and those specified by our company.
e. In case of failure due to use under special conditions and environment.
f. In case of failure due to incomplete engineering equipment or insufficient maintenance management.
3) Operation obligations of the unit
The machine is recorded in the operating instructions. Please follow the operating methods. In order to be used permanently, please follow the specified items.
4) Processing expenses after warranty period
The expenses for faults occurring after the warranty period and repairs beyond the warranty items shall be charged according to the material expenses, repair expenses, travel expenses, etc.

专业机器视觉解决方案制造商

Professional Machine Vision Solutions Manufacturers

东莞市德诚机电科技有限公司

DE CHENG MECHANICAL ELECTRICAL TECH.CO.LTD.

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