

Mold monitor user manual

Step 1 Test

1.1 Testing the mold

1. The system learns the standard image of the mold taken by the camera in advance and sets the standard image of the mold in the detection area (before die closing and the insert is in place).
2. The system triggers the image of the mold taken before the mold closing during the molding cycle, compares it with the above standard image of the mold and calculates the difference. If there is a difference, that is, the mold is stuck or the thimble is mislocated, the mold NG is checked, and the system blocks the mold closing signal and gives an alarm. If there is no difference, the mold check is OK.

1.2 Testing the product

1. The system learns the camera in advance and sets the standard product image of the detection area (after the mold is opened and not pushed out).
2. The system triggers the shooting of the product image after opening the mold during the molding cycle, compares it with the above product standard image and calculates the difference. If there is any difference, that is, the product has incomplete or sticky static mold and dynamic mold, etc., then the product NG, the system blocks the ejecting signal and gives an alarm. If there is no difference, the product is OK.

Step 2 Installation

2.1 Safety Matters

The installation process should pay attention to the safety of electricity, first find the corresponding wiring port, and then stop the injection molding machine power supply, it is best to stop the whole injection molding machine power supply line, and then start wiring. In order to be safe, the line connected with the injection molding machine should be as neat and simple as possible, and the high-voltage part should be avoided.

2.2 Installation of main machine

Choose a suitable position on the machine to fix the host, the position does not hinder the injection molding machine to replace the mold and loading and unloading operations, and can facilitate personnel to operate quickly when the monitor alarms.

2.3 Camera infrared light source installation

1. Select the appropriate position on the machine to fix the camera and infrared light source with the magnetic base, and be sure to install it firmly, otherwise the camera position will be offset due to vibration, resulting in false positives.
2. Adjust the focal length of the lens, it is best to just take the whole mold. When the focus is finished, you need to lock the focus.
3. The infrared light source tries to illuminate the whole mold evenly.
4. Mold as far as possible to avoid direct sun, if there is direct, you can add curtains, because the sun has infrared spectrum, may affect the monitor, resulting in false positives.

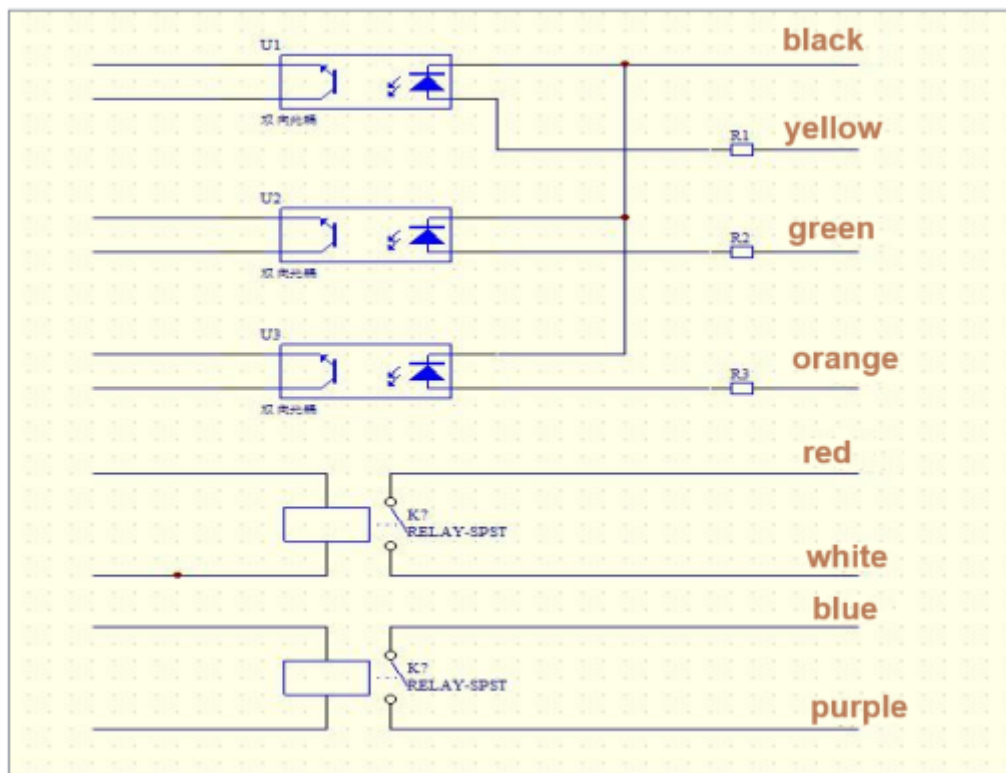
5. The vibration of the injection molding machine is too large may have an impact on the monitor.

When the injection molding machine is close to the mold, the speed is slow, which can reduce the vibration of the injection molding machine, so as to avoid the false positive of the mold monitor.

2.4 Monitor internal schematic diagram

The circuits of the injection molding machine and the monitor are completely isolated by

Bidirectional optocouplers and relays.



2.5 Control wire connection

The control wire connection is very simple, as long as you know the "open mold" signal, "take out complete" signal, "ejection" signal, "ejection" signal and the common end of the injection molding machine.

Cable	Function	Injection molding machine input and output terminals
Black	Common terminal H24V	PNP connects negative, NPN connects positive.
Yellow	Ejection signal	Connect ejection signal, also could connect die sinking signal.
Green	Die sinking signal	Connect die sinking signal.
Red	Allowed closing-	Allow the closing relay (normally closed) to disconnect the two wires when detecting the mold NG and connect them in series to the "take out complete" signal.
White	Allowed closing+	
Blue	Allowed thimble (optional connection)	Allow the closing relay (normally closed) to disconnect the two wires when detecting the mold NG and connect them in series to the "ejection" signal.
Purple	Allowed thimble (optional connection)	
Orange	Monitor signal (optional connection)	This signal can be set on the software. When this signal is enabled on the software, if the voltage of this signal line and the common terminal is less than 12V, the monitor will stop working, that is, the circuit before the injection molding machine default is restored. When this signal is enabled, if the monitor needs to work, there must be a 24V voltage difference with the common end.

Brown	Monitor 12V power power supply (optional connection)	Monitor 12V power supply.
Gray	Monitor ground electrode (optional connection)	Monitor ground electrode.

2.6 Signal principle

2.6.1 Detecting the mold

There is a bidirectional optocoupler between black and yellow, as long as there is a voltage difference of more than 12V and less than 36V at both ends, the optocoupler is on, notifying the monitor to receive the ejection signal, when the first ejection signal falling edge arrives (if multiple ejection, start timing from the completion of the first ejection), the monitor starts timing (the time needs to be set reasonably according to the injection molding machine, Otherwise, the shot is not the mold picture before the closing), when the time arrives to take a picture, that is, before the closing of the mold to take a picture, if the mold inspection scene NG, then break the closing signal (the yellow line can also take the opening of the mold signal, but the timing from the end of the opening of the mold).

2.6.2 Testing the product

There is a two-way optocoupler between black and green, as long as there is a voltage difference of more than 12V and less than 36V at both ends, the optocoupler is switched on, notifying the monitor to receive the open mode signal, when the falling edge of the open mode arrives, that is, the end of

the open mode, the monitor starts timing (this time is basically about 0), when the time reaches the photo, if the product scene NG, then disconnect the top out signal.

2.6.3 Monitoring signal (By default, this signal is not turned on)

1. Generally do not connect, if you need to connect, you must be familiar with the circuit of the injection molding machine, which can realize the function of automatically not protecting the safety door and closing the safety door protection.
2. If you are not familiar with the circuit of the injection molding machine, it is not recommended to directly take the input signal of the injection molding machine safety door, because the worst case may lead to the failure of the safety door, as can be known from the schematic diagram of 2.2 above, if the public line is disconnected without a solid connection, it may lead to a low level of "yellow" or "green" (assuming that the public end is high). String two 10K resistance and two bidirectional optocoupler, and "orange" safety door signal connected, resulting in safety door failure, may cause serious accidents, if you need to take the safety door signal, you must be clear about the safety door mechanism and familiar with the principle of the injection molding machine circuit, and debugging is strictly prohibited to stand in the mold or operate the mold by hand, after the safety door, Open mold can only take the "open mold in place signal", that is, the input end, and the above connection is a little different.

2.7 Haitian and other domestic hydraulic press the simplest connection

2.7.1 Signal search

1. Operate on the touch control panel of the injection molding machine, press "IO" and then "Output", there will be the corresponding terminal number of "open mold", "ejection" and "ejection" on it.
2. Press "Input", there will be the corresponding terminal number of "safety door", "Taking out complete", "mold locking internal lock", "mold locking Interlock" and so on.

2.7.2 Enable the manipulator function

The "Manipulator" terminal can be found in "Input" after the manipulator function is enabled on the injection molding machine. Control closing can be achieved by cutting off the input end of the "take out completed", "mold lock inside lock", "mold lock interlock" terminal signal, if the three manipulator signals, the injection molding machine must enable the manipulator function. If you need to deactivate the manipulator, turn off the power supply of the manipulator.

2.7.3 Connecting Cables

1. Connect the output H24V terminal in black.
2. Connect the "Yellow" and "green" to the "open die" terminal at the output end in parallel.
3. "Red" and "white" are connected to the input end "manipulator" terminal in series. The manipulator function must be enabled on the injection molding machine.
4. The electric injection molding machine "yellow" and "green" take the "open mold complete" signal, and control the photo by delay.