PASSED
MACHINERY EQUIPMENT

陶瓷数控检测设备

平整度，尺寸，精确测量

佛山市南海珀瓷特机电设备有限公司

PASSED `MACHINERY EQUIPMENT CO.LTD

CONTENTS

PART 1 Introduction

Introduction：

This manual provides information on the installation, commissioning, and operation of the PSD-308 Ceramic Tile Flatness and Dimension Measurement Integrated Equipment.

Please read this manual carefully to ensure the performance and safe use of the PSD series products.

Description of Equipment Model:：

PSD-308——6-side scanning point tile flatness, visual dimension measurement.

Please note:

● This series of products is a combination of high-precision optical and microelectronic products. Excessive dust will affect the measurement accuracy of the equipment, and even cause the equipment to not work properly. So please keep the equipment clean.

● Please install and use the equipment in strict accordance with the relevant points of this manual to ensure its proper function and measurement accuracy.

● The equipment is a high-precision instrument, please ensure that it is not collided with tiles when running on the production line, so as not to cause

damage to the equipment.

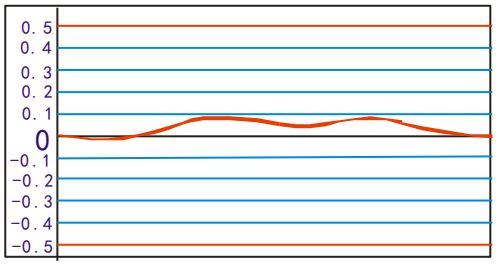
● The platform of PSD series ceramic tile measuring equipment is made of glass. Do not knock or strike it，which will make the platform break otherwise.

PSD-308 Part Name and Function

The PSD-308 measurement machine is equipped with a brand-new visual system and a high-power laser size detection system, which ensures stability and reliability of dimension measurement system by resisting vibrations and water adhesion interference.

The PSD-308 measurement equipment uses the principle of synchronous tracking to measure flatness，and the sensor is driven by servo motor, synchronized with the running speed of the transmission belt and tracks the relative fluctuation of four side lines and two diagonal lines of the tile. A true reflection of the bending deformation value of the tiles is achieved by high and low displacements relative to the zero point of the

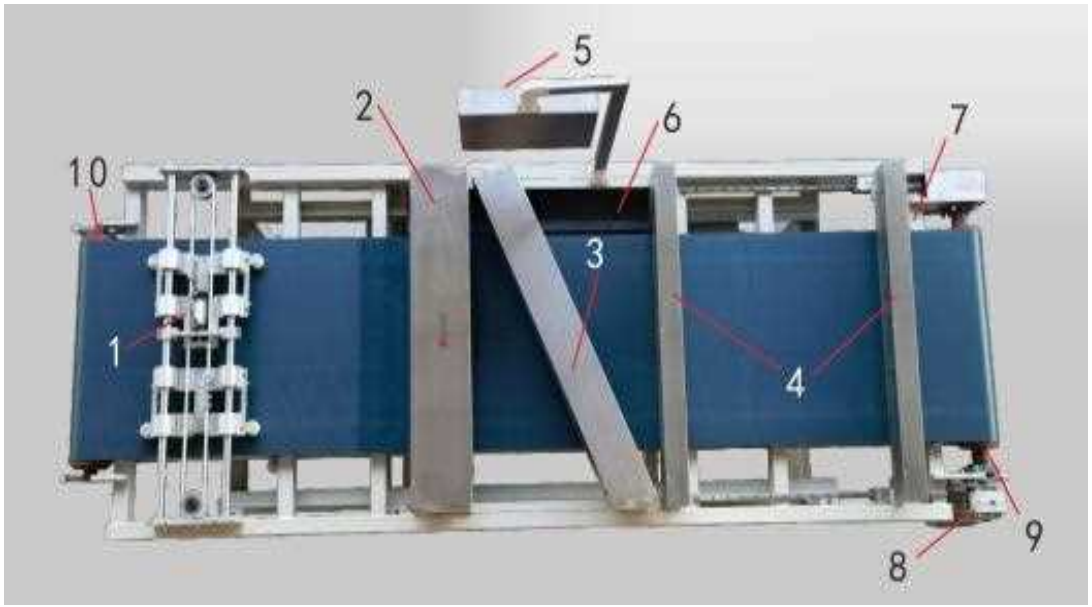
laser displacement sensor. It is suitable for measuring the flatness of tiles in any deformation condition.



In order to achieve the high efficiency of the production line to change specifications, PSD-308 adds a new one-key switching specification function, which can make the camera vision measurement system and flatness sensor measurement system one-key switch to the specification position required inspection，shorten the time of switching specifications in the traditional way and reduce the labor. Meanwhile, in order to facilitate the data tracking, the function of saving historical data is added on the operation interface.

PSD-308 Equipment Appearance：

PSD-308 Top View Exterior Diagram and Part Description No.



1. Centering Machine

2. BDEF Scanning System

3. AC Scanning System

4. Tile Dimension Measurement System

5. Man-machine Interactive Processing System

6. Power Distribution Cabinets

7. Defect Identification Component

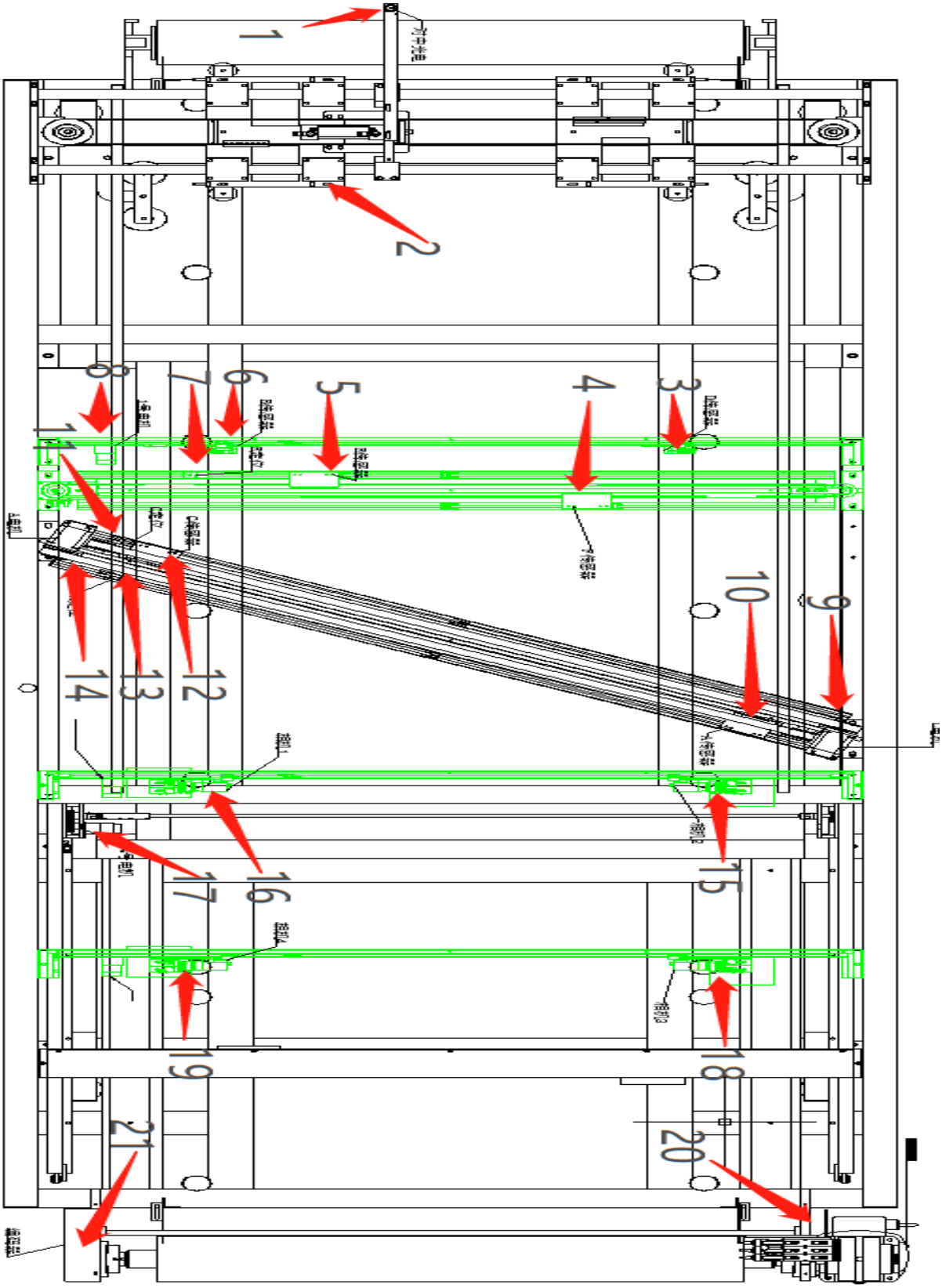
8. Drive Train Assemblies

9. Active Drive Shaft

10. Passive Drive Shaft

Component Name:

1	Centering Photoelectricity	**12**	C Sensor
2	Centering Structural Device	**13**	Position A
3	Sensor D	**14**	Motor A
4	Sensor F	**15**	Camera 2
5	Sensor E	**16**	Camera 1
6	Sensor B	**17**	Motor 4
7	Position E	**18**	Camera 3
8	Motor 1	**19**	Camera 4
9	Motor C	**20**	Drive Motor
10	Sensor A	**21**	Encoder
11	Position C		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PART 2 Installation & Connection

Installation site and requirements of PSD-308 equipment

1、A flat and dry site is required.

2、Equipment must be completely dry before installation and keep tiles dry as much as possible.

3、When the equipment is installed in the production line, the tile guiding device must be installed before the tiles going in. Otherwise the messy tiles will get stuck and cause serious damage to the equipment.

4、Equipment power supply is 380V AC with neutral and earth wire, which ensure stable 380V and 220V AC and good connection. The power cord cannot be less than 1.5 mm^2.

5、Make sure the connection pipe for compressed power gas source is 8mm，which ensures the air pressure is 0.6-0.8MP or above and the compressed gas is clean and dry. Otherwise, life of pneumatic components will be shortened.

6、The main components of the equipment are optical. Please try to avoid installation in the area of water mist and dust, so as not to affect the normal operation.

Please be sure to select a suitable site to install the equipment in strict accordance with the above requirements which need attention.

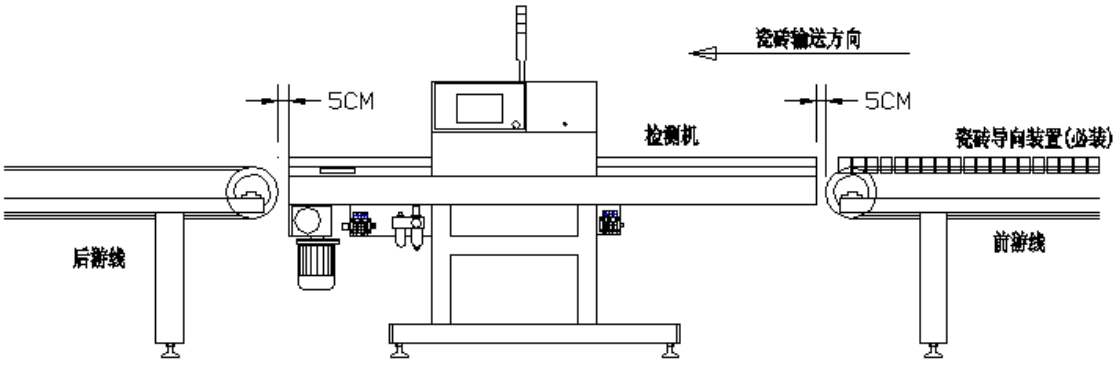
PSD-308 equipment installation and connection to the production line

After selecting a suitable installation site, please install the equipment according to the following requirements:

1.The equipment is installed in the finished product inspection section of the production line and is required to divide the corresponding length distance in the middle of the production line after polishing and grinding. Put the equipment on the empty space of the production line, then adjust the four spiral feet, so that the height of the equipment's conveyor belt coincides with that of the belt on the production line，and move the equipment to make sure that the tiles in the production line are aligned as closely as possible to the center of the conveyor belt, allowing them to flow smoothly between the equipment and the production line while minimizing vibration.

2. Keep the equipment 5cm away from the front and rear lines，because the equipment and the lines will get damage for the friction when they are too close，while tiles will be unstable when too far.

3. Install the tile guiding device on the line before the tiles go in. Debugging Key Point: Height of the front and back of the conveyor belt. Try to keep tiles right in the center of the conveyor belt when they enter. Adjust the four spiral feet to ensure the equipment is stable.



(Same requirements of the PSD-308 installation on production line)

4. After the placement of the equipment, please connect it to a three-phase power. Open the side cover, where there are power inlets, then connect R, S, T, N, G power cables according to the labeling. For electrical safety, cover them and organize power cords after finishing. On the side of the equipment there is a gas-oil-water filter regulator, which is the inlet to the compressed gas. Connect Φ8 air tube to the compressed air source of 0.6---0.8kg pressure, and adjust the regulator to make the air pressure supplied to the equipment stable at 0.4kg. Organize the protection of air tubes，then the installation of the equipment is done.

5.The air inlet is equipped with an 8mm tee connector, one of which is used for accessing the cleaning air gun, which is convenient for cleaning and dusting the equipment in normal times.

PART 3 PSD-308 Basic Operation

Basic Operation of PSD-308

We need to do a series of checks on the equipment when it is connected to the power supply for the first time, or when it is turned on again after a long period of inactivity. Firstly，check if the supply voltage is appropriate and if the air pressure is sufficient and stable. After checking these two conditions and confirming that they are normal, open the door of the electrical cabinet, which has three air switches and one socket. The switches are PLC power switch, servo motor switch, inverter switch, and computer switch.

Introduction to Functions of Equipment Control Switches and Buttons

The equipment has a total of six hardware switch buttons：

1. Air switch 1，to control PLC 24V power supply

2. Air switch 2，to control the servo motor power supply.

3. Air switch 3，to control the inverter 380V power supply.

4. Emergency switch, is the first switch located in the lower right corner of the large circuit board. Turn it on and the inverter runs at the internally set speed.

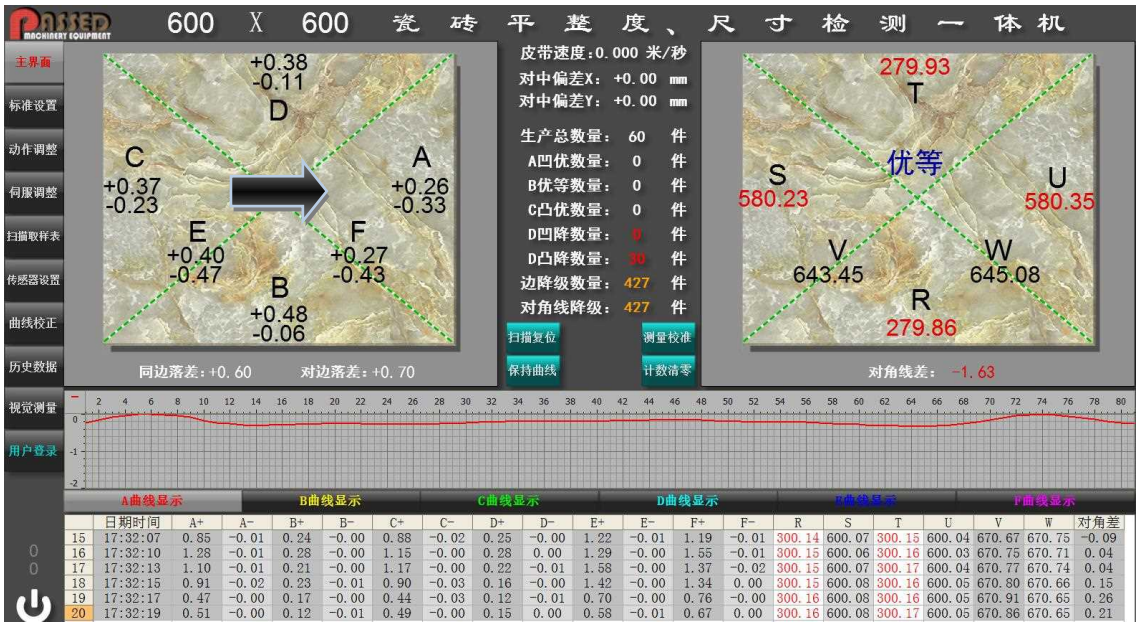
5. Lower computer unlocked，turn on the second switch located in the lower right corner of the large circuit board to release the lower computer's interlocked shutdown of the equipment.

6. Master computer unlocked，turn on the third switch located in the lower right corner of the large circuit board to release the equipment's interlocked shutdown of the master computer.

The use of Main Interface

We must know the software operation steps of the equipment before using it.

Main interface：



The main screen shows all the results of tile measurement.

Controlling equipment via touch panel requires authorization.

Factory Default Authorization.

(User name：EQ01　Password：12345678)

1、 Tile Flatness Status Display

The flatness of the four edge lines and two diagonal lines of the tile under measurement is displayed at the top left of the screen, with two numbers attached to each line; the upper one indicates the downward curvature value (turtleback) of the line, displayed as "+"； while the lower one indicates the upward curvature value (upturn) of the line, displayed as "-". If both two numbers on a line aren't “0”, it means that this line has both upward and downward curvature.

2、 Same-edge Difference

It is the sum of the maximum of the upward and downward curvature value of the four lines，which represents the difference value between the highest and lowest drop of the 4 edges of the same tile. According to the setting of the inspection standard, different colors indicate whether or not this value exceeds the set standard. (Red means exceeding the set standard, and the tile will be judged as a downgraded product).

3、 Opposite-line Difference

It is the sum of the maximum of the upward and downward curvature value of two diagonal lines，which represents the difference value between the highest and lowest point of the diagonal lines of one tile. According to the setting of the inspection standard, different colors indicate whether or not this value exceeds the set standard. (Red means exceeding

the set standard, and the tile will be judged as a downgraded product).

4、 Dimension of Tile

The values of 4 edge and two diagonal lines are displayed on the right of the main interface. According to the setting of the inspection standard, different colors indicate whether or not this value exceeds the set standard. (Red means exceeding the set standard, and the tile will be judged as a downgraded product).

5、 Diagonal Line Difference

The difference between “V” diagonal value and “W” diagonal value reflects the conditions of tiled parallelograms. The "+" and "-" symbols help the technician make reference adjustments to the grinding edge of the tiles. According to the setting of the inspection standard, different colors indicate whether or not this value exceeds the set standard. (Red means exceeding the set standard, and the tile will be judged as a downgraded product).

6、 Production Quantity

In the center of the screen is production quantity, which reflect the quality of the production.

7、 Inspection Standard

The standard of flatness and dimension can be set up after pressing this button. By setting up inspection standards, the equipment can perform better quality control accordingly. （Refer to the following parameter settings page）

8、 Action Adjustment

Through this button, we can enter the action validation page, where the action switch and relevant position parameter settings of the equipment can be adjusted. (Refer to the following action adjustment page).

9、 Servo Adjustment

The Motion Servo Adjustment page can be entered through this button, where you can adjust the motion switches of the 3 scanning motors and 4 camera motors of the inspection machine and the related position parameter settings (Refer to the following Servo Adjustment interface).

10、 Scanned Sampling Table

Enter the Scanned Sampling Table page through this button, where actual sampling value of 81 for each side of the whole inspection equipment. (Refer to the following Scanned Sampling Table interface).

11、 Sensor Settings

Enter Sensor Settings page through this button, where you can check the real-time value of the scanning sensors as well as calibration and compensation values of flatness and dimension of each line. (Refer to the following Sensor Settings interface).

12、 Curve Calibration

This button takes you to the Curve Correction page, where you can adjust the guide track parameters of the 6 side of the inspection machine. (Refer to the following Curve Calibration interface).

13、 Historical Data

Enter Historical Data page through this button，where you can check the measurement values of flatness and dimension of each tile inspected. (Refer to the following Historical Data interface).

14、 Visual Measurement

This button takes you to the Vision Measurement page, where the 4 camera parameters of dimensional measurements can be checked and adjusted. (Refer to the following Visual Measurement interface).

15、 Measurement Calibration

Turn on the quick calibration function of flatness and dimension through this button. (Refer to the following Quick Calibration interface).

16、 Counter Zeroing

Click this button to zero out all counted quantities and re-run the quantity count.

17、 Scanning Reset

Click this button to reset the 3 scanning motors.

18、 Curve Holding

Click this button to pause the refresh of the inspection data.

Keyboard Instructions

Shift----- Letter case conversion

BSP------Eliminate typos

ESC------Exit Keyboard

←------- Cursor forward

→------Cursor backward

↵ ------Confirm/OK

Standard Setting Interface

Flatness Paraments Notes：

1. Lower limit of line AC and BD - i.e., the standard maximum negative of -0.5 for quadrilateral concave excesses.

2. Upper limit of line AC and BD - i.e., the standard maximum positive of 0.5 for quadrilateral convex excesses.

3. Class A - i.e., concave superiority ranging from -0.5 to -0.3.

4. Class B - i.e., standard superiority ranging from -0.3 to 0.3.

5. Class C - i.e., convex superiority ranging from 0.3 to 0.5.

6. If there is no Class A and C requirements in the actual standard，then the range for Class A is -0.5 to -0.5, and the range for Class C is 0.5 to 0.5.

7. Lower limit of line EF - i.e., the maximum negative of -0.8 for diagonal concave excesses.

8. Upper limit of line EF - i.e., the maximum positive of 0.8 for diagonal concave excesses.

9.Same-side difference，maximum number of concave +convex on the same side 1.0.

10. Opposite-side difference - maximum number of concave + convex of two opposite lines 1.2.

11. Angle Concave Starting Point value - The criterion for marking special brick shapes is 0.2.

12. Shrug Angle Standard - the maximum positive number of shrug angle is 0.8.

13. Rake Angle Standard - the maximum negative of Rake Angle is - 0.8.

14. Angle Concave Standard - the maximum negative of Angle Concave is - 0.8.

Dimension Parameter Notes：

1. R/T - the low limit is small number 599.5, the upper limit is large number 600.5, the other two groups of numbers are also in the same principle.

2. Diagonal Difference-The upper limit of the difference of two diagonal lines is 1.0.

Markup Parameter Notes：

Different marking position output for the testing products can be made to meet different needs. Refer to the number annotation on screen and fill in the relevant figures.

Markup Switch Notes：

AC makeup，class D markup，dimension side overweight，diagonal overweight（Three highlighter pens for markup. Click the button “use” to red when you use the pen. Otherwise，click it to black.）

Specification Parameter Notes：

There are 8 groups of data can be separated to save in the Specification Parameter Table. Click the corresponding button to red，and enter the actual value of the relevant specifications in the input field. After filling in, click the button to red when you need the data next time.

Action Adjustment Interface

FWD (which means the conveyor belt runs forward. Click it to red to make the belt run backward)

Tile Alignment (click it to red when you need manual clamping &

centering)

Centering Position (center the tiles at a point where tiles hit the electronic eye and delay centering)

Centering Time (time of straightening tiles is the time when the air cylinder aligns and clamps tiles)

Simulate Handwork (click it to red to measure head size of tile)

Dimension Adjustment (when the R and T compensation value is adjusted much larger than normal, we need to adjust the position of the H and I sensor group and click "dimension adjustment" button to red. Click it to "black" when the adjustment is done.)

Stop Scan (stop the flatness-scanning motor)

Horn Blow Dry (click it to red to activate Horn Blow Dry solenoid valve.)

Get P-value (to re-acquire the encoder P-value, click it to "red" for 5 times consecutive normal running. Refresh the encoder P-value normally when the light turns black. P-value is about 0.0965.)

Marking Time (means the time we use the markup pens，which determines the length of markup line. The longer the time is， the longer the line is.)

Front Marking Position (controls the markup pen to draw line in front of the tile edge)

Back Marking Position (controls the markup pen to draw line behind the tile edge)

Scan Collecting Period (time of microcontroller collecting points)

Sampling Time (from when the laser sensor touches the tile surface to when it leaves)

Sampling Quantity (refers to the number of collecting from the time the laser sensor touches the tile surface to the time it leaves, which must not be less than 81. Otherwise， detection errors will occur.)

Capture Delay (adjustment of 4 cameras grip positions)

Light Delay (adjustment of 4 lasers shut-off time)

Lasers Normally On (4 lasers will stay on after clicking this button to red.)

Servo Adjustment Interface

Pan Forward - The infrared scanning point moves forward to reduce the start distance parameter.

Pan Backward - The infrared scanning point moves backward to increase

the start distance parameter.

Forward Swing - The infrared scanning position swings forward at an angle to increase the speed scale parameter.

Backward Swing - The infrared scanning point swings backward at an angle to reduce the speed scale parameter.

Servo Adjustment Process Notes：

FJOG (click FJOG to make the scan motor move forward)

RJOG (click RJOG to make the scan motor move backward)

Read Limit Coordinates (click FJOG or RJOG to make the scan motor move forward or backward. When it moves to the maximum position, tap "Read Limit Coordinates" to get the current coordinate position and then click "back to origin".)

Servo A Acceleration Time (scanning motor acceleration time, default 50)

Servo A Deceleration Time (scanning motor deceleration time, default 50)

Tile Sample Width (tile width after reading center coordinates and servo P value)

Read Center Coordinates and Servo P-value (align a tile and place it under the corresponding sensor to check whether the width of the tile is the same as that of the tile sample set. After checking，click "Read Center Coordinate and Servo P Value" switch and it will automatically obtain the relevant coordinate value and servo P value. Pay attention that the sensor

must scan the complete width of the tile sample.)

Click servo A, servo AC, servo E, corresponding to the adjustment of line A, C, EF respectively.

Servo Dimensional Adjustment Interface

Motor Servo Adjustment Process Notes:

FJOG (tap to make the motor move forward)

RJOG (tap to make the motor move backward)

Motor Current Pulse（servomotor counting pulses at high speed）

Read Limit Coordinates (click FJOG to make the motor move forward. When the sensor or the camera moves to the maximum position, tap “Read Limit Coordinates” to get current coordinate position and then click back

to origin.)

Get P-value First Step (click to obtain current motor pulse value, and the current distance can be measured and input to the distance before JOG at the same time.)

Distance Before JOG （measure the distance between the centers of the two cameras and input the value.）

Distance After JOG （click FJOG or RJOG，when the two cameras have moved a certain distance of more than 200mm，measure the distance after JOG and input the value. ）

Get P-value Second Step (Click it to obtain the correct pulse P value. Calibration complete.)

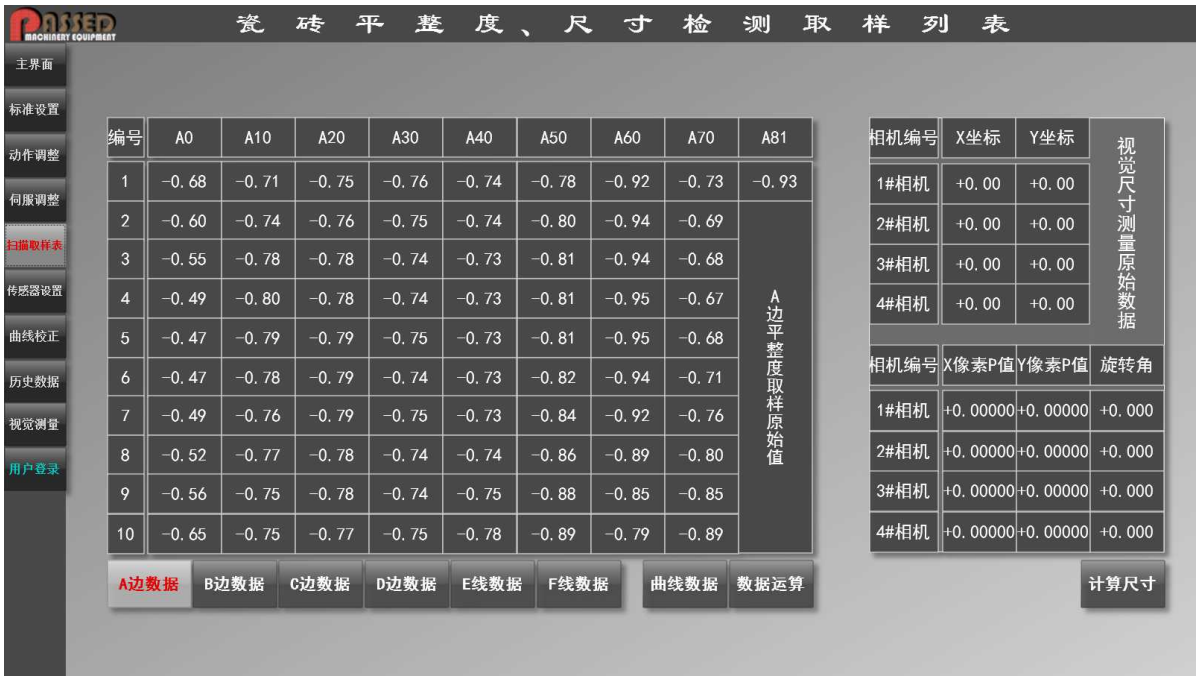
Origin Distance (distance from the center of the camera or sensor after tapping "Return to Origin")

Motor Auto (tap "Motor Auto" to red, and then tap "Specification Conversion" to red as well. The motor will first perform a return to the origin, and then move to the corresponding position after the return is completed. Attention: Motor Auto can execute multiple actions at the same time, but gives priority to the return signal. When all the returns to the origin are finished, it will execute the forward signal to go out. When the motor has moved to the desired position, the switch light will change from red to black).

Return to Origin (4 motors will return to original positions after a click.)

Click on the motor No. 1, No. 2, No. 3, No. 4, and adjust them accordingly.

Scanned Sampling Table Interface



Flatness Sampling Table Notes:

The sample data of 6 lines of the tile can be seen in the Scanned sampling table，and it is possible to determine the individual value variability based on the current 81 values as a whole. Therefore，the position that measurement goes wrong at can be recognized.

Data Arithmetic - clicking on this button will cause the PLC to perform an arithmetic operation and output the results.

Dimensional sampling table notes：

Visual Dimension Measurement Raw Data- check XY coordinate values of the 4 cameras to determine the cause of the failure of the camera analysis.

Camera Pixel P-value - XY pixel P-value is the accuracy

Sensor Settings Interface

Tile Flatness Sensor Zeroing Notes:

Real-time display (click “real-time display” to get the real-time data of each sensor.)

Sensor Zeroing (click it to zero the real-time data of each sensor)

Notes on the compensation values for the dimension measurements：

Dimension Compensation Value Zeroing (click it to zero the compensation value of each line.)

(This compensation value table is a summary of the compensation value of each line calibrated by the calibration button in the main interface.)

Tile Flatness Correction Values Notes：

(This calibration values table is a summary of the turtleback and upturn calibration values of each line by the calibration button in the main interface.)

Tile Flatness Compensation Values Notes：

(This table of compensation values is a summary of the turtleback and upturn compensation values of each line calibrated through the calibration buttons on the main interfaces.)

Flatness Corner Concave Correction Values Notes：

(This table of calibration values is a summary of the calibration values for the front and rear concave corners of each line by the calibration buttons on the main interface.)

Hook Angle & Shrug Angle Sampling Range Notes:

Front Hook Angle Shrug Angle Sampling Range (analyze the range of

front hook angle shrug angle sampling point, generally the range of the first 1-4 location points)

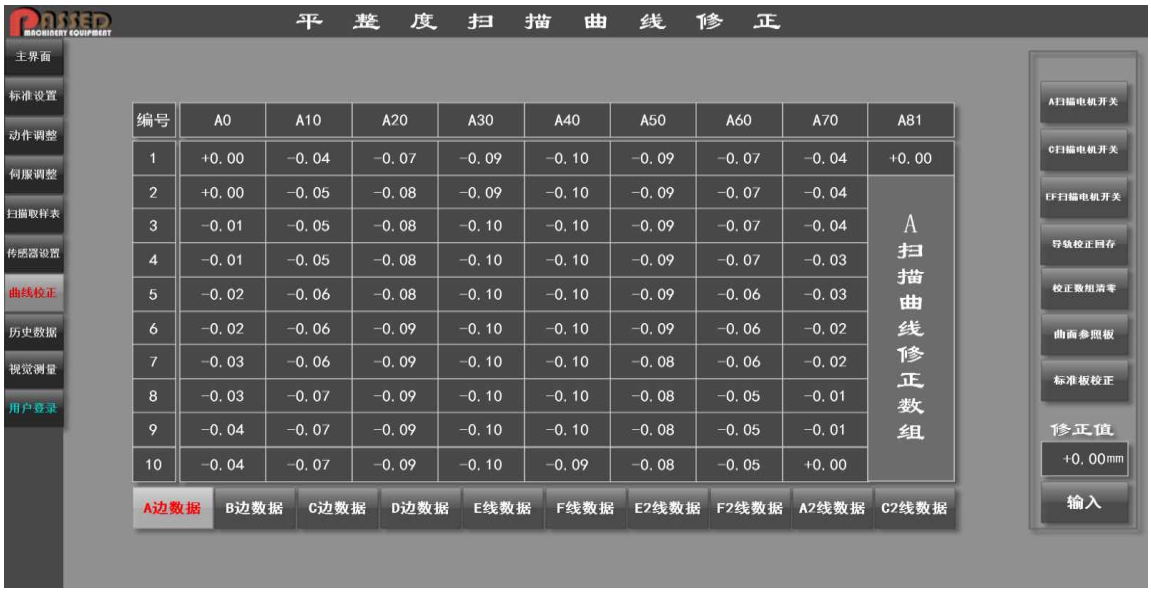
Rear Hook Angle Shrug Angle Sampling Range (analyze the range of rear hook angle and shrug angle sampling point, generally the range of the last 1-4 location points)

Base of Deformation Under Ruler Pressure Notes：

（Analyze Reduction of gravity from distortion ruler to center convex，which is generally about 0.2.）

(**In the summary table of flatness calibration ratio of each line，upturn = concave，turtleback = convex**. The higher the ratio of upturn and turtleback is，the larger the measurement value is. Conversely，the lower，the smaller.

Curve Correction Interface



Scanning Motor Switch A (place the calibration aluminum plate in the sensor A moving track, and then click on this switch. Sensor A will perform a scan on the aluminum plate. Then click “standard plate calibration” to calibrate the parameters of line A guideway.)

Scanning Motor Switch C (place the calibration aluminum plate in the sensor C moving track, and then click on this switch. Sensor C will perform a scan on the aluminum plate. Then click “Standard Plate Calibration” to calibrate the parameters of line C guideway.)

Scanning Motor Switch EF (place the calibration aluminum plate in the sensor EF moving track, and then click on this switch. Sensor EF will perform a scan on the aluminum plate. Then click “standard plate calibration” to calibrate the parameters of line EF guideway，Operate E2 and F2 on the same principle as above.)

Save Guideway Correction (when changing the guideway data individually, click this button to save the data to the data group after completing the change.)

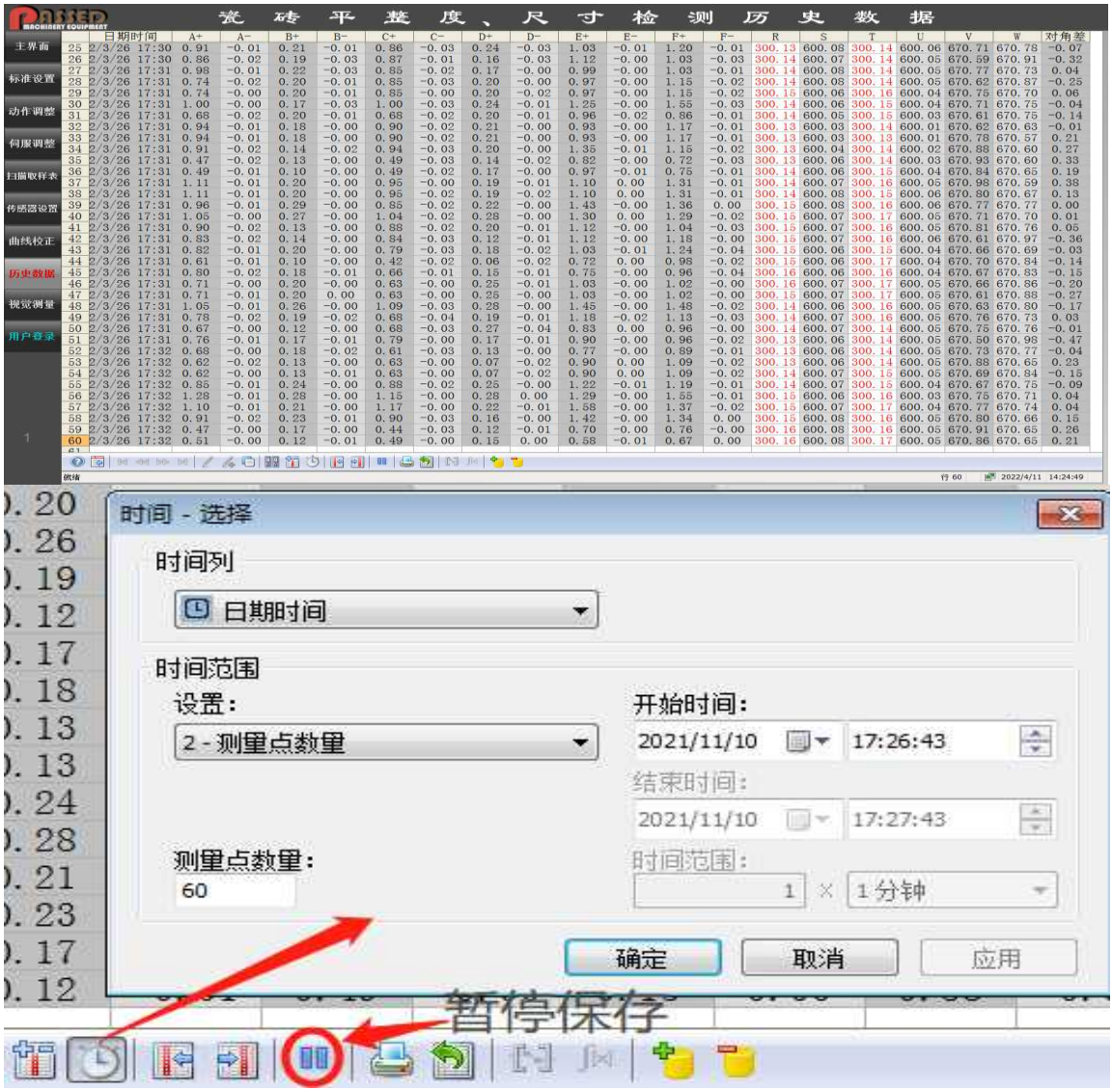
Calibration Array Zeroing (individually reset 81 guideway calibration values of each side to 0.0.)

Curve Reference Plate (calibrate the guideway parameters of the 6 lines according to this array.)

Standard Plate Calibration (the switch to obtain guideway parameters of each line)

Correction value (which means correction of the curve height for each side. Fill in the relevant value and press the input button to modify the height of the curve.)

Historical Data Interface



Historical data table notes:

Pause Save (click this button to pause the data refresh, and scroll to check the historical data)

Time Selection (click this button to enter the selection of time range and quantity range)

Calibration Interface

Flatness calibration Notes：

According to the prompts， input the machine display value and manual value respectively, click the "Calibration" button to modify the calibration value and compensation value, and click “Return” after completing the calibration.

When the input box is filled with unreasonable values, a green text prompt will pop up to indicate that it is out of the reasonable range.

Dimension calibration notes：

According to the prompts, enter the display value and manual value respectively. After the error value has been changed, click the "Correction" button to modify the calibration value and the compensation value, and click “Return” to exit after completing the calibration.

When the input box is filled with unreasonable values, a green text prompt will pop up to indicate that it is out of the reasonable range.

Visual Measurement Interface

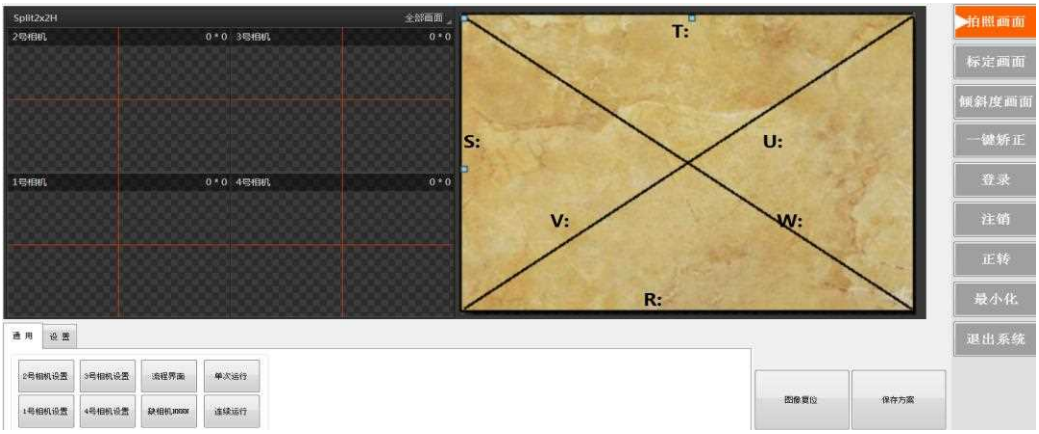
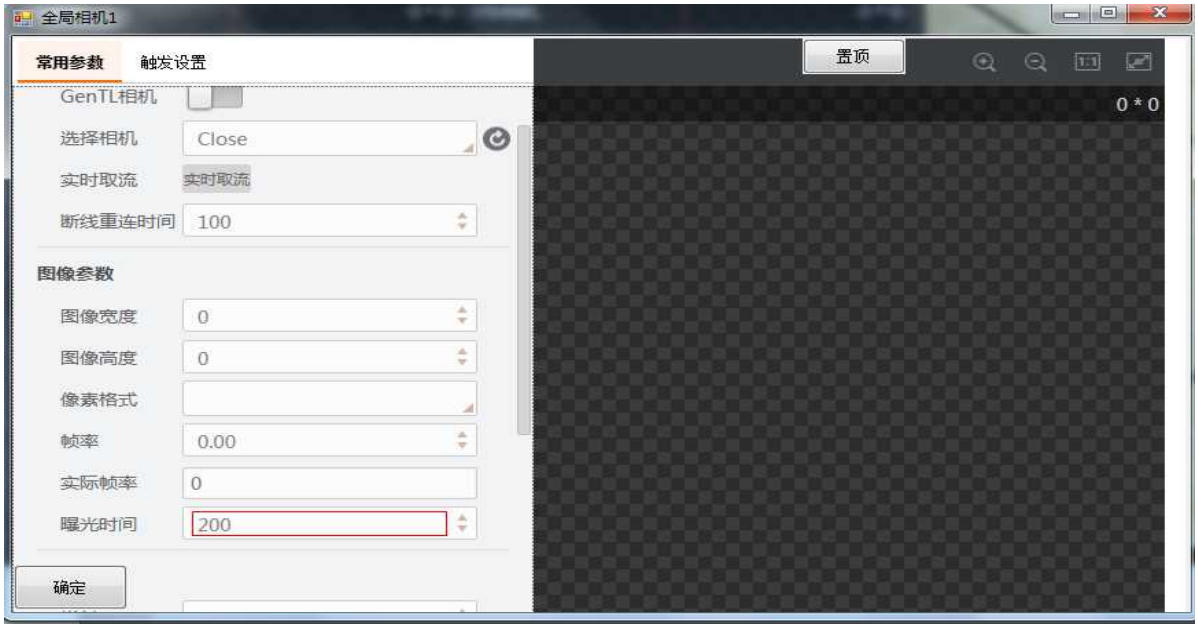


Photo taking screen notes：

① Camera Settings

Select Camera - Select the corresponding camera according to the screen, Camera 1 matches Screen 1，for example.

Exposure time - Try to keep the camera exposure time between 60 and 200, and no other parameters need to be adjusted.



②Process interface - parameter setting of each process

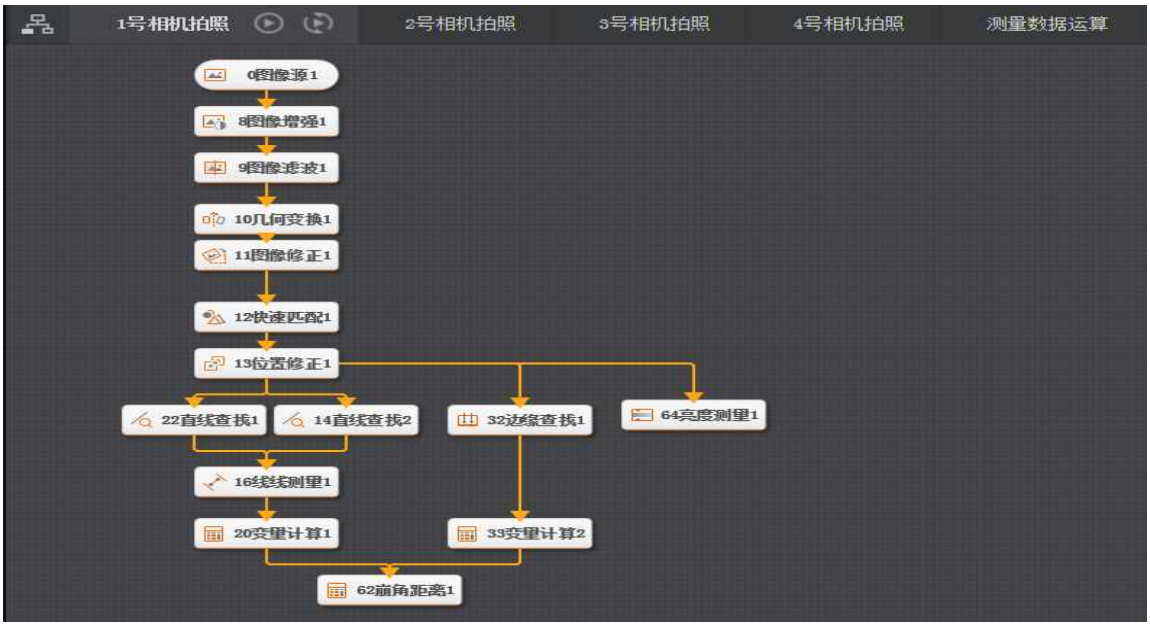


Image source

Image Enhancements

Geometric Transformation

Linear Search

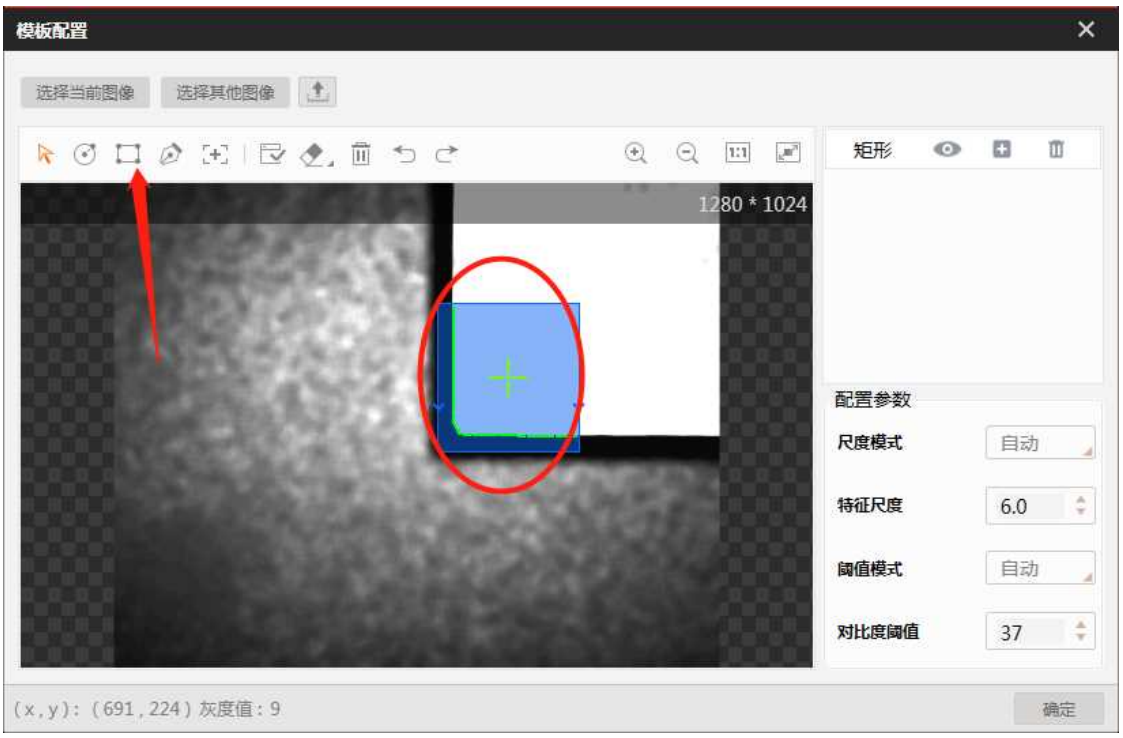
Edge Search

Brightness Measure

Line Measure

Quick Match

Template Configuration



External and Internal Trigger Switching:

Soft Trigger (trigger when camera switches to internal signal)

Hard Trigger (trigger when camera switches to external signal)

Single Run (camera is triggered to take a single shot)

Continuous Run (camera is triggered to take continuous capture)

Acquisition of Pixel Dimension and Inclination：

Get Pixel Dimension (transferring the pixel dimension of the calibration screen to the picture-taking screen)

Pixel Dimension Settings (saves the pixel dimension data of the picture-taking screen in the program)

Get Inclination (transfers the tilt of the tilt screen to the picture-taking screen)

Pixel Dimension Settings (saves the inclination data of the picture-taking screen in the program)

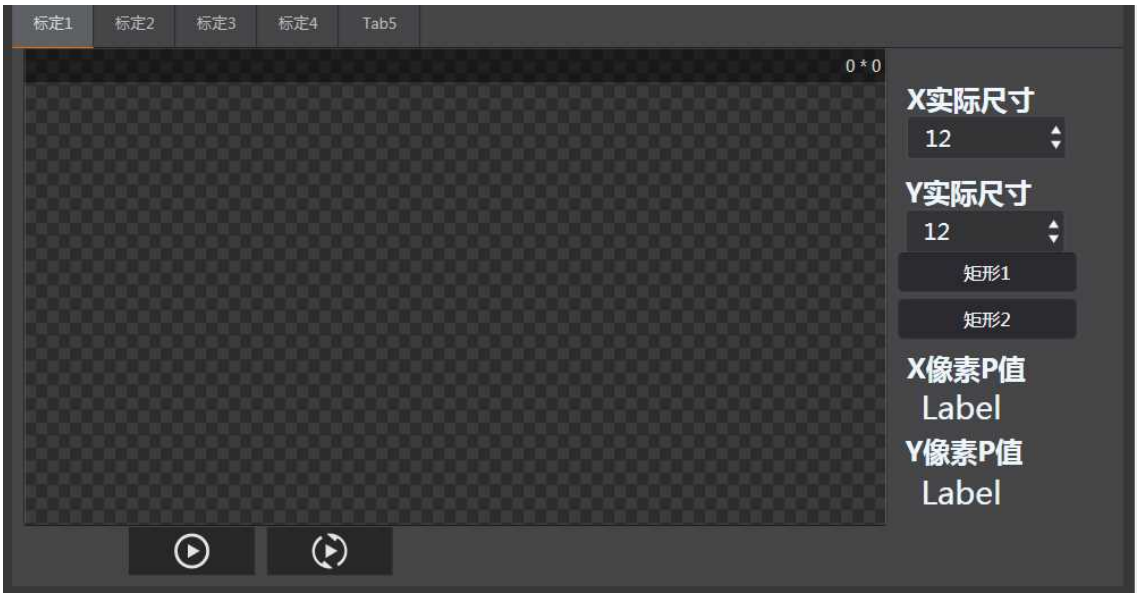
Markup Interface Notes：

①Get calibration parameter of Markup 1, 2, 3, 4

X, Y Actual Dimension (standard board is a black square with a length and width of 12)

X, Y Pixel P-value (place the standard board in the camera's photo screen, and click the Single or Continuous button, then the camera screen can automatically and stably search. When the frame of standard board turns green, pause the search and stop refreshing the P-value, and then go back to

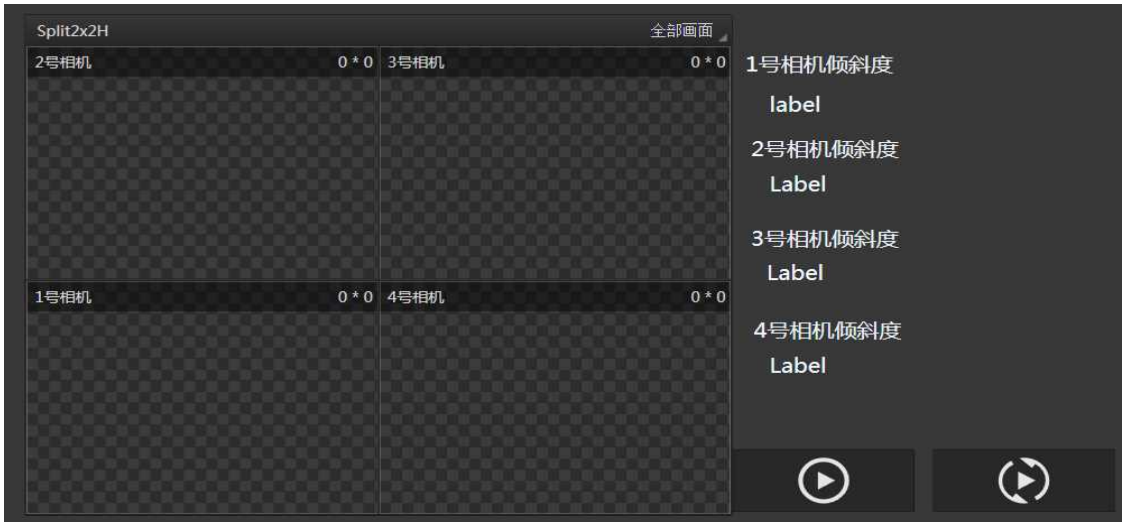
the photo screen and click "Get pixel P-value", and then click "Pixel Dimension Setting" to save the data).



Tilt Interface Notes：

① Get camera 1,2,3,4 tilt parameter

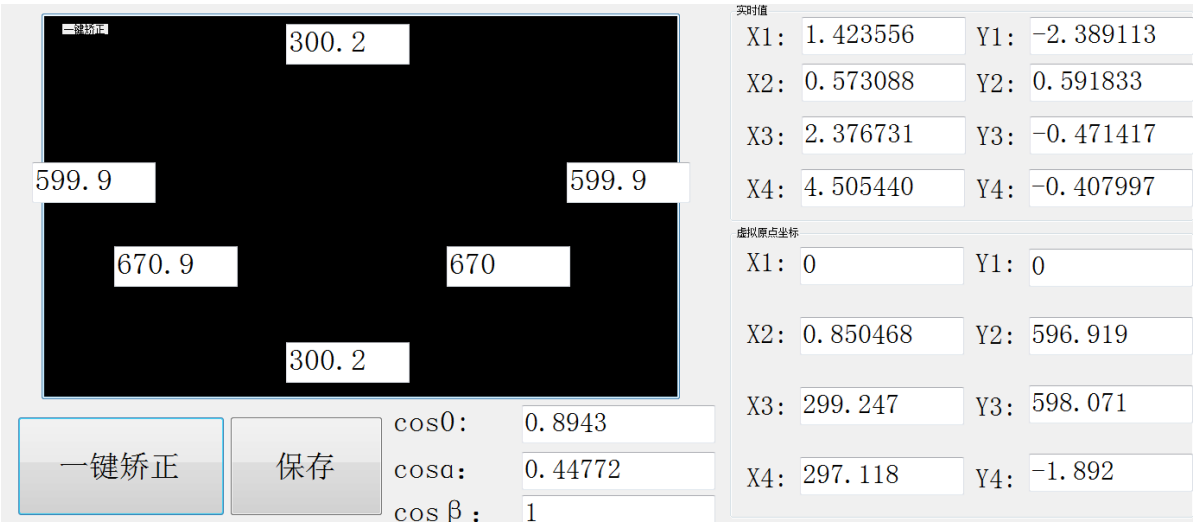
Center the tiles and place them in the camera's screen, click the “Single” or “Continuous Run” button, and the camera screen will search steadily and automatically. When the tile edges turn green, pause the search and stop refreshing the tilt, then go back to the camera screen and click "Get Tilt", then click "Tilt Settings" to save the data.



One-click Correction Interface Notes：

① One-click Correction Parameter Acquisition

Input 6 lines value of the tile that needs measuring the actual length. After aligning the tile, start the conveyor belt and four cameras to shoot the tile corner and analyze. Then click on the "One-click Correction". Get back to the photo-taking screen and tap "Save Plan" to save the data.



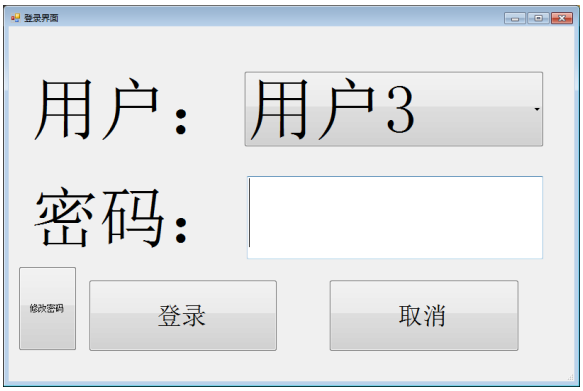
Notes for Login Page：

(Click “login”，choose the username and enter the password.)

Username1：Password1

Username2：Password2

Username3：Password3



Logout (Clear password)

Forward (Reverse drive belt operation)

Minimize (Minimize the system and Hide it)

Exit system (Turn measurement system off)

PART 4 Appendices

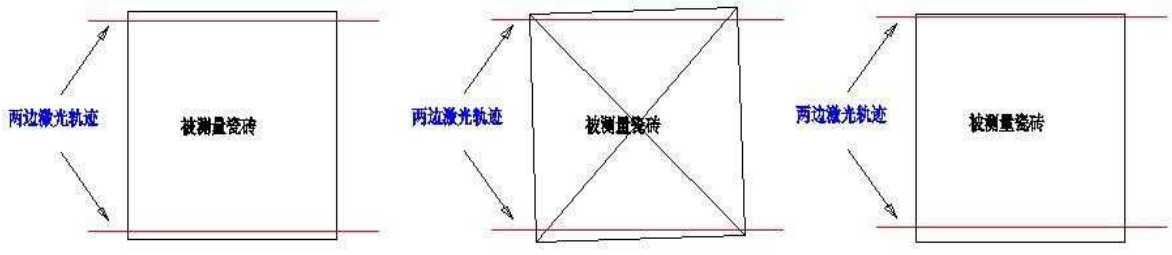
Daily equipment checks

1、Check whether the equipment and its four feet are stable, whether there is obvious vibration in the operation of the equipment. If there is vibration, then look for the source of vibration and get it solved to make the equipment runs smoothly again.

2、Observe whether the lights F, G, H, I, J in the black microcontroller box in the electric cabinet are flashing normally. If there is any abnormality, please check and clean up the corresponding sensors.

3、Observe whether the tiles enter the equipment in a smooth and orderly manner，located in the center. If not, they need to be adjusted appropriately. Check if the two lines traced by the two laser points outermost in motion are parallel to the edges of the tiles，and that

if the distances of both side remain the same, about 10 mm. If not，please adjust the centering wheel to ensure that each tile enters the inspection bin of the equipment in a well-centered condition.



运转正常　　运转异常　　运转异常

4、Clean the four sensors used to inspect the sides of the tiles (the four sensors in the detection compartment that shine from the side on the edge

of the tiles), because if they are too dusty, the sensor accuracy can be severely affected，which has a serious impact on the measurement accuracy of the equipment . For cleaning, absorb some water with a cotton swab, squeeze it by hand to dry slightly, and then repeat the gentle rubbing of the projecting and light-receiving windows of each sensor.

5、Check whether the tiles are dry or grind. Grind tiles get dusty easily. Tiles with water or obvious dust on their sides will lead to measurement errors.

6、While the oil-water separator of the equipment is draining, add the appropriate amount if the oil is insufficient. Please check carefully whether the belt is deviated, whether it is parallel to the platform glass, whether there is abnormal noise in each part and whether there is air leakage.

Once the above checks have been completed, calibrate the dimensions of each edge and diagonal line in sequence with calipers. This will allow the equipment to run at its optimum condition.

Monthly Maintenance of Equipment

1、Clean oil and dust，especially for the laser sensor. Cleaning tools can be used such as brush and air gun.

2、Re-lubricate the bearings of each action part.

3、Check the oil balance of the reducer and apply lubricant if insufficient.

4、Check individual parts for bearing wear and replace as appropriate.

PSD-308 Accessories List

Equipment size (unit: mm): 2960×1280×1200 (L×W×H)

PSD-308 Scanning Tile Detection Machine Accessories List

No.	Item	Model	Brand	Quantity
1	Rack Hardware Processing	PSD-308	Passed	1
2	Platform Glass	Customized	Passed	1
3	Conveyor Belt	Customized	Hao Tuo	1
4	Hardware Surface Treatment	Spraying, Plating	-----	1
5	Pneumatic Parts	Various	AirTAC	1

6	Motor Reducer	RK64	LORD	1
7	Drive Shaft Bearing	Various	----	1
8	PLC	AFPOHC32ET	Panasonic	1
9	System Motherboard	STM32PLC.PCB	Passed	1
10	Single chip Microcomputer Board	JS-STM.PCB	Passed	1
11	VFD	V20	Siemens	1
12	Touch Screen Monitor	17.3 inch	Passed	1
13	Laser Sensor	IL-S065	KEYENCE	6
14	Rotary Optical Encoder	K6015D2-5000BM-K830	ROTARY ENCODER	1
15	Electrical and miscellaneous parts	-----	-----	1
16	Industrial Computer Mainframe	-----	-----	1
17	Industrial Cameras	MV-CA013-AOGM	Hikvision	4
18	FA Lens	25mmF/2.8	Hikvision	4
19	Linear Guide Slider	LSH20HN	AirTAC	4
20	Servo Motor Kit	SV-X2MH040A	HCFA	3