Precision Touch System Manual

V 2.5

catalogue

preface

Thank you for purchasing the touchscreen software. This manual explains how to install and use the software on Windows 10 or later systems. Please read this manual carefully before use to ensure proper operation. After reading, please keep it properly so you can refer to it whenever issues arise.

Attention

Due to the continuous improvement of software performance and function, this specification is subject to change without prior notice.

The software shall not be transferred or lent to any third party. We shall not be liable for any damage directly or indirectly caused by the use of the software.

1. Overview

This software is suitable for installing, debugging and configuring laser touch control software. This product is a human-computer interaction input device that can achieve wall (or other flat surfaces) touch control when paired with large-screen display devices (such as projectors, etc.).

1.1 Working principle of the product:

The working principle of this product involves installing an infrared laser module above a projector or display device. The laser module creates an invisible light film layer 1-2 mm thick and 1mm wide on the projection surface. When touching this film with fingers or other opaque objects, a reflected light spot is captured by the camera module mounted on the projector. Through our proprietary touch control software's analysis and algorithm processing, accurate touch coordinates are obtained to achieve the touch functionality.

1.2. Product Features Overview

(1) Supports finger touch: You can touch the projected screen directly with your finger without any pen.

(2) Supports multi-touch: stretch and retract images with both hands; two points to achieve mouse wheel function; ten people write at the same time without interference.

(3) The minimum installation distance is 15cm: the "80-inch" projection screen requires only 15cm between the camera and the board surface.

(4) High integration, portable, easy to install: The host is fixed with double-sided tape on the wall or board. There is no need to modify the board or wall.

(5) Transforming a normal whiteboard or wall into a finger touch screen: This product

can transform any whiteboard or wall into a touch screen. You can directly fix the product above the area you want to transform.

(6) Any opaque object can be used as a stylus: The finger touch feature employs camera-based positioning technology. Within the interactive area, any strip-shaped opaque object can function as a stylus. If you accidentally lose your pointer pen or find it too cold to use on the whiteboard, simply roll up a sheet of paper and continue your lesson.

(7) Conversion of standard LCD screens to touch screens: Compatible with 40-120 inch displays. The process involves installing a glass cover over the screen surface and securing the device to it, transforming it into a touch screen. This method is more cost-effective than infrared frame solutions, requires no custom modifications, and maintains consistent pricing regardless of screen size.

1.3: Product Hardware

1.3.1. Hardware list:

order number	name	quantity
1	Camera Module	1
2	Laser Module	1
3	Type B mouth camera data cable (12M)	1
4	Type-c laser power cable (6M)	1
5	Camera Mount	1
6	Laser power adapter	1
7	Laser 3M adhesive (rectangular)	1
8	Camera bracket 3M adhesive	1
9	Wall transparent adhesive tape	1
10	Laser screw	1
11	nail-free glue	1
12	Adjusting screwdriver	1

1.3.2. The hardware schematic diagram is shown in Figure 1 to Figure 12.

Figure 1: Camera module Figure

2: Laser module

(12M)

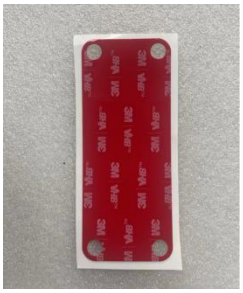
3: Type B camera data cable Figure

(6M)

4: Type-C laser power cable

5: Camera mounting bracket Figure

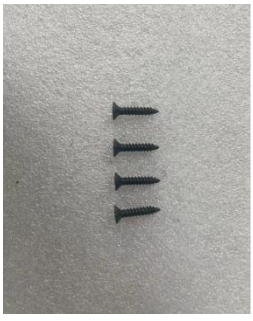
6: Laser power adapter



7: Laser 3M adhesive (rectangular)

8: Camera bracket 3M adhesive

9: Wall protective transparent adhesive tape



10: Laser fixing screw

Figure 11: Nail free glue Figure

12: Adjustment screwdriver

1.4: Product software

Software consists of a client and a server. The client and server can be installed on the same computer or on two separate computers (one for touch and one for operation).

1. 4. 1 PC system environment requirements

1.4.1.1 Computer hardware

PC

Computers running Windows 10 or Windows 11.

CPU and memory

32-bit version: x 11th Gen Intel (R) Core (TM) i5-11400 @ 2.60GHz 2.59 GHz,4GB or more memory.

hard disk

Available space: 64GB or more.

Touch screen or mouse

The operating system supports touch screen and mouse

Display

The operating system recommends a graphics card and an operating system-supported display of 1024 x 768 dots or higher, 65536 (16-bit, enhanced color) or higher.

1.4.1.2 Operating systems

Running on one of the following operating systems:

Windows 10 (32Bit, 64Bit)

Windows 11 (64-bit)

1.5: Product Performance Parameters

Parameter Specifications	
fixed position	Automatic, manual, mouse, circle, non-standard picture calibration
gesture recognition	Write with one finger, erase with the palm, zoom in/out with two fingers, and scroll with two fingers
Number of touch points	10-point touch, writing and erasing can be done at the same time
delayed	<30ms
Filter push-pull mode	Auto Control Push/Pull
Minimum interaction area	40 inches
Most interactive area	120-inch environment without sunlight, brush support up to 140 inches
Touch technology	Camera Positioning Technology (CV)
positioning accuracy	The deviation is less than 3 pixels
Projection ratio	4: 3; 16:9; 16:10 and so on
Projection ratio	Ultra short focus 0.15 Installation distance: 0.35m 0.21 Installation distance: 0.45m

	0.28 Installation distance: 0.5m Short focus: 0.34 installation distance: 0.54m Telephoto: 0.86 installation distance: 1.4m 1.34 Installation distance: 2.2m Default (80-inch 4:3)
Number of laser heads	2808nm infrared laser, 1650nm red light laser
size	Camera: 50*45*45 (mm) Laser: 108*48*35 (mm)
joggle	Camera interface: Type B connector USB 2.0; Laser interface: Type-C connector USB 2.0
service temperature	-20℃ to 35℃
operation humidity	10% to 80%
total power consumption	5w
Infrared laser power	280mw*2
source	5V/2A
a signal receptor	60 frames per second
attended mode	The camera is connected to the computer by a USB cable, and the laser only needs power. The camera and the laser are connected by infrared wireless.
weight	1.7kg
system requirements	win8、win8.1、win10、win11

software	Touch screen positioning software
attestation	ISO9001 quality system certification/third party testing certification
Quality Assurance	1 year warranty

1.6: Installation Guide

1.6.1: Hardware Installation Guide

Camera installation: The camera is installed on the projector through the bracket, and the installation is fixed firmly to ensure that the camera module can not be shaken. Adjust the camera Angle to correspond with the laser (in general, please keep the camera in the center of the picture), and the camera lens is directed to the projection screen for shooting.

① Install the camera and bracket, and tighten all key parts, as shown in the figure below

Figure1

② The mounting bracket is fixed on the projector in two ways:

Figure 2

Figure 3

One of them:(as shown in Figure 2) the camera bracket in the accessory bag is fixed to the bottom of the bracket with 3M adhesive, and the other side is glided and fixed on the projector.

Second: (as shown in Figure 3) When it is necessary to install the camera on the ceiling or fix the camera on other materials, you can choose to use the expansion screw in the bracket bag to fix it.

Figure 4

Figure 5

As shown in Figure 4-5, the camera can be mounted above or below the projector. Just make sure the projected image is fully visible without any obstructions.

Laser installation: The laser should be fixed at the edge and center of the projection screen, and 3cm away from the edge of the screen. As shown in the figure below

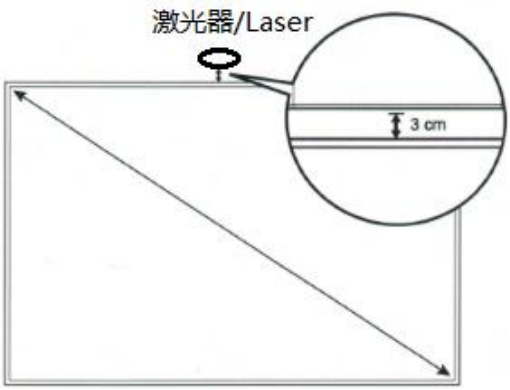


Figure 5

There are two types of laser fixation, as follows

1: Attach a 3M double-sided tape (as shown in Figure 6) from the accessory bag to the bottom of the laser, align the holes, and press the whole surface with the palm of your hand to prevent air from entering the bonding area.

Figure 6

Take a piece of transparent film from the accessory bag (as shown in Figure 7) and stick it on the wall where the laser is fixed (above the picture, in the center, 3cm away from the edge of the picture). Then tear off the part of the 3M adhesive paper at the bottom of the laser and stick it on the same position.

Figure 7

2: For long-term use where the site environment may damage walls, screw fixation is recommended. Remove the expansion screw bag from the accessory bag and secure it using expansion screws at the four holes on the laser's ear.

Equipment connection: The camera is connected to the COMPUTER USB port with a 12M USB data line (Type B interface); the laser is connected to the strong power with a 6m USB power line (Type C interface) and a 5V/2A adapter; the camera and laser are connected by wireless communication.

Hardware usage notes:

1. Do not drop this product from high altitude.
2. This product has specific light requirements for the usage environment. Direct sunlight must be avoided, and reflected sunlight should not reach the camera module or the projection whiteboard.
3. Please use the connecting cable of this product. Do not change the connecting cable of this product without permission.
4. The flatness of the projection carrier must meet the tolerance of ±2mm.
5. **Do not look directly at the light outlet of the laser module within 50cm!!!!**
6. Please use in accordance with the product specifications in a qualified temperature and humidity environment.
7. If any issues arise, contact the technical staff. Do not disassemble the device without authorization.

1.6.2: Software Installation Guide

Remove the USB drive from its case and connect it to the computer you want to install on. Open the drive, locate the installation software, and drag it into the host system. Double-click the software to launch the language selection window. Choose your preferred language and click the "OK" button to proceed. As shown in Figure 1.

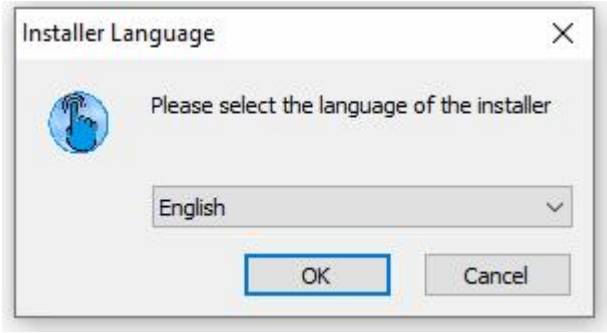


Figure 1： Installation options language

Complete the installation step by step according to the installation wizard interface. After the installation is complete, click "Finish" to complete the installation successfully.

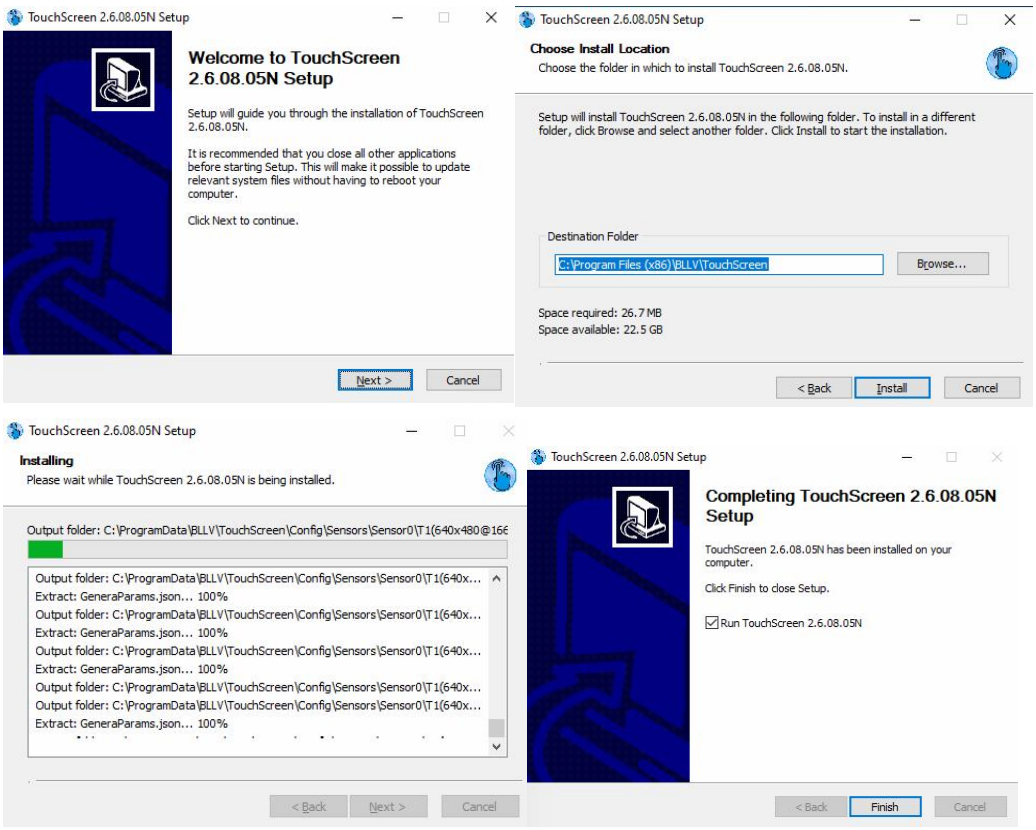


Figure 2： Installation sequence diagram

2. Interface usage guide and function introduction

The client program includes a basic operation menu, a Settings menu, and a Help menu.

2.1: Installation and debugging interface with control usage guide

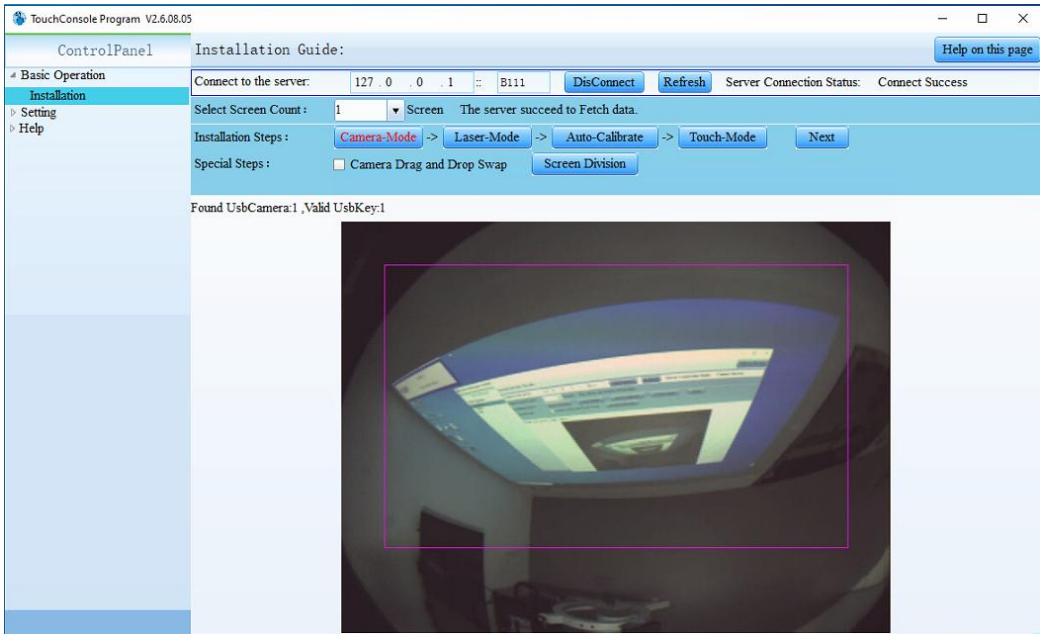


Figure 1 ： Installation and debugging interface

Connecting to the server : The client program connects to the IP address and port number of the host where the server program is located (the port is fixed and cannot be modified).

Disconnect/Connect button: This button disconnects or connects the client application and the touch service application.

Server connection status: displays the current connection status between the client and server.

Select Screen count: This drop-down box is used to select the number of screens.

The debugging process includes camera-moude, laser-moude ， auto-matic calibration and touch-mode:

1: Camera debugging is used to check whether the entire frame falls within the camera's capture range. If

If it is not within the range, basic adjustment is required. Finally, the whole picture is

within the range of the camera.

2: Laser debugging is used to check whether the laser film meets the requirement of 1-2mm away from the wall. If not, basic adjustment should be made.

3: Automatic calibration is the automatic collection and calculation of image coordinates. After the collection, return to the touch state.

Next button: complete the three operations of "camera debugging", "laser debugging" and "automatic correction" in turn.

Camera Drag-and-Exchange Function: This feature is designed for multiple cameras. When the camera's view doesn't match the actual area, check "Camera Drag-and-Exchange" and click left-click to select the desired camera view. Simply release the left-click to drag it to your desired position. Once each camera's image aligns with the client's requested area, uncheck this option.

Figure 2 Camera Drag-and-Drop Interface

Screen division button: This function is to divide the area requested by the customer (most of the time for multiple cameras). If you want to divide, move the vertical line in the middle with the left mouse button. After completion, click the "checkmark" button to complete.

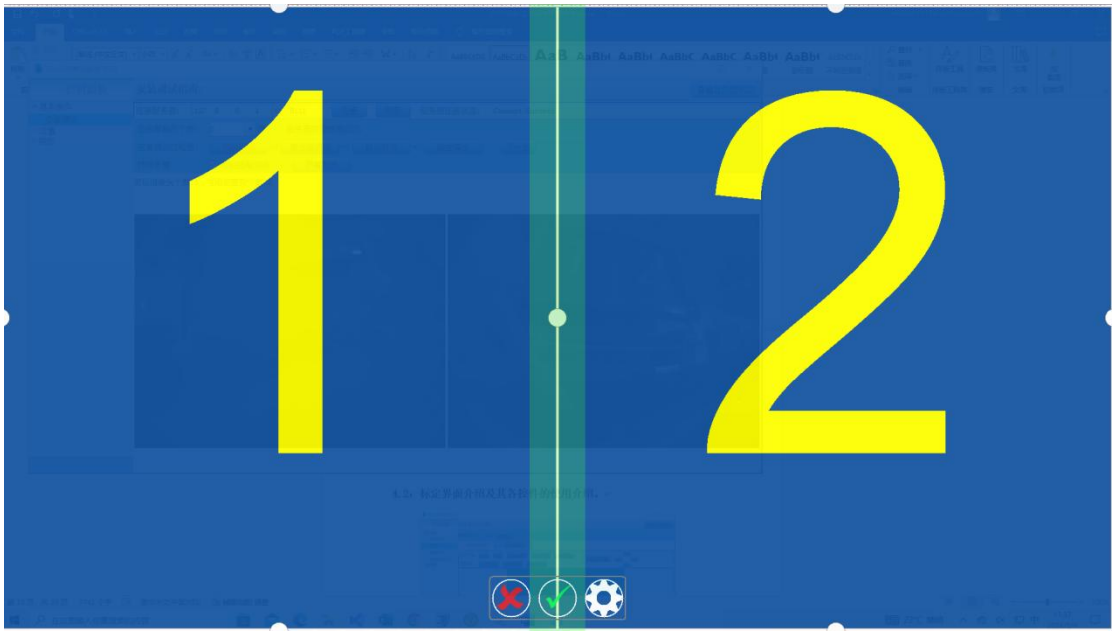


Figure 3: Screen Division Interface

2.2: Introduction to the Settings interface.

The settings menu includes calibration, local parameters, system parameters, gesture control, and manual selection interfaces.

The camera number button is used to select which or which cameras to calibrate.

The calibration mode is divided into "automatic", "manual", "mouse", "manual irregular shape" and "manual round".

2.2.1: Introduction to the calibration interface

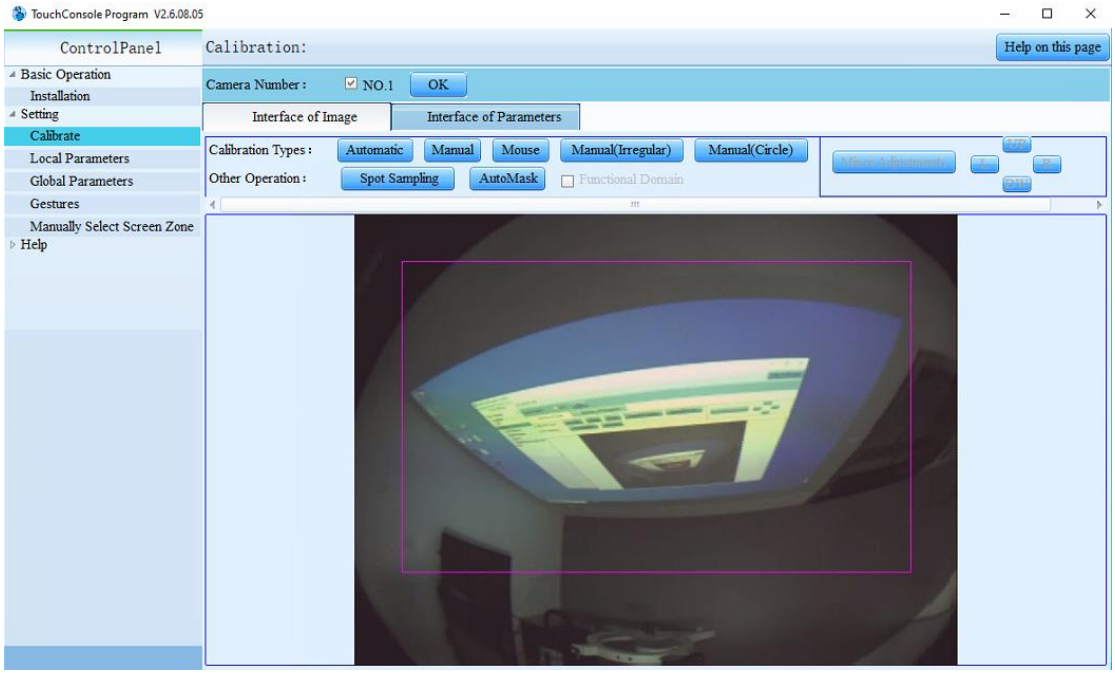


Figure 4 Calibration image interface

2.2.1.1: Automatic Calibration

Automatically capture screen coordinates. Click "Auto" to calibrate automatically without manual operation. The process is shown in the figure. After successful auto-calibration, debugging is complete.

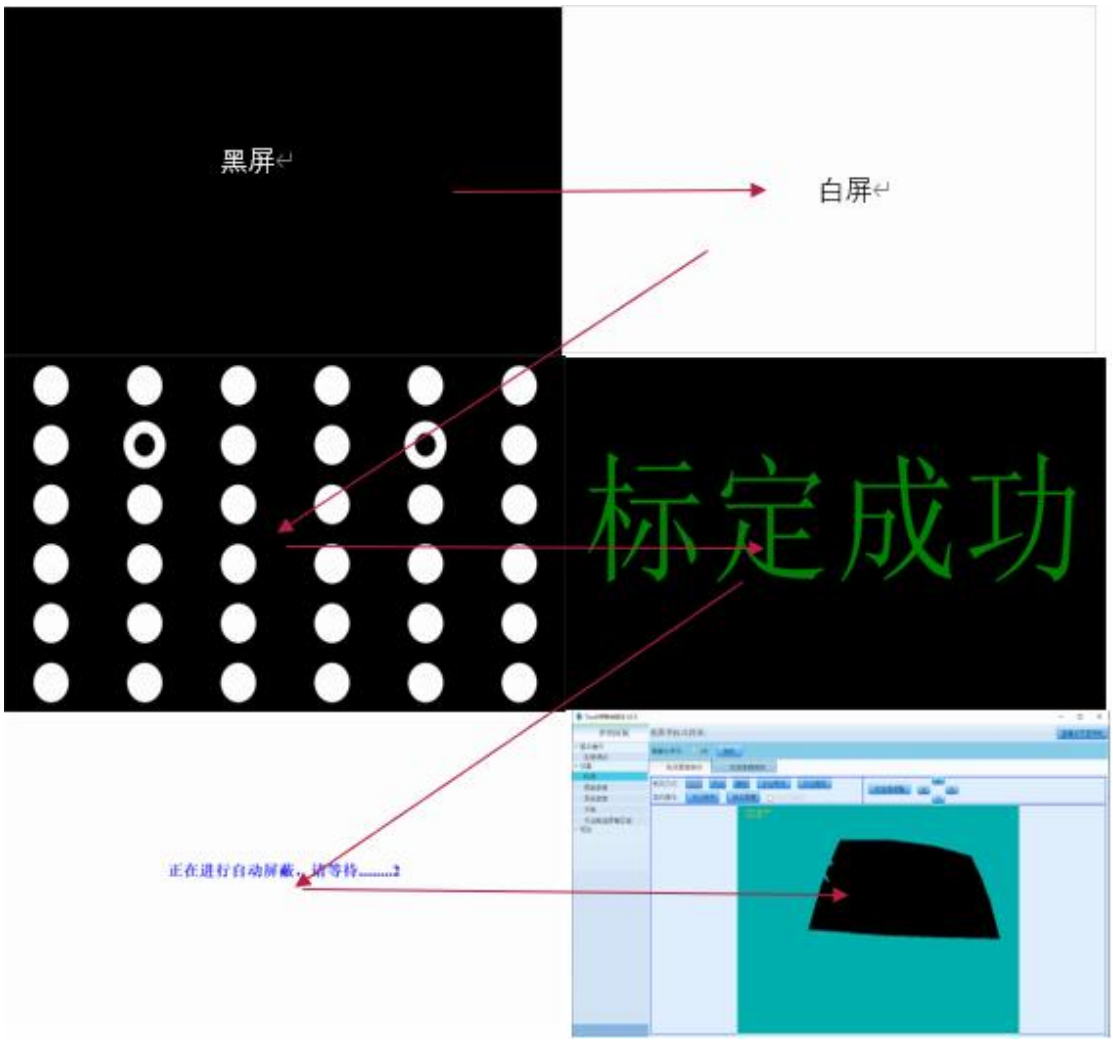


Figure 5: Automatic calibration reference sequence diagram

2.2.1.2: Manual calibration

The process of manually capturing the screen coordinates (on the server).

The steps are as follows:

First, click Manual.

An icon will appear on the screen after the auto-block operation is completed.

Click the icon with your hand (touch pen). After success, the icon will turn green and the next red icon will appear. Click the red icon in sequence until all clicks are completed and return to the normal touch interface.

If there is interference in the process, you can right-click on the icon and select "Undo" (step back) to return to the state of the previous point.

If you want to exit the calibration process directly, select "Exit Calibration"

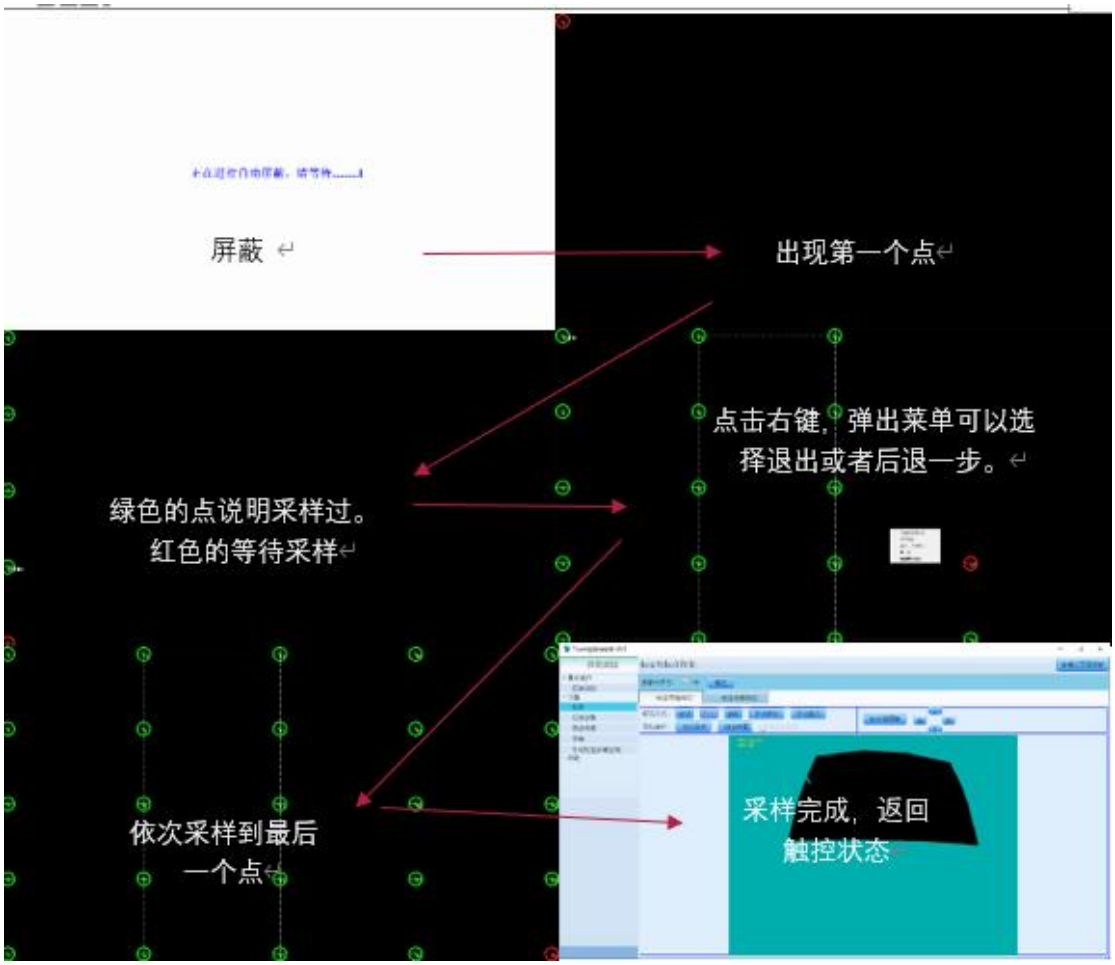


Figure 6: Manual calibration reference sequence diagram

2.2.1.3: Mouse calibration

The process of using the mouse to capture screen coordinates on the client interface.

The steps are as follows:

First click the mouse button.

If the connected IP address is "127.0.0.1", the sampling area will be divided into two parts.

The left side of the screen displays the positions of reference points, which are mapped to corresponding locations in the client's image. Use the mouse to click these points sequentially for operations. First complete the operation on the left half, then automatically switch to the right half to perform identical actions.

If you accidentally click, right-click the form at the displayed point to open the menu, then select "Undo" to return to the previous point.

If you want to exit the mouse calibration, click "Exit mouse calibration".

After clicking all the points, the program will automatically block and return to normal touch mode.

Figure 7: Mouse calibration reference sequence diagram

2.2.1.4: Circular calibration

Manually collect the coordinates of the circular screen on the server. Refer to manual calibration for the collection method. (Contact after-sales support if you want to use this method.)

2.2.1.5: Irregular Shape Calibration

Manually collect coordinate points of irregular screens (on the server). The collection method references manual calibration. Before calibrating irregular shapes, perform graphical dragging of irregular patterns (the dragging principle is that outer circle points remain outside after dragging, while inner circle points can be freely rearranged).

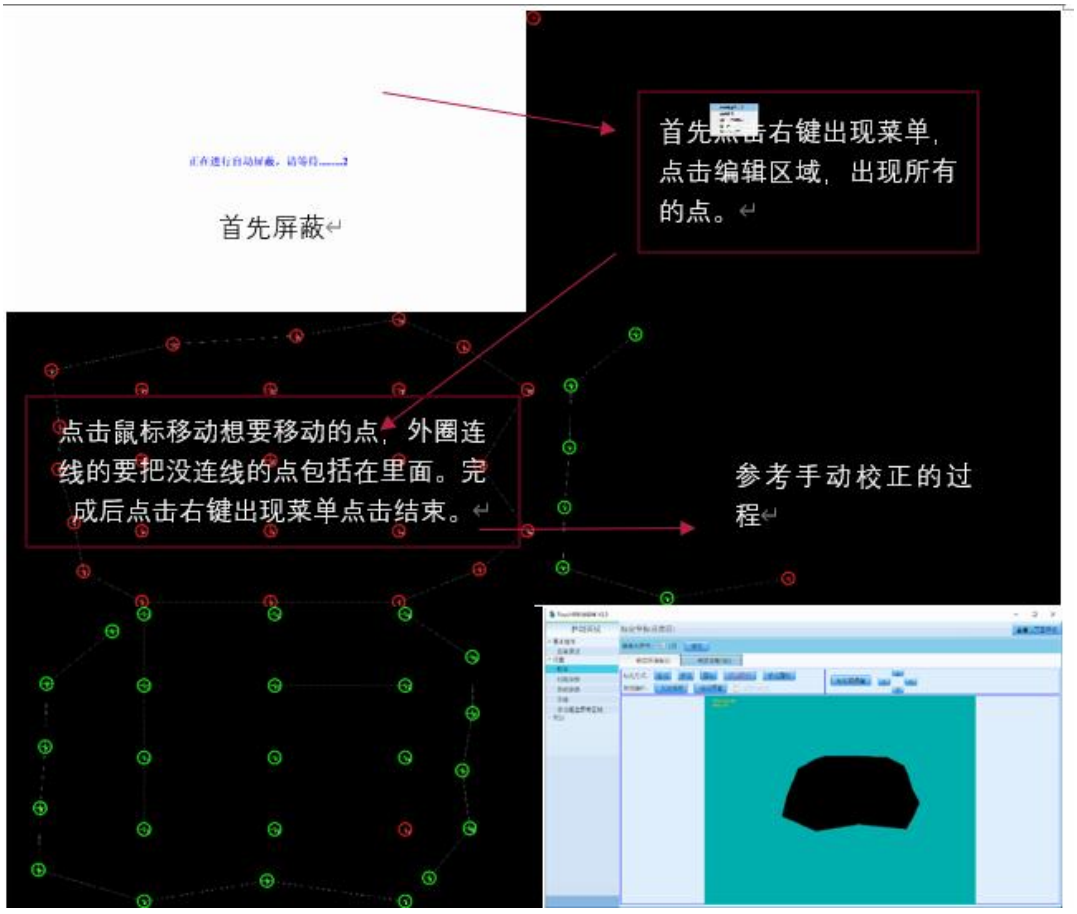


Figure 8: Figure of reference sequence for anisometry calibration

2.2.1.6: Spot sampling

Spot sampling refers to the sampling of a spot on a screen to obtain information about the position of the spot. Spots are often used in specific calibration or calibration processes to improve accuracy and accuracy. The steps are as follows:

1: Click the "Spot Sampling" button. The screen will automatically block the area (no manual intervention required). After the auto-blocking process, a black icon indicating the sampling area will appear on the screen.

2: When clicking this icon, the icon will turn green and the next icon to be collected will appear after the icon is correctly collected. Collect in accordance with the requirements one by one. After collecting 6 points normally, return to normal use mode.

3: If you want to quit during the collection process, click the right mouse button to pop up a menu, and select "Exit spot collection" on the menu.

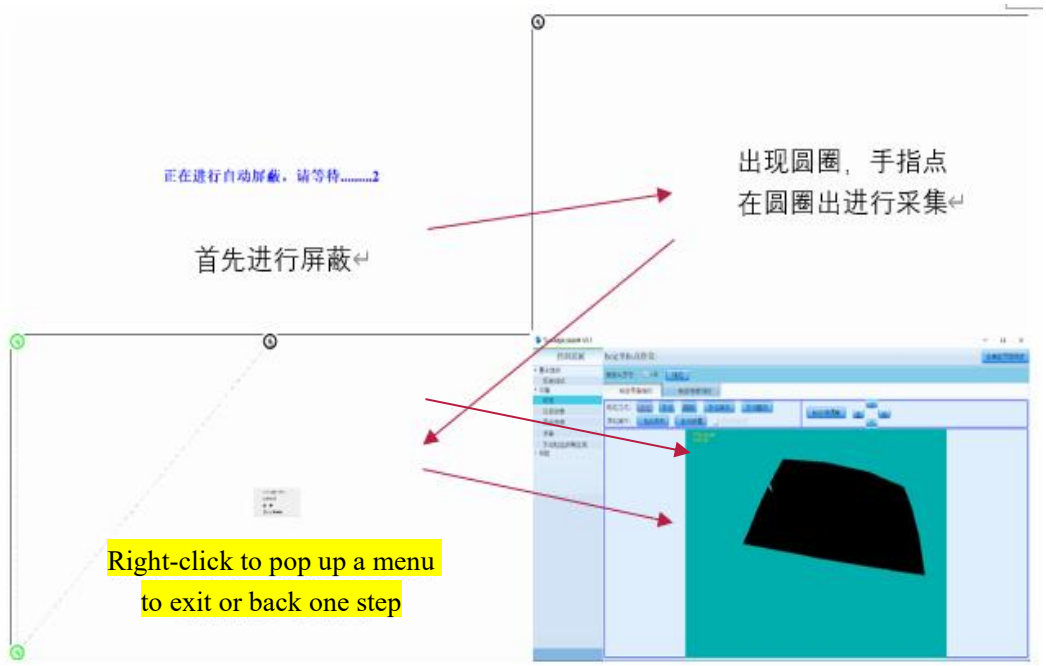


Figure 9 Sample reference sequence of light spot

2.2.1.7: Automatic shielding

Automatic shielding refers to the system automatically blocking or shielding certain areas to prevent accidental contact or unnecessary interference. This feature helps ensure that only the required valid data is collected during calibration or touch operations.

2.2.1.8: Calibrate fine adjustments

Calibration fine-tuning refers to the minor adjustments or corrections made to the calibrated data after the calibration process is completed. This can be achieved by fine-tuning the coordinate point position, adjusting parameters, or performing compensation to further improve the calibration accuracy and accuracy.

The steps are as follows.

First, click the Standard Fine-Tune button. The screen displays the coordinates of the last calibrated point.

(No manual intervention required). After the process completes, two cross symbols (white and blue) will appear on the client interface. Verify if they align. If not, click the blue cross to turn it red, then adjust using the keyboard's "up", "down", "left", and "right" keys until they match. Right-click to open a menu, then select "Exit" to return to normal operation mode.

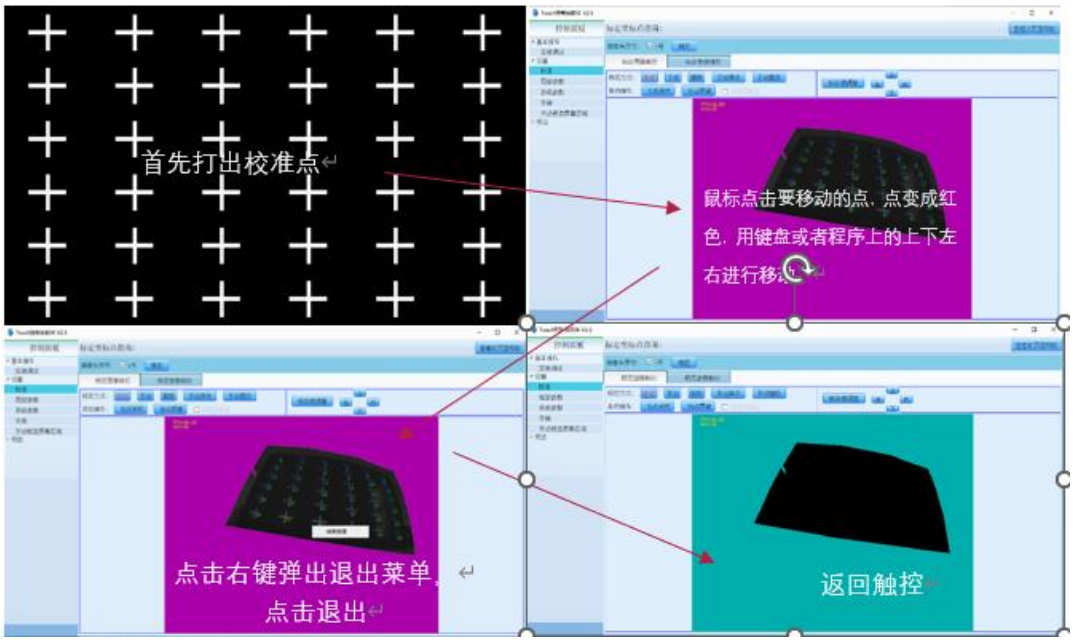


Figure 10: Calibration micro-adjustment reference sequence diagram

2.2.1.9: Set the ribbon

Set the function area by drawing the touchable area in camera mode and setting the corresponding mouse coordinates. This way, touching the area with your finger will trigger the mouse value in this area.

The steps are as follows:

1: Turn on the calibration parameter response function area.

2: Return to the image interface, double-click the left mouse button until the cursor turns into a cross. Press and hold the left mouse button to draw a line. Move to the next point, press and hold the left mouse button again, and continue drawing lines until the final point is reached. Double-click the left mouse button to complete the drawing of the area.

3: Double-click the left mouse button in the area to open the settings dialog box, where you can configure the X and Y coordinates. After completing the settings, click OK.

4: Following this sequence, proceed to draw and configure all regions. Right-click the menu to view coordinate settings. Once all regions are properly configured, you can delete them by clicking the "Delete Selected Regions" option in their respective menus. To remove all regions simultaneously, right-click on the image area and select "Delete All" from the pop-up menu to eliminate all drawn areas. The "Cancel" option prevents accidental deletion of partially drawn regions.

5: After drawing is complete, click Complete All.

Figure 11: Setting up functional areas

2.2.1.10: Calibration Parameters

This interface is used to set some parameters for calibration.

To configure the ribbon, first open the ribbon.

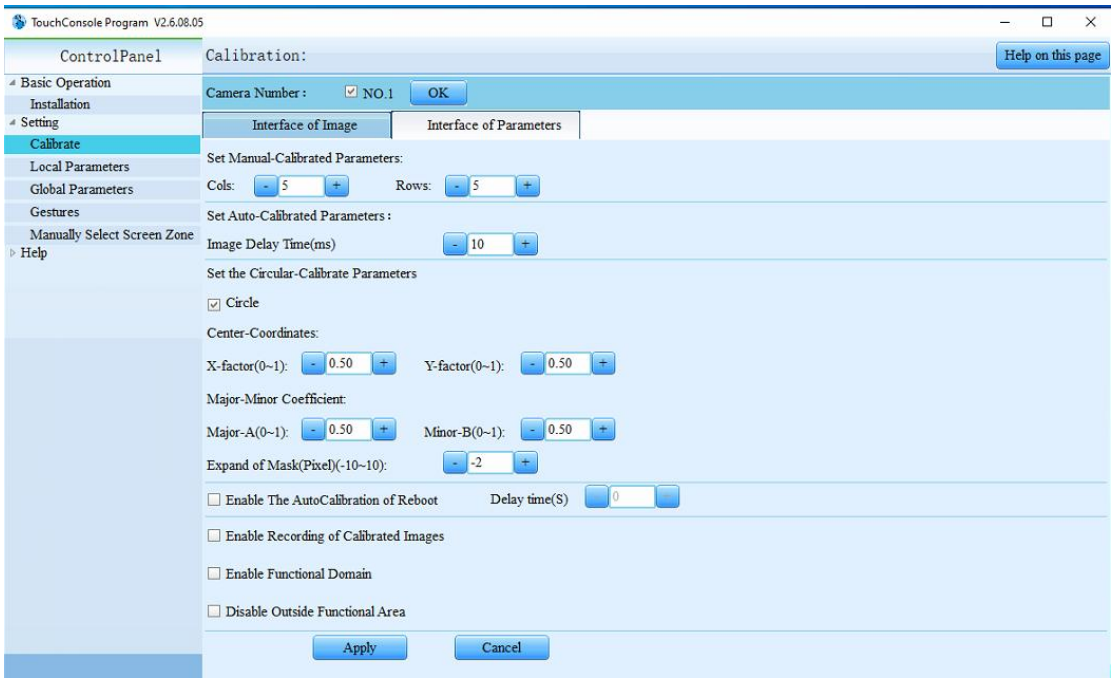


Figure 12 Calibration parameter interface

2.2.2: Introduction of local parameter interface and the use of each control.

2.2.2.1: Image parameter interface:

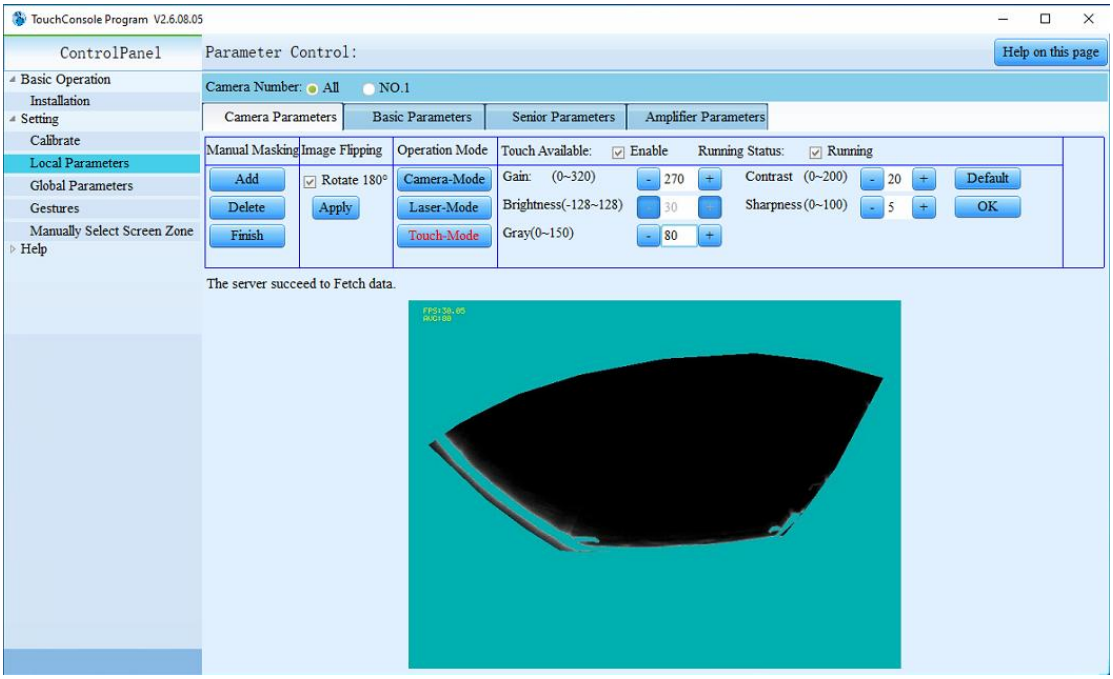


Figure 13 Image parameter control interface

1: To manually add a shielding layer, click the "Add" button. After adding, click "Complete". Similarly, to delete a shielding layer, click the "Delete" button. After deletion, click "Complete".

2: Camera image flip function is used to flip the image 180°.

3: The touch usability function is used to control whether the touch is available or not. If checked, it means the touch is available; if not checked, it means the touch is not available.

4: Running status function is used to show whether the camera is running or not. If checked, it means it is running; if not checked, it means it is not running.

5: Mode Selection and Parameter Settings

Check and modify camera parameters according to different modes (including gain and expected brightness). A minus sign on the left of a parameter means a decrease, while a plus sign on the right means an increase. After modification, click OK.

2.2.2.2: Basic parameter interface:

View and modify some parameter values.

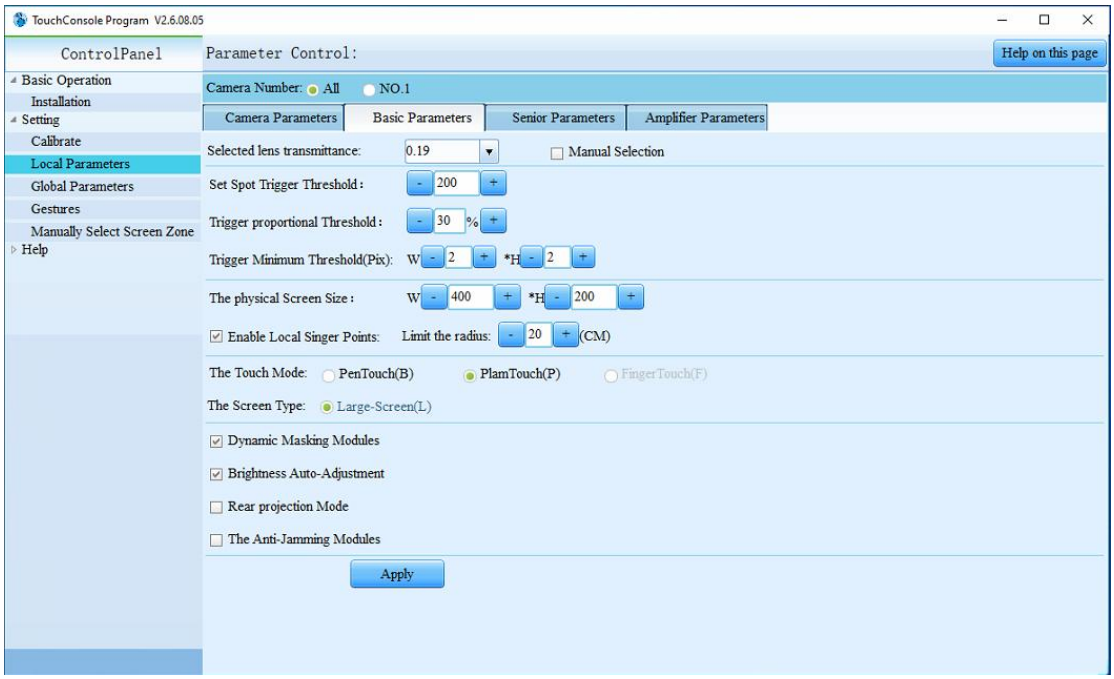


Figure 14 Basic parameter control interface

1: Select the lens projection ratio. In general, the camera projection ratio needs to be the projector projection ratio

Maintain consistency. The projection ratio matches the camera's registered projection ratio. If you need to select another, check "Manual selection" first.

The projection ratio is defined as the ratio of the distance d between the camera and the object to the maximum width w of the object.

$\text{throw ratio} = \frac{d}{w}$It's a physical parameter of the lens.

2: Set the light spot trigger threshold as the minimum brightness required for the bright spot recognition to become a touch light spot.

3: The standard spot trigger ratio threshold is calculated based on the spot size from the current touch position after spot sampling (this setting is ignored if spot sampling is not enabled). If the actual spot size exceeds the calculated spot size multiplied by this ratio threshold, the touch is triggered. Otherwise, the spot remains unresponsive.

(Spotlight Trigger)$Spot_{实际值} \geq Spot_{计算值} \times 门限\%$

(No spotlights triggered)$Spot_{实际值} < Spot_{计算值} \times 门限\%$

4: The minimum threshold (width * height) is the minimum size of the touch spot that must be met on the entire screen.

5: The physical screen size is set according to the actual use size.

6: Enable local single-point function. If there is reflection in the touch interface, this function is enabled to ensure that only one light spot is responsive within a certain radius (the radius can be set behind).

7: Set the touch mode according to your needs, such as brush control, palm control or finger control.

8: The screen type is the size of the screen when registering (can not be changed).

9: Start automatic image brightness adjustment and set the expected ambient brightness. The ambient background brightness is used as the basis for brightness adjustment. Generally, users are not advised to change it.

10: Enable real-time blocking module. When interference occurs in the touch area

due to environmental or other reasons, real-time blocking is required. Generally, users are not advised to change it.

11: The rear projection mode is triggered by the touch area. If the camera and projector are not installed on the same side, the rear projection mode will be activated. Generally, users are not advised to change it.

After the parameter is modified, click "Apply" to make it effective.

2.2.2.3: Advanced parameter interface:

It is to view and modify some values of advanced parameters.

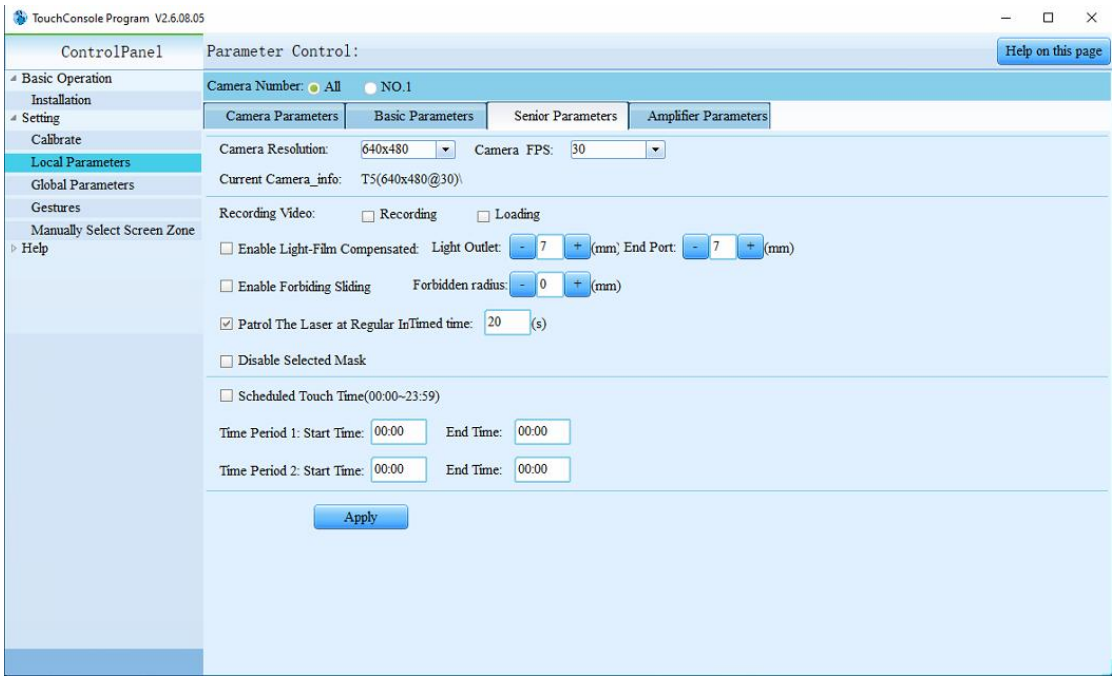


Figure 15 Advanced parameter control interface

1: The resolution and frame rate options display all available resolutions and corresponding frame rates. Generally, users are not advised to modify them.

2: The optical film height compensation is the value that notifies the program of the height exceeded when the laser is installed higher than the default height. Complete this under the guidance of a technician.

4: Disable the local sliding function. This function can be enabled when the light film is high and clicking or double-clicking is not sensitive. Please complete it under the guidance of technicians.

5: The laser timer performs periodic checks to ensure the laser remains activated during operation. If not activated, it will automatically turn on.

2.2.3: Introduction to the system parameter interface and its controls.

The system parameters include three parts: "Touch Mode", "Language Settings", and "Camera and Laser Communication Settings".

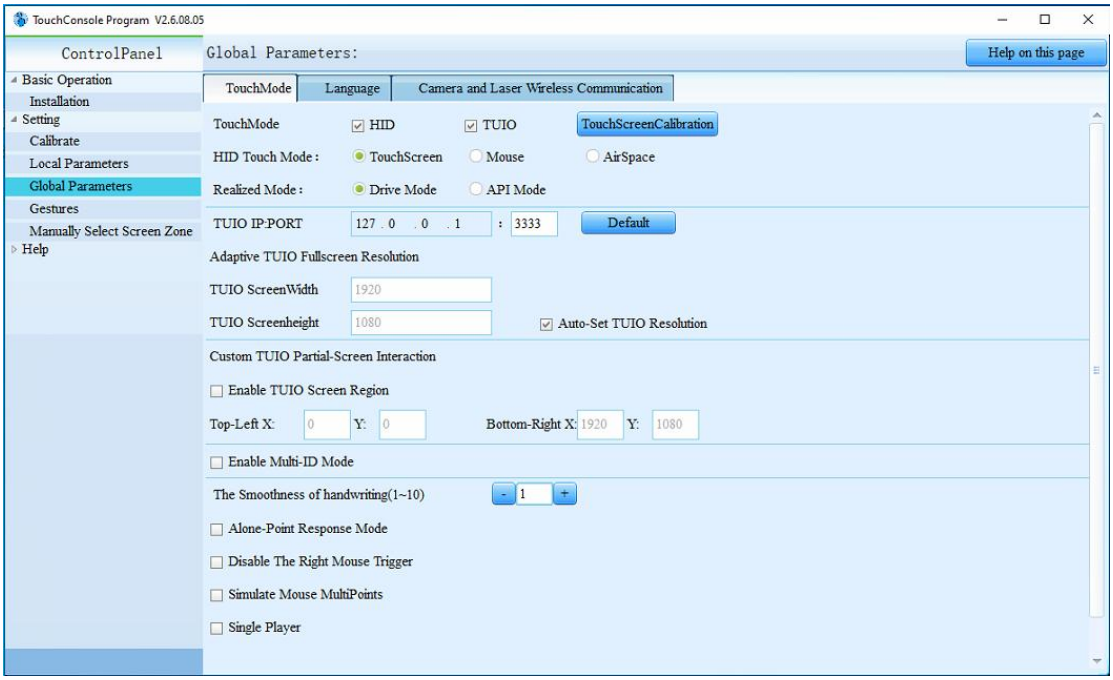


Figure 16 Touch control mode setting interface

2.2.3.1: Touch control

1: Touch control controls include "HID" and "TUIO" options. You can choose them individually or

Both options are available. HID also offers two touch modes: 'mouse mode' and 'touch screen mode', allowing users to choose based on their preferences.

If you choose "TUIO", the interface will display the IP address, PORT, screen length and width of TUIO. Normally, these parameters do not need to be changed. Only when there is a deviation in TUIO touch control will the

length and width be modified.

"Auto-Tune TUIO Resolution" -Check this to align TUIO's screen dimensions with the touch screen.

2: The smoothness of the pen stroke is used to set the amplitude of the pen stroke jitter. The larger the value, the smoother the pen stroke.

3: Global single-point response is set in touch screen mode, where only one point can respond globally.

4: Disable the right mouse button is to disable the right mouse button.

5: Simulate mouse multi-point is to simulate the state of multi-point response in mouse mode.

6: Single-player mode is mainly used on the remote stylus.

When the selection on the interface changes, you need to click "Apply" to make it effective.

2.2.3.2: Languages

The language settings interface allows you to modify language preferences. Currently, four languages are supported: Simplified Chinese, Traditional Chinese, English, and Russian. To apply the changes, you need to reopen the client application.

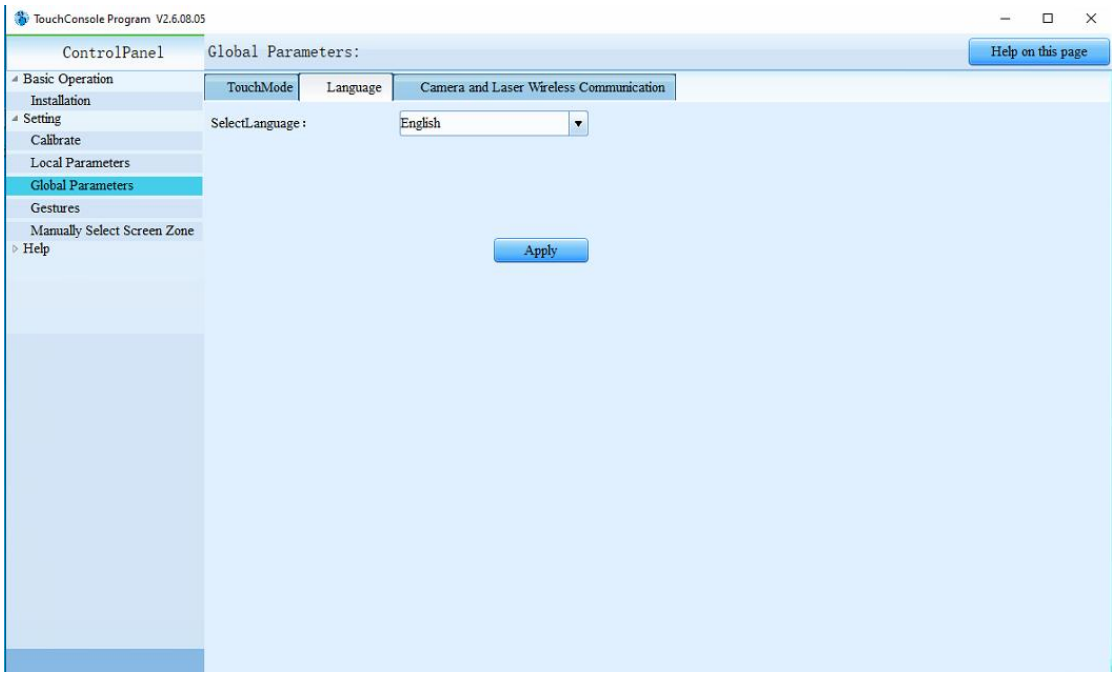


Figure 17 Language Settings Interface

2.2.3.3: Camera and laser wireless communication

This interface is performed under the guidance of technical personnel. Do not modify it directly.

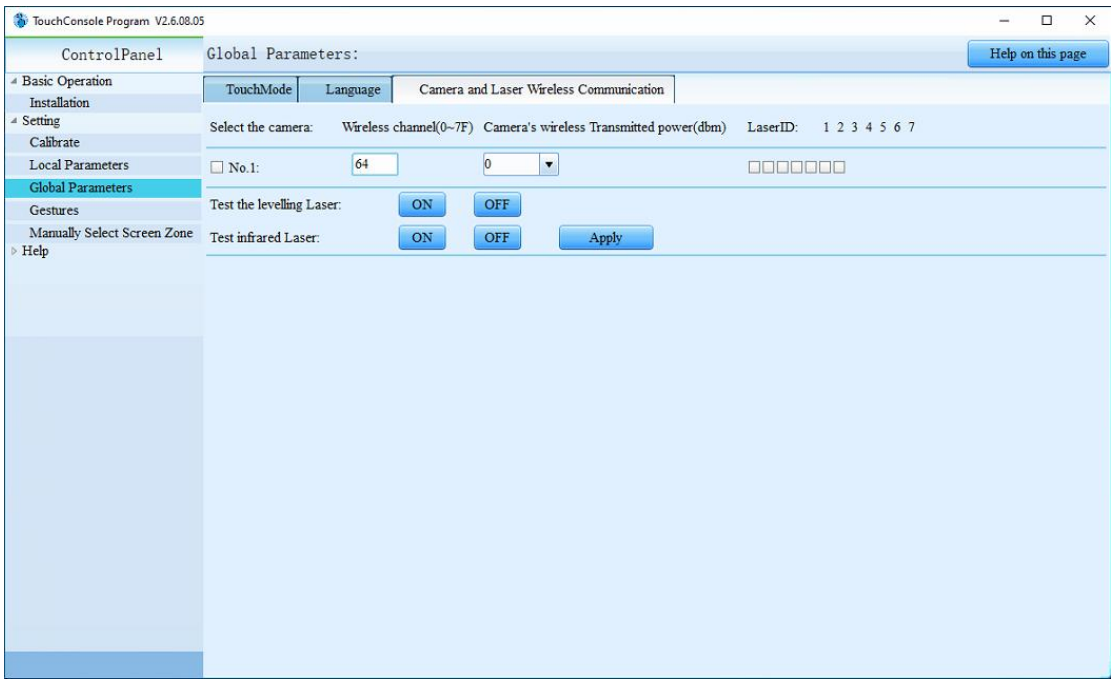


Figure 18. Wireless communication interface between camera and laser

2.2.4: Introduction to gesture setting interface and its controls

The gesture recognition system comprises two modes: "Finger Gesture Configuration" and "Palm Gesture Configuration". When the "Block All Windows Gestures" option is selected, all gesture recognition becomes disabled. The "Palm-to-Finger Ratio" control determines whether a finger's light spot is considered a palm by evaluating its size relative to the predicted finger.

2.2.4.1: Finger gestures

Finger gestures include "mouse wheel slide", "close current window", "maximize current window", "minimize current window" and "switch window".

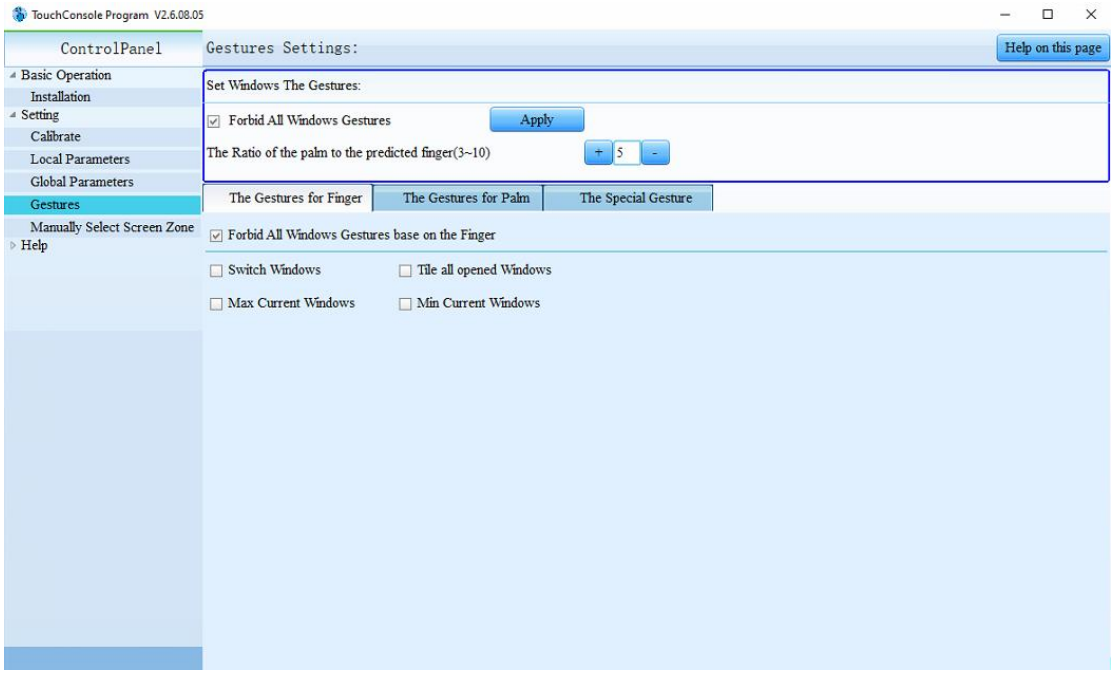


Figure 19. Finger gesture setting interface

1: The mouse wheel slide gesture is defined as two fingers sliding horizontally to represent the mouse wheel slide horizontally, and two fingers sliding vertically to represent the mouse wheel slide vertically.

2: The gesture to lay out all open windows is defined as three to five fingers

sliding vertically from the bottom of the screen.

3: Maximize the current window gesture definition is three to five fingers sliding vertically from the middle of the screen.

4: Minimizing the current window gesture is defined as three to five fingers sliding vertically up from the middle of the screen.

5: The gesture to switch windows is defined as three to five fingers sliding horizontally from the middle of the screen to the left or right.

2.2.4.2: Palm gesture

Palm gestures include "Show Desktop", "Close Current Window", "Move Current Window", and "Refresh Current Window". Palm gestures are not available to the public.

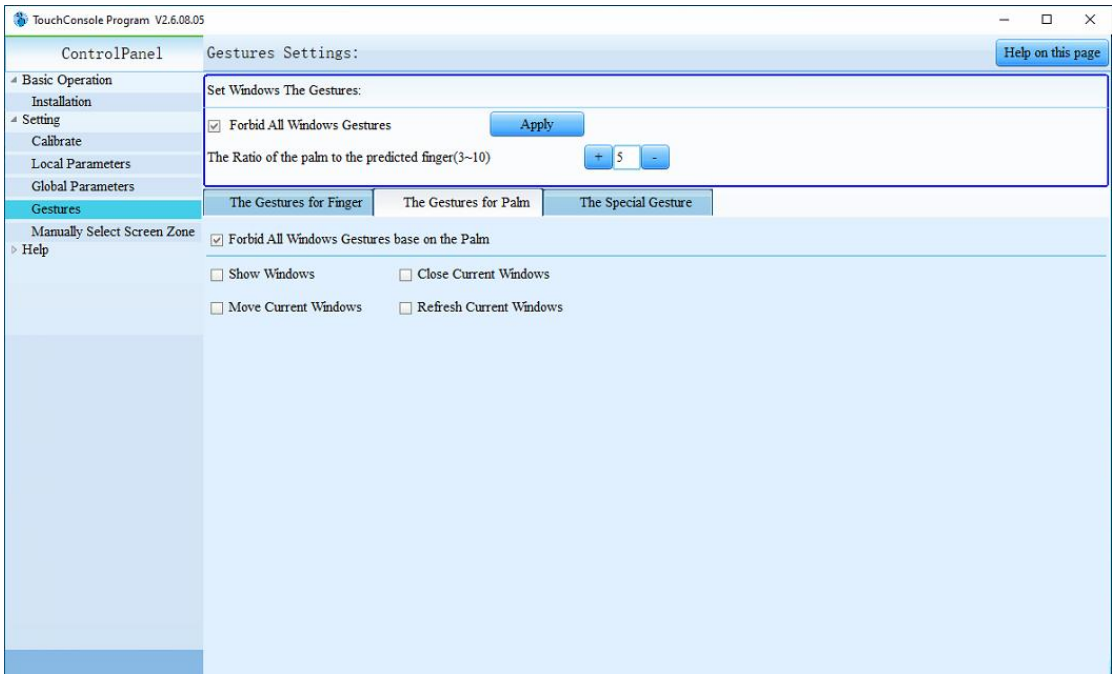


Figure 20. Hand gesture setting interface

2.2.5: How to manually select screen areas and their controls

In order to prevent the ambient light outside the camera area from interfering with the correction and resulting in unsuccessful correction, the camera area is

artificially framed to ignore the influence of ambient light.

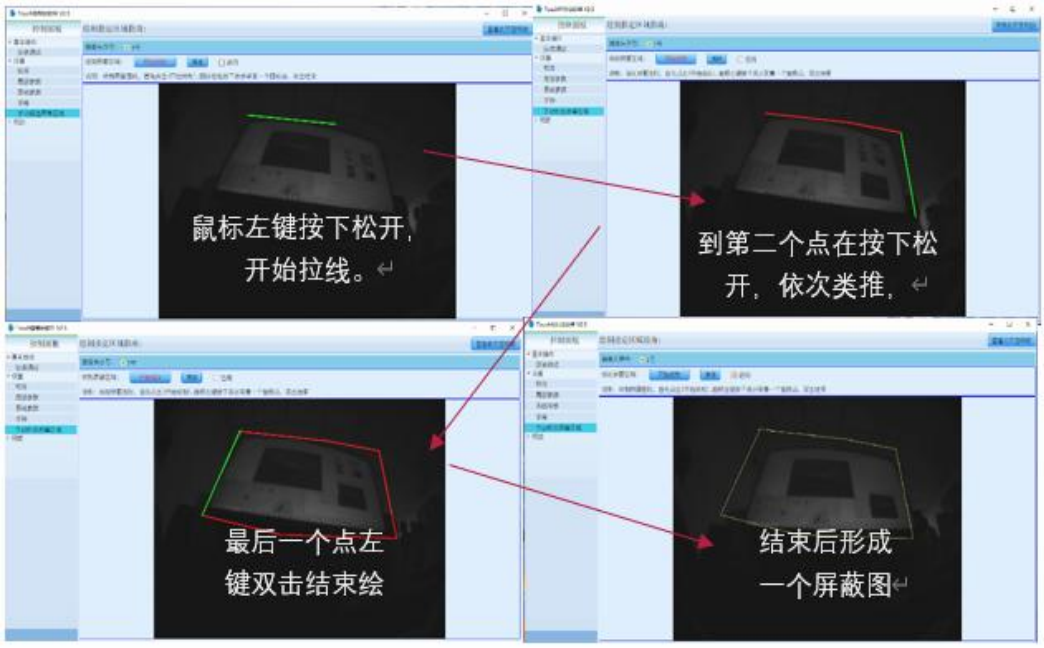


Figure 21. Manual frame selection screen area interface

The area of the camera can be manually selected by following these steps:

1: Click "Start Drawing".

2: Press and hold the left mouse button to select a starting point. As you move the mouse, a green line appears. Release the left mouse button when reaching the desired position, and the line will turn red upon completion. Repeat this process to finish drawing. A rectangle or custom shape will then be created on the interface. This shape defines the area you want the camera to capture and process.

3: If this area is not enabled, uncheck the "Enable" control. This will turn the drawing frame into one that closely matches the background color.

4: If you do not need this area, then click the "Clear" button to clear the drawing box.

2.3: Help interface introduction.

The help interface includes the registration information interface, the auxiliary tools interface, the software version interface, and the company information interface.

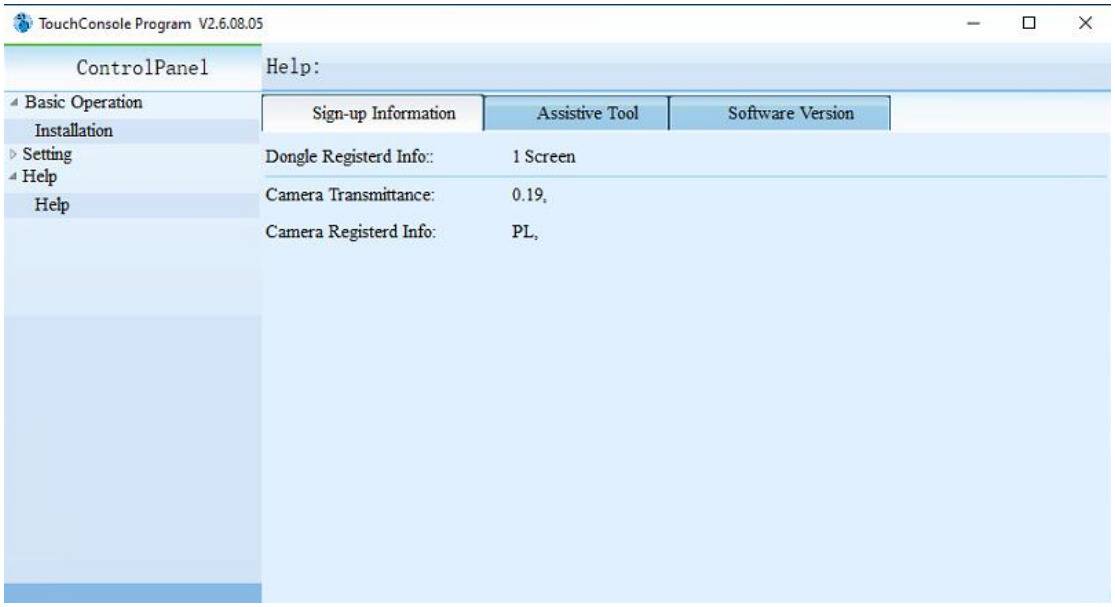
The registration information interface is primarily used to view the registration details of the dongle and camera.

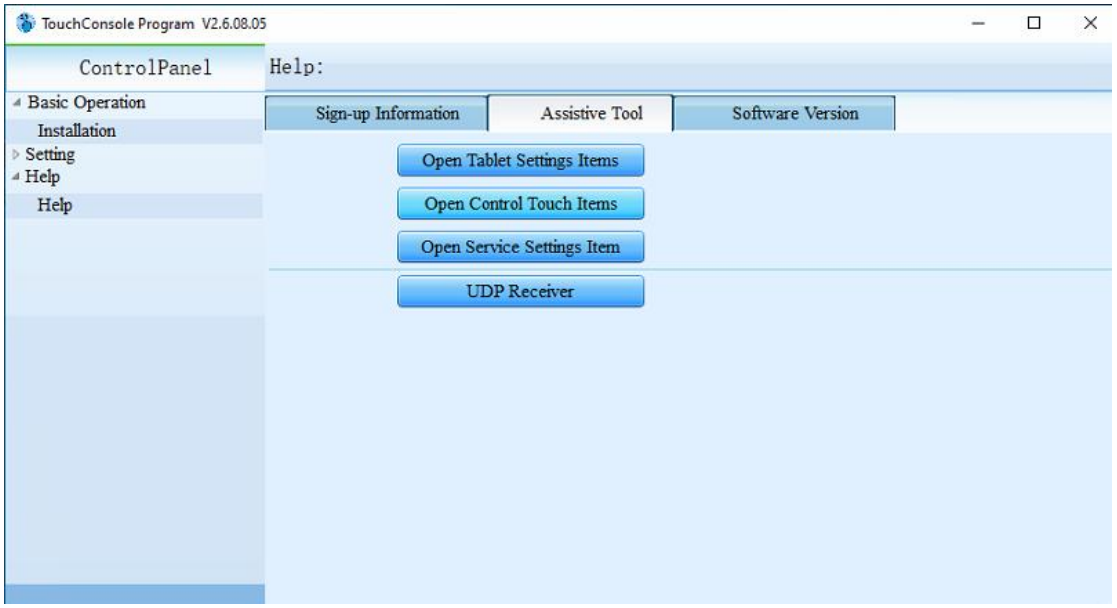
The auxiliary tools interface primarily opens touch-related settings on the

computer, such as "Open Tablet Settings", "Open Control Touch Settings", and "Open Service Settings".

The software version interface is mainly used to view the software version.

The company information interface is mainly the company information.





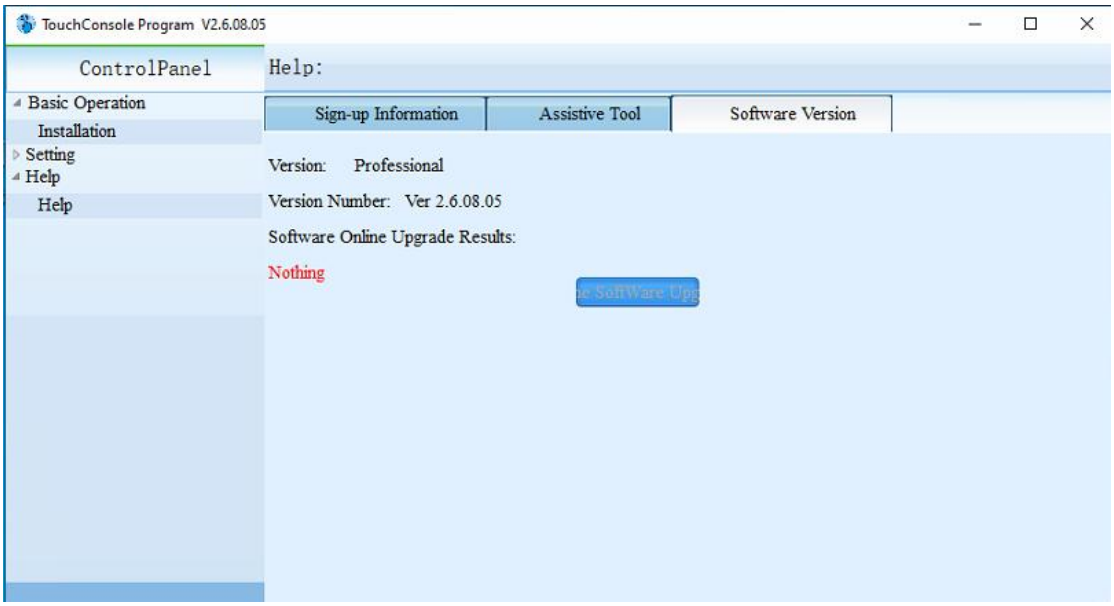


Figure 22 Help interface

3. Fault analysis and troubleshooting

1: The client program cannot display images

Solution: Check if the server's IP address is correct. If correct, click Disconnect and then Connect. If incorrect, enter the correct IP address in the address bar, then click Disconnect and Connect again. The image will display.

2: The image can not see the whole screen in camera mode

Solution: Adjust the camera position so that the entire screen is visible in the image, and then fix the camera.

3: The image is too dark or too bright in camera mode

Solution: Adjust the parameters in camera mode to meet customer requirements.

4: The spot is too small or absent in laser mode or touch mode

Solution: Adjust the parameters in laser mode or touch mode to meet customer requirements. Start by modifying the gain. If parameter adjustment is not possible, adjust the "Spot Trigger Threshold" in the basic settings interface: reducing it enlarges the spot, while increasing it shrinks it.

5: Touch point deviation in touch mode

Solution: Re-calibrate automatically or manually or by mouse (depending on the actual environment).

6: Touch interference occurs during the process

Solution: For fixed interference points, either manually or automatically disable them. For flickering interference points, simply check 'Enable Real-time Shielding Module' in the basic settings.

7: The ambient light around the school affects the success rate of the correction

Solution: You can pull up the curtains or turn off the lights to minimize the program's impact. If that doesn't work or isn't possible, simply use the image editing interface to frame the screen.

4. Warranty and repairs

1: Warranty

If the hardware is damaged within the shelf life, disassembling the product without the permission of our company and authorized technicians is not covered by the warranty.

If the fault is caused by time, it is not covered by warranty.

The user is responsible for sending the product to our after-sales service department for warranty service.

2: Maintenance

If the hardware or software is not working and the customer cannot fix it, please contact our technicians. If the software is upgraded, we can upgrade the software to the customer free of charge.

5. Notes

Note: Do not look at the laser when it is on, as it may cause eye injury.