



Software Operation Manual

V2K

[V2K000800-EV1-00A]

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1 V2K Installation & Updates

This section describes how to install V2K, and you need to install the environment software and various pre-jobs before using the V2K software. Make sure V2K runs smoothly. It also explains how to update V2K and informs you of the precautions required for the update.

1.1 V2K environment installation

Follow the steps below to install V2k in the environment.

- (1) Open "DriverENV_installer.exe" and wait for the depression.
- (2) In the Command Character window, enter 1 to install the V2k environment.

Driver and Env, 1(V2K), 2(CxVis) or 3(dcontrol):1

Figure 1: Driver and environment installation

- (3) Follow the steps to install the driver and environment package.

Note: During the installation process, please skip the reboot prompt and restart the device after the installation is completed.

1.2 V2k software installation

Follow the steps below to install the V2k software.

- (1) Download the V2k full version and V2k update file according to the recommended version.
- (2) Unzip the V2k full to the intended installation location.

Note: V2K is not recommended to be installed in non-system magnetic areas, and is recommended to be installed in the "D:\V2K\" path.

Note: If you do not use the recommended path to install V2k, make sure that the installation path must not contain special characters in non-English languages.

- (3) Update V2k to the recommended version.
- (4) Put the software license file with the file name "license.ssi_lic" into the V2k folder.

Note: Please note that the software license file name is correct.

Note: If you have authorization issues, please check with TSM.

- (5) Put the configuration file of the machine in the path "\V2k\conf\".
 - (A) Put in the "ssimcInfo.json" base machine configuration file.
 - (B) Put in the "gconf.json" motion control parameter profile
- (6) Place the handover control file in the path of "\V2k\conf\". (Options)

Note: Depending on the device type and application type, you may need a corresponding grip control file, so please install it according to your needs.

- (A) Place the handover control file in the path of "\V2k\conf\". (Options)

Note: This configuration file is used for PC-controlled inline devices, usually for floor-standing machines.

- (B) Insert "Machandske.JSON" plc handshake configuration file.

Note: This setting is used for PLC-controlled inline devices, usually for floor-standing machines with PLCs or other customized equipment.

1.3 V2K software update

Follow the steps below to update the V2k software.

- (1) Copy the currently running V2k folder.



Figure 2: Copy the V2k folder

Note: It is recommended that you keep the current V2k version to avoid being unable to return to the original version due to an update exception.

Note: If the update spans a different version, check whether you need to use the new full package to install it.

- (2) Rename the copied folder name to the version to be updated.



Figure 3: The version to be updated

Note: Update the V2k file to the copied folder.

- (A) Copy the files in the updated archive except the conf folder to the folder to be updated.

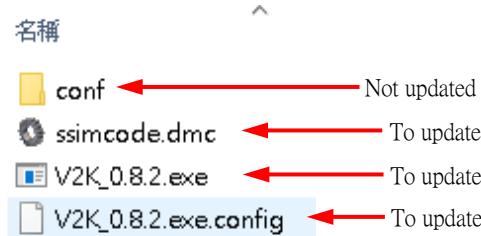


Figure 4: Update the items to be updated in the compressed file

Note: The conf folder is not updated here to avoid the device settings and correction parameters being overwritten by blank settings.

- (B) Update the language folder under the conf folder.

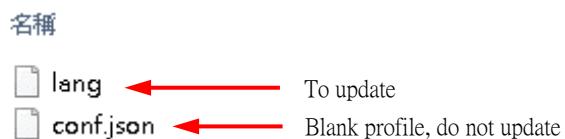


Figure 5: The conf folder must be updated with the project

- (3) Remove the old V2k executable file and execution parameter file.

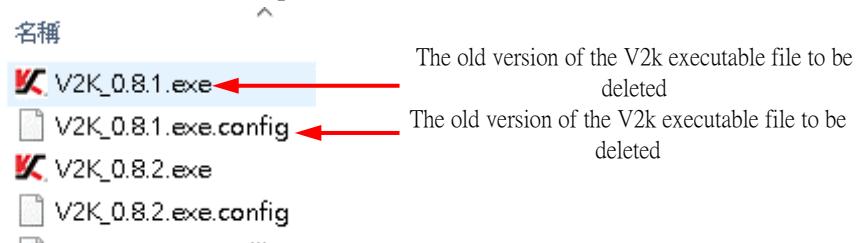


Figure 6: Remove old version of executable files and execution parameter files

- (4) Create a V2k shortcut to the desktop.

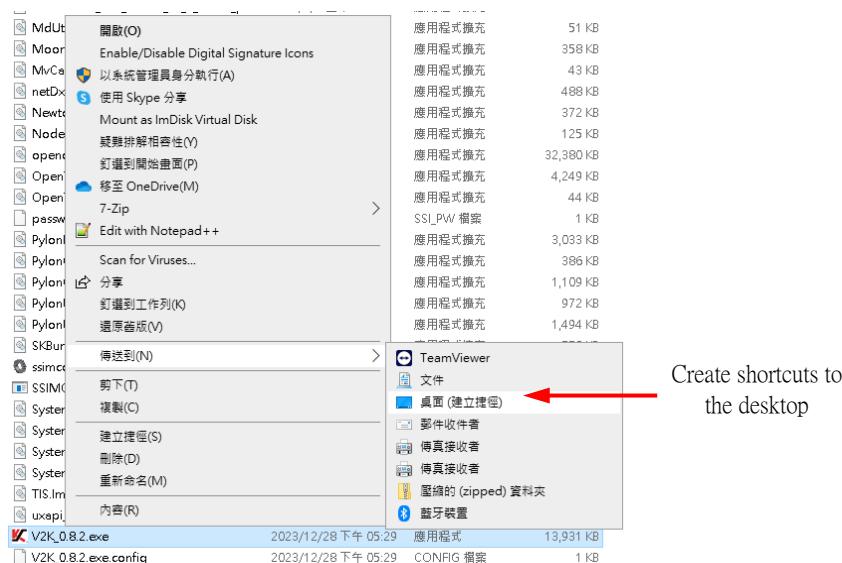


Figure 7: A shortcut to build V2k

- Right-click on the V2k executable file.
- Form selection is transferred to the desktop (create a shortcut).
- Removed the old V2k desktop shortcut.

2

The old version of the V2k executable file to be deleted

The software introduction and main page, It mainly provides four mainfunctions of the main page, Language and Change Dispenser.

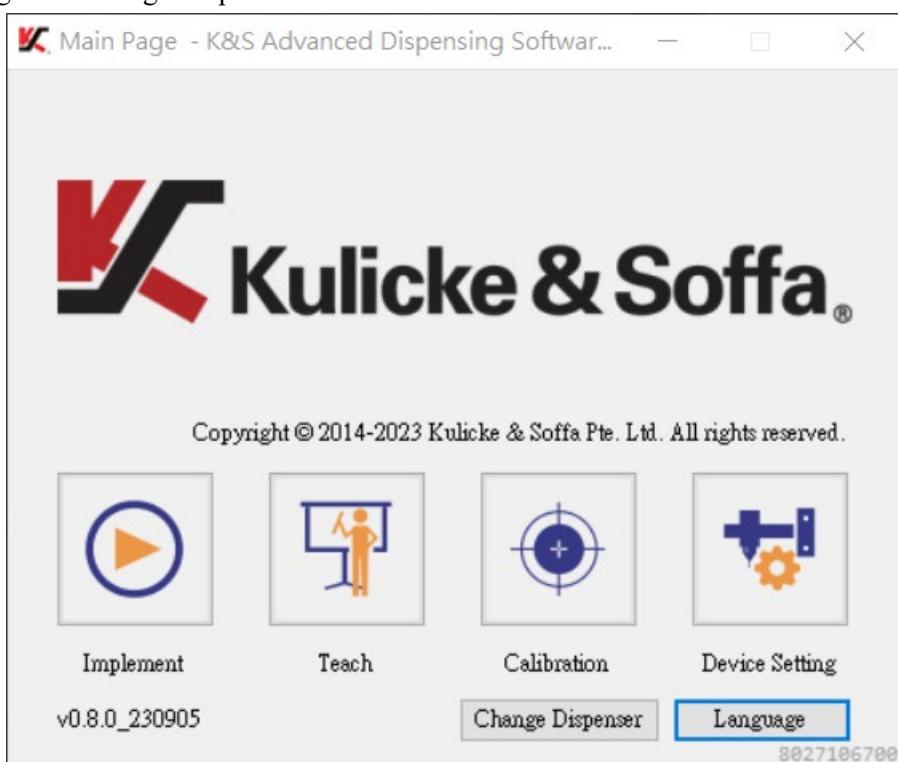


Figure 8:V2K software interface

2.1

Software Introduction

This software uses an operating system of WIN7 or above (X64 compatible), and the hardware specifications need to run at Intel I3 CPU level or above, RAM 4G, HDD 80G or above (hardware capability determines the ability of image teaching and recognition), and this software must be used with the machine designated by our company to operate.

2.2

V2k Startup Instructions

Please follow the steps below to start V2k.

- (1) Launch the other software with Adaptor and CxVis first. (Options)

Note: When the environment requires AOI detection or CIM, the corresponding software will be installed to work together.

- (2) Start V2k.

Note: In addition to special customer needs, related software will create corresponding shortcuts on the desktop.

- (3) Go to the device settings page to test the connection of each device.
- (4) Go to the calibration page to perform various device calibrations. (e.g. cameras, valves, altimeters, weighing devices, height corrections.).....etc.).

Note: Note: When the hardware is changed or disassembled, it should be calibrated first to confirm that the calibration parameters of each device are correct.

Note: In the case of actions such as replacing consumables for valves, it is recommended that you perform a quick calibration process to save time required for calibration confirmation.

- (5) Go to the teaching page to check the content of the teaching document to be executed.
- (6) Go to the execution page to execute the teaching file for actual production.

2.2.1

There are four main functions on the main page

The main page has four functions, from left to right, execution, teaching, correction, and device setting functions.

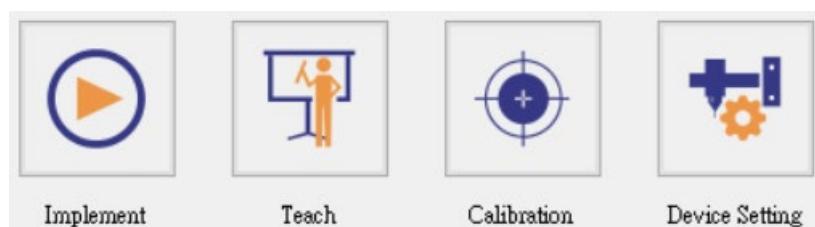


Figure 9:Four major functions

name	Depictions
Implement	Perform the dispensing program that has been written, and generally use it to load the taught program in actual mass production.
teach	Write and teach dispensing procedures.
calibration	The machine device is offset, the camera device and the upper and lower height measurement, cleaning and other devices are used for calibration.
Device settings	When the machine has been replaced with a dispensing device or other hardware options have been added, you need to use the "Device Settings" first. Added and modified the attached hardware device setting connection.

After the operating system is booted in, click on the teaching software V2K on the desktop to enter the main page of the software, and the detailed function description of the main page of the software.



Figure 10:shortcut

- (1) Common process descriptions:

- (A) On the device settings page, you can set up the connection for the hardware devices attached to the machine.
- (B) On the calibration page, correction is required when the machine is running for the first time or when the hardware settings (CCD lens, height measurement device position, needle position, clear glue and other hardware devices) have been changed.

- (C) On the teaching page, through the software program teaching function, you can write the dispensing program that needs to be run for teaching.
- (D) On the execution page, it is used to execute the dispensing program that has been written during the actual mass production.

2.2.2 Change the language family

Change the language system and set the interface language to be used for software operation.

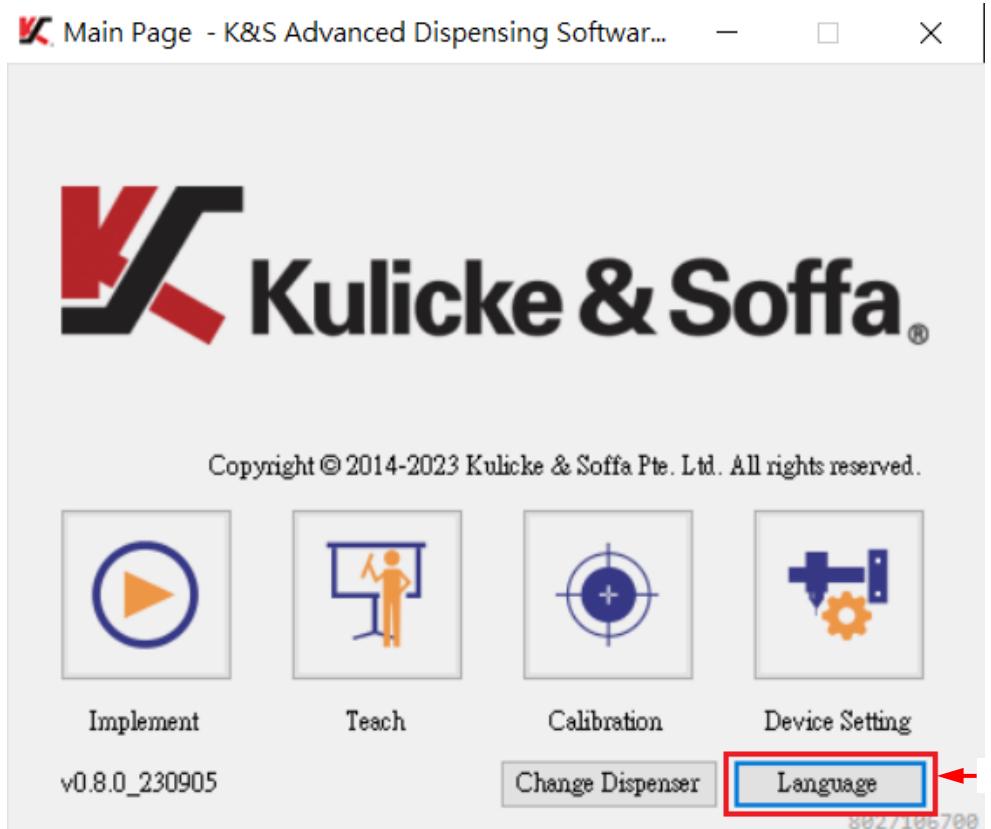


Figure 11:Switch languages

If you switch to English, the language of the software operation interface will be changed to English.

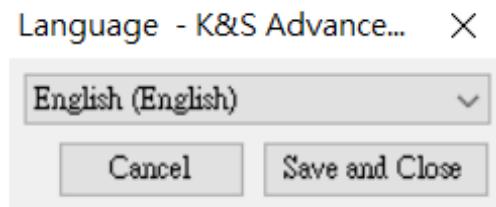


Figure 12:Switch to English

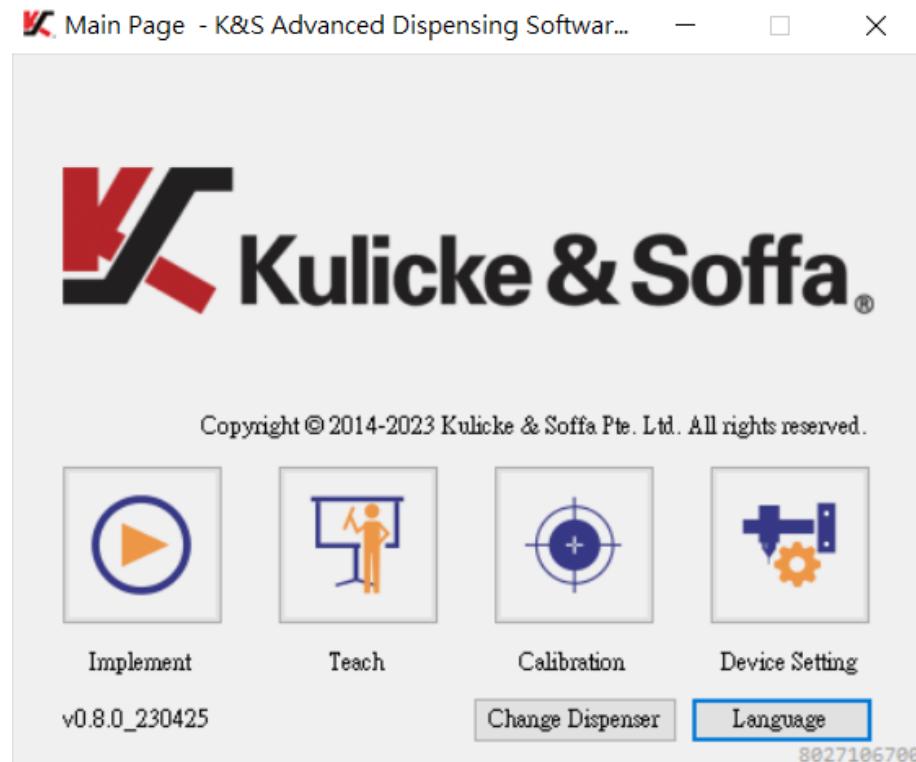


Figure 13:English interface

2.2.3 Replace the valve

Replace the glue valve, valve body, glue, needle setting and replacement and monitoring setting function, when it is necessary to replace the glue or needle, you can go through this page to do the replacement process.

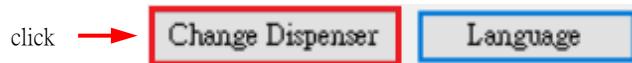


Figure 14:Replace the valve

For detailed parameter description, please refer to Chapter 1, Replacement Valve Project Description.

3

Device settings

Device settings: After entering the device settings page, you can set the machine, camera, altimetry device and other related equipment to be used for connection, advanced settings and password settings, etc.

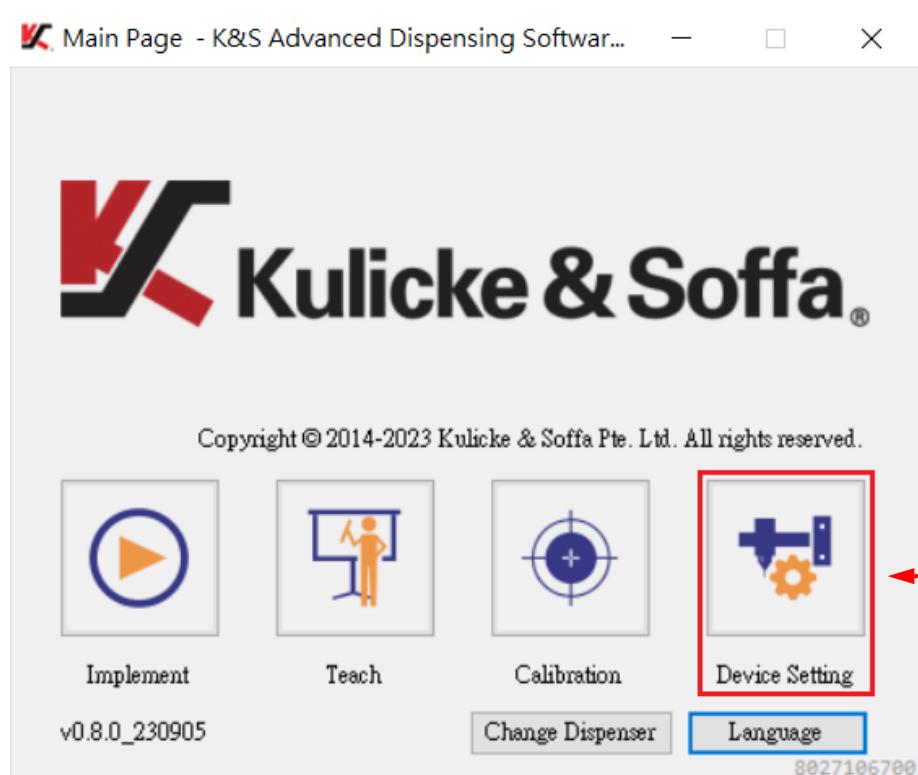


Figure 15:Device settings

3.1 Interface features

The function description of the device setting interface software is described in detail as follows: The function description of the device setting interface software is described in detail as follows:

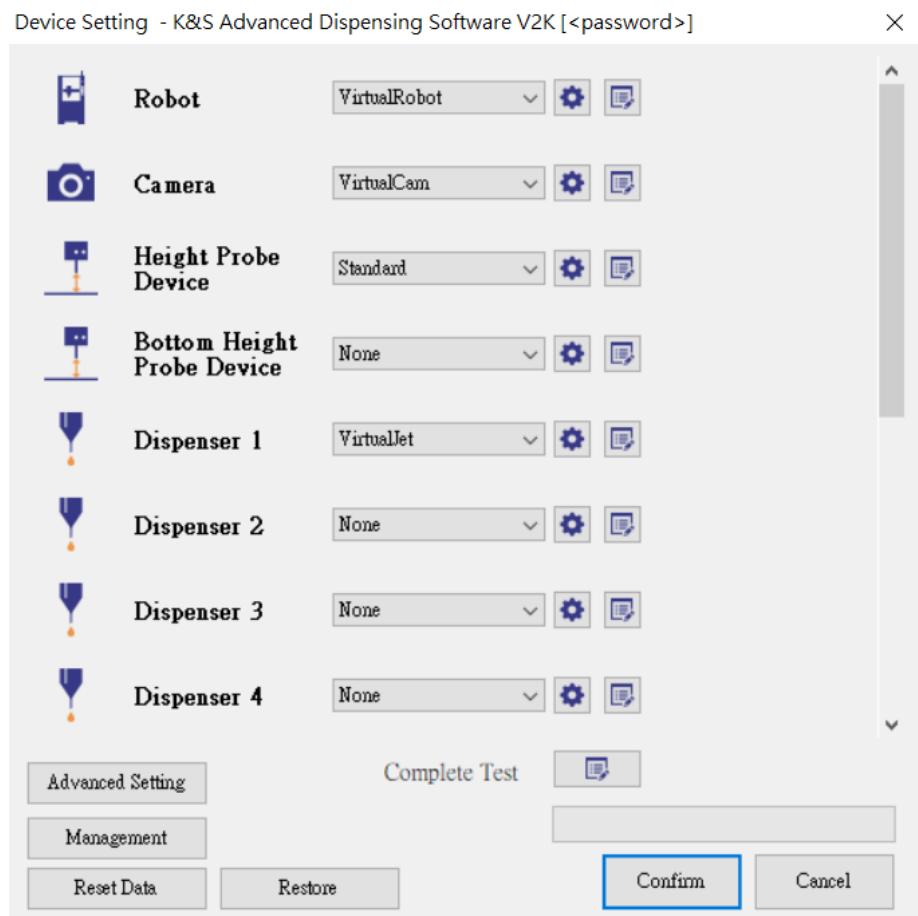


Figure 16:Device settings

Name	Depictions
Advanced Setting	Device settings for engineering personnel.
Management	Manage passwords: Go to the password settings or delete them on the device page. FM Settings: Enable the FM feature.
Confirm	Save the settings and leave the page.
Cancel	Do not save the settings and leave the page.
Setting	Communication settings.
Test	Communication testing.
Complete Test	Test all the device options that have been set.

3.2 Device settings

Device setting, setting the dispensing machine, camera, dispensing device and other related equipment use.

The main device setting screen, device setting method description and scope are as follows.

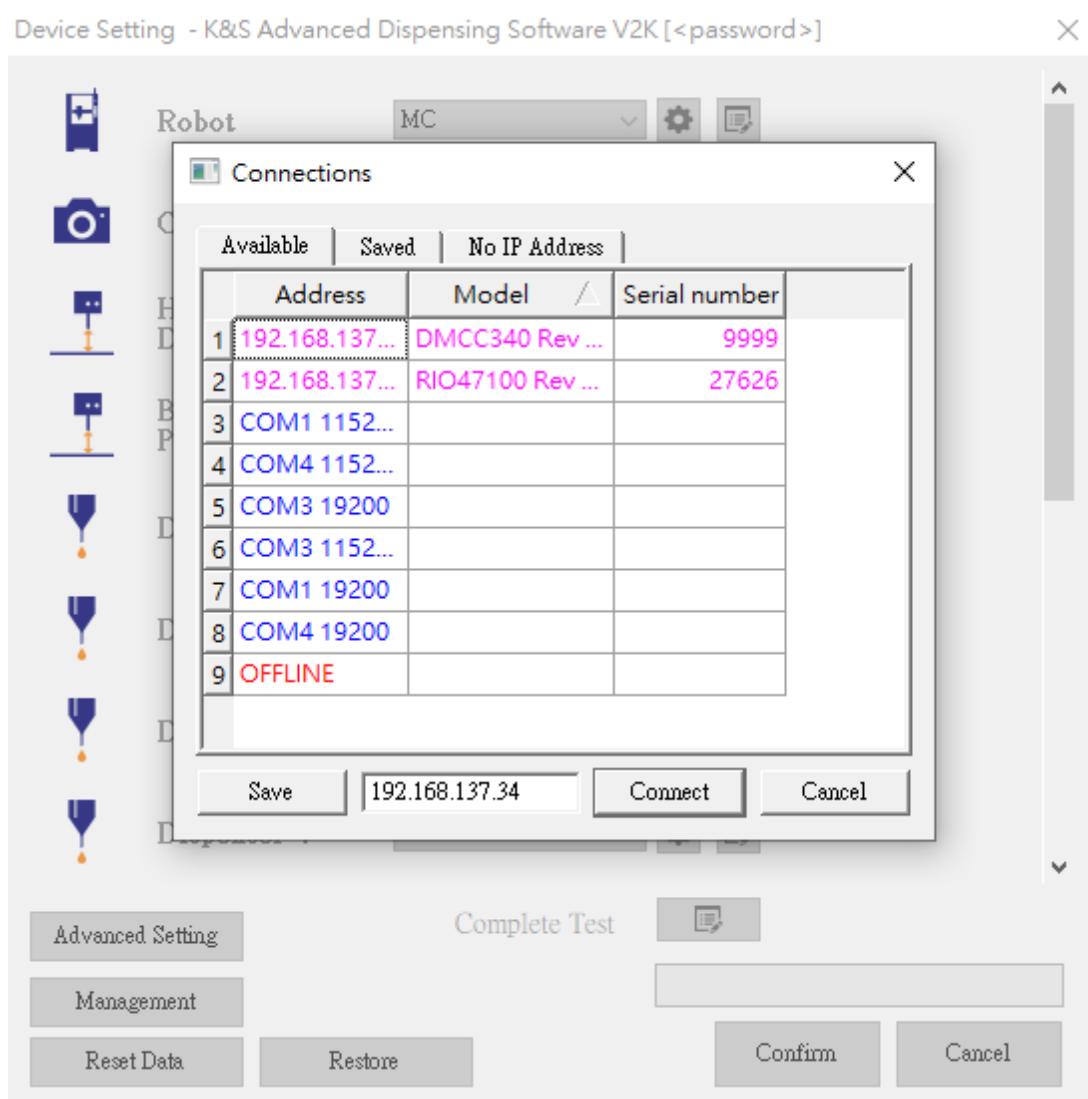


Figure 17:Robot settings

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

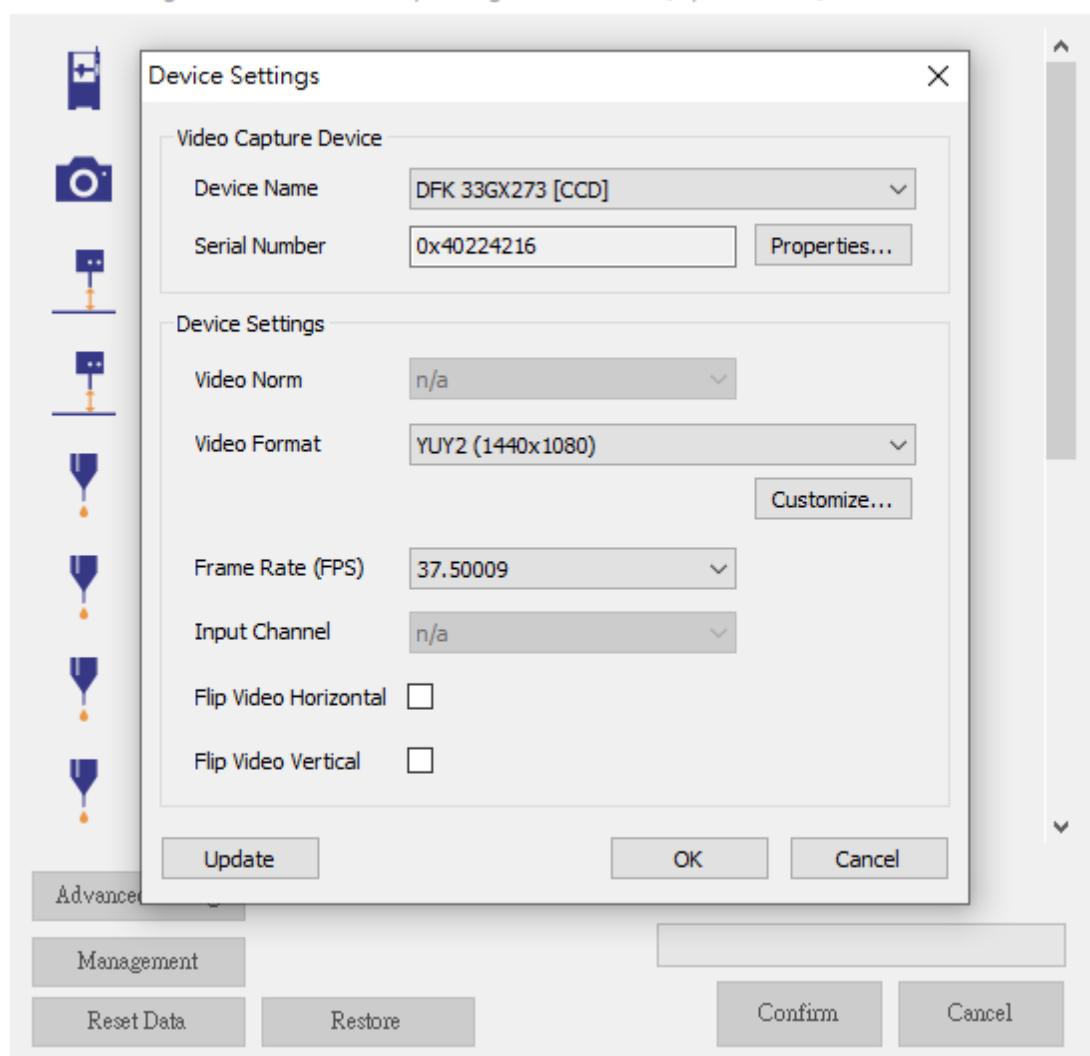


Figure 18: CCD Settings

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

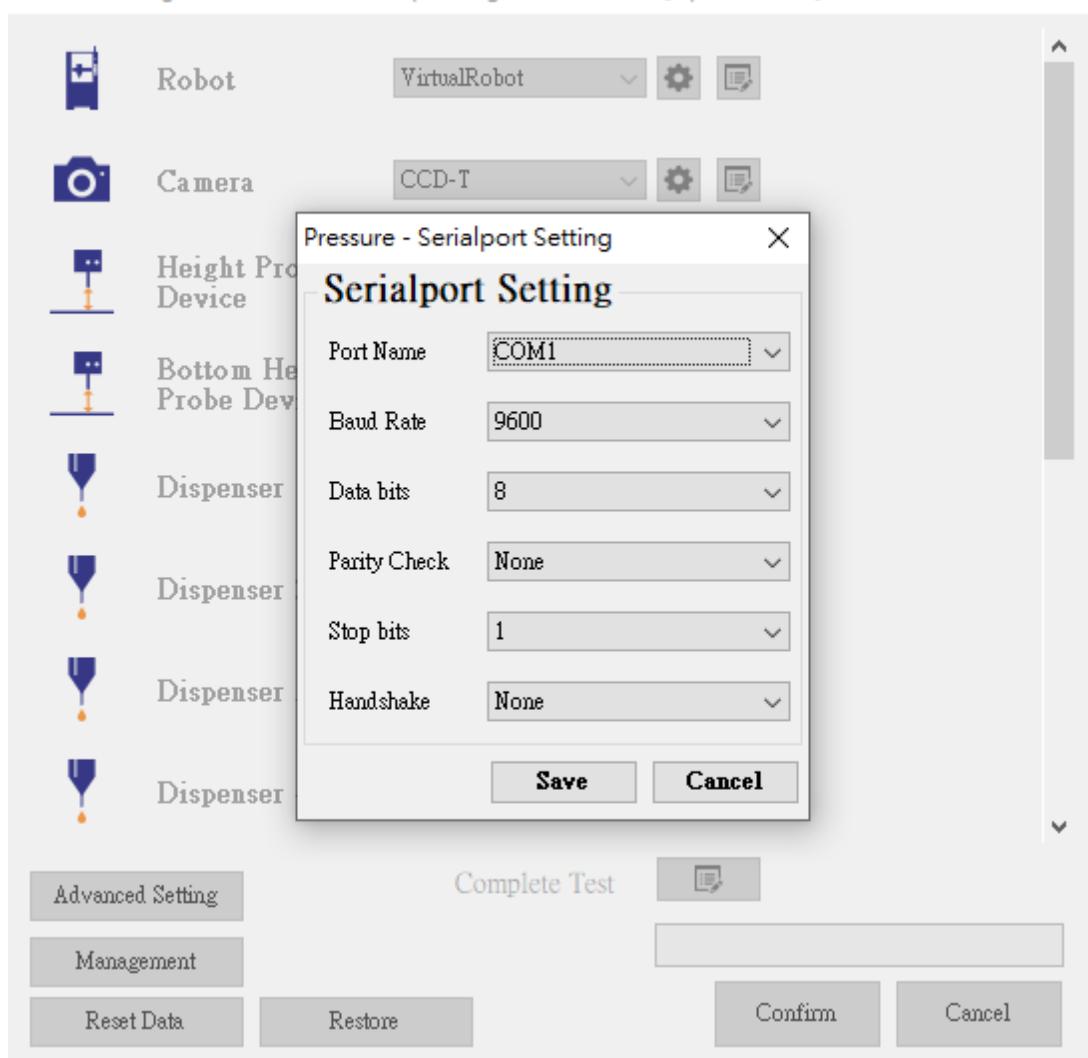


Figure 19: Dispenser Device Settings

Device setting description and examples:

When the machine has been replaced with a dispensing device or other hardware options have been added, you need to use "Device Settings" to add and modify the attached hardware device settings connection, and the options page has a detailed function description.

The following is an example of a "machine" device connection:

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

X

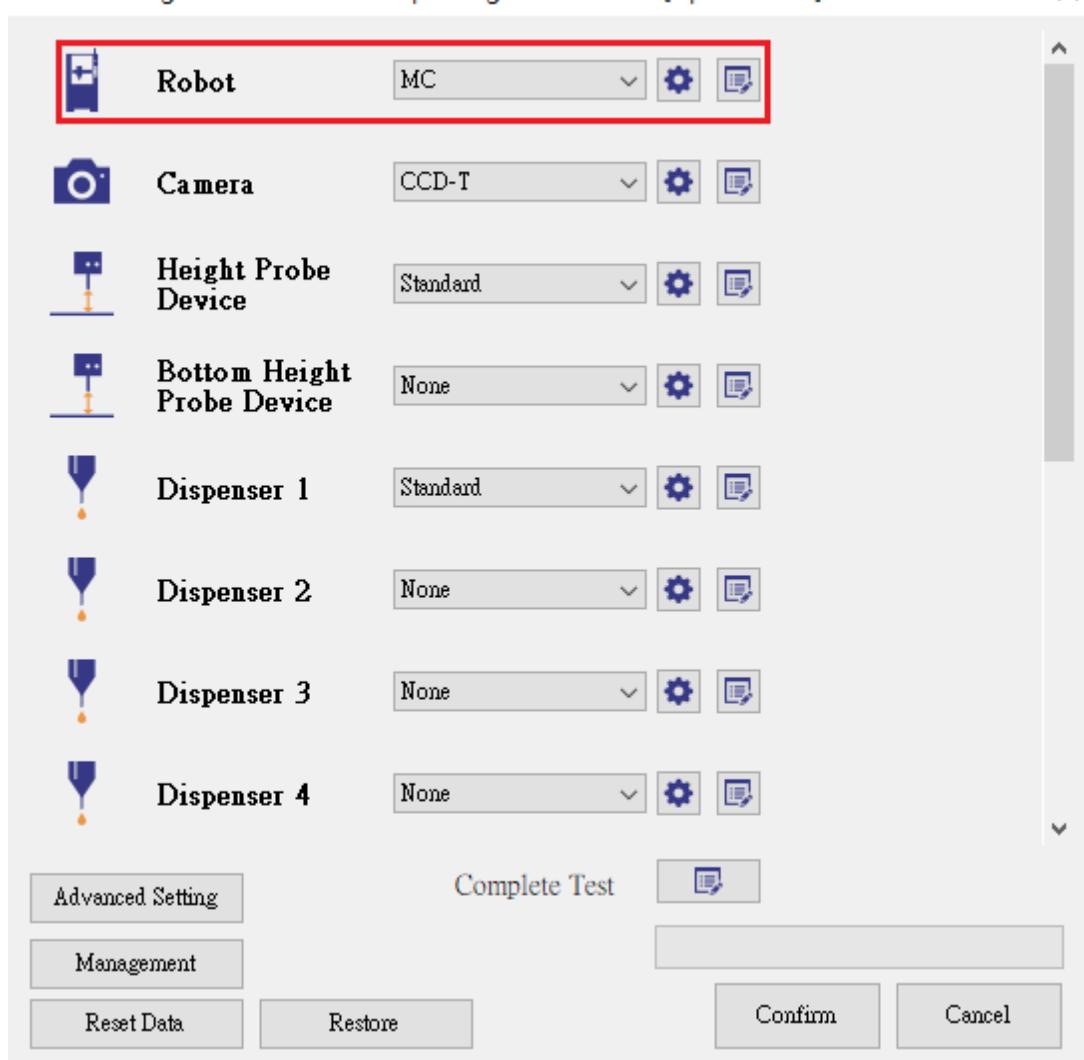


Figure 20: Robot Connection settings

Name	Depictions
Robot	The name of the device.
MC	Device model.
Settings	Communication settings.
Test	Communication test. (Confirm whether the device test can be effectively connected)
Valid MC	The connection of the MC equipment is normal + the tested equipment device model (eg: MC).
Invalid MC	MC device connection failed + the tested device model (eg: MC).

3.2.1

Robot Connection process

- (1) If you need to connect the "Robot" device, find the device on the device settings page, and select the device model with the actual hardware from the menu.

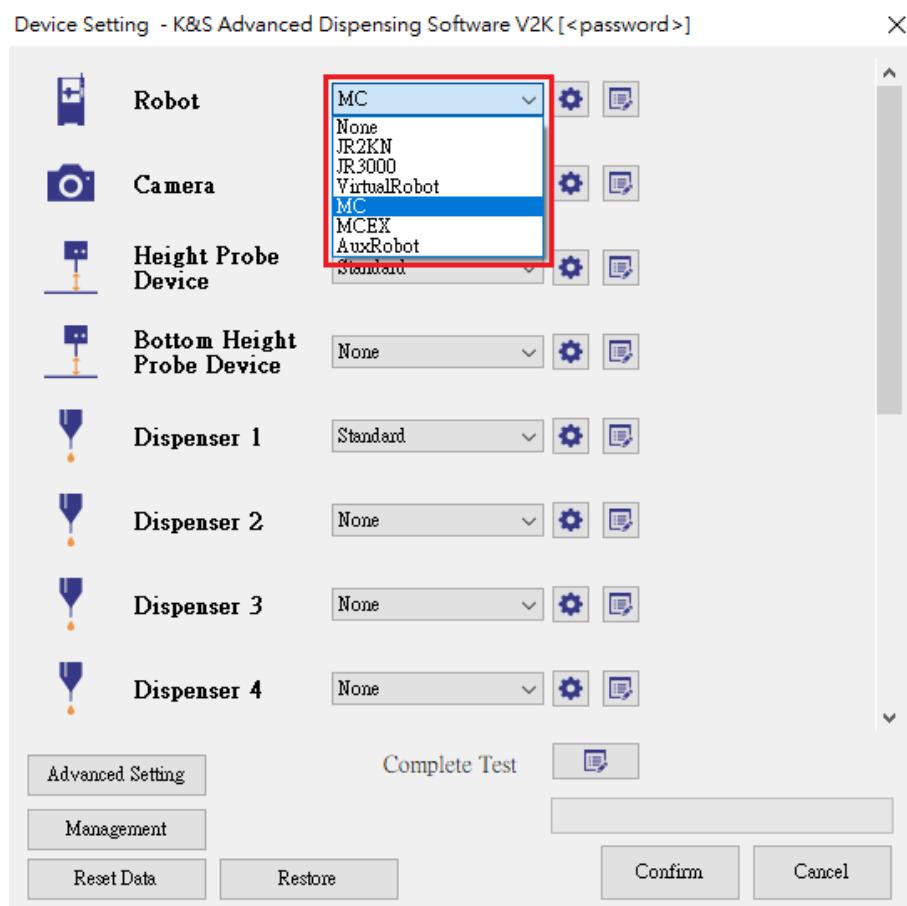


Figure 21:Select the machine model

- (2) Then click the gear button to set the content of the device, and then click the test button to confirm whether the device test can be effectively connected.

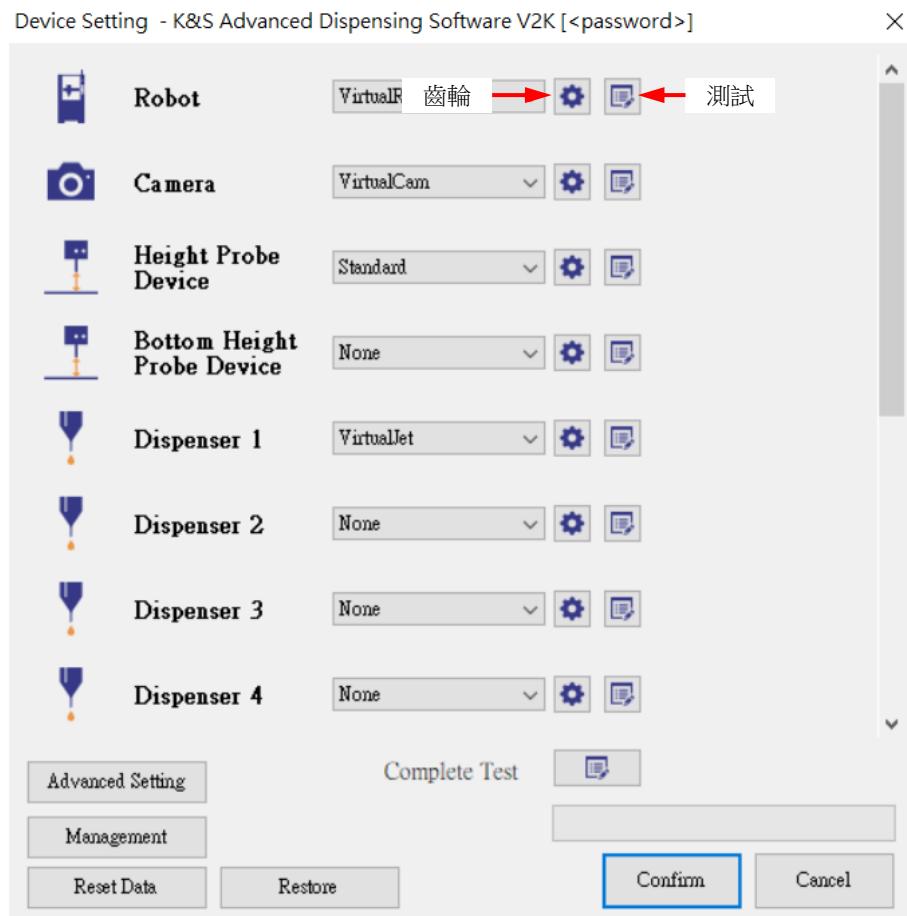


Figure 22: Setup & Testing

- (3) Select the corresponding axis card and IP.

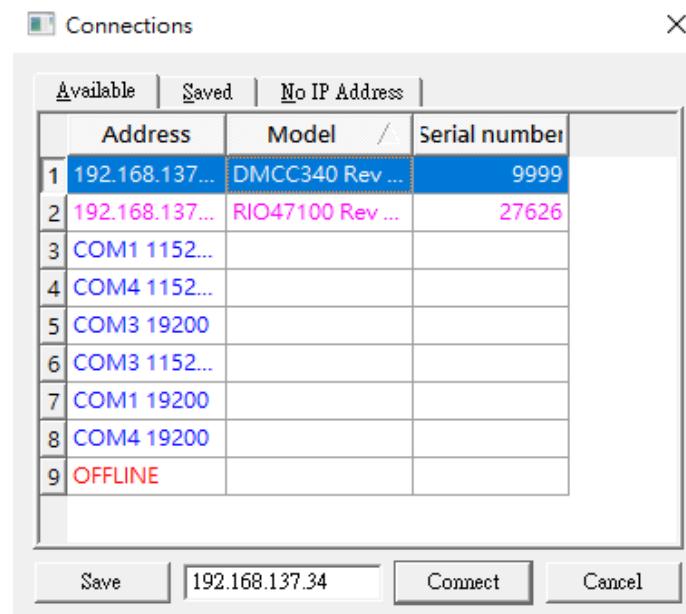


Figure 23: Select the axis card

- (4) The warning window pops up and the initialization action is performed.

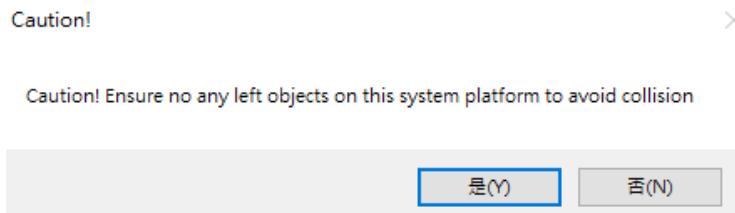


Figure 24: Initialize the warning window



Caution:

Be sure to check before initialization, the Z-axis will be raised from the front position to the front during initialization, and it will be confirmed that there will be no collision when lifting, and the machine will be used to ensure the usability of the machine during initialization.

- (5) When the device is properly connected, the software will display the status message "Normal+ Device Model (e.g. MC)" for testing, and conversely, when the device model device is selected incorrectly or the settings are incorrect, the "Error+ Device Model (e.g. MC)" status message will be displayed.



Figure 25: The connection is successful

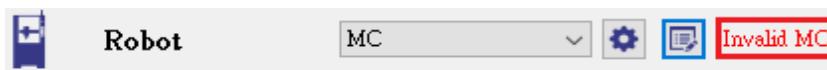


Figure 26: Continuity Failure

Note: For the connection method of other devices, please refer to the example description of the connection of the "machine".

When you need to test all the options for all the set devices, click the "Full Test" button to test all the options for all the set devices.

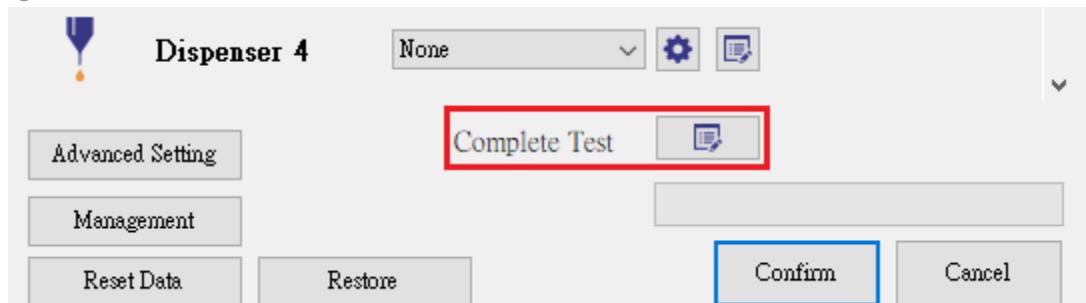


Figure 27: Complete Test

3.3 Advanced settings

Advanced Setup Description, in addition to the device settings for engineers, includes additional device settings for V2K and other module devices.

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

X

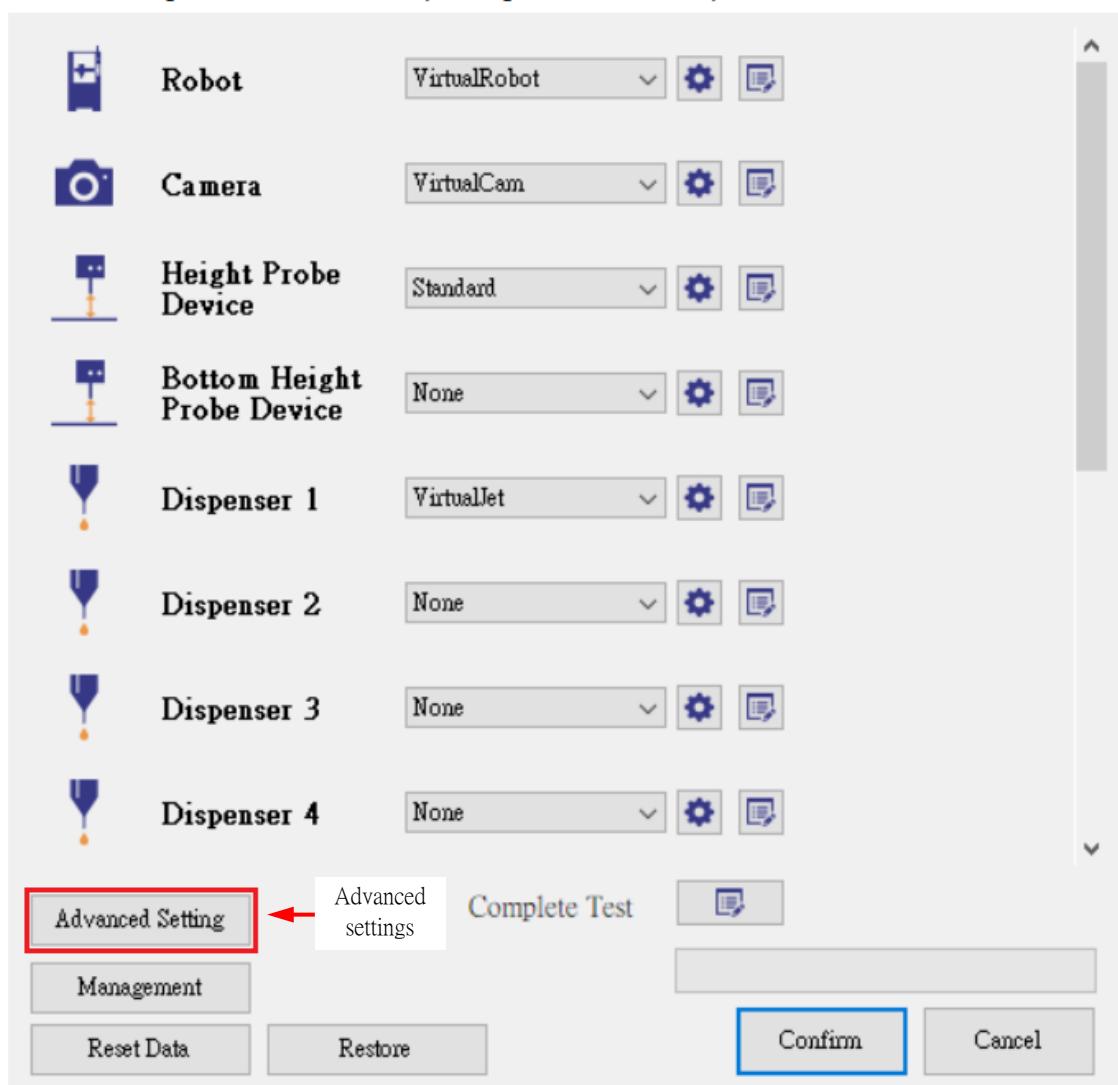


Figure 28: Click Advanced Settings

Advanced Setting		
Connection Controller External Module		
	Add	Delete
Name	Type	Info
robot0	Galil	TODO
height_sensor0	Virtual	TODO
dispenser0	Virtual	TODO
dispenser1		TODO
scale0	Virtual	TODO
light0	Virtual	TODO
robot1	Virtual	TODO
inline0		TODO
camera0	Other	TODO
camera1	Virtual	TODO

Figure 29: Advanced settings interface

3.4 Manage passwords

Manage page passwords, set and clear correction page, teach page, run settings page, device settings page, Password function for door inspection.

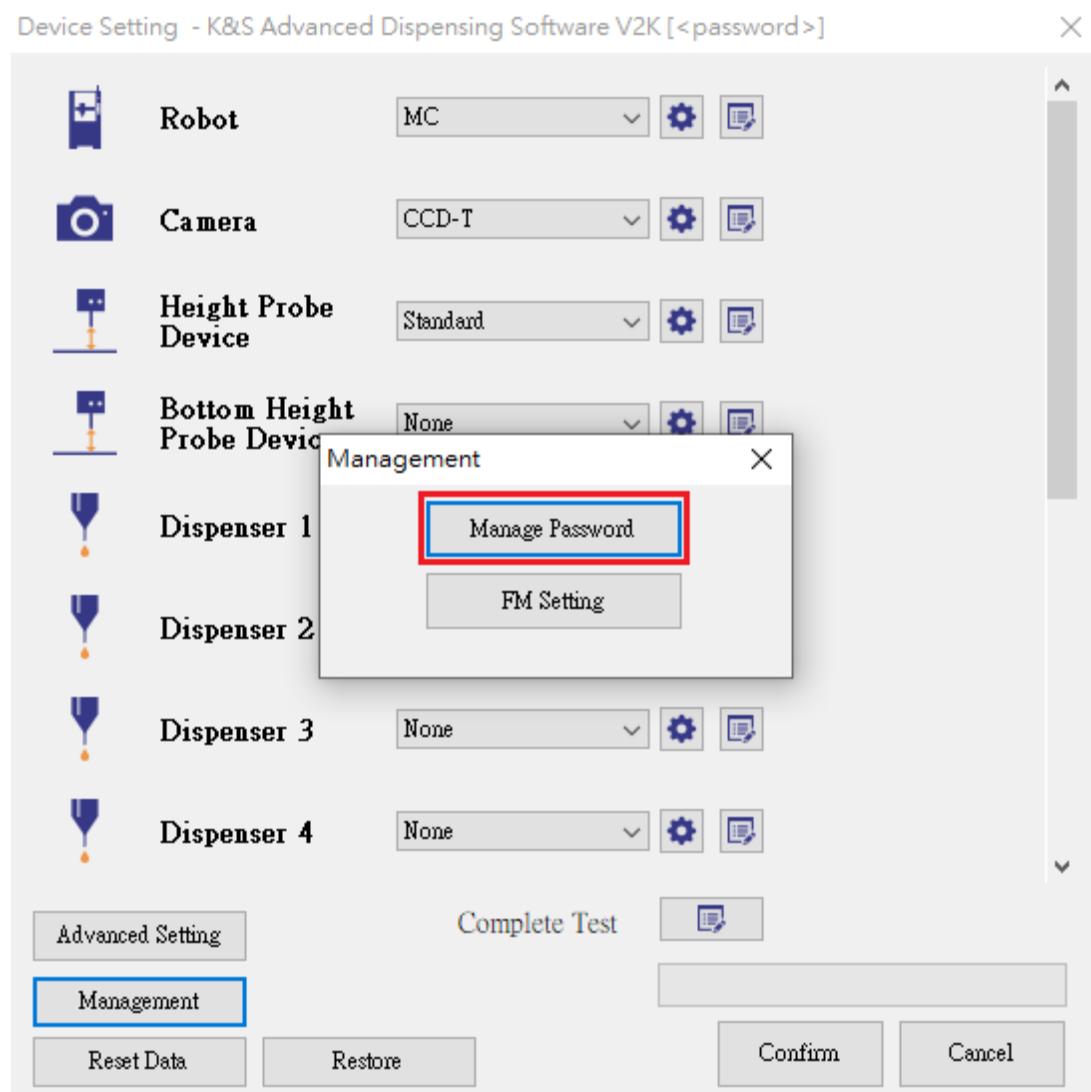
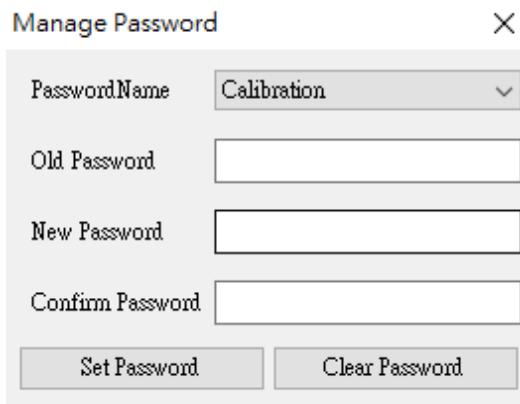


Figure 30:Enable the management password



The 'Manage Password' dialog box contains fields for 'PasswordName' (set to 'Calibration'), 'Old Password', 'New Password', and 'Confirm Password'. At the bottom are 'Set Password' and 'Clear Password' buttons.

Figure 31:Manage password interface

3.5 Manage Users

Manage Users, you can set other user accounts and passwords, and specific accounts are authorized to enter the mode, and non-authorized mode is not allowed to enter.

Manage Users

	<input type="button" value="New"/> <input type="button" value="Delete"/> <input type="button" value="Edit"/> <input type="button" value="X"/>
admin test	Name <input type="text" value="admin"/> <input type="button" value="L"/>
	<input type="button" value="Save"/> <input type="button" value="Cancel"/>
	Remark <input type="text"/>
	Password <input type="password" value="*****"/>
	Permission
	<input checked="" type="checkbox"/> Device Setting <input checked="" type="checkbox"/> Device Setting (Connection Only) <input checked="" type="checkbox"/> Calibration <input checked="" type="checkbox"/> Door Check <input checked="" type="checkbox"/> Change Supplies <input checked="" type="checkbox"/> Dispenser Type <input checked="" type="checkbox"/> Teach <input checked="" type="checkbox"/> Run Setting <input checked="" type="checkbox"/> Run <input checked="" type="checkbox"/> Manage Users

Figure 32: Manage Users interface

3.5.1

Manage Users Operation:

- (1) Open the Manage Passwords page, hold down Ctrl, and click Manage Passwords to jump out of Enable User Mode.

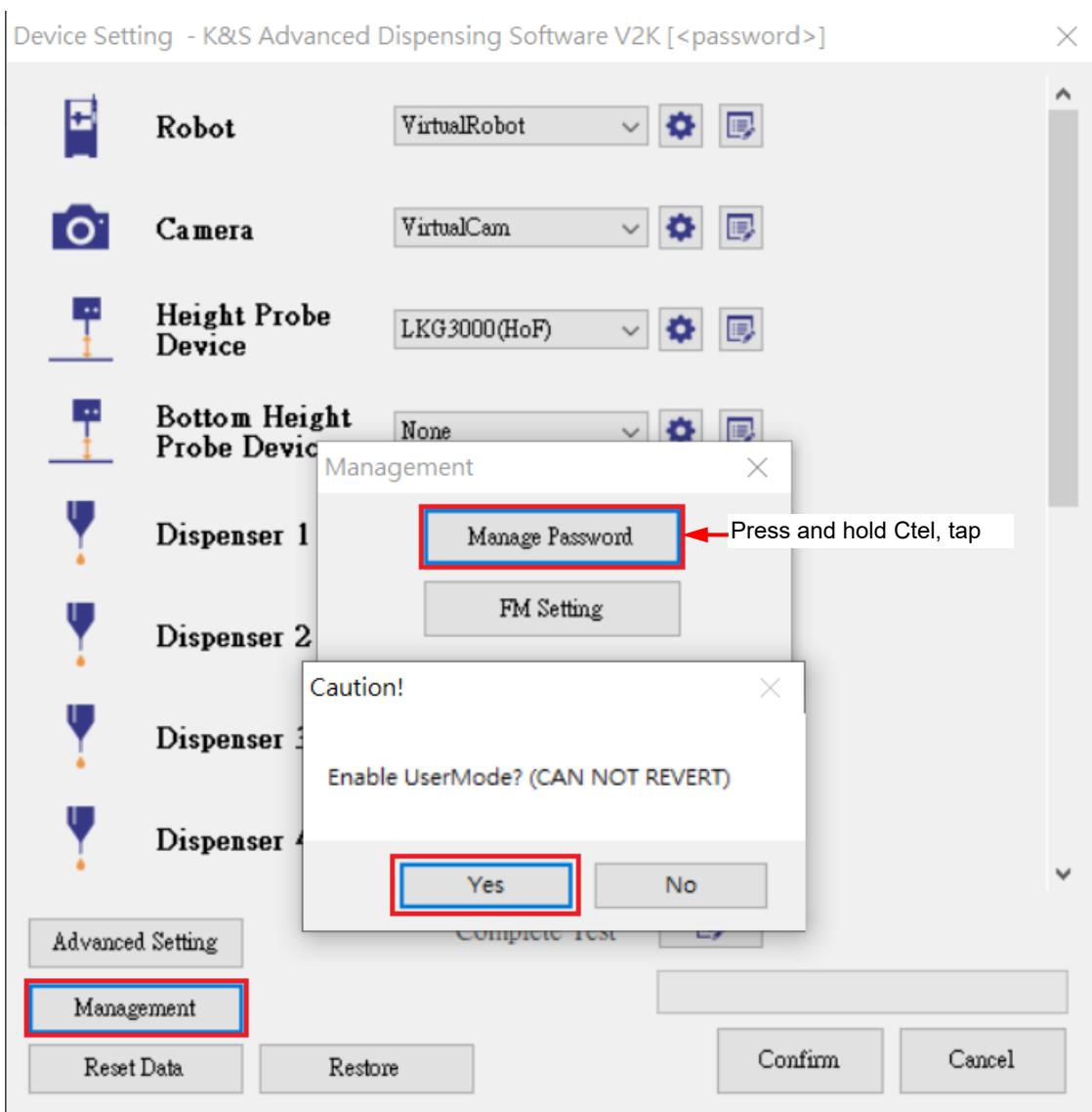


Figure 33: Enable user management mode

Note: Please note that after enabling user mode, it cannot be restored, if you need to restore it, please contact the FAE department.

- (2) Click Yes to jump out of the setting and click Manage Passwords again.

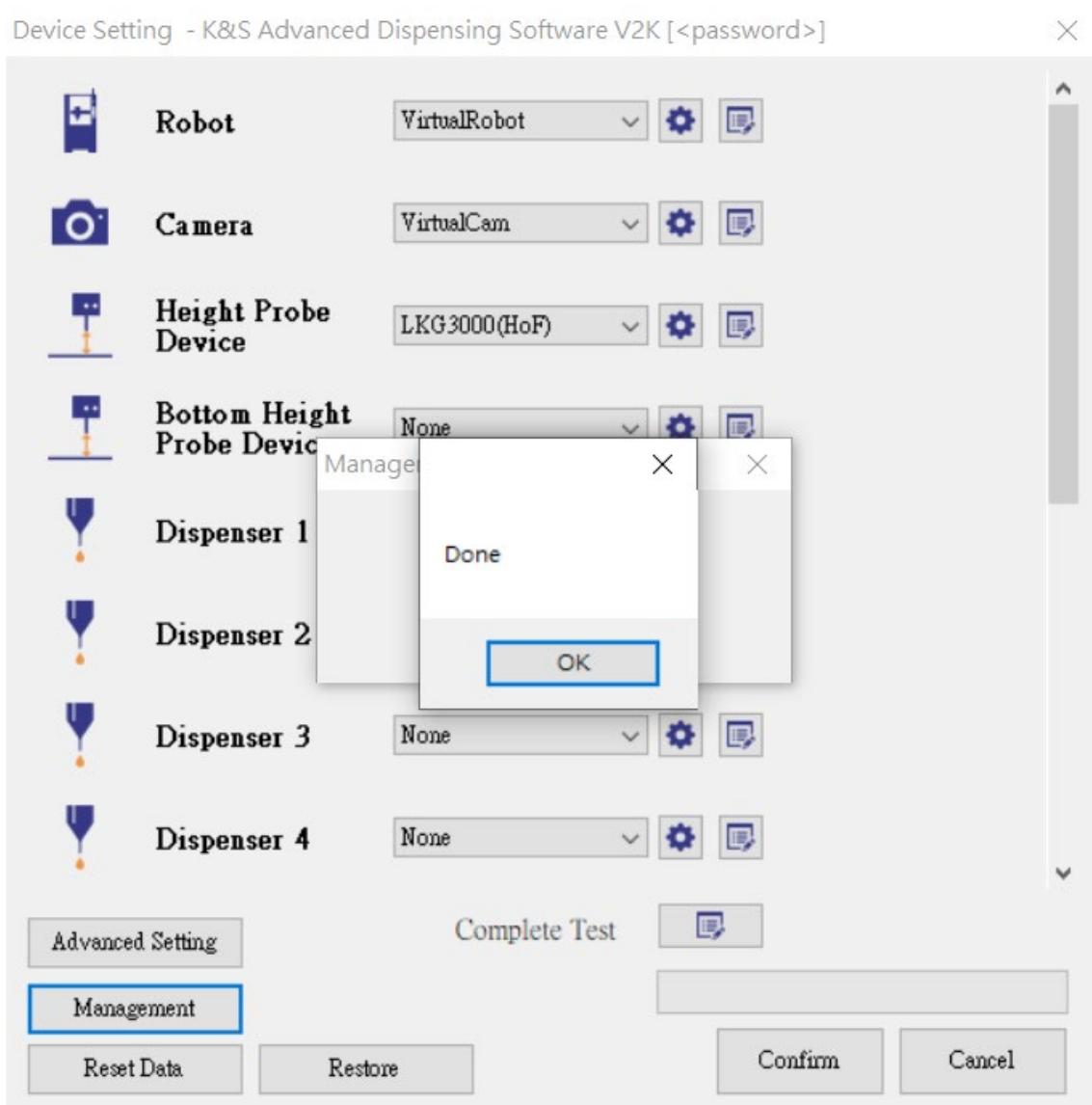


Figure 34:Enable user mode

(3) User: "admin" Password: "123456789" .

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

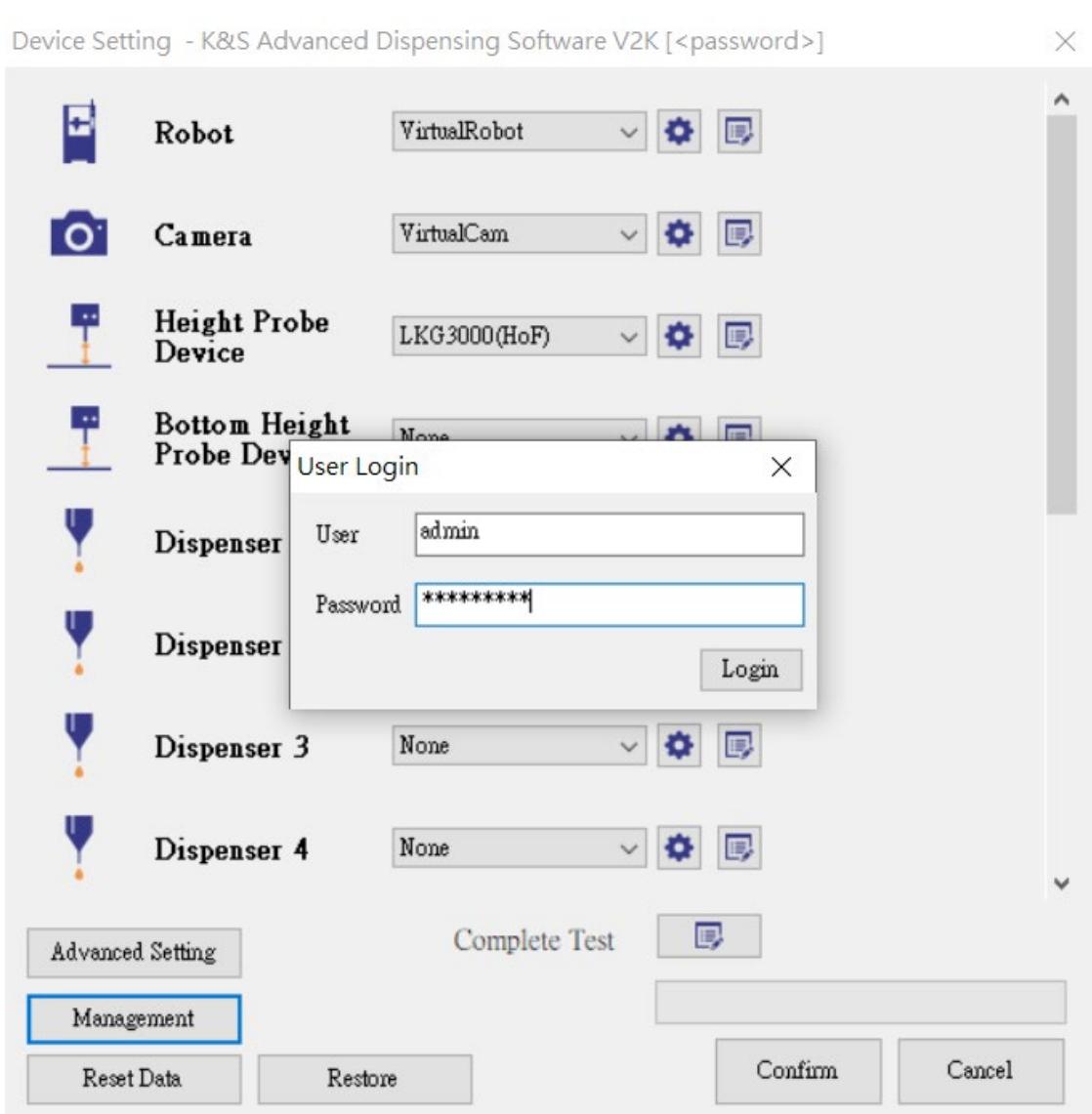


Figure 35: Enter the user and password

- (4) Jump out of the settings interface and add an account and set authorization.

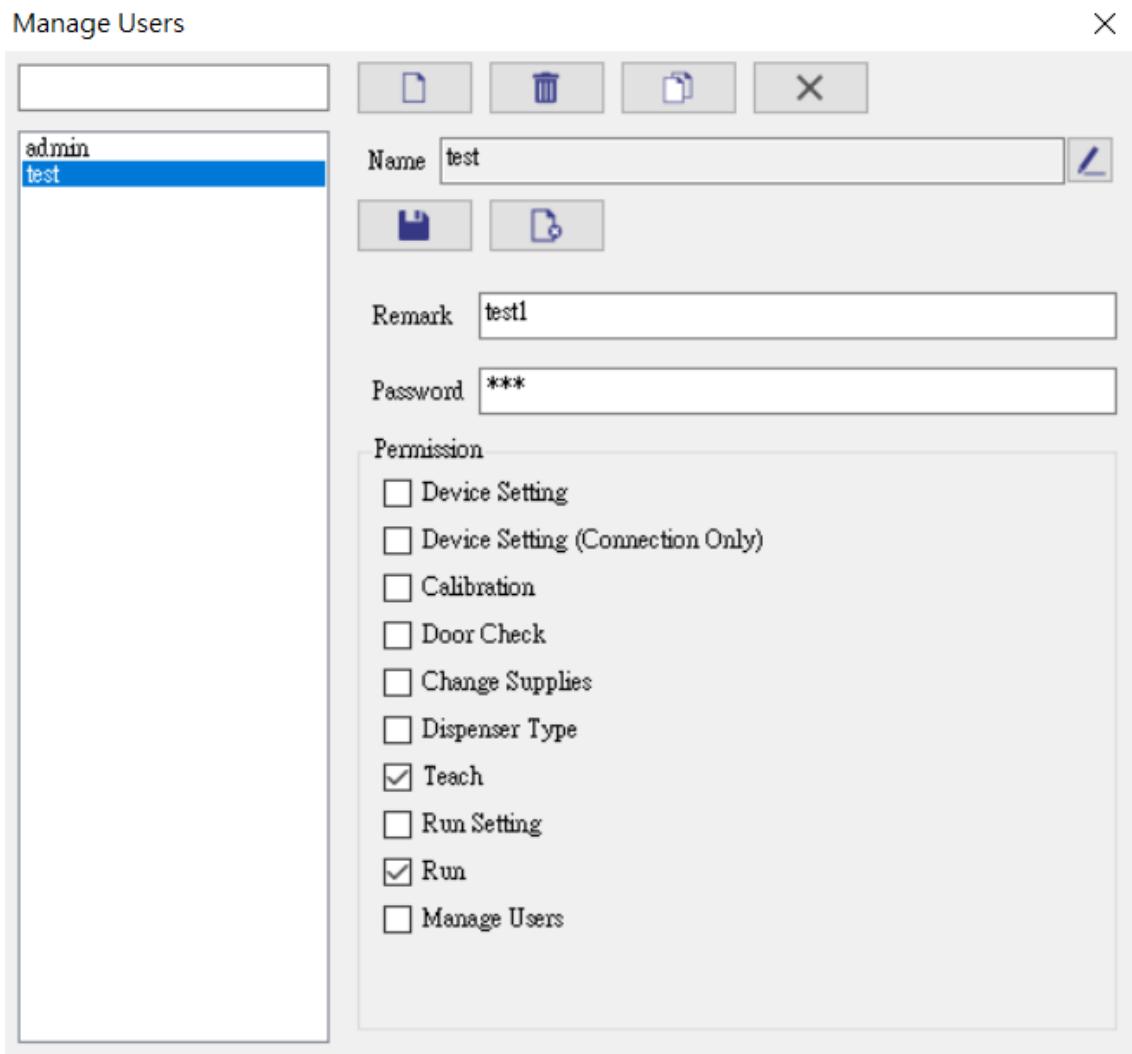


Figure 36: Set up individual users

3.6 FM settings

FM Settings, enable FM Enable, and enable V2K machines to communicate with PLCs.

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

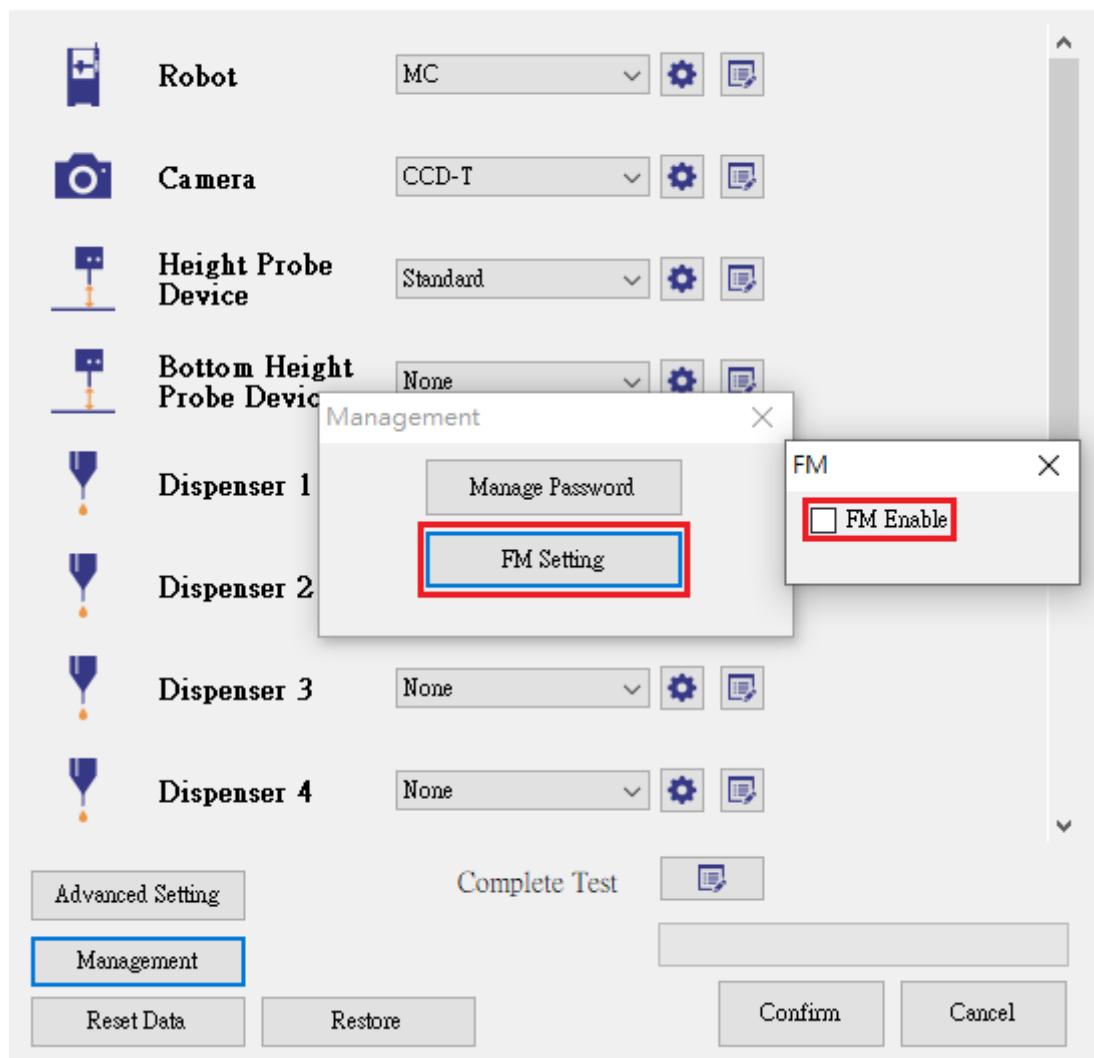


Figure 37:FM setting

4

Device control

The device control page is located at the upper right of the screen of calibration, teaching, and execution (run), which mainly provides equipment operation and teaching functions. The page is divided into two parts, the upper part is the machine control and teaching function, the upper button function is used to switch the lower function, and the lower part is the camera, dispensing device, auxiliary device, Log and other interfaces.

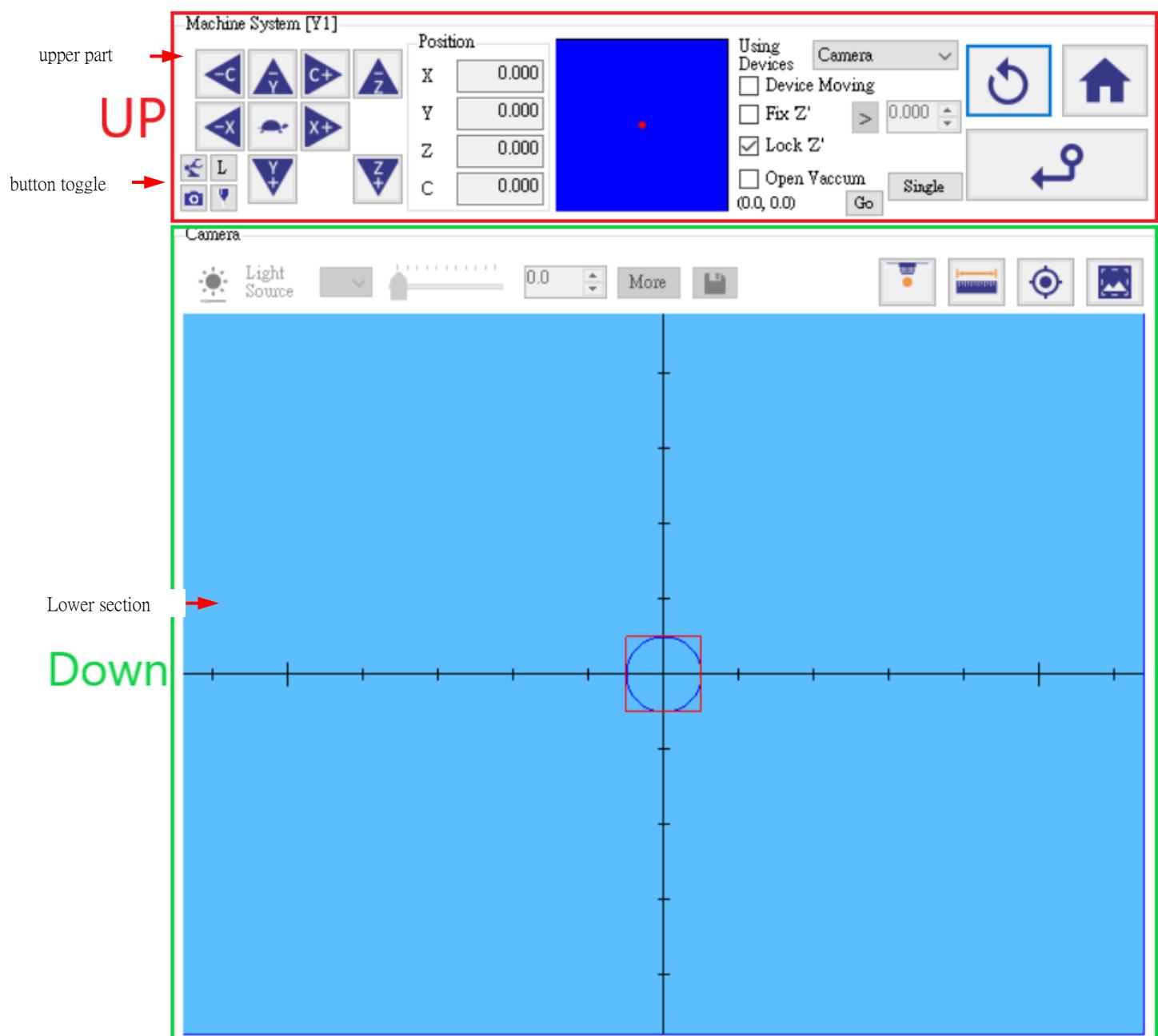


Figure 38: Device control interface

4.1 Machine control and teaching

Machine control screen, the functions from left to right are Jog, current coordinates, small map, machine control options.

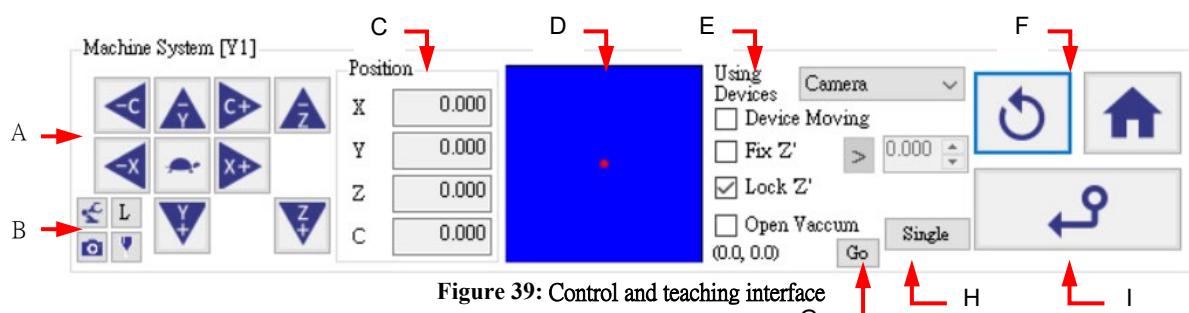


Figure 39: Control and teaching interface

Name	Depictions
------	------------

A.X-、X+、 Y-、Y+、 Z-、Z+、 C-、C+(Jog)	X, Y, Z, C axis movement buttons. Through the button in the middle of XYZ, you can switch the speed of the device's movement.
B. Device switching	The device switching button can switch the camera screen, dispensing device settings, other devices, and Log data.
C.Position(X、Y、Z、C)	Displays the coordinate position of the camera mounted on the current machine gantry.
D. Mini map	The blue area indicates the movable range of the machine, and the red marked point is the current position of the machine. You can use the mouse to click to quickly move the machine to the clicked position.
E. Device settings	Using Devices: Switch the currently used device. If the device is equipped with cylinder switching, the corresponding cylinder will be turned on. (Also affects the baseline of the "GO" move.) Device Moving: After checking, moving with "GO" will be based on "Using Device". Fix Z: Lock the Z-axis height to the safe height of the camera without moving to prevent collision. Lock Z: After checking, you can set the Z-axis default value, move the machine coordinates to the expected coordinate height, and click the ">" button to set the height. Open Vacuum: Turn on the machine floor vacuum.
F. Machine return	Initialization: Initialize the machine. If the connection is interrupted and the machine cannot operate, you can initialize the machine and reconnect. Return to origin: Move the machine to the origin and perform search for the origin.
G.Go	Move the machine to the set coordinate position.
H.Single	Switch and display the current teaching mode, used to switch the method of teaching coordinates.
I. Teach	Used when importing coordinates into the program.

4.2 Teaching

When you click teach, the current machine coordinates will be taught to the grayed out coordinate fields.



Figure 40: Teach button

Teach operation:

- (1) Move the machine to the required position.

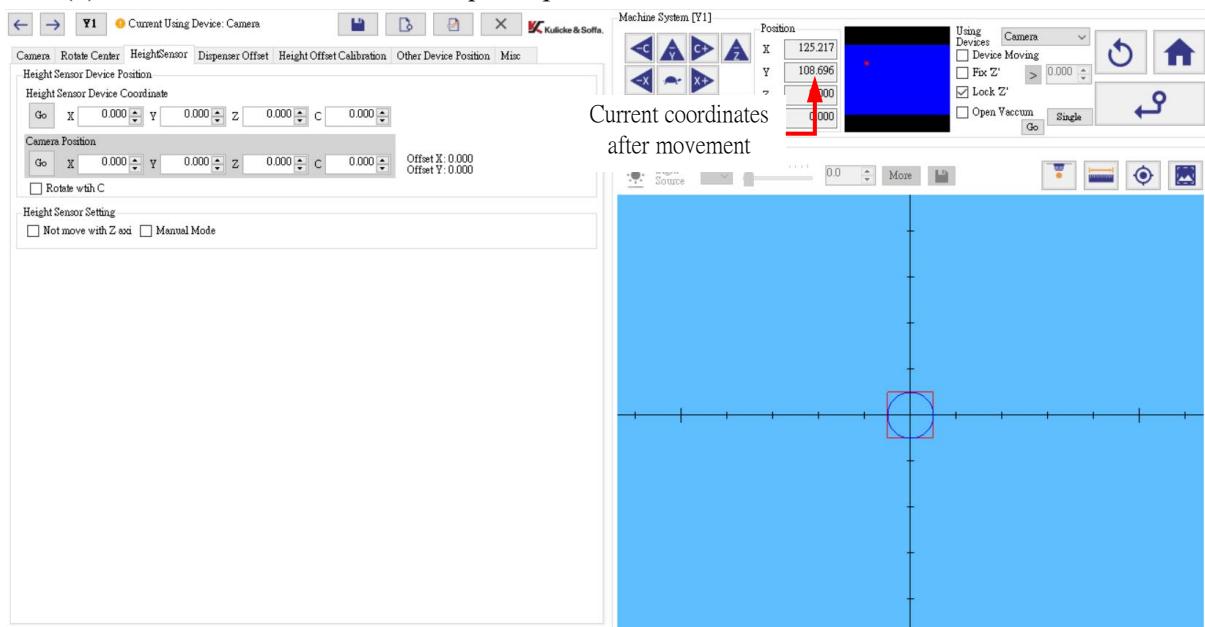


Figure 41:Mobile machine

- (2) Click the teach button

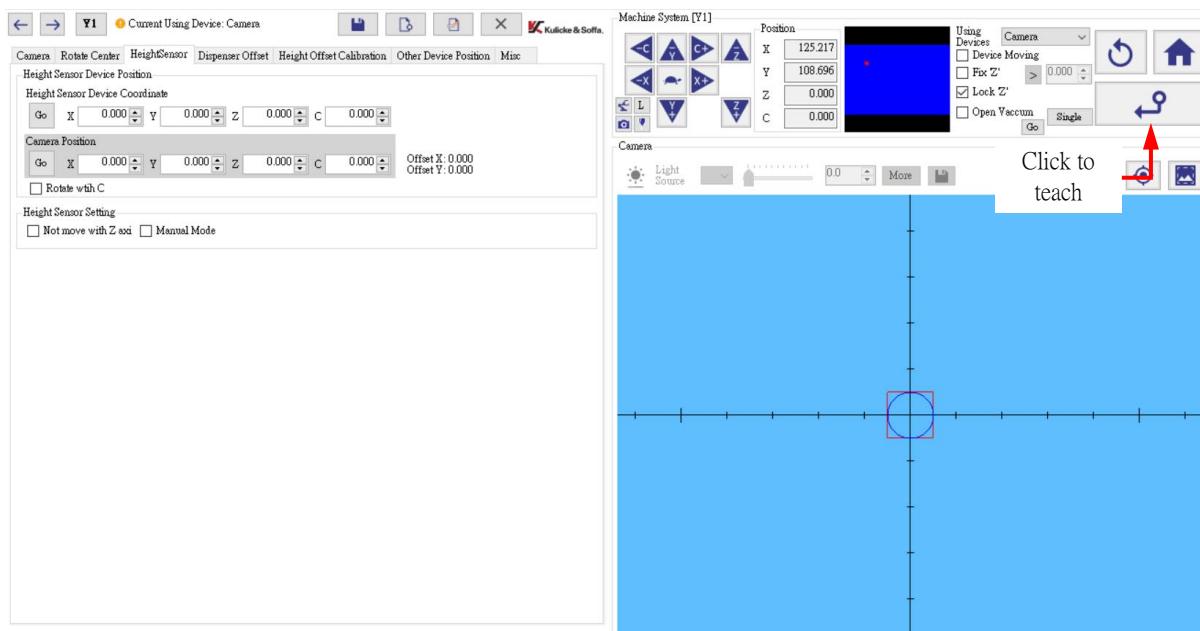


Figure 42: Click the teach button

(3) The software will insert the current position coordinates into the coordinate field.

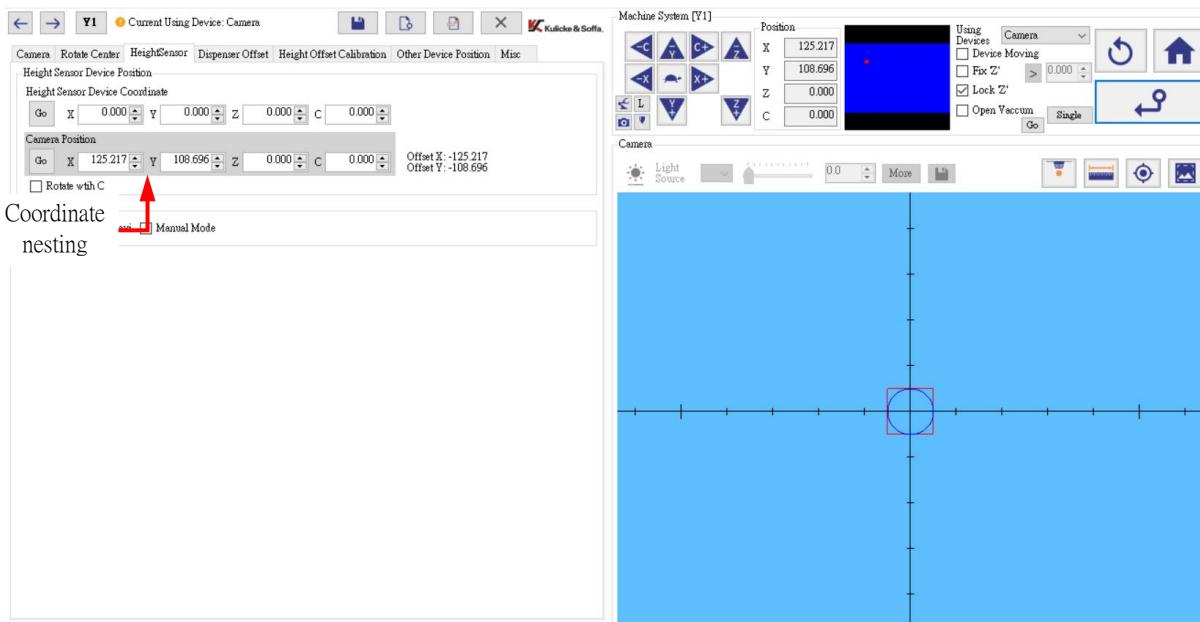


Figure 43: Nested coordinates

If the device displacement is checked, the software will use "Using Device" as the basis for guidance, otherwise it will use "Camera" as the basis for guidance.

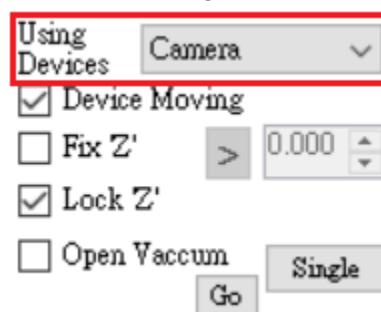


Figure 44: Device displacement

4.3 Single

Single mode can change the method of teaching coordinates. In some cases, the coordinates cannot be effectively taught. You can accurately teach the target position by switching to Singlemode.

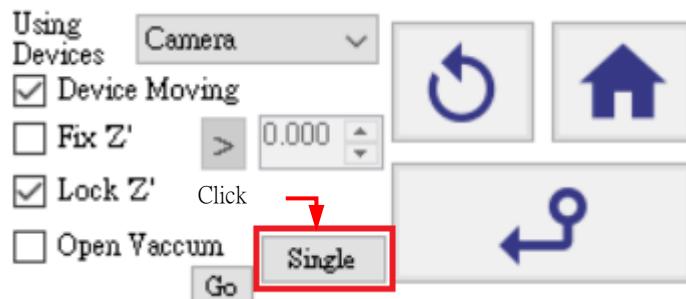


Figure 45: Single button position

Name	Depictions
Single	In default mode, click "Teach" to output the current position of the machine.
Circle	Use 3 points to determine the center of the circle. You need to click 3 times to output the center position of the circle.
Cross	It takes 4 clicks (2 lines) to output the intersection position of the 2 lines.
Center	It requires 4 clicks (4 points) to output the center position of the quadrilateral connected by 4 points.

4.4 Mini Map

The mini map is used to display the current coordinate position and teaching content. The blue area indicates the movable range of the machine, and the red marked point is the current position of the machine. You can use the mouse to click to quickly move the machine to the clicked position. "Right-click" on the mini-map can open "Full Map" and switch drawing tasks.



Figure 46:Mini map

4.5 Full Map

The full map will show the working path and empty running path of the teaching, and provide related convenient functions. Details are as follows:

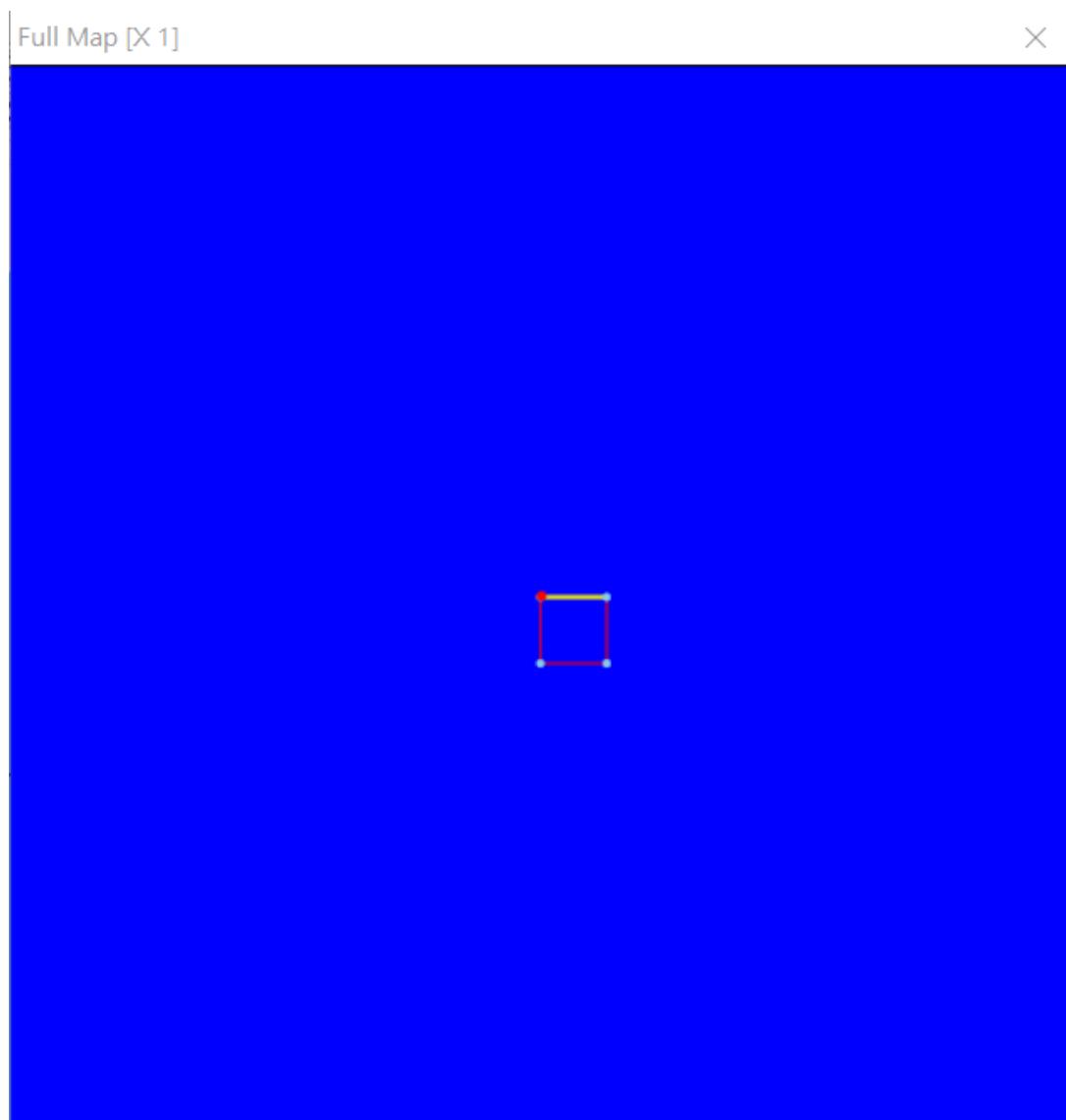


Figure 47:Full Map

Working and empty running paths:

Click "right click" on the mini map to display the full map or disable or enable the drew map.

Name	Depictions
Red	Machine working path (usually refers to the glue coating path).
Translucent	The empty running path of the white machine.
Yellow	Roughly select the working path.

4.5.1 Zoom

Right-click the full map menu to switch the zoom mode and switch the results in different modes.

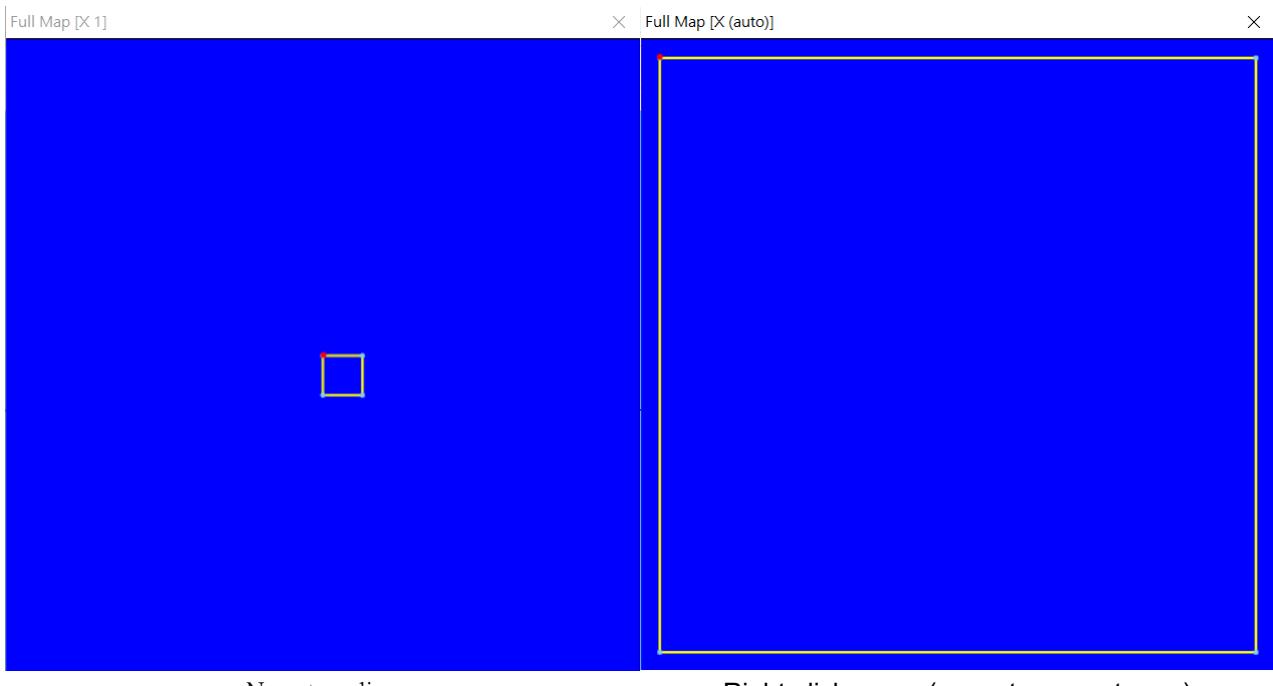


Figure 48: Zoom function

In addition to zooming to the current area, you can also zoom according to the selected zoom ratio, import and display panoramas, import and display DxF files, move, etc.

Full Map [X 1]

X

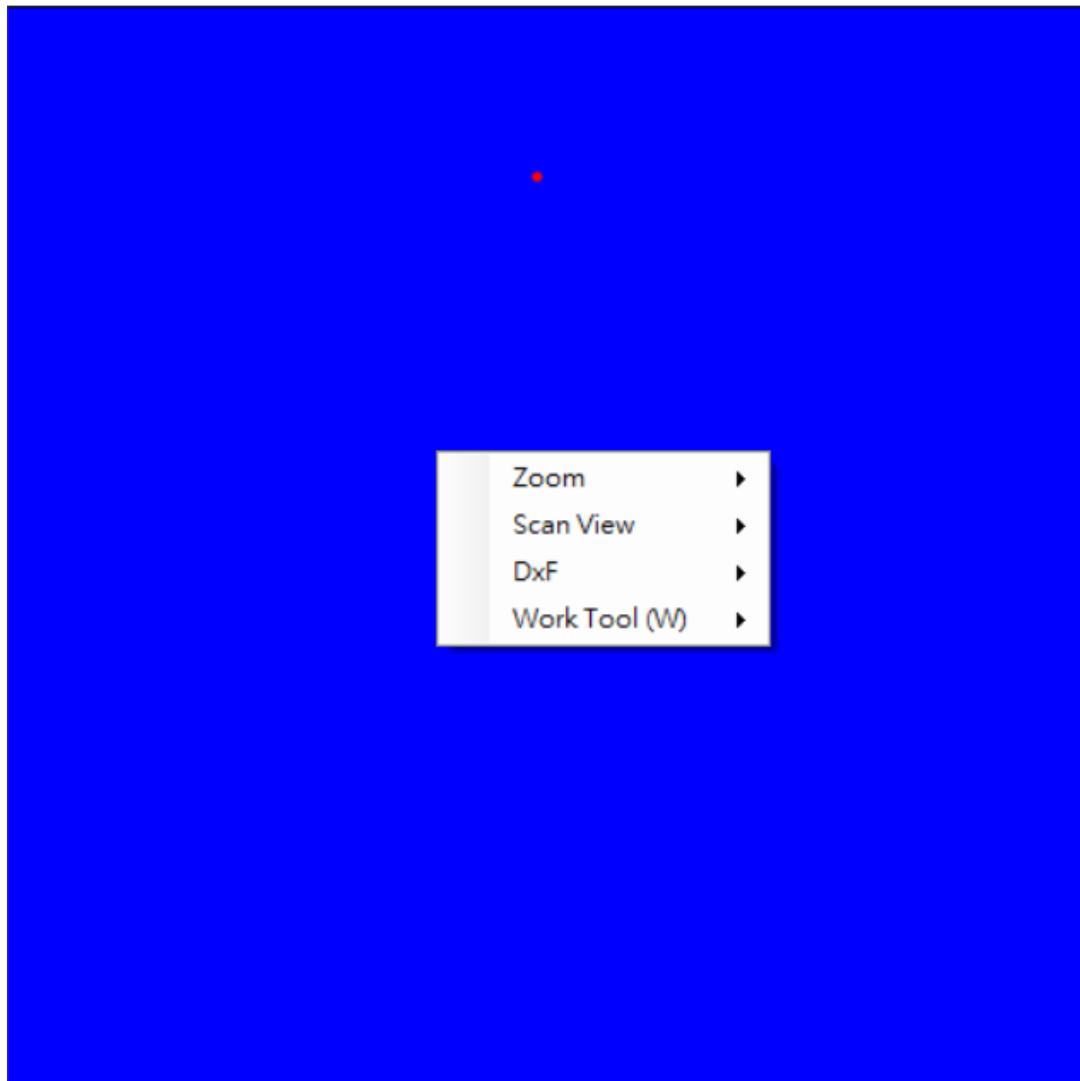


Figure 49:Full map functionality

Name	Depictions
Normal	No automatic zoom mode.
Zoom to current area	Zoom to the current area.
Zoom to selected work	Zoom to the selected job.
X2, X4, X8, X16, X32, X64	The magnification of the map. (Ex: X4 means that the map is magnified four times, (magnification 2 times) and (magnification 4 times))

Full Map [X 1]

X

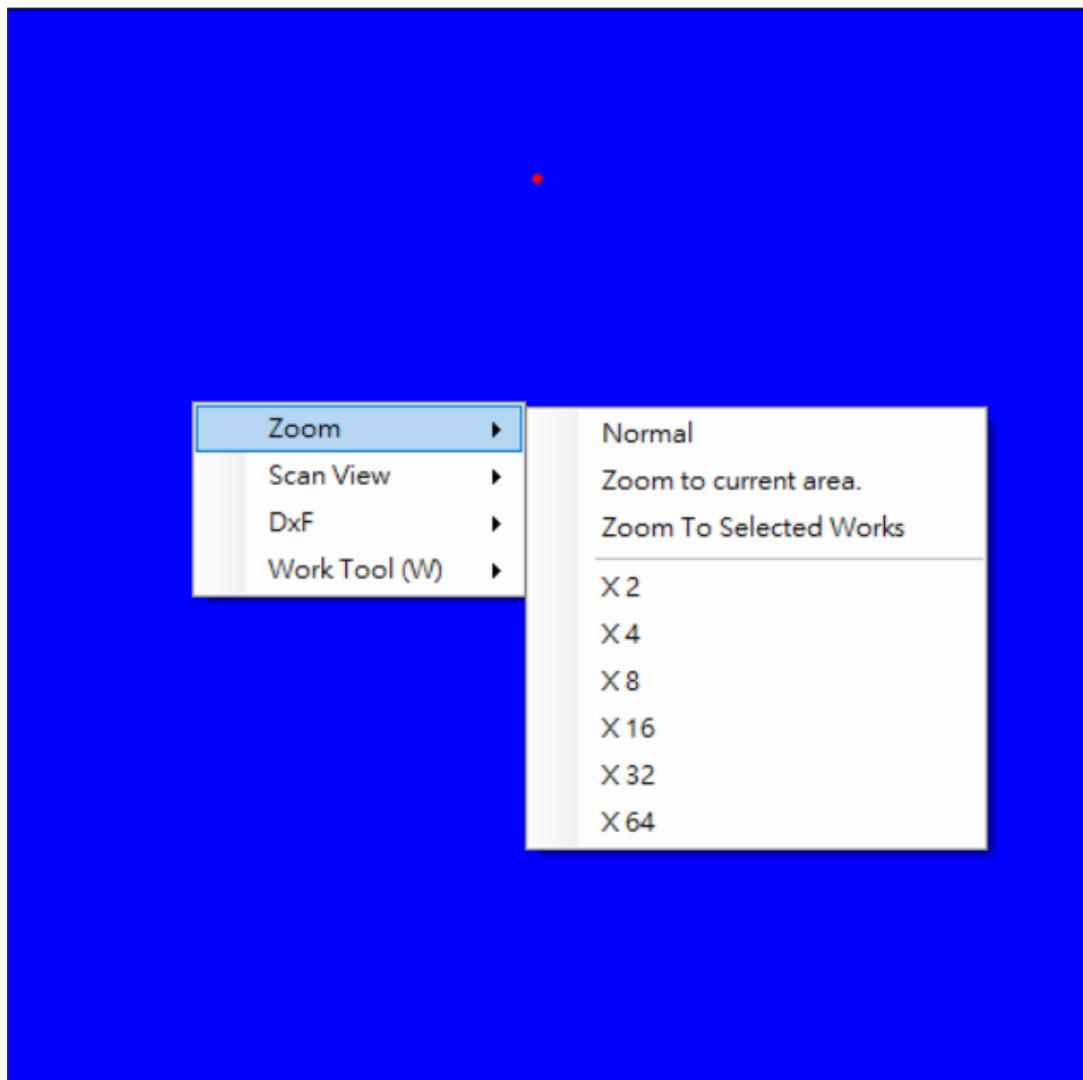


Figure 50:zomm

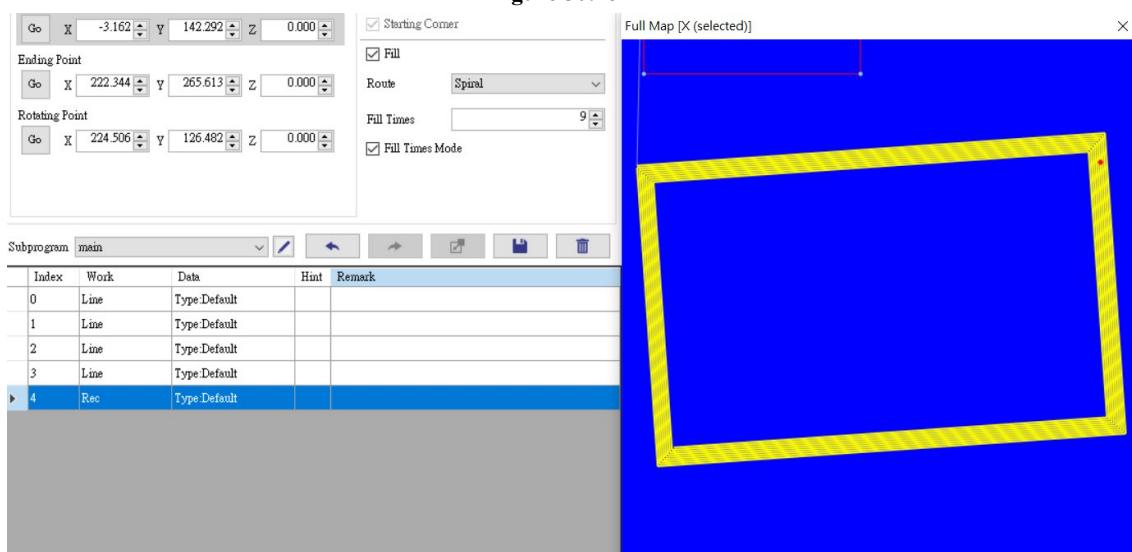


Figure 51: Zoom to selected work

Full Map [X 2]

X

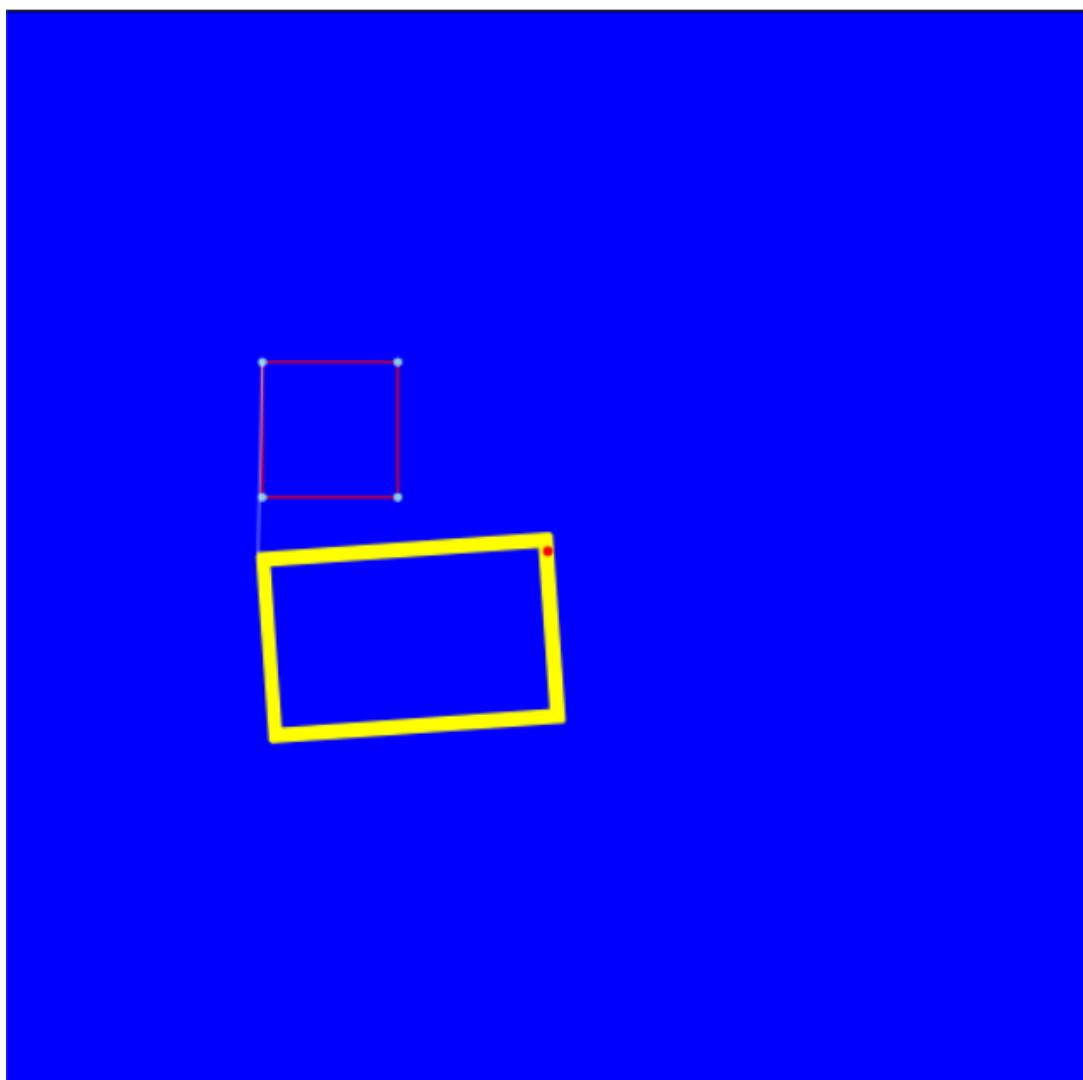


Figure 52:Original image enlarged 2 times

Full Map [X 4]

X

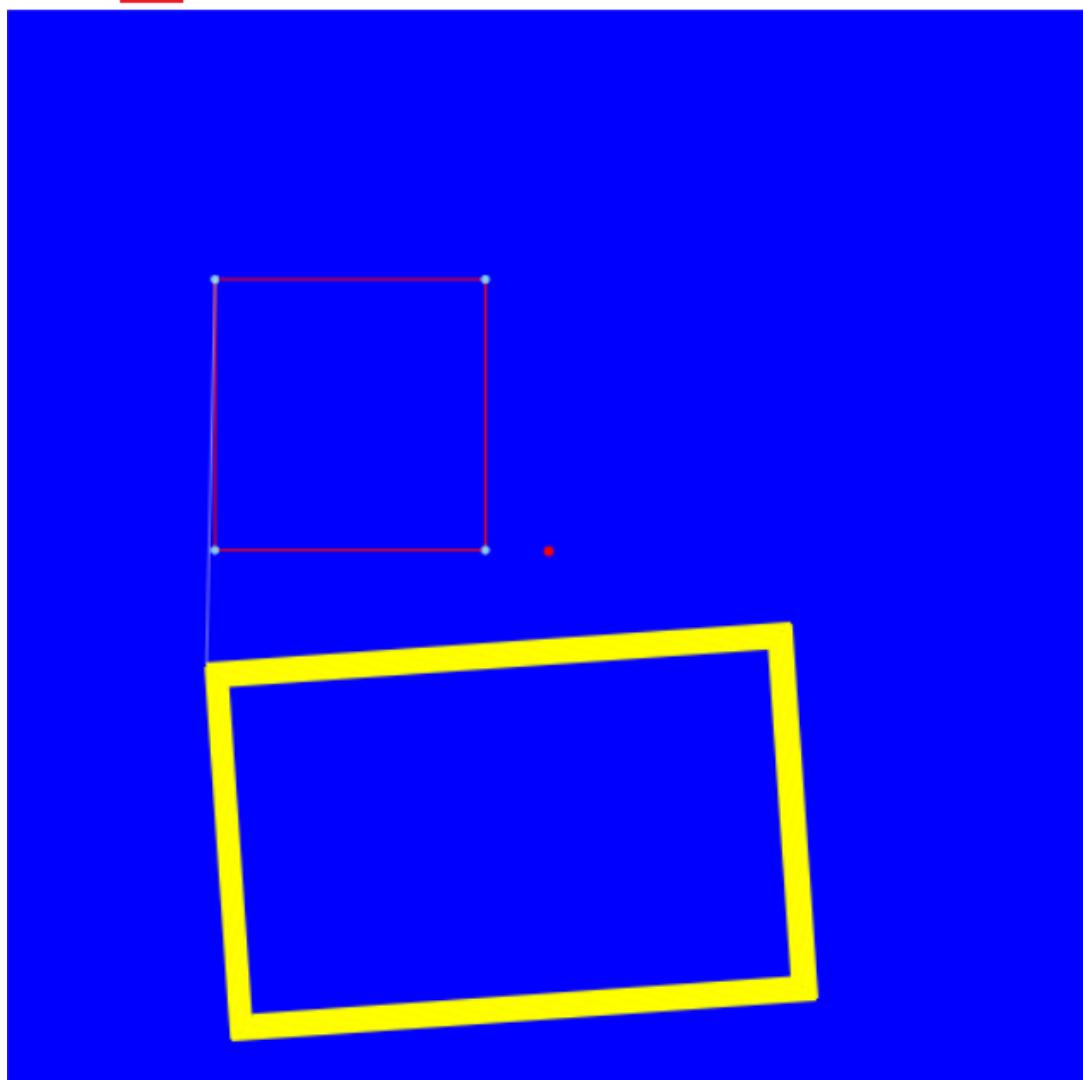


Figure 53: Original image enlarged 4 times

4.5.2 Scan View

Scan View, import and display scan view files on the mini map.

Full Map [X 4]

X

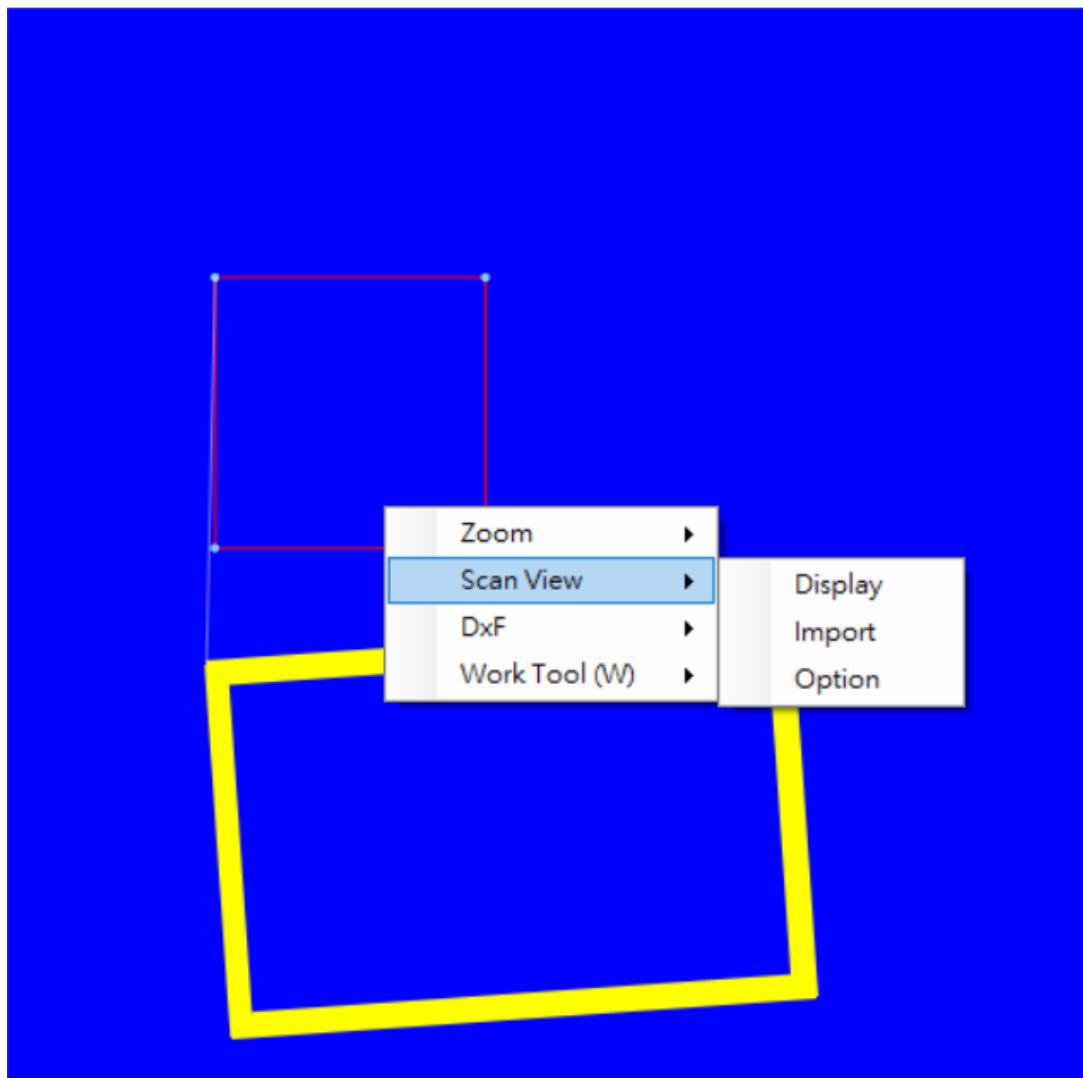


Figure 54: Scan View function

Name	Depictions
Display	After importing the panorama file, whether to display it on the mini map.
Import	Select a panorama file and import it.
Option	The panorama page is used to adjust the size, XY position, and rotation angle of the panorama in the complete map so that the displayed content matches the actual size and position.

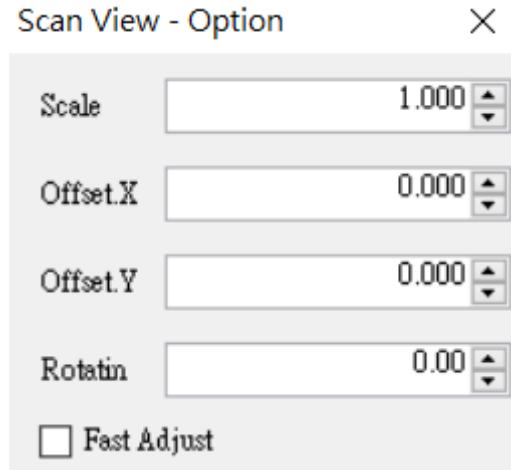


Figure 55: Scan View Setting interface

Name	Depictions
Scale	The size of the panorama.
Offset.X	X-axis displacement adjustment.
Offset.Y	Y-axis displacement adjustment.
Rotatin	Scan View rotates.
Fast Adjust	Quick adjustment, when this function is checked, it is convenient to move the XY coordinates of the minimap.

4.5.3 DxF:

DxF, import and display DxF files on the minimap.

Full Map [X 4]

X

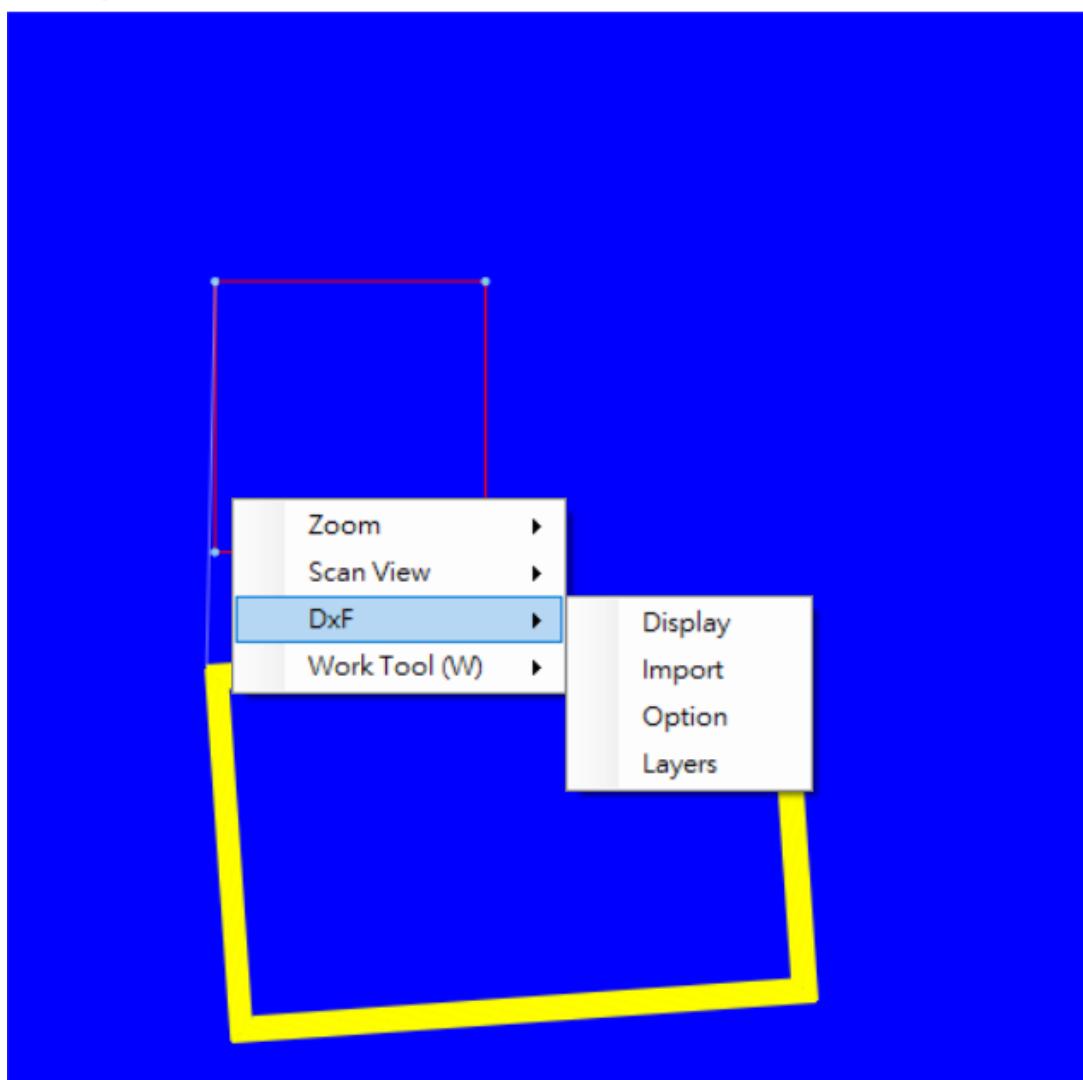


Figure 56:DxF import function

Name	Depictions
Display	After importing the DxF file, whether to display it on the mini map.
Import	Select the DxF file and import it.
Option	Used to adjust the size, XY position, and rotation angle of the DxF file in the complete map so that the displayed content matches the actual size and position.
Layers	The layers of the imported DxF file.

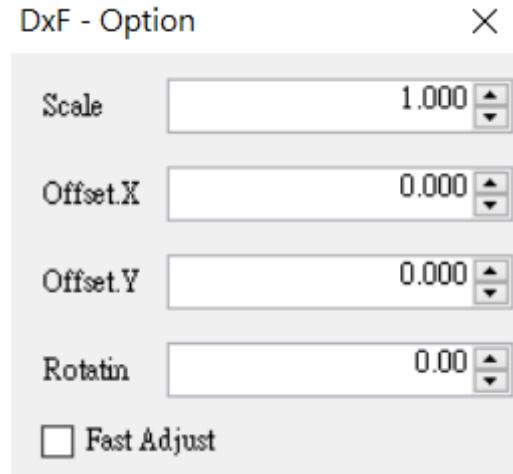


Figure 57: DxF options

Name	Depictions
Scale	The size of the DxF file.
Offset.X	X-axis displacement adjustment.
Offset.Y	Y-axis displacement adjustment.
Rotatin	DxF gear rotation.
Fast Adjust	Quick adjustment, when this function is checked, it is convenient to move the XY coordinates of the mini map.

4.5.4 Work tool description

On the work tool page, when selecting a single or multiple work instructions, XY coordinate movement can be performed.

Full Map [X 4]

X

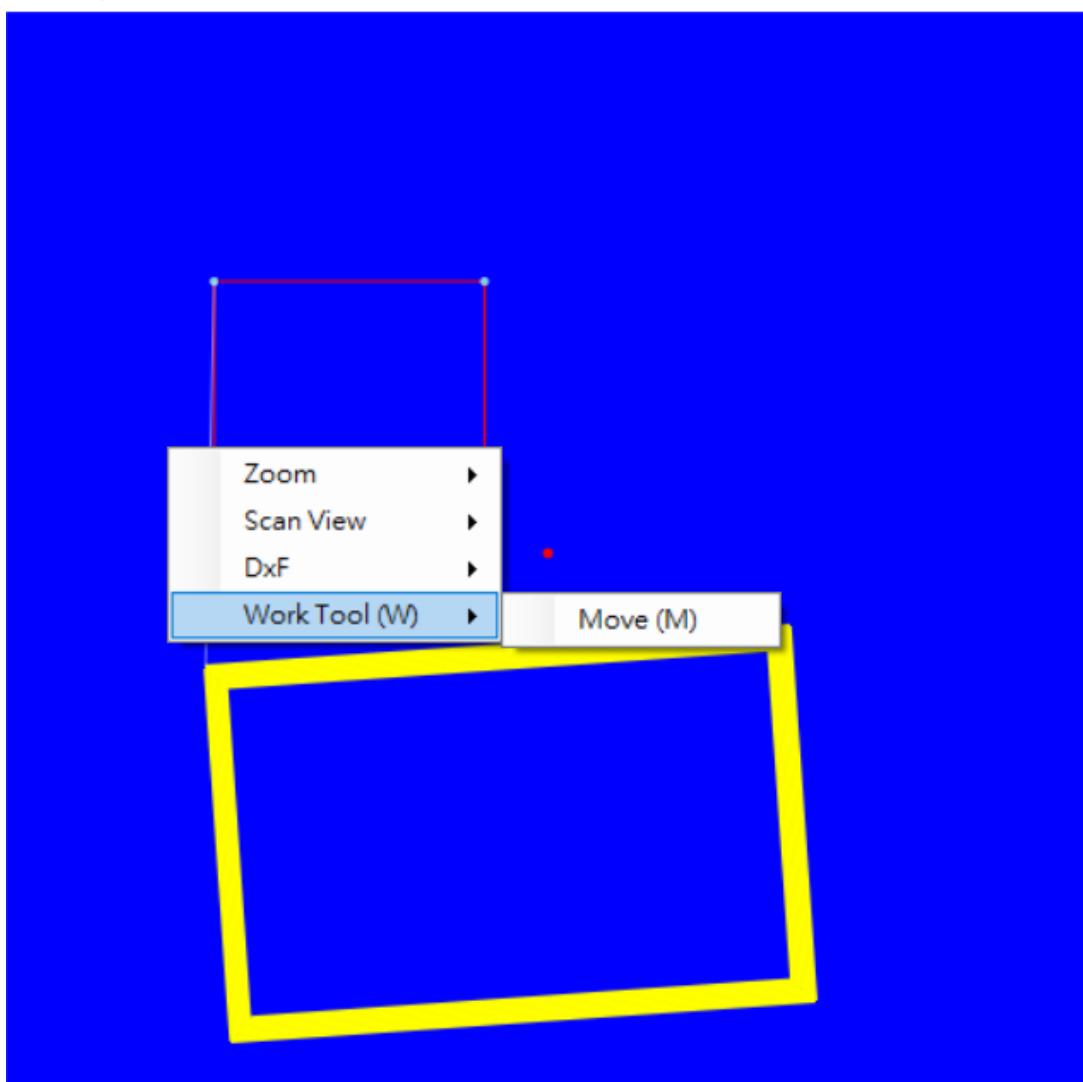


Figure 58: Move tool

Moving Tool X

Offset X	0.000
Offset Y	0.000
Save	Cancel

Figure 59: Move XY coordinates

Name	Depictions
Offset X	X-axis displacement adjustment.
Offset Y	Y-axis displacement adjustment.

4.5.5

Work selection

Hold down "Ctrl" on the keyboard and click on the path to automatically select the corresponding job. The selected job will be marked in yellow. If you are on the tutorial page, the corresponding job will also be selected in the job editing area, which can be used to quickly select the job you want to edit. work.

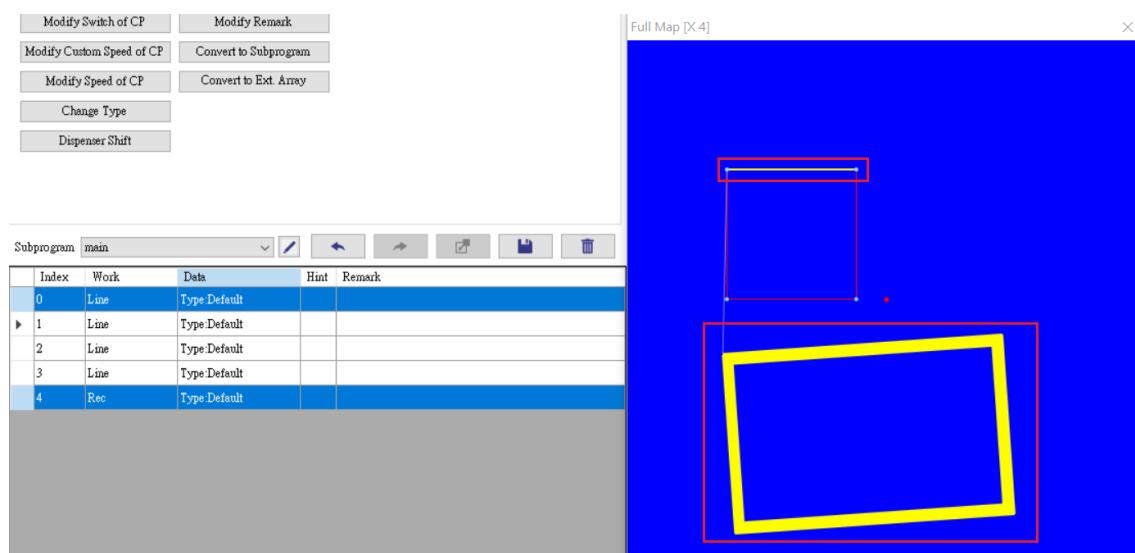


Figure 60: Ctrl can select multiple instructions

Note: If the job is in the called group, it cannot be selected.

4.6 Camera (CCD) related functions

Camera (CCD) related function screen, the functions from left to right are light source, camera switching, measurement tools, target, capture and CCD screen zoom and other options.

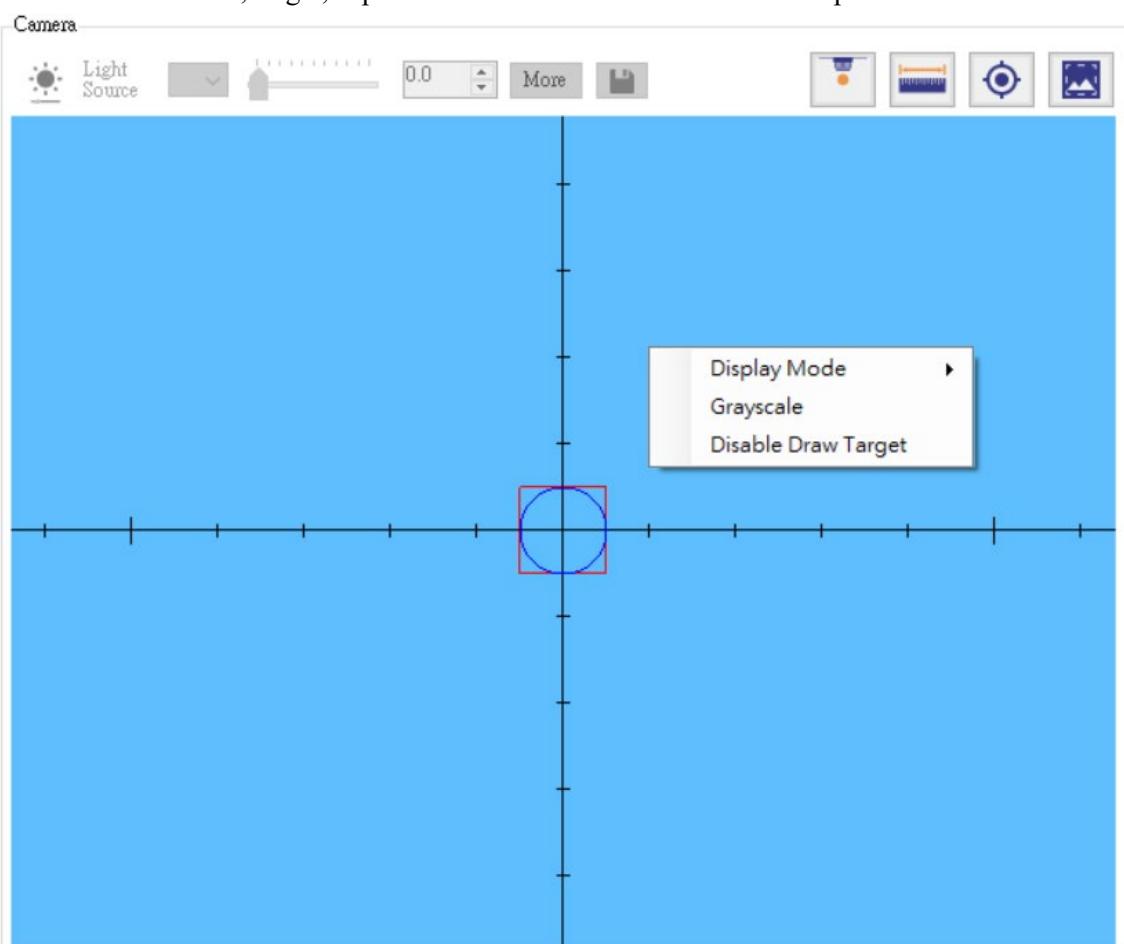


Figure 61: Camera interface

Name	Depictions
Light Source	Light source settings, intensity adjustment.
Camera Seitch	Switch cameras (select main camera/side camera/bottom camera).
Measure CCD	Can measure the size and dimensions of objects.

Item Size	
Setting Rouler Scale Type	Set target type.
Catch CCD Window Picture	Capture screenshots and save them to files (.BMP format).
With target	Whether to include the target when capturing images.
Display Mode	On the CCD screen, right-click to use the display mode to switch the screen display to center or zoom (supports high-resolution cameras).
Grayscale	Change the CCD screen to grayscale display.
Disable Draw Target	Target Closes the target displayed on the CCD screen.
Enable Draw Target	Target turns on the target displayed on the CCD screen.

4.6.1 Light Source

Light source, camera light source settings, adjust light source intensity, and save settings.



Figure 62:Light source block interface

4.6.2 Camera Seitch

Camera switching, camera lens switching between main photo, bottom photo and side photo.



Figure 63:Camera Switch button

4.6.3 Measure CCD Item Size

Measuring tools, the top row of functions from left to right are line, rectangle, and circle options, and the bottom row of functions from left to right are restore, cancel, and add options. Using simple measurement tools, you can select "line, rectangle, circle, etc." method is used to measure the size of lines and points on the coating.



Figure 64:Measure CCD Item Size button

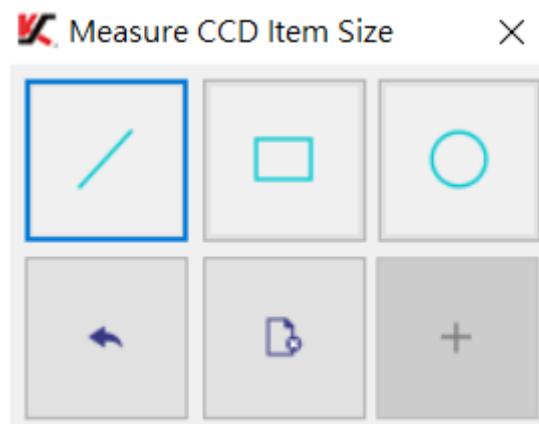


Figure 65:Measure CCD Item Size interface

Name	Depictions
line	Linear measurement function. Detailed instructions include operating procedures.
Rectangle	Rectangular measurement function.

	Detailed instructions include operating procedures.
Round	Circle measurement function. Detailed instructions include operating procedures.
Rollback	Undo the previous action.
Cancel	Cancel measurement.
New	Added multi-group measurement.

Operation process description:

- (1) Line: Click on the screen to connect any two points into a straight line. After clicking, the length value between the two points will be displayed. It can be used to measure the glue width or any object that needs to be measured on the screen. When working, make simple measurements first to facilitate the adjustment and application of the glue application process.

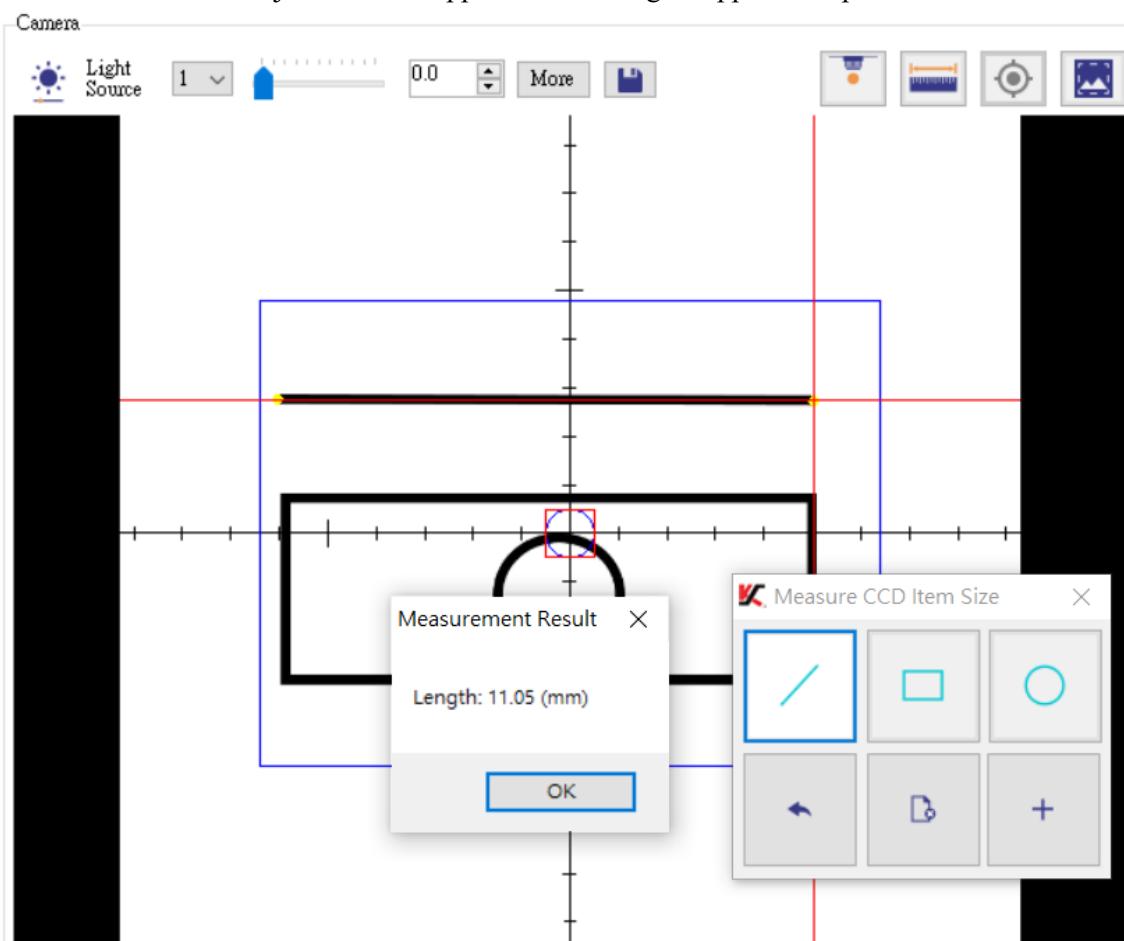


Figure 66: Line segment measurement tool

- (2) Rectangle: For measuring the dispensing area or the quadrilateral of any object, click on the screen to set any three points (start point, end point, rotation point) and circle a square range. After the circle is completed, it will be displayed Get the width and height values of the rectangle.

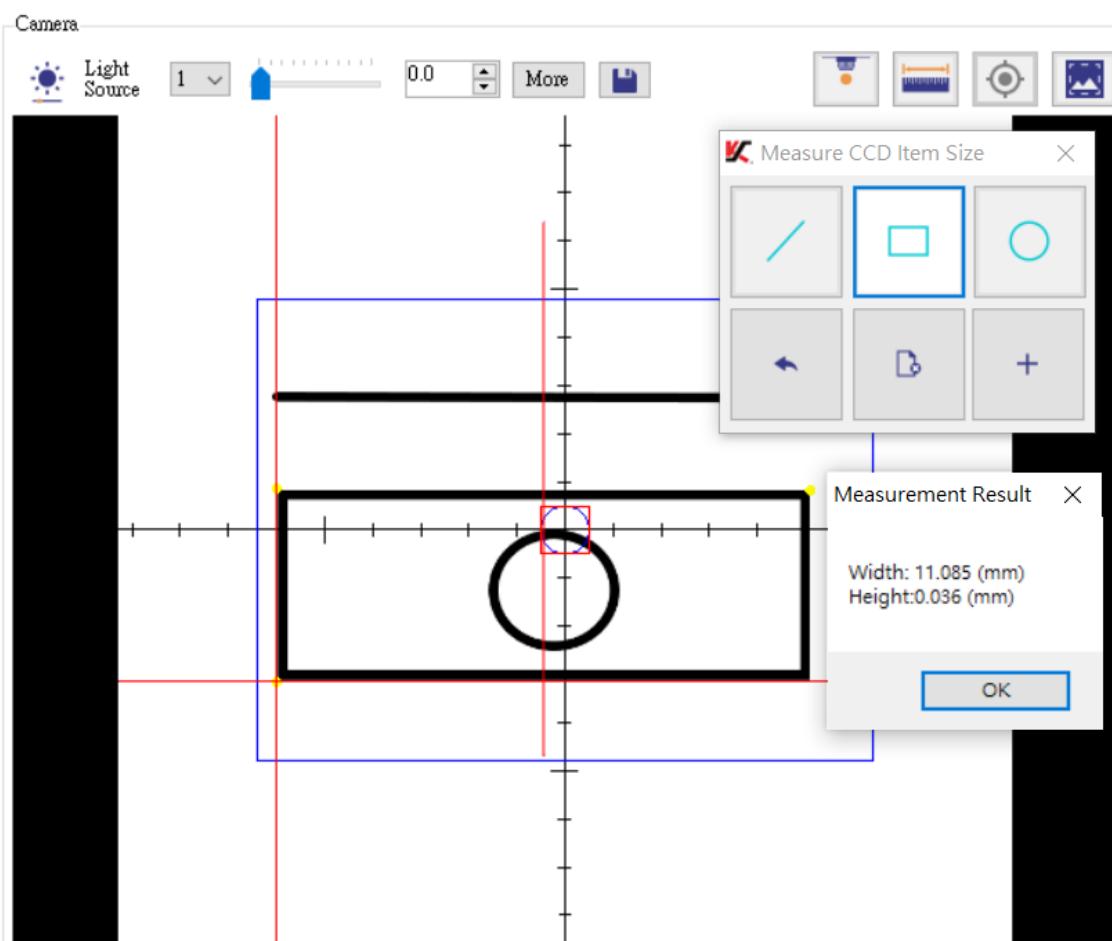


Figure 67: Rectangle measuring tool

- (3) Circle: Click on the screen to set any three points (start point, circle midpoint, end point) to complete a circle measurement function setting. After the measurement setting is completed, the measurement circle will be displayed. The center coordinates and radius length can quickly and easily measure the circular dispensing area or the size of the glue point.

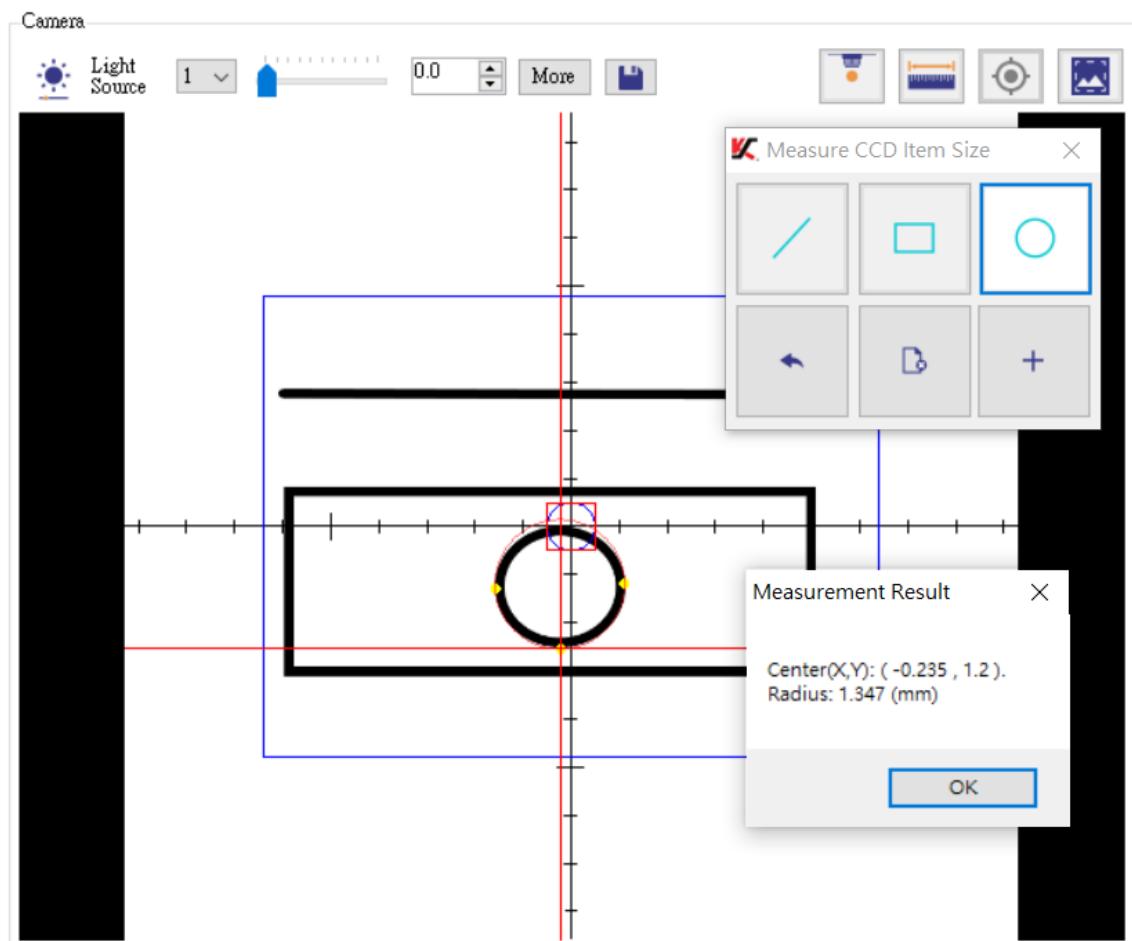


Figure 68: Circle measuring tool

4.6.4 Setting Rouler Scale Type

Target setting, set the target type to make accurate measurement and alignment easier and faster.



Figure 69: Target setting button

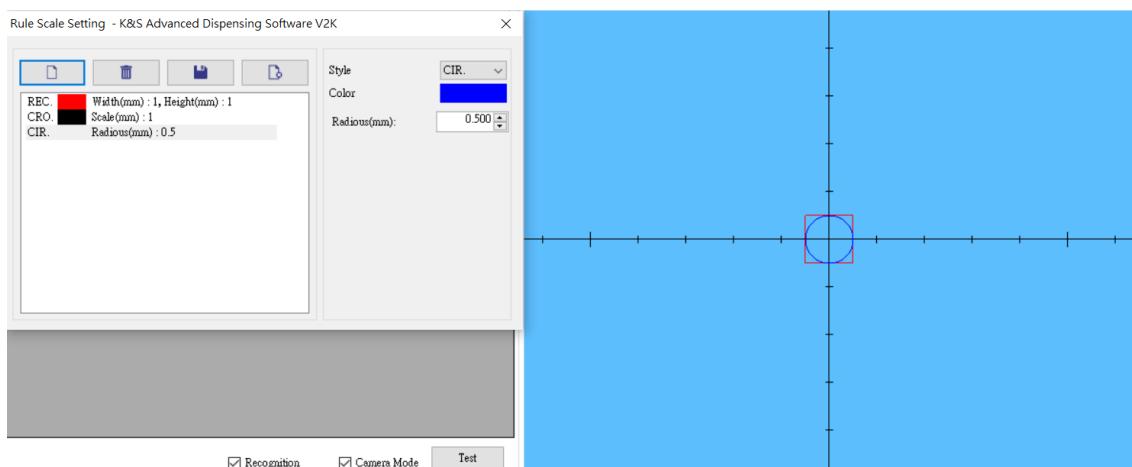


Figure 70: Target setting

Click the target setting button to set the color, scale unit and target shape of the cross ruler displayed on the CCD screen, and it can be used repeatedly. The target shape can be selected from circular, rectangular, X-shaped, etc. and the set display mode can be adjusted arbitrarily to calibrate the coating results.

When displaying objects for coating alignment and measurement, the target graphics set by the target can make accurate measurement and alignment easier and faster.

Rule Scale Setting - K&S Advanced Dispensing Software V2K

X

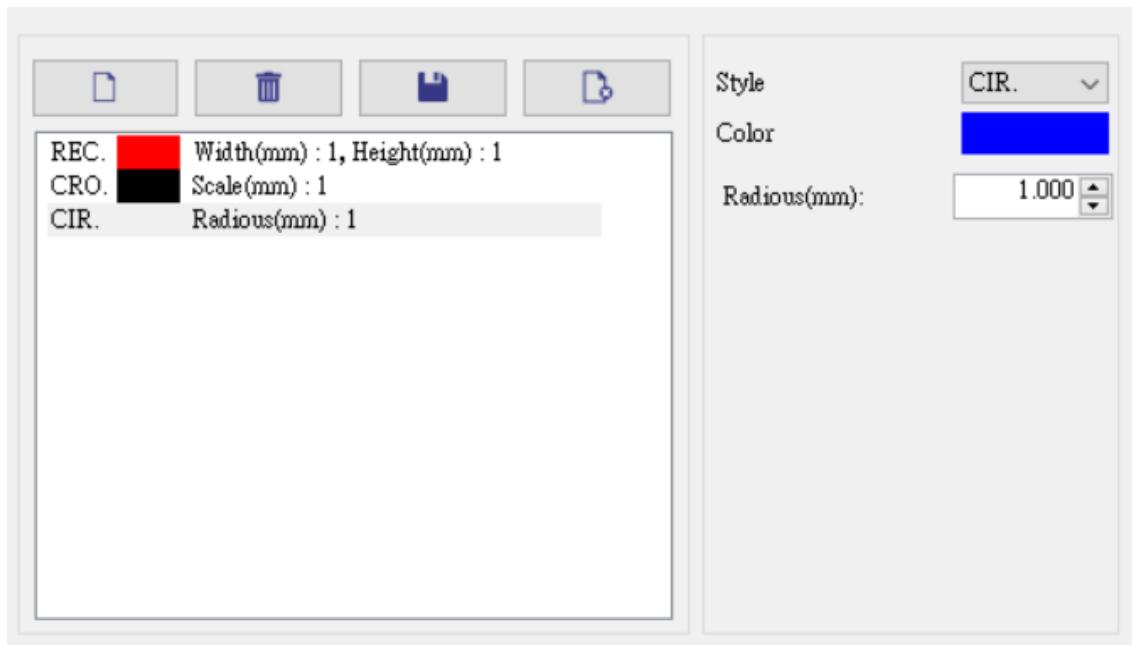


Figure 71:Target setting

Name	Depictions
Add	Added target setting.
Delete	Delete target settings.
Save	Save target settings.
Cancel	Cancel unsaved target settings.
Style	The shape of the target (circle, rectangle, X-shaped, etc.).
Color	Choose the color the target displays.

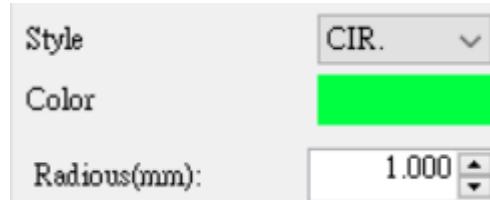


Figure 72:Target circle setting

Name	Depictions
Radious(mm)	Target radius displacement adjustment. (Used to adjust the position of the target in the CCD screen,to match the displayed target to its actual size and position.)

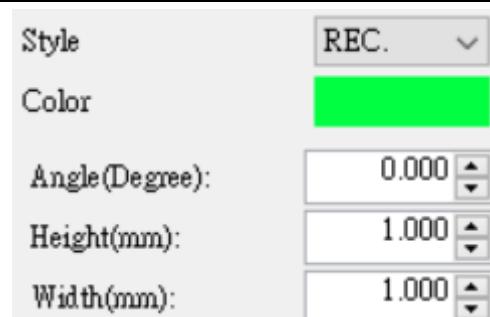


Figure 73:Target rectangle setting

Name	Depictions
Angle(Degree)	Target rotation angle adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)

Height(mm)	Target height (Y-axis) displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)
Width(mm)	Target width (X-axis) displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)



Figure 74:Target cross setting

Name	Depictions
Scale(mm)	Target scale displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)



Figure 75:Target XCR settings

Name	Depictions
Scale(mm)	Target scale displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)

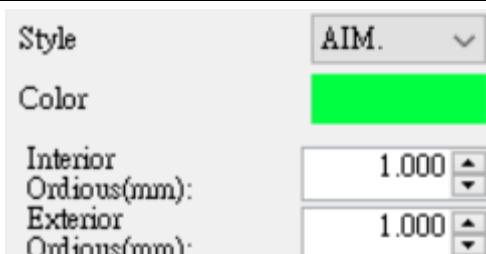


Figure 76:AIM target setting

Name	Depictions
Interior Ordious (mm)	Target inner radius displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)
Exterior Ordious (mm)	Target outer radius displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)

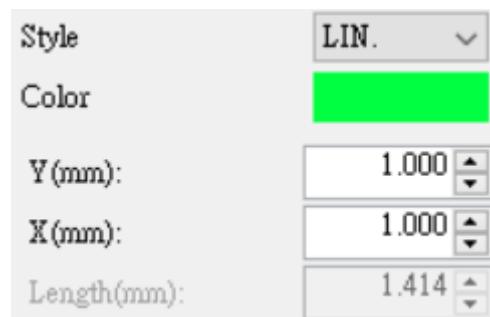


Figure 77:Target line segment setting

Name	Depictions
Y(mm)	Target Y-axis displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)
X(mm)	Target X-axis displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)
Length(mm)	The length of the target.

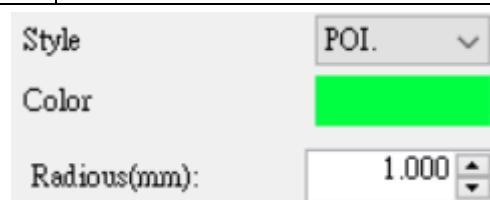


Figure 78:Target point setting

Name	Depictions
Radious(mm)	Target radius displacement adjustment. (Used to adjust the position of the target in the CCD screen so that the displayed target matches the actual size and position.)

The target can be arbitrarily selected style and set length unit size, and can be accumulated repeatedly.

Rule Scale Setting - K&S Advanced Dispensing Software V2K

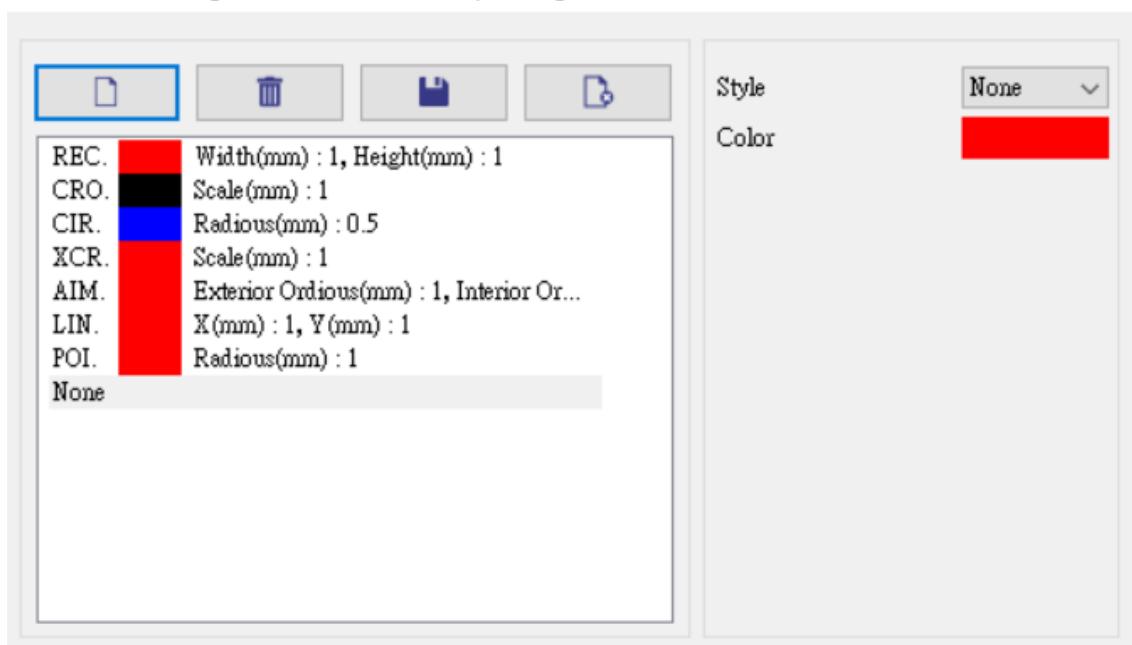


Figure 79: Example diagram

4.6.5 Screen save

Screen storage can quickly save the image displayed on the CCD screen, including pure CCD screen capture access and target access.



Figure 80: Camera screenshot function

- (1) Click the "Capture" button to quickly save the image displayed by the CCD in the window.
- (2) Right-click the mouse to select the pattern style with "target included".

4.6.6 CCD screen zoom

CCD screen zoom. When the camera is a high-resolution camera, the CCD screen can be zoomed.

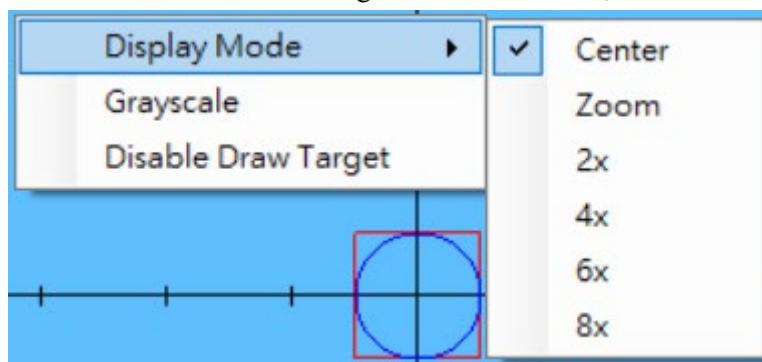


Figure 81: Camera screen zoom

Name	Depictions
CCD screen zoom	On the CCD screen, press the right button to use the Display mode to switch the screen display to center or zoom. (Highresolution camera support)
Grayscale	Change the CCD screen to grayscale display.
Disable target	Turn off the target displayed on the CCD screen.
Enable target	Turn on the target displayed on the CCD screen.



Center



Zoom

Figure 82: CCD screen zoom

4.7 Other device control

Other device controls, the functions from top to bottom are auxiliary axis device control, inclination axis control and scale (micro balance) function, the detailed function description is as follows:

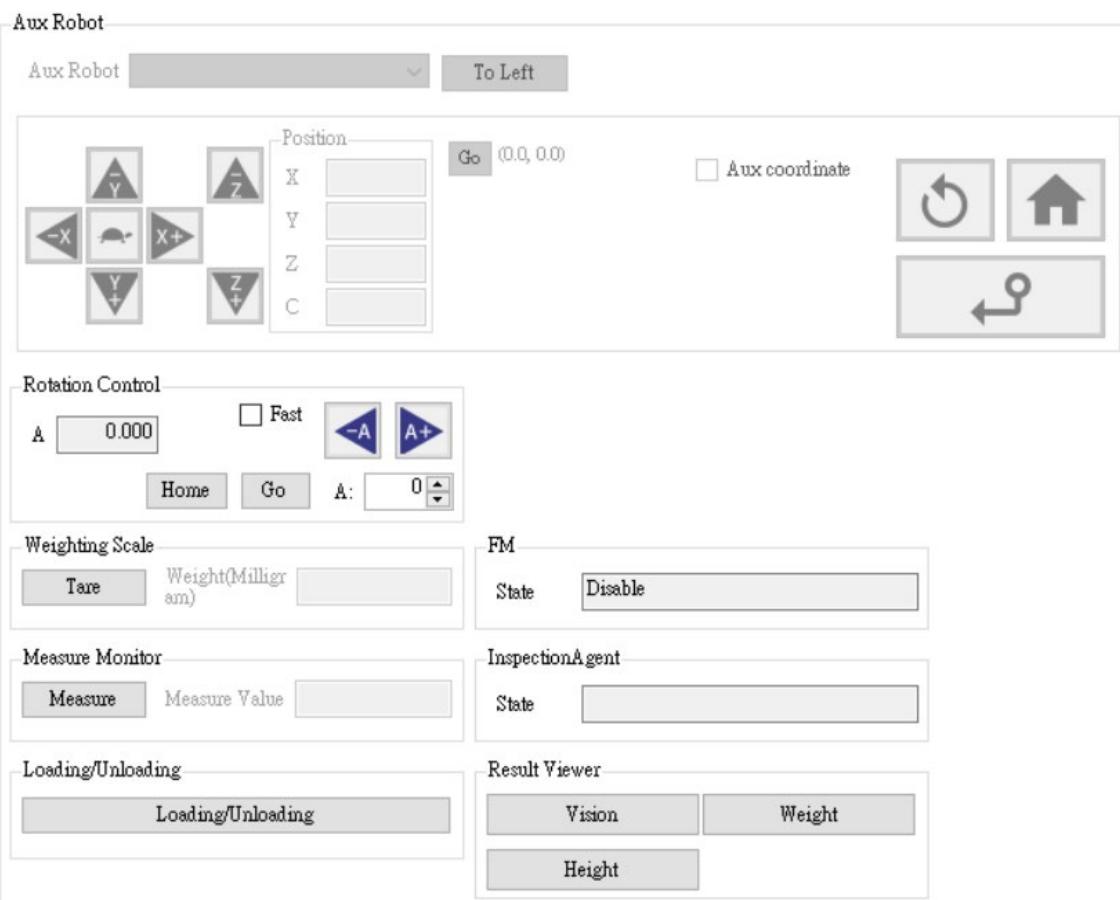


Figure 83: Toggle assist button

4.7.1 Assisting equipments

The auxiliary device screen has functions from left to right: Jog, current coordinates, GO, auxiliary coordinates, and machine control options. When the software is connected to an auxiliary device, the position of the auxiliary device can be adjusted and controlled through this page. .

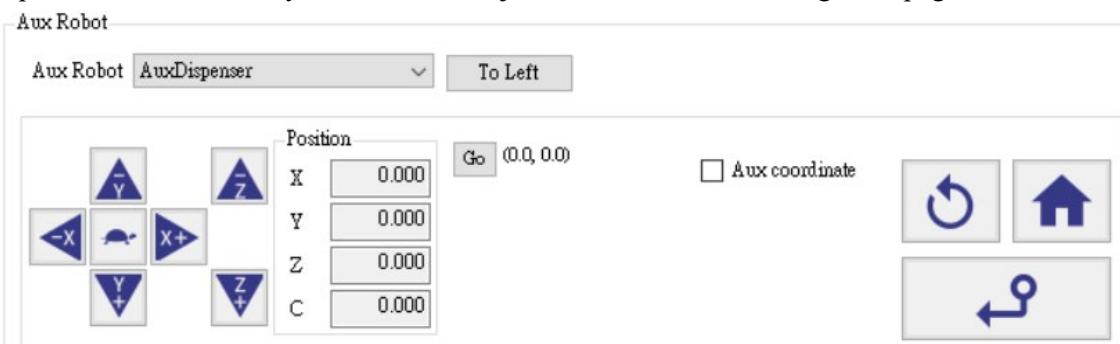


Figure 84: Assistive Device Interface

Name	Depictions
X-, X+, Y-, Y+, Z-, Z+	X, Y, Z axis movement buttons. Through the button in the middle of XYZ, you can switch the speed.
Position(X, Y, Z, C)	Display the current machine coordinate position.
Go	Move the machine to the set coordinate position.
Auxiliary coordinates	Use auxiliary axis coordinates for teaching.
Teach	Used when importing coordinates into the program.
Initialization	Initialize the machine. If the connection is interrupted and the machine cannot operate, you can initialize the machine to reconnect.

[Return to origin](#)
[Move the machine to the origin and search for the origin.](#)

4.7.2 Rotation Control

Inclination control, the functions from left to right include current inclination value, fast and slow Jog switching, return to origin, GO, A-axis angle setting and other options. When there is an inclination axis on the machine equipment (such as equipment XYZ+A or XYZC+A), the required angle of the inclination axis can be adjusted and controlled through this page.



Figure 85: Rotation Control Interface

Name	Depictions
A	Current machine inclination axis angle value.
Fast	Switch the jog speed button.
A-、A+(jog)	Move button for tilt axis.
Home	The inclination axis of the machine returns to the origin.
Go	Move the inclination angle to A: setting value at the current position.
A	Set the tilt axis angle.

4.7.3 Weighting Scale

Microscale, the functions from left to right are zero adjustment and weight options. This page can be used to reset the scale reading value to zero and measure the weight of the glue.



Figure 86: Weighting Scale interface

Name	Depictions
Tare	Reset the scale value to zero.
Weight (Milligram)	Measure the actual fluid dispensing weight.

4.7.4 FM

FM, shows whether the current FM connection is normal. (Must enable FM function and cooperate with LogPC).

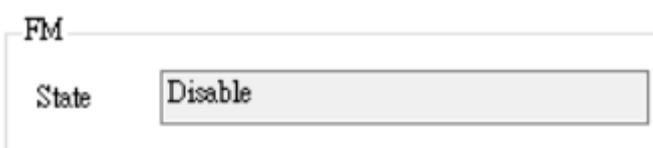


Figure 87: FM data is displayed in the field

4.7.5 InspectionAgent

InspectionAgent · Displays the current status of the connection with CxVis.



Figure 88: Display the current CxVis connection status

4.7.6 Measure Monitor

The measurement is displayed instantly. Currently, there is only one model of UV-meter, which is mainly used for integrated light measurement.



Figure 89: Weighing value display

Name	Depictions
Measure	Start measuring.
Measured value	Display measurement value.

4.7.7 Loading/Unloading

When V2K needs to be used with a loading and unloading device, the loading and unloading device can be controlled through the loading and unloading of the auxiliary device, the loading and unloading of the teaching array, and the loading and unloading of the execution mode.

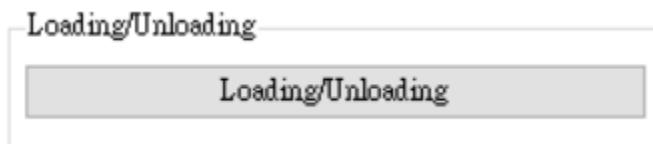


Figure 90: Auxiliary device loading and unloading

In the loading and unloading settings of the device, select the loading and unloading device you need to use. After the device is successfully connected, click the loading and unloading function to operate the loading and unloading device.

Device Setting - K&S Advanced Dispensing Software V2K [<password>]

X

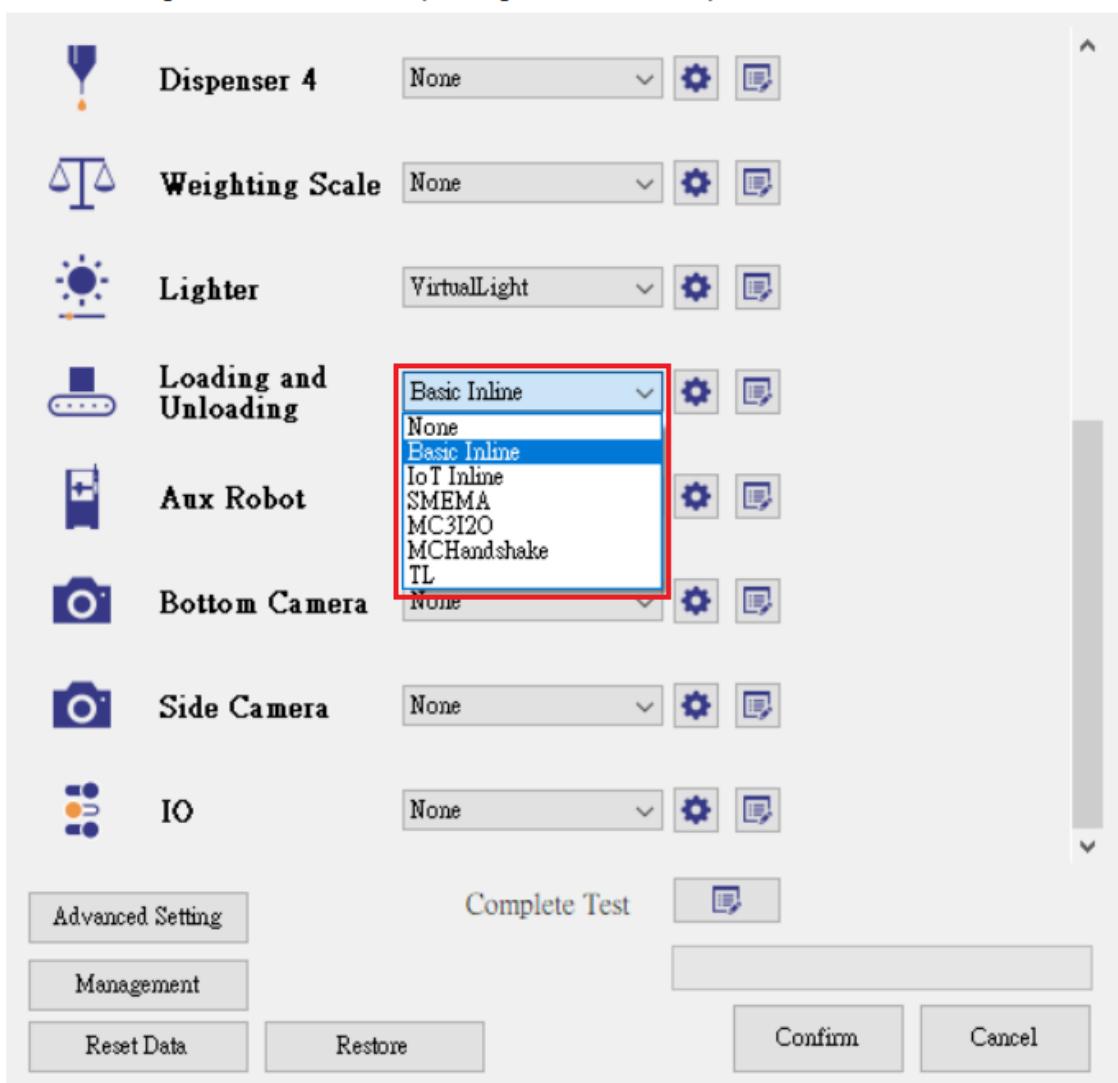


Figure 91: Loading and unloading device wiring

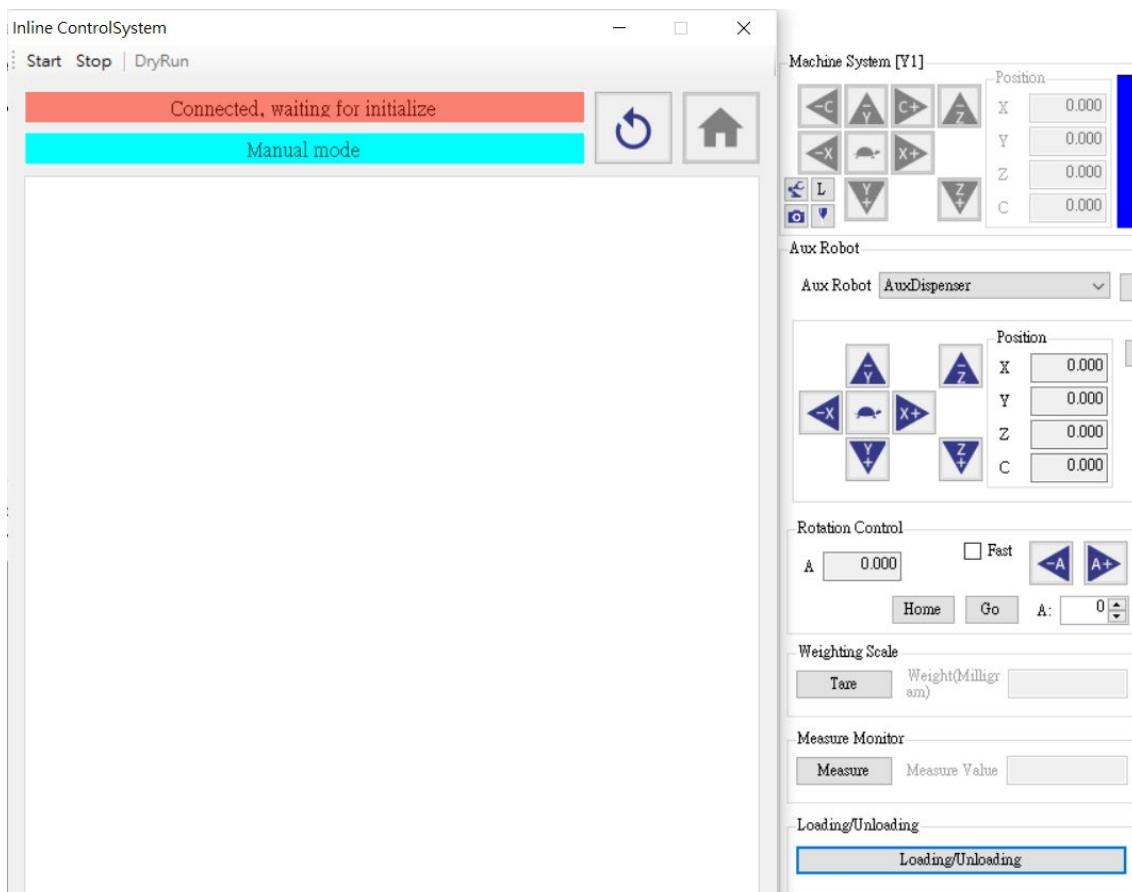


Figure 92: Open the loading and unloading interface

4.8 Result Viewer

Graph Vision, Weight, and Height.



Figure 93: Result Viewer fields

4.8.1 Vision

Vision data, query image recognition or detection data.

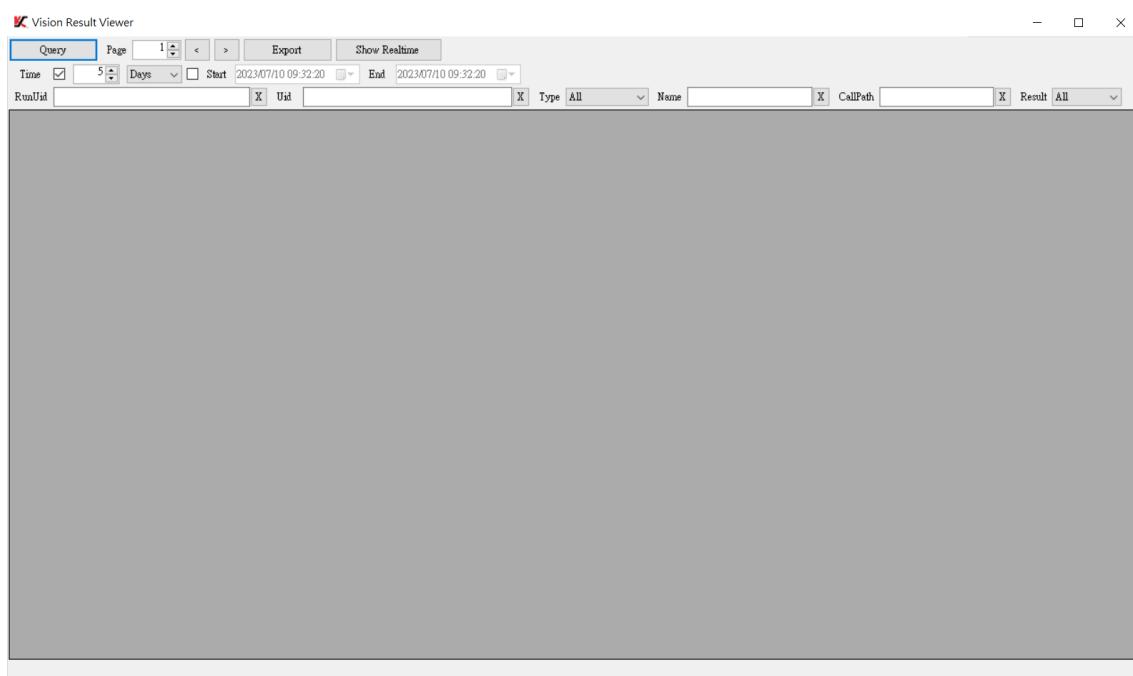


Figure 94: Vision interface

Name	Depictions
Query	Read the measurement results.
Page	Number of pages.
<>	Previous page; Next page.
Export	Export vision data to csv file. Flatten Array: After checking, the array data will be expanded and displayed. Process Point: After checking, the point data will be converted into numerical display. Export Images: If checked, the image will also be output. Export Format: The output image file name format. Export images with drawing: The output image should be marked with the detection results.
Show Realtime	Display the photo results of the current data.
Time	Set the time to read data.
Start End	Set the specified date and time to read data.
RunUid	Enter the running UIS number to narrow the data range.
Uid	Enter the Uis number to narrow the data range.
Type	Recognition: Image recognition. Inspection: Image detection. Capture: Retrieve.
Name	Enter Name to narrow down the data scope.
Callpath	Enter Callpath to narrow the data scope.
Result	OK: Image recognition or detection successful. Fail: Image recognition or detection failed.

4.8.2 Weight

The weighing result view converts the weighing result data into a line chart, making it easy to view the weight measurement status.

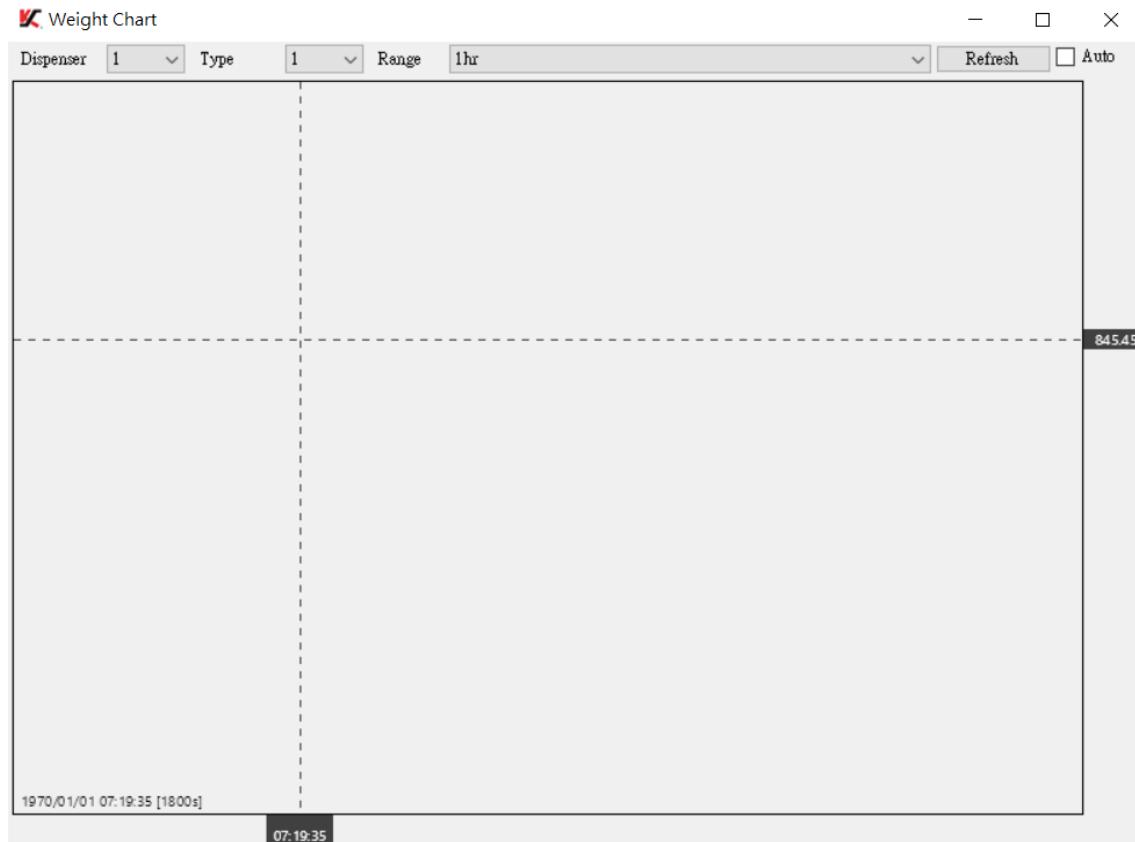


Figure 95: Weight interface

Name	Depictions
Dispenser	Select valve body.
Type	Valve body parameters.
Range	time limit.
Refresh	refresh.
Auto	Automatically read data.

4.8.3 Height

The height measurement result view converts the height measurement result data into a line chart, making it easy to view the height measurement status.

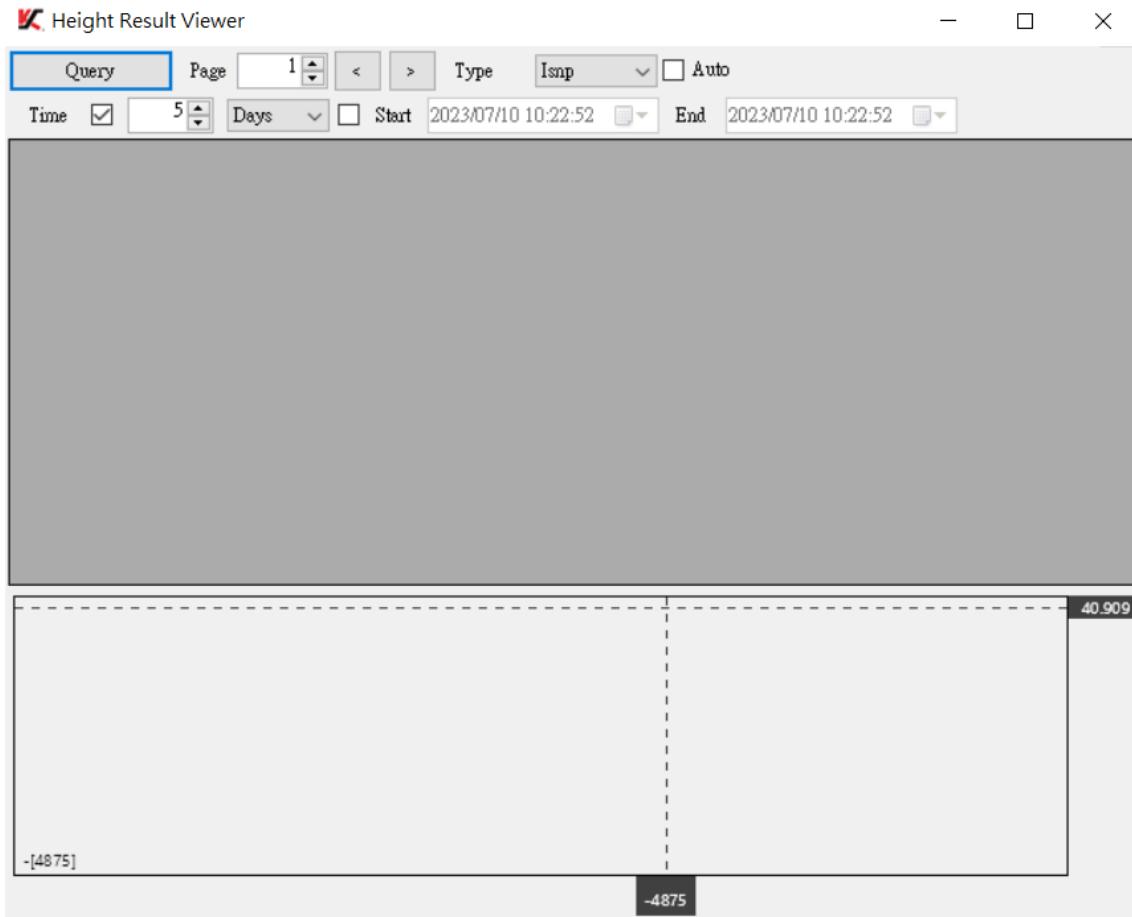


Figure 96: Height interface

Name	Depictions
Query	Read the measurement results.
Page	Number of pages.
<>	Previous page; Next page.
Type	Ismp(Detection. Example: height detection, etc.). Reco(Position. Example: height measurement, etc.).
Auto	Automatically read data.
Time	Set the time to read data.
Start End	Set the specified date and time to read data.

4.9 Dispensing device

The functions of the dispensing device are from top to bottom, including the glue/needle replacement process, consumables monitoring, glue discharge operation options, and basic function description of the dispensing device (setting parameters of the dispensing device, uploading or downloading, single triggering, etc.).

Dispenser Setting

Change Glue/Tip Consumables Purge Valve1 Purge Valve2 Purge Valve3 Purge Valve4 Purge All

Dispenser Setting 1: VirtualJet

Setting Value		Monitor Value	
Name	Value	Name	Value
Valve On Time(ms)	0.0000	Fluid Inlet Pressure	0.0000
Valve Cycle Time(ms)	0.0000	Nozzle Temperature	0.0000
Jet Count	0.0000		
Nozzle Temperature	0.0000		
Temperature Range	100.0000		

Download Upload

Special control

Purge Single shot Reset

Figure 97: Dispensing device setting interface

4.9.1

Replace glue/needle

Replace glue/needle, provide replacement valve body, glue, needle setting and monitoring setting functions.

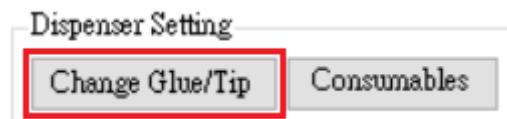


Figure 98: Change glue/needle button function

Replace:

To replace, read the scanned barcode of the valve (glue).

Dispenser/Glue 1

Device Serial Change

Activate Date

Figure 99: Change button

Name	Depictions
Manual entry	Enter the scan code manually.
Cancel	Cancel the scan and close the page.

Replace glue type:

Press the "Replace" button and confirm one by one that the feed pressure has been manually turned off. Move the machine to the maintenance coordinates. After the device replaces the glue and other processes, enter the "Glue Name" and "Remarks" and other information, and check the button . , and confirm the action. After the confirmation is completed, the "last replacement" time and other information will be displayed.

Dispenser/Glue Setting and Changing - K&S Advanced Disp...

Dispenser/Glue 1

Device Serial	<input type="text"/>	Change
Activate Date	<input type="text"/>	
Glue Name	<input type="text"/> ww	Cps <input type="text"/> 0 <input type="button" value="Change"/>
PartNumber	<input type="text"/> www	
Initial Date	<input type="text"/> 2018-10-09 16:23:57	
Tip Name	<input type="text"/> 123	Change
Initial Date	<input type="text"/> 2023-10-20 16:03:51	
<input type="button" value="Monitor Setting"/>		<input type="button" value="Change Tip and Glue"/>

Dispenser/Glue 2

Device Serial	<input type="text"/>	Change
Activate Date	<input type="text"/>	
Glue Name	<input type="text"/>	Cps <input type="text"/> 0 <input type="button" value="Change"/>
PartNumber	<input type="text"/>	
Initial Date	<input type="text"/>	
Tip Name	<input type="text"/>	Change
Initial Date	<input type="text"/>	
<input type="button" value="Monitor Setting"/>		<input type="button" value="Change Tip and Glue"/>
<input type="button" value="Maintainer Setting"/>		<input type="button" value="Close"/>

Figure 100: Click the change button

ChangeGlue

Please input data!

Glue Name	<input type="text"/> test	Cps <input type="text"/> 0 <input type="button" value="Change"/>
PartNumber	<input type="text"/>	<input type="button" value="Read"/>
Remark	<input type="text"/>	
<input type="button" value="X"/>	<input type="button" value=""/>	

Figure 101: Enter new name

To replace the needle:

During the needle replacement process, press the "Replace" button, move the machine to the maintenance coordinates, and confirm that the valve is in the "Purge On" state. It will automatically "Purge Off" later. After the device replaces the needle process, enter the "needle name" and "Remarks" and other information.

Tip Name	123	Change
Initial Date	2023-10-20 16:03:51	

Figure 102:Change

ChangeTip X

Please input data!

Tip Name	testTip
PartNumber	<input type="text"/> Read
Remark	<input type="text"/>

X ✓

Figure 103: Replace needle enter name

Replace needles and glue:

At the same time, replace the needle and glue.

Dispenser/Glue Setting and Changing - K&S Advanced Dispe... X

Dispenser/Glue 1

Device Serial	<input type="text"/>	Change
Activate Date	<input type="text"/>	
Glue Name	<input type="text" value="test"/>	Cps <input type="button" value="0"/> Change
PartNumber	<input type="text"/>	
Initial Date	<input type="text" value="2023-10-20 16:11:47"/>	
Tip Name	<input type="text" value="123"/>	Change
Initial Date	<input type="text" value="2023-10-20 16:03:51"/>	
Monitor Setting		Change Tip and Glue

Dispenser/Glue 2

Device Serial	<input type="text"/>	Change
Activate Date	<input type="text"/>	
Glue Name	<input type="text"/>	Cps <input type="button" value="0"/> Change
PartNumber	<input type="text"/>	
Initial Date	<input type="text"/>	
Tip Name	<input type="text"/>	Change
Initial Date	<input type="text"/>	
Monitor Setting		Change Tip and Glue
Maintainer Setting		Close

Figure 104:Replace needles and glue

Monitoring settings:

Monitor settings, select the valve (Glue 1 or Glue 2 device) or needle to be replaced, click "Monitor Settings", set the estimated usage time or weight of the glue or needle, and the "warning" time before replacing the glue and needle. Or weight, etc.

Dispenser Monitor Setting

X

Glue

Time Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Weight Limit (Dot) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Idle Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Total Idle Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>

Tip

Time Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Count Limit (Dot) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Idle Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>
Total Idle Limit (Min) :	<input type="text" value="0"/>	Warning (%) :	<input type="text" value="80.00"/>

Figure 105: Valve monitoring settings

Name	Depictions
Time limit (minutes)	Set the estimated usable time after the glue is replaced.
Warning threshold	When the set item is used to a certain percentage, the software will issue a "warning" that it is time to replace the glue.
Weight limit(points)	Set the expected weight that can be used after the glue is replaced.
Idle time (minutes)	The idle time for the valve to stop operating.
Total idle limit (minutes)	Total idle time.
Point limit(points)	Set the number of points expected to be used after the needle is replaced.

Example: When the time limit is 10 minutes and the warning threshold is 90%, the software will pop up the "warning window" at the 9th minute of use and notify whether to jump to the consumables monitoring window.



Dispenser Monitor Setting

×

Glue

Time Limit (Min) :	5	Warning (%) :	80.00
Weight Limit (Dot) :	0	Warning (%) :	80.00
Idle Limit (Min) :	0	Warning (%) :	80.00
Total Idle Limit (Min) :	0	Warning (%) :	80.00

Tip

Time Limit (Min) :	0	Warning (%) :	80.00
Count Limit (Dot) :	0	Warning (%) :	80.00
Idle Limit (Min) :	0	Warning (%) :	80.00
Total Idle Limit (Min) :	0	Warning (%) :	80.00

Figure 106: Enter time and warning threshold

Caution!

×


Consumables rut out:
- Glue 1 Time Limit

Do you like to open Consumables Monitor? (Reminder after 5 mins.)

Figure 107: Pop up warning window

Maintenance settings:

Used to control the switch of specific IO when maintaining settings. It is convenient to control the IO switch during maintenance.

<input type="button" value="Monitor Setting"/>	<input type="button" value="Change Tip and Glue"/>
<input style="outline: 2px solid red; border: 1px solid red;" type="button" value="Maintainer Setting"/>	<input type="button" value="Close"/>

Figure 108: Maintenance settings button

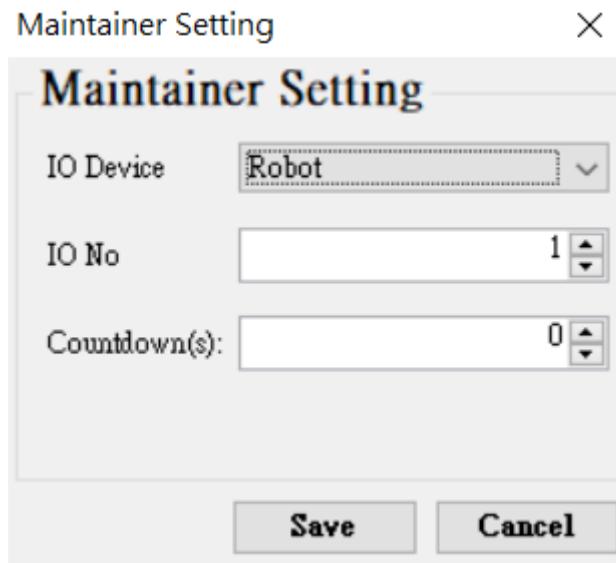


Figure 109: Set up maintenance device

Name	Depictions
IO device	Which device to use for IO operations.
IO number	IO number. (starting from 1)
Countdown warning (seconds)	During the needle replacement process and before Purge is about to shut down, an IO warning is sent.
Save	Save changed settings and close the window.
Cancel	Do not save changed settings and close the window.
Closure	Close the window.

4.9.2 Consumables monitoring

Consumables monitoring allows you to view the current usage time, used time, and percentage icons of the glue and needle settings. The percentage icon shows that the current time is before the "warning" time, the "warning" time is up, the "glue change" time is up, etc.

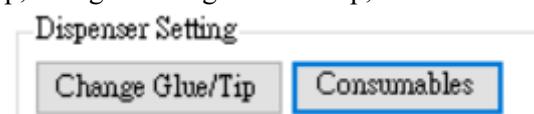


Figure 110: Consumables monitoring

Consumables monitoring warning instructions

- (1) Before the "warning" time, the glue has been used for about 2 minutes and the used percentage is 20% (light blue box).

Consumables Monitor

X

Glue 1 Time Limit	0.6 / 10.0 Mins
	<div style="width: 6.2%; background-color: #0070C0; height: 10px;"></div> 6.2 %
Glue 1 Weight Limit	0.0 / 0.0
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Glue 1 Idle Limit	0.6 / 0.0 Mins
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Glue 1 Total Idle Limit	0.6 / 0.0 Mins
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Tip 1 Time Limit	10.9 / 0.0 Mins
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Tip 1 Count Limit	0.0 / 0.0
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Tip 1 Idle Limit	10.9 / 0.0 Mins
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %
Tip 1 Total Idle Limit	10.9 / 0.0 Mins
	<div style="width: 0%; background-color: #F0A0A0; height: 10px;"></div> 0.0 %

Figure 111: Valve body consumption progress

- (2) The time has reached the "warning" time, which means it is time to replace the glue, and the used percentage turns into an orange box.

Consumables Monitor

X



Figure 112: More than half consumed

- (3) When the glue replacement time is up, the used percentage turns into an orange box, the glue usage status is 100%, and a "warning" will pop up.



Figure 113: Glue is consumed

- (4) When the program is running and the glue replacement time has come, the software will pop up the following "warning" message. And before completing the next glue replacement process, if you close the warning window, the warning window will pop up again after 5 minutes until the "glue replacement process" is completed.

Caution!



Consumables rut out:
- Glue 1 Time Limit

Do you like to open Consumables Monitor? (Reminder after 5 mins.)

Figure 114:Pop up warning window

Consumables monitoring status description:

- (1) Description of consumables monitoring status (please check various consumables monitoring conditions in the following order):

- (A) Strict mode + No installation supplies => NotReady. (Unable to run, display message contains NotReady)
- (B) Use exceeds warning threshold => Warning. (There is only a message warning, but it can still be run)
- (C) Use exceeds upper limit => Error. (Cannot run and displays message)
- (D) Strict mode + no correction => NotReady. (Unable to run, display message contains NotReady)
- (E) None of the above conditions => OK. (normal operation)

4.9.3

Debinding

For glue discharge, a single valve (valve 1 and valve 2) is provided for glue discharge and all valves are provided for glue discharge.



Figure 115: Manually select valve body to drain glue

When debinding, you need to correct the position of the debinding setting.

Glue discharge needs to be matched with dispensing parameter settings.

4.9.4

Basic function description of dispensing device

Description of the basic functions of the dispensing device, setting parameters of the dispensing device, uploading or downloading, single triggering, etc.

Dispenser Setting 1: VirtualJet

Setting Value		Monitor Value	
Name	Value	Name	Value
▶ Valve On Time(ms)	0.0000	▶ Fluid Inlet Pressure	0.0000
Valve Cycle Time(ms)	0.0000	Nozzle Temperature	0.0000
Jet Count	0.0000		
Nozzle Temperature	0.0000		
Temperature Range	100.0000		

Download Upload

Special control

Purge Single shot Reset

Figure 116: Dispensing parameter setting interface

Name	Depictions
set value	Display or modify the current parameters of the controller.
Monitoring value	Monitor the current valve body nozzle temperature, etc.
Purge	Let the valve body perform the Purge action.
Single trigger	Trigger valve body.
Download	Load the current parameters of the controller into the current screen.
Upload	Set the current UI settings into the controller (the dispensing parameters must be uploaded before they are saved).
Reset	When the controller crashes, you can press the "Reset" button to restore the controller.

4.10

Log

Log, displays the V2K Log, used to query events that occurred when the V2K software is running.

Log

Time	Code	Category	Message
10:21:20	3100	Auth grant.	user:<password> action:device_setting OK
10:21:21	3100	UI enter/exit.	DeviceSettingCollection enter
10:21:27	3100	Config saved.	DeviceSetting
10:21:27	3100	UI enter/exit.	DeviceSettingCollection closed
10:21:28	3100	Auth logout.	user:<password>
10:22:31	3100	Auth grant.	user:<password> action:device_setting OK
10:22:31	3100	UI enter/exit.	DeviceSettingCollection enter
10:22:52	3100	UI enter/exit.	DeviceSettingCollection closed
10:22:52	3100	Auth logout.	user:<password>
11:30:50	3100	Auth grant.	user:<password> action:calibration OK
11:30:54	1300	Camera startup failed.	Side
11:30:55	3100	UI enter/exit.	CalibrationFlowComponent enter
11:30:55	3100	UI enter/exit.	CameraCalibrationUI enter
11:56:47	3100	UI enter/exit.	CameraCalibrationUI closed
11:56:47	3100	UI enter/exit.	RotateCenterOffsetCalibration enter
11:56:55	3100	UI enter/exit.	RotateCenterOffsetCalibration closed
11:56:55	3100	UI enter/exit.	CalibrationFlowComponent closed

2023-10-20 10:21:20.068+08:00 Auth grant.
user:<password> action:device_setting OK

 Bottom Alarm Only

Filter

V

Clear

286 / 286 | 2023/10/20 16:42:51

Figure 117: Log interface

Name	Depictions
Bottom	When new information is updated, the scroll axis will move to the bottom on its own.
Alarm Only	Only alarm information is displayed.
Filter	The data can be filtered and the specific data you want to display can be selected. ALL: display all. Advance:Enable: Do not enable this feature. Advance:Modify: Set what log information to display after opening. Device: Display device information. Software: Display software information. Operation: Display operation status information. Operation Abnormal: Display operation abnormal status information. Calibration: Display calibration information. Run: Display operation related information. Run Abnormal: Display abnormal information. Other Abnormal: Display other abnormal status information.
V	Information jumps to the latest.
Clear	Clear log data.

5

Correction

The calibration page mainly provides camera calibration, rotation center calibration, height detector calibration, dispensing device displacement, height calibration, other device positions, and other functions. Calibration is required when the machine is operated for the first time or when the hardware settings (CCD lens, height measuring device position, needle position, clear glue and other hardware devices) are changed.

Click the "Calibration" button on the main page to enter the "Calibration" screen window.

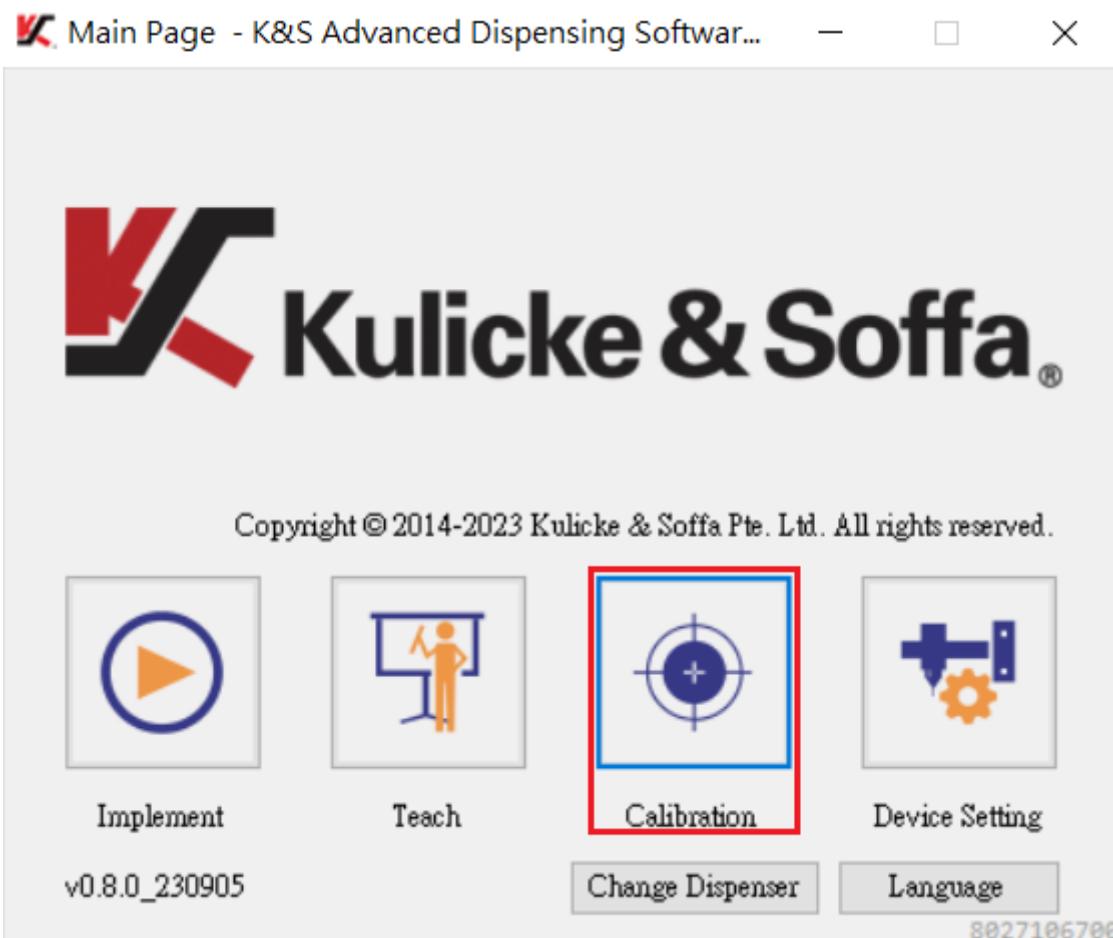


Figure 118: Click Calibration from the main screen to enter



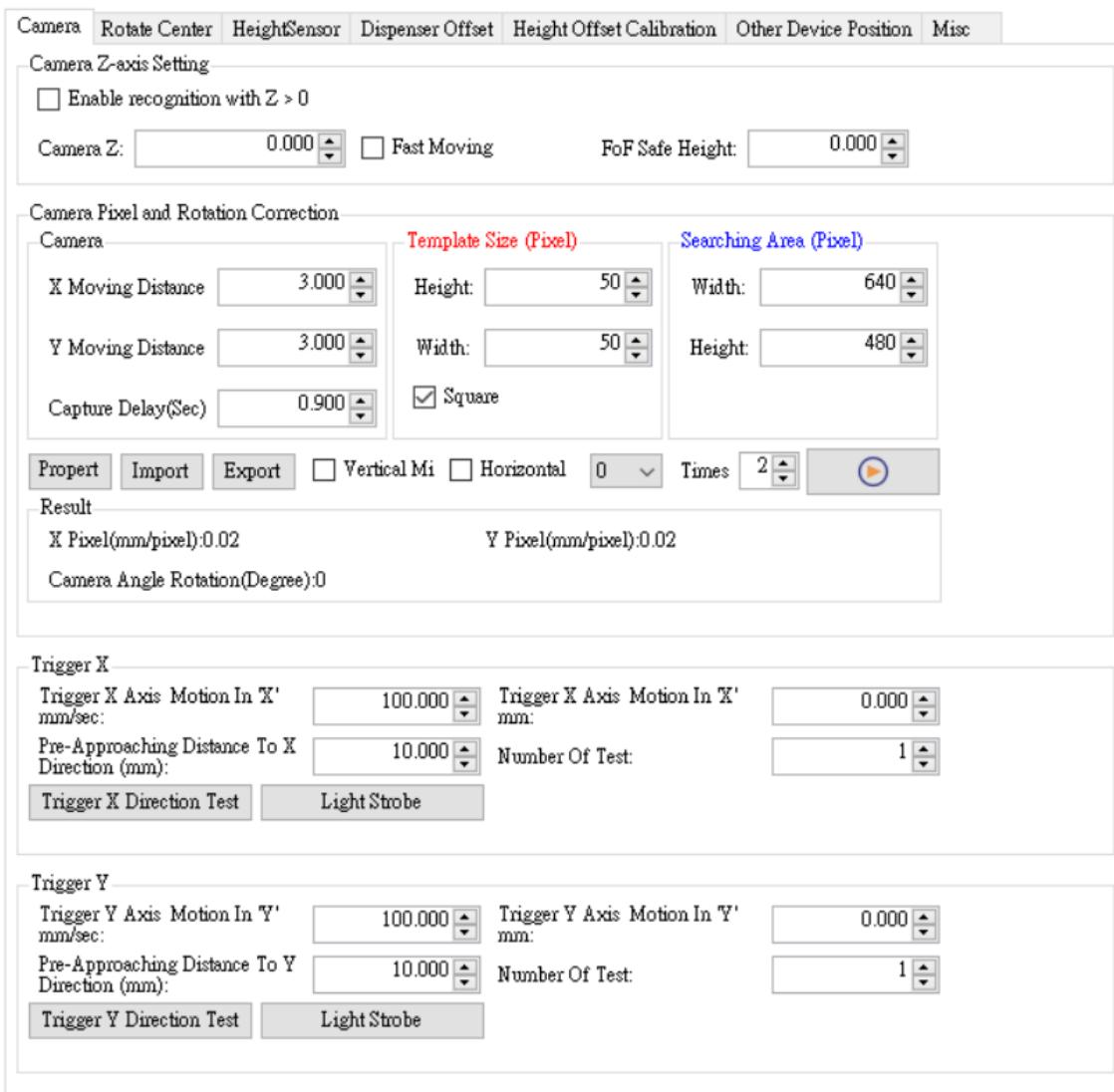
Figure 119: Calibration toolbar

Name	Depictions
↔	Previous action or next action.
Y1	Switch Y-axis device. When the machine has dual Y-axes, both axes must be calibrated separately. It is necessary to switch to the Y2 axis to calibrate the displacement of the camera, height detector and dispensing device.
Currently using device	The device currently in use.
Save	Save the calibration settings.
Reset settings	Reset restores the settings before saving.
Import/Export	Import or export calibration bin files.
Close	Close the calibration page.
camera	When the machine is operated for the first time or the CCD lens is changed, the camera (Pixel) and the XY axis movement ratio of the machine need to be corrected.
Rotation center correction	Correct the machine device and camera offset containing the rotation axis.
Height detector	Correct the coordinate offset of the CCD lens and the upper height measuring device.
Dispenser Offset	Offset and tilt pattern correction of dispensing device and CCD camera.
Height Offset Calibration	On the lower height measuring device, perform Z-axis calibration of the dispensing device and Z-axis calibration of the height measuring device (the two are relative heights)
Other device locations	The relevant settings of the scale and the relative position

	of the glue removal device on the X, Y, Z axes on the work platform, etc.
Misc	Micro balance related settings, maintenance coordinates and safety coordinates settings, glue discharge settings and other functions.

5.1 Camera

The camera calibration page has functions from top to bottom including camera Z-axis setting, camera pixel and rotation correction, FoF correction and other functions. It mainly provides correction of the ratio of camera (Pixel) and machine XY axis movement. (Move the coordinates to the appropriate pattern or symbol on the work object for automatic correction (there must be no duplicate graphics nearby))

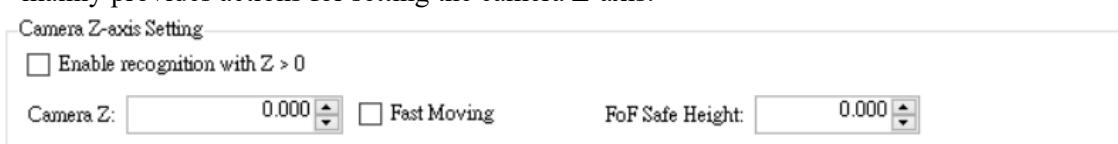


The screenshot displays the 'Camera' tab of the calibration interface. At the top, there are tabs for Camera, Rotate Center, HeightSensor, Dispenser Offset, Height Offset Calibration, Other Device Position, and Misc. Under the Camera tab, the 'Camera Z-axis Setting' section includes an unchecked checkbox for 'Enable recognition with Z > 0', a 'Camera Z:' input field set to 0.000, a 'Fast Moving' checkbox, and a 'FoF Safe Height:' input field set to 0.000. The 'Camera Pixel and Rotation Correction' section contains three main groups: 'Camera' (X Moving Distance: 3.000, Y Moving Distance: 3.000, Capture Delay(Sec): 0.900), 'Template Size (Pixel)' (Height: 50, Width: 50, checked 'Square'), and 'Searching Area (Pixel)' (Width: 640, Height: 480). Below these are buttons for Property, Import, Export, and a series of checkboxes for Vertical/Mi, Horizontal, and Times (set to 2). The 'Result' section shows X Pixel(mm/pixel): 0.02 and Y Pixel(mm/pixel): 0.02, along with a Camera Angle Rotation(Degree): 0. The 'Trigger X' section includes Trigger X Axis Motion In X' mm/sec: 100.000, Pre-Approaching Distance To X Direction (mm): 10.000, Number Of Test: 1, and buttons for Trigger X Direction Test and Light Strobe. The 'Trigger Y' section is similar, with Trigger Y Axis Motion In Y' mm/sec: 100.000, Pre-Approaching Distance To Y Direction (mm): 10.000, Number Of Test: 1, and buttons for Trigger Y Direction Test and Light Strobe.

Figure 120: Camera calibration function interface

5.1.1 Camera Z axis setting

The camera Z-axis setting page has functions from top to bottom, including activating the image recognition Z-axis function, camera Z-axis height setting, fast movement, and flying safety height. It mainly provides actions for setting the camera Z-axis.



The screenshot shows the 'Camera Z-axis Setting' section of the Z-axis correction block. It includes an unchecked checkbox for 'Enable recognition with Z > 0', a 'Camera Z:' input field set to 0.000, a 'Fast Moving' checkbox, and a 'FoF Safe Height:' input field set to 0.000.

Figure 121: Camera Z-axis correction block

Name	Depictions

Enable recognition with Z > 0	During image recognition, the Z axis is recognized according to the currently set height value.
Camera Z axis height	When moving, it will first pull back to a safe height, and then move to the Z-axis height of "Camera Z-axis height" after reaching the XY position.
Fast-moving	After checking, it will not pull back to a safe height, but will move according to the camera Z-axis height setting value.
FoF Safe Height	When using the gallop function, work will be performed at this height.

5.1.2 Camera pixel and rotation correction

The camera pixel and rotation correction page mainly provides parameter settings and correction functions related to camera correction. The page is divided into two parts. The upper part is the camera X and Y moving distance and photo delay time settings, template size setting, and search range setting functions. The lower part is the camera properties (properties, import, export), Mirror adjustment, rotation angle, number of tests, start of test execution, etc.

Camera Pixel and Rotation Correction

Camera	Template Size (Pixel)	Searching Area (Pixel)
X Moving Distance 3.000	Height: 50	Width: 640
Y Moving Distance 3.000	Width: 50	Height: 480
Capture Delay(Sec) 0.900	<input checked="" type="checkbox"/> Square	
<input type="button" value="Property"/> <input type="button" value="Import"/> <input type="button" value="Export"/> <input type="checkbox"/> Vertical Mi <input type="checkbox"/> Horizontal <input type="button" value="0"/> Times <input type="button" value="2"/> <input type="button" value="▶"/>		
Result X Pixel(mm/pixel):0.02 Y Pixel(mm/pixel):0.02 Camera Angle Rotation(Degree):0		

Figure 122: Camera correction function

Name	Depictions
Camera	Camera X and Y movement distance and photo delay time settings.
X moving distance (unit: mm)	When calibrating, make the X-axis movement distance from the center point.
Y moving distance (unit: mm)	When calibrating, measure the Y-axis movement distance from the center point.
Photo delay time (unit: seconds)	Delay time for machine movement correction. Excessively fast speed will cause calibration failure. If the table on which the machine is placed is unstable or the CCD magnification is large, it is recommended to extend the time.
Template size (unit: Pixel)	Set the CCD calibration window, and the image in the frame will be used as the positioning image.
High	Adjust the template height of the specified CCD frame.
Width	Adjust the template width of the specified CCD frame.
Square	If checked, the template size will be adjusted in the form of a square.
Search range (unit: Pixel)	Adjust the area scanned during CCD image correction. Usually there are other repeated patterns that need to be modified.
Width	During calibration, CCD image scan width.
High	During calibration, the CCD image scan height.
Property	Modify camera properties, such as white balance, contrast, gain value, exposure time and other parameter values. (Different cameras and attribute items may also be different.)
Import	Import camera properties.

Export	Export camera properties.
Vertical mirror	Vertical mirror adjustment. (When the movement direction of the camera image and the actual working platform are opposite up and down, adjustments need to be made.)
Horizontal	Horizontal mirror adjustment. (When the movement direction of the camera image and the actual working platform are opposite, left and right, adjustments need to be made.)
0	Rotate the CCD lens screen.
Times	The total number of tests performed.
Start	Start performing camera calibration test.
Result	Displays the corrected pixel ratio value.
X(mm/pixel)	Convert the X-axis pixel scale value. (Calibration values are automatically generated.)
Y(mm/pixel)	Convert the Y-axis pixel scale value. (Calibration values are automatically generated.)
Camera rotation angle (degrees)	Correct the skew of CCD fixture. (Calibration values are automatically generated.)

5.1.2.1 Camera calibration process

- (1) Move the coordinates and CCD image to the appropriate pattern or symbol on the work object as a positioning template. The image is used as a template in the screen. You can see that there are no repeated graphics in the surrounding screen. It can be used as a suitable template graphic.

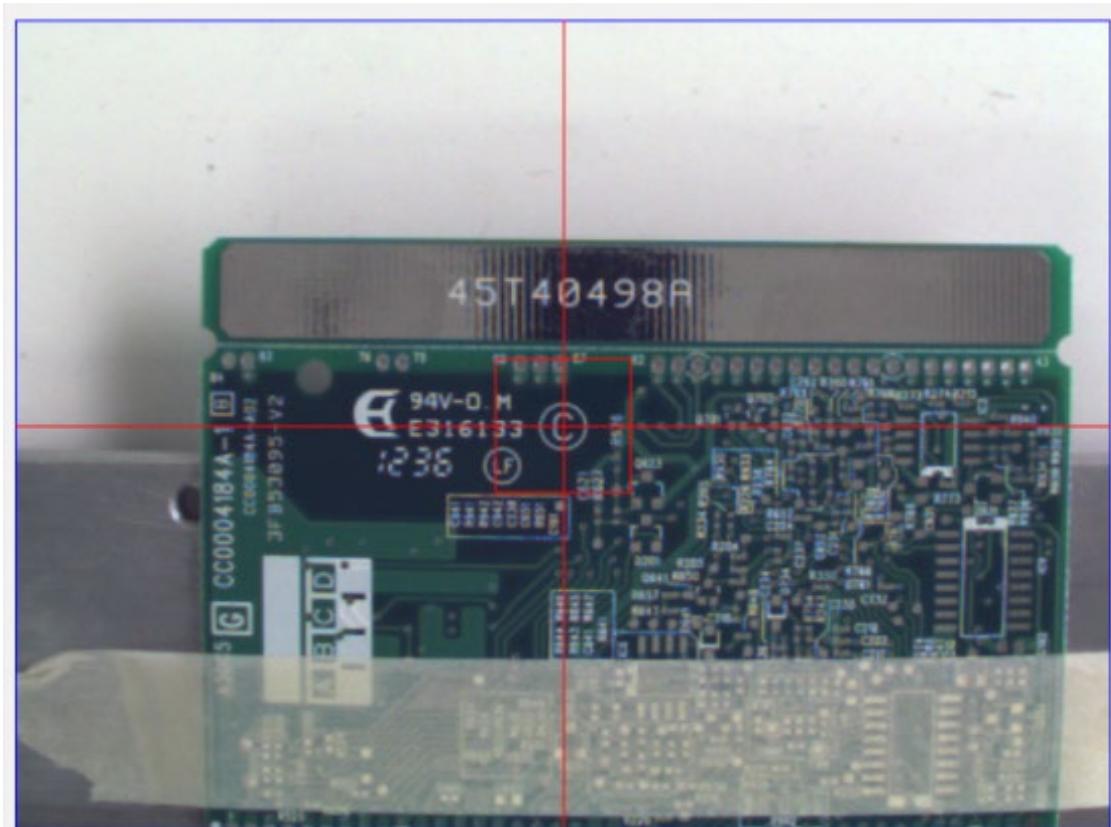


Figure 123: Example diagram sample

- (2) Adjust the appropriate template size (width, height), and the template size is displayed in a red box. If there are repeated or similar graphics in the template box, the search range will be narrowed. If there are no repeated graphics, the default range will be (640X480).

Template Size (Pixel) Height: <input type="text" value="50"/> Width: <input type="text" value="50"/> <input checked="" type="checkbox"/> Square	Searching Area (Pixel) Width: <input type="text" value="640"/> Height: <input type="text" value="480"/>
---	--

Template Size(pixel) Searching Area(Pixel)

Figure 124: Set template size and search range

- (3) After the setting is completed, you can click the "Start" button. At this time, the machine will move the recognition template in the X and Y directions as a conversion of pixels to millimeters.

Template Size (Pixel) Height: <input type="text" value="50"/> Width: <input type="text" value="50"/> <input checked="" type="checkbox"/> Square	Searching Area (Pixel) Width: <input type="text" value="640"/> Height: <input type="text" value="480"/>
---	--

al Mi Horizontal Times

Figure 125: Click the Start button to start calibration

5.1.3 Virtual Camera

The virtual camera page, virtual camera, does not perform correction. Its pixel ratio is the parameter when the image file is imported.

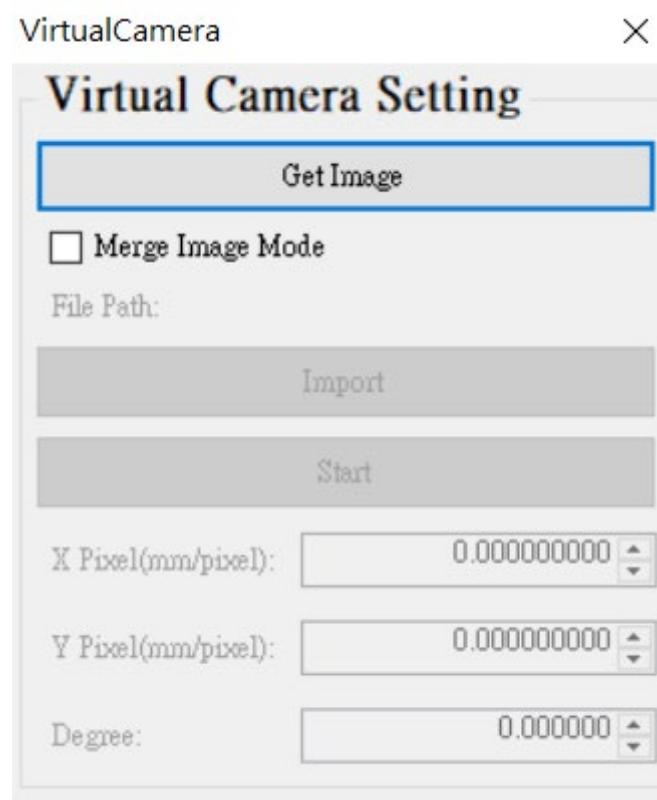


Figure 126:虛擬相機介面

Name	Depictions
Select photo	Load photos (loading into CCD is a fixed screen, and correction cannot be used normally.)
Full image merge mode	When checked, a panorama can be imported to simulate the camera window.
Import	Import panoramas.
Start	Read the panorama into the CCD window.
X(mm/pixel)	They are all X-axis pixel ratio values when shooting the panorama.
Y(mm/pixel)	They are all Y-axis pixel ratio values when shooting the panorama.
Camera rotation angle (degrees)	Correct the skew of CCD fixture. (Calibration values are automatically generated.)

Note: This interface will only appear in the camera properties when the device settings select to use Virtual Camera.

5.1.4 FoF

Camera FoF correction page.

Trigger X

Trigger X Axis Motion In X' mm/sec:	100.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>	Trigger X Axis Motion In X' mm:	0.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>
Pre-Approaching Distance To X Direction (mm):	10.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>	Number Of Test:	1 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>
<input style="background-color: #f0f0f0; border: 1px solid #ccc; padding: 2px 10px; border-radius: 5px; margin-right: 10px;" type="button" value="Trigger X Direction Test"/> <input style="background-color: #f0f0f0; border: 1px solid #ccc; padding: 2px 10px; border-radius: 5px;" type="button" value="Light Strobe"/>			

Trigger Y

Trigger Y Axis Motion In Y' mm/sec:	100.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>	Trigger Y Axis Motion In Y' mm:	0.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>
Pre-Approaching Distance To Y Direction (mm):	10.000 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>	Number Of Test:	1 <input style="width: 15px; height: 15px; border: none; border-radius: 50%; background-color: #f0f0f0;" type="button" value="▲"/>
<input style="background-color: #f0f0f0; border: 1px solid #ccc; padding: 2px 10px; border-radius: 5px; margin-right: 10px;" type="button" value="Trigger Y Direction Test"/> <input style="background-color: #f0f0f0; border: 1px solid #ccc; padding: 2px 10px; border-radius: 5px;" type="button" value="Light Strobe"/>			

Figure 127:FoF functional interface

Name	Depictions
Triggers X	Corrected FoF's X-axis orientation control.
Trigger X direction speed (mm)	Trigger X direction speed (mm)
Trigger X direction displacement (mm)	FoF's X-axis direction deviation adjustment.
Trigger X direction run-up distance (mm)	When FoF is enabled, the reserved starting distance on the X-axis allows the machine to have space for run-up and acceleration.
Testing frequency	The total number of tests performed on the X-axis.
Trigger X direction	The test starts by performing the X-axis correction of the FoF.
Trigger Y	Correct FoF's Y-axis orientation control.
Trigger Y direction speed (mm)	Trigger X direction speed (mm)
Trigger Y direction displacement (mm)	FoF's X-axis direction deviation adjustment.
Trigger Y direction run-up distance (mm)	When FoF is enabled, the reserved starting distance on the Y-axis allows the machine to have space for run-up and acceleration.
Testing frequency	The total number of tests performed on the Y-axis.
Trigger Y direction	The test starts by performing the X-axis correction of the FoF.
Light Strobe	FoF flash settings.

FoF function calibration process settings:

- (1) Check Fast Move and set the camera Z-axis height and flying safety height to the Z-axis height where the camera focuses.

Camera Z-axis Setting

Enable recognition with Z > 0

Camera Z:

15.123

Fast Moving

FoF Safe Height:

15.123

Figure 128: Z-axis safety height setting

- (2) Find the appropriate Mark point at the Z-axis height center where the camera focuses.
- (3) Set the matching machine and camera to trigger the appropriate X or Y direction speed and run-up distance.

Trigger X

Trigger X Axis Motion In X'
mm/sec:

40.000

Trigger X Axis Motion In X'
mm:

-0.320

Pre-Approaching Distance To X
Direction (mm):

10.000

Number Of Test:

3

Figure 129: Set the X-axis trigger direction

- (4) Set the number of tests, generally set to run 2 to 3 times.

Trigger X

Trigger X Axis Motion In X'
mm/sec:

40.000

Trigger X Axis Motion In X'
mm:

-0.320

Pre-Approaching Distance To X
Direction (mm):

10.000

Number Of Test:

3

Figure 130: Test times setting

- (5) After the setting is completed, press the trigger X or Y direction test button to start running the machine.

Figure 131: Click to trigger X direction test

- (6) The machine will then start moving back and forth to take pictures based on the set speed and run-up distance.
- (7) After the operation is completed, the software will display the result value after the operation and modify the trigger direction displacement value.

Shift Average(mm) = 0.021, Bias Average(mm) = 0.004
 Shift Max(mm) = 0.023, Bias Max(mm) = 0.004
 Shift Min(mm) = 0.016, Bias Min(mm) = 0.004
 Shift(mm) = 0.023, Bias(mm) = 0.004
 Shift(mm) = 0.016, Bias(mm) = 0.004
 Shift(mm) = 0.023, Bias(mm) = 0.004
 Shift(mm) = 0.023, Bias(mm) = 0.004

Figure 132: Test Results

Trigger X

Trigger X Axis Motion In X' mm/sec:	40.000	Trigger X Axis Motion In X' mm:	-0.320
Pre-Approaching Distance To X Direction (mm):	10.000	Number Of Test:	3
Trigger X Direction Test		Light Strobe	

Figure 133: Trigger X direction data change

(8) Due to different machine mechanisms, the X-axis and Y-axis need to be calibrated separately.

5.1.4.1 Light Strobe

Use the FoF function to provide flash settings.

Light Strobe

<input type="checkbox"/> Enable							
StrobeDelay1	0.000	StrobeWidth1	10.000	OutputDelay1	0.000	Intensity1(%)	0.0
StrobeDelay2	0.000	StrobeWidth2	10.000	OutputDelay2	0.000	Intensity2(%)	0.0
StrobeDelay3	0.000	StrobeWidth3	10.000	OutputDelay3	0.000	Intensity3(%)	0.0
StrobeDelay4	0.000	StrobeWidth4	10.000	OutputDelay4	0.000	Intensity4(%)	0.0

Figure 134: Light Strobe interface

Name	Depictions
StrobeDelay	Flash frequency delay time.
StrobeWidth	Flash width.
OutputDelay	Output delay time.
Intensity	Flash intensity.

5.2 Rotation center correction

The rotation center correction page has functions from top to bottom including rotation center correction, rotation center correction auxiliary tools, etc. It mainly provides integration of three-axis, four-axis, and five-axis different applications, provides a unified correction solution, reduces the correction process time, and extends More functional applications.

Camera Rotate Center HeightSensor Dispenser Offset Height Offset Calibration Other Device Position Misc

Robot Mode XYZC

Rotate Center

Robot Position

Go	X	0.000	Y	0.000	C	0.000
----	---	-------	---	-------	---	-------

Camera Position

Go	X	0.000	Y	0.000	C	0.000
----	---	-------	---	-------	---	-------

Offset X: 0.000
Offset Y: 0.000

Rotation Center Calibration Tool

Move to Gap

Robot Position

Go	X	0.000	Y	0.000	Z	0.000	C	0.000
----	---	-------	---	-------	---	-------	---	-------

Camera Circle Point 1

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Camera Circle Point 2

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Camera Circle Point 3

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Radius :

Offset :

Rotation Center : Apply

Figure 135: Rotation center correction page

Machine mode:

Mode	Depictions
XYZ	Standard three-axis equipment.
XYZ+A	Standard three axes plus a tilt axis.
XYZC	Standard four-axis (direct injection), supports height measurement and independent valve setting to rotate with C.
XYZC Side spray	For four-axis side spraying, the valve spraying positions are concentric, and only the rotation center needs to be corrected, without additional correction of the valve offset.
XYZC+A	Standard four axes plus an inclination axis. In addition to the functions of the standard four axes, the valve supports inclination angle correction.

Correction logic:

For three-axis machines, the offset between the device and the camera must be corrected. For a four-axis machine with a C-axis, if the equipment is not installed on the C-axis, the concept is the same as that of a three-axis machine. If the equipment is installed on the C-axis, the rotation center needs to be calibrated first (the entire machine only needs to be calibrated once), and then the offset of the device is corrected. , the software will automatically calculate the Offset at different angles. The A-axis needs to be corrected through inclination. Because the height of the inclination device will affect the landing point, it must be corrected according to different angles.

Mode	Depictions
Three axis	Correction device and camera Offset.
Four axes	Correction device and camera Offset.

(not following C axis)	
four axis (Follow the C-axis rotation)	Calibrate the machine rotation center -> Calibrate the device and camera Offset.
Four-axis side injection (valve 1)	Correct the machine rotation center. (The four-axis side spraying is designed concentrically, so the software locks its Offset. Except for the equipment of valve 1, which needs to be calibrated, it is the same as the four-axis.)
A axis (does not follow C axis)	Inclination pattern correction. (Calibrated separately according to different A and spacing.)
A axis (follows the C axis rotation)	Calibrate the machine rotation center -> Calibrate the inclination angle type (correct according to different A and spacing.)

Function Description:

Name	Depictions
Machine mode	Select the matching machine mode.
Rotation center correction	Used to correct the coordinate offset (relative position in X and Y coordinates) of the CCD lens and the rotation center device.
Device rotation center position	To move the machine to the appropriate position, you need a way to spray or a jig to poke the clay, and teach the current position to the "rotation center position".
camera coordinates	On the auxiliary page below, the CCD camera uses "Circle" mode to teach the coordinates of the three mark points generated by the actual valve body.
OffsetX、OffsetY	The coordinate offset (relative position in X and Y coordinates) of the CCD lens and the rotation center device.
Rotation Center Correction Aid Tool	Center of rotation correction aid page.
move to spacing	After measuring the height, move the valve to the target distance. (You need to confirm that the correction of the lower height measurement coordinates and the upper height measurement height Offset is completed first).
Actual valve body coordinates	The coordinates of the actual valve body.
Camera circular coordinate1	The CCD camera uses "Circle" mode to teach the three mark points
Camera circular coordinate2	of the previous step.
Camera circular coordinate3	
Radius	The radius value of the circle automatically calculated by the software.
Offset	The software automatically calculates the coordinate offset of the CCD lens and the rotation center device.
center of rotation	The software automatically calculates the coordinate position of the rotation center.
Apply	Apply the correction results to the center of rotation.
Go	Quickly move to the teaching coordinates.
Height correction	Height correction of the valve body to the lower height measuring device.
Actual valve body lower height measurement position	The valve body moves to the lower height-measured coordinates and teaches the position.
Predict Offset X, Y	The offset between the lower height measurement coordinate and the actual valve body's lower height measurement position.
test	The valve body performs a height test on the lower height measuring device.
HeightOffset	Offset value after height test.
Move to spacing	After measuring the height, move the valve to the target distance.
CCD height measurement position	The position of the CCD lens relative to the height measuring device.

Spacing (unit: mm)	Set the target spacing of the valve.
Move to spacing	After measuring the height, move the valve to the target distance.
Close	Close the window.
Go	Quickly move to the teaching coordinates.

5.2.1 Rotation center correction process

- (1) To move the machine to the appropriate position, you need a way to spray or a jig to poke the clay.
- (2) Teach the current position to the "rotation center position".

Robot Position

Go	X	0.000	Y	0.000	Z	0.000	C	0.000
----	---	-------	---	-------	---	-------	---	-------

Figure 136:Teaching rotation center position

- (3) Rotate the C axis to generate three mark points with different C axis angles on the platform.

Note: XY cannot be moved during the process.

- (4) The CCD camera uses Circle mode to teach the three mark points in the previous step. After pressing Apply, the software will automatically calculate the center point and teach the camera coordinate position.

Camera Circle Point 1

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Camera Circle Point 2

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Camera Circle Point 3

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Figure 137:Teach three circles and three positions

- (5) C axis rotation

- (A) Set whether to follow the C axis for rotation (if following C, make sure the rotation center has been corrected).
- (B) Standard offset correction process (three-axis and four-axis).

Height Sensor Device Position								
Height Sensor Device Coordinate								
Go	X	0.000	Y	0.000	Z	0.000	C	0.000
Camera Position								
Go	X	0.000	Y	0.000	Z	0.000	C	0.000
Offset X: 0.000 Offset Y: 0.000							<input type="checkbox"/> Rotate with C	

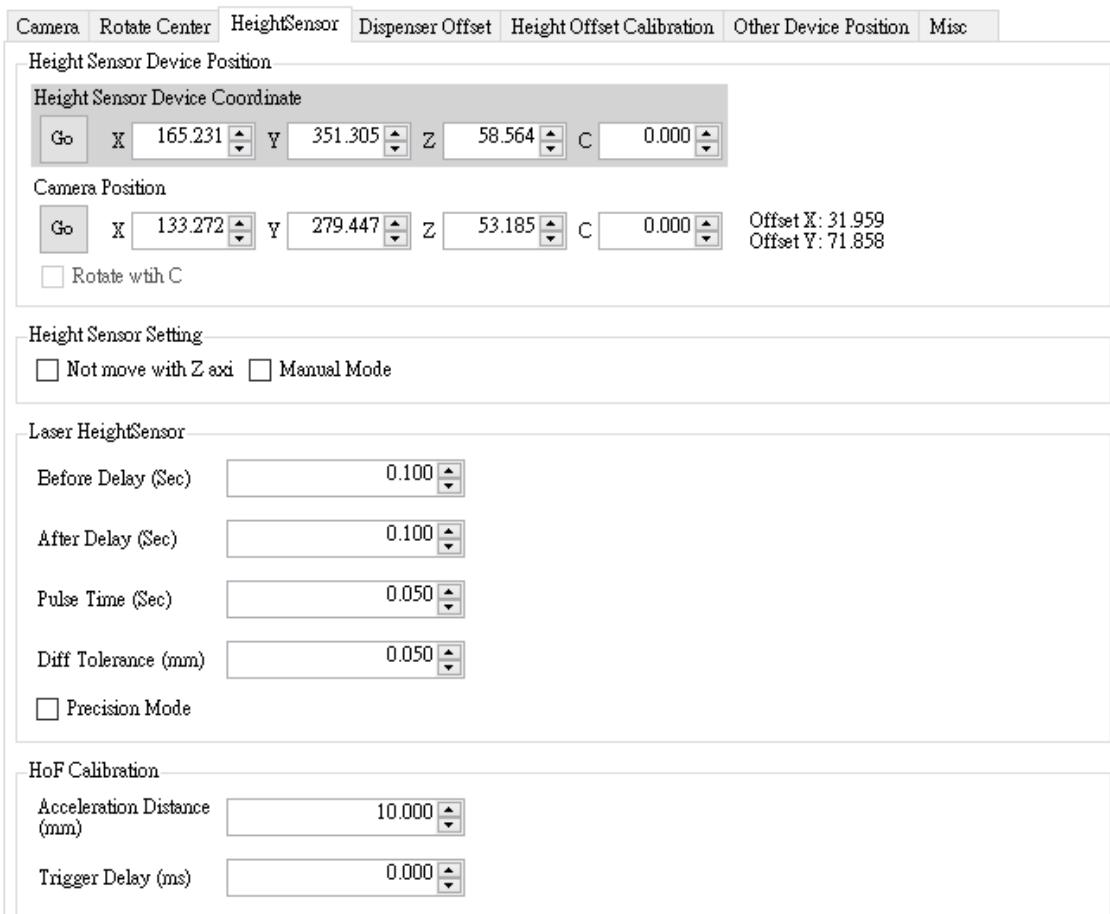
Figure 138: Check C axis rotation

Offset Calibration For Probe To Dispenser 1								
Current Dispenser Coordinate								
Go	X	0.000	Y	0.000	Z	0.000	C	0.000
Camera Position								
Go	X	0.000	Y	0.000	Z	0.000	C	0.000
Offset X: 0.000 Offset Y: 0.000							Rotation Type	
<input type="checkbox"/> Rotate with C								

Figure 139: Check C axis rotation

5.3 Height detector calibration

Height detector calibration page, the functions from top to bottom are height measurement device position, height measurement device settings, laser height measurement, galloping height measurement correction and other functions. It is mainly used to correct the coordinates of the CCD lens and the upper height measurement device. Offset (relative position in X, Y coordinates).



The screenshot shows a software interface for height detection calibration. At the top, there is a navigation bar with tabs: Camera, Rotate Center, HeightSensor, Dispenser Offset, Height Offset Calibration, Other Device Position, and Misc. The HeightSensor tab is selected.

Height Sensor Device Position:

- Height Sensor Device Coordinate:** Includes fields for Go, X (165.231), Y (351.305), Z (58.564), C (0.000), and a button for "Offset X: 31.959" and "Offset Y: 71.858".
- Camera Position:** Includes fields for Go, X (133.272), Y (279.447), Z (53.185), C (0.000), and a checkbox for "Rotate with C".

Height Sensor Setting:

- Not move with Z axis
- Manual Mode

Laser HeightSensor:

- Before Delay (Sec): 0.100
- After Delay (Sec): 0.100
- Pulse Time (Sec): 0.050
- Diff Tolerance (mm): 0.050
- Precision Mode

HoF Calibration:

- Acceleration Distance (mm): 10.000
- Trigger Delay (ms): 0.000

Figure 140: Height detection calibration interface

Name	Depictions
Height measuring device location	Manually set the offset between the height measuring device and the CCD.
Height measuring device coordinates	The coordinates obtained by contacting the vertex of the upper height measurement (mechanical height measurement) with the clay or the coordinates of the MARK point for laser height measurement calibration.
Camera coordinates	The CCD lens moves to the center of the identification point (indentation) after the upper height measurement (mechanical height measurement) contacts the clay or the MARK point used for laser height measurement calibration for correction.
OffsetX and OffsetY	The coordinate offset (relative position in X and Y coordinates) of the CCD lens and the upper height measuring device.
Rotate following the C axis	Please tick if the mechanism has a C-axis.
Height measuring device settings	Set the height measuring device to not follow the Z-axis movement.
Does not move with the Z axis	The height measuring device does not move with the Z axis.
Go	Quickly move to the teaching coordinates.

5.3.1 Height detector calibration process

- (1) The coordinates obtained by contacting the vertex of the upper height measurement (mechanical height measurement) with the clay or the coordinates of the MARK point for laser height measurement calibration.
- (2) The CCD lens moves to the center of the identification point (indentation) after the upper height measurement (mechanical height measurement) contacts the clay or the MARK point used for laser height measurement calibration for correction.
- (3) After inputting the relative positions of the height measuring device coordinates and camera coordinate values respectively, you can press "Save" to complete the height detector calibration process.

5.3.2 Laser altimetry

Laser altimetry page.

Laser HeightSensor

Before Delay (Sec)	0.100 <input type="button" value="▲"/> <input type="button" value="▼"/>
After Delay (Sec)	0.100 <input type="button" value="▲"/> <input type="button" value="▼"/>
Pulse Time (Sec)	0.050 <input type="button" value="▲"/> <input type="button" value="▼"/>
Diff Tolerance (mm)	0.050 <input type="button" value="▲"/> <input type="button" value="▼"/>
<input type="checkbox"/> Precision Mode	

Figure 141:Laser height measurement setting interface

Name	Depictions
Delay before height measurement (unit: seconds)	The machine stagnation time before laser height measurement.
Delay after height measurement (unit: seconds)	After laser height measurement, the machine stays for a period of time.
Trigger time (unit: seconds)	The length of the signal that triggers the laser height measuring device.
Allowable linear difference (unit: mm)	Used to confirm whether the measurement results are within the set linear difference range in teaching mode.
High precision mode	When checked, when running the height measurement action, in order to overcome the problem of linearity difference, the same height measurement will be measured twice to obtain a more accurate height measurement value. When high-precision mode is checked, the flying height measurement function cannot be performed.

5.3.3 HoF correction

Dash to the altimetry correction page.

HoF Calibration

Acceleration Distance (mm)	10.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Trigger Delay (ms)	0.000 <input type="button" value="▲"/> <input type="button" value="▼"/>

Figure 142: Flying Height Measurement Setting Interface

Name	Depictions
Acceleration distance (unit: mm)	The movement is pre-accelerated before starting the measurement, so as to avoid the head-to-tail acceleration and deceleration during the galloping height measurement process from affecting the height measurement results.
Trigger delay (unit: milliseconds)	Trigger delayed correction results.

5.4 Displacement of dispensing device

Dispensing device displacement correction page, the functions from top to bottom are Offset between dispensing device 1 and CCD, Offset between dispensing device 2 and CCD, tilt shape correction, etc. It is mainly used to correct the CCD lens and dispensing device. Coordinates Offset.

Camera	Rotate Center	HeightSensor	Dispenser Offset	Height Offset Calibration	Other Device Position	Misc
Offset Calibration For Probe To Dispenser 1						
Current Dispenser Coordinate						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Rotation Type						
Camera Position						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Offset X: 0.000 Offset Y: 0.000						
<input type="checkbox"/> Rotate with C						
Offset Calibration For Probe To Dispenser 2						
Current Dispenser Coordinate						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Rotation Type						
Camera Position						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Offset X: 0.000 Offset Y: 0.000						
<input type="checkbox"/> Rotate with C						
Offset Calibration For Probe To Dispenser 3						
Current Dispenser Coordinate						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Rotation Type						
Camera Position						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Offset X: 0.000 Offset Y: 0.000						
<input type="checkbox"/> Rotate with C						
Offset Calibration For Probe To Dispenser 4						
Current Dispenser Coordinate						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Rotation Type						
Camera Position						
<input type="button" value="Go"/>	X <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Y <input type="text" value="0.000"/>	<input type="button" value="▲"/>	Z <input type="text" value="0.000"/>	<input type="button" value="▲"/>
C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		C <input type="text" value="0.000"/>	<input type="button" value="▲"/>		
Offset X: 0.000 Offset Y: 0.000						

Figure 143: Dispensing device Offset settings

Name	Depictions
Offset between dispensing device 1 and CCD	Manually set the Offset between dispensing device 1 and CCD.
Current dispensing coordinates	Use the dispensing device 1 to actually make a dot anywhere on the platform or the coordinate position where the needle contacts the clay.
Camera coordinates	The CCD lens moves to the center of the identification point (indentation) after contact with the clay or the dot for correction.
OffsetX OffsetY	The coordinate offset (relative position in X and Y coordinates) of the CCD lens and dispensing device 1.
Rotate following the C axis	Please tick if the mechanism has a C-axis.
Offset between dispensing device 2 and CCD	Manually make the Offset setting between dispensing device 2 and CCD.
Current dispensing coordinates	Use the dispensing device 2 to actually make a dot anywhere on the platform or the coordinate position where the needle contacts the clay.
Camera coordinates	The CCD lens moves to the center of the identification

	point (indentation) after contact with the clay or the dot for correction.
OffsetX OffsetY	The coordinate offset (relative position in X and Y coordinates) of the CCD lens and dispensing device 2.
Rotate following the C axis	Please tick if the mechanism has a C-axis.
Go	Quickly move to the teaching coordinates.

5.4.1

Dispensing device displacement correction process

- (1) Move the dispensing needle to any position on the work platform, and dot the position or the point where the needle contacts the clay as the Mark point, click the "Teach" button to teach the current X and Y coordinates in the field.
- (2) The CCD camera moves to the Mark point where the dot or needle contacts the clay, and finds the center of the identification point for alignment. Click the "Teach" button to teach the current X and Y coordinates in the fields.
- (3) After inputting the relative positions of the dispensing needle coordinates and camera coordinate values respectively, you can press Save to complete the dispensing device displacement correction.

5.5

Inclination shape correction (dispensing device displacement)

On the dispensing device displacement page, click the "Inclination Shape Correction" button to enter the "Inclination Shape Correction" page.

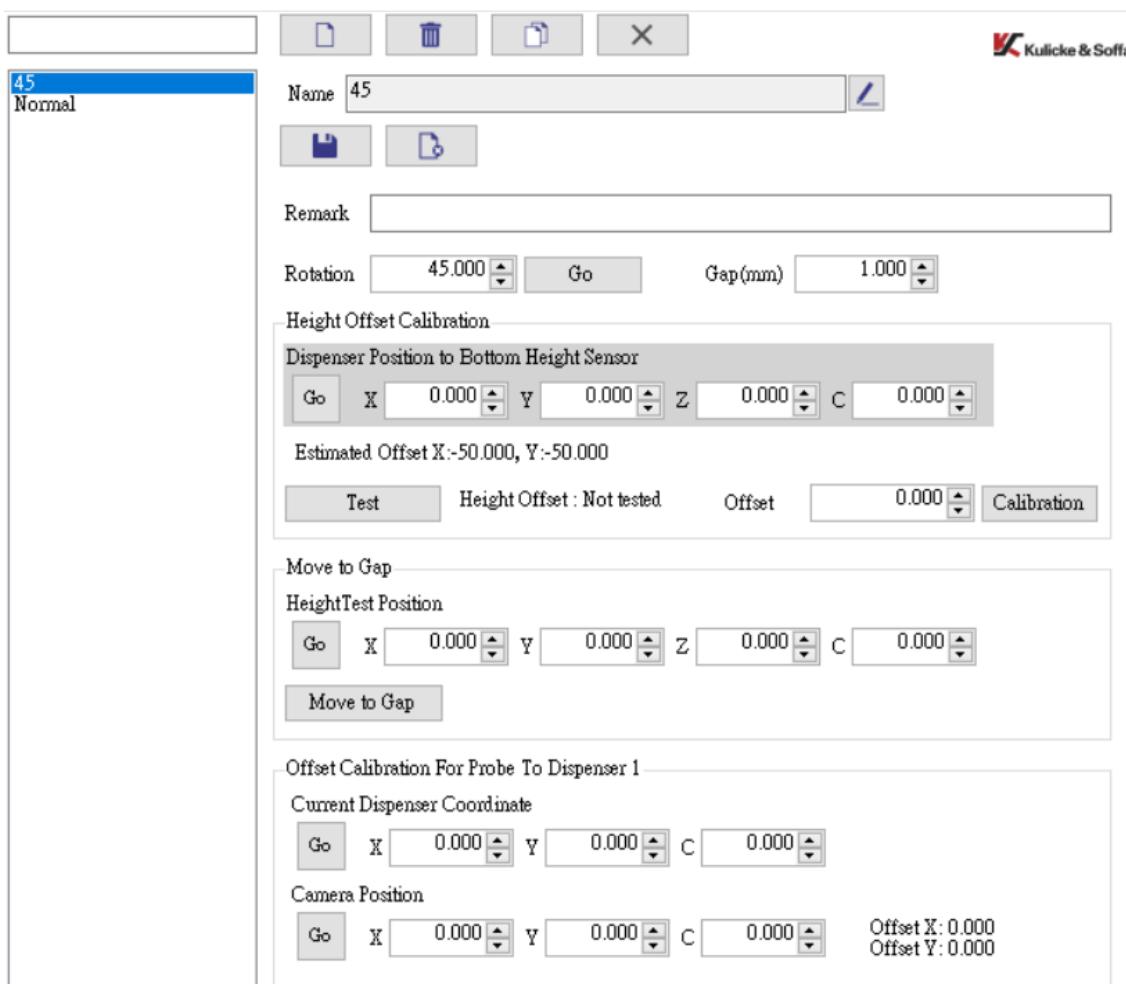


Figure 144:Tilt pattern correction

Through an additional motor, the valve body inclination angle is controlled. Since the inclination angle is non-0 degrees (perpendicular to the plane), the position of the glue landing point will change due to the difference in spacing and inclination angle, so offset correction is required for non-0 degree inclination angles.

When there is a rotation axis and an inclination axis at the same time, the glue landing point will change as the rotation axis and inclination axis change. The software provides a correction mechanism. After correction, the software will automatically correct the offset changes caused by changes in the rotation axis.

To set the inclination shape correction, you must first go to "Rotation Center Calibration → Machine Mode" to set up a device containing the A-axis (inclination angle) before you can perform inclination angle correction.

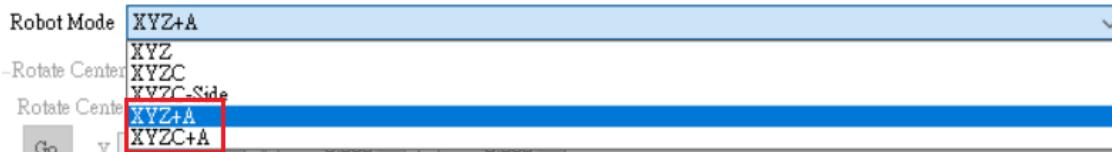


Figure 145: Select machine mode with A-axis

Name	Depictions
Add	new page.
Remove	Remove the page.
Copy	Copy the set tilt page.
Close	Close the page.
Save	Save settings.
Cancel	Cancel unsaved settings.
Remarks	You can fill in any comments.
Inclination	Set the inclination value.
GO	Set the inclination angle and click "GO" to move the A-axis to the set angle.
Spacing (unit: mm)	Set the spacing value.
height correction	Height correction of the valve body to the lower height measuring device.
Actual valve body lower height measurement position	The valve body moves to the lower height-measured coordinates and teaches the position.
Predict Offset X, Y	The offset between the lower height measurement coordinate and the actual valve body's lower height measurement position.
Test	The valve body performs a height test on the lower height measuring device.
HeightOffset	Offset value after height test.
Offset	Calibrate the offset of the valve (where it touches the lower height).
Calibration	Fine-tune the height Offset through the calibration process. Detailed functions.
Move to spacing	After measuring the height, move the valve to the target distance.
CCD height measurement position	The position of the CCD lens relative to the height measuring device.
move to spacing	After measuring the height, move the valve to the target distance.
Offset between dispensing device 1 and CCD	Manually set the Offset between dispensing device 1 and CCD.
Current dispensing coordinates	Use the dispensing device 1 to actually make a dot anywhere on the platform or the coordinate position where the needle contacts the clay.
Camera coordinates	The CCD lens moves to the center of the identification point (indentation) after contact with the clay or the dot for correction.
Offset X, Y	The coordinate offset (relative position in X and Y coordinates) of the CCD lens and dispensing device 1.
Go	Quickly move to the teaching coordinates.

5.5.1 Inclination shape correction process

- (1) Basic project calibration needs to be completed first: camera offset, camera height, height measurement offset, valve offset, height offset, clear glue position, etc.
- (2) Enter the inclination type page.

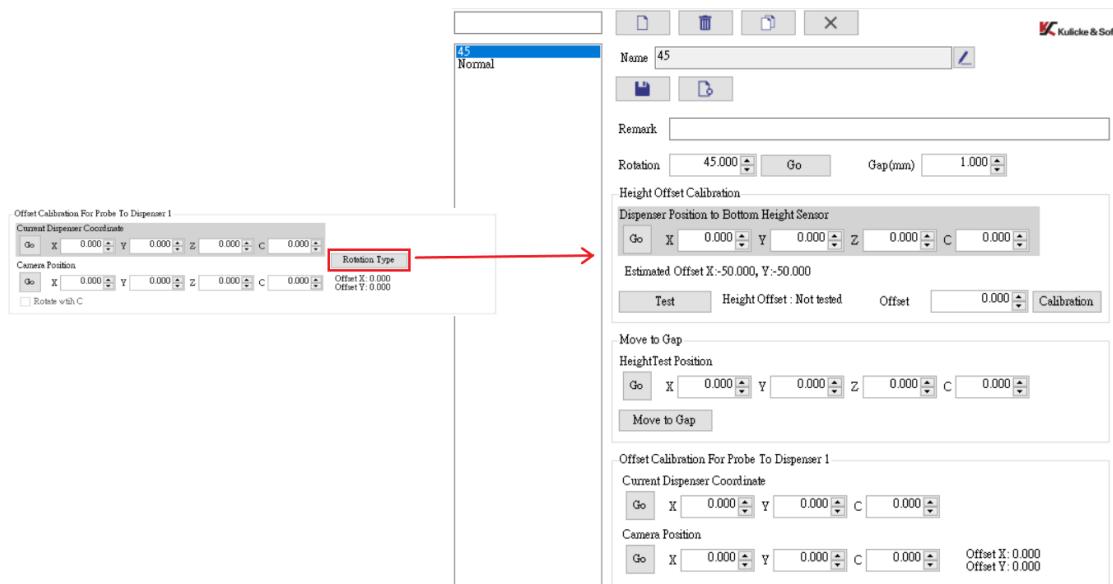


Figure 146: Click on tilt pattern correction

- (3) Set the inclination and spacing values.

Rotation	45.000	Go	Gap(mm)	1.000
----------	---------------	----	---------	--------------

Figure 147: Inclination setting

- (4) Set the inclination angle and click "GO" to move the A-axis to the set angle.

Rotation	45.000	Go	Gap(mm)	1.000
----------	---------------	----	---------	--------------

Figure 148: Click GO to move the A-axis to the set angle

- (5) Move the valve to the top of the lower height measuring device and teach the current position (use the low point of the valve to the position of the lower height measuring device).

Dispenser Position to Bottom Height Sensor					
Go	X	273.023	Y	148.330	Z
					C
					0.000

Figure 149: Height measurement under the actual valve body

- (6) Click the "Test" button. At this time, the valve body will be lowered to measure the height, and the height Offset will be obtained.

Dispenser Position to Bottom Height Sensor					
Go	X	273.023	Y	148.330	Z
					C
					0.000
Estimated Offset X: 223.023 , Y: 98.330					
Test	Height Offset : Not tested		Offset	0.000	Calibration

Figure 150: Click Test to perform a height test

- (7) Move the CCD in the Move to Spacing block and teach the height measurement position.

Move to Gap					
HeightTest Position					
Go	X	0.000	Y	0.000	Z
					C
					0.000
Move to Gap					

Figure 151: Move the CCD to the height measurement position and teach into the field

- (8) After the camera teaches the height measurement position, click the "Move to Spacing" button, and the software will measure the height and move the valve body to the set position and spacing.



Figure 152: Carry out height measurement

- (9) After pressing, a prompt window will appear in the software. Please confirm that the height correction has been completed and remove objects that may cause collision. After pressing "OK", the user will be asked to confirm the required height of the Z-axis movement. Please confirm and then click OK. .

Caution! X

Please do the height offset calibration before do this action. Remove all the stuff that may cause collision.

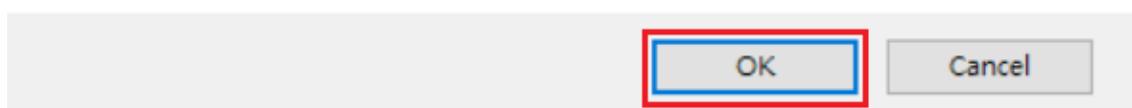


Figure 153: Confirm window

Caution! X

Sure to move the Z to 18.001 at the current position?

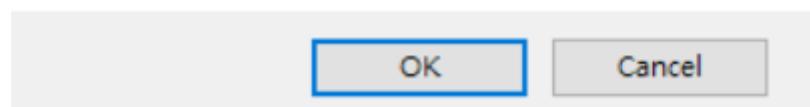


Figure 154: Click OK

- (10) <Calibrate Offset> Move the valve and camera to the predetermined dispensing coordinates and teach the position. (Increase the Z-axis above the clay to create indentations (with needles) or spray glue (without needles).

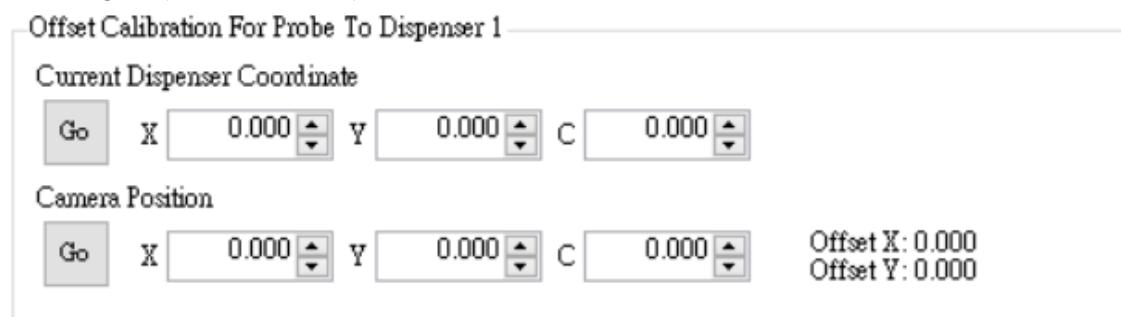


Figure 155: Offset setting

5.6

height correction

The height correction page has functions from top to bottom: bottom height measuring device, height measuring device height Offset, dispensing device 1 height Offset, dispensing device 2 height Offset, side spray height Offset fine-tuning correction and other functions.

The relative height position of the dispensing device and the upper height measuring device on the Z axis is mainly corrected on the lower height measuring device.

The screenshot shows a software interface for height correction. At the top, there is a navigation bar with tabs: Camera, Rotate Center, HeightSensor, Dispenser Offset, Height Offset Calibration, Other Device Position, and Misc. The 'Height Offset Calibration' tab is currently selected.

The main area contains several sections for setting height offsets:

- Tip Sensor Setting**: Contains a 'Tip Sensor Coordinate' section with 'Go' and coordinate input fields for X (50.000) and Y (50.000).
- Height Sensor Setting Height Offset**: Shows 'Height Offset : 2.000' and 'Offset : 0.000' with 'Test', 'C (0.000)', and 'Calibration' buttons.
- Dispenser Setting1 Height Offset**: Shows 'Height Offset : 3.000' and 'Offset : 0.000' with 'Test', 'C (0.000)', and 'Calibration' buttons.
- Dispenser Setting2 Height Offset**: Shows 'Height Offset : 4.000' and 'Offset : 0.000' with 'Test', 'C (0.000)', and 'Calibration' buttons.
- Dispenser Setting3 Height Offset**: Shows 'Height Offset : Not tested' and 'Offset : 0.000' with 'Test', 'C (0.000)', and 'Calibration' buttons.
- Dispenser Setting4 Height Offset**: Shows 'Height Offset : Not tested' and 'Offset : 0.000' with 'Test', 'C (0.000)', and 'Calibration' buttons.
- Dispenser Height Difference: 1**: A note indicating the difference between dispensing device 1 and the lower height measuring device.
- Plate Height Calibration**: A button at the bottom left of the interface.

Figure 156: Highly tested interface

Name	Depictions
Lower height measuring device	Set the height measurement coordinates.
Lower altitude coordinates	Set the X and Y coordinates of the lower height measuring device on the platform.
Height measuring device height Offset	The Z-axis height value obtained after the upper height measurement (mechanical height measurement) comes into contact with the lower height measurement.
C	Set the C-axis value.
HeightOffset	Offset value after the height test of the height measuring device.
Offset	When the side spray uses a normal lower height gauge, it can hit the expected position through camera correction and valve (where it contacts the lower height gauge) Offset.
Dispensing device 1	The Z-axis height value measured

Height Offset	after the dispensing device 1 comes into contact with the lower height measuring device.
C	Set the C-axis value.
HeightOffset	Offset value after height test of dispensing device 1.
Offset	When the side spray uses a normal lower height gauge, it can hit the expected position through camera correction and valve (where it contacts the lower height gauge) Offset.
Dispensing device 2 Height Offset	The Z-axis height value measured after the dispensing device 2 comes into contact with the lower height measuring device.
C	Set the C-axis value.
HeightOffset	Offset value after height test of dispensing device 2.
Offset	When the side spray uses a normal lower height gauge, it can hit the expected position through camera correction and valve (where it contacts the lower height gauge) Offset.
name	illustrate
Lower altimetry device	Set the lower altimetry coordinates.
Lower altimetry coordinates	下測高裝置於平台上的 X、Y 座標。
Altimeter height offset	Upper altimetry (mechanical altimetry) The Z-axis height value obtained after contact with the lower altimetry.
C	Set the value of the C-axis.
Highly Offset	Offset value after height test of the height of the altimeter.
Offset	When the side spray is used for general altimetry, the camera is corrected with the valve (contact Offset, which is able to hit the expected position).
Dispensing device 1 height offset	The Z-axis height value measured by the dispensing device 1 after contact with the lower height measurement.
C	Set the value of the C-axis.
Highly Offset	Dispensing device 1 Offset value after height test.
Offset	When the side spray is used for general altimetry, the camera is corrected with the valve (contact Offset, which is able to hit the expected position).
Dispensing device 2 height offset	The Z-axis height value measured by the dispensing device 2 after contact with the lower height measurement.
C	Set the value of the C-axis.
Highly Offset	Dispensing device 2 Offset value after height test.
Offset	When the side spray is used for general altimetry, the camera is corrected with the valve (contact Offset, which is able to hit the expected position).
Go	Quickly move to the teaching coordinates.

Altitude correction process

1. The CCD lens moves to the lower altimetry device, aligns it with the center point of the lower altimetry position, and clicks the "Teach" button to teach the X and Y coordinates of the current altimetry center in the field, and then you can perform the following steps.

2. Click the "Test" button in the height offset of the height measurement device to test the height of the upper height measuring device and obtain the Z-axis height value of the upper height measurement.
3. Click the "Test" button in the height offset of dispensing device 1 to test the height of dispensing device 1, and obtain the Z-axis height value of dispensing device 1.
4. Click the "Test" button in the height offset of dispensing device 2 to test the height of dispensing device 2, and obtain the Z-axis height value of dispensing device 2.

Note: When there is no lower height measurement device, you can select "Manual" for "Lower Altitude Detector", and in this case, you can manually perform the lower height measurement work.

Note: If you don't need to do a dot 2 height test.

5.6.1

Side spray height Offset fine adjustment correction

The Offset Fine-tuning and Correction page of the side spray height provides functions such as Offset, Run, and Offset from top to bottom.

Adjustment Height Offset

Camera Height Offset

Camera to bottom height Position

<input type="button" value="Go"/>	X	0.000	<input type="button" value="▲"/>	Y	0.000	<input type="button" value="▲"/>	Z	0.000	<input type="button" value="▲"/>	C	0.000	<input type="button" value="▲"/>
-----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------

Height offset of camera to device : 2.000

Run

Start Position (Real)

<input type="button" value="Go"/>	X	0.000	<input type="button" value="▲"/>	Y	0.000	<input type="button" value="▲"/>	Z	0.000	<input type="button" value="▲"/>	C	0.000	<input type="button" value="▲"/>
-----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------

End Position (Real)

<input type="button" value="Go"/>	X	0.000	<input type="button" value="▲"/>	Y	0.000	<input type="button" value="▲"/>	Z	0.000	<input type="button" value="▲"/>	C	0.000	<input type="button" value="▲"/>
-----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------

Speed (mm/sec): Acceleration Distance (mm):

Adjustment Height Offset

Start Position (Camera)

<input type="button" value="Go"/>	X	0.000	<input type="button" value="▲"/>	Y	0.000	<input type="button" value="▲"/>	Z	0.000	<input type="button" value="▲"/>	C	0.000	<input type="button" value="▲"/>
-----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------	---	-------	----------------------------------

Result Z Offset : -2.000



Figure 157: Height Offset fine-tuning correction interface

Mainly through the camera calibration and offset of the valve (the place where it touches the lower height measurement), and then running the glue at a specific height, the expected glue position and the actual glue position are corrected.

Name	Depictions
Camera height Offset	The offset of the side CCD lens to the lower height measuring device.

Camera height measurement position	The side CCD lens points to the position of the lower height measuring device.
Camera and device height Offset	The offset of the side CCD lens to the lower height measuring device.
Run	Use the valve to teach the start and end positions of the line segment and "run" the glue application action.
Starting coordinates (actual)	Use the valve to teach the starting position of the line segment.
End coordinate (actual)	The valve teaches the end position of the line segment.
Speed (unit: mm/second)	Set the speed at which the drawn line moves.
Acceleration distance (unit: mm/second)	Set the acceleration distance, and the line segment action can be pre-accelerated and then enabled.
Run	Use the valve to teach the starting and ending positions of the line segment, set the running speed and acceleration and deceleration distance, and press "Run" to start the gluing action.
Mobile camera	The Z-axis moves to the position (height) where the glue is expected to be applied. Note: Move the Z axis at the current position.
Height Offset fine-tuning correction	The CCD on the teaching side is aligned with the actual glue position.
Start coordinates (camera)	Move the side CCD to align the actual glue position and teach.
Result height Offset	Height Offset fine-tune the correction result.
Cancel	Cancel the height Offset fine-tuning correction.
Finish	Complete height Offset fine-tuning correction.
Go	Quickly move to the teaching coordinates.

Height Offset fine-tuning correction process:

- (1) Perform the normal height measurement process during height correction.
- (2) Press Calibrate to enter the height Offset fine-tuning calibration process.

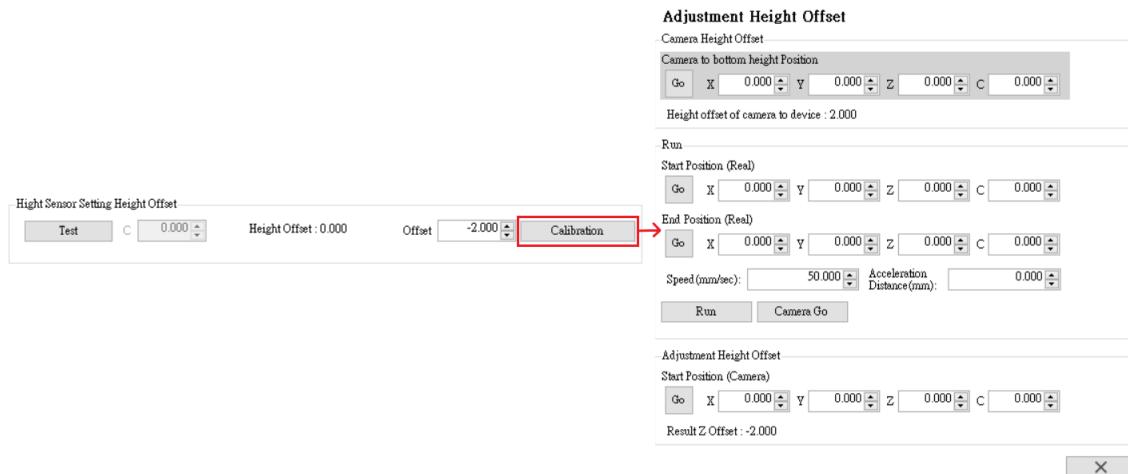


Figure 158: Click Calibration to enter

- (3) Align the center of the side CCD with the lower height measurement plane.

Camera Height Offset

Camera to bottom height Position

Go	X	50.000	Y	50.000	Z	0.000	C	0.000
----	---	--------	---	--------	---	-------	---	-------

Height offset of camera to device : 2.000

Figure 159: Teach the height measurement position

- (4) Use the valve to teach the starting and ending positions of the line segment, set the running speed and acceleration and deceleration distance, and press "Run" to start the gluing action.

Run

Start Position (Real)

Go	X	187.826	Y	-48.696	Z	0.000	C	0.000
----	---	---------	---	---------	---	-------	---	-------

End Position (Real)

Go	X	438.261	Y	-62.609	Z	0.000	C	0.000
----	---	---------	---	---------	---	-------	---	-------

Speed(mm/sec): 50.000 Acceleration Distance(mm): 0.000

Run **Camera Go**

Figure 160: Teaching actual coordinates of line segments

- (5) Click "Move Camera" and move the Z-axis to the position (height) where the glue is expected to be applied.

Run

Start Position (Real)

Go	X	187.826	Y	-48.696	Z	0.000	C	0.000
----	---	---------	---	---------	---	-------	---	-------

End Position (Real)

Go	X	438.261	Y	-62.609	Z	0.000	C	0.000
----	---	---------	---	---------	---	-------	---	-------

Speed(mm/sec): 50.000 Acceleration Distance(mm): 0.000

Run **Camera Go**

Figure 161: Click to move camera

- (6) After the glue is applied, move the CCD to align it with the actual glue position.

Adjustment Height Offset

Start Position (Camera)

Go	X	229.565	Y	-34.783	Z	0.000	C	0.000
----	---	---------	---	---------	---	-------	---	-------

Result Z Offset : 18.000

X

Figure 162: Make Offset settings

5.6.1

Plate Height Calibration

The plane height correction page, found below the height correction page. Plane height correction can be corrected when measuring the height of the platform. It is used for direct coating directly on the platform. (It is possible to support the height compensation function without the height detection command, such as gap mode)

Camera | Rotate Center | HeightSensor | Dispenser Offset | Height Offset Calibration | Other Device Position | Misc

Tip Sensor Setting

Tip Sensor Coordinate
 X 50.000 Y 50.000

Height Sensor Setting Height Offset
 C 0.000 Height Offset : 2.000 Offset 0.000 Calibration

Dispenser Setting1 Height Offset
 C 0.000 Height Offset : 3.000 Offset 0.000 Calibration

Dispenser Setting2 Height Offset
 C 0.000 Height Offset : 4.000 Offset 0.000 Calibration

Dispenser Setting3 Height Offset
 C 0.000 Height Offset : Not tested Offset 0.000 Calibration

Dispenser Setting4 Height Offset
 C 0.000 Height Offset : Not tested Offset 0.000 Calibration

Dispenser Height Difference: 1

Plate Height Calibration

Figure 163:Plane height correction is located below

Plate Height Calibration

Use Plate Height

Height test type Heighttest

Location

Coordinate
 X 0.000 Y 0.000 Z 0.000 C 0.000

Figure 164:Plane height correction interface

5.7

Other device locations

Other device location pages, the functions from top to bottom are, dispensing device 1 and dispensing device 2, weight measurement, avoidance position, and glue clearing. It is mainly used to set the weighing device and glue clearing device at X and Y on the work platform. , relative position on the Z axis.

The screenshot shows a software interface titled 'Other Device Position' with several tabs: Camera, Rotate Center, HeightSensor, Dispenser Offset, Height Offset Calibration, Other Device Position (selected), and Misc. Under 'Other Device Position', there are four main sections:

- Weighting Scale Setting:** Contains fields for 'X' (1.000), 'Y' (2.000), 'C' (3.000), and 'A' (4.000) with up/down arrows, and a 'Move Device' button.
- Safety Height Setting:** Contains a 'Safe Height(mm)' field (0.000) with an up/down arrow, a 'Set' button, and checkboxes for 'Anti-Collision DrawBack Mode' and 'Z-axis Upward Height' (0.000).
- Avoid Position:** Contains a 'Go' button and coordinate fields for X (0.000), Y (0.000), Z (0.000), C (0.000), and A (0.000) with up/down arrows, and a 'Move Device' button.
- Clean Nozzle:** Contains a 'Clean Station Position' section with a 'Go' button and coordinate fields for X (0.000), Y (0.000), C (0.000), and A (0.000) with up/down arrows, and a 'Move Device' button. It also includes a 'Height(mm)' field (0.000) with an up/down arrow, a 'Set' button, a 'Clean Type' dropdown (General), and a 'Safety Height Setting' section with a 'Safe Height(mm)' field (0.000) with an up/down arrow, a 'Set' button, and checkboxes for 'Anti-Collision DrawBack Mode' and 'Z-axis Upward Height' (0.000).

Figure 165: Other device interfaces

Name	Depictions
Dispensing device 1 dispensing device 2	Set other parameter coordinates (weight measurement, avoidance position, clear glue).

5.7.1

Measuring weight

The weight measurement page is mainly used for weighing coordinates and height settings.

Weighting Scale Setting

Weighting Scale Position

Go	X	1.000	Y	2.000	C	3.000	A	4.000	Move Device
----	---	-------	---	-------	---	-------	---	-------	-------------

Height(mm): Set

Safety Height Setting

Safe Height(mm): Set

Anti-Collision DrawBack Mode

Z-axis Upward Height:

Figure 166: Weight measurement and calibration interface

Name	Depictions
Measuring weight	Weighing parameter setting.
Weighing coordinates	The weighing device is located at the X, Y, Z, and A coordinates on the platform.
Height (unit: mm)	The Z-axis height of the needle when weighing.
Safe height	Set the safe height.
Safety height (unit: mm)	The altitude position (absolute coordinates) of the upward run after measurement.
Pull back height (relative height)	The relative height difference of safe pullback. Prevent collision during movement.
Pullback height (unit: mm)	After the weight measurement is completed, move to the safe height (relative height) of the next program point.
Mobile device	Move the device to set coordinates.
Set up	Set height.
Go	Quickly move to the teaching coordinates.
Dispensing device 2	Same as the above function description of glue dispensing device 1.

5.7.2 Avoid position

The avoid position page is mainly used for dodge position setting, etc.

Avoid Position

Go	X	0.000	Y	0.000	Z	0.000	C	0.000	A	0.000	Move Device
----	---	-------	---	-------	---	-------	---	-------	---	-------	-------------

Figure 167: Avoid position interface

Name	Depictions
Avoid position	Set the avoidance coordinates after weighing.
Mobile device	Move the device to set coordinates.
Dispensing device 2	Same as the above function description of glue dispensing device 1.

5.7.3 Clear glue

The glue removal page is mainly used for setting the glue removal position and selecting the glue removal device type.

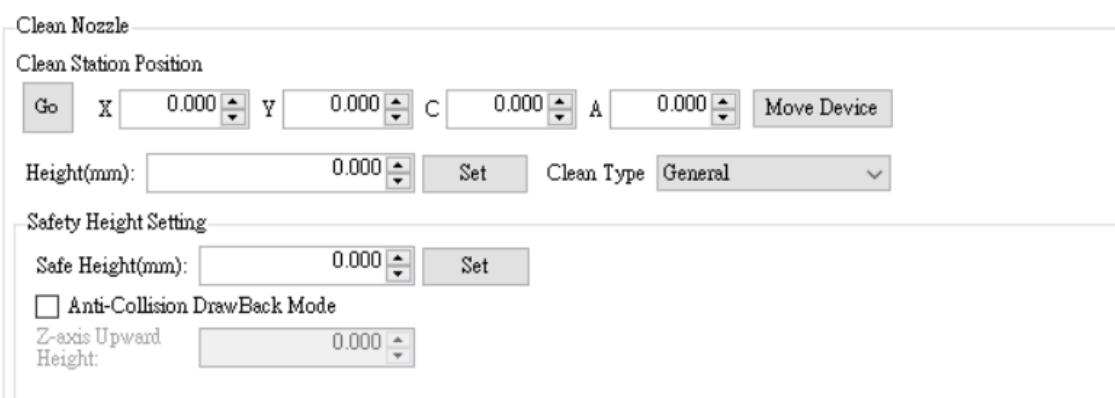


Figure 168: Clean interface

Name	Depictions
Clear glue	Clear glue parameter setting.
Clear glue coordinates	Set the coordinates when clearing glue.
Height (unit: mm)	Set the height of the glue valve when clearing glue.
Clear glue type	Select the type of glue removal device. (General, tape and reel, seal, clip-on)
Safe height setting	Set a safe height.
safe height (Unit: mm)	After clearing the glue, run upward to the height position (absolute coordinates).
Pull back height (relative coordinates)	After measuring, run up to the altitude position.
Pullback height (unit: mm)	After the glue removal is completed, move to the safe height at the next program point.
Mobile device	Move the device to set coordinates.
Set up	Set height.
Go	Quickly move to the teaching coordinates.
Dispensing device 2	Same as the above function description of glue dispensing device 1.

5.7.3.1 Weighing and glue correction process

1. After the CCD lens moves to the center point of the weighing device, click the "Teach" button, teach the weight coordinate field, lower the Z-axis height to the appropriate spacing, and "set" its Z-axis height value. After the measurement is completed, you can set the position (absolute coordinates) of the upward running height, and you can choose whether to check the pullback safety height (relative height), and then enter the pullback height value.
2. Set the coordinates of the dodge position on the working platform after the weighing is completed.
3. After the CCD lens moves to the center point of the clearer, click the "Teach" button, teach the Cleaner coordinate field, click the mobile device to move the valve to the clearer position, and then lower the Z-axis height to the appropriate spacing, and "set" its Z-axis height value. After setting the glue clearing, you can enter the pullback height value after setting the altitude position (absolute coordinates) and selecting whether to check the pullback safety height (relative height).

5.7.4 Other

On other pages, the functions from top to bottom are: micro-scale balance calibration, machine measurement coefficient, maintenance, glue discharge setting, lower camera calibration, Fixed Camera Calibration (fixed camera), and Other Controller.



Camera Rotate Center HeightSensor Dispenser Offset Height Offset Calibration Other Device Position Misc

Weighting Scale Calibration

Tare Weight Alarm (mg)

Stable Measure

Switch Delay (Sec)

Scale Time (Sec)

Scale Timeout (Sec)

Robot Measure Factor

X

Y

Maintain

Maintain Device Position

Go X Y Z C A

Safe Position

Go X Y Z C A

Purge Setting

Sync Purge

Dispenser 1 Dispenser 2 Dispenser 3 Dispenser 4

Dispenser 1

Go X Y Z C A

Type Ignore Temperature ! Valve1 flow type is Default Purge Time(sec):

Bottom Camera Calibration **Fixed Camera Calibration** **Other Controller**

Figure 169: Other device functional interfaces

5.7.4.1 Micro balance calibration

The micro balance calibration page is mainly used to set the parameters of the micro balance, including "stable weighing" to take the weight when it reaches stability, "weighing delay" to take the weight value after a certain time delay, and "weighing timeout" to take the weight value after exceeding At this time, but before it stabilizes, it will stop and sound a warning sound.

Weighting Scale Calibration

Tare Weight Alarm (mg)

Stable Measure

Switch Delay (Sec)

Scale Time (Sec)

Scale Timeout (Sec)

Figure 170: Micro-volume calibration interface

Name	Depictions
Micro balance	Set the parameters of the microscale.

calibration	
Zero adjustment	Reset the scale value to zero.
Stable weighing	When the value measured by the weighing device is stable, the weight value is taken out.
Switching delay	Delay time for starting the weighing switch.
Weighing delay	The time to wait before weighing.
Weighing timeout	Time limit for weighing. If the weight value is not obtained within this time, an error will pop up.
Upper limit warning	When the scale weight reaches the set upper limit weight, a warning will be issued.

5.7.4.2 Maintain

The maintenance page is mainly used to set the coordinates and safety coordinates of the maintenance device.

Figure 171: Maintenance coordinate interface

Name	Depictions
Maintenance settings	Maintain device coordinates and safe coordinate positions.
Maintenance device coordinates	During the glue change process, quickly move to the maintenance coordinates to facilitate glue change or base replacement.
Safe Position	Set safe position coordinates to avoid other devices and avoid the risk of collision.
Go	Quickly move to the teaching coordinates.

5.7.4.3 Debinding settings

The glue discharging setting page is mainly used to set the glue discharging position and parameters used, and supports the simultaneous degluing function of dual valves.

Figure 172:Glue removal setting interface

Name	Depictions
Debinding settings	Set the location and parameters of the glue removal.
Synchronous debinding	Supports the function of simultaneous glue discharge of dual valves. Based on valve 1 position, dual valves can discharge glue at the same time.
Dispensing device 1	Set the glue discharge coordinate position of valve 1.
Dispensing device 2	Set the glue discharge coordinate position of valve 2.
Valve body parameters	When setting the glue discharge, which valve body parameters are used together.
Do not adjust temperature parameters	When debinding, the current operating temperature is used (does not overwrite the originally set temperature parameters).
Default glue discharge time (unit: seconds)	The valve body parameters are the preset glue discharge time in normal mode.

Go	Quickly move to the teaching coordinates.
----	---

5.7.4.4 Lower camera calibration

Download the camera calibration interface.

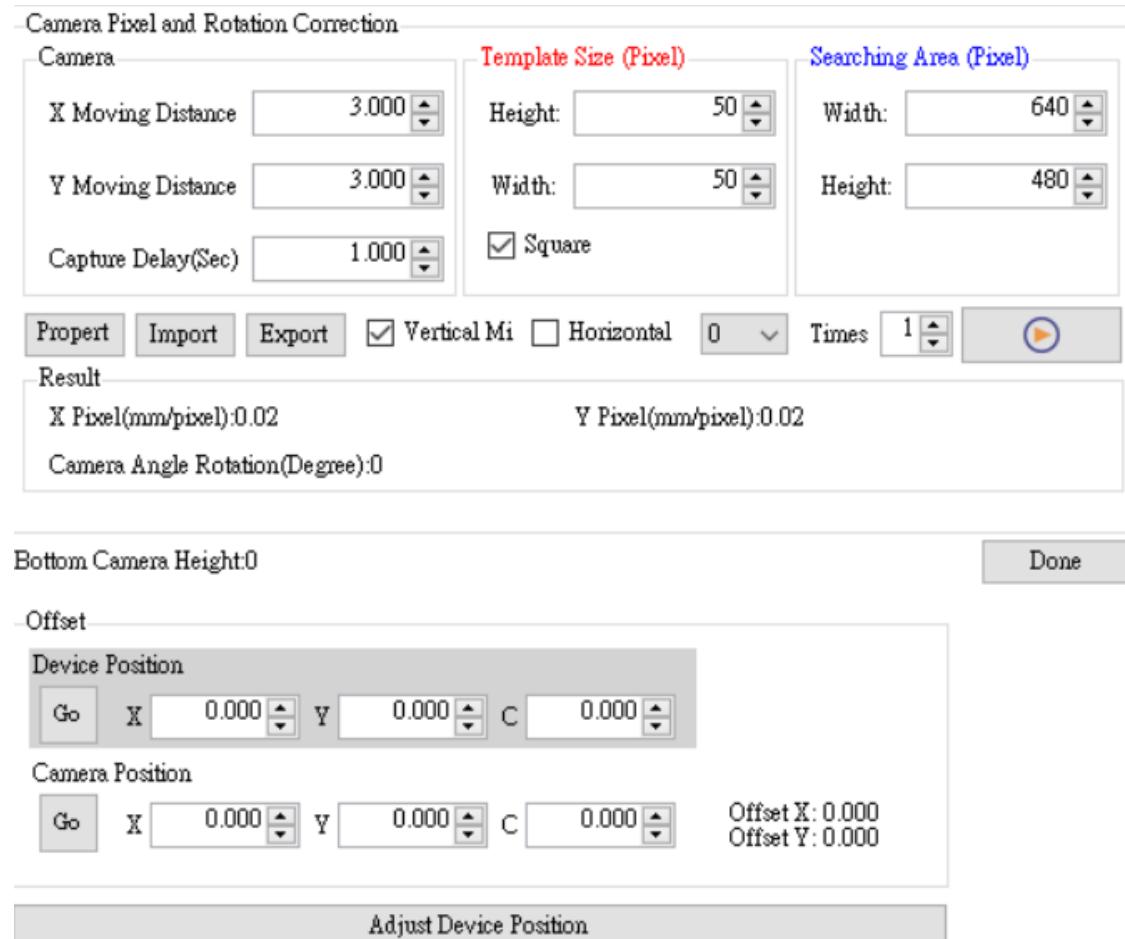


Figure 173: Next camera calibration interface

Name	Depictions
Camera	Camera X and Y movement distance and photo delay time settings.
X moving distance (unit: mm)	When calibrating, make the X-axis movement distance from the center point.
Y moving distance (unit: mm)	When calibrating, measure the Y-axis movement distance from the center point.
Photo delay time (unit: seconds)	Delay time for machine movement correction. Excessively fast speed will cause calibration failure. If the table on which the machine is placed is unstable or the CCD magnification is large, it is recommended to extend the time.
Template size (unit: Pixel)	Set the CCD calibration window, and the image in the frame will be used as the positioning image.
High	Adjust the template height of the specified CCD frame.
Width	Adjust the template width of the specified CCD frame.
Square	If checked, the template size will be adjusted in the form of a square.
Search range (unit: Pixel)	When adjusting the CCD image correction, the scanned area usually only needs to be modified if there are other repeated patterns.
Width	During calibration, CCD image scan width.
High	During calibration, the CCD image scan height.
Attributes	Modify camera properties, such as white balance, contrast, gain value, exposure time and other parameter values. (Different cameras and attribute items may also be different.)

Import	Import camera properties.
Export	Export camera properties.
Vertical mirror	Vertical mirror adjustment. (When the movement direction of the camera image and the actual working platform are opposite up and down, adjustments need to be made.)
Horizontal mirroring	Horizontal mirror adjustment. (When the movement direction of the camera image and the actual working platform are opposite, left and right, adjustments need to be made.)
0	Rotate CCD lens screen
Times	The total number of tests performed.
Start	Start performing camera calibration test.
Result	Displays the corrected pixel ratio value.
X(mm/pixel)	Convert the X-axis pixel scale value. (Calibration values are automatically generated.)
Y(mm/pixel)	Convert the Y-axis pixel scale value. (Calibration values are automatically generated.)
Camera rotation angle (degrees)	Correct the skew of CCD fixture. (Calibration values are automatically generated.)
Finish	Save the camera settings and exit.

5.7.4.4.1 Lower camera and dispensing device

This function is used to use the camera to check the needle status of the dispensing device. On this calibration page, set the offset of the camera and dispensing device.

Offset

Device Position			
Go	X	0.000	Y
		0.000	0.000
	C	0.000	
Camera Position			
Go	X	0.000	Y
		0.000	0.000
	C	0.000	
			Offset X: 0.000 Offset Y: 0.000
Adjust Device Position			

Figure 174: Lower camera and valve calibration

Name	Depictions
Device Position	Set the dispensing device position.
Camera Position	Set the camera position.
Offset X, Y	Remove the camera and dispensing device Offset.
Adjust Device Position	The software recalculates the new position and takes out the new Offset.

5.7.4.5 Fixed Camera Calibration

Fixed camera correction page.

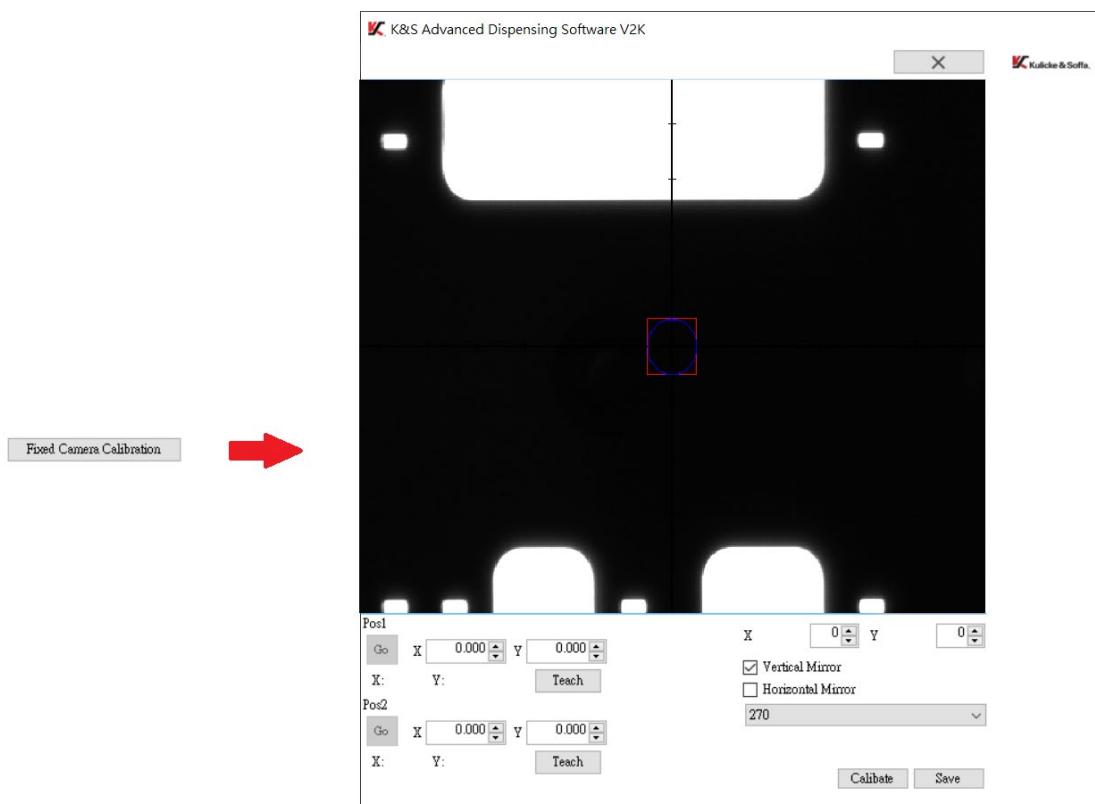


Figure 175: Camera interface

Name	Depictions
X in upper right corner	Exit the fixed camera correction interface.
Pos1、Pos2	Set the calibration point.
Go	Quickly move to the teaching coordinates.
Teach	Teach the coordinate points of the fixed camera frame on the left.
X、Y	After Teach, fix the coordinate position of the camera screen.
Vertical Mirror	Fixed camera screen being vertically reversed.
Horizontal Mirror	Fixed camera screen being reversed horizontally.
0、90、180、270	Fixed camera screen rotation.
Calibat	Fix the camera for correction.
Save	Store fixed camera correction settings.

Fixed camera calibration process

- (1) Before fixing the camera calibration, you need to enable the fixed camera and settings in the device settings.

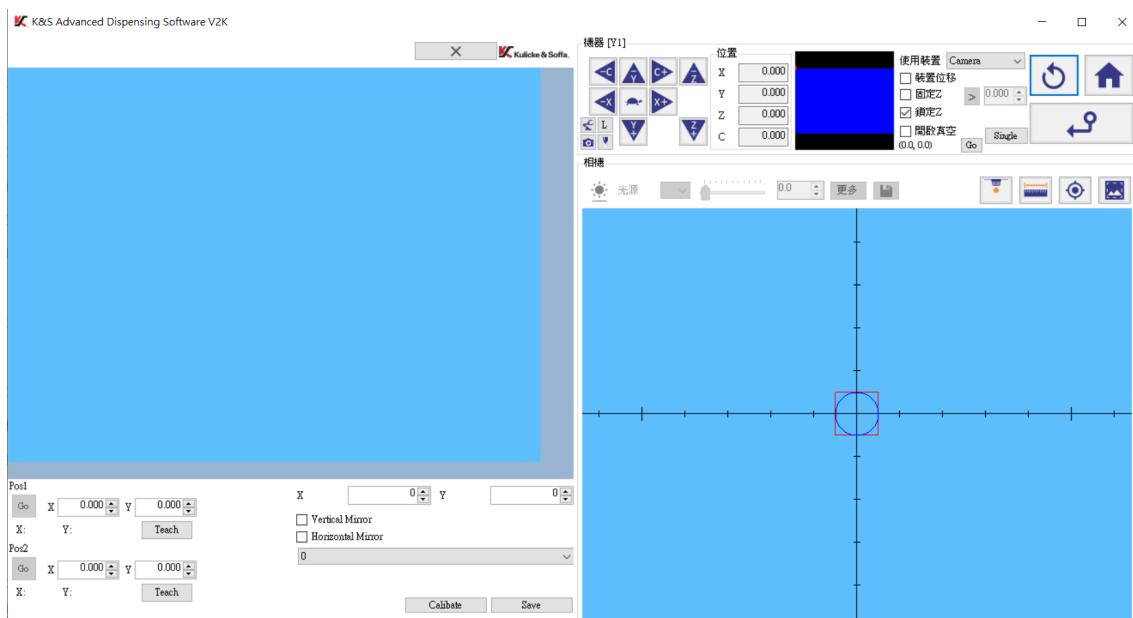


Figure 176: Open fixed camera correction interface

- (2) First check whether the upper image needs to be rotated horizontally or vertically. If necessary, check Vertical Mirror and Horizontal Mirror. After the screen orientation is correct, teach the upper left corner (red frame) and lower right corner (green frame).

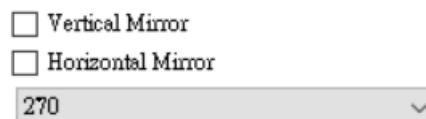


Figure 177: Confirm fixed camera screen

- (3) Use the XY in the middle to move the upper screen to the upper left corner.



Figure 178: Input X, Y offset camera screen

- (4) Adjust the upper position so that you can see the upper left point, press Teach, and then use the mouse to click on the upper point where you want to correct the upper left point.

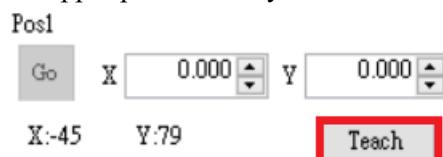


Figure 179: Move to the anchor point and click Teach

- (5) Then use the XY in the middle to move the upper screen to the lower right corner.
- (6) Adjust the upper part so that you can see the lower right point, press Teach, and then use the mouse to click on the point above where you want to correct the lower right point.

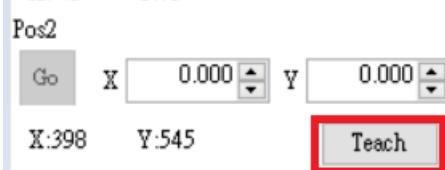


Figure 180: For the second anchor point, click Teach

- (7) After the two-point teaching is completed, click Calibrate to correct. After the correction is completed, press Done to leave.



Figure 181: After correction, click Done

5.7.4.6 Machine measurement coefficient

The machine measurement coefficient page is mainly used for the correction function during dimensional measurement.

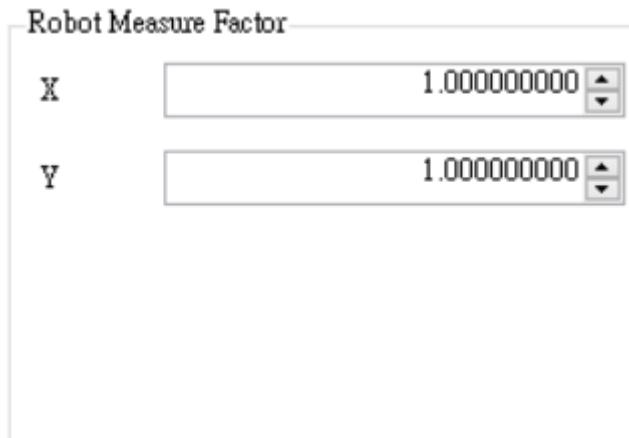


Figure 182: Machine measurement coefficient interface

Name	Depictions
Machine measurement coefficient	Correction function during dimensional measurement.
X	Set the X-axis dimension measurement coefficient of the machine.
Y	Set the Y-axis dimension measurement coefficient of the machine.

6

Teach

The teaching page mainly provides toolbar (file, execution, teaching settings, import, tools, loading and unloading, etc.), coating settings (type), program group (editing group), function command menu and other functions. Through the software program teaching function, you can quickly create or edit a dispensing coating program. The program is composed of the editing sequence and functional coating settings of one or more subprograms, and multiple subprograms can be run at the same time.

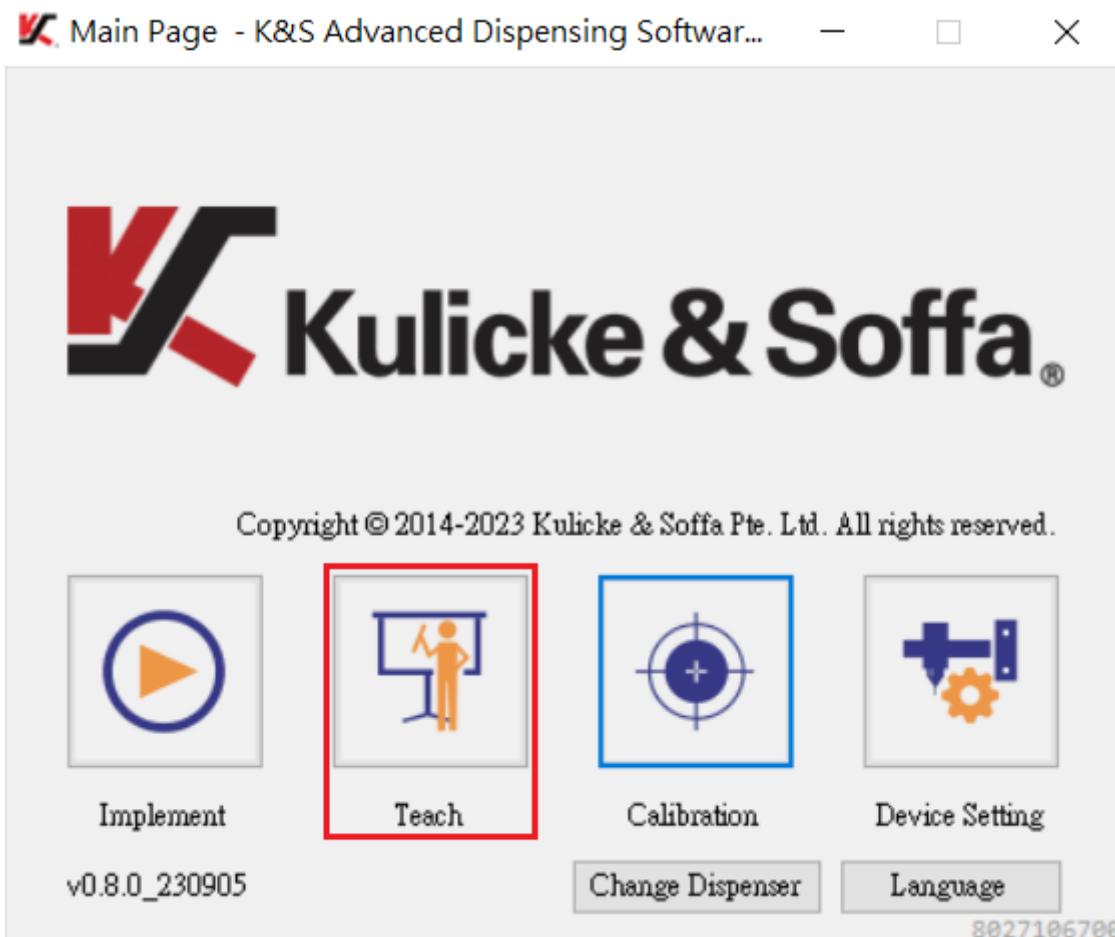


Figure 183: Enter teaching mode from the main interface

6.1

Simple function description

V2K teaches the above gadgets, some basic functions and other tools.

File Implement Teach Config. Import Tool Loading/Unloading

Figure 184: Teaching Mode Toolbar

Name	Depictions
Archives	Add new files, open old files, save files, and save new files.
Implement	Run the written program.
Teaching settings	It mainly provides functions such as machine switching Y-axis, process required delay, multiple identification point merging shooting, shooting effective area setting, and fixing materials.
Import	Import DXF document files into the software program.
Tool	toolbox. (Dispenser settings, coordinate displacement, switching calibration page, entering CCD camera setting value function adjustment interface, consumables monitoring window, quick calibration, IO control tools and other functions.)
Loading and unloading	Turn on the loading and unloading control system.

6.1.1

Teaching command bar

The V2K teaching command toolbar is used to design V2K teaching commands and will be introduced in sequence.

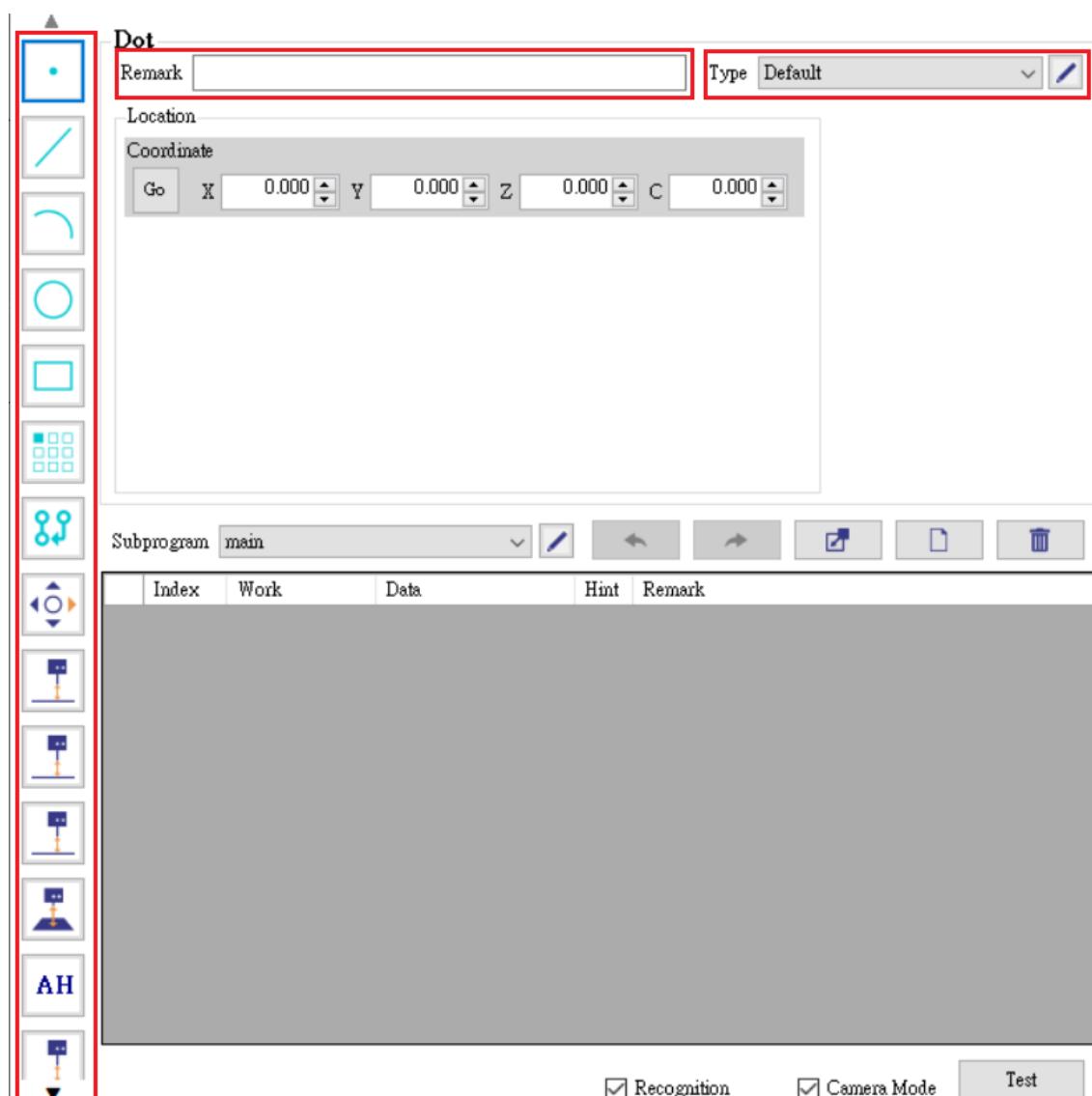


Figure 185: Pattern editing and teaching commands

Name	Depictions
Type	Select the set dispensing type.
Edit	Enter to edit dispensing parameter settings.
Remark	You can fill in any comments.
Function command menu	Select the desired function program from the function command menu on the left.

6.1.2 Basic teaching instruction editing and testing

Basic instruction instruction editing and testing, V2K group basic software operation.

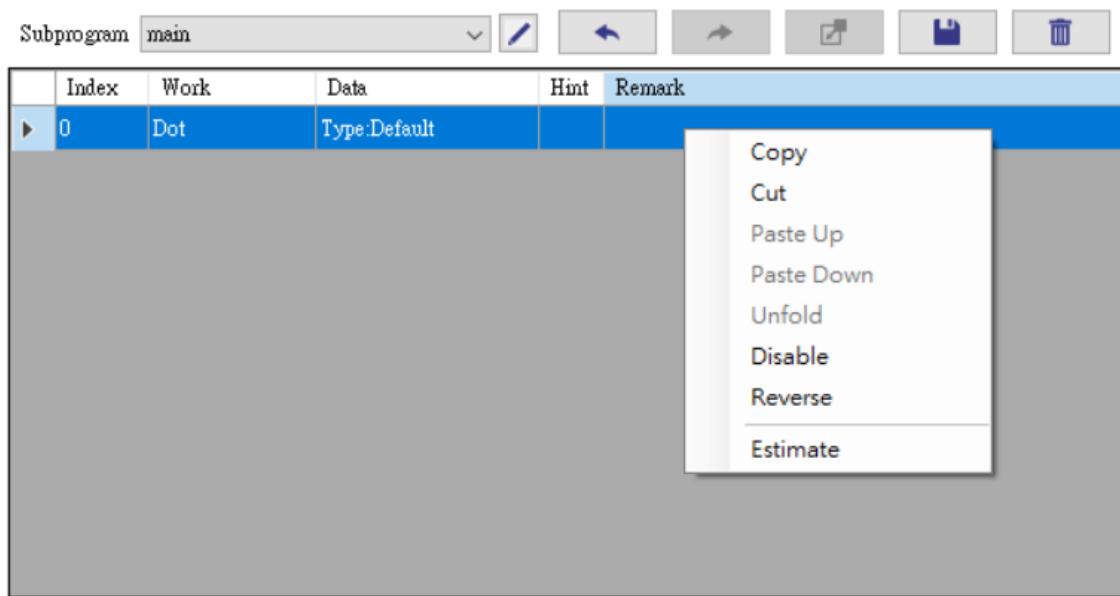


Figure 186: Basic teaching instruction editing and testing

Name	Depictions
Group	Select a group.
Edit	Enter the group editing settings.
Return	Return to the previous step.
Redo	Redo the next step.
Insert	Select a line of instructions to insert.
Add	Added new command.
Delete	Delete instructions.
Image recognition	Enable image recognition when testing groups.
Camera mode	Coating path confirmation is performed with CCD.
Test group	Execute the instruction to complete the instruction.

6.1.3 Advanced features

Advanced functions, advanced function operations.

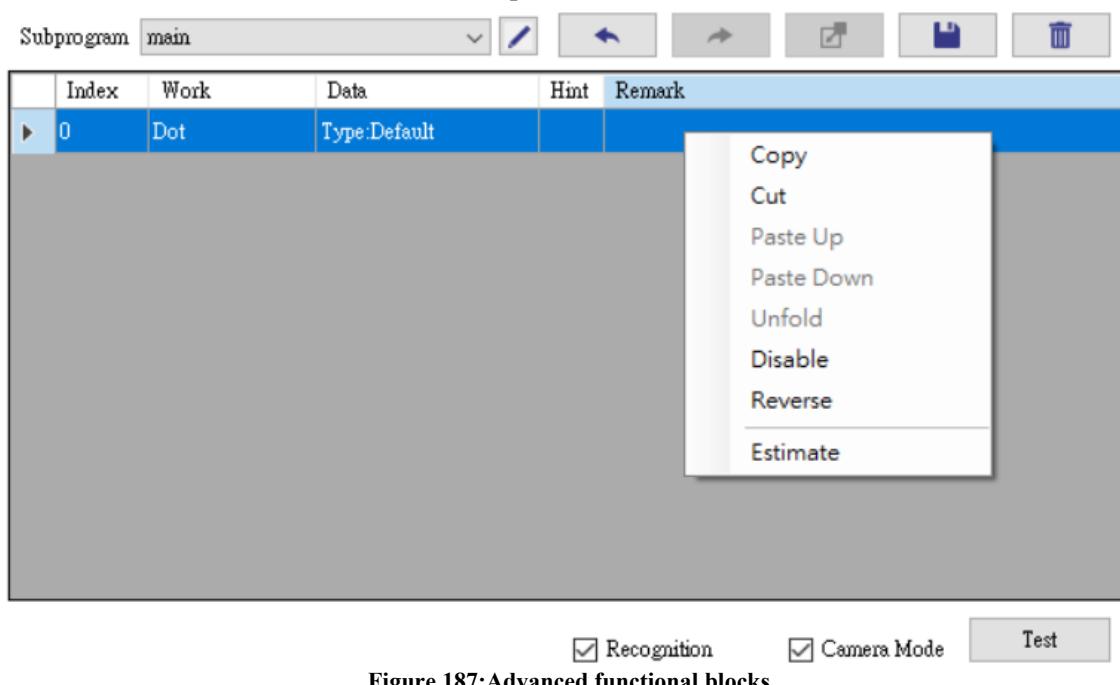


Figure 187:Advanced functional blocks

Name	Depictions
Copy	Copy the selected command.
Cut	Cut out the selected command.
Paste up	Paste the copied or cut command above the selected command.
Paste Down	Paste the copied or cut command below the selected command.
Expand	Use the selected arc, circle, square and other functional commands to expand the route coordinate points in the form of continuous line segments.
Disable	Disable the selected command. When running, the command will be skipped.
Reverse	Reverses the selected command path.
Select all points of current CP	The currently associated CP line segment can be selected. (Special for CP line segments)
Evaluate	The selected teaching command can be measured and the value displayed.

6.1.4 Batch processing

Batch processing, appears when more than two teaching instructions are selected, multiple teaching instruction editing operations.

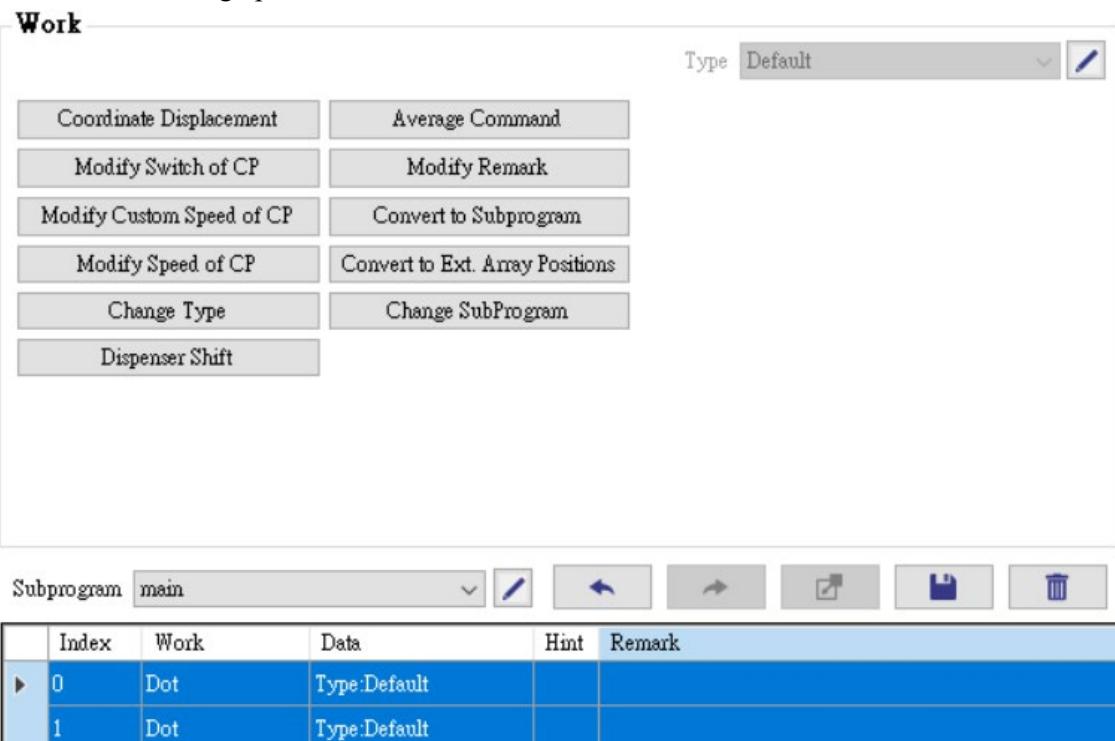


Figure 188: Batch processing

Name	Depictions
Coordinate displacement	Multiple teaching commands coordinate modification at the same time.
Batch modification CP switch	Switch the selected CP line segment on and off the valve body.
Batch modify CP custom speed	Switch the selected CP line segment on and off to customize the speed.
Modify CP speed in batches	Set the speed of the selected CP line segments uniformly.
Batch modification type	Change the type of the selected teaching command.
Drop point (multi-point) correction	Perform drop point correction on the selected points.
Batch modification	Replace the selected teaching command with

remarks	comments.
Convert to call group	Change the selected teaching command to the call group.
Convert to external array points	Convert selected points into external array points.

6.1.5

Basic dispensing and coating program editing process

- (1) Click the "Teach" button to open the Edit Coating Program interface, and click Add in the "File" menu to save it with a name.
- (2) Return to the tutorial screen and click the desired function program in the function command menu on the left.
- (3) After entering the relative position coordinates in the selected function program, click the Add button to complete the addition command. (The line numbers in the program are added from 0 in the order of addition, and if you need to carry out dispensing and coating operations on the working object, you should give priority to adding the height test instruction function to measure its relative height, and then carry out the rest of the dispensing and coating instructions).
- (4) If you need to modify a completed order, simply click on its program command (it will be displayed in blue), and then save it after correcting it.
- (5) If you want to delete a completed order, simply click on its program instruction (which appears in blue at this time) and then click Delete to delete it.
- (6) If you want to insert a new command into a completed command, you need to click Insert to insert it when the edit is completed at the command coordinate position.
- (7) The parameters in the dispensing parameter setting (type) are the default values, and click the edit button on the right side of the pattern menu to set the parameter mode, and you can add a number of different type parameters to correspond to different instructions.
- (8) In the program group menu, you can select the command content in the main/subprogram to be edited, and click the edit button on the right side of the menu to set the image recognition, alignment and correction functions in the main/subprogram.

6.2

Function command menu

Select the function command menu on the left to select the function program you want to edit.

Name	Depictions
Dot	Make a single point of glue dispensing at the specified coordinates.
Lin	Apply a line segment in the specified two coordinates (starting point and end point).
Arc	The arc editing method can choose to perform three-point or center point editing of the arc path.
Round	The circular editing method allows you to select three points or the center point to edit the circular coating path.
Square	Make a square line segment coating edit through the start point and end point (diagonally).
Array	Array the programs in the specified line number or specified subgroup.
Call group	Call another group to the current program.
Move	Move the device to the set coordinate position.
Height	When performing coating operations, the height of the workpiece must be measured first.
Height detection	Measurement heights are provided, and different modes are provided for different needs. The results generated by each mode will be checked to see whether the values are within the allowable range.
Height detection	It can measure the height profile, count the maximum and minimum values, and calculate the difference.
Plane height measurement	Measure the height of three points and calculate the plane height.
Array height	Used on an object or plane, multiple different heights need to be detected.

CAD2CAM	Height measurement is used for special projects.
Continuous line segment	Applied to complex coating paths, the continuous line segment glue path can be edited through the line starting point, line midpoint, line end, and arc midpoint commands.
Delay	Set the interval from the previous command to the next command (unit: seconds).
Clear glue	Use a cleaning device to clean the valve nozzle.
Weighing	Traffic detection.
Image detection	You can set up image detection and capture images.
Process delay required	It can save the idle waiting time of the machine when a single product requires multiple processes, and make full use of the interval time for operations.
Pause observation	You can set a position. When running encounters this command, it will move to a specific position for observation. It will not continue until the user clicks to continue.
command action	Specify the action of the machine.
Height difference detection	Allow users to use different dispensing parameters according to different height differences of objects to achieve expected dispensing results.
Debinding	Carry out the glue removal operation according to the glue removal settings.
IO control	Select individual devices to perform IO testing.
process control	Provides the ability to run different actions based on the results of specific actions when the program is running.
Repeat	Call the subgroup, do not repeatedly perform image recognition, and only perform the gluing action.
targeting criteria	Select the image recognition point to perform recognition positioning.
Sensor command	Select the sensor device to use and the target to write to.
Double identification point size measurement	It is necessary to use image recognition with position output, and then calculate the distance between the two image recognitions respectively.
External array coordinate points	Sets the position when the group uses the coordinate points of the external array.
External array call group	Call other groups for external arrays.
Crawl	Teach the coordinate position and move to the specified position for grabbing action.
Place	The coordinate position is taught in advance, and other devices are moved to the designated position for placement and image recognition.
Pick and place process	Integration of grabbing and placing, first move to the specified coordinate, perform the grabbing group action, and then move to the next coordinate, perform the placing group action.
Trigger command	Replace the capture command, used for shooting while running. When reaching the corresponding coordinates, the axis card will send a trigger command to make the camera take pictures. Once the command is triggered, the camera will be triggered once. Currently only equal spacing is supported.
Glue volume adjustment instructions	Each time glue is applied, the required amount of glue may not be reached due to other factors, so a filling function is provided.
Automatic parameter adjustment	The software can set and control two sets of dispensing devices at the same time, and can set the dispensing valve parameters separately.
Flying spray mode correction (line)	For the continuous coating function, the number of dots can be set arbitrarily in one line segment.
Drop point correction (line)	The parameters of the injection mode are automatically calculated.
Flying height measurement correction (line)	Continuous height measurement is performed based on the set coordinate path, so that the height of the glue coating path changes with the measured value.

6.2.1 Dot

Click the page to make a single point of glue dispensing at the specified coordinates.

Dot

Remark	Type	Default	<input type="button" value="Edit"/>	
Location				
Coordinate				
Go	X 0.000	Y 0.000	Z 0.000	C 0.000

Figure 189: Click interface

Name	Depictions
Remark	You can fill in any comments.
Coordinate designation	Make a single point of glue dispensing on the coordinates.
Go	Move the machine to the coordinate position.

6.2.2 Line

On the line page, paint a line segment in the specified two coordinates (line starting point and line end point).

Line

Remark	Type	Default	<input type="button" value="Edit"/>
Location			
Line Start			
Go	X 0.000	Y 0.000	Z 0.000
Line End			
Go	X 0.000	Y 0.000	Z 0.000
<input type="checkbox"/> Auto C Calculation Angle of valve 90 FoF Interval -1.000 JetOnFlyCount 0 <input type="checkbox"/> EndTrigger			
Jet on Fly Calibration Offset Calibration HoF Calibration			

Figure 190: Line interface

Name	Depictions
Remark	You can fill in any comments.
Line starting	Specifies the starting point of the line segment.
Line End	Specifies the end point of the line segment.
Go	Move the machine to the coordinate position.
Automatically calculate C angle	According to the set angle of the spray valve, calculate the angle corresponding to the C axis.
Spray valve angle	Turn the spray valve to +90 or -90.
FoF Interval	During the line drawing process, the FoF signal will be triggered continuously according to the set number of mm.
Flying Spray Points	How many points should the line segment be sprayed with?
EndTriger	When the dash coating is checked, the last point will not be coated.

6.2.3 arc

On the arc page, you can choose to edit the arc coating path using three points (start point, arc midpoint, end point) or center point (start point, center point).



Figure 191: arc interface

Name	Depictions
Remark	You can fill in any comments.
Starting point (three-point mode)	Set the starting point of the three-point arc.
Arc midpoint (three-point mode)	Set the midpoint of the three-point arc.
End point (three-point mode)	Set the end point of the three-point arc.
Starting point (center point mode)	Set the starting point of the center point to draw the arc.
Center point (center point mode)	Set the center point to draw the center point of the arc.
Method	Select three points (start point, arc midpoint, end point) or center point (start point, center point) to determine the radius to create an arc.
Direction	The direction of the arc. (clockwise or counterclockwise).
Angle	If you use the center point method to draw an arc, you can set the arc angle.
Go	Move the machine to the coordinate position.

6.2.3.1 Three point arc

Set the input start point, arc midpoint, and end point coordinates to define the arc.

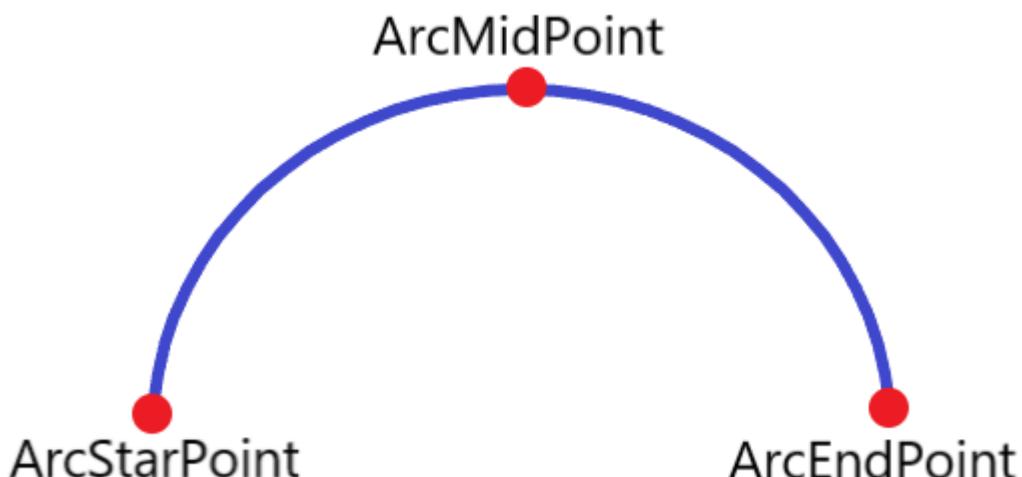


Figure 192: Use three-point arc method

Note: Draw an arc with three points, and the direction from the starting point to the middle point of the arc will determine the direction of the arc when applying glue.

6.2.3.2 Center point draws arc

Set the input start point and center point coordinates to calculate the radius, and input the angle to create the arc.

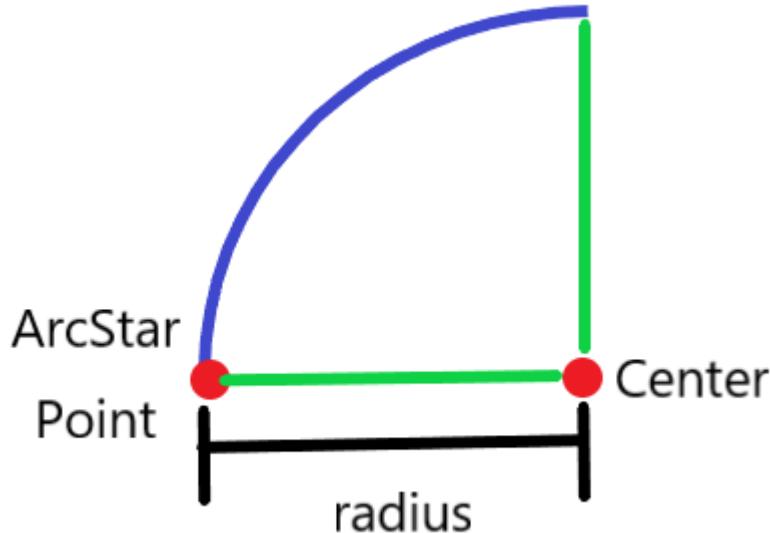


Figure 193: Draw arc using center point

The blue line segment is the coating arc path, and the coating direction and angle can be set.

6.2.4 Circle

On the circle page, you can select three points (start point, circle midpoint, end point) or center point (start point, center point) to edit the circle coating path.

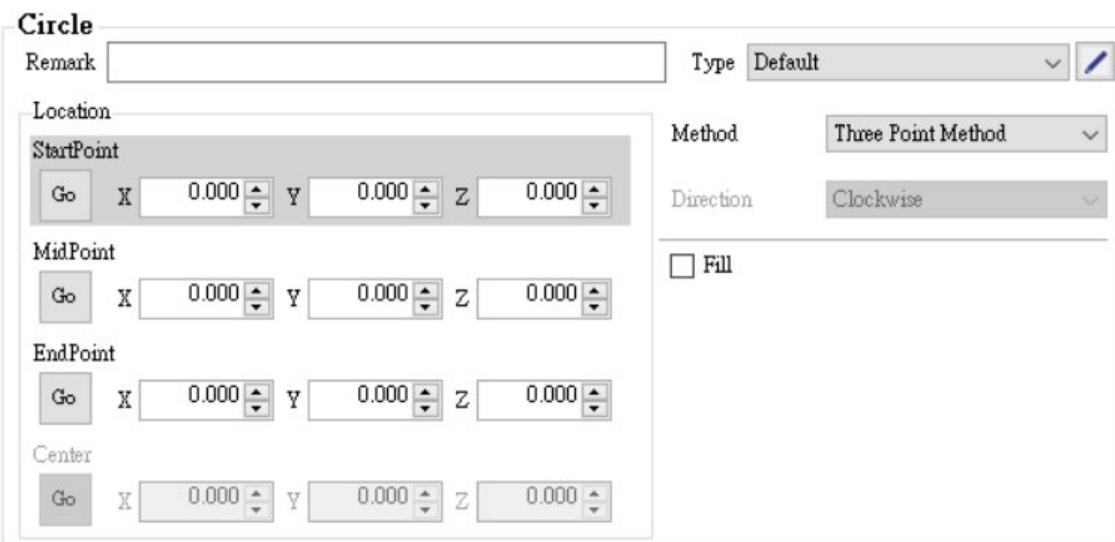


Figure 194: circle interface

Name	Depictions
Remark	You can fill in any comments.
Starting point (three-point mode)	Set the starting point of the three-point circle.
Circle midpoint (three-point mode)	Set the midpoint of the circle drawn by three points.
End point (three-point mode)	Set the end point of the three-point circle.

Starting point (center point mode)	Set the starting point of the center point to draw the circle.
Center point (center point mode)	Set the center point to draw the center point of the circle.
Method	Select three points (start point, circle midpoint, end point) or center point (start point, center point) to make a circle.
Direction	The direction of circular coating (clockwise or counterclockwise).
fill up	area coating.
Route	Ways to fill routes. Round coating, S-shaped coating.
Fill width (mm)	Fill the width from outside to inside.
Fill count mode	The number of uses, not the width, determines the amount of fill.
Go	Move the machine to the coordinate position.

6.2.4.1 Draw a circle with three points

Set the input start point, circle midpoint, and end point coordinates to generate a circle.

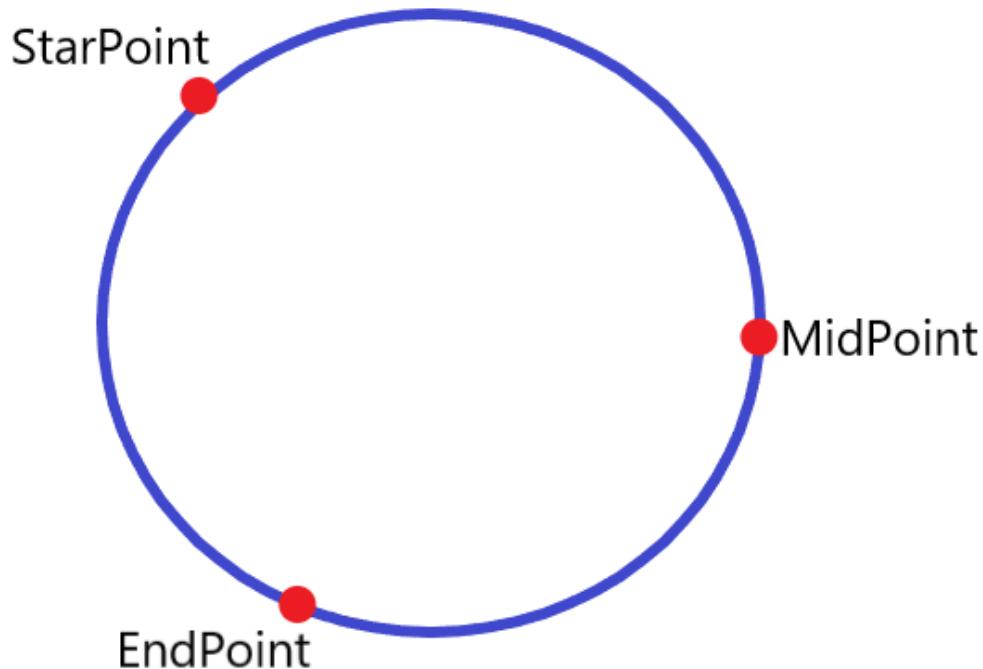


Figure 195: Use the three-point circle method

Set any three points (start point, circle midpoint, end point), and a circular blue line segment will be automatically calculated and generated as the calculated circular coating path.

6.2.4.2 Draw a circle with center point

Set the starting point and center point, get the circle radius, and generate a blue circular coating path as shown below, and the coating direction can be selected clockwise or counterclockwise.

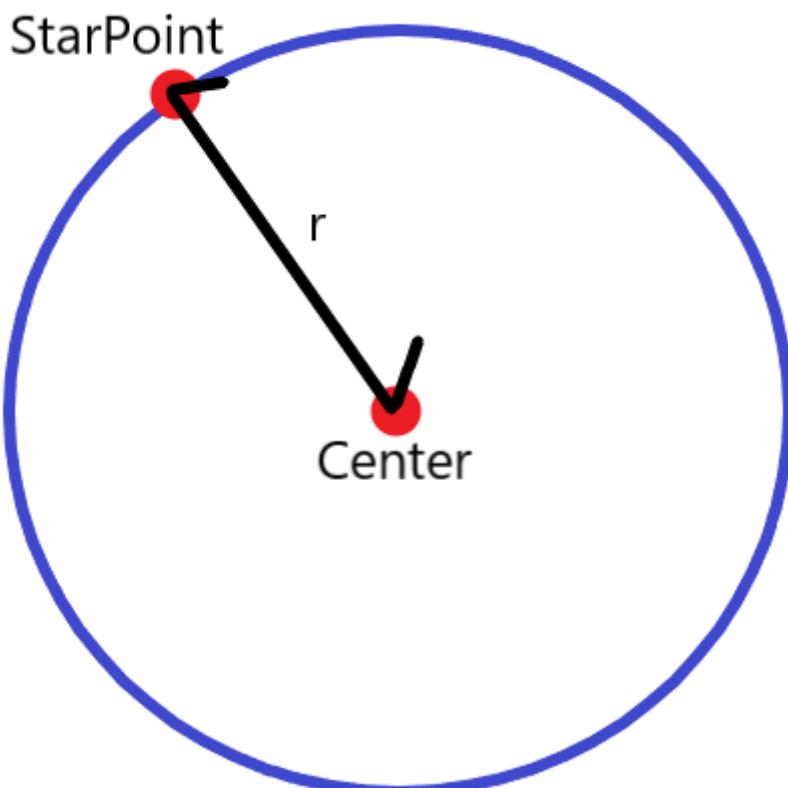


Figure 196: How to draw a circle using center point

6.2.4.3 square

On the square page, you can edit the square by using the start point and the end point (diagonally) to make square line segment coating edits. When the square of the work object is not a horizontal and vertical square in the image, you can use the "Rotate Point" function to set it. Correct its rotation angle.

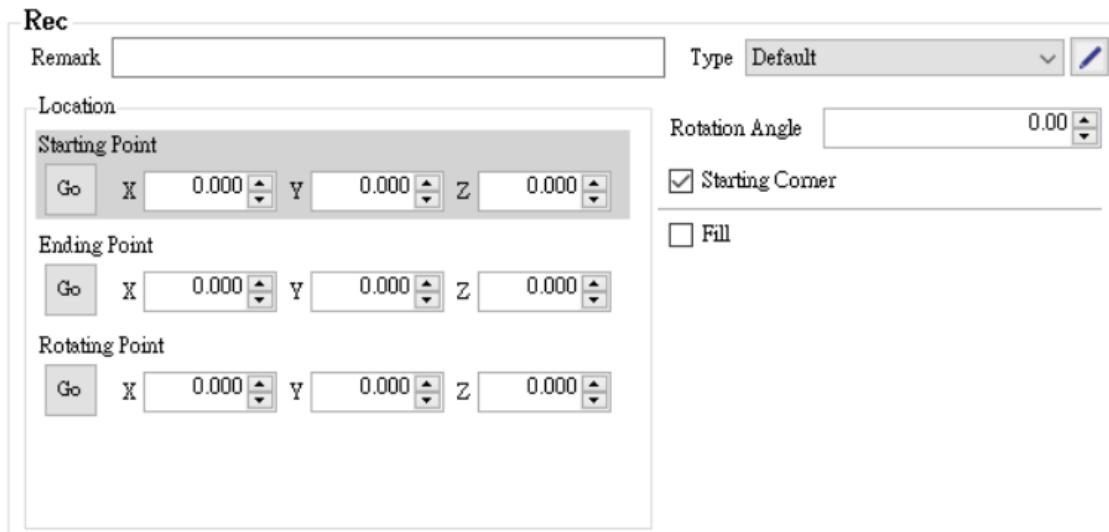


Figure 197: 方形指令界面

Name	Depictions
Remark	You can fill in any comments.
starting point	Sets the starting point of the square.
End point	Set the end point of the square.
Rotation point	Set the "rotation point" to correct its rotation angle.
horizontal angle	Rotates the square, but deforms it.

start from corner	When checked, the coating path will start spraying from the corner point coordinates. If not checked, spraying will start from the midpoint of the line segment.
fill	Execute box and interior coating paths.
Route	Ways to fill routes. Spiral coating, S-shaped coating.
frequency	After inputting the spacing and total coating width, the program will automatically calculate the number of coating path turns.
Fill width (unit: mm)	Set the coating width from the outer frame to the inner frame.
Fill count mode	The number of uses, not the width, determines the amount of fill.
Go	Move the machine to the coordinate position.

6.2.4.3.1 Square coating path description

The black box represents the desired square path to be painted, and the start point and end point are entered. When there is no coordinate input for the "rotation point", the actual coating path will be a red dotted line path.

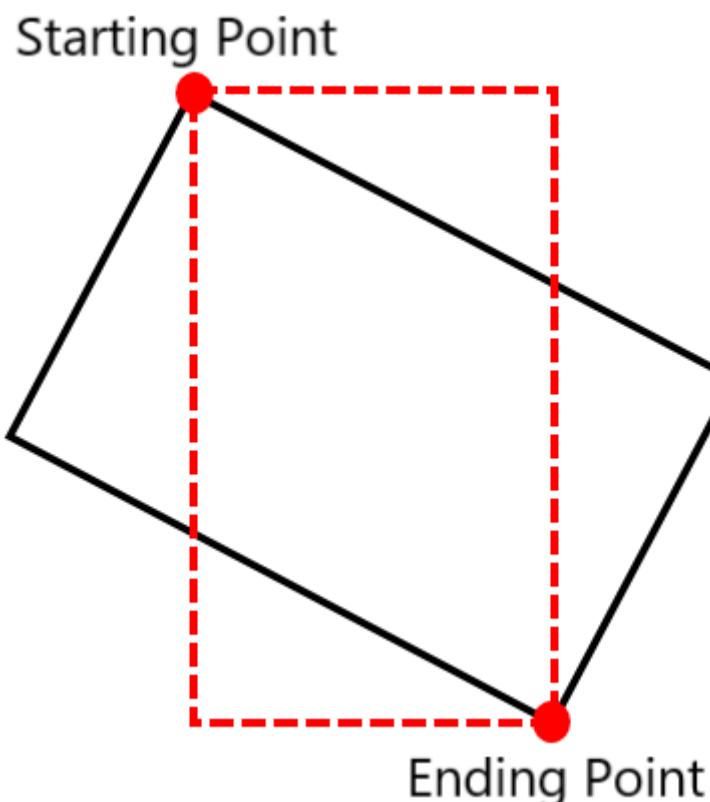


Figure 198: If the rotation point is not taught, the software will automatically draw a square.

In order to add the rotation point coordinate value, the coating path will be automatically corrected to the correct path. When teaching partial rotation points, the turning point will be calculated separately.

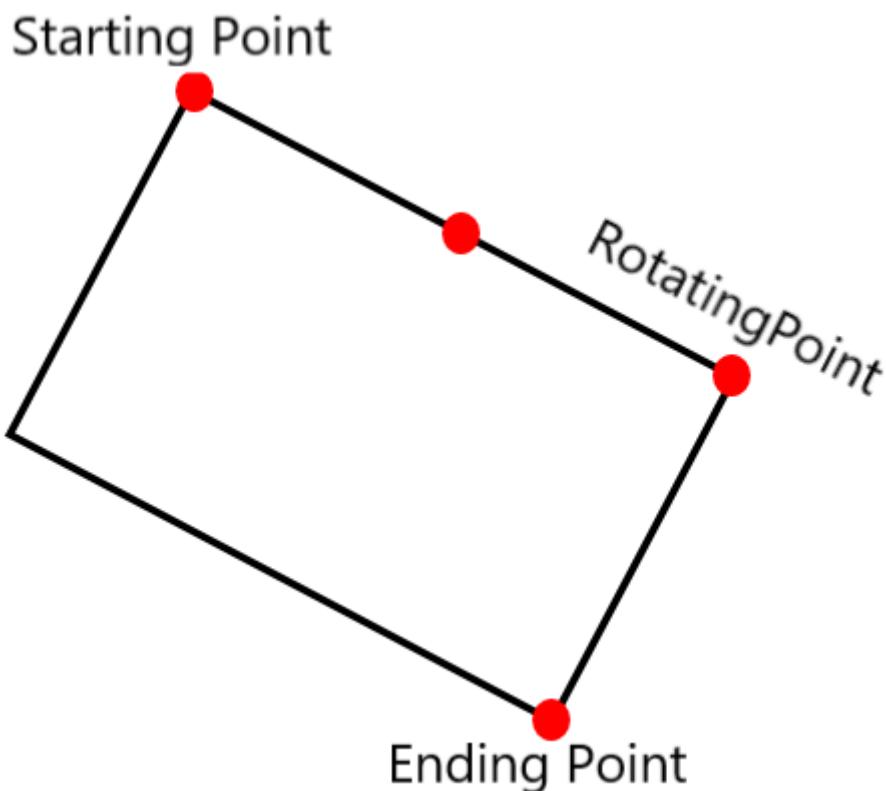


Figure 199: Teaching rotation points to control square directionality

Note: If "Start from Corner" is not checked, the painting path will start from the midpoint of the line segment.

6.2.4.3.2 Check the "Fill" function

The fill coating path parameters can be set.

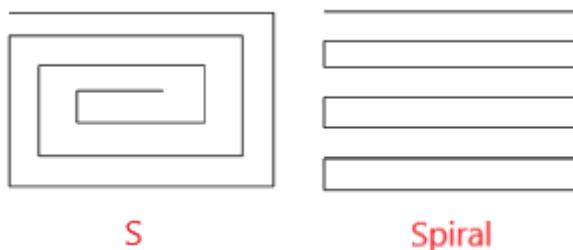


Figure 200: path mode

Note: During actual operation, if the coating path is too short or the turning point is too small, insufficient machine acceleration will result in an erroneous stop. This problem can be solved by correcting the parameters.

6.2.5 Array

On the array page, the programs in the specified line number or specified subgroup will be arrayed.

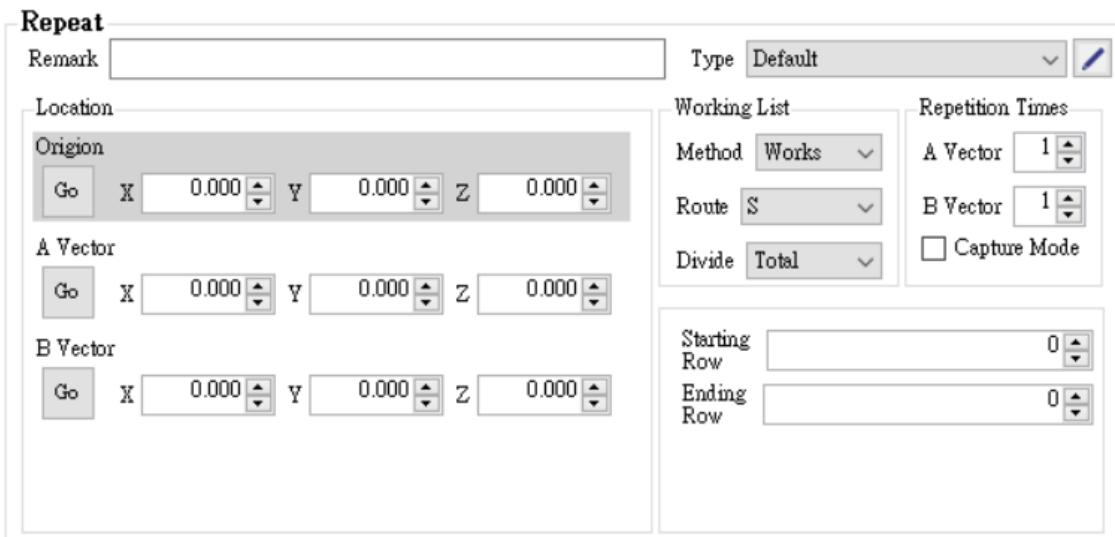


Figure 201: array command interface

Name	Depictions
Remark	You can fill in any comments.
Remark	You can fill in any comments.
A direction	X, Y direction coordinate points. (A and B directions can be determined arbitrarily.)
B direction	X, Y direction coordinate points. (A and B directions can be determined arbitrarily.)
Go	Move the machine to the coordinate position.
Method	Choose to use row numbers or call groups for arraying.
Route	Select an S-shaped or Z-shaped execution array path.
Cutting	Select "All" for the total distance (within the distance from the origin to A and B) Divide by the number of repetitions. Select "Single" interval distance (distance from origin to A and B) Execute the array cumulatively according to the number of repetitions.
A times	Number of copies in direction A.
B times	Number of copies in direction B.
Shooting mode	Automatically calculate the number of arrays based on the effective shooting range.
start line	Select the row number from which to start executing the array.
End line	Select the row number to end the array.
Call group	Select the subroutine to be called and executed.
Galloping identification	Check to use the FoF feature.
Galloping to measure height	Check to use dash height measurement function.
Running phase	The stage in which the group call work is to be run is determined by setting the "Run specific stage".
Go	Move the machine to the coordinate position.
Map	Set to output the teaching command data to the front and rear stations.

6.2.5.1

Example: Tutorial process for making 3X3 coating array

- (1) After setting the origin coordinates and AB direction coordinates, enter the number of repetitions (3 times in direction A, 3 times in direction B), and select route planning (S type or Z type).

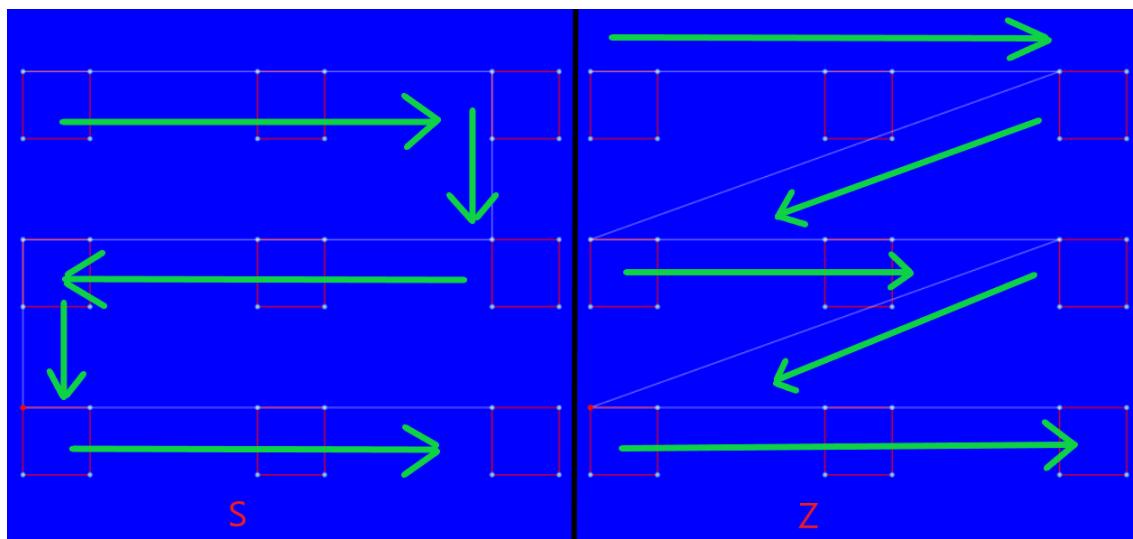


Figure 202: Coating direction selection

- (2) Select a split option.
 - (A) All: Enter the origin coordinates and A, B direction coordinates.
 - (B) Single: Enter the origin coordinates and A, B direction coordinates.

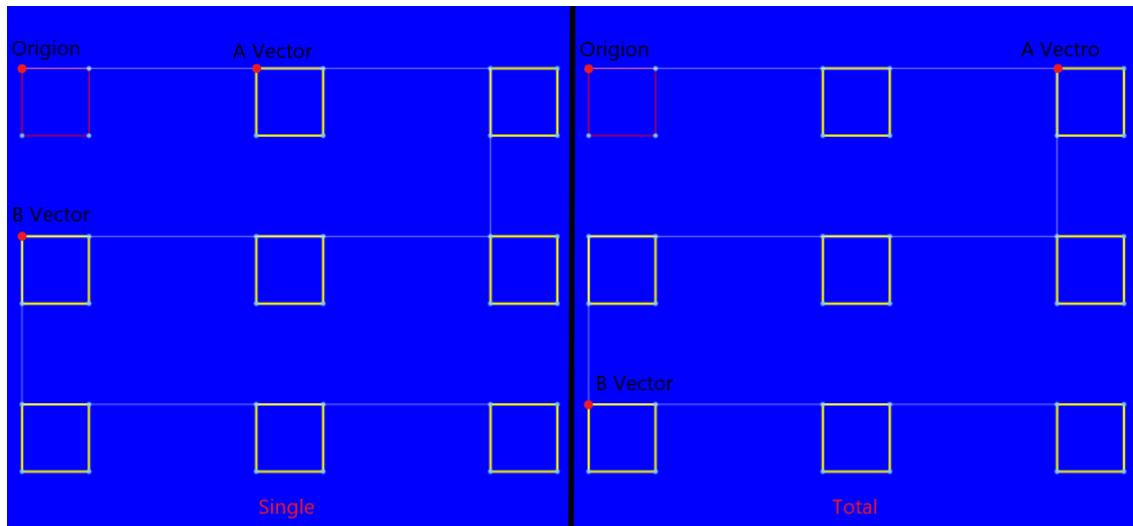


Figure 203: Select split options

- (3) Choose to use the line number or call the group, and then add the command after completion.

6.2.6 call group

Call the group page to call other groups to the current program.

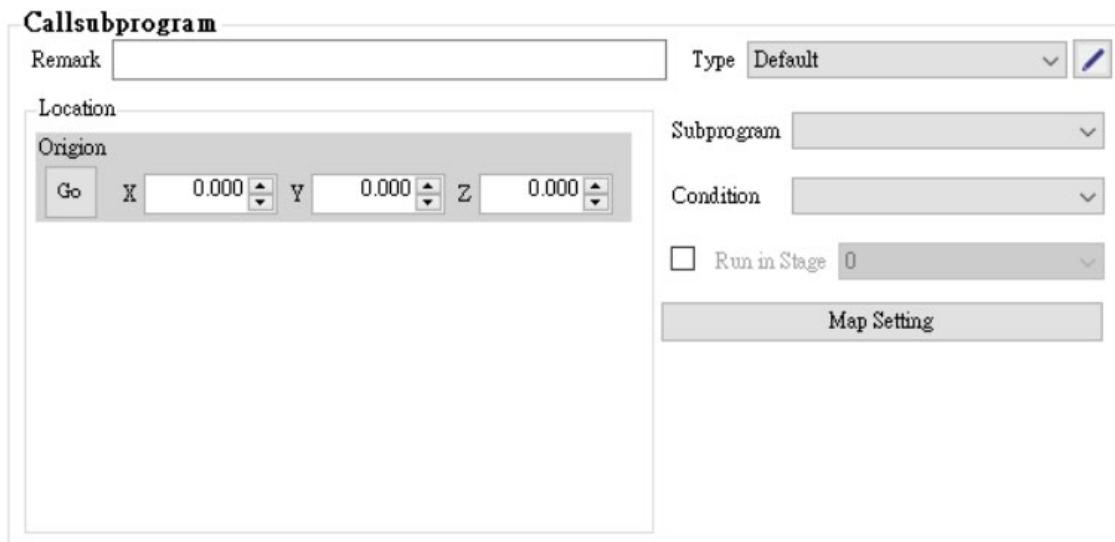


Figure 204: 呼叫群組指令

Name	Depictions
Remark	You can fill in any comments.
Origin	The original coordinate point of the call group.
Go	Move the machine to the coordinate position.
call group	Select the subroutine to be called and executed.
condition	When using the call group command in the current group, you can select a condition to decide whether to execute the command (as long as the condition is met, the action will be executed, otherwise it will be ignored).
running phase	Put the function instructions in different stages, and you can choose to specify the stage call for use.
Map	Set to output the teaching command data to the front and rear stations.

6.2.7 Move

Move the page and move the device to the set coordinate position.

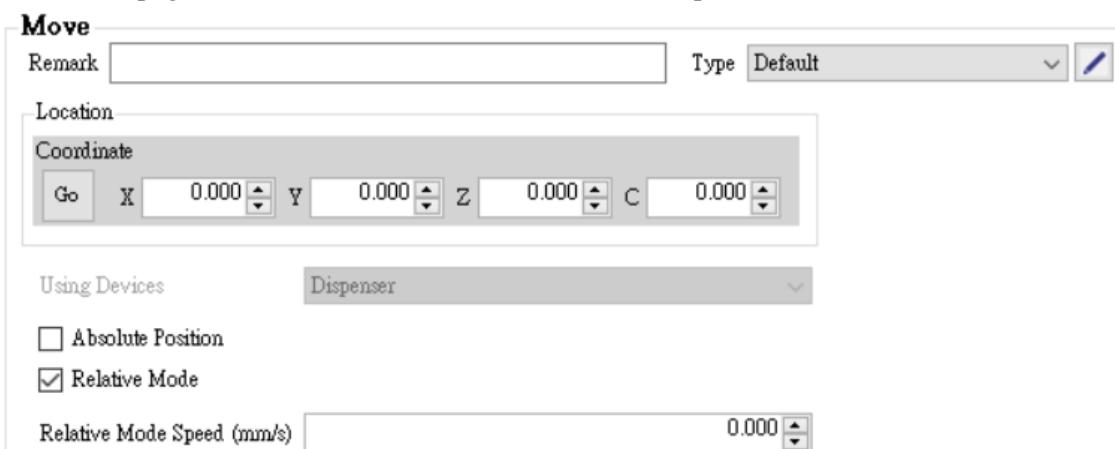


Figure 205: mobile command interface

Name	Depictions
Remark	You can fill in any comments.
Location	moving coordinate point.
Use device	Mobile use device. (Camera device, dispensing device, height measuring device.)
Go	Move the machine to the coordinate position.
absolute coordinates	Moves to taught absolute coordinates without reference to the group origin.

6.2.8 Height measurement

On the height measurement page, you need to measure the height of the workpiece before performing coating operations.

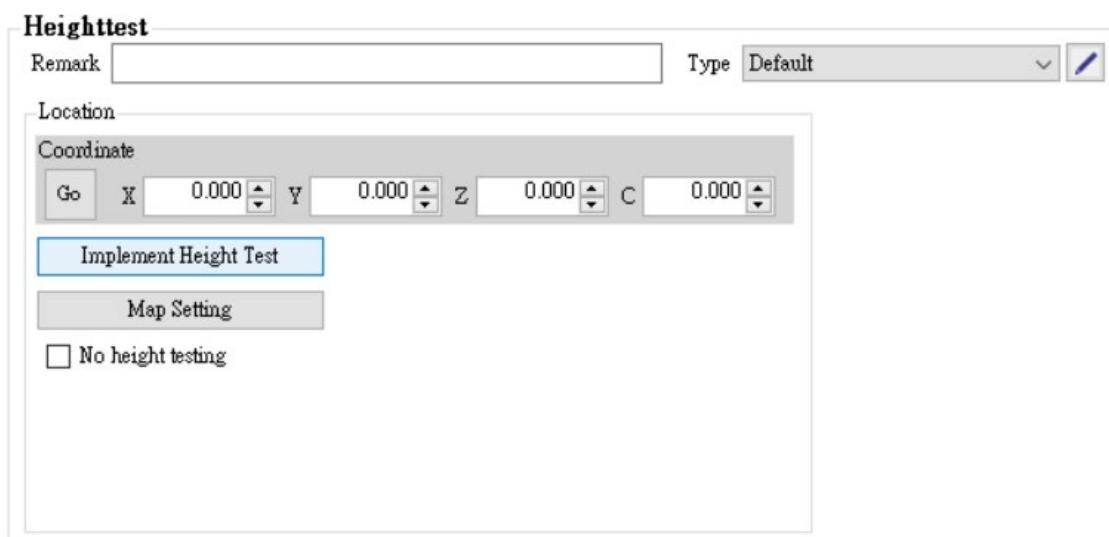


Figure 206: Height measurement command interface

When performing coating operations, if the relative height of the work object has not been entered, you must first move the coordinates to the area to be sprayed to measure the height of the work object.

Name	Depictions
Remark	You can fill in any comments.
Coordinate	The coordinate point of the height measurement.
Go	Move the machine to the coordinate position.
Perform altitude testing	When saving this command, you need to measure the height of the specified coordinates first.
Map	Set to output the teaching command data to the front and rear stations.
No height measurement action is performed	This height measurement command is only used as a height measurement baseline. When running, height measurement will no longer be performed.

6.2.9 height detection

The height detection page provides measurement height and provides different modes according to different needs. For the results generated by each mode, it will check whether the value is within the allowable range.

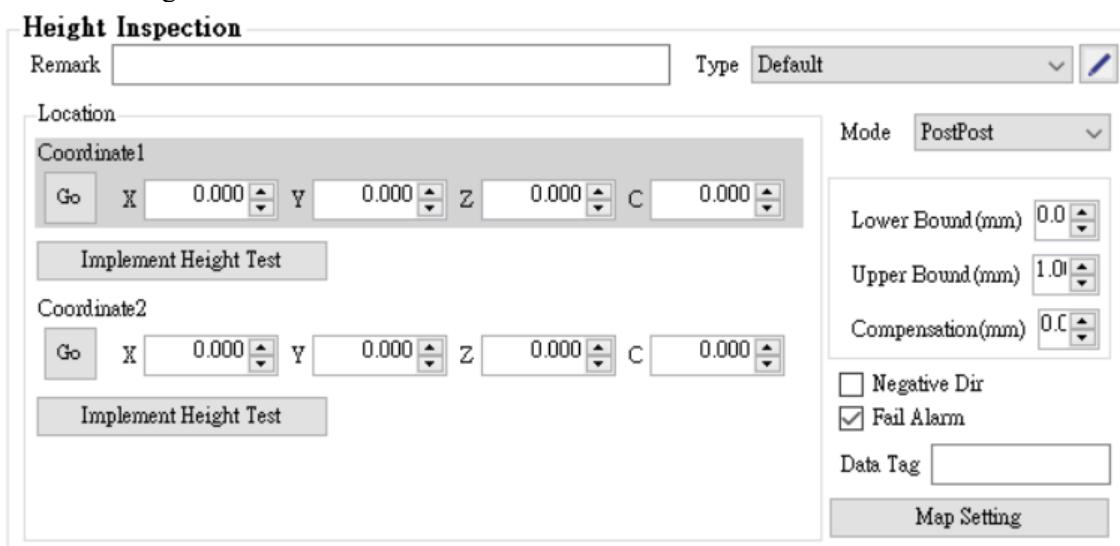


Figure 207: Height detection command interface

Name	Depictions
Remark	You can fill in any comments.
Go	Move the machine to the coordinate position.
Coordinate 1	The first coordinate point position of height detection.
Coordinate 2	The second coordinate point position of height detection.
Perform altitude testing	Detect height. When saving this command, you need to measure the height of the specified coordinates first.
model	Measurement mode, select different modes according to different needs.
Before and after inspection	Test before and after gluing.
Post-inspection double points	Double-point inspection is performed after gluing.
Single point of pre-inspection	Single point inspection before gluing.
Pre-inspection double points	Double-point inspection is performed before gluing.
Front and center double points	Single-point inspection is performed before gluing, and single-point inspection is performed after gluing.
Lower limit value (unit: mm)	Detection height lower limit value.
Upper limit value (unit: mm)	Detect the upper limit value of altitude.
Compensation value (unit: mm)	Add the compensation value to the height detection value, and then compare the upper and lower limit values.
Negative	The value obtained when enabled must be positive.
Data Tag	Notes on the report.
Map	Set to output the teaching command data to the front and rear stations.

The purpose of the target value and the error tolerance range of the target value is to check whether the measured height value is within the allowable range. If it is within the range, the detection is successful. If it is out of the range, the software will pop up the message "Height measurement failed or an error occurred"

6.2.10 Height contour detection

The height profile detection page is mainly used to detect when the plane is not at zero angle, or when the glue is applied at an irregular shape at each point, or you just want to measure the height difference between two points, you can use the height profile detection to do a test.

Height Profile Inspection

Remark	Type	Default																				
Location																						
<table border="1"> <tr> <td>Start</td> <td>Go</td> <td>X</td> <td>0.000</td> <td>Y</td> <td>0.000</td> <td>Z</td> <td>0.000</td> <td>C</td> <td>0.000</td> </tr> <tr> <td colspan="10">Implement Height Test</td> </tr> </table>			Start	Go	X	0.000	Y	0.000	Z	0.000	C	0.000	Implement Height Test									
Start	Go	X	0.000	Y	0.000	Z	0.000	C	0.000													
Implement Height Test																						
<table border="1"> <tr> <td>End</td> <td>Go</td> <td>X</td> <td>0.000</td> <td>Y</td> <td>0.000</td> <td>Z</td> <td>0.000</td> <td>C</td> <td>0.000</td> </tr> <tr> <td colspan="10">Implement Height Test</td> </tr> </table>			End	Go	X	0.000	Y	0.000	Z	0.000	C	0.000	Implement Height Test									
End	Go	X	0.000	Y	0.000	Z	0.000	C	0.000													
Implement Height Test																						
<table border="1"> <tr> <td>Spacing</td> <td>5.000</td> <td><input type="checkbox"/> HoF</td> <td>Data Tag</td> <td><input checked="" type="checkbox"/> Fail Alarm</td> </tr> <tr> <td colspan="5"><input checked="" type="checkbox"/> Reconstruction</td> </tr> </table>			Spacing	5.000	<input type="checkbox"/> HoF	Data Tag	<input checked="" type="checkbox"/> Fail Alarm	<input checked="" type="checkbox"/> Reconstruction														
Spacing	5.000	<input type="checkbox"/> HoF	Data Tag	<input checked="" type="checkbox"/> Fail Alarm																		
<input checked="" type="checkbox"/> Reconstruction																						
<table border="1"> <tr> <td>Mode</td> <td>Prev</td> </tr> <tr> <td colspan="2">Setting</td> </tr> <tr> <td colspan="2"> <input type="button" value="Base Setting"/> <input type="button" value="Measure Setting"/> </td> </tr> <tr> <td colspan="2"> Lower Bound(mm) 0.0 Upper Bound(mm) 1.0 Compensation(mm) 0.0 <input type="button" value="Map Setting"/> </td> </tr> </table>			Mode	Prev	Setting		<input type="button" value="Base Setting"/> <input type="button" value="Measure Setting"/>		Lower Bound(mm) 0.0 Upper Bound(mm) 1.0 Compensation(mm) 0.0 <input type="button" value="Map Setting"/>													
Mode	Prev																					
Setting																						
<input type="button" value="Base Setting"/> <input type="button" value="Measure Setting"/>																						
Lower Bound(mm) 0.0 Upper Bound(mm) 1.0 Compensation(mm) 0.0 <input type="button" value="Map Setting"/>																						

Figure 208: Highly contoured interface

Name	Depictions
Remark	You can fill in any comments.
Start	Set the starting point of measurement.

End	Set the end point of measurement.
Spacing	The size of each point between the starting point and the end point.
HoF	High speed running mode. Relevant hardware configuration is required to use the HoF function.
Data Tag	After input, it will be displayed in the Tag field in the CSV report.
Failure warning	When checked, a warning will be issued if the height measurement fails.
Rebuild mode	When the measurement value is less than the measured value, the interpolation method is used to fill in the points.
Model	There are pre-check (Prev), mid-check (Current), and post-check (Post) respectively.
Upper limit value lower limit value compensation value	The upper limit value, lower limit value, and compensation value are used to detect whether the sample quality reaches the standard. Based on the difference between Base Setting and Measure Setting, the compensation value will be added first, and then the "upper limit" and "lower limit" will control whether the contour height difference is NG. NG and OK are displayed by the State in the CSV report in the HeightInspection folder of V2K.
Map	Set the teaching command data to be output to the front and back stations

Height contour detection process setting instructions

- (1) First set the Start and End coordinates and set how much Spacing needs to be divided at Start and End.
- (2) Set the Base and Measure of Setting to obtain the required value.

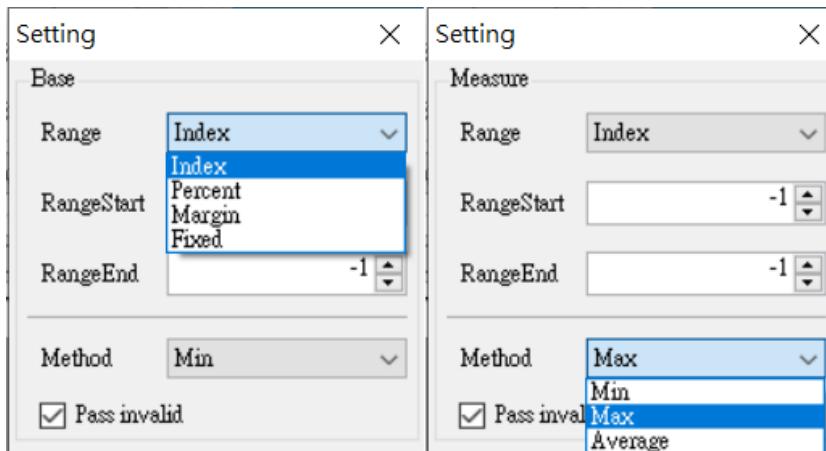


Figure 209: Make settings

Name	Depictions
Index	The sequence number starts from zero, RangeStart and RangeEnd are used to obtain the range, and Method is used to determine whether the height value is the maximum, minimum or average.
Percent	Use percentage to distinguish, and then use Method to determine within what percentage you want the maximum, minimum, or average value.
Margin	Use Count to determine the previous and next values, and then use Method to determine whether the height value is the maximum, minimum or average value.
Fixed	For the value of external data, you can enter the value yourself.
Pass invalid	When checked, errors will not be detected. If a defective product is encountered in the program, debugging will be interrupted.

- (3) After confirmation, the machine will measure the current range and subtract the obtained Base and Measure.
- (4) The program will finally report the results in a CSV file in the HeightInspection folder in the V2K folder.

6.2.11 Plane height measurement

On the plane height measurement page, measure the height of three points and calculate the plane height.

Plane Height Test

Remark Type Default

Location

Coordinate1
 X 0.000 Y 0.000 Z 0.000 C 0.000

Coordinate2
 X 0.000 Y 0.000 Z 0.000 C 0.000

Coordinate3
 X 0.000 Y 0.000 Z 0.000 C 0.000

Implement Height Test

No height testing

Figure 210: Plane height measurement command interface

Name	Depictions
Remark	You can fill in any comments.
Coordinate 1	The first coordinate point of plane height measurement.
Coordinate 2	The second coordinate point of the plane height measurement.
Coordinate 3	The third coordinate point of the plane height measurement.
Perform altitude testing	Measure the height of three points. When saving this command, you need to measure the height of the specified coordinates first.
Go	Move the machine to the coordinate position.

6.2.12 Array height measurement

The array height measurement page is mainly used when multiple different heights need to be detected on an object or plane.

Repeat Height Test

Remark Type Default

Location

Origin
 X 0.000 Y 0.000 Z 0.000

A Vector
 X 0.000 Y 0.000 Z 0.000

B Vector
 X 0.000 Y 0.000 Z 0.000

Implement Height Test

Working List

A Vector 3
B Vector 3

HoF
 Relative Mode
 Grid Data Export

Checking

Slope Checking

Slope Range 0.000

Measuring Assigned Location

Figure 211: Array height measurement command interface

Name	Depictions
Remark	You can fill in any comments.
Origin	Original coordinate point.
A direction	X, Y direction coordinate points. (A and B directions can be determined arbitrarily.)
B direction	X, Y direction coordinate points. (A and B directions can be determined arbitrarily.)
Perform altitude testing	Measure the height of three points. When saving this command, you need to measure the height of the specified coordinates first.
A times	Number of copies in direction A.

B times	Number of copies in direction B.
Galloping to measure height	Altimetry with or without dash.
Relative Mode	The measurement height of the next point will be adjusted based on the height measurement result of the previous point, which is applicable when the height difference with the sample exceeds the laser measurement range.
Grid Data Export	Output detailed array height measurement csv file.
Slope Checking	Enable or disable slope detection.
Slope Range	Slope detection range value.

6.2.12.1 Array height measurement usage process

- (1) Set the origin coordinates, A direction, and B direction coordinates, and enter the number of repetitions (for example, 4 times in the A direction and 4 times in the B direction).

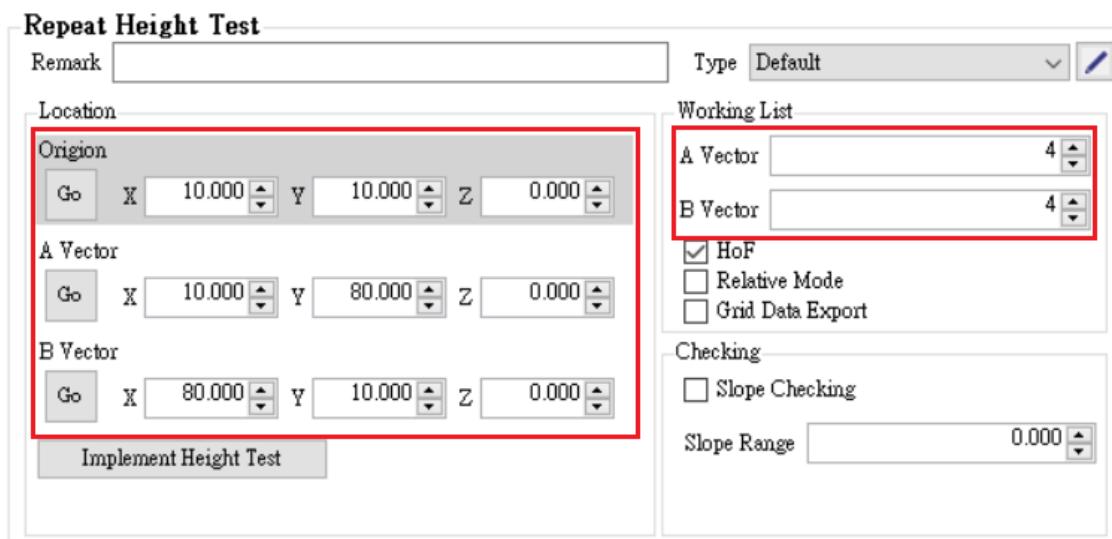


Figure 212: Teach the origin, AB direction position, and set the number of times

- (2) Click to perform the height test, and the machine starts to measure the height of the three-point coordinates. After performing the altitude test, it can be saved.

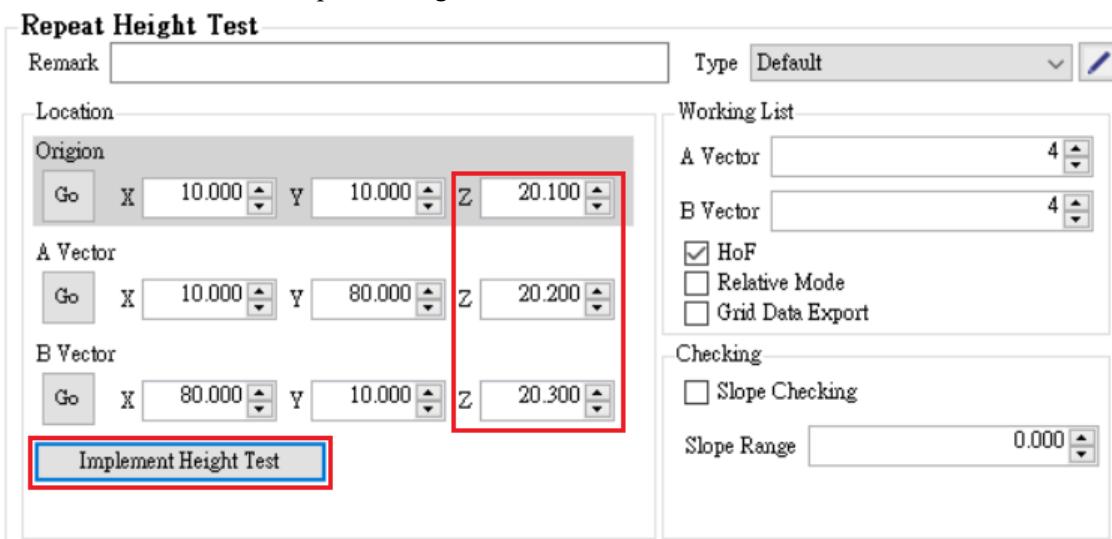


Figure 213: Perform height test, Z-axis height

6.2.12.2 Slope detection

Slope detection can compare height differences and automatically calculate whether the height difference exceeds the set slope range.

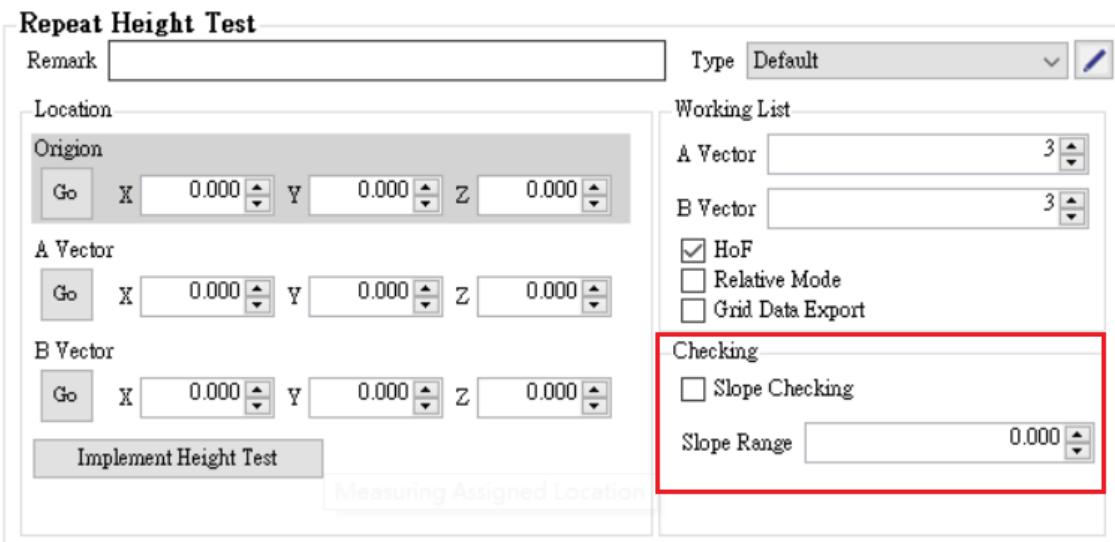


Figure 214: Slope detection function

Name	Description
Slope Checking	Enable or disable slope detection.
Slope Rangr	Slope detection range value.

Slope detection usage process

- (1) Before using the slope detection function for the first time, the Conf file of V2K needs to be set. Open the Conf file, find "ArrayHeightTestReport" and set it to true, save it and reopen V2K. Note: Only when slope detection has been used can the slope detection report appear normally. Report location: V2K folder → HeightRecognitiongrid.

```

},
"ExternalArrayAutoLoad": false,
"LockRobotUIMove": false,
"DisplayRefreshTime": 50,
"DisplayRunningRefreshTime": 50,
"ArrayHeightTestReport": true,
"CxvisMode": "none",
"CxVisImageFormat": "jpg",
"Functions": {
    "JoyStickJogControl": {
        "Enable": false
    }
}

```

Figure 215: conf file settings

- (2) Carry out the array height measurement setting process, enable Slope Checking, enter the slope detection range value (Slope Range), save and run.

Repeat Height Test

Remark	Type	Default	<input type="button" value="Edit"/>
Location			
Origin			
Go	X: 10.000	Y: 10.000	Z: 20.100
A Vector			
Go	X: 10.000	Y: 80.000	Z: 20.200
B Vector			
Go	X: 80.000	Y: 10.000	Z: 20.300
<input type="button" value="Implement Height Test"/>			
Working List			
A Vector: 4			
B Vector: 4			
<input checked="" type="checkbox"/> HoF <input type="checkbox"/> Relative Mode <input type="checkbox"/> Grid Data Export			
Checking			
<input checked="" type="checkbox"/> Slope Checking Slope Range: 0.500			

Figure 216: Check Slope and enter the Range value

6.2.13 CAD2CAM height measurement

On the CAD2CAM height measurement page, fill in the CAD2CAM data in the Datas field, and then the data will be converted into machine position data when V2K is running, and moved there to perform height measurement.

CAD2CAM Height Test

Remark	Type	Default	<input type="button" value="Edit"/>
Location			
Datas			

Figure 217: CADCAM height measurement command interface

Name	Description
Remark	You can fill in any comments.
Type	Change the dispensing type used by this command.
Datas	Fill in the CAD2CAM data, V2K converts the data during runtime, and performs actions.

6.2.14 continuous line segment

The continuous line segment page is used for complex coating paths. You can edit the continuous line segment glue path through the line start, line midpoint, line end, and arc midpoint commands. You can also arbitrarily change the movement speed and the opening of the glue valve controller. /close.

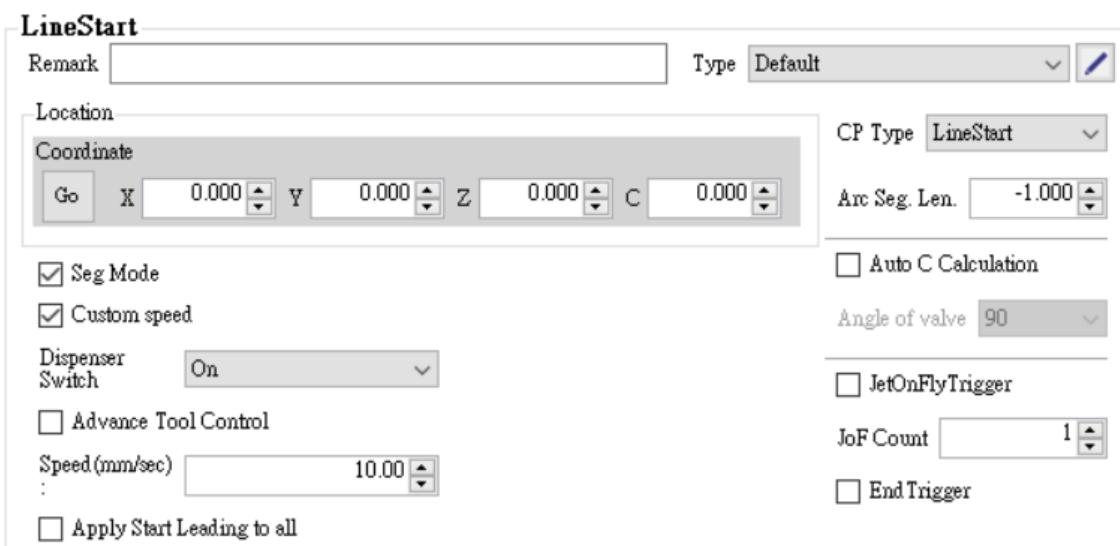


Figure 218: Continuous line segment command interface

Name	Description
Remark	You can fill in any comments.
Go	Move the machine to the coordinate position.
line start	The starting point of the continuous line segment.
line midpoint	The midpoint of a continuous line segment.
arc midpoint	The arc midpoint of a continuous line segment.
End of line	Line end of continuous line segments.
Segmented mode	Set the segment mode so that each segment can match different dispensing flow modes and switch the glue valve controller on/off.
Custom speed	Custom speed, not affected by type.
Speed (unit: mm/second)	Change the speed of movement.
Dispenser switch	In segmented mode, set the valve controller on/off.
Advanced device control	Depending on the type of device that controls device IO, it must handle IO shutdown itself.
Apply pre-glue to all points	Enable: Apply the pattern's pre-glue distance to all points. Not enabled: The pre-spray distance will only be used at this starting point.
CP point type	You can quickly switch between line start, line midpoint, line end, and arc midpoint.
Arc Seg. Len.	Expand the entire continuous line segment.
Automatically calculate C angle	When the machine has a rotation axis C, the software automatically calculates the angle of the C axis.
Spray valve angle	When the machine has a C-axis of rotation, set the included angle of the spray valve.
Use Dashing Spray to trigger	Enable the dash spray trigger to apply glue. This function is used for gluing any continuous line segment.

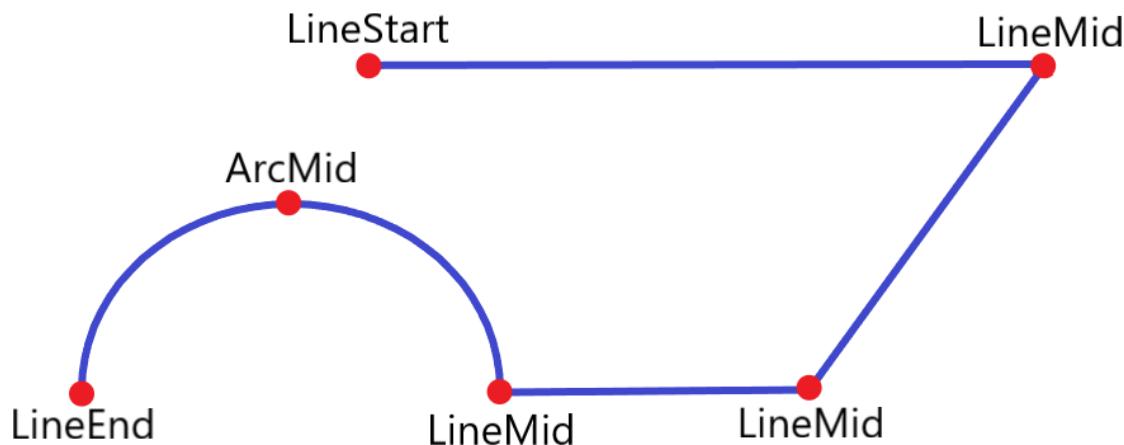


Figure 219: The composition of continuous line segments

Note: A single line segment requires at least one "line start" and "line end" command, and arc midpoints cannot be used continuously.

6.2.15 Delay

Delay page, set the interval (unit: seconds) from the previous command to the next command.

Delay

Remark	Type	Default
Interval(Sec)	0.00	

Figure 220: Delay command interface

Name	Description
Remark	You can fill in any comments.
Interval (unit: seconds)	Set the waiting interval.

6.2.16 Clear glue

On the glue cleaning page, use the cleaning device to clean the glue valve nozzle.

Clean

Remark	
Clean Type	General
Repeat	1
Interval(Sec.)	0.000

Figure 221: Clear glue command interface

Set the rubber valve to move to the specified cleaning coordinate, and drive the rubber valve and cleaning device to act. The clear glue position can be set by entering the "Other Device Calibration Window" and setting its device coordinate position.

Name	Description
Remark	You can fill in any comments.
Clear glue type	Configure the type of glue removal device (General, seal, tape and reel, clip-on).
Repeat	Set the number of cleaning repetitions.
Interval (unit: seconds)	Set the interval between glue cleaning times.

6.2.16.1 Clear glue setting process

- (1) Set the clear glue coordinates and height. The type of glue clearer can be selected according to the device: general (vacuum suction type, sponge roller), tape and reel type, stamp type, clamp type (the glue type needs to be modified, go to Calibration → Other Device Locations → Cleanser → Cleanser Type).

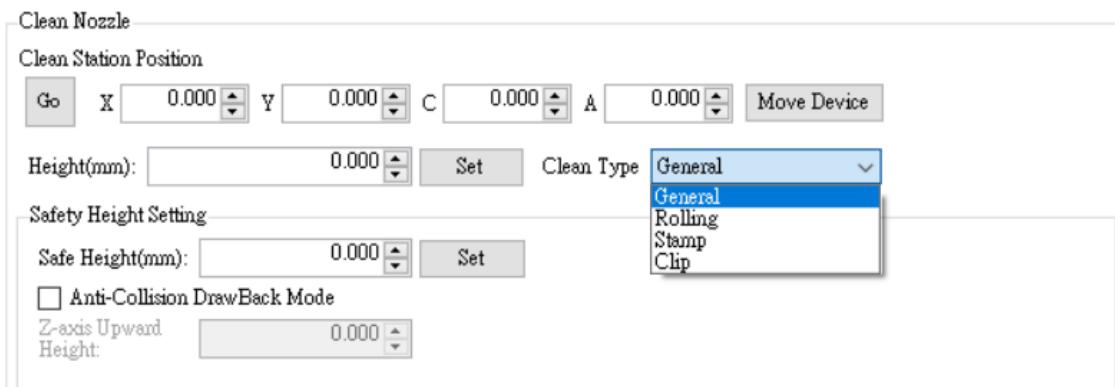


Figure 222: Click parameter settings

The delay before dotting in the set point parameters (unit: seconds) = glue clearing time. (Remarks: Vacuum suction device → adsorption time, sponge roller device → sponge rolling time, tape and reel device → wiping time.)

- (2) The number of repetitions and interval (unit: seconds) can be set to perform multiple glue cleaning actions.

6.2.17 Weighing and related functions

Weighing page, flow detection function.



Figure 223: Weighing command interface

Name	Description
Remark	You can fill in any comments.
Use clean	Check to enable the glue removal function.
Cleaning subroutine	Select the subroutine for the glue clearing action.
First time cleaning	Before starting the weighing test, do a clear glue action.

Note: The type of weighing command must use dispensing parameters, otherwise there will be a warning prompt as shown in the picture below, and an error will occur when executing the program.

Index	Work	Data	Hint	Remark
0	Weighting	Type:Default	!	Using scale action type should use DispFlowType

Figure 224: Weighing teaching settings

Note: Before using the weighing command, weighing related settings must be made.

Weighting Scale Calibration

<input type="checkbox"/> Tare	Weight Alarm (mg)	1000.000
<input checked="" type="checkbox"/> Stable Measure		
Switch Delay (Sec)		0.000
Scale Time (Sec)		2.000
Scale Timeout (Sec)		60.000

Figure 225: Settings on the microbalance

The settings related to the parameters of the micro-library are located in the parameter window of the dispensing controller.

Weight Testing

Dispenser Type

Target(Milligram):	7.000	Min.(Milligram):	5.000	Max.(Milligram):	10.000
Min. Boundary	1.000	Max. Boundary	11.000	Max Var(mg):	-1.000
Repeat Times:	1	Gap Time(ms):	0	Calibration	pressure:Fluid.f
Number of Ignore Times:	0	Number of Successes:	0	Max. Number of Test:	3
				Ext. open time(ms)	-1.000
Weight(Milligram)	8.000000	Dot (Milligram)	1.600000	Flow (Milligram/s)	400.000000
<input type="button" value="Tare"/>					

Figure 226: Weighing interface

6.2.18 Image detection

The image detection page is used to set up image detection and can also be used to capture images.

Image Inspection

Remark	Type	Default
Recognition1		
Null	<input type="button" value="Parameter"/>	
Coordinate		
Go	X 0.000	Y 0.000
	Z 0.000	
<input type="checkbox"/> Inline Run <input checked="" type="checkbox"/> Fail Alarm		
<input type="button" value="Map Setting"/>		

Figure 227:Image detection interface

In addition to using the main camera, it also provides the use of auxiliary cameras (downward or side photos) for shooting and detection.

Name	Description
Remark	You can fill in any comments.
Image recognition point 1	Select the image recognition method you want to use.
Settings	Set image recognition parameters.

coordinate	Coordinates of image recognition.
Go	Move the machine to the coordinate position.
Run instantly	When this mode is enabled, image detection will be executed immediately when the line number command is reached. Otherwise, image detection will be executed at the end of the run.
Failure warning	Whether to warn and stop the operation when detection or identification fails. (Disabling this function is usually used with the IF-ELSE function to provide the behavior when the detection fails through the IF-ELSE instruction)
Pre-test	The shooting action will be done before the glue is applied , and the original shooting after the glue is applied will also be done. (Image recognition: Capture only has this function)
Pre-test instructions	pre-test instructions. (Image recognition: Capture only has this function)
Post-detection instructions	Post-detection instructions. (Image recognition: Capture only has this function)
Map	Set to output the teaching command data to the front and rear stations.

Note: When executing an action, the image recognition function needs to be checked. Otherwise, the software will automatically skip the execution of image recognition-related actions, and the captured screenshots will not be saved.

6.2.18.1 Pre-detection function description

When the pre-detection function is checked, the shooting action will be done before gluing, and the original shooting after gluing will also be done. (This function is used for comparison before and after gluing.)

- (1) Precautions before inspection:
 - (A) Live run does not support pre-detection mode.
 - (B) Pre-detection only supports capture mode.
- (2) Pre-detection action description:
 - (A) Image recognition.
 - (B) Height measurement.
 - (C) Pre-detection (capture picture 1).
 - (D) Action (gluing).
 - (E) Post-detection (original detection) (capture picture 2).

6.2.19 Process delay required

Process required delay page. When a single product requires multiple processes, the machine repeatedly moves back and forth and waits for the process, resulting in a waste of time. Make full use of the interval time to carry out operations and save the idle waiting time of the machine.

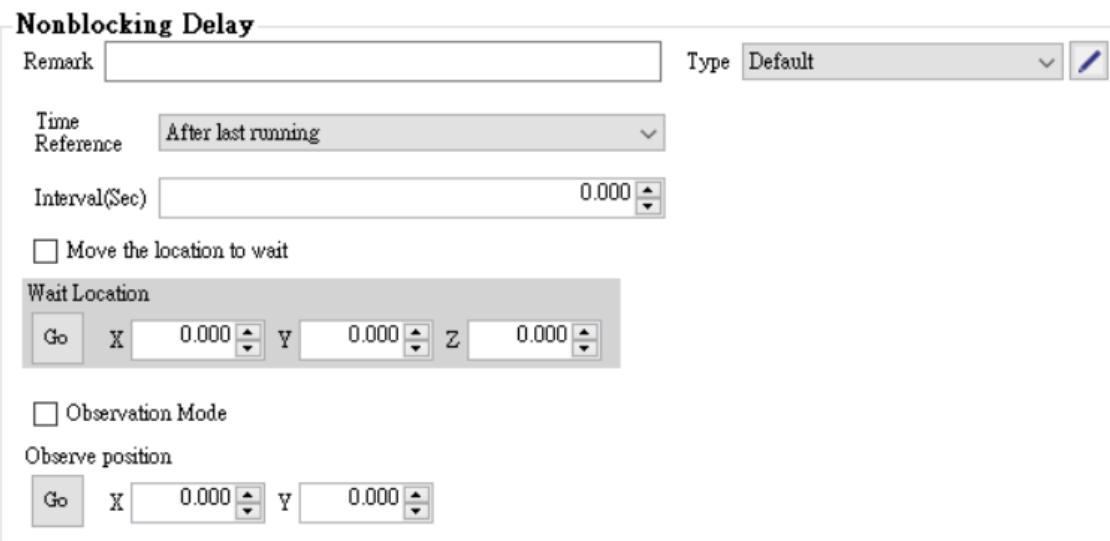


Figure 228: Process delay command interface

Name	Description
Remark	You can fill in any comments.
Time base	Delay time reference. (After running, starting from the last time.)
After running	Timing after completion of operation.
Since last time	Timing before starting operation.
Interval (unit: seconds)	Set the waiting interval.
Move to a specific location.	Wait for the machine to move to the set position and wait.
Waiting position	The waiting position to which the machine moves.
Observation mode	If there is still time to wait after operating the specified number of groups, the machine will move to the set observation position. (Observation mode must enable "Delayed Observation" in the teaching settings to be effective.)
Observation position	The observation position to which the machine moves.
Go	Move the machine to the coordinate position.

General delay and process delay function description

(1) general delay

- (A) A single product requires multiple processes, and there needs to be an interval between processes.
- (B) Using the general delay method, there will be frequent idle times during operation, which will significantly reduce production capacity.

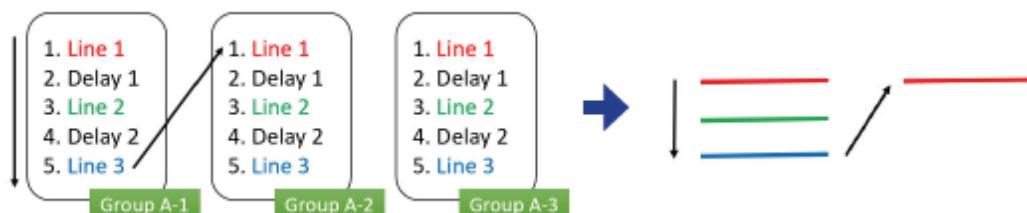


Figure 229: General coating route

(2) Process delay

(A) When executing the process delay command, each group will be completed continuously according to the setting, and at the same time, the remaining time will be waited for to complete, and then the next process will be carried out.

(B) Using process delay, the same instructions between groups can be executed separately to reduce the idle time of the machine and greatly improve the underfill process throughput.



Figure 230: Coating path using process delay

6.2.19.2 Instructions on how to use process delay

- (1) Go to the upper toolbar and enter "Teaching Settings"

File Implement Teach Config. Import Tool Loading/Unloading

Figure 231: Click on the toolbar to teach settings

- (A) Click "Enable Cutting and Grouping".
- (B) Set the number of times for "a group". (Evaluate the waiting time for the next process after doing several groups in succession)

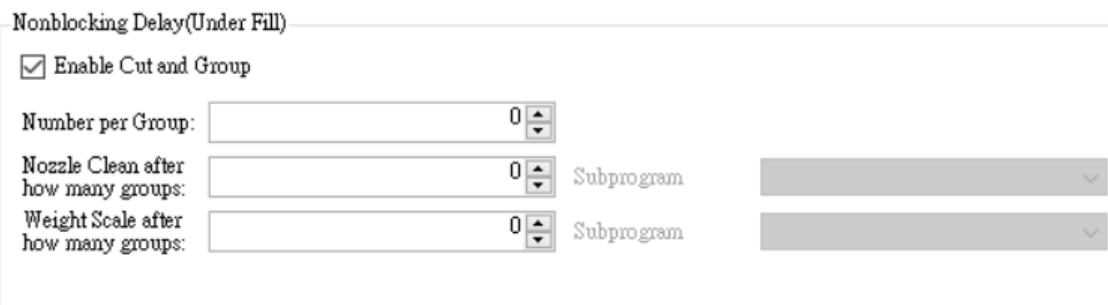


Figure 232: Check Enable and set the number of groups

- (2) Process delay teaching instruction setting
 - (A) Set the "time basis" (the basis for calculating waiting time).
 1. Last Started: Timing before starting operation.
 2. After Run: Timing after the run ends.
 - (B) Set the number of seconds for "Interval (seconds)".

Nonblocking Delay

Remark

Time Reference	After last running
Interval(Sec)	1.000

Move the location to wait

Wait Location

Go	X 0.000	Y 0.000	Z 0.000
----	---------	---------	---------

Observation Mode

Observe position

Go	X 0.000	Y 0.000
----	---------	---------

Figure 233: Set process delay instructions

(C) Insert teaching instructions where process delays are required

Index	Work	Data	Hint	Remark
0	Line	Type:Default		
► 1	Nonblocking D...	Type:Default		
2	Line	Type:Default		
3	Nonblocking D...	Type:Default		
4	Line	Type:Default		

Figure 234:Insert made delay instruction

(3) Group editing settings-check "Cut and Group" on the group that needs to use process delay

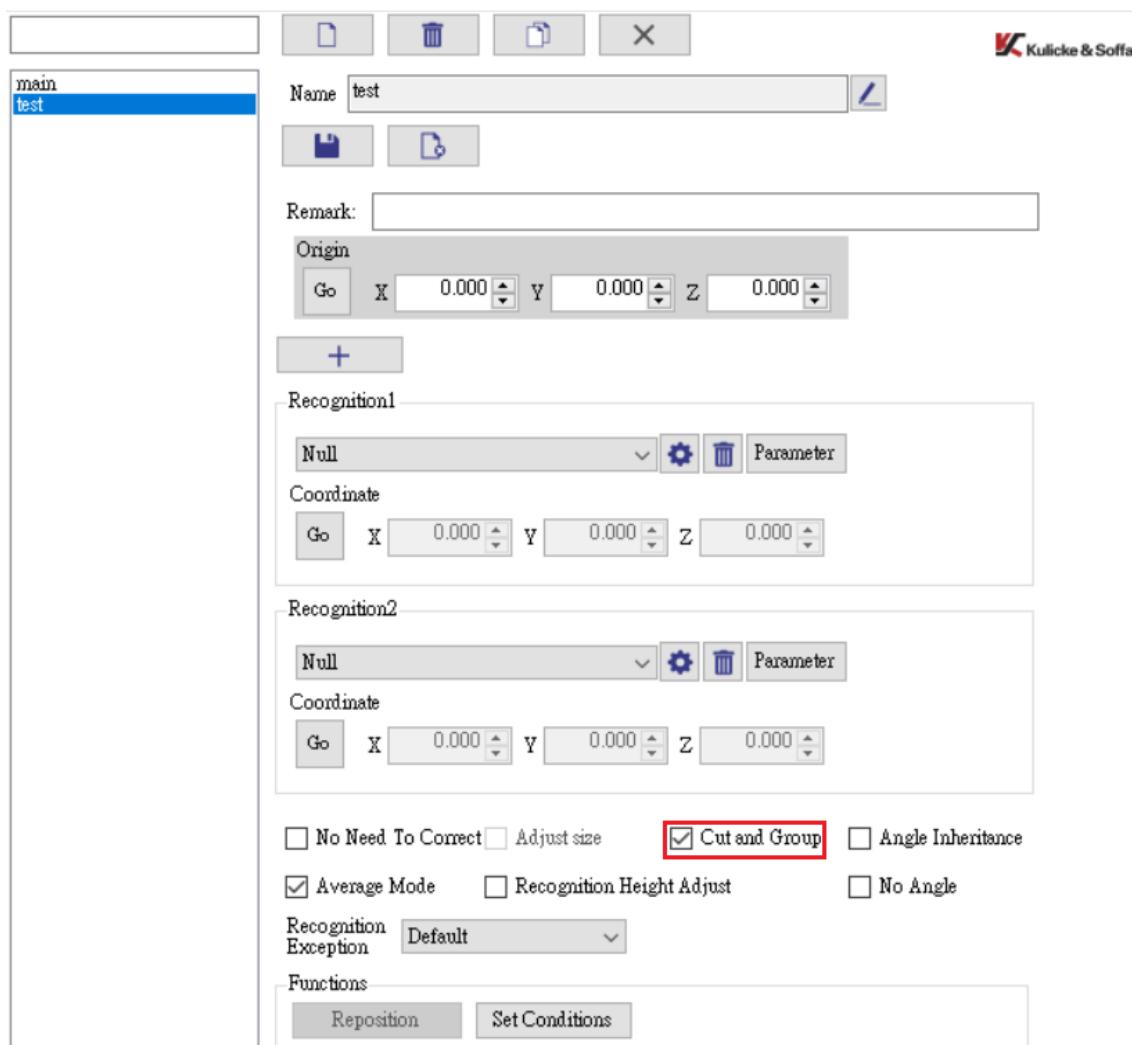


Figure 235: Check "Cut and Group" on the group

6.2.20 Pause observation

To pause the observation page, you can set a position. When this command is run, it will move to a specific position for observation. It will not continue until the user clicks to continue.

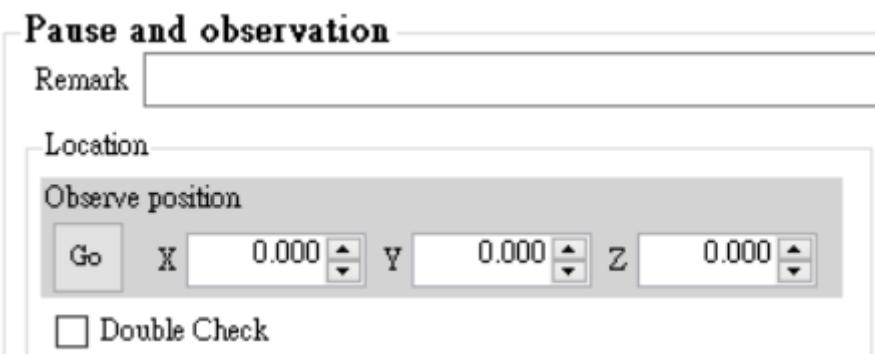


Figure 236: Pause observation command

Name	Description
Remark	You can fill in any comments.
observation mode	If there is still time to wait after operating the specified number of groups, the machine will move to the set observation position. (Observation mode must enable "Delayed Observation" in the teaching settings to be effective.)
Observation position	The observation position to which the machine moves.
Go	Move the machine to the coordinate position.

6.2.21 command action

The command action page specifies the action of the machine, such as moving the auxiliary axis position, running a specific stage, switching camera screens, moving the A-axis, displaying error warning instructions, etc.

Command



Figure 237: command action interface

6.2.21.1 Auxiliary axis absolute position movement

Auxiliary axis absolute position movement page.

Command

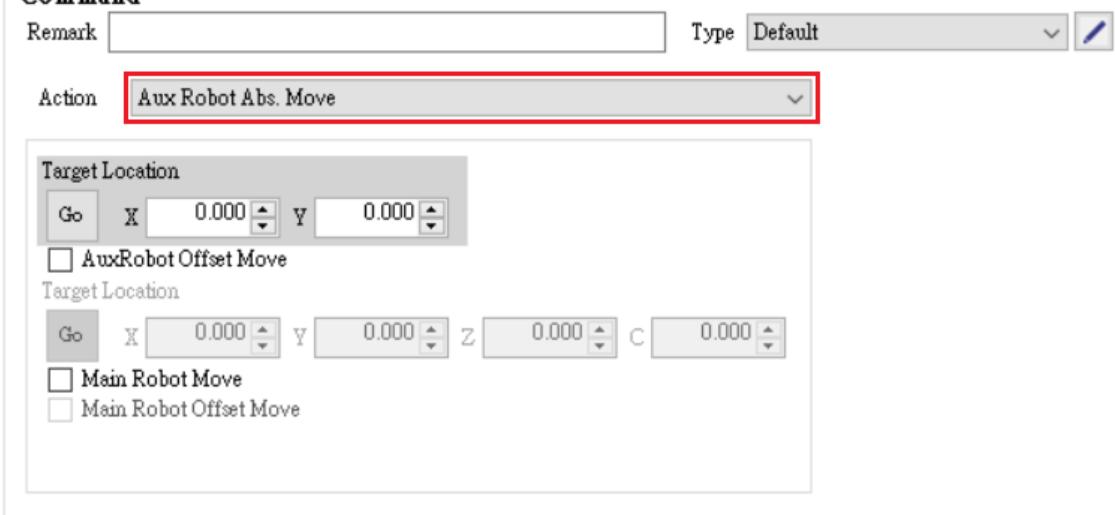


Figure 238: Auxiliary axis absolute position movement function

Name	Description
Remark	You can fill in any comments.
Auxiliary axis absolute position movement	The auxiliary axis moves to the target position.
Target location	The target position to which the auxiliary axis is to be moved.
Go	Move the machine to the coordinate position.
Host station moves synchronously	When the auxiliary axis moves, the host table also moves to the target position.

6.2.21.2 Auxiliary axis valve two movement

Auxiliary shaft valve two moving page.

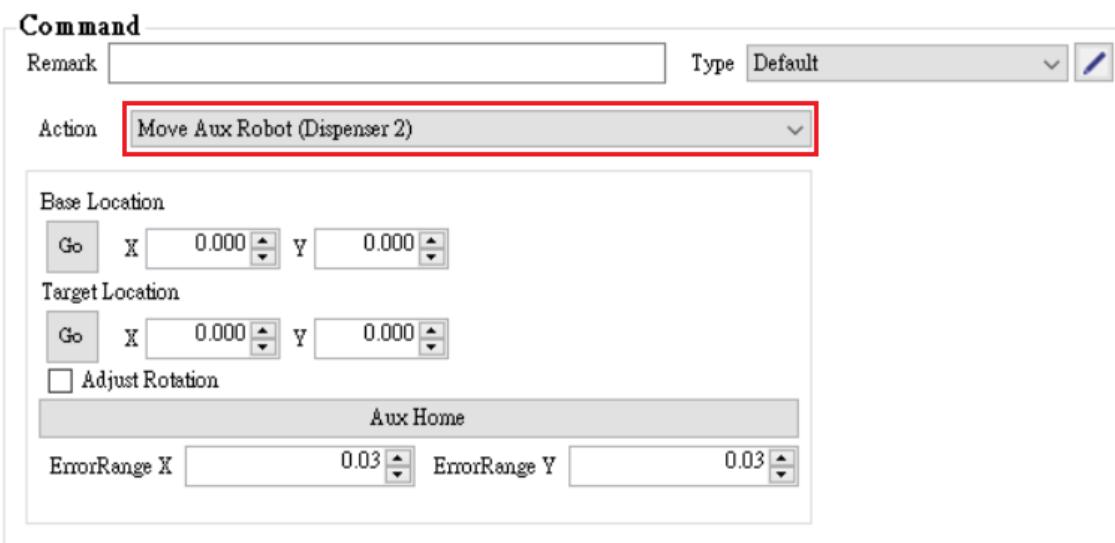


Figure 239: Auxiliary axis valve two movement

Name	Description
Auxiliary axis valve two movement	Moving auxiliary shaft valve 2.
Reference position	The main axes move to the reference position.
Target location	The auxiliary axis moves to the target position.
Go	Move the machine to the coordinate position.
Adjust angle	Use the results of image recognition to adjust the angle.
Auxiliary axis origin	Set the reference position and target position as the origin of the auxiliary axis.

6.2.21.3 Run a specific stage

The main concept of running a specific stage page is to place functional instructions in different stages, and you can choose to specify the stage call to use.

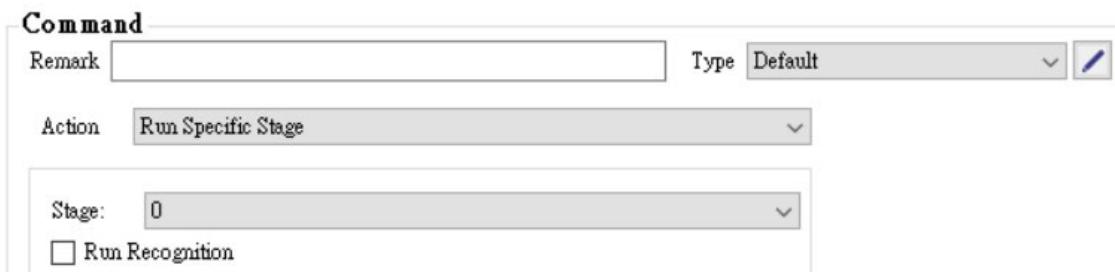


Figure 240: Run a specific stage

Name	Description
Run a specific stage	Place functional instructions in different stages and optionally specify which ones to run
Stage call use	The stage sets the stage in which the call's work should be run.
Repeat run identification	Run identification every time.

6.2.21.4 Operation instructions for specific stages of operation

Generally, when using teaching commands, functional commands that do not have a specified Stage are placed in Stage 0 by default. When running, the program will execute functional instructions with higher priority by default. By using a call group and running it in stages, you can change the sequence of teaching instructions during runtime.



Figure 241: Runtime instruction priority

- (1) After assigning work instructions to a specific stage, you must use the run stage instruction to run the content of the special stage. If no stage is specified, the program will execute stage 0 (Stage0) by default.
 - (2) Repeated running of identification means that when a stage is run more than once, image identification and height detection must be re-executed or the previous results must be used.
 - (3) In the "Call Group" command in the function bar, set the running phase number.
 - (A) Call group command, after selecting the group to call, check the following running stages to specify which stage to place it in.

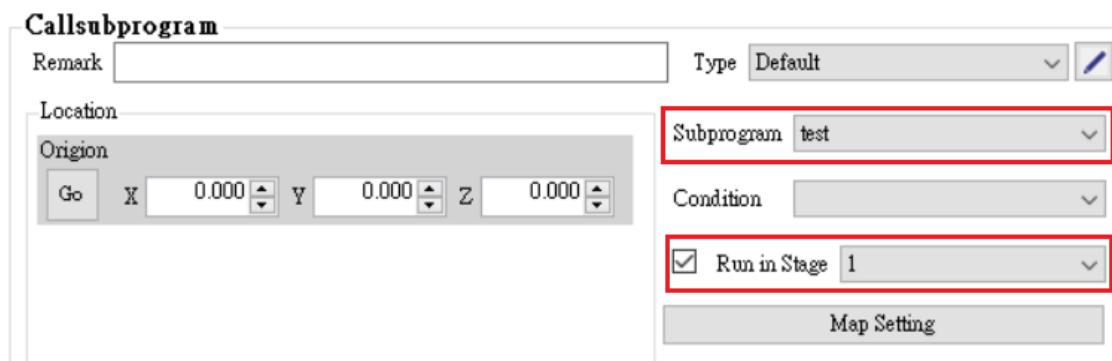


Figure 242: Check the run phase in the call group

- (B) Array command, check the running stage located in the lower right corner of the array function to specify which stage it is placed in.

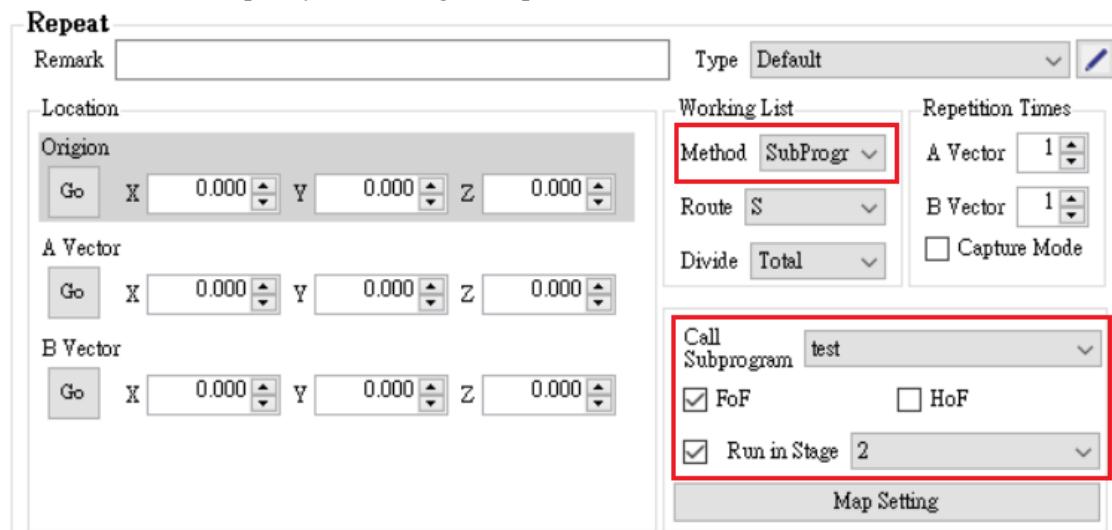


Figure 243: Check the run phase in the array and select 2

- (C) For the above two instructions, if the running stage is not checked, the function instructions will be placed in Stage0 by default.

(4) Run a specific stage program example

Subprogram main		Data	Hint	Remark
Index	Work			
0	Line	Type:Default		
1	Image Inspection	Type:Default		
2	Heighttest	Type:Default		

Figure 244: Run a specific stage program example

- (A) New teaching instructions: line number 0, line segment instruction; line number 1, image detection instruction; line number 2, height measurement instruction.
- (B) By arranging the instructions in this way, during actual operation, the machine will still give priority to operation: height measurement → line segment → image detection.
- (5) Example of running a specific stage program and adding a dispensing coating program
- (A) Put the image detection and height measurement instructions into the subgroup

Subprogram test		Data	Hint	Remark
Index	Work			
0	Image Inspection	Type:Default		
1	Heighttest	Type:Default		

Figure 245: Add group commands for image detection and height measurement

- (B) Return to the main group, add a new call group, call group 1, and set running phase 1

Callsubprogram

Remark	Type Default
Location	Subprogram 1
Origin	Condition
Go X 0.000 Y 0.000 Z 0.000	<input checked="" type="checkbox"/> Run in Stage 1
	Map Setting

Subprogram main		Data	Hint	Remark
Index	Work			
0	Line	Type:Default		
1	Callsubprogram	Subprogram:1		

Figure 246: Using run stages in call groups

- (C) Add a new command action, select: run a specific stage, stage: 1 (this is the official announcement, the action of group 1 must be run after stage 0).

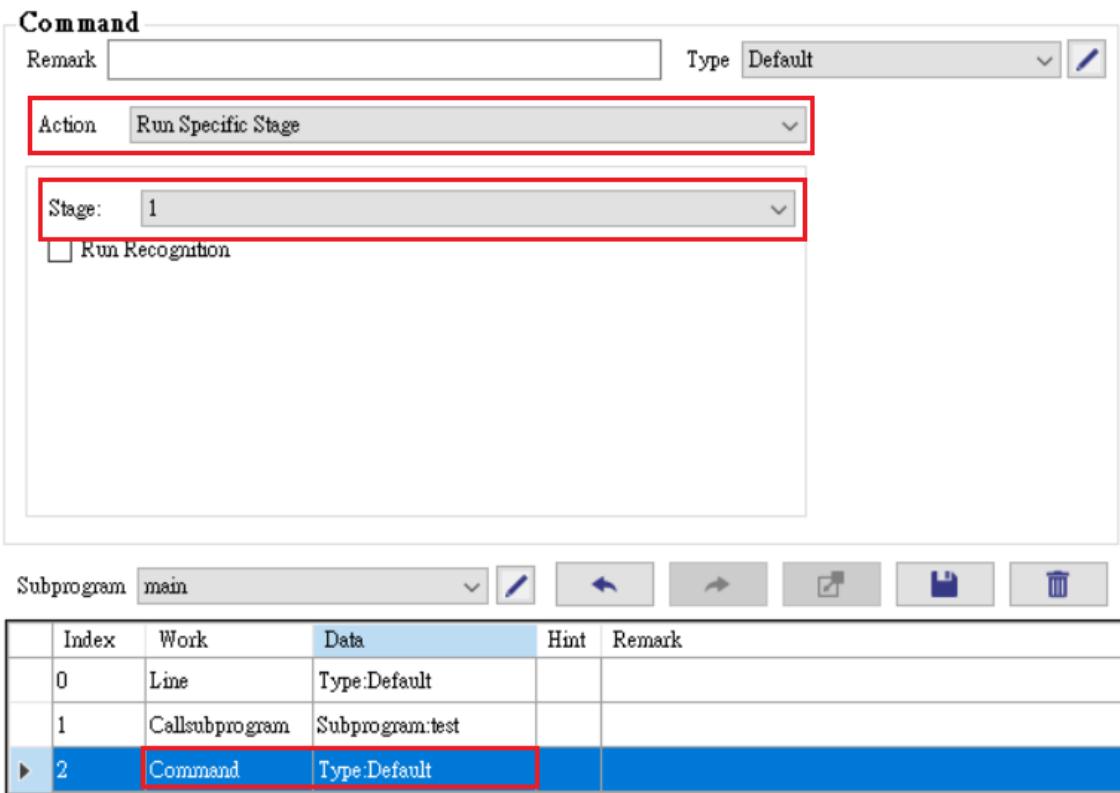


Figure 247: Declare the running stage will set stage 1

(D) When the machine is actually running, the line segment gluing action will be performed first, and then image detection and height measurement instructions will be performed.

6.2.21.5 Switch camera screen

Switch camera screen page.



Figure 248: Switch camera screen function

Name	Description
Switch camera screen	Switch the camera screen while running.
Target camera	The target camera device to switch the screen to. (Main camera, side camera, bottom camera.)

6.2.21.6 Move A axis

Move the A-axis page.



Figure 249: Move A-axis function

Name	Description
Move A	The axis moves the A-axis to the set

	inclination axis angle.
Goal A	Set the inclination axis angle of the A-axis.

6.2.21.7 Error warning

Error warning page.

Command

Remark	Type Default	
Action	Alarm	
Alarm Message		
<input checked="" type="checkbox"/> Show Alarm		

Figure 250: Error warning function

Name	Description
Error warning	When the operation fails, an error message indicating that the operation failed will be displayed on the program.
Error command message	Set command message for error warning.

6.2.22 Debinding

On the glue removal page, perform glue removal according to the glue removal settings.

Purge

Remark	Type Default	
Purge Device	Purge Dispenser1	
Purge Setting		

Figure 251: Glue removal command interface

Name	Description
Remark	You can fill in any comments.
Glue discharge device	Set up the device for discharging glue. (Valve one row of glue, valve two row of glue, all valves row of glue.)
Valve one row glue	Set to valve one device to perform glue discharging action.
Valve second row glue	Set the valve 2 device to perform glue discharging action.
Debinding all valves	It is set that both valve one and valve two devices perform glue discharge action.
Debinding settings	Enter other calibration pages to set the glue discharge settings.

6.2.23 IO control

On the IO control page, select each device to perform IO testing.

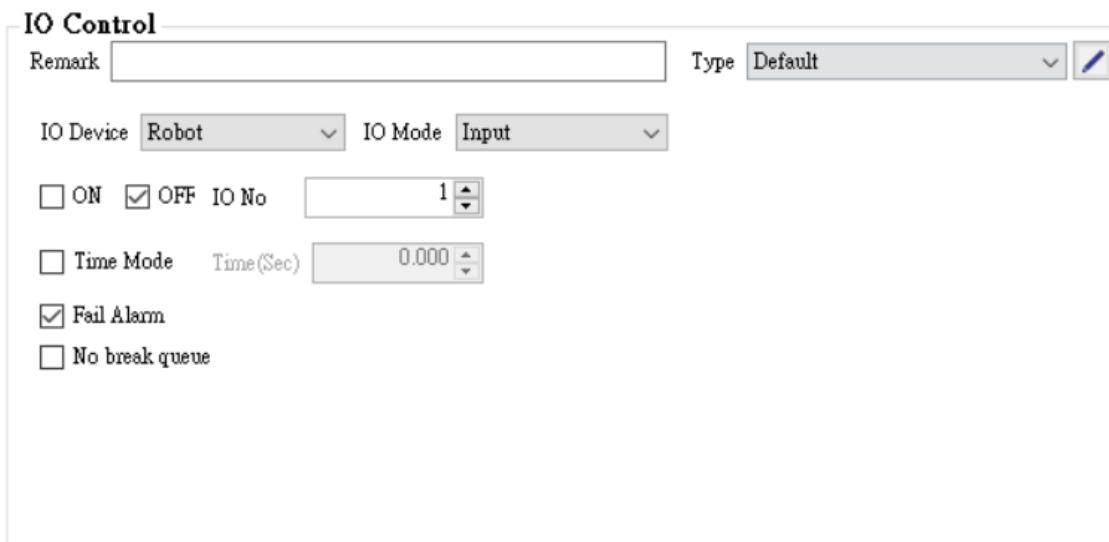


Figure 252: IO control command interface

Name	Description
Remark	You can fill in any comments.
IO device	Which device to use for IO operations.
IO mode	Select the mode to be input or output. (Input mode means reading IO, and output mode means doing output IO.)
On and off	In the input mode state, to check whether the input IO matches the set switch; in the output mode, the output IO is set to the set switch.
IO number	IO number. (Start from 1.)
limited time mode	In the non-time-limited mode, the input mode will wait until it is met before ending the command action. The output mode will proceed to the next command action after setting the IO. In the limited time mode, if the input does not match within a certain period of time, an error will occur. In the output mode, after setting the IO, wait until the time is up, and then switch the IO back to the set reverse state. (Set to on, and will turn off when finished.)
Time (unit: seconds)	Specify the duration of the limited-time mode.
Failure warning	Warn when operation fails and stop operation.
Not dividing the action	Before performing the IO action, perform a 3D height measurement action.

Note: For IO switch control, you can operate it on the IO Control Tool page in the toolbar.

6.2.24

Process control (IF-ELSE (conditional execution)) function

The process control page runs different actions based on the detection results.

Name	Description
Control Method	Select a label. (IF,ELSEIF,ELSE,END)
condition	Select label content. (TRUE, FALSE)
Advanced	Set advanced instructions. (Operator instructions can be used: AND, OR, >, <, >=, <=, =, !=)
little helper	You can directly select the required conditions.
internal conditions	No conditional instructions are set (for example: IO control, image recognition, positioning conditions) This option must be checked

Detailed description is as follows:

- (1) It allows the program to run different actions based on the results of specific actions (currently supported: IO commands and image recognition detection commands).
- (2) Instructions that can be combined with IF-ELSE are called "conditional instructions", which means that the instruction will output a piece of information based on its work results, allowing the IF-ELSE instruction to determine whether True or False is to be executed.

6.2.24.1 IO commands and image recognition detection commands

Name	Description
IO instructions	Determine whether a certain IO input operates correctly to determine subsequent operations.
Image recognition command	Check whether the image detection is correct. to determine subsequent work.

6.2.24.2 IO command and image recognition detection command function description

(1) IO commands and image recognition commands

(A) It was originally designed that when an IO or image command fails, the job will be stopped directly and a warning will pop up. In order to cooperate with IF-ELSE, the IO command has a new "failure warning" option, which is enabled by default. When the command fails, the job will be stopped., if you want to use IF-ELSE, you need to turn off this option manually.

(B) The image detection command is preset to run after all dispensing operations are completed. You can check "Run Immediately" to indicate that it will run during the operation instead of waiting until all dispensing operations are completed.

6.2.24.3 Instructions for using IO commands and image recognition detection commands

(1) IF-ELSE tag (command)

(A) Select tag: IF-ELSEIF-ELSE-END.

(B) Select label content: Currently supports True and False.

(C) Tags must be in pairs, Ex: IF...END, IF...ELSE...END, IF...ELSEIF...ELSE...END.

(D) Supports nesting, Ex: IF...IF...END...END.

(2) conditional directive

(A) The conditional instruction must be placed before the IF-ELSE tag to serve as the condition of IF-ELSE.

(B) Case description: If you want to decide whether to run glue removal based on the results of image recognition, this is a practical case. First run an image detection, and then follow a set of IF..END instructions, which wraps a glue removal instruction. In this case, the clear glue command will only be run if the image detection fails.

Index	Work	Data	Hint	Remark
0	Image Inspection	Type:Default		
1	IF	Type:Default		
2	Line	Type:Default		
3	END	Type:Default		

Figure 253: Case tutorial file

6.2.24.4 Instructions for use of the little helper

Example description: Set the time limit of colloid 1 to be greater than 100 minutes and execute the action process

(1) First select the required control method (IF, ELSEIF, ELSE, END) and input it. After selecting, check the "Advanced" option, and then click the "Little Helper" on the right.

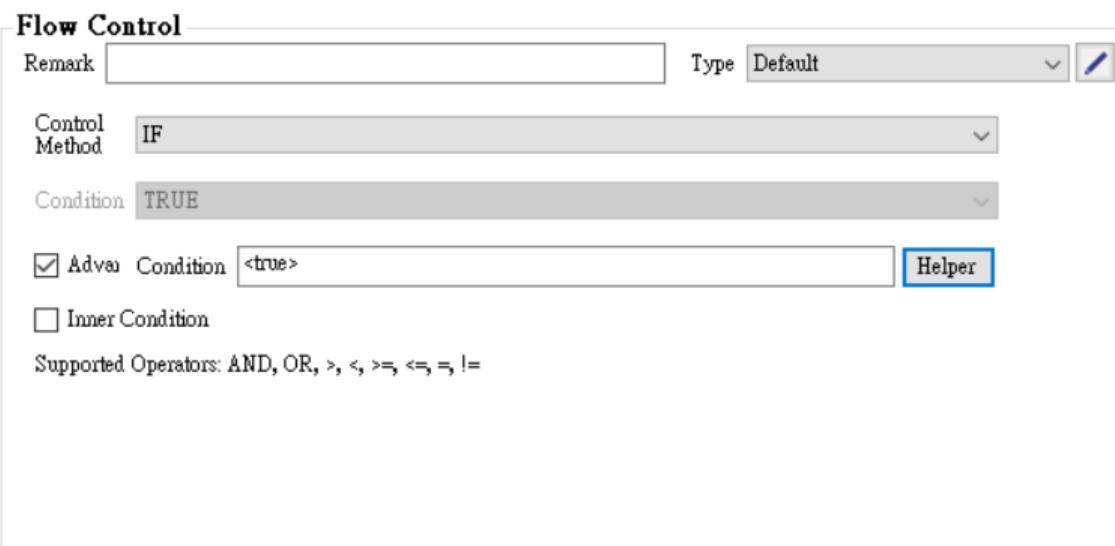


Figure 254: Check Advanced and click Helper

- (2) Enter the condition helper, select the condition (Expr) you need, set the conditional expression, and enter the range value

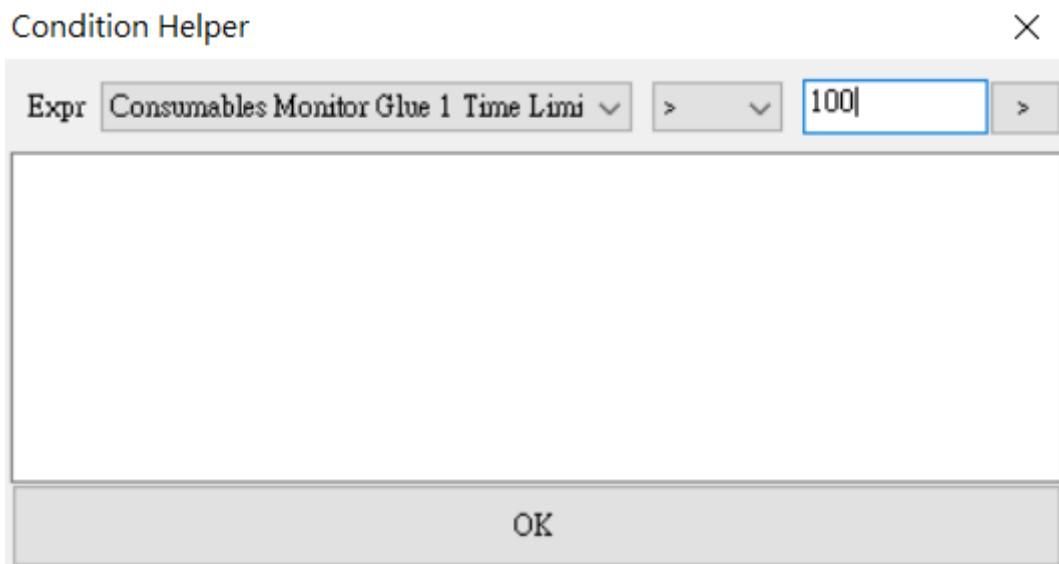


Figure 255: Establish conditions and condition scope

- (3) Click the ">" button to bring in the data and click "OK"

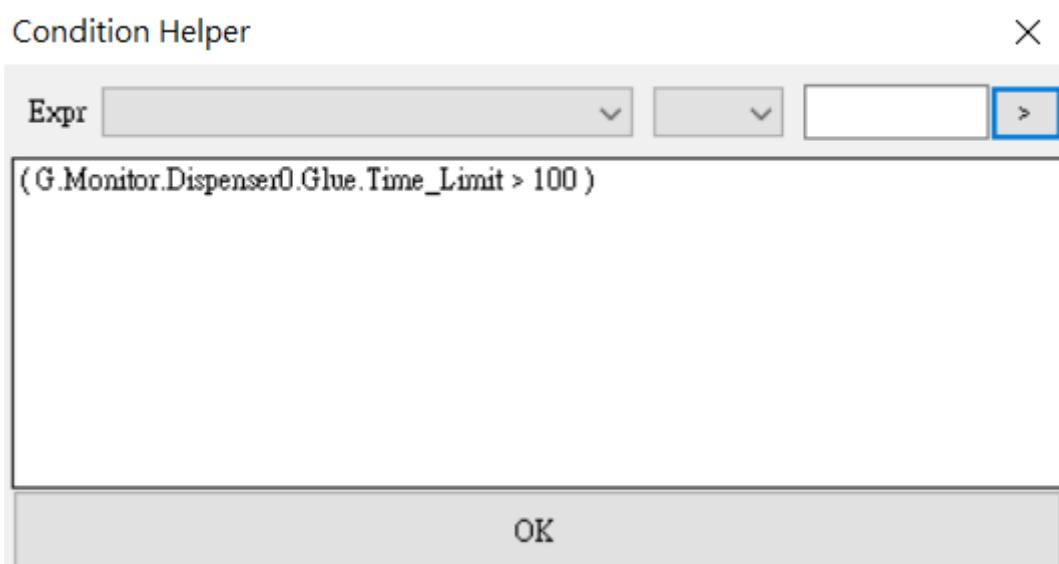


Figure 256: Bring data into

- (4) Return to the process control instruction interface and you can see the conditions

<input checked="" type="checkbox"/> Advan Condition <expr> (G.Devices.Dispenser0.Temperature1 > 110)	<input type="button" value="Helper"/>
--	---------------------------------------

Figure 257: Return to the command interface and see the conditions set up

- (5) The process description in the figure below: If the time limit of colloid 1 is greater than 100 minutes, then enter the clear glue, otherwise, enter the spraying.

Flow Control

Remark	Type Default	<input type="button" value=""/>
Control Method	IF	<input type="button" value=""/>
Condition	<input type="button" value=""/>	
<input checked="" type="checkbox"/> Advan Condition <expr> G.Monitor.Dispenser0.Glue.Time_Limit	<input type="button" value="Helper"/>	
<input type="checkbox"/> Inner Condition		
Supported Operators: AND, OR, >, <, >=, <=, !=		
Subprogram main	<input type="button" value=""/>	
Index	Work	Data
0	IF	Type:Default
1	Purge	Type:Default
2	ELSE	Type:Default
3	Line	Type:Default

Figure 258: Description of how conditions work

6.2.25 Targeting criteria

The positioning conditions page mainly provides the option of selecting image identification points to perform identification and positioning.

Adjustment Cond

Remark	Type Default	<input type="button" value=""/>
Recognition	1	<input type="button" value=""/>

Figure 259: Positioning criteria command interface

Name	Description
Image recognition	Select the image recognition point to perform recognition positioning.

6.2.26 Double identification point size measurement

On the dual recognition point size measurement page, through the "double recognition point size measurement" function command, image recognition is performed at two points, and then the distance between the two image recognitions is calculated. It can cooperate with "multi-point recognition point merging" to merge the photo points together to reduce the number of shots required. However, the light source and camera parameters must be the same to take pictures together.

Dual Inspection Size Measure

Remark	Type	Default	<input type="button" value="Edit"/>
Recognition1			
Null	<input type="button" value="Parameter"/>	Lower Limit (mm) 0.000	
Coordinate			
Go	X 0.000	Y 0.000	Z 0.000
Recognition2			
Null	<input type="button" value="Parameter"/>	Upper Limit (mm) 0.000	
Coordinate			
Go	X 0.000	Y 0.000	Z 0.000
<input checked="" type="checkbox"/> Fail Alarm <input type="checkbox"/> Inline			

Figure 260: Dual identification point size measurement interface

Name	Description
Image recognition point 1	The first coordinate image identifies the point.
Image recognition point 2	The second coordinate image identifies the point.
Image recognition method field	Select the image recognition method you want to use.
Coordinate	Coordinates of image recognition.
Minimum length (mm)	Set the lower limit of length for dimension measurement.
Maximum length (mm)	Set the upper limit of length for dimension measurement.
Length correction (mm)	When there is an error between the photographed position and the actual position, the length correction value can be set.
Failure warning	Warn when operation fails and stop operation.
Go	Move the machine to the coordinate position.

6.2.27

Flying spray mode correction (line)

On the Flying Spray Mode Correction (Line) page, after the line segment is saved, you can click the Flying Spray Mode Correction. This function is mainly for continuous coating with a set number of dots in a line segment.

K Jet On The Fly Setting - K&S Advanced Dispensing Software V2K

Initial Data

Line Starting Location (mm)

Go	X	0.000	Y	0.000	Z	0.000	C	0.000	Subprogram	main
----	---	-------	---	-------	---	-------	---	-------	------------	------

Line Ending Location (mm)

Go	X	313.043	Y	-20.870	Z	0.000	C	0.000	Type	Default
----	---	---------	---	---------	---	-------	---	-------	------	---------

Speed(mm/sec) 50.0 Start location lead (mm) 0.000 Pre-Acceleration Distance(mm): 10.000

New Data

Speed(mm/sec) 50.0 Start location lead (mm) 0.000 Acceleration Distance (mm) 10.000

Setting Spacing

First Step

Initial Point

Go	X	0.000	Y	0.000	Test
----	---	-------	---	-------	------

Second Step

Initial Point

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Ending Point

Go	X	0.000	Y	0.000
----	---	-------	---	-------

Dot Quantity By Number Of Droplet 2

Third Step

Dot Quantity By Number Of Droplet 2

Figure 261: Flying spray mode correction interface

Name	Description
original data	After the line segment is saved, the coordinate values will be automatically read in.
Line starting position (mm)	The coordinate where the line starts.
Line end position (mm)	The end coordinate of the line segment.
Starting Point (Phase 1 Testing)	The starting coordinate of the program line segment setting.
Test	Initial operational testing of this feature. (Test start coordinate)
Second stage	Teach the current coordinates.
Starting point (mm) (second stage)	In the second stage, the starting point of coordinates is actually set.
End point (mm) (second stage)	The actual coordinate end point of the second stage is set.
Number of points (second stage)	Single points for actual work.
The third phase	Teach set point quantity.
Number of points (third stage)	Set the number of job orders.
Go	Move the machine to the coordinate position.

This function is mainly for continuous coating of line segments by setting the number of dots. It is an example of continuous coating in galloping mode on line segments.



Figure 262: Dot coating example

6.2.27.1 Calibration process of galloping coating mode

(1) speed correction

- (A) Select the line drawing command function, enter the coordinates of the starting point and end point of the line segment, and add a new line segment command.
- (B) Enter the "Flying Coating Mode Calibration" button.

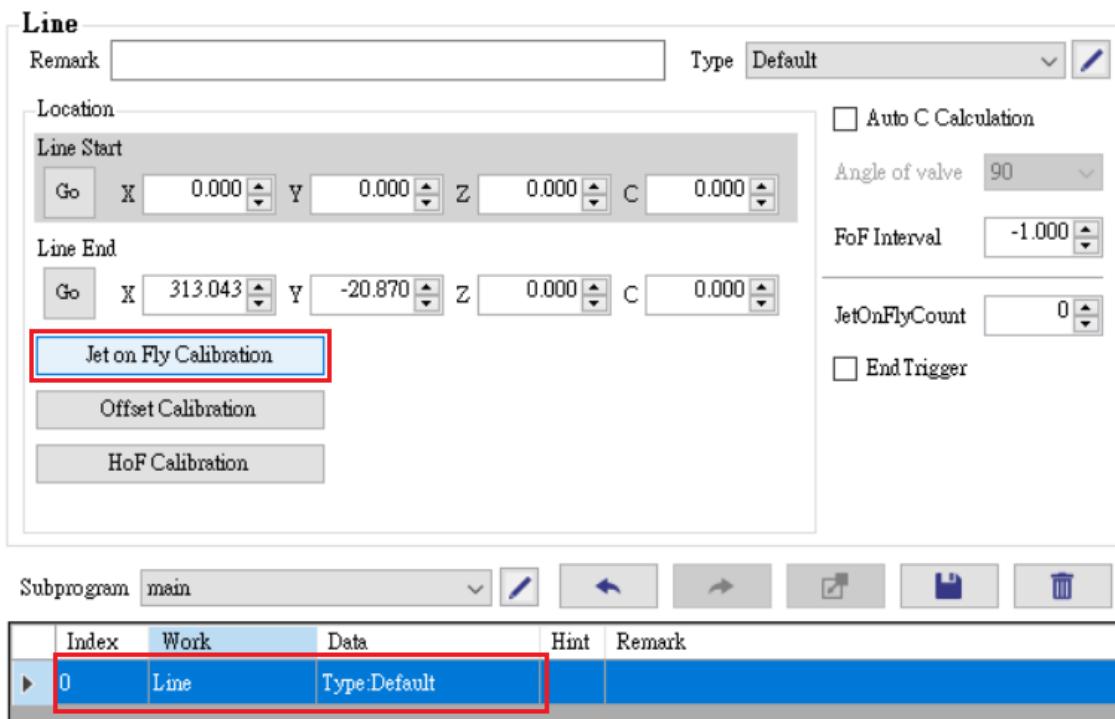


Figure 263: Click on the line segment command to correct the galloping spray mode

- (C) Carry out the first stage starting point test (the initial value is the starting point of the set line segment).

Setting Spacing

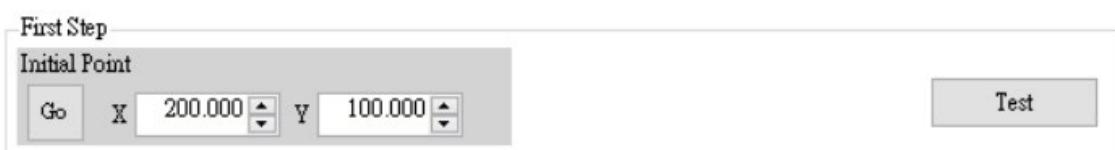


Figure 264: First stage setup

- (D) After the actual spraying test in the first stage is completed, the starting point, end point coordinates and number of points of the actual spraying are entered in the second stage.

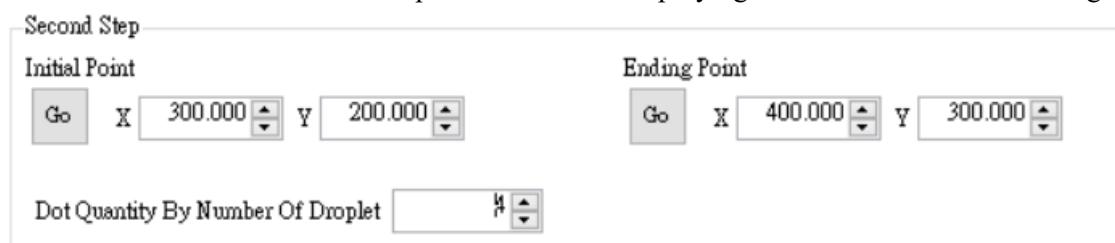


Figure 265: Second stage setting

(E) In the third stage, enter the required number of dots, generate a new coating speed in the new data field, and click the (→) button to proceed to the next step.

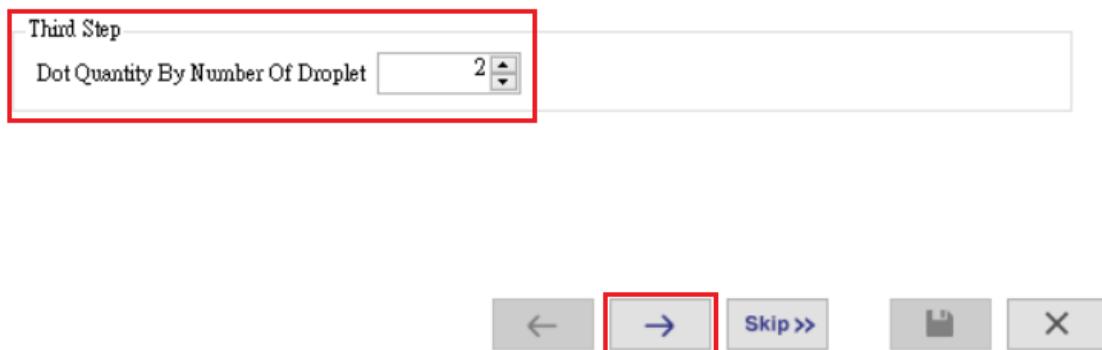


Figure 266: The third stage setting

(2) Starting point position correction

(A) In the first stage, the coordinate position of the test starting point is input for actual testing.

Setting Offset

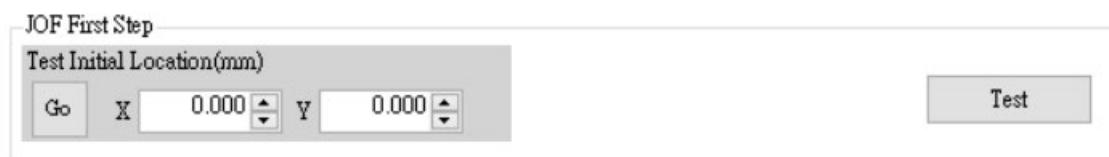


Figure 267: Phase 1 testing

(B) In the second stage, the coordinate position after the actual dotting in the first stage is input.

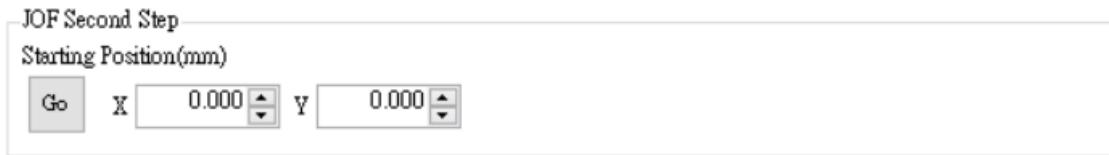


Figure 268: Phase 2 testing

(C) The software will automatically calculate the compensation starting point position. When completed, click "Save" to exit.

Finish Setting, Save To Leave



Figure 269: The software automatically calculates, saves and exits after completion.

6.2.28 Drop point correction (line)

Drop point correction (line), the speed factor, deviation factor, Type used dispensing parameters, and line speed in drop point correction may change due to some settings, and the difference in the drop point of dispensing at different speeds will be uneven. Therefore, dynamic drop point correction is required to correct these two parameters in Type (manual adjustment is not recommended).

Method Dynamic

Height Offset

Run HeightTest

HeightTest Position

Go X 0.000 Y 0.000 Z 0.000

Line1

Line Start Position

Go X 0.000 Y 0.000 Z 0.000 Speed 0.00

Result Start Position

Go X 0.000 Y 0.000 Z 0.000

Line2

Line Start Position

Go X 0.000 Y 0.000 Z 0.000 Speed 0.00

Result Start Position

Go X 0.000 Y 0.000 Z 0.000

Figure 270: Drop point correction (line)

Name	Description
height correction	When performing height measurement, select height correction.
Perform altimetry	Perform height measurement.
Height measurement point coordinates	Correct the height measurement of the starting point of the line segment.
method	Select the correction method. (Start point correction, end point correction, dynamic correction.)
Starting point correction	Correct the starting point of the line segment.
End point correction	Correct the position of the end point of the line segment.
Dynamic correction	Correct the entire line segment point position.
implement	Perform drop point correction.
Correction	Calibration results.
Go	Move the machine to the coordinate position.
Line starting point coordinates	The coordinates of the starting point of the original line segment.
Actual starting point coordinates	Actual line segment coordinates.
Speed	Line speed.

6.2.28.1 Drop point correction (line)

- (1) Choose the method you want to use.

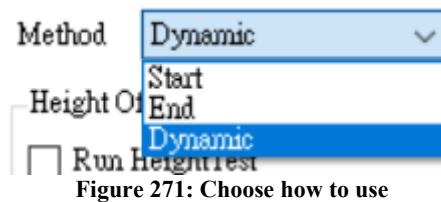


Figure 271: Choose how to use

- (2) After ticking, height measurement will be done during execution.

Height Offset

Run HeightTest

HeightTest Position

Go X 0.000 Y 0.000 Z 0.000

Figure 272: Perform altimetry

- (3) V2K software position and actual dispensing position are taught

Height Offset

Run HeightTest

HeightTest Position

Go X 0.000 Y 0.000 Z 0.000

Figure 273: Teach the actual position of dispensing glue

- (4) After confirmation, press Execute, and after correction is completed, press Calibrate.

Line1

Line Start Position

Go X 0.000 Y 0.000 Z 0.000 Speed 0.00

Result Start Position

Go X 0.000 Y 0.000 Z 0.000

Line2

Line Start Position

Go X 0.000 Y 0.000 Z 0.000 Speed 0.00

Result Start Position

Go X 0.000 Y 0.000 Z 0.000

Figure 274: Calibration completed

- (5) After confirmation, press Execute, and after correction is completed, press Calibrate

Run Test Calibration

Figure 275: Click to finish the correction

6.2.28.2 Flying height measurement correction (line)

Flying height measurement calibration (line), using flying height measurement must be calibrated before it can be used. Continuous height measurement is performed based on the set coordinate path, so that the height of the glue path changes with the measured value.

Spacing Time (ms)	<input type="text" value="0.000"/>	<input type="button" value="Run Calibration"/>
Diff Threshold	<input type="text" value="0.050"/>	
Matching Diff:		

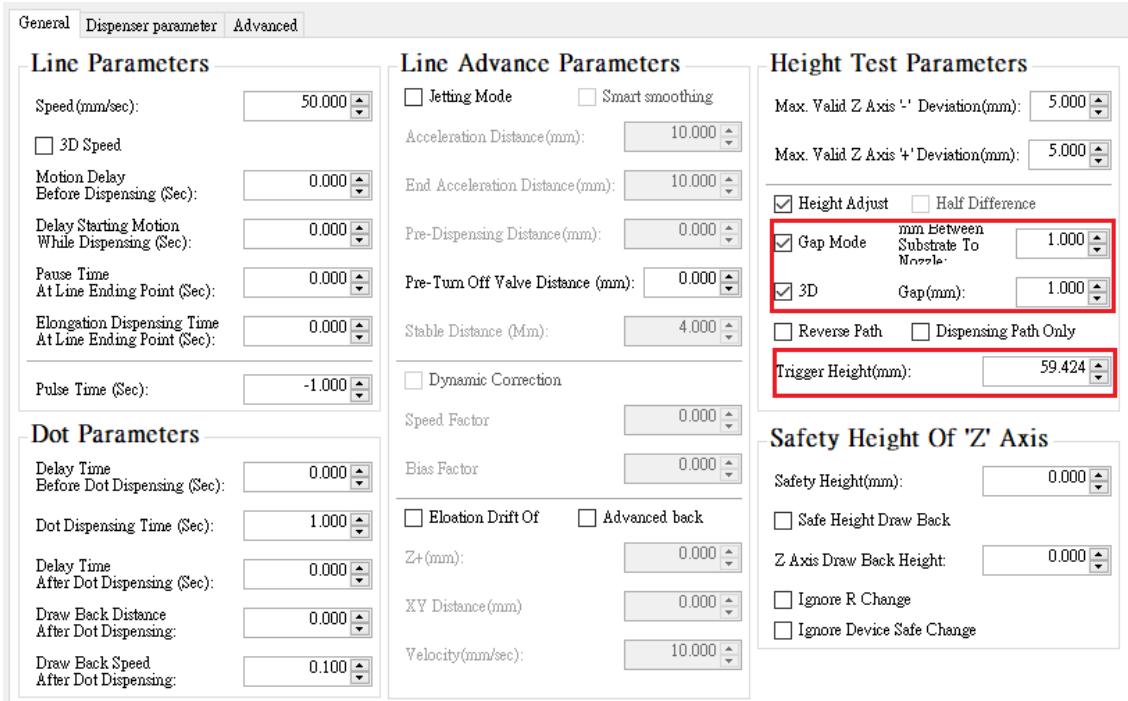
Trigger Delay (ms) :

Figure 276: Flying Height Calibration (Line) Interface

Name	Description
Measurement interval (milliseconds)	The interval between dash height measurement and general 3D height measurement.
Error tolerance	The allowable error value between Dash height measurement and general 3D height measurement.
Comparison error	The software calculates the error value between dash height measurement and general 3D height measurement.
Trigger delay	The delay time between Dash height measurement and general 3D height measurement.

6.2.28.3 Feiben height measurement calibration process

- (1) Enter the type → General, check the height correction, spacing mode and 3D, complete the activation of the 3D height measurement function, and enter the trigger height value (the trigger height can be substituted by the Z-axis height obtained by performing the height test on the starting line segment) trigger height").



The screenshot shows the 'Dispenser parameter' tab selected in the top navigation bar. The interface is divided into several sections:

- Line Parameters:** Speed (mm/sec): 50.000, 3D Speed checked, Motion Delay Before Dispensing (Sec): 0.000, Delay Starting Motion While Dispensing (Sec): 0.000, Pause Time At Line Ending Point (Sec): 0.000, Elongation Dispensing Time At Line Ending Point (Sec): 0.000, Pulse Time (Sec): -1.000.
- Line Advance Parameters:** Jetting Mode checked, Smart smoothing unchecked, Acceleration Distance (mm): 10.000, End Acceleration Distance (mm): 10.000, Pre-Dispensing Distance (mm): 0.000, Pre-Turn Off Valve Distance (mm): 0.000, Stable Distance (Mm): 4.000, Dynamic Correction unchecked, Speed Factor: 0.000, Bias Factor: 0.000.
- Height Test Parameters:** Max. Valid Z Axis '-' Deviation(mm): 5.000, Max. Valid Z Axis '+' Deviation(mm): 5.000, Height Adjust checked, Half Difference unchecked, Gap Mode checked, mm Between Substrate To Nozzle: 1.000, 3D checked, Gap(mm): 1.000, Reverse Path unchecked, Dispensing Path Only unchecked, Trigger Height(mm): 59.424.
- Dot Parameters:** Delay Time Before Dot Dispensing (Sec): 0.000, Dot Dispensing Time (Sec): 1.000, Delay Time After Dot Dispensing (Sec): 0.000, Draw Back Distance After Dot Dispensing: 0.000, Draw Back Speed After Dot Dispensing: 0.100.
- Safety Height Of 'Z' Axis:** Safety Height(mm): 0.000, Safe Height Draw Back unchecked, Z Axis Draw Back Height: 0.000, Ignore R Change unchecked, Ignore Device Safe Change unchecked.

Figure 277: Dispensing type setting

- (2) Setting type → Advanced, fill in a number greater than 0 in the "Maximum speed of galloping height measurement" field in the galloping height measurement block to enable the galloping height measurement function. This parameter represents the permission allowed when running galloping height measurement. The upper limit speed of machine movement. (When the maximum

speed of galloping height measurement is entered as 0, only general 3D height measurement will be performed.)

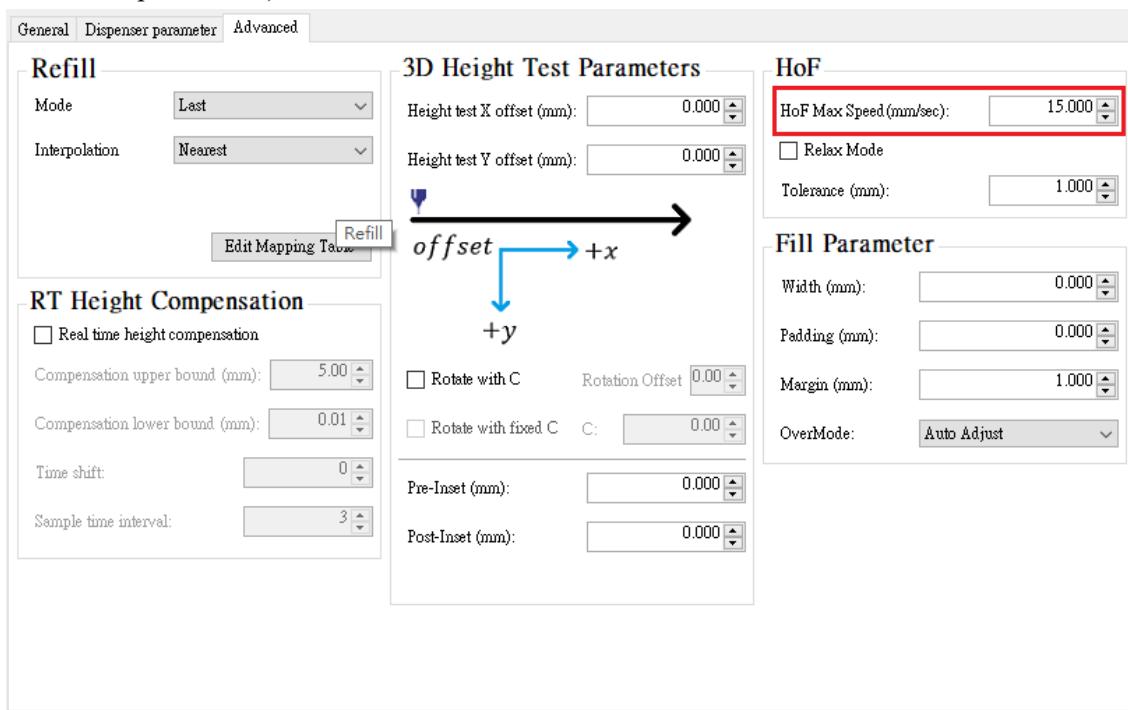


Figure 278: Set the maximum speed for galloping height measurement

- (3) Teach a section of "Line" command to enable the flying height measurement correction, and select the type of the line segment that has the flying height measurement function enabled. After saving, click "Flying Height Measurement Calibration" to enter the calibration page. (It is recommended that the selected line segment path has obvious height changes. In this case, the correction effect will be better.)

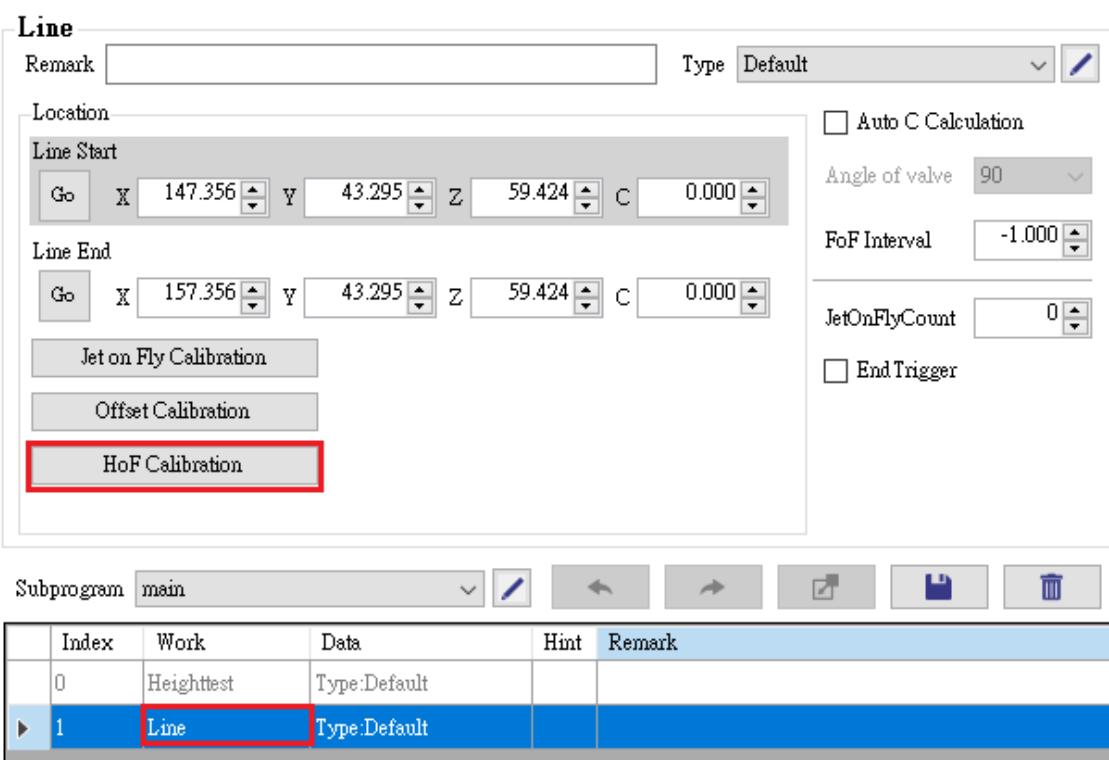


Figure 279: Click Flying Height Calibration to enter Flying Height Calibration.

- (4) After entering the calibration page, first click the Run Calibration button, and then the program will run two height measurements, one for single-point height measurement and the other for dash height measurement.

Spacing Time (ms) Run Calibration

Diff Threshold

Mathcing Diff:

Trigger Delay (ms) :

Figure 280: Carry out height measurement test

- (5) After two height measurement runs are completed, the software will display the "comparison error" and "trigger delay". When the error is within the set range, the archive can be confirmed.

Spacing Time (ms) Run Calibration

Diff Threshold

Mathcing Diff: 0.000370014

Trigger Delay (ms) : 28.521

Figure 281: Show results

- (6) The calibration results of trigger delay can be found on the height detector calibration page under the calibration interface. In addition, another parameter of galloping height measurement is the acceleration distance. This parameter is mainly used to avoid the acceleration and deceleration at the head and tail during galloping height measurement from affecting the height measurement results.

Camera Rotate Center HeightSensor Dispenser Offset Height Offset Calibration Other Device Position Misc

Height Sensor Device Position

Height Sensor Device Coordinate

Go X Y Z C

Camera Position

Go X Y Z C Offset X: 0.000
Offset Y: 0.000

Rotate wth C

Height Sensor Setting

Not move with Z axi Manual Mode

Laser HeightSensor

Before Delay (Sec)

After Delay (Sec)

Pulse Time (Sec)

Diff Tolerance (mm)

Precision Mode

HoF Calibration

Acceleration Distance (mm)

Trigger Delay (ms)

Figure 282: Change the galloping height measurement value from the calibration interface

Note: If the values of 3D height measurement (such as the distance between the needle and the working surface (mm)) and the maximum speed of HoF flying height measurement (mm/sec) are modified, the flying height measurement must be recalibrated before it can continue to be used.

6.2.28.4 Flying height measurement report

If you have performed the flying height measurement action, you can go to a specific folder, search for the flying height measurement files, and view the flying height measurement values. Location: V2K folder → HeightRecognition folder → Find the CSV file of the current date. Open the CSV file and you will see two rows of measurement results. (The above is the 3D height measurement, the bottom is the HoF height measurement), frame them and make a chart to see if the correction values are similar.

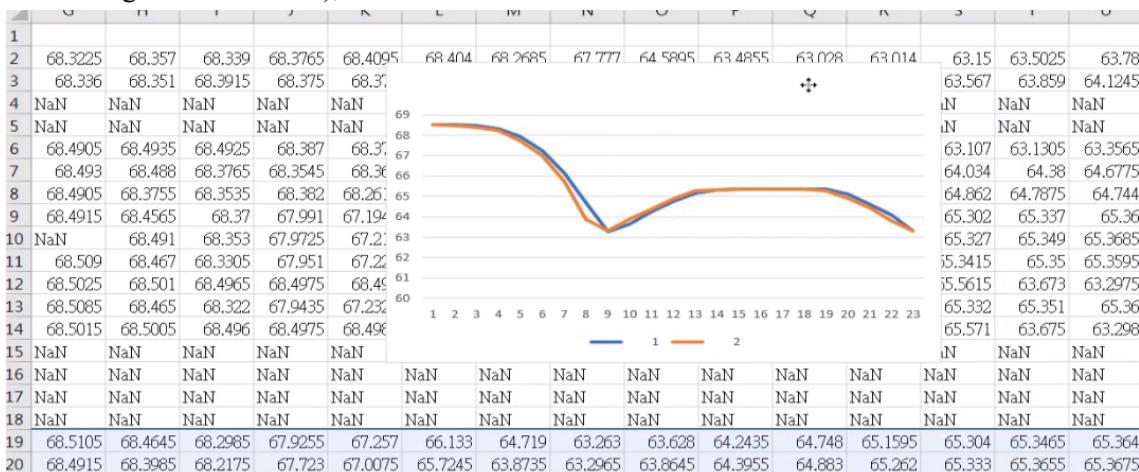


Figure 283: Test results converted into curve graph

Note: The two rows of values will not be the same, there will be a delay difference, and they need to be corrected before the two rows of values will be close.

6.2.29 Sensor command

On the sensor command page, select the sensor device to be used and the target to be written.

Sensor Command

Remark

Sensor Name

Action

Measure

Target

Factor

1.000

Figure 284: Sensor command interface

Name	Description
Sensor name	Select the device you want to sensor.
action	The sensor function operates. (Measure, reset device, stop and record accumulated value, reset device.)
Target	The target to write to.

6.2.30 Repeat

When the page is executed repeatedly, when calling a group, the image recognition is not executed repeatedly, only the gluing action is executed.

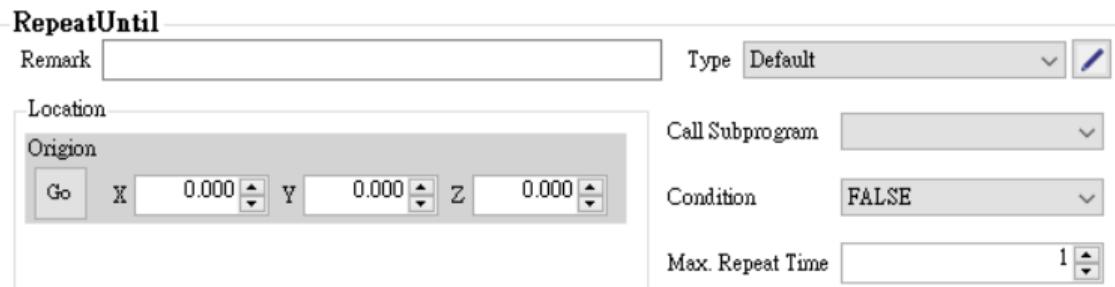


Figure 285: Repeat command interface

Name	Description
Origin	The origin of repeated execution.
Call group	Select the group you want to call.
Repeat condition	Select condition content. (TRUE, FALSE)
Maximum number of repetitions	The maximum number of repetitions to perform.
Go	Move the machine to the coordinate position.

6.2.31 External array coordinate points

On the External Array Coordinate Points page, set the position when the group uses the coordinate points of the external array.

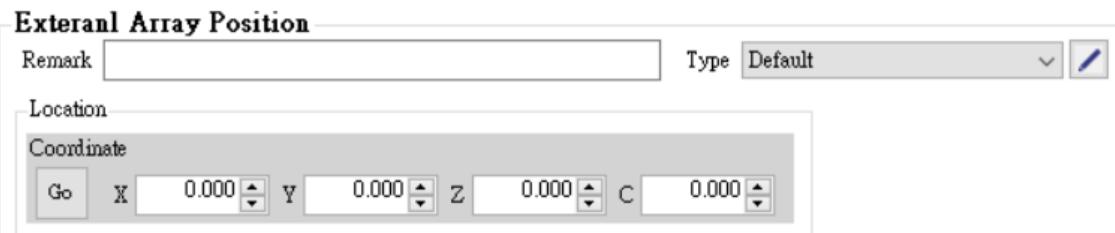


Figure 286: External array coordinate point command

6.2.32 External array call group

External array call group page, call other groups, perform external array.

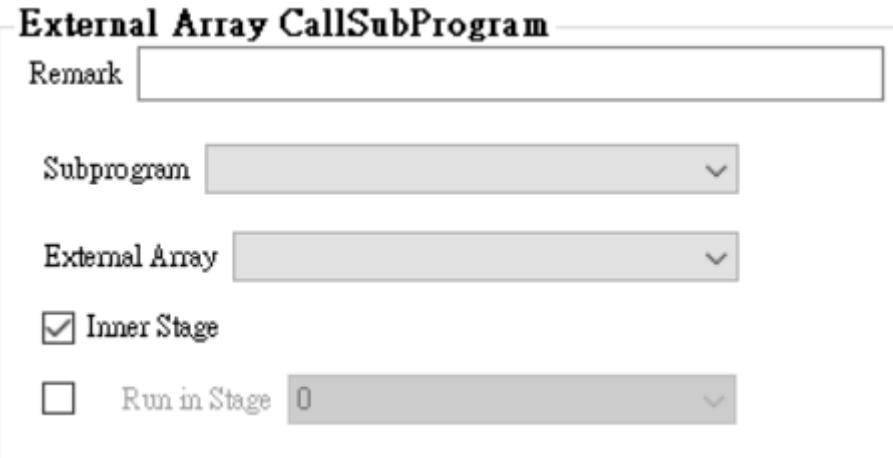


Figure 287: External array call group command

Name	Description
Call group	Call other subgroups.
external array	Select the external array teaching file.
Inner Stage	When enabled, this command becomes an independent Stage. Main's image recognition correction will not be affected when running the group.
running phase	Change the order of stages in a run.

6.2.33 Pick

Grab the page, teach the coordinate position, and move to the specified location to perform the grabbing action.

Pick



Figure 288: Pick instructions

6.2.34 place

Grab the page, teach the coordinate position in advance, and use other devices to move it to the designated position for placement and image recognition.

Place

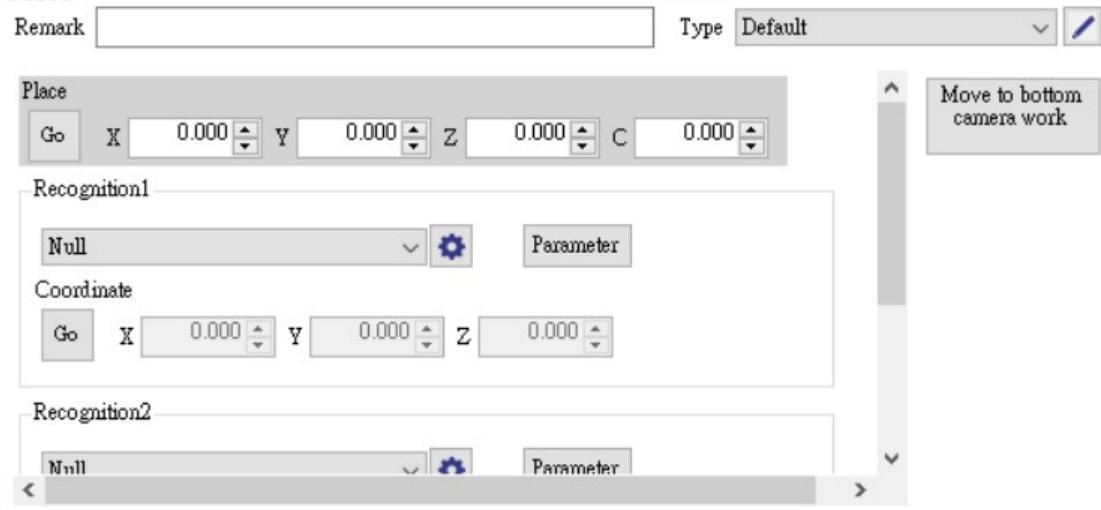


Figure 289: placement instructions

Name	Description
Placement	Place coordinates.
Image recognition point 1	The first coordinate image identifies the point.
Terminal deceleration distance	The deceleration distance at the end.
Terminal speed	Movement speed when moving to the end.
Move to lower camera working height	Move to lower camera working height.

6.2.35 Pick and Place

On the pick and place process page, this function is the integration of grabbing and placing. First move to the specified coordinate and perform the grabbing group action. Then move to the next coordinate and perform the placing group action.

PP Command

Remark Type Default

Pick Phase

ExternalArray Name CallSub Name
 Use Adjustment Auto Reset ExtArray Retry Times Fail Step Backward

Place Phase

ExternalArray Name CallSub Name Alarm
 Use Adjustment Auto Reset ExtArray Retry Times Fail Step Backward

Figure 290: Pick-Place directive

Name	Description
ExternalArray Name	Select the set external array file name.
CallSub Name	Select the set action group name.
Use Adjustment	Automatically correct position.
Auto Reset	Automatically recreate external arrays.
Retry Times	Number of consecutive failures.
Fail Step Backward	When failed, the step count will go back to the previous step.
Alarm	Alert on failure.

6.2.36 Trigger command

The trigger command page is usually used to replace the capture command and is used for running shooting. When reaching the corresponding coordinates, the axis card will send a trigger command to make the camera take pictures. Once the command is triggered, the camera will be triggered once. Currently only equal spacing is supported.

Trigger Command

Remark Type Default

Location

Coordinate

Go X 0.000 Y 0.000 Z 0.000 C 0.000
 Trigger Delay(Sec)

Map Setting

Figure 291: Trigger command

Name	Description
Coordinate	Camera shooting position.
Go	Move the machine to the coordinate position.
Trigger delay time	Delay and then trigger after reaching the coordinates.

6.2.37 Glue volume adjustment instructions

The glue amount adjustment command page provides a filling function every time the glue is applied. The required glue amount may not be reached due to other factors.

Dispensing Adjust

Remark	Type	Default	<input type="button" value="Edit"/>
VarKey	<input type="text"/>		
<input type="checkbox"/> Allow Fail Result			

Figure 292: Glue volume adjustment command interface

Name	Description
VarKey	The name of this information.
Allow Fail Result	Failure results are allowed.

6.2.38 Automatic parameter adjustment instructions

The automatic parameter adjustment page automatically adjusts the dispensing parameters based on the detection results to achieve the set glue width or glue height.

Auto Parameter Adujst Command

Remark	Type	Default	<input type="button" value="Edit"/>
Name	<input type="text"/>		
Target Target Key: <input type="text"/> Target: 0.500 Target Error: 0.050 Target Min: 0.400 Target Max: 0.600 Mode: Last		Adjusting Adjusted Name: pressure:FluidAir <input type="button" value="S"/> Valid Min: 0.000 Valid Max: 5.000 Slope: Positive Method: Ratio <input type="text"/> DispFlowTypes	

Figure 293: Automatic parameter adjustment instructions

6.3

Dispensing controller parameters

On the dispensing parameter setting page, the software can set and control two sets of dispensing devices at the same time, and can set the dispensing valve parameters separately. The parameters can store up to 100 groups, and the dispensing parameters can be adjusted for different dispensing device equipment. Modification, upload, download, mode parameter setting, scale calibration test, etc.

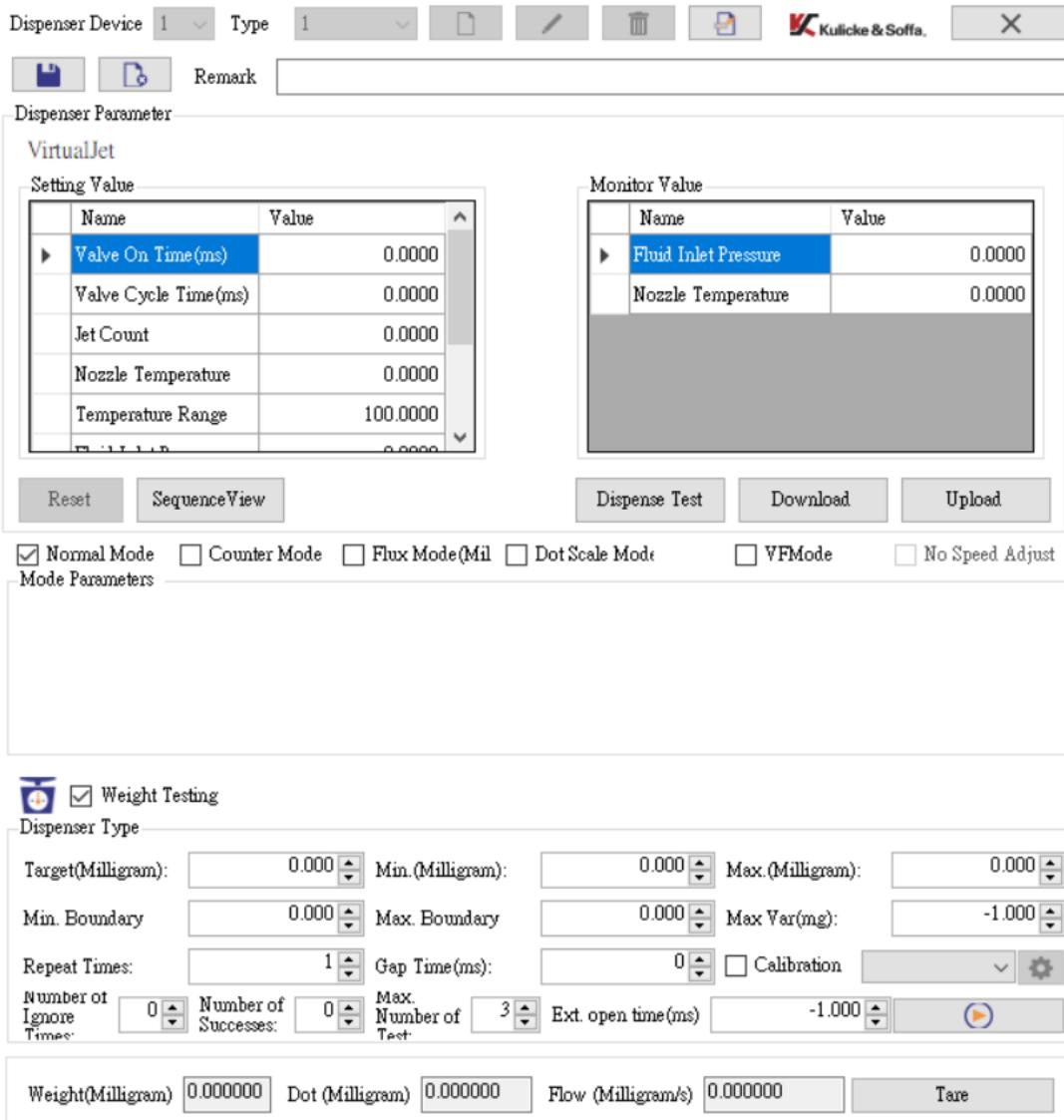


Figure 294: Dispensing controller parameter setting interface

6.3.1

Dispenser parameters and basic software functions

Dispenser parameters and basic software function pages.

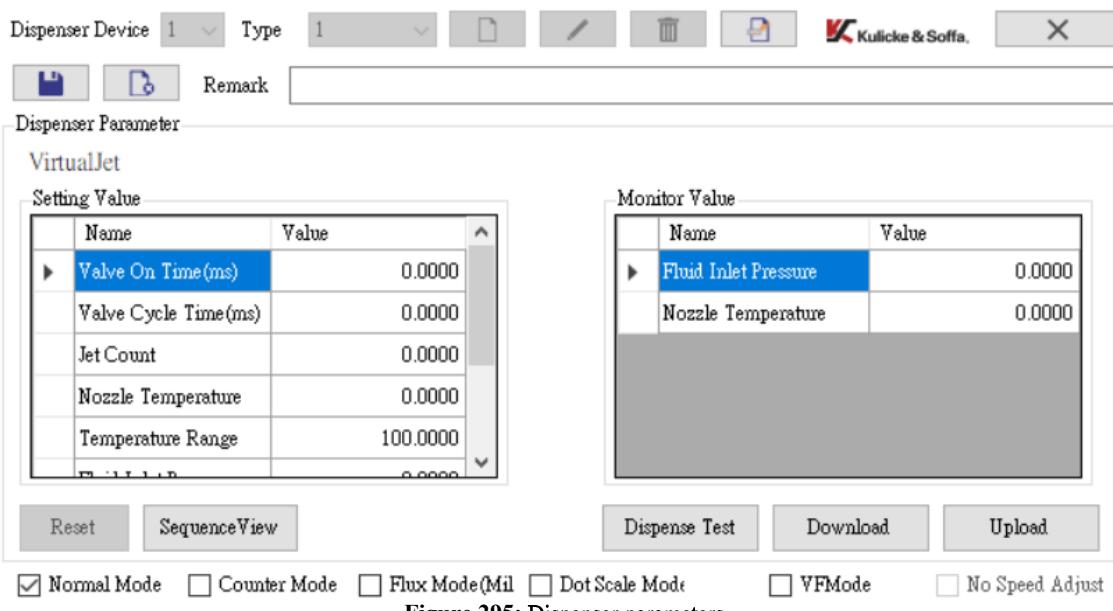


Figure 295: Dispenser parameters

Name	Description
Dispensing device	Select a dispensing device.
Valve body parameters	Select valve body parameters.
New	Added valve body parameters.
Edit	Edit dispensing parameters.
Delete	Delete dispensing parameters.
Import/Export	Import or export dispensing parameters.
Close	Close the dispensing page.
Save	Save settings.
Cancel	Cancel unsaved settings.
Set value	Display or modify the current parameters of the controller. Detailed parameter description.
Monitoring value	Monitor the current valve body nozzle temperature, etc. Detailed parameter description.
Reset	When the controller crashes, you can press the "Reset" button to restore the controller.
Glue in situ	Do the glueing action in place.
Download	Load the current parameters of the controller into the current screen.
Upload	Set the current UI settings into the controller (the dispensing parameters must be uploaded before they are saved). After changing the parameter settings, the font will be displayed in "red". After clicking "Upload", the font will be displayed in black.
Model	Select dispensing mode.
Frequency conversion mode	Check to enable dispensing frequency conversion mode.
No speed adjustment	In frequency conversion mode, the speed is not adjusted.

6.3.2

Parameter and mode description

On the setting value parameter page, different valves will have different parameter modes. For example, when changing the parameter values of the dispensing device, be sure to click the "Upload" button to update the changed parameter content.

Dispenser Parameter

VirtualJet

Setting Value	
Name	Value
Valve On Time(ms)	0.0000
Valve Cycle Time(ms)	0.0000
Jet Count	0.0000
Nozzle Temperature	0.0000
Temperature Range	100.0000

Monitor Value

Name	Value
Fluid Inlet Pressure	0.0000
Nozzle Temperature	0.0000

Buttons: Reset, SequenceView, Dispense Test, Download, Upload

Figure 296: Parameter adjustment interface

6.3.2.1

Description of dispenser parameter setting values and monitoring values

Name	Description
Valve On Time	Single trigger valve opening time. (Set in ms.)
Valve Cycle Time	The period of a single trigger signal. (Set in ms.)
Jet Count	Single trigger points, the number of set points, the number of points acted on a single input signal. (The value is set to 0 to represent the long-on mode and continuous dotting.)
Nozzle Temperature	Target nozzle temperature. If the nozzle temperature does not reach the target temperature, it will not start working. (The maximum temperature is 100°C, set in 1°C units.)

Temperature Range	Allowable range of target nozzle temperature.
Voltage	voltage size. (0V is up to 400V, set in 1V units.)
MMC	Sets the firing pin force mode to be used. (There are a total of 7 power levels to choose from.)
MMC Serial	Reserved information, not yet functional.
Rising Fact	Striker lift rise time (1 is used as a relative time reference value, set in ±0.01 units). The larger the Fact, the longer the time, the smaller the slope; the smaller the Fact, the shorter the time, the larger the slope.
Falling Fact	Striker drop fall time (1 is used as a relative time reference value, set in ±0.01 units). The larger the Fact, the longer the time, the smaller the slope; the smaller the Fact, the shorter the time, the larger the slope.
Purge	Specify the Purge time.
Timeout(s)	After the software starts to execute the work, if the target temperature and air pressure are not reached within the time, the execution of the work action will be interrupted.
Nozzle Temperature	Measure the current injection valve needle temperature. Note: It is different from the glue liquid.
Suggested Min. On Time	Recommended minimum valve opening time (varies depending on the type and model of the spray valve).
Suggested Min. Cycle Time	Recommended minimum frequency period (varies depending on the type and model of the spray valve).

6.3.2.2 Dispenser parameter selection mode description

Dispenser parameter selection mode, use this set of dispensing valve body parameters, and in which mode it operates.

Normal Mode Counter Mode Flux Mode(Mil) Dot Scale Mod: VFMode No Speed Adjust

Figure 297: Mode selection

Name	Description
Normal Mode	Use this set of dispensing valve body parameters.
Counter Mode	Use this set of dispensing valve body parameters and operate in quantitative point mode.
Flux Mode(Mil)	Using this set of dispensing valve body parameters, the weight of glue applied is adjusted through the system, and the machine speed is automatically adjusted.
Dot Scale Mode	Using this set of dispensing valve body parameters, the amount of glue applied is adjusted through the system, and the machine speed is automatically adjusted.

6.3.2.3 Traffic pattern

The flow mode interface uses flow mode to limit the flow rate of glue.

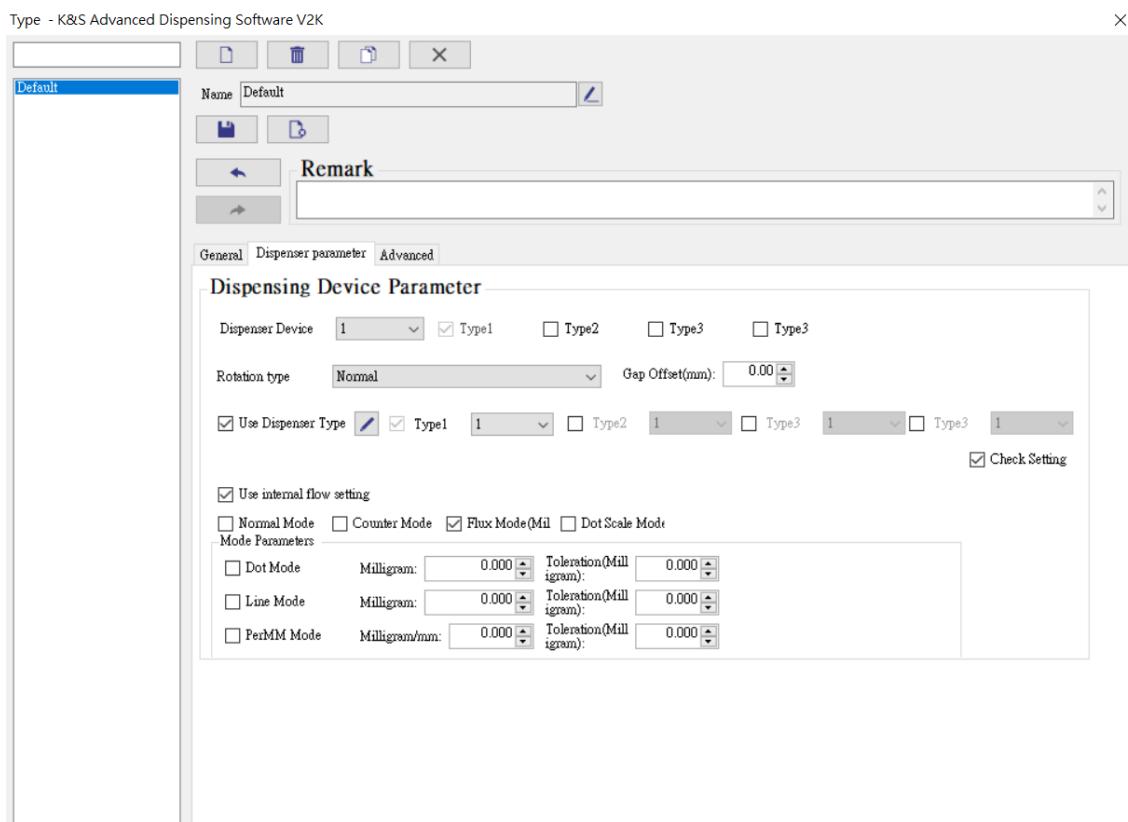


Figure 298: Flux Mode

Name	Description
Dot pattern mg	Set the amount of glue to be dispensed when drawing dots.
Line mode mg	Set the amount of glue to be dispensed when drawing lines.
Unit length mode mg/mm	Set the amount of glue to be dispensed per unit length (mm) when drawing lines.
milligrams	Set glue weight.
Tokeration (Milligram)	Set the allowable error range.

6.3.2.4 Dot Scele Mode

The quantitative mode interface allows you to limit the flow rate of glue in a quantitative manner.

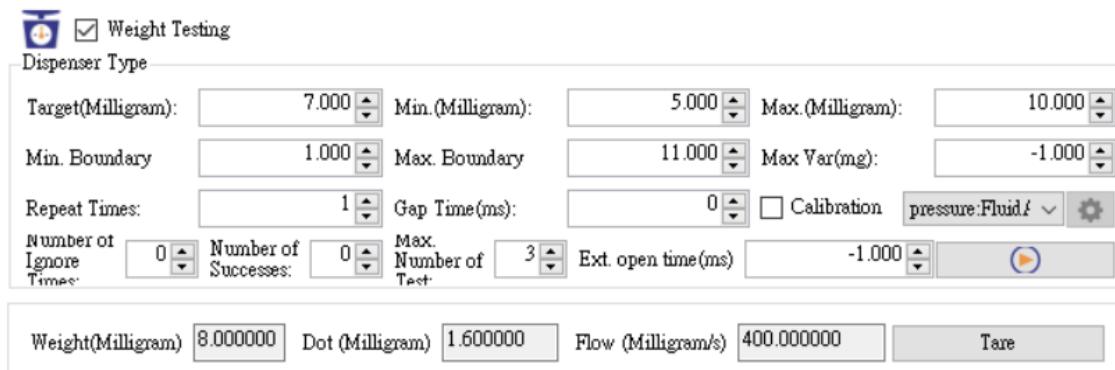
Dispensing Device Parameter

Figure 299: Quantitative mode interface

Name	Description
Dot pattern Dot	Set the number of glue dots to be printed when drawing dots.
line pattern points	Set the number of glue dots to be made when drawing lines.
Unit length mode points/mm	Set the number of glue dots to be printed per unit length (mm) when drawing lines.

6.3.2.5 Weighing test

Weighing test page, set parameters to apply glue, and use a micro-scale to measure the weight.



The screenshot shows the 'Weighing test' configuration window. It includes sections for 'Dispenser Type' and 'Calibration'. Key parameters include:

- Target(Milligram):** 7.000
- Min. (Milligram):** 5.000
- Max. (Milligram):** 10.000
- Min. Boundary:** 1.000
- Max. Boundary:** 11.000
- Max Var(mg):** -1.000
- Repeat Times:** 1
- Gap Time(ms):** 0
- Calibration:** pressure:Fluid I
- Number of Ignore Times:** 0
- Number of Successes:** 0
- Max. Number of Test:** 3
- Ext. open time(ms):** -1.000

Below these are status fields: **Weight(Milligram)** 8.000000, **Dot (Milligram)** 1.600000, **Flow (Milligram/s)** 400.000000, and a **Tare** button.

Figure 300: Weighing test function interface

Name	Description
Weighing test	Check to enable the weighing function.
Target(mg)	Expected measured target value weight.
Target lower limit, upper limit (mg)	Set the value range of the weight.
Upper limit of variation	The weight difference between two consecutive measurements, if the difference exceeds the set value, the weighing will be judged to have failed. If not enabled, enter "-1"
Clear glue upper lower limits	When the weighing result falls outside the set range, the software determines that there is glue accumulation and will perform a glue removal action.
Repeat times	Set the number of dispensing triggers before weighing.
Interval time (milliseconds)	The dead time between each trigger.
Correction parameters	Check the box to enable the correction parameter function.
Ignore count	Ignore the results of previous weighings.
Number of successes	Set the weighing result to be within the range several times in a row before passing the test.
Maximum times	Maximum number of weighings.
Traffic parameters	When the parameter correction function is enabled, select the parameter to be adjusted for weight correction. Click the setting button on the right to set the maximum and minimum values of the parameter to limit the adjustable range of the parameter.
Weight(mg) Point weight (mg) Flow (mg)	Final weighing result.
Zero adjustment	Reset the scale value to zero.

6.3.2.5.1 Weighing test process

- (1) When using a weighing test, the "Jet Count" of the dispenser must be greater than 0.
- (2) Weight range setting.
 - (A) When the weight is between the target lower limit and the target upper limit (green block), it means that the weight has reached a reasonable range (successful calculation once).
 - (B) When the weight exceeds the lower limit of glue clearing or the upper limit of clear glue (white area), it will be determined that the dispenser has glue accumulation. If the glue clearing function is enabled, the glue clearing action will be performed at this time.



Figure 301: Set value range

Name	Description
Green block	Reasonable weight range.
Blue block	Target upper and lower range.
White area	Determined to accumulate glue.

- (3) The behavior of weighing instructions.
 (A) The execution results are displayed.

Figure 302: Glue quantity weighing

6.3.2.6 Mono Pump Auger Valve Dispenser Instructions

Mono Pump screw valve dispenser, Stream Vision image dispensing control software can easily control the motor speed, acceleration, deceleration and glue dispensing metering of the Mono Pump screw valve through simple parameter settings and visual image settings., allowing users to easily and accurately control the Mono Pump gluing results.

6.3.2.7 The detailed parameter setting process is as follows:

- (1) The glue dispensing setting is the main glue dispensing flow rate (including motor acceleration, deceleration, rotation speed, and the total flow rate of a single glue dispensing).
- (2) Back-sucking sets the back-sucking of the glue material after the gluing action (including the reverse acceleration, reverse deceleration, reverse rotation speed of the motor during back-sucking, and the total flow rate of a single back-sucking).
- (3) After applying the glue evenly, set the suction and then push the glue to the needle again (including motor acceleration, deceleration, rotation speed, and total flow rate of a single glue dispensing).

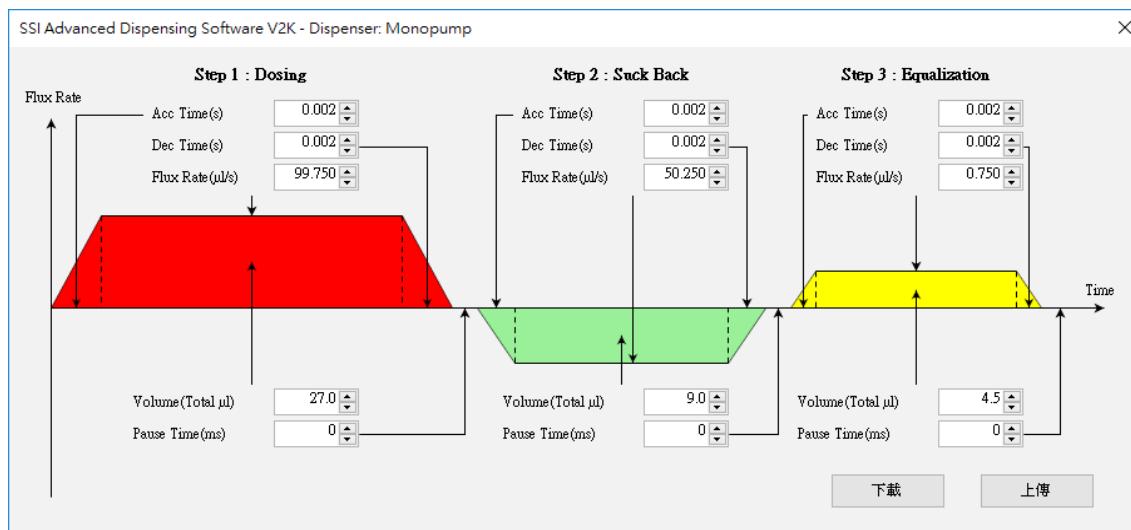


Figure 303: Mono Pump interface

Name	Description
Red Block (Phase 1 Dosing)	Dispensing glue sets the main glue flow rate.
Green Block (Phase 2 Suck Back)	Back-sucking sets the back-sucking of the adhesive material after the gluing action.
Yellow block (Phase 3 Equalization)	Apply glue evenly, set the suction back, and then push the glue toward the needle again.
Acc Times(s)	Set acceleration time/second.
Dec Times(s)	Set deceleration time/second.
Flux Rate(l/s)	Set flow rate.
Volume(Total l)	Set the total flow rate.
Pause Time(ms)	The pause time of each stage.

6.4 Dispensing type

The dispensing type page allows you to edit the dispensing parameter settings. The functions from left to right are general, dispenser parameters, and advanced functions.

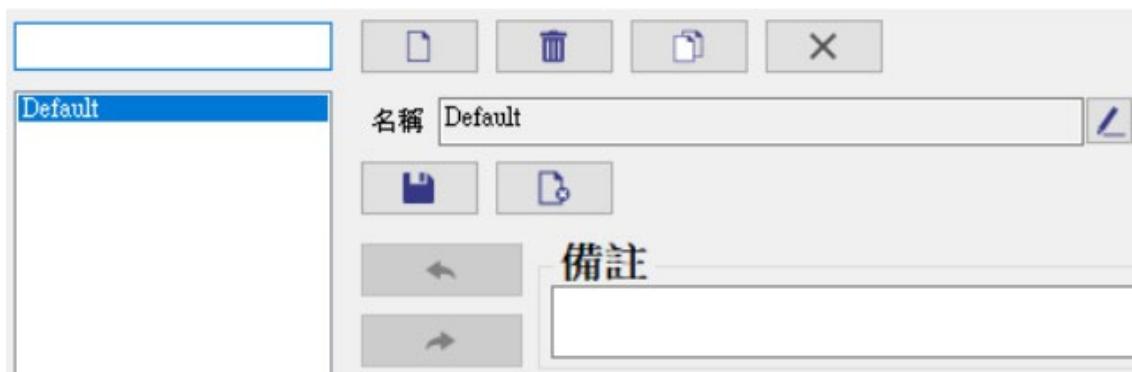


Figure 304: Dispensing type parameter interface

The basic operating functions are introduced below:

Name	Description
New	Add new page.
Remove	Remove page.
Copy	Copy the contents of pages and page settings.
Close	Close the page.
Name	Modify the type name.
Save	Save settings.
Cancel	Cancel unsaved settings.
Recovery action	Reply to the upper action and lower action.
Remark	You can fill in any comments.
Left form	Type form.

Generally	Set point and line and height testing and other related parameters.
Dispenser parameters	Edit valve body parameters and valve body control related settings.
Advanced	Advanced settings related to filling glue volume, flying height measurement, and filling.

6.4.1 Generally

On the general page, set the glue coating speed, glue breaking action setting when dot line glue coating, height test, pull back action after glue coating and other parameters.

6.4.1.1 Line parameters

Line Parameters

Speed (mm/sec):	50.000
<input type="checkbox"/> 3D Speed	
Motion Delay Before Dispensing (Sec):	0.000
Delay Starting Motion While Dispensing (Sec):	0.000
Pause Time At Line Ending Point (Sec):	0.000
Elongation Dispensing Time At Line Ending Point (Sec):	0.000
Pulse Time (Sec):	-1.000

Figure 305: Line parameter block

Name	Description
Speed(mm/sec)	The speed of line segments, such as line, arc, and circle coating movement speed.
3D speed	Unchecked: Set the speed to the XY plane glue coating speed. Checked: Set the speed to the XYZ three-dimensional plane glue coating speed.
Delay before start (seconds)	During the delay time before starting to apply line segment coating, the glue valve will not act first.
Delay after start (seconds)	During the delay time after starting line segment coating, the glue valve will not act first.
Delay before end (seconds)	After the line segment ends, delay time.
Delay after completion (seconds)	After the line segment ends, continue the glue application time.
Trigger time	Line segment spray trigger time.

6.4.1.2 Point parameters

Dot Parameters

Delay Time Before Dot Dispensing (Sec):	0.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Dot Dispensing Time (Sec):	1.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Delay Time After Dot Dispensing (Sec):	0.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Draw Back Distance After Dot Dispensing:	0.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Draw Back Speed After Dot Dispensing:	0.100 <input type="button" value="▲"/> <input type="button" value="▼"/>

Figure 306: Click parameter block

Name	Description
Delay before dotting (seconds)	Delay time before dispensing glue.
Valve opening time	Time to dispense glue at a single point.
Post-dot delay	Post-dot delay
Pullback distance of end point (mm)	After the glue is broken, the Z axis pulls back upward distance is set. If it is 0, it will not move.
Pullback speed at end point (mm/sec)	After the glue is broken, the speed of the Z-axis pulling back upward.

6.4.1.3 Line advanced parameters

Line Advance Parameters

<input type="checkbox"/> Jetting Mode	<input type="checkbox"/> Smart smoothing
Acceleration Distance(mm):	10.000
End Acceleration Distance(mm):	10.000
Pre-Dispensing Distance(mm):	0.000
Pre-Turn Off Valve Distance (mm):	0.000
Stable Distance (Mm):	4.000
<hr/>	
<input type="checkbox"/> Dynamic Correction	
Speed Factor	0.000
Bias Factor	0.000
<hr/>	
<input type="checkbox"/> Elevation Drift Off	<input type="checkbox"/> Advanced back
Z+(mm):	0.000
XY Distance(mm)	0.000
Velocity(mm/sec):	10.000

Figure 307: Line advanced parameter missing block

Name	Description
jet mode	By pre-accelerating the line segment coating before performing line segment coating, there will be no problems with the head or tail of the line segment due to the acceleration and deceleration of the machine.
Smart smooth motion	When spraying short-distance spaced line segments in spray mode , this function can be turned on. Coating and dry running can be carried out at the same speed, saving the time of repeated acceleration and deceleration.
Acceleration distance (mm)	Set when the injection mode is turned on, the pre-acceleration distance in the injection mode can be adjusted, thereby adjusting the consistency of the glue amount of the line segment.
Pre-glue dispensing distance (mm)	The distance of pre-glue before the line segment starts. When high-speed spraying occurs, there will be a difference between the target coordinates and the actual spraying coordinates. This function can be used to correct the situation.
Early glue breaking distance (mm)	Before the end of the line segment, the distance to stop glue dispensing in advance.
Settling distance (mm)	When using the smart smooth motion mode, the parameter conditions for calculating whether actions can be merged are mainly to ensure that the merged gluing actions and gluing effects can maintain a certain stability.
Dynamic correction	When used to correct dispensing parameters, the line speed

	may change due to some settings.
Speed factor	The value calculated by the software and corrected.
Bias factors	The value calculated by the software and corrected.
end point extension	After the glue is applied, it will continue to extend backwards, which mainly solves the problem of wire drawing and glue breakage when the glue is broken.
Z height upward (mm)	The end of the line segment extends to the Z-axis coordinate height.
Extended distance (mm)	The extended distance after the line segment ends and is broken. (Positive values extend the distance, negative values shorten the distance).
Speed(mm/sec)	End extension speed.
Pull back in advance	Pull back the glue spitting action in advance.
Advance pullback distance (mm)	How much distance to pull back in advance.
Advance pullback height (mm)	The Z-axis coordinate height to which to pull back in advance.

6.4.1.4 Height test parameters

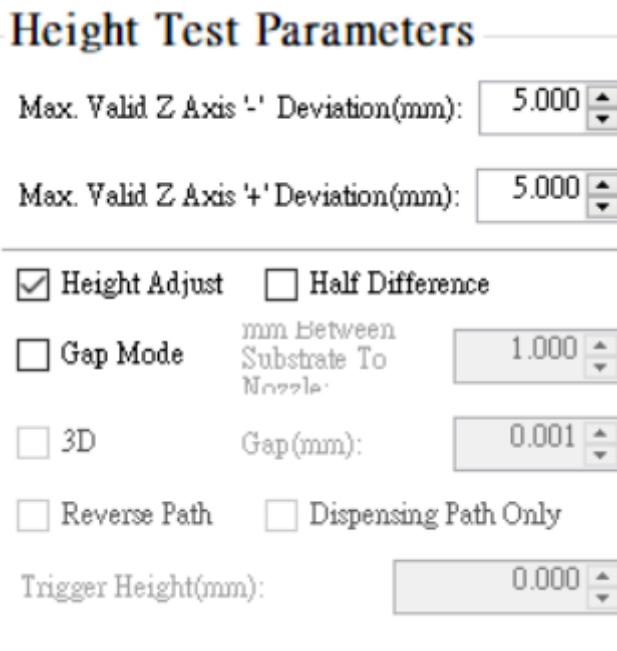


Figure 308: Height test parameter block

Name	Description
Max.Valid Z Axis '-' Deviation (mm)	The minimum relative coordinate when measuring height. If the value exceeds this Z-axis coordinate value, it will not operate.
Max.Valid Z Axis '+' Deviation (mm)	The maximum relative coordinate when measuring height. If the Z-axis coordinate exceeds this value, it will not operate.
Height correction	When performing height measurement, select height correction.
Side spray intermediate correction mode (1/2)	Select this function when the machine wants to spray in the middle of the side of the object.
Spacing mode	After checking, you can set the height distance between the valve body needle and the measurement workpiece.
3D	Continuously measures the distance between the workpiece and the needle, which can be used for 3D coating height correction.
Spacing (mm)	When performing 3D coating operations, set the separation distance for continuous height measurement.
Opposite measurement path	In 3D height measurement mode, when the machine's back-and-forth path is in the opposite direction, select this function to reduce the distance the machine moves.
Only measure the glue path	In 3D height measurement mode, the software only measures the path to be glued.
Trigger height (mm)	Height measurement reference height during 3D height measurement.

6.4.1.5 Z-axis idle running safety height setting

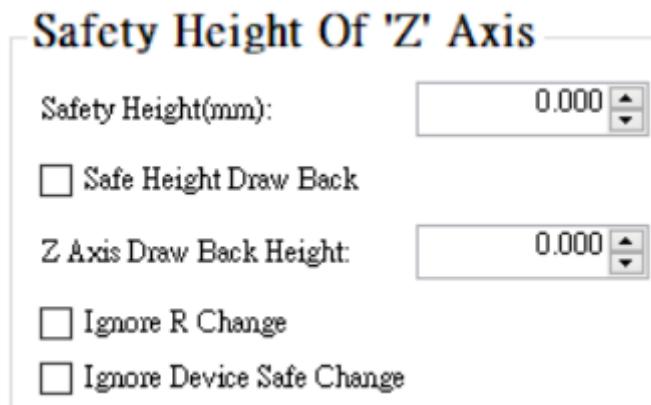


Figure 309: Z axis block

Name	Description
absolute height	When the machine is running, the Z-axis descends to the set Z-axis height. After the execution, the Z-axis is pulled back to this "absolute coordinate value" before moving. (For example: absolute coordinate setting: 0, pull back to the Z-axis origin height after execution).
Pull back safety height	After clicking, when the machine is running, the Z-axis will drop to the set Z-axis height. After the execution, the Z-axis height will be pulled up using this as the origin, and then the XY-axis movement will be carried out. (For example: Z-axis working height: 50; Z-axis relative height: 30, Z-axis height is 50 during operation, pull back to Z-axis height: 20 after execution).
Z-axis relative height (mm)	After checking the pullback safety height, set the pullback safety height value in this field.
Ignore rotation pullback	Function used on four-axis machines. After checking, when the command ends, the C axis will ignore the rotation to the preset angle and directly pull back to the Z axis set height.
Ignore device security switching	When checked, the pullback action when switching devices is ignored.

6.4.2 Dispenser parameters

The dispenser parameter page is used to set valve body related parameters.

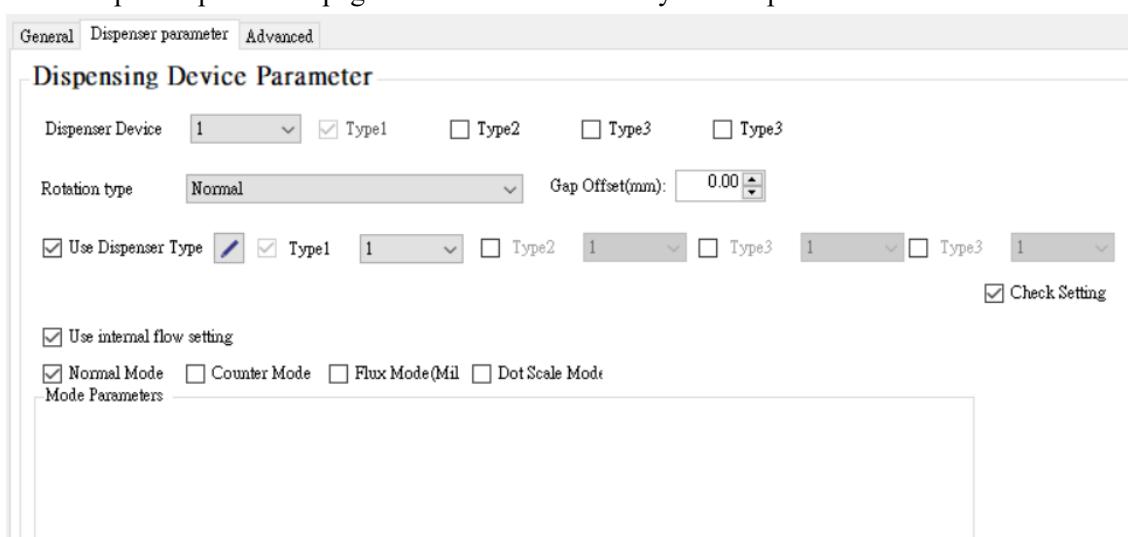


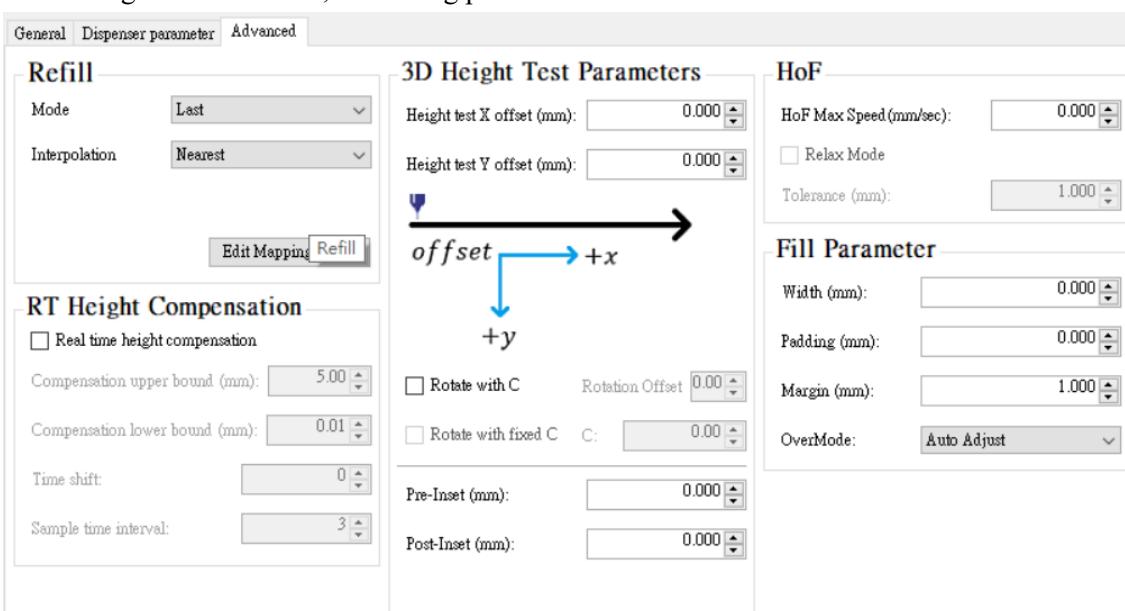
Figure 310: Dispenser parameter interface

Name	Description
Dispensing device	Select the dispensing unit to run.
Dual valve	Check to enable dual valve trigger mode.

trigger mode	
Inclination type	Select the type of dispensing angle.
Spacing offset (mm)	Adjust "Spacing Mode" under Tilt Correction.
Use dispensing parameters	Enable the use of dispensing parameters. When dispensing glue, use its dispensing parameters to dispense glue.
Edit	Edit the dispensing parameters and enter the dispensing controller page. Dispensing parameter setting.
Valve body parameters 1	Set valve body parameters 1.
Valve body parameters 2	Set valve body parameters 2.
Use internal traffic settings	To use internal traffic settings, check to enable the desired mode.
Normal mode	To maintain normal mode.
fixed pattern	Operates in "Quantitative Points" mode.
raffic pattern	The "weight" of the glue is adjusted through the system, and the machine speed is automatically adjusted.
quantitative mode	The "amount" of glue applied is adjusted through the system, and the machine speed is automatically adjusted.

6.4.3 Advanced

Advanced page, advanced settings related to filling glue amount, 3D height measurement parameters, dash height measurement, and filling parameters.



General Dispenser parameter Advanced

Refill

Mode: Last
Interpolation: Nearest

RT Height Compensation

Real time height compensation
Compensation upper bound (mm): 5.00
Compensation lower bound (mm): 0.01
Time shift: 0
Sample time interval: 3

3D Height Test Parameters

Height test X offset (mm): 0.000
Height test Y offset (mm): 0.000

HoF

HoF Max Speed(mm/sec): 0.000
 Relax Mode
Tolerance (mm): 1.000

Fill Parameter

Width (mm): 0.000
Padding (mm): 0.000
Margin (mm): 1.000
OverMode: Auto Adjust

Figure 311: Advanced interface

6.4.3.1 fill

To fill the page, every time you apply glue, the required amount of glue may not be reached due to other factors, so a filling function is provided. (This function is used with the glue amount adjustment command).

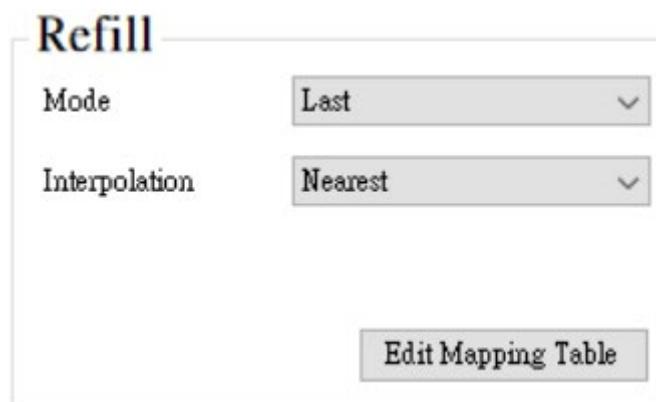


Figure 312: Fill function interface

Name	Description
Model	Latest: Measure the latest value. Average: The average value of all detections of the type. Maximum: The maximum value of the grab measurement. Minimum: grab the minimum value of the measurement.
Calculation method	Closest: The closest value according to the detected value of the edited correspondence table. Linear: According to the detection values of the edited corresponding table, the average of the detection values.
Edit correspondence table	Select the filling mode and calculation method, compare the table settings, and modify the dispensing device parameters.

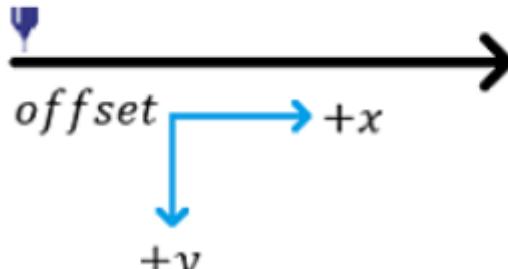
6.4.3.2 3D altimetry parameters

On the 3D height measurement parameter page, when measuring by lightning, when encountering a 90-degree angle, there will be a deviation in the measurement. Therefore, the user is provided with the option to set the offset and then calculate it through the software to meet the requirements.

3D Height Test Parameters

Height test X offset (mm):

Height test Y offset (mm):



Rotate with C Rotation Offset

Rotate with fixed C C:

Pre-Inset (mm):

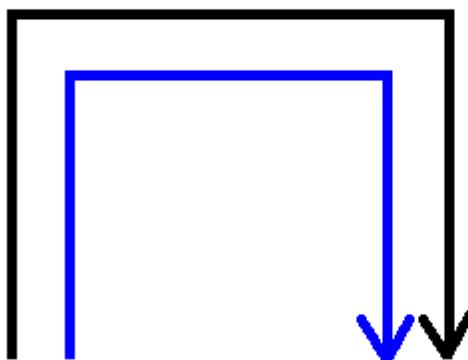
Post-Inset (mm):

Figure 313: 3D height measurement parameter block interface

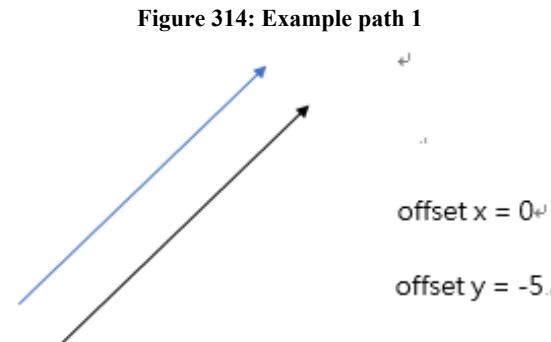
Name	Description
Height measurement X offset (mm)	For 3D altimetry X-axis offset setting.
Height measurement Y offset (mm)	For 3D height measurement Y-axis offset setting.
Follow the C axis rotation	If the C axis is used, you can check it.
AngleOffset	Make a compensating rotation for the already calibrated C-axis (Table for 3D altimetry only).
Use fixed C value	If there is a fixed C-axis rotation value, you can check it and enter the required value.
C	Enter a fixed C-axis rotation value.
Start to retract (mm)	Start shrinking from a certain position.
End retraction (mm)	End the indentation from a certain position.

Example description

- (1) The offset axis direction will be affected by the dispensing direction.
 (A) [Black line] is the dispensing path (the taught CP point path), [Blue line] is the height measurement path (the path automatically calculated through offset).

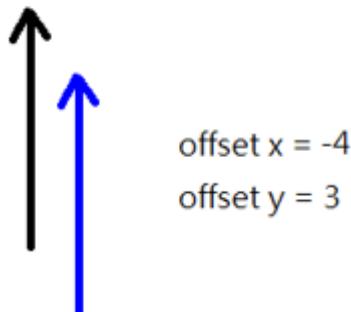


offset x = 0
offset y = 5



offset x = 0
offset y = -5

Figure 315: Example path 2



offset x = -4
offset y = 3

Figure 316: Example path 3

6.4.3.3 Galloping to measure height

Galloping height measurement page, this function page is mainly used to set parameters such as speed and allowable displacement value of galloping height measurement.

HoF

HoF Max Speed (mm/sec):	0.000
<input type="checkbox"/> Relax Mode	
Tolerance (mm):	1.000

Figure 317: Flying Height Measurement Block Interface

Name	Description
Maximum speed of galloping height measurement (mm/sec)	When the setting value is 0, 3D height measurement is performed. When the setting value is greater than 0, the galloping function is enabled (this parameter represents the moving speed of the machine when running galloping height measurement).
non-strict mode	When the array is flying to measure height, whether the height measurement position is allowed to shift and how much distance is allowed.

Allowable displacement (mm)	How much displacement is allowed.
-----------------------------	-----------------------------------

6.4.3.4 Fill in parameters

Fill in the parameters page.

Fill Parameter

Width (mm):	0.000
Padding (mm):	0.000
Margin (mm):	1.000
OverMode:	Auto Adjust

Figure 318: Fill in parameter interface

Name	Description
Line width(mm)	When filling, the width of the line.
Leave blank(mm)	Reduce white space.
Line distance (mm)	Change the distance between lines.
out of mode	When filling square spirals, the center overlap area processing method.

6.5 Edit group

6.5.1 Edit group function description

The group editing page is mainly used to set the group origin, add image recognition and other adjustment settings in the group editing function page, and can add multiple groups at will.

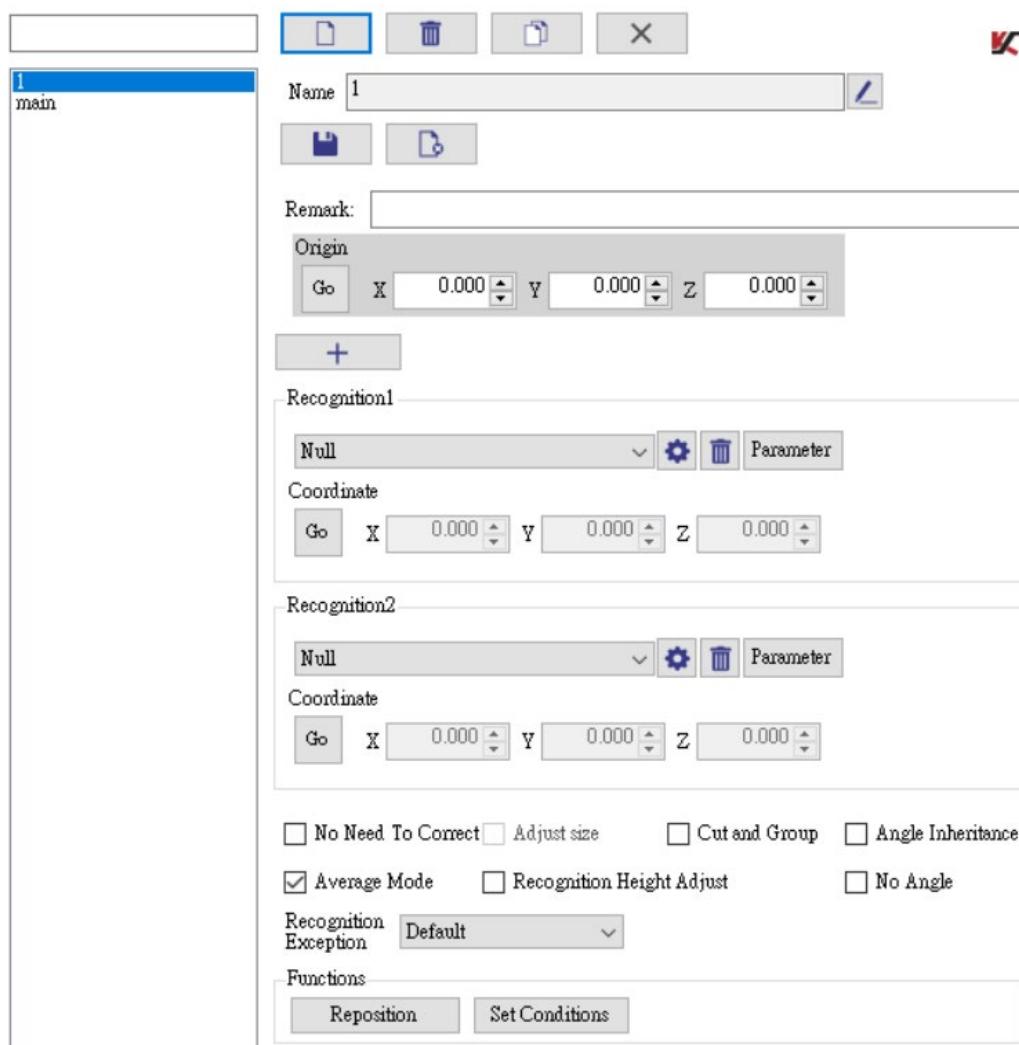


Figure 319: Group editing interface

Name	Description
Add	new page.
Remove	Remove the page.
Copy	Copies the group of the selected group.
Close	Close the page.
name	The name of the program group. Note: main is the main program group and cannot be deleted.
Save	Save settings.
Cancel	Cancel unsaved settings.
annotation	You can fill in any comments.
origin	Defines the origin coordinates of this program group.
Go	Move the machine to the coordinate position.
+	Added image identification points.
Settings	Set the parameters of image recognition points.
Delete	Delete image recognition points. Note: The number of image recognition cannot be less than two.
coordinate	Coordinates of image recognition.
Image recognition method field	Select the image recognition method you want to use.
Image recognition point 1	The first coordinate image identifies the point.
Image recognition point 2	The second coordinate image identifies the point.
No position correction	Carry out image recognition function, but do not perform image coordinate correction during operation.

adjust size	Fixed object size changes.
Cutting and grouping	Divide and group the group (check the delay function settings required for the process).
Angular inheritance	When the group has two layers, upper and lower, and the lower layer items need to follow the angle rotation of the upper layer items for inheritance, select this function.
Average Mode	Average mode. When there are multiple identifications, Offset and Rotation use the average of multiple results.
Identification and height measurement correction	Enable the image recognition height correction function. Generally speaking, the Z-axis height of image recognition is fixed. In special cases, it needs to be adjusted according to the height of the sample. This function will read the height measurement results. (Note that it needs to be run in conjunction with the stage).
Identify exception handling	When an error message appears in image recognition, select a processing method. Default: Use the same processing method for image recognition failure in the running screen. Stop: Temporarily stop the operation and perform manual position correction (manual correction). No correction: Coating is performed without position correction. Not executed: An error message appears and coating is not performed.
re-locate	Recapture the positions of image recognition point 1 and image recognition point 2 to modify the corresponding coordinates in the group.
Condition setting	Set the conditions for successful image recognition.

6.5.2

Reposition

Reposition the page. The repositioning function is mainly to modify the origin. Based on the coordinate positions of the two newly defined identification points in the group, this function will make adjustments such as amplification or reduction, rotation and displacement to the command coordinates in the group according to the relationship between the original coordinates and the adjusted coordinates.

Relocation

Mirror No Resize

Recognition1

OriginCoordinate 1

Go X 10.000 Y 9.380 Z 0.000

Reference Coordinate 1

Go X 0.000 Y 0.000 Z 0.000

Auto-Relocation

Recognition2

OriginCoordinate 2

Go X 10.000 Y 9.760 Z 0.000

Reference Coordinate 2

Go X 0.000 Y 0.000 Z 0.000

Auto-Relocation

Manual Relocation Result

Offset

Go X 0.000 Y 0.000

Rotation 0.000

Resize 1.000

Mirror

Figure 320: Reposition the interface

Name	Description
Close	Close the retargeting page.
Reposition	After re-capturing the positions of image identification point 1 and image identification point 2, the group coordinates are adjusted.
Retarget all groups	Based on this group, reposition all group coordinates.
Manual results	Manual repositioning.
Mirror	The identification point work instructions in the group are mirrored and flipped based on the group origin position.
No scaling	Only repositioning is performed, but no resizing is performed.
Origin coordinate 1 origin coordinate 2	Coordinates of the original group image identification points.
Reference coordinates 1 Reference coordinates 2	Set the changed position of the identification point.

Automatic positioning	If the identification point has an image setting function, you can click this function and the software will help calculate the target position and fill in the reference coordinates.
Offset	For the displacement amount, click GO to see the offset and fine-tune it to the set position.
Go	Move the machine to the coordinate position.
Rotate	The angle of rotation of the reference point.
Scaling	The reference point size is enlarged or reduced.

6.5.2.1 Repositioning operational processes

- (1) Before repositioning, pay attention to the coordinates of the origin, image recognition point 1, and image recognition point 2.

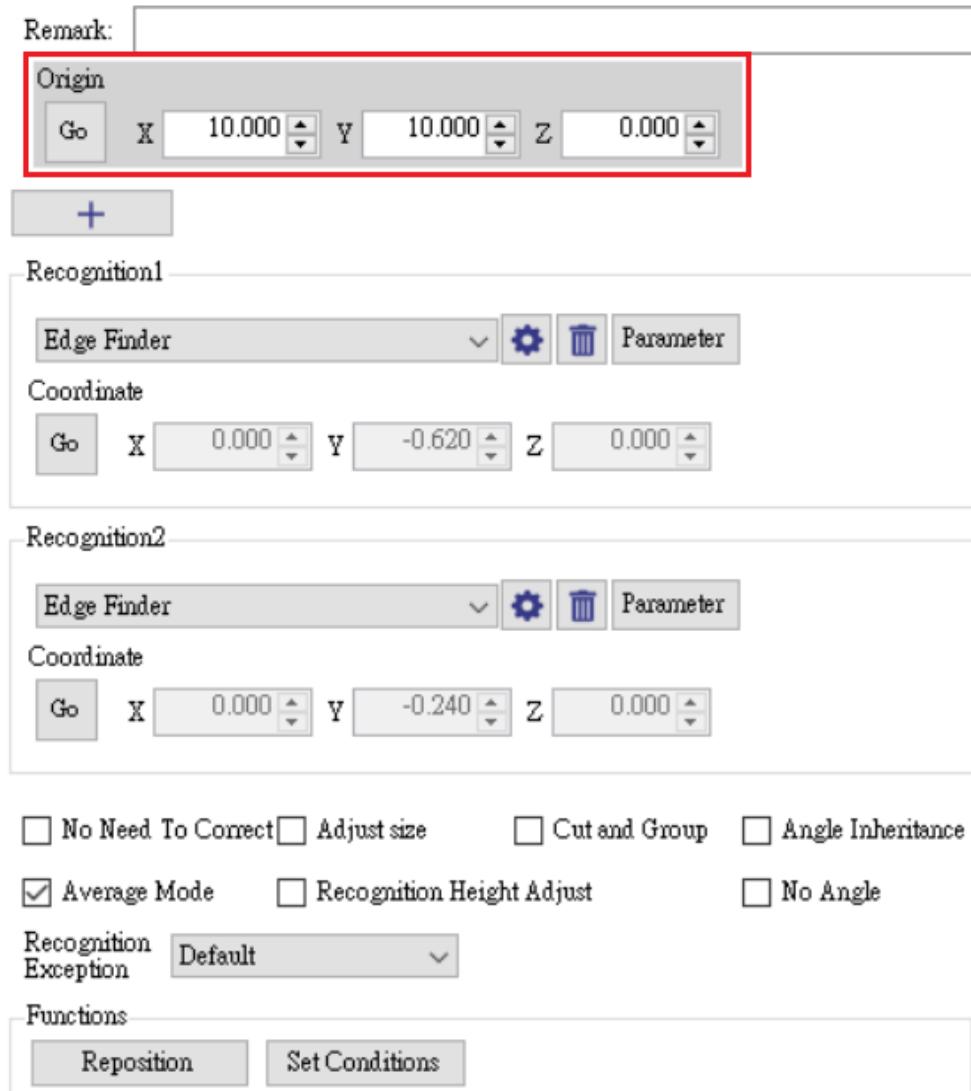


Figure 321: Teach a new starting point

- (2) Teach the coordinates of new image recognition point 1 and image recognition point 2, and click to recalibrate.

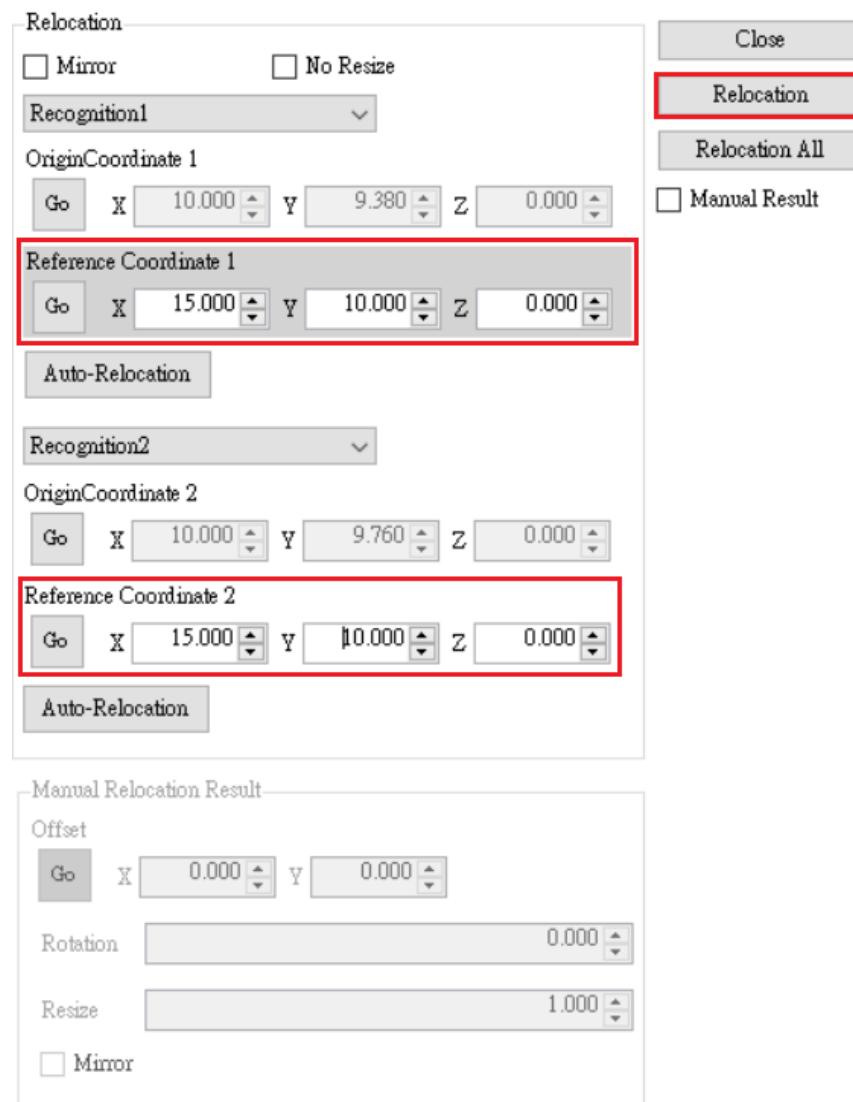


Figure 322: Teach new image recognition coordinates

- (3) A warning window pops up to display the offset between the repositioned and previous coordinates. Once the modification is confirmed, it cannot be restored.

Caution!

×

Offset = 10,15.62
Rotation = 45 degree
Resize = 55.8242195673592
This Action Would Modify The SubProgram and Works
Do You Sure To Do Relocation?

Yes

No

Figure 323: After completion, a warning window will pop up to inform you of the coordinate change.

- (4) After repositioning, return to the group and you will see that the origin coordinates are different from the previous origin coordinates.

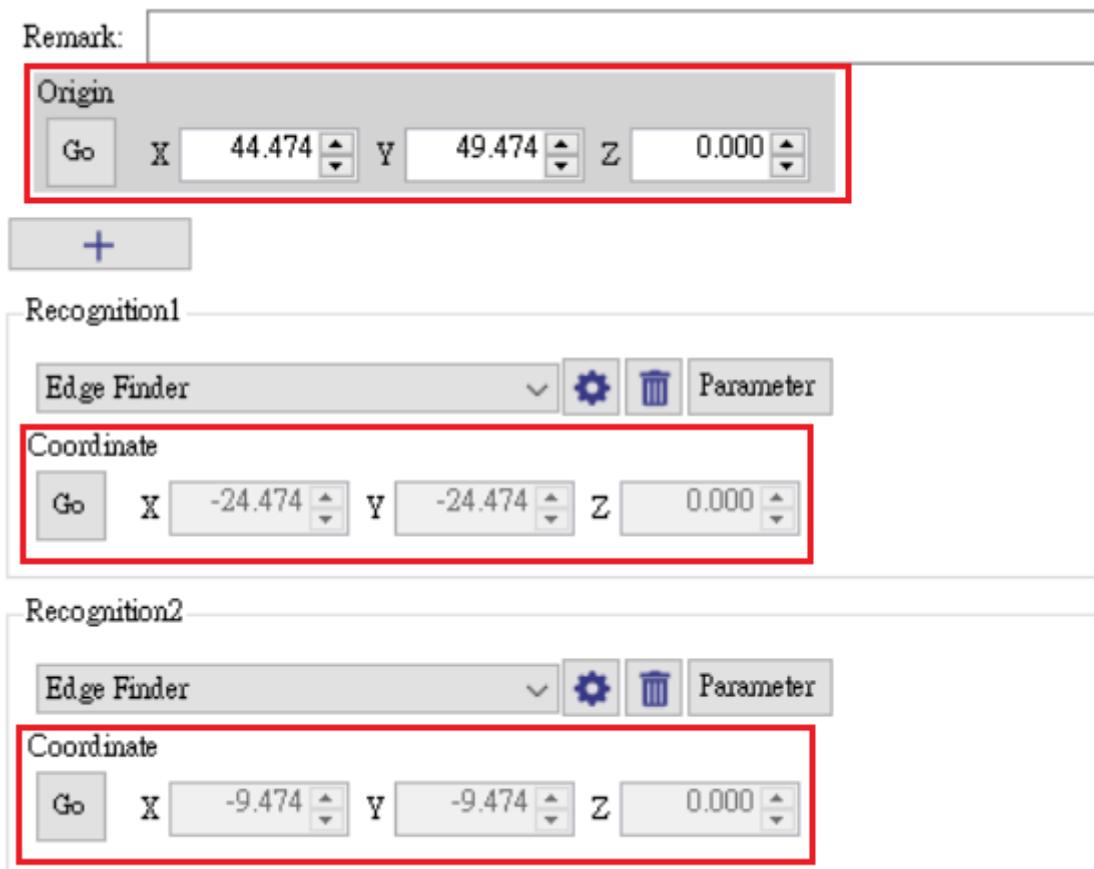


Figure 324: New coordinates replace changes

6.5.3

Condition setting

Condition setting page, set the conditions for successful image recognition.



Figure 325: Condition setting interface

Name	Description
Save	Save the correction condition settings.
Close	Close the correction conditions page.
Not	Use reverse logic selection.
Image recognition and conditions operator	Image recognition and conditions logical selection of AND/OR.
Main condition non-main condition	Set whether the correction condition should be listed in the main condition list.
Annotation	You can fill in any comments.

6.5.3.1

Condition setting process

- (1) On the edit group page, click the "Condition Settings" button.

Functions

Reposition

Set Conditions

Figure 326: Click on condition settings

- (2) Click to enter the condition settings, select "+" to add a condition, create a name, and press OK to get a new condition.

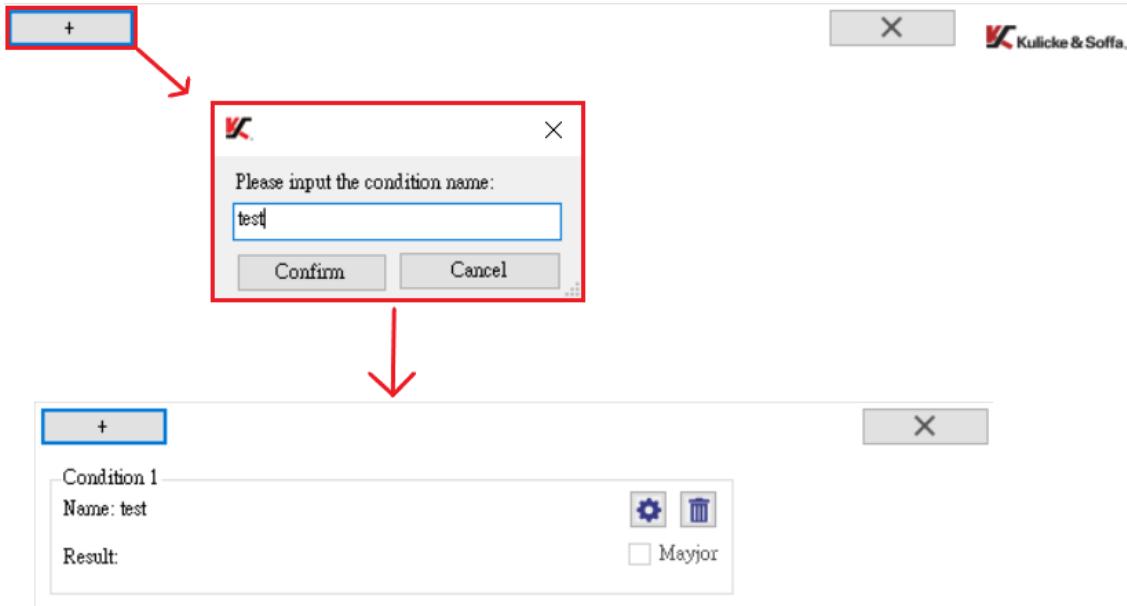


Figure 327: Click + to open the new interface

- (3) Correction condition editing is divided into 3 parts.

- (A) Meet condition settings
- (B) Main condition/non-main condition
- (C) Correction method

Index: 1

Name: test

Not Recognition

Operator

Not Recognition

Major Ignore when fail

Recognition

Recognition1 Null

Recognition2 Null

Recognition3 Null

Recognition4 Null

Remark:

Figure 328: Establish conditions

6.5.3.2 Meet condition settings

This setting is similar to the definition of logic, consisting of 2 operands and 1 operator. The operand can select image recognition or conditions (other edited correction conditions), and there is Not (reverse) logic before the operand. If selected, the operator is a logical choice of AND/OR.

- (1) If the image recognition point 1 is successfully recognized, this condition is established.

Index: 1

Name: test

Not Recognition

Operator

Not Recognition

Figure 329: Set up condition settings

- (2) Both image recognition 1 and image recognition 2 are successful, and this condition is established.

Index: 1
Name: test

Not Recognition Condition Recognition1

Operator AND

Not Recognition Condition Recognition2

Figure 330: Set up two conditions

- (3) This condition will only be true when image recognition point 2 fails or image recognition point 4 succeeds.

Index: 1
Name: test

Not Recognition Condition Recognition1

Operator OR

Not Recognition Condition Recognition2

Figure 331: Set one of the conditions to be met

- (4) If both the Cond-Up condition and the Cond-Down condition succeed, the condition is true.

Index: 1
Name: test

Not Recognition Condition 1

Operator AND

Not Recognition Condition 2

Figure 332: Both conditions are successful.

6.5.3.3 Main condition/non-main condition

Set whether the correction condition should be listed in the main condition list.

6.5.3.3.1 How correction works

After the image is recognized, the conditions in the main condition list will be matched based on the recognition results, and the matching situation will have the following three situations.

- (1) No match at all: Image recognition failed, handled according to the group setting failure handling method (no correction, no execution, stop).

- (2) Matched 1 condition: This group will be corrected according to the correction method of the condition.
- (3) Matching more than 1 condition: According to the priority order, the correction method of the higher condition will be used to correct this group.

6.6 Image recognition

Image recognition, select the appropriate image recognition method in the image recognition point option. (Including angle search, edge search, template comparison, template comparison (mask), petal recognition, circle search, glue width detection type and other image recognition methods, you can choose.)

6.6.1 Image recognition conditions

Image recognition conditions, the group's image recognition points must have at least 2, and when the image recognition points want to be deleted, but the image recognition points are used in the correction condition settings, they will not be deleted.

Press the "+" button to add new image recognition points. In the image recognition method field, you can select the method of image recognition and set the coordinates.

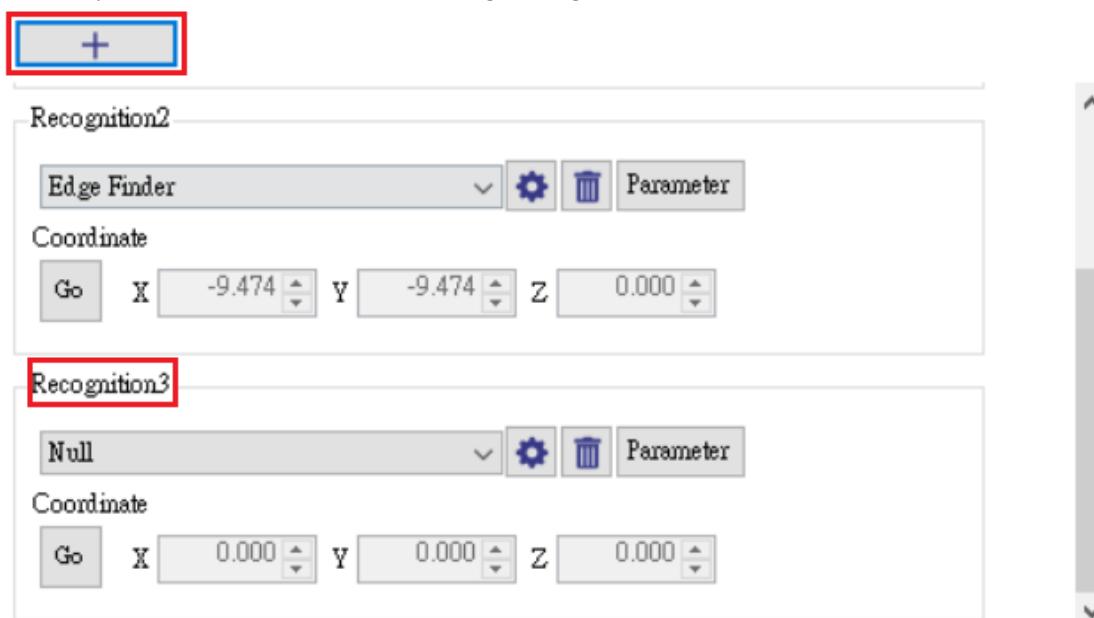


Figure 333: Add new image recognition points

Click the "Delete" button to delete image recognition points. Note: The number of image recognition cannot be less than two.

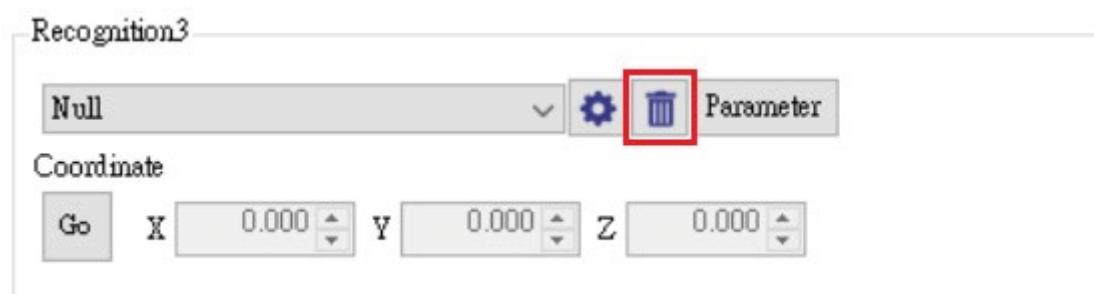


Figure 334: Click Delete to eliminate image recognition points

6.6.2 Image recognition selection

Select the image recognition method and click the "Settings" button to enter the setting window.

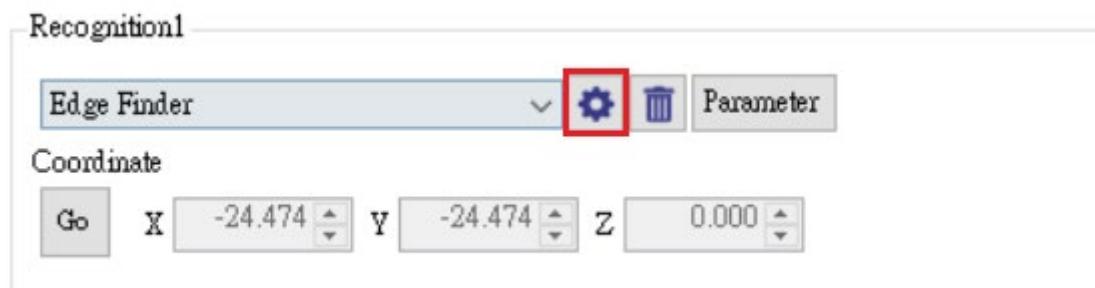


Figure 335: Image recognition selection

6.6.2.1 null

The empty page is mainly used to locate two empty coordinate points for subsequent repositioning.

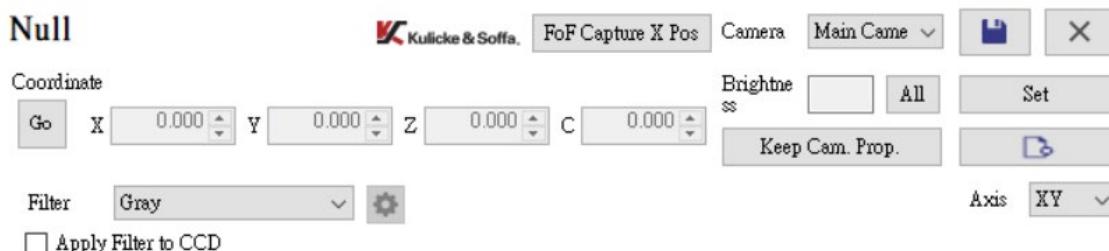


Figure 336: Basic image recognition interface

Name	Description
coordinate	The coordinates of the image recognition point.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.
Save	Save parameter settings of image recognition points.
Close	Close the image recognition page.
Set	Set the coordinates of the image recognition point.
Clear	Clear the coordinates of image recognition points.
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the set filter is appropriate through the camera screen on the right side of the software.

6.6.2.2 Corner Finder

Angular finding page.

Corner Finder

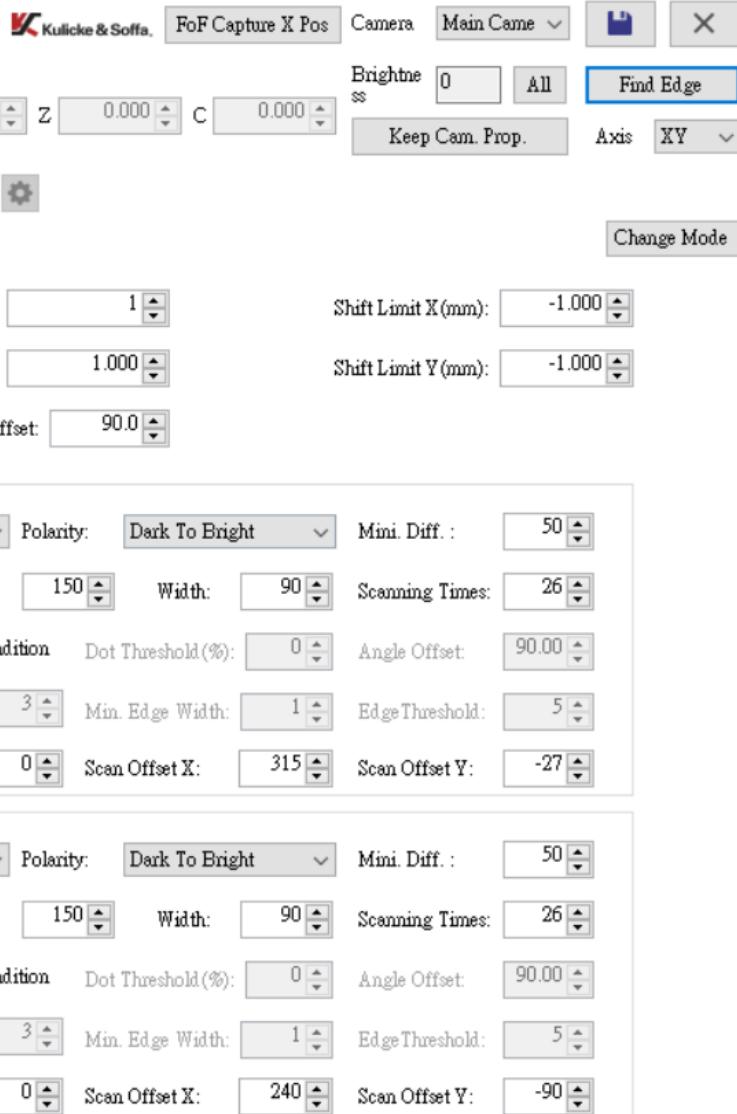


Figure 337: Angular finding page.

Name	Description
corner position	Define the center coordinates of the corner identification point.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.
Save	Save parameter settings of image recognition points.
Close	Close the image recognition page.
get corners	Test the function and test the set parameters to see if the required corners can be obtained correctly.
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the selected filter is appropriate through the camera screen on the right side of the software.
XY Quadrant	Select the corner quadrant location that needs to be identified.
Filter times	Number of times to perform filtering (noise). (Default value is 1)
Filter strength	Noise filtering will be exceeded. (The default value is 1, the smaller the value, the stricter the filtering)
vertical direction	Set the recognition angle offset angle. (Default value is 90 degrees)
Corner angle offset	The direction of the horizontal scan block (red box), combined with the "Polarity" menu setting.
horizontal direction	Brightness directionality of the horizontal scan block (red box) with the "Direction" setting.
polarity	Brightness directionality of the horizontal scan block (red box) with the "Direction" setting.

minimum difference	Set the minimum difference in "polarity" brightness. (When the degree of lightness and darkness is large, the minimum difference amount can be increased).
start distance	The distance between the horizontal or vertical scan area (red box) and the center point.
long	Set the horizontal or vertical scan block (red box) length.
Width	Set the horizontal or vertical scan area (red box) width.
Scan quantity	The scanning block (red box) is divided into columns. The more the number (columns), the more scanning points.
Rotation angle (degrees)	Set the horizontal or vertical scan block rotation angle.
condition	Set point threshold and angle offset.
point threshold	Effective filter scan point ratio.
Angle offset	Scan point angle offset.
Advanced controls	Set the edge range, edge minimum width, and edge similarity threshold.
edge range	Edge detection range.
margin minimum width	Minimum width for edge detection.
edge similarity threshold	The edge color is similar to the threshold. The smaller the value, the more stringent it is.
Double line start Double line end	Double line mode, looking for two edges. This parameter determines the maximum and minimum distance between the two lines, indicating the distance between the two lines. When both are 0, it means the function is disabled, and finally the point of the second line will be found.
Scanning displacement X scanning displacement Y	Displacement scanning coordinates are used when the machine does not move or the light source is affected.

6.6.2.3 Angle finding setup process

- (1) After selecting the angle finding function in the image recognition method, click the "Settings" (gear) button to enter the setting page.
- (2) Select according to the angle position (X, Y quadrant) you want to find.
- (3) Move to the area where angle identification is to be performed, and according to its image characteristics and position, select the condition settings that match the "Direction" and "Polar" functions of the workpiece (the direction is displayed as a blue arrow), and move the horizontal and vertical scanning blocks (Red box) overlaps with both sides of the angle to be found, and after setting the initial minimum difference value, click the "Get Corner" button to test. When the "Angle Finding Failed" window is displayed, the parameters must be adjusted until it can be successfully obtained. The required corner (cross coordinates of the green line segment) is then obtained by adjusting the scan block (starting distance, length, width and number of scans), filter parameters, angle offset and other conditional values, and the search is completed. Click "Save" to exit the corner settings.

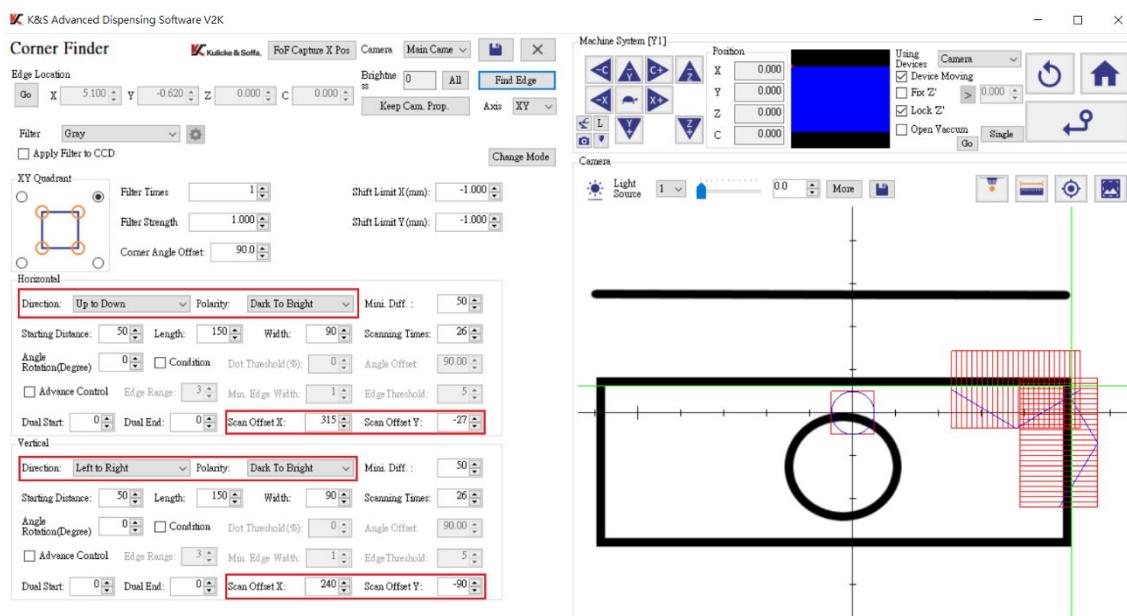


Figure 338: Adjust "Direction" and "Polarity" to find the angular position

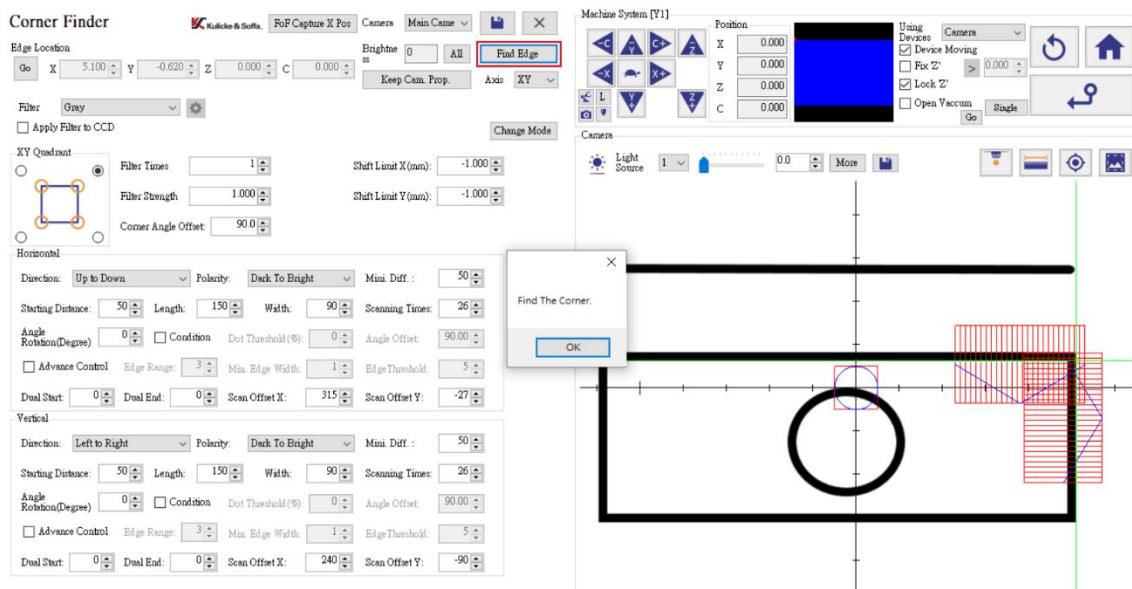


Figure 339: Adjust accuracy and reduce error tolerance according to needs

6.6.2.4 Find the edge

The edge-finding page is mainly for selecting the image recognition method of "edge-finding".

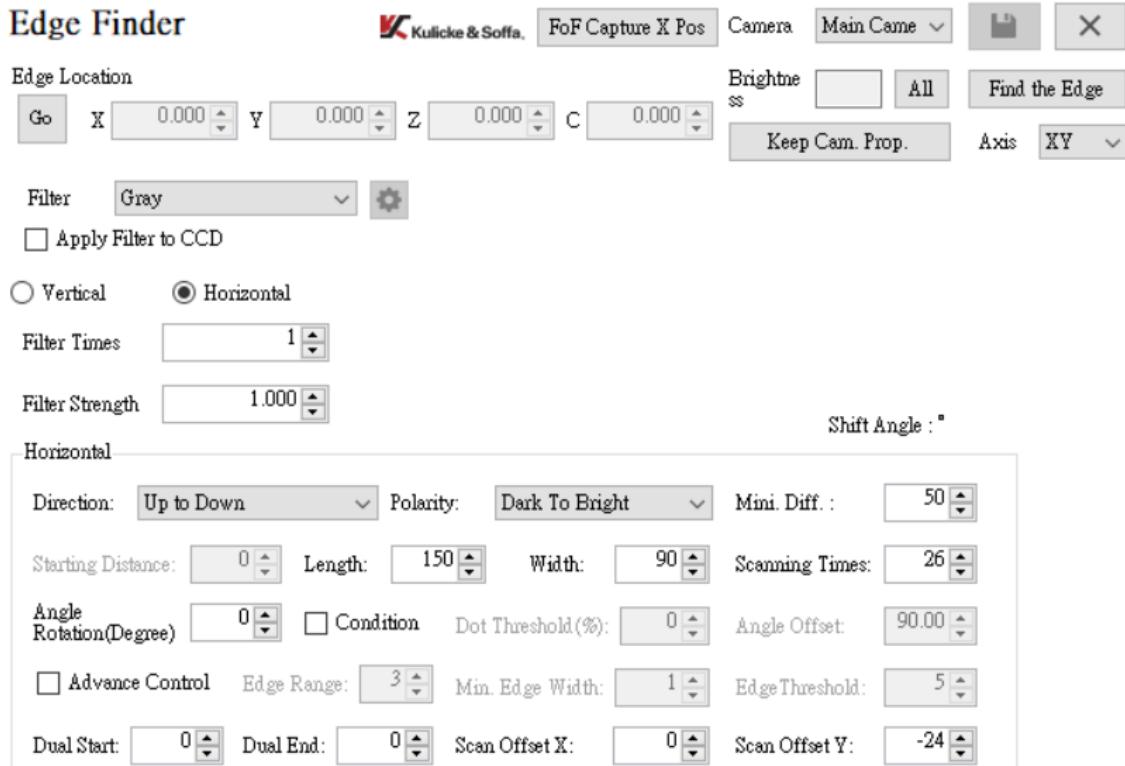


Figure 340: Edge finding interface

Name	Description
Save	Save parameter settings of image recognition points.
Close	Close the image recognition page.
edge location	Define the center coordinates of the edge identification point.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
get edge	Test the function and test the set parameters to see if the required edges can be obtained correctly.
Record camera parameters	Record current camera parameters.
Clear camera	Clear previously recorded camera parameters.

parameters	
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the selected filter is appropriate through the camera screen on the right side of the software.
Vertical level	Select the horizontal or vertical scan block direction of the line segment.
Filter times	Number of times to perform filtering (noise). (Default value is 1)
Filter strength	Will exceed (noise) filtering. (The default value is 1, the smaller the value, the stricter the filtering)
direction	The direction of the scan block (red box) horizontally or vertically, with the "Polarity" menu setting.
polarity	Scan the area (red box) brightness directionality with the horizontal or vertical "direction" setting.
minimum difference	Set the minimum difference in "polarity" brightness. (When the degree of lightness and darkness is large, the minimum difference amount can be increased)
start distance	The distance between the horizontal or vertical scan area (red box) and the center point.
long	Set the horizontal or vertical scan block (red box) length.
Width	Set the horizontal or vertical scan area (red box) width.
Rotation angle (degrees)	Set the horizontal or vertical scan block rotation angle.
condition	Set point threshold and angle offset.
point threshold	Effective filter scan point ratio.
Angle offset	Scan point angle offset.
Advanced controls	Set the edge range, edge minimum width, and edge similarity threshold.
Edge range	Edge detection range.
Margin minimum width	Minimum width for edge detection.
Edge similarity threshold	The edge color is similar to the threshold. The smaller the value, the more stringent it is.
Double line start Double line end	Double line mode, looking for two edges. This parameter determines the maximum and minimum distance between the two lines, indicating the distance between the two lines. When both are 0, it means the function is disabled, and finally the point of the second line will be found.
Scan displacementX Scan displacement Y	Displacement scanning coordinates are used when the machine does not move or the light source is affected.

The setup process is described as follows:

Edge finding setup process:

- (1) After selecting the edge finding function in the image recognition method, click the "Settings" (gear) button to enter the setting page.
- (2) Move the coordinates to the selected edge for identification detection (horizontally or vertically).
- (3) According to its image characteristics and position, select the appropriate "Direction" and "Polarity" to set (the direction is shown as a blue arrow), overlap the scanned area (red box) and edges with each other, and set the preliminary minimum difference value. Click the "Get Edge" button to test. If the "Edge Finding Failed" window is displayed, you must repeatedly adjust the values until the edge path (green line segment) is successfully obtained, and adjust the scanning area (starting distance, length, width and number of scans), Conditional values such as filter parameters and angle offset are used to obtain the edge path. Once the edge search settings are completed, you can "save" and leave.

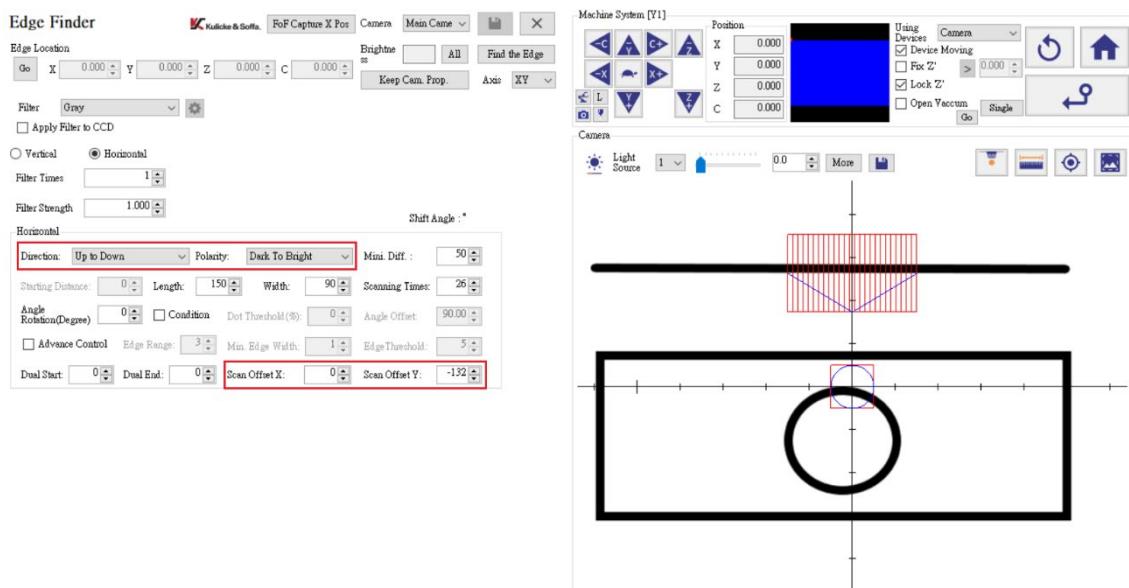


Figure 341: Adjust "Direction" and "Polarity" to find the angular position

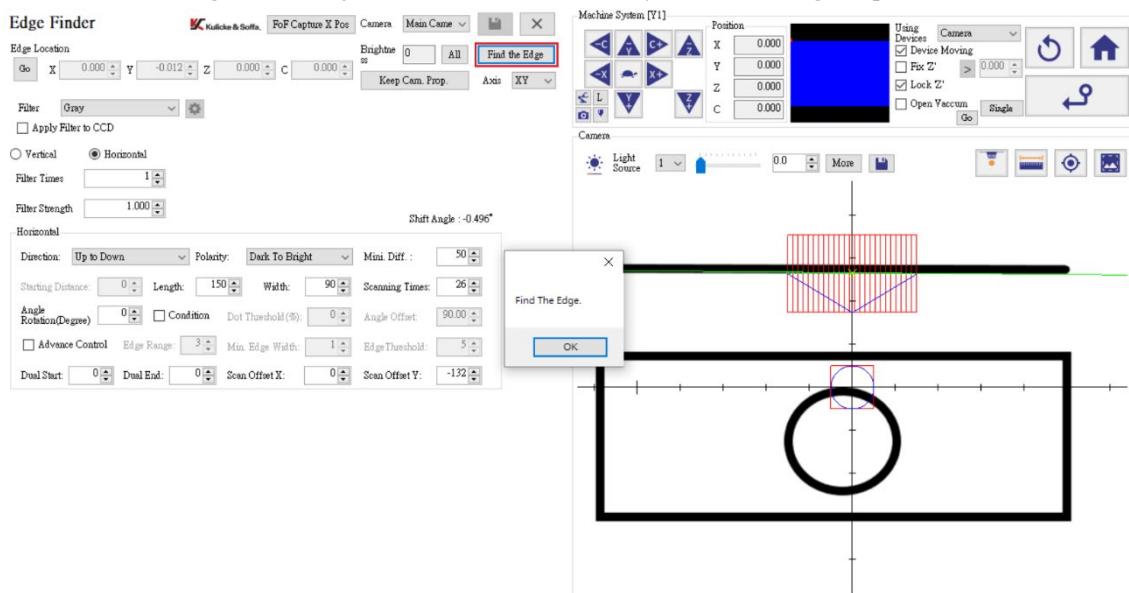


Figure 342: Adjust accuracy and reduce error tolerance according to needs

(4) Adjust accuracy and reduce error tolerance according to needs

6.6.2.5 Template comparison

The template comparison page is mainly for selecting the image recognition method of "template comparison".

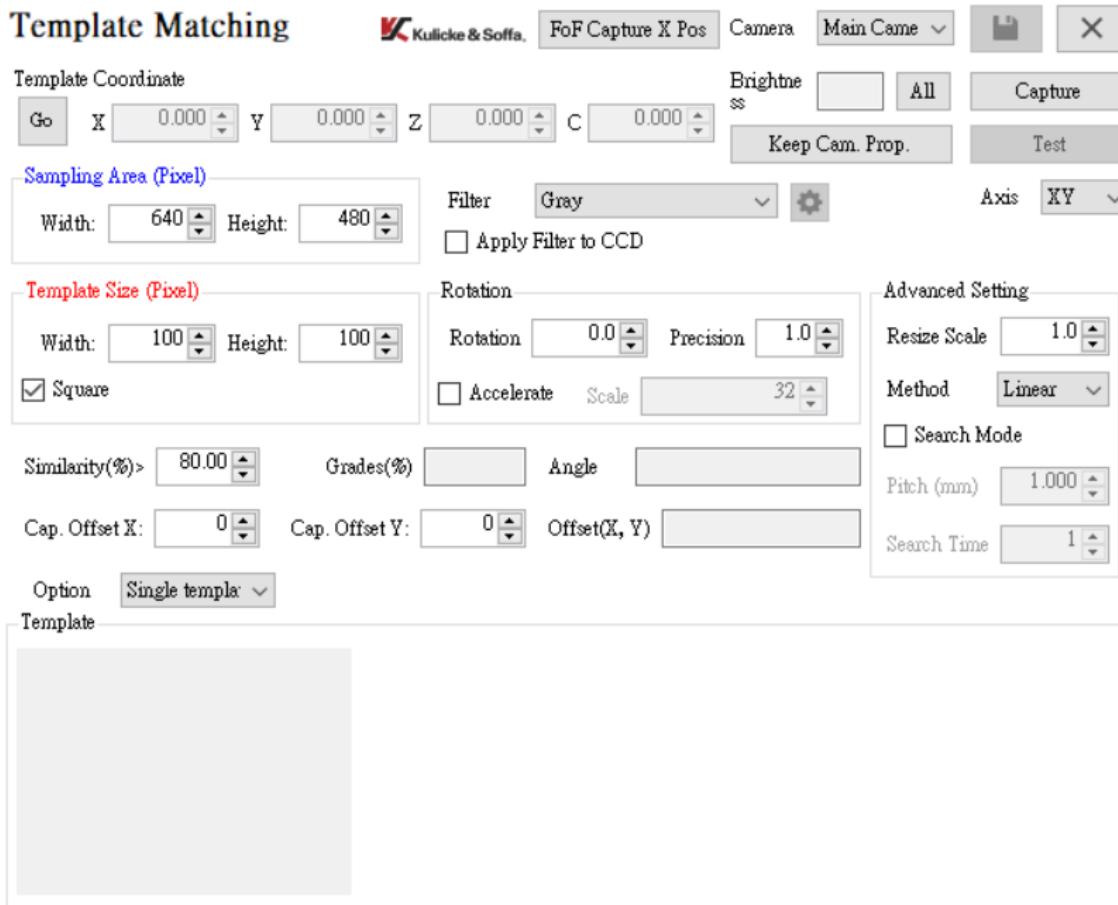


Figure 343: Template comparison interface

Name	Description
Template coordinates	Define the coordinates of the sampling template area.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.
Save	Save parameter settings of image recognition points.
Close	Close the image recognition page.
Get template	Capture the image of the screen where the template comparison is performed.
test	Perform test image template comparison results.
Sampling range (pixels)	Set the CCD scanning range. (shown as blue box area)
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the selected filter is appropriate through the camera screen on the right side of the software.
Template size (pixels)	Adjust the template size. (shown as red box area)
Square	Square template.
Rotate	Rotate the scan range.
Accuracy	Set scanning accuracy. (Default value is 1)
Accelerate	Accelerate the speed of image recognition.
scale size	Parameters that affect accuracy and speed. The larger the value, the slower the speed and the higher the accuracy; the smaller the value, the faster the speed and the lower the accuracy (the default value is 32).
Magnification	CCD image frame magnification.

Similarity	Set the similarity of template comparison. When the comparison similarity is less than the set value, image recognition will fail.
result	Similarity results, the higher the value, the more consistent it is.
angle	Set the offset angle value for performing template comparison.
Offset(X, Y)	After the template comparison test, it is offset from the original template coordinates.
Template displacementX Template displacement Y	Displace the template coordinates as long as the machine does not move or the light source is affected.

6.6.2.5.1 Template comparison setting process

- (1) After selecting the template comparison function in the image recognition method, click the Settings (gear) button to enter the setting page. Look for obvious marks on the work object as positioning points for image recognition (there must be no similar images nearby), take J6 text as an example).

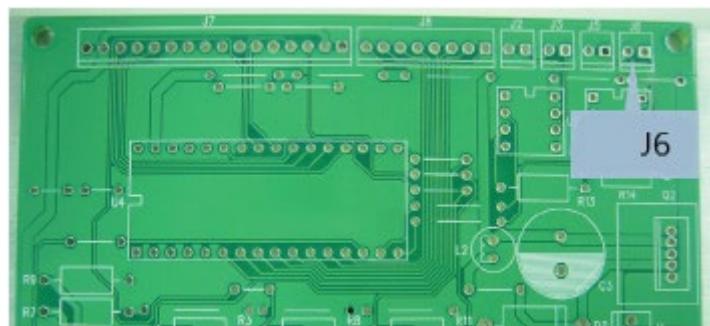


Figure 344: Sample sample looking for J6 text

- (2) Move the center position of the CCD image screen to the center of the recognition image.

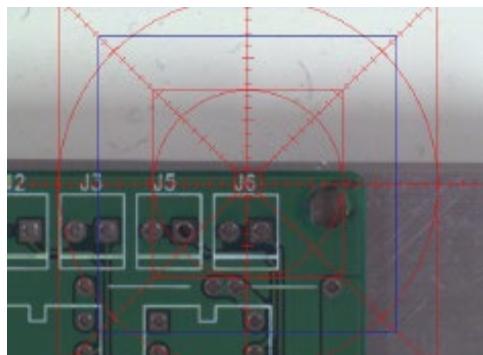


Figure 345: Move the CCD to the center of the image

- (3) Set "Sampling Range" to specify the scanning range of the template comparison test (displayed as a blue box). The default is 640×480 window scanning range.
- (4) Adjust the width and height of "Template Size" to the appropriate size range for the recognized image (displayed as a red box).

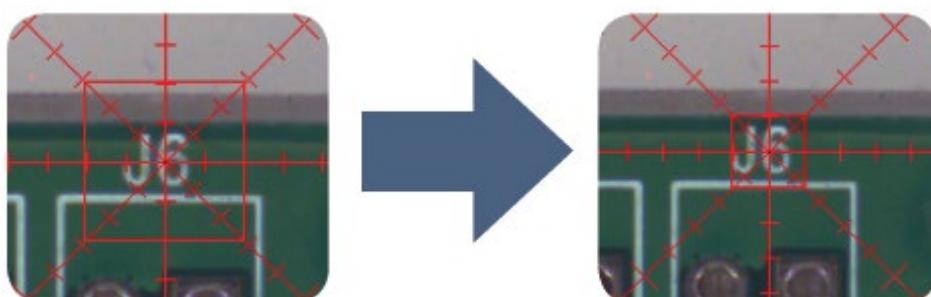
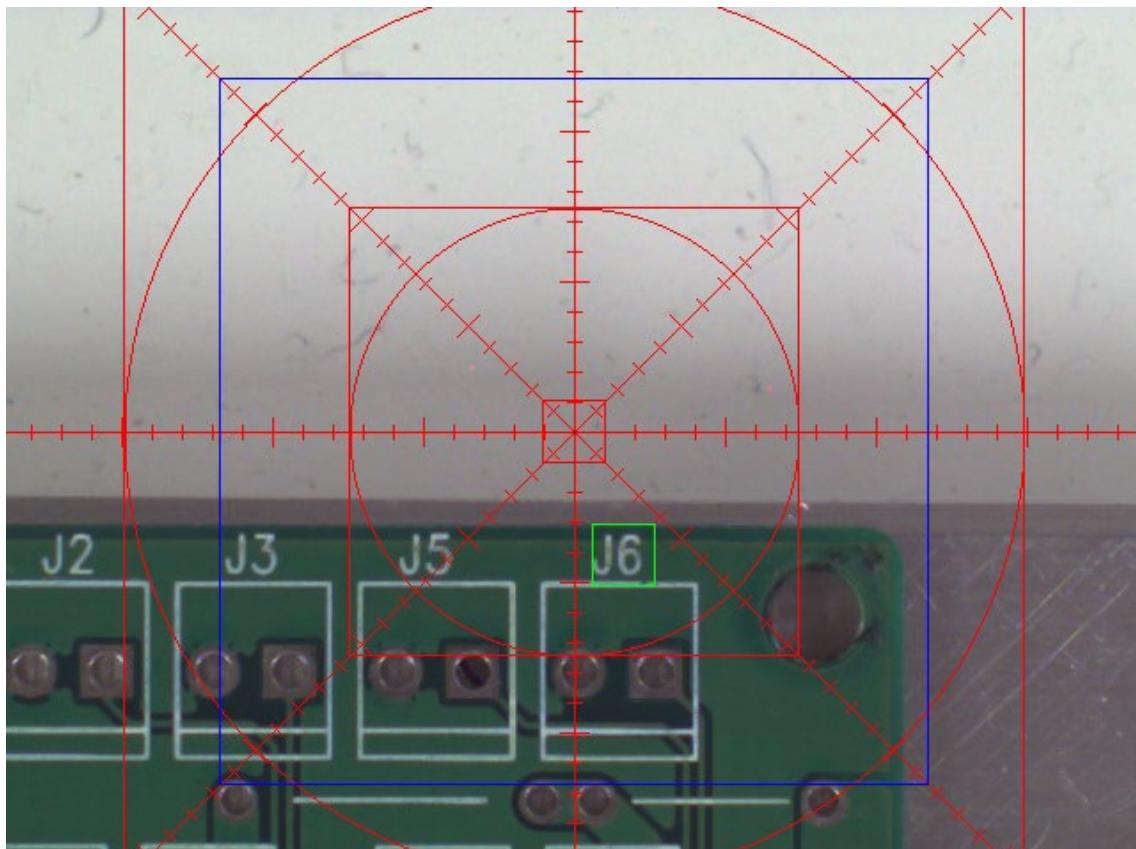


Figure 346: Resize template

- (5) After setting the other image comparison parameters according to the image characteristics, click "Get Template" to save the identified image (at this time, the image in the red box will be displayed in the lower left corner of the window).
- (6) In order to confirm the template comparison results after completion, you need to click the "Test" button to test the image recognition results. If a green box is displayed, the template image style has been successfully captured in the green box area; if the comparison fails, the recognition failure window will be displayed.



6.6.2.6 Template comparison (mask)

The template comparison (mask) page is mainly for selecting the image recognition method of "template comparison (mask)". Using masks for template comparison can improve the success rate of image recognition, mask unnecessary images in the template, and reduce Peripheral image interference.

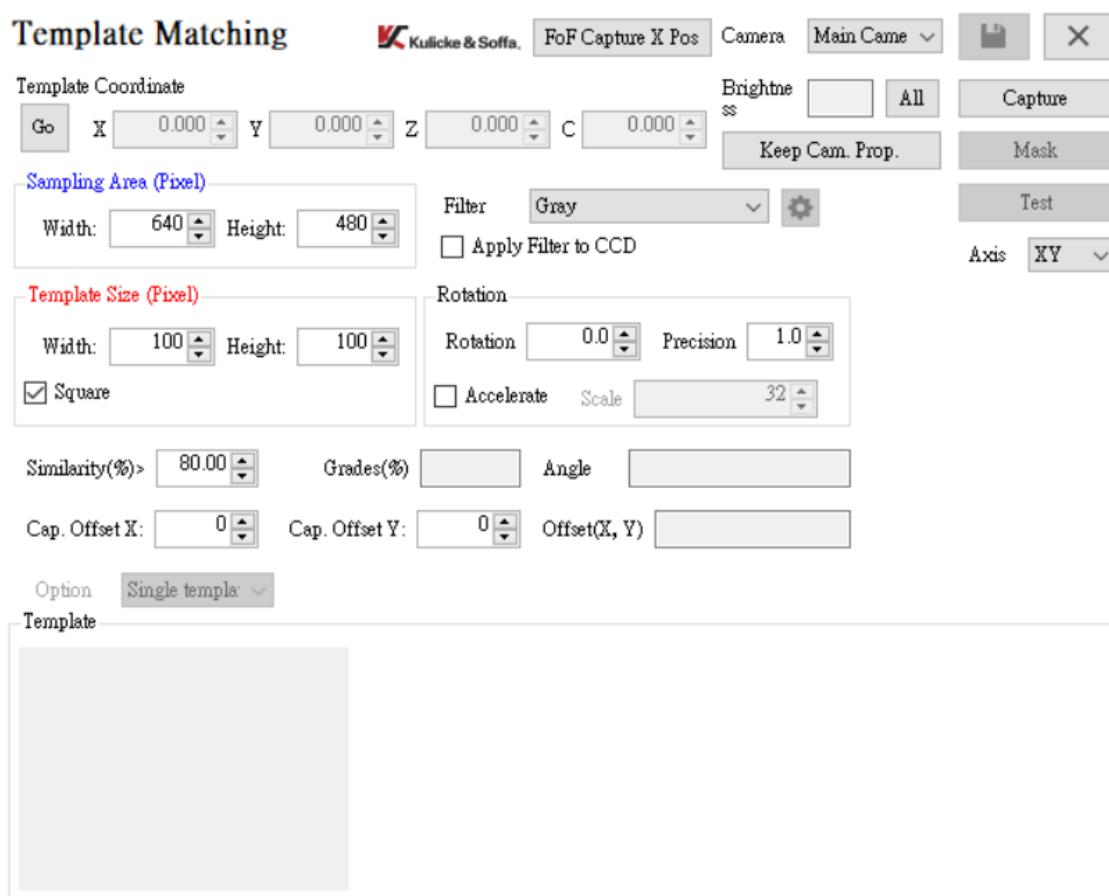


Figure 348: Template comparison (mask) interface

Name	Description
Template coordinates	Define the coordinates of the sampling template area.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.
Save	Save parameter settings of image recognition points.
Close	Close the image recognition page.
Get template	Capture the image of the screen where the template comparison is performed.
mask	Open the mask editing screen.
test	Compare the test image template results.
Sampling range (pixels)	Set the CCD scanning range. (shown as blue box area)
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the selected filter is appropriate through the camera screen on the right side of the software.
Template size (pixels)	Adjust the template size. (shown as red box area)
Square	Square template.
Rotate	Rotate the scan range.
Accuracy	Set scanning accuracy. (Default value is 1)
Accelerate	Accelerate the speed of image recognition.
scale size	Parameters that affect accuracy and speed. The larger the value, the slower the speed and the higher the accuracy; the smaller the value, the faster the speed and the lower the accuracy. (Default value is 32)
Magnification	CCD image frame magnification.

Similarity	Set the comparison similarity. The default value is 80. If the comparison similarity is less than the set value, image recognition will fail.
Result	Similarity results, the higher the value, the more consistent it is.
angle	Set the offset angle value for performing template comparison.
Offset(X, Y)	Adjust the Offset in the X and Y directions.
Template displacementX	Displace the template coordinates as long as the machine does not move or the light source is affected.
Template displacement Y	

Mask

X

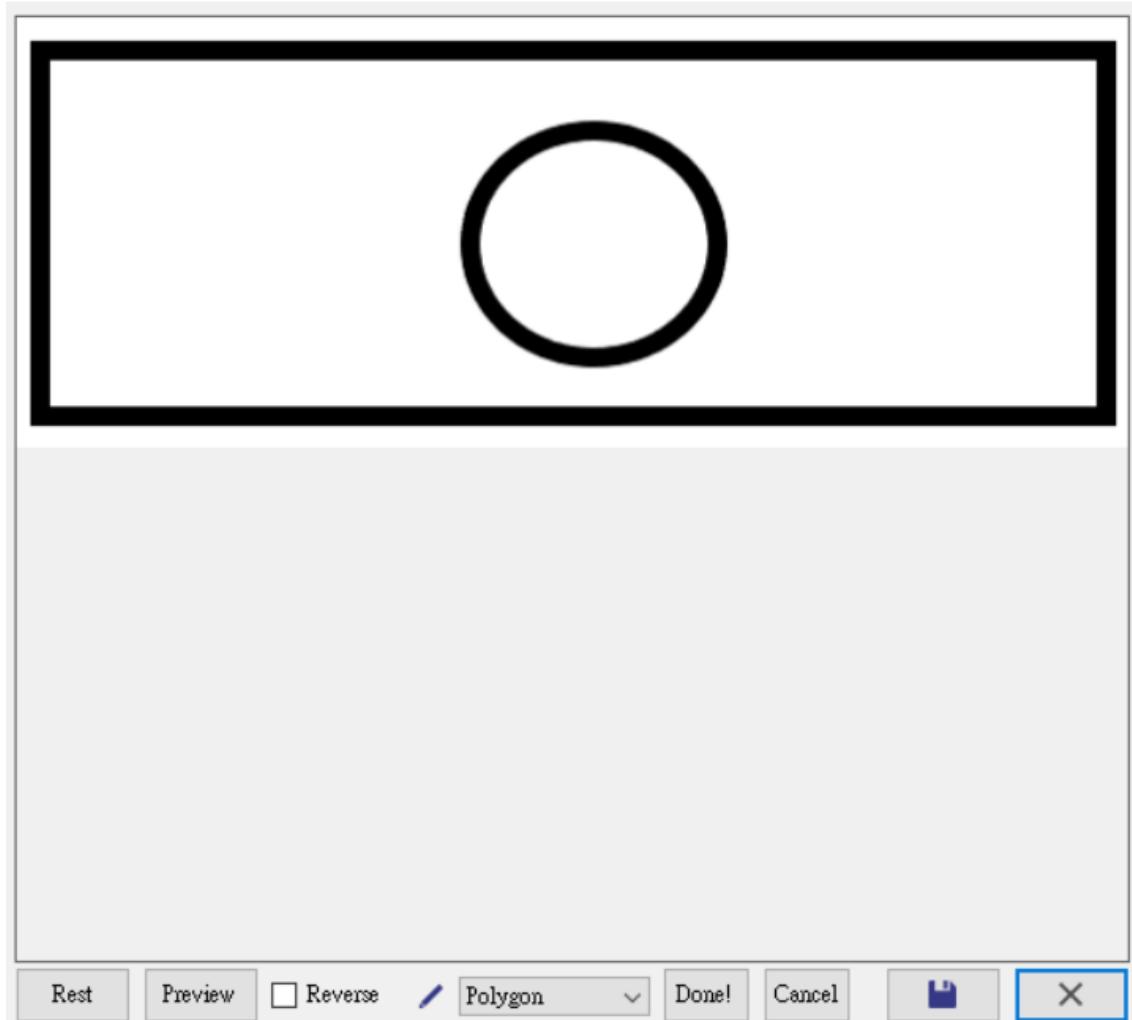


Figure 349: Template mask setting interface

Name	Description
reset	Clear all masked areas.
Preview	View the masked image.
reverse	After checking, you can reversely select the mask area.
polygon	Click the picture clockwise or counterclockwise to frame the polygon mask area.
round	Click the image clockwise or counterclockwise to frame a circular mask area.
Done!	After the block is framed, click this button to continue to add other blocks.
Cancel	Click this button to cancel the currently selected block.
Save	Save settings.
Close	Close the window.

6.6.2.6.1 Template comparison (mask) setting process

- (1) Click the Get Template button. After getting the template, click the Mask button to open the mask editing screen.

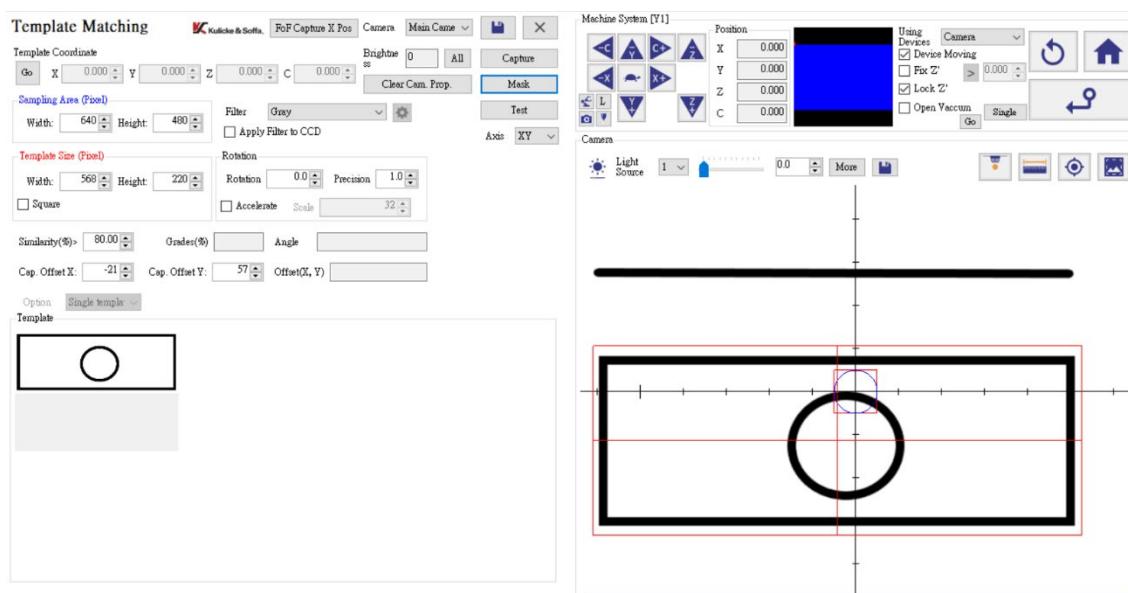


Figure 350: Get the template first, then mask

- (2) According to the current required graphic shape, frame the areas that do not need to be masked.

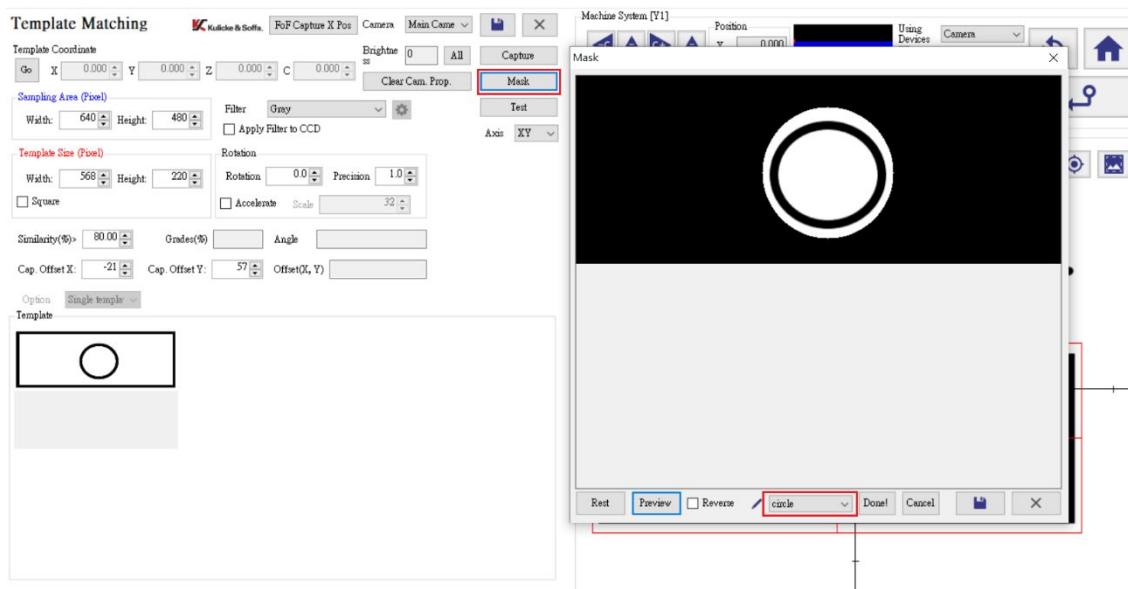


Figure 351: Make mask settings

- (3) After completing the template settings, click the mask button to display the mask setting window for work. After selecting the mask type, edit the interference image mask path, then click the preview button to preview the masked image, save it and leave after completion.

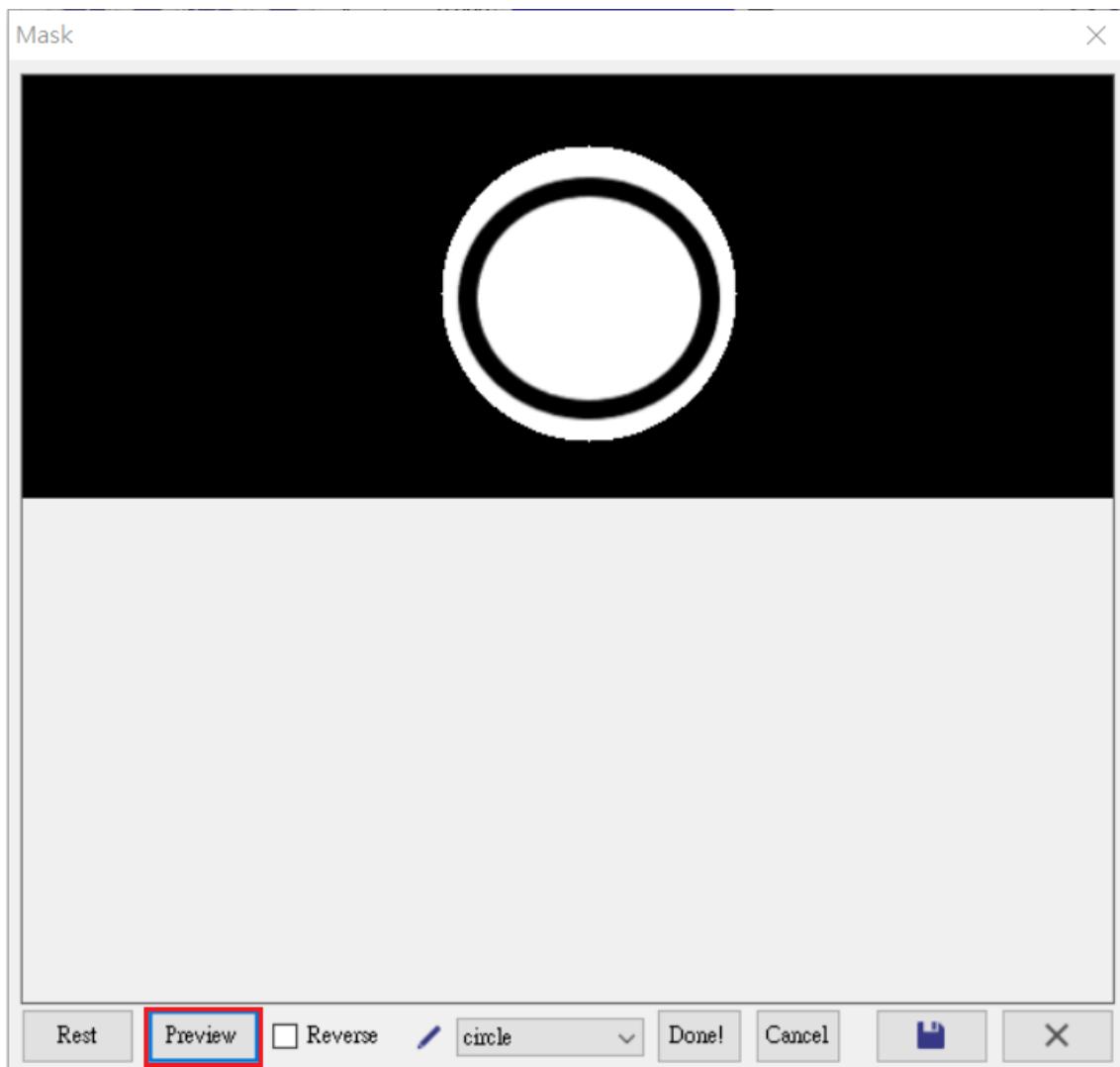


Figure 352: The mask is edited and saved.

6.6.2.7 Petal identification

Petal identification page, find the center of the circle (determine the position of X, Y) and find the petals (calculate the angle).

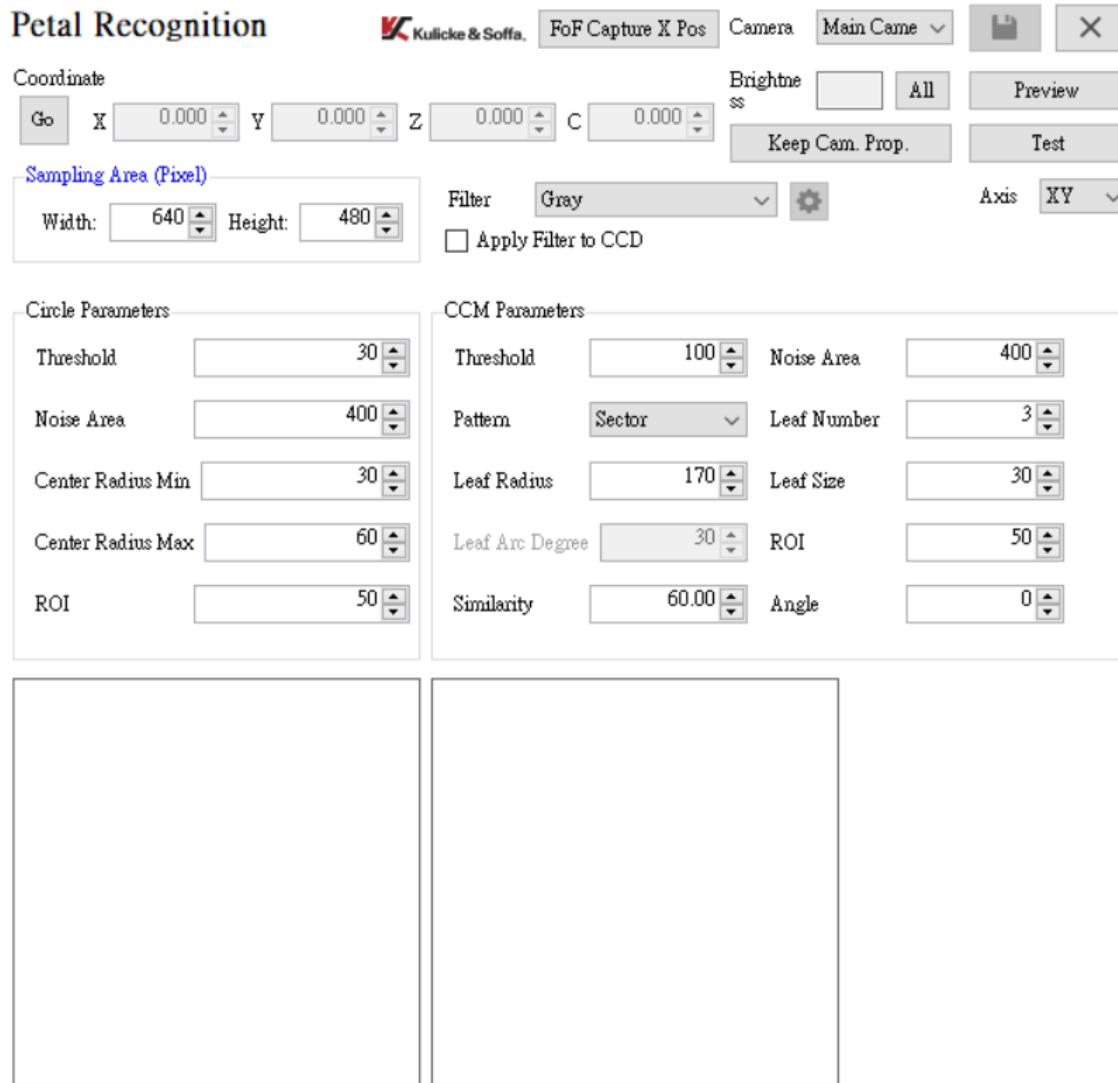
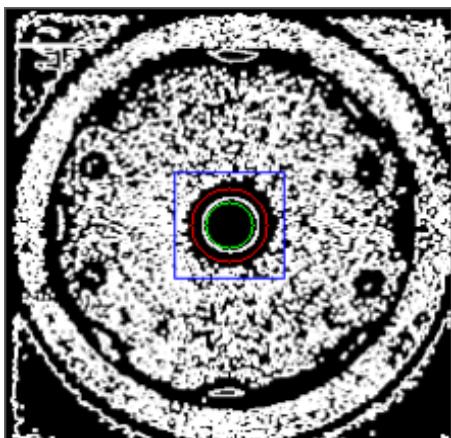


Figure 353: Petal recognition interface

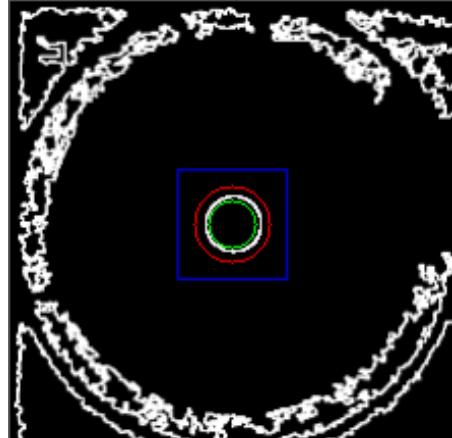
Circle search parameters

The settings in this part will affect the result of circle recognition in the image. Press Preview to preview the image result of the circle. The purpose of the parameter: adjust the image to a state where the outline of the object is obvious.

Name	Description
threshold	The threshold value used when finding the center point of a circle. It is used to find the center point of the circle.
Noise area	Noise filtering helps filter out unnecessary points around the center of the circle. The larger the noise area setting, the less noise around the circle, causing misjudgment. (It should be noted that when the noise range is resized, circles cannot be filtered out.).
Minimum value of circle center radius	Set the circle radius range of the center of the circle (the green circle is the lower limit), close to the center of the circle.
Maximum value of circle center radius	Set the circle radius range of the center of the circle (the red circle is the upper limit), close to the center of the circle.
Detection area	The range to find the center of the circle needs to be set according to the range of circle movement.



The smaller the noise area is set, the more noise points there are around the center of the circle.



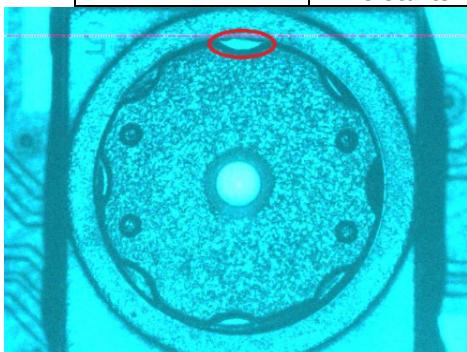
The larger the noise area setting, the fewer noise points around the center of the circle.

Figure 354: Noise area example

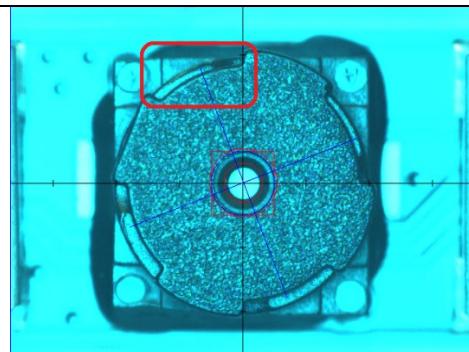
Petal identification parameters

The settings in this part will affect the result of image recognition of petals. Click Preview to preview the image result of petals. The purpose of the parameter: adjust the image to a state where the outline of the object is obvious.

Name	Description
threshold	The threshold to use when finding petals.
Noise area	Noise filtering helps filter out unnecessary points around the petals. The larger the noise area setting, the fewer the noise around the petals, causing misjudgments. (It should be noted that when the noise size is adjusted, the petals cannot be filtered out).
model	Select the appropriate petal pattern (arc or fan-shaped) according to the actual petal shape.
number of petals	The number of petals is as shown in the figure below where the red line starts.



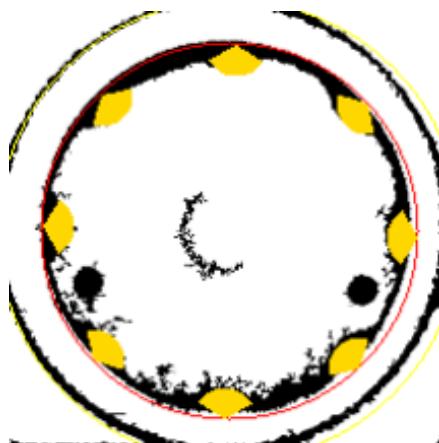
Grab the petal icon



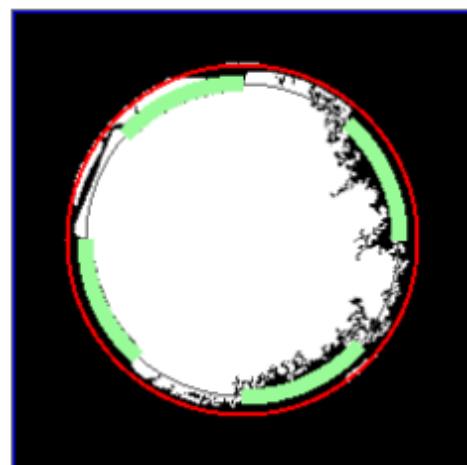
Grab the petal icon

Figure 355: Example icon

Name	Description
petal radius	The length from the center of the circle to the edge of any petal.
petal size	Adjust it to a suitable size, close to the petals.
Petal arc angle	Adjust to a suitable arc angle value, close to the petals.
angle	Adjust to a suitable rotation angle value, close to the petals. Adjust the radius, size, radian and rotation angle values of the above-mentioned petals. The more accurate the adjusted values, the easier it will be to find the correct position of the petals.



Captured example icon

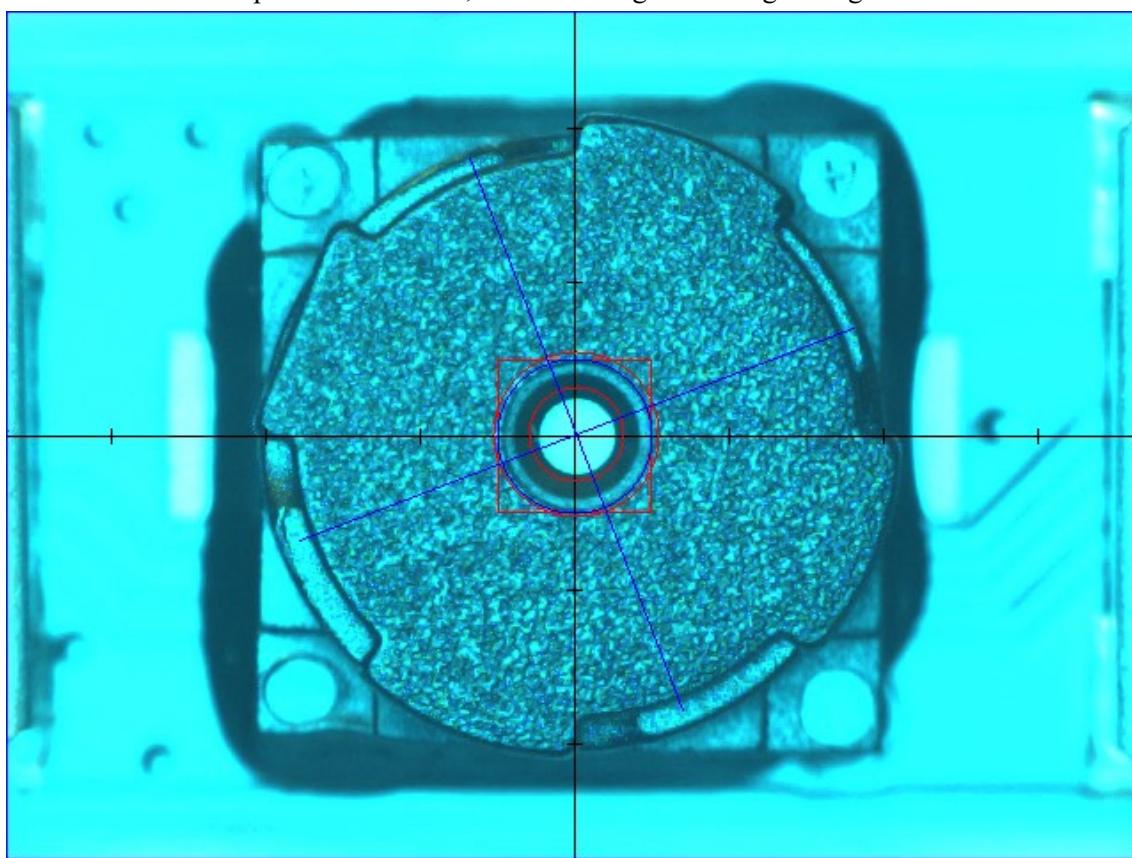


Captured example icon

Figure 356: Identify the crawl results after applying filters

Name	Description
detection area	Find the range of the petals, which cannot be smaller than the petal radius.
Similarity	The similarity of petal recognition. The more accurate the setting value of petal recognition, the higher the similarity.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.

After all the above parameters are set, click Test to get the image recognition results.

**Figure 357: Sample diagram after identification is completed**

The above is a sample picture of correct identification. There will be a cross pair passing through each petal, and it is approximately in the middle of the side, and the small red circle is the center of the circle.

6.6.2.8 Find the circle

The circle finding page is mainly for finding the center coordinates of a circle.

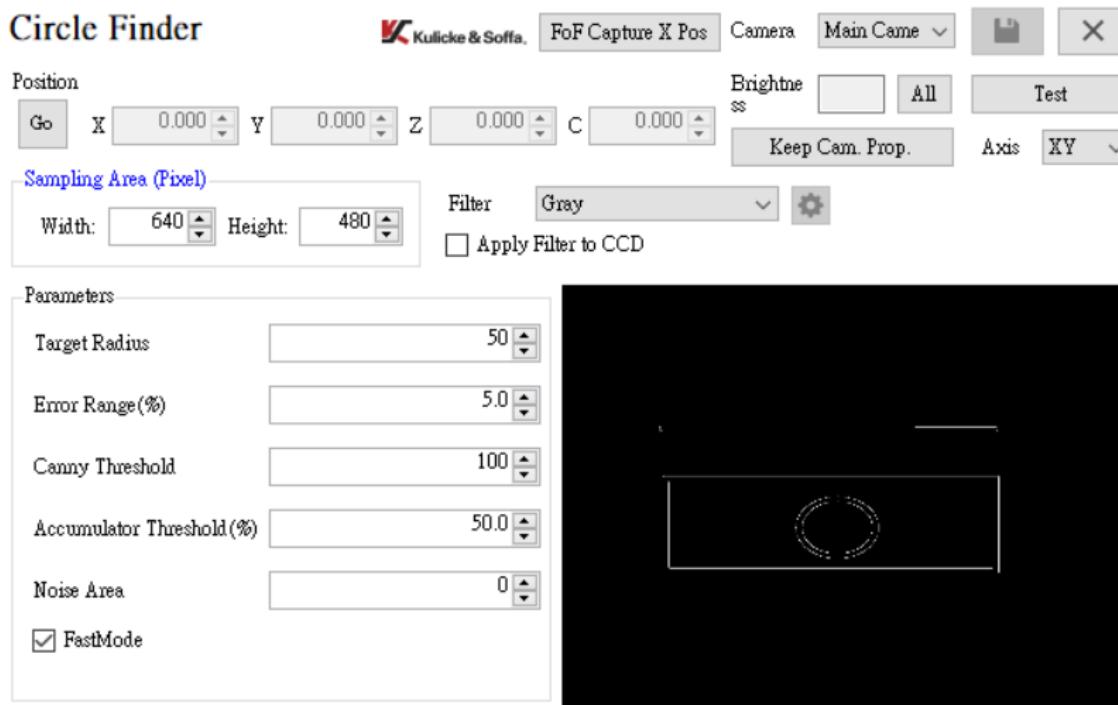


Figure 358: Circle recognition interface

Name	Description
Sampling range	The algorithm will look for a circle within the range that meets the identification parameters.
target radius	The radius of the target circle. During teaching, the Camera screen can be aligned with the center of the circle and set through the auxiliary target on the screen.
Allowable error	Allows you to find circles that are much larger or smaller than the target radius. Too large a value may slow down the recognition speed.
Edge detection threshold	The threshold for marginalization processing. Edges whose grayscale difference is greater than the threshold will be retained, and edges whose grayscale difference is smaller than the threshold will be filtered out.
Circle measurement accumulation threshold	Based on the retained edge segments, calculate the percentage of true circles. The larger the value, the closer it is to a perfect circle.
Noise area	Noise filtering helps filter unnecessary points around the center of the circle. When the noise range is adjusted, the circle cannot be filtered out.
Similarity	The similarity of the circle. The more accurate the set value of the circle, the higher the similarity.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.

6.6.2.8.1 Circle finding process

- (1) Set the sampling range and search based on the set search range.

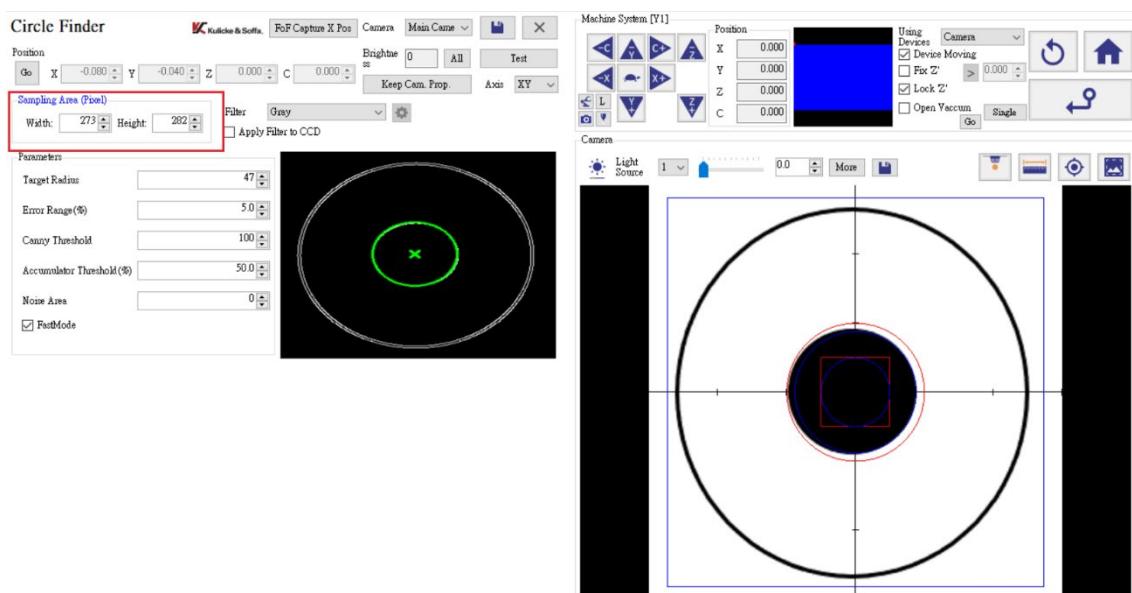


Figure 359: Set sampling range

- (2) Find the radius of the target circle and the allowable error of the radius

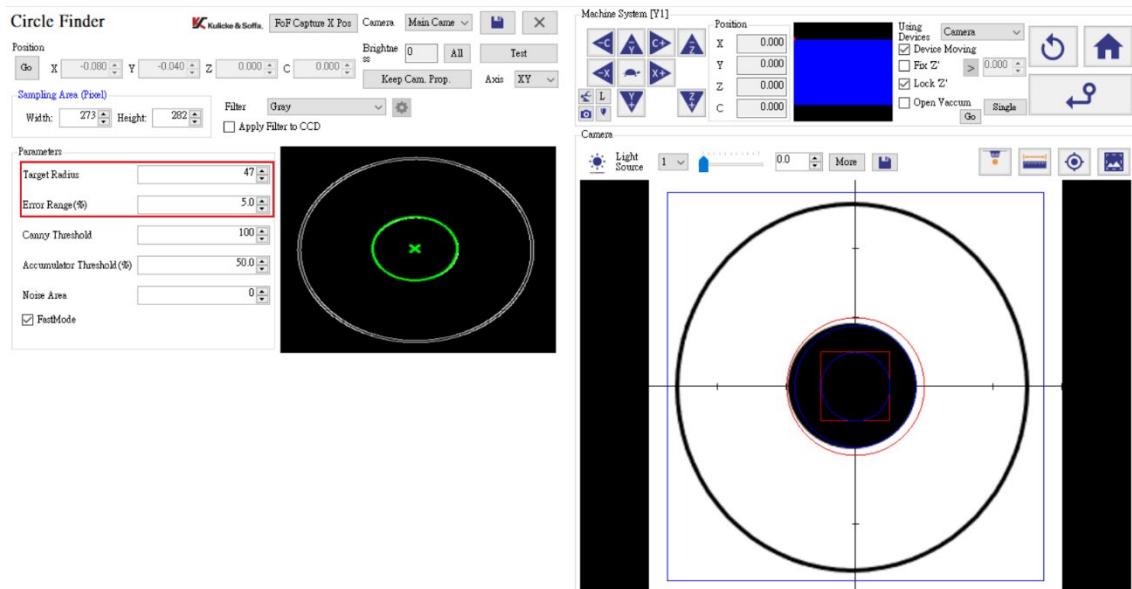


Figure 360: Set the range of the grabbing circle

- (3) Adjust the edge detection threshold, circle detection accumulation threshold (%), and noise area, and the picture on the right will change more.

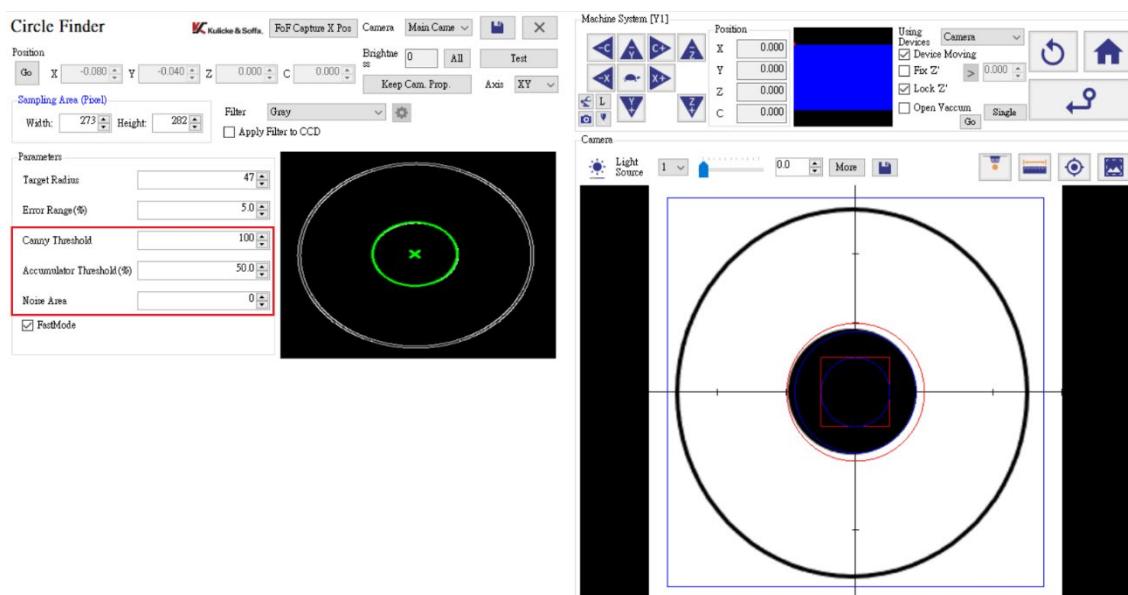


Figure 361: Set threshold values and other values

(4) Click "Test" and save it after the capture is successful.

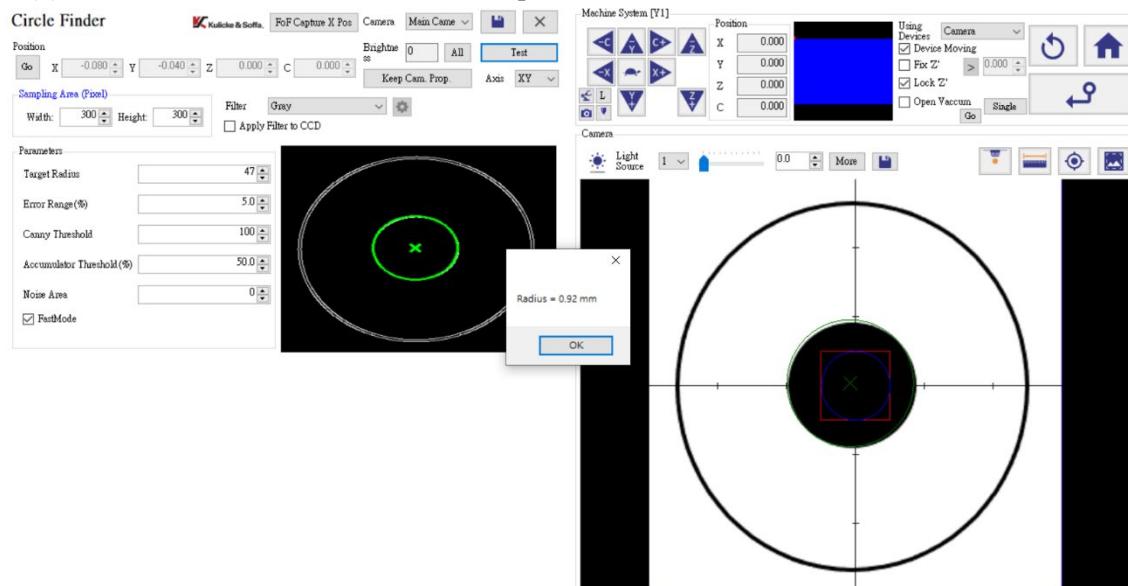


Figure 362: The test capture is successful, click Save

6.6.2.9 Glue width detection

On the glue width detection page, perform edge search on both sides of the glue, and then calculate the glue width and center offset based on the edge search results.

Width Inspection



FoF Capture X Pos

Camera

Main Came 

Go	X <input type="text" value="0.000"/>	Y <input type="text" value="0.000"/>	Z <input type="text" value="0.000"/>	C <input type="text" value="0.000"/>	Brightne <input type="text" value="0"/>	All	<input type="button" value="Inspect"/>
					ss		
					Keep Cam. Prop.	Axis	XY 
Filter	Gray						
<input type="checkbox"/> Apply Filter to CCD				<input checked="" type="checkbox"/> Shift (mm): <input type="text" value="0.715"/>			
Option	Line 	Radius: <input type="text" value="100"/>	Start Angle: <input type="text" value="0"/>	End Angle: <input type="text" value="90"/>			
<input type="radio"/> Vertical	<input checked="" type="radio"/> Horizontal	Win. Threshold (%):	<input type="text" value="50"/>	Allow Defect (%):	<input type="text" value="10"/>		
Filter Times	<input type="text" value="0"/>	Width Min. (mm):	<input type="text" value="0.000"/>	Window Size:	<input type="text" value="5"/>		
Filter Strength	<input type="text" value="1.000"/>	Width Max. (mm):	<input type="text" value="999.000"/>	Limit option:	<input data-bbox="1071 595 1230 624" type="text" value="Range"/>		
Horizontal							
Direction:	Down to Up 	Polarity:	Dark To Bright 	Mini. Diff.:	<input type="text" value="50"/>		
Starting Distance:	<input type="text" value="-1"/>	Length:	<input type="text" value="147"/>	Width:	<input type="text" value="90"/>	Scanning Times:	<input type="text" value="26"/>
Angle Rotation(Degree)	<input type="text" value="0"/>	<input type="checkbox"/> Condition	Dot Threshold(%):	<input type="text" value="0"/>	Angle Offset:	<input type="text" value="90.00"/>	
<input type="checkbox"/> Advance Control	Edge Range: <input type="text" value="3"/>	Min. Edge Width:	<input type="text" value="1"/>	Edge Threshold:	<input type="text" value="5"/>		
Dual Start:	<input type="text" value="0"/>	Dual End:	<input type="text" value="0"/>	Scan Offset X:	<input type="text" value="0"/>	Scan Offset Y:	<input type="text" value="-45"/>
Horizontal							
Direction:	Up to Down 	Polarity:	Dark To Bright 	Mini. Diff.:	<input type="text" value="50"/>		
Starting Distance:	<input type="text" value="2"/>	Length:	<input type="text" value="147"/>	Width:	<input type="text" value="78"/>	Scanning Times:	<input type="text" value="26"/>
Angle Rotation(Degree)	<input type="text" value="0"/>	<input type="checkbox"/> Condition	Dot Threshold(%):	<input type="text" value="0"/>	Angle Offset:	<input type="text" value="90.00"/>	
<input type="checkbox"/> Advance Control	Edge Range: <input type="text" value="3"/>	Min. Edge Width:	<input type="text" value="1"/>	Edge Threshold:	<input type="text" value="5"/>		
Dual Start:	<input type="text" value="0"/>	Dual End:	<input type="text" value="0"/>	Scan Offset X:	<input type="text" value="0"/>	Scan Offset Y:	<input type="text" value="-45"/>

Figure 363: Glue width detection interface

Name	Description
Detection position	Move to detection position.
Record camera parameters	Record current camera parameters.
Clear camera parameters	Clear previously recorded camera parameters.
brightness	Light source parameters during testing.
All	All light source parameters during testing.
Detection area	To find the range of the glue width, you need to set it according to the scope of the glue width.
filter	Grayscale is the default value. Optionally set to apply filters to the screen.
Apply filter to screen	When Apply Filter to Screen is checked, you can check whether the selected filter is appropriate through the camera screen on the right side of the software.
vertical level	Select the horizontal or vertical scan block direction of the line segment.
window filter threshold	The ratio of the number of valid points to the entire window. Only when this ratio is exceeded will the new value of the noise point be calculated.
Defect ratio threshold	If it exceeds the defect threshold, it will be judged as NG.
Filter times	Number of times to perform filtering (noise). (Default

	value is 1)
Filter strength	Will exceed (noise) filtering. (The default value is 1, the smaller the value, the stricter the filtering)
Lower limit of glue width	Set the lower limit of glue width detection. If it exceeds the lower limit, it will be judged as NG.
Upper limit of glue width	Set the upper limit of glue width detection. If it exceeds the upper limit, it will be judged as NG.
Window size settings	A window that filters out noise points will use nearby points as references to calculate new values.
direction	The direction of the horizontal scan block (red box), combined with the "Polarity" menu setting.
polarity	Scan the area (red box) brightness directionality with the horizontal "Direction" setting.
minimum difference	Set the minimum difference in "polarity" brightness. (When the degree of lightness and darkness is large, the minimum difference amount can be increased)
start distance	Horizontal scan area (red box) distance from the center point.
long	Set the length of the horizontal scan block (red box).
Width	Set the width of the horizontal scan area (red box).
Rotation angle (degrees)	Sets the horizontal scan block rotation angle.
Condition setting	Point threshold and angle offset.
point threshold	Effective filter scan point ratio.
Angle offset	Scan point angle offset.
Advanced controls	Set the edge range, edge minimum width, and edge similarity threshold.
Edge range	Edge detection range.
margin minimum width	Minimum width for edge detection.
edge similarity threshold	The edge color is similar to the threshold. The smaller the value, the more stringent it is.
Double line start Double line end	Double line mode, looking for two edges. This parameter determines the maximum and minimum distance between the two lines, indicating the distance between the two lines. When both are 0, it means the function is disabled, and finally the point of the second line will be found.
Scan displacementX Scan displacement Y	Displacement scanning coordinates are used when the machine does not move or the light source is affected.

6.6.2.9.1 Glue width detection process

- (1) Choose vertical or horizontal.

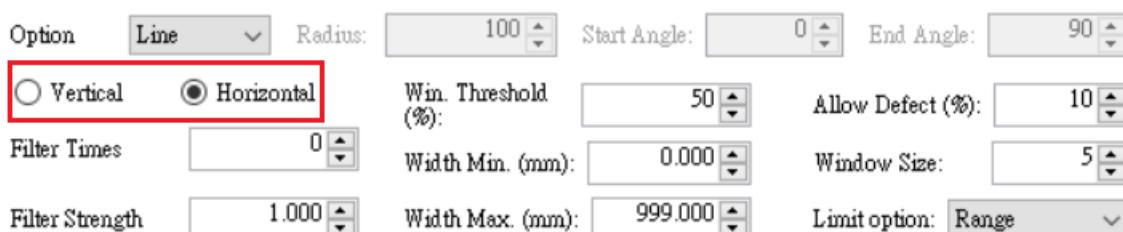


Figure 364: Select grabbing direction

- (2) Set two detection areas (red boxes), modify the scanning displacement X (Y) and start distance to adjust the positions and settings of the detection areas (red boxes) on both sides. According to its image characteristics and position, select the condition settings that match the "Direction" and "Polar" functions of the workpiece (the direction is displayed as a blue arrow), and detect the horizontal and vertical scanning areas (red boxes) and the width to be glued. After overlapping the two sides and setting the preliminary minimum difference value, click the "Get Corner" button to test. When the "Failed to Find Corner" window is displayed, you must adjust the parameters until the required corner (green line segment) can be successfully obtained. cross coordinates).

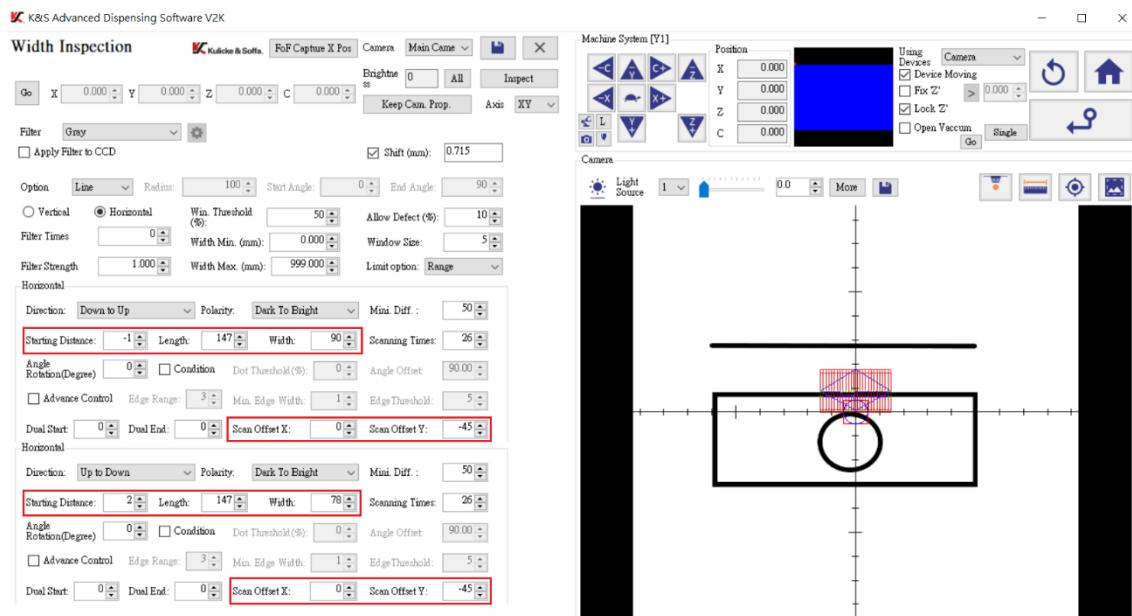


Figure 365: Set scanning displacement, scanning length and width, and directionality

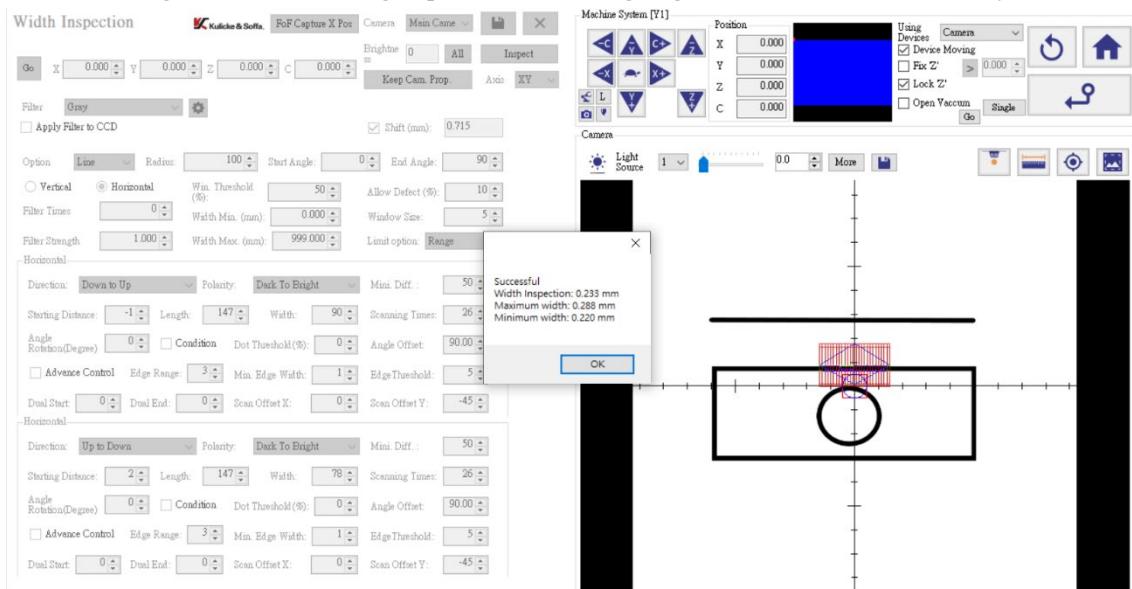


Figure 366: If the test is successful, the results will pop up.

- (3) If the detection effect meets the requirements, store the parameters; if the detection effect is not good, adjust the parameters and then test again (adjust the scanning block (starting distance, length, width and number of scans), filter parameters, angle offset and other condition values.), Save and leave when finished.

6.6.2.10 Grayscale detection

Grayscale interface to determine whether the grayscale within the detection range meets the specifications. Confirm whether there is any variation based on the grayscale changes in the detection area. For example, when the gray scale difference between the glue and the surface of the sample is large, glue overflow or glue breakage can be judged from the gray scale change.

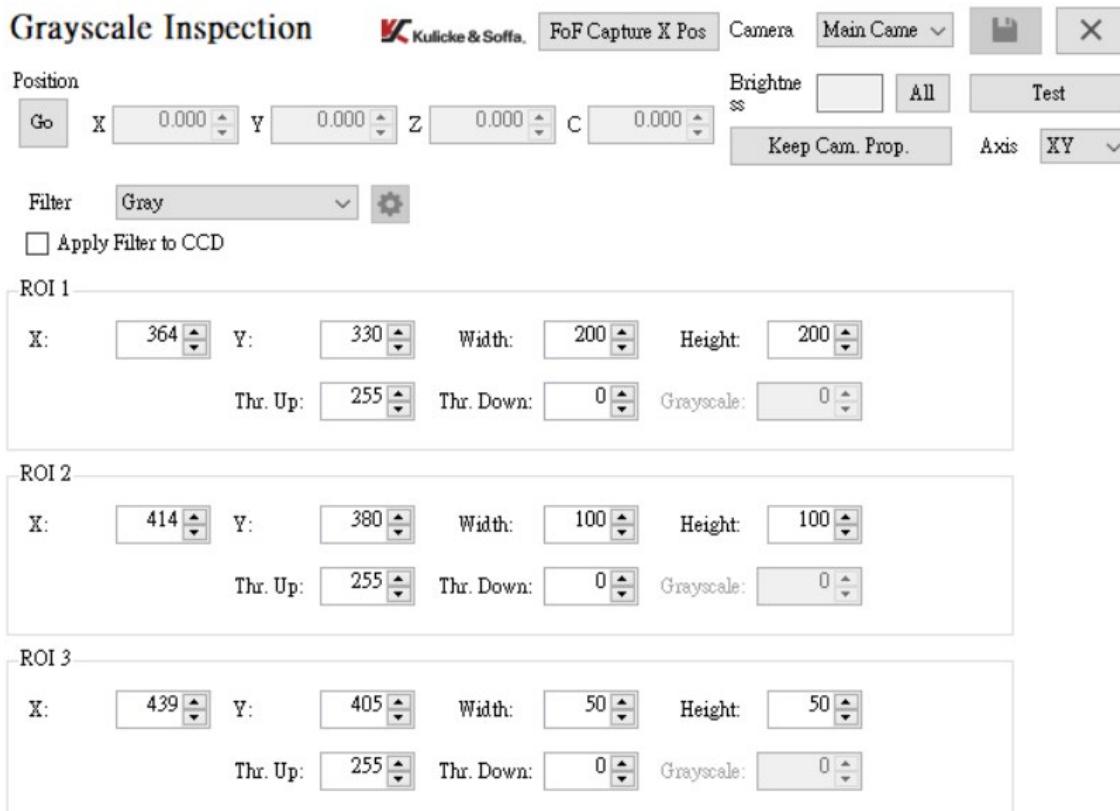


Figure 367: Grayscale detection interface

Name	Description
Wide sampling range	The width of the sampling range of the test.
High sampling range	The height of the sampling range for detection.
ROI X	The X coordinate of the ROI area.
ROI Y	Y coordinate of the ROI area.
ROI wide	ROI area width.
High ROI	ROI area height.
Upper threshold	The upper specification limit for gray scale determination.
lower threshold	The lower specification limit for gray scale determination.
Grayscale	The grayscale measured in the current ROI area. If the ROI has been segmented, you can also know the grayscale after segmentation from the detection result dialog box.

6.6.2.10.1 Grayscale detection setting process

- (1) Use grayscale, red, green and blue filters to enhance the contrast between the detected object and the background. If the contrast is insufficient, you can use a composite filter to increase the contrast. It is not recommended to add too many filters for grayscale detection, as it may cause some details to disappear.



Figure 368: Open the apply filter screen and adjust the filter effect

- (2) Set the position, size and angle of the ROI area to be detected. The effect of the ROI area will be displayed in a red frame on the picture.



Figure 369: Adjust ROI position

- (3) Set the upper and lower limits of the grayscale judgment threshold. If the grayscale exceeds the specification, it will be judged as NG. If the grayscale is within the specification, it will be judged as PASS.

Thr. Up: Thr. Down: Grayscale:

Figure 370: Adjust upper and lower limits

- (4) Click Test and Save.

6.6.3 filter

Image recognition can be used with the filter function. Appropriate filters can make image recognition more accurate and stable. Enter the image recognition screen and select the appropriate filter to use from the menu.



Figure 371: filter list

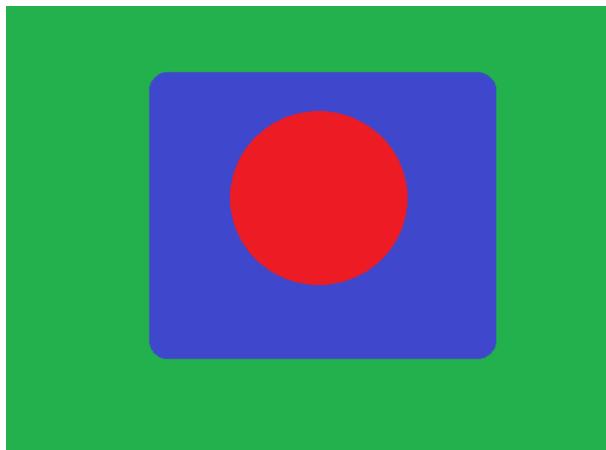
- (1) Some filter functions can set parameter values. Click the "Gear" button on the right to set filter parameters.
- (2) If you check Apply filter to screen, we can determine the effect of the filter through the camera screen on the right side of the software.

Apply Filter to CCD

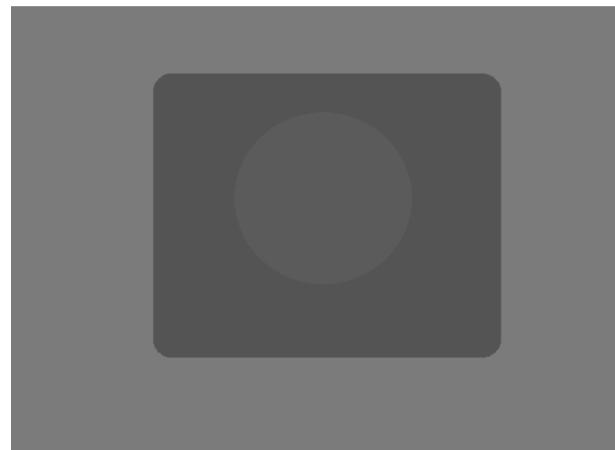
Figure 372: Check the box to apply the filter to the screen and confirm the filter effect.

6.6.3.1 Grayscale

Convert color pictures to grayscale pictures.



Before applying filter

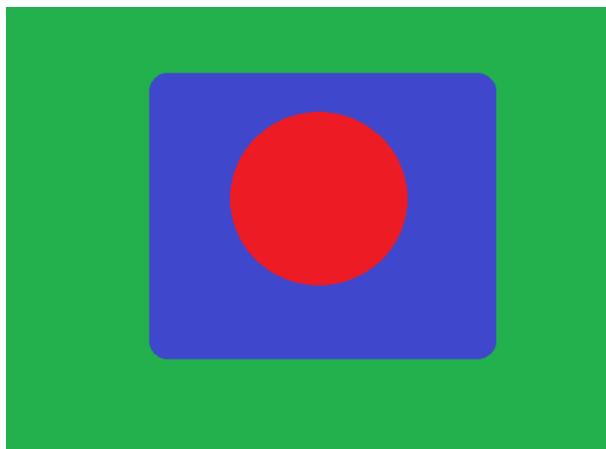


After applying filter

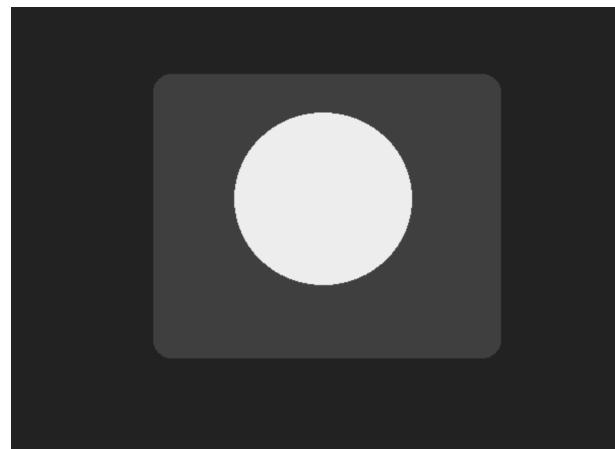
Figure 373: Grayscale effect diagram

6.6.3.2 Red

Convert color image to red channel image.



Before applying filter



After applying filter

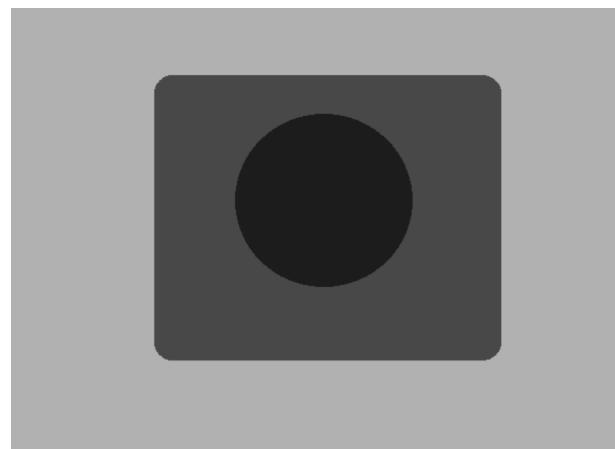
Figure 374: Red effect diagram

6.6.3.3 Green

Convert color images to green channel images.



Before applying filter

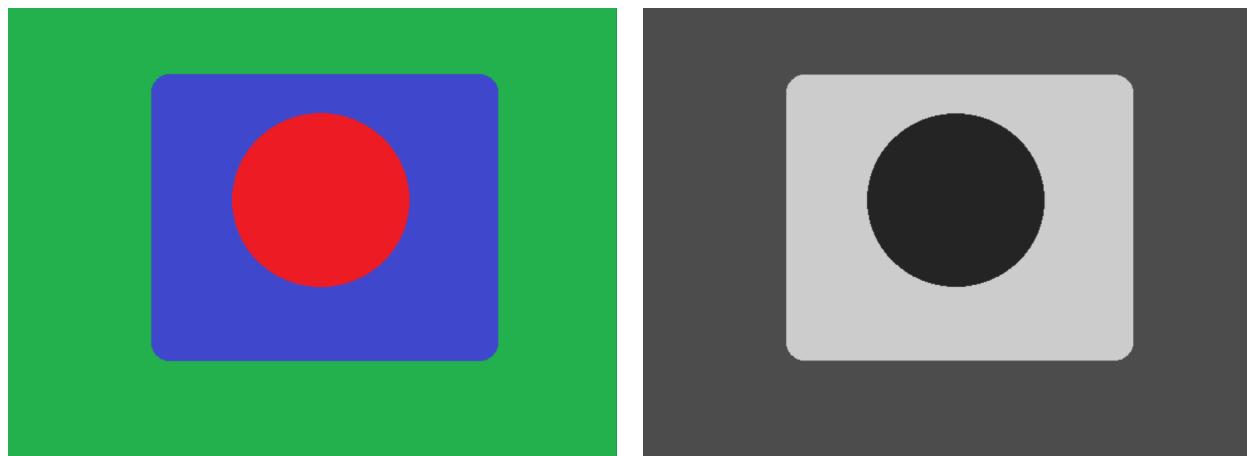


After applying filter

Figure 375: Green effect diagram

6.6.3.4 Blue

Convert color image to blue channel image.



Before applying filter

After applying filter

Figure 376: Blue effect diagram

6.6.3.5 MS filter

The MS filter page is a composite filter that integrates morphology, bandpass filtering, and binarization, which can eliminate noise, enhance contrast, and perform binarization processing.

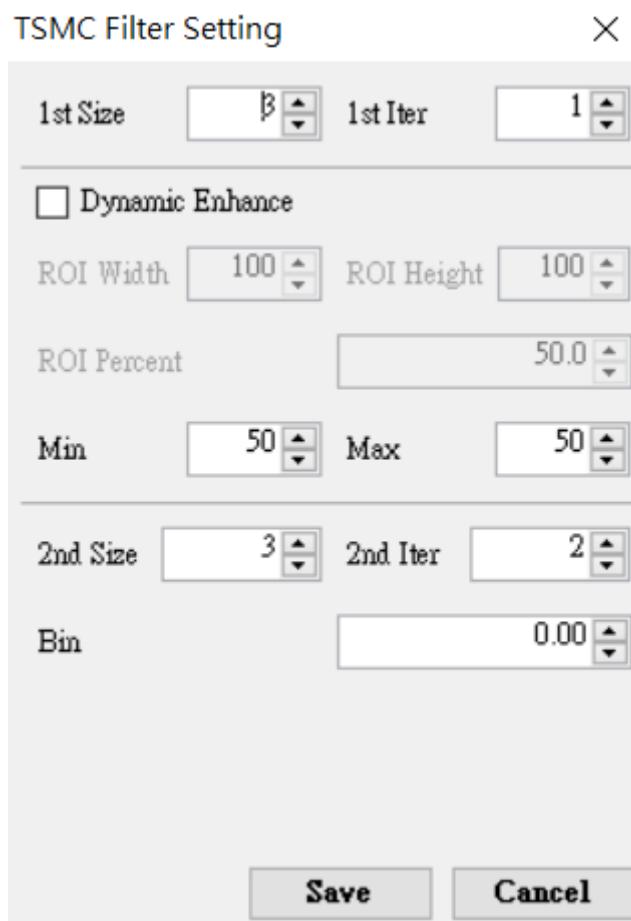


Figure 377: MS filter setting interface

Name	Description
1st Size	The size of the first morphological expansion.
1st Iter	The number of first morphological processing. When set to 0, no morphological processing will be performed.
dynamic contrast enhancement	Enable the dynamic contrast function and make dynamic adjustments based on the contrast strength within the range.

ROI wide	Calculate the ROI width for dynamic contrast.
High ROI	Calculate the ROI height for dynamic contrast.
ROI Percent	Calculate the percentage of dynamic contrast.
minimum value	Bandpass filtering enhances the minimum value of contrast.
maximum value	Bandpass filtering enhances the maximum value of contrast.
2nd Size	The size of the second morphological expansion.
2nd Iter	The second morphological processing times, when set to 0, no morphological processing will be performed.
Binarization threshold	The threshold value for binarization processing. Set from 1 to 0. When 0 is set, binarization is not performed.

MS filter filter effect effect

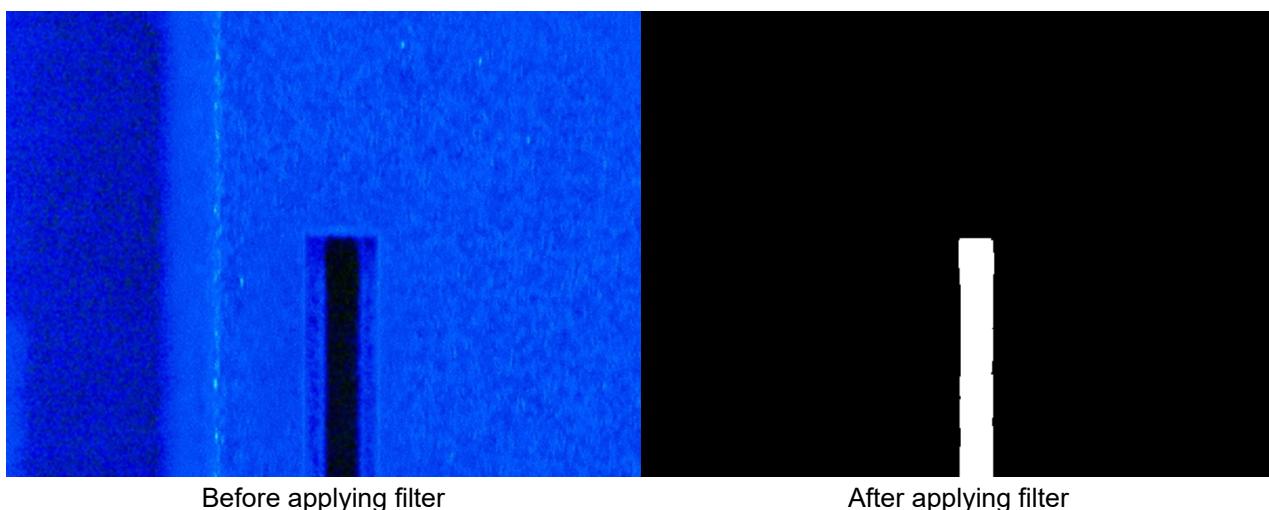


Figure 378: MS filter example diagram

6.6.3.6 bandpass filter

Bandpass filtering page, bandpass filtering is to filter out the gray levels that exceed the upper and lower limits. The most commonly used is the contrast enhancement option, which enhances the contrast of pictures.

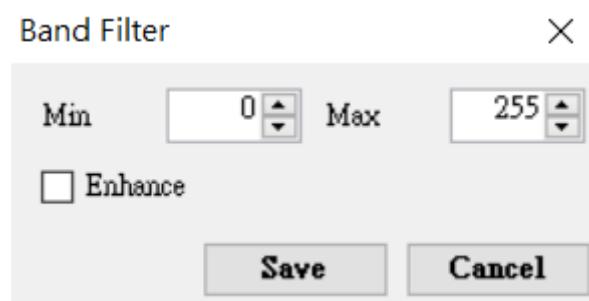
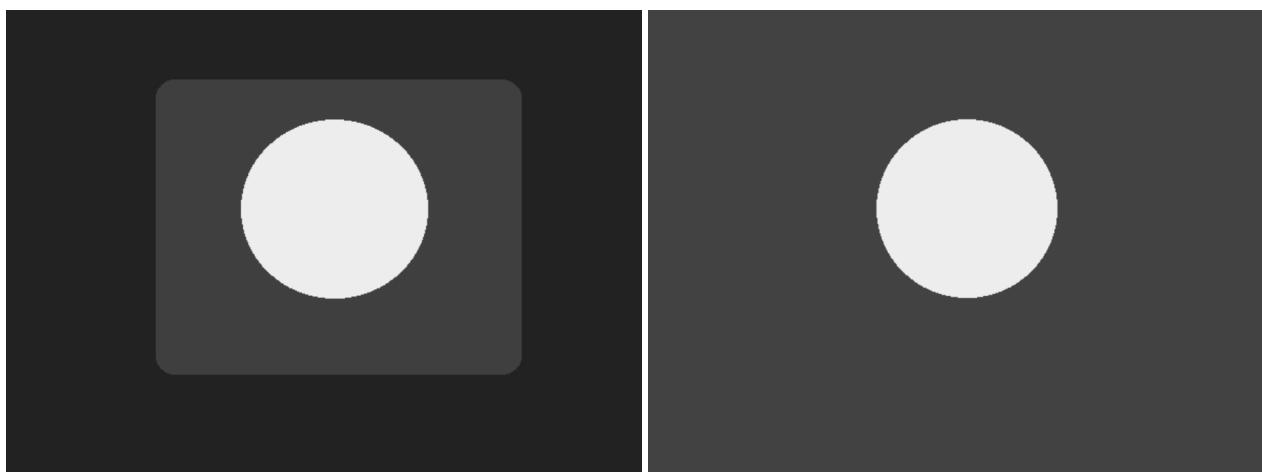


Figure 379: Bandpass filter interface

Name	Description
minimum value	Pixels in the image with grayscale values lower than this value are replaced by the set Min value.
maximum value	Pixels in the image with grayscale values higher than this value are replaced by the set Max value.
contrast enhancement	Reassign filtered images from 0 to 255.

Filter effect that adjusts the minimum value upwards

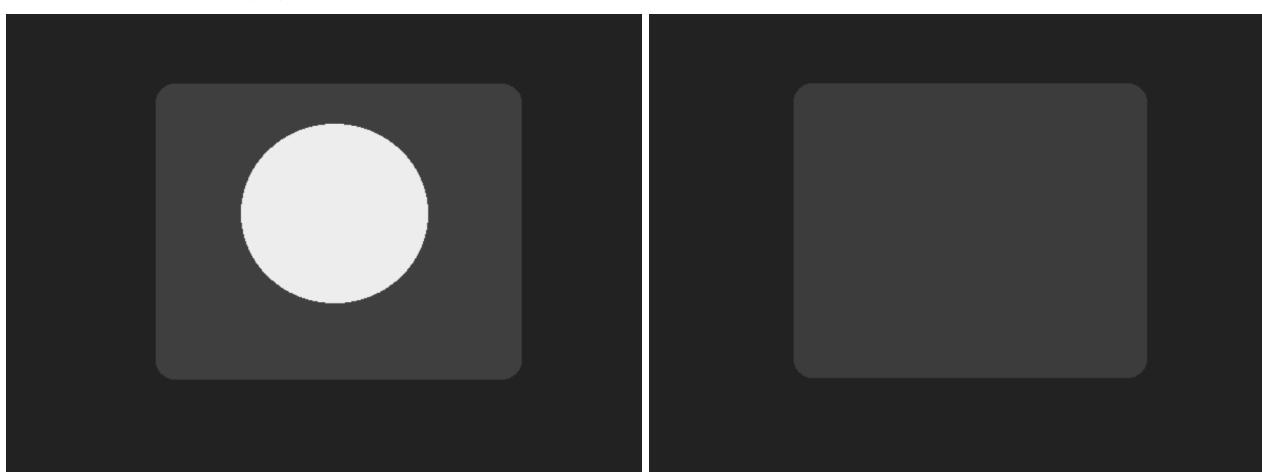


Before applying filter

After applying filter

Figure 380: Minimum value example diagram

將最大值往下調的濾鏡效果

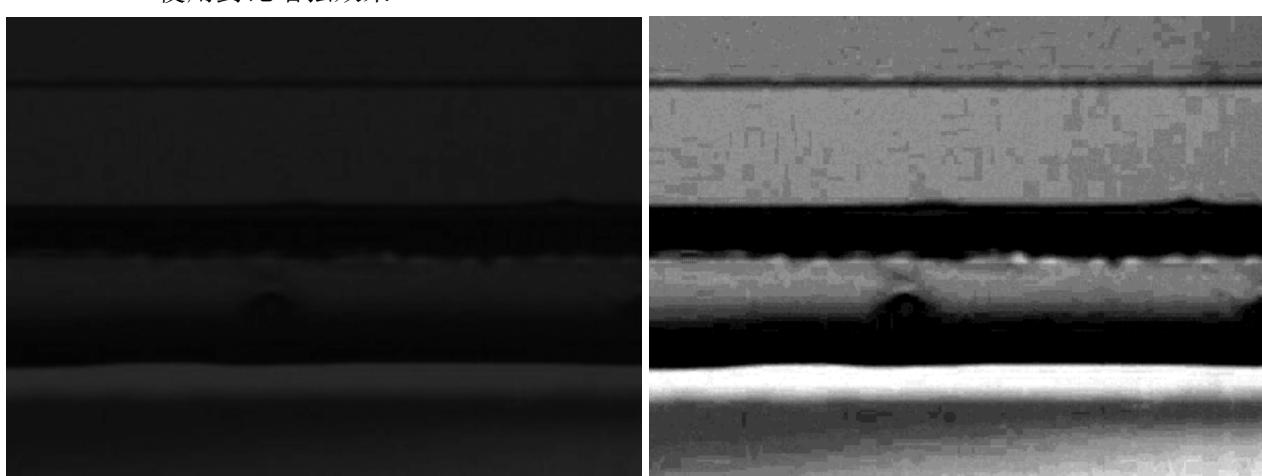


Before applying filter

After applying filter

Figure 381: Maximum value example diagram

使用對比增強效果



Before applying filter

After applying filter

Figure 382: Contrast enhancement example diagram

6.6.3.7 Regional equalization filter

The regional equalization filtering page cuts the image into equal parts and performs contrast enhancement on the cut areas respectively. It can be applied to gradual intensity changes to enhance local image contrast.

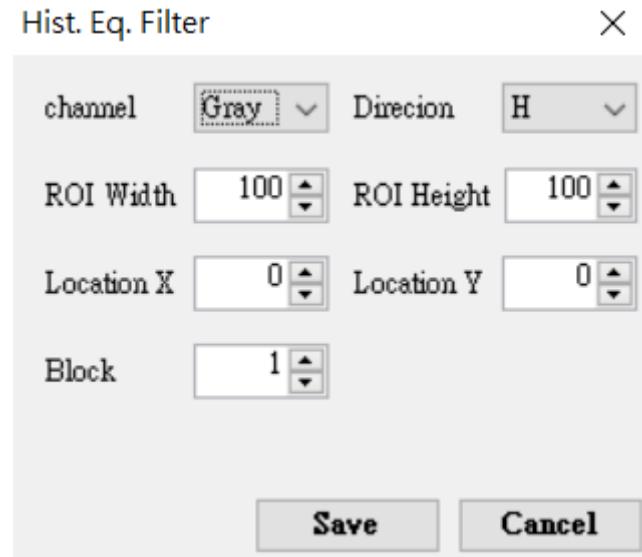


Figure 383: Regional equalization filter interface

Name	Description
aisle	Select the filtered color channel, you can choose grayscale, red, green, or blue.
direction	The direction of the cutting area. V is for vertical cutting and H is for horizontal cutting.
ROI wide	The width of the area to be cut.
High ROI	The height of the area to be cut.
ROI displacementX	Displacement X of the area to be cut.
ROI displacement Y	Displacement Y of the area to be cut.
Number of areas	The quantity to be cut.

Regional equalization filter effect

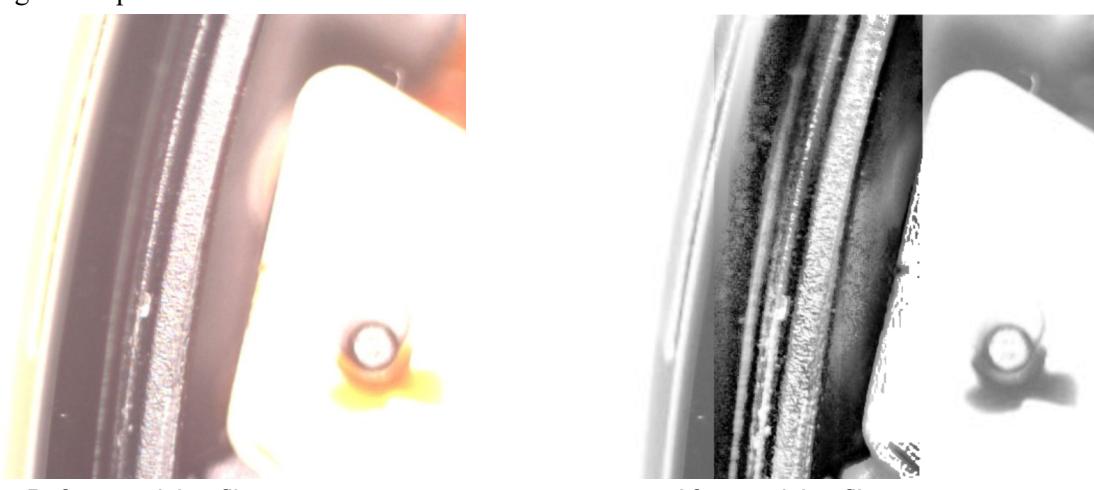


Figure 384: Regional equalization filter example oscilloscope

6.6.3.8 Composite filter

On the compound filter page, different filter effects can be combined and used. The application order of compound filters is F1->F2->.....



Figure 385: Composite filter interface

6.6.3.9 ROI filter

ROI filter page, ROI filter can perform filter processing on a fixed area independently. Usually used in images where the ratio of light to dark is too large, or where some areas need to be processed separately.

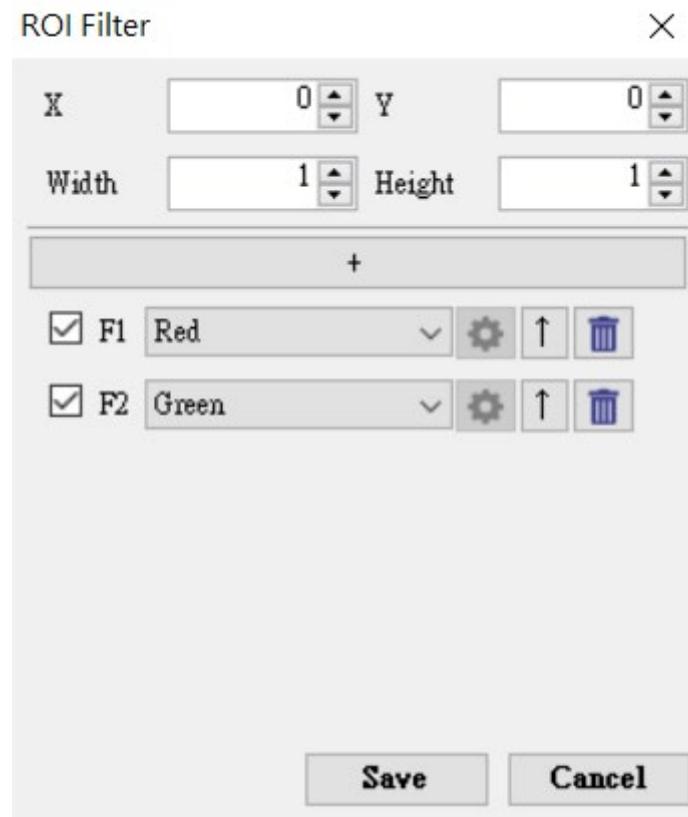


Figure 386: ROI filter interface

Name	Description
------	-------------

X	ROI filter's X position.
Y	Y position of ROI filter.
Width	The width of the ROI filter.
height	The height of the ROI filter.
Add new filter	Similar to the compound filter operation, edit the filter applied in the ROI filter area.

6.6.3.10 Otsu filter

The Otsu filter page applies the automatic binarization filter of the Otsu algorithm. It is suitable for images with clear contrast that need to be automatically binarized.

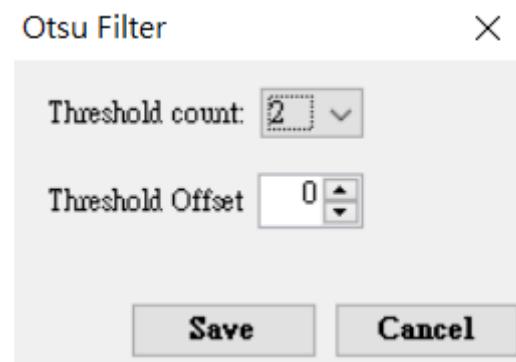


Figure 387: Otsu filter interface

Name	Description
threshold offset	Automatically calculate the binarization threshold and increase the offset to adjust the binarization effect.

The effect of binarization using Otsu filter

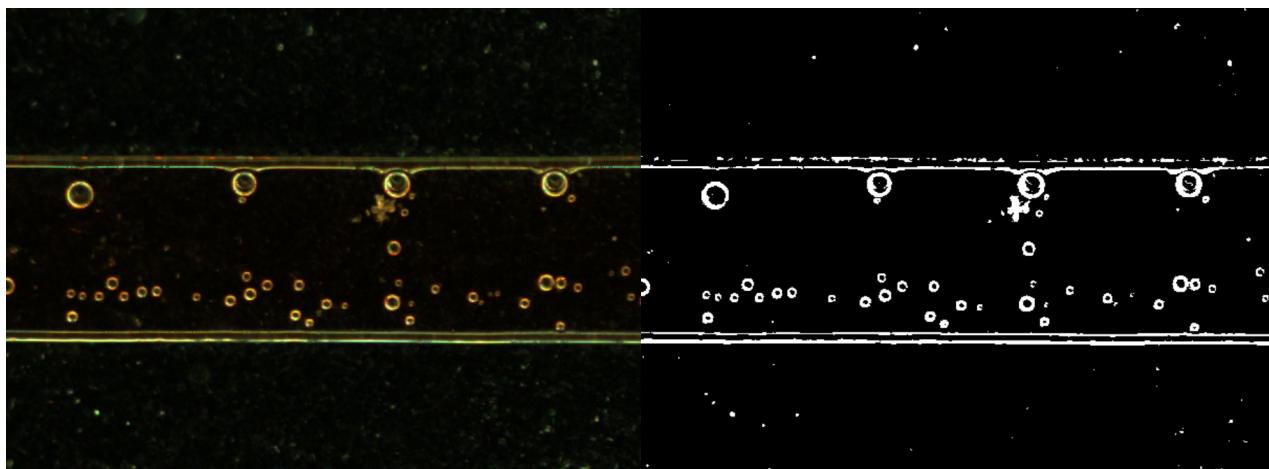


Figure 388: Otsu 濾波器範例示圖

6.6.3.11 Median filter

Median filter page, the Median filter calculates the median value of adjacent points and is often used to remove noise.

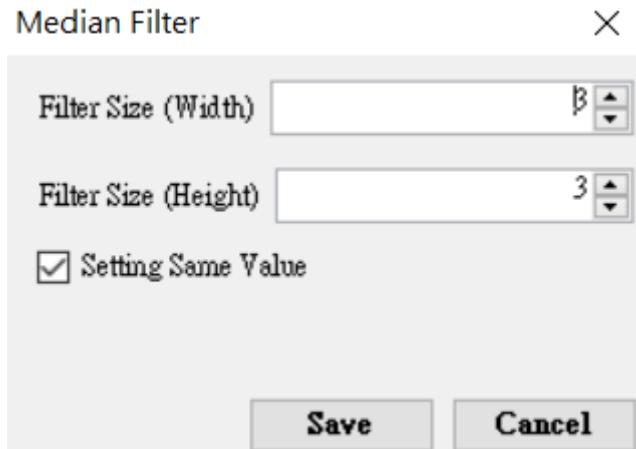


Figure 389: Median filter interface

Name	Description
Median size (width)	Smoothing is performed on the horizontal line. The larger the setting, the more pixels are processed.
Median size (height)	Smoothing is performed on vertical lines. The larger the setting, the more pixels are processed.
Set the same value	打勾則將寬高的數值設定相同。

Median filter removes noise effects

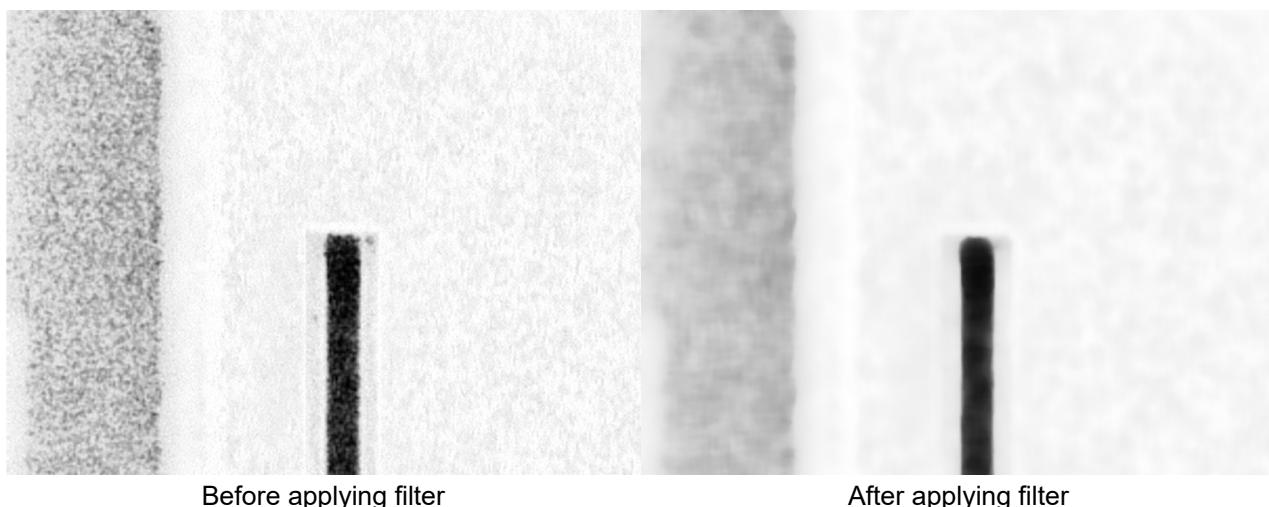


Figure 390: Example diagram

6.6.3.12 Kapur filter

Kapur filter page, which applies the automatic binarization filter of the Kapur algorithm. It is suitable for images with clear contrast that need to be automatically binarized.

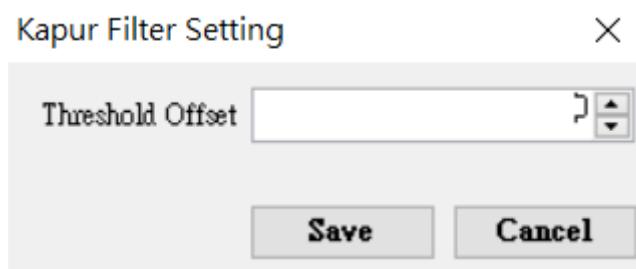
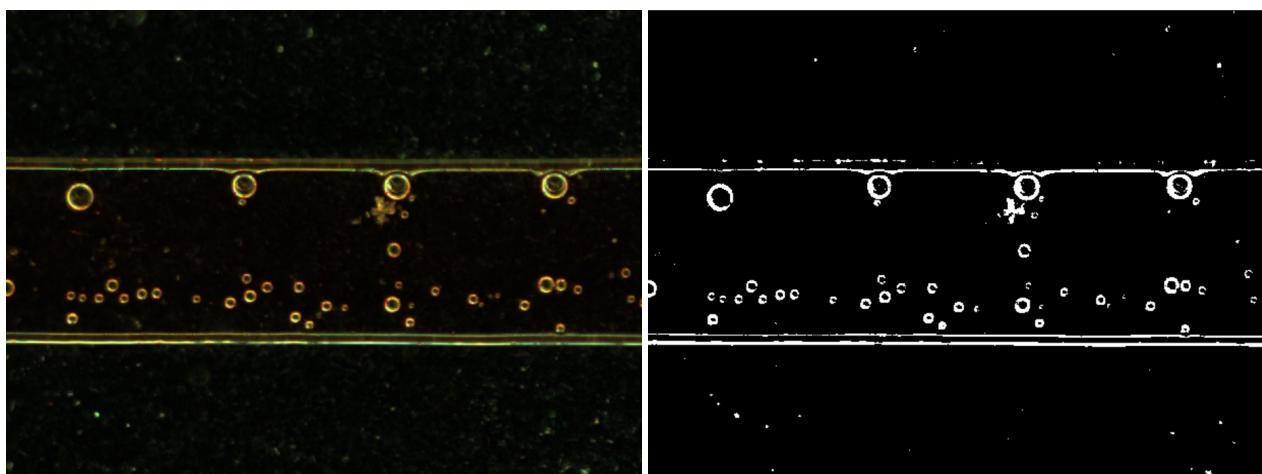


Figure 391: Kapur filter interface

Name	Description
threshold offset	Automatically calculate the binarization threshold and increase the offset to adjust the binarization effect.

The effect of binarization using Kapur filter



Before applying filter

Before applying filter

Figure 392: Example diagram

6.6.3.13 Canny edge detection

Canny edge detection page, Canny edge detection can display edges as lines, and is often used in images that need to display edges.

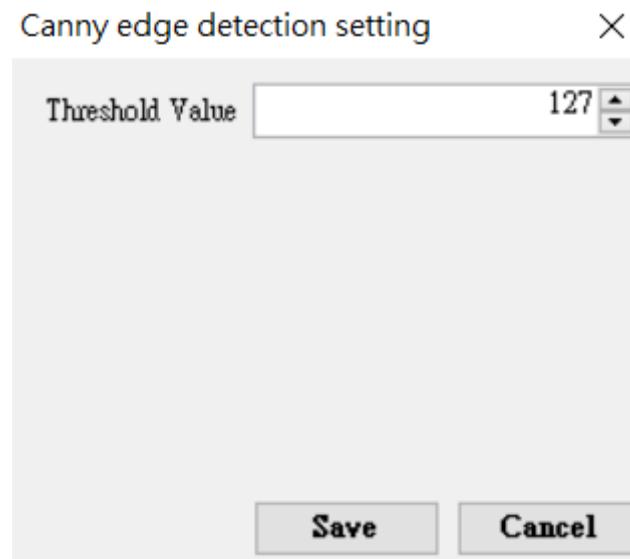


Figure 393: Canny edge detection interface

name	illustrate
threshold value	The threshold value for edge determination. The larger the value, the larger the threshold for edge difference needs to be.

Canny edge detection effect

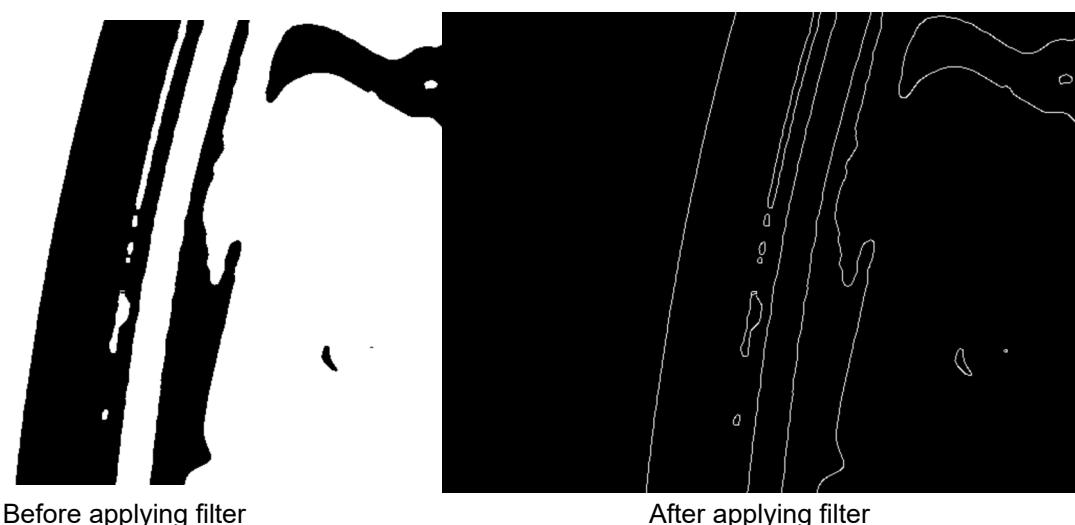


Figure 394: Example diagram

sharpen

Enhance the contrast between light and dark in your image, allowing you to see tiny textures.

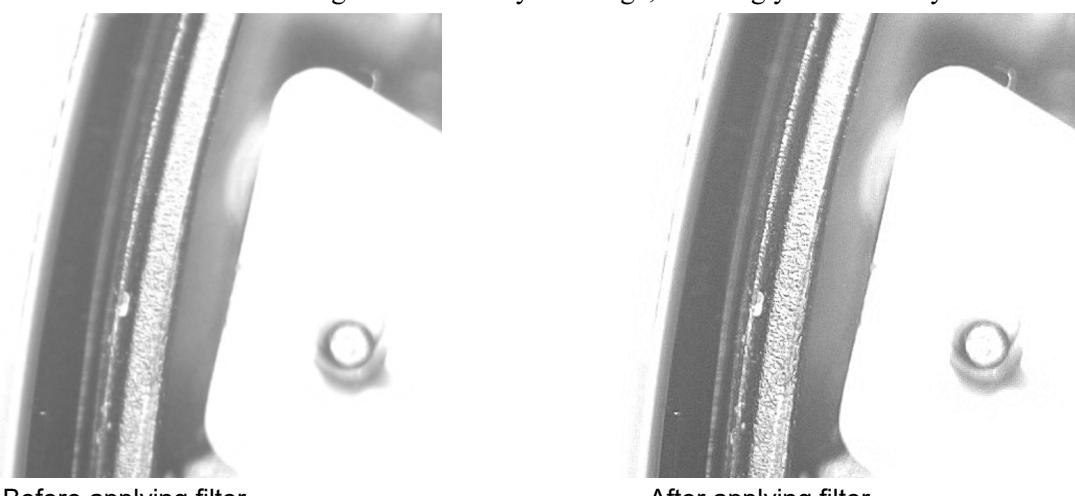


Figure 395: Sharpening example image

negative effect

The negative effect is a grayscale inversion of black and white, and is used when some image recognition or filters require objects to be white.

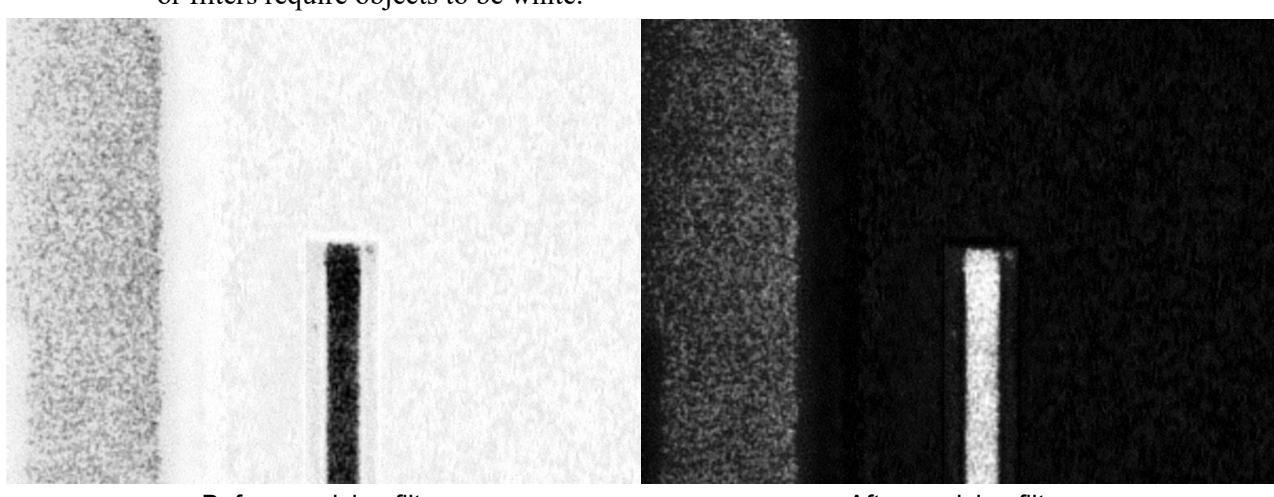


Figure 396: Example of negative film effect

refine

Thin the white line segment, leaving only the 1 pixel white line in the center. Usually used to find edges from the center of a line segment.

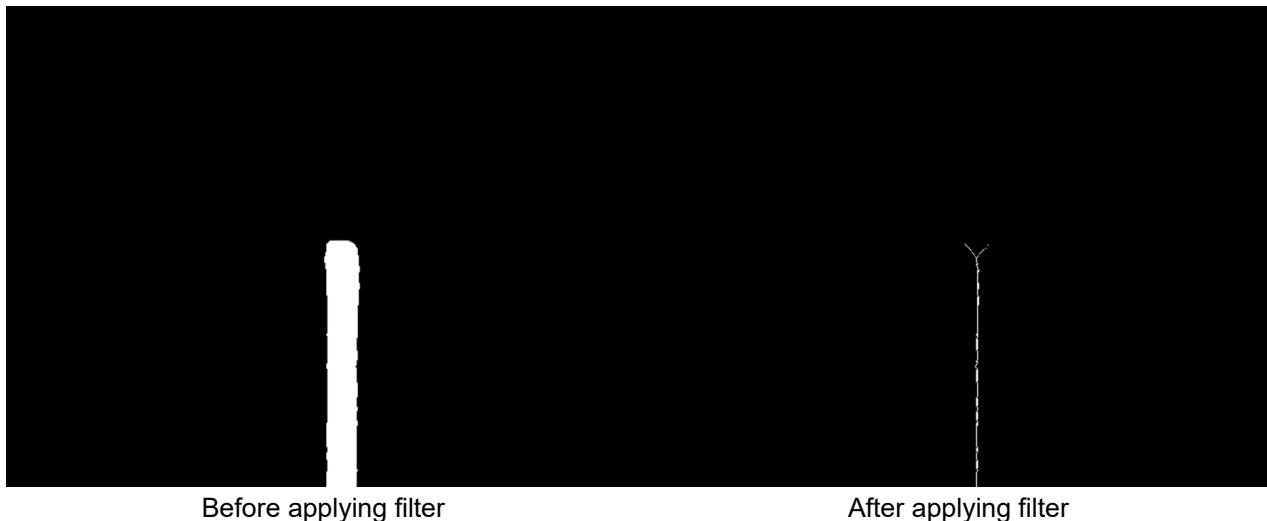


Figure 397: Example of refinement effect

6.6.3.14 Noise cancellation

The noise elimination page can eliminate or retain noise. It is usually used to remove small noise.

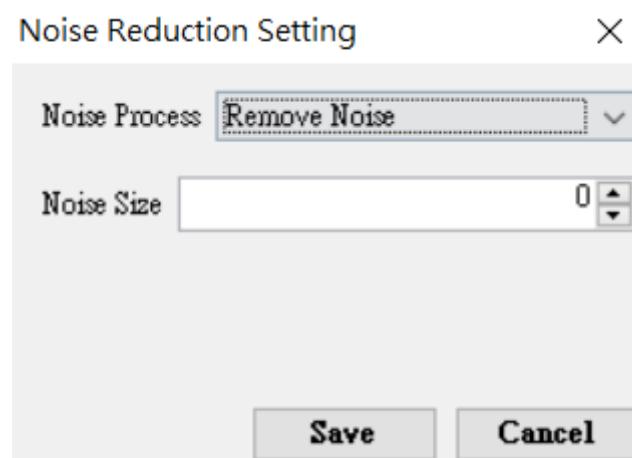
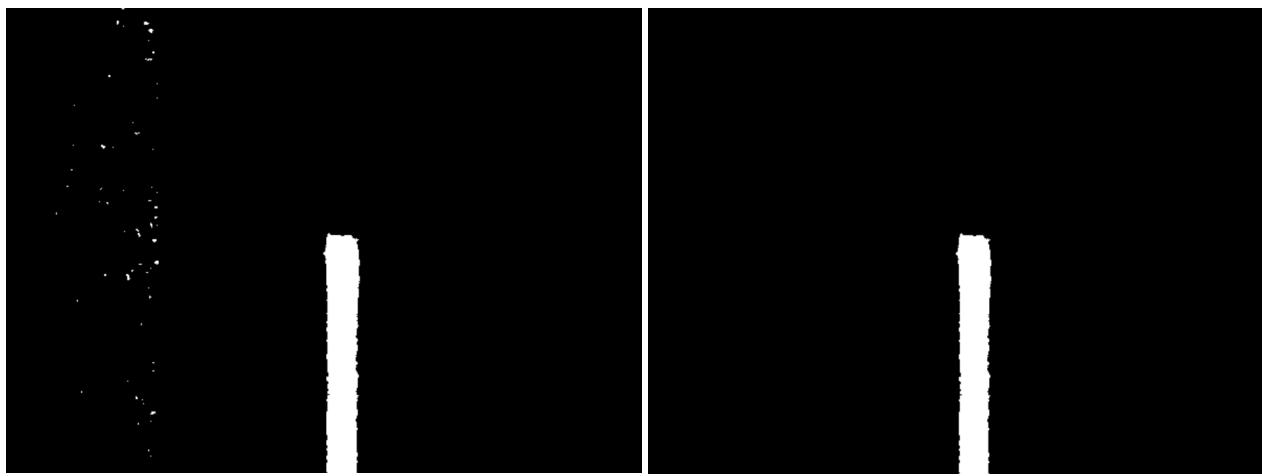


Figure 398: Noise elimination interface

name	illustrate
Noise processing	Noise removal: Remove signals below the noise area. Retain noise: Retain signals above the noise area.
Noise area	The signal is filtered using the area of the white area on the image as the judgment threshold.

Remove noise effects

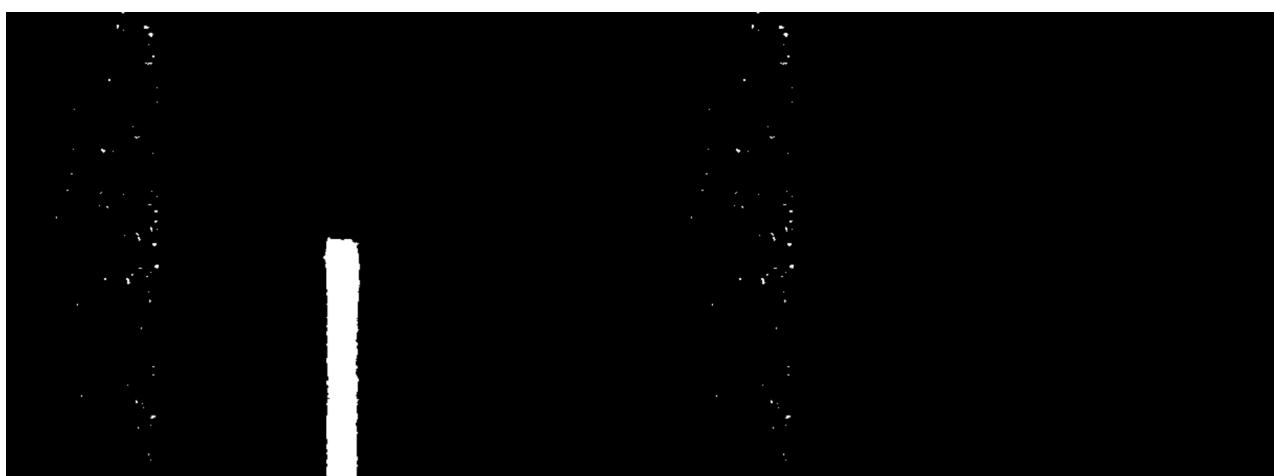


Before applying filter

After applying filter

Figure 399: Noise removal effect example diagram

保留雜訊效果



Before applying filter

After applying filter

Figure 400: Preserved noise effect example diagram

6.6.3.15 guided filtering

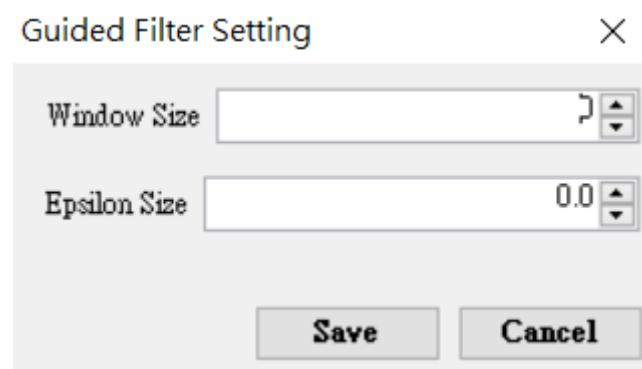


Figure 401: Guided filtering interface

6.6.3.16 Threshold filtering

Threshold filtering page. Threshold filtering is a manual binary filter, which is mainly used for binary images that require custom adjustment.

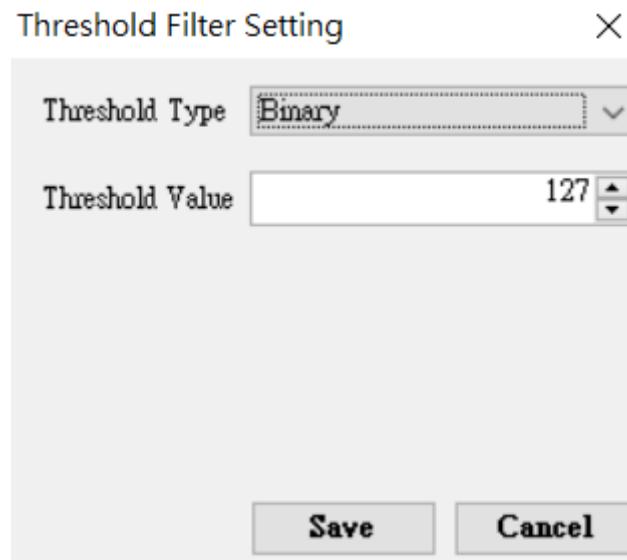


Figure 402: Threshold value example diagram

name	illustrate
threshold type	Binarization: Turn values greater than the threshold into white, and values less than the threshold into black. Anti-binariation: Turn values greater than the threshold into black, and values less than the threshold into white. Truncated: Change colors greater than the threshold value into the threshold value. Return to zero: Change colors smaller than the threshold to black. Anti-return to zero: Change colors greater than the threshold to black.
threshold value	Determine the threshold value for binarization, the adjustment range is 0 to 255.

Binarization effect

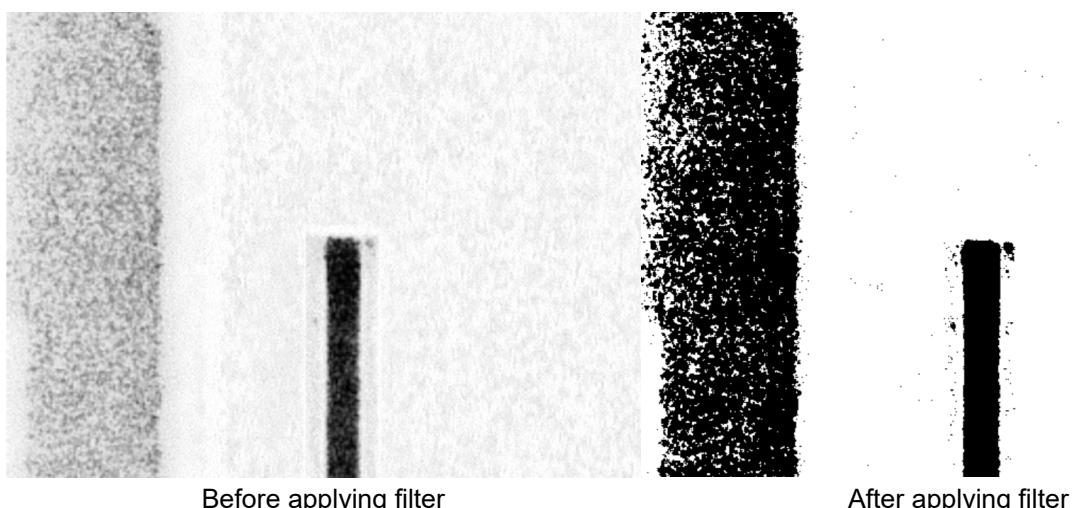
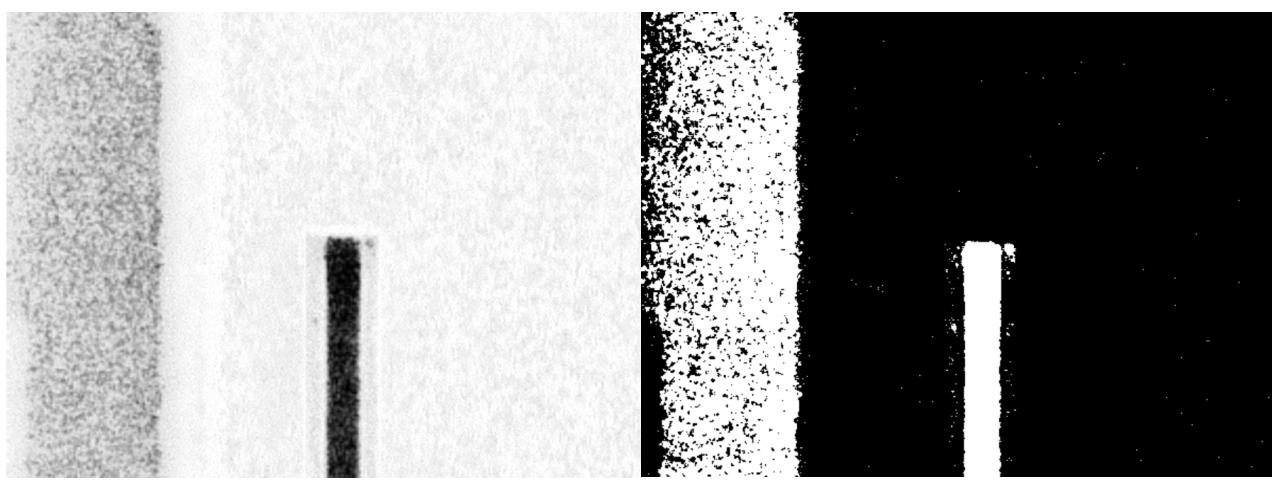


Figure 403: Binarization effect

Anti-binariation effect

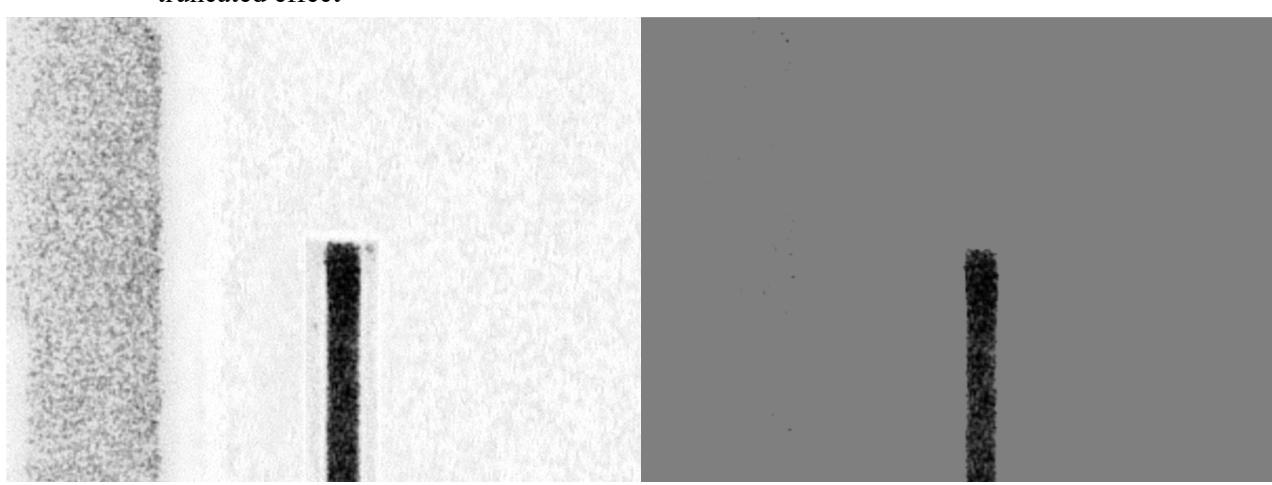


Before applying filter

After applying filter

Figure 404: Anti-binariation example effect

truncated effect

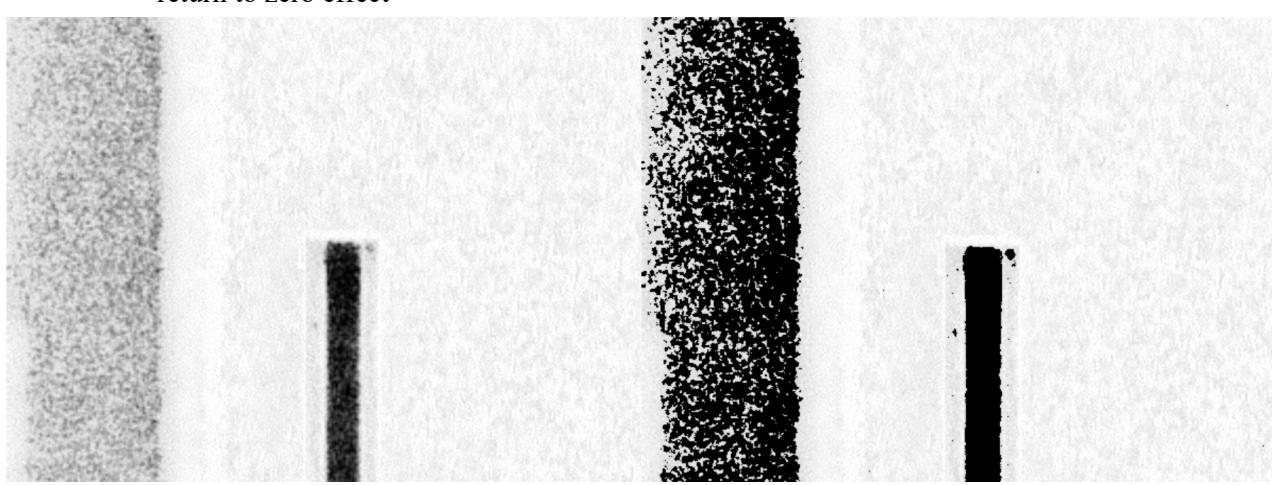


Before applying filter

After applying filter

Figure 405: Truncated example effect

return to zero effect



Before applying filter

After applying filter

Figure 406: Example diagram of return-to-zero effect

Anti-zero effect

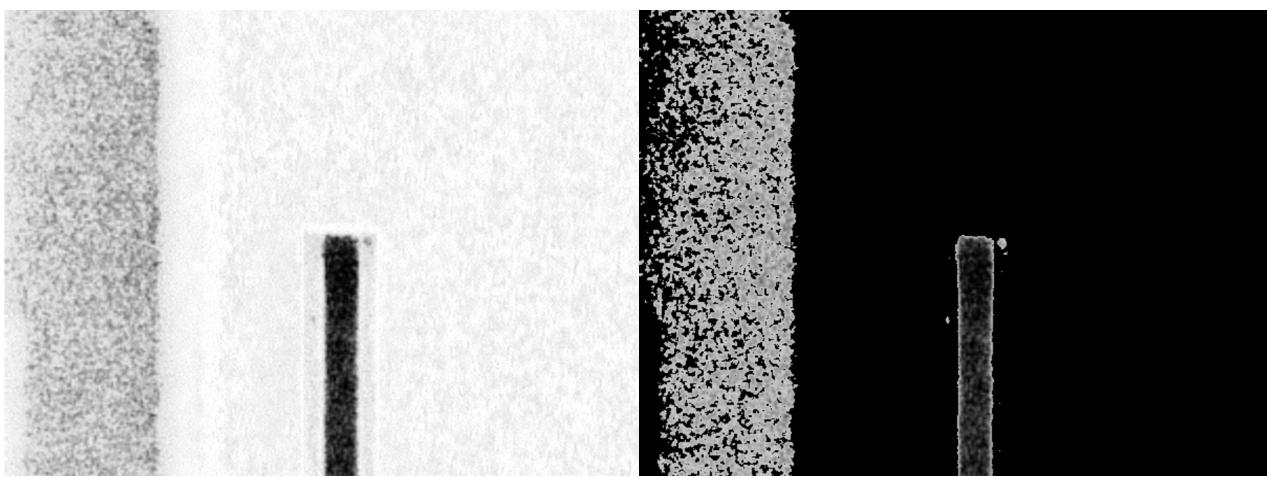


Figure 407: Example diagram of anti-zero effect

6.6.3.17 Morphological processing

The morphological processing page performs morphological processing on image content and is often used to process images with fixed shapes.

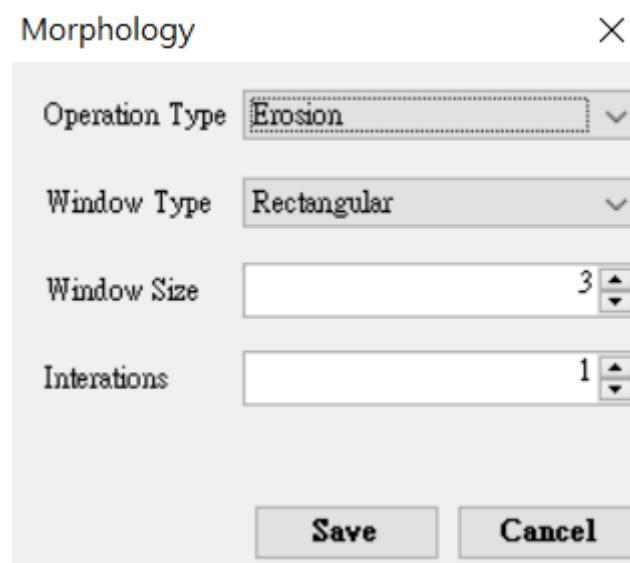


Figure 408: Morphological processing interface

name	illustrate
morphological form	Erosion: Erode the image and make the white area smaller. Dilation: Dilate the image and make the white area larger. Disconnect: Disconnect the white line segments, and the thinner segments will be disconnected first. Close: Close the white interval area, and the adjacent areas will be closed first.
window style	Rectangle: The processing area is rectangular, with the largest processing area. Rectangular objects are usually processed. Ellipse: The processing area is oval, the processing area is moderate, and round objects are usually processed. Cross: The processing area is a cross, and the processing area is the smallest.
window size	The window size for processing is recommended to be an odd number. If an even number is input, the processed image will be displaced.
Processing times	The more processing times, the more deformation will occur. It is not recommended to process too many times as it may cause image distortion.

Erosion treatment effect



Figure 409: Example diagram of erosion treatment effect

Expansion processing effect

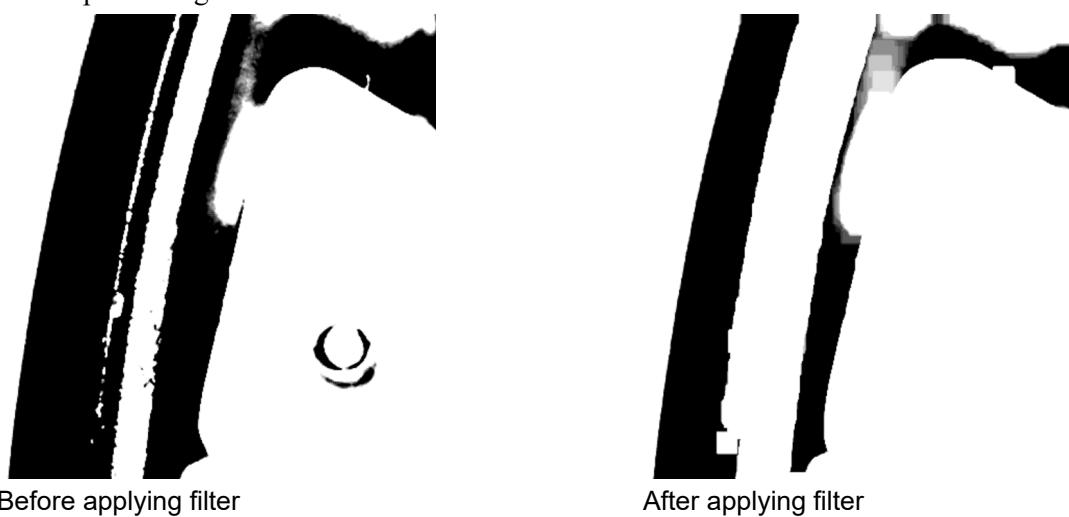


Figure 410: Expansion processing example diagram

Disconnect processing effect

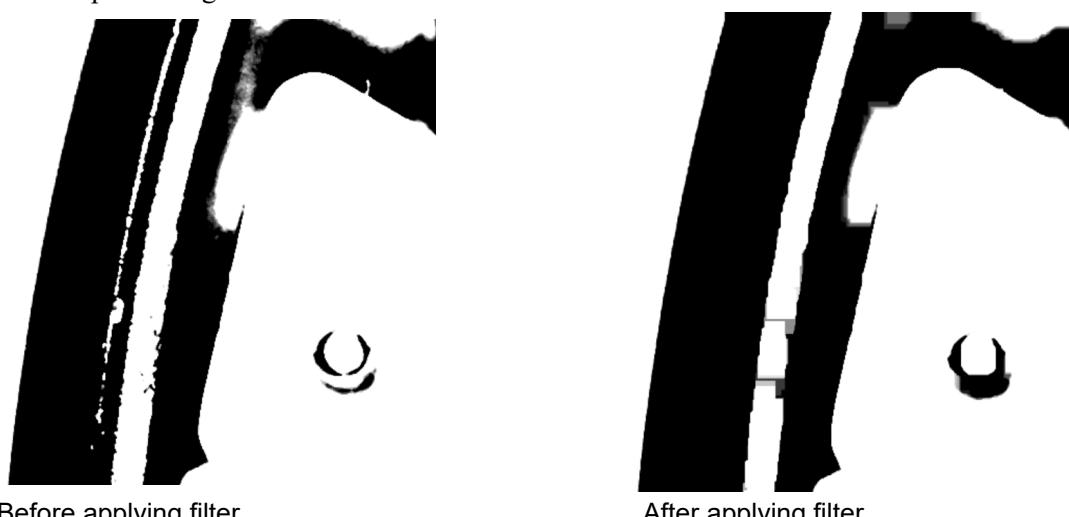


Figure 411: Example diagram of disconnection processing effect

Close processing effect

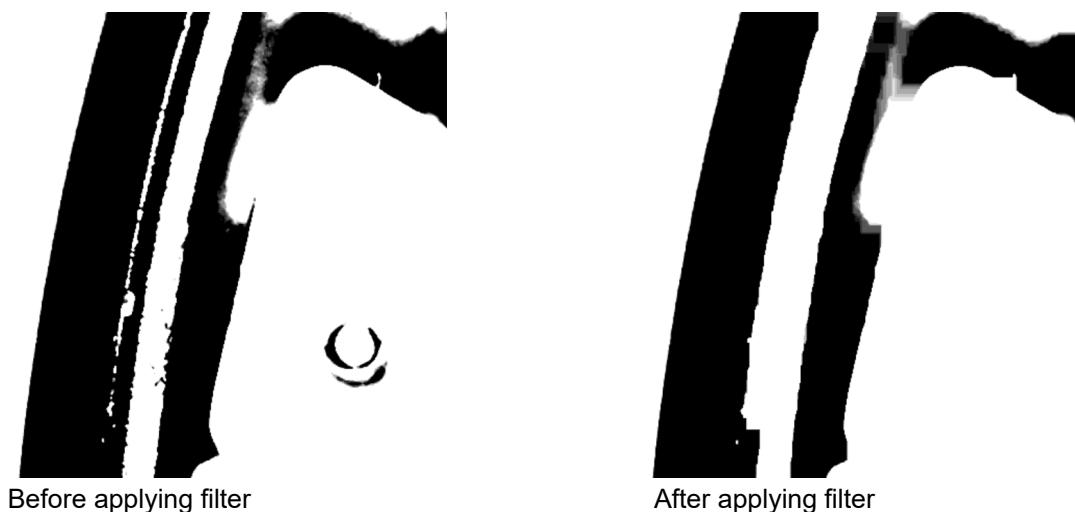


Figure 412: Example diagram of closure processing effect

6.6.3.18 LAB color filter

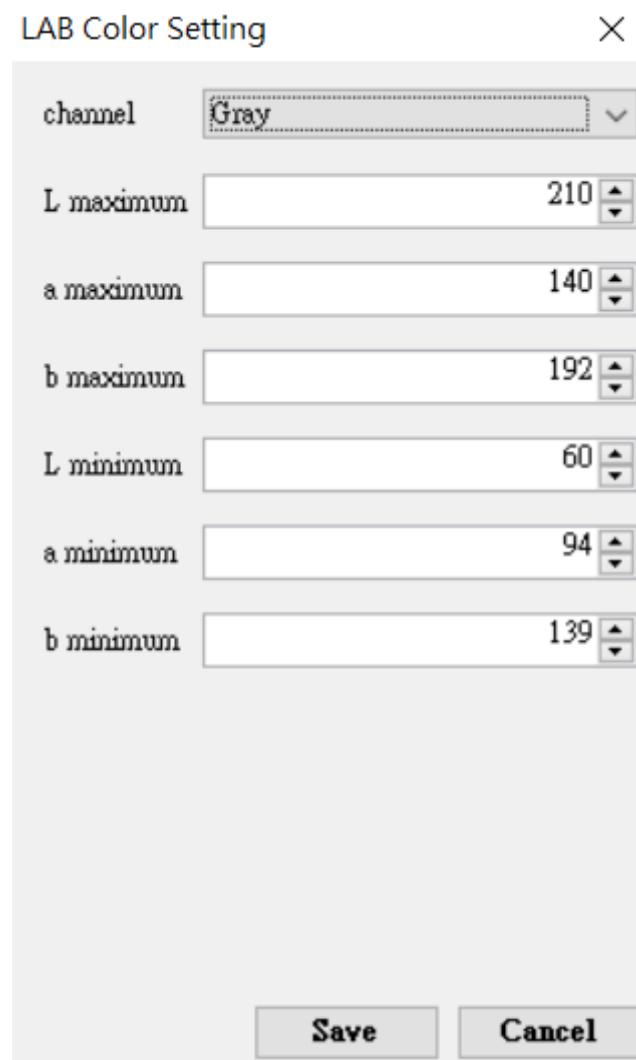


Figure 413: LAB color filter interface

6.6.3.19 Ignore area filtering

Ignore the area filtering page and perform masking in a fixed area of the shooting screen. It is usually used to block the same signal in a fixed area.

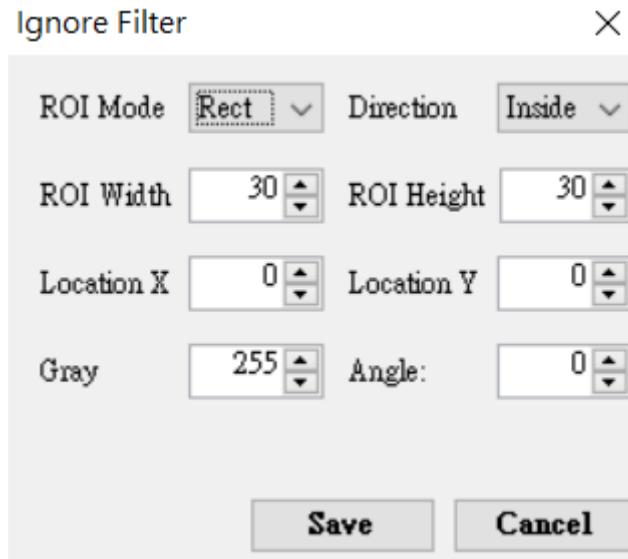


Figure 414: Ignore area filter interface

name	illustrate
ROI wide	Set the width of the masked area.
High ROI	Set the height of the masked area.
ROI displacementX	The X displacement of the masked area.
ROI displacement Y	Y displacement of masked area.
Grayscale	The grayscale value filled in the masked area.

Mask left signal using ignore region

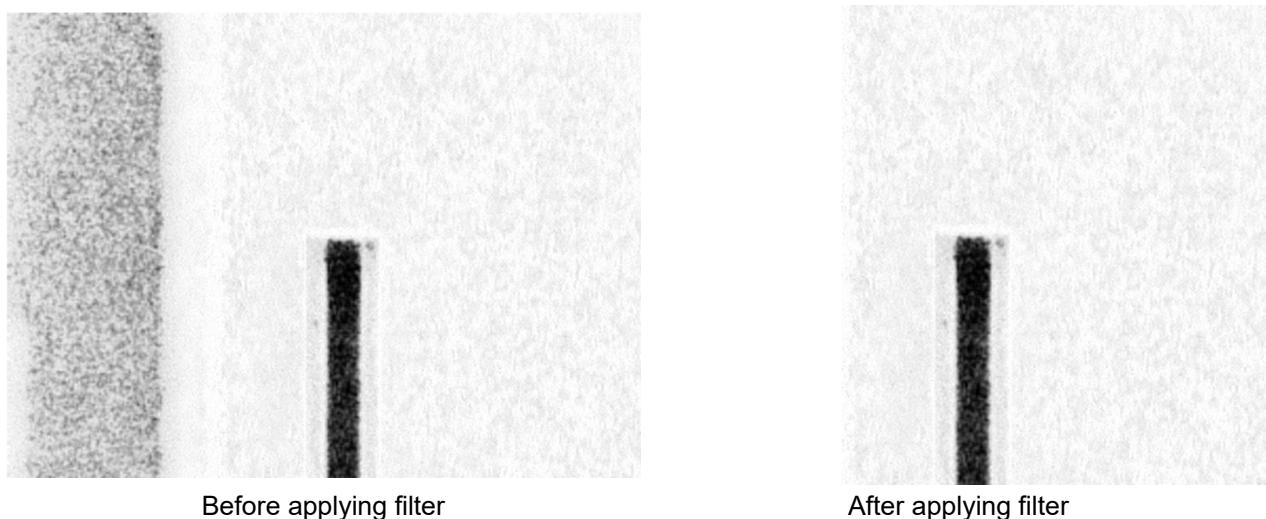


Figure 415: Ignore effect example image

6.6.3.20 RGB

RGB: Template comparison, providing three different color channels for comparison.



Figure 416: RGB menu

6.6.4 Image recognition correction (manual image recognition alignment correction)

On the image recognition correction page, when image recognition fails, you can select the following three processing methods for correction.

- (1) Stop: Manual adjustment method for correction and alignment.
- (2) No correction: Ignore image alignment and apply glue directly.
- (3) Do not execute: Unrecognized program applications will not be executed.

According to the "Stop" correction mode selected, when an abnormality occurs in image recognition, the adjustment correction window screen will be displayed.

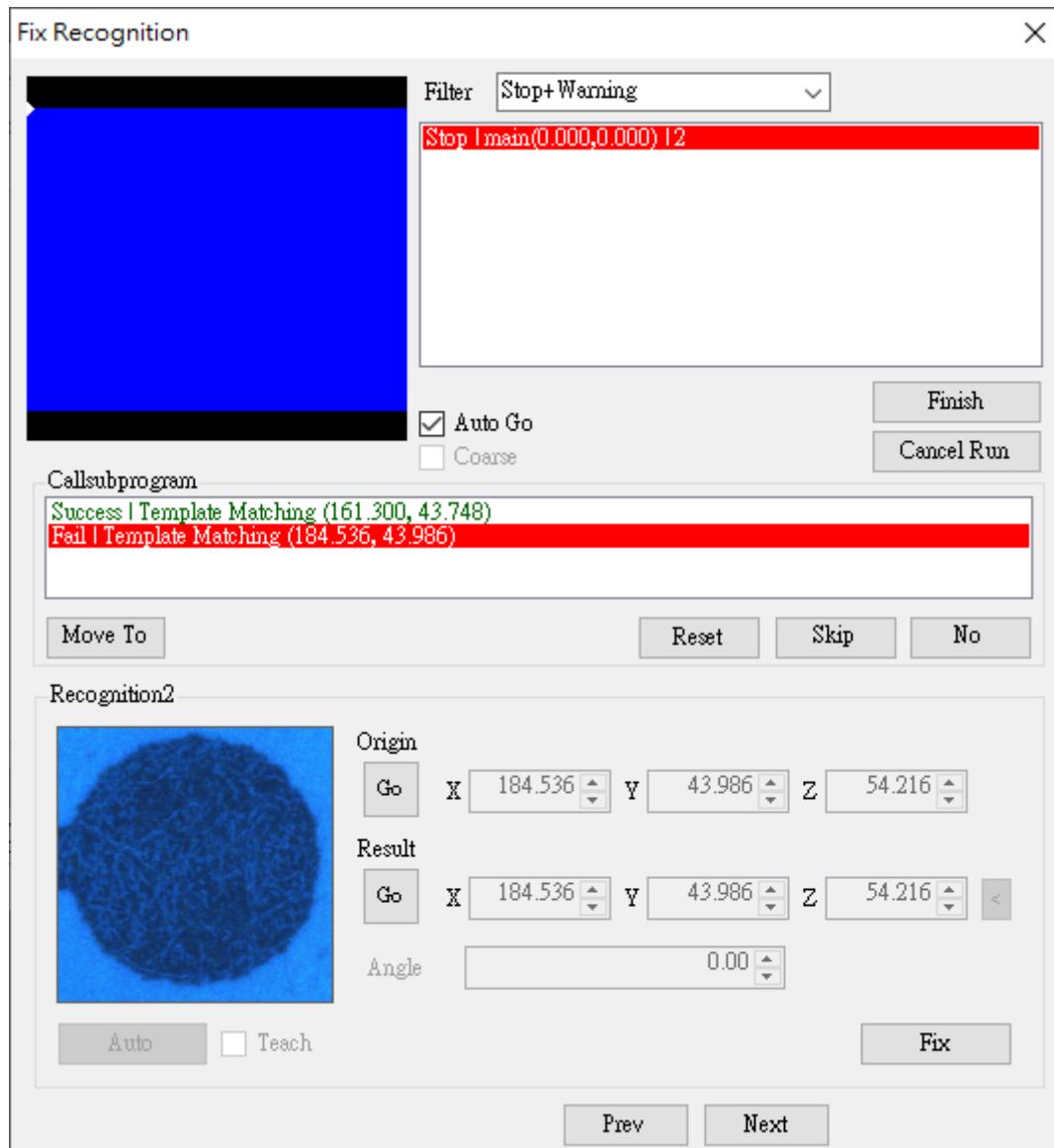


Figure 417: Image recognition correction-1

name	illustrate
filter	Display the results to be displayed (all, stop, do not execute, do not correct, stop + warning, success, corrected).
rough	Click to display the approximate relative position of the identification point, and turn it off to display the position on the minimap.
Finish	End the correction process and continue.
Cancel run	End this run.
Move to origin	Move to group origin.
call group	List all image recognition points in the group.

reset	Clear the correction behavior settings.
Not executed	This identification point operation is not executed.
No correction	The equipment dispenses glue according to the original preset glue path.
Image recognition point 1	Image recognition for group settings1.
original location	The identification position set in the group.
Identify location	The current point position identified by the machine.
Identification angle	The rotation angle after identification.
start correction	Enter the correction state, move the machine and teach the correct coordinate position, and you can also set the angle.
automatically find	Search in the current image screen. When teaching is checked, the successful position will be automatically taught after the search is successful.
Cancel	Cancel this correction.
Finish	Save this correction.
Previous and next	Automatically selects the previous or next uncorrected identification point.

6.7 Upper toolbar

Some basic functions and other tools are detailed below.

6.7.1 file

File page, basic functions of the software.

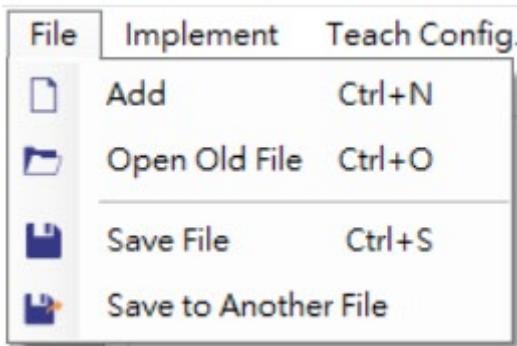


Figure 418: File interface

name	illustrate
New	Create a new file.
turn on	Old file opens an existing file.
store	Archive saves the current file.
Save as new file	Save another new file.

6.7.2 implement

Execution page, V2K simple execution page, can be switched directly in the teaching page without switching back to the V2K homepage.

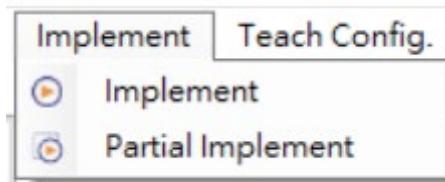


Figure 419: Execution field interface

name	illustrate
implement	Run the editing completion command (unhidden command) in the current group.
partial execution	The selected command in the run group (command shown as a blue block), when the command is a discontinuous

program, the program cannot be executed.

6.7.3

Teaching settings

Teaching settings page, some advanced settings of V2K.

Teach Config.

Function Settings

Delay Observation Condition Rearrange Works Auto-Distribution Fix Inspection Mode

Machine System

Y Axis: Y1

Nonblocking Delay(Under Fill)

Enable Cut and Group

Number per Group: 0

Nozzle Clean after how many groups: 0 Subprogram

Weight Scale after how many groups: 0 Subprogram

Multiple In-One-Shot

Multiple In-One-Shot Width: 150 Height: 150

Capture ROI

Width: 320 Height: 240

Lock Work Piece

Auto On at Start Auto Off at End Checking

Height Test

Retry Times: 1 Insp. Retry Times: 1

Dispenser Parameter Retry

Manual Retry Auto Retry Times: 1 Retry Delay (ms): 100

Misc

Barcode Module Dot Checking

Figure 420: Teaching setting interface

name	illustrate
Close	Close the page.
Function settings	Delayed observation: Enable the delayed observation function required for the process. Condition classification: Classify work based on conditions (work with the same conditions will be done together). Dual valve work distribution: Automatically distribute work to two valves.
machine	By specifying a machine with dual Y-axis or above, you can set which axis of the Robot to use for this teaching file. Therefore, when running the teaching file, the Robot will switch to the corresponding axis to run.
Process delay required	When using process delay, make a group of delay instructions several times, and automatically perform cleaning or weight measurement functions during operation.
Merge multiple identification points	Combine multiple image recognition points in a set area to reduce the time spent running empty routes.
Shooting effective area	Set the width and height of the captured image.

Fixed parts	Set whether to turn on the vacuum and switch processes when executing the program.
height test	Use it with height measurement to set the number of retries.
Manually retry	Allows manual testing when valve parameterization fails.
Valve parameter writing retry	Under special circumstances, the valve parameters may fail to be written due to communication problems. If this function is enabled, the software will automatically retry.
Manually retry	Pops up a message asking the user if they want to try again.
Automatic retries	It is to set the maximum number of uploads and the format (P.S. The default is 1, because the first write is included).
Retry delay	The time between retries.
Barcode module settings	The barcode module allows the machine to scan the barcode according to the settings before each operation. The barcode data can be used for data handover and data recording.
Dot Checking	Check the number of points of the Jet valve. Before and after the operation, the software obtains the number of points of the valve to avoid some abnormalities that may cause the number of glue points to be lower than expected.

Dispenser



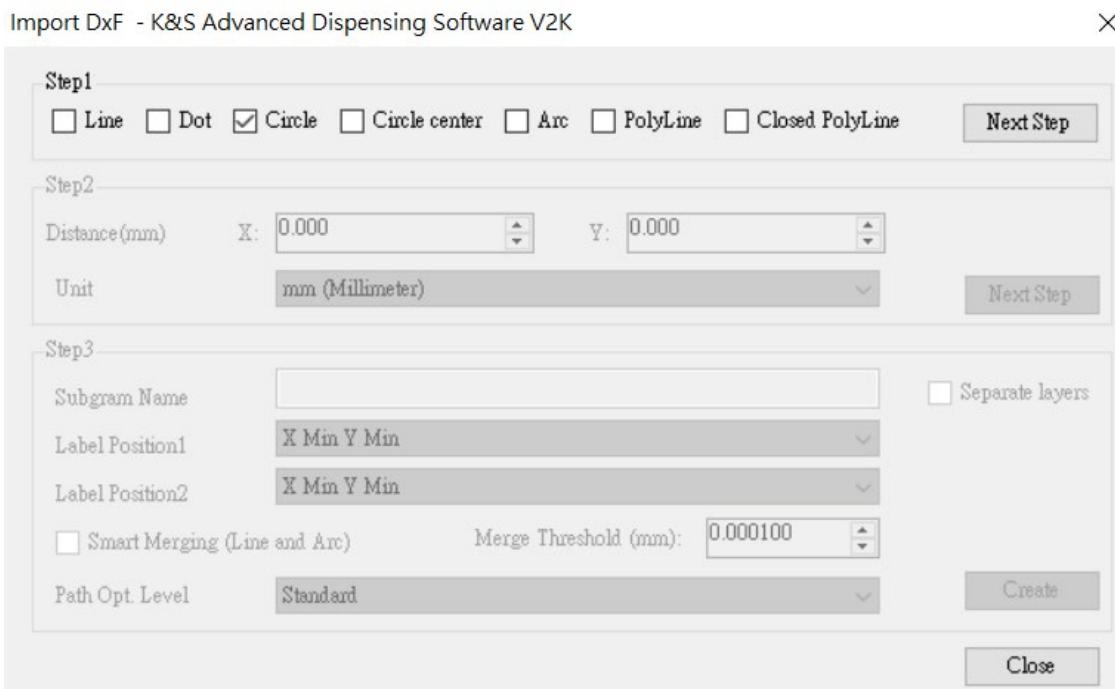
The screenshot shows a software interface for 'Dot Checking'. At the top right are two buttons: a blue floppy disk icon for saving and a grey 'X' icon for closing. Below these are two sets of input fields. The first set is for 'Enable' and consists of a checkbox followed by a numeric input field with a minus sign, a plus sign, and a value of '-1'. To its right is an equals sign and another numeric input field with a minus sign, a plus sign, and a value of '1'. The second set is for 'Target' and has a similar structure. Both sets of fields are preceded by a label '=<' and followed by a label '>='.

Figure 421: DotChecking interface

name	illustrate
-	The minimum allowed number of valve body points.
Target	Valve body points allowable target value.
+	The maximum allowed number of valve body points.

6.7.4 DxF import

DxF page, DxF import is used to simplify more complex glue path editing.



The screenshot shows a software interface for 'Import DxF - K&S Advanced Dispensing Software V2K'. It consists of three main sections: Step1, Step2, and Step3. Step1 contains checkboxes for Line, Dot, Circle, Circle center, Arc, PolyLine, and Closed PolyLine, with 'Circle' checked. Step2 contains fields for 'Distance(mm)' with X: 0.000 and Y: 0.000, and a 'Unit' dropdown set to 'mm (Millimeter)'. Step3 contains fields for 'Subgram Name', 'Label Position1' (set to 'X Min Y Min'), 'Label Position2' (set to 'X Min Y Min'), a checkbox for 'Smart Merging (Line and Arc)', a 'Merge Threshold (mm)' dropdown set to 0.000100, and a 'Path Opt. Level' dropdown set to 'Standard'. There are 'Next Step' and 'Create' buttons at the bottom of each section, and a 'Close' button at the bottom right.

Figure 422: DxF import interface

Name	Description
Displacement(mm)	The absolute coordinates of the corresponding displacements X and Y after the file is read in (the imported work will be aligned with coordinates (0,0) by default).
Unit	Select DxF to select the unit (mm, um, mil)

	when importing.
Group name	Set the group name of this imported image file path.
Label point 1	Import the image coordinate range 1. (It is recommended to enter the minimum values of X and Y).
Label point 2	Import the coordinate range 2 of the image file. (It is recommended to enter the maximum values of X and Y).
Automatic merge (lines, arcs)	When checked, the software automatically merges connected lines or arcs into continuous motion (CP).
Path optimization level	Standard, Medium, and Advance can be selected for path optimization. If None is selected, the original path will be executed.

6.7.4.1 Import DxF process

- (1) Enter the tutorial page and click Tools at the top → DXF Import.

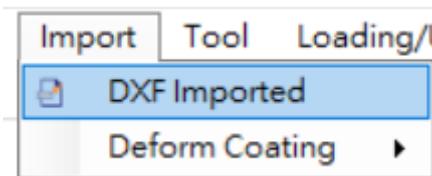


Figure 423: Find Import from the toolbar and click DXF Import

- (2) After entering the page, select the coating program you want. I only want to display the Layout diagram with circles. Then follow the next step.

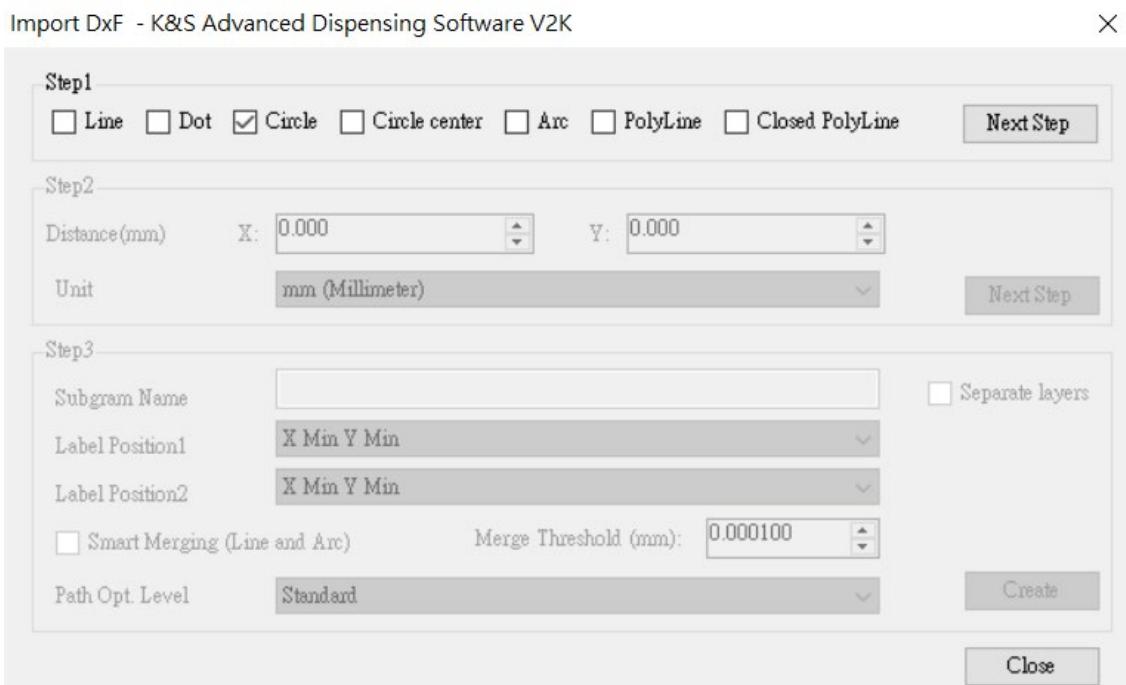


Figure 424: Select the graphics to import in step 1

- (3) You will be asked to open the DXF file, and it will be displayed after the selection is completed.

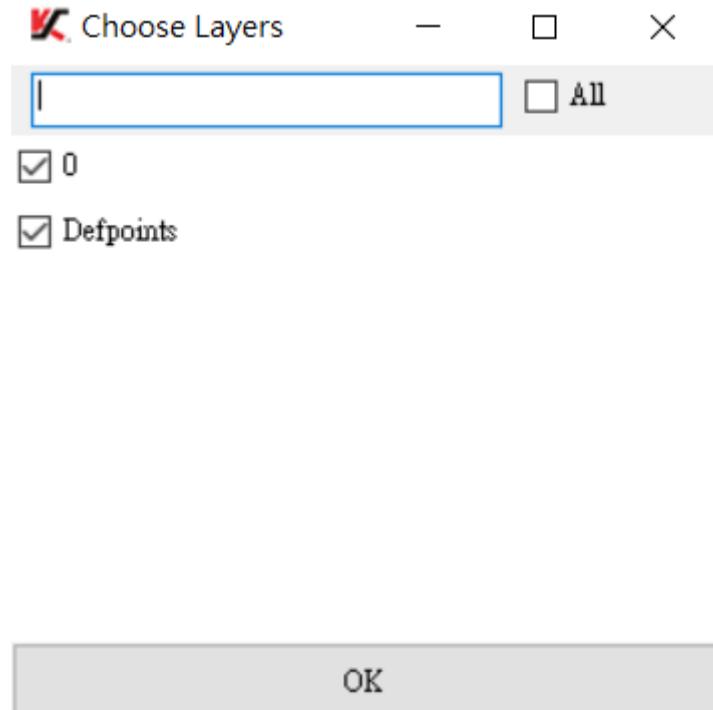


Figure 425: Select layers to import

(4) Set the XY displacement distance, and the glue path will be displaced according to the setting.

Import DxF - K&S Advanced Dispensing Software V2K

Step1
 Line Dot Circle Circle center Arc PolyLine Closed PolyLine

Step2
 Distance(mm) X: 5.409 Y: -144.880
 Unit mm (Millimeter)

Step3
 Subgram Name Separate layers
 Label Position1 X Min Y Min
 Label Position2 X Min Y Min
 Smart Merging (Line and Arc) Merge Threshold (mm): 0.000100
 Path Opt. Level Standard

Figure 426: Set displacement distance

(5) Set the group name, coordinate range, and glue path, and click Generate when finished.

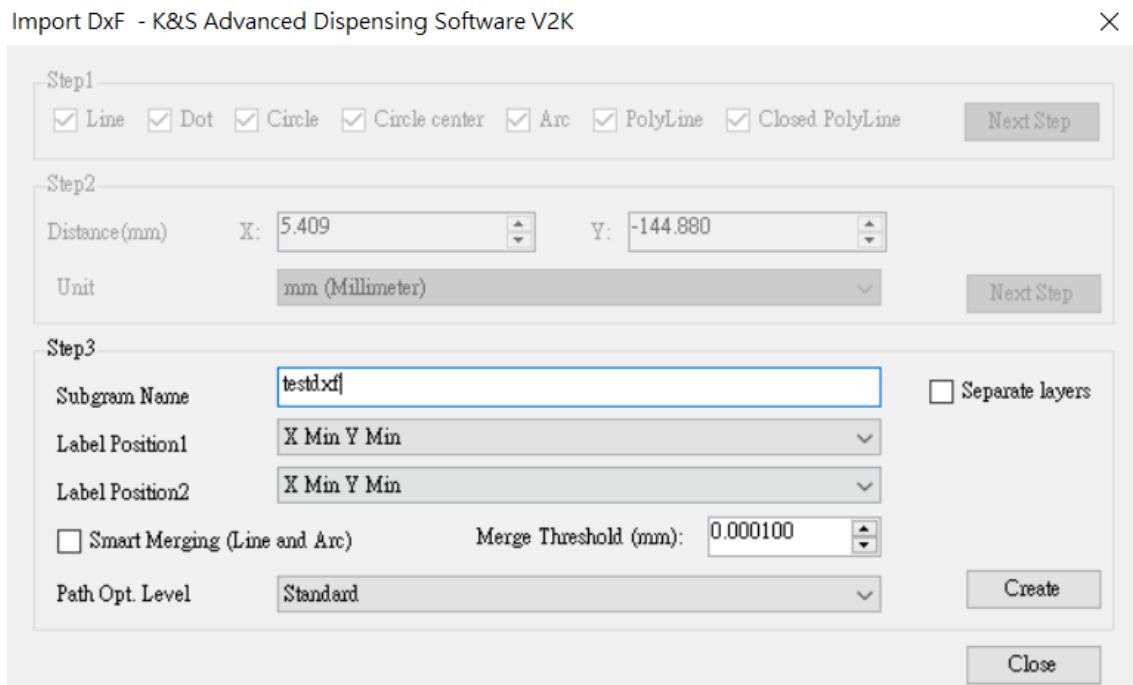


Figure 427: Set group name

(6) Once completed, the set name will be found in your group.

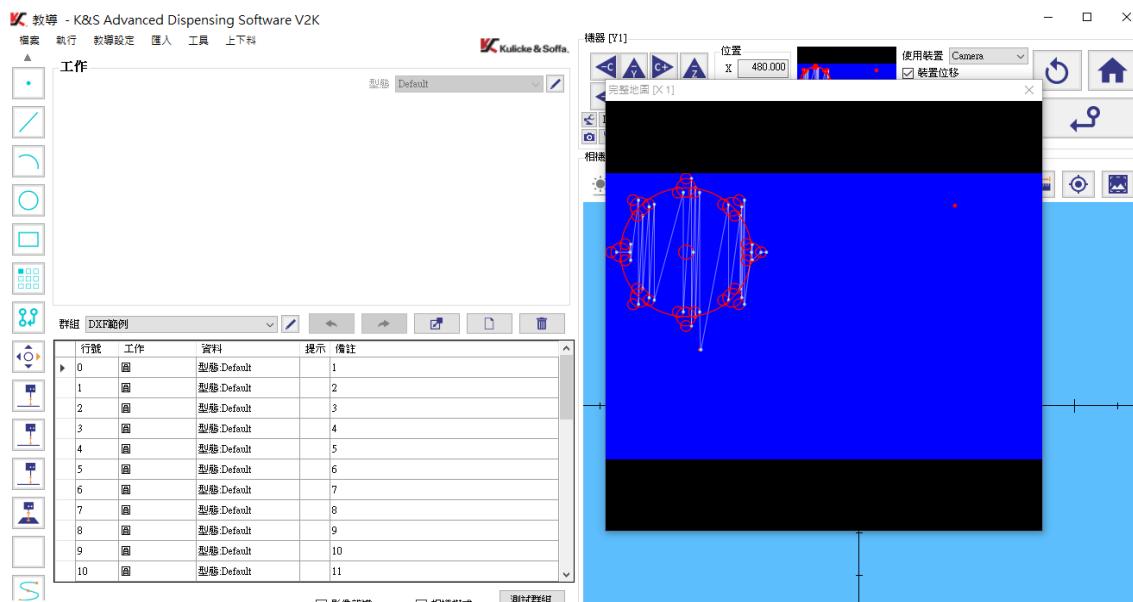


Figure 428: View import results

6.7.5

Special-shaped coating import

Set whether a certain area needs to be fully coated with glue or not. For instructions, please refer to Chapter X, Special Shape Coating Instructions.

6.7.6

tool

Tool list, including dispensing controller parameters, Adjust Position, correction of actual dispensing point position, correction, quick correction, camera, machine, panoramic scan, special array, consumables monitoring, spray measurement Z-axis teaching, IO Monitoring, external array manager and other function settings.

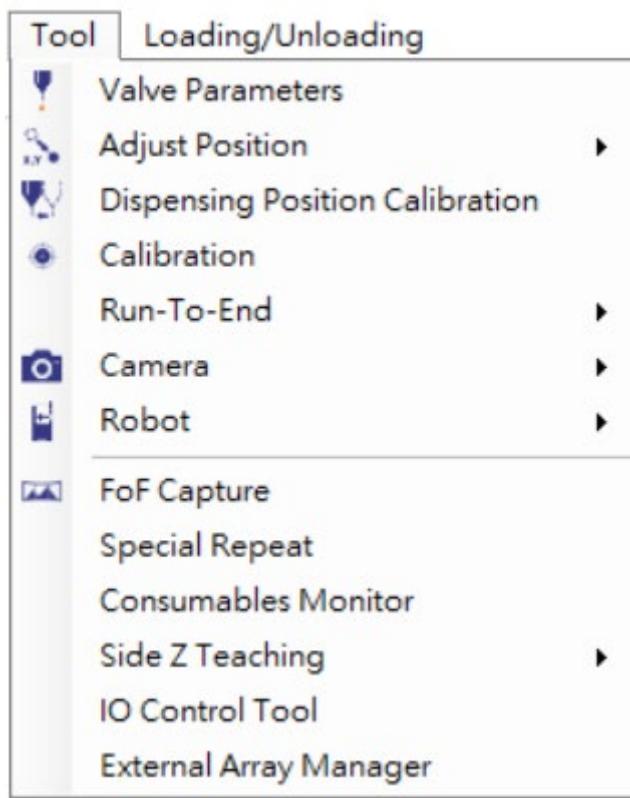


Figure 429: Toolbar functions

name	description
Dispensing controller parameters	Enter the parameter adjustment interface of the dispensing controller.
Adjust Position	Coordinate displacement: offset the coordinates in the program instructions in the X and Y directions Set Position Value: Change the instructions in the teaching file and the specific axis into the set coordinates.
Correct the actual dispensing point position	When there is a slight deviation between the coordinates of the actual dispensing point and the set coordinates, the coordinates can be corrected through this function.
Correction	Click to switch to the correction function interface.
Quick correction	Quickly confirming the device offset calibration operation can reduce the long time spent on basic calibration (must be used after performing basic calibration once).
camera	Click to enter the CCD camera setting value function adjustment interface.
Machine	Move the machine to the maintenance coordinates.
panoramic scan	Set the scan area range, image capture settings and file storage path.
special array	Set the upper, lower, left and right sides to add a new array.
Consumables monitoring	You can check the current usage status of glue and needles, etc.
Side spray Z axis teaching	Use the side camera to teach the Z-axis height.
IO monitoring	IO Input/Output list. Double-click the IO switch field of IO Output to switch ON/OFF.
external array manager	Displays the external array management interface.

6.7.6.1 Coordinate displacement

The coordinate displacement interface is used to offset the dispensing coordinates in the program instructions in the X, Y, and Z directions.

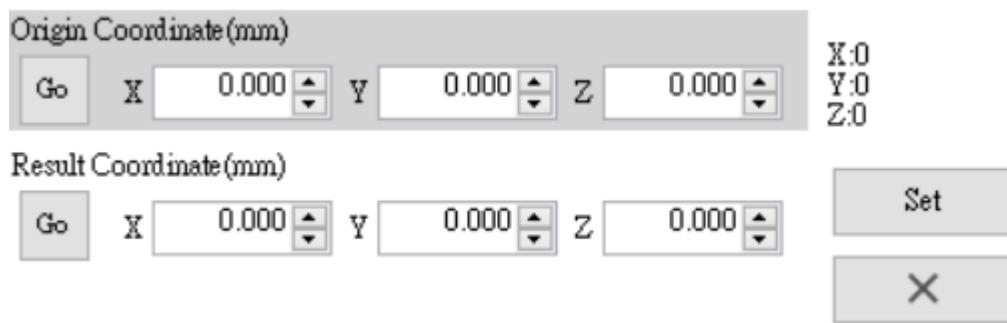


Figure 430: Coordinate displacement interface

After selecting the desired coordinate displacement command, set the required displacement distance in the "Result Coordinates" field, and click "Set" to complete the modification.

name	description
Origin coordinates (mm)	Current command coordinates.
Result coordinates (mm)	Enter the coordinates of the desired displacement or enter the distance to move.

6.7.6.1.1 Coordinate displacement process

(1) Select target to change

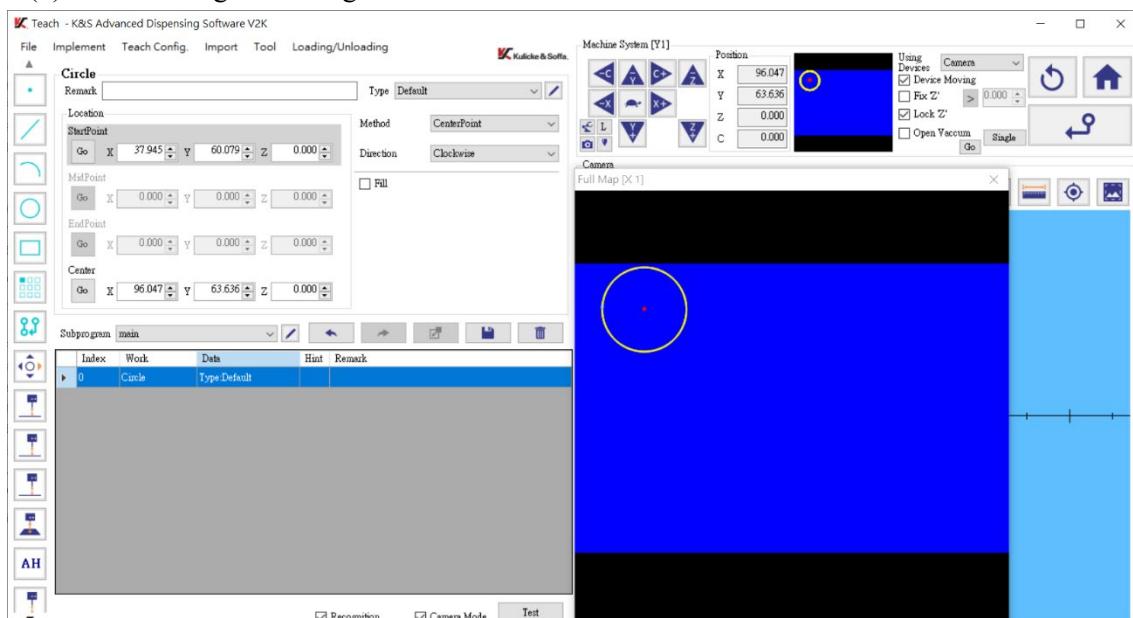


Figure 431: Select the command to change coordinates

(2) Upper tool → Adjust Position → Coordinate displacement

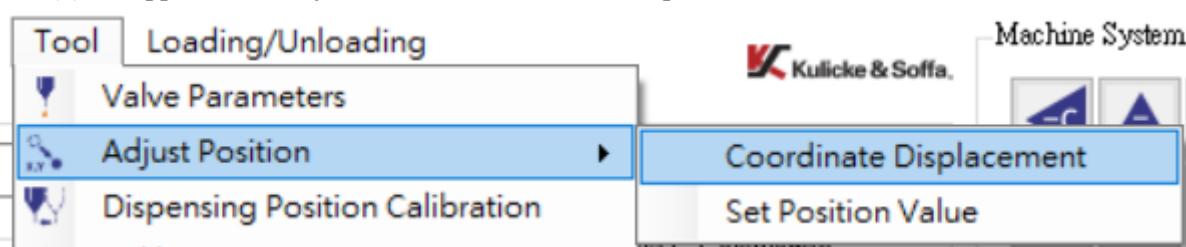


Figure 432: Find the coordinate displacement from the toolbar

- (3) Origin coordinates (mm) sets the coordinates of the original target; Result coordinates (mm) sets the coordinate position you want to modify. After setting, press Set.

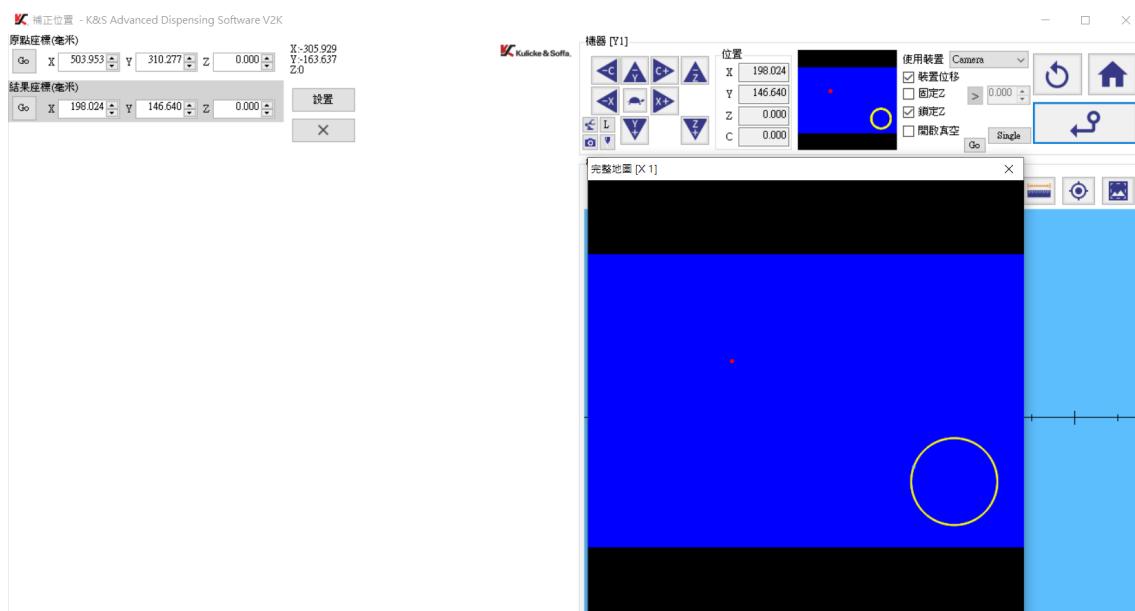


Figure 433: Set new coordinates

(4) Complete results.

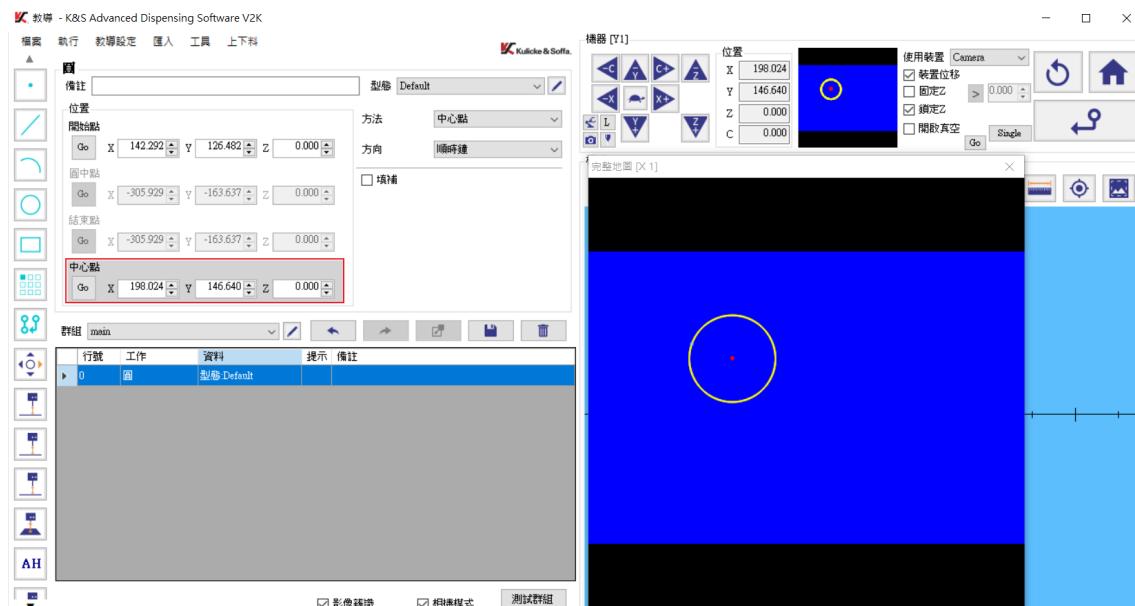


Figure 434: You can see the coordinate displacement

(5) Attached are the differences before and after the modification.

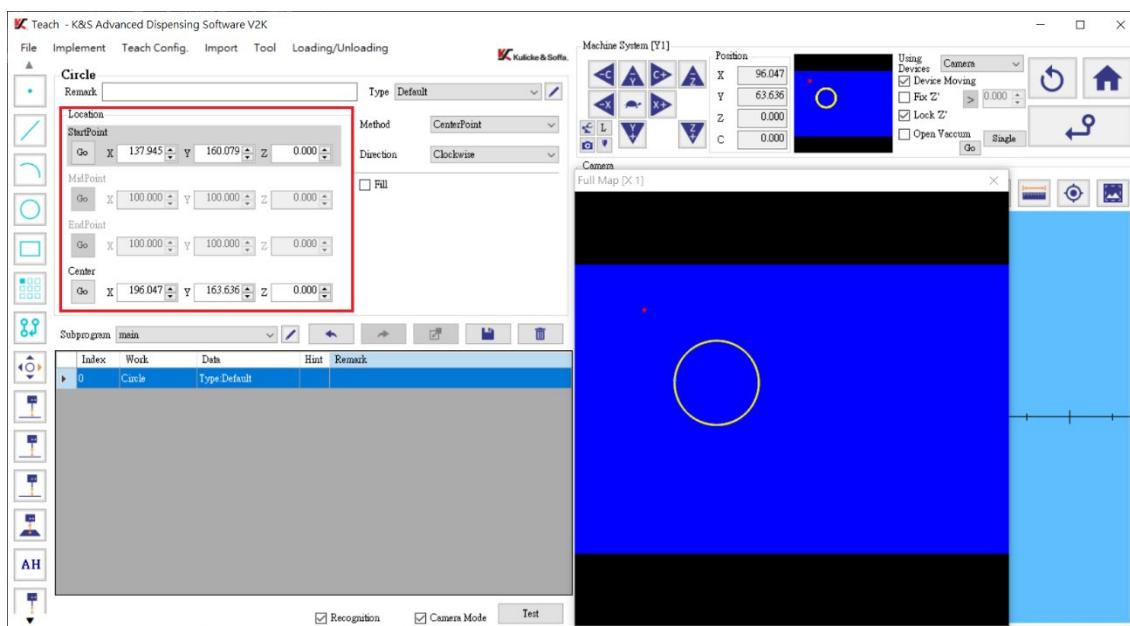


Figure 435: Difference before and after

6.7.7

Set Position Value

Reset the coordinate value page to reset the specific axial coordinate of the entire teaching file. Not only the Z axis, but also the X axis, Y axis, A axis and C axis, it all depends on what the user needs to do. Can be used in most teaching instructions. Some teaching commands that will not be modified include: circles, arcs, command actions, and all functions of image recognition.

Axis ComboBox	Z	Target Value:	0.000
		Set	Close

Figure 436: Reset coordinate value page

name	description
Axis ComboBox	Select the axis to be modified.
Target Value	Enter the target value.
Set	set up.
Close	Cancel.

6.7.7.1

Reset coordinate value operation process

- (1) For this teaching, the purpose is to set the current teaching Z axis to 7.

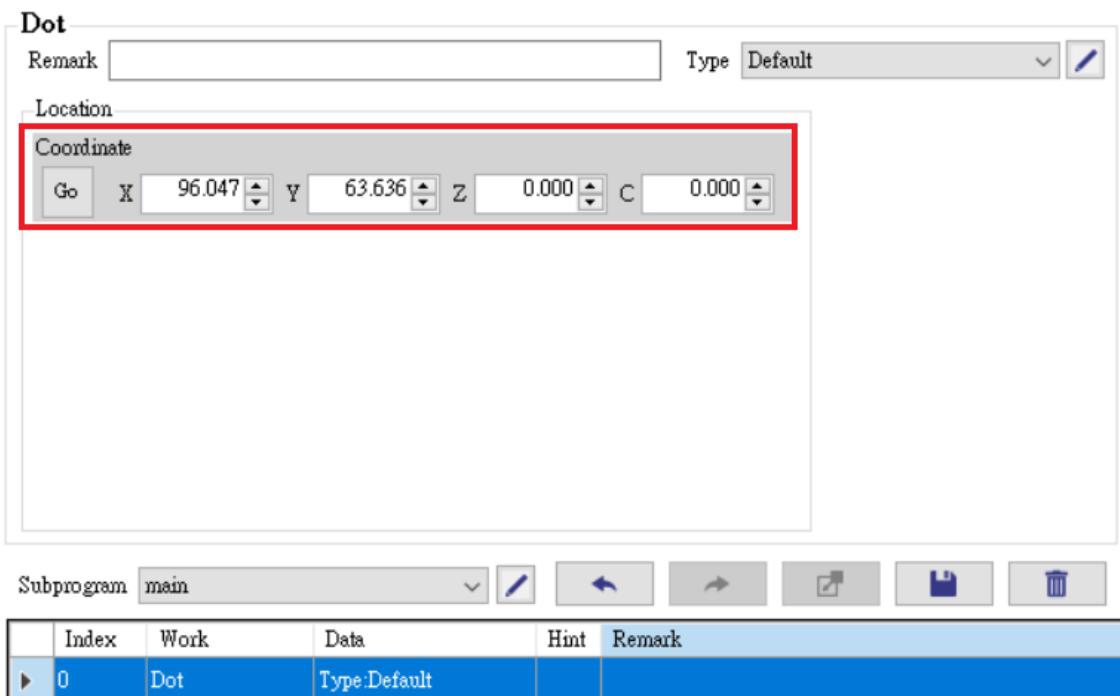


Figure 437: Select the command to reset coordinates

- (2) Click the upper tool→Adjust Position→Set Position Value.

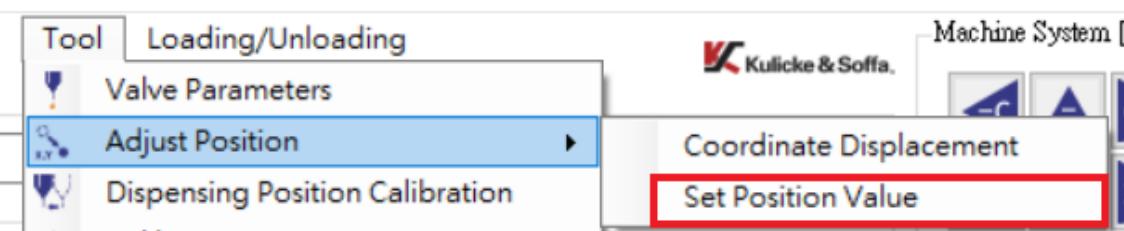


Figure 438: Find Reset Coordinates in the toolbar

- (3) Set the required axis Axis ComboBox, and the value to be changed Target Value.

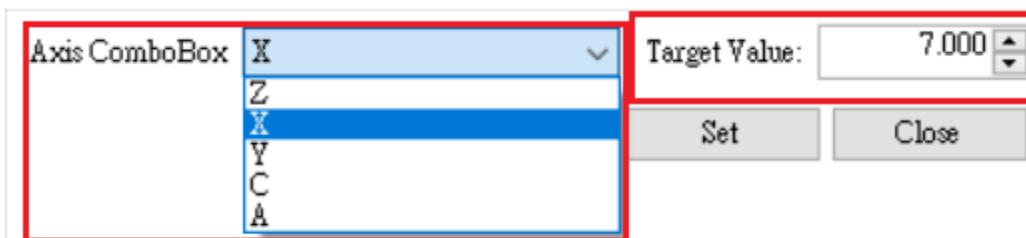


Figure 439: Set the axis position you want to change and enter the value

- (4) After setting, the Z-axis coordinate value changes to the set value.

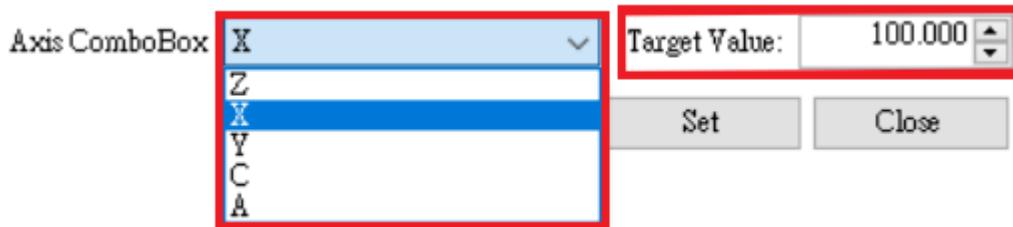


Figure 440: You can see that the Z-axis coordinate has been modified

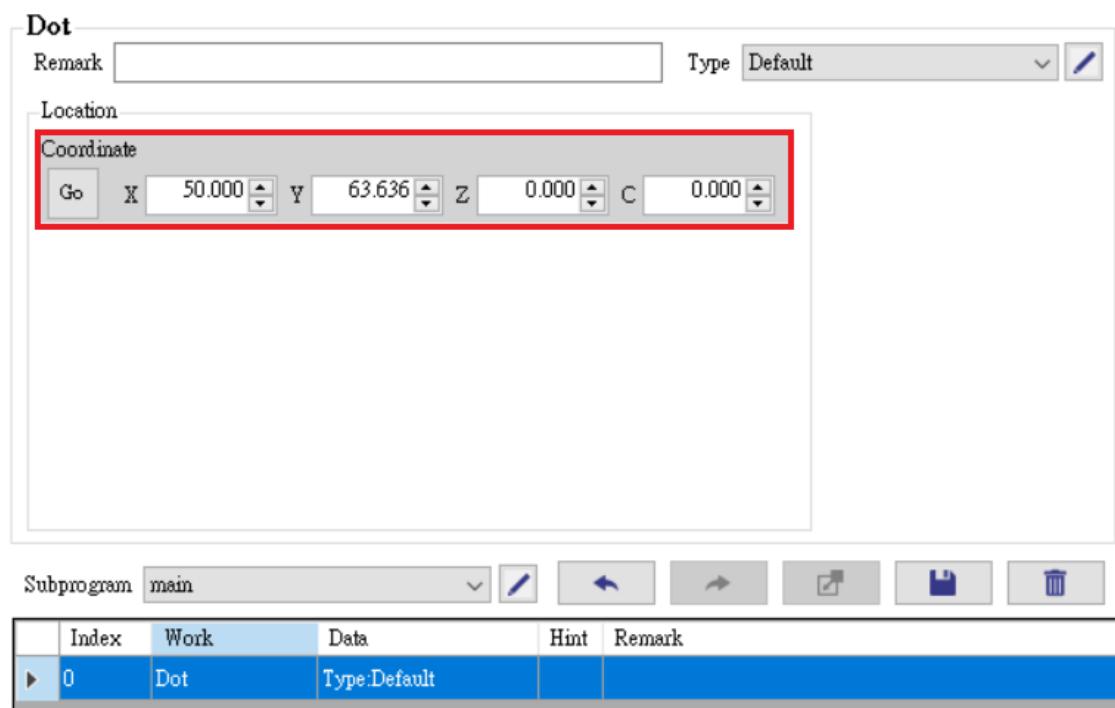


Figure 441: The Z-axis coordinate is modified

Note: All coordinates recognized by the image cannot be modified.

Note: When modifying the axis, pay attention to whether the instruction after modifying the coordinates will exceed the range and cause a collision risk.

Note: It cannot be restored after use, please think twice before use.

Note: Modify the coordinates of the currently taught instructions. Adding new ones after the adjustment will not be modified accordingly.

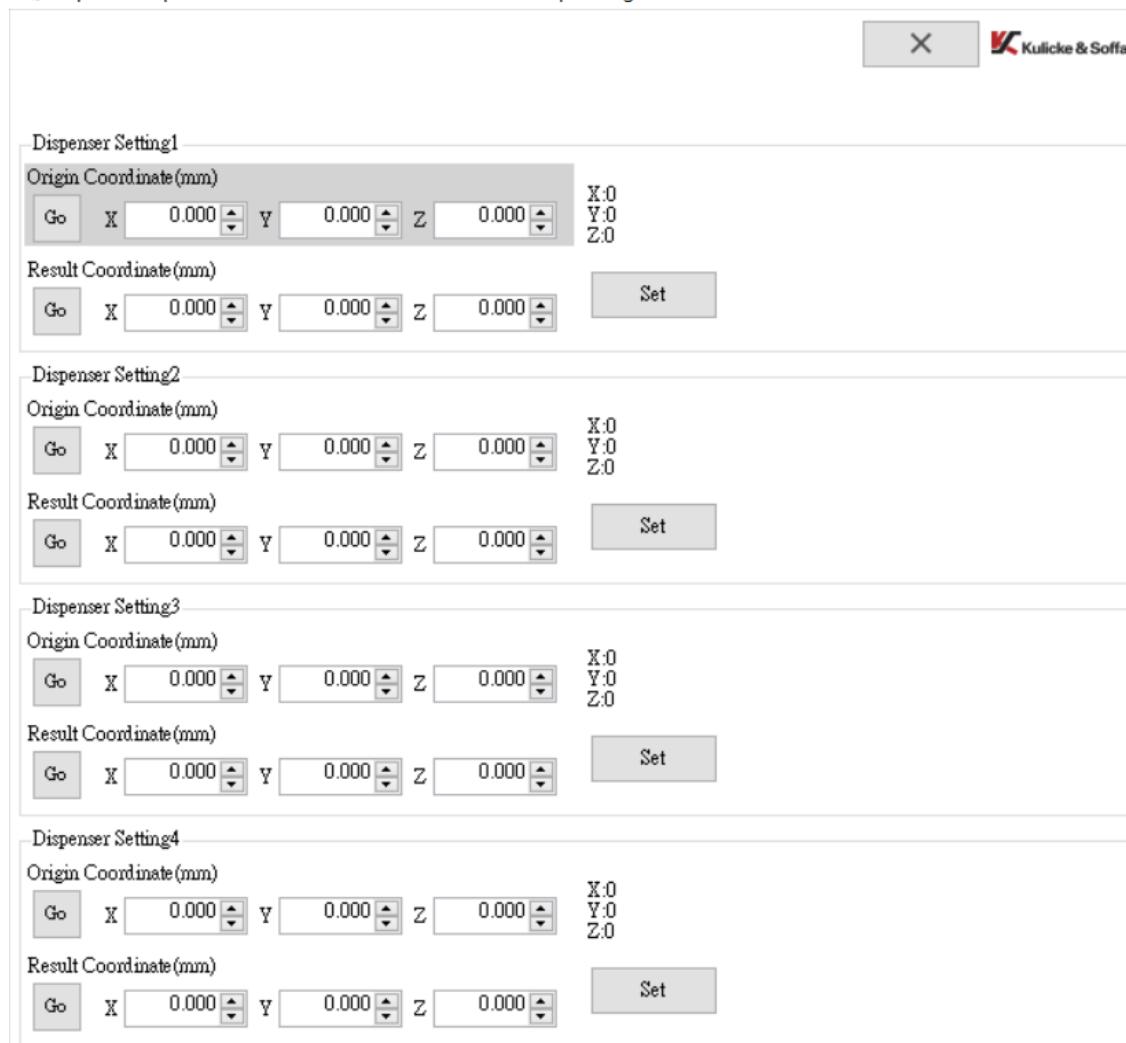
Note: In all graphics, circles and arcs will not be modified.

6.7.8

Correct the actual dispensing point position

Correct the actual dispensing point position page. When the coordinates of the actual dispensing point deviate slightly from the set coordinates, you can use this function to correct the coordinates.

K Dispenser Tip Offset Calibration - K&S Advanced Dispensing Software V2K



The screenshot shows a software interface for dispensing tip offset calibration. It features four sections, each labeled 'Dispenser Setting1', 'Dispenser Setting2', 'Dispenser Setting3', and 'Dispenser Setting4'. Each section contains two sets of coordinate input fields: 'Origin Coordinate(mm)' and 'Result Coordinate(mm)'. Each set includes a 'Go' button, X, Y, and Z coordinate input boxes with up/down arrows, and a 'Set' button. The 'X:0', 'Y:0', and 'Z:0' labels are positioned to the right of the coordinate input boxes.

Figure 442: Correct the actual dispensing point position

Name	Description
Origin coordinates (mm)	Enter the preset dispensing coordinate position.
Result coordinates (mm)	Enter the actual position coordinates of the current dispensing point.

6.7.9 Quick correction

Quick calibration is mainly used for machines that have been calibrated originally. Because the height measuring device and valve body device have been disassembled or moved, they need to be recalibrated. Through the set teaching file, use the quick calibration function. This eliminates the need for complex calibration steps for the device.

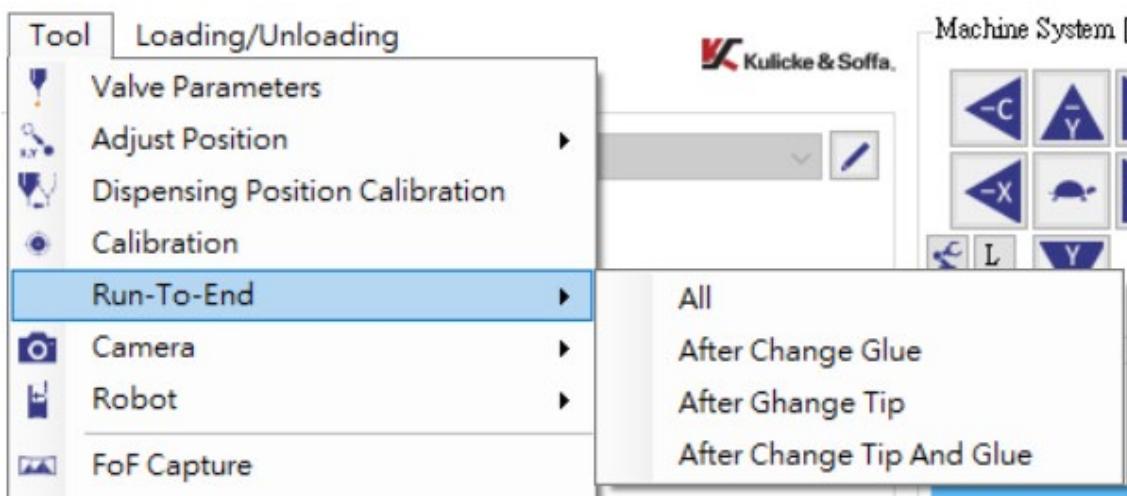


Figure 443: Quick correction tool

Note: It needs to be saved after completion, otherwise it will not be recorded.

Note: Check if there is runToEnd.v2k file under conf/wizard.

6.7.9.1 Preparatory work:

- (1) Check whether there is runToEnd.v2k file under conf/wizard.

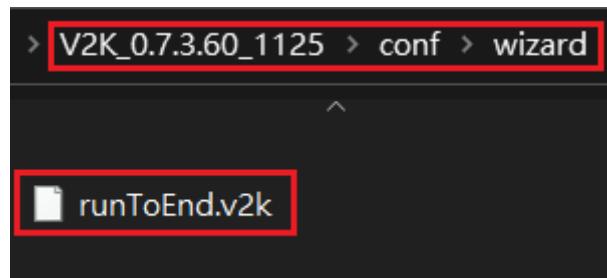


Figure 444: Quick school administration file path

- (2) runToEnd.v2k file, owned by the group.

Group name	illustrate
dispenser1	Manual dispensing 1 calibration.
dispenser2	Manual dispensing 2 correction.
dispenser1_auto	Automatic dispensing 1 calibration.
dispenser2_auto	Automatic dispensing 2 calibration.
purge	Debinding.
scaleTest	Weigh.
auxRobot	Auxiliary axis machine.

6.7.9.2 Examples of command descriptions within each group

The following programs are only examples. You can modify them according to the current needs of the user. However, the tools in each group are indispensable. You must also pay attention to this, otherwise the program will report an error when performing quick correction later.

Dispensing device offset correction dispenser1 group:

Subprogram		dispenser1						
Index	Work	Data	Hint	Remark				
0	Heighttest	Type:Default						
1	Line	Type:Default						
2	Line	Type:Default						

Figure 445: Dispensing device offset correction instructions

Glue removal and glue cleaning action purge group :

Subprogram purge					
	Index	Work	Data	Hint	Remark
▶	0	Purge	Type:Default		
	1	Clean	Type:Default		

Figure 446: Glue removal and glue removal instructions

Scale weight calibration scale Test group :

Subprogram scaleTest					
	Index	Work	Data	Hint	Remark
▶	0	Weighting	Type:Default		

Figure 447: Scale calibration instructions

6.7.9.3 Quick calibration operation process (take complete calibration as an example)

- (1) In the toolbar above, select Tools → Quick Correction. Select whether to have a complete calibration or a single calibration.
- (2) Select Complete Calibration. When entering the screen, there will be a warning to please clear the items. After clearing the platform, press OK.

Caution!



Calibration will be started. Please remove all stuff on the plateform

OK

Cancel

Figure 448: warning window

- (3) Height measuring device offset correction: It will move according to the position corrected by the general calibration height measuring device. The user only needs to confirm whether the position is the same as the general calibrated position at that time.
 - (A) Aim the height measuring device at the height measuring location point.
 - (B) Move the camera to the point where you just tested the height measurement.

Height Sensor Offset

Skip Start

Step1

Move Height Sensor to the right position.

Skip Done

Step2

Move Camera to the center of the mark point.

Skip Done

Figure 449: Perform offset correction of height measuring device

- (4) Then "Device Height Calibration", there will be two warnings, one is the height measuring device and the other is the dispensing device.

Caution!



Height Sensor height test will be started. Please check the height sensor is at the right positoin and remove the stuff which may cause collision.

Yes

No

Figure 450: Device height calibration warning window

- (A) The height measurement device will move to the previous height measurement position for height correction. The height measurement device will slowly descend until the sensor senses the height, then it will pull back and a window will pop up to record the height measurement results above.

Device Height Offset

Skip Start

Step1

Height Sensor. Height test result:10.000

Step2

Dispenser1. Height test result:12.000

Step3

Dispenser2. Height test result:11.324

Figure 451: Conduct device height school administration test

- (B) The dispensing device will automatically move to the height measurement position for height correction, and a window will pop up to record the height measurement results above.

Confirm



Result: 10.000

Diff: 8.000

=====

Yes: Keep and Next

No: Retry

Yes

No

Figure 452: Jump out of the test results window

- (5) Then the weighing action will be carried out: the glue will be discharged first, and then the glue will be sprayed and then weighed.

- (A) The purge group will be applied and the purge group will be executed to perform the glue removal operation.

(B) The scaleTest group will be applied, the scaleTest group will be executed to perform the weighing action, and the results will be recorded on the screen.

Scale Test

Step1
Purge Action

Step2

時間	閾	點膠型態	下限	上限	量測	判定

Skip Start

Scale Test
Next Step

Figure 453: Scale calibration

- (6) Then "dispensing device offset correction": XY axis offset, the camera will automatically move to the expected position, move the camera to align and "teach", the camera will automatically move to the next point position.
 - (A) If you use "manual correction": use dispenser1 and dispenser2 groups, the process will first spray glue, and then the user will move the camera to the position of the glue point.
 - (B) If you use "auto correction": use dispenser1-auto and dispenser2-auto groups, the process will first spray glue, and then the software will automatically adjust the camera to the dispensing position.

Dispenser Offset

Step1
Dispenser Setting1. Move Camera to the center of each dot and press the teach button.
X dots left

Skip Teach
Rerun Back

Step2
Dispenser Setting2. Move Camera to the center of each dot and press the teach button.
X dots left

Skip Teach
Rerun Back

Figure 454: Perform dispensing device calibration

- (7) After correction, click above to save. Note: If there is Auto authorization, the software will only execute the dispenser1-auto and dispenser2-auto groups. If there is no authorization and no auto group, the software will only execute the dispenser1 group and dispenser2 group.

6.7.10 panoramic scan

Panoramic scanning page, set the scanning area range, image capture settings and file storage path.

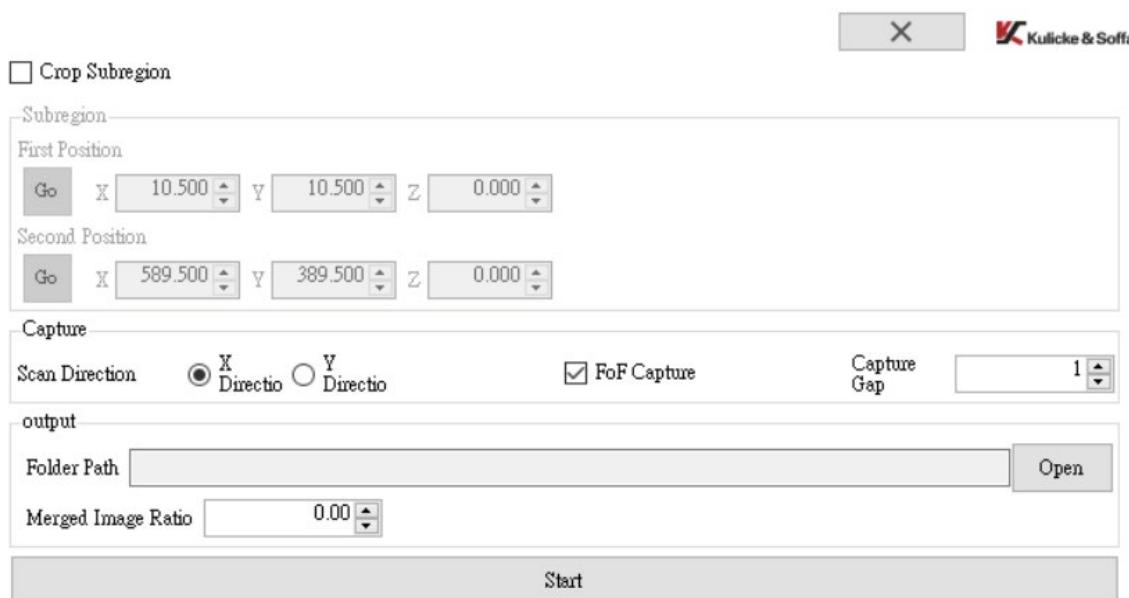


Figure 455: Panoramic scan function interface

Name	Description
Folder path	Select the folder where the pictures will be placed after scanning.
subarea	Set the scan area range.
Shooting on the fly	Check Dash Shot to reduce the time required for shooting.
Shot interval	A few seconds between each shot.
start	Start shooting.
Prioritize scanning direction	Choose to scan from the X-axis or Y-axis direction first.

6.7.10.1 Panoramic scanning operation process

- Set the folder where pictures are stored during scanning.
- Set the scan range coordinates one and two.
- Set whether to enable dash shooting and the interval between photos.
- Set the priority scanning direction.
- Click the Start button to perform a panoramic scan.

6.7.11 special array

On the special array page, set the starting point and end point position of the upper, lower, left, and right positions of the array respectively. You can use the circle filtering function to subtract points that are not within the circle (to assist in wafer teaching). To use it, click 3 on the teaching circle.

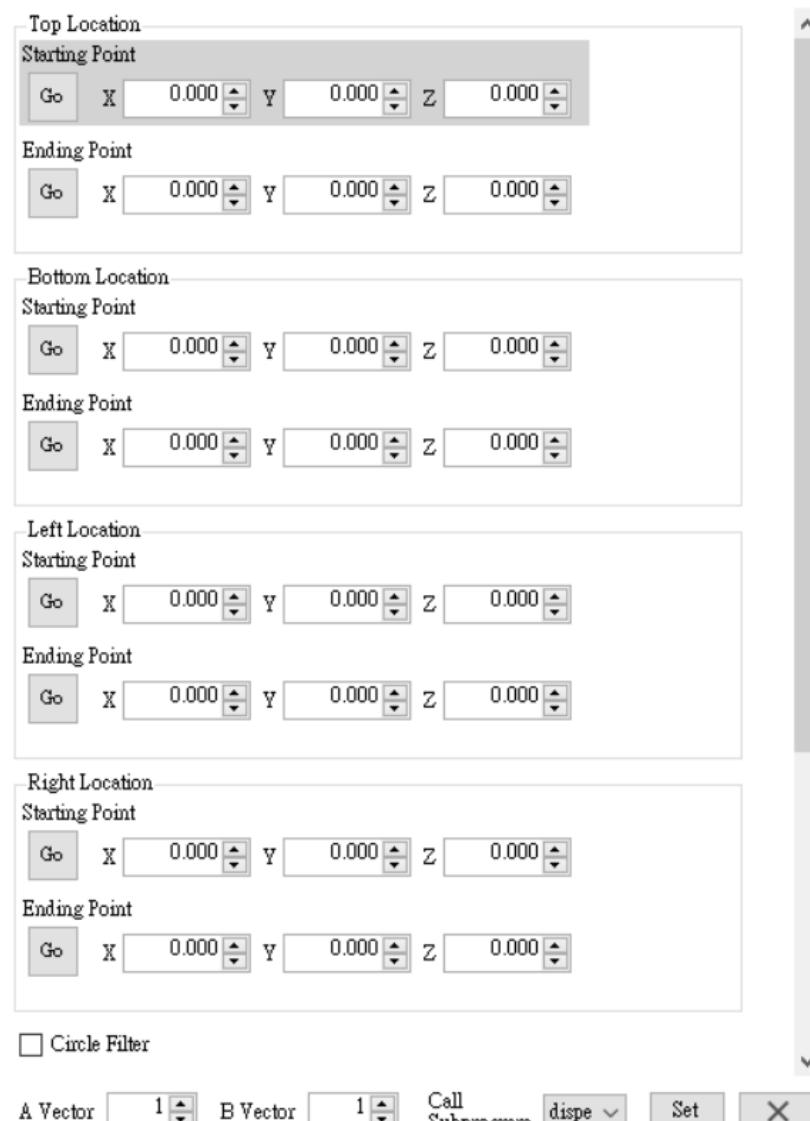


Figure 456: Special array interface

Name	Description
upper position	Set the top of the spray layout.
lower position	Set the bottom of the spray layout.
left position	Set the left side of the spray layout.
right position	Set the right side of the spray layout.
circle filter	After checking, filter out the spray images outside the circle based on the size of the circle below.
Die size	Set the width and height of the chip.
circle position	Set the circular layout size and position.
A times	X, Y direction coordinate points. (The number of times A and B can be decided arbitrarily.)
B times	X, Y direction coordinate points. (The number of times A and B can be decided arbitrarily.)
call group	Call the group of spray shapes to be copied.
set up	After the settings are completed, an array is generated in the group.
X	Don't set it, leave it.

- (1) Set up another group to set the spray shapes that need to be copied.

Subprogram		main									
	Index	Work	Data	Hint	Remark						
▶	0	Dot	Type:Default								

Figure 457: Set the spraying instructions for the array to be copied

- (2) Return to the group where the special array needs to be placed and click the upper tool → Special Array.

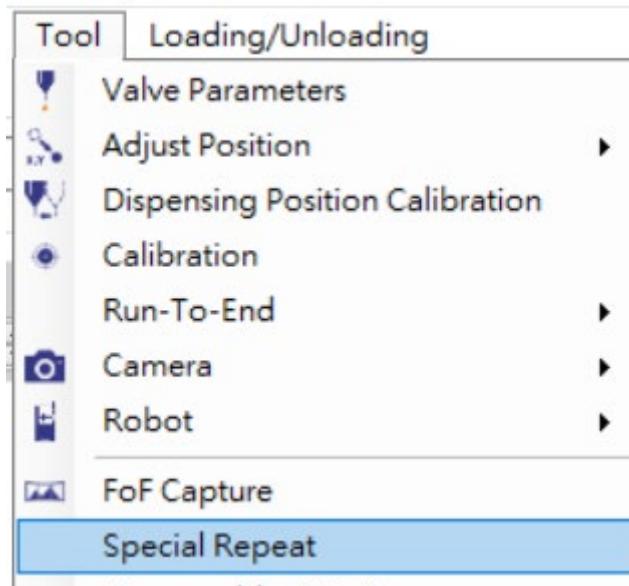


Figure 458: Find special arrays in the toolbar

- (3) Set the top, bottom, left, and right sides required by the object. If the spray layout is circular, teach the layout circular shape to the setting.

Note: If the picture is a square, the circle filter option does not need to be checked.

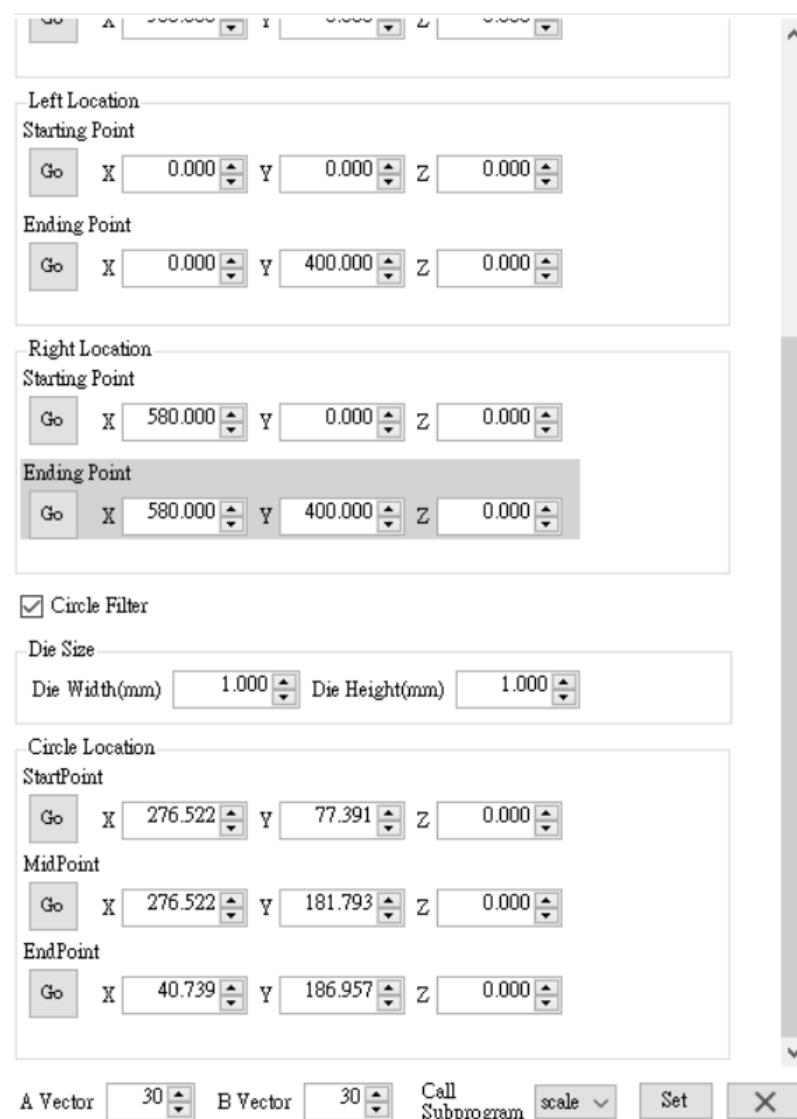


Figure 459: Set the coordinates that need to be copied

(4) After setting up, the minimap will appear as a circle.

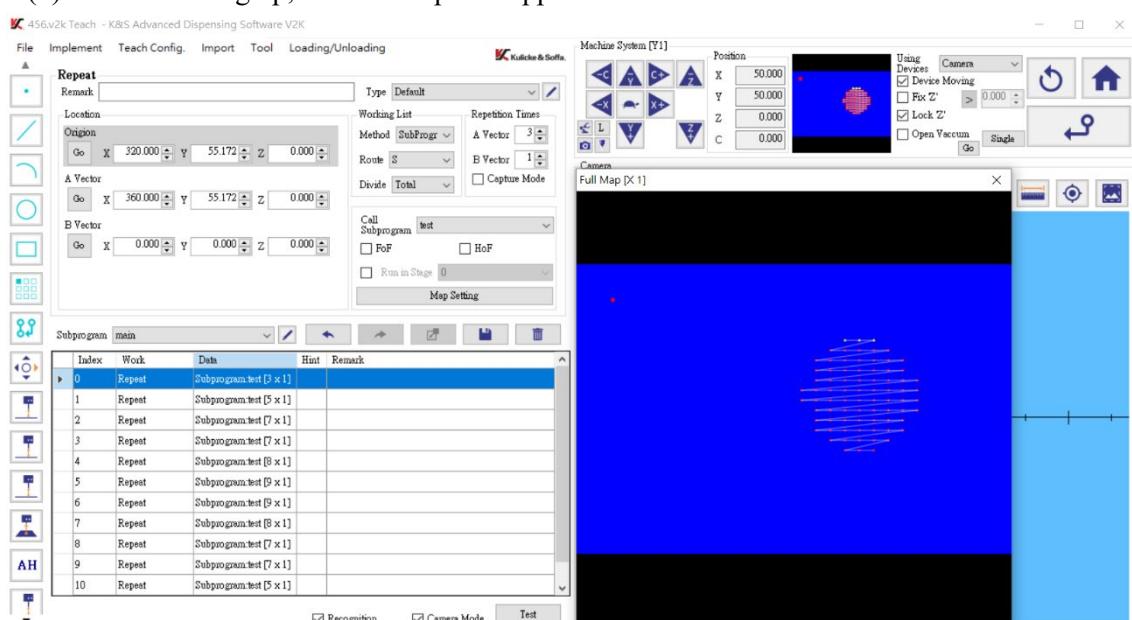


Figure 460: The results show

6.7.12 Side spray Z axis teaching

On the side spray Z-axis teaching page, use the side camera to teach the Z-axis height.

Functional Overview:

- (1) Through the first offset correction of the side camera and valve glue outlet position, it will assist subsequent teaching.
- (2) Two teaching methods are provided, one is to use the side camera to only teach the Z-axis height each time, and the other is to use the side camera to determine a fixed Z-axis height, which will be used for subsequent teaching.

Camera switching: The red box is the camera switching button. Click to switch cameras and display the current camera screen. Right-click to display a list of cameras that can be switched, and you can quickly select the camera you want to switch.

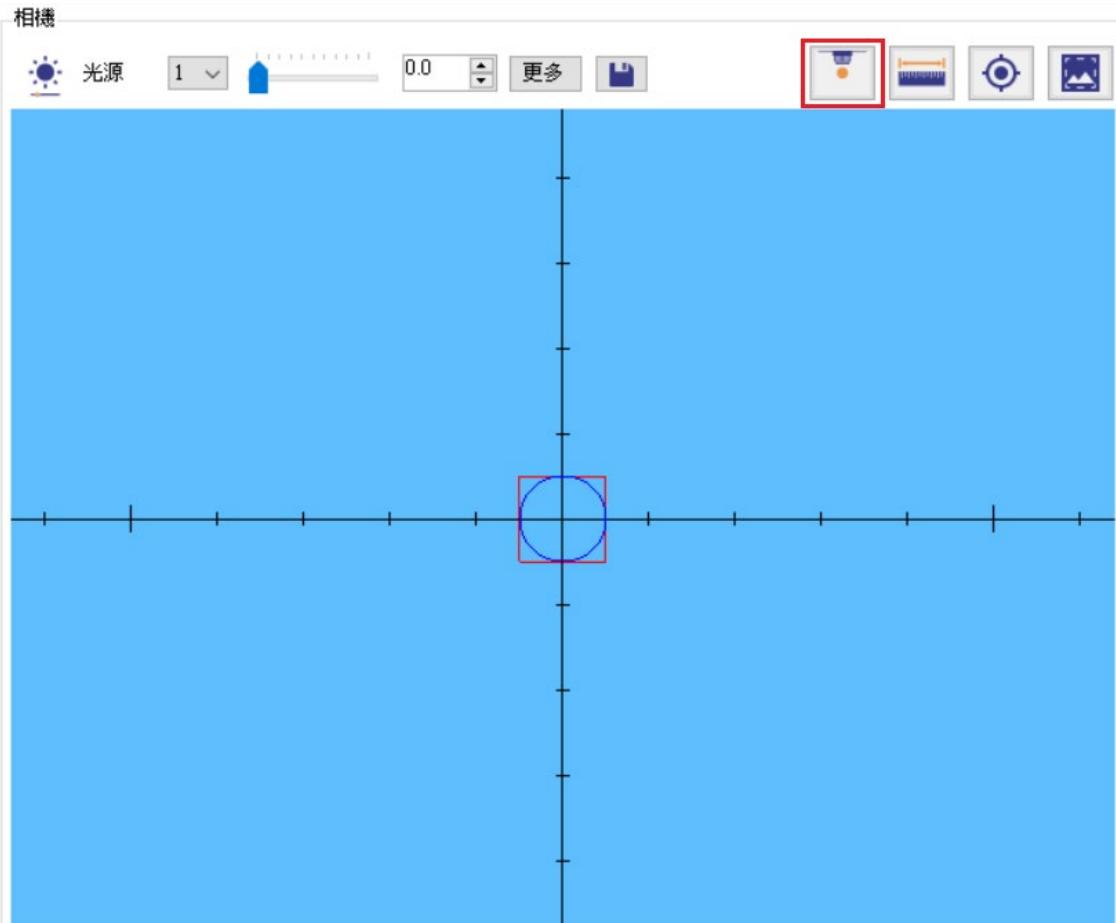


Figure 461: Switch camera screen

6.7.12.2 Z axis offset correction

- (1) Teaching the glue dispensing position: First teach a line, and after running, use the starting point as the glue discharging position.

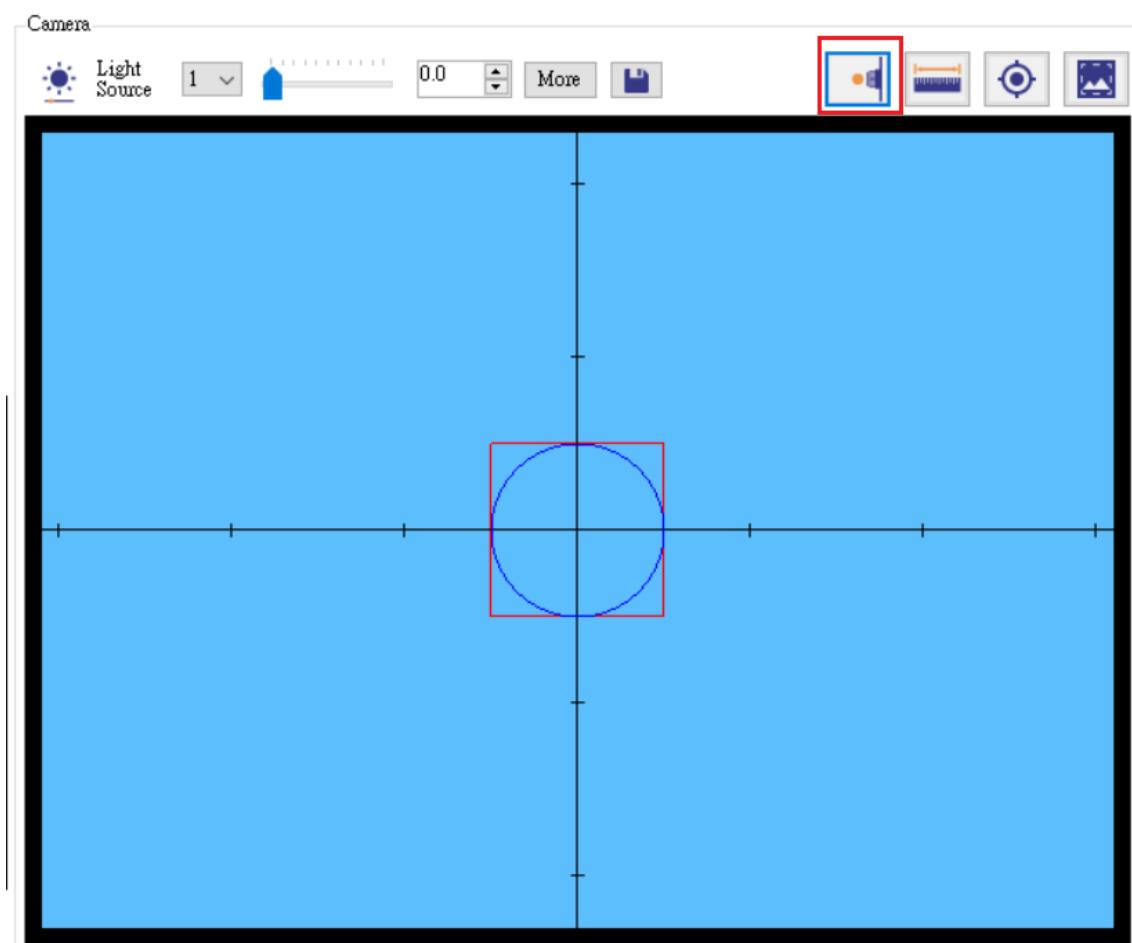


Figure 462: Set the current dispensing coordinates

- (2) Teaching camera coordinates: Switch the camera screen to the side camera, and use the camera to teach the middle position of the glue by moving the machine. Please pay attention to the focus, as the glue may flow downward. Please make sure the calibration has been completed before proceeding with the teaching operation.

6.7.12.3 Z-axis teaching tool

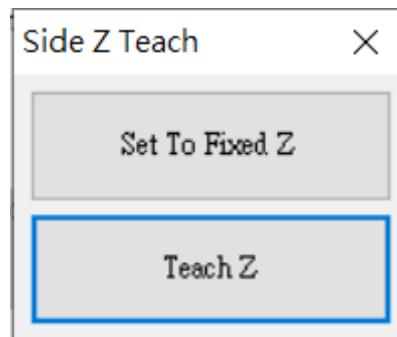


Figure 463: Z-axis teaching tool

When you click to enter the Z-axis teaching tool, the software will switch the camera to the side camera.

Name	Description
Set to fixed Z	Look at the position to be glued through the side camera and press Set to Fixed Z. The calculated Z value will be set to the fixed Z on the software screen. This value will be used directly in subsequent teachings.
Teach Z	Use the side camera to point to the position to be glued, and press Teach Z. The calculated value will be taught to the currently selected coordinate item (only the Z value will be taught, and the X, Y, and C values will not be affected.) .

6.7.13 IO monitoring

IO monitoring page, IO Input/Output list. Double-click the IO switch field of IO Output to switch ON/OFF.

The screenshot shows the 'IO monitoring' interface with two tables:

- IO Input:** A table with 12 rows, each containing an IO number from 1 to 12 and an 'OFF' status in the 'IO Switch' column.
- IO Output:** A table with 12 rows, each containing an IO number from 1 to 12 and an 'OFF' status in the 'IO Switch' column.

Figure 464: IO monitoring interface

Name	Description
IO Device	Select IO device. (Robot, IOCard, AuxRobot.)
IO Input	IO input list.
IO Output	IO Output list. (Click twice on the IO switch field to switch IO.)
Close	Close the page.

6.8 Loading and unloading

On the loading and unloading page, if a loading and unloading system is installed, click to enter the machine loading and unloading control setting window.

File Implement Teach Config. Import Tool **Loading/Unloading**

Figure 465: Loading and unloading fields of toolbar

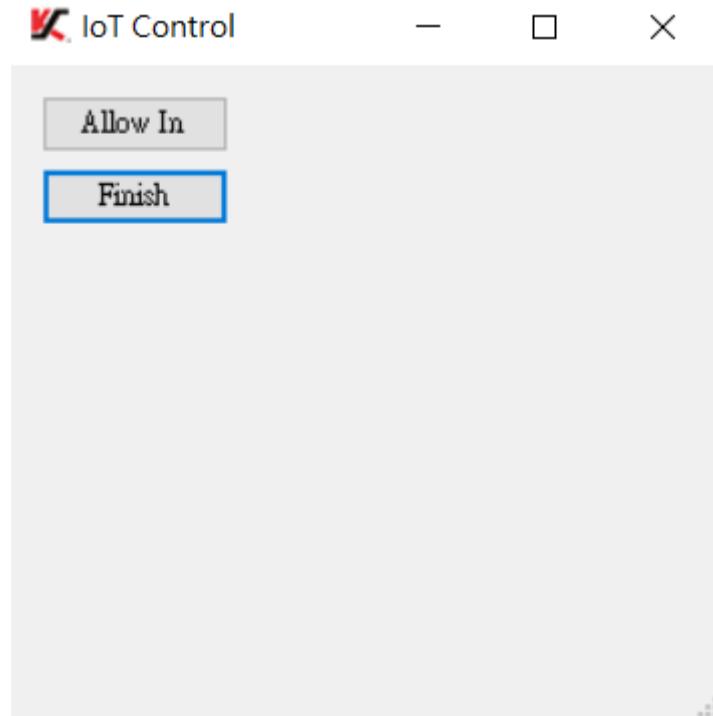


Figure 466: Loading and unloading interface

- (1) Allow In: Execute loading action.
- (2) Finish: Complete the job and execute the unloading action.

Note: For loading and unloading test operations, please refer to Chapter Operation Instructions.

7

Implement

Execute the dispensing program that has been written. It is generally used to load the taught program in actual mass production.

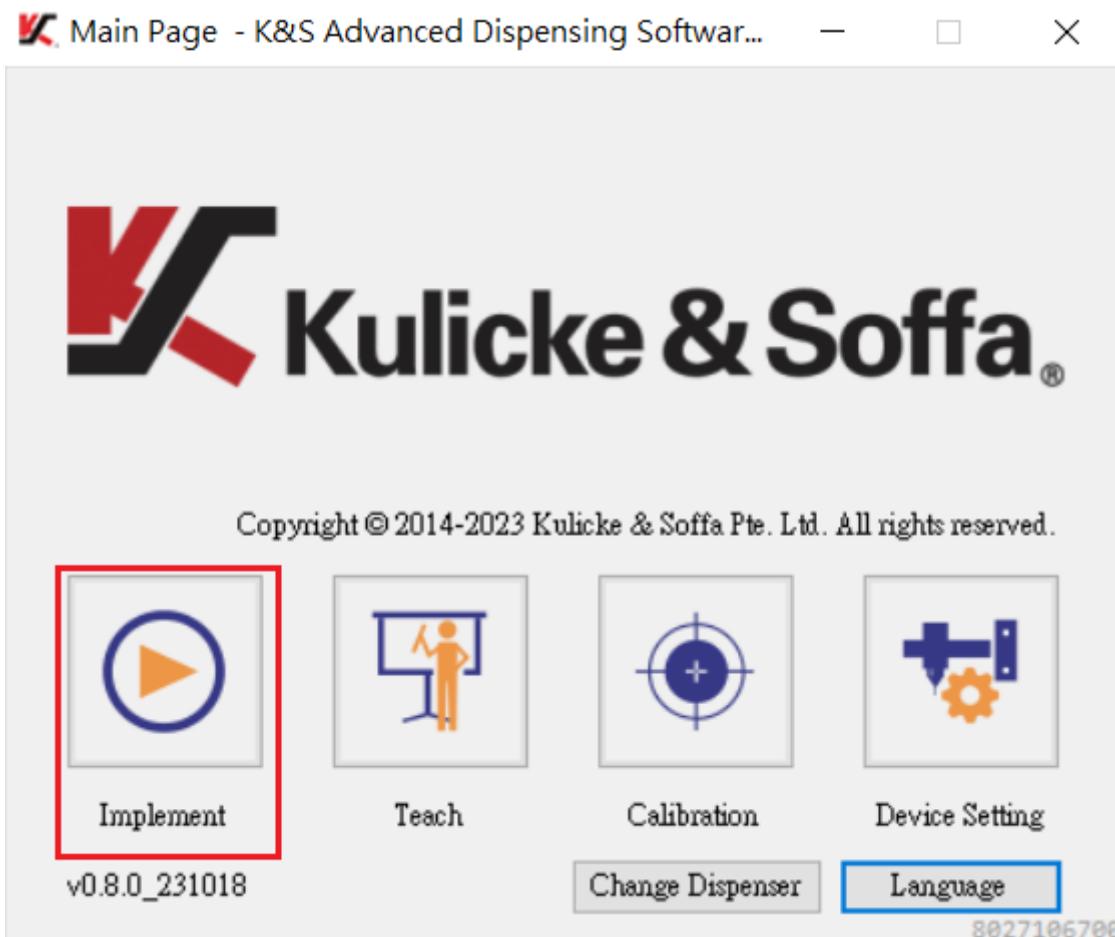


Figure 467: V2K interface

7.1 Execute page switching function

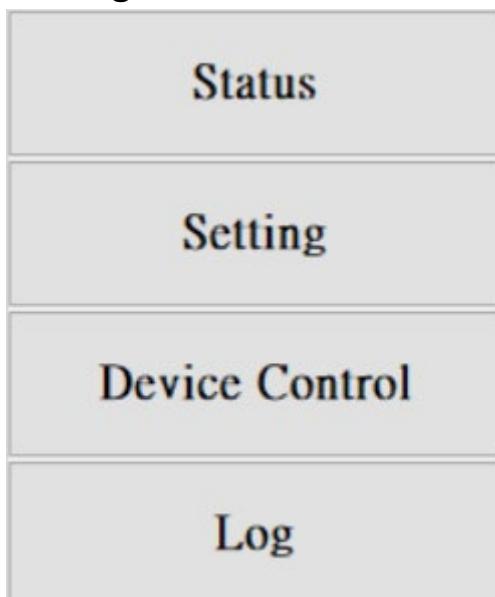


Figure 468: Perform four interface switches

Name	Description
Operating status	Switch to the running status page to view running status information.
Run settings	Switch to the operation setting page and set the functions required during operation.
Device control	Switch to the device control page to

	operate the machine and device.
Running record	Switch to the running record page to view the current running record.

7.2 Run control button

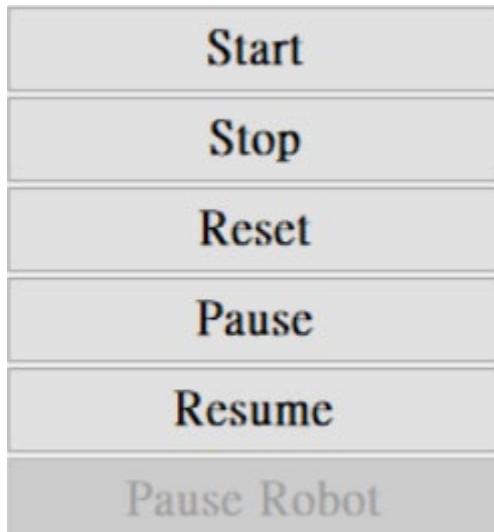


Figure 469: Run control button

Nam	Description
Start	Start using the tutorial files and related settings.
Stop	Stop using the teaching files and related settings.
Reset	Return to the initial state.
Pause	Pause operation.
Resume	Resume from paused operation to continued operation.
Pause the machine	The machine pauses.

7.3 Operating status

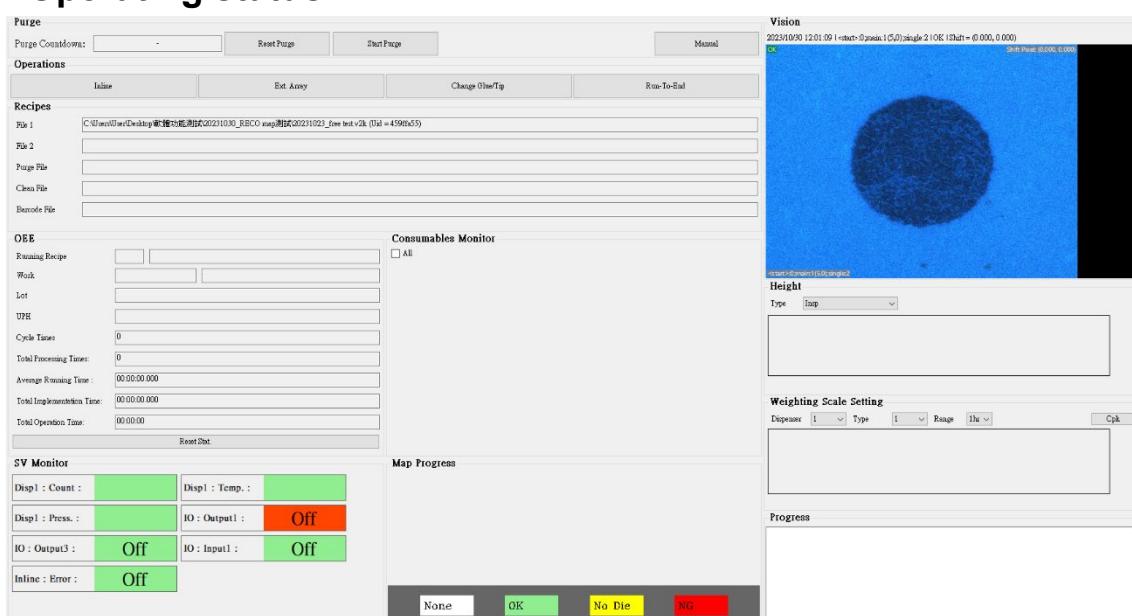


Figure 470: Running status interface

Nam	Description
Countdown to glue discharge	Displays the time until glue discharge.
Reset debinding	Clear to reset the debinding countdown timer.
Start degluing	Manually perform the glue discharging and teaching file procedure.

Specify debinding	Specify a specific valve body for debinding.
Loading unloading	Set the operation mode of loading and unloading device.
External Array	Opens the external manager interface.
Replace glue/needle	Provide replacement valve body, glue, and needle settings.
Quick correction	It is used for quick calibration after it has been calibrated and the device has been moved again.
Teaching file display	The currently used teaching file and the teaching file path.
Glue discharging instruction file	Displays the currently used debinding teaching file and the debinding teaching file path.
Cleaning tutorial files	Displays the currently used cleaning teaching file and cleaning teaching file path.
Barcode guide	Displays the currently used barcode guide and barcode guide path.
Running tutorial file	Displays the running teaching file and the teaching file path.
Work	Display the current Work ID.
batch	Display Lot ID.
Output per hour	Calculate how many units are produced per hour.
Execution cycle	The number of times the cycle runs.
Executed times	Displays the number of times the tutorial file program has been executed.
average execution time	The average execution time of each program execution.
total execution time	The accumulated total execution time of the instruction file.
total operating time	The running time after the software is clicked to start.
Reset information	Reset all information.
Monitor all	Monitor all valve bodies and needles.
Setpoint monitoring	Display valve body parameter group and IO status.
Positioning image detection	The last image detection screen is displayed.
Height measurement	Single run teaching file, curve chart of height measurement results.
Measuring weight	Single run teaching file, weighing result curve chart.
Execution progress	Displays the current step of the machine operation.
Running progress	During execution, the measurement height currently being executed and the current stage of execution are displayed.

7.4 Run settings

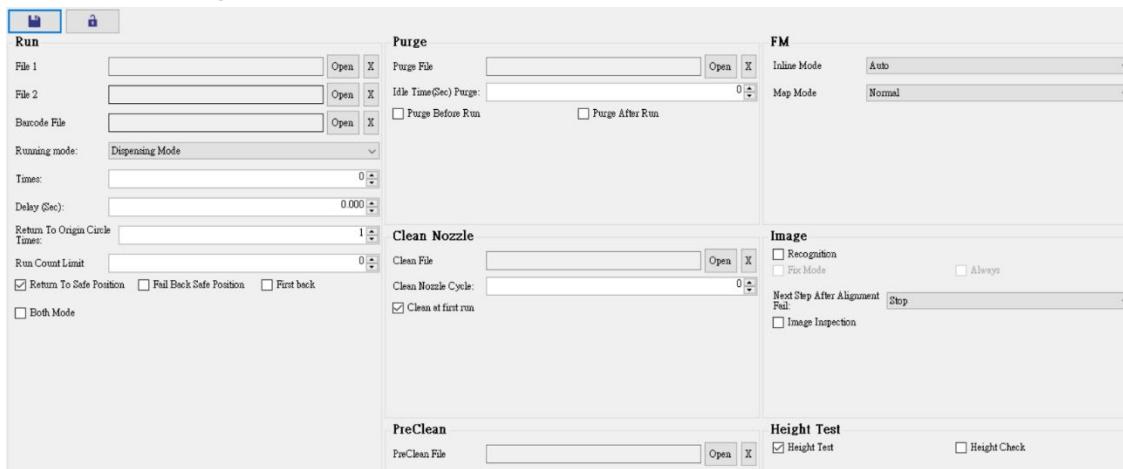


Figure 471: Run the configuration interface

Nam	Description
Save	Save the current V2K execution interface setting parameters.
locking	The current execution settings are grayed out and are not allowed to be modified by the user.
Tutorial file file name	Display the general tutorial file path.
turn on	Open the file location.
X	Deselect the selected tutorial file.
barcode guide	Run the teaching file in series with V2K and CxVis.

execution mode	Dispensing mode: Use the dispensing device to execute the glue application path. Camera mode: Use the camera to execute the glue application path. Dry run mode: The glue dispensing device executes the glue application path, but does not spray.
frequency	Number of times the coating process is performed. (If the value is set to 0, it will be executed continuously for unlimited times)
Delay (seconds)	The time interval between each procedure.
Return to origin cycle	After executing the coating program for the set number of times, it will return to the origin once.
Total execution limit	Set the total number of executions, 0 means unlimited times.
Complete and return to safe position	After executing the program instructions, it will return to the safe position.
Return to safety after failure	Return to a safe location after executing program instructions fails.
First safe pullback	After executing the program command for the first time, it will return to the safe position.
Both Mode	When checked, the teaching files will be executed sequentially.
Glue discharging Tutorial file-file name	Display the debinding teaching file path.
Idle time (seconds) Debinding	When the device is idle for the set number of seconds, it will automatically start the glue removal process.
Discharge glue before operation	When checked, glue removal will be performed before executing the program.
Discharge glue after operation	When checked, the glue removal operation will be performed after the program is executed.
Qingjiao tutorial file-file name	Display the clear glue teaching file path.
cleaning cycle	Clean after executing the coating process for the set number of times.
Perform cleaning for the first time	When you choose to execute it for the first time, the cleaning operation will be performed. If cleaning instructions have been set in the program, there is no need to check the cleaning cycle function.
Clean the teaching files in advance	Execute the cleaning teaching file before starting.
Connected mode	Choose manual (only use computer for operation), semi-automatic (computer and external IO for operation), automatic (only external IO trigger for operation) method for machine connection.
Map Mode	Normal: Normal signal. Disable: Disabled. Virtual: Virtual signal.
Image recognition correction mode	Image recognition processing is performed when executing the program. When image recognition fails, correct the alignment manually.
always on	Correction mode will also be enabled when no recognition fails.
Image recognition loss Failure exception handling	Stop: Manual adjustment method for correction and alignment. No correction: Ignore image alignment and apply glue directly. Do not execute: Unrecognized program applications will not be executed.
Image detection	Image detection processing is performed when executing the program.
height test	Execute the height measurement command in the program.
height detection	Displays height measurement results.

7.5

Device control

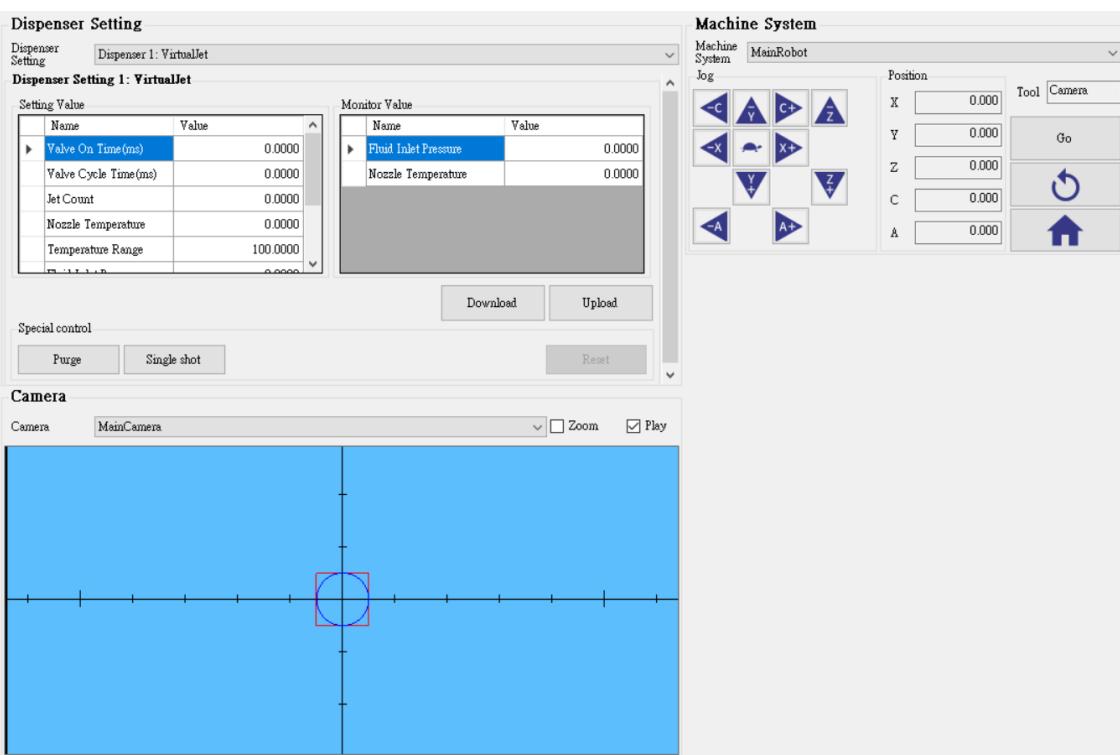


Figure 472: Device control interface

Note: Please read the Dispensing Equipment chapter.

Note: Please read the Machine Control and Teaching chapter.

Note: Please read the camera-related functions chapter.

7.6

Running record

Time	Code	Category	Message
09:40:02	1800	IO device startup failed.	
09:40:02	1600	Inline startup failed.	
09:40:03	1300	Camera startup failed.	Sale
09:40:03	1500	Dispenser startup failed.	index: 0
09:40:03	1500	Dispenser startup failed.	index: 1
09:40:03	1500	Dispenser startup failed.	index: 2
09:40:03	1500	Dispenser startup failed.	index: 3
09:40:04	1800	Light startup failed.	
09:40:04	1800	Scale startup failed.	

2023-05-05 09:40:02.336+08:00 IO device startup failed.

Figure 473: Log data interface

Please read the Log chapter.

7.7

Loading and unloading (IoT operation)

- (1) Confirm that the machine is at the Home point.
- (2) Click the execution screen->Loading and unloading.

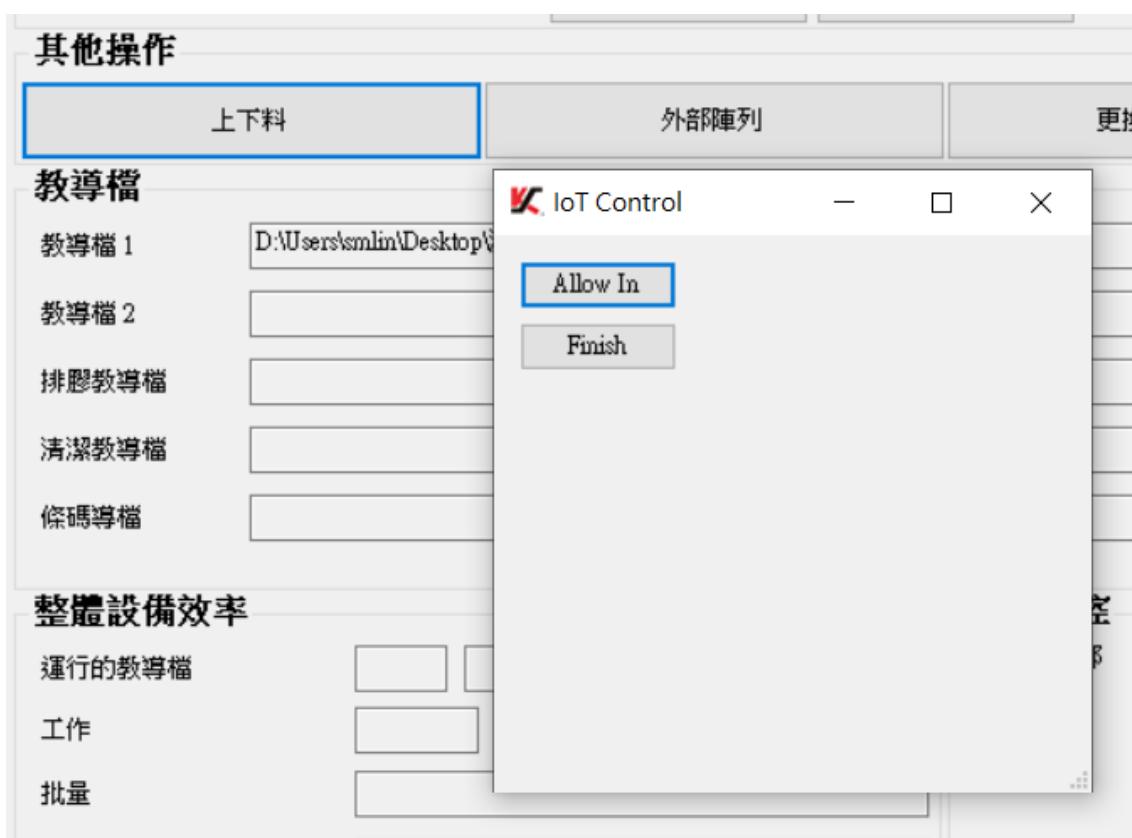


Figure 474: Click on the loading and unloading field function

- (3) Send IoT commands
 - (A) Allow In: Run the Load action.
 - (B) Finish: Run the Unload action.
- (4) IoT operates automatically
 - (A) Connection mode => Automatic.
 - (B) Make sure there is no risk of collision around people or objects.
 - (C) Confirm that the sample is placed in the load port.
 - (D) Confirm -> Start.
- (5) Troubleshooting and Precautions
 - (A) Please confirm that the PC is connected to the IoT wifi.
 - (B) Turn on the base station and then turn on the pi power supply (a device housed in plastic). If load fail or unload fail is displayed, please confirm that the arm status and IO output are correct (pi will check the arm status before running)
 - (C) The arm movements are pre-written, and it is best to reduce the PTP speed at the beginning to avoid safety issues.

8

Double Y control

When the machine uses the second Y-axis, Y2 needs to be calibrated (usually Y1 is used when not modified), and it must be calibrated before it can be used after switching to Y2. It should be noted that the Y1 and Y2 calibrations are separate.

8.1

Calibration: Switch the Y axis of calibration

The Y-axis toggle button can be seen above the correction.

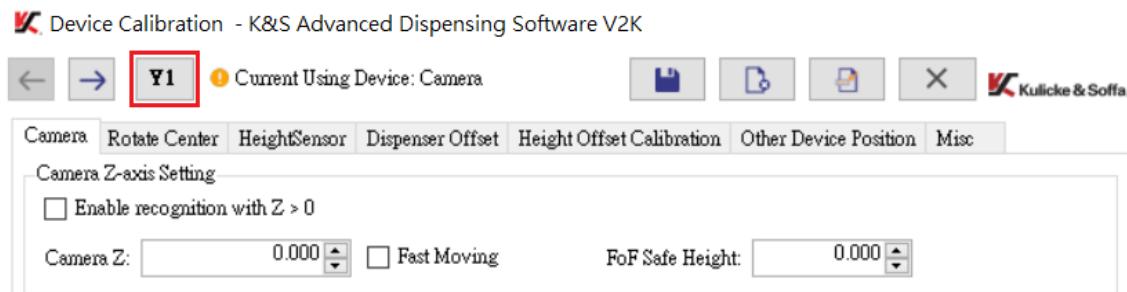


Figure 475: Cut Y control in calibration mode

Items required for double Y calibration (both axes must be calibrated separately)

- (1) Camera Correction: Camera pixel and rotation correction.
- (2) Camera calibration: Camera Z-axis settings.
- (3) Height detector correction: Height measuring device position correction.
- (4) Displacement of dispensing device: Offset correction between dispensing device and CCD.

Note: For Y2-axis camera calibration, camera Z-axis setting, height detector calibration, and dispensing device displacement correction, first switch to the Y2-axis device.

8.2

Tutorial: Tutorial on setting double Y

On the teaching page, go to Teaching Settings → Machine → Y Axis, and set whether to use Y1 or Y2 axis for teaching.

Teach Config.

Kulicke & Soffa.

Function Settings

Delay Observation Condition Rearrange Works Auto-Distribution Fix Inspection Mode

Machine System

Y Axis: Y1

Nonblocking Delay(Under Fill)

Enable Cut and Group

Number per Group: 0

Nozzle Clean after how many groups: 0 Subprogram

Weight Scale after how many groups: 0 Subprogram

Multiple In-One-Shot

Multiple In-One-Shot Width: 150 Height: 150

Capture ROI

Width: 320 Height: 240

Lock Work Piece

Auto On at Start Auto Off at End Checking

Height Test

Retry Times: 1 Insp. Retry Times: 1

Dispenser Parameter Retry

Manual Retry Auto Retry Times: 1 Retry Delay (ms): 100

Misc

Barcode Module Dot Checking

Figure 476: Select the spindle to be controlled in the teaching setting**8.3****Run double Y**

- (1) According to the teaching file settings, run different Y axes.
- (2) Check the box "Execution mode will automatically switch to the teaching file".
- (3) After running teaching file 1, it will automatically switch to teaching file 2. After running teaching file 2, it will switch back to teaching file 1, and so on.

9**Special-shaped coating**

The group command action taught by V2K may be a closed rectangle or circle. At this time, you can set which ones should be dispensed or not.

9.1**Preliminary work**

Before importing the group for special-shaped coating, two groups need to be taught. The purposes of the two groups are as follows:

- (1) The area to be painted.
- (2) Areas not to be painted.

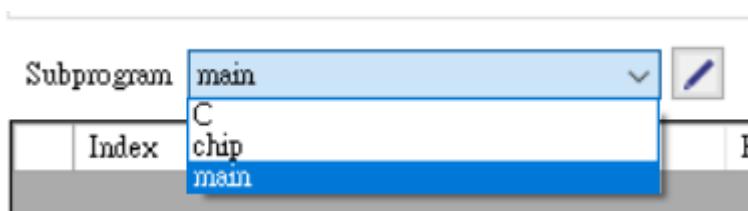


Figure 477: Group classification

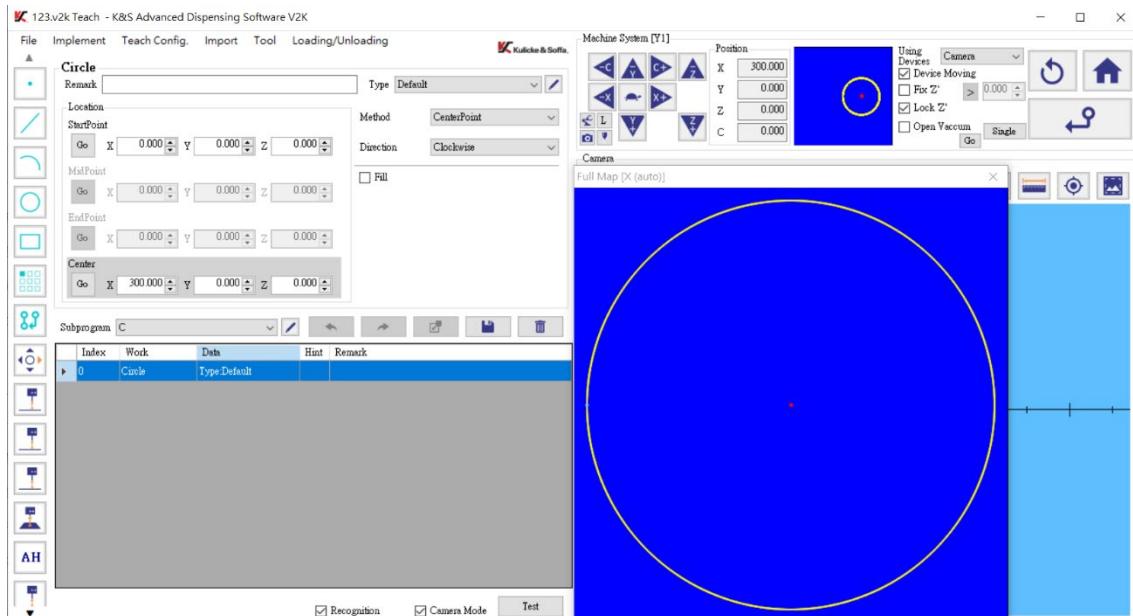


Figure 478: Taught areas not to be painted

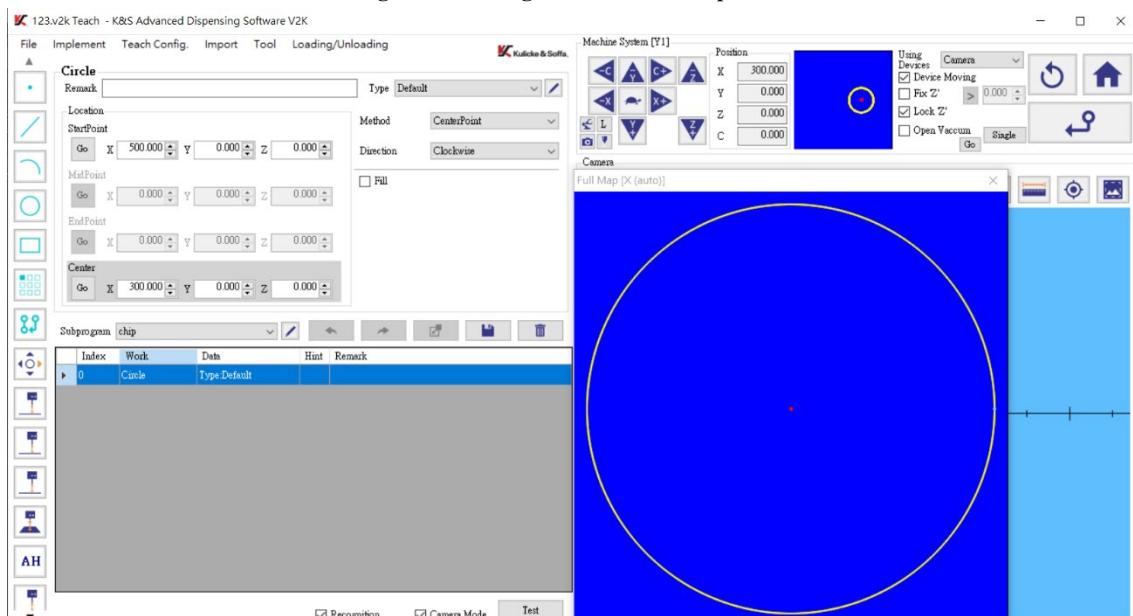


Figure 479: Taught areas not to be painted

9.2 Import jobs and settings

After confirming that the pre-work is completed, we can select Import → Job from the job menu to open the import interface of special-shaped coating.

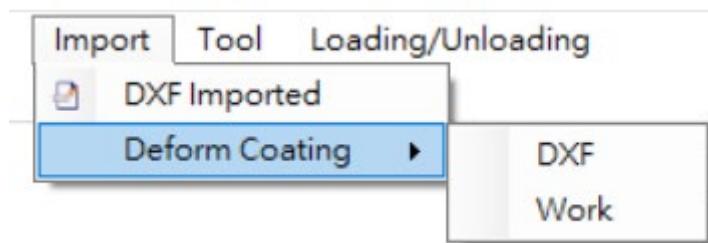


Figure 480: Find DxF import from Special Shape Coating

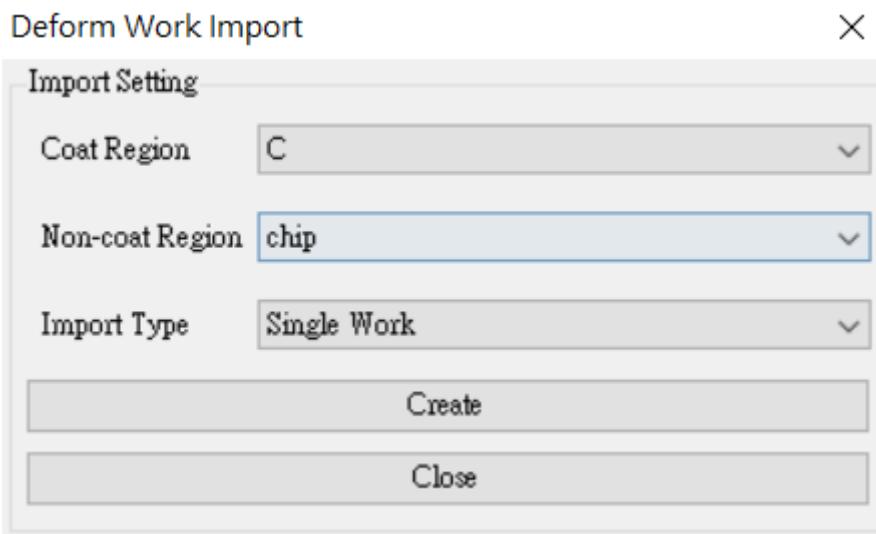


Figure 481: Special-shaped coating interface

The options for importing settings are described below:

- (1) Area to be painted: Select the work group of the area to be painted.
- (2) Do not paint area: Select the work group of the non-painting area.
- (3) Import type
 - (A) Single job: The imported job presents a single line of instructions.
 - (B) Multiple jobs: The imported job will display multiple lines of instructions depending on the situation (currently only applicable to DXF import, a single line of instructions will still appear when using the imported job).
- (4) Generate: Calculate the special-shaped coating path according to the default settings, and generate a work instruction. The work type is "special-shaped" and contains the setting information.

After the import is completed, we can see that the software generates a line of work instructions based on the default coating settings. The coating settings can be changed after the import is completed. After the settings are completed, they can be saved and reflected on the minimap immediately. Detailed coating setting instructions are as follows:

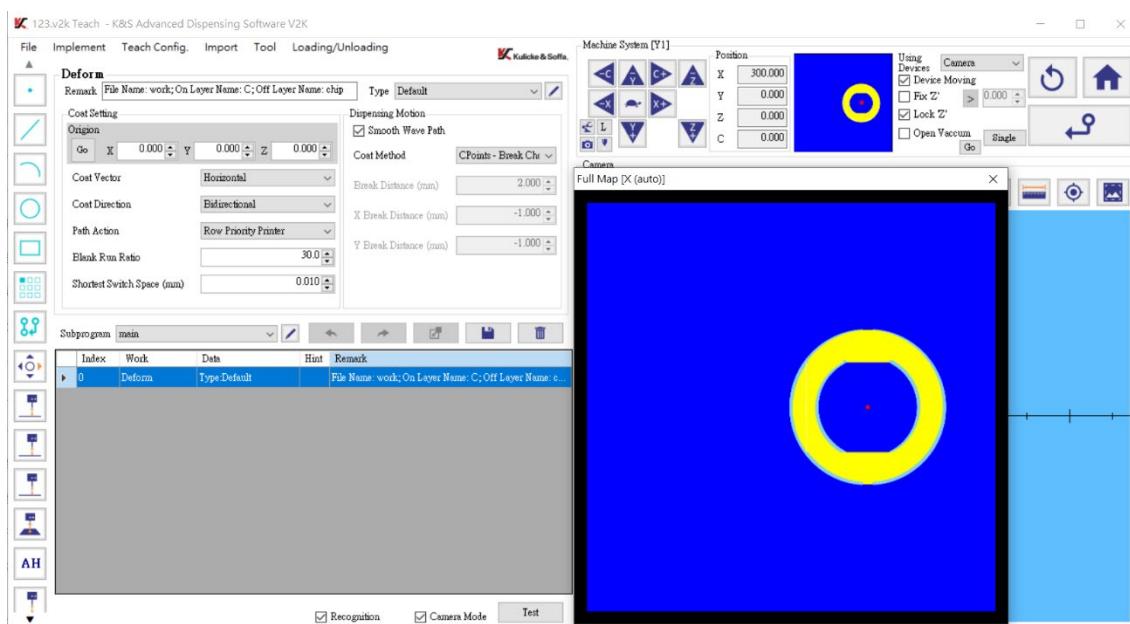


Figure 482: Result after production is completed

- (1) Origin: The origin coordinates of the work. Only with the origin coordinates can the entire work be moved.
- (2) Coating vector: The main direction of movement of the spray valve in the path.
 - (A) Horizontal coating (recommended): Mainly apply glue in the horizontal direction.
 - (B) Vertical coating: Mainly apply glue in vertical direction.
- (3) Coating direction: the moving direction of the spray valve between different line segments.
 - (A) One-way coating: The starting direction of each line segment is fixed (the starting direction of horizontal coating is the left side, and the starting direction of vertical coating is the upper side).
 - (B) Bidirectional coating (recommended): Automatically calculates a suitable starting point in the coating line, and the direction of the starting point is not limited.
- (4) Path action: How different line segments are connected.
 - (A) Column priority printing: The nozzle path moves first according to the set "coating vector".
 - (B) Run-ahead priority printing: The path priority is moved in the vertical direction according to the set "coating vector".
 - (C) Full path printing: The spray valve will completely complete the area to be coated (equivalent to column priority printing with an allowable dry run ratio of 100%). If there is an area that is not coated, it will be processed according to the "coating method".
- (5) Allowed idle running ratio: The maximum proportion of the distance that each column of coating can consume in empty running (moving but not applying glue), the range is 0 to 100, only "column priority printing" needs to set this.
- (6) Minimum switching valve distance (mm): the shortest moving distance between valve opening and valve closing.
- (7) Wave Path Smoothing: Straighten S-shaped paths for ultra-short distances.
- (8) Coating method: spray valve glue coating method.
 - (A) Line segment: After each line segment is painted, the spray valve will rebound first before painting the next line segment.
 - (B) CP point - no line separation: the spray valve will not rebound and only rely on the switch valve to control the glue application.
 - (C) CP point - too far dividing line: If the distance between two line segments is too long, the spray valve will rebound before painting the next line segment. The excessive length standard is defined by the "line dividing distance". If it is not too long, the spray valve will be directly drawn

along the line segment. Continue painting along the moving path to the starting point of the next line.

1. Three distances are considered, ranging from -1 to 9999. A negative number means that the distance is not considered, and a value greater than or equal to 0 means that the distance is considered.
2. Line dividing distance: Set the distance between the end point of the previous line segment and the starting point of the next line segment.
3. X component line distance: Set the X component distance between the end point of the previous line segment and the starting point of the next line segment.
4. Y component line distance: Set the Y component distance between the end point of the previous line segment and the starting point of the next line segment.
5. For example, if you set the dividing line distance = -1, the X component distance = 2, and the Y component distance = 2, and the spray valve is to move from line A to line B, it means that when the end point of line A and the starting point of line B meet the X distance ≤ 2 And when the Y distance is ≤ 2 , the spray valve will paint directly from the end point of A to the starting point of B along the moving path, otherwise it will rebound before painting line B.

(D) CP point - line change line: The spray valve will rebound only when the line is changed and glue is applied.

If you want to set the glue width (width), the distance between glues (margin) and the indentation distance (padding) of the glued line segments, you can set it through the editing mode. In the advanced setting interface to set fill parameters.

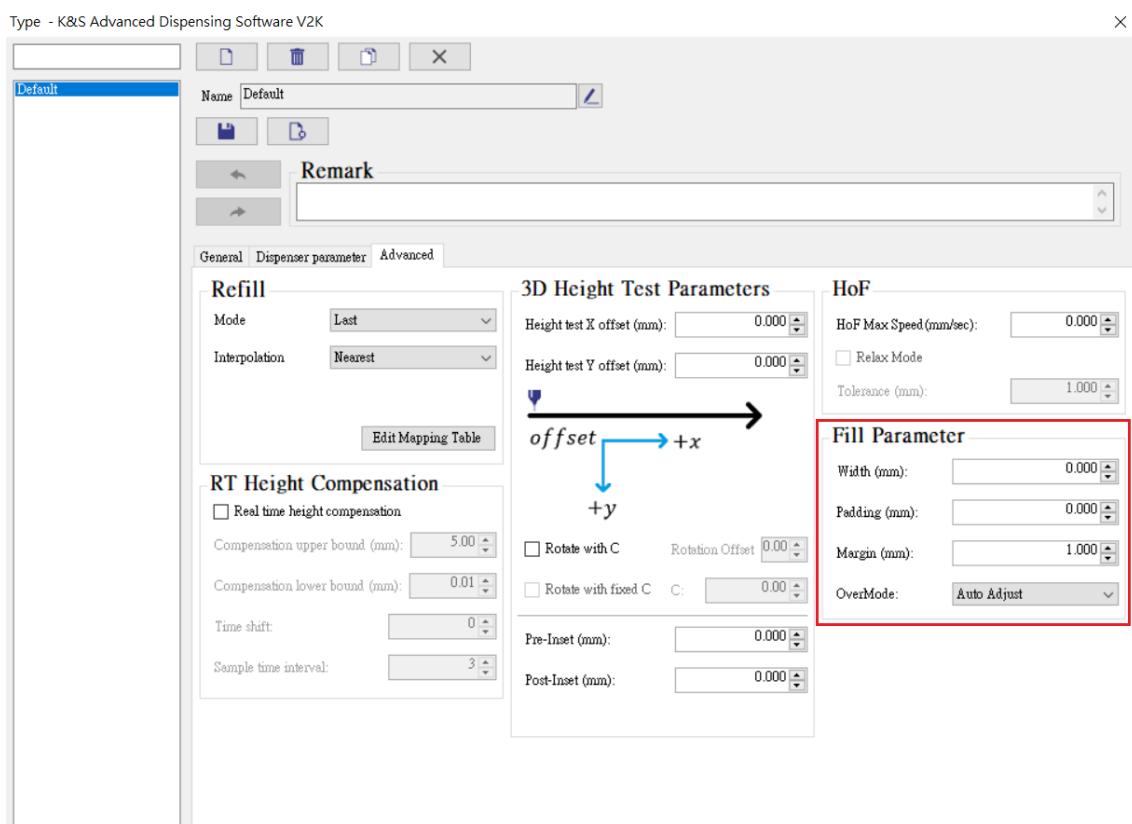


Figure 483: The filling parameter is used to change the filling situation

9.3 Expand

When users want to manually fine-tune the path calculated by the software, they can use the expansion function. The expansion can be divided into single group expansion and multiple group expansion methods, as explained below.

9.3.1 Expand process description

- (1) Right-click the work order and select the expand function to expand it.

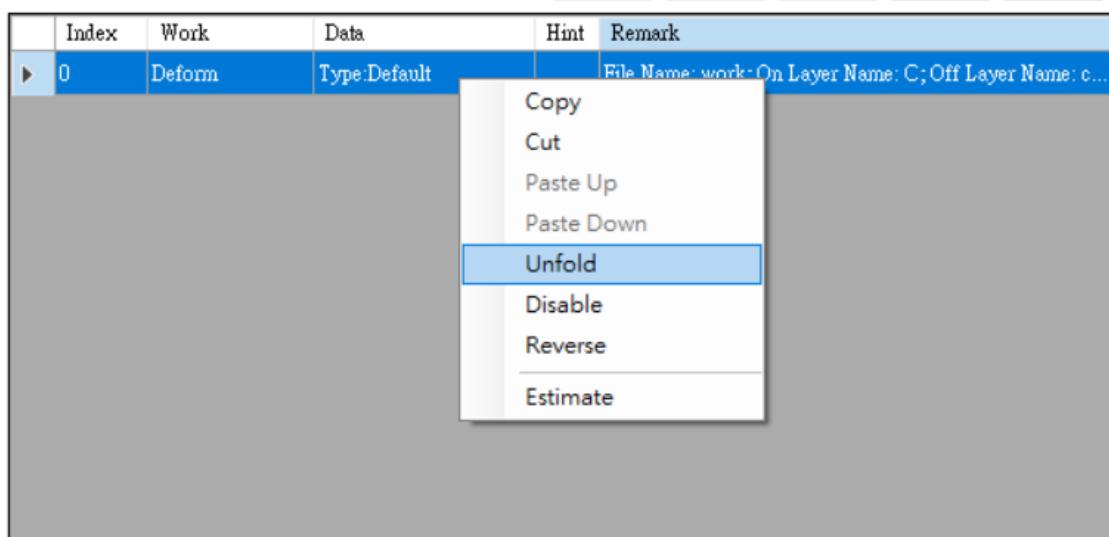


Figure 484: Select the command and right-click to expand

- (2) Enter a new group name and the software will expand the work to the new group.

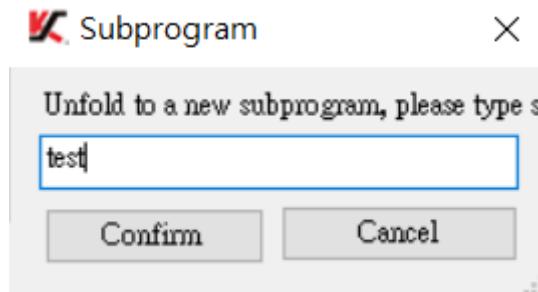


Figure 485: Enter group name

Note: The coating method of special-shaped coating must be "Line Segment" to create the following window, otherwise there is only "Enter Group Name".

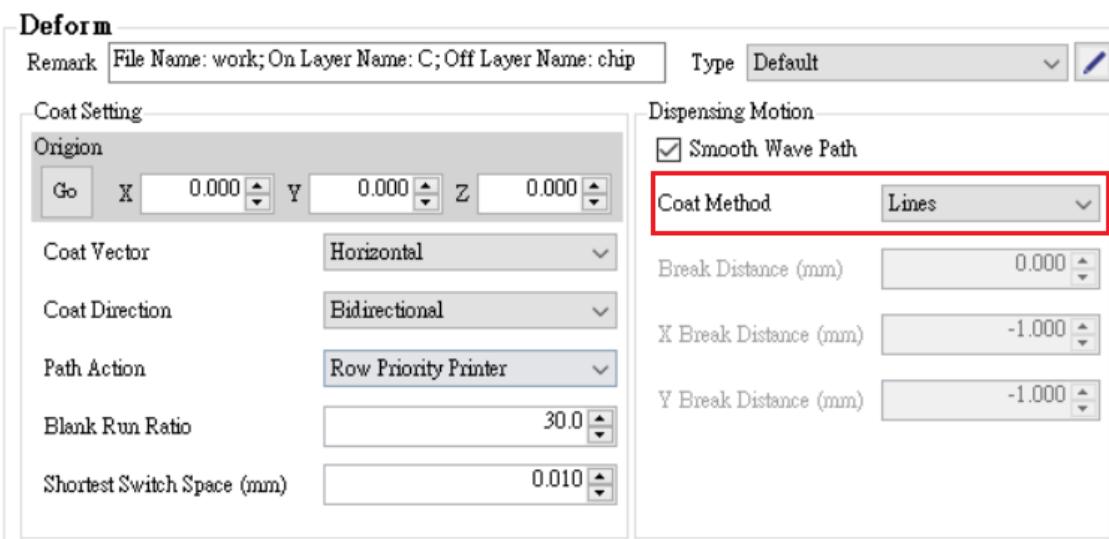


Figure 486: Line segments need to be selected for normal operation

- (3) After adding the name, the software will pop up the expansion group type window, and you can choose to expand a single group or multiple groups.

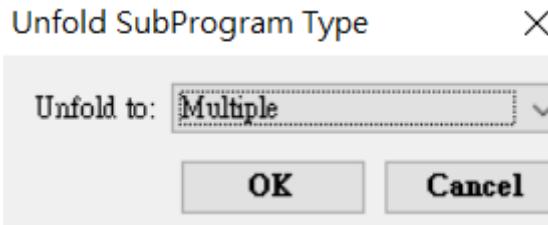


Figure 487: Select multiple groups

- (4) Select multiple groups to expand, the software will pop up the expansion group setting window, enter the number of work groups for each group, and how many work groups a group has on average.

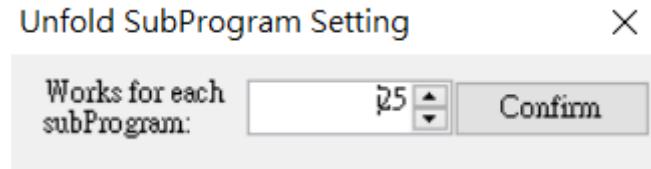


Figure 488: Enter the number of groups

- (5) The software will calculate how many groups are needed based on the entered average number of work groups for a group, and will prompt the software (such as adding groups test001-test008) and add a new group.
- (6) Click on the group option and you will see each expanded group.

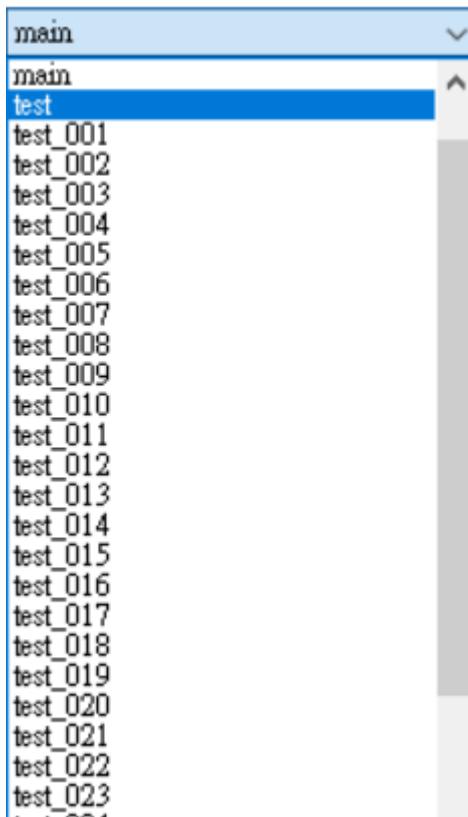


Figure 489: Each expanded group

- (7) After the group is expanded, you can edit the details.

Subprogram		test							
Index	Work	Data	Hint	Remark					
0	Callsubprogram	Subprogram:test_001							
1	Callsubprogram	Subprogram:test_002							
2	Callsubprogram	Subprogram:test_003							
3	Callsubprogram	Subprogram:test_004							
4	Callsubprogram	Subprogram:test_005							
5	Callsubprogram	Subprogram:test_006							
6	Callsubprogram	Subprogram:test_007							
7	Callsubprogram	Subprogram:test_008							
8	Callsubprogram	Subprogram:test_009							
9	Callsubprogram	Subprogram:test_010							
10	Callsubprogram	Subprogram:test_011							

Figure 490: Check and edit details

If you choose to expand for a single group in step 3, the software will expand the path calculated by the software in the newly added group name.

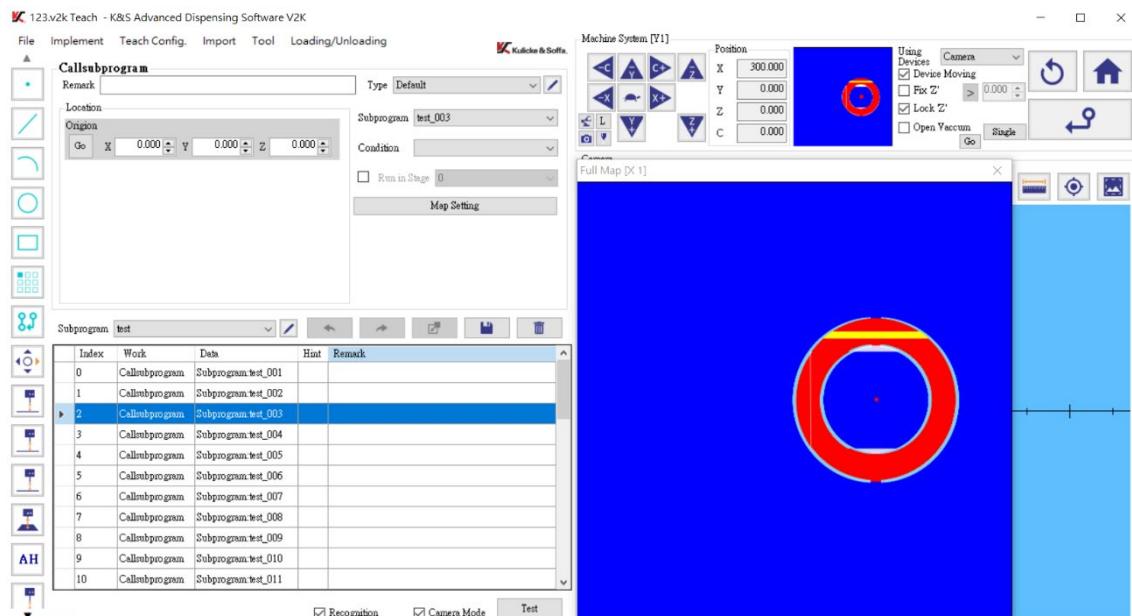


Figure 491: Single group expansion results

9.4

Archive and read files

In order to avoid the need for users to repeat the teaching file every time, the V2K software provides a file reading and archiving mechanism. This mechanism is also applicable to special-shaped coating work. Select Save as a new file or Save the file in the taskbar-File to archive. On the one hand, you can also choose to open an old file to read previously created work.

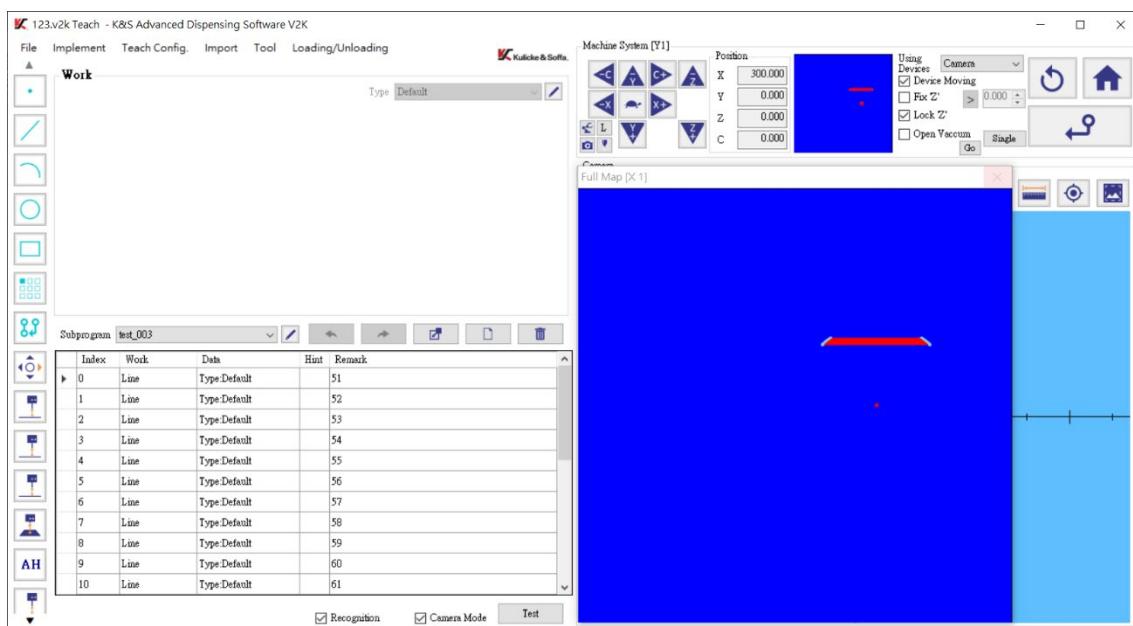


Figure 492: Task Column-File

10 Pick & Place

After setting the Pick coordinates to perform the picking action successfully, go to the set Place coordinates to perform the placement action.

10.1 External array tutorial file

Set the coordinate position of the sample to be captured.

	Index	Work	Data	Hint	Remark
▶	0	External Array ...	Type:Default		
	1	Repeat	Index:0~0 [3 x 3]		

Figure 493: Set external array coordinate points

- (1) To use the external array coordinate point (single point) command (not a general coordinate point).

K Teach - K&S Advanced Dispensing Software V2K

File Implement Teach Config. Import Tool Loading/Unloading

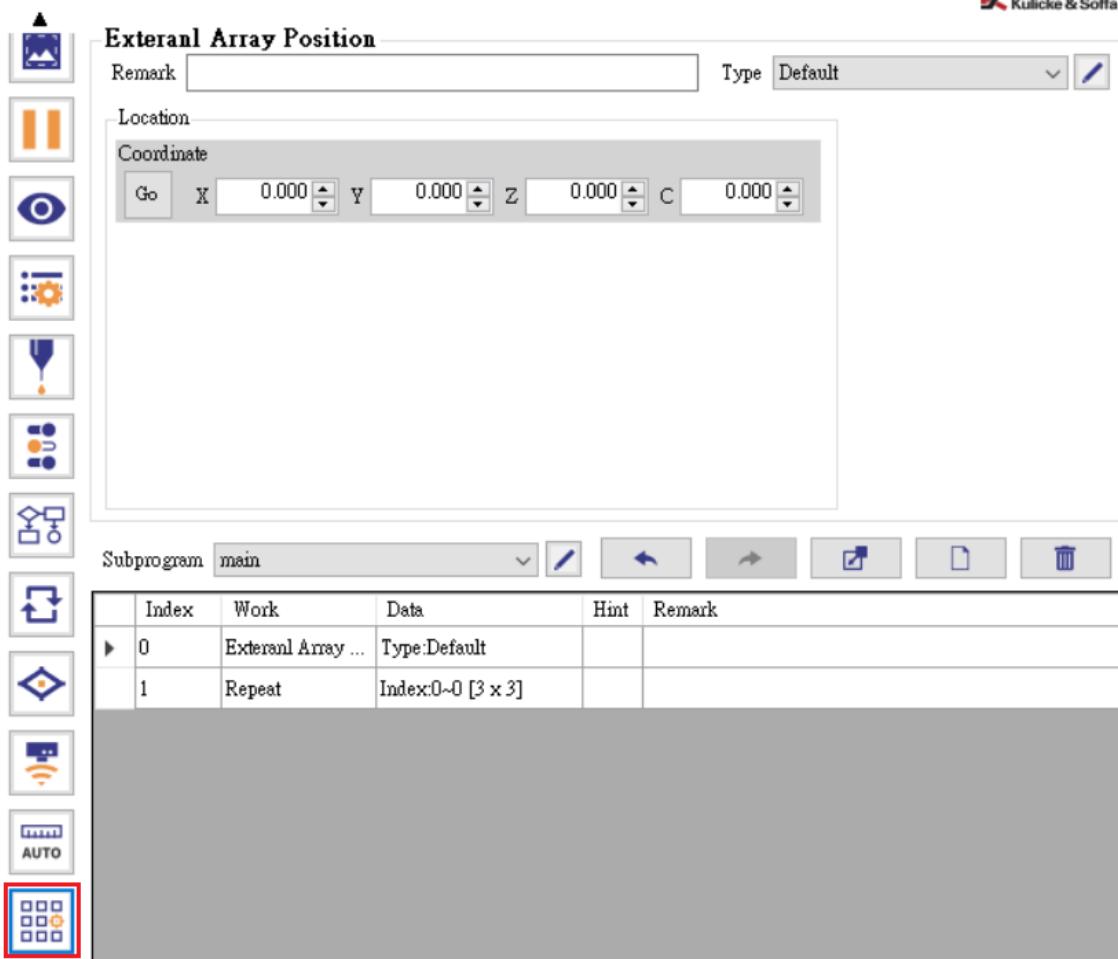


Figure 494: Use external array coordinate point command

- (2) Set the fetch sample array range.

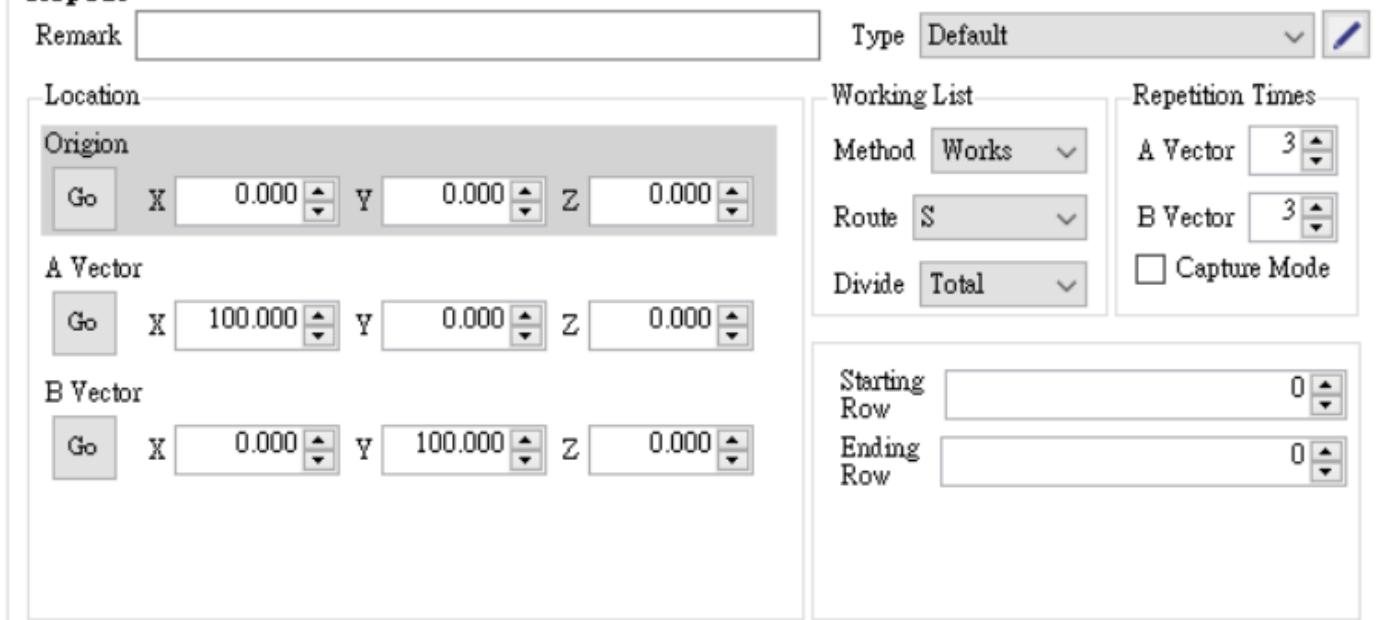
Repeat


Figure 495: Set array range

- (3) The teaching file needs to be saved to the ext folder.



Figure 496: The teaching files need to be saved to the corresponding folder

Under the V2K folder, create a folder with the file name "ext".



Figure 497: Save the tutorial file in the "ext" folder

Save the tutorial file in the "ext" folder.

10.1.1 External Array Manager (Tools)

On the external array manager page, set the current step number to retrieve the position of the external array teaching file.

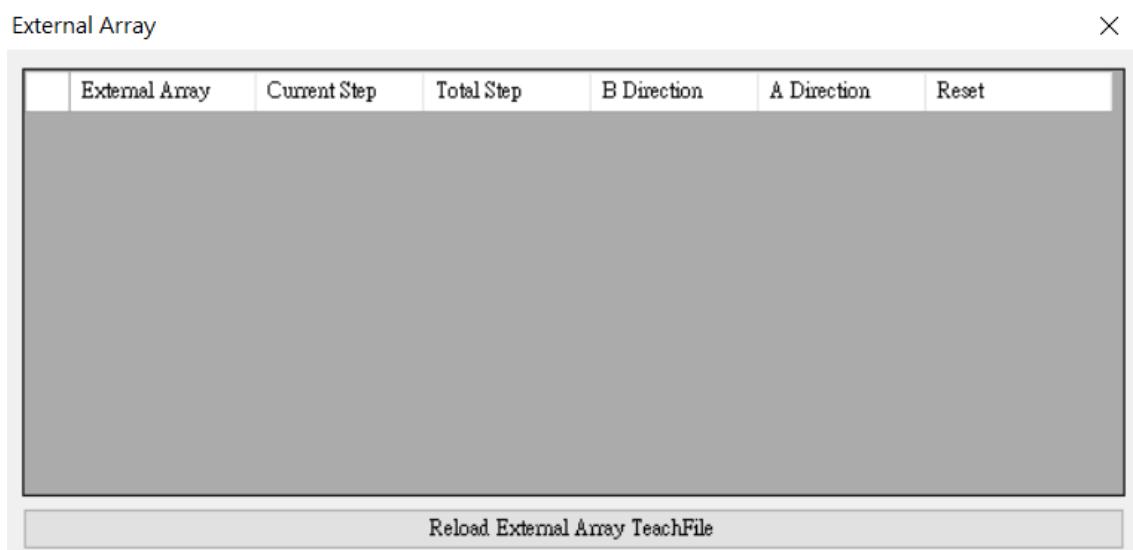


Figure 498: External array manager (tool) interface

Name	Description
External array	External array file name.
Current number of steps	This number of steps is currently being executed.
Total steps	This instruction performs a maximum number of steps.
B direction	Currently executing array B direction position.
A direction	Currently executing array A direction position.
Reset	Step count reset.
Reload external Array teaching files	Load the external array teaching file.

10.1.2 External array user

- (1) On the tutorial page → upper toolbar → Tools → select the External Array Manager option.

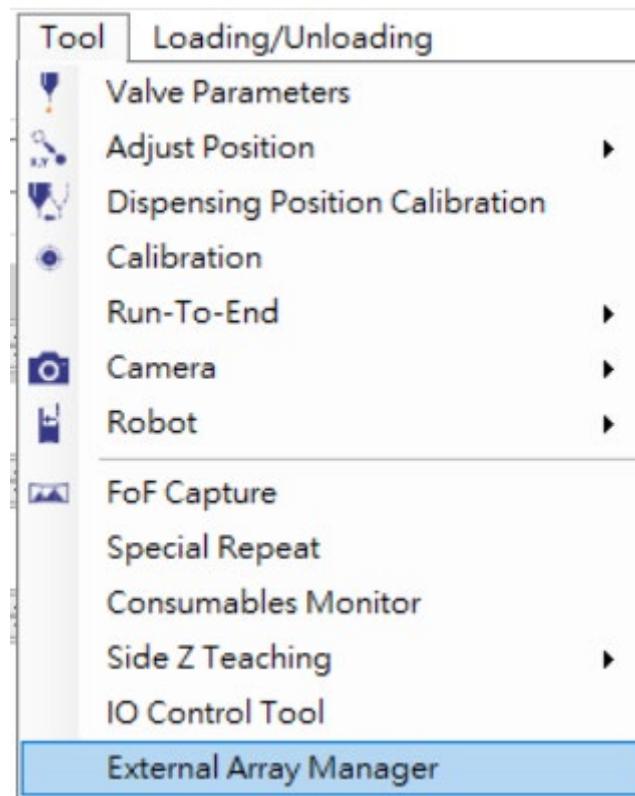


Figure 499: Toolbar Find External Array Manager

(2) Refresh external array: Reload the external array tutorial file into PPCommand Manager.

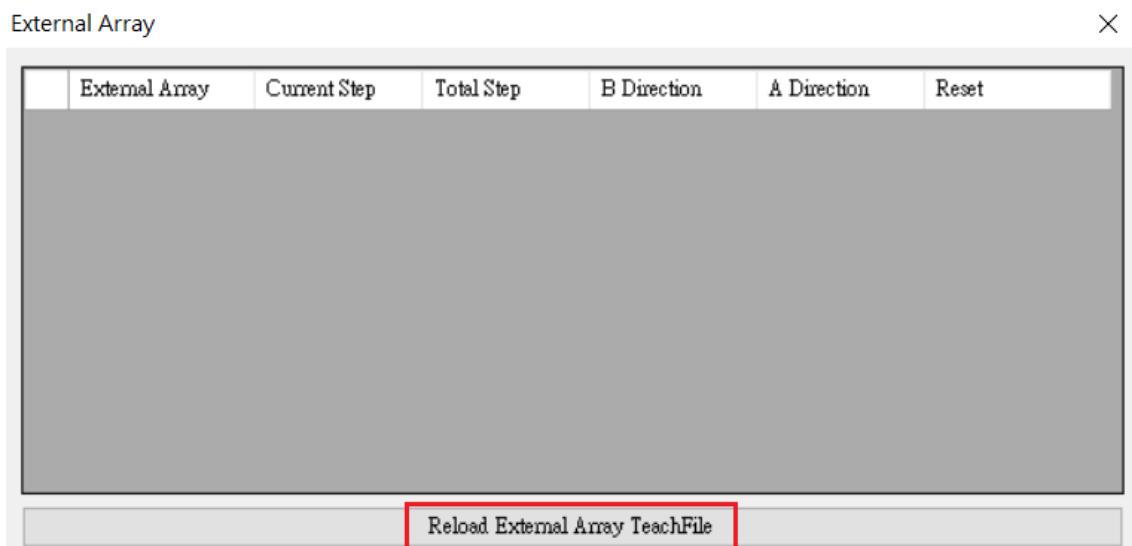


Figure 500: Click to reload

(3) Show refresh results.

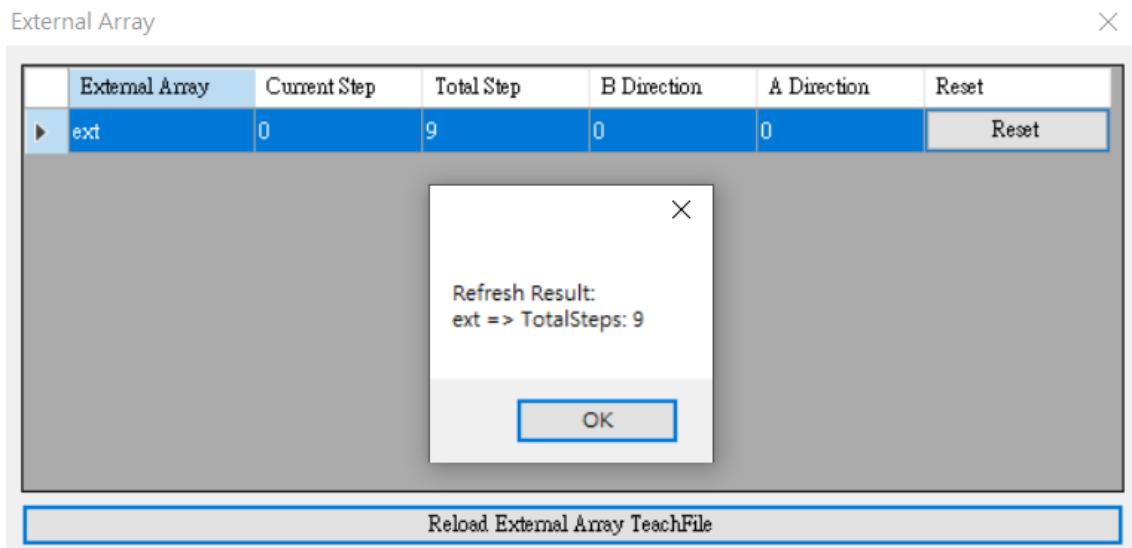


Figure 501: Jump out of the number of steps read

- (4) Select the external array teaching file.

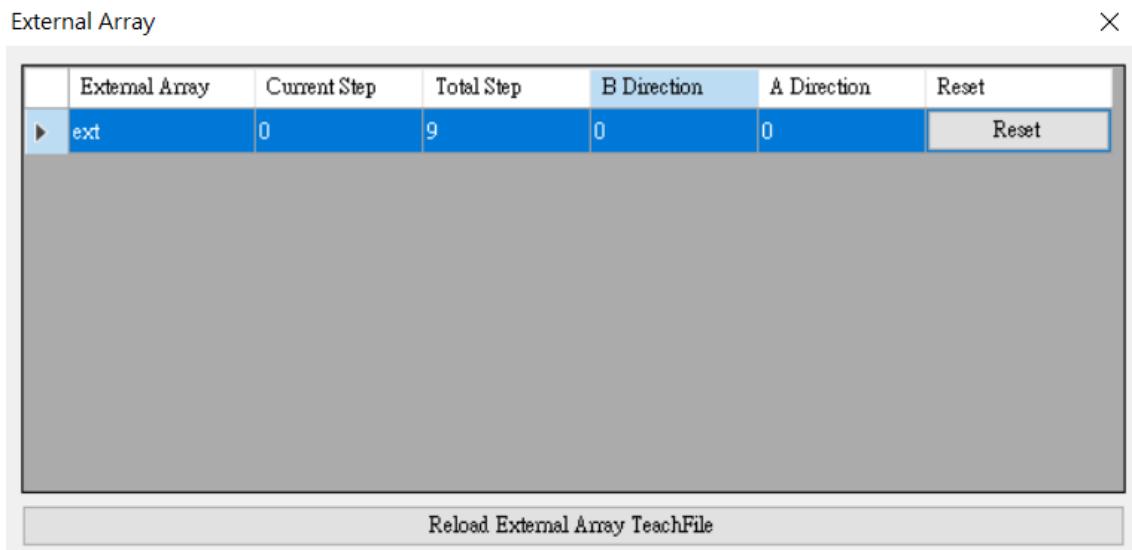


Figure 502: normal display

Note: After the V2K software is closed, the current step number of the external array manager will no longer be retained. If you need to retain the step number, please refer to the settings below.

10.1.3 External array step count remains set

- (1) Open the V2K folder
- (2) Open the conf folder
- (3) Edit conf file
- (4) Find "ExternalArrayAutoLoad" and change false to true.

10.2 Pick

Fetch the page, set the coordinates, and perform a fetch action on the coordinates.

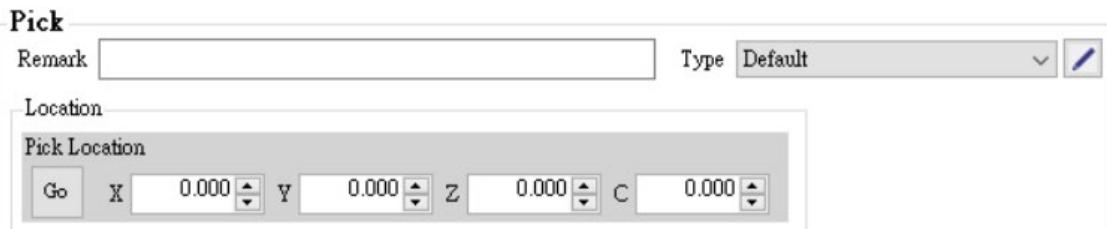


Figure 503: Crawl interface

Name	Description
Grab position	Set the coordinates to be captured.

10.3 Place

Place the page, set the coordinates, and perform the placement action on the coordinates.

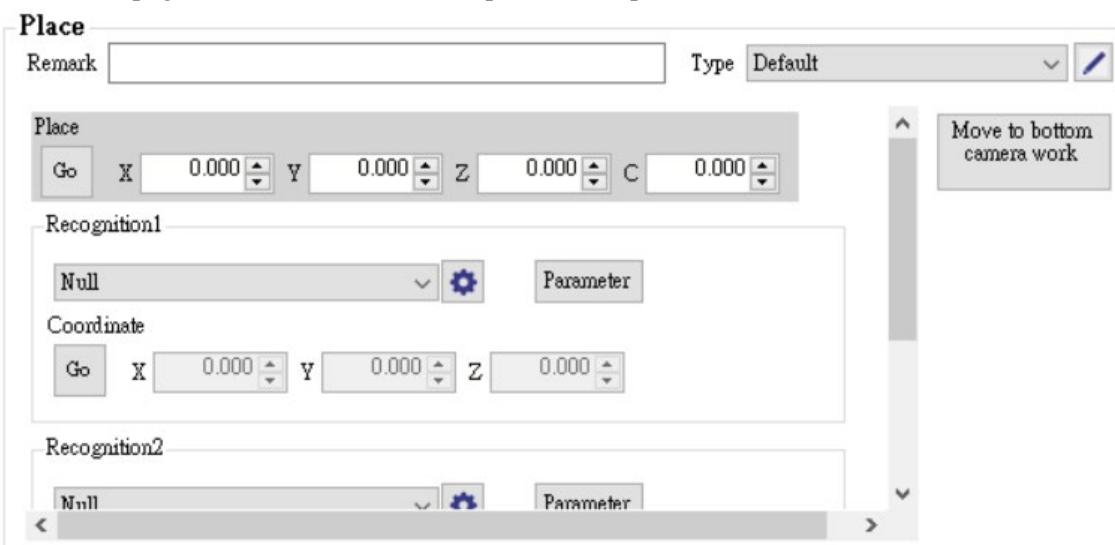


Figure 504: Place command interface

Name	Description
Placement	Set the coordinates to be placed.
Image recognition	Choose which identification to use
Terminal deceleration distance	When placing it, when the Z-axis moves to almost reach the target, how far in advance should it start decelerating.
terminal speed	The deceleration distance of this section is the walking speed.
Move to next camera working height	This is used with the lower camera. Move the device to the height of the lower camera to see the target clearly.

10.4 PPCommand

The PPCommand page directly combines the functions of the Pick and Place commands.

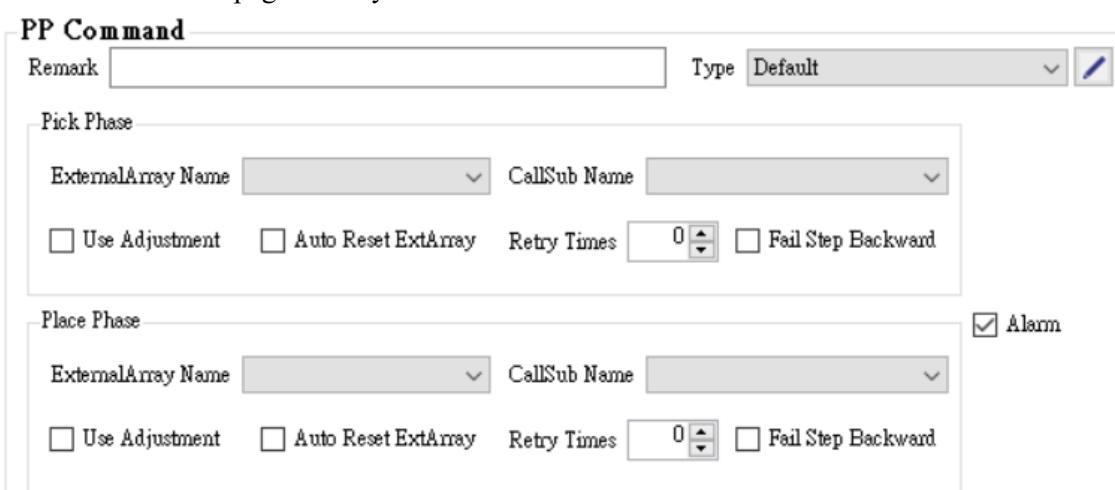


Figure 505:PPCommand

Name	Description
Remarks	You can fill in any remarks.
ExternalArray Name	Select the set external array file name.
CallSub Name	Select the set action group name.
Use Adjustment	Automatically correct position.

Auto Reset	The number of automatic reproductions.
Retry Times	Number of consecutive failures.
Fail Step Backward	Return to the previous action after exceeding the number of consecutive failures.
Alarm	Alert on failure.

10.5 Grab, place, PPCommand operation process

- (1) Set group settings for grab and place. To ensure that the moved position is offset, you can set image recognition in the group.

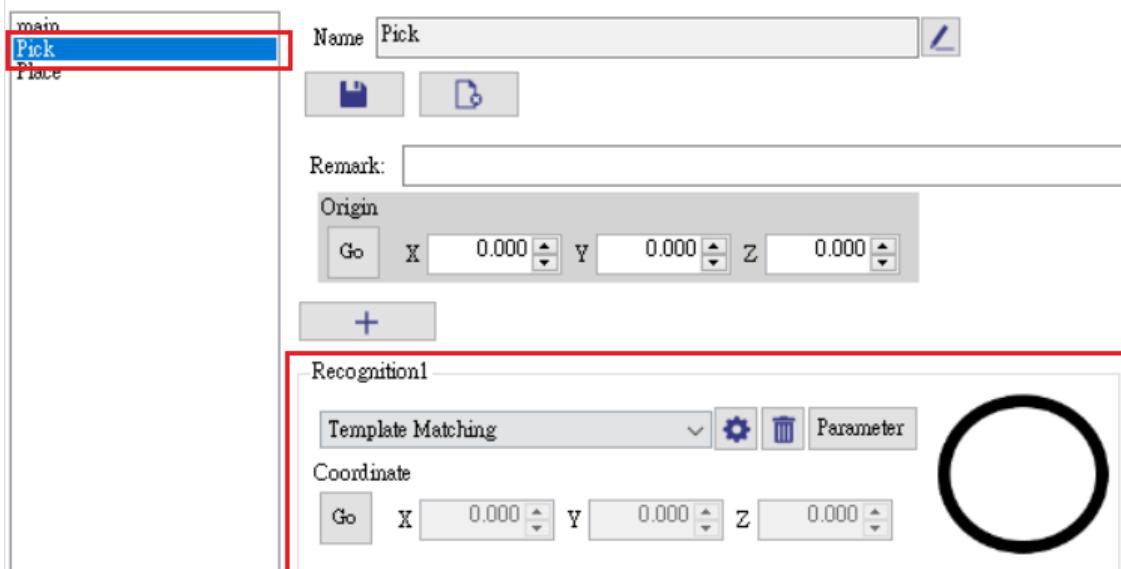


Figure 506 Set up image recognition to ensure accuracy

- (2) Set the grab position.

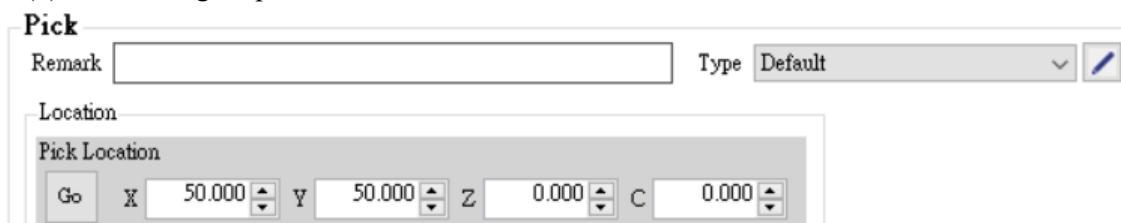


Figure 507: Set grabbing coordinate position

- (3) Set the placement position and set the image recognition point. The placement action will only be performed if the recognition is successful.

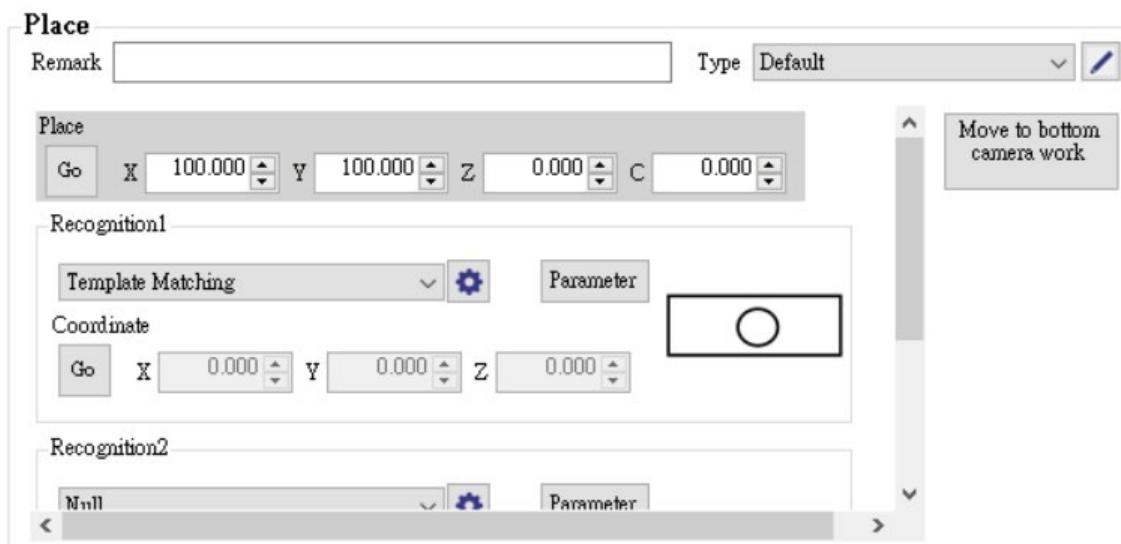


Figure 508: Set placement position and image recognition point

- (4) Place the external array teaching file, capture group, and placement group into PPCommand to complete the setting.

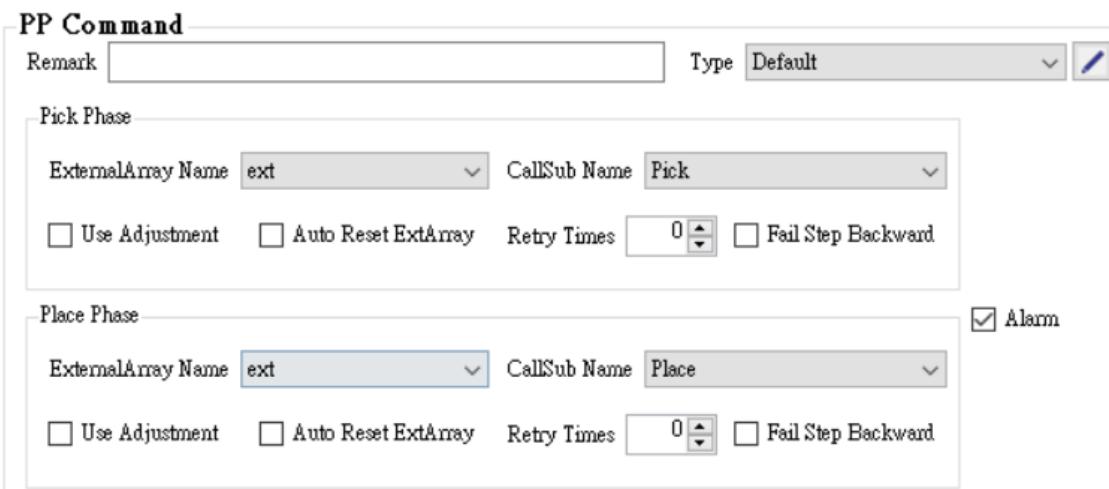


Figure 509: Then pick and place process instructions set up pick and place groups

11

Barcode module

The machine performs a barcode scanning operation according to the settings before each operation, and the barcode data can be used for data handover and data recording.



Figure 510: Barcode module interface

11.1

Enter the barcode module function process

- (1) Click Teaching Settings above the teaching mode.



Figure 511: Teaching settings in the toolbar

- (2) Then click on the barcode module below.

Teach Config.



Kulicke & Soffa.

Function Settings

Delay Observation Condition Rearrange Works Auto-Distribution Fix Inspection Mode

Machine System

Y Axis: Y1

Nonblocking Delay(Under Fill)

Enable Cut and Group

Number per Group: 0

Nozzle Clean after how many groups: 0 Subprogram

Weight Scale after how many groups: 0 Subprogram

Multiple In-One-Shot

Multiple In-One-Shot Width: 150 Height: 150

Capture ROI

Width: 320 Height: 240

Lock Work Piece

Auto On at Start Auto Off at End Checking

Height Test

Retry Times: 1 Insp. Retry Times: 1

Dispenser Parameter Retry

Manual Retry Auto Retry Times: 1 Retry Delay (ms): 100

Misc

Barcode Module Dot Checking

Figure 512: Find the barcode module in the teaching settings

11.2 Barcode module settings

The barcode module page provides manual scanning, camera scanning, automatic scanning machine and other functions.

Type	None
Common	None
<input type="checkbox"/> Auto By	Manual Camera Scan Barcode Reader
None	

Figure 513: Select the type of source to use

11.2.1 Manual scan

Manually scan the page and enter the code manually after execution.

Type	Manual
Common	
<input type="checkbox"/> Auto Bypass when there is id from external	
Manual	
<input type="checkbox"/> Auto Start	
Countdown Time(ms)	2000

Figure 514: Manual input interface

11.2.2 camera scan

The camera scans the page, using the camera to identify the barcode. Camera scan setting function.

Type	Camera Scan
Common	
<input type="checkbox"/> Auto Bypass when there is id from external	
Camera Scan	
Set Recognition	
Scan Timeout (ms)	3000
<input type="checkbox"/> Manual Input when Fail	

Figure 515: Camera scanning interface

Name	Description
Identification settings	Set up barcode detection.
Scan Timeout(ms)	Scan time.
Manual input when recognition fails	After checking, if the "Scan Timeout (ms)" is exceeded, you will be asked to enter the barcode yourself.
Image recognition	Image recognition for positioning
Coordinate	Teach the barcode coordinate position to this position.

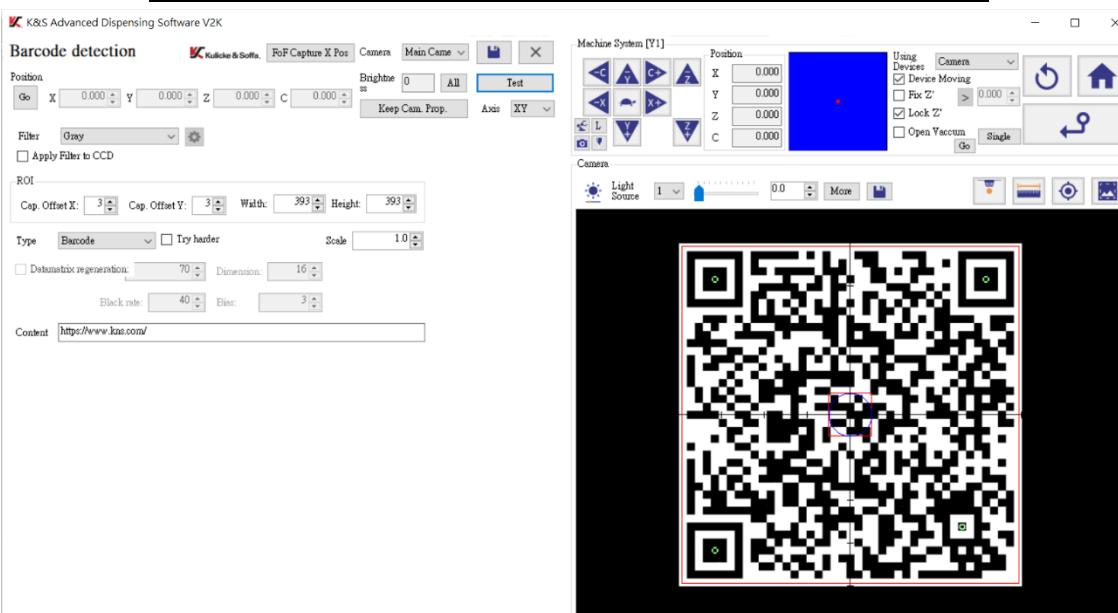


Figure 516: Setting operation example

Name	Description
filter	The barcode type that can be recognized by barcode

	recognition needs to be a white background and a black barcode. It is recommended that the barcode be binarized to achieve a higher recognition success rate.
ROI	Set the recognition range, search starting position and size.
ROI template displacement X	The X coordinate of the ROI area.
ROI template displacement Y	Y coordinate of the ROI area.
ROI wide	ROI area width.
High ROI	ROI area height.
type	Barcode: Supports one-dimensional barcode, QR code, and Data matrix reading. QRCode: Supports QR code reading. Datamatrix: Support Data matrix reading.
Enhance analysis	Enabling enhanced parsing can improve the identification success rate, but will slow down the detection speed.
Image zoom	Reduce or enlarge the image before identification. (Zooming the image can speed up recognition and reduce noise.)
barcode reconstruction	Enable barcode reconstruction. The software overlaps the barcodes based on the color ratio of the characters. (Currently only supports encoding reconstruction of square characters, such as "16x16").
size	The original length of the read barcode, in pixels.
Format	The number of characters in the barcode, such as "16x16".
Proportion	Determine the color proportion of a single character. If the black proportion is greater than the set value, the character is judged to be black. For example, if you set "30", if the proportion of black in a single character is greater than 30%, Then the character is judged to be black.
Bias	Exclude images with a fixed width around the character, in pixels. For example, if Bias is set to 3, an image with a character peripheral width of 3 pixels will be Exclusion judgment.
content	Displays the results of barcode reading.

11.2.3 Automatic code scanning machine

On the automatic scanning machine page, the machine using the barcode scanning function can scan and import the V2K code by itself. (Currently supports standalone barcode readers. Only KEYENCE supports it).

Type

Common

Auto Bypass when there is id from external

Barcode Reader

Position

Go	X	0.000	Y	0.000	Z	0.000
----	---	-------	---	-------	---	-------

Scan Timeout (ms) Manual Input when Fail

Score

Figure 517: Automatic code scanning interface

Name	Description
Position	Barcode location.
Scan Timeout(ms)	Scan time.
Manual input when recognition fails	After checking, if the "Scan Timeout(ms)" is exceeded, you will be asked to enter the barcode yourself.
Score	Identify the score.
Test	Test automatic code scanning.

12

Height of Flight (HoF)

When performing single-point height measurement and then performing array measurement, the z-axis will be measured up and down, resulting in a lot of wasted time. Therefore, using flying height measurement can greatly solve the waste of time.

12.1

About the interface with HoF function

- In the method: group of the array, you can check the galloping height measurement function.

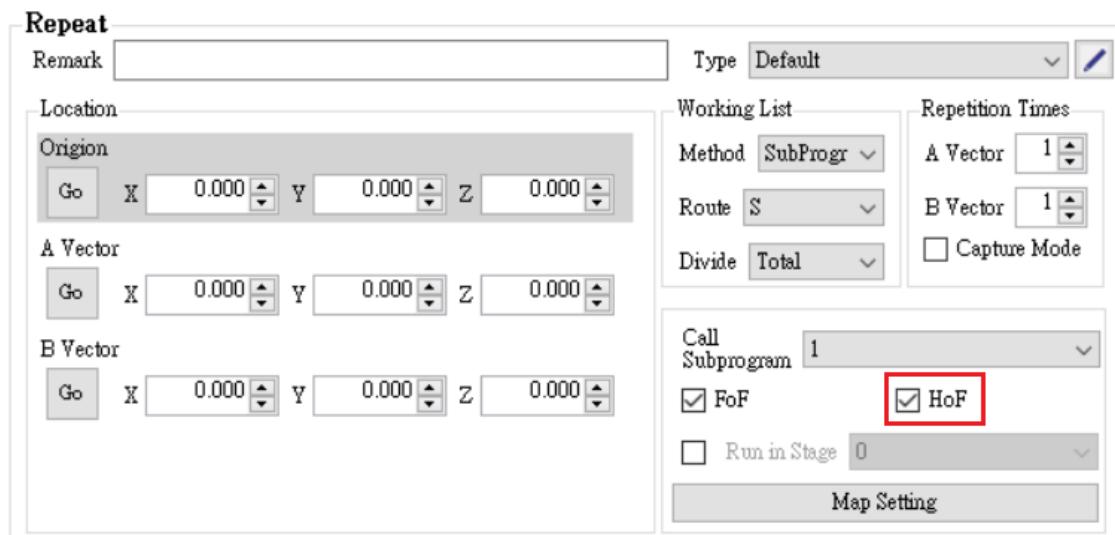


Figure 518: Check the flying height measurement in the array command

- For height contour detection, you can check HoF in the interface and use the flying height measurement function.

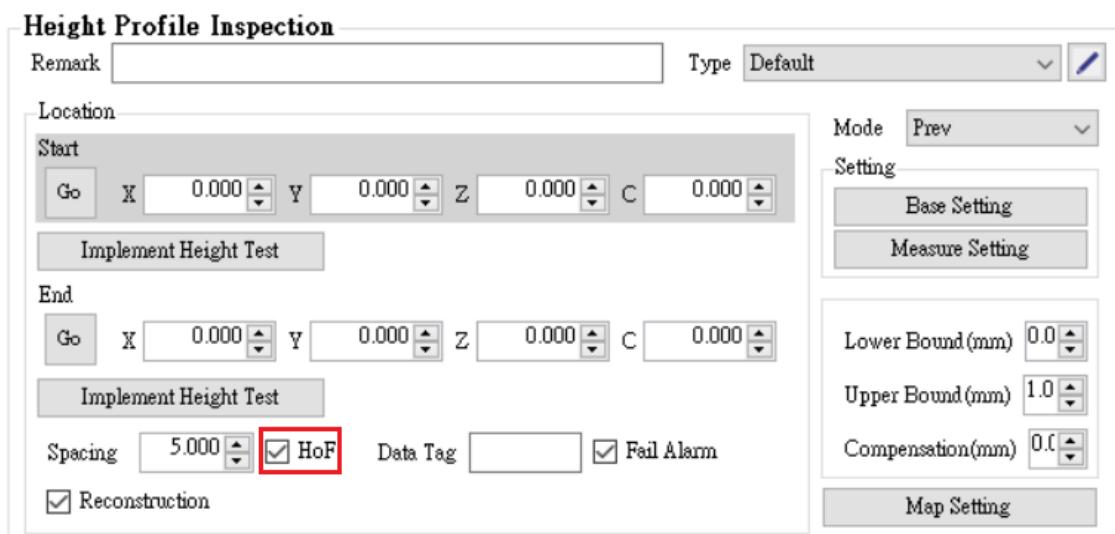


Figure 519: HoF can also be enabled in the height profile command

12.2 Enable HoF functionality

- (1) In the "Height Test Parameters" on the right side of the form, check the height correction, spacing mode, and 3D to set the spacing distance.

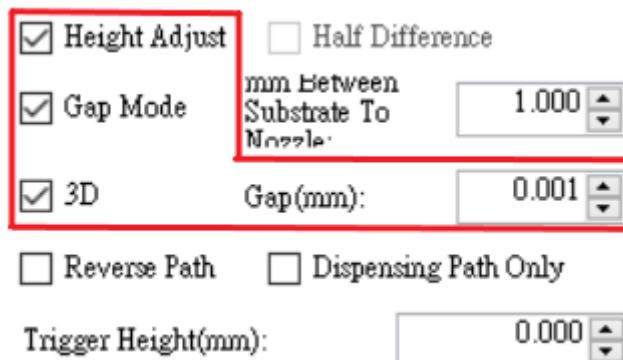


Figure 520: Enable 3D in dispensing mode

- (2) Set "Trigger height (mm)". (The trigger height can be obtained by measuring the object under test from the height measurement command).

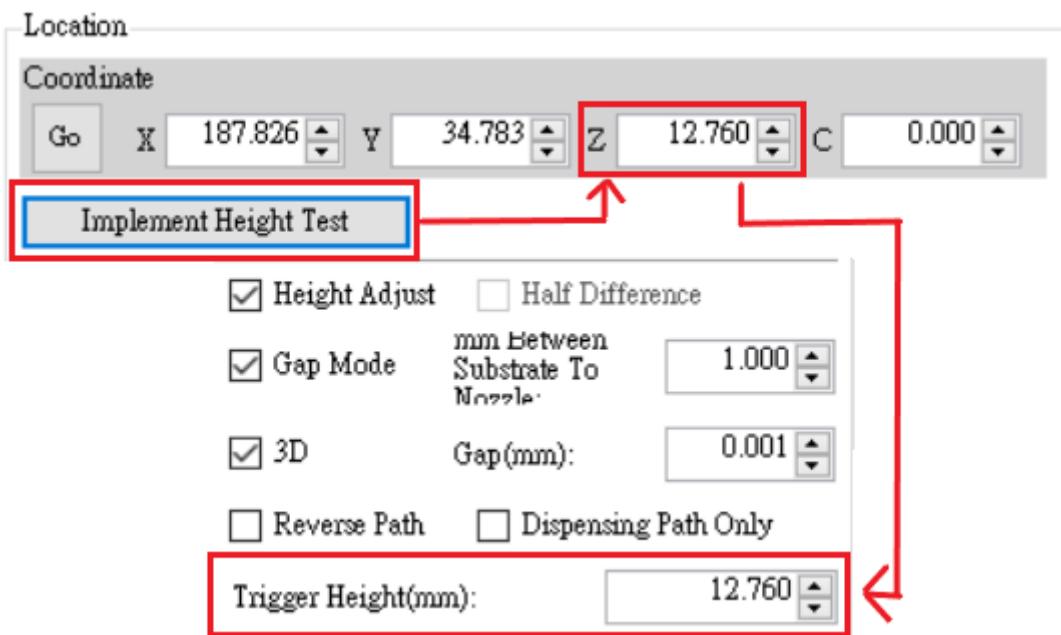


Figure 521: Set the height test value to the trigger height

- (3) Enter the mode → Set the flying height measurement in the advanced step. When the maximum speed of the flying height measurement is set to be greater than 0, the 3D height measurement will become the flying height measurement. (The speed setting is set according to the actual situation of the machine.).

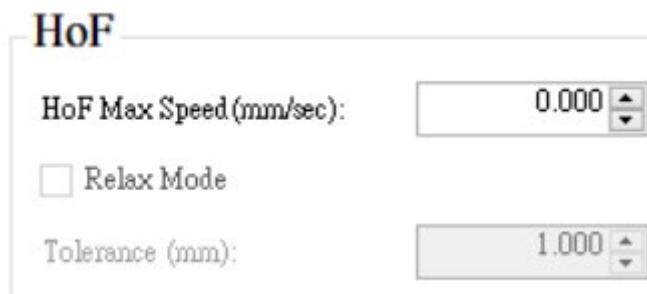


Figure 522: Dispensing type setting, galloping height measurement, maximum speed setting

- (4) After turning on the galloping mode, perform galloping correction.

- (5) After the calibration is completed, it can be run by turning on the command with the flying height measurement function.

13 Glue amount adjustment

Combined with the detection function, it can automatically calculate the amount of glue that needs to be repaired when the amount of glue is insufficient.

13.1 Glue volume adjustment instructions

The glue amount adjustment command page automatically calculates the amount of glue that needs to be repaired based on the measured glue height or width, and performs the glue amount repair action.



Figure 523: Glue volume adjustment command interface

Name	Description
Remark	You can fill in any comments.
type	Select the set dispensing type.
VarKey	Different Varkeys are input corresponding to different detections. Height detection: No need to enter Varkey Glue width detection: Varkey = "line_width"
Allow Fail Result	Failure results are allowed.

The "glue amount adjustment command" function is used to check the current "glue amount" and then use the settings in the type to determine the current glue amount that should be compensated. "How much glue is required" is to use height measurement or image detection instructions to measure the glue thickness or width, and then use the closest value in the corresponding table to add glue to achieve the required glue amount.

The instructions are as follows: After measuring the height, apply glue to the line segment, then measure the amount of glue, and then add the amount of glue.

群組 main		新增	上一筆	下一筆	修改	刪除
行號	工作	資料	提示	備註		
▶ 0	測高	型態:Default				
1	線	型態:Default				
2	影像檢測	型態:Default				
3	膠量調整指令	型態:Default				

Figure 524: Dispensing adjustment instructions

13.1.1 Refill

On the refill page, substitute the detected value into the refill mode. Under different detection values, calculate the parameters of the refill glue amount, and then use the closest value in the corresponding table to match the "glue amount adjustment command". The action of adding glue to achieve the required amount of glue.

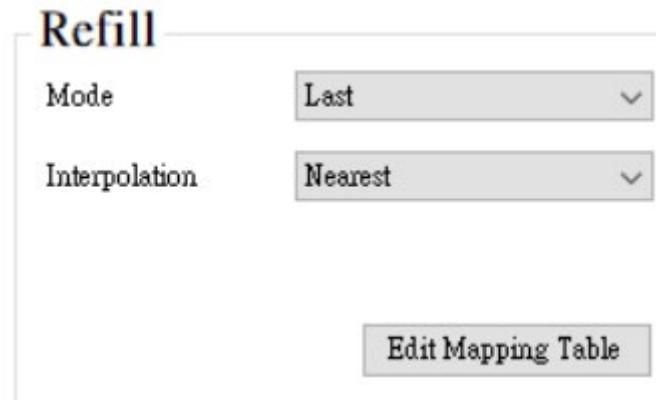


Figure 525: fill page

13.1.1.1 Fill in operation process instructions

- (1) Enter Type → Dispenser Parameters and check "Use Dispensing Parameters" and "Use Internal Flow Command Settings". Select "Flow Mode" or "Quantification Mode".

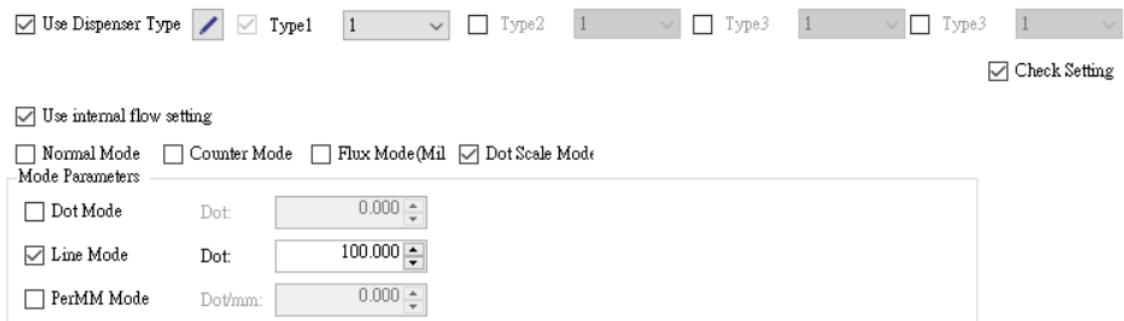


Figure 526: Use dispensing parameters

- (2) After setting up, enter advanced. The glue table that needs to be filled based on different test results.

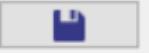
Mapping Table - K&S Advanced Dispensing Software V2K				
	Import	Export		
Mapping Table				
	Inspected Value	Dot Mode	Line Mode	PerMM Mode
**				

Figure 527: fill interface

- (3) Set the detection command of the glue reference standard.

Image Inspection

Remark	Type	Default	<input type="button" value="Edit"/>
Recognition1			
Width Inspection		<input type="button" value="Parameter"/>	<input type="button" value="Edit"/>
Coordinate			
Go	X 326.957	Y 20.870	Z 0.000
<input type="checkbox"/> Inline Run <input checked="" type="checkbox"/> Fail Alarm			
<input type="button" value="Map Setting"/>			

	Index	Work	Data	Hint	Remark
▶	0	Image Inspection	Type:Default		
	1	Dispensing Adjust	Type:Default		
	2	Line	Type:Default		

Figure 528: Image detection settings

- (4) Set the glue amount adjustment command and input different Varkey corresponding to different detections.

Dispensing Adjust

Remark	
VarKey	line_width
<input type="checkbox"/> Allow Fail Result	

Figure 529: Glue volume adjustment instructions

- (5) Set the glue path and set the type to the table-building correction type.

Line

Remark	Type	Default	<input type="button" value="Edit"/>
Location			
Line Start			
Go	X 0.000	Y 0.000	Z 0.000 C 0.000
Line End			
Go	X 257.391	Y -6.957	Z 0.000 C 0.000
<input type="checkbox"/> Auto C Calculation Angle of valve 90 FoF Interval -1.000 JetOnFlyCount 0 <input type="checkbox"/> End Trigger			
<input type="button" value="Jet on Fly Calibration"/> <input type="button" value="Offset Calibration"/> <input type="button" value="HoF Calibration"/>			

Figure 530: Line command settings

13.2 Automatic parameter adjustment

Automatic parameter adjustment, based on detection results, automatically adjusts dispensing parameters to achieve the set glue width or glue height.

Auto Parameter Adujst Command

Remark	Type	Default	<input type="button" value="Edit"/>
Name			
Target		Adjusting	
Target Key		Adjusted Name	pressure:Fluid:Air <input type="button" value="S"/>
Target	0.500 <input type="button" value="▲"/> <input type="button" value="▼"/>	Valid Min	0.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Target Error	0.050 <input type="button" value="▲"/> <input type="button" value="▼"/>	Valid Max	5.000 <input type="button" value="▲"/> <input type="button" value="▼"/>
Target Min	0.400 <input type="button" value="▲"/> <input type="button" value="▼"/>	Slope	Positive <input type="button" value="▼"/>
Target Max	0.600 <input type="button" value="▲"/> <input type="button" value="▼"/>	Method	Ratio <input type="button" value="▼"/>
Mode	Last <input type="button" value="▼"/>	Count	1 <input type="button" value="▲"/> <input type="button" value="▼"/>
DispFlow Types			

Figure 531: Automatic parameter adjustment interface

Name	Description
target value	Set target values.
Target tolerance range	The allowable error of the target value.
Target minimum	The target value allows for a minimum value.
Target max	The maximum value allowed for the target value.
Last	The value of the last stroke.
First	The previous values.
Average	The measured values are averaged.
Min	Select the minimum value for the measured value.
Max	Select the maximum value for the measured value.
Count	Select the required information.
Adjust minimum value	Adjust the output range of the valve, the lowest limit.
Adjust maximum value	Adjust the output range of the valve, the maximum upper limit.
DispFlow Types	Can be checked to modify valve parameters.

13.2.1 Automatic parameter adjustment process

- In the V2K software, select "Teaching Mode" and select the teaching command "Automatic Parameter Adjustment" to set appropriate parameters.

Auto Parameter Adujst Command

Remark	Type	Default	<input type="button" value="Edit"/>
Name	test-1		
Target		Adjusting	
Target Key	Adjusted Name pressure:Fluid.Air <input type="button" value="S"/>		
Target	Valid Min 12.000 <input type="button" value="▲"/> <input type="button" value="▼"/>		
Target Error	Valid Max 15.000 <input type="button" value="▲"/> <input type="button" value="▼"/>		
Target Min	Slope Positive <input type="button" value="▼"/>		
Target Max	Method Ratio <input type="button" value="▼"/>		
Mode	Last <input type="button" value="▼"/>	Count	1 <input type="button" value="▲"/> <input type="button" value="▼"/>
DispFlowTypes			

Figure 532: Set appropriate parameters

- (2) After setting the detection command ("height detection" or "image detection") according to your needs, then add the "automatic parameter adjustment" command to use the automatic parameter adjustment function.

	Index	Work	Data	Hint	Remark
▶	0	Heighttest	Type:Default		
	1	Image Inspection	Type:Default		

Figure 533: Teaching settings

14 CxV directive

The CxV command is used to link V2K software with CxVis software. It can send camera control signals to CxVis through V2K and obtain CxVis signals to make V2K perform the next action.

CxV Command

Remark	Type	Default	<input type="button" value="Edit"/>
Command			
Action	TriggerCamera <input type="button" value="▼"/>		
Camera Index	TriggerCamera PullData QueueEnd		
Camera Tag	<input type="text"/>		
<input checked="" type="checkbox"/> Alarm			

Figure 534: CxV command interface

Name	Description
Remarks	You can fill in any remarks.
Action	Action; select the mode that the command needs to use. Trigger Camera: Trigger CxVis to take software-triggered photos. PullData: Corresponds to the variable output command of CxVis. Queue End: The end command used before cxv group mode postback.

14.1 Trigger Camera

V2K sends trigger instructions and controls the CxVis camera to take pictures or control.

CxV Command

Remark	Type	Default	<input type="button" value="Edit"/>
Command			
Action	TriggerCamera		
Camera Index	0		
Camera Tag			
<input checked="" type="checkbox"/> Alarm			

Figure 535: Trigger Camera function interface

Name	Description
Camera Index	Enter the camera to trigger. For example 0=Camera No. 1 of CxVis.
Camera tag	Selection Task for CxVis for selective triggering.
Alarm CxV	Alert message for the command.

14.2 PullData

It is used to let V2K receive the variable output result sent by CxVis and let V2K perform the next action.

CxV Command

Remark	Type	Default	<input type="button" value="Edit"/>
Command			
Action	PullData		
Data Name			
Wait Timeout (ms)	1000		
<input type="checkbox"/> Map in	<input type="checkbox"/> Inverse		
<input checked="" type="checkbox"/> Alarm			

Figure 536: PullData function interface

Name	Description
Data Name	Enter the camera to trigger. For example 0=Camera No. 1 of CxVis.
Wait Timeout(ms)	V2K waits for the CxVis output signal.
Map in	V2k will decide whether to perform subsequent actions based on the array data returned by CxVis. Note: This function requires V2K to enable Map and check AutoIn, and CxVis needs to be checked. Select array output.
Inverse	When checked, the NG sample of CxVis return array will be executed. When unchecked, OK will be executed normally.

Alarm

In PullData mode, the alarm is OK or NG according to the settings.

14.3 Queue End

The end command used before cxv group mode postback.

CxV Command

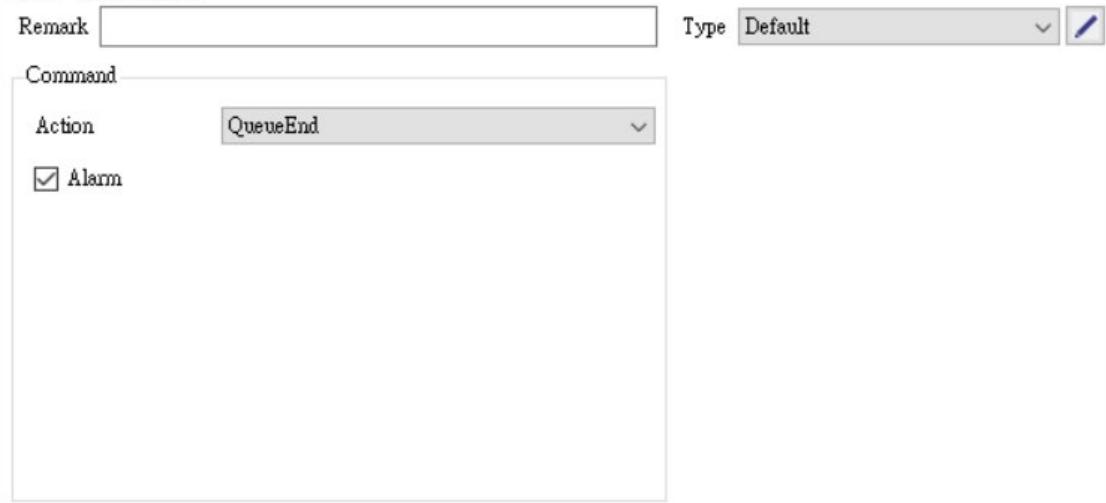


Figure 537: Queue End functional interface

Name	Description
Alarm	The phase end signal is sent to CxVis, and CxVis has no end.

15 Abnormal Messages

This chapter introduces how to learn the current error situation from the error message when an error occurs, and help users eliminate it.

Error messages can be known and viewed from Log messages

This chapter introduces how users can view messages.

Figure 538: Abnormal Messages

Divide this message into three columns, from left to right, which are message code, message type, and message ID, and query message information from various forms.



Figure 539: Message classification

15.1 Message Code

Message Classification	Classification Name
9999	other
3999	Run error.
3799	Operation information.

15.2 Message Type

Message Type	Directions
Trigger	It means that this type of message is triggered by an action or event.
State	Indicates On/Off status.

15.3 Message ID directions

ErrorID1	ErrorID2	ID Directions
image_	inspection_fail	Image detection failed.
	inspection_motion_fail	An error occurred while running the image detection photography process.
	recognition_fail	Image recognition failed.
run_module_	lock_work_piece_fail	During operation, the safety lock is not locked or the safety lock signal is abnormal.
	map_data_error	Failed to send ProductID during runtime/timed out waiting to receive map data/failed to parse map in data.
	monitor_check_fail	Before running, the software checks if there is an original error status and displays this error message.
	no_teach_file	Before running, the correct teaching file could not be read.
	over_run_count_limit	The upper limit of the number of runs has been exceeded.
	remote_reject	When running, the signal returned by FM and ConfirmStart is rejection.
	run_fail	Running, the software failed to run.
	scan_barcode_fail	Running the barcode process failed.
	wait_work_id_timeout	While running, the waiting job exceeds the time limit.
	wait_external_result_timeout	While running, waiting for CxVis or handshake signal, time limit exceeded.
robot_	common_warning	Check the machine warning before running.
	error_off_warning	When running, the machine is still in an error state or is not connected to the machine.
	enter_running_fail	In the Prewait phase, the running module fails to switch to the running state.
	glue_warning	JET lacks glue or no glue warning.
	position_out_of_range	The X-axis and Y-axis coordinates exceed the movement range of the machine.
teach_	generate_motion_fail	An error occurred while performing Dot, Line, and Circle command actions.
	observation_record	Using the pause observation command, this message ID will be recorded and displayed.
	ptp_capture_fail	Running a single image recognition or detection failed.