Getting Started with iLOGIX

2025

Preface

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Purpose

This is a quick start manual for the smart camera client iLOGIX, which mainly includes a quick installation guide and an operation guide.This manual may be updated due to product upgrades or other reasons. If you need, please contact the sales engineer for the latest version of this manual.

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Disclaimer

The information and specifications described in this manual are subject to change without notice.

Latest Manual Version

For the latest version of this manual,
see the Download Center on our web site at: http://www.visiondatum.com/en/service/005001.html

Technical Support

For technical support, e-mail：support@visiondatum.com.

Warranty

To ensure that your warranty remains in force, adhere to the following guidelines:

Do not remove the camera's serial number label

If the label is removed and the serial number can't be read from the camera's registers, the warranty is void.

Prevent ingress or insertion of foreign substances into the camera housing

Prevent liquid, flammable, or metallic substances from entering the camera housing. If operated with any foreign substances inside, the camera may fail or cause a fire.

Avoid electromagnetic fields

Do not operate the camera in the vicinity of strong electromagnetic fields. Avoid electrostatic charging.

Clean with care

Avoid cleaning the sensor if possible.

Handle this camera with care

Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling.

Read the manual

Read the manual carefully before using the camera.

Introduction

Client Software

The client software now supports the web version. After connecting the device, the user can perform the project management on the client software. The wizard-type guideline can walk the user through configuring the project. The main steps include Shooting Setup, Master Registration,
Algorithm Setup, Communication Setup. Also, supports the functions of device management and monitoring, and the web version is integrated in the client software; therefore, the user does not need to install the additional software.

Configuration Requirement

To ensure that the normal operation of the client, the requirements to the PC are as follows.

Recommend Configuration

- Operating System：64-bit Windows 10 or above
- CPU: Intel i5-10500
- Memory：8GB or above
- Graphics Card：1440*900 or above
- NIC：GigE

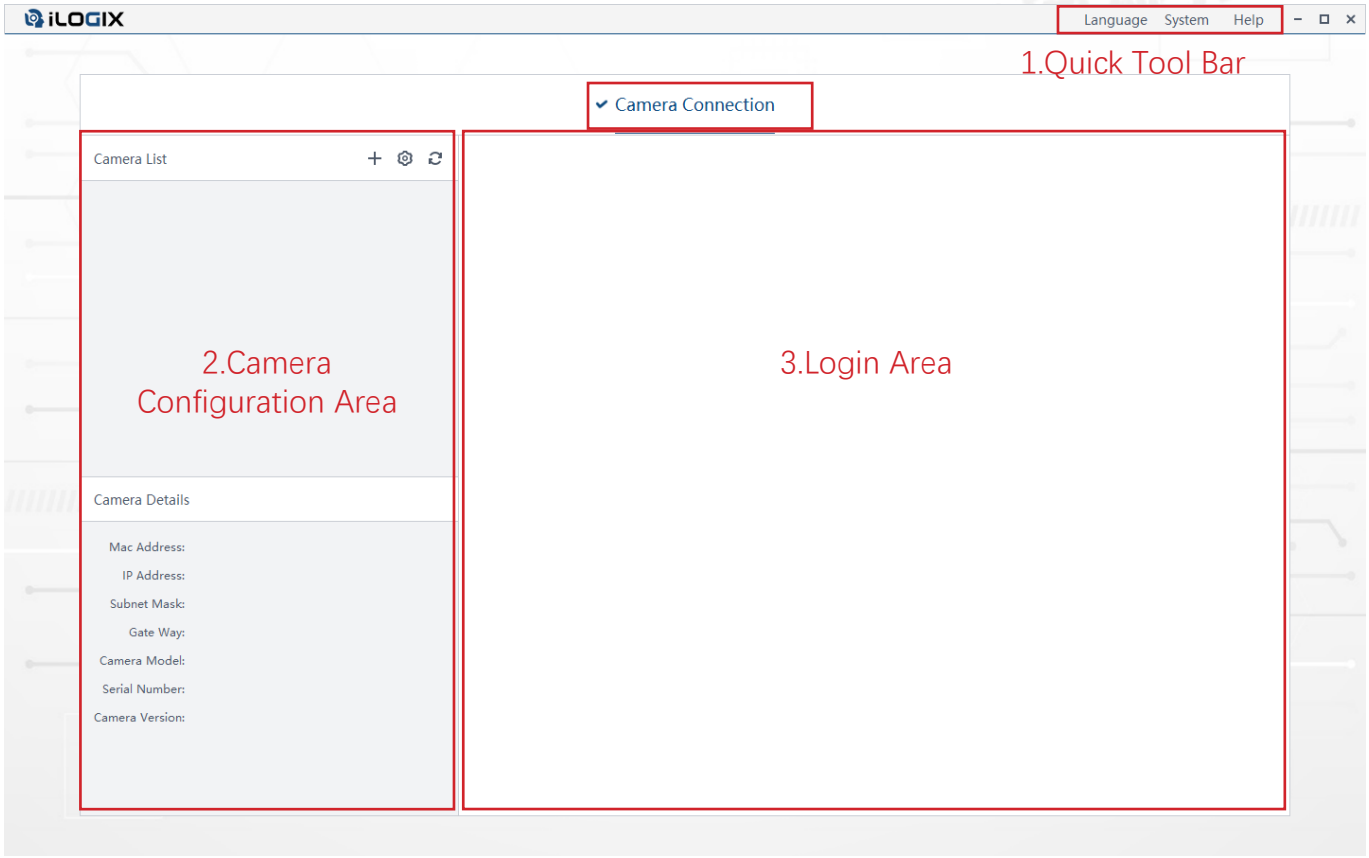
Standard Configuration

- Operating System：64-bit Windows 10 or above
- CPU: Intel E3940
- Memory： 4 GB
- Graphics Card：1440*900 or above
- NIC：GigE

	• The client has integrated the drivers required by the hardware, so there is no need to download and install other drivers. • It cannot be ruled out that some unknown antivirus software may identify the client as a virus. For convenience of use, it is recommended to add the client to the whitelist of such antivirus software or disable the antivirus software on the computer.

Client Software

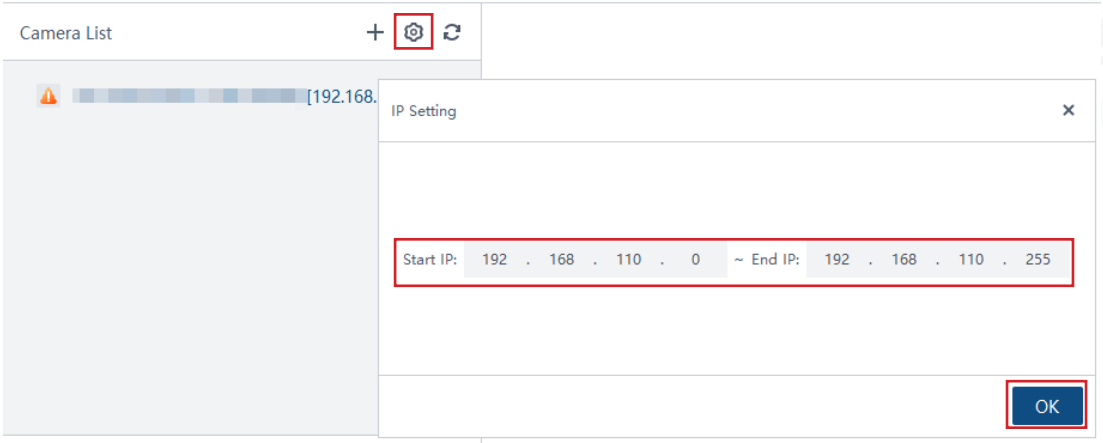
Main Control



No.	Function	Description
1	Quick Tool Bar	It includes the settings of language, help document, version information, firmware upgrade tool, and image saving parameter configuration
2	Menu Bar	Camera connection can be selected from the menu bar.
3	Camera Configuration Area	User can perform Add IP, IP Config, Refresh, etc., and user can check the information of the device under the device list.
4	Login Area	After completing the connection between the device and client, user can login to enter the control console, and perform algorithm settings, project management, and device configuration.

Connect Device

Connect the sensor normally, and ensure that the power supply and network of the sensor are both normal by checking the indicators on the vision sensor. After that, open the ILOGIX. If the sensor is connected to the NIC or ordinary switch, the sensor will be displayed in the device list of ILOGIX without IP configurations; if the sensor is connected to the three-layer switch, click“ ”to enter the IP network segment configuration interface, and modify the IP network segment of the sensor.

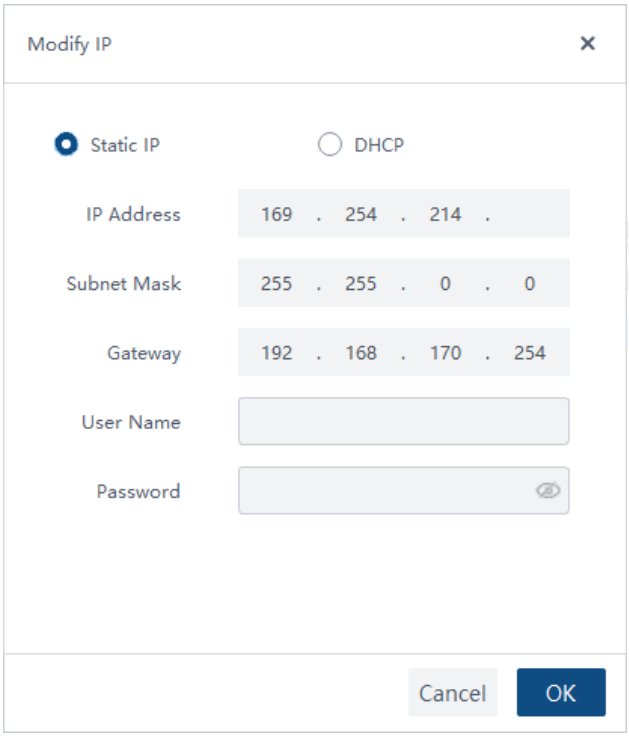


	● When the sensor is connected to the three-layer switch, user shall ensure that the sensor can connect to the client using the ICMP. ● If user wants to keep the firewall enabled, the ILOGIX needs to be added in the allowlist; otherwise, the client cannot find the sensor. ● After configuring the IP network segment, the device list will display the sensor in the same network segment with the PC. When new devices come online, click“ ”to refresh the list. The IP address of sensor is 192.168.1.108 by default. ● Under the same LAN, check the IP address of the sensor before using to avoid IP address conflict among sensors.

Click + to add the IP address of the sensor. This is suitable for the sensor connected through the three-layer switch which is not in the same network segment with the PC.

After adding the IP address of sensor, click OK, and the device list will display the device.

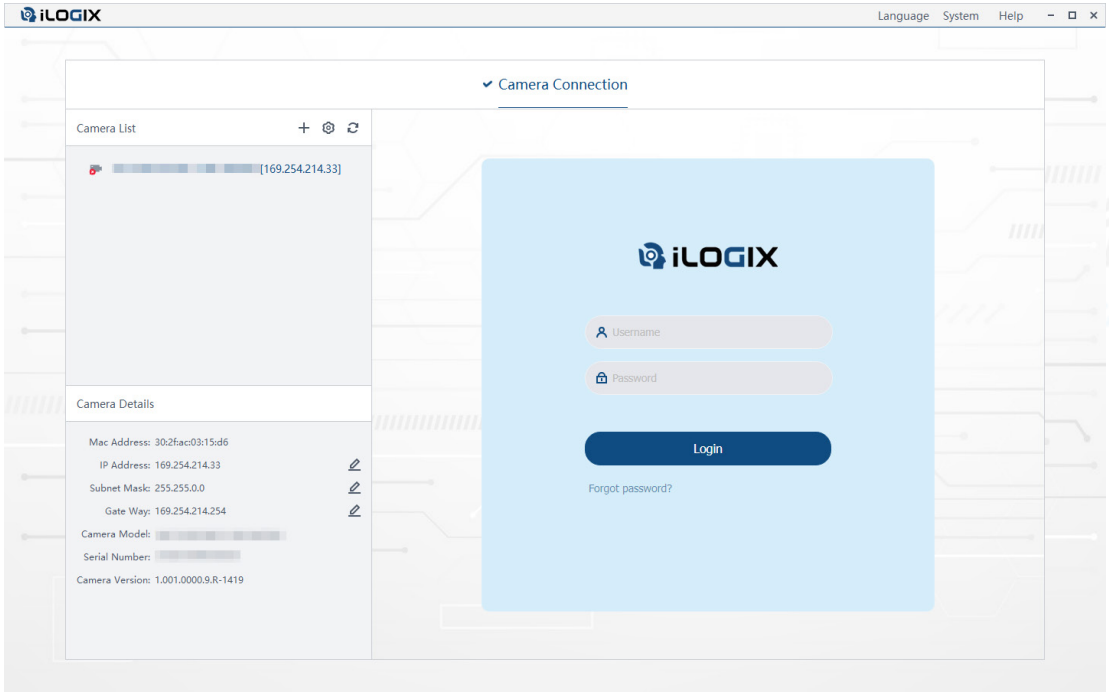
Click to enter the configuration interface of IP address, enter the IP address, and click OK, as shown in the figure below.



Click the sensor in the device list, the login area will show the login box. User needs to enter the username and password, and click Login to enter the configuration interface.

- Default Username: admin
- Default Password: admin123
- If the icon in the left side of the sensor name in the device list turns into the , it means that the sensor connection is successful.

The right area will display the login window. Click Login to enter the homepage of the sensor configuration. See the following figure.



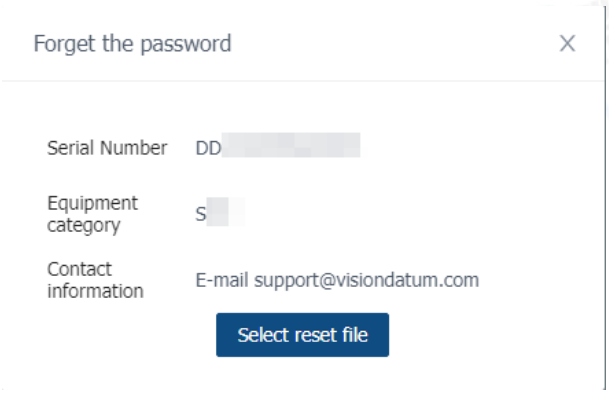
Password Reset

If user forgets the password, user can perform the password resetting by clicking the Forget Password.

1.Click Forgot Password.

2.Contact after-sales or send us emails, and provide the serial number of the sensor and user's requirement of password resetting to obtain the password reset file.

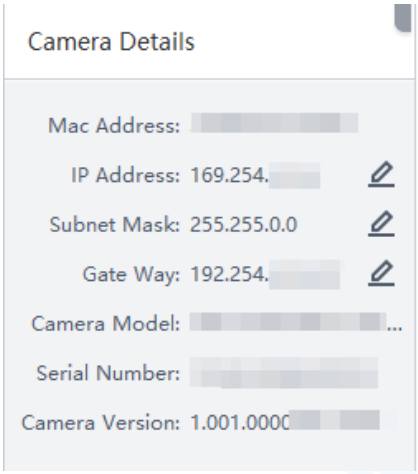
3.Click Select Reset File, select the password reset file which our technical specialist provided, and import the file into the sensor. A prompt box saying Reset Successfully will pop up.



i	The default username and password are admin and admin123 respectively. Considering the security of the device, we highly suggest you modify the password after resetting it.

Camera Details

Select the device in the device list, the relevant information of device will be displayed in the Camera Details area, which includes IP address, Mac address, sensor model, sensor version (firmware version), serial number, as shown in the figure below.



i	If an abnormal device needs to be checked by the vendor, please provide the device information, such as model, firmware version, and serial number to the sales or technical specialist.

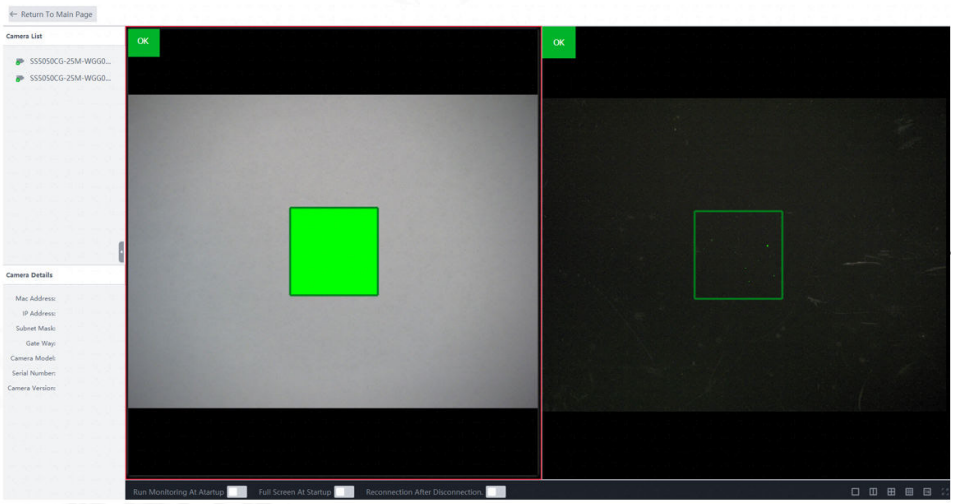
Multiple Channels

Click the sensor name in the device list and log in, and click Multiple Devices Monitoring. 

Click Multiple Devices Monitoring to enter the monitoring interface. After adjusting the ratio, click the sensors in the device list to perform multiple-channel monitoring function.

Click the Return to Main Page in the top left of the interface to return to the main control interface. User can also adjust the ratio of the multiple-channel interface in the bottom right of the monitoring window. The options include 1*1, 2*1, 2*2, 3*3, and 4*4.

- After enabling the Run Monitoring at Startup, user can directly enter monitoring interface when start the ILOGIX.
- After enabling the Full Screen at Startup, the monitoring interface is in the full screen mode by default.
- After enabling the Reconnection after Disconnection, the client will automatically connect the sensor when it is disconnection.



Multiple-channel Monitoring Interface

Firmware Upgrade

Click System > Upgrade in the Quick Access Bar, the Firmware Config tool will pop up.

User can perform the firmware upgrading to the multiple cameras.

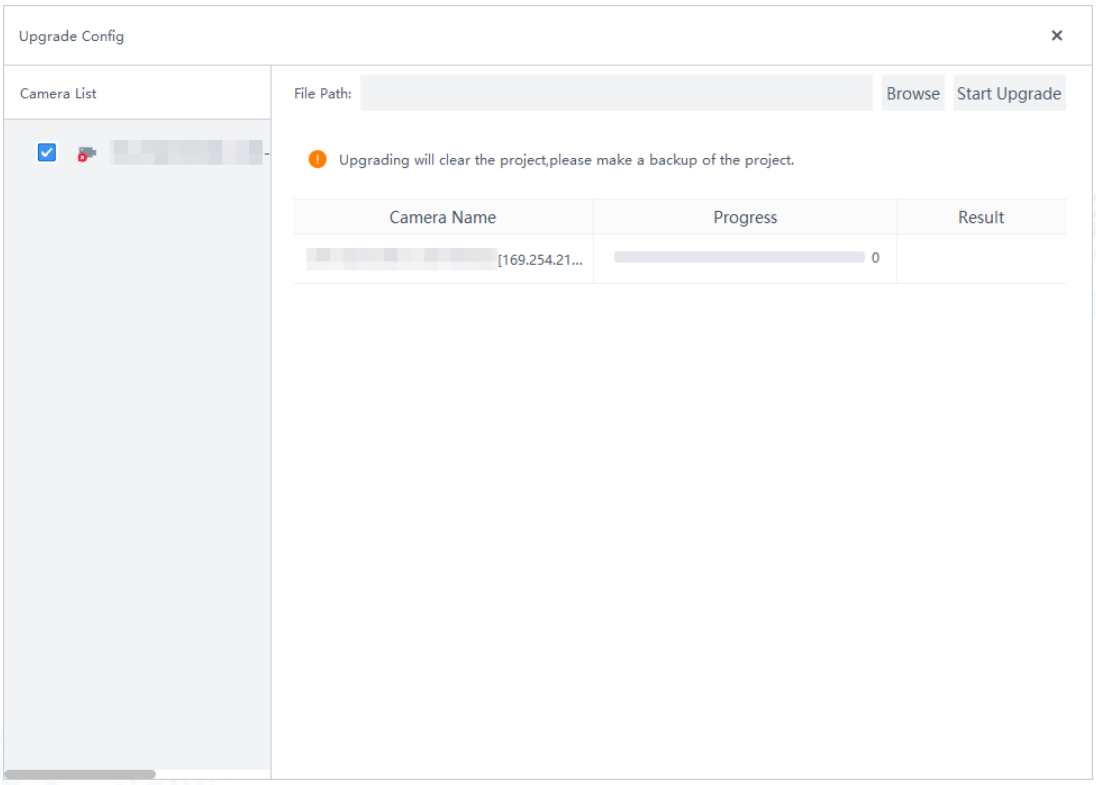


Image Save

Save Picture Config

Click System > Image Save, the Save Picture Config interface will pop up.User can set the relevant configurations in the Save Picture Config, such as picture save path, frame number, deal result, and store by day. The time stamp is a fixed option, which cannot be configured.

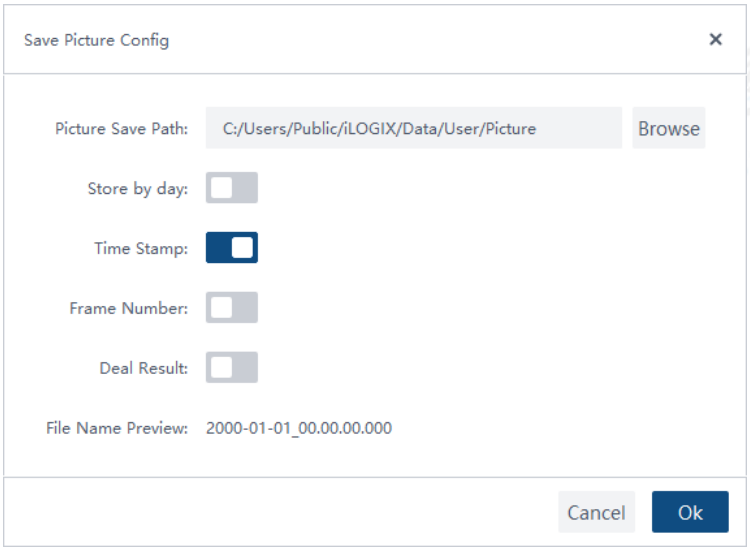
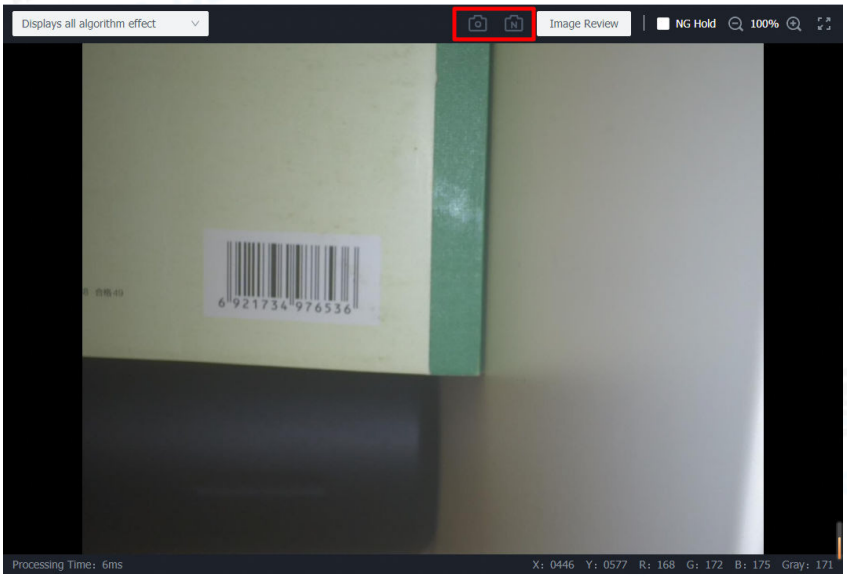


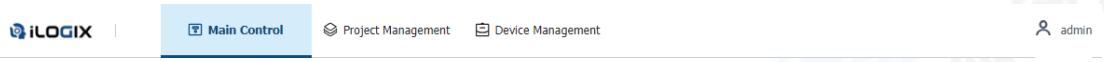
Image Saving Operation

There are two image saving methods in the image display area, including snapshot and continuous saving. The snapshot is performed once by one click, which only saves one image; the continuous saving is enabled by one click, it will save images continuously until user clicks the button one more time.



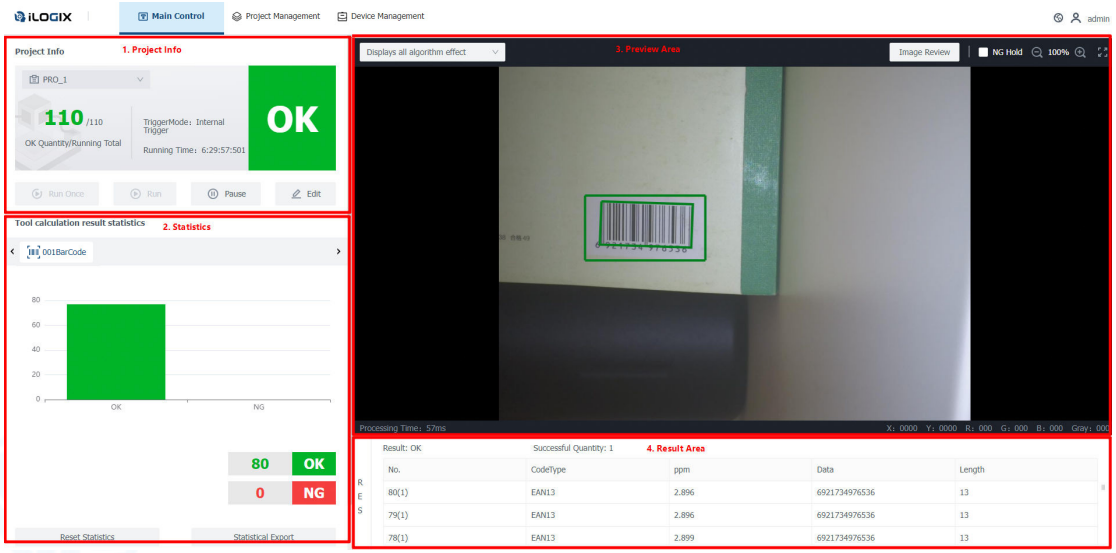
Client Software Layout

After logging in, the home page will be displayed. The menu bar of the configuration interface includes the Main Control, Project Management, Device Management, Language, User Management, Restart, and Logout.



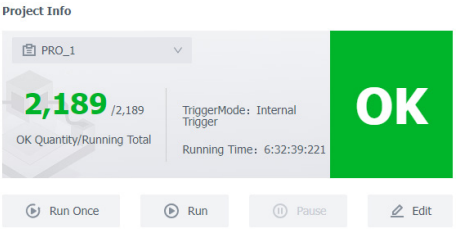
Main Control

The layout of main control includes the project information area, statistics area, preview area, and result area.



Project Info

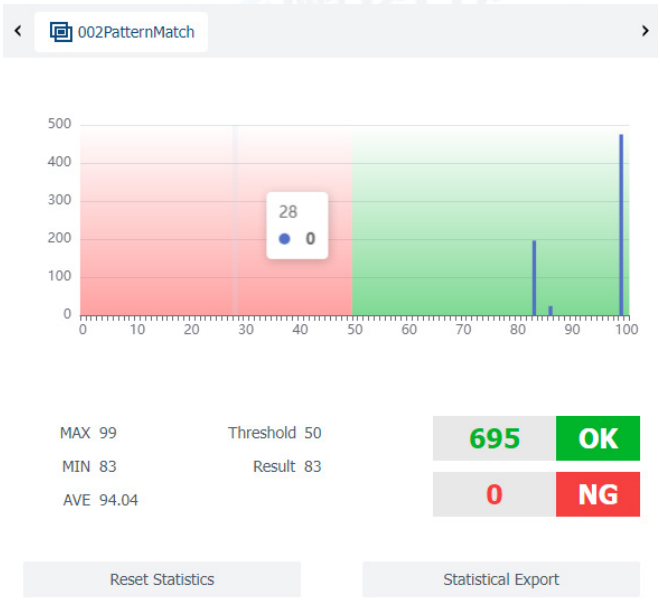
The project information area includes the information of the total amount of projects, trigger mode, and running time. User can click Pause to discontinue the project running process, and click the Run Once or Run to restart the project running process. Click Edit to enter the project configuration interface.



Statistics

The statistics area displays the running results of each parameter of the project in the form of the histogram. After clicking the Reset Statistics, the statistics of running results will be re-calculated.

User can click the Statistical Export to export the statistics in the form of the txt.



Preview Area

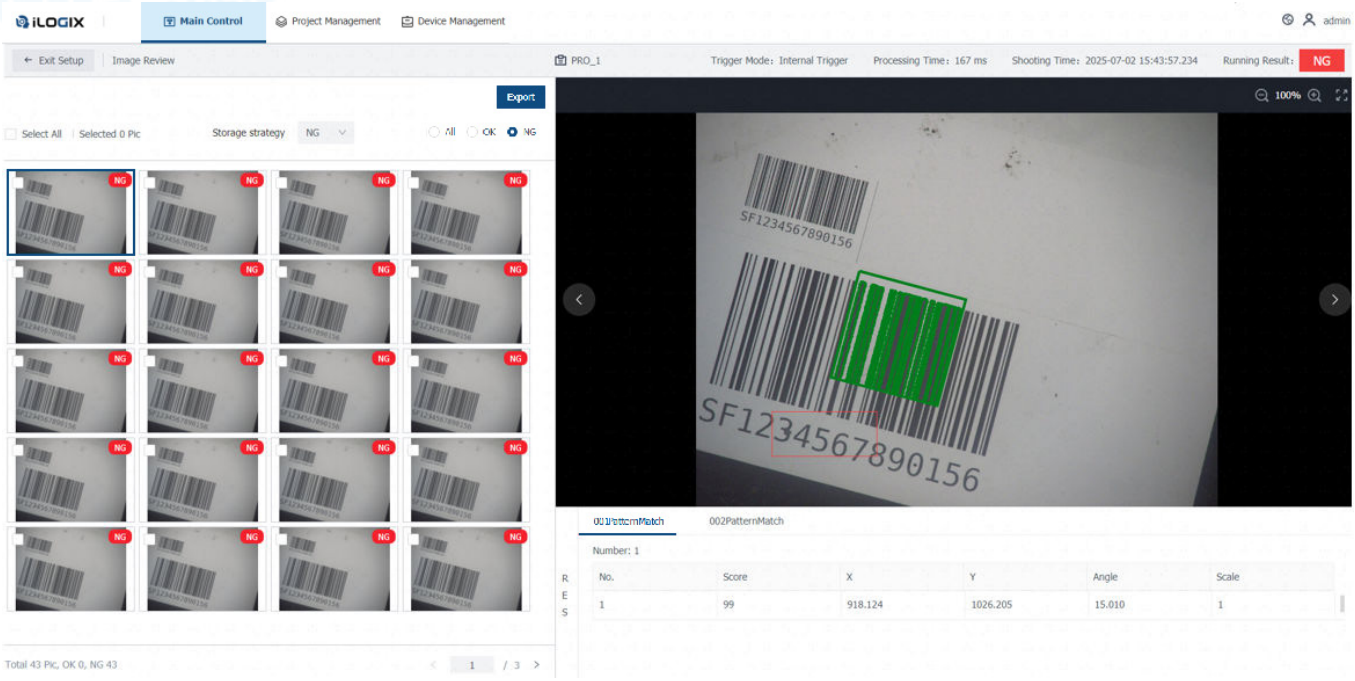
No.	Function	Button	Description
1	Display All Algorithm Effect	/	The options include Display All Algorithm Effect, Display Current Algorithm Effect, and Do Not Display Algorithm Effect.
2	Image Review	/	It displays the history records of the algorithm processing effects of the sensor. User can review all of the saved images, or the NG images.
3	Button		Snapshot. Save one frame of image by clicking once.
			Continuous Saving. After clicking it, the client will continuously save the images to the specified folder. User can set the saving path in the Save Image Config. For more details, please refer to the Image Save.
			When there is no any NG image, the client will update the OK images; After the NG result occurs, it will only update the NG images.
			Zoom-in button, it will zoom in the image based on the center of the FoV.
			Zoom-out button, it will zoom out the image based on the center of the FoV.
			Full Screen button. It will display the image in full screen. Press 【ESC】 to exit the full screen mode.

Result Area

It displays the operation results of the operators. User can select the operator in the statistics area. After selecting the operator, the result area will display the results of the selected operator.

Image Review

When the sensor is running, the history images and operation results are stored in the sensor. The upper limit of image saving quantity may vary depending on the device model, the actual condition shall prevail.



i	The images which display in the image review are stored in the sensor, which means that if the sensor restarts or powers off, these images will be lost.

Storage Strategy

- NG: The client will save the NG images, and information of NG images.
- ALL: The client will save the OK images and NG images, and information of all images.

Filter

- ALL: It will display all of the images.
- OK: It will display all of the OK images.
- NG: It will display all of the NG images.

Preview Area

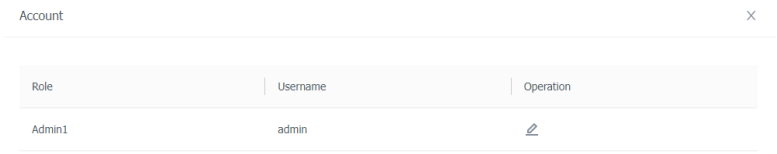
When user clicks the thumbnail images, the preview area will display the selected image, the result area will display the operation result of the selected image. The information bar will display the trigger mode, algorithm processing time, shooting time, and operation result.

Export

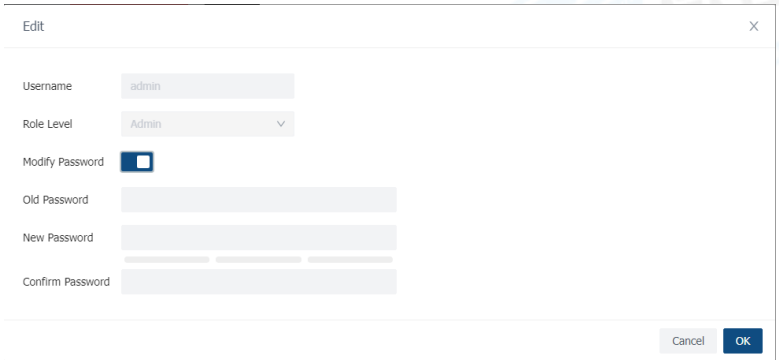
It supports the single export and batch export.

User Management

Click the Admin in the upper right corner of the configuration interface, and select the Account to enter the user management interface.User can modify the password of the administrator account.



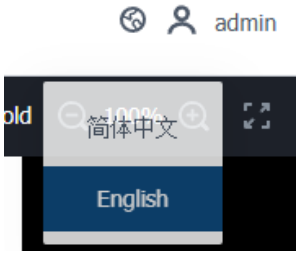
After enabling the Modify Password option, user needs to enter the old password and the new password twice. After clicking OK, the client will return to the login interface. User must then use the new password to log in.



	The password length must range from 8 to 32 characters, and the password must contain at least two types of characters, including numbers, uppercase and lowercase letters, and punctuations, excluding ' " ; : and &.

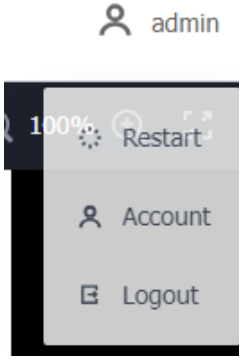
Language

User can click the Language to switch the interface language between Chinese and English.



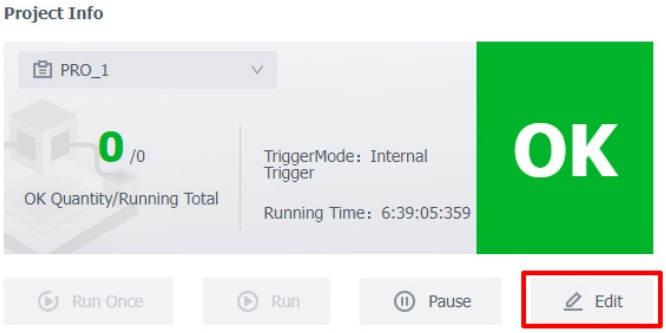
Restart and Logout

User can perform the restart and log out in the Admin.



Set Project

User can enter the Main Control interface to configure the projects. If there is no any project, user can click the Set Project to enter the project editing interface, as shown in the figure below. If there is a edited project, user can click Edit to enter the configuration interface, as shown in the figure below.



After entering the project editing interface, user can configure the relevant parameters in the shooting setup, master registration, algorithm setup, and communication setup pages.

Exit Setup

To return to the main control interface. The unsaved configured parameters take effect temporarily, which means that when user returns to the main control interface, these parameters will be restored to the default values.

Previous

To return to the configuration page of the previous module.

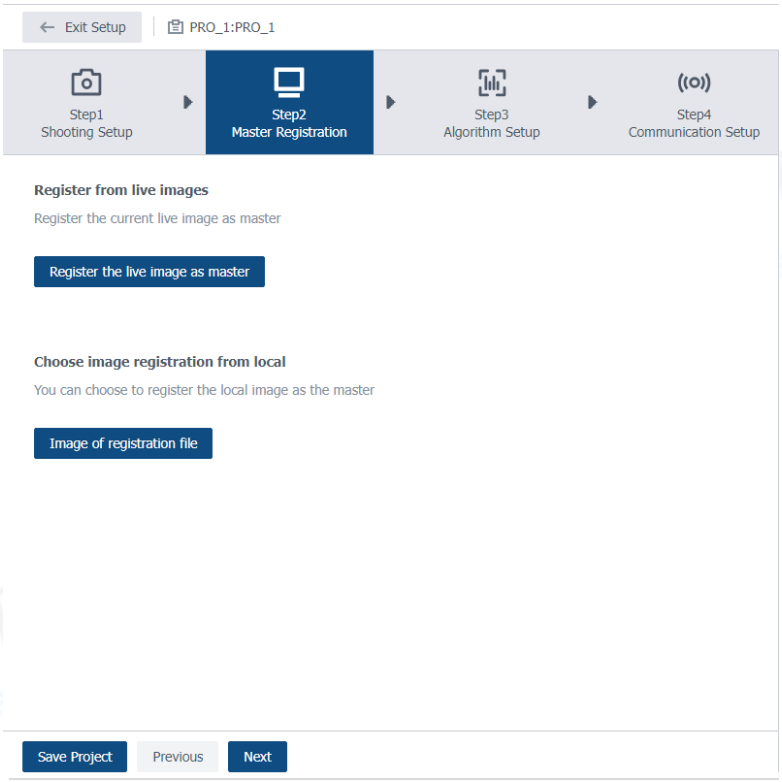
Next

To enter the configuration page of the next module.

Save Project

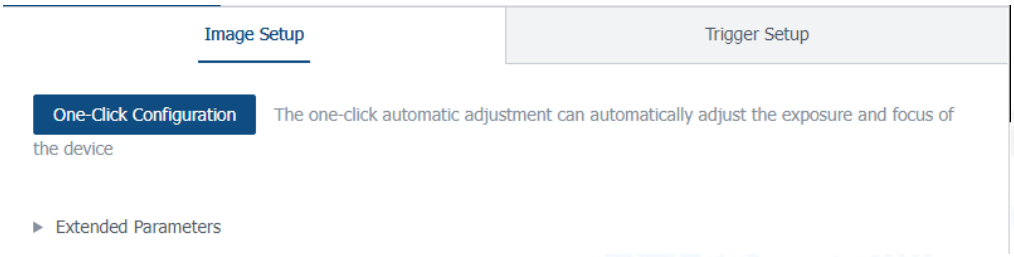
To save the configured parameters into the project, and return to the main control interface.

i	User must click the Save after completing the parameters configuration; otherwise, the configurations will be lost when user switches the project or restarts the sensor.



Shooting Setup

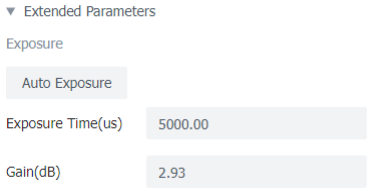
Click the Shooting Setup to enter the Image Setup page by default. The One-Click Configuration can perform the automatic adjustment of the exposure, white balance, etc. User can click the Extended Parameters to manually configure the parameters of exposure, fill light, mirroring, and image denoising, sharpness, etc.



During the processing of the auto-exposure, user cannot operate the client. Please wait the client completes the configuration.

Exposure

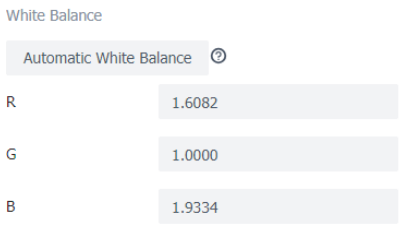
For adjusting the brightness level of the image. User can perform the Auto Exposure, or manually adjust the Exposure Time and Gain.



- Increasing the exposure time can enhance the brightness level of the image, but it may also reduce the frame rate to some extent, and when capturing the moving objects, it is prone to motion blur.
- Increasing the gain value can enhance the brightness of the image, but it will also increase the image noise to some extent.
- During the processing of the auto-exposure, user cannot operate the client. Please wait the client completes the configuration.

White Balance

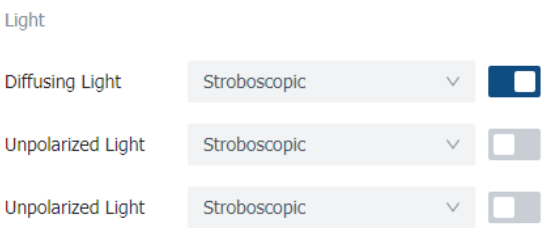
For correcting the color of the image. User can perform the Auto White-Balance, or manually adjust the component values of R, G, and B.



This function is only available to the color device.We recommend the user adjust the brightness level before adjusting the white balance. When adjusting the white balance, put a pure white object in front of the camera and cover the half FoV; otherwise, the image color may be distorted after adjusting the white balance.

Light

For setting the parameters of the built-in light sources. The parameters of the light source may vary depending on the device model, and the actual condition shall prevail.



Mirroring

For flipping the image horizontally or vertically.

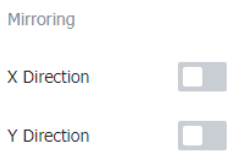
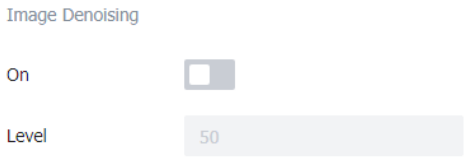


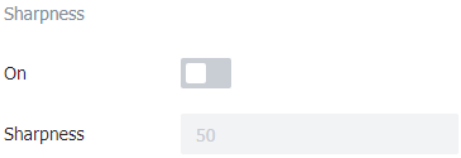
Image Denoising

For reducing the image noise and increasing the clarity.



Sharpness

For increasing the sharpness of image edges.



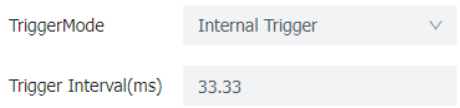
Trigger Mode

The "Trigger Mode" allows selection of the camera's trigger mode, which is divided into internal trigger, external trigger, network/ serial port, and industrial Ethernet.

● Internal Trigger:For enabling the continuous image acquiring.

Trigger Interval (ms)

The interval time between each time the of device acquires a image.



i	The exposure parameter and working mode of the light source will influence the parameter range of the trigger interval. If user requests a higher frame rate, i.e., lower trigger interval time, user can lower the exposure parameter, or adjust the working mode of the light source.

● External Trigger:Select ExternalExternal trigger is selected, and the device will be triggered to take images upon receiving an IO signal.

Signal Delay (ms)

To acquire images after a period of time.

Signal Buffeting and Buffeting Time (us)

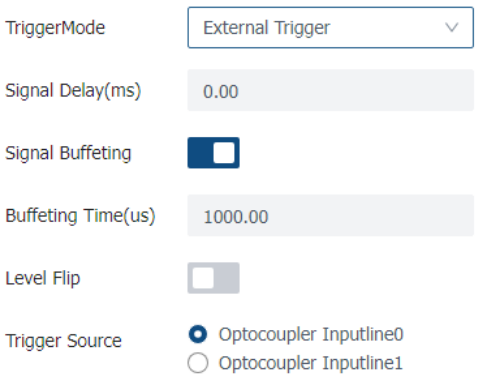
When the external trigger signal time is lower than the set buffeting time, the buffeting function will not be triggered, which can avoid the false triggering of this function.

Level Flip

When this option is disabled, the trigger mode is low level trigger; when it is enable, the trigger mode is high level trigger.

Trigger Source

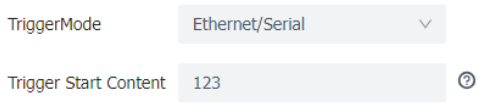
The IO characteristics supported by device may vary depending on the device model, and the actual condition shall prevail.



● Ethernet/Serial Port:When the user-defined trigger content is received, the device will acquire images. This function is only valid when user completes the settings of communication protocol in the Communication Setup, such as TCP, UDP, serial port.

Trigger Start Content

When the received content is consistent with the trigger start content, the device can be triggered to acquire images.

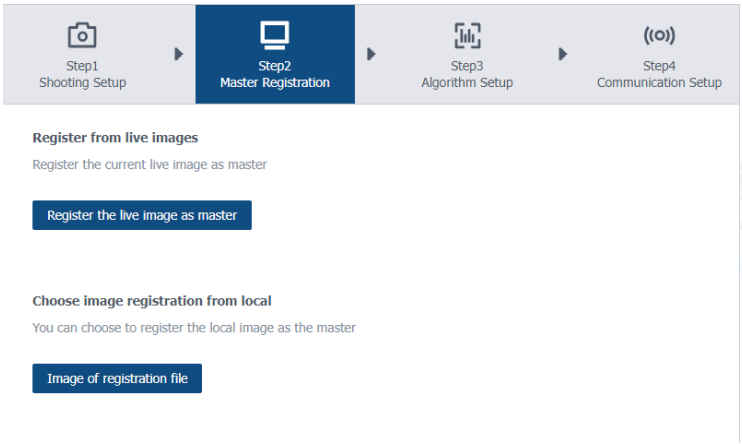


	Only alphanumeric characters and punctuations can be entered. The maximum number of character is 32.

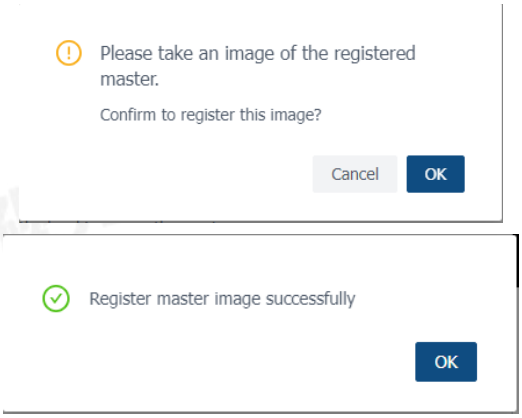
● Industrial Ethernet:The device will be triggered to acquire images when it receives the user-defined trigger content. This function is only valid when user completes the settings of industrial communication protocol in the Communication Setup, and completes the configurations of the register address. The industrial protocol includes Profinet, Ethernet/IP, and Modbus Server.

Master Registration

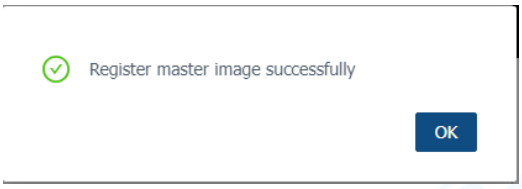
After completing the settings of the Shooting Setup, click Next to enter the page of the Master Registration. The methods of performing the master registration include Register from Live Images and Choose Image Registration from Local.



1.Register from Live Images: User can register the selected Live image as the master. Click Register from Live Images, the prompt box will pop up, as shown in the figure below. Click OK. The master registration configuration is completed. Note that before performing this function, please ensure the sensor can be streaming normally.

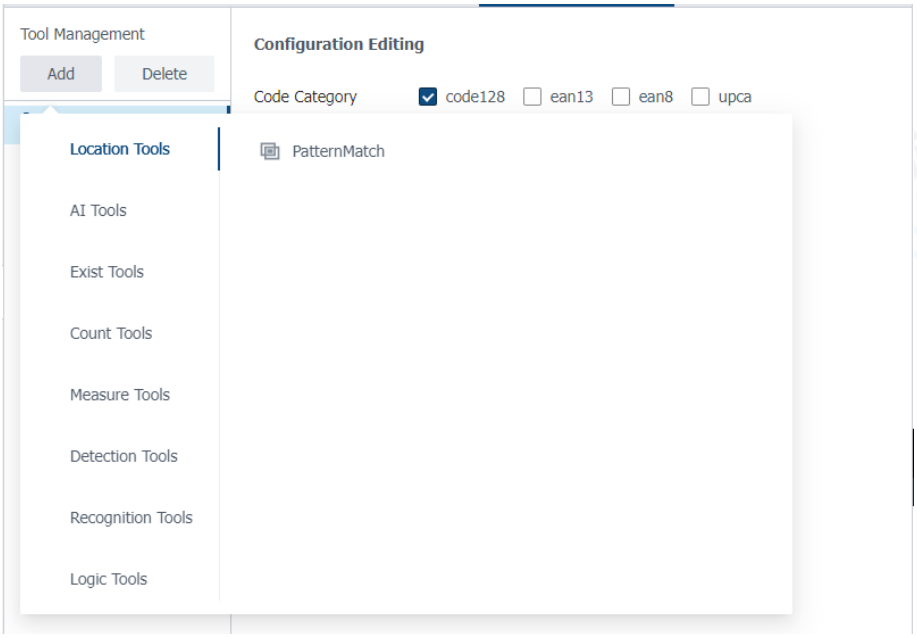


2.Choose Image Registration from Local: User can register the local image as the master. Click Choose Image Registration from Local, the image selection window will pop up. Note that this function is only valid when the resolution of the local image is consistent with the sensor's. After uploading, the prompt box saying 'Register master image successfully' will pop up.

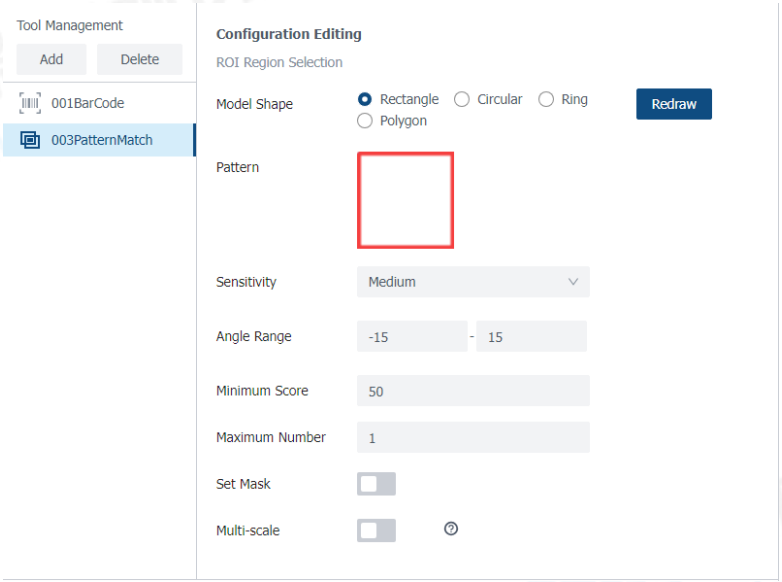


Algorithm Setup

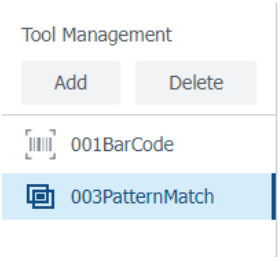
After completing the settings of the Master Registration, click Next to enter the page of the Algorithm Setup. Click Add under the Tool Management to select the algorithm tool.The operator tool supported by the sensor will vary depending on the sensor model, the actual condition shall prevail.



After completing the operator tool addition, the configuration interface will be displayed.Take the operator tool of Pattern Match as an example.



User can delete the selected operator tool.



i	In the Tool Management, user can add multiple same operator tool, and the upper limit of the number of operator tool is 16. When user adds the 17th operator tool in the list, the prompt box saying 'The number of modules has reached the upper limit' will pop up. As for the operator tools that may occupy a lot of resources, the upper limit number of operator tool will be less than the general number, and the prompt box will also pop up, such as, pattern match, contour compare, and color recognition.

I/O and Communication Setup

User can configure the parameters of I/O in the I/O Setup page included in the Communication Setup.

I/O Setup

When the sensor meets the requirements of result output, the sensor will output the opto-isolated signals to the external system. The I/O output configuration may vary depending on the sensor model, the actual condition shall prevail.

Output Condition

To set the status of the project or operator tool as the requirement of the I/O signal output.

Output Delay

To set the delay time value of I/O signal output.

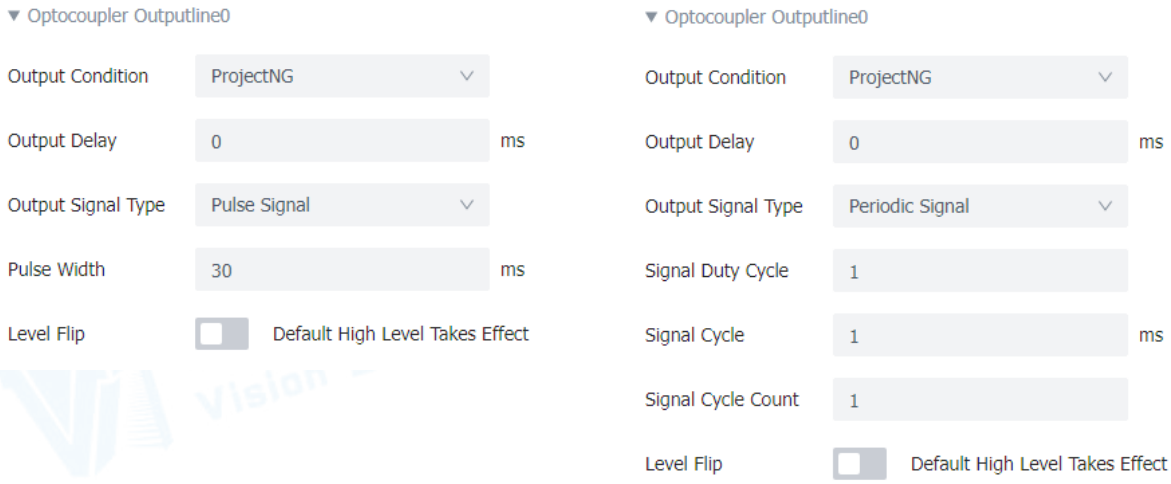
Output Signal Type

It includes the pulse signal and periodic signal.

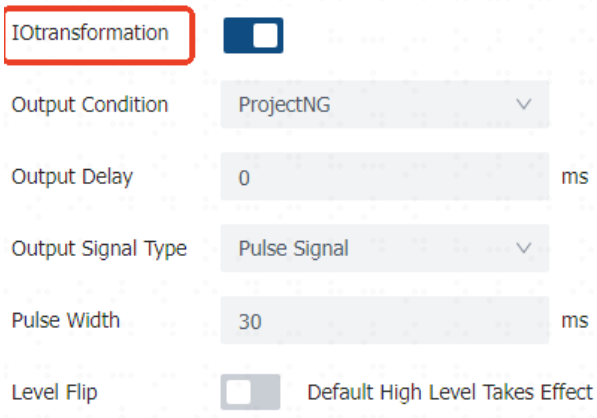
- When it is set to the pulse signal, user should also set the pulse width.
- When it is set to the periodic signal, user should also set the signal duty cycle, signal cycle, and signal cycle count.

Level Flip

After enabling the level flip function, it will be the low level; otherwise, it is high level.

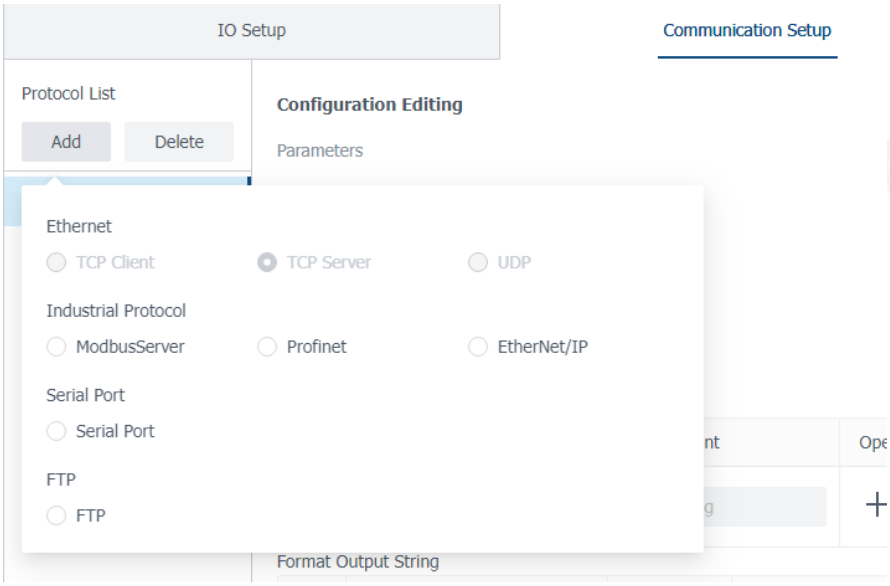


For the I/O ports needs to be reused, enable the I/O Transformation, and set the parameters of the I/O output port.

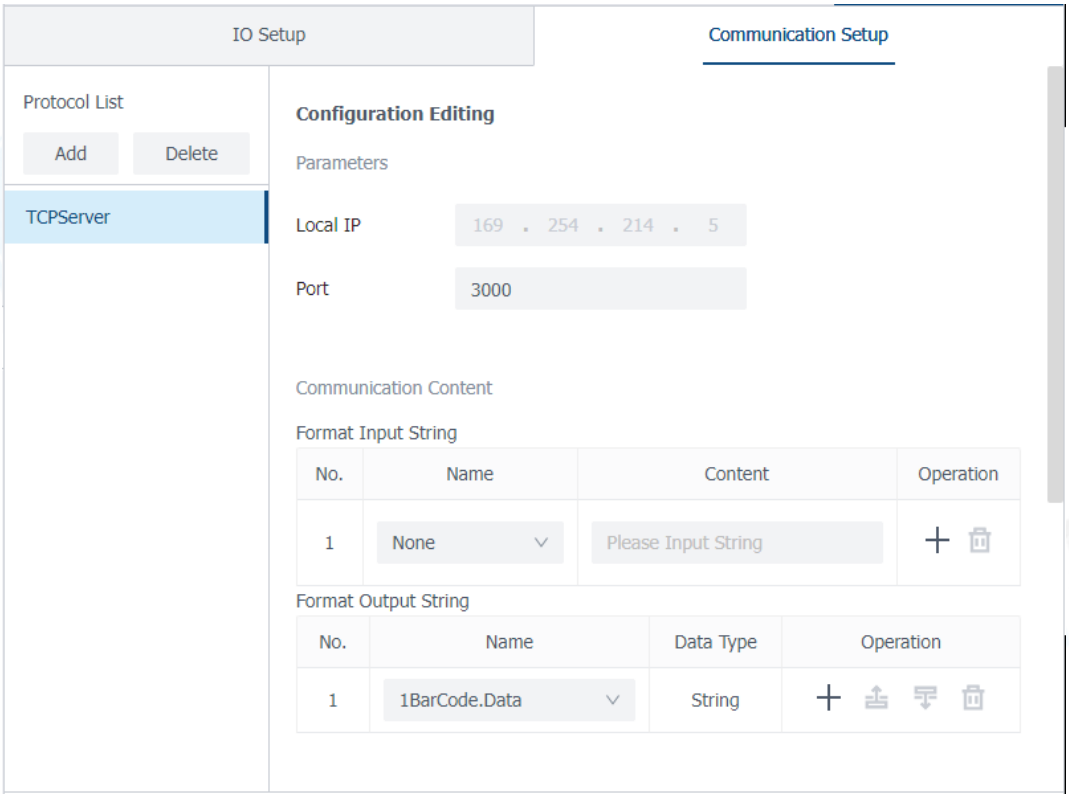


Communication Setup

User can add or delete the communication protocol in the Communication Setup page.



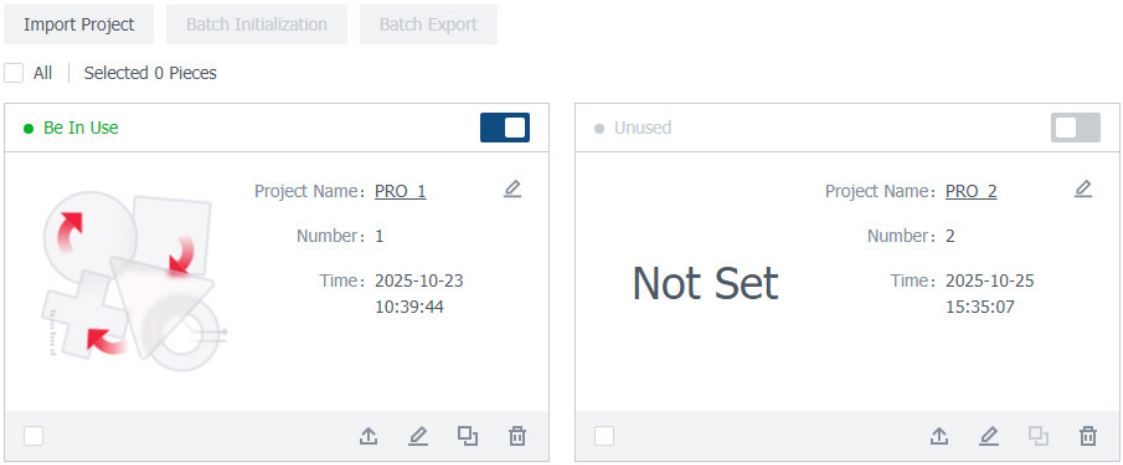
After adding the protocol, the client will display the relevant parameters of the selected protocol. Take the TCP Client as an example.



	User can add only one protocol of the same type. For example, user can choose only one from the TCP Client, TCP Server, and UDP protocols.

Project Management

User can operate the project one by one, or in batch. Click All or select the projects by clicking the icon in the bottom left corner of each project to manage and operate them in batch, such as batch export, and batch initialization.

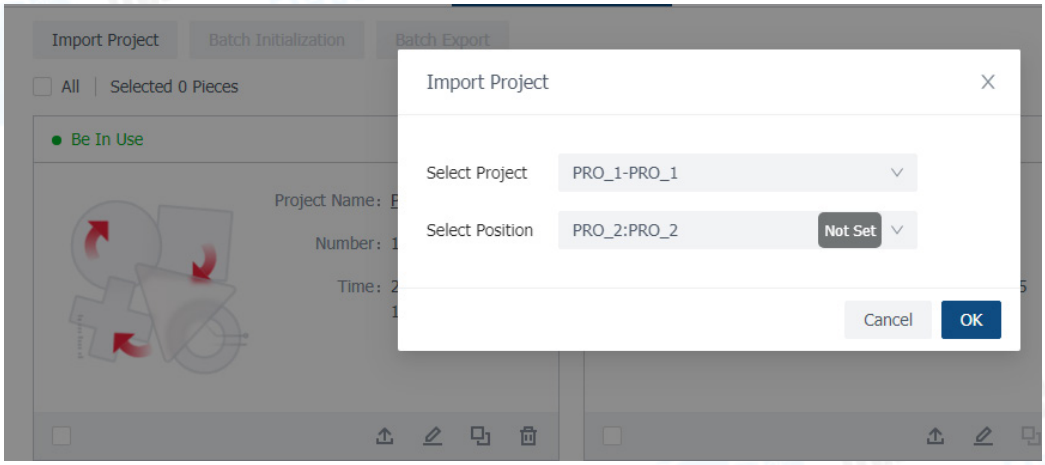


User can perform the project import, project switch, name modification, project export, project setting, project copy, or project initialization.

Import Project

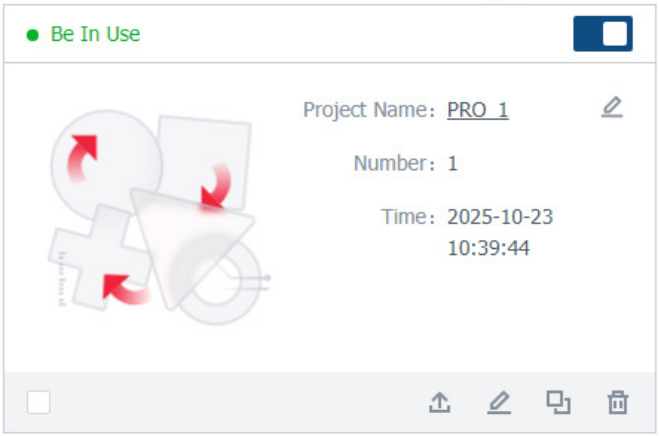
Select the project file with the suffix name of '.pro'. After completing the file selection, the configuration window will pop up.

- Select Project: To select a project file which needs to be imported.
- Select Position: To define which project the file needs to import.



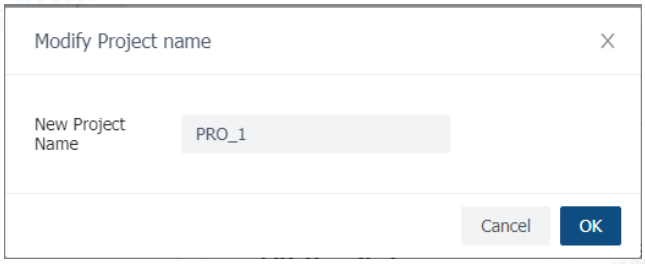
Switch Project

User can enable the project by clicking the button marked with ①, and the client will automatically disable the original project. Also, user can switch projects in the Main Control page, or switch projects by setting the communication command.



Modify Project Name

Click icon marked with ② to modify the project name.



Export Project

Click icon marked with ③ to export the project.

Set Project

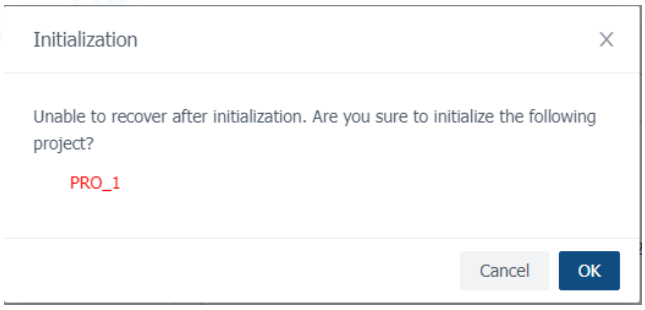
Click icon marked with ④ to enter the project configuration interface.

Copy Project

Click icon marked with ⑤ , the configuration window will pop up. User should select the project to save the copied parameters.

Project Initialization

Click icon marked with ⑥ , the confirmation prompt box will pop up, click OK to start the initialization.



	User can create up to 32 projects in the project management page.

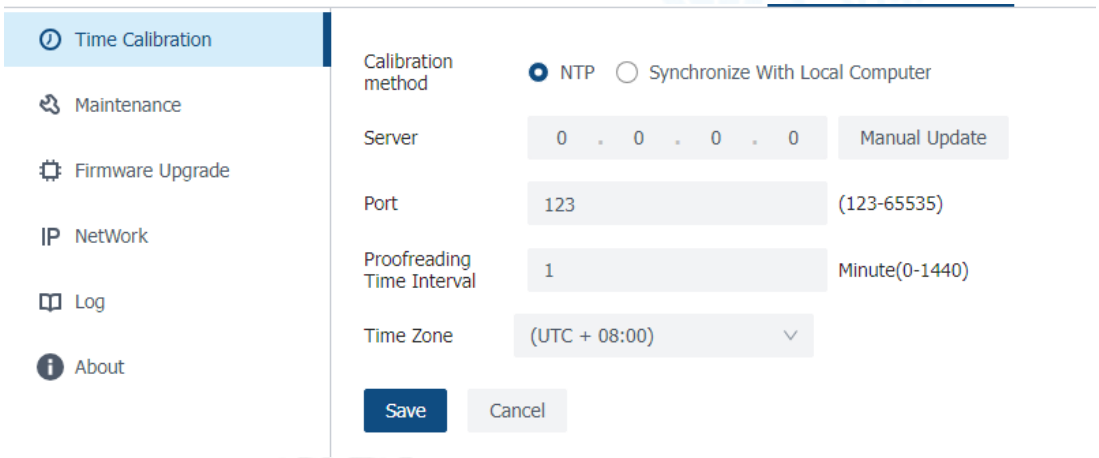
Device Management

The functions in the Device Management include time calibration, maintenance, firmware upgrade, network setting, Log export, etc.

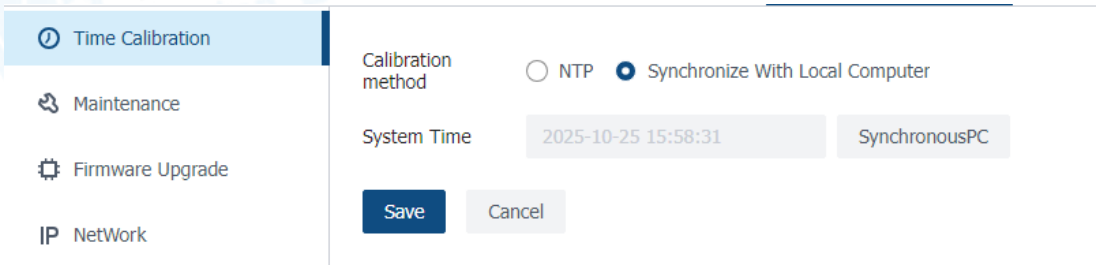
Time Calibration

The calibration methods include NTP and Synchronize with Local Computer.

● After selecting the NTP, configure the IP address in the Server, port number in the Port, Proofreading Time Interval, and Time Zone. Click Save.



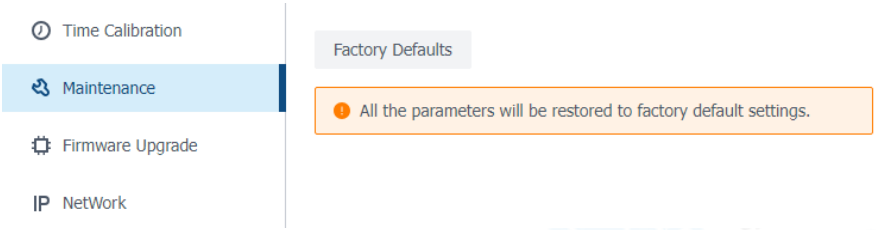
● After selecting the Synchronize with Local Computer, click the SychronousPC.



Maintenance

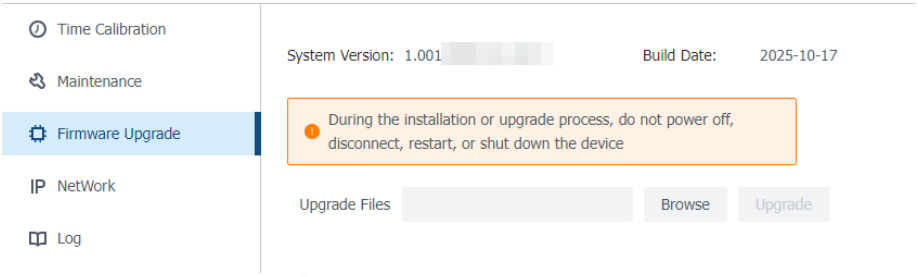
After clicking the Factory Defaults, the client software will restore the parameters of the sensor.

- The IP address of the sensor will be restored to 192.168.1.108, and the sensor will restart.
- The User name and password will not be reset after clicking the Factory Defaults.



Firmware Upgrade

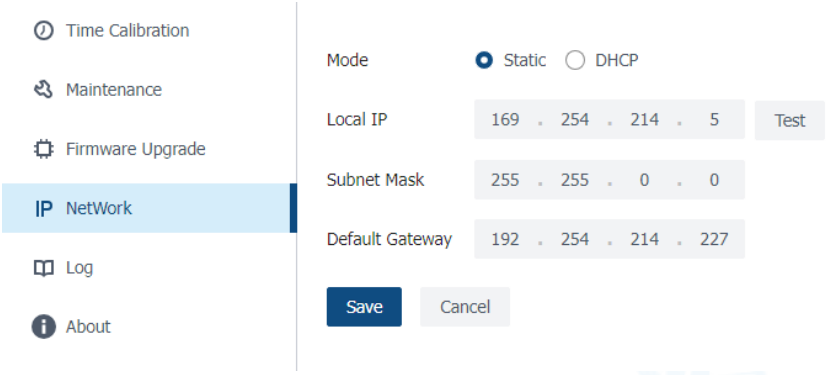
In the Firmware Upgrade page, it will display the system version information and build date information. Click Browse to select and upload the firmware file with the suffix of the '.bin', and click Upgrade to perform the firmware upgrading. The firmware upgrading will take a while, please wait patiently.



i	Do not disconnect the power supply and network connection during the upgrading. Do not restart or shut down the device when upgrading firmware.

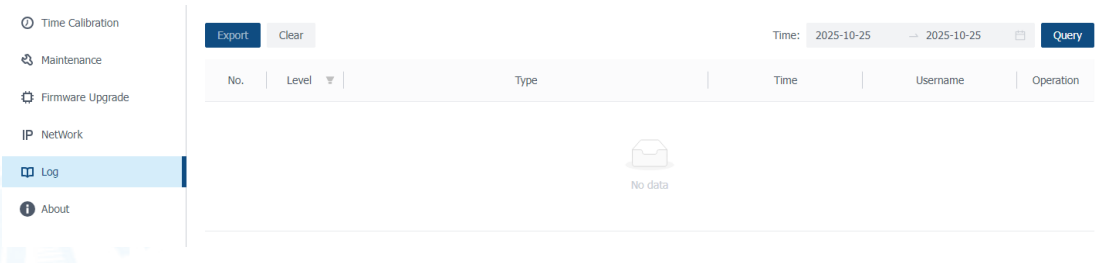
Network

The working mode of the network includes Static and DHCP. User can click the Test in the right side of the Local IP to test the entered static IP address.



Log

User can search the operation logs according to the date. Also, user can clear the logs and export logs in batch.



Operator Tools

Location Tools

The Location Tools now supports the Pattern Match, which performs the detection by using the positioning techniques.

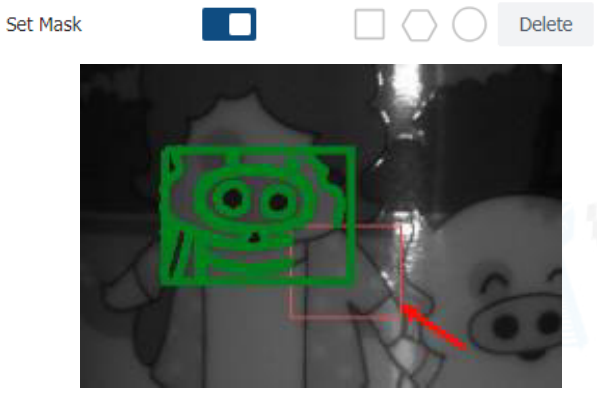
Pattern Match

This operator adopts the technique of feature matching to assist the positioning and correct the location of the moving object.

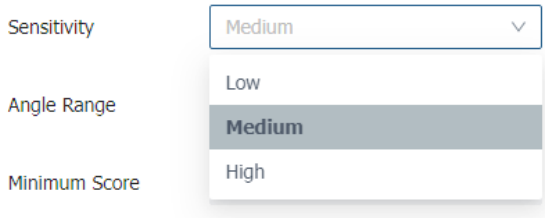
Procedure:

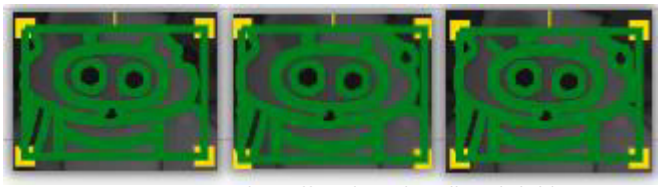
1. Draw the pattern area. It supports the rectangle, circular, ring, and polygon. The pattern marked with ② in the figure below can be moved and scaling.

2. If there are noises in the pattern area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete multiple shapes.



3. The sensitivity level includes high, medium, and low. The higher the sensitivity, the more feature points are extracted. The sensitivity level should be set according to the actual conditions, the noises could be mistakenly extracted as the feature points, and this will increase the running time of the algorithm process.

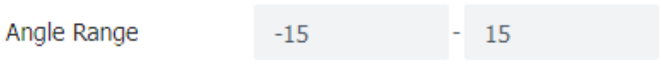




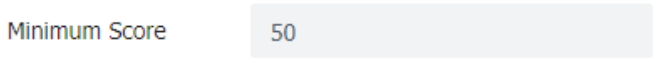
Post Processing Effect (Low/Medium/High)

4.Draw the search area. The rectangle marked with ② in the figure 9-2 is the search area.

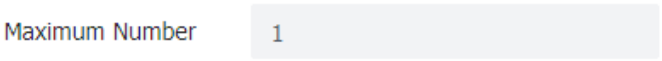
5.Set the values of the Angle Range. The algorithm will recognize and match the object if its angle changing is in the set range. If the angle exceeds the set range, the algorithm cannot recognize the object. Therefore, the larger the angle range, the greater the allowable range of angle variation will be, and the longer the processing time of the algorithm is.



6. Set the similarity threshold between the target and the pattern. The higher the score, the higher the similarity. The object can only be recognized when the similarity score of the matched objects is higher the set minimum score.

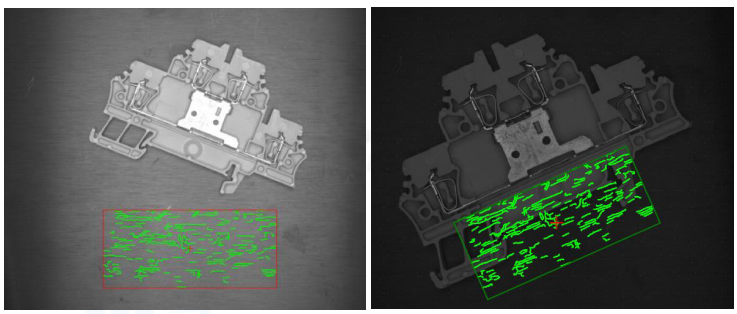


7. Set the maximum number of the object.When the maximum number is not 1, the operator of the pattern match can be user as the counter.

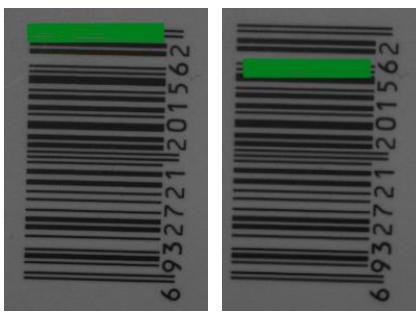


8. When the Multi-Scale is disabled, the algorithm will match the objects by comparing the object and pattern in a ratio of 1:1. After enabling the Multi-Scale, the operator can also recognize and match the object with the different height in the FoV of sensor, but this function will increase the processing time. Enable this function according to the actual condition.

i	When using the operator of Pattern Match as the datum of positioning, the pattern user selects in the image should be with clear edges and unique feature. If the edges of pattern are not clear and with noises, the operator cannot match the pattern and object; if the features of pattern is not unique, the matching results will be different and wrong.



Edges with Noises



Not Unique Feature

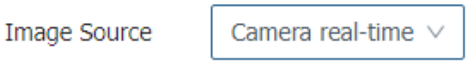
The AI Tools now supports the AI Classification operator which uses the AI module to perform the tasks processing.

AI Classification

AI classification automatically divides the image, area, or pixels in the image into the specific categories by analyzing their features using the deep-learning algorithm. The object discrimination capability of this operator can greatly improve the automation efficiency without any additional manual intervention.

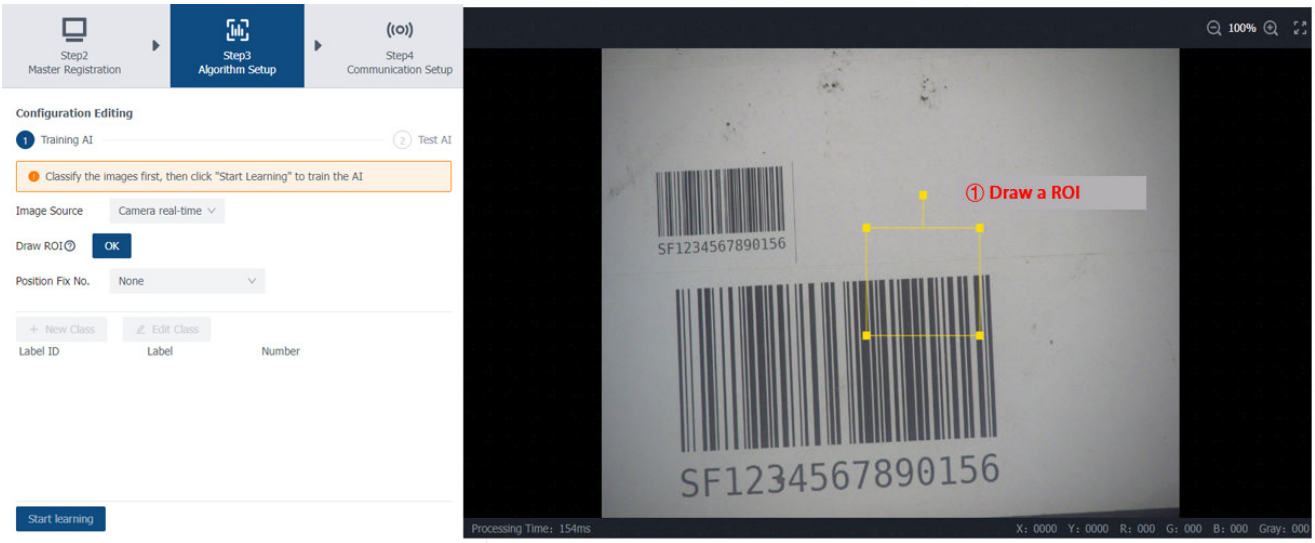
Procedure:

1. Select the image source. It includes the Camera Real-Time and Local Upload.

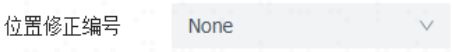


	The AI Classification operator only supports the images that resolution is consistent with the sensor's, and user can upload multiple images.

2. Draw the ROI area on the image, and click OK. The ROI box size will be locked and can only be moved and rotated.

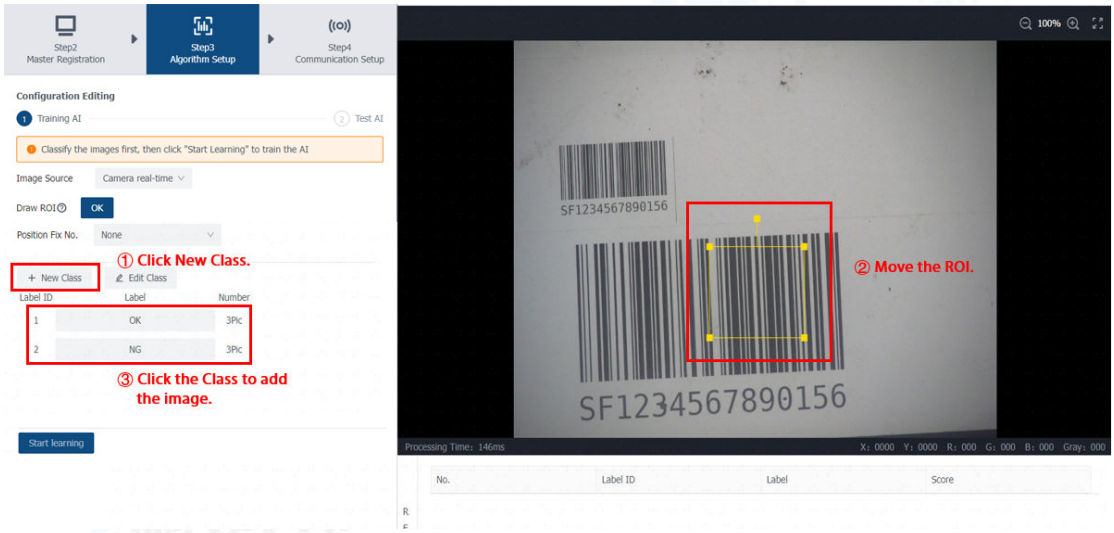


3. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.

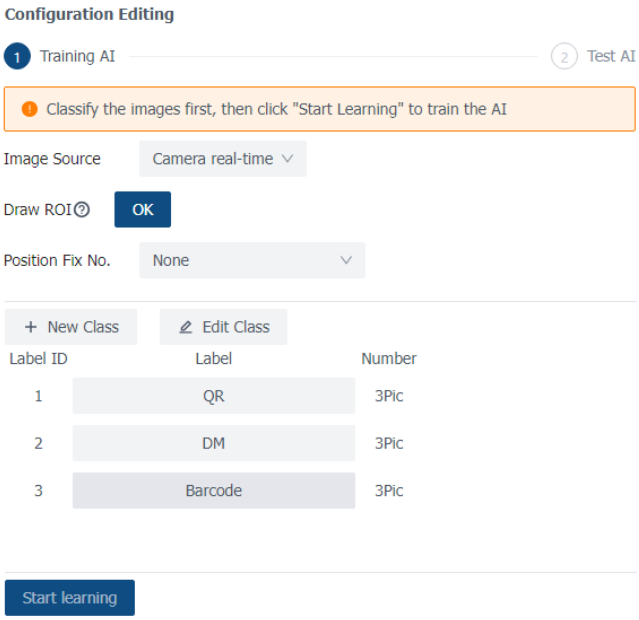


	After selecting the Camera Real-time and binding the operator of pattern match, the operator will also correct the location of the ROI according to bound operator of the pattern match in the configuration interface.

4. Add and edit the class. Click New Class, and enter the label name. User can add multiple classifications in the AI Classification operator. Move the ROI box drawn in the second step, and click the added label. The image captured by the ROI box will be added into the selected label. Click Edit Class to rename, delete, or move the added labels and images.

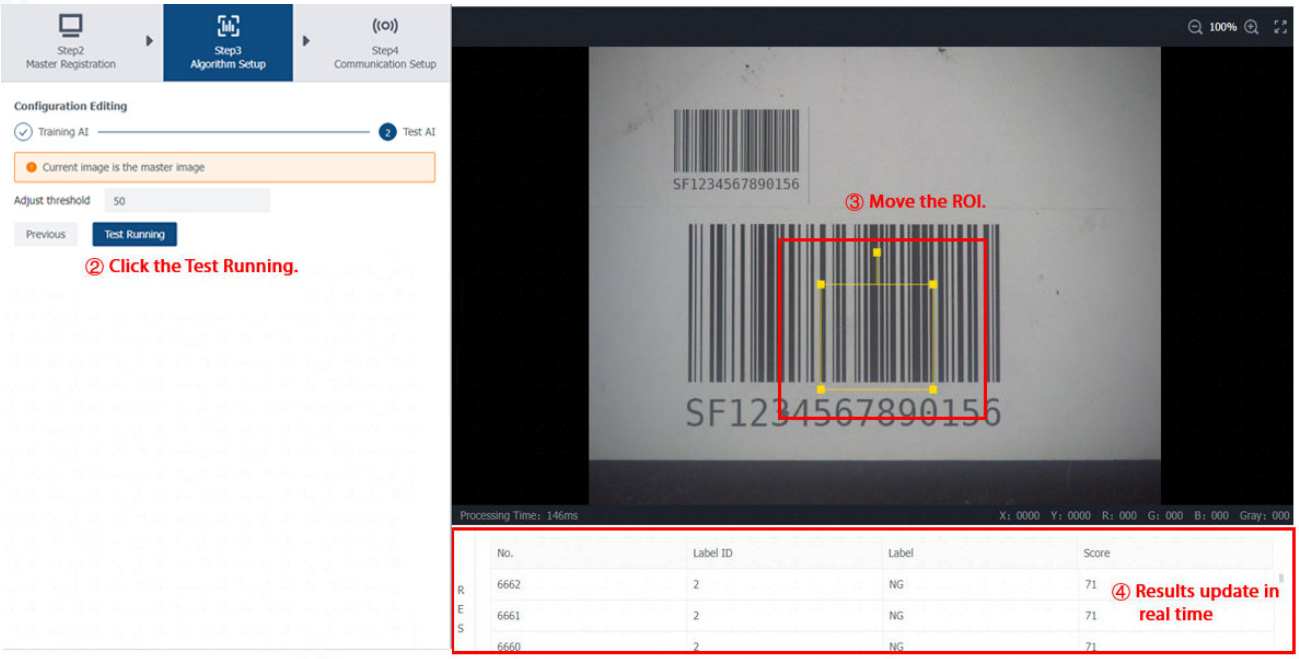


5. Click Start Learning.



6.Test the model processing effect. Click Next, and drag the ROI box to test the model processing effect on the master image. Click Test Running to perform the classification processing effect on the streaming images in real time.

● Adjust Threshold: To set the threshold of the classifications recognized by the operator. If the score is greater than the threshold, the status of operator will be OK, otherwise, it is NG.

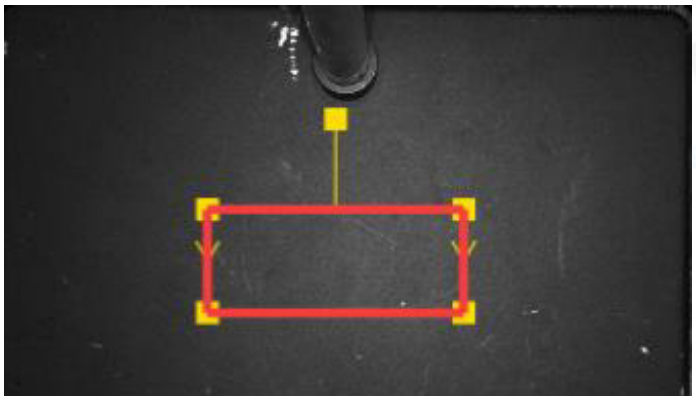


Find Line

The Find Line operator is for detecting whether the image contains the straight line. The operator finds the edge points of the object in the image, links these points, and judges whether the lines in the image are straight according to the straightness.

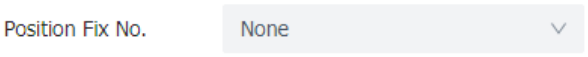
Procedure:

1. User can drag the ROI box or adjust its size in the under-detection area according to the actual demands. When the ROI box is red, it is NG; when the ROI box is green, it is OK.



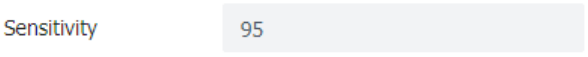
2. Set Position Fix No.

Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



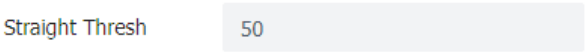
3. Set Sensitivity.

The sensitivity of the straight-line detection, that is, the ability to correctly identify the straight lines or exclude the nonlinear lines under the different conditions. After configuring the Sensitivity to the lower value, the operator can filter the edges with low contrast out.

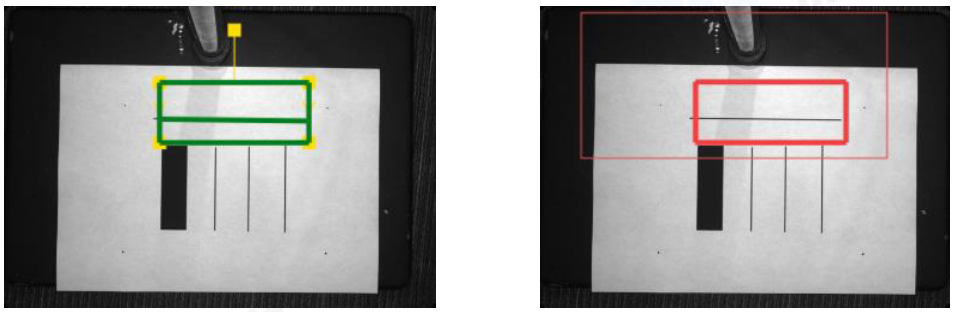


4. Set Straight Thresh

When the fitting score is greater than the set value, the status of operator is OK, otherwise, it is NG.



5. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete multiple shapes.



Shielding Results

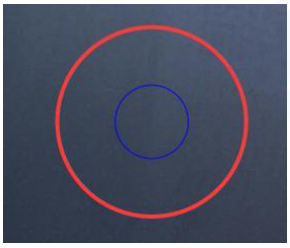
- The search direction of the polarity is the direction of the arrow on the ROI box.
- The high sensitivity will recognize the weaker edge points to link them as the straight line.
- The low sensitivity can only recognize the more obvious edge points to link them as the straight line.
- The straightness parameter is for measuring the approximation degree between the detected line or edges and straight line.

Find Circle

The Find Circle operator is for detecting whether the image contains the circular objects. The operator finds the edge points of the object in the image, links these points to a circle, and judges whether the object is circular in the image according to the roundness of the linked circle.

Procedure:

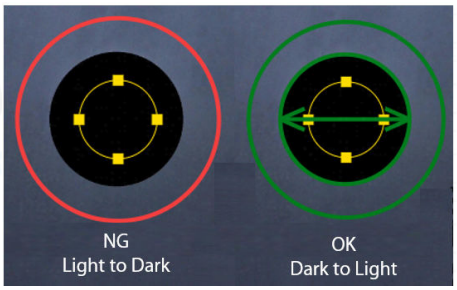
1. User can drag the ROI box or adjust its size in the under-detection area according to the actual demands. The ROI in the Find Circle operator has two circles, including inner circle and outer circle. User can click on the area in the inner circle to select the inner circle and adjust the inner circle size; click on the area between the inner circle and outer circle to select the outer circle. When the outer circle is red, it is NG; when the outer circle is green, it is OK.



2. Set Character Polarity.

- From Dark to Light: It will find the circular edges which have the dark to light.
- From Light to Dark: It will find the circular edges which have the light to dark.
- Any Polarity: It will find the circular edges which have the light to dark or dark to light.

i	The search direction of the polarity is from inner circle to outer circle.

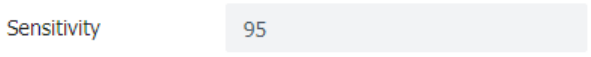


3.Set Position Fix No.

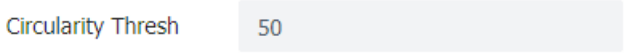
Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.

4.Set Sensitivity.

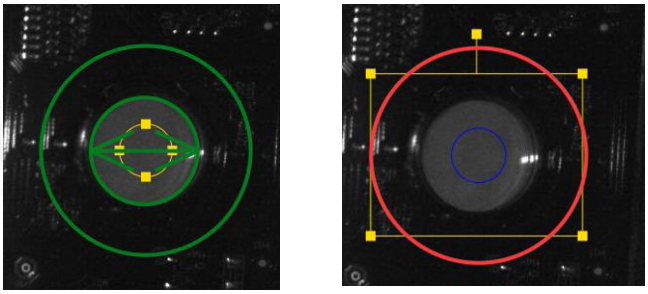
The higher the value of sensitivity, the lower the requirements to the grey difference of the object edges in the image.



5. Set Circularity Thresh to define the recognition threshold. If the recognition score is greater than the threshold, the status of operator will be OK, otherwise, it is NG.



6. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle and polygon. User can add and delete the multiple shapes.



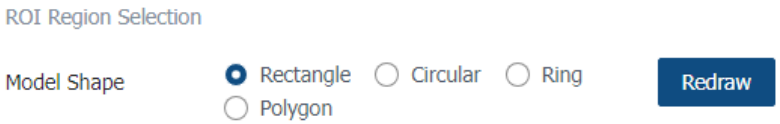
Shielding Results

Blob Exist

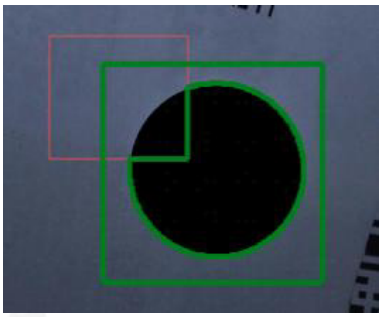
The Blob Exist operator is for detecting and positioning the area which is in the set grayscale range, or cannot be measured. The Blob Exist can position and judge the blobs and shapes in the image.

Procedure:

1. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.

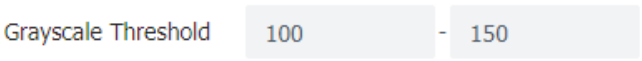


2. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete the multiple shapes.

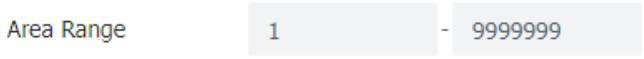


3. Set Grayscale Threshold.

The grayscale threshold is for separating the target blobs and background, so as to identify and count the number of the blobs accurately. The Blob Exist operator will detect the blobs which are in the set range of the grayscale threshold.

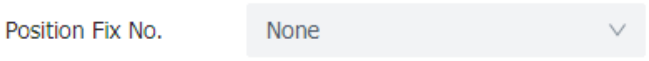


4. Set Area Range. User can set the Area Range to make the operator ignore the too large and too small blobs.



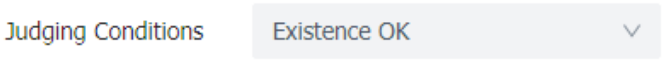
5. Set Position Fix No.

Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



6. Set Judging Conditions.

When selecting the Existence OK, the status will be OK when operator finds the blobs in the image; when selecting the Non-Existent OK, the status will be OK when operator does not find the blobs in the image.



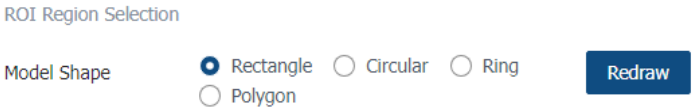
i	The Blob Exist operator can only output result of one blob in the image, even though the operator finds multiple blobs in the image. If user requests to detect multiple blobs, please use the Blob Count operator.

Blob Count

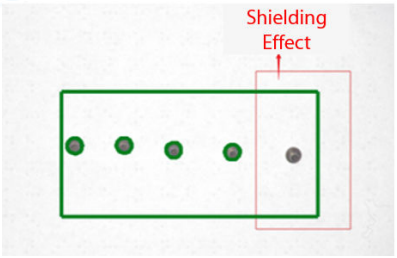
The Blob Count operator is for automatically identifying and counting the specific areas, such as particles, defects, etc. The operator first finds the blobs which meet the preset conditions, then counts the blobs, and finally screens out the targets that meet the size requirements which are set according to the actual demands.

Procedure:

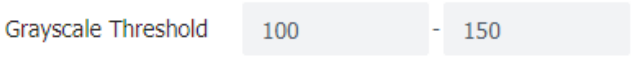
1. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.



2. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete multiple shapes.

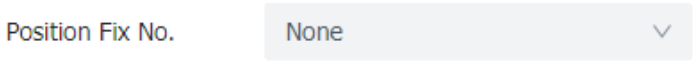


3. Set Grayscale Threshold. The grayscale threshold is for separating the target blobs and background, so as to identify and count the number of the blobs accurately. The Blob Count operator will detect the blobs which are in the set range of the grayscale threshold.

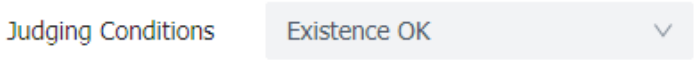


4. Set Area Range. User can set the Area Range to make the operator ignore the too large and too small blobs.

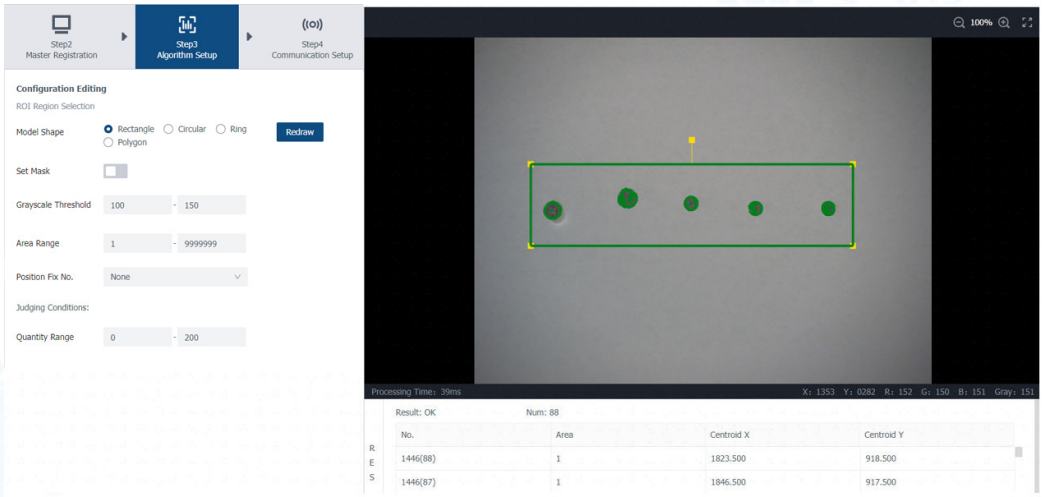
5. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



6. Set Quantity Range. The operator status will be OK if the number of the detected blobs in the image is in the set range; otherwise, it is NG.



	The blobs in the image, such as noises and particles, are usually darker or lighter than the background. After setting the grayscale threshold, the area will be marked as the blob when its grayscale value is higher or lower than the set threshold, and other areas will be marked as the background. Uneven lighting or noises in the image could lead to the misjudgments. The threshold can eliminate the interferences of the area with low contrast to improve the recognition accuracy rate. We recommend you set the thresholds according to the features of the actual images, such as brightness difference.

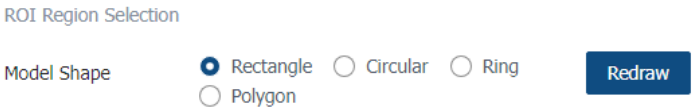


Grayscale Area

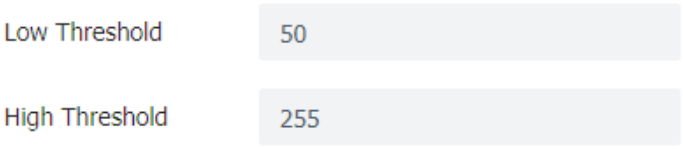
The Grayscale Area operator is for counting and selecting the pixels whose grayscale meets the set thresholds.

Procedure:

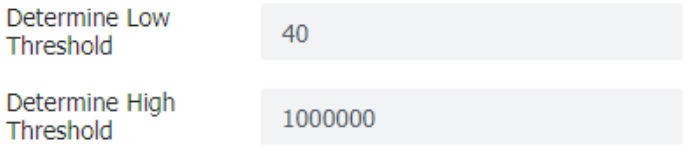
1. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.



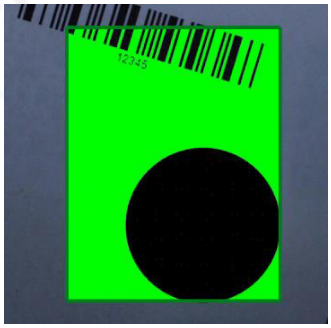
2. Set the High Threshold and Low Threshold. Set the grayscale threshold of the pixels that needs to count. When the grayscale values of the pixels are in the set thresholds, the pixels can be counted. For the color sensors, the Grayscale Area operator will first convert the color image into the mono image, and then judge whether their grayscale values are in the set thresholds.



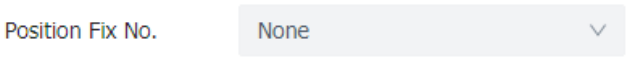
3. Set the Determine High Threshold and Determine Low Threshold. The operator judges the pixels of the area that are within the grayscale thresholds whether the pixel quantity of the area is in the set quantity threshold. If it is within the set quantity threshold, the operator status will be OK; otherwise, it will be NG.



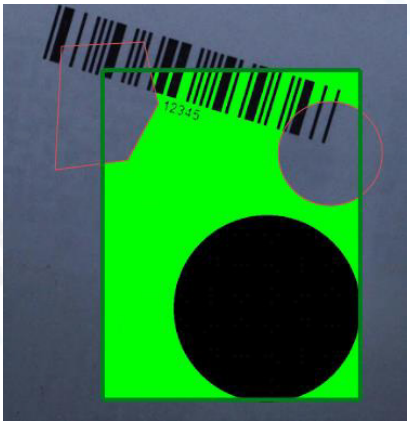
4. Enable or disable the Feature Draw. After enabling the this function, the pixels that have been counted will turn into the green color.



5. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



6. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete multiple shapes.



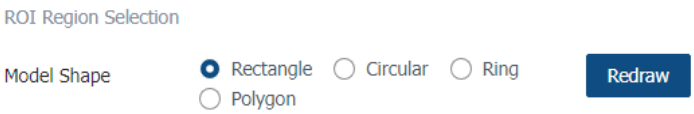
Shielding Results

Brightness

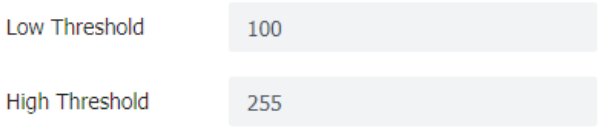
The Brightness operator is for calculating the average brightness value in the ROI detection area to judge whether the object exists.

Procedure:

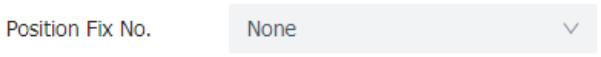
1. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.



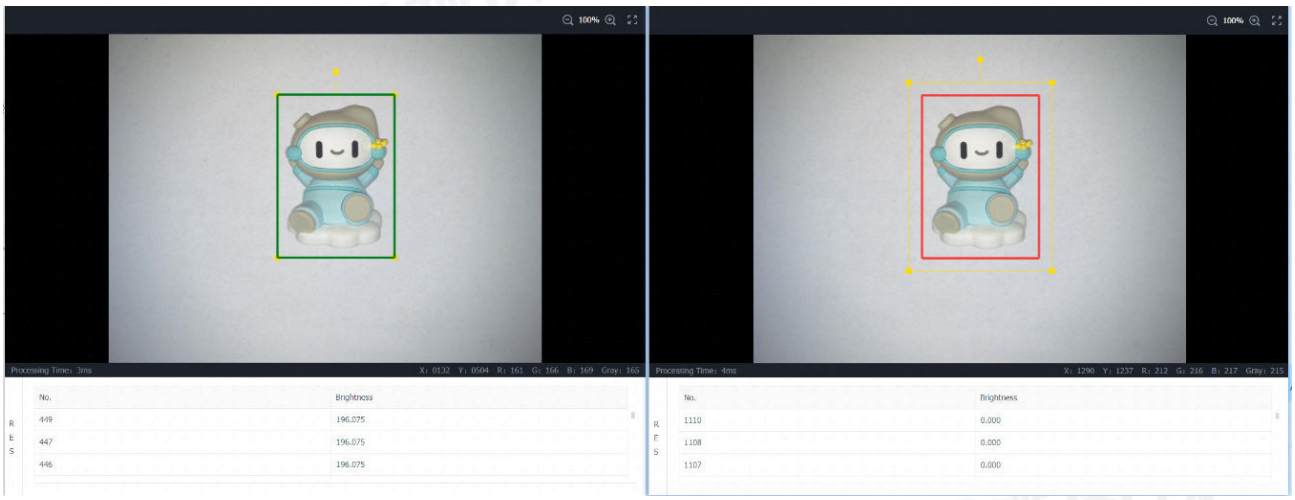
2. Set Low Threshold and High Threshold. The operator judges whether the brightness level of the ROI area is in the set threshold. If it is within the set threshold, the operator status will be OK; otherwise, it will be NG.



3. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



4. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle and polygon. User can add and delete multiple shapes.



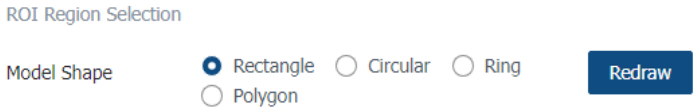
Set Mask

Contrast

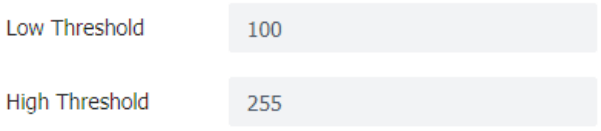
The Contrast operator is for calculating the contrast ratio of the images in the ROI detection area, identify whether the contrast ratio of the features which need to be detected are within the set range. This operator is suitable for the image with high contrast ratio.

Procedure:

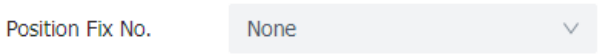
1. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.



2. Set Low Threshold and High Threshold. The operator judges whether contrast ratio of the ROI area is in the set threshold. If it is within the set threshold, the operator status will be OK; otherwise, it will be NG.



3. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



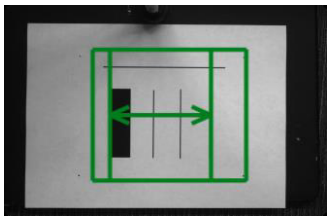
4. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete multiple shapes.

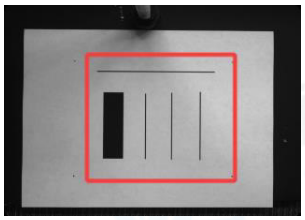
Edge Width Tool

The Edge Width Tool operator is for detecting the edges of the object in the image, and calculating the spacing between the two edges.

Procedure:

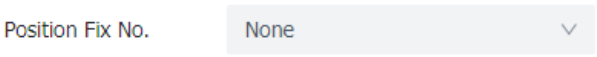
1. User can drag the ROI box or adjust its size in the under-detection area according to the actual demands. When the ROI box is red, it is NG; when the ROI box is green, it is OK.





2. Set Position Fix No.

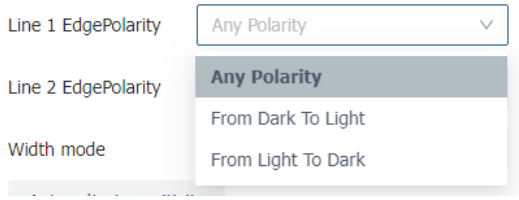
Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



3. Set Line 1 Edge Polarity.

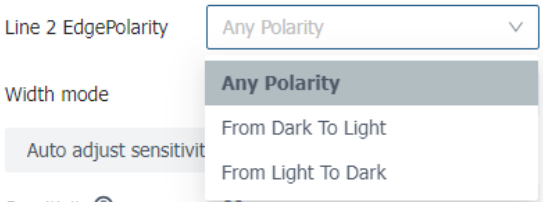
The options include From Dark to Light, From Light to Dark, any Polarity.

- Any Polarity: The operator detects all types of edges regardless of the direction of the grayscale change.
- From Dark to Light: The operator only detects the edges whose grayscale changes from low to high.
- From Light to Dark: The operator only detects the edges whose grayscale changes from high to low.



4. Set Line 1 Edge Polarity.

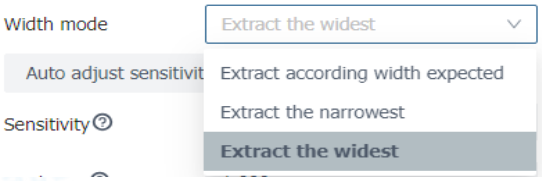
Line 1/2 Edge Polarity: It is for defining the grayscale changing direction of the edges when detecting the edges.



5. Set Width Mode.

The options include Extract according Width Expected, Extract the Narrowest, Auto Adjust Sensitivity.

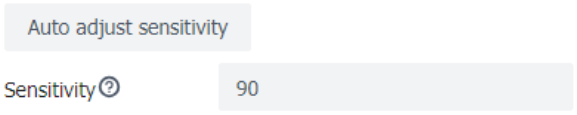
- Width Mode: This parameter is for defining how the operator selects the final results from the multiple detected width values.
- Extract according Width Expected: After setting this parameter, the operator will select the width value closest to the expected width value from the multiple detected width values.
- Extract the Narrowest: After setting this parameter, the operator will select the minimum width value from the multiple detected width values.
- Extract the Widest: After setting this parameter, the operator will select the maximum width value from the multiple detected width values.



6. Set Sensitivity.

The higher the value of the sensitivity, the lower the requirement to the grayscale value of the edge detection. User can manually set the value of the sensitivity, and also can click the Auto Adjust Sensitivity.

Auto Adjust Sensitivity: It will automatically adjust the sensitivity of the edge detection operator according to the contrast, noise level, edge clarity, etc. of the image. The adjusted sensitivity parameter is for reference only.



7. Set Pixel Ratio.

This parameter is for converting the pixel distance in the image into the actual physical distance.

Range: 0.000~100.000

8. Set Width Range.

This parameter is for defining the allowed measurement range of the width. The operator can filter out the measurement results which meet the requirements by setting the width range. The operator status is OK when it is within the range; otherwise, it is NG.

Range: 1.000~9999999.999.

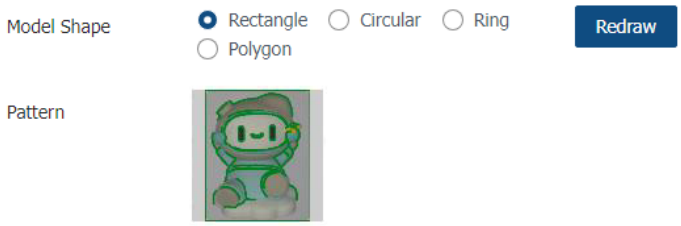
The Contour Compare operator is for defect identification of the industrial components, product appearance, and objects locating in the complex environments. This operator can assist the user to complete the identification tasks in a non-contact and high-speed manner, which can significantly improve the production efficiency and quality consistency.

Contour Compare

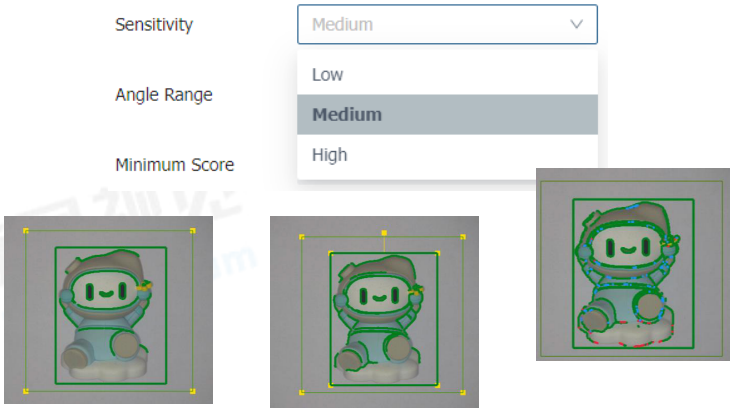
The Contour Compare operator calculates the similarity by comparing the contour features extracted from the object and reference template. The higher the score, the higher the similarity between the object features and the template.

Procedure:

1. Draw the pattern area. It supports the rectangle, circular, ring, and polygon.

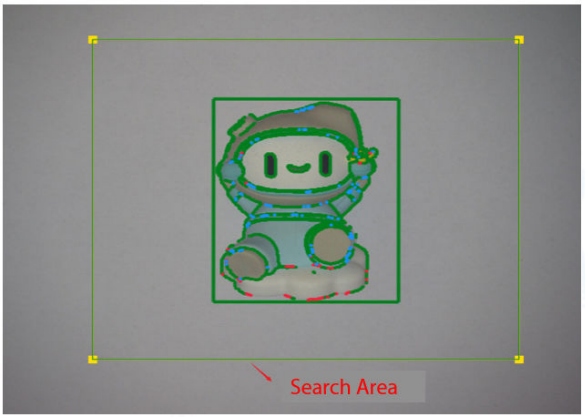


2. The sensitivity level includes high, medium, and low. The higher the sensitivity, the more feature points are extracted. The sensitivity level should be set according to the actual conditions, the noises could be mistakenly extracted as the feature points, and this will increase the running time of the algorithm process.

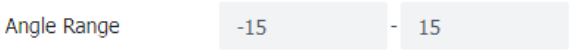


Post Processing Effect (Low/Medium/High)

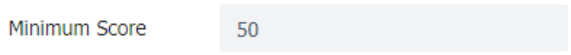
3. Draw the search area. The rectangle in the figure below is the search area.



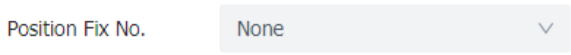
4. Set the values of the Angle Range. The algorithm will recognize and match the object if its angle changing is in the set range. If the angle exceeds the set range, the algorithm cannot recognize the object. Therefore, the larger the angle range, the greater the allowable range of angle variation will be, and the longer the processing time of the algorithm is.



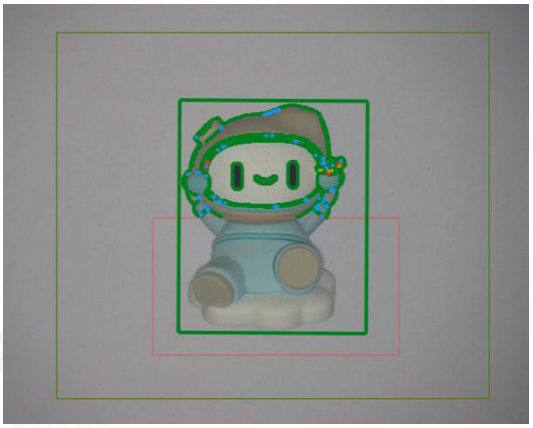
5. Set Minimum Score. This parameter is for setting the score threshold of the similarity between the target and the template. The higher the score, the higher the requirment to the similarity between the target and the template, which means that the object can only be recognized when the similarity score is higher than the set value.



6. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



7. If there are noises in the pattern area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle, polygon, and circle. User can add and delete the multiple shapes.



- The sensitivity of the Contour Compare operator affects the the number of the extracted feature points. The higher the sensitivity, the more the matched feature points. Also, it will lead to the increasing of the algorithm process time. Therefore, we recommend you adjust the sensitivity according to the actual condition.
- The position correction parameter (Position Fix No.) is working based on the search area.
- This operator can detects the missing corners, collapsed edges, lamination, etc. by comparing the contours of the template image and the test image. This operator is suitable for the objects with clear boundaries and stable environments.
- The effect of the Contour Compare operator is shown in the figure below. The two images on the left are the trained template images; the two images on the right are the compared images.

Effect images of Contour Compare

The operators in the Recognition Tool include Data Code, Barcode, and OCR.

Data Code

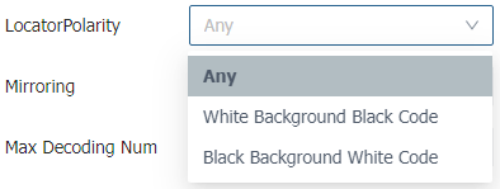
The Data Code operator is for accurately locating the position of the 2D codes and decoding the contained characters. This operator can decode QR code and DM code, which are commonly used in the logistics industry and in other scenarios of 2D code recognition and decoding.

Procedure:

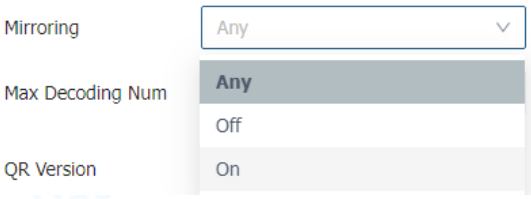
1. Select code type. User can select multiple code types.

2. Set Locator Polarity.

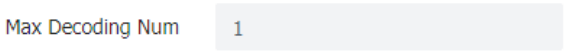
- Any: The operator will dynamically adjust the polarity of the locator according to the background color and 2D code content.
- White Background Black Code: The code background is white, and the locator and dots are black.
- Black Background White Code: The code background is black, and the locator and dots are white.



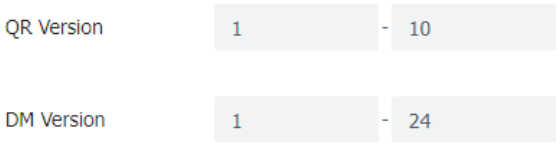
3. Set Mirroring.



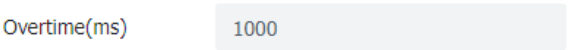
4. Set the Max Decoding Num.



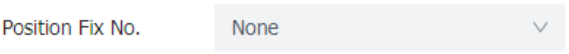
5. Set QR Version/DM Version.



6. Set Overtime.



7. Set Position Fix No.



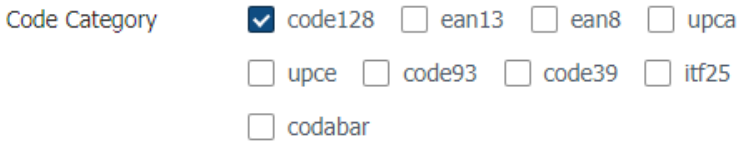
	• The more the set maximum number of the decoding, the longer the algorithm processing; therefore, we recommend you configure this parameter according to the actual demands. • The Mirroring parameter can flip the code image along the certain axis, such as horizontal axis or vertical axis, to get the new flipped code images. The content of the flipped code image will be the same as the original. • Timeout parameter is for defining the maximum decoding time, if the decoding time exceeds the timeout value, the decoding of the current code image will end early.

Barcode

The Barcode operator is for accurately locating the position of the barcode, and decoding the contained characters. The supported code types include code128, ean13, ean8, upca, upce, code93, code39, itf25, and codabar. These code types are commonly used in the logistics industry and for other scenarios of barcode recognition and decoding.

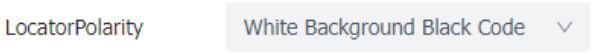
Procedure:

1. Select code type. User can select multiple code types.

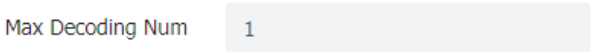


	Upca code is a special code type of the ean13 code, which means that the upca code is a subset of ean13. Therefore, if the ean13 is selected, the upca code can also be detected and decoded.

2. Set Locator Polarity. The options include White Background Black Code and Black Background and White Code.

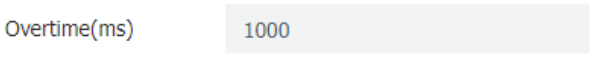


3. Set the Max Decoding Num.

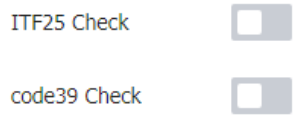


	The more the set maximum number of the decoding, the longer the algorithm processing; therefore, we recommend you configure this parameter according to the actual demands.

4. Set Overtime. This parameter is for defining the maximum decoding if the decoding time exceeds the timeout value, the decoding of the current code image will end early.

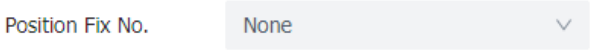


5. Enable the ITF25 Check and Code39 Check.



	• When selecting the code39 and ITF25 and disabling the code39 Check and ITF25 Check, the code verification will not be performed, and code39 and ITF25 with or without the verification code can be recognized. • After enabling the ITF25 Check and Code39 Check, the operator will verify these two code types, and after the codes pass the verification, the operator will decode the codes.

6. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.

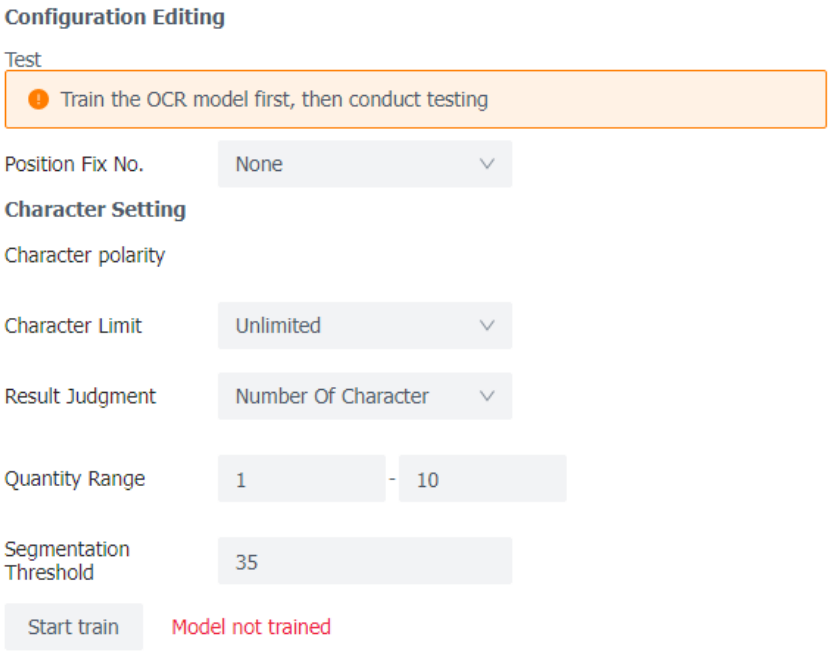


OCR (Optical Character Recognition)

The OCR operator is for extracting the characters in the detection area.

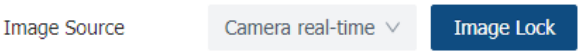
Procedure:

1. Click Start Train to enter the Train Config interface.

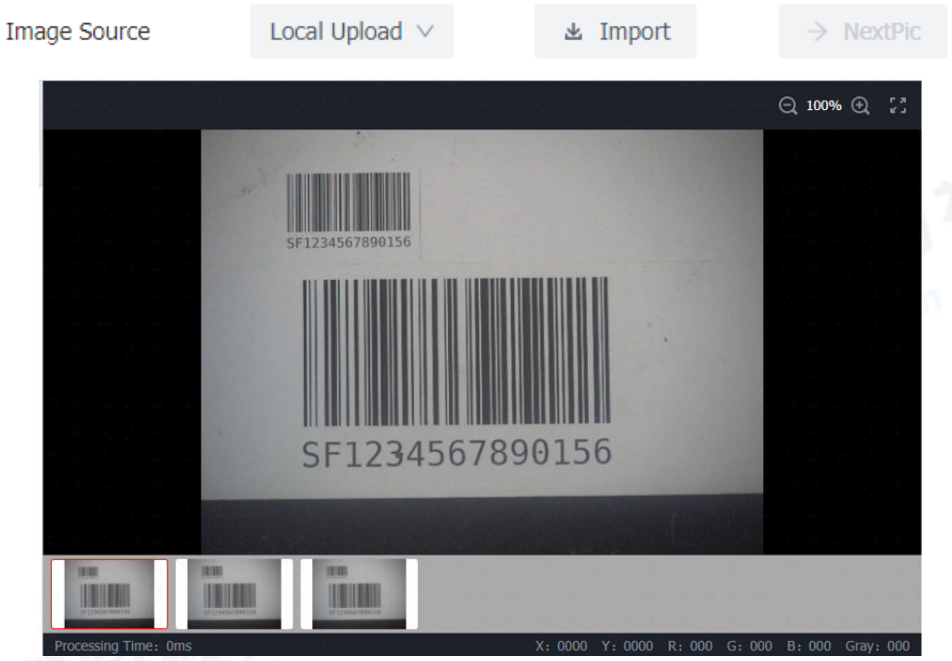


2.Set Image Source. The options include Camera Real-time and Local Upload.

- When selecting the Camera Real-time, the samples are the images acquired by sensor in real time. Click Image Lock to acquire an image in real time.

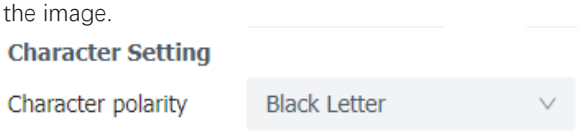


- When selecting the Local Upload, the samples are the images uploaded from the computer by user. User can select and upload multiple images. After a image is tagged, click Next to continue labeling.



	User can only import the image whose resolution is consistent with the sensor's.

3. Set the Character Polarity. The options include Black Letter and White Letter. The set option of the Character Polarity must be consistent with the character color in the image.



4. Draw ROI. Move the ROI box on the characters which need to be recognized.

After adjusting the ROI box, click OK.

i	The characters covered by the ROI box will be recognized from left to right. Therefore, if the orientation of the ROI box is not matching with the characters in the image, the recognition results will be wrong.

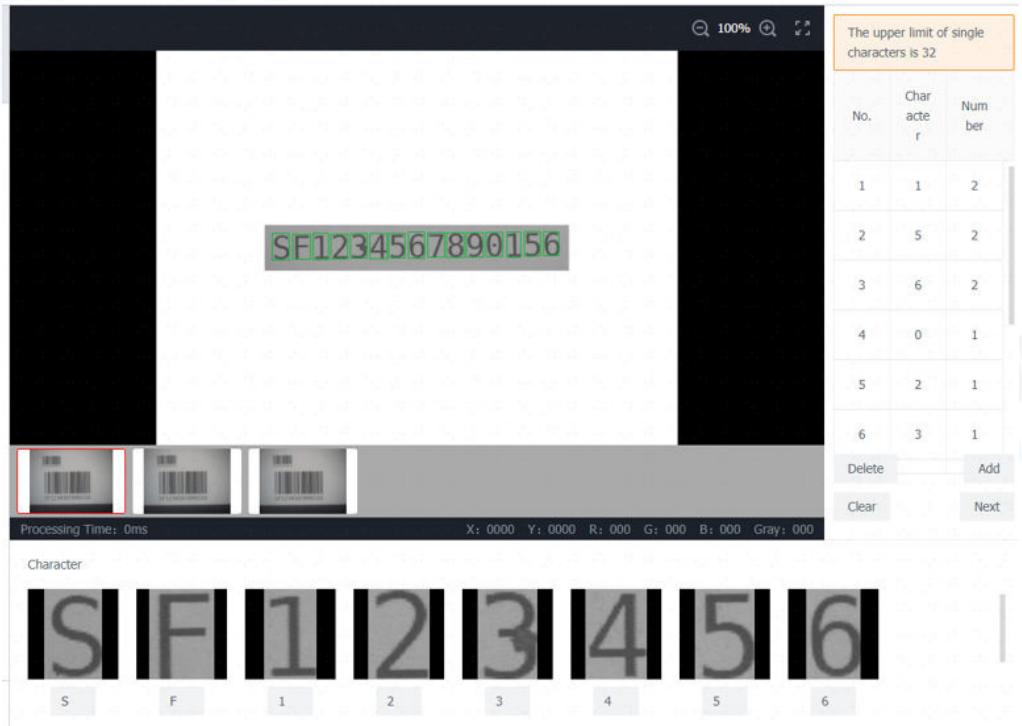
5. Add tags. The operator will automatically add the tags according to the recognized characters. If there are wrong tags, user can manually modify the tags.

Add: To add the ROI box on the unrecognized or mis-recognized characters to re-recognize the characters;

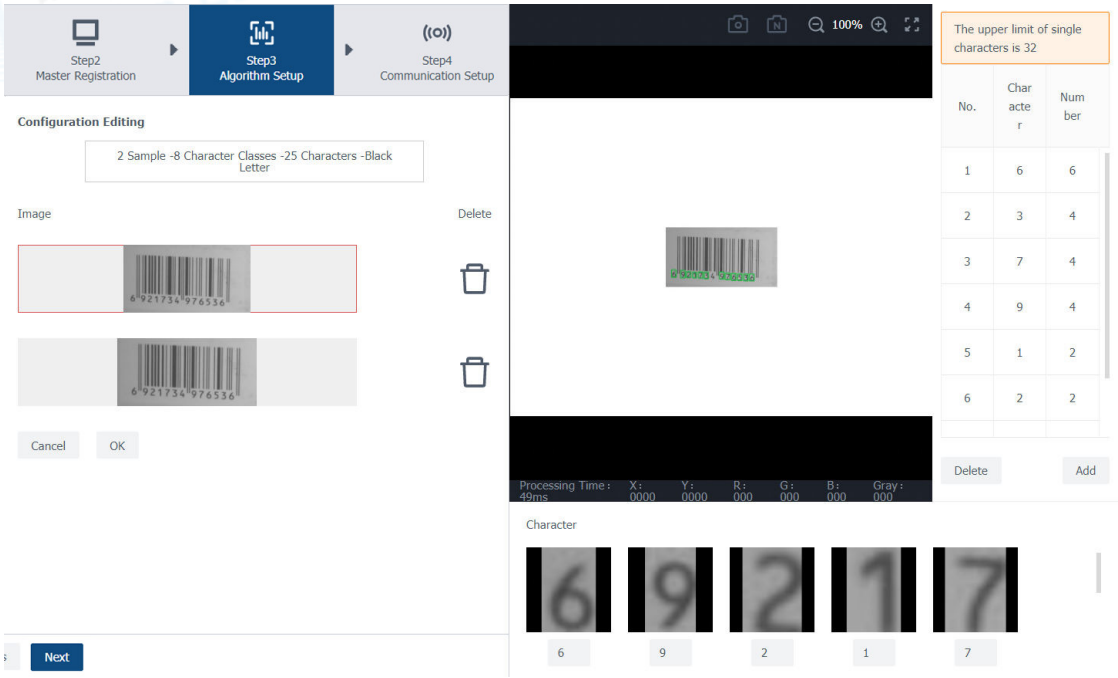
Delete: To delete the selected mis-recognized characters in character set;

Clear: To clear all the recognized characters in the character set.

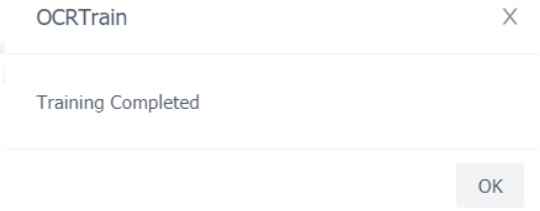
Next: To perform the next round of tags adding.



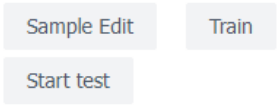
6. For the added labels, user can edit them again. Click OK to save the edits. Click Cancel to abandon all the edits.



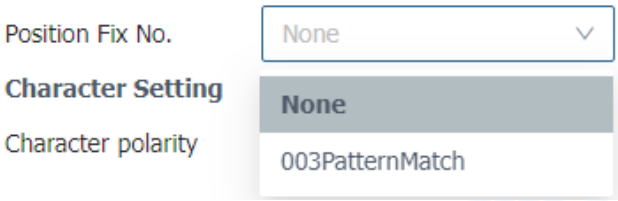
7. Click Train. After the training is completed, the prompt box will pop up. Click OK.



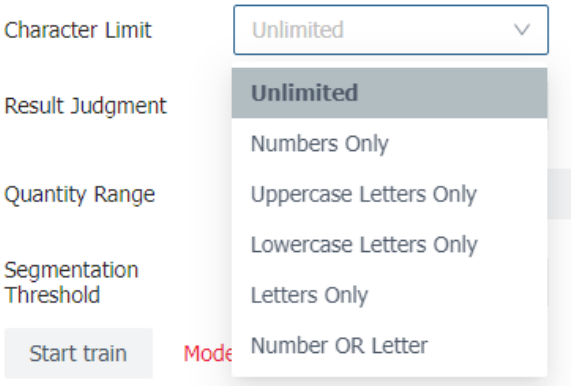
8. Click Start Test to enter the Training interface.



9. Set Position Fix No. If user needs the ROI box moves with the object, the Pattern Match operator should be added. The details of Pattern Match, please refer to Location Tools. Otherwise, select None.



10.Set Character Limit. The options include Unlimited, Numbers Only, Uppercase Letter Only, Lowercase Letter Only, Letters Only, Number OR Letter. Select the limit type according to the actual demands. The characters which are not belong to the set type will not be outputted.

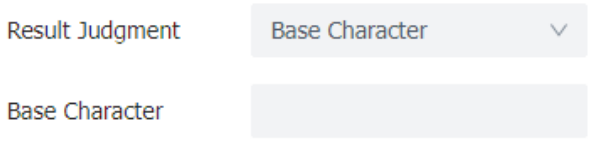


11.Set Result Judgment. The options of the Result Judgment include Number of Character,Lowest Score, and Base Character.

- Set the Quantity Range. When the number of the recognized characters is within the set range, the detection result will be OK; otherwise, it is NG.

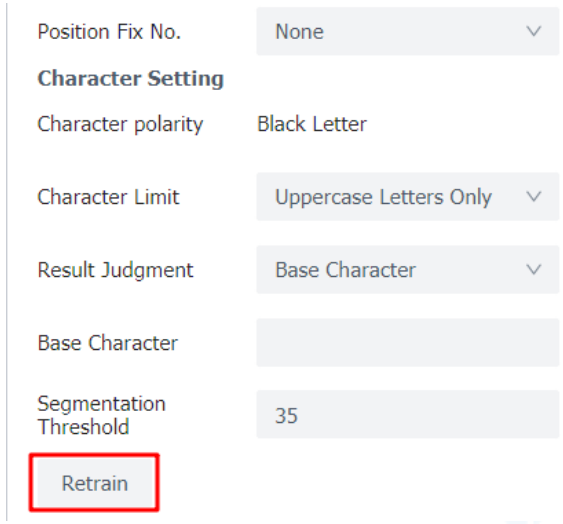
- Set the score threshold in the Score after setting the Result Judgment to the Lowest Score. When the recognition score is higher than the threshold, the detection result will be OK; otherwise, it is NG.

- Enter the characters in the Base Character after setting the Result Judgment to the Base Character. When the recognized characters are consistent with the enter characters in the Base Character, the detection result will be OK; otherwise, it is NG.



12.Set Segmentation Threshold. When the score of the recognized characters which are covered by the ROI box is less than the set threshold, the recognized characters will be filtered out. User can increase the segmentation threshold to reduce the possibility of the mis-recognition. But the high threshold may cause that the exist characters are filtered out mistakenly. Therefore, we recommend you set the threshold according to the actual conditions.

13.Click Retrain when the recognition result is not satisfying.



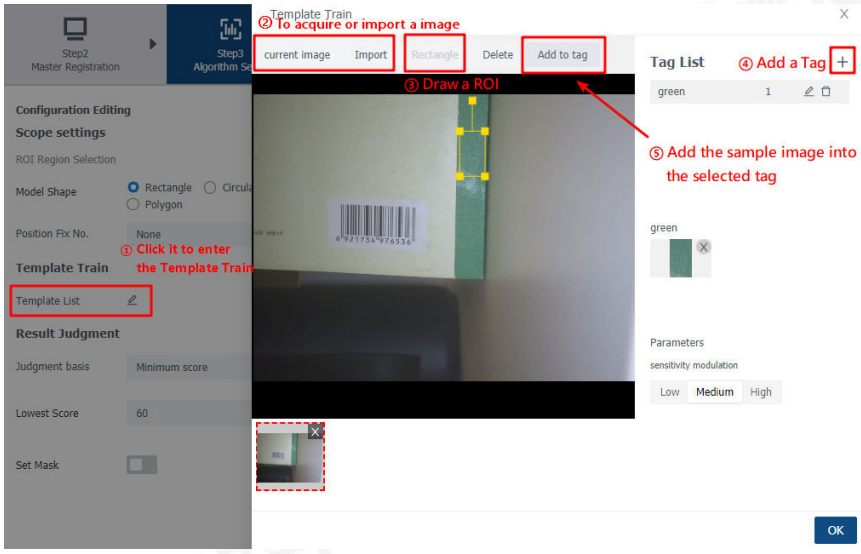
	The textures in the background may be mis-identified as the characters. Therefore, please ensure that the background of the image is simple and clear.

Color Recognition

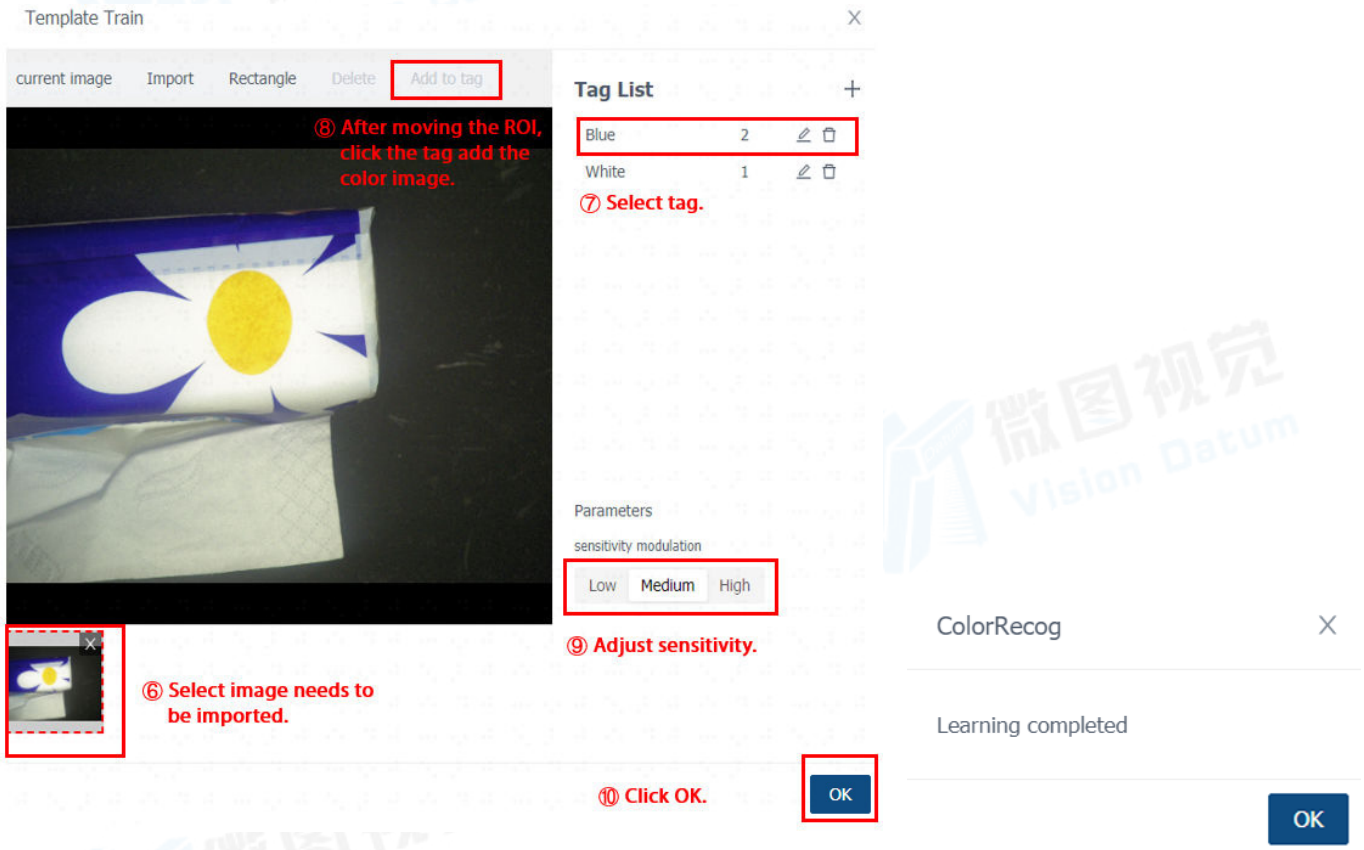
The Color Recognition operator is for matching and recognizing the colors. The operator extracts the colors from the ROI area and trains the color template. The color recognition is performed by calculating the similarity between the colors of objects and color template. This operator is only available for the color sensor.

Procedure:

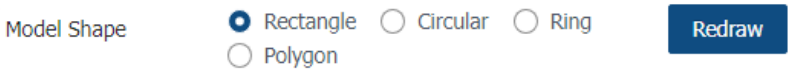
1. Train the template of the color recognition. Click the icon on the right side of the Template List to enter the Template Train interface. User can use the current image or import image to train the template. First, click the + to add the color tag into the Tag List which is on the right side of the Template Train interface. Then, click Rectangle to draw the ROI box.



Move the ROI box and adjust its size. Then, click the Add to Tag to add image selected by the ROI into the specified color tag. User can modify and delete the images stored in the color tag and tag name. The sensitivity levels of the color recognition include Low, Medium, and High. After selecting the level, click OK to start the color template training.

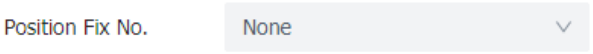


2. Draw the ROI. It supports the rectangle, circular, ring, and polygon. User can move the ROI or adjust its size.

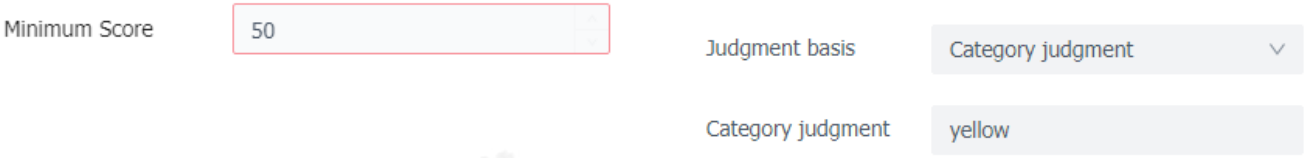


3. If there are any non-detection areas needs to be shielded in the ROI area, user can enable the Set Mask. Select the shape to define the shielding area on the image. The shapes include rectangle and polygon. User can add and delete multiple shapes.

4. Set Position Fix No. Select the Pattern Match operator that needs to be bound. When it is running, the operator will correct the location of the ROI box according to the offset recognized by the bound pattern match operator.



5. Set Judgment Basis. The options include the Minimum Score and Category. After selecting the Minimum Score, if the recognition score is higher than the set minimum score, the operator status will be OK; otherwise, it is NG. After selecting the Category, when the recognition tag on the ROI box is consistent with the tag entered in the Category Judgment, the operator status will be OK; otherwise, it is NG.



Logic Tools

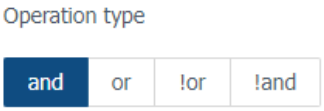
The operators in the Logic Tools include Logic Check, Condition Check, Mathematical, StringComparison. These operators are mainly working based on the logic operation.

Logic Check

During the running of the operators, user can use the Logic Check operator to judge the running statuses of the operators, and execute the corresponding operations according to the judgment results.

Procedure:

1. Set Operation Type.



And: The operation result is True when all the conditions are True. The operator status is OK when the operation is True; otherwise, it is NG.

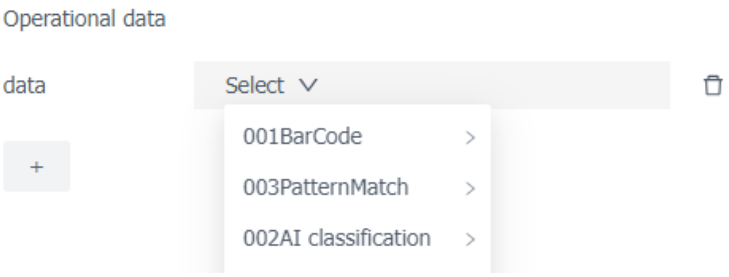
Or: The operation result is True when at least one condition is True. The operator status is OK when the operation result is True; otherwise, it is NG.

!Or: The operation result is True when all conditions are False. The operator status is OK when the operation result is True; otherwise, it is NG.

!And: The operation result is True when at least one condition is False. The operator status is OK when the operation result is True; otherwise, it is NG.

2. Set Operational Data.

Click + to add the operational data.



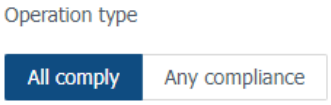
	The Logic Check operator is for performing the logic operation to the running status of the operator. User can add multiple running statuses of operators in the Operational Data. When the operator status is 1, it refers to the OK; when the operator status is 0, it refers to the NG.

Condition Check

The Condition Check operator is for judging whether the output results of the single operator or multiple operators meets the requirements of the set conditions.

Procedure:

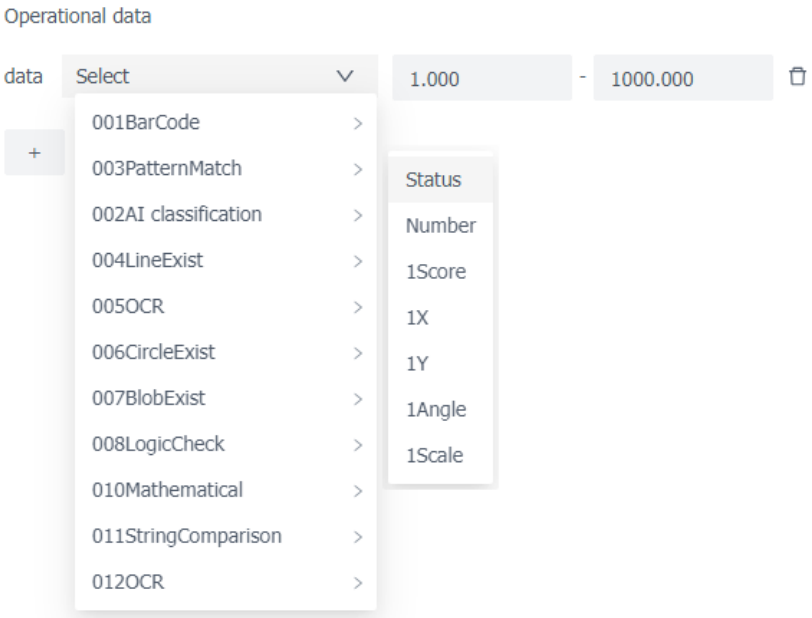
1. Set Operation Type.



- All Comply: When the output results of all operators meet the set conditions, the running status of the project is OK; otherwise, it is NG.
- Any Compliance: When the output result of any operator meets the set condition, the running status of the project is OK; otherwise, it is NG.

2. Set Operational Data.

Click + to add the data, click Select in the added data to select the operator and its information type, and set the judgment condition.Range: 1.000~1000.000



	The Condition Check operator is for judging the output result of the operator. When setting the operational data, user can add multiple information types of one operator. When the operator status is 1, it refers to the OK; When the operator status is 0, it refers to the NG.

Mathematical

The Mathematical operator can use the output data of the operators as the variables. Also, user can enter the expressions to perform the mathematical operations. The operation results can be sent by communication.

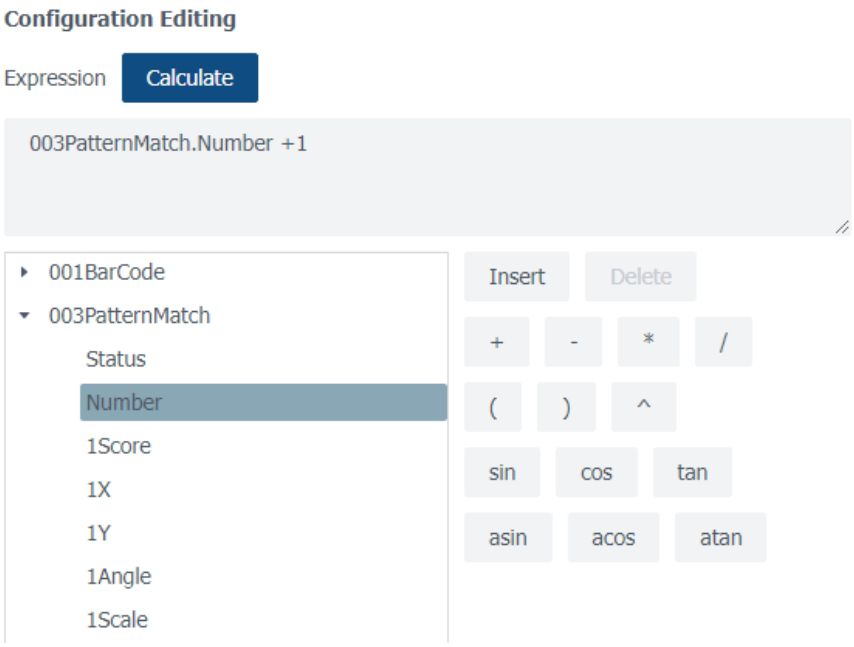
Procedure:

1.Write the arithmetic expressions.

① Select the output item of operator that needs to be operated.

② Click Insert to insert the expression of the output item of the selected operator.

	User can edit or delete the entered mathematic expressions in the input box. Select the expression completely in the input box, and click Delete to delete it.



③ Select the proper sign of the operation.

④ Click Calculate to perform the operation.

	There are two error types of the mathematical operation. ● Illegal Mathematical Operation: It includes but not limited to the divisor is 0, the input field of inverse trigonometric function is not in [-1,1]. The operation will work after clicking the Calculate, but the operator status is NG. ● Expression Does Not Meet the Standards: It includes but not limited to the operation sign exists at the beginning or end of the expression, unrecognized signs, and unpaired parentheses. At this time, the operation will not work.

2. Click Calculate to start the arithmetic. It adopts the the float type variables by default, and the result can be output in the Communication Setup.

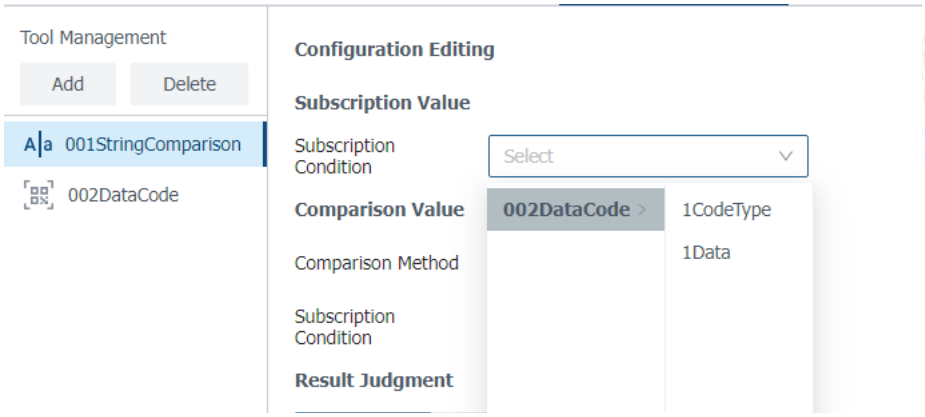
	Since the arithmetic adopts the float type variables, the number of significant digits in the output result is 6. Furthermore, for the integers whose absolute value exceeds 16777215, the operator status is NG because the float type variables cannot accurately illustrate it.

String Comparison

The String Comparison operator is for comparing the subscription value and comparison value. If the comparison result meets the judgment condition, it is OK; otherwise, it is NG.

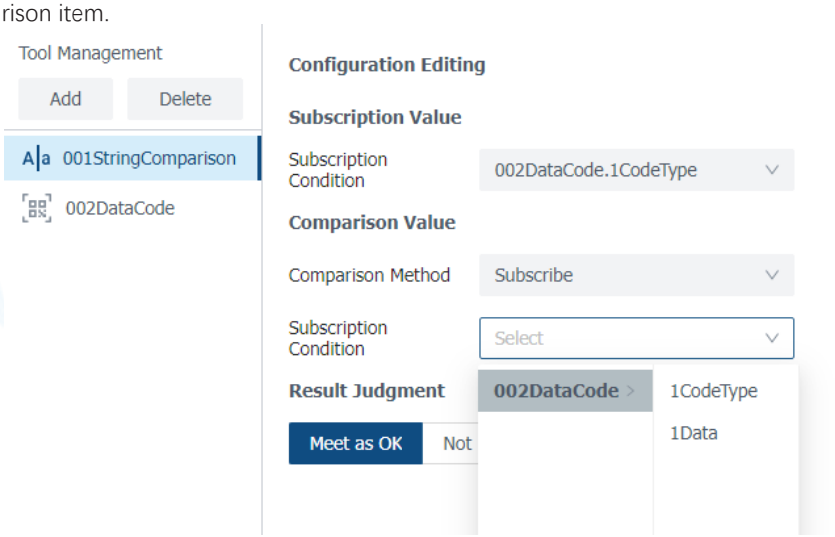
Procedure:

1. Select the output item of the operator by setting the subscription condition.

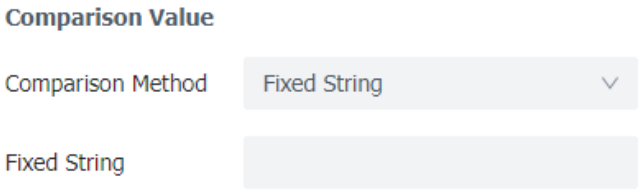


2.Set Comparison Method and Subscription Condition. The options include Subscribe, Fixed String, and Regular Expression.

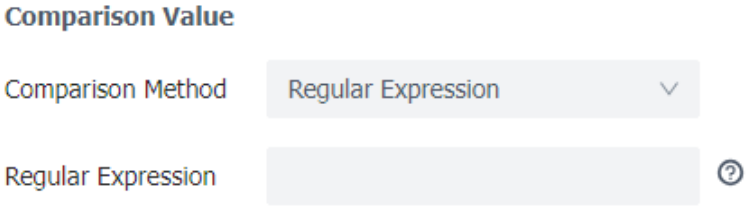
- After setting the Comparison Method to the Subscribe, select the output item of the other operators in the Subscription Condition as the comparison item.



- After setting the Comparison Method to the Fixed String, the entered strings will be as the comparison value.



- When setting the Comparison Method to the Regular Expression, the entered expression in the Regular Expression will be as the comparison rule.



i	The regular expression does not support the \u keywords, which refers to the Unicode-encoded characters.

3.Select the condition of the result judgment standard in the Result Judgment. The options include Meet as OK and Not Meet as OK.

- After selecting the Meet as OK, the judgment result is OK when the subscription value equals to the comparison value.
- After selecting the Not Meet as OK, the judgment result is OK when the subscription value does not equal to the comparison value.

FAQ (Frequently Asked Question)

Client Cannot Find Sesnsor

Possible Reasons:

1. Sensor are not started normally, and the power supply cannot meet the requirements.
2. Abnormal network cable connection.
3. The sensor and the client are not under the same network segment.
4. Firewall forbidden the network access.
5. IP Conflict: The IP address of sensor conflicts with the PC's or other devices.

Solutions:

1. Power Supply: Make sure that the power supply and cable are suitable.
2. Network Connection: Check the indicator of the sensor, and make sure the network connection is normal. Also, make sure the device and client are on the same network segment.
3. Disable the firewall, or add the client software into the allow-list.

Disconnection

Possible Reasons:

1. Hardware problems, such as poor contact of network card and network cable.
2. Unmatched configurations of network adapter and sensor.

Solutions:

1. Perform cross verification for hardware, if failure happens, replace the corresponding hardware.
2. Check the NIC configuration.

Algorithm Processing Does Not Meet Expectations

Possible Reasons:

1. Image FOV or illumination does not meet the requirements.
2. Improper parameter configurations.

Solutions:

1. Check the parameters of sensor FoV and the illumination. Review the sensor parameters, such astrigger mode, trigger delay, exposure and gain, illumination, etc.
2. Check the parameters of the algorithm, especially the ROI box, polarity, filtering conditions, etc.

External Trigger Cannot be Enabled

Possible Reasons:

1. Incorrect cable connection of external trigger.
2. The trigger mode is not set to external trigger.

Solutions:

Select the required trigger mode and make sure that the external cable connection is correct.

Unable to Login the Web Client

Possible Reasons:

1. The IP address of the sensor was not defined which means it is the private IP address.
2. IP address of the sensor was changed.

Solutions:

Use ILOGIX to find sensor and check its IP address, and then use the correct IP address to log in the web client.

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