Auoser Headscan Flat Guide Belt Integrated Visual Positioning Printing System

2026-3-7 edition

"Headscan"

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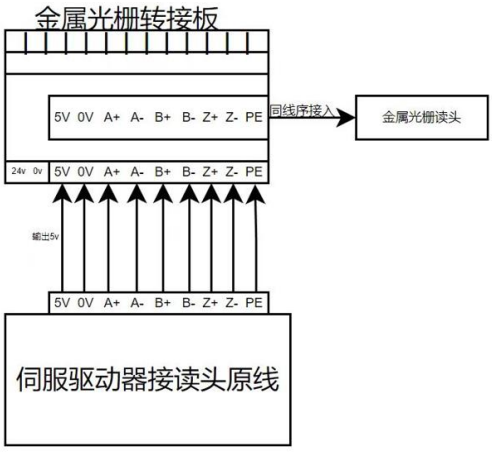
Ⅰ.Computer Configuration Requirements

1. Desktop computer with gigabit network card, Windows 10 Professional, Intel i7 or above CPU, 128GB RAM, 500GB+ hard disk.
2. Camera requires a **2.5G network card**.
3. One **Cat-7 Ethernet cable**, 6–10 meters (depending on machine size).

Ⅱ. Wiring

Metal Grating Wiring Diagram



Network Connection

Connect the camera Ethernet port to the computer’s network port using a Cat-7 cable.

The camera **must use a 2.5G network port** for direct connection to the host.

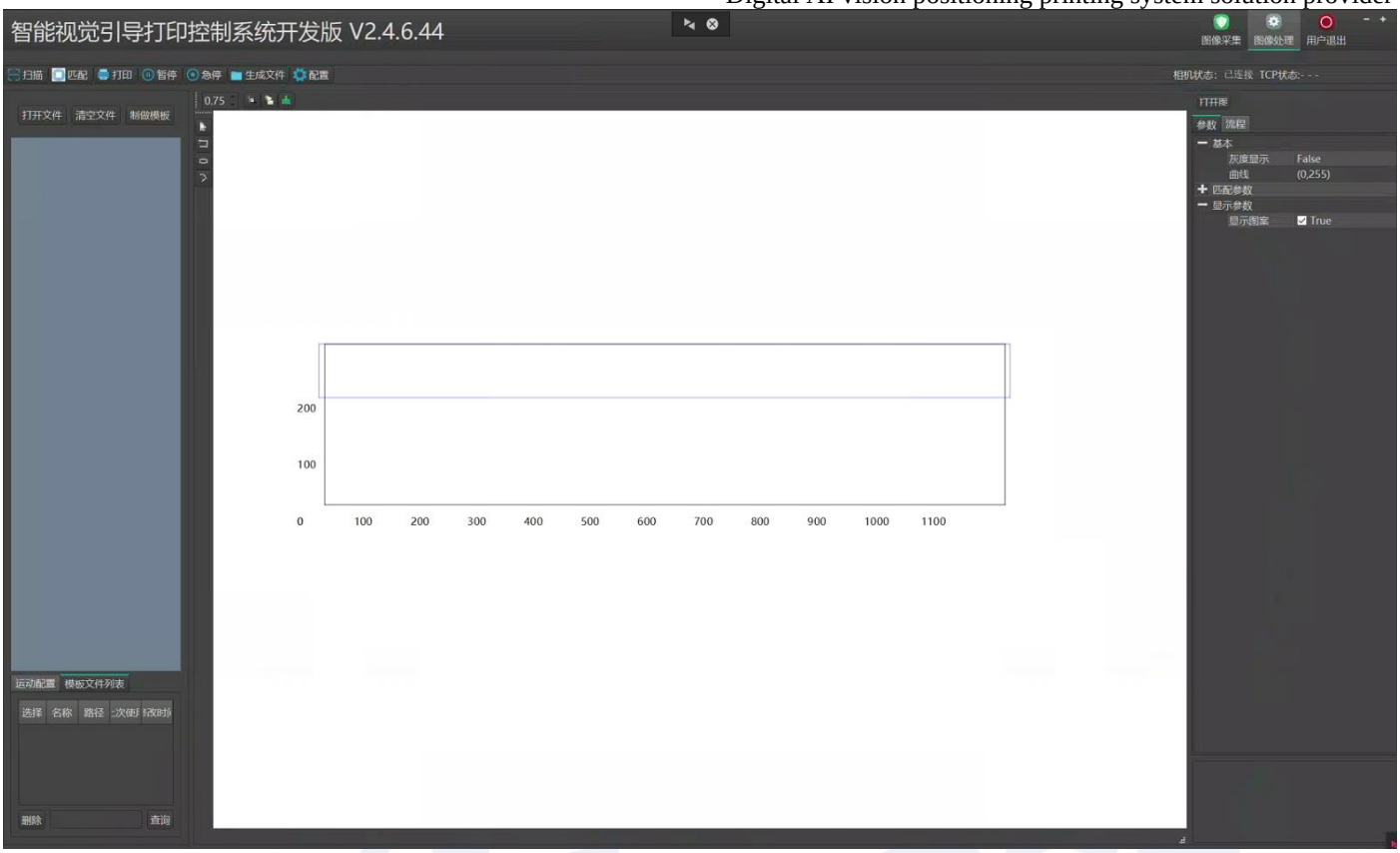
Camera IP Settings

- Fixed camera IP: **192.168.3.101**
- Set the computer’s network port IP to the same subnet as the camera.
- Disable Windows real-time virus & threat protection.
- Turn off firewall for domain, private, and public networks.

Ⅲ. Integrated Software Interface Description

3.1 Interface Introduction

3.1.1 Full Interfac



3.1.2 Function Introduction

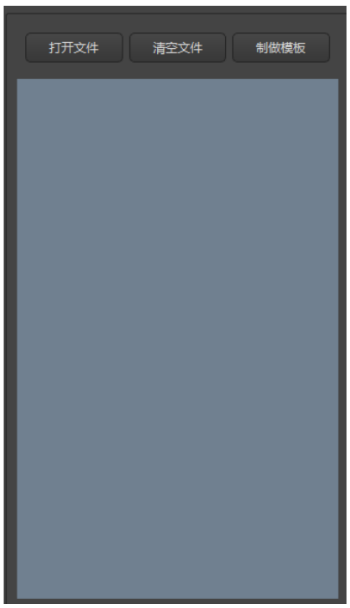
1. **Scan**: Start camera image capture
2. **Match**: Match template with captured image
3. **Print**: Generate file and start machine printing & scanning
4. **Pause**: Pause during movement
5. **Emergency Stop**: Stop all running actions immediately
6. **Generate File**: Create vision interface files
7. **Config**: Parameter settings for vision, camera, and printing device

Module Functions

- **Image Acquisition**: Camera interface
- **Image Processing**: Vision interface
- **User Logout**: Exit and close the software

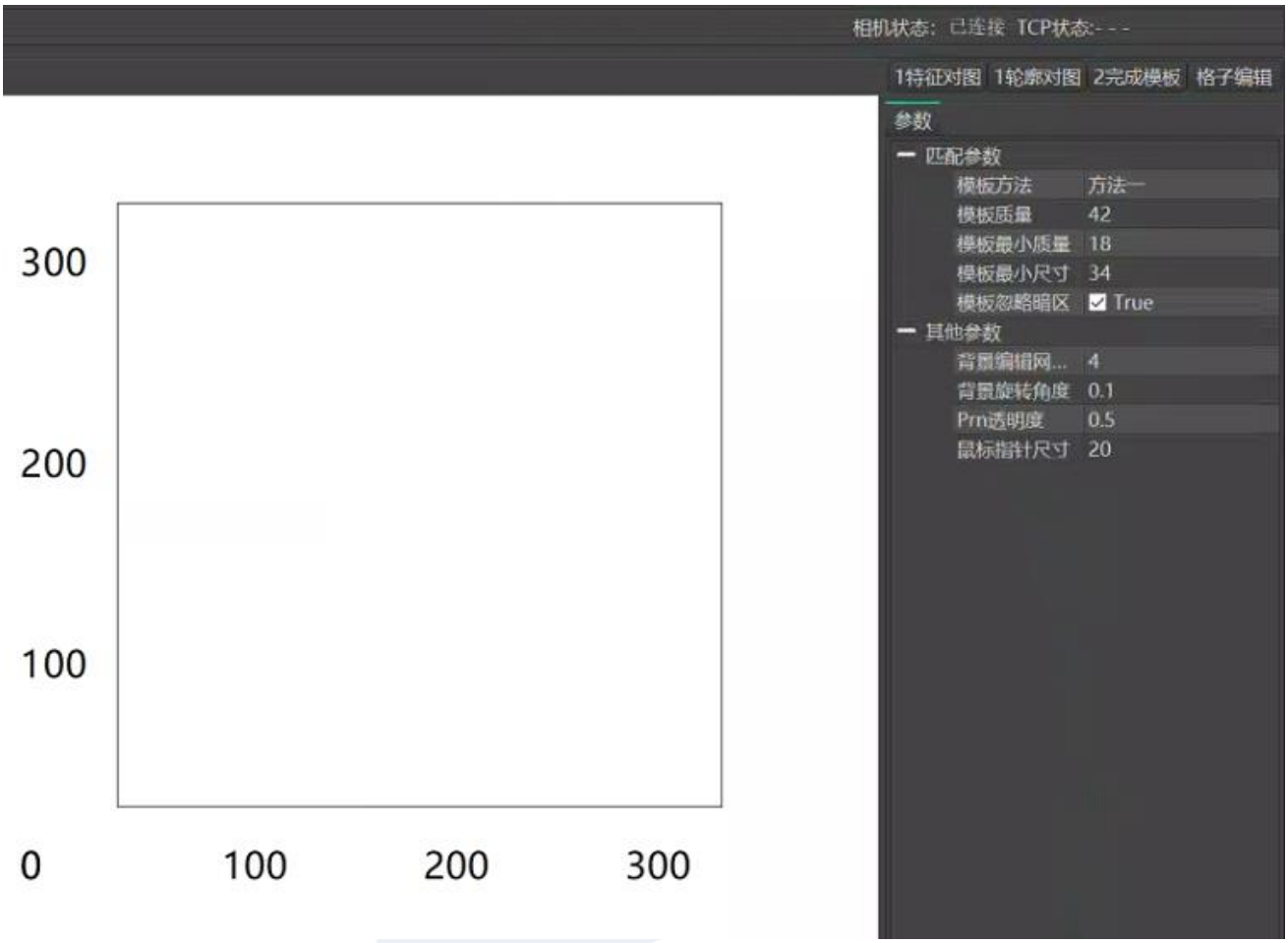
Basic Parameters

- **Grayscale Display:** When enabled, scanned images in C:\LTNETCLIENT will have 9 channels.
- **Curve:** Enhance contour clarity for low-feature materials**.**
- **Matching Similarity:** Similarity threshold between template and material.
- **Matching Speed:** Speed of template matching.
- **Show Pattern:** Display image pattern instead of feature lines after matching.



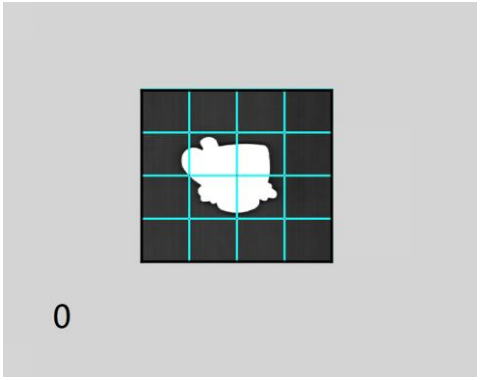
File & Template Tools

- **Open File:** Open PRN files to be printed.
- **Clear File:** Clear files in the list area.
- **Make Template:** Enter template creation interface.



Template Creation Parameters

- **Feature Alignment:** Auto-align PRN features with material features.
- **Contour Alignment:** Align PRN contour with material contour.
- **Finish Template:** Save completed template.
- **Grid Edit:** Generate grid positioning.



Matching Parameters

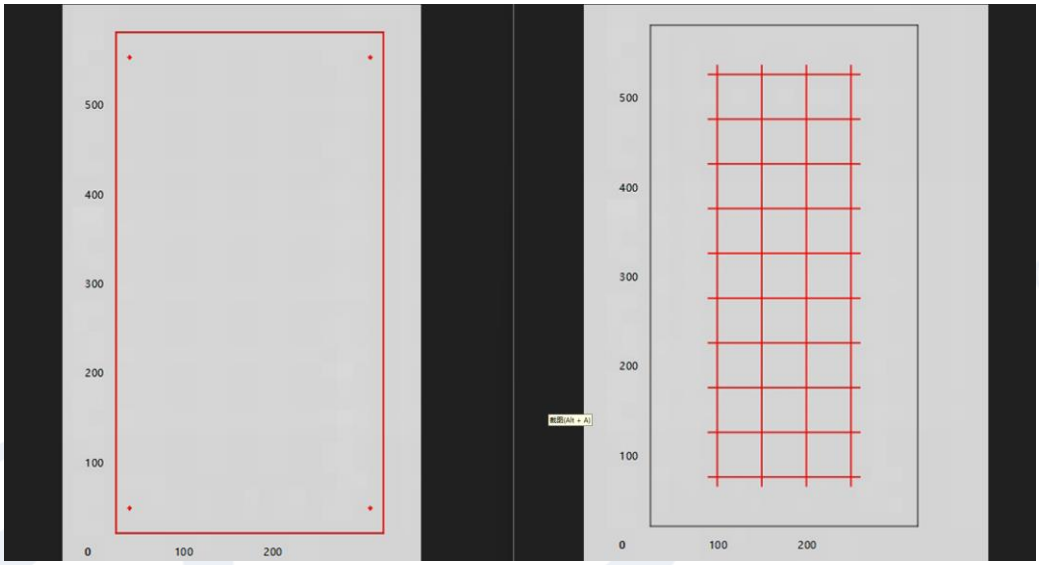
- **Template Method:** Method 1 / Method 2
- **Template Quality / Min Quality:** Upper/lower contrast thresholds
- **Template Min Size:** Minimum detectable object size
- **Ignore Dark Areas:** Improve accuracy by ignoring dark regions

Other Parameters

- **Background Edit Grid Size:** Grid size for positioning
- **Background Rotation Angle:** Adjust background angle
- **PRN Transparency:** Transparency of PRN image

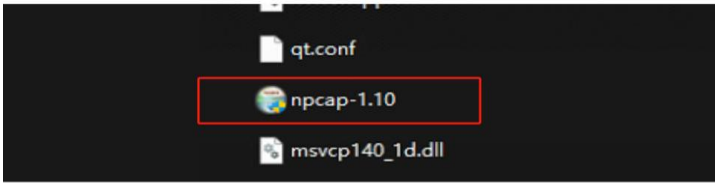
Calibration Parameters

- **Grid Width:** Machine format width
- **Grid Height:** Machine format height
- **Calibration X:** Adjust positioning error
- **Auto Format Adjust:** Auto adjust according to grid width
- **Grid File:** 0 = cross grid; 1 = normal grid
- **Grid Size X/Y:** Size of single grid cell
- **Grid Margin X/Y:** Margin from grid to format edge

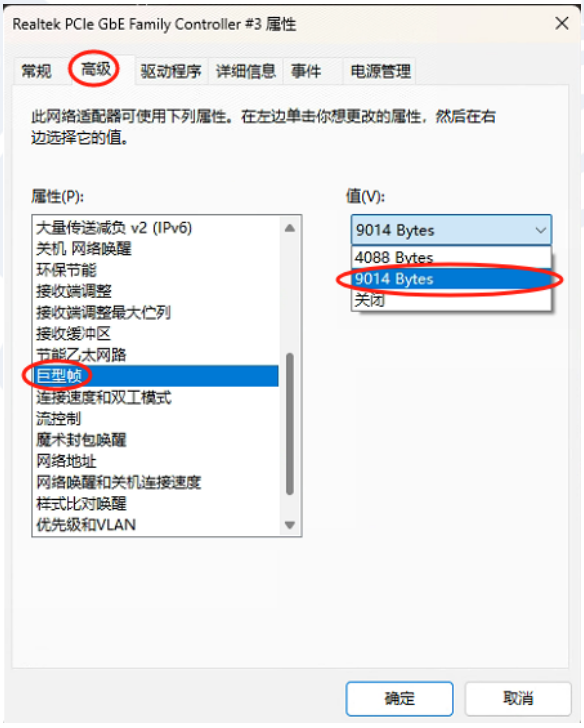


IV. Software Installation & Commissioning

4.1 Camera Driver & Network Setup



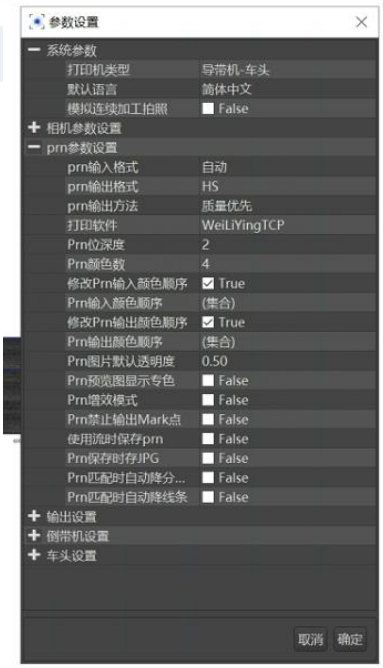
- **Install camera driver and NPCAP 1.10.**
- **Set camera IP: 192.168.3.101 (2.5G port required).**
- **Set network adapter Jumbo Frame to 16128 Byte**



4.2 Vision Software Settings

- **Printer Type:** Conveyor Belt Printer Head
- **Default Language:** Chinese and English
- **Continuous Processing Photography:** Simulated Continuous Processing Photography
- **PRN Input Format:** Auto

- **PRN Output Method:** Quality Priority
- **PRN Output Format/Method:** According to Printing Software Selection
- **PRN Depth:** Default 2
- **PRN Color Count:** According to the Ink Color Settings of the Printer
- **Modify PRN Input/Output Color Order:** Modify Input and Output Color Order (Disabled by Default)
- **PRN Input and Output Color Order:** Adjust CMYK Color Order for Input and Output
- **PRN Default Image Transparency:** Adjust the Transparency of Opened Images
- **PRN Preview Display Spot Color:** Display Spot Colors Other Than CMYK When Enabled
- **PRN Enhancement Mode/Disable Output Mark Points:** Exclusive for Enhancement Mode
- **Save JPG When Saving PRN:** Save the Base Image Along with the PRN File
- **Auto Reduce Resolution/Lines During PRN Matching:** Improve Smoothness After Matching Large Imported Images When Enabled
- **Save PRN When Using Stream:** Save PRN for Stream Files
- **Save JPG When Saving PRN:** Save the Background Image Along with the File
- **Auto Reduce Resolution During PRN Matching/Auto Reduce Line Resolution During Matching:** Improve Smoothness After Matching



- **Output Directory:** Default is C:/LTNETCLIENT

- **Output Background Image:** Folder for saving output images
- **Auto Adjust Output Image Size:** Area Print
- **Output Image X/Y Mirror:** Adjust image mirroring for output
- **Output X/Y DPI:** Printing precision of the printing software
- **Preview DPI:** Display resolution when opening PRN images

Just set the output directory, image file format, print while sharpening, and X/Y DPI of the image.

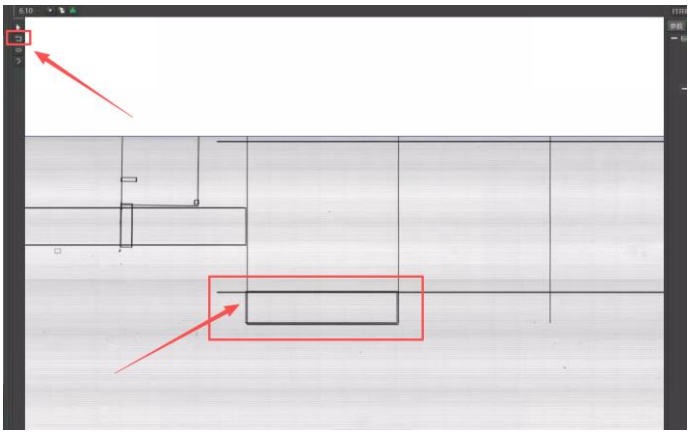
Conveyor Printer Settings

- **Printing Software:** Select printing software according to the board/card.
- **Order Completion Delay:** Delay time after order completion.
- **Distance from Camera to Nozzle:** The actual offset distance between printed position and intended position during printing (can be calibrated with reference images).

(Calibration method: Print a standard grid, scan it, draw a rectangular frame along the grid lines, then print and measure the error.

If printing occurs ahead of the standard position: increase the distance value by the error amount.

If printing occurs behind the standard position: decrease the distance value by the error amount.)



- **Single PASS Height:** The distance of each movement in the Y direction of the machine
- **Matching PASS Count:** The number of images scanned by the camera
- **Start Mode:** Select Production Mode

- **Scan Mode:** Default is Unidirectional
- **Scan Start Position:** Set according to the output position of the printer head
- **Raster Options:** The machine supports plastic raster and metal raster
- **Plastic Raster Model:** Accuracy of the plastic raster
- **Enable External Trigger:** Check to use external trigger acquisition
- **Scan X Start/End Position:** Set the travel start and end points according to the camera scanning range
- **Camera Length:** Automatically calculated
- **Scan X Speed:** Movement speed of the machine

4.3 Camera Configuration

- **Acquisition Speed**: Print axis speed (mm/s)
- **Trigger Timeout**: Timeout for untriggered capture
- **Trigger Mode**: Grating Trigger (for conveyor machines)
- **Imaging Mode**: Carriage Belt
- **Start Position**: Top Right
- **Scan Columns**: Capture length
- **Upper Crop**: Calculated by DPI, Pass height, and Pass count
- **600 DPI**

Camera Length for 600 DPI = 5196 pixels

Camera Length = (5196 − 180) − (Single PASS Height × Matching PASS Count / 25.4 × 600 Camera DPI)

- **300 DPI**

Camera Length for 300 DPI = 2592 pixels

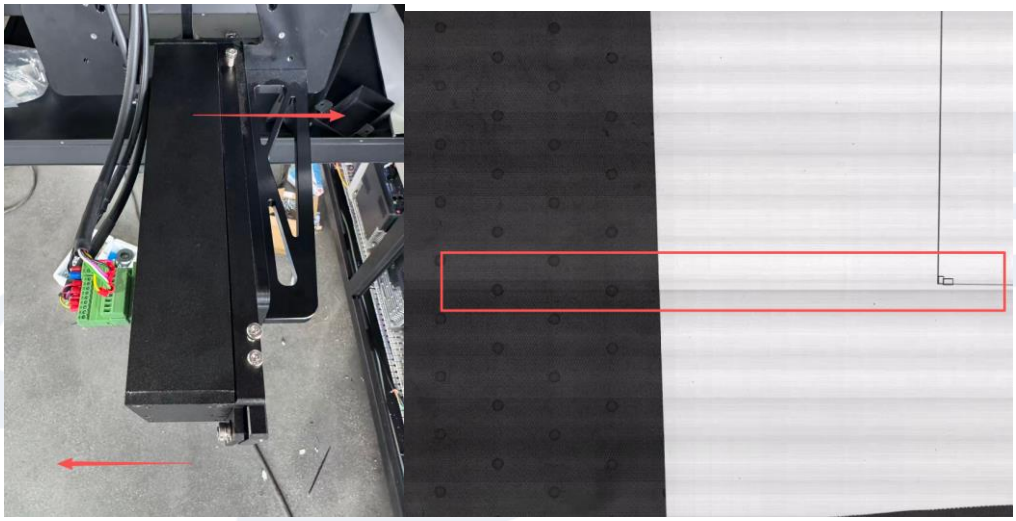
Camera Length = (2592 − 180) − (Single PASS Height × Matching PASS Count / 25.4 × 300 Camera DPI)

- **Lower Crop**: 180 pixels

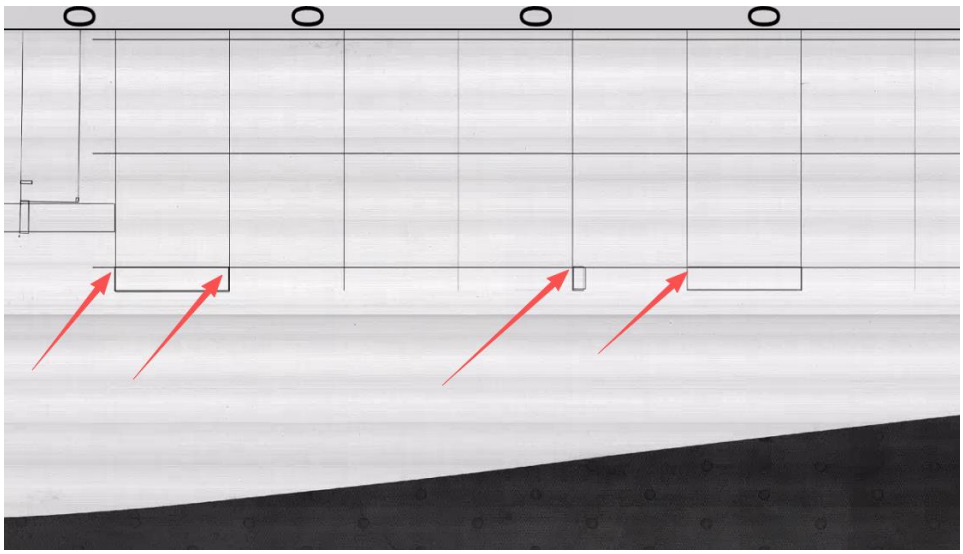
Ⅴ. Camera Adjustment & Operation

Step 1: Set the machine format size.You need to set the height; the width is automatically generated based on the Single PASS Height and Matching PASS Count.

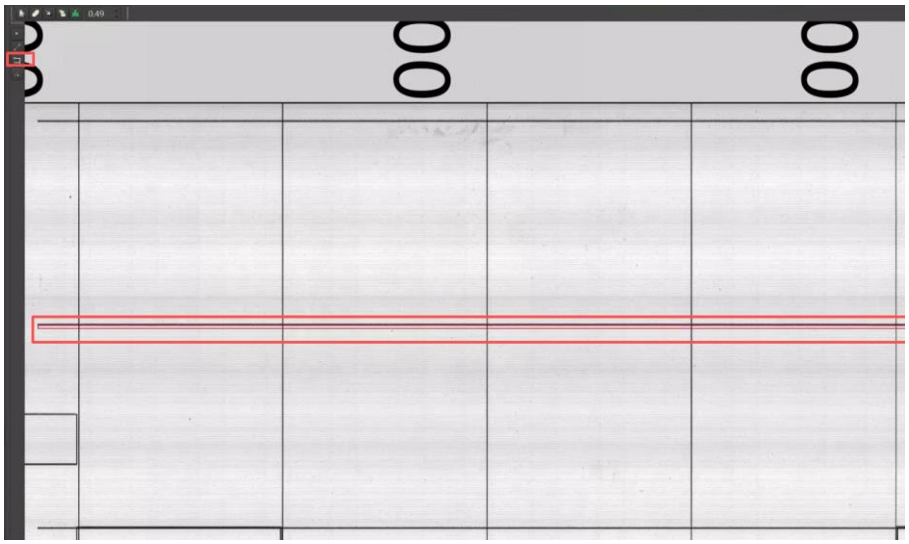
Step 2: Adjust the camera angle.Ensure the **stitching misalignment pixel between each PASS is within 1 pixel**, with no obvious stitching gaps or offsets.



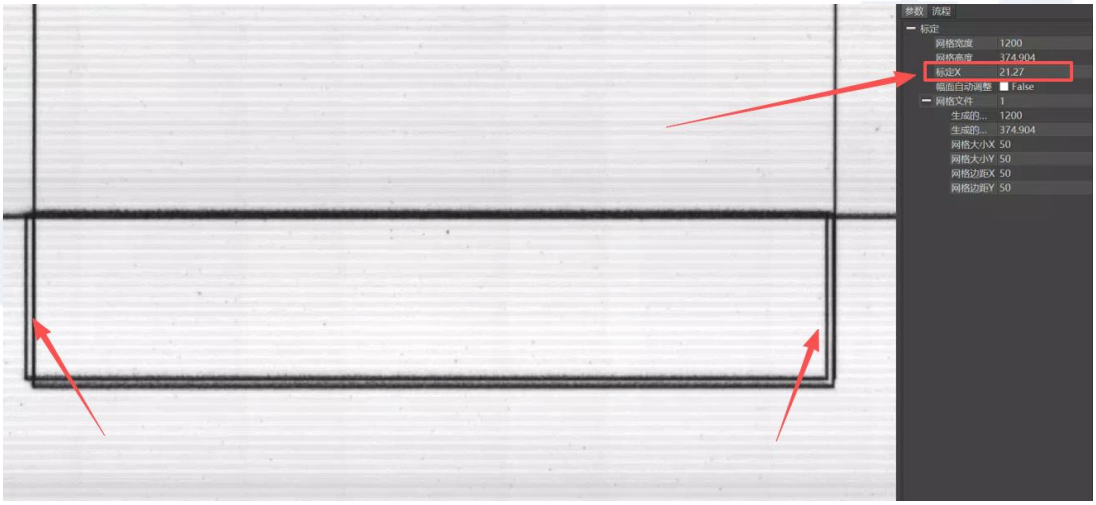
Step 3: Print the grid while the conveyor belt runs continuously.Verify that vertical lines can be printed overlapping, and check if the conveyor belt may deviate or run off course.



Step 4: Print horizontal lines and draw a rectangular frame in the camera software to check if there is any tilt in the X direction.

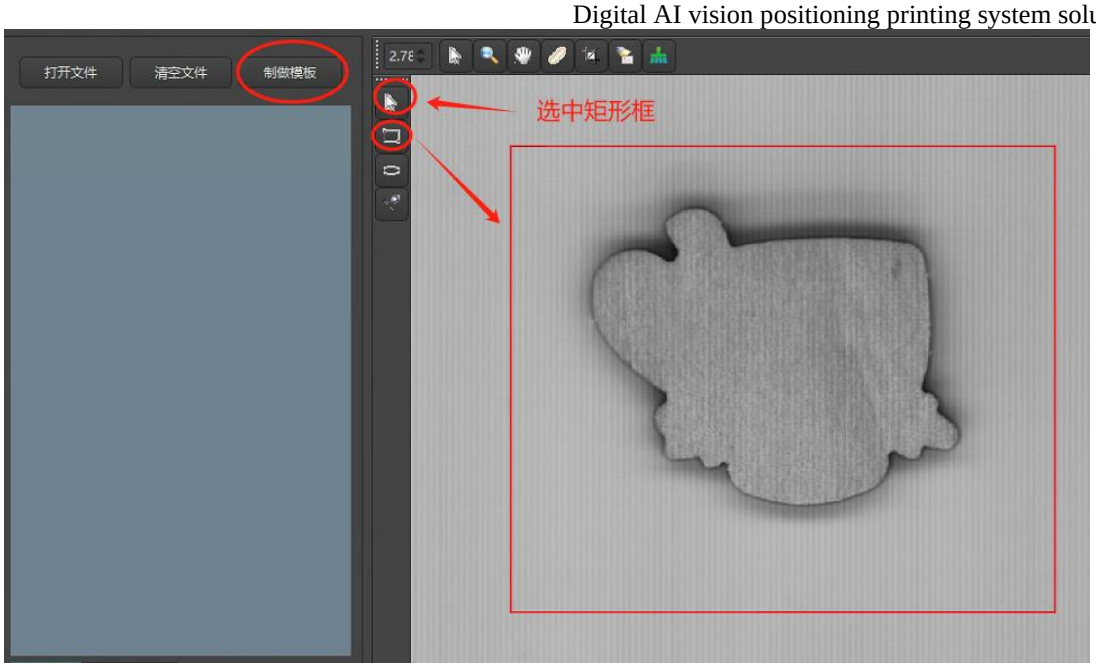


Step 5: Fine-tune the X direction to determine the accuracy.

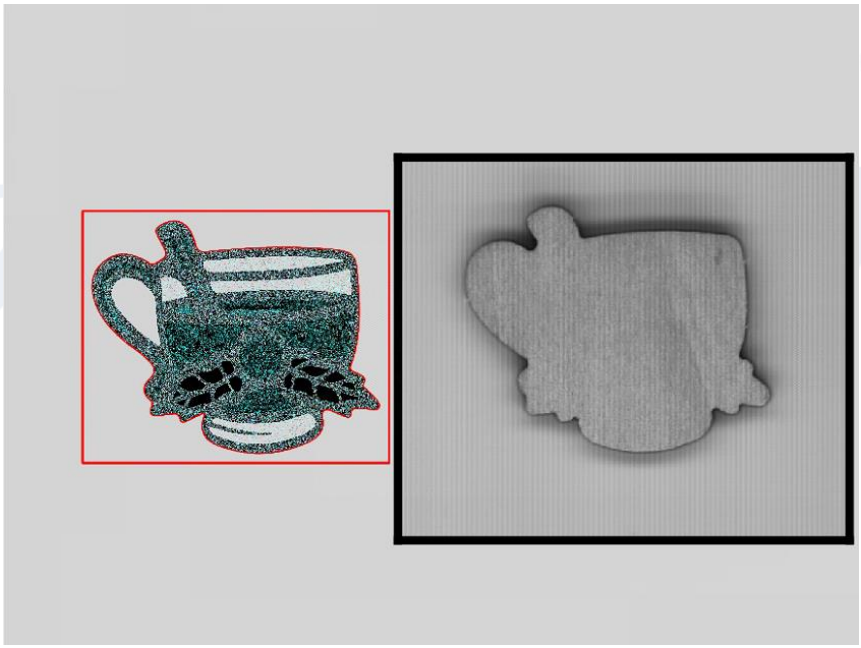


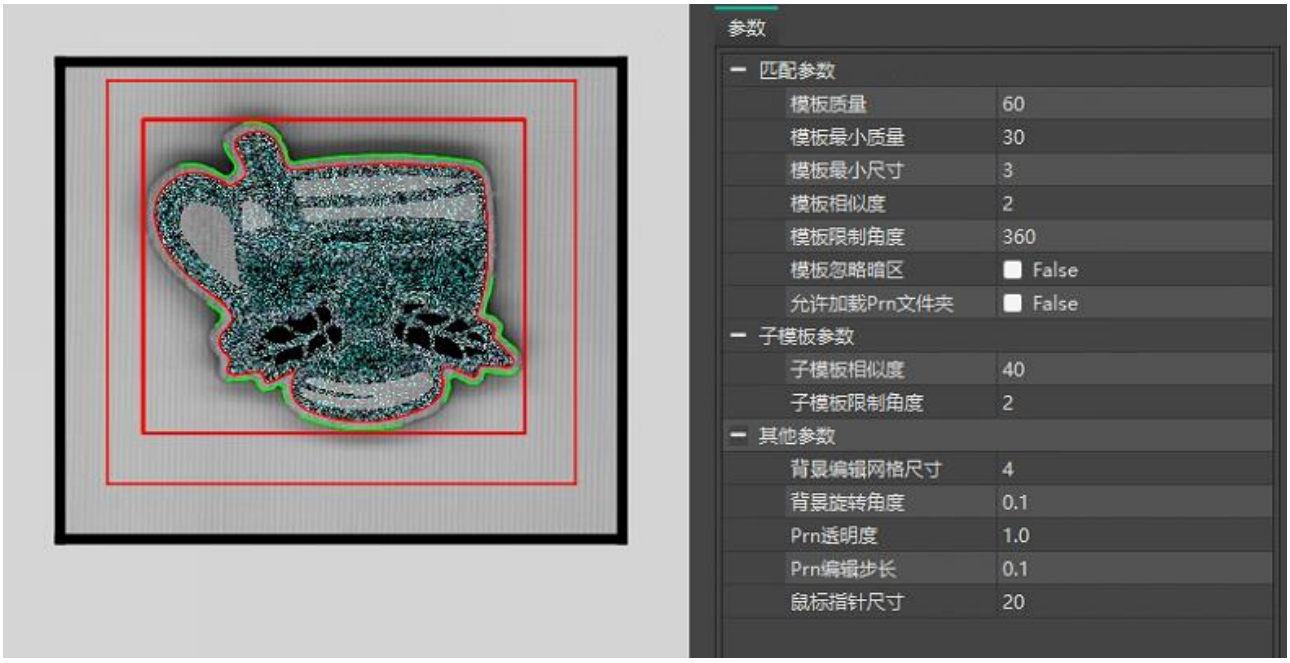
VI. Template Creation

First, draw a rectangular box to frame the scanned material, then select the rectangular box you have drawn.



Click on "Make Template" to jump to the template creation interface.





Draw another rectangular box to frame the image, and feature lines will appear.You can adjust the feature lines by modifying the template quality on the right side.Adjust the template limit angle according to the actual situation.

The matching effect is shown in the figure below: