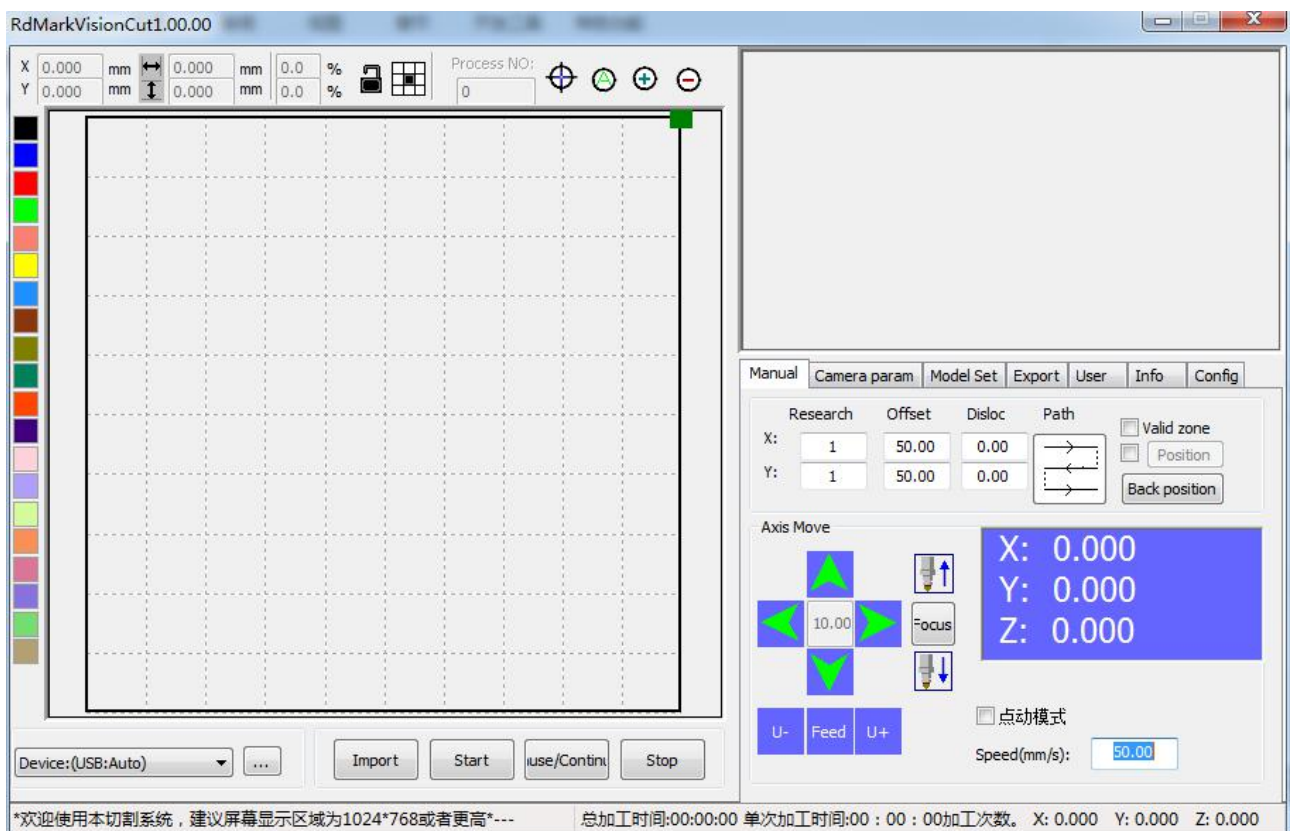


# RDVMaRkPlugCut Operation Manual V1.0

1. the related machine manufacturer parameter Settings, camera installation. The reference 6442 vision cutting instruction. (the software for the 6442 vision cutting auxiliary software)

## 2. quick start.



### 1 set up machine communication.

Usb port or Tcp/IP communications. Ensure successful communication.


### 2. Camera parameter

The camera adjustment on the hardware mainly through adjusting the aperture and focal length to adjust the quality of the image, but which can't adjust freely after the camera is installed. Usually it is to adjust the ambient light.

The camera parameters adjustment in the software:

**Contrast:** Mainly through adjust the background color and contrast material color difference to fine image quality.

**Gain:** the brightness of the image magnification.

**Exposure:** the longer the exposure, the higher of the image brightness. Click  can perform automatic expose operation.

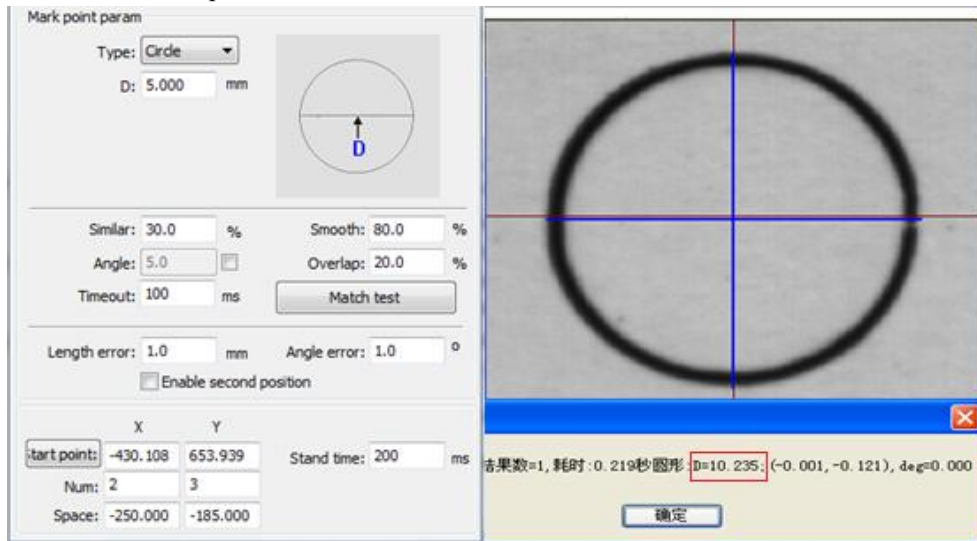
“Contrast“, "gain" are both to deal with image data. So when image is in dim, firstly adjust the light source (lamp on the camera ) and **【Exposure】** , if still cannot get the desired effect, to adjust brightness, contrast, gain.

**Camera Calibration:**

**【Speed】** : In the process of camera calibration, laser head moving speed or when cutting cross or dotting.

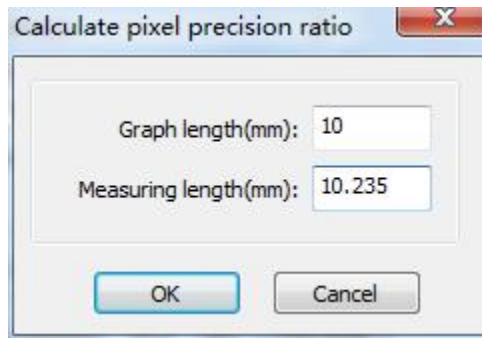
**【Power】** : The processing power when camera calibration.

Cutting a circle as appointed, press “cut circle”, the system will cut a circle on the platform and then matching test the circle size in the model parameters as below showed:



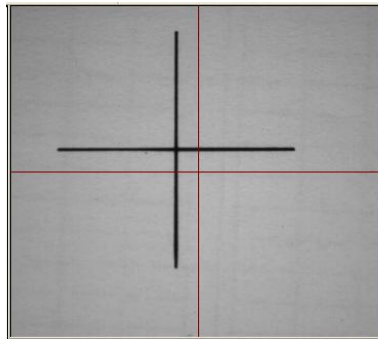
Picture 2-1 matching test to measure diameter

Click “<<<” to correct the pixel precision, fill the matching test result into Measuring Length Bar, then click “confirm”, the system will confirm the proportionality coefficient automatically.



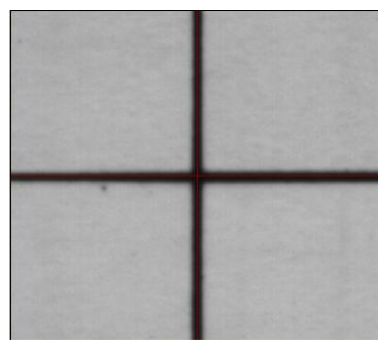
Picture 2-2 pixel precision ratio

**【Cut Cross】** : Click the "cross cutting", the laser will quickly cut a cross.



Picture 2-3 Cut Cross

**【Camera Distance Calibration】** : Cut a cross, then move the camera view cross center to coincide with the cross center, click "camera calibration". System will calculate the offset from camera view center to the center of the laser head.



Picture 2-4 Camera Distance Calibration

### 3 Import Graphics

3.1 User clicks the imported icon, the following dialog will be appeared.

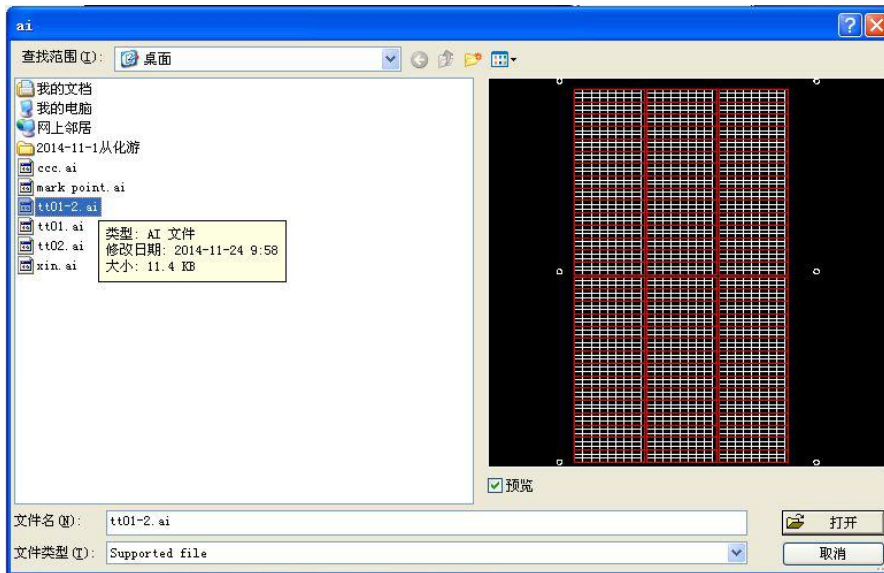


Figure 3-1 import processing file preview

Select the imported graphics, click "open". The waiting processing graphics will appear in the main view area.

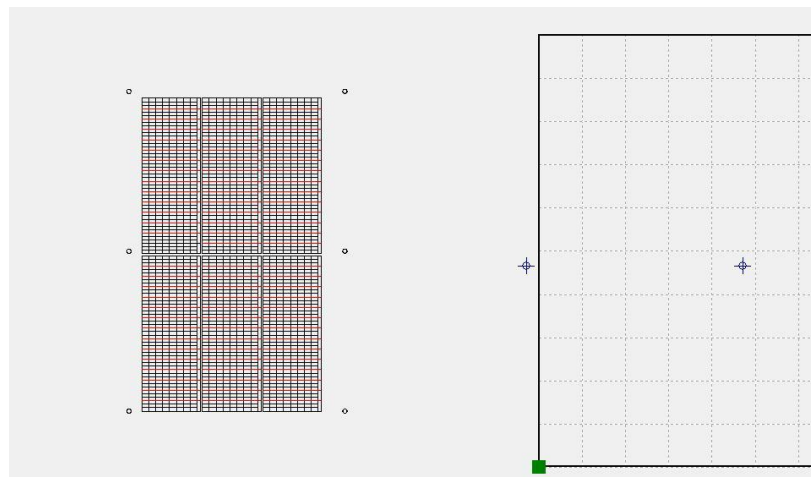


Figure3-2 import processing files

The imported graphics output as the already made layer color, you can define the output cutting contour.

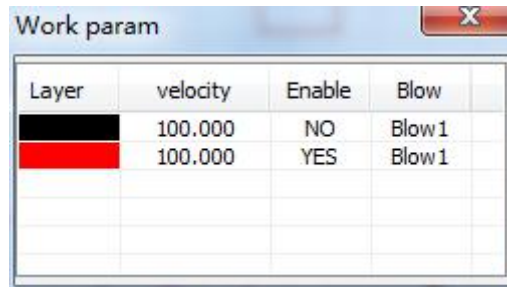


Figure 3-3 File processing parameter settings

### 3.2 Model Parameter Settings

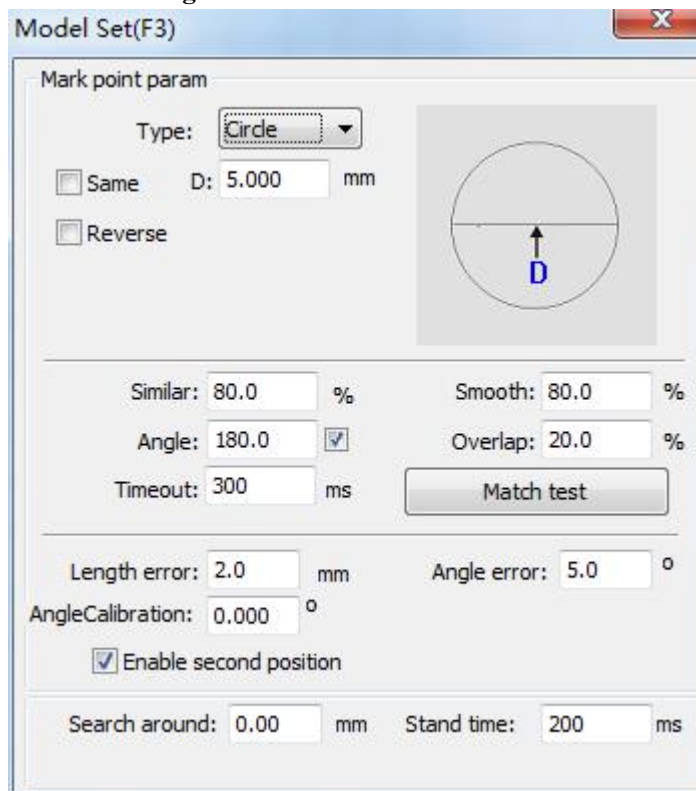


Figure 3-4 Model parameters

#### 3.2.1 Mark point parameters

Choose the required Mark point types to make Model, respectively supporting circle, cross, rhombus, ellipse, circular ring, rectangle, square, triangle, and 8 kinds of Mark point style.

When making Model, please specifying different styles respectively according to the chart corresponding parameters (such as diameter, width).

### 3.2.2 Model matching parameters

**Smoothing coefficient:** the higher smoothing coefficient, the less extracting characteristics of scattered points.

**Similarity:** matching score between Model and the actual pattern, the higher the score, the more like of graphics. Similarity setting, will affect the match quality directly.

**Overlapping:** the overlapping percentage of two envelope rectangles of target graphics. This parameter controls the target graphics overlapping whether to identify or not.

**Matching angle:** the allowing model revolving and searching angle range. Such as: its value is set to 180 degrees, in the process of model matching, the range of angle searching is: - 180 ~ 180 degrees. The match angle should be set up according to the actual requirements, the wider the angle, the more the match time required. If the user does not need to set this parameter, can remove the option directly

**Match overtime:** this parameter controls the match time. To adjust the parameters when the target graphics matching failed due to lacking of time or to avoid waiting too long time in search process. This parameter is mainly affected by the model characteristics of complexity.

**Matching test:** The current model matches with the current target graphics in camera view range, test results will be back in results interface. You can know the mark point elated parameters from test results.

### 3.2.3 Enable Secondary Positioning

After searching the target, not set this location coordinates as criterion, but moved to the target automatically, take photos again, and repositioned target location coordinates.

**Distance offset / Angle offset:** When two-point positioning, such as you might find more features when searching feature 2, according to the distance between feature 1 to feature 2, if found multiple features in the circle arc of feature 1 as origin, then as angle to distinguish them.

Note: But when the offset is set too small, missing cut will be happened. Generally distance offset can be set within 2mm, angle offset within 5°, such as the workpiece requires more accurately, you can set smaller.

### 3.3. Mark point identification settings

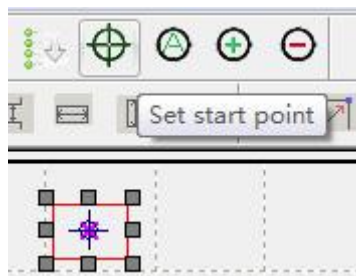






Figure 4-5 Mark point setting

Support any point identification, which is fit for mark point cutting with different quantity. To choose the mark point in the view area, click  to set the starting point, and choose other mark point, click  to set. You can also click  to search all the mark points automatically.

### 3.4. Mark point searching path

Click the starting point to confirm the starting point coordinate, also can choose the mark point in the view area to click  starting point.

The system will search the marking points starting from the closest other marking points.

### 3.5 Processing Settings

Move the axis, the camera will find the first Mark points, then match testing and check the matching result.

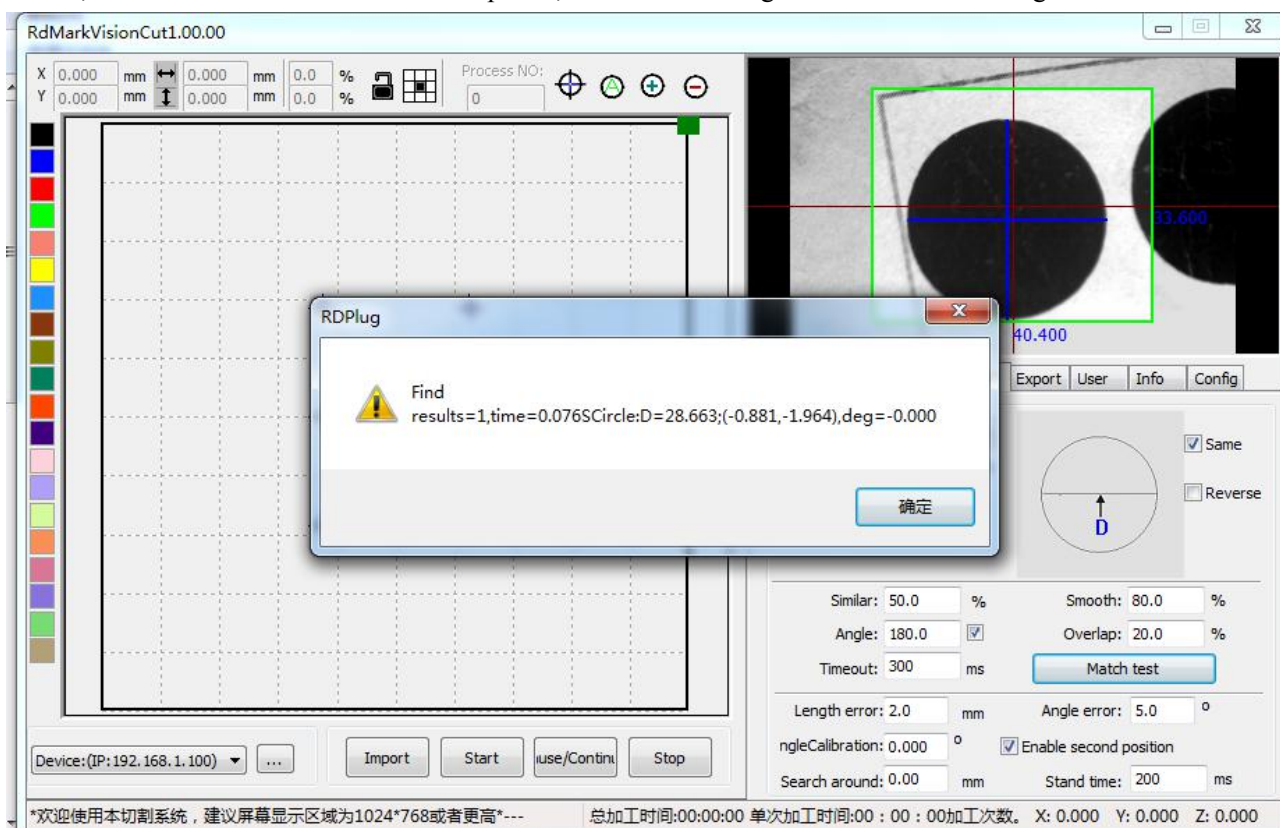


Figure 4-6 Mark point matching test

After the testing, click the "start" button on the control panel to proceed processing.



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