CCD Camera Debugging Steps

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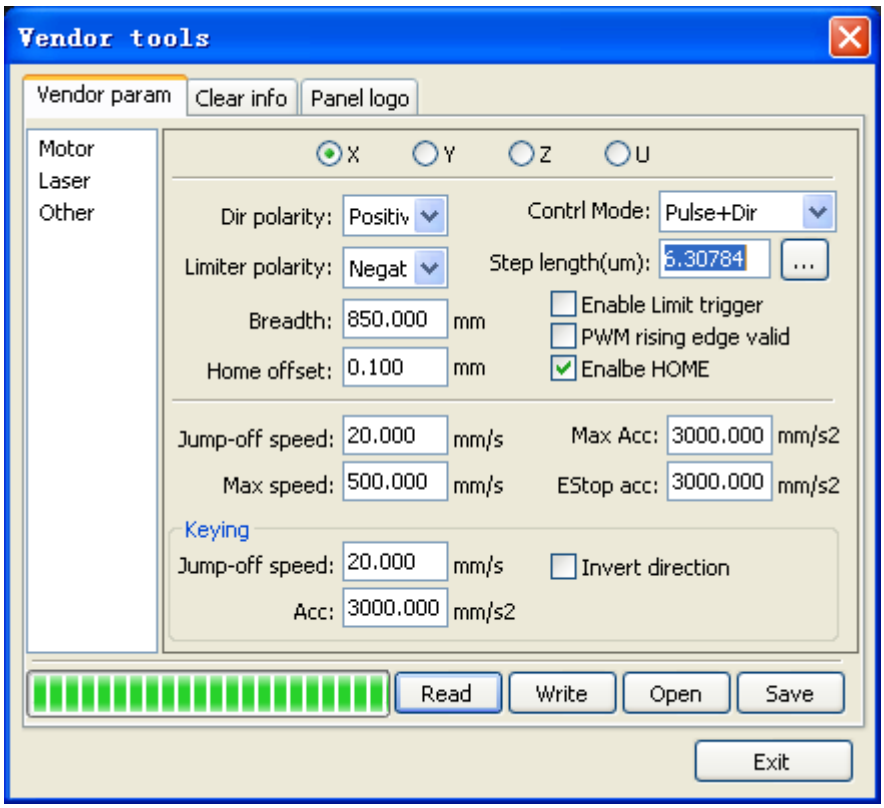
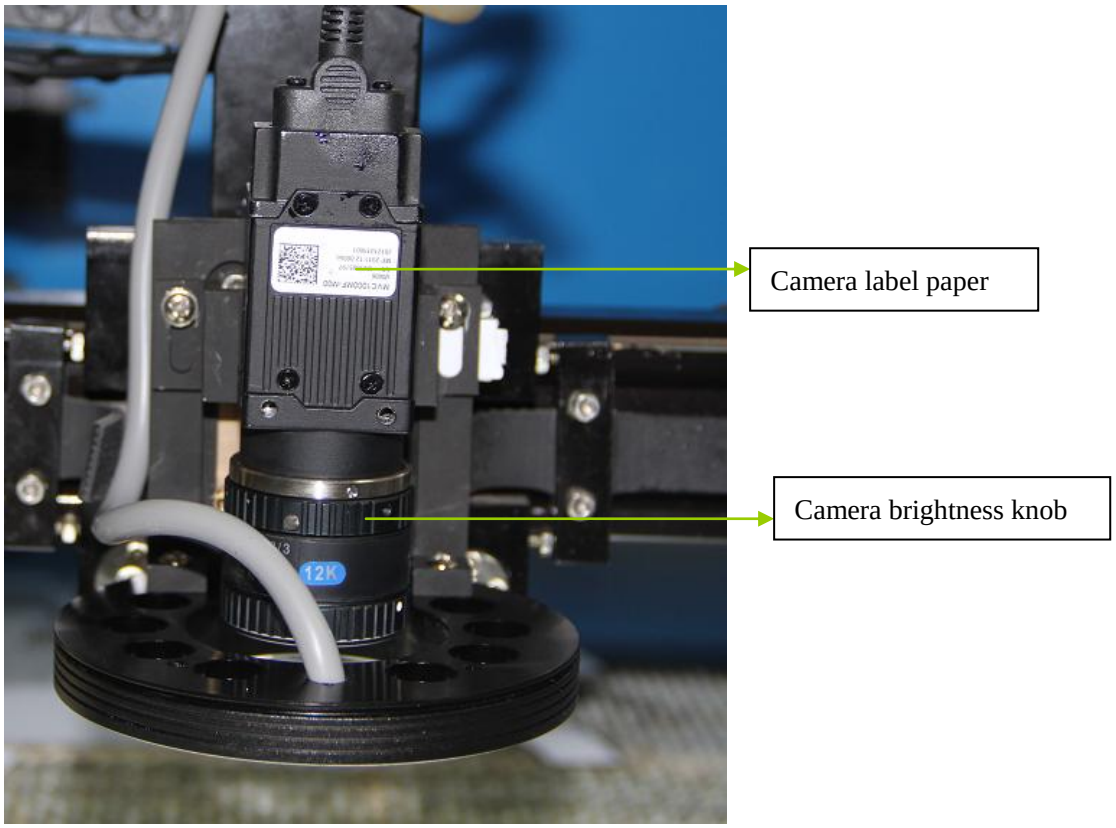
Chapter 1 Camera Calibration

1) Set the motor step: File->Vendor setting->Vender password->Vendor tools dialog box;
Vendor parameter->Motor->Read->Step length;
Set the accurate step-value of each axis, and then click “Write” button and “Exit”.



2) The camera installation height is 170MM－180MM.

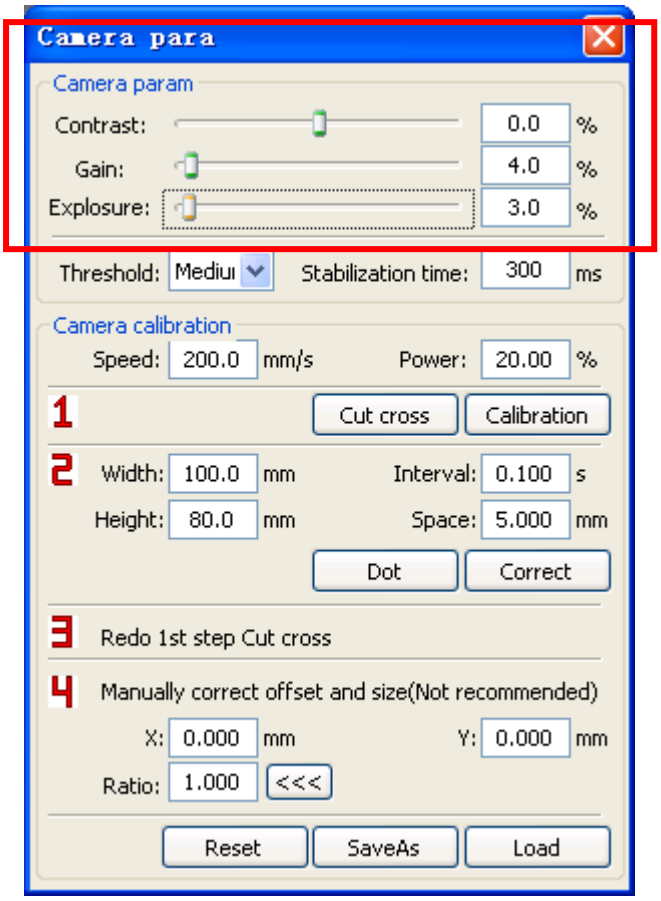
（Note: The camera label paper must be facing the installer）



3) Debugging camera focal and brightness.

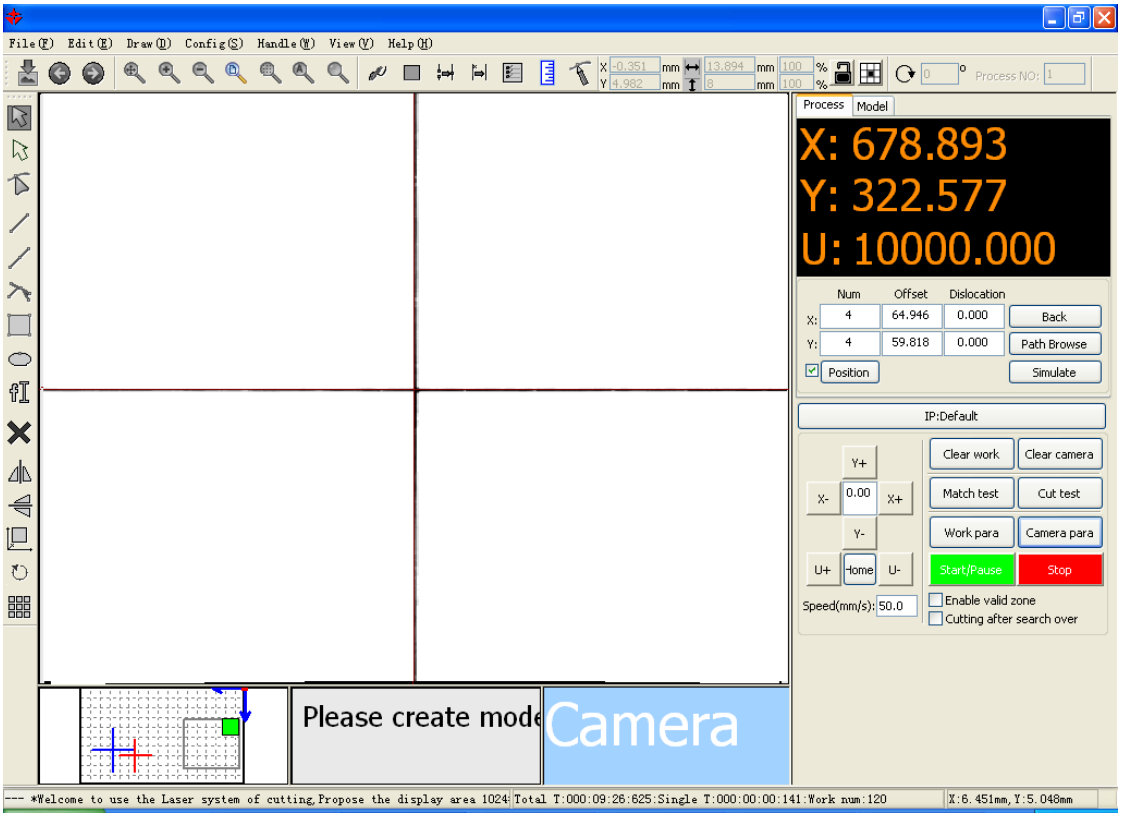
The camera parameters settings please refer to the below picture showed, recommended that do not change the camera parameters.

If brightness needs to be changed, the user can adjust “ambient light brightness” or “camera brightness knob”. The user can set automatic exposure by click “exposure”.

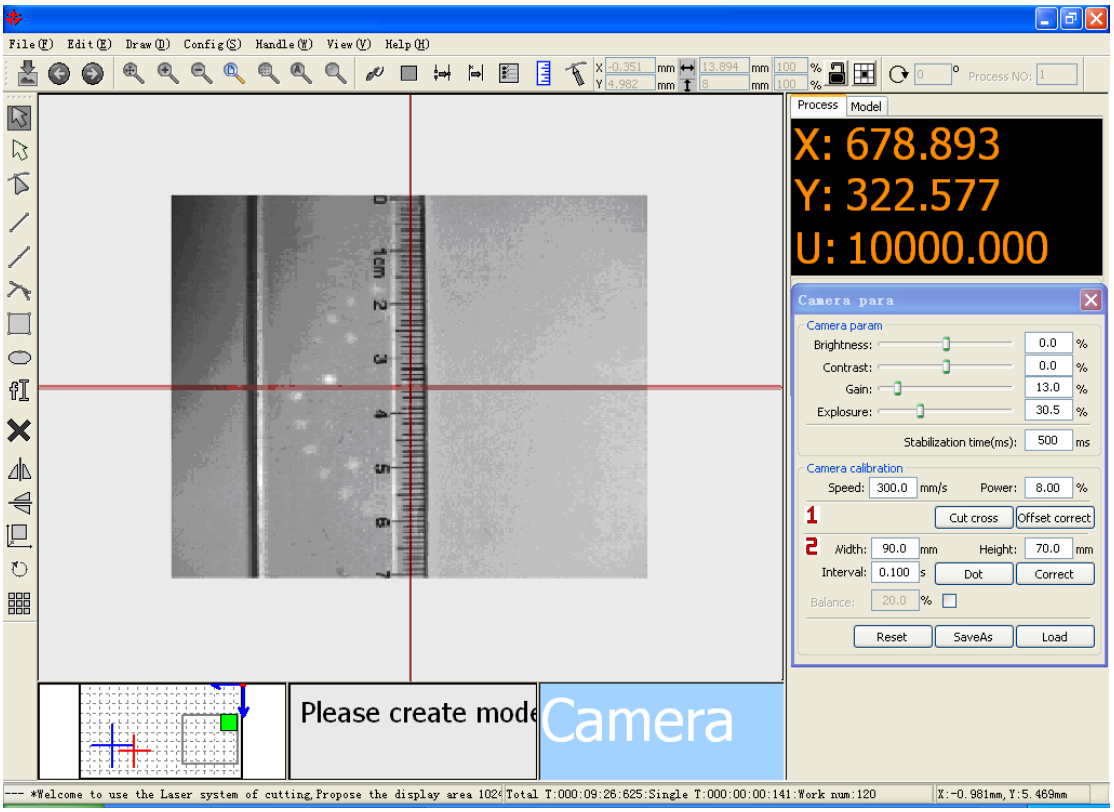


4) Click “Cut cross” button.

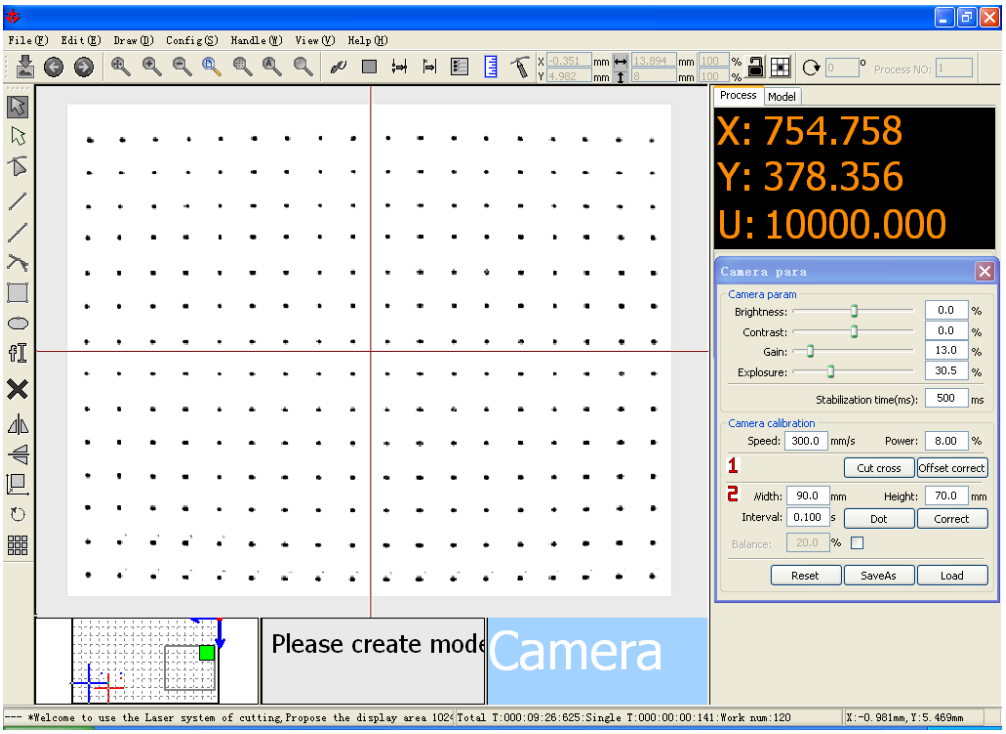
5) Move the center of camera filed view to the center of the crosshairs.（If there is large angle between the crosshairs on the software and the cut crosshairs, you should adjust the camera installation）, and then click “Offset Correct” button.（At this time, the software will calculate the offset between camera and laser head automatically.）



6) Put a ruler under the camera, to check the camera's shooting range, and input the “width: X, high: H” into software which get from video interface of software.



7) Dotting: Set the interval time (usually set to 0.2S)，and then click “Dot”. (the dot should be clear, and as bigger as possible and can dot out of focus)

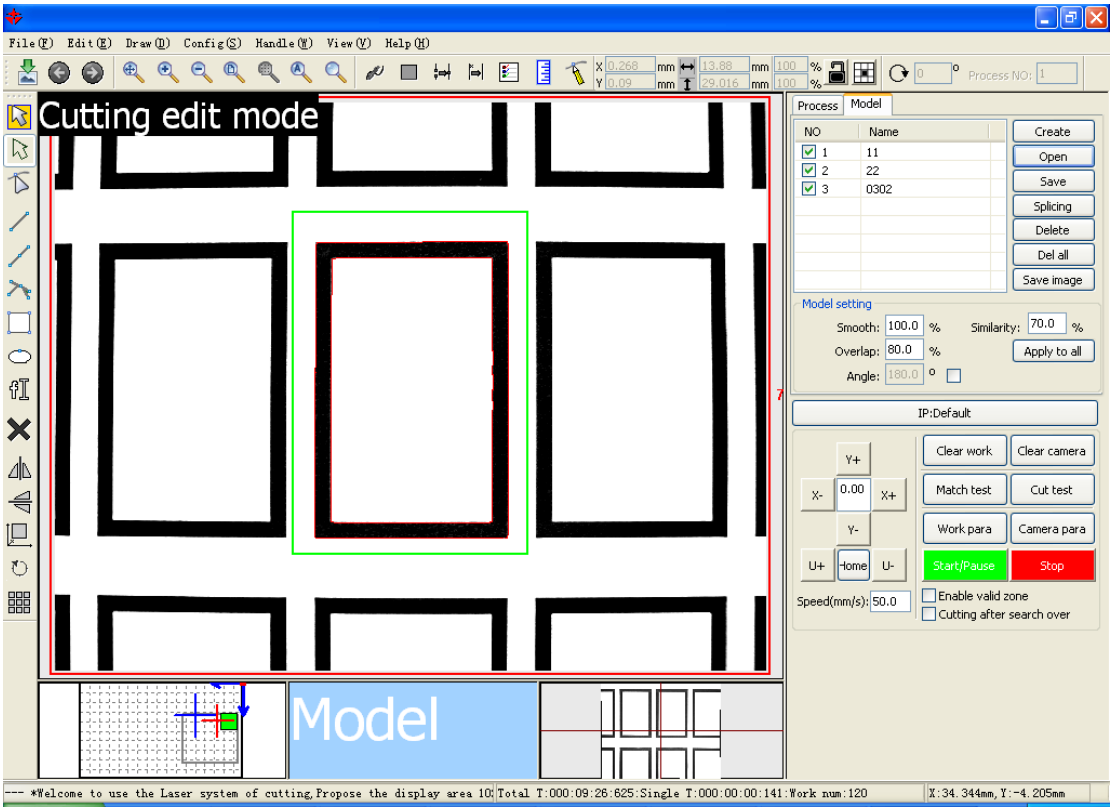


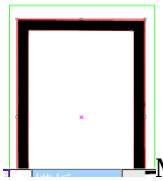
8) Click “Correct” button, if it is OK, then proceed to the next step.

9) Click again “Cut cross” button, repeat Step 5, finished then click “Save As” button to save the corrected file.

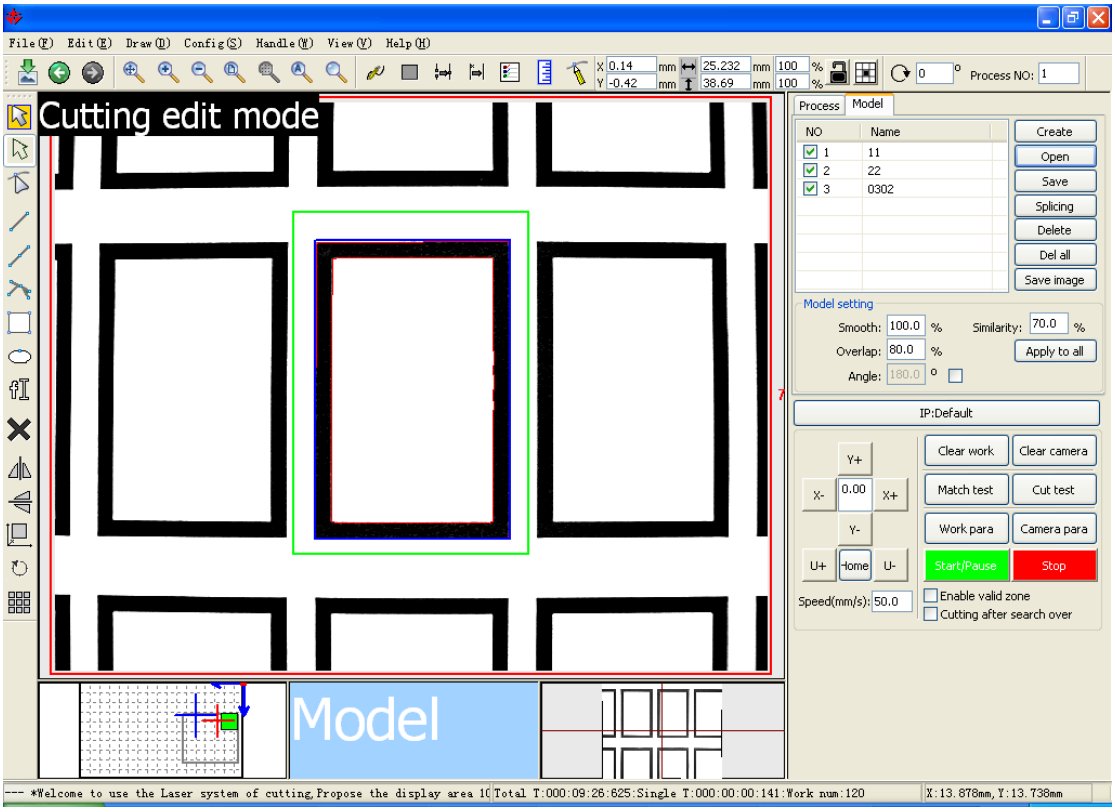
Chapter 2 Vision Cutting

1) Put into the processed material as straight as possible. (Test pattern is printed in this article, details refer to attachment 1)
2) Adjust the brightness of the light source; try to make a clear picture outline of be processed material on the camera.
3) Move camera to make the graphic to be cut in the center of the camera.
4) In template editing interface, create a template.



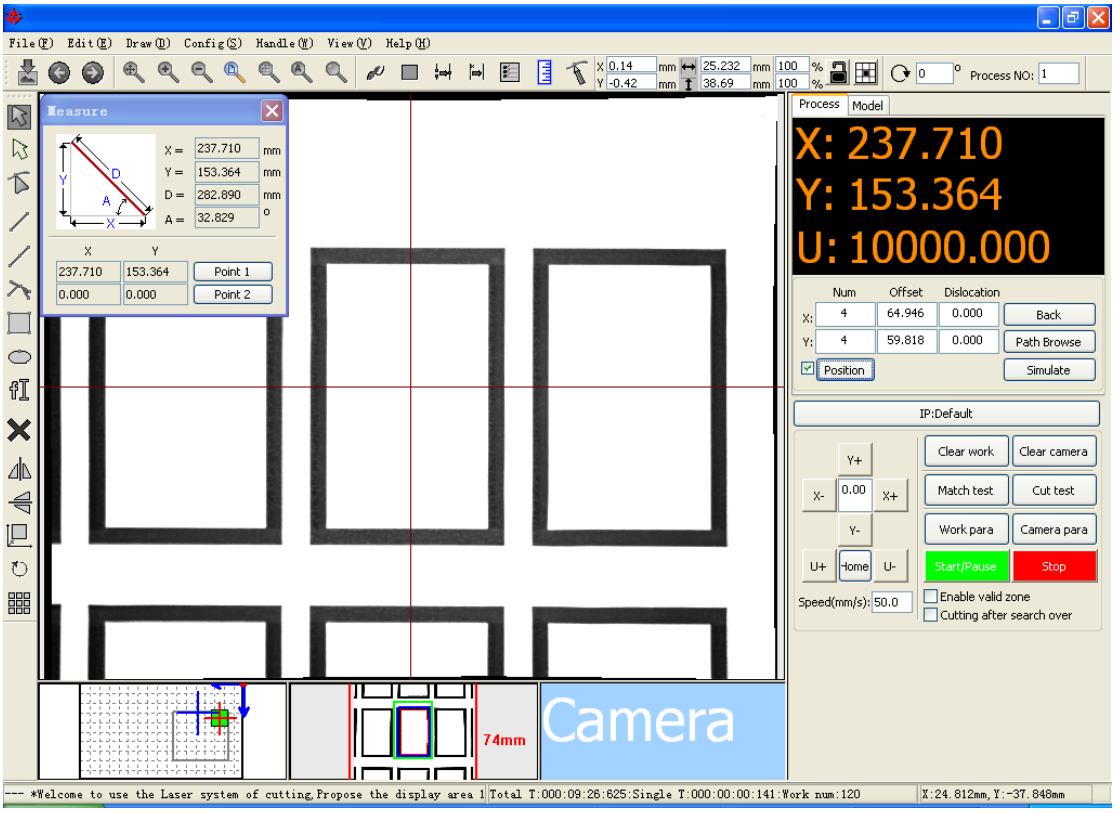
5) Create matching graphics: In “Feature Edit Mode”, press the right button to choose the features of processed graphics.（As shown：  -Marquee the entire graph）. If there are too many mixed curves, users can adjust “smoothing coefficient” to filter them. Also you can click the left button or Frame Select the deleted features and press “Delete”.

6) Create Cutting graphics: switching to “Cutting edit mode”, drawing or importing the cutting-graphics，and aligned at graphic in the template.



7) Matching Test: click “Match test” button to check the results displayed on the video interface. If the matching results are not satisfied, adjust “similarity” and “match angle” until the matching results meet to the requirements.

8) Set positioning point: back to the processing interface (As shown below), camera moving to make the video center aligns to the beginning position of the array, and click “Position” button.



9) Set search-array parameters:

The number of X indicates the search times at the horizontal direction;

The number of Y indicates the search times at the vertical direction.

The X-offset indicates the distance of each movement at the horizontal direction;

The Y-offset indicates the distance of each movement at the vertical direction.

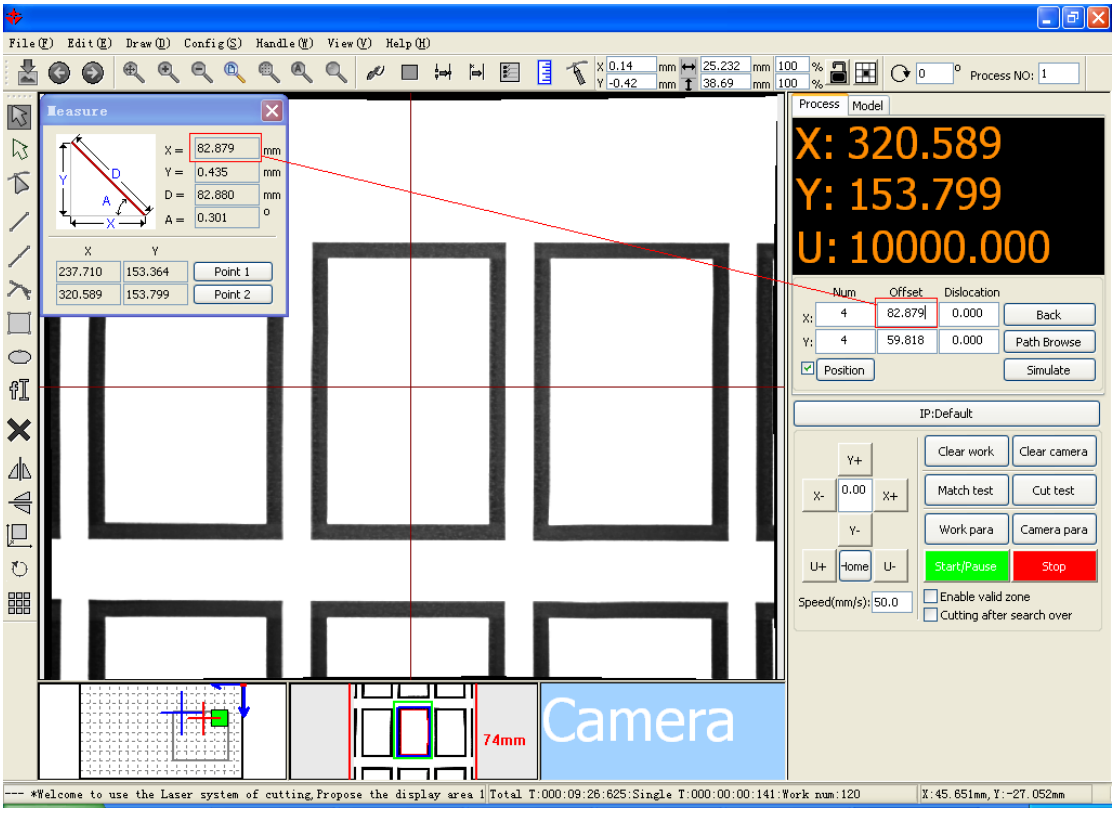
Software provides offset measurement tool. （Click  , measurement tool will be popup）The tool can measure the positional relationship between any two cameras.

In this application, measuring the offset of X-array, firstly click “Back” button, make the camera back to the starting position of array, then click “Point 1” button in the measurement dialog box and record the first measurement point. Then manually control the camera to next search position in the horizontal direction, click “Point 2” button， and record the second measurement point.

Measurement tools automatically calculate the offset, horizontal offset between the two points:

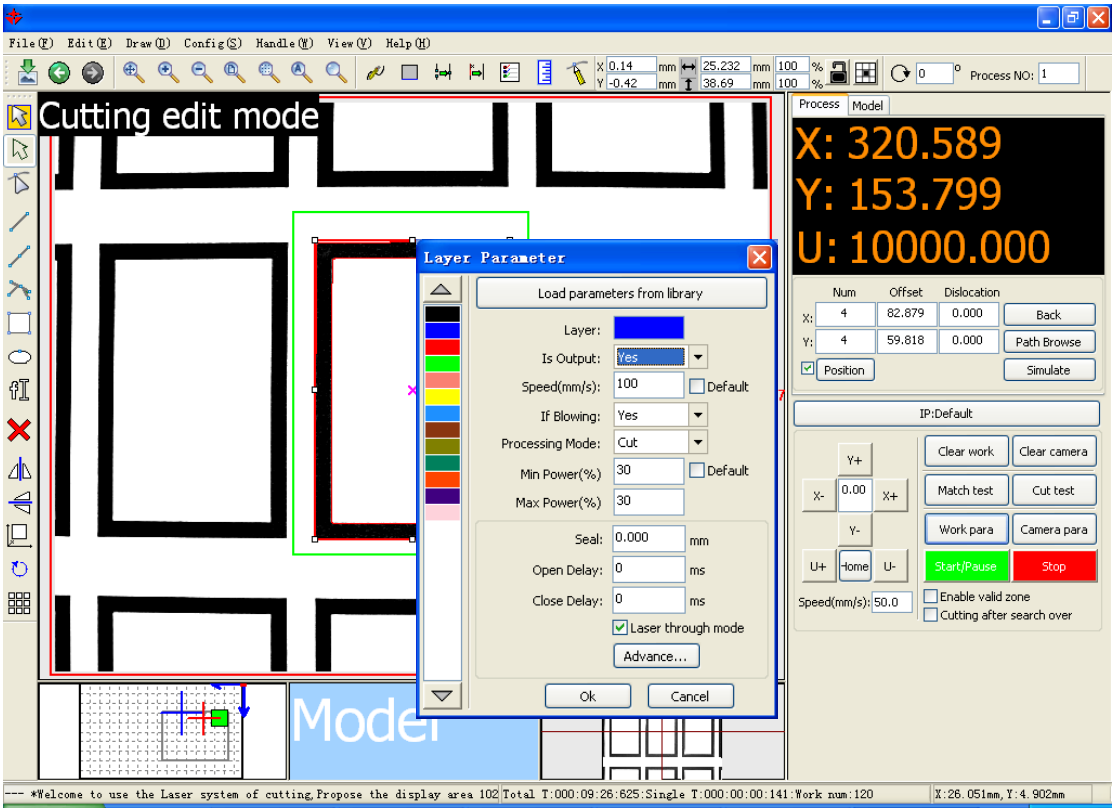
X = 82.879, then copy the value to fill "X-offset".

Y-offset measurement is similar to the X-offset’s.



10. Confirm the array search parameters: set up all array-search parameters, click “Path Browse” button and observe the Camera View, to confirm that whether the search offset is proper or not. If the search offset are appropriate, there are overlap part between the different search positions, then you can check “Enable valid zone” to avoid identifying repeatedly.

11. Simulate processing: Before processing, you can simulate processing firstly. Click “Simulate” button, to observe the search-results displayed in the Machine View are consistent with the actual. If wrong-cutting, missing-cutting. You can adjust the “similarity” and” search-angle” and then do simulate processing again until all graphics are identified correctly.
12. The above steps completed, set cutting parameters, then start to process.



Thank you very much for using the product from Shenzhen RuiDa Technology!

If any comments and suggestions please feel free to contact us.

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