VCTA Coating AOI

TP800（3D） INTRODUCTION



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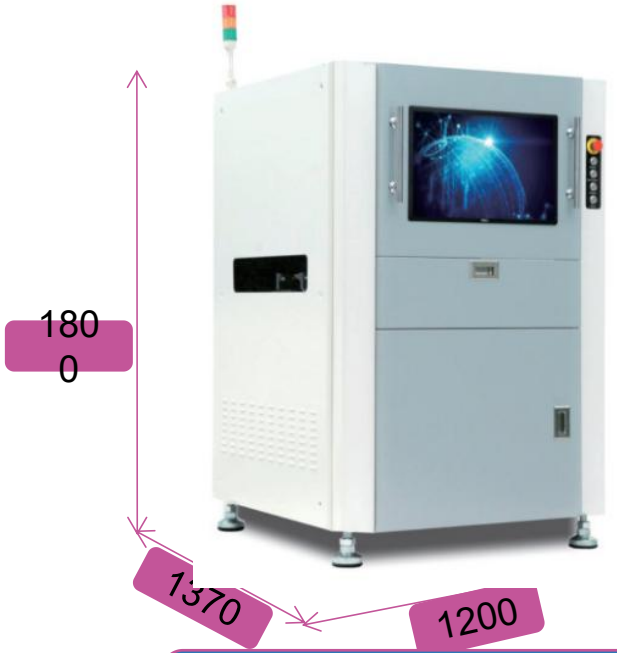
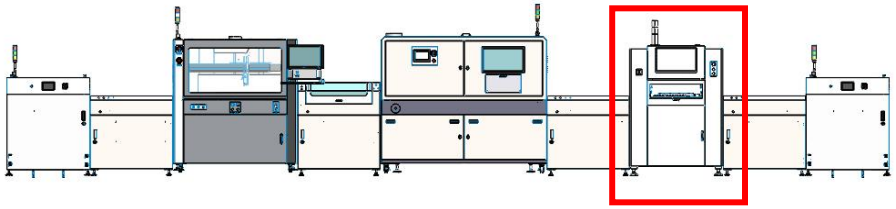
Update Date：2025-03-23

01 UV AOI --Machine Performance



UV AOI machine introduction



- ·Steel supporting structure, high-speed operation and run smoothly without resonance noise;
- ·Adopting industrial computer with motion control card and WINDOWS operating system;
- ·Manual teaching programming mode, with sound and light alarm and menu warning for faults;
- · Three Shaft-driven bicycle platform with servo motor;
- · Selective detection mode, allowing for arbitrary selection of detection areas;
- · SMEMA communication ports;
- · high-precision stepper motor
- · Support MES connection

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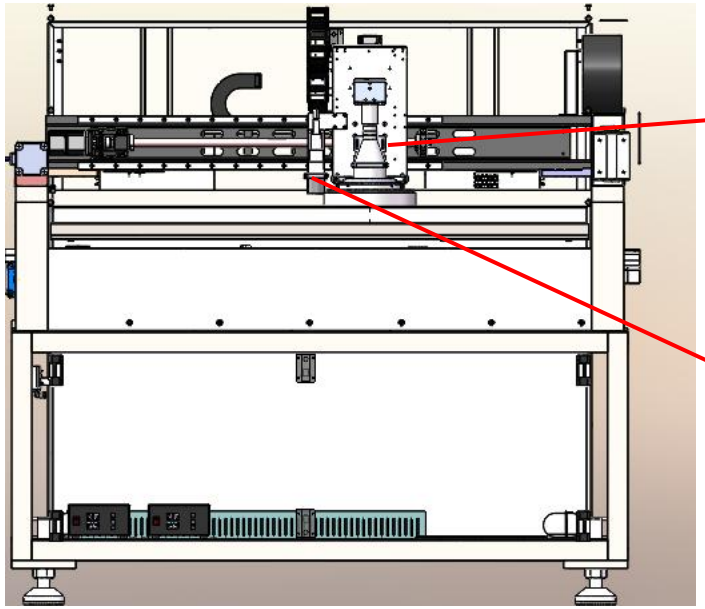
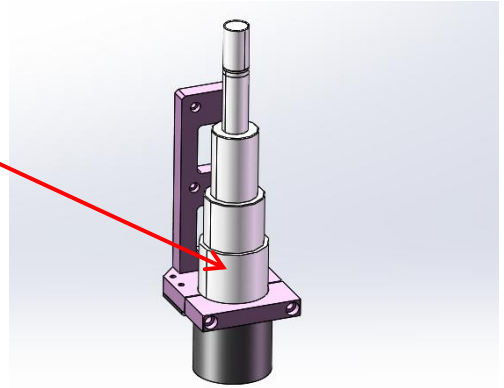
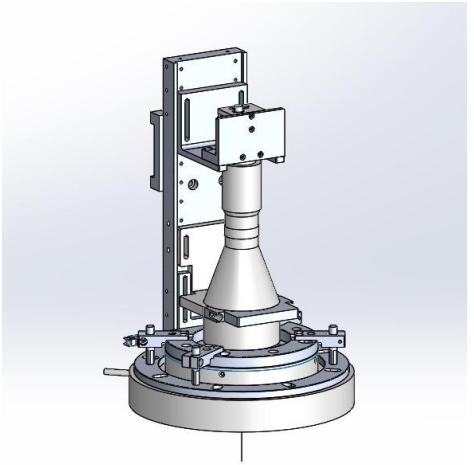
02 UV AOI-- Machine Technology



Design Model Diagram



Spectral confocal displacement sensor



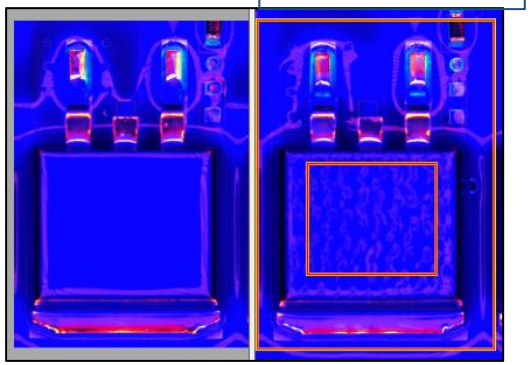
Camera+Lighting

03 UV AOI --NG Image

Typical NG image

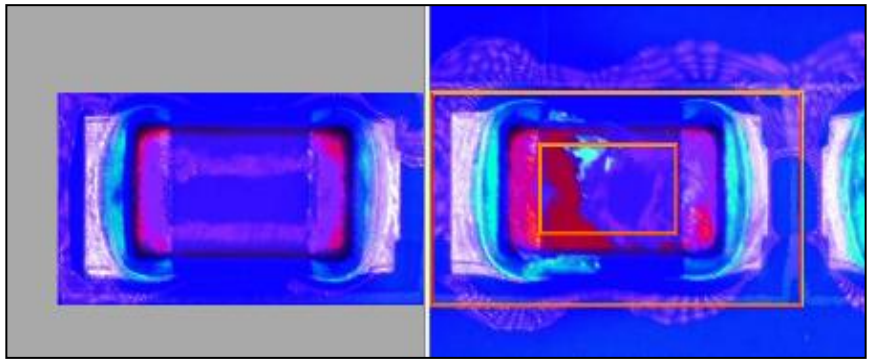
OK

Orange peel stripe



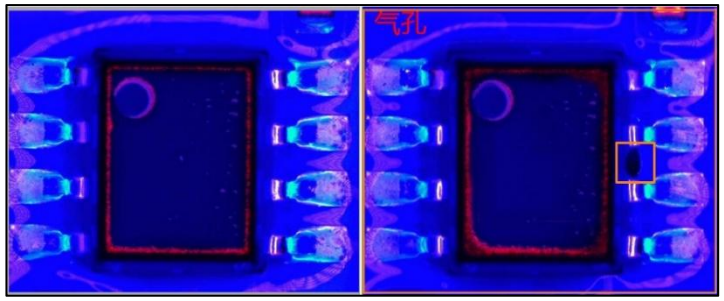
OK

Missing



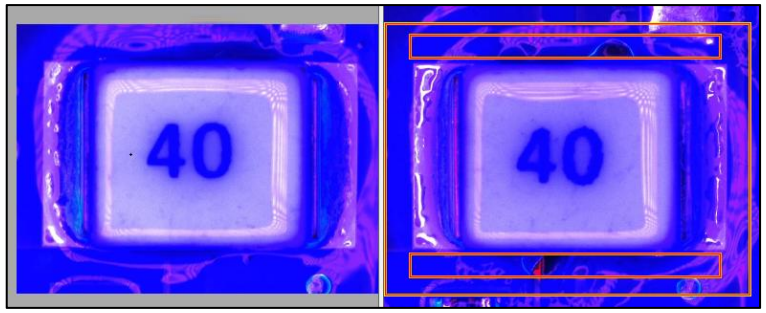
OK

Missing



OK

Bubble, Missing



How to Programming:

Extract bad color features

↓

Set defect threshold

↓

Simulation test

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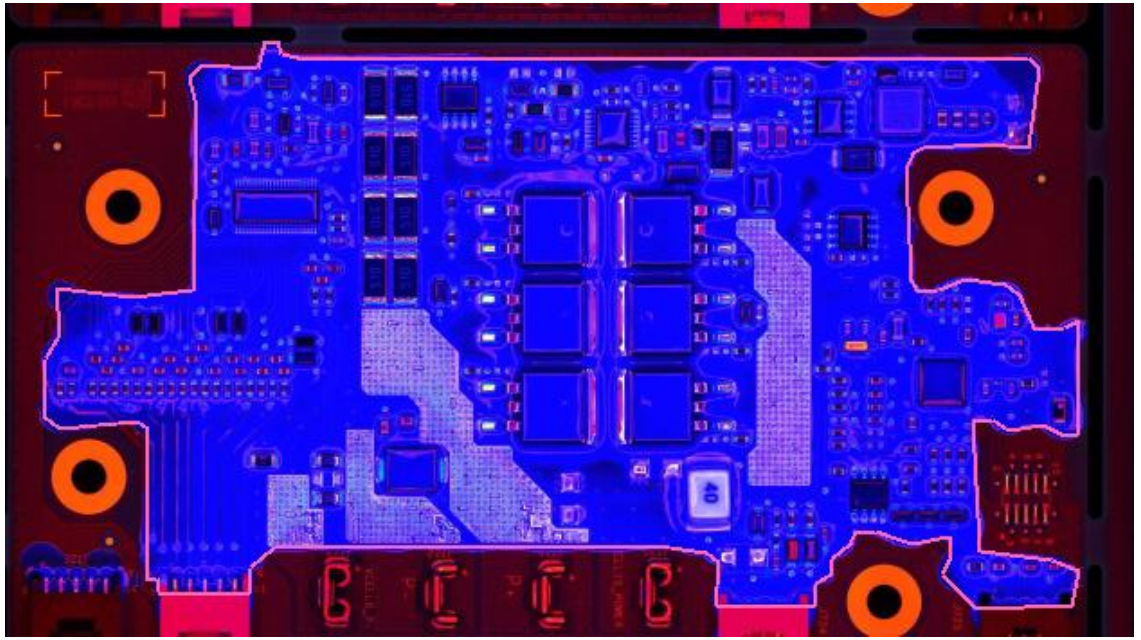
04 UV AOI --easy programming

AI easy programming

The gluing detection area can be automatically generated according to the whole board FOV, the gluing boundary can be intelligently locked, and the inspection free area can be automatically identified.



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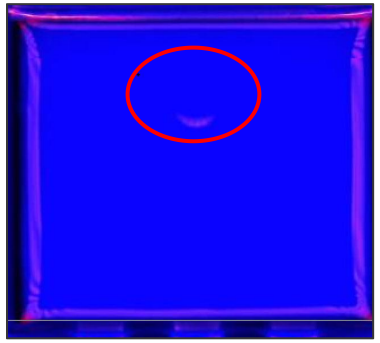
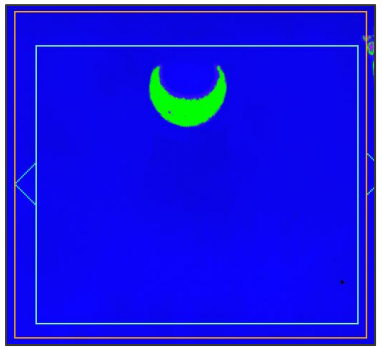
UV AOI--Defect Inspection

Glue overflow or Glue insufficient

Using feature algorithms for detection, only the features of defective points need to be extracted for defect judgment.

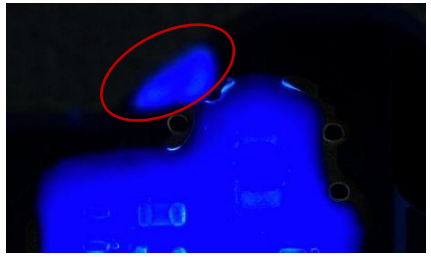


Binarization of defect features





Detection of insufficient glue by Extract uncoated colors



Detection of glue overflow by Extract glue color

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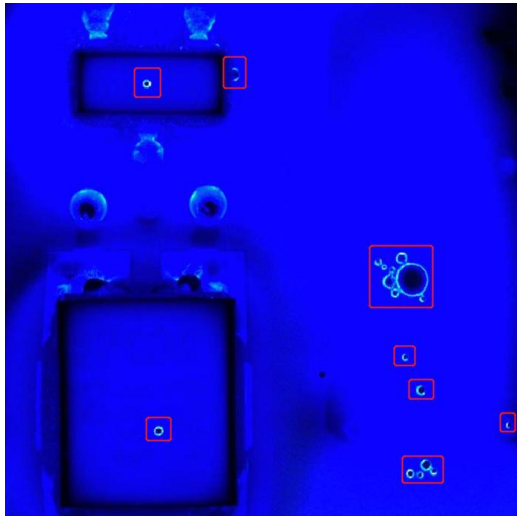
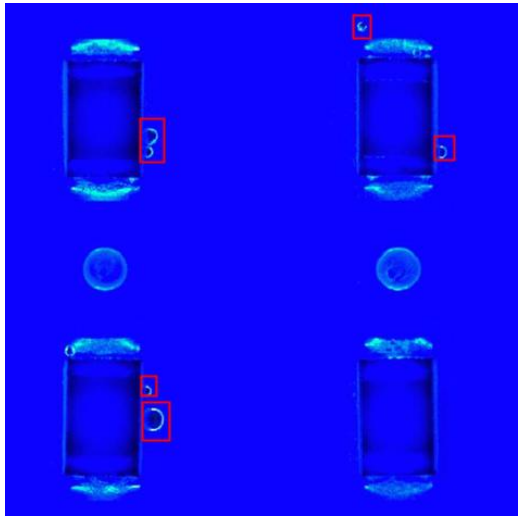
UV AOI--Defect inspeciton

AI Inspection for bulbles





- Improved the detection ability of small targets and the accuracy of detection size
- Improved calculation speed, fast positioning speed, and good bubble recognition effect
- The parameter settings are simple, capable of forming positive feedback and continuously optimizing the detection effect

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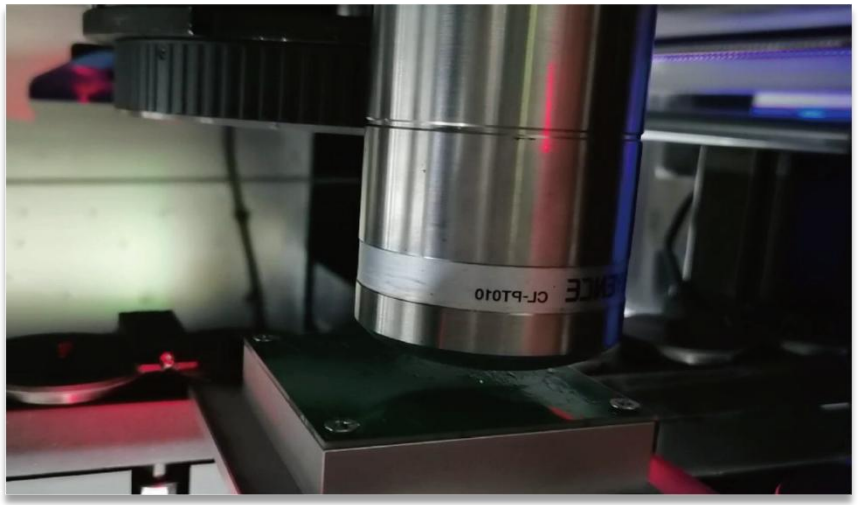
07 UV AOI--Glue thickness insepction

Timely measurement of coating thickness
Process:
1. Select an appropriate number of thickness measurement positions;
2. Use the point sensor to measure the thickness of Conformal coating in real time and obtain the thickness data



Features:
1. Any transparent adhesive can be tested;
2. The thickness measurement accuracy can reach ± 2um;
3. High movement accuracy, with a repetition accuracy of up to 5um;
4. Intelligent anti-collision structure for handling high components;
5. Adopting a unique solution to effectively solve the problem of board surface warping.

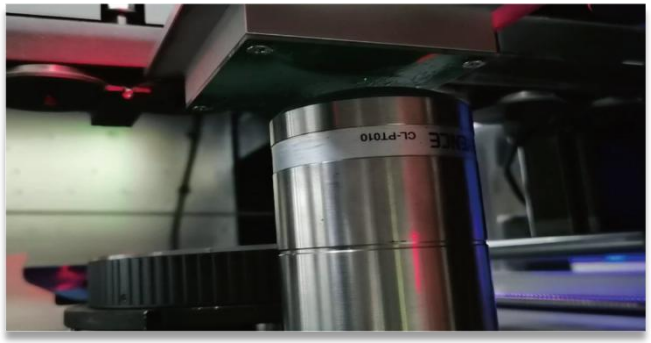
08 UV AOI--Glue thickness insepction

Thickness Measurement Technology introduction

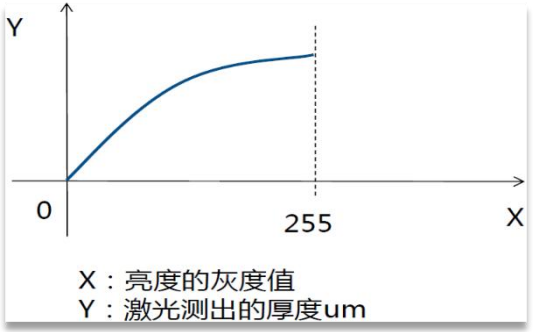
1) The point spectrum displacement sensor is used to measure the thickness of Conformal coating or UV glue;

2) Fit the measured thickness values at different positions with the gray value under the UV light of the corresponding Conformal coating adhesive, and obtain the corresponding characteristic curve. Each gray value corresponds to a different thickness value;

3) AOI took pictures of Conformal coating, read the brightness gray value, and calculated the thickness of Conformal coating through the characteristic curve.



thickness inspection



Characteristic curve of thickness and brightness of Conformal coating



thickness inspection of coating

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UV AOI--Glue thickness insepction

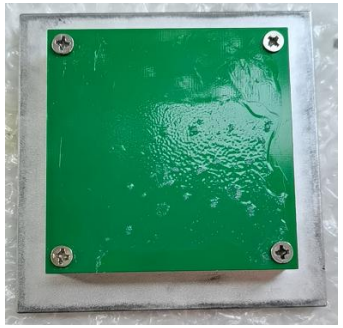
Process of calibration board thickness inspection

1) Apply uneven glue on the calibration board, and AOI software controls this sensor to measure the thickness of the adhesive in different areas on the board;

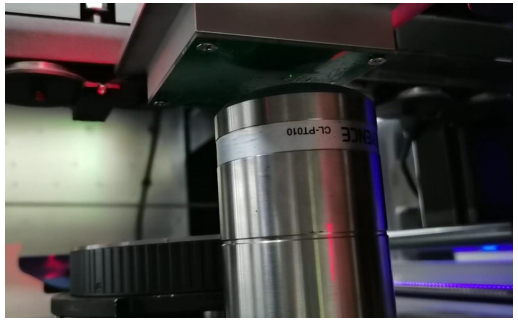
2) The glue on the calibration plate is photographed by AOI. The thickness of the adhesive is different from light to dark. Generally, the thin part is Baby blue, and the thick part is dark blue. The AOI array generates a thickness measurement window;

3) According to the corresponding relationship between the measured height and UV brightness, fit the sample data and generate a calibration file;

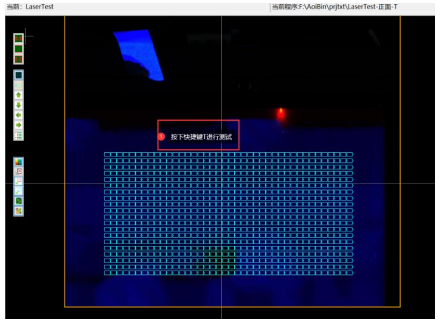
4) During the testing process, selecting the calibration file corresponding to the glue can achieve calibration and thickness measurement.



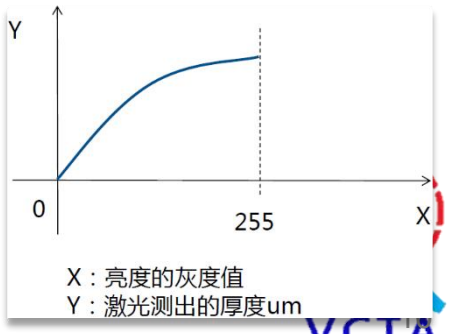
Applying glue



Thickness inspection



Brightness



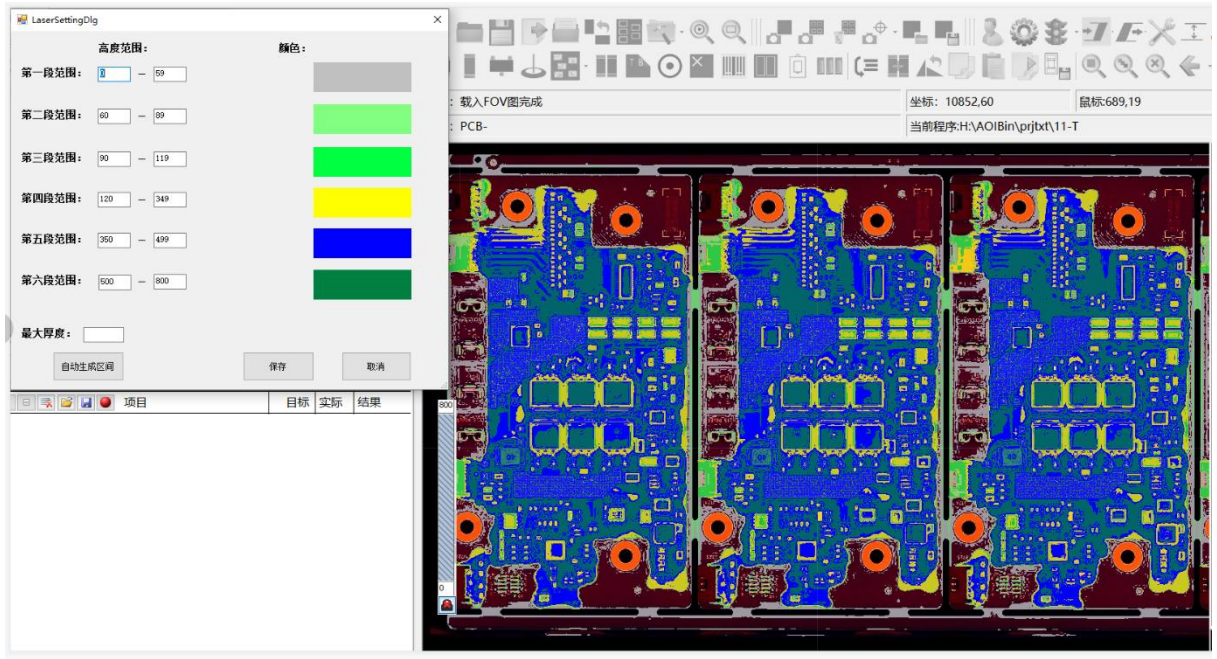
Calibration

UV AOI--Glue thickness insepction

·Calibration thickness measurement application

Thickness visualization:

Display a color map of the coating thickness, which can visually display the layer thickness.



11 UV AOI specification

Machine Specifications		Optional Items	
Repeat Position Accuracy	±0.02mm	UV lighting √	Barcode reading √
Position Accuracy	±0.02mm	Industrial Camera+Telecentric lens √	Carrieer return at bottom √
Width adjustment	50-460mm(Auto adjustment)	MES connection √	Spectral displacement sensor √
PCB SIZE	L50mm×W50mm ~ L510*W460mm		
Transmission Mode	Belt or Stainless steel		
Max Pcb Weight	15Kg		
Driving Axis	3 axises		
Machine Dimensions	1200mm*1370mm*1570mm		

Thanks

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