SMT

SMT Inline 3D AOI

# **Cube** Series

3D AOI

Magic-ray Technology

Trusted in Detail

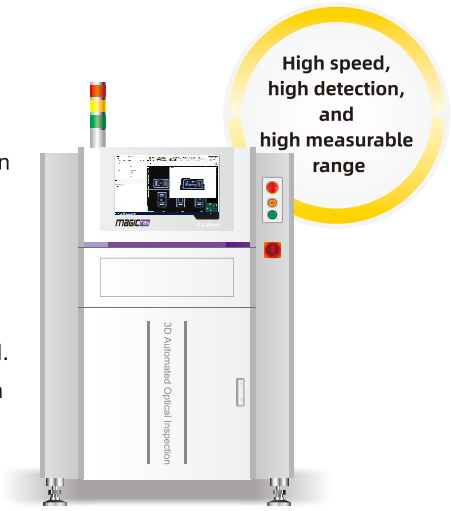
3D AOI

# High Efficient and Easy Programming 3D AOI

**3D AOI - Cube Series boasts cutting-edge positioning technology and advanced feature analysis algorithms, making it ideal for high-speed, high-precision inspections of SMT components in SMT pre-reflow and post-reflow process. The Cube Series eliminates shadow blind spots and accurately captures 3D component shapes for optimal results with its state-of-the-art multi-fringe projection technique.**

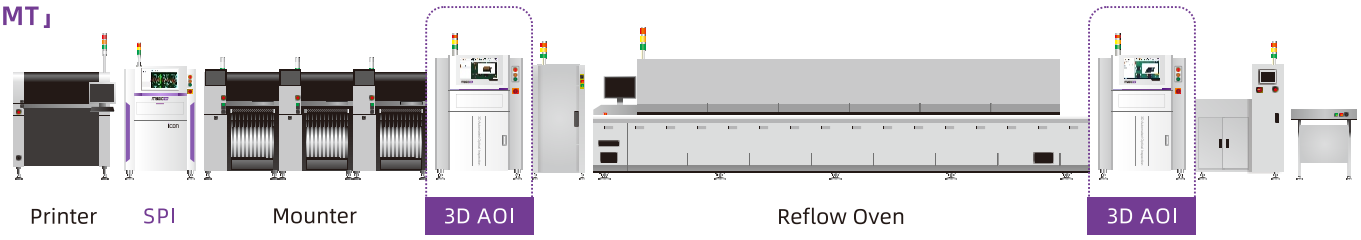
## Product Features

- Rich algorithm, the combination of 3D, AI and color feature algorithms to optimize the detection rate of the defects.
- Multiple positioning methods to locate the component precisely. Intelligently compensate for board warpage and detect defects on black components on black board.
- Adapts to different color PCBs, effectively detect both black and white boards.
- Marble platform, dual-drive plus motion control card ensure industry-leading inspection speed.
- Ultra-high range 3D reconstruction technology, capable of measuring components up to 35mm height.
- The powerful combination of three-point check software and SPC data analysis quickly identifies the root cause of defects.



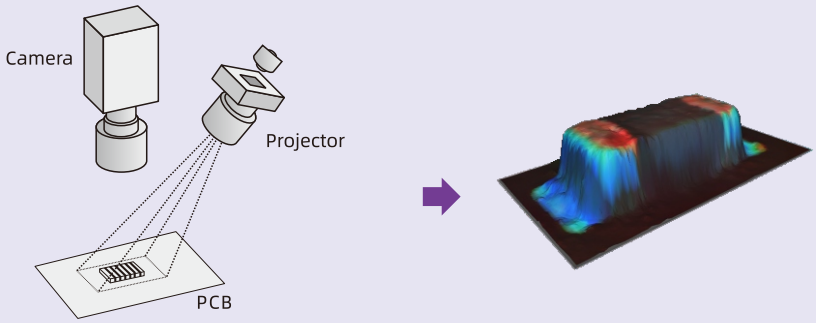

## Production Line Solution

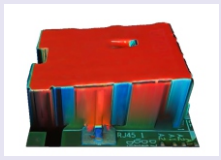
SMT

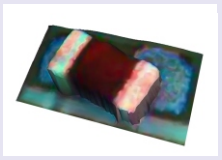


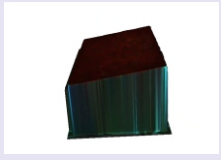

## Optical Imaging Principle

- Using phase shift projection, an accurate profile of the solder paste can be determined.





▲Float


▲Shift

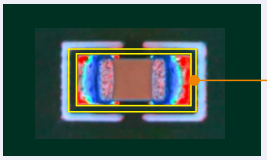

▲Coplanarity

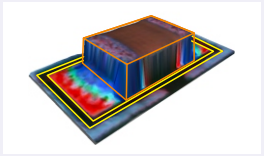
▲Shift

# Core Technology and Advantages

### Intelligent Zero Reference Point Technology

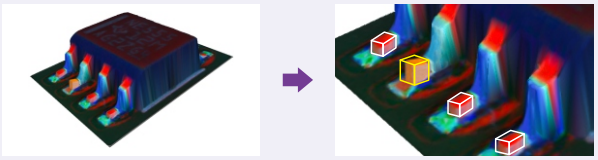
Automatically generates a reference point, ignores PCB color change and board interference, and makes height measurement more accurate.



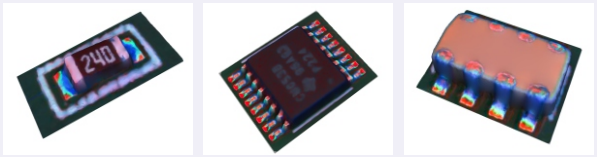
### Intelligent Coplanarity Inspection Technology

The combination of the intelligent coplanarity inspection and absolute height can eliminate the false calls caused by a component's height variation.



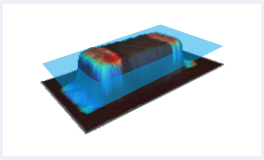
### 3D+Color Algorithm

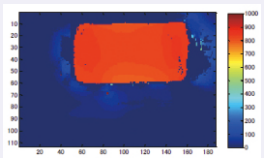
Optimizes the information of height and color to reconstruct the various shapes of the components and solder joints in all directions.



### 3D Positioning Technology

With 3D positioning technology, positioning problems can be effectively overcome, removing interference of silkscreens or the changing color of PCB backgrounds and components.




### Ultra-high Range Reconstruction Technology

Magic-ray 3D AOI Cube can measure components with a height of up to 35mm with industry-leading high-range 3D reconstruction technology. This cutting-edge technology effectively expands 3D measurement range, delivering results like never before.

# Features & Functions

### iFactory Solutions

Magic-ray iFactory solutions realize real-time remote monitoring of the production data and centralized management for multiple production lines, improving process quality and increasing production yield.

### Automatic Program Switch Through Barcode Scanning

Auto width adjustment is a standard feature and is achieved by simply reading the PCB's barcode. At the same time, it supports MES command.

### SPC Alarm Function

SPC Alarm Function allows for real-time monitoring of production quality, providing timely feedback in the event of an abnormal situation. This helps prevent defects from continuing through the process and incurring costs.

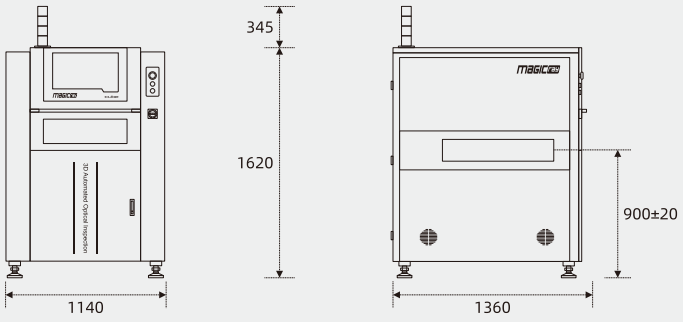
### Major Defects Foolproof

This feature can be configured by authorized personnel to specifically focus on key inspection locations. It prevents unauthorized individuals the ability to bypass inspections, thereby guaranteeing strict control over critical inspection points.

# Product Specification

| Equipment Model | | Cube | Cube-D | Cube-XL |
|---|---|---|---|---|
| Image System | Camera | 12MP industrial camera | | |
| | Resolution | 15μm, 12μm, 10μm | | |
| | FOV | 60*45mm（12MP, 15μm） | | |
| | Lighting | 4 color ring shape LED (RGBW) | | |
| | Height Measurement Method | 4 way projectors | | |
| Movement Structure | X/Y Movement | AC Servo (Dual drive) | | |
| | Platform | Granite | | |
| | Width Adjustment | Automatic | | |
| | Transport Type | Belt | | |
| | Board Loading Direction | Left to right or right to left (Select at point of order) | | |
| | Fixed Rail | Single lane: 1st fixed rail; Dual lane: 1st rail (1st & 3rd fixed rail or 1st & 4th fixed rail) | | |
| Hardware Configuration | Operating System | Win 10 | | |
| | Communication | Ethernet, SMEMA | | |
| | Power Requirement | Single phase 220V, 50/60Hz, 5A | | |
| | Air Requirement | 0.4-0.6MPa | | |
| | Conveyor Height | 900±20mm | | |
| | Equipment Dimensions | L1140mm*D1360mm*H1620mm (Without tower light) | | L1310*D1360*H1620mm (Without tower light) |
| | Equipment Weight | 1100kg | 1150kg | 1300kg |
| PCB Size | Size | 50*60-510*510mm | Dual lane: 50*60-510*320mm<br>Single lane: 50*60-510*560mm | 50*80-650*610mm |
| | Thickness | ≤6.0mm | | |
| | Warping | ±3.0mm | | |
| | Component Clearance | Top clearance 25-50mm adjustable, Bottom clearance 45mm | | |
| | Clamping Edge | 3.0mm | | |
| | PCB Weight | ≤3.0kg | | |
| Inspection Categories | Component | Wrong Component, Missing, Polarity, Shift, Reverse, Damage, IC Lead Bend, IC Lifted Lead, Foreign Material, Float, Coplanarity, Tombstone, etc. | | |
| | Solder Joint | No Solder, Insufficient Solder, Open Solder , Excess Solder, Solder Bridge, Solder Ball, etc. | | |
| | Component Size | Chip: 03015 and above (3D); LSI: 0.3mm pitch and above; Others: Odd shape component | | |
| | Measurable Range | 35mm (15μm) | | |
| | Height Resolution | 0.37μm | | |
| | Inspection Speed | 450ms/FOV | | |

# Equipment Dimensions




(Unit: mm)

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Note: Product configuration and specification are subject to change due to technical improvements. Please refer to the latest content of Product Center on the official website (www.magic-ray.com). For more options and customization needs, please contact sales or service.