

## SMT AOI SYSTEM S1-500D

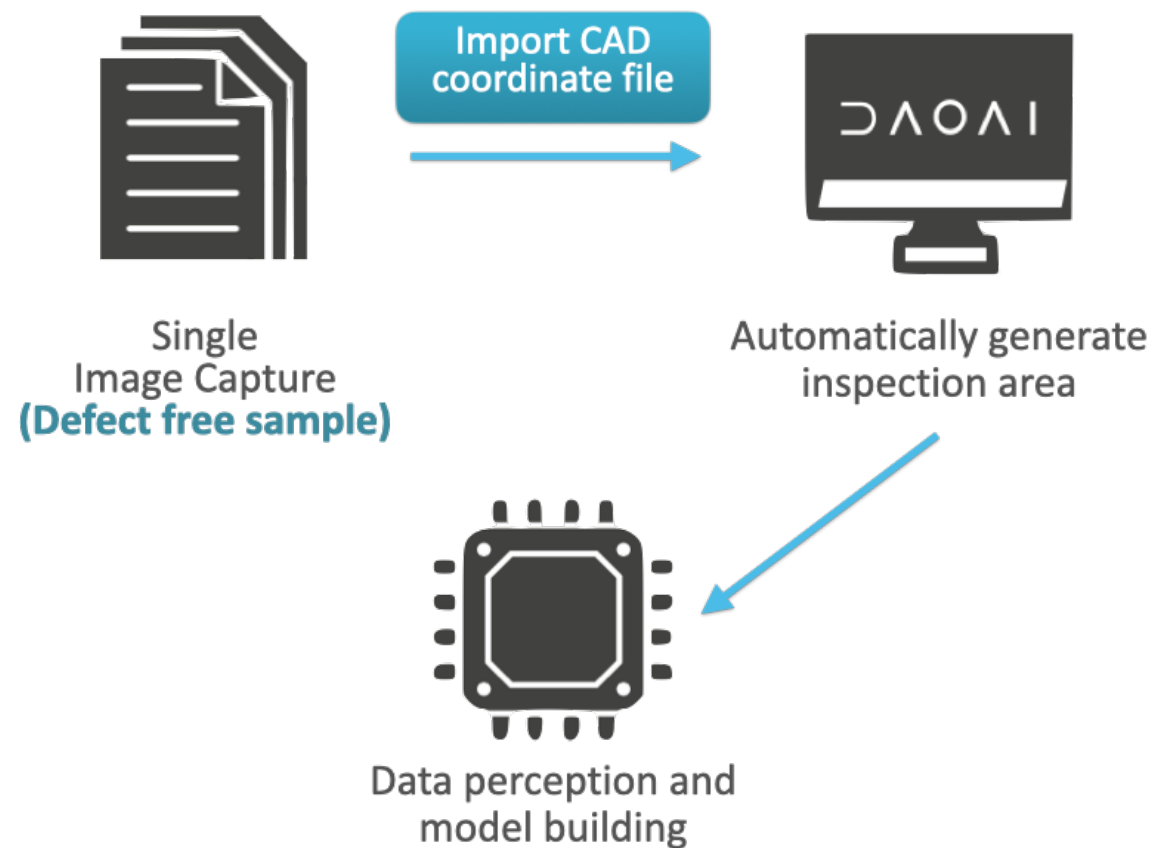
# Reliable AI Inspection with Zero Defect Escape

From one golden sample to high-precision AI



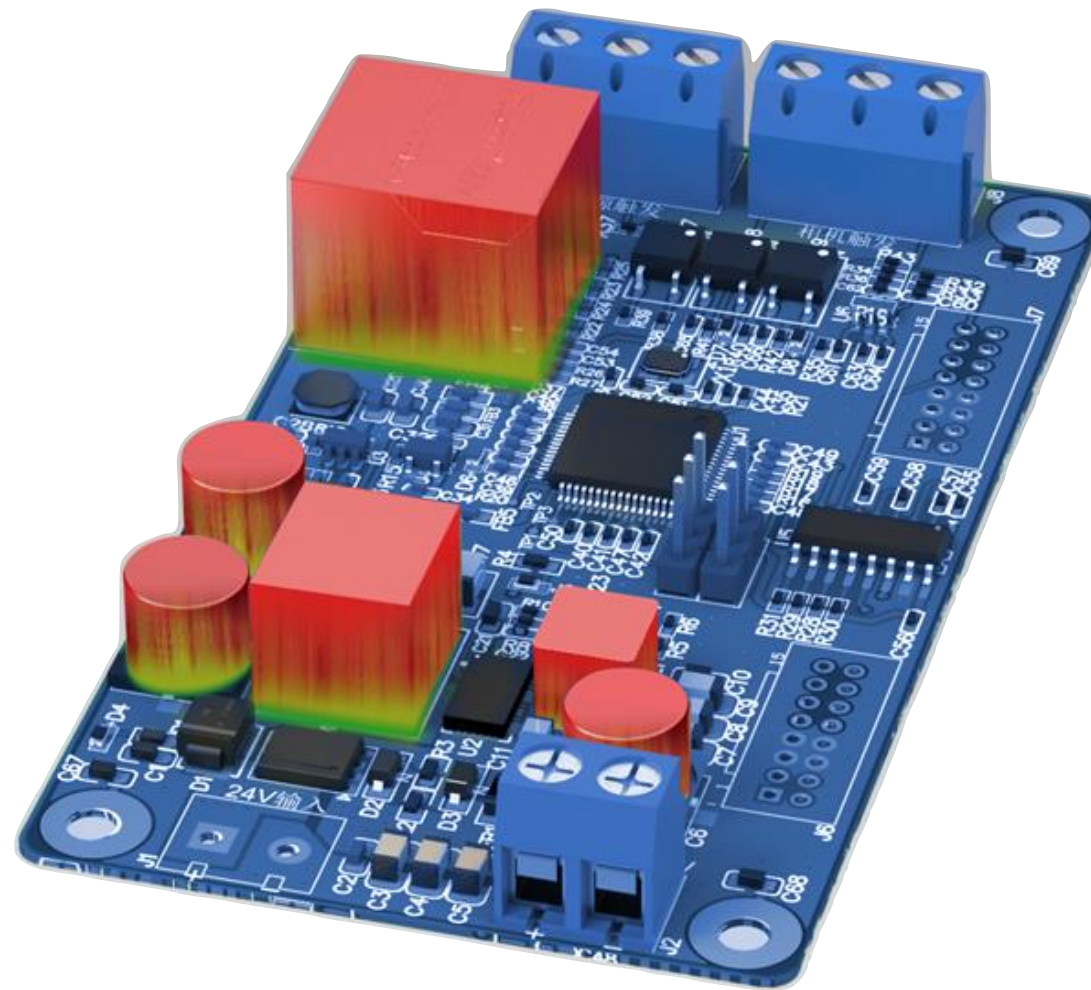
# What Sets Us Apart

Efficient modeling with a single Golden image



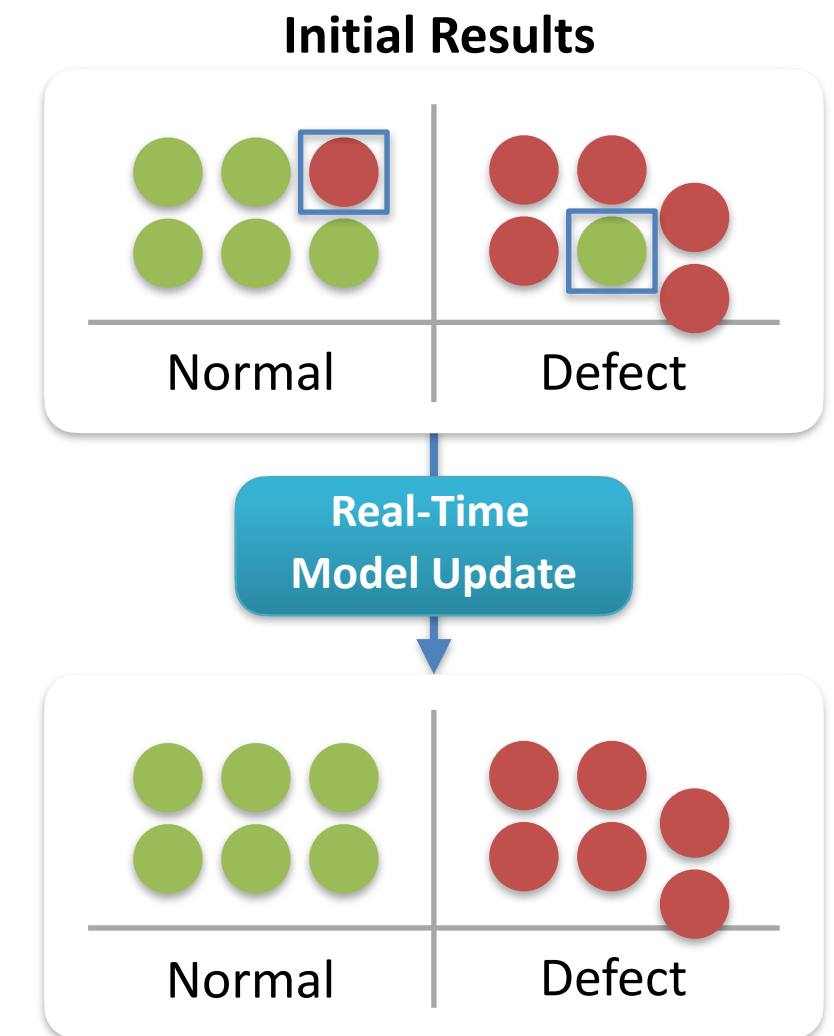
One Good Sample is All It TakesFast, Efficient, On-Site AI Deployment.

Full-color 3D & 2D inspection



The RGBW quad-ring shadowless lighting ensures zero-defect 3D/2D inspection.

Continuous model optimization via feedback loop



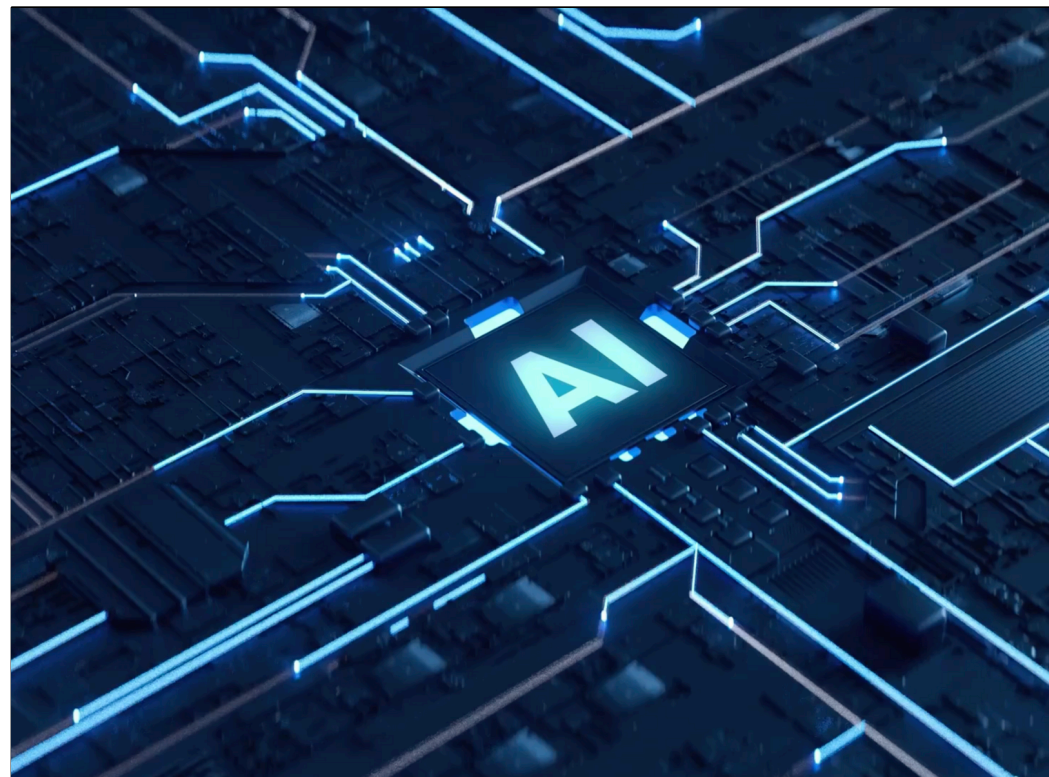
Seamlessly integrates human feedback for ultra-fast model updates, ensuring continuous improvement in accuracy.



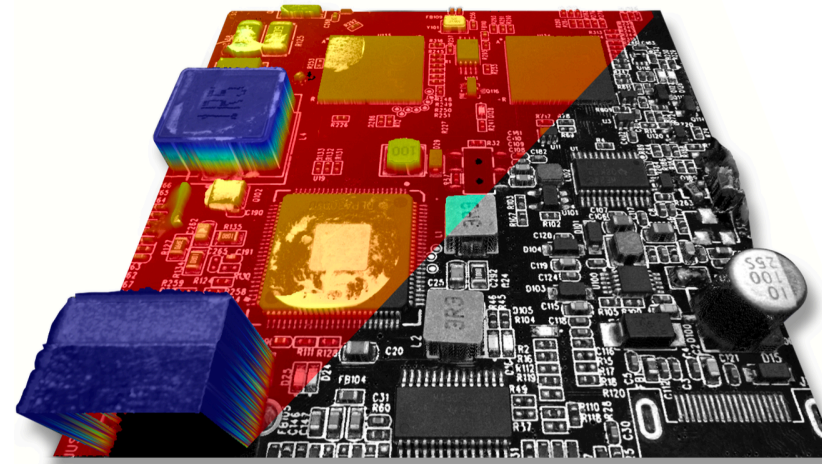
# All-in-One AI Inspection System

Built for PCB Quality Control

## Smart AI Inspection



- Modeling with a Single Golden Image
- Detects Even Unknown Defects
- Feedback loop



## High-Performance 2D/3D

- 3D Height Inspection
- 2D Full-Color Inspection
- Simultaneous 2D + 3D Inspection



## Integrated In-Line Inspection

- Four-Direction Structured Light Projection
- 18MP Telecentric High-Speed Camera
- Dual Independent Tracks

# Smart AI Inspection

DaoAI AOI requires only a single defect-free sample image to train the AI and build the inspection model.

Once trained on a normal sample, the AI can identify defects across all components, enabling fast and efficient on-site deployment.

## ✓ Training with Defect-Free Samples

- **Data Requirement:** One defect-free sample image as a reference
- **Smart Programming:** CAD file import supported

## ✓ Feedback Loop

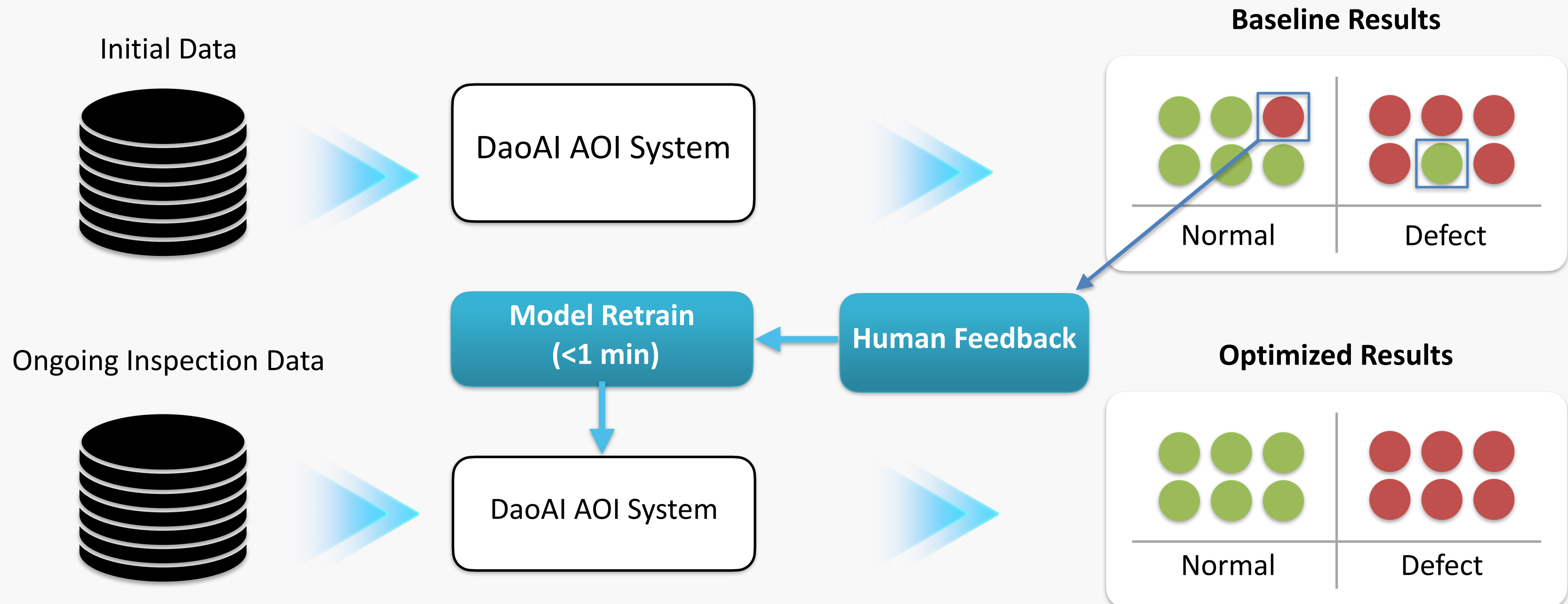
Just like humans learn from their mistakes, DaoAI AOI seamlessly integrates human feedback into its learning process.

When a defect is detected on the production line, operators can review and verify the result, providing feedback directly into the system. This enables continuous model updates and ensures sustained improvement in accuracy over time.



# Continuous Improvement in Model Accuracy

Seamlessly integrate human feedback into model learning



# Exceptional 3D Inspection Accuracy

## 18MP + Telecentric Lens

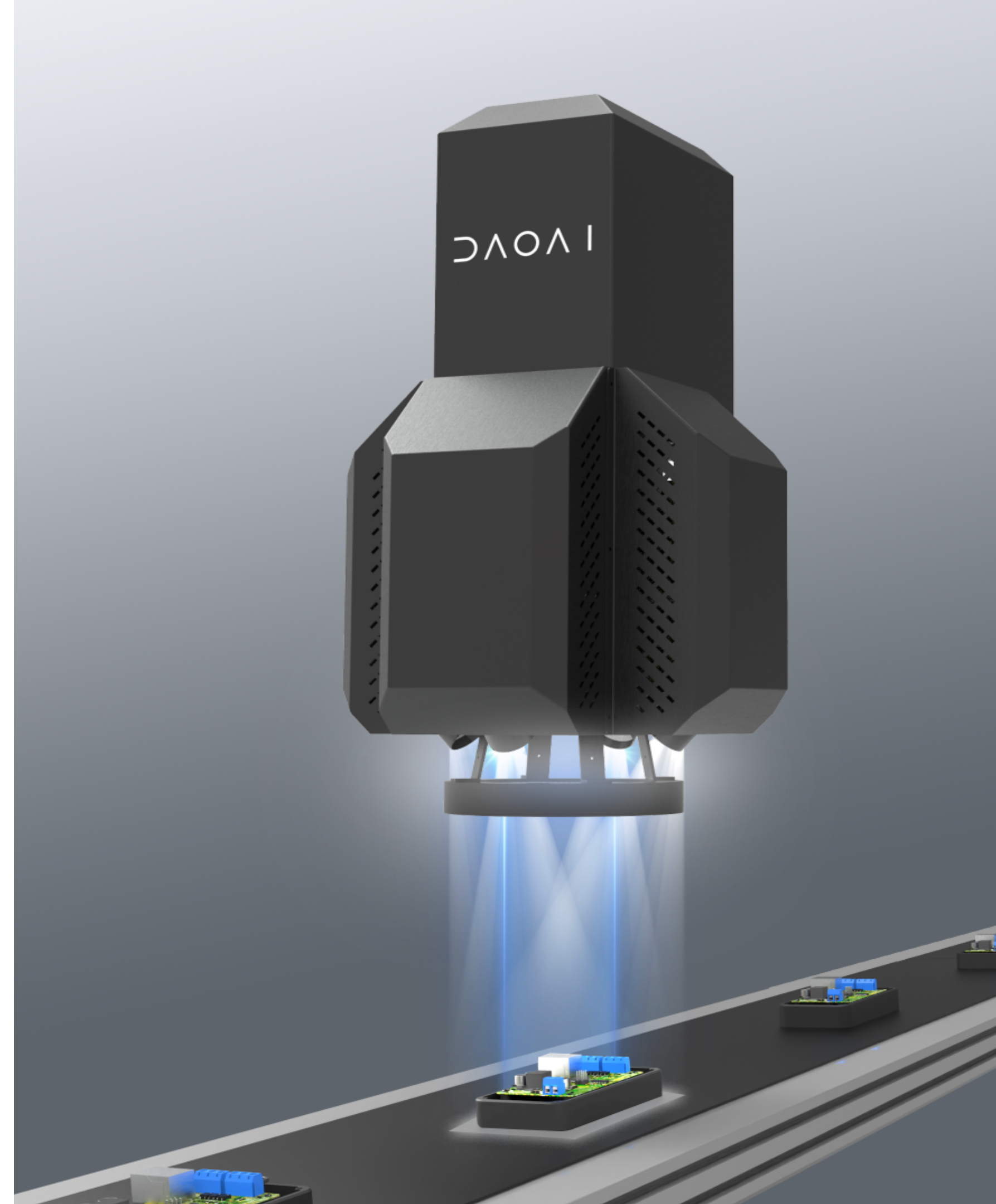
High-Speed Monochrome Camera

$\pm 2$   $\mu\text{m}$   
Repeatability

60 x 60 mm  
FOV

$> 10$   $\text{cm}^2/\text{s}$   
Inspection Speed  
(Range)

0603 mm  
Minimum Detectable  
Part Size

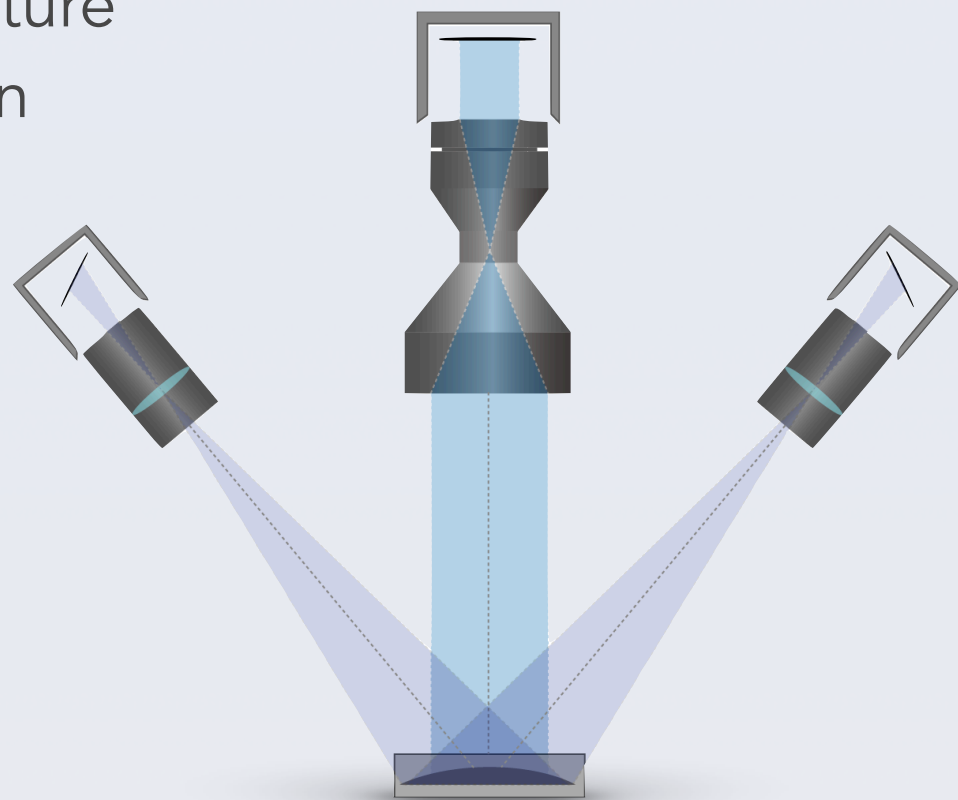




# Precision Optics + Quad-Directional Projection System

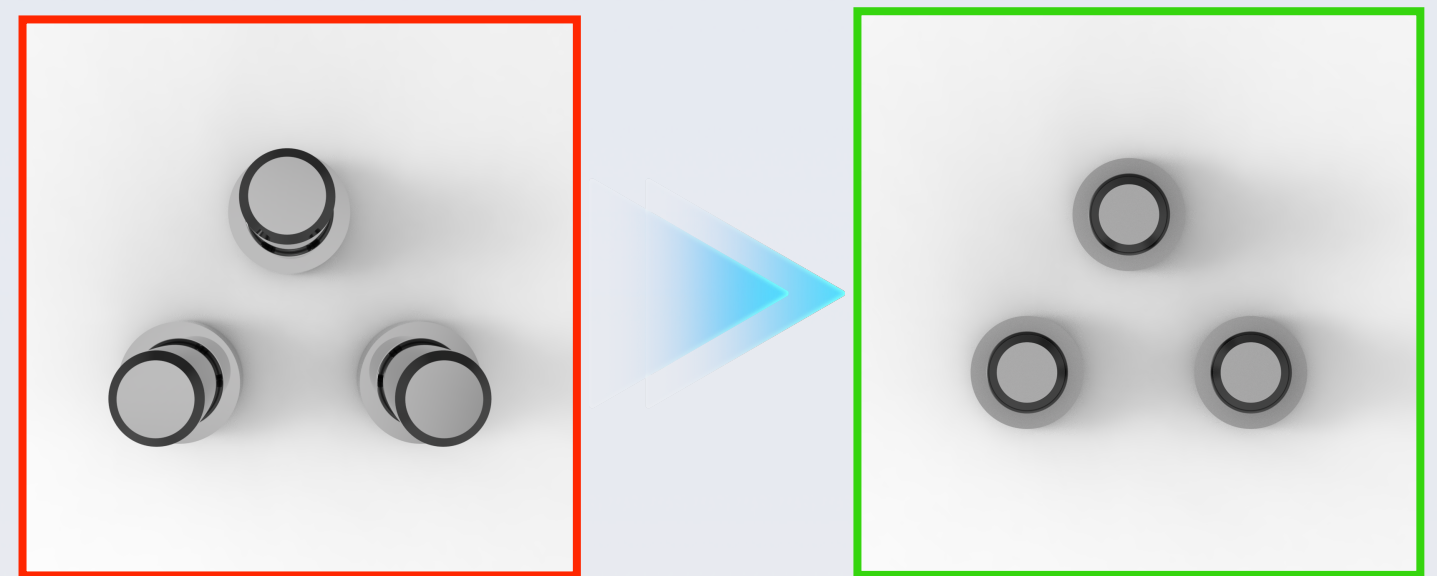
## Central Camera with 4-Direction Structured Light Projection

Maintains sharp focus  
Accurate depth capture  
Eliminates Occlusion



## Uncompromised Accuracy with Telecentric Lens

Reduces perspective errors and blind spots.  
Delivering actual size and shape.



# High-Performance 3D AOI with Full Coverage

Dual-Track

18MP High-Speed Camera

Automatic Programming

Full 3D Height Inspection

Full 2D Color Inspection

MES System Integration

QR Code Reading

RGBW Ring  
Shadowless Light

Four-Direction Structured  
Light Projection

Remote Operation (Optional)

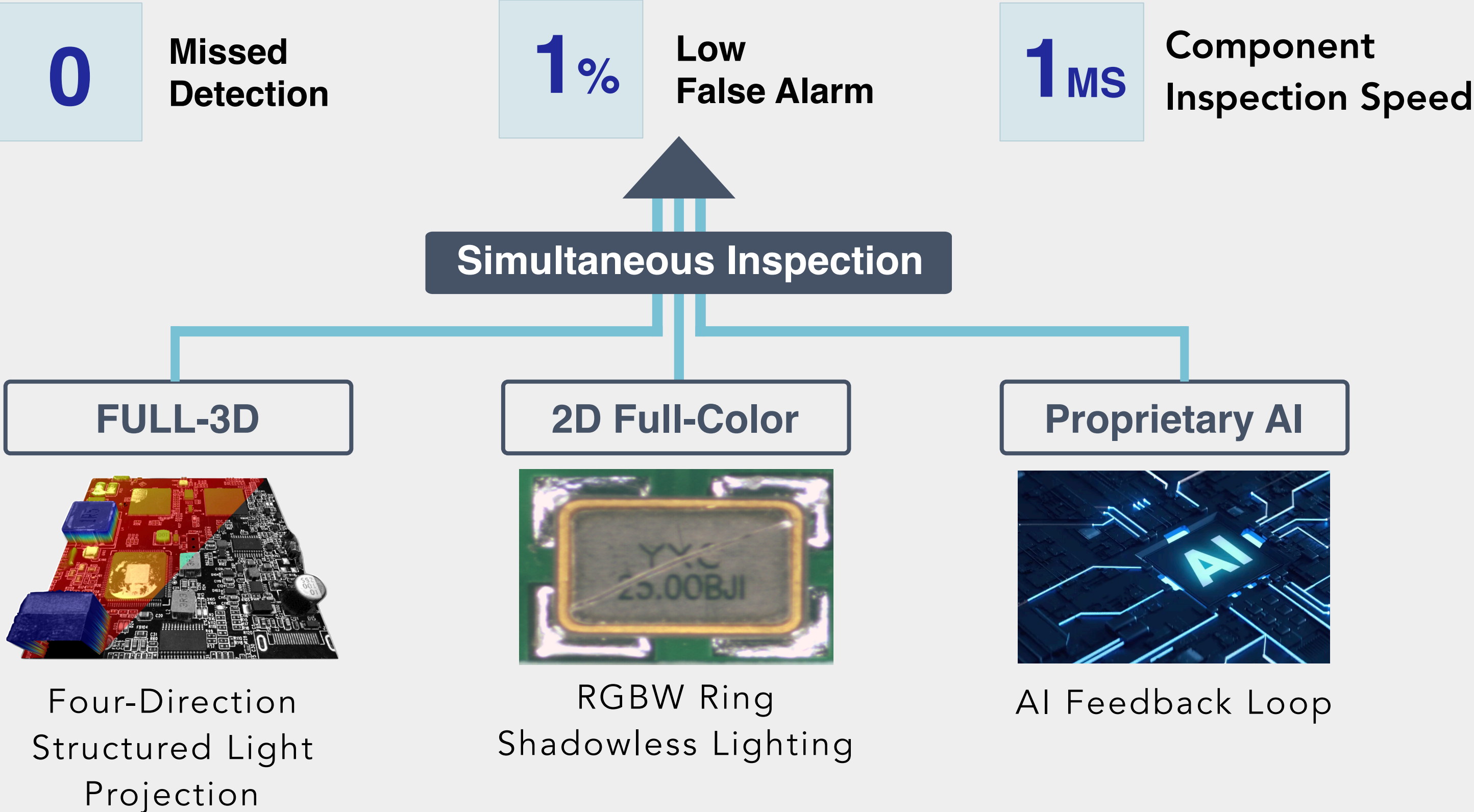
Repair Station (Optional)

Offline Programming (Optional)



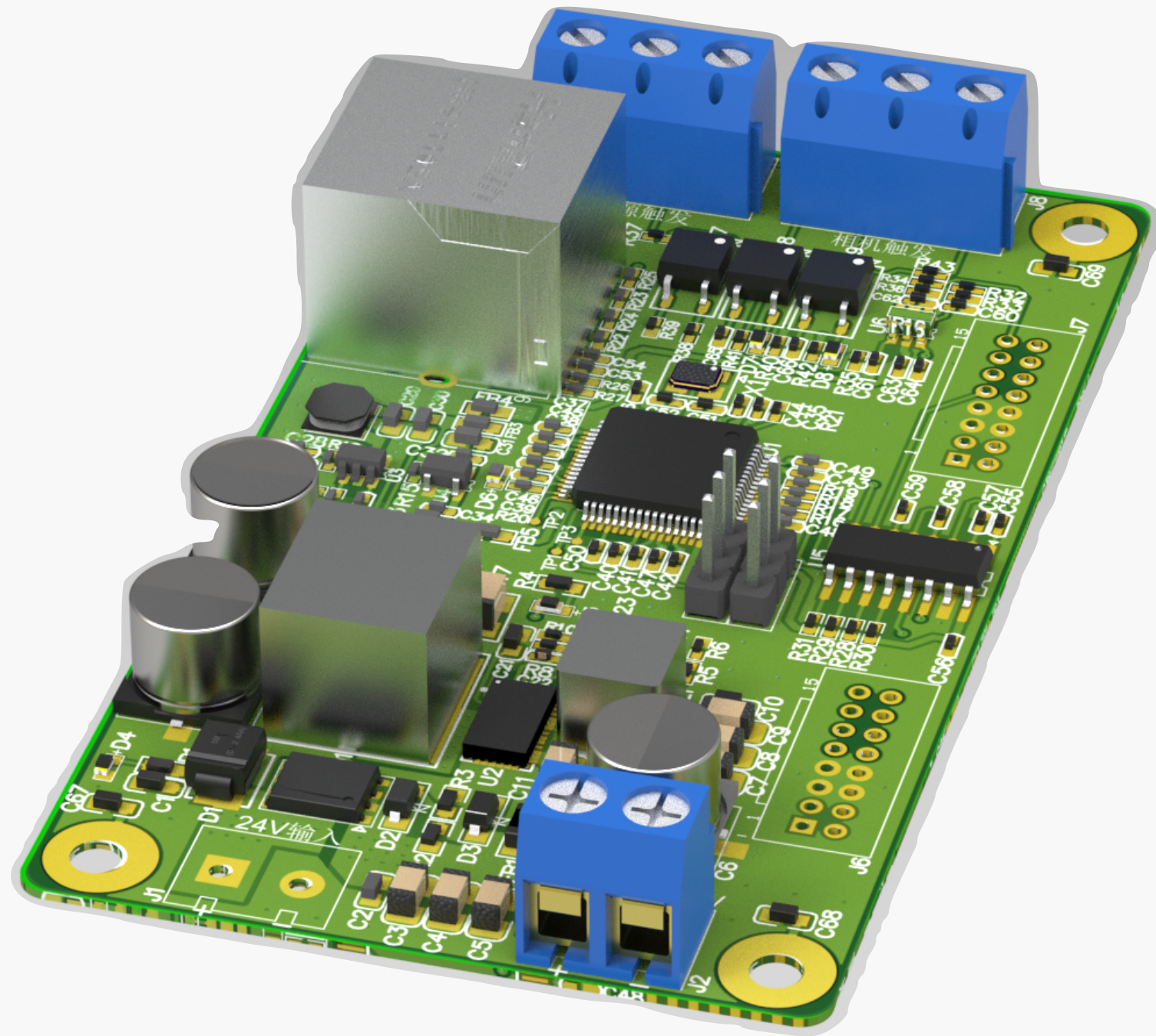


# Efficient Simultaneous 2D & 3D Inspection

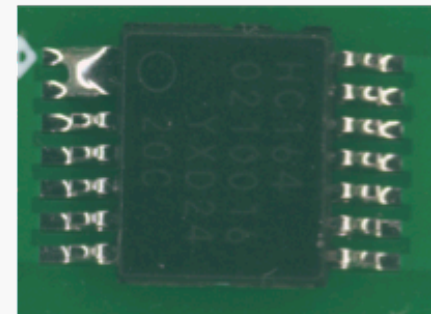




# 2D Full-Color Inspection Capabilities



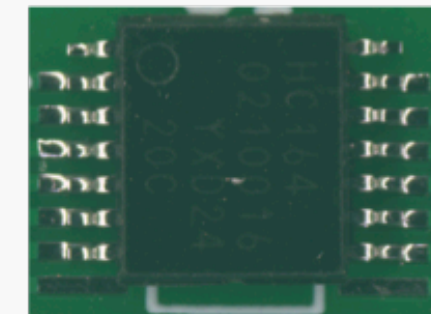
Bridge connections



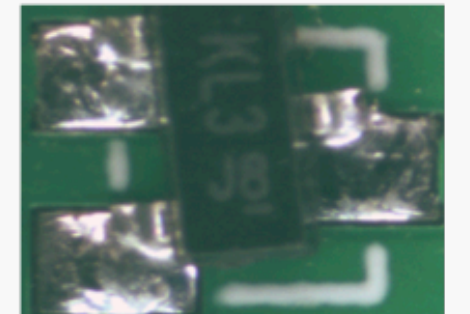
OCR



Chip misplacement



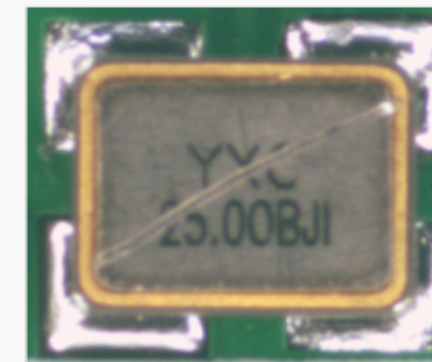
Displacement



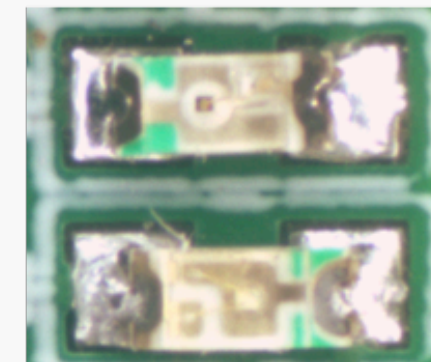
Tombstone



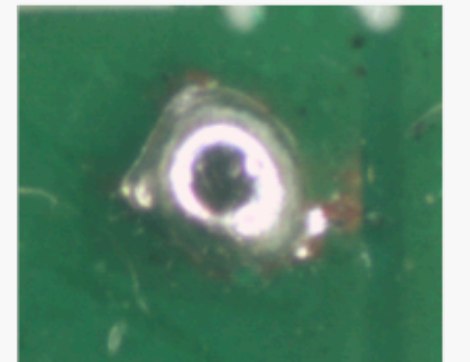
Damaged unit



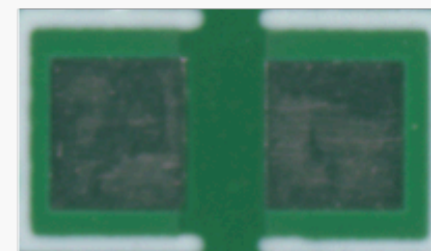
Polarity errors



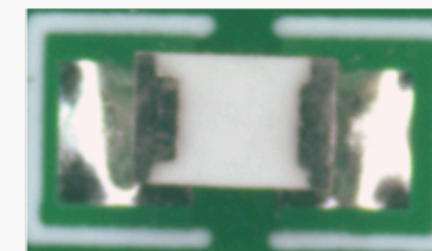
Foreign objects



Missing components

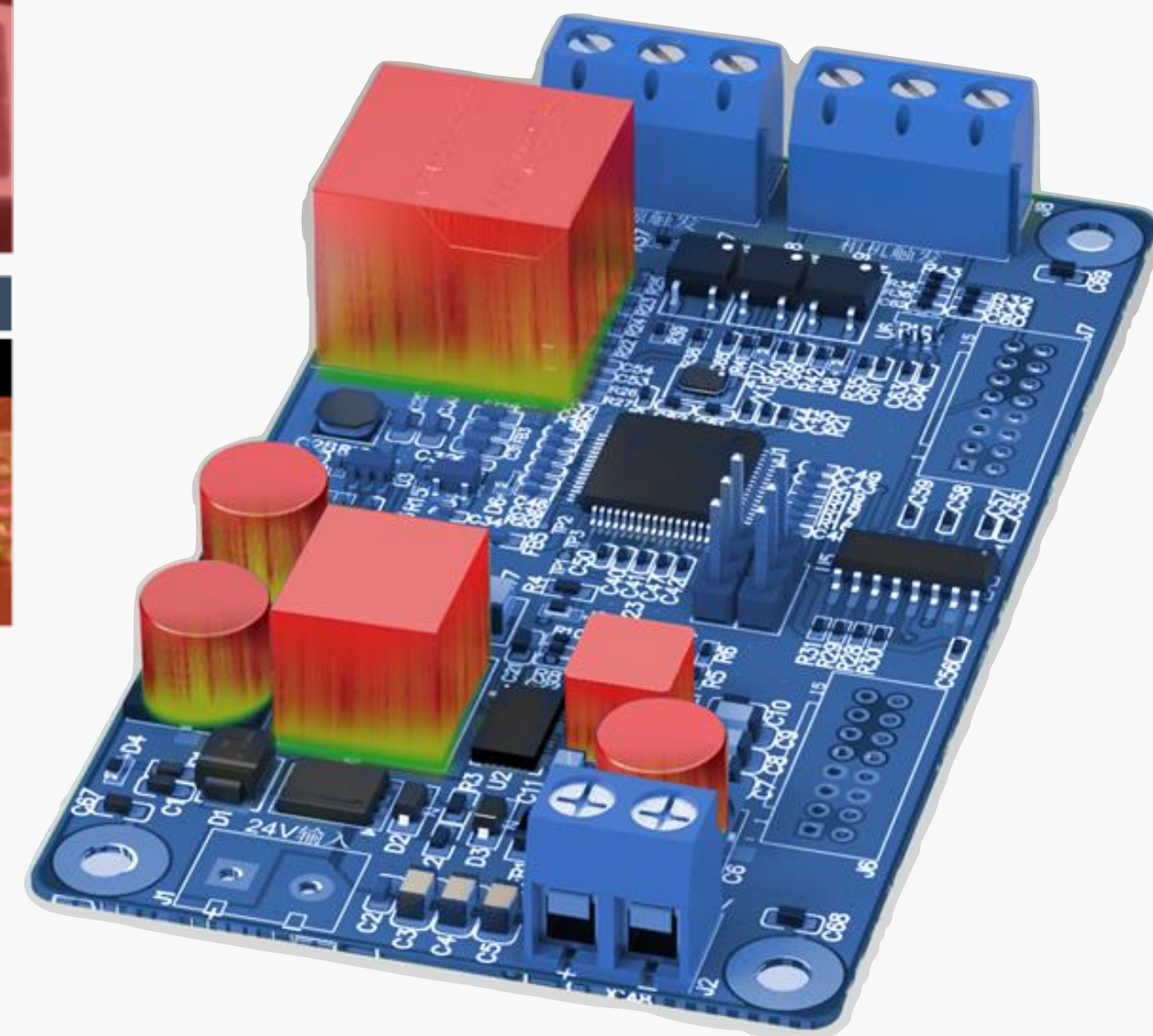
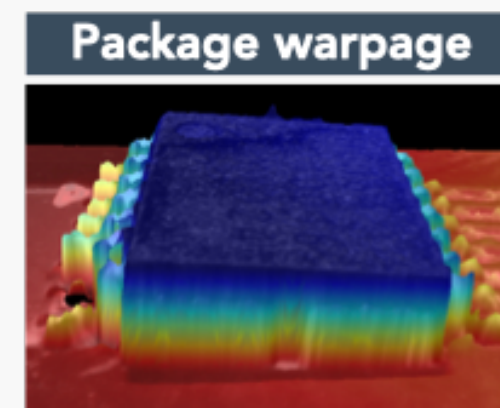
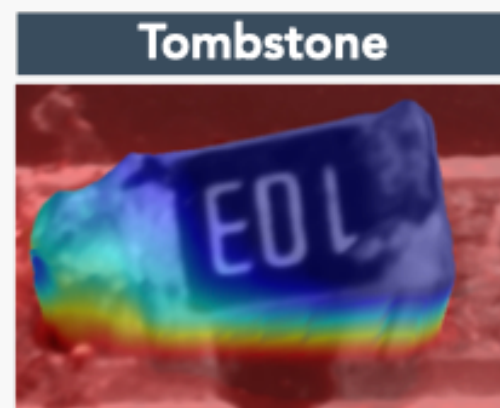
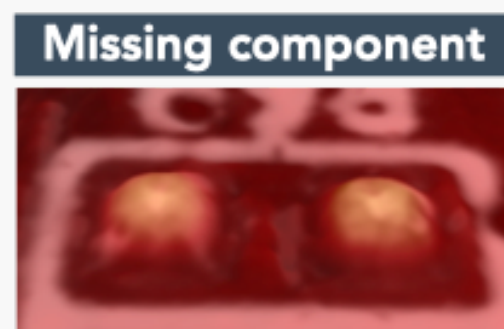
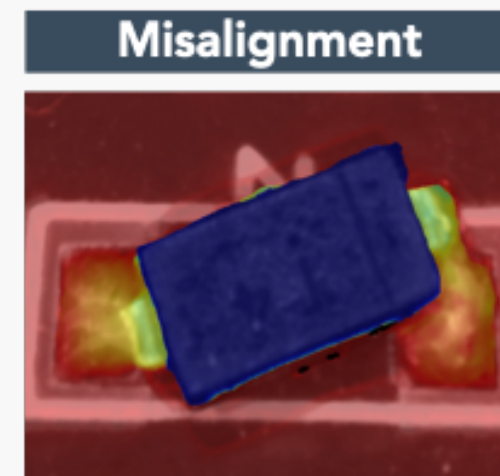
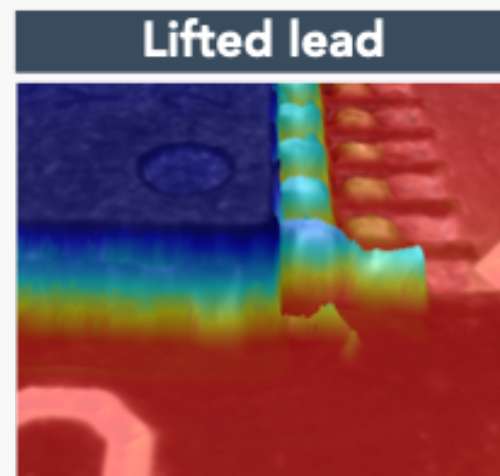
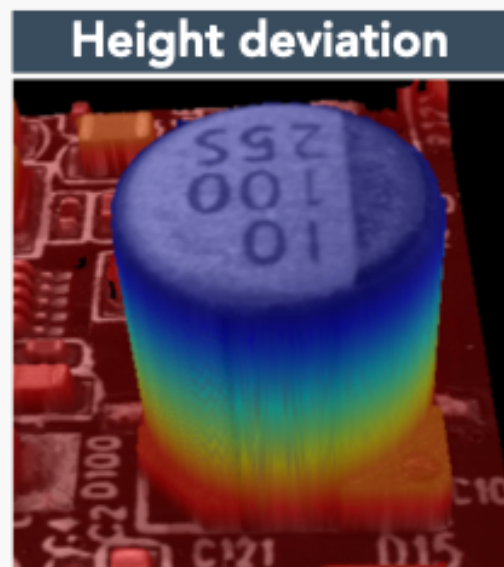


Component flipping





# 3D Inspection Capabilities



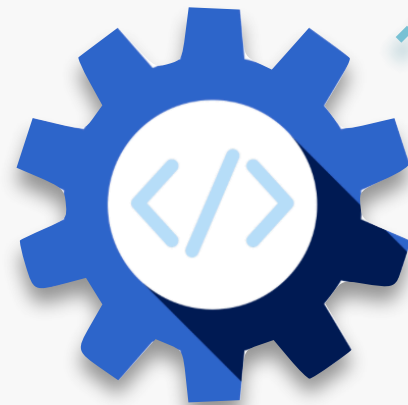
# S1-500D Software Functions

The Optimal Visual Solution for PCB Inspection



## Quick Search

Quickly locate inspection records by date, serial number, or component reference designator.



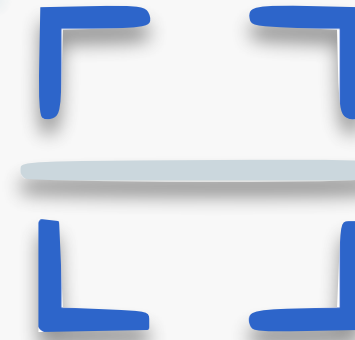
## Automated Programming

CAD Import Support  
Built-In PCB Library  
Automatic Template Matching



## Web-Based Interface

Run directly in your browser, no software installation needed.



## Barcode & QR Code Input

Support External Scanner Integration



## MES Integration

Automatically generates MES system files to a specified directory on the AOI device.



# Why S1-500D Stands Out:

	AOI Type	AI AOI				Traditional AOI		
	Model	S1-500D	AIS4xx	Alpha X5xx	3D-AOI PCxx	MV-6 OMxx	Zenith 2-x	A-5xx
Inspection Capabilities	Camera Resolution(MP)	18	12	12	12	15	8	12
	Optical Resolution(um)	14	15	15	10	15	20	15
	Tracks	2	1	1	1	1	1	1
Inspection Items	Common Errors	✓	✓	✓	✓	✓	✓	✓
	Solder Inspection	✓	✓	✓	✓	✓	✓	✓
	Damaged Parts	✓	✗	✓	✓	✓	✗	✗
	Foreign Objects	✓	✓	✓	✗	✓	✗	✗
	Silkscreen Issues	✓	✗	✗	✗	✗	✗	✗
	Gold Fingers	✓	✗	✓	✗	✗	✗	✗
Support Functions	On-Site Calibration	✓	✗	✗	✗	✓	✗	✗
	Repair Station	✓	✗	✗	✗	✗	✓	✓
	Offline Programming	✓	✗	✗	✗	✓	✗	✓
	Remote Control	✓	✗	✓	✗	✓	✗	✗
	CAD-Based Model Generation	✓	✓	✓	✓	✗	✗	✗
AI Capabilities	AI-Based Defect Detection	✓	✗	✗	✓	✗	✗	✗
	AI Improvement	✓	✗	✗	✗	✗	✗	✗
	AI Positive Sample Learning	✓	✗	✗	✗	✗	✗	✗

# Next-Level AOI Performance: S1-500D

A Smarter & Faster AOI System for PCB Inspection with AI

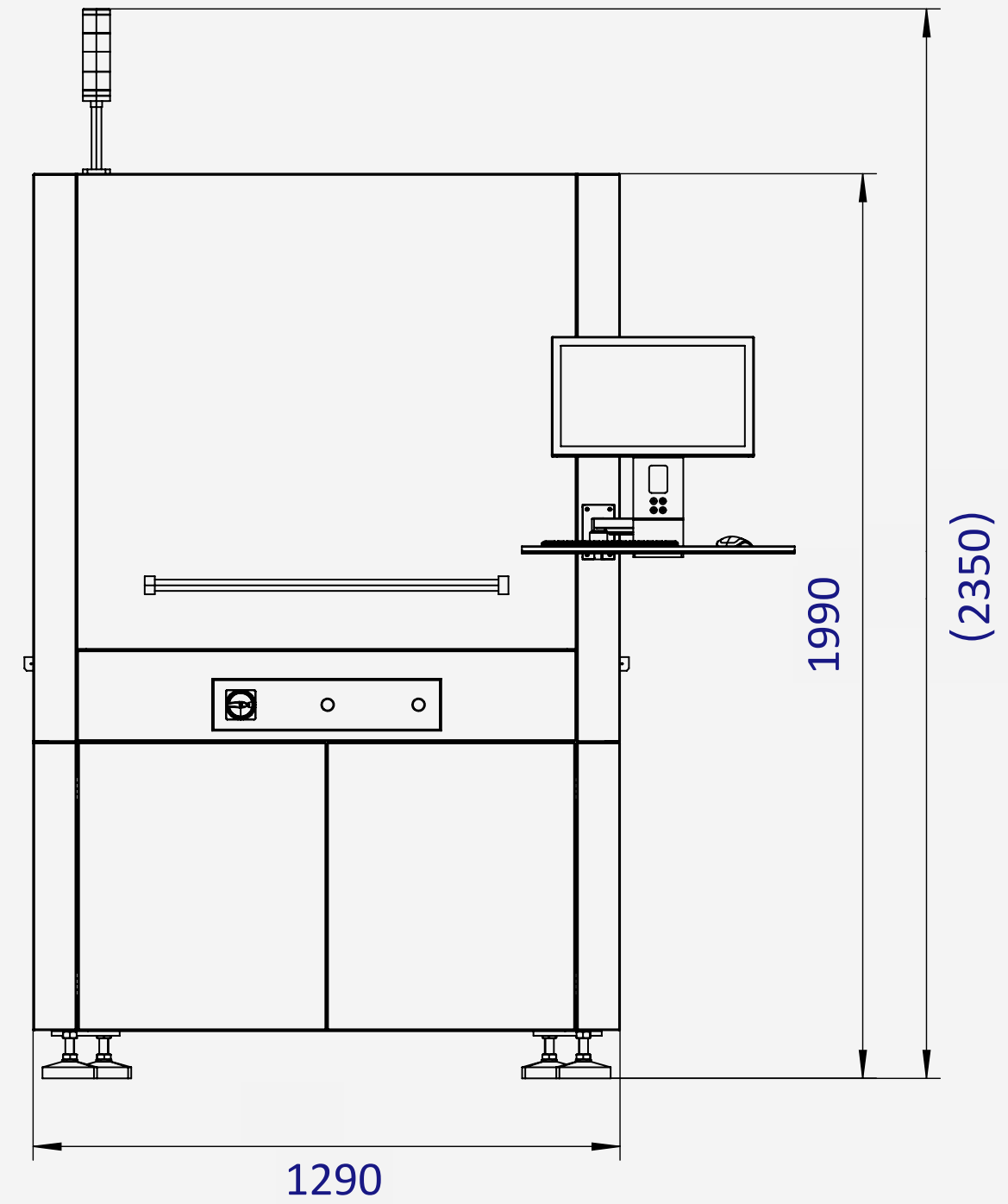
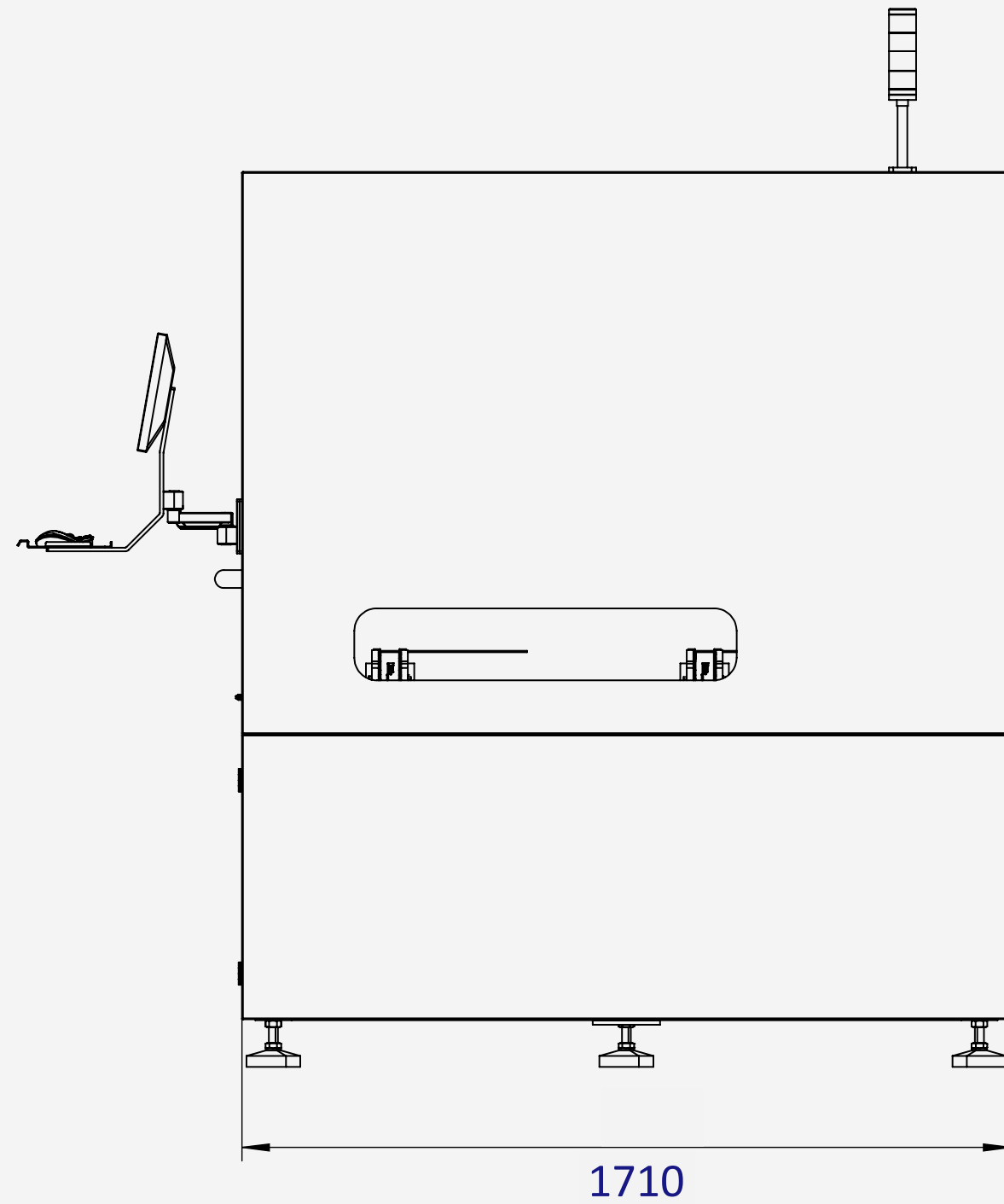


DaoAI AOI	Traditional AOI
10-minute quick start, easy to train	Takes day and deep expertise to set up
2D + 3D simultaneous inspection	2D or 3D inspection only
Train AI model with a single golden sample image; high accuracy	Classic image processing algorithms; lower accuracy
Continuous AI improvement through feedback integration	Complex parameter setup, heavily rely on operator experience
Browser-based access anytime, anywhere	Desktop software required, local access only



# DIEMENSION

# S1-500D AOI SYSTEM



# SPEC

# S1-500D AOI SYSTEM

Equipment Parameters	
Number of tracks	Dual track
Track Height	900±20mm (Distance from the track to the ground)
Motion System	X/Y/Z, AC Servo Motor
Motion System Precision	± 0.01mm
Track Direction	Left to Right or Right to Left (customizable as needed); Dual-track configuration
Power Supply	AC220V, 50/60Hz International Power Plug
Power Consumption	8.8KW
Air Pressure	0.4-0.6Mpa
Dimension	L1290*W1710*H1990 (excluding Tower Stack Light and other accessories)

Optical Imaging System	
Camera	18MP High-Speed Monochrome Camera + Telecentric Lens
FOV	60mm x 60mm
Resolution	14μm
Inspection Speed (Range)	> 10cm²/s
Max 3D Height Measurement	25mm
3D Technology	Four-direction Structured Light Projection

Inspection Parameters		
Camera Light Source	Illuminating Light Source	RGBW color light source
Inspection Defect Items	Component Defects	Missing/wrong/damaged/lifted component, tombstone, billboard, polarity, misalignment, turn over, foreign objects, float, silk screen;
	Solder Defects	Solder height, solder volume, excessive solder, insufficient solder, solder bridge, lifted lead, gold finger defects, surface scratch/solder adhesion;
Inspection Capability	Minimum Component Size	0603 (mm) / 0201 (inch)
	Precision	±6μm (using calibration tools)
PCB Dimensions	Thickness	0.6–5mm
	Maximum Size	500x330mm (dual track)
	Minimum Size	50x50mm
	Clear distance	Top: 50mm, Bottom: 40mm



# DAOAI SMT AOI SYSTEM S1-500D

Contact us

Email: [business@daoai.com](mailto:business@daoai.com)

