

Mech-Eye 2D AI Camera AIC-Lite Series

Smart. Simple. Changeover in Seconds.



All-in-One Design

Highly integrated.
Ready out of the box.

Fast AI Training

1 sample image.
1-second training.

Easy Deployment

Unified software platform
for 2D & 3D vision.

AIC-Lite Series Cameras

Beyond Traditional 2D Vision: Solving 4 Key Challenges

? Traditional 2D Vision Challenges

01 Separate Vision Systems

2D and 3D cameras run on separate systems, leading to complex communication and lengthy commissioning cycles.

02 Complex Integration

Light sources, lenses, and controllers must be selected individually, leading to intricate field wiring.

03 Expert Dependency

Traditional solutions rely on massive training samples, and product changeovers require recalibration by specialized engineers.

04 Limited Flexibility

Manual focus lenses require camera replacement or mechanical readjustment whenever products change.



AIC-Lite Innovative Solutions

All-in-One Design

Multi-zone controllable lighting, a motorized zoom lens, and a global shutter camera — one device that flexibly handles a wide range of product sizes.

Lightweight AI Training

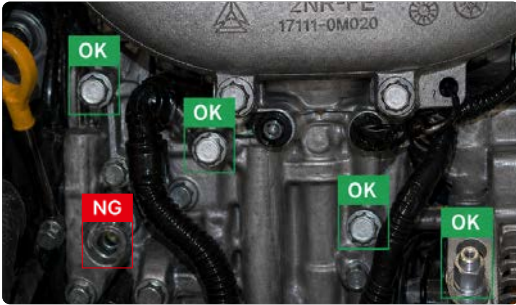
Self-developed few-shot learning algorithm with no-code operation. Train a model in as little as 1 second with just 1 sample, enabling instant production-line changeovers without downtime.

Unified Software Suite

Seamlessly collaborates with 3D cameras via Mech-Vision. A unified software suite enables end-to-end 2D + 3D vision deployment, eliminating cross-system integration challenges.

Typical Applications in the Automotive Industry

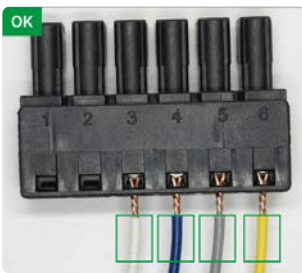
► Presence & Orientation Inspection



Engine Screw Presence Detection



Connector O-Ring Presence Detection



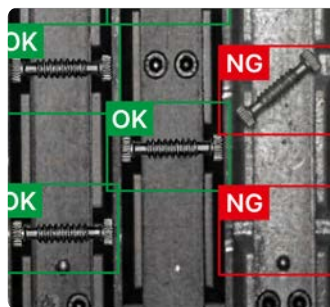
Wire Harness Sequence Inspection



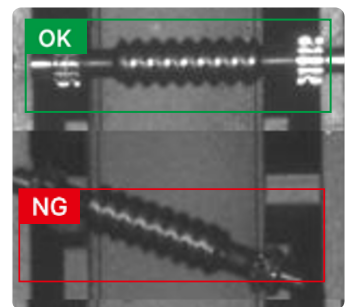
O-Ring Diameter Inspection



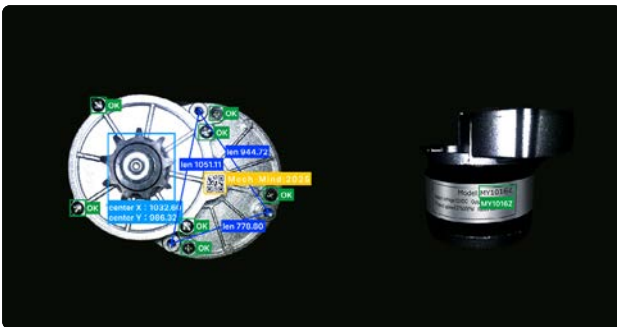
Part Orientation and Positioning



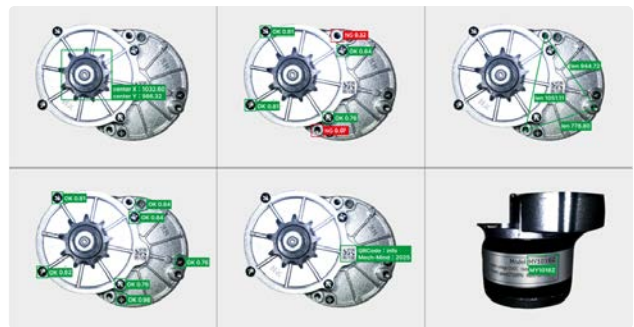
Part Misalignment Check/Error-Proofing



► Comprehensive Inspection



Reducer Comprehensive Inspection



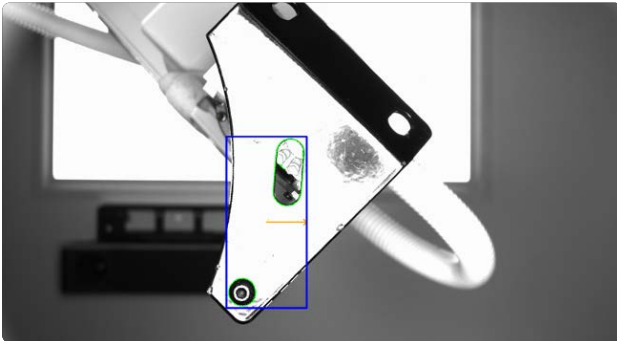
Fixed-Position Screw Presence Detection

Screw Counting / Gear Position Detection / 2D Code Reading / Hole Distance Measurement / Model Identification

Typical Applications in the Automotive Industry

► Secondary Imaging for High-Precision Pose Correction

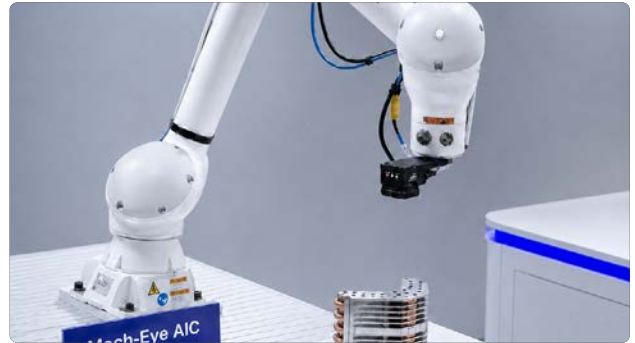
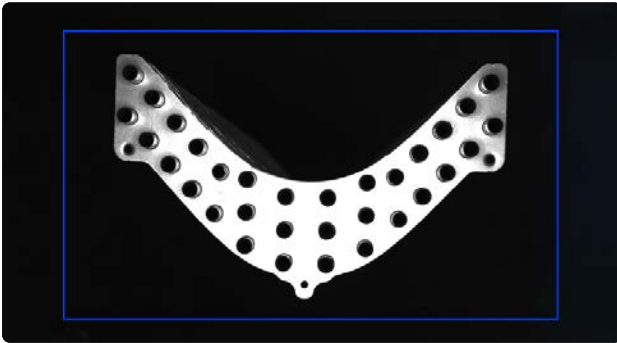
Placement Correction: High-precision pose correction after picking, with accuracy of up to ± 0.2 mm.



High-Precision Loading of Ultra-Thin Reflective Sheet Metal Parts

► 2D Positioning & Guidance

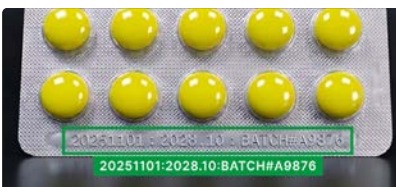
Single-layer workpiece positioning & picking: Guides robots to achieve precise coordinate recognition and automated loading of single-layer workpieces.



Automotive Stamping Part Orientation Recognition & Placement

Typical Applications in Food & Pharmaceutical Industries

► OCR / Code Reading



► Error-Proofing Check



Typical Applications in Consumer Electronics / PCB Industry

► 2D Information Reading

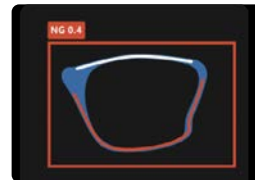
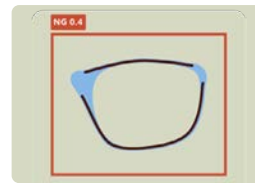


QR Code Reading



Character Reading

► 2D Defect Detection



Typical Applications in the New Energy Industry

► 2D Vision-Guided Picking



► 2D Code Reading

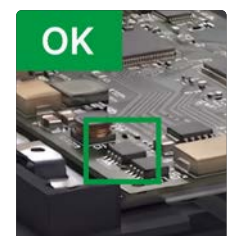
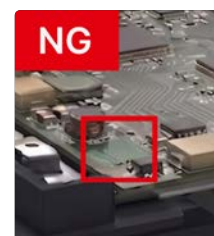
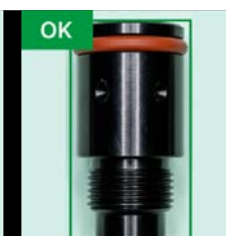


Typical Applications in the Semiconductor Industry

► OCR & Data Entry



► Component Presence & Sequence Inspection



Semiconductor Component Presence & Orientation Inspection

Lightweight AI Algorithms

"One Image Sample, One Second Training"

Traditional Deep Learning Algorithm

- **Samples:** Requires 30–50+ samples
- **Training:** Hours on GPU servers
- **Expertise:** Requires professional AI engineers
- **Changeover:** Requires collecting many new samples, with high downtime

Lite AI Few-Shot Learning Algorithm

- **Samples:** Just 1 standard sample required
- **Training:** As fast as 1 second, edge-ready
- **Expertise:** No-code, user-friendly operation
- **Changeover:** One-click incremental learning, no downtime

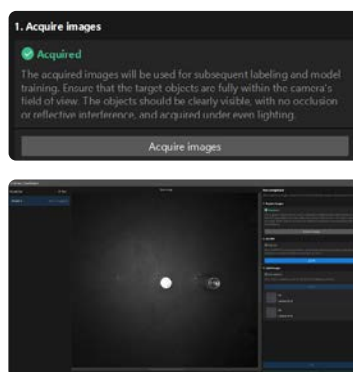
Core Technologies

- **Industrial Pre-Trained Foundation Model:** Built on millions of industrial images, with strong generalization capability.
- **Anomaly Detection:** Learn only from "good" samples and automatically detect any deviation, without collecting all NG samples.
- **Real-Time Edge Training:** No cloud GPU required. Training completes locally on the camera or compute platform in as little as 1 second, helping ensure data security.

Workflow

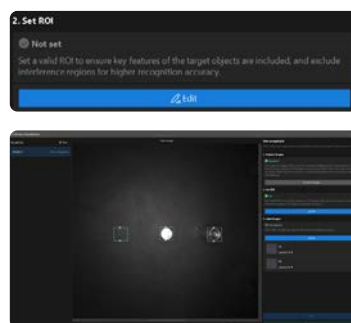
01

Acquire Images



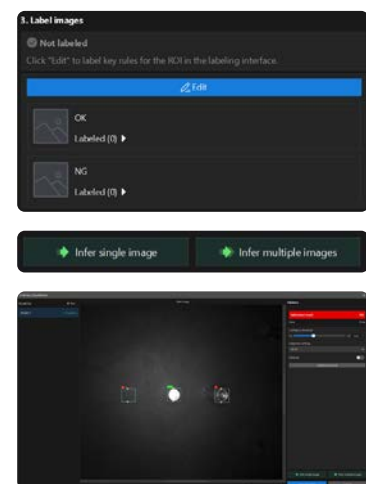
02

Set ROI (Region of Interest)



03

Label Images



Lightweight AI Algorithms

"Faster Deployment, Fewer Samples, Greater Precision, Higher Speed"

Metal Part Installation Orientation Inspection

- 90% fewer samples
- 20x higher efficiency



Criteria

Sample Requirements

Deployment Efficiency

Hardware Requirements

Traditional Deep Learning

Requires 30–50 samples per defect type for deep learning training

2–4 hour deployment or changeover with lighting, focus, and parameter setup

Requires a GPU-equipped industrial PC for training

Lightweight AI Solution

1–3 samples are sufficient to complete model training

Model switching in under 10 minutes, no hardware adjustment required

CPU alone handles both training and inference

Screw Presence Detection for Industrial Cameras

- 3-minute changeover
- False alarm rate reduced by 100x



Criteria

Inspection Principle

Changeover Efficiency

Interference Resistance

Traditional Vision Inspection Systems

Template matching, edge detection, and grayscale thresholding, requiring strict imaging consistency

Machine changeover requires 1–2 hours to recalibrate ROI and parameters

Sensitive to reflective screws and slight positional deviations, with 2–5% false detection rate

Lightweight AI Solution

AI-adaptive feature extraction and intelligent recognition in complex scenarios

<3 minutes auto ROI positioning and model hot switching

Adaptive illumination normalization, with false positive rate <0.05%

Laser-Engraved Metal DPM Code OCR

- 90% deployment time saved
- 3x speedup



Criteria

Deployment Cycle

Sample Requirements

Low-Contrast Recognition

PC-Based Deep Learning OCR Systems

3–5 days of parameter tuning and model iterations

200+ samples required per character type, special fonts require rebuilding the training dataset

Recognition accuracy drops to 95% in low-contrast scenarios

Lightweight AI Solution

<2 hours for one-click adaptation and automated optimization

Universal model, plug-and-play

99.99%+ overall recognition accuracy

Highly Integrated Design

"Optics, Mechanics, Electronics, Algorithms" in One Camera

The Mech-Eye AIC-Lite Series 2D AI camera features a highly integrated "optics-mechanics-electronics-algorithms" design. Integrating multi-zone controllable lighting, a motorized zoom lens, and a global shutter camera, a single device flexibly adapts to diverse product sizes, powered by intelligent and easy-to-use software algorithms.

Motorized Zoom Lens

- 8/16 mm motorized autofocus
- A single camera covers multiple working distances for parts at different heights
- Zero adjustment for changeover



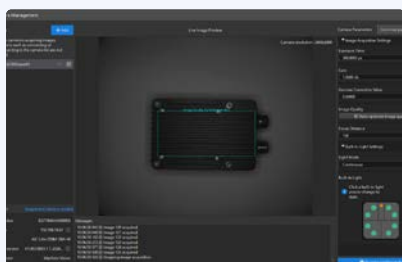
Multi-Zone Controllable Lighting

- Main model equipped with 12 LED beads and 4-channel controllable lighting
- Flexible adaptation to various application scenarios

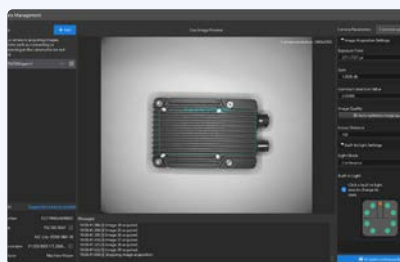


Global Shutter Camera

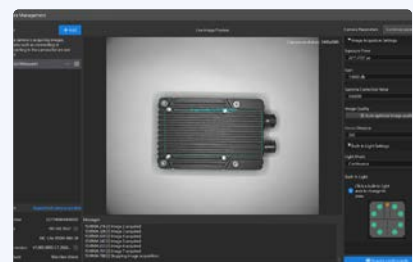
- Free from motion blur in high-speed imaging
- Complete imaging of fast-moving objects
- Stable, blur-free performance



Area Selection



Auto Brightness Adjustment



Auto Focus

One-Stop, No-Code Deployment

"One Unified System, Integrated 2D + 3D Vision"

Core Traditional 2D Vision Algorithms

Calibration & Measurement

- 2D Extrinsic Parameter Calibration
- Distortion Calibration
- Distance/Angle/Width Measurement

Positioning & Recognition

- 2D Template Matching
- Blob Analysis
- Color Detection, Line/Circle Finding

Logic & Extensions

- Logic Tools
- Python Scripting

Core AI Algorithms

Lite AI

- AI Classification (Orientation/Multi-Class)
- AI OCR

Deep Learning

- Instance/Defect Segmentation
- Object Detection/Classification
- Text Detection & Recognition

Large Models

- Pick Anything V2
- Object-Bin Segmentation

► Key Advantages of the Mech-Vision 2D+3D Vision Software Platform

One-Stop Rapid Deployment

- Built-in 1,000+ robot models, supporting 2D/3D perception, path planning, and production deployment in a single software platform
- Drag-and-drop, zero-code programming reduces project cycles from weeks to 1–2 days.

Multi-Scenario Adaptability

- 2D/3D matching, deep learning, and multimodal fusion enable robust performance in challenging scenarios such as high-glare reflections, tightly stacked parts, and large SKU variations
- Recognition accuracy >99.99%

Intelligent Operation & Maintenance

- Real-time visual monitoring with minute-level changeover and fast troubleshooting
- No engineer intervention required for production changes, enabling unmanned operation

► Flexible Deployment Options



2D + 3D Camera for Precise Guidance

Mech-Eye 2D and 3D cameras work in deep coordination to deliver high-precision visual guidance, enabling reliable positioning and recognition in complex scenarios.



Single IPC for Multi-Camera Control

A single industrial PC connects to and triggers multiple cameras simultaneously, simplifying system architecture and reducing cost and deployment complexity.



Flexible Mounting Options

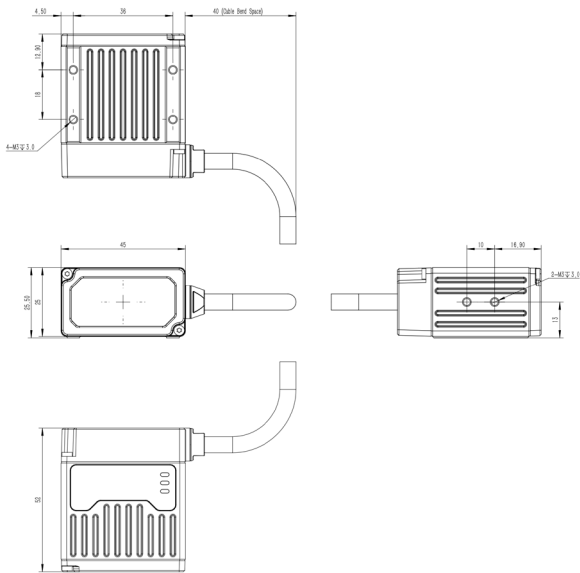
Supports both ETH (eye-to-hand) and EIH (eye-in-hand) configurations, adapting to different production line layouts and application requirements.

Key Specifications

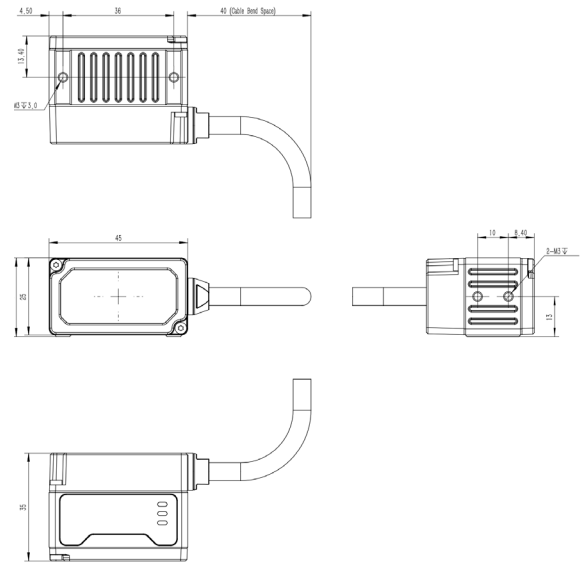
Model	AIC-Lite-016M-07M-W-GL	AIC-Lite-016M-16M-W-GL	AIC-Lite-050M-08A-W-GL	AIC-Lite-050M-16A-W-GL	AIC-Lite-050C-08A-W-GL	AIC-Lite-120M-00C-N-GL	AIC-Lite-200M-00C-N-GL	AIC-Lite-250M-00C-N-GL
Basic Specifications								
Resolution	1440 × 1080		2400 × 2000			4096 × 3000	5328 × 4608	5120 × 5120
Color	Monochrome				Color	Monochrome		
Focusing Mode	Manual Focus		Motorized Focus			Manual Focus		
Light Source	Non-polarized white light				Polarized/Non-polarized white light	None		
Working Distance/mm	40 ~ 150	80 ~ 200	80 ~ 1500	100 ~ 1500	80 ~ 1500	Adapted based on lens		
Field of View (FOV)/mm	30 × 22 ~ 111 × 83	21 × 16 ~ 58 × 44	210 × 157 @ 200 mm	96 × 72 @ 200 mm	216 × 164 @ 200 mm	Adapted based on lens		
Pixel Size/μm	3.45 × 3.45						2.74 × 2.74	2.5 × 2.5
Sensor Size	1/2.7"		2/3"			1.1"	1.2"	1.1"
Max Frame Rate	12fps		16fps		12fps	9.9fps	4.9fps	4.5fps
Sensor Type	CMOS, Global Shutter							
Lens/mm	6.72	16	8	16	8	Optional		
Trigger Mode	Software trigger / External trigger, etc.							
Software	Mech-Vision 2.2+ (Supports 2D matching, measurement, lite AI, etc.)							
Certifications	FCC、ISED、CE、UKCA		FCC、ISED、KC、CE、UKCA			FCC、ISED、CE、UKCA		
Aimer	Orange/Green light		Red crosshair			None		
Interface Specifications								
Interface	12-pin M12 power IO cable, including Ethernet & GPIO interface		12-pin M12 power IO cable, 8-pin M12 network port			6-pin power IO cable, RJ45 network cable		
Network Interface	Fast Ethernet (100 Mbps)		Gigabit Ethernet					
GPIO Interface	1 isolated input, 1 isolated output, 1 configurable I/O		2 isolated inputs, 3 isolated outputs			6-pin interface: 1 opto-isolated input, 1 opto-isolated output, and 1 non-isolated configurable I/O		
LED Indicators	Power indicator, Network indicator, Capture indicator					Power indicator		
Power Specifications								
Input	9 ~ 26VDC					9 ~ 24VDC		
Max Power Consumption	<10.5W		<18W			<2.6W	<2.6W	<3.2W
Structural Specifications								
Dimensions/mm	45 × 35 × 25 (excluding cables)	45 × 52 × 25.5 (excluding cables)	82 × 55 × 50.7 (excluding interface height)			29 × 29 × 42 (excluding lens mount & rear interfaces)		
Weight/g	<110	<140	<350			98		140
IP Rating	IP65					IP40 (with correct lens and cable installation)		
Environmental Specifications								
Operating Temperature	-20°C ~ +50°C					0°C ~ +50°C		
Operating Humidity	20% ~ 95% (non-condensing)					20% ~ 80% (non-condensing)		
Storage Temperature	-30°C ~ +70°C					-30°C ~ +80°C		

Specifications are subject to the official website.

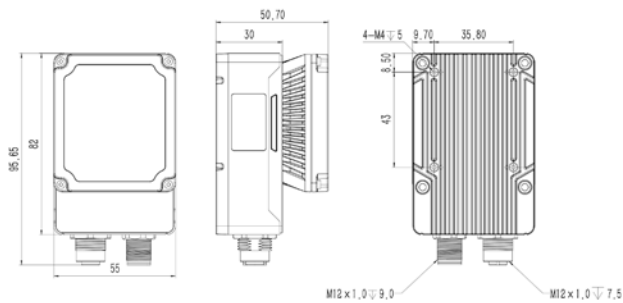
Dimensions



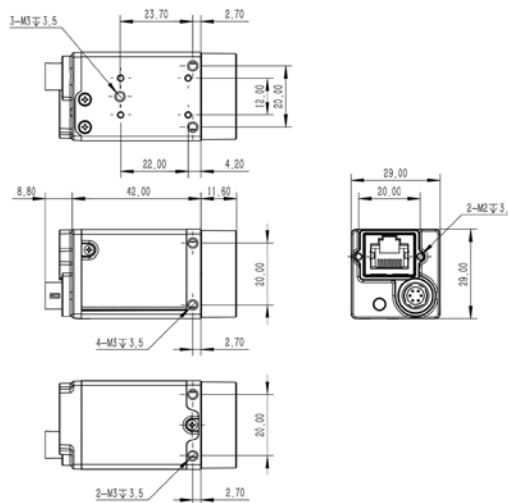
AIC-Lite-016M-16M-W-GL



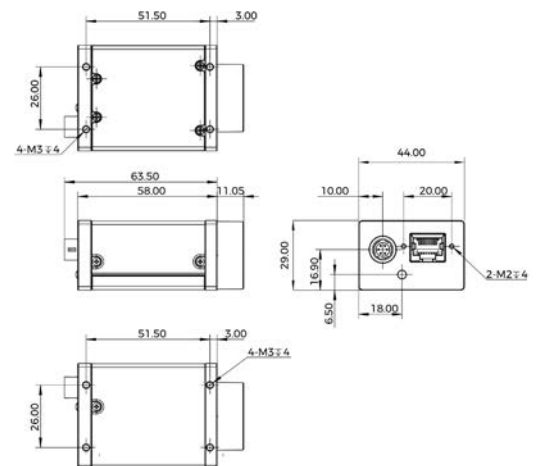
AIC-Lite-016M-07M-W-GL



AIC-Lite-050M-08A-W-GL | AIC-Lite-050M-16A-W-GL | AIC-Lite-050C-08A-W-GL



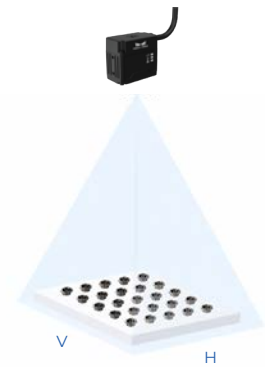
AIC-Lite-120M-00C-N-GL | AIC-Lite-200M-00C-N-GL



AIC-Lite-250M-00C-N-GL

Field of View

Model	Lens/mm	Working Distance/mm	FOV (H × V) /mm	Single-Pixel Resolution/mm
AIC-Lite-016M-07M-W-GL	6.72	40	29.57 × 22.18	0.021
		150	110.89 × 83.17	0.077
AIC-Lite-016M-16M-W-GL	16	80	24.84 × 18.63	0.017
		200	62.10 × 46.58	0.043
AIC-Lite-050M-08A-W-GL	8	80	82.80 × 69.00	0.035
		200	207.00 × 172.50	0.086
		1500	1552.50 × 1293.75	0.647
AIC-Lite-050M-16A-W-GL	16	100	51.75 × 43.13	0.022
		200	103.50 × 86.25	0.043
		1500	776.25 × 646.88	0.323
AIC-Lite-050C-08A-W-GL	8	80	82.80 × 69.00	0.035
		200	207.00 × 172.50	0.086
		1500	1552.50 × 1293.75	0.647
AIC-Lite-120M-00C-N-GL	8	100	176.64 × 129.38	0.043
		500	883.20 × 646.88	0.216
		1500	2649.60 × 1940.63	0.647
	12	100	117.76 × 86.25	0.029
		500	588.80 × 431.25	0.144
		1500	1766.40 × 1293.75	0.431
	16	150	132.48 × 97.03	0.032
		500	441.60 × 323.44	0.108
		1500	1324.80 × 970.31	0.323
	25	150	84.79 × 62.10	0.021
		500	282.62 × 207.00	0.069
		1500	847.87 × 621.00	0.207
	35	200	80.75 × 59.14	0.020
		500	201.87 × 147.86	0.049
		1500	605.62 × 443.57	0.148
	50	250	70.66 × 51.75	0.017
		500	141.31 × 103.50	0.035
		1500	423.94 × 310.50	0.104
AIC-Lite-200M-00C-N-GL	12	100	121.66 × 105.22	0.023
		500	608.28 × 526.08	0.114
		1500	1824.84 × 1578.24	0.343
	16	150	136.86 × 118.37	0.026
		500	456.21 × 394.56	0.086
		1500	1368.63 × 1183.68	0.257
	25	150	87.59 × 75.76	0.016
		500	291.97 × 252.52	0.055
		1500	875.92 × 757.56	0.164
	35	200	83.42 × 72.15	0.016
		500	208.55 × 180.37	0.039
		1500	625.66 × 541.11	0.117
	50	250	72.99 × 63.13	0.014
		500	145.99 × 126.26	0.027
		1500	437.96 × 378.78	0.082
AIC-Lite-250M-00C-N-GL	12	100	106.67 × 106.67	0.021
		500	533.33 × 533.33	0.104
		1500	1600.00 × 1600.00	0.313
	16	150	120.00 × 120.00	0.023
		500	400.00 × 400.00	0.078
		1500	1200.00 × 1200.00	0.234
	25	150	76.80 × 76.80	0.015
		500	256.00 × 256.00	0.050
		1500	768.00 × 768.00	0.150
	35	200	73.14 × 73.14	0.014
		500	182.86 × 182.86	0.036
		1500	548.57 × 548.57	0.107
	50	250	64.00 × 64.00	0.013
		500	128.00 × 128.00	0.025
		1500	384.00 × 384.00	0.075



AIC-Lite-016M-07M-W-GL | AIC-Lite-016M-16M-W-GL



AIC-Lite-050M-08A-W-GL | AIC-Lite-050M-16A-W-GL
AIC-Lite-050C-08A-W-GL



AIC-Lite-120M-00C-N-GL | AIC-Lite-200M-00C-N-GL
AIC-Lite-250M-00C-N-GL

Specifications are subject to the official website.

Empowering Global Customers

Mech-Mind Self-Owned Factory

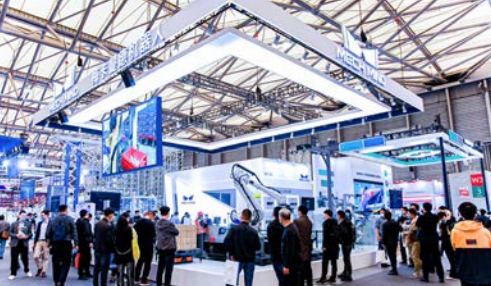
- High-standard factory: spans 5,000 sqm; certified for ISO 9001, ISO 14001, and ISO 45001.
- Top-tier camera manufacturing: CE, FCC, VCCI, KC, ISCED, NRTL certified; MTBF ($\geq 100,000$ hours)
- Annual production capacity: 20,000+ units
- 100% factory inspection
- 2-week delivery



Mech-Mind Academy

- **Online and offline learning:** Whether remote learning or immersive in-person instruction, we've got you covered.
- **Beginner-friendly courses:** All can quickly get started on 3D vision applications through step-by-step video tutorials and clearly defined training.
- **Multifaceted training:** Students can master the expertise in setup, configuration, application deployment and project delivery.





About Mech-Mind

Mech-Mind is an industry-leading provider of industrial 3D cameras ("Eye"), AI software suites ("Brain"), and dexterous hands ("Hand") for intelligent robotics. With the comprehensive and standardized "Eye-Brain-Hand" product portfolio and universal components, Mech-Mind empowers partners and system integrators to tackle the most challenging automation tasks—bin picking, depalletizing & palletizing, picking & placing, inspection and more—bringing automation to the next level.

Backed by Top Global Investors

Founded in 2016, Mech-Mind is a global leader in embodied AI and robotics, ranked No.1 globally by market share for multiple consecutive years. Backed by Intel, IDG, and other leading global investors, Mech-Mind is among the most well-funded embodied AI and robotics companies worldwide.

Trusted Partner for System Integrators

Excellent usability, proven quality, high flexibility, comprehensive service and competitive pricing, helping customers and partners outperform. Our mature solutions empower system integrators to tackle demanding applications.

World-Class Team with Deep R&D in Embodied AI

Mech-Mind has assembled highly qualified experts with deep technical knowledge in multimodal large models, 3D imaging, robotics algorithms, AI software, etc. The **general-purpose "Eye-Brain-Hand" product portfolio**, which is based on high-precision 3D cameras, AI software, and dexterous hands, can be adapted to various robots and application scenarios.

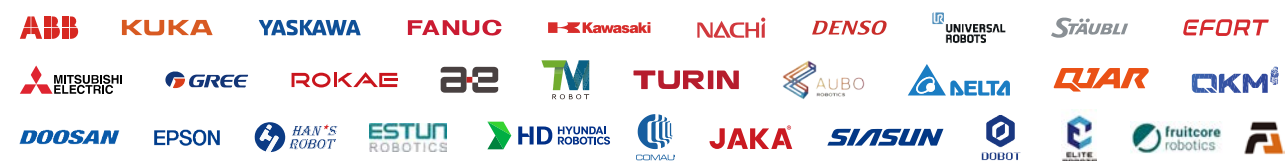
Large-Scale, Cross-Industry, Global Deployments

Mech-Mind has deployed **29,000+ units** across **nearly 50 countries** and served **100+ Fortune Global 500 clients**. Our solutions deliver visible ROI across industries—automotive, F&B, logistics, home appliances, EV batteries, metal and machining, electronics, etc.—with applications such as machine tending, depalletizing, assembly, welding, inspection and piece picking.

Our Partners



Compatible with Major Robot Brands



Your Trusted Partner in Embodied AI and 3D Vision

● Partners and subsidiaries



100+

Fortune Global 500 Clients

29,000+ Cameras

Installed Worldwide

~50

Countries & Regions

Find us all over the world

Germany

Industriestraße 15, 82110 Germering, Munich, Germany

South Korea

Rooms 212, 213, and 214, Byucksan Digital Valley 5-cha, 60-73 Gasan-dong, Geumcheon-gu, Seoul, Republic of Korea

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