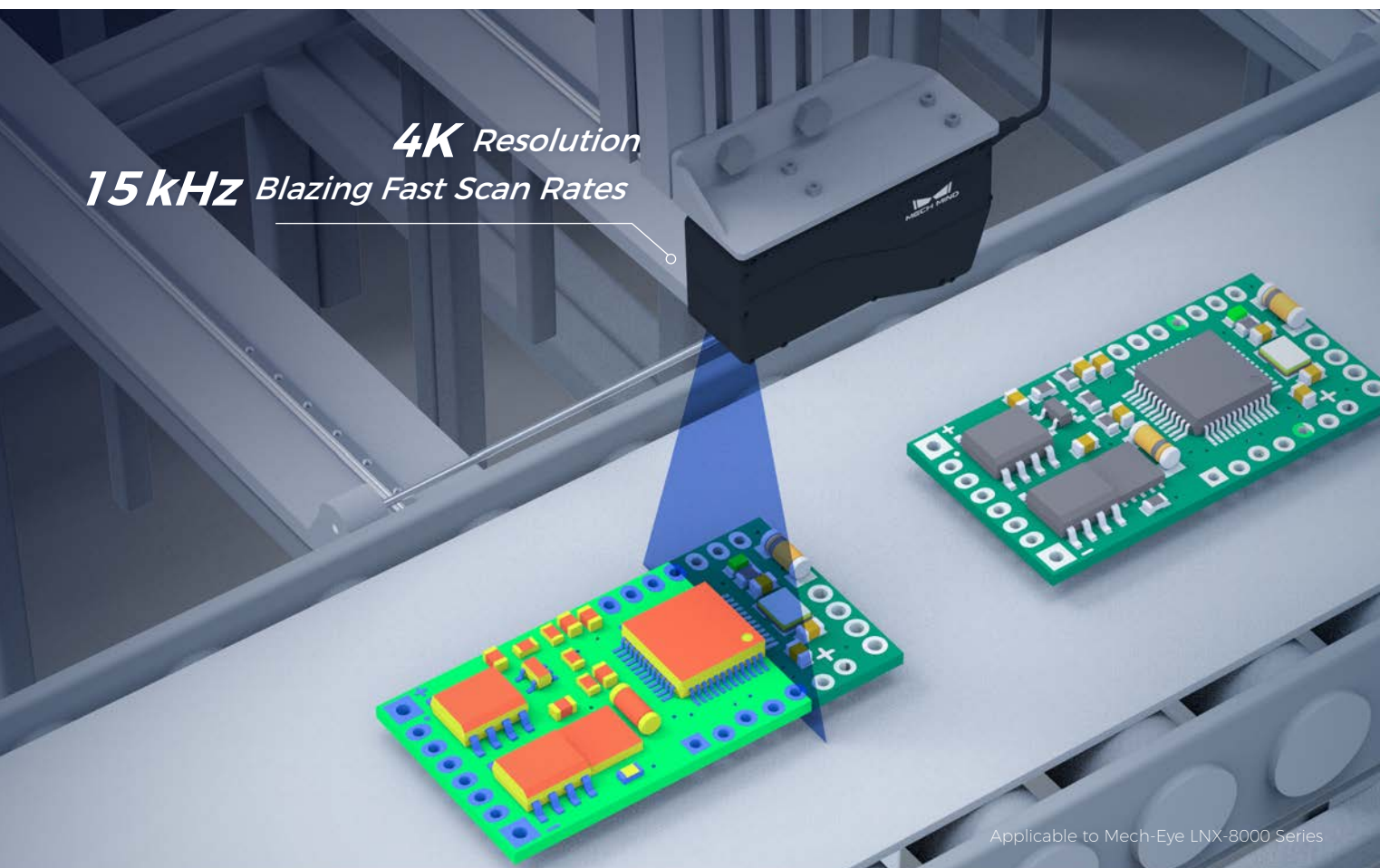


4K Resolution
15 kHz Blazing Fast Scan Rates



Applicable to Mech-Eye LNX-8000 Series

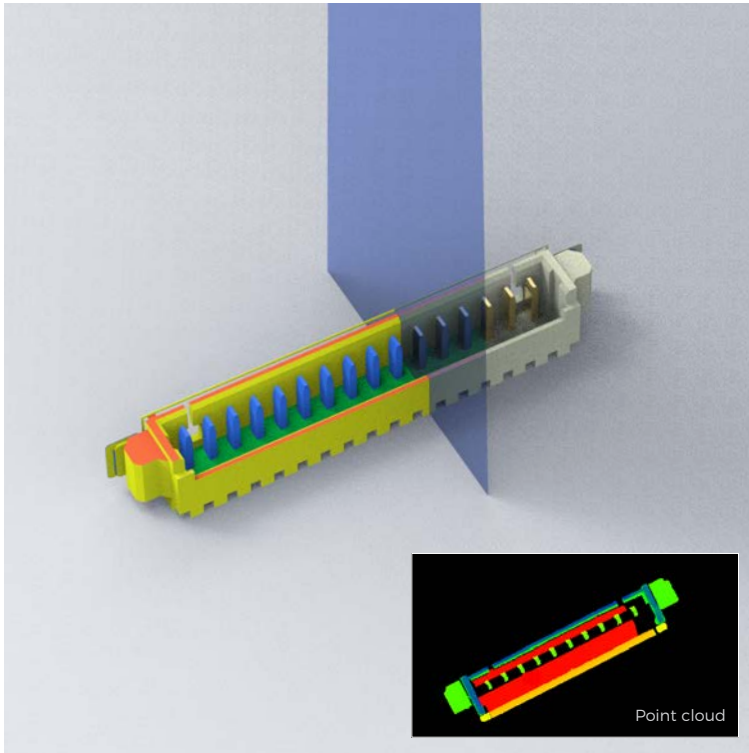
3D Laser Profilers

Mech-Eye LNX Series

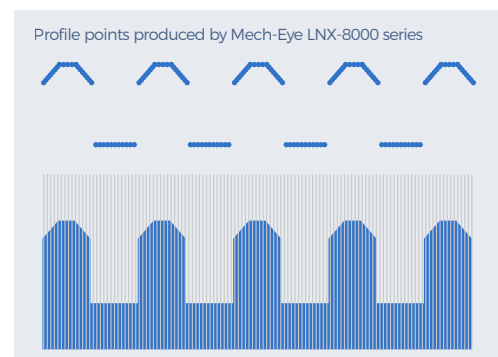
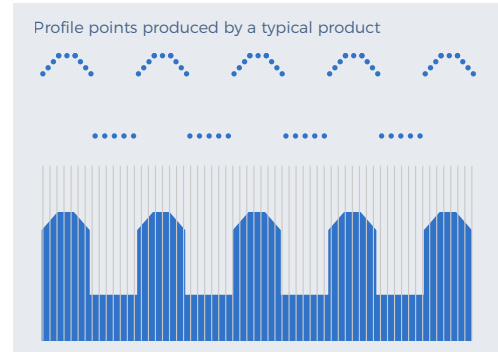
For inline measurement and inspection in electronics, EV battery, automotive and more industries.

4K+ Resolution Laser Profiling to see every detail and feature

Mech-Eye LNX series is a new-generation 3D laser profiler with high resolution. Leveraging advanced optical design and 3D algorithms, the Mech-Eye LNX produces up to **4,096 data points/profile**^[1] for accurate 3D inspection of targets (dents, gaps, edges, etc.), even for fine features.



Mech-Eye LNX-8030-GL scans pins.



When the X-axis scanning range is constant, the LNX-8000 series generates more profile points than other line profilers.

Micron Resolution and Precision to inspect the tiniest defects

When maintaining a constant scanning range along the X-axis, the Mech-Eye LNX-8000 series outperforms other profilers by providing a higher density of profile points. It achieves an impressive Z repeatability at $0.2 \mu\text{m}$ ^[2] and $\pm 0.02\%$ of F.S. linearity^[2]. These features enable precise inspection, even on the tiniest details and most complex surfaces.

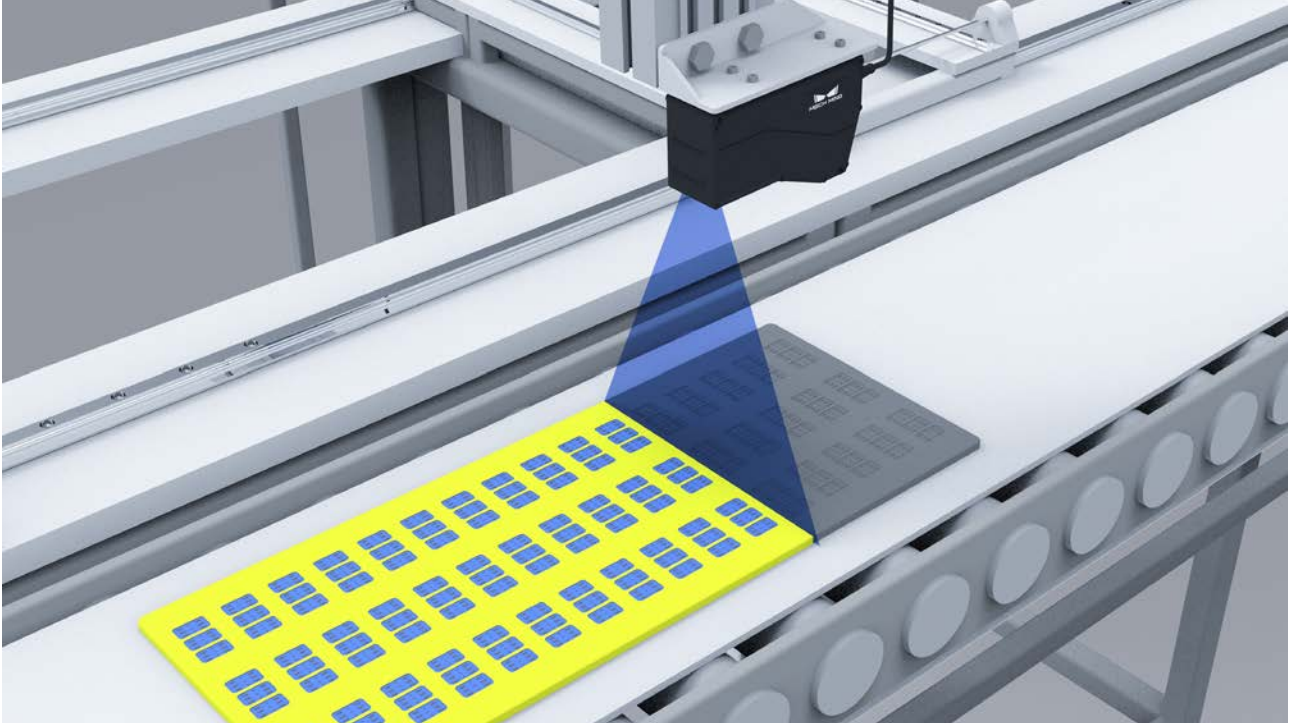
Comparison with a typical laser profiler

X-axis (width)			Z-axis (height)		
	typical product	LNX-8030-GL		typical product	LNX-8030-GL
Measurement range	35 mm (RD) ^[3]	35 mm (RD) ^[3]	Repeatability	0.5 μm	0.2 μm
Data points per profile	3,200	4,096	Linearity	$\pm 0.03\%$ of F.S.	$\pm 0.02\%$ of F.S.
Profile data interval	12.5 μm	9 μm			

[1] Applicable to LNX-8000 series

[2] Applicable to Mech-Eye LNX-8030-GL

[3] Reference distance



Mech-Eye LNX-8080-GL scans SIM card slots. It can scan multiple parts in a single capture, boosting production efficiency by over **50%** and significantly increasing production capacity.

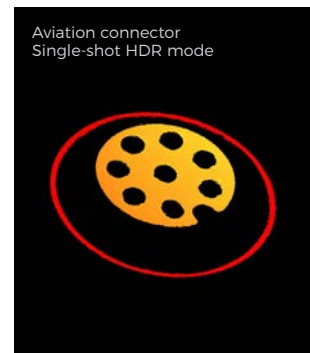
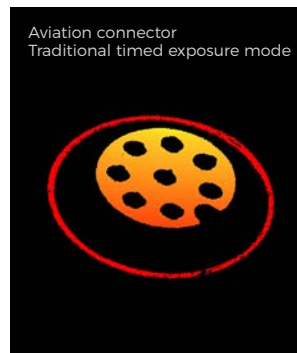
Ultra-High Scan Rates and Large FOVs to scan large parts and edge details at a fast speed

Do more with fast scan rates and large measurement ranges.

- Achieve scan rates of 3.3 kHz^[1] (a full field of view) and up to 15 kHz^[1] (a complete X measurement range). Generate high-resolution 3D data at an accelerated pace.
- The X measurement range reaches 430 mm^[2] and the Z measurement range reaches 305 mm^[2]. Scan large objects in one exposure or multiple small parts simultaneously, significantly boosting inspection speed and keeping up with the production pace.

Single-Shot HDR to scan dark and reflective surfaces in a single exposure

The Mech-Eye LNX series, equipped with a single-shot HDR function, makes it possible to scan both dark (low reflectivity) and reflective (high reflectivity) surfaces in one exposure and creates complete 3D point clouds.



[1] Applicable to LNX-8000 series

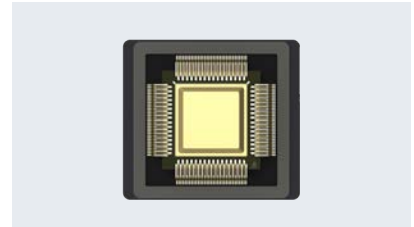
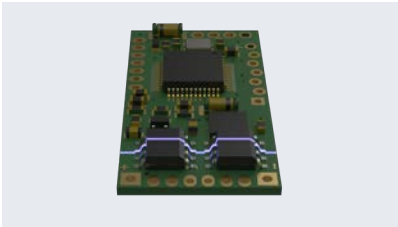
[2] Applicable to Mech-Eye LNX-8300-GL

Advanced Optical Design and Algorithms

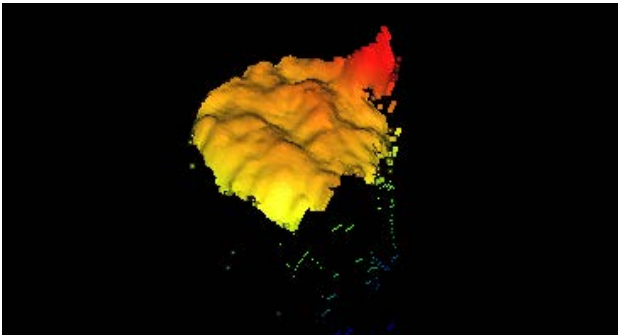
to measure almost any material and surface

The Mech-Eye LNX series features an advanced optical design, incorporating a laser with a cylindrical lens, a large-aperture Scheimpflug lens, and an imaging sensor with a resolution of up to 10MP. These features enable more precise imaging of any surface and intricate detail.

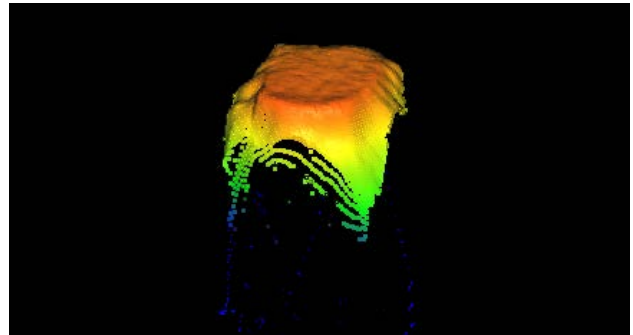
- Our self-developed laser, equipped with a uniquely designed cylindrical lens, emits light with a wide field of view and a narrow fan angle, minimizing blind spots effectively.
- A large-aperture Scheimpflug lens enhances received light intensity fourfold compared to conventional lenses. Its high-resolution, low-distortion design significantly improves imaging quality.
- With up to 10MP resolution, the CMOS provides 4,096 data points per profile^[1], enabling precise measurement of even the most intricate features.



▼ Point clouds: pin tip



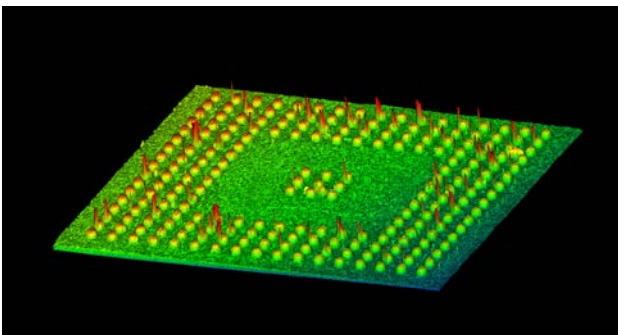
The point cloud generated by a conventional 3D line laser profiler has visible noisy data, like spikes, that can affect measurement accuracy.



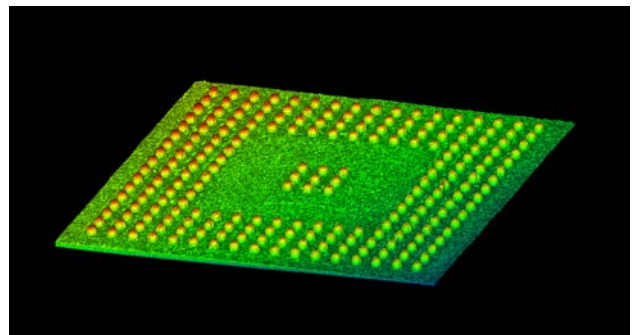
The Mech-Eye LNX series adopts high-resolution CMOS and advanced optical designs, allowing precise imaging of even the smallest pin tips.

With our robust algorithms, the Mech-Eye LNX series excels in handling interreflection, dead zones, and other challenging situations. Its enhanced resistance to interference ensures precise and reliable measurement results.

▼ Point clouds: BGA



Traditional algorithms struggle with interference caused by interreflection. This results in point cloud outliers that affect measurement accuracy.



Robust anti-interreflection algorithms eliminate outliers and deliver high-quality point clouds, ensuring reliable measurement results.

[1] Applicable to LNX-8000 series

Open for Secondary Development

Users can use various SDK interfaces to seamlessly integrate with various development environments and third-party vision software.

- Compatible with GenICam and GigE Vision protocol.



- Provides an SDK in various programming languages (C++, C#, and Python) for secondary development.

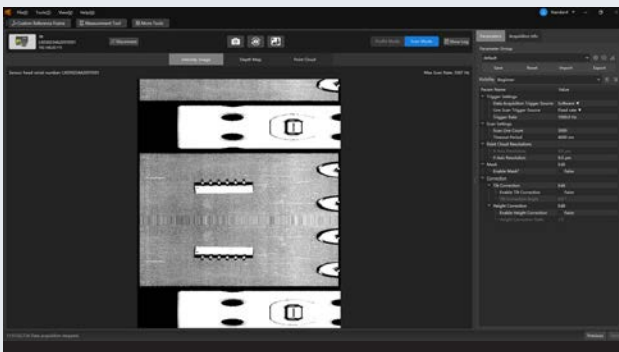


- Easily integrated with HALCON, VisionPro, Matrox and other third-party vision software.

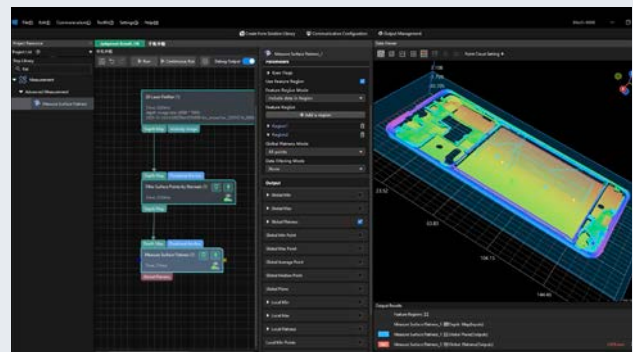


Easy and Quick to Deploy

Achieves quick setup, data collection and deployment with Mech-Eye Viewer and Mech-MSR. Realizes easy configuration with fewer steps and speeds up your project delivery.



Mech-Eye Viewer offers various configuration tools (e.g., brightness settings, profile extraction and mask tools), allowing for quick setup and image acquisition.



Mech-MSR 3D measurement and inspection software, with powerful algorithms and versatile functions, enables rapid application deployment.

Mech-Eye LNX-8000 Series

4,096 points/profile

15 kHz blazing fast scan rates

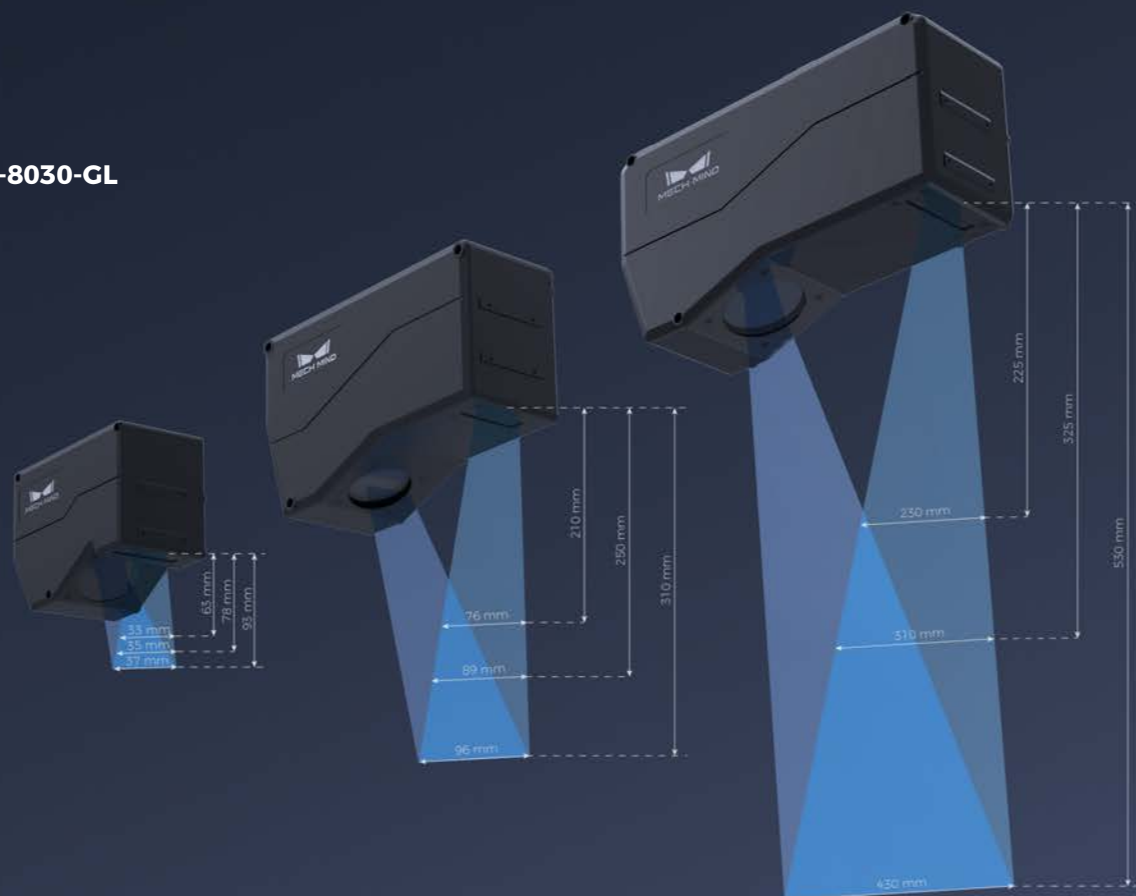
Down to $9\mu\text{m}^{[1]}$ X resolution. Down to $0.2\mu\text{m}^{[1]}$ Z repeatability

Measurement range (X-axis): 33-430 mm. Measurement range (Z-axis): 30-305 mm

LNX-8300-GL

LNX-8080-GL

LNX-8030-GL



[1] Applicable to Mech-Eye LNX-8030-GL

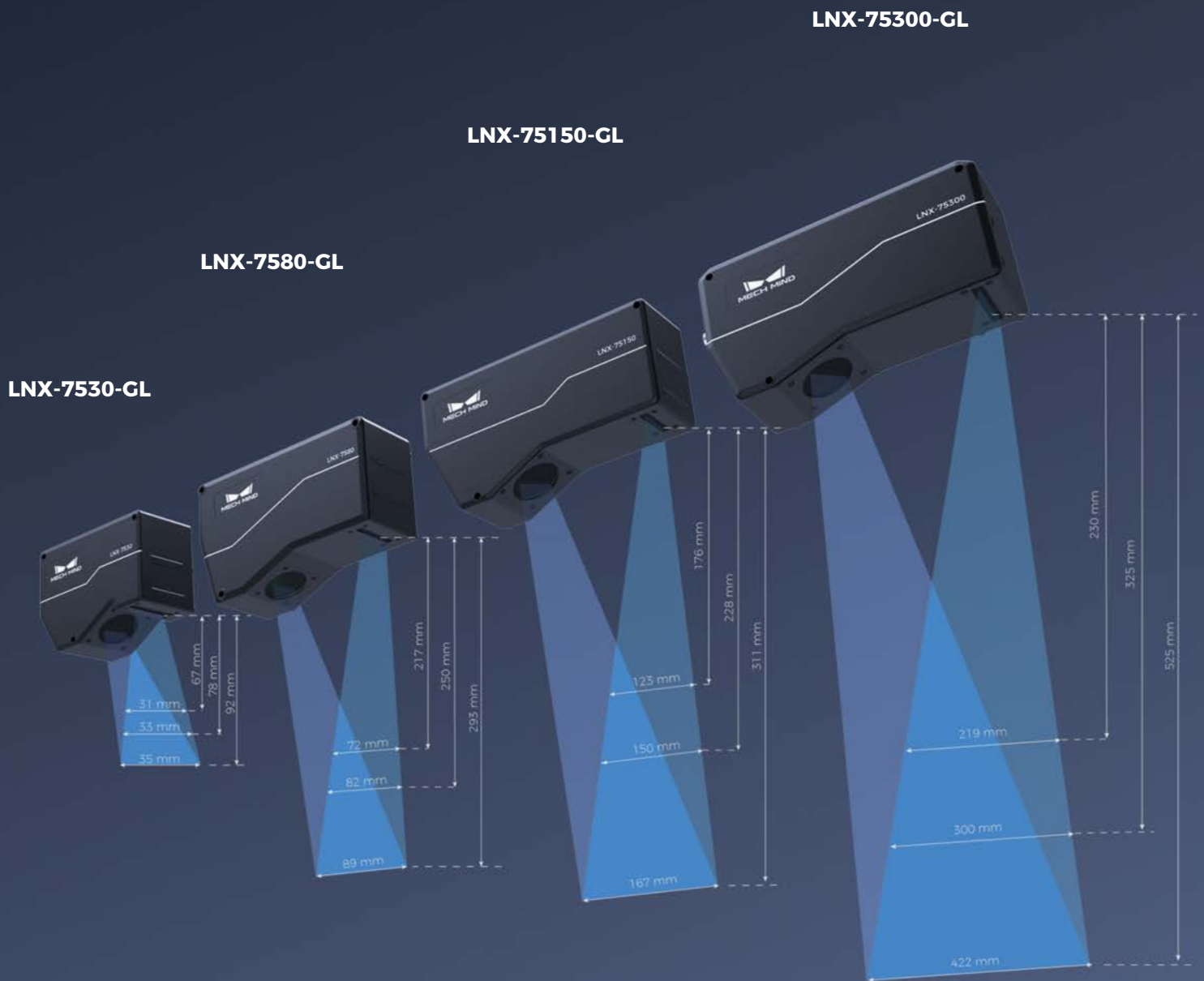
Mech-Eye LNX-7500 Series

3,200 points/profile

10 kHz fast scan rates

Down to $11\mu\text{m}^{[1]}$ X resolution. Down to $0.2\mu\text{m}^{[1]}$ Z repeatability

Measurement range (X-axis): 31-422 mm. Measurement range (Z-axis): 25-295 mm



[1]Applicable to Mech-Eye LNX-7530-GL

Proven Stable Performance

The Mech-Eye LNX, certified by CE, FCC, VCCI, KC, ISED, and NRTL, complies with international quality standards.



In compliance with CE marking.



Complies with ANSIC63.4, 47 CFR PART 15B and ICES-003.



Complies with VCCI-CISPR 32:2016.



In compliance with KS C 9832 and KS C 9835.



Meets the IEC 61010-1 standard.

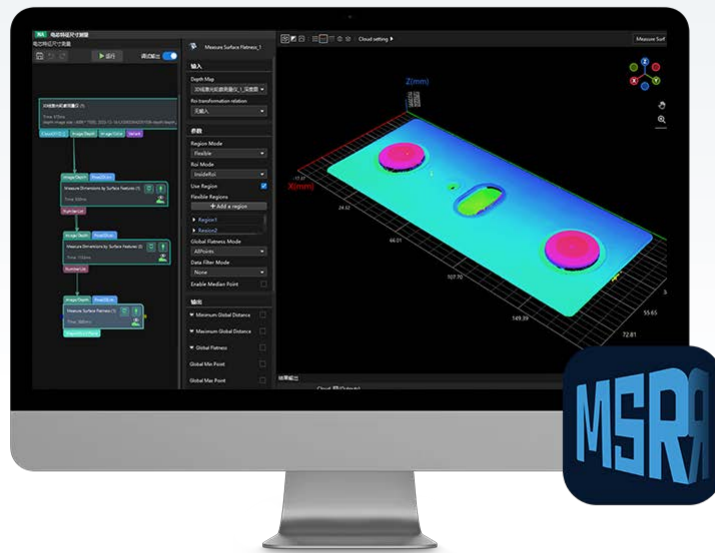
With an industry-ready design and an IP67 protection rating, it can deliver reliable performance in environments with dust, humidity, vibrations, high temperatures and electromagnetic interference.



IP67 protection certificates

Work with Mech-MSR 3D Measurement and Inspection Software for Comprehensive Inspection Solutions

- The Mech-Eye LNX, paired with Mech-MSR, will provide you with all-in-one solutions. You can carry out effective deployment of measurement and inspection applications.
- Running Mech-MSR on the Mech-Eye LNX series enables users to deploy applications without coding, greatly increasing efficiency.



NO CODE GUI



Users without programming skills can easily deploy the applications thanks to its codeless graphical interface.

2-HOUR^[1] DEPLOYMENT



Users can conduct one-stop applications by using the project templates in the solution library.

ROBUST AI ALGORITHMS



Powerful algorithms help you conduct dimensional measurement, defect detection and other inspection applications.

TECHNICAL SUPPORT



Technical documents and video tutorials are easily available for professional guidance.

[1] It is a case-by-case situation.

Versatile Functions for Fast and Easy Deployment



SCAN



ALIGN



PROCESS



MEASURE



EVALUATE



COMMUNICATE



DEPLOY

Scan

Easily connect to and run on the Mech-Eye LNX 3D sensors for easy setup and real-time data collection.

Align

Align objects for quick positioning and ensure all are at the reference position for accurate and efficient measurement.

Process

Preprocess and optimize depth images, 3D data, and other image data to create the best point clouds.

Measure

Accurately measure the length, width and height of the target, driven by robust measurement algorithms and tools.

Inspect

Comprehensively inspect the shape and defect of the target object, meeting various requirements of quality inspection.

Evaluate

Use single-index or comprehensive evaluation methods to meet various product quality standards.

Communicate

Connect PLCs and factory devices for real-time data transmission. Support TCP ASCII and EtherNet/IP.

Deploy

Check the running status and collect data in real time due to a visualized production interface.

Applications in the Consumer Electronics

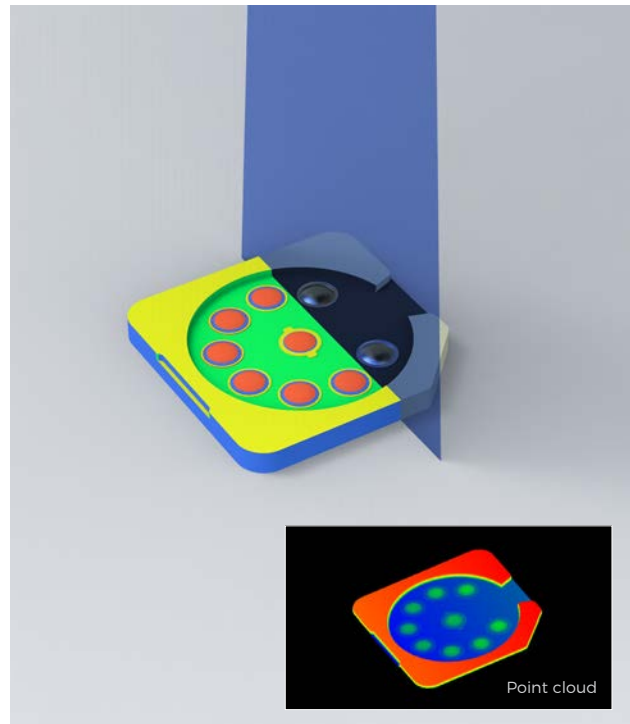
Solder Joint Inspection

► The challenge

- Solder joints on the phone flashlight are tiny, typically ranging from tens to hundreds of micrometers in height.
- Solder joints have reflective surfaces, making precise 3D scanning and inspection more challenging.
- Solder joint defects are varied, including irregular shapes, bridging, and more. These defects significantly impact the device's functionality and performance.

► The advantage

- Generate high-resolution 3D data (4,096 data points per profile and Z repeatability down to 0.2 μm) of each solder joint
- Advanced algorithms effectively handle the reflection and generate detailed and high-density 3D data.
- Mech-MSR, driven by robust measurement algorithms, works with the sensor to inspect complex solder joint defects.



► Recommended sensors: LNX-8030-GL & LNX-7530-GL

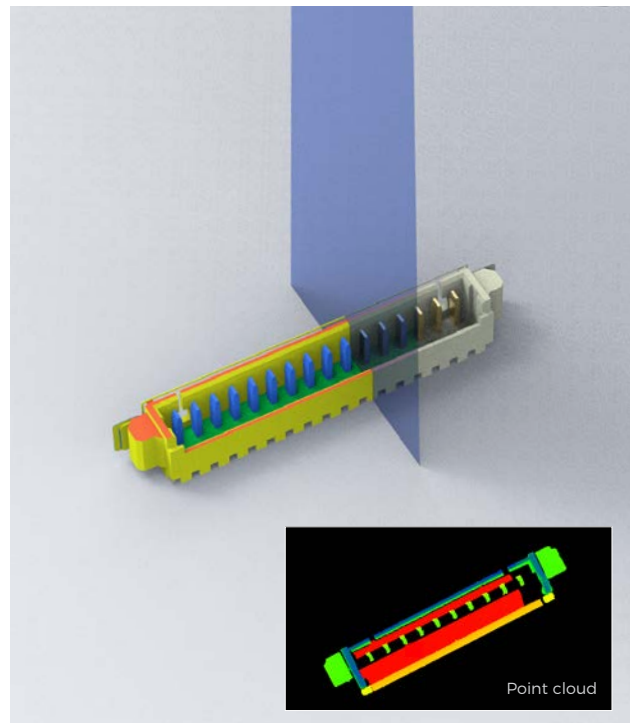
Connector Pin Inspection

► The challenge

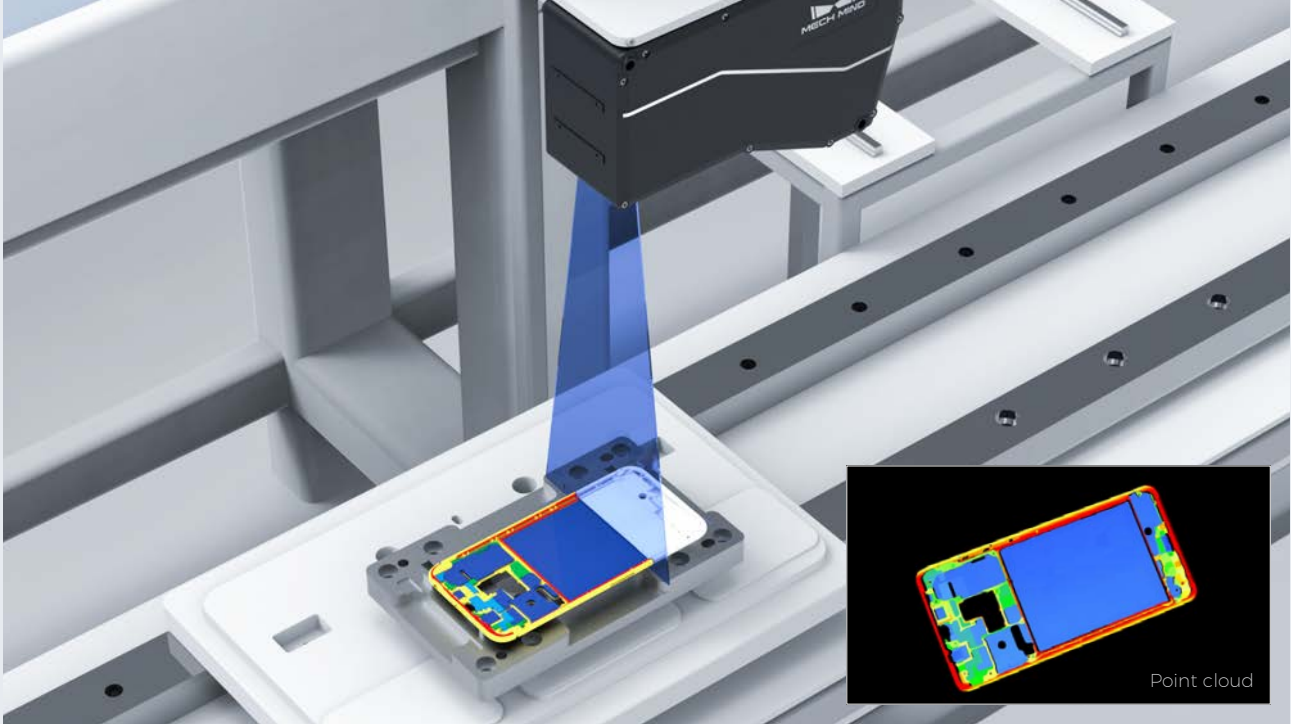
- Inspecting connector pins is a crucial step in the quality assurance process. Pin height, spacing, orientation and alignment must be verified before insertion.
- Pins are difficult to scan and measure because they are tiny, highly reflective, and come in varying heights and materials.
- Noise, such as spikes, in the 3D data regularly appears between pins.
- Pins of slightly incorrect height can result in short circuits and poor contact.

► The advantage

- Generate high-resolution 3D data (4,096 data points per profile) of each tiny, highly reflective pin.
- Advanced optical design and algorithms effectively handle different types of noise, such as dead zones and spikes.
- Measurement repeatability: ± 0.01 mm
- Vision time: < 0.8 s



► Recommended sensors: LNX-8030-GL & LNX-7530-GL



Smartphone Midplate Inspection

► The challenge

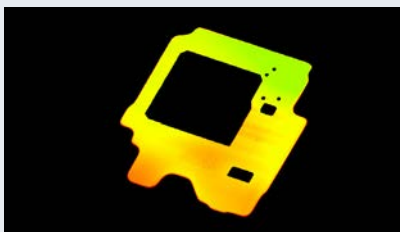
- The smartphone midplate combines reflective and dark surfaces, posing challenges to imaging and recognition.
- Cycle time and inspection accuracy are extremely important in the electronics industry.

► Recommended sensors: LNX-8080-GL & LNX-7580-GL

► The advantage

- Single-shot HDR function: capture precise 3D data of both dark and reflective surfaces in one exposure.
- Acquire points on the surface to check whether all points are in the same plane.
- Measurement repeatability: ± 0.015 mm
- Vision time: < 0.5 s

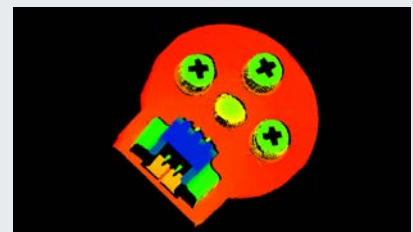
More Applications



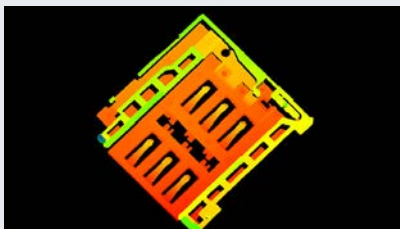
Shielding frame inspection



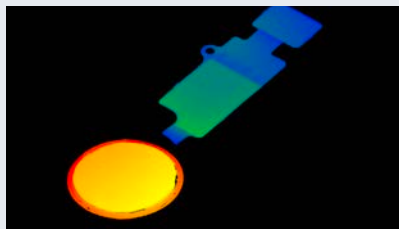
Smartphone camera module inspection



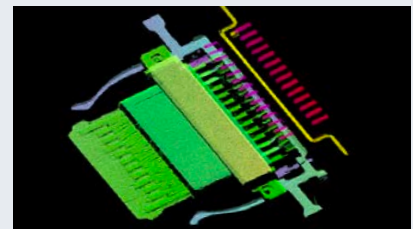
Bolt height measurement



SIM card holder height measurement



Fingerprint module height measurement



Type-C connector inspection

Applications in the EV Battery

Dimensional Measurement of Battery Modules

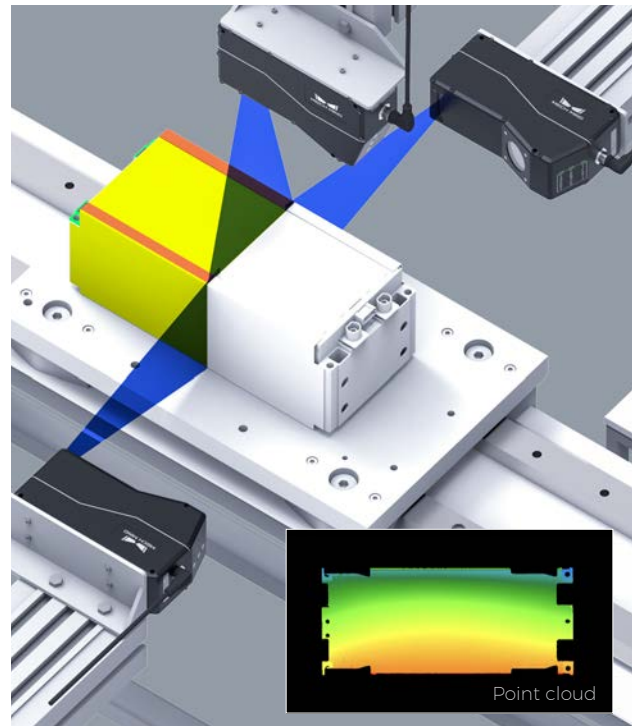
► The challenge

- There are many types of battery modules. Some are very large.
- There are various measurement items, including length, width, height, flatness and hole location.
- Measurements with high precision are essential to ensure proper fit and function within devices.

► The advantage

- **High resolution and fast scan rate:** clear and fast imaging of module surfaces.
- **Wide measurement ranges** to scan large modules.
- **Multi-sensor setup** to effectively reduce errors caused by vibration.
- Fast deployment and setup with sensors and Mech-MSR combined.

► Recommended sensors: LNX-8300-GL & LNX-75300-GL



Cell Cap Welding Inspection

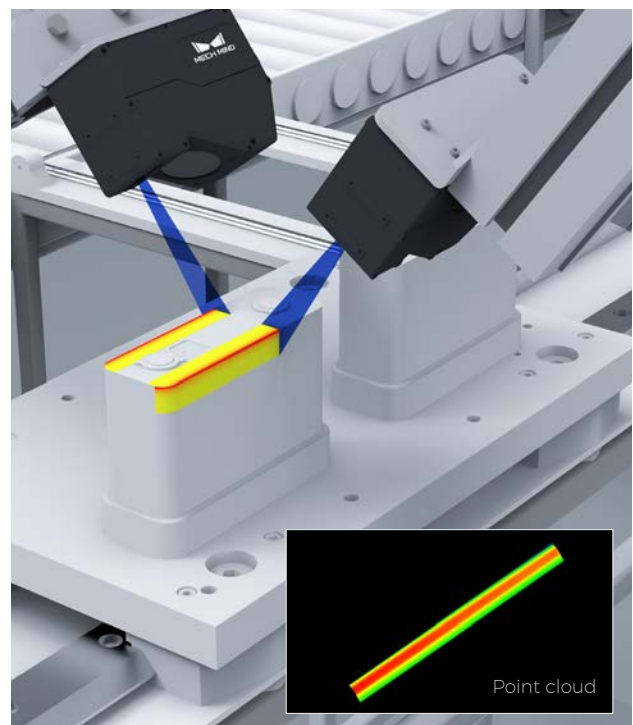
► The challenge

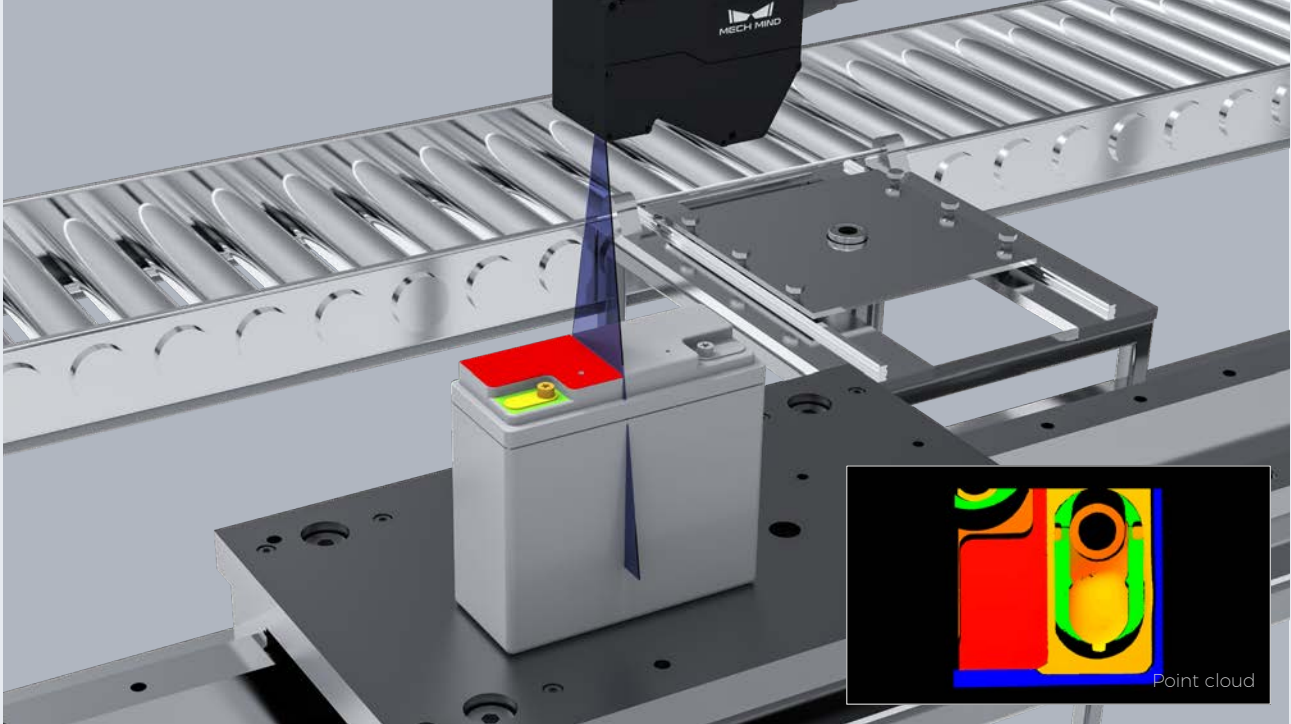
- Defects occur on the battery cell cap, such as burns, dents, pinholes, broken and missing welds.
- Accuracy and cycle time are extremely important in the EV battery production.

► The advantage

- Clear imaging of tiny welding seams for accurate and efficient inspection.
- Pixel-level defect segmentation and inspection driven by deep learning algorithms.
- Stable and durable operation for efficient production and high productivity.

► Recommended sensors: LNX-8030-GL & LNX-7530-GL





Battery Terminal Welding Inspection

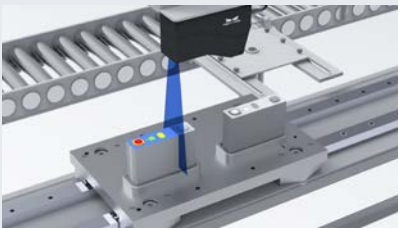
► The challenge

- 24/7 production in the industry requires consistency in inspection systems.
- There are many defects, such as missing welding and extra welding.

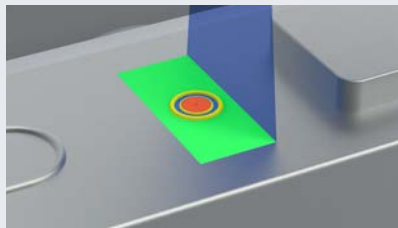
► Recommended sensors: LNX-8030-GL & LNX-7530-GL

► The advantage

- **High resolution and fast scan rate:** measure the target with speed and accuracy.
- **Fast deployment** of defect inspection and height measurement applications with Mech-MSR.
- Overkill rate: < 0.5%
- Underkill rate: < 0.5%



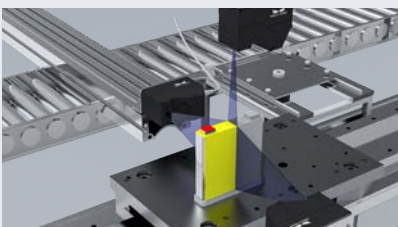
Cell cap inspection (flatness & height difference)



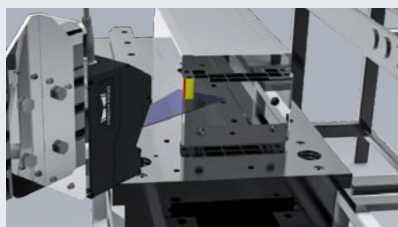
Sealing pin welding inspection



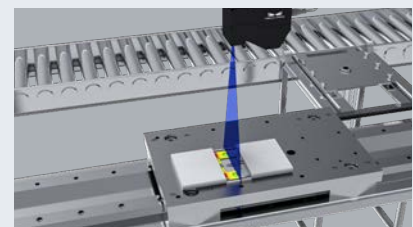
Busbar welding seam inspection



Battery cell appearance inspection



Side seam inspection



Battery adapter plate inspection

Applications in the Automotive

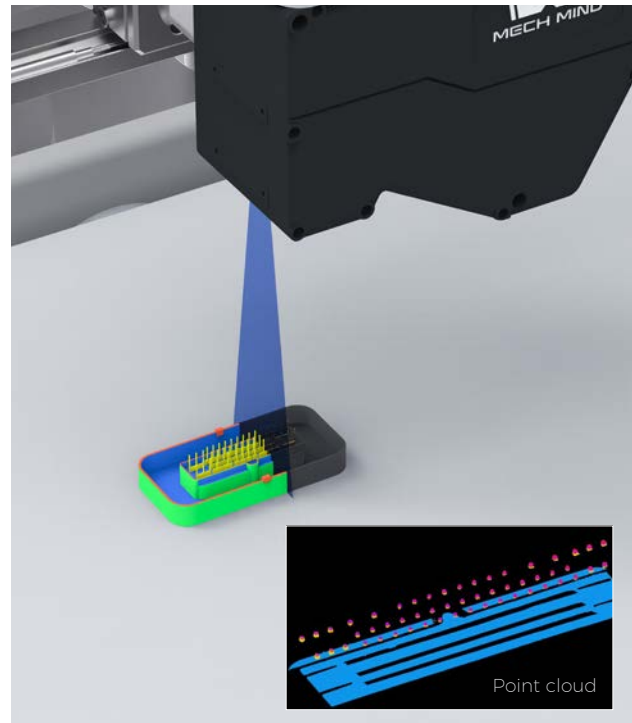
Connector Pin Inspection

► The challenge

- Pins of slightly incorrect height can result in voltage drops and intermittency.
- The tiny pin inspection places high demands on accuracy and resolution.
- Noise resulting from interreflection between pins impacts the image quality.
- Intricate geometries of pins are easy to create curves in the 3D point clouds.

► The advantage

- Produce high-density and high-resolution profiles and detailed 3D point clouds of tiny pins.
- The robust algorithms effectively deal with the noisy data resulting from reflection.
- Accurately measure pin height and positional accuracy driven by feature extraction and measurement algorithms built in Mech-MSR.



► Recommended sensors: LNX-8030-GL & LNX-7530-GL

Tire DOT Code Reading

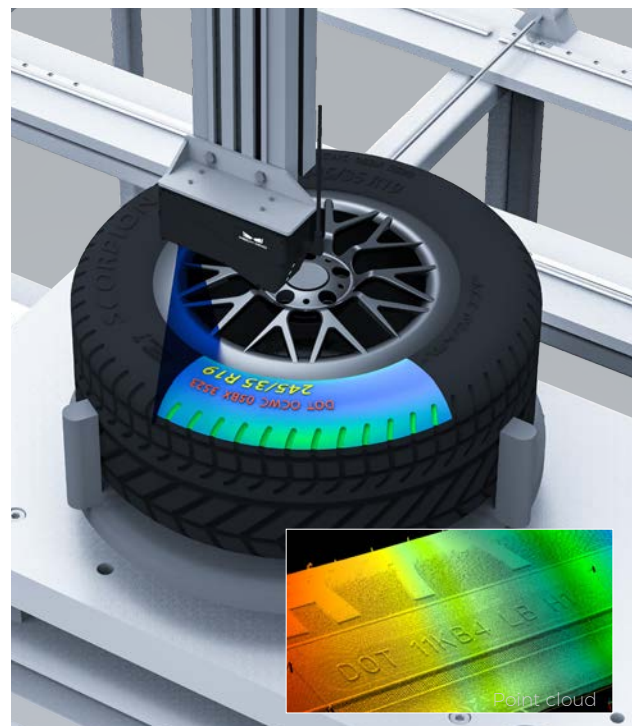
► The challenge

- Various tire specs. with different tire heights, section heights and hub diameters.
- Dark surfaces make it difficult to clearly capture tire DOT codes.
- Deep field of view and depth of field are essential for scanning large tires.

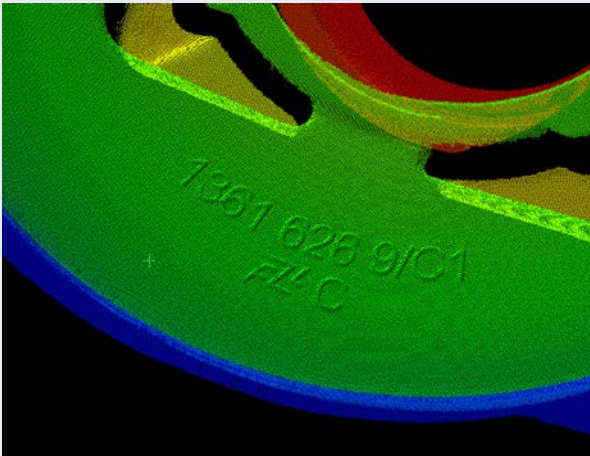
► The advantage

- Clearly capture DOT codes at a fast speed.
- Wide measurement range to scan large tires in one shot.
- AI algorithms ensure accurate locating and reading of DOT codes.
- 99.9% recognition accuracy

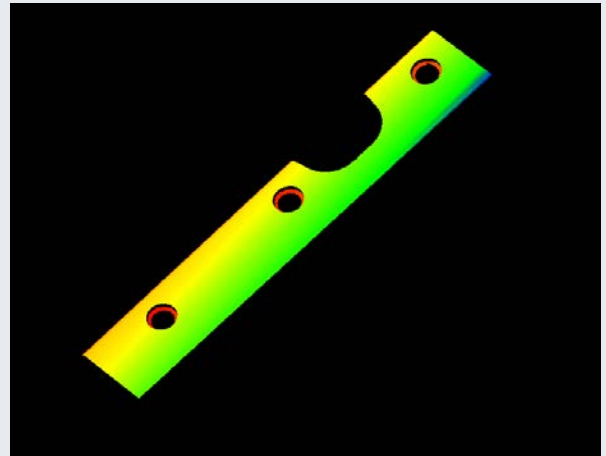
► Recommended sensors: LNX-8300-GL & LNX-75300-GL



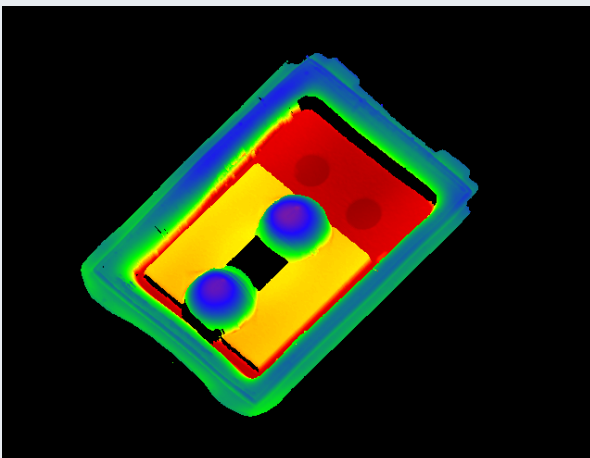
More Applications in the Automotive



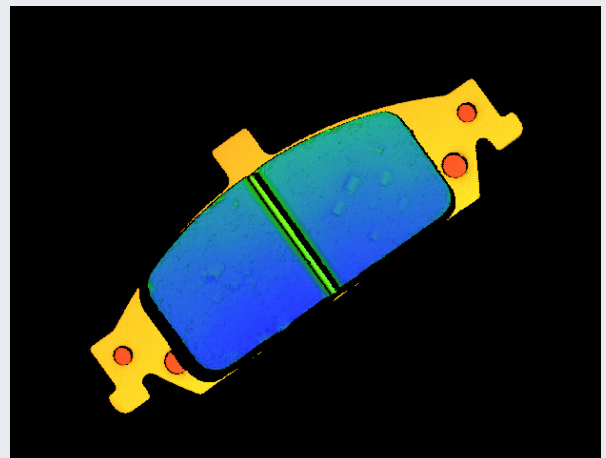
VIN code inspection



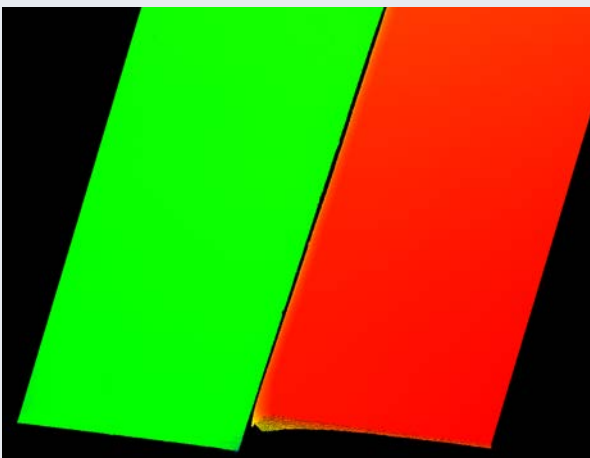
Battery tray inspection



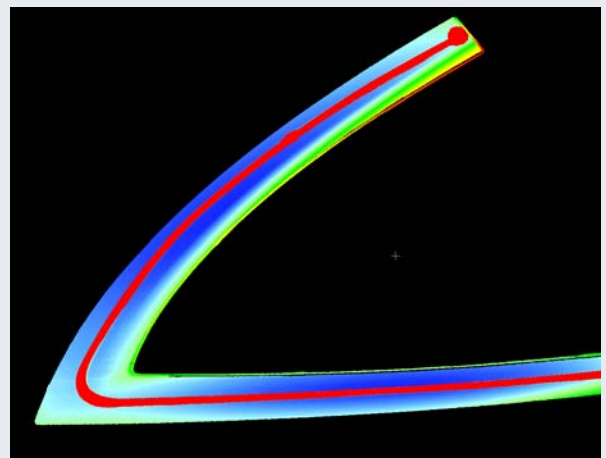
Automotive electronics glue bead inspection



Brake pad defect detection

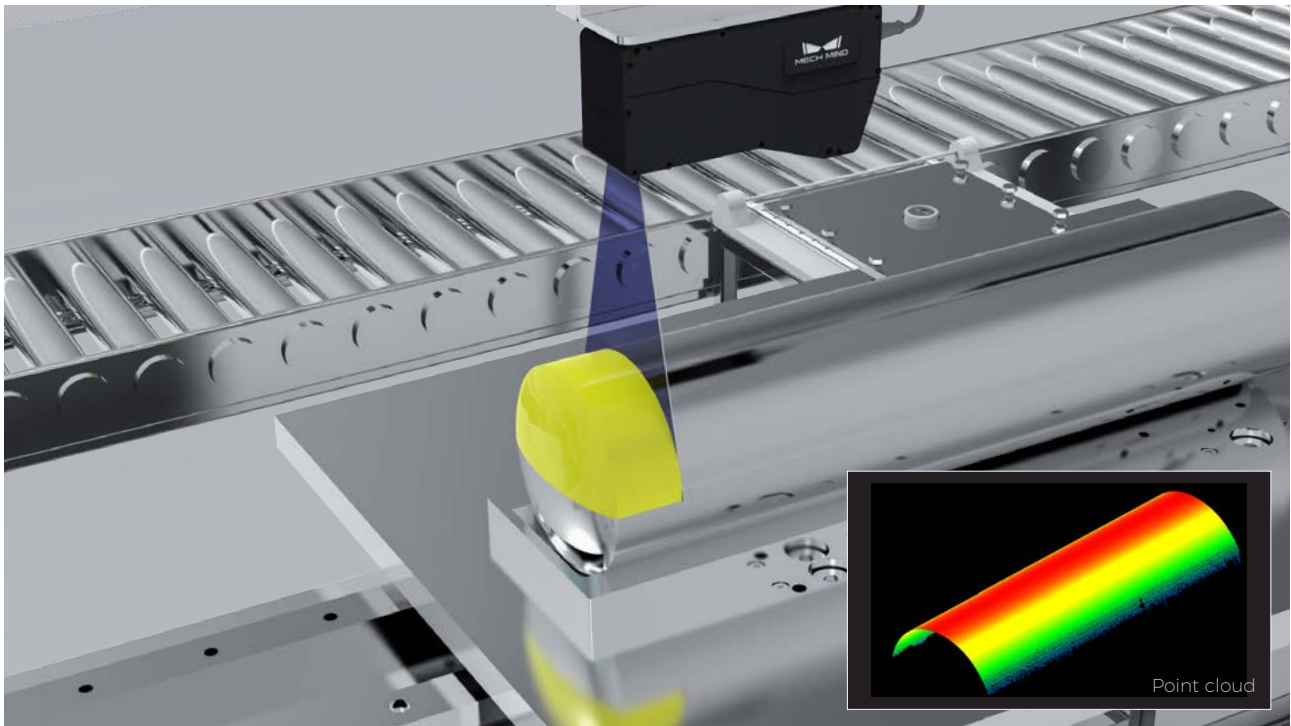


Door panel gap and flush inspection



Car window glue path inspection

Applications in the Photovoltaics



Diameter Measurement of Monocrystalline Silicon Rods

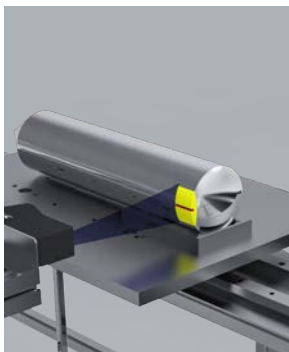
► The challenge

- Many factors affect measurement accuracy, such as reflective surfaces, burrs, defects and bends.
- Requirements for fast imaging and measurement.

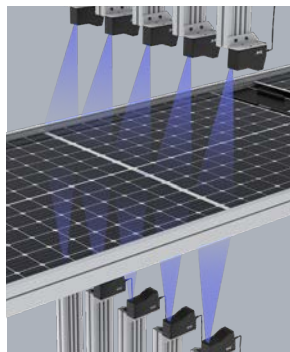
► Recommended sensors: LNX-8300-GL & LNX-75300-GL

► The advantage

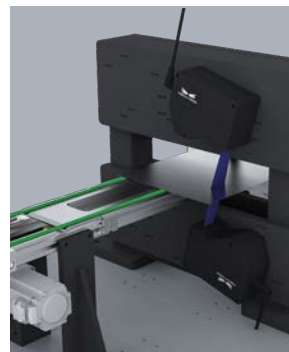
- Create high-resolution point clouds of silicon rods.
- Ultra-high scanning rate allows for clear imaging of silicon rods at a fast speed.
- Advanced imaging algorithms effectively tackle reflective surfaces, burrs and defects.
- The sensor works with Mech-MSR to measure diameters rapidly.



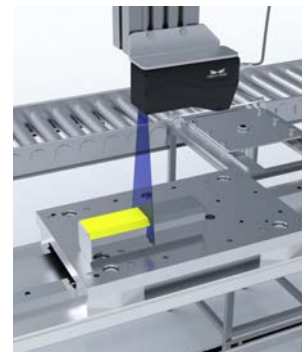
Growth line inspection



Silicon wafer flatness & overlap
& dislocation detection



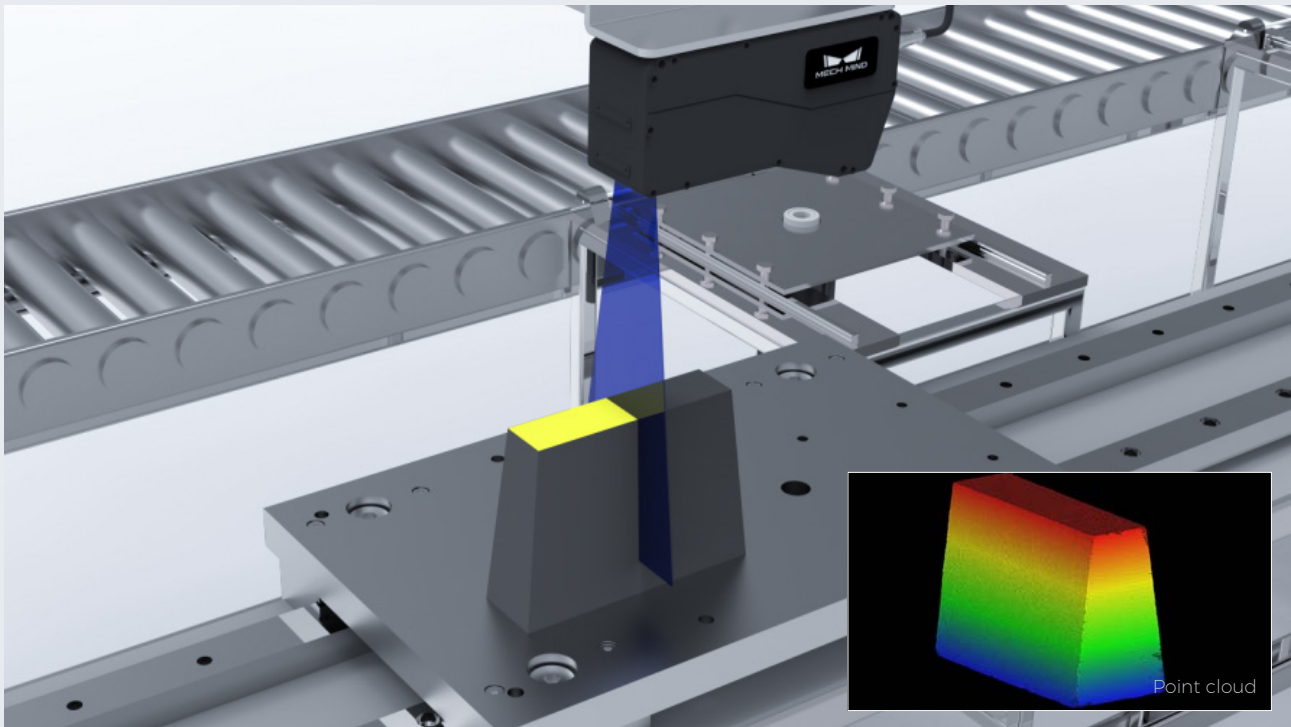
Silicon wafer thickness &
flatness inspection



Silicon ingot flatness inspection

More Applications

in metal & machining, medical, home appliances and more



Dimensional Measurement of Refractory Bricks

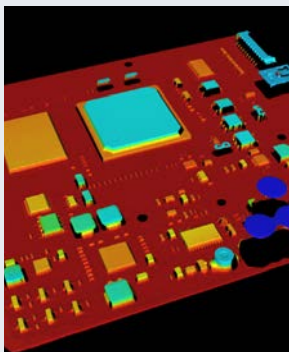
► The challenge

- The bricks come in various shapes (e.g., square, rectangular, trapezoidal, etc.).
- Bricks of all sizes, whether small or large, should be covered when measuring the parameters.

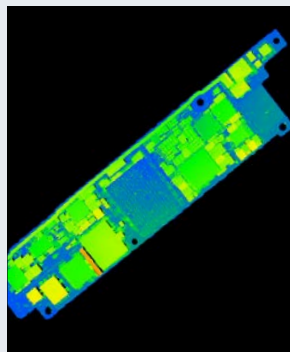
► Recommended sensors: LNX-8300-GL & LNX-75300-GL

► The advantage

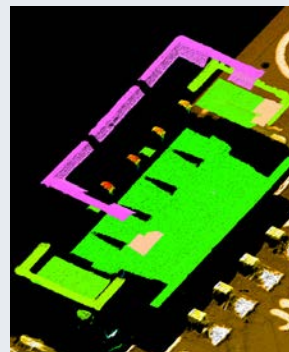
- High resolution in X-axis and high repeatability in Z-axis allow for accurate measurement.
- Scan a large brick in a single shot due to wide X- and Z-axis measurement ranges.
- Fast scan rates enable short cycle time and enhance efficiency.
- IP67 protection enables reliable performance in harsh environments.



PCB-mounted component height measurement



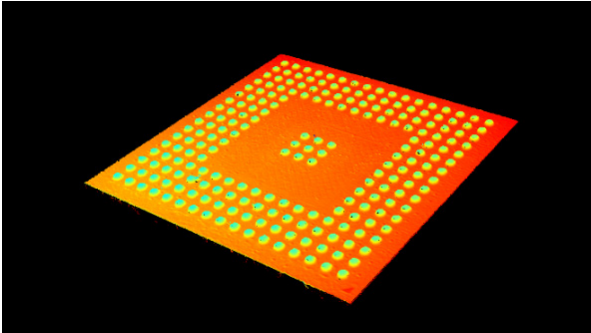
Component presence/absence detection



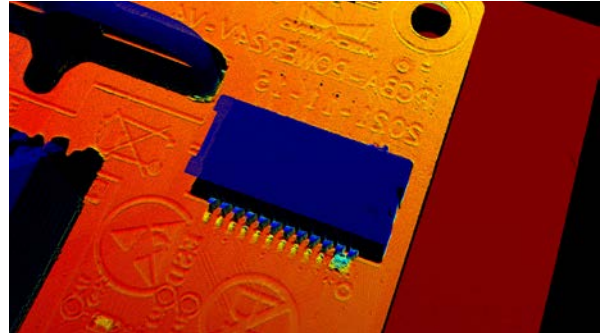
Pin height measurement



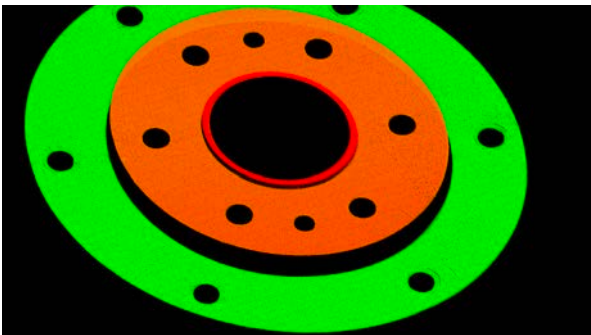
Metal plate flatness inspection



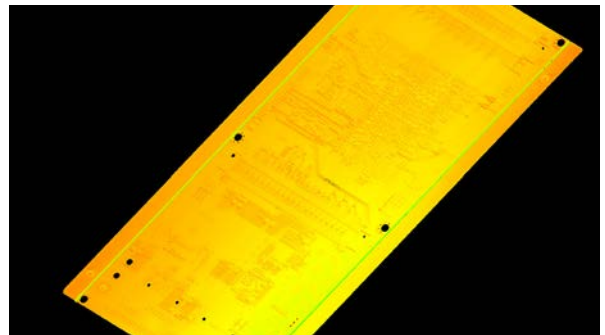
BGA inspection (height & coplanarity)



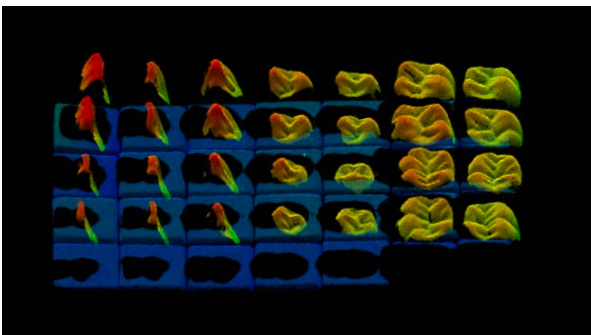
PCB solder joint height measurement



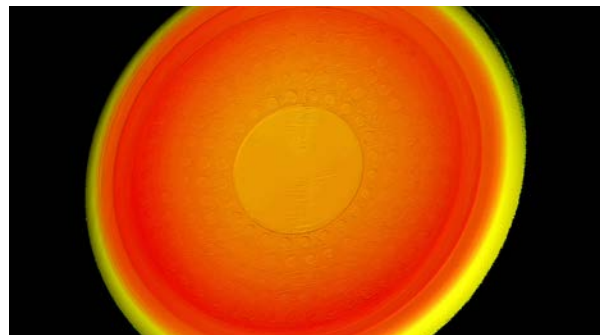
Round hole inspection (diameter & position)



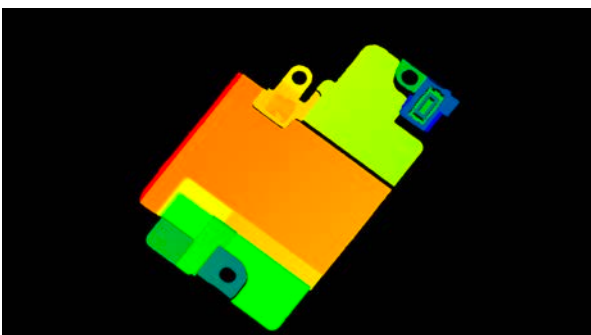
PCB flatness inspection



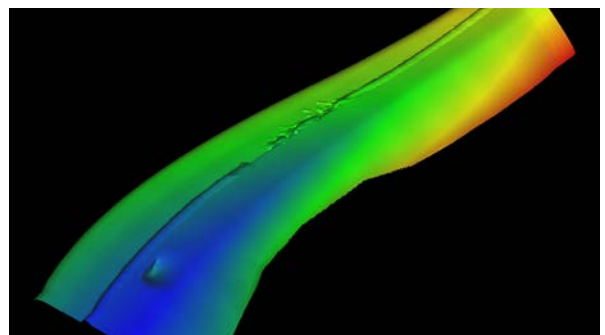
Object counting



Pan flatness inspection

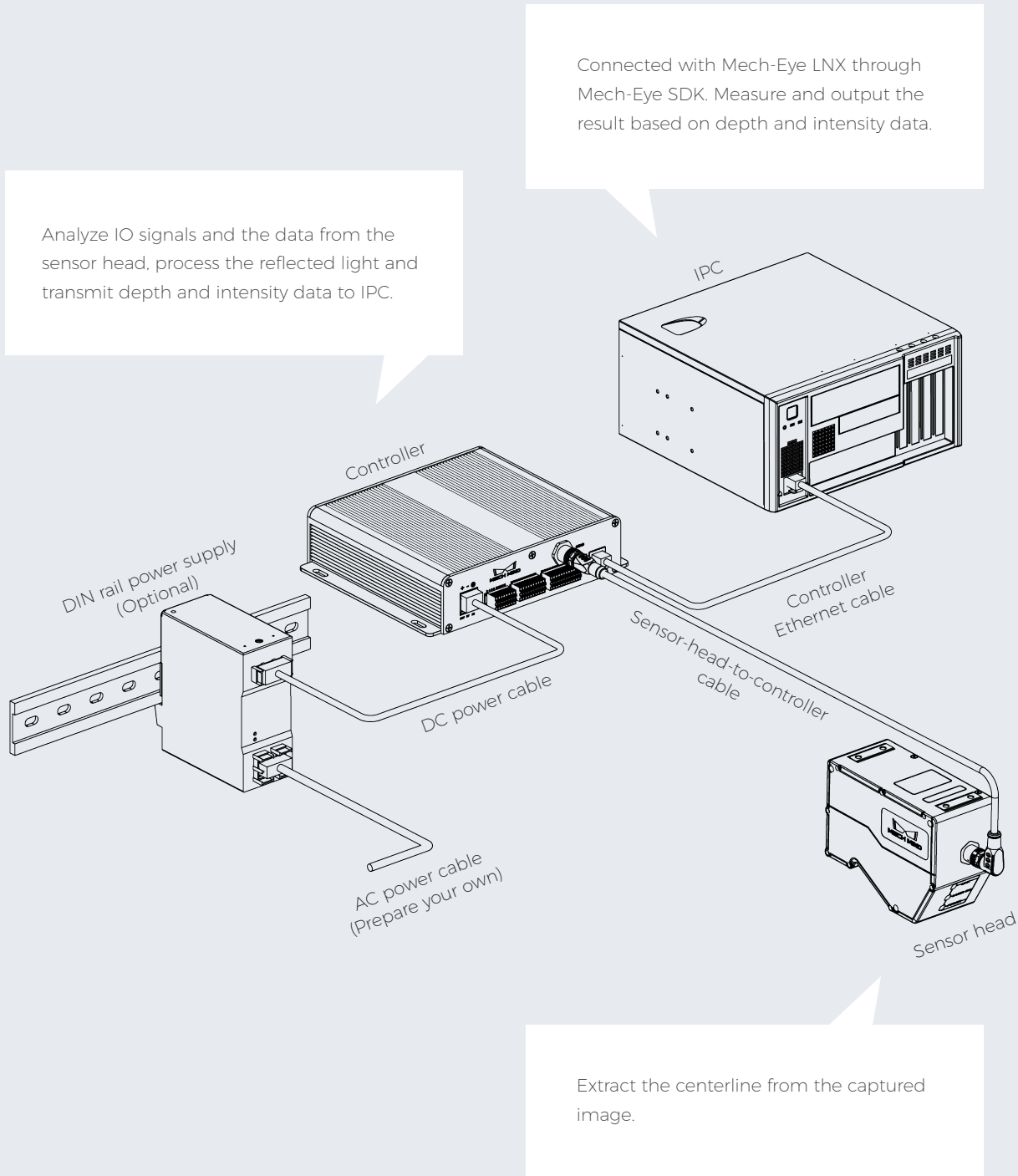


Small parts inspection (height & flatness)



Welding seam inspection

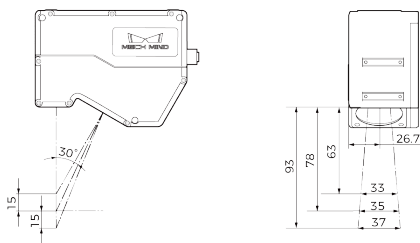
System Configuration



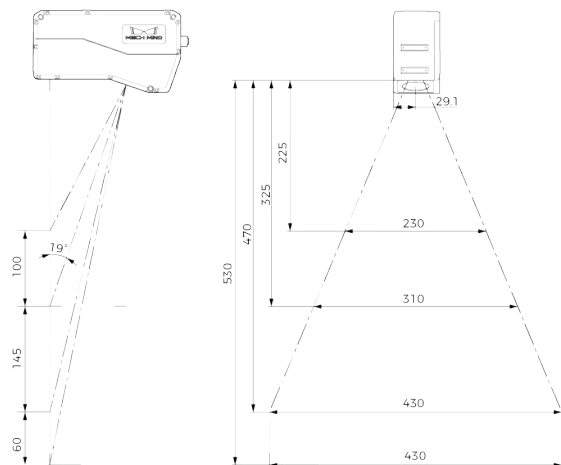
Key Specs of Mech-Eye LNX-8000 Series

Model	LNX-8030-GL	LNX-8080-GL	LNX-8300-GL
Data points/profile		4,096	
Scan rate		3.3-15 kHz	
Reference Distance (RD)	78 mm	250 mm	325 mm
Measurement range Z	30 mm	100 mm	305 mm
Measurement range X (near)	33 mm	76 mm	230 mm
Measurement range X (RD)	35 mm	89 mm	310 mm
Measurement range X (far)	37 mm	96 mm	430 mm
Resolution X	9 μm	23.5 μm	105 μm
Repeatability Z	0.2 μm	0.5 μm	2 μm
Linearity Z		±0.02% of F.S.	
Weight	0.9 kg	1.2 kg	
Dimensions	133 × 61 × 102 mm	182 × 63 × 112 mm	195 × 61 × 109 mm
Laser	Blue (405 nm, Class 2)	Blue (405 nm, Class 2M)	
Lens inclination	30°	22°	19°
Input voltage	24V DC		
Max. input power	48W (25W for sensor head)		
Communication interface	Gigabit Ethernet		
Encoder input	Single-ended and differential encoders supported		
Operating temperature	0-45°C		
Safety and EMC	CE/FCC/VCCI/KC/ISED/NRTL		
IP rating	IP67		
Cooling	Passive		

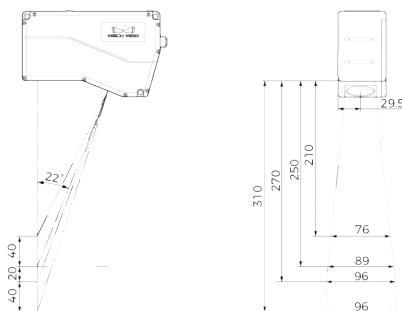
Mech-Eye LNX-8030-GL



Mech-Eye LNX-8300-GL

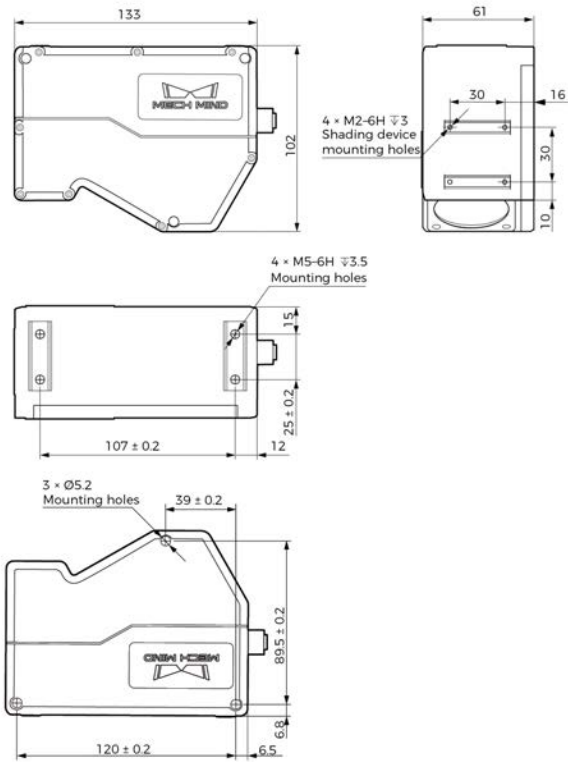


Mech-Eye LNX-8080-GL



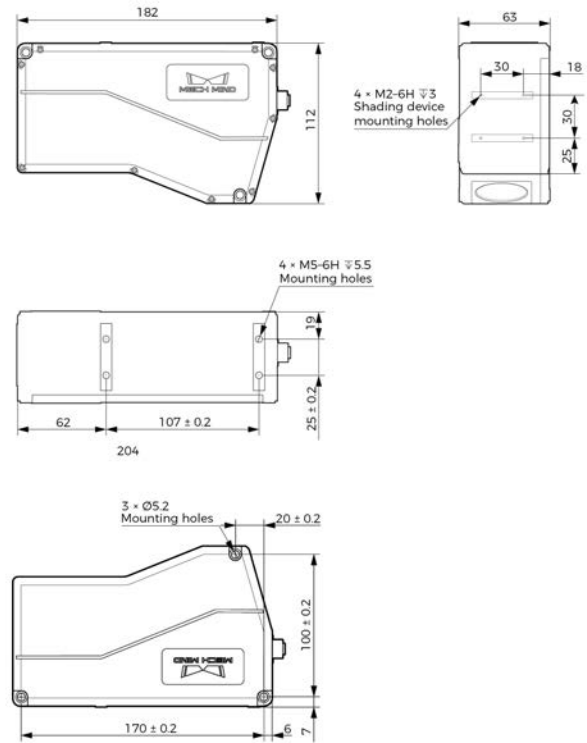
Dimensions

Mech-Eye LNX-8030-GL

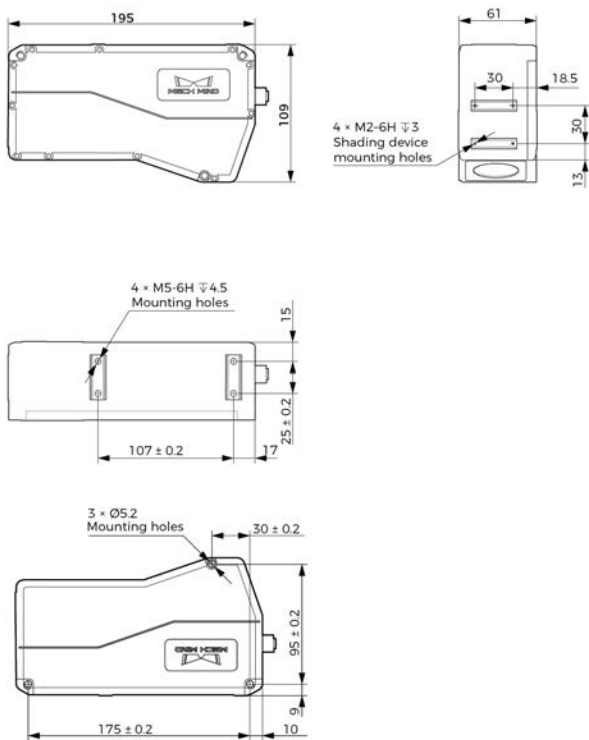


Mech-Eye LNX-8080-GL

Robotics



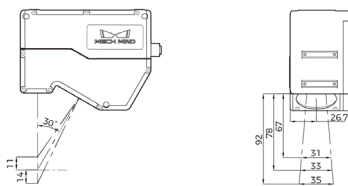
Mech-Eye LNX-8300-GL



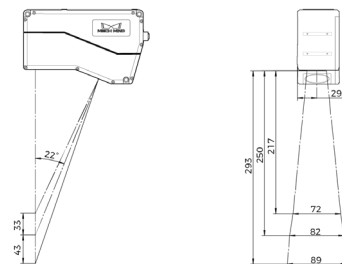
Key Specs of Mech-Eye LNX-7500 Series

Model	LNX-7530-GL	LNX-7580-GL	LNX-75150-GL	LNX-75300-GL
Data points/profile	3,200			
Scan rate	2-10 kHz			
Reference Distance (RD)	78 mm	250 mm	228 mm	325 mm
Measurement range Z	25 mm	76 mm	135 mm	295 mm
Measurement range X (near)	31 mm	72 mm	123 mm	219 mm
Measurement range X (RD)	33 mm	82 mm	150 mm	300 mm
Measurement range X (far)	35 mm	89 mm	167 mm	422 mm
Resolution X	11 μ m	28 μ m	52 μ m	132 μ m
Repeatability Z	0.2 μ m	0.5 μ m	1.5 μ m	2 μ m
Linearity Z	\pm 0.02% of F.S.			
Weight	0.9 kg	1.2 kg	1.1 kg	1.2 kg
Dimensions	133 x 61 x 102 mm	182 x 63 x 112 mm	199 x 57 x 108 mm	195 x 61 x 109 mm
Laser	Blue (405 nm, Class 2)	Blue (405 nm, Class 2M)		
Lens inclination	30°	25°	29°	19°
Input voltage	24V DC			
Max. input power	48W (25W for sensor head)			
Communication interface	Gigabit Ethernet			
Encoder input	Single-ended and differential encoders supported			
Operating temperature	0-45°C			
Safety and EMC	CE/FCC/VCCI/KC/ISED/NRTL			
IP rating	IP67			
Cooling	Passive			

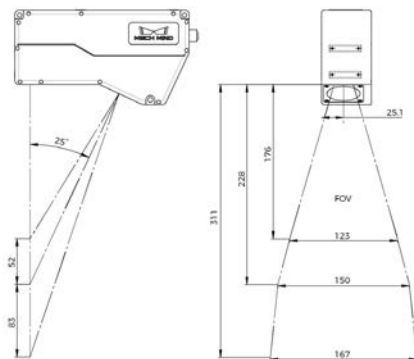
Mech-Eye LNX-7530-GL



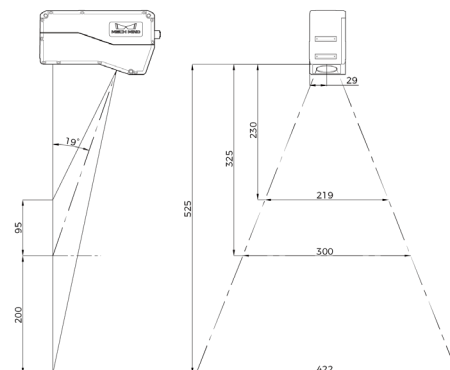
Mech-Eye LNX-7580-GL



Mech-Eye LNX-75150-GL

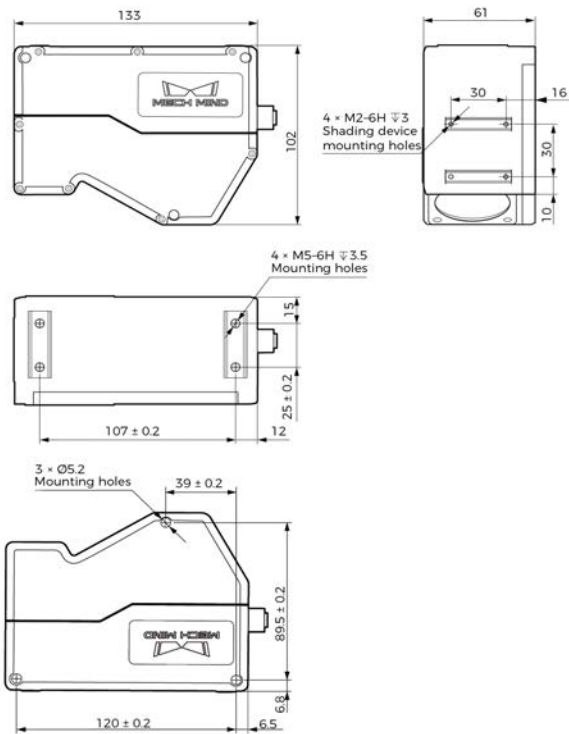


Mech-Eye LNX-75300-GL

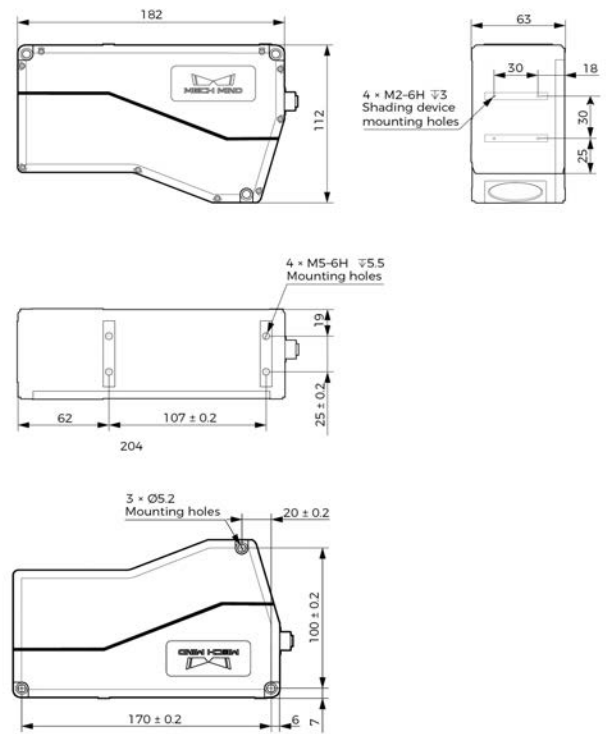


Dimensions

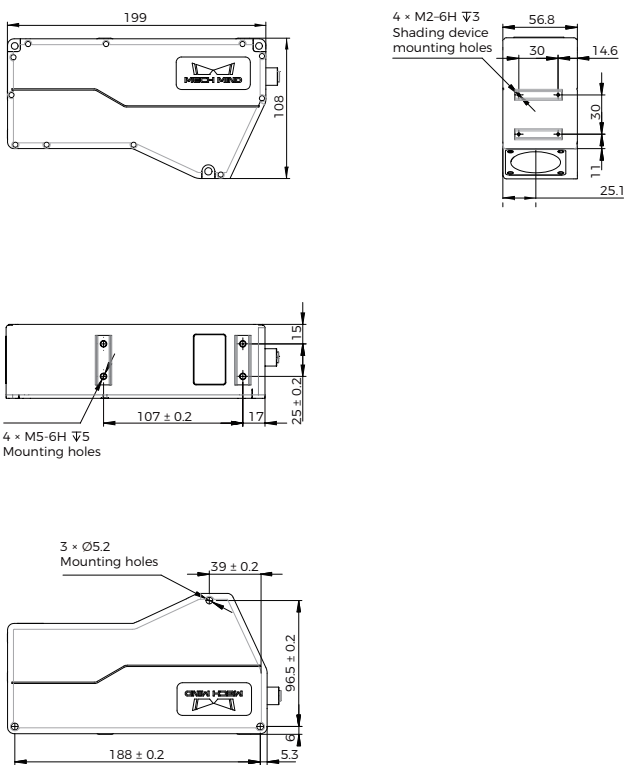
Mech-Eye LNX-7530-GL



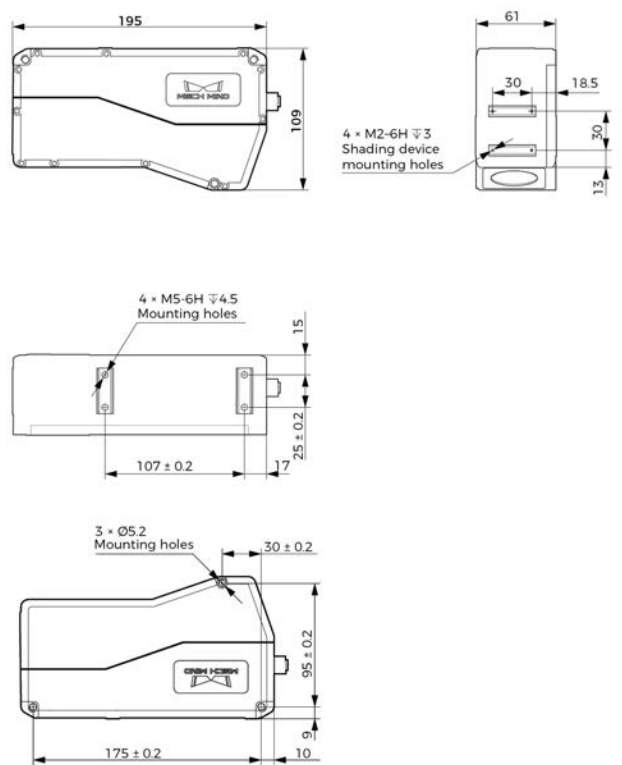
Mech-Eye LNX-7580-GL



Mech-Eye LNX-75150-GL



Mech-Eye LNX-75300-GL



Empowering Global Customers

Mech-Mind Self-owned Factory

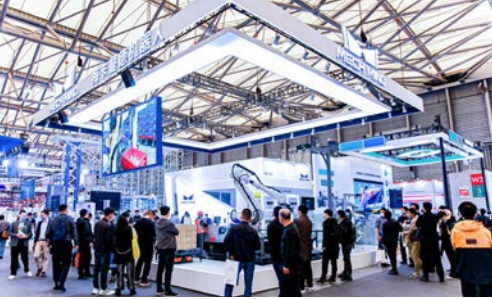
- High-standard factory: spans 5,000 sqm; certified for ISO 9001, ISO 14001, and ISO 45001.
- Top-tier camera manufacturing: CE, FCC, VCCI, KC, ISED, NRTL certified; MTBF (≥40,000 hours)
- Annual production capacity: 20,000+ units
- 100% factory inspection
- 2-week delivery



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 company focusing on industrial 3D sensors and software suites for intelligent robotics. By combining 3D vision with AI technology, Mech-Mind brings automation to the next level and empowers partners and system integrators to manage the most challenging automation tasks, including bin picking, depalletizing & palletizing, picking & placing, and more.

One of the Highest-Funded AI + Robotics Companies

Founded in 2016, Mech-Mind has closed its Series C+ with total funding of > USD 200 million. Backed by Intel and other global top investors, Mech-Mind has been one of the highest-funded AI + robotics companies all over the world.

World-Class Team with Deep Technical Knowledge

Mech-Mind assembles highly qualified experts with rich technical knowledge in 3D sensing, vision and robotics algorithms, robotics software, and intelligent robotic solutions.

Create Success Together with Partners and Integrators

Excellent usability, approved quality, high flexibility, comprehensive service, and competitive price, that's what we stand for and how we help our customers and partners to exceed in their business. Our mature solutions empower system integrators and partners to solve the most demanding applications and bring automation to the next level.

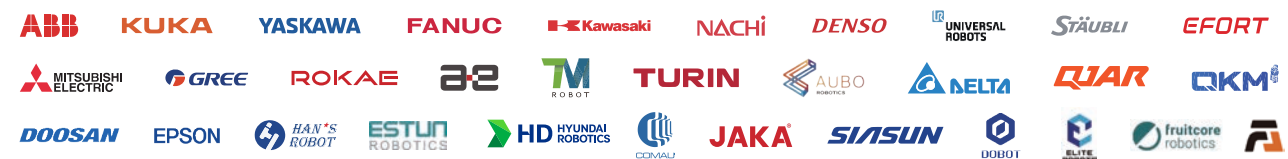
10,000+ Cameras Deployed

Mech-Mind partnered with industry-leading companies and has deployed applications in 50+ regions. By delivering cutting-edge technology and reliable solutions, Mech-Mind has created visible ROI for global customers across diverse industries, including automotive, metal and machining, logistics, home appliances, food and beverage, etc.

Customers and Partners

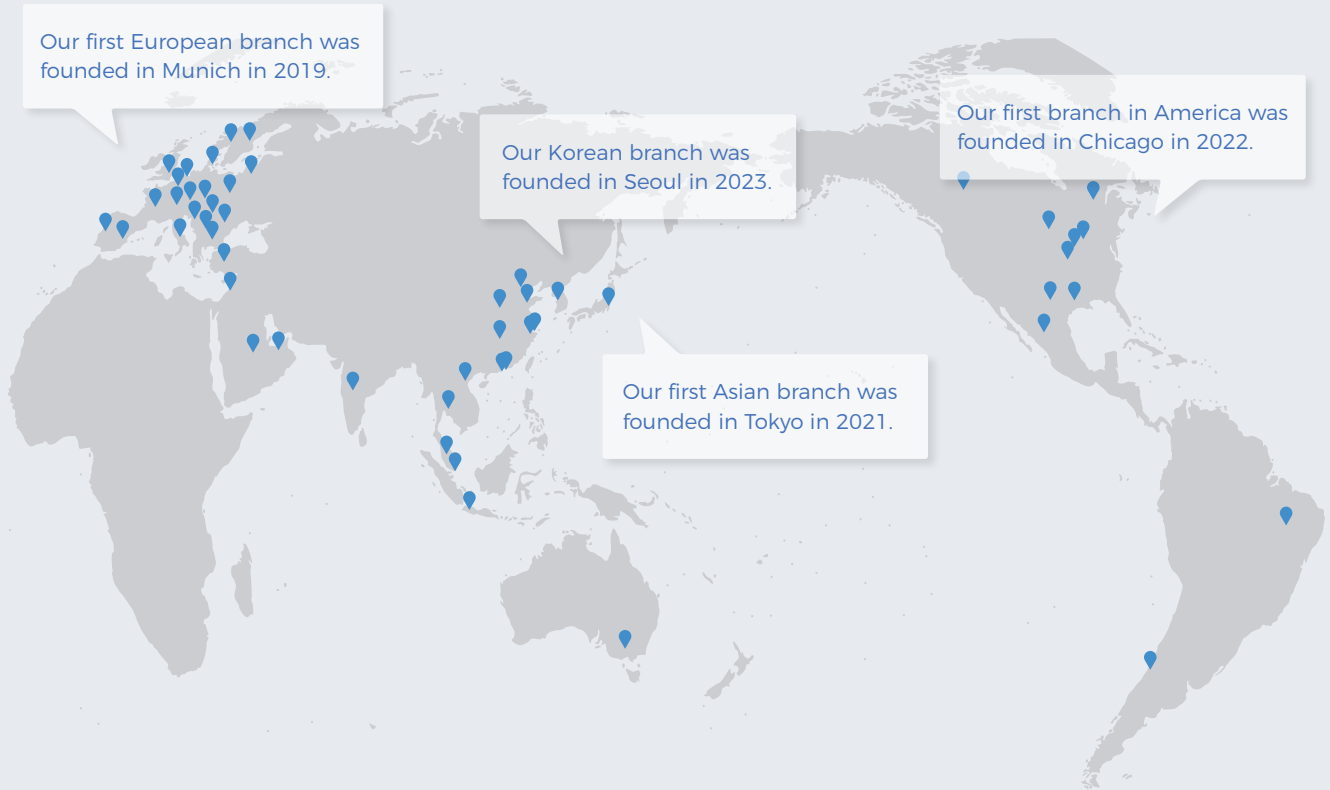


Compatible with Major Robot Brands



Your Trusted Partner in AI and 3D Vision

● Partners and branches



10,000+ cameras
installed worldwide

> \$200 million
total funding

50+
regions

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Japan

702 KDX Hamamatsucho Place, 1-7-6 Shiba Koen, Minato-ku, Tokyo (Office), Japan

AE3-N, 3rd Floor, Distribution Building A, 6-1-1 Heiwajima, Ota-ku, Tokyo 143-0006, Japan

China

1st Floor, Building 2, Independent Innovation Building, No.6 Chuangye Road, Haidian District, Beijing, China

5# No.485 Xiangjiang Road, Jiading District, Shanghai, China

3D VISION & AI FOR ROBOTS AND MORE



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