

3D Vision & AI for Robots and More

# Mech-Mind Robotics Product Catalog

We Help Integrators WIN with best-in-class AI + 3D vision tools and services.

# **Empower System Integrators with Advanced AI + 3D Vision Tools**

Mech-Mind is an industry-leading provider of industrial 3D cameras and AI software suites for robotic applications. With the comprehensive product portfolio, Mech-Mind empowers partners and system integrators to manage the most demanding robotic applications and brings automation to the next level.

#### **Mech-Eye Industrial 3D Cameras**



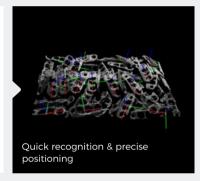
- · High accuracy
- · Fast scanning
- · Resistance to ambient light
- · IP65/IP67 protection and CE, FCC, VCCI, KC, ISED, NRTL, and RoHS certified
- · Multiple model options





#### **Mech-Vision Machine Vision Software**

- · Code-free graphical user interface
- · Extensive solution library
- · Easy integration
- · Various vision tools integrated
- · Integrates 1,000+ robot models





#### **Mech-DLK Deep Learning Software**

- · Intuitive graphical user interface
- · Visualized model validation
- · Simple labeling and fast training
- Easy integration using multi-language SDKs, including C, C++, C#, and Python
- · Standalone AI software for quality control





#### Mech-Viz **Robot Programming Software**

- · Task-oriented graphical programming interface
- · One-click simulation
- Powerful algorithms
- · Support for almost all major-brand robots



## **Mech-Eye Industrial 3D Cameras**



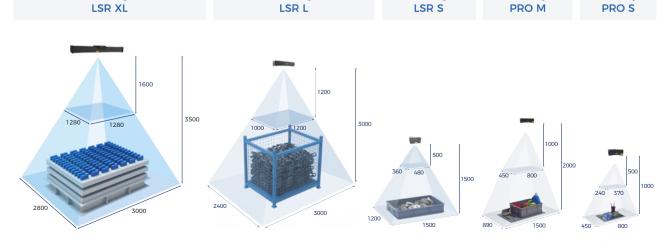
- · Detailed and accurate 3D point clouds
- · Ambient light resistance
- · Short capture time

- · IP65 water and dust resistance
- · Rugged aluminum alloy housing

Mech-Eye

MTBF (Mean Time Between Failures): ≥ 100,000 hours

Specification	LSR XL	LSR L	LSR S	PRO M	PRO S		
				M /-	- m (-		
Recommended working distance <sup>[1]</sup>	1600-3500 mm	1200-3000 mm	500-1500 mm	1000-2000 mm	500-1000 mm		
Near FOV	1280 × 1280 mm @ 1.6 m	1200 × 1000 mm @ 1.2 m	480 × 360 mm @ 0.5 m	800 × 450 mm @ 1.0 m	370 × 240 mm @ 0.5 m		
Far FOV	3000 × 2800 mm @ 3.5 m	3000 × 2400 mm @ 3.0 m	1500 × 1200 mm @ 1.5 m	1500 × 890 mm @ 2.0 m	800 × 450 mm @ 1.0 m		
Resolution	Depth map: 2448 × 2040	Depth map: 2048 × 1536	Depth map: 2048 × 1536				
	RGB: 4000 × 3000/ 2000 × 1500	RGB: 4000 × 3000/ 2000 × 1500	RGB: 4000 × 3000/ 2000 × 1500	1920 × 1200	1920 × 1200		
Megapixels	/	/	/	2.3 MP	2.3 MP		
Point repeatability $Z(\sigma)^{[2]}$	0.2 mm @ 3.0 m	0.5 mm @ 3.0 m	0.2 mm @ 1.5 m	0.2 mm @ 2.0 m	0.05 mm @ 1.0 m		
VDI/VDE accuracy <sup>[3]</sup>	1.0 mm @ 3.0 m	1.0 mm @ 3.0 m	1.0 mm @ 1.5 m	0.2 mm @ 2.0 m	0.1 mm @ 1.0 m		
Typical capture time	0.6-1.1 s	0.5-0.9 s	0.5-0.9 s	0.3-0.6 s	0.3-0.6 s		
Baseline	800 mm	380 mm	140 mm	270 mm	180 mm		
Dimensions	942 × 88 × 116 mm	459 × 77 × 86 mm	228 × 77 × 126 mm	353 × 57 × 100 mm	265 × 57 × 100 mm		
Weight	4.5 kg	2.9 kg	1.9 kg	1.9 kg	1.6 kg		
Light source	Red laser (638 nm, Class 2)			Blue LED (459 nm. RG2)/White LED(RG2)			
Image sensor	Sony CMOS for high-end machine vision						
Operating temperature	-10-45°C			0-45℃			
Communication interface	Gigabit Ethernet						
Input	24V DC, 3.75 A						
Safety and EMC	CE/FCC/VCCI/KC/ISED/NRTL						
IP rating	IP	65	IP67	IP65			
Cooling	Passive						



Mech-Eye

[1] Multiple focal distances are available in a camera model. For further details, please scan the QR code to access camera datasheets.

Mech-Eye

Mech-Eye

Mech-Eye

<sup>[2]</sup> One standard deviation of 100 Z-value measurements of the same point. The measurement target was a ceramic plate.

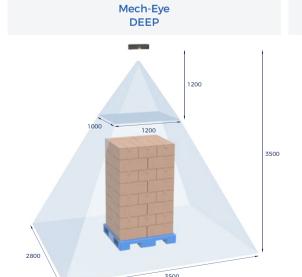
### **Mech-Eye Industrial 3D Cameras**



- · Detailed and accurate 3D point clouds
- · Ambient light resistance
- · Short capture time

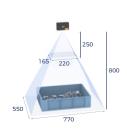
- · IP65 water and dust resistance
- · Rugged aluminum alloy housing
- MTBF (Mean Time Between Failures): ≥ 100,000 hours

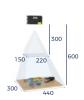
Specification	DEEP	NANO ULTRA	NANO	UHP-140		
Recommended working distance <sup>[1]</sup>	1200-3500 mm	250-800 mm	300-600 mm	300 ± 20 mm		
Near FOV	1200 × 1000 mm @ 1.2 m	220 × 165 mm @ 0.25 m	220 × 150 mm @ 0.3 m	135 × 90 mm @ 0.28 m		
Far FOV	3500 × 2800 mm @ 3.5 m	770 × 550 mm @ 0.8 m	440 × 300 mm @ 0.6 m	150 × 100 mm @ 0.32 m		
Resolution	Depth map: 2048 × 1536			2048 × 1536		
	RGB: 2000 × 1500	2400 × 1800	1280 × 1024			
Megapixels	/	4.3 MP	1.3 MP	3.0 MP		
Point repeatability $Z(\sigma)^{[2]}$	1.0 mm @ 3.0 m	0.1 mm @ 0.6 m	0.1 mm @ 0.5 m	2.6 µm @ 0.3 m		
				Region <sup>[3]</sup> : 0.09 µm @ 0.3 m		
VDI/VDE accuracy <sup>[4]</sup>	3.0 mm @ 3.0 m	0.1 mm @ 0.6 m	0.1 mm @ 0.5 m	0.03 mm @ 0.3 m		
Typical capture time	0.5-0.9 s	0.5-0.9 s	0.6-1.1 s	0.6-0.9 s		
Baseline	300 mm	86 mm	68 mm	80 mm		
Dimensions	366 × 77 × 92 mm	125 × 46 × 76 mm	145 × 51 × 85 mm	260 × 65 × 142 mm		
Weight	2.4 kg	0.7 kg	0.7 kg	1.9 kg		
Light source	Red Laser (638 nm, Class 2)	Blue LED (440 nm. RG2)	Blue LED (459 nm, RG2)/White LED(RG2)	Blue LED (459 nm. RG2)		
Image sensor	Sony CMOS for high-end machine vision	High-performance CMOS for high- end machine vision	Sony CMOS for high-end machine vision			
Operating temperature	-10-45°C	0-45℃				
Communication interface	Gigabit Ethernet					
Input	24V D0	C, 3.75 A	24V DC, 1.5 A	24V DC, 3.75 A		
Safety and EMC	CE/FCC/VCCI/KC/ISED/NRTL					
IP rating	IP65					
Cooling	Passive					



Mech-Eye **NANO ULTRA**  Mech-Eye **NANO** 

Mech-Eye **UHP-140** 







Field of view (mm)

[1] Multiple focal distances are available in a camera model. For further details, please scan the QR code to access camera datasheets.

[2] One standard deviation of 100 Z-value measurements of the same point. The measurement target was a ceramic plate

[4] According to VDI/VDE 2634 Part II.

# **Mech-Eye LSR L**

**Long-Range Working Distance** 



High Accuracy | Large FOV | Ambient Light Resistance

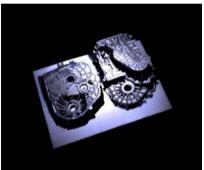
The next-gen Mech-Eye LSR L can generate accurate, complete, and detailed 3D point cloud data of a wide variety of objects under severe ambient light interference (> 30,000 lx).



Track links



Gearbox housings

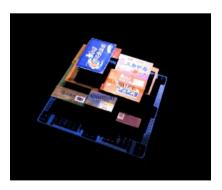


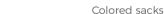
Brake discs Color rendered by height

Point clouds captured by Mech-Eye LSR L under challenging light conditions of > 30,000 lx @ 2.0 m











Point clouds captured by Mech-Eye LSR L under challenging light conditions of > 30,000 lx @ 2.0 m  $^{\circ}$ 

## **Mech-Eye PRO**

**Medium-Range Working Distance** 



MTBF (Mean Time Between Failures): ≥ 100.000 hours

High Accuracy | Fast Scanning Speed | Blue and White Light Options

Mech-Eye PRO delivers an extraordinary level of detail with super high accuracy. Capturing point clouds with accurate details takes as low as 0.3 s.



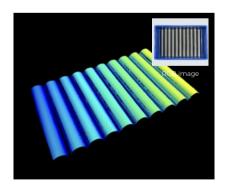
Dark and reflective objects Mech-Eye PRO S



Highly reflective metal parts Mech-Eye PRO S



Transparent groceries Mech-Eye PRO S



Reflective shafts Mech-Eye PRO S Color rendered by height



Colored goods Mech-Eye PRO M



Colored cartons Mech-Eye PRO M

Point clouds captured under typical indoor lighting conditions

# **Mech-Eye NANO**

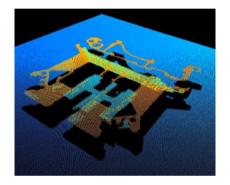
**Short-Range Working Distance** 



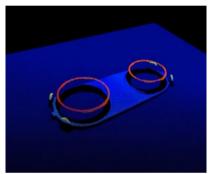
MTBF (Mean Time Between Failures): ≥ 40.000 hours

#### Ultra-Small Size | High Accuracy | Ambient Light Resistance

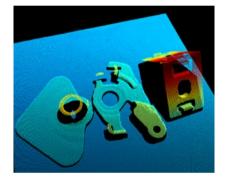
Mech-Eye NANO (accuracy: 0.1 mm @ 0.5 m) can create 3D data of most complex parts with extraordinarily high accuracy. In space-critical applications, Mech-Eye NANO is easy to install and shows outstanding flexibility thanks to its ultra-small size (145 × 85 × 51 mm).



Precision component



Thin objects (only 0.6 mm thick)



Various small workpieces

Point cloud examples captured by Mech-Eye NANO



Screws and nuts



Car charging port



Small parts

Point cloud examples captured by Mech-Eye NANO

## **Mech-Eye NANO ULTRA**

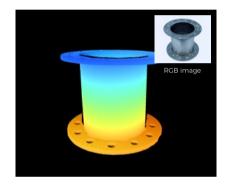
**Short-Range Working Distance** 



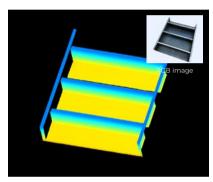
MTBF (Mean Time Between Failures): ≥ 100,000 hours

Ultra-High Precision | Palm Size | Ideal for Welding, Precision Part Picking and Fine Assembly

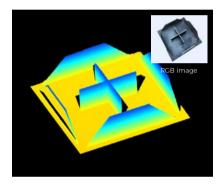
Mech-Eye NANO ULTRA, featuring impressive ambient light resistance and anti-reflection capability, can capture clear, detailed point clouds of reflective weldments and metal parts even under strong light (> 60,000 lx)







H-beam



Sub-assembly component of the ship hull

Mech-Eye NANO ULTRA @ 0.6 m, color rendered by height



Shiny steel plates with holes



Gas connectors



Bolts

Mech-Eye NANO ULTRA @ 0.6 m

## **Mech-Eye UHP-140**

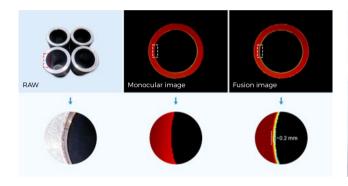
**Short-Range Working Distance** 



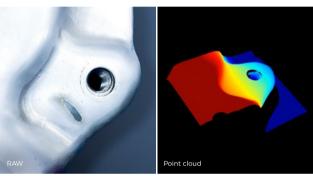
Micron-Level Accuracy | Robust Anti-Reflection Performance | Advanced Image Stitching Algorithms

Mech-Eye UHP-140 is designed to inspect or measure the subtlest features and defects (accuracy: 0.03 mm @ 0.3 m; standard: VDI/VDE 2634 part II of Germany).

Coupled with advanced image fusion and anti-reflection 3D reconstruction algorithms, Mech-Eye UHP-140 can effectively reduce blind spots and generate high-quality point clouds of reflective and complex-shaped parts.

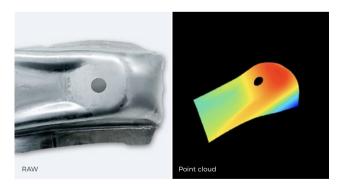


Round positioning hole with chamfered edges

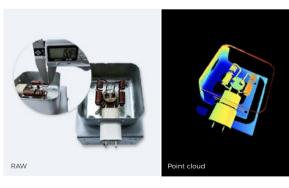


Threaded hole

Mech-Eye UHP-140 @ 0.3 m, color rendered by height



Reflective curved sheet metal part



Reflective enameled copper wire with a diameter of about

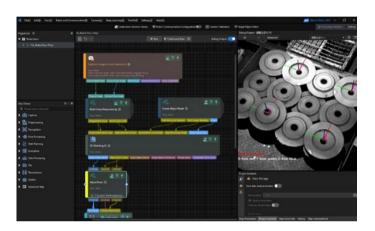
Mech-Eye UHP-140 @ 0.3 m, color rendered by height

### **Mech-Vision**

#### **Machine Vision Software**

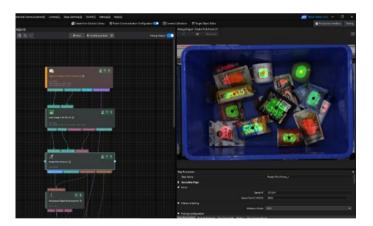
Mech-Vision is an industry-leading machine vision software. It is designed to quickly build vision applications, whether simple or complex. With Mech-Vision, users can manage a wide range of vision tasks, including identification, localization, inspection & measurement, etc.





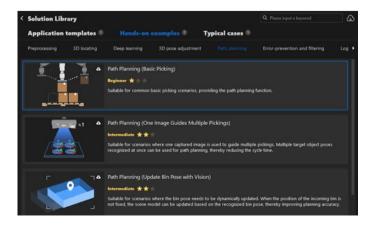
#### **Build your vision applications** efficiently

- Intuitive solution-oriented graphical user interface
- Drag-and-drop programming simplifies setup without writing a line of code
- Visualized configuration



#### Manage complex vision applications with extensive tools

- Powerful algorithms: 2D/3D matching, 2D/3D deep learning, 2D/2.5D measurement, etc.
- · Integrated machine vision tools: matching model, pick point editor, automatic calibration, caliper, etc.
- The **3D Workpiece Recognition** tool delivers recognition results in 1 sec, enabling easier and faster deployment of various loading and handling applications



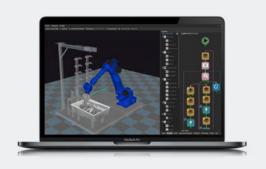
#### **Develop vision applications** easily and flexibly

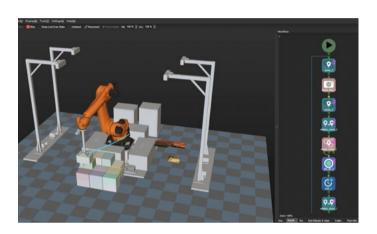
- Robust Solution Library: get faster application deployment by adapting an existing project after simple modifications
- Production Interface for easy production status monitoring and data reporting
- Multiple languages: English, Japanese, Chinese, and Korean

### **Mech-Viz**

#### **Robot Programming Software**

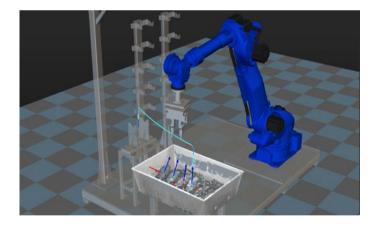
Mech-Viz is a software product for efficiently implementing robotic applications without writing a line of code. Mech-Viz enables robots to manage demanding automation tasks with excellent stability, extraordinary flexibility, and outstanding consistency.





#### **Intuitive Robot Programming**

- · Intuitive graphical user interface
- Code-free programming environment
- · One-click simulation of robot path



#### **Powerful Algorithms for Reliable Robotic Operation**

- Motion planning and collision detection
- Multi-pick depalletizing algorithms
- Picking strategies: multiple pick points, rotational symmetry, etc.



#### **Flexible and Easy Implementation**

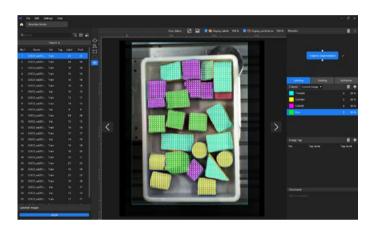
- Support for almost all major-brand robots
- Streamlines configuration and redeployment with robot path reporting and tracking capabilities
- Multiple languages: English, Japanese, Chinese, and Korean

### **Mech-DLK**

#### **Deep Learning Software**

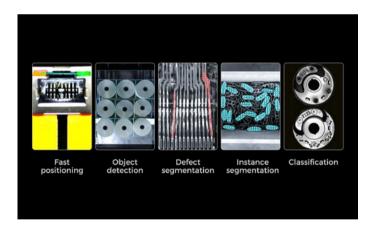
Mech-DLK is a versatile deep learning software solving complex machine vision tasks. It enables users to rapidly train models and easily solve demanding vision applications, including overlapping object recognition and classification, complex defect detection, character reading, etc.





#### Train models efficiently without writing a line of code

- Intuitive code-free user interface
- Visualized model validation
- · Advanced data augmentation: train models with smaller image sets
- Finetune function: leverage pre-trained models to expedite training, rather than train a model from scratch



#### Manage complex machine vision tasks with speed and accuracy

- Manage complex vision applications with powerful algorithms such as fast positioning, defect segmentation, and instance segmentation
- · VFM labeling tool, smart labeling tool and pre-trained labeling tool simplify the labeling process, saving time and effort



#### Integrate your vision tasks into your production environment easily

- Multi-language SDKs: C, C++, C#, and Python
- Easy integration with Mech-Vision for quick deployment

## **Example Cases**





**Vision-Guided Case Depalletizing** 



**Vision-Guided Case and Tote Depalletizing** 



**Vision-Guided Sack Depalletizing** 



**Vision-Guided Machine Tending of Drive Gears** 



**Vision-Guided EV Charging** 



**Vision-Guided Bin Picking of CV Joints** 



**Subframe Inline** Measurement



**Vision-Guided Car Door Inner Panel Picking** 

## **Example Cases**





**Vision-Guided Machine Tending of Countershafts** 



**Vision-Guided De-racking of Stamping Parts** 



**Vision-Guided Heavy-Duty Truck Tire Assembly** 



**Vision-Guided Machine Tending of Battery Modules** 



**Vision-Guided Tote Depalletizing** 



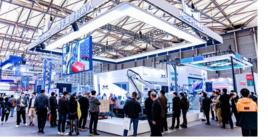
**Vision-Guided Depalletizing of Shrink-Wrapped Bottles** 



**Vision-Guided Bolt Tightening** 



**Inline Measurement of Bumper Beams** 











#### **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.

#### **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.

#### **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.

#### 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.

10.000+ cameras

installed worldwide

> \$200 million

total funding

**50**+ regions

Customers and Partners



SIEMENS



















Honeywell









































**☑** XCMG























Compatible with Major Robot Brands

**GREE** 





















MITSUBISHI DOOSAN





















#### **3D VISION & AI FOR ROBOTS AND MORE**



Get the most from Mech-Mind's 3D vision - get in touch with us!

Website: www.mech-mind.com
E-mail (business): info@mech-mind.net
E-mail (PR & marketing): marketing@mech-mind.net

Learning guidance to deploy your vision application STEP BY STEP, please visit

Documentation: docs.mech-mind.net
Online community: community.mech-mind.com