

Mech-Eye UHP-140 Industrial 3D Camera with Micron-Level Accuracy

For inspection & measurement in the
automotive industry

- Robust Anti-Reflection Performance
- Advanced Image Stitching Algorithm



MTBF (Mean Time Between Failures): $\geq 40,000$ hours

Specification

Recommended working distance (mm) : 300 ± 20

Near FOV (mm) : 135×90 @ 0.28 m

Far FOV (mm) : 150×100 @ 0.32 m

Resolution: 2048×1536

Megapixels (MP) : 3.0

Point Z-value repeatability (σ)^[1] : $2.6 \mu\text{m}$ @ 0.3 m

Regional Z-value repeatability (σ)^[2] : $0.09 \mu\text{m}$ @ 0.3 m

Measurement accuracy (VDI/VDE)^[3] : 0.03 mm @ 0.3 m

Typical capture time (s) : 0.6–0.9

Image sensor: Sony CMOS for high-end machine vision

Dimensions (mm) : Approx. $260 \times 65 \times 142$

Weight (kg) : Approx. 1.9

Operating temperature (°C) : 0–45

Communication interface: Gigabit Ethernet

Input: 24 V DC, 3.75 A

Safety and EMC: CE/FCC/VCCI/UKCA/KC/ISED/NRTL

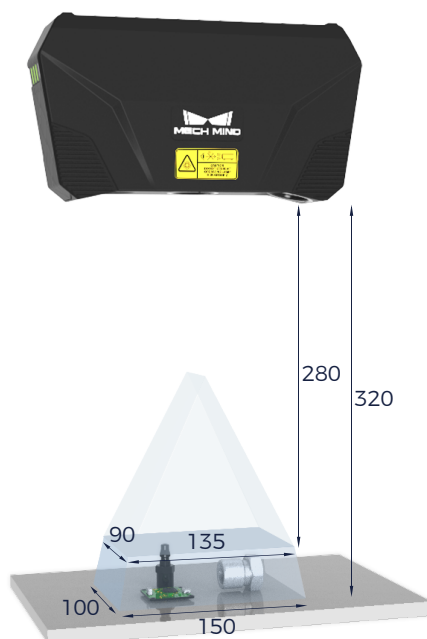
IP rating: IP65

Cooling: Passive

Light source: Blue LED (459 nm, RG2)

MTBF (Mean Time Between Failures) : $\geq 40,000$ hours

Field of View (mm)



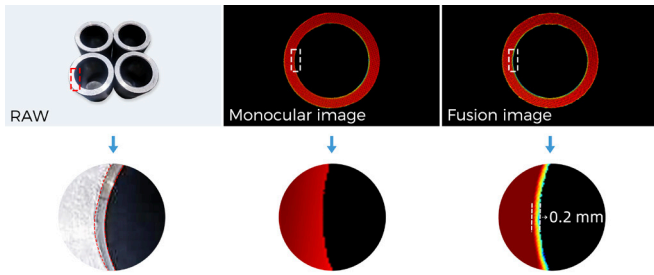
[1] The standard deviation of the single point Z value for 100 measurements. The measurement target is a ceramic plate.

[2] The standard deviation of the difference of the average Z value in two local regions for 100 measurements. The measurement target is a ceramic plate.

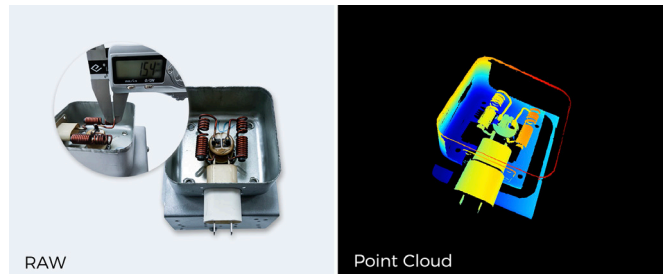
[3] Refer to VDI/VDE 2634 Part II.

Advanced Image Stitching and 3D Reconstruction Algorithms

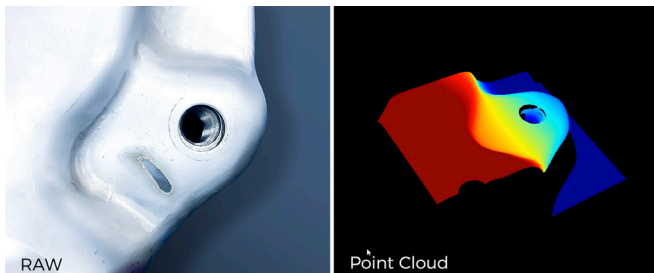
Mech-Eye UHP-140, coupled with the advanced image stitching and anti-reflection 3D reconstruction algorithms, can effectively reduce blind spots and generate complete, detail-rich, and accurate point cloud data of reflective and complex-shaped parts with tiny details.



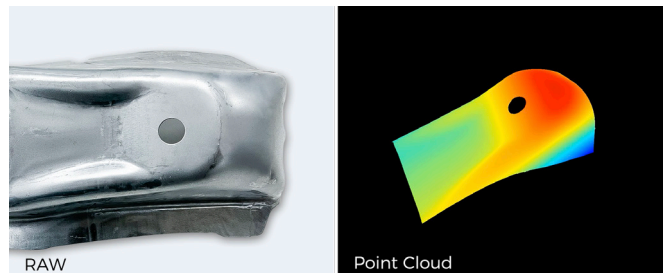
Round positioning hole with chamfer
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



Reflective enameled copper wire with a diameter of about 1.5 mm
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



Threaded hole
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height



Reflective dented sheet metal part
Mech-Eye UHP-140 @ 0.3 m, point cloud rendered by height

Application

Large Automotive OEM – Subframe Inline Measurement

Background

The customer is a large international automotive OEM. On the subframe assembly line of the customer's welding workshop, it's necessary to measure the key parameters of each assembly feature (mainly including various types of diameter, position, flatness, and other form tolerances), which is vital to avoid assembly errors and ensure precise assembly.

Highlights

- ▶ Mech-Eye UHP-140 industrial 3D camera, featuring ultra-high precision, can generate high-quality point cloud data of features on the subframes with strong reflection on the surface.
- ▶ With the advanced intelligent measurement algorithm, Mech-Eye UHP-140 can handle a variety of feature types, such as common round holes, threaded holes, studs, etc., with high measurement accuracy.
- ▶ Multi-camera and multi-robot collaboration to flexibly handle different positions of features and quickly complete the measurement tasks of various large parts.
- ▶ The measurement data can be managed and organized, supporting custom history filtering and outputting measurement reports.

