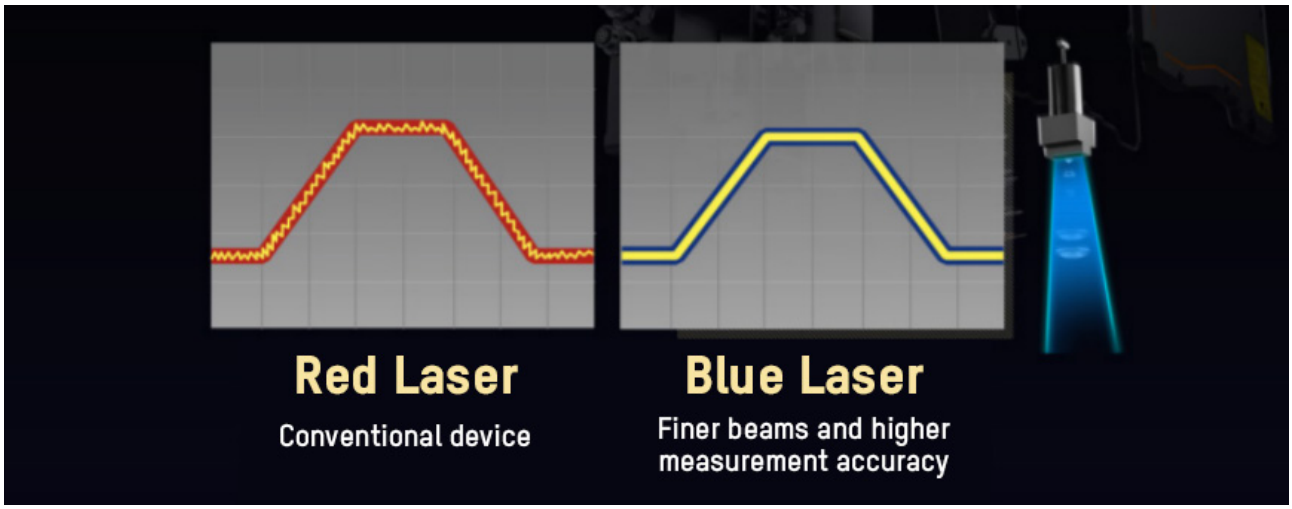
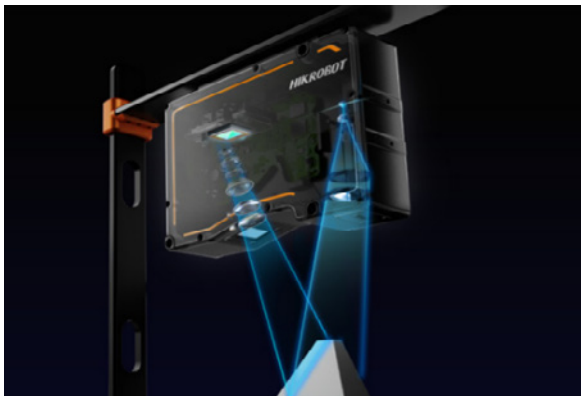
3D Camera

3D Laser Profile Sensor

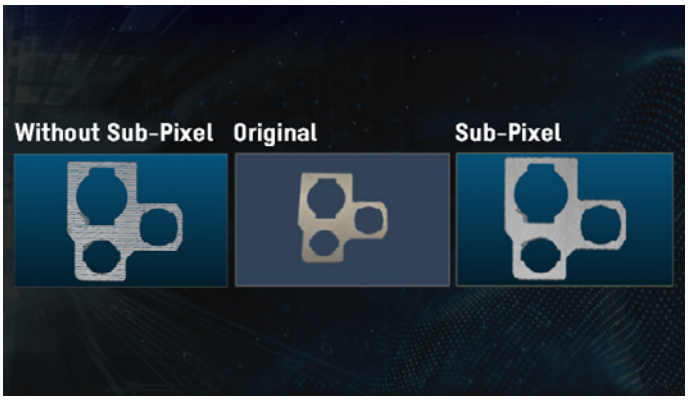
Based on laser triangulation measurement, the 3D laser profile sensor provides point cloud data, depth image, and brightness image with high frame rate and high accuracy up to micron level via the built-in high-precision algorithm. It is widely used in online, non-contact, and high-precision 3D measurement application scenarios in PCB, consumer electronics, and lithium battery industries.



Ultra-Fine Blue Light

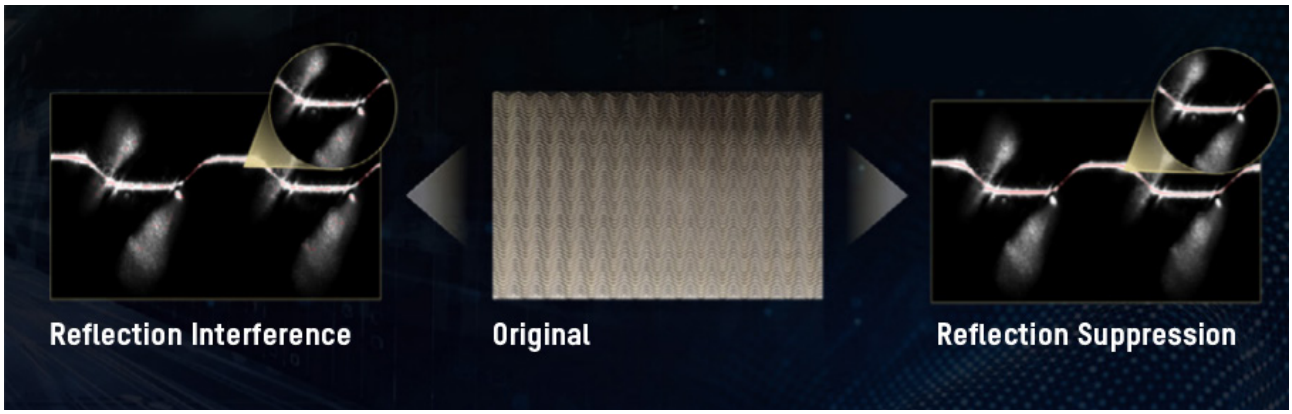


Embedded Product Design

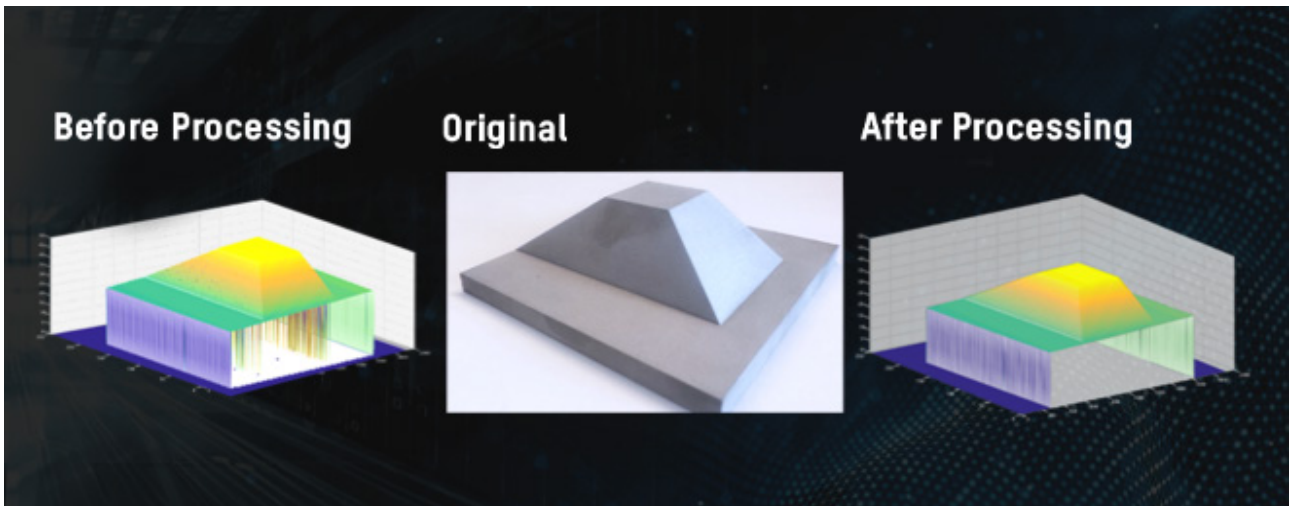


Super-Resolution Sub-Pixel Processing

HDR Mode

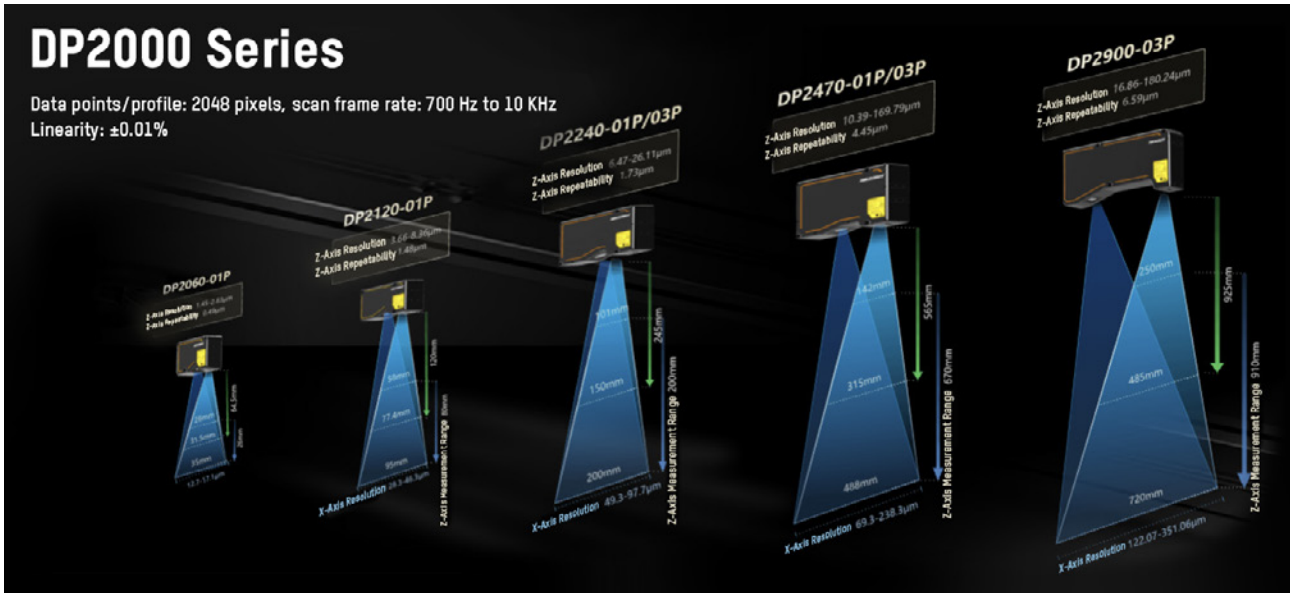


Glow Filter



Multi-Mode Post-Processing

DP2000 Series



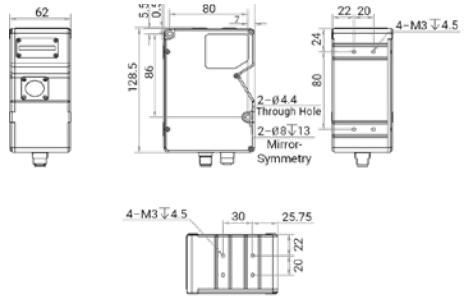
Specifications

CE RoHS

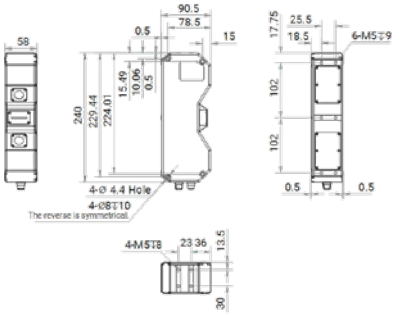
Model	Data points/ profile	Reference distance	Z-axis measurement range	X-axis measurement range	Z-axis resolution	Z-axis repeatability	Profile data interval	Scan frame rate	Laser wavelength	Label
MV-DP2060-01P	2048	64.5 mm	26 mm	31.5 mm@reference distance;26 mm@near field of view;35 mm@ far field of view	1.08 ~ 1.74 μm	0.4 μm	12.7 ~ 17.1 μm	700 Hz~10 KHz	405 nm	A
MV-DP2060-01D *	2048	63.5 mm	26 mm	27 mm@near field of view;32 mm@reference distance;37 mm@far field of view	1.2 ~ 1.6 μm	0.2 μm	13.1 ~ 18.1 μm	660 Hz~10 KHz	405 nm	B
MV-DP2120-01P	2048	120 mm	80 mm	77.4 mm@reference distance;58 mm@near field of view;95 mm@ far field of view	1.54 ~ 3.24 μm	0.6 μm	28.3 ~ 46.3 μm	700 Hz~10 KHz	405 nm	C
MV-DP2120-01D *	2048	118mm	80 mm	75.4mm@reference distance;53mm@near field of view;97.8mm@ far field of view	25.9 ~ 47.8 μm	0.5 μm	3.0 ~ 4.5 μm	660 Hz~10 KHz	405 nm	D
MV-DP2240-01P	2048	245 mm	200 mm	150 mm@reference distance;101 mm@ near field of view;200 mm@far field of view	5.65~11.20 μm	2.8 μm	49.3 ~ 97.7 μm	700 Hz~10 KHz	405 nm	E
MV-DP2240-03P	2048	245 mm	200 mm	150 mm@reference distance;101 mm@ near field of view;200 mm@far field of view	6.60~11.59 μm	2.28 μm	49.3 ~ 97.7μm	700 Hz~10 KHz	650 nm	E
MV-DP2470-01P	2048	565 mm	670 mm	315 mm@reference distance;142 mm@ near field of view;488 mm@far field of view	12.26~72.65 μm	4.9 μm	69.3 ~ 238.3 μm	700 Hz~10 KHz	405 nm	E
MV-DP2470-03P	2048	565 mm	670 mm	315 mm@reference distance;142 mm@ near field of view;488 mm@far field of view	7.41~58.38 μm	4.3 μm	69.3 ~ 238.3 μm	700 Hz~10 KHz	650 nm	E
MV-DP2900-03P	2048	925mm	910mm	485 mm@reference distance;250 mm@ near field of view;720 mm@far field of view	11.70 ~ 82.92 μm	9.0 μm	122.07 ~ 351.56 μm	700 Hz~10 KHz	650 nm	F

Notice:* will be released soon
Z-axis repeatability: This data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.

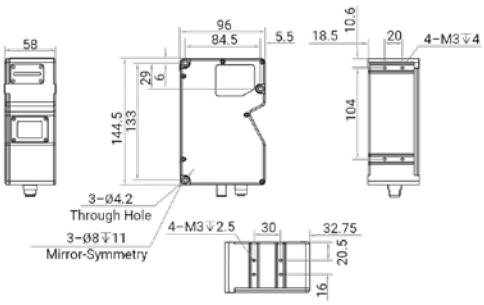
Dimension



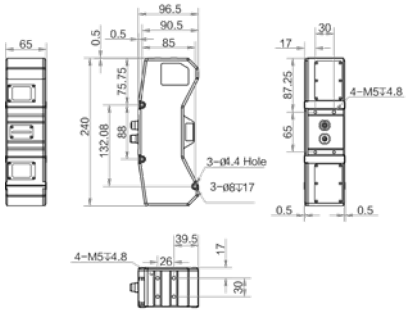
A



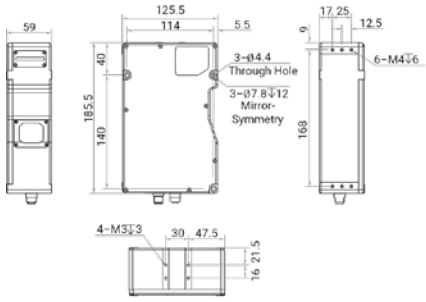
B



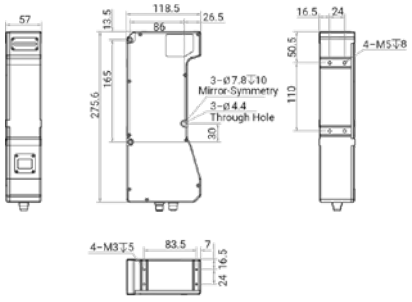
C



D



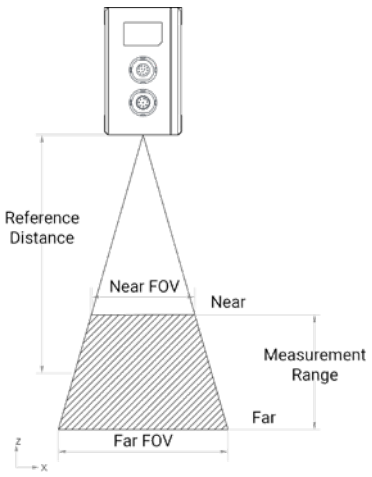
E



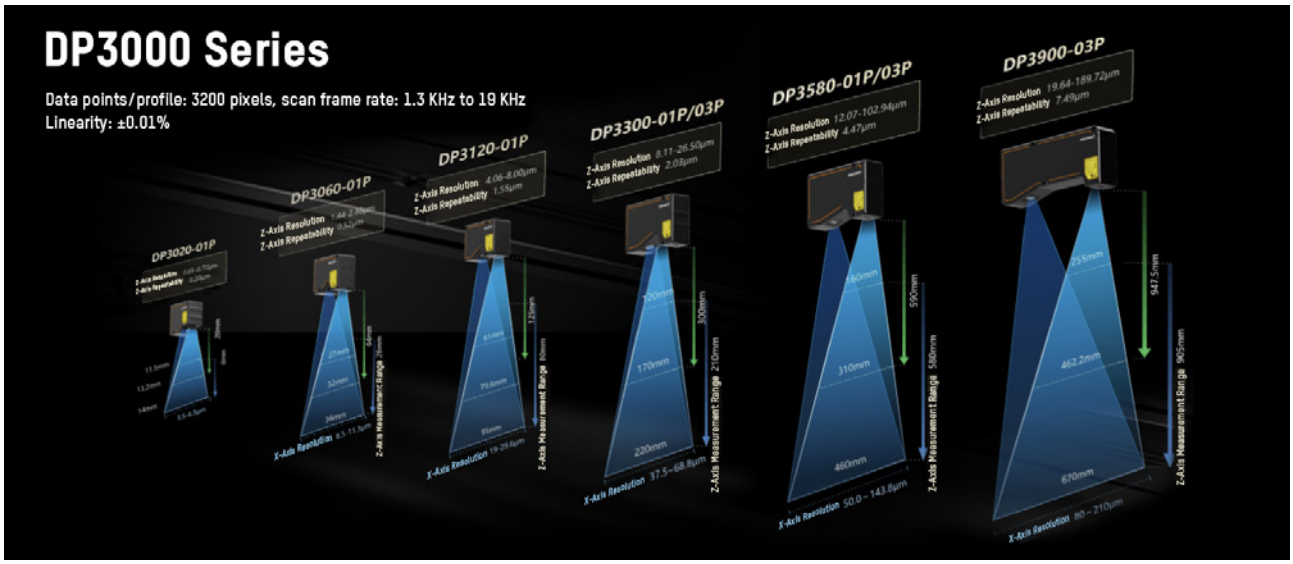
F

Unit:mm

Measurement Range Diagram



DP3000 Series



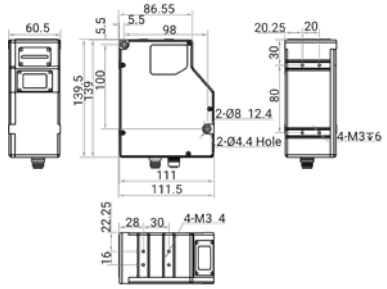
Specifications

CE RoHS

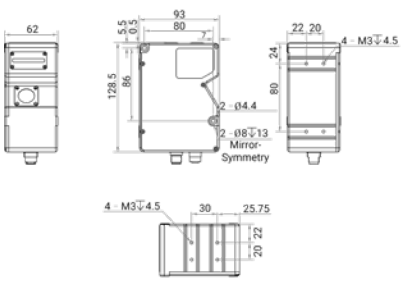
Model	Data points/ profile	Reference distance	Z-axis measurement range	X-axis measurement range	Z-axis resolution	Z-axis repeatability	Profile data interval	Scan frame rate	Laser wavelength	Label
MV-DP3020-01P	3200	20 mm	6 mm	13.2 mm@reference distance;11.5 mm@near field of view;14 mm@far field of view	0.5~1.0 μm	0.15 μm	3.5 ~ 4.3 μm	1.3 KHz~19 KHz	405 nm	A
MV-DP3060-01P	3200	64 mm	26 mm	32 mm@reference distance;27 mm@near field of view;36 mm@far field of view	1.20 ~ 1.82 μm	0.4 μm	8.5 ~ 11.3 μm	1.3 KHz~19 KHz	405 nm	B
MV-DP3060-01D *	3200	60 mm	21 mm	27 mm@reference distance;24 mm@near field of view;30 mm@far field of view	1.2 ~ 1.6 μm	0.2 μm	7.5 ~ 9.3 μm	1.3 KHz~19 KHz	405 nm	C
MV-DP3062-01P	3200	61 mm	10 mm	17.4 mm@reference distance;16 mm@near field of view;18.5 mm@far field of view	0.5 ~ 0.8 μm	0.1 μm	5 ~ 5.8 μm	1.3 KHz~19 KHz	650 nm	D
MV-DP3120-01P	3200	125 mm	80 mm	79.6 mm@reference distance;61 mm@near field of view;95 mm@far field of view	3.0 ~ 4.5 μm	0.5 μm	19 ~ 29.6 μm	1.3 KHz~19 KHz	405 nm	E
MV-DP3120-01D *	3200	125 mm	80 mm	71 mm@reference distance;55mm@near field of view;87 mm@far field of view	3.0 ~ 4.5 μm	0.5 μm	17.2 ~ 27.2 μm	1.3 KHz~19 KHz	405 nm	F
MV-DP3300-01P	3200	300 mm	210 mm	170 mm@reference distance;120 mm@near field of view;220 mm@far field of view	5.11 ~ 8.20 μm	2.9 μm	37.5 ~ 68.8 μm	1.3 KHz~19 KHz	405 nm	G
MV-DP3300-03P	3200	300 mm	210 mm	170 mm@reference distance;120 mm@near field of view;220 mm@far field of view	4.90 ~ 7.83 μm	1.6 μm	37.5 ~ 68.8 μm	1.3 KHz~19 KHz	650 nm	G
MV-DP3580-01P	3200	590 mm	580 mm	310 mm@reference distance;160 mm@near field of view;460 mm@far field of view	5.80 ~ 5.95 μm	1.1 μm	50.0 ~ 143.8 μm	1.3 KHz~19 KHz	405 nm	G
MV-DP3580-03P	3200	590 mm	580 mm	310 mm@reference distance;160 mm@near field of view;460 mm@far field of view	6.43 ~ 6.59 μm	1.2 μm	50.0 ~ 143.8 μm	1.3 KHz~19 KHz	650 nm	G
MV-DP3900-03P	3200	947.5 mm	905 mm	462.5 mm@reference distance;255 mm@near field of view;670 mm@far field of view	8.37 ~ 37.33 μm	3.1 μm	80 ~ 210 μm	1.3 KHz~19 KHz	650 nm	H

Notice:* will be released soon
Z-axis repeatability: This data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.

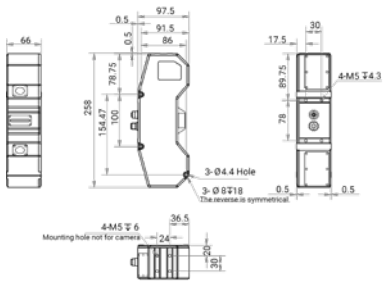
Dimension



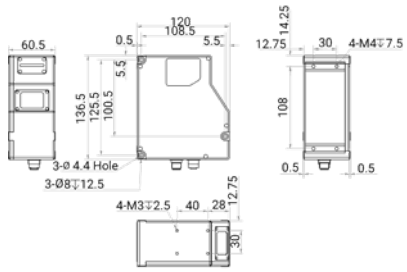
A



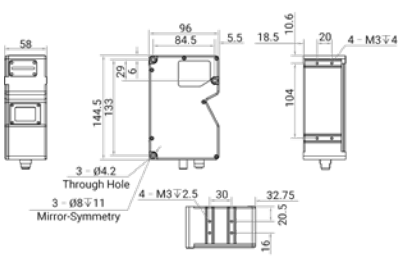
B



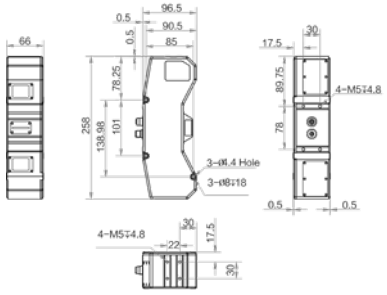
C



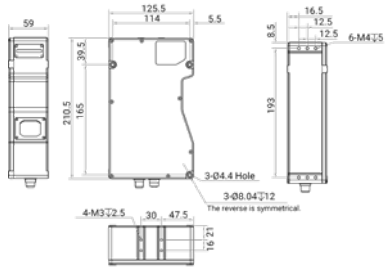
D



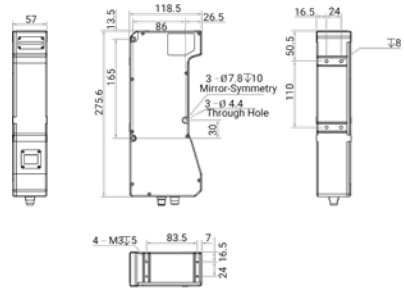
E



F



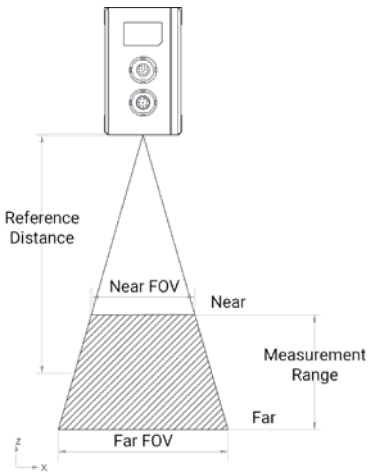
G



H

Unit:mm

Measurement Range Diagram



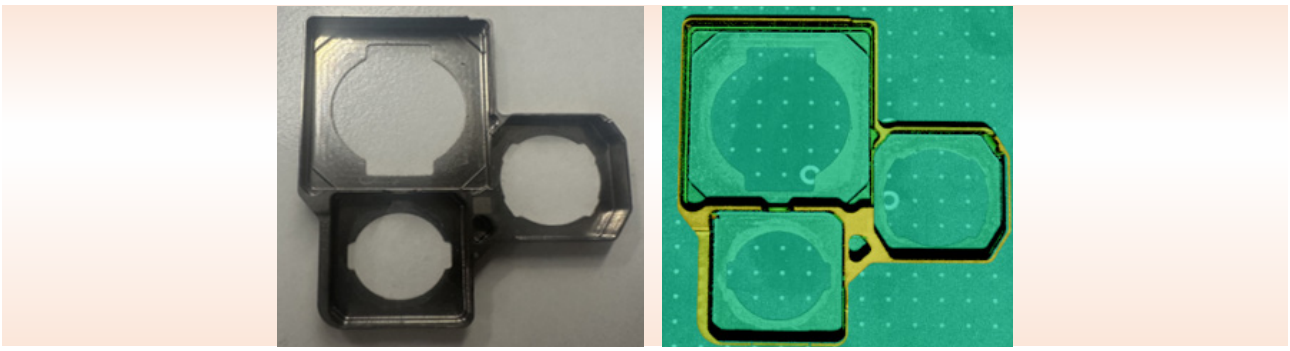
Device and Recommended Accessories

Model	Description	Quantity
MV-DP Series	3D laser profile sensor, select device model as required.	1
MV-3DA-P-M12A12pF-open-HFS-3m/5m/10m/15m/25m	Power and I/O cable with different lengths, purchase separately as needed.	1
MV-3DA-E-M12A8pF-RJ45-HFS-3m/5m/10m/15m/25m	Network cable with different lengths, purchase separately as needed.	1

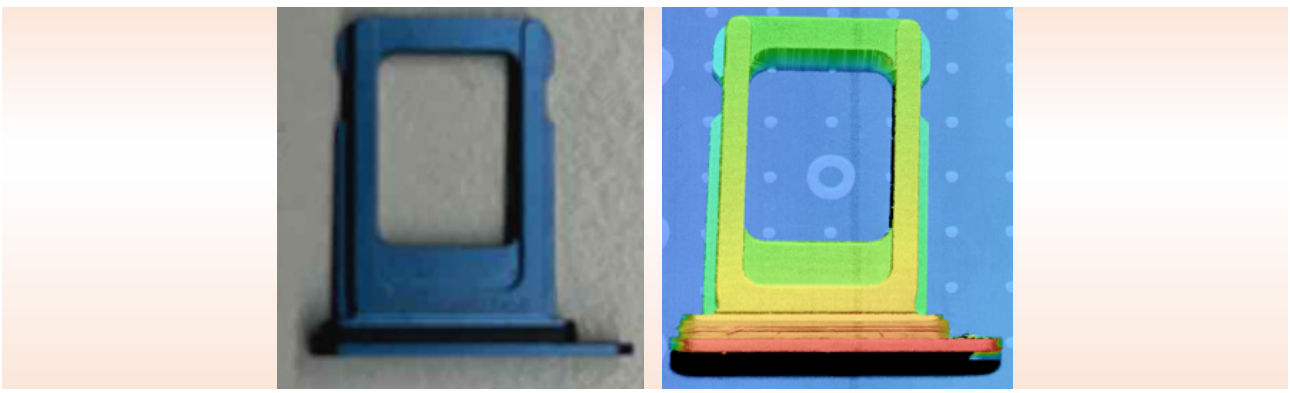
Consumer Electronics Industry

In the manufacturing process of consumer electronics products, from parts production to parts assembly, and to finished products inspection, an ultimate pursuit of quality can be found in each stage.3D laser profile sensor products feature rich-layout hardware and software with complete functions. The product supports adjustable solutions for height difference, flatness, and 3D defect detection, delivering excellent repeated measurement stability to meet the needs of various application scenarios.

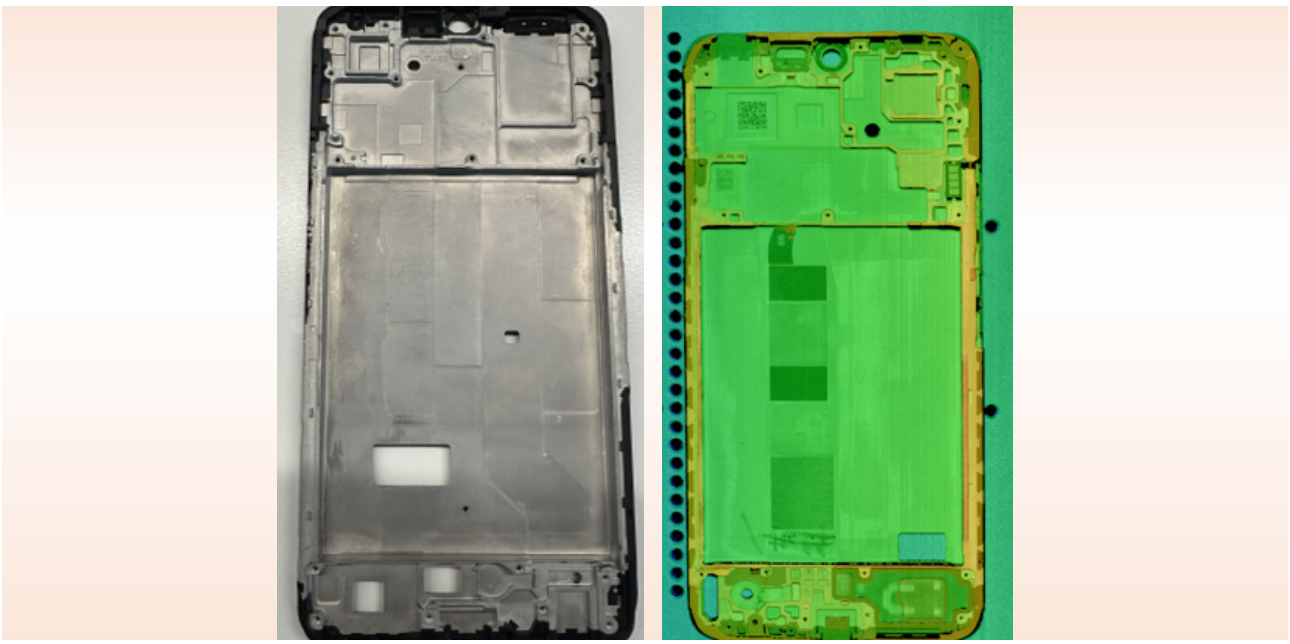
Measurement of step and coplanarity of folds in mobile phone camera modules



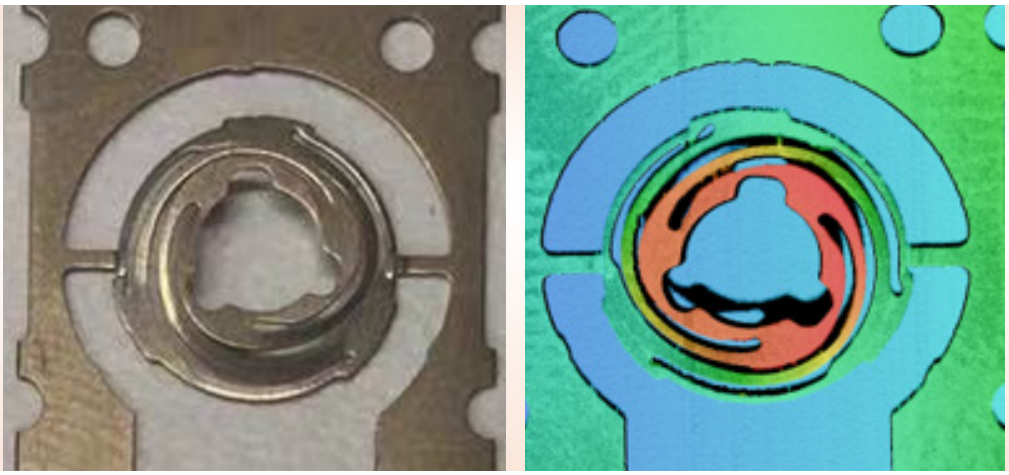
Measurement of step and flatness of mobile phone card slots



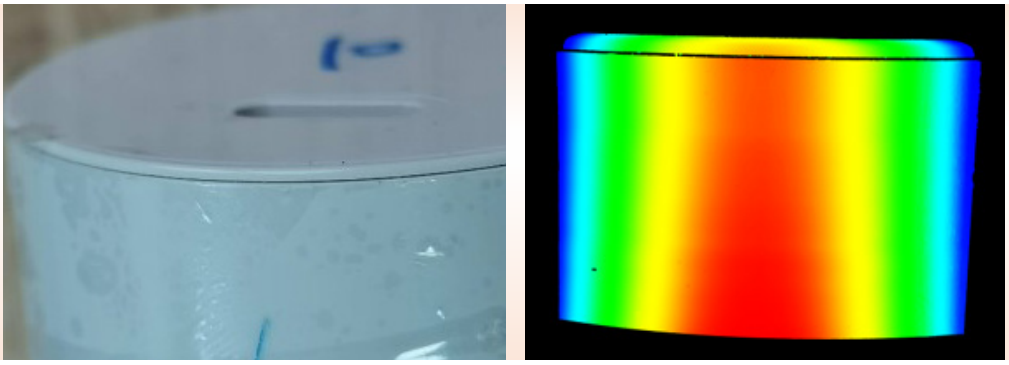
Measurement of mobile phone midplate dimensions



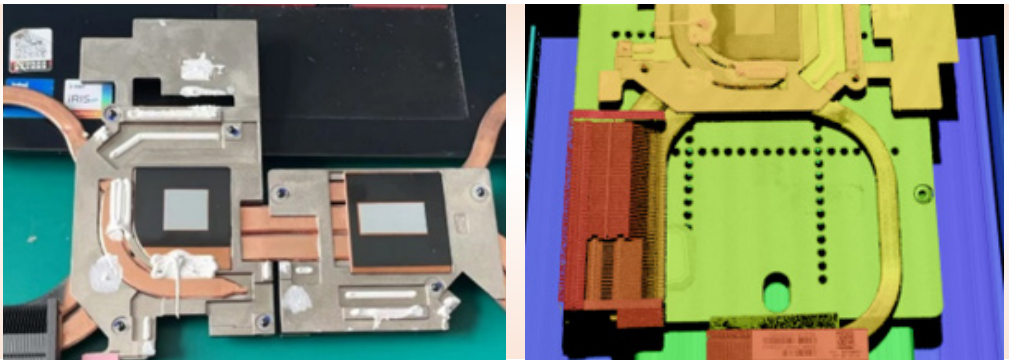
Height measurement of precision parts step



Charger gap detection



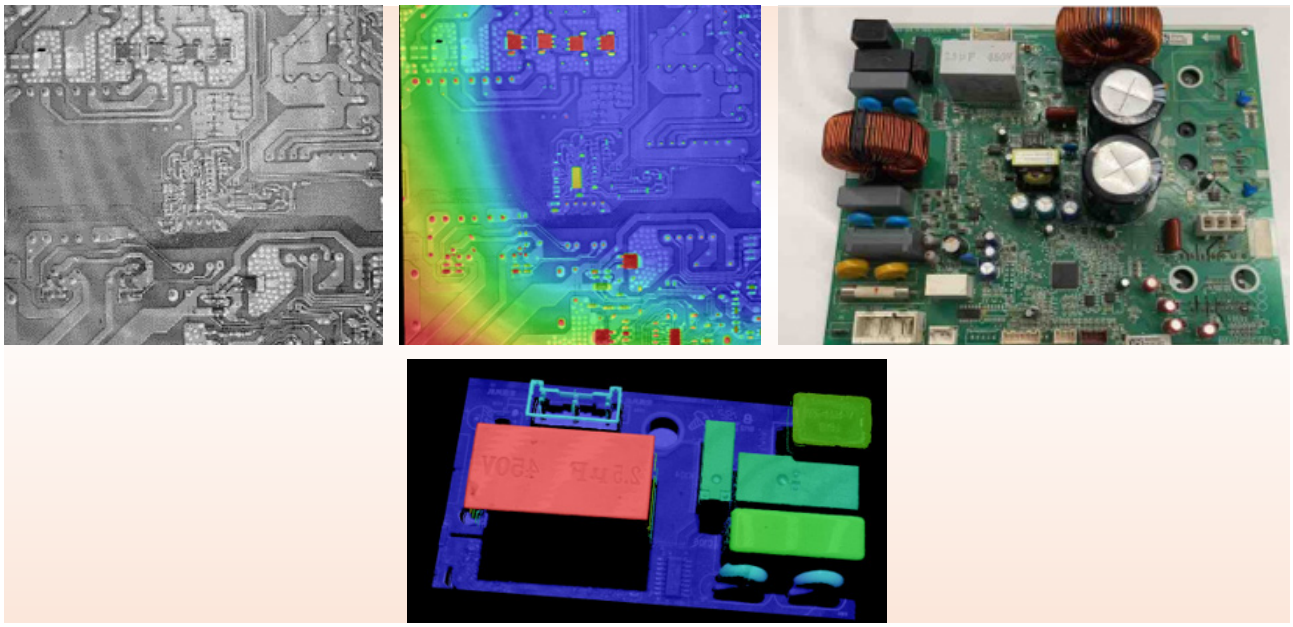
Structural part detection of laptop main boards



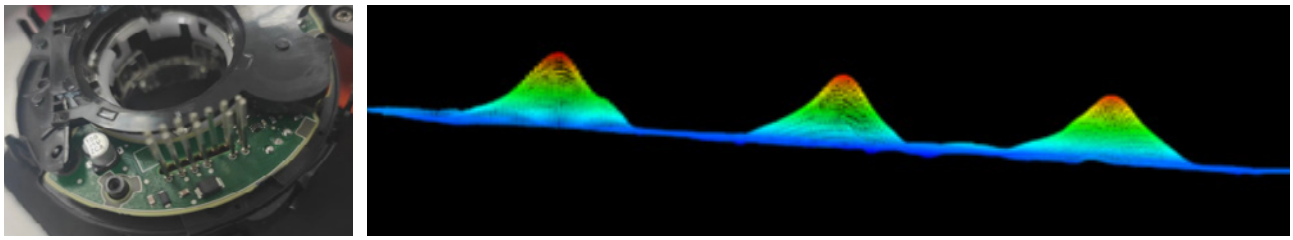
PCB Industry

In the later stages of the PCB manufacturing process, various modules and cable pins are soldered onto the PCB. Any poor soldering can lead to the malfunction of the entire PCB. 3D laser profile sensor products can precisely inspect the soldering quality, as well as the height and presence of the modules.

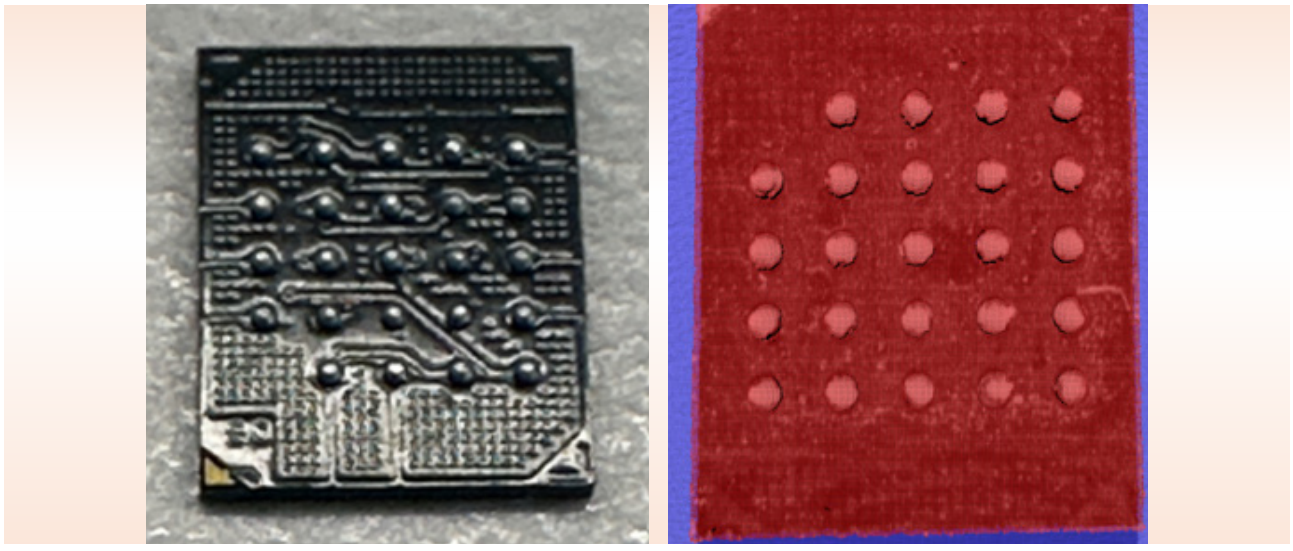
Height detection of the PCB parts



Measurement of soldering height and volume



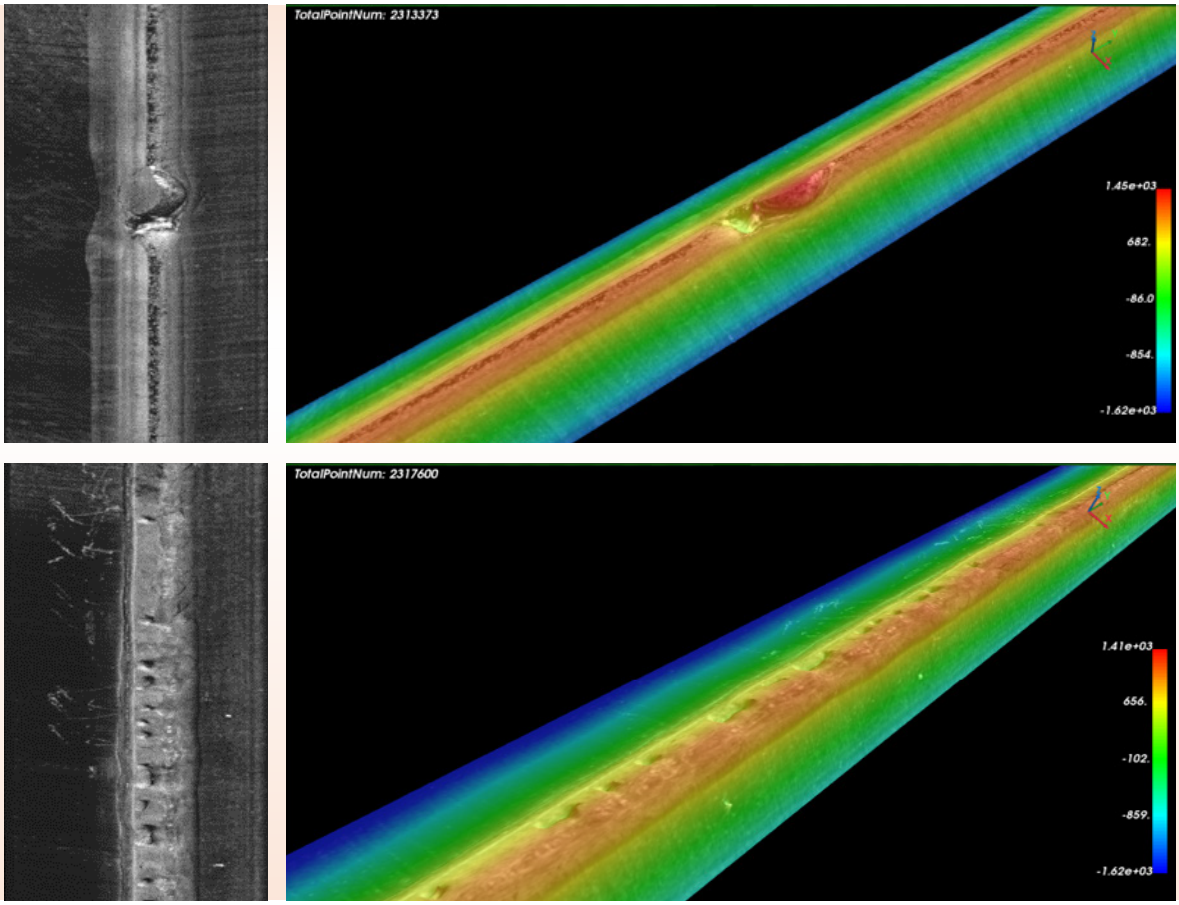
Height detection of the PCB parts



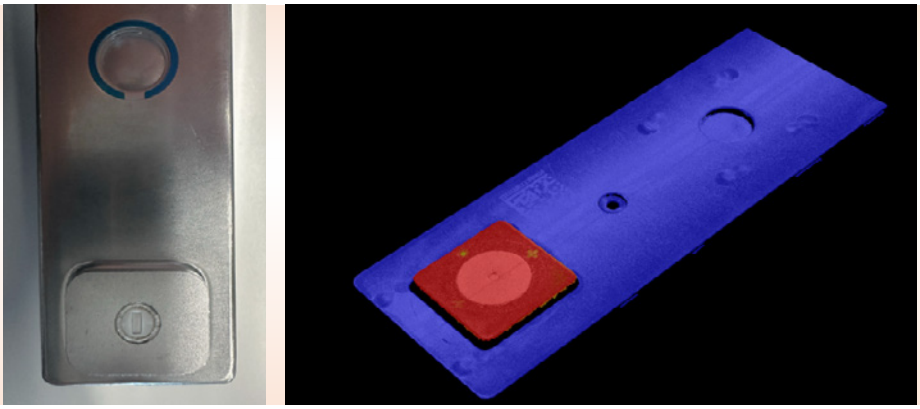
Lithium Battery Industry

In lithium battery production, from cell to battery module, and to pack, strict requirements for process and safety performance can be found in each stage. 3D laser profile sensor products offer comprehensive solutions for all stages of the process, ensuring the safety of lithium battery production.

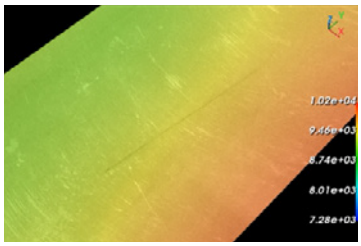
Defect detection of the welding treatment of the top cover perimeter

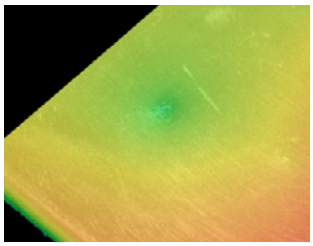


Height measurement of the post terminals on the top cover

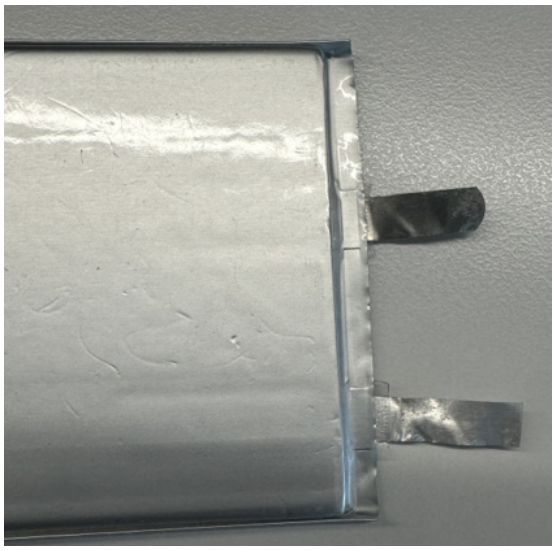


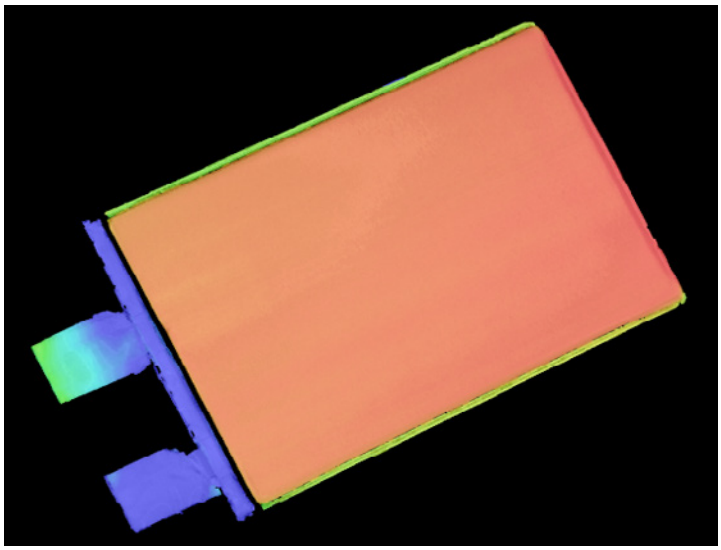
Six-surface defect detection of the lithium battery (scratches and dents)



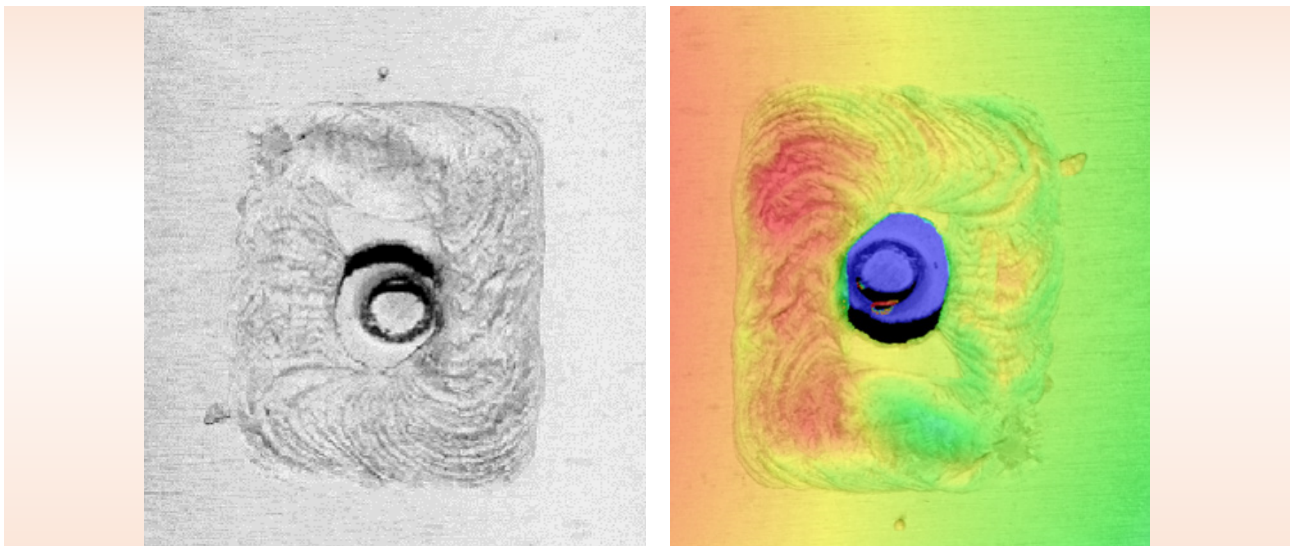


Inspection of pouch cell tab

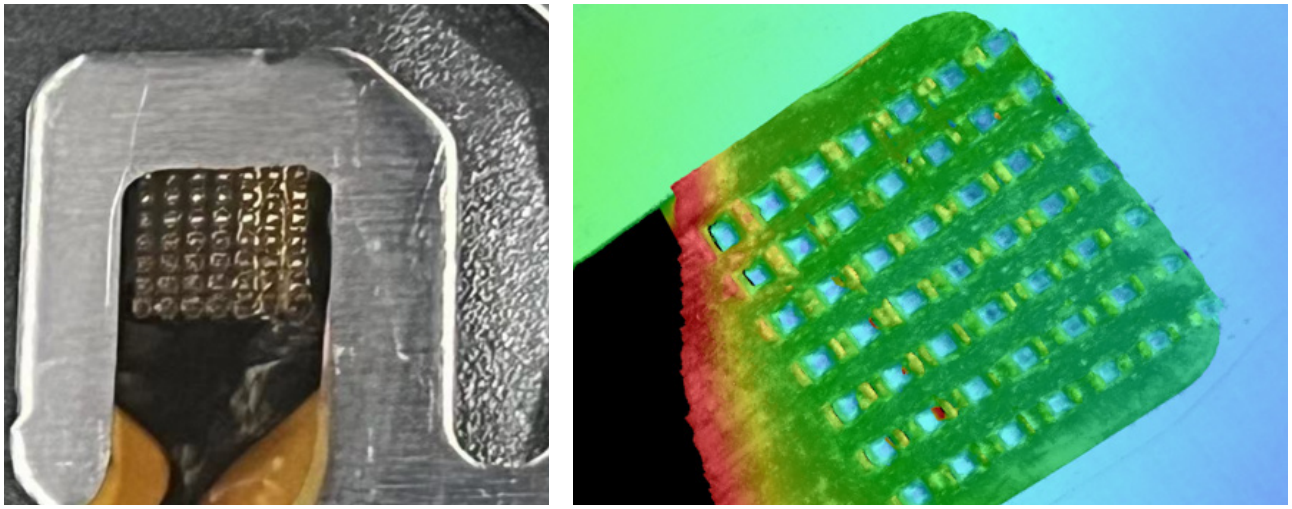




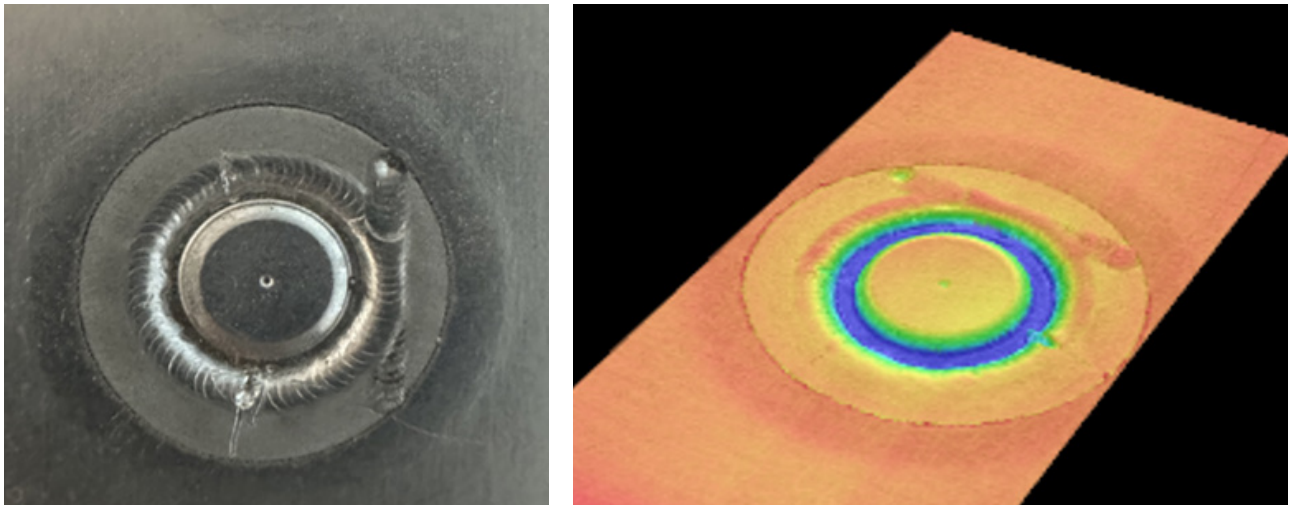
Defect detection of the busbar welding



Defect detection of the tab welding



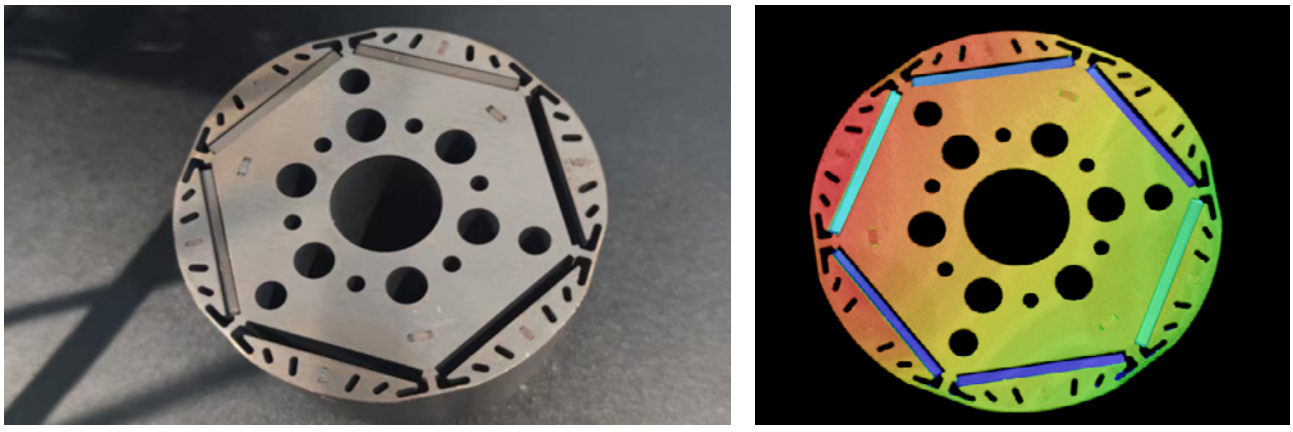
Defect detection of the sealing nail welding



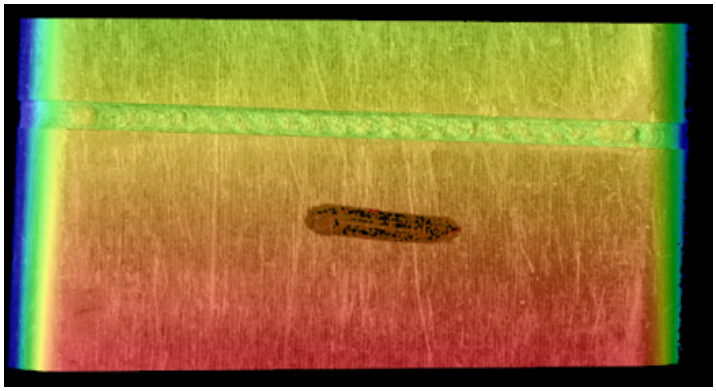
Automotive Parts

In every stage of the processes from production to assembly of automotive parts, quality is strictly controlled. 3D laser profile sensor products support high-precision and high-stability measurement of accessory dimensions and detection of minute defects.

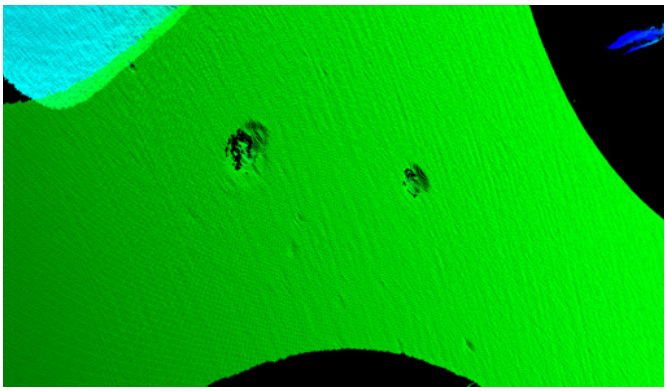
Inspection of automotive rotor



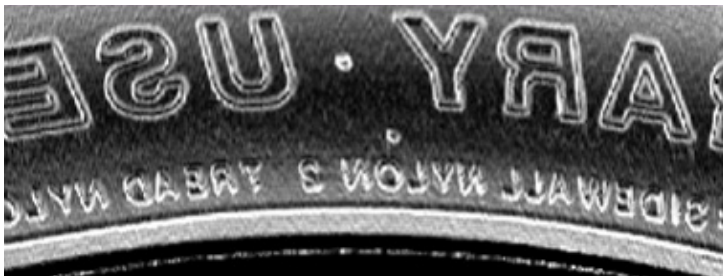
Defect detection of structural part welding seam

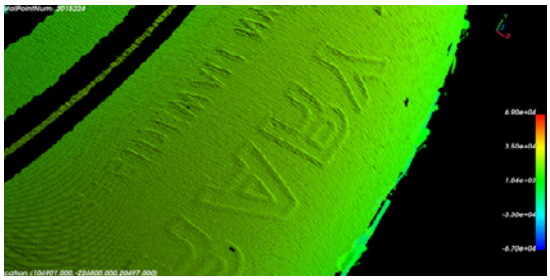


Defect detection of engine steel body

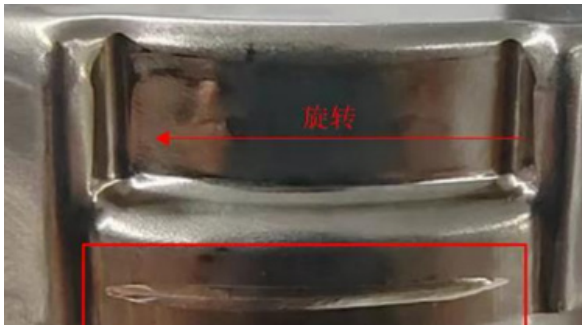


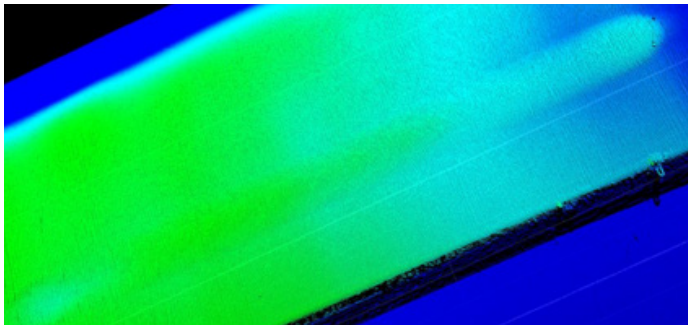
Recognition of automobile tire DOT code



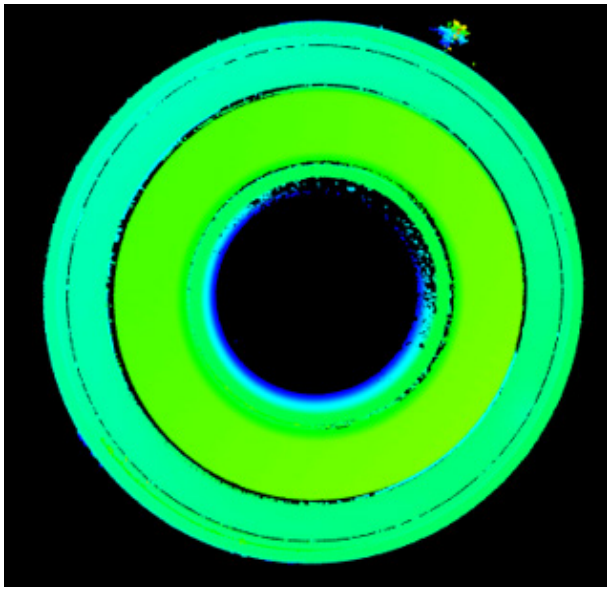


Weld bead defect detection of bearings

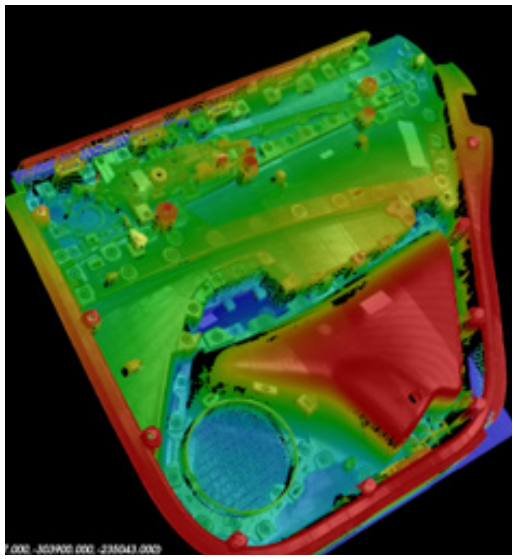




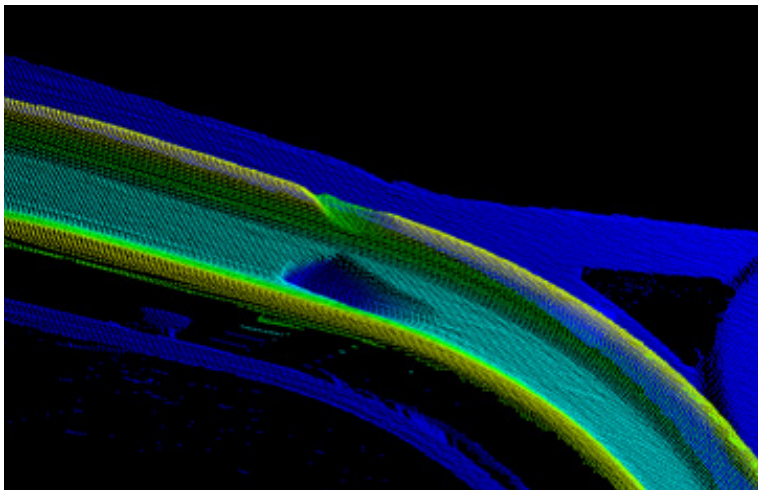
Rubber ring defect detection of bearings

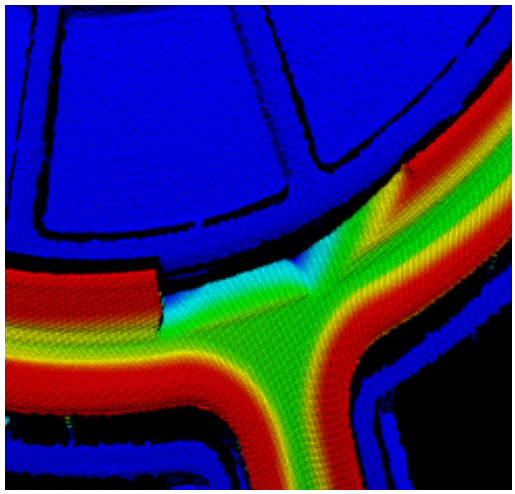


Structural part defect detection of car doors



O-ring defect detection

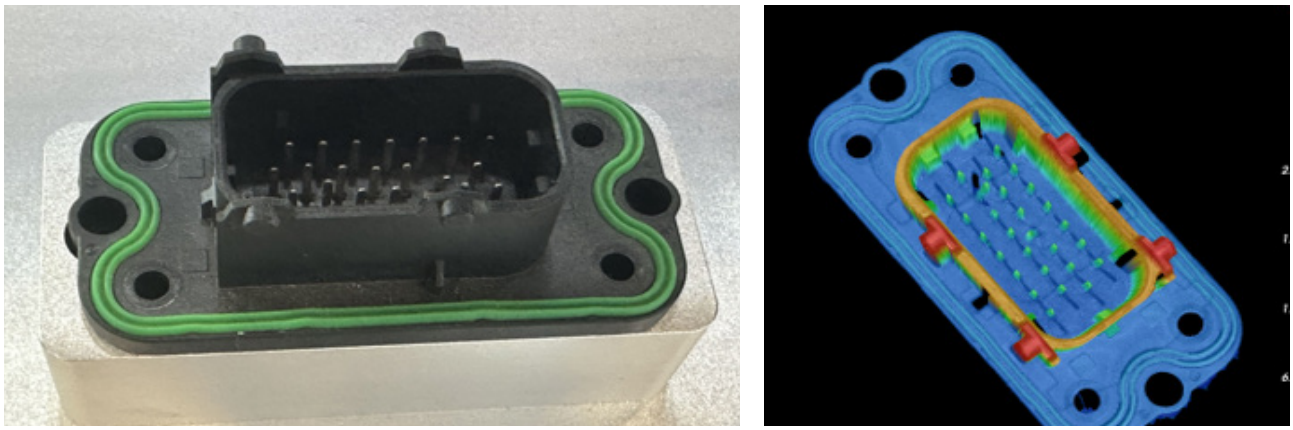




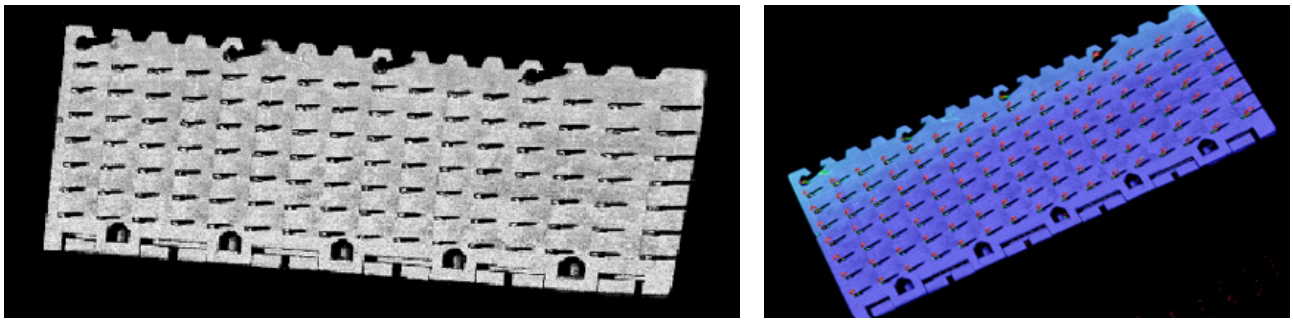
Pin Detection

During the production of connector pins, there may be issues such as broken pins, bent pins, and defective height. Equipped with the VM3D algorithm platform, 3D laser profile sensor products provide outstanding algorithm performance and convenient detection solutions, meeting the requirements for position detection of pins.

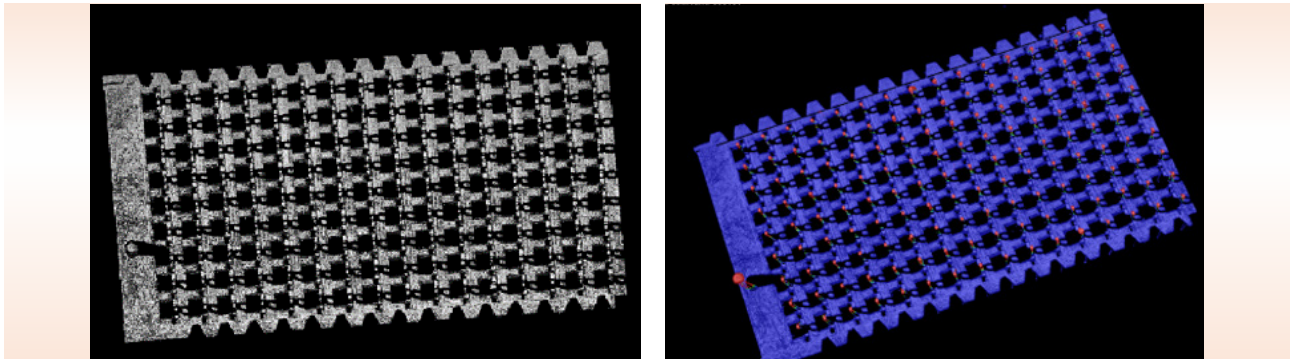
Connector pin position detection



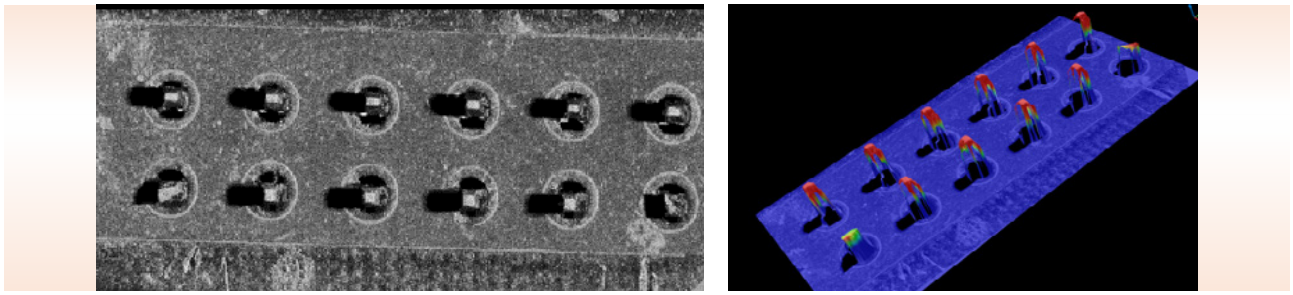
Circuit board pin coplanarity detection



Circuit board pin position detection



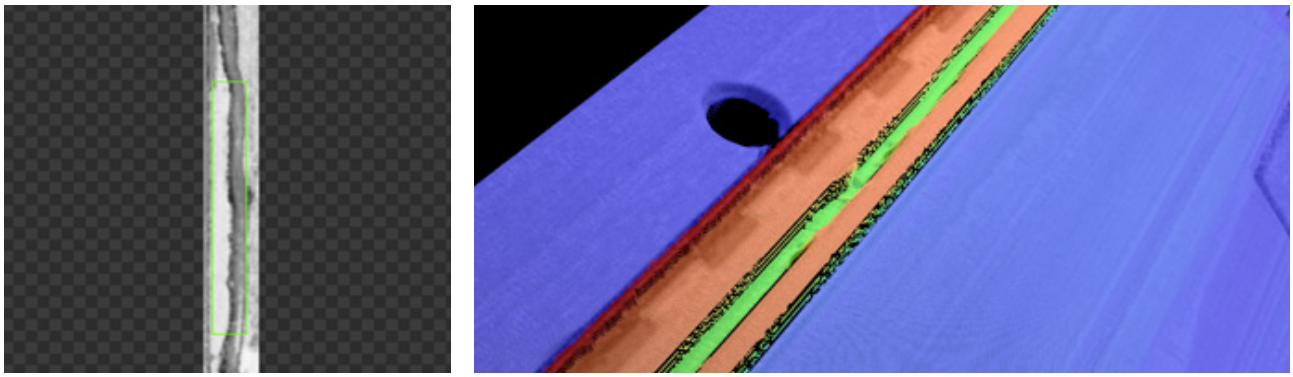
Circuit board pin position detection



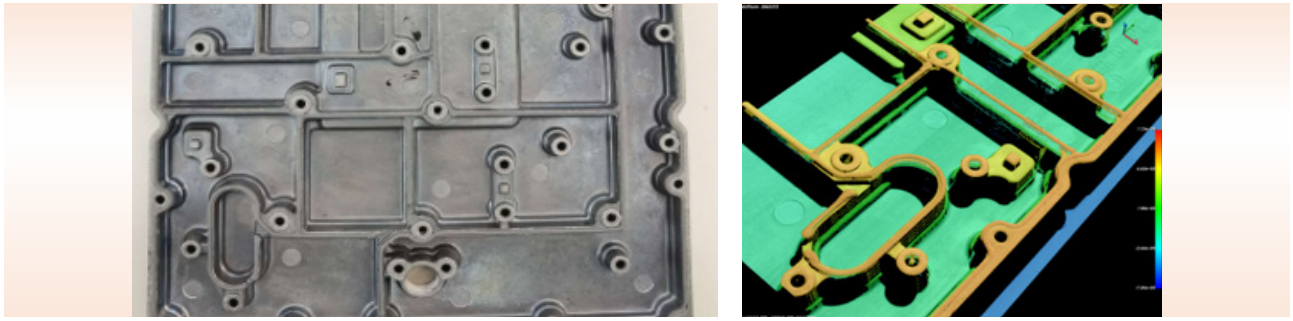
Glue Bead Inspection

In the production processes of consumer electronics, automobile, and automotive parts industries, the quality of adhesive application directly impacts the product's lifetime and safety. However, traditional 2D vision systems fail to inspect the height of the adhesive coating. Thus, the introduction of 3D vision systems aims to address this limitation. These systems can inspect adhesive coating quality based on multiple process standards, providing enterprises with reliable quality control assurances.

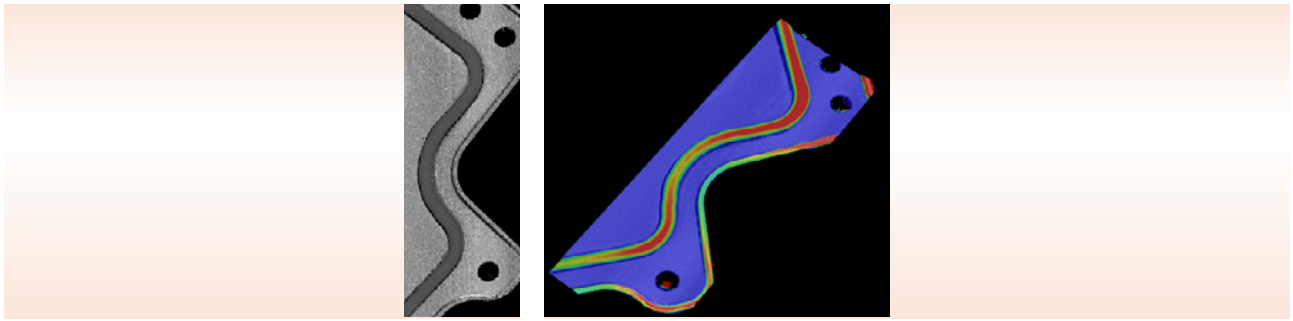
Glue bead inspection of mobile phone midplate



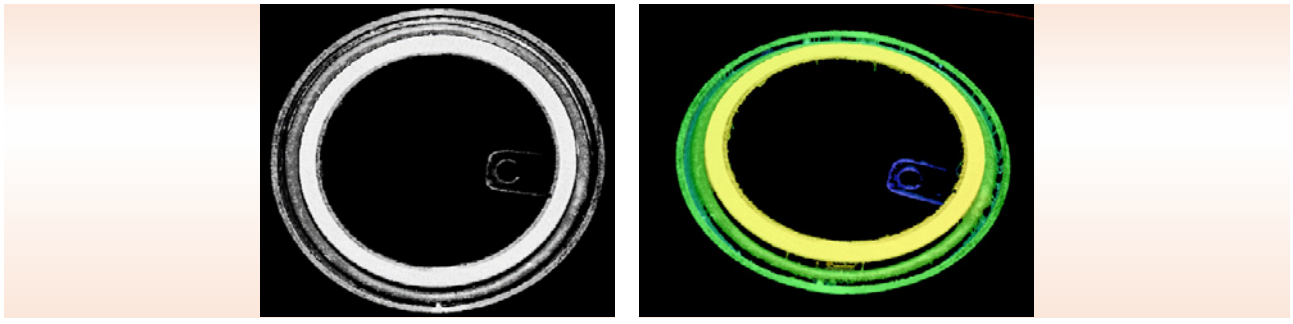
Glue bead inspection of auto parts



Glue bead inspection of auto parts



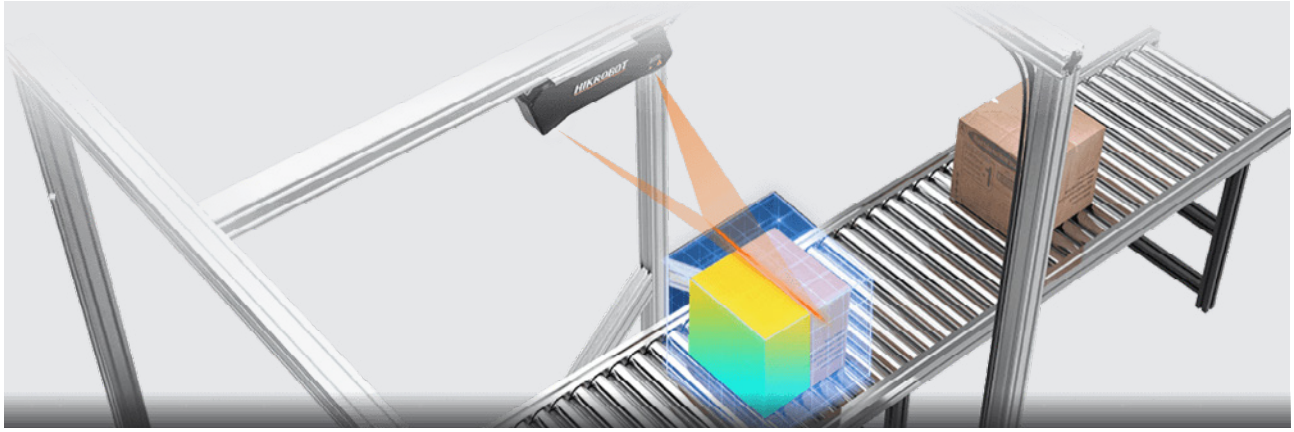
Glue bead inspection of smart phone cameras



3D Camera

Line Laser 3D Camera

Built-in high accuracy measurement algorithm and wider dynamic image processing algorithm, 3D cameras can output objects' size information in logistics and warehousing applications, a wider dynamic detection range, and stronger robustness ability.



- Output real-time point cloud data in high-precision

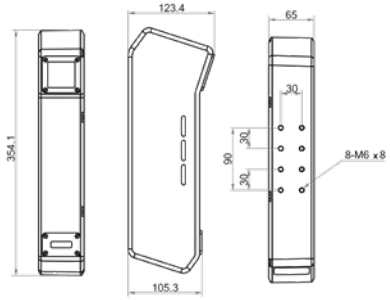
- High-speed scanning with 3m/s speed max

Specifications

CE RoHS

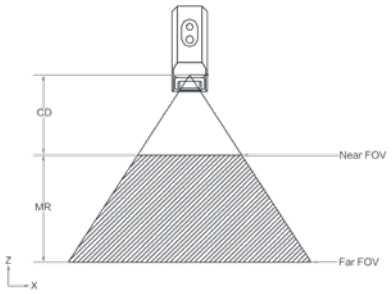
Model	Near FOV	Far FOV	Clearance distance (CD)	Measurement range (MR)	Detection accuracy	Inspection speed	Scan frame rate
MV-DL2125-04H-R	1000 mm	2600 mm	700 mm	1000 mm	± 5 mm	3 m/s @±5 mm Accuracy	600 fps @1 m³ measurement range
MV-DL2125-04P-R	1000 mm	2600 mm	700 mm	1000 mm	± 5 mm	3m/s @±5mm Accuracy	1140 fps@1 m³ measurement range

Dimension



Unit:mm

Measurement Range Diagram

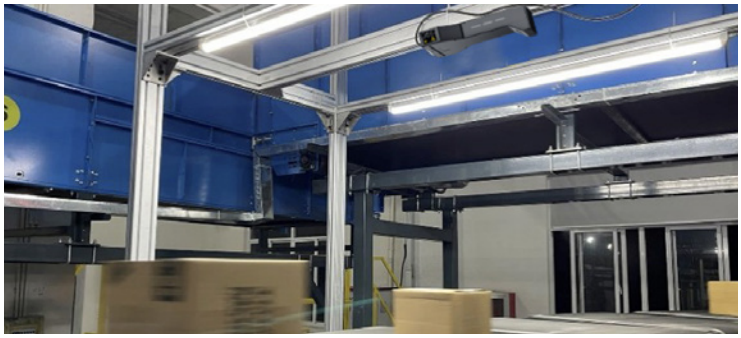


Logistics Industry

In the logistics industry, efficiency is crucial, and the prerequisite of highly-efficient sorting is the acquisition of accurate package information. Based on the principle of triangulation and with built-in wide dynamic image processing algorithm and high-precision measurement algorithm, line laser 3D camera products offer high-precision dimension inspection of target objects with a wider dynamic range and better robustness. Thus, it is widely applied in dynamic 3D measurement of parcels in the logistics industry.

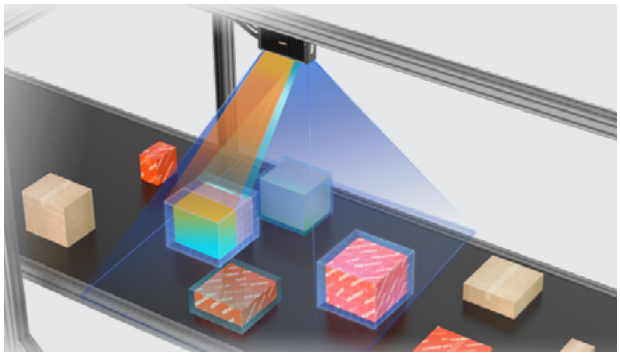
The dynamic DWS system

Dynamic volume measurement of parcels on the cross-belt sorter

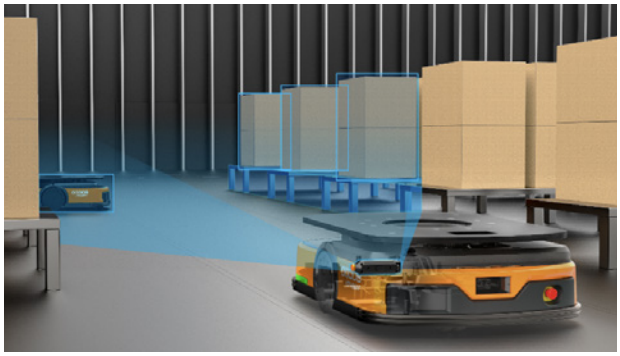


RGB-D smart 3D camera

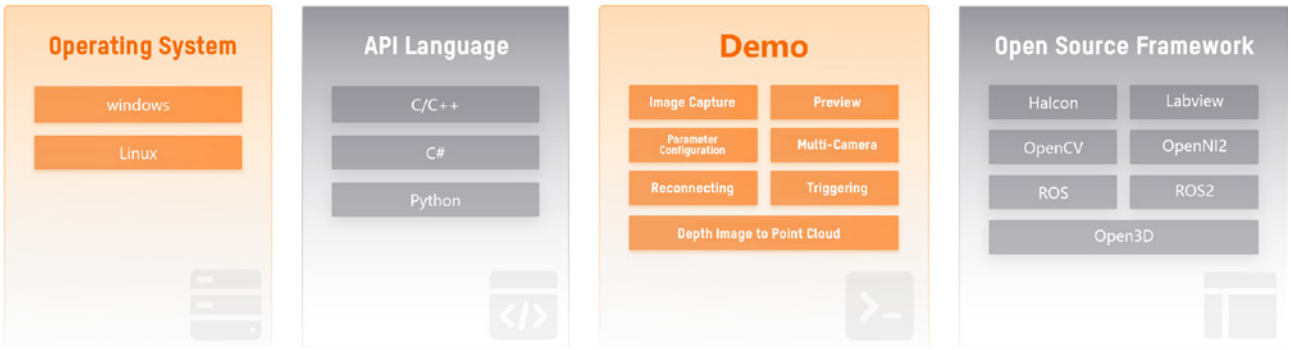
The RGB-D smart camera adopts binocular 3D imaging technology and color camera to output RGB-D images with high frame rate. It has built-in deep learning algorithm to output instance segmentation, and is applicable to the logistics, warehousing, medical treatment, new energy, and other industries.



- High-Speed Simultaneous Multi-Image Output



- Built-In Deep Learning Algorithm



- Comprehensive SDK and Third-Party Framework

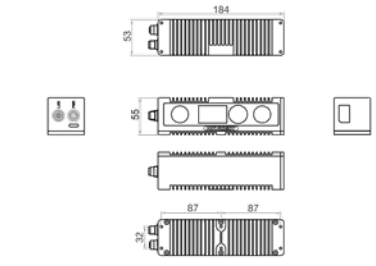
Specifications

CE RoHS

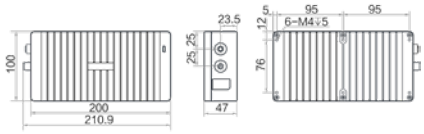
Model	Near FOV	Far FOV	Clearance distance (CD)	Measurement range (MR)	Depth image detection accuracy	Scan frame rate	Data type	Label
MV-DB500S-S	580 mm × 470 mm	2500 mm × 1800 mm	500 mm	1500 mm	3 mm@1 m;8 mm@2 m	MAX.30 fps@ singulation mode	Original image (mono and color images), depth image, object posture information	A
MV-DB500S-C	580 mm × 470 mm	2500 mm × 1800 mm	500 mm	1500 mm	3 mm@1 m;8 mm@2 m	MAX 7 fps@EDP mode	Original image (mono and color images), depth image, EDP detection result	A
MV-DB500S-V	580 mm × 470 mm	2400 mm × 1800 mm	500 mm	1500 mm	3 mm@1 m;8 mm@2 m	MAX 8 fps@ volume measurement mode	Original image (mono and color images), depth image, volume information	B
MV-DB700S-S *	595 mm × 460 mm	2255 mm × 1535 mm	300 mm	700 mm	10 mm@1 m	MAX.30 fps@ singulation mode	Original image (mono and color images), depth image, object posture information	A
MV-DB700S-C	595 mm × 460 mm	2255 mm × 1535 mm	300 mm	700 mm	10 mm@1 m	MAX 7 fps@ EDP mode	Original image (mono and color images), depth image, EDP detection result	A

Notice: * will be released soon.

Dimension



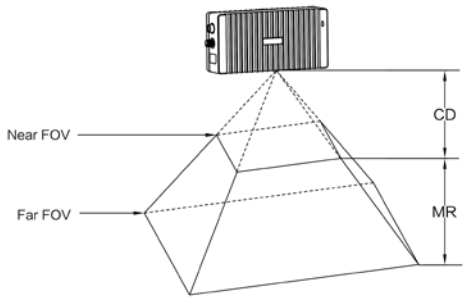
A



B

Unit:mm

Measurement Range Diagram



Logistics Industry

The thriving e-commerce industry has spurred an enormous volume of express delivery business in the logistics industry. In the face of complicated transportation networks and strict demands for rapid response, the RGB-D smart camera can be applied in a rich array of application scenarios. From data collection, recognition and positioning, to parcel inspection on cross-belt sorting system, it enables logistics companies to achieve their goals for precision, automation, and intelligence. By implementing 3D vision and robotic solutions based on RGB-D smart camera, it can replace traditional manual operation.

Volume measurement

Positioning and recognition of goods

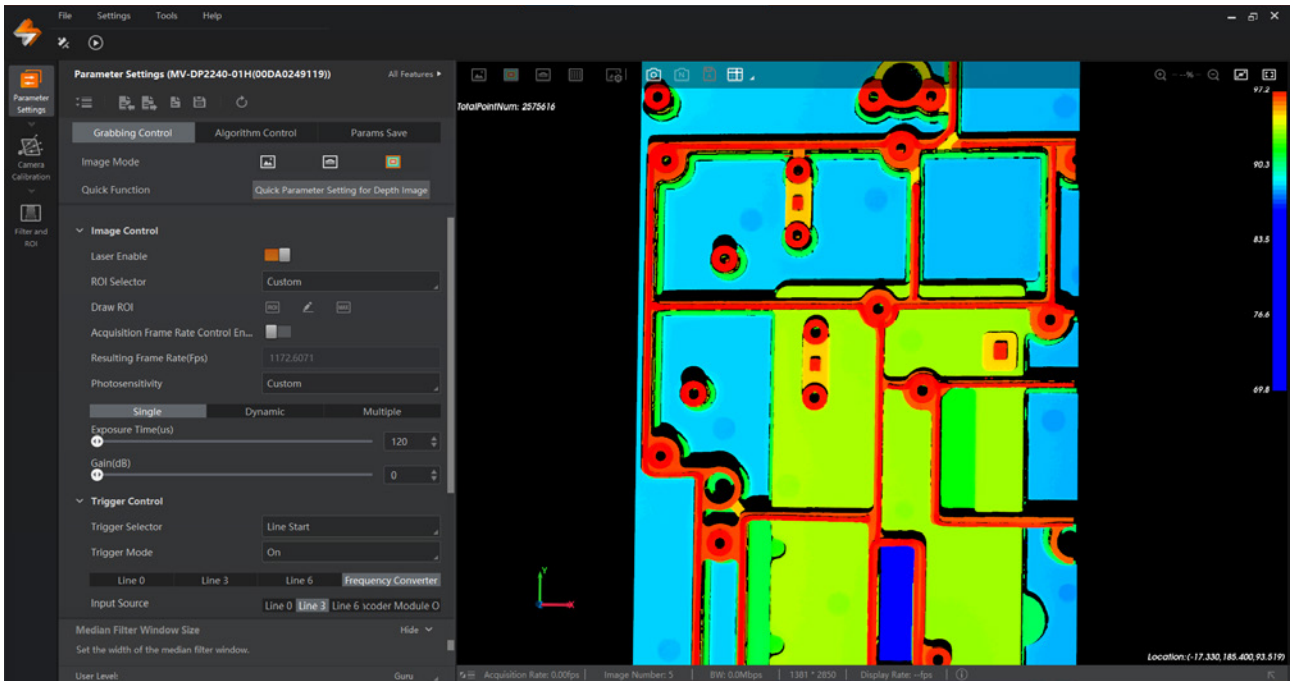
3DMVS Client

3DMVS is an application developed for Hikrobot 3D cameras, compatible with products including line laser 3D camera and 3D laser profile sensor. Features such as real-time preview, parameter configuration, calibration, data saving, and firmware update are supported on the client. You can choose to preview the original image, depth image, contour image, or point cloud image.

Key Features

- Supports easy installation and operation without the need to install other drivers.
- Provides diverse sample codes, source codes, and development documentation to help you get started quickly.
- Provides rich APIs for efficient secondary development.
- Supports image preview, including the original image, depth image, contour image, and point cloud image.
- Adopts user-friendly UI design that realizes convenient operation and intuitive functions.
- Supports operation on multiple platforms, compatible with Windows 7/10 (32-bit and 64-bit).

3DMVS



Download

3DMVS client can be downloaded by visiting the website of Hikrobot.
https://www.hikrobotics.com/en/machinevision/service/download?module=0

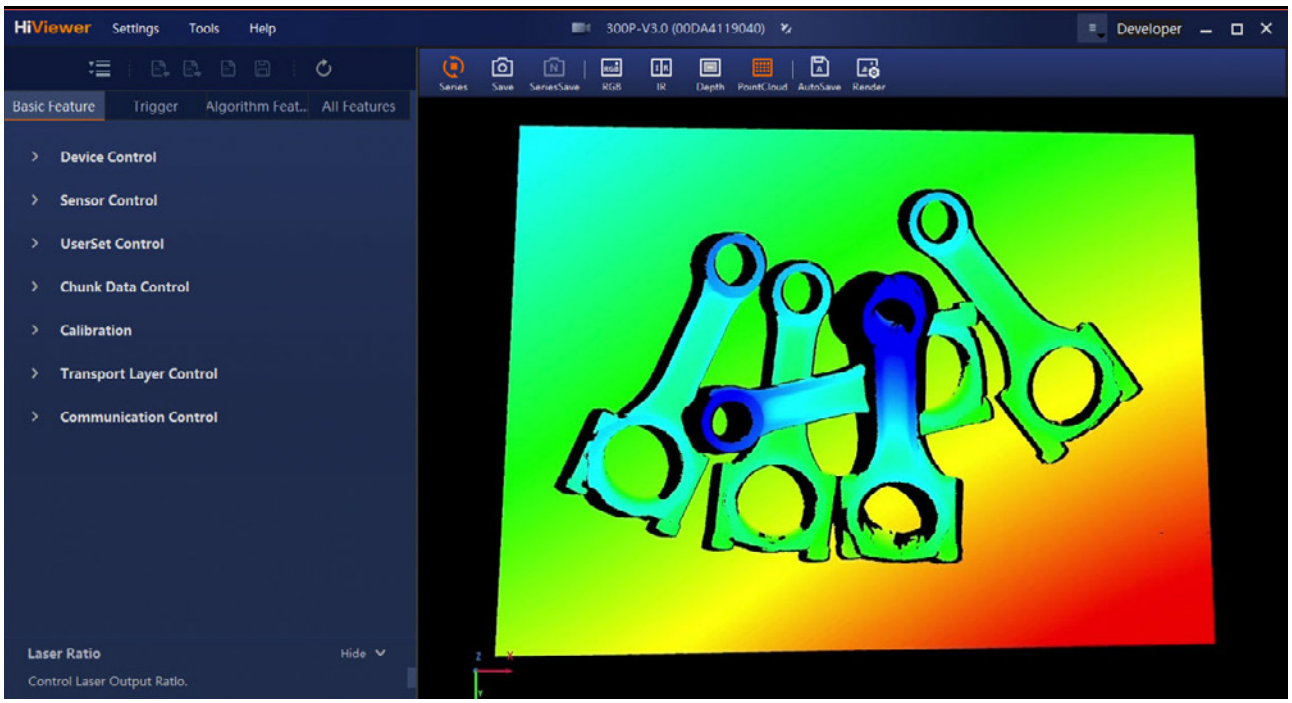
HiViewer Client

HiViewer is a software application designed for connecting, image previewing, attribute configuration, and function debugging of RGB-D cameras. It supports the preview of various types of images, including RGB images, IR images, depth images, and point cloud images, while integrating multiple auxiliary tools to enhance the functionality of the application. The user-centric interface design ensures a friendly and intuitive user experience, making operations simple and straightforward.

Key Features

- Supports the preview and image storage of RGB images, IR images, depth images, and point cloud images from RGB-D cameras.
- Allows operations on RGB-D cameras such as IP modification, firmware upgrades, attribute viewing and modification, parameter configuration, and more.
- Provides various RGB-D camera tools, including image preview tool, depth image automatic exposure, intrinsic parameter calibration, intrinsic parameter inspection, firmware upgrade tool, and log viewing tool,etc.

HiViewer



Download

HiViewer client can be downloaded by visiting the website of Hikrobot.
https://www.hikrobotics.com/en/machinevision/service/download?module=0