MACHINE VISION
3D PRODUCT CATALOG
Vision for Imagination



Hikrobotics.com

HIKROBOT

Overview

3D Laser Profile Sensor P14



- Provides point cloud data, depth image, and brightness image with high frame rate and high accuracy up to micron level.
- Suitable for online, non-contact, and high precision 3D measurement application scenarios.

Binocular Structured Light Stereo Camera P30



- Outputs high-precision stereo images with exceptional stability.
- Suitable for 3D visual positioning guide application scenarios.

Logistics Speckle Structured Light Stereo Camera P38



- Provides high-frame-rate and high-integrity stereo images with high protection.
- Suitable for express and warehouse logistics application scenarios.

VisionMaster 3D Algorithm Development Platform P48

- Supports graphical interaction, workflow-based operation, and visual configuration.
- Provides software with 3D positioning, measurement, defect detection and other functions.

RobotPilot MV Guidance Platform P52

- Builds four core modules with rich features.
- Provides a visual no-code workflow for rapid development.

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Hikrobot

Hikrobot is a global product and solution provider specialized in machine vision, autonomous mobile robots, and articulated robots. Focusing on industrial internet of things (IIoT), smart logistics, and intelligent manufacturing, we build an open cooperation ecosystem, provide service to customers in industry and logistics, and commit to leading the intelligent manufacturing process and continuously promoting it intelligentization.

Mission

Leading the development of industrial intelligence and creating a new future for intelligent manufacturing.

Vision

Enabling the industrial internet of things and creating sustainable social value.

Values

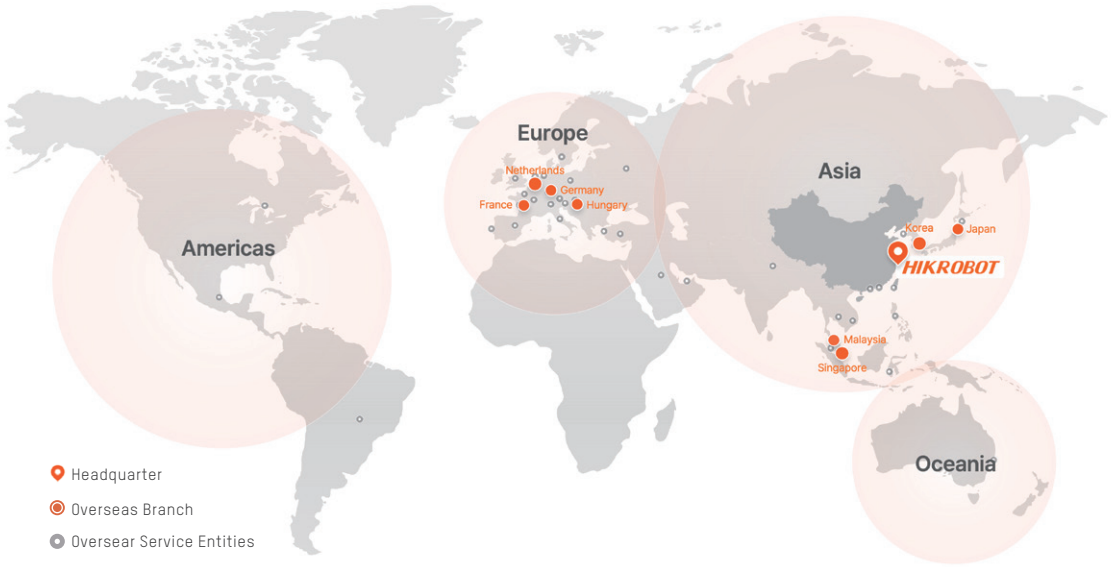
Professional, courageous, honest and pragmatic.

Global Footprint



City-Centered Domestic Marketing Service Network

15+ domestic branches, **30+** domestic offices, and **40+** domestic after-sales service network entities



Localized Sales and Technical Service Teams in the International Market

Business covers 50+ countries, with branches founded in the Netherlands, France, Germany, Hungary, Korea, Japan, Singapore, and Malaysia

Milestones

2014

- Established Machine Vision Department
- Developed software & hardware products independently

2015

- Released 1st GigE Area Scan Camera
- Released 1st Latent Mobile Robot

2016

- Founded Hangzhou Hikrobot Co., Ltd.
- Released RCS and iWMS

2017-2018

- Entered the high-end camera market with 1st HD CCD camera
- Became part of SAC/TC159/SC2/WG15, leading industrial standardization
- Expanded global development
- Won Gold Award of CIIF

2019

- Released 1st Forklift Mobile Robot
- Over 1,000,000 industrial cameras used in market
- Over 10,000 AMRs used in market

Improve Software & Hardware

2020

- Won Gold Award of CMVU Innovative Products: SC7000
- Got SIL & CE Certification: AMR Safety Controller

2021

- Built Xi'an R&D center
- Launched Machine Vision technology community (V-CLUB)
- Released 4th AMR architecture platform: Intelligent Base
- Over 1,500 AMR customers worldwide

2022

- Established Hikrobot branch in Korea
- Built 3D Camera Production Line
- 50,000+ AMRs delivered

2023

- Established "Shape Our Future Intelligently" philosophy
- Expanded overseas branches
- Initiated Eco-Partner 3.0 Program to expand visual application
- Awarded Best in Intralogistics Certificate for IFOY Award 2023

2024

- 100,000 AMRs produced as of May, 2024
- Ranked top in global shipments for 3 consecutive years (from Interact Analysis)
- Launched innovative STUs and solutions
- Established the production line of Industrial PC and published related products
- Released 2.5D imaging system
- Constant upgrading of VM4.4, meeting the ever-evolving development
- Launched Articulated Robot based on integrated drive and control strategy

Customize Products and Solutions

Build an Industry Ecosystem

R&D Input



R&D Investment

29.51%

Maintained a rapid growth over the past three years, with a compound annual growth rate

Team Size

60%

R&D employees

Intellectual Property

950+

Domestic Patents

200+

International Patents

50+

Software Copyrights

Before December 31, 2024

Product Architecture

Hardware Product and Software Platform Provider Specialized in Machine Vision and Algorithms

Focus on industrial sensors to drive digitalization and intelligence in production.



Product and Solution Provider Specialized in Autonomous Mobile Robots

Focus on intralogistics to improve the intelligence of manufacturing and circulation industry.



Product Provider Specialized in Articulated Robots

Focus on drive & control and incorporate sensory perception to increase production flexibility and process intelligence.



China's First Full Directive CE Marking Certification

CB Certification

KC Certification

RCM Certification

WPC Certification

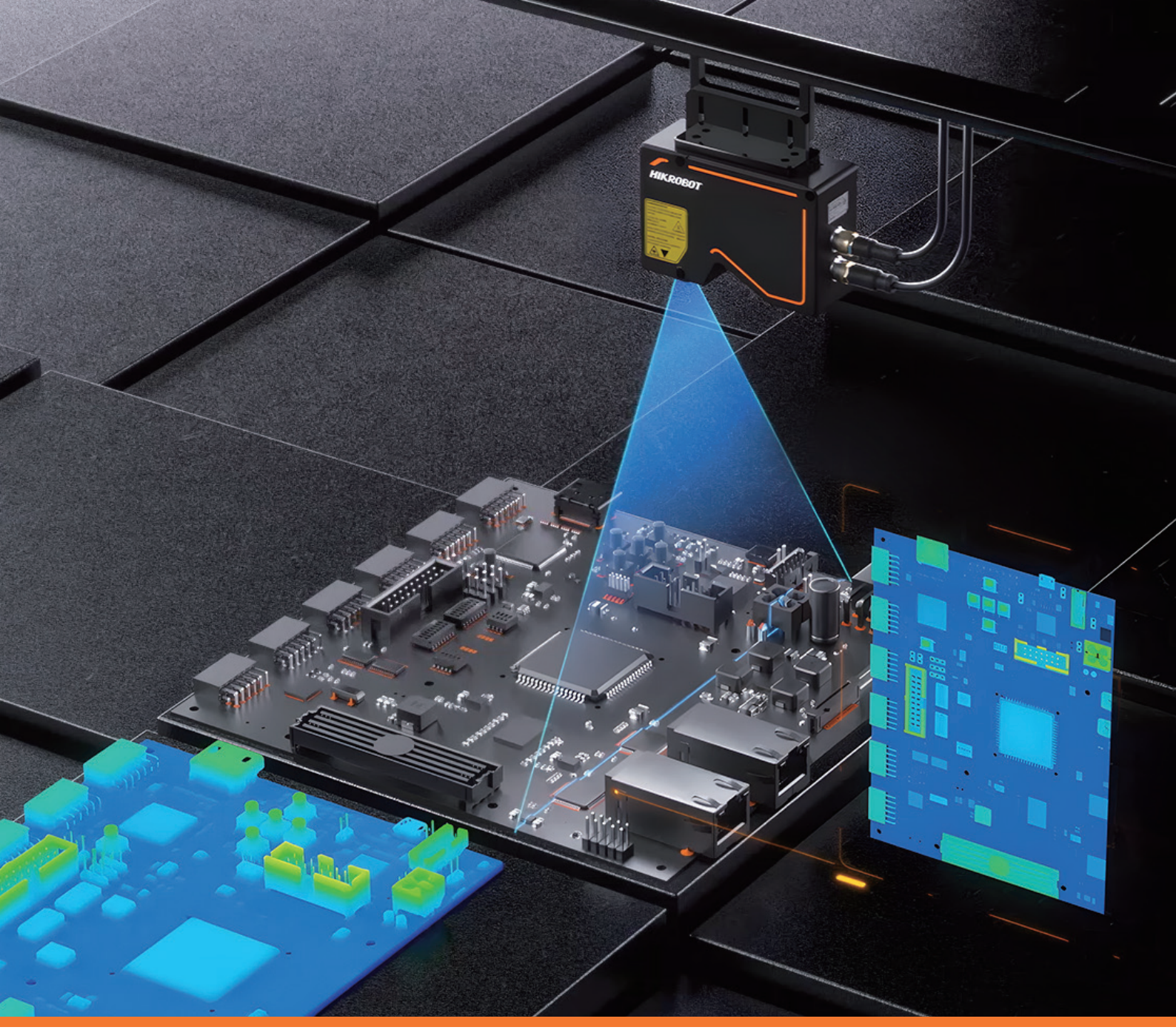
China Robot Certification

Red Dot Design Award

National High-Tech Enterprise

CIIF Gold Award

Hikrobot products have been certified by many international organizations.



Machine Vision

With efforts in industrial vision sensing application and hardware technology, the company provides customers with leading machine vision products. The products cover industrial camera, smart cameras, industrial code reader, 3D cameras, vision controllers, algorithm platforms, lens, and related accessories.

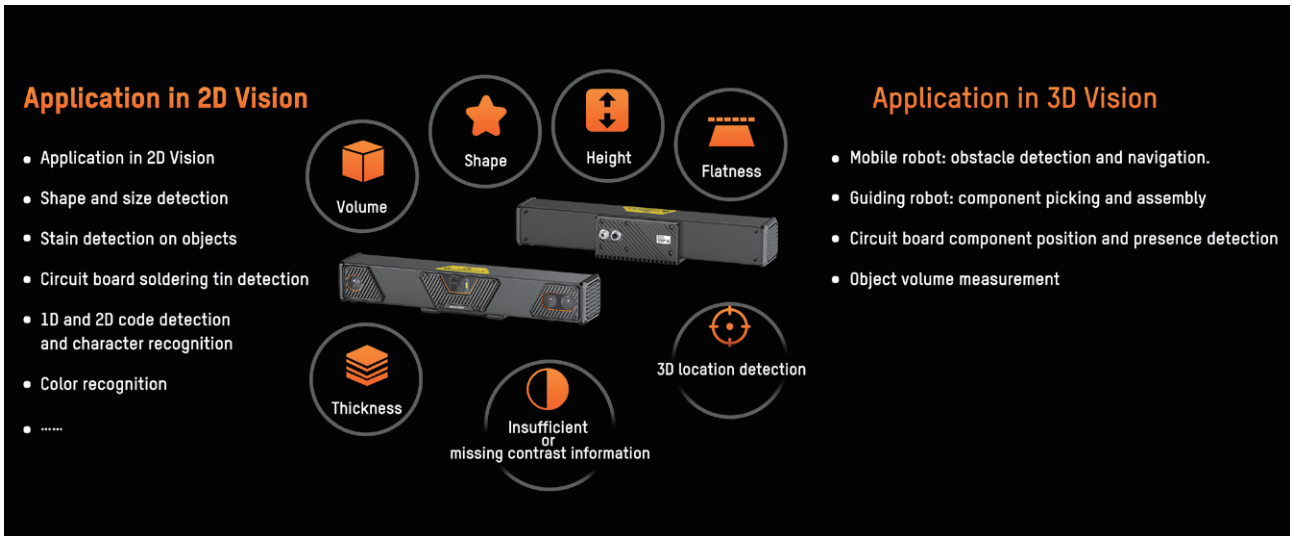
Through rigorous EMC, safety and reliability tests, Hikrobot guarantees the high precision, high efficiency and high environmental performance of each product. The machine vision products are widely used in industrial automation sectors such as consumer electronics, semiconductors and logistics, as a part of the vision applications like positioning guidance, measurement, defect inspection, code reading, OCR, etc. They help users to greatly improve productivity, accuracy and stability.



3D Product Overview & Key Features

3D Vision Overview

In the field of machine vision, upgrading from 2D vision to 3D vision can enable machines to understand the 3D physical world like humans, thus giving more possibilities to machine vision. Hikrobot is committed to accelerating manufacturing automation upgrade with 3D technology, after years of research and development, we have now developed a whole ecosystem consisting of 3D laser profile sensor, 3D structured light sensor, binocular structured light stereo camera, perceptive camera, logistics speckle structured light stereo camera, VisionMaster 3D algorithm development platform, and RobotPilot robot guidance platform, etc. These products are extensively applied in consumer electronics, electronics manufacturing, logistics and other industries that require high-precision 3D measurement and logistic sensing.

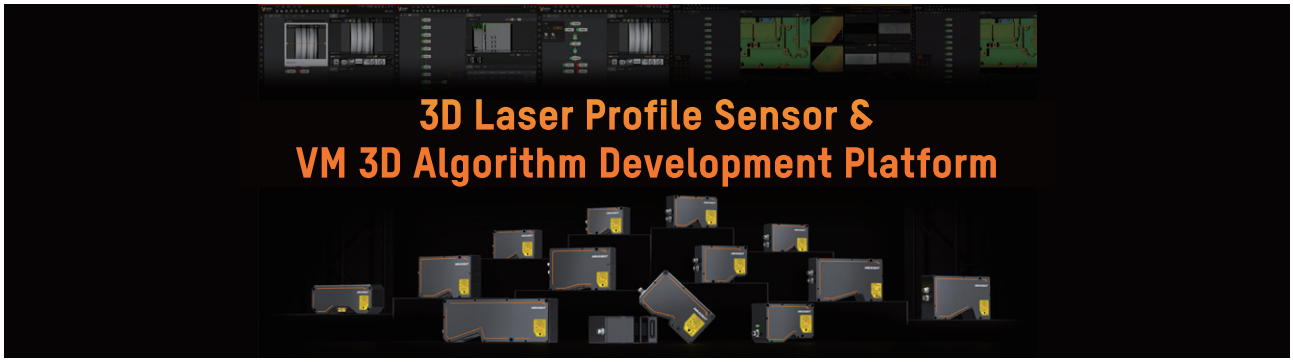


Key Features

With 3D sensor technology at its core, 3D vision supports multi-dimension data acquisition. Focusing on applications in high-precision measurement and logistics sensing fields, 3D vision provides all-in-one solutions that cover both hardware and software. By simplifying conventional mechanical design, 3D vision breaks the limits of traditional applications and assists enterprises in upgrading to smart manufacturing.

High-precision measurement

Based on laser triangulation measurement, the 3D laser profile sensor provides point cloud data, depth map, and intensity image with high frame rate and high accuracy up to micron level via the built-in high-precision algorithm. The matching VM-3D algorithm development platform is a platform-level software built for high-precision 3D positioning, measurement, and defect detection. Featuring a graphical, workflow-based editing and visual configuration framework, the platform delivers a feature-rich and easy user experience. It is widely used in online, non-contact, and high-precision 3D measurement application scenarios in PCB, consumer electronics, and lithium battery industries.



Robot Vision Guidance

With binocular structured light stereo camera and VisionMaster 3D Algorithm Development Platform, robot vision guidance solution can be achieved. Binocular structured light stereo camera features high precision, strong resistance to reflections, a wide field of view, and excellent image quality. RobotPilot MV Guidance Platform combines 3D vision and motion planning to guide robots in performing vision-based intelligent tasks. The software supports visual programming and simulation of robot operations through a code-free, workflow-driven interface, making it easy to use and quick to deploy. This integration of the hardware and software can be flexibly applied to tasks such as workpiece positioning and grasping, palletizing and depalletizing. It is widely applicable to logistics, automotive, heavy machinery, and electromechanical industries.





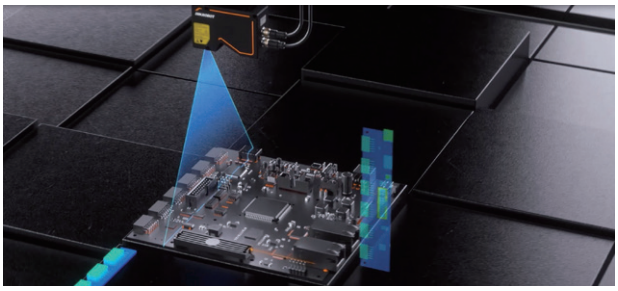
Logistics Application

Logistics speckle structured light stereo camera adopts binocular stereo matching, line laser, and time-of-flight technologies to cover both dynamic and static 3D applications. Purpose-designed for express and warehouse logistics, it is suited for singulation, anti-overlapping and anti-double parcel, volume measurement, and palletizing and depalletizing.



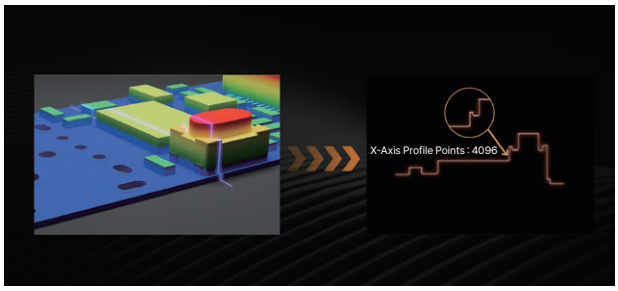
3D Laser Profile Sensors

Based on triangulation theory, 3D laser profile sensor can output high-framerate point cloud, depth map and intensity image at micrometer level in real-time. It is widely applicable to non-contact and real-time high-precision 3D measurement in consumer electronics, lithium battery, and PCB industries.



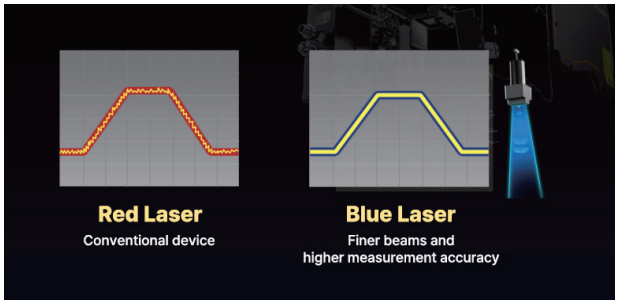
Measurement Principle

Based on laser triangulation, 3D laser profile sensor adopts the high-speed image acquisition module to capture the laser line diffusely reflected from the target surface. Through built-in high-precision image processing algorithms, it computes the 3D profile data of the surface, and then reconstructs the full 3D spatial information of the object via the relative motion between the camera and the target.



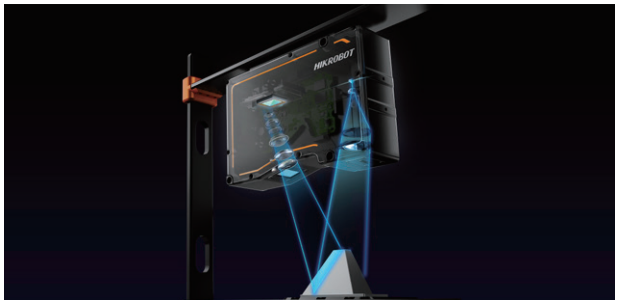
High-Speed Data Acquisition

The high-speed image acquisition chip features the large pixel size, high frame rate and wide dynamic range. With hardware acceleration of SOC chip, it enables a maximum camera frame rate of up to 49 kHz.



Ultra-Fine Blue Laser

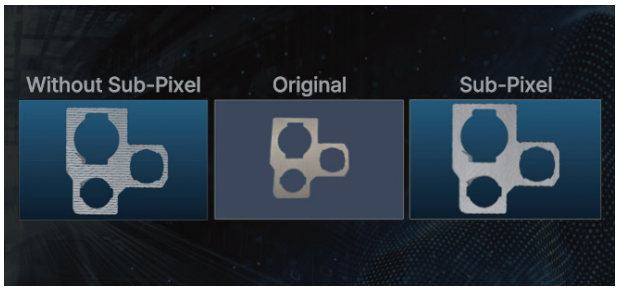
The shorter wavelength of blue laser delivers high resolution. It provides finer scanning and higher power density, and improves scanning accuracy and imaging responsiveness, meeting the requirements for inspecting challenging and complex material surfaces.



Embedded Product Design

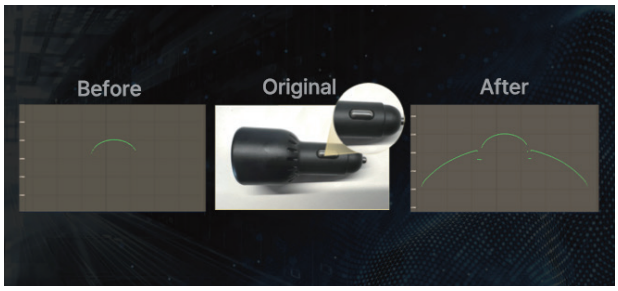
The sensor is built with high-performance hardware, modular design, and dynamic laser tuning technology. It has passed rigorous testing for hardware performance, stability, and lifetime, ensuring high stability, prolonged lifetime, and broad applicability.





Super-Resolution Sub-Pixel Processing

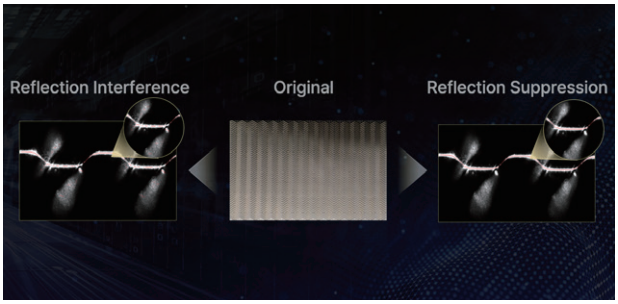
Building on the fundation of center point extraction algorithm, the sensor further integrates super-resolution sub-pixel processing algorithm. It can achieve an extraction accuracy of up to 0.05 pixels, thereby improving the sensor's Z-axis detection accuracy.



HDR Mode

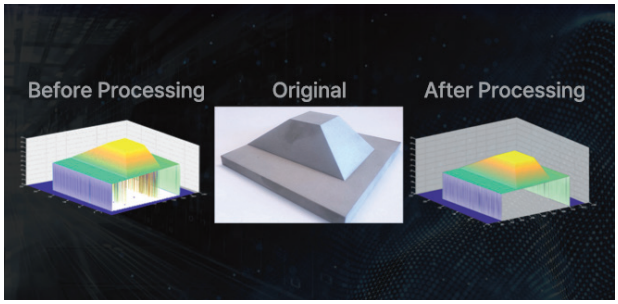
Multi-Exposure Fusion: By performing multiple exposures and fusing the brightness information, the sensor can retain valid grayscale information, and further fuse it to obtain high-contrast feature information for contour extraction, adapting to scenarios with both high and low reflectivity.

Single-Frame HDR: The sensor supports single-frame wide dynamic range function, enabling high-precision reconstruction of complex reflectivity scenes even under high-speed scanning.



Halo Filter

The sensor is able to extract halo features, filter different light signals, and suppress the interference of stray light halos with center point extraction.



Multi-Mode Post-Processing

The sensor is equipped with comprehensive post-processing algorithms, including spatial filtering, temporal filtering, hole filling, bidirectional interpolation, and edge extension, ect., which are convenient for customers to use and do not consume any host CPU resources.

DP2000 Series Laser Profile Sensor

Key Features

- Built-in high-accuracy algorithm and accuracy is up to submicron level.
- Adopts high frame rate chip with 23.9 kHz scan frame rate.
- Supports multiple exposure modes with good robustness.
- Adopts multiple-frame integration technology to provide complete profiles.
- Provides multiple filter modes with stable data.
- Supports ROI selection and auto setting for easier operation.

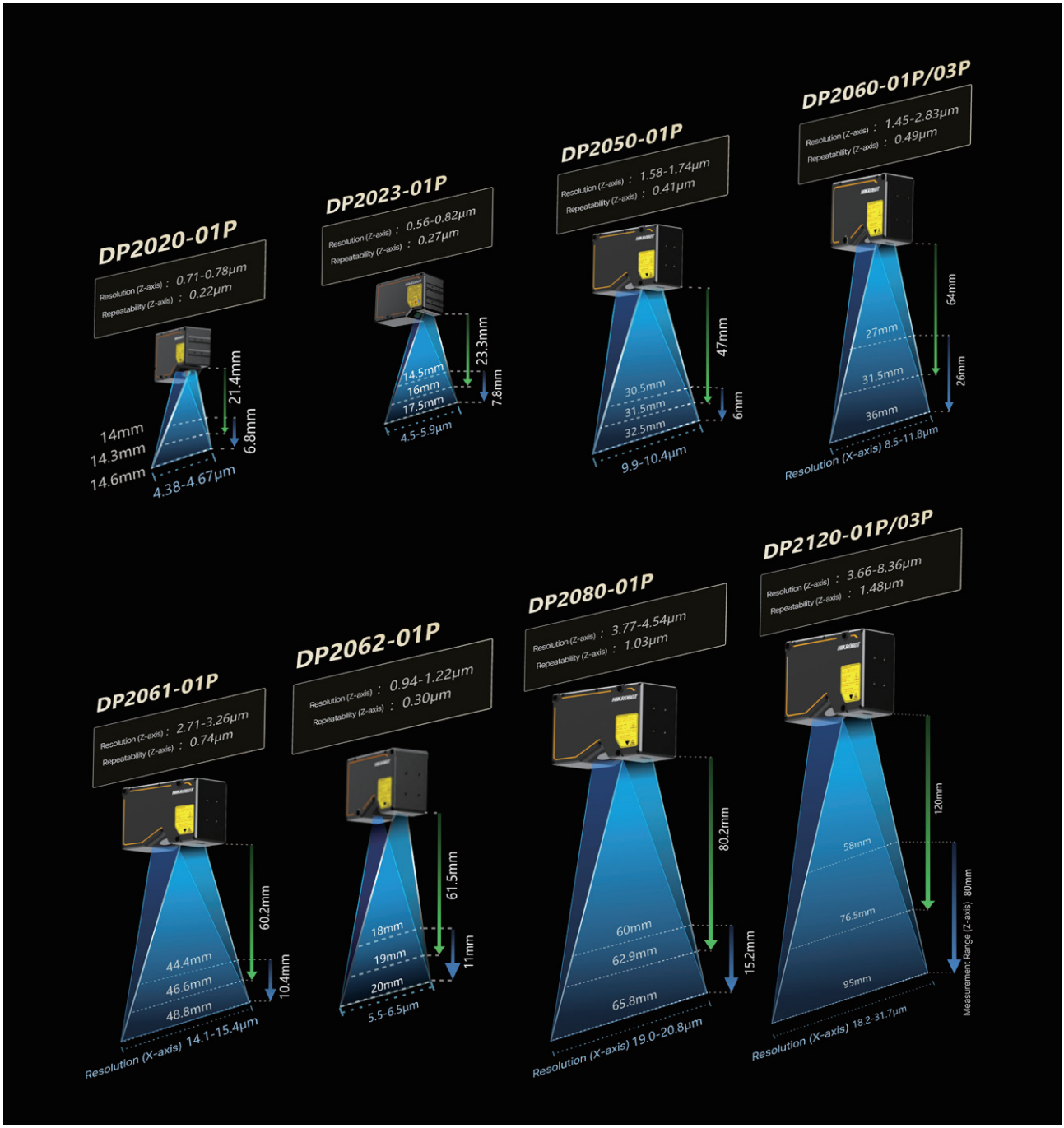
Specification

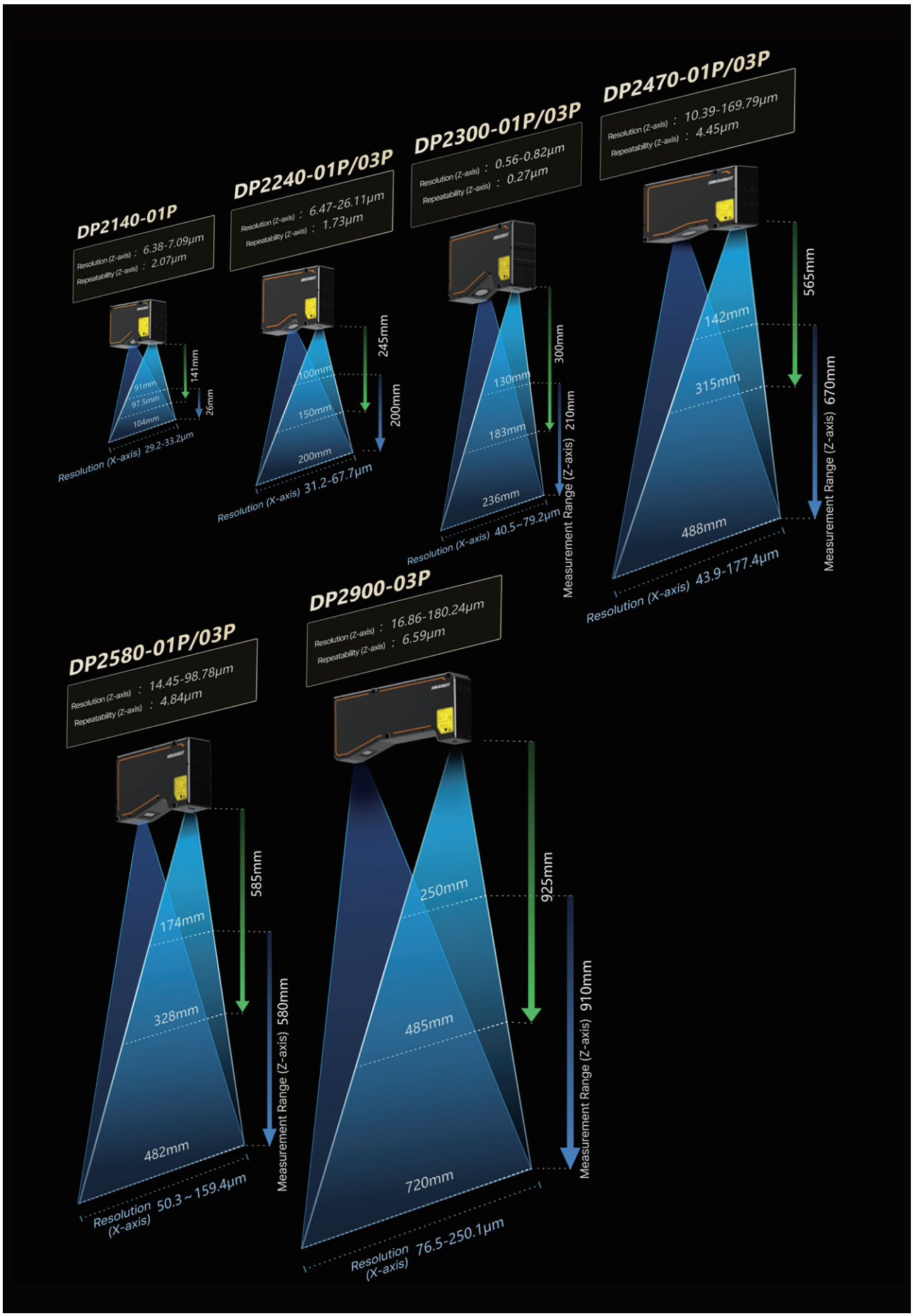
Model	Data points/ profiles	Reference distance	Measurement range (Z-axis)	Measurement range (X-axis)	Resolution (Z-axis)	Repeatability (Z-axis)	Profile data interval	Scan frame rate	Wavelength	Dimension
MV-DP2020-01P V2.0	3200	21.4 mm	6.8 mm	14.3 mm @ reference distance 14 mm @ near field of view 14.6 mm @ far field of view	0.71 ~ 0.78 µm	0.22 µm	4.38 ~ 4.67 µm	1.7k Hz ~ 23.9k Hz	405 nm	A
MV-DP2023-01P V2.0	3200	23.3 mm	7.8 mm	16 mm @ reference distance 14.5 mm @ near field of view 17.5 mm @ far field of view	0.56 ~ 0.82 µm	0.27 µm	4.5 ~ 5.9 µm	1.7k Hz ~ 23.9k Hz	405 nm	B
MV-DP2050-01P V2.0	3200	47 mm	6 mm	31.5 mm @ reference distance 30.5 mm @ near field of view 32.5 mm @ far field of view	1.58 ~ 1.74 µm	0.41 µm	9.9 ~ 10.4 µm	3.3k Hz ~ 23.9k Hz	405 nm	C
MV-DP2060-01P V2.0	3200	64 mm	26 mm	31.5 mm @ reference distance 27 mm @ near field of view 36 mm @ far field of view	1.45 ~ 2.83 µm	0.49 µm	8.5 ~ 11.8 µm	1.7k Hz ~ 23.9k Hz	405 nm	D
MV-DP2060-03P V2.0	3200	64 mm	26 mm	31.5 mm @ reference distance 27 mm @ near field of view 36 mm @ far field of view	1.45 ~ 2.83 µm	0.49 µm	8.5 ~ 11.8 µm	1.7k Hz ~ 23.9k Hz	650 nm	D
MV-DP2061-01P V2.0	3200	60.2mm	10.4mm	46.6 mm @ reference distance 44.4 mm @ near field of view 48.8 mm @ far field of view	2.71 ~ 3.26 µm	0.74 µm	14.1 ~ 15.4 µm	3.3k Hz ~ 23.9k Hz	405 nm	E
MV-DP2062-01P V2.0	3200	61.5 mm	11 mm	19 mm @ reference distance 18 mm @ near field of view 20 mm @ far field of view	0.94 ~ 1.22 µm	0.30 µm	5.5 ~ 6.5 µm	1.7k Hz ~ 23.9k Hz	405 nm	F
MV-DP2080-01P V2.0	3200	80.2 mm	15.2 mm	62.9 mm @ reference distance 60 mm @ near field of view 65.8 mm @ far field of view	3.77 ~ 4.54 µm	1.03 µm	19.0 ~ 20.8 µm	3.3k Hz ~ 23.9k Hz	405 nm	G
MV-DP2120-01P V2.0	3200	120 mm	80 mm	76.5 mm @ reference distance 58 mm @ near field of view 95 mm @ far field of view	3.66~ 8.36 µm	1.48 µm	18.2 ~ 31.7 µm	1.7k Hz ~ 23.9k Hz	405 nm	H
MV-DP2120-03P V2.0	3200	120 mm	80 mm	76.5 mm @ reference distance 58 mm @ near field of view 95 mm @ far field of view	3.66~ 8.36 µm	1.48 µm	18.2 ~ 31.7 µm	1.7k Hz ~ 23.9k Hz	650 nm	H
MV-DP2140-01P V2.0	3200	141 mm	26mm	97.5 mm @ reference distance 91 mm @ near field of view 104 mm @ far field of view	6.38 ~ 7.09 µm	2.07 µm	29.2 ~ 33.2 µm	3.3k Hz ~ 23.9k Hz	405 nm	I
MV-DP2240-01P V2.0	3200	245 mm	200 mm	150 mm @ reference distance 100 mm @ near field of view 200 mm @ far field of view	6.47 ~ 26.11 µm	1.73 µm	31.2 ~ 67.7 µm	1.7k Hz ~ 23.9k Hz	405 nm	J
MV-DP2240-03P V2.0	3200	245 mm	200 mm	150 mm @ reference distance 100 mm @ near field of view 200 mm @ far field of view	6.47 ~ 26.11 µm	1.73 µm	31.2 ~ 67.7 µm	1.7k Hz ~ 23.9k Hz	650 nm	J
MV-DP2300-01P V2.0	3200	300 mm	210 mm	183 mm @ reference distance 130 mm @ near field of view 236 mm @ far field of view	9.36 ~ 26.27 µm	2.20 µm	40.5 ~ 79.2 µm	1.7k Hz ~ 23.9k Hz	405 nm	K
MV-DP2300-03P V2.0	3200	300 mm	210 mm	183 mm @ reference distance 130 mm @ near field of view 236 mm @ far field of view	9.36 ~ 26.27 µm	2.20 µm	40.5 ~ 79.2 µm	1.7k Hz ~ 23.9k Hz	650 nm	K
MV-DP2470-01P V2.0	3200	565 mm	670 mm	315 mm @ reference distance 142 mm @ near field of view 488 mm @ far field of view	10.39 ~ 169.79 µm	4.45 µm	43.9 ~ 177.4 µm	1.7k Hz ~ 23.9k Hz	405 nm	J
MV-DP2470-03P V2.0	3200	565 mm	670 mm	315 mm @ reference distance 142 mm @ near field of view 488 mm @ far field of view	10.39 ~ 169.79 µm	4.45 µm	43.9 ~ 177.4 µm	1.7k Hz ~ 23.9k Hz	650 nm	J
MV-DP2580-01P V2.0	3200	585 mm	580 mm	328 mm @ reference distance 174 mm @ near field of view 482 mm @ far field of view	14.45 ~ 98.78 µm	4.84 µm	50.3 ~ 159.4 µm	1.7k Hz ~ 23.9k Hz	405 nm	K
MV-DP2580-03P V2.0	3200	585 mm	580 mm	328 mm @ reference distance 174 mm @ near field of view 482 mm @ far field of view	14.45 ~ 98.78 µm	4.84 µm	50.3 ~ 159.4 µm	1.7k Hz ~ 23.9k Hz	650 nm	K

Model	Data points/ profiles	Reference distance	Measurement range (Z-axis)	Measurement range (X-axis)	Resolution (Z-axis)	Repeatability (Z-axis)	Profile data interval	Scan frame rate	Wavelength	Dimension
MV-DP2900-03P V2.0	3200	925 mm	910 mm	485 mm @ reference distance 250 mm @ near field of view 720 mm @ far field of view	16.86 ~ 180.24 μm	6.59 μm	76.5 ~ 250.1 μm	1.7k Hz ~ 23.9k Hz	650 nm	L

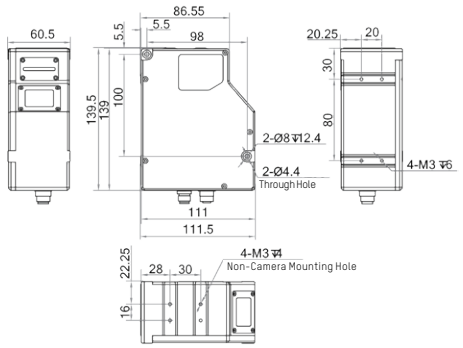
Notice: Repeatability (Z-axis): The data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.
For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

Measurement Range Diagram

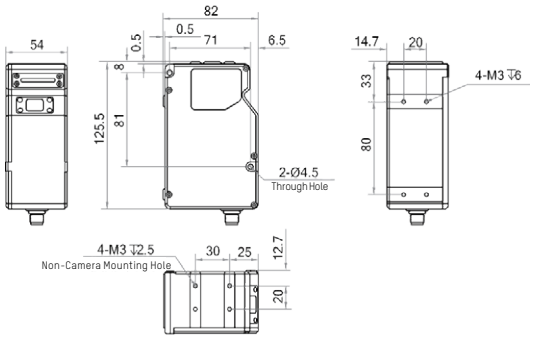



DP2140-01P
Resolution (Z-axis) : 6.38-7.09μm
Repeatability (Z-axis) : 2.07μm
141mm
26mm
91mm
97.5mm
104mm
Resolution (X-axis) 29.2-33.2μm
DP2240-01P/03P
Resolution (Z-axis) : 6.47-26.11μm
Repeatability (Z-axis) : 1.73μm
245mm
200mm
100mm
150mm
200mm
Resolution (X-axis) 31.2-67.7μm
DP2300-01P/03P
Resolution (Z-axis) : 0.56-0.82μm
Repeatability (Z-axis) : 0.27μm
300mm
210mm
130mm
183mm
236mm
Resolution (X-axis) 40.5~79.2μm
Measurement Range (Z-axis)
DP2470-01P/03P
Resolution (Z-axis) : 10.39-169.79μm
Repeatability (Z-axis) : 4.45μm
565mm
670mm
142mm
315mm
488mm
Resolution (X-axis) 43.9-177.4μm
Measurement Range (Z-axis)
DP2580-01P/03P
Resolution (Z-axis) : 14.45-98.78μm
Repeatability (Z-axis) : 4.84μm
585mm
580mm
174mm
328mm
482mm
Resolution (X-axis) 50.3 ~ 159.4μm
Measurement Range (Z-axis)
DP2900-03P
Resolution (Z-axis) : 16.86-180.24μm
Repeatability (Z-axis) : 6.59μm
925mm
910mm
250mm
485mm
720mm
Resolution (X-axis) 76.5-250.1μm
Measurement Range (Z-axis)

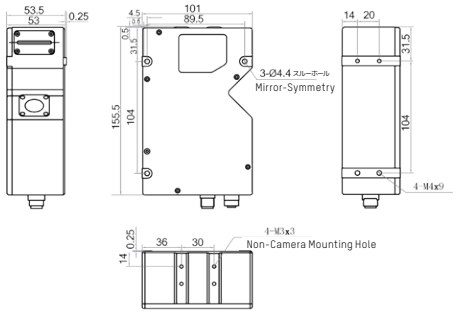
Dimension



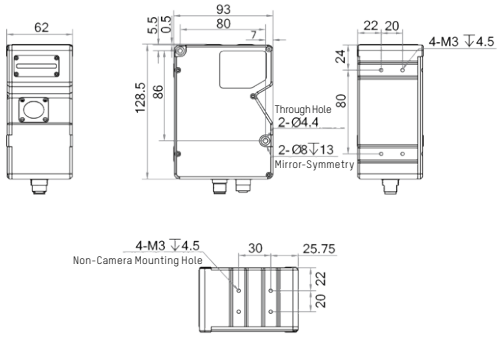
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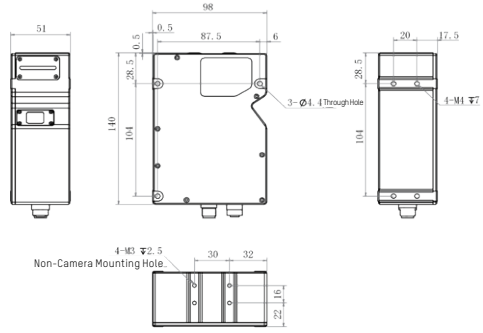
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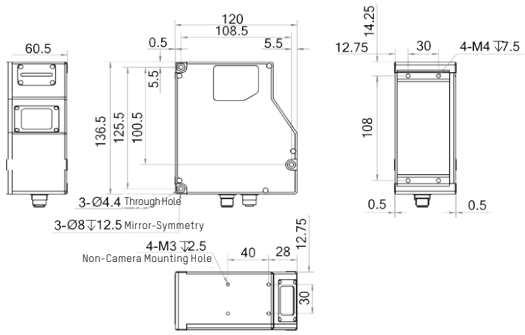
C



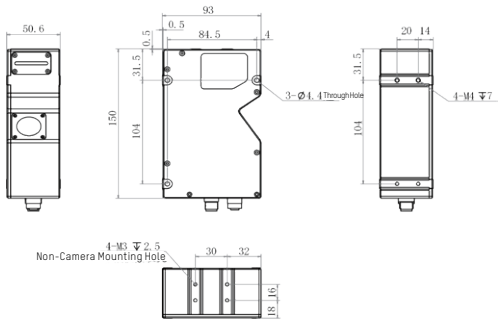
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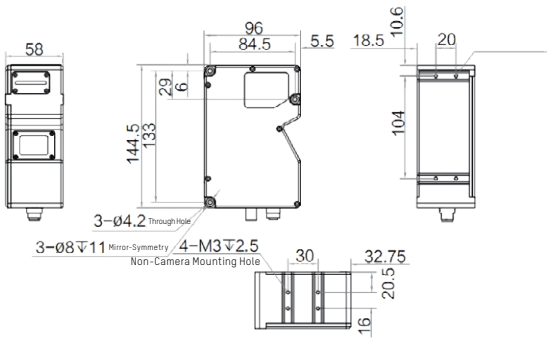
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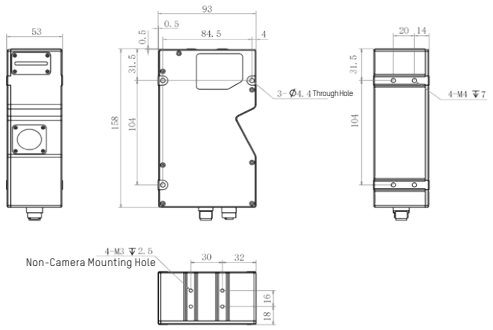
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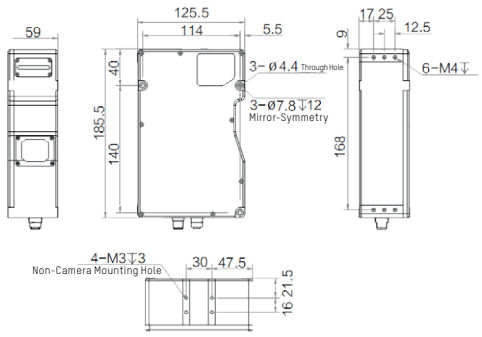
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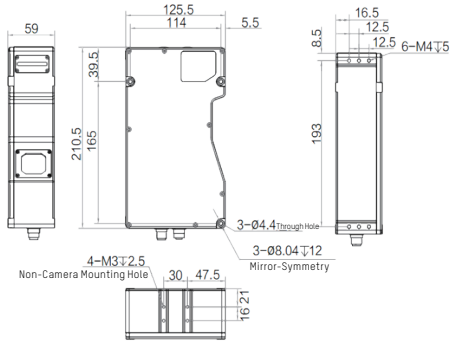
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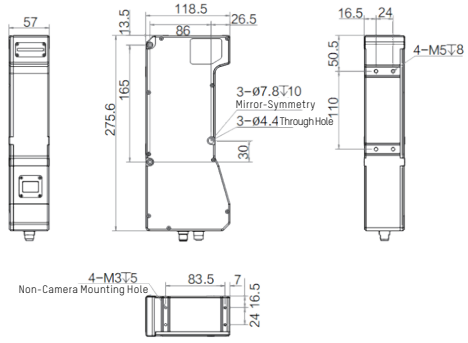
I



J



K



L

Unit:mm

DP3000 Series Laser Profile Sensor

Key Features

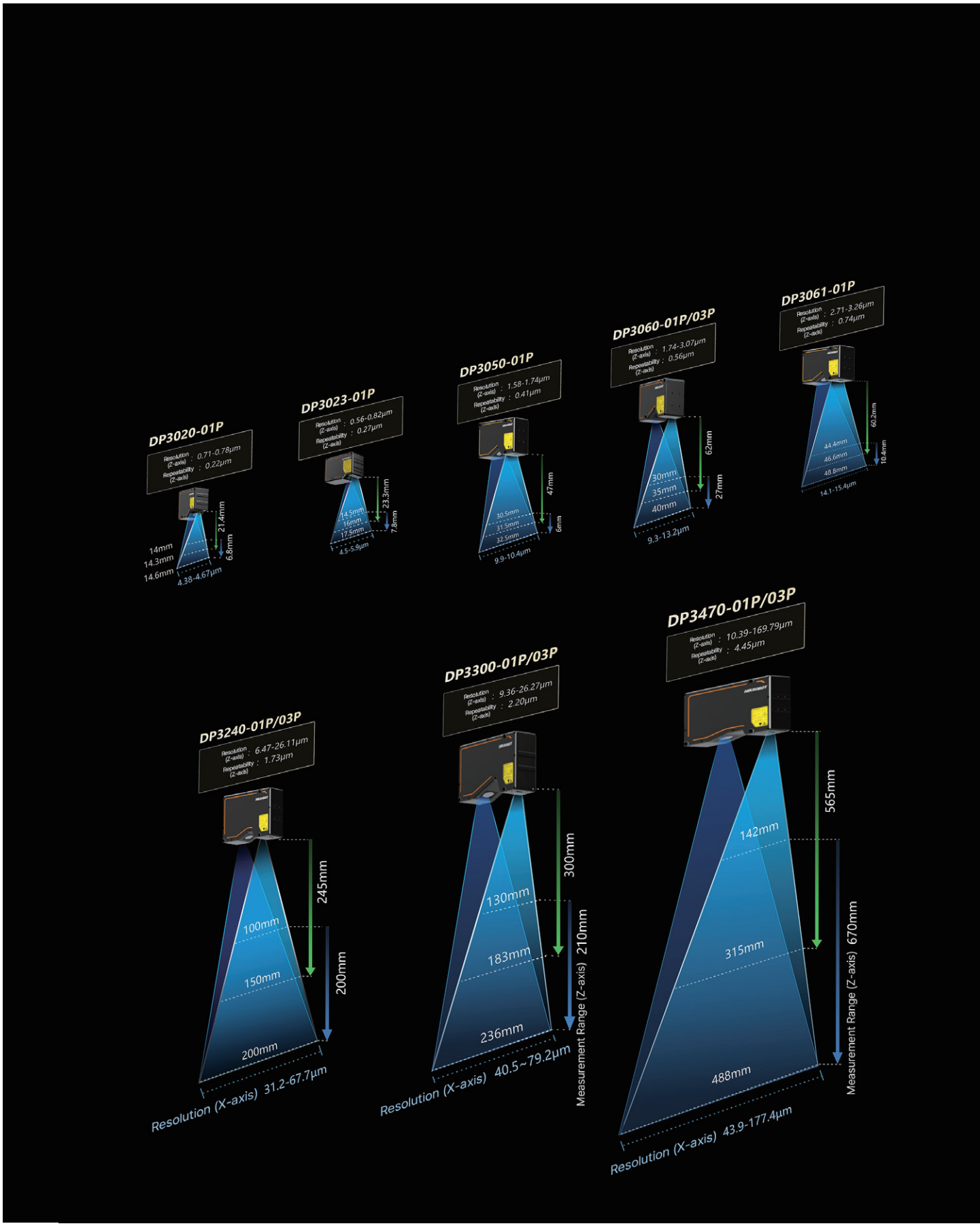
- Built-in high-accuracy algorithm and accuracy is up to submicron level.
- Adopts high frame rate chip with 46.7 kHz scan frame rate.
- Supports multiple exposure modes with good robustness.
- Adopts multiple-frame integration technology to provide complete profiles.
- Provides multiple filter modes with stable data.
- Supports ROI selection and auto setting for easier operation.

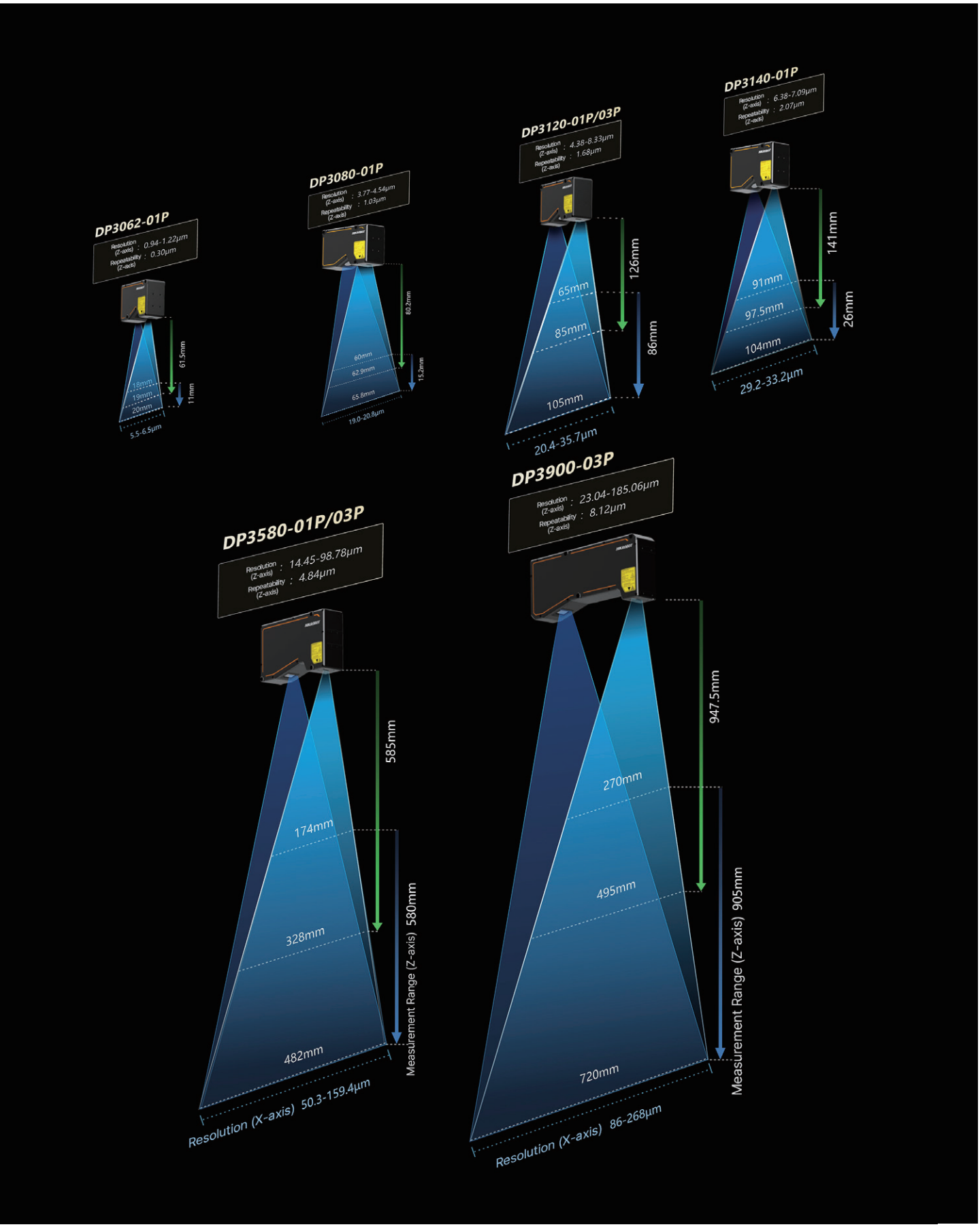
Specification

Model	Data points/ profile	Reference distance	Measurement range (Z-axis)	Measurement range (X-axis)	Resolution (Z-axis)	Repeatability (Z-axis)	Profile data interval	Scan frame rate	Wavelength	Dimension
MV-DP3020-01P V2.0	3200	21.4mm	6.8 mm	14.3 mm @ reference distance 14 mm @ near field of view 14.6 mm @ far field of view	0.71 ~ 0.78 μm	0.22 μm	4.38 ~ 4.67 μm	3.4k Hz ~ 46.7k Hz	405 nm	A
MV-DP3023-01P V2.0	3200	23.3 mm	7.8 mm	16 mm @ reference distance 14.5 mm @ near field of view 17.5 mm @ far field of view	0.56 ~ 0.82 μm	0.27 μm	4.5 ~ 5.9 μm	3.4k Hz ~ 46.7k Hz	405 nm	B
MV-DP3050-01P V2.0	3200	47 mm	6 mm	31.5 mm @ reference distance 30.5 mm @ near field of view 32.5 mm @ far field of view	1.58 ~ 1.74 μm	0.41 μm	9.9 ~ 10.4 μm	3.4k Hz ~ 46.7k Hz	405 nm	C
MV-DP3060-01P V2.0	3200	62 mm	27 mm	35 mm @ reference distance 30 mm @ near field of view 40 mm @ far field of view	1.74 ~ 3.07 μm	0.56 μm	9.3 ~ 13.2 μm	3.4k Hz ~ 46.7k Hz	405 nm	D
MV-DP3060-03P V2.0	3200	62 mm	27 mm	35 mm @ reference distance 30 mm @ near field of view 40 mm @ far field of view	1.74 ~ 3.07 μm	0.56 μm	9.3 ~ 13.2 μm	3.4k Hz ~ 46.7k Hz	650 nm	D
MV-DP3061-01P V2.0	3200	60.2mm	10.4mm	46.6 mm @ reference distance 44.4 mm @ near field of view 48.8 mm @ far field of view	2.71 ~ 3.26 μm	0.74 μm	14.1 ~ 15.4 μm	3.4k Hz ~ 46.7k Hz	405 nm	E
MV-DP3062-01P V2.0	3200	61.5 mm	11mm	19 mm @ reference distance 18 mm @ near field of view 20 mm @ far field of view	0.94 ~ 1.22 μm	0.30 μm	5.5 ~ 6.5 μm	3.4k Hz ~ 46.7k Hz	405 nm	F
MV-DP3080-01P V2.0	3200	80.2 mm	15.2 mm	62.9 mm @ reference distance 60 mm @ near field of view 65.8 mm @ far field of view	3.77 ~ 4.54 μm	1.03 μm	19.0 ~ 20.8 μm	3.4k Hz ~ 46.7k Hz	405 nm	G
MV-DP3120-01P V2.0	3200	126 mm	86mm	85 mm @ reference distance 65 mm @ near field of view 105 mm @ far field of view	4.38 ~ 8.33 μm	1.68 μm	20.4 ~ 35.7 μm	3.4k Hz ~ 46.7k Hz	405 nm	H
MV-DP3120-03P V2.0	3200	126 mm	86mm	85 mm @ reference distance 65 mm @ near field of view 105 mm @ far field of view	4.38 ~ 8.33 μm	1.68 μm	20.4 ~ 35.7 μm	3.4k Hz ~ 46.7k Hz	650 nm	H
MV-DP3140-01P V2.0	3200	141 mm	26mm	97.5 mm @ reference distance 91 mm @ near field of view 104 mm @ far field of view	6.38 ~ 7.09 μm	2.07 μm	29.2 ~ 33.2 μm	3.4k Hz ~ 46.7k Hz	405 nm	I
MV-DP3240-01P V2.0	3200	245 mm	200 mm	150 mm @ reference distance 100 mm @ near field of view 200 mm @ far field of view	6.47 ~ 26.11 μm	1.73 μm	31.2 ~ 67.7 μm	3.4k Hz ~ 46.7k Hz	405 nm	J
MV-DP3240-03P V2.0	3200	245 mm	200 mm	150 mm @ reference distance 100 mm @ near field of view 200 mm @ far field of view	6.47 ~ 26.11 μm	1.73 μm	31.2 ~ 67.7 μm	3.4k Hz ~ 46.7k Hz	650 nm	J
MV-DP3300-01P V2.0	3200	300 mm	210 mm	183 mm @ reference distance 130 mm @ near field of view 236 mm @ far field of view	9.36 ~ 26.27 μm	2.20 μm	40.5 ~ 79.2 μm	3.4k Hz ~ 46.7k Hz	405 nm	K
MV-DP3300-03P V2.0	3200	300 mm	210 mm	183 mm @ reference distance 130 mm @ near field of view 236 mm @ far field of view	9.36 ~ 26.27 μm	2.20 μm	40.5 ~ 79.2 μm	3.4k Hz ~ 46.7k Hz	650 nm	K
MV-DP3470-01P V2.0	3200	565 mm	670 mm	315 mm @ reference distance 142 mm @ near field of view 488 mm @ far field of view	10.39 ~ 169.79 μm	4.45 μm	43.9 ~ 177.4 μm	3.4k Hz ~ 46.7k Hz	405 nm	J
MV-DP3470-03P V2.0	3200	565 mm	670 mm	315 mm @ reference distance 142 mm @ near field of view 488 mm @ far field of view	10.39 ~ 169.79 μm	4.45 μm	43.9 ~ 177.4 μm	3.4k Hz ~ 46.7k Hz	650 nm	J
MV-DP3580-01P V2.0	3200	585 mm	580 mm	328 mm @ reference distance 174 mm @ near field of view 482 mm @ far field of view	14.45 ~ 98.78 μm	4.84 μm	50.3 ~ 159.4 μm	3.4k Hz ~ 46.7k Hz	405 nm	K
MV-DP3580-03P V2.0	3200	585 mm	580 mm	328 mm @ reference distance 174 mm @ near field of view 482 mm @ far field of view	14.45 ~ 98.78 μm	4.84 μm	50.3 ~ 159.4 μm	3.4k Hz ~ 46.7k Hz	650 nm	K
MV-DP3900-03P V2.0	3200	947.5 mm	905 mm	495 mm @ reference distance 270 mm @ near field of view 720 mm @ far field of view	23.04 ~ 185.06 μm	8.12 μm	86 ~ 268 μm	3.4k Hz ~ 46.7k Hz	650 nm	L

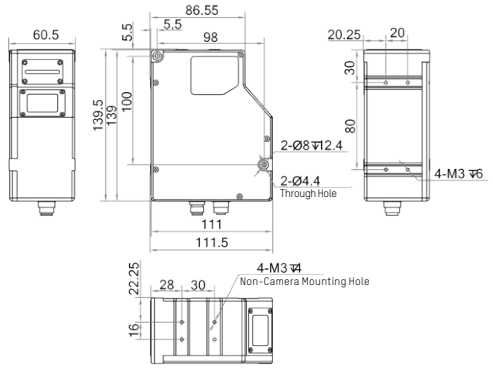
Notice: Repeatability (Z-axis): The data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.
For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

Measurement Range Diagram

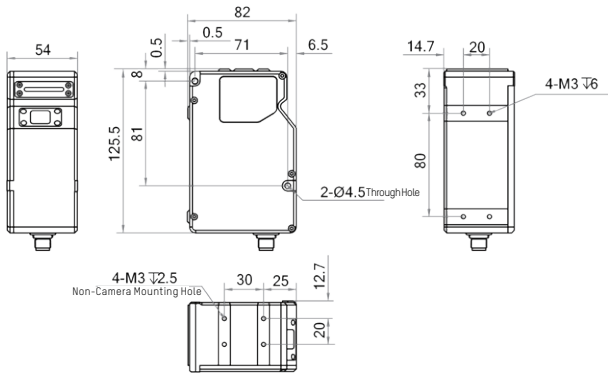



DP3062-01P
Resolution (Z-axis) : 0.94-1.22μm
Repeatability (Z-axis) : 0.30μm
61.5mm
11mm
18mm
19mm
20mm
5.5-6.5μm
DP3080-01P
Resolution (Z-axis) : 3.77-4.54μm
Repeatability (Z-axis) : 1.03μm
80.2mm
15.2mm
60mm
62.9mm
65.8mm
19.0-20.8μm
DP3120-01P/03P
Resolution (Z-axis) : 4.38-8.33μm
Repeatability (Z-axis) : 1.68μm
126mm
86mm
65mm
85mm
105mm
20.4-35.7μm
DP3140-01P
Resolution (Z-axis) : 6.38-7.09μm
Repeatability (Z-axis) : 2.07μm
141mm
26mm
91mm
97.5mm
104mm
29.2-33.2μm
DP3580-01P/03P
Resolution (Z-axis) : 14.45-98.78μm
Repeatability (Z-axis) : 4.84μm
585mm
580mm
174mm
328mm
482mm
Measurement Range (Z-axis)
Resolution (X-axis) 50.3-159.4μm
DP3900-03P
Resolution (Z-axis) : 23.04-185.06μm
Repeatability (Z-axis) : 8.12μm
947.5mm
905mm
270mm
495mm
720mm
Measurement Range (Z-axis)
Resolution (X-axis) 86-268μm

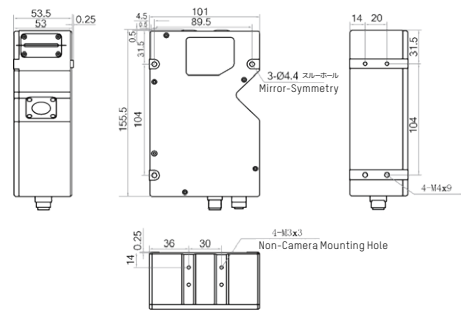
Dimension



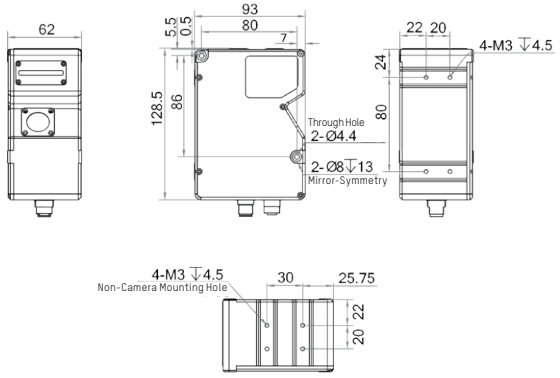
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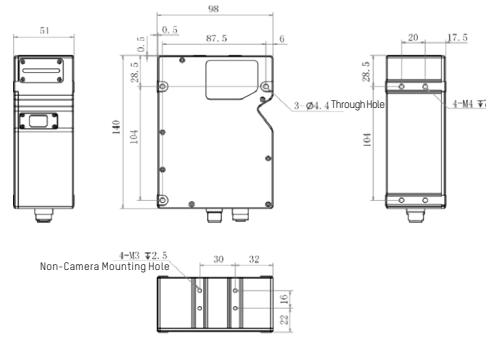
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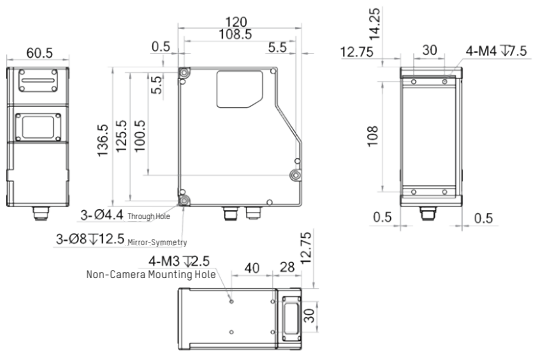
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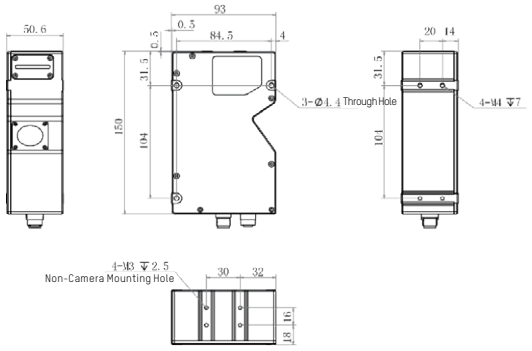
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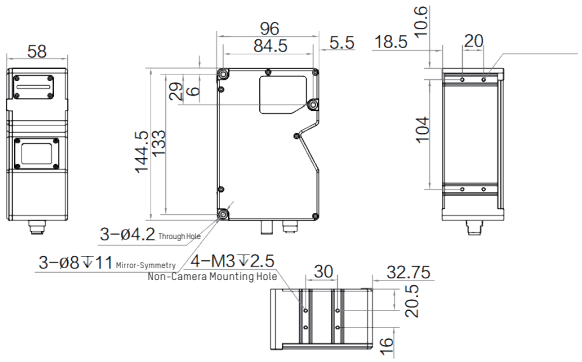
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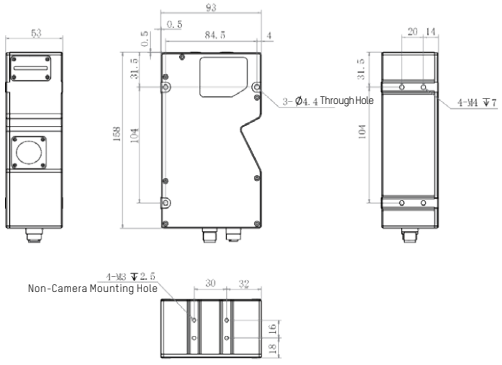
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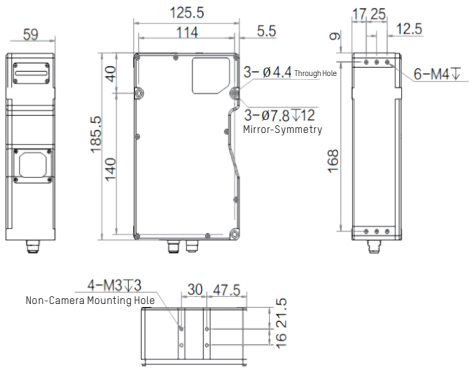
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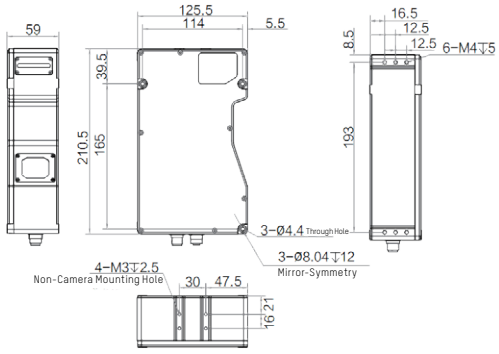
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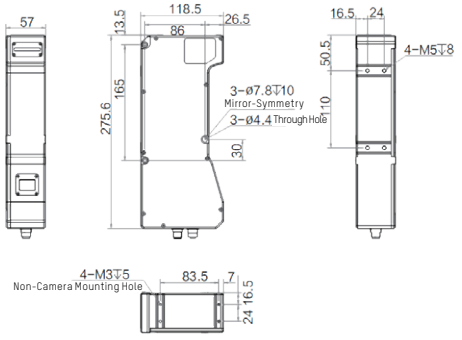
I



J



K



L

Unit:mm

DP4000 Series Laser Profile Sensor

Key Features

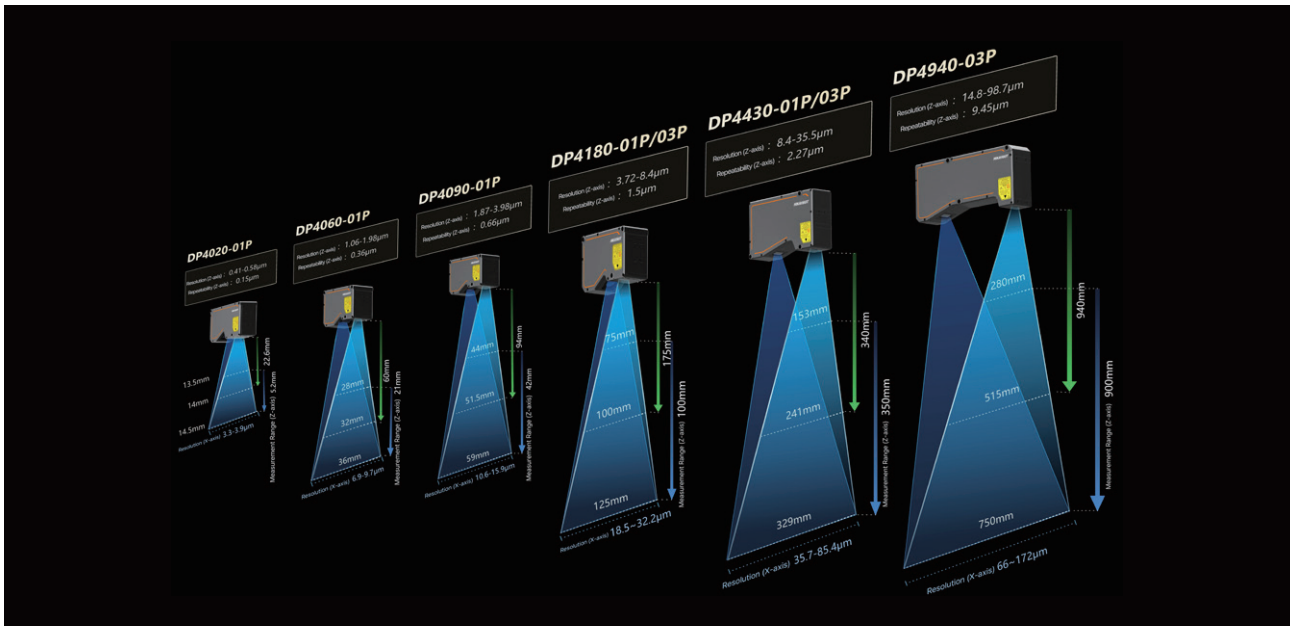
- Adopts high-speed, high-resolution, and large-pixel element image chips.
- Adopts FPGA hardware with 49 kHz scan frame rate.
- Provides customized large iris lens and ultra-uniform laser optical solution.
- Adopts ultra-high subpixel algorithm and accuracy is up to submicron level.
- Supports multiple exposure modes with good robustness.
- Adopts multiple-frame integration technology to provide complete profiles.
- Provides multiple filter modes with stable data.
- Adopts integrated design for easy installation and debugging.

Specification

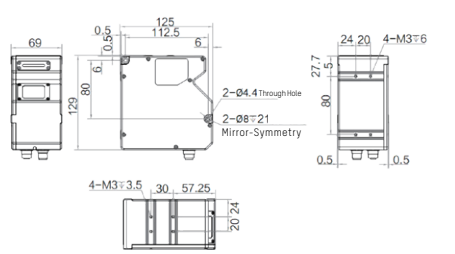
Model	Data points/ profile	Reference distance	Measurement range (Z-axis)	Measurement range (X-axis)	Resolution (Z-axis)	Repeatability (Z-axis)	Profile data interval	Scan frame rate	Wavelength	Dimension
MV-DP4020-01P	4080	22.6 mm	5.2 mm	14 mm @ reference distance 13.5 mm @ near field of view 14.5 mm @ far field of view	0.41 ~ 0.58 μm	0.15 μm	3.3 ~ 3.9 μm	2.5k Hz ~ 49k Hz	405 nm	A
MV-DP4060-01P	4080	60 mm	21 mm	32 mm @ reference distance 28 mm @ near field of view 36 mm @ far field of view	1.06 ~ 1.98 μm	0.36 μm	6.9 ~ 9.7 μm	2.5k Hz ~ 49k Hz	405 nm	B
MV-DP4090-01P	4080	94 mm	42 mm	51.5 mm @ reference distance 44 mm @ near field of view 59 mm @ far field of view	1.87 ~ 3.98 μm	0.66 μm	10.6 ~ 15.9 μm	2.5k Hz ~ 49k Hz	405 nm	C
MV-DP4180-01P	4080	175 mm	100 mm	100 mm @ reference distance 75 mm @ near field of view 125 mm @ far field of view	3.72~ 8.40 μm	1.5 μm	18.5 ~ 32.2 μm	2.5k Hz ~ 49k Hz	405 nm	D
MV-DP4180-03P	4080	175 mm	100 mm	100 mm @ reference distance 75 mm @ near field of view 125 mm @ far field of view	3.72~ 8.40 μm	1.5 μm	18.5 ~ 32.2 μm	2.5k Hz ~ 49k Hz	650nm	D
MV-DP4430-01P	4080	430mm	340 mm	241mm @ reference distance 153mm @ near field of view 329mm @ far field of view	8.4 ~ 35.5 μm	2.27 μm	35.7-85.4 um	2.5k Hz ~ 49k Hz	405nm	E
MV-DP4430-03P	4080	430mm	340 mm	241mm @ reference distance 153mm @ near field of view 329mm @ far field of view	8.4 ~ 35.5 μm	2.27 μm	35.7-85.4 μm	2.5k Hz ~ 49k Hz	650nm	E
MV-DP4940-03P	4080	940 mm	900 mm	515mm @ reference distance 280mm @ near field of view 750mm @ far field of view	14.8 - 98.7 μm	9.45 μm	66 - 172 μm	2.5k Hz ~ 49k Hz	650 nm	F

Notice: Repeatability (Z-axis): The data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.
For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

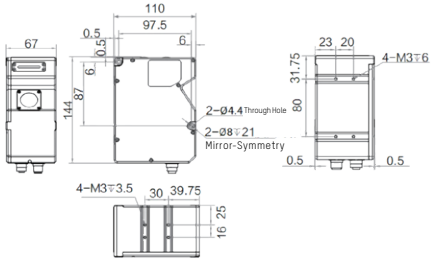
Measurement Range Diagram



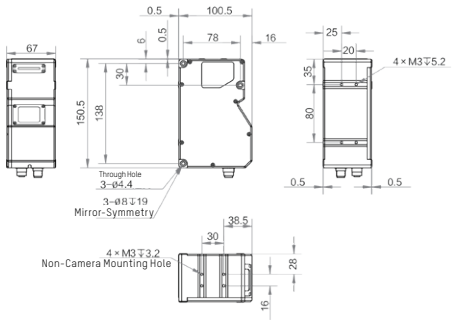
Dimension



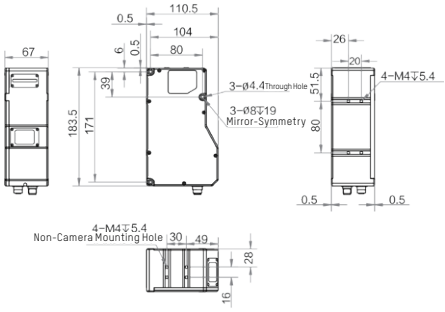
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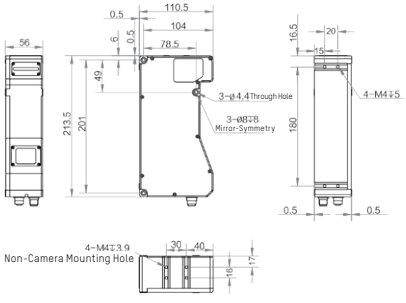
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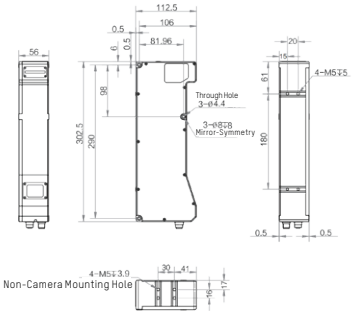
C



D



E



F

Unit:mm

Binocular Single-Line Series Laser Profile Sensor

Key Features

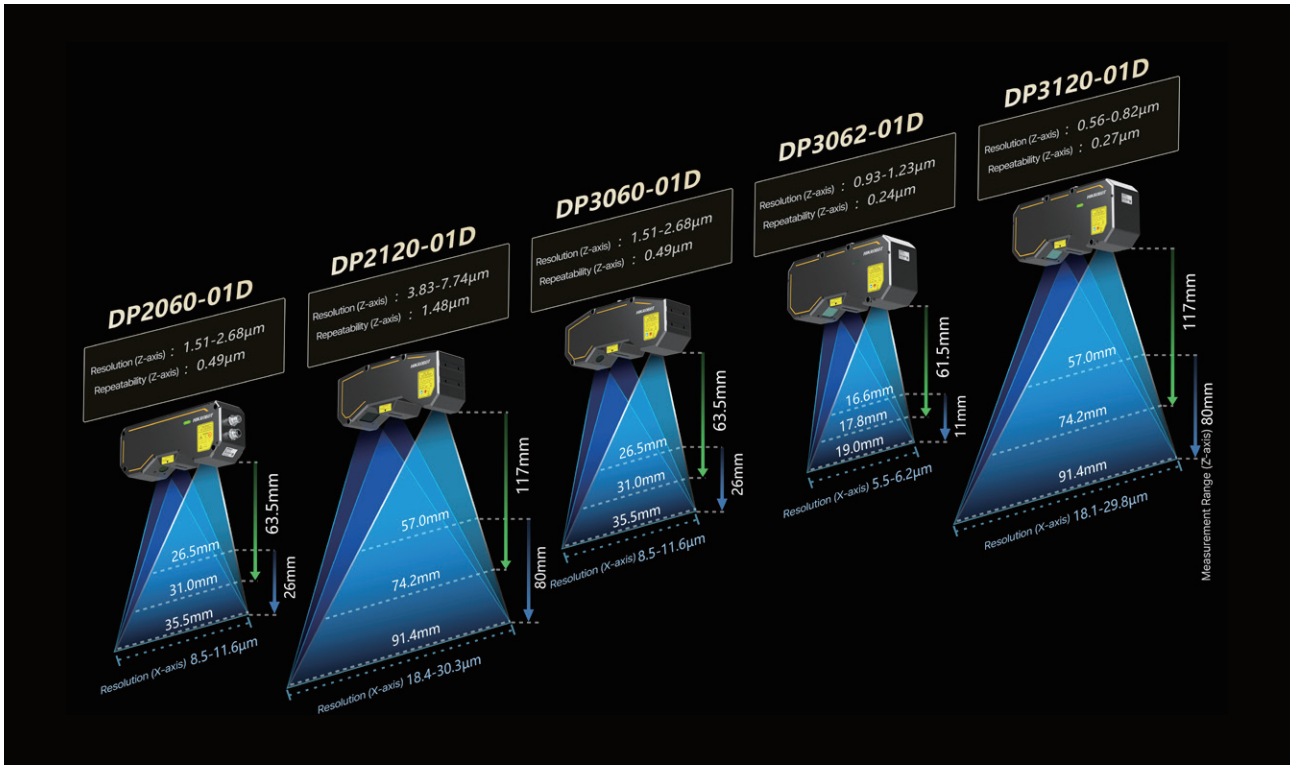
- Dual-mode image sensor to eliminate blind area of FOV and suppress stray light.
- Built-in high-accuracy 3D algorithm and accuracy is up to submicron level.
- Adopts high frame rate image chip up to 46.7 kHz scan frame rate.
- Supports multiple exposure modes with wider dynamic range.
- Adopts image integration algorithm technology to provide complete point cloud data.
- Provides multiple filter modes with stable point cloud data.

Specification

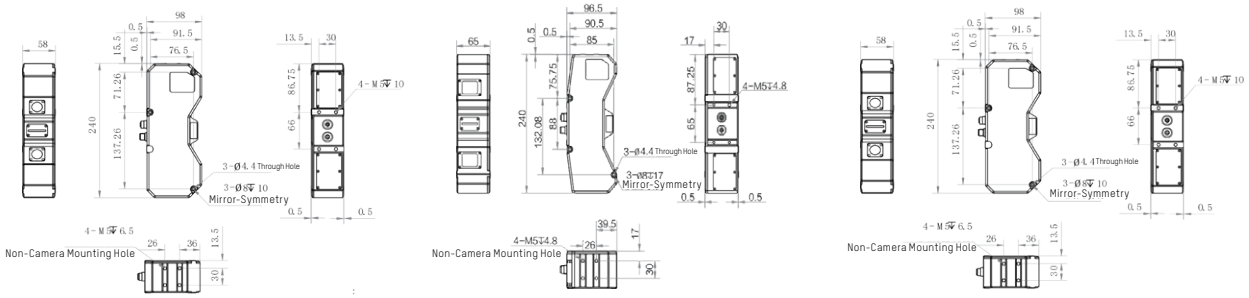
Model	Data points/ profile	Reference distance	Measurement range (Z-axis)	Measurement range (X-axis)	Resolution (Z-axis)	Repeatability (Z-axis)	Profile data interval	Scan frame rate	Wavelength	Dimension
MV-DP2060-01D V2.0	3200	63.5mm	26 mm	31.0 mm @ reference distance 26.5 mm @ near field of view 35.5 mm @ far field of view	1.51 ~ 2.68 μm	0.49 μm	8.5 ~ 11.6 μm	1.7k Hz ~ 23.9k Hz	405 nm	A
MV-DP2120-01D V2.0	3200	117 mm	80 mm	74.2 mm @ reference distance 57 mm @ near field of view 91.4 mm @ far field of view	3.90 ~ 7.56 μm	1.48 μm	18.4 ~ 30.3 μm	1.7k Hz ~ 23.9k Hz	405 nm	B
MV-DP3060-01D V2.0	3200	63.5 mm	26 mm	31.0 mm @ reference distance 26.5 mm @ near field of view 35.5 mm @ far field of view	1.51 ~ 2.68 μm	0.49 μm	8.5 ~ 11.6 μm	3.4k Hz ~ 46.7k Hz	405 nm	C
MV-DP3062-01D V2.0	3200	61.5 mm	11 mm	17.8 mm @ reference distance 16.6 mm @ near field of view 19.0 mm @ far field of view	0.93 ~ 1.23 μm	0.24 μm	5.5 ~ 6.2 μm	3.4k Hz ~ 46.7k Hz	405 nm	D
MV-DP3120-01D V2.0	3200	117 mm	80 mm	74.2 mm @ reference distance 57.0 mm @ near field of view 91.4 mm @ far field of view	3.89 ~ 7.56 μm	1.48 μm	18.1 ~ 29.8 μm	3.4k Hz ~ 46.7k Hz	405 nm	E

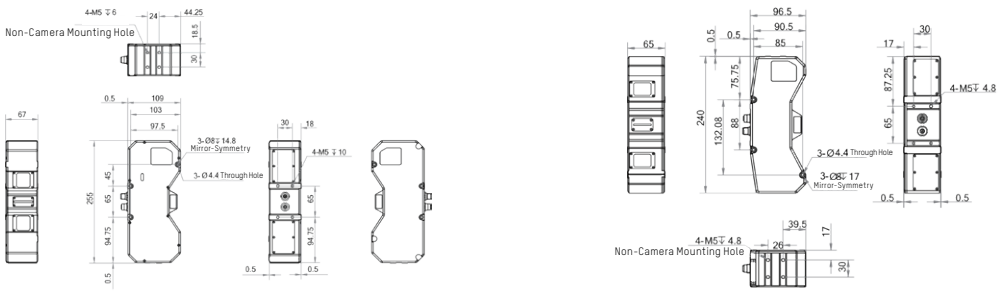
Notice: Repeatability (Z-axis): The data is obtained via testing gauge blocks in a laboratory, and it is an average from 4096 tests.
For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

Measurement Range Diagram



Dimension

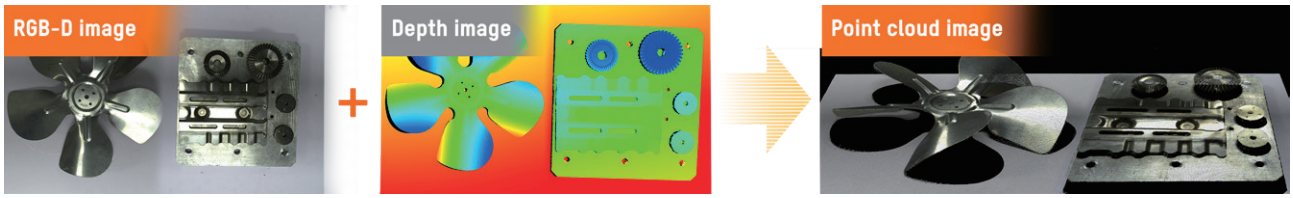




Unit:mm

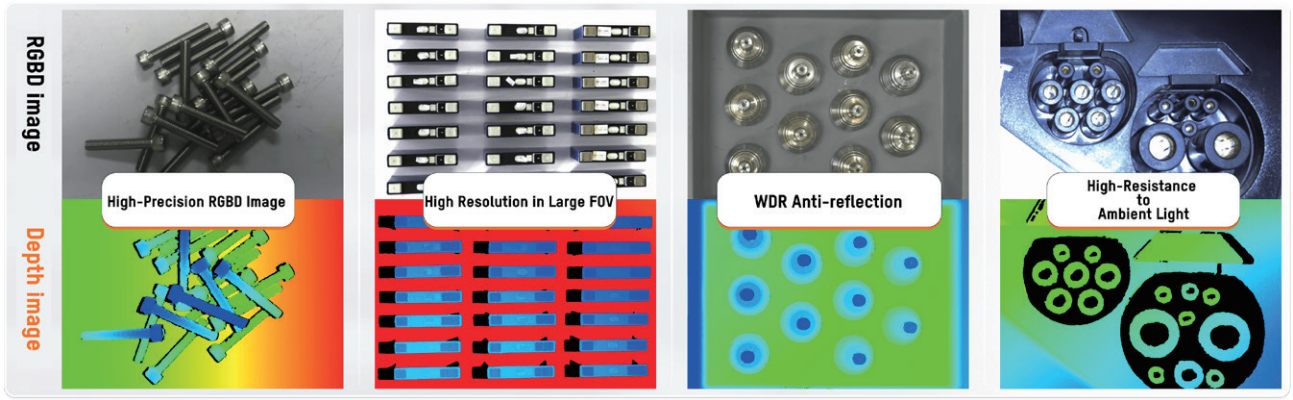
Binocular Structured Light Stereo Camera

The camera adopts laser galvanometer and projected structured-light technology, combined with a customized optical system, high-performance processing chips, and high-strength materials. It can adapt to many working conditions such as light absorption, high reflectivity, and ambient light interference, achieving high-precision and high-stability 3D imaging, widely used in scenarios like workpiece picking, robot guided assembly.



High-Precision RGBD Image Output

The camera adopts high-precision laser galvanometer and subpixel algorithmn, improving 3D imaging accuracy to obtain more detailed RGB-D image.



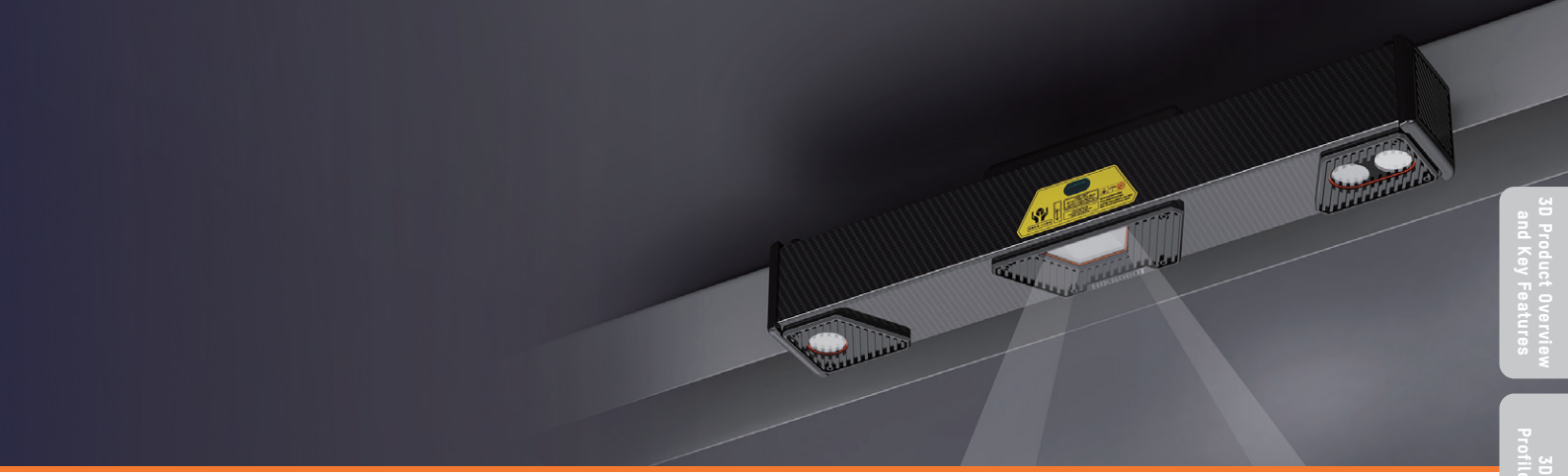
High-Precision and High-Performance 3D Imaging

Equipped with a high-performance processing chip, a wide dynamic range optical design, and automatic exposure, multi-frame fusion and other algorithms, the camera meets the demanding requirements of highly reflective metal surfaces while delivering excellent resistance to ambient light, suitable for 3D scanning of various sets of workpieces.

RS (RoboScan) Series Galvanometer Laser 3D Camera

Key Features

- Supports high-uniformity laser module to provide a more detailed point cloud.
- Supports multi-core parallel processing with high precision and fast image acquisition rate.
- Adopts high-strength carbon fiber design with high stability.
- Supports alignment between depth images and RGB images, convenient for secondary development.

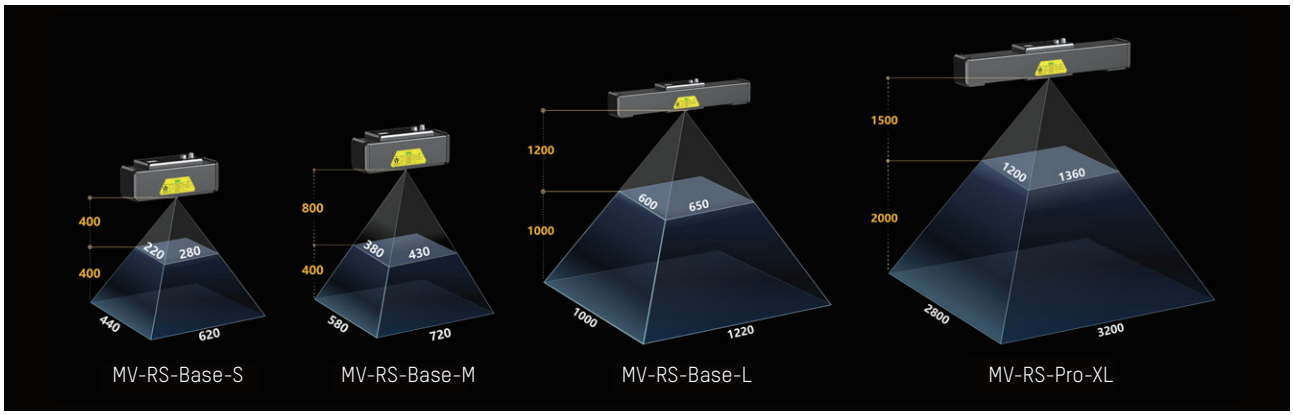


Specification

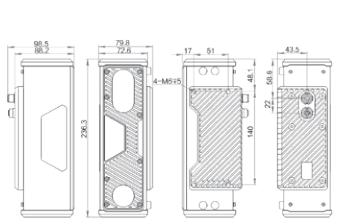
Model	Near field of view	Far field of view	Clearance distance (CD)	Measurement range (MR)	Repeatability (Z-axis)	VDI/VDE accuracy	Resolution	Data acquisition time	Image output delay	Laser	Laser safety class	Data type	IP Protection	Dimension
MV-RS-Base-S	280 mm × 220 mm	620 mm × 440 mm	400 mm	400 mm	0.03 mm @ 600 mm	0.05 mm @ 600 mm	RGB: 3200 × 1944 Depth: 1632 × 1080	0.4-0.9s	0.8-1.5s	Single line	Class 2	Original image (mono and color images), depth image, RGB-D image	IP65	A
MV-RS-Base-M	430 mm × 380 mm	720 mm × 580 mm	800 mm	400 mm	0.08 mm @ 1000 mm	0.10 mm @ 1000 mm	RGB: 3200 × 1944 Depth: 1632 × 1264	0.4-0.9s	0.8-1.5s	Single line	Class 2		IP65	A
MV-RS-Base-L	640 mm × 600 mm	1220 mm × 1000 mm	1200 mm	1000 mm	0.08 mm @ 1800 mm	0.15 mm @ 1800 mm	RGB: 3200 × 1944 Depth: 1632 × 1264	0.4-0.9s	0.8-1.5s	Single line	Class 2		IP65	B
MV-RS-Pro-XL	1360 mm × 1200 mm	3200 mm × 2800 mm	1500 mm	2000 mm	0.2 mm @ 2500 mm	0.3 mm @ 2500 mm	RGB: 3968 × 3000 Depth: 1920 × 1536	0.4-0.9s	0.9-1.6s	Single line	Class 2		IP65	C

Notice: For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

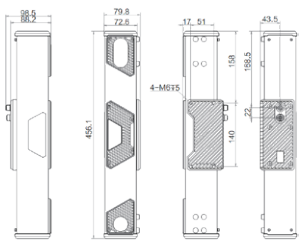
Measurement Range Diagram



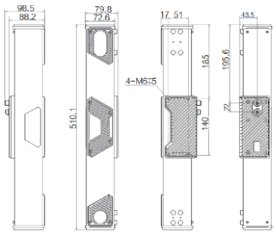
Dimension



A



B



C

Unit:mm

RS Ultra Series Galvanometer Laser 3D Camera

Key Features

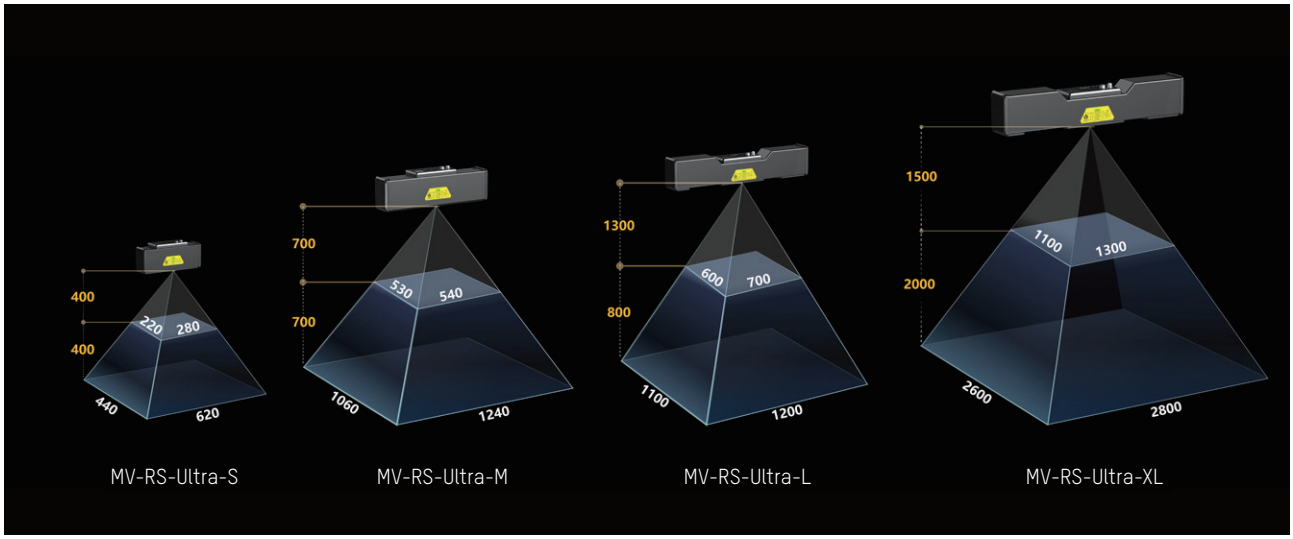
- Supports high-uniformity laser module to provide a more detailed point cloud.
- Supports 5MP depth map and 12MP color image for high-resolution design.
- Supports multi-core parallel processing with high precision and high image acquisition rate.
- Adopts high-strength carbon fiber design with high stability.
- Supports alignment between depth images and RGB images, convenient for secondary development.

Specification

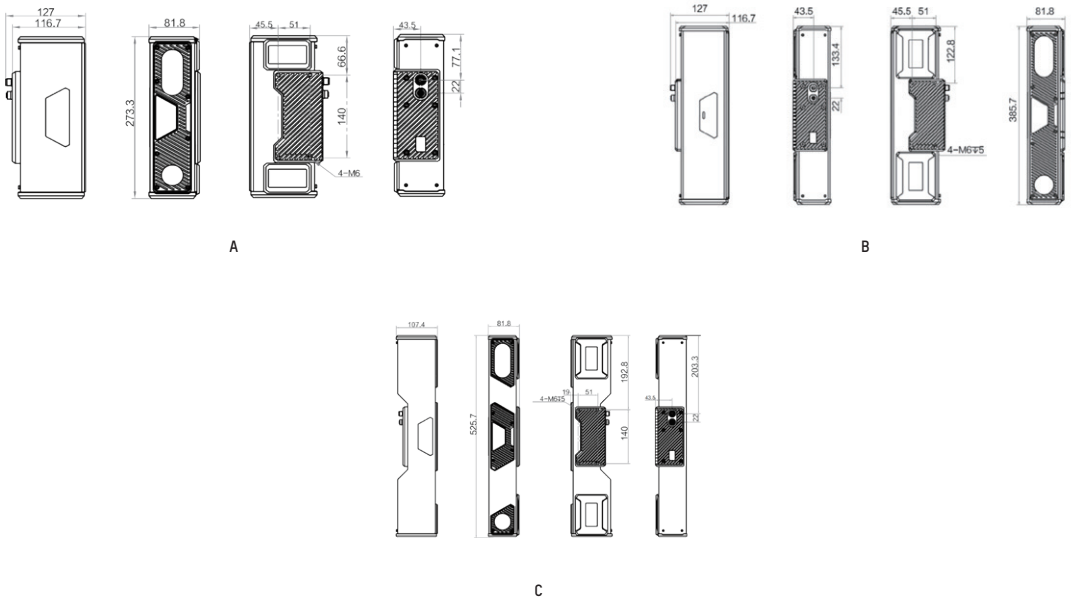
Model	Near field of view	Far field of view	Clearance distance (CD)	Measurement range (MR)	Repeatability (Z-axis)	VDI/VDE accuracy	Resolution	Data acquisition time	Image output delay	Laser	Laser safety class	Data type	Ingress protection	Dimension
MV-RS-Ultra-S	240 mm × 260 mm	480 mm × 440 mm	500 mm	300 mm	0.03 mm @ 600 mm	0.05 mm @ 600 mm	RGB: 4000 × 3000 Depth: 2448 × 2048	0.4-0.9s	1.0-1.7s	Single line	Class 2	Original image (mono and color images), depth image, RGB-D image	IP65	A
MV-RS-Ultra-M	540 mm × 530 mm	1240 mm × 1060 mm	700 mm	700 mm	0.06 mm @ 1000 mm	0.12 mm @ 1000 mm	RGB: 4000 × 3000 Depth: 2448 × 2048	0.4-0.9s	1.0-1.7s	Single line	Class 2		IP65	B
MV-RS-Ultra-L	700 mm × 600 mm	1200 mm × 1100 mm	1300 mm	800 mm	0.08 mm @ 1800 mm	0.15 mm @ 1800 mm	RGB: 4000 × 3000 Depth: 2448 × 2048	0.4-0.9s	1.0-1.7s	Single line	Class 2		IP65	C
MV-RS-Ultra-XL	1300 mm × 1100 mm	2800 mm × 2600 mm	1500mm	2000 mm	0.2 mm @ 2500 mm	0.3 mm @ 2500 mm	RGB: 4000 × 3000 Depth: 2448 × 2048	0.4-0.9s	1.0-1.7s	Single line	Class 2		IP65	C

Notice: For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

Measurement Range Diagram



Dimension



I RC(RoboCast) Series Projected Structured Light 3D Camera

Key Features

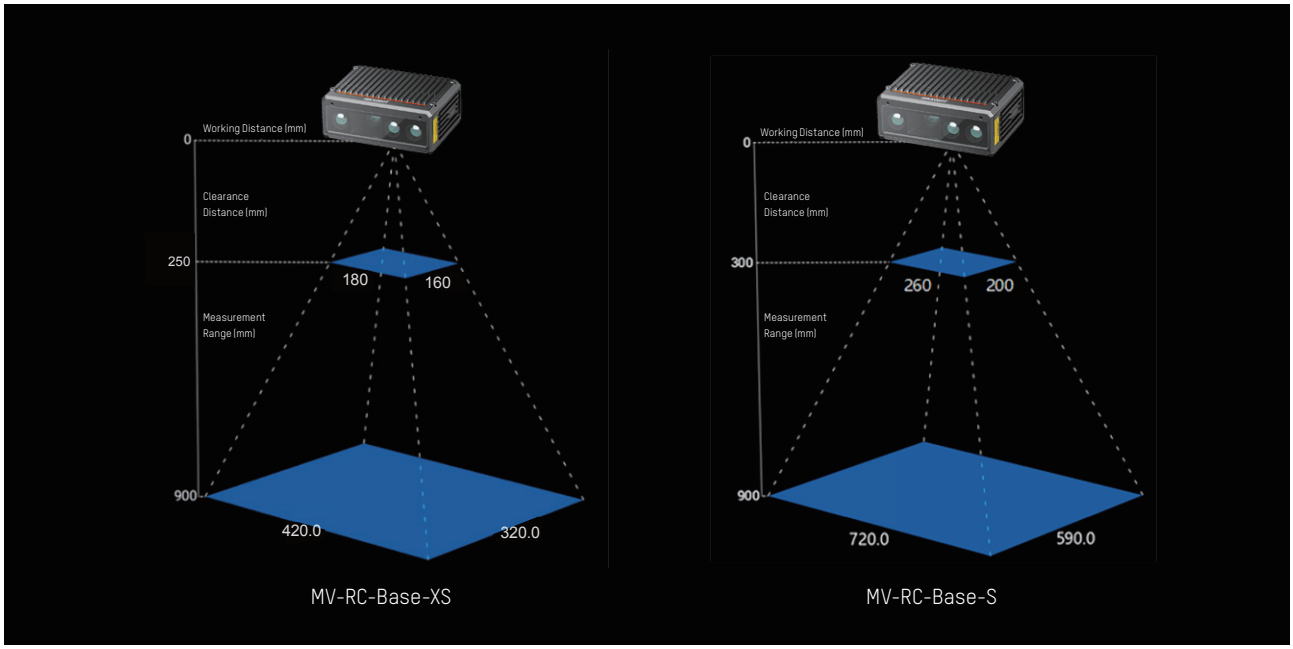
- Supports high-performance projected structured light to provide a more detailed point cloud.
- Supports multi-core parallel processing with high efficiency.
- Adopts light-weight design and small size with high stability for flexible installation and use.
- Supports alignment between depth images and RGB images, convenient for secondary development.

Specificaton

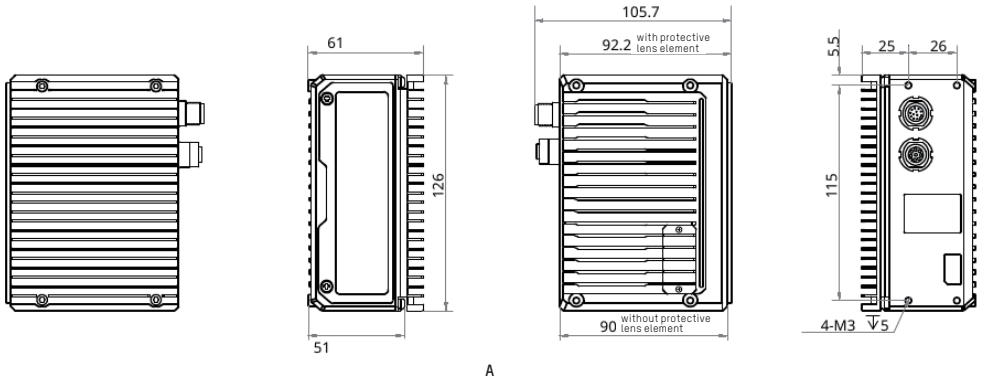
Model	Near field of view	Far field of view	Clearance distance (CD)	Measurement range (MR)	Repeatability (Z-axis)	VDI/VDE accuracy	Resolution	Data acquisition time	Image output delay	Data type	Ingress protection	Dimension
MV-RC-Base-XS	180 mm × 160 mm @250 mm	420 mm × 320 mm @500 mm	250 mm	250 mm	0.02 mm @300 mm	0.03 mm @300 mm	RGB: 3200 × 1944 Depth: 1632 × 1264	0.2~0.7s	0.5 ~ 1.2 s	Original image (mono and color images), depth image, RGB-D image	IP67	A
MV-RC-Base-S	260 mm × 200 mm @300 mm	720 mm × 590 mm @900 mm	300 mm	600 mm	0.05 mm @600 mm	0.08 mm @600 mm	RGB: 3200 × 1944 Depth: 1632 × 1264	0.2~0.7s	0.5 ~ 1.2 s	Original image (mono and color images), depth image, RGB-D image	IP67	A

Notice: For cable specifications, refer to Appendix. Available in straight, angled, high-flex, super-flex types and various lengths for different application needs.

Measurement Range Diagram



Dimension



Unit:mm

3D Vision Guided Random Bin Picking Application Scenarios

The workpiece loading and unloading solution is applicable to handling and grasping scenarios involving complex workpieces, structural components, irregular parts, and other objects across industries such as automotive, steel, and machinery. Equipped with binocular structured light stereo cameras and intelligent trajectory planning algorithms, this solution is not only capable of accurately identifying workpieces of various models but also optimizing the robot motion path and grasping angle in real time, which ensures collision avoidance and enables highly efficient grasping operations.

Automotive Industry



3D Vision-Guided Welding Material Loading for OEM Plant (Single Camera)



3D Vision-Guided Welding Material Loading for OEM Plant (Dual Camera)



3D Vision-Guided EOL Packing for OEM Plant

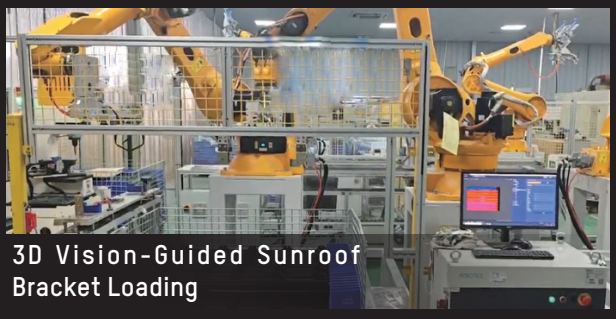


3D Vision-Guided Wheel Hub Final Assembly for OEM Plant

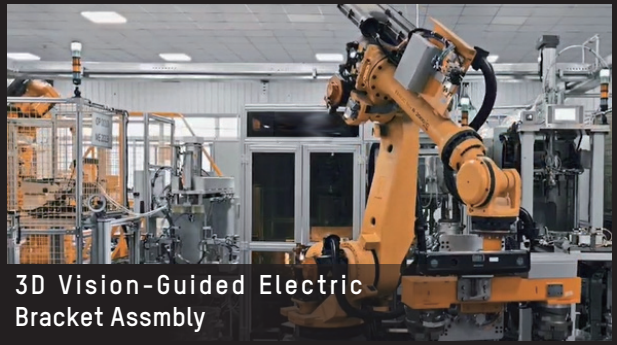
Auto Parts Industry



3D Vision-Guided Drive Shaft Loading and Unloading



3D Vision-Guided Sunroof Bracket Loading



3D Vision-Guided Electric Bracket Assmbly



3D Vision-Guided Sheet Metal Projection Welding Loading and Unloading

Lithium Battery Industry



3D Vision-Guided Battery Cell Unloading

Heavy Industry



3D Vision-Guided Steel Plate Loading

Photovoltaic Industry



3D Vision-Guided Cable Picking



3D Vision-Guided Aluminum Frame Loading

Machining Industry



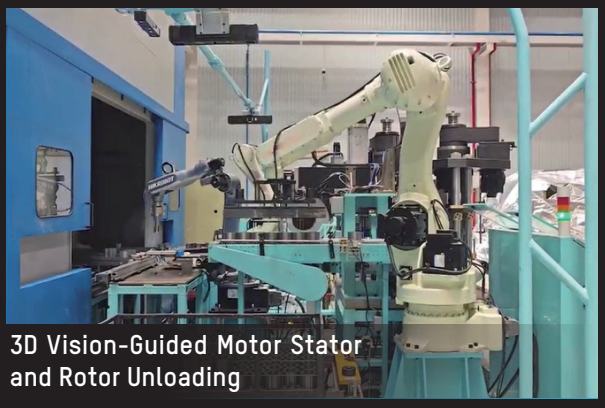
3D Vision-Guided Casting Grinding Loading

Home Appliance Industry



3D Vision-Guided Compressor Loading

Motor Industry



3D Vision-Guided Motor Stator and Rotor Unloading



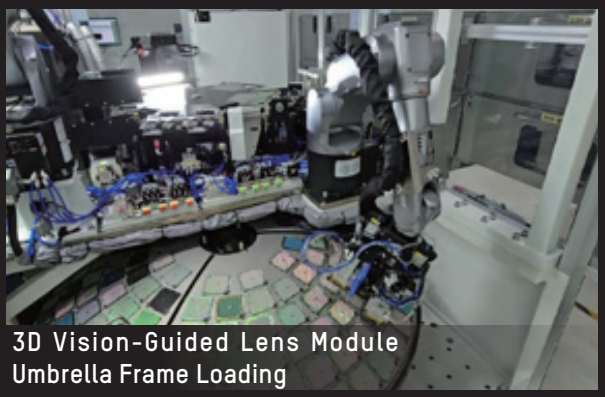
3D Vision-Guided Motor Stator and Rotor Deep-bin Picking and Loading

Welding Industry



3D Vision-Guided Teachless Welding

Consumer Electronics Industry



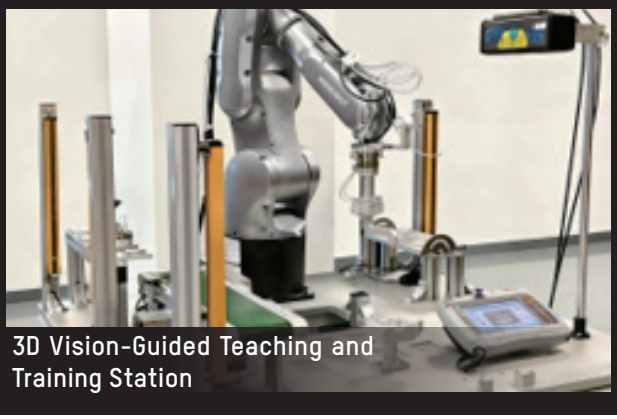
3D Vision-Guided Lens Module Umbrella Frame Loading

Hybrid Cobot Industry



3D Vision-Guided Hybrid Cobot Tray Inspection

Education and Training Industry



3D Vision-Guided Teaching and Training Station

Steel Structure Industry

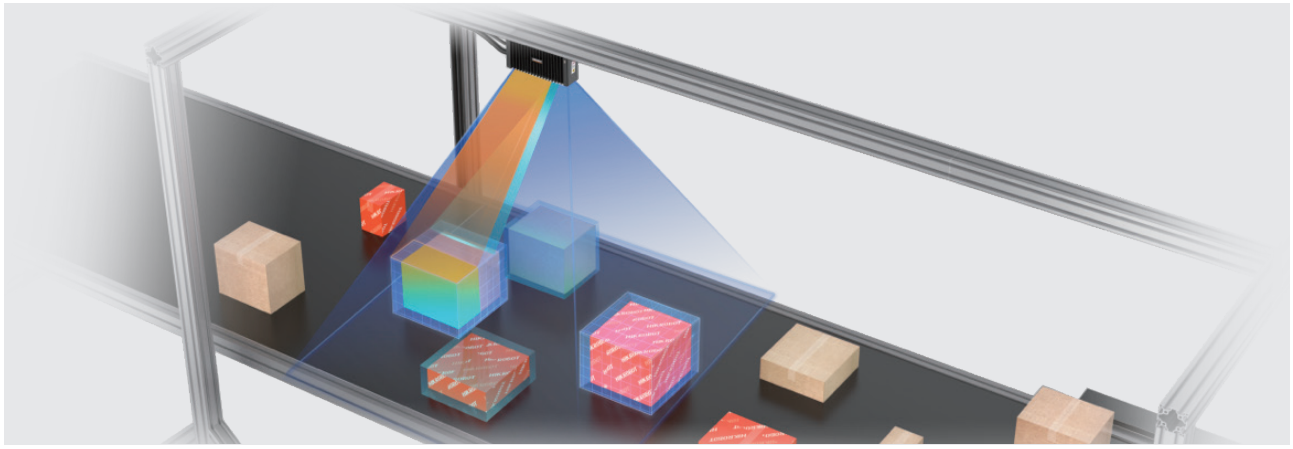


3D Vision-Guided V-shaped Angle Iron Loading and Unloading

Logistics Speckle Structured Light Stereo Camera

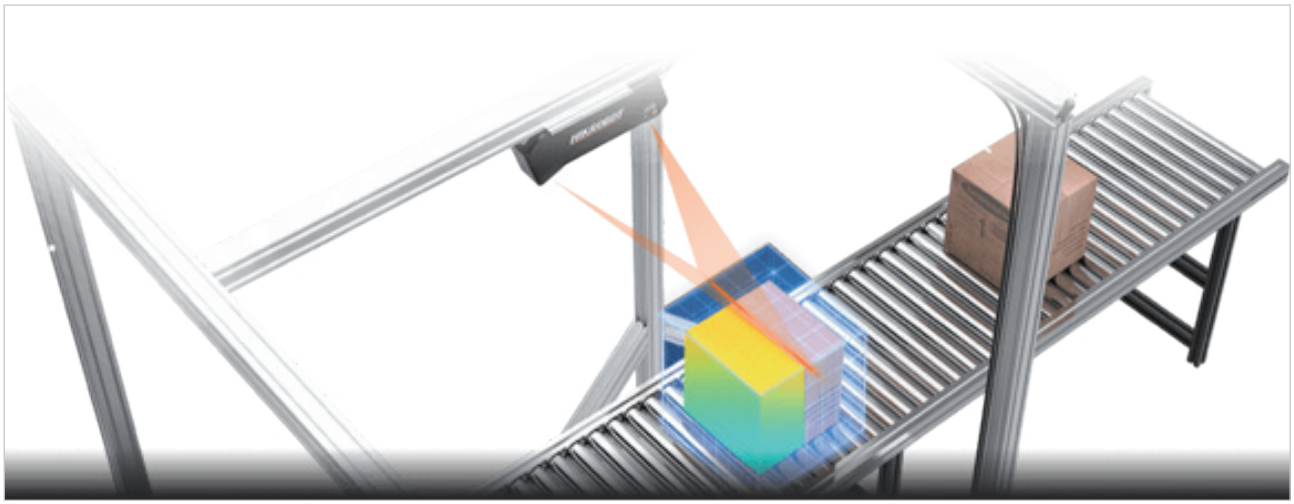
Logistics Speckle Structured Light Stereo Camera for Express

Logistics Speckle Structured Light Stereo Camera adopts binocular stereo camera and line laser technology to cover both dynamic and static applications. The camera is designed for express logistics industry and applicable for singulation, anti-overlapping and anti-double parcel, and volume measurement.



Built-in Deep Learning Algorithm

Equipped with built-in AI computing core, this RGBD 3D camera for logistics directly delivers deep learning computation results. Effectively lowers IPC hardware setup costs in scenarios like parcel segmentation, and EDP.



High-precision Point Cloud with Real-time Data Output

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. It is widely applied in dynamic 3D measurement of parcels in the logistics industry.



RGBD 3D Camera for Logisitc

Key Features

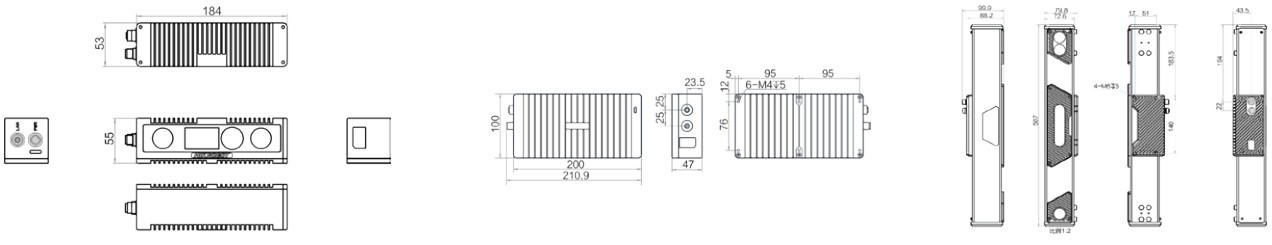
- Adopts built-in deep learning algorithm and 3D image process algorithm.
- Highly efficient laser module and accurate exposure synchronization provide stable performance and wider dynamic range.
- Adopts narrow band filters for stronger anti-interference.
- Support one-click system calibration of single or multiple cameras.
- IP Protection 65, industrial-grade dust and water proofing.

Specification

Model	Near field of view	Far field of view	Clearance distance (CD)	Measurement range (MR)	Detection accuracy	Scan frame rate	Data type	Dimension
MV-DB500S-S	580 mm × 470 mm	2500 mm × 1800 mm	500 mm	1500 mm	4 mm @ 1 m; 8 mm @ 2 m	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	4 mm @ 1 m; 8 mm @ 2 m	20 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	2.6 mm@1 m; 5.5 mm @ 2 m	12 fps @ high-precision mode	Original image (mono and color images), depth image, volume information	B
MV-DB700S-S	590 mm × 470 mm	2200 mm × 1500 mm	300 mm	700 mm	2.5 mm @ 0.5 m; 5 mm @ 1 m	30 fps @ singulation mode	Original image (mono and color images), depth image, object posture information	A
MV-DB700S-C	590 mm × 470 mm	2200 mm × 1500 mm	300 mm	700 mm	2.5 mm @ 0.5 m, 5 mm @ 1 m	20 fps @ EDP mode	Original image (mono and color images), depth image, EDP detection result	A
MV-DB1300A	870 mm × 860 mm	3340 mm× 2500 mm	1100 mm	2100 mm	1.5 mm @ 2100 mm	1.2 s - 1.5 s	Original image (mono and color images), depth image, RGB-D image	C

Notice: For cable specifications (including power I/O cables, data transmission cables, etc.), refer to Appendix.

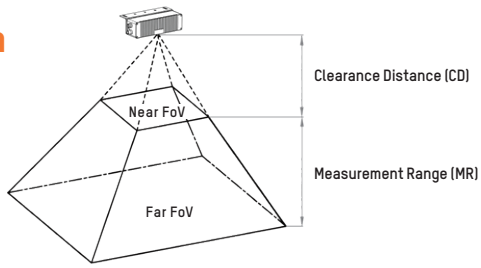
Dimension



A B C

Measurement Range Diagram

Unit:mm



Line Laser 3D Camera for Express

Key Features

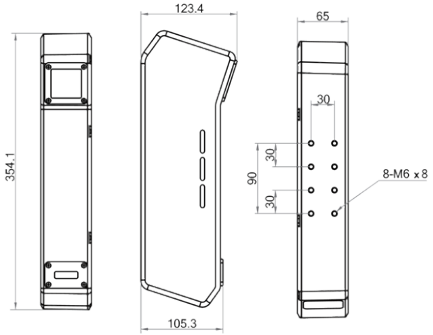
- Adopts wide dynamic range algorithm to accurately measure materials of high-absorbance or high-reflection.
- Achieves detection speed up to 3 m/s and accuracy of ± 5 mm.
- Adopts sub-pixel techonology with accutacy up to 5 mm.
- Adopts high-power laser module with wide dynamic range.
- Adopts narrow band pass filter to suppress interference.
- Stable performance with simultaneous exposure.
- Supports outputting data type of length/width/height and integral volume.

Specification

Model	Near field of view	Far field of view	Clearance distance (CD)	Measurement range (MR)	Detection accuracy	Detection speed	Scan frame rate	Dimension
MV-DL2125-04H-R/0ILM	1000 mm	2600 mm	700 mm	1000 mm	± 5 mm (standard object)	3 m/s @ ± 5 mm detection accuracy	600 fps @ 1 m depth measurement range	A
MV-DL2125-04P-R/0ILM	1000 mm	2600 mm	700 mm	1000 mm	± 5 mm (standard object)	3 m/s @ ± 5 mm detection accuracy	1140 fps @ 1 m depth measurement range	A

Notice: For cable specifications (including power I/O cables, data transmission cables, etc.), refer to Appendix.

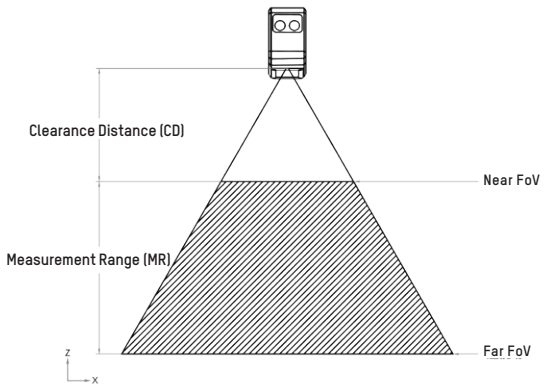
Dimension



A

Unit:mm

Measurement Range Diagram



Logistics Applications

Designed for logisitics application, Logistics Speckle Structured Light Stereo Camera is widely used in scenarios involving data acquisition, recognition and positioning, and parcel inspection on cross-belt sorting system. It achieves the logistics companies' demand for precision, automation, and intelligence. Through stereo camera-based 3D vision solution, it can replace traditional manual operation.



Dynamic DWS System



Cross-belt Dynamic Volume Measurement



Unmanned Parcel-feeding



Static Volume Measurement



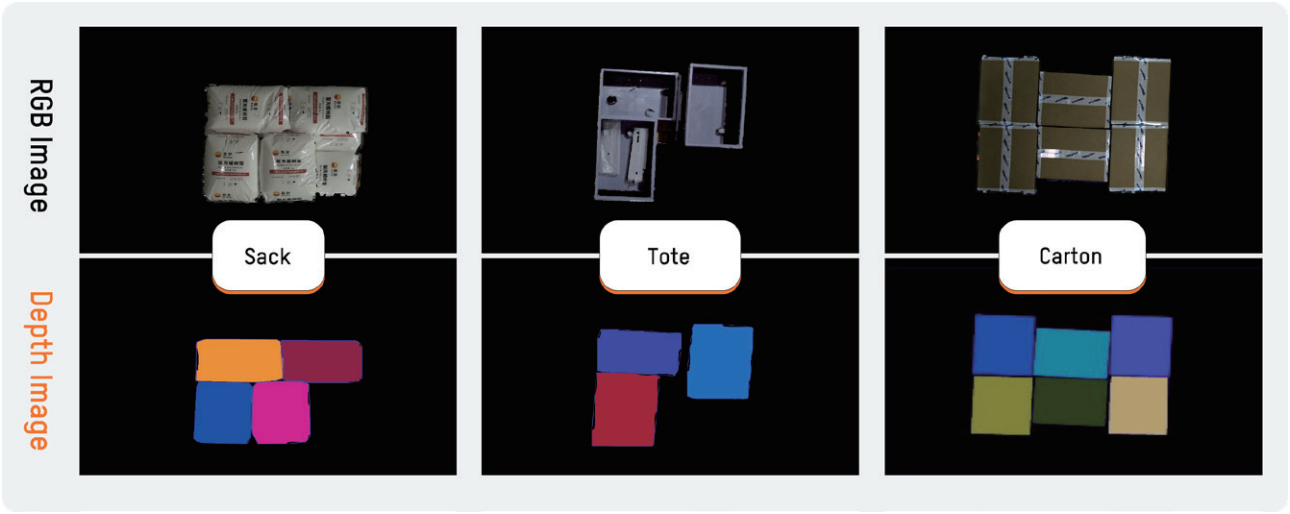
Parcel Singulation



EDP

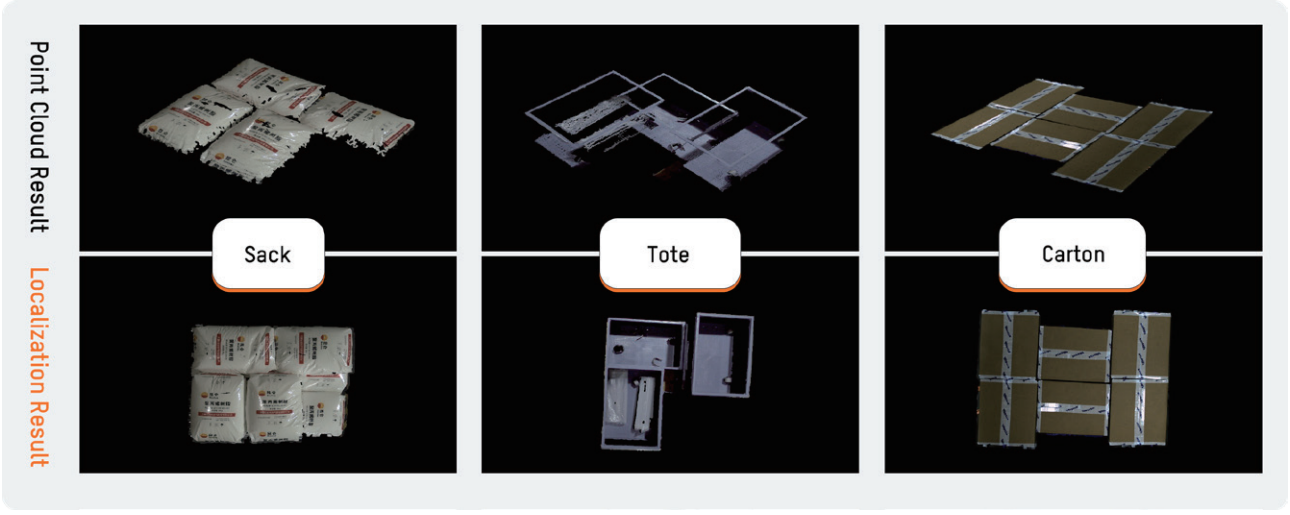
Logistics Speckle Structured Light Stereo Camera for Warehouse

Logistics Speckle Structured Light Stereo Camera for Warehouse adopts binocular stereo matching, ToF (time-of-flight), and galvanometric laser to capture depth image with high completeness and high stability. The camera is designed for logistics industry and applicable for sack, carton, and tote depalletizing



High-quality RGB-D Imaging

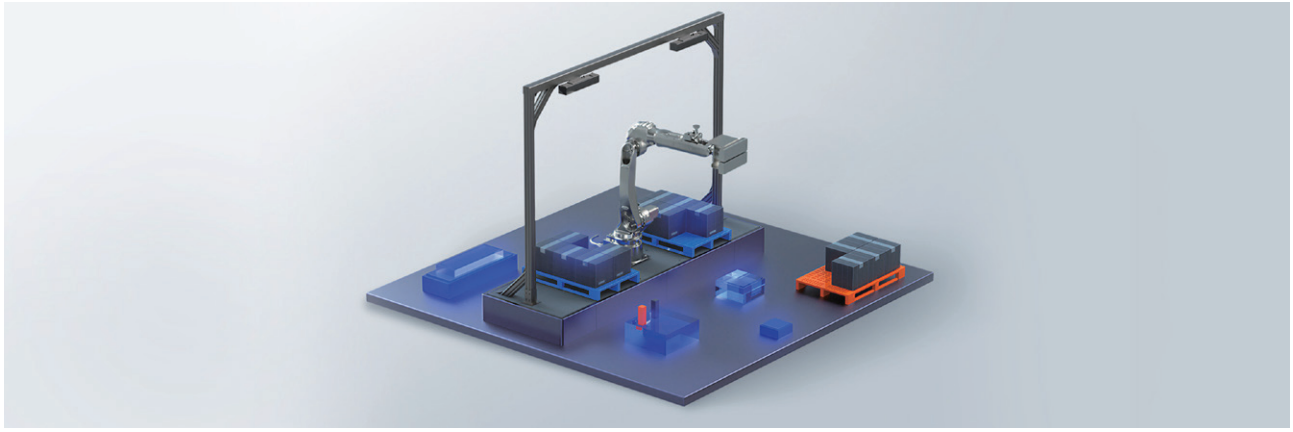
Features large coverage area, high imaging completeness, and aligned RGB images, the camera is adaptable to various materials and highly resistant to ambient light.



High-Precision Intelligent Recognition and Localization

The camera can delivers output high-precision 3D point cloud data, adaptable to complex stacking scenarios by accurately locating the object position, pose, and stacked form. It supports advanced AI model and possesses strong recognition capabilities.





Complete Vision-Guided Depalletizing Solution

Based on the deep integration of 3D vision, AI algorithm, and full-process automation control channel, the solution adopts stereo camera for warehouse paired with high-speed robots. Through RobotPilot MV Guidance Platform, it delivers full-time, highly-efficient, and diversified depalletizing applications.

RGBD 3D Camera for Warehouse Logisitcs

Key Features

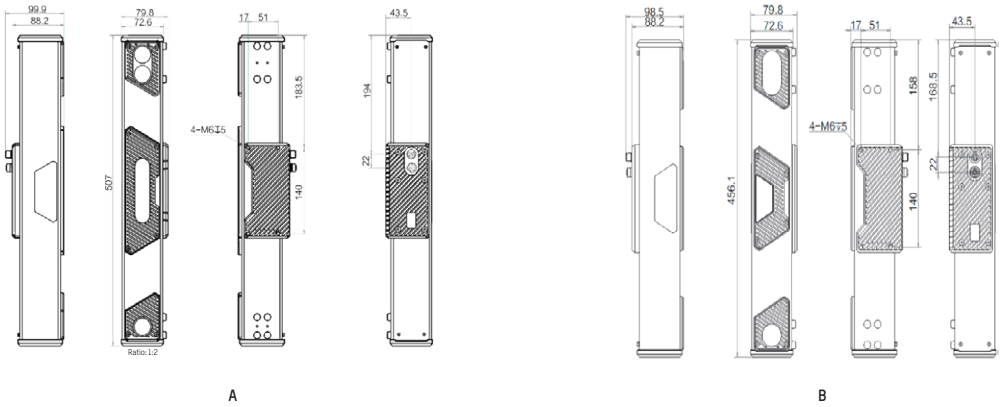
- Designed for warehousing application to cover various precision levels.
- Adopts narrow band filters for stronger anti-interference
- Supports synchronized output of RGB images and depth images.
- Supports RP platform for covenient application.

Specification

Model	Field of view	Working range	Repeatability (Z-axis)	Resolution	Data type	Data interface	Dimension
MV-DB1300A	Near field of view: 870 mm × 860 mm Far field of view: 3340 mm× 2500 mm	1.1 to 3.2 m	1.5 mm @ 2100 mm	Depth: 1536 × 1024 RGB: 3072 × 2048	Original image (mono and color images), depth image, RGB-D image	GigE	A
MV-RS-Base-XL	Near field of view: 1360 mm × 1200 mm Far field of view: 3200 mm × 2800 mm	1.5 to 3.5 m	0.3 mm @ 2500 mm	RGB: 3200 × 2400 Depth: 1440 × 1152	Original image (mono and color images), depth image, RGB-D image	GigE	B

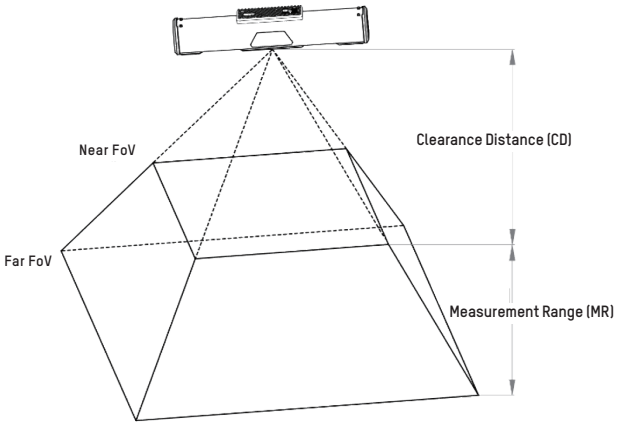
Notice: For cable specifications (including power I/O cables, data transmission cables, etc.), refer to Appendix.

Dimension



Unit:mm

Measurement Range Diagram



Warehouse Logistics Applications

In logistics and industrial automation, depalletizing and palletizing are critical parts in warehousing, manufacturing, and the supply chain. Traditional manual operations have disadvantages of inefficiency, high labor-intensity, and high error rate. Especially when handling mixed, irregular, or multi-SKU pallets, manual processes cannot deliver the speed and precision required by modern production. Automated solutions greatly enhance logistics efficiency, and 3D vision technology represents a breakthrough component of this transformation.



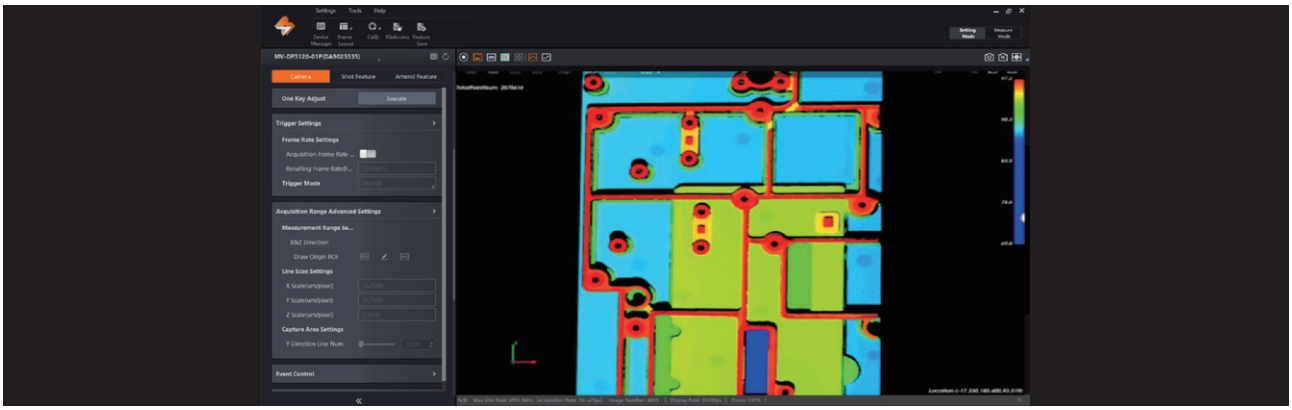
3DMVS Client

3DMVS is an application developed for Hikrobot 3D cameras, compatible with 3D laser profile sensor. Features such as real-time preview, parameter configuration, calibration, data saving, and firmware update are supported on the client. For previewing, the available image types are original image, depth image, profile image, and point cloud image.

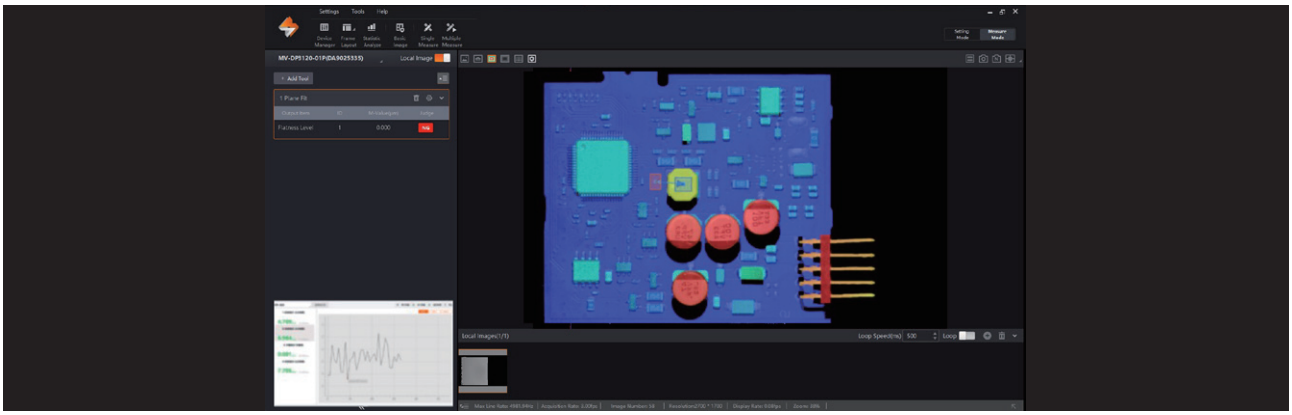
Key Features

- Supports easy installation and operation without the need to install other drivers.
- Provides diverse sample codes, source codes, and development documentation to help users 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).
- Supports streamlined workflow-based parameter configuration for easy operation.
- Supports measurement and data statistics functions for convenient evaluation.

3DMVS



The client interface supports camera connection, parameter configuration, image mode switching, and other functions, delivering clear visual effect.



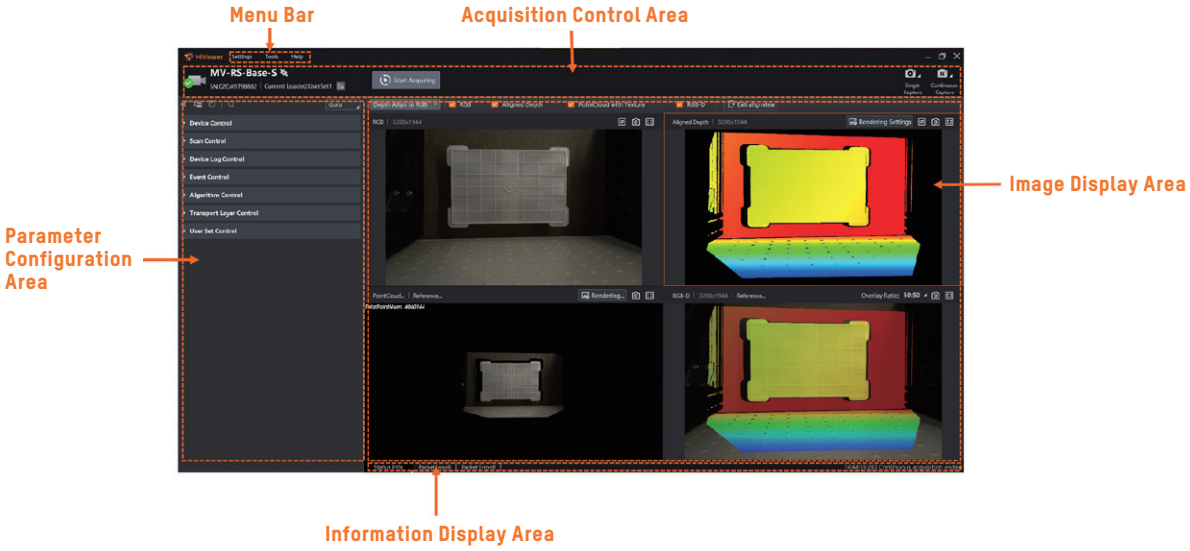
The client integrates 3D measurement function, including flatness and step difference, and supports detection result statistics. The accuracy of the 3D camera can be quickly evaluated by data line charts.

HiViewer Client

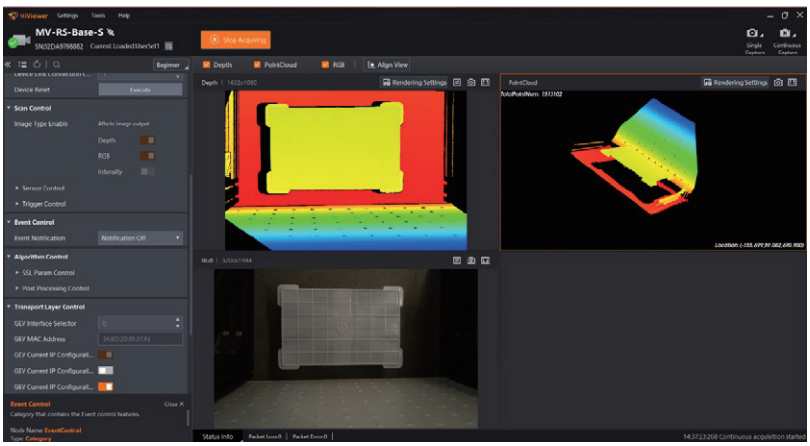
HiViewer is a graphical interface software based on the RGB-D SDK, specifically designed for debugging RGB-D stereo cameras. It is compatible with RGB-D stereo cameras with GigE and USB3.0 interfaces, and integrates multiple functions such as parameter configuration, real-time preview, image saving, and firmware upgrade. You can flexibly adjust camera parameters according to the characteristics of the target object to quickly obtain high-quality color image, depth image, and point cloud data, delivering an efficient and convenient 3D debugging and acquisition experience.

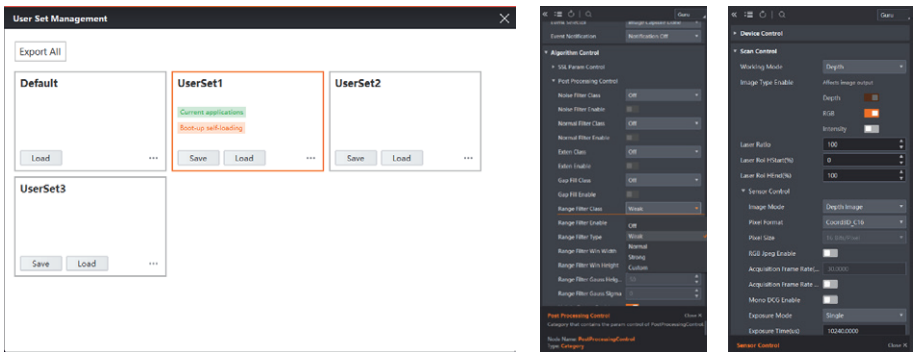
Key Features

- Designed for RGB-D stereo cameras, the software provides a fully optimized interface and interaction design for simple operation and intuitive functions. It supports multi-image preview, allowing simultaneous display of 2D image, depth image, point cloud data, and other image types to present image effects from multiple perspectives. It supports various rendering modes such as color palettes, grayscale, overlay, and texture, with switchable aligned views and rich auxiliary information, delivering intuitive and clear results.

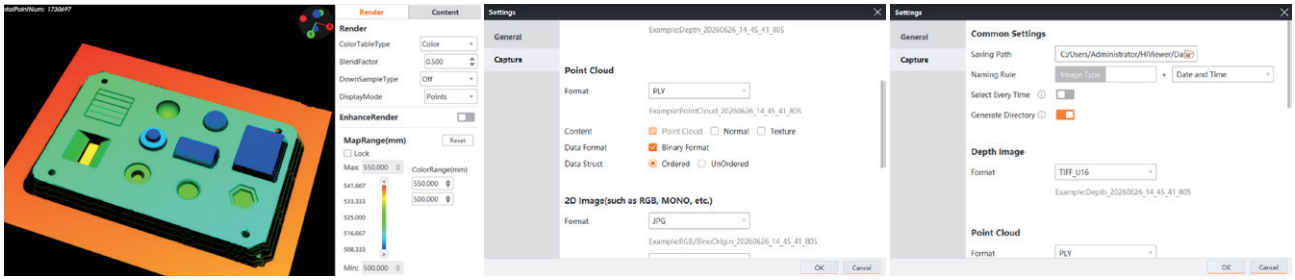


- The software provides three parameter visibility levels (Beginners, Experts, and Master), with progressively increasing complexity of function and parameter. 2D and 3D image configurations are decoupled, and support tiered parameter setting for convenient debugging. Its abundant configurable nodes and powerful post-processing capability enable precise camera calibration. It supports saving multiple parameter configuration sets, ensuring operational convenience and adjustment flexibility.

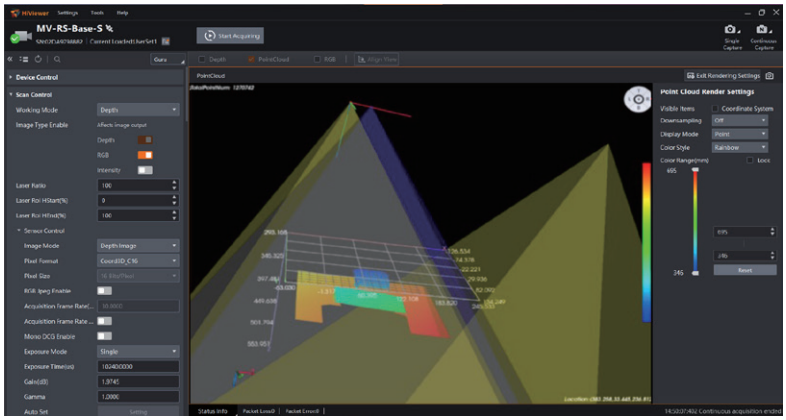




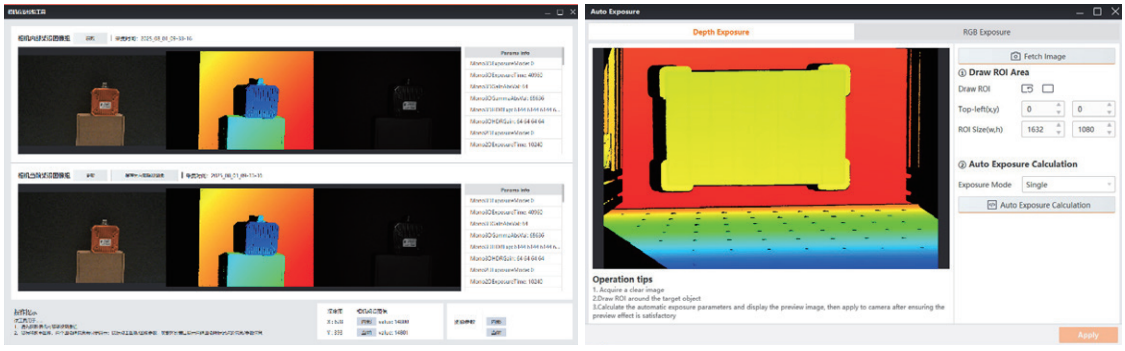
- The software supports multi-platform SDKs and provides abundant sample programs, easy for secondary development. It offers image preview and conversion tools for convenient data saving and interaction, supports saving data in multiple formats, and enables data sharing with RobotPilot and VM3D platforms for smooth debugging.



- Newly added FOV Display feature assists in adjusting the camera mounting position.

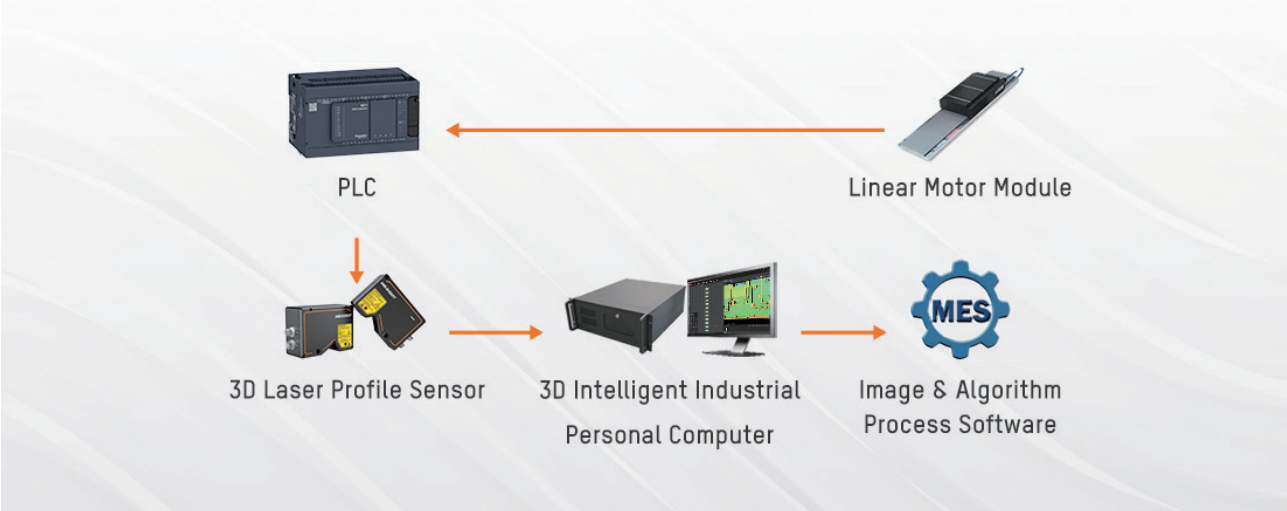


- The software integrates various debugging tools to handle different on-site working conditions, including auto exposure, intrinsic parameter check, and camera pose verification, effectively resolving various issues in camera debugging and application.



VM 3D Algorithm Development Platform

VM 3D Algorithm Development Platform is a platform-level software built for high-precision 3D positioning, measurement, and defect detection. Featuring a graphical, workflow-based editing and visual configuration framework, the platform delivers a feature-rich and easy user experience. The software organizes its features around Hikrobot's multi-category hardware and software, implementing a "2 + N + X" model (2D and 3D solutions + N algorithm function modules + X business scenarios). This provides strong support for the deployment of 3D solutions across diverse applications in industrial automation, achieving multi-dimensional fusion.

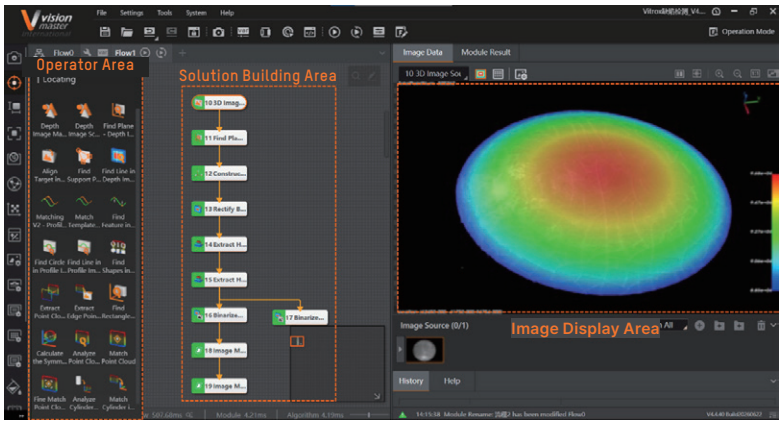


Key Features

- Integrates more than 130 3D operators for codefree and workflow-based solution.
- Supports functions including 3D image acquisition, 3D preprocessing, 3D positioning, 3D locating, 3D measurement, and Posture transformation.
- Combined with 2D functions, delivers a comprehensive "2D + 3D + AI" solution.

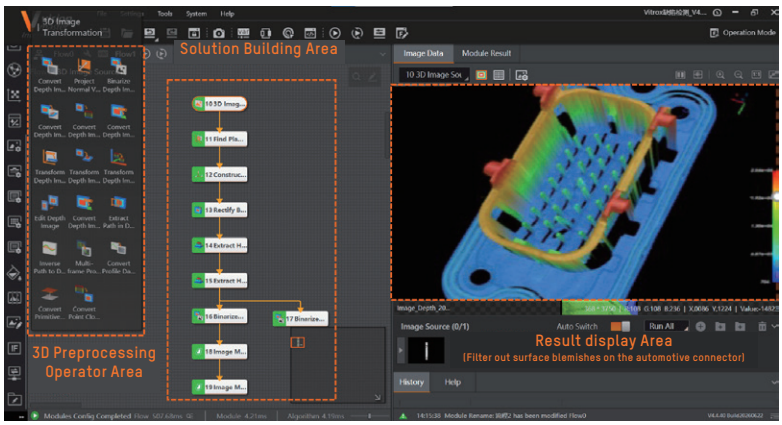


Operator Introduction



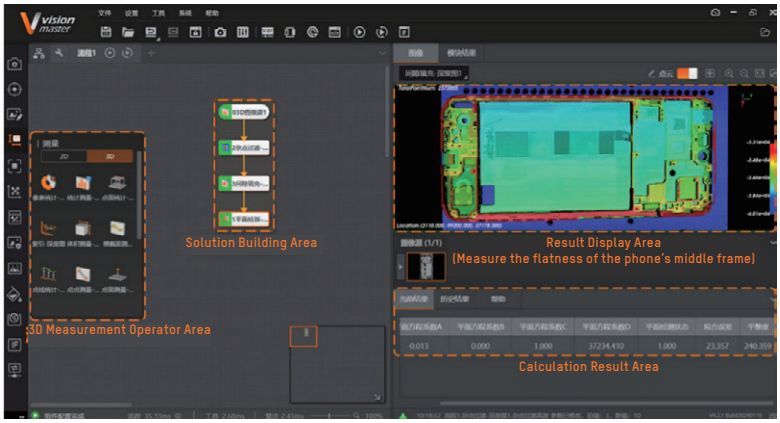
3D Locating Operator

3D Locating Operator can correct image poses to resolve inaccurate feature extraction caused by position deviation of incoming workpieces, enabling precise locating of target.



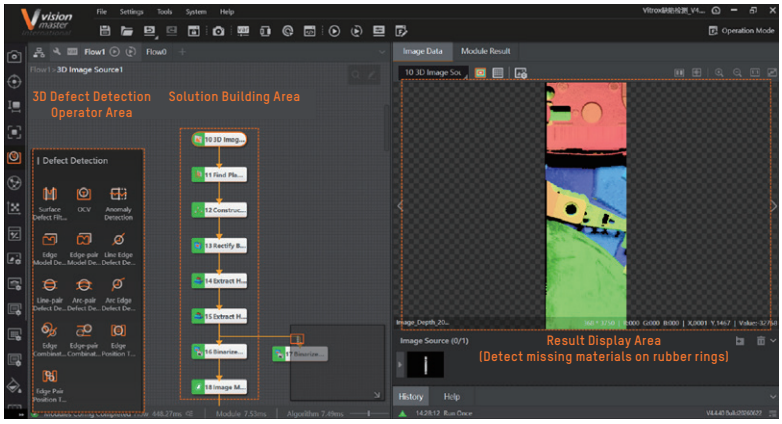
3D Preprocessing Operator

3D Preprocessing Operator can perform functions such as image filtering and filling, resulting in sharper contrast and more distinct defect features.



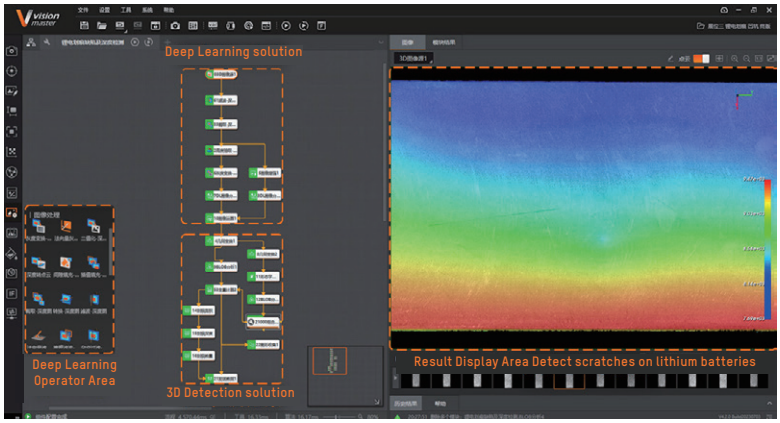
3D Measurement Operator

3D Measurement Operator supports calculation of flatness, step, gap, volume, angle, ect.



3D Defect Detection Operator

3D Defect Detection Operator can identify defects such as pits, blowholes on weld beads, and missing materials on flexible seals.



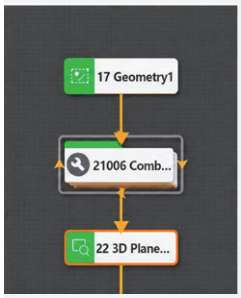
"2D+3D+AI" solution

"2D+3D+AI" solution addresses critical pain points in industry applications.

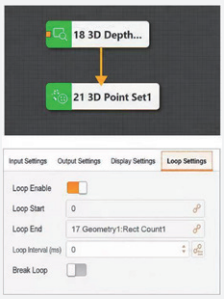
Typical Solutions

Flatness Inspection

1. Create the detection area using geometry algorithm tools.
2. Generate the 3D point set through statistical & measurement algorithm tools.
3. Calculate flatness by fitting a plane to the point set.





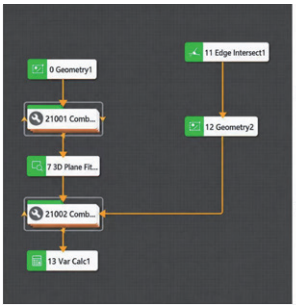


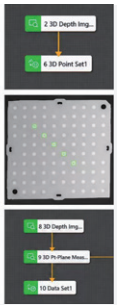
Number	Fit Status	Fit Error	Planarity	Tx	Ty	Tz
0	1	0.9441212	29.02323	-270.0737	87642.52	647.1727

Rx	Ry	Rz	3D Transform Matrix Info
-0.002238619	-0.007617595	0	[0.999971, 0.000017, -0.007618, -270.073691; 0.000000, 0.999997, 0.002239, 87642.519194; 0.007618, -0.002239, 0.999968, 647.172689; 0.000000, 0.000000, 0.000000, 1.000000]

Point-to-Plane Distance Measuremnet

1. Create the detection area using geometry algorithm tools.
2. Generate the 3D point set through statistical & measurement algorithm tools
3. Select the measurement point and get the point-to-plane distance Point-to-Plane Distance through Measurement algorithm tool.





Parameter Name	Current Result
Combination Module2	
Module Status	1;1;1;1;1
Pt-Plane Meas. Set	178.9949;178.9949;199.086;178.9949;199.086;

Level difference measurement

1. Create multiple detection area using geometry algorithm tools
2. Loop through all points with Group module, subscribing the loop count to the number of measurement points.
3. Get distances between multiple points and the fixed point with point-to-point measurement.





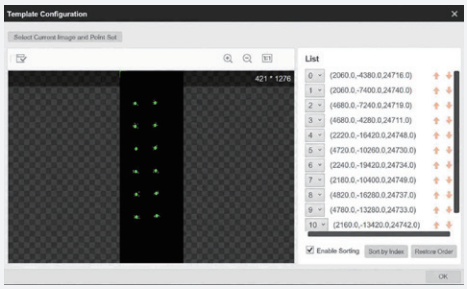
Index	Center X	Center Y	Center Z	Euclidean Dist.	Width (X)	Length (Y)	Height (Z)
0	-6629.192	-24698.090	17090.390	18860.990	10785.620	15423.810	1230.254
1	-6289.192	-24433.090	17141.630	18033.880	10105.620	14893.810	1127.777
2	-5954.192	-24168.090	17151.690	17221.410	9435.616	14363.810	1107.668
3	-5614.192	-23903.090	17140.200	16410.780	8755.616	13833.810	1130.637
4	-5274.192	-23633.090	17122.970	15598.030	8075.616	13293.810	1165.098

Pin Position Detection

1. Get the depth image of the pin tops with normal vector filtering and Height Extraction module.
2. Binarize the depth image and perform Blob analysis.
3. Calculate residuals between the spatial coordinates of the pin tips and the template pins with Array Sorting module.
4. Output all pin position related information with Group module.





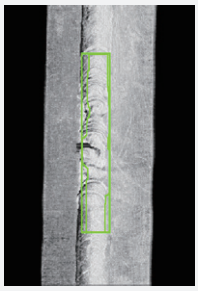


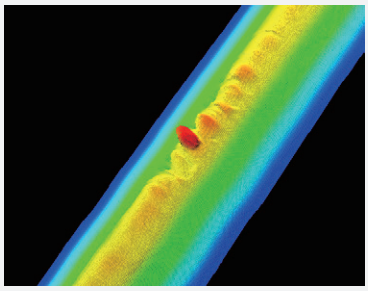
Point Residual Components	
Residual X	-84.62292;-52.26904;38.10498;103.9102;-92.12329;
Residual Y	58.72021;78.86035;-92.6709;64.98682;59.52637;-72
Residual Z	-0.5722656;-10.56055;246.5801;-465.1289;-3.5;239
Residual	103.0021;95.19734;266.1609;481.0047;109.7376;25
Point Index	1;2;3;4;5;6;7;8;9;10;11;12
3D Transformation Matrix	0.017808, 0.999833, 0.004071, -982.686184 0.084862, -0.005568, 0.996377, -305.330520

Weld Defect Defection

1. Adjust the image position with coordinate system construction and reference alignment.
2. Get the contour image with Feature Locating module, build a parabolic model, and perform error fitting with Fitting Difference module.
3. Based on the depth map and luminance image, the processed binarized images are superimposed, morphological image processing is performed, and the defect detection results are output via the blob analysis module.





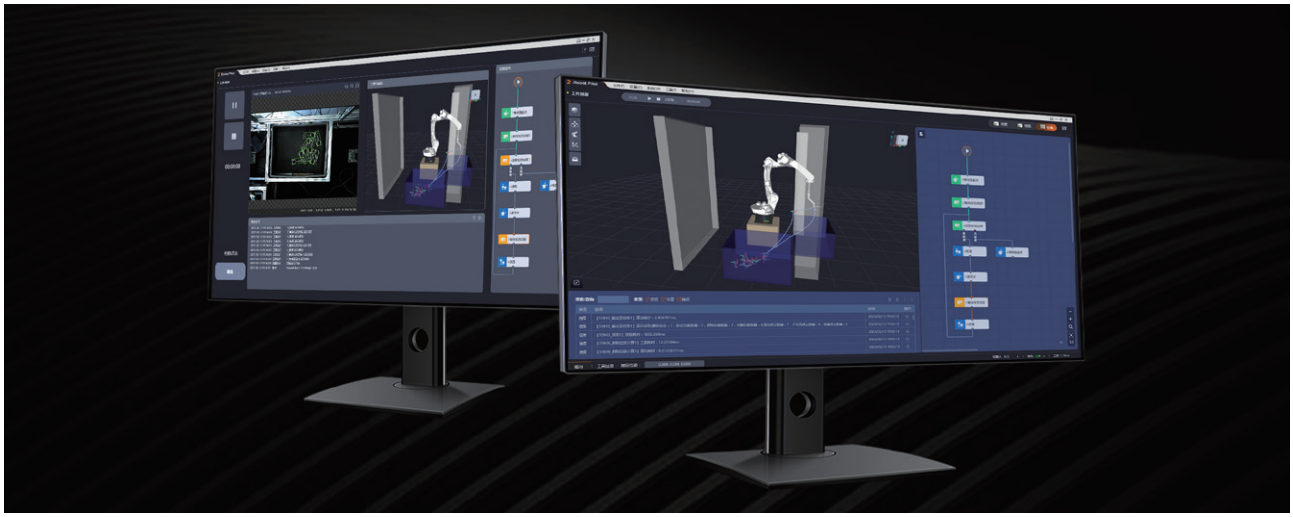


Area	Perimeter	CentroidX	CentroidY	Angle
54852	1465.889	221.0869	2950.447	0

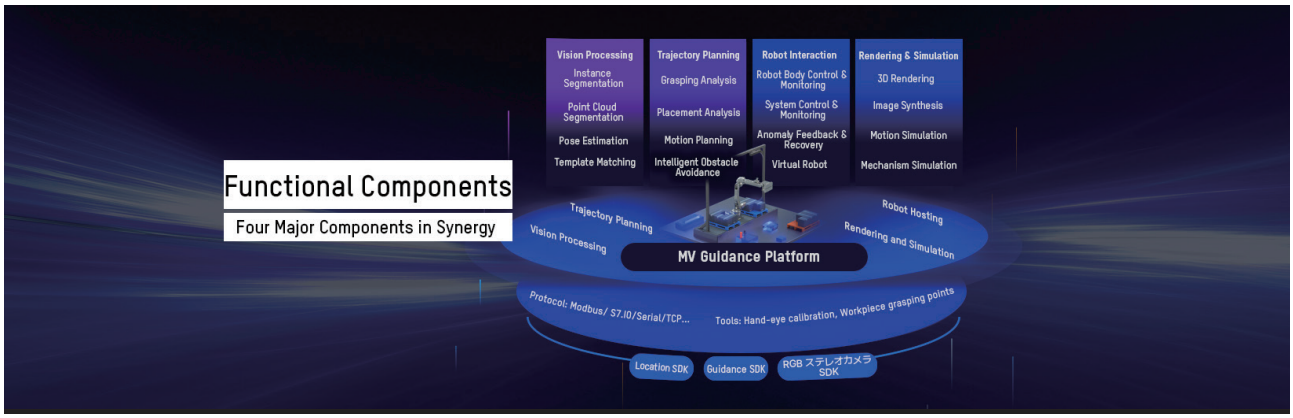
LongAxis	ShortAxis	Circularity	Rectangularity
367	302	0.2770056	0.4949023

RobotPilot MV Guidance Platform

RobotPilot is a comprehensive software platform for visualizing, validating, and deploying automation solutions of vision-guided robot for 3D robot applications. Built on the four functional components of vision processing, trajectory planning, robot interaction, and rendering and simulation work flow, it offers a variety of commonly used tools such as hand-eye calibration, point cloud editor, pallet pattern editor and workpiece grasping. The software applies a graphical programming interface with various typical projects. Users can quickly complete the development and delivery of 3D robot applications without the need for programming skills.



Functional Components



- Vision Processing includes a rich set of typical composite operators for 3D robot applications, such as carton localization, sack localization, and cylinder localization. It also supports the import of VM 3D vision workflows. With extensive basic operators including image preprocessing, template matching, and OCR, Visual Processing module enables the development and delivery of 2D+3D combined Applications.
- Trajectory Planning provides various trajectory planning tools for 3D robot applications, such as pick-and-place analysis (including pose post-processing, collision detection, and pose fitting), trajectory planning, and intelligent obstacle avoidance.
- Robot Interaction supports multiple interaction modes, including protocol interaction, robot hosting, and standard interfaces, enabling vision engineers and robot engineers to deliver 3D robot applications quickly and conveniently.
- Rendering and Simulation provides a realistic digital twin interface for offline development, testing, and verification of 3D robot applications, significantly improving delivery efficiency. It also displays the robot's motion status in real time during operation.

Steps

RobotPilot formulates a six-step deployment method from implementation to delivery, integrating it into the software's design through guided process:



1 Hand-Eye Calibration

Provides intelligent hand-eye calibration tools that support different types of cameras, robot configurations, and application scenarios. Supports various correction and compensation strategies to achieve ultra-high-precision 3D robot applications.

2 Environment Import

Realistically reproduces production scenarios for robot motion simulation and intelligent obstacle avoidance by environment construction methods including importing external digital models, adding simple geometries, and adopting robot teaching.

3 Camera Parameter Setup

Through the built-in camera adjustment module or the client software HiViewer, camera parameters can be quickly adjusted to obtain depth maps and RGB images of high imaging quality.

4 Grasping Pose Setup

Supports various matching methods including contour matching, upper surface point cloud matching, digital model matching, and fused matching. Provides a grasping point registration tool that supports quick registration of grasp points based on workpiece symmetry and rotation margin requirements.

5 Process Setup

Quickly builds the interactive workflow between vision systems and robots using a code-free drag-and-drop approach.

6 Motion Confirmation

Validates the functional performance of the integrated camera- robot workflow through simulation or physical machine environments, and verifies whether the workpiece grasping precision meets operational requirements.

Key Features

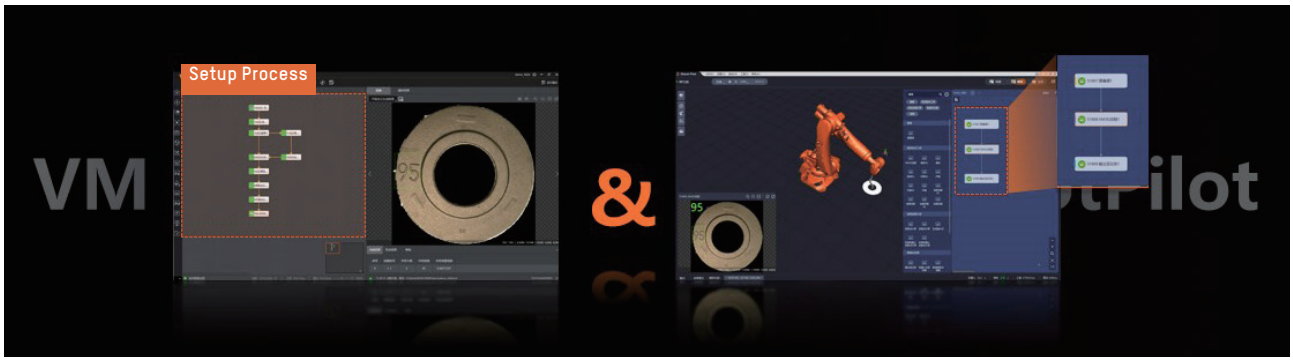
Simple Process, and Easy-to-Build

RobotPilot adopts a graphical programming interface. The development process can be completed through drag-and-drop of modules, reducing the learning cost.



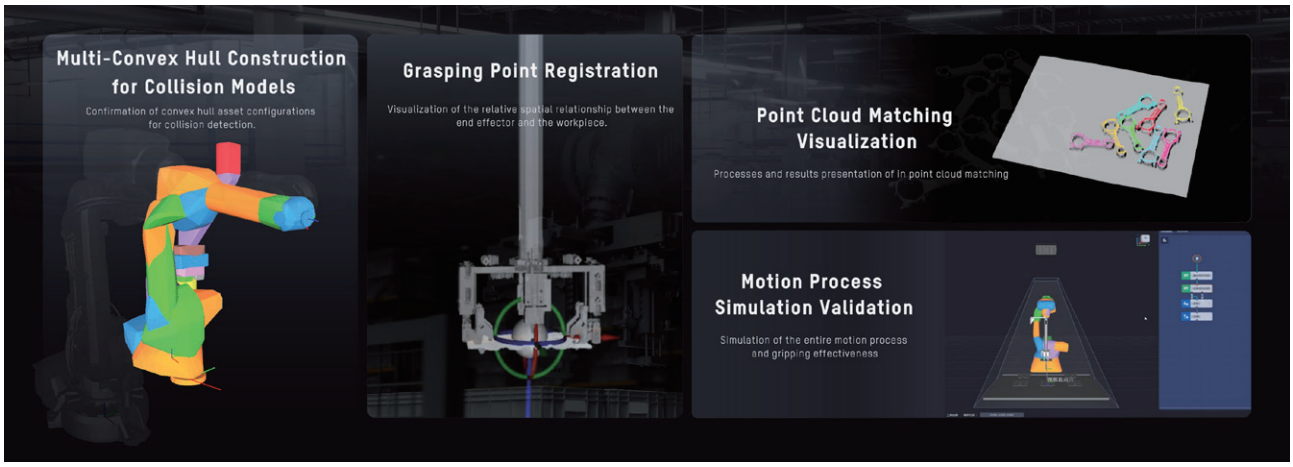
Strong Visual Algorithm Support

Based on the Vision Master Algorithm Development Platform, RobotPilot integrates 3D point cloud processing technology and comprises over 1,000 fully self-developed image processing algorithms along and various interactive development tools. It provides image recognition and processing algorithm support for 3D robot applications.



Visualized Debugging

RobotPilot enables visual and intuitive debugging in multiple stages such as convex hull construction for collision detection, grasp point registration, and point cloud matching, enabling users to verify results against expectations during the debugging process.



Whole Process Simulation

Through digital twin technology, offline development, testing and verification of the 3D product combined with articulated robot can be achieved, significantly reducing the trial and error costs and the cycle of on-site implementation and debugging for its delivery.



Closed-Loop Debugging and Troubleshooting

RobotPilot provides calibration troubleshooting tools, repeated positioning tools, and historical trajectory planning viewing tools in key debugging stages, enabling users to reload and analyze historical data. It allows users to quickly locate issues, improve debugging efficiency, and reduce delivery costs. RobotPilot newly adds system error correction function, which can be used as daily inspection tool or startup initialization check to correct system deviations accumulated during prolonged operation, enhancing equipment stability and maintainability.



Rich Built-in Typical Projects

RobotPilot comes with rich typical 3D robot application projects and robot models of various brands. Users can select the appropriate typical project based on the application scenario and complete the overall debugging and delivery through simple debugging steps.







Robot Interaction

RobotPilot supports multiple interaction modes such as protocol interaction, robot hosting, and standard interfaces, and provides teach pendant programs for mainstream protocols as well as scripts for hosting and standard interfaces. It users to quickly complete communication and interaction tasks for 3D robot applications.

ROKAE INOVANCE EPSON EXCEED YOUR VISION UNIVERSAL ROBOTS

Kawasaki NACHI STÄUBLI EFORT

Note: For unmarked brands, please contact our technical support for consultation.

Appendix

Accessories

High-Precision Measurement

IO Cable			Applicable Series			
			3D Laser Profile Sensor		3D Structured Light Sensor	
			High-Flex	Super-Flex	High-Flex	Super-Flex
M12 12PIN Aviation Head Cable	Straight	3M	√	√	√	√
		5M	√	√	√	√
		10M	√	√	√	√
		15M	√	√	√	√
		25M	√	√	√	√
		50M	√	×	√	×
	Angled	3M	√	√	√	√
		5M	√	√	√	√
		10M	√	√	√	√
		15M	√	√	√	√
		25M	√	√	√	√
		30M	×	√	×	√

Data Cable			Applicable Series			
			3D Laser Profile Sensor		3D Structured Light Sensor	
			High-Flex	Super-Flex	High-Flex	Super-Flex
M12 8PIN Aviation Head Cable	Straight	3M	√	√	√	√
		5M	√	√	√	√
		10M	√	√	√	√
		15M	√	√	√	√
		25M	√	√	√	√
		50M	√	×	√	×
	Angled	3M	√	√	√	√
		5M	√	√	√	√
		10M	√	√	√	√
		15M	√	√	√	√
		25M	√	√	√	√
		30M	×	√	×	√

Power Adapter		
Model	Type	Max. Power Consumption
Desktop DC Adapter_24V2.5A_national standard_open cable outlet_1.2M	Desktop DC Adapter	Max 60W
Industrial Power Supply_24V2A_220VAC input_24VDC output_terminal blocks	Industrial Power Supply	Max 50W

Vision-Guided Robotic Grasping

IO Cable			Applicable Series					
			RC Series		RS Series		DB Series	
			High-Flex	Super-Flex	High-Flex	Super-Flex	High-Flex	Super-Flex
M12 12PIN Aviation Head Cable	Straight	3M	√	×	√	×	√	×
		5M	√	√	√	√	√	√
		10M	√	×	√	×	√	×
		15M	√	√	√	√	√	√
		25M	√	×	√	×	√	×
		30M	√	√	√	√	√	√
	Angled	3M	√	×	√	×	√	×
		5M	√	√	√	√	√	√
		10M	√	×	√	×	√	×
		15M	√	√	√	√	√	√
		25M	√	×	√	×	√	×
		30M	×	√	×	√	×	√

Data Cable			Applicable Series					
			RC Series		RS Series		DB Series	
			High-Flex	Super-Flex	High-Flex	Super-Flex	High-Flex	Super-Flex
M12 8PIN Aviation Head Cable	Straight	3M	√	×	√	×	√	×
		5M	√	√	√	√	√	√
		10M	√	×	√	×	√	×
		15M	√	√	√	√	√	√
		25M	√	×	√	×	√	×
		30M	√	√	√	√	√	√
	Angled	3M	√	×	√	×	√	×
		5M	√	√	√	√	√	√
		10M	√	×	√	×	√	×
		15M	√	√	√	√	√	√
		25M	√	×	√	×	√	×
		30M	×	√	×	√	×	√

Power Adapter		
Model	Type	Max. Power Consumption
Industrial Power Supply_24V2A_220VAC input_24VDC output_terminal blocks	Industrial Power Supply	Max 50W

Calibration Plate	Applicable Scenario		
	Small FOV	Medium FOV	Large FOV
Photoplotted Checkerboard Hand-Eye Calibration Plate	×	√	√
Photoplotted Checkerboard Hand-Eye Calibration Plate (Small)	√	×	×
Carbon Fiber Checkerboard Hand-Eye Calibration Plate	×	√	√
Aluminum-backed Checkerboard Calibration Plate	×	√	√

Logistics

I/O Cable			Applicable Series				
			DB Series (whithout DB05SME)		DT Series	Warehousing Series	DL Series
			Static		High-Flex	High-Flex	Static
M12 12PIN Aviation Head Cable	Straight	3M	×	√	√	√	√
		5M	×	√	√	√	√
		7M	×	√	√	√	√
		10M	×	√	√	√	√
		15M	×	√	√	√	√
		30M	×	√	√	√	√

Data Cable			Applicable Series				
			DB Series (whithout DB05SME)		DT Series	Warehousing Series	DL Series
			Static	High-Flex	High-Flex	High-Flex	Static
M12 8PIN Aviation Head Cable	Straight	3M	√	√	√	√	√
		5M	√	√	√	√	√
		7M	√	√	√	√	√
		10M	√	√	√	√	√
		15M	√	√	√	√	√
		30M	√	√	√	√	√

Power Adapter	Type	Output Power	Applicable Series			
			DB Series	DT Series	Warehousing Series	DL Series
Industrial Power Supply_12V4.2A	Industrial Power Supply	Max 50W	√	×	×	×
Industrial Power Supply_24V2A_220VAC input_24VDC output_terminal blocks	Industrial Power Supply	Max 50W	√	√	√	√

Model	Calibration Target	Applicable Scenarios
MV-3DC-T60K-0808	52 mm Calibration Plate	EDP
MV-3DC-T80B-5012	V036-System Calibration Cloth	Singlulation
MV-3DC-T40B-5012	V-007-Calibration Cloth-2000x480-40x40	Narrow Band Singlulation
MV-3DC-T1000B-0101	V-007-Adhesive Calibration Cloth-1000x1000-50x50	Volume Measurement

Parameter Definition

Frame rate

The number of frames per second tranmitted, in fps units.

Reference distance/Clear distance

The minimum distance between the measured object and the device when it is within the measurement range.

If the distance between the measured object and the device is less than this value, valid data will not be obtained.

Measurement range

The depth range that can be measured by the device.

If the measured object is not in the measurement range, valid data will not be obtained.

Near FOV

The size of the field of view corresponding to the nearest end of the measurement range from the device.

Far FOV

The size of the field of view corresponding to the farthest end of the measurement range from the device.

X-axis resolution

The distance of adjacent profile points in single profile data, and it is determined by the field of view and single profile point quantity.

Z-axis resolution

It is the fixed height position within the measurement range, and the min. height difference that the device can detect. This parameter is determined by the device installation position and algorithm accuracy.

Z-axis repeatability

In the measurement range, the same target area is repeatedly measured, and the max. deviation value of measurement result is repeated accuracy. This parameter reflects the measurement stability performance of the device.

Linearity Z-axis

It indicates the deviation between the measured value and the true value of the measured object within the measurement range. This parameter reflects the absolute measurement capability of the device.

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HIKROBOT

China Headquarters:
No. 630, Qizhi Street, Binjiang District, Hangzhou,
Zhejiang Province, China

South Korea Headquarters:
F4, Pangyo Yemiji Building, 14-1, Pangyoyeok-ro
192 Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea

Pan-Asia-Pacific Headquarters:
2 Venture Drive, Vision Exchange, #07-22, 608526,
Singapore

Europe Headquarters:
Dirk Storklaan 3, 2132 PX Hoofddorp, Netherlands

Website: Hikrobotics.com
Email: Info@hikrobotics.com

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