VMD03-8521C\VMD03-8521 Specifications

Technical Specifications

Parameters	Value
3D sensing technology	Active stereo + structured light with fringe patterns
Laser wavelength	635 nm (Red)
Latency of image acquisition[1]	Quality mode: approx. 2749 ms Standard mode: approx. 2405 ms Fast mode: approx. 1891 ms
Frame rate[2] @ resolution (Depth)	**Quality mode** : 0.63 fps @ 2048 x 1536 0.63 fps @ 1024 x 768 0.63 fps @ 512 x 384 **Standard mode** : 0.76 fps @ 2048 x 1536 0.76 fps @ 1024 x 768 0.76 fps @ 512 x 384 **Fast mode**: 0.99 fps @ 2048 x 1536 0.99 fps @ 1024 x 768 0.99 fps @ 512 x 384
Frame rate[3] @ resolution (RGB)	5 fps @ 2560 x 1920 @ YUYV 7 fps @ 2560 x 1920 @ CSI BAYER12GBRG 9 fps @ 1920 x 1440 @ YUYV 15 fps @ 1280 x 960 @ YUYV 15 fps @ 640 x 480 @ YUYV
RGB-D alignment	VMD03-8521C: Supported VMD03-8521: Not Supported
Output data[4]	VMD03-8521C: Depth, RGB, grayscale, point cloud images VMD03-8521: Depth, grayscale, point cloud images

[1] Latency of image acquisition: the latency time between the host computer sending the software trigger signal and receiving depth images (with a resolution of 2048 x 1536) from the camera when the camera works in software trigger mode, measured under three PreSetMode settings: Quality, Standard, and Fast.

[2] Frame rate of depth images: the number of depth images that the host computer receives every second from the camera when the camera works in continuous capture mode, measured under three PreSetMode settings: Quality, Standard, and Fast.

[3] Frame rate of RGB images: the number of RGB images that the host computer receives every second from the camera when the camera works in continuous capture mode.

[4] Output data: VMD03-8521 does not have an RGB sensor and therefore does not support RGB image output.

Measurement Performance

Measurement Range & FOV

Parameters	Value
Working distance	Quality mode: 850 mm ~ 2100 mm Standard mode: 850 mm ~ 2100 mm Fast mode: 1000 mm ~ 2000 mm
Near field of view	796 mm x 646 mm @ 850 mm (H/V ≈ 50°/42°)
Field of view @ optimal working distance	1138 mm x 898 mm @ 1190 mm (H/V ≈ 51°/41°)
Far field of view	1805 mm x 1574 mm @ 2100 mm (H/V ≈ 47°/41°)
XY point-to-point distance[5] @ optimal working distance	0.6 mm @ 1190 mm

[5] XY point-to-point distance: the actual physical distance corresponding to the spacing between pixels in the depth image (unit: mm).
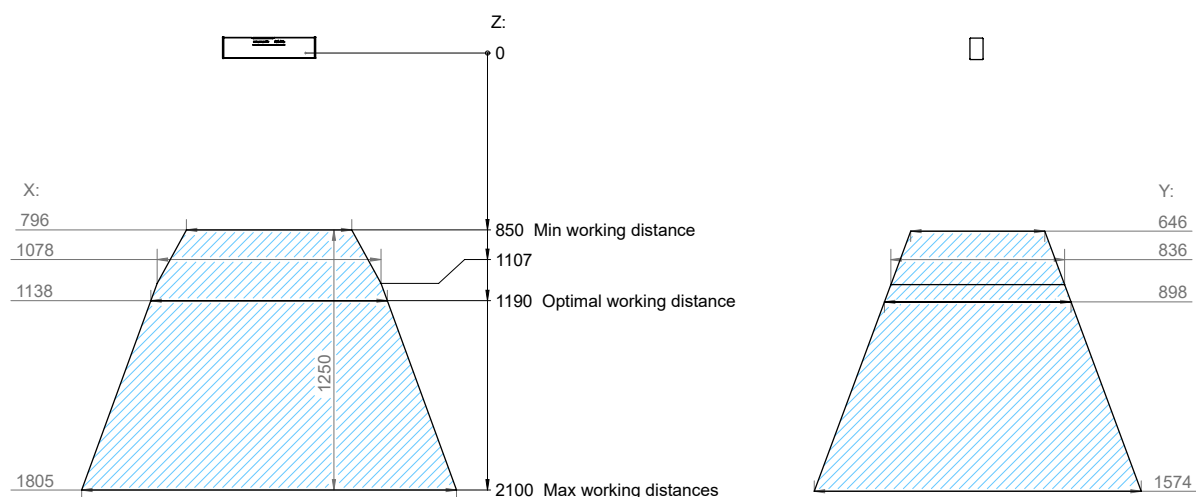

Figure 1   FOV (unit: mm)

## Performance Evaluation Metrics

Parameters	Descriptions
Z-axis accuracy	The dispersion of measured depth values from the true distance in the Z-direction.
Point precision	The degree of oscillation of depth values for all pixel points in the central region of the field of view over time.
Planarity	The dispersion of all pixel points in the central ROI relative to the desired plane.

The line charts below illustrates the measured distribution ranges of Z-Axis Accuracy, Point Precision, and Planarity under three different PreSetMode settings: Quality, Standard, and Fast. The horizontal axis represents the distance values, with the unit in millimeters (mm).
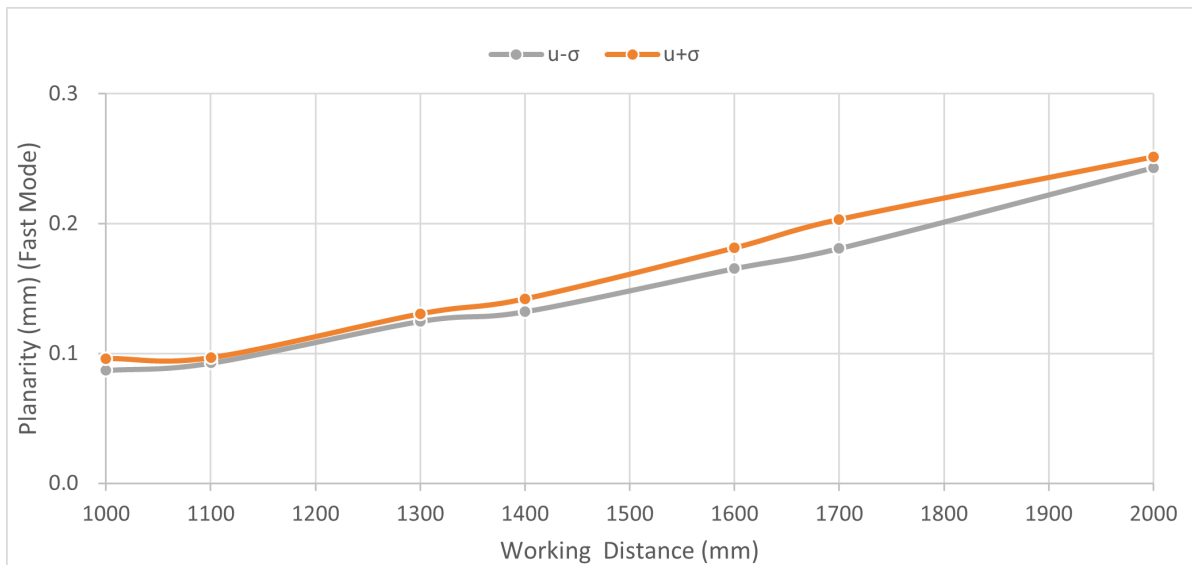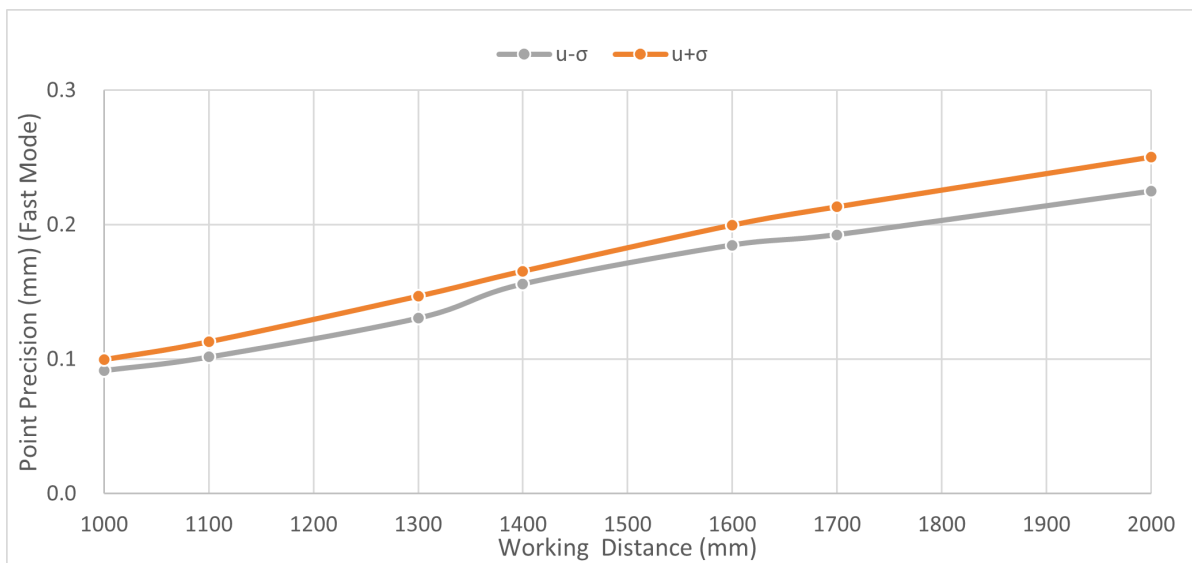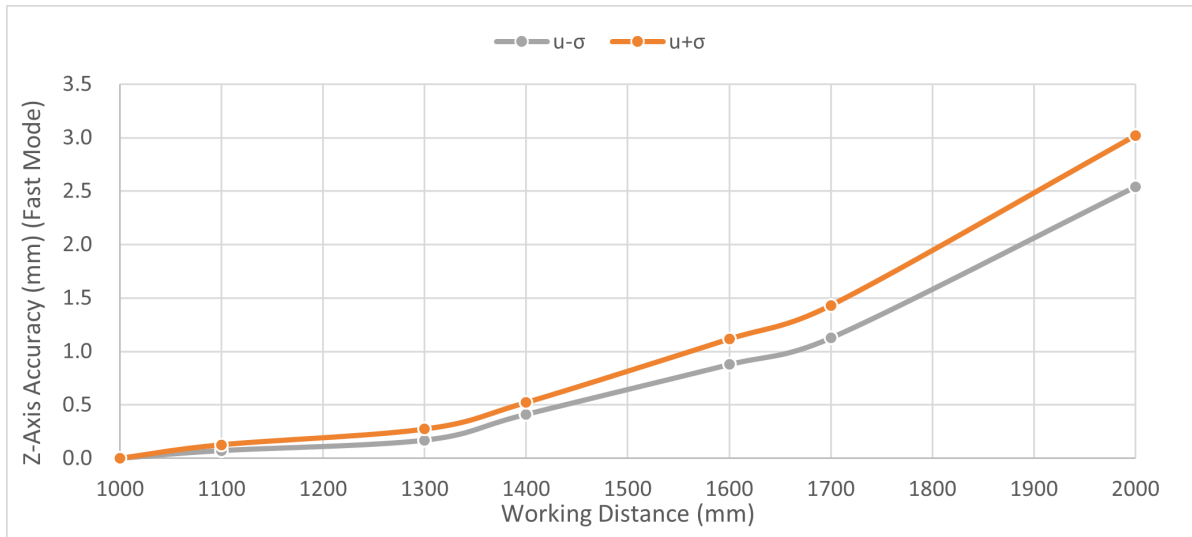
Quality Mode
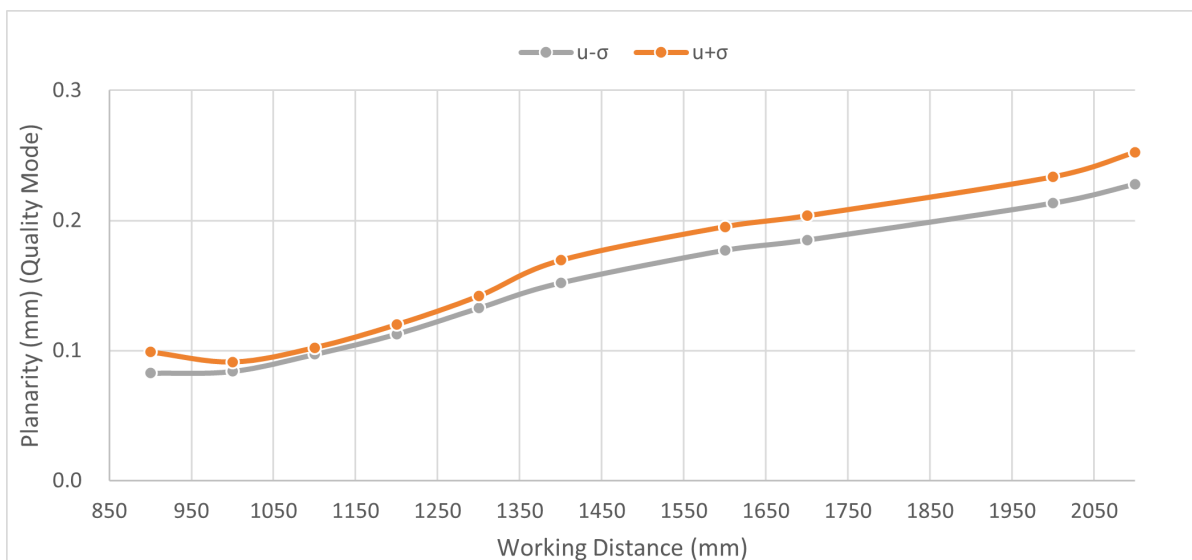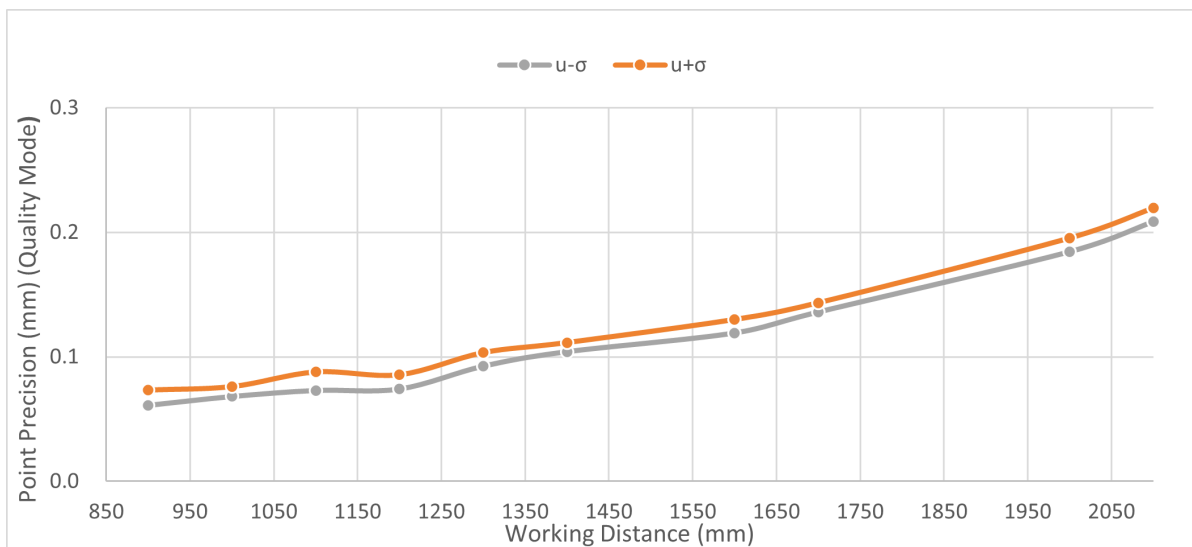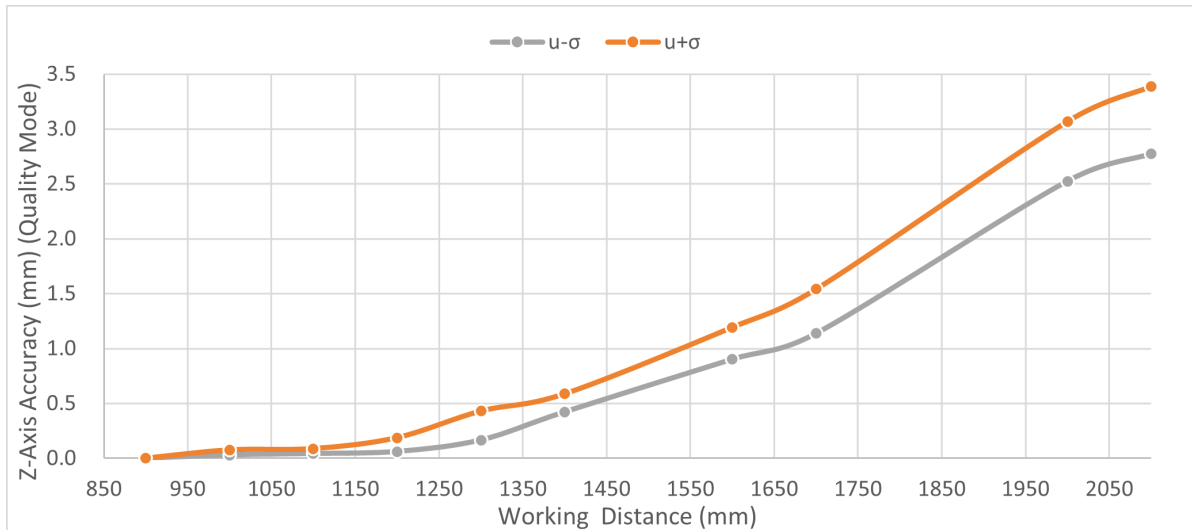
Standard Mode
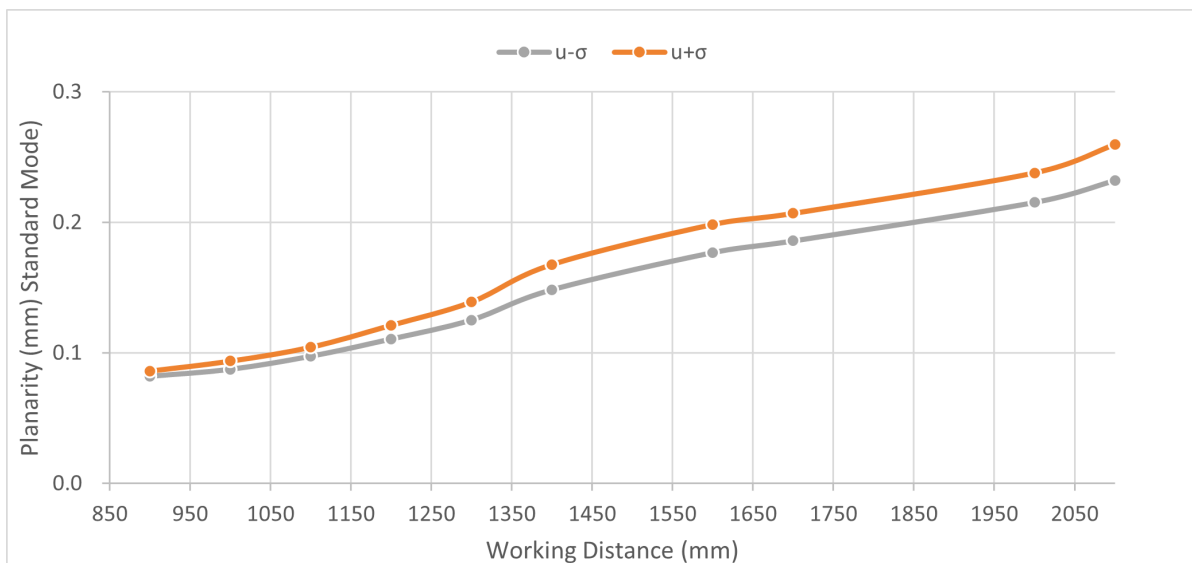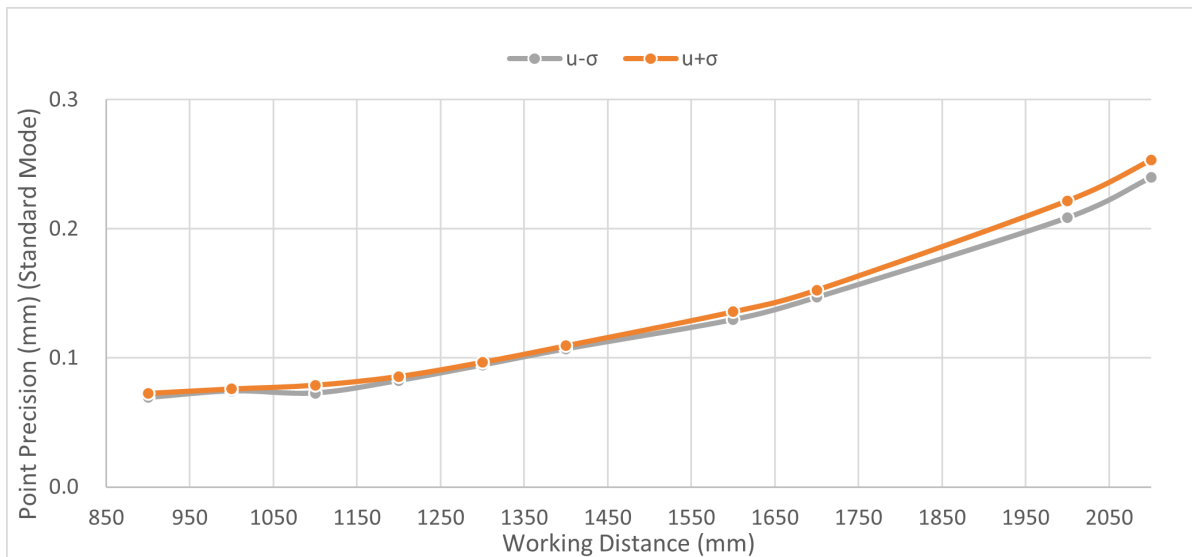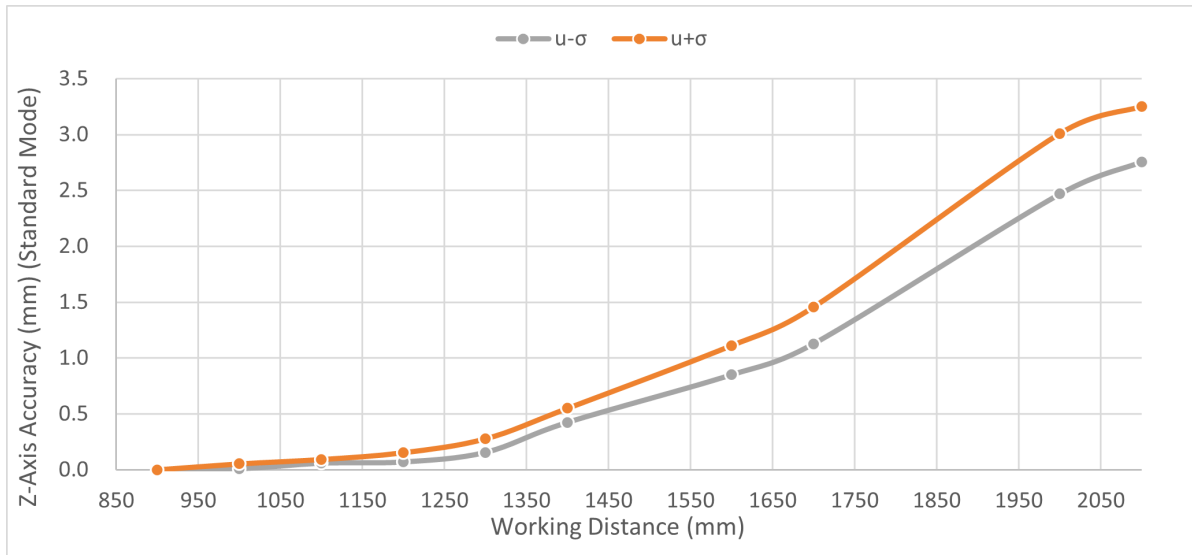
Fast Mode

Software Specifications

Parameters	Value
Host somputer OS	Linux/Windows/ROS
SDK	Percipio Camport SDK;Supported programming language: C/C++, C#, Python; See Percipio Technical Documentation for more SDK tutorials.
SGBM parameters	The SGBM parameters will influence the measurement performance of the camera. For the settings of SGBM parameters, see SGBM Features.

Hardware Specifications

Parameters	Value
Dimensions (incl. connectors)	449 mm x 104 mm x 64 mm
Weight	2307 g
Power & trigger connector	M12 A-Code, 8-pin, male connector. See Power & Trigger Connector for its pinout.
Data connector	M12 X-Code, 8-pin, female connector, Gigabit Ethernet
Power supply	DC 24 V ~ 48 V
Hardware trigger	Supports 2 hardware trigger channels: Input/Output 1 (rising-edge), Input/Output 2 (falling-edge).
Power consumption	≤ 24 W
Housing material	Aluminum alloy
Ingress protection	IP65
Thermal dissipation	Passive[6]
Temperature	Recommended operating temperature: 22 ℃ ~ 25 ℃; Operating temperature: 0 ℃ ~ 40 ℃; Storage temperature: -10 ℃ ~ 55 ℃
Laser safety	Class 2 (IEC 60825-1:2014)

[6] The camera housing has a heat dissipation function. Do not cover it to avoid overheating. Additionally, ensure good ventilation and air flow during installation. Choose a metal mounting surface with good thermal conductivity to contact with the camera, and place the camera in a stable temperature environment.
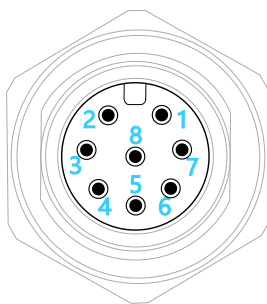
Power & Trigger Connector


Figure 2   Pinout of the power & trigger connector

Pin No.	Name	Description
1	TRIG_OUT 1	Trigger output signal 1 [rising-edge]
2	P_24V	DC 24 V ~ 48 V power (camera)
3	P_GND	GND (camera)
4	TRIG_POWER	DC 11.4V ~ 25.2V power (trigger circuit)
5	TRIG_GND	GND (trigger circuit)
6	TRIG_IN 2	Trigger input signal 2 [falling-edge]
7	TRIG_IN 1	Trigger input signal 1 [rising-edge]
8	TRIG_OUT 2	Trigger output signal 2 [falling-edge]

Trigger Circuit Schematic Diagram

The camera supports two channels of hardware trigger input/output, specifically rising-edge and falling-edge triggers. The trigger circuit schematic diagrams are shown as follows (The resistance at point A is 10kΩ).

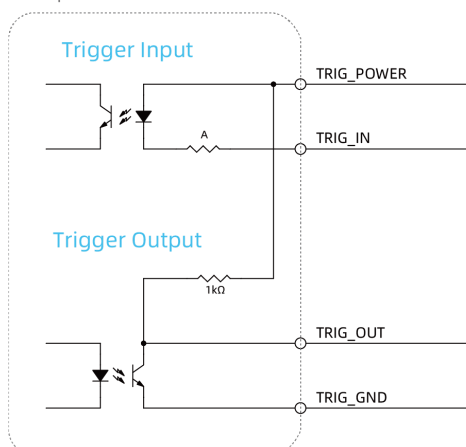For details about hardware connection, see Percipio Technical Documentation.
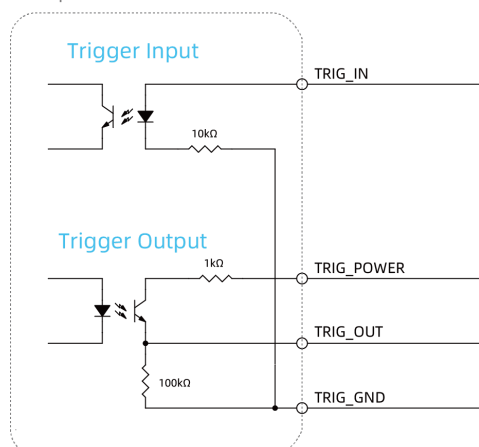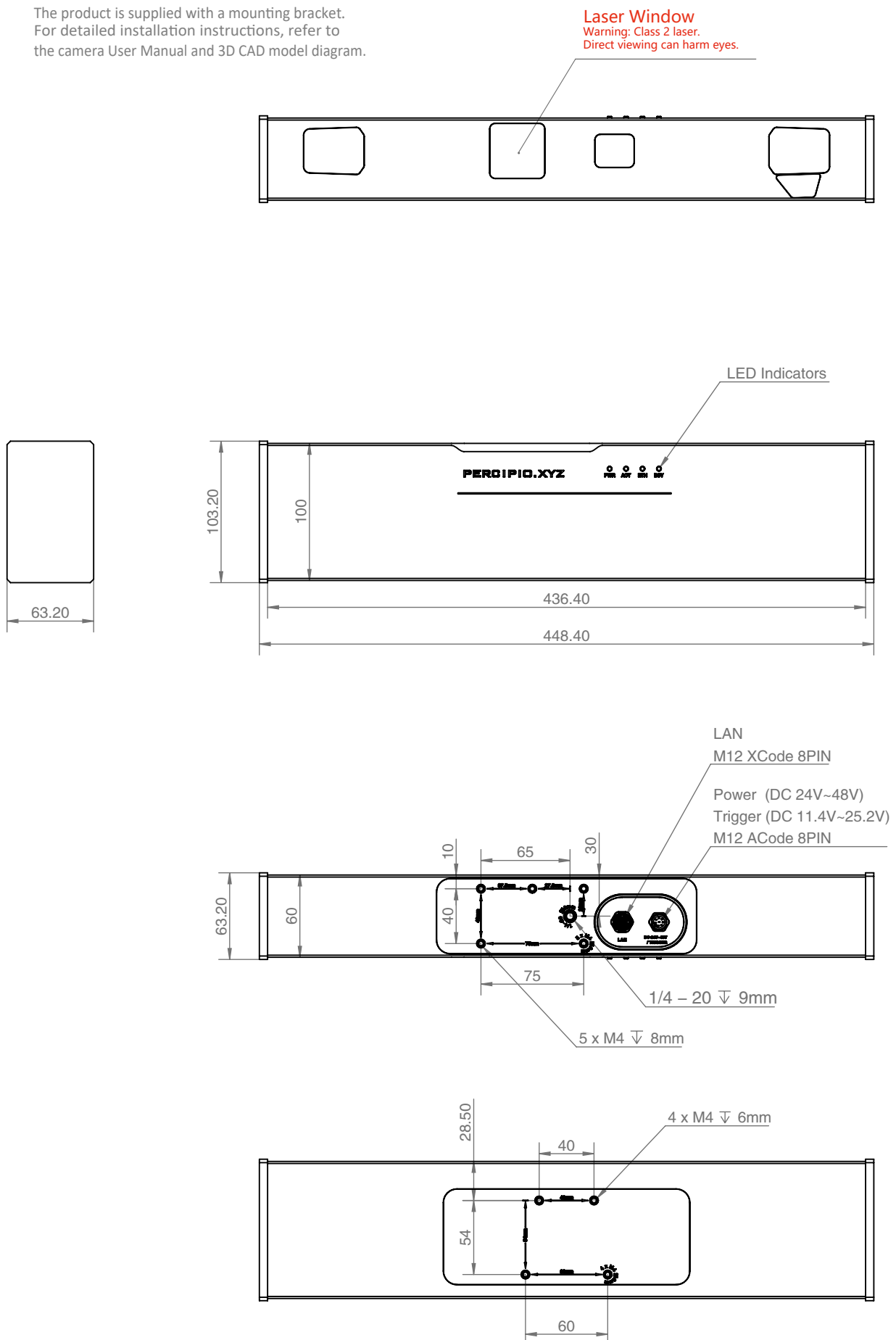

Figure 3   Trigger Circuit Schematic. Left: Rising-edge trigger; Right: Falling-edge trigger.

Mechanical Dimensions

Note:
The product is supplied with a mounting bracket.
For detailed installation instructions, refer to
the camera User Manual and 3D CAD model diagram.

Laser Window
Warning: Class 2 laser.
Direct viewing can harm eyes.

LED Indicators

PERCIPIO.XYZ

103.20
100
63.20
436.40
448.40

LAN
M12 XCode 8PIN

Power (DC 24V~48V)
Trigger (DC 11.4V~25.2V)
M12 ACode 8PIN

10
65
30
63.20
60
40
75
1/4 – 20 ⩒ 9mm
5 x M4 ⩒ 8mm

28.50
4 x M4 ⩒ 6mm
40
54
60

Figure 4   VMD03-8521C\VMD03-8521 mechanical dimensions (unit: mm)

Percipio.XYZ is an industry leading provider of 3D cameras. We provide a broad range of 3D camera products to meet requirements from various applications, such as industrial, automotive, inspection, logistics, medical, education, security and commercial etc. We will continue to develop and optimize our product roadmap to support more 3D vision applications.

Percipio is an independent vendor of 3D machine vision solutions. We provide products and services to system integration customers rather than end users. This marketing strategy allows us to serve multiple sectors and segments, and also means that our success will be based on our customer's success. Together with our customer's industry specific expertise, we can support end users with implementing machine intelligence, which will improve productivity and/or reduce cost.

Affordable 3D Machine Vision

YouTube