



## VMD02-4070 Specifications



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## Technical Specifications

GXiXd \Kij	MXd \
3D sensing technology	Active stereo + structured light with fringe patterns
Laser wavelength	635 nm (Red)
Latency of image acquisition <sup>1</sup>	Quality mode: approx. 2697 ms Standard mode: approx. 2337 ms Fast mode: approx. 1882 ms
Frame rate <sup>2</sup> @ resolution (Depth)	<b>Quality mode :</b> 0.63 fps @ 2048 x 1536 0.63 fps @ 1024 x 768 0.63 fps @ 512 x 384  <b>Standard mode :</b> 0.76 fps @ 2048 x 1536 0.76 fps @ 1024 x 768 0.76 fps @ 512 x 384  <b>Fast mode:</b> 1.05 fps @ 2048 x 1536 1.05 fps @ 1024 x 768 1.05 fps @ 512 x 384
Output data	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.

# Measurement Performance

## Measurement Range & FOV

Parameters	Value
Working distance	400 mm ~ 700 mm
Near field of view	352 mm x 307 mm @ 400 mm (H/V $\approx 47^\circ/42^\circ$ )
Field of view @ optimal working distance	469 mm x 375 mm @ 490 mm (H/V $\approx 51^\circ/41^\circ$ )
Far field of view	675 mm x 532 mm @ 700 mm (H/V $\approx 51^\circ/42^\circ$ )
XY point-to-point distance <sup>3</sup> @ optimal working distance	0.25 mm @ 490 mm

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

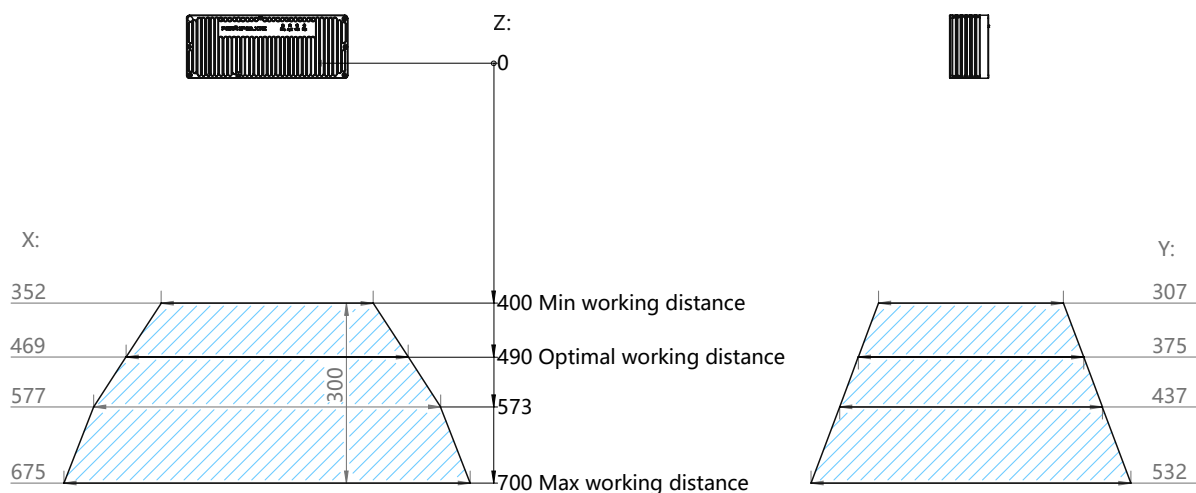


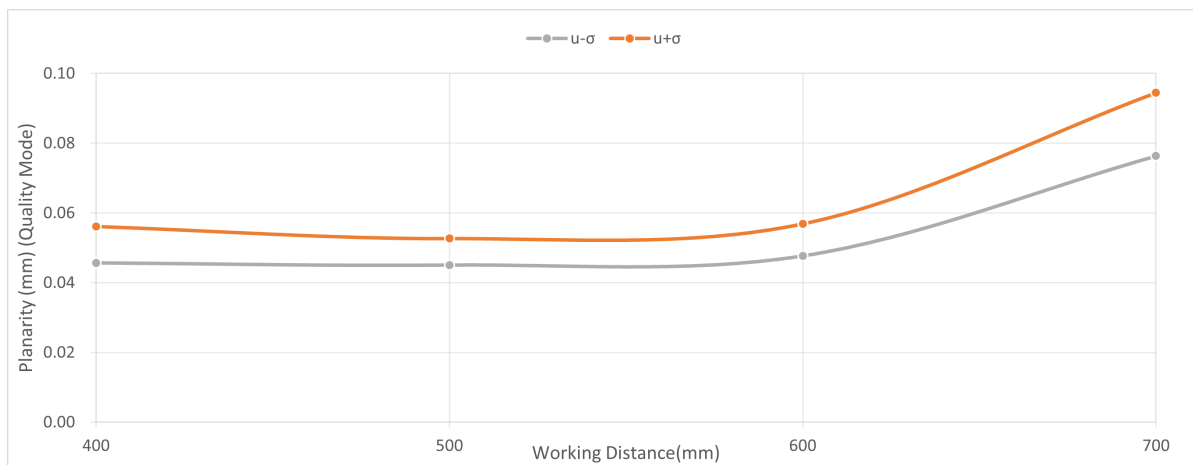
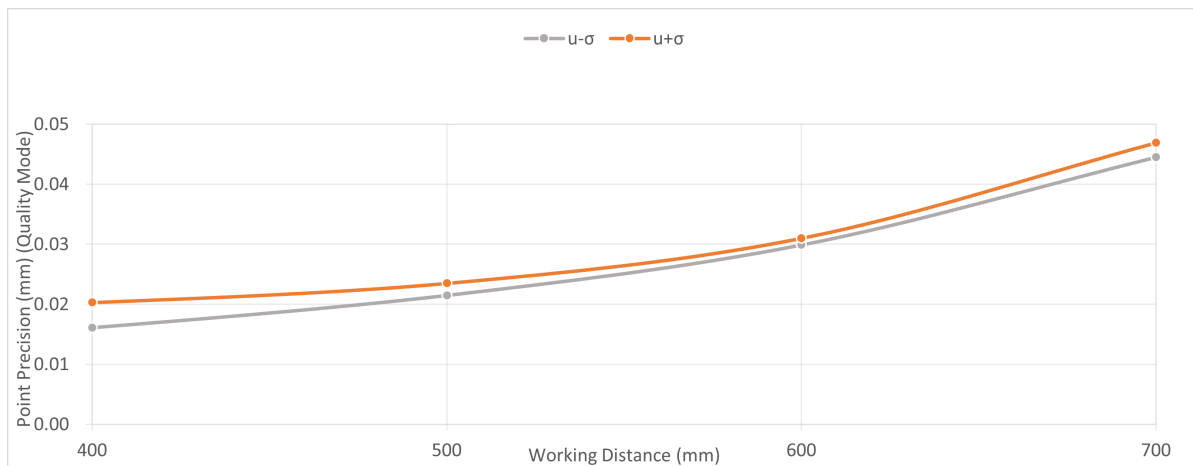
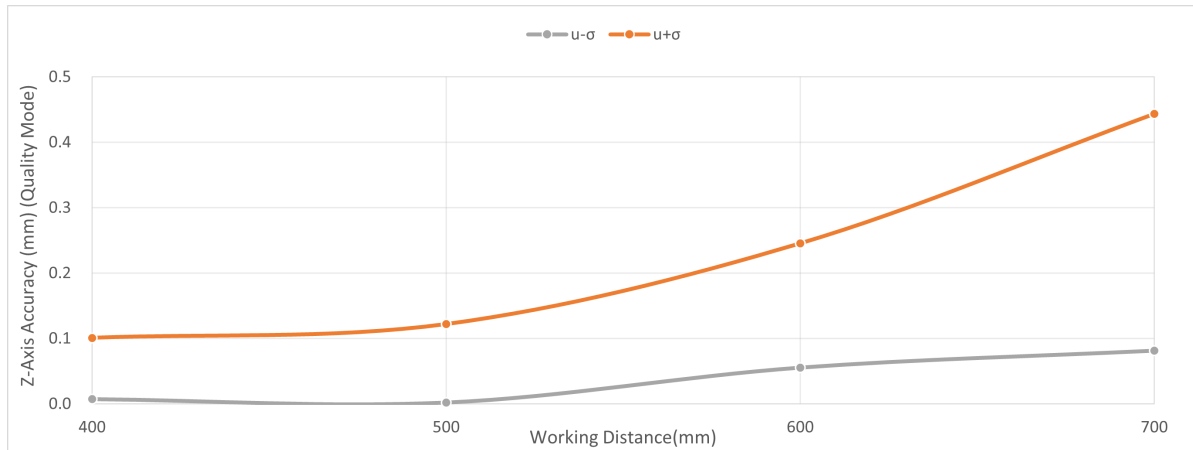
Figure 1 FOV (unit: mm)

## Performance Evaluation Metrics

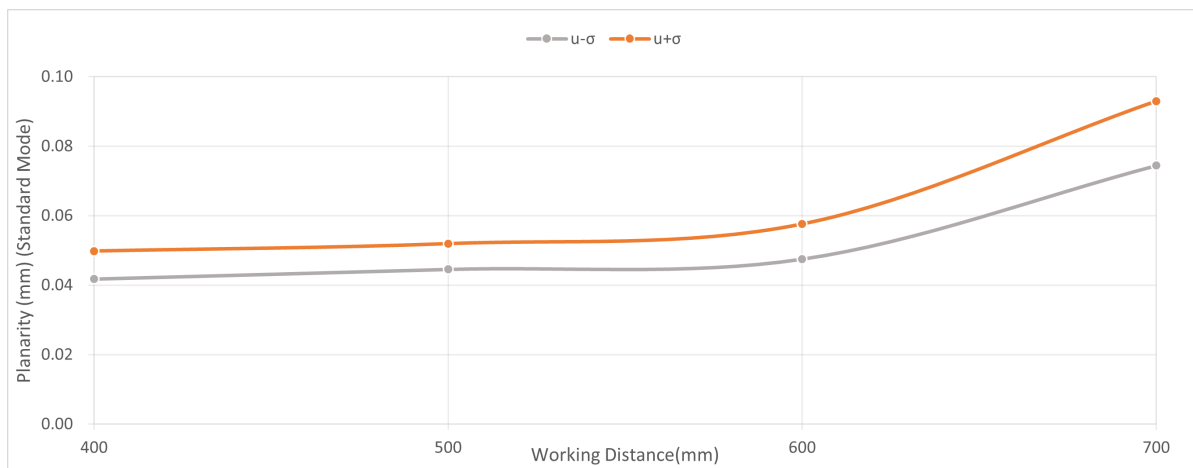
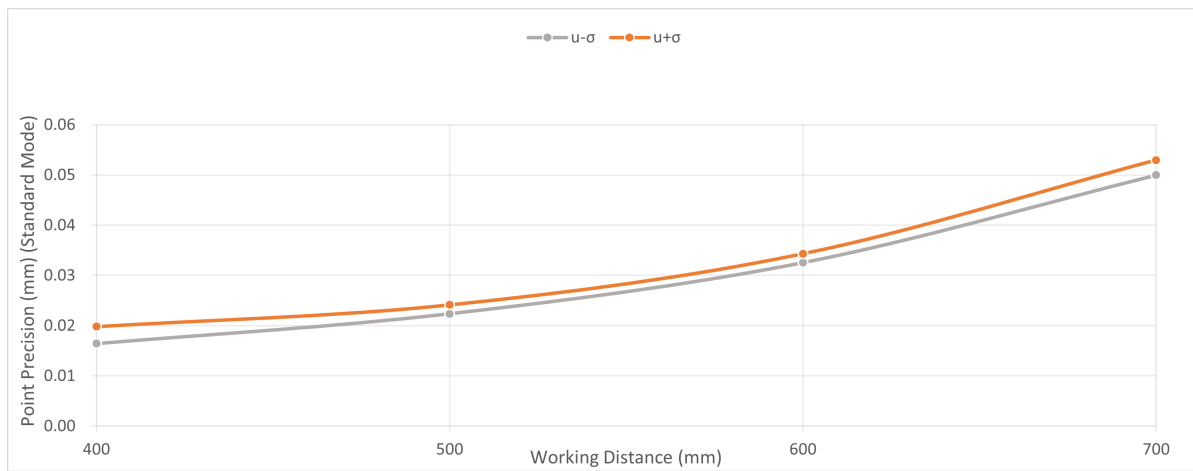
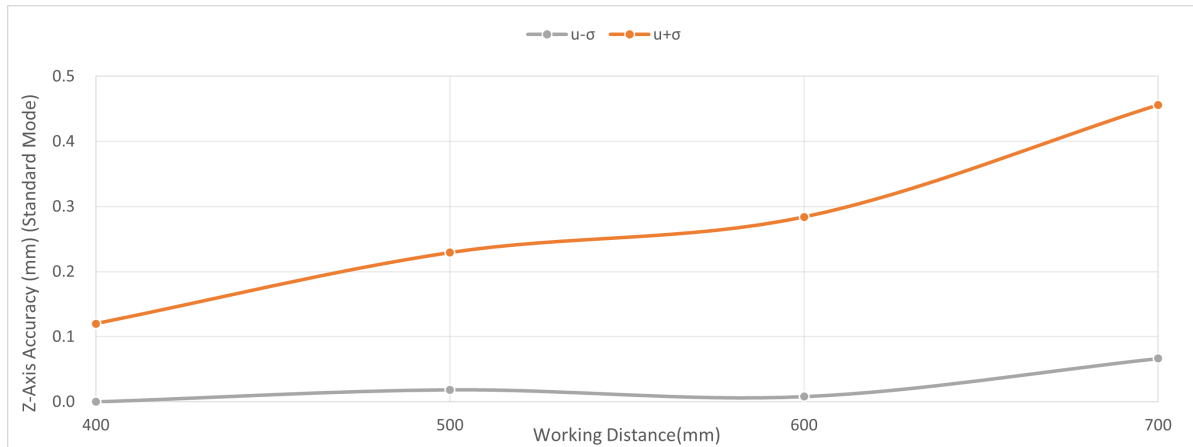
Parameters	Descriptions
Z-axis accuracy	The dispersion of measured depth values from the true distance in the Z-direction.
Point precision	The degree of oscillation of depth values for all pixel points in the central region of the field of view over time.
Planarity	The dispersion of all pixel points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

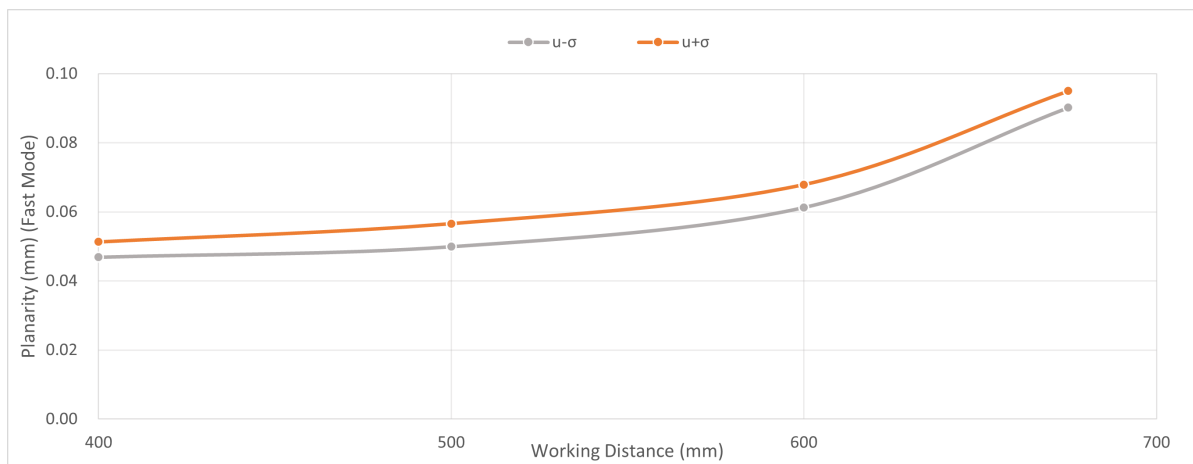
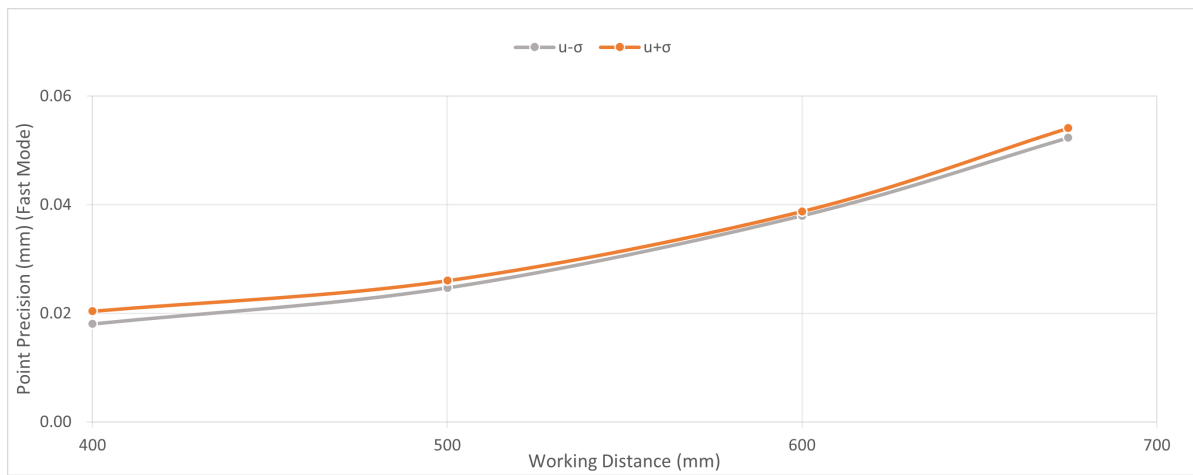
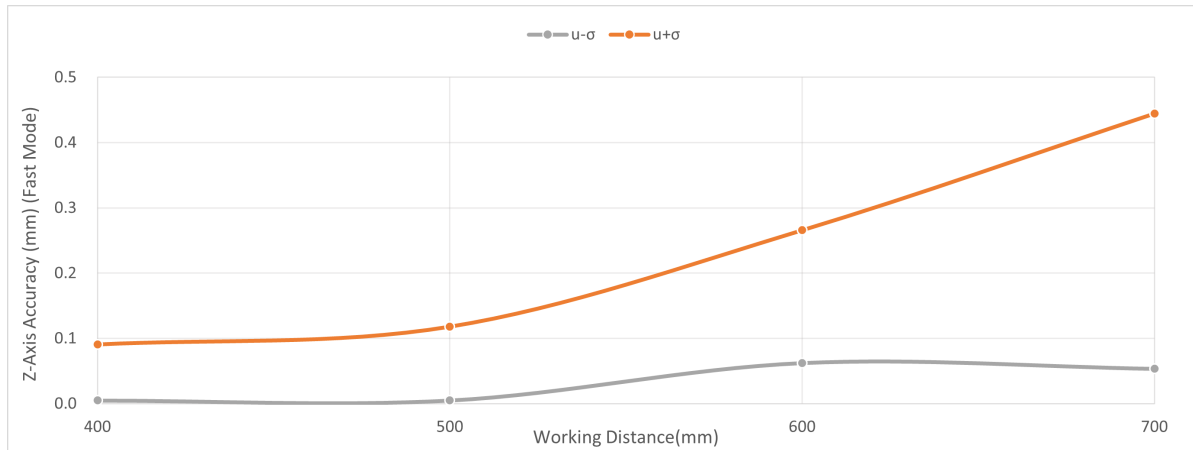
## Quality Mode



## Standard Mode



## Fast Mode



## Software Specifications

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

## Hardware Specifications

Parameters	Value
Dimensions (incl. connectors)	268 mm x 105 mm x 65 mm
Weight	2080 g
Power & trigger connector	M12 A-Code, 8-pin, male connector. See <a href="#">Power &amp; Trigger Connector</a> 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	$\leq 24$ W
Housing material	Aluminum alloy
Ingress protection	IP65
Thermal dissipation	Passive <sup>4</sup>
Temperature	Recommended operating temperature: 22 °C ~ 25 °C; Operating temperature: 0 °C ~ 40 °C; Storage temperature: -10 °C ~ 55 °C
Laser safety	Class 2 (IEC 60825-1:2014)

[4] 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

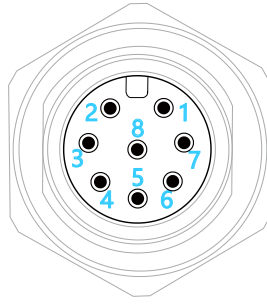


Figure 2 Pinout of the power & trigger connector

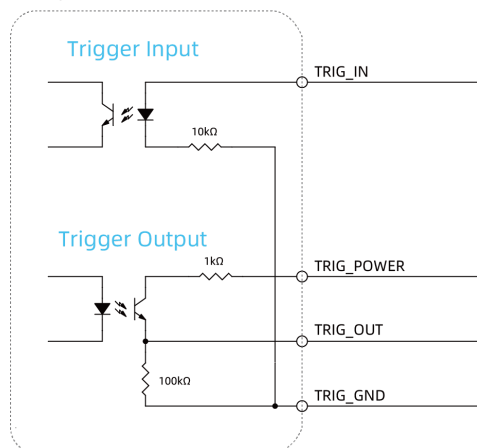
Pin No.	Name	Description
1	TRIG_OUT 1	Trigger output signal 1 [rising-edge]
2	P_24V	DC 24 V ~ 48 V power (camera)
3	P_GND	GND (camera)
4	TRIG_POWER	DC 11.4V ~ 25.2V power (trigger circuit)
5	TRIG_GND	GND (trigger circuit)
6	TRIG_IN 2	Trigger input signal 2 [falling-edge]
7	TRIG_IN 1	Trigger input signal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

Percipio-Camera



Percipio-Camera

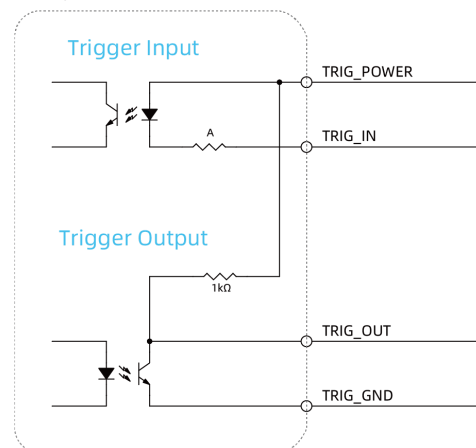


Figure 3 Trigger Circuit Schematic. Left: Rising-edge trigger; Right: Falling-edge trigger.



## 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.

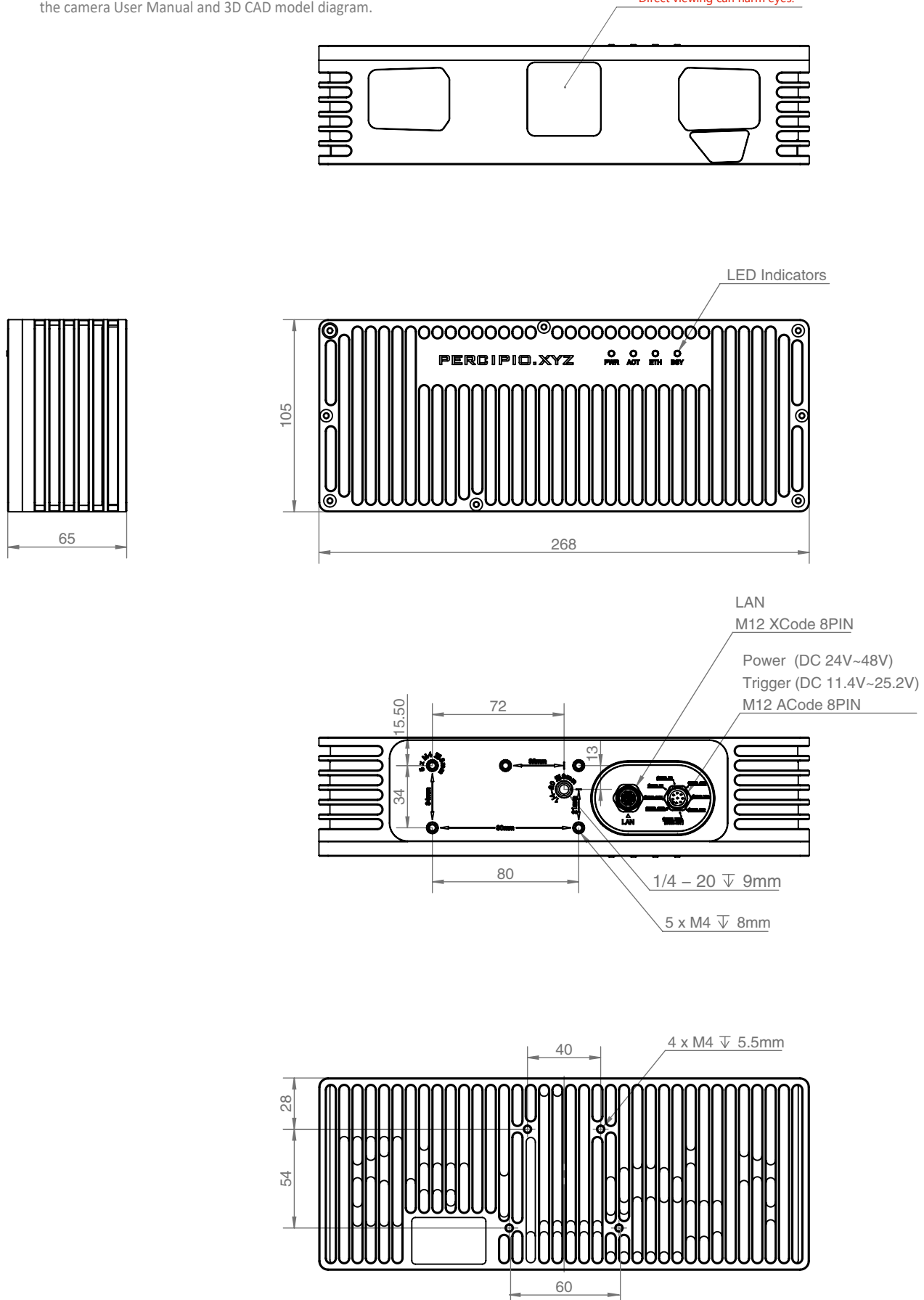


Figure 4 VMD02-4070 mechanical dimensions (unit: mm)

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