FM815-IX-E1 Specifications

Introduction

Percipio FM815-IX-E1 3D camera features the anti-sunlight capability and enhanced imaging performance for highly reflective objects. The camera is suitable for indoor and outdoor applications such as object recognition, classification, and positioning.

The documentation introduces the detailed technical specifications of FM815-IX-E1 3D cameras. For more specifications of Percipio's other products, please go to Product Specifications — PercipioDC documentation.

Figure 1   FM815-IX-E1 3D camera

Technical Specifications

Parameters	Value
Technical principle	Active stereo
Illumination	3 x infrared laser (λ = 940 nm)
Baseline	100 mm
Latency of image acquisition[1]	385 m
Frame rate[2] @ resolution (Depth)	5 fps @ 1280 x 960 5 fps @ 640 x 480 5 fps @ 320 x 240
Frame rate[2] @ resolution @ image format (RGB)	6 fps @ 2560 x 1920 @ CSI BAYER12GBRG 4 fps @ 2560 x 1920 @ YUYV 7 fps @ 1920 x 1440 @ YUYV 16 fps @ 1280 x 960 @ YUYV 30 fps @ 640 x 480 @ YUYV
RGB-D alignment	√
Output data	Depth, RGB, IR, point cloud images

[1] Latency of image acquisition: the latency time between the host computer sending the software trigger signal and receiving VGA depth images from the camera that works in software trigger mode. This is when the camera is working with default SGBM parameters.

[2] Frame rate of depth/RGB images: the number of depth/RGB images that the host computer receives every 1 second from the camera. This is when the camera is working in free acquisition mode with default SGBM parameters. The frame rate of depth images will change with SGBM parameters.

Measurement Performance

Parameters	Value
Max working distance	400 mm ~ 8000 mm (change with SGBM parameters)
Recommended working distance	800 mm ~ 3000 mm (change with SGBM parameters)
Near field of view	850 mm x 710 mm @ 800 mm (H/V ≈ 56°/48°)
Far field of view	3465 mm x 2670 mm @ 3000 mm (H/V ≈ 60°/48°)
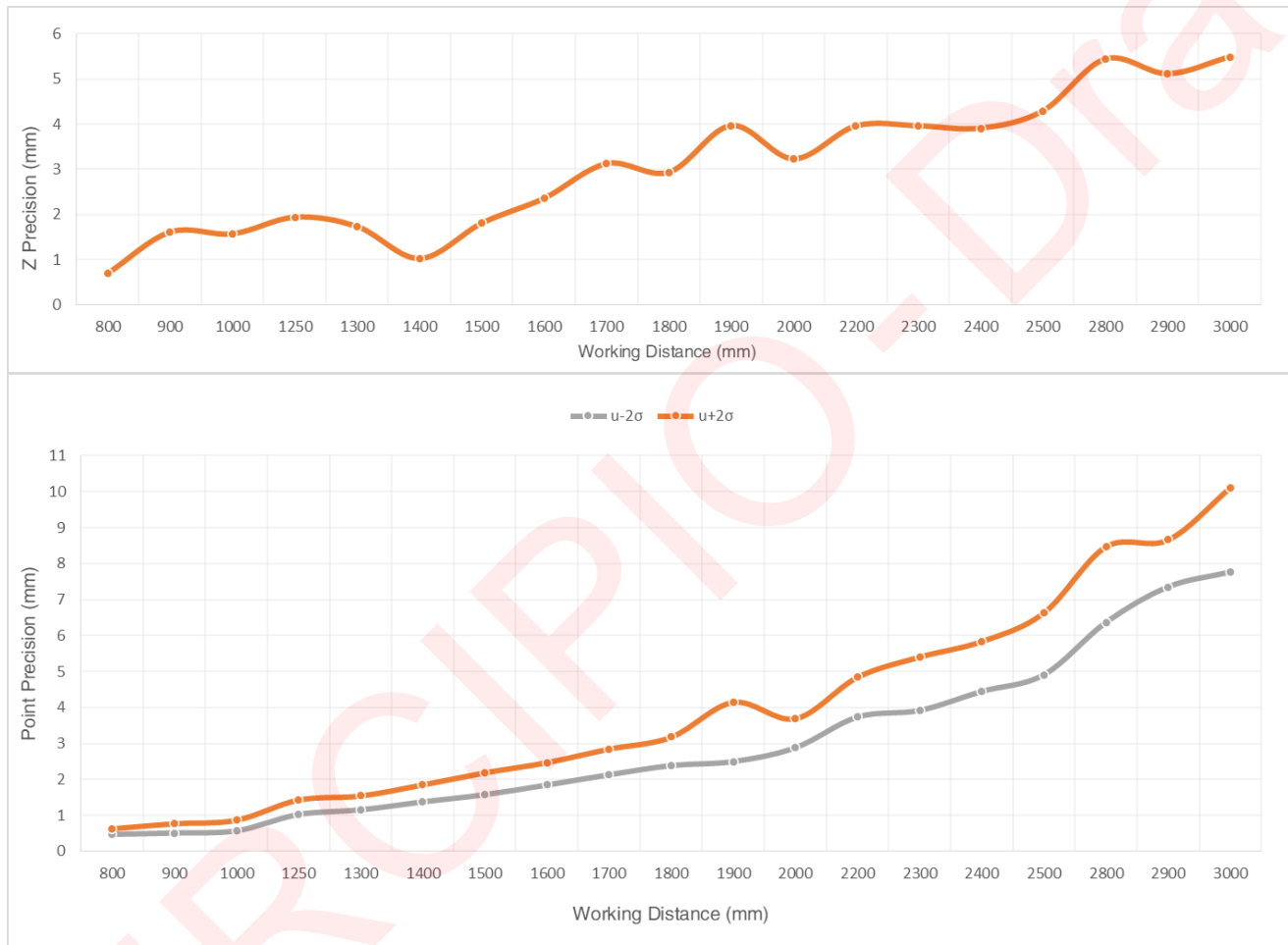
Z precision: the average deviation between the Z measured value and ground truth.

The line chart shows the Z precision at different working distances.

Point precision: the time-domain dispersion of all pixel points in the central ROI.

The line chart shows the distribution of point precision at different working distances.

Planarity: the dispersion of all pixel points in the central ROI relative to the desired plane.

The line chart shows the distribution of planarity at different working distances.

Note: The line charts above show the measurement performance of FM815-IX-E1 whose SGBM parameters are set to default values. SGBM parameters can be adjusted for a better measurement performance.

Software Specifications

Parameters	Value
OS	Linux/Windows/ROS/Android
SDK	Percipio Camport SDK; Supported programming language: C, C++, C#, Python, Java See PercipioDC documentation for more SDK tutorials.
SGBM parameters	The parameters will influence the measurement performance of FM815-IX-E1. For the settings of SGBM parameters, see API Guide.

Hardware Specifications

| Parameters	Value
L x H x W (excluding interfaces)	145 mm x 35 mm x 90 mm
Weight	620 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 12V ~ 24V 3A; IEEE802.3 af/at PoE
Power consumption	Idle mode: 5.0 W Continuous mode: 11.3 W
Housing material	Aluminum alloy
Ingress protection	IP65
Thermal dissipation	Passive
Temperature	Operating: -10 ℃ ~ 50 ℃ Storage：-20 ℃ ~ 55 ℃

Power & Trigger Connector
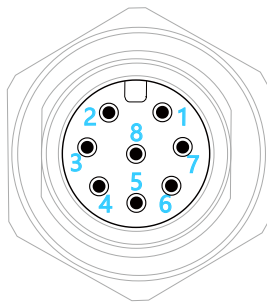
Figure 2   Pinout of the power & trigger connector

Pin No.	Name	Description	Cable Color
1	TRIG_OUT 1	Trigger output signal 1 [rising-edge]	White
2	P_24V	DC 24V power (camera)	Brown
3	P_GND	GND (camera)	Green
4	TRIG_POWER	DC 12V~24V power (trigger circuit)	Yellow
5	TRIG_GND	GND (trigger circuit)	Grey
6	TRIG_IN 2	Trigger input signal 2 [falling-edge]	Pink
7	TRIG_IN 1	Trigger input signal 1 [rising-edge]	Blue
8	TRIG_OUT 2	Trigger output signal 2 [falling-edge]	Red

Note: The cable color is subject to change without notice. Please refer to the cable you obtain.

Trigger Circuit Schematic Diagram

The camera supports the rising-edge trigger and falling-edge trigger, and the trigger circuit schematic diagrams are shown as follows (The resistance at point A is 10kΩ). For details about hardware connection, see PercipioDC documentation.
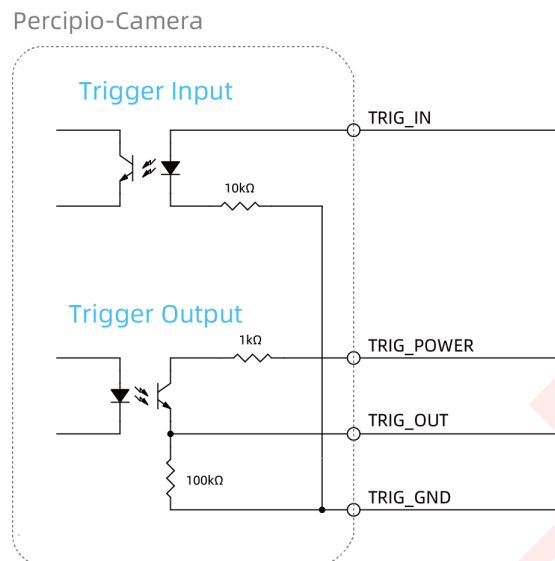
Figure 3   Trigger circuit schematic diagram (rising-edge)

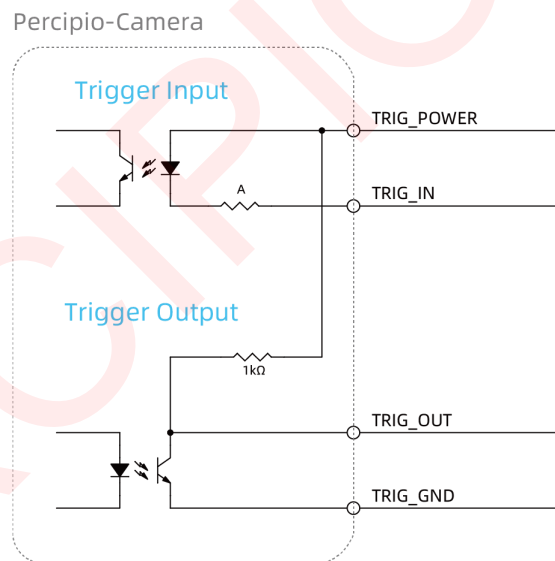Figure 4   Trigger circuit schematic diagram (falling-edge)

Mechanical Dimensions

156.60 ± 1.00

145.00

11.00

115.50 ± 0.10

38.00 ± 0.10

90.00

Status LED

M12 XCode 8PIN
LAN(POE)

4xM4 ⟱ 6mm

1/4–20UNC ⟱ 7mm

M12 ACode 8PIN
TRIGGER/DC POWER

35.00

38.00 ± 0.10

4xM4 ⟱ 6mm
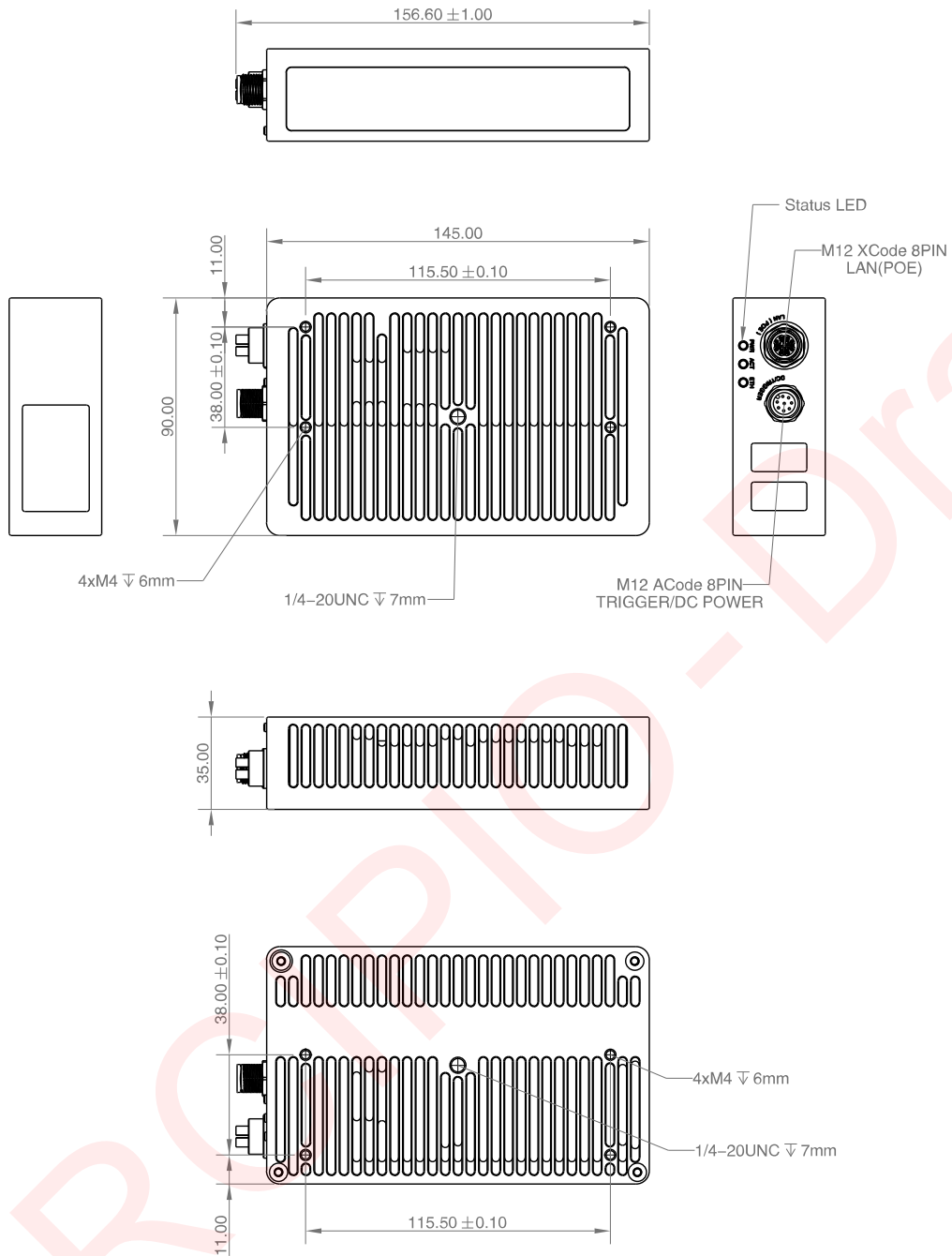
1/4–20UNC ⟱ 7mm

11.00

115.50 ± 0.10

Figure 5　FM815-IX-E1 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.

Make 3D Machine Vision Everywhere

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Statement

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