

# Cube 1



## Compact solid-state LiDAR

The Cube 1 is a versatile 3D LiDAR sensor features a software-defined flexibly adaptable field of view and configurable scan pattern. The Cube 1 offers a wide field of view and long-range detection while maintaining a compact form factor and light weight. The proprietary solid-state technology is maintenance-free and durable. The on-device pre-processing and the easy-to-use web user interface make Cube 1 a smart solution for numerous applications.

## DISTINCTIVE FEATURES



Configurable Scan Pattern



Easy Installation and Setup



Information Rich Data



Small Size and Light Weight



Web User Interface



On-Device Processing

## SPECIFICATIONS

### OPTICAL PERFORMANCE <sup>a</sup>

Typical application range	1.5 – 75 m
Detection range	250 m (> 30 m for 10 % reflectivity target, pixel-filling, 100 klux, 90 % detection rate, false positive rate < 0.2 %, 0.6° horizontal resolution)
Range resolution	< 1 cm
Range precision	< 2 cm (bias free RMS, 10 m, 50 % reflectivity target)
Maximum field-of-view (Horizontal x vertical)	70° x 30°
Vertical resolution	5 – 400 scan lines per frame <sup>b</sup> (user-configurable)
Horizontal resolution	0.4° – 1.0° (user-configurable)

Scan rate	> 500 scan lines per second
Frame rate	1.5 – 50 Hz (dependent on configured scan lines and vertical field-of-view) Examples: 70° x 30°; 200 scan lines; min. 2.5 Hz. 70° x 30°; 50 scan lines; min. 10 Hz. 70° x 10°; 20 scan lines; min. 25 Hz.

Number of returns 3<sup>c</sup>

<sup>a</sup> Measured at 25 °C, 60 % humidity, single return. Performance may deviate outside of these reference conditions.

<sup>b</sup> For less than 26 scan lines a reduced vertical field-of-view must be configured (see frame rate).

<sup>c</sup> Starting from a distance of 5 m. Only single returns at closer distances.

### LASER

Laser class	Class 1, eye-safe (IEC 60825-1:2014, Ed. 3)
Wavelength	905 nm
Beam divergence	0.4° Examples: 10 m: 0.07 m x 0.07 m 50 m: 0.35 m x 0.35 m

### OUTPUT

Connection	TCP/IP over Gigabit Ethernet
LiDAR output	Distance, intensity, and Cartesian coordinates per return; Azimuth angle, elevation angle, and timestamp in ns per acquisition
On-device data processing	Smart background subtraction and pose correction transformation; Filters: Distance, Noise, Intensity, Neighbor
IMU output	> 1 kHz sampling rate; 3 axis accelerometer, 3 axis gyroscope

### CONTROL INTERFACE

Configuration interface	Cross-platform graphical web interface with interactive 3D point cloud visualization and recording feature
Control & stream interface	TCP connection with Blickfeld protocol; C++ library and Python package as client software interface; ROS and ROS 2 drivers
Time synchronization	NTPv4 and PTPv2 (IEEE 1588)

## MECHANICAL / ELECTRICAL

Power consumption	Typ. 8.5 W (max. 13 W)
Operating voltage	Recommended: 12 V DC Maximum ratings: 10 – 26 V DC
Dimensions (H x W x D)	60 mm x 82 mm x 50 mm
Weight	ca. 275 g
Data connector	Ethernet, RJ45
Power connector	Phoenix Contact 1817615 Compatible power supply connector: Phoenix Contact 1845219

## OPERATIONAL

Ambient operating temperature (mounted)	-30 °C – 60 °C
Storage temperature	-30 °C – 60 °C
Humidity	85% at 30 °C, non-condensing
Ingress Protection (IEC 60529)	IP40
Electromagnetic compatibility (EMC)	EN 61326-1:2013 FCC (47 CFR) Part 15 Subpart B KS C 9832:2019 KS C 9835:2019
Conformity marks/Compliance	CE, RoHS, REACH, FDA, FCC, TAA, KC

## INCLUDED ACCESSORIES

Mounting angle	Provides a 1/4"-UNC threaded hole for mounting the Cube 1 to e.g. standard photography mounts Aluminium, black anodized
12 V Power supply	Table-top switching power supply for use with Cube 1 Input: 110/230 V, 50/60 Hz, IEC 60320 C14 appliance inlet Output: 12V DC, Phoenix Contact 1845219 matching Cube 1 plug

## RECOMMENDED ACCESSORIES AND PRODUCTS

Perception Software	Blickfeld Percept
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## DIMENSIONS

