## Cube 1 Outdoor

### All-environment sensing

The Blickfeld Cube 1 Outdoor provides high-quality data even in adverse environmental conditions such as rain, fog, and snow. The IP65-rated housing is specially designed for demanding applications that require a dust and waterproof sensing solution. With its Power over Ethernet capability and no need for clumsy adapter boxes, installation time and maintenance efforts are kept at a minimum.

### DISTINCTIVE FEATURES

- Configurable Scan Pattern
- Easy Installation and Setup
- Power over Ethernet
- IP65-rated housing
- Web User Interface
- On-Device Processing

### SPECIFICATIONS

#### OPTICAL PERFORMANCE

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

### LASER

- **Laser class**: Class 1, eye-safe (IEC 60825-1:2014, Ed. 3)
- **Wavelength**: 905 nm
- **Beam divergence**: 0.4°

#### 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. 9 W (max. 13 W)

**Operating voltage**
Power over Ethernet Type 1 (IEEE 802.3af):
37 – 57 V DC

**Dimensions (H x W x D)**
60 mm x 97 mm x 50 mm

**Weight**
ca. 330 g

**Power and Data connector**
M12x1 Industrial Ethernet connector, 8-pole, X-coded (DIN EN 61076-2-109)

**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)**
IP65

**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

**Industrial Ethernet cable**
Outdoor capable Ethernet cable, shielded, Cat. 6a, UV-resistant, PUR, 3 m
Connector A: 8-pin M12 Industrial Ethernet connector, X-coded (DIN EN 61076-2-109)
Connector B: R345

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>60 ± 0.6 mm</td>
</tr>
<tr>
<td>Width</td>
<td>97 ± 0.8 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>50 ± 0.6 mm</td>
</tr>
</tbody>
</table>

**RECOMMENDED ACCESSORIES AND PRODUCTS**

**Perception Software**
Blickfeld Percept

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Specifications are subject to change without notice and errors excepted.

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