

Velodyne LiDAR™ Puck™

REAL-TIME 3D LiDAR SENSOR



VLP-16



Velodyne LiDAR PUCK™

Velodyne's new Puck, VLP-16 sensor is the smallest, and most advanced product in Velodyne's 3D LiDAR product range. Vastly more cost-effective than similarly priced sensors, and developed with mass production in mind, it retains the key features of Velodyne's breakthroughs in LiDAR: Real-time, 360°, 3D distance and calibrated reflectivity measurements.

Real-Time 3D LiDAR

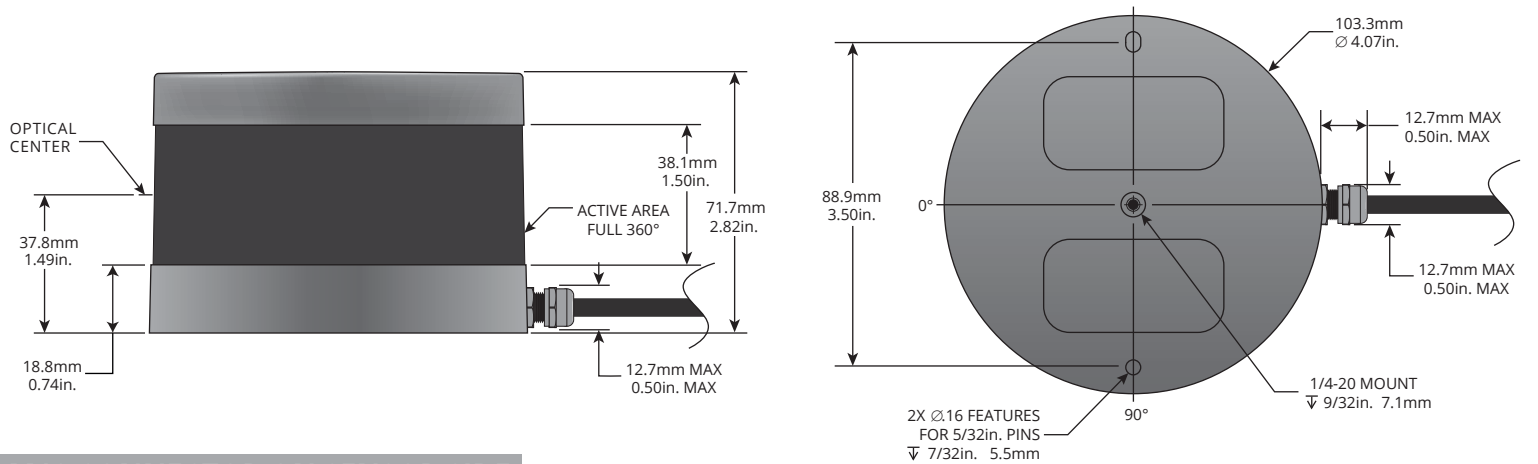
The VLP-16 has a range of 100 m, and the sensor's low power consumption (~8 W), light weight (830 g), compact footprint (~Ø103 mm x 72 mm), and dual return capability make it ideal not only for autonomous vehicles but also robotics and mobile terrestrial 3D mapping applications.

Velodyne's LiDAR Puck supports 16 channels, ~300,000 points/second, 360° horizontal field of view and a 30° vertical field of view, with ±15° up and down. The Velodyne LiDAR Puck does not have visible rotating parts, making it highly resilient in challenging environments (Rated IP67) while operating over a wide temperature range (-10°C to +60°C).

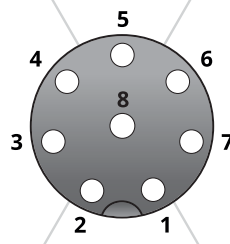
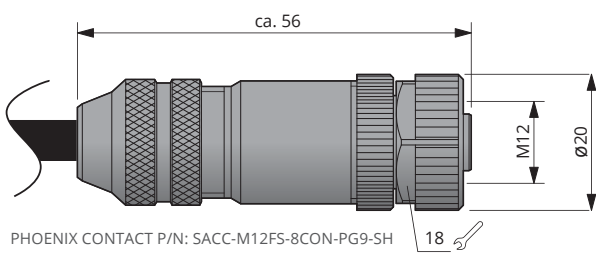


VLP-16

DIMENSIONS



M12 CONNECTOR ON SENSOR SIDE



Pin	Wire Color	Function
8	Black	Ground
7	Red	+12 V
6	Yellow	GPS Pulse Per Second (PPS)
5	White	GPS Serial Data
4	Light Orange	Ethernet TX+
3	Orange	Ethernet TX-
2	Light Blue	Ethernet RX+
1	Blue	Ethernet RX-



Real-Time 3D LiDAR Sensor

The VLP-16 provides high definition 3-dimensional information about the surrounding environment.

Specifications:

- Sensor:**
- Time of Flight Distance Measurement with Calibrated Reflectivities
 - 16 Channels
 - Measurement Range: Up to 100 m
 - Accuracy: ± 3 cm (Typical)
 - Single and Dual Returns (Strongest, Last)
 - Field of View (Vertical): $+15.0^\circ$ to -15.0° (30°)
 - Angular Resolution (Vertical): 2.0°
 - Field of View (Horizontal): 360°
 - Angular Resolution (Horizontal/Azimuth): $0.1^\circ - 0.4^\circ$
 - Rotation Rate: 5 Hz – 20 Hz
 - Integrated Web Server for Easy Monitoring and Configuration

- Laser:**
- Laser Product Classification: Class 1 Eye-safe per IEC 60825-1:2007 & 2014
 - Wavelength: 903 nm
 - Beam Size @ Screen: 9.5 mm x 12.7 mm
 - Beam Divergence: 0.18° (3.0 mrad)

- Mechanical/
Electrical/
Operational**
- Power Consumption: 8 W (Typical)
 - Operating Voltage: 9 V – 18 V (with Interface Box and Regulated Power Supply)
 - Weight: 830 g (without Cabling and Interface Box)
 - Dimensions: 103 mm Diameter x 72 mm Height
 - Shock: 500 m/s² Amplitude, 11 ms Duration
 - Vibration: 5 Hz to 2,000 Hz, 3 G_{rms}
 - Environmental Protection: IP67
 - Operating Temperature: -10°C to $+60^\circ\text{C}$
 - Storage Temperature: -40°C to $+105^\circ\text{C}$

- Output:**
- 3D LiDAR Data Points Generated:
 - Single Return Mode: ~300,000 points per second
 - Dual Return Mode: ~600,000 points per second
 - 100 Mbps Ethernet Connection
 - UDP Packets Contain:
 - Time of Flight Distance Measurement
 - Calibrated Reflectivity Measurement
 - Rotation Angles
 - Synchronized Time Stamps (μs resolution)
 - GPS: \$GPRMC NMEA Sentence from GPS Receiver (GPS not included)

63-9229 Rev-E

Product Ordering Information:

Product Name	SKU Ordering Number	Sensor		Interface Box			
		Connector	Cable Length	Included	Connector to Sensor	Cable Length	I/O Connectors
Puck	80-VLP-16	None	3.0 m	Yes	None	-	RJ45, GPS and Power
Puck	80-VLP-16 M12-0.3M	M12 Female	0.3 m	Yes	M12 Male	1.6 m	RJ45, GPS and Power
Puck	80-VLP-16 M12	M12 Female	0.3 m	No	-	-	-



CLASS 1 LASER PRODUCT

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