Velodyne LiDAR™ Puck™

REAL-TIME 3D LiDAR SENSOR

Automotive | Robotics | Mapping | UAV | Security | Industrial

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.

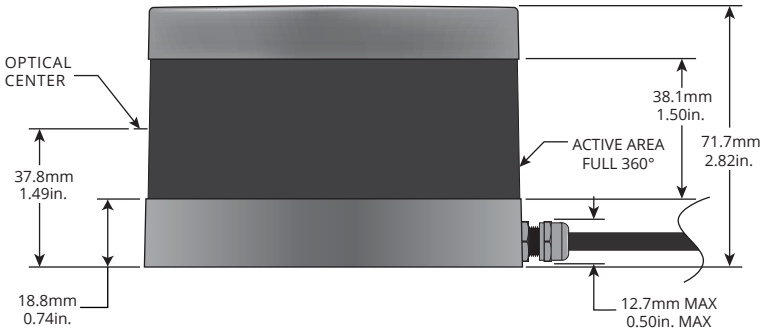
Real-Time 3D LiDAR

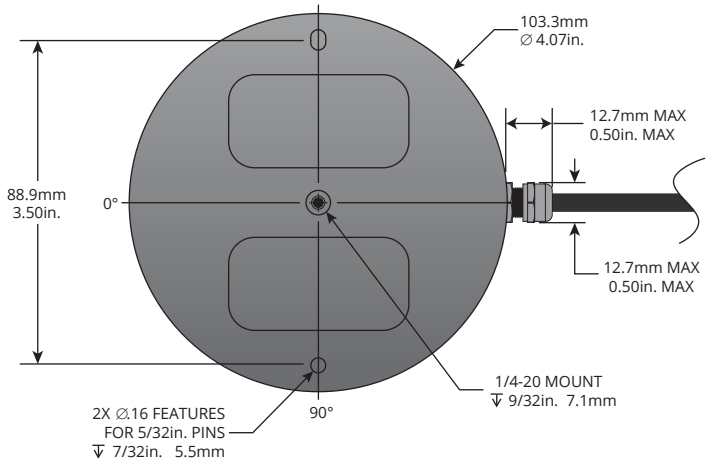
The VLP-16 has a range of 100 m, and the sensor's low power consumption (~8 W), light weight (830 g), compact footprint (~Ø103 mm x 72 mm), and dual return capability make it ideal not only for autonomous vehicles but also robotics and mobile terrestrial 3D mapping applications.

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).

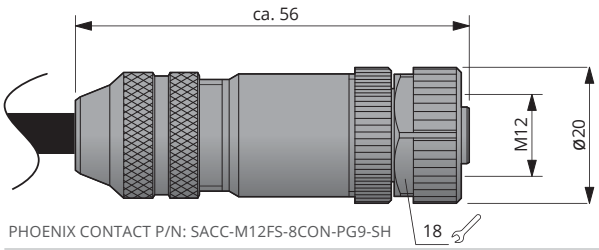
VLP-16

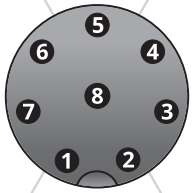
DIMENSIONS





M12 CONNECTOR ON SENSOR SIDE

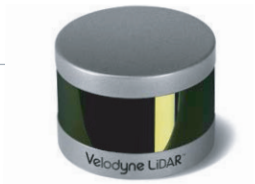




Pin	Wire Color	Function
8	Black	Ground
7	Red	+12 V
6	Yellow	GPS Pulse Per Second (PPS)
5	White	GPS Serial Data
4	Light Orange	Ethernet TX+
3	Orange	Ethernet TX-
2	Light Blue	Ethernet RX+
1	Blue	Ethernet RX-

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° to -15.0° (30°)
- Angular Resolution (Vertical): 2.0°
- Field of View (Horizontal): 360°
- Angular Resolution (Horizontal/Azimuth): 0.1° – 0.4°
- 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: 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/s ^{2} Amplitude, 11 ms Duration
- Vibration: 5 Hz to 2,000 Hz, 3 G $_{rms}$
- Environmental Protection: IP67
- Operating Temperature: -10°C to +60°C
- Storage Temperature: -40°C to +105°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-D

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