

# Velodyne LiDAR™ Puck Hi-Res™

HIGH RESOLUTION REAL-TIME 3D LiDAR SENSOR



## Puck Hi-Res

Velodyne LiDAR's Puck Hi-Res is a higher resolution version of the Puck and used in applications that requires greater resolution in the captured 3D image. The Puck Hi-Res has identical performance to VLP-16 with the only differences in the vertical field of view (FoV) which is 20° instead of 30° and therefore a tighter channel distribution where it is 1.33° instead of 2.00° between channels. No other changes have been made to Puck Hi-Res as it retains its patented 360° surround view to capture real-time 3D LiDAR data that includes distance and calibrated reflectivity measurements.

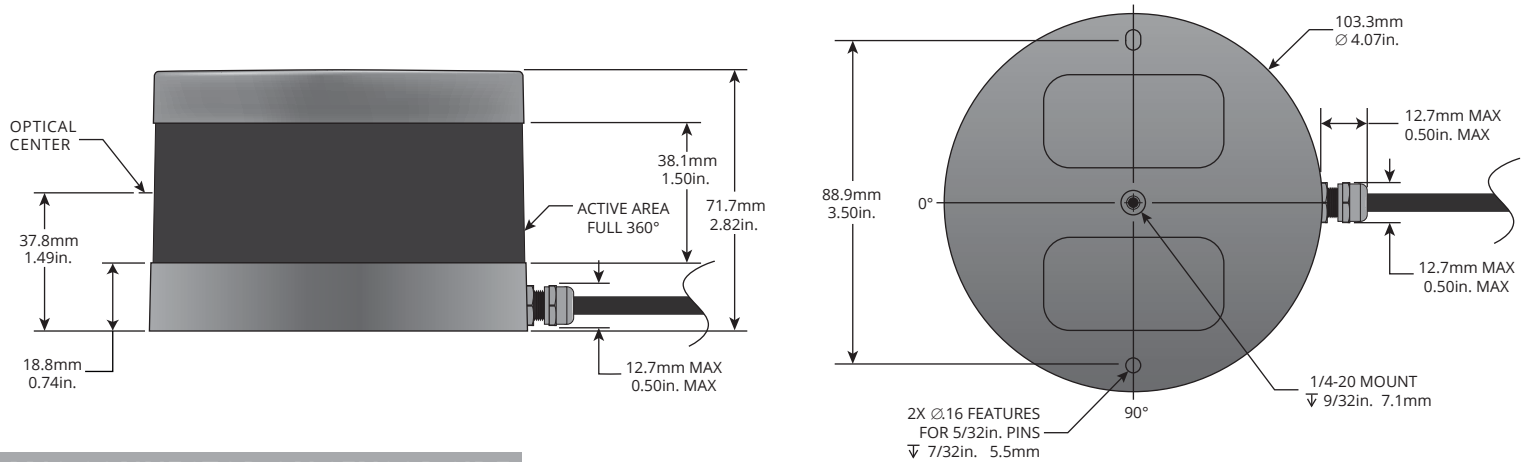
### Higher Resolution at Longer Distances while Maintaining High Point Density

The Puck Hi-Res has a range of 100 m with dual return mode to capture greater detail in the 3D image at longer ranges while the power consumption is approximately 8 W. A compact footprint (Ø103 mm x 72 mm) with closer spacing between channels to enable greater resolution of 3D images, the Puck Hi-Res provides more detailed views in applications such as autonomous vehicles, surveillance and 3D mapping/imaging.

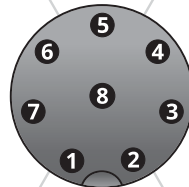
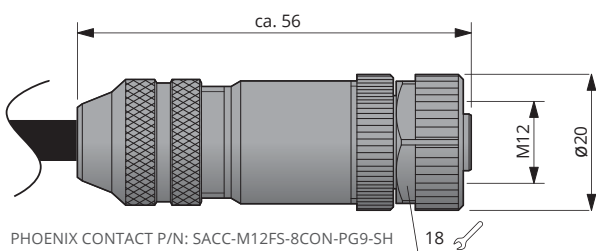
It supports 16 channels and generates 300,000 points/second from a 360° horizontal field of view and a 20° vertical field of view with ±10° from the horizon. The Puck Hi-Res has no visible rotating parts and is encapsulated in package that allows it to operate over a wide temperature range (-10°C to +60°C) and environmental conditions (IP67).



## 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-



## High Resolution Real-Time 3D LiDAR Sensor

The Puck Hi-Res provides high definition 3-dimensional information about the surrounding environment.

### Specifications:

Sensor:	<ul style="list-style-type: none"> <li>• Time of Flight Distance Measurement with Calibrated Reflectivities</li> <li>• 16 Channels</li> <li>• Measurement Range: Up to 100 m</li> <li>• Accuracy: <math>\pm 3</math> cm (Typical)</li> <li>• Single and Dual Returns (Strongest, Last)</li> <li>• Field of View (Vertical): <math>+10.0^\circ</math> to <math>-10.0^\circ</math> (<math>20^\circ</math>)</li> <li>• Angular Resolution (Vertical): <math>1.33^\circ</math></li> <li>• Field of View (Horizontal): <math>360^\circ</math></li> <li>• Angular Resolution (Horizontal/Azimuth): <math>0.1^\circ - 0.4^\circ</math></li> <li>• Rotation Rate: 5 Hz – 20 Hz</li> <li>• Integrated Web Server for Easy Monitoring and Configuration</li> </ul>
Laser:	<ul style="list-style-type: none"> <li>• Laser Product Classification: Class 1 Eye-safe per IEC 60825-1:2007 &amp; 2014</li> <li>• Wavelength: 903 nm</li> <li>• Beam Size @ Screen: 9.5 mm x 12.7 mm</li> <li>• Beam Divergence: 3.0 mrad</li> </ul>
Mechanical/ Electrical/ Operational	<ul style="list-style-type: none"> <li>• Power Consumption: 8 W (Typical)</li> <li>• Operating Voltage: 9 V – 18 V (with Interface Box and Regulated Power Supply)</li> <li>• Weight: 830 g (without Cabling and Interface Box)</li> <li>• Dimensions: 103 mm Diameter x 72 mm Height</li> <li>• Shock: 500 m/s<sup>2</sup> Amplitude, 11 ms Duration</li> <li>• Vibration: 5 Hz to 2,000 Hz, 3 G<sub>rms</sub></li> <li>• Environmental Protection: IP67</li> <li>• Operating Temperature: <math>-10^\circ\text{C}</math> to <math>+60^\circ\text{C}</math></li> <li>• Storage Temperature: <math>-40^\circ\text{C}</math> to <math>+105^\circ\text{C}</math></li> </ul>
Output:	<ul style="list-style-type: none"> <li>• 3D LiDAR Data Points Generated:             <ul style="list-style-type: none"> <li>- Single Return Mode: ~300,000 points per second</li> <li>- Dual Return Mode: ~600,000 points per second</li> </ul> </li> <li>• 100 Mbps Ethernet Connection</li> <li>• UDP Packets Contain:             <ul style="list-style-type: none"> <li>- Time of Flight Distance Measurement</li> <li>- Calibrated Reflectivity Measurement</li> <li>- Rotation Angles</li> <li>- Synchronized Time Stamps (<math>\mu\text{s}</math> resolution)</li> </ul> </li> <li>• GPS: \$GPRMC NMEA Sentence from GPS Receiver (GPS not included)</li> </ul>

63-9318 Rev-A

### Product Ordering Information:

Product Name	SKU Ordering Number	Sensor		Interface Box			
		Connector	Cable Length	Included	Connector to Sensor	Cable Length	I/O Connectors
Puck Hi-Res	80-VLP-16-COB13P20SR4SL	None	3.0 m	Yes	None	-	RJ45, GPS and Power
Puck Hi-Res	80-VLP-16-COB13P20SM1SL	M12 Female	0.3 m	Yes	M12 Male	1.6 m	RJ45, GPS and Power



CLASS 1 LASER PRODUCT

