Velodyne LiDAR®

Alpha Puck™

ULTRA-HIGH RESOLUTION, LONG RANGE
LIDAR FOR AUTONOMOUS SYSTEMS

Automotive | Robotics | Mapping | Security | Industrial

Alpha Puck

Velodyne LiDAR's Alpha Puck sensor is a revolutionary new lidar sensor, with up to 300 m range capability combined with top of the line resolution and field-of-view (FoV), enabling the widest variety of road and traffic scenarios for autonomous systems. Building upon the successful core foundation of Velodyne's Puck™ product line, the Alpha Puck produces extremely dense and comprehensive 3D point clouds of the surrounding scene with best-in-class point-density.

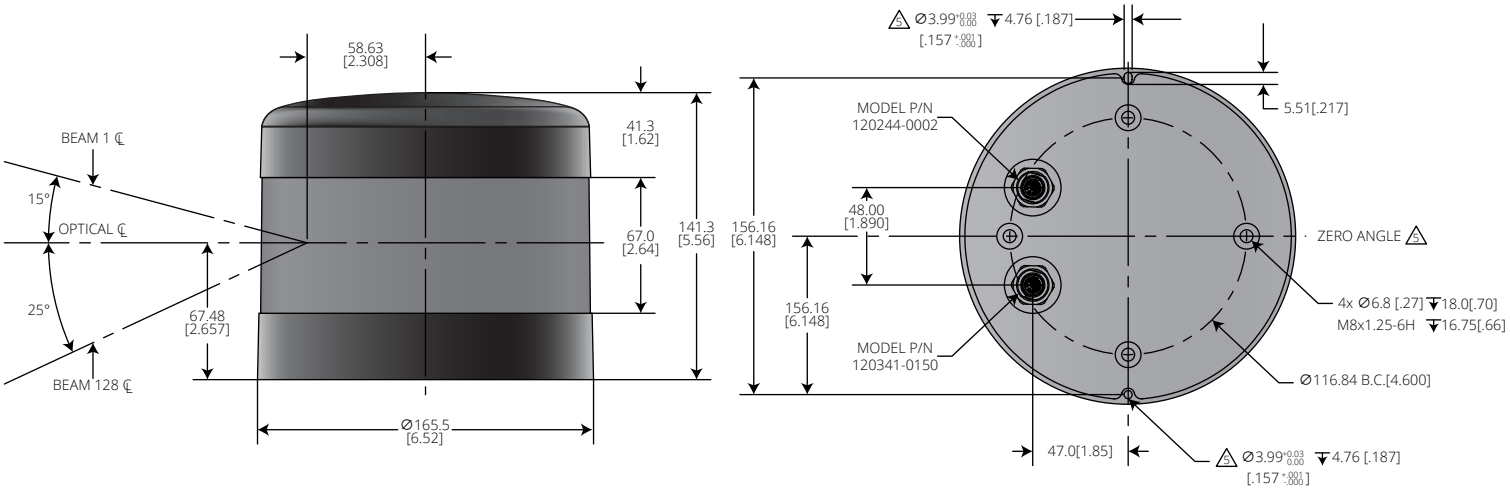
The Alpha Puck is designed for a wide range of temperatures and environmental conditions. It uses proven, mainstream 905 nm Class 1 eye-safe technology and off-the-shelf components, including solid state lasers and silicon-based detectors, which enables automotive scale and attractive volume pricing. The Alpha Puck is the world's first sensor built with advanced robotic alignment in a state-of-the-art manufacturing facility, paving the path for consistency & quality in high volume production.

Available in dark and light color options, the Alpha Puck features an innovative bottom connector to hide the cabling, as well as cable length options for various vehicle types. Like other Velodyne sensors, it has world-class technical support available across North America, Europe & Asia from the world's leading lidar company.

Alpha Puck at a glance

- **First 300m capable sensor for autonomous fleets**
- **Best horizontal (360°) and vertical (40°) FoV**
- **Best resolution (0.2° x 0.1°) and point density**
- **Proven, Class 1 eye-safe 905 nm technology**
- **Sensor-to-sensor interference mitigation**
- **Dynamic intelligent firing with perception awareness**
- **Bottom connector, with cable length options**

DIMENSIONS *(Subject to change)*



Alpha Puck

Real-Time Lidar Sensor

The Alpha Puck provides ultra-high resolution 3-dimensional point clouds of the surrounding environment.

Alpha Puck™

	Specifications [1] *(Subject to change)*
Sensor	• Channels: 128 • Measurement Range: Up to 300 m [2] • Range Accuracy: Up to ±3 cm (Typical) [3] • Return Modes: Up to 4 [2] • Horizontal Field of View: 360° • Vertical Field of View: 40° (-25° to +15°) • Minimum Angular Resolution (Vertical): 0.11° (non-linear distribution) • Angular Resolution (Horizontal/Azimuth): 0.1° to 0.4° • Frame Rate: 5 Hz to 20 Hz • Integrated Web Server for Easy Monitoring and Configuration
Laser	• Laser Product Classification: Class 1 – Eye-safe per IEC60825-1:2014 • Wavelength: ~903 nm
Mechanical/ Electrical/ Operational	• Power Consumption: <30 W (under typical conditions) [4] • Operating Voltage: 9 V – 28 V (including regulated power supply) • Weight: ~3.5 kg (typical, without cabling) • Dimensions: See diagram on previous page • Environmental Protection: IP67 • Operating Temperature: -20°C to +60°C (under typical conditions) [5] • Storage Temperature: -40°C to +85°C
Output	• 3D Lidar Data Points Generated [2]: - Single Return Mode: ~2,400,000 points per second - Dual Return Mode: ~4,800,000 points per second - Triple Return Mode: ~7,200,000 points per second - Quadruple Return Mode: ~9,600,000 points per second • 1,000 Mbps (Gigabit) Ethernet Connection • UDP Packets Contain: - Time of Flight Distance Measurement - Calibrated Reflectivity Measurement - Synchronized Time Stamps (µs resolution) - System Diagnostics Data • GPS: $GPRMC and $GPGGA NMEA Sentence from GPS Receiver (GPS not included)

63-9480 Rev-3 VLS-128

For more details and ordering information, contact Velodyne Sales (sales@velodyne.com)

1. These are projected specifications for final production parts. The specifications for any sample, prototype, or other non-final or pre-production products may be different from the specifications in this document. For more information, please contact Velodyne Sales.
2. Configuration dependent.
3. Typical accuracy refers to ambient wall test performance across most channels and may vary based on factors including but not limited to range, temperature and target reflectivity.
4. Operating power may be affected by factors including but not limited to range, reflectivity and environmental conditions.
5. Operating temperature may be affected by factors including but not limited to air flow and sun load.

CLASS 1 LASER PRODUCT