HYPOINT

Real-Time LiDAR Truck Parking Monitoring

System Overview:

The LiDAR-Based Truck Parking Monitoring System provides precise monitoring, real-time occupancy tracking, and vehicle classification to support efficient parking management. Utilizing cutting-edge LiDAR technology, the system delivers high accuracy, long-range detection, and broad coverage, ensuring reliable performance in all weather conditions. Sensors are installed in the entrance and exit ramps of the truck parking facility, where they classify and count vehicles entering and exiting the site. The system seamlessly integrates into existing monitoring infrastructure, offering a robust solution with advanced detection capabilities to optimize space utilization and streamline operations.

System Features:

- Monitors 2 lanes of traffic
- Determines commercial/non-commercial based on vehicle height
- Sends JSON files with payloads for time, location, and direction of vehicle detection
- Only needs 12VDC/1A power supply and WiFi connection for operation
- Operates 24/7 in all weather conditions
- Output: Vehicle detection (+1 for incoming, -1 for outgoing) and simple classification (1 for commercial vehicles, 2 for non-commercial vehicles)

Commercial Vehicle Definition:

- Height: > 10’ (3 m)

Operating Conditions:

- Operating Temperature: -22°F to +120°F (-30°C to +50°C)
- Storage Temperature: -22°F to +120°F (-30°C to +50°C)
- Power Consumption: 15W (@ 77°F / 25°C)
- Operating Voltage: 12VDC
- Communication Protocol: WiFi 6 dual-band 802.11 ax/ac/a/b/g/n

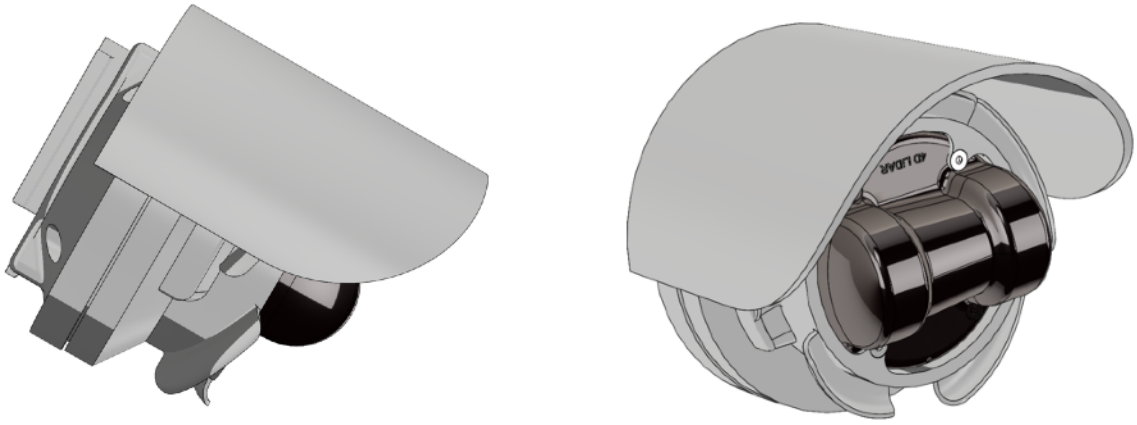
Sensor Performance:

- Laser Wavelength: 905nm
- Eye Safety Rating: Class 1 (IEC60825-1:2014)

- Maximum Sensor Range:
  - 66’ (20 m) @ 90% reflectivity
  - 33’ (10 m) @ 10% reflectivity

- Minimum Range: 2” (0.05 m)
- Sensor Field of View: 360° x 90°
- Sampling Frequency: 43,200 points/s
- Scanning Method: Contactless Brushless Mirror
- 4D Information: 3D Position (X, Y, Z) + 1D Intensity
- Measurement Accuracy (Linear): ±0.8” (2.0 cm)
- Measurement Resolution: 0.3” (8 mm)

LIDAR Sensor with Enclosure and Mount Design



Sensors designed for easy installation with durable, weather-resistant housing for continuous outdoor operation.

Sensors Mounted at Rest Area Parking Facility

Example of HyPoint LiDAR-Based Monitoring System Installed for WisDOT at Rest Area 10