

## Falcon Prime LiDAR

Falcon Prime is an image-grade ultra-long range LiDAR developed by Innovusion as a core sensor for smart transportation scenarios like V2X, smart highway and smart railway, etc. With maximum detection range of 500 meters and ultra-high resolution of  $0.09^{\circ} \times 0.08^{\circ}$ . It can effectively perceive small obstacles at a long distance. Highly-integrated design, wide application scenarios, easy deployment and maintenance enable its long-term stable operation on roadside, which effectively ensures the perception and safety requirements of smart transportation.



## Features

- Highly integrated design, easy deployment and high maintenance efficiency.
- Image-grade resolution with wide FOV, as well as max detection range of 500m, applicable to different scenarios.
- 1550nm laser wavelength, eye-safe.

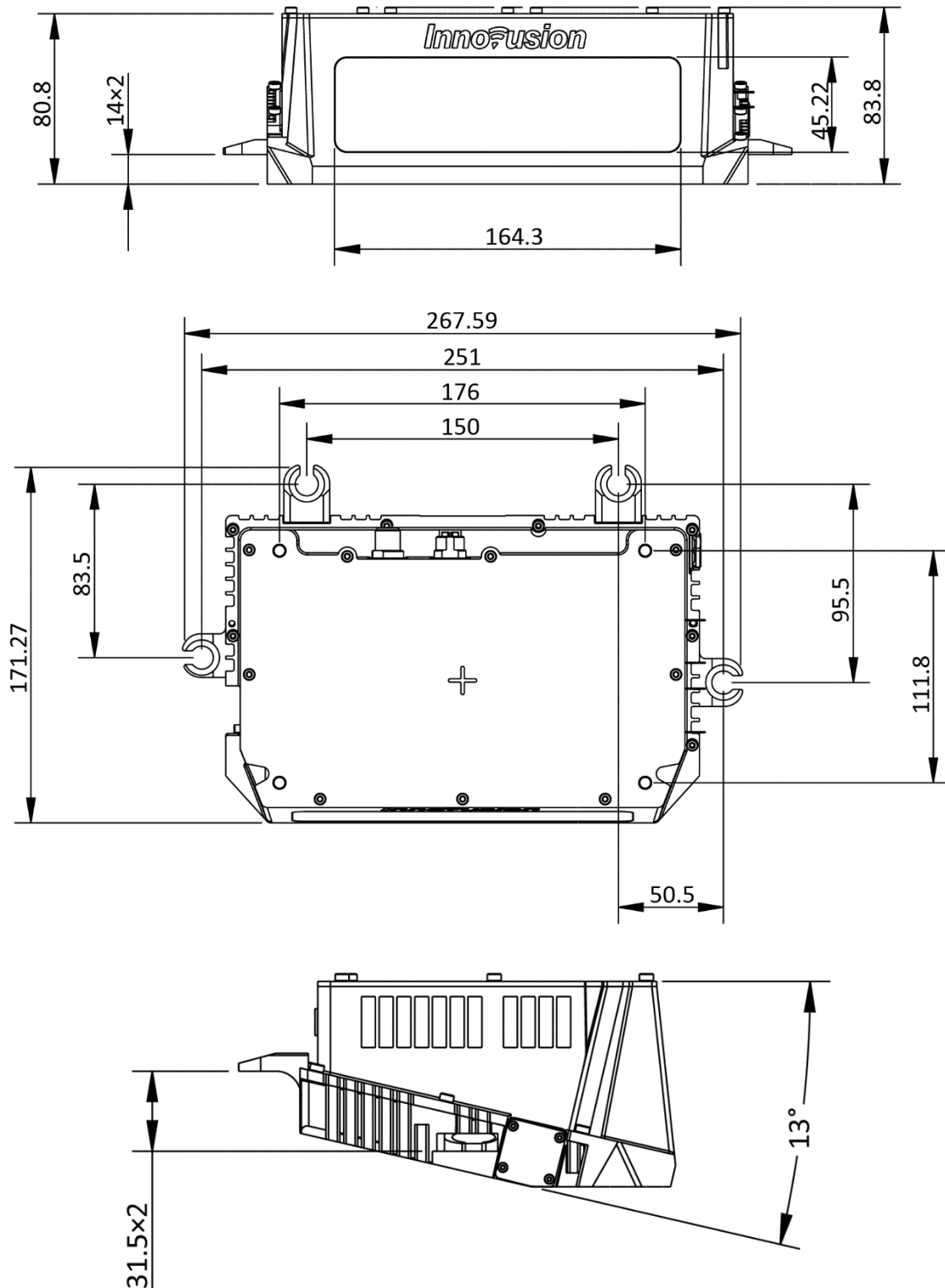
## Specifications

OPTICAL PERFORMANCE	
Range (Maximum)	500 m
Range (Minimum)	1.5 m
Detection Range (10% Lambertian reflectivity @ 10 Hz)	250 m@100 klx sunlight, POD>90%
Detection Range Accuracy	± 5 cm for Lambertian targets ± 10 cm for retroreflectors
Detection Range Precision (10% Lambertian reflectivity, 1 standard deviation)	2 cm (50 m@1sigma)
Detection Range Resolution	0.5 cm
Vertical Scanning Lines	1500 to 2000 lines/sec
FOV in non-ROI	HFOV: 100° to 120° VFOV: 25°
FOV in ROI	HFOV ≥ 40° VFOV ≥ 4.8°
Angular Resolution in non-ROI	HRES ≤ 0.18° VRES ≤ 0.24°
Angular Resolution in ROI	HRES ≤ 0.09° VRES ≤ 0.08° <b>Note:</b> The angular resolution in ROI can reach $0.06^{\circ} \times 0.06^{\circ}$ . Some optical parameters will be changed as follows.

	Detection Range (10% Lambertian reflectivity @ 10 Hz): 200m @ 100 klx sunlight, POD>90% Vertical scanning lines: 1600 lines/sec Vertical FOV in non-ROI:22.5° Angular resolution in non-ROI (H×V): 0.12°×0.24°
Angular Accuracy	± 0.1°
Frame Rate	10 FPS (configurable: 5 to 20 FPS)
False Positive Rate	<1/10,000 @ 100 klx sunlight
# of Returns	single, 2 strongest, strongest & furthest
<b>LASER</b>	
Laser Safety Class	Class 1 (IEC 60825-1:2014)
Laser Wavelength	1550 nm
Beam Divergence	0.1°
<b>LIDAR OUTPUT</b>	
Communication	Gigabit Ethernet (UDP & TCP)
Points Per Second	900,000 Points/sec
Data Rate (Megabits Per Second)	7.385MB/S@1 return 10.965MB/S@2 return
Data Output	radius, azimuth, elevation, reflectivity, timestamp, frame ID, return mode, working mode, fault state, CRC verification, etc.
<b>CONTROL INTERFACE</b>	
Interface	TCP and HTTP APIs
Time Synchronization	<ul style="list-style-type: none"> <li>NTP. Accuracy: &lt;1ms error</li> <li>IEEE1588 (PTP). Accuracy: &lt;1μs error</li> <li>IEEE 802.1as(gPTP). Accuracy: &lt;1μs error</li> </ul>
<b>MECHANICAL/ELECTRICAL</b>	
Power Consumption	24V/34.8W
Operating Voltage	24V DC
Connector	Proprietary pluggable connector (Power + Industrial Ethernet)
Dimensions (H×W×D)	83.8mm×268mm×172mm
Weight	2.3 kg
Mounting	4×M4×18 screws, located in bushings
<b>OPERATIONAL</b>	
Operating Temperature	-40 to 70°C
Storage Temperature	-40 °C to + 85°C
Ingress Protection	IP67
Shock	GB/T 2423.5-2019 (Pulse shape: Half-sine. Peak acceleration: 530m/s <sup>2</sup> . Duration of pulse: 6ms. Number of shocks per direction (±X, ±Y, ±Z): 3 shocks.)
Vibration	GB/T 2423.10-2019 (Frequency 10-150 HZ X.Y.Z. acceleration value: 5 m/s <sup>2</sup> , 3 axes 5 min duration each If any resonance point vibrates under the resonance point for 5 minutes; If there is no resonance point, vibrate at the maximum frequency for 5 minutes)
Compliance	IEC60825-1:2014 Class 1 eye-safe RoHS(EU)

<b>ACCESSORIES</b>	
Wire Harness	15/25m cable (configurable)
Optional Mount	Metal bracket
<b>SOFTWARE</b>	
Available Drivers	ROS/ROS2/APOLLO

## Dimensions (Unit: mm)



\*Specifications are subject to change without notice and based on engineering targets. Specs are not guaranteed to have passed full validation at the time of publication.