

Technical Datasheet



UNDETECTABLE

By operating well below shortwave infrared background levels, SurePath™ achieves an exceptionally low probability of intercept and detection, ensuring covert operation even in contested or high-threat environments



HIGH CONFIDENCE MEASUREMENTS

Leveraging a coherent receiver, the system delivers ultra-fast, sub-millisecond velocity measurements with high signal-to-noise clarity, enabling safe, reliable, and confident decision-making in real time



NON-RF

Unlike RF-based systems that can be spoofed, jammed, or hacked with inexpensive equipment, this lidar-based solution provides a secure, RF-resistant alternative that cannot be easily compromised by conventional electronic attacks

SurePath™ Ground-V is a highly accurate, dual-use velocity sensing solution built on NASA-proven Navigation Doppler Lidar (NDL) technology. By directly measuring a vehicle's motion relative to the ground, SurePath™ delivers real-time, surface-relative velocity data without reliance on GNSS, traditional wheel sensor or external infrastructure. This capability ensures dependable performance in GPS-denied, degraded, or contested environments for any ground vehicle platform.

Resistant to RF Interference

RF resistant to detection or disruption, jamming or spoofing and delivers superior overall velocity performance.

Accuracy and Resolution

SurePath™ utilizes a wavelength of 1550 nm, resulting in better precision and accuracy compared to radar. SurePath™ delivers precise and accurate velocity data to generate relative motion and position.

Next Generation Message Capability

RS-422, CAN and Ethernet message available, capable of integrating with new DoD open system architecture and proven on various platforms.

Reliability and Robustness

Fully self-contained, dual use velocimeter sensor, allowing for straight forward integration into any existing navigation system. Capable of delivering dependable 3D velocity measurements to enhance existing positional accuracy of the platform in the harshest of environments.

Unlike wheel sensors or terrain-dependent solutions, SurePath™ provides true velocity unaffected by slip, drift, or changing conditions. Its compact form factor and rugged construction make it ideal for use across a wide range of demanding applications. With precise accuracy, SurePath™ provides navigation systems with a reliable velocity reference they can trust.

Key Features

- Capable of delivering high-accuracy velocity data in real-time
- Resistant to jamming or detection by external sources
- Not impacted by wheel slip or changing terrains

Applications

- Autonomous navigation for civil and military markets
- Dead-reckoning for navigation in GPS-denied environments
- Applications where assured navigation is critical

Technical Datasheet
Velocimeter Specifications

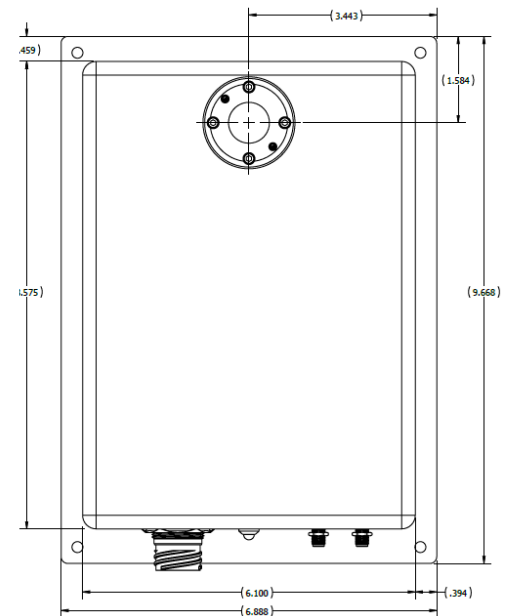
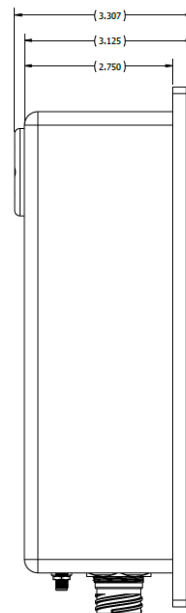
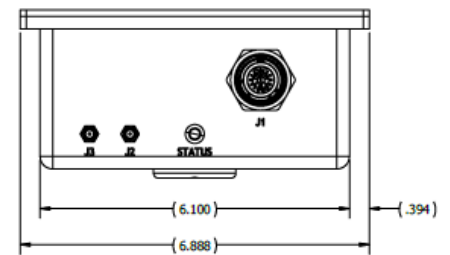
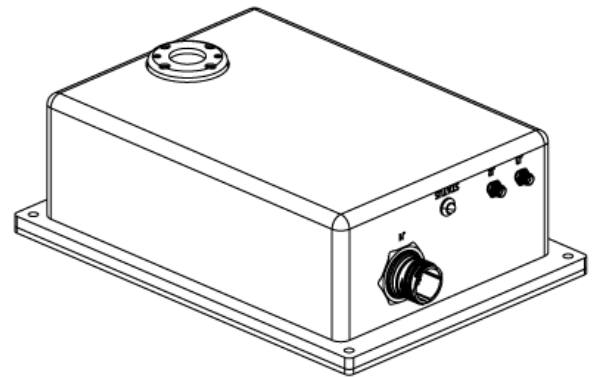
Max Installation Height	10 m
Max LOS Velocity	45 m/s
Max Body Velocity	160 km/hr
LOS Velocity Accuracy	0.59 cm/s
X Body Velocity Accuracy	1.3 cm/s, 1 σ
Y Body Velocity Accuracy	0.36 cm/s, 1 σ
Z Body Velocity Accuracy	0.96 cm/s, 1 σ
Typical Performance with Industrial Grade IMU	< 1% Distance Travelled
Typical Performance with Tactical Grade IMU	< 0.5% Distance Travelled
Typical Performance with Navigation Grade IMU	< 0.1% Distance Travelled

Interface Specifications

Data Output Rate	100 Hz
Primary Interface	Ethernet
Auxiliary Interfaces	RS-422, CAN
Interface Protocols	Psionic Binary, NMEA, ASPN
Time Synchronization	1-PPS Input, MSYNC
Input Voltage	12-48 VDC
Power Consumption	< 12 W Typ (< 20 W Max)

Mechanical/Environmental Specifications

Dimensions	9.7in x 6.9in x 3.3in
Weight	6.83lbs
Operating Temperature	-40 to +75C
Storage Temperature	-40 to +85C
EMI/EMC	MIL-STD-461G
Environmental	MIL-STD-810H
Shock Limit	16g, 11ms, Sawtooth
Vibration Limit	8g RMS, 20 Hz to 2000 Hz


About Psionic

Founded in 2017, Psionic is a privately held small business headquartered in Hampton, Virginia dedicated to developing next-generation dual-use navigation solutions. Psionic's foundation stems from NASA's Navigation Doppler Lidar (NDL), a breakthrough technology that provides highly accurate, long-range velocity and distance measurements. Building on this innovation, Psionic delivers advanced capabilities across space, commercial, and defense markets, with applications ranging from GPS-denied navigation to precision target tracking and broader civilian uses.