

ORION ONE-LASER

GNSS RECEIVER

Non-Contact Laser, More Surveying Possibilities



LASER SURVEYING

By combining accurate laser distance surveying with high-precision GNSS positioning and IMU tilt survey, Orion ONE-Laser provides non-contact laser surveying to simplify your tasks where traditional methods fall short. It excels in environments with signal blockages, hard-to-reach location or hazardous conditions, providing safer, more efficient results and expanding the possibilities for geospatial professionals.

ACCURATE IN PALM SIZE

Ultra-compact design of only $\Phi 107$ mm \times 58.7 mm, the Orion ONE-Laser keeps its body as small as an apple without compromising on functionality, easily fit in your palm. Inside this ultra-small body, it packs full-constellation GNSS tracking and anti-interference capability for optimal positioning accuracy, allowing surveyors to carry out accurate surveying without the bulk.

COMPREHENSIVE FUNCTIONALITY

Packed with comprehensive features, the Orion ONE-Laser provides an advanced GNSS engine, laser surveying, 60° tilt IMU, 15km enhanced UHF, built-in web UI, NFC/WiFi/Bluetooth/USB communication, 8GB static storage, IP67 protection and rich features to empower your tasks, delivering unmatched flexibility, safety, and productivity across diverse surveying scenarios.

SATELLITES TRACKING

Channels	1408
BDS	B1I, B2I, B3I, B1C, B2a, B2b
GPS	L1C/A, L1C, L2C, L2P(Y), L5
GLONASS	G1, G2, G3
Galileo	E1, E5a, E5b, E6
QZSS	L1C/A, L1C, L2C, L5
NavIC	L5
SBAS	WAAS, EGNOS, SDCM, BDSBAS, GAGAN
L-Band	Support
Cold start	<30s
RTK Initialization Time	<5s(typical)
RTK initialization reliability	>99.9%
Re-acquisition	<1s

ACCURACY

Standalone	1.5m Horizontally 2.5m Vertically
DGPS	0.4m Horizontally 0.8m Vertically
Static Post-processing	2.5mm+0.5ppm Horizontally 5mm+0.5ppm Vertically
RTK	8mm+1ppm Horizontally 15mm+1ppm Vertically
PPP	5cm Horizontally 10cm Vertically
SBAS	< 1.0 m 3D RMS
Time Accuracy	20ns
Tilt Surveying	< ±2.5cm, within 60° Tilt Range
Laser Tilt Measurement	≤5.5cm (5m Range, ≤60°Tilt in Laser Mode)

DATA FORMAT

Data Output Format	- NMEA-0183 - RINEX 3.02/3.04 - Binary Format *.xyz
Data Update Rate	1~50Hz Selectable
Correction Data Format	- RTCM v3.3/3.2/3.1/3.0
Supported Protocols	Ntrip client, Ntrip Server, Ntrip Caster, TCP, UDP

COMMUNICATION

UHF Modem ¹	- Working Range: Up to 15km with optimal conditions - Frequency Range: 410-470MHz - Protocol (TX & RX): LoRa - Protocol (RX): TRIMATLK, SATEL, TRANSEOT, TRIMMARK3, etc. - Channel Spacing: 25KHz - Transmit Power: 0.5W~2W Selectable
Bluetooth	BT4.0 Dual Mode

NFC	Support NFC Connection
WiFi	802.11 a/b/g/n/ac
Interface	- 1 Type-C Interface for Data Transmission and Charging - 1 SMA Connector for UHF Antenna

LASER SENSOR

Range	10m
Accuracy	(3-5)mm + 1ppm
Measuring Frequency	2Hz
Laser Injection Power	2mW~3mW
Laser Tilt Measurement	≤5.5cm (5m Range, ≤60°Tilt in Laser Mode)

USER INTERACTION

Front panel	- 3 LED indicators indicating satellite tracking, differential data transmission and power - 1 button for power on/off
WebUI	- Accessible via Wi-Fi - Support Configuration, Status Checking, Data Transfer, Data Storage and System Upgrade

ELECTRICAL

Power Consumption	1.8 W ²
Input Voltage	DC 5-15V
Battery	- 4200 mAh, up to 12 Hours Working Time - Fast Charge of 3 Hours Charging Time

PHYSICAL

Size	Φ107 mm × 58.7 mm
Weight	547 g
Storage	8 GB ³
Housing Material	Magnesium-aluminum Alloy

ENVIRONMENTAL

Working Temperature	-40 °C to + 65 °C
Storage Temperature	-55 °C to + 85 °C
Humidity	100% Non-condensing
Waterproof & Dustproof	IP67
Drop	Designed to Survive a 2m Drop onto Concrete

All specifications are subject to change without notice.

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- The enhanced UHF base is not compatible with normal UHF rovers on the market. For different user needs, SingularXYZ also provides normal UHF as an option compatible with UHF of other brands. Please clarify your requirements when placing the order.
- The power consumption varies with the different work modes.
- Storage can be expanded to 32GB according to user demands.