

Tersus GNSS LUKA GNSS Receiver

Overview

The LUKA GNSS Receiver is a new generation GNSS RTK system, which is small, light, and easy to carry and operate. It supports a calibration-free tilt compensation function immune to magnetic disturbances; a leveling pole is unnecessary. The LUKA GNSS Receiver can provide high accuracy and stable signal detection with an internal high-performance multi-constellation and multi-frequency GNSS board. The high-performance antenna can speed up the time to first fix (TTFF) and improve anti-jamming performance. The built-in 7000mAh large capacity battery supports up to 19 hours of fieldwork in 4G/3G/2G network and Rover radio mode. The built-in UHF radio module supports long-distance communication. The rugged housing protects the equipment from challenging environments.

Key Features

- ✓ Supports multiple constellations and frequencies
 - GPS L1, L2, L5
 - GLONASS L1, L2
 - BeiDou B1I, B2I, B3I, B1C, B2a
 - Galileo E1, E5a, E5b
 - QZSS L1, L2, L5
 - SBAS supports WAAS, EGNOS, GAGAN, SDCM, MSAS
- ✓ Supports 1568 channels
- ✓ 410-470MHz UHF radio ⁽¹⁾, 4G network, Wi-Fi, Bluetooth, NFC
- ✓ Tilt compensation without calibration, immune to magnetic disturbances⁽¹⁾
- ✓ The design is exquisite and compact, making it more convenient to carry and operate
- ✓ 8GB internal storage
- ✓ Up to 19 hours working in 4G/3G/2G network and Rover radio mode
- ✓ IP68-rated dust- & waterproof enclosure, for reliability in harsh environmental conditions
- ✓ Free subscription to Tersus Caster Service (TCS): transmit the correction data from LUKA Base to Rover



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Technical Specifications

Performance

Signal Tracking:	
GPS L1/L2/L5;	BDS B1I/B2I/B3I/B1C/B2a;
GLONASS L1/L2;	Galileo E1/E5a/E5b; QZSS L1/L2/L5
SBAS supports WAAS, EGNOS, GAGAN, SDCM, MSAS	
Channels:	1568
Single Point Positioning Accuracy (RMS):	
- Horizontal:	1.5m
- Vertical :	2.5m
DGPS Positioning Accuracy (RMS):	
- Horizontal:	0.25m
- Vertical:	0.5m
High-Precision Static (RMS):	
- Horizontal:	2.5mm+0.1ppm
- Vertical:	3.5mm+0.4ppm
Static & Fast Static (RMS):	
- Horizontal:	2.5mm+0.5ppm
- Vertical:	5mm+0.5ppm
Post Processed Kinematic (RMS):	
- Horizontal:	2.5mm+1ppm
- Vertical:	5mm+1ppm
Real Time Kinematic (RMS):	
- Horizontal:	8mm+1ppm
- Vertical:	15mm+1ppm
Initialization (Typical):	4s ⁽²⁾
Initialization Reliability:	>99.9% ⁽³⁾
Network Real Time Kinematic (RMS):	
- Horizontal:	8mm+0.5ppm
- Vertical:	15mm+0.5ppm
Observation Accuracy (zenith direction):	
- C/A Code:	10cm
- P Code:	10cm
- Carrier Phase:	1mm
Tilt Compensation Accuracy (No tilt angle limit):	
	≤2cm(within 60°) ⁽¹⁾

Time To First Fix (TTFF):	
- Cold Start:	<30s
- Warm Start:	<5s
Re-acquisition:	<1s
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s

System & Data

Operating System:	Linux
Storage:	Built-in 8GB
Differential Data Format:	CMR, RTCM 2.x/3.x
Data Output:	RINEX, NMEA-0183, Tersus Binary
Data Update Rate:	20Hz

Software Support

Tersus Nuwa

Communication

Cellular:	4G LTE/WCDMA/GSM/EDGE
Cellular Bands ⁽⁴⁾ :	LTE FDD B1, B3, B7, B8, B20, B28 LTE TDD B38, B40 WCDMA B1, B8 GSM/EDGE B3, B8
Network Protocols:	Ntrip Client, Ntrip Server, TCP Tersus Caster Service (TCS)
Wi-Fi:	802.11b/g/n
Bluetooth:	4.1
Internal Radio⁽¹⁾:	
RF Transmit Power:	0.5W/1.0W
Frequency Range:	410MHz ~ 470MHz
Operating Mode:	Half-duplex
Channel Spacing:	12.5KHz / 25KHz
Modulation Type:	GMSK, 4FSK
Air Baud Rate:	4800 / 9600 / 19200bps

Technical Specifications

Radio Protocols: TrimTalk450, TrimMark 3, South, Transparent, Satel

Wired Communication

USB: Type-C, OTG

User Interface

Button: Power Button

LED Indicators: Satellite, Correction Data, Static, Solution, Bluetooth

Voice: Support

Power Display: Support

Electrical

External Power Supply : Support USB (5~20V)

Fast Charging: Support, 15W max (5V 3A)

Lithium Battery: Built-in, 7000mAh/7.4V

Charging Time: 3 hours (20%-90%)

Battery Charging Temperature: +10°C ~ +45°C

Working Time: up to 19 hours⁽⁵⁾

Physical

Dimension: $\phi 132 \times 68 \text{mm}$

Weight: $\approx 827 \text{g}^{(6)}$

Operating Temperature: $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$

Storage Temperature: $-55^{\circ}\text{C} \sim +85^{\circ}\text{C}$

Relative Humidity: 100% not condensed

Dust- & Waterproof: IP68

Pole Drop onto Concrete: 2m

Vibration: MIL-STD-810G, FIG 514.6C-1

Note:

- (1) IMU and built-in radio are optional, details refer to performance comparison table.
- (2) The initialization time depends on various factors, including the number of satellites, observation time, atmospheric conditions, multi-path, obstructions, satellite geometry, etc.
- (3) The initialization reliability for LUKA Ultimate is 99.99%, for Basic is 99.9%. May be affected by atmospheric conditions, signal multipath, and satellite geometry.
- (4) Optional for LTE FDD B28A.
- (5) The working time of the battery is related to the working environment, working temperature and battery life. Up to 19 hours working in 4G/3G/2G network and Rover radio mode.
- (6) The actual size/weight may vary depending on the manufacturing process and measurement method.

Performance Comparison



PN	Version	Configuration
628xxxxxxxx	Ultimate	IMU+UHF+4G

Version	Ultimate
Channels	1568
GPS	L1/L2/L5
GLONASS	L1/L2
Bei Dou	B1I/B2I/B3I/B1C/B2a
Galileo	E1/E5a/E5b
QZSS	L1/L2/L5
SBAS	WAAS, EGNOS, GAGAN, SDCM, MSAS
GNSS Antenna	Integrated
Button	Power Button
LED indicators	Satellite, Correction data, Static, Solution, Bluetooth
Bluetooth	✓
4G	✓
UHF radio	✓
Tilt compensation (IMU)	✓
Electronic bubble	✓
Memory	8GB
USB OTG	✓
Battery capacity	7.4V 7000mAh
Smart battery with power display	✓
Warranty period	Two Year

Authorized Master Distributor in U.S. and Canada



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