Tersus GNSS
LUKA GNSS Receiver

Overview

The LUKA GNSS Receiver is a new generation GNSS RTK system, which is small and light, easy to carry and operate. It supports calibration-free tilt compensation function which is immune to magnetic disturbances, leveling pole is not required. With an internal high-performance multi-constellation and multi-frequency GNSS board, the LUKA GNSS Receiver can provide high accuracy and stable signal detection. 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 field work 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 harsh environments.

There are four versions of the LUKA GNSS Receiver, which can provide selectivity for the requirement from different users.

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
- ✓ Supports 1568 channels
- ✓ 410-470MHz UHF radio(1), 4G network, WI-FI, Bluetooth, NFC
- ✓ Tilt compensation without calibration, immune to magnetic disturbances(1)
- ✓ The whole design is exquisite and compact, which is 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 of 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; BeiDou B1I/B2I/B3I/B1C/B2a; GLONASS L1/L2; Galileo E1/E5a/E5b; QZSS L1/L2/L5	
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:	8mm+1ppm
- Vertical:	15mm+1ppm
Real Time Kinematic (RMS):	
- Horizontal:	8mm+1ppm
- Vertical:	15mm+1ppm
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
Time To First Fix (TTFF):	
- Cold Start:	<30s
- Warm Start:	<5s
Re-acquisition:	<1s
Tilt compensationaccuracy (No tilt angle limit):	
	≤2cm(within 60°)[1]
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Initialization (Typical):	< 5s
Initialization Reliability:	>99.9%

System & Data

Operating System:	Linux
Storage:	Built-in 8GB
Differental Data Format:	CMR, RTCM 2.3, RTCM3.x
Data Output:	RINEX, NMEA-0183, Tersus Binary
Data Update Rate:	20Hz

Software Support

Tersus Nuwa

Communication

Cellular:	4G LTE/WCDMA/GSM/EDG
Cellular Bands:	
	LTE FDD B1,B3,B7,B8,B20,B28A LTE TDD B38,B40,B41 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/1.5W
Frequency Range:	410MHz ~ 470MHz
Operating Mode:	Half-duplex
Channel Spacing:	12.5KHz / 25KHz
Modulation Type:	GMSK, 4FSK
Air Baud Rate:	4800 / 9600 / 19200bps
Radio Protocols:	
	Transparent, TrimTalk450, TrimMark3, South,Satel

Technical Specifications

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

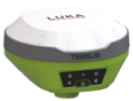
External Power Supply:	Support USB (5~20V)
Fast Charging:	Support, 15W max(5V 3A)
Battery:	Built-in, 7000mAh/7.4V
Charing Time:	3 hours (20%~90%)
Battery Charging Temperature:	+10°C ~ +45°C
Working Time:	Up to 19 hours[2]

Physical

Dimension:	ϕ132x68mm
Weight:	≈835g [3]
Operating Temperature:	-40°C ~ +70°C
Storage Temperature:	-55°C ~ +85°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 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.
(3) The actual size/weight may vary depending on the manufacturing process and measurement method.

Performance Comparison



PN	Version	Configuration
628xxxxxxxx	Ultimate	IMU+UHF+4G
629xxxxxxxx	Ultimate w/o UHF	IMU+4G
630xxxxxxxx	Basic	UHF+4G
631xxxxxxxx	Basic w/o UHF	4G

Version	Ultimate	Ultimate w/o UHF	Basic	Basic w/o UHF
Channels	1568	1568	1568	1568
GPS	L1/L2/L5	L1/L2/L5	L1/L2/L5	L1/L2/L5
GLONASS	L1/L2	L1/L2	L1/L2	L1/L2
BeiDou	B1I/B2I/B3I/B1C/B2a	B1I/B2I/B3I/B1C/B2a	B1I/B2I/B3I/B1C/B2a	B1I/B2I/B3I/B1C/B2a
Galileo	E1/E5a/E5b	E1/E5a/E5b	E1/E5a/E5b	E1/E5a/E5b
QZSS	L1/L2/L5	L1/L2/L5	L1/L2/L5	L1/L2/L5
GNSS Antenna	Integrated	Integrated	Integrated	Integrated
Button	Power Button	Power Button	Power Button	Power Button
LED indicators	Satellite, Correction data, Static, Solution, Bluetooth	Satellite, Correction data, Static, Solution, Bluetooth	Satellite, Correction data, Static, Solution, Bluetooth	Satellite, Correction data, Static, Solution, Bluetooth
Bluetooth	✔	✔	✔	✔
NFC	✔	✔	✔	✔
4G	✔	✔	✔	✔
UHF radio	✔	✘	✔	✘
Tilt compensation (IMU)	✔	✔	✘	✘
Electronic bubble	✔	✔	✔	✔
Memory	8GB	8GB	8GB	8GB
USB OTG	✔	✔	✔	✔
Battery capacity	7.4V 7000mAh	7.4V 7000mAh	7.4V 7000mAh	7.4V 7000mAh
Smart battery with power display	✔	✔	✔	✔
Warranty period	ONE Year	ONE Year	ONE Year	ONE Year

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