



# LUKA-TAP GNSS RECEIVER

LIGHTER, SMALLER AND SMARTER

# LUKA-TAP GNSS RECEIVER

The LUKA-TAP GNSS Receiver adopts satellite-based precise point positioning service developed by Tersus GNSS, which allows users to achieve centimeter-level high-precision positioning worldwide. With TAP, the GNSS rover receiver will not need to work with the local RTK base station or CORS, but directly receives corrections broadcast by the satellites, such as ephemeris error, satellite clock error, etc.

The LUKA-TAP is Lighter, Smaller and Smarter. It is an ultra-compact IMU-GNSS receiver, easy to carry and operate. Powered by 1792 channels, LUKA-TAP can track full-constellation and multi-frequency for enhanced performance. It provides centimetre-level positioning accuracy, and fix in seconds even in challenging conditions. LUKA-TAP supports a calibration-free tilt compensation function immune to magnetic disturbances; a leveling pole is unnecessary. Built-in high-capacity lithium battery provides 19 hours of field work, with a smart power display. It can be quickly charged in about 3 hours, and a power bank can be used during field surveying work. The rugged housing with IP68 protects the equipment from harsh environments.

The LUKA-TAP meets the demand for centimeter-level high-precision positioning in areas without or with poor network coverage. It can be widely used in marine surveying, precision agriculture, autonomous driving, and so on.



## Application Scenario



Danger Zone



Hidden Point



Underground  
Utilities



Forest



City Canyon



# Features



**Global satellite-based PPP service**

**1792**

**1792 channels** for enhanced performance.



**Smart battery** with extended working hours and power level display.



**Compact and Exquisite Design**



**Fixed in Seconds**



**Flexible and fast charging methods:**  
15W fast charging; Support power bank charging during surveying.

## Tersus TAP (PPP) Service

TAP is a satellite-based precise point positioning service developed by Tersus GNSS, which allows users to achieve centimeter-level high-precision positioning worldwide.



### High-performance global solution

Enjoy 15mm horizontal and 30mm vertical accuracy in just 3 minutes worldwide.

### High-availability & Redundancy

With redundant backups for all hardware and broadcast paths, ensure over 99.99% service availability.

### The security and simplicity

Quick and secure access, with one-way data transfer of corrections to your receiver.

### Seamless subscriptions

Remote one-click activation, with flexible subscription durations to suit your application needs.



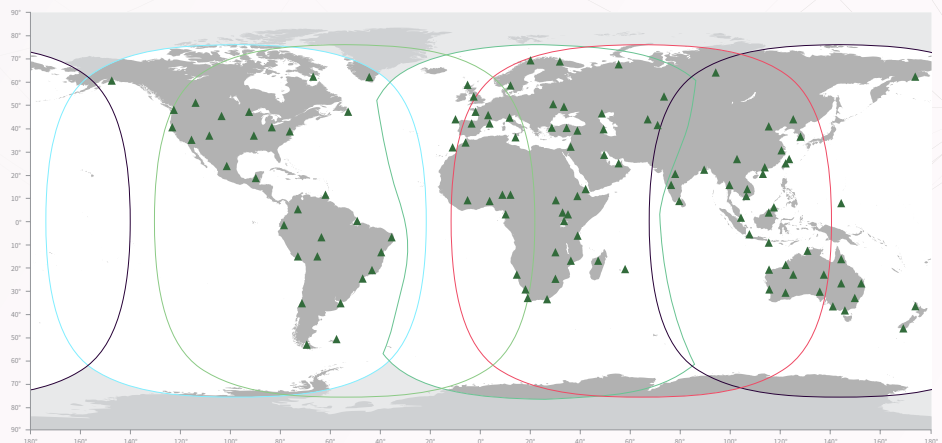
**Real-time via L-band from satellite**



**Global coverage**



**Stable coordinate frame**



## NUWA

Nuwa is a survey application software based on Android OS (Operating System), designed by and all rights reserved to Tersus GNSS Inc. Nuwa is simple, easy to use and has a friendly user interface. It is designed to work with the LUKA-TAP GNSS receiver, Oscar GNSS Receiver, and other receivers that support NMEA-0183. Nuwa provides extensive pre-defined coordinate systems that are used worldwide, and various data formats import and export like TXT, CSV, DXF, SHP, RAW, KML/KMZ, LandXML, RW5, HTML, and so on.



# Technical Specifications

## LUKA-TAP

### Performance

Signal Tracking:	
GPS L1/L2/L5;	
BeiDou B1I/B2I/B3I/B1C/B2a;	
GLONASS L1/L2;	
Galileo E1/E5a/E5b;	
QZSS L1/L2/L5	
SBAS supports WAAS, EGNOS, GAGAN, SDCM, MSAS, L-BAND	
Channels:	1792
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 <sup>(1)</sup>
Initialization Reliability:	>99.9% <sup>(2)</sup>
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

### Performance – continued

Tilt compensation accuracy (No tilt angle limit) :	
≤2cm(within 60°) <sup>(3)</sup>	
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s

### PPP(TAP)

Positioning Accuracy (RMS):	
- Horizontal:	15mm
- Vertical:	30mm
Convergence Time:	3 minutes
Coverage:	Global
Signal Stability:	99.99%

### System & Data

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

### Communication

Cellular:	4G LTE/WCDMA/GSM/EDGE
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<sup>(3)</sup>

RF Transmit Power:	0.5W/1.0W
Frequency Range:	410MHz ~ 470MHz
Operating Mode:	Half-duplex
Channel Spacing:	12.5KHz / 25KHz
Air Baud Rate:	4800 / 9600 / 19200bps
Modulation Type:	GMSK, 4FSK
Radio Protocols:	Transparent, TrimTalk450, TrimMark3, South,Satel

### Communication

<b>Wired Communication</b>	
USB:	Type-C, OTG

### User Interface

Button:	Power Button
LED Indicators:	Satellite, Correction data, Static, Solution, Bluetooth
Voice:	Support in Nuwa App
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 <sup>(4)</sup>

### Physical

Dimension:	φ132x68mm
Weight:	≤ 827g <sup>(5)</sup>
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

### Software Support

Tersus Nuwa	
Note:	
(1)	The initialization time depends on various factors, including the number of satellites, observation time, atmospheric conditions, multi-path, obstructions, satellite geometry, etc.
(2)	The initialization reliability may be affected by atmospheric conditions, signal multipath, and satellite geometry.
(3)	IMU and built-in radio are optional, details refer to performance comparison table.
(4)	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.
(5)	The actual size/weight may vary depending on the manufacturing process and measurement method.



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To learn more, please visit: [www.tersus-gnss.com](http://www.tersus-gnss.com)  
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