TERSUS
GNSS

LUKA
GNSS RECEIVER

LIGHTER, SMALLER AND SMARTER

LUKA GNSS RECEIVER

Smaller, lighter, and smarter, the LUKA GNSS Receiver delivers calibration-free tilt compensation that is immune to magnetic disturbances. Surveyors no longer need to hold the pole upright, gaining unprecedented flexibility and efficiency in the field.

Powered by 1792 channels, LUKA can track full-constellation and multi-frequency for enhanced performance. It provides centimetre-level positioning accuracy, and fix in seconds even in challenging conditions. Built-in high-capacity lithium battery provides long time 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 version integrates the Tersus satellite-based Precise Point Positioning service (TAP), enabling centimeter-level accuracy worldwide without relying on local RTK base stations or CORS. By directly receiving satellite-broadcast corrections such as ephemeris and clock errors, Oscar-TAP ensures high-precision positioning even in remote areas with poor or no network coverage, including oceans, deserts, mountains, and high altitudes.

Application Scenario

Danger Zone   Hidden Point   Underground Utilities   Forest   City Canyon

Features

Compact and Exquisite Design

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

Smart battery with extended working hours and power level display.

Fixed in Seconds

1792 **1792 channels** for enhanced performance.

Global satellite-based PPP service[1]

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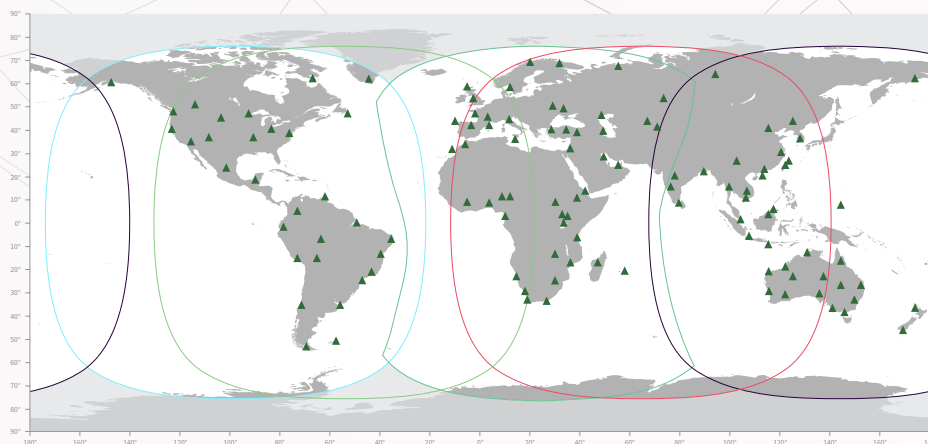Remote one-click activation, with flexible subscription durations to suit your application needs.

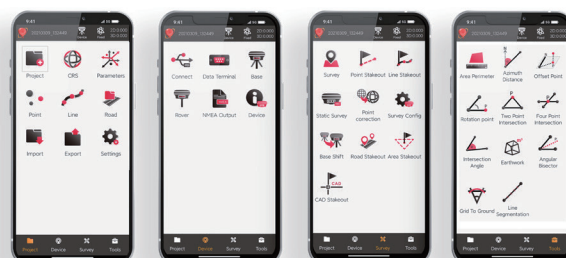**Real-time via L-band from satellite**

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

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[1]

Channels:	1792[1]

Single Point Positioning Accuracy (RMS):

- Horizontal:	1.5m
- Vertica:	2.5m

DGPS Positioning Accuracy (RMS):

- Horizontal:	0.25m
- Vertica:	0.5m

High-Precision Static (RMS):

- Horizontal:	2.5mm+0.1ppm
- Vertica:	3.5mm+0.4ppm

Static & Fast Static (RMS):

- Horizontal:	2.5mm+0.5ppm
- Vertica:	5mm+0.5ppm

Post Processed Kinematic (RMS):

- Horizontal:	2.5mm+1ppm
- Vertica:	5mm+1ppm

Real Time Kinematic (RMS):

- Horizontal:	8mm+1ppm
- Vertica:	15mm+1ppm
Initialization (Typical):	4s[2]
Initialization Reliability:	>99.9%[3]

Network Real Time Kinematic (RMS):

- Horizontal:	8mm+0.5ppm
- Vertica:	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°)[4]
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s

PPP(TAP)[1]

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
Data Format:	CMR, CMR+, RTCM 2.x/3.x
Data Output:	RINEX, NMEA-0183, Tersus Binary
Data Update Rate:	20Hz

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[3]

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

Wired Communication

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 10 hours[5]

Physical

Dimension:	φ132x68mm
Weight:	≤ 827g[6]
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) TAP Service is available exclusively on the LUKA-TAP version.
(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 may be affected by atmospheric conditions, signal multipath, and satellite geometry.
(4) IMU and built-in radio are optional, details refer to performance comparison table.
(5) The working time of the battery is related to the working environment, working temperature and battery life. Up to 10 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.

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