

**Right to the Point**

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# TERSUS OSCAR

**GNSS RTK Receiver  
with Calibration-Free Tilt Compensation  
and Global Satellite-Based PPP Service**



# OscarGNSS Receiver ExtremeRTK™

## Speed Up Your Work

Empowered by a high-precision inertial measurement unit (IMU), the Oscar 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.

With a high-performance multi-constellation, multi-frequency GNSS board and built-in antenna, Oscar ensures reliable signal tracking and fast time to first fix (TTFF). The integrated UHF radio enables long-distance communication, while two detachable high-capacity batteries provide up to 16 hours of continuous operation in 4G/3G/2G and radio Rover mode. A 1.54-inch interactive screen allows quick configuration, and the rugged housing guarantees durability in challenging environments.

The Oscar-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.



Oscar  
GNSS Receiver

Unprecedented  
Flexibility and efficiency



Danger Zone



Hidden Point



Underground  
Utilities



Forest



City Canyon

# Features



Supports multiple constellations & frequencies: GPS, GLONASS, BeiDou, Galileo, QZSS, SBAS, IRNSS, L-Band

**1792** Supports 1792 channels<sup>(1)</sup>



Tilt compensation without calibration, immune to magnetic disturbances



Up to 16 hours working in 4G/3G/2G network and Rover radio mode



IP68-rated dust- & waterproof enclosure, for reliability in harsh environmental conditions



410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC, 32GB/8GB internal storage



Free subscription of Tersus Caster Service (TCS): transmit the correction data from Oscar-TAP Base to Rover



Global satellite-based PPP service<sup>(1)</sup>

## 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

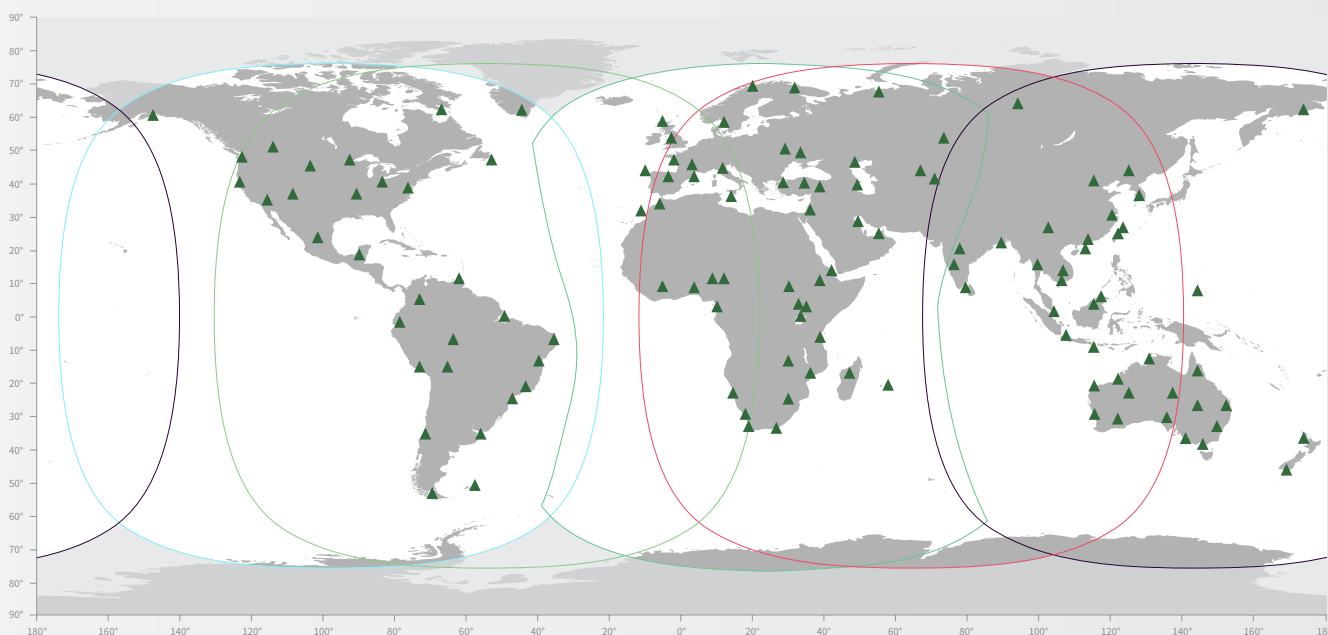
With redundant backups for all hardware and broadcast paths, ensure over 99.99% service availability.

### 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.



# Technical Specifications

## Oscar

### Performance

Signal tracking GPS L1 C/A, L1C, L2C, L2P, L5C; GLONASS L1OF, L2OF, L3OC; BDS B1I, B2I, B3I, B1C, B2a, B2b; Galileo E1, E5a, E5b, E5AltBOC, E6; QZSS L1 C/A, L1C, L2C, L5C; SBAS L1 C/A, L5; IRNSS L5; L-band <sup>(1)</sup>	
Channels:	1792 <sup>(1)</sup>
Single Point Positioning Accuracy (RMS):	
- Horizontal:	1.5m
- Vertical:	3.0m
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>(2)</sup>
Initialization Reliability:	>99.99% <sup>(3)</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:	<35s
- Warm Start:	<10s
Reacquisition:	<1s

### Performance – continued

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

### PPP(TAP)<sup>(1)</sup>

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(default) Built-in 32GB(optional)
Data Format:	CMR, CMR+ (GPS only), RTCM 2.x/3.x
Data output:	RINEX, NMEA-0183, Tersus Binary
Data update rate:	20Hz

### Physical

Display:	1.54" OLED
Dimension:	157x157x103mm <sup>(4)</sup>
Weight:	≈ 1.2kg (without battery) ≈ 1.4kg (with a battery) <sup>(4)</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
MicroSurvey FieldGenius

### Electrical

Input voltage:	9~28V DC
Power consumption (typical):	
Network or Radio receive mode:	≈ 5W
Radio transmit mode (0.5W):	≈ 8W
Radio transmit mode (1W):	≈ 9W
Radio transmit mode (2W):	≈ 11W
Lithium battery:	7.4V 6400mAh x2 <sup>(5)</sup>
Battery Charging Temperature:	+10°C ~ +45°C
Battery Working Time:	up to 8 hours <sup>(5)</sup>

### Communication

Cellular	
Cellular:	4G LTE/WCDMA/GSM
Cellular Bands <sup>(6)</sup> :	
	FDD LTE 1,3,7,8,20,28A   2,4,5,12,13 TDD LTE 38,40,41  WCDMA 1,8 2,5 GSM 3,8
Network protocols:	
	Ntrip Client, Ntrip Server, TCP, Tersus Caster Service (TCS)
Wi-Fi:	802.11b/g
Bluetooth	4.1
Internal Radio	
RF transmit power:	0.5W/1W/2W
Frequency range:	410MHz ~ 470MHz
Operating mode:	Half-duplex
Channel spacing:	12.5KHz / 25KHz
Modulation type:	GMSK, 4FSK
Air baud rate:	4800 / 9600 / 19200bps
Distance (Typical) <sup>(7)</sup> :	>5km
Radio protocols:	
	TrimTalk450, TrimMark 3, South, Transparent, Satel
Wired communication	
USB OTG:	USB 2.0 x1
Serial ports:	RS232 x1
COM baud rate:	up to 921600bps

#### Note:

- (1) TAP Service is available exclusively on the Oscar-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) The actual size/weight may vary depending on the manufacturing process and measurement method.
- (5) Oscar-TAP uses one battery at a time, the other is a substitute. Each battery lasts up to 8 hours when Oscar-TAP works in 4G/3G/2G network and Rover radio mode. Two batteries add up to 16 hours of continuous use. The working time of the battery is related to the working environment, working temperature and battery life.
- (6) Depending on version. In order Europe | American version.
- (7) The distance depends on the environment and antenna type. In an urban environment, a short rod antenna can reach up to 5 km, and a high-gain antenna can exceed 5km. In optimal conditions, the range can exceed 5 km. However, in challenging environments such as wooded and suburban areas, the range will be less than 5 km.

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

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