

# Oscar GNSS Receiver

## Oscar Ultimate T

### Overview

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The Oscar GNSS Receiver is a new generation GNSS RTK system. It supports calibration-free tilt compensation function which is immune to magnetic disturbances, leveling pole is not required. Easy configuration with 1.54 inch interactive screen on Ultimate T version. With an internal high-performance multi-constellation and multi-frequency GNSS board, the Oscar 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 large capacity battery is detachable, two batteries support up to 16 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.

### Key Features

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Supports multiple constellations & frequencies:

- GPS L1 C/A, L2C, L2P, L5
  - GLONASS L1 C/A, L2 C/A
  - BeiDou B1, B2, B3
  - Galileo E1, E5a, E5b
  - QZSS L1 C/A, L1C, L2C, L5
  - SBAS (EGNOS, WAAS, MSAS, GAGAN) L1 C/A (optional)
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Supports 576 channels

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410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC

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Tilt compensation without calibration, immune to magnetic disturbances

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Various working modes

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16GB internal storage

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

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

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

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# Technical Specifications



## Performance

Signal tracking:	
– GPS L1 C/A, L2C, L2P, L5; GLONASS L1 C/A, L2 C/A;	
– BeiDou B1, B2, B3; Galileo E1, E5a, E5b;	
– QZSS L1 C/A, L1C, L2C, L5;	
– SBAS (EGNOS, WAAS, MSAS, GAGAN) L1 C/A (optional)	
Channels:	576
Single Point Positioning Accuracy (RMS):	
– Horizontal:	1.5m
– Vertical:	3.0m
DGPS Positioning Accuracy (RMS):	
– Horizontal:	0.4m
– Vertical:	0.8m
SBAS Differential Positioning Accuracy (RMS):	
– Horizontal:	0.6m
– Vertical:	1.2m
High-Precision Static (RMS):	
– Horizontal:	3mm+0.1ppm
– Vertical:	3.5mm+0.4ppm
Static & Fast Static (RMS):	
– Horizontal:	3mm+0.5ppm
– Vertical:	5mm+0.5ppm
Real Time Kinematic (RMS):	
– Horizontal:	5mm+0.5ppm
– Vertical:	10mm+0.8ppm
Post Processed Kinematic (RMS):	
– Horizontal:	8mm+1ppm
– Vertical:	15mm+1ppm
Observation Accuracy (zenith direction):	
– C/A Code:	15cm
– P Code:	20cm
– Carrier Phase:	1mm
Time To First Fix (TTFF):	
– Cold Start:	<35s
– Warm Start:	<10s
Reacquisition:	<1s

## Performance – continued

Tilt Compensation Accuracy (within 30° )	≤2cm
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Initialization (typical):	<10s
Initialization Reliability:	>99.9%

## System & Data

Operating system:	Linux
Storage:	built-in 16GB
Data format:	CMR, RTCM 2.X/3.X
Data output:	RINEX, NMEA-0183, Tersus Binary
Data update rate:	20Hz

## Software Support

Tersus Nuwa
MicroSurvey FieldGenius



# Technical Specifications - Continued



## Communication

### Cellular

Cellular: 4G LTE/TD-SCDMA/WCDMA/GPRS/GSM

Cellular bands (EU version):

LTE FDD B1/B2/B3/B4/B5/B8/B20

WCDMA B1/B2/B5/B8

GSM/GPRS 1900/1800/900/850MHz

Network protocols:

Ntrip Client, Ntrip Server, Tersus Caster Service (TCS)

Wi-Fi: 802.11b/g (2)

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): >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

## 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>(1)</sup>

## Physical

Display: 1.54" OLED

Dimension: 157x157x103mm

Weight: ≈ 1.15kg (without battery)

≈ 1.4kg (with a battery)

Operating temperature: -40°C ~ +80°C

Storage temperature: -55°C ~ +85°C

Relative humidity: 100% not condensed

Dust- & Waterproof: IP68

Pole drop onto concrete: 2m

### Note:

(1) Oscar uses one battery at a time, the other is a substitute. Each battery lasts up to 8 hours when Oscar works in 4G/3G/2G network and Rover radio mode. Two batteries add up to 16 hours of continuous use.

(2) Hardware of Wi-Fi module is ready, the function will be supported by firmware update.

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