

# Oscar GNSS Receiver

## Overview

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 and Advanced versions. 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.

The Oscar GNSS Receiver has three versions: Ultimate, Advanced, and Basic. It provides selectivity for the requirement from different users.

## Key Features

Supports multiple constellations & frequencies:

- GPS L1, L2, L5
- GLONASS L1, L2
- BeiDou B1, B2, B3
- Galileo E1, E5a, E5b
- QZSS L1, L2, L5
- SBAS (EGNOS, WAAS, MSAS, GAGAN) L1C/A

Supports 576 channels

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

Tilt compensation without calibration, immune to magnetic disturbances

Various working modes

16GB/8GB internal storage

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

IP67-rated dust- & waterproof enclosure, for reliability in harsh environmental conditions

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





# Technical Specifications

## Performance

Signal tracking:	
GPS L1, L2, L5; GLONASS L1, L2; BeiDou B1, B2, B3;	
Galileo E1, E5a, E5b; QZSS L1, L2, L5;	
SBAS (EGNOS, WAAS, MSAS, GAGAN) L1C/A	
Channels:	576
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
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
Initialization (typical):	<10s
Initialization Reliability:	>99.9%
Tilt Compensation Accuracy (within 30° )	≤2cm <sup>(2)</sup>

## System & Data

Operating system:	Linux
Storage:	built-in 16GB/8GB <sup>(2)</sup>
Data format:	CMR, CMR+, RTCM 2.X/3.X
Data output:	RINEX, NMEA-0183, Tersus Binary

## Software Support

Tersus Nuwa
MicroSurvey FieldGenius

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) Details refer to performance comparison table.

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

## Communication

Cellular:	4G LTE/TD-SCDMA/WCDMA/GPRS/GSM
Network protocols:	Ntrip Client, Ntrip Server, Tersus Caster Service (TCS)
Wi-Fi:	802.11b/g <sup>(3)</sup>
Bluetooth:	4.1
USB OTG:	USB 2.0 x1
Serial ports:	RS232 x1
Internal radio:	
- RF transmit power	0.5W/1W/2W
- Frequency	410MHz ~ 470MHz
Distance (Typical):	>5km
Radio protocols:	TrimTalk450, TrimMark 3, South, Transparent, Satel

## 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 <sup>(2)</sup>
Dimension:	157x157x103mm
Weight:	≈ 1.2kg (without battery)
	≈ 1.4kg (with a battery)
Operating temperature:	-40°C ~ +75°C
Storage temperature:	-55°C ~ +85°C
Relative humidity:	100% not condensed
Dust- & Waterproof:	IP67
Pole drop onto concrete:	2m



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# Performance Comparison



Oscar Version	Ultimate	Advanced	Basic
Picture			
Channels	576	576	576
GPS	L1, L2, L5	L1, L2, L5	L1, L2, L5
GLONASS	L1, L2	L1, L2	L1, L2
BeiDou	B1, B2, B3	B1, B2, B3	B1, B2, B3
Galileo	E1, E5a, E5b	E1, E5a, E5b	E1, E5a, E5b
QZSS	L1, L2, L5	L1, L2, L5	L1, L2, L5
SBAS	L1C/A	L1C/A	L1C/A
GNSS Antenna	Integrated	Integrated	Integrated
Buttons	FN, ON/OFF	FN, ON/OFF	FN, ON/OFF
Display	1.54" OLED	1.54" OLED	X
LED Indicators	Satellite, Tilt, Correction Data, Power	Satellite, Static, Correction Data, Power	Satellite, Static, Correction Data, Power, Bluetooth, Solution Status
Bluetooth	√	√	√
NFC	√	√	√
UHF Radio	√	√	√
4G	√	√	√
Tilt Compensation (IMU)	√	X	X
Electronic Bubble	√	√	√
Memory	16GB	16GB	8GB
USB OTG	√	√	√
Battery Capacity	6400mAh 7.4V x2	6400mAh 7.4V x2	6400mAh 7.4V x2
Smart Battery with power display	√	√	√
Warranty Period	TWO Years	TWO Years	ONE Year

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