

Tersus

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 and frequencies
 - GPS L1 C/A, L2C, L2P, L5
 - GLONASS L1 C/A, L2 C/A
 - BeiDou B1, B2, B3 (BDS-3)
 - Galileo E1, E5a, E5b
 - QZSS L1 C/A, L2C, L5
- ✓ Supports 576 channels
- ✓ 410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC
- ✓ Tilt compensation without calibration, immune to magnetic disturbances ⁽¹⁾
- ✓ 16GB/8GB internal storage ⁽¹⁾
- ✓ 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
- ✓ Free subscription of Tersus Caster Service (TCS): transmit the correction data from Oscar Base to Rover

Technical Specifications

Performance		System & Data	
Signal tracking:		Operating system:	Linux
GPS L1 C/A, L2C, L2P, L5; GLONASS L1 C/A, L2 C/A; BeiDou B1, B2, B3 (BDS-3); Galileo E1, E5a, E5b; QZSS L1 C/A, L2C, L5		Storage:	built-in 16GB/8GB ⁽¹⁾
Channels:	576	Data format:	CMR, CMR+ (GPS only), RTCM 2.x/3.x
Single Point Positioning Accuracy (RMS):		Data output:	RINEX, NMEA-0183, Tersus binary
- Horizontal:	1.5m	Data update rate:	20Hz
- Vertical:	3.0m		
DGPS Positioning Accuracy (RMS):		Software Support	
- Horizontal:	0.4m	Tersus Nuwa	
- Vertical:	0.8m	MicroSurvey FieldGenius	
High-Precision Static (RMS):		Communication	
- Horizontal:	3mm+0.1ppm	Cellular	
- Vertical:	3.5mm+0.4ppm	Cellular:	
Static & Fast Static (RMS):		4G LTE/TD-SCDMA/WCDMA/GPRS/GSM	
- Horizontal:	3mm+0.5ppm	Cellular bands (EU version):	
- Vertical:	5mm+0.5ppm	LTE FDD B1/B2/B3/B4/B5/B8/B20	
Post Processed Kinematic (RMS):		WCDMA B1/B2/B5/B8	
- Horizontal:	8mm+1ppm	GSM/GPRS 1900/1800/900/850MHz	
- Vertical:	15mm+1ppm	Network protocols: Ntrip Client, Ntrip Server, Tersus Caster Service (TCS)	
Real Time Kinematic (RMS):		Wi-Fi: 802.11b/g ⁽²⁾	
- Horizontal:	8mm+1ppm	Bluetooth: 4.1	
- Vertical:	15mm+1ppm	Internal Radio	
Network Real Time Kinematic (RMS):		RF transmit power: 0.5W/1W/2W	
- Horizontal:	8mm+0.5ppm	Frequency range: 410MHz ~ 470MHz	
- Vertical:	15mm+0.5ppm	Operating mode: Half-duplex	
Observation Accuracy (zenith direction):		Channel spacing: 12.5KHz / 25KHz	
- C/A Code:	15cm	Modulation type: GMSK, 4FSK	
- P Code:	20cm	Air baud rate: 4800 / 9600 / 19200bps	
- Carrier Phase:	1mm	Distance (Typical): >5km	
Time To First Fix (TTFF):		Radio protocols: TrimTalk450, TrimMark 3, South, Transparent, Satel	
- Cold start:	<35s	Wired communication	
- Warm start:	<10s	USB OTG: USB 2.0 x1	
Re-acquisition:	<1s	Serial ports: RS232 x1	
Tilt compensation accuracy (within 30°):		COM baud rate: up to 921600bps	
	≤2cm ⁽¹⁾		
Timing Accuracy (RMS):	20ns		
Velocity Accuracy (RMS):	0.03m/s		
Initialization (typical):	<10s		
Initialization Reliability:	>99.99% ⁽³⁾		


Technical Specifications - Continued

Electrical		Physical	
Input voltage:	9~28V DC	Display:	1.54" OLED ⁽¹⁾
Power consumption (typical):		Dimension:	157x157x103mm
Network or Radio receive mode:	≈ 5W	Weight:	≈ 1.2kg (without battery)
Radio transmit mode (0.5W):	≈ 8W		≈ 1.4kg (with a battery)
Radio transmit mode (1W):	≈ 9W	Operating temperature:	-40°C ~ +70°C
Radio transmit mode (2W):	≈ 11W	Storage temperature:	-55°C ~ +85°C
Lithium battery:	7.4V 6400mAh x2 ⁽⁴⁾	Relative humidity:	100% not condensed
		Dust- & Waterproof:	IP68
		Pole drop onto concrete:	2m
		Vibration:	MIL-STD-810G, FIG 514.6C-1

Note:

- (1) Details refer to performance comparison table.
- (2) Hardware of Wi-Fi module is ready, the function will be supported by firmware update.
- (3) The initialization reliability for Oscar Ultimate is 99.99%, for Advanced and Basic is 99.9%.
- (4) 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.

Performance Comparison

Oscar Version	Ultimate	Advanced	Basic
Picture			
Channels	576	576	576
GPS	L1 C/A, L2C, L2P, L5	L1 C/A, L2C, L2P, L5	L1 C/A, L2C, L2P, L5
GLONASS	L1 C/A, L2 C/A	L1 C/A, L2 C/A	L1 C/A, L2 C/A
BeiDou	B1, B2, B3 (BDS-3)	B1, B2, B3 (BDS-3)	B1, B2, B3 (BDS-3)
Galileo	E1, E5a, E5b	E1, E5a, E5b	E1, E5a, E5b
QZSS	L1 C/A, L2C, L5	L1 C/A, L2C, L5	L1 C/A, L2C, L5
GNSS antenna	Integrated	Integrated	Integrated
Buttons	FN, ON/OFF	FN, ON/OFF	FN, ON/OFF
Display	1.54" OLED	1.54" OLED	×
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)	✓	×	×
Electronic bubble	✓	✓	✓
Memory	16GB	16GB	8GB
USB OTG	✓	✓	✓
Battery capacity	7.4V 6400mAh x2	7.4V 6400mAh x2	7.4V 6400mAh x2
Smart battery with power display	✓	✓	✓
Warranty period	TWO Years	TWO Years	ONE Year

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