Oscar GNSS Receiver
Oscar Ultimate T

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 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

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)

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 internal storage

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

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
Correction formats:	DGPS, VRS, FKP and MAC
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[1]

Physical

Display:	1.54'' OLED
Dimension:	157x157x103mm
Weight:	≈ 1.15kg (without battery)
	≈ 1.4kg (with a battery)
Operating temperature:	-40℃ ~ +80℃
Storage temperature:	-55℃ ~ +85℃
Relative humidity:	100% not condensed
Dust- & Waterproof:	IP68
Pole drop onto concrete:	2m
Antenna IGS/NGS Code	TRSOSCAREU

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.