Oscar Trek

GNSS Receiver

Overview

The Oscar Trek GNSS Receiver is the latest high-precision GNSS RTK system, which is an innovative integration of visual positioning technology, GNSS, IMU and a camera. It enables you to measure what you see to achieve high-precision, high-efficiency and multi-point measurement.

It also supports calibration-free tilt compensation function which is immune to magnetic disturbances. Levelling pole is not required. Easy configuration with 1.54 inch interactive screen. With an internal multi-constellation and multi-frequency GNSS board, the Oscar Trek 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 and frequencies
  - GPS L1 C/A, L2C, L2P, L5
  - GLONASS L1 C/A, L2 C/A
  - BeiDou B1, B2, B3, support BDS-3
  - Galileo E1, E5a, E5b
  - QZSS L1 C/A, L2C, L5
- Supports 576 channels
- Innovative visual positioning technology, measure what you see
- 410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC
- Tilt compensation without calibration, immune to magnetic disturbances
- 16GB/8GB 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 to Tersus Caster Service (TCS): transmit the correction data from Oscar Base to Rover

Website: www.tersus-gnss.com

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Technical Specifications

Performance

Signal tracking:	
GPS L1 C/A, L2C, L2P, L5; GLONASS L1 C/A, L2 C/A; BDS B1, B2, B3, support BDS-3; Galileo E1, E5a, E5b; QZSS L1 C/A, L2C, L5	
Channels:	576
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:	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
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
Re-acquisition:	<1s
Tilt compensation accuracy (No tilt angle limit):	
	⩽2cm (within 60°)
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Initialization (typical):	<10s
Initialization Reliability:	>99.99%

Camera

Sensor:	2.3MP
Frame rate:	up to 120fps
Measurement accuracy(Typically):	2 cm ~4 cm (2D)
Distance:	2 m ~10 m to the object
Focal length:	3.2mm
View angle:	D:152° V:63° H:114°

Software Support

Tersus Nuwa

MicroSurvey FieldGenius

Wired communication

USB OTG:	USB 2.0 x1
Serial ports:	RS232 x1
COM baud rate:	up to 921600bps

Communication

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

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)

System & Data

Operating system:	Linux
Storage:	built-in 16GB
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(2)
Weight:	≈ 1.2kg (without battery)
	≈ 1.4kg (with a battery)(2)
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

Note:

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

(2) The actual dimension/weight may vary depending on the manufacturing process and measurement method.

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