Right to the Point

TERSUS

OSCAR

GNSS RTK Receiver with Calibration-Free Tilt Compensation

Oscar
GNSS Receiver

Speed Up Your Work

Empowered by a high precision inertial measurement unit (IMU) on Ultimate version, Oscar GNSS receiver from Tersus is a new generation of tilt survey GNSS receiver. This kind of calibration-free tilt compensation is immune to magnetic disturbances. Oscar gives a surveyor unprecedented flexibility and efficiency — holding the survey pole upright is no longer necessary. With an internal high-performance multi-constelltion and multi-frequency GNSS board, the Oscar GNSS Receiver can provide high accuracy and stable signal detection.

The built-in high-performance antenna can speed up the time to first fix (TTFF) and improve anti-jamming performance. With a Nano-SIM card inserted in Oscar, it can access Internet, transmit and receive correction data through 4G/WiFi network. The built-in UHF radio module supports long distance communication. The built-in large capacity battery is detachable and can display power level. Two batteries support up to 16 hours of fieldwork in 4G/3G/2G network and Rover radio mode. Oscar can be easily configured with 1.54 inch interactive screen on Ultimate and Advanced versions. The rugged housing protects the equipment from harsh environments.

Customers also have an easy backup from Tersus Caster Server (TCS), so that a GNSS BASE station can be quickly set up to broadcast correction stream via mobile networks instead of radio. Natively supported by FieldGenius and Nuwa App, Oscar can be configured to different work modes to suit various daily jobs. Also pillared by the prompt technical supports from Tersus' global partner network, Oscar GNSS receiver is a surveyor's capable and reliable workmate.

Unprecedented
Flexibility and Efficiency

Danger Zone

Hidden Point

Underground Utilities

Forest

City Canyon

Features

- Supports multiple constellations & frequencies: GPS, GLONASS, BeiDou, Galileo, QZSS
- 576 Supports 576 channels
- Tilt compensation without calibration, immune to magnetic disturbances
- Smart battery displays power level, two batteries supports up to 16 hours working in 4G/3G/2G network and Rover radio mode
- IP68-rated dust- & waterproof enclosure, ensure reliability in harsh environmental conditions
- 16GB/8GB internal storage
- 410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC
- TCS Free subscription of Tersus Caster Service (TCS): transmit the correction data from Oscar Base to Rover via internal 4G network or controller network

Version Comparison

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

Version	Display	LED Indicators	IMU (Tilt Compensation)	Memory	Warranty Period
	1.54” OLED	Satellite, Tilt, Correction Data, Power	✓	16GB	TWO Years
	1.54” OLED	Satellite, Static, Correction Data, Power	—	16GB	TWO Years
	—	Satellite, Static, Correction Data, Power, Bluetooth, Solution Status	—	8GB	ONE Year

Common Specifications
Supports 576 channels
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
Integrated GNSS Antenna
FN, ON/OFF buttons
Bluetooth; NFC; UHF Radio; 4G
Electronic Bubble
USB OTG
2x 6400mAh Battery Capacity
Smart Battery with power display

Technical Specifications

Oscar

Performance

Signal tracking 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	
Channels:	576
Single Point Positioning Accuracy (RMS):	
– Horizontal:	1.5m
– Vertical:	3.0m
DGPS Positioning Accuracy (RMS):	
– Horizontal:	0.4m
– Vertical:	0.8m
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
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
Tilt Compensation Accuracy (within 30°) ⩽ 2cm (1)	

Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Initialization (typical):	<10s
Initialization Reliability:	>99.99% (2)

System & Data

Operating system:	Linux
Storage:	built-in 16GB/8GB (1)
Data format: CMR, CMR+ (GPS only), RTCM 2.X/3.X	
Data output: RINEX, NMEA-0183, Tersus Binary	
Data update rate:	20Hz

Electrical

Input voltage:	9~28V DC
Power consumption (typical):	
Network or Radio receive mode:	≈ 5W
Radio transmit mode (0.5W):	≈ 8 W
Radio transmit mode (1W):	≈ 9 W
Radio transmit mode (2W):	≈ 11 W
Lithium battery:	7.4V 6400mAh x2 (3)

Physical

Display:	1.54'' OLED (1)
Dimension:	157x157x103mm
Weight:	≈ 1.2kg (without battery) ≈ 1.4kg (with a battery)
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

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 (4)
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

Software Support

Tersus Nuwa	
MicroSurvey FieldGenius	

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

To learn more, please visit: www.tersus-gnss.com
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