Tersus GNSS
Oscar ProBase GNSS Receiver

Overview

The Oscar ProBase GNSS receiver is the new generation of Tersus's super base station system. The built-in UHF radio module supports long-distance communication and can be easily carried without an external radio. The dual transmitter for radio and network can easily be configured with a 1.54" interactive screen. The Oscar ProBase GNSS receiver can provide high accuracy and stable signal detection with an internal high-performance multi-constellation and multi-frequency GNSS board. 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, and two batteries support up to 8 hours of fieldwork in Base 5W radio mode. The rugged housing protects the equipment from challenging environments.

The Oscar ProBase-TAP version adopts satellite-based precise point positioning service developed by Tersus GNSS, which allows users to achieve centimeter-level high-precision positioning worldwide. With TAP, the GNSS base station receives corrections directly from satellites, including ephemeris and satellite clock erros. The resulting fixed PPP solution can serve as a reliable coordinate reference for initializing the base station.

Key Features

- ✓ Multiple constellations and frequencies
  - GPS L1C/A, L1C, L2C, L2P, L5C
  - GLONASS L1OF, L2OF, L3OC
  - BeiDou B1I, B2I, B3I, B1C, B2a, B2b
  - Galileo E1, E5a, E5b, E5AltBOC, E6
  - QZSS L1C/A, L1C, L2C, L2P, L5C
  - SBAS L1C/A, L5
  - IRNSS L5
  - L-Band
- ✓ 1792 channels
- ✓ Built-in 5W radio to support long-distance operation
- ✓ 8GB internal storage
- ✓ Up to 8 hours working in Base 5W radio mode
- ✓ IP68-rated dust- & waterproof enclosure for reliability in challenging environmental conditions
- ✓ Free subscription to Tersus Caster Service (TCS): transmit the correction data from Base to Rover
- ✓ With worldwide coverage, TAP(1) enables centimeter-level high-precision positioning
- ✓ No need to use the network to receive corrections with TAP
- ✓ High stability TAP service, which guarantees uninterrupted transmission for 24 hours a day

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Technical Specifications

Performance

Signal Tracking:	
GPS	L1 C/A, L1C, L2C, L2P, L5C
GLONASS	L1OF, L2OF, L3OC
BDS	B1I, B2I, B3I, B1C, B2a, B2b
Galileo	E1, E5a, E5b, E5AltBOC, E6
QZSS	L1 C/A, L1C, L2C, L5C
SBAS	L1 C/A, L5
L-band	
Channels:	1792[1]
Single Point Positioning Accuracy (RMS):	
- Horizontal:	1.5m
- Vertical :	2.5m
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:	2.5mm+1ppm
- Vertical:	5mm+1ppm
Real Time Kinematic (RMS):	
- Horizontal:	8mm+1ppm
- Vertical:	15mm+1ppm
Initialization (Typical):	4s[2]
Initialization Reliability:	>99.9%[3]
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
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Time To First Fix (TTFF):	
- ColdStart:	<30s
- WarmStart:	<5s
Re-acquisition:	<1s
TAP[1] Positioning Accuracy (RMS):	
- Horizontal:	15mm
- Vertical :	30mm
TAP Convergence Time:	3 minutes
TAP Coverage:	Global
TAP Signal Stability:	99.99%

System & Data

Operating System:	Linux
Storage:	Built-in 8GB
Differential Data Format:	CMR, CMR+ (GPS only), RTCM2.x/3.x
Data Output:	RINEX, NMEA-0183, Tersus binary
Data Update Rate:	20Hz

Software Support

Tersus Nuwa

Communication

Cellular:	4G LTE/WCDMA/GSM
Cellular Bands [4]:	FDD LTE 1,3,7,8,20,28A | 2,4,5,12,13 TDD LTE 38,40,41 | WCDMA 1,8 | 2,5 GSM3,8 |
Network Protocols:	Ntrip Client, Ntrip Server, TCP, Tersus Caster Service (TCS)
Wi-Fi:	802.11b/g
Bluetooth:	4.1
NFC:	Support
Internal Radio	
RF Transmit Power:	1W/2W/5W
Frequency Range:	410MHz ~ 470MHz

Technical Specifications

Operating Mode:	Half-duplex
Channel Spacing:	25KHz
Modulation Type:	GMSK
Air Baud Rate:	9600 / 19200bps
Distance (Typical):	8-15km(5)
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: Radio Transmit Mode (1W): Radio Transmit Mode (2W): Radio Transmit Mode (5W):	≈ 5W ≈ 8W ≈ 9W ≈ 11W
Lithium Battery:	7.4V 6400mAh x2
Battery Charging Temperature:	+10°C ~ +45°C
Battery Working Time:	up to 8 hours(6)
Smart Battery with Power Display:	Support
Electronic Bubble:	Support

Physical

Display:	1.54'' OLED
Buttons:	FN, ON/OFF
LED Indicators:	Satellite, Static, Correction data, Power
Dimension:	157x157x103mm(7)
Weight:	≈ 1.2kg (without battery) ≈ 1.4kg (with a battery)(7)
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
Warranty period:	ONE Year

Note:
(1) TAP Service is available exclusively on the Oscar ProBase-TAP version.
(2) The initialization time depends on various factors, including the number of satellites, observation time, atmospheric conditions, multi-path, obstructions, satellite geometry, etc.
(3) The initialization reliability may be affected by atmospheric conditions, signal multipath, and satellite geometry.
(4) Depending on version. In order Europe | American version.
(5) The distance depends on the environment and antenna type. In an urban environment, a short rod antenna can reach up to 8 km, and a high-gain antenna can reach up to 15 km. In optimal conditions, the range can exceed 15 km. However, in challenging environments such as wooded and suburban areas, the range will be less than 8 km.
(6) Oscar ProBase uses one battery at a time, the other is a substitute. Each battery lasts up to 4 hours when Oscar ProBase works in Base 5W radio mode. Two batteries add up to 8 hours of continuous use. The working time of the battery is related to the working environment, working temperature and battery life.
(7) The actual size/weight may vary depending on the manufacturing process and measurement method.

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