

Tersus GNSS

TS20 GNSS Receiver

Overview

The TS20 is an innovative integration of visual positioning technology, GNSS, IMU and a camera. Its CAD AR visual stakeout allows for precise path planning, while the IMU ensures accuracy with no tilt angle limit.

It 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 supports long time of fieldwork 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 challenging environments.



Key Features

- ✓ Multiple constellations and frequencies
 - GPS L1C/A, L2C, L2P, L5
 - GLONASS L1C/A, L2C/A
 - BeiDou B1, B2, B3, supports BDS-3
 - Galileo E1, E5a, E5b
 - QZSS L1C/A, L2C, L5
 - SBAS supports WAAS, EGNOS, GAGN, SDCM, MSAS
- ✓ 1568 channels
- ✓ Professional camera, visual navigation and stakeout in One step
- ✓ 410-470MHz UHF radio, 4G network, Wi-Fi, Bluetooth, NFC
- ✓ Tilt compensation without calibration, immune to magnetic disturbances
- ✓ 32GB internal storage
- ✓ IP68-rated dust- & waterproof enclosure, for reliability in harsh environmental conditions
- ✓ Free subscription to Tersus Caster Service (TCS): transmit the correction data from TS20 Base to Rover

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Technical Specifications

Performance

Signal Tracking:	
GPS	L1 C/A, L2C, L2P, L5
BDS	B1, B2, B3, supports BDS-3
GLONASS	L1C/A, L2C/A
Galileo	E1, E5a, E5b
QZSS	L1 C/A, L2C, L5
SBAS	supports WAAS, EGNOS, GAGAN, SDCM, MSAS
Channels:	1568
Image Sampling Accuracy(Typically):	2cm ⁽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

Time To First Fix (TTFF):	
- Cold Start:	<30s
- Warm Start:	<5s
Re-acquisition:	<1s
Timing Accuracy (RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Tilt Compensation Accuracy (No tilt angle limit):	
≤2cm(within 60°)	
Observation Accuracy (Zenith Direction):	
- C/A Code:	10cm
- P Code:	10cm
- Carrier Phase:	1mm

System & Data

Operating System:	Linux
Storage:	Built-in 32GB
Differential Data Format:	CMR, RTCM 2.x/3.x
Data Output:	RINEX, NMEA-0183, Tersus Binary
Data Update Rate:	20Hz

Communication

Cellular:	4G LTE/WCDMA/GSM/EDGE
Cellular Bands ⁽⁴⁾ :	
LTE FDD B1, B3, B5, B7, B8, B20, B28	
LTE TDD B38, B40, B41	
WCDMA B1, B5, B8	
GSM/EDGE 900/1800MHz	
Network Protocols:	Ntrip Client, Ntrip Server, TCP Tersus Caster Service (TCS)
Wi-Fi:	802.11a/b/g/n/ac
Bluetooth:	5.0

Technical Specifications

Internal Radio:	
RF Transmit Power:	0.5W/1.5W
Frequency Range:	410MHz ~ 470MHz
Operating Mode:	Half-duplex
Channel Spacing:	12.5KHz / 25KHz / 250KHz
Modulation Type:	CSS, GMSK, 4FSK
Air Baud Rate:	4800 / 9600 / 19200bps
Radio Protocols:	
LORA,TrimTalk450, TrimMark 3, South, Transparent, Satel	
Wired Communication	
USB:	Type-C, OTG

Camera

Pixel:	bottom camera 2.0MP
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Electrical

External Power Supply :	Support USB (5~20V)
Fast Charging:	Support, 15W max (5V 3A)
Lithium Battery:	Built-in, 7000mAh/7.4V
Charging Time:	3 hours (20%-90%)
Battery Charging Temperature:	+10°C ~ +45°C
Working Time:	up to 19 hours ⁽⁵⁾
Smart Battery with Power Display:	Support
Electronic Bubble:	Support

Physical

Dimension:	φ134x71mm
Weight:	≈ 850g ⁽⁶⁾
GNSS Antenna:	Integrated
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

Software Support

Tersus Nuwa

User Interface

Button:	Power Button
LED Indicators:	
	Satellite, Correction Data, Static, Solution
Voice:	Support
Power Display:	Support

Note:

(1) The measurement precision may be subject to anomalies such as multi-path, obstructions, satellite geometry , atmospheric conditions, etc.

(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) Optional.

(5) The working time of the battery is related to the working environment, working temperature and battery life.

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

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