Tersus GeoBee
Cost-effective Solution for Ntrip Corrections

Overview
The Tersus GeoBee is a dedicated and cost-effective solution to transmit or receive Ntrip corrections. With Tersus Ntrip Caster Service, Ntrip Modem and David Receiver, the GeoBee opens the possibility for users to transmit Real Time Kinematic (RTK) corrections via Internet (Ethernet or 2G/3G/4G) in a simple, user-friendly way, just using a SIM card or Ethernet cable without any need of a static IP. GeoBee can also work as GNSS Rover to receive RTK corrections from Tersus Ntrip Caster or any CORS service.

Ntrip server mode: use David GNSS receiver to create a base station. This temporary base or CORS are for surveying, agriculture, UAV, machine control, and etc. It is also ideal for deformation monitoring. Tersus GNSS Inc. provides Ntrip Caster to transfer data.

Ntrip client mode: connect David or other Tersus GNSS receivers to Tersus Ntrip Caster or any Ntrip/CORS service. David is mainly used for surveying, and also used as a GNSS sensor in various applications, such as mobile mapping, UAV, machine control, agriculture, and etc.

Key Features
- Supports multiple constellations & frequencies
  - GPS L1, L2
  - GLONASS L1, L2
  - BeiDou B1, B2
- Support 384 channels
- Supports RTCM2.3/3.x, CMR, CMR+ corrections
- Supports 4GB internal storage
- Rapid RTK integer ambiguity resolution
- Supports stable, high-precision measurement output
- Supports Ethernet is default while 2G/3G/4G is hot standby
- Supports Ntrip Server and Ntrip Client protocol
- Supports RS232 and RS485
- Supports remote access and operation

GeoBee System Structure
## Technical Specifications

### Performance

**Signal Tracking:**
- GPS L1, L2; GLONASS L1, L2; BeiDou B1, B2

**GNSS Channels:**
- 384

**Single Point Positioning Accuracy (RMS):**
- Horizontal: 1.5m
- Vertical: 3.0m

**Real Time Kinematic (RMS):**
- Horizontal: 10mm+1ppm
- Vertical: 15mm+1ppm

**Post Processed Kinematic (RMS):**
- Horizontal: 10mm+1ppm
- Vertical: 15mm+1ppm

**Static Post Processing (RMS):**
- Horizontal: 3mm+0.5ppm
- Vertical: 5mm+0.5ppm

**Observation Accuracy:**
- C/A Code (zenith direction): 10cm
- P Code (zenith direction): 10cm
- Carrier Phase (zenith direction): 1mm

**Time To First Fix (TTFF):**
- Cold Start: <50s
- Warm Start: <30s

**Timing Accuracy (RMS):**
- 20ns

**Velocity Accuracy (RMS):**
- 0.03m/s

**Initialization (typical):**
- <10s

**Initialization Reliability:**
- >99.9%

**Max. Measurements Update Rate:**
- 20Hz

**Input Voltage:**
- 5V~12V DC

**Power Consumption (at 25℃):**
- 3.2W (David only)

**Active Antenna Input Impedance:**
- 50Ω

**Storage:**
- In-built 4GB memory

### Communication

**Serial Ports:**
- RS232 x2

**USB Ports:**
- USB 2.0 device x1

**Antenna Connector:**
- SMA female x1

**COM Baud Rate:**
- Up to 460800bps

### Software Support

- Tersus Nuwa
- MicroSurvey FieldGenius
- Other Third Party Software Support NMEA-0183

### Physical

- **Dimension:** 104x65x31mm (David only)
- **Weight:** ≈ 250g (David only)
- **Operating Temperature:** -40℃ ~ +85℃
- **Dust- & Waterproof:** IP67

### Optional Accessories

- 2W 460MHz/30W 460MHz radio to transmit/receive RTK corrections
- Battery bank

Note: 1. It is recommended using 2A instead of 1A when the external power is 5V.
Technical Specifications - Ntrip Modem TR600

Performance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>12V~48V DC</td>
</tr>
<tr>
<td>Operating Current</td>
<td>350mA @ +12V DC</td>
</tr>
<tr>
<td>Standby Current</td>
<td>250mA @ +12V DC</td>
</tr>
<tr>
<td>Power Consumption (typical)</td>
<td>4.2W</td>
</tr>
</tbody>
</table>

Physical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
<td>118x91x34mm (w/o connectors)</td>
</tr>
<tr>
<td>Weight</td>
<td>335g</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30°C ~ +80°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>95% @ +40°C</td>
</tr>
</tbody>
</table>

Interfaces

<table>
<thead>
<tr>
<th>Port Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Port</td>
<td>RS232 x1, RS485 x1</td>
</tr>
<tr>
<td>Ethernet</td>
<td>RJ45 x2 (LAN, LAN/WAN)</td>
</tr>
<tr>
<td>Antenna Connector</td>
<td>SMA Female x2 (4G, WiFi)</td>
</tr>
</tbody>
</table>

Communication

Network:

- Chinese version:
  - 2G: GSM/GPRS/EDGE/CDMA2000 1x
  - 3G: UMTS/WCDMA/HDSPA/HSPA+/TD-SCDMA
  - CDMA2000 EVDO
    - 4G: TDD-LTE/FDD-LTE
- Eurasian version (Europe, Middle East, Africa, South Korea, Thailand):
  - 2G: GSM/GPRS/EDGE
  - 3G: UMTS/WCDMA/HDSPA/HSPA+
  - 4G: TDD-LTE/FDD-LTE
- North American version:
  - 3G: UMTS/WCDMA/HDSPA/HSPA+
  - 4G: FDD-LTE
- Australian version (New Zealand, Australia, South America):
  - 2G: GSM
  - 3G: WCDMA
  - 4G: FDD-LTE/TDD-LTE

Operating Frequency:

- Chinese version:
  - TDD-LTE B38/B39/B40/B41
  - FDD-LTE B1/B3/B8
  - UMTS/HSDPA/HSPA+ B1/B8
  - TD-SCDMA B34/B39
  - CDMA2000 1x/EVDO BC0
  - GSM/GPRS/EDGE 900/1800 MHz
- Eurasian version:
  - TDD-LTE B38/B40
  - FDD-LTE B1/B3/B7/B8/B20
  - UMTS/HSDPA/HSPA+ B1/B8
  - GSM/GPRS/EDGE 900/1800 MHz
- North American version:
  - FDD-LTE B2/B4/B5/B17
  - UMTS/HSDPA/HSPA+ B2/B5
- Australian version:
  - TDD-LTE B40
  - WCDMA B1/B2/B5/B8
  - GSM 850/900/1800/1900