TERSUS

Right to the Point


# GNSS OEM Boards

TERSUS GNSS

# Tersus BX-Series

## GNSS OEM Boards & Receivers

Tersus GNSS OEM boards and receivers are cost-efficient solutions for obtaining raw GNSS measurements and centimeter-level precision positioning. All BX-series OEM boards offer multi-constellation (GPS, GLONASS, BeiDou) and dual-frequency tracking capabilities, which improve the availability, continuity and reliability of RTK solutions in challenging environments.

The BX-series modules feature compatibility with major GNSS boards in the market in terms of interfaces, hardware design as well as log and command formats.

The Tersus OEM boards are easy to integrate and simple to use. The upgradeable firmware, software and comprehensive communication messages make them suitable for reconfiguration, integration and fast data processing applications.

These next-generation BX-series modules have low power consumption and offer advanced features to satisfy the needs of system integrators and various applications in a more affordable and scalable way.

## Key Features

- Multi-GNSS
- RTK, Centimeter-accurate
- Fast Data Processing
- On-board Data Storage
- Simple to Integrate
- Flexible Interfaces
- Compatibility
- Low Power Consumption

## Key Applications

- Unmanned Aerial Vehicle
- Automated Vehicle
- Precision Agriculture
- Deformation Monitoring
- Construction Engineering
- Robotics
- Machine Control
- Scientific Research

| Specifications | BX50C | BX40C | BX306 | BX316D |
|---|---|---|---|---|
| **Signal Tracking** | Single Antenna | Single Antenna | Single Antenna | Dual Antenna |
| | GPS L1 C/A, L1C, L2C, L2P, L5C;<br>GLONASS L1OF, L1OC, L2OF, L2OC, L3OC;<br>BeiDou B1I, B2I, B3I, B1C, B2a, B2b;<br>Galileo E1, E5a, E5b, E5AltBOC, E6;<br>QZSS L1 C/A, L1C, L2C, L5C;<br>SBAS L1 C/A, L5;<br>IRN L5 | GPS L1 C/A, L2C, L2P, L5;<br>GLONASS L1 C/A, L2 C/A;<br>BeiDou B1, B2, B3, supports BDS-3;<br>Galileo E1, E5a, E5b;<br>QZSS L1 C/A, L2C, L5 ;<br>SBAS supports WAAS, EGNOS, GAGAN, SDCM, MSAS | GPS L1/L2<br>GLONASS L1/L2<br>BeiDou B1/B2 | Primary: GPS L1/L2, GLONASS L1/L2<br>Secondary: GPS L1, GLONASS L1<br>or<br>Primary: GPS L1/L2, BeiDou B1/B2<br>Secondary: GPS L1, BeiDou B1 |
| **Positioning** | | | | |
| Single (RMS) | | | | |
| Horizontal | 1.5m | 1.5m | 1.5m | 1.5m |
| Vertical | 3.0m | 3.0m | 3.0m | 3.0m |
| RTK (RMS) | | | | |
| Horizontal | 8mm+1ppm | 8mm+1ppm | 10mm+1ppm | 10mm+1ppm |
| Vertical | 15mm+1ppm | 15mm+1ppm | 15mm+1ppm | 15mm+1ppm |
| TAP | √ | √ | | |
| **Observation** | | | | |
| C/A Code (zenith direction) | 10cm | 10cm | 10cm | 10cm |
| P Code (zenith direction) | 10cm | 10cm | 10cm | 10cm |
| Carrier Phase (zenith direction) | 1mm | 1mm | 1mm | 1mm |
| Heading 1m baseline (RMS) | | | | 0.15° |
| **Performance** | | | | |
| Time to First Fix | | | | |
| Cold Start | <50s | <50s | <50s | <50s |
| Warm Start | <30s | <30s | <30s | <30s |
| Timing Accuracy (RMS) | 20ns | 20ns | 20ns | 20ns |
| Velocity Accuracy (RMS) | 0.03m/s | 0.03m/s | 0.03m/s | 0.03m/s |
| Initialization (typical) | <10s | <10s | <10s | <10s |
| Initialization Reliability | >99.9% | >99.9% | >99.9% | >99.9% |
| **Physical & Electrical** | | | | |
| Size | 46x71x11mm | 100x60x10.1mm | 71x46x10.3mm | 71x46x9.3mm |
| Weight | 24g | 44g | 27g | 27g |
| Input Voltage | 3.3V DC±5% | 3.45V DC | 3.3V DC | 3.3V DC |
| Power Consumption (typical) | 1.8W | 3.6W | 2.8W | 2.8W |
| Active Antenna Input Impedance | 50Ω | 50Ω | 50Ω | 50Ω |
| Antenna Connector | MMCX female x1 | MMCX female x1 | MCX female x1 | MMCX female x2 |
| COM Baud Rate | Up to 921600bps | Up to 921600bps | Up to 460800bps | Up to 460800bps |
| Pin to Pin Compatible | Novatel OEM615 | Trimble BD970 | NovAtel 615 | NovAtel 617D |
| Operating Temperature | -40°C ~ +85°C | -40°C ~ +75°C | -40°C ~ +85°C | -40°C ~ +85°C |
| **Data** | | | | |
| Storage | In-built 8GB eMMC | In-built 8GB eMMC | In-built 4GB eMMC | In-built 4GB eMMC |
| Correction | RTCM 2.3/3.0/3.1/3.2, CMR, CMR+<br>NMEA-0183 | RTCM 2.3/3.0/3.1/3.2, CMR, CMR+<br>NMEA-0183 | RTCM 2.x/3.x/CMR/CMR+<br>NMEA-0183 | RTCM 2.x/3.x/CMR/CMR+<br>NMEA-0183 |
| Output | Tersus Binary Format | Tersus Binary Format | Tersus Binary Format | Tersus Binary Format |
| Max. Update Rate | 20Hz | 20Hz | 20Hz | 20Hz |
| Log & Command Compatible | NovAtel protocol | NovAtel protocol | NovAtel Protocol | NovAtel Protocol |
| **Communication** | | | | |
| Serial Ports | RS-232 x1, TTL x2 | RS-232 x1, TTL x2 | LVTTL x2 | LVTTL x2 |
| USB Ports | USB2.0 device x1 | USB2.0 device x1 | USB2.0 device x1 | USB2.0 device x1 |
| CAN Ports | ISO/DIS 11898 x1 * | ISO/DIS 11898 x1 * | ISO/DIS 11898 x1 * | ISO/DIS 11898 x1 * |
| PPS Ports | LVTTL x1 | LVTTL x1 | LVTTL x1 | LVTTL x1 |
| Event Mark | LVTTL x2 | LVTTL x2 | LVTTL x1 | LVTTL x1 |
| **Antenna Match** | | | | |
| Antenna Output Voltage | 3.3V | 3.3V | 3.3V | 3.3V |
| **GNSS Options** | | | | |
| OEM Board | √ | √ | √ | √ |
| Enclosure | | | √ | √ |

Remarks:
* This port's function is related to firmware version.

# Tersus GNSS Inc.

## Right to the Point

Tersus GNSS is a leading Global Navigation Satellite System (GNSS) solution provider. Our offerings and services aim to make centimeter-precision positioning affordable for large-scale deployment.

Founded in 2014, we have been pioneers in design and development GNSS RTK products to better cater to the industry's needs. Our portfolios cover GNSS RTK & PPK OEM boards, David GNSS Receiver, Oscar GNSS Receiver and inertial navigation systems.

Designed for ease of use, our solutions support multi-GNSS and provide flexible interfaces for a variety of applications, such as UAVs, surveying, mapping, precision agriculture, lane-level navigation, construction engineering, and deformation monitoring.

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