

# GNSS Kits

## Get Started with a Comprehensive GNSS Kit

We provide affordable, high-quality GNSS kits for high precision applications. These kits feature centimeter-accurate GNSS OEM RTK boards, GNSS antennas, radios, cables and other accessories, which support straight-forward integration of GNSS RTK technology into applications and products.

### BX316D GNSS Kit

- 2 x BX316D GNSS RTK receivers
- 3 x AX3702 GNSS antennas with 3m antenna cables
- 2 x RS460 2W/460MHz radio with antennas
- 2 x USB Type A to USB Mini cable
- 2 x UART to USB converters
- 2 x 20pin external cables
- 1 x USB to 2pin BX316D power + 2W-Radio-power and COM cable
- 1 x Bullet-DC to 2pin BX316D power + 2W-Radio-power and COM cable
- 1 x Bullet-DC to Alligator Clip
- 2 x 2pin power cables



### BX316D GNSS UAV Kit

- 2 x BX316D GNSS RTK receivers
- 1 x AX3702 GNSS antennas with 3m antenna cables
- 2 x Eagle 1W/915MHz radio with antennas
- 2 x power & data cable for Eagle radio
- 2 x USB Type A to USB Mini cable
- 2 x AX3703 Mini GNSS antennas with SMA cables
- 2 x 20pin external cables
- 2 x UART to USB converters
- 2 x 2pin power cables



We offer different versions of GNSS kits for your various applications. Visit our website [www.teresus-gnss.com](http://www.teresus-gnss.com) for details.

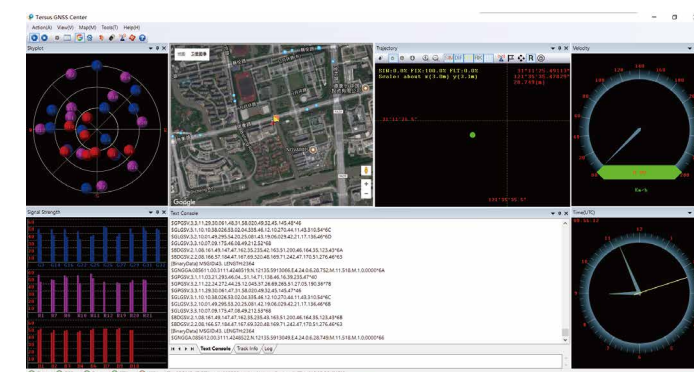
# Tersus GNSS Center

**Tersus GNSS Center** is a configuration tool for Tersus GNSS OEM boards. This software integrates configuration, monitoring, data logging, firmware upgrade and other useful tools. With Tersus GNSS Center, you can

- Communicate over the on-board serial ports
- Key in commands to configure the board
- Upgrade firmware
- Store data, playback data
- Convert the data to RINEX format
- Display the rover's trajectory in Google/Baidu
- Calculate the average position of the base station
- View status of the board and positioning results

### Other software for Tersus GNSS OEM boards

- Tersus RINEX converter
- Tersus GeoPix



## Tersus GNSS Inc.

Global Accuracy Easier

Tersus is a leading GNSS RTK solution provider. Our engineers have been pioneers in the design of GNSS products to support high-precision positioning applications.

Our products include GNSS RTK & PPK OEM boards and receivers, as well as integrated solutions such as the David GNSS Receiver, Oscar Receiver, MatrixRTK, and GNSS-aided Inertial Navigation System.

Designed for easy and rapid integration, our GNSS solutions offer centimeter-level positioning accuracy and flexible interfaces for a variety of applications including: unmanned aerial vehicle (UAVs), surveying, mapping, construction engineering, and precision agriculture.

To learn more, visit [www.teresus-gnss.com](http://www.teresus-gnss.com)  
Sales inquiry : [sales@teresus-gnss.com](mailto:sales@teresus-gnss.com)  
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# TERSUS

Global Accuracy Easier



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GNSS OEM Boards & Receivers





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

### Key Applications

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

### BX306 GNSS RTK Board

This compact, dual-frequency board offers robust RTK performance, which is designed to deliver centimeter precision positioning and accurate raw measurement output.

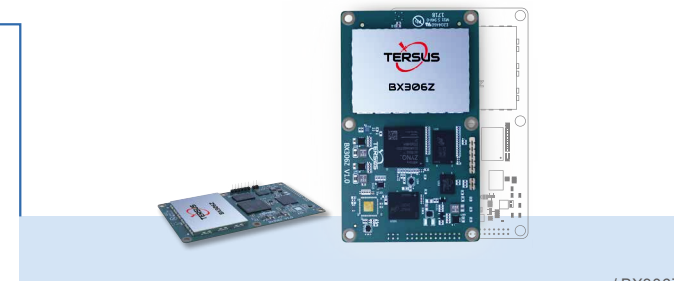
The board is capable of accepting/sending NovAtel-compatible command and logging protocol, and is pin-to-pin compatible with NovAtel OEM615 receivers. Using the BX306 provides efficient pathways for rapid delivery of GNSS-capable products to markets.



### BX306Z GNSS RTK Board

This board is a compact, multi-GNSS RTK module, which provides users with centimeter-level positioning accuracy. The BX306Z can be easily integrated with autopilots and inertial navigation units.

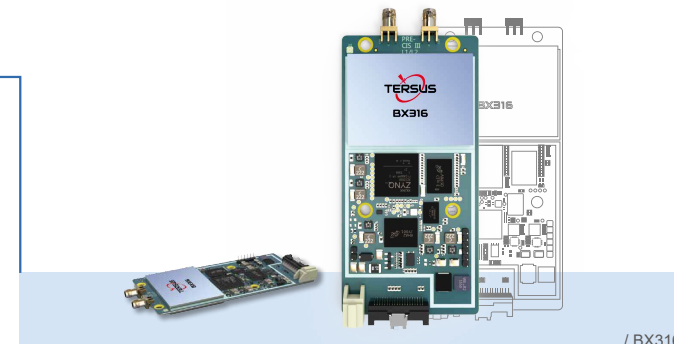
The module's logging and command protocol are compatible with major GNSS boards. The BX306Z has flexible interfaces and is pin-to-pin compatible with the Trimble BD970 GNSS system. It is designed for take-up by original equipment manufacturers and system integrators.



### BX316 GNSS RTK Board with Heading

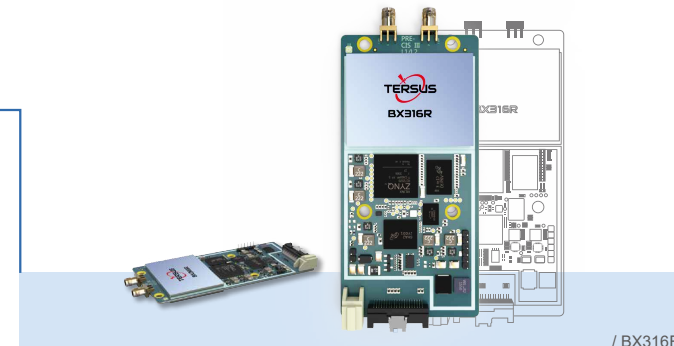
This multi-constellation, dual-frequency GNSS RTK board is designed for accurate positioning and heading applications. The BX316 provides built-in capabilities to enable a wide range of application developments.

The BX316 commands and logging are compatible with NovAtel protocols. USB, LVTTTL/RS232, CAN, PPS and Event Mark are supported.



### BX316R GNSS PPK Board

This multi-GNSS, post processing kinematic (PPK) board supports raw measurement output from two antennas. Exploiting GNSS signals from two antennas supports the calculation of stable position estimates in challenging conditions.



### BX316D GNSS RTK Board with Heading

This multi-GNSS, dual-frequency GNSS RTK board is designed for accurate positioning and heading applications. The BX316D uses common interfaces, logging and command formats, which can be configured for compatibility with major OEM boards.

The BX316D is pin-to-pin compatible with NovAtel OEM617D. It is designed for take-up by original equipment manufacturers and system integrators.



Specifications	BX306	BX306Z	BX316	BX316R	BX316D
<b>Signal Tracking</b>					
Single Antenna	GPS L1/L2 GLONASS L1/L2 BeiDou B1/B2	GPS L1/L2 GLONASS L1/L2 BeiDou B1/B2	GPS L1/L2 GLONASS L1/L2 BeiDou B1/B2	GPS L1/L2 GLONASS L1/L2 BeiDou B1/B2	GPS L1/L2 GLONASS L1/L2 BeiDou B1/B2
Dual Antenna			Primary: GPS L1/L2, GLONASS L1/L2 Secondary: GPS L1, GLONASS L2 or Primary: GPS L1/L2, BeiDou B1/B2 Secondary: GPS L1, BeiDou B2	Primary: GPS L1/L2, GLONASS L1/L2 Secondary: GPS L1, GLONASS L2 or Primary: GPS L1/L2, BeiDou B1/B2 Secondary: GPS L1, BeiDou B2	Primary: GPS L1/L2, GLONASS L1/L2 Secondary: GPS L1, GLONASS L1 or Primary: GPS L1/L2, BeiDou B1/B2 Secondary: GPS L1, BeiDou B1
<b>Positioning</b>					
Standard (RMS)					
Horizontal	1.5m	1.5m	1.5m	1.5m	1.5m
Vertical	3.0m	3.0m	3.0m	3.0m	3.0m
RTK (RMS)					
Horizontal	10mm+1ppm	10mm+1ppm	10mm+1ppm		10mm+1ppm
Vertical	15mm+1ppm	15mm+1ppm	15mm+1ppm		15mm+1ppm
<b>Observation</b>					
C/A Code (zenith direction)	10cm	10cm	10cm	10cm	10cm
P Code (zenith direction)	10cm	10cm	10cm	10cm	10cm
Carrier Phase (zenith direction)	1mm	1mm	1mm	1mm	1mm
Heading 1m baseline (RMS)			0.15°		0.15°
<b>Performance</b>					
Time to First Fix					
Cold Start	<50s	<50s	<50s	<50s	<50s
Warm Start	<30s	<30s	<30s	<30s	<30s
Timing Accuracy (RMS)	20ns	20ns	20ns	20ns	20ns
Velocity Accuracy (RMS)	0.03m/s	0.03m/s	0.03m/s	0.03m/s	0.03m/s
Initialization (typical)	<10s	<10s	<10s	<10s	<10s
Initialization Reliability	>99.9%	>99.9%	>99.9%	>99.9%	>99.9%
<b>Physical &amp; Electrical</b>					
Size	46x71x12mm	100x60x12mm	108x54x12mm	108x54x12mm	46x71x12mm
Weight	23g	44g	50g	50g	23g
Input Voltage	3.3V DC	3.3V DC	5V ~ 12V DC	5V ~ 12V DC	3.3V DC
Power Consumption (typical)	2.8W	2.9W	3.5W	3.5W	2.8W
Active Antenna Input Impedance	50Ω	50Ω	50Ω	50Ω	50Ω
Antenna Connector	MCX female x1	MMCX female x1	SMA female x2	SMA female x2	MMCX female x2
COM Baud Rate	Up to 460800bps	Up to 460800bps	Up to 460800bps	Up to 460800bps	Up to 460800bps
Pin to Pin Compatible	NovAtel 615	Trimble BD970			NovAtel 617D
Operating Temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
<b>Data</b>					
Storage	In-built 4GB eMMC	In-built 4GB eMMC	In-built 4GB eMMC	In-built 4GB eMMC	In-built 4GB eMMC
Correction	RTCM 2.x/3.x/CMR/CMR+	RTCM 2.x/3.x/CMR/CMR+	RTCM 2.x/3.x/CMR/CMR+	RTCM 2.x/3.x/CMR/CMR+	RTCM 2.x/3.x/CMR/CMR+
Output	NMEA-0183 Tersus Binary Format	NMEA-0183 Tersus Binary Format	NMEA-0183 Tersus Binary Format	NMEA-0183 Tersus Binary Format	NMEA-0183 Tersus Binary Format
Max. Update Rate	20Hz	20Hz	20Hz	20Hz	20Hz
Log & Command Compatible	NovAtel Protocol	NovAtel Protocol	NovAtel Protocol	NovAtel Protocol	NovAtel Protocol
<b>Communication</b>					
Serial Ports	LVTTTL x2	LVTTTL x1, RS232 x1	LVTTTL x2 or RS232 x2	LVTTTL x2 or RS232 x2	LVTTTL x2
USB Ports	USB2.0 device x1	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 *	LVTTTL or ISO/DIS 11898 x1 *	ISO/DIS 11898 x1 *
PPS Ports	LVTTTL x1	LVTTTL x1	LVTTTL x1	LVTTTL x1	LVTTTL x1
Event Mark	LVTTTL x1	LVTTTL x1	LVTTTL x1	LVTTTL x1	LVTTTL x1
<b>Antenna Match</b>					
Antenna Output Voltage	3.3V	3.3V	3.3V	3.3V	3.3V
<b>GNSS Options</b>					
Evaluation Board	√	√	√	√	√
Enclosure	√		√	√	√

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

