TERSUS

Right to the Point

GNSS OEM Boards & GNSS Module

TERSUS GNSS

Tersus BX-Series

GNSS OEM Boards & Module

Tersus OEM boards and GNSS modules are cost-effective solutions for obtaining raw observations and centimeter-level positioning results. All BX-series boards and GNSS modules support simultaneous tracking of all constellations and all frequencies. This feature enhances availability, continuity, and reliability in challenging environments.

The BX-series boards and modules are compatible with leading GNSS products, including their interfaces, hardware design, and log and command formats.

The BX-series boards and modules 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

- All-constellation All-band
- RTK&PPP, 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

BX50L-TAP GNSS RTK Board

The BX50L-TAP, powered by the Tersus Antares Chip, provides real-time interference signal monitoring and automatic filtering. It supports all major GNSS constellations for reliable RTK solutions with centimeter-level positioning accuracy.

Equipped with TAP, a satellite-based precise point positioning service developed by Tersus GNSS, the BX50L-TAP eliminates the need for local RTK base stations or CORS. It directly receives corrections broadcasted by satellites, simplifying the setup for the GNSS rover receiver.

With low power consumption, a flexible interface, intelligent hardware design, and a common log/command format, the BX50L-TAP integrates into various systems, including autonomous vehicles and inertial navigation devices.


/ BX50L-TAP
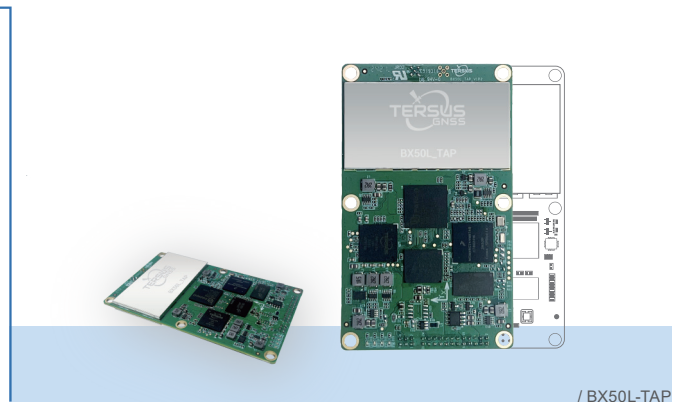
BX50M-TAP GNSS RTK Board

The BX50M-TAP utilizes the Tersus Antares Chip for real-time interference signal monitoring and filtering. It tracks all major GNSS constellations, enhancing centimeter-level positioning reliability in RTK solutions.

With TAP, a satellite-based precise point positioning service by Tersus GNSS, the BX50M-TAP eliminates the need for local RTK base stations or CORS. It directly receives satellite corrections, including ephemeris and satellite clock errors.
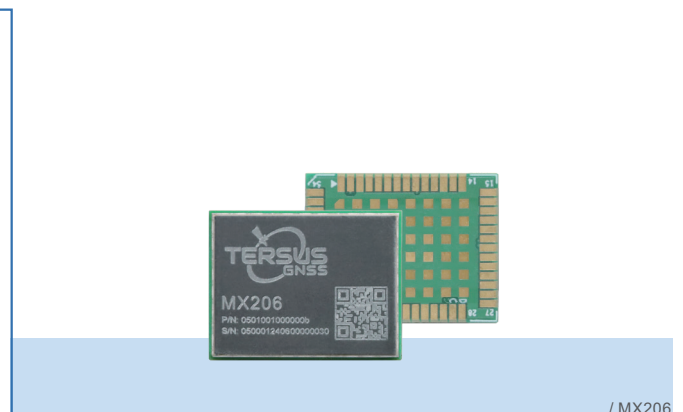
With its compact size, low power consumption, flexible interface, intelligent hardware design, and common log/command format, the BX50M-TAP seamlessly integrates into various systems.

/ BX50M-TAP
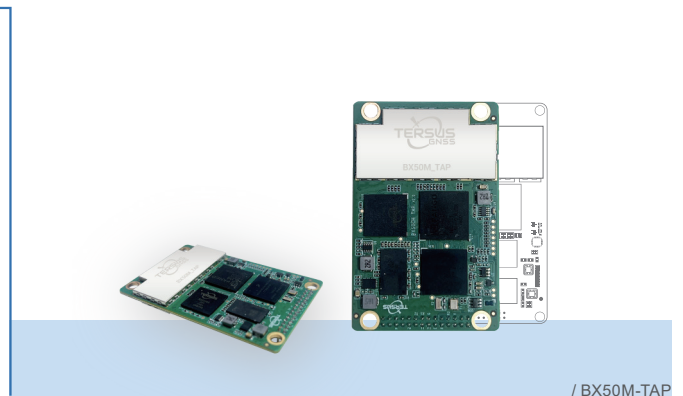
MX206 Module

MX206 is a module with a precise point positioning service developed by Tersus. The integrated high-performance capture engine delivers an enhanced all-constellation, all-frequency centimeter-level RTK positioning. The GNSS/INS fusion algorithm combines the built-in IMU to acquire real-time position, velocity, and attitude information accurately.

MX206 features high integration, high performance, low power consumption, and compact form factor. It is an ideal solution for various applications, including intelligent unmanned equipment, precision agriculture, lawnmowers, logistic tracking, and smart monitoring terminals. Its 17x22x2.4 LGA package size provides a wide range of peripheral functions, including CAN, UART, SPI, and I2C, to meet the diverse application needs of users.

/ MX206

Specifications	BX50L-TAP	BX50M-TAP
Signal Tracking		
	GPS: L1 C/A, L1C, L2C, L2P, L5C; GLONASS: L1OF, L2OF, L3OC; BeiDou: B1I, B2I, B3I, B1C, B2a, B2b; Galileo: E1, E5a, E5b, E5AltBOC, E6; QZSS: L1 C/A, L1C, L2C, L5C; SBAS: L1 C/A, L5; IRN: L5; NavIC	GPS: L1 C/A, L1C, L2C, L2P, L5C; GLONASS: L1OF, L2OF, L3OC; BeiDou: B1I, B2I, B3I, B1C, B2a, B2b; Galileo: E1, E5a, E5b, E5AltBOC, E6; QZSS: L1 C/A, L1C, L2C, L5C; SBAS: L1 C/A, L5; IRN: L5; NavIC
Positioning		
Single (RMS)		
Horizontal	1.5m	1.5m
Vertical	3.0m	3.0m
RTK (RMS)		
Horizontal	8mm+1ppm	8mm+1ppm
Vertical	15mm+1ppm	15mm+1ppm
TAP	√	√
Observation		
C/A Code (zenith direction)	10cm	10cm
P Code (zenith direction)	10cm	10cm
Carrier Phase (zenith direction)	1mm	1mm
Performance		
Time to First Fix		
Cold Start	<35s	<35s
Hot Start	<10s	<10s
Timing Accuracy (RMS)	20ns	20ns
Velocity Accuracy (RMS)	0.03m/s	0.03m/s
Initialization (typical)	4s	4s
Initialization Reliability	>99.99%	>99.99%
Physical & Electrical		
Size	100x60x10.1mm	71x46x11mm
Weight	44g	24g
Input Voltage	3.3V DC±5%	3.3V DC±5%
Power Consumption (typical)	2.3W	2.3W
Active Antenna Input Impedance	50Ω	50Ω
Antenna Connector	MMCX female(defaul), MCX female(optional)	MMCX female(defaul), MCX female(optional)
IO Connector	24-pin header+ 6-pin header	28-pin header
COM Baud Rate	Up to 921600bps	Up to 921600bps
Pin to Pin Compatible	Trimble BD970	Novatel OEM6
Operating Temperature	-40℃～+85℃	-40℃～+85℃*
Data		
Storage	In-built 8GB eMMC	In-built 8GB eMMC
Correction	RTCM 2.3/3.0/3.1/3.2, CMR, CMR+ NMEA-0183	RTCM 2.3/3.0/3.1/3.2, CMR, CMR+ NMEA-0183
Output	Tersus Binary Format	Tersus Binary Format
Max. Update Rate	20Hz	20Hz
Communication		
Serial Ports	RS-232 x1, LV TTL x2	LV TTL x3
USB Ports	USB2.0 device x1	USB2.0 device x1
CAN Ports	ISO/DIS 11898 x1 **	ISO/DIS 11898 x1 **
PPS Ports	LVTTL x1	LVTTL x1
Event Mark	LVTTL x1	LVTTL x1
Antenna Match		
Antenna Output Voltage	+5.0 VDC ± 5%	+5.0 VDC ± 5%

Specifications	MX206
Signal Tracking	
	GPS: L1 C/A, L1C, L2C, L5; GLONASS: L1OF, L2OF, BeiDou: B1I, B1C, B2I, B2a, B2b, B3I; Galileo: E1, E5a, E5b, E6; QZSS: L1 C/A, L1C, L2C, L5; NavIC: L5; PPP: PPP-B2b, QZSS L6, Galileo HAS E6; SBAS: L1; NavIC
Positioning	
Single (RMS)	
Horizontal	1.5m
Vertical	2.5m
RTK (RMS)	
Horizontal	7mm+1ppm
Vertical	15mm+1ppm
TAP	√
Observation	
C/A Code (zenith direction)	10cm
P Code (zenith direction)	10cm
Carrier Phase (zenith direction)	1mm
Performance	
Time to First Fix	
Cold Start	30s
Hot Start	2s
Timing Accuracy (RMS)	10ns
Velocity Accuracy (RMS)	0.03m/s
Initialization (typical)	<5s
Initialization Reliability	>99.99%
DR Accuracy	0.2%
INS Solution Delay	≤5ms
RTK Solution Delay	≤50ms
Capture Sensitivity	-145dBm
Tracking Sensitivity	-160dBm
Velocity	≤550m/s
Acceleration	≤4g
Physical & Electrical	
Size	17x22x2.4mm
Package	LGA 54pin
Input Voltage	3.3V DC
Power Consumption (typical)	350mW
Operating Temperature	-40℃～+85℃
Data	
Correction	RTCM 3.3 NMEA-0183
Output	Tersus Binary Format
Max. Update Rate	20Hz
Communication	
UART	x3
I2C	x1
SPI Master	x1
SPI Slave	x1
CAN	x2
PPS Ports	x2
Event Mark	x1

Remarks:
*Heat sink required at 85℃.
** This port's function is related to firmware version.

TERSUS TAP

TAP is a satellite-based precise point positioning service developed by Tersus GNSS, which allows users to achieve centimeter-level high-precision positioning worldwide.

Worldwide coverage

With worldwide coverage, it can be used as long as there is a good vision.

High signal stability

Guarantees uninterrupted transmission for 24 hours a day.

No need local RTK base station or CORS

Directly receives corrections broadcast by the satellites. Broadcasting over the internet is available as a backup method for data delivery for all users.

Wide range of applications

It can be widely used in autonomous driving, precision agriculture, and disaster monitoring and so on.
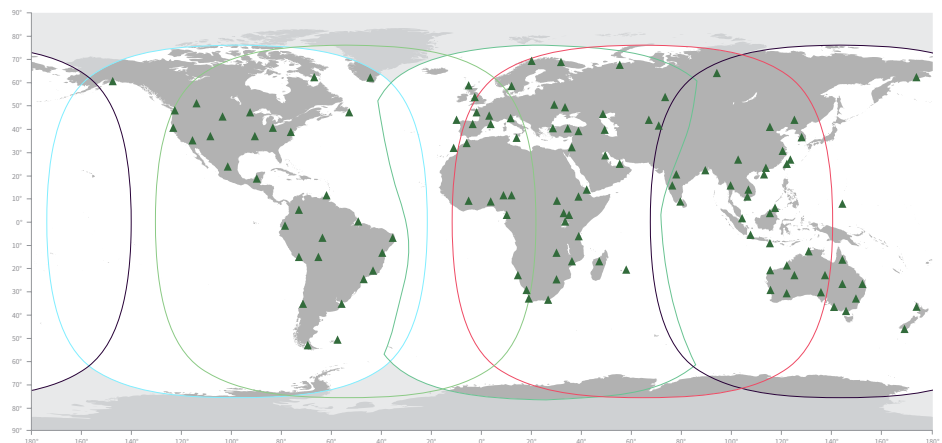
Real-time via L-band from satellite

Global coverage

**Stable coordinate frame**

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
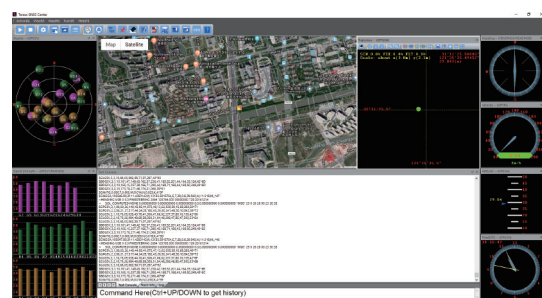
Tersus GNSS Inc.

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.

To learn more, visit www.tersus-gnss.com
Sales inquiry : sales@tersus-gnss.com
Technical support : support@tersus-gnss.com