

TERSUS

Right to the Point



GNSS OEM Boards & Module



Tersus BX-Series

GNSS OEM Boards & Module

Tersus GNSS OEM boards 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

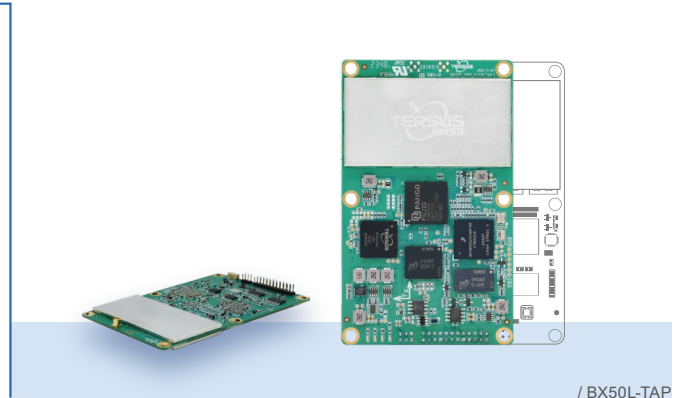


BX50L-TAP GNSS RTK Board

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.

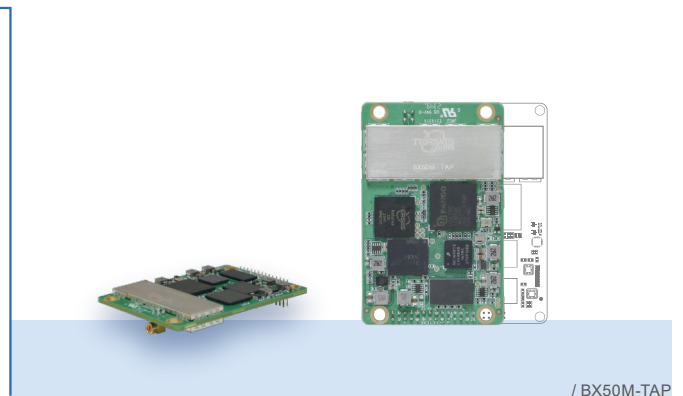


BX50M-TAP GNSS RTK Board

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.

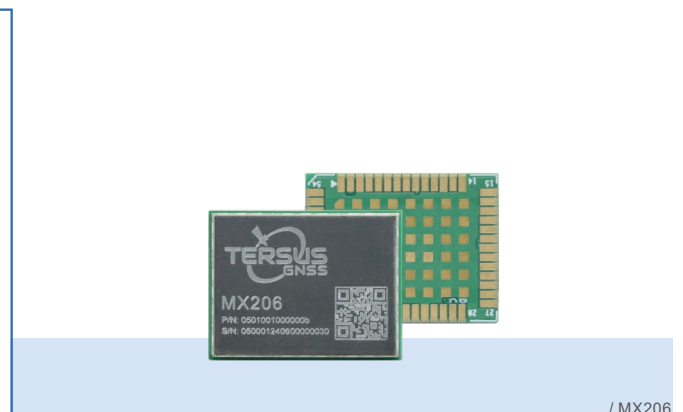
With its compact size, low power consumption, flexible interface, intelligent hardware design, and common log/command format, the BX50M-TAP seamlessly integrates into various systems.



MX206 Module

MX206 is a navigation 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.



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; L-Band		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; L-Band	
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	
Warm 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)	1.9W		1.9W	
Active Antenna Input Impedance	50Ω		50Ω	
Antenna Connector	MMCX female x1		MCX female x1	
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		UB482	
Operating Temperature	-40°C ~ +85°C		-35°C ~ +75°C	
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	
Log & Command Compatible	NovAtel protocol		NovAtel protocol	
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	LV TTL x1		LV TTL x1	
Event Mark	LV TTL x1		LV TTL x1	
Antenna Match				
Antenna Output Voltage	5V		3.3V	

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

Specifications	MX206	
Signal Tracking		
	BDS: B1I, B1C, B2I, B2a, B2b, B3I; GPS: L1 C/A, L1C, L2C, L5; Galileo: E1, E5a, E5b, E6; GLONASS: L1OF, L2OF, QZSS: L1 C/A, L1C, L2C, L5; NavIC: L5; PPP: PPP-B2b, QZSS L6, Galileo HAS E6; SBAS L1; L-Band	
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	
Warm 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°C ~ +85°C	
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	

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.



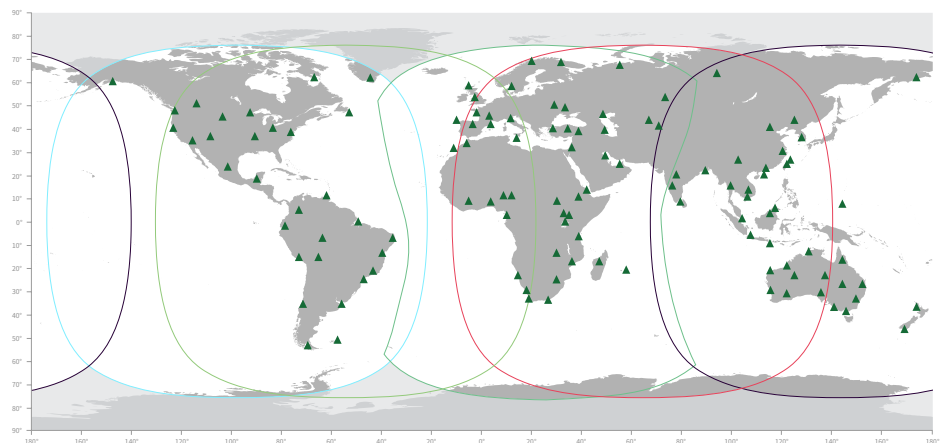
Real-time via L-band from satellite



Global coverage



Stable coordinate frame



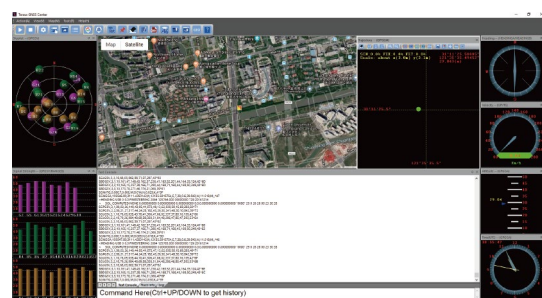
Tersus GNSS Center

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

Other software for Tersus GNSS OEM boards

- Tersus RINEX converter
- Tersus GeoPix

- 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



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

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Descriptions, specifications and related materials are subject to change.

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