Tersus GNSS

BX50L-TAP GNSS RTK&PPP Board

Overview

The BX50L-TAP adopts Tersus Antares Chip, and provides real-time monitoring of interference signals and automatic filtering. It tracks all current GNSS constellations including GPS, GLONASS, Galileo, BeiDou, QZSS, SBAS, and IRNSS to improve continuity and reliability of RTK solutions that provide centimeter positioning.

The BX50L-TAP includes TAP, the satellite-based precise point positioning service developed by Tersus GNSS. With TAP, the GNSS rover receiver will not need to work with the local RTK base station or CORS, but directly receives corrections broadcast by the satellites, such as ephemeris error, satellite clock error, etc.

It has low power consumption, flexible interface, intelligent hardware design and common log/command format for easy integration.

Key Features

- ✓ Supports multiple constellations and frequencies
  - 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
  - IRNSS L5
  - L-Band
- ✓ 1792 channels
- ✓ TAP
- ✓ Advanced anti-interference algorithms monitor interfering signals in real time and filter them automatically
- ✓ Centimeter-level position accuracy
- ✓ Low power consumption
- ✓ Supports up to 20Hz RTK solution updates and raw data output
- ✓ Flexible interfaces such as COM, USB, CAN
- ✓ Supports PPS output and event mark input
- ✓ Easy to integrate

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Technical Specifications

Performance

Signal Tracking:	
- GPS:	L1 C/A, L1C, L2C, L2P, L5C
- GLONASS:	L1OF, L2OF, L3OC
- BDS:	B1I, B2I, B3I, B1C, B2a, B2b
- Galileo:	E1, E5a , E5b, E5AltBOC, E6
- QZSS:	L1 C/A, L1C, L2C, L5C
- SBAS:	L1 C/A, L5
- IRNSS:	L5
- L-Band	
Channels:	1792
Single Point Positioning Accuracy (RMS):	
- Horizontal:	1.5m
- Vertical:	3.0m
DGPS Positioning Accuracy (RMS):	
- Horizontal:	0.25m
- Vertical:	0.5m
High-Precision Static (RMS):	
- Horizontal:	2.5mm+0.1ppm
- Vertical:	3.5mm+0.4ppm
RTK Positioning Accuracy (RMS):	
- Horizontal:	8mm+1ppm
- Vertical:	15mm+1ppm
Initialization (Typical):	4s(1)
Initialization Reliability:	>99.99%(2)
Observation Accuracy (zenith direction):	
- C/A Code:	10cm
- P Code:	10cm
- Carrier Phase:	1mm
TAP Positioning Accuracy(RMS):	
- Horizontal:	15mm
- Vertical:	30mm
TAP Convergence Time:	3 minutes
TAP Coverage:	Global
TAP Signal Stability:	99.99%
Time Accuracy(RMS):	20ns
Velocity Accuracy (RMS):	0.03m/s
Time To First Fix (TTFF):	
- Cold Start:	<35s
- Warm Start:	<10s
Reacquisition:	<1s

System & Data

Data Output:	NMEA-0183 and Tersus Binary
Max. Update Rate:	20Hz
Differential Correction Format:	RTCM 2.3/3.0/3.1/3.2,CMR,CMR+
Storage:	In-built 8GB Memory

Communication Ports

PPS Output:	LV TTL x1
Event Input:	LV TTL x1
USB:	USB 2.0 device x1
CAN:	ISO/DIS 11898 x1(3)
Serial Ports:	RS-232*1, TTL*2
COM Baud-rate:	Up to 921600 bps
IO Connector:	24-pin header+ 6-pin header
Antenna Connector:	MMCX Female x1

Technical Specifications

Physical

Dimension:	100x60x10.1mm(4)
Weight:	44g

Electrical

Input Voltage:	+3.3 VDC ±5%
Power Consumption(Typical):	2.3W

Environmental

Operating Temperature:	-40℃ ~ +85℃
Storage Temperature:	-55℃ ~ +95℃
Humidity:	95% not condensed

Antenna Match

Antenna Output Voltage:	+5.0 VDC ±5%

Note:
(1) The initialization time depends on various factors, including the number of satellites, observation time, atmospheric conditions, multi-path, obstructions, satellite geometry, etc.
(2) The initialization reliability may be affected by atmospheric conditions, signal multipath, and satellite geometry.
(3) CAN Bus optional.
(4) The actual size/weight may vary depending on the manufacturing process and measurement method.

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