

# Tersus GNSS

## BL40C\_PPP Full Constellation GNSS RTK Board

### Overview

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The Tersus BL40C\_PPP is a compact GNSS RTK board with full constellation tracking for providing cm-level accuracy positioning. It can be integrated with autopilots and inertial navigation units.

The BL40C\_PPP board supports multiple constellations and multiple frequencies to improve the continuity and reliability of the RTK solution even in harsh environments. In-built 8GB memory makes data collection easy. It features compatibility with other GNSS boards in the market via flexible interfaces, smart hardware design, and commonly used log/command formats.

The BL40C\_PPP board 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.

### Key Features

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- ✓ Powered by new Tersus ExtremeRTK™ GNSS Technology, BX40C supports multi-constellation and multi-frequency all-in-view satellite tracking
- ✓ Supports multiple constellations and frequencies
  - GPS L1 C/A, L2C, L2P, L5
  - GLONASS L1 C/A, L2 C/A
  - BeiDou B1, B2, B3, support BDS-3
  - Galileo E1, E5a, E5b
  - QZSS L1 C/A, L2C, L5
  - L-BAND
- ✓ Supports 576 channels
- ✓ Centimeter-level position accuracy
- ✓ Flexible interfaces such as RS232, TTL, USB, CAN, Ethernet
- ✓ Supports PPS output and event mark input
- ✓ Supports up to 20Hz RTK solution updates and raw data output
- ✓ Built-in 8GB memory makes data collection easy
- ✓ Pin-to-pin compatible with Trimble BD970
- ✓ Log/command compatible with NovAtel protocol



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### Technical Specifications

#### Performance

|   |              |
|---|--------------|
| Signal Tracking:  |              |
| GPS L1 C/A, L2C, L2P, L5; GLONAS L1 C/A, L2 C/A; BDS B1, B2, B3, support BDS-3; Galileo E1, E5a, E5b; QZSS L1 C/A, L2C, L5 L-BAND |              |
| Channels:   | 576          |
| 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    |
| Observation Accuracy (zenith direction):  |              |
| - C/A Code:   | 10cm         |
| - P Code:   | 10cm         |
| - Carrier Phase:  | 1mm          |
| Time To First Fix (TTFF):   |              |
| - ColdStart:  | <50s         |
| - WarmStart:  | <30s         |
| Re-acquisition:   | <2s          |
| Timing Accuracy (RMS):  | 20ns         |
| Velocity Accuracy (RMS):  | 0.03m/s      |
| Initialization (Typical):   | <10s         |

|                                 |                                    |
|---------------------------------|------------------------------------|
| TAP positioning accuracy (RMS): | < 5cm                              |
| TAP convergence time:           | 15 minutes                         |
| TAP coverage:                   | Global                             |
| TAP signal stability:           | 99.99%                             |
| Initialization Reliability:     | >99.99%                            |
| Correction:                     | RTCM 2.x/3.x/CMR/CMR+              |
| Data Output:                    | NMEA-0183 and Tersus Binary Format |
| Max. Update Rate:               | 20Hz                               |
| Storage:                        | Built-in 8GB memory                |

#### Communication

|                |                        |
|----------------|------------------------|
| Serial ports:  | RS-232 x1, TTL x2      |
| COM baud rate: | Up to 921600bps        |
| USB ports:     | USB 2.0 device x1      |
| CAN ports:     | ISO/DIS 11898 x1*      |
| PPS ports:     | LVTTTL x1              |
| Event mark:    | LVTTTL x2              |
| Ethernet:      | 10BaseT/100BaseTx1*(1) |

#### Electrical and Physical

|                              |                            |
|------------------------------|----------------------------|
| Input voltage:               | 3.45V DC                   |
| Power consumption (typical): | 3.6W                       |
| Dimension:                   | 100x60x10.1mm              |
| Weight:                      | 44g                        |
| IO connectors:               | 24pin header + 6pin header |
| Antenna Connector:           | MMCX female x1             |

#### Environmental

|                        |               |
|------------------------|---------------|
| Operating Temperature: | -40°C ~ +70°C |
| Storage Temperature:   | -55°C ~ +85°C |

Note:

\* This port' s function is related to firmware version.  
 (1) Hardware of ethernet is ready, reserved for future upgrade.

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