COMPACT FULL METAL JACKET DESIGN

The Trimble® BD970 GNSS system is a compact multi-constellation receiver designed to deliver centimeter accuracy to a variety of applications. With the Trimble BD970, OEM’s and integrators can be assured their investment is sound today and into the future. The Trimble BD970 GNSS supports a wide range of satellite signals, including GPS L2C and L5, GLONASS L1/L2 and BeiDou, B1 and B2 signals. In addition, Trimble is committed to the next generation of modernized GNSS configurations by providing Galileo-compatible products available for customers well in advance of Galileo system availability. In support of this plan, the Trimble BD970 is capable of tracking both Galileo signals for evaluation and test purposes.¹

DEMONSTRATED PERFORMANCE

Industry professionals trust Trimble embedded positioning technologies as the core of their precision applications. With the latest Trimble-precise Maxwell™ 6 technology, the BD970 provides assurance of long-term future-proofing and trouble-free operation. Moving the industry forward, the Trimble BD970 redefines high-performance positioning:

• On-board multipath mitigation
• Proven low-elevation tracking technology
• Dramatically improved RTK initialization

FLEXIBLE INTERFACING

The Trimble BD970 was designed for easy integration and rugged dependability. Customers benefit from the Ethernet connectivity available on the board, allowing high speed data transfer and configuration via standard web browsers. USB, RS232 and CAN are also supported. Just like other Trimble embedded technologies, easy to use software commands simplify integration and reduce development times. All software features are password-upgradeable, allowing functionality to be upgraded as your requirements change.

COMPACT DESIGN

The compact form factor is suitable for applications where lightweight is a necessity. The BD970 is rigorously tested to perform in the harsh environments your products are built for, with the reliability you expect from Trimble.
**Trimble BD970 Module**

**TECHNICAL SPECIFICATIONS**
- **220 Channels:**
  - GPS: Simultaneous L1 C/A, L2E, L2C, L5
  - GLONASS: Simultaneous L1 C/A, L1 P, L2 C/A (GLONASS M Only), L2P
  - SBAS: Simultaneous L1 C/A, L5
  - Galileo: Simultaneous L1/BOC, E5A, E5B, E5ARBOC
  - BeiDou: B1, B2
  - QZSS: L1 C/A, L1 SAIF, L2C, L5
- Advanced Trimble Maxwell 6 Custom Survey GNSS Technology
- High precision multiple correlator for GNSS pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response
- Very low noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Proven Trimble low elevation tracking technology: Initialization time \[<10 \text{ seconds}\] approximately / Initialization reliability: \[>99.9\%\]

**Network Protocols supported:**
- HTTP (web GUI)
- NTripCaster, NTripServer, NTripClient
- mDNS/uPhP Service discovery
- Dynamic DNS
- Email alerts
- Network link to Google Earth
- Support for external modems via PPP
- 3 x RS232 ports:
  - Baud rates up to 115,200
  - 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 & 50 Hz positioning outputs (depends on installed option)
  - Up to 50 Hz raw measurement & position outputs
- Reference outputs/inputs:
  - CMR, CMR+, SCMRX, RTCM 2.1, 2.2, 2.3, 3.0, 3.1
- Navigation outputs:
  - ASCII: NMEA-0183 GSV, AVR, RMC, HDG, VDH, VOT, GGK, GGA, GSA, ZDA, VTG, GST, PVT, PJK, BPQ, GLL, GNS, GRS, and Binary: Trimble GSOF
- Control Software:
  - HTML web browser. Internet Explorer, Firefox, Safari, Opera, Google Chrome
- 1 Pulse Per Second Output
- Event Marker Input Support
- LED drive support

**PERFORMANCE SPECIFICATIONS**
- **Time to First Fix (TTFF):**
  - Cold Start \[<45 \text{ seconds}\]
  - Warm Start \[<30 \text{ seconds}\]
- **Velocity Accuracy:**
  - Horizontal \[0.007 \text{ m/sec} \] (indicating Power, Satellite Tracking, and Differential Data)
  - Vertical \[11 \text{ g}\]
- **Maximum Operating Limits:**
  - Velocity \[515 \text{ m/sec}\]
  - Altitude \[18,000 \text{ m}\]
  - Acceleration \[75 \text{ g}\]

**PHYSICAL AND ELECTRICAL CHARACTERISTICS**
- **Size:**
  - 100 mm x 60 mm x 11.6 mm
- **Power:**
  - 3.3 V DC +5%/–3%
- **Temp:**
  - –40 °C to +75 °C
- **Humidity:**
  - 95% relative humidity non-condensing
- **Vibration:**
  - MIL-STD-810F, typically <1 minute
  - Dynamic RMS operating
  - 5 g RMS survival
  - Random RMS operating
  - ±40 g operating
- **Shock:**
  - ±75 g survival

**ENVIRONMENTAL CHARACTERISTICS**
- **Temperature:**
  - –55 °C to +85 °C
- **Humidity:**
  - 95% relative humidity non-condensing

**ORDERING INFORMATION**
- **Module Part Number:**
  - 7970-XX
- **Included:**
  - Interface board and power supply

1. Developed under a License of the European Union and the European Space Agency.
2. May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
3. 1 sigma level, when using Trimble Zephyr 2 antennas.
4. At maximum output rate.
5. GPS only and depends on SBAS system performance. FAA WAAS accuracy specifications are <5 m 3DRMS.
6. Depends on appropriate mounting/enclosure design.
7. Input only network connection.
8. Typical observed values.
9. No previous satellite (ephemerides / almanac) or position (approximate position or time) information.
10. Ephemerides and last used position known.
11. As required by the U.S. Department of Commerce to comply with export licensing restrictions.

Specifications subject to change without notice.