Trimble BD920

DUAL FREQUENCY RECEIVER SPEEDS DEVELOPMENT OF MOBILE POSITIONING APPLICATIONS

COMPACT FULL METAL JACKET DESIGN

The Trimble® BD920 GNSS receiver module has been designed for applications requiring centimeter accuracy in a very small package. Mobile platforms can now embed proven Trimble RTK technology using a shielded module with a 51 mm x 41 mm x 7 mm form factor. The Trimble BD920 is a complete drop-in, solder-down module manufactured and tested to Trimble's highest quality standards. This design ensures the high quality GNSS signals are protected from the sources of EMI on the host platform. It also significantly reduces radiated emissions which speeds compliance certification and time to market.

MULTI CONSTELLATION GNSS

The Trimble BD920 supports both L1 and L2 frequencies from the GPS and GLONASS constellations plus the E1 frequency from Galileo. This delivers the quickest and most reliable RTK initializations for 1–2 centimeter positioning. For applications that do not require centimeter accuracy the BD920 contains an advanced kalman filter PVT engine that delivers high accuracy GNSS, DGNSS positions in the most challenging environments such as urban canyons. Different configurations of the module are available including single frequency RTK and GPS only. All features are password-upgradeable, allowing functionality to be upgraded as your requirements change.

The receiver also supports Fault Detection and Exclusion (FDE) and Receiver Autonomous Integrity Monitoring (RAIM) for safety-critical applications.

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 BD920 provides assurance of long-term future-proofing and trouble-free operation. Moving the industry forward, the Trimble BD920 redefines high-performance positioning:

- On-board multipath mitigation
- Proven low-elevation tracking technology

FLEXIBLE INTERFACING

The Trimble BD920 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 and RS-232 are also supported. Just like other Trimble embedded technologies, easy to use software commands simplify integration and reduce development times.

Key Features

- 220 Channels for multi-constellation GNSS support
- Fully EMI shielded module
- Compact design for mobile applications
- Flexible RS232, USB and ethernet interfacing
- Centimeter-level position accuracy
- Proven Trimble Maxwell 6 technology
- Supports FDE and RAIM

Trimble BD920 Module

TECHNICAL SPECIFICATIONS[1]

- 220 Channels:
  - GPS: L1 C/A, L2E, L2C
  - GLONASS: L1 and L2 C/A
  - Galileo: E1[2]
  - QZSS: L1 C/A, L1 SAIF, L2C
  - SBAS: L1 C/A
- 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
- 1 USB 2.0 Device port
- 1 LAN Ethernet port:
  - Supports links to 10BaseT/100BaseT auto-negotiate networks
  - All functions are performed through a single IP address simultaneously—including web GUI access and raw data streaming
  - Network Protocols supported:
    - > HTTP (web GUI)
    - > NTP Server
    - > NMEA, GSOF, CMR over TCP/IP or UDP
    - > NTripCaster, NTripServer, NTripClient
    - > mDNS/uPnP Service discovery
    - > Dynamic DNS
    - > Email alerts
    - > Network link to Google Earth
    - > Support for external modems via PPP
- 4 x RS232 ports:
  - Baud rates up to 115,200
- Up to 20 Hz raw measurement & position outputs
- Reference outputs/inputs:
  - CMR, CMR+, sCMRx, RTCM 2.1, 2.2, 2.3, 3.0, 3.1[12]
- Navigation outputs:
  - VGK, VHD, ROT, GGK, GGA, GSA, ZDA, VTG, GST, PJT, PJK, BPQ, GLL, GRS, GBS 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
- Supports Fault Detection & Exclusion (FDE), Receiver Autonomous Integrity Monitoring (RAIM)

PERFORMANCE SPECIFICATIONS

Time to First Fix (TTFF)[7]
- Cold Start[8] ..... <45 seconds
- Warm Start[9] ..... <30 seconds
- Signal Re-acquisition ..... <2 seconds

Velocity Accuracy[3,4]
- Horizontal ..... 0.007 m/sec
- Vertical ..... 0.020 m/sec

Acceleration ..... 11 g

Maximum Operating Limits[10]
- Velocity ..... 515 m/sec
- Altitude ..... 18,000 m

POSITIONING SPECIFICATIONS[3]

Mode	Accuracy[4]	Latency[5]	Maximum Rate
Single Baseline RTK (<30 km)	0.008 m + 1 ppm Horizontal 0.015 m + 1 ppm Vertical	<30 ms	20 Hz
DGNSS	0.25 m + 1 ppm Horizontal 0.50 m + 1 ppm Vertical	<20 ms	20 Hz
SBAS[6]	0.50 m Horizontal 0.85 m Vertical	<20 ms	20 Hz

RTK initialization time[3] ..... typically <1 minute
RTK initialization reliability[3] ..... >99.9%

PHYSICAL AND ELECTRICAL CHARACTERISTICS

Size ..... 51 mm x 41 mm x 7 mm
Power ..... 3.3 V DC +5%/–3%
Typical 1.3 W (L1/L2 GPS + L1/L2 GLONASS)
Weight ..... 24 grams
Connectors
- I/O ..... 80 pin Narrow Pitch Panasonic Socket
- Antenna ..... MMCX receptacle

Antenna LNA Power Input
- Input voltage ..... 3.3 VDC to 5 VDC
- Maximum current ..... 400 mA

Minimum required LNA Gain ..... 28.5 dB

ENVIRONMENTAL CHARACTERISTICS[11]

Temperature
- Operating ..... –40 °C to +85 °C
- Storage ..... –55 °C to +85 °C

Vibration ..... MIL810F, tailored
Random 6.2 gRMS operating
Random 8 gRMS survival

Mechanical shock MIL810D
±40 g operating
±75 g survival

Operating Humidity ..... 5% to 95% R.H. non-condensing, at +60 °C

ORDERING INFORMATION

Module Part Number 60920-XX
Module ..... Trimble BD920 GNSS available in a variety of configurations from SBAS upwards
Evaluation Kit ..... Includes interface board and power supply

1 Trimble BD920 is available in a variety of software configurations. Specifications shown reflect full capability.
2 Developed under a License of the European Union and the European Space Agency.
3 May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
4 1 sigma level, when using Trimble Zephyr 2 antennas.
5 At maximum output rate.
6 GPS only and depends on SBAS System performance. FAA WAAS accuracy specifications are <5 m 3DRMS.
7 Typical observed values.
8 No previous satellite (ephemerides / almanac) or position (approximate position or time) information.
9 Ephemerides and last used position known
10 As required by the U.S. Department of Commerce to comply with export licensing restrictions.
11 Dependent on appropriate mounting/enclosure design.
12 Input only network correction

Specifications subject to change without notice.

Contact your local dealer today

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