## 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**

## DUAL FREQUENCY GPS/GLONASS RECEIVER LESS THAN HALF CREDIT CARD SIZE SPEEDS DEVELOPMENT OF MOBILE POSITIONING APPLICATIONS

**THE LATEST IN GNSS TECHNOLOGY FROM TRIMBLE IS NOW AVAILABLE TO ORIGINAL EQUIPMENT MANUFACTURERS (OEM) AND SYSTEM INTEGRATORS.**

**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 or SBAS 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
• Dramatically improved RTK initialization

**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.

# TRIMBLE BD920 GNSS RECEIVER 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 and Host port
- 1 LAN Ethernet port:
  - Supports links to 10BaseT/100BaseT 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 . . . . . . . . . . CMR, CMR+, sCMRx, RTCM 2.1, 2.2, 2.3, 3.0, 3.1
Navigation outputs . . . . . . . . . . . . . . . ASCII: NMEA-0183 GSV, AVR, RMC, HDT, 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 7.0 or later, Firefox 3.5 or later, Safari 4.0, Opera 9, Google Chrome
- 1 Pulse Per Second Output
- Event Marker Input Support
- Supports Fault Detection & Exclusion (FDE), Receiver Autonomous Integrity Monitoring (RAIM)

## POSITIONING SPECIFICATIONS[3]

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

RTK initialization time[3] . . . . . . . . . . . . . . . . . . . . . . . . . . typically <10 seconds
RTK initialization reliability[3] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . >99.9%

## 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
Vertical . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 0.020 m/sec
Maximum Operating Limits[10]
Velocity . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .515 m/sec
Altitude . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 18,000 m

## 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 V DC to 5 V DC
Maximum current . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 400 mA
Minimum required LNA Gain with 5dB cable loss . . . . . . . . . . . . . . . . . . 33.5dB

## 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 . . . . . . . . . . . . . . . . . . . . . Trimble BD920 GNSS available in a variety of configurations from L1 SBAS upwards
Evaluation Kit . . . . . . . . . . . . . . . . . .Includes interface board and power supply