

### KEY FEATURES

Proven GNSS technology from Trimble

Centimeter level position accuracy

OmniSTAR XP/HP support

Convenience of Ethernet connectivity

Easy-to-integrate form factor and software commands



### EMBEDDED GNSS RECEIVER SPEEDS DEVELOPMENT OF ADVANCED POSITIONING APPLICATIONS

**THE GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM) INDUSTRY IS GROWING AND EVOLVING TO ADOPT NEW SIGNAL TECHNOLOGIES. BY ADOPTING MODERNIZED GPS AND GLONASS SIGNAL POSITIONING, APPLICATIONS REACH NEW LEVELS OF PERFORMANCE AND PRODUCTIVITY.**

The Trimble® BD960 GNSS system is a multi-channel, multi-frequency, OEM GNSS receiver, in a compact Eurocard form factor. The latest, Trimble centimeter-level positioning technology is now available in an easy-to-integrate module. With the Trimble BD960, OEMs and integrators can easily harness both the modernized GPS L2C and L5 signals and GLONASS L1/L2 signals. This GNSS support is available now, with the confidence of working with proven technology.

#### DEMONSTRATED PERFORMANCE

Industry professionals trust Trimble embedded positioning technologies as the core of their precision applications. With the latest Trimble-precise Maxwell™ technology, the BD960 provides assurance of long-term future-proofing and trouble-free operation.

Moving the industry forward, the Trimble BD960 redefines high-performance positioning:

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

#### OMNISTAR SUPPORT

For land and air applications where decimeter-precision is required, onboard OmniSTAR satellite service is a convenient option. OmniSTAR satellite-based services are available in specific geographic regions worldwide and require a subscription from the service provider (check with OmniSTAR for availability and operating constraints in your area). The Trimble BD960 supports the three levels of Differential GPS Service provided by OmniSTAR: VBS, HP, and XP.

#### PROVEN DESIGN

The Trimble BD960 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. The compact, Eurocard form-factor is suitable for many of the most ambitious designs. 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. The BD960 is rigorously tested to perform in harsh environmental conditions with the reliability you expect from Trimble.

# TRIMBLE BD960 GNSS RECEIVER MODULE

## TECHNICAL SPECIFICATIONS

- Advanced Trimble Maxwell 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 receiver noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Signal-to-Noise ratios reported in dB-Hz
- 72 Channels:
  - GPS L1 C/A Code, L2C, L1/L2/L5 Full Cycle Carrier
  - GLONASS L1 C/A Code, L1 P Code, L2 C/A, L2 P Code, L1/L2 Full Cycle Carrier
- 4 additional channels for SBAS WAAS/EGNOS/MSAS support
- L-Band OmniSTAR VBS, HP & XP
- 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, GSOFF, CMR etc 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
- 3 x RS232 ports:
  - Baud rates up to 115,200
- 1 Hz, 2 Hz, 5 Hz, 10 Hz and 20 Hz positioning and data streaming outputs
- Reference outputs CMR, CMR+, RTCM 2.1, 2.2, 2.3, 3.0
- Control Software:
  - HTML web browser. Internet Explorer 7.0 or later, Firefox 2.0 or later
  - PC Utilities including Configuration Toolbox
- 1 Pulse Per Second Output
- Event Marker Input Support

Initialization time<sup>1</sup> . . . . . typically <10 seconds

Initialization reliability<sup>1</sup> . . . . . >99.9%

Navigation outputs . . . . . ASCII: NMEA-0183 GSV, AVR, RMC, HDT, VGK, VHD, ROT, GGK, GGA, GSA, ZDA, VTG, GST, PJT, PJK and Binary: Trimble GSOFF

LED drive support. . . . . 3  
(indicating Power, Satellite Tracking, and Differential Data)

## POSITIONING SPECIFICATIONS

Mode	Accuracy <sup>2</sup>	Latency <sup>3</sup>	Maximum Rate
Single Baseline RTK (<30km)	8 mm + 1 ppm Horizontal 15 mm + 1 ppm Vertical	<20 ms	20 Hz
DGPS	0.25 m + 1 ppm Horizontal 0.50 m + 1 ppm Vertical	<20 ms	20 Hz
SBAS <sup>4</sup>	<5 m 3DRMS	<20 ms	20 Hz

## PHYSICAL CHARACTERISTICS

Size . . . . . 100 mm x 106.7 mm x 12.7 mm  
 Power . . . . . 4.9 V DC to 28 V DC  
 Typical 2.1 W at 5 V DC (L1/L2 GPS)  
 Weight . . . . . 150 grams

## Connectors

I/O . . . . . 34-pin header  
 Antenna . . . . . MMCX receptacle

## ENVIRONMENTAL CHARACTERISTICS<sup>5</sup>

Temperature  
 Operating . . . . . –40 °C to +75 °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

## ORDERING INFORMATION

Module . . . . . Trimble BD960 GNSS available in a variety of configurations from L1 DGPS upwards  
 Evaluation Kit . . . . . Includes BD960 receiver, I/O board, Power Supply

<sup>1</sup> May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.  
<sup>2</sup> 1 sigma level, when using Trimble Zephyr 2 antennas.  
<sup>3</sup> At maximum output rate.  
<sup>4</sup> Depends on SBAS system performance.  
<sup>5</sup> Dependant on appropriate mounting/enclosure design\*

Specifications subject to change without notice.

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