Trimble BD9250s

COMPACT DUAL-FREQUENCY RECEIVER INTEGRATED WITH S-BAND FOR PRECISE POSITIONING

FLEXIBLE SIGNAL TRACKING

The Trimble BD9250s GNSS receiver is a lightweight, dual-frequency receiver designed in an industry standard form factor to deliver centimeter accuracy for a variety of applications. It offers integrators the ability to switch between L2 and L5 signal tracking in the field, providing the user the ability to pick the best frequency for operations and allow for a maximum number of observations.

TRIMBLE MAXWELL 7 TECHNOLOGY

The Trimble BD9250s supports dual-frequency for the GPS, GLONASS, BeiDou, Galileo QZSS and NavIC constellations. As the number of satellites in the constellation grows the BD9250s is ready to take advantage of the additional signals. This delivers the quickest and most reliable RTK initializations for centimeter positioning. With the latest Trimble Maxwell™ 7 Technology, the BD9250s provides:

- ▶ Trimble ProPoint® RTK/RTX Engine
- ▶ 336 Tracking Channels
- ▶ Trimble Everest™ Plus multipath mitigation
- ▶ Advanced RF Spectrum Monitoring and Analysis
- ▶ Proven low-elevation tracking technology
- ▶ Anti-spoofing protection

FLEXIBLE INTERFACING

The Trimble BD9250s was designed for easy integration and rugged dependability. Customers benefit from the Ethernet connectivity available on board, allowing high speed data transfer and configuration via standard web browsers. USB, CAN and RS-232 are also supported. Just like other Trimble embedded technologies, easy to use software commands simplify integration and reduce development times.

Different configurations of the model are available. These include everything from an autonomous L1 unit all the way to a multi-constellation dual-frequency RTK unit. All features are password upgradeable, allowing functionality to be upgraded as your requirements change.

Key Features

- ▶ Trimble Maxwell 7 Technology
- ▶ Trimble ProPoint GNSS Positioning Engine
- ▶ Trimble RTX® Support over IP
- ▶ 336 Channels for multi-constellation GNSS support
- ▶ S-Band
- ▶ L1 + L2 or L5 (Field selectable)
- ▶ Compact, lightweight design with industry standard pinouts
- ▶ Centimeter-level position accuracy
- ▶ Advanced RF Spectrum Monitoring

Trimble BD9250s Module
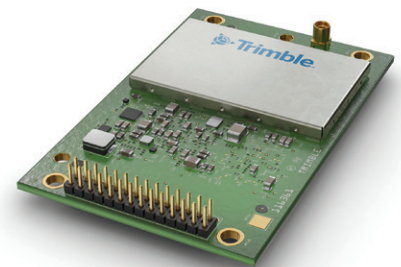
TECHNICAL SPECIFICATIONS[1]
- Trimble Maxwell 7 Technology
- 336 Tracking Channels:

	Field Selectable (L2 or L5 Band)				
	L1 Band	**L2 Band**	**L5 Band**	**S-Band**	**MSS-Band**
GPS	L1 C/A, L1C	L2E, L2C	L5	–	–
BeiDou	B1	–	B2	–	–
GLONASS	L1 C/A	L2 C/A	L3 CDMA[12]	–	–
Galileo	E1	–	E5A, E5B, AltBOC	–	–
NavIC	–	–	L5	S-Band	–
QZSS	L1 C/A, L1C, L1 SAIF	L2C	L5	–	–
SBAS	L1 C/A	–	L5	–	–
Trimble RTX	–	–	–	–	–

- High precision multiple correlator for GNSS pseudorange measurements
- Trimble Everest Plus multipath mitigation
- Advanced RF Spectrum Monitoring and Analysis
- 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 1Hz bandwidth
- Proven Trimble low elevation tracking technology
- Reference outputs/inputs:
  – CMR, CMR+, sCMRx, RTCM 2.1, 2.2, 2.3, 3.0, 3.1[11], 3.3
- 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, NMEA2000
- 1 Pulse Per Second Output
- Event Marker Input Support
- Supports Fault Detection & Exclusion (FDE), Receiver Autonomous Integrity Monitoring (RAIM)
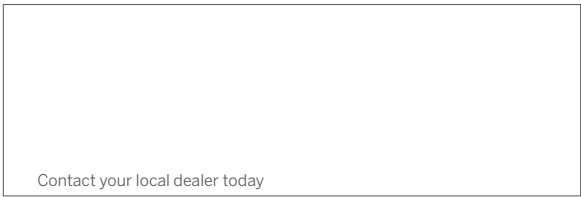
COMMUNICATION
- 1 USB OTG
- 1 LAN Ethernet port:
  – Supports links to 10BaseT/100BaseT auto-negotiate networks
  – All functions are performed through a single IP address simultaneously—including web GUI access and raw data streaming
  – Network Protocols supported:
    > HTTP (web GUI)
    > NTP Server
    > 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
    > RDNIS Support
- 4 x RS232 ports:
  – Baud rates up to 460,800
- Control Software:
  – HTML web browser, Microsoft Edge, Firefox, Safari, Opera, Google Chrome
- 2 CAN Ports (requires addition of CAN Transceiver by customer)

POSITIONING SPECIFICATIONS [2,3]

	Autonomous	SBAS	DGNSS	RTK
Position (m)	1.00 (H) 1.50 (V)	0.50 (H) 0.85 (V)	0.25 (H) 0.50 (V)	0.008 (H) 0.015 (V)

TRIMBLE RTX SPECIFICATIONS [13]

	Horizontal / Vertical (RMS)	Initialization Standard / Fast
CenterPoint® RTX	2 cm / 5 cm	<3 min / <1 min

PERFORMANCE SPECIFICATIONS
Time to First Fix (TTFF)[6]
- Cold Start[7] .... <55 seconds
- Warm Start[8] .... <30 seconds
- Signal Re-acquisition ....<2 seconds

Velocity Accuracy[2,3]
- Horizontal .... 0.007 m/sec
- Vertical .... 0.020 m/sec

Maximum Acceleration GNSS Tracking ....+/- 11g

Maximum Operating Limits[9]
- Velocity .... .515 m/sec
- Altitude .... 18,000 m

RTK Initialization Time[2]..Typically <8 sec
- RTK Initialization Reliability[2] ....>99.9%
- Position Latency[4] ....<20ms

Maximum Position/Attitude Update Rate 20Hz

PHYSICAL AND ELECTRICAL CHARACTERISTICS
Size. .... 71.1 mm x 45.7 mm x 11 mm
Power. .... 3.3 VDC +/- 5%
Typical 1.4 W (L1/L2 GPS + L1/L2 GLONASS)
Weight 25g
Connectors
- I/O. ....28 pin dual-row male header
- GNSS Antenna. ....1 x MMCX receptacle

Antenna LNA Power Input
- Input voltage .... 5 VDC Nominal
- Maximum current .... 125 mA

Minimum required LNA Gain. 22dB

ENVIRONMENTAL CHARACTERISTICS[11]
Temperature
- Operating .... -40 °C to +75 °C
- Storage .... -55 °C to +85 °C

Vibration .... MIL-STD-810G, tailored
Random 6.2 gRMS operating
Random 8gRMS survival

Mechanical shock. MIL-STD-810D
+/- 40g 10ms operating
+/- 75g 6ms survival

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

ORDERING INFORMATION
Module Part Number. 229251-XX

1 Trimble BD9250s is available in a variety of software configurations. Specifications shown reflect full capability.
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™ 2/3 antennas, add 1 ppm to RTK Position accuracies.
4 At maximum output rate.
5 GPS only and depends on SBAS System performance. FAA WAAS accuracy specifications are <5 m 3DRMS.
6 Typical observed values. (95%)
7 No previous satellite (ephemerides / almanac) or position (approximate position or time) information.
8 Ephemerides and last used position known
9 As required by the U.S. Department of Commerce to comply with export licensing restrictions.
10 Dependent on appropriate mounting/enclosure design.
11 Input only network correction
12 There is no public GLONASS L3 CDMA. The current capability in the receivers is based on publicly available information. As such, Trimble cannot guarantee that these receivers will be fully compatible.
13 Contact a local sales representative for comprehensive overview of all options and accuracies

Specifications subject to change without notice.

Contact your local dealer today

TRANSFORMING THE WAY THE WORLD WORKS

Trimble