



Trimble BD9250

COMPACT DUAL-FREQUENCY RECEIVER FOR PRECISION POSITIONING APPLICATIONS

FLEXIBLE SIGNAL TRACKING

The Trimble BD9250 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 and QZSS constellations. As the number of satellites in the constellation grows the BD9250s is ready to take advantage of the additional signals to allow for quicker and more 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 BD9250 is 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 time.

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
- ▶ 336 Channels for multi-constellation GNSS support
- ▶ Trimble RTX Support
- ▶ L1 + L2 or L5 (Field selectable)
- ▶ Compact, lightweight design with industry standard pinouts
- ▶ Centimeter-level position accuracy
- ▶ Advanced RF Spectrum Monitoring



Trimble BD9250 Module

TECHNICAL SPECIFICATIONS¹

- 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 ¹³	-	-
Galileo ²	E1	-	E5A, E5B, E5AltBOC	-	-
NavIC	-	-	L5	-	-
QZSS	L1 C/A, L1C, L1 SAIF	L2C	L5	-	-
SBAS	L1 C/A	-	L5	-	-
Trimble RTX	-	-	-	-	MSS-Band

- 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, 3.1¹², 3.3
- Navigation Outputs:
 - ASCII: NMEA-0183 GSV, AVR, RMC, HDT, VGK, VHD, ROT, GKG, 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^{3,4}

	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® SPECIFICATIONS¹⁴

	Horizontal / Vertical (RMS)	Initialization Standard / Fast
CenterPoint® RTX	2 cm / 5 cm	<15 min / <1 min

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PERFORMANCE SPECIFICATIONS

Time to First Fix (TTFF)⁷	
Cold Start ⁶	<55 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
Maximum Acceleration GNSS Tracking	+/- 11g
Maximum Operating Limits¹⁰	
Velocity	.515 m/sec
Altitude	18,000 m
RTK Initialization Time ³	Typically <8 sec
RTK Initialization Reliability ³	>99.9%
Position Latency ⁵	<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	22.0 dB

ENVIRONMENTAL CHARACTERISTICS¹¹

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	.229250-XX
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- 1 Trimble BD9250 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 2/3 antennas, add 1 ppm to RTK Position accuracies.
- 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. (95%)
- 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
- 13 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.
- 14 Contact a local sales representative for comprehensive overview of all options and accuracies

Specifications subject to change without notice.



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