Alloy

GNSS REFERENCE RECEIVER

THE FUTURE OF GNSS IS HERE

The Trimble Alloy GNSS receiver offers powerful performance with the latest GNSS technology in a sleek new design that is easy and intuitive to use. Whether you need GNSS for campaign work or in permanent installations, the flexible configuration delivers reliable, robust data when and where you need it.

MODERNIZED GNSS TRACKING

Using powerful Trimble 360 receiver technology in combination with dual Trimble Maxwell™ 7 chipsets, the Alloy GNSS receiver supports all known and planned GNSS constellations, ensuring your GNSS data is robust and reliable including GPS Block IIIA and BeiDou Generation III.

INTELLIGENT DESIGN

Review Key Info at a Glance

With a four-line angled display you can read all important information such as satellite tracking, position solution type, data logging, IP address, Wi-Fi, firmware information and battery status right on the home screen. Setup and verifying status information is now quick and easy.

Plug in and get to work

Multiple ports are easily accessible without the need for adapters in a configuration that makes it simple to plug in a variety of external sensors and antennas.

Power when you need it

The Alloy receiver provides the most robust power options for any GNSS system. Featuring multiple power inputs with dual hot-swappable batteries, power over Ethernet, and advanced power management features, the Trimble Alloy GNSS receiver is ideal for any GNSS base station deployment.

Stackable Design

With a versatile, stackable design the Alloy GNSS receiver is built with a lightweight rugged aluminum alloy chassis which features IP68 certification. When you need to organize multiple units for deployment, simply stack and prep.

SECURITY 24/7

Using Trimble Sentry™ technology, you can easily configure alerts that will automatically inform you of any changes to the position, data logging, configuration, tracking, power, communications, and system access events. Combined with advanced security measures such as anti-spoofing, Trimble Sentry technology ensures continued operation of your Trimble Alloy GNSS receiver.

TRIMBLE RTX ON BOARD

The Alloy GNSS receiver is available with Trimble RTX™ advanced positioning technology allowing for rapid real-time network coordination. Whether this is for base station deployment or monitoring, Trimble RTX technology remains locked onto your real world absolute position.

COMMUNICATION

The Trimble Alloy GNSS receiver supports a wide range of communication protocols including Ethernet (IPv4 / IPv6), Bluetooth®, and Wi-Fi for flexible easy access via the built-in multi-language web interface and mini-web interface for mobile devices.

DATA

Storage

The Alloy GNSS receiver can store more data in less space by using specialized compression formats. Up to twelve independent high-rate data logging sessions can be stored internally, and using USB storage you can be sure the data you collect and store is specific for your application.

Access

Leveraging advanced communication protocols, data can be accessed via the web interface, built-in FTP server, or configured to be pushed to remote FTP sites or email accounts in multiple industry formats.

Benefits

- ▶ Dual Trimble Maxwell 7 chipsets combined with a powerful processor provides the ultimate in tracking and processing power

- ▶ Ethernet and Wi-Fi support provide ease of access, configuration, and transfer of data. Using the built-in web interface gives instant access to a simple-to-use configuration suite

- ▶ Dual hot-swappable internal batteries with integrated charging makes the Alloy receiver suitable for use in the office or remote locations, and anywhere in-between

- ▶ The intelligent design features multiple connectors and stackable housing, making the Alloy receiver easy to configure for deployment

- ▶ Seamless integration to Trimble Pivot Platform software for easy Real-Time Network operations

- ▶ Designed to an IP68 certification the Alloy receiver is ready for any environment

- ▶ Includes firmware for life so it's easy to keep your Alloy reference receiver up-to-date with the latest features, enhancements and security updates, free to install from **www.alloy.trimble.com**

Trimble

SPECIFICATIONS[1]

GNSS TECHNOLOGY

- Trimble RTX worldwide Corrections
- Advanced Trimble dual Maxwell™ 7 GNSS chipset provide 672 channels for simultaneous satellite tracking and anti-spoofing capabilities
- Trimble EVEREST Plus™ multipath signal rejection
- Trimble 360 receiver technology
- High-precision multiple correlator for GNSS pseudorange measurements
- Spectrum Analyzer to troubleshoot GNSS jamming
- Trimble Sentry delivers anti-spoofing security
- 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
- Signal-to-noise ratio reported in dB-Hz
- Proven Trimble low elevation tracking technology
- Proprietary Receiver Autonomous Integrity Monitor (RAIM) system to detect and reject degraded signals to improve position quality

SATELLITE TRACKING

- GPS: L1C, L1 C/A, L2E (L2P), L2C, L5
- GLONASS: L1 C/A[2] and unencrypted P code, L2 C/A and unencrypted P code, L3 CDMA
- Galileo: E1, E5A, E5B and E5AltBOC, E6
- BeiDou: B1, B2, B3, B1C, B2A
- QZSS: L1 C/A, L1C, L1S, L2C, L5, LEX/L6[3]
- IRNSS: L5, S-Band
- SBAS: L1 C/A (EGNOS/MSAS GAGAN/SDCM), L1 C/A and L5 (WAAS)
- L-Band: Trimble RTX™

INPUT/OUTPUT FORMATS

- Correction Formats:
  - CMR, CMR+, CMRx, GAGAN, RTX, RTCM 2.x, RTCM 3.x
- Observables:
  - RT17, RT27, BINEX, RTCM 3.x
- Position/Status I/O:
  - NMEA-0183 v2.30, GSOF
- Up to 100 Hz Output
- 10 MHz External Frequency Input
  - Normal input level 0 to +13 dBm
  - Maximum input level +17 dBm, ±35 V DC
  - Input impedance 50 Ohms @ 10 MHz; DC blocked
- 1 PPS Output
- Event Input
- Met/Tilt Sensor Support

POSITIONING PERFORMANCE

Differential Positioning

Code differential GNSS positioning[4]

Horizontal	0.25 m + 1 ppm RMS
Vertical	0.50 m + 1 ppm RMS

SBAS differential positioning accuracy[5]

Horizontal	0.50 m RMS
Vertical	0.85 m RMS

Static GNSS Surveying[4]

High-accuracy Static

Horizontal	3 mm + 0.1 ppm RMS
Vertical	3.5 mm + 0.4 ppm RMS

Static and Fast Static

Horizontal	3 mm + 0.5 ppm RMS
Vertical	5 mm + 0.5 ppm RMS

Real Time Kinematic Surveying[4]

Single Baseline < 30km

Horizontal	8 mm + 1 ppm RMS
Vertical	15 mm + 1 ppm RMS

Networked RTK[6]

Horizontal	8 mm + 0.5 ppm RMS
Vertical	15 mm + 0.5 ppm RMS
Initialization time	typically <10 seconds
Initialization reliability	typically >99.9%

COMMUNICATION

- Serial Ports:
  - Two 9-pin Male
  - Two 7-pin Lemo
- USB: one Mini-B USB 5-pin / RDNIS (Device and Host modes)
- Ethernet: one RJ45 (Full-duplex, auto-negotiate 100Base-T)
  - IPv4 / IPv6, UDP, FTP, NTRIP Caster, NTRIP Server, NTRIP Client, Proxy server
  - Routing table, NTP Server, NTP Client support
  - Email Alerts and File Push
  - DNS client support
- Wi-Fi: 802.11 b/g, access point and client mode, WPA/WPA2/WEP64/WEP128 encryption
- Bluetooth[7]: Integrated 2.4 GHz Bluetooth; supports three simultaneous connections

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1 Specifications subject to change without notice.
2 L2 C/A on GLONASS-M satellites.
3 LEX / L6 supported on QZSS Block I satellites.
4 Accuracy may be subject to degradation by multipath interference, obstructions, satellite geometry and atmospheric conditions. Always follow recommended survey practices.
5 Depends on WAAS/EGNOS system performance.
6 Networked RTK PPM values are reference to the closest physical base station.
7 Bluetooth type approvals are country specific.

DATA LOGGING

Storage Capacity:
    Onboard Memory (Journaling) . . . . .up to 24 GB[8]
    External Memory[9] . . . . greater than 1 TB
Maximum Data Logging Rate . . . . 100 Hz
Maximum Combined Data Logging Rate . . . . 188 Hz
File Durations. . . . . 1 minute to continuous
Storage Sessions . . . . 12 concurrent independent sessions with dedicated memory pooling
File Formats . . . . T02, T04, BINEX, RINEX v2.x/3.0x, Google Earth KML/KMZ
File Naming Conventions . . . . Multiple
Data Retrieval and transfer . . . . HTTP, FTP Server, USB
Events . . . . Definable file protection on events

PHYSICAL SPECIFICATIONS

Alloy receiver dimensions (L x W x H) . . . . 20.98 cm x 21.36 cm x 7.62 cm (8.41 in x 8.26 in x 3 in)

Alloy receiver dimensions
    with brackets attached (L x W x H) . . . . .26.77 cm x 21.36 cm x 8.3 cm (8.41 in x 10.54 in x 3.27 in)
Weight . . . . 2.34 kg (5.17 lbs)

ENVIRONMENT

Operating Temperature[10, 11] . . . .–40 °C to +65 °C (−40 °F to +149 F)
Storage temperature . . . .–40 °C to +80 °C (−40 °F to +176 F)
Humidity . . . . 100% condensing
Shock
    Operating . . . . .40 g per MIL-STD-810G Table 5.16.6-VII
    Non-Operating . . . . 75 g per MIL-STD-810G Table 5.16.6-VII Designed to survive 1m bench drop
Vibration
    Operating . . . . MIL-STD-810G Fig. 5.14.6C-1 Category 4
    Ingress protection . . . . IP68 Certified per IEC-60529 - waterproof/dustproof (1 m submersion for 1 hr)

USER INTERFACE

- Front Panel Display
    - 4-line x 32 character reversible OLED display
    - 7 button input configuration
    - Adjustable LED backlighting
- Multiple language support for front panel and web UI - Chinese, Dutch, English, Finnish, French, German, Italian, Japanese, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish
- Web User Interface: Allows remote configuration, data retrieval, and firmware updates over HTTPS/HTTP

ANTENNA SUPPORT

Output Voltage . . . . 5 V DC nominal
Maximum output current . . . . 150 mA
Maximum cable loss . . . . 12 dB
Recommended antennas . . . . Trimble Zephyr 3 Geodetic, Trimble GNSS-Ti v2 Choke Ring

SECURITY

- HTTP login
- HTTPS/SSL
- Programmatic Interface authentication
- NTRIP
- IP Filtering

ELECTRICAL

- Power over Ethernet (PoE) 802.3af (Type 1), 802.at (Type 2)
- 10.8 to 28.0 V DC input on 2 Lemo ports
    - User-configurable power-on voltage
    - User-configurable power-down voltage
- User-configurable 12 V DC power output on serial port #2
- Integrated dual hot-swappable smart batteries (7.4 V, 7800 mA-hr, Li-Ion batteries) with up to 15 hours of continuous operation
- Seamless switching between external/internal power sources
- Configurable minimum input voltage for battery charging
- Integrated battery charging circuitry
- Power Consumption – 3.8 W or higher, dependent on user settings

REGULATORY COMPLIANCE

- FCC Part 15 (Class B device), CISPR 32, 24
- RED CE Mark
- RCM
- UN 38.3 – ST/SG/AC.10/27/Add.2 Rev.5 (Li-Ion battery)
- IEC 62133(Ed.2) and EN 62133: 2013 (Li-Ion battery)
- RoHS, China RoHS, WEEE

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8 Trimble's highly efficient T02 data logging format makes this equivalent to 32 GB to 55 GB for competitive receivers.
9 Solid state drives are recommended for optimal performance.
10 Operating temperature when connected to external DC supply. To protect the removable Li-ION batteries from extreme temperatures, the battery charger only operates from +5 °C to +35 °C (41°F to 95 °F).

11 If operated only with batteries and no external DC supply, operating temperature is -20 °C to +55 °C (-4 °F to +131 °F).

Alloy GNSS
REFERENCE RECEIVER

Contact your local dealer today