TRIMBLE RT200

MOBILE REAL-TIME POSITION AND ORIENTATION SYSTEM: DESIGNED FOR INTEGRATION, BUILT FOR PERFORMANCE

When data continuity with position and orientation accuracy is a requisite for an autonomous or robotics applications, engineers and geospatial specialists turn to Trimble for solutions. Whether it is to upgrade from GNSS-only positioning performance or seeking a fully-integrated, turnkey position and orientation system, Trimble RT systems deliver reliable, repeatable results that enable autonomy, making the autonomous systems productive and profitable.

Compact and simple to install, Trimble RT has been designed to calibrate quickly after installation. Available on all models to ensure superior accuracy performance, Trimble RT can utilize DGPS or RTK corrections, survey-grade GNSS technology and odometry (DMI) integration is designed for real-time operation, POSPac post-processing software is also available to review and analyze results.

With autonomous vehicles and ADAS systems requiring robost position and orientation information at all times, Trimble RT provides accurate pose estimates using inertial navigation in real time.

Whether it is for autonomous vehicle development, groundtruth or enabling vehicles to navigate themselves through difficult driving conditions, Trimble's RT product line provides best in class navigation and positioning solutions, lowering costs and potential rework. Trimble enables vehicle automation in areas such as mining and ports and harbors. With autonomous hauling and asset tracking, the mining industry radically reduces overall cost and improves mining productivity. GNSS/ INS modules provide precise positioning for mobile asset tracking that aids in managing equipment availability.

RT200 provides uninterrupted, precise position and orientation measurements in seemingly impossible GNSS conditions. The unit earns its distinguished reputation by producing reliable, repeatable, high-rate (up to 200 Hz), high-accuracy results – even in circumstances where GNSS signals are blocked or affected (multipath effects), such as with urban canyons.

Key Features

- Proven GNSS-Aided Inertial technology from Trimble Applanix
- Centimeter level mobile positioning accuracy
- 40g IMU
- Industry leading continuous positioning performance in GNSS denied environments
- Full position and orientation solution for direct georeferencing of remote sensing systems
- High-performance GNSS two antenna heading aiding from single receiver
- Single IP67 enclosure

RT200

PERFORMANCE

No GNSS outages, standard road vehicle dynamics

	SPS	DGPS	IARTK
X,Y Position (m)	1.50	0.30	0.02
Z Position (m)	3.00	0.50	0.05
Velocity (m/s)	0.05	0.05	0.015
Roll & Pitch (deg)	0.03	0.025	0.025
True Heading (deg)	0.07	0.06	0.06

1 km or 1 minute GNSS outage, standard road vehicle dynamics

	SPS	DGPS	IARTK
X,Y Position (m)	2.0	1.25	1
Z Position (m)	4	1	0.75
Velocity (m/s)	0.2	0.2	0.1
Roll & Pitch (deg)	0.035	0.03	0.03
True Heading (deg)	0.1	0.08	0.08

All results RMS per axis, absolute. Accuracy may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Results dependent on typical road vehicle dynamics as well as DMI and GAMS availability (GAMS where GPS is available RTK and POSPac results require adequate base station coverage. DGPS results may vary based on service provider and depend on SBAS system performance. POSPac results require POSPac MMS v8.7 or greater software for review and analysis of trajectory.

SYSTEM SPECIFICATIONS

Component	Dimensions L x W x H (mm)	Weight (kg)	Power	Temperature (°C)	Humidity	Cables
PCS	160 x 146 x 65.5	1.3	10-32 Volts DC, 22 Watts	-40 to +75	5 to 95%RH[1]	-
DMI (Applanix)	115 x 254 x 908	2.4	Powered by PCS	-40 to +105	-	8 m (standard)
GNSS Antenna	177 dia x 73	0.45	Powered by PCS	-40 to +70	-	10 m (standard)

1 Non-Condensing

Be sure to ask about our 3 year warranty plan that includes one system upgrade at anytime throughout the warranty period. System upgrade includes system unit including on-board IMU and standard cables. Contact support@applanix.com to find out more.

USER SUPPLIED EQUIPMENT

- PC for POSPac MMS™ (post-processing): Pentium 4 (32 Bit) at 2 GHz processor, 1GB RAM, 400 MB free disc space 4+ GB for navigation data, USB port, Windows 7 XP
- 10-34 VDC power supply, capable of supplying 60 W (peak) power from the host vehicle's electrical system.
- PC or laptop computer for LV-POSView™ (controller): Celeron x86 1 GHz processor (minimum), 16 MB RAM, 20 MB free disc space, Ethernet adapter (10/100 base-T, RJ45), Windows 7/10

Specifications subject to change without notice.

TECHNICAL SPECIFICATIONS

- Advanced Applanix IN-Fusion™ GNSS-Inertial integration technology
- Solid-state MEMS IMU with Applanix SmartCal™ compensation technology
- Advanced Trimble Maxwell Custom GNSS survey technology (two chipsets)
- Position antenna based on 336 Channels Maxwell 7 chip:
  - GPS: L1 C/A, L2E, L2C, L5
  - BeiDou B1, B2, B3[1]
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  - Galileo[3]: E1, E5A, E5B, E5AltBOC, E6[3]
  - QZSS: L1 C/A, L1 SAIF,L1C, L2C, L5, LEX
  - SBAS: L1 C/A, L5
  - MSS L-Band: OmniSTAR, Trimble RTX
- Vector Antenna based on second 336 Channel Maxwell 7 chip:
  - GPS: L1 C/A, L2E, L2C, L5
  - BeiDou B1, B2, B31
  - GLONASS: L1 C/A, L2 C/A, L3 CDMA[2]
  - Galileo[3]: E1, E5A, E5B, E5AltBOC, E6[3]
  - QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX
- 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
- Two antenna heading aiding (GNSS Azimuth Measurement System, GAMS™)
- Support for optional Distance Measurement Indicator (DMI) input
- No export permit required

1 The hardware of this product is designed for Beidou B3 compatability (trial version) and its firmware will be enhanced to fully support such new signals as soon as the oficially published signal interface control documentation (ICD) becomes available
2 There is no public GLONASS L3 CDMA or Galileo E6 ICD. The current capability in the receivers is based on publicly available information. As such, Trimble cannot guarantee that these receivers will be fully compatable.
3 Developed under a License of the European Union and the European Space Agency

ETHERNET INPUT/OUTPUT

Function:	Operate POS LV and record data
Data:	Position, attitude, heading, velocity, track and speed, acceleration, status and performance, raw data. All data has time/distance tags.
UDP Port:	Display port - low rate (1 Hz data)
TCP/IP Ports:	Real-Time Data Port - high rate (1-200 Hz data) Logging Data (buffered for data logging) Control Port - used by LV-POSView™ (controller software)

CANbus J1939

Parameters:	Position, attitude, heading, velocity, track and speed, acceleration, status and performance, raw data. All data has time tag
Rate:	1 - 200 Hz (user selectable)

RS232 NMEA OUTPUT

Parameters:	Position ($INGGA), Heading ($INHDT), Track and Speed ($INVTG), Statistics ($INGST), Attitude ($PASHR), Time and Date ($INZDA), Events ($EVT1, $EVT2)
Rate:	1 - 50 Hz (user selectable)

RS232 HIGH RATE DIGITAL OUTPUT

Parameters:	Roll, pitch, true heading, latitude, longitude and altitude
Rate:	1 - 200 Hz (user selectable, IMU dependent)

RS232 BASE 1 AND BASE 2 INPUT

Formats:	RTCM v2.x, RTCM v3.x, CMR and CMR+

OTHER I/O

PPS:	One pulse-per-second time sync output. Normally low, active high pulse where the rising edge is the reference.
Event Input:	Four input discretes used to mark external events. Discretes are TTL pulses > 1 msec width where rising or falling edge is time tagged and logged. (Max rate 300 Hz.)

TRIMBLE
10368 Westmoor Dr
Westminster, CO
80021
United States