TRIMBLE RT300

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 reliable and repeatable 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, ground truth 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.

The Trimble RT300 provides precise, uninterrupted 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 within urban canyons.

Key Features

- Directly processes raw GNSS data from as few as one satellite, in order to compute accurate positional information in areas with intermittent or no GNSS reception
- IMU generates a true representation of vehicle motion in all three axes
- Streamlined data workflows
- Worldwide availability - "non-ITAR"
- Embedded dual-GNSS receiver provides heading aiding to supplement the inertial data
- Operates at any speeds for cost-effective data capture
- Quick operational capability

Trimble RT300

SYSTEM SPECIFICATIONS

Component	Dimensions (L x W x H) mm	Weight kg	Power	Temperature	Humidity	Cables
PCS (all models)	167 x 185 x 68	2.4	10 to 34 Vdc power supply	-20 °C to+60 °C	5 to 95% RH*	-
DMI (Applanix)	908 x 115 x 254	2.4	Powered by PCS	-40 °C to+85 °C	-	8 m (standard)
GNSS Antenna*	146 x 146 x 62	0.4	Powered by PCS	-40 °C to+70 °C	-	10 m (standard)
IMU	158 x 158 x 124	2.6	Powered by PCS	-25 °C to+70 °C	-	8 m (standard)

* Non-Condensing

PERFORMANCE SPECIFICATIONS - WITH GNSS*

RT 300	DGPS	IARTK
X,Y Position (m)	0.300	0.020
Z Position (m)	0.500	0.030
Roll & Pitch (deg)	0.020	0.020
True Heading (deg)	0.050	0.050

PERFORMANCE SPECIFICATIONS - GNSS OUTAGE, 60 SECONDS*

POS LV	DGPS	IARTK
X,Y Position (m)	0.880	0.690
Z Position (m)	0.610	0.350
Roll & Pitch (deg)	0.020	0.020
True Heading (deg)	0.070	0.070

* All accuracy values given as RMS. Assumes typical road vehicle dynamics for initialization, with DMI option.

INERTIAL MEASUREMENT UNIT (IMU)

Type	Range	Maximum Data Rate	IP Rating
IMU-42[1]	+/-10 g +/-490 dps	200 Hz	IP68

GLOBAL POSITIONING SYSTEM OPTIONS

Option	Signals	
GPS-19	GPS: L1 C/A, L2E, L2C, L5 GALILEO[4]: E1, E5A, E5B, E5AltBOC, E6[3] SBAS: L1 C/A, L5 BeiDou: B1, B2, B3[3]	GLONASS : L1 C/A , L2 C/A, L3[3] QZSS: L1 C/A, L1 SAIF, L1C, L2C, L5, LEX[3] MSS L-Band: OmniSTAR VBS, Trimble RTX

1 These IMUs are exportable worldwide subject to statutory export declarations, and standard restrictions relating to certain international destinations. Contact your Applanix representative for further information.

2 Typical mission profile, max RMS error

3 The hardware of htis product is designed to support this capability, however tracking of these is currently disabled

4 Developed under a License of the European Union and the European Space Agency

USER SUPPLIED EQUIPMENT

- 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
- 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 XP Professional
- 10-34 Vdc power supply, capable of supplying 60 W (peak) power from the host vehicle's electrical system

Be sure to ask about our 3 year warranty plan that includes one system upgrade at anytime throughout the warranty period. System upgrade includes PCS (latest version available at time of upgrade request), IMU tophat (as applicable to current system), and standard cables.

GENERAL – SENSORS

IMU . . . . . Reliable high performance sensors
DMI . . . . . Rugged construction able to withstand harsh vibration and shock environment, as well as temperature and humidity extremes

CANbus J1939

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

ETHERNET INPUT OUTPUT (10/100 BASE-T)

Function . . . . . Operate POS LV and record data
Media . . . . . 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)
UDP & TCP/IP Ports . . . . . Real-Time Data Port - high rate (1-200 Hz data)
TCP/IP Ports . . . . . Logging Data (buffered for data logging)
Control Port - used by LV-POSView™ (controller software)

LOGGING OUTPUT TO REMOVABLE DRIVE

Parameter . . . . . Position, attitude, heading, velocity, track and speed, acceleration, status and performance, raw data. All data has time/distance tags.

RS232 NMEA OUTPUT

Parameters . . . . . Position ($INGGA), Heading ($INHDT), Track and Speed ($INVTG), Statistics ($INGST), Attitude ($PASHR), Time and Date ($INZDA), Events ($EVTI, $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 dependant)

RS232 BASE 1 AND BASE 2 INPUT

Formats . . . . . CMR, CMR+, RTCM 2.3, 3.0, 3.1, 3.2

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. (Maximum rate 300 Hz.)

Specifications subject to change without notice.

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