



CompassAPNT

Assured Position, Navigation and Timing

- ✓ Available with M-Code/SAASM or Commercial GPS Receivers
- ✓ Precise 1 PPS and 10 MHz signals
- ✓ Support for RTK and PPK
- ✓ Support for MEMS, FOG, RLG, and Navigation grade IMU's
- ✓ Anti-Jam Antenna Can be Integrated with Unit



HIGH-ACCURACY NAVIGATION SYSTEM

CompassAPNT offers a fully integrated GPS-aided inertial navigation solution supporting a wide range of IMU grades and provides a high-performance trusted positioning and navigation capability.

Proven performance in wide range of application areas:

- Available with M-Code / SAASM or Commercial GPS
- Centimeter-level position accuracy with RTK and PPK
- In-motion dynamic alignment
- Support for low, medium, and high-dynamic platforms
- GPS/IMU Post-processing support with Geodetics' RTD-Post

HIGH-PERFORMANCE TIME

CompassAPNT maintains an accurate internal timescale with very low power consumption via a GNSS-Disciplined, low-phase noise rubidium Oscillator. Precise time and frequency signals are available as 1 PPS and 10 MHz outputs, and NMEA output messages.

- RS232 Control and NMEA Output
- 1PPS Output (Rubidium or OCXO steered)
- 10MHz Sine Wave Outputs -
(One buffered, Two un-buffered Low-Noise direct OCXO)
- Holdover Stability < +/- 0.16usec over 24 Hour Period @ +25°C after 30 days with GPS lock

CompassAPNT Applications

Airborne

- Observation payload
 - ✓ Radar
 - ✓ Optronics
 - ✓ Electronic warfare
- Flying test bench
- Flight analysis
- Tactical UAV navigation



Ground

- SATCOM on the move
- Anti IED jamming systems
- Mobile radios and C3I
- Robotics



- Sensor support
 - ✓ Radar, Sonar
 - ✓ Optronics
- Electronic warfare
- Communications networks
- Offshore / DSO platforms





CompassAPNT

Assured Positioning, Navigation and Timing

Technical Specifications: Data Recording / Logging

- Navigation solutions (position, velocity, acceleration, attitude, angular rate, ...)
- Raw GPS and IMU data (for post processing with RTD-Post)
- Full diagnostics

External IMU Support

Fiber Optic Gyro is standard in Advanced configurations. Built-in support for:

- Honeywell HG1900, HG1700, HG9900
- Litton LN200, Inertial Lab FI200C
- Other IMU's available upon request

Safety and Diagnostics

- Internal safety and monitoring
- Systems
- Internal BIT with operator notification

Operational Readiness

- Cold Start: 60 s
- 1 PPS/Time-of-Day: 60 s

Power

- Input Voltage: 10-30 VDC
- Tactical Configurations: 9 W typical, Advanced Configurations: 13 W typical

Monitoring

- Power/status LEDs
- Remote/local status, configuration, event log, software update through web interface

Environmental

- Temperature in Operation: -40°C to +65°C
- Temperature in Storage: -45°C to +85°C
- Humidity: 95% RH, non-condensing
- Altitude: 35,000 ft
- Mechanical (MIL-STD-810G)
- Vibration: 7.7 g rms, 20 to 1000 Hz
- Shock: 20 g, 11 ms

Physical

- Size: 120 x 100 x 55 mm (4.7" x 3.9" x 2.2")
- Weight: 0.75 kg (1.7 lbs.) – with embedded MEMS IMU
- Mounting: On a plate, 4 through holes

Position Accuracy*

Configuration (GPS Receiver)	Standalone Mode Horizontal/Vertical Accuracy	Standalone Mode Horizontal/Vertical Accuracy
Tactical (L1 Only)	1.5 m / 2.5 m	-
Tactical-RTK (L1/L2) Tactical-RTK M-Code/SAASM	1.5 m / 2.5 m	0.05 m / 0.1 m (SAASM only)
Advanced (L1/L2) Advanced M-Code/SAASM	1.0 m / 2.0 m	0.05 m / 0.1 m (SAASM only)

Dynamic Attitude Accuracy*

Configuration (IMU)	Standalone Mode Roll-Pitch / Heading Accuracy	Differential Mode Roll-Pitch / Heading Accuracy (RMS)
Tactical commercial (Internal MEMS IMU)	±0.1° / ±0.3°	-
Tactical M-Code/SAASM (Internal MEMS IMU)	±0.05° / ±0.1°	±0.01° / ±0.05° (SAASM only)
Advanced M-Code/SAASM (External FOG)	±0.05° / ±0.1°	±0.01° / ±0.05° (SAASM only)

NOTE: Accuracy must be measured once dynamic alignment is complete

* Accuracy is dependent upon GPS satellite system performance, ionospheric conditions, conditions, GPS blockage, data link and other factors

Timing (Low Noise Rubidium GNSDO) – External I/O Signals

- RS232 Control Port (115.2KB, 8N1)
- 1PPS Out (5V CMOS)
- 10 MHz Sine Wave Buffered Output (+13dBm ± 2dBm)
- Two 10 MHz Un-Buffered Low-Noise Direct OCXO sine wave Outputs (+5 dBm to +10 dBm)
- L1 GPS Active Antenna Input (5V)

Time and Frequency Performance

Long Term Oscillator Aging (without GNSS – Zero aging with GNSS)	<0.1ppb per month
1PPS Stability	< ±10 ns to UTC RMS (1-Sigma) GPS Locked in Position Hold Mode after 72 hours
Frequency Stability over Temperature (-10°C +65°C)	<0.1ppb
Phase Noise on 10 Mhz. Output:	
@ 1 Hz	<114 dBc/Hz
@ 10 Hz	<-114dBc/Hz
@ 100 Hz	<-155dBc/Hz
@ 1 kHz	<-162dBc/Hz
@ 10 kHz	<-165dBc/Hz
@ 100 kHz	<-167 dBc/Hz

Geo-APNT IMU Performance (Internal)

Config. IMU	Parameter	Accelerometer	Gyros
Embedded MEMS	Range	±10g	±450°/sec
Other MEMS's IMUs available upon request, such as STIM300, HG1930, etc.	Bias Stability (in-run)	4 mg	0.8°/hr.
	Random walk	0.07 (m/sec)/Vhr.	0.06/Vhr.

Different complementary aiding sensor are available upon request, including air data (altimeter-aiding, speed-aiding), AHRS (magnetometer-aiding), visual-aiding, and LEO-PNT capability (IMU-tight coupling)

Geo-APNT IMU Performance (External)*

Configuration	IMU	Parameter	Accelerometer	Gyroscope
Advanced M-Code /SAASM	Fiber Optic Gyro	Range	±10g	±490°/sec
		Bias Stability (in-run)	< 7.5 mg	1°/hr.
		Random walk	0.07 (m/sec)/Vhr.	0.012/Vhr.
Advanced M-Code /SAASM	Ring Laser Gyro	Range	±37g	±1074°/sec
		Bias Stability (in-run)	< 1 mg	1°/hr.
		Random walk	0.001 (m/sec)/Vhr.	0.125/Vhr.

*Built-in Support for Honeywell HG1900, HG1700, HG9900, Litton LN200, Inertial Lab FI200C. Other IMU's available upon request.