

ASHTECH SKYNAV GG12W

GPS+SBAS ALL-VIEW POSITIONING SINGLE RECEIVER SOLUTIONS

With over 10 years of experience in high-precision receiver design, we have developed an OEM GPS and GPS+SBAS™ receiver explicitly for the aviation industry.

The SkyNav GG12W from Ashtech is ideally suited to integration within Technical Standard Order (TSO) Flight Management Systems (FMS), ground-based reference stations for GPS aircraft landing systems (SCAT I and LAAS) and other avionics. In addition to traditional GPS receiver design and ISO 9001 engineering practices, the GG12W design team adhered to FAA/RTCA design criteria.

CERTIFICATION

The SkyNav GG12W software has been developed in accordance with the requirements for RTCA DO-178B Level 'B' (Software Considerations in Airborne Systems and Equipment Certification). The hardware and software have been developed to conform to the RTCA DO-208 (MOPS for Airborne Supplemental Navigation Equipment Using GPS) and RTCA DO-229D (MOPS for GPS/WAAS Airborne Equipment) requirements.

The receiver capably operates in autonomous or SBAS differential mode, making it ideal for all phases of flight, including precision approach. It also provides code and carrier data for ground reference station operation.

ANTI-JAMMING

The SkyNav GG12 receiver features extensive anti-jam capabilities in the RF hardware. The receiver meets the CWI (continuous Wave Interference) specification from RTCA DO-208 and DO-229D (WAAS MOPS).

12 PARALLEL CHANNEL RECEIVER

The SkyNav GG12W GPS receiver incorporates tracking of up to 12 satellites with a "loss of lock" re-acquisition time of less than 3 seconds. Ten channels are assigned to GPS and 2 channels are assigned to SBAS. The criteria of satellite selection implements the requirements of RTCA/DO-229D.

WINDOWS EVALUATION SOFTWARE

Evaluate™ software is available with the SkyNav GG12W and provides visual displays of satellite information (e.g., azimuth, elevation, SNR), receiver position and velocity, as well as data logging and analysis. It also allows direct communication with the receiver. Compatible with most Ashtech receivers, the software runs on Windows® version 3.x, Windows 95/98, NT, 2000, and XP platforms.

Key Features

- ▶ FAA-certifiable for avionics integration
- ▶ GPS+SBAS to meet DO-229D
- ▶ High performance and reliability



ASHTECH SKYNAV GG12W GPS receiver module

FEATURES

- 12 channels L1 C/A code & carrier
- 1 Hz, 2 Hz and 5 Hz position update rates
- Position Latency: < 90 ms
- Raw data output (code and carrier)
- Standard NMEA-0183 V2.3 output
- SBAS Differential
- Position Latency
- Raw SBAS data output
- Geoid and Magnetic Variation models

REAL-TIME POSITION ACURACY¹

Velocity Accuracy (knots)²

- 0.1 (95%)

Autonomous^{3,4}

- 3 meters (CEP 50%)
- 5 meters (95%)

SBAS Differential

- 1 meter (CEP 50%)
- 3 meters (95%)

TIME TO FIRST FIX²

- TTF requirements of RTCA/DO-229D at the minimum signal level and in the presence of interference are met.

RE-ACQUISITION

- < 3 sec if blockage is less than 10 sec
- < 5 sec if blockage is 10–60 sec

DYNAMICS

- Acceleration: Meets RTCA/DO-229D requirements for normal and abnormal maneuvers
- Speed⁵: 514 m/sec (1,000 knots)
- Altitude⁵: 18287 m (60,000 ft)
- Vibration⁶: RTCA DO-160D (curves B, M, L)

PHYSICAL AND ELECTRICAL CHARACTERISTICS

Size	108 mm x 82.5 mm x 15.44 mm (4.275 in x 3.25 in x 0.608 in)
Weight	108 gr (3.8 ounces)
Power Consumption	<1.5 W (Receiver)
Input voltage	.5VDC ± 5% 50mV p-p ripple
Temperature	
Operating	-30 °C to +70 °C (-22° to +158°F)
Storage	-40° to +85°C (-40° to +185°F)

CONNECTORS

- 32 pin (pins 1–30 compatible with G12™; pins 1–20 compatible with G12 and Sensor II™).
- The SkyNav GG12W connector is a SAMTEC SDL-116-G-D connector (socket)
- Most socket strips made for .025" square pins on 0.100" centers with 2 rows of 16 pins will fit.

MOUNTING

- Most socket strips made for .025" square pins on 0.100" centers with 2 rows of 16 pins will fit. One mounting hole is located in each corner; the center of each hole is 0.15" from each edge.

COMMUNICATIONS

- 2 bi-directional RS232 serial ports up to 115,200 baud.

PART NUMBER

990567

- 1 The time delay from the instant a message is time tagged to when the receiver finishes its transmission @ 115,200 baud. Latency specification is for certain messages. Latency of other messages under different conditions may yield different results.
- 2 Accuracy and TTF specs. based on tests conducted in California. Differential tests performed using Z-Sensor™ base station with Geodetic antenna and SkyNav GG12W GPS Board remote with Geodetic antenna (Marine IV antenna for TTF). Antenna benchmark locations determined using CORS sites Point Blunt (PBL1) and Pigeon Point (PPT1). Tests at different locations under different conditions may produce different results. Position accuracy specifications are for horizontal positioning. Vertical error is typically <2 times horizontal error.
- 3 Real-time position accuracies obtained with SA off. With SA on, accuracy of autonomous positioning may degrade up to 100 meters (95%) as specified by the U.S. Department of Defense.
- 4 Conforms to RTCA DO-217 (Minimum Aviation System Performance Standards—Instrument Approach System SCAT-1).
- 5 Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multi-path areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.
- 6 Tested to RTCA DO-160C specification, categories B, M, and N within a Flight Management System.



Specifications subject to change without notice.

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