MAGELLAN®
PROFESSIONAL

AC12™ Receiver

GPS, SBAS and Precision Carrier Phase Capability

Magellan, a world leader in GPS+SBAS technology, now offers the AC12™ OEM board with raw GPS carrier phase observables as a standard feature. Leveraging more than 15 years of OEM expertise in carrier phase technology, the AC12 is capable of precise carrier phase output while remaining cost effective. For high-precision applications constrained by cost and size, the AC12 board is the ultimate solution.

High-Accuracy Carrier Phase

The AC12 is a low-cost board with carrier phase measurements that deliver high-accuracy and flexibility usually found only in more expensive GPS boards. The AC12's extremely accurate carrier phase data can be used for navigation and provides an advantage in a variety of applications, enabling users to apply their choice of carrier smoothing algorithms to improve the pseudorange positioning accuracy and even perform carrier-phase differential positioning.

Innovative Satelite Tracking Technology

The AC12 supports differential remote operation and is capable of tracking Satellite Based Augmentation System (SBAS –WAAS/EGNOS/MSAS) satellites to enable enhanced and free-of-charge DGPS positioning. Next-generation board design minimizes the impact of common mobile application challenges such as skyward obstructions and GPS signal multipath, while superior signal reacquisition techniques ensure position availability and reliability.

Low-Cost Solution

For many applications, such as agriculture, GIS and mapping, the AC12 provides high-performance GPS at a fraction of the cost of "high-end" alternatives. A field-proven design built on Magellan's world-class GPS engineering capabilities, the AC12 OEM board is also ideal for land and marine navigation, low-cost heading and attitude systems, deformation monitoring, asset and people tracking, relative navigation, automotive, military, and even golf course management – delivering reliable, consistent position and raw data including carrier phase measurements under the toughest conditions.

AC12 Offers A Range of Additional Features!

- Low power consumption – only 0.23 watts
- User-defined and pre-defined datums
- Two-way serial port communications
- Raw data output (code and carrier)
- Precise carrier-phase tracking
- 1PPS output accurate to better than 250 nanoseconds
- Same form factor and interface as A12™ OEM board
- Also available in a rugged sensor or as a Development Kit

Features

- **Low power consumption – only 0.23 watts**
- **User-defined and pre-defined datums**
- **Two-way serial port communications**
- **Raw data output (code and carrier)**
- **Precise carrier-phase tracking**
- **1PPS output accurate to better than 250 nanoseconds**
- **Same form factor and interface as A12™ OEM board**
- **Also available in a rugged sensor or as a Development Kit**

AC12 Receiver Technical Specifications

Standard Features

- 12-channel GPS receiver with up to 2 channels for SBAS
- L1 frequency, C/A code (SPS)
- DGPS (Remote)
- 1-Hz update rate
- 1 PPS (TTL)
  Precision: 250 ns (Stand-alone)
- Single Port Operation
- 99 Predefined Datums
- User-defined datum Support
- WAAS/EGNOS Support
- Speed (max): 514 m/s (1,000 knots)
- Altitude (max): 18,288 m (60,000 ft)

Accuracy

Real Time Position[1]

- Autonomous

Horizontal CEP	3.0 m (9.843 ft)
Horizontal 95%	5.0 m (16.48 ft)

- SBAS (WAAS/EGNOS/MSAS)

Horizontal CEP	1.0 m (3.28 ft)
Horizontal 95%	3.0 m (9.843 ft)

- DGPS

Horizontal CEP	0.8 m (2.62 ft)
Horizontal 95%	1.5 m (4.92 ft)

- Carrier Phase Measurement Accuracy 3 mm (RMS)

Acquisition Time[2]

- Typical Acquisition Time

Hot start	<10 sec
Warm start	<45 sec
Cold start	<150 sec

Typical Reacquisition Time

Total satellite blockage for < 20 seconds	1–2 sec
Total satellite blockage for < 180 seconds	3–5 sec

Communication

- Standard NMEA–0183 V3.0 interface utilizing common Magellan OEM receiver command set
- Differential remote operation using RTCM V2.2 Message Types 1, 3 and 9.
- Software-selectable baud rate ranging from 1200 bps to 115K bps

AC12 OEM Board

- Operating Temp: –30°C to +80°C (–22°F to 176°F)
- Storage Temp: –40°C to +85°C (–40°F to 185°F)
- Humidity: 95% RH, non-condensing
- Vibration: 5-20 Hz 0.008 g^2/Hz
  20-100 Hz 0.05 g^2/Hz
  100-900 Hz 3 dB/octave
- Size (including shield case):
  1.58 x 2.41 x 0.52 inches
  40 x 61.2 x 13.3 mm
- Weight (including shield case): 1.6 oz. (45.4 gr)
- I/O Connector: 8-Pin Molex Connector
  P/N 53254-0810
- RF Connector: Right Angle SMB
- Primary Voltage: 3.3 to 5.0 VDC
- Current Consumption: 55-70 mA
  Power (typical): 230 to 250 mW @3.3 to 5.0 VDC
  Back-up Voltage: 2.7-3.6 VDC = 6 µA
- I/O Ports
  1 full-duplex serial port (TTL compatible) for primary I/O
  1 half-duplex serial port (TTL compatible) for RTCM input

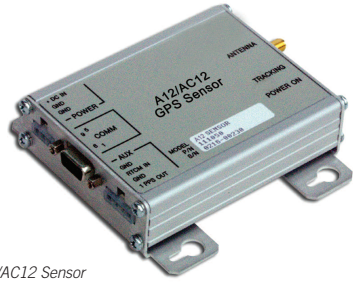
AC12 Sensor

- Operating Temp: –30°C to +70°C (–22°F to 158°F)
- Storage Temp: –40°C to +85°C (–40°F to 185°F)
- Size
  4.38 x 4.12 x 1.16 inches
  111.2 x 104.6 x 29.5 mm
- Weight: 8.5 oz. (240.0 gr)
- I/O Ports: 2 RS-232 Ports
- Input Voltage: 10-18 VDC
- Current Consumption: 70-90 mA
- Power Consumption: (typical) 1 watt

Development Kit

Kit Includes:

- PC compatible Evaluate and Mission Planning™ Software
- AC12 sensor: AC12 receiver in a rugged enclosure with 12 VDC power supply and RS-232 interface.
- Magnetic-mount antenna with cable
- Null modem cable and RS-232 interface cable with integral power connector
- Power source adapters (auto lighter adapter, AC adapter)



A12/AC12 Sensor

Mini Magnetic Mount Antenna

- 5V active micro patch antenna
- Dimensions: 46 x 39 x 12.5 mm
- Cable Length: 6 m
- Connector: SMB (board) or SMA (sensor)
- Gain: 24.5 dBi

Mini Magnetic Mount Antenna

[1] Position accuracies are based on tests calculated in low multipath environment under clear sky conditions. Accuracy may degrade in high multipath environments.

[2] Assumes that at least 4 GPS satellites are clearly visible.

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