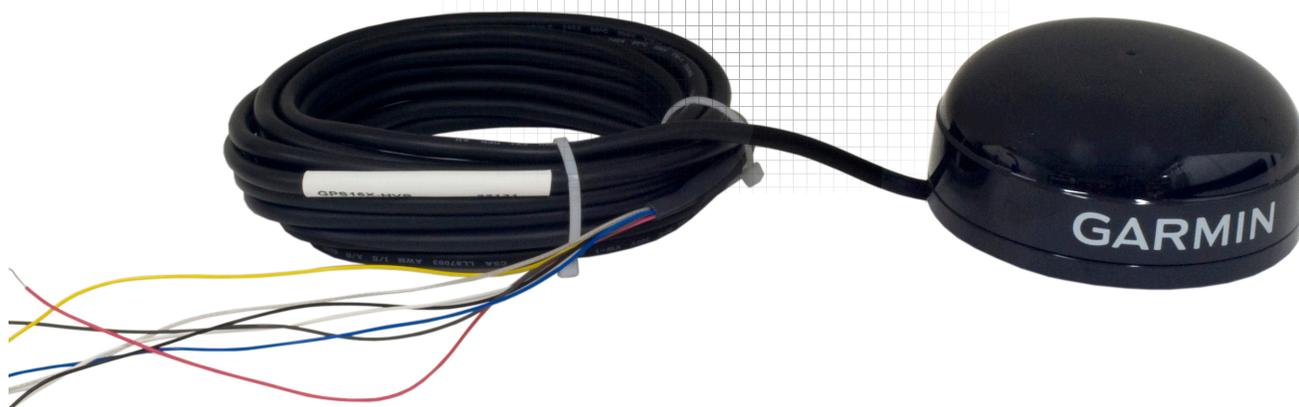


Position and Time

Precision time synchronization



Overview

The GPS16X-HVS is a global positioning system (GPS) receiver that provides position, velocity, and timing information. Campbell Scientific configures the GPS16X-HVS and modifies its cable. The

GPS16X-HVS is typically used with our CR800, CR850, CR1000, and CR3000 dataloggers.

Benefits and Features

- › Supports real-time WAAS or RTCM corrections for accuracy of 3 to 5 m
- › Connects directly to the control ports of a CR800, CR850, CR1000, or CR3000 datalogger—adapter not required
- › Processes data from up to 12 satellites depending on the number of satellites viewable above the horizon
- › Allows the datalogger clock to be set to the highly accurate GPS time
- › Configured by Campbell Scientific to output RMC and GGA data strings at 38400 bps
- › Extremely accurate timing pulse (PPS) can be used to synchronize time between the datalogger and other instruments

Technical Description

The GPS16X-HVS consists of a receiver and an integrated antenna. It receives signals from orbiting Global Positioning System (GPS) satellites, and then uses the signals to calculate position and velocity. The GPS16X-HVS also provides a highly accurate one-pulse-per-second (PPS) output for precise timing measurements.

Default settings are typically used. The default settings and options are changed using GPS16 software, which is available, at no charge, from the Garmin website (www.garmin.com). Additional hardware is required to connect the GPS16X-HVS to the PC running the GPS16 software (see Ordering Information for more information).



Ordering Information

Geographic Position Receivers

GPS16X-HVS GPS Receiver with antenna and 15-ft cable that terminates in pigtails. The pigtails connect directly to the control ports of a CR800, CR850, CR1000, or CR3000.

GPS16X-HVS-PW GPS Receiver with antenna and 15-ft cable that terminates in a connector. The connector attaches to a prewired enclosure.



Both the 17212 Magnetic Mount (above) and the CM235 Magnetic Mount Stand (right) are used to attach the GPS sensor to a mast or a CM202, CM203, CM204, or CM206 crossarm.

Accessories

- 17212** Magnetic Mount that allows the sensor to be attached to a magnetically susceptible metallic surface, typically the CM235 Magnetic Stand (see below).
- CM235** Magnetic Mounting Stand for attaching the receiver to a crossarm such as the CM202, CM204, or CM206, or a tripod or tower mast. The 17212 is required (see above).
- 28840** DB9 Female to Terminal Block with Hood and Hardware Kit allows the sensor to be connected to a PC's USB port. The sensor needs to be connected to a PC to change its default settings and options.
- A200** Sensor to PC Interface allows the sensor to be connected to a PC's RS-232 9-pin terminal. The sensor needs to be connected to a PC to change its default settings and options.



Specifications

- Receiver: WAAS enabled; 12 parallel channel GPS receiver continuously tracks and uses up to 12 satellites (up to 11 with PPS active) to compute and update the position
- Update Rate: Factory set to 1 s between updates; programmable from 1 to 900 s
- PPS Output: 1 Hz pulse; 1 μ s accuracy; width factory set to 100 ms
- Baud Rate: Factory set to 38400 bps
- Operating Temperature Range: -30° to 80°C
- Storage Temperature Range: -40° to 80°C
- Operating Voltage Range: 8 to 40 Vdc
- Current Drain @ 12 Vdc: 65 mA active
- Velocity Accuracy: 0.1 knot RMS steady state
- Diameter: 9.1 cm (3.58 in)
- Height: 4.2 cm (1.65 in)
- Weight: 332 g (12 oz)

Acquisition Times

- Reacquisition: < 2 s
- Hot: ~1 s (all data known)
- Warm: ~38 s (initial position, time and almanac known, ephemeris unknown)
- Cold: ~45 s

Position Accuracy (95% typical)

- GPS Standard Positioning Service (SPS): < 15 m
- DGPS (USCG/ RTCM) Correction: 3 to 5 m
- DGPS (WAAS) Correction: < 3 m



The GPS16X-HVS connects directly to COM port pairs of a CR800, CR850, CR1000 (shown), or CR3000 datalogger.

