

Position and Time

Precision time synchronization



The GPS16X-HVS is a high-sensitivity, 12-channel receiver that continuously tracks satellites and reports your precise position.

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 so that the receiver can more easily interface with our dataloggers.

Technical Description

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

The GPS16X-HVS receiver is manufactured by Garmin International. Campbell Scientific configures the receiver and modifies its cable. The modified cable terminates in pigtailed that attach directly to the control ports of a CR6,

CR800, CR850, CR1000 or CR3000 datalogger. In these dataloggers the logger clock is set and GPS position data read with a single instruction.

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).

Benefits and Features

- › Supports real-time WAAS, EGNOS or RTMC corrections for accuracy of 3 to 5 m
- › Attaches directly to a CR6, regardless of functionality
- › Connects directly to a CR800, CR850, CR1000, or CR3000 datalogger when PPP time-synchronizing functionality is not used
- › 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

Specifications

- › Receiver: WAAS/EGNOS 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
- › GPS (WAAS/EGNOS) Correction: < 3 m



The GPS16X-HVS connects directly to COM port pairs of a CR6, CR800, CR850, CR1000 (shown), or CR3000 datalogger

Ordering Information

GPS16X-HVS GPS Receiver with antenna and 4.6m cable. The cable terminates in pigtails that connect directly to the control ports of a CR6, CR800, CR850, CR1000 or CR3000.

GPS16-HVS Magnetic Mount (010467-001) Magnetic Mount that allows the sensor to be attached to a metallic surface.

CM225E Sensor Mount Stand Can be used to mount the GPS-16X at any point along a CM200 series mounting arm.

A300 Power and signal converter is needed to connect the pulse-per-second (PPS) output of a GPS16X-HVS to a CR800-series, CR1000, or CR3000 datalogger. It is not needed with a CR6 datalogger.

#28840 DB9 Female to Terminal Block with Hood and Hardware Kit allows the sensor to be connected to a PC's RS232 serial 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 USB port. The sensor needs to be connected to a PC to change its default settings and options.

*Changing the default settings or options requires a bare wire to RS-232 D connector (part 010376) and a PC running GPS16 software. Please specify the cable length required. The software can be downloaded, at no charge, from the Garmin web site (www.garmin.com). It is also possible to make changes manually via the datalogger.



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