



GPS-605

GPS Synchronized Clock and Time Code Generator

KEY FEATURES

- IRIG B Time Code Output
- Precise 1 PPS Output
- GPS Synchronization
- Compact Size
- Manual Setup Controls
- RS-232 I/O Interface

Symmetricom's GPS-605 is a low-cost, high-performance GPS receiver and time display. Time is precisely referenced to UTC and displayed in days, hours, minutes and seconds. The primary outputs of the GPS-605 are an IRIG B time code and a precise 1 PPS. Time and status information are also available via the RS-232. The GPS-605 combines the performance and key features usually found in large, expensive units in a cost-effective configuration.

The GPS-605 is ideal for providing time to range control rooms, launch facilities, airfield control towers, power utilities and data collection or reduction installations. It is an effective time display for operators, while outputting the necessary timing signals for accurate and reliable system synchronization. The easily visible display includes twelve 0.5-inch LED digits for time and status. The GPS-605 can also be used to drive other time displays.

The IRIG B serial time code output is either analog or digital with an accuracy of 2 microseconds to UTC. The 1 PPS pulse rate also is accurate to 2 microseconds. The RS-232 interface provides control functions, GPS status, and time to the millisecond either on demand or automatically once per second. Time is referenced to UTC with user-configurable daylight saving and local time offsets provided. Display and receiver configurations are easily adjusted with either manual or RS-232 control.

The GPS-605 is quick and easy to install; simply install and connect the GPS antenna and connect the power unit to a wall outlet, then the unit is ready to run. IRIG time code and 1 PPS output is automatic. The unit includes a bracket for easy mounting to a desk or ceiling.



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GPS-605 Specifications

RECEIVER/GENERAL

- Timing accuracy: ± 2 microseconds to UTC (with SA)
- Position accuracy: 25 meters (without SA)
- Receiver input: 1575 MHz L1 C/A code
- Tracking: Six parallel channels
- Acquisition time: Warm start (has ephemeris data and position) typically < 3 minutes. Cold start typically < 20 minutes.
- Internal oscillator
 - Accuracy: 5×10^{-8} when disciplined to GPS
 - Stability: 1 PPM, 0°C to $+50^\circ \text{C}$
- UTC to local offset: User selectable
- Daylight saving: Programmed by user to select time, day and month when DST begins and ends.
- Leap second: Automatically inserted
- Antenna: L1 GPS, 40 dB gain. RG-59/U cable, 50' (15 m) supplied; maximum cable length 150' (46 m). For longer cable runs, see Options.

FIXED OUTPUTS

- IRIG B serial code output (Analog)
 - Amplitude: Adjustable, 0–6 Vpp into 600 ohms, factory set to 3 Vpp
 - Ratio: Adjustable, 2:1 to 6:1, factory set to 3:1
 - Connector: BNC
- IRIG B serial code output (RS-422)
 - Amplitude: TTL levels
 - Connector: RJ11
- 1 PPS
 - Logic level: 0–5 Vdc
 - Output impedance: 50Ω
 - Timing: Positive edge on time
 - Duty cycle: 50%
 - Connector: BNC
- RS-232 I/O
 - Baud rate: User-selectable protocol. 1200 to 38400 baud. Factory set to 9600 baud.
 - Output data: Time, status and current setting of control parameters
 - Input data: Time preset, mode control, local offset, display parameter setup, local offsets, daylight savings
 - Connector: RJ11; RJ11–DB9 adapter included
- Manual controls: Serial I/O (baud rate, data, stop parity), intensity, local offset ($\pm \text{HH:MM}$), days display on/off, year, daylight saving, 12/24 hour mode, switch/remote lockout, firmware version, time broadcast on/off, GPS status
- DC input power voltage: 9–20 Vdc at 10 watts maximum
- AC input power voltage: 115 Vac $\pm 20\%$ at 10 watts maximum (230 Vac input optionally available)

MECHANICAL/ENVIRONMENTAL

- Receiver
 - Display digit height: 0.56" (1.42 cm)
 - Display digit type: Numeric LED
 - Display digit quantity: 12 (DDD:HH:MM:SS)
 - Display digit color: Red, adjustable intensity
 - Display digit viewing distance: 25' (7.62 m)
 - Chassis size: 7.5" W x 1.64" H x 3.6" D (19 cm x 4.2 cm x 9.1 cm); with desk/wall mount: 9" W x 2.7" H x 5.25" D (22.9 cm x 6.9 cm x 13.3 cm) [4.25" (10.8 cm) deep with connectors].
 - Operating temperature: 0°C to $+50^\circ \text{C}$
 - Storage temperature: -20°C to $+85^\circ \text{C}$
 - Humidity: To 95%, noncondensing
- Antenna
 - Size: 3" Dia x 3" H (7.62 cm x 7.62 cm)
 - Weight: 0.55 lb. (0.25 kg)
 - Operating temperature: -40°C to $+70^\circ \text{C}$
 - Storage temperature: -55°C to $+85^\circ \text{C}$
 - Humidity: 100%, condensing
- Certification: FCC, CE

RS-232 PROTOCOL

- Standard Symmetricom serial I/O commands: Commands and responses are ASCII. Responses are terminated with carriage return/line feed.
 - F01: Time zone entry/request
 - F02: 12/24 hour format entry/request
 - F06: Keypad lockout enable
 - F08: Continuous time once per second enable (Mode C automatic once per second transmission)

$\langle \text{SOH} \rangle \text{DDD:HH:MM:SSQ} \langle \text{CR} \rangle \langle \text{LF} \rangle ^*$

Where:

DDD	Day of year
HH	Hours
MM	Minutes
SS	Seconds
Q	Is the time quality indicator; Locked = space, unlocked = ?

 - F09: Time on request enable

$\langle \text{SOH} \rangle \text{DDD:HH:MM:SS:mmmQ} \langle \text{CR} \rangle \langle \text{LF} \rangle$

 - F18: Software version request
 - F50: Position request
 - F60: Satellites list request
 - F66: Daylight saving enable/request
 - F68: Year entry (GPS epoch management)
 - F69: Select local/standard/GPS/UTC time
- * Note the first zero-to-one transition of the carriage return is the beginning of the second.
- Symmetricom TL-3 Compatible Commands: The GPS-605 supports the full range of Symmetricom TL-3 setup and query commands, including those listed below.
 - QA: Request lock status
 - QC: Current date and time request
 - QD: Current date request
 - QT: Current time request

OPTIONS

- 230 Vac input module
- GPS antenna down/up converter for long cable runs. Contact Symmetricom for application-specific details.
- Wall-mount kit (standard unit includes only desk/ceiling brackets)



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