instrumentation technology systems

MODEL 6115G-8S-N
GPS SYNCHRONIZED MINIATURE IRIG B TIME CODE GENERATOR

FEATURES

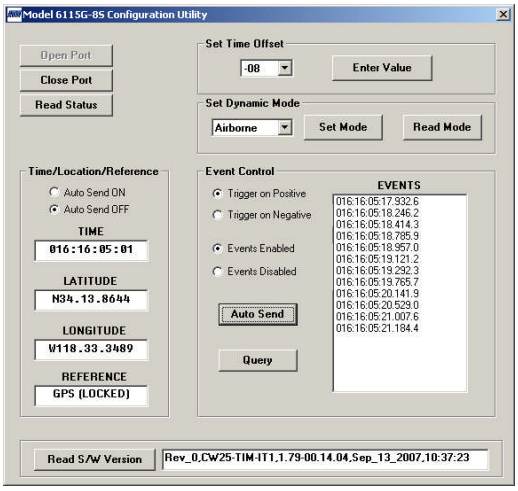
- *Twelve Channel GPS Receiver.*
- *IRIG B time reference input*
- *IRIG B122 time code generator.*
- *IRIG B002 time code generator*
- *UTC time mark output.*
- *RS-232C serial port.*
- *Event trigger input.*
- *Outputs NMEA 0183 GGA and GSA sentences via serial port.*
- *Meets environmental requirements of E-2C Aircraft*
- *Battery backed up internal clock maintains time during power loss.*
- *Outputs Time and Latitude & Longitude via serial port. (NMEA output format optional)*
- *Time offset input via serial port.*
- *Non-Volatile Memory.*

DESCRIPTION

The Model 6115G-8S-N GPS Synchronized Miniature Time Code Generator provides AC and DC IRIG B time code outputs. The internal time code generator is synchronized with UTC time derived from GPS or an IRIG B reference input as selected by the operator. If the reference lock is lost the 6115G-8S will automatically switch to an internal clock and continue generating the output IRIG B signal. No discernible change in the IRIG B output will occur due to this transition.

The internal twelve channel GPS receiver automatically acquires all in-view satellites upon power up and locks the internal IRIG B time code generator to the GPS time reference. When no GPS signal is present the unit may be locked to an applied IRIG B time reference. A user programmable time zone offset is available when using GPS as the time reference. The battery backed up internal clock maintains the time during power interruption preventing “zeroing” of the IRIG outputs during power switching.

The 6115G-8S-N has an asynchronous RS-232C port, which provides a means of configuring the unit, as well as reading the time, event, location information and NMEA messages. The output messages for time/location and events are individually controlled. The Time/Location message may be set to OFF or AUTO. When set to AUTO, messages are sent at one second intervals. The event message may also be turned off, or may be set to respond only to a query or set to send automatically until the event buffer is empty.



Included with the 6115G-8S-N is a CDROM containing a self-installing utility program for setting up the unit via a Graphical User Interface (GUI) from a Windows™ based computer via the COM port.

The 6115G-8S-N is housed in a shielded aluminum enclosure designed to meet the enhanced shock, vibration and EMI requirements of the E-2C Hawkeye aircraft. It is 7.5 inches long (including mounting flanges), 4.25 inches wide and 1.45 inches high. All controls, connectors and indicators are on the front panel.

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Model 6115G-8S GPS Synchronized IRIG Time Code Generator

SPECIFICATIONS

Timing Accuracy

When Locked to GPS:	1×10^{-9} @ 1 second 1×10^{-10} @ 100 second 3×10^{-12} @ 1 day (Dynamic mode set to 'Fixed')
When powered (no GPS)	$<2.5 \times 10^{-6}$ without discipline $<0.3 \times 10^{-6}$; <30 ms per day (after 24 hours of GPS locked disciplining)
On Battery backup	1×10^{-4}. (0 to +55°C)

IRIG B Outputs 1 and 2 — Standard IRIG B122 serial time code IAW IRIG Standard 200-98 (synchronized with time code generator). Output level 6V p-p unloaded, 3V p-p with 75 ohm load.

IRIG B Outputs 3 and 4 — Standard IRIG B002 serial time code IAW IRIG Standard 200-98 (synchronized with time code generator). RS-422. Output load up to 75 ohms.

1PPS Outputs 1 and 2 — High true RS-422 signal, positive going edge corresponds to UTC time mark or 1 second IRIG reference depending upon time reference selection. Output load up to 75 ohms.

Trigger Input — TTL signal, captures event on rising or falling edge, as selected. Maximum burst event input rate = 100KHz. Max stored events = 127. Note: When "Auto Send Events" is enabled, the sustained event trigger rate is limited to an average of 120 Hz to avoid buffer overflow. This rate assumes that the Auto Send of the Time/Location message is OFF.

GPS Performance

Channels:	12 Parallel channels, tracks all satellites in view.
Time-to-first-fix:	<15 seconds typical (warm start), <90 seconds typical (cold start).
UTC Time Mark:	Synchronized with Global Reference Standard.
Reacquisition:	2 seconds typical.
Dynamics Mode:	Five settings: Fixed, Walking, Land Vehicle, Marine, Airborne. Timing accuracy varies from <25nsec (Fixed) to <100nsec (Airborne)

GPS Antenna Input

Acquisition = -173dBW
Tracking = -185dBW
Maximum antenna gain = 48dB.
Antenna voltage = 5V (provided to antenna via antenna SMA connector).
Maximum antenna current = 80ma.

IRIG Time Reference Input — IRIG B standard serial time code (IRIG Standard 200-98). Input level 500 mv peak-to-peak to 15 volts peak-to-peak with modulation ratio from 2:1 to 6:1. Code formats accepted are B120, B121, B122 and B123.

Serial Interface — EIA RS-232C, Asynchronous, 19200 baud, 8 data bits, 1 start bit, 1 stop bit, no parity, no flow control.

Temperature

Operating:	-20°C to +60°C
Non-operating:	-30 to +70

Humidity — 95% non-condensing

Package — Aluminum enclosure, 7.5 inches long (including mounting flanges), 4.27 inches wide and 1.45 inches high.

Weight: — 1.5 lbs.

Environment: — Shock & Vibration per MIL STD-810E: Shock – Method 516.5, Procedure I, 20g all axis, Vibration – Method 514.4, Cat 4.
EMI per Mil-STD-461E: CE102, CS101, CS114, CS115, CS116, RE102, RS103

Power — 9 to 36 Volts DC, 3.5 Watts (not including antenna power)

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