



XL-750

GPS Time Source

KEY FEATURES

- 12 Channel GPS Receiver Provides a Continuous UTC Time Reference
- Extremely Accurate Output Pulses
- IRIG Time Code Output
- Electrically Isolated Outputs and Inputs
- Synchronization of SCADA System Equipment, Remote Terminal Units (RTU), Protection Relays and Power/Tariff Meters
- Multiple Format RS232 Serial Time Broadcast
- Event Time Tagging (option)
- Network Time Server (option)

Symmetricom's XL-750 GPS Time Source has been developed to address key power industry timing requirements. Whether it's the monitor, control or analysis of the power system, the XL-750 is the cost-effective GPS time synchronization solution.

To begin with, the XL-750 offers superb timing accuracy (100ns to UTC). Using GPS satellites, it generates extremely accurate output pulses and time codes in multiple formats.

The XL-750 synchronizes a wide variety of microprocessor-based power system equipment including: SCADA systems, remote terminal units (RTUs), protection relays, sequence of event recorders, digital fault recorders, tariff meters and other Intelligent Electronic Devices (IEDs). Field programmable using a Windows-based configuration program, the XL-750 allows the user to define output pulses or choose from pre-programmed pulses and time codes. Each output can feed directly to different areas through electrically isolated outputs which insures reliable operation in a harsh substation environment.

The XL-750 generates a wide range of timing signals via four output ports. A fixed output provides an IRIG B amplitude modulated (AM) time code signal. Three independently configurable digital ports can provide pulses or unmodulated time code. The XL-750 pulse output is easily configured to provide common power industry pulse rates including a 1 pulse-per-second (PPS), 1 pulse-per-minute (PPM), and 1 pulse-per-hour (PPH). Supported signal levels are TTL (standard) and optionally RS422, fiber optic, and high voltage MOSFET outputs.

A serial port (RS232) is provided for configuration and synchronous time string broadcasts. A dual channel, event time tagging option provides 100 nanosecond time stamping of external event pulses. A Network Time Server (NTS) option is available which allows the XL-750 to synchronize computer clocks and other network devices via the Network Time Protocol (NTP).



XL-750 GPS Time Source

XL-750 Specifications

GENERAL SPECIFICATIONS

- GPS receiver
 - Input: 1575.42 MHz L1 CA code
 - Position accuracy: 10m RMS (typical) tracking 4 satellites
 - Tracking: 12 parallel channels with multi-satellite ensembling with TRAIM
 - Acquisition time: <30 minutes typical
- Accuracy
 - 1PPS output: $\pm 100\text{nS}$ RMS UTC(USNO), Positive edge on-time
 - P2 & P3: $\pm 100\text{nS}$ RMS UTC(USNO), Positive edge on-time
 - P4 RS232 pulse/code output: $\pm 1.5\mu\text{s}$ UTC (USNO)
 - Pulse durations: Programmable from 10ms to 24 hours
 - Pulse duration accuracy: To $\pm 300\text{nS}$ to positive edge
- Oscillator: TCXO

INPUT/OUTPUT SIGNALS

- User configurable outputs [3]:
 - IRIG B time code (B00x)
 - IRIG B modified Manchester encoding (B22x)
 - Selectable extensions (IEEE 1344, AFNOR)
 - DCF77 pulse simulation
 - Configurable pulses per second/minute/hour/day
 - Pulse rate duration (10ms-24 hours)
 - Connector and signal type: BNC female (P2, P3)
 - TTL: 0-5V, 150mA (standard)
 - RS422: $\pm 6\text{V}$, 50Ω (optional)
 - HV switch, MOSFET 300V, 1A (optional)
 - Fiber Optic: 62.5/125um ST (optional)
 - 9-pin D male subminiature (P4-pin1)
 - RS232 levels: $\pm 10\text{V}$, 15mA
- Time code modulated output:
 - IRIG B time code (B12x)
 - Selectable extensions (IEEE 1344, AFNOR)
 - Connector: BNC female (P5)
 - 6Vpp into 50Ω
- Serial port I/O
 - XL-750 Configuration port
 - Time string broadcast
 - Connector: 9-pin D male subminiature (P4)
 - RS232 levels: $\pm 10\text{V}$, 15mA
- Alarm relay output:
 - Synchronization status: (NO/NC)
 - Connector: 3 pin (P7)
- Event time tagging (option):
 - Dual channel, 100 nsec resolution
 - TTL 0-5 V
 - Connector: 2 pin (P6)
 - Minimum pulse duration: 1 μsec
 - Maximum events per second: 100
- Network time server (option):
 - NTP Version 2, 3, 4, Stratum 1 server
 - Network interface: 10baseT
 - Connector: RJ-45, 8 pin (P8)

MECHANICAL/ENVIRONMENTAL SPECIFICATIONS

- Time system
 - Power
 - Voltage ranges: L = 12-36 VDC
M = 20-60 VDC
H = 90-350 VDC
 - Power drain: 6W max (load dependent)
 - Fuse: 500mA
 - Connector: 2 pin plug with mating connector
 - Size: 1.58" x 6.3" x 6.3" [4cm x 16cm x 16cm]
 - Operating temperature: 0°C to +50°C (32°F to +122°F)
 - Humidity: 95% non-condensing
 - Display: LCD 2 line x 16 characters
 - Rackmount: Kit included
- Isolation: 2.5kV between all outputs
2.5kV all outputs to base
1kV power supply to base unit
- Antenna
 - Size: 3" Dia x 3" H (7.62 cm x 7.62)
 - Input: SMA female to GPS receiver. TNC on antenna.
 - Power: +5 VDC
 - Operating temperature: -55°C to +85°C (-67°F to +185°F)
 - Storage temperature: -55°C to +85°C (-67°F to +185°F)
 - Humidity: 95% non-condensing

OPTIONS

- Power supply ranges (12-36, 20-60, 90-250Vdc)
- Network time server (NTS)
- Event time tagging (2 channel)
- High voltage switching (P2 and/or P3)
- Fiber optic output (P2 and/or P3)
- RS422 output (P2 and/or P3)
- Lightning arrester
- Antenna cable length options (150, 300, >300')
- GPS In-line amplifier for extended cable runs up to 300' (91 m)
- GPS Antenna down/up converter for long cable runs up to 1500' (457 m)
- Antenna splitter kit

RELATED PRODUCTS

- High Isolation Repeater (HIR)



XL-750 Rear panel



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