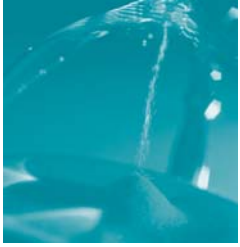


GPS INSTRUMENTATION

Features

GPS Time and Frequency Reference
Disciplined Quartz Oscillator Time Base
Optional Disciplined Rubidium Oscillator
Rapid Acquisition and Time Stabilization
Six Programmable Output Signals
1 PPS Time Interval Measurement to 1 Nanosecond
Automatic Daylight Savings Time Update
50/60 Hz Power Frequency Measurement
External Event Time Logging - Up to 256 Event Storage
Preset Coincidence Trigger Pulse Output
Over 40 Signal Output and Function Options
RS-232 Input/Output Port
RS-232 Printer Port
Free Remote Control Software for Windows® 3.1/95/98/2000

ExacTime™ GPS PowerStar

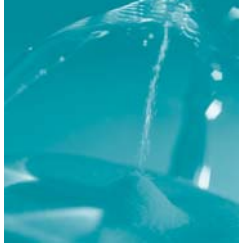
Overview

ExacTime™ GPS PowerStar is a GPS receiver that offers two time base oscillator options and a wide range of 'off-the-shelf' optional features. PowerStar is designed specifically to meet the requirements of electrical power utilities.

- **50/60 Hz Power Frequency Measurement**
  During power generation the PowerStar provides precise power frequency measurement for short term control and accumulated time error for long term control.
- **Event Log Counter**
  The Event Log function provides 100 nanosecond precision for fault location.
- **Time Code Output**
  Both modulated IRIG B (AC) and IRIG B (DCLS) are generated to provide a precise time code input for existing fault recorders and relay systems.

The extreme flexibility of this instrument allows configurations including time codes, low phase noise frequencies, pulse rates, parallel time and many other outputs to support specific needs. The internal quartz time base oscillator can be upgraded to a low phase noise oven quartz oscillator or to a rubidium oscillator. A time zone offset control is included with 1/2-hour resolution, and a daylight savings time capability can be set for the next ten years. These controls affect the LCD display, time code output and the time in the RS-232 outputs. The year can be preset to any value for test purposes. For situations in which it is desirable to disable the oscillator disciplining process temporarily, a 'flywheel' mode is provided. While in flywheel mode, the oscillator loop is opened, and the natural purity of the oscillator is not perturbed by the disciplining function.

The basic GPS PowerStar provides six output BNC ports and one input BNC port. The six output ports are user selectable via box pin jumpers and front panel controls to generate frequency (10 MHz), pulse rates (1 PPM to 10 MPPS) and time code (IRIG B). Other frequency and time code outputs can be optionally added. A front panel LCD panel gives the user a simple and intuitive control interface. Remote control software for Windows 3.1/95/98/2000 is included. The flexible input/output signal selection capability is depicted on page 3 of the ExacTime 6000 data sheet.



Specifications

ELECTRICAL SPECIFICATIONS

Outputs

10 MHz Sinusoid	1 Vrms into 50Ω
1 PPS Digital Output	TTL level into 50Ω
11 Selectable Pulse Rates	TTL level into 50Ω 10MPPS 5MPPS 1MPPS 100KPPS 2PPH 1KPPH 100PPS 1PPH 1PPS .1PPS 1PPM
Time Code	IRIG B into 50Ω, 3V P-P (AC & DC) IEEE 1344 compliant. Time code output is suppressed until accurate time is established.
Printer Outputs:	RS-232, 9-pin 'D' connector
Format A	Year, time, status, position and interval at a programmed interval
Format B	Time (D:H:M:S), CR on-time, every second (Sysplex Timer)

Inputs

1 PPS Time Interval:	
Signal	TTL level, pos or neg edge select
Resolution	1 nanosecond
Accuracy	<10 nanoseconds
External Event Log:	
Signal	TTL level, pos or neg edge select
Resolution	100 nanoseconds
Storage	Up to 256 events

GPS Subsystem

Time Accuracy	After power-up, when LOCKED and using 200 Position Averages, will be better then ±125 nanoseconds relative to UTC with SA on within: 2 hours using Oven oscillator 1 hour using TCXO oscillator
Frequency Accuracy	90% of time, better than: 1E-9 (TCXO) 1.5E-10 (OCXO)
Position Accuracy	100m 2drms with SA. Less than 25m SEP without SA
Maximum Velocity	515 meters/second (1,000 KPH)
Tracking Channels	8 parallel
Receiver Frequency	L1, 1.575 GHz, C/A code
Acquisition Time	Typically <5 minutes to first fix.

Input/Output

Remote Control and Data Output	RS-232, 9-pin 'D'

Oscillator Aging

TCXO (standard)	Aging: 1E-7/day
OCXO LPN (optional)	Aging: 5E-10/day

Front Panel

Display	LCD, 2x40 characters. Displays time, status, satellite position data, frequency and control menus
Keypad	0-9, Menu. Provides control of all functions

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

Temperature:

Operating	Unit:	0° C to 50° C
	Antenna:	-40° C to 85° C
Storage	Unit:	-20° C to 70° C
	Antenna:	-55° C to 100° C
Humidity	Unit:	0-95% relative, non condensing
	Antenna:	Unlimited
SWC Protection	275 VAC/369 VDC steady state, Energy spike to 75 Joules	

Power Requirements

90-240 VAC, 47-440 Hz,
120-370 VDC, <40 watts

Dimensions (in/cm)

1.75/4.45H x 17/43.18W x 12/30.48D

Standard Equipment

- GPS Antenna
- 50-ft. of RG58 Antenna Cable
- 18-inch Antenna Mast
- Complete Antenna Mounting Kit
- User's Manual

Options *	Option P/N
• Parallel BCD, Days - milliseconds	13A
• Extended Antenna Cable Lengths	20A thru 20E
• Lightning Arrestor	23A/23B
• High Gain Antenna	26B
• 1.544/2.048 MHz Square Wave Output	33A
• T1 Output (framed ones, balanced transformer)	33B
• E1 Output (framed ones, balanced transformer)	33C

* See ExacTime Configuration Guide for option details.

ExacTime 6500 GPS PowerStar - Rear View
J11 = Printer Port J12 = Input/Output Port

Specifications subject to change without notice.

GPS INSTRUMENTATION