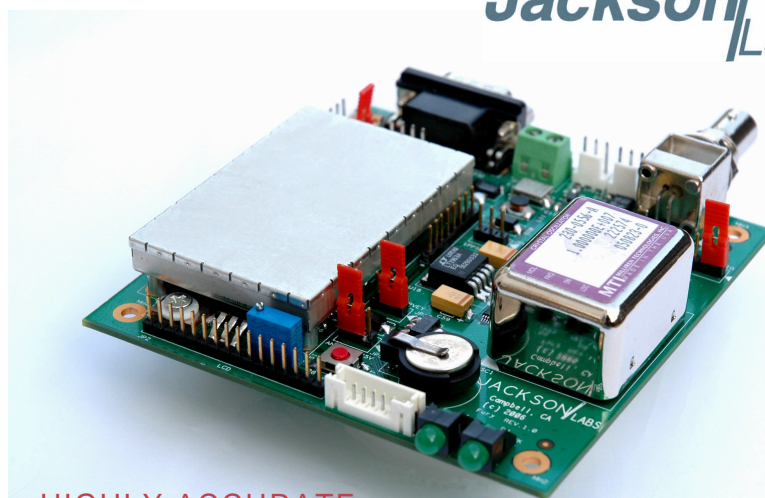


# Fury GPS Disciplined Frequency Standard

**Jackson**  
Labs

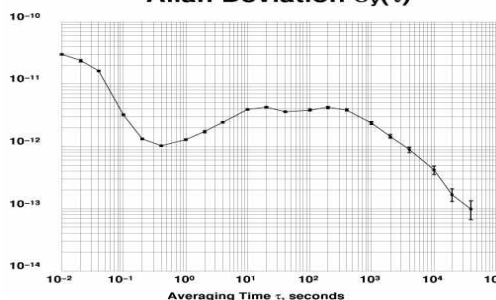
## KEY FEATURES

- Extremely low phase-noise and Allan Deviation (best in class)
- Very low cost (**US \$750.00** each, US-list at 20+ pieces)
- Double-Oven SC-cut OCXO option
- GPSDO 1PPS output with <20ns 1-Sigma to UTC
- 10MHz 3.3V/5V CMOS output
- 10MHz Sine-Wave output +6dBm, <-50dBc Harmonics
- Better than 1E-12 long term accuracy
- Raw GPS-driven 1PPS, and OCXO-driven 1PPS output
- Very low power consumption: 12V @ <5W
- SNTP Server Application
- Small 10cm x 10cm form factor
- LCD and Keypad Control
- RS232, SCPI-99 commands (Agilent/Symmetricon compatible)



## HIGHLY ACCURATE GPS-DISCIPLINED FREQUENCY STANDARD

### Allan Deviation $\sigma_y(\tau)$



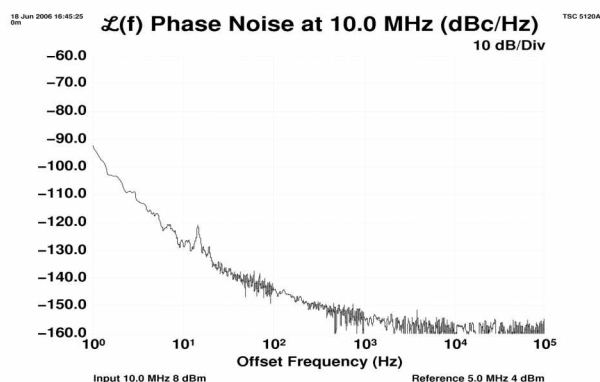
The Fury GPSDO uses the Motorola M12+ timing receiver and an OCXO to exceed 1E-12 Stratum-1 long term UTC-locked performance. (Typical ADEV performance of double oven option)

*Setting new standards in frequency generation for engineering, test & measurement, broadcast, defense, and research.*

The new Fury GPSDO presents unprecedented frequency accuracy by combining the highest GPS timing performance with the very latest in OCXO technology in one low-cost module. Allan Deviations of less than 1E-011 are possible for measurement intervals greater than 0.1 seconds. Phase noise of <120dBc at >10Hz offsets is standard. Power consumption of <5W from 11.0V to 14.0V allows battery operation. A high-end GPS receiver drives an ultra-stable OCXO frequency reference under the control of a 32bit Processor. Hold-over mode with aging and temperature compensation. Alarm outputs. The unit can be controlled by using an LCD and keypad, or via RS-232 control using standard SCPI commands. Settings are automatically stored in non-volatile memory. Sine-wave and CMOS outputs are standard. GPSCon Windows SNTP server software compatible. Available as OEM module or in an Aluminum enclosure. Jackson-Labs exclusive GPS-FailSave™ external 1PPS input for redundancy in case of GPS holdover or receiver failure.

## Jackson Labs

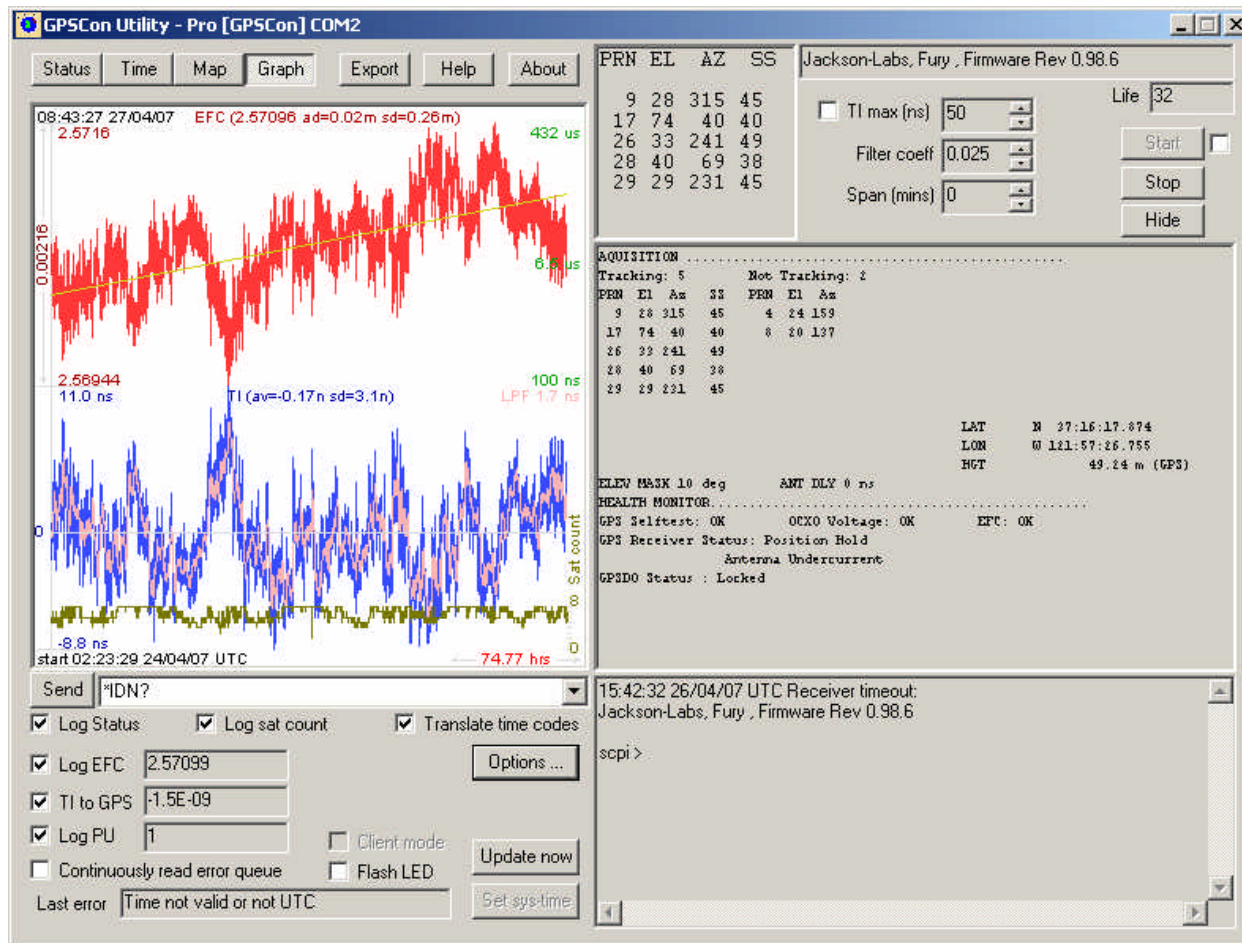
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(408) 596-0600 Fax: (408) 379-6451  
info@jackson-labs.com  
www.jackson-labs.com



Best Value GPSDO On Market

# Fury GPS Disciplined Frequency Standard

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Labs



For advanced applications the Fury GPSDO Fully supports the GPSCON communication software available for a minimal charge at:

<http://www.realhamradio.com/gpscon-info.htm>

GPSCON provides an **SNTP network time server** functionality for the Fury GPSDO as well as graphing and logging functions of various parameters of the Fury GPSDO. A web server interface showing graphics is included in GPSCON. The Fury GPSDO can be ordered with single and double-oven OCXO's, and with SMA connectors to support disciplining of external oscillators including Cesium and Rubidium standards. The Fury GPSDO is available as an OEM PCB module, or in a small Aluminum enclosure. Flash Firmware updates are made available at [www.jackson-labs.com](http://www.jackson-labs.com)

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Best Spur Noise Performance On Market

# Fury GPSDO Technical Specifications



<b>General</b>	<b>Dimensions</b>	100mm x 100mm x 25mm OEM PCB. 140mm x 170mm x 58mm Desktop Enclosure
	<b>Applications</b>	In-House Frequency Standard. Military and Industrial Applications. Battery operation
<b>1PPS Output</b>	<b>Connector</b>	BNC (Desktop), Molex 100mil type connector (OEM PCB)
	<b>Output Voltage</b>	3.3V TTL/CMOS compatible with <2ns RiseTime. 50Ohm terminated or open ended
<b>10MHz Sine Wave</b>	<b>Connector</b>	BNC (Desktop), Molex 100mil type connector (OEM PCB)
	<b>Output Power</b>	+6dBm +/-3dBm into 50 Ohms
<b>Stability</b> <b>Holdover</b> <b>Phase Noise</b> (AT-cut OCXO)	<b>Stability</b>	better than 5E-013/24 hours when locked to GPS (Double Oven OCXO)
	<b>Holdover</b>	better than 7 microseconds/24 hours (better than 8.1E-011/24 hours average) DOCXO
	<b>Phase Noise</b>	1Hz -90dBc/Hz
		10Hz -122dBc/Hz
		100Hz -140dBc/Hz
		1KHz -155dBc/Hz
		10KHz -155dBc/Hz
		100KHz -157dBc/Hz
		1MHz -160dBc/Hz
	<b>Jitter</b>	380 Femtoseconds RMS (measured with Agilent E5052B)
	<b>Harmonics</b>	< -50dBc/Hz
<b>10MHz CMOS/TTL</b>	<b>Connector</b>	BNC
	<b>Output Voltage</b>	3.3Vpp or 5Vpp Square Wave. Performance similar to 10MHz Sine Wave Output
<b>1PPS GPS-FailSafe™ Input</b>	<b>Description</b>	External 1PPS input with auto-switching in case internal GPS fails, or goes into holdover. Allows fails-save GPS operation, or external (noisy) Atomic backup references etc.
	<b>Connector</b>	Molex 100mil type
<b>Timing Accuracy</b>	<b>Input Voltage</b>	TTL, CMOS 3.3V/5V
	<b>GPS Locked</b>	Better than +/-20ns UTC offset 1-Sigma (RMS)
<b>GPS Specification</b>	<b>Holdover Mode</b>	better than 7 microseconds/24 hours (better than 8.1E-011/24 hours average) DOCXO
	<b>Xtal Compensation</b>	Automatic OCXO aging and temperature coefficient measurement and compensation
<b>Status LED's Alarm Output</b>	<b>Sat Signal</b>	12-Channel GPS L1, 1575.42MHz, C/A 1.023MHz Timing-Optimized Receiver
	<b>Cold Start</b>	Auto Survey mode, or 3D-Fix mode. 15 Minutes warmup to better than 1E-09 (DOCXO)
<b>Serial Interface</b>	<b>LED Indicators</b>	1PPS cadence indicator LED. Lock Indicator LED
	<b>ALARM Output</b>	3.3V TTL, can drive LED. System Error, GPS error, and PLL unlock alarm.
<b>Environmental Characteristics</b>	<b>Connector</b>	RS-232. 9600 to 115200 Baud
	<b>Protocol</b>	SCPI-99 Command Interface. Industry Standard Commands for drop-in replacement
<b>NOTE</b>	<b>Temperature</b>	0-50°C (single OCXO), 0-70°C (double OCXO)
	<b>Power</b>	11.0V to 14.0V DC less than 4.5W at 25°C ambient
<b>NOTE</b>		All specifications typical and quoted at 25.0°C after 3 days operation with GPS reception in still air with < 1°C change with +12.0V power supply unless otherwise specified.

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Lowest Power GPSDO On Market

Technical specifications are typical at 25 +/-1Deg. C, and subject to