LN CSAC GPSDO (Chip Scale Atomic Clock) Ultra low Noise Frequency Standard

Jackson Labs

"the next generation in frequency and timing"

- **3.88 X 3.0 X 0.9 Inches**
- **Cesium Vapor based Atomic Clock**
- **SC-cut Crystal Noise Post Filter**
- **Less than 5W Power Consumption**
- **PRELIMINARY SPECIFICATION**

TYPICAL ELECTRICAL SPECIFICATIONS:

Module Specification:	
Long-Term Oscillator Aging (without GPS - Zero aging with GPS)	Less than 0.3ppb per month in Holdover without GPS
Frequency Stability Over Temperature	Better than ±0.5E-09 (CSAC only, no GPS Disciplining, 0°C to +75°C)
1 PPS Accuracy	±15ns to UTC RMS (1-Sigma) GPS Locked in Position Hold mode
Holdover Stability after 96 hours warmup	<±2us over 24 Hour Period @+25°C (after 20 minutes with GPS lock)
ADEV (DOCXO after 24 hours with GPS lock)	1s: <2E-12, 10s: <6E-12, 100s <7E-12, 1Ks: <7E-12, 10Ks: <2E-12
1 PPS Output (CSAC Flywheel Generated)	5V CMOS output, can be shifted in 1ns steps relative to UTC
10MHz Output, 5MHz Output	Four Isolated 10MHz Sine Wave +13dBm ±3dBm, one 5MHz CMOS 5V
Distribution Amplifier Port Isolation	2MHz: > 98dB, 10MHz: > 85dB
RS-232/USB Control	SCPI-99 Control at 9.6K, 19.2K, 38.4K, 57.6K, 115.2K
RS-232/USB NMEA Output Sentences	NMEA 0183 rev. 2.3, Sentences: GGA, RMC, ZDA, PASHR, and others
GPS Frequency, Antenna	L1 C/A 1574MHz, Passive or Active Antenna 5V, MMCX Connector
GPS Receiver	50 Channels, Mobile, SBAS: **WAAS, EGNOS, MSAS supported**
Sensitivity	Acquisition -144 dBm, Tracking -160 dBm
GPS Receiver Motion Adaptive Filter Settings	Optimized depending on vehicle velocity (Auto-sensing, Auto-switching)
TTL Alarm Output	GPS Unlock and Hardware Failure indicator
Warm Up Time / Stabilization Time Without GPS	+25°C to <5E-010 Accuracy Typ: CSAC: <3 min, Filter: <12 min
Supply Voltage (Vdd)	12V ±1V
Power Consumption	<5W at +25°C steady-state, <9W warmup
Operating Temperature	-10°C to +70°C
g-sensitivity	CSAC: <0.2ppb/g/axis, Filter: <0.3ppb/g/axis with low-g option
Magnetic Sensitivity	Less than 0.4ppb per Gauss long term
Storage Temperature	-45°C to +85°C
MTBF	> 100,000 Hours (0°C to +70°C)
USB, LCD support	RS-232 or USB controlled, supports 16x2 LCD Displays
Ordering Options	Extended Temp Range DOCXO option, low-g ruggedized DOCXO option, SOCXO ultra-low-ADEV option
Phase Noise (standard temp DOCXO option)	

Offset	CSAC	Filter
1Hz	NA	-100dBc/Hz
10Hz	-90dBc/Hz	-135dBc/Hz
100Hz	-125dBc/Hz	-145dBc/Hz
1KHz	-145dBc/Hz	-150dBc/Hz
10kHz	-152dBc/Hz	-155dBc/Hz
100kHz	-153dBc/Hz	-155dBc/Hz

Low Noise Chip Scale Atomic Clock GPSDO: **MADE IN USA**

Jackson Labs Technologies, Inc, 10191 Park Run Dr., Suite 100, Las Vegas, NV 89145
Phone: (702) 233-1334, Fax: (702) 233-1073, www.jackson-labs.com
sales@jackson-labs.com

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