SAASM FireFly-IIA DOCXO Disciplined 10MHz Frequency Standard

Jackson Labs

"the next generation in frequency and timing"

- **2.0 X 2.85 X 1 Inches**
- **Ultra Low Phase Noise DOCXO**
- **SAASM with L1/L2 GPS reception**
- **Less than 3.4W Total Power**
- **Cold-Zerorize with backup battery**
- **PRELIMINARY SPECIFICATION**

TYPICAL ELECTRICAL SPECIFICATIONS:

Module Specification:	
Long-Term Oscillator Aging (without GPS - Zero aging with GPS)	Less than 50ppb per year in Holdover without GPS
Frequency Stability Over Temperature	Better than ±0.2E-09 (DOCXO only, no GPS Disciplining, -20°C to 85°C)
1 PPS output stability to UTC	±25ns to UTC RMS (1-Sigma) GPS Locked with P(Y) Code stationary
Frequency Accuracy	Better than ±2E-010 after 14 minutes operation with GPS lock
Holdover Stability (5 days on with GPS, then 24 hours off cold-soak)	<±7us over 24 Hour Period, no tilt, @+25°C (after 24hrs with GPS lock)
ADEV (no motion, no airflow, 25C, after 24+ hours with GPS lock)	1s: <3E-12, 10s: <8E-12, 100s <8E-12, 1Ks: <2E-11, 10Ks: <2E-12
1 PPS Output (CSAC Flywheel Generated)	5V CMOS output, LVDS output
10MHz Outputs	+8dBm Sine, 5V CMOS 10MHz, one LVDS differential 10MHz output
SAASM Software Key-Zerorize	Via RS-232 SCPI interface command
SAASM Hardware Cold Key-Zerorize (no prime-power required)	External switch and 2V to 5V small backup battery, 3.6V nominal
RS-232 Control	Full SCPI-99 Control Commands at 9.6K, 19.2K, 38.4K, 57.6K, 115.2K
RS-232 NMEA Output Sentences	NMEA 0183 rev. 2.3, Sentences: GGA, RMC, ZDA, PASHR, GSV
GPS Frequency, Antenna	L2 P(Y), L1 C/A and P(Y), Active Antenna 3.3V, MMCX Connector
GPS Receiver (Rockwell SAASM MicroGram)	12 Channels, Mobile, SAASM with DS101 Key and Zerorize
GPS Receiver Footprint	SMT module
GPS TTFF (DS101 Keyed, fresh Almanac auto-saved in NVRAM)	Cold Start - <110 sec, Warm Start - <90 sec, Hot Start - <10 sec
GPS Dynamics	9g operating, 600g shock
TTL Alarm Output	GPS Unlock, Event, and Hardware Failure indicator
Warm Up Time / Stabilization Time Without GPS	<12 min at +25°C to <5E-010 Accuracy Typ.
Supply Voltage (Vdd)	11V to 13VDC (12V nominal)
Power Consumption	<3.4W at +25°C at 12V Vdd, tracking GPS
Operating Temperature	-40°C to +85°C
g-sensitivity	<0.3ppb per-g per-axis
Storage Temperature	-45°C to +85°C
MTBF	> 400,000 Hours (0°C to +75°C)
Ordering Options	Single OCXO option, Standard Temp OCXO option
Spurs on 10MHz Sine Wave Output	Less than -130dBc
Phase Noise	1Hz: <-100dBc/Hz 10Hz: <-135dBc/Hz 100Hz: <-148dBc/Hz 1KHz: <-152dBc/Hz 10kHz: <-155dBc/Hz 100kHz: <-158dBc/Hz
External 1PPS Inputs	One 3.3V, one 5V CMOS

SAASM FireFly-IIA DOCXO GPSDO PN: 1005116 MADE IN USA

The SAASM FireFly-IIA GPSDO has been granted Security Approval by the Global Positioning System Directorate.

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Revision 08/29/2016 B