

FireFly-IIA Ruggedized, Ultra-Low-G GPSDO, DOCXO Module Spec



- **1.5 X 3 X 1 Inch Package**
- **Built-In 10MHz Distribution Amp**
- **Built-In Accelerometer/Gyro**
- **Ruggedized, Low-G DOCXO**
- **ARSTRAT Spec Compliant Option**
- **PRELIMINARY SPECIFICATION**

ELECTRICAL SPECIFICATIONS:

Module Specification:		
GPS Receiver Motion Adaptive Filter Settings	Automatic switchover (optimized settings for stationary, pedestrian, car, and three airborne modes) depending on vehicle velocity	
Accelerometer/Gyro Output	20 samples/s $< \pm 0.1g$ accuracy, $\pm 3g$ range, degrees and g-load output	
1 PPS Accuracy	$\pm 50ns$ to UTC RMS (1-Sigma) GPS Locked	
Frequency Accuracy	Better than $\pm 3E-010$ after 3 hours operation with GPS locked	
Holdover Stability	$< \pm 7us$ over 24 Hour Period @ $+25^{\circ}C$ (No Motion, after 5 days GPS lock)	
ADEV	0.1s to 1000s: $< 3E-11$ with GPS lock	
1 PPS Output (OCXO Flywheel Generated)	LVDS output, RS-232 level output	
10MHz Output	Two LVDS level, and three Isolated Sine Wave at $+13dBm \pm 3dBm$	
Distribution Amplifier Port Isolation	2MHz: $> 98dB$, 10MHz: $> 92dB$, 1GHz: $> 92dB$	
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-POS	
GPS Frequency, Antenna	L1, C/A 1574MHz, Passive or Active Antenna 5V	
GPS Receiver	50 Channels, Mobile, SBAS: WAAS, EGNOS, MSAS supported, Galileo ready	
Sensitivity	Acquisition $-144 dBm$, Tracking $-160 dBm$	
TTFF	Cold Start - < 45 sec, Warm Start - 1 sec, Hot Start - 1 sec	
TTL Alarm Output	GPS Unlock and Hardware Failure indicator	
Warm Up Time / Stabilization Time	< 10 min at $+25^{\circ}C$ to $1E-09$ Accuracy Typ.	
Supply Voltage (Vdd)	12 VDC Nominal $\pm 5\%$	
Power Consumption	$< 4W$ at $+25^{\circ}C$	
Operating Temperature	$-25C$ to $+75C$ extended temp range	
Storage Temperature	$-45^{\circ}C$ to $+85^{\circ}C$	
Oscillator Specification:		
Frequency Output	10,000,000.000MHz	
Maximum Frequency Deviation over any 24 hour period, 2 hour warmup	$< \pm 3.6E-010$ guaranteed by design, or fully tested (ARSTRAT Option)	
Frequency Stability Over Temperature	$\pm 2.5E-010$ (Oscillator only)	
OCXO Options	Low-g ruggedized: $< \pm 3E-010/g/axis$, Extended Temp Range option	
Phase Noise	1Hz	-90dBc/Hz
	10Hz	-120dBc/Hz
	100Hz	-140dBc/Hz
	1kHz	-150dBc/Hz
	10kHz	-152dBc/Hz

FireFly-IIA GPSDO:



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