

FireFly-IIA_{GPSDO}



- ▶ **Only 1.5" x 3" x 0.8"**
- ▶ **Excellent Holdover Stability**
- ▶ **Double Oven SC-Cut Crystal**
- ▶ **Built-In 10MHz Distribution Amp with 3 isolated outputs (>80dB)**

FireFly-IIA is an extremely small Global Positioning System Disciplined Oscillator (GPSDO) that has a built-in Distribution Amplifier, and a high-performance 50-channel GPS receiver with -160dBm tracking capability. FireFly-IIA is backwards form, fit, and function compatible to the FireFly-II GPSDO, and offers higher performance, and additional functionality in the same footprint. As a bonus, the FireFly-IIA provides special support for airborne applications by providing avionics systems with a 3D Velocity Vector, Attitude/Tilt information, Speed, Heading, Height (both MSL and GPS Height), Position, Time, Date, Frequency, Time-Stamping, and Health information.

At only 1.5 x 3.0 Inches small, FireFly-IIA provides Stratum-1 long-term performance of better than 5 parts per Trillion (5E-012) averaged over 24 hours at less than ½ the size of the smallest competitive products. FireFly-IIA has a built-in 3-port distribution amplifier with +13dBm Sine Wave outputs and isolation of typ. better than 80dB at 3GHz, and 90dB at 10MHz between outputs.

FireFly-IIA provides an OCXO-sourced 1PPS LVDS output that is phase synchronized to better than 50ns rms to UTC (typ. <10ns rms), a high-accuracy LVDS 10MHz Output, as well as three independent 10MHz Sine-Wave outputs. The unit can be monitored and controlled by an RS-232 port via standard SCPI Commands, and is capable of generating NMEA-0183 output sentences for easy integration into existing infrastructure. With a phase noise floor of -155dBc/Hz, superior spurious-suppression, and very low jitter (<400fs rms) at a power consumption of <4W, the FireFly-IIA sets a new performance standard. FireFly-IIA is also available with a Ruggedized, extended temp-range, and low-g Oscillator option for demanding military applications. For mission-critical applications FireFly-IIA provides a direct redundancy feature allowing multiple units to be daisy-chained to each other for increased reliability.

FireFly-IIA GPSDO

Electrical Specifications:

Module Specification:

1 PPS Accuracy	±30ns to UTC RMS (1-Sigma) GPS Locked
Frequency Accuracy	Better than ±3E-010 after 3 hours operation with GPS locked
Holdover Stability	<±7us over 24 Hour Period @+25°C (No Motion)
ADEV	0.1s to 1000s: <5E-11 with GPS lock
1 PPS Output (OCXO Flywheel Generated)	LVDS output, RS-232 level output
10MHz Output	Two LVDS and three Isolated Sine Wave at +13dBm ±3dBm
Distribution Amplifier Port Isolation	2MHz: > 98dB, 10MHz: > 92dB, 1GHz: > 92dB
RS-232 Control	Full control via SCPI-99 Control Commands
GPS Frequency	L1, C/A 1574MHz
GPS Antenna	Passive or Active, 5V
GPS Receiver	50 Channels, Mobile, GPS, 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°C to 1E-09 Accuracy Typ.
Supply Voltage (Vdd)	12 VDC Nominal ±5%
Power Consumption	<4W at +25°C
Operating Temperature	0°C to +75°C (-25C to +75C extended temp range available)
Storage Temperature	-45°C to +85°C

Oscillator Specification:

Frequency Output	10MHz						
10MHz Retrace	±2E-08 After 1 Hour						
Frequency Stability Over Temperature	±2.5E-010						
Output Amplitude	Output Isolation: >80dB, +13dBm ±3dBm, LVDS +/-300mV						
Warm Up Time	< 12 min						
Phase Noise	<table border="1"> <tr> <td>1Hz -90dBc/Hz</td> <td>10Hz -120dBc/Hz</td> <td>100Hz -140dBc/Hz</td> </tr> <tr> <td>1kHz -150dBc/Hz</td> <td>10kHz -155dBc/Hz</td> <td></td> </tr> </table>	1Hz -90dBc/Hz	10Hz -120dBc/Hz	100Hz -140dBc/Hz	1kHz -150dBc/Hz	10kHz -155dBc/Hz	
1Hz -90dBc/Hz	10Hz -120dBc/Hz	100Hz -140dBc/Hz					
1kHz -150dBc/Hz	10kHz -155dBc/Hz						

Also Available:

- Single oven standard temp.
- Double Oven – Extended Temperature Option
- Double Oven – Ultra-Extended Temperature Option

DESIGNED LIFETIME > 10 YEARS