

FireFly-IIA

FireFly-IIA GPSDO

Defense | 5G Communications | SATCOM | Transportation
Data Center Energy | Financial | Critical Infrastructure

The FireFly-IIA is an extremely small Global Positioning System Disciplined Oscillator (GPSDO) that has a built-in 3-port Distribution Amplifier and a high-performance 50-channel GPS receiver with -160 dBm tracking capability.

The 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.

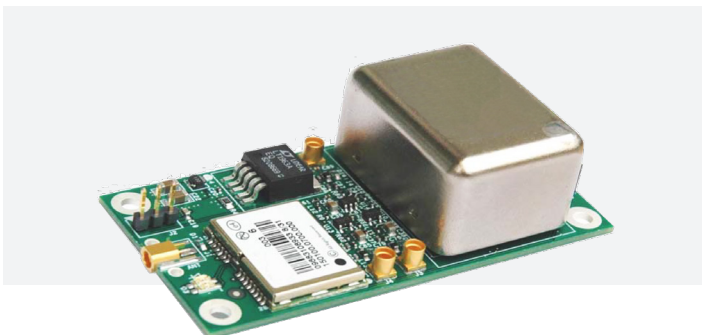
FireFly-IIA is backwards form, fit, and function compatible with the FireFly-II GPSDO, offering better performance and additional functionality in the same footprint.

Applications

Airborne applications that require 3D Velocity Vector, Attitude/Tilt information, Speed, Heading, Height (both MSL and GPS Height), Position, Time, Date, Frequency, Timestamping, and Health information.

Highlights

- Only 1.5" x 3" x 0.8"
- Excellent Holdover Stability
- Double Oven SC-Cut Crystal
- Built-In 10 MHz Distribution Amplifier with 3 isolated outputs (>80 dB)
- OCXO-sourced 1 PPS LVDS output that is phase synchronized to better than 50ns rms to UTC (typ. <10 ns rms)
- High-accuracy LVDS 10 MHz Output
- Three independent 10 MHz Sine-Wave outputs
- Monitoring and Control via RS-232 port using standard SCPI Commands
- Capable of generating NMEA-0183 output sentences for easy integration into existing infrastructure



FireFly-IIA GPSDO

Typical Electrical Specifications

Module Specifications	Description
1 PPS Accuracy	± 30 ns to UTC RMS (1-Sigma) GPS Locked
Frequency Accuracy	Better than $\pm 3E-010$ after 3 hours operation with GPS locked
Holdover Stability	$< \pm 7$ μ s over 24 Hour Period @ +25°C (No Motion)
ADEV	
0.1 s to 1000 s	$< 5E-11$ with GPS lock
1 PPS Output (OCXO Flywheel Generated)	LVDS output, RS-232 level output
10 MHz Output	Two LVDS and three Isolated Sine Wave at +13 dBm ± 3 dBm
Distribution Amplifier Port Isolation	
2 MHz	>98 dB
10 MHz	>92 dB
1 GHz	>92 dB
RS-232 Control	Full control via SCPI-99 Control Commands
GPS Frequency	L1, C/A 1574 MHz
GPS Antenna	Passive or Active, 5 V
GPS Receiver	50 Channels, Mobile, GPS, WAAS, EGNOS, MSAS supported, Galileo ready
Sensitivity	
Acquisition	-144 dBm
Tracking	-160 dBm
TTF	
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 typical
Supply Voltage (Vdd)	12 V DC Nominal $\pm 5\%$
Power Consumption	<4 W at +25°C
Temperature	
Operating Temperature	0°C to +75°C (-25°C to +75°C extended temp range available)
Storage Temperature	-45°C to +85°C

Typical Electrical Specifications continued

Oscillator Specifications	Description	
Frequency Output	10 MHz	
10 MHz Retrace	±2E-08 After 1 Hour	
Frequency Stability over Temperature	±2.5E-010	
Output Amplitude	Output Isolation: >80 dB, +13 dBm ±3 dBm, LVDS ±300 mV	
Warm-up Time	<12 min	
Phase Noise	1 Hz	-90 dBc/Hz
	10 Hz	-120 dBc/Hz
	100 Hz	-140 dBc/Hz
	1 kHz	-150 dBc/Hz
	10 kHz	-155 dBc/Hz
Designed Lifetime	>10 years	

NOTE: Specifications subject to change without notice.

Product Ordering Information

VIAMI offers the FireFly-IIA SOCX0 variant in the following configuration:

Product Number	Description
22174854	FireFly-IIA SOCX0 Standard Temp - RoHS

VIAMI offers the FireFly-IIA DOCX0 variant in the following configurations:

Product Number	Description	Std Temp	Extnd Temp	Extreme Temp	10 MHz	Rugged Low-G
22174856	FireFly-IIA DOCX0 Standard Temp - RoHS	•				
22174857	FireFly-IIA DOCX0 Extended Temp - RoHS		•			
22174859	FireFly-IIA 10MHz DOCX0 Standard Temp Ruggedized G-Force - RoHS	•			•	
22174863	FireFly-IIA 10MHz DOCX0 Extreme Temp Low G Ruggedized CC - RoHS			•	•	•
22174858	FireFly-IIA 10MHz DOCX0 Extended Temp Low G Ruggedized CC - RoHS		•		•	•



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