

Firefly-1A

GPSOCXO Module Specification – Extended Temperature

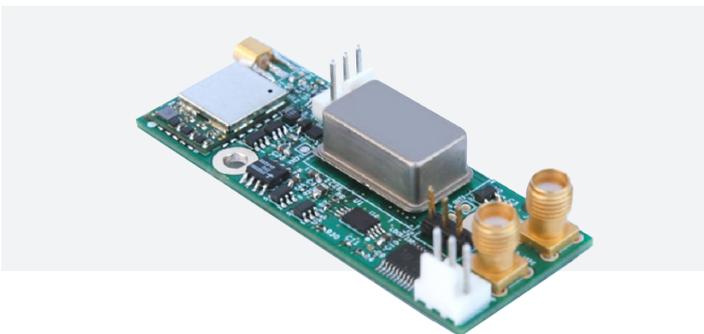
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The FireFly™ is an extremely small Global Positioning System Disciplined Oscillator (GPSDO) that has very low power consumption, delivers long-term performance similar to Atomic Frequency Standards, and supports mobile and stationary applications.

The FireFly-1A provides Stratum-1 long-term performance of better than 10 parts per trillion (1E-11) averaged over 24 hours when locked to GPS. The unit generates an OCXO-driven 1 PPS output that is phase-synchronized to better than 100 ns rms to UTC and a synchronized, low-noise +12 dBm, 10 MHz Sine-Wave Output. The FireFly is easy to integrate in any application requiring a stable and accurate reference clock and can be monitored and controlled by an RS-232 port via industry-standard SCPI Commands. FireFly-1A has excellent phase noise, superior spurious suppression, and very low jitter.

Highlights

- 1 minute warm up
- Small form-factor of 1.0" x 2.5" x 0.5"
- 72 Channel WAAS GPS Receiver
- Low-noise +12 dBm
- OCXO-driven 1 PPS output that is phase-synchronized to better than 100 ns rms to UTC
- Synchronized, low-noise +12 dBm, 10 MHz Sine-Wave Output



FireFly-1A Module

Typical Electrical Specifications

Module Specifications	Description
1 PPS Accuracy	± 50 ns to UTC RMS (1-Sigma) GPS Locked
Holdover Stability	$< \pm 11$ μ s over 3 Hour Period @+25°C (No Motion)
1 PPS Output (OCXO Flywheel Generated)	3.3 V DC CMOS
RS-232 Control	NMEA and SCPI-99 Control Commands 1 PPS Level Output for Linux SNTP Server Software (with D Sub RTS pin)
Avionics Support	3D Velocity Vector (Velocity Output for the X, Y, and Z planes)
GPS Frequency	L1, C/A 1574 MHz
GPS Antenna	Active or Passive
GPS Receiver	50 Channels, Mobile, WAAS, EGNOS, MSAS capable
Sensitivity	
Acquisition	-144 dBm
Tracking	-160 dBm
TTFF	
Cold Start	<45 sec
Warm Start	1 sec
Hot Start	1 sec
ADEV	1 s - 1E-11
TTL Alarm Output	GPS Unlock and Hardware Failure, and LOCK indicators
Warm Up Time/Stabilization Time	<5 min at +25°C to 1E-08 Accuracy
Supply Voltage (Vdd)	8.0 V to 14.0 V DC (12 V DC Nominal)
Power Consumption	<2 W Max, 1.35 W Typ.
Temperature	
Operating Temperature	-40°C to +75°C
Storage Temperature	-45°C to +85°C

Typical Electrical Specifications continued

Oscillator Specification	Description	
Frequency Output	10 MHz Sine Wave	
10MHz Retrace	$\pm 2E-08$ After 1 Hour @ +25°C	
Frequency Stability Over Temperature (Unlock Condition)	$\pm 2.5E-07$	
Output Amplitude	+13 dBm ± 3 dBm	
Warm Up Time	<1 min @ +25°C	
Phase Noise	1 Hz	-80 dBc/Hz
	10 Hz	-110 dBc/Hz
	100 Hz	-135 dBc/Hz
	1 kHz	-145 dBc/Hz
	10 kHz	<-145 dBc/Hz
Connections	Connector Type	
1 PPS Output, 10 MHz Output	SMB or SMA (see variant options)	
RS-232	3 Pin	

NOTE: Specifications subject to change without notice.

Product Ordering Information

Product Number	FireFly Configurations
100102-12V-G2	FireFly-IA SOXCO Extended Temp - RoHS
100107-6V-G2	FireFly-IA SOCX0 Extended Temp SMA -1PPS 1.2 - RoHS
100152-12V-G2	FireFly-IA SOXCO Extended Temp SMA - RoHS



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