

# VIAVI

## CSAC GPSDO

### CSAC (Chip Scale Atomic Clock) GPSDO Frequency Standard

#### Typical Electrical Specifications

Module Specifications	
Long-Term Oscillator Aging	Less than 0.3 ppb per month in holdover without GPS Zero aging with GPS
Frequency Stability Over Temperature	Better than $\pm 0.5E-09$ (CSAC only, no GPS Disciplining, 0°C to +70°C)
1 PPS Accuracy	$\pm 15$ ns to UTC RMS (1-Sigma) GPS Locked in Position Hold mode
Frequency Accuracy	Better than $\pm 2E-010$ after 3 minutes operation with GPS lock
Holdover Stability (after 96 hours warmup)	$< \pm 2$ $\mu$ s over 24 Hour Period @ +25°C (after 20 minutes with GPS lock)
ADEV (with GPS lock)	
1 s	$< 1E-10$
10 s	$< 2.5E-11$
100 s	$< 2E-11$
1K s	$< 1E-11$
10K s	$< 2E-12$
1 PPS Output (CSAC Flywheel Generated)	5 V CMOS output, can be shifted in 1 ns steps relative to UTC
10 MHz Output, 5 MHz Output	Four Isolated 10 MHz Sine Wave +13 dBm $\pm 3$ dBm, one 5 MHz CMOS 5 V
Distribution Amplifier Port Isolation	
2 MHz	$> 98$ dB
10 MHz	$> 85$ dB



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Module Specifications continued		
RS-232 Control (Including USB Port)	Full SCPI-99 Control Commands at 9.6 K, 19.2 K, 38.4 K, 57.6 K, 115.2 K	
RS-232 NMEA Output Sentences	NMEA 0183 rev. 2.3, Sentences: GGA, RMC, ZDA, PASHR, and others	
GPS Frequency, Antenna	L1 C/A 1574 MHz, Passive or Active Antenna 5 V, MMCX Connector	
GPS Receiver	50 Channels, Mobile, SBAS: WAAS, EGNOS, MSAS supported	
Sensitivity		
Acquisition	-144 dBm	
Tracking	-160 dBm	
GPS TTF		
Cold Start	<45 sec	
Warm Start	1 sec	
Hot Start	1 sec	
GPS Receiver Motion Adaptive Filter Settings	Optimized depending on vehicle velocity (Auto-sensing, Auto-switching)	
TTL Alarm Output	GPS Unlock and Hardware Failure indicator	
Warm Up Time/Stabilization Time Without GPS	<3 min at +25°C to <5E-010 Accuracy Typical	
Supply Voltage (Vdd)	Aircraft and Vehicle Power Range: 8 V to 36 V DC, or 5 V via Mini-USB	
Power Consumption	<1 W with CMOS output option (12 V Vdd) <1.4 W	
Temperature		
Operating Temperature	-10°C to +70°C	
Storage Temperature	-45°C to +85°C	
g-sensitivity	<0.2 ppb per-g per-axis	
Magnetic Sensitivity	Less than 0.4 ppb per Gauss	
MTBF	>100,000 Hours (0°C to +70°C)	
USB, LCD support	Optionally USB powered and controlled, supports 16x2 LCD Displays	
Phase Noise	10 Hz	-90 dBc/Hz
	100 Hz	-125 dBc/Hz
	1 kHz	-145 dBc/Hz
	10 kHz	-152 dBc/Hz
	100 kHz	-153 dBc/Hz

NOTE: Specifications subject to change without notice.



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