

VIAVI

HD CSAC

HD CSAC (Chip Scale Atomic Clock) GPSDO Time and 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	± 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 Drift (after 5 minute warmup with GPS lock)	$< \pm 2.5$ μ s drift per hour over worst case temperature range
Typical Holdover Drift (after 5 minute warmup with GPS lock)	$< \pm 1$ μ s drift per hour at 25°C ± 5 °C
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)	LVDS output, can be shifted in 1 ns steps relative to UTC
10 MHz Outputs	10 MHz LVDS, 10 MHz CMOS 5 V
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
External GPS option	1 PPS input for optional external SAASM GPS receiver



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Module Specifications continued

GPS Frequency, Antenna	L1 C/A 1574 MHz, Passive or Active Antenna 3.3 V, MMCX Connector	
GPS Receiver	50 Channels, Mobile, SBAS: WAAS, EGNOS, MSAS supported	
Sensitivity		
Acquisition	-147 dBm	
Tracking	-160 dBm	
GPS Time To First Fix		
Cold Start	<30 sec	
Warm Start	1 sec	
Hot Start	1 sec	
GPS Receiver Motion Adaptive Filter Settings (dynamic mode enabled)	Optimized depending on vehicle velocity (Auto-sensing, Auto-switching)	
TTL Alarm Output	Hardware Event Indicator	
Warm Up Time/Stabilization Time Without GPS	<180 s at +25°C to <5E-010 accuracy typical	
Supply Voltage (Vdd)	+12 V ±5%	
Power Consumption	<1.25 W at +25°C	
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	
Connectors	Compatible to FireFly-IIA connector	
Phase Noise	10 Hz	-75 dBc/Hz
	100 Hz	-115 dBc/Hz
	1 kHz	-128 dBc/Hz
	10 kHz	-134 dBc/Hz
	100 kHz	-140 dBc/Hz

NOTE: Specifications subject to change without notice.



Contact Us +1 800 835 2352
avcomm.sales@viavisolutions.com

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