HD CSAC LP GPSDO

Low Power HD CSAC GPSDO Time and Frequency Standard

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

The HD CSAC Low Power (LP) 10 MHz GPSDO has evolved from the HD CSAC GPSDO, providing the same features as the HD CSAC GPSDO, but with enhanced operational capabilities and additional features.

Highlights

- <0.45 W Power (holdover)
- HD CSAC compatible
- 5 V Supply
- 3.3 V CMOS 1 PPS output a socketed CSAC for easy upgrading of the CSAC oscillator
- TTL and RS-232 serial, socketed CSAC
- Ultra Low Power 10 MHz reference with holdover



HD CSAC LP GPSDO

Applications

- UTC holdover clock for dismounted radios
- Blue-Force communications equipment such as Jammers/Spoofers
- DAB/DVB (Digital Audio/Video) broadcast stations in Europe, etc.
- VSB Terrestrial TV station transmitter synchronization and syntonization
- Power generation facilities, especially those that require long battery-powered holdover capabilities
- Avionics retrofit with 10 MHz/1PPS clock
- Cell towers and base stations for tight 5G synchronization requirements
- Train and mobile equipment synchronization
- UAS/UAV timing and frequency synchronization
- Underwater oil exploration and underwater beacons

Typical Electrical Specifications

Module Specifications	Description
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 ±0.5E-09 (CSAC only, no GPS Disciplining, 0°C to +75°C)
1 PPS Accuracy	±15 ns to UTC RMS (1-Sigma) GPS Locked in Position Hold mode
Frequency Accuracy	Better than ±2E-010 after 3 minutes operation with GPS lock
Holdover Drift (after 5-minute warmup with GPS lock)	<±2.5 µs drift per hour over worst case temperature range
Typical Holdover Drift (after 5-minute warmup with GPS lock)	<±1 µs 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, 3.3 V CMOS output
10 MHz Outputs	10 MHz LVDS, 10 MHz CMOS 3.3 V
RS-232 and TTL serial ports	Independent RS-232 and TTL ports, 9.6 K, 19.2 K, 38.4 K, 57.6 K, 115.2 K
RS-232 and TTL NMEA Output Sentences	NMEA 0183 rev. 2.3, Sentences: GGA, RMC, ZDA, PASHR, and others External GPS option
External GPS option	1 PPS input for optional external SAASM GPS receiver
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

Typical Electrical Specifications continued

Module Specifications	Description	
Warm Up Time/Stabilization Time Without GPS	<130 s at +25°C to <5E-010 accuracy typical	
Supply Voltage (Vdd)	+5 V ±5%	
Power Consumption	<0.45 W holdover or external 1 PPS mode, <0.55 W with GPS enabled	
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	CSAC oscillator socketed for easy upgrade	
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.

Product Ordering Information

VIAVI offers the HD CSAC Low Power module in the following configurations:

Product Number	Description	5V	UFL	RoHS
22174905	CSAC HD Ultra Low Power SA.65 5V OEM Board w/socket CC - RoHS	•		•
22174906	CSAC HD Ultra Low Power SA.65 UFL OEM Board w/socket CC - RoHS		•	•
1005157-CC	CSAC HD Ultra Low Power SA.65 UFL OEM Board w/socket CC - non-RoHS		•	
1005115	CSAC HD Ultra Low Power OEM Board w/socket - non-RoHS			

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