

Quantum™ LN CSAC

Low Noise Chip Scale Atomic Clock



Key Features

- Power consumption ≤ 275 mW
- Less than 46 cc volume, 2.0" x 2.0" x 0.70"
- 10 MHz Sine Wave output
- 1 PPS output and 1 PPS input for synchronization
- RS-232 interface for monitoring and control
- Short term stability (Allan Deviation) of $\leq 2E-11$ @ TAU = 1 sec
- Phase Noise - sine wave
 - ≤ -87 dBc/Hz @ 1 Hz
 - ≤ -120 dBc/Hz @ 10 Hz
 - ≤ -140 dBc/Hz @ 100 Hz
 - ≤ -145 dBc/Hz @ 1 kHz
 - ≤ -150 dBc/Hz @ 10 kHz
 - ≤ -155 dBc/Hz @ ≥ 100 kHz

Key Applications

- Underwater sensor systems
- GPS receivers
- Dismounted radios
- Dismounted IED jamming systems
- Autonomous sensor networks
- Unmanned vehicles

The Low Noise Chip Scale Atomic Clock (LN CSAC) combines the accuracy of an atomic clock with the spectral purity of an ovenized crystal oscillator in a compact size requiring low input power.

Microsemi®, the developer of the CSAC, has incorporated a low power OCXO within the frequency control loop of the atomic clock enabling exceptional performance for both Allan Deviation and Phase Noise. This level of performance cannot be achieved using external phase locked loops.

The LN CSAC provides a 10 MHz sine wave output and 1 PPS output, with short-term stability [Allan Deviation] of $\leq 2E-11$ @ TAU = 1 sec, long-term aging of $\leq 9E-10$ /month, and maximum frequency change of $\pm 5E-10$ over an operating temperature range of -10°C to $+35^{\circ}\text{C}$.

The LN CSAC accepts a 1 PPS input that may be used to synchronize the unit's 1 PPS output to an external reference clock with ± 100 ns accuracy. The LN CSAC can also use the 1 PPS input to discipline its phase and frequency to within 1 ns and $1.0E-12$, respectively.

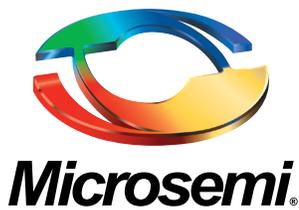
A standard RS-232 serial interface is built in to the LN CSAC. This is used to control and calibrate the unit and also to provide a comprehensive set of status monitors. The interface is also used to set and read the LN CSAC's internal time-of-day clock.

The LN CSAC acts as a frequency and timing subsystem while requiring limited size, weight and power.



Microsemi invented portable atomic timekeeping with QUANTUM™, the world's first family of miniature and chip scale atomic clocks.

Choose QUANTUM™ class for best-in-class stability, size, weight and power consumption.



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