

CsIII

Cesium Frequency Standard



Key Features

- Third-generation cesium technology
- 2U compact rack mount
- AC and DC inputs
- Remote monitoring and control
- 5 MHz and 10 MHz outputs
- 1PPS sync input
- 1PPS output
- <30 lbs
- CE compliant

Key Benefits

- Cesium stability and accuracy
- Lightweight, compact, and economical
- Ideal for SATCOM, calibration, metrology and many other test and measurement applications
- Standard 1 year electronics and 8-year tube warranty

The Microsemi® CsIII is a lightweight, compact, economical cesium frequency standard. The technology developed for the CsIII is an evolutionary step forward in the quest for higher stability, lower phase noise, and longer life. An ever-increasing base of demanding users in communications, timing, synchronization, and other applications take advantage of this performance.

The CsIII is configured with 5 MHz and 10 MHz sinewave outputs, a 10 MHz TTL output, a 1PPS sync input, and a 1PPS timing output. All monitoring and control of the unit is done through the serial interface and Microsemi's proprietary Monitor3 software.

Packaged in a 2U, 19-inch rack mounted chassis, the CsIII weighs less than 30 lbs. An optional portability kit and T1/E1 synthesizer are available for added functionality and versatility.

The CsIII comes with a standard 1-year electronics warranty and an 8-year tube warranty.

The CsIII is ideal for SATCOM, Calibration, Metrology and many other Test and Measurement applications that require cesium stability and accuracy.

CsIII

Cesium Frequency Standard

Electrical Specifications

Frequency Outputs (Two Sine and One TTL)

Format: Sine

- Frequency: 1 each, 5 MHz and 10 MHz
- Amplitude: 1 V_{RMS}
- Harmonic: <-40 dBc
- Non-harmonic: <-80 dBc
- Connector: BNC
- Load impedance: 50 Ω
- Location: Rear panel

Format: TTL

- Frequency: 10 MHz
- Amplitude: >2.2 V
- Load impedance: 50 Ω
- Location: Rear panel
- Connector: BNC

Timing Outputs

- Format: 1PPS
- Amplitude: >3.0 V into 50 Ω (TTL compatible)
- Pulse width: 20 μs positive pulse
- Rise time: <5 ns
- Jitter: <1 ns rms
- Connector: BNC
- Load impedance: 50 Ω
- Location: Rear panel

Timing Inputs

- Sync input: 1PPS
- Amplitude: >3.0 V into 50 Ω (TTL compatible)
- Pulse width: 20 μs positive pulse
- Rise time: <5 ns
- Jitter: <1 ns rms
- Connector: BNC
- Load impedance: 50 Ω
- Location: Rear panel

Remote System Interface and Control RS-232-C (DTE Configuration)

Complete remote control and interrogation of all instrument functions and parameters.

- Connector: 9-pin male rectangular D subminiature type
- Location: Rear panel

Alarm (Relay)

- Connector: 9-pin female rectangular D subminiature type
- Location: Rear panel

Performance Parameters

- Accuracy: $\pm 1.0 \times 10^{-12}$
- Warm-up time (typical): 30 minutes
- Reproducibility: $\pm 2.0 \times 10^{-13}$
- Settability
 - Range: $\pm 1.0 \times 10^{-9}$
 - Resolution: 1.0×10^{-15}
 - Control: Via RS-232 port

Stability

Average time	Allan Deviation
1 s	$< 1.2 \times 10^{-11}$
10 s	$< 8.5 \times 10^{-12}$
100 s	$< 2.7 \times 10^{-12}$
1,000 s	$< 8.5 \times 10^{-13}$
10,000 s	$< 2.7 \times 10^{-13}$
100,000 s	$< 8.5 \times 10^{-14}$
Floor	$< 5.0 \times 10^{-14}$

SSB Phase Noise (5 MHz)

Offset	Noise
1 Hz	<-95 dBc/Hz
10 Hz	<-130 dBc/Hz
100 Hz	<-145 dBc/Hz
1,000 Hz	<-155 dBc/Hz
10,000 Hz	<-155 dBc/Hz
100,000 Hz	<-160 dBc/Hz

Environmental and Physical Specifications

- 0 °C to 50 °C (operating), -40 °C to 70 °C (non-operating)
- Humidity: 95% up to 50°C
- Magnetic field: 0 to 2 gauss
- Altitude (operating): 0 to 50,000 feet
- 3.50" (89.9 mm) (height); 19.00" (483 mm) (front panel width); 17.31" (440 mm) (instrument width), 15.0" (381 mm) (depth)
- Weight: <30 lbs (13.5 kg)
- MTBF: >130,000 hours

AC Power Requirements

- Operating voltage ($\pm 10\%$): 100 VAC to 240 VAC
- Frequency: 47 Hz to 63 Hz
- Power: 65 W operating; 90 W warm-up

DC Power Requirements

- 24 VDC option: 22 VDC to 36 VDC
- 48 VDC option: 36 VDC to 75 VDC
- 30 W, 1.3 A at 24 V operating; 65 W, 2.7 A at 24 V warm-up

Ordering Information

- 24 VDC (Part number: 14534-110)
- 48 VDC (Part number: 14534-109)



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