



Advanced Test Equipment Corp.

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 **Microsemi** | a  **MICROCHIP** company



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.

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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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