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.

Microsemi makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does Microsemi assume any liability whatsoever arising out of the application or use of any product or circuit. The products sold hereunder and any other products sold by Microsemi have been subject to limited testing and should not be used in conjunction with mission-critical equipment or applications. Any performance specifications are believed to be reliable but are not verified, and Buyer must conduct and complete all performance and other testing of the products, alone and together with, or installed in, any end-products. Buyer shall not rely on any data and performance specifications or parameters provided by Microsemi. It is the Buyer's responsibility to independently determine suitability of any products and to test and verify the same. The information provided by Microsemi hereunder is provided "as is, where is" and with all faults, and the entire risk associated with such information is entirely with the Buyer. Microsemi does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other IP rights, whether with regard to such information itself or anything described by such information. Information provided in this document is proprietary to Microsemi, and Microsemi reserves the right to make any changes to the information in this document or to any products and services at any time without notice.

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 VRMS
- 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 (±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)

Microsemi
a Microchip company

Microsemi Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996
email: sales.support@microsemi.com
www.microsemi.com

Microsemi, a wholly owned subsidiary of Microchip Technology Inc. (Nasdaq: MCHP), offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Learn more at www.microsemi.com.

©2014–2018 Microsemi, a wholly owned subsidiary of Microchip Technology Inc. All rights reserved. Microsemi and the Microsemi logo are registered trademarks of Microsemi Corporation. All other trademarks and service marks are the property of their respective owners.

900-00509-000 Rev B