

TimeCesium 4400

Cesium Primary Reference Source



Key Features

- State-of-the-art Cesium III beam tube technology
- Autonomous Stratum 1 primary reference source
- No antenna installation required
- Front-access ETSI shelf
- DS1, E1, 2048 kHz G.703/13, 10 MHz, 5 MHz, 1.544 MHz, and composite clock outputs

Key Benefits

- Maintenance-free (8-year warranty on Cesium tube)
- Plug and play; less than 45 minutes of installation
- Flattens the sync distribution hierarchy
- Lowers the overall operation, administration, maintenance, and provisioning (OAMP) costs
- Enhances network performance and provides total control of your network synchronization source
- Prevents upstream clock errors from propagating across the network

The TimeCesium® 4400 is an autonomous Primary Reference Source based on the latest Cesium III technology from Microsemi. It is designed for telecom network operators to generate superior and highly reliable Stratum 1 synchronization signals for advanced network services.

Plug and Play in Less Than 45 Minutes

The TimeCesium 4400's architecture uses the latest digital technology to provide superior performance and maintenance-free operation. The TimeCesium 4400 is easy to install and is fully operational in less than 45 minutes. Its plug and play architecture provides highly reliable operation over the lifetime of the system.

Network Applications

The TimeCesium 4400 is used to equip core network offices with Stratum 1 synchronization.

The deployment of TimeCesium 4400 sources across the network provides the following benefits:

- Flattens the sync distribution hierarchy
- Lowers the overall OAM&P (Operation, Administration, Maintenance, & Provisioning) costs
- Reduces the number of network recovery clocks (TSG/SSU) operating in tandem
- Minimizes pointer adjustments caused by frequency errors in the SONET/SDH payload
- Prevents up-stream network clock errors to propagate across the network
- Enhances overall network performance
- Provides total control of your network synchronization source

Standards Compliance

The TimeCesium 4400 meets industry standards, including ITU-T, ETSI, ANSI, Telcordia, NEBS, and AS; RoHS 5/6 compliant. This includes the requirements contained in the new ITU-T G.811.1 ePRC standard.

TimeCesium 4400

Cesium Primary Reference Source

Specifications

Performance

- Accuracy (over environment): $\leq \pm 1 \times 10^{-12}$

Stability

- Average time

1 s	1.2×10^{-11}
10 s	8.5×10^{-12}
100 s	2.7×10^{-12}
1,000 s	8.5×10^{-13}
10,000 s	2.7×10^{-13}
- Warm-up time (typical): 30 minutes

Outputs

- Telecom signals: Two framed or unframed
- Framed (AMI)
 - 1544 kbps: ANSI T1.102 DS1 selectable framing: SF(D4) or ESF, with Stratum 1 Sync Status Message (SSM)
 - Format: Framed all ones, B8ZS
 - 2048 kbps: ITU-T Rec.G.703/9 (E1) with G.704 framing and with Stratum 1 Sync Status Message (SSM)
 - Format: Framed all ones, HDB3
- Unframed
 - 1544 kHz G.703/13
 - 2048 kHz G.703/13
 - Composite clock G.703/4
- Connectors
 - DB9 for balanced signal
 - CC, 133 Ω
 - T1, 100 Ω
 - E1, 120 Ω
 - BNC for unbalanced signals, 75 Ω
- Sinusoidal signals
 - 1 at 5 MHz, 10 MHz
 - 1 $V_{RMS}/50 \Omega$, BNC

General

- Power requirements: Dual redundant DC inputs
- Operating voltage: $-48 V_{DC}$ nominal ($-36 V_{DC}$ to $-62 V_{DC}$)
- Power
 - Operating: 40 W
 - Warm-up: 55 W
- Interface connections
 - External DC inputs, A and B: #6 screw terminal block
 - RS232: 9-pin male D-connector
 - Chassis ground, A and B: #6 screw terminal block
 - Alarm (critical and minor): #6 screw terminal block
- Fuses: External DC input 2 A, 250 V, slow acting
- Dimensions
 - Width: 18.2" (46.2 cm)
 - Depth: 10.2" (25.7 cm)
 - Height: 10.5" (26.67 cm)
 - Weight: 36.5 lb (16.6 kg)
 - Mounting: Mounting ears provided for 19" (48 cm) or 23" (58 cm) racks

Environment

- Temperature
 - Operating: 0 °C to 50 °C
 - Non-operating: -40 °C to 75 °C
- Humidity: 95%, non-condensing



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.

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.

©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.