The TimeCesium® 4500 is an autonomous Primary Reference Source based on the Cesium III technology from Microsemi. It is designed for telecom network operators to generate superior and highly reliable Stratum I synchronization signals for advanced network services.

Key Features
- State-of-the-art Cesium III beam tube technology
- Autonomous Stratum 1 primary reference source
- No antenna installation required
- Rear-access ANSI 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
- Reduces the overall OAM&P (Operation, Administration, Maintenance, & Provisioning) costs
- Minimizes pointer adjustments caused by frequency errors in the SONET/SDH payload
- Enhances overall network performance
- Provides total control of your network synchronization source

Plug and Play in Less Than 45 Minutes
The TimeCesium 4500's architecture uses the latest digital technology to provide superior performance and maintenance-free operation. The TimeCesium 4500 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 4500 is used to equip core network offices with Stratum 1 synchronization.

Standards Compliance
The TimeCesium 4500 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.
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.

Specifications

Performance

- Accuracy (over environment): ≤±1 × 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
  - 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
- 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 Ω, BNC

General

- Power requirements: Dual redundant DC inputs
- 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

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