TimeCesium 4500

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
- 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
- Lowers the overall operation, administration, maintenance, and provisioning costs
- Enhances network performance and provides total control of your network synchronization source
- Prevents up-stream clock errors from propagating across the network

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.

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.

The deployment of TimeCesium 4500 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 from propagating across the network
- Enhances overall network performance
- Provides total control of your network synchronization source

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.

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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, 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 Ω, 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

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