

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

- Low cost of maintenance with 12 year tube warranty
- Plug and play in less than 45 minutes of installation
- Lowers the overall operation, administration, maintenance and provisioning costs
- Enhances network performance and provides total control of your network synchronization source
- Prevents up-stream network clock errors from propagating across the network

The TimeCesium® 4500 is an autonomous Primary Reference Source based on the latest Cesium III technology from Symmetricom®. It is designed for telecommunication operators to generate superior and highly reliable Stratum 1 synchronization signals for advanced network services.

Plug & 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 & 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 network synchronization source

Standards Compliance

The TimeCesium 4500 meets industry standards, including ITU-T, ETSI, ANSI, Telcordia, NEBS, and CE/AS.

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Specifications

PERFORMANCE

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

STABILITY

- Averaging 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: 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, 133Ω
T1, 100Ω
E1, 120Ω
BNC for unbalanced signals, 75Ω
- Sinusoidal signals:

1 at 5 MHz, 10 MHz,
1.0 V rms/50Ω, BNC

GENERAL

- Power requirements: Dual redundant DC inputs
- Operating voltage: -48 V DC nominal (-36 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:	10.1" (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