Symmetricom

Cs4000

Cesium Frequency Standard

STANDARD FEATURES

- Multiple RF Outputs
- CsIII Technology
- AC & DC Inputs
- Internal Battery Back-up
- Color Front Panel User Interface
- 10b/100T Remote Interface
- 30 Minute Warm-Up to Full Specifications

OPTIONAL FEATURES

- T1/E1 Outputs
- No Front Panel Option
- No Battery Option
- 24VDC Input
- Custom Outputs Available

The Symmetricom Cs4000 is a new cesium frequency standard platform that provides exceptional performance in a configurable 3U rack mount chassis. The Cs4000 is designed for high precision timing and frequency applications requiring high stability, low noise RF and 1PPS reference signals. Symmetricom's advanced Cesium III digital technology is the engine that drives this exceptional performance.

The Cs4000 includes a new color front panel Graphical User Interface (GUI) that provides easy to use monitoring and control of the instrument. All functional control of the cesium and optional output cards are managed via the front panel GUI. The GUI is a touch panel LCD screen that provides easy at a glance access to cesium health, control and configuration data. Remotely, you now have two methods of interfacing with the Cs4000. A new Ethernet interface provides monitoring capability via an embedded web page server. Both static IP and DHCP are supported. The Cs4000 also provides an RS-232 port that allows the user comprehensive monitor and control access via ASCII commands or via Symmetricom's Monitor 3 windows based utility program.

The Cs4000 is designed to provide standard and custom output signal formats. The standard outputs include, 100kHz, 1, 5, 10MHz and 1PPS. Optional outputs include T1 and E1 both of which support multiple signaling and alarming formats. Realizing that custom signaling is part of many system designs, the Cs4000 has a custom output area that can support most signaling requirement. Because of this, the standard output signals are not affected and can be utilized along with whatever custom format is required.

The Cs4000 meets the challenges of laboratory standards, satcom terminals, mobile communications systems and a wide variety of test and measurement applications.

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Cs4000 Specifications

ELECTRICAL SPECIFICATIONS

- Frequency outputs

Frequency:	1 ea 100kHz & 1MHz Sine
Amplitude:	1Vrms
Harmonic:	<–40dBc
Non harmonic:	<–80dBc
Connector:	BNC
Load impedance:	50Ω
Location:	rear panel
Frequency:	2 ea 5 &10 MHz Sine
Amplitude:	1Vrms
Harmonic:	<–40dBc
Non harmonic	<–80dBc
Connector:	Type N
Load impedance:	50Ω
Location:	rear panel

- Timing outputs

Format:	Three 1PPS
Amplitude:	>3.0V into 50Ω
Pulse width:	20µs positive pulse
Rise time:	<5ns
Jitter:	<1ns rms
Connector:	BNC
Load impedance:	50Ω
Location:	rear panel (2) front panel (1)

- Timing inputs

Sync input:	Two 1PPS
Connector:	BNC
Load impedance:	50Ω
Location:	rear panel (1) front panel (1)

- Remote system interface and control

RS-232-C (DTE Configuration)
Complete remote control and interrogation of all instrument functions and parameters

Connector

RS-232-C:	9-pin male rectangular D subminiature type
Location:	rear panel (1)

Network interface

Physical Layer:	10 base 100 TX (IEEE 802.3)
Connector:	RJ45
Location:	rear panel (1)
Transport:	TCP/IP
Protocol:	HTTP
Alarm (TTL):	BNC
Location:	rear panel
Output TTL:	high, normal

TTL low, fault
Circuit is TTL open collector with internal pullup resistor
Circuit can sync up to 10mA

PERFORMANCE SPECIFICATIONS

- Performance

Accuracy:	±1.0E-12
Warm-up time: (typical)	30 Min
Reproducibility:	±2.0E-13
Settability	
Range:	±1.0E-9
Resolution:	1.0E-15

- Stability

AvgTime (s)	Allan Deviation
1	≤1.2E-11
10	≤8.5E-12
100	≤2.7E-12
1,000	≤8.5E-13
10,000	≤2.7E-13
100,000	≤8.5E-14
Floor	≤5.0E-14

- SSB Phase noise

Offset (Hz)	5MHz Output
1	≤-95dBc
10	≤-130dBc
100	≤-145dBc
1,000	≤-155dBc
10,000	≤-155dBc
100,000	≤-160dBc

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

- General environment

Operating	
Temperature:	0°C to 50°C
Humidity:	95% up to 50°C (non-condensing)
Non-operating (transport)	
Temperature (storage):	-30°C to 70°C
Temperature (short term):	-40°C to 75°C
Magnetic field:	0 to 2 gauss
Shock:	30g/11ms, 3 axis
Vibration:	MIL-T-28800E, Type III, Class 5
Altitude (operating):	0 to 50,000'

- AC Power requirements

85 to 264 VAC
47 to 63 Hz
70VA, 64W (Operating)
90VA, 80W (Warm Up)

- DC Power requirements

36 - 75VDC*
60W (Operating)
70W (Warm Up)

* 24VDC (22 - 36VDC) Power supply option available

- Dimensions: 17.22" W x 5.22" H x 20.63" D (43.73 cm x 13.25 cm x 52.40 cm)
- Internal standby battery

Capacity:	45 minutes @ 25°C from full charge (without front panel display) 20 minutes @ 25°C from full charge (with front panel display)
Charge time:	16 hours maximum from fully discharged state
Charge source:	AC or DC

- Weight: 45 lbs. (20.4 Kg)
- MTBF: >145,000 hrs.

ORDERING INFORMATION	Part No.
• 48VDC, Display, Battery, Ethernet	14645-111
• 48VDC, Display, Battery, T1, Ethernet	14645-123
• 48VDC, Display, Battery, E1, Ethernet	14645-115
• 48VDC, No Display, No Battery	14645-101

Rear view of Cs4000

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