

Features

Long Caesium Beam Tube Life Span
No Calibration Necessary - No Aging
Programmable TTL Output
Transportable



CAESIUM PRODUCTS
Modules, Instruments, Militarized Instruments and Replacement Tubes

4040B Caesium Frequency Standard



Overview

The Datum 4040B is a high performance rack mounted caesium frequency standard with multiple output configurations. The long term stability and accuracy of the 4040B make it ideally suited for precision timing and frequency control in a variety of stringent applications that include communication, navigation, test and measurement.

APPLICATIONS

- Stratum 1 master clock reference for communications systems & telephone networks
- Synchronization of satellite ground terminals and remote stations
- Calibration of secondary quartz and rubidium oscillators

The accurate, stable, and spectrally pure sinusoidal signals available from the Datum 4040B are derived from a micro-processor controlled cesium beam tube

used to stabilize the output of an integral oven-controlled quartz crystal oscillator. This oscillator drives output signals at 1, 5, and 10 MHz, and optionally at telecom rates and formats, 1544 or 2048 kbps.

Internal Microprocessor Functions

- Digital demodulation and integration of the servo loop signals.
- Monitoring of system parameters
- OCXO frequency locked to a cesium resonance pedestal (search phase) and peak (normal operation)
- Automatic compensation for cesium tube signal level changes
- C-Field lock to Zeeman resonance peak
- Microwave power levels continuously optimized

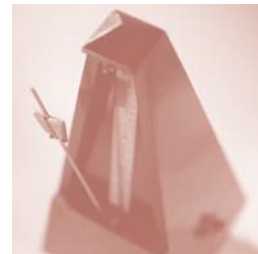


datum

Timing, Test & Measurement

Model 4040B Cesium Frequency Standard

Specifications



CAESIUM PRODUCTS
Modules, Instruments, Militarized Instruments and Replacement Tube

ELECTRICAL SPECIFICATIONS

RF Output

Frequency	1 each at 1, 5, 10 MHz
Amplitude	>1 Vrms
Harmonic Signals	<-40 dBc
Non-Harmonic Signals	<-80 dBc
Connector Type*	BNC
Load Impedance	50 Ω
Location	rear panel

Programmable Output

Frequency	0.1, 1, 5, 10 MHz
Amplitude/Wave Shape	>2.4V pk into 50 ohms
Connector Type	BNC
Location	rear panel

Stability

	Standard Performance	High Performance
Averaging Time(s)	Allan Deviation	Allan Deviation
1	----	<5.0E-12
10	<1.0E-11	<3.5E-12
100	<5.0E-12	<8.5E-13
1,000 **	<1.6E-12	<2.7E-13
10,000 **	<5.0E-13	<8.5E-14
100,000 **	<2.0E-13	<3.0E-14
floor **	<8.0E-14	<2.0E-14

	5 MHz	5 MHz
SSB Phase Noise Offset (Hz)		
1	-106 dBc	-106 dBc
10	-135 dBc	-135 dBc
100	-145 dBc	-145 dBc
1,000 **	-155 dBc	-155 dBc
10,000 **	-160 dBc	-160 dBc
100,000 **	-160 dBc	-160 dBc

Performance Parameters

	Standard Performance	High Performance
Accuracy***	<2E-12	<1E-12
Warm-up Time (Typical)	30 min	30 min
Reproducibility	<1.2E-12	<5E-13

Settability

Range	$\pm 1E-9$	$\pm 1E-9$
Resolution	1E-15	1E-15
Control	via RS232	via RS232

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

Power Requirements

	AC	DC
Operating Voltage	90 to 132 V 180 to 265 V	± 22 to 56 V
Frequency Range	47 to 63 Hz	
Power	400 Hz	
(operating)	65W	60W
(warm-up)	90W	90W

Dimensions

(EIA-310C)	
Height	5.22" (133mm)
Width (front panel)	19.00" (483mm)
(instrument)	17.31" (440mm)
Depth	17.30" (439mm)

Weight

Additional Shipping	45 lbs. (20.4 kg) 15 lbs. (6.9 kg)
---------------------	---------------------------------------

Options	Option P/N
• Dual 1544 kbps output, twinex connectors	063
• Dual 2.048 MHz output, twinex connectors	064
• Certified shipping container, cardboard	

Telecom Output Connector Options

Option Suffix Letter*	Connector Type
T	Twin BNC
W	Weco 310
B	Bantam

* For telecom options three possible types are available: BNC, Weco 310 and Bantam.

** Excluding environmental effects

*** 100% verified & calibrated against Datum-Beverly in-house standard



Specifications subject to change without notice.