RUBIDIUM PRODUCTS

Modules, Instruments and Militarized Components

Features

Power Conditioning
Aging <5E-11 per month
Output Flexibility
Compact 1U Rack Mount or Bench Top
Wide temperature range 0º C to 50º C
GPS Disiplining Option

8040 RUBIDIUM STANDARD

Overview

The Datum 8040 Rubidium Frequency Standard is a high performance 10MHz frequency standard in a 1U high, 19 inch rack mount plug and play package. Based on many years of refinement, the Datum 8040 rubidium physics package is a design that offers high reliability supported by tens of thousands of fielded units.

The standard instrument offers power supply selection to meet a variety of needs. A wide range of available individual options coupled to the highly stable rubidium physics package's known performance level permit tailored configuration to address specific application needs.

datum

Timing, Test & Measurement

8040 RUBIDIUM STANDARD

Specifications

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ELECTRICAL SPECIFICATIONS

Output/Frequency/Waveform		10 MHz sine wave
Output Impedance		50Ω @10 MHz
Output Amplitude		0.5v rms
Phase Noise (SSB)	1 Hz	-75 dBc//Hz
	10 Hz	-89 dBc//Hz
	100 Hz	-128 dBc//Hz
	1000 Hz	-140 dBc//Hz
	10 kHz	-147 dBc//Hz
Spurs		
Harmonic	2nd	<-51 dBc
	Other:	<-65 dBc
Non-Harmonic	1 Hz to 1 kHz	<-89 dBc
	1 kHz to 10 kHz	<-97 dBc
	10 kHz to 100 kHz	<-100 dBc
	>100 kHz to 1 GHz	<-68 dBc
Aging	Monthly (after 1 month):	<5E-11/month
	10 years	<1E-9
Frequency Accuracy At Shipment		±5E-11(25° C)
Frequency Retrace (after 24 hrs power on @ 25° C & up to 48 hrs power off)		±2.5E-11
Short Term Stability	τ =1 sec	<2.5E-11
	τ =10 sec	<8.0E-12
	τ =100 sec	<2.5E-12
Frequency Control		
Internal trim range (trimpot)		≥±1.5E-9(0V 1.5E-9)
External trim range (electronic)		≥±1.5E-9(0V to +5V)
Warm-up	(at -20° C)	(at 25° C)
	<8.7 min	<5.6 min
	<10.2 min	<7.3 min
	<12.7 min	<10.6 min
Status Monitor		
Analog	VCXO volts, lamp volts (20 kOhm impedance, filtered)	
Digital	LOCK monitor: 5V CMOS load	
Lock	>2.5V (TTL high)	
Unlock	<0.2V (TTL low)	
Connector	9 Pin "D" on rear panel	

ENVIRONMENTAL SPECIFICATION

Operating Temperature	0° C to 50° C	
Temperature Coefficient	|y(50° C)-y(0° C)|	<3E-10
Storage Temperature	-55° C to +85° C	
Altitude		
Operating	-200 ft to 40,000 ft.	
Non-operating	-200 ft to 70,000 ft.	
Magnetic Field Sensitivity, DC (2 Gauss Max)	±4E-11/GAUSS	

Power Supply Requirements (85 to 264 VAC)

	Warm-up	Quiescent (25° C)
Maximum	60 W	25 W
Typical	45 W	15 W

Dimensions	
Height	1.75"
Width	19"
Depth	12"
Weight	<6 lbs

Options	Option P/N
• RF Buffer providing 1MHz, 5MHz, 10MHz, 1 Vrms sine	EU1
• 2 PPS Outputs (synchronizable)	R03
• Three 1 MHz Sine Wave Outputs, high isolation (>100dB)	R41
• Three 5 MHz Sine Wave Outputs, high isolation (>100dB)	R42
• Three 10 MHz Sine Wave Outputs, high isolation (>100dB)	R43
• Disciplining module	R46
• Three 10.23 MHz Sine Wave Outputs	R53

Specifications subject to change without notice.