

A1000 Rubidium Frequency Reference

Features

- <1.5us holdover per 24 hours
- Available from 1 to 100MHz
- Short term stability $<5 \times 10^{-13}$ at 1sec
- Accuracy of 5×10^{-11}
- Ultra Low phase noise -115dBc at 1Hz
- Available 1 to 16 outputs
- Synch and auto calibration via external 1PPS input



Description

The Quartzlock A1000 rubidium frequency reference is a 10 MHz, high-stability Rubidium frequency standard with flexible output options and very low cost of ownership primarily for production test of quartz oscillators and RF instrumentation frequency referencing. The A1000 incorporates the latest high stability and low drift designs. It can be configured to frequencies from 1 to 100MHz outputs presented on the rear panel.

Applications

- Frequency Calibration
- Telecom Network Synchronization
- Broadcast – Radio & TV & Satellite Communications
- HDTV
- Production Test Reference for instrumentation
- Microwave Test Bench or Test Solution

Standard configuration:

1 x 10MHz sine BNC connector, Phase noise standard, Short term stability option standard, 1PPS output BNC connector, 1PPS input BNC connector, RS232 interface for monitoring data & settings

Related frequency reference products

- **A10-M**: Low Phase Noise 1U 19" rack mount Rubidium Frequency standard up to 12 output, 1 to 100MHz
- **E10-Y**: Low Phase Noise Desktop/Bechtot Rubidium Frequency standard, 1 to 8 output, 1 to 100MHz
- **E10-LN**: Low Phase Noise Rubidium oscillator module
- **E10-X**: Low cost Desktop Rubidium frequency reference, 1 to 4 outputs
- **E10-P**: Portable Desktop & Bench top Frequency reference 1 to 4 outputs

A1000 Specification

Outputs *See options*

10MHz	+10dBm (± 2 dBm) into 50 Ohms, 0.7V _{rms}
	Available from 1MHz to 100MHz
Connector	BNC (Standard), SMA (specify)

Frequency Stability *Allan Deviation*

	Standard	Options B	Options C
Frequency	10MHz	10MHz	10MHz
$\tau = 1s$	$\leq 2 \times 10^{-12}$	$\leq 8 \times 10^{-13}$	$\leq 5 \times 10^{-13}$
$\tau = 10s$	$\leq 3 \times 10^{-12}$	$\leq 4 \times 10^{-12}$	$\leq 5 \times 10^{-13}$
$\tau = 100s$	$\leq 6 \times 10^{-12}$	$\leq 3 \times 10^{-12}$	$\leq 5 \times 10^{-13}$
$\tau = 1000s$	$\leq 3 \times 10^{-12}$	$\leq 2 \times 10^{-12}$	$\leq 6 \times 10^{-13}$

Phase Noise (SSB)

Frq.	Standard		Options B		Options C	
	10MHz	5MHz	10MHz	5MHz	10MHz	5MHz
1Hz	-108 dBc	-110 dBc	-110 dBc	-115 dBc	-115 dBc	-123 dBc
10Hz	-130 dBc	-135 dBc	-138 dBc	-138 dBc	-140 dBc	-145 dBc
100Hz	-145 dBc	-150 dBc	-145 dBc	-152 dBc	-152 dBc	-153 dBc
10kHz	-158 dBc	-154 dBc	-160 dBc	-154 dBc	-160 dBc	-155 dBc
100kHz	-158 dBc	-155 dBc	-160 dBc	-158 dBc	-160 dBc	-158 dBc

Harmonics	Options C			
	10MHz	5MHz	10MHz	5MHz
	<-40dBc	<-40dBc	<-50dBc	<-50dBc

Spurious				
100 KHz BW	<-100dBc	<-100dBc	<-100dBc	<-100dBc

Aging (After 30 days)

Frequency	10MHz	5MHz
Per day	5×10^{-12}	1×10^{-12}
Per Month	5×10^{-11}	4×10^{-11}
Per Year	5×10^{-10}	4×10^{-10}

Frequency accuracy

Accuracy at shipping 5×10^{-11}

Frequency retrace

After 1 hours of continues operation 3×10^{-11}

Frequency Adjustment

Mechanical	$\pm 2 \times 10^{-9}$	Optional
Electrical	$\pm 2 \times 10^{-9}$	Control voltage 0 to +5V

Warm up time

<10 minutes, time to lock

<7 minutes to 1×10^{-9} at room temperature 25°C

Environmental

Temperature :	Operating	-20°C +60°C
	Storage	-40°C +80°C
Temp stability :	-20°C +60°C	1×10^{-9}
Relative humidity :	95% non-condensing	
Magnetic Field sensitivity :	5×10^{-11} Gauss	
Atmospheric pressure :	-60m -4000m $< 2 \times 10^{-11}$ Per mbar	
Approximate MTBF :	100,000 Hrs, Stationary	
Dimensions :	44mm (1.75") 1U 19" rack mount	

Power supply

AC power: 90-245V AC, 47 to 63Hz

Optional redundancy switch: see option 00

Seamless battery back-up switch

Data output & monitoring	Options D	
RS232, 9600 baud rate	USB	Ethernet

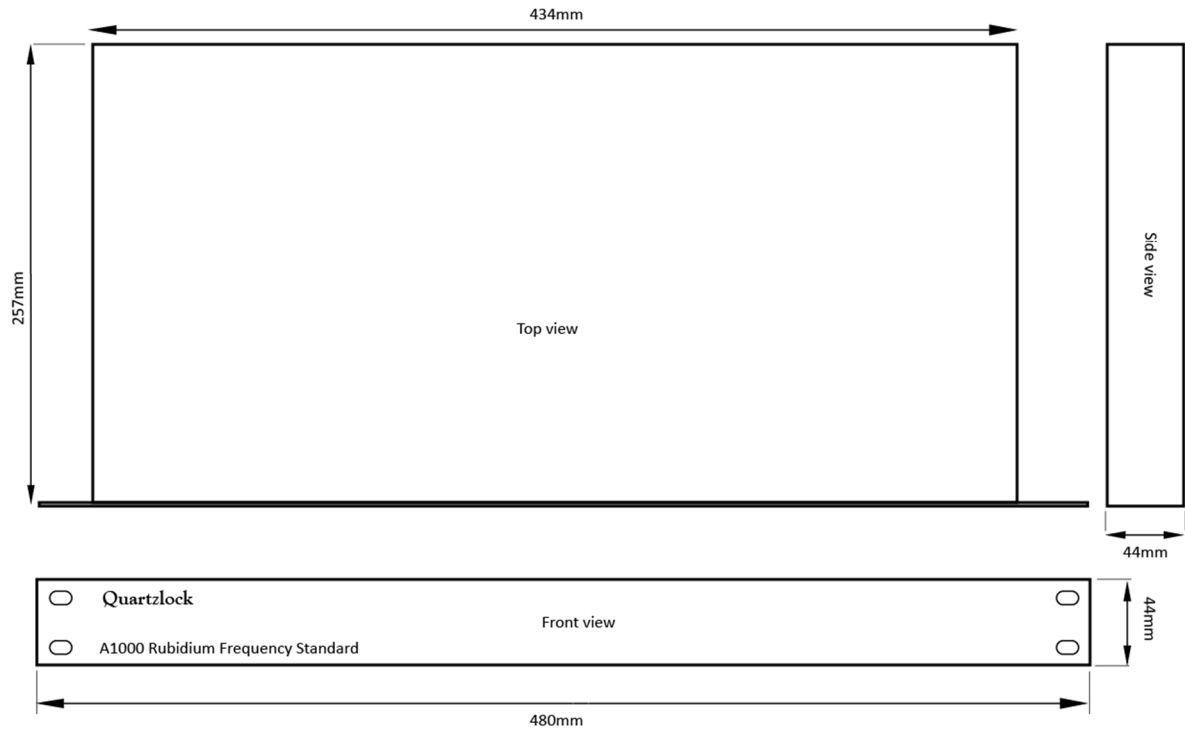
Built-in options

- Option 00:** Redundant switchover for external power back-up
- Option 02:** Output 2048kHz
- Option 03:** Output 1544kHz
- Option 04:** 13MHz Output
- Option 05:** Square wave Output, CMOS, TTL
- Option 06:** 6 x 1PPS Output, pulse width 10 millisecond
- Option 07:** 10.24MHz Output
- Option 08:** 10.23MHz Output
- Option 09:** Add 6 Output Distribution Card
- Option 10:** 26MHz Output
- Option 11:** 1MHz Output
- Option 12:** 5MHz Output
- Option 18:** Extended warranty to 3 years
- Option 20:** External synch input. 1PPS, 5MHz or 10MHz
- Option 21:** 2 x 1PPS Output
- Option 42:** Low noise floor -170dBc at 10KHz
- Option 52:** Rack Mount 19" 2U
- Option 53:** Rack Mount 19" 3U
- Option 62:** AC Input 110V
- Option 64:** DC input: Specify +12V, +24V, +48V or +60V
- Option 75:** Add internal battery, up to 4 hours of battery life.

Included with shipment: Calibration certificate, Certificate of Conformance, product test sheet and 24 month warranty.

Contact us to configure this product to meet your requirement.
Designed and manufactured in the U.K.

A1000 1U enclosure mechanical drawing



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