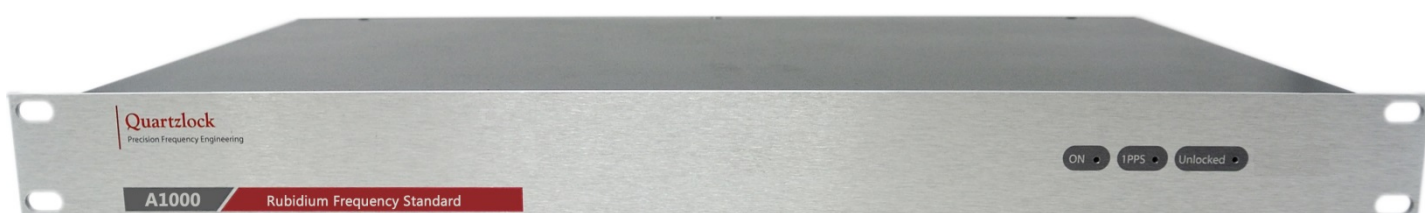


A1000 Rubidium Frequency Reference

- Low Phase Noise
- Aging $<5 \times 10^{-10}$ per year
- High Precision Atomic Clock
- Two years warranty



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 have both 5MHz and 10MHz outputs presented on the front panel for easy access.

Applications

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

Features

Output signals: Sine wave & CMOS/TTL

Multiple Output options: 1 to 100MHz

Custom Frequency Outputs: 2 - 125MHz, 1PPS

Low Phase Noise: -115dBc at 1Hz offset

Front panel outputs

Exceptionally low drift/aging and high stability per hour/day

Stability	8×10^{-13}
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Magnetic field sensitivity	$5 \times 10^{-11}/\text{Gauss}$
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Frequency trim range	2×10^{-9}
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Optional disciplined to external 1PPS, or 10MHz

Harmonic distortion	$< -40\text{dB}$ (for 10MHz output)
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Non-harmonic distortion	$< -100\text{dB}$ in the range from 10Hz to 10kHz
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A1000 Specification

Outputs *See options*

10MHz	+10dBm into 50 Ohms, 0.7V _{rms}
Connector	BNC (Standard), SMA (specify)

Frequency Stability *Allan Deviation*

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

Phase Noise (SSB)

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

Harmonics

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

Spurious

100 KHz BW	<-100dBc	<-100dBc	<-100dBc	<-100dBc
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Aging (After 30 days)

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

<6 minutes, time to lock

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

Environmental

<i>Temperature :</i>	Operating	-20°C +60°C
	Storage	-40°C +80°C
<i>Temp stability :</i>	-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

RS232, 9600 baud rate	Options D	
	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:** TTL Output
- Option 06:** 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 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.

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 Quartzlock continuous improvement policy: spec subject to change without notice and not part of any contract.
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