

A10-M Rubidium Frequency Reference

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



Description

The Quartzlock A10-M 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 A10-MX incorporates the latest high stability and low drift designs. It may also have both 5MHz and 10MHz outputs presented on the front panel to align with A7-MX Signal Stability Analyzer reference input.

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: 5 to 100MHz

Custom Frequency Outputs: 2 - 125MHz, 1PPS

Low Noise Floor: -170dBc at 10KHz 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	$2 \times 10^{-11}/\text{Gauss}$
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Frequency trim range	2×10^{-9}
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Optional disciplined to external 1PPS, or 10MHz

Harmonic distortion	$< 30\text{dB}$ (for 5 MHz output)
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Non-harmonic distortion	$< -100\text{dB}$ in the range from 10Hz to 10kHz
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A10-M Specification

Outputs *See options*

5 & 10MHz	++10dBm (± 2 dBm) into 50 Ohms, 0.7Vrms
Connector	BNC (Standard), SMA (specify)

Frequency Stability *Allan Deviation*

Frequency	Options A		Options B	
	10MHz	5MHz	10MHz	5MHz
$\tau = 1s$	$\leq 2 \times 10^{-12}$	$\leq 1 \times 10^{-12}$	$\leq 8 \times 10^{-13}$	$\leq 7 \times 10^{-13}$
$\tau = 10s$	$\leq 3 \times 10^{-12}$	$\leq 2 \times 10^{-12}$	$\leq 4 \times 10^{-12}$	$\leq 4 \times 10^{-12}$
$\tau = 100s$	$\leq 5 \times 10^{-12}$	$\leq 4 \times 10^{-12}$	$\leq 3 \times 10^{-12}$	$\leq 3 \times 10^{-12}$

Phase Noise (SSB)

Frequency	Options C		Options D	
	10MHz	5MHz	10MHz	5MHz
1Hz	-110 dBc	-115 dBc	-117 dBc	-123 dBc
10Hz	-135 dBc	-138 dBc	-140 dBc	-145 dBc
100Hz	-145 dBc	-152 dBc	-152 dBc	-153 dBc
1 kHz	-155 dBc	-154 dBc	-155 dBc	-155 dBc
10KHz	-158 dBc	-155 dBc	-158 dBc	-158 dBc

Harmonics

		Options E	
	<-40dBc	<-40dBc	<-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}
<i>Relative humidity :</i>	95% non-condensing	
<i>Magnetic Field sensitivity :</i>	2×10^{-11} Gauss	
<i>Atmospheric pressure :</i>	-60m –4000m $< 2 \times 10^{-11}$ Per mbar	
<i>Approximate MTBF :</i>	100,000 Hrs, Stationary	
<i>Dimensions :</i>	88mm (3.5") 2U 19" rack mount	

Power supply

AC power: 90-245V AC, 50Hz

Optional redundancy switch: see option 00

Seamless battery back-up switch

Data output & monitoring

	Options X	
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:** TTL Output
- Option 06:** 1PPS Output
- 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:** Discipline to external GPS 1PPS or 10MHz input
- Option 21:** 2 x 1PPS Output
- Option 42:** Low noise floor -170dBc at 10KHz
- Option 51:** Rack Mount 19" 1U
- 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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