

Rubidium Frequency Reference

- ❑ Low Phase Noise
- ❑ Ageing $<5 \times 10^{-10}$ /year
- ❑ High Precision Atomic Clock

A7-MX using A10-MX as reference



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.

Features

- Multiple Output options
- 3 years warranty
- Custom Frequency Outputs
- Low Noise Floor
- Front panel outputs (A10-MX)
- Exceptionally low drift/ageing and high stability Per hour/day

Benefits

- Stability to 5×10^{-13} /s
- 10MHz Standard Output
- 1-40MHz Optional
- 100MHz option (-180dBc/Hz NF)
- 5MHz option (-123dBc/Hz @ 1Hz)
- The A10-M can accommodate many options including customized requirements.

Applications

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

Specification

Output	10MHz, +7dBm into 50 Ω , 0.5VRMS -see options				
Adjustment					
Mechanical Range	2x10 ⁻⁹ min				
Electrical Range	2x10 ⁻⁹ min				
Control Voltage	0 ~ 5V				
Factory Setting	$\pm 5 \times 10^{-11}$				
Frequency Stability typical	A10-M	A10-MX			
	STD	LN	ULN ¹ _{5MHz}	ULN ² _{10MHz}	ULN ³ _{5MHz}
1s	3x10 ⁻¹²	2x10 ⁻¹²	5x10 ⁻¹³	1-30s from	1s 8x10 ⁻¹⁴
10s	2x10 ⁻¹²	5x10 ⁻¹²	2x10 ⁻¹³	1x10 ⁻¹³ to	3 to 30s
100s	8x10 ⁻¹³	4x10 ⁻¹³	4x10 ⁻¹³	2.5x10 ⁻¹³	1.3x10 ⁻¹³
Aging					
1 day	3x10 ⁻¹²	1x10 ⁻¹²	5x10 ⁻¹²	5x10 ⁻¹²	5x10 ⁻¹²
1 month	4x10 ⁻¹¹	4x10 ⁻¹¹	4x10 ⁻¹¹	4x10 ⁻¹¹	4x10 ⁻¹¹
1 year	5x10 ⁻¹⁰	4x10 ⁻¹⁰	4x10 ⁻¹⁰	4x10 ⁻¹⁰	4x10 ⁻¹⁰
Phase Noise dBc/Hz in 1Hz BW	STD	LN	ULN ¹ _{5MHz}	ULN ² _{10MHz}	ULN ³ _{5MHz}
1Hz	-90	-110	-123	-122	-123
10Hz	-120	-139	-148	-137	-140
100Hz	-135	-152	-158	-143	-145
1kHz	-145	-154	-165	-145	-150
10kHz	-150	-154	-168	-145	-155
Harmonics	<30dBc	<30dBc	<40dBc	<40dBc	<40dBc
Spurious	<80dBc	<80dBc	<80dBc	<70dBc	<70dBc
Warm time to 1x10 ⁻⁹	5 minutes				
Retrace after 24h off & 1h on, same temp	<3x10 ⁻¹¹				
Power Supply Power at steady state at 25°C	90 245V ac Battery Back Up option 13W @ 24V (22~30Vdc) @ 25°C, Max 2A				
Freq offset over output voltage range	<2x10 ⁻¹¹				
Temperature					
Operating	-20°C ~ +50°C				
Storage	-40°C ~ +70°C				
Freq offset over operating temperature range	<3x10 ⁻¹⁰				
Magnetic Field					
Sensitivity	<2x10 ⁻¹¹ /Gauss				
Atmospheric Pressure	-60m ~ 4000m <1x10 ⁻¹³ /mbar				
Approx MTBF, Stationary	Approx MTBF, Stationary				
Mechanical	88mm (3.5") 2U x 19" rack mounted				
Option	Calibrator outputs can be provided additionally as options. Sinewave +13dBm 50 Ohm 1Vrms Output frequencies:1MHz, 5MHz, 10MHz, 100MHz, 1GHz				

Options

- Multiple options
- 1...40MHz Output frequency
- Ultra Low noise 50...100MHz Outputs(-180dBc)
- 24V dc Battery Back-up input

A10-MX Uses Quartzlock DPPL-DDS Clean Up Loop Technology

Please contact Quartzlock about your application. We can help you choose the most cost effective low noise solution.

The Quartzlock A10-M or A10-MX find applications in standards laboratories, as low noise frequency references and as calibrators.