

Rubidium Frequency Reference

Low Noise Multiple Outputs

- ❑ Eight outputs
 - ❑ -110dBc/Hz @ 1Hz phase noise
 - ❑ Compact light weight portable for a wide range of applications
 - ❑ Low drift 5×10^{-12} /day
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Approx actual size

Compact simple to install low noise multi-output atomic frequency reference for use as a general purpose 10MHz rubidium frequency standard.

This very low noise rubidium frequency reference will enable up to eight separate instruments to be referenced.

This frequency standard benefits from having Quartzlock's SMAC (Sub Miniature Atomic Clock), and very low noise distribution amplifier technology built in.

Features

- 10MHz multiple outputs
- Ageing $< 5 \times 10^{-10}$ /year
- 5×10^{-11} accuracy
- 8×10^{-12} /s @ 100s

Benefits

- Atomic accuracy
 - Quick and simple to use and install
 - Higher sensitivity
 - Enables narrower bandwidth filtering
 - Improved instrument frequency accuracy & phase noise
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Applications

- Frequency referencing of interception and monitoring receivers
 - ***Time and frequency standard for calibration and external referencing of all quartz-based instrumentation in RF and microwave laboratories to significantly reduce noise levels and improve accuracy***
 - Frequency reference for counters, signal generators, spectrum, DSO, VNA, SA and network analysers
 - Secure communications, C4, defence and R&D
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Specification

Outputs – 4 or 8	4 (E10-Y4) or 8 (E10-Y8) 10MHz, 13dBm $\pm$ 1db into 50 Ω , 0.5VRMS	
Output Connectors	SMA	
Adjustment		
Mechanical Range	2x10 ⁻⁹ min	
Electrical Range	2x10 ⁻⁹ min	
Control Voltage	0 ~ 5V	
Factory Setting	$\pm$ 5x10 ⁻¹¹ 1x10 ⁻¹¹	
Frequency Stability		
	0.2s	4x10 ⁻¹²
	1s	2x10 ⁻¹²
	10s	5x10 ⁻¹²
	100s	4x10 ⁻¹³
	1 hour	
	1 day	1x10 ⁻¹²
Ageing		
	1 day	1x10 ⁻¹²
	1 month	4x10 ⁻¹¹
	1 year	4x10 ⁻¹⁰
Phase Noise		
	dBc/Hz in 1Hz BW	Standard
	1Hz	-110
	10Hz	-140
	100Hz	-145
	1kHz	-155
	10kHz	-157
Harmonics	<30dBc	-46dB -36dB
Spurious	<80dBc	
Warm Time to 1 x 10 ⁻⁹	5 minutes	
Retrace after 24h off & 1h on, same temp	<3x10 ⁻¹³	
Power Supply Power at steady state at 25C	90 245V ac Battery Back Up option 15Vdc @ 500mA 7.5W (1.5A warm-up 22.5W) @ 25C, Max 2A	
Frequency Offset over output voltage range	<2x10 ⁻¹¹	
Temperature		
Operating	-22C ~ +30C max	
Storage	-40C ~ +70C	
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

Size	103 x 55 x 122 mm
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Weight	500gm approx
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Warranty	24 months
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Options

The E10-Y series is a new product range introduced in 2012. A few options will be available to meet customer requirements – please discuss with Quartzlock.

Cable set: 8 x SMA to BNC cables 1.5m long can be supplied.