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 $5x10^{-12}$/day

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 $<5x10^{-10}$/year
- $5x10^{-11}$ accuracy
- $8x10^{-12}$/s @ 100s

Benefits

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

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 ±1db into 50Ω, 0.5VRMS
Output Connectors	SMA
Adjustment	
Mechanical Range	$2x10^{-9}$ min
Electrical Range	$2x10^{-9}$ min
Control Voltage	0 ~ 5V
Factory Setting	$\pm5x10^{-11}$
	$1x10^{-11}$
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
Weight	500gm approx
Warranty	24 months

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.