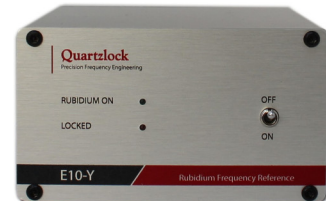


# Low Noise Rubidium Frequency Reference

## Features

- Sine wave or CMOS/TTL output
- Short term stability  $2 \times 10^{-12}$  at 100sec
- Accuracy  $5 \times 10^{-11}$
- Phase noise -115dBc at 1Hz
- Phase-lock to external 1PPS
- 1 $\mu$  sec. holdover per 24hrs
- 1PPS output



## Description

The Quartzlock E10-Y rubidium frequency reference is a 10 MHz, high-stability and low phase noise 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 E10-Y incorporates the latest high stability and low drift designs. It can be configured to frequencies from 1 to 100MHz outputs presented on the rear panel.

## Applications

- Frequency Calibration
- Telecom Network Synchronization
- Broadcast – Radio & TV & Satellite Communications
- Microwave Test Bench or Test Solution
- Production Test Reference for instrumentation
- 5G Network

## Related frequency reference products

- **A10-M**: Low Noise 1U 19" rack mount Rubidium Frequency standard up to 12 output, 1 to 100MHz
- **A1000** : Low Noise 2U 19" rack mount Rubidium Frequency standard up to 24 output, 1 to 100MHz
- **E10-LN**: Low phase noise Rubidium oscillator module
- **E10-X**: Low cost Desktop Rubidium frequency reference, 1 to 4 outputs
- **E10-P** : Portable Desktop & Bench top Frequency reference 1 to 4 outputs

## E10-Y Specification

### Outputs *See options*

10MHz	+10dBm into 50 Ohms, 0.7V <sub>rms</sub> (Specify for 75Ω load)	
Connector	BNC (Standard), SMA (specify)	
No. outputs	Standard: 8	Specify number of outputs: up to 12

### Frequency Stability *Allan Deviation*

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

### Phase Noise (SSB)

	Options A (standard)	Options B	Options C
Frequency	10MHz	10MHz	10MHz
1Hz	-108 dBc	-110 dBc	-115 dBc
10Hz	-130 dBc	-135 dBc	-140 dBc
100Hz	-140 dBc	-145 dBc	-152 dBc
1 kHz	-155 dBc	-155 dBc	-155 dBc
10KHz	-155 dBc	-158 dBc	-158 dBc

### Harmonics

	Options C
10MHz	10MHz
<-35dBc	<-50dBc

### Spurious

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

	Option G
Frequency	10MHz
Per day	$5 \times 10^{-12}$
Per Month	$5 \times 10^{-11}$
Per Year	$5 \times 10^{-10}$

### Frequency accuracy

Accuracy at shipping  $5 \times 10^{-11}$

### Frequency retrace

After 1 hours of continues operation  $8 \times 10^{-11}$

### Frequency Adjustment

Mechanical	$\pm 2 \times 10^{-9}$	Optional
Electrical	$\pm 2 \times 10^{-9}$	Control voltage 0 to +5V

### Warm up time

8 minutes, time to lock

<7 minutes to  $1 \times 10^{-10}$  at room temperature 25°C

### Environmental

Temperature :	Operating	-40°C +65°C
	Storage	-40°C +80°C
Temp stability :	Standard	-20°C +60°C
	Option E	-30°C +65°C
	Option F	-50°C +65°C

<0.5x10<sup>-9</sup>  
0.3x10<sup>-9</sup>  
0.5x10<sup>-9</sup>

Relative humidity : 95% non-condensing

Magnetic Field sensitivity : 3x10<sup>-11</sup> Gauss

Atmospheric pressure : -60m -4000m <2x10<sup>-11</sup> Per mbar

Approximate MTBF : 100,000 Hrs, Stationary

Dimensions : 122 x 105 x 60mm LWH

Weight: Without internal battery 600gms  
With internal battery 750gms

### Power supply

DC power: External +12 to +15V

Power consumption: 22W Max at start (25°C)  
6W at steady state

### Data output & monitoring

RS232, 9600 baud rate	Option D
	Ethernet Module

### Built-in options

- Option 02: Output 2048kHz
- Option 03: Output 1544kHz
- Option 04: 13MHz Output
- Option 05: CMOS/TTL Output
- Option 06: 100MHz output
- Option 07: 10.24MHz Output
- Option 08: 10.23MHz Output
- Option 10: 26MHz Output
- Option 11: 1MHz Output
- Option 12: 5MHz Output
- Option 18: Extend warranty to 3 years
- Option 21: 6 x 1PPS Output
- Option 42: Low noise floor -170dBc at 10KHz
- Option 52: Rack Mount 19" 1U
- Option 53: Rack Mount 19" 2U
- Option 75: Internal battery, up to 5 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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