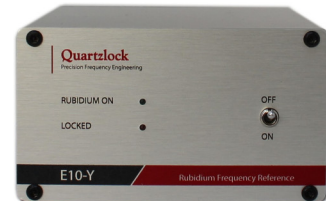


Low Noise Rubidium Frequency Reference

Features

- Sine wave or CMOS/TTL output
- Short term stability 2×10^{-12} at 100sec
- Accuracy 5×10^{-11}
- Phase noise -115dBc at 1Hz
- Phase-lock to external 1PPS
- 1 μ 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 _{rms} (Specify for 75Ω load) | |
| Connector | BNC (Standard), SMA (specify) | |
| No. outputs | Standard: 4 | 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 |
|------------|----------|

Aging (After 30 days)

| | Option G |
|------------------|---------------------|
| Frequency | 10MHz |
| <i>Per day</i> | 5×10^{-12} |
| <i>Per Month</i> | 5×10^{-11} |
| <i>Per Year</i> | 5×10^{-10} |

Frequency accuracy

Accuracy at shipping 5×10^{-11}

Frequency retrace

After 1 hours of continues operation 8×10^{-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 1×10^{-10} at room temperature 25°C

Environmental

| | | |
|-------------------------|-----------------|-----------------------|
| <i>Temperature :</i> | Operating | -40°C +65°C |
| | Storage | -40°C +80°C |
| <i>Temp stability :</i> | Standard | -20°C +60°C |
| | Option E | -30°C +65°C |
| | Option F | -50°C +65°C |
| | | <0.5x10 ⁻⁹ |
| | | 0.3x10 ⁻⁹ |
| | | 0.5x10 ⁻⁹ |

Relative humidity : 95% non-condensing

Magnetic Field sensitivity : 3x10⁻¹¹ Gauss

Atmospheric pressure : -60m –4000m <2x10⁻¹¹ 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.

The Quartzlock logo is a registered trademark.
Quartzlock continuous improvement policy: spec subject to change without notice and not part of any contract.
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