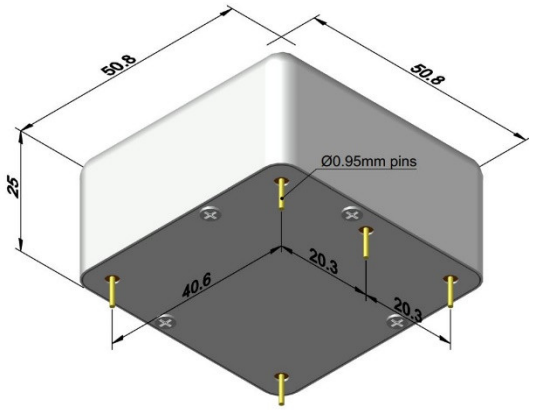
E10-MRX

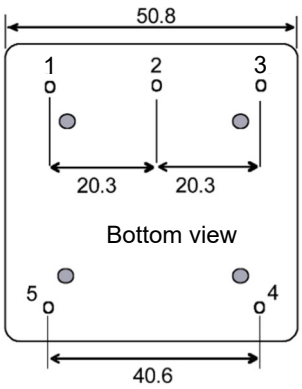
The E10-MRX is a low cost rubidium oscillator is miniature atomic clock with excellent stability in 50 x 50mm package. This rubidium oscillator has 100 times less drift than OCXO's.

KEY FEATURES

- Frequency 10MHz
- Low phase noise
- Excellent short term stability
- Operating voltage: +5V, +12 to +18V
- $5x10^{-11}$ accuracy
- Temp stability available to 0.5ppb (-20°C to +60°C)
- 2" inch square package
- Sine wave or HCMOS

RoHS

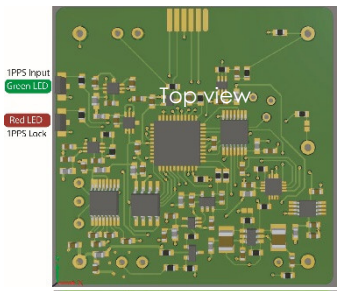




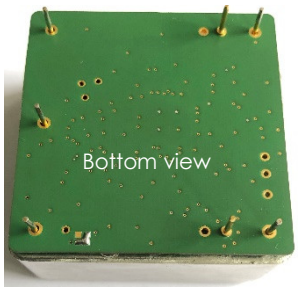
Pin	Function
1	Input frequency control
2	Lock monitor
3	Output signal
4	Ground
5	Power supply input

Optional E10-PPS locking module: The Quartzlock E10-PPS is designed using the digital phase lock loop system to discipline E10-MRX to 1PPS. The control algorithm used is designed to give optimum control results and the fastest possible acquisition from switch on. The Quartzlock E10-PPS is a board level product designed to lock a 10MHz rubidiums to the 1PPS time mark signal generated from a GPS receiver, Cesium or Hydrogen maser. E10-PPS can generate stable 1PPS mark from the controlled rubidium.

Please contact sales to specify your requirement.



Option 95



Dimensions: 50x50mm

E-mail: sales@quartzlock.com
Tel: (+44) 01444 232967
www.quartzlock.com

E10-MRX Specification

Outputs *See options*	
10MHz	+10dBm (±2dBm) sinewave into 50 Ohms **Options:** HCMOS

Frequency Stability *Allan Deviation*		
Gate time	Standard	Option A
τ =1s	$5x10^{-11}$	$2x10^{-11}$
τ =10s	$2x10^{-11}$	$8x10^{-11}$
τ =100s	$7x10^{-11}$	$3x10^{-12}$

Phase Noise (SSB)	
10Hz	-95 dBc
100Hz	-125 dBc
1 kHz	-135 dBc
10KHz	-140 dBc

Harmonics	
10MHz	<-30dBc

Spurious	
100 KHz BW	<-70dBc

Aging (After 30 days)		
Frequency	10MHz	Optional
Per day	5×10^{-12}	3×10^{-12}
Per Month	5×10^{-11}	3×10^{-11}
Per Year	5×10^{-10}	3×10^{-10}

Frequency accuracy

Accuracy at shipping ±5 x 10^{-11}

Frequency retrace

After 1 hours of continues operation 3 x 10^{-11}

Frequency Adjustment

Electrical	±2x10^{-9}	Positive slop, Control voltage 0 to +5V Input impedance 10K Ohms

Warm up time

<6 minutes to lock at +25°C

7 minutes to <5x10^{-10} at room temperature 25°C

Lock monitor output

Locked: Logic Low <0.5V
Unlocked: Logic High >4V

Included with shipment: *Calibration certificate, Certificate of Conformance, product test sheet and 24 month warranty.*

Environmental			
Temperature :		Storage	-40°C +90°C
Temp stability :	Standard	-20°C +65°C	<0.3x10^{-9}
	Option E	-30°C +65°C	<0.5x10^{-9}
	Option F	-20°C +70°C	<0.5x10^{-9}
	Option G	-30°C +70°C	<0.5x10^{-9}
Relative humidity :		94% non-condensing	
Magnetic Field sensitivity :		2x10^{-12} Gauss	
Atmospheric pressure :		-60m – 4000m 1x10^{-13} Per mbar	
Approximate MTBF :		100,000 Hrs, Stationary	
Dimensions without cover *Weight*		50 x 50 x 25mm LWH <200gms	

Power supply	
DC power:	+12 to +15V, +5V (optional)
Power consumption:	18W Max at start (25°C) 6W at steady state

Shock/Vibration

Mechanical Shock: IEC 60068-2-27, Test Ea: Acceleration of 50G peak amplitude for 11ms duration.
Vibration: IEC 60068-2-06, Test Fc: 10Hz-55Hz 1.5mm displacement, 55Hz-500Hz 10G acceleration.
EMI: Compliant to FCC Part 15, Class B.

Built-in options

Option 05: HCMOS

Option 18: Extended warranty to 3 years

Option 95: Add 1PPS locking module

Option 75: Low phase noise high stability **See E10-LN**

Contact us to configure this product to meet your requirement.

E-mail: sales@quartzlock.com
Tel: (+44) 01444 232967
www.quartzlock.com

Create a Part Number

E10-MRX / X X XX - X - X – 10M

Monthly Aging	
$5x10^{-11}$	D
$3x10^{-11}$	E

	Temp. Stability	
±0.5ppb	-30 to +65°C	E
±0.5ppb	-20 to +70°C	F
±0.5ppb	-30 to +70°C	G

Temperature code table			
-50°C	A		
-40°C	B	+60°C	F
-30°C	C	+70°C	G
-20°C	D		
-10°C	E		
0°C	G		

Example: DF = -20°C to +60°C

Supply Voltage	
+12V	12
+5V	05

Waveform	
Sine	N
HCMOS	Q

How to specify Temperature Code

First code	Lowest temperature A= -50°C
Second code	Highest temperature G= +70°C
Example	-50°C to +70°C

Soldering guidlines

The unit should be mounted on the circuit board after any cleaning and drying process. Hand soldering is recommended with tip temperature of 370°C for 7 seconds and 430°C for 5 seconds maximum.

Care must be taken to avoid any excessive bending or stress on the mounting pins. This can cause failure of the pins in the base. This product is not suitable for immersion in cleaning fluids and should not undergo any ultrasonic cleaning process.

E-mail: sales@quartzlock.com
Tel: (+44) 01444 232967
www.quartzlock.com