

Rubidium Oscillator – Sub Miniature Atomic Clock (SMAC)

- Compact rubidium oscillator for a wide range of applications
- OCXO form factor and pin out
- Low power operation
- Ageing 5×10^{-10} /year



Actual size

The E10-MRX rubidium oscillator is a sub miniature atomic clock exhibits normal rubidium oscillator performance in a 65cc OCXO style package.

This rubidium oscillator has 100x less drift than OCXO's.

With short term stability of $8 \times 10^{-12}/s$ @ 100s this rubidium oscillator provides significant improvements in performance over.

Features

- 10MHz output
- 2" x 2" x 1" form factor
- -95dBc/Hz @10Hz
- 5×10^{-11} accuracy
- $8 \times 10^{-12}/s$ @100s

Benefits

- Atomic accuracy
- Low power consumption
- 100x less drift than OCXOs

Applications

- Stand-alone (free-run) stable frequency source (for UMTS and LTE)
- Extended holdover for CDMA, WiMAX and LTE base stations
- Stability for various other communication and transmission applications

Specification

Outputs	10MHz Sine, 7~13dBm (HCOMS option)	
Harmonics	<-40dBc	
Accuracy	$\pm 5 \times 10^{-11}$ at shipment @ 25C	
Short Term Stability (AVAR)	1s	8×10^{-11}
	10s	3×10^{-11}
	100s	8×10^{-12}
Drift	Day	5×10^{-12}
	Month	5×10^{-11}
Phase to Noise (SSB)	1Hz	-67dBc/Hz
	10Hz	-95dBc/Hz
	100Hz	-127dBc/Hz
	1kHz	-140dBc/Hz
Input Power	6W at 12V @ 25°C, Max 1.2A	
Input Voltage Range	+12V~+18Vdc	
Warm Time	5 minutes to lock @ 25C	
Retrace	$\leq \pm 2 \times 10^{-11}$	
Magnetic field sensitivity, dc (± 2 GAUSS)	$< \pm 4 \times 10^{-11}$ /GAUSS	
Frequency Control	$> 5 \times 10^{-9}$ (External trim range: 0V~5V)	
External Trim Range	$\geq 5 \times 10^{-9}$ (0V~5V)	
Size	50.8~50.8~25 (mm3) (65cc)	
Weight	<150gm	
Warranty	24/36 months	
Magnetic Field Sensitivity Atmospheric Pressure Approx MTBF, Stationary	$< 2 \times 10^{-11}$ /Gauss	
	-60m ~ 4000m	$< 1 \times 10^{-13}$ /mbar
	100,000 hours	
Mechanical	51 x 51 x 25mm (2 x 2 x 1")	

Connector Interface	5 Pins match standard OCXO configurations	
	Pin 1:	Input frequency control
	Pin 2:	Lock monitor
	Pin 3:	Output signal
	Pin 4:	Ground (signal & supply)
Pin 5:	Input supply (+)	

Environmental Specification

Operating Temp Range	-20°C~+50°C Typical: -30~+65°C
Base Plate Temp	-30°C~+85°C
Case Temperature	<45°C (after 1 hour, ambient temp 25°C. No ventilation)
Temperature Coefficient (ambient)	5×10^{-10} (0~50°C)
Storage Temp	-55°C~+85°C
MTBF	100,000 hours
Environmental health	RoHS
Shock / Vibration	GR-CORE-63, 4.5.2/4, locked to 1.0g
EMI	Compliant to FCC Part 15 Class B

Outline Dimensions

