

Low Cost Rubidium Master Oscillator (RMO)

High Precision & Performance Source



Telecom | Navigation | Broadcast | Defense | Instrument

Applications

Package: (all dimensions in millimeters)

The general information for the mechanical interface of the RMO unit is given in the package drawing of Fig. 1.

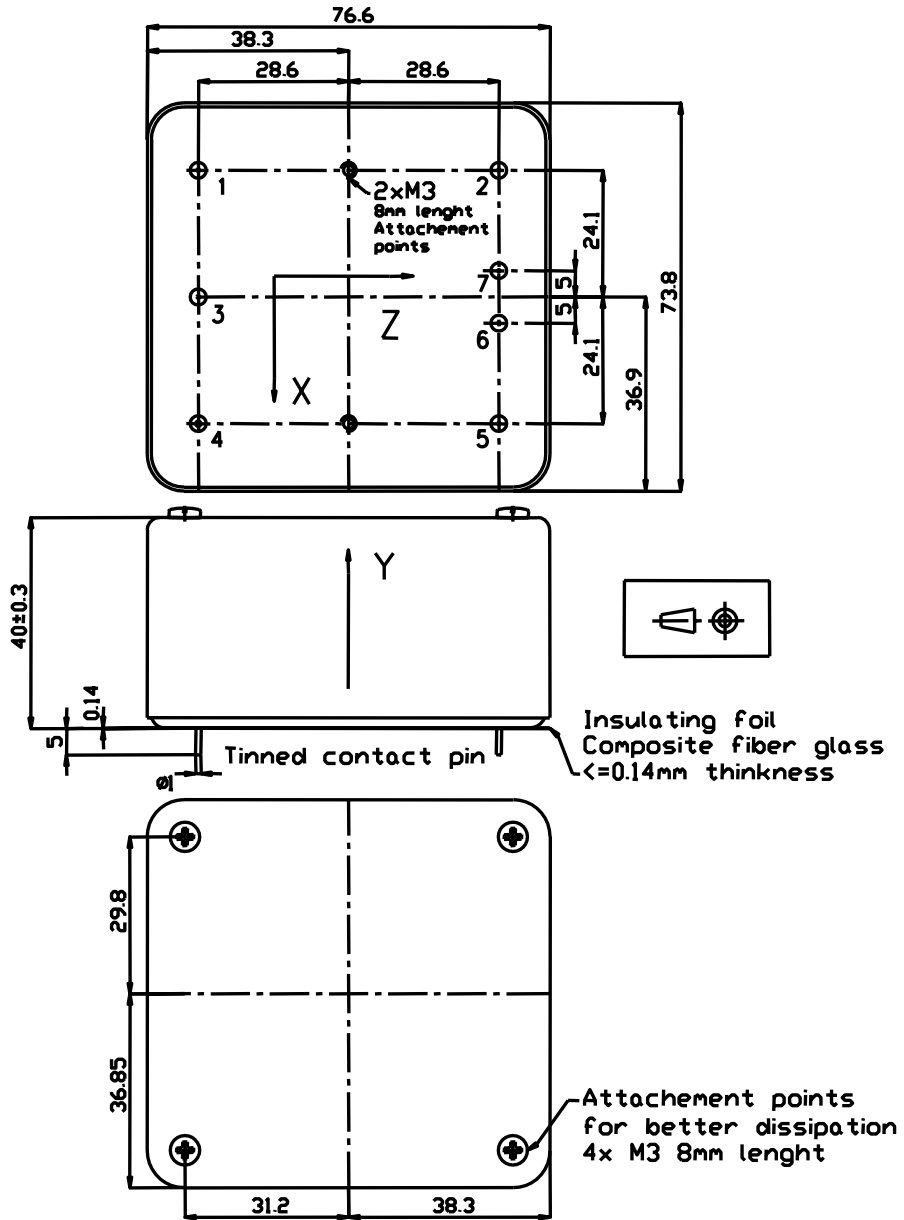


Fig. 1

SPECIFICATIONS**ELECTRICAL:**

Type	RMO	
	Standard version	Options
Frequency	5, 10, 20 MHz	4.096, 8.192, 16.384 MHz + other on request
Frequency change within operating temperature range	$\leq \pm 1 \times 10^{-10}$ over -5°C to $+55^{\circ}\text{C}$	over -20°C to $+60^{\circ}\text{C}$ (option code E) 0°C to $+65^{\circ}\text{C}$ typical with radiator (option code RAD)
Long term stability (Measured after 3 months of continuous operation)	$< 5 \times 10^{-11}$ / month (typical: 3×10^{-11} / month)	$< 3 \times 10^{-11}$ / month $< 2 \times 10^{-10}$ / year (option code A) $< 1 \times 10^{-9}$ / 10 years (typical: $\pm 1 \times 10^{-11}$ / month)
Short term stability	Standard 3×10^{-11} / 1 s 1×10^{-11} / 10 s 3×10^{-12} / 100 s	Option code S (only for 5,10,20 MHz) 1×10^{-11} / 1 s 3×10^{-12} / 10 s 1×10^{-12} / 100 s
Phase noise (10 MHz)	Standard -70 dBc/Hz at 1 Hz -80 dBc/Hz at 10 Hz -115 dBc/Hz at 100 Hz -135 dBc/Hz at 1kHz -140 dBc/Hz at 10 kHz	Option code S (only for 10 MHz) -80 dBc/Hz at 1 Hz -100 dBc/Hz at 10 Hz
Frequency retrace (in stable temperature, gravity, pressure and magnetic field conditions)	$< 5 \times 10^{-11}$ within 1 h after 24 h off	
Warm-up time [minutes]	5×10^{-10} after 15' at $+25^{\circ}\text{C}$	< 7 min. to lock Option code F
Analog frequency adjustment For stable operation, an external voltage adjust. value shall be applied (DC voltage of 0 to 5V on pin 4) Typically: the cursor pin of a $10\text{k}\Omega$ variable resistor connected between pins 2 and 3 (Vref & GND) can provide this adjustment voltage. (refer to Op. Manual)	$2.5 \times 10^{-9} \pm 20\%$	$5 \times 10^{-9} \pm 20\%$ (option code O) $3 \times 10^{-8} \pm 20\%$ (option code O2) $4 \times 10^{-8} \pm 20\%$ (DC Voltage of 0 to 10V) (Frequency adj. At 5V) (option code O2/0-10V)
Digital frequency adjustment through serial RS-232 port.	$\pm 1.2 \times 10^{-7}$ (resolution: 2×10^{-9}) 2.5×10^{-9} (resolution: 1×10^{-11}) $\pm 20\%$	Option code O: 5×10^{-9} (resolution: 2×10^{-11}) $\pm 20\%$
Output level	0.5Vrms $\pm 10\%$, into 50 ohms	HC MOS output (option code HCMOS) on request
Harmonics / Subharmonics	< -25 dBc / < -60 dBc	
Spurious $f_0 \pm 100\text{kHz}$	< -80 dBc	
Supply voltage Max Power Supply Ripple	12V option : 11.2V to 16V < 50 mV peak to peak (from 1Hz to 1 MHz frequency band)	24V option : 18 V to 32 V
Supply voltage sensitivity	$< 2 \times 10^{-11}$ / V	
Input power	-5°C : < 13 W $+25^{\circ}\text{C}$: < 10 W $+55^{\circ}\text{C}$: < 7 W	-5°C : < 16 W $+25^{\circ}\text{C}$: < 12 W option $+55^{\circ}\text{C}$: < 8 W RAD
Typical warm-up power	20W	25W with 24V option Option F or E < 32 W
Electrical Protection	power pin RF output TxD output 5V ref/lock output RxD input Frequency adjust input	An internal diode protects against reverse polarity connection ESD and short-cut protected ESD and short-cut protected ESD and short-cut protected ESD protected ESD protected

ENVIRONMENTAL (for other Environmental qualifications, consult factory)

Type	RMO	
Magnetic field sensitivity	$< 2 \times 10^{-11}$ / Gauss for X and Y axis $< 1 \times 10^{-10}$ / Gauss for Z axis	
Storage Temperature	- 55°C to + 90°C	
Operating LTCRO case temperature or temp. of the thermal chamber	-5°C to +55°C	(Option code E) -20°C to +60°C
Overall Environment Effects * (Altitude, Vibration, Shocks)	Meets or exceeds MIL-T-28800B for Type III, class 5 equipment	
Humidity	RTCA/DO-160C hot humidity, 35°C, 95% relative humidity	
Helium concentration sensitivity	$< 1 \times 10^{-10}$ per ppm of Helium concentration changes	
g-tip-over test	$< 2 \times 10^{-11}$ / g in X and Y axis $< 2 \times 10^{-10}$ / g in Z axis	

PHYSICAL

Type	RMO
Size	74 x 77 x 40 mm. (2.91 x 3.03 x 1.6 inches)
Weight	290 g max. (0.64 Lbs. max)
Volume	¼ liter (14 inches cubed)
Connector	Pin arrangement according to standard OCXO + RxD/TxD

Ordering Information:

