

13th March 2008

Ultra Low Cost Rubidium (LCR-900)

High Precision Source



Telecom | Navigation | Broadcast | Defense | Instrument

Applications

1) SPECIFICATIONS

ELECTRICAL	PERFORMANCE
Type	LCR-900
Frequency	10 MHz
Frequency change within operating temperature range	$<3 \times 10^{-10}$ over -5°C to $+60^{\circ}\text{C}$ 0°C to $+65^{\circ}\text{C}$ typical with radiator and air flow > 20 m/min (option code RAD)
Long term stability <i>(a) When measured after 6 months of continuous operation</i>	$< 2 \times 10^{-11}$ / day Typical: 5×10^{-11} / month(a) first year $< 2 \times 10^{-9}$
Short term stability	Standard 3×10^{-11} / 1 s 1×10^{-11} / 10 s 3×10^{-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 1 kHz -140 dBc/Hz at 10 kHz
Frequency retrace <i>(In stable temperature, gravity, pressure and magnetic field conditions)</i>	1×10^{-10} within 1 h after 24 h off
Warm-up time [minutes]	5×10^{-10} after 15' at $+25^{\circ}\text{C}$
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)	$> 4 \times 10^{-9}$ for 2V to 4V $> -4 \times 10^{-9}$ for 2V to 0V
Digital frequency adjustment <i>(Through serial RS-232 port)</i>	$\pm 1.2 \times 10^{-7}$ (resolution: 2×10^{-9}) 2.5×10^{-9} (resolution: 1×10^{-11}) $\pm 20\%$
Output level	0.5Vrms $\pm 20\%$, into 50 ohms
Harmonics / Sub-harmonics	< -25 dBc / < -60 dBc
Spurious $f_0 \pm 100\text{kHz}$	< -80 dBc
Supply voltage Max Power Supply Ripple	15V : 11.2V to 16V < 50 mV peak to peak (from 1Hz to 1 MHz frequency band)
Supply voltage sensitivity	$< 2 \times 10^{-11}$ / V
Input power	-5°C : < 13 W $+25^{\circ}\text{C}$: < 10 W $+60^{\circ}\text{C}$: < 7 W $+55^{\circ}\text{C}$: < 8 W RAD
Typical warm-up power	35W typical
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

ENVIRONMENTAL <i>(Consult factory for other parameters)</i>	PERFORMANCE
Magnetic field sensitivity	$< 4 \times 10^{-11}$ all directions
Storage temperature	- 55°C to + 90°C
Operating case temperature or temp. of the thermal chamber with strong airflow	-5°C to +60°C
Overall environment effects <i>(Altitude, Vibration & Shocks)</i>	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	$< 2 \times 10^{-10}$ / g all axis

PHYSICAL	LCR-900
Size	74 x 77 x 40 mm. (2.91" x 3.03" x 1.6")
Weight	290 g max. (0.64 Lbs. max)
Volume	¼ liter (14 inches cube)
Connector	Pin arrangement according to standard OCXO + RxD/TxD

2) SIZE (all dimensions in millimeters)

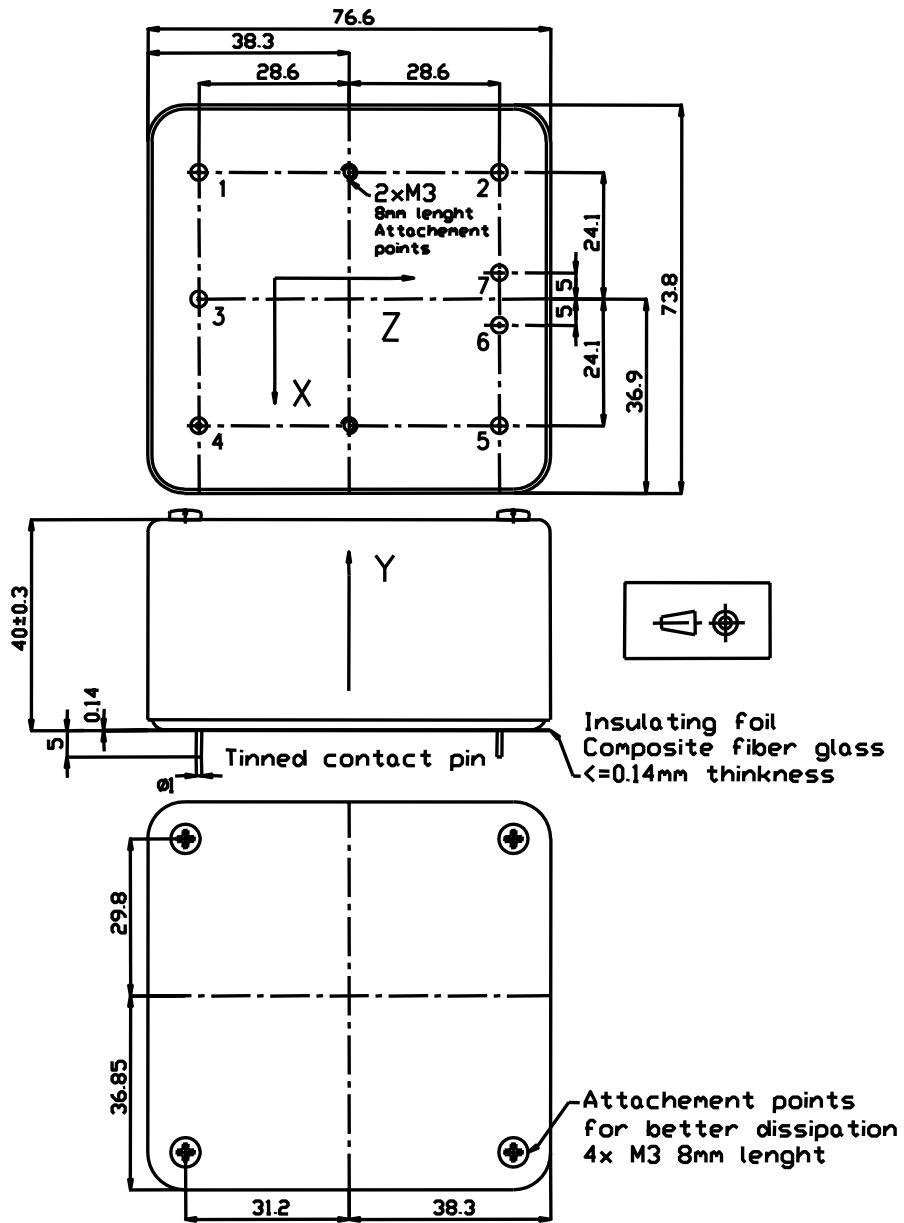


Fig. 1 - LCR-900 Size

Fig 2. is showing the RMO / RAD with radiator option.

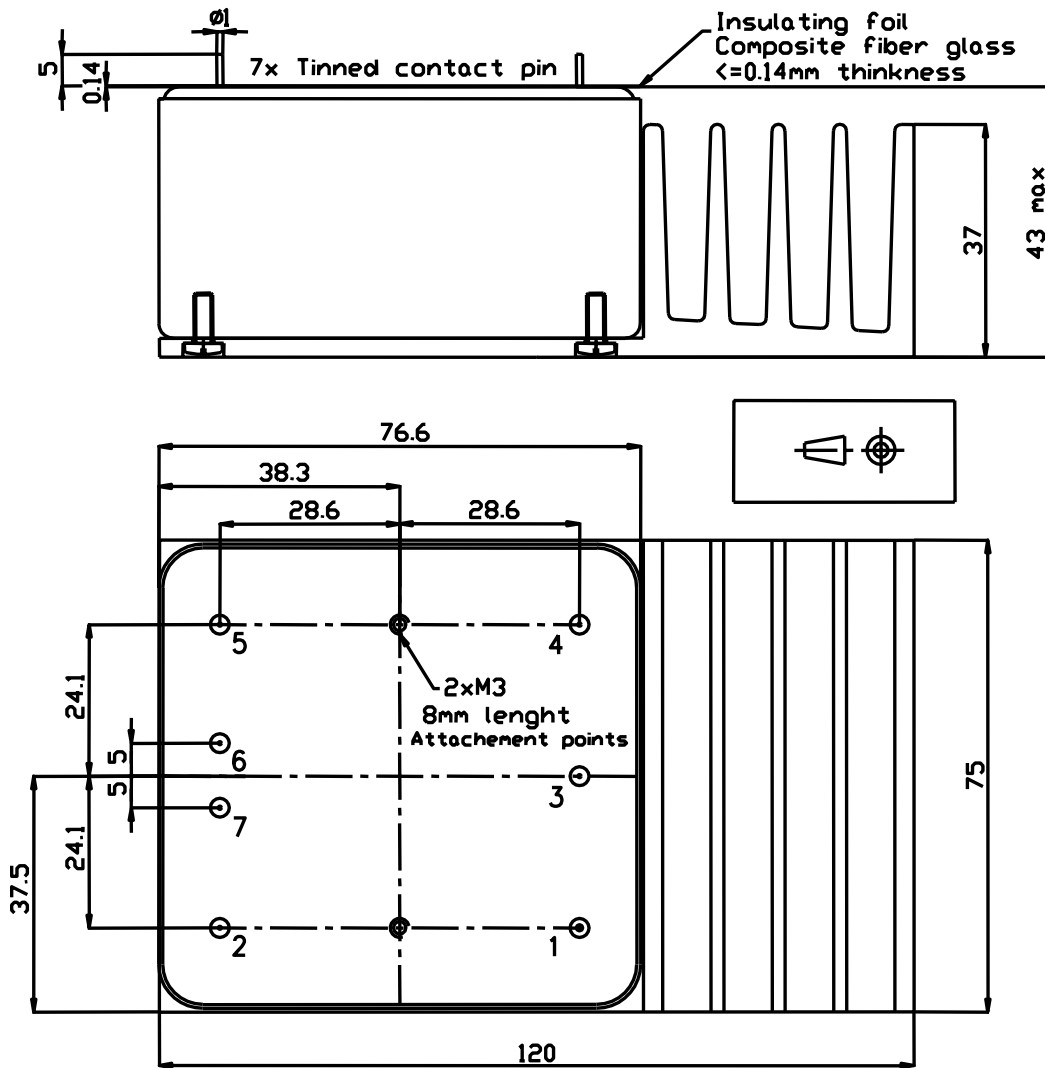


Fig. 2 - LCR-900 Size with Heat Sink Radiator

3) PIN LAYOUT:

PIN	FUNCTION
1	RF output
2	Vref / lock indicator
3	ground
4	Frequency control input
5	Power supply
6	RxD (TTL)
7	TxD (TTL)

4) ORDERING MODEL

