iSource+™ Low Cost RMO Spec

Revised 9 November 2005

iPrecision Timing Solutions™

Low Cost Rubidium Master Oscillator (RMO)

High Precision & Performance Source

Telecom | Navigation | Broadcast | Defense | Instrument

Applications

©Temex Time
sales@temextime.com
temextime.com

Europe Headquarters
+41.32.732.16.66

North America Sales Offices
+1.512.470.3980

Asia Sales Office
+86.21. 5240.0117

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.

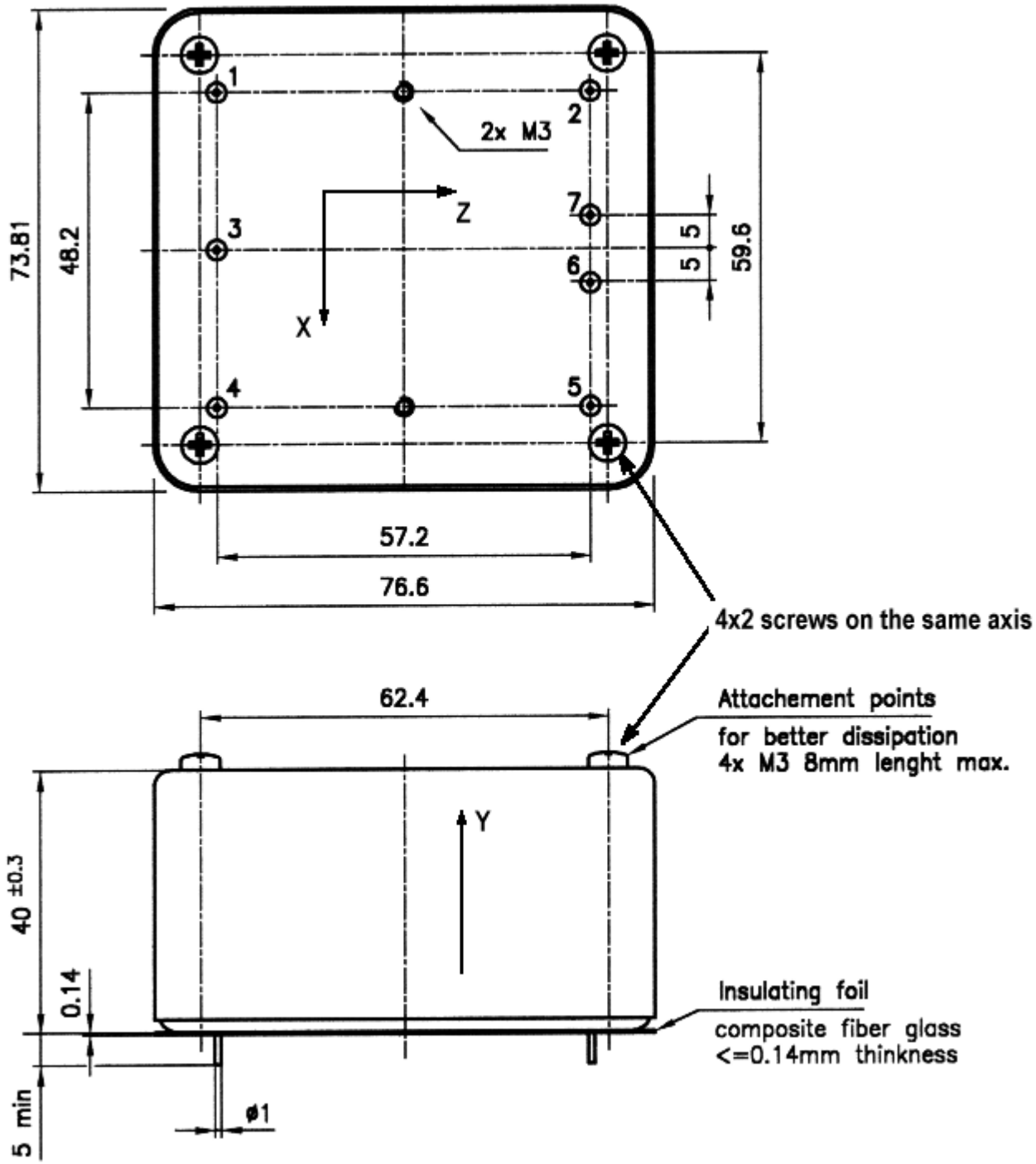

Fig. 1

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

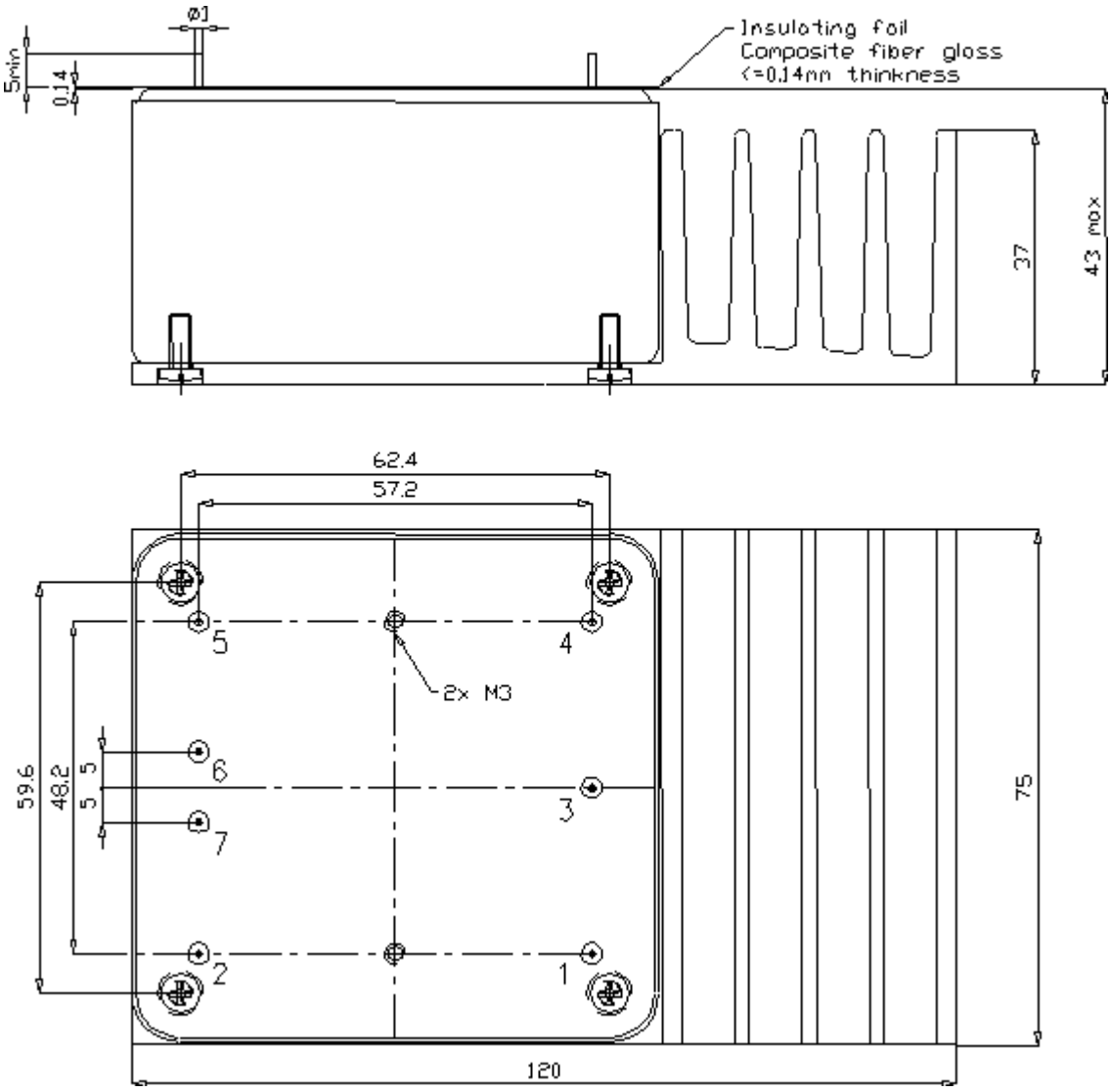

Fig. 2

PIN FUNCTION LAYOUT:

The complete pin layout is given in the following figure :

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

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	<= $\pm 1 \times 10^{-10}$ over -5°C to +55°C	over -20°C to +60°C **(option code E)** 0°C to +65°C typical with radiator **(option code RAD)**
Long term stability (Measured after 3 months of continuous operation)	< 5×10^{-11} / month (typical: 3×10^{-11} / month)	< 3×10^{-11} / month (**option code A**) (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)	< 5×10^{-11} within 1 h after 24 h off	
Warm-up time [minutes]	5×10^{-10} after 15' at +25° 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 10kΩ variable resistor connected between pins 2 and 3 (Vref & GND) can provide this adjustment voltage. (refer to Op. Manual)	2.5×10^{-9} ± 20%	5×10^{-9} ± 20% (**option code O**) 3×10^{-8} ± 20% (**option code O2**) 4×10^{-8} ± 20% (DC Voltage of 0 to 10V) (Frequency adj. At 5V) (**option code O2/0-10V**)
Digital frequency adjustment through serial RS-232 port.	±1.2 x 10^{-7} (resolution: 2×10^{-10}) 2.5×10^{-9} (resolution: 1×10^{-11}) ±20%	Option code O: 5×10^{-9} (resolution: 2×10^{-11}) ±20%
Output level	0.5Vrms ±10%, into 50 ohms	
Harmonics / Subharmonics	< -25 dBc / <-60dBc	
Spurious $f_0 \pm 100$kHz	< -80dBc	
Supply voltage	**12V option** : 11.2V to 16V	**24V option** : 18 V to 32 V
Supply voltage sensitivity	< 2×10^{-11} / V	
Input power	-5° C: <13 W +25° C: <10 W +55° C: <7 W	-5° C : <16 W +25° C : <12 W option +55° C : <8 W RAD
Typical warm-up power	20W	25W with 24V option **Option F or E** < 32W
Electrical Protection power pin RF outpu TxD outpu 5V ref/lock outpu RxD inpu Frequency adjust inpu	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 x 10^{-11} / Gauss for X and Y axis < 1 x 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 x 10^{-10} per ppm of Helium concentration changes	
g-tip-over test	< 2 x 10^{-11} / g in X and Y axis < 2 x 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:

RMO / XX / 10 M / 12 V

Type Option Frequency Supply voltage