## RFS-M102 miniature size Rb frequency standard

## **Features:**

- Standard frequency: 10 MHz
- Package size: 51x51x25 mm
- 1 PPS input and output available by default (1PPS output pin is user programmable)
- Rb lamp life time: up to 20 years
- Excellent temperature stability: up to ±1E-10
- Short term stability (Allan Deviation): <5x10<sup>-11</sup> per 1 sec
- Aging: up to  $\pm 4x10^{-12}$ /day and up to  $\pm 5x10^{-10}$ /year

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Frequency stability vs. Baseplate temperature		<±3E-10	<±2E-10	<±1E-10	
		03	02	01	$\vdash$
HU	-10+75°C	A	A	A	i
HV	-10+80°C	A	A	A	
EU	-40+75°C	A	A	A	
EW	-40+80°C	A	A	A	I

A-available.

Unit may start at -10°C (-40°C) baseplate and continue operation at -10°C (-40°C) ambient temperature with total heat sinking less than 5W.

Aging		
	Per day <sup>1</sup>	Per year <sup>2</sup>
A	±2E-11	±1E-9
$\mathbf{B}^3$	±4E-12	±5E-10
1 1	1 0-1	

 $\overline{}$  per day: average value of 7 days continuous operation at constant temperature ( $<\pm2^{\circ}$ C) after 24 h of continuous operation.

<sup>&</sup>lt;sup>3</sup> compatible only with frequency stability vs. temperature option **01** 

Standard parameters					
Parameter	Spec				
Frequency, MHz	10				
Output signal waveform	SIN, LVCMOS				
Output power (Load 50±	>7 (10 typical)				
Frequency stability vs. is @ Us = $\pm 0.2V$	±2E-11				
Retrace (24h ON → 6h @ constant temperature	±5E-11				
Supply voltage, V (±0.2)	12				
Power consumption at	- steady state:	<6			
25°C, W	– warm up:	<20 (<18 typical)			
Warm-up time @	– to lock	<5			
25°C, min:	– within accuracy @ <1x10 <sup>-9</sup>	<7.5			
	– within accuracy @ $<5x10^{-10}$	<15			
Digital frequency tuning	range (via UART)	±1E-7			
Analog frequency pulling range (Option A)		±1.5E-9			
Control voltage range (C	Option A)	0+5V			
Harmonics, dBc (SIN only)		<-30			
Spurious, dBc (SIN only)		<-60			
Random vibration (no	<ul> <li>frequency range, Hz</li> </ul>	202000			
loose lock):	<ul> <li>acceleration, g</li> </ul>	4			
Allan Deviation	– per 1s	<5E-11(2E-11 typical)			
(after 2h of continuous	– per 10s	<2E-11(9E-12 typical)			
operation):	– per 100s	<8E-12(3E-12 typical)			
Phase noise, dBc/Hz	10 Hz	-80 (-90 typical)			
@ offset (after 2h of	100 Hz	-115 (-120 typical)			
continuous operation):	1 kHz	-130 (-135 typical)			



Additional options		
- (default)	1 PPS input	
A*	Analog tuning option	

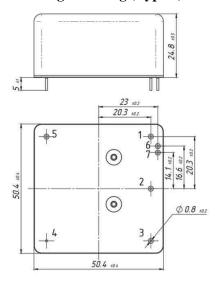
\* Option factory installed only. It is not compatible with 1 PPS input default option.

Packaging type	
Type 1	T1 (7 pin case)
Type 2	

\*Consult factory for details

Output
SIN (default)
LVCMOS

## Package drawing (Type 1):



Pin	Assignment
1	1PPS input or analog EFC IN
2	1 PPS output (default)*
3	RF output
4	GROUND (SIGNAL+CASE)
5	Power supply input
6	DATA TX (UART)
7	DATA RX (UART)

<sup>\*</sup> Pin #2 is fully user programmable. Please contact factory or see User Guide for details.



<sup>&</sup>lt;sup>2</sup> per year: after 30 days of continuous operation