

# 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  $\pm 1E-10$
- Short term stability (Allan Deviation):  $< 5E-11$  per 1 sec
- Aging: up to  $\pm 4E-12$ /day and up to  $\pm 5E-10$ /year



## ORDERING GUIDE: RFS-M102-HU02A-SIN-T1-10MHz-A-LN

Frequency stability vs. operating temperature range		$< \pm 3 \times 10^{-10}$	$< \pm 2 \times 10^{-10}$	$< \pm 1 \times 10^{-10}$
		03	02	01
HU	-10...+75* °C	A	A	A
EU	-40...+75* °C	A	A	A
HW**	-10...+80* °C	A	A	A
EW**	-40...+80* °C	A	A	C
BU	-55...+75* °C	C	C	C

«A» - available, C – consult factory

\* baseplate temperature

\*\* except for LN option

Aging		
	Per day <sup>1</sup>	Per year <sup>2</sup>
A	$\pm 2E-11$	$\pm 1E-9$
B <sup>3</sup>	$\pm 4E-12$	$\pm 5E-10$

<sup>1</sup> per day: after 24 h for option A, after 3 days for option B

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

<sup>3</sup> compatible only with frequency stability vs. temperature option 01

Additional options	
A	Analog tuning option*
LN	Low phase noise and Allan deviation option

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

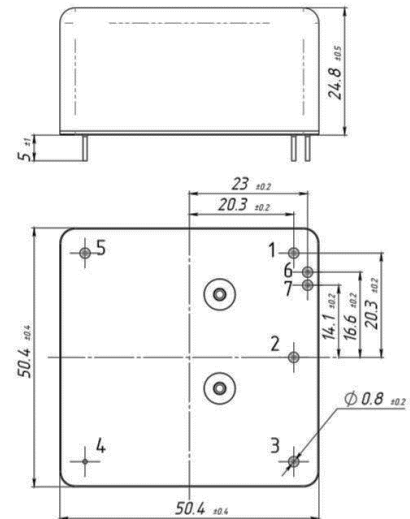
Packaging type	
Type 1	T1 (7 pin case)
Type 2	T2 (8 pin case)*

\*Consult factory for details

Output	
	SIN
	LVC MOS

Standard parameters		Spec	
Parameter			
Frequency, MHz		10	
Output signal waveform		SIN, LVC MOS	
Output power (Load 50±5 Ohm), dBm (SIN)		>7	
Frequency stability vs. input voltage changes @ $U_s = \pm 0.2V$		$\pm 2E-11$	
Retrace (24h ON → 6h OFF → 2h ON) @ $\Delta T < \pm 2^\circ C$		$\pm 5E-11$	
Warm-up time within accuracy, min:	- $\pm 1E-9$ @ 25±5°C - $\pm 1E-9$ @ operat. temp.range - $\pm 5E-10$ @ operat. temp.range	<5 <7.5 <15	
Digital frequency tuning range (via UART) with resolution 1,6E-14		$\pm 1E-7$	
Analog frequency pulling range (Option A)		$\pm 1.5E-9$	
Control voltage range (Option A), V		0...+5	
Harmonics, dBc (SIN only)		<-30	
Spurious, dBc (SIN only)		<-60	
Allan Deviation:	- per 1s	5E-11	2E-11
	- per 10s	2E-11	7E-12
	- per 100s	5E-12	3E-12
Phase noise, dBc/Hz @ offset:	10 Hz	-85	-90
	100 Hz	-115	-120
	1 kHz	-130	-140
Supply voltage, V (±0.2V)		12	
Power consumption at 25±5°C, A	- warm up	<1.66	
	- steady state (after 60 min of continuous operation)	<0.5	
Random vibration (no loose lock):	- frequency range, Hz	20...2000	
	- acceleration, g	8	

## 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)

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