



RFS4: 10 MHz Rubidium Oscillator

Key Features

- Rubidium Oscillator for OEM and industrial applications
- Low phase noise
- Low Allan Deviation
- Low monthly and yearly ageing
- External 1 pps conditioning option
- 10 MHz Sinewave Output in phase with 1 pps input / output
- Integrated GPS receiver option
- RS232 interface (control and monitor)
- 12 or 24 VDC Power Supply
- Custom built options available upon request

Description

The RFS4 is a high quality rubidium oscillator module. Intended for OEM applications, the RFS4 provides a very accurate 10 MHz output signal. The RFS4's base plate will need to be placed on a suitable heat sink

A special feature of the RFS4 is the ability to lock to an external 1 pps signal, such as from a GPS receiver. The 10 MHz signal output's phase and 1 pps outputs will be aligned to the external 1 pps rising edge.

Many options are available for the RFS4 including built in GPS receiver, 12 or 24 V power supply, external 1pps disciplining and lower monthly ageing with higher stability.

Specifications

Description	Specification	Remarks
Rubidium Oscillator		
Output Frequency	10 MHz sinewave (option squarewave)	Optional change to 5 MHz
Output Level	Sine Wave +7 dBm into 50 Ω	
Ageing (after 30 days)	$< 5 \times 10^{-11}$ /month or $< 5 \times 10^{-10}$ /year	Typically 3×10^{-11} /month
Ageing (option after 30 days)	$< 3 \times 10^{-11}$ /month or $< 2 \times 10^{-10}$ /year	Typically 1×10^{-11} /month. Opt 02
Accuracy at shipment	$< \pm 5 \times 10^{-11}$ @ 25 °C	
Allan Deviation (standard)	$< 3 \times 10^{-11}$ (1s), $< 3 \times 10^{-12}$ (100s)	
Allan Deviation (option))	$< 1 \times 10^{-11}$ (1s), $< 1 \times 10^{-12}$ (100s)	Option 04
Phase Noise (Standard Unit)	-75,-95,-125,-145,-145dBc/Hz	@ 1/10/100/1k/10k/ Offsets
Phase Noise (Option)	-80,-100,-125,-145,-145 dBc/Hz	@ 1/10/100/1k/10k/ Offsets
Spurious / Harmonics	< -80 dBc (100 kHz BW) / -25 dBc	
Frequency Retrace	$\pm 5 \times 10^{-11}$ (24 hours off, 1 hour on)	Typical
Digital Frequency Adjustment	$\pm 1.6 \times 10^{-8}$ Resolution $< 5.12 \times 10^{-13}$	
Analog Trim Range	$\pm 5 \times 10^{-9}$	
Warm-Up Time	< 12 minutes to within 5×10^{-10}	
Temperature Coefficient	$\pm 1 \times 10^{-10}$ (-10 °C to +55 °C)	Optional < 5 minutes
Magnetic Field	$< 2 \times 10^{-10}$ for 1 Gauss field reversal	Option -32 °C to +65 °C
Design Life	10 to 20 years	

Options

Option 07	Integrated GPS Receiver	RFS4 disciplined by GPS system
Option 08	10 MHz AC/MOS Output	
Miscellaneous		
Operating / Storage Temp.	-30 °C to +55 °C / -55 °C to +85°C	Base Plate
Altitude	21200 m or 70000 feet	
Power Supply	+12 VDC (11.2-16V) standard,	Option 20 to 32V
Current	2.4A warm-up, 1 A steady state	Typical
Protection	± 30 VDC on any power pin	
Interface	RS232, 9600 baud 0 to 5V levels	
Lock Indicator	Open Collector	
Operation Vibration	GR-63-Core, Section 5.4.2	Random MIL-PRF-28800F, Class 3,4
Shock	Survival 40g 11 ms	
Helium Concentration Sensitivity	< 1E-10 per ppm of Helium concentration	
EMC	MIL-STD-461F/CE-102	
Physical / Weight	102 x 71 x 25.4 mm / 0.24 kg.	
RoHS	Lead – Free Compliance	
Consult Precision Test Systems for further details of available options.		

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Full specifications available from www.ptsyst.com. Specifications and features subject to change without notice (091023)