

PTS PRECISION TEST SYSTEMS

RFS10G Ultra Low Phase Noise 10 MHz Rubidium Frequency Standard

Key Features

- Rubidium Oscillator as main frequency reference.
- Ultra Low Phase Noise, e.g. -110 dBc/Hz at 1 Hz, -143 dBc/Hz at 10 Hz offset.
- Five sinewave outputs as standard. Five additional outputs available as option 01.
- 1 pps output derived from the rubidium oscillator
- RS232 interface. Full control and interrogation of the rubidium oscillator.
- 19" 2U high rack mountable case. 1U case optionally available.
- Optional frequency change, e.g. 5 MHz or 10.23 MHz, 20 MHz.
- Optional increase in output power to +20 dBm
- Optional 1 pps input. Lock rubidium to an external 1 pps input such as GPS (option 02).
- Optional 1 μ Hz to 80 MHz DDS Output. Generate any frequency from 0 to 80 MHz in 1 μ Hz steps.
- Optional single frequency output. Single frequency is fixed and can be anywhere from 0 to 10 GHz.
- Optional alarm relay outputs. Dual changeover relay is operated in an alarm condition.
- Optional redundancy. Operate two units in a redundancy set-up for added security with automatic switchover. Five 10 MHz outputs as standard. More outputs can be added if required.
- Custom built options available upon request.

Description

The RFS10G is a 10 MHz rubidium frequency standard with exceptional low phase noise for a rubidium oscillator. An optional input allows the RFS10G to be locked to a 1 pps signal such as GPS. Also the 1 pps output derived from the rubidium will align itself in time to the 1 pps input to within 150 ns.

Options

Various options are available such as additional frequency outputs.

Specifications		
Description	Specification	Remarks
Rubidium Oscillator		
Output Frequency	10 MHz sinewave	Optional change to 5 MHz
Aging (after 30 days)	$< 5 \times 10^{-11}$ /month or $< 5 \times 10^{-10}$ /year	
Accuracy at shipment	$< \pm 5 \times 10^{-11}$	
Allan Deviation	$< 1 \times 10^{-11}$ (1s), $< 2 \times 10^{-12}$ (100s)	
Spurious	< -120 dBc (100 kHz BW)	
Frequency Retrace	$\pm 5 \times 10^{-11}$ (72 hours on, 72 hours off)	
Settability	$< 5 \times 10^{-12}$	
Trim Range	$\pm 2 \times 10^{-9}$ (0-5 VDC), ± 1 ppm (via RS232)	
Warm-Up Time	< 6 minutes to within 1×10^{-9}	
Temperature Coefficient	5×10^{-11} (-10 $^{\circ}$ C to +50 $^{\circ}$ C)	
Magnetic Field	$< 2 \times 10^{-10}$ for 1 Gauss field reversal	

Design Life	10 to 20 years	
10 MHz Outputs		
Connector	BNC socket on rear panel	
Number of Outputs	Five as standard, ten with option 01	
Frequency	10 MHz	
Accuracy	Same as main Rubidium Reference	
Signal Type	Sine wave	
Amplitude	0 dBm to + 13 dBm	Internally adjustable
Harmonic Distortion	- 60 dBc	
Return Loss	> 20 dB @ 10 MHz	
Phase Noise @ 1,10,100,1k,10 kHz Offsets	-110, 143, 158, 163, 165 dBc/Hz	Typical results @ +10 dBm output
1 pps Output		
Connector	BNC rear panel socket	
Frequency	1 pulse per second	
Signal Type	Pulse Output	Pulses high for 10 μ s when rubidium is locked. +5V DC when rubidium not locked.
Amplitude (open circuit)	0 to 5 V, TTL Compatible	
Optional 1 pps Input		
Connector	BNC socket on rear panel	
Input type	1 pulse per second, TTL level.	
Miscellaneous		
Operating Temperature	-10 °C to +50 °C	
Storage Temperature	-20 °C to +60°C	
AC Power Inlet with switch	IEC320 power cord	Rear Panel
AC Voltage Range	100 – 240 VAC	Usable 90 – 260 VAC
Power consumption	140 W Max (warm up), 70 W (operating)	Warm up period is < 10 minutes at +20 °C
Width	482.6 mm (19.00 inches)	
Depth	330 mm (13.0 inches)	
Height	88 mm (3.5 inches)	
Weight	7 kg (15.4 lbs)	
Consult Precision Test Systems for further details of these options. Not all options can be fitted at the same time.		

Precision Test Systems			
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Specifications subject to change without notice (290311)			