



Key Features

- Rubidium Oscillator as main frequency reference
- Five sinewave outputs as standard.
- Five additional outputs available as option 01
- Very Low Phase Noise and monthly ageing
- RS232 and Ethernet Interfaces

- Additional five outputs at different frequency
- Many options available. See list in this brochure
- Custom built options available upon request
- 19" 1U high rack mountable case
- Free Windows Software

Description

TEST SYSTEMS

The RFS10E is a 10 MHz rubidium frequency standard with many options as described below. An optional input allows the RFS10E to be locked to a 1 pps signal such as GPS, or to other frequencies such as 5 or 10 MHz. Also the 1 pps output derived from the rubidium will align itself in time to the 1 pps input to within 50 ns. The RFS10E has very low phase noise and exceptional Allan Deviation for a rubidium oscillator.

Options

Various options are available such as:

- Very low phase noise outputs at 10.23 MHz, 13 MHz or 20 MHz. Other frequencies on request. All outputs locked to main rubidium reference.
- Very low Allan Deviation, 1.5 x 10E-12 (1 second) and 7 x 10E-13 (100 sec)
- Squarewave Outputs. TTL, ECL, RS232, RS422, E1 levels. Any frequency from 0.1 pps to 100 MHz
- DDS output programmable from 0 to 80 MHz in 1 µHz steps. Sinewave and squarewave outputs.
- Output levels to +19 dBm.
- Redundancy. Two units operate together for high reliability systems, or 2nd redundant input connector.
- Second redundant AC power supply or external DC input.
- Extra sinewave outputs.
- Multiplied or divided outputs.

Windows Software

The RFS10E is supplied with two types of windows software as well as Telnet commands. A Console program is PC software that connects to the RFS10E either via RS232 or Ethernet. The Console program monitors all parameters of the RFS10E to be monitored and controlled.

Also, there is an embedded web page inside the RFS10E. This allows any browser to simply connect to the RFS10E using its IP address. Again the Web page monitors all functions and allows many parameters to be changed. Also this software can be set up to allow remote viewing and control of the RFS10E from anywhere in the world.

Thirdly Telnet commands are available.



Typical phase noise for a 10.00 MHz Output

Specifications				
Description	Specification	Remarks		
Rubidium Oscillator				
Output Frequency	10 MHz sinewave	Optional change to 5 MHz		
Aging (after 90 days continuous operation)	$< 5 \times 10^{-11}$ /month or $< 5 \times 10^{-10}$ /year	Options to $< 1 \ge 10^{-11}$ /month available.		
Accuracy at shipment	$< \pm 5 \times 10^{-11}$ @ 25 °C			
Allan Deviation	$< 1.5 \text{ x } 10^{-12} \text{ (1s)}, < 7.0 \text{ x } 10^{-13} \text{ (100s)},$	Options to $< 1.2 \text{ x } 10\text{E}^{-12}(1 \text{ sec})$ exist.		
Spurious	<-120 dBc (100 kHz BW)			
Frequency Retrace	$\pm 5 \times 10^{-11}$ (72 hours on, 72 hours off)			
Digital Frequency Adjustment	\pm 5 x 10 ⁻⁹ Resolution < 5.12 x 10 ⁻¹³			
Trim Range	$\pm 5 \ge 10^{-9}$ (bottom panel),)			
Warm-Up Time	< 12 minutes to within 5 x 10 ⁻¹⁰	Optional < 4 minutes		
Temperature Coefficient	$1 \ge 10^{-10} (-10 \ ^{\circ}C \ to +55 \ ^{\circ}C)$	-		
Magnetic Field	< 2 x 10 ⁻¹⁰ for 1 Gauss field reversal			
Design Life	10 to 20 years			

Number of OutputsFive as standard, ten with option 01 10 MHzRear panel BNC connectors.VacuracySame as main Rubidium ReferenceSime waveSignal TypeSine waveInternally adjustable.Mumplitude0 dBm to + 12 dBm adjustableInternally adjustable. Default = +10 dBm.Aarmonic Distortion- 25 dBc (-45 dBc with option 07)See graph for typical phase noise plot.Abase Noise (dBc/Hz) @ offset frequency- 106 dB @ 1 Hz, -136 @ 10Hz, -155 @ 100See graph for typical phase noise plot.O MHz carrier frequency.Hz , -160 @ 1 kHz, -161 @ 10 kHzBetter phase noise is optionally availableConnectorBNC on rear panelPulse width programmable from 0 to 1'requencyI pulse per secondSecond in (133 ns steps).Output level 0 - 5V (open) orOutput level 0 - 5V (open) orAmplitude (open circuit)0 to 5 V, TTL CompatibleOther external input frequencies available, e.g. 5 MHz, 10.23 MHz, 100 MHzConnectorBNC socket on rear panel I pulse per second, TTL level.Other external input frequencies available, e.g. 5 MHz, 10.23 MHz, 100 MHzConnectorBNC socket on rear panel I pulse per second, TTL level.Other external input frequencies available, e.g. 5 MHz, 10.23 MHz, 100 MHzConnectorBNC socket on rear panel I pulse per second, TTL level.Other external input frequencies available, e.g. 5 MHz, 10.23 MHz, 100 MHzConnectorBNC socket on rear panel I pulse per second, TTL level.Other external input frequencies available, e.g. 5 MHz, 10.23 MHz, 100 MHzConnectorBNC socket on rear panel I p
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Storage Temperature -20 °C to $+60$ °C
Agnetic Field < 2 x 10E ⁻¹⁰ for 1 Gauss field reverse
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Departion Vibration GR-63 CORE, section 5.4.2, Random & Phase noise may be impaired during
Sinusoidal MIL-PRF-28800F, Class 3,4 vibration
G-Tip Over Test < 2 x 10 /g in worst axis
Miscellaneous
AC Power Inlet with switch IEC320 power cord
AC Voltage Range 100 - 240 VAC
Power consumption 100 W Max (warm up), 70 W (operating) Rear Panel
Width x Depth x height. / Weight482.6 x 280 x 44 mm / 6 kg'sUsable 90 - 260 VAC
Consult Precision Test Systems for further details of these options. Not all options can be fitted at the same time.

Head Office (UK)	South Africa	USA
Precision Test Systems LTD	Precision Test Systems cc	Precision Test Systems L.L.C
The Studio, Whitehouse Farm,	Randburg	304 S. Jones Blvd
New Hall Lane, Mundon	Gauteng	Suite #807
Maldon, Essex, CM9 6PJ, UK	South Africa	Las Vegas, NV, 89107
Tel: +44 (0) 870 368 9608	Fax 08651 58198	Tel: 1 888 876 4804
Fax: +44 (0) 1245 330030	Email:	Fax: 1 832 201 6564
Email: uksales@ptsyst.com	sasales@ptsyst.com	Email: usasales@ptsyst.com
Web: www.ptsyst.com	Web: www.ptsyst.com	Web: www.ptsyst.com

Specifications subject to change without notice (240616)