PRECISION
TEST SYSTEMS

RFS10C 10 MHz Rubidium Frequency Standard

RFS10C Front View

RFS10C Rear View

Key Features

- Rubidium Oscillator as main frequency reference.
- Five sinewave outputs as standard. Five additional outputs available as option 01.
- One Squarewave Outputs, driving TTL signals into 50 Ω. One additional output with option 01
- Squarewave frequencies can be set to 10 MHz, 5 MHz, 2 MHz, 1 MHz, 100 kHz and 1 pps.
- 1 pps output derived from the rubidium oscillator
- Ultra Low Phase Noise, e.g. -148 dBc/Hz at 1 kHz offset.
- RS232 interface.   Full control and interrogation of the rubidium oscillator.
- 19" 2U high rack mountable case.
- Optional change of frequency to 5 MHz outputs (option 04)
- Optional dual output of 5 MHz and 10 MHz outputs (option 03)
- Optional 1 pps input. Lock rubidium to an external 1 pps input such as GPS (option 02).
- Optional 1 µHz to 80 MHz DDS Output. Generate any frequency from 0 to 80 MHz in 1 µHz 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 time code outputs (IRIG-B, IRIG-E and ESE-TC90)
- 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.
- Optional Slave Clock Display. Display provides 25 mm high digits of time or date.
- Optional Windows Software. Allows RFS10C to be monitored from a remote location.
- Optional GSM Interface. GPS10RB can send a text message to GSM phones in the event of an alarm
- High quality design.
- Custom built options available upon request.

Description

The RFS10C is a 10 MHz rubidium frequency standard with many options as described above. An optional input allows the RFS10C 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. For example, option 03A is a 100 MHz squarewave generator. Three outputs are provided, sinewave, TTL and PECL.

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	$< \pm 5 \times 10^{-11}$	
Phase Noise	< -125 dBc/Hz (10 Hz)	< 140 dBc/Hz (100 Hz)
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), ± 1ppm (via RS232)	
Warm-Up Time	< 6 minutes to within 1×10^{-9}	
Temperature Coefficient	5×10^{-11} (-10 °C to +50 °C)	
Magnetic Field	$< 2 \times 10^{-10}$ for 1 Gauss field reversal	
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	Internally adjustable
Amplitude	0 dBm to + 13 dBm	Typically -70 dBc
Harmonic Distortion	- 65 dBc	
Return Loss	> 20 dB @ 10 MHz	
Squarewave Outputs		
Connector	BNC socket on rear panel	
Number of Outputs	One standard, two with option 01	Independently switchable by front panel
Frequency	10, 5, 2, 1, 0.1 MHz and 1 pps	rotary switches
Signal Type	Squarewave	
Amplitude (open circuit)	0 to 5 V, TTL Compatible	
Amplitude (50 ohm)	0 to > 2.5 V, TTL Compatible	
1 pps Output		
Connector	BNC rear panel socket	
Frequency	1 pulse per second	
Signal Type	Pulse Output	Pulses high for 10 μs when rubidium is
Amplitude (open circuit)	0 to 5 V, TTL Compatible	locked. +5V DC when rubidium not locked.
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	115 VAC ± 10%	Voltage range selectable on rear panel
	230 VAC ± 10%	power inlet assembly
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	348 mm (13.7 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.		

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