

Model PRS-10, Rubidium Frequency Standard option for P7889



FEATURES

- Excellent stability for longer period time measurements

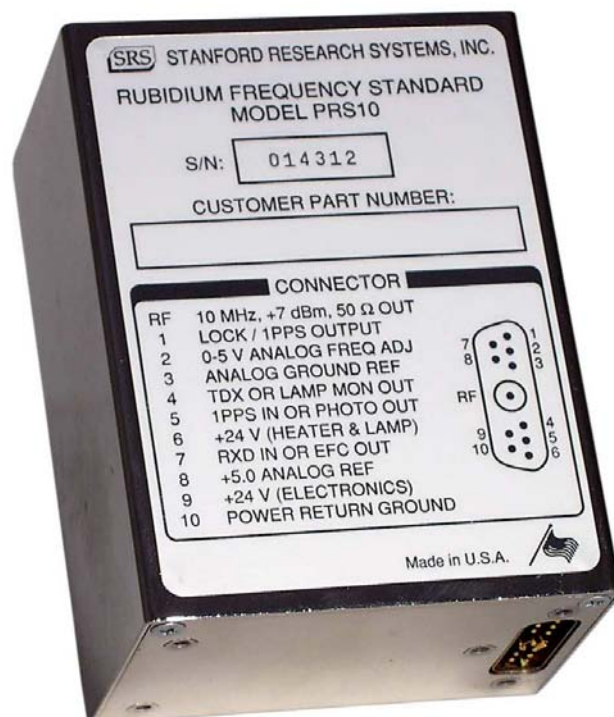
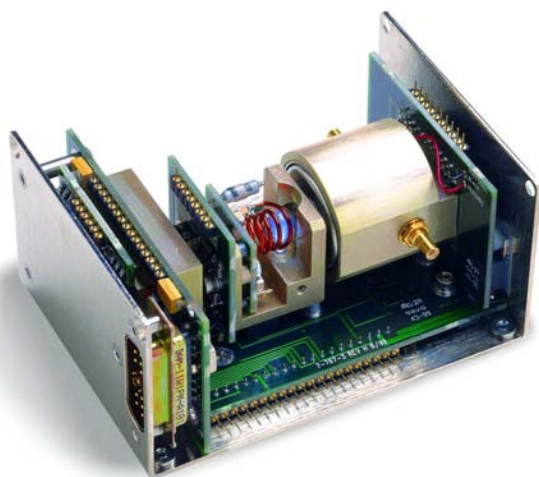
Description

The PRS10 is an ultra-low phase-noise, 10 MHz rubidium-disciplined crystal oscillator. It is well suited as an external clock reference for the **P7889 ultra fast multiscaler/TOF** for applications where extreme clock stability for long periods is essential. The stability can be further improved by synchronizing the PRS-10 to the GPS atomic clock by use of the 1 pps input.

Its low aging rate makes it an excellent timebase for precision frequency measurements.

The PRS10 can time-tag an external 1 pps input with 1 ns

resolution. These values may be reported back via RS-232, or used to phase-lock the unit to an external reference (such as GPS) with time constants of several hours. This feature can provide Stratum 1 performance at a very reasonable cost. The PRS10 establishes a new level of features and performance in atomic frequency standards. Its design provides the lowest phase noise, greatest versatility, and easiest path to system integration of any rubidium frequency standard available.



PRS-10 13102006



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Output

Output frequency	10 MHz sine wave
Amplitude	0.5 Vrms, $\pm 10\%$
Phase noise (SSB)	< -130 dBc/Hz (10 Hz) < -140 dBc/Hz (100 Hz)
Spurious	< -130 dBc (100 kHz BW)
Harmonic distortion	< -25 dBc
Return loss	>25 dB @ 10 MHz
Accuracy at shipment	$\pm 5 \times 10^{-11}$
Aging (after 30 days)	< 5×10^{-11} (monthly) < 5×10^{-10} (yearly)
Short-term stability (Allan variance)	< 2×10^{-11} (1 s) < 1×10^{-11} (10 s) < 2×10^{-12} (100 s)
Holdover	72 hour Stratum 1 level
Frequency retrace	$\pm 5 \times 10^{-11}$ (72 hrs. off then 72 hrs. on)
Settability	< 5×10^{-12}
Trim range	$\pm 2 \times 10^{-9}$ (0 to 5 VDC) ± 1 ppm (via RS-232)
Warm-up time	<6 minutes (time to lock) <7 minutes (time to 1×10^{-9})
Voltage sensitivity	< 2×10^{-11} (1 VDC supply change)

Electrical

Input voltage	+24 VDC (nom.), +22 VDC (min.), +30 VDC (max.)
Current	2.2 A (warm-up), 0.6 A (steady-state) at 25 °C (Note 1)
Protection	± 30 VDC to any pin except rf out
RF protection	100 mA (stable w/ any termination)
Cal reference RS-232	out 5.00 ± 0.05 VDC 9600 baud, 8 bits, no parity, 1 stop bit, 0 to 5V levels with X-on/X-off protocol
1 pps measurement	± 10 ns (accuracy), ± 1 ns (resolution)
1 pps output set	± 10 ns (accuracy), ± 1 ns (resolution)

Environmental

Operating temperature	-20 °C to +65 °C (baseplate)
Temperature stability	$\pm 1 \times 10^{-10}$ (-20 °C to +65 °C baseplate)
Storage temperature	-55 °C to +85 °C
Magnetic field	< 2×10^{-10} for 1 Gauss field reversal
Relative humidity	95 % (non-condensing)

Miscellaneous

Design life	2 20 yrs.
Size	2.00" \times 3.00" \times 4.00" (HWD)
Weight	1.32 lbs. 0.6 kg
Baseplate threads	4-40 (4 places)
Connector	Mates with ITT/Cannon DAM11W1S series

Warranty	Two year parts and labor on defects in materials and workmanship
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Notes

1. Low power warm-up option is available. Contact factory for details.
2. Lamp lifetime is the dominant consideration in the design life estimate. The estimate is based on the measured reduction of lamp intensity and the elevation of lamp start voltage with time.