

Rubidium Atomic Audio Clock

PERF10 — 10 MHz rubidium atomic audio clock

GMP

General Microtechnology & Photonics
Systems for Industry, Research, Telecom & Medicine



PERF10 Rubidium Audio Clock

- **Atomic stability and accuracy**
- **Eight 10 MHz, 75 Ω outputs**
- **± 0.05 ppb accuracy**
- **10 year aging less than 5 ppb**
- **Ultra-low phase noise**
(< -150 dBc/Hz @ 10 kHz)
- **Compatible with Antelope™ and dCS™ equipment**
- **Optional 12 VDC redundant power input with automatic switchover**

Perfection is a high standard — but your studio clocks deserve nothing less. That's why we designed the PERF10, to offer audio professionals and demanding audiophiles a frequency reference of staggering accuracy and unmatched stability.

Up until now, atomic clocks marketed for audio use have been designed around commercial off-the-shelf rubidium clocks designed for the communications market — not audio. And while these rubidium clocks may have good long-term stability, they were never designed to provide low short-term jitter.

The PERF10 is built around Stanford Research Systems' own PRS10 rubidium oscillator. By designing and building the oscillators ourselves, we're able to craft an instrument perfectly matched to the demanding requirements of audio master clocks. Starting with an oven stabilized, 3rd overtone, varactor tuned, SC-cut crystal oscillator, the PERF10 offers both the accuracy and stability associated with rubidium clocks and unmatched jitter performance — 30 dB better phase noise at 10 Hz off carrier than a competing rubidium clock.

And because we don't have to buy our oscillators from an outside source, we can offer you perfection — at an affordable price.

www.gmp.ch

PERF10 Specifications

PERF10 has eight 10 MHz, 75 Ω outputs compatible with all master clocks that accept a 10 MHz reference input.

Option 01 allows the unit to be powered from an external 12 VDC power source. When equipped with Option 01 PERF10 can be powered solely from an 12 VDC source, or the DC and AC power sources can be connected simultaneously with the DC supply providing an automatically switched redundant power source in the event of an AC failure.

Rubidium Oscillator

Accuracy at shipment	± 0.05 ppb ($\pm 5 \times 10^{-11}$)
Aging (after 30 days)	$< 5 \times 10^{-11}$ (monthly)
	$< 5 \times 10^{-10}$ (yearly)
	5×10^{-9} (20 years, typ.)
Spurious harmonics	< -60 dBc
Phase noise (SSB)	< -130 dBc (10 Hz)
	< -140 dBc (100 Hz)
	< -150 dBc (1 kHz)
	< -150 dBc (10 kHz)
Short-term stability (Allan variance)	$< 2 \times 10^{-11}$ (1 s)
	$< 1 \times 10^{-11}$ (10 s)
	$< 2 \times 10^{-12}$ (100 s)
Warm-up time	< 6 minutes (time to lock)

Outputs

Number of outputs	8 (rear-panel BNCs)
Output impedance	75 Ω
Output amplitude	1 Vpp (terminated in 75 Ω)

Environment

Operating temperature	+10°C to +40°C
Storage temperature	-55°C to +85 °C
Relative humidity	95% (non-condensing)

General

AC power	90 to 132 VAC or 175 to 264 VAC 47 to 63 Hz, 50 W
DC power	12 VDC, 54 W (when equipped with Opt. 01)
Dimensions	19" \times 3.5" \times 10.125" (WHD)
Weight	10 lbs.
Warranty	One year parts and labor on defects in materials and workmanship



PERF10 front panel



PERF10 rear panel