

Passive Hydrogen Maser VCH-1008M

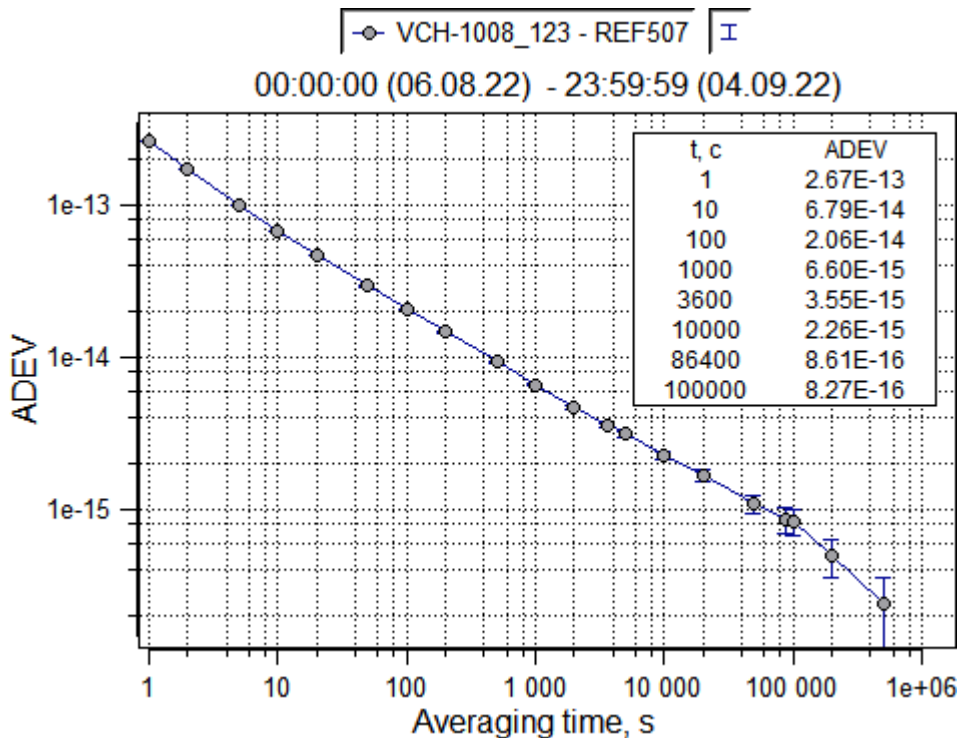
 vremya-ch.com/index.php/en/products-en/passivehm-en/vch-1008m-en/index.html



The VCH-1008M Passive Hydrogen Maser is a compact hydrogen maser with excellent frequency stability and utilises state-of-the-art technology. Full digital processing of the modulation and servo loop signals makes it ideal for high accuracy applications. An internal GPS/GLONASS option is available and provides automatic output signal frequency calibration.

Key applications:

- National Time Keeping Service.
- Space tracking and navigation.
- Verification of frequency signals.
- Scientific research.



Specifications

Output signals:

Sine: 5 MHz; 10 MHz; 100 MHz, (1±0.2) V RMS into 50 Ω load.

Pulse: 2,048 MHz (square pulse), 1,5±2,8 V (pp) into 75 Ω (ITU-T G.703 part15).

1Hz; 1/60 Hz, positive polarity pulse, width 100±0.1; 10±0.01; 1±0.01; 0.1±0.01 μs, TTL level at 50 Ω, rise time: <10 ns.

Metrological characteristics are given in the table:

| | | |
|--|---|---|
| | 1 s | $\leq 4.0 \cdot 10^{-13}$ |
| | 10 s | $\leq 1.5 \cdot 10^{-13}$ |
| | 100 s | $\leq 4.0 \cdot 10^{-14}$ |
| | 1000 s | $\leq 1.5 \cdot 10^{-14}$ |
| | 1 hour | $\leq 7.0 \cdot 10^{-15}$ |
| Frequency stability (Allan deviation at 25±1C°, environmental effects are excluded) | 1 day | $\leq 1.5 \cdot 10^{-15}$ |
| Relative frequency accuracy | $\pm 3 \cdot 10^{-13}$ (factory calibration) | $\leq \pm 1 \cdot 10^{-13}$ (in option with GPS calibrator) |
| Output signals frequency corrector | resolution | $1 \cdot 10^{-15}$ |
| | tuning range | $1 \cdot 10^{-10}$ |
| | Frequency offset | Spectral density (dBc/Hz) |
| | 1 Hz | ≤ -105 |
| | 10 Hz | ≤ -130 |
| | 100 Hz | ≤ -145 |
| | 1000 Hz | ≤ -155 |
| Phase noise spectral density (dBc/Hz) (5 MHz output) | 10000 Hz | ≤ -155 |
| Frequency drift (after 1 year of unperturbed, continuous operation, temperature variation no more ±1C°, environmental effects are excluded) | $\leq 1.0 \cdot 10^{-15}$ per day | |
| Manual synchronization to external 1 pps TTL signal accuracy | ≤ 25 ns | |

| | |
|--|--|
| Time synchronization to UTC using GPS | ≤50 ns (using optional GPS calibrator) |
| Temperature sensitivity in temperature operating range (10–40 C°) | ≤5·10 ⁻¹⁵ 1/C° |
| Magnetic sensitivity | ≤1·10 ⁻¹⁴ 1/Oersted |

Digital control and monitoring: all operating parameters available remotely (Windows/Linux).

Interface: RS-232C; USB; LAN.

Power supply: AC(100÷240)V, (50÷60)Hz; DC(22÷30)V.

Power consumption: 120 V·A (AC), 100 W (DC).

Options: Internal GPS/GLONASS calibrator for automatic calibration.

Dimensions (W×H×D): 470 mm×200 mm×530 mm.

Weight: 27 kg.

Warranty: 3 years (10 years extended).

Life time: 15 years.