


# Passive Hydrogen Maser VCH-1008

 [vremya-ch.com/index.php/en/products-en/passivehm-en/vch-1008-en](http://vremya-ch.com/index.php/en/products-en/passivehm-en/vch-1008-en)



The VCH-1008 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.

## Manual for VCH-1008

- Maintenance and service manual download
- User guide download

## Specifications

### Output signals:

Sine: 5 MHz; 10 MHz; 100 MHz,  $(1 \pm 0.2)$  V RMS into 50  $\Omega$  load.

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

1 Hz; positive polarity pulse, width  $100 \pm 0.01$ ;  $10 \pm 0.01$ ;  $1 \pm 0.01$ ;  $0.1 \pm 0.01$   $\mu$ s, TTL level at 50  $\Omega$ , rise time: <15 ns.

### Metrological characteristics are given in the table:

Frequency stability (Allan deviation at $25 \pm 0.5^\circ\text{C}$ , environmental effects are excluded)	1 s	$\leq 5.0 \cdot 10^{-13}$
	10 s	$\leq 2.0 \cdot 10^{-13}$
	100 s	$\leq 5.0 \cdot 10^{-14}$
	1 hour	$\leq 9.0 \cdot 10^{-15}$
	1 day	$\leq 4.0 \cdot 10^{-15}$

<b>Relative frequency accuracy</b>	$\pm 3 \cdot 10^{-13}$ (factory calibration)	$\pm 1 \cdot 10^{-13}$ (in option with GPS calibrator)
<b>Output signals frequency corrector</b>	resolution tuning range	$1 \cdot 10^{-15}$ $1 \cdot 10^{-10}$
<b>Phase noise spectral density (dBc/Hz) (5 MHz output)</b>	Frequency offset	Spectral density (dBc/Hz)
	1 Hz	$\leq -105$
	10 Hz	$\leq -130$
	100 Hz	$\leq -145$
	1000 Hz	$\leq -155$
	10000 Hz	$\leq -155$
<b>Frequency drift (after 1 year of unperturbed, continuous operation, temperature variation no more <math>\pm 1^\circ\text{C}</math>, environmental effects are excluded)</b>	$\pm 2.0 \cdot 10^{-15}$ per day	
<b>Time synchronization to UTC using GPS/GLONASS</b>	$\leq 50$ ns (in GPS/GLONASS option)	
<b>Temperature sensitivity in temperature operating range (5–40 <math>^\circ\text{C}</math>)</b>	$\leq 2 \cdot 10^{-14}$ 1/ $^\circ\text{C}$	
<b>Magnetic sensitivity</b>	$\leq 1 \cdot 10^{-14}$ 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:** 100 V·A (AC), 100 W (DC).

**Options:** Internal GPS/GLONASS calibrator for automatic calibration.

**Dimensions (W×H×D):** 483 mm×200 mm×550 mm.

**Weight:** 33 kg.

**Warranty:** 3 years (10 years extended).

**Life time:** 15 years.