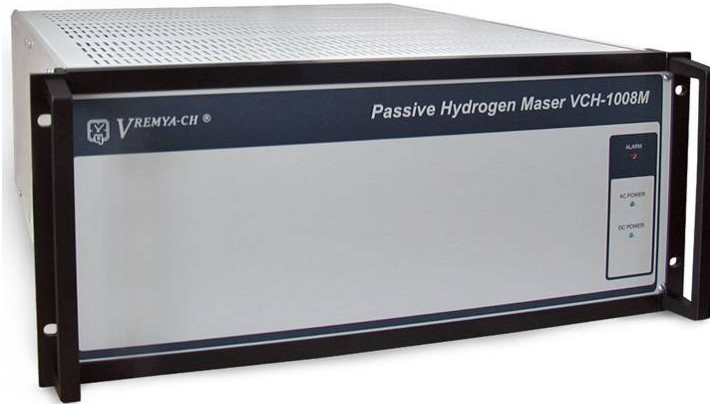




Passive Hydrogen Maser

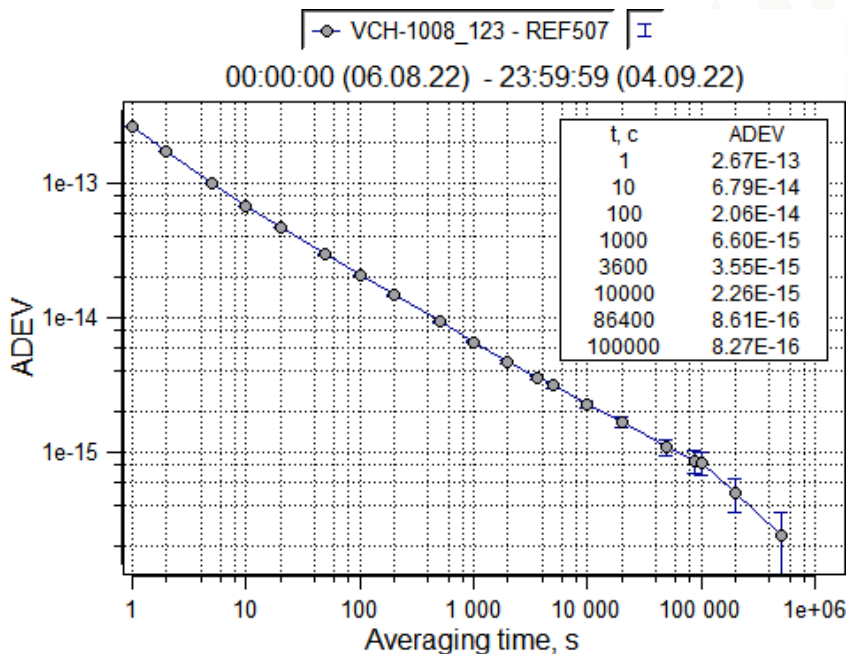
VCH-1008M



VCH-1008M Passive Hydrogen Maser is a compact hydrogen maser with excellent frequency stability and utilizes 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. The device is remotely control via RS-232C, USB or LAN interfaces.

The Key applications:-

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



VCH-1008M Specifications

Outputs :-

Waveform	Qty	Amplitude	Width, μ s	Rise time, ns	Termination
5MHz (sine)	2	$1 \pm 0.2 V_{RMS}$	-	-	SMA/50 Ω
10 MHz (sine)	2	$1 \pm 0.2 V_{RMS}$	-	-	SMA/50 Ω
100 MHz (sine)	1	$1 \pm 0.2 V_{RMS}$	-	-	SMA/50 Ω
2048 MHz (pulse)	1	$2.5 \sim 2.8 V_{(pp)}$	(ITU-T G.703 part13)		SMA/ 75 Ω
1 Hz (pulse) PPS	1	$>2.5 V$ (TTL)	100 ± 0.1 ; 10 ± 0.01 ;	< 10	BNC/ 50 Ω
1/60 Hz (pulse) PPM	1	$>2.5 V$ (TTL)	1 ± 0.01 ; 0.1 ± 0.01	< 10	BNC/ 50 Ω

Performance		Option 1 (Std- Factory)	Option 3 (GPS/GLONASS calibrator)	
Relative frequency accuracy		$\pm 3 \cdot 10^{-13}$	$\leq \pm 1 \cdot 10^{-13}$	
Output signals frequency corrector	resolution	$1 \cdot 10^{-15}$		
	tuning range	$1 \cdot 10^{-10}$		
Frequency stability (Allan deviation at $25 \pm 1^\circ C$, environmental effects are excluded)	1 s	$\leq 4.0 \cdot 10^{-13}$		
	10 s	$\leq 1.5 \cdot 10^{-13}$		
	100 s	$\leq 4.0 \cdot 10^{-14}$		
	1000s	$\leq 1.5 \cdot 10^{-14}$		
	1 hour	$\leq 7.0 \cdot 10^{-15}$		
	1 day	$\leq 1.5 \cdot 10^{-15}$		
Phase Noise Spectral density (dBc/Hz)	Offset	@5MHz	@10MHz	@100MHz
	1 Hz	≤ -105	≤ -100	≤ -80
	10 Hz	≤ -130	≤ -120	≤ -100
	100 Hz	≤ -145	≤ -140	≤ -120
	1000 Hz	≤ -155	≤ -145	≤ -150
	10000 Hz	≤ -155	≤ -145	≤ -150
Frequency drift @ $\pm 1^\circ C$, environmental effects are excluded		$\leq \pm 1 \times 10^{-15}/\text{Day}$		
Manual synchronization to external 1 pps TTL signal accuracy		≤ 25 ns		
Time synchronization to UTC with Option 3		≤ 50 ns		
Magnetic sensitivity		$\leq \pm 1 \cdot 10^{-14}/\text{Gauss}$		
Temperature sensitivity		$\leq \pm 5 \cdot 10^{-15}/^\circ C$		
Harmonic distortion (for 5 MHz output)		< -30 dB		
Non-harmonic distortion from 10 Hz to 10 kHz		< -100 dB		
Options				
Internal GPS/GLONASS calibrator for automatic calibration		Option 3		

General

Dimensions (WxHxD) mm :	470 x 200 x 530
Weight:	< 27 kg
Digital control and monitoring:	Remotely via RS-232/LAN/USB
Interface:	RS-232C; USB; LAN
Power AC:	100–240 V, 50-60 Hz
Power DC:	22~30 V.
Temperature operating range ($\pm 1^\circ C/\text{Hour}$):	10–35 $^\circ C$ (recom. $+22^\circ C$)
Relative humidity:	$< 80\%$ at $+25^\circ C$
Power consumption:	120 VA AC, 100 W DC.

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