

Active Hydrogen Maser VCH-1003M Option LT

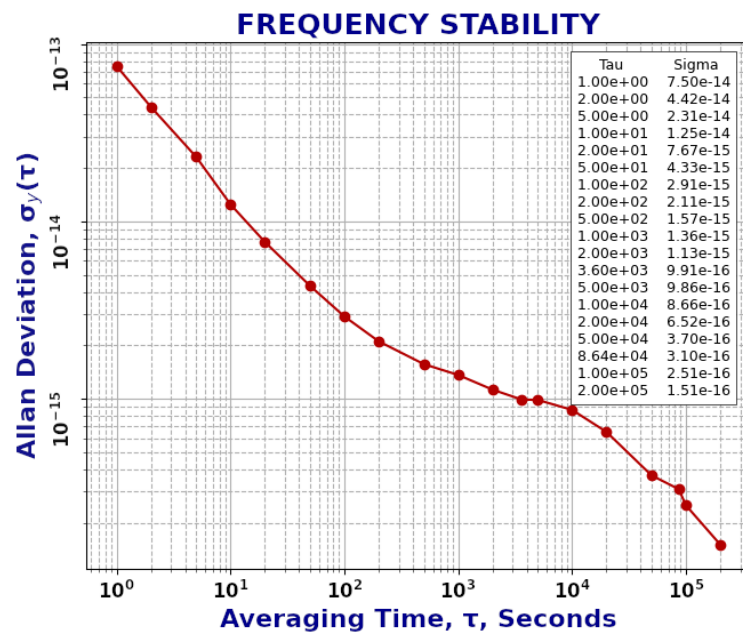
 vremya-ch.com/index.php/en/products-en/activehm-en/vch-1003m-lt-en/index.html



The VCH-1003M is a high-performance hydrogen maser with low phase noise output signals. Extremely high frequency stability is provided by state-of-the-art technology and internal stand-alone Cavity Auto Tuning system.

Key Applications

- National Time Keeping Service;
- Deep space tracking and navigation;
- VLBI systems;
- GNSS satellite monitoring.



Frequency stability (Option LT, 3 Hz bandwidth)

Specifications

Output signals:

two outputs : 5 MHz (sine), 1 ± 0.2 V RMS into 50 Ohms,
two outputs : 10 MHz (sine), 1 ± 0.2 V RMS into 50 Ohms,

two outputs : 100 MHz (sine), 1 ± 0.2 V RMS into 50 Ohms,
two outputs : 1 Hz (pulse):Amplitude: >2.5 V into 50 Ohm.
Width: 10-20 μ s ; Rise time: <3 ns.

Metrological characteristics are given in the table:

		Option LT
		0.5 Hz measuring bandwidth
Frequency stability (Allan deviation)	1 s	$\leq 8 \cdot 10^{-14}$
	10 s	$\leq 1.4 \cdot 10^{-14}$
	100 s	$\leq 4.0 \cdot 10^{-15}$
	1000 s	$\leq 1.5 \cdot 10^{-15}$
	1 hour	$\leq 1.0 \cdot 10^{-15}$
	1 day	$\leq 4.0 \cdot 10^{-16} *$
Long term	$<3.0 \cdot 10^{-16}$ per day**	
Auto tuning	no external reference required	
Frequency accuracy	$\pm 1 \cdot 10^{-13}$	
Temperature sensitivity	$<1.5 \cdot 10^{-15} / ^\circ\text{C}$	
Magnetic sensitivity	$\leq 5 \cdot 10^{-15} / \text{Gauss}$	
Frequency trim range	$1 \cdot 10^{-10}$	
Setting resolution	$1 \cdot 10^{-16}$	

* Specified only under laboratory conditions: ambient temperature in the range ± 0.1 $^\circ\text{C}$, changing rate <0.3 $^\circ\text{C}/\text{hour}$. ADEV at 1 day is specified for measurements with removed linear frequency drift.

**Achieved after 1 year of unperturbed, continuous operation.

Phase noise (SSB Phase Noise, dBc/Hz):

Option LT			
Offset from carrier	5 MHz	10 MHz	100 MHz
1 Hz	≤ -122	≤ -116	≤ -96
10 Hz	≤ -135	≤ -129	≤ -109
100 Hz	≤ -149	≤ -143	≤ -122

1 kHz	≤-156	≤-149	≤-130
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10 kHz	≤-158	≤-152	≤-152
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100 kHz	≤-158	≤-152	≤-152
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Harmonic distortion: <-30 dBc (for 5 MHz output).

Non-harmonic distortion: <-100 dBc in the range from 10 Hz to 10 kHz.

Full data monitoring and functions control (local or remote through any network) are performed by personal computer (not included in delivery set).

Application software running under Microsoft Windows is applied.

Power supply: AC(84÷264)V, (47÷60)Hz; DC(22÷30)V.

Power consumption: 150 V·A (AC), 100 W (DC).

Operating temperature range: 10...35 °C.

Storage temperature range: -30...50 °C.

Humidity: up to 80% (non-condensing) at 25 °C.

Dimensions (W×H×D): 550×1010×550 mm.

Weight: ~105 kg.

Lifetime: 15 years.