

FCNU-2310-PRO**10 KG-CLASS ACTIVE HYDROGEN MASER
(STANDARD MODEL)****Features:**

- 10 kg-class ultra-compact design in a standard 4U rack-mount chassis
- High frequency stability with advanced integration and manufacturing technologies
- Operates as a node in an autonomous cooperative timing network
- Optional RS-232C, USB and Ethernet interfaces for status and control access

Applications:

- Metrology and testing
- Timekeeping and time dissemination
- Tracking and navigation
- Scientific research and measurement



470 x 200 x 530 mm

Product Overview:

The FCNU-2310-PRO is a 10 kg-class active hydrogen maser in a 4U rack-mount chassis, built as the standard-performance entry point in the FCNU-2310 series. It delivers Allan deviation $\leq 5.0 \times 10^{-14}$ at 100 s and $\leq 4.0 \times 10^{-15}$ at 86,400 s, with long-term drift held to $\leq 1 \times 10^{-15}$ /day — stability suited to continuous reference-clock duty in timing labs and metrology facilities that don't require the tightened low-offset phase noise of the MAX variant.

Beyond raw stability, the FCNU-2310-PRO is built to operate as a node in an autonomous cooperative timing network, letting multiple units cross-reference and hold ensemble time without a single point of failure — relevant for distributed timing architectures rather than standalone lab use. Dual 5 MHz and 10 MHz sine outputs (SMA, 50 Ω , 1 ± 0.2 Vrms) hold phase noise ≤ -155 dBc/Hz at 10 kHz offset on both signals. Optional RS-232C, USB, and Ethernet interfaces provide remote access to operating status and control parameters, and the unit integrates into a range of host platforms rather than only fixed rack installations.

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Signal Outputs:

Signal	Qty.	Amplitude	Width (μ s)	Rise (ns)	Connector / load
5 MHz (sine)	2	$1 \pm 0.2 V_{RMS}$	—	—	SMA / 50 Ω
10 MHz (sine)	2	$1 \pm 0.2 V_{RMS}$	—	—	SMA / 50 Ω

Performance Specifications:

Relative frequency accuracy	±3×10 ⁻¹³			
Fractional frequency stability (Allan deviation, 25 ± 1 °C; environmental effects excluded)	1 s	≤ 3.0×10 ⁻¹³		
	10 s	≤ 1.0×10 ⁻¹³		
	100 s	≤ 5.0×10 ⁻¹⁴		
	3600 s	≤ 9.0×10 ⁻¹⁵		
	86400 s	≤ 4.0×10 ⁻¹⁵		
	Frequency offset	5 MHz output	10 MHz output	
Phase noise spectral density (dBc/Hz)	1 Hz	≤ -115	≤ -110	
	10 Hz	≤ -135	≤ -125	
	100 Hz	≤ -145	≤ -140	
	1 kHz	≤ -155	≤ -150	
	10 kHz	≤ -155	≤ -150	
Long-term fractional frequency drift (after 1 year of operation)	≤ 1×10 ⁻¹⁵ /day			
Magnetic sensitivity	≤ 1×10 ⁻¹⁴ /Gauss			
Temperature sensitivity	≤ 2×10 ⁻¹⁴ /°C			

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Dimensions (W xH xD)	470 mm x 200 mm x 530 mm
Weight	Approx. 10 kg
Operating temperature (rate of change ≤ 0.5 °C/h)	10 – 35 °C (recommended: +22 °C)
Relative humidity	< 80% RH at +25 °C
Power Supply	220V AC [110V AC optional]
Warranty	3 years

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