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CH1-76 PASSIVE HYDROGEN MASER

The CH1-76 Passive Hydrogen MASER is a frequency standard of a passive type. As in an active MASER the CH1-76 comprises a beam source, a sorting magnet and a storage quartz bulb situated in a cavity and coated with fluoro-plastic. The Passive MASER differs from the Active MASER in that an atom medium in a bulb is not self-excited and provides an atom emission caused by an external signal the frequency of which is nearly equal to the hydrogen atoms emission frequency. Thanks to this the requirements to a cavity quality (Q) are reduced.

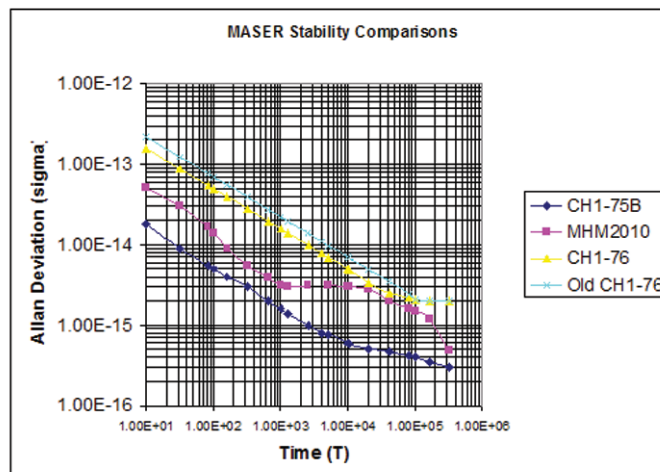


APPLICATIONS

National Timekeeping
National Frequency Standards
VLBI
Navigation
Telecommunications
GPS Satellite Monitoring
Astro Laser Range Finding
Laboratory Standard
Astronomy
Baseline Definition

Calibration
Calibration of Caesium or Rubidium
and Quartz
Climatology
Defense
Determination of Earth Rotation
Earthquake Research
Fast Missile Tracking
Geodesy
Geodynamics

Glacial Movement
Gravity Prospecting
Intelligence
Plate Tectonics
Position fixing
Secure Communications
Space Navigation
Support of Radar
Heat Transport



Specifications subject to change without notice



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SPECIFICATIONS

Frequency Outputs

(2) 5MHz, sine	50Ω, 1±0.2 Vrms
(2) 1Hz pulse (1 pps)	50Ω, >2.5V peak
Pulse Width	10 to 20 μs
Rise Time	<30 ns
Jitter	<0.1 ns

Clock Synchronization

Automatic within 200 ns of reference pulse
Amplitude 2.5 to 5V

Stability (5MHz Outputs)

Avg Time τ(s)	Allan Variance σ _y (2,τ)
1s	≤1.5E-12
10s	≤ 5E-13
100s	≤1.5E-13
1000s	≤ 5E-14
1 hour	≤ 3E-14
1 day	≤ 1E-14

Temp/Freq Coefficient ≤2E-14

Drift ≤1.E-15/day

Accuracy ±1.5E-12/years

Frequency Trim Range 1E-10

Setting Resolution 1E-14

Retrace ≤3E-14 after 24 hrs of op.

Phase Noise (dBc)

Hz from carrier	5MHz outputs
1	-100
10	-120
100	-140
1000	-150
10000	-150

Spurs

Harmonics	<30 dBc
Non-Harmonics	<100 dBc

Power Input - AC

220 Vac, ±10%, 100,120 V±10%,
240 V+5-10%; 45-65Hz

Power Input - DC (automatic battery back-up)

As an alternative to AC, the CH176 can be powered by an external 22-30 VDC supply.

Power Consumption

(AC) <140 VA
(DC) <90 watts

Warm-up Time

≤10 hours to lock (typically 6 hrs)

Operating Temp

+5 to +35°C

Storage Temp

-50°C to +50°C

Magnetic Sensitivity

±2E-14/Gauss

Pressure

630 to 795 mm Hg (84 - 106 kPA)

Humidity

Up to 80% at 25°C

Size (HxWxD)

11" x 19" x 22" (28x48x56 cm)

Weight

120 lbs (55kg)

Warranty

1 year (2 - 5 year options)

Service Life

15 years

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