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Data Sheet

August 13, 2026

HP / AGILENT

HP / Agilent 58503A GPS Time and Frequency Receiver

HP 58503A GPS Time and Frequency Reference Receiver The HP/Agilent 58503A is a GPS-disciplined quartz time and frequency reference providing precise 10 MHz and 1 pps outputs. A 6-channel parallel-tracking GPS engine locks the high-reliability quartz oscillator (field MTBF greater than 500000 hours class) using SmartClock technology. Locked frequency accuracy is better than $1e-12$; time accuracy versus UTC (USNO MC) is better than 110 ns even with Selective Availability. Intelligent holdover maintains better than $1e-10$ per day when GPS is interrupted. Manufacturer: Hewlett Packard / Agilent / Keysight Instrument Type: GPS time and frequency reference receiver Alias: HP 58503A; Agilent 58503A; Keysight 58503A GPS Channels: 6 channel parallel tracking



MODEL HP / Agilent 58503A	CALIBRATION Available on request
CONDITION Used	STATUS In stock
RFQ / SKU 58503A	LISTING https://aumictechlabs.com/products/58503a-2/

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The HP/Agilent 58503A GPS Time and Frequency Receiver delivers primary standard-level time and frequency references by locking to GPS satellite signals. This 6-channel parallel-tracking receiver provides two 10 MHz outputs and 1 pulse per second (1 PPS) timing with frequency accuracy better than 1×10^{-12} over one-day averages and time accuracy under 110 ns relative to

UTC. The instrument achieves exceptional phase stability through HP SmartClock technology, delivering 1.5×10^{-12} aging per year and 5×10^{-12} root Allan variance at 1 second. In holdover mode, frequency drift remains under 1×10^{-10} per 24 hours with phase accumulation below 8.6 μ s after 24 hours unlocked. Technical Specifications GPS Receiver & Signal Acquisition 6-channel parallel-tracking receiver C/A code, L1 carrier Lock-on time: 5 to 25 minutes HP SmartClock / HP Enhanced GPS technology Frequency & Time Outputs 10 MHz: two outputs at >1 Vrms into 50 Ω load 1 PPS: >2.4 V pulse, 26 μ s width, <750 ps rms timing jitter (locked) 1 PPS leading edge jitter: <50 ps rms (locked) Accuracy & Stability Frequency accuracy (locked): better than 1×10^{-12} (one-day average) Time accuracy (locked): <110 ns to UTC (95% probability); 20 ns typical (1 Sigma) Time base stability: 1.5×10^{-12} per year Root Allan variance (1 sec): 5×10^{-12} Holdover aging: $<1 \times 10^{-10}$ per 24 hours; phase accumulation <8.6 μ s after 24 hours Phase Noise (10 MHz, locked) 10 Hz offset: -85 dBc/Hz 100 Hz offset: -135 dBc/Hz 1 kHz offset: -140 dBc/Hz 10 kHz offset: -145 dBc/Hz Key Features Intelligent holdover mode compensates for environmental changes during GPS signal loss Front panel LED indicators: Power, GPS lock, Holdover, Alarm Optional 16-character vacuum-fluorescent display N-type (female) antenna connector RS-232-C DTE interface for remote monitoring and control Universal AC input 90-260 Vac, 50-60 Hz; DC power options available Over 500,000 hours MTBF with quartz oscillator Typical Applications Precision frequency and time distribution for calibration laboratories, R&D facilities, and manufacturing environments requiring traceable primary standards and long-term frequency stability.

Features & description

From manufacturer datasheet

Features

- GPS-locked quartz with SmartClock holdover • 10 MHz and 1 pps outputs • 6-channel parallel tracking GPS engine • RS-232 monitoring and control • Universal 90-260 Vac power

58503A Characteristics / Specifications

PARAMETER	VALUE
Model	58503A
Manufacturer	Hewlett Packard / Agilent / Keysight
Instrument Type	GPS time and frequency reference receiver
Alias	HP 58503A; Agilent 58503A; Keysight 58503A
GPS Channels	6 channel parallel tracking
Reference Outputs	10 MHz and 1 pps
Frequency Accuracy Locked	better than 1e-12
Frequency Accuracy One Day Average 0 To 50 C	better than 1e-12
Time Accuracy Versus UTC USNO	better than 110 ns with SA present
Holdover Aging	better than 1e-10 per 24 hours
Root Allan Variance 1 s	5e-12
Phase Noise At 1 Hz Offset Class	-85 dBc/Hz
Phase Noise At 10 Hz Offset Class	-125 dBc/Hz 10 MHz Amplitude: 1 Vrms (also cited greater than 1 Vpp into 50 ohm)
Output Impedance	50 ohm
Oscillator Type	precision quartz GPS disciplined
Oscillator MTBF Class	greater than 500000 hours field proven
SmartClock Holdover	yes; compensates environmental drift
Control Interface	RS-232C
Mains	90-260 Vac; 50-60 Hz
Form Factor	benchtop
Related Antenna	58532A GPS reference antenna
RelatedBModel	58503B
Related Measurement Sync Sibling	59551A 10 MHz Connector Location: configurable front or rear on some units
Warm Lock Time Typical	5 to 25 minutes class

PARAMETER	VALUE
Operating Temperature Accuracy Spec	0 C to 50 C for 1e-12 day average statement
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General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Operating temperature	Accuracy Spec: 0 C to 50 C for 1e-12 day average statement
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Form Factor	benchtop
Related Antenna	58532A GPS reference antenna
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Related Measurement Sync Sibling	59551A 10 MHz Connector Location: configurable front or rear on some units
Warm Lock Time Typical	5 to 25 minutes class
Operating Temperature Accuracy Spec	0 C to 50 C for 1e-12 day average statement Notes Specs from HP 58503A datasheet/performance characteristic tables and Avalon/Calright OEM summaries. Confirm antenna model and 10 MHz front/rear configuration. Do not mix 58503B-only options without faceplate verification.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
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Manufacturer	Hewlett Packard / Agilent / Keysight
Instrument Type	GPS time and frequency reference receiver
Alias	HP 58503A; Agilent 58503A; Keysight 58503A
GPS Channels	6 channel parallel tracking
Reference Outputs	10 MHz and 1 pps
Frequency Accuracy Locked	better than 1e-12
Frequency Accuracy One Day Average 0 To 50 C: better than 1e-12	
Specifications	
PARAMETER	VALUE
Time Accuracy Versus UTC USNO	better than 110 ns with SA present
Holdover Aging	better than 1e-10 per 24 hours
Root Allan Variance 1 s	5e-12
Phase Noise At 1 Hz Offset Class	-85 dBc/Hz
Phase Noise At 10 Hz Offset Class	-125 dBc/Hz
10 MHz Amplitude: 1 Vrms (also cited greater than 1 Vpp into 50 ohm)	
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Output Impedance	50 ohm
Oscillator Type	precision quartz GPS disciplined
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PARAMETER	VALUE
Related Antenna	58532A GPS reference antenna
RelatedBModel	58503B
Related Measurement Sync Sibling	59551A

10 MHz Connector Location: configurable front or rear on some units
Warm Lock Time Typical: 5 to 25 minutes class
Operating Temperature Accuracy Spec: 0 C to 50 C for 1e-12 day average statement

Notes
Specs from HP 58503A datasheet/performance characteristic tables and Avalon/Calright OEM summaries. Confirm antenna model and 10 MHz front/rear configuration. Do not mix 58503B-only options without faceplate verification.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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NIST-traceable calibration · SAM registered ·
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.