

KEYSIGHT TECHNOLOGIES (AGILENT HP)

16823A

The Keysight (Agilent) 16823A is a portable logic analyzer featuring 102 logic analysis channels and an integrated 48-channel pattern generator. Part of the 16800 Series, this instrument provides high-performance logic state and timing analysis alongside digital stimulus generation in a single portable form factor, designed for debugging, verifying, and optimizing digital systems.

SPECIFICATIONS

General

Interfaces	LAN (10/100/1000 Mb/s), 6 x USB 2.0 (2 front, 4 rear), VGA video out, External Trigger BNC, GPIB (optional)
Display	15-inch color TFT LCD, 1024 x 768 XGA resolution, optional touchscreen

Physical

Power Supply	100 - 240 V AC ($\pm 10\%$), 50/60 Hz, 550 W maximum power consumption
Operating Temperature	0 °C to 40 °C °C
Dimensions (W×H×D)	426.5 mm × 337.8 mm × 396.2 mm mm

Logic Analyzer Channels & Mode

Logic Analyzer Channels	102 channels
Probe Support	Agilent 40-pin logic analyzer probes

State Analysis

Maximum State Clock Speed	250 MHz (standard) / 450 MHz (Option 450)
Maximum State Data Rate	250 Mb/s (standard) / 500 Mb/s (Option 500)
Minimum State Pulse Width	1.5 ns
Setup and Hold Time Window	1.0 ns (standard) / 600 ps (with Option 450/500)
State Memory Depth Options	1 M (Option 001), 4 M (Option 004), 8 M (Option 008), 16 M (Option 016), 32 M (Option 032)

Timing Analysis

Maximum Timing Sample Rate	1.0 GHz (half-channel) / 500 MHz (full-channel)
Half-Channel Timing Sample Rate	1.0 GHz
Full-Channel Timing Sample Rate	500 MHz
Transitional Timing Sample Rate	500 MHz
Timing Zoom Sample Rate	4.0 GHz (250 ps resolution)
Timing Zoom Memory Depth	64 K samples
Timing Memory Depth Options	Up to 32 M (full-channel) / 64 M (half-channel), configuration dependent

Input & Probing

Threshold Range	-3.0 V to +5.0 V
Threshold Settings Resolution	10 mV
Threshold Accuracy	$\pm(30 \text{ mV} + 1\% \text{ of setting})$
Minimum Input Voltage Swing	300 mV peak-to-peak
Maximum Input Voltage	$\pm 40 \text{ V}$
Input Impedance	100 k Ω (single-ended, probe dependent) / 20 k Ω (differential, probe dependent)
Input Capacitance	1.5 pF (probe dependent)

Pattern Generator

Pattern Generator Channels	48 channels
Maximum Vector Speed	300 MHz
Memory Depth per Channel	16 M vectors (16,777,216 vectors)
Logic Level Outputs	TTL, CMOS, LVCMOS (3.3V, 2.5V, 1.8V, 1.5V), LVDS, ECL (pod dependent)
Output Impedance	50 Ω nominal
Pattern Sequencer Commands	Store, loop, repeat, call, branch, etc.
Pattern Generator Clock Outputs	1
Pattern Generator Strobe Outputs	1
Pattern Generator Lead Sets Compatibility	10483A, 10480A, 10481A, 10482A, 10484A, 10485A, 10486A, 10344A

Triggering & Analysis

Trigger Sequencer States	16 states
Patterns / Words per State	16 pattern recognizers
Range Recognizers	4 range recognizers
Edge / Glitch Triggers	Edge/glitch triggers on any channel
Timer / Counter Resources	2 timers, 2 counters
Global Markers / Search Criteria	1007 user-definable global markers with search criteria

Built-in System

Operating System	Windows XP Professional or Windows Embedded Standard 7
Processor Type	Intel Celeron 2.0 GHz
System Memory (RAM)	1 GB / 2 GB (configuration dependent)
Internal Storage Type & Capacity	80 GB (or larger) Hard Disk Drive
Optical Storage Drive	DVD-ROM
Display Size & Resolution	15-inch color TFT, 1024 x 768 XGA
Touchscreen Availability	Optional (Option TCN)
External Video Outputs	1 VGA port

Connectivity & I/O

LAN Interface Speed	10/100/1000 Mb/s (Gigabit Ethernet)
USB Ports	6 x USB 2.0 (2 front, 4 rear)
GP-IB Interface Option	Optional (via USB-to-GPIB adapter)
External Trigger Input BNC	1 BNC (Logic Analyzer Trigger In)
External Trigger Output BNC	1 BNC (Logic Analyzer Trigger Out)

Software & Protocol Decoding

Analysis Software Application	Keysight (Agilent) Logic Analyzer Application Software
Offline Analysis Capability	Supported (via free Logic Analyzer software on host PC)
Exportable Data Formats	ASCII, CSV, XML, Binary, ALY

Power & Mechanical

AC Input Voltage Range	100 - 240 V AC $\pm 10\%$
AC Line Frequency Range	50/60 Hz
Power Consumption (Maximum)	550 W

Environmental & Compliance

Storage Temperature Range	-40 °C to +75 °C
Operating Humidity Range	Up to 80% relative humidity (non-condensing) at 40 °C
Maximum Operating Altitude	3,000 meters (10,000 feet)
Calibration Interval	2 years

Triggering

Pre-defined Trigger Macros	13
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Compliance & Safety

Safety Standards	IEC 61010-1:2001, CAN/CSA-C22.2 No. 61010-1-04, UL 61010-1:2004
EMC Standards	IEC 61326-1:2005, EN 61326-1:2006, ICES/NMB-001:2006

Environmental

Acoustic Noise Emission	51.5 dBA (low fan speed), 55.4 dBA (high fan speed)
Operating Vibration	0.27 g rms (5 Hz to 500 Hz)
Non-operating Vibration	2.41 g rms (5 Hz to 500 Hz)
Non-operating Altitude	15,300 m (50,000 ft)

Logic Analyzer Channels & Inputs

Number of Pods	6
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Connectivity & Interfaces

Target Control Port	10-pin header (2 rows of 5 pins)
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Pattern Generator Clock & Timing

Pattern Generator Clock Input Connector	SMB
Pattern Generator Clock Output Connector	SMB
Pattern Generator Strobe Output Connector	SMB

Logic Analyzer Performance

Minimum State Eye Width	1.5 ns
Typical Timing Accuracy	±(250 ps + 0.01% of interval)

TECHNOLOGY

Logic Analysis and Pattern Generation

APPLICATIONS

Digital System Debugging, FPGA Verification, Embedded Systems Testing

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