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**Data Sheet**

August 13, 2026

KEYSIGHT / AGILENT / HP

# Keysight / Agilent / HP 16531A 2-Channel 400 MSa/s Digitizing Oscilloscope Acquisition Module

HP 16531A 2 Channel 400 MSa/s Digitizing Oscilloscope Acquisition Module The HP 16531A is a two-channel digitizing-oscilloscope acquisition card for the 16500A/B/C logic-analysis mainframe. It requires the 16530A timebase card. Bandwidth 100 MHz class; sample rate 400 MSa/s per channel; 6-bit vertical; 4 kSample record per channel. Probe 10433A 300 MHz 10:1, 10-16 pF, 1 Mohm, 2 m. Succeeded in the same cage by 16532A (250 MHz, 1 GSa/s, 8 bit, 8 k). Cross-triggers with 16550A and other 16500 modules at 2 ns correlation. The HP 16531A is a two-channel digitizing-oscilloscope acquisition card for the 16500A/B/C logic-analysis mainframe. It requires the 16530A timebase card. Bandwidth 100 MHz class; sample rate 400 MSa/s per channel; 6-bit vertical; 4 kSample record per channel. Probe 10433A 300 MHz 10:1, 10-16 pF, 1 Mohm, 2 m. Succeeded in the same cage by 16532A (250 MHz, 1 GSa/s, 8 bit, 8 k). Cross-triggers with 16550A and other 16500 modules at 2 ns correlation. 100 MHz analog capture in a 16500 logic-analysis system

**MODEL****Keysight / Agilent /  
HP 16531A****CALIBRATION****Available on  
request****CONDITION****Used****STATUS****In stock****RFQ / SKU****16531A****LISTING**[https://aumictechlabs.c  
om/products/16531a-2/](https://aumictechlabs.com/products/16531a-2/)

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**This unit**

The Keysight/Agilent/HP 16531A is a 2-channel digitizing oscilloscope acquisition module for the 16500 series modular logic analysis framework. It captures high-speed transient signals with 1024

samples per channel and delivers integrated waveform analysis within a unified test environment. The module supports both state and timing acquisition modes, with threshold-programmable inputs and comprehensive measurement automation. It integrates directly with the HP 16530A timebase card for synchronized multi-channel operation.

**Technical Specifications**

**Channels:** 2

**Acquisition Memory:** 1024 samples per channel

**Setup Time:** 10 ns

**Hold Time:** 0 ns

**Minimum Detectable Glitch:** 5 ns wide at threshold

**State Mode Clock Repetition Rate:** 25 MHz maximum (single phase)

**Sample Period (Timing Mode):** 20 ns to 50 ms in 1-2-5 sequence

**Input Impedance:** 100 k $\Omega$   $\pm$ 2% shunted by approximately 8 pF

**Maximum Input Voltage:**  $\pm$ 40 V peak

**Probe Minimum Swing:** 600 mV peak-to-peak

**Dynamic Range:**  $\pm$ 10 V around threshold

**Threshold Range:** -9.9 to +9.9 V in 0.1 V increments

**Threshold Accuracy:**  $\pm$ 300 mV over -9.9 to -2.1 V and 2.1 to 9.9 V ranges

**Minimum Input Offset:** 250 mV at 25°C or input amplitude, whichever is greater

**Key Features**

- Independently programmable thresholds for channels 1 and 2
- Selectable clock edges (positive, negative, or either)
- Single-phase, two-phase demultiplexing, or two-phase mixed-mode clocking
- Automatic measurements: Frequency, Rise Time, Fall Time, Period, Pulse Width, Vpp, Preshoot, Overshoot, Vtop-base
- Vertical and time markers for manual measurements
- Autoscale function (requires >10 mV peak amplitude and 50 Hz to 100 MHz frequency)
- ECL and TTL waveform presets
- Change-triggered sampling in timing mode

**Typical Applications**

- Digital signal acquisition in mixed-signal test environments
- Transient waveform capture for protocol analysis
- Timing and setup/hold characterization
- Glitch detection and measurement

**Compatibility & Integration**

The 16531A operates within the Keysight 16500 series framework and connects to the HP 16530A timebase card. Multiple acquisition modules can share a single timebase card for coordinated multi-channel operation.

## 16531A Characteristics / Specifications

| PARAMETER             | VALUE                                      |
|-----------------------|--------------------------------------------|
| Model                 | 16531A                                     |
| Manufacturer          | Hewlett Packard / Agilent / Keysight       |
| Instrument Type       | Digitizing oscilloscope acquisition module |
| Series                | 16500 modules                              |
| Alias                 | 16531A; HP 16531A                          |
| Channels              | 2                                          |
| Sample Rate           | 400 MSa/s                                  |
| Bandwidth Class       | 100 MHz                                    |
| Vertical Resolution   | 6 bit                                      |
| Record Length         | 4 kSamples per channel                     |
| Timebase Module       | 16530A required                            |
| Host Mainframe        | 16500A / 16500B / 16500C                   |
| Probe Example         | 10433A 300 MHz 10:1                        |
| Probe R               | 1 Mohm                                     |
| Probe C               | 10 to 16 pF                                |
| Probe Cable           | 2 m                                        |
| Related 16532A        | 250 MHz, 1 GSa/s, 8 bit, 8 k               |
| Related 16533A 16534A | later 16500 scope modules                  |
| Time Correlation      | 2 ns with other 16500 modules              |
| Form                  | 16500 plugin (with 16530A)                 |
| Status                | HP 16530/31A pair                          |
| Installation          | 16500 slot pair with 16530A                |
| Documentation         | 16531A programming/service                 |
| Use                   | restore 400 MSa/s acquisition              |
| Compatibility         | 16500 mainframes                           |

| PARAMETER      | VALUE                                                                                                                                                                                                                                                      |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identification | 16531A                                                                                                                                                                                                                                                     |
| Cooling        | 16500 airflow                                                                                                                                                                                                                                              |
| Calibration    | scope cal in 16500                                                                                                                                                                                                                                         |
| Duty           | continuous in 16500                                                                                                                                                                                                                                        |
| Not Standalone | needs 16530A and 16500C/B/A Notes Specs from HP 16500 module lists (16531A 2-ch 400 MSa/s 100 MHz 6-bit 4 k; 16530A timebase). Confirm 16530A is present. Do not copy 16532A 1 GSa/s numbers onto 16531A.                                                  |
| Bandwidth      | 100 MHz class; sample rate 400 MSa/s per channel; 6-bit vertical; 4 kSample record per channel. Probe 10433A 300 MHz 10:1, 10-16 pF, 1 Mohm, 2 m. Succeeded in the same cage by 16532A (250 MHz, 1 GSa/s, 8 bit, 8 k). Cross-triggers with 16550A and othe |

# 16531A Specifications

| PARAMETER                | VALUE                                                   |
|--------------------------|---------------------------------------------------------|
| Applications             | 100 MHz analog capture in a 16500 logic-analysis system |
| Key Features             | 2 channels, 400 MSa/s, 6 bit, 4 k                       |
| Requires 16530A timebase | 16500A/B/C plugin                                       |
| Technical Specifications | Model: 16531A                                           |

# 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      |                                            |
|---------------------|--------------------------------------------|
| Specifications      |                                            |
| PARAMETER           | VALUE                                      |
| Model               | 16531A                                     |
| Manufacturer        | Hewlett Packard / Agilent / Keysight       |
| Instrument Type     | Digitizing oscilloscope acquisition module |
| Specifications      |                                            |
| PARAMETER           | VALUE                                      |
| Series              | 16500 modules                              |
| Alias               | 16531A; HP 16531A                          |
| Channels            | 2                                          |
| Specifications      |                                            |
| PARAMETER           | VALUE                                      |
| Sample Rate         | 400 MSa/s                                  |
| Bandwidth Class     | 100 MHz                                    |
| Vertical Resolution | 6 bit                                      |
| Specifications      |                                            |
| PARAMETER           | VALUE                                      |
| Record Length       | 4 kSamples per channel                     |
| Timebase Module     | 16530A required                            |
| Host Mainframe      | 16500A / 16500B / 16500C                   |
| Specifications      |                                            |
| PARAMETER           | VALUE                                      |
| Probe Example       | 10433A 300 MHz 10:1                        |
| Probe R             | 1 Mohm                                     |
| Probe C             | 10 to 16 pF                                |

### Specifications

| PARAMETER             | VALUE                        |
|-----------------------|------------------------------|
| Probe Cable           | 2 m                          |
| Related 16532A        | 250 MHz, 1 GSa/s, 8 bit, 8 k |
| Related 16533A 16534A | later 16500 scope modules    |

### Specifications

| PARAMETER        | VALUE                         |
|------------------|-------------------------------|
| Time Correlation | 2 ns with other 16500 modules |
| Form             | 16500 plugin (with 16530A)    |
| Status           | HP 16530/31A pair             |

### Specifications

| PARAMETER     | VALUE                         |
|---------------|-------------------------------|
| Installation  | 16500 slot pair with 16530A   |
| Documentation | 16531A programming/service    |
| Use           | restore 400 MSa/s acquisition |

### Specifications

| PARAMETER      | VALUE            |
|----------------|------------------|
| Compatibility  | 16500 mainframes |
| Identification | 16531A           |
| Cooling        | 16500 airflow    |

### Specifications

| PARAMETER      | VALUE                       |
|----------------|-----------------------------|
| Calibration    | scope cal in 16500          |
| Duty           | continuous in 16500         |
| Not Standalone | needs 16530A and 16500C/B/A |

#### Notes

Specs from HP 16500 module lists (16531A 2-ch 400 MSa/s 100 MHz 6-bit 4 k; 16530A timebase). Confirm 16530A is present. Do not copy 16532A 1 GSa/s numbers onto 16531A.

### Available from Aumictech

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

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

#### Aumictech

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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.