

## KEYSIGHT TECHNOLOGIES (AGILENT HP)

# 54610B

The Keysight (Agilent) 54610B is a 500 MHz, 2-channel digital storage oscilloscope from the 54600 Series. It combines the responsive, analog-like feel of a high-speed vector display with digital storage capabilities, providing up to 20 MSA/s real-time sampling and 10 GSa/s equivalent-time sampling for repetitive waveforms.

## SPECIFICATIONS

### General

|            |                                                                    |
|------------|--------------------------------------------------------------------|
| Interfaces | HP-IB (GPIB), RS-232, or Parallel (via optional interface modules) |
| Display    | 7-inch monochrome raster CRT                                       |

### Physical

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Power Supply          | 100 - 240 V AC ( $\pm 10\%$ ), 45 - 440 Hz, 220 VA maximum |
| Operating Temperature | 0 to +55 °C °C                                             |
| Dimensions (W×H×D)    | 322 mm × 172 mm × 417 mm mm                                |
| Weight                | 6.2 kg kg                                                  |

### Vertical System

|                                       |                                                                        |
|---------------------------------------|------------------------------------------------------------------------|
| Number of Channels                    | 2                                                                      |
| Analog Bandwidth (-3 dB)              | 500 MHz                                                                |
| Calculated Rise Time                  | < 700 ps                                                               |
| Input Coupling                        | AC, DC, GND                                                            |
| Input Impedance                       | 1 M $\Omega$ ( $\parallel$ 8 pF) or 50 $\Omega$ (selectable)           |
| Vertical Sensitivity Range            | 2 mV/div to 5 V/div                                                    |
| Vertical Resolution                   | 8 bits                                                                 |
| DC Vertical Gain Accuracy             | $\pm 1.5\%$                                                            |
| Maximum Input Voltage (1 M $\Omega$ ) | 400 V (DC + peak AC)                                                   |
| Maximum Input Voltage (50 $\Omega$ )  | 5 V rms                                                                |
| Channel-to-Channel Isolation          | > 40 dB at 100 MHz                                                     |
| Vertical Offset Range                 | $\pm 2$ V (2 mV/div to 100 mV/div), $\pm 40$ V (200 mV/div to 5 V/div) |
| Vertical Dynamic Range                | $\pm 8$ divisions from center screen                                   |
| Probe Attenuation Factors             | 1:1, 10:1, 100:1 selectable                                            |

## Horizontal System

|                         |                         |
|-------------------------|-------------------------|
| Time Base Range         | 1 ns/div to 5 s/div     |
| Time Base Accuracy      | ±0.01%                  |
| Horizontal Modes        | Main, Delayed, XY, Roll |
| Horizontal Delay Jitter | 10 ppm                  |
| Horizontal Resolution   | 100 ps                  |

## Acquisition System

|                                     |                                             |
|-------------------------------------|---------------------------------------------|
| Maximum Real-time Sample Rate       | 20 MSa/s                                    |
| Maximum Equivalent-time Sample Rate | 10 GSa/s                                    |
| Memory Depth (Record Length)        | 4,000 points per channel                    |
| Acquisition Modes                   | Real-time, Repetitive, Peak Detect, Average |
| Peak Detect Glitch Capture Width    | 50 ns                                       |
| Waveform Averaging                  | Selectable (4, 8, 16, 32, 64, 128, 256)     |

## Trigger System

|                                          |                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Trigger Sources                          | Channel 1, Channel 2, Line, External                                                                         |
| Trigger Modes                            | Auto, Normal, Single                                                                                         |
| Trigger Coupling                         | AC, DC, LF Reject, HF Reject, Noise Reject                                                                   |
| Trigger Sensitivity (DC to 100 MHz)      | 0.35 div or 2.0 mV                                                                                           |
| Trigger Sensitivity (100 MHz to 500 MHz) | 1.0 div or 10 mV                                                                                             |
| External Trigger Input Impedance         | 1 MΩ (   8 pF)                                                                                               |
| External Trigger Maximum Input Voltage   | 400 V (DC + peak AC)                                                                                         |
| Trigger Holdoff Range                    | 200 ns to 13 s                                                                                               |
| LF Reject Filter Cutoff                  | 50 kHz                                                                                                       |
| HF Reject Filter Cutoff                  | 50 kHz                                                                                                       |
| External Trigger Range                   | ±1.8 V or ±18 V                                                                                              |
| External Trigger Sensitivity             | ±1.8 V range: 100 mV (DC-100 MHz), 500 mV (100-500 MHz);<br>±18 V range: 1 V (DC-100 MHz), 5 V (100-500 MHz) |

## Waveform Measurements and Math

|                                |                                                                     |
|--------------------------------|---------------------------------------------------------------------|
| Automatic Voltage Measurements | Vp-p, Vmax, Vmin, Vtop, Vbase, Vavg, Vrms                           |
| Automatic Time Measurements    | Frequency, Period, Duty Cycle, +Width, -Width, Rise Time, Fall Time |
| Cursor Measurements            | Volts, Time, 1/Time (Frequency)                                     |
| Waveform Math Operations       | Addition, Subtraction (Channel 1 ± Channel 2)                       |

## Display Characteristics

|                       |                                    |
|-----------------------|------------------------------------|
| Waveform Update Rate  | Up to 1.5 million points/sec       |
| Controls & Dial Types | Analog-style tactile control knobs |

**Connectivity & I/O Interfaces**

|                             |                            |
|-----------------------------|----------------------------|
| Auxiliary Calibrator Output | ~5 V, ~1.2 kHz square wave |
|-----------------------------|----------------------------|

**Environmental and Safety**

|                                 |                                                |
|---------------------------------|------------------------------------------------|
| Storage Temperature             | -40 to +70 °C                                  |
| Operating Humidity              | 95% RH at 40 °C                                |
| Operating Altitude              | Up to 4,600 meters (15,000 feet)               |
| Vibration Resistance            | Random vibration 0.31 g (rms) from 5 to 500 Hz |
| Safety Standards Certifications | CSA C22.2 No. 231, IEC 348                     |

**Power**

|                           |                 |
|---------------------------|-----------------|
| Line Frequency Range      | 45 Hz to 440 Hz |
| Maximum Power Consumption | 220 VA          |

**Display**

|                 |                 |
|-----------------|-----------------|
| CRT Screen Size | 7-inch diagonal |
| CRT Phosphor    | P31             |

**Options & Accessories**

|                            |                                                                        |
|----------------------------|------------------------------------------------------------------------|
| Optional Interface Modules | HP 54650A (HP-IB), HP 54651A (RS-232), HP 54652A (Centronics Parallel) |
|----------------------------|------------------------------------------------------------------------|

**Storage & Memory**

|                  |                                    |
|------------------|------------------------------------|
| Setup Storage    | 16 non-volatile front-panel setups |
| Waveform Storage | 4 non-volatile waveform memories   |

**Triggering**

|                              |                                     |
|------------------------------|-------------------------------------|
| Internal Trigger Level Range | ±12 divisions from center of screen |
|------------------------------|-------------------------------------|

**Environmental**

|                  |                                |
|------------------|--------------------------------|
| Shock Resistance | 30g, half-sine, 11 ms duration |
|------------------|--------------------------------|

**TECHNOLOGY**

Digital Storage Oscilloscope (DSO)

**APPLICATIONS**

Electronic Design and Troubleshooting

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.