

KEYSIGHT TECHNOLOGIES (AGILENT HP)

54622D

The Keysight (Agilent) 54622D is a 2+16 channel, 100 MHz Mixed-Signal Oscilloscope (MSO) that combines the detailed signal analysis of an oscilloscope with the multi-channel timing measurements of a logic analyzer. Featuring 4 MB of patented MegaZoom deep memory and a high-definition display with 32 levels of intensity, it is designed for debugging MCU, CPLD, and serial bus systems like I2C, SPI, LIN, CAN, and USB.

SPECIFICATIONS

General

Interfaces	RS-232 (Standard), Parallel Printer Port (Standard), Floppy Drive (Standard); GPIB, USB, LAN (via optional modules)
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Physical

Power Supply	100-240 VAC, 50/60 Hz / 100-120 VAC, 400 Hz; 110 VA maximum
Operating Temperature	0 °C to +55 °C °C
Dimensions (W×H×D)	322 mm × 172 mm × 317 mm mm
Weight	6.2 kg

System Overview

Analog Bandwidth	100 MHz
Number of Analog Channels	2
Number of Digital Channels	16
Maximum Analog Sample Rate	200 MSa/s
Maximum Digital Sample Rate	400 MSa/s
Maximum Memory Depth (Analog)	4 MB (single-channel), 2 MB (dual-channel)
Maximum Memory Depth (Digital)	8 MB (8-channels active), 4 MB (16-channels active)
Waveform Update Rate	25 million vectors/second

Vertical System - Analog Channels

Hardware Bandwidth Limits	20 MHz (selectable)
Input Coupling	AC, DC, GND
Input Impedance	1 M Ω 13 pF
Input Sensitivity Range	2 mV/div to 5 V/div
Vertical Resolution	8 bits
DC Gain Accuracy	$\pm 2.0\%$ of full scale
Maximum Input Voltage	400 V (DC + Peak AC)
Analog Channel Rise Time (Calculated)	3.5 ns
Analog Channel Offset Range (2 mV/div to 200 mV/div)	± 2 V
Analog Channel Offset Range (>200 mV/div to 5 V/div)	± 40 V
Analog Channel Dynamic Range	± 8 divisions from screen center

Vertical System - Digital Channels

Input Channels	16 channels (D0 - D15) in two 8-channel pods
Input Threshold Selections	TTL, CMOS, ECL, User-Defined
User-Defined Threshold Range	± 6.0 V in 10 mV increments
Threshold Accuracy	$\pm (100 \text{ mV} + 3\% \text{ of threshold setting})$
Input Dynamic Range	± 10 V about threshold
Minimum Input Voltage Swing	500 mV peak-to-peak
Input Impedance (Digital Probe)	100 k Ω 8 pF
Channel-to-Channel Skew	2 ns typical
Digital Channel Maximum Toggle Rate	150 MHz
Digital Channel Minimum Detectable Pulse Width	5 ns
Digital Channel-to-Channel Skew	2 ns typical, 3 ns maximum

Horizontal System

Timebase Range	5 ns/div to 50 s/div
Timebase Accuracy	$\pm 0.007\%$ (70 ppm)
Horizontal Modes	Main, Delayed, Roll, XY

Acquisition System

Acquisition Modes	Normal, Peak Detect, Averaging
Peak Detect Resolution	5 ns
Averaging Factors	2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384

Trigger System

Trigger Sources	Channel 1, Channel 2, Digital D0-D15, Line, External
Trigger Modes	Auto, Normal, Single
Trigger Coupling	AC, DC, LF Reject, HF Reject, Noise Reject
Trigger Holdoff Range	60 ns to 10 s
Edge Triggering	Rising, Falling, Alternating
Pulse Width Triggering	Trigger on positive or negative pulses from 5 ns to 10 s
Pattern/State Triggering	Trigger on multi-channel logic pattern or state
Serial Protocol Triggering	I ² C, SPI, LIN, CAN, USB (Start of Packet)
External Trigger Input Impedance	1 M Ω 13 pF
External Trigger Max Input Voltage	400 V (DC + Peak AC)
Trigger Sensitivity (DC to 25 MHz)	0.35 div or 3.5 mV
Trigger Sensitivity (25 MHz to 100 MHz)	1 div or 10 mV
External Trigger Sensitivity (DC to 25 MHz)	50 mV
External Trigger Sensitivity (25 MHz to 100 MHz)	150 mV
External Trigger Range	± 10 V

Waveform Measurements & Analysis

Automatic Voltage Measurements	Vp-p, Vmax, Vmin, Vtop, Vbase, Vamp, Vavg, Vrms
Automatic Time Measurements	Frequency, Period, Rise Time, Fall Time, +Width, -Width, Duty Cycle
Cursor Measurements	Manual, Track, Auto
Waveform Math Operations	Addition, Subtraction, Multiplication, FFT
FFT Window Functions	Hanning, Flat Top, Rectangular

Display & User Interface

Display Type	7-inch monochrome raster CRT with 32 levels of gray-scale
Display Resolution	500 × 240 pixels
Local Language Support	Quick Help in 11 languages

Connectivity & Interfaces

RS-232 Interface	Standard, DB-9 male, up to 115.2 kbps
Parallel Printer Port	Standard, 25-pin D-sub female
Floppy Drive	Standard 3.5-inch 1.44 MB
Auxiliary Output	Trigger Out (BNC)

Power Requirements

Line Voltage Range	100 to 240 VAC (nominal)
Line Frequency Range	50 Hz to 60 Hz, or 400 Hz (at 100-120 VAC)
Power Consumption	110 VA max

Environmental & Safety Compliance

Storage Temperature Range	-40 °C to +70 °C
Operating Altitude	Up to 4,600 m (15,000 ft)

Ordering & Configuration

Standard Probes Included (Analog)	2 x 10074C 10:1 passive probes (1.5 m, 150 MHz)
Standard Probes Included (Digital)	16-channel digital probe kit (54620-68701) with grabbers and lead set

Triggering

Minimum Glitch Pulse Width	5 ns
Video Triggering Formats	NTSC, PAL, SECAM, PAL-M
High-Frequency Reject Filter	Selectable, ~50 kHz cutoff
Low-Frequency Reject Filter	Selectable, ~50 kHz cutoff

Digital Channels

Digital Probe Input Capacitance	8 pF
Digital Probe Maximum Input Voltage	±40 V peak

Storage

Internal Setup/Waveform Storage	3 setups, 4 waveforms
Real-time Clock	Yes, battery-backed (for file timestamps)

Serial Triggering

I2C Triggering Modes	Start, Stop, Missing Ack, Address, Data, Restart
SPI Triggering Modes	Data (MISO/MOSI), Clock, Chip Select
CAN Triggering Modes	Start of Frame, Frame Type, Identifier, Data, Missing Ack

Display

Display Size	7-inch diagonal CRT
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Connectivity

Optional Interface Modules	N2757A (GPIB), N2758A (USB)
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Environmental & Safety

Operating Humidity	95% RH at 40 °C
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General Specifications

Calibration Interval	1 year
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TECHNOLOGY

Mixed Signal Oscilloscope

APPLICATIONS

MCU and CPLD debugging, serial bus analysis (I2C, SPI, CAN, LIN, USB), mixed-signal circuit troubleshooting

