

➤ 9384C Series

Signal Capture



Acquisition System

Bandwidth (- 3 dB):

- @ 50 Ω: DC to 1 GHz
10 mV/div and above
- @ 1 MΩ: DC to 500 MHz typical
at PP005 probe tip
 - 1 GHz FET probe optional

Number of Channels: four

Number of Digitizers: four

Sensitivity:

- 50 Ω: 2 mV/div to 1 V/div, fully variable
- 1 MΩ: 2 mV/div to 10 V/div, fully variable

Scale Factors: Wide range of probe attenuation factors

Offset Range:

- 2.00–4.99 mV/div: ±400 mV
- 5–99 mV/div: ±1 V
- 0.1–1 V/div: ±10 V
- 1–10 V/div: ±100 V (1 MΩ Only)
- ±20 V over the full sensitivity range using AP 020 FET probe

9384C Series					
CHANNELS USED (PEAK DETECT ON/OFF)	MAX SAMPLE RATE	MEMORY PER CHANNEL (IN POINTS)			ACTIVE CHANNELS
		Model			
		C	CM/CTM	CL	
All (Peak Detect OFF)	1 GS/s	100k	500k	2M	All
All (Peak Detect ON)	100 MS/s data	50k data	250k data	1M data	All
	400 MS/s peak	50k peak	250k peak	1M peaks	2.5 ns peak detect
Two Channels Paired (Peak Detect OFF)	2 GS/s	200k	1M	2M	CH 2 + CH 3



Specifications

Four Channels Combined by PP094 Adapter (Peak Detect OFF)	4 GS/s	400k	2M	8M	One (PP094 input)
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DC Accuracy: typically 1% at 10 mV and above

Vertical Resolution: 8 bits

Bandwidth Limiter:

- 25 MHz
- 200 MHz

Input Coupling: AC, DC, GND

Input Impedance: 50 Ω ±1 %, or 1 MΩ//11 pF typical

Max. Input:

- 50 Ω: ±5 V DC
- 1 MΩ: 400 V max (DC + peak AC ≤10 kHz)

Acquisition Modes

Random Interleaved Sampling (RIS): For repetitive signals from 1 ns/div to 2 μs/div

Single shot: For transient and repetitive signals from 1 ns/div (all channels active)

Peak Detect: Captures and displays 2.5 ns glitches and other high-speed events

Sequence: Stores multiple events, time-stamped, in segmented acquisition memories

Deadtime Between Segments: ≈80 μs

Number of Segments Available:

Model			Segments
9384C			2–500
9384CM	9384CTM	9384CL	2–2000

Timebase System

Timebases: Main and up to four Zoom Traces

Time/Div Range: 1 ns/div to 1000 s/div

Clock Accuracy: ≤10 ppm

Interpolator resolution: 10 ps

Roll Mode:

- Ranges 500 ms–1000 s/div
- For >50 000 points: 10–1000 s/div

Triggering System

Modes: Normal, Auto, Single, and Stop

Sources: CH1, CH2, CH3, CH4, Line, Ext, Ext/10; Slope, Level and Coupling able to be set independently

Slope: Positive, Negative

Coupling: AC, DC, HF, LFREJ, HFREJ

Pre-trigger Recording: 0–100 % of full scale adjustable in 1 % increments



SMART Trigger Types

Post-trigger Delay: 0–10 000 divisions adjustable in 0.1 div increments

Holdoff by Time: 10 ns–20 s

Holdoff by Events: 0–99 999 999 events

Internal Trigger Range: ± 5 div

EXT Trigger Max Input:

➤ 50 Ω ± 1 %: ± 5 V DC (500 mW) or 5 V rms

➤ 1 M Ω /15 pF: 400 V max. (DC + peak AC ≤ 10 kHz)

EXT Trigger Range: ± 0.5 V (± 5 V with Ext/10)

Trigger Timing: Trigger Date and Time listed in “Memory Status” menu

Signal or Pattern Width: Triggers on width between two limits of between <2.5 ns (1 ns typical) or pulse widths between <2.5 ns and 20 s exclusive

Signal or Pattern Interval: Triggers on interval between two limits of between 10 ns and 20 s

Dropout: Triggers if the input signal drops out for a time-out longer than 25 ns–20 s

State/Edge Qualified: Triggers on any source only if a given state or transition – number of events, time interval – on another source

TV: Selection of both line (up to 1500) and field number (up to 8) for PAL, SECAM, NTSC or nonstandard video

Exclusion Trigger: Triggers only on shorter-than-normal (defined) aberrations

Pattern: Triggers on the logic combination of the five inputs CH 1, CH 2, CH 3, CH 4 and EXT Trigger, where each source can be defined as High, Low or Don't Know and the trigger as the pattern's beginning or end

Autosetup

AUTOSETUP button: Sets timebase, trigger and sensitivity to display wide range of repetitive signals – amplitude 2 mV–40 V; frequency above 50 Hz; duty cycle greater than 0.1%

Autosetup Time: Around two seconds

Vertical Find: Automatically sets sensitivity and offset



Probes

Probe Model: One PP005 probe supplied per channel (10:1, 10 M Ω //11 pF, 500 V max input); FET probes, purchased separately, fully compatible with entire scope series

Probe calibration: Max 1 V into 1 M Ω , 500 mV into 50 Ω , frequency and amplitude programmable, pulse or square wave

able to be selected, rise and fall time 1 ns typical (calibrator also offers trigger or Pass/Fail output)

Signal Viewing

Display

CRT: 12.5 x 17.5 cm (9" diagonal) raster

Resolution: 810 x 696 points

Grids: 1, 2, or 4 grids.

Formats: YT, XY and both together

Gaticules: Internally generated; separate intensity control for grids and waveforms

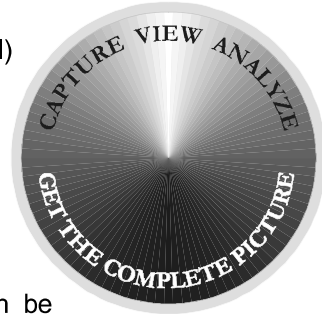
Waveform Style: Vectors, which can be switched on and off, connect individual sample points highlighted as dots

Modes: Normal, XY, Variable or Infinite Persistence

Real-time Clock: Date, hours, minutes, seconds

Vertical Zoom: Up to 5x Vertical Expansion (50x with averaging, up to 80 μ V sensitivity, with optional WP01 Advanced Waveform Math Package)

Horizontal Zoom: Waveforms can be expanded to give 2–2.5 points/div.



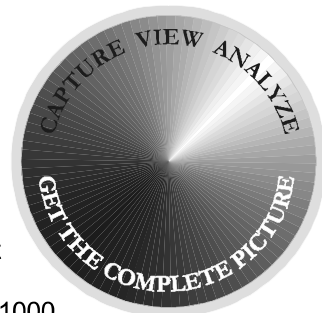
Model		Zoom Factor
9384C		2000x
9384CM	9384CTM	10 000x
9384CL		80 000x

Signal Analysis

Waveform Processing

Processing functions: Add, Subtract, Multiply, Divide, Negate, Identity, Summation Averaging, and Sine x/x ; four functions performable at one time

Average: Summed averaging of up to 1000





Specifications

waveforms in the basic instrument; up to 10^6 averages possible with optional WP01 Advanced Waveform Math Package



Extrema: Roof, Floor or Envelope values of from 1 to 10^6 waveforms – with WP01 Option

ERES: Low-Pass digital filter provides up to 11 bits vertical resolution; sampled data always available, even when trace turned off; any of above modes usable without destroying data – with WP01 Option

FFT: Spectral Analysis with five windowing functions and FFT averaging, with optional WP02 Spectrum Analysis Package

Histogramming and Trending: With optional WP03 Parameter Analysis Package, in-depth diagnostics on waveform parameters

Internal Memory

Waveform Memory: Up to four 16-bit Memories (M1, M2, M3, M4).

Processing Memory: Up to four 16-bit Waveform Processing Memories (A, B, C, D).

Setup Memory: Four non-volatile memories; optional cards or disks for high-capacity waveform and setup storage

Cursor Measurements

Relative Time: Arrow cursors measure time and voltage differences relative to each other

Relative Voltage: Horizontal bars measure voltage differences up to $\pm 0.2\%$ full-scale in single-grid mode

Absolute Time: Cross-hair marker measures time relative to trigger and voltage with respect to ground

Absolute Voltage: Reference bar measures voltage with respect to ground

Interfacing

Remote Control: By GPIB and RS-232-C for all front-panel controls, internal functions

RS-232-C Port: Asynchronous up to 115.2 Kb/s for computer or terminal control, or printer or plotter connection

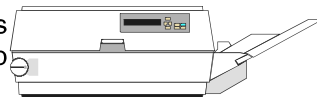
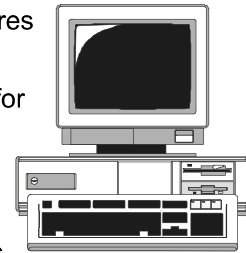
GPIB Port: (IEEE-488.1) Configurable as talker/listener for computer control and fast data transfer; command language compliant with IEEE-488.2

Centronics Port: Hardcopy interface

PC Card (PCMCIA II/III Ports): Optional for memory cards, flash cards and removable hard disks

Floppy Disk: High density 3.5-inch floppy disk drive (DOS format)

Hardcopy: TIFF and BMP formats available for import to Desktop



Publishing programs; printers and plotters: HP DeskJet, HP ThinkJet, QuietJet, LaserJet, PaintJet, and EPSON printers; HP 7400 and 7500 series, or HPGL compatible plotters

➤ Optional internal, high-resolution graphics printer

Output Formats: Binary, or ASCII waveform output compatible with spreadsheets, MATLAB, Mathcad

General

Auto-calibration: Ensures specified DC and timing accuracy

Temperature: 5 to 40 °C (41 to 104 °F) rated

Humidity: 80 % for temperatures up to 31 °C, decreasing linearly to 50 % relative humidity at 40 °C

Altitude: Up to 2000 m (6560 ft) operating, 40 °C max

Power: 90–250 V AC, 45–66 Hz, 350 W

Battery Backup: Front-panel settings maintained for two years

Dimensions: (HWD) 8.5 x 14.5 x 16.25 inches / 264 x 397 x 453 mm

Weight: 13 kg (28.6 lb.) net, 18.5 kg (40.7 lb.) shipping

Warranty: Three years

Conformity

EMC: EN 50082-1 conformity

Safety: Designed to comply with EN 61010-1; UL and cUL listed, File E 170588: Protection Category I, Installation (Over-Voltage) Category II, Pollution Degree 2

See Declaration of Conformity for further details.