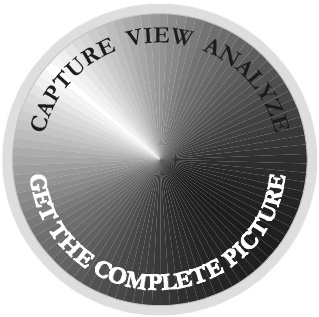
➢ *9304C Series, 9310C Series, 9314C Series*

Signal Capture



Acquisition System

Bandwidth (–3 dB):
- **9304C Series**
  - @ 50 Ω: DC to 200 MHz
  - @ 1 MΩ: DC to 160 MHz typical at probe tip
- **9310C/9314C Series):**
  - @ 50 Ω: DC to 400 MHz
  - @ 1 MΩ: DC to 230 MHz typical at probe tip

***Note:** Where a particular model or a series is NOT mentioned, the specification concerned applies to all related models.*

Number of Channels:
- **9304C/9314C Series:** four
- **9310C Series:** two

Number of Digitizers:
- **9304C/9314C Series:** four
- **9310C Series:** two

Max. Sample Rate: 100 MS/s simultaneously on each channel
Sensitivity: 2 mV/div to 5 V/div, fully variable
Scale Factors: Wide range of probe attenuation factors
Offset Range:
- 2.00–9.9 mV/div: ±120 mV
- 10.0–199 mV/div: ±1.2 V
- 0.2–5.0 V/div: ±24 V

DC Accuracy: ±2 % full scale (eight divisions) at 0 V offset
Vertical Resolution: 8 bits
Bandwidth Limiter: 30 MHz

Model	9304C	9304CM	9310C	9310CM	9310CL	9314C	9314CM	9314CL
Number of Channels	Four		Two			Four		
Acquisition Memory per Channel	50 k	200 k	50 k	200 k	1 M	50 k	200 k	1 M

Input Coupling: AC, DC, GND

Input Impedance: 1 MΩ//15 pF (system capacitance using PP002) or 50 Ω ±1 %

Max. Input:

- 50 Ω: ±5 V DC (500 mW) or 5 V rms
- 1 MΩ: 250 V max (DC + peak AC ≤10 kHz)

Acquisition Modes

Random Interleaved Sampling (RIS): For repetitive signals from 1 ns/div to 10 µs/div

Single shot: For transient and repetitive signals from 50 ns/div

Sequence: Stores multiple events in segmented acquisition memories

Deadtime Between Segments: ≤80 µs

Number of Segments Available:

Model			Segments
9304C	9310C	9314C	2–200
9304CM	9310CM	9314CM	2–500
9310CL		9314CL	2–2000

Timebase System

Timebases: Main and up to four Zoom Traces

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

Clock Accuracy: ≤±0.002%

Interpolator resolution: 10 ps

Roll Mode: Ranges 500 ms–1000 s/div

For > 50 000 points: 10–1000 s/div

External Clock: ≤100 MHz on EXT input with ECL, TTL or zero crossing levels

Triggering System

Modes: Normal, Auto, Single, and Stop

Sources: CH1, CH2 (plus CH3 and CH4 on four-channel models), Line, Ext, Ext/10; Slope, Level and Coupling able to be set independently

Slope: Positive, Negative, Window (Bislope)

Coupling: AC, DC, HF (up to 500 MHz), LFREJ, HFREJ

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

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 MΩ/15 pF: 250 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

SMART Trigger Types

Signal Width: Triggers on width between two limits of between 2.5 ns and 20 s
Signal 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

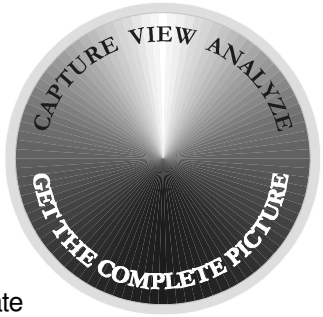
Autosetup

AUTOSETUP button: Sets timebase, trigger and sensitivity to display wide range of repetitive signals — amplitude 2 mV to 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 PP002 probe supplied per channel; FET probes, purchased separately, fully compatible with entire scope series
Probe calibration: Max 1 V into 1 MΩ, 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
Graticules: 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 40 µV sensitivity)
Horizontal Zoom:

Model			Zoom Factor
9304C	9310C	9314C	1000x
9304CM	9310CM	9314CM	5000x
9310CL	9314CL		20 000x

Signal Analysis

Waveform Processing

Processing Functions: Add, Subtract, Multiply, Divide, Negate, Identity and Summation Averaging; four functions performable at one time
Average: Summed averaging of up to 1000 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 optional WP01 Advanced Waveform Math Package

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

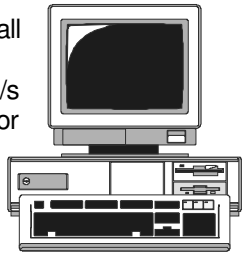
Internal Memory

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 for high-capacity waveform and setup storage

Cursor Measurements

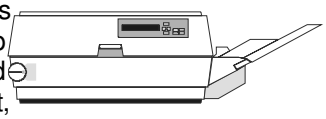
Relative Time: Arrow cursors measure time and voltage differences relative to each other
Relative Voltage: Horizontal bars measure voltage differences up to ±0.2% full-scale in single-grid mode
Absolute Time: Cross-hair marker measures time relative to trigger and voltage with respect to ground
Absolute 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, 150 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: 12.5 kg (27.5 lb.) net, 18 kg (40 lb.) shipping
Warranty: Three years

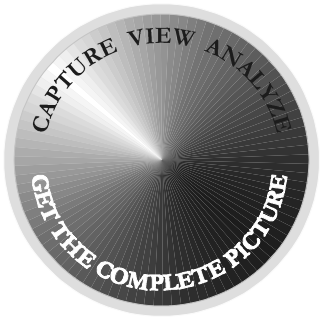
Conformity

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.

➢ 9344C Series, 9350C Series, 9354C Series

Signal Capture

Acquisition System



Bandwidth (–3 dB):

- **9344C Series**
  - @ 50 Ω: DC to 500 MHz
    - 100 mV/div: 400 MHz
    - 50 mV/div and below: 350 MHz
  - @ 1 MΩ: DC to 500 MHz typical at tip of optional FET probe AP020
- **9350C/9354C Series:**
  - @ 50 Ω: DC to 500 MHz
    100 mV/div: 400 MHz
    50 mV/div and below: 350 MHz
  - @ 1 MΩ: DC to 500 MHz typical at tip of optional FET probe AP020

Number of Channels:

- **9344C/9354C Series:** four
- **9350C Series:** two

Number of Digitizers:

- **9344C/9354C Series:** four

9350C Series: two

9344C Series					
Channels Used (Peak Detect ON/OFF)	Max Sample Rate	Memory per Channel (in Points) per Model			Active Channels
		C	CM	CL	
All (Peak Detect Off)	250 MS/s	50k	250k	2M	All
All (Peak Detect ON)	100 MS/s data	25k data	100k data	1M data	All
	200 MS/s peak	25k peak	100k peak	1M peak	
Two Channels Paired (Peak Detect OFF)	500 MS/s	100k	500k	4M	CH 2 and CH 3
Four Channels Combined (Peak Detect OFF)	1000 MS/s	250k	500k	4M	CH 2

9350C/9354C Series						
Channels Used (Peak Detect ON/OFF)	Max Sample Rate	Memory per Channel (in Points) per Model			Active Channels	
		C	CM	CL		
All (Peak Detect OFF)	500 MS/s	50k	250k	2M	All	
All (Peak Detect ON)	100 MS/s data	25k data	100k data	1M data	All	
	400 MS/s peak	25k peak	100k peak	1M peak	2.5 ns peak detect	
Two Channels Paired (Peak Detect OFF)	1 GS/s	100k	500k	4M	9350C/M/L	9354C/M/L
					CH 1	CH 2 + CH 3
Four-Channel Models Only						
Four Channels Combined by PP092 Adapter (Peak Detect OFF)	2 GS/s	250k	1M	8M	CH 2 (PP092 input)	
9354CTM						
All (Peak Detect OFF)	500 MS/s	500 000			All	
Two Channels Paired (Peak Detect OFF)	1 GS/s	1M			CH 2 and CH 3	
All Peak Detect ON	100 MS/s data	250k data			All	
	400 MS/s peak	250k peak			2.5 ns peak detect	
Four Channels Combined by PP092 Adapter (Peak Detect OFF)	2 GS/s	2M			CH 2 (PP092 input)	

Sensitivity: 2 mV/div to 5 V/div, fully variable
Scale Factors: Wide range of probe attenuation factors
Offset Range:

- 2.00–9.9 mV/div: ±120 mV
- 10.0–199 mV/div: ±1.2 V
- 0.2–5.0 V/div: ±24 V

DC Accuracy: typically 1%
Vertical Resolution: 8 bits
Bandwidth Limiter: 30 MHz
Input Coupling: AC, DC, GND

Input Impedance: 50 Ω ±1 % or 1 MΩ//15 pF (system capacitance using PP002)
Max. Input:
- 50 Ω: ±5 V DC (500 mW) or 5 V rms
- 1 MΩ: 250 V max (DC + peak AC ≤10 kHz)

Acquisition Modes

Random Interleaved Sampling (RIS): For repetitive signals from 1 ns/div to 2 µs/div
- **9344C Series, 9350CM/CL, 9354CM/CL/CTM:** For repetitive signals from 1 ns/div to 5 µs/div

Single shot:
- **9344C Series:** For transient and repetitive signals from 20 ns/div (all channels active)
- **9350C, 9354C Series:** For transient and repetitive signals from 10 ns/div (all channels active)

Peak Detect:
- **9344C Series:** Captures and displays 5 ns glitches and other high-speed events
- **9350C, 9354C Series:** Captures and displays 2.5 ns glitches and other high-speed events

Sequence: Stores multiple events in segmented acquisition memories
Deadtime Between Segments: ≤80 µs
Number of Segments Available:

Model				Segments
9344C	9350C	9354C		2–200
9344CM	9350CM	9354CM	9354CTM	2–500
9344CL	9350CL	9354CL		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:
- **9344C:** Ranges 500 ms–1000 s/div
- **9350C, 9354C Series:** Ranges 500 ms–1000 s/div; >50 000 points: 10–1000 s/div

External Clock: ≤100 MHz on EXT input with ECL, TTL or zero crossing levels

Triggering System

Modes: Normal, Auto, Single, and Stop
Sources: CH1, CH2 (plus CH3 and CH4 on four-channel models), Line, Ext, Ext/10; Slope, Level and Coupling able to be set independently
Slope: Positive, Negative
Coupling: AC, DC, HF (up to 500 MHz), LFREJ, HFREJ
Pre-trigger Recording: 0–100 % of full scale adjustable in 1 % increments
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 MΩ/15 pF: 250 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

SMART Trigger Types

Signal or Pattern Width: Triggers on width between two limits of between 2.5 ns and 20 s
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 Trigger:
- **Two-channel models:** Triggers on the logic combination of the three inputs CH 1, CH 2 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
- **Four-channel models:** 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

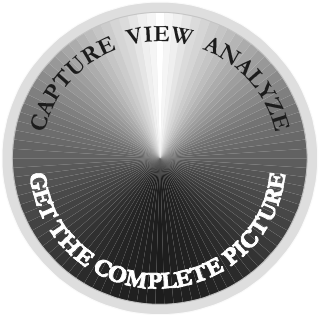
Autosetup

AUTOSETUP button: Sets timebase, trigger and sensitivity to display wide range of repetitive signals — amplitude 2 mV to 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 PP002 probe supplied per channel, DC to 250 MHz typical at probe tip, 600 V max.; FET probes, purchased separately, fully compatible with entire scope series
Probe calibration: Max 1 V into 1 MΩ, 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

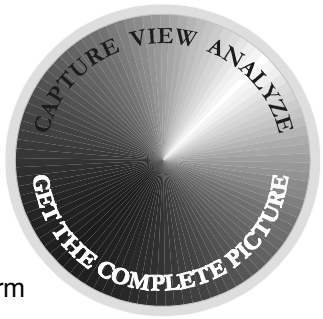


Display

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
Graticules: 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 40 µV sensitivity, with optional WP01 Advanced Waveform Math Package)
Horizontal Zoom: Waveforms can be expanded to give 2–2.5 points/div

Model			Zoom Factor
9344C	9350C	9354C	2000x
9344CM	9350CM	9354CM	10 000x
9354CTM			50 000x
9344CL	9350CL	9354CL	100 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 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 optional WP01 Advanced Waveform Math Package
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

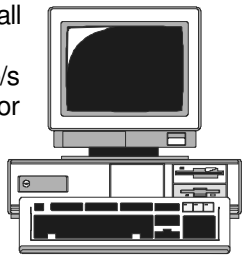
Internal Memory

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

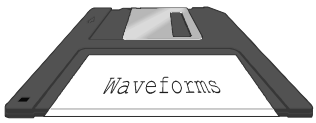
Cursor Measurements

Relative Time: Arrow cursors measure time and voltage differences relative to each other
Relative Voltage: Horizontal bars measure voltage differences up to ±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

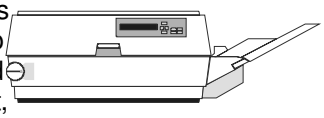
Interfacing



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

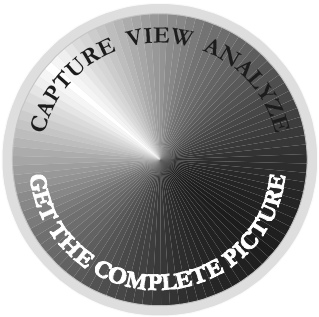
Auto-calibration: Ensures specified DC and timing accuracy
Temperature: 5 to 40 °C (41 to 104 °F) rated
Humidity: 80 % for temperatures up to 31 °C, decreasing linearly to 50 % relative humidity at 40 °C
Altitude: Up to 2000 m (6560 ft) operating, 40 °C max
Power: 90–250 V AC, 45–66 Hz, 230 W
Battery 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.

➢ *9370C Series, 9374C 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, Digitizers:
- ➢ **9374C Series:** four
- ➢ **9370C Series:** two

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

9370C/9374C Series							
Channels Used (Peak Detect ON/OFF)	Max Sample Rate	Memory per Channel (Points)				Active Channels	
		Model					
		C	CM	CTM	CL		
All (Peak Detect OFF)	500 MS/s	50k	250k	500k	2M	All	
All (Peak Detect ON)	100 MS/s data	25k data	100k data	250k data	1M data	All	
	400 MS/s peak	25k peak	100k peak	250k peak	1M peak	2.5 ns peak detect	
Two Channels Paired (Peak Detect OFF)	1 GS/s	100k	500k	1M	4M	9370C/M/L: CH 1	9374C/M/L/TM: CH 2 + CH 3
Four-Channel Models Only							
Four Channels Combined by PP093 Adapter (Peak Detect OFF)	2 GS/s	250k	1M	2M	8M	One (PP093 input)	

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)

DC Accuracy: typically 1%
Vertical Resolution: 8 bits
Bandwidth Limiter:
- 25 MHz
- 200 MHz

Input Coupling: AC, DC, GND
Input Impedance: 50 Ω ±1 %, or 1 MΩ//15 pF typical, system capacitance at tip of PP005 probe
Max. Input:
- 50 Ω: ±5 V DC (500 mW) or 5 V rms
- 1 MΩ: 400 V max (DC + peak AC ≤10 kHz)

Acquisition Modes

Random Interleaved Sampling (RIS): For repetitive signals from 1 ns/div to 5 µs/div
Single shot: For transient and repetitive signals from 10 ns/div (all channels active)
Peak Detect: Captures and displays 2.5 ns glitches and other high-speed events
Sequence: Stores multiple events in segmented acquisition memories
Deadtime Between Segments: ≤80 µs
Number of Segments Available:

Model			Segments
9370C	9374C		2–200
9370CM	9374CM		2–500
9370CL	9374CL	9374CTM	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

External Clock:
- ≤100 MHz on EXT input with ECL, TTL or zero crossing levels
- Optional 50–500 MHz rear panel fixed frequency clock input

Triggering System

Modes: Normal, Auto, Single, and Stop
Sources: CH1, CH2 (plus CH3 and CH4 on four-channel models), 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
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 MΩ/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

SMART Trigger Types

Signal or Pattern Width: Triggers on width between two limits of between 2.5 ns and 20 s
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:

- **Two-channel models:** Triggers on the logic combination of the three inputs CH 1, CH 2 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
- **Four-channel models:** 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 MΩ//11 pF, 500 V max input); FET probes, purchased separately, fully compatible with entire scope series
Probe calibration: Max 1 V into 1 MΩ, 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

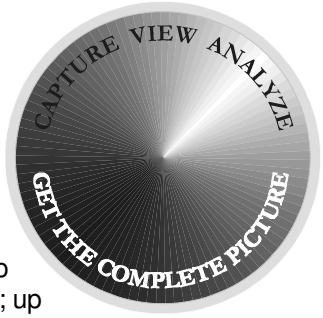
Display

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
Graticules: 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 40 µV sensitivity, with optional WP01 Advanced Waveform Math Package)
Horizontal Zoom: Waveforms can be expanded to give 2–2.5 points/div.

Model		Zoom Factor
9370C	9374C	2000x
9370CM	9374CM	10 000x
9374CTM		50 000x
9370CL	9374CL	100 000x

Signal Analysis



Waveform Processing

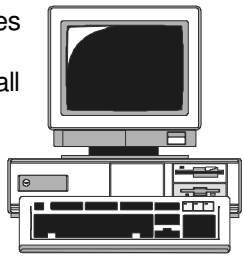
Processing functions: Add, Subtract, Multiply, Divide, Negate, Identity, Summation Averaging, and Sine x/x; four functions performable at one time
Average: Summed averaging of up to 1000 waveforms in the basic instrument; up to 10^6 averages possible with optional WP01 Advanced Waveform Math Package
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 ±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, 230 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

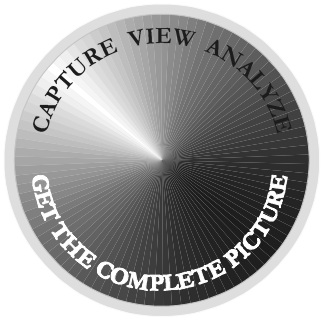
Conformity

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.

➢ 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	CH2 + CH3
Four Channels Combined by PP094 Adapter (Peak Detect OFF)	4 GS/s	400k	2M	8M	One (PP094 input)

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

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 MΩ/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

SMART Trigger Types

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
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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

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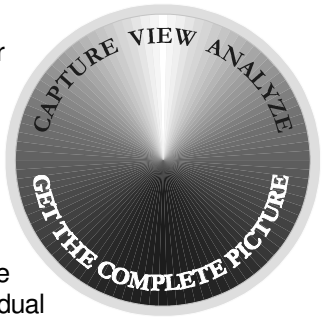
Signal Viewing

Display



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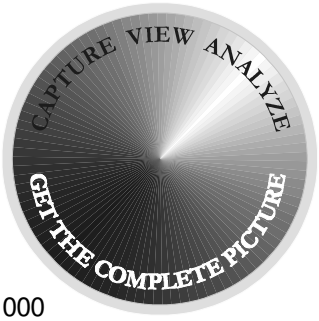
Waveform Processing



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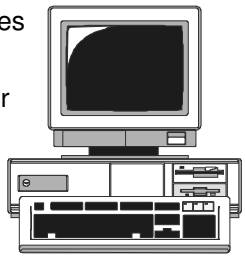

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Power: 90–250 V AC, 45–66 Hz, 350 W
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Dimensions: (HWD) 8.5 x 14.5 x 16.25 inches / 264 x 397 x 453 mm
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