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CombiScope® PM 3370B/80B/84B/90B/94B Specifications

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Analog Mode Specifications

Vertical Deflection

Input Channels:

(PM 3370B): 2 Channels + Ext Trig View
 (PM 3380B/90B): 2 Channels + Ext Trig View
 (PM 3384B/94B): 4 Channels

Frequency Response:

(PM 3370B): 60 MHz
 (PM 3380B/84B): 100 MHz
 (PM 3390B/94B): 200 MHz

Deflection Coefficient:

Ch1 & Ch2 (all models): 2 mV/div . 5 V/div in a 1-2-5 sequence or 2 mV/div to 12.5 V/div calibrated continuously variable
 Ch3 & Ch4 (PM 3384B/94B): 2 mV/div . 5 V/div in a 1-2-5 sequence or 2 mV/div to 12.5 V/div calibrated continuously variable

Rise Time (Calculated):

(PM 3370B): 5.8 ns
 (PM 3380B/84B): 3.5 ns
 (PM 3390B/94B): 1.75 ns

Error Limit:

1.3% (Measured over center 6 divisions)

Input Impedance:

(all models, all channels) 1 MΩ ± 1% // 25 pf ± 2 pf
 (PM 3390B/94B): user selectable 50Ω ± 1%

Max. Rated input voltage:

In 1 MΩ position: 150 Vrms CAT II
 In 50Ω position: 5 Vrms; 50V ac peak (max of 50 mJ during any 100 ms interval.

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Horizontal (Main & Delayed Timebases)	<p>Display Modes: Main Timebase (MTB), Delayed Timebase (DTB), Alternate Timebase (MTB & DTB), X-Y Mode.</p> <p>Time Coefficients: (PM 3370B/80B/84B): 0.5 s/div to 50 ns/div in a 1-2-5 sequence or calibrated variable control, 1.25 s/div to 50 ns/div. (PM 3390B/94B): 0.5 s/div to 20 ns/div in a 1-2-5 sequence or calibrated variable control, 1.25 s/div to 20 ns/div.</p> <p>Fastest Sweep (Magn 10X): (PM 3370B/80B/84B) 5 ns/div (PM 3390B/94B) 2 ns/div</p> <p>Error Limit (Magn 10X): ± 1.3% of reading + 0.5% of 8 divisions)</p>
Triggering (Main & Delayed Timebase)	<p>Trigger modes: Auto free run, Triggered, Single, Edge Triggering, TV Triggering</p>
Edge Triggering	<p>MTB Trigger Source: (PM 3370B/80B/90B): Ch1, Ch2, Ext (PM 3384B/94B): Any input channel or Line (mains); Optional rear mounted External Trigger input replacing line Triggering.</p> <p>DTB Trigger Source: Starts after delay or triggered on any input channel.</p> <p>Slope: Positive or Negative</p> <p>Coupling: DC, AC (> 10 Hz), LF-Rej (30 kHz), HF-Rej (30 kHz)</p> <p>Level Range: ≈ 8 div or level within signal peak to peak range.</p> <p>Level Indication: On screen level indicators and numeric readout.</p> <p>Trigger Sensitivity: (PM 3370B): 0.6 div up to 30 MHz, 1.2 div up to 60 MHz, 2.0 div up to 150 MHz. (PM 3380B/84B): 0.6 div up to 50 MHz, 1.2 div up to 100 MHz, 2.0 div up to 200 MHz (PM 3390B/94B): 0.6 div up to 100 MHz, 1.2 div up to 200 MHz, 2.0 div up to 300 MHz</p>
TV Triggering	<p>Video Standard: HDTV, NTSC, PAL, SECAM standards</p> <p>MTB Trigger Source: CH1 to CH4, Field1, Field2, TV-Lines</p> <p>Signal Polarity: Positive or Negative</p> <p>Sensitivity: 0.7 div (Sync Pulse)</p>
Cursor Measurements	<p>Cursor Modes: Horizontal, Vertical, Both</p> <p>Readout: Vertical: dV, V1 to gnd, V2 to gnd, Ratio Horizontal: dt, 1/dt (in Hz), Ratio, Phase</p> <p>Accuracy (magn 1X): 1% of full scale within the central 8 horizontal and 6 vertical divisions.</p>

X-Y Mode	<p>X Deflection Source: Any input channel or line</p> <p>X Deflection Coefficient: Same as for vertical deflection</p> <p>Dynamic range: 20 div up to 100 kHz, > 10 div up to 2 MHz.</p> <p>Frequency Response: 32 MHz at -3 dB</p> <p>Error Limit: 5% measured over central 6 divisions.</p> <p>Phase Shift: < 30 up to 100 kHz</p>
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Digital Mode Specifications

Acquisition	<p>Repetitive Sample Rate: Random sampling gives an equivalent sample rate of up to; (PM 3370B/80B/84B): 10 GS/s (PM 3390B/94B): 25 GS/s</p> <p>Single Shot Sample Rate: Up to 200 MS/s</p> <p>Vertical resolution: ADC resolution: 8 bit Memory resolution: 16 bit</p> <p>Memory: (PM 3370B/80B/90B): Standard Memory: 8 k, max trace storage, 27 traces (PM 3370B/80B/90B): Extended Memory option: 32 k, max trace storage, 153 traces (PM 3384B/94B): Standard Memory: 32 k, max trace storage, 204 traces</p> <p>Average: 2,4,8 to 4096, giving a resolution of up to 14 bits</p> <p>Peak Detection: Captures glitches up to 5 ns</p> <p>Envelope Mode: For continuous tracking of changing waveforms</p>
Vertical	<p>Auto Ranging vertical deflection: Automatically and continuously adapts the instrument's vertical settings to have 2 to 6 divisions' display of input signal.</p> <p>Bandwidth: See above analog mode specification</p> <p>Magnification: Up to x32 magnification for higher deflection sensitivity.</p> <p>Display modes: Ch1, ± Ch2, Ch3, ± Ch4, calculated add and subtract</p> <p>Window Mode: 2 or 4 windows to display two or four traces above each other while using the full dynamic range of the ADC</p>

Horizontal	<p>Autoranging timebase: Continuously adapts timebase sweep speed to the frequency of the trigger signal in order to keep 2 to 6 cycles on screen.</p> <p>Acquisition modes: Recurrent (Auto and triggered), Single Shot, Multiple Single Shot, Roll, Triggered Roll</p> <p>X-Y Mode: Any trace in memory or any of the input channels can be used as a X source.</p>
Timebase	<p>Single Shot Sampling: 200 s/div to 500 ns/div in a 1-2-5 sequence</p> <p>Variable Timebase: Continuously variable sweep speed; 1us/div to 500 us/div in 1 us increments. 500 us/div to 200 s/div with 0.2% or smaller increments.</p> <p>Recurrent: (PM 3370B/80B/84B): 200 ns/div to 5 ns/div (PM 3390B/94B): 200 ns/div to 2 ns/div</p> <p>Roll Mode: 200 s/div to 200 ms/div, triggered or free roll mode, in a 1-2-5 sequence or continuously variable</p> <p>Display Resolution: Horizontal resolution for 1x magnification: 500 samples = 10 divisions = 1 screen width.</p> <p>Magnification: x2, x4 to x32 to zoom in onto parts of waveform</p> <p>Interpolation: Dots, Sine or Linear</p>
Triggering	<p>Trigger Coupling: Same as analog mode</p> <p>Edge Triggering: Same as analog mode plus; dual slope triggering available when in single shot, real time mode.</p> <p>TV Triggering: Same as analog mode</p> <p>Logic trigger modes: (PM 3370B/80B/90B): Glitch (time qualified pulse) (PM 3384B/94B): State (4 bit), Pattern (4 bit), Glitch (time qualified pulse)</p>
Delay	<p>Time Delay: 0 to 1,000 div continuously adjustable</p> <p>Pre trigger view: Up to a complete record can be filled with pre-trigger information. (160 div for 8 k, 640 division for 32 k)</p> <p>Event Delay: 1 to 16,384 events, max count rate 50 MHz</p> <p>Delay Modes: Starts after time delay or wait for trigger after time delay.</p>
Cursor Measurements	<p>Cursor Modes: Horizontal, Vertical, Both: Free or locked to trace</p> <p>Readout: Vertical: dv, V1 to gnd, V2 to gnd, Ratio Horizontal: dt, 1/dt (in Hz), Ratio, Phase (cycle is automatically referenced to trigger signal)</p>

Calculated Measurements	<p>Volt: DC, rms, minimum, maximum, peak to peak, Low level, High level, Overshoot (positive & negative), Pre-shoot (positive & negative)</p> <p>Time: Frequency, Period, Pulsewidth, Rise time, Fall time, Duty cycle</p> <p>Delay: Channel to channel, rising and falling edges.</p> <p>Quick Measurements Probe operated, "Touch Hold And Measure" instantly gives calculated measurements of frequency, dc, rms, and Vp-p.</p>
Processing	Add, Subtract, Multiply, Digital Filter, Integrate, Differentiate, FFT, Histogram, Pass Fail.

General Specifications

Autoset	Selects proper channel, time-base and trigger settings. Function can be customized
Autocal	Automatic fine adjustment for enhanced accuracy to get optimal performance even under extreme environmental conditions
Interfacing	Standard: RS-232C, CPL protocol Options: IEEE-488.2(GPIB), SCPI
Hard Copy	<p>Output: Printed or plotted hard copy of the screen in digital mode.</p> <p>User Text: Two lines of on-screen text</p> <p>Interface: RS-232C or IEEE-488.2 (GPIB)</p> <p>Printer Drivers: FX Series (9 Pin), LQ1500 (24 Pins), HP 2225 Thinkjet, HP Laserjet, (series II & III), HP 540 Deskjet, and compatibles.</p> <p>Plotters: HP 7440, HP 7550, HP 7475A, HP 7470A and compatibles, HPGL.</p> <p>Camera: Camera Kit PM 9381/001 available as optional accessory.</p>
Power Supply	<p>Line Voltage: 100V to 240V ($\pm 10\%$) CAT II</p> <p>Line Frequency: 50 Hz to 400 Hz ($\pm 10\%$)</p> <p>Power Consumption: 115W (130W with all options installed)</p>
Safety	Meets requirements of EN 61010-1 CAT II Pollution Degree 2, Low Voltage Directive 73/23/EEC, UL3111, CSA C22.2 No 1010-1
EMC	<p>Meets requirements of EMC directive 89/336/EEC: emission EN50081.1, susceptibility EN50082.1.</p> <p>Meets requirements of MIL-STD-461C: Part2 CEO1 (narrow band), Part4 CEO3, Part2 CSO1, Part5 CSO6, (Limited to 300V), Part5 and 6 REO1, Part2 REO2 (max. 1 GHz)</p>

Miscellaneous	<p>Setting Memory: 10 complete instrument setups, with battery backup.</p> <p>Calibrated output: 600 mv p-p, 2 kHz square wave.</p> <p>Z-Modulation Input: BNC, 10 kΩ > 2.4V=blanked, < 0.5 V=unblanked</p> <p>Time Between Calibration: 2000 Hrs or 1 year 4000 Hrs or 2 year if error limits are doubled.</p>
Size (excluding handle & feet)	<p>139 mm H x 341 mm W x 481 mm L 5.5" H x 13.4" W x 18.9" L</p>
Weight	<p>9.5 kg 21 lb</p>
Warranty	<p>Three-year product warranty, parts and labor. Five year CRT warranty.</p>

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