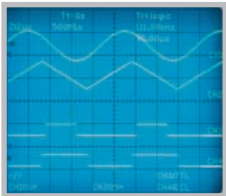


**150 MHz Analog-/Digital  
Mixed Signal CombiScope  
HM1508**

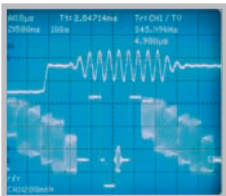
**NEW**



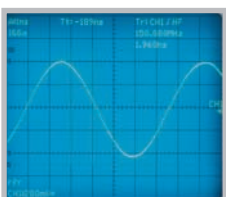
Digital Mode: Display of 4 signals (2 analog and 2 logic signals)



Digital Mode: One complete TV line and a ZOOM magnified sector (PAL Burst)



High fidelity even in digital mode: Low noise signals displayed without additional noise



Analog mode: see HM1500

4 Channels (2 Analog, 2 Logic)

1 GSa/s Real Time Sampling, 10 GSa/s Random Sampling

Pre-/Post-Trigger -100% to +400%

8-Bit Low Noise Flash A/D Converters

Time Base 50 s/cm – 5 ns/cm

1 MPts memory per channel allows zoom up to 40,000:1

Acquisition modes: Single Event, Refresh, Average, Envelope, Roll, Peak-Detect

RS-232 Interface, optional: RS-232/USB, IEEE-488, Ethernet

Signal display: Yt and XY;

Interpolation: Sinx/x, Pulse, Dot Join (linear)



# 150 MHz Analog/Digital CombiScope HM1508

## Technical description

### Vertical Deflection

<b>Channels:</b>	
Analog:	2
Digital:	2 + 2 Logic Channels
<b>Operating Modes:</b>	
Analog:	CH 1 or CH 2 separate, DUAL (CH 1 and CH 2 alternate or chopped), Addition
Digital:	Analog Signal Channels: CH 1 or CH 2 separate, DUAL (CH 1 and CH 2), Addition Logic Signal Channels: CH 3 and CH 4
Y in XY-Mode:	CH 1
Invert:	CH 1, CH 2
Bandwidth (-3 dB):	2 x 0 - 150 MHz
Rise time:	< 2.3 ns
Overshoot:	max. 1%
<b>Deflection Coefficient(CH 1, 2):</b> 14 calibrated steps	
1 mV - 2 mV/cm (10 MHz)	± 5% (0 - 10 MHz (-3 dB))
5 mV - 20 V/cm	± 3% (1-2-5 sequence)
variable (uncalibrated):	> 2.5:1 to > 50V/cm
<b>Inputs CH 1, 2:</b>	
Impedance:	1 MΩ // 15 pF
Coupling:	DC, AC, GND (ground)
Max. Input Voltage:	400 V (DC + peak AC)
Y Delay Line (analog):	70 ns
Measuring Circuits:	Measuring Category
<b>Digital mode only:</b>	
Logic Channels:	CH 3, CH 4
Select. switching thresholds:	TTL, CMOS, ECL
User definable thresholds:	3
within the range	-2 V to +3 V
<b>Analog mode only:</b>	
Auxiliary input:	CH 4: 100V DC + peak AC
Function (selectable):	Extern Trigger, Z (unblank)
Coupling:	AC, DC
Max. input voltage:	100V DC + peak AC

### Triggering

<b>Analog and Digital Mode</b>	
<b>Automatic (Peak to Peak):</b>	
Min. signal height:	5 mm
Frequency range:	10 Hz - 250 MHz
Level control range:	from Peak- to Peak+
<b>Normal (without peak):</b>	
Min. signal height:	5 mm
Frequency range:	0 - 250 MHz
Level control range:	-10 cm to +10 cm
<b>Operating modes:</b> Slope/Video/Logic	
Slope:	positive, negative, both
Sources:	CH 1, CH 2, alt.1/2, Line, Ext.
Coupling:	<b>AC:</b> (10 Hz-250 MHz) <b>DC:</b> (0-250 MHz) <b>HF:</b> (30 kHz-250 MHz) <b>LF:</b> (0-5 kHz) Noise Rej. switchable
<b>Video:</b> pos./neg. Sync. Impulse	
Standards:	525 Line/60 Hz Systems 625 Line/50 Hz Systems
Field:	even/odd/both
Line:	all/line number selectable
Source:	CH 1, CH 2, Ext.
<b>Indicator for trigger action:</b> LED	
External Trigger via:	CH 4
Coupling:	AC, DC
Max. input voltage:	100V DC +peak AC
<b>Digital mode:</b>	
Logic:	AND/OR, TRUE/FALSE
Source:	CH1 or 2, CH3 and CH4
State:	X, H, L
Pre/Post Trigger:	-100% to +400% related to complete memory
<b>Analog mode</b>	
<b>2nd Trigger</b>	
Min. signal height:	5 mm
Frequency range:	0 - 250 MHz
Coupling:	DC
Level control range:	-10 cm to +10 cm

### Horizontal Deflection

<b>Analog mode</b>	
Operating modes:	A, ALT (alternating A/B), B
Time base A (Sequence):	0.5 s/cm - 50 ns/cm (1-2-5 sequence)
Time base B (Sequence):	20 ms/cm - 50 ns/cm (1-2-5 sequence)
Accuracy A and B:	± 3%
X-Mag. x10:	to 5 ns/cm
Accuracy X x10:	± 5%

Variable time base A/B:	cont. 1:2.5
Hold Off time:	var. 1:10 LED-Indication
Bandwidth X-Amplifier:	0 - 3 MHz (-3 dB)
X-Y phase shift < 3°:	< 220 kHz
<b>Digital mode</b>	
<b>Time base range (sequence)</b>	
Refresh Mode:	20 ms/cm - 5 ns/cm (1-2-5 sequence)
with Peak Detect:	20 ms/cm - 50 ns/cm (1-2-5 sequence)
Roll Mode:	50 s/cm - 50 ms/cm (1-2-5 sequence)
<b>Accuracy time base</b>	
Time base:	50 ppm
Display:	± 1%
MEMORY ZOOM:	max. 40,000:1
Bandwidth X-Amplifier:	0 - 150 MHz (-3 dB)
X-Y phase shift < 3°:	< 100 MHz

### Digital Storage

<b>Acquisition (real time):</b>	Analog channels: 2 x 500 MSa/s, 1 GSa/s interleaved Logic Channels: 2 x 500 MSa/s
<b>Acquisition (random sampling):</b>	Analog channels:10 GSa/s
<b>Bandwidth:</b>	2 x 0 - 150 MHz (random)
<b>Memory:</b>	1 M-Samples per channel
<b>Operating modes:</b>	Refresh, Average, Envelope/ Roll: Free Run/Triggered, Peak-Detect
<b>Resolution (vertical):</b>	8 Bit (25 Pts/cm)
<b>Resolution (horizontal):</b>	
Yt:	11 Bit (200 Pts/cm)
XY:	8 Bit (25 Pts/cm)
<b>Interpolation:</b>	Sin $x$ /x, Dot Join (linear), Pulse
<b>Delay:</b>	1 Million * 1/Sampling Rate to 4 Million * 1/Sampling Rate
<b>Display refresh rate:</b>	max.170/s at 1 MPts
<b>Display:</b>	Yt, XY (acquired points only), Interpolation, Dot Join
<b>Reference Memories:</b>	9 with 2 kPts each (for recorded signals)
Display:	2 signals of 9 (free selectable)

### Operation/Measuring/Interfaces

<b>Operation:</b>	Menu (multilingual), Autoset, help functions (multilingual)
<b>Save/Recall (instrument parameter settings):</b>	9
<b>Signal display:</b>	max. 4 signals or 4 traces
analog:	CH 1, 2 (Time Base A) in combination with CH 1, 2 (Time Base B)
digital:	CH 1, 2 and CH 3, 4 or ZOOM or Reference or Mathematics)
<b>Frequency counter:</b>	
6 digit resolution:	>1 MHz - 250 MHz
5 digit resolution:	0.5 Hz - 1 MHz
Accuracy:	50 ppm
<b>Auto Measurements:</b>	
Analog mode:	Frequency, Period, Vdc, Vpp, Vp+, Vp-
add. in digital mode:	$V_{rms}/V_{avg}$
<b>Cursor Measurements:</b>	
Analog mode:	$\Delta V$ , $\Delta t$ , $1/\Delta t$ (f), V to GND, ratio X, ratio Y
add. in digital mode:	Pulse count, Vt to Trigger Peak to Peak, Peak+, Peak-
<b>Resolution Readout/Cursor:</b>	1000 x 2000 Pts, Signals: 250 x 2000
<b>Interfaces (plug-in):</b>	RS-232 (HO710)
<b>Optional:</b>	IEEE-488, Ethernet, Dual-Interface RS-232/USB

### Mathematic functions

<b>Number of Formula Sets:</b>	5 with 5 formulas each
<b>Sources:</b>	CH 1, CH 2, Math 1-Math 5
<b>Targets:</b>	5 math. memories, Math 1-5
<b>Functions:</b>	ADD, SUB, 1/X, ABS, MUL, DIV, SQ, POS, NEG, INV
<b>Display:</b>	max. 2 math. memories (Math 1-5)

### Display

<b>CRT:</b>	D14-375GH
<b>Display area (with graticule):</b>	8 cm x 10 cm
<b>Acceleration voltage:</b>	approx. 14 kV

### General Information

<b>Component tester</b>	
Test voltage:	approx. 7V <sub>rms</sub> (open circuit), approx. 50 Hz
Test current:	max. 7 mA <sub>rms</sub> (short circuit)
Reference Potential :	Ground (safety earth)
<b>Probe ADJ Output:</b>	1 kHz/1 MHz square wave signal 0.2V <sub>pp</sub> (tr < 4 ns)
<b>Trace rotation:</b>	electronic
<b>Line voltage:</b>	105 - 253 V, 50/60 Hz, CAT II
<b>Power consumption:</b>	47 Watt at 230 V, 50 Hz
<b>Protective system:</b>	Safety class I (EN61010-1)
<b>Weight:</b>	5.6 kg
<b>Cabinet (W x H x D):</b>	285 x 125 x 380 mm
<b>Ambient temperature:</b>	0°C ...+40°C

**Accessories supplied:** Line cord, Operating manual, 4 Probes 10:1 with attenuation ID, Windows Software for control and data transfer

**Optional accessories:** Dual-Interface RS-232/USB HO720, Ethernet HO730, IEEE-488 (GPIB) HO740, Opto-Interface (with optical fiber cable) HZ70