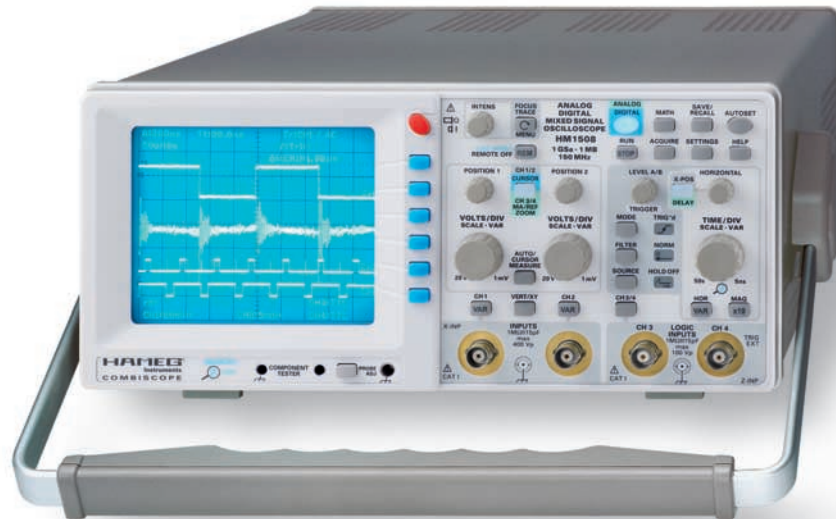
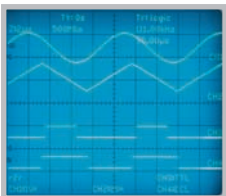


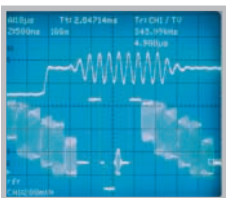
**150 MHz Mixed Signal
CombiScope®
HM1508**



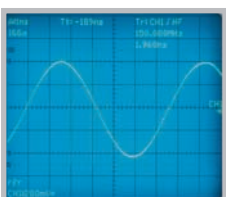
Digital Mode: Display of 4 signals (2 analog and 2 logic signals)



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



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

1 MPts memory per channel allows Memory Zoom up to 50,000:1

4 Channels (2 Analog, 2 Logic)

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

8-Bit Low Noise Flash A/D Converters

Time Base 50 s/cm – 5 ns/cm

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)

Analog mode: see HM1500



150 MHz Mixed Signal CombiScope® HM1508

Valid at 23 °C after a 30 minute warm-up period

Vertical Deflection

Channels:	
Analog:	2
Digital:	2 + 2 Logic Channels
Operating Modes:	
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
X 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%
Deflection Coefficients (CH 1, 2):	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
Inputs CH 1, 2:	
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 I
Digital mode only:	
Logic Channels:	CH 3, CH 4
Select. switching thresholds:	TTL, CMOS, ECL
User definable thresholds:	3
within the range:	-2 V to +3 V
Analog mode only:	
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

Analog and Digital Mode	
Automatic (Peak to Peak):	
Min. signal height:	5 mm
Frequency range:	10 Hz - 250 MHz
Level control range:	from Peak- to Peak+
Normal (without peak):	
Min. signal height:	5 mm
Frequency range:	0 - 250 MHz
Level control range:	-10 cm to +10 cm
Operating modes:	Slope/Video/Logic
Slope:	positive, negative, both
Sources:	CH 1, CH 2, alt. CH 1/2 (≥ 8 mm), Line, Ext.
Coupling:	AC: 10 Hz-250 MHz DC: 0-250 MHz HF: 30 kHz-250 MHz LF: 0-5 kHz Noise Rej. switchable
Video:	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.
Indicator for trigger action:	LED
External Trigger via:	CH 4 (0.3 V _{pp} , 150 MHz)
Coupling:	AC, DC
Max. input voltage:	100V (DC +peak AC)
Digital mode:	
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
Analog mode	
2nd Trigger	
Min. signal height:	5 mm
Frequency range:	0 - 250 MHz
Coupling:	DC
Level control range:	-10 cm to +10 cm

Horizontal Deflection

Analog mode	
Operating modes:	A, ALT (alternating A/B), B
Time base A:	0.5 s/cm - 50 ns/cm (1-2-5 sequence)
Time base B:	20 ms/cm - 50 ns/cm (1-2-5 sequence)
Accuracy A and B:	± 3%
X Magnification x10:	to 5 ns/cm
Accuracy:	± 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
Digital mode	
Time base range (1-2-5 sequence)	
Refresh Mode:	20 ms/cm - 5 ns/cm
with Peak Detect:	20 ms/cm - 2 ms/cm (min. Pulse Width 10 ns)
Roll Mode:	50 s/cm - 50 ms/cm
Accuracy time base	
Time base:	50 ppm
Display:	± 1%
MEMORY ZOOM:	max. 50,000:1
Bandwidth X-Amplifier:	0 - 150 MHz (-3 dB)
XY phase shift < 3°:	< 100 MHz

Digital Storage

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

Operation/Measuring/Interfaces

Operation:	Menu (multilingual), Autoset, help functions (multilingual)
Save/Recall (instrument parameter settings):	9
Signal display:	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)
Frequency counter:	
6 digit resolution:	>1 MHz - 250 MHz
5 digit resolution:	0.5 Hz - 1 MHz
Accuracy:	50 ppm
Auto Measurements:	
Analog mode:	Frequency, Period, V _{dc} , V _{pp} , V _{p+} , V _{p-}
also in digital mode:	V _{rms} , V _{avg}
Cursor Measurements:	
Analog mode:	Δt, 1/Δt (f), t _r , ΔV, V to GND, ratio X, ratio Y
plus in digital mode:	V _{pp} , V _{p+} , V _{p-} , V _{avg} , V _{rms} , pulse count
Resolution Readout/Cursor:	1000 x 2000 Pts, Signals: 250 x 2000
Interfaces (plug-in):	RS-232 (H0710)
Optional:	IEEE-488, Ethernet, Dual-Interface RS-232/USB

Mathematic functions

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

Display

CRT:	D14-3756H
Display area (with graticule):	8 cm x 10 cm
Acceleration voltage:	approx. 14 kV

General Information

Component tester	
Test voltage:	approx. 7V _{rms} (open circuit), approx. 50 Hz
Test current:	max. 7 mA _{rms} (short circuit)
Reference Potential :	Ground (safety earth)
Probe ADJ Output:	1 kHz/1 MHz square wave signal 0.2V _{pp} (tr < 4 ns)
Trace rotation:	electronic
Line voltage:	105 - 253 V, 50/60 Hz ± 10%, CAT II
Power consumption:	47 Watt at 230V, 50 Hz
Protective system:	Safety class I (EN61010-1)
Weight:	5.6 kg
Cabinet (W x H x D):	285 x 125 x 380 mm
Ambient temperature:	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 H0720, Ethernet H0730, IEEE-488 (GPIB) H0740, Opto-Interface (with optical fiber cable) HZ70