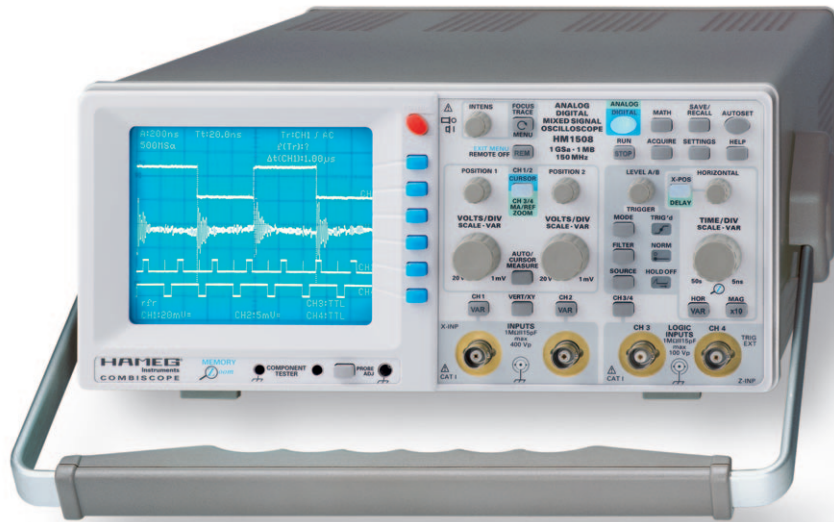
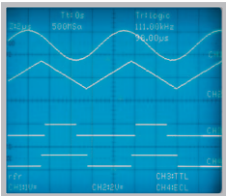


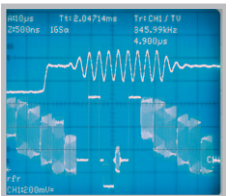
**150 MHz Mixed Signal
CombiScope®
HM1508**



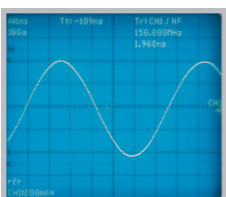
Digital Mode: Display of 4 signals (2 analog and 2 logic signals)



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/USB

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 %

Bandwidth limiting (selectable):

about 20 MHz (5 mV/cm - 20V/cm)

Deflection Coefficients(CH1,2):

14 calibrated steps

1 mV - 2 mV/cm (10 MHz) ± 5 % (0 - 10 MHz [-3 dB])

5 mV - 20V/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:

400V (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 (0.3V_{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: Sinx/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, Vdc, Vpp, Vp+, Vp-

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 (HO710)

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 - 253V, 50/60 Hz ± 10 %, CAT II

Power consumption: 47 Watt at 230 V, 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: HO720 Dual-Interface RS-232/USB, HO730 Dual-Interface Ethernet/USB, HO740 Interface IEEE-488 (GPIB), HZ70 Opto-Interface (with optical fiber cable)