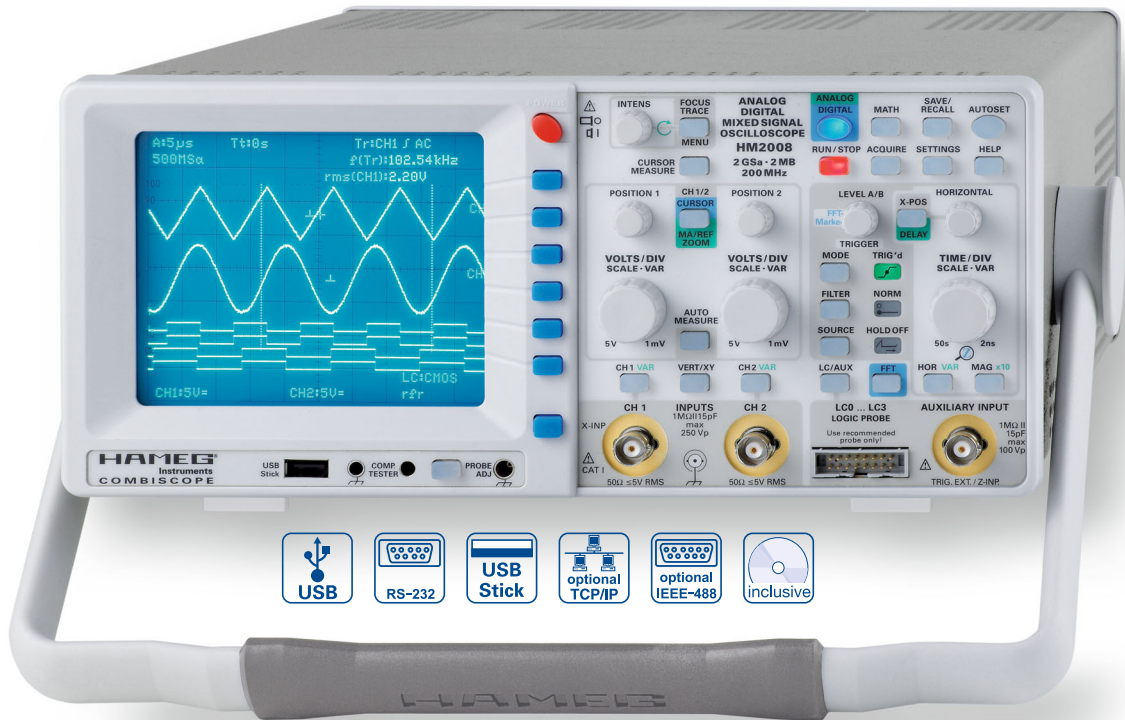
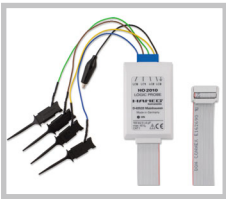


200MHz Mixed Signal CombiScope® with FFT HM2008

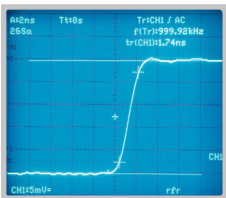
HM2008



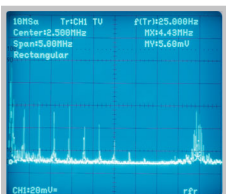
Logic Probe H02010




Rise Time Measurement
in DSO Mode with 2 ns/div.,
2GSa/s



Frequency Analysis of a
Video Signal with FFT



- 2GSa/s Real Time Sampling, 20GSa/s Random Sampling
- 2MPts Memory per Channel, Memory  Zoom up to 100,000:1
- FFT for spectral analysis
- 2 Channels + 4 Logic Channels with Option H02010 (MSO)
- Deflection coefficients 1mV/div....5V/div., with adjustable DC offset voltage; Time Base 2ns/div....50s/div.
- Acquisition modes: Single, Refresh, Average, Envelope, Roll, Peak-Detect
- Front USB-Stick Connector for Screenshots
- USB/RS-232, optional: IEEE-488 or Ethernet/USB
- Signal display: Yt, XY and FFT; Interpolation: Sinx/x, Pulse, Dot Join (linear)
- Adjustable input impedance 1MΩ/50Ω
- See HM2005-2 for analog mode

200 MHz Mixed Signal CombiScope® with FFT HM2008

All data valid at 23 °C after 30 minute warm-up

Vertical Deflection

Channels:	
Analog:	2
Digital:	2 + (additionally with Option HO2010) 4 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) or Addition. Logic Signal Channels (LCH 0...3) switchable.
X in XY-Mode:	CH 1
Invert:	CH 1, CH 2
Bandwidth [-3 dB]:	2 x 0...200 MHz
Rise time:	< 1,75 ns
Bandwidth Limiter (switchable):	approx. 20 MHz (1 mV/div...5 V/div.)
Deflection Coefficients (CH 1, 2):	12 calibrated steps
1 mV...2 mV/div.:	± 3% (0...100 MHz [-3 dB])
5 mV...5 V/div.:	± 3% (1-2-5 sequence)
variable (uncalibrated):	> 1 mV/div...5 V/div., continuous
Inputs CH 1, 2:	
Impedance:	1 MΩ 13 pF
Coupling:	DC, AC, 50 Ω, GND (ground)
Offset control:	
1 mV, 2 mV	± 0.2 V
5 mV...50 mV	± 1 V
100 mV...5 V	± 20 V
Max. Input Voltage:	250 V (DC + peak AC), 50 Ω < 5 V _{rms}
Y Delay Line (analog):	70 ns
Measuring Circuits:	Measuring Category I
Analog mode only:	
Auxiliary input:	
Function (selectable):	Ext. Trigger, Z (unblank in analog mode)
Coupling (Ext. Trig./Z):	all / AC, DC
Max. input voltage:	100 V (DC + peak AC)
Digital mode only:	
Logic Channels in combination with Option HO2010:	
Quantity	4 (LCH 0...3)
Select. switching thresholds:	TTL, CMOS, ECL (common for all)
User definable thresholds:	2
within the range:	-2V...+8V (common for all)
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 div...+10 div.
Operating modes:	Slope/Video/Logic
Slope:	Rising, falling, both
Sources:	CH 1, CH 2, alt. CH 1/2 (≥ 8 mm, analog mode only), 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:	AUXILIARY INPUT (0.3 V _{pp} , 0...200 MHz)
Coupling:	AC, DC
Max. input voltage:	100 V (DC + peak AC)
Digital mode:	
Pre/Post Trigger:	-100%...+400% relative to complete memory
Logic (with Option HO2010):	AND/OR, TRUE/FALSE

Source:	Logic Channel 0...3
State:	X, H, L
Analog mode:	
2nd Trigger	
Min. signal height:	5 mm
Frequency range:	0...250 MHz
Coupling:	DC
Level control range:	-10 div...+10 div.

Horizontal Deflection

Analog Time Base	
Operating modes:	A, ALT (alternating A/B), B
Time base A:	20 ns/div...0.5 s/div. (1-2-5 sequence)
Time base B:	20 ns/div...20 ms/div. (1-2-5 sequence)
Accuracy A and B:	± 3%
X Magnification x10:	to 2 ns/div.
Accuracy:	± 5%
Variable time base A/B:	cont. 1:2.5
Hold Off time:	var. 1:10 (LED-Indication)
Analog XY Mode	
Bandwidth X-Amplifier:	0...3 MHz [-3 dB]
XY phase shift:	< 3° < 220 kHz
Digital Time Base	
Time base range (1-2-5 sequence)	
Refresh Mode:	2 ns/div...50 s/div.
with Peak Detect:	500 ns/div...50 s/div. (min. Pulse Width 10 ns)
Roll Mode:	50 ms/div...50 s/div.
Accuracy time base	
Time coefficient:	50 ppm
Display:	± 1%
MEMORY ZOOM:	max. 100,000:1
Digital XY Mode	
Bandwidth X-Amplifier:	0...200 MHz [-3 dB]
XY phase shift:	< 3° < 200 MHz

Digital Storage

Sampling Rate (real time):	Analog channels: 2 x 1 GSa/s or 1 x 2 GSa/s (interleaved); Logic Channels: max. 4 x 500 MSa/s
Sampling Rate (random sampling):	20 GSa/s (1-Channel mode) 25 GSa/s (2-Channel mode)
Bandwidth:	2 x 0...200 MHz (Random)
Memory:	2 x 2 MPts (analog); 4 x 2 MPts (logic)
Operating modes:	Refresh, Average, Envelope, Roll: Free Run/Triggered, Peak-Detect
Resolution (vertical):	8 Bit (25 Pts/div.)
Resolution (horizontal):	
Yt:	11 Bit (200 Pts/div.)
XY:	8 Bit (25 Pts/div.)
Interpolation:	Sinx/x, Dot Join (linear)
Delay:	2 Million x (1/Sampling Rate; max.) 8 Million x (1/Sampling Rate; max.)
Display refresh rate:	max. 170/s at 2 MPts
Display:	Dots (acquired points only), Vectors (interpolation), Optimal (complete memory weighting and vector display)
Reference Memories:	9 with 2 kPts each (for recorded signals)
Display:	2 signals of 9 (freely selectable)

FFT Mode

Display X:	Frequency Range
Display Y:	True rms value of spectrum
Scaling:	Linear or logarithmic
Level display:	dBV, V
Window:	Square, Hanning, Hamming, Blackman
Control:	Center frequency, Span
Marker:	Frequency, Amplitude
Zoom (frequency axis):	up to x 20

Operation/Measuring/Interfaces

Operation:	Menu (multilingual), Autoset, Help functions (multilingual)
Save/Recall internal:	
analog:	9 Instrument parameter settings
digital:	9 Signals (each 2k) incl. instrument parameters
Signal sources:	CH 1, CH 2, LCH 0...3, ZOOM, Reference 1-9 or Mathematics
Signal display:	max. 6 signals

USB Memory-Stick:	
Save/Recall external:	
Instrument settings and Signals:	CH1, CH2, LCH 0...3, ZOOM, Referenz 1-9 or Mathematics
Screen-shot:	as Bitmap
Signal display data (2k per channel):	Binary (SCPI-Data), Text (ASCII-Format), CSV (Spread Sheet)
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-}
plus in digital mode:	V_{rms} , V_{avg}
Cursor Measurements:	
Analog mode:	Δt , $1/\Delta t$ (f), tr, 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):	USB/RS-232 (H0720)
Optional:	IEEE-488, Ethernet/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:	D14-375GH
Display area (with graticule):	8 div. x 10 div.
Acceleration voltage:	approx. 14 kV
General Information	
Component tester	
Test voltage:	approx. $7 V_{rms}$ (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 $0.2 V_{pp}$ (tr < 4 ns)
Trace rotation:	electronic
Line voltage:	105...253 V, 50/60 Hz $\pm 10\%$, CAT II
Power consumption:	48 Watt at 230 V, 50 Hz
Protective system:	Safety class I (EN61010-1)
Operating temperature:	+5°C...+40°C
Storage temperature:	-20°C...+70°C
Rel. humidity:	5%...80% (non condensing)
Dimensions (W x H x D):	285 x 125 x 380 mm
Weight:	5.6 kg

Accessories supplied: Line cord, manual, 2 probes 10 :1 with automatic identification of the attenuation ratio (HZ200), Windows software for instrument control and data transfer.

Optional accessories:

H0730 Dual interface Ethernet/USB
H0740 IEEE-488 (GPIB) interface
HZ70 Optical interface with fiber cable

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