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## Test & Measurement

- > sales
- > rentals
- > calibration
- > repair
- > disposal

## Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

If you click on the "Click-to-Call" logo below, you can call us for FREE!

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Product Lifecycle Management System

### Disclaimer:

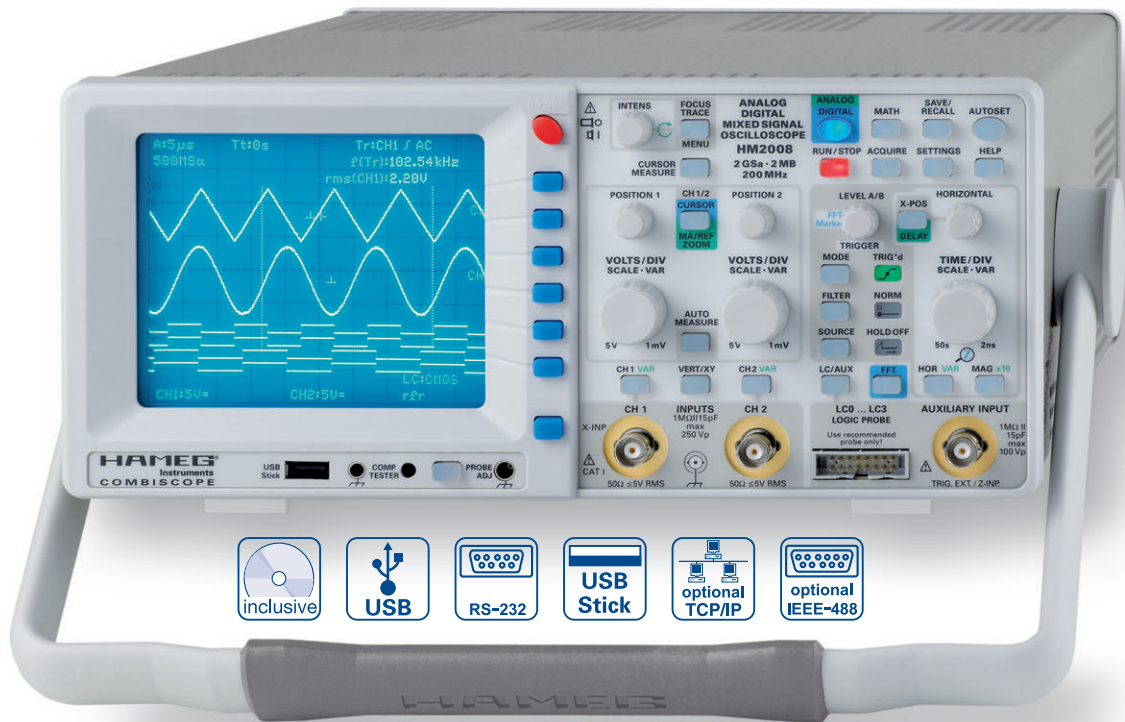
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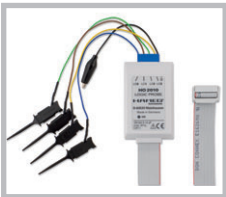


# 200 MHz Mixed Signal CombiScope® with FFT HM2008

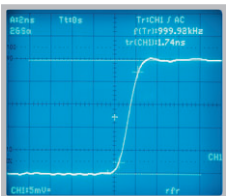
HM2008



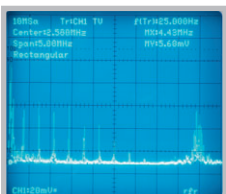
Logic Probe H02010



Rise Time Measurement  
in DSO Mode with 2 ns/cm,  
2GS/s



Frequency Analysis of a  
Video Signal with FFT



2 GSa/s Real Time Sampling, 20 GSa/s Random Sampling

2 MPts Memory per Channel, Memory **Z**oom up to 100,000:1

FFT for spectral analysis

2 Channels + 4 Logic Channels with Option H02010

Deflection coefficients: 1 mV/cm – 5 V/cm,  
with adjustable DC offset voltage;  
Time Base: 50 s/cm – 2 ns/cm

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

Front USB-Stick Connector for Screenshots

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

Signal display: Yt, XY and FFT;  
Interpolation: Sinx/x, Pulse, Dot Join (linear)

Adjustable input impedance 1 M $\Omega$ /50  $\Omega$

## 200 MHz CombiScope® with FFT HM2008

### Vertical Deflection

<b>Channels:</b>	
<b>Analog:</b>	2
<b>Digital:</b>	2 + (Additionally with Option HO2010) 4 Logic Channels
<b>Operating Modes:</b>	
<b>Analog:</b>	CH 1 or CH 2 separate, DUAL (CH 1 and CH 2 alternate or chopped), Addition
<b>Digital:</b>	Analog Signal Channels CH 1 or CH 2 separate, DUAL (CH 1 and CH 2) or Addition. Logic Signal Channels (LCH 0 – 3) switchable.
<b>X in XY-Mode:</b>	CH 1
<b>Invert:</b>	CH 1, CH 2
<b>Bandwidth [-3 dB]:</b>	2 x 0 – 200 MHz
<b>Rise time:</b>	< 1,75 ns
<b>Bandwidth Limiter [switchable]:</b>	approx. 20 MHz (1 mV/cm – 5 V/cm)
<b>Deflection Coefficients (CH 1, 2):</b> 12 calibrated steps	
1 mV – 2 mV/cm:	± 3% (0 – 100 MHz [-3 dB])
5 mV – 5 V/cm:	± 3% (1-2-5 sequence)
variable (uncalibrated):	> 1 mV/cm to 5 V/cm, continuous
<b>Inputs CH 1, 2:</b>	
<b>Impedance:</b>	1 MΩ    13 pF
<b>Coupling:</b>	DC, AC, 50 Ω, GND (ground)
<b>Offset control:</b>	
1 mV, 2 mV	± 0.2 V
5 mV – 50 mV	± 1 V
100 mV – 5 V	± 20 V
<b>Max. Input Voltage:</b>	250 V (DC + peak AC), 50 Ω < 5 V <sub>rms</sub>
<b>Y Delay Line (analog):</b>	70 ns
<b>Measuring Circuits:</b>	Measuring Category I
<b>Analog mode only:</b>	
<b>Auxiliary input:</b>	
<b>Function (selectable):</b>	Ext. Trigger, Z (unblank in analog mode)
<b>Coupling (Ext. Trig./Z):</b>	all / AC, DC
<b>Max. input voltage:</b>	100 V (DC + peak AC)
<b>Digital mode only:</b>	
<b>Logic Channels in combination with Option HO2010:</b>	
<b>Quantity</b>	4 (LC 0 – 3)
<b>Select. switching thresholds:</b>	TTL, CMOS, ECL (common for all)
<b>User definable thresholds:</b>	2
<b>within the range:</b>	-2V to +8V (common for all)
<b>Triggering</b>	
<b>Analog and Digital Mode</b>	
<b>Automatic (Peak to Peak):</b>	
<b>Min. signal height:</b>	5 mm
<b>Frequency range:</b>	10 Hz – 250 MHz
<b>Level control range:</b>	from Peak- to Peak+
<b>Normal (without peak):</b>	
<b>Min. signal height:</b>	5 mm
<b>Frequency range:</b>	0 – 250 MHz
<b>Level control range:</b>	-10 cm to +10 cm
<b>Operating modes:</b> Slope/Video/Logic	
<b>Slope:</b>	positive, negative, both
<b>Sources:</b>	CH 1, CH 2, alt. CH 1/2 (≥ 8 mm, analog mode only), Line, Ext.
<b>Coupling:</b>	
<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	
<b>Standards:</b>	525 Line / 60 Hz Systems 625 Line / 50 Hz Systems
<b>Field:</b>	even/odd/both
<b>Line:</b>	all/line number selectable
<b>Source:</b>	CH 1, CH 2, Ext.
<b>Indicator for trigger action:</b>	LED
<b>External Trigger via:</b>	AUXILIARY INPUT (0.3 V <sub>pp</sub> , 0 – 200 MHz)
<b>Coupling:</b>	AC, DC
<b>Max. input voltage:</b>	100 V (DC + peak AC)
<b>Digital mode:</b>	
<b>Pre/Post Trigger:</b>	-100% to +400% relative to complete memory
<b>Logic (with Option HO2010):</b>	AND/OR, TRUE/FALSE

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

### Horizontal Deflection

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

### Digital Storage

<b>Sampling Rate (real time):</b>	Analog channels: 2 x 1 GSa/s or 2 GSa/s interleaved; Logic Channels: max. 4 x 500 MSa/s
<b>Sampling Rate (random sampling):</b>	20 GSa/s (1-Channel mode) 25 GSa/s (2-Channel mode)
<b>Bandwidth:</b>	2 x 0 – 200 MHz (Random)
<b>Memory:</b>	2 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>	
<b>Yt:</b>	11 Bit (200 Pts/cm)
<b>XY:</b>	8 Bit (25 Pts/cm)
<b>Interpolation:</b>	Sin <sup>x</sup> /x, Dot Join (linear)
<b>Delay:</b>	2 Million x (1/Sampling Rate; max.) 8 Million x (1/Sampling Rate; max.)
<b>Display refresh rate:</b>	max. 170/s at 2 MPts
<b>Display:</b>	Dots (acquired points only), Vectors (interpolation), Optimal (complete memory weighting and vector display)
<b>Reference Memories:</b>	9 with 2 kPts each (for recorded signals)
<b>Display:</b>	2 signals of 9 (freely selectable)

### FFT Mode

<b>Display X:</b>	Frequency Range
<b>Display Y:</b>	True rms value of spectrum
<b>Scaling:</b>	Linear or logarithmic
<b>Level display:</b>	dBV, V
<b>Window:</b>	Square, Hanning, Hamming, Blackmann
<b>Control:</b>	Center frequency, Span
<b>Marker:</b>	Frequency, Amplitude
<b>Zoom (frequency axis):</b>	up to x20

### Operation/Measuring/Interfaces

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

<b>USB Memory-Stick:</b>	
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)
<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, $V_{dc}$ , $V_{pp}$ , $V_{p+}$ , $V_{p-}$
plus in digital mode:	$V_{rms}$ , $V_{avg}$
<b>Cursor Measurements:</b>	
Analog mode:	$\Delta t$ , $1/\Delta t$ (f), tr, $\Delta V$ , 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 cm x 10 cm
Acceleration voltage:	approx. 14 kV

#### General Information

<b>Component tester</b>	
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)
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, 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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