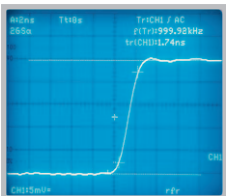


**200 MHz Mixed Signal
CombiScope® with FFT
HM2008**

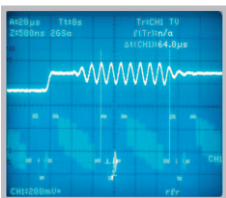
NEW



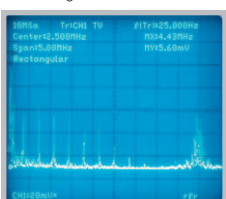
Rise Time Measurement in DSO Mode, Time Base Setting 2 ns/cm, Sampling Rate 2 GS/s



DSO Mode:
Portion of a Complex Signal, expanded by using Zoom



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 Zoom 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,
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 Interface
optional: IEEE-488, Ethernet/USB Interface**

Adjustable input impedance 1 M Ω /50 Ω

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

Analog mode: see HM2005-2



200 MHz CombiScope® with FFT HM2008

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

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
Overshoot:	max. 1%
Bandwidth Limiter (switchable):	approx. 20 MHz (1 mV/cm - 5V/cm)
Deflection Coefficients (CH 1, 2): 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 5V/cm, 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 < 5V _{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 (LC 0 - 3)
Select. switching thresholds:	TTL, CMOS, ECL (common for all)
User definable thresholds:	2
within the range:	2 V to +8 V (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 cm to +10 cm
Operating modes: Slope/Video/Logic	
Slope:	positive, negative, both
Sources:	CH 1, CH 2, alt. CH 1/2 (≥ 8mm, 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% to +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 cm to +10 cm

Horizontal Deflection

Analog Time Base	
Operating modes:	A, ALT (alternating A/B), B
Time base A:	0.5 s/cm - 20 ns/cm (1-2-5 sequence)
Time base B:	20 ms/cm - 20 ns/cm (1-2-5 sequence)
Accuracy A and B:	± 3%
X Magnification x10:	to 2 ns/cm
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]
X Y phase shift:	< 3° < 200 kHz
Digital Time Base	
Time base range (1-2-5 sequence)	
Refresh Mode:	50 s/cm - 2 ns/cm
with Peak Detect:	50 s/cm - 500 ns/cm (min. Pulse Width 10 ns)
Roll Mode:	50 s/cm - 50 ms/cm
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 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 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)
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, Blackmann
Control:	Center frequency, Span
Marker:	Frequency, Amplitude
Zoom (frequency axis):	x2, x5

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

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Operation/Measuring/Interfaces	
Signal sources:	CH 1, CH 2, LCH 0 - 3, ZOOM, Reference 1-9 or Mathematics
Signal display:	max. 6 signals or 6 traces
USB Memory-Stick:	as Bitmap
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, Vdc, Vpp, Vp+, Vp-
plus in digital mode:	Vrms, Vavg
Cursor Measurements:	
Analog mode:	Δt , $1/\Delta t$ (f), tr, ΔV , V to GND, ratio X, ratio Y
plus in digital mode:	Vpp, Vp+, Vp-, Vavg, Vrms, 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	
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 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, 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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