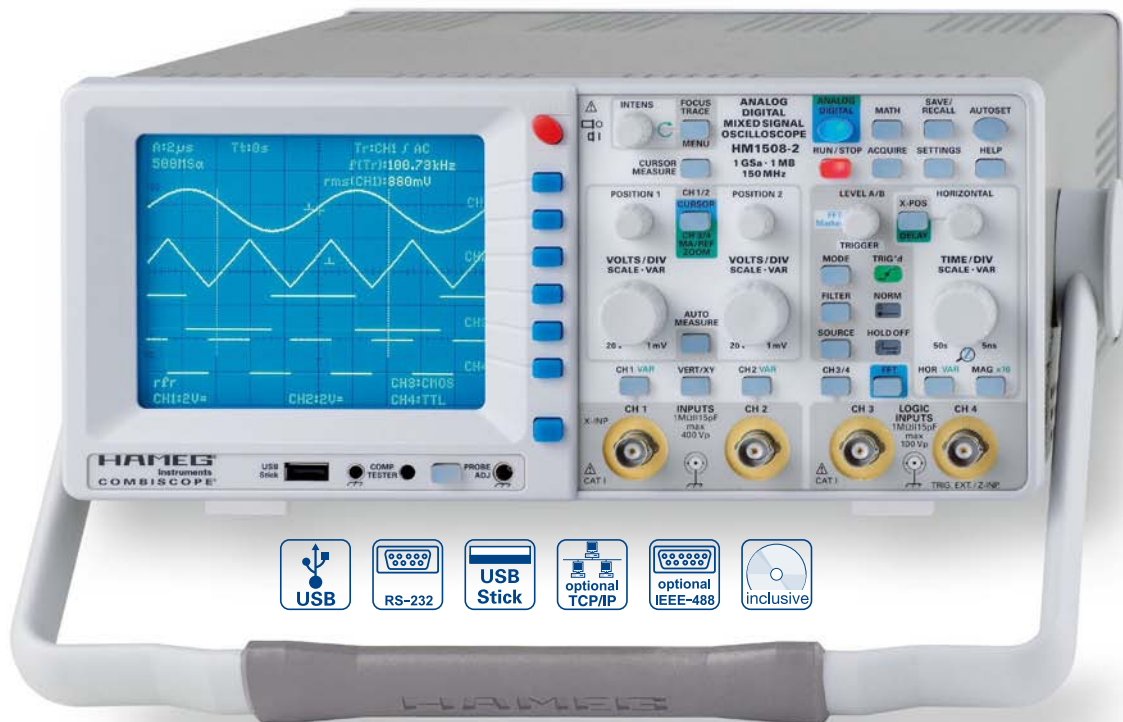
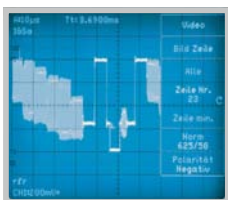


# 150MHz Mixed Signal CombiScope® HM1508-2

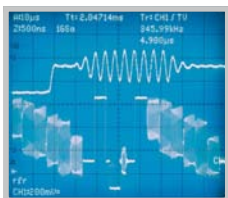
HM1508-2



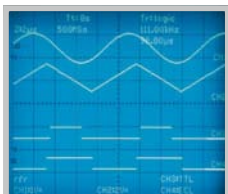
Either PAL or NTSC:  
Line Triggering  
with Line Counter




DSO Mode: Signal Portion  
expanded with Zoom  
(Burst in one Line)



DSO Mode:  
4-Channel Display of 2  
Analog and 2 Logic Signals



- ✓ 1GSa/s Real Time Sampling, 10GSa/s Random Sampling
- ✓ 1MPts Memory per Channel,  
Memory  Zoom up to 50,000:1
- ✓ FFT for Spectral Analysis
- ✓ 4 Channels (2 Analog, 2 Logic Inputs)
- ✓ Deflection Coefficients 1mV/div....20V/div.,  
Time Base 5ns/div....50s/div.
- ✓ 8-Bit Low Noise Flash A/D Converters
- ✓ Acquisition Modes: Single, Refresh, Average, Envelope,  
Roll, Peak-Detect
- ✓ Front USB-Stick Connector for Screenshots
- ✓ USB/RS-232, optional: IEEE-488 (GPIB) or Ethernet/USB
- ✓ Signal Display: Yt, XY and FFT;  
Interpolation: Sinx/x, Pulse, Dot Join (linear)
- ✓ See HM1500-2 for Analog Mode

# 150 MHz Mixed Signal CombiScope® HM1508-2

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

## Vertical Deflection

<b>Channels:</b>	
Analog:	2
Digital:	2 + 2 Logic Channels
<b>Operating Modes:</b>	
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
Bandwidth limiting (selectable):	approx. 20 MHz (5 mV/div....20V/div.)
<b>Deflection Coefficients (CH 1, 2):</b> 14 calibrated steps	
1...2 mV/div. (10 MHz)	±5% (0...10 MHz [-3dB])
5 mV...20V/div.	±3% (1-2-5 sequence)
variable (uncalibrated):	>2.5:1 to >50V/div.
<b>Inputs CH 1, 2:</b>	
Input 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
<b>Digital mode only:</b>	
Logic Channels:	CH 3, CH 4
Select. switching thresholds:	TTL, CMOS, ECL
User definable thresholds:	3
within the range:	-2...+3V
<b>Analog mode only:</b>	
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

<b>Analog and Digital Mode</b>	
<b>Automatic (Peak to Peak):</b>	
Min. signal height:	5 mm
Frequency range:	10 Hz...250 MHz
Level control range:	from Peak- to Peak+
<b>Normal (without peak):</b>	
Min. signal height:	5 mm
Frequency range:	0...250 MHz
Level control range:	-10...+10 div.
<b>Operating modes:</b> Slope/Video/Logic	
Slope:	Rising, falling, both
Sources:	CH 1, CH 2, alt. CH 1/2 (≥8mm, analog mode only), Line, Ext.
<b>Coupling:</b>	
AC:	10 Hz...250 MHz
DC:	0...250 MHz
HF:	30 kHz...250 MHz
LF:	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
Field:	even/odd/both
Line:	all/line number selectable
Source:	CH 1, CH 2, Ext.
<b>Indicator for trigger action:</b> LED	
External Trigger via:	CH 4 (0.3V <sub>pp</sub> , 150 MHz)
Coupling:	AC, DC
Max. input voltage:	100V (DC + peak AC)
<b>Digital mode:</b>	
<b>Logic:</b> AND/OR, TRUE/FALSE	
Source:	CH 1 or 2, CH 3 and CH 4
State:	X, H, L
Pre/Post Trigger:	-100...+400% related to complete memory
<b>Analog mode</b>	
<b>2nd Trigger</b>	
Min. signal height:	5 mm
Frequency range:	0...250 MHz
Coupling:	DC
Level control range:	-10...+10 div.

## Horizontal Deflection

<b>Analog mode</b>	
Operating modes:	A, ALT (alternating A/B), B
Time base A:	50 ns/div....0.5s/div. (1-2-5 sequence)
Time base B:	50 ns/div....20 ms/div. (1-2-5 sequence)
Accuracy A and B:	±3%
X Magnification x10:	to 5 ns/div.
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
<b>Digital mode</b>	
<b>Time base range (1-2-5 sequence)</b>	
Refresh Mode:	5 ns/div....20 ms/div.
with Peak Detect:	2...20 ms/div. [min. Pulse Width 10 ns]
Roll Mode:	50 ms/div....50 s/div.
<b>Accuracy time base</b>	
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

<b>Sampling Rate (real time):</b> Analog channels: max. 2 x 500 Ms/s or 1 x 1 GSa/s (interleaved); Logic Channels: 2 x 500 Ms/s	
<b>Sampling Rate (random sampling):</b> 10 GSa/s	
Bandwidth:	2 x 0...150 MHz (random)
Memory:	2 x 1 MPts (analog); 2 x 1 MPts (logic)
Operating modes:	Refresh, Average, Envelope/Roll: Free Run/Triggered, Peak-Detect
Resolution (vertical):	8 Bit (25 Pts/div.)
<b>Resolution (horizontal):</b>	
Yt:	11 Bit (200 Pts/div.)
XY:	8 Bit (25 Pts/div.)
Interpolation:	Sin <sup>x</sup> /x, Dot Join (linear)
Delay:	1 Million x 1/Sampling Rate to 4 Million x 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)

## 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 x20

## Operation/Measuring/Interfaces

Operation:	Menu (multilingual), Autoset, help functions (multilingual)
Save/Recall (instrument parameter settings):	9
Signal display:	max. 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
<b>USB Memory-Stick:</b>	
Save/Recall external:	CH 1, 2 and CH 3, 4 or ZOOM or Reference or Mathematics
Instrument settings and Signals:	CH 1, 2 and CH 3, 4 or ZOOM or Reference 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...250 MHz
5 digit resolution:	0.5 Hz...1 MHz
Accuracy:	50 ppm
<b>Auto Measurements:</b>	
Analog mode:	Frequency, Period, V <sub>dC</sub> , V <sub>pp</sub> , V <sub>p+</sub> , V <sub>p-</sub>
also in digital mode:	V <sub>rms</sub> , V <sub>avg</sub>
<b>Cursor Measurements:</b>	
Analog mode:	Δt, 1/Δt (f), tr, ΔV, V to GND, ratio X, ratio Y
plus in digital mode:	V <sub>pp</sub> , V <sub>p+</sub> , V <sub>p-</sub> , V <sub>avg</sub> , V <sub>rms</sub> , pulse count

<b>Resolution Readout/Cursor:</b>	1000 x 2000 Pts, Signals: 250 x 2000
<b>Interfaces (plug-in):</b>	USB/RS-232 (HO720)
<b>Optional:</b>	IEEE-488, Ethernet/USB

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

Display	
<b>CRT:</b>	D14-375GH
<b>Display area (with graticule):</b>	8 div. x 10 div.
<b>Acceleration voltage:</b>	approx. 14 kV

General Information	
<b>Component tester</b>	
<b>Test voltage:</b>	approx. 7V <sub>rms</sub> (open circuit), approx. 50 Hz
<b>Test current:</b>	max. 7 mA <sub>rms</sub> (short circuit)
<b>Reference Potential:</b>	Ground (safety earth)
<b>Probe ADJ Output:</b>	1 kHz/1 MHz square wave signal 0.2V <sub>pp</sub> (tr < 4 ns)
<b>Trace rotation:</b>	electronic
<b>Line voltage:</b>	105...253V, 50/60 Hz ±10 %, CAT II
<b>Power consumption:</b>	47 Watt at 230V, 50 Hz
<b>Protective system:</b>	Safety class I (EN61010-1)
<b>Operating temperature:</b>	+5...+40 °C
<b>Storage temperature:</b>	-20...+70 °C
<b>Rel. humidity:</b>	5...80 % (non condensing)
<b>Dimensions (W x H x D):</b>	285 x 125 x 380 mm
<b>Weight:</b>	5.6 kg

<b>Accessories supplied:</b>	Line cord, Operating manual, 4 Probes 10:1 with attenuation ID (HZ200), Windows Software for control and data transfer
<b>Optionales accessories:</b>	
H0730	Dual-Interface Ethernet/USB
H0740	Interface IEEE-488 (GPIB)
HZ13	Interface cable (USB) 1.8 m
HZ14	Interface cable (serial) 1:1
HZ20	Adapter, BNC to 4 mm banana
HZ33	Test cable 50 Ω, BNC/BNC, 0.5 m
HZ34	Test cable 50 Ω, BNC/BNC, 1 m
HZ45	19"-Rackmount Kit 4RU
HZ51	Probe 10:1 (150 MHz)
HZ52	Probe 10:1 RF (250 MHz)
HZ53	Probe 100:1 (100 MHz)
HZ72	GPIB-Cable 2 m
HZ100	Differential probe 20:1/200:1
HZ109	Differential probe 1:1/10:1
HZ115	Differential probe 100:1/1000:1
HZ154	Standard probe 1:1/10:1
HZ350	Probe 10:1 with automatically identification (350 MHz)
HZ355	Slimline probe 10:1 with automatically identification (500 MHz)
HZ020	High voltage probe 1000:1 (400 MHz, 1000V <sub>rms</sub> )
HZ030	Active probe 1 GHz (0.9 pF, 1 MΩ, including many accessories)
HZ050	AC/DC Current probe 20 A, DC...100 kHz
HZ051	AC/DC Current probe 1000 A, DC...20 kHz