

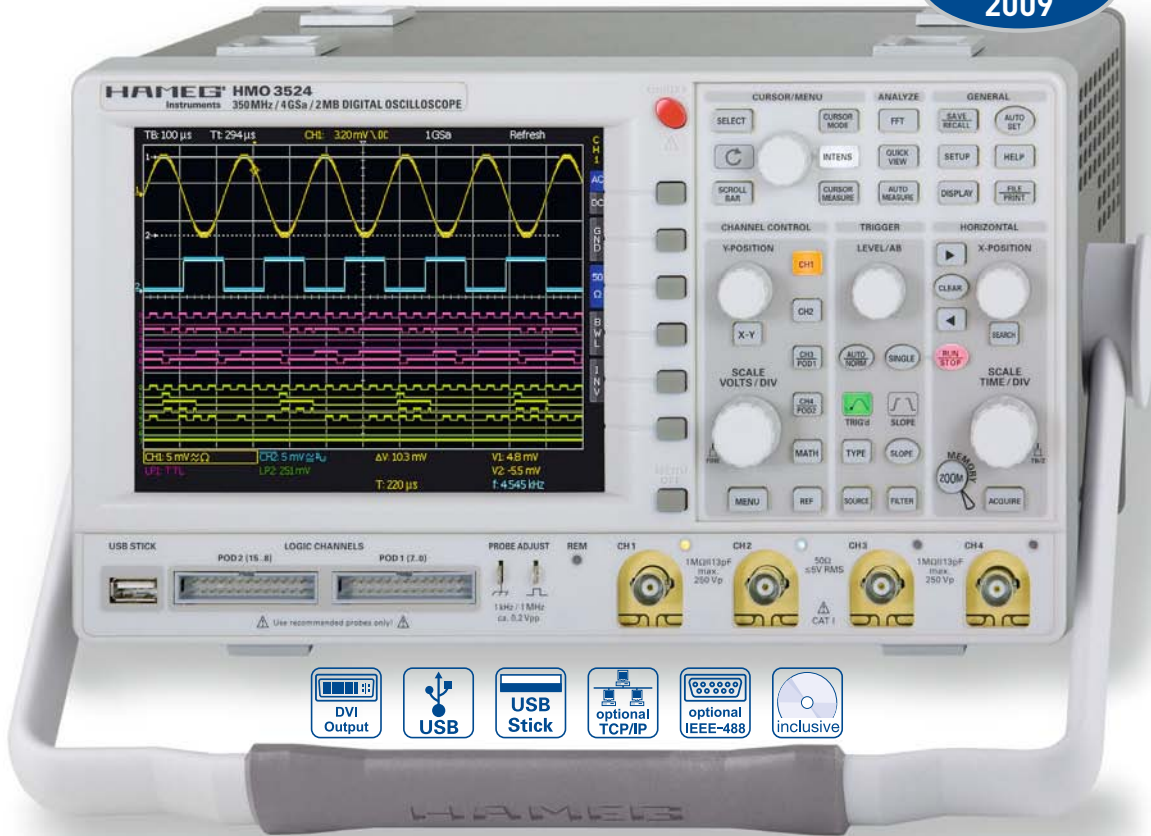
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350MHz 2/4 Channel Digital Oscilloscope HMO3522 / HMO3524

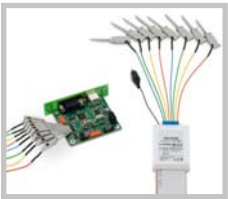
1st Quarter
2009

HMO3524

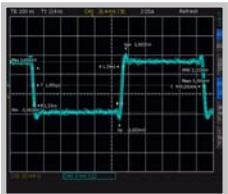


-  DVI Output
-  USB
-  USB Stick
-  optional TCP/IP
-  optional IEEE-488
-  inclusive

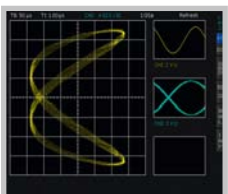
8 Channel logic probe H03508




Quickview provides all available automeasurements at the push of a button



The operating mode XYZ



- 4GSa/s Real time, 50GSa/s Random sampling, low noise flash A/D converter (reference class)
- 2MPts memory per channel, memory  oom up to 100,000:1
- MSO (Mixed Signal Opt. H03508) with 8/16 logic channels
- Vertical sensitivity 1mV...5V/div. (into 1MΩ/50Ω)
Offset control ±0,2...±20V
- 12div. x-axis display range
- Trigger modes: slope, video, pulsewidth, logic, delayed, event
- FFT for spectral analysis
- 6 digit counter, Autoset, automeasurement, formula editor
- 6.5" TFT VGA display, DVI output
- 3 x USB for mass storage, printer and remote ctrl.
optional IEEE-488 or Ethernet/USB

350 MHz 2 [4] Channel Digital Oscilloscope HMO3522 [HMO3524]

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

Display	
Display:	6,5" VGA Color TFT
Resolution:	640 x 480 Pixel
Backlight:	LED 400cd/m ²
Display area for curves:	
without menu	400 x 600 Pixel (8 x 12 div.)
with menu	400 x 500 Pixel (8 x 10 div.)
Color depth:	256 colors
Intensity steps per channel:	0...31

Vertical System	
Channels:	
DSO mode	CH1, CH2 [CH1...CH4]
MSO mode	CH1, CH2 LCH 0...15 (logic channels) with 2 x Option H03508
Auxiliary input:	Frontside [Rear side]
Function	Ext. Trigger
Impedance	1MΩ 13pF ± 2pF
Coupling	DC, AC
Max. input voltage	100V (DC + peak AC)
XYZ-mode:	All analog channels on individual choose
Invert:	CH 1, CH 2 [CH1...CH4]
Y-bandwidth (-3dB):	350MHz (5mV...5V)/div. 100MHz (1mV, 2mV)/div.
Lower AC bandwidth:	2Hz
Bandwidth limiter (switchable):	approx. 20MHz
Rise time (calculated):	< 1ns
DC gain accuracy	2%
Input sensitivity:	12 calibrated steps
CH1, CH2 [CH1...CH4]	1mV/div...5V/div. [1-2-5 Sequence]
Variable	Between calibrated steps
Inputs CH1, CH2 [CH1...CH4]:	
Impedance	1MΩ 13pF ± 2pF (50Ω switchable)
Coupling	DC, AC, GND
Max. input voltage	200V (DC + peak AC), 50Ω <5V _{eff}
Measuring circuits:	Measuring Category I (CAT I)
Position range	± 10Divs
Offset control:	
1mV, 2mV	± 0,2V
5mV...50mV	± 1V
100mV...5V	± 20V
Logic channels	With Option H03508
Select. switching thresholds	TTL, CMOS, ECL, 2 x User -2V...+8V
Impedance	100kΩ < 4pF
Coupling	DC
Max. input voltage	40V (DC + peak AC)

Triggering	
Analog channels:	
Automatic:	Linking of peakdetection and triggerlevel
Min. signal height	0.8div; 0.5div typ.
Frequency range	5Hz...400MHz
Level control range	From peak- to peak+
Normal (without peak):	
Min. signal height	0.8div; 0.5div typ.
Frequency range	0...400MHz
Level control range	-10div...+10div.
Operating modes:	Flanke/Video/Logik/Pulse
Slope:	Rising, falling, both
Sources:	CH1, CH2, Line, Ext. [CH1...CH4, Line, Ext.]
Coupling:	AC: 5Hz...400MHz DC: 0...400MHz HF: 30kHz...400MHz LF: 0...5kHz Noise rejection: 100MHz LPF switchable
Video:	Pos./neg. sync. impulse
Standards	525 Line/60Hz systems 625 Line/50Hz systems
Fields	Field 1, field 2, both
Line	All, selectable line number
Source	CH1, CH2, Ext. [CH1...CH4]
Logic:	AND, OR, TRUE, FALSE
Source	LCH0...15
State	LCH0...15 X, H, L
Indicator for trigger action:	LED
Ext. Trigger via:	Auxiliary input [Aux. input at rear side]
Pre/Post Trigger:	-100%...+200% related to 2MPts
2nd Trigger:	
Slope	Rising or falling
Min. signal height	0.5div.

Frequency range	0...400MHz
Level control range	-10div...+10div.
Operating modes:	
after time	20ns...0.1s
after incidence	1...2 ¹⁶

Horizontal System	
Domain representation:	Time, Frequency (FFT), Voltage (XY)
Representation Time Base:	Main-window, main- and zoom-window
Memory Zoom:	Up to 100.000:1
Accuracy:	20ppm
Time Base:	
Refresh operating modes	20ms/div...1ns/div.
Roll operating modes	50s/div...50ms/div.

Digital Storage	
Sampling rate (real time):	2 x 2GSa/s, 1 x 4GSa/s [4 x 2GSa/s, 2 x 4GSa/s] Logic channels: 16 x 1GSa/s
Sampling rate (random):	50GSa/s (n/a to logic channels)
Memory:	2 x 2MPts [4 x 2MPts]
Operation modes:	Refresh, Average, Envelope, Peak-Detect Roll: free run/triggered
Resolution (vertical)	8Bit
Resolution (horizontal)	
Yt Mode	[50 Pts./div.]
XY Mode	8Bit
Interpolation:	Sinx/x [CH1...CH4], Pulse (LCH0...15)
Persistence:	Off, 50ms...∞
Delay pretrigger:	0...2 Million x (1/samplerate)
posttrigger:	0...4 Million x (1/samplerate)
Display refresh rate:	Up to 2500 waveforms/s
Display:	Dots [acquired points only], vectors (interpolation), 'persistence'
Reference memories:	10

Operation / Measuring / Interfaces	
Operation:	Menu-driven (multilingual), Autoset, help functions (multilingual)
Save / Recall memories:	10 complete instrument parameter settings
Frequency counter:	
0.5Hz...1MHz	5 Digit resolution
> 1MHz...350MHz	6 Digit resolution
Accuracy	20ppm
Auto measurements:	Frequency, Period, U _{DC} , U _{pp} , U _{p+} , U _{p-} , U _{RMS} , U _{Avg} , t _{Rise} , t _{Fall}
Cursor measurements:	ΔV, Δt, 1/Δt (f), V to Gnd, V _t related to Trigger point, ratio X and Y, pulse count, peak to peak, peak+, peak-
Interface:	Dual-Schnittstelle USB/RS-232 (H0720) USB-Stick (frontside) USB-Printer (rear side) with SW V2.0 DVI for ext. monitor
Optional:	IEEE-488, Ethernet/USB

Mathematic functions	
Number of formula sets:	10 formula sets with up to 5 formulas each
Sources:	All channels, references and math. memories
Targets:	Math. memories
Functions:	ADD, SUB, 1/X, ABS, MUL, DIV, SQ, POS, NEG, INV
Display:	Up to 4 math. memories

General Information	
Probe ADJ Output:	1kHz/1MHz square wave signal -0.2V _{pp} (ta < 4ns)
Line voltage:	105...253V, 50/60Hz, CAT II
Power consumption:	Max. 70Watt at 230V, 50Hz
Protective system:	Safety class I [EN61010-1]
Operating temperature:	+5°C...+40°C
Storage temperature:	-20°C...+70°C
Max. rel. humidity:	5%...80% (non condensing)
Dimensions (W x H x D):	285 x 175 x 220mm
Weight:	3.6kg

Accessories supplied: Line cord, Operating manual, 2 [4] Probes, 10:1 with attenuation ID (H2350), Dual-Interface USB/RS-232 (H0720), CD
Optional accessories:
 H0730 Dual-Interface Ethernet/USB
 H0740 Interface IEEE-488 (GPIB) galvanically isolated
 HZ46 4RU 19" Rackmount Kit
 H03508 8 Channel Logic Probe