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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.

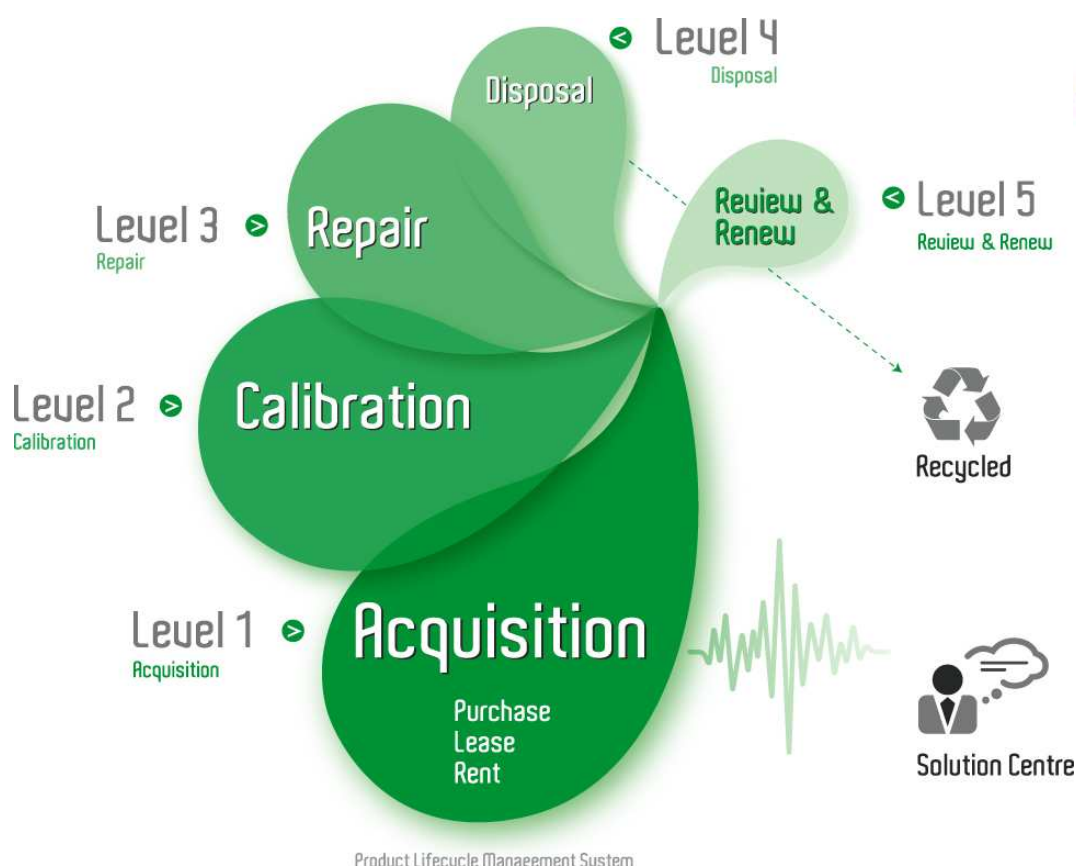
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TMG Corporate Website

TMG Products Website



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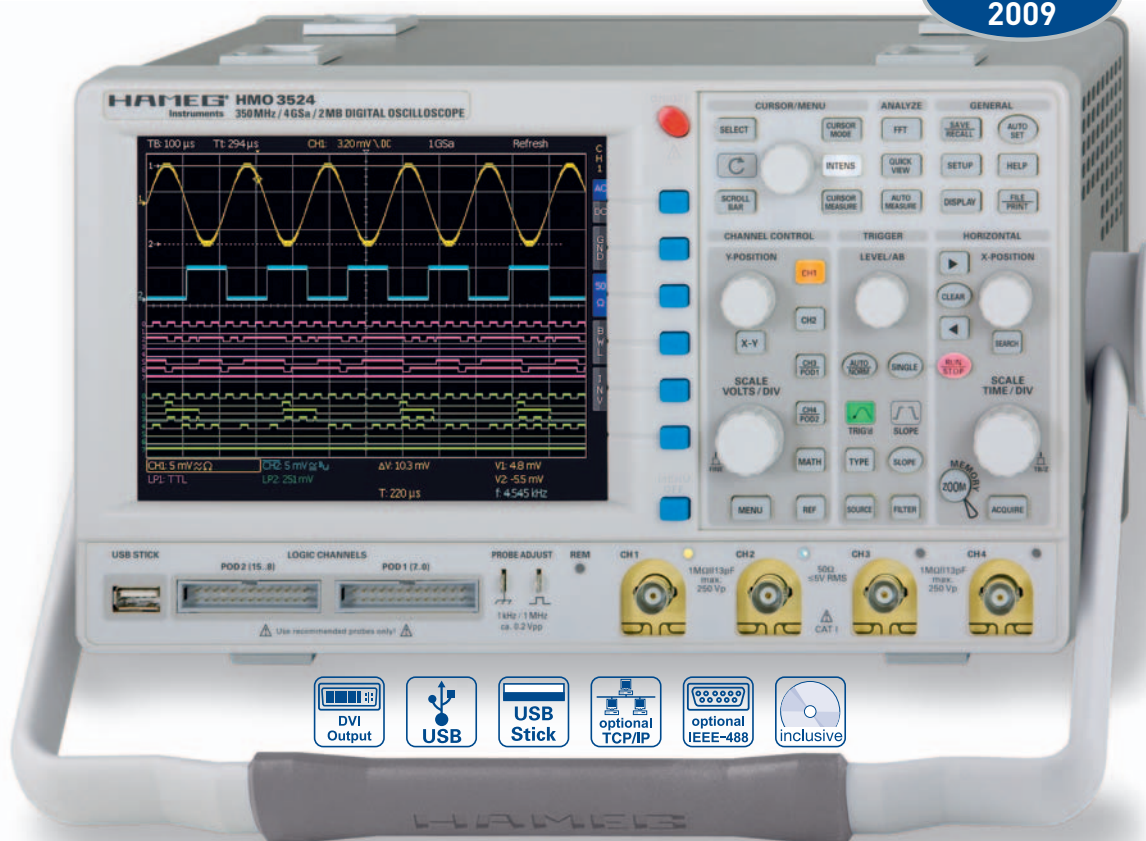


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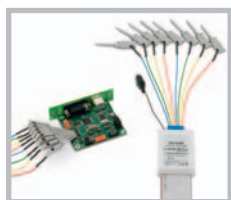
350MHz 2/4 Channel Digital Oscilloscope HM03522/HM03524

1st Quarter
2009

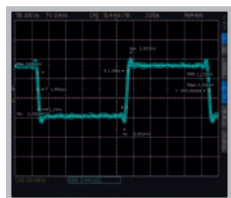


HM03524

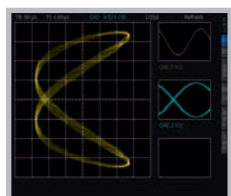
8 Channel
logic probe H03508



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 choice
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 [measured]:	< 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	0.5div.
Frequency range	5Hz...400MHz
Level control range	From peak- to peak+
Normal (without peak):	
Min. signal height	0.5div.
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
H246	4RU 19" Rackmount Kit
H03508	8 Channel Logic Probe