



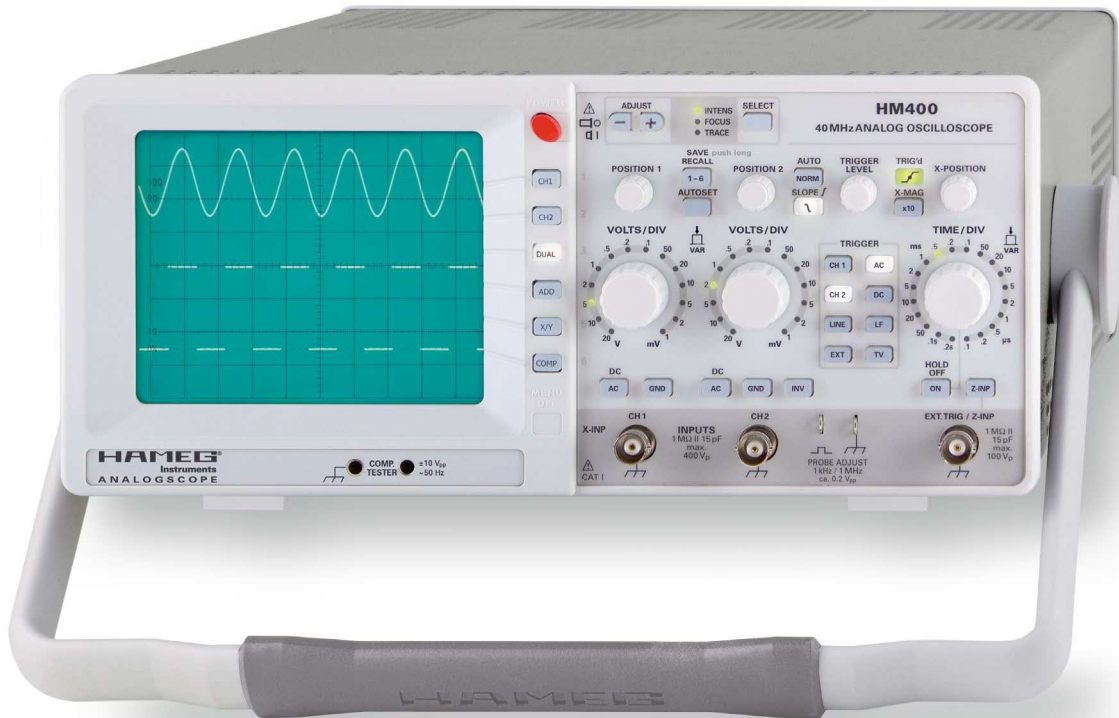
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**EN:** This Datasheet is presented by the manufacturer.

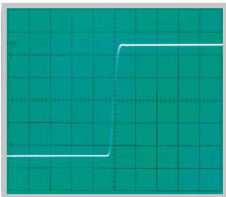
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## 40MHz Analog Oscilloscope HM400

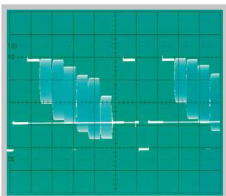


HM400

No Signal Distortion  
resulting from Overshoot



Line triggered composite  
Video Signal



Characteristic of a Z-Diode  
with Component Test Mode



- ✓ Reference-Class in Sensitivity and Input Voltage Range
- ✓ 2 Channels with Deflection Coefficients 1mV/div....20V/div., variable up to 50V/div.
- ✓ Time Base 100ns/div....0.2s/div., with X Magnification to 10ns/div.
- ✓ Low Noise Measuring Amplifiers with high Pulse Fidelity and minimum Overshoot
- ✓ Peak to Peak Trigger for stable Triggering 0...50MHz at 0.5div. Signal Level (up to 80MHz at 1div.)
- ✓ Autoset, Save/Recall Memories for 6 Instrument Settings
- ✓ Yt- and XY-Mode with Z-Input for Intensity Modulation
- ✓ Component Characterisation with Component Tester (two Terminal Network Measurement) for use within Service etc.
- ✓ Low Power Consumption, no Fan

## 40 MHz Analog Oscilloscope HM400

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

### Vertical Deflection

<b>Operating Modes:</b>	Channel 1 or 2 only Channels 1 and 2 (alternate or chopped) Sum or Difference of CH 1 and CH 2
<b>Invert:</b>	CH 2
<b>XY Mode:</b>	CH 1 (X) and CH 2 (Y)
<b>Bandwidth (-3 dB):</b>	
DC, 5 mV/div...20V/div.:	0...40 MHz
AC, 5 mV/div...20V/div.:	2Hz...40 MHz
DC, 1...2 mV/div.:	0...10 MHz
AC, 1...2 mV/div.:	2Hz...10 MHz
<b>Rise Time (calculated):</b>	<35 ns (1...2 mV/div.) <8.75 ns (5 mV/div...20V/div.)
<b>Deflection Coefficient:</b>	1-2-5 Sequence ±5% (1...2 mV/div.) ±3% (5 mV/div...20V/div.)
Variable (uncalibrated):	>2.5:1 to >50V/div.
<b>Input Impedance:</b>	1 MΩ    15 pF
<b>Input Coupling:</b>	DC, AC, GND (ground)
<b>Max. Input Voltage:</b>	400V (DC + peak AC)

### Triggering

<b>Automatic:</b>	Linking of peakdetection and triggerlevel
<b>Min. signal height</b>	0.5 div.
<b>Frequency range</b>	5 Hz...50 MHz
<b>Level control range</b>	From peak- to peak+
<b>Normal (without peak):</b>	
<b>Min. signal height</b>	0.5 div.
<b>Frequency range</b>	0...50 MHz
<b>Level control range</b>	-10...+10 div.
<b>Slope:</b>	Rising or falling
<b>Sources:</b>	Channel 1 or 2, Line and External
<b>Coupling:</b>	AC (5 Hz...80 MHz), DC (0...80 MHz), LF (0...1.5 kHz)
<b>Trigger Indicator:</b>	LED
<b>External Trigger:</b>	
<b>Input Impedance:</b>	1 MΩ    15 pF
<b>External Trigger Signal:</b>	0.3V <sub>pp</sub> ≤5V, DC (0...50 MHz), AC (20 Hz...50 MHz)
<b>Max. input voltage:</b>	100V (DC + peak AC)
<b>Active TV sync. separator:</b>	Field and Line, +/-

### Horizontal Deflection

<b>Time Base:</b>	100 ns/div...0.2 s/div (1-2-5 Sequence)
<b>Accuracy:</b>	±3%
Variable (uncalibrated):	>2.5:1 to >1.25 s/div.
<b>X Magnification x10:</b>	up to 10 ns/div.
<b>Accuracy:</b>	±5%
<b>Hold-Off Time:</b>	variable to approx. 10:1
<b>XY</b>	
<b>Bandwidth X amplifier:</b>	0...2.5 MHz (-3 dB)
<b>XY Phase shift &lt;3°:</b>	<120 kHz

### Operation/Readout/Control

<b>Manual:</b>	via controls and buttons
<b>Autoset:</b>	automatic signal related parameter settings
<b>Save and Recall:</b>	6 instrument parameter settings

### Component Tester

<b>Test Voltage:</b>	approx. 7V <sub>rms</sub> (open circuit)
<b>Test Current:</b>	max. 7 mA <sub>rms</sub> (short-circuit)
<b>Test Frequency:</b>	approx. 50 Hz
<b>Test Connection:</b>	2 banana jacks 4 mm Ø One test circuit lead is grounded via protective earth (PE)

### Miscellaneous

<b>CRT:</b>	D14-363GY, 8 x 10 div. with internal graticule
<b>Acceleration Voltage:</b>	approx. 2 kV
<b>Trace Rotation:</b>	adjustable on front panel
<b>Z-Input (Intens. modulation):</b>	max. +5V (TTL), 10 kHz
<b>Probe ADJ Output:</b>	1 kHz/1 MHz Square Wave Signal approx. 0.2V <sub>pp</sub> (tr <5ns) for probe adjustment
<b>Power Supply (Mains):</b>	105...253V, 50/60 Hz ±10%, CAT II
<b>Power Consumption:</b>	approx. 30 Watt at 230V/50 Hz
<b>Safety class:</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>	approx. 4.8 kg

**Accessories supplied:** Line Cord, Operators Manual, 2 Probes 1:1/10:1 (HZ154) with LF/HF adjustment

#### Recommended accessories:

HZ20	Adapter, BNC to 4 mm banana
HZ33	Test cable 50Ω, BNC/BNC, 0.5 m
HZ34	Test cable 50Ω, 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)
HZ100	Differential probe 20:1/200:1
HZ109	Differential probe 1:1/10:1
HZ115	Differential probe 100:1/1000:1
HZ200	Probe 10:1 with auto attenuation ID (250 MHz)
HZ350	Probe 10:1 with automatically identification (350 MHz)
HZ355	Slimline probe 10:1 with automatically identification (500 MHz)
HZO20	High voltage probe 1000:1 (400 MHz, 1000V <sub>rms</sub> )
HZO30	Active probe 1 GHz (0.9 pF, 1 MΩ, including many accessories)
HZO50	AC/DC Current probe 20A, DC...100 kHz
HZO51	AC/DC Current probe 1000A, DC...20 kHz