

40MHz Analog-Oscilloscope HM404

Autoset, Save / Recall, Readout / Cursor and RS-232 Interface

Specifications

Vertical Deflection

Operating modes: Channel I or CH II separate,
Channel I and II: alternate or chopped

Chopper Frequency: approx. 0.5MHz

Sum or Difference: from Channel I and CH. II

Invert: CH II

XY-Mode: via CH I(X) and CH I(Y)

Frequency range: 2x DC to 40MHz (-3dB)

Overshoot: $\leq 1\%$ **Risetime:** $< 8.75\text{ns}$

Deflection coefficient: 14 calibrated positions
from 1mV/div to 20V/div in 1 - 2 - 5 sequence,
with variable 2.5:1 up to 50V/div.

Accuracy in calibrated positions

1mV/div to 2mV/div: $\pm 5\%$ (DC - 10MHz (-3dB))

5mV/div to 20V/div: $\pm 3\%$

Input impedance: 1M Ω || 18pF

Input coupling: DC - AC - GD (ground)

Input voltage: max. 400V (DC + peak AC)

Triggering

Automatic (peak to peak): $\geq 0.5\text{div.}$

Range: 20Hz - 100MHz

Normal with level control: DC-100MHz ($\geq 0.5\text{div.}$)

Indicator for trigger action: LED

Slope: positive or negative

Sources: CH I or II, line, external

ALT. Triggering: CH I / CH II ($\geq 0.8\text{div.}$)

Coupling: AC (10Hz - 100MHz)

DC (0 - 100MHz)

HF (50kHz - 100MHz)

LF (0 - 1.5kHz)

2nd triggering: normal with level control

External: $\geq 0.3V_{pp}$ (0 - 100MHz)

Active TV Sync. Separator: field & line, + / -

Horizontal Deflection

Time coefficients: 22 calibrated steps from
0.5s/div. - 50ns/div. ($\pm 3\%$) in 1-2-5 sequence
Variable 2.5:1 up to 1.25s/div. (uncal.)

X-MAG.x10: up to 10ns/div. $\pm 5\%$

Delay: approx. 140ms - 200ns, variable

Hold-off time: variable to approx. 10:1

Bandwidth X-amplifier: 0 - 3MHz (-3dB)

Input X-amplifier: via Channel I, Sensitivity see CH I

X-Y-phase shift: $< 3^\circ$ below 120kHz.

Operation / Control

Manual (front panel switches)

Autoset (automatic parameter selection)

Save/Recall: 9 user defined parameter settings

RS232: interface for remote control via a PC

Readout: Display of parameter settings

Cursor measurement: ΔV , Δt or $\Delta t/t$ (frequ.)

Component Tester

Test voltage: approx. $7V_{rms}$ (open circuit)

Test current: max. $7mA_{rms}$ (short circuit)

Test frequency: approx. 50Hz

One test lead is grounded (Safety Earth)

General Information

CRT: D14-363GY, 8x10cm, internal graticule

Acceleration voltage: approx. 2kV

Trace rotation: adjustable on front panel

Z Input: (Intens. modulation), max. +5V (TTL)

Calibrator: $\square$ 0,2V $\pm 1\%$, $\approx 1\text{kHz}/1\text{MHz}$ ($t_r < 4\text{ns}$)

Line voltage: 100-240V AC $\pm 10\%$, 50/60Hz

Power consumption: approx. 34 Watt at 50Hz

Min./Max. ambient temperature: $0^\circ\text{C} \dots +40^\circ\text{C}$

Protective system: Safety class I (IEC1010-1)

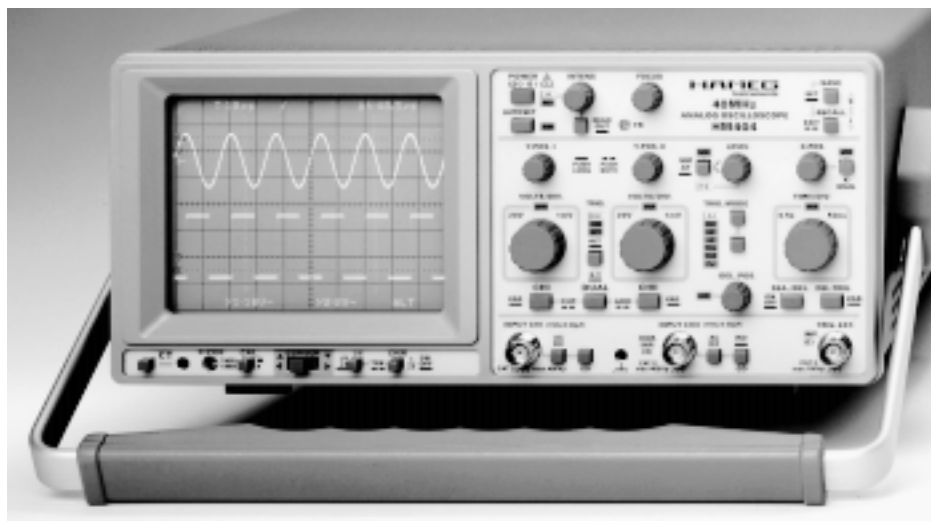
Weight: approx. 5.5kg. **Color:** techno-brown

Cabinet: W 285, H 125, D 380 mm

Lockable tilt handle

Subject to change without notice.

06/98



2 Channels, DC - 40MHz, 1mV - 20V/div., Component Tester

Triggering: DC to 100 MHz; Automatic Peak to Peak; $\leq 0.5\text{div.}$

Time Base: 0.5 s/div. to 10 ns/div.; with Delay & 2nd Trigger.

The excellent user interface characteristics of the new **HM404** oscilloscope are comparable with high tech scopes. Supported by **two microprocessors** any front panel input is executed in a fraction of a second. A selftest procedure checks all relevant parameters of the device; the test results will be displayed on screen within ten seconds after power on. Supported by an **on screen menu** adjustments can be performed without opening the scope.

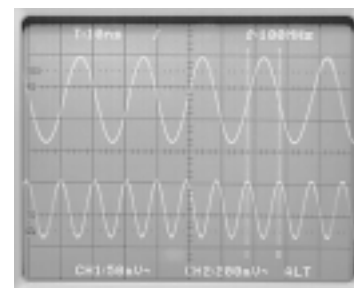
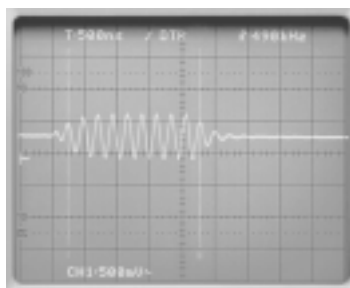
It is recommended to use the **Autoset** function if signals of lower complexity shall be displayed. The scope's logic circuitry performs all relevant parameter settings automatically to optimize the presentation of the signal(s). Of course, any parameter may be modified manually as required. Front panel settings (measurement parameters) and selected features are alphanumerically displayed on the screen. The cursor functions enable the user to analyze a signal while watching the numeric readout for voltage difference, time difference, or frequency values. Another feature is the storage capability for nine complete parameter settings, which may be stored and recalled randomly by pushing the corresponding front panel key.

Because of its high performance characteristics of the broad band signal amplifiers and its excellent trigger bandwidth the scope is capable to **display 100 MHz** signals. A delayed time base combined with a second trigger circuit makes the **HM404** an ideal instrument for high-resolution analysis of expanded, asynchronous signals. Furthermore, the built in component tester and the **1kHz/1MHz calibrator** are standard equipment for this class of **HAMEG** scopes.

The instrument may be remotely controlled by any personal computer via its built-in serial interface. A disk supplied with the scope, contains the instrument commands and programming examples.

TV burst signal in delay mode with 2. trigger.

Signals of 50 and 100 MHz, alternate mode, display of cursors and frequency values.



Accessories supplied: Line Cord, Operators Manual, 1 Disk, 2 Probes 1:1/ 10:1