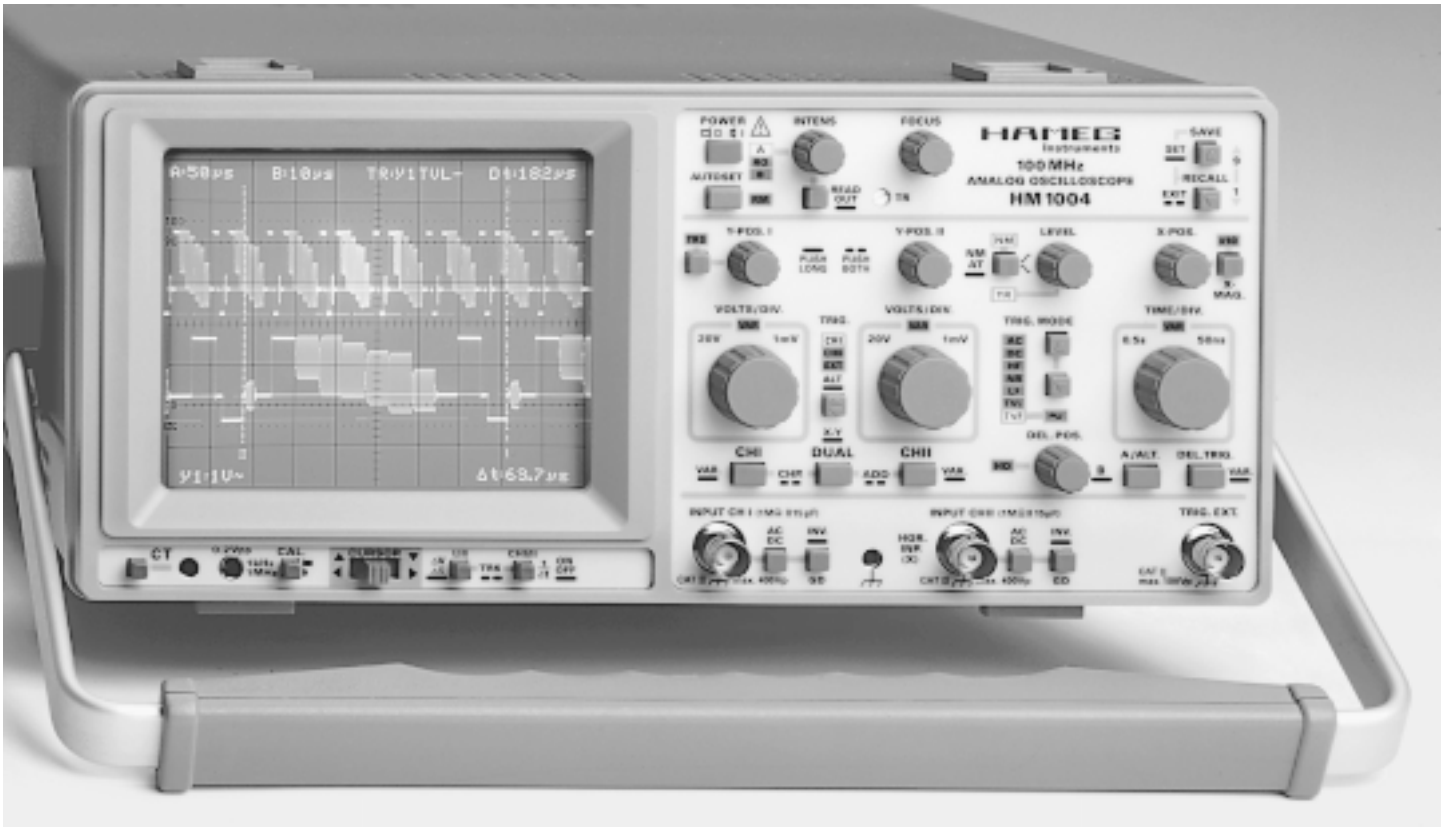
Analog Oscilloscope HM1004-2 (100MHz) & HM2005 (200MHz)

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



- **2 Channels, 1mV – 20V (5V/**2005**)/div,**
- **Delay Line, 14kV CRT**
- **Time Base A: 0.5s – 5ns (2ns/**2005**)/div.,**
- **Time Base B: 20ms–5(2)ns/div. , 2nd Trigger**
- **Triggering DC – 250 (300/**2005**) MHz,**
- **Automatic Peak to Peak,**
- **Alternate Trigger,**
- **Calibrator and Component Tester**

These **microprocessor** controlled oscilloscopes have been designed for a wide multitude of applications in service and industry. For ease of operation the **„Autoset“** function allows for signal related **automatic setup** of measuring parameters. On screen **alphanumeric readout** and **cursor functions** for voltage, time and frequency measurement provide extraordinary operational convenience. Nine different user defined instrument settings can be saved and recalled without restriction. The **built-in RS-232** serial interface allows for remote controlled operation by a PC.

The outstanding features of the **HM1004-2** and **HM2005** include two vertical input channels and the second time base with the ability to magnify, over 1000 times, extremely small portions of the input signal. The **second time base** has its own triggering controls, including level and slope selection,to allow a stable and precisely referenced display of asynchronous or jittery signal segments. The trigger circuit is designed to provide reliable triggering to over **250 (300/**2005**)MHz** at signal levels as low as **0.5div.**. An active **TV Sync Separator** for TV-signal tracing ensures accurate triggering even with noisy signals. The built in **Y delay line** allows for leading edge display of even low repetition rate signals, supported by the **14kV CRT** with its high intensity. Both instruments are equipped with a built in **COMPONENT TESTER**.

Because it is so important to be able to trust the accuracy of the display when viewing pulse or square signals, the **HM1004-2** and **HM2005** have a built-in switchable calibrator, which checks the instrument’s transient response characteristics - from probe tip to CRT screen. The essential high frequency compensation of wide band probes can be performed with this calibrator, which features a rise time of less than 6ns.

The instruments offer the right combination of triggering control, frequency response, and time base versatility to facilitate measurements in a wide range of applications - in laboratory as well as in field service use. It is another example of **HAMEG’s** dedication to engineering excellence.

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

Specifications

	HM1004-2 (100MHz)	HM2005 (200MHz)
Vertical Deflection		
Operating modes:	Channel I or II separate, Channel I and II: alternate or chopped	Channel I or II separate, Channel I and II: alternate or chopped
Chopper Frequency:	approx. 0.5MHz	approx. 0.5MHz
Sum or **difference:**	from CH I and CH II	from CH I and CH II
Invert:	both channels	both channels
XY-Mode:	via channel I (Y) and channel II (X)	via channel I (X) and channel II (Y)
Frequency range:	**2x DC to 100MHz (-3dB)**	**2x DC to 200MHz (-3dB)**
incl. Bandwidth Limiter:		approx. 2x DC to 50MHz (-3dB)
Risetime:	**<3.5ns**	**<1.75ns**
Overshoot:	≤1%	≤1%
Deflection coefficients:	14 calibrated steps **1mV** to **2mV/div.**: ±5% (DC – 10MHz (-3dB)) **5mV/div.** to **20V/div.:** ±3% in 1-2-5 sequence with variable 2.5:1 up to **50V/div.**	12 calibrated steps **1mV** to **2mV/div.**: ±5% (DC – 10MHz (-3dB)) **5mV/div.** to **5V/div.**: ±3% in 1-2-5 sequence with variable 2.5:1 up to **12,5V/div.**
Input impedance:	1MΩ II 15pF	1MΩ II 15pF
Input coupling:	DC-AC-GD (ground)	DC-AC-GD (ground)
Input voltage:	max. 400V (DC + peak AC)	max. 250V (DC + peak AC)
Delay line:	approx. 70ns	approx. 70ns
Triggering		
Automatic (peak to peak):	**≤20Hz-250MHz** (≥ 0.5div.)	**≤20Hz-300MHz** (≥ 0.5div.
Normal with level control:	**DC-250MHz** (≥ 0.5div.)	**DC-300MHz** (≥ 0.5div.)
Indicator for trigger action:	LED	LED
Slope:	positive or negative	positive or negative
Sources:	Channel I or II, line and external	Channel I or II, line and external
ALT. Triggering:	CH I/CH II (≥ 0.8div.)	CH I/CH II (≥ 0.8div.)
Coupling:	**AC** (10Hz – 250MHz) **DC** (0 – 250MHz) **HF** (50kHz – 250MHz) **LF** (0 –1.5kHz) **NR** (noise reject): 0-50MHz (≥ 0.8div.)	**AC** (10Hz – 300MHz) **DC** (0 – 300MHz) **HF** (50kHz – 300MHz) **LF** (0 –1.5kHz) **NR** (noise reject): 0-50MHz (≥ 0.8div.)
Triggering time base B:	normal with level control and slope selection (0 – 250 MHz)	normal with level control and slope selection (0 – 300 MHz)
Active TV Sync. Separator:	field and line, + / –	field and line, + / –
External:	≥0.3V_{pp} (0 – 100MHz)	≥0.3V_{pp} (0 – 100MHz)
Horizontal Deflection		
Time base A:	22 calibrated steps (±3%) from 0.5s/div. – 50ns/div. in 1-2-5 sequence variable 2.5:1 up to 1.25s/div.	23 calibrated steps (±3%) from 0.5s/div. – 20ns/div. in 1-2-5 sequence variable 2.5:1 up to 1.25s/div.
X-Mag. x10:	5ns/div. (±5%)	2ns/div. (±5%)
Holdoff time:	variable to approx. 10:1	variable to approx. 10:1
Time base B:	18 calibrated steps (±3%) from 20ms/div. to 50ns/div. in 1-2-5 sequence	19 calibrated steps (±3%) from 20ms/div. to 20ns/div. in 1-2-5 sequence
Operating modes:	**A** or **B**, alternate **A/B**	**A** or **B**, alternate **A/B**
Bandwidth X-amplifier:	0 – 3MHz (-3dB)	0 – 5MHz (-3dB)
Input X-amplifier:	via Channel II	via Channel I
Sensitivity:	see CH II	see CH I
X-Y phase shift:	<3° below 220kHz	<3° below 220kHz
Operation / Control		
Manual	front panel switches	front panel switches
Auto Set	(automatic parameter selection)	(automatic parameter selection)
Save/Recall:	**9** user-defined parameter settings	**9** user-defined parameter settings
Readout:	Display of parameter settings	Display of parameter settings
Cursor measurement:	ΔV, Δt or Δ1/t (frequ.)	ΔV, Δt or Δ1/t (frequ.)
Remote control:	with built in **RS-232** interface	with built in **RS-232** interface
Component Tester		
Test voltage:	max. 7V_{rms} (o/c) approx. 50Hz	max. 7V_{rms} (o/c) approx. 50Hz
Test current:	max. 7mA_{rms} (s/c) approx. 50Hz	max. 7mA_{rms} (s/c) approx. 50Hz
Test frequency:	One test lead is grounded (Safety Earth)	One test lead is grounded (Safety Earth)
General Information		
CRT:	D14-375GY, 8x10cm, internal graticule	D14-375GY, 8x10cm, internal graticule
Acceleration voltage:	approx. 14kV	approx. 14kV
Trace rotation:	adjustable on front panel	adjustable on front panel
Calibrator:	⎍ 0,2V ±1%, ≈ 1kHz/1MHz (t_r <6ns)	⎍ 0,2V ±1%, ≈ 1kHz/1MHz (t_r <6ns)
Z-Input (Intensitymodulation)**:**		max. +5V (TTL)
Line Voltage / Power consumption:	100-240V AC ±10% / approx.35Watt. 50/60Hz	100-240V AC ±10% / approx.43Watt. 50/60Hz
Min./Max. ambient temperature:	0°C + 40°C	0°C + 40°C
Protective system:	Safety class I (IEC1010-1)	Safety class I (IEC1010-1)
Weight:	approx. 5.9kg.	approx. 5.9kg.
Cabinet / Color:	**W** 285, **H** 125, **D** 380 mm / techno-brown	**W** 285, **H** 125, **D** 380 mm / techno-brown
	Lockable tilt handle	Lockable tilt handle

Subject to change without notice. 03/99