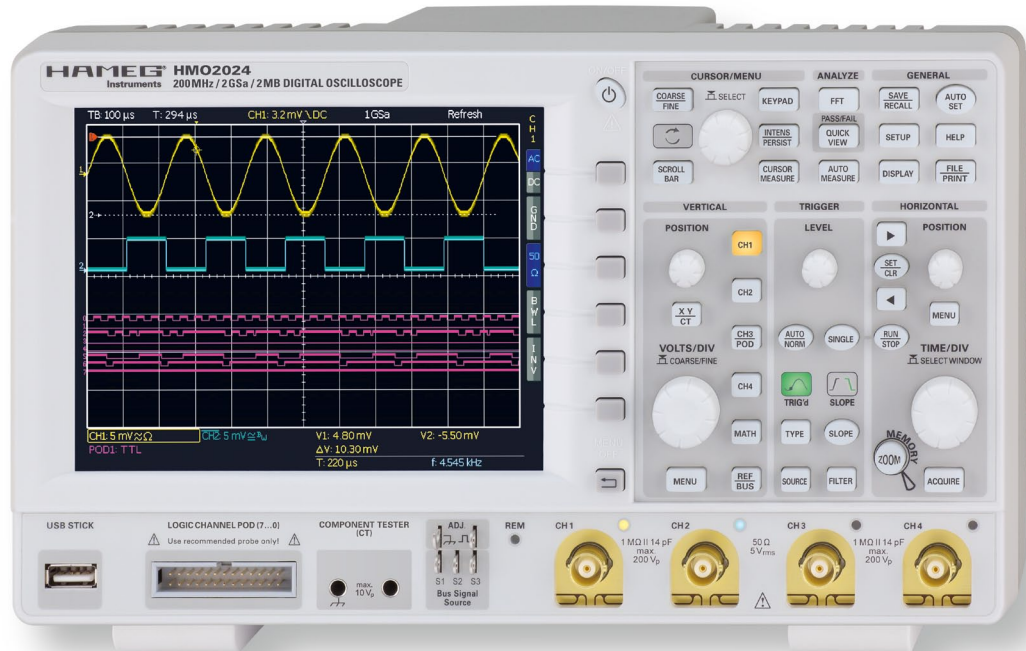


200MHz 2[4] Channel Digital Oscilloscope HMO2022 [HMO2024]
150MHz 2[4] Channel Digital Oscilloscope HMO1522 [HMO1524]

HMO2024



2 Channel Version
HMO2022



Side view



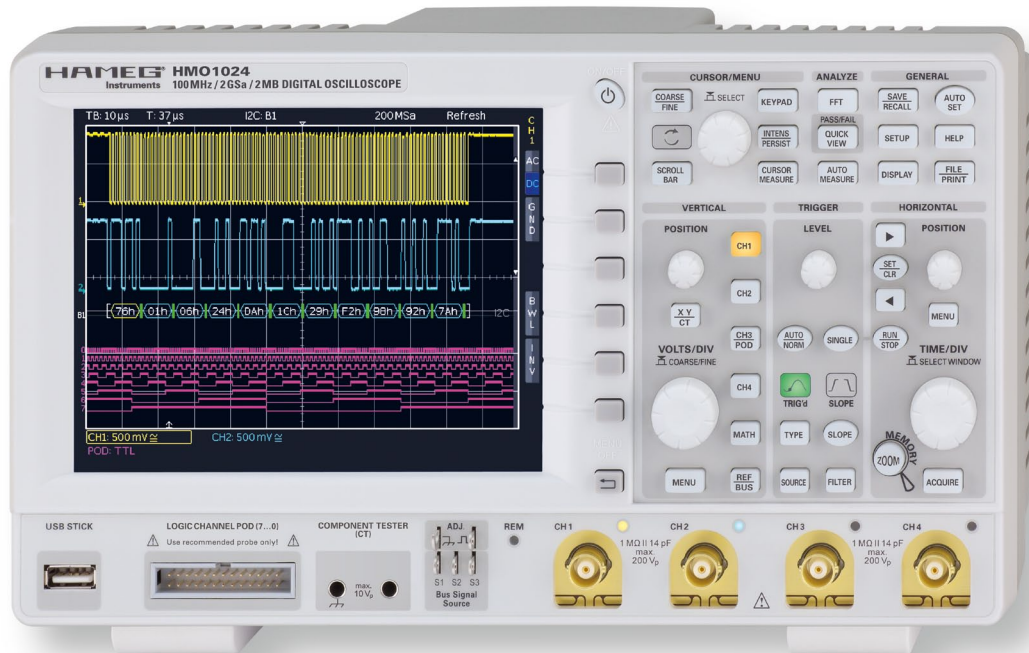
8 Channel
Logic Probe H03508



- ✓ 2GSa/s Real Time, Low Noise Flash A/D Converter (Reference Class)
- ✓ 2MPts Memory, Memory **Z**oom up to 50,000:1
- ✓ MSO (Mixed Signal Opt. H03508) with 8 Logic Channels
- ✓ Serial Bus Trigger and Hardware accelerated Decode, I²C, SPI, UART/RS-232 (Opt. H0010, H0011)
- ✓ 8 User definable Markers for easy Navigation
- ✓ Pass/Fail Test based on Masks
- ✓ Vertical Sensitivity 1mV/div., Offset Control $\pm 0.2... \pm 20V$
- ✓ 12div. x-Axis Display Range, 20div. y-Axis Display Range (VirtualScreen)
- ✓ Trigger Modes: Slope, Video, Pulsethrough, Logic, Delayed, Event
- ✓ Component Tester, 6 Digit Counter, Automeasurement, Formula Editor, Ratiocursor, FFT for Spectral Analysis
- ✓ Crisp 16.5cm (6.5") TFT VGA Display, DVI Output
- ✓ Lowest Noise Fan
- ✓ 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

**100MHz 2[4] Channel Digital Oscilloscope HMO1022 [HM01024]
70MHz 2[4] Channel Digital Oscilloscope HMO722 [HM0724]**

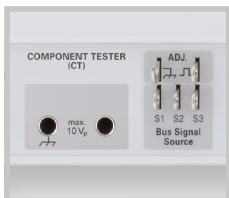
HMO1024



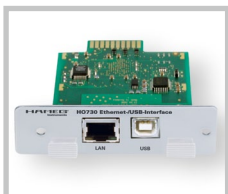
Carrying Case HZ090



Component Tester/
Bus Signal Source



Ethernet/USB-Interface
H0730 for industrial Use
(Option)



- ✓ 2GSa/s Real Time, Low Noise Flash A/D Converter (Reference Class)
- ✓ 2MPts Memory, Memory Zoom up to 50,000:1
- ✓ MSO (Mixed Signal Opt. H03508) with 8 Logic Channels
- ✓ Serial Bus Trigger and Hardware accelerated Decode, I²C, SPI, UART/RS-232 (Opt. H0010, H0011)
- ✓ 8 User definable Markers for easy Navigation
- ✓ Pass/Fail Test based on Masks
- ✓ Vertical Sensitivity 1mV/div.
- ✓ 12div. x-Axis Display Range, 20div. y-Axis Display Range (VirtualScreen)
- ✓ Trigger Modes: Slope, Video, Pulswidth, Logic, Delayed, Event
- ✓ Component Tester, 6 Digit Counter, Automeasurement, Formula Editor, Ratiocursor, FFT for Spectral Analysis
- ✓ Crisp 16.5cm (6.5") TFT VGA Display, DVI Output
- ✓ Lowest Noise Fan
- ✓ 3 x USB for Mass Storage, Printer and Remote Control optional IEEE-488 (GPIB) or Ethernet/USB

200 MHz 2 [4] Channel Digital Oscilloscope HMO2022 [HMO2024]
150MHz 2[4] Channel Digital Oscilloscope HMO1522 [HMO1524]
 All data valid at 23 °C after 30 minute warm-up.

| Display | |
|----------------------------|-------------------------------|
| Display: | 16.5cm (6.5") VGA Color TFT |
| Resolution: | 640 x 480 Pixel |
| Backlight: | LED 400 cd/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 trace: | 0...31 |

| Vertical System | |
|-----------------------------------|---|
| Channels: | |
| DSO mode | CH 1, CH 2 [CH 1...CH 4] |
| MSO mode | CH 1, CH 2, LCH 0...7 (logic channels) [CH 1, CH 2, LCH 0...7, CH4] with Option H03508 |
| Auxiliary input: | Frontside [Rear side] |
| Function | Ext. Trigger |
| Impedance | 1 MΩ 14 pF ±2 pF |
| Coupling | DC, AC |
| Max. input voltage | 100V (DC + peak AC) |
| XYZ-mode: | All analog channels on individual choice |
| Invert: | CH 1, CH 2 [CH 1...CH 4] |
| Y-bandwidth (-3 dB) (HMO202x): | 200 MHz (5 mV...5V)/div, 100 MHz (1 mV, 2 mV)/div |
| (HMO152x): | 150 MHz (5 mV...5V)/div, 100 MHz (1 mV, 2 mV)/div |
| Lower AC bandwidth: | 2 Hz |
| Bandwidth limiter (switchable): | approx. 20 MHz |
| Rise time (calculated) (HMO202x): | <1.75 ns |
| (HMO152x): | <2.4 ns |
| DC gain accuracy | 2% |
| Input sensitivity: | 12 calibrated steps |
| CH 1, CH 2 [CH 1...CH 4] | 1 mV/div...5V/div. [1-2-5 Sequence] |
| Variable | Between calibrated steps |
| Inputs CH 1, CH 2 [CH 1...CH 4]: | |
| Impedance | 1 MΩ 14 pF ±2 pF |
| Coupling | DC, AC |
| Max. input voltage | 200V (DC + peak AC), 50 Ω <5V _{rms} |
| Measuring circuits: | Measuring Category I [CAT I], UL 61010B-1 |
| Position range | ±10 Divs |
| Offset control: | |
| 1 mV, 2 mV | ±0,2V - 10 div. * Sensitivity |
| 5...50 mV | ±1V - 10 div. * Sensitivity |
| 100 mV | ±2,5V - 10 div. * Sensitivity |
| 200 mV...2V | ±40V - 10 div. * Sensitivity |
| 5V | ±100V - 10 div. * Sensitivity |
| Logic channels | With Option H03508 |
| Select. switching thresholds | TTL, CMOS, ECL, 2 x User -2...+8V |
| Impedance | 100 kΩ <4 pF |
| Coupling | DC |
| Max. input voltage | 40V (DC + peak AC) |

| Triggering | |
|----------------------------|--|
| Analog channels: | |
| Automatic: | Linking of peakdetection and triggerlevel |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO202x) | 5 Hz...250 MHz |
| (HMO152x) | 5 Hz...200 MHz |
| Level control range | From peak- to peak+ |
| Normal (without peak): | |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO202x) | 0...250 MHz |
| (HMO152x) | 0...200 MHz |
| Level control range | -10...+10 div from center of the screen |
| Operating modes: | Slope/Video/Logic/Pulses/Busses (optional) |
| Slope: | Rising, falling, both |
| Sources: | CH 1, CH 2, Line, Ext., LCH 0...7 [CH 1...CH 4, Line, Ext., LCH 0...7] |
| Coupling (Analog Channel): | AC (HMO202x): 5 Hz...250 MHz (HMO152x): 5 Hz...200 MHz DC (HMO202x): 0...250 MHz (HMO152x): 0...200 MHz HF (HMO202x): 30 kHz...250 MHz (HMO152x): 30 kHz...200 MHz LF : 0...5 kHz Noise rejection : switchable |
| Video: | |
| Standards | PAL, NTSC, SECAM, PAL-M, SDTV 576i, HDTV 720p, HDTV 1080i, HDTV 1080p |
| Fields | Field 1, field 2, both |
| Line | All, selectable line number |
| Sync. Impulse | Positive, negative |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4] |
| Logic: | |
| Sources: | LCH 0...7 |
| State | LCH 0...7 X, H, L |

| | |
|-------------------------------|--|
| Pulses: | Positive, negative |
| Modes | equal, unequal, less than, greater than, within/without a range |
| Range | min. 16 ns, max. 268.434 ms, resolution from 16 ns until 2 μs |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4] |
| Indicator for trigger action: | LED |
| Ext. Trigger via: | Auxiliary input 0.3V...10V _{pp} |
| 2nd Trigger: | |
| Slope: | Rising, falling, both |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO202x) | 0...250 MHz |
| (HMO152x) | 0...150 MHz |
| Level control range | -10...+10 div. |
| Operating modes: | |
| after time | 32 ns...536 ms |
| after incidence | 1...2 ¹⁶ |
| Busses (Opt. H0010): | I ² C/SPI/UART/RS-232 |
| Sources: | CH 1, CH 2, Ext., LCH 0...7 [CH 1...CH 4, Ext., LCH 0...7] |
| Busses (Opt. H0011): | I ² C/SPI/UART/RS-232 |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4, Ext.] |
| Format | hexadecimal, binary |
| I ² C | Trigger on Start, Stop, Restart, NACK, Address (7 or 10 Bit), Data, Address and Data, up to 5 Mb/s |
| SPI | up to 32 Bit Data, Chip select (CS) pos. or neg., without CS, up to 12.5 Mb/s |
| UART/RS-232 | up to 8 Bit Data, up to 30 Mb/s |

| Horizontal System | |
|---------------------------|-------------------------------------|
| Domain representation: | Time, Frequency (FFT), Voltage (XY) |
| Representation Time Base: | Main-window, main- and zoom-window |
| Memory Zoom: | Up to 50,000:1 |
| Accuracy: | 50 ppm |
| Time Base: | |
| Refresh operating modes | 2 ns/div...20 ms/div. |
| Roll operating modes | 50 ms/div...50 s/div. |

| Digital Storage | |
|----------------------------|--|
| Sampling rate (real time): | 2 x 1 GSa/s, 1 x 2 GSa/s [4 x 1 GSa/s, 2 x 2 GSa/s] Logic channels: 8 x 1 GSa/s |
| Memory: | 2 x 1 MPts, 1 x 2 MPts [4 x 1 MPts, 2 x 2 MPts] |
| Operation modes: | Refresh, Average, Envelope, Peak-Detect Roll: free run/triggered, Filter |
| Resolution (vertical) | 8 Bit |
| Resolution (horizontal) | |
| Yt Mode | 50 Pts./div. |
| XY Mode | 8 Bit |
| Interpolation: | Sinx/x, linear, Sample-hold |
| Persistence: | Off, 50 ms...∞ |
| Delay pretrigger: | 0...8 Million x (1/samplerate) |
| posttrigger: | 0...2 Million x (1/samplerate) |
| Display refresh rate: | Up to 2000 waveforms/s |
| Display: | Dots, vectors, „persistence“ |
| Reference memories: | typ. 10 Traces |

| Operation/Measuring/Interfaces | |
|--------------------------------|---|
| Operation: | Menu-driven (multilingual), Autoset, help functions (multilingual) |
| Save/Recall memories: | typ. 10 complete instrument parameter settings |
| Frequency counter: | |
| 0.5 Hz...250 MHz (HMO202x) | 6 Digit resolution |
| 0.5 Hz...200 MHz (HMO152x) | 6 Digit resolution |
| Accuracy | 50 ppm |
| Auto measurements: | Frequency, Period, pulse count, V _{pp} , V _{p+} , V _{p-} , V _{rms} , V _{avg} , V _{top} , V _{base} , t _{width+} , t _{width-} , t _{dutycycle+} , t _{dutycycle-} , t _{rise} , t _{fall} , pos. edge count, neg. edge count, pos. pulse count, neg. pulse count |
| Cursor measurements: | ΔV, Δt, 1/Δt (f), V to Gnd, Vt related to Trigger point, ratio X and Y, pulse count, peak to peak, peak+, peak-, Average, Mean, standard deviation |
| Interface: | Dual-Interface USB type B/RS-232 (H0720), 2x USB type A (front- and rear side each 1x) max. 100 mA, DVI-D for ext. Monitor |
| Optional: | IEEE-488 (H0740), Ethernet/USB (H0730) |

| Display functions | |
|--------------------------------------|--|
| Marker: | up to 8 user definable marker for easy navigation |
| VirtualScreen: | virtual Display with 20 div. vertical for all Math-, Logic-, Bus- and Reference Signals |
| Busdisplay: | up to 2 busses, user definable, parallel or serial busses (option), decode of the bus value in ASCII, binary, decimal or hexadecimal, up to 4 lines logic channels can also be used as source for bus definition |
| Parallel | |
| I ² C (Opt. H0010, H0011) | color coded Read-, Write Adress, Data, Start, Stop, acknowledge, missing acknowledge, Errors and Trigger condition |
| SPI (Opt. H0010, H0011) | color coded Data, Start, Stop, Errors and Trigger condition |

UART/RS-232 color coded Data, Start, Stop, Errors and Trigger condition
(Opt. H0010, H0011)

Mathematic functions

| | |
|--------------------------------|---|
| Number of formula sets: | 5 formula sets with up to 5 formulas each |
| Sources: | All channels and math. memories |
| Targets: | Math. memories |
| Functions: | ADD, SUB, 1/X, ABS, MUL, DIV, SQ, POS, NEG, INV, INTG, DIFF, SQR, MIN, MAX, LOG, LN, Low-, High-pass filter |
| Display: | Up to 4 math. memories with label |

Pass/Fail functions

| | |
|----------------------|---|
| Sources: | Analog channels |
| Type of test: | Mask around a signal, userdefined tolerance |
| Functions: | Stop, Beep, screen shot (screen print-out) and/or output to printer for pass or fail, event counting up to 4 billion, including the number and the percentage of pass and fail events |

General Information

| | |
|---------------------------------------|---|
| Component tester | |
| Test voltage: | approx. 7V _{rms} (open circuit), approx. 100Hz |
| Test current: | max. 7mA _{rms} (short circuit) |
| Reference Potential: | Ground (safety earth) |
| Probe ADJ Output: | 1 kHz/1 MHz square wave signal ~1V _{pp} (ta <4 ns) |
| Bus Signal Source | SPI, I ² C, UART, Parallel (4 Bit) |
| Internal RTC (Realtime clock): | Date and time for stored data |
| Line voltage: | 100...240V, 50...60Hz, CAT II |
| Power consumption: | Max. 50 Watt at 230V, 50Hz |
| Protective system: | Safety class I (EN61010-1) |
| Operating temperature: | +5...+40 °C |
| Storage temperature: | -20...+70 °C |
| Rel. humidity: | 5...80 % (non condensing) |
| Dimensions (W x H x D): | 285 x 175 x 140mm |
| Weight: | <2.5kg |

Accessories supplied: Line cord, Operating manual, 2 [4] Probes, 10:1 with attenuation ID (HZ010), CD

Recommended accessories you can find at www.hameg.com/embedded

100 MHz 2 [4] Channel Digital Oscilloscope HMO1022 [HMO1024]

70 MHz 2[4] Channel Digital Oscilloscope HMO722 [HMO724]

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

Display see HMO2022 [HMO2024]

Vertical System

| | |
|--|--|
| Channels: | |
| DSO mode | CH 1, CH 2 [CH 1...CH 4] |
| MSO mode | CH 1, CH 2, LCH 0...7 [logic channels] [CH 1, CH 2, LCH 0...7, CH 4] with Option H03508 |
| Auxiliary input: | Frontside [Rear side] |
| Function | Ext. Trigger |
| Impedance | 1 MΩ 13 pF ±2 pF |
| Coupling | DC, AC |
| Max. input voltage | 100V (DC + peak AC) |
| XYZ-mode: | All analog channels on individual choice |
| Invert: | CH 1, CH 2 [CH 1...CH 4] |
| Y-bandwidth [-3 dB] (HMO102x): | 100 MHz (5mV...10V)/div., 20 MHz (1 mV, 2 mV)/div. |
| (HMO72x): | 70 MHz (5mV...10V)/div., 20 MHz (1 mV, 2 mV)/div. |
| Lower AC bandwidth: | 2Hz |
| Bandwidth limiter (switchable): | approx. 20 MHz |
| Rise time (calculated) (HMO102x): | <3.5ns |
| (HMO72x): | <5ns |
| DC gain accuracy | 2% |
| Input sensitivity: | 13 calibrated steps |
| CH 1, CH 2 [CH 1...CH 4] | 1 mV/div...10V/div. (1-2-5 Sequence) |
| Variable | Between calibrated steps |
| Inputs CH 1, CH 2 [CH 1...CH 4]: | |
| Impedance | 1MΩ 14pF ±2pF |
| Coupling | DC, AC, GND |
| Max. input voltage | 200V (DC + peak AC) |
| Measuring circuits: | Measuring Category I (CAT I) |
| Position range | ±10 Divs |
| Logic channels | With Option H03508 |
| Select. switching thresholds | TTL, CMOS, ECL, 2 x User -2...+8V |
| Impedance | 100 kΩ <4 pF |
| Coupling | DC |
| Max. input voltage | 40V (DC + peak AC) |

Triggering

| | |
|----------------------------------|---|
| Analog channels: | |
| Automatic: | Linking of peakdetection and triggerlevel |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO102x) | 5 Hz...150 MHz |
| (HMO72x) | 5 Hz...100 MHz |

| | |
|-----------------------------------|--|
| Level control range | From peak- to peak+ |
| Normal (without peak): | |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO102x) | 0...150 MHz |
| (HMO72x) | 0...100 MHz |
| Level control range | -10...+10 div. |
| Operating modes: | Slope/Video/Logic/Pulses/Busses (optional) |
| Slope: | Rising, falling, both |
| Sources: | CH 1, CH 2, Line, Ext., LCH 0...7 [CH 1...CH 4, Line, Ext., LCH 0...7] |
| Coupling (Analog Channel): | AC (HMO102x): 5 Hz...150 MHz (HMO72x): 5 Hz...100 MHz DC (HMO102x): 0...150 MHz (HMO72x): 0...100 MHz HF (HMO102x): 30 kHz...150 MHz (HMO72x): 30 kHz...100 MHz LF : 0...5 kHz Noise rejection: switchable |

| | |
|--------------------------------------|---|
| Video: | |
| Standards | PAL, NTSC, SECAM, PAL-M, SDTV 576i, HDTV 720p, HDTV 1080i, HDTV 1080p |
| Fields | Field 1, field 2, both |
| Line | All, selectable line number |
| Sync. Impulse | Positive, negative |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4] |
| Logic: | AND, OR, TRUE, FALSE |
| Sources: | LCH 0...7 |
| State | LCH 0...7 X, H, L |
| Pulses: | Positive, negative |
| Modes | equal, unequal, less than, greater than, within/without a range |
| Range | min. 16 ns, max. 268.434 ms, resolution from 16 ns until 2 μs |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4] |
| Indicator for trigger action: | LED |
| Ext. Trigger via: | Auxiliary input 0.3V...10V _{pp} |
| 2nd Trigger: | |
| Slope: | Rising, falling, both |
| Min. signal height | 0.8 div.; 0.5 div. typ. |
| Frequency range (HMO102x) | 0...100 MHz |
| (HMO72x) | 0...70 MHz |
| Level control range | -10...+10 div. |
| Operating modes: | |
| after time | 32 ns...536 ms |
| after incidence | 1...2 ¹⁶ |
| Busses (Opt. H0010): | I ² C/SPI/UART/RS-232 |
| Sources: | CH 1, CH 2, Ext., LCH 0...7 [CH 1...CH 4, Ext., LCH 0...7] |
| Busses (Opt. H0011): | I ² C/SPI/UART/RS-232 |
| Sources: | CH 1, CH 2, Ext. [CH 1...CH 4, Ext.] |
| Format | hexadecimal, binary |
| I²C | Trigger on Start, Stop, Restart, NACK, Address (7 or 10 Bit), Data, Address and Data, up to 5Mb/s up to 32 Bit Data, Chip select (CS) pos. or neg., without CS, up to 12.5 Mb/s |
| SPI | |
| UART/RS-232 | up to 8 Bit Data, up to 30 Mb/s |

Horizontal System see HMO2022 [HMO2024]

Digital Storage see HMO2022 [HMO2024]

Operation/Measuring/Interfaces

| | |
|-----------------------------------|---|
| Operation: | Menu-driven (multilingual), Autoset, help functions (multilingual) |
| Save/Recall memories: | typ. 10 complete instrument parameter settings |
| Frequency counter: | |
| 0.5 Hz...150 MHz (HMO102x) | 6 Digit resolution |
| 0.5 Hz...100 MHz (HMO72x) | 6 Digit resolution |
| Accuracy | 50 ppm |
| Auto measurements: | Frequency, Period, pulse count, V _{pp} , V _{p+} , V _{p-} , V _{rms} , V _{avg} , V _{top} , V _{base} , t _{width+} , t _{width-} , t _{dutycycle+} , t _{dutycycle-} , t _{rise+} , t _{fall+} , pos. edge count, neg. edge count, pos. pulse count, neg. pulse count |
| Cursor measurements: | ΔV, Δt, 1/Δt (f), V to Gnd, Vt related to Trigger point, ratio X and Y, pulse count, peak to peak, peak+, peak- |
| Interface: | Dual-Interface USB type B/RS-232 (H0720), 2x USB type A (front- and rear side each 1x) max. 100mA, DVI-D for ext. Monitor |
| Optional: | IEEE-488 (H0740), Ethernet/USB (H0730) |

Display functions see HMO2022 [HMO2024]

Mathematic functions see HMO2022 [HMO2024]

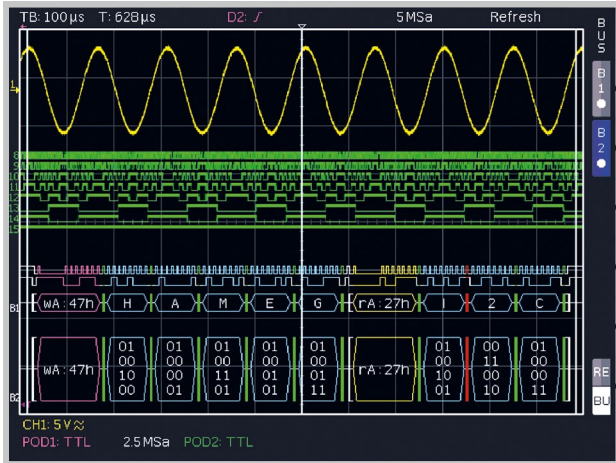
Pass/Fail functions see HMO2022 [HMO2024]

General Information see HMO2022 [HMO2024]

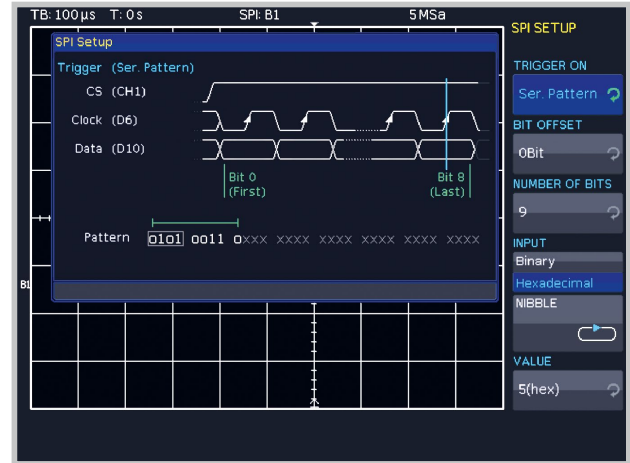
Accessories supplied: Line cord, Operating manual, 2 [4] Probes, 10:1/1:1 switchable (HZ154), CD
Recommended accessories you can find at www.hameg.com/embedded

| | HMO3522 [HMO3524] | HMO2524 | HMO2022 [HMO2024] | HMO1522 [HMO1524] | HMO1022 [HMO1024] | HMO722 [HMO724] |
|--|--|--------------------------|------------------------------------|------------------------------------|------------------------------------|----------------------------------|
| Vertical | | | | | | |
| Number of Channel | 2 [4] | 4 | 2 [4] | 2 [4] | 2 [4] | 2 [4] |
| Bandwidth | 350 MHz | 250 MHz | 200 MHz | 150 MHz | 100 MHz | 70 MHz |
| Input Impedance | 1M Ω /50 Ω | 1M Ω /50 Ω | 1M Ω /50 Ω | 1M Ω /50 Ω | 1M Ω | 1M Ω |
| V/div. 1M Ω | 1mV/div....5V/div. | 1mV/div....5V/div. | 1mV/div....5V/div. | 1mV/div....5V/div. | 1mV/div....10V/div. | 1mV/div....10V/div. |
| Max. Input voltage 1M Ω | 200Vpk | | | | | |
| V/div. 50 Ω | 1mV/div....1V/div. | 1mV/div....1V/div. | 1mV/div....1V/div. | 1mV/div....1V/div. | N/A | N/A |
| Probe Attenuation Sense | Standard | | | | | |
| Horizontal | | | | | | |
| Sample Rate per Analog Channel | 2 GSa/s | 1.25 GSa/s | 1 GSa/s | 1 GSa/s | 1 GSa/s | 1 GSa/s |
| Max. Sample Rate | 4 GSa/s | 2.5 GSa/s | 2 GSa/s | 2 GSa/s | 2 GSa/s | 2 GSa/s |
| Memory Depth per Ch. | 2 MPts. | 2 MPts. | 1 MPts. | 1 MPts. | 1 MPts. | 1 MPts. |
| Max. Memory | 4 MPts. | 4 MPts. | 2 MPts. | 2 MPts. | 2 MPts. | 2 MPts. |
| Timebase Accuracy | 15 ppm | 15 ppm | 50 ppm | 50 ppm | 50 ppm | 50 ppm |
| Trigger | | | | | | |
| Trigger Rate | 2500 wfs/s | 2500 wfs/s | 2000 wfs/s | 2000 wfs/s | 2000 wfs/s | 2000 wfs/s |
| Trigger Modes | Edge, Pulse Width, Pattern, Video incl. HDTV, A/B Trigger | | | | | |
| Measurement | | | | | | |
| Cursor measurement List | ΔV , Δt , $1/\Delta t$ (f), V to Gnd, Vt related to Trigger point, ratio X and Y, pulse count, peak to peak, peak+, peak- | | | | | |
| Parameter List | Frequency, Period, pulse count, V_{pp} , V_{p+} , V_{p-} , V_{rms} , V_{avg} , V_{top} , V_{base} , t_{width+} , t_{width-} , t_{duty+} , t_{duty-} , t_{rise} , t_{fall} , pos. edge count, neg. edge count, pos. pulse count, neg. pulse count | | | | | |
| HW Counter | 6 Digit | | | | | |
| Advanced Math, Math on Math | Standard | | | | | |
| Math Functions std. | ADD, SUB, 1/X, ABS, MUL, DIV, SQ, POS, NEG, INV, INTG, DIFF, SQR, MIN, MAX, LOG, LN, Filter (low-pass, high-pass) | | | | | |
| Pass/Fail Mask testing | Standard | | | | | |
| Mixed Signal | | | | | | |
| Mixed Signal Functionality | via Option H03508 (8 Channel) or H03516 (16 Channel) | | via Option H03508 (8 Channel) | | | |
| Max. Number of Logic Channel | 16 | 16 | 8 | 8 | 8 | 8 |
| Sample Rate of the Digital Channel | 1 GSa/s | 1,25 GSa/s | 1 GSa/s | 1 GSa/s | 1 GSa/s | 1 GSa/s |
| Memory Depth of the Digital Channel | 1 MPts. | 2 MPts. | 1 MPts. | 1 MPts. | 1 MPts. | 1 MPts. |
| Serial Trigger and Decode | | | | | | |
| Serial Trigger and Decode I ² C, SPI, UART/RS-232 | H0010 via Analog Channels and/or Logic Channels, H0011 via Analog Channels | | | | | |
| Display | | | | | | |
| Display Size | 6.5 inch | | | | | |
| Display Resolution | 640x480 | | | | | |
| Virtual Screen | 20 div. | | | | | |
| Interfaces | | | | | | |
| Monitor Output | Standard: DVI-D | | | | | |
| USB Remote Interface | Standard | | | | | |
| RS-232 Remote Interface | Standard | | | | | |
| Ethernet Remote Interface | Option H0730 | | | | | |
| GPIO Remote Interface | Option H0740 | | | | | |
| Miscellaneous | | | | | | |
| Fan noise | very low | | | | | |
| Dimension (WxHxD) | 28,5 x 17,5 x 22 cm | 28,5 x 17,5 x 22 cm | 28,5 x 17,5 x 14 cm | 28,5 x 17,5 x 14 cm | 28,5 x 17,5 x 14 cm | 28,5 x 17,5 x 14 cm |
| Footprint | 627 cm ² | 627 cm ² | 399 cm ² | 399 cm ² | 399 cm ² | 399 cm ² |
| Weight | 3,6 kg | 3,6 kg | 2,5 kg | 2,5 kg | 2,5 kg | 2,5 kg |
| Power | 70W max | 70W max | 50W max | 50W max | 50W max | 50W max |
| Component Tester | N/A | N/A | Standard | Standard | Standard | Standard |
| Bus Signal Source | Standard | | | | | |
| Languages | German, English, French, Spain | | | | | |

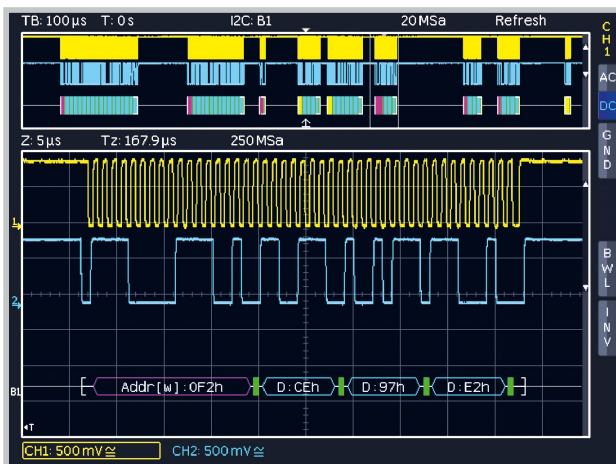
H0010/H0011 Serial Bus for all Oscilloscopes of the HMO Series



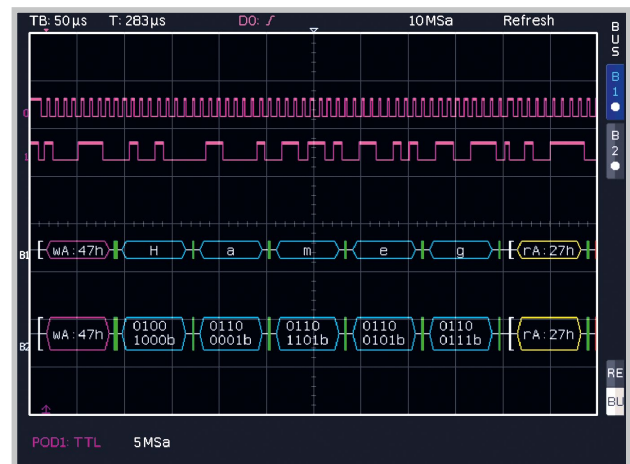
Mixed Signal and Bus Display



SPI Bus Trigger Setup



I²C Bus Hex Decode of the Analog Channels



I²C Bus ASCII and Binary Decode of the Digital Channels

- ✓ H0010 via Analog Channels and/or Logic Channels, H0011 via Analog Channels
- ✓ I²C, SPI, UART/RS-232 Bus Trigger and Decode
- ✓ Hardware accelerated Decode in Realtime
- ✓ Color Coded Display of the Content for intuitive Analysis and easy Overview
- ✓ More Details of the decoded Values come visible with increasing Zoom Factor
- ✓ Bus Display with synchronous Display of the Data and may be Clock Signal
- ✓ Decode into ASCII, Binary, Hexadecimal or Decimal Format
- ✓ Up to four Lines to show the decoded Values Comfortably
- ✓ Powerful Trigger to isolate specific Messages
- ✓ Option for all Oscilloscopes of the HMO Series, retrofittable

H0010