

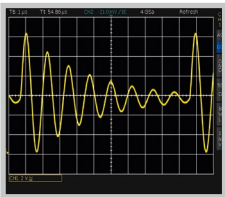
25MHz [50MHz] Arbitrary Function Generator HMF2525 [HMF2550]



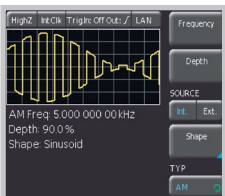
HMF2550



Generation of complex
Waveforms with 256kPts
in 14Bit



All Parameters at a glance
on the 3.5" TFT and
interactive Softkeys



Ethernet/USB
Dual-Interface HO730
(Option)



- ✓ Frequency Range 10 μ Hz...25MHz [50MHz]
- ✓ Output Voltage 5mV_{pp}...10V_{pp} (into 50 Ω) DC Offset \pm 5mV...5V
- ✓ Arbitrary Waveform Generator: 250MSa/s, 14Bit, 256kPts
- ✓ Sine, Square, Pulse, Triangle, Ramp, Arbitrary Waveforms incl. Standard Curves (white Noise, Cardiac etc.)
- ✓ Total Harmonic Distortion 0.04% (f < 100kHz)
- ✓ Burst, Sweep, Gating, external Trigger
- ✓ Rise Time <8ns, in Pulse Mode 8...500ns Variable-Edge-Time
- ✓ Pulse Mode: Frequency Range 100 μ Hz...12.5MHz [25MHz], Pulse Width 15ns...999s, Resolution 5ns
- ✓ Modulation Modes AM, FM, PM, PWM, FSK (int. and ext.)
- ✓ 10MHz Timebase: \pm 1ppm TCXO, rear I/O BNC Connector
- ✓ Front USB Connector: Save and Recall of Waveforms and Settings
- ✓ 8.9cm (3.5") TFT: crisp Representation of the Waveform and all Parameters
- ✓ USB/RS-232 Dual-Interface, optional Ethernet/USB Dual-Interface or IEEE-488 (GPIB)

25 MHz Arbitrary Function Generator HMF2525 [50 MHz Arbitrary Function Generator HMF2550]

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

Frequency

| | |
|------------------------|--------------------|
| HMF2525: | 10 µHz...25 MHz |
| HMF2550: | 10 µHz...50 MHz |
| Temperature stability: | 1 ppm (18...28 °C) |
| Aging (after 1 year): | ±1 ppm (25 °C) |

Amplitude

| | |
|----------------------------|--|
| Output voltage: | 5 mV _{pp} ...10 V _{pp} (into 50 Ω) 10 mV _{pp} ...20 V _{pp} (open circuit) |
| Resolution: | 1 mV (into 50 Ω) |
| Setting accuracy: | ±1% of control + 1 mV _{pp} at 1 kHz |
| Frequency response (Sine): | f < 10 MHz: <±0.15 dB 10 MHz ≤ f < 25 MHz: <±0.2 dB 25 MHz ≤ f < 50 MHz: <±0.4 dB |
| DC offset: | |
| Voltage range (AC + DC) | ±5 mV...5 V (into 50 Ω) ±10 mV...10 V (open circuit) |
| Accuracy | ±2% of offset ±0.5% of signal level ±2 mV ±1 mV/MHz |
| Units: | V _{pp} , dBm |

Waveform Sine Wave

| | |
|---|---|
| Total harmonic distortion (1 V _{pp}): | |
| f < 100 kHz | < -70 dBc |
| 100 kHz ≤ f < 10 MHz | < -55 dBc |
| 10 MHz ≤ f < 25 MHz | < -40 dBc |
| f ≥ 25 MHz | < -37 dBc |
| Spurious (Non-harmonics 1 V _{pp}): | |
| f < 1 MHz | -70 dBc |
| 1 MHz < f < 50 MHz | -70 dBc + 6 dB/Octave |
| Total harmonic distortion: | (f ≤ 100 kHz) 0.04% typ. |
| Phase noise: | (10 MHz, 10 kHz Offset, 1 V _{pp}) < -115 dBc/Hz typ. |

Waveform Square

| | |
|----------------------------|-------------|
| Rise/fall time: | < 8 ns |
| Overshoot: | < 3% typ. |
| Symmetry (50% duty cycle): | 1% + 5 ns |
| Jitter (RMS): | < 1 ns typ. |

Waveform Pulse

| | |
|------------------|--|
| Frequency range: | |
| HMF2525 | 100 µHz...12.5 MHz |
| HMF2550 | 100 µHz...25 MHz |
| Amplitude: | 5 mV...+5 V respectively -5 mV...-5 V (into 50 Ω) |
| Rise/fall time: | < 8 ns, variable up to 500 ns |
| Pulse width: | 15 ns...999 s |
| Resolution: | 5 ns |
| Jitter (RMS): | < 500 ps typ. |
| Overshoot: | < 3% typ. |

Waveform Ramp, Triangle

| | |
|------------------|-----------------|
| Frequency range: | |
| HMF2525 | 10 µHz...5 MHz |
| HMF2550 | 10 µHz...10 MHz |
| Symmetry: | 1...99% |
| Linearity: | |
| f < 250 kHz | < 0.1% typ. |
| f ≥ 250 kHz | < 2% typ. |

Waveform Arbitrary

| | |
|-----------------------|---|
| Frequency range: | |
| HMF2525 | 10 µHz...12.5 MHz |
| HMF2550 | 10 µHz...25 MHz |
| Sample rate: | 250 MSa/s |
| Amplitude resolution: | 14 Bit |
| Bandwidth (-3 dB): | > 50 MHz |
| Signal length: | Up to 256 kPts |
| Non-volatile memory: | up to 4 MB (internal file system) |
| Predefined waveforms: | Sine, square (50%), ramp (positive/negative), triangle (50%), noise (white/pink), cardinal sine, exponential (rise/fall) |

Inputs and Outputs

| | |
|---------------------|--|
| Signal output: | BNC socket (frontside), short-circuit-proof, ext. voltage ±15V max. |
| Impedance | 50 Ω |
| Gate/Trigger input: | BNC socket (frontside) |
| Impedance | 5 kΩ 100 pF |
| Level | TTL (protected up to ±30 V) |
| Edge | Positive/negative (selectable) |
| Pulse width | Min. 100 ns |
| Trigger output: | BNC socket (frontside) |
| Impedance | 50 Ω |
| Level | Positive TTL level impulse |
| Frequency | 10 MHz max. |
| Modulation input: | BNC socket (rear side) |
| Impedance | 10 kΩ |
| Max. input voltage | ±5 V for full scale |
| Bandwidth (-3 dB) | DC...50 kHz (sample with 250 kSa/s) |
| Reference input: | BNC socket (rear side) |
| Impedance | 1 kΩ |
| Frequency | 10 MHz ±100 kHz |
| Input voltage | TTL |
| Reference output: | BNC socket (rear side) |
| Impedance | 50 Ω |
| Frequency | 10 MHz |
| Output voltage | 1.65 V _{pp} (into 50 Ω) |
| Ramp output: | BNC socket (rear side) |
| Impedance | 200 Ω |
| Output voltage | 0...5 V, synchronous with sweep |

Sweep

| | |
|-------------|--------------------|
| Signals: | All (except pulse) |
| Type: | linear/logarithmic |
| Direction: | up/down |
| Sweep time: | 1 ms...500 s |

Burst

| | |
|--------------------------|---|
| Signals: | All |
| Type: | Internal/external triggered, 1...50,000 cycles, Immediate or Gate controlled |
| Start/stop phase: | 0...360° (sine only) |
| Trigger source: | Manual, internal or external via Trigger source or interface |
| Internal Trigger period: | 1 µs...500 s |

Modulation

| | |
|---------------------------------------|---|
| Type of modulation: | AM, FM, PM, PWM, FSK |
| Waveform carrier: | All (except pulse) |
| Internal modulation (waveform): | Sine, square (50%), ramp (positive/negative), triangle (50%), noise (white/pink), cardinal sine, exponential (rise/fall), Arbitrary with up to 4,096 Pts. |
| Internal modulation frequency: | 10 µHz...50 kHz |
| Ext. modulation bandwidth (-3 dB): | DC...50 kHz (sampled at 250 kSa/s) |
| Amplitude modulation: | |
| Modulation depth | 0...100% |
| Frequency modulation: | |
| Frequency deviation | Max. 10 MHz |
| Phase modulation: | |
| Phase deviation | -180...+180° |
| Pulse width modulation: | |
| Deviation | 0...49,99% of the pulse width |

Miscellaneous

| | |
|-------------------------|---|
| Display: | 8.9 cm (3.5") color TFT QVGA 65k colors |
| Interface: | Dual-Interface USB/RS-232 (H0720) |
| Save/Recall memory: | 4 MB internal file system/ext. USB |
| Protection class: | Safety class I (EN61010-1) |
| Power supply: | 105...253 V, 50...60 Hz, CAT II |
| Power consumption: | approx. 30 W |
| Operating temperature: | +5...+40 °C |
| Storage temperature: | -20...+70 °C |
| Rel. humidity: | 5...80% (non condensing) |
| Dimensions (W x H x D): | 285 x 75 x 365 mm |
| Weight: | 3.4 kg |

Accessories supplied: Line cord, Operating manual, CD, Software

Recommended accessories:

| | |
|-------|--|
| H0730 | Dual-Interface Ethernet/USB |
| H0740 | Interface IEEE-488 (GPIB), galvanically isolated |
| HZ13 | Interface cable (USB) 1.8 m |
| HZ14 | Interface cable (serial) 1:1 |

| | |
|------|---|
| HZ20 | Adapter, BNC to 4mm banana |
| HZ24 | Attenuators 50 Ω (3/6/10/20 dB) |
| HZ33 | Test cable 50 Ω , BNC/BNC, 0.5 m |
| HZ34 | Test cable 50 Ω , BNC/BNC, 1.0 m |
| HZ42 | 19" Rackmount kit 2RU |
| HZ72 | IEEE-488 (GPIB) Cable 2m |