

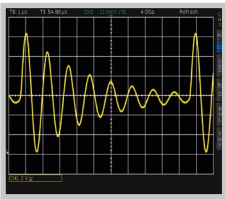
## 25MHz [50MHz] Arbitrary Function Generator HMF2525 [HMF2550]



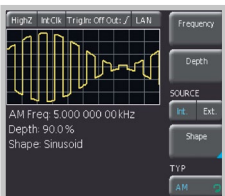
HMF2550



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 $\mu$ Hz...25MHz [50MHz]
- ✓ Output Voltage 5mV<sub>pp</sub>...10V<sub>pp</sub> (into 50 $\Omega$ ) 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 $\mu$ 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 <sub>pp</sub> ...10 V <sub>pp</sub> (into 50 Ω) 10 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Resolution:	1 mV (into 50 Ω)
Setting accuracy:	±1% of control + 1 mV <sub>pp</sub> 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 <sub>pp</sub> , dBm

Waveform Sine Wave	
Total harmonic distortion (1 V <sub>pp</sub> ):	
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 <sub>pp</sub> ):	
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 <sub>pp</sub> ) < -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 <sub>pp</sub> (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

<b>Accessories supplied:</b> Line cord, Operating manual, CD, Software	
<b>Recommended accessories:</b>	
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 $\Omega$ (3/6/10/20 dB)
HZ33	Test cable 50 $\Omega$ , BNC/BNC, 0.5 m
HZ34	Test cable 50 $\Omega$ , BNC/BNC, 1.0 m
HZ42	19" Rackmount kit 2RU
HZ72	IEEE-488 (GPIB) Cable 2m