

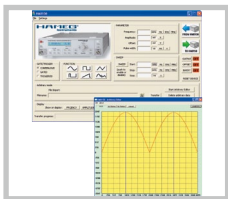
## 12.5MHz Arbitrary Function Generator HM8150



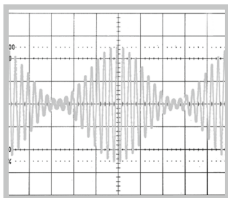
# HM8150



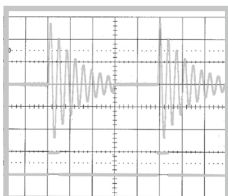
Gated Sine Wave,  
PC-Software included



Amplitude-modulated  
Sine Wave



Triggered Arbitrary Signal



- Frequency Range 10mHz...12.5MHz
- Output Voltage 10mV<sub>pp</sub>...10V<sub>pp</sub> (into 50Ω)
- Waveforms: Sine Wave, Square Wave, Triangle, Pulse, Sawtooth, Arbitrary
- Rise and Fall Time <10ns
- Pulswidth Adjustment: 100ns...80s
- Arbitrary Waveform Generator 40MSa/s
- Burst, Gating, External Triggering, Sweep
- Software for Remote Control and for Creation of Arbitrary Waveforms
- External Amplitude Modulation (Bandwidth 20kHz)
- Intuitive Operation with one touch of a Button – quick Change of Signals
- Galvanically isolated USB/RS-232 Interface, optional IEEE-488 (GPIB)

## 12.5 MHz Arbitrary Function Generator HM8150

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

### Frequency

Range:	10 mHz...12.5 MHz
Resolution:	5 digit, max. 10 mHz
Accuracy:	±(1 digit + 5 mHz)
Temperature coefficient:	0.5 ppm/°C
Aging:	2 ppm/year

### Waveforms

#### Sine wave

Frequency range:	10 mHz...12.5 MHz
Amplitude:	20 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Harmonic Distortion @ 1 V <sub>pp</sub> :	
f < 500 kHz:	-65 dBc
500 kHz ≤ f < 5 MHz:	-50 dBc
5 MHz ≤ f ≤ 12.5 MHz:	-40 dBc
Total Harmonic Distortion @ 1 V <sub>pp</sub> :	
f < 100 kHz:	typ. 0.05%
Spurious (Non-Harmonic) @ 1 V <sub>pp</sub> :	
f < 500 kHz:	-65 dBc
500 kHz ≤ f ≤ 12.5 MHz:	-65 dBc + 6 dBc/octave

#### Square wave

Frequency range:	10 mHz...12.5 MHz
Amplitude:	20 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Rise/fall time:	< 10 ns
Overshoot:	< 5% (V <sub>out</sub> ≤ 200 mV)
Symmetry:	50% ±(5% + 10 ns)

#### Pulse

Frequency range:	10 mHz...5 MHz
Amplitude:	10 mV <sub>pp</sub> ...+10 V <sub>pp</sub> or -10 mV <sub>pp</sub> ...-10 V <sub>pp</sub>
Rise/fall time:	< 10 ns
Pulse width:	100 ns...80 s
Duty cycle:	max. 90%

#### Sawtooth

Frequency range:	10 mHz...25 kHz
Amplitude:	20 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Linearity:	better than 1%

#### Triangle

Frequency range:	10 mHz...250 kHz
Amplitude:	20 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Linearity:	better than 1%

#### Arbitrary generator

Frequency range:	10 mHz...250 kHz
Amplitude:	20 mV <sub>pp</sub> ...20 V <sub>pp</sub> (open circuit)
Output rate:	40 MSa/s
Resolution:	X: 1024 (10 bit), Y: 1024 (10 bit) or X: 4096 (12 bit), Y: 4096 (12 bit)

#### Inputs

Gate/Trigger:	BNC connector
Impedance:	5 kΩ    100 pF
Max. input voltage:	±30 V
Modulation Input:	BNC connector
Impedance:	10 kΩ
Max. input voltage:	±30 V

#### Outputs

Signal output:	BNC connector, short circuit proof, ext. voltage up to ±15 V
Impedance:	50 Ω
Output voltage:	Range 1: 2.1...20 V <sub>pp</sub> (open circuit) Range 2: 0.21...2.0 V <sub>pp</sub> (open circuit) Range 3: 20...200 mV <sub>pp</sub> (open circuit)
Resolution:	Range 1: 100 mV Range 2: 10 mV Range 3: 1 mV
Setting accuracy (1 kHz):	Range 1: ±2% Range 2: ±3% Range 3: ±4% 3% additional for pulse and square wave
Frequency response:	< 100 kHz ±0.2 dB 0.1...12.5 MHz: ±0.5 dB
Offset error:	Range 3: ±50 mV
Display:	2½ digits (LCD)

Trigger output:	BNC connector
Level:	5V/TTL
Impedance:	50 Ω
Sawtooth output:	BNC connector
Output voltage:	0...5 V, synchronous to sweep
Impedance:	1 kΩ

#### DC offset

Output voltage:	Range 1: -7.5...+7.5 V (open circuit) Range 2: -0.75...+0.75 V (open circuit) Range 3: -75...+75 mV (open circuit)
	$V_{\text{acrange}} + 2x V_{\text{offset range}} \leq V_{\text{range max}}$

#### Sweep (internal)

Setting of start and stop frequency	
Internal sweep:	all waveforms
Sweep time:	linear, 20 ms...100 s continuous or triggered (ext. signal, interface)

#### Amplitude Modulation:

Modulation via external signal	
Modulations depth:	0...100%
Bandwidth:	DC...20 kHz (-3 dB)

#### Gate (asynchronous)

Modulation on/off via external TTL signal	
Delay time:	< 150 ns
Input signal:	TTL

#### Trigger Function (synchronous)

Burst mode via ext. trigger input or interface	
Frequency range:	< 500 kHz

#### Miscellaneous

Interface:	USB/RS-232 (H0820), IEEE-488 (optional)
Display:	16 characters, LCD with backlight
Memory:	for the last device settings and for 1 arbitrary signal
Safety Class:	Safety Class I (EN61010-1)
Power supply:	115...230 V ±10%; 50/60 Hz, CAT II
Power consumption:	approx. 20 Watt
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:	approx. 5 kg

**Accessories supplied:** Line cord, Operating manual, software

#### Recommended accessories:

H0880	IEEE-488 (GPIB) Interface (galvanically isolated)
HZ13	Interface cable (USB) 1.8 m
HZ14	Interface cable (serial) 1.1 m
HZ20	Adapter, BNC to 4 mm banana
HZ24	Attenuator Set 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	GPIB-Cable 2 m