

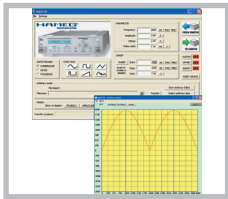
Arbitrary Function Generator 12.5MHz HM8150



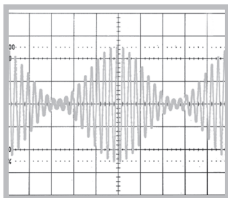
HM8150



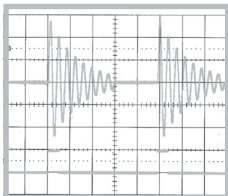
Gated Sine Wave,
PC-Software included



Amplitude-modulated
Sine Wave



Triggered Arbitrary Signal



- ✓ Frequency range: 10mHz to 12.5MHz
- ✓ Triangle waveforms up to 250 kHz
- ✓ Output voltages: 10 mV_{pp} to 10 V_{pp} (at 50 Ω)
- ✓ Total Harmonic Distortion: 0.05 % (f ≤ 100 kHz)
- ✓ Waveform modes: sine, square, triangle/ramp, pulse and arbitrary waveforms
- ✓ External amplitude modulation up to 20 kHz
- ✓ External connectors: GATE (I), TRIGGER (I/O), SWEEP (O), MODULATION (I)
- ✓ Arbitrary waveform generator: 40 MSa/s, 12 bit, 4096 Pts
- ✓ PC software (free of charge) to easily create user-defined waveforms
- ✓ RS-232/USB dual interface, IEEE-488 (GPIB) optional

Arbitrary Function Generator 12.5 MHz HM8150

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

Frequency

Range:	10 mHz to 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 to 12.5 MHz
Amplitude:	20 mV _{pp} to 20 V _{pp} (open circuit)
Harmonic Distortion @ 1 V _{pp} :	
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 _{pp} :	
f < 100 kHz	typ. 0.05%
Spurious (Non-Harmonic) @ 1 V _{pp} :	
f < 500 kHz	-65 dBc
500 kHz ≤ f ≤ 12.5 MHz	-65 dBc + 6 dBc/octave

Square wave

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

Pulse

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

Sawtooth

Frequency range:	10 mHz to 25 kHz
Amplitude:	20 mV _{pp} to 20 V _{pp} (open circuit)
Linearity:	better than 1%

Triangle

Frequency range:	10 mHz to 250 kHz
Amplitude:	20 mV _{pp} to 20 V _{pp} (open circuit)
Linearity:	better than 1%

Arbitrary generator

Frequency range:	10 mHz to 250 kHz
Amplitude:	20 mV _{pp} to 20 V _{pp} (open circuit)
Output rate:	40 MSa/s
Resolution:	X: 1,024 (10 bit), Y: 1,024 (10 bit) or X: 4,096 (12 bit), Y: 4,096 (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 V _{pp} to 20 V _{pp} (open circuit)
	Range 2:	0.21 V _{pp} to 2.0 V _{pp} (open circuit)
	Range 3:	20 mV _{pp} to 200 mV _{pp} (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 MHz to 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 V to 5 V, synchronous to sweep
Impedance	1 kΩ

DC offset

Output voltage:	Range 1:	-7.5 V to +7.5 V (open circuit)
	Range 2:	-0.75 V to +0.75 V (open circuit)
	Range 3:	-75 mV to +75 mV (open circuit)
	V _{acrange} + 2 × V _{offsetrange} ≤ V _{range max.}	

Sweep (internal)

Setting of start and stop frequencies:

Internal sweep:	all waveforms
Sweep time:	linear, 20 ms to 100 s continuous or triggered (ext. signal, interface)

Amplitude Modulation

Modulation via external signal:

Modulations depth:	0% to 100%
Bandwidth:	DC to 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
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Miscellaneous

Interface:	Dual-Interface USB/RS-232 (H0820), IEEE-488 (GPIB) (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 V to 230 V ±10%; 50 Hz to 60 Hz, CAT II
Power consumption:	approx. 20 W
Operating temperature:	+5 °C to +40 °C
Storage temperature:	-20 °C to +70 °C
Rel. humidity:	5% to 80% (non condensing)
Dimensions (W x H x D):	285 x 75 x 365 mm
Weight:	approx. 5 kg

Accessories supplied: Line cord, printed operating manual, CD, Software

Recommended accessories:

H0880	Interface IEEE-488 (GPIB), galvanically isolated
HZ13	Interface cable (USB) 1.8 m
HZ14	Interface cable (serial) 1:1
HZ20	Adapter, BNC to 4 mm 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	GPIB-Cable 2 m