

HM8150

Function Generator

Technical Data



Key facts

- Frequency range: 10mHz to 12.5MHz
- Output voltage: 10mV_{pp} to 10V_{pp} (into 50Ω)
- Waveforms: Sine wave, square wave, triangle, pulse, sawtooth, arbitrary
- Rise and fall time <10ns
- Pulse width adjustment: 100ns to 80s
- Arbitrary waveform generator 40MSa/s
- Burst, gating, external triggering, sweep
- Free of charge 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 dual-interface, optional IEEE-488 (GPIB)

Technical Data

12,5 MHz Arbitrary Funktionsgenerator HM8150

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

Frequency

Range	10mHz to 12,5MHz
Resolution	5 digit, max. 10mHz
Accuracy	$\pm(1 \text{ Digit} + 5 \text{ mHz})$
Temperature coefficient	0,5ppm/°C
Aging	2ppm/year

Waveforms

Sine wave

Frequency range	10mHz to 12,5MHz
Amplitude	20mV _{pp} to 20V _{pp} (open circuit)
Harmonic Distortion @ 1V _{pp}	
f < 500kHz	-65dBc
500kHz ≤ f < 5MHz	-50dBc
5MHz ≤ f ≤ 12,5MHz	-40dBc

Total Harmonic Distortion @ 1V_{pp}

f < 100kHz	typ. 0,05%
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Spurious (Non-Harmonic) @ 1V_{pp}

f < 500kHz	-65dBc
500kHz ≤ f ≤ 12,5MHz	-65dBc + 6dBc/octave

Square wave

FrequenzRange	10mHz to 12,5MHz
Amplitude	20mV _{pp} to 20V _{pp} (open circuit)
Anstiegs-/Abfallzeit	< 10ns
Overshoot	< 5% (U _{out} ≤ 200mV)
Symmetry	50% ±(5% + 10ns)

Pulse

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

Sawtooth

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

Triangle

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

Arbitrary-Generator

Frequency range	10mHz to 250kHz
Amplitude	20mV _{pp} to 20V _{pp} (open circuit)
Output rate	40MSa/s
Resolution	X 1.024 (10Bit), Y 1.024 (10Bit) or X 4.096 (12Bit), Y 4.096 (12Bit)

Inputs

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

Max. input voltage	±30V
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Outputs

Signal output	BNC connector, short circuit proof, ext. voltage up to ±15V
Impedance	50Ω
Output voltage	
Range 1	2,1 to 20V _{pp} (open circuit)
Range 2	0,21 to 2,0V _{pp} (open circuit)
Range 3	20 to 200mV _{pp} (open circuit)

Resolution

Range 1	100mV
Range 2	10mV
Range 3	1mV

Setting accuracy (1 kHz)

Range 1	±2%
Range 2	±3%
Range 3	±4%

3% additional for pulse and square wave

Frequency response

< 100kHz	±0,2dB
0,1 to 12,5MHz	±0,5dB

Offset error

Range 3	±50mV
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Display 2½ digits (LCD)

Trigger output BNC connector

Level 5V/TTL

Impedance 50Ω

Sawtooth output BNC connector

Output voltage 0 to 5V, synchronous to sweep

Impedance 1kΩ

DC-Offset

Output voltage	
Range 1	-7.5 to +7.5V (open circuit)
Range 2	-0.75 to +0.75V (open circuit)
Range 3	-75 to +75mV (open circuit)

$$V_{\text{acrange}} + 2 \times V_{\text{offsetrange}} \leq V_{\text{rangemax}}$$

Sweep (internal)

Setting of start and stop frequencies

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

Amplitude Modulation

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

Gate (asynchronous)

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

Trigger Function (synchronous)

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

Miscellaneous

Interface	Dual-Interface USB/RS-232 (HO820), 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 to 230V \pm 10%; 50 to 60Hz, CAT II
Power consumption	ca. 20W
Operating temperature	+5 to +40°C
Storage temperature	-20 to +70°C
Rel. humidity	5 to 80% (non condensing)
Dimensions (W x H x D)	285 x 75 x 365mm
Weight	approx. 5 kg

Accessories supplied:

Line cord, Operating manual, CD, Software

Recommended accessories:

HO880 Interface IEEE-488 (GPIB), galvanically isolated

HZ13 Interface cable (USB) 1.8m

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, 0.5m

HZ34 Test cable 50 Ω , BNC/BNC, 1.0m

HZ42 19" Rackmount kit 2RU

HZ72 GPIB-Cable 2m