

R&S® HM8150

Function Generator

Technical Data

4TECT

ООО «4TECT»

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Key facts

- ▮ Frequency range: 10 mHz to 12.5 MHz
- ▮ Output voltage: 10 mV (V_{pp}) to 10 V (V_{pp}) (into 50 Ω)
- ▮ Waveforms: sine wave, square wave, triangle, pulse, sawtooth, arbitrary
- ▮ Rise and fall time: < 10 ns
- ▮ Pulse width adjustment: 100 ns to 80 s
- ▮ Arbitrary waveform generator: 40 MSa/s
- ▮ Burst, gating, external triggering, sweep
- ▮ Free of charge software for remote control and for creation of arbitrary waveforms
- ▮ External amplitude modulation (bandwidth 20 kHz)
- ▮ 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 Function Generator R&S®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 (V _{pp}) to 20 V (V _{pp}) (open circuit) |
| Harmonic distortion at 1 V (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 at 1 V (V _{pp}) | |
| f < 100 kHz | typ. 0.05 % |
| Spurious (non-harmonic) at 1 V (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 (V _{pp}) to 20 V (V _{pp}) (open circuit) |
| Rise/fall time | < 10 ns |
| Overshoot | < 5 % (U _{out} ≤ 200 mV) |
| Symmetry | 50 % ± (5 % + 10 ns) |
| Pulse | |
| Frequency range | 10 mHz to 5 MHz |
| Amplitude | 10 mV (V _{pp}) to +10 V (V _{pp}) or -10 mV (V _{pp}) to -10 V (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 (V _{pp}) to 20 V (V _{pp}) (open circuit) |
| Linearity | better than 1 % |
| Triangle | |
| Frequency range | 10 mHz to 250 kHz |
| Amplitude | 20 mV (V _{pp}) to 20 V (V _{pp}) (open circuit) |
| Linearity | better than 1 % |
| Arbitrary generator | |
| Frequency range | 10 mHz to 250 kHz |
| Amplitude | 20 mV (V _{pp}) to 20 V (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 (V _{pp}) to 20 V (V _{pp}) (open circuit) |
| Range 2 | 0.21 V (V _{pp}) to 2.0 V (V _{pp}) (open circuit) |
| Range 3 | 20 mV (V _{pp}) to 200 mV (V _{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 to 12.5 MHz | ±0.5 dB |
| Offset error | |
| Range 3 | ±50 mV |
| Display | 2½ digits (LCD) |
| Trigger output | BNC connector |
| Level | 5 V/TTL |
| Impedance | 50 Ω |
| Sawtooth output | BNC connector |
| Output voltage | 0 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) |
| $V_{ac\ range} + 2 \times V_{offset\ range} \leq V_{range\ max}$ | |
| 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 |
| Miscellaneous | |
| Interface | dual-interface USB/RS-232 (HO820), optional HO880 IEEE-488 (GPIB) |
| 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 | ca. 20 W |
| Operating temperature | +5 °C to +40 °C |
| Storage temperature | -20 °C to +70 °C |
| Rel. humidity | 5 % to 80 % (noncondensing) |
| Dimensions (B × H × T) | 285 mm × 75 mm × 365 mm (11.2 in × 3 in × 14.4 in) |
| Weight | approx. 5 kg (11 lb) |

Accessories supplied:

Line cord, Operating manual

Recommended accessories:

| | |
|-----------|--|
| R&S®HO880 | Interface IEEE-488 (GPIB), galvanically isolated |
| R&S®HZ20 | Adapter, BNC to 4 mm banana |
| R&S®HZ24 | Attenuators 50 Ω (3/6/10/20 dB) |
| R&S®HZ42 | 19" Rackmount kit 2RU |
| R&S®HZ72 | GPIB-Cable 2 m |