15 MHz Arbitrary Function Generator
HM8131-2

Frequency range from 100 µHz to 15 MHz

DDS signal generator (frequency stability 10 ppm)

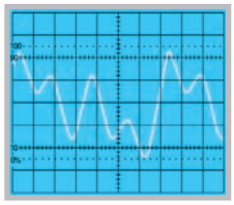
6 standard signal forms and arbitrary

Master-slave mode for up to 3 generators

SRAM memory card for signal storage (Option HO831)

Increased frequency stability with TCXO
(Option HO86): ± 5 x 10^{-7} at 23° C (24 hrs.)

AF arbitrary signal



Option HO86
High stability TCXO

Option HO831
SRAM Memory Card 1MB

RS-232 | optional IEEE 488 | optional USB

15 MHz Arbitrary Function Generator HM8131-2

Valid at 23 °C after a 30 minute warm-up period

Frequency specifications	
Range:	100 µHz to 15 MHz
Resolution:	100 µHz; 100 mHz (sweep mode)
Display:	‹ 10 ms (without band change) ‹ 60 ms (with band change)
Accuracy:	Standard oscillator: ±(10 ppm x freq.+ 30 µHz) TCXO (Option HO86): ±(0.5 ppm x freq.+ 30 µHz) HM8125 (ext. reference frequency): ± 30 µHz
Temperature coefficient:	Standard oscillator: 2 ppm/° C TCXO (Option HO86): 0.5 ppm/year
Ageing:	Standard oscillator: 10 ppm/year TCXO (Option HO86): 2 ppm/year

Waveforms Sine wave		
Frequency range:	100 µHz to 15 MHz	
Amplitude:	0 - 20 V_{pp} (open circuit)	
Distortion:	10 Hz to 20 kHz:	‹ 0.1 %
	20 kHz-3 MHz:	‹ 1 %
	3 MHz-15 MHz:	‹ 3 %
Nonharmonic distortions:	100 µHz-1 MHz:	‹ -65 dBc
	1 MHz-15 MHz:	‹ -(65 dBc + 6 dBc/Octave)
Phase noise:	‹ -90 dBc / √Hz (0 dBm, 1 kHz from carrier)	

Rectangle	
Frequency range:	10 µHz to 15 MHz
Amplitude:	0 - 20 V_{pp} (open circuit)
Rise/fall time:	‹ 10 ns
Overshoot:	‹ 5 % (U_{out} ≤ 200 mV)
Symmetry:	50 % ±(5 %+10 ns)

Ramp	
Frequency range:	100 µHz to 100 kHz
Amplitude:	0 - 20 V_{pp} (open circuit)
Linearity:	better than 1 %
Polarity:	positive/negative
Rise/fall time:	45 ns

Triangle	
Frequency range:	100 µHz to 1 MHz
Amplitude:	0-20 V_{pp} (open circuit)
Linearity:	better than 1 % (‹ 100 kHz)

Noise	
White noise:	Bandwidth 10 MHz
Pink noise:	Bandwidth 100 kHz

Arbitrary	
Frequency range:	100 µHz to 10 MHz
Amplitude:	max. 20 V_{pp} (open circuit)
Output rate:	40 MSa/s
Resolution:	12 bit (amplitude)
Filter:	Bessel, 7th order, b=10 MHz
Memories:	1x 4 K-words not volatile 1x 16 K-words volatile
Jitter:	‹ 25 ns

Inputs	
Gate/trigger	
Impedance:	5 kΩ II 100 pF (protected to 30 V)
Amplitude modulation	
Impedance:	1 kΩ (protected to ±30 V)
External reference	
Frequency:	10 MHz ± 2 ppm
Input voltage:	1 V_{rms}
Impedance:	500 Ω (protected to ±30 V)

Outputs		
Signal output	BNC socket, short-circuit-proof ext. voltage max. ±15 V f. 30 s.	
Impedance:	50 Ω	
Output voltage:	Range 1:	2.1 - 20 V_{pp} (open circuit)
	Range 2:	0.21 - 2.0 V_{pp} (open circuit)
	Range 3:	20 - 200 mV_{pp} (open circuit)
Resolution:	3½ digit (100 / 10 / 1 mV) Display of V_{pp} or RMS (except in arbitrary mode)	
Setting accuracy:	Sine wave 1 kHz: ±(1% x amplitude + 5 digits) Rectangle 1 kHz: ±(3 % x amplitude + 5 digits)	
Frequency response:	‹ 100 kHz:	±0.2 dB
	100 kHz - 1 MHz:	±0.3 dB
	1 MHz - 15 MHz:	+0.5 dB
Temperature stability:	± 0.1 % / ° C	
Trigger output	BNC socket, short-circuit proof	
Level:	5V / TTL level	
Ramp output		
Voltage progression:	0-5 V; synchronous with sweep	
Impedance:	1 kΩ	

DC offset		
Output voltage:	Range 1:	-5 V... +5 V (open circuit)
	Range 2:	-0.5 V... + 0.5 V (open circuit)
	Range 3:	-50 mV + 50 mV (open circuit)
Resolution:	3 digit	
Accuracy:	±(1 % x offset voltage + 5 digits)	
Temperature stability:	± 0.1% / ° C	

Phase		
Range:	0 - 359.9°	
Resolution:	0.1°	
Reference:	declining slope of the synch. signal	
Jitter:	‹ 25 ns	
Accuracy:	except for rectangle:	± (0.1 + freq. / Hz x 10^{-6}) degrees
	for rectangle:	± (5 + freq. / Hz x 30 x 10^{-6}) degrees

Sweep (internal)	
Internal sweep:	all waveforms, linear or log.
Ranges:	100 mHz to max. signal frequency selectable beginning and end frequencies
Sweep time:	from 10 ms to 40 s, continuous or triggered (ext. signal, front panel keypad, interface)

Modulation	
FSK/PSK:	all signals
Frequency range:	100 µHz to max. frequency
Triggering:	by external signal
Minimum duration:	25 µs
Delay:	PSK: typ. 10 µs
	FSK: typ. 15 µs

Amplitude modulation	
Modulation source:	internal or external
Modulation depth:	0 to 100 %
Bandwidth:	DC - 20 kHz (-3 dB)
Carrier frequency:	100 µHz to max. signal frequency
Accuracy:	± (5 % of reading + 2 %)
Internal modulation:	1 kHz sine wave
External modulation:	20 Hz – 20 kHz
Gate:	(asynchronous)
Delay time:	‹ 150 ns
Input signal:	TTL
Trigger function:	(synchronous)
Frequency range:	‹ 500 kHz

Burst mode via ext. trigger or interface

Miscellaneous	
Optional memory card:	PCMCIA II format up to 1 MB for storage of up to 16 ARB signals
Memories:	10 for device settings; 1 for ARB signal storage
RS-232:	interface preinstalled
Safety class:	Safety Class I (EN 61010-1)
Supply voltage:	115 / 230 V ± 10 %, 50 / 60 Hz
Power consumption:	approx. 30 VA
Operating temperature:	+10° C to + 40° C
Max. relative humidity:	10 %-90 % (without condensation)
Dimensions (W x H x D):	285 x 75 x 365 mm
Weight:	approx. 5 kg

Accessories supplied: Operator's Manual and power cable
Optional accessories: HZ33/HZ34 50 Ω Test Cable, BNC-BNC; HO831 Memory Card 1 MB, HZ10 Silicone test leads, HZ20 Adapter plug

HAMEG Instruments GmbH · Industriestr. 6 · D-63533 Mainhausen · Tel +49 (0) 6182 800 0 · Fax +49 (0) 6182 800 100 · www.hameg.com · info@hameg.com

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