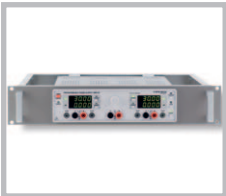


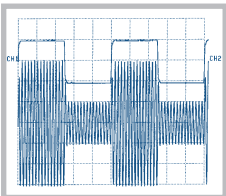
1.2 GHz RF-Synthesizer HM8134-3



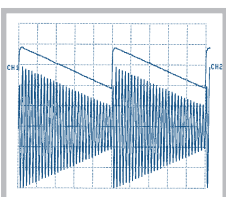
HZ42 19" Rackmount kit 2RU



Internal modulation source



Internal modulation source



Frequency range from 1 Hz to 1.2 GHz

Output power from -127 dBm to +13 dBm

Frequency resolution 1 Hz
(accuracy 0.5 ppm)

Input for external time base (10 MHz)

Modulation modes: AM, FM, Pulse, Φ , FSK, PSK

Rapid pulse modulation: typ. 200 ns

Internal modulator from 10 Hz to 150 kHz

High spectral purity

OCXO optional

RS-232 Interface
optional: USB, IEEE-488



1.2 GHz HF Synthesizer HM8134-3

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

Frequency

Range:	1 Hz to 1200 MHz
Resolution:	1 Hz
Settling time:	< 10 ms

Frequency Reference 10 MHz

Standard: TCXO

Stability (0 to 50° C):	≤ ±0.5 ppm
Aging:	≤ ±1 ppm/year

Option: OCXO (H085)

Stability:	≤ ±1x10 ⁻⁸
Aging:	≤ ±5x10 ⁻⁹ /day

Internal reference output: [rear panel]

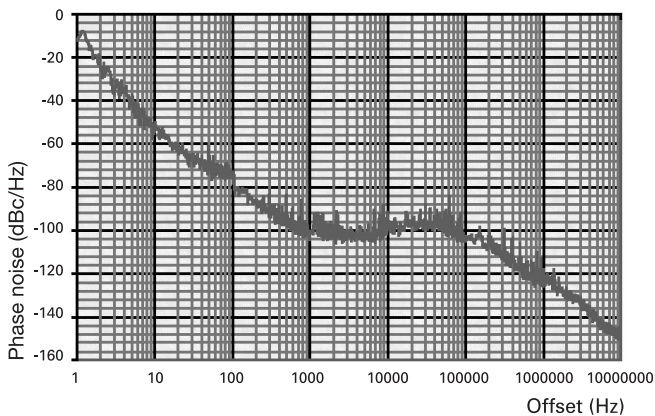
Level: TTL

External reference input: [rear panel]

Level:	> 0 dBm
Frequency:	10 MHz ± 20 ppm

Spectral purity (without modulation)

Harmonics:	≤ -35 dBc
Non-harmonics:	≤ -55 dBc (> 15 kHz from carrier)
Phase noise:	[at 20 kHz from carrier]
f < 16 MHz:	≤ -120 dBc/Hz
16 MHz ≤ f < 250 MHz:	≤ -94 dBc/Hz
250 MHz ≤ f < 500 MHz:	≤ -105 dBc/Hz
500 MHz ≤ f < 1000 MHz:	≤ -100 dBc/Hz
1000 MHz ≤ f < 1200 MHz:	≤ -95 dBc/Hz
Residual FM:	≤ 6.5 Hz (at 1 GHz in 300 Hz – 3 kHz bandwidth)
Residual AM:	typ. < 0.06 % (in 0.03 – 20 kHz bandwidth)



(Typical phase noise at 1 GHz)

Output level

Range:	-127 to +13 dBm
Resolution:	0.1 dB
Precision: for level > -57 dBm:	≤ ±0.5 dB
for level < -57 dBm:	≤ ±(0.5 dB + (0.2 x [-57 dBm - level])/10)
Impedance:	50 Ω
V.S.W.R.:	≤ 2

Modulation sources

Internal:	10 Hz - 150 kHz sine wave, 10 Hz - 20 kHz square wave, triangle, sawtooth
Resolution:	10 Hz
External:	(input on front panel)
Impedance:	10 kΩ 50 pF
Input level:	2 V _{pp} for full scale
Coupling:	AC or DC
Output:	(on front panel)
Level:	2 V _{pp}
Impedance:	1 kΩ

Amplitude modulation (Level ≤ +7 dBm)

Source:	internal or external
Modulation depth:	0 to 100 %
Resolution:	0.1 %
Accuracy:	± 4 % of reading ± 0.5 % (AM-depth ≤ 80 %, f _{mod} ≤ 40 kHz)

Ext. frequency resp. (to -1 dB):	10 Hz to 50 kHz for AC
Distortion:	< 2 % (AM-depth ≤ 60 %, f _{mod} ≤ 1 kHz) < 6 % (AM-depth ≤ 80 %, f _{mod} < 20 kHz)

Frequency modulation

Source:	internal or external
Deviation:	± 200 Hz to 400 kHz (depending on frequency band)
Resolution:	100 Hz
Accuracy:	± 3 % + res. FM (f _{mod} ≤ 5 kHz) ± 7 % + res. FM (5 kHz < f _{mod} < 100 kHz)

Ext. frequency response: (to -1 dB)

DC coupling:	0 to 100 kHz
AC coupling:	10 Hz to 100 kHz

Distortion:	< 1 % for deviation ≥ 50 kHz at 1 kHz < 3 % for deviation ≥ 10 kHz at 1 kHz
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Phase modulation

Source:	internal or external
Deviation: < 16 MHz:	0 to 3.14 rad
> 16 MHz:	0 to 10 rad
Resolution:	0.01 rad
Accuracy:	± 5 % to 1 kHz + residual PM

Ext. frequency response : (to -1 dB)

DC coupling:	0 to 100 kHz
AC coupling:	10 Hz to 100 kHz

Distortion:	< 3 % for f _{mod} = 1 kHz and deviation = 10 rad
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FSK modulation

Range (F0 - F1):	16 to 1200 MHz
Mode:	2 FSK levels
Data source:	external
Max. rate:	10 kbit/s
Shift (F1 - F0):	0 to 10 MHz
Resolution:	100 Hz
Accuracy:	see under FM

PSK modulation

Mode:	2 PSK levels
Data source:	external
Max. rate:	10 kbit/s
Shift (Ph1 - Ph0): < 16 MHz:	0 to ± 3.14 rad
> 16 MHz:	0 to ± 10 rad
Resolution:	0.01 rad
Accuracy:	see under PM

Pulse modulation

Source:	external [rear panel]
Dynamic range:	> 80 dB
Rise/fall times:	< 50 ns
Delay:	< 100 ns
Max. frequency:	2.5 MHz
Input level:	TTL

Sweep mode

Range:	1 MHz to 1200 MHz
Depth:	500 Hz to 1199 MHz
Sweep time:	20 ms to 5 s
Trigger:	internal

Protective functions

The synthesizer is protected against reverse power applied on RF output up to 1 W for a 50 Ω source and against any DC source up to ± 7 V. The protection disconnects the output until manually rearmed by operator.

Miscellaneous

Interface:	RS-232 [standard], IEEE-488 [optional], USB [optional]
Configuration memories:	10
Safety class:	Safety Class I (EN61010-1)
Power supply:	115/230 V ± 10 %, 50/60 Hz
Power consumption:	approx. 40 VA
Operating temperature:	+ 10 to + 40° C
Max. relative humidity:	10 to 90 % (without condensation)
Dimensions (W x H x D):	285 x 75 x 365 mm
Weight:	approx. 5 kg

Accessories supplied: Operator's manual, power cable
Optional accessories: HZ33/HZ34 Test Cable 50 Ω (BNC-BNC), HZ21 Adapter plug, HZ42 19" Rackmount kit 2RU, H0870 USB Interface, H0880 IEEE-488 Interface, H0890 RS-232 Interface, H085 OCXO (Installation only ex factory)

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