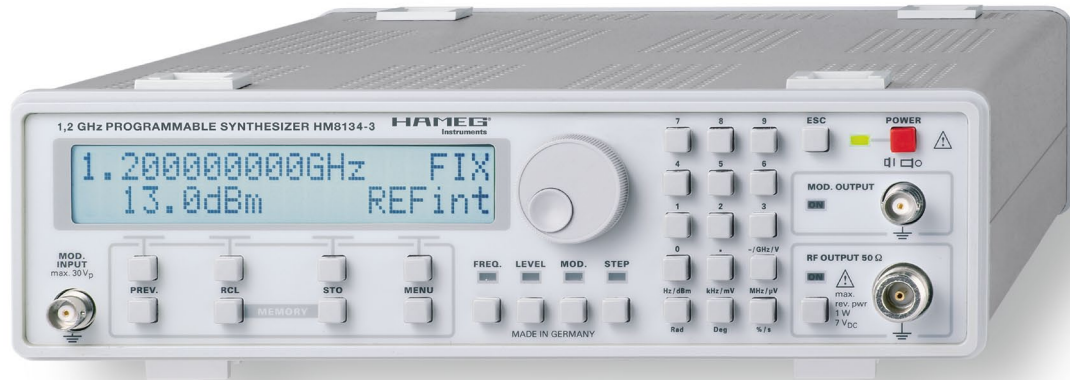


1.2GHz RF-Synthesizer HM8134-3



HM8134-3



HZ42 19" Rackmount Kit
2RU



H0880 IEEE-488
(GPIB) Interface (Option)



- Outstanding Frequency Range 1Hz...1.2GHz
- Output Power -127...+13dBm
- Frequency Resolution 1Hz (Accuracy 0.5ppm)
- Input for external Time Base (10MHz)
- Modulation Modes: AM, FM, Pulse, Φ , FSK, PSK
- Rapid Pulse Modulation: typ. 200ns
- Internal Modulator (Sine Wave, Square Wave, Triangle, Sawtooth)
10Hz...150kHz
- High spectral Purity
- 10 Configuration Memories including Turn-On Configuration
- Standard: TCXO (Temperature Stability: $\pm 0.5 \times 10^{-6}$)
Optional: OCXO (Temperature Stability: $\pm 1 \times 10^{-8}$)
- Galvanically isolated USB/RS-232 Interface,
optional IEEE-488 (GPIB)

1.2 GHz RF-Synthesizer HM8134-3

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

Frequency

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

Frequency Reference 10 MHz

Standard: TCXO

Temperature stability (0...50 °C):	±0.5 ppm
Aging:	±1 ppm/year

Option: OCXO (H085)

Temperature stability (0...50 °C):	±1x 10 ⁻⁸
Aging:	±1x 10 ⁻⁹ /day

Internal reference output: (rear panel)

Level: TTL

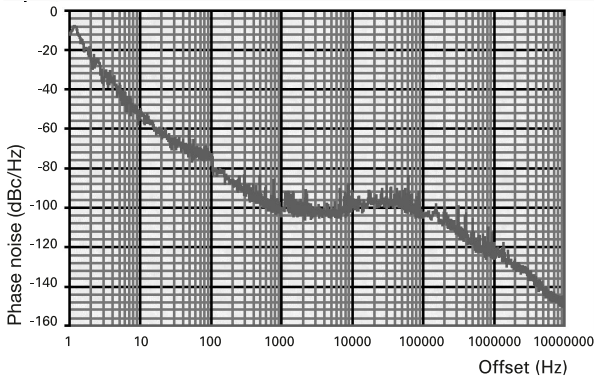
External reference input: (rear panel)

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 0.3...3 kHz bandwidth)
Residual AM:	typ. <0.06 % (in 0.03...20 kHz bandwidth)



(Typical phase noise at 1 GHz)

Output level

Range:	-127...+13 dBm
Resolution:	0.1 dB
Display-Offset for ext. Attn.:	0.0...30.0 dB in 0.1 dB steps
Precision:	

for level >-57 dBm:	±0.5 dB
for level <-57 dBm:	±(0.5 dB + (0.2x (-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: 2V_{pp} for full scale

Coupling: AC or DC

Output: (on front panel)

Level: 2V_{pp}

Impedance: 1 kΩ

Amplitude modulation (Level ≤ +7 dBm)

Source: internal or external

Modulation depth: 0...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...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...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...100 kHz

AC coupling: 10 Hz...100 kHz

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

Phase modulation

Source: internal or external

Deviation: <16 MHz: 0...3.14 rad

>16 MHz: 0...10 rad

Resolution: 0.01 rad

Accuracy: ±5 % to 1 kHz + residual PM

Ext. frequency response: (to -1 dB)

DC coupling: 0...100 kHz

AC coupling: 10 Hz...100 kHz

Distortion: <3 % for f_{mod} = 1 kHz and deviation = 10 rad

FSK modulation

Range (F0...F1): 16...1200 MHz

Mode: 2 FSK levels

Data source: external

Max. rate: 10 kbit/s

Shift (F1...F0): 0...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...±3.14 rad

>16 MHz: 0...±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...1200 MHz

Depth: 500 Hz...1199 MHz

Sweep time: 20 ms...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 reset by operator.

Miscellaneous

Interface: USB/RS-232 (H0820), IEEE-488 (optional)

Configuration memories: 10

Safety class: Safety Class I (EN61010-1)

Power supply: 115...230 V ±10 %, 50/60 Hz, CAT II

Power consumption: approx. 40 VA

Operating temperature: +5...+40 °C

Storage temperature: -20...+70 °C

Rel. humidity: 5...80 % (non condensing)

Dimensions (W x H x D): 285 x 75 x 365 mm

Weight: approx. 5 kg

Accessories supplied: Line cord, Operating manual

Recommended accessories:

H085	OCXO temperature stability ±1x 10 ⁻⁸
H0880	IEEE-488 (GPIB) Interface (galvanically isolated)
HZ13	Interface cable (USB) 1.8 m
HZ14	Interface cable (serial) 1:1
HZ20	Adapter, BNC to 4 mm banana
HZ21	Adapter plug
HZ24	Attenuator Set 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