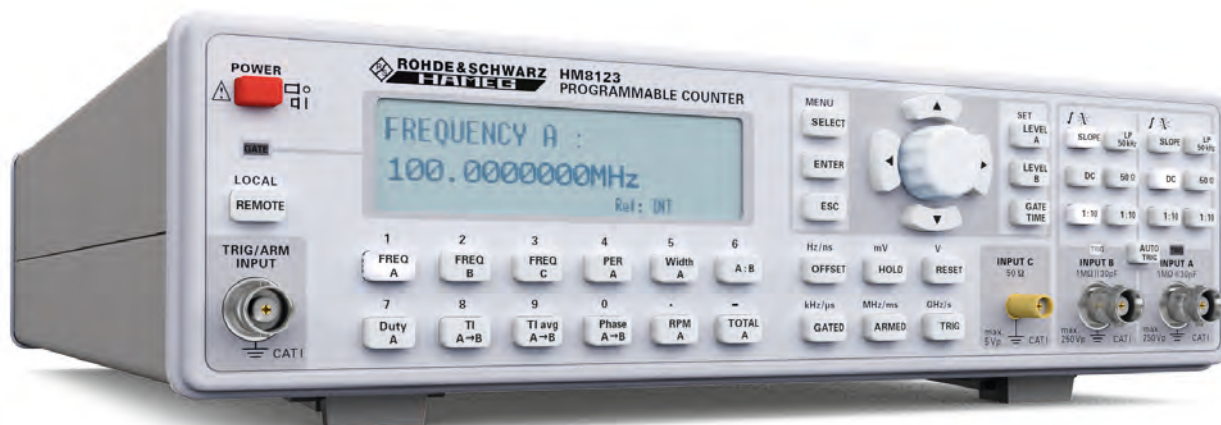


Частотомер HM8123



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Technical Data

HM8123 3 GHz Programmable Counter

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

Input characteristics (Input A and B)

Connection	BNC socket	
Frequency range		
0 to 200MHz	DC coupled	
10Hz to 200MHz	1 MΩ, AC coupled	
500kHz to 200MHz	50Ω, AC coupled	
Input impedance	1 MΩ 30pF or 50Ω (switchable)	
Attenuation	1:1, 1:10, 1:100 (selectable)	
Sensitivity (normal triggering)		
0 to 80MHz	25 mV _{rms} (sine wave), 80 mV _{SS} (pulse)	
80 to 200MHz	65 mV _{rms} (sine wave)	
20Hz to 80MHz	50 mV _{rms} (sine wave, auto trigger)	
Trigger (programmable via encoder or software)		
Attenuation:	Trigger level	Resolution
1:1	0 to ±2V	1 mV
1:10	0 to ±20V	10 mV
1:100	0 to ±200V	100 mV
Max. input voltage		
Input 1 MΩ	250V (DC + AC _{peak}) from 0 to 440Hz decreasing to 8V _{rms} at 1MHz	
Input 50Ω	5V _{rms}	
Minimum pulse duration	<5ns for single pulse	
Input noise	(typ.) 100μV	
Auto trigger (AC coupling)	trigger point: 50% of peak-to-peak value	
Trigger slope	Rising or falling	
Filter	50kHz low-pass filter (selectable)	

Input characteristics (Input C)

Connection	SMA socket	
Frequency range:	100MHz to 3GHz	
Input sensitivity	to 1 GHz: 30 mV _{rms} (typ. 20 mV _{rms}) 1 to 2 GHz: 100 mV _{rms} (typ. 80 mV _{rms}) 2 to 2.5 GHz: 150 mV _{rms} (typ. 100 mV _{rms}) 2.5 to 3 GHz: 200 mV _{rms} (typ. 150 mV _{rms})	
Input impedance	50Ω nominal	
Max. Input voltage	5V (DC + AC _{peak})	

Input characteristics

	External Reset	Reference	Gate/Arming
Input impedance	5kΩ	500Ω	5kΩ
Max. Input voltage	±30V	±20V	±30V
Input sensitivity	-	typ. 2V _{pp}	-
High level	>2V	-	>2V
Low level	<0,5V	-	<0,5V
Min. pulse duration	200ns	-	50ns
Input frequency	-	10MHz	-
Min. eff. gate time	-	-	20μs

Measurement functions

Frequency A/B/C; period duration A; width A; totalize A; RPM A; frequency ratio A:B; time interval A:B; time interval A:B (average); phase A to B; Duty cycle A; burst measurements

Frequency measurement (Inputs A, B, C)

Frequency range	0 to 200MHz (3GHz)
LSD	(1,25 x 10 ⁻⁸ s x frequency) / measurement time

Resolution	1 LSD
Accuracy	±(resolution/frequency ±time inaccuracy ±trigger error ² / measurement time)

Period duration measurement

Range	5ns to 10,000s
LSD	(1.25 x 10 ⁻⁸ s x period) / measurement time
Resolution	1 LSD
Accuracy	±resolution / period ±(trigger error ² / measurement time)

Totalization A

	manual control	external control
Range	0 to 200MHz	0 to 200MHz
Min. pulse duration	10ns	10ns
LSD	1 count	±1 count
Resolution	LSD	LSD
Accuracy	(resolution ±ext. gate time error x frequency A) / total	
Pulse resolution	10ns	10ns
Ext. gate error	-	100ns

Time interval/Average time interval

(Input A = start; Input B = stop)		
LSD	10ns (0,1 ps to 10ns im 'average' mode)	
Resolution	1 LSD	
Accuracy	±(resolution + trigger error ² +system error) / time interval ±time base uncertainty (system error: ≤4ns)	
Number of average	N = 1 to 25 N = 26 to 2,500 N = 2,501 to 250,000 N = 250,001 to 25,000,000 N = >25,000,000	LSD = 10ns LSD = 1ns LSD = 100ps LSD = 10ps LSD = 0.1ps

Rpm measurement

NPR ¹ presetting	1 to 65.535 pulses per revolution
Gate time	330ms fixed
LSD	7.5 x 10 ⁻⁸ x revolution speed
Resolution	1 LSD
Accuracy	±(trigger error ² / 0.33) ±time base error

Offset

Range	Covers the entire measurement range
Resolution	Same resolution as in normal measurement. If the gate time is changed in the offset mode, the offset resolution is the reference value resolution or the current reading resolution (whichever is less precise).

Gate time

Range	1 ms to 65 s
Resolution	1 ms
External gate time	min. 20μs

Time base

Frequency	400MHz clock rate; 10MHz Quarz
Temperature stability (0 to 50°C)	TCXO (standard): ±0,5 x 10 ⁻⁶ OCXO (HO85): ±1,0 x 10 ⁻⁸
Aging TCXO	<0.27ppm per month, 0.05ppm per day
OCXO	≤ ±1 x 10 ⁻⁹ /day
External Reference	10MHz ±20ppm

Miscellaneous

Interface	Dual-Interface USB/RS-232 (HO820), optional HO880 IEEE-488 (GPIB)
Safety class	Safety class I (EN61010-1)
Display	LCD display (83 x 21 mm)

Power Supply	115 to 230V $\pm 10\%$, 45 to 60Hz, CAT II
Power consumption	approx. 20W
Operating temperature	+5 to +40°C
Storage temperature	-20 to +70°C
Rel. humidity	5 to 80% (without condensation)
Dimensions (W x H x D)	285 x 75 x 365mm
Weight	approx. 4kg

- 1) NPR=number of pulses per revolution
 2) Trigger error= \pm noise input (V_{pp})/slew rate of the input signal

Accessories supplied:

Line cord, Operating manual

Recommended accessories:

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

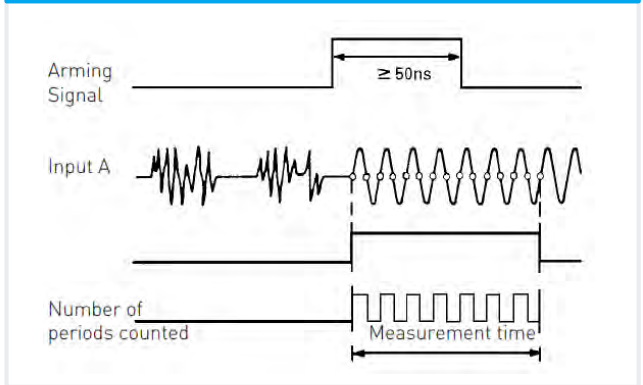


R&S®HZ42
2 HU, 19" rackmount kit.



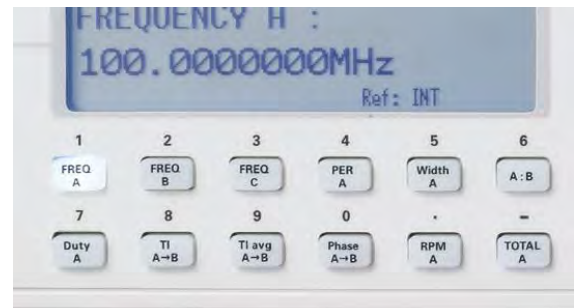
R&S®HO880
IEEE-488 GPIB interface.

External arming



External arming prevents undesired signals from triggering of a measurement.

Ease of use



Intuitive one-push pushbutton operation makes each function directly addressable.

Ordering information

Base units	
Description	Model
With TCXO (temp. stability: $\pm 0.5 \times 10^{-6}$)	R&S®HM8123
With OCXO (temp. stability: $\pm 1.0 \times 10^{-8}$)	R&S®HM8123-X

Options/system components	
Description	Type
IEEE-488 Interface (GPIB)	R&S®HO880
19" rackmount kit, 2 HU	R&S®HZ42

Included accessories:

All models include power cable, operating manual and three-year warranty.

- | | | | | |
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