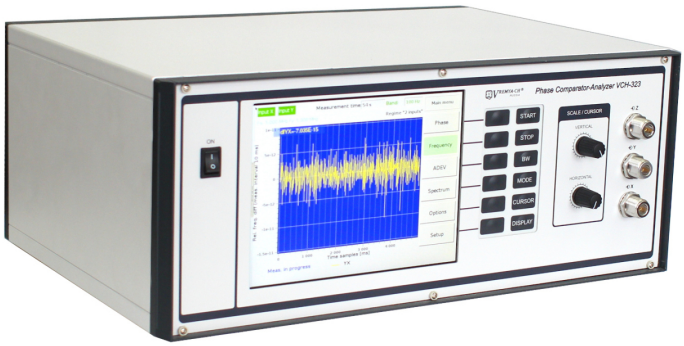
Phase Comparator-Analyzer VCH-323

vremya-ch.com/index.php/en/products-en/freq-comparators-en/vch-323-en/index.html



Phase comparator-analyzer VCH-323 is intended for precise frequency instability and phase noise measurements (Allan deviation, L(f)).

Key applications:

– metrological characteristics monitoring of the of precise signal sources, including crystal oscillators and quantum frequency standards;

– scientific research measurements.

Manual for VCH-323

– Operational Manual download

Specification

The comparator has two identical measuring channels (three inputs) and uses correlation processing providing extremely low measurement error and the frequency instability calculation of each input signals.

Input signals: sinusoidal in frequency range from 1 up to 100 MHz (different frequencies at all inputs are allowed), level (0.6−1.2) Vrms, 50 Ohm load.

Noise bandwidth: 1, 10, 100, 1000 Hz.

Averaging time range: 0.001 s to 10^{5} s.

Phase noise spectrum measurement range: 0.1 Hz to 100 kHz.

Allan deviation noise floor, not more:

		Allan deviation			
Averaging time	**Passband**	**For the input signal pairs (YX, ZX)**		**“Two inputs” mode for the input signal pair YX. “Three inputs” mode for the input signal X**	
		Specification	Typical	Specification	Typical
0.01 s	100 Hz	$5.0 \cdot 10^{-12}$	$2.5 \cdot 10^{-12}$	$3.0 \cdot 10^{-13}$	$3.0 \cdot 10^{-14}$
0.1 s	10 Hz	$6.0 \cdot 10^{-13}$	$2.5 \cdot 10^{-13}$	$1.0 \cdot 10^{-13}$	$9.0 \cdot 10^{-15}$

1 s	1 Hz	$3.0 \cdot 10^{-14}$	$9.0 \cdot 10^{-15}$	$1.0 \cdot 10^{-14}$	$1.0 \cdot 10^{-15}$
10 s	1 Hz	$5.0 \cdot 10^{-15}$	$1.5 \cdot 10^{-15}$	$2.0 \cdot 10^{-15}$	$1.5 \cdot 10^{-16}$
100 s	1 Hz	$2.0 \cdot 10^{-15}$	$5.5 \cdot 10^{-16}$	$1.0 \cdot 10^{-15}$	$8.0 \cdot 10^{-17}$
1 hour	1 Hz	$5.0 \cdot 10^{-16}$	$8.0 \cdot 10^{-17}$	$3.0 \cdot 10^{-16}$	$9.0 \cdot 10^{-17}$
1 day	1 Hz	$1.0 \cdot 10^{-16}$	5.0·10 −17/sup>	$1.0 \cdot 10^{-16}$	$7.0 \cdot 10^{-18}$

Phase Noise floor, not more

Phase Noise L(f), dBc/Hz
“Three inputs” mode for the input signal pairs (YX, ZX)

	Specification			**Typical**		
	Frequency of input signals			**Frequency of input signals**		
Frequency offset	5 MHz	10 MHz	100 MHz	5 MHz	10 MHz	100MHz
1 Hz	−130	−127	−107	−141	−138	−119
10 Hz	−143	−135	−115	−145	−146	−128
100 Hz	−145	−143	−127	−147	−147	−133
1 kHz	−146	−145	−133	−148	−148	−134
10 kHz	−147	−145	−135	−148	−149	−138
100 kHz	−148	−146	−140	−148	−150	−143

Phase Noise L(f), dBc/Hz
“Two inputs” mode the input signal pair YX.
“Three inputs” mode for the input signal (X)

	Specification			**Typical**		
	Frequency of input signals			**Frequency of input signals**		
Frequency offset	5 MHz	10 MHz	100 MHz	5 MHz	10 MHz	100MHz
1 Hz	−135	−130	−110	−148	−144	−128
10 Hz	−150	−145	−127	−160	−156	−142

100 Hz	−155	−153	−140	−168	−165	−152
1 kHz	−160	−158	−143	−172	−170	−157
10 kHz	−163	−160	−150	−175	−172	−164
100 kHz	−163	−160	−155	−176	−173	−168

Interfaces: LAN.
Software: calculates relative frequency difference, Allan deviation, phase noise spectrum.
Temperature in use: +5°C to +40°C.
Power supply: AC(198÷242)V, DC(50÷60)V.
Power consumption: not more 60 V·A.
Size (H×W×D): 184×449×339 mm.
Weight: not more 12 kg.