Microstepper Combiner Synthesizer VCH-317M

vremya-ch.com/index.php/en/products-en/signgen-en/vch-317m-en/index.html

Microstepper Combiner Synthesizer produces uninterrupted in frequency and phase signals on the base of group atomic clocks. Operational principle of Combiner is based on frequency control of local crystal oscillator using multichannel phase comparator and digital processor. Digital control of output frequency performed by built-in processor provides such advantages as programming frequency and phase shifts of output signal with high resolution.

Key Applications
– time and frequency redundant systems;
– frequency and time keeping etalons.

Manual for VCH-317M
– Operational Manual download

Specifications

Input signals:
– sine: 5 or 10 or 100 MHz nominal frequency, (0.8÷1.2) V into 50 Ω load;
– maximal frequency deviation from nominal value: $\pm 1.0 \cdot 10^{-11}$;
– number of input signals: up to 4.

Output signals:
– sine: 5; 10; 100 MHz, (0.8÷1.2) V into 50 Ω load, harmonics ≤-35 dB;
– pulse: 1 Hz (1 pps time scale), positive polarity, amplitude (2.5÷5.0) V into 50 Ω load, pulse width (10.2±0.1) μs; rise time: ≤10 ns.

Metrological characteristics are given in the table:

	Averaging time (τ)	**Allan deviation noise floor**
Frequency instability, inserted by internal phase noises (frequency differences between any input or output signals ≤$1.0 \cdot 10^{-12}$	1 s	$1.0 \cdot 10^{-13}$
	3600 s	$\leq 1.0 \cdot 10^{-15}$

	Frequency offset	Spectral density
Output signal phase noise (5 MHz output)	10 Hz	−137 dBc/Hz
	100 Hz	−155 dBc/Hz
	1000 Hz	−160 dBc/Hz
	10000 Hz	−160 dBc/Hz
Programmable output signals frequency shift	**resolution**	$1.0 \cdot 10^{-18}$
	range	$\pm 1.0 \cdot 10^{-8}$
Programmable output signals frequency drift compensation	**resolution**	$1.0 \cdot 10^{-18}$
	range	$\pm 8.64 \cdot 10^{-12}$
Programmable output signals phase shift	**resolution**	10^{-12} s
	range	$\pm 999999 \cdot 10^{-12}$ s

The Combiner works with a group of input signals (up to 4) simultaneously in one of the operational modes: “ **SWITCHING”** mode – synchronous operation with one signal from the signal group with the possibility of switching to synchronous operation with another signal without frequency shift; “ **AVERAGING”** mode – synchronous operation with the sum of all signals from the synchronizing group with the possibility of excluding (including) the signal from the synchronizing group (into the synchronizing group) without loss of frequency.

The frequency error when excluding / switching on the signal from the synchronizing group caused by the Combiner: ≤ $2.0 \cdot 10^{-15}$.

If necessary, the output signal can be adjusted in phase and frequency, as well as a compensating frequency drift can be introduced.

The Combiner retains the frequency of the output signal when the signals at the inputs disappear. Automatically excludes a signal from the synchronizing group if the frequency of this signal deviates significantly from the frequency of the signal group.

Application software: runs under Microsoft Windows 7 / 8 / 10 / 11 and Linux (option). Full data monitoring and functions control are performed remotely through the interface.

Interface: RS-232C or USB.
Power supply: AC (198÷242) V, (50÷60) Hz; DC (22÷32) V.

Power consumption: ≤50 V×A.
Dimensions (W×H×D): 483mm×140mm×370mm.
Weight: 8 kg.
Life time: 15 years.