Microstepper Combiner Synthesizer VCH-317

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

Microstepper Combiner Synthesizer produces an uninterrupted in frequency and phase signal 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-317
– 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*	≤$1.0 \cdot 10^{-15}$
	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

	10 Hz	−131 dBc/Hz
	100 Hz	−150 dBc/Hz
	1000 Hz	−155 dBc/Hz
Output signal phase noise (10 MHz output)	10000 Hz	−155 dBc/Hz
Programmable output signals frequency shift	**resolution** **range**	$1.0 \cdot 10^{-18}$ $\pm 1.0 \cdot 10^{-8}$
Programmable output signals frequency drift compensation	**resolution** **range**	$1.0 \cdot 10^{-18}$ $\pm 8.64 \cdot 10^{-12}$
Programmable output signals phase shift	**resolution** **range**	10^{-12} s $\pm 999999 \cdot 10^{-12}$ s

* Specified if temperature change is no more ±0.5 °C/hour

The Combiner automatically excludes from combination process any input signal when the signal: disappears; exceeds the given frequency difference limit; external ERROR signal from the input signal source is coming. In such a case of failure the combiner holds output signal frequency and phase: (frequency shift (RMS) $\leq \pm 2.0 \cdot 10^{-15}$; phase shift $\leq \pm 1.0 \cdot 10^{-10}$ s). After the signal renewal the previous combination can be recovered by operator only.
Application software: runs under Microsoft Windows XP, Vista 7. Full data monitoring and functions control are performed manually by front panel or remotely through 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×133mm×380mm.
Weight: 8 kg.
Warranty: 3 years.
Life time: 15 years.