

## Rubidium standard of time and frequency Ch1-92

### DESIGNED FOR

generation of highly stable signals with a frequency of 5 and 10 MHz, as well as a 1 Hz pulse signal with the possibility of its external synchronization



### DESCRIPTION OF MEASURING INSTRUMENT

In terms of design the standard is made in the form of a monoblock, on the front panel of which control elements for synchronization mode are located, as well as LEDs of indication of standard state.

The following interfaces are available on the rear panel:

- output signal connectors 1 Hz, 5 and 10 MHz;
- connectors for input synchronizing signal 1 Hz (50 Ohm);
- AC power connector 220 V;
- RS-232 connector for adjustments to the actual frequency value is located on the front panel.

Functionally, the standard consists of an integrated rubidium reference generator, frequency divider block, buffer amplifier block, power supply.

The standard has an external synchronization mode of a pulse signal 1 Hz.

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Nominal frequencies of output signals, Hz	1; $5 \cdot 10^6$ ; $1 \cdot 10^7$
Root mean square of voltage of output signals 5 and 10 MHz at load of 50 Ohms, V	$(1,0 \pm 0,2)$
1 Hz pulse signal parameters:	
· output signal voltage level (positive polarity at a load of 50 Ohms), V, not less	2,4
· pulse duration, $\mu$ s	from 20 to 40
· duration of the leading edge of pulses, ns, not more than	5
Limits of permissible relative error in frequency	$\pm 2,0 \cdot 10^{-10}$
Average quadratic relative two-sample deviation of the measurement results of the frequency of the output signals 5 and 10 MHz, not more than:	
· for a measurement time interval of 1 s	$1,4 \cdot 10^{-11}$
· for a measurement time interval of 10 s	$5,0 \cdot 10^{-12}$
· for a measurement time interval of 100 s	$1,4 \cdot 10^{-12}$
Spectral power density of phase noise in one side band of the spectrum of the output signal, dB / Hz, not more than:	
	5 MHz      10 MHz
· at a frequency of 10 Hz	minus 100    minus 95
· at a frequency of 100 Hz	minus 130    minus 125
· at a frequency of 1 kHz	minus 140    minus 140
· at a frequency of 10 kHz	minus 145    minus 145
Attenuation of harmonic components in the spectra of output signals 5 and 10 MHz, dB, not less than	30
Limits of permissible absolute error of the external synchronization of pulse signal 1 Hz, ns	$\pm 100$
Limits of permissible relative error in frequency from on to off	$\pm 5,0 \cdot 10^{-11}$
Additional relative frequency change at change in ambient temperature in the working temperature range	$\pm 3,0 \cdot 10^{-10}$
Feeding voltage from AC supply by frequency $(50 \pm 1)$ Hz, V	from 198 to 242
Consumed power, B·A, not more than	100
Overall dimensions (length × width × height), mm	330 × 240 × 140
Weight, kg, not more than	4,0
Operating conditions:	
· ambient temperature, °C	from 5 to 40
· relative humidity at ambient temperature 25°C, %	to 90
Mean time between failures, h, not less than	25 000
Average life, years, not less than	10