

Oscillators available for Meinberg GPS Receivers / Time Servers: TCXO, OCXO, Rubidium

	TCXO	OCXO LQ	OCXO SQ	OCXO MQ	OCXO HQ	OCXO DHQ	Rubidium (only available for 3U models)
short term stability ($\tau = 1$ sec)	$2 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$5 \cdot 10^{-10}$	$2 \cdot 10^{-10}$	$5 \cdot 10^{-12}$	$2 \cdot 10^{-12}$	$2 \cdot 10^{-11}$
accuracy of PPS (pulse per sec)	< ± 100 ns	< ± 100 ns	< ± 50 ns	< ± 50 ns	< ± 50 ns	< ± 50 ns	< ± 50 ns
phase noise	1Hz -60dBc/Hz 10Hz -90dBc/Hz 100Hz -120dBc/Hz 1kHz -130dBc/Hz	1Hz -60dBc/Hz 10Hz -90dBc/Hz 100Hz -120dBc/Hz 1kHz -130dBc/Hz	1Hz -70dBc/Hz 10Hz -105dBc/Hz 100Hz -125dBc/Hz 1kHz -140dBc/Hz	1Hz -75dBc/Hz 10Hz -110dBc/Hz 100Hz -130dBc/Hz 1kHz -140dBc/Hz	1Hz < -85dBc/Hz 10Hz < -115dBc/Hz 100Hz < -130dBc/Hz 1kHz < -140dBc/Hz	1Hz < -80dBc/Hz 10Hz < -110dBc/Hz 100Hz < -125dBc/Hz 1kHz < -135dBc/Hz	1Hz -75dBc/Hz 10Hz -89dBc/Hz 100Hz -128dBc/Hz 1kHz -140dBc/Hz
accuracy free run, one day	$\pm 1 \cdot 10^{-7}$ ± 1 Hz (Note1)	$\pm 2 \cdot 10^{-8}$ ± 0.2 Hz (Note1)	$\pm 5 \cdot 10^{-9}$ ± 50 mHz (Note1)	$\pm 1.5 \cdot 10^{-9}$ ± 15 mHz (Note1)	$\pm 5 \cdot 10^{-10}$ ± 5 mHz (Note1)	$\pm 1 \cdot 10^{-10}$ ± 1 mHz (Note1)	$\pm 2 \cdot 10^{-11}$ ± 0.2 mHz (Note1)
accuracy, free run, 1 year	$\pm 1 \cdot 10^{-6}$ ± 10 Hz (Note1)	$\pm 4 \cdot 10^{-7}$ ± 4 Hz (Note1)	$\pm 2 \cdot 10^{-7}$ ± 2 Hz (Note1)	$\pm 1 \cdot 10^{-7}$ ± 1 Hz (Note1)	$\pm 5 \cdot 10^{-8}$ ± 0.5 Hz (Note1)	$\pm 1 \cdot 10^{-8}$ ± 0.1 Hz (Note1)	$\pm 5 \cdot 10^{-10}$ ± 5 mHz (Note1)
accuracy GPS-synchronous, average 24h	$\pm 1 \cdot 10^{-11}$	$\pm 1 \cdot 10^{-11}$	$\pm 1 \cdot 10^{-11}$	$\pm 5 \cdot 10^{-12}$	$\pm 1 \cdot 10^{-12}$	$\pm 1 \cdot 10^{-12}$	$\pm 1 \cdot 10^{-12}$
accuracy of time free run, 1 day	± 4.3 ms	± 865 μ s	± 220 μ s	± 65 μ s	± 22 μ s	± 4.5 μ s	± 1.1 μ s
accuracy of time free run, 7 days	± 128 ms	± 32 ms	± 9.2 ms	± 2.9 ms	± 1.0 ms	± 204 μ s	± 34 μ s
accuracy of time free run, 30 days	± 1.1 s	± 330 ms	± 120 ms	± 44 ms	± 16 ms	± 3.3 ms	± 370 μ s
accuracy of time free run, 1 year	± 16 s	± 6.3 s	± 4.7 s	± 1.6 s	± 788 ms	± 158 ms	± 8 ms
temperature dependant drift free run	$\pm 1 \cdot 10^{-6}$ (-20...70°C)	$\pm 2 \cdot 10^{-7}$ (0...60°C)	$\pm 1 \cdot 10^{-7}$ (-10...70°C)	$\pm 5 \cdot 10^{-8}$ (-20...70°C)	$\pm 1 \cdot 10^{-8}$ (5...70°C)	$\pm 2 \cdot 10^{-10}$ (5...70°C)	$\pm 6 \cdot 10^{-10}$ (-25...70°C)

Note 1: The accuracy in Hertz is based on the standard frequency of 10 MHz.

For example: Accuracy of TCXO (free run one day) is $\pm 1 \cdot 10^{-7} \cdot 10\text{MHz} = \pm 1$ HZ

The given values for the accuracy of frequency and time (not short term accuracy) are only valid for a constant ambient temperature!

A minimum time of 24 hours of GPS-synchronicity is required before free run starts.