



Product-News

New Precision OCXOs Provide Ultra Low G-Sensitivity (ULGS) and Low Phase Noise (LPN)

By the usage of self-manufactured noise-optimized 5th overtone SC-cut crystals and noise-minimized electronic circuits KVG's engineers succeeded in designing new OCXOs what provide beside an exceptional ultra low G-sensitivity (ULGS) and a low phase noise (LPN) and in addition a high frequency stability.

For high-frequency crystal oscillators locked to a frequency-reference – like GPS; Rubidium- or Cesium-Normal, the phase-noise (PN) in the frequency-range above the PLL-loop bandwidth is particularly important, because phase-noise is determined by the locked oscillator and not by the reference-signal.

The new 100 MHz OCXOs - **O-30-ULGS-100M** – have an exceptional good robustness against vibration – also known as microphony – this is very important for oscillators with good phase-noise, to avoid a significant performance impact due to “vibration-induced” phase-modulation. The dynamic G-sensitivity of the new OCXO is less than 0.1 ppb/g (1×10^{-10} /g) for all axes, which means about 100-times better than standard-OCXOs (see also pic 1). In addition the OCXO performs with very good PN-values: a “Noise Floor” for better than -170 dBc/Hz at 100 kHz offset. At 10 kHz offset the phase-noise is already better than -160 dBc/Hz and near to the carrier **O-30-ULGS-100M** gives a very good performance with -130 dBc/Hz at 100 Hz offset.

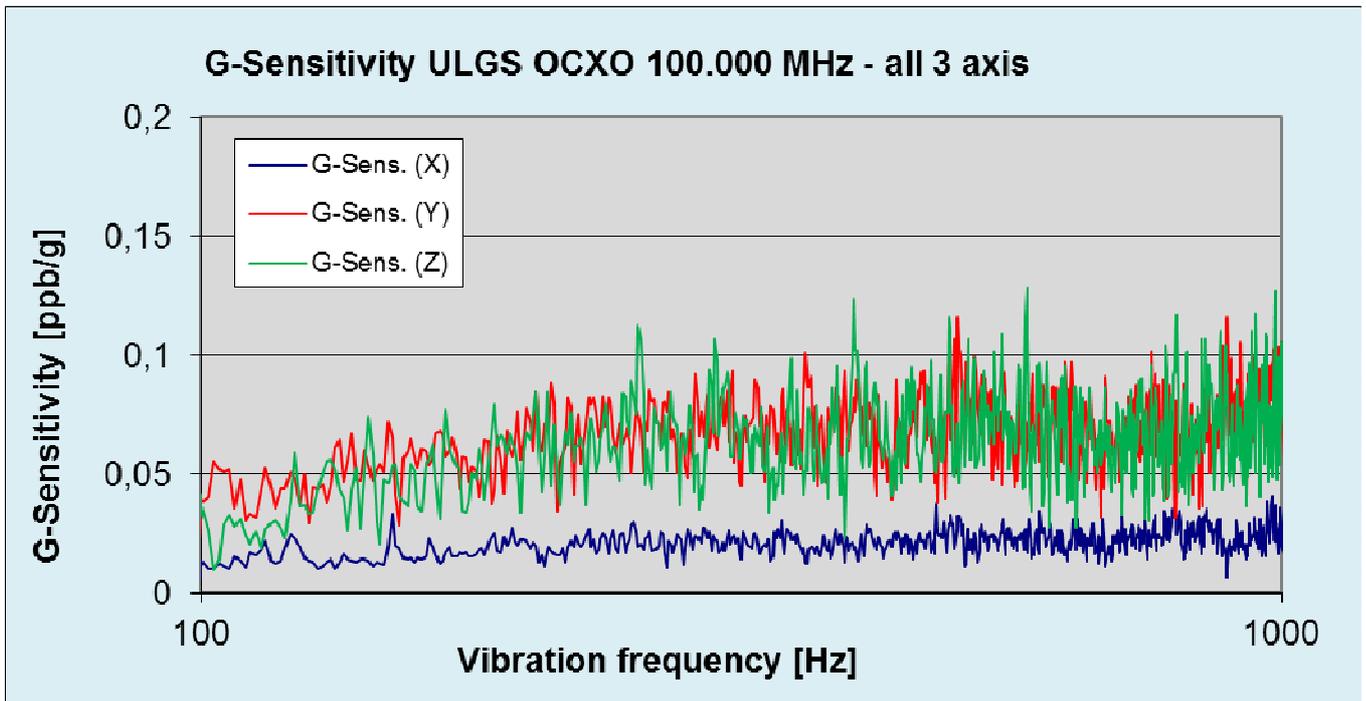
In addition to the excellent G-sensitivity and low phase-noise the **O-30-ULGS-100M** is characterized by a very good frequency stability vs. temperature of better than ± 100 ppb ($\pm 1 \times 10^{-7}$) in the temperature-range from -40 °C to +85 °C.

The long term stability (aging) is typically better than ± 1.5 ppm within 10 years. The OCXO provides a voltage controlled frequency-tuning with a sufficiently large tuning-range. So for the full life-time it is guaranteed that the carrier-frequency could be adjusted to the nominal-frequency, this is crucial for synchronized systems.

These new high-frequency ULGS OCXOs are dedicated for application in Test & Measurement Systems as well as Medical-industry (e.g. Magnetic Resonance – or Computed Tomography) and reference clock for microwave signal sources or radar systems. Due to the low G sensitivity the hermetically sealed package option is suitable for applications with demanding environmental requirements (shock, vibration, humidity, dust), as it is requested for several military or avionic applications.

The oscillators will be delivered in a small hermetically sealed metal can packages either (36 x 27 x 16 mm) for thru-hole mounting (see also pic 2).

KVG Quartz Crystal Technology GmbH is the leading German manufacturer of crystals, crystal filters and oscillators and has been one of the industry's technology leaders for high precision quartz crystal products for more than 65 years.



Pic 1 G-Sensitivity O-30-ULGS-100M



Pic 2 Hermetically Sealed Package