

## Calibration of Vibration Sensors

Item	Description
Factory calibration: Re-Calibration	<ul style="list-style-type: none"> <li>Suitability test: <ul style="list-style-type: none"> <li>BIAS voltage or</li> <li>Capacitance and insulating resistance</li> <li>Frequency sweep up to 50 kHz (depending on sensor type)</li> </ul> </li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020</li> <li>Calibration at reference point (depending on sensor type, 80 Hz; 20 m/s<sup>2</sup> rms standard)</li> </ul> <p>Documentation: Calibration data sheet (not traceable), factory calibration certificates are not accredited reports and are therefore not covered by EA MLA.</p>
Accredited calibration: Fixed point calibration medium frequency (5 Hz to 10 kHz)	<ul style="list-style-type: none"> <li>Suitability test: <ul style="list-style-type: none"> <li>BIAS voltage or</li> <li>Capacitance and insulating resistance</li> <li>Frequency sweep up to 50 kHz (depending on sensor type)</li> </ul> </li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020</li> <li>Calibration at reference point (depending on sensor type, 80 Hz; 20 m/s<sup>2</sup> rms standard)</li> <li>Calibration at 11 further frequency points at octave intervals from 5 Hz to 10 kHz</li> </ul> <p>Documentation: accredited calibration certificate according to DIN EN ISO/IEC 17025:2018</p>
Accredited calibration: Fixed point calibration high frequency (5 Hz to 20 kHz)	<ul style="list-style-type: none"> <li>Suitability test: <ul style="list-style-type: none"> <li>BIAS voltage or</li> <li>Capacitance and insulating resistance</li> <li>Frequency sweep up to 50 kHz (depending on sensor type)</li> </ul> </li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020</li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020Calibration at reference point (depending on sensor type, 80 Hz; 20 m/s<sup>2</sup> rms standard)</li> <li>Calibration at 14 further frequency points at octave intervals from 5 Hz to 20 kHz</li> </ul> <p>Documentation: accredited calibration certificate according to DIN EN ISO/IEC 17025:2018</p>
Accredited calibration: Fixed point calibration low frequency (1 Hz to 160 Hz)	<ul style="list-style-type: none"> <li>Determining the calibration capability: <ul style="list-style-type: none"> <li>BIAS voltage or</li> <li>Capacitance and insulating resistance</li> <li>Frequency sweep up to 50 kHz (depending on sensor type)</li> </ul> </li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020</li> <li>Calibration at reference point (depending on sensor type, 16 Hz; 10 m/s<sup>2</sup> rms standard)</li> <li>Calibration at 9 further frequency points at octave intervals from 1 Hz to 160 Hz</li> </ul> <p>Documentation: accredited calibration certificate according to DIN EN ISO/IEC 17025:2018</p>



Item	Description
Accredited calibration: Fixed point calibration KST94 (70 Hz to 5 kHz)	<ul style="list-style-type: none"> <li>Suitability test: <ul style="list-style-type: none"> <li>BIAS voltage</li> <li>Frequency sweep up to 10 kHz</li> </ul> </li> <li>Calibration method according to DIN ISO 16063-21:2016 / DKD-R 3-1 Bl. 3:2020</li> <li>Calibration at reference point (160 Hz; 1 m/s<sup>2</sup> rms)</li> <li>Calibration at 7 further frequency points at octave intervals from 70 Hz to 5 kHz</li> </ul> <p>Documentation: accredited calibration certificate according to DIN EN ISO/IEC 17025:2018</p>
Option TS and TF (very low frequency)	<p>Additional frequency points for fixed point calibration low frequency from 0.2 Hz to 1 Hz:</p> <ul style="list-style-type: none"> <li>Standard (TS): 0.2 / 0.4 / 0.8 Hz</li> <li>Option F (TF): 0.2 / 0.25 / 0.315 / 0.4 / 0.5 / 0.63 Hz / 0.8 Hz</li> </ul>
Option F (fine)	<p>Calibration at further frequency points at third octave intervals:</p> <ul style="list-style-type: none"> <li>5 Hz to 10 kHz: 34 points total</li> <li>5 Hz to 20 kHz: 37 points total</li> <li>1 Hz to 160 Hz: 23 points total (without option T!)</li> <li>Fixed point calibration KST94: 20 points total</li> </ul>
Option P (reference point)	<p>Selection of another reference point, possible points are: 8 / 16 / 80 / 100 / 160 Hz</p>
Option R1 (Additional conformity check according to decision rule 1)	<p>Additional conformity check according to data sheet for accredited calibration certificates according to decision rule 1: Consideration of measurement uncertainty Conformity check for (if specified):</p> <ul style="list-style-type: none"> <li>Sensitivity at reference point</li> <li>Lower 5 % / 10 % / 3 dB frequency limit</li> <li>Upper 5% / 10 % / 3 dB frequency limit</li> </ul>
Option R2 (Additional conformity check according to decision rule 2)	<p>Additional conformity check according to data sheet for accredited calibration certificates according to decision rule 2: Without consideration of measurement uncertainty Conformity check for (if specified):</p> <ul style="list-style-type: none"> <li>Sensitivity at reference point</li> <li>Lower 5 % / 10 % / 3 dB frequency limit</li> <li>Upper 5% / 10 % / 3 dB frequency limit</li> </ul>
Option Q	<p>Determination of transverse sensitivity at 40 Hz / 10 m/s<sup>2</sup> rms Option for Factory calibration: Re-calibration only</p>
Option Ax	<p>Calibration at amplitude x according to customer specification as far as technically possible</p>

## Notes:

- Calibration only after prior feasibility check (regarding coupling, mounting threads, possible adapters, signal output and signal conditioning).
- Calibration adapters can increase the test weight beyond the permitted ranges, making calibration in the desired range impossible.
- For third-party sensors, cables with BNC connector and signal conditioning (AC voltage output) must be provided.
- The mean value and the standard deviation are performed by 10 recorded measured values, whereby 10 periods of the signal are evaluated for each measured value.
- Conformity test: according to data sheet (reference point and upper frequency limits), other specifications on request.
- The factory calibration is not an accredited calibration and therefore not traceable. Factory calibration certificates are not accredited reports and are therefore not covered by EA MLA.
- We do not offer resale or volume discounts on calibration services.

**Overview of Frequency Points**

	<b>Medium and high frequency</b>	<b>High frequency</b>
Standard	5 / 10 / 20 / 40 / 80 / 160 / 315 / 630 / 1250 / 2500 / 5000 / 10000 Hz	12500 / 16000 / 20000 Hz
Fine	5/6.3/8/10/12.5/16/20/25/31.5/40/50/63/80/100/125/160/200/250/315/400/500/630/800/1000/1250/1600/2000/2500/3150/4000/5000/6300/8000/10000 Hz	12500 / 16000 / 20000 Hz

	<b>Very low frequency (option T)</b>	<b>Low frequency</b>
Standard	0.2 / 0.4 / 0.8 Hz	1 / 1.6 / 3.15 / 6.3 / 12.5 / 25 / 50 / 100 / 160 Hz
Fine	0.2 / 0.25 / 0.315 / 0.4 / 0.5 / 0.63 / 0.8 Hz	1/1.25/1.6/2/2.5/3.15/4/5/6.3/8/10/12,5/16/20/25/31.5/40/50/63/80/100/125/160 Hz

	<b>Calibration KST94</b>
Standard	70 / 80 / 160 / 315 / 630 / 1250 / 2500 / 5000 Hz
Fine	70/80/100/125/160/200/250/315/400/500/630/800/1000/1250/1601/2000/2500/3145/4000/5000 Hz