



Price List 2009 Calibration Service – Vibration –
Calibration of sensors, signal conditioners, measuring systems and calibrators used in vibration
 by Calibration Laboratory DKD-K-27801

Type	Extent of Calibration	EUR
1. Vibration sensor 1 axis; sine calibration: Calibration of transfer coefficient (sensitivity) from Charge, ICP, Voltage, Capacitive - or PiezoResistive acceleration-, velocity and stroke sensors with sine excitation, preferably in octave steps (at 11 fixed frequencies) in the standard frequency range: 0,2 Hz to 160 Hz up to max. 900 gram, 5 Hz to 5 kHz up to max. 500 gram, 10 Hz to 10 kHz or 10 Hz to 20 kHz up to max. 200 gram. Calibrations in a customer specified frequency range between 0,2 Hz to 20 kHz additional option-EF.		
S-A-1-11-D	Calibration, DKD calibration certificate	167
S-A-1-11-W	Calibration, factory calibration certificate	142
Options (with additional costs)		
-EF	Calibration with overstepping the standard frequency range	56
-31	Calibration at 31 fixed frequencies, preferably third-octave steps	42
-x	Calibration at each additional working point (acceleration, frequency)	5
-F	Logging of amplitude frequency response as continuity test with fine stepping of the frequency (Sweep)	21
-PH	Recording of the phase shift angle (only in connection with DKD calibration certificate)	32
S-E(PR)-1-B	Electrical testing of PiezoResistive sensor, in connection with subsequent calibration	89
-conformity	Declaration of conformity: test for compliance of the measured parameters with manufacturer's specific.	15
2. Vibration sensor, 3 axis with sine excitation: Calibration of transfer coefficient (sensitivity) from Charge, ICP, Voltage, Capacitive - or PiezoResistive acceleration-, velocity and stroke sensors with sine excitation, preferably in octave steps (at 11 fixed frequencies) in standard frequency range: 0,2 Hz to 160 Hz up to max. 900 gram, 5 Hz to 5 kHz up to max. 500 gram, 10 Hz to 10 kHz up to max. 200 gram. Calibrations in a customer specified frequency range between 0,2 Hz and 20 kHz additional option-EF.		
S-A-3-11-D	Calibration, DKD calibration certificate	351
S-A-3-11-W	Calibration, factory calibration certificate	298
Options (with additional costs)		
-EF	Calibration with overstepping the standard frequency range	168
-31	Calibration at 31 fixed frequencies, preferably in third-octave steps	126
-x	Calibration at each additional working point (acceleration, frequency)	15
-F	Logging of amplitude frequency response as continuity test with fine stepping of the frequency (Sweep)	63
-PH	Recording of the phase shift angle (only in connection with DKD calibration certificate)	96
S-E(PR)-3-B	Electrical testing of a three axial PiezoResistive sensor, in connection with subsequent calibration	267
3. Vibration sensor 1 or 3 axis; Shock calibration: Calibration of transfer coefficient with shock excitation Charge, ICP, Voltage, Capacitive- or PiezoResistive acceleration sensors.		
S-ST-1-D	Calibration sensor mono axial, DKD calibration certificate	164
S-ST-1-W	Calibration sensor mono axial, factory calibration certificate	139
S-ST-3-D	Calibration sensor three axial, DKD calibration certificate	378
S-ST-3-W	Calibration sensor three axial, factory calibration certificate	321
4. Vibration Sensor, Reference Standard (S/BN) sine excitation: Calibration of transfer coefficient (sensitivity) with sine excitation with best possible measuring uncertainty of the DKD- laboratory from Charge, ICP, Voltage, Capacitive or PiezoResistive acceleration-, velocity and stroke sensors with sine excitation, preferably in third-octave steps (at 31 fixed frequencies) in the standard frequency range: 0,2 Hz to 160 Hz up to max. 900 gram, 5 Hz to 5 kHz, 10 Hz to 10 kHz or 10 Hz to 20 kHz up to max. 200 gram, including logging of amplitude frequency response as continuity test with fine stepping of the frequency (Sweep) or calibration in the customer specified frequency range between 0,2 Hz to 20 kHz including logging of amplitude frequency response as continuity test with fine stepping of the frequency (Sweep)		
S/BN-A-1-D(P)	Primary calibration, DKD calibration certificate	645
S/BN-A-1-D(S)	Secondary calibration, DKD calibration certificate	430
Options (with additional costs)		
-EF	Calibration with overstepping the standard frequency range	56
-PH	Recording of the phase shift angle	32
5. Geophones, Geophone measurement systems mono and 3 axis, sine calibration: Calibration of transfer coefficient (sensitivity) for a geophone or one measurement rang for geophone measuring systems at a frequency rang 0,2 Hz to 350 Hz up to max. 5 kg horizontal or 3,5 kg vertical at 20 fixed frequencies. Calibrations of higher weights on request		
S-V-1-20-D	Calibration, geophone 1 axis, DKD calibration certificate up to 80 Hz	265
S-V-1-20-W	Calibration, geophone 1 axis, factory calibration certificate	240
S-V-3-20-D	Calibration, geophone 3 axis, DKD calibration certificate up to 80 Hz	558
S-V-3-20-W	Calibration, geophone 3 axis, factory calibration certificate	503

Type	Extent of Calibration	EUR
6. Vibration Measuring System / Vibration meter single- (MK) or multi- (MKn) channel: calibration of the deviation of displayed measurement values with sine excitation, preferably in octave steps, (at 11 fixed frequencies) in the standard frequency range: 0,2 Hz to 160 Hz up to max. 900 gram, 5 Hz to 5 kHz up to max. 500 gram or 10 Hz to 10 kHz up to max. 200 gram, preferably on octave steps, included the test of the measuring range switch over, at one reference frequency. Calibration in the customer specified frequency range between 0,2 Hz and 20 kHz (see option-EF) preferably on octave steps, included the test of the measuring range switch over, at one reference frequency		
MK-A-1-11-D	Calibration, vibration measuring system one channel, DKD calibration certificate	194
MK-A-1-11-W	Calibration, vibration measuring system one channel, factory calibration certificate	165
MKn-A-n-11-D	Calibration, vibration measuring system multi- channel, DKD calibration certificate	174
MKn-A-n-11-W	Calibration, vibration measuring system multi- channel, factory calibration certificate	149
Options (with additional costs)		
-EF	Calibration with overstepping the standard frequency range	56
-31	Calibration at 31 fixed frequencies, preferably in third-octave steps	42
-F	Logging of amplitude frequency response as continuity test with fine stepping of the frequency (Sweep)	21
-PH	Recording of the phase shift angle (only in connection with DKD calibration certificate)	32
7. Vibration and Charge Calibrator: Calibration of one operating point: Vibration calibrator: vibration level, frequency and distortion factor Charge calibrator: charge, waveform and frequency		
K-A-1-D	Calibration, DKD calibration certificate	121
K-A-1-W	Calibration, factory calibration certificate	103
K-A-x-D(W)	each additional working point	20
8. Piezoelectric Force sensors (preloaded and not preloaded), mono - and tri-axial: Calibration of transfer coefficient (sensitivity) at three working points with shock or sine excitation		
S-F-K-1-W	Calibration mono-axial preloaded up to 90 N, factory calibration certificate	121
S-F-V-1-W	Calibration mono-axial preloaded up to 2 kN, factory calibration certificate	238
S-F-V-3-W	Calibration tri-axial preloaded up to 2 kN, factory calibration certificate	305
S-F-N-1-W	Calibration mono-axial not preloaded up to 2 kN, factory calibration certificate *	291
S-F-N-3-W	Calibration tri-axial not preloaded up to 2 kN, factory calibration certificate*	358
* in agreement with the customer, a calibration adaptor will be manufactured. In that case the calibration time can be more than 5 working days.		
9. Inclinomater single axis : calibration of the linearity in the measurement range -90°...0°...+90° at 10 working points with a measuring uncertainty of 0,1°		
S-N-1-10-W	Calibration, factory calibration certificate	150
S-N-1-X-W	Calibration of one additional working point	5
10. Impact hammers and impedance sensors, mono axial: Calibration of transfer coefficient at three working points with shock or sine excitation.		
S/II-A/F-1-W	Calibration impedance sensor, factory calibration certificate	295
S/IIH-F-1-W	Calibration impact hammer, factory calibration certificate	195
11. Signal Conditioner, measurement amplifier and supply unit for Sensors, Calibration of transfer coefficient of one measuring range of a Charge-, ICP, PiezoResistive or Voltage signal conditioner in the rated frequency range 0,2 Hz to 50 kHz at 20 fixed frequencies. Including checking a measuring rang changeover at one reference frequency		
SK-E-1-20-D	Calibration signal conditioner, single-channel, DKD calibration certificate	158
SK-E-1-20-W	Calibration signal conditioner, single-channel, factory calibration certificate	134
SK-E-2-20-D	Calibration signal conditioner, 2-channel, DKD calibration certificate	244
SK-E-2-20-W	Calibration signal conditioner, 2-channel, factory calibration certificate	208
SK-E-4-20-D	Calibration signal conditioner, 4-channel, DKD calibration certificate	392
SK-E-4-20-W	Calibration signal conditioner, 4-channel, factory calibration certificate	333
SK-E-n-20-D	Calibration signal conditioner, multi-channel (from 5. channel), DKD calibration certificate	57
SK-E-n-20-W	Calibration signal conditioner, multi-channel (from 5. channel), factory calibration certificate	48
Options (with additional costs)		
-F-PH	Calibration with logging of amplitude frequency response as continuity test and recording of the phase shift angle up to 20 kHz	32
12. calibration of cross sensitivity at accelerometers: at on frequency (8 Hz, 16 Hz or 32 Hz) of one sensor axis for sensor characterization		
Q1-1-W	calibration of cross sensitivity, one sensor axis	88
13. options for all calibration in the vibration		
- conformity	Conformity: checking the conformance with manufacturer information	15
14. calibration of sensitivity for sensors at different temperatures or in magnetic field as an Option for sensor characterization on request		



Example of the type key:

S	-A	-1	-11	-D
sensor	acceleration	1 channel	11 fixed frequencies	DKD certificate

Measuring uncertainties according to GUM for the quantity to be measured “Acceleration” on the reference point with sine excitation:

DKD-Calibration: from 0.25 % with Primary- and from 0.5 % with Secondary Calibration
 Factory Calibration: ≥ 1.5 %

Calibration Time: About 5 working days after we receive the order and the devices to test. Better times after agreement.

Price: Net Price plus tax. For each shipment (up to 20 kg volume weight), a shipping and handling lump sum of 19 EUR (Germany) (incl. standard insurance of 2.500 EUR) will be added. For higher weights / insurance costs or other countries we add the real costs. For single orders of 5 or more Sensors of the same type we will give a discount of 5 % on the net price. For annually 20 or more calibrations, special contracts can be agreed. For devices not able for calibration we count our costs, but at least 50 EUR plus shipping.

Remark: Please send all sensors and/or measuring devices including parts like connecting cables, adaptors and documentation to SPEKTRA. For the making of requested adaptors or for additional costs to make the device able for calibration we keep the right to increase the price after arrangement with you.

Further calibration services at SPEKTRA:

- Calibration of acoustic measurement technique (sound level meters, calibrators, pistonphones, microphones)
- Recalibration of calibration systems
- Calibration of vibration control systems by SPEKTRA or at customer side
- Calibration of laser vibrometer
- Calibration of static slope sensors
- Calibration of preloaded force sensors