

Calibrating Your Transducers

m+p SensCal

Regular transducer calibration is an essential requirement for maintaining the accuracy, reliability and repeatability of the results obtained from a measurement system. m+p international's new m+p SensCal program provides a quick and simple process for calibrating accelerometers (piezo-electric with charge output or IEPE, piezo-resistive, capacitive) in your laboratory, as well as velocity or displacement transducers.

We offer the m+p SensCal program as an add-on to a wider vibration test system for checking its transducers without any additional acquisition hardware; or it can be utilized as a standalone calibration system.

m+p SensCal uses a reference accelerometer and shaker system to measure the sensitivity of the sensor-under-test (SUT) to swept sine vibration over standard or user-defined frequency and acceleration ranges. The results (amplitude and phase) are automatically recorded and output to a calibration certificate for later reference.

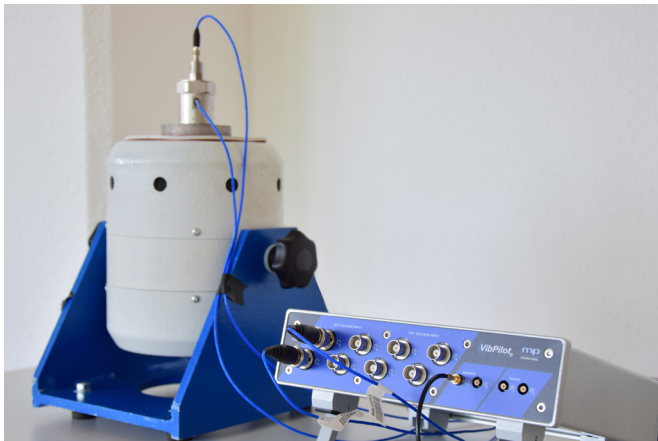
Precise calibration of accelerometers, displacement and velocity transducers

Cost- and time-saving in your own lab

No additional acquisition hardware required

Detailed calibration certificate

Early detection of incorrect transducer sensitivities



m+p SensCal system with m+p VibPilot front-end

A complete m+p SensCal system consists of:

- shaker
- reference accelerometer
- m+p international measurement front-end (m+p VibPilot, m+p VibRunner, m+p VibMobile)
- m+p VibControl (ver. 2.13+) vibration control software with sine excitation and m+p SensCal

The reference transducer is mounted on the shaker, and the SUT is bolted directly to it, ensuring that the vibration experienced by both sensors is identical.

m+p SensCal is simple to operate within m+p VibControl. On-screen set-up enables the user to select a stored profile which defines the frequency range and acceleration amplitude for the test. Additional data specific to the sensor and test, such as serial number, operator, etc., can also be entered. It is possible to store several test profiles to calibrate the transducer with different

amplitudes. Some customers use the tool to calibrate their transducers at the highest possible acceleration. At the conclusion of the test, comprehensive calibration data can be displayed including graphs showing the deviation of amplitude and phase response of the SUT from that of the reference accelerometer.

After the calculation process, m+p SensCal creates a detailed calibration certificate with company logo in Microsoft® Word. It shows, among other things, the sensitivity and the transmissibility with phase information.

Profile settings

Parameters

Description: calib002_m+p_Ref_U353B33_20-2000Hz

Testdefinition: calib002_m+p_Ref_U353B33_20-2000Hz.tsn

Reference channel: 1

Response channels: 2, 3, 4

Reference frequency: 100 Hz

Reference

Frequency	Amplitude Lower limit	Amplitude Upper limit	Phase Lower limit	Phase Upper limit	Slope
10 Hz	-1 dB	1 dB	-10 °	10 °	Log.
1000 Hz	-1 dB	1 dB	-10 °	10 °	Log.

Shaker

Manufacturer: The Modal Shop

Model: K2007E01

Serial no.: 898

Date of calibration:

Calibration mark:

Reference standard

Manufacturer: PCB

Model: U353B33

Serial no.: 77493

Date of calibration: 2018-XX-XX

Calibration mark:

Calibration system

Manufacturer: m+p international

Model: VibPilot-E

Serial no.: B130234

Date of calibration: 01.10.2016

Calibration mark:

OK Cancel

Calibration is ready.

Start calibration

m+p SensCal settings

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1. Calibration certificate no. 12

Device under test: Accelerometer
Manufacturer: PCB
Model: 352A21/NC
Serial no.: LW136923
Customer: m+p international
Order no.: 123456
Remarks:

2. Components of the measuring device

	Shaker	Reference standard	Calibration system
Manufacturer:	The Modal Shop	PCB	m+p international
Model:	K2007E01	U353B33	VibPilot
Serial no.:	898	77493	B130234
Date of calibration:	-	2018-XX-XX	01.10.2016
Calibration mark:	-	-	-

3. Calibration method

This calibration procedure is carried out using a comparison measurement which compares the values of a master sensor with those of the item to calibrate. Both transducers are mounted on a shaker and are excited by a sinusoidal acceleration signal.

4. Information on calibration

Date of calibration: 12.12.2016
Ambient temperature: 20 °C
Relative humidity: 50 %
Axis: Z
Mount: Wax
Cable length: 3 m
Mass: 0,2 gm

5. Determination of the transfer coefficient

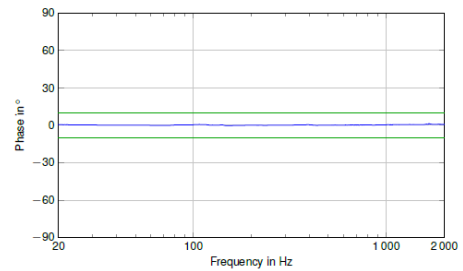
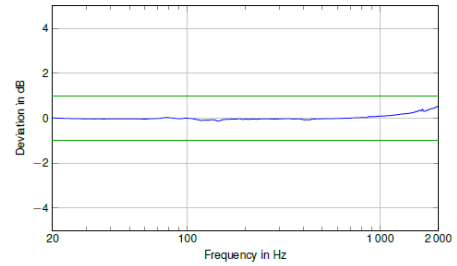
Frequency: 100 Hz
Acceleration (Peak): 1,999 g pk (19,61 m/s² pk)
Sensitivity: 10,09 mV/g (1,029 mV/(m/s²))

Person: Artur Hofmann Signature: _____

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6. Charts



Calibration certificate with your company logo



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