

CS18 HF

Calibration System High-Frequency



SE-09
HF Vibration Exciter
with included
Reference Standard

Application

- Secondary calibration according to **ISO 16063-21** (comparison method) of charge type, ICP[®], voltage, capacitive and piezo-resistive sensors for acceleration, velocity and distance, with Sine excitation with high accuracy
- Secondary calibration of **reference standards**
- **Resonant frequency search** up to 50 kHz
- Calibration of **vibration meters**
- Calibration of **vibration calibrators**

Range of Use

- **Certified calibration laboratories**
- Departments of **measuring instrument verification** in research and industry (automotive, aviation, space, military)
- **Quality assurance** in sensor manufacturing
- **National metrological laboratories** (with the optional extra 'Primus' as a Primary Calibration System CS18P HF)

Features

- **Traceable** to Physikalisch Technische Bundesanstalt (**PTB**) Braunschweig by the accredited SPEKTRA Calibration Laboratory D-K-15183-01-00 (**DAkkS Calibration Certific.**)
- **Calibration of sensors** with/without amplifiers, measurement instruments with own indication by applying defined acceleration signals
- **Calibration of calibrators** by exact measurement of vibration quantities with an additional accelerometer
- **Frequency range 5 Hz ... 20 kHz**
- **Sensors with mass up to 200 gram**
- **Repeatability** under identical conditions less than 0.1 % up to 5 kHz, otherwise less than 0.5 %
- Air-bearing **high-frequency vibration exciter** with **internal reference standard accelerometer**
- **Max. acceleration** without DUT: 20 g_n
- **Upgradeable** to a combined Sine calibration system, e.g. type CS18 HF / VLF or CS18P HF
- **Including single-ended reference standard** for the calibration of vibration calibrators



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Components

- Vibration control system **SRS-35**, SPEKTRA
- Software CS18 HF with operation modes: sensor calibration, measurement, supply
- Power amplifier **PA 14-500**
- Air-bearing high-frequency vibration exciter **SE-09** with heavy base plate **M**
- Reference standard transducer **BN-09**, integrated in vibration exciter **SE-09**
- **Single-ended reference standard** for the calibration of calibrators
- Standard-PC

Specification

CS18 HF with vibration exciter SE-09

in the frequency range 5 Hz ... 20 kHz for sensor mass up to 200 gram (DUT)¹⁾

for environmental conditions: temperature 23°C (± 2°C) and relative humidity 30 % ... 75 %

Frequency Range		Sensor Mass DUT Up to	Expanded Measurement Uncertainty ²⁾ Amount ³⁾ / Phase ⁴⁾	Working Range (peak value)		
from	to			Minimum	Maximum ⁵⁾ (Displacement, Velocity, Acceleration)	Maximum ⁶⁾ (Displacement, Velocity, Acceleration)
5 Hz	< 10 Hz	200 gram	1,0 % / 1,0°	1,0 m/s ²	5 Hz .. 12 Hz: 4 mm	5 Hz .. 12 Hz: 4 mm
10 Hz	< 20 Hz		0,7 % / 0,7°			
20 Hz	1.000 Hz		0,5 % / 0,7°			
> 1.000 Hz	5.000 Hz	50 gram	0,7 % / 0,7°		12 Hz .. 53 Hz: 0,3 m/s	12 Hz .. 106 Hz: 0,3 m/s
> 5.000 Hz	10.000 Hz		1,5 % / 1,0°			
> 10.000 Hz	15.000 Hz		2,0 % / 2,0°			
> 15.000 Hz	20.000 Hz		3,0 % / 3,0°			
Reference frequency 80 Hz, 100 Hz, 160 Hz		200 gram	0,5 % / 0,7°	53 Hz .. 20 kHz: 100 m/s²	106 Hz .. 20 kHz: 200 m/s²	

¹⁾ Specifications for CS18 HF with other vibration exciters on request

²⁾ Determined according to GUM (ISO Guide to the expression of uncertainty in measurement, 1995) with k = 2 (coverage factor) for the best possible DUT (other devices that are not as ideal have to be evaluated with individual additions)

³⁾ Valid for electrical sensor signals ≥ (1 mV or 1 pC)

⁴⁾ Only in combination with optional extra PHASE

⁵⁾ Maximum acceleration for maximum payload (DUT); higher excitations possible according to datasheet SE-09

⁶⁾ Maximum acceleration without any payload; higher excitations possible according to datasheet SE-09

For the advanced technical data, please see data sheet for the SE-09

Options for calibration systems: see leaflet CS18-extras