

CS18P HF

Primary Calibration System High-Frequency



Primary
Calibration of
- Reference Standards
- Laser Vibrometers



Applications

- **Primary calibration** of vibration sensors, calibrators and meters with lowest measurement uncertainty according to **ISO 16063-11** (Primary calibration using method 3)
- **Primary calibration** of laser vibrometers and reference laser vibrometers according to **ISO 16063-41**
- **Primary calibration** of **reference standard transducers**
- **Resonant frequency search** up to 50 kHz

Range of Use

- **National metrological laboratories** as highest metrological authorities
- **Certified calibration laboratories** with outstanding quality demands
- **Departments of measuring instrument verification** in research and industry
- **Quality assurance** in sensor manufacturing

Features

- **Traceable** to Physikalisch Technische Bundes-anstalt (**PTB**) Braunschweig by the accredited SPEKTRA Calibration Laboratory D-K-15183-01-00 (**DAKKS Calibration Certificate**), NIST (MRA) ...
- **Calibration** of **sensors** with / without measuring amplifier, **measuring systems** with indication of their own by applying of determinate acceleration signals
- **Calibration** of **calibrators** by measurement with ultra-high precision
- **Frequency range** 5 Hz ... 20 kHz (... 50 kHz)
- **Sensors with mass up to 200 gram**
- **Digital laser vibrometer** as primary reference standard
- Application of an **air-bearing high-frequency vibration exciter** with internal reference standard
- Maximum acceleration 40 g_n
- Additionally applicable for **secondary calibrations** according to ISO 16063-21 by using integrated **secondary reference standard**
- **Upgradeable** to combined calibration system CS18P VLF / HF

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Components

- Precision measuring and control system **SRS-35**, SPEKTRA
- Software CS18 HF with operation modes: sensor calibration, measurement, supply, sweep
- Power amplifier **PA 14-500**
- Air bearing vibration exciter **SE-09** with base plate **M**
- All-digital Polytec laser vibrometer **PLV-01** as **primary reference standard**
- **Prism** for the calibration of laser vibrometers
- Vibration isolator **VI-01** for laser vibrometer PLV-02
- **BN-09** as secondary reference standard, integrated in exciter SE-09
- **Single-ended reference standard** for the calibration of calibrators

Specifications of CS18P HF (Primary Calibration) at 23°C (± 2°C) and relative humidity 30 % ... 75 %

Frequency Range		Sensor Mass DUT horizontal / vertical up to	Expanded Measurement Uncertainty ²⁾		Working Range (peak value)		
from	to		Amount ³⁾ / Phase ¹⁾ <small>Sensors and Laser Vibrometers with analogue Signal Output</small>	Display Deviation <small>Ref. Laser Vibrometer</small>	Minimum	Maximum ⁴⁾ <small>(Displacement, Velocity, Acceleration)</small>	Maximum ⁵⁾ <small>(Displacement, Velocity, Acceleration)</small>
5 Hz	< 20 Hz	200 gram	0.5 % / 0.5°	0.2 %	0.1 m/s ²	5 Hz .. 12 Hz: 4 mm	5 Hz .. 12 Hz: 4 mm
20 Hz	1,000 Hz		0.3 % / 0.5°				
> 1,000 Hz	5,000 Hz		0.5 % / 0.5°				
> 5,000 Hz	10,000 Hz	50 gram	1.0 % / 1.0°	0.3 %		12 Hz .. 53 Hz: 0.3 m/s	12 Hz .. 106 Hz: 0.3 m/s
> 10,000 Hz	15,000 Hz		2.0 % / 2.0°	0.4 %			
> 15,000 Hz	20,000 Hz		2.5 % / 3.0°	0.5 %			
Reference Frequency 80 Hz, 100 Hz, 160 Hz		200 gram	0.3 % / 0.5°	0.2 %	10 m/s ²	53 Hz .. 20 kHz: 100 m/s²	106 Hz .. 20 kHz: 200 m/s²

Specifications of CS18P HF (Secondary Calibration)

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		0.7 % / 0.7°				
> 5,000 Hz	10,000 Hz	50 gram	1.5 % / 1.0°			12 Hz .. 53 Hz: 0.3 m/s	12 Hz .. 106 Hz: 0.3 m/s
> 10,000 Hz	15,000 Hz		2.0 % / 2.0°			53 Hz .. 20 kHz: 100 m/s²	106 Hz .. 20 kHz: 200 m/s²
> 15,000 Hz	20,000 Hz		3.0 % / 3.0°				
Reference Frequency 80 Hz, 100 Hz, 160 Hz		200 gram	0.5 % / 0.7°	10 m/s ²			

¹⁾ 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)

²⁾ Only in combination with optional extra PHASE

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

⁴⁾ Maximum acceleration for maximum payload (DUT); higher excitations possible according to datasheet SE-09

⁵⁾ Maximum acceleration without any payload; higher excitations possible according to datasheet SE-09

Options for calibration systems

-TABLE block made of sand stone for proper installation and utilization of the system