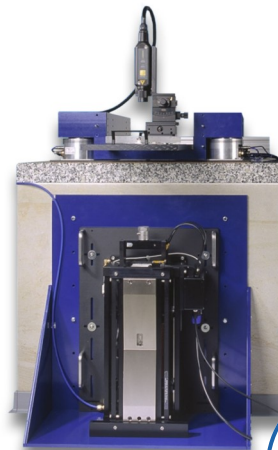
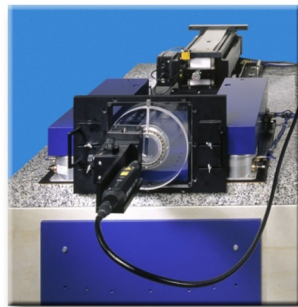


# CS18P VLF

Primary Calibration System Very-Low-Frequency



Primary  
Calibration of  
- Reference Standards  
- Laser Vibrometers

## Applications

- **Primary calibration** of vibration sensors, calibrators and measurement systems with very high quality and performance according to **ISO 16063-11** (Primary Calibration, method 3)
- **Primary calibration** of laser vibrometers and reference laser vibrometers performance to **ISO 16063-41**
- **Primary calibration of reference standards**
- **Resonant frequency search** from 10 to 200 Hz
- Calibration of **vibration meters**
- Calibration of **vibration calibrators**
- Calibration of **seismic sensors**

## Range of Use

- **National metrology laboratories** as highest measurement authorities
- **Authorized calibration laboratories** (such as DAkkS-Labs in Germany)
- Departments for the **supervision of measuring instruments** in research and industries
- **Quality assurance** in sensor production

## Features

- **Traceable** to Physikalisch Technische Bundesanstalt (**PTB**) Braunschweig by the accredited SPEKTRA Calibration Laboratory D-K-15183-01-00 (**DAkkS Calibration Certificate**), NIST (MRA) ...
- **Calibration of sensors** with / without amplifiers, of measurement instruments with indication of their own by applying determinate acceleration signals
- **Calibration** of calibrators by exact measurement of definite vibration quantities
- **Air-bearing long stroke exciter** with electronic zero position control unit for full 100 mm peak to peak stroke application
- **Frequency range 0.2 Hz ... 160 Hz**,  
**Option -EF:** starting from 0.1 Hz
- **Sensor mass up to 900 gram**  
**Option -HL:** 5 kg horizontal / 3 kg vertical
- All **digital laser vibrometer** as primary reference standard
- Additionally applicable for **secondary calibrations** according to ISO 16063-21 by using integrated **secondary reference standard**
- **Upgradeable** to calibration systems, e.g. type CS18P VLF / HF

# CS18P VLF

## Primary Calibration System Very-Low-Frequency



### Components

- Precision measuring and control system **SRS-35**, SPEKTRA
- Software CS18P VLF with operation modes: sensor calibration, measurement, supply, sweep
- Electronic zero position controller **APS 0109**
- Power amplifier **APS 125**
- Air bearing long-stroke vibration exciter **APS 113AB** for up to 100 mm vibration displacement
- **Vertical Mounting Kit** for vertical excitation
- Digital laser vibrometer **PLV-01** as **primary reference standard**
- **Prism** for the calibration of laser vibrometers
- Vibration isolation **VI-02** for vibrometer PLV-02

**Specifications of CS18P VLF (Primary System)** at 23°C ( $\pm 2^\circ\text{C}$ ) and relative humidity 30 % ... 75 %

Frequency Range		Sensor Mass DUT horizontal / vertical up to	Expanded Measurement Uncertainty <sup>2)</sup>		Working Range (peak value)		
from	to		Amount <sup>3)</sup> / Phase <sup>1)</sup> <small>Sensors and Laser Vibrometers with analog Signal Output</small>	Amount Reference Laser Vibrometer	Minimum	Maximum <sup>4)</sup> <small>(Displacement, Velocity, Acceleration)</small>	Maximum <sup>5)</sup> <small>(Displacement, Velocity, Acceleration)</small>
0.2 Hz	< 0.4 Hz	900 gram	0.7 % / 0.7°	0.25 %	0.2 Hz .. 1.0 Hz: <b>0.04 m/s²</b>  1.0 Hz .. 160 Hz: <b>0.1 m/s²</b>	0.2 Hz .. 1.25 Hz: <b>50 mm</b>	0.2 Hz .. 1.25 Hz: <b>50 mm</b>
0.4 Hz	< 1 Hz		0.5 % / 0.5°			1.25 Hz .. 8.0 Hz: <b>0.4 m/s</b>	1.25 Hz .. 8.0 Hz: <b>0,4 m/s</b>
1 Hz	63 Hz		0.3 % / 0.5°			8 Hz .. 63 Hz: <b>20 m/s²</b>	8 Hz .. 63 Hz: <b>20 m/s²</b>
> 63 Hz	160 Hz		0.7 % / 0.7°			63 Hz .. 160 Hz: <b>10 m/s²</b>	63 Hz .. 160 Hz: <b>10 m/s²</b>
Ref. Frequency 8 Hz, 16 Hz			0.3 % / 0.5°				

### Specifications of CS18P VLF (Secondary System)

0.2 Hz	< 0.4 Hz	900 gram	1.5 % / 1.5°	-	0.2 Hz .. 1.0 Hz: <b>0.04 m/s²</b>	0.2 Hz .. 1.25 Hz: <b>50 mm</b>	0.2 Hz .. 1.25 Hz: <b>50 mm</b>
0.4 Hz	< 1 Hz		1.0 % / 1.5°			1.25 Hz .. 8.0 Hz: <b>0.4 m/s</b>	1.25 Hz .. 8.0 Hz: <b>0.4 m/s</b>
1 Hz	63 Hz		0.5 % / 0.7°			8 Hz .. 63 Hz: <b>20 m/s²</b>	8 Hz .. 63 Hz: <b>20 m/s²</b>
> 63 Hz	160 Hz		1.0 % / 1.0°			63 Hz .. 160 Hz: <b>10 m/s²</b>	63 Hz .. 160 Hz: <b>10 m/s²</b>
Ref. Frequency 8 Hz, 16 Hz			0.5 % / 0.7°				

<sup>1)</sup> Only in combination with optional extra PHASE

<sup>2)</sup> Determined according to GUM (ISO Guide to the expression of uncertainty in measurement) with  $k = 2$  (coverage factor)

<sup>3)</sup> Valid for electrical sensor signals  $\geq 1$  mV or 1 pC

<sup>4)</sup> Maximum acceleration for maximum payload (DUT)

<sup>5)</sup> Maximum acceleration without any payload (DUT)

### Options for calibration systems

- EF extended frequency range starting from 0,1 Hz
- HL higher payloads up to 5 kg in horizontal and 3 kg in vertical direction by means of an additional vibration exciter type APS 129 (SE-06).  
E.g. for calibration of seismometers or geophones
- TABLE block made of sand stone for proper installation and use of the system