

CS18 SPL

Calibration System Sound Pressure Level



Application

- Pressure chamber **secondary calibration** of measuring microphones acc. to **IEC 61094-5**
- Pressure chamber **secondary calibration** of sound level meters and sound level measuring chains according to **IEC 61672**
- Calibration of acoustic calibrators and pistonphones according to **IEC 60942**

Range of Use

- **Certified calibration laboratories**
- Departments of **measuring instrument verification** in research and industry, for example test laboratories in the automotive field or in the aviation and space industry
- **Quality assurance** in manufacturing of microphones, sound level meters and dosimeters

Features

- Reference standards **traceable** to Physikalisch Technische Bundesanstalt Braunschweig (PTB) by the accredited SPEKTRA Calibration Laboratory D-K-15183-01-00 (**DAkkS Calibration Certificate**)
- True **pressure chamber calibration** with an acoustic calibrator
- **Calibration** of measuring microphones (capacitor and electret microphones in the sizes 1", 1/2" and 1/4")
- **Supply** of a sound pressure level for the calibration of sound level meters and measuring chains
- **Calibration** of acoustic calibrators
- **Upgradeable** to a combined acoustical calibration system e.g. CS18 SPL / FF, CS18 SPL / SPL-VLF

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Components (standard)

- Vibration control system **SRS-35**, SPEKTRA with system cables
- Active electro-acoustic coupler **SQ-4.2** for ½" Microphones and ¼" adapter
- Microphone / Calibrator holder fixture
- High-End Power amplifier with system cables
- Working standard microphone / calibrator:
 - **GN-A-02** ½" condenser microphone **WS2P**, with ½" standard preamplifier and LS-Adapter
 - **BN-A-02** acoustic calibrator class **LS**, (94 dB / 1,000 Hz and 114 dB / 1,000 Hz)
- Measurement uncertainty budget for microphone calibration

Optional reference standards (recommended)

- **BN-A-01** ½" condenser microphone **LS2P**, with ½" VIC (Voltage Insert Calibration) preamplifier
- **BN-A-03** Acoustic calibrator pistonphone type **LS** (124 dB / 250 Hz)

Optional calibration adapter and equipment:

- Calibration adapters for surface microphones
- Active electro-acoustic coupler **SQ-4.1** for 1" Microphones

Specification of CS18 SPL for the environmental conditions in the laboratory:

Temperature: 23°C (± 2°C), Relative humidity: 30 % ... 75 %, Environmental noise: **LZeq < 60 dB**

Type of Sound Field: Pressure Chamber			
Sound Pressure Level	94 dB, adjustable in the range of 64 dB ... 124 dB ²⁾		
Device under test	Frequency range / Sound pressure level	Expanded Uncertainty ¹⁾ Microphone calibration	Expanded Uncertainty ¹⁾ Sound level meter calibration
Calibration Method 1: comparison with Reference Standard Microphone and acoustic coupler			
Measuring Microphones with ½" Diameter, Sound Level Meters and Measuring Chains	31.5 Hz ... 5,000 Hz	0.20 dB	0.25 dB
	> 5,000 Hz ... 10,000 Hz	0.25 dB	0.30 dB
	> 10,000 Hz ... 16,000 Hz	0.45 dB	0.50 dB
Calibration Method 2: absolute calibration with Calibrator / Pistonphone			
Measuring Microphones with ½" Diameter, Sound Level Meters and Measuring Chains	250 Hz / 124 dB	0.20 dB	0.25 dB
	1,000 Hz / 94 dB	0.20 dB	0.25 dB
	1,000 Hz / 114 dB	0.20 dB	0.25 dB
Calibration Method 3: substitution method with the Reference Calibrator / Pistonphone			
Calibrators and Pistonphones	250 Hz / 124 dB	Approved acoustic Calibrators / Pistonphones (class 1 and 2):	Other acoustic Calibrators and Pistonphones:
	1,000 Hz / 94 dB		
	1,000 Hz / 114 dB		

¹⁾ Determined according to GUM (ISO Guide to the expression of uncertainty in measurement, 1995) with k = 2 (coverage factor)

²⁾ 94 dB sound pressure level is the preferred value. The maximum sound pressure level depends on the frequency (see datasheet of coupler)

Option for calibration system:

CLP - Temperature, Hygrometer and Air Pressure sensor with all automatic data transfer to the calibration system. This option is especially recommended if the system is operated with the additional reference standards (pistonphone and calibrator), in order to get the correction factors depending on the environmental conditions.

All data are subject to change without notice

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