CS Q-LEAP™ primary vibration calibration system

with SE-09 high frequency exciter

	HERO™ vibration controller incl. signal conditioners
	CS Q-LEAP™ software • sine calibration • sine sweep • vibration measurement • vibration generation • more on demand
	SE-09 high-frequency vibration exciter incl. power amplifier
	all-digital laser vibrometer incl. vibration isolation and positioning device for the laser head

Typical DUTs

- PE transducer
- IEPE transducer
- VC transducer
- PR transducer
- digital transducer with SPI, I2C, DTI, and many other interfaces
- vibration meter
- laser vibrometer
- vibration calibrator

Standards

- ISO 16063 -11: Primary calibration vibration transdurcers
- ISO 16063 - 21: Calibration of vibration transducers by comparison to a reference transducer
- ISO 16063 - 41: Calibration of laser vibrometers
- ISO 17025: General requirements for the competence of testing and calibration laboratories

Key features

- Frequency range 5 Hz ... 20 kHz (50 kHz)
- Traceable to PTB (German National Metrology Laboratory)
- Calibration of vibration sensors, measurement systems and calibrators
- Integrated sensor database
- Integrated software for the generation of calibration certificates (print, PDF,…)
  Easy data exchange with applications like ERP systems or measuring equipment databases

Technical data

CS Q-LEAP™ primary vibration calibration system with SE-09 high frequency exciter

Frequency range	5 Hz…20 kHz (…50 kHz without traceability)
Acceleration, max.	400 m/s² (40 g_n) peak
Velocity, max.	0.5 m/s (19.7 inch/s)
Displacement, max.	7.5 mm (0.3 inch)
DUT Weight, max.	350 g (12 oz)
Sensitivity of ref. accel.	1 mV / m/s² (10 mV / g_n)
Laser vibrometer	Class 2 helium-neon laser with 632.81 nm wavelength; digital interface between laser and vibration controller

Frequency range		**Max. recommended payload**	**Expanded measurement uncertainty** [2]	
from	**to**		**magnitude** [3] **/ phase** [1]	**display deviation (ref. laser vibromter)**
5 Hz	< 20 Hz	200 g	0.5 % / 0.5°	0.2 %
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 g	1.0 % / 1.0°	0.3 %
> 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 frequencies: 80 Hz, 100 Hz, 160 Hz		200 g	0.3 % / 0.5°	0.2 %

Recommended excitation amplitudes (peak values)	
Minimum	0.1 m/s²
Maximum (high payload) [4] (displacement, velocity, acceleration)	**4 mm** in the range **5 Hz…12 Hz** **0.3 mm/s** in the range **12 Hz…53 Hz** **100 m/s²** in the range **53 Hz…40 kHz**
Maximum (low payload) [5] (displacement, velocity, acceleration)	**4 mm** in the range **5 Hz…12 Hz** **0.3 mm/s**in the range **12 Hz…106 Hz** **200 m/s²** in the range **106 Hz…20 kHz**

1) Requires software option for phase response measurements

2) Determined according to GUM (ISO Guide to the expression of uncertainty in measurement) with k = 2 (coverage factor). The measurement uncertainty is specified for the best possible device under test (DUT): „Nanometrics Trillium Compact" (plus its mounting adapter) in two configurations: first the DUT and secondly the DUT with additional dummy mass. Best uncertainty values only valid for symmetric centered mounting of the DUT and the mass with a center of gravity <80 mm at 35 kg above exciter table. Any other type of DUT can be calibrated. But they must meet the maximum payload limits given by the data sheet of the vibration exciter. Measurement uncertainties need to be determined individually, especially for frequencies above 20 Hz

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

4) Maximum vibration amplitude for maximum payload (DUT)

5) Maximum vibration amplitude without any payload (DUT)