

DIGITAL INDUSTRIES SOFTWARE

Simcenter Qsources Mid High Frequency Volume Source

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Product Information Sheet

Summary

The Simcenter Qsources hardware mid-high frequency source is a general use monopole volume acceleration source with internal reference sensors to measure mid- and high-frequency frequency response functions (FRFs). Automotive original equipment manufacturers (OEMs) use these acoustic monopole sources for dedicated investigations, such as transfer path analysis (TPA), airborne source quantification (ASQ) and other noise, vibration and harshness (NVH) related measurements and analyses.

BENEFITS

- Provides high-frequency monopole excitation
- Delivers omnidirectional and negligible diffraction
- Supports fast reciprocal FRF acquisition
- Enables frequency range of 150 to 10,000 Hz

FEATURES

- Integrated sound source strength sensor
- Modular tube length
- Reinforced lightweight driver housing
- Ø30mm noise emission nozzle
- Built-in protection electronics
- Matching positioning tool [Q-MHF-EPT optional]



These sources are also used by full vehicle NVH departments for validation of the high-frequency sound package of a vehicle body. Engineers appreciate the accuracy and speed with which the reciprocal transfer functions can be measured, which enables the follow-up of the sound package during the vehicle development program. A dedicated optional positioning tool facilitates an accurate and tool free installation, maintaining the omnidirectional performance. The negligible diffraction makes it an accurate omni-directional sound source. The reference sensor is integrated at the aperture of the nozzle and is used to accurately measure volume acceleration. The sensor is practically independent from the acoustic environment where the source is used. Component suppliers in the industry use these sources to investigate vibro-acoustic behavior of components such as engines, transmissions and air conditioning



units. The sound source level in combination with the frequency range makes this source a versatile measurement device designed to meet the needs of NVH research and development (R&D) departments.

The noise propagates through a flexible tube, which has a modular design, before it is emitted. The selection of tube length enables you to focus the energy in different bands. To support pass-by-noise

engineering, length size is available that allows you to measure acoustic FRFs from 150 to 10000 Hz.

For higher levels in the high-frequency band, the appropriate tube length can be chosen to enable significantly higher noise levels at frequencies over 5 kHz.

Sophisticated electronics are integrated in the source to protect the acoustic driver against excessive power, making the source a reliable and durable device. To facilitate the long-term reliable use of the source, Siemens PLM Software offers a sensitivity measurement service for the internal transducers, including a detailed performance check.

Application

- Airborne Source Quantification (ASQ)
- Transfer Path Analysis (TPA)
- Vibro-acoustic modal analysis (EMA)
- Statistical energy analysis (SEA)
- Vehicle/body airborne isolation
- Body panel and trim transmissibility

Physical specifications

- Diameter nozzle: Ø30 millimeters (mm)
- Tube length: 2, 4 and 6 meters
- Mass: 8 kilograms (kg)
- Sensor connector type: female 10 to 32
- Power cable connector: male banana
- Power cable length: 4 meters

Performance

- Frequency response sensor (± 2 dB): 150 to 10000 Hz

- Noise level@1meter semi-ff:95 decibel (dB)
- Q-MHF internal sensor type: Voltage
- Q-MHF-ICP® sensor includes IEPE signal

Supplied accessories

- User manual
- Flight case
- 2-meter extension tube
- 4-meter extension tube
- Sensitivity sheet sensor [mV/m³/s²]

Product requirements

- Simcenter Qsources measurement amplifier[Q-AMP230V/Q-AMP115V]
- Simcenter Testlab software MIMO FRF testing, spectral acquisition or similar

Options

- Headrest positioning tool [Q-MHF-EPT]
- IEPE type reference sensor [Q-MHF-ICP]
- Calibration service [Q-SR-SENS]

Simcenter Qsources structural and acoustic exciters

- Low-mid frequency volume source [Q-LMF]
- Mid-high frequency volume source [Q-MHF]
- High-frequency shaker [Q-HSH]
- Miniature shaker [Q-MSH]
- Thumper shaker [Q-TMP]
- Low-frequency monopole source [Q-MED]