

DIGITAL INDUSTRIES SOFTWARE

# Simcenter Qsources low frequency monopole source

Simcenter/Q-MED/2/20221109

## Product Information Sheet

### Summary

The Simcenter Qsources hardware low-frequency monopole source has been designed to measure vibro-acoustic transfer functions in and around vehicles.

The sound source level in combination with the frequency range makes this source a versatile measurement device designed to meet the needs of noise, vibration, and harshness (NVH) research and development departments.

## BENEFITS

- Provides 1 kHz monopole source
- Facilitates range noise transfer function from 30 to 1,000 Hz
- Enables frequency range acoustic modal analysis from 5 to 1,000 Hz
- Doesn't affect vibro-acoustic system-under-test
- Delivers fast reciprocal FRF Acquisition

## FEATURES

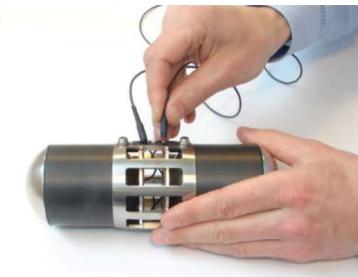
- Integrated sound source strength sensor
- High output-to-size ratio in the lowfrequency range
- Dual driver technology
- Compact omnidirectional design
- Built-in protection for electronics

The negligible diffraction makes it an accurate omnidirectional sound source up to 2,000 hertz (Hz). This source also allows you to measure typical vibroacoustic body noise transfer functions reciprocally, which is valuable information for vehicle body development. It can excite the passenger and trunk cavity to measure scaled acoustic transfer functions. These frequency response functions (FRFs) can be used to perform acoustic modal analysis. These sources are compatible with the latest standards for acoustic modal analysis, which propose multiple sources in the cavity without the disturbances associated with traditional low-frequency sources.

Another application of the measured FRFs is for indoor pass-by-noise engineering.

Acoustic frequency response functions between indoor microphone positions and microphone positions at dominant sound sources in and around the vehicle is acquired from 30 Hz up to 1,000 Hz. The reference sensor is integrated in the source and measures the volume displacement. The sensor is independent from the acoustic environment in which the source is used.

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



### Application

- Full vehicle FRF testing
- Acoustic modal analysis
- passenger
- cavity
- Vibro-acoustic body noise
- transfer
- functions
- Airborne source quantification (ASQ)
- Transfer path analysis (TPA)

### Physical specifications

- Diameter: Ø75 millimeters (mm)
- Length: 200 mm
- Mass: 1.9 kilograms (kg)
- Temperature sensitivity: 0.5 decibel(dB)/10° Centigrade (C)
- Sensor connector type: female 10-32
- Power cable connector type: male
- banana

### Performance

- Frequency response sensor ( $\pm 2$  dB): 5 to 1,000 Hz
- Sensor output: volume displacement
- Sensor type: Voltage
- Source input impedance: 7 Ohm nominal

### Supplied accessories

- User manual
- Power cable
- Flight case
- Sensitivity sheet sensor [mV/m<sup>3</sup>]
- Acoustic support foam



### Product requirements

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

### Options

- Sensitivity measurement [Q-SR-SENS]
- Simcenter Qsources structural and acoustic excitors
- Low-mid frequency volume source [Q-LMF]
- Mid-high frequency volume source [Q-MHF]
- Miniature volume source [Q-IND]
- High frequency shaker [Q-HSH]
- Miniature shaker [Q-MSH]
- Thumper shaker [Q-TMP]
- Low frequency monopole source [Q-MED]