

PRODUCT DATA

OmniPower Sound Source Type 4292-L

Sound source for room and building acoustics

OmniPower™ Sound Source Type 4292-L is an omnidirectional sound source that meets the requirements for airborne sound insulation and room acoustics measurements.

For most room and building acoustics measurements, the sound source must radiate sound evenly in all directions to give reproducible and reliable results; therefore, the relevant standards (such as ISO 16283 and ISO 3382) require the use of an omnidirectional sound source.

Combine the sound source with HBK 2755 Smart Power Amplifier and HBK 2255 Sound Level Meter with Building Acoustics Partner for a complete building acoustics testing system. Combine with DIRAC Room Acoustics Software Type 7841 for a powerful room acoustics measurement system.



Uses and features

Uses

- Room and building acoustics
- Measurement of:
 - Airborne sound insulation
 - Reverberation time
 - Room impulse responses
 - Open-plan speech privacy

Features

- High maximum sound power output: 122 dB
- Stable output over long periods of high-power usage
- Omnidirectional and conforming to national and international standards
- Lightweight and easily portable
- Robust and suitable for field use on building sites
- Flexible mounting options: tripod, suspension or floor-standing
- Wireless operation with HBK 2755 Smart Power Amplifier
- Part of a complete building acoustics system with HBK 2255 Sound Level Meter with Building Acoustics Partner
- Part of an advanced room acoustics system with DIRAC Room Acoustics Software Type 7841

The sound source

Architectural acoustics measurements place many demands on sound sources. Sources must meet the directivity requirements of the relevant standards, and produce continuous high sound pressure levels, consistently and without overheating. Often used on building sites, they must be rugged and robust, yet lightweight enough to be comfortably carried from room to room and up and down stairs.

Sound in all directions

Type 4292-L uses a cluster of 12 loudspeakers mounted on the 12 pentagonal faces of an icosidodecahedron. This configuration radiates sound evenly with a spherical distribution. All 12 speakers are connected in a series-parallel network to ensure both in-phase operation and an impedance that matches the power amplifier.

Consistent sound power

Modern buildings can include partitions with very effective sound insulation. Testing well-insulated partitions requires a powerful source that can transmit adequate sound levels into the receiving room. Powered by HBK 2755 Smart Power Amplifier, Type 4292-L can deliver a maximum sound power of 122 dB. This high-power output is also useful for room acoustics measurements in large venues, or in the presence of high background noise levels. The metal enclosure and efficient internal cooling of Type 4292-L ensures that high and stable output levels can be safely maintained for hours.

Portable

The entire assembly weighs only 8 kg, and its convenient handle does not measurably interfere with the sound field.

The power amplifier

HBK 2755 Smart Power Amplifier is designed specifically to power Type 4292-L during room and building acoustic field measurements. The amplifier has a powerful signal generator, preloaded with signals optimized for Type 4292-L for a range of frequency spans.

Designed for use

All connectors and the gain and signal generator controls are located on the front of HBK 2755 for easy access. The amplifier is compact, lightweight and robust, which makes it easy and safe to carry and transport to the measurement location.

Fig. 1 Easy access to all connectors and controls



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Wireless connectivity

HBK 2755 can be operated manually or controlled remotely over Wi-Fi®. The Building Acoustics Partner mobile app for HBK 2255 Sound Level Meter uses wireless connectivity to automatically configure and control HBK 2755 for sound insulation and reverberation time measurements, which ensures the optimal settings are used for every measurement.

Advanced applications

For advanced room acoustics measurements, HBK 2755 can be directly connected to a PC running DIRAC Room Acoustics Software Type 7841 via USB, or even operated asynchronously with stimuli from its integrated signal generator.

Fig. 2 Type 4292-L powered by HBK 2755 delivers the sound power required for sound insulation measurements



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Type 4292-L satisfies the requirements of room and building acoustics standards, including ISO 16283, ISO 10140 and ISO 3382 (see Fig. 3 through Fig. 5).

Frequency response

Fig. 3 shows the frequency response of OmniPower Sound Source Type 4292-L using HBK 2755 Smart Power Amplifier and its internal pink noise generator.

Directivity

Fig. 4 shows the maximum deviation from mean for ‘gliding’ 30° arc.

Directional response

Fig. 5 shows the directional response for the horizontal plane of Type 4292-L, measured in 1/3-octaves. Below 1 kHz there is no significant deviation from omni-directionality

Fig. 3 Frequency response for third-octave (left) and full-octave (right) sound power levels

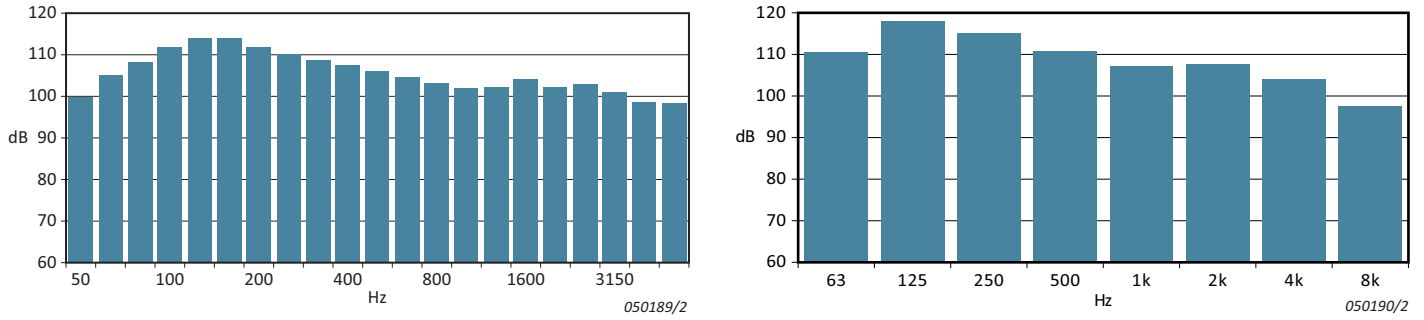


Fig. 4 Directivity for Type 4292-L according to ISO 16283 (left) and ISO 3382 (right). The shaded areas represent the tolerances for each standard

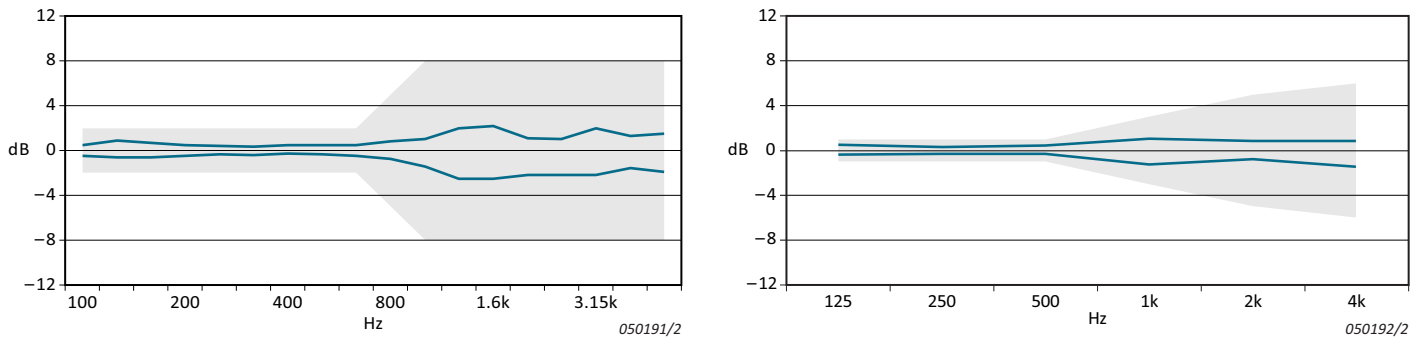
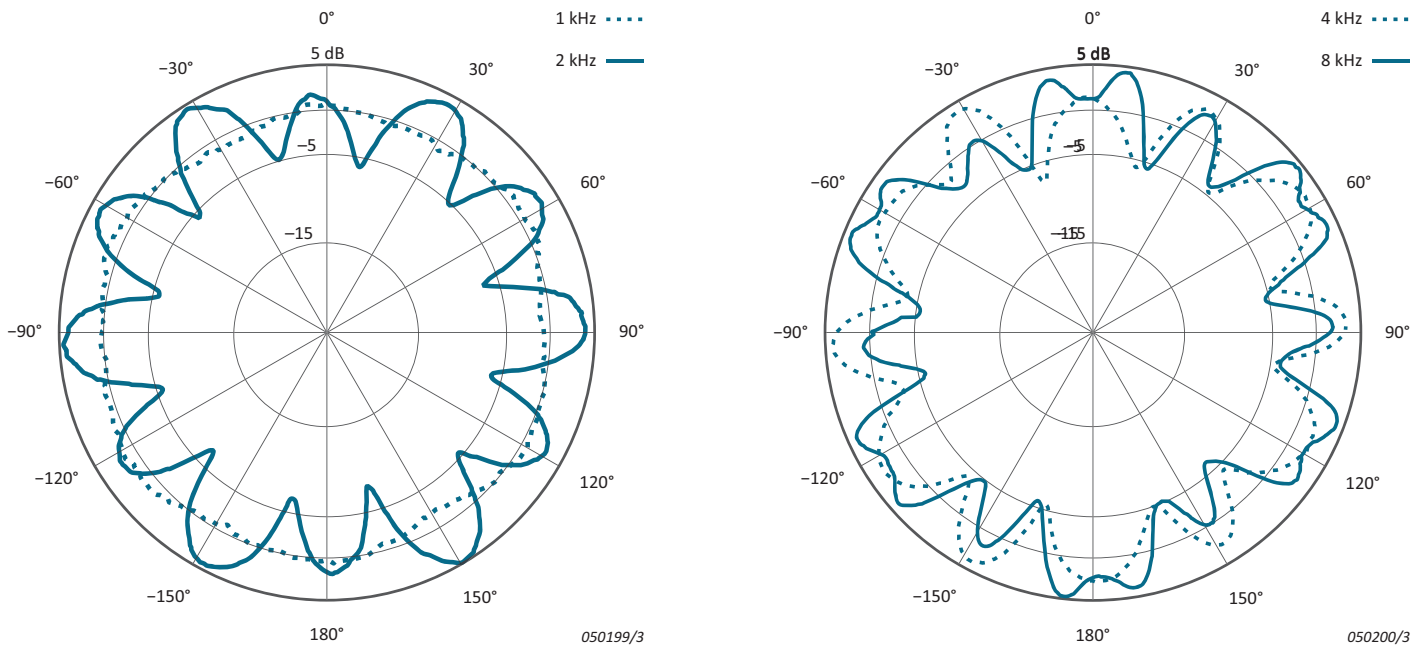


Fig. 5 Directional response at 1 and 2 kHz (left), and 4 and 8 kHz (right)



Carrying Bag KE-0462

Carrying Bag KE-0462 is included with the OmniPower sound source. Padded and with handles as well as a shoulder strap, it offers basic protection.

Flight Case KE-0449

An optional transportation and storage case, Flight Case KE-0449, is available for the OmniPower sound source. It is custom-designed, features a foam lining to protect Type 4292-L and has two handles for ease of carriage.

Carrying Case KE-0364

For the sound source's tripod, Carrying Case KE-0364, is equipped with both a shoulder strap and handles.



Compliance with environmental standards

Temperature	IEC/EN 60068-2-1: Environmental testing – Part 2-1: Tests – Test A: Cold IEC/EN 60068-2-2: Environmental testing – Part 2-2: Tests – Test B: Dry heat Operating Temperature: – 5 to +40 °C (+23 to 104 °F) Storage Temperature: – 25 to +70 °C (– 13 to +158 °F) IEC/EN 60068-2-14: Change of Temperature: – 10 to +40 °C (2 cycles, 1 °C/min.)
Humidity	IEC/EN 60068-2-78: Damp Heat: 93% RH (non-condensing at 40 °C (104 °F))
Mechanical	Non-operating: IEC/EN 60068-2-6: Vibration: 0.15 mm, 20 m/s ² , 10 – 500 Hz IEC/EN 60068-2-27: Shock: 1000 m/s ² Bump: 1000 bumps at 250 m/s ²

Specifications – OmniPower Sound Source Type 4292-L

STANDARDS	ISO 16283 ISO 10140 ISO 140 ISO 3382	DIN 52210 ASTM E2235 ASTM E336 ASTM E90
NOMINAL IMPEDANCE	6 Ω	
POWER HANDLING	300 W continuous broadband 1000 W short duration (duty cycle 1/10, on time 10 s)	
OPERATING FREQUENCY RANGE	50 – 5000 Hz (1/3-octave band centre frequencies)	
OPERATING TEMPERATURE	– 5 to +40 °C (+23 to 104 °F)	
CONNECTION	Four-pin Neutrik® speakON® socket, pins 1+ and 1–	
SOUND POWER LEVEL	With HBK 2755 Smart Power Amplifier (100 – 3150 Hz pink-noise signal) Broadband: 122 dB re 1 pW Spectral: Min. 100 dB/1 pW in each 1/3-octave band	
TRIPOD	Adjustable to give a speaker height of between 131 and 207 cm (51.6 and 81.5 in)	
FLOOR MOUNTING	Rubber feet provided for floor mounting	
DIAMETER	Speaker Enclosure: 39 cm (15.35 in)	
WEIGHT	Speaker Enclosure: 8.0 kg (17.6 lb) Tripod: 2.3 kg (5.1 lb)	

Ordering information

4292-L OmniPower Sound Source

includes:

- KE-0462: Carrying Bag for Type 4292-L
- UA-1690: Tripod

Accessories

KE-0449	Flight Case for Type 4292-L
KE-0364	Carrying Case for Type 4292-L Tripod (UA-1690)
AQ-0673	Speaker cable, connect Type 4292-L to HBK 2755 or equivalent, 10 m (32.8 ft)

Building acoustics systems

Type 4292-L is part of a complete measurement system, which includes sound sources and a sound level meter with an application for analysing and documenting results

2755	Smart Power Amplifier
2255-B-S	Sound Level Meter with Building Acoustics Partner Software
2255-B-SC	Sound Level Meter with Building Acoustics Partner Software and Sound Calibrator Type 4231
3207-A	Tapping Machine

Building acoustics kits

	SOUND SOURCES				SOUND LEVEL METERS		ACCESSORIES	
	Type 4292-L OmniPower Sound Source	AQ-0673 Speaker Cable, Type 4292-L to HBK 2755	HBK 2755 Smart Power Amplifier	Type 3207-A Tapping Machine with Battery Kit	HBK 2255-B-S Sound Level Meter with Building Acoustics Partner Software	HBK 2255-B-SC Sound Level Meter with Building Acoustics Partner Software and Sound Calibrator Type 4231	UA-0049 Rigid Microphone Extension for HBK 2255	KE-0003 Backpack for Building Acoustics Kit
2255-B-K01 HBK 2255 Building Acoustics Kit (Airborne)	✓	✓	✓		✓		✓	✓
2255-B-K02 HBK 2255 Building Acoustics Kit (Airborne and Impact)	✓	✓	✓	✓	✓		✓	✓
2255-B-KC1 HBK 2255 Building Acoustics Kit with Calibrator Type 4231 (Airborne)	✓	✓	✓			✓	✓	✓
2255-B-KC2 HBK 2255 Building Acoustics Kit with Calibrator Type 4231 (Airborne and Impact)	✓	✓	✓	✓		✓	✓	✓

Room acoustics systems

7841	DIRAC Room Acoustics Software
2755	Smart Power Amplifier

Calibration services

Note: Calibration services are performed by subcontractor

4292-CTF	Traceable Calibration of Type 4292-L
4292-CTI	Initial Traceable Calibration of Type 4292-L

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