

PRODUCT DATA

Sound Source Type 4224

Sound Source Type 4224 is specifically designed for building acoustics measurements such as sound reduction index, facade insulation, reverberation time and absorption. Type 4224 consists of a loudspeaker with a built-in power amplifier and noise generator, all contained in a robust, moulded cabinet with an integral handle. Type 4224 can deliver up to 115 dB sound power level from 100 Hz to 4 kHz when driven from its internal, rechargeable batteries or up to 118 dB sound power level when driven from a mains supply. In spite of its impressive performance, Type 4224 weighs only 18 kg (40 lb).

Uses

- Room and building acoustics
- Measurement of:
 - Reverberation time
 - Airborne sound insulation
 - Facade sound insulation

Features

- 115 dB sound power (battery driven) or 118 dB (mains driven) in the range of 100 Hz to 4 kHz
- Power amplifier and pink noise generator included
- Shaped spectra according to ASTM E597
- Diffuser for improved reproducibility of insulation measurements

- 0°, 30° or 45° inclination of cabinet for facade insulation measurements (as illustrated in the above photograph)



Sound Source Type 4224 is a portable, robust instrument capable of producing high noise levels. It is well suited for in situ room and building acoustics measurements.

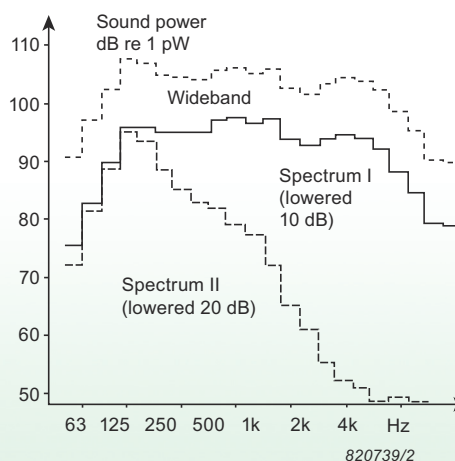
Type 4224 works with a variety of Brüel & Kjær instruments to form simple, easily portable setups or larger setups for automatic measurements. Sound insulation and reverberation time measurements can be made using, for example, Hand-held Analyzers Type 2250-J, 2270-J or 2270-K to form a powerful, portable and battery powered system.

In its wideband mode, the sound source produces a pink noise signal from 100 Hz to 4 kHz. To produce bands of noise, this signal can be fed to an external filter before amplification and reproduction by the loudspeaker. Two special filter shapes (I and II) can be selected in accordance with "Simple test method for measuring sound insulation" ASTM E597.

The output level can be attenuated in steps of 10 dB over a 40 dB range and varied continuously. Lamps on the control panel indicate when the delivered sound power exceeds the maximum for continuous use (Overload) and when it is within 3 dB of the overload condition (Upper 3 dB). There is no danger of overheating Type 4224; it is protected by a thermostat that turns off the instrument if it becomes too warm. Operation is disabled until the instrument cools down.

The conical diffuser (seen mounted in above photograph) can be snap-locked onto the front of the cabinet to improve sound insulation measurement reproducibility and to render the measured results less dependent on position and angle of inclination of the cabinet. When not in use the diffuser can be stowed in the instrument's protective cover.

Fig. 1 Sound power spectra with Type 4224 at full power for Wideband, Spectrum I, and Spectrum II. For clarity the spectrum curves have been lowered 10 dB and 20 dB



A Calibration Attachment is supplied with Type 4224 to provide a defined microphone position for a near-field measurement of the sound pressure level in front of the cabinet. The measurement is used for conformance to the ASTM E597. When not in use the attachment is held by a clip on the rear of the cabinet.

A "Remote Control" socket is provided to enable the Sound Source to be remotely switched on or off which is necessary in some set-ups for measuring reverberation time. This facility also enables the battery power to be used more efficiently during sound insulation measurements.

Type 4224 can be operated from its internal batteries, mains supply or an external DC supply. The operating time with the internal batteries is sufficient for most purposes. A battery charger is incorporated for recharging the internal batteries.

Fig. 2 View showing front panel of Type 4224



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Specifications – Sound Source Type 4224

SOUND POWER LEVEL

0 to 118 dB re 1 pW, mains operated
0 to 115 dB re 1 pW, battery operated
Variable attenuation from 0 to -40 dB in 10 dB steps. Continuously variable

SOUND POWER SPECTRUM

Wide band: 100 Hz to 4 kHz, +0 dB to -10 dB re: max. level
63 Hz to 10 kHz, +0 dB to -30 dB re: max. level
Spectrum I: Fulfills ASTM E 597
Spectrum II: Fulfills ASTM E 597

OVERLOAD INDICATION

Indicates max. sound power level (overload) and -3 dB re overload

PINK NOISE OUTPUT (to external filter input):

Pink Noise from 50 Hz to 10 kHz: 0.7 V RMS.
Max. Load: 500 Ω

EXT. GEN. INPUT (from external filter or external generator output):

115 mV to 2 V RMS corresponding to max. sound power level. Max. 5 V peak. Impedance 150 kΩ

SOUND POWER OFF

Stops the signal (to -60 dB) in less than 30 ms without transient overload

REMOTE CONTROL

Remote control of the Sound Power Off. TTL levels

POWER SUPPLY

Class II instrument complying with IEC 348.
Mains operated 100 V to 240 V, 50 Hz to 60 Hz.
Built in batteries, 10 NiCd cells. External Supply 12 to 17 V DC 6A

POWER CONSUMPTION

65 W at full load

BUILT-IN BATTERY CHARGER

Recharging Time using Mains Supply: 14 hours

OPERATING TIME WITH NiCd CELLS

Approx. ¼ of an hour at full power (-3 dB re overload). Approx. 4 hours and 8 hours at reduced power of -13 dB and -30 dB re overload respectively

DIMENSIONS AND WEIGHT

Height: 480 mm (19")
Width: 380 mm (15")
Depth: 242 mm (9.5")
Weight: 16 kg (40 lb)

ENVIRONMENT

Temperature Range: (for operation within specifications) +5°C to +40°C
Maximum Relative Humidity: 90%
Storage Temperature: -25°C to +70°C



Compliance with EMC Directive and Low Voltage Directive of the EU
Compliance with the EMC requirements of Australia and New Zealand

Accessories Included

Type 4224 Sound Source
Includes the following accessories:
• KF-0091: Plastic Cover
• UA-0745: Diffuser Cone

- DP-0401: Calibration attachment
- Mains Cable
- JP-0401: 4 pin plug
- JP-0802: 8 pin plug

- VF-0027: Fuse 1.25 A
- VF-0044: Fuse 6.3 A
- VF-0032: Fuse 0.63 A

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