

BRÜEL & KJÆR® Sound Level Meters

B&K 2245 Sound Level Meter with Product Noise Partner

B&K 2245 Sound Level Meter with Product Noise Partner is a complete solution for product noise testing using free-field sound pressure measurements.

Whether you are a complete novice, occasional user or an acoustics specialist – sometimes all you need is a simple sound level meter – one that provides you with reliable, accurate results without all the fuss. That is what B&K 2245 delivers.

This robust, class 1 sound level meter puts functionality, ease-of-use and versatility into the palm of your hand together with the reliability and confidence that is ensured with the Brüel & Kjær brand.

Together with the Product Noise Partner app, you can easily measure sound power levels for machinery and equipment such as household appliances in order to comply with national and international regulations and help promote a safe and healthier environment.



Uses and Features

Uses

- Easy acquisition and reporting of sound power levels in accordance to ISO standards
- Fulfilment of certain sound levels for CE compliance
- Determining noise emissions of machinery and equipment
- Determining sound pressure levels at workstations
- Determining sound pressure levels from toys
- Declaring product compliance with noise specifications for legislation or commendation
- Comparing noise emissions of machinery and equipment for benchmarking
- R&D and quality assurance testing of products
- Lab-based test and certification

Features

- Measurement of sound power using measurement methods that fulfil the ISO 3744 and ISO 3746 standards
- Measurement of sound pressure levels of toys (from close-to-the-ear toys, table-top or floor toys, and handheld toys) according to EN 71-1
- Single measurement range: 15.8 – 140.9 dB(A) from noise floor to maximum level
- Frequency range: 6 Hz – 20 kHz
- 16 GB internal storage
- PC software for measurement setup and template creation, as well as measurement control, data storage, viewing and reporting
- iOS-based mobile app for easy measurement control, metadata entry, and sound power level calculations
- Simplified user interface
- Automatic measurement transfer to network or USB storage media for backup and analysis
- Measurement annotation using photos, audio, text or video
- Calibrator auto-detection for easy calibration check
- Robust design for both indoor and outdoor measurements
- Windscreen auto-detection and compensation

A Complete Solution

B&K 2245 Sound Level Meter is a complete package solution that is designed with your specific needs in mind. Each purpose-built package includes:

- An ergonomically designed instrument for effortless usability, with dust- and water-resistant body that is rubberized for a secure grip and ensured compliance to IP 55
- Specific software: Both an iOS-based app for mobile measurement control, display and data transfer and a PC-based application for analysis and documentation

While the instrument can be used as a stand-alone noise measurement device, together with its specially-created mobile and PC apps, B&K 2245 brings an entirely new level of efficiency and control. Accurate noise measurement, analysis and documentation has never been so streamlined and simple.

Hassle-free Licencing

B&K 2245 licences are installed on the instrument and enabling measurement functions on the instrument and administering connections to licenced mobile apps and post-processing in the PC apps.

This means there are no licence files to install on the PC, and no dongles. Mobile and desktop apps can be freely downloaded and installed on any supported iOS mobile device and PC, and measurements made with the instrument can be easily and seamlessly edited by the desktop app on a PC without extra requirements.

Fig. 1 The complete solution: B&K 2245 Sound Level Meter and the Product Noise Partner app installed on a mobile device and PC



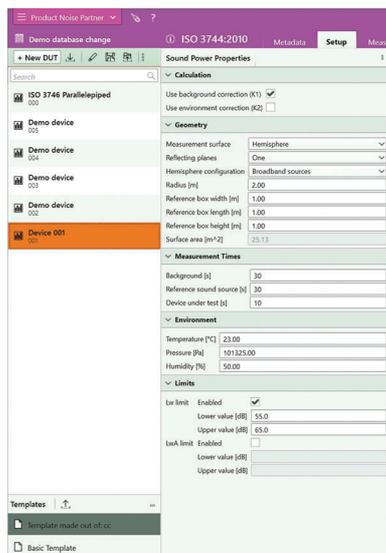
The Product Noise Partner App

The Product Noise Partner licence comes ready with everything you need to determine the noise emission of products using measurement methods that fulfil the ISO 3744, ISO 3746 and EN 71 standards. The user interface is designed specifically for the standard with a clear set of tasks that leads you through all the necessary steps to fulfil the requirements. Colour-coding gives you a quick overview on measurement status, and clear warnings let you know if information is missing or does not follow the requirements.

Set Up for One or More Product Tests

Using the PC software, one person can enter all metadata and measurement properties for a single device under test (DUT) or a range of DUTs, allowing test operators and analysts to repeat and compare measurements as needed.

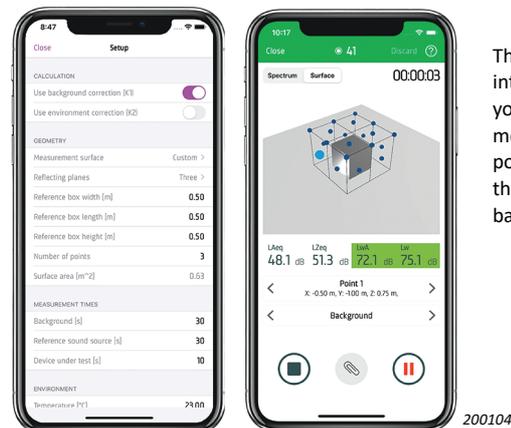
Fig. 2 Measurement properties that can be used once or saved as a template for future tests



Perform Guided Measurements via Mobile Device or PC
With a test or test template in hand, the test operator can then go step by step through a measurement using either the PC software or via a mobile device with the Product Noise Partner app downloaded.

The dedicated user interface provides the framework for determining, storing and reporting noise-emission quantities according to the standard in an easy-to-follow, task-based manner.

Fig. 3 Edit and control measurements directly from your mobile device



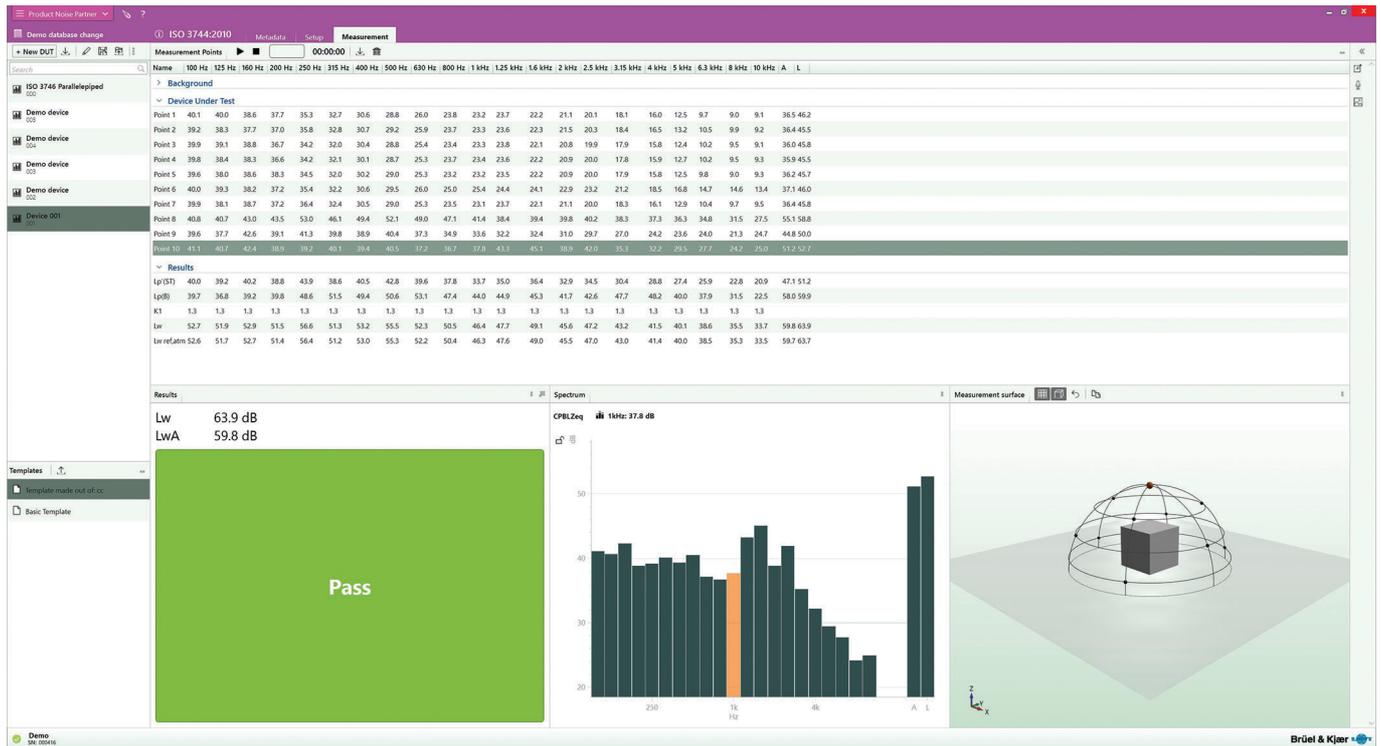
The user interface guides you through the measurement points for both the DUT and background

Transfer Data for Analysis and Reporting

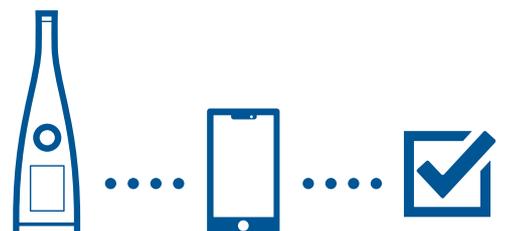
When you are done measuring with the mobile app, you can quickly and securely transfer data back to the PC. All annotations saved via the mobile app are included. The Product

Noise Partner PC software, with its preconfigured, user-friendly tools for presenting and sharing results, organizes the data intuitively, ready for further analysis and reporting.

Fig. 4 Post-processing using the Product Noise Partner PC app



Job done.



Compliance with Standards

NOTE: Below is only guaranteed using accessories listed in this document

	<p>The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives. For this product it is the Radio Equipment Directive 2014/53/EU. RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME. China RoHS mark indicates all items shipped to China have to be marked as to whether the items are compliant or non-compliant with the Chinese restriction of hazardous substances. WEEE mark indicates compliance with the EU WEEE Directive. FCC mark is a certification mark employed on electronic products manufactured or sold in the United States, which certifies that the electromagnetic interference from the device is under limits approved by the Federal Communications Commission</p>
Electrical Safety	<p>EN/IEC 61010-1, ANSI/UL 61010-1 and CSA C22.2 No.1010.1: Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements CB Scheme: • Battery: EN/IEC 62133-2:2017: Secondary cells and batteries containing alkaline or other non-acid electrolytes. Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems</p>
Radio Spectrum	<p>ETSI EN 300 328 V2.1.1: Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU. EN 303 413 V1.1.1: Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1164 – 1300 MHz and 1559 – 1610 MHz frequency bands</p>
EMC Emission and Immunity	<p>EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements. EN/IEC 61000-6-2: Generic standard – Immunity for industrial environments. EN/IEC 61000-6-3: Generic emission standard for residential, commercial and light industrial environments, class B. CISPR 32: Radio disturbance characteristics of multimedia equipment. Class B limits. EN 301 489-1 V2.2.0: Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU. EN 301 489-17 V3.2.0: Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for broadband data transmission systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU. EN 301 489-19 V2.1.0: For radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1.5 GHz band providing data communications and GNSS Receivers Operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data. 47 CFR FCC Part 15, subpart B</p>
Product-specific Standards (incl. EMC)	<p>EN/IEC 61672-1:2013: Electroacoustics – Sound level meters – Part 1: Specifications EN/IEC 61260-1:2014: Electroacoustics – Octave-band and fractional-octave-band filters – Part 1: Specifications</p>
Specific Absorption Rate (SAR)	<p>RED (Europe): • 1999/519/EC: Council recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz – 300 GHz) • EN 62311: General radio frequency (RF) exposure standard that effectively refers to specific absorption rate (SAR) standards for devices where other assessment methods are not relevant • IEC 62209-2: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz) FCC (US): • FCC CFR 2.1093: Radio frequency radiation exposure evaluation: Portable devices • KDB 447498 D01: General RF exposure guidance • KDB 865664 D01: SAR measurement 100 MHz – 6 GHz • KDB 248227 D01: SAR guidance for IEEE 802.11 (Wi-Fi) transmitters • IEEE standard 1528: IEEE Recommended Practice For Determining the Peak Spatial-average Specific Absorption Rate (SAR) in the human head from wireless communications devices: measurement techniques ISED (Canada): • RSS-102: Radio frequency (RF) exposure compliance of radio communication apparatus</p>
Temperature	<p>IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and Dry Heat • Storage Temperature: –25 to +70 °C (–13 to +158 °F)</p>
Humidity	<p>IEC 60068-2-78: Damp Heat: 93% RH (non-condensing at +40 °C (104 °F)). Recovery time: 2 – 4 hours</p>
Mechanical	<p>Non-operating: • IEC 60068-2-6: Vibration: 0.15 mm, 20 m/s², 10 – 500 Hz • IEC 60068-2-27: Bump: 4000 bumps at 400 m/s² • IEC 60068-2-27: Shock: 1000 m/s², 5 directions • EN 60068-2-32: Free fall: 100 cm, 10 directions</p>
Enclosure	<p>EN/IEC 60529 (1989): Protection provided by enclosures: IP 55</p>

Specifications – B&K 2245 Sound Level Meter with Product Noise Partner BZ-7303

The following specifications are specifically for the use of B&K 2245 with Product Noise Partner licence. For general specifications of the sound level meter, see product data [BP 0029](#).

System Requirements for Apps

PC OPERATING SYSTEM	Windows® 8.1 or 10 (64-bit)
PC FRAMEWORK*	Microsoft® .NET 4.7.2
MOBILE DEVICE	iOS-based phone or tablet
iOS	See supported iOS versions for current app version in the App Store, under Product Noise Partner > Information > Compatibility

* The PC app software will check if pre-installed. If it is not, it will start auto-installation. Accept the installation to run the app.

Recommended PC for PC App

Intel® Core™ i5 or better	8 GB of memory
Sound card	At least one available USB port
Solid State Drive	Microsoft Office 2016 (32-bit) or later

Standards

NOTE: The international IEC standards are adopted as European standards by CENELEC. When this happens, the letters IEC are replaced with EN and the number is retained. The sound level meter also conforms to these EN standards

The sound level meter part of B&K 2245 conforms to the following national and international standards and classes/types/groups with the standard accessories and configurations:

IEC – INTERNATIONAL ELECTROTECHNICAL COMMISSION (Commission électrotechnique internationale)	IEC 61672-1:2002-05 class 1, group X/Z
	IEC 61672-1 (2013) class 1, group X/Z
	IEC 60651 (1979) plus Amendment 1 (1993-02) and Amendment 2 (2000-10), type 1, group X/Z
	IEC 60804 (2000-10), type 1, group X/Z
	IEC 61260-1 (2014), 1/1-octave bands and 1/3-octave bands, class 1
	IEC 61260 (1995-07) plus Amendment 1 (2001-09), 1/1-octave bands and 1/3-octave bands, class 0
	PTB approved: Certificate No. DE-20-M-PTB-0026
DIN – DEUTSCHES INSTITUT FÜR NORMUNG E.V. (the German Institute for Standardization)	DIN 45657 (1997-07)
ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI S1.4-1983 plus ANSI S1.4A-1985 Amendment, type 1
	ANSI/ASA S1.4-2014, class 1
	ANSI S1.43-1997, type 1
	ANSI S1.11-1986, 1/1-octave bands and 1/3-octave bands, order 3, type 0-C
	ANSI S1.11-2004, 1/1-octave bands and 1/3-octave bands, class 0
	ANSI/ASA S1.11-2014 Part 1, 1/1-octave bands and 1/3-octave bands, class 1

Physical

START-UP TIME	From power off: <30 s
DUST AND WATER RESISTANCE	In compliance with IP 55. When exposed to heavy rainfall, water may pass through the static pressure vent between the microphone and preamplifier. The instrument will not be damaged by water that has passed through the vent, but measurement operation will be disturbed until the microphone and preamplifier are dry

Measurements

Provides measurement and calculation procedures for the determination of the sound power of noise sources as described in the following international standards:

- ISO 3744:2010
- ISO 3746:2010
- EN 71-1:2014+A1:2018

Suitable Test Environments: Essentially free field over a reflecting plane

MEASUREMENT	Time-averaged sound pressure level produced by background noise
	Time-averaged sound pressure level from the noise source under test
CALCULATION	Surface time-averaged sound pressure level
	Sound power level
VALIDATION	Criterion for background noise
	Requirement evaluation for additional microphone positions

STATISTICS

Mean and standard deviation of any measured or calculated quantity on batch measurements

Input

CORRECTION FILTERS

The software is able to correct the frequency response to compensate for sound field and accessories

SOUND FIELD	Free-field or diffuse-field for Type 4966
ACCESSORIES	Windscreen UA-1650 (automatically detected)

Analysis

DESCRIPTION	APPLICATION	SUPPORTED STANDARDS
Sound power determination in essentially free-field environments	Free-field	ISO 3744, ISO 3746
	Free-field with emission SPL	ISO 3744 (sound power level)
Sound pressure emission from close-to-the-ear toys, table-top or floor toys and handheld toys	Emission SPL	EN 71-1

DETECTORS

Parallel detectors on every measurement

A, C or Z	Two simultaneous broadband frequency weightings. F, S and I exponential time weightings, linear averaging and peak detector simultaneously for each frequency weighting
Overload Detector	Monitors the overload outputs of all the frequency weighted channels

MEASUREMENT PARAMETERS

X = frequency weightings A, C or Z

Y = time weightings F or S

Sound Input for Display and Storage	Start Time	Stop Time	L _{Xeq}	L _{Xpeak}
	L _{Aleq}	L _{Almax}	L _{XYmax}	L _{XYmin}
	L _{AYN1-5}	L _{AN1-5}	L _{XFmin}	L _{Xlmin}
	L _{YSmin}	L _{YFmin}		
Sound Input Only for Display as Numbers or Quasi-analog Bars	L _{XY}	L _{XY(SPL)}	L _{XPeak,1s}	
Frequency Analysis for Display and Storage	L _{Xeq}	L _{XYmax}	L _{XYmin}	
Frequency Analysis for Display Only	L _{XY}			

GPS DATA

Latitude and longitude

Calibration

Initial calibration is stored for comparison with later calibrations.

ACOUSTIC	Using Sound Calibrator Type 4231 or custom calibrator. The calibration process automatically detects the calibration level when Sound Calibrator Type 4231 is used
CALIBRATION HISTORY	Calibrations and calibration checks are listed and can be viewed on the instrument

Software Interface

PREFERENCES	Date, time and number formats can be specified
LANGUAGE	User interface in Catalan, Czech, Dutch, English, French, German, Italian, Japanese, Portuguese, Romanian, Slovenian, Slovakian and Spanish
HELP	On app: Concise context-sensitive help in English, French, German, Italian and Spanish
UPDATE OF SOFTWARE	Update to latest version using Internet*
REMOTE ACCESS	Connect to the instrument using: <ul style="list-style-type: none"> Product Noise Partner Noise Partner Other optional apps also available – see Ordering Information Remote display (non-interactive) via internal web server

* For WELMEC type-approved instruments, updates must be performed at a Brüel & Kjær service centre.

Measurement Control

MEASUREMENT MODE	Single
FREE SETTING	Manually controlled single measurement
PRESET SETTING	Preset measurement time from 1 second to 31 days in 1 s steps (exactly 31 days, 23 hours, 59 minutes and 59 seconds, that is 31.23.59.59)
MANUAL CONTROLS	Start, Pause, Continue and Stop measurements
BACK-ERASE	The last 1 to 10 s of data can be erased without resetting the measurement

Measurement Status

ON SCREEN STATUS	Information such as overload and running/paused are displayed on screen as icons	
TIME	Elapsed measurement time, when preset, is shown on screen	
MEASUREMENT STATUS LIGHT RING RGB light ring shows the measurement status and instantaneous overload as follows	Green on constantly:	Measuring
	Yellow flashing every 5 s:	Stopped, ready to measure
	Yellow flashing slowly:	Paused, measurement not stored
	Red flashing quickly:	Intermittent overload, calibration failed
	Purple on constantly:	Latched overload
	White flashing slowly:	Instrument off and charging
Blue flashing quickly:	Pairing with mobile device	

Displays on Instrument

SLM VIEW	One quasi-analogue instantaneous bar and one broadband value
LIST VIEW	One quasi-analogue instantaneous bar and three broadband values
SPECTRUM VIEW	1/1- or 1/3-octave spectrum column graph with cursor readout – for one parameter at a time. Configurable Y-axis
ABOUT DATA VIEW	Latitude, longitude, microphone used, microphone sensitivity, calibrated date, time zone, software version and hardware version for current measurement

Displays on Mobile App

METADATA VIEW	Edit metadata to describe device under test (DUT)
SETUP	Edit measurement setup for the DUT
MEASUREMENT VIEW	1/1- or 1/3-octave spectrum column graph with broadband columns for selected measurement point and calculated DUT sound power levels. 3D measurement surface geometry display with selected measurement point indicator
ANNOTATIONS VIEW	Add photo, video, text and voice note annotations to the DUT
DUTs VIEW	List of all DUT definitions stored on the connected instrument, by name and serial number. Open, edit and delete DUT

Data Management

DATABASES	When using Product Noise Partner mobile app, you create an instance of a device under test (DUT). Measurement setup, measurements and annotations are saved for each instance of a DUT. DUTs are saved on the instrument and can be imported into a database using the PC application
MEASUREMENT DATA	Measurements are automatically stored on measurement stop. Data is stored in folders by date, with individual measurements numbered sequentially

ANNOTATION DATA	Annotations (photos, videos, text and voice notes) made using the mobile app are embedded into measurement data and stored on the instrument
DATA RETENTION	The instrument can be configured to automatically move data to trash after a user-defined retention period
BACKUP	Measurement and annotation data can be automatically backed up to a USB stick or server message block (SMB) network share

Ordering Information

Type 2245-P-S B&K 2245 Sound Level Meter with Product Noise Partner Software

which includes the following in a hard-shell transport case (KE-1034):

- B&K 2245 Sound Level Meter
- BZ-7300-N: Noise Partner
- BZ-7303-N: Product Noise Partner
- Type 4966: ½" Free-field Microphone
- ZG-0486: Mains Power Supply
- AO-0821-D-010: USB 3, USB-C to USB-A Cable (1.0 m/3.3 ft)
- UA-1650: 90 mm dia. Windscreen with AutoDetect
- DH-0819: Wrist Strap, for sound level meter
- UA-2237: Mobile Phone Holder Kit

Type 2245-P-SC B&K 2245 Sound Level Meter with Product Noise Partner Software and Sound Calibrator Type 4231

which includes the following in a hard-shell transport case (KE-1034):

- B&K 2245 Sound Level Meter
- BZ-7300-N: Noise Partner
- BZ-7303-N: Product Noise Partner
- Type 4966: ½" Free-field Microphone
- Type 4231: Sound Calibrator
- ZG-0486: Mains Power Supply
- AO-0821-D-010: USB 3, USB-C to USB-A Cable (1.0 m/3.3 ft)
- UA-1650: 90 mm dia. Windscreen with AutoDetect
- DH-0819: Wrist Strap, for sound level meter
- UA-2237: Mobile Phone Holder Kit

Firmware Variants

B&K 2245 has three firmware variants. In countries where a WELMEC-compliant instrument is required for legal metrology (currently Germany and Spain), the WELMEC firmware variant for that country should be selected. For all others who require a type-approved SLM, the standard variant should be suitable

FW-2245-000	General type-approved firmware (standard)
FW-2245-001	WELMEC type-approved firmware, Germany
FW-2245-002	WELMEC type-approved firmware, Spain

For more information on B&K 2245 firmware variants and versions, go to www.bksv.com/2245-updates.

Supported Brüel & Kjær Products and Services

SOFTWARE MODULES

BZ-7301	Enviro Noise Partner Licence (see product data BP 0030)
BZ-7302	Work Noise Partner Licence (see product data BP 0031)
BZ-7400	Open Interface for B&K 2245 Licence (see product data BP 2635)

All mobile apps are available for free download via the App Store. All PC apps can be downloaded at www.bksv.com

SOUND SOURCE

Type 4204	Reference Sound Source
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INTERFACING

UL-1073	4.7" App Control Unit, 32 GB
AO-0846	USB-C™ to AC or DC Output Cable, with power

CALIBRATION

Type 4231	Sound Calibrator (fits in transport case)
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MOUNTING

UA-0750	Tripod
UA-0801	Lightweight Tripod
UA-1651	Tripod Extension

ACCREDITED CALIBRATION

SLM-SIM-CAI	Initial Accredited Calibration incl. microphone (according to IEC 61672)
SLM-SIM-CAF	Accredited Calibration incl. microphone (according to IEC 61672)
BKC-0068-008-CAI	Initial Accredited Calibration of octave-band filter, 1/3-octave (according to IEC 61260)
BKC-0068-008	Accredited Calibration of octave-band filter, 1/3-octave (according to IEC 61260)

For more information about our calibration services, go to www.bksv.com/Service/Calibration-and-verification

SERVICE

Standard Product Warranty: Two years

Calibration Plus Service Contract: Calibration contract with up to 5 years coverage, extended warranty for sound level meters up to 10 years old, plus more. For details, go to www.bksv.com/calibration-plus

Extended Warranty Contract: Extend your standard product warranty up to 10 years. For details, go to www.bksv.com/extended-warranty-hardware

Online Service: Online services such as downloading your calibration certificate and scheduling your services. Access the calibration cloud at www.bksv.com/calibrationdata

NOTE: Wear and tear on parts like windscreens and cables are not covered by the Standard Product Warranty or Extended Warranty.



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To learn more about all HBK offerings, please visit hbkworl.com

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