

B&K 2245 Sound Level Meter with Work Noise Partner

B&K 2245 Sound Level Meter with Work Noise Partner is a complete solution for workplace noise surveys.

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.



Uses and Features

Uses

- Task-based determination of occupational noise exposure (ISO 9612:2009)
- Job-based determination of occupational noise exposure (ISO 9612:2009)
- Managing noise exposure
- Testing for prevention of hearing loss and selection of hearing protection using different calculation methods:
 - SNR: Single number rating
 - HML: High, middle, low ratings
 - APV: Assumed protection value
 - NRR: Noise reduction rating
- Measurements to ensure regulatory compliance that include OSHA, Czech, Slovene, and Western Australian regulations

Features

- Single measurement range: 15.8 – 140.9 dB(A) from noise floor to maximum level
- Frequency range: 6 Hz – 20 kHz
- Frequency analysis measurements
- Automated instrument setup for compliance with ISO 9612
- Measurement annotation using photos, audio, text or video
- Robust design for both indoor and outdoor measurements
- Wireless connectivity for remote control of measurements and data transfers
- Simplified user interface using either the sound level meter or your iOS mobile device
- Create projects, tasks, exposure groups and jobs on the fly
- 16 GB internal storage
- Automatic measurement transfer to network or USB storage media for backup and analysis
- PC software for data storage, viewing and reporting
- GPS for time and position
- Calibrator auto-detection
- 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 to the market. Accurate noise measurement, analysis and documentation has never been so streamlined and simple.

Hassle-free Licencing

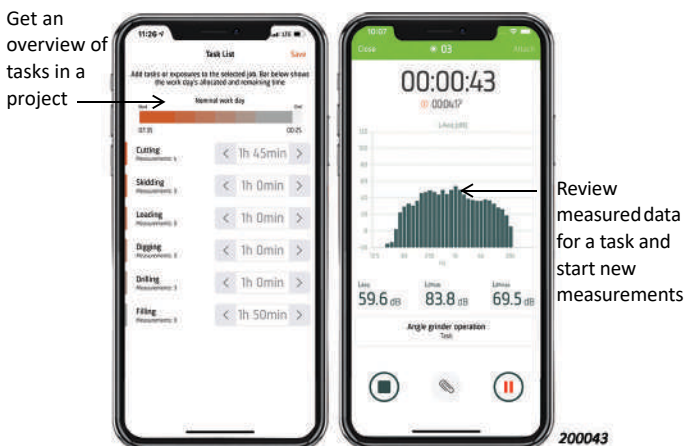
B&K 2245 licences are installed on the instrument, enabling measurement functions on the instrument and administering connections to licenced mobile apps and post-processing in the PC apps.

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

The Work Noise Partner App

The Work Noise Partner licence comes ready with everything you need for workplace noise surveys – you can even do a full workday noise exposure calculation in the field. Frequency analysis is also included – perfect for measurements to determine hearing protection.

Fig. 2 Control and view measurements directly from your mobile device



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 Work Noise Partner app installed on a mobile device and PC



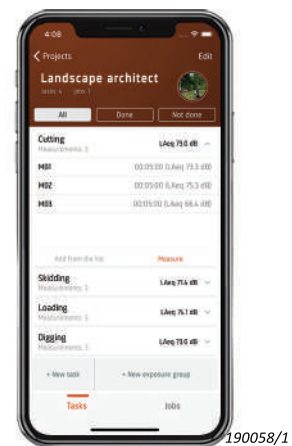
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Use with Noise Dose Meters

The Work Noise Partner PC software also works with Personal Noise Dose Meter Type 4448. You can import measurements from the dose meter into a Work Noise Partner project and combine that data with measurements from B&K 2245 to compare and analyse as needed. A separate licence is not required.

The intuitive mobile app guides you through the steps of a survey, including calculating the workday noise exposure level. This means you never have to remember complex processes and your results will comply with regulatory requirements.

Fig. 3 For each project you set up, you can define the tasks, exposure groups and test standard and easily manage project status

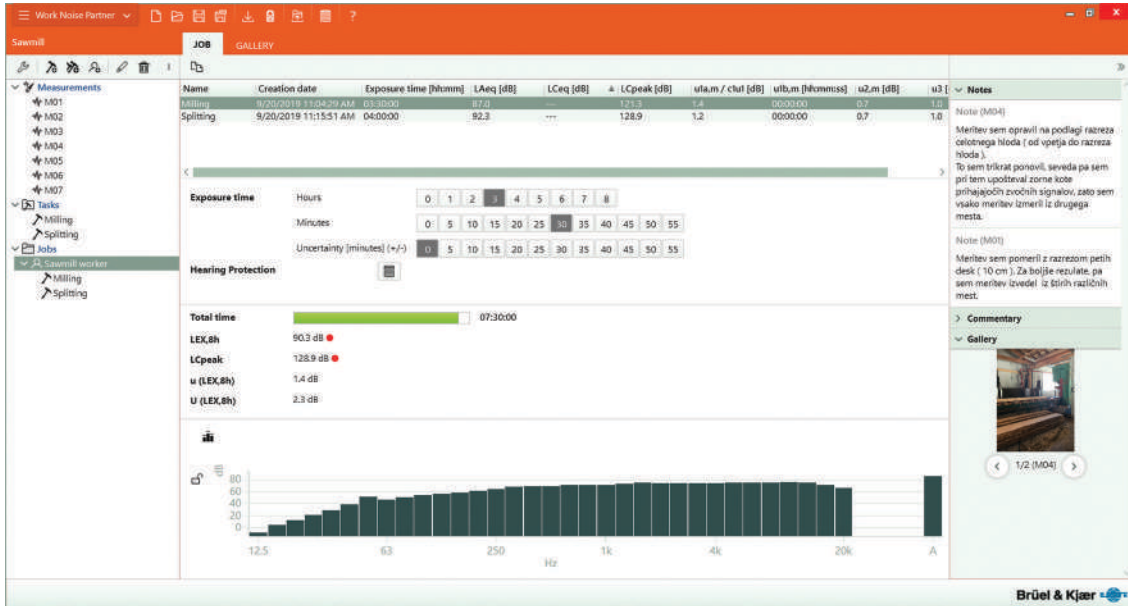


Transfer Data for Analysis

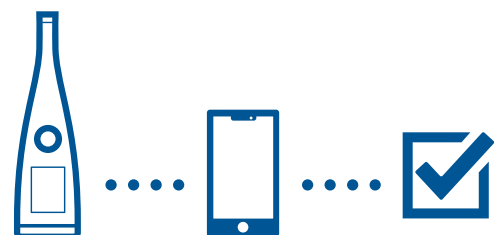
When you are done measuring, you can quickly and securely transfer data to your PC. All data is stored in the instrument, which can be set up to automatically transfer data whenever it connects to your local network.

The Work Noise Partner PC software, which is simple to install and use with 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 Work Noise Partner PC app. All annotations saved via the mobile app are included



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.</p> <p>RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME.</p> <p>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.</p> <p>WEEE mark indicates compliance with the EU WEEE Directive.</p> <p>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>
<p>Electrical Safety</p>	<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</p> <p>CB Scheme:</p> <ul style="list-style-type: none"> 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>	<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.</p> <p>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>
<p>EMC Emission and Immunity</p>	<p>EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements.</p> <p>EN/IEC 61000-6-2: Generic standard – Immunity for industrial environments.</p> <p>EN/IEC 61000-6-3: Generic emission standard for residential, commercial and light industrial environments, class B.</p> <p>CISPR 32: Radio disturbance characteristics of multimedia equipment. Class B limits.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>47 CFR FCC Part 15, subpart B</p>
<p>Product-specific Standards (incl. EMC)</p>	<p>EN/IEC 61672-1:2013: Electroacoustics – Sound level meters – Part 1: Specifications</p> <p>EN/IEC 61260-1:2014: Electroacoustics – Octave-band and fractional-octave-band filters – Part 1: Specifications</p>
<p>Specific Absorption Rate (SAR)</p>	<p>RED (Europe):</p> <ul style="list-style-type: none"> 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) <p>FCC (US):</p> <ul style="list-style-type: none"> 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 <p>ISED (Canada):</p> <ul style="list-style-type: none"> RSS-102: Radio frequency (RF) exposure compliance of radio communication apparatus
<p>Temperature</p>	<p>IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and Dry Heat</p> <ul style="list-style-type: none"> Storage Temperature: –25 to +70 °C (–13 to +158 °F)
<p>Humidity</p>	<p>IEC 60068-2-78: Damp Heat: 93% RH (non-condensing at +40 °C (104 °F)). Recovery time 2 – 4 hours</p>
<p>Mechanical</p>	<p>Non-operating:</p> <ul style="list-style-type: none"> 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>	<p>EN/IEC 60529 (1989): Protection provided by enclosures: IP 55</p>

Specifications – B&K 2245 Sound Level Meter with Work Noise Partner BZ-7302

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

System Requirements for Apps

PC OPERATING SYSTEM	Windows® 7 (SP1), 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 Work Noise Partner > Information > Compatibility

* The 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

Analysis

DETECTORS

Parallel detectors on every measurement

A, B, 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

FREQUENCY ANALYSIS BANDWIDTH

1/1- and 1/3-octave

GPS DATA

Latitude and longitude

MEASUREMENT PARAMETERS

X = frequency weightings A, B, C or Z

Y = time weightings F or S

	Start Time	Elapsed Time	L _{Xeq}	L _{Xpeak}
Sound Input for Display and Storage	L _{Aleg}	L _{AImax}	L _{XYmax}	L _{XYmin}
	L _{XE}	L _{avS4}	L _{avS5}	
	L _{AYN1–5}	L _{AN1–5}		
Frequency Analysis for Display and Storage	L _{Xeq}			
Frequency Analysis for Display Only	L _{XY}			

MEASURING RANGES

Dynamic Range	From typical noise floor to max. level for a 1 kHz pure tone signal): A-weighted: 15.8 to 140.9 dB
Primary Indicator Range	In accordance with IEC 60651: A-weighted: 21.5 dB to 123.6 dB
Linearity Range	In accordance with IEC 60804: A-weighted: 19.4 dB to 142.1 dB
Linear Operating Range	In accordance with IEC 61672: • A-weighted: 1 kHz: 22.8 dB to 140.9 dB • C-weighted: 26.3 dB to 140.9 dB • Z-weighted: 32.3 dB to 141.3 dB
Peak C Range	In accordance with IEC 61672: 1 kHz: 43.1 dB to 143.9 dB

SAMPLING FOR BROADBAND STATISTICS

Statistics can be based on either L_{AF} , L_{AS} or L_{Aeq} .
Full distribution saved with measurement

Statistics L_{AFN1-5} are based on sampling L_{AF} every 16 ms into 0.2 dB-wide classes over 130 dB
Statistics L_{ASN1-5} are based on sampling L_{AS} every 125 ms into 0.2 dB-wide classes over 130 dB
Statistics L_{AN1-5} are based on sampling L_{Xeq} every second into 0.2 dB-wide classes over 130 dB

STANDARD-SPECIFIC SETTINGS

Uncertainty	In accordance with ISO 9612:2009, Slovene, Czech Republic and Western Australian regulations. Estimate the uncertainty of your measurements <ul style="list-style-type: none"> 1.65 (p=95%): Coverage factor of 1.65 and a confidence interval of 95% 2.23 (p=99%): Coverage factor of 2.23 and a confidence interval of 99%
Lower and Upper Warning Limit, Limit	In accordance with Slovene and Czech Republic regulations. Values (in dB) for daily exposure limits
Exchange Rate	In accordance with OSHA. The amount of increase that corresponds to a doubling of the noise dose. Select between 3, 4 or 5 dB
Criterion Level	In accordance with OSHA. The maximum equivalent sound pressure level (A-weighted) over an 8-hour workday that must not be exceeded. Also referred to as the exposure limit. Select either 85 or 90 dB
Threshold	In accordance with OSHA. Value in dB
Workplace	In accordance with Czech Republic regulations. Select the type of work environment

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)

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"> Work 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.

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
PROFILE VIEW	Graphical profile for one broadband parameter at a time. Movable cursor for last 100 logging samples. 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

MEASUREMENT VIEW	Broadband L_{Aeq} , L_{AFmax} and L_{Cpeak} alongside 1/1- or 1/3-octave spectrum column graph. Selected task or exposure group, elapsed time and recommended remaining time displayed while measuring
TASKS VIEW	List of all tasks and exposure groups included in project. Task and exposure group levels and individual measurement levels displayed
JOBS VIEW	List of all jobs, with calculated work day noise exposures displayed
PROJECTS VIEW	List of projects stored on connected instrument, with job and task completion summary. Add and delete projects

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

Audio

AUDIO RECORDING	Listening-quality MP3, compressed to 3% of original signal. 24-bit covering full measurement range. Can be enabled/disabled. Records whole measurement (no triggers or on/off during measurement)
STORAGE	Audio recordings are stored on instrument and transferred with measurement to PC app
FILE SIZE	Variable bit-rate, approximately 22 MB per hour
PLAYBACK	Via app

Data Management

PROJECTS	When using Work Noise mobile app, measurement and annotation data is organised into projects. Projects are stored on the instrument and can be loaded and edited in the mobile app and imported to the Work Noise PC app
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

Measurement Control

MEASUREMENT MODES	Single or logging
LOGGING INTERVAL	1, 5, 10, 30 or 60 s intervals
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 the measurement manually
BACK-ERASE	Single Measurements Only: 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	Remaining 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

Type 2245-W-S B&K 2245 Sound Level Meter with Work 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-7302-N: Work 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-W-SC B&K 2245 Sound Level Meter with Work 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-7302-N: Work 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-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

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)

MOUNTING

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

NOISE DOSE METERS

- Type 4448-001* Personal Noise Dose Meter with HML parameters
- Type 4448-002* Personal Noise Dose Meter with HML parameters, Intrinsically Safe (I.S.) Model

Types 4448-001 and 4448-002 are also available in starter kits, with or without an included calibrator, and with one or more noise dose meters. For more information, see product data [BP 2388](#)

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.

