PRODUCT DATA

B&K 2245 Sound Level Meter with Noise Partner

The core of the B&K 2245 series

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



Uses and Features

Uses

- Basic noise measurements
- Broadband measurements requiring IEC 61672 compliant instrumentation
- Simple product testing

Features

- 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
- Automatic measurement transfer to network or USB storage media for backup and analysis
- 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
- Measurement annotation using photos, audio, text or video
- PC software for data storage, viewing and reporting
- GPS for time and position
- Calibrator auto-detection
- Windscreen auto-detection and compensation

Brüel & Kjær

A Complete Solution

B&K 2245 Sound Level Meter is a complete package solution that includes the Noise Partner app for both mobile measurement control, display and data transfer and as a PC-based application for analysis and documentation.

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



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The Sound Level Meter

B&K 2245 provides effortless usability with a dust- and water-resistant body that is rubberized for a more secure grip and ensured compliance to IP 55*. The seven control buttons can be comfortably operated with one hand, and the instrument's clear, bright display shows you the most important information at a single glance. With a 13-hour battery life, you can be sure it will not let you down.

Fig. 2 *The sound level meter's lightweight design and user-friendly display*



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Wireless Connectivity

Using the Noise Partner app on your mobile device, you can wirelessly connect to B&K 2245, which provides the flexibility to control your measurements via your mobile device, thus avoiding possible body reflections or unsafe environments. Once the app has connected to the sound level meter, it will remember the instrument and automatically connect to it when in range.

The App

Noise Partner is an intuitive mobile app that extends the measurement environment to your mobile device. Monitor and control the measurement from the mobile device and easily add photos, text, voice or videos to document the setup and/or particular events and situations.

Fig. 3 *Control, view and annotate measurements directly from your mobile device*



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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. You can also share measurements with your colleagues in the office using the Noise Partner app. Measurements are securely uploaded to Brüel & Kjær's cloud and easily accessible via an emailed hyperlink. Shared measurements can be password protected.

The 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.

* 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.

Smart Accessories

From tripods, calibrators, mobile phone holders, and more – Brüel & Kjær provides you with the accessories you need to complete any measurement task using B&K 2245.

See “Ordering Information” for a complete overview.

Hassle-free Licencing

B&K 2245 licences are installed in the instrument, enabling measurement functions on the instrument as well as:

- Allowing connections to licenced mobile apps
- Embedding licences in measurement files for editing in licenced desktop 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 iOS mobile device and PC, and measurements made with the instrument can be easily and seamlessly edited by the desktop app on any PC without extra requirements.

A Platform that Helps You Get the Job Done

The B&K 2245 platform includes a range of apps, each tailored to assist a specific job-to-do. Each instrument can be licenced for more than one app, so switching tasks is as easy as – switching apps.

All available mobile apps can be downloaded from the App Store®. PC apps can be downloaded at www.bksv.com.

- **Enviro Noise Partner** – for environmental noise surveys that includes markers to isolate sounds (for example, removing a barking dog or identifying the moment when a sound source is operating) and checklists to ensure each step is completed to local requirements
- **Work Noise Partner** – for workplace noise surveys that guides you through a full work-day noise exposure calculation. Frequency analysis is included along with tools to select appropriate hearing protectors when needed



Compliance with Standards

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

	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
Electrical Safety	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
Radio Spectrum	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
EMC Emission and Immunity	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 301489-1 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
Product-specific Standards (incl. EMC)	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
Specific Absorption Rate (SAR)	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
Temperature	IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and Dry Heat • Storage Temperature: –25 to +70 °C (–13 to +158 °F)
Humidity	IEC 60068-2-78: Damp Heat: 93% RH (non-condensing at +40 °C (104 °F)). Recovery time 2 – 4 hours
Mechanical	Non-operating: • IEC 60068-2-6: Vibration: 0.15 mm, 20 m/s^2, 10 – 500 Hz • IEC 60068-2-27: Bump: 4000 bumps at 400 m/s^2 • IEC 60068-2-27: Shock: 1000 m/s^2, 5 directions • EN 60068-2-32: Free fall: 100 cm, 10 directions
Enclosure	EN/IEC 60529 (1989): Protection provided by enclosures: IP 55

Microphone

SUPPLIED MICROPHONE	Type 4966: Free-field ½″ Microphone
NOMINAL OPEN-CIRCUIT SENSITIVITY	50 mV/Pa (corresponding to −26 dB re 1 V/Pa) ±1.5 dB

Supplied Charger

PART NO.	ZG-0486
INPUT	100 – 240 VAC, 50/60 Hz, 0.45 A
OUTPUT	5.0 VDC, Max. 2.4 A
SUPPLIED CABLE	USB 3.1, USB-C® connector to USB-A connector

Battery

CAPACITY	6700 mAh nominal, 24 Wh
OPERATING TIME	Typically >13 h with Wi-Fi® enabled
CYCLE LIFE	Min. 80% battery capacity available after 500 complete charge/discharge cycles
INDICATOR	Remaining battery capacity and expected working time may be read out in % or hours
FUEL GAUGE	The instrument is equipped with a built-in fuel gauge that continuously measures and stores the actual battery capacity in the battery unit
CHARGE TIME	Using ZG-0486, typically <6 hours from empty at normal room temperature. When using a different power source other than ZG-0486, the charging time will vary depending on the current delivered by the source **NOTE:** It is not recommended to charge the battery at temperatures below 0 °C (32 °F) or over 50 °C (122 °F). Doing this will reduce battery lifetime

Storage

INTERNAL STORAGE	16 GB (approximately 13 GB formatted space available for measurement and annotation data)

Physical

START-UP TIME	From power off: <30 s
OPERATING TEMPERATURE	−25 to +70 °C (−13 to +158 °F)
WEIGHT	370 g (13 oz)
DIMENSIONS	260 × 68 × 37 mm (10.2 × 2.7 × 1.5″) including preamplifier and microphone

Wireless Connection to Mobile Phone

OPERATING FREQUENCY	2.4 GHz
DATA RATE	IEEE 802.11n: Up to 300 Mbps
	IEEE 802.11g: Up to 54 Mbps
	IEEE 802.11b: Up to 11 Mbps
ENCRYPTION/ AUTHENTICATION	64/128-bit WPA-PSK, WPA2-PSK, TLS, SSL
RANGE	The range is similar to a standard WLAN unit, typically from 10 to 50 m (33 to 164 ft), depending on the environment and the number of other WLAN transmitters in the area (smartphones, Wi-Fi, etc.)
BLUETOOTH® CONNECTION	Bluetooth Low Energy (BLE) to discover and connect devices, allowing for simpler connections on Wi-Fi, etc. Not used for transporting measurement data

Wired Connection to PC

CONNECTIONS	USB-C, Ethernet over USB
DATA RATE	150 Mbps
ENCRYPTION/ AUTHENTICATION	TLS, SSL

Hardware Interface

CONTROL BUTTONS	7 buttons optimized for measurement control and screen navigation
ON-OFF BUTTON	Press centre button 1 s to switch on; press 2 s to switch off; press and hold to restart
STATUS INDICATORS	LED light ring visible from a distance, and from most angles: Red, yellow, green, blue, purple
DISPLAY	Transflective back-lit colour 240 × 320 dot matrix. Adjustable power settings
DISPLAY BACKLIGHT	Adjustable level
USB INTERFACE	Multi-purpose USB-C Connector: Battery charge, data transfer, output signal (frequency-weighted input signal or DC voltage corresponding to measured L_{AF}, L_{BF}, L_{CF} or L_{ZF} level)
CLOCK	System time updated from GPS when possible. Drift <0.26 s per 24-hour period (±3 ppm)

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 via Internet*
REMOTE ACCESS	Connect to the instrument via mobile device downloaded with: • Noise Partner BZ-7300 • 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.

Input Settings

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 **NOTE:** At default setting with UA-1650, automatic frequency response will be added
SELF-GENERATED NOISE LEVEL Typical values at 23 °C for nominal microphone open-circuit sensitivity	**A-weighting:**	**Microphone:** 14.9 dB **Electrical:** 8.5 dB **Total:** 15.8 dB
	B-weighting:	**Microphone:** 13.7 dB **Electrical:** 9.2 dB **Total:** 15.1 dB
	C-weighting:	**Microphone:** 13.8 dB **Electrical:** 13.0 dB **Total:** 16.4 dB
	Z-weighting:	**Microphone:** 15.5 dB **Electrical:** 19.5 dB **Total:** 21.0 dB

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

Data Management

MEASUREMENT DATA	Measurements are automatically stored at 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 Noise Partner 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
INTERNAL STORAGE* CAPACITY	The internal disk can hold up to 600,000 single measurements with just one broadband parameter, or up to 330,000 single measurements with all broadband parameters, including statistics and five 1/3-octave spectra. The internal disk can hold 35 years logging of a single parameter with 1 s intervals, or 300 days logging of all broadband parameters, including statistics and five 1/3-octave spectra with 1 s intervals, or 23 days when audio recording is stored too

* Statistics, frequency analysis and logging features are only available with additional software licences installed.

Measurement Control

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	The last 1 to 10 s of data can be erased without resetting the measurement

Measurement Status

ON SCREEN	Information such as overload and running/paused are displayed on screen as icons	
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

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 VERSION	See supported iOS versions for current app version in the App Store, under **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 Desktop 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

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

MEASUREMENT PARAMETERS
X = frequency weightings A, B, C or Z
Y = time weightings F or S

Sound Input for Display and Storage	Start Time	Elapsed Time	L_{Xeq}	L_{Xpeak}
	L_{AIeq}	L_{AImax}	L_{XYmax}	L_{XYmin}
Sound Input Only for Display as Numbers or Quasi-analog Bars	L_{XY}	$L_{XY(SPL)}$		

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

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 instrument 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
	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)
	DIN 45657 (2014-07)
ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI S1.4-1983 plus ANSI S1.4A-1985 Amendment, type 1
	ANSI/ASA S1.4, Part-2014, class 1, group X/Z
	ANSI S1.43–1997, type 1

The frequency analysis* part of B&K 2245 conforms to the following additional national and international standards and classes/types/groups:

IEC – INTERNATIONAL ELECTROTECHNICAL COMMISSION	IEC 61260:1995-07 (plus Amendment 1 (2001-09)), 1/1-octave bands and 1/3-octave bands, Class 0, group X/Z, all filters
	IEC 61260-1:2014, 1/1-octave bands and 1/3-octave bands, class 1, group X/Z, all filters
ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI S1.11-2004, 1/1-octave bands and 1/3-octave bands, class 0, group X/Z, all filters
	ANSI/ASA S1.11-2014/Part 1, 1/1-octave bands and 1/3-octave bands, class 1, group X/Z, all filters

* Frequency analysis features are only available with additional software licences installed.

The firmware is made in accordance with:

EUROPEAN COOPERATION IN LEGAL METROLOGY – WELMEC	WELMEC 7.2 Software Guide - 2014

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
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

XL TOTAL VIEW	One quasi-analogue instantaneous bar and one broadband value
TOTAL LIST VIEW	One quasi-analogue instantaneous bar and five broadband values

Ordering Information

Type 2245-N-S **B&K 2245 Sound Level Meter with 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
- 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, for use on tripod

Type 2245-N-SC **B&K 2245 Sound Level Meter with 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
- 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, for use on tripod

Supported Brüel & Kjær Products and Services

SOFTWARE MODULES AVAILABLE SEPARATELY

BZ-7301	Enviro Noise Partner
BZ-7302	Work Noise Partner

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

INTERFACING HARDWARE

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

CALIBRATION HARDWARE

Type 4231	Sound Calibrator (fits in transport case)

MOUNTING HARDWARE

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)

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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