

## Open Interface for B&K 2245

Programming interface for B&K 2245 Sound Level Meter

*Open Interface for B&K 2245 uses the Brüel & Kjær Web-XI® protocol to communicate with B&K 2245 Sound Level Meter, a compact, powerful, type-approved, class 1 sound level meter. The interface allows you to control the instrument and to stream data via Ethernet, Wi-Fi® or USB, using standard web technologies.*

*Open Interface for B&K 2245 enables access to all features and functionality in the sound level meter, making sound data available from within your own software solutions and for integration with existing software solutions.*



200041

### Uses

- Use your own applications to control B&K 2245 and to receive its measurement data
- Create a custom user interface of selected measurement features to meet your specific needs
- Build permanent installations for correlating sound data with other physical properties
- Control and stream data from multiple/distributed sound level meters simultaneously
- Monitor sound parameters using one or more sound level meters as remote microphones, get results as they happen
- Stream discrete sound parameters, MP3 data, spectra and events
- Create programs that will trigger events based on streamed sound measurement data

### System Features

- Fast binary streaming format for efficient and continuous data transfer
- GPS-synchronized clock on the sound level meter
- PC software for storage, viewing and reporting of sound level meter data (free to download at [www.bksv.com/downloads](http://www.bksv.com/downloads))
- Documentation of protocol specifications and a guide for programming
- Example programs in C#/.NET, Python

### Networking/Communication Technologies

- TCP/IP networking, wireless (Wi-Fi) and wired (Ethernet, USB)
- HTTP/HTTPS request methods (GET, PUT, POST and DELETE)
- REST web service structure
- mDNS and zero configuration networking
- DHCP network management

### Applications

- Integrating sound measurement into systems:
  - Quality control and production testing systems
  - Process control systems
  - Digital signage systems
- Product testing customised sound measurement workflows
- Distributed sound measurement systems controlling multiple sound level meters
- Education, enabling students to add accurate sound measurement to projects using simple REST commands
- Research, enabling the integration of sound measurement into applications written in almost any language

### What is Web-XI?

Web-XI is a protocol developed by Brüel & Kjær that is used in B&K 2245 to enable communication between the sound level meter and clients. Web-XI is used for communication in all applications for B&K 2245.

Web-XI is a RESTful protocol that uses JSON data formatting and relies on Internet-infrastructure protocols: TCP/IP and HTTP/HTTPS. Through the RESTful protocol (using GET, PUT, POST and DELETE), it is possible to control settings in the sound level meter, to fetch parameters and results, and to set up WebSocket streams for Web-XI data. WebSocket streams use a compact and fully-documented binary data format to ensure fast and efficient communication. With these streams, time-stamped measurement and system status data can be continuously pushed from your sound level meter to your application.

Web-XI is a RESTful service, making it is possible to communicate with B&K 2245 from any platform that supports HTTP requests and to develop the software using a variety of programming languages such as C#, Objective-C or C/C++ and Python.

## Licences

Open Interface for B&K 2245 can be used together with any B&K 2245 licence to provide access to all measurement capabilities via Web-XI. Open Interface for B&K 2245 supports all standard solutions for B&K 2245: Noise Partner, Enviro Noise Partner, Work Noise Partner and Exhaust Noise Partner.

### Building a Custom Solution for Open Interface

Open Interface for B&K 2245 also supports custom solutions. Licences that enable specific measurement capabilities can be added to any B&K 2245 with the Noise Partner BZ-7300 license installed. See Table 1 for an overview of the licences and the measurement capabilities they enable.

For more information about B&K 2245, including product data, visit [www.bksv.com/2245](http://www.bksv.com/2245)

**Table 1** Custom solutions are created by adding optional licences to Noise Partner BZ-7300

	Licence	Functionality
Required	Noise Partner BZ-7300	Broadband Parameters
		$L_{XYmax}$ , $L_{XYmin}$ $L_{Xeq}$ $L_{Xpeak}$ $L_{Aeq}$ , $L_{Amax}$
Optional	Extended Broadband Analysis BZ-7401	Broadband Parameters
		$L_{XE}$ (SEL) $L_{avS4/5}$ $L_{AFTeq}$
	Logging BZ-7402	Statistics
	Log measured parameters at 1, 5, 10, 30 or 60 s intervals	$L_{AYN}$ , $L_{AN}$
Frequency Analysis BZ-7403	1/1- or 1/3-octave Band Analysis	$L_{eq}$ $L_{max}$ , $L_{min}$
MP3 Audio BZ-7404	Record audio in MP3 format	

X = Frequency weighting (A, B, C or Z), Y = Time weighting (F or S)

## Specifications – BZ-7400

Open Interface for B&K 2245 provides access to all measurement features of any B&K 2245 licence (installed and enabled on the sound level meter) via Web-XI. Open Interface for B&K 2245 must be installed and enabled on the sound level meter for a client connection to work.

### SUPPORTED SOUND LEVEL METER SOLUTIONS

Standard Solutions	<ul style="list-style-type: none"> <li>B&amp;K 2245 with Noise Partner</li> <li>B&amp;K 2245 with Enviro Noise Partner</li> <li>B&amp;K 2245 with Work Noise Partner</li> <li>B&amp;K 2245 with Exhaust Noise Partner</li> </ul>
Custom Solution	B&K 2245 with the Noise Partner BZ-7300 licence plus one or more of the following licences: <ul style="list-style-type: none"> <li>Extended Broadband Analysis BZ-7401</li> <li>Logging BZ-7402</li> <li>Frequency Analysis BZ-7403</li> <li>MP3 Audio BZ-7404</li> </ul>

### CLIENT REQUIREMENTS

- BZ-7400 can be used by any client such as PC, Mac®, smartphone, tablet, etc.
- Any programming language with libraries that support HTTP/HTTPS and sockets/WebSockets can be used
- BZ-7400 is a tool for programmers and, as such, requires programming skills

### CONNECTION

- B&K 2245 connects through Wi-Fi, Ethernet or USB. Commands and data can be routed over the Internet
- B&K 2245 can accept connections from multiple devices simultaneously. For example, this allows you to set up the instrument from one device, and subscribe to measurement data on another device

### RESOURCES

For additional information, documentation and sample code, visit the GitHub® repository for Open Interface:

<https://github.com/hbk-world/Open-Interface-for-Sound-Level-Meter>

## Ordering Information

### BZ-7400 Open Interface for B&K 2245

#### SOFTWARE MODULES FOR B&K 2245

BZ-7300	Noise Partner
BZ-7301	Enviro Noise Partner*
BZ-7302	Work Noise Partner*
BZ-7304	Exhaust Noise Partner*
BZ-7401	Extended Broadband Analysis*
BZ-7402	Logging*
BZ-7403	Frequency Analysis*
BZ-7404	MP3 Audio*

#### INTERFACING

AO-0846 USB-C to voltage output adapter, with power input

#### CALIBRATION

Type 4231 Sound Calibrator


#### SERVICES FOR B&K 2245

**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](http://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](http://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](http://www.bksv.com/calibrationdata)

 **Please note:** Wear and tear on parts like windscreens and cables are not covered by the Factory Standard Warranty or Extended Warranty.

\* Requires BZ-7300

Brüel & Kjær and all other trademarks, service marks, trade names, logos and product names are the property of Brüel & Kjær or a third-party company.

