

## PRODUCT DATA

# Open Interface for B&K 2245 and HBK 2255 Sound Level Meters

## Application programming interface for B&K 2245 and HBK 2255

*Open Interface uses the Brüel & Kjær® Web-XI® protocol to communicate with B&K 2245 and HBK 2255 – advanced, compact, powerful, type-approved, class 1 sound level meters. 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 and HBK 2255 allows you to access all features and functionality in your sound level meter, making sound data available from within your own software solutions and for integration with existing software solutions.*

*Open Interface is included in the standard bundled solutions for B&K 2245 and HBK 2255, or the licence can be added separately to custom solutions.*



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## Uses, features and applications

### Uses

- Use your own applications to control your instrument and 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

### Networking and 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

### 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

### 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 Brüel & Kjær protocol used to enable communication between the sound level meter and clients. Web-XI is used for communication in all applications for B&K 2245 and HBK 2255.

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 or HBK 2255 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

### Standard solutions

The Open Interface licence is included with any B&K 2245 or HBK 2255 standard bundle. The licence provides access to all measurement capabilities via Web-XI. Open Interface supports Noise Partner, Enviro Noise Partner, Work Noise Partner, Exhaust Noise Partner, Product Noise Partner and Building Acoustics Partner.

### B&K 2245 – Standard bundles

	2245 -N-S SLM with Noise Partner	2245 -N-SC SLM with Noise Partner & Calibrator	2245 -N-I SLM with Noise Partner	2245 -E-S SLM with Enviro Noise	2245 -E-SC SLM with Enviro Noise & Calibrator	2245 -W-S SLM with Work Noise	2245 -W-SC SLM with Work Noise & Calibrator	2245 -P-S SLM with Product Noise	2245 -P-SC SLM with Product Noise & Calibrator	2245 -X-I SLM with Exhaust Noise	2245 -X-L SLM with Exhaust Noise	2245 -X-LC SLM with Exhaust Noise & Calibrator
<b>B&amp;K 2245</b> Sound Level Meter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>BZ-7300</b> Noise Partner	✓	✓	✓	✓	✓	✓	✓	✓	✓			
<b>BZ-7301</b> Enviro Noise Partner				✓	✓							
<b>BZ-7302</b> Work Noise Partner						✓	✓					
<b>BZ-7303</b> Product Noise Partner								✓	✓			
<b>BZ-7304</b> Exhaust Noise Partner										✓	✓	✓
<b>BZ-7400</b> Open Interface	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>KE-1038</b> Hard-shell case for SLM and accessories	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Type 4231</b> Sound Calibrator		✓			✓		✓		✓			✓
<b>Type 4966</b> ½" Free-field Microphone	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
<b>ZG-0486</b> Mains Power Supply	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
<b>AO-0821-D-010</b> USB 3, USB C to USB A Cable	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
<b>UA-1650</b> 90 mm dia. Windscreen with AutoDetect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>DH-0819</b> Wrist Strap, for sound level meter	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
<b>UA-2237</b> Mobile Phone Holder Kit	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓

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

HBK 2255 – Standard bundles

	2255-B-S	2255-B-SC	2255-E-S	2255-E-SC	2255-N-S	2255-N-SC	2255-P-S	2255-P-SC	2255-W-S	2255-W-SC
	SLM with Building Acoustics	SLM with Building Acoustics & Calibrator	SLM with Enviro Noise	SLM with Enviro Noise & Calibrator	SLM with Noise Partner	SLM with Noise Partner & Calibrator	SLM with Product Noise	SLM with Product Noise & Calibrator	SLM with Work Noise	SLM with Work Noise & Calibrator
<b>HBK 2255</b> Sound Level Meter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>BZ-7300</b> Noise Partner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>BZ-7301</b> Enviro Noise Partner			✓	✓						
<b>BZ-7302</b> Work Noise Partner									✓	✓
<b>BZ-7303</b> Product Noise Partner							✓	✓		
<b>BZ-7350</b> Building Acoustics Partner	✓	✓								
<b>BZ-7400</b> Open Interface	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Type 4231</b> Sound Calibrator		✓		✓		✓		✓		✓
<b>Type 4966-Z-041</b> ½" Free-field Microphone (microphone cartridge + preamplifier combination)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>ZG-0486</b> Mains Power Supply	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>AO-0821-D-010</b> USB 3, USB C to USB A Cable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>UA-1650</b> 90 mm dia. Windscreen with AutoDetect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>DH-0819</b> Wrist Strap, for sound level meter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>UA-2237</b> Mobile Phone Holder Kit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For more information about HBK 2255, visit [www.bksv.com/2255](http://www.bksv.com/2255).

Custom solutions

Open Interface also supports custom solutions. Licences that enable specific measurement capabilities can be added to any B&K 2245 or HBK 2255 with the Noise Partner BZ-7300 license installed. See Table 1 for an overview of the licences and the measurement capabilities they enable.

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

	LICENCE	FUNCTIONALITY
<b>Required</b>	Noise Partner BZ-7300	Broadband Parameters
		$L_{XYmax}$ , $L_{XYmin}$ $L_{Xeq}$ $L_{Xpeak}$ $L_{Aeq}$ , $L_{Almax}$
<b>Optional</b> For B&K 2245 or HBK 2255	Extended Broadband Analysis BZ-7401	Broadband Parameters
		$L_{XE}$ (SEL) $L_{avS4/5}$ $L_{AFTeq}$
		Statistics
	Logging BZ-7402	Log measured parameters at 1, 5, 10, 30 or 60 s intervals
	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
<b>Optional</b> For HBK 2255 only	Advanced Logging BZ-7450 (Requires Logging BZ-7402)	Log measured parameters at 4 ms intervals
		Set trigger to record audio
		Use timers to measure at regular intervals
		Charge injection calibration (CIC) check
	FLAC Audio BZ-7451	Record audio in FLAC format

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

Open Interface provides access to all measurement features of any B&K 2245 or HBK 2255 licence (installed and enabled on the sound level meter) via Web-XI. Open Interface must be installed and enabled on the sound level meter for a client connection to work.

**SUPPORTED SOUND LEVEL METER SOLUTIONS**

<b>Standard Solutions</b>	<ul style="list-style-type: none"> <li>• B&amp;K 2245 or HBK 2255 with Noise Partner</li> <li>• B&amp;K 2245 or HBK 2255 with Enviro Noise Partner</li> <li>• B&amp;K 2245 or HBK 2255 with Work Noise Partner</li> <li>• B&amp;K 2245 or HBK 2255 with Product Noise Partner</li> <li>• B&amp;K 2245 with Exhaust Noise Partner</li> <li>• HBK 2255 with Building Acoustics Partner</li> </ul>
<b>Custom Solution</b>	<p>B&amp;K 2245 or HBK 2255 with the Noise Partner BZ-7300 licence plus one or more of the following licences:</p> <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> <hr/> <p>HBK 2255 with the Noise Partner BZ-7300 licence plus one or more of the following:</p> <ul style="list-style-type: none"> <li>• Logging BZ-7402 plus Advanced Logging BZ-7450</li> <li>• MP3 Audio BZ-7404 plus FLAC Audio BZ-7451</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 and HBK 2255 connect through Wi-Fi, Ethernet or USB. Commands and data can be routed over the Internet
- B&K 2245 and HBK 2255 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 and HBK 2255**

**SOFTWARE MODULES**

BZ-7300	Noise Partner
BZ-7301	Enviro Noise Partner*
BZ-7302	Work Noise Partner*
BZ-7304	Exhaust Noise Partner
BZ-7350	Building Acoustics Partner*
BZ-7401	Extended Broadband Analysis*
BZ-7402	Logging*
BZ-7403	Frequency Analysis*
BZ-7404	MP3 Audio*
BZ-7540	Advanced Logging†
BZ-7541	FLAC Audio‡

\* Requires BZ-7300  
 † For HBK 2255 only, requires BZ-7402  
 ‡ For HBK 2255 only, requires BZ-7300

**INTERFACING**

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

**CALIBRATION**

Type 4231      Sound Calibrator

**SERVICES FOR B&K 2245 AND HBK 2255**

**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.

**Extended Warranty Contract:** Extend your standard product warranty up to 10 years.

**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.