

PRODUCT DATA

Hand-held Analyzer Type 2250-L (2250 Light)

Hand-held Analyzer Type 2250-L (2250 Light) has been developed specifically for measuring occupational, environmental and product noise, while complying fully with all the relevant national and international standards.

Extensive user studies have been paired with state-of-the-art technology to make this analyzer a robust, effective and practical tool for those applications.

Using the large, high-contrast, touch screen interface, the analyzer can easily be set up to display and measure just what is needed from the extensive list of parameters provided by the analyzer.

Together with Measurement Partner Suite for post-processing, 2250 Light is a complete solution for your measurement needs.



Uses and Features

Uses

- Environmental noise assessment
- Occupational noise evaluation
- Hearing protection selection
- Noise reduction
- Product quality control
- General purpose Class 1 sound measurements
- Real-time analysis of sound in 1/1- and 1/3-octave bands
- Tone assessment using 1/3-octave methods
- Loudness and noise rating measurements
- Time history analysis for broadband parameters and spectra (Logging)
- Audiometer calibration

Features

- Hardware
 - Large, high-resolution, touch-sensitive colour screen
 - ‘Traffic light’ status indicator
 - Plug-in rechargeable Li-ion battery (>8 h operation)
 - Robust and environmentally protected (IP 44)
 - Data storage on high-capacity plug-in memory cards or USB flash drive
 - USB 2.0 host for connection to printer, GPS, weather station, modem
 - Upgrade to Type 2250 or 2270 with the trade-in program
- Software
 - Multilingual user interface: 23 languages
 - 120 dB dynamic range – up to 140 dB
 - 24- or 16-bit recording of all or parts of a measurement
 - Broadband and spectrum logging (optional BZ-7133)
 - Logging profile display with markers (optional BZ-7133)
 - Back-erase for manual delete of unwanted noise events
 - Full Measurement Partner Suite support software for archiving, exporting and post-processing
 - Simultaneous measurement of noise and weather parameters with weather station

2250 Light (Type 2250-L) is built on the same platform as the award-winning Hand-held Analyzer Type 2250, whose design and ease-of-use and renowned Brüel & Kjær measurement excellence is provided in an efficient and versatile sound measurement instrument. Whether addressing workplace noise compliance, environmental noise assessment, or product noise certification, 2250 Light offers the functionality needed to meet your requirements. 2250 Light is fully compliant with IEC 61672-1 (see the specifications section for compliance information) and is delivered with a number of predefined measurement templates tailored to suit specific requirements.

The comfortable and secure design feels safe in your hand, and the buttons fall precisely where they need to be for a one-thumb operated start, stop and save. The 'traffic light' indicator surrounding the Start/Pause pushbutton gives you an immediate visual indication of measurement status, even in the brightest sunshine. The large, high contrast, touchscreen/display, lets you select parameters on the display and easily store those setups in your 2250 Light for future measurements.

When on site, the weather station kit measures weather parameters that are stored on 2250 Light together with the noise data. After completion, transfer your measurement data to Measurement Partner Suite, which has tools to help you extract exactly what you need from your data.

This product data describes the suite of software applications available for 2250 Light. All analyzers are delivered with Sound Level Meter Software for 2250 Light BZ-7130 enabled.

Upgrade to Full Type 2250 or 2270

2250 Light can be upgraded to a Type 2250 or Type 2270, which has more features and supports a wider range of applications, such as enhanced logging, triggered signal recording and reverberation time software (see product data [BP 2025](#) for more information). The upgrade is on an exchange basis, contact your local HBK representative for details.

Workplace and Industrial Hygiene Noise Measurement Applications



2250 Light is an easy-to-use, powerful tool to make you more productive, and more confident measuring noise at work. 2250 Light was developed with workplace noise as a special concern.

2250 Light has all the necessary occupational health noise parameters. It can measure Fast and Slow, and A- and C-weighted sound pressure levels simultaneously (along with a separately weighted peak detector) so that the values you need to specify hearing protection are immediately displayed. Parallel analysis allows you to compare a 3 dB exchange rate average measurement with a selectable alternate 4, 5 or 6 dB exchange rate, including separate dose, expected dose and exposure values.

2250 Light offers three independent threshold peak event counters, along with simultaneous Fast, Slow and Impulse rms detectors, to assess impulsive noise.

With the optional 1/1- and 1/3-octave frequency analysis software options, instantly assess noise control and detailed hearing-protection requirements for a surveyed location. All the octaves are measured at the same instant, along with broadband A- and C-weighted values, so there is no filter switching or range changing.

Sometimes noise levels in the workplace vary dramatically, and perhaps irregularly. To assess this kind of noise it is helpful to measure and analyse a noise profile – a measurement that shows how the sound varies with time. The logging option for 2250 Light provides this capability in a natural, intuitive way. If you have installed the 1/1- or 1/3-octave real-time frequency analysis option, 2250 Light seamlessly integrates the spectrum information into the noise profile.

Signal Recording Option BZ-7226 lets you record the measurement signal in order to identify and document sound sources.

Easily export, archive and report your measurements using Measurement Partner Suite BZ-5503, or export the results to Work Noise Partner BZ-7302, where you can organize and document a company's noise and hearing conservation programme. Work Noise Partner calculates noise exposure according to ISO 9612-2.

Product Noise Measurement



Whether you have a simple A-weighted sound limit requirement, or need to evaluate a 1/3-octave reverberation chamber sound power test, 2250 Light is scalable to your requirements.

2250 Light can be used as a hand-held device for easy portability, or it can be operated using your Windows® PC as an online-, USB- or LAN-controlled device in your laboratory. The user-defined templates make switching between applications easy.

The wide 120 dB dynamic range of 2250 Light eliminates concern for overloads, and you can define a preset measurement time to add consistency to your measurements. Use the built-in headphone (3.5 mm) output jack to send the signal to other measurement instruments. Measurement Partner Suite (included) makes it easy to keep track of results in an organized archive structure.

Environmental Noise Assessment



The tasks for environmental noise measurements are varied, so the instrument you pick for your measurements needs to be flexible, easy to configure, powerful and accurate. 2250 Light is all that and more, ideal for a simple noise enforcement measurement one moment and for a complex environmental impact survey the next.

2250 Light with included Sound Level Meter Software BZ-7130 is ideal for spot noise enforcement checks. Press the Start button and when ready, press the same button to stop the measurement. Press the Save button and you will not only be saving the results, but also the time and duration of the measurement and the date and time of the last calibration.

2250 Light can measure all the parameters needed for environmental noise, including dual-frequency weightings, fast, slow, and impulse time averaging, L_{eq} and a full range of statistical distributions. Just as important, you can set 2250 Light to display only the parameters you need and save that configuration so the instrument starts-up, tailor-made for your use every time.

For more involved environmental applications, you will need to add the logging option. Now you can set the analyzer to record all, or up to ten selected measurement results at intervals from one second to one day, for a duration up to 1 month. The display offers two simultaneous views: the complete profile and a 'zoomed-in' 100-sample window, which are intuitively linked by the cursor.

For the precise timing of noise events, an alternative fast log view gives you the L_{AF} , L_{AS} and L_{Aeq} results for 100 ms intervals. In either the fast log or profile view, you can define up to five different markers anywhere in the profile, to identify noise sources or events. When you use the real-time frequency analysis options, 1/1-octave or 1/3-octave, the frequency spectrum average, maximum and minimum values can be logged along with the overall values. With the Tone Assessment Option, annoying tones in the spectrum can be assessed according to the ISO 1996 standard. Save and view the noise profiles on your Microsoft® Windows® PC using Measurement Partner Suite and use its optional post-processing module for noise assessment based on logging and frequency analysis.

Make these measurements with the incredible 120 dB dynamic range of 2250 Light, which allows measurements from the low noise floor of the analyzer to over 140 dB. Without a range switch to consider, you can now make measurements without fear of overload, and still capture the nuances of a silent night. 2250 Light is an ideal entry point to safe, easy and precise environmental noise measurements.

Great care has been taken to ensure that the hardware is ergonomically optimal in field use. The key features of 2250 Light are shown in Fig. 1.

Fig. 1 Key features of Hand-held Analyzer Type 2250-L

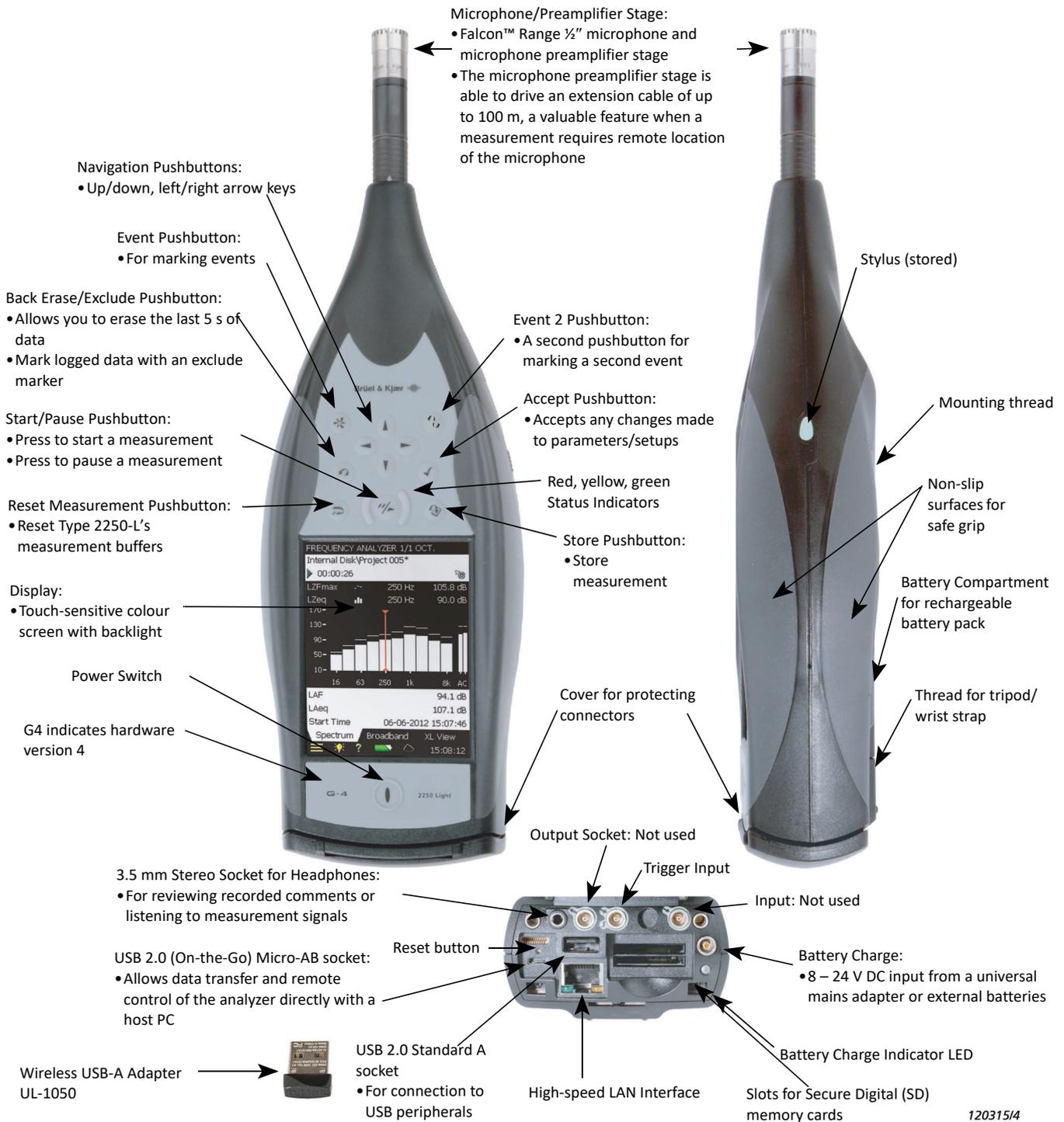
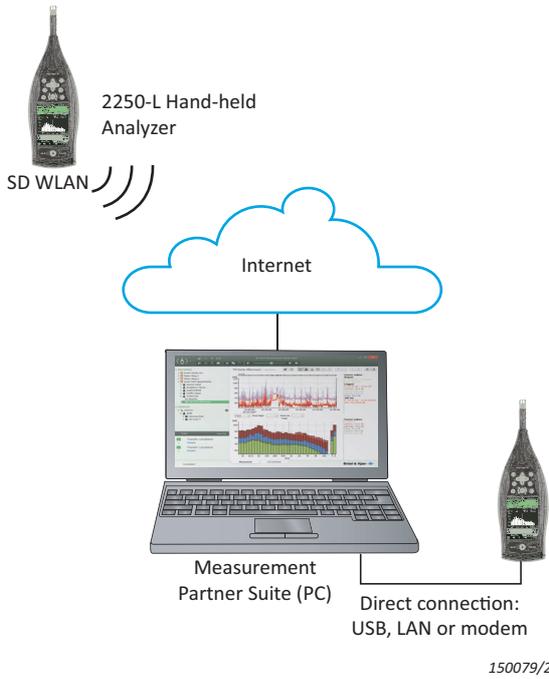
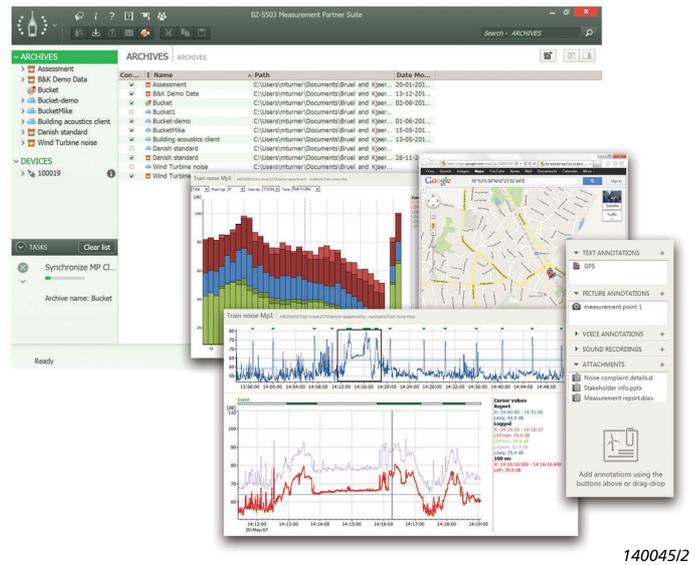


Fig. 2 Secure access to measurement data from anywhere



Remote Internet Communication
 Access your data from anywhere by using various technologies. 2250-L can operate via Wi-Fi, modem communication (for example, 3G) or LAN (Ethernet).

Fig. 3 Measurement Partner Suite BZ-5503



Measurement Partner Suite BZ-5503, in its basic configuration, comes with your hand-held analyzer (see [product data BP 2430](#)). It is the Brüel & Kjær data viewing and post-processing toolbox for environmental noise and vibration.

The free, basic configuration provides data archive, preview and export capabilities, software maintenance and online display. Archives can be stored locally or on network drives.

Advanced post-processing functionality is available with a Measurement Partner Suite post-processing module licence. A range of subscription or capex licence options are available, locked to either your instrument's serial number or a USB dongle, giving you the flexibility to choose the licence model that meets the needs of your business.

Sound Level Meter Software for 2250 Light – BZ-7130

2250 Light comes with Sound Level Meter Software for 2250 Light included, which enables 2250 Light to be a versatile broadband sound level meter that complies with the latest international standard (IEC 61672-1) as well as previous international and national standards.

All quantities are measured simultaneously. For example, A and C frequency weighted levels are measured at the same time and F, S and I time weightings are applied in parallel, and peak levels are also measured. Full statistics are also computed on-the-fly. Combine this with the dynamic range exceeding 120 dB and you never miss a beat! You get all the parameters in one attempt – under-range is non-existent and you will have difficulties provoking an overload. A full complement of occupational health sound parameters are provided simultaneously, complying with national and international standards. The detailed list of available parameters can be found in the specifications section. You choose what you want on the display, but, at any time, during or after the measurement, all other parameters can be inspected and reported.

1/- and 1/3-octave Frequency Analysis Software for 2250 Light – BZ-7131 and BZ-7132

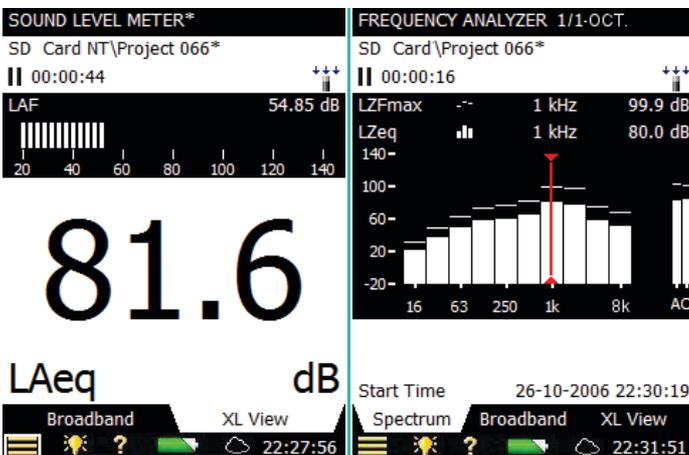
1/1-octave Frequency Analysis Software for 2250 Light BZ-7131, and 1/3-octave Frequency Analysis Software for 2250 Light BZ-7132 are optional software modules that enable real-time measurements in 1/1- or 1/3-octave bands over a wide frequency range. This makes it a simple matter to obtain spectra in order to, for example, select hearing protection, qualify heat and ventilation systems, or assess tonality.

The following frequency ranges are available:

- 1/1-octave spectra (centre frequencies 16 Hz to 8 kHz)
- 1/3-octave spectra (centre frequencies 12.5 Hz to 16 kHz)

Each band provides unrivalled dynamic range from the noise floor in that particular band to 140 dB. That is, a dynamic range generally in excess of 135 dB. Spectra can be A-, B-, C- or Z-weighted. Five spectra are measured and stored and, in addition, two instantaneous spectra are available for display, for example, a minimum and maximum spectrum, that can be superimposed on the display. All the broadband quantities measured by Sound Level Meter Software BZ-7130 are computed in parallel with the frequency analysis.

Fig. 4 Left: The large numeric display – ideal for a spot noise enforcement check
Right: Example of 1/1-octave frequency analysis. Note that two spectra are displayed simultaneously



Tone Assessment Option – BZ-7231

Tone assessment identifies any 1/3-octave bands with audible tones above a set limit and is a standard application on all new analyzers. The assessment is based on the band's prominence versus adjacent bands. The adjustment is the penalty to add to L_{Aeq} .

Annoying tones in the spectrum can be assessed according to the ISO 1996 standard. The level of each 1/3-octave band is compared to the level of its neighbours, and all tones as well as the overall penalty (adjustment) are indicated. The search parameters are user adjustable to suit national requirements.

Logging Software for 2250 Light – BZ-7133

With optional Logging Software enabled, 2250 Light becomes a versatile instrument for obtaining time histories. The Logging Software allows you to select freely among the broadband parameters and log them at intervals from 1 s to 24 h. At the same time L_{AF} , L_{AS} and L_{Aeq} can be logged at 100 ms intervals.

If Frequency Analysis Software BZ-7131 or BZ-7132 is enabled, the Logging Software additionally lets you log spectra at the same 1 s to 24 h intervals.

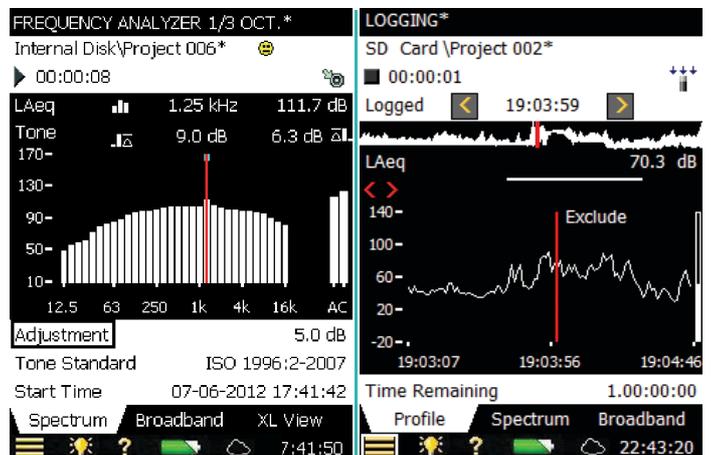
Logging Software BZ-7133 incorporates a number of features designed to make difficult field work as manageable as possible.

Some of these features are:

- Five user-definable markers can be set on-the-fly, making it easy to clearly indicate specific noise sources
- Markers can be set directly on the profile display using the stylus and the touch screen. Simply 'tap and drag' on the part of the profile you want to mark and select a marker from the drop-down list
- Markers can even be set after the fact. The display covers the latest 100 samples (100 s of profile when logging at 1 s intervals, otherwise more), so in most cases, you can wait for the event (or disturbance) to end before placing your marker. Alternatively, scroll back in the profile and set your marker
- Browse easily between markers (like signal recordings)
- The profile display can be 'frozen' at any time (automatic when you tap the screen)

All markers and annotations are saved with the measurement. No further bookkeeping is required. When importing data into Measurement Partner Suite BZ-5503 for further analysis, markers, as well as annotations, are directly accessible on the profile.

Fig. 5 Left: Tone Assessment Option BZ-7231 showing 1/3-octave bands with audible tones over a set limit (identified by the blue dot)
Right: Display showing part of a logging profile and an exclude marker



Charge Injection Calibration (CIC)

Measurement integrity is vital, particularly if the system is operating unattended. CIC provides a means of auto-checking the measurement system for 10 s to ensure its continued and accurate operation.

With the Logging Software, CIC can be set to run at the beginning and end of measurement.

Signal Recording Option – BZ-7226

Signal Recording Option BZ-7226 works with all other applications. In all cases it allows you to make recordings of the actual measured signal. Recordings are automatically attached to the measurement and kept with it, even after transfer of the data to a PC.

One purpose of the Signal Recording Option is to let you record the measurement signal in order to identify and document sound sources. Automatic gain control is available to allow for any signal level. For example:

- Did the measured L_{Aeq} at 57 dB actually stem from the rather distant compressor, or from other sources such as nearby birds or traffic? Not necessarily easy to evaluate on site, very difficult to document convincingly later. If the signal is recorded: No discussion
- Is it really true that this noise is impulsive and should be penalized accordingly? If the signal is recorded: There may still be a discussion, but it is then based on facts

Another important use of signal recording is to record the signal for later processing, such as analysing an engine run-up or a machinery process cycle.

With Sound Level Meter Software BZ-7130 and Frequency Analysis Software BZ-7131, Signal Recording Option BZ-7226 lets you:

- Record all or parts of the measured signal giving rise to specific results, levels and spectra
- Set up your analyzer so that recording can be set to start automatically when the measurement is started, or you can initiate recordings manually

With Logging Software BZ-7133, signal recording can be associated with the Event Marker using the Event key or an external signal (such as with Hand Switch ZH-0680). The sound during the event is recorded and attached to the appropriate part of the profile.

In all of the above cases, the maximum duration of recordings can be set (the analyzer is only limited by available storage on the memory card currently in use). Recording signals may require large amounts of storage; therefore, Signal Recording Option BZ-7226 allows you to decide on the trade-off between storage needed and recording quality (sampling rate).

The Signal Recording Option offers a choice of 24- or 16-bit recording. You can use 24-bit recording to capture the full 120 dB dynamic range of 2250 Light, which is convenient for later signal analysis. You can use 16-bit recording to consume less memory; however, this requires selecting the level range for recording (or using the automatic gain control).

Adding Weather Parameters to Your Measurement Data

Fig. 6 Hand-held analyzer measuring outdoor noise using a weather station kit



Weather conditions affect the propagation of sound, so wind speed and direction must be taken into account when measuring noise outdoors. Consequently, most environmental noise measurement standards define limits for wind speed and direction. To identify the portions of your measurement that are within allowable limits for wind speed and direction, use Weather Station Kit MM-0316-A (two parameters) or MM-0256-A (six parameters).

Fig. 7 Weather Station Kit MM-0316-A



The weather stations are based on ultrasound technology and operate well above the upper frequency limit of the microphone. Connect your weather station to your analyzer, turn it on, and you are ready to start measuring with no software setup necessary. The weather station is powered by the analyzer's battery, so there is no need for extra batteries.

Post-processing of Weather Data

Noise and weather parameters are captured simultaneously on the analyzer and are available for display and post-processing in Measurement Partner Suite BZ-5503 along with your noise data when you are back in the office. To quickly identify the portions of your logging profile where wind speed and direction are within the allowed limits, use Measurement Partner's report and marker wizard (requires a post-processing module licence for Measurement Partner Suite).

Outdoor Protection

For outdoor environmental noise measurements, your analyzer may need extra weather protection, offered by All-weather Case Type 3535-A and Outdoor Microphone Type 4952. For details, please refer to [product data BP 2251](#) and [product data BP 2099](#) respectively.

Overview of 2250 Light Software Features

The table that follows presents a summary of the features of each of the software modules available with 2250 Light. See Specifications for details.

FEATURE	SLM SOFTWARE	1/1-OCT. FREQUENCY ANALYSIS SOFTWARE	1/3-OCT. FREQUENCY ANALYSIS SOFTWARE	LOGGING SOFTWARE
IEC/ANSI SLM standards Type/Class 1	•	•	•	•
120+ dB Dynamic Range – no need for range switching	•	•	•	•
Sound levels up to 140 dB with supplied Microphone Type 4950	•	•	•	•
Frequency weightings A, B, C, Z (linear) and time weightings F, S, I	•	•	•	•
Free-field/diffuse-field correction	•	•	•	•
Preset time start/stop	•	•	•	•
Multi-language user interface	•	•	•	•
Context-sensitive help	•	•	•	•
Broadband statistics based on L_{Aeq} , L_{AF} or L_{AS}	•	•	•	•
Broadband frequency range: 5 Hz – 20 kHz	•	•	•	•
Remote control using analogue or GSM modem	•	•	•	•
Transfer of data files while measuring (USB, LAN or modem)	•	•	•	•
Recording of measured signal during measurement, 16- or 24-bit	•*	•*	•*	•*
Timers for automatic measurement start	•*	•*	•*	•*
Occupational health parameters	•	•	•	•
Weather data and GPS input	•	•	•	•
Back-erase – last 5 seconds of measurement data	•	•	•	•
Tone assessment		•	•	•
Loudness and Noise Rating results		•	•†	•†
1/1-octave spectra (centre frequencies 16 Hz – 8 kHz)		•		•†
1/3-octave spectra (centre frequencies 12.5 Hz – 16 kHz)			•	•†
Charge Injection Calibration (CIC)			•	•
Recording of signal during noise events (with Event key or external signal)			•*	•*
Logging of all or selected broadband parameters and spectra				•
Logging period 1 s – 24 h, Logging time up to 31 days				•
L_{Aeq} , L_{AS} , L_{AF} logged every 100 ms				•
Profile display				•
Profile overview of entire measurement				•
Markers on profile display				•

* If Signal Recording Option is enabled

† If 1/1- or 1/3-octave Frequency Analysis Software is enabled

	<p>The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives</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 compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China</p> <p>WEEE mark indicates compliance with the EU WEEE Directive</p>
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
EMC Emission	<p>EN/IEC 61000-6-3: Generic emission standard for residential, commercial and light industrial environments</p> <p>EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements</p> <p>CISPR 32: Radio disturbance characteristics of information technology equipment. Class B Limits</p> <p>IEC 61672-1, IEC 61260, IEC 60651 and IEC 60804: Instrumentation standards</p> <p>NOTE: The above is only guaranteed using accessories listed in this document</p>
EMC Immunity	<p>EN/IEC 61000-6-2: Generic standard – Immunity for industrial environments</p> <p>EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements</p> <p>IEC 61672-1, IEC 61260, IEC 60651 and IEC 60804: Instrumentation standards</p> <p>NOTE: The above is only guaranteed using accessories listed in this document</p>
Temperature	<p>IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing.</p> <p>Cold and Dry Heat</p> <p>Operating Temperature: -10 to +50 °C (14 to 122 °F)</p> <p>Storage Temperature: -25 to +70 °C (-13 to 158 °F)</p>
Humidity	IEC 60068-2-78: Damp Heat: 93% RH (non-condensing at +40 °C (104 °F)). Recovery time 2 ~ 4 hours
Mechanical	<p>Non-operating:</p> <p>IEC 60068-2-6: Vibration: 0.3 mm, 20 m/s², 10 – 500 Hz</p> <p>IEC 60068-2-27: Bump: 1000 bumps at 400 m/s²</p> <p>IEC 60068-2-27: Shock: 1000 m/s², 6 directions</p>
Enclosure	IEC 60529 (1989): Protection provided by enclosures: IP 44*

* With preamplifier, extension cable or protection plug connected to the top socket and the hinged cover protecting the bottom connectors.

ADDITIONAL STANDARDS FOR MICRO USB WIRELESS ADAPTER UL-1050*

Safety	EN 60950-1:2006+A11:2009+A1:2010 +A12:2011
EMC Emission	<p>EN 301 489-1 V1.9.2</p> <p>EN 301 489-17 V2.2.1</p> <p>EN 55022: 2010+AC:2011</p>
Spectrum & Health	<p>EN 300 328 V1.7.1</p> <p>EN 62311:2008</p>
Restriction of Hazardous Substances	EN 50581:2012

FCC GRANT OF EQUIPMENT AUTHORIZATION FOR MICRO USB WIRELESS ADAPTER UL-1050*

FCC Identifier	KA2WA121A1
FCC Rule Parts	15c
Frequency Range (MHz)	2412.0 – 2462.0
Output Watts	0.269
EC Declaration of Conformity	1Tx1R 802.11bgn USB adapter
C-Tick Authorization	AS/NZS 4268: 2008+A1:2010

* From the D-Link Corporation declaration of conformance for Wireless N 150 Micro USB Adapter DWA-121.

Specifications – Hand-held Analyzer Type 2250-L (2250 Light) Platform

Specifications apply to 2250 Light fitted with Microphone Type 4950 and Microphone Preamplifier ZC-0032:

Transducer

SUPPLIED MICROPHONE

Type 4950: Prepolarized Free-field ½" Microphone
Nominal Open-circuit Sensitivity: 50 mV/Pa (corresponding to -26 dB re 1 V/Pa) ±2 dB
Capacitance: 12.5 pF (at 250 Hz)

SUPPLIED MICROPHONE PREAMPLIFIER

Part No.: ZC-0032
Nominal Preamplifier Attenuation: 0.3 dB
Connector: 10-pin LEMO
Extension Cables: Up to 100 m in length between the microphone preamplifier and 2250 Light, without degradation of the specifications

MICROPHONE POLARIZATION VOLTAGE

Selectable between 0 V and 200 V

SELF-GENERATED NOISE LEVEL

Typical values at 23 °C for nominal microphone open-circuit sensitivity:

WEIGHTING	MICROPHONE	ELECTRIC	TOTAL
"A"	14.0 dB	12.7 dB	16.4 dB
"B"	12.9 dB	11.9 dB	15.4 dB
"C"	13.0 dB	13.6 dB	16.3 dB
"Z" 5 Hz – 20 kHz	14.4 dB	19.3 dB	20.5 dB

Hardware Interface

PUSHBUTTONS

11 keys with backlight optimized for measurement control and screen navigation

ON-OFF BUTTON

Function: Press 1 s to turn on; press 1 s to enter standby; press for more than 5 s to switch off

STATUS INDICATORS

LEDs: Red, yellow and green

DISPLAY

Type: Transflective back-lit touchscreen, 240 × 320 dot matrix

Colour Scheme: Black and white

Backlight: Adjustable level and time

USER INTERFACE

Measurement Control: Using pushbuttons

Setup and Display of Results: Using stylus on touchscreen or pushbuttons

Lock: Pushbuttons and touchscreen can be locked and unlocked

USB INTERFACE

USB 2.0 OTG Micro AB and USB 2.0 Standard A sockets for Wireless USB-A Adapter UL-1050, printer or weather station

MODEM INTERFACE

Connection to Internet through GPRS/EDGE/HSPA modem connected through the USB Standard A Socket.

Supports DynDNS for automatic update of IP address of host name

PRINTER INTERFACE

PCL printers, Mobile Pro Spectrum thermal printer or Seiko DPU S245/S445 thermal printers can be connected to USB socket

SECURE DIGITAL SOCKET

2 × SD sockets

Connect SD and SDHC memory cards

LAN INTERFACE SOCKET

- Connector: RJ 45 Auto-MDIX
- Speed: 100 Mbps
- Protocol: TCP/IP

TRIGGER SOCKET

Connector: Triaxial LEMO

Max. Input Voltage: ±20 V_{peak}

Input Impedance: >47 kΩ

Precision: ±0.1 V

HEADPHONE SOCKET

Connector: 3.5 mm MiniJack stereo socket

Max. Peak Output Level: ±1.4 V

Output Impedance: 32 Ω in each channel

Storage

INTERNAL FLASH-RAM (NON-VOLATILE)

512 Mbyte for user set-ups and measurement data

EXTERNAL MEMORY CARD

Secure Digital (SD and SDHC) Card: For store/recall of measurement data

USB MEMORY STICK

For store/recall of measurement data

Power

EXTERNAL DC POWER SUPPLY REQUIREMENTS

Used to charge the battery pack in the analyzer

Voltage: 8 – 24 V DC, ripple voltage <20 mV

Current Requirement: min. 1.5 A

Power Consumption: <2.5 W, without battery charging, <10 W when charging

Cable Connector: LEMO Type FFA.00, positive at centre pin

EXTERNAL AC MAIN SUPPLY ADAPTOR

Part No.: ZG-0426

Supply Voltage: 100 – 120/200 – 240 VAC; 47 – 63 Hz

Connector: 2-pin IEC 320

BATTERY PACK

Rechargeable Li-Ion battery

Part No.: QB-0061

Voltage: 3.7 V

Nominal Capacity: 5500 mAh (typical); 5200 mAh (minimum)

Typical Operating Time: >11 h (screen backlight dimmed); >10 h (full screen backlight)

Use of external interfaces (LAN, USB, Wi-Fi) will decrease battery operating time. Connecting a weather station or a GPS receiver can decrease battery operating with up to 20%. Connecting Wireless USB-A Adapter UL-1050 can decrease battery operating time up to 35%

Battery Cycle Life: >500 complete charge/discharge cycles

Battery Indicator: Remaining battery capacity and expected working time may be read out in % and time

Battery Fuel Gauge: The battery is equipped with a built-in fuel gauge, which continuously measures and stores the actual battery capacity in the battery unit

Charge Time: In analyzer, typically 10 hours from empty at ambient temperatures below 30 °C (86 °F). To protect the battery, charging will be terminated completely at ambient temperatures above 40 °C (104 °F). At 30 to 40 °C, charging time will be prolonged. With External Charger ZG-0444 (optional accessory), typically five hours

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

CLOCK

Back-up battery powered clock. Drift <0.45 s per 24-hour period

Environmental

WARM-UP TIME

From Power Off: <2 minutes

From Standby: <10 seconds

WEIGHT AND DIMENSIONS

650 g (23 oz) including rechargeable battery

300 × 93 × 50 mm (11.8 × 3.7 × 1.9") including preamplifier and microphone

Wireless Connection to Mobile Device

Specifications apply to Wireless USB-A Adapter UL-1050

Operating Frequency: 2.4 GHz

Data Rate:

- IEEE 802.11n: up to 150 Mbps
- IEEE 802.11g: up to 54 Mbps
- IEEE 802.11b: up to 11 Mbps

Encryption/Authentication:

- 64/128-bit WEP
- WPA-PSK
- WPA2-PSK

Range: The range is similar to a standard WLAN unit, typically from 10 to 50 m (33 to 164'), depending on the environment and the number of other WLAN transmitters in the area (smartphones, Wi-Fi, etc.)

Power Requirements: Power Consumption: <1 W

Software Interface

PREFERENCES

Date, time and number formats can be specified

LANGUAGE

User interface in Catalan, Chinese (People's Republic of China), Chinese (Taiwan), Croatian, Czech, Danish, English, Flemish, French, German, Hungarian, Japanese, Italian, Korean, Polish, Portuguese, Romanian, Russian, Serbian, Slovenian, Spanish, Swedish, Turkish and Ukrainian

HELP

Concise context-sensitive help in Chinese (People's Republic of China), English, French, German, Italian, Japanese, Polish, Romanian, Serbian, Slovenian, Spanish and Ukrainian

UPDATE OF SOFTWARE

Update to any version using BZ-5503 through USB or update via Internet from version 4.0 and up

REMOTE ACCESS

Connect to the analyzer using:

- Measurement Partner Suite BZ-5503
- the 2250/2270 SDK (software development kit)
- a REST interface through HTTP
- an Internet browser supporting JavaScript

The connection is password protected with two levels of protection:

- Guest level: for viewing only
- Administrator level: for viewing and full control of the analyzer

Input

CORRECTION FILTERS

For Microphone Types 4950, 4952, 4952+EH-2152 and 4184-A: Correct the frequency response to compensate for sound field and accessories

Accessories (Type 4950 only): None or Windscreen UA-0237

Sound Field: Free-field or Diffuse-field for Types 4952 and 4184-A only: 0° (Top) reference direction and 90° (Side) reference direction

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

ELECTRICAL

Uses internally generated electrical signal combined with a typed-in value of microphone sensitivity

CALIBRATION HISTORY

Up to 20 of the last calibrations made are listed and can be viewed on the analyzer

Data Management

PROJECT TEMPLATE

Defines the display and measurement settings. Setups can be locked and password protected

PROJECT

Measurement data stored with the project template

JOB

Projects are organized in jobs

Explorer facilities for easy management of data (copy, cut, paste, delete, rename, view data, open project, create job, set default project name)

Measurement Control

MANUAL

Manually controlled single measurement

AUTOMATIC

Preset measurement time from 1 s to 24 h in 1 s steps

MANUAL CONTROLS

Reset, Start, Pause, Back-erase, Continue and Store the measurement manually

AUTO-START

A total of 10 timers allow set up of measurement start times up to a month in advance. Each timer can be repeated. Measurements are automatically stored when completed

BACK-ERASE

The last 5 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

TRAFFIC LIGHTS

Red, yellow and green LEDs show measurement status and instantaneous overload as follows:

- Yellow LED flash every 5 s = stopped, ready to measure
- Green LED flashing slowly = awaiting calibration signal
- Green LED on constantly = measuring
- Yellow LED flashing slowly = paused, measurement not stored
- Red LED flashing quickly = intermittent overload, calibration failed

NOTIFICATIONS

Sends an SMS or email daily at a specified time or if an alarm condition is fulfilled.

Alarm Conditions:

- Disk space below set value
- Internal battery enters set state
- Change in measurement state
- Reboot of analyzer

GPS Annotations

A text annotation with GPS information can be attached (Latitude, Longitude, Altitude and position error). Requires connection to a GPS receiver

Software Specifications – Sound Level Meter Software for 2250 Light BZ-7130

Conforms with the following national and international standards:

- IEC 61672-1 (2013) Class 1
- IEC 60651 (1979) plus Amendment 1 (1993-02) and Amendment 2 (2000-10), Type 1
- IEC 60804 (2000-10), Type 1
- DIN 45657 (1997-07)
- ANSI S1.4-1983 plus ANSI S1.4 A-1985 Amendment, Type 1
- ANSI/ASA S1.4-2014, Class 1
- ANSI S1.43-1997, Type 1

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. Type 2250-L also conforms to these EN Standards

Analysis

DETECTORS

Parallel Detectors: On every measurement:

A- or B-weighted: (switchable) broadband detector channel with three exponential time weightings (Fast, Slow, Impulse), one linearly averaging detector and one peak detector

C- or Z-weighted: (switchable) as for A- or B-weighted

Overload Detector: Monitors the overload outputs of all the frequency weighted channels

MEASUREMENTS

X = frequency weightings A or B

Y = frequency weightings C or Z

V = frequency weightings A, B, C or Z

U = time weightings F or S

Q = exchange rate 4, 5 or 6 dB

N = number between 0.1 and 99.9

For Storage: Full statistics

For Display and Storage:

Start Time	Stop Time	Overload %
Elapsed Time	L_{XeQ}	L_{YeQ}
L_{XE}	L_{YE}	$L_{CeQ} - L_{AeQ}$
L_{XSmax}	L_{XFmax}	L_{XImax}
L_{YSmax}	L_{YFmax}	L_{YImax}
L_{XSmin}	L_{XFmin}	L_{XImin}
L_{YSmin}	L_{YFmin}	L_{YImin}
L_{XeQ}	L_{YeQ}	$L_{AeQ} - L_{AeQ}$
L_{AFTeQ}	$L_{AFTeQ} - L_{AeQ}$	Time Remaining
$L_{ep,d}$	$L_{ep,d,v}$	E
Dose	Proj. Dose	#VPeaks (>NNNdB)
#VPeaks (>137dB)	#VPeaks (>135dB)	L_{Vpeak}
T_{Vpeak}	L_{avUQ}	TWA
TWA_v	DoseUQ	Proj. DoseUQ
$L_{AeQ,T1,mov,max}$	$L_{AeQ,T2,mov,max}$	$L_{CeQ,T1,mov,max}$
$L_{CeQ,T2,mov,max}$	$\Delta L_{eQ,T1,mov,max}$	$\Delta L_{eQ,T2,mov,max}$

Weather Data (requires connection to a weather station):

Wind Dir. avg.
 Wind Dir. min.
 Wind Dir. max.
 Wind Speed avg.
 Wind Speed min.
 Wind Speed max.
 Amb. Temperature
 Amb. Humidity
 Amb. Pressure
 Rainfall

Only for Display as Numbers or Quasi-analog Bars:

L _{XS}	L _{XF}	L _{XI}
L _{YS}	L _{YF}	L _{YI}
L _{XS(SPL)}	L _{XF(SPL)}	L _{XI(SPL)}
L _{YS(SPL)}	L _{YF(SPL)}	L _{YI(SPL)}
L _{Vpeak,1s}	L _{AN1} or L _{AUN1}	L _{AN2} or L _{AUN2}
L _{AN3} or L _{AUN3}	L _{AN4} or L _{AUN4}	L _{AN5} or L _{AUN5}
L _{AN6} or L _{AUN6}	L _{AN7} or L _{AUN7}	Std.Dev.
L _{Aeq,T,mov}	L _{Aeq,T2,mov}	L _{Ceq,T1,mov}
L _{Ceq,T2,mov}	ΔL _{eq,T1,mov}	ΔL _{eq,T2,mov}

Trig. Input Voltage

Instantaneous Weather Data:

Wind Dir.
 Wind Speed

Instantaneous GPS Data:

Latitude
 Longitude

MEASURING RANGES

When using Microphone Type 4950

Dynamic Range: From typical noise floor to max. level for a 1 kHz pure tone signal, A-weighted: 16.4 dB to 140 dB

Primary Indicator Range: In accordance with IEC 60651, A-weighted: 23.6 dB to 122.3 dB

Linearity Range: In accordance with IEC 60804, A-weighted: 21.5 dB to 140.8 dB

Linear Operating Range: In accordance with IEC 61672:

- A-weighted 1 kHz: 24.9 dB to 139.8 dB
- C-weighted: 26.2 dB to 139.8 dB
- Z-weighted: 31.6 dB to 139.8 dB

Peak C Range: In accordance with IEC 61672: 1 kHz, 43.0 dB to 142.8 dB

SAMPLING FOR BROADBAND STATISTICS

Statistics can be based on either L_{AF}, L_{AS} or L_{Aeq}:

- Statistics L_{AFN1-7} or L_{ASN1-7} are based on sampling L_{AF} or L_{AS}, resp., every 10 ms into 0.2 dB wide classes over 130 dB
- Statistics L_{AN1-7} are based on sampling L_{Aeq} every second into 0.2 dB wide classes over 130 dB

Full distribution saved with measurement

The Std.Dev. (Standard Deviation) parameter is calculated from the Statistics

Measurement Display

Measurement data displayed as numbers of various sizes and one quasi-analog bar.

Measured data are displayed as dB values, housekeeping data as numbers in relevant format.

Instantaneous measurement L_{XF} is displayed as a quasi-analog bar

Signal Monitoring

The input signal can be monitored using an earphone/headphones connected to the headphone socket

HEADPHONE SIGNAL

Input signal can be monitored using this socket with headphones/earphones

Gain Adjustment: -60 dB to 60 dB

Software Specifications – 1/1-octave Frequency Analysis Software for 2250 Light BZ-7131 and 1/3-octave Frequency Analysis Software for 2250 Light BZ-7132

The specifications for BZ-7131 and BZ-7132 include the specifications for Sound Level Meter Software for 2250 Light BZ-7130. **BZ-7131 and BZ-7132 add:**

Standards

Conforms with the following National and International Standards:

- 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
- 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

Frequency Analysis**CENTRE FREQUENCIES**

1/1-octave Band Centre Frequencies (BZ-7131 only): 16 Hz to 8 kHz

1/3-octave Band Centre Frequencies (BZ-7132 only): 12.5 Hz to 16 kHz

MEASUREMENTS

X = frequency weightings A, B, C or Z

Spectra for Display and Storage:

L _{Xeq}	L _{XSmax}	L _{XFmax}
L _{XSmin}	L _{XFmin}	

Spectra for Display Only:

L _{XS}	L _{XF}
-----------------	-----------------

Single Values:

SIL	PSIL	SIL3
-----	------	------

L_{Xeq}(f1 - f2)*

NR	NR Decisive Band
----	------------------

RC	RC Classification
NCB	NCB Classification
NC	NC Decisive Band
Loudness	Loudness Level (BZ-7132 only)

* where f1 and f2 are frequency bands in the spectrum

MEASURING RANGES

When using Microphone Type 4950:

BZ-7131, 1/1-octave:

- Dynamic Range: From typical noise floor to max. level for a pure tone signal at 1 kHz: 5.9 to 140 dB
- Linear Operating Range: In accordance with IEC 61260: ≤22.9 dB to 140 dB

BZ-7132, 1/3-octave:

- Dynamic Range: From typical noise floor to max. level for a pure tone signal at 1 kHz: 1.0 to 140 dB
- Linear Operating Range: In accordance with IEC 61260: ≤20.1 dB to 140 dB

MEASUREMENT DISPLAYS

Spectrum: One or two spectra superimposed + A/B and C/Z broadband bars

Table: One or two spectra in tabular form

Y-axis: Range: 5, 10, 20, 40, 60, 80, 100, 120, 140, 160 or 200 dB. Auto zoom or auto scale available

Cursor: Readout of selected band

The specifications for BZ-7133 include the specifications for Sound Level Meter Software for 2250 Light BZ-7130. **BZ-7133 adds:**

Logging

MEASUREMENTS

Measurement data logged at preset periods into files on:

- SD Card
- USB Memory Stick

Logging Period: From 1 s to 24 h with 1 s resolution

Fast Logging: L_{AF} , L_{AS} and L_{Aeq} can be logged every 100 ms, irrespective of logging period. L_{AF} can be logged every 10 ms. One spectrum (L_{eq} , L_F or L_S) can be logged every 100 ms. The 10 ms L_{AF} and the 100 ms spectrum can only be stored and not displayed, but can be displayed using MPS BZ-5503

Broadband Data Stored at each Logging Interval: All, or up to 10 selectable broadband data including weather data and $L_{Aeq,T,mov}$
Broadband Statistics Stored at each Logging Interval: Full distribution, or none

Spectrum Data Stored at each Logging Interval: All, or up to three selectable spectra (license for BZ-7131 or BZ-7132 required)

Logging Time: From 1 s to 31 days with 1 s resolution

Measurement Total: For the logging time, in parallel with logging: All broadband data, statistics and spectra (license for BZ-7131 or BZ-7132 required).

Automatic reboot and resume of operation in case of power failure

MEASUREMENT DISPLAYS

Profile: Graphical display of selectable measurement data versus time. Fast display of next or previous marker; Profile overview of entire measurement

Software Specifications – Signal Recording Option BZ-7226

Signal Recording Option BZ-7226 is enabled with a separate license. It works with all analyzer software: Sound Level Meter, Frequency and Logging Software.

For data storage, signal recording requires:

- SD Card
- USB Memory Stick

RECORDED SIGNAL

A-, B-, C- or Z-weighted signal from the measurement transducer

AUTOMATIC GAIN CONTROL

The average level of the signal is kept within a 40 dB range, or the gain can be fixed

SAMPLING RATE AND PRE-RECORDING

The signal is buffered for the pre-recording of the signal. This allows the beginning of events to be recorded even if they are only detected later

SAMPLING RATE (KHZ)	8	16	24	48
Maximum Pre-recording (s) 16-bit	470	230	150	70
Maximum Pre-recording (s) 24-bit	310	150	96	43
Memory (kB/s) 16-bit	16	32	48	96
Memory (kB/s) 24-bit	24	48	72	144

PLAYBACK

Playback of signal recordings can be listened to using the earphone/headphones connected to the headphone socket

RECORDING FORMAT

The recording format is either 24- or 16-bit wave files (extension .wav) attached to the data in the project, easily played back afterwards on a PC using BZ-5503. Calibration information is stored in the .wav file allowing BZ-5503 and BK Connect to analyse the recordings

Y-axis: Range: 5, 10, 20, 40, 60, 80, 100, 120, 140, 160 or 200 dB. Auto zoom or auto scale available

X-axis: Scroll facilities

Cursor: Readout of measurement data at selected time

MARKERS

Five user-definable markers for online marking of noise sources or events anywhere in the profile.

Markers are set using the stylus on the touch screen, or the three marker pushbuttons

Calibration

CHARGE INJECTION CALIBRATION (CIC)

Injects an internally generated electrical signal in parallel with the microphone diaphragm. Manual CIC can be performed whenever no measurement is in progress. Automatic CIC can be performed at the start and end of a logging measurement

Notifications

ALARM CONDITIONS

CIC failed (in addition to those specified for BZ-7130)

Weather Data

MM-0256-A WEATHER STATION KIT

Six parameters: Wind Speed, Wind Direction, Ambient Temperature, Ambient Humidity, Ambient Pressure, Rain Gauge

MM-0256-A WEATHER STATION KIT

Two parameters: Wind Speed, Wind Direction

Functions with BZ-7130 and BZ-7131

Manual Control of Recording: Recording can be manually started and stopped during a measurement using a pushbutton or an external signal

Automatic Control of Recording: Start of recording when measurement is started. Minimum and Maximum recording time can be preset

Functions with BZ-7133

Manual Control of Recording (using Manual Event or Back-erase pushbutton, or an external signal): Recording during all of the event, or for preset minimum and maximum duration. A Sound marker is set while recording. Selectable pre- and post-recording time

Manual Control of Recording (using touch screen): Recording for the selected time period (subject to the limitations of the pre-recording buffer). A Sound marker is set for the selected time period

Automatic Control of Recording: Recording during all of the event or for preset minimum and maximum duration. Selectable pre- and post-recording time

Playback: Playback of signal recordings can be listened to using earphone/headphones connected to the headphone socket

Gain Adjustment: -60 to 60 dB

LICENSE

Tone Assessment Option BZ-7231 is a standard application included with all new Type 2250/2270 analyzers. The option can be used with the 1/3-octave and logging template (BZ-7132 and BZ-7133)

Tone Assessment

STANDARD

Tone assessment is based on the measured in accordance with ISO 1996:2007 Acoustics – Description, assessment and measurement of environmental noise – part 2: Determination of environmental noise levels. Annex D (informative) Objective method for assessing the audibility of tones in noise – Simplified method

SPECTRA ASSESSED

Any displayed 1/3-octave spectrum (L_{eq}) may be assessed. Assessment is made as post-processing, that is, when measurement is paused or stopped

SETUP ACCORDING TO STANDARD

Setups in violation of the standard are indicated as such on the display, you may then accept to apply the default setup

Tone assessment will be made if possible, in spite of standard violations. For tone assessment according to ISO 1996–2, Annex D, you can set the division between the low and middle frequency range, the division between the middle and high frequency range, and the limits for the level differences between adjacent bands

QUALITY INDICATORS

On the display, a quality indicator (smiley) will indicate that a hint is available for tone assessment quality. Click on the indicator to see the hint

RESULTS

Tones are indicated above the spectrum when Tone is selected as spectrum parameter. The resulting adjustment can be viewed on the Value panel. It is not saved with the measurement

Specifications – Measurement Partner Suite BZ-5503

BZ-5503 is included with Type 2250-L for easy synchronization of setups and data between the PC and hand-held analyzer. BZ-5503 is supplied on ENV DVD BZ-5298

PC REQUIREMENTS

Operating System: Windows® 7, 8.1, 10 or 11 (all in 32-bit or 64-bit versions)

Recommended PC:

- Intel® Core™ i3
- Microsoft® .NET 4.5
- 2 GB of memory
- Sound card
- DVD drive
- At least one available USB port
- Solid State Drive

ONLINE DISPLAY OF TYPE 2250-L DATA

Measurements on the analyzer can be controlled from the PC and displayed online with the PC, using the same user interface on the PC as on the analyzer

Display: 1024 × 768 (1280 × 800 recommended)

DATA MANAGEMENT

Explorer: Facilities for easy management of analyzers, users, jobs, projects and project templates (copy, cut, paste, delete, rename, create)

Data Viewer: View measurement data (content of projects)

Synchronization: Project templates and projects for a specific user can be synchronized between PC and analyzer

EXPORT FACILITIES

Excel®: Projects (or user-specified parts) can be exported to Microsoft® Excel® (Excel 2003 – 2016 supported)

Brüel & Kjær Software: Projects can be exported* to Enviro Noise Partner BZ-7301, Work Noise Partner BZ-7302 or BK Connect

POST-PROCESSING

With the post-processing module licence, Measurement Partner Suite includes a range of post-processing tools for data acquired with Type 2250-L. These tools help to assess logging data and measured spectra, such as calculating contribution from markers on a logging profile, or correcting spectra for background noise. Standard calculators for BS 4142, TA Lärm, Emergence and uncertainty analysis according to ISO 1996 are also included

HAND-HELD ANALYZER SOFTWARE UPGRADES AND LICENSES

The software controls analyzer software upgrades and licensing of the analyzer applications

INTERFACE TO HAND-HELD ANALYZER

USB, LAN or Internet connection

LICENSE MOVER

To move a license from one analyzer to another use BZ-5503 together with License Mover VP-0647

LANGUAGE

User interface in Chinese (People's Republic of China), Chinese (Taiwan), Croatian, Czech, Danish, English, Flemish, French, German, Hungarian, Japanese, Italian, Korean, Polish, Portuguese, Romanian, Russian, Serbian, Slovenian, Spanish, Swedish, Turkish and Ukrainian

HELP

Concise context-sensitive help in English

* Not all data are available in all exports. The data exported are dependent on the type and target of the export.

Ordering Information

Type 2250-L-S Hand-held Analyzer Light
Type 2250-L-SC Hand-held Analyzer Light with Sound Calibrator
Type 4231

which include the following as standard:

INCLUDED SOFTWARE

- BZ-7130: Sound Level Meter Software
- BZ-7231: Tone Assessment Option
- BZ-7232: Noise Monitoring Software

INCLUDED MICROPHONE AND PREAMPLIFIER

- Type 4950: ½" Pre-polarized Free-field Microphone
- ZC-0032: Microphone Preamplifier

INCLUDED ACCESSORIES

- FB-0679: Hinged Cover
- QB-0061: Battery Pack
- ZG-0426: Mains Power Supply
- UA-0237: 90 mm dia. Windscreen
- Compulsory Accessory Kit UA-1710-D01 including:
 - KE-0441: Protective Cover, for hand-held analyzer
 - UL-1050: Wireless USB-A (M) Adapter
 - UA-1651: Tripod Extension, for hand-held analyzer
 - UA-1654: 5 Extra Styli
 - UA-1673: Adaptor for Standard Tripod Mount
 - DH-0696: Wrist Strap
 - DD-0594: Protection Plug, for hand-held analyzer without preamplifier
 - AO-1494: Cable, USB 2.0, USB-A (M) to USB-micro-B (M) black, 1.8 m (5.9'), max. +70 °C (158 °F)
 - BZ-5298: Environmental Software

NOTE: These accessories are also available separately

Software and Accessories Available Separately

SOFTWARE MODULES

BZ-7131 1/1-octave Frequency Analysis
BZ-7132 1/3-octave Frequency Analysis
BZ-7133 Logging Software for 2250 Light
BZ-7226 Signal Recording Option

MEASUREMENT PARTNER SUITE SOFTWARE

BZ-5503-012 Post-processing Module, 1-year subscription for one instrument
BZ-5503-ND Post-processing Module, permanent license for any instrument (dongle)
BZ-5503-NI Post-processing Module, permanent license for one instrument

See product data [BP 2430](#)

PC SOFTWARE

BZ-7302-X-ND Work Noise Partner export from Measurement Partner Suite, licence for any instrument (dongle)
BZ-7302-X-NI Work Noise Partner export from Measurement Partner Suite, licence for one instrument

MISCELLANEOUS

Type 3535-A All-weather Case (see product data [BP 2251](#))
AO-0697-D-030 Microphone Extension Cable, 10-pin LEMO, 3 m (10')
AO-0697-D-100 Microphone Extension Cable, 10-pin LEMO, 10 m (33')
KE-0440 Travel Bag
HT-0015 Headphones
UA-0254 90 mm dia. Windscreens (6-pack of UA-0237)

UA-0750 Tripod
UA-0801 Small Tripod
UA-0588 Tripod Adaptor for ½" microphone/preamplifier assemblies
UA-1317 Microphone Holder
UL-1009 SD Memory Card for hand-held analyzers
UL-1017 SDHC Memory Card for hand-held analyzers
MM-0256-A Weather Station Kit
MM-0316-A Weather Station Kit
Included with MM-0256-A or MM-0316-A:

- MM-0256-002: Six-parameter Weather Station (and mounting kit)
- MM-0316-002: Two-parameter Weather Station (and mounting kit)
- AO-0657: USB Cable
- AO-0659: Cable M12 8-pin (F) to LEMO 1-B 8-pin (M), 10 m (33.3')
- BR 1779: Weather Station Field Guide
- DB-4364: Weather Station Pole Adaptor
- KE-4334: Weather Station Carrying Case
- QX-0016: Screwdriver
- QX-1171: 2.5 mm Hex Wrench
- UA-1707-A: Weather Station Tripod Adaptor
- ZH-0689: Weather Station USB Adaptor

ANALYZER COMPONENTS

ZG-0444 Charger for QB-0061 Battery Pack

CALIBRATION

Type 4231 Sound Calibrator

Service Products

MAINTENANCE

2250-L-EW1 Extended Warranty, one year extension

ACCREDITED CALIBRATION

SLM-ADV-CAF SLM Advanced, Accredited Calibration incl. microphone
SLM-ADV-CAI SLM Advanced, Initial Accredited Calibration incl. microphone

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