

B&K 2245 and HBK 2255 with Enviro Noise Partner

User Guide

for Version 1.8.1

BN 2375-21

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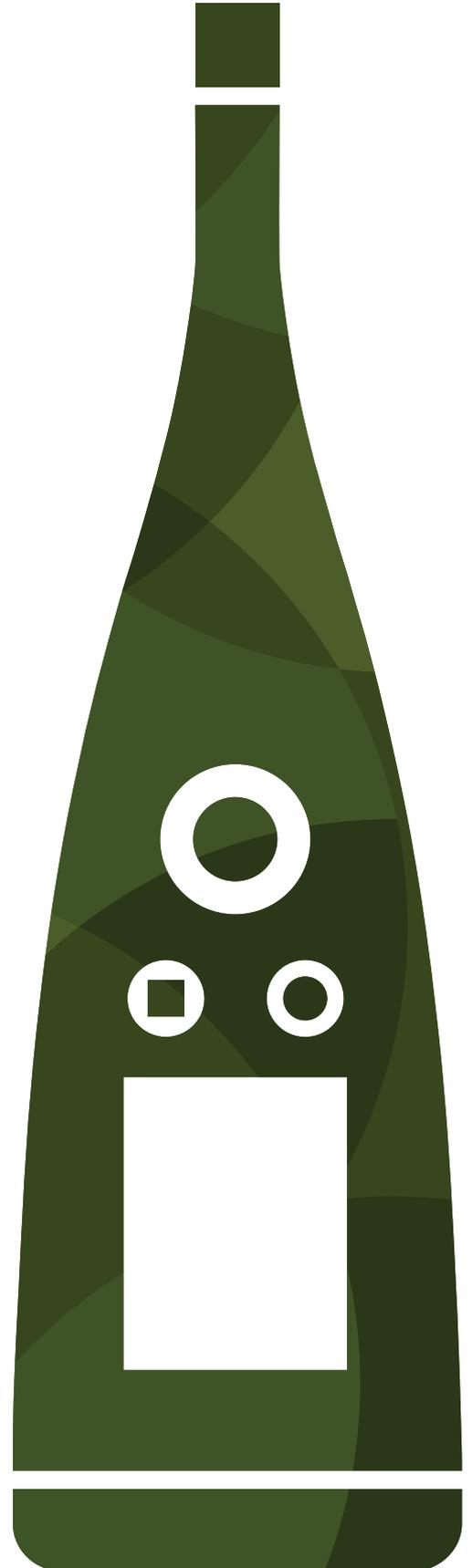


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OVERVIEW



Your instrument works with applications:

- **Noise Partner** for general-purpose, basic sound level measurements
- **Enviro Noise Partner** for measuring and analysing sound levels in the world around us
- **Work Noise Partner** for determining sound exposure levels in the workplace
- **Product Noise Partner** for testing noise emission levels of products
- **Building Acoustics Partner** for testing sound insulation in buildings

There is a mobile version and a PC version of each application.



The mobile app connects with the instrument to act as a remote control and help guide you through set up. It also enables you to document the measurement with photos, video, notes and commentaries using the functionality of your mobile device. Once you have made a measurement, you will use the PC application to view and process data, and report your findings.

Licences

B&K 2245 is a type-approved sound level meter (SLM). However, this basic functionality can be extended with optional licences; it can perform frequency analysis, log broadband and spectral data, perform statistical analysis and make audio recordings.

Licences for the instrument control the functionality of the instrument and to which applications it can connect.

BZ-7300: Noise Partner

This licence enables you to make simple, broadband measurements, to make general-purpose sound pressure level measurements, and to make basic occupational, product and environmental measurements.

- Measure broadband parameters.
- Connect to Noise Partner mobile app and PC application.

BZ-7301: Enviro Noise Partner

This licence enables you to measure and report on environmental noise concerns.

- Measure broadband parameters.
- Perform spectrum analysis (1/1- and 1/3-octave).
- Perform statistical analysis of measured broadband parameters.
- Average and log intervals of broadband and/or spectral data (logging mode).
- Record audio.
- Connect to Enviro Noise Partner mobile app and PC application.

BZ-7302: Work Noise Partner

This licence enables you to measure occupational noise-related concerns, such as noise exposure surveys and risk mitigation for noise-induced hearing loss.

- Measure broadband parameters.
- Perform spectrum analysis (1/1- and 1/3-octave).
- Average and log intervals of broadband and/or spectral data (logging mode).
- Record audio.
- Connect to Work Noise Partner mobile app and PC application.

BZ-7303: Product Noise Partner

This licence enables you to determine the sound power level of a device under test (DUT) according to standards (ISO 3744, ISO 3746 and EN 71-1).

- Measure broadband parameters.
- Perform spectrum analysis (1/1- and 1/3-octave).
- Perform statistical analysis of measured broadband parameters.
- Record audio.
- Connect to Product Noise Partner mobile app and PC application.

BZ-7304: Exhaust Noise Partner

This licence enables you to measure exhaust noise.

- Measure broadband parameters.
- Connect to Noise Partner mobile app and PC application.

About the instrument

B&K 2245

The instrument measures **sound level meter** parameters (Leq, LE, Lpeak, Lmax, Lmin, L(SPL), L) with up to two simultaneous frequency weightings (A, B, C, Z) and up to three simultaneous time weightings (F, S, I) for the exponential averaging.

The instrument performs **frequency analysis** of either 1/1- or 1/3-octave spectra (Leq, Lmax, Lmin) with one of the available frequency weightings (A, B, C, Z) and time weightings (F, S).

The instrument takes **single measurements**. In other words, the instrument calculates a single value for each measured parameter for the total measurement time.

The instrument takes logged measurements. In other words, it has a **logging mode** that can average and log intervals of broadband and/or spectral data to obtain a profile of the total measurement with logging intervals between 1 s and 1 min.

The instrument performs **statistical analysis** on either LAeq, LAF or LAS with calculation of 5 user-defined percentile levels.

The instrument takes **audio recordings**.

HBK 2255

The instrument measures **sound level meter** parameters (Leq, LE, Lpeak, Lmax, Lmin, L(SPL), L) with up to three simultaneous frequency weightings (A, B, C, Z) and up to three simultaneous time weightings (F, S, I) for the exponential averaging.

The instrument performs **frequency analysis** of either 1/1- or 1/3-octave spectra (Leq, Lmax, Lmin) with up to two of the available frequency weightings (A, B, C, Z) and time weightings (F, S).

The instrument takes **single measurements**. In other words, the instrument calculates a single value for each measured parameter for the total measurement time.

The instrument takes logged measurements. In other words, it has a **logging mode** that can average and log intervals of broadband and/or spectral data to obtain a profile of the total measurement with logging intervals between 1 s and 1 min.

With the **fast logging mode**, the instrument logs broadband parameters at intervals between 1 ms and 1000 ms and/or spectrum parameters at intervals between 4 ms and 1000 ms.

The instrument performs **statistical analysis** on either LAeq, LAF or LAS with calculation of 5 user-defined percentile levels.

The instrument takes **audio recordings**.

Standards

Menu location: **Menu > About > Metrology > Standards**.

Here you will see the complete list of standards to which the instrument conforms.

About the mobile app

The mobile app interfaces with the instrument, which enables you to control the instrument as though you have it in your hand. The mobile app allows you to start, stop and pause measurements from a distance, to avoid measuring unwanted sounds. The mobile app also makes it easier to change settings and interact with the measurement data. Last, the mobile app enables you to fully document your measurements with photos, video, written notes and commentary. It is recommended that you use the mobile app whenever possible.

Functionality of the mobile version of Enviro Noise Partner:

- See the status of the instrument and access instrument settings.
- Set up the instrument for measuring.
- Control one or more instruments remotely (make measurements).
- Customize markers (name and type).
- Create post-processing calculations (moving average and difference).
- Create a project checklist.
- Create and use templates.
- Add markers to measurements.
- Annotate measurements (add photos, videos, notes and commentary).
- Add location and time to annotations (via the iOS mobile device).
- Recall past data stored on the instrument.
- View measurements, level evolutions, marker totals, post-processing calculations.
- Listen to audio recordings during or after a measurement.
- Share projects via the cloud.

About the PC application

Functionality of the PC version of Enviro Noise Partner:

- Import projects created with the mobile app from the instrument.
- Create projects from measurements stored on the instrument.
- Add measurements stored on the instrument to an existing project.
- Import measurements made using Types 2250, 2270 or 2250-L via Measurement Partner Suite (MPS).
- Create custom markers and add them to measurements.
- Configure moving-average and difference calculations on measured broadband and statistical parameters (post-processing parameters).
- Share projects via the cloud.
- Export projects to another file format (for sharing or reporting).
- Play back recorded audio (digitally gained).
- View measurements, annotations, calculations and results.
- View measurement and annotation locations on a map.
- View multiple measurements made in parallel (measurements made on multiple instruments at the same time).
- Preview and create reports.

System requirements

The mobile app

- iOS-based phone or tablet

See supported iOS versions for current app version in the App Store®, under **Enviro Noise Partner > Information > Compatibility**.

The PC application

System Requirements:

- Windows® 10 or 11 (64-bit) operating system
- Microsoft® .NET 6 framework

Recommended PC:

- Intel® Core™ i5 or better
- Sound card
- Solid State Drive (SSD)
- 8 GB of memory
- At least one available USB port
- Microsoft Office 2016 or later

Data storage

The instrument

Data storage: Approximately 12 GB

The instrument has 16 GB of built-in storage, of which approximately 12 GB is available for data storage. All measurement data and annotations are stored on the instrument.

Measurements and annotations are imported to the PC application from the instrument. They can then be saved to your computer or to a location on a network.

Useful settings

- **Menu > Data explorer:** View past measurements or move them to trash.
- **Menu > Status:** See remaining storage space.
- **Menu > System settings > Data management:** Edit settings for data backup and retention.

Mobile app

Neither measurement data nor annotations are stored on your mobile device, everything is uploaded to and stored on the instrument.

Service and support

Standard warranty

B&K 2245 has a two-year warranty that is valid from the delivery of the product.

HBK 2255 has a two-year warranty that is valid from the delivery of the product.

Updates

Instrument

Update firmware and install new licences over the Internet.

1. Connect the instrument to a network with access to the Internet.
See [Join your local network](#) for more information.
2. Press  briefly to open the menu.
3. Go to: **System settings > Advanced settings**.
4. Set **Service mode** to *Enabled*.
5. Go to: **Check for updates**.
6. Follow the prompts.

Note:

- When you return your instrument for service, the firmware will be updated to the latest version.
- For type-approved firmware versions, you may need to return the instrument to a certified service centre to update the firmware. Check with your type-approving authority before updating the firmware.
- Any new languages are installed with the update of the firmware.

Applications

Updates are handled via the application.

Services

Visit www.hbkworld.com/en/services-support for information about available services.

- Extended warranty contracts for hardware
- Hardware maintenance and repair
- Support and calibration services

Contact information

Visit www.hbkworld.com/en/contact-us for links to find your local HBM, BKS (Brüel & Kjær), nCode or ReliaSoft office.

THE INSTRUMENT

Hardware interface



The **microphone** and **preamplifier** are at the top of the instrument.

B&K 2245 has a removable microphone cartridge and a built-in microphone preamplifier.

HBK 2255 has a removable microphone preamplifier and supports TEDS (transducer electronic data sheet).



 is the **power/menu/reboot** button.

Press and hold the button to power the instrument on or off. When the instrument is on, press the button briefly to open the menu. If the instrument becomes unresponsive, press and hold the button for approximately 40 seconds (remove cables first).



The arrow buttons **scroll** through measurement displays, **auto-zoom** graphs, **move** cursors and **navigate** the menu.

Press ▲ and ▼ briefly to scroll through measurement displays.

Press ◀ and ▶ briefly to scroll through the parameters for each display.

Press and hold ◀ or ▶ to move the cursor on the Spectrum and Profile displays.

Press and hold ▲ to auto-zoom the Y-axis on the Spectrum and Profile displays.



■ is the **stop/reset** button.

Press the button once to stop a measurement. At this point, averaged measurement parameters will stop updating and you can review the results. Press the button again to clear the results and reset the instrument for the next measurement. Data is saved automatically.



● is the **start/pause** button.

Press the button once to start a measurement, press it again to pause the measurement, press it a third time to resume the measurement.



The **screen** displays sound levels and the menu.



- The **light ring** is colour-coded to reflect the status of the instrument.
- The light ring is solid **green** while measuring.
- The light ring flashes **yellow** slowly while idle or quickly while paused (measuring).
- The light ring flashes **red** quickly for intermittent overloads.
- The light ring is solid **purple** for latched overloads.
- The light ring flashes **white** slowly when switched off and charging the battery.
- The light ring flashes **blue** while pairing a mobile device with the instrument.



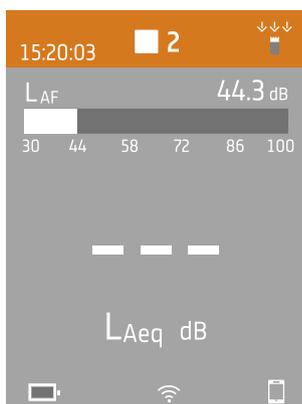
On the base of the instrument is a **threaded hole** for mounting the instrument on a tripod and a **USB-C™ socket**. Use the USB socket as a connector or as signal output.

Instrument GUI



This is an example of the instrument graphical user interface (GUI) in dark colour scheme while measuring and connected to the mobile app.

Hint: You can view the GUI in a web browser via the instrument's IP address. See [Web server display](#) for more information.

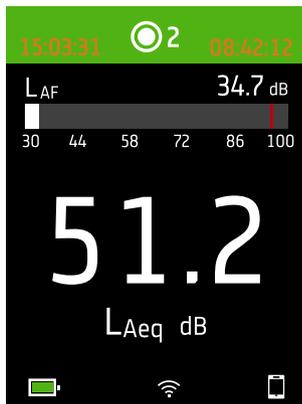


The top region shows measurement information and instrument status.

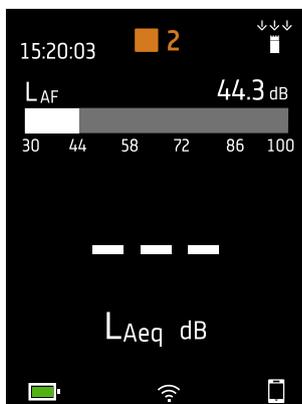


When idle, the instrument displays the current time (to the left) and input settings (to the right).

- ⚠ : Indicates that the clock is estimated to be more than 2 s wrong.
- ↓↓↓ : Indicates that Sound field is set to Free-field and there is not a windscreen.
- ↓↓↓ : Indicates that Sound field is set to Free-field and there is a windscreen.
- ↓← : Indicates that Sound field is set to Diffuse-field and there is not a windscreen.
- ↓← : Indicates that Sound field is set to Diffuse-field and there is a windscreen.



During a measurement, the instrument displays the start time (to the left) and the elapsed time (to the right).



The number in the centre is the measurement number. The first measurement of every day is number 1. The number increments with each new measurement.

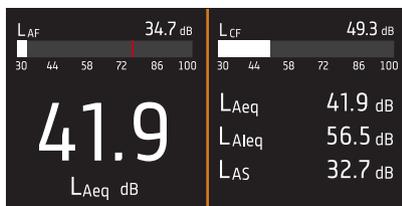
The background colour of the top region and the centre symbol change to indicate the state of the instrument.

- : Indicates that the instrument is ready to measure.
- : Indicates that the instrument is measuring.
- ⏸ : Indicates that the instrument is paused.
- : Indicates that the instrument is stopped and displaying results from the measurement.

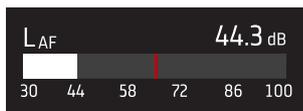


In the middle is the measurement display. There are views for broadband parameters (SLM view and List view), spectrum parameters (Spectrum view), logging profiles (Profile view) and a view for information about your data (About data view).

Press ▲ and ▼ briefly to scroll through measurement displays. Press ◀ and ▶ briefly to scroll through the parameters for each display.



SLM view (left) and **List view** (right) are the main displays for single measurements. SLM view shows a bar graph and one broadband parameter. List view shows a bar graph and a list of broadband parameters.

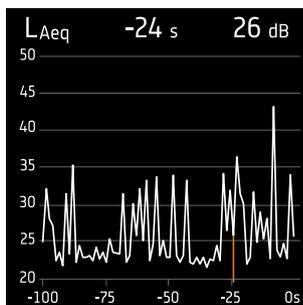


The bar graph shows the instantaneous sound level (L) with frequency and time weightings. This display is sometimes called the fast bar or fast display.

| : Indicates the maximum instantaneous sound level during a measurement.

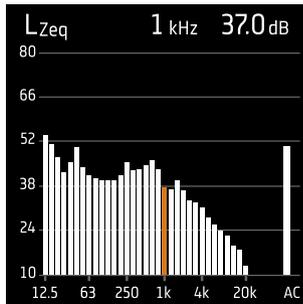
✍ **Note:** The bar graphs in SLM view and List view are unique, that is they can each be set to show a different parameter.

- Go to **Menu > Display settings > SLM view > Graph parameter** to set the parameter for the bar graph when displaying one broadband parameter.
- Go to **Menu > Display settings > List view > Graph parameter** to set the parameter for the bar graph when displaying a list of broadband parameters.



Profile view is the main display for logged measurements because it shows the profile of logged broadband and/or spectrum parameters.

Press and hold ◀ or ▶ to move the cursor in the display. The readout above the graph shows the location of the cursor and its decibel level. Press and hold ▲ to auto-scale the Y-axis to fit the data.



Spectrum view displays the frequency analysis of spectrum parameters, shown as decibel (dB) levels by Hertz (Hz).

Press and hold ◀ or ▶ to move the cursor in the display. The readout above the graph shows the location of the cursor and its decibel level. Press and hold ▲ to auto-scale the Y-axis to fit the data.



For very low or very high sound levels, you will see indicators.

▼ : Indicates a signal that is under the measurement range.

Overload occurs when the signal is over the measurement range. There are two types of overload indicators: latched and instantaneous. The latched-overload indicator is triggered at the first instance of overload and persists until the instrument is reset. The instantaneous-overload indicator is triggered every time the signal is over the measurement range.

▲ : Indicates instantaneous overload.

▲ : Indicates latched overload.



The bottom region provides information about the system: battery, network, and connectivity status.

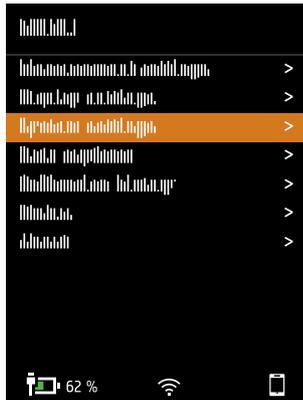
The battery icons show the status of the battery. For example, 🔋 (charging) or 🔋 (full).

The network icons show the current network settings and its status. For example, 📶 (connected to a wireless network), 📶 (acting as a hotspot), 🌐 (Ethernet connection) or ✈️ (aeroplane mode).

The connectivity icons show you to which application the instrument is connected: 📱 (mobile) or 🖥️ (PC).

🔄 indicates that a backup is in progress.

The menu



Use the buttons on the instrument to interact with the menu.

☰ : Open / close the menu; open a response dialog; confirm a setting in a response dialog; enable / disable parameter selection boxes.

▲ : Navigate up a list; increment a value in a response dialog.

▼ : Navigate down a list; decrement a value in a response dialog.

◀ : Navigate down a level in the menu; exit a response dialog (without confirming a setting).

▶ : Navigate up a level in the menu; enter a response dialog.

Web server display

You can display the instrument GUI in a web browser.

You will need:

- Your instrument
- A computer or mobile device with Wi-Fi® and a web browser installed

Procedure:

1. Go to: **System settings > Network settings > Web server display**.
2. Select **Enabled**.
3. Network your devices.

This is one way to network your devices:

- a. On the instrument, go to: **System settings > Network settings > Wi-Fi settings > Wi-Fi mode**.
 - b. Select **Act as hotspot**.
 - c. Make note of the hotspot name (example: BK2245-000000 or BK2255-000000) and password.
 - d. Connect your device to the hotspot as per the manufacturer's instructions.
4. On your mobile device or computer, open a web browser.
 5. Type **<IP address/display>** in the address bar of the browser.

When acting as a hotspot, the IP address of the instrument is 10.42.0.1, so you will type **<10.42.0.1/display>**.

✍ **Note:** You can find the instrument's IP address here: **System settings > Network settings**. Look under **Wi-Fi settings** or **Ethernet settings** depending on your connection.

Charge the battery

The instrument has an internal Lithium-ion rechargeable battery.

Procedure

1. Connect the instrument to a power source.
 -  indicates that the battery is charging with a readout of the percentage charged.
2. Disconnect the power source to stop charging.

Approved power sources

- Mains
- Base station (the base station is powered via mains)
- Computer
- Power bank

Status

Go to **Menu > Status** to see the status of the battery.

- **Status:** Either *Full*, *Charging*, or *Discharging*
- **Time remaining:** The approximate time left on the charge
- **Charged:** The percentage to which the battery is currently charged

Power consumption

Settings for the screen and wireless configuration can have a noticeable effect on the instrument's power consumption. The type of measurement you perform will not have a large effect on battery consumption.

To manage power consumption, you can modify these settings:

- **System settings > Power management**
- **System settings > Network settings > Wi-Fi settings > Wi-Fi mode**
- **Display settings > Screen brightness**
- **System settings > Network settings > Web server display**

Battery calibration

To improve the accuracy of battery readings, it is recommended to calibrate the battery regularly.

1. Press  briefly to open the menu.
2. Go to: **System settings > Advanced settings > Service mode.**
3. Select **Enabled.**
4. Go to: **Calibrate battery.**

Follow the prompts to calibrate your battery.

Fix an unresponsive instrument

If your instrument freezes, try rebooting the instrument.

1. Remove all external connections, including the charger.
2. Press and hold  until the instrument reboots.

This should take approximately 40 seconds.

Water ingress

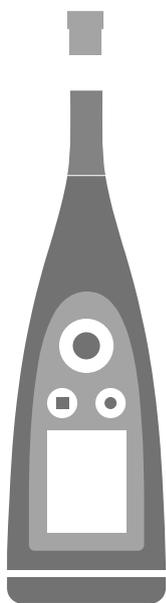
IP rating

The enclosure for the instrument has an IP (ingress protection) rating of 55 as defined in IEC 60529. The double-digit rating number is actually two separate ratings. The first number is the rating of protection against the entry (ingress) of solids, such as dust. The second number is the rating of protection against the entry of liquids, such as water.

- **Protection against solids:** A rating of five means that the ingress of dust is not entirely prevented, but that it does not enter in quantities sufficient to interfere with the operation of the instrument.
- **Protection against liquids:** A rating of five means that the ingress of water from a low-pressure jet (6.3 mm (0.25 in)) from any direction has no harmful effect on the instrument. A rating of five means that the instrument is not watertight.

Where can water get in?

It is possible for water to enter the space between the microphone cartridge and the microphone preamplifier when, for example, the instrument is exposed to heavy rain. Also, water may enter the instrument body if, for example, the instrument is submerged in water.



On B&K 2245, the **microphone cartridge** attaches to (and detaches from) the microphone preamplifier, which is an integral part of the instrument body.

The **instrument body** includes the microphone preamplifier and houses the signal processor. Of course, the instrument body also provides the user interface (control buttons, a display screen and a light ring) which allows you to interact with the instrument.

 **Note:** The microphone preamplifier cannot be removed from the instrument.

What will happen?

Water ingress between the microphone cartridge and the microphone preamplifier will not permanently damage the instrument, but measurement operation will be disturbed until everything is dry. This is because the contacts between the microphone cartridge and microphone preamplifier are very sensitive to contamination, such as water, which disrupts the ability of the signal to travel from the microphone cartridge to the microphone preamplifier.

 **Note:** Water that enters the instrument body will cause permanent damage.

How to dry the instrument

1. Turn the microphone cartridge anticlockwise to remove the microphone from the instrument body.
2. Let the microphone cartridge and instrument body dry by evaporation.
3. Reattach the microphone cartridge to the instrument body.

DOWNLOAD THE APPS

Download the mobile app

You will need:

- iOS-based phone or tablet

See supported iOS versions for current app version in the App Store®, under **Enviro Noise Partner > Information > Compatibility**.

Procedure:

1. Go to the App Store.
2. Search for and install Enviro Noise Partner.

Updates

You will be informed of updates via the App Store.

Download the PC application

You will need:

- A computer with access to the Internet and a web browser

System Requirements:

- Windows® 10 or 11 (64-bit) operating system
- Microsoft® .NET 6 framework

Recommended PC:

- Intel® Core™ i5 or better
- Sound card
- Solid State Drive (SSD)
- 8 GB of memory
- At least one available USB port
- Microsoft Office 2016 or later

Procedure:

1. Go to: www.bksv.com/downloads.
2. From the list of available downloads, expand **B&K 2245 and HBK 2255 Software, Manuals and Compliance Information**.
3. Click **B&K 2245 and HBK 2255 Software Downloads**.
4. Scroll down to the application.
5. Click **Install Enviro Noise Partner Software** to start the download.
6. Once the download is complete, double-click the file (Setup.exe) to start installation.

 **Note:** The file will be placed in a location that is defined by the settings in your web browser.

The PC application will start immediately after installation.

Updates

You will be informed of updates via the application.

CONNECT DEVICES

Communication between the instrument and the devices running the applications is an essential part of using the instrument. Once you understand the ways in which the devices can communicate, you will be able to change connections to suit your circumstances.

There are basically two ways to connect the mobile app or the PC application to the instrument: locally or remotely. The difference between the two types is that remote connections enable you to connect to the instrument when you are not near it. For most people, a local connection is all you will need.

Local connections

A local connection is a connection to a local area network (LAN). It is the simplest way to connect the applications to the instrument. Typically, the network will be your office or home network, but you can also use the instrument to create a hotspot to which you can connect devices while you are out in the field.

Once the instrument and the device running the application are using the same network, they can communicate. You will use Wi-Fi®, Bluetooth® and Ethernet in varying combinations to enable communication between devices.

 **Note:** The mobile app and PC application do not connect to one another, the applications only connect to the instrument.

Join your local network

Connect all devices (instrument, mobile device and PC) to your local network so that they can communicate with one another. Connect the mobile device and PC as per the manufacturer's instructions. Connect the instrument using one of the following options:

- Use an Ethernet connection:
 - Use a USB-C to USB-A cable to connect the instrument to your PC.
 - Use a USB-C to Ethernet adaptor to connect an Ethernet cable directly to the instrument.
 - Place the instrument on the desktop base station (an optional accessory that provides power and a network connection to the instrument).
- Use a wireless connection:
 - a. Press  briefly to open the menu.
 - b. Go to: **System settings > Network settings > Wi-Fi settings > Wi-Fi mode.**
 - c. Select **Connect to network.**
 - d. Go to: **Wi-Fi name.**
 - e. Select the network you wish to join.
 - f. Enter the password at the prompt.
 - Use  and  to scroll through the character menu.
 - Use  and  to move left or right.
 - Press  to advance to the options: OK or Cancel.

Use the instrument as a hotspot

Connect your mobile device and / or PC to the instrument's hotspot so that the devices can communicate.

1. On the instrument, go to: **System settings > Network settings > Wi-Fi settings > Wi-Fi mode.**
2. Select **Act as hotspot.**
3. Make note of the hotspot name (example: BK2245-000000 or BK2255-000000) and password.
4. Connect your device to the hotspot as per the manufacturer's instructions.

Change the hotspot password

If you wish to change the default password for the instrument hotspot:

1. Go to: **System settings > Network settings > Wi-Fi settings.**
2. Ensure that Wi-Fi mode is set to Act as hotspot.
3. Select **Password.**
4. Use ▲ and ▼ to scroll through the character menu.
5. Press (⊞) to confirm the changes.

 **Note:** Restart the instrument to apply the new password.

Remote connections

It is possible to connect to an instrument remotely, that is, connect to an instrument on a network from a different network or the Internet. Establishing a remote connection is a little more complicated than creating a local connection, but it can be helpful if you want to be able to access your instrument from remote locations. The following includes information about your instrument, general guidelines for the configuration of your router to enable remote connection, and how to test the connection.

 **Note:**

- Remote connection is optional. In other words, you do not need to be able to connect to your instrument remotely in order to use it with the mobile app or the PC application.
- Please refer to the manufacturer of your router or to your Internet service provider (ISP) for information specific to your network.
- The instrument must be on and connected to the network in order to access it remotely using the mobile app or the PC application.

Before you begin, you will need some information about your Internet service:

- Is your IP address IPv4 or IPv6 or both?

The instrument supports both. The difference is that IPv4 requires port forwarding while IPv6 does not.

- If you have an IPv4 address, is it static or dynamic?

You can use either static or dynamic addresses. However, dynamic IPv4 addresses change, which requires you to enter a new IP address in the mobile app or PC application every time the address changes.

- If you have a dynamic IPv4 address, can you get a static IP address or set up a DynDNS (dynamic domain name system)?

You can use a static IP address or set up DynDNS, which works by assigning a persistent host name to the instrument, to overcome the problem of changing IPv4 addresses.

- Is your ISP blocking any instrument ports?

 **Note:** The instrument uses ports 80, 443 and 8700 to 8720. It is not possible to change these ports. Therefore, remote connection is not possible if your ISP blocks any of those ports.

What you will need:

- An instrument that is connected to the network (either by Wi-Fi® or Ethernet)
- Access to the settings interface of your network router

How to connect remotely via an IPv4 address

Use the NAT (network address translation) capabilities of your router to forward the ports of your instrument so that you can connect to it remotely.

A general procedure is as follows:

 **Note:** This procedure applies to static IPv4 addresses and dynamic IPv4 address using DynDNS.

1. Look for the port forwarding option on your router.

If you do not find it right away, look for advanced options.

2. Create port-forwarding rules.

Port-forwarding rules link the IP address of the instrument to ports that it uses so that when you send a request to the instrument's network from another network, the router knows to which device to direct the request.

You can find the IPv4 address of the instrument on the instrument or on the router.

- On the instrument, go to: **Menu > Network settings > Wi-Fi settings** or **Ethernet settings > IP address**.
- On the router, see the list of the connected devices.

The instrument uses the following ports:

- Port 80: The common port assigned to HTTP (hypertext transfer protocol)
- Port 443: The common port assigned to HTTPS (hypertext transfer protocol secure)
- Ports 8700 to 8720: Open ports

 **Note:** All ports use TCP (transmission control protocol).

3. From another network, such as a mobile network, test the setup.

 **Note:** Turn off Wi-Fi on your mobile device to make sure that you are not connected to the same network as the instrument.

- a. Open the mobile app.
- b. From the instrument list, tap .

 **Note:** If the mobile app is connected to an instrument, disconnect from it to access the list.

- c. Enter the IP address or host name.
 - For IPv4 addresses, enter your network's public WAN IP address.
You can find your WAN IP address on your router or through an Internet search of 'my IP'.
 - For DynDNS, enter the host name given by the DynDNS.
- d. Tap **Done**.
- e. Tap the instrument listing to connect.

 **Note:** You can also test the setup using the PC application. Click  to open the import dialog then click  and select **Add instrument from IP address**.

How to connect remotely via an IPv6 address

You do not have to set up port forwarding when using an IPv6 address.

To test the remote connection, try to connect to the instrument from a different network. The easiest way to check is to use a mobile device that has a mobile network and the mobile app installed.

 **Note:** Turn off Wi-Fi on your mobile device to make sure that you are not connected to the same network as the instrument.

1. Open the mobile app.
2. From the instrument list, tap .

 **Note:** If the mobile app is connected to an instrument, disconnect from it to access the list.

3. Enter the IPv6 address of your instrument.

To find the IPv6 address, go to: **Menu > Network settings > Wi-Fi settings** or **Ethernet settings > IPv6 address**.

 **Note:** Enter the address in brackets, for example: [2701:db8:424d:d15::1a2f:].

4. Tap **Done**.
5. Tap the instrument listing to connect.

 **Note:**

- If you are unable to connect, try adjusting the firewall settings on your router.
- You can also test the setup using the PC application. Click  to open the import dialog then click  and select **Add instrument from IP address**.

Connect via HTTP

If you are unable to connect to instruments remotely, there is a setting in the application menu which allows you to connect to instruments via HTTP instead of HTTPS. HTTP does not have the certificate requirements of HTTPS, which can cause problems with security features like firewalls. See [Application menu](#) for information about where to find the setting.

Connect the mobile app to the instrument

The mobile app connects to the instrument via Wi-Fi® and Bluetooth®.

What you will need:

- The instrument
- An iOS-based mobile device (phone or tablet) with the mobile app installed

 **Note:** You will need to enable Wi-Fi and Bluetooth on your mobile device.

How to connect

1. Turn on the instrument.
2. Open the mobile app.

A list of detected instruments sorted by nickname, type and serial number opens.

3. Tap an instrument to select it.



Hint: Give the instrument a nickname (**System settings > Network settings > Nickname**). A nickname can make it easier to find your instrument in a list. Also, nicknames are fun!

4. Tap **Connect**.
5. The mobile app will prompt you to connect the mobile device and the instrument to the same local network. You have two options:
 - *Connect to network:* The instrument and the mobile device connect to the Wi-Fi access point of your personal or work network.
 - *Act as hotspot:* This enables the instrument's hotspot and your mobile device connects to it.
6. After choosing, the mobile app prompts you for the permissions and information required to connect to the desired network.

That's it! The instrument shows  when it is connected to the mobile app.

Once the mobile app has connected to an instrument, the app will remember the instrument and re-establish a connection automatically after separation.

Note: Remember that measurement data is stored on the instrument. If measurement data is no longer being displayed after separation, tap  on the mobile app to open the list of past measurements and recall the desired measurement.

Connect to multiple instruments

You can connect the mobile app to more than one instrument at a time, including combinations of both B&K 2245 and HBK 2255 instruments. This allows you to make measurements at multiple locations simultaneously, which helps you get the job done quickly. Also, being able to measure at different locations at the same time is useful when making measurements at events with a relatively short duration, such as when measuring concert noise.

1. Turn on the instrument.
2. Open the mobile app.
3. Select the primary instrument.

The first instrument you tap becomes the primary instrument.

4. Select more instruments, in any order.
5. Tap **Connect**.
6. The mobile app will prompt you to connect the mobile device and the instrument to the same local network.

You have two options:

- *Connect to network*: The instruments and the mobile device connect to the Wi-Fi access point of your personal or work network.
- *Act as hotspot*: This enables the primary instrument's hotspot to which your mobile device and the other instruments connect.

✍ **Note:** Ideally, the hotspot is the instrument to which you are closest and is the centre point for all instruments being used. Keep this in mind when you select the primary instrument.

7. After choosing, the mobile app prompts you for the permissions and information required to connect to the desired network.

When you connect the mobile app to multiple instruments, the connected instruments sync to the measurement setup of the primary instrument. This allows you to set up multiple instruments with the same measurement setup quickly.

✍ **Note:** For multiple instrument setups that include both B&K 2245 and HBK 2255, only instruments which are the same model as the primary instrument sync to its measurement setup.

How to add the instrument manually

If you want to find an instrument that is not showing up in the list of discovered instruments, such as an instrument on another network, you can manually add the instrument to the list using its IP address.

✍ **Note:** Use this functionality to connect to your instrument remotely.

1. On the mobile app, tap .
2. Enter the IP address or host name.

For local connections, you can find the IP address of the instrument here: **Menu > System settings > Network settings > Wi-Fi settings** or **Ethernet settings**.

For remote connections, the IP address or host name will depend on your setup. Refer to [Remote connections](#) for information about which IP address or host name to use.

3. Tap **Done**.

How to disconnect devices

Disconnect the instrument from the mobile app if you wish to connect the mobile app to another instrument. When you disconnect the instrument, the mobile app will not connect to the instrument automatically.

1. In the mobile app, tap  to open the instrument menu.
2. Tap the instrument.



3. Tap **Disconnect**.

✍ **Note:** If you disconnect the instrument from the mobile app, the app will still discover the instrument.

Troubleshooting connection problems

- Check that the instrument is set to act as a hotspot (**System settings > Network settings > Wi-Fi settings > Wi-Fi mode**).
- Check that the instrument is generating a hotspot, it will show .
- Check that Wi-Fi is enabled on the mobile device.
- Make sure that the two devices are within range.
- Try turning Wi-Fi off and on again on the mobile device.
- Try re-entering the network password on the mobile device. You may have to forget the network first.
- If you get an invalid password error message on the mobile device when trying to connect to the instrument hotspot, try rebooting the instrument.

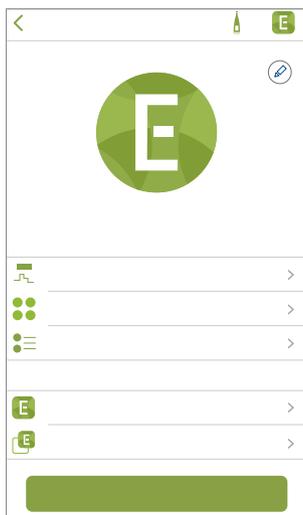
Mobile app GUI

 **Note:** If the mobile app and the instrument are not set to display the same language, text in the graphical user interface (GUI) of the mobile app will be in two languages.



Once the mobile app and instrument are connected, the Enviro Noise Partner mobile app opens to the project list. Projects are organized by date and time.

Tap an existing project to open it. Swipe left to delete a project. Tap **Create new project** to start a project.



Use the project screen to set up a new project or edit an existing project.

Tap the project name to change the default name.

Tap  to add a picture.

Tap **Markers** to set up markers.

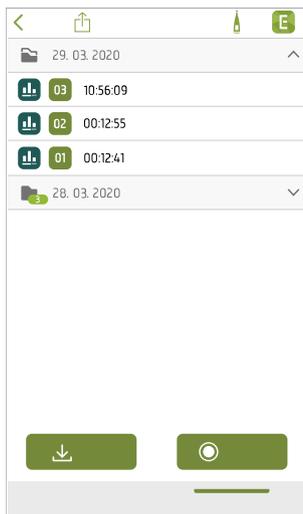
Tap **Post-processing parameters** to add calculations to your measurements.

Tap **Define checklist** to create a checklist for the project.

Tap **Save as template** to save the instrument and project settings for future use.

Tap **Apply template** to select a template to use.

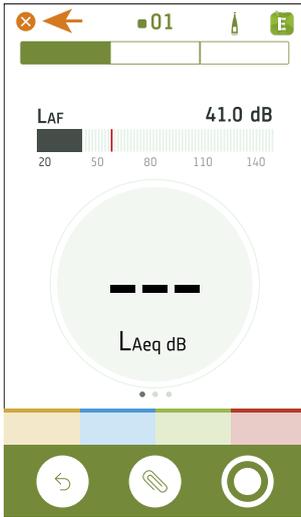
Tap **Measurements** to add measurements to the project.



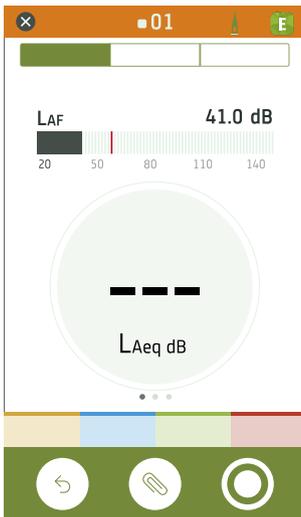
Measurements is where you can view, add and share measurements in the project.

Measurements are grouped by data and time. Tap a folder to expand or collapse it. Tap a measurement to open it. Swipe left on a measurement to delete it.

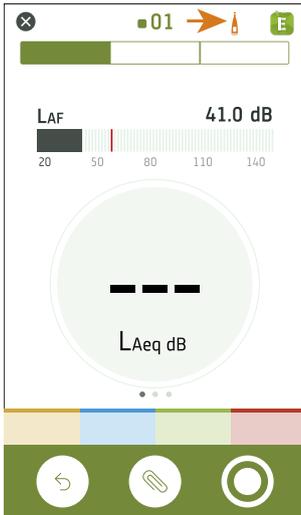
Tap **Import** to add measurements that are stored on the instrument or tap **Measure** to open the measurement screen and make new measurements. Tap  to share the project.



Tap **X** to close the measurement screen and return to the project screen.



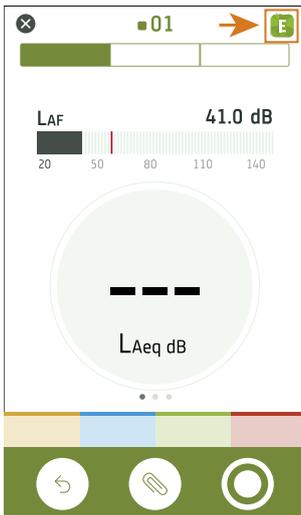
The mobile app displays the same colour, status icon and measurement number as the instrument.



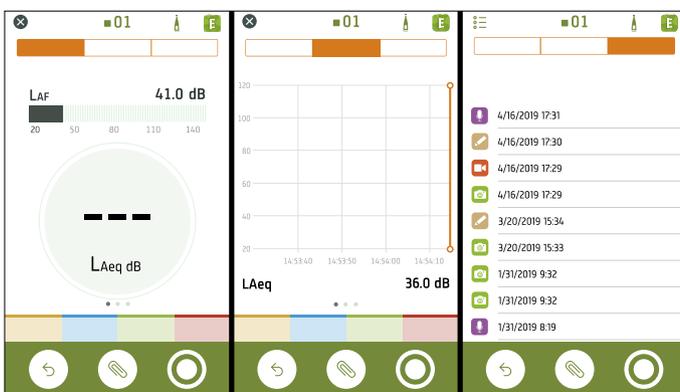
Tap  to open the Setup screen. Open the Setup screen to access instrument settings and view status information about the instrument. You can edit many of the instrument settings using the mobile app.

 **Note:** If you are connected to multiple instruments, the Setup screen shows the primary instrument.

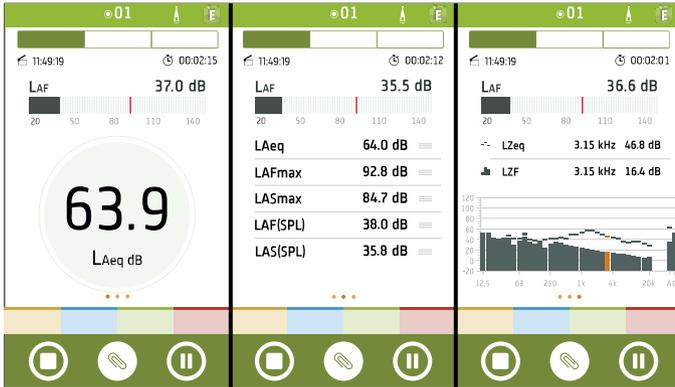
The icon also gives status information.  means there is no connection between the instrument and the mobile app.  means that the wireless signal is weak.  means data is being uploaded to the instrument.



Tap  to access information about the mobile app and help.



Use the navigation bar to change between **Total** (left), **Profile** (centre) and **Annotations** (right).



Total displays instantaneous parameters, parameters that are calculated for the total measurement time, and frequency analysis parameters. It is the main display for single measurements. SLM view (left) shows an instantaneous broadband parameter (bar graph) and one calculated broadband parameter. List view (centre) shows an instantaneous broadband parameter (bar graph) and a list of calculated broadband parameters. Spectrum view (right) shows an instantaneous broadband parameter (bar graph), and the frequency analysis of two spectrum parameters. Each view contains a unique bar graph.

For multiple instrument setups, it is possible to display measurement data from all connected instruments. The bar graph will show instantaneous data from all instruments at the same time using the same order as on the instrument screen.

Swipe left or right to switch between views. Tap on a parameter to change the parameter being displayed. Tap and drag ≡ to move items in the list.



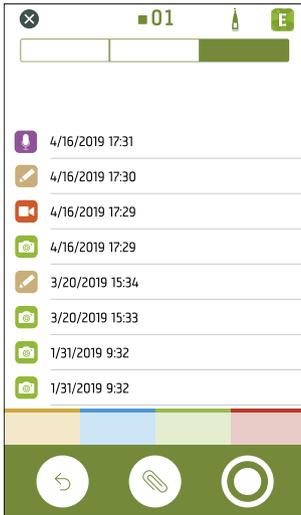
Profile displays the logged broadband and/or spectrum parameters (Profile view). It is the main display for logged measurements.

For multiple instrument setups, it is possible to display logged data from all connected instruments. Logging profiles from up to three instruments can be displayed at the same time.

Swipe left or right to switch between views of a single logged broadband parameter, multiple logged broadband parameters or a single logged spectrum parameter. Tap on a parameter to change the displayed parameter.

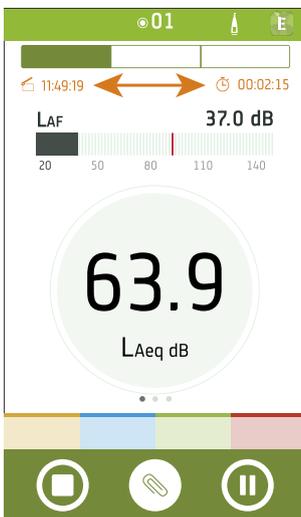
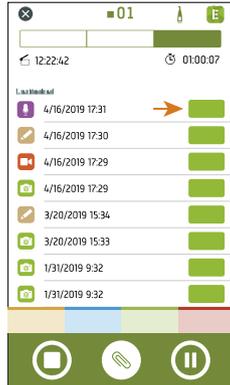
You can interact with the profile graphs: Scroll forwards and backwards through time, double tap on the Y-axis to scale the graph to the data, and tap on markers to view or edit them. For the spectrum parameter, highlight different frequencies in the spectrum graph to view the logging profile graph at each frequency.

During a measurement, the cursor is fixed to the right side of the graph. During review of a completed measurement, the cursor is fixed to the centre of the graph.

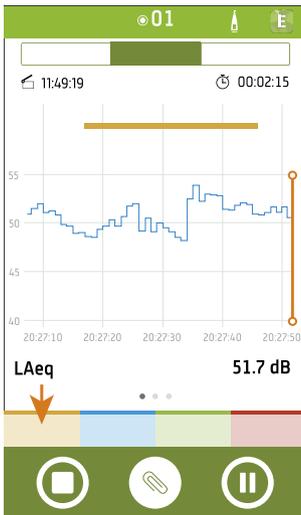


Annotations is the list of annotations.

Tap an annotation to review it. Swipe left on an annotation to delete it. While measuring or reviewing a measurement, tap **Attach** to add an unattached annotation to the measurement.



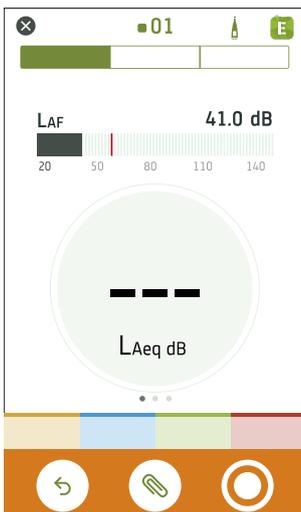
During a measurement, the mobile app shows the measurement start time (🕒) and the measurement duration time (🕒).



Add markers to your measurements to make a note of events in the measurement.

Tap a marker button to start applying it, tap it a second time to stop applying it. You can apply multiple markers simultaneously.

Tap the marker bar in the graph to select the marker. When a marker is selected, you can see the level evolution and the total value of the parameter being displayed for that marker. You can also select a marker to edit its type and duration, or to delete it from the measurement.



Tap  to reset the instrument for the next measurement.

Tap  to open the annotation menu.



Tap  to start a measurement.

During a measurement, slide  to the right to stop or slide  to the left to pause.

CONFIGURE YOUR INSTRUMENT

You can edit instrument settings using the instrument or using the mobile app.

The functionality of the mobile app enhances the usability of the instrument. For example, it is easier to use the keypad on your mobile device to enter passwords than it is to scroll through characters on the instrument. It is recommended to use the mobile app to set up the instrument wherever possible.

For multiple instrument setups, the mobile app enables you to edit the settings of all connected instruments at the same time.

Note:

- You cannot access all of the instrument settings from the mobile app. If you cannot find a setting in the mobile app, check the instrument.

Access instrument settings on the instrument

Press  briefly to open the menu.

Use the arrow buttons to navigate through the menu and the power button to make selections.

Hint:

- The menu is hierarchical. Your current location in the menu is shown in the header.
- The menu opens at the location from which it was closed.
- An arrow (>) on the far right indicates that there is a sub-menu, press  to access it.
- Navigate to the  and press  to exit parameter menus.
- You can also use the mobile app to edit some of the instrument settings.

Access instrument settings on the mobile app

1. Open the mobile app.
2. Connect the mobile app to the instrument.
See [How to connect](#) for more information.
3. Tap .

Setup mode

HBK 2255 can be used for very different purposes: general sound level measurements, environmental measurements, building acoustics measurements and calculations, and measurements at very low frequencies. To handle such different applications and to make it easier to set up and use the instrument, HBK 2255 has different setup modes. The Setup mode setting filters the instrument settings to provide a dedicated user interface for the different types of applications. It is important to check that the setup mode of the instrument matches the type of measurement you will perform.

Note:

- The Setup mode setting is not available on B&K 2245 because it only handles basic sound level meter applications.
- The functionality of your instrument will depend on the licences installed and enabled on your instrument, which affects the setup modes available on your instrument.
- In some cases, you may be prompted to change the setup mode when connecting to the mobile app.

Menu location: **Measurement settings > Setup mode**

About the setup modes

Below is a short description of all the Setup mode options for HBK 2255.

SLM

The SLM setup mode is used for most measurements within the normal human range of hearing in both level and frequency..

Infrasound

The Infrasound setting is for measurements at very low frequencies using Microphone Type 4964. In this mode, 1/3-octave frequency analysis is extended down to the 0.8 Hz band (1 Hz for 1/1-octave analysis) and the G frequency weighting is selectable. Infrasound functionality requires the BZ-7452 licence to be installed and enabled on your instrument.

Building acoustics

The Building acoustics setting is for testing sound insulation: measurements of sound pressure levels in the source and receiving rooms as well as the measurement, calculation and display of reverberation time in the receiving room. The building acoustics functionality requires the BZ-7350 licence to be installed and enabled on your instrument.

Input settings

Input settings ensure that you are collecting accurate data. The instrument optimizes the frequency response based on the selected microphone and makes corrections based on the selected sound field and windscreen.

Go to: **Measurement settings > Input.**

Microphone

The Microphone setting tells the instrument which microphone is attached. The microphones in the microphone database populate the options for the Microphone setting. See [Microphone database](#) for more information about the database.

B&K 2245 has a built-in preamplifier and is designed for use with Microphone Cartridge Type 4966. Type 4966 is pre-polarized, so it can be used with battery-operated equipment such as B&K 2245, and is optimized for use in free-field environments. By default, the instrument is set up to use the attached Type 4966 microphone cartridge. If you change the microphone cartridge, you will need to change the Microphone setting.

HBK 2255 is designed to be used with different combinations of microphone cartridges and microphone preamplifiers, which enables the instrument to perform a variety of applications. HBK 2255 uses TEDS (transducer electronic data

sheet) to set the attached microphone cartridge/preamplifier pair automatically. If you change the microphone cartridge/preamplifier pair, the instrument will change the Microphone setting according to the TEDS information of the new pair. See [TEDS, Microphones and HBK 2255](#) for more information about TEDS, supported microphone cartridges and preamplifiers, and how it works with HBK 2255.

Note: If you are using a single microphone preamplifier with multiple microphone cartridges, check that the Microphone setting is correct. By default, the instrument selects the first microphone cartridge/preamplifier pair with the correct preamplifier for the Microphone setting.

Sound field

It is important that the instrument knows the type of sound field in which you are measuring so it can apply the appropriate correction to your measurements. These corrections will enhance the overall frequency response of the system regardless of whether or not the microphone you are using is designed for the sound field in which you are measuring.

- Choose **Free-field** if you are in an environment with no (or very few) objects or surfaces that will reflect sound. Free-field sounds generally come from the sound source.
- Choose **Diffuse-field** if you are in an environment with a lot of objects or surfaces that reflect sound. Diffuse-field sounds come randomly from all angles (random incidence) due to reflection off surfaces within the environment.

Note: Generally, ISO requires free-field conditions and ANSI requires diffuse-field conditions. Be sure to check your local standards for the setting you require.

Windscreen

Windscreens are used to reduce the amount of wind-induced noise in measurements. Therefore, windscreens are generally used for outdoor measurements, but they can be used any time you want to protect measurements from unwanted noise caused by air movement.

Windscreen detect is the setting that enables or disables automatic detection of Windscreen UA-1650.

- *Enabled:* The instrument detects the windscreen and applies the appropriate correction.
- *Disabled:* Specify the windscreen manually under **Windscreen type**.

Frequency range

HBK 2255 has a few options for extending the lower limit of the frequency range of your measurements. The options available will vary according to the licences installed and enabled on your instrument.

	Normal	Extended	Very low
1/3-octave	12.5 Hz to 20 kHz	6.3 Hz to 20 kHz	0.8 Hz to 20 kHz
1/1-octave	16 Hz to 16 kHz	8 Hz to 16 kHz	1 Hz to 16 kHz

Note: The usable lower frequency will be limited by the specifications of the attached microphone.

Leq(f1–f2)

Together, the f1 for Leq(f1-f2) and f2 for Leq(f1-f2) settings define the frequency bands for calculating the equivalent continuous sound level, Leq, for frequency bands from f1 Hz to f2 Hz.

TEDS, Microphones and HBK 2255

TEDS

HBK 2255 uses TEDS (transducer electronic data sheet) to detect the attached microphone (microphone cartridge/preamplifier pair), add new microphones to the microphone database and set the attached microphone as the input. If the TEDS information changes (that is, if you change the microphone), the instrument changes its configuration accordingly. The instrument performs all of these tasks automatically, which makes it very easy to change microphones on HBK 2255.

TEDS scenarios

For preamplifiers with a built-in TEDS chip, the chip contains information about the microphone preamplifier, and in some cases, the microphone cartridge as well. The instrument supports three TEDS scenarios using three different templates. The templates are standardized in compliance with IEEE 1454.4.

- **Microphone preamplifier:** TEDS describes the preamplifier (serial number and some characteristics).
- **Microphone with integrated preamplifier:** TEDS describes the microphone preamplifier and microphone cartridge as one unit, with one serial number and one sensitivity.
- **Combined microphone cartridge and preamplifier:** TEDS describes a microphone preamplifier with one serial number and a microphone cartridge with another serial number, but a single sensitivity (the sensitivity of the system).

The information the instrument enters in the microphone database depends on the TEDS scenario of the attached microphone (microphone cartridge/preamplifier pair). See [Microphone database](#) for more information about the database.

Microphones supported by HBK 2255

Below is a list of all Brüel & Kjær microphone cartridges, microphone preamplifiers, and microphone cartridge/preamplifier combinations which can be used with HBK 2255.

Microphone preamplifiers	<ul style="list-style-type: none"> • 1/2-inch Microphone Preamplifier Type 2669 • 1/4-inch Microphone Preamplifier Type 2670 • 1/2-inch Microphone Preamplifier ZC-0043 (with 1/2-inch to 1/4-inch adapter for use with 1/4-inch Microphone Types 4954 and 4944)
Microphone with integrated preamplifier	<ul style="list-style-type: none"> • Outdoor Microphone Type 4952 (integrated preamplifier)

<p>Combined microphone cartridge and preamplifier</p>	<p>Standard combinations for HBK 2255 using Preamplifier ZC-0043:</p> <ul style="list-style-type: none"> • Type 4966-Z-041: 1/2-inch Microphone Cartridge Type 4966 + ZC-0043 • Type 4964-Z-041: 1/2-inch Microphone Cartridge Type 4964 + ZC-0043 • Type 4954-Z-047: 1/4-inch Microphone Cartridge Type 4954 + Adapter UA-0056 + ZC-0043 • Type 4944-Z-047: 1/4-inch Microphone Cartridge Type 4944 + Adapter UA-0056 + ZC-0043 <p> Note: The microphone cartridge, preamplifier and adapter (if used) are sealed with tape. Calibration is void if the seal is broken.</p>
<p>Microphone cartridges</p> <p>Microphone cartridges do not have built-in TEDS. Microphone cartridges may be used with one of the supported (known) preamplifiers or an unknown preamplifier.</p>	<p>Microphone cartridges treated as known:</p> <ul style="list-style-type: none"> • 1/2-inch Microphone Cartridge Type 4966 • 1/2-inch Microphone Cartridge Type 4964 • 1/4-inch Microphone Cartridge Type 4954 • 1/4-inch Microphone Cartridge Type 4944 <p>Microphone cartridges treated as unknown:</p> <ul style="list-style-type: none"> • 1/2-inch Microphone Cartridge Type 4188 • 1/2-inch Microphone Cartridge Type 4189 • 1/2-inch Microphone Cartridge Type 4942 • Outdoor Microphone Type 4198 (includes Preamplifier Type 2669-C)

Microphone usage scenarios

Using a standard combination

Standard microphone combinations are set up for use with the instrument prior to delivery. When you detach and reattach the combination, the instrument reads the TEDS information and recognizes the attached microphone as a microphone in the microphone database. The instrument sets the attached microphone as the input, and you are ready to measure.

Using Type 4952

The instrument comes with a standard microphone. In addition, you purchase Type 4952 for use with the instrument. The first time you attach Type 4952 to the instrument, the instrument reads the TEDS information but does not recognize the attached microphone because it is not in the microphone database. The instrument adds a new microphone to the database using TEDS. The instrument sets the attached microphone as the input, and you are ready to measure.

Using a new preamplifier with TEDS

You attach a microphone preamplifier that has not been connected to the instrument before. The instrument reads the TEDS information in the preamplifier and adds a new microphone cartridge/preamplifier pair to the microphone database. The new microphone consists of an unknown microphone cartridge with serial number 0 together with the preamplifier and its serial number. You can manually edit the microphone cartridge in the database as needed. See [Microphone database](#) for more information about editing the database.

Using one microphone preamplifier with multiple cartridges

Each microphone cartridge/preamplifier pair must be set up in the microphone database. When you attach a microphone to the instrument, the preamplifier will be recognized in more than one microphone cartridge/preamplifier pair. By default, the instrument selects the first microphone cartridge/preamplifier pair with the correct preamplifier for the Microphone setting. You will need to manually change the Microphone setting if the default selection is not correct.

Microphone database

The microphone database populates the list of options in the dialog box of the Microphone setting. Initially, the database only contains the microphone supplied with the instrument.

You can only access the microphone database on the instrument: **Menu > System settings > Advanced settings**.

B&K 2245 has a built-in microphone preamplifier, but you can use different microphone cartridges with the instrument. To use a different microphone cartridge with the instrument, you will first need to add the microphone cartridge to the microphone database. The microphone database stores the type and serial number, sensitivity and sound field for individual microphone cartridges.

HBK 2255 has a detachable microphone preamplifier. The instrument can be used with different combinations of microphone cartridges and microphone preamplifiers. The instrument uses TEDS to detect the attached microphone and add new microphones to the microphone database. The microphone database stores the type and serial number, sensitivity and sound field for each microphone cartridge along with the type and serial number of its associated microphone preamplifier to create a microphone cartridge/preamplifier pair. If TEDS only contains information about the microphone preamplifier, you can edit the information about the microphone cartridge in the microphone database. If TEDS contains information about the microphone cartridge/preamplifier pair, it is not possible to edit information about the microphone cartridge or preamplifier in the microphone database.

For more information about TEDS and HBK 2255, see [TEDS, Microphones and HBK 2255](#).

Known vs unknown microphones

Known microphone cartridges and preamplifiers are microphone cartridges and preamplifiers that the instrument recognizes.

B&K 2245 recognizes 1/2-inch Microphone Cartridge Type 4966.

HBK 2255 recognizes all microphone cartridges and preamplifiers listed in the table below.

Standard microphone combinations for HBK 2255	<ul style="list-style-type: none"> • Type 4966-Z-041: 1/2-inch Microphone Cartridge Type 4966 + Preamplifier ZC-0043 • Type 4964-Z-041: 1/2-inch Microphone Cartridge Type 4964 + Preamplifier ZC-0043 • Type 4954-Z-047: 1/4-inch Microphone Cartridge Type 4954 + Adapter UA-0056 + Preamplifier ZC-0043 • Type 4944-Z-047: 1/4-inch Microphone Cartridge Type 4944 + Adapter UA-0056 + Preamplifier ZC-0043
Microphone (with integrated preamplifier)	<ul style="list-style-type: none"> • Outdoor Microphone Type 4952
Microphone preamplifiers	<ul style="list-style-type: none"> • 1/2-inch Microphone Preamplifier Type 2669 • 1/4-inch Microphone Preamplifier Type 2670 • 1/2-inch Microphone Preamplifier ZC-0043 (with 1/2-inch to 1/4-inch adapter for use with 1/4-inch Microphone Types 4954 and 4944)

All microphone cartridges and preamplifiers that the instrument does not recognise are unknown.

While it is possible to use unknown microphones with the instrument, known microphones enhance the functionality of the instrument. For example, the instrument will not apply any filter corrections for unknown microphones.

For HBK 2255, the CIC (charge injection calibration) check functionality, which requires the BZ-7450 licence, is only possible if the microphone is known. See [Charge injection calibration](#) for more information about CIC checks.

How to edit the microphone database

1. Press  briefly to open the menu.
2. Go to: **System settings > Advanced settings**.
3. Enable **Service mode**.
4. Go to: **Microphones**.
5. Select a microphone in the list and choose an action:
 - *Edit*: Opens the microphone in the database so you can make changes to its type, serial number, sensitivity and sound field.
 - *Delete*: Deletes the microphone from the database.
 - *Create new*: Creates a copy of the selected microphone which you can edit as needed.
 - *Select*: Sets the microphone as the microphone attached to the instrument.

Note:

- You cannot delete the microphone that the instrument is currently set to use.
- For HBK 2255, the ability to edit or delete microphones in the database depends on the TEDS scenario which applies to the attached microphone/preamplifier pair. If TEDS only contains information about the microphone preamplifier, it is possible to edit information about the microphone cartridge and/or delete the microphone. If TEDS contains information about the microphone cartridge/preamplifier pair, it is not possible to edit or delete the microphone. See [TEDS, Microphones and HBK 2255](#) for more information about TEDS scenarios.

Measurement control

Measurement control settings specify how your measurements will run.

Go to: **Measurement settings** > **Measurement control**.

Logging mode

Logging measures and saves data periodically on the internal disk and thus creates a profile of measurement data. Measurements are restarted for each interval. This is done in addition to measuring sound levels for the total measurement time.

The instrument can log broadband parameters as well as spectrum parameters.

- *Disabled*: Turn off Logging mode.
- *Enabled*: Turn on Logging mode.

Logging interval

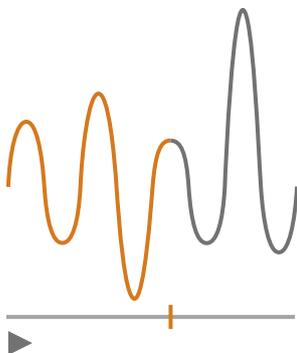
The Logging interval setting controls the length of the interval at which measurements are logged.

To enable the setting: **Logging mode** = *Enabled*.

Measurement time

This setting controls how the measurement stops: automatically or manually.

- *Preset*: The instrument will measure for the time specified in **Preset time**, then stop and save automatically.



- *Free*: You control the measurement manually.



Preset time

This setting controls the amount of time for which the instrument will measure when **Measurement time** is set to *Preset*.

Back-erase mode

This setting determines what happens when you resume a paused measurement.

Hint: You can change these settings while a measurement is paused.

Note: Back-erase will not be applied to logged data. To enable Back-erase mode, **Logging mode** must be set to *Disabled*.

- *Enabled*: Overwrite measurement data for the **Back-erase time**.



- *Disabled*: Resume the measurement without overwriting earlier data.



Back-erase time

This setting controls the number of seconds that will be erased when the measurement is resumed. This setting is enabled when **Back-erase mode** is set to *Enabled*.

Fast logging

HBK 2255 can fast log broadband parameters with one frequency weighting and spectrum parameters with up to two simultaneous frequency weightings. Fast logging is very similar to regular logging, the difference is that data is logged at shorter intervals. Fast logging requires the BZ-7301 or BZ-7450 licence to be installed and enabled on your instrument.

How to set up fast logging measurements

1. Go to **Measurement settings > Measurement control**.
 - a. Enable the logging mode.
 - b. Set the fast logging interval for broadband (BB) and/or spectrum parameters.
2. Go to **Measurement settings > Fast logging**.
3. Enable fast logging parameters.

 **Note:** If you do not enable one or more parameters, the instrument will not fast log data.

See [Fast logging](#) for more information about enabling parameters for fast logging.

BB fast logging

The BB fast logging setting controls the interval at which broadband parameters are fast logged.

You can choose an interval between 1 ms and 1000 ms.

Spectrum fast logging

The Spectrum fast logging setting controls the interval at which spectrum parameters are fast logged.

You can choose an interval between 4 ms and 1000 ms.

Broadband parameters

The instrument measures broadband sound level parameters with frequency weightings that mimic how humans hear sounds and time weightings that define the averaging of sound levels over time. The different parameters that you can measure are combinations of the parameters (Leq, Lmax, Lmin, etc.) with frequency weightings and time weightings (F, S or I).

B&K 2245 has frequency weightings A, B, C and Z. The instrument can make measurements with up to two frequency weightings simultaneously.

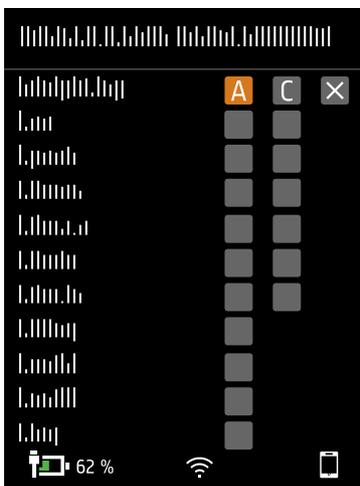
HBK 2255 has frequency weightings A, B, C, and Z. The instrument can make measurements with up to three frequency weightings simultaneously. If the BZ-7452 licence is installed and enabled on HBK 2255, the instrument will also have frequency weighting G.

Note: HBK 2255 filters the number of frequency weightings and the available frequency weightings according to the Setup mode setting.

Go to: **Measurement settings > Broadband parameters.**

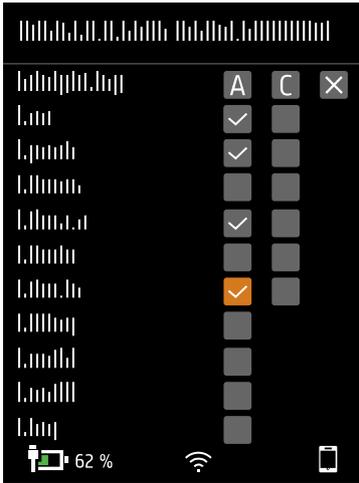
How to set up broadband parameters using the instrument

1. Enable a frequency weighting.



- a. Press  to navigate to a weighting box.
- b. Press  to scroll through the frequency weightings.

2. Enable measurement parameters.



- a. Press ▼ to navigate to a parameter.
 - b. Press ⏪ to enable / disable parameters.
3. Navigate to X.
 4. Press ⏪ to close the parameter selection menu.

How to set up broadband parameters using the mobile app

1. Tap **1** to enable parameters for the first frequency weighting.

The instrument can measure broadband parameters with multiple simultaneous frequency weightings, you will enable parameters for each frequency weighting separately.

2. Select the frequency weighting.

- a. Tap **Weighting**.
- b. Select the desired frequency weighting.

 **Note:** The options are the unused frequency weightings.

See [About frequency weightings](#) for more information.

- c. Tap **Back**.

3. Enable measurement parameters.

- a. Tap a parameter.
- b. Tap **On** to enable or **Off** to disable the parameter.

See [About parameters](#) and [About time weightings](#) for more information.

- c. Tap **Back**.

4. Repeat the process for each frequency weighting.
5. Tap **Done** to return to the project menu or tap **Back** to return to the instrument settings menu.

About parameters

Time-averaged levels

The instrument can average levels of the sound source over time.

- **Leq** = equivalent continuous sound level

This parameter calculates a constant level of noise with the same energy content as the varying acoustic noise signal being measured.

- **LE** = sound exposure level

This parameter takes the sound levels for a period of time and calculates the constant sound level that would produce the same total sound energy in one second. Sound level exposure is sometimes called single event level (SEL).

Peak levels

- **Lpeak** = peak sound level

This parameter gives the highest value of the frequency-weighted acoustic signal.

Lpeak,1s is the peak sound level during the latest second.

Exponentially averaged levels

Exponentially averaged sound levels provide easy-to-read values. A number of parameters are derived from exponential averaging:

- **Lmax** = maximum sound level

This parameter gives you the highest time-weighted sound level that occurs during the measurement time.

Lmax is often used in conjunction with another noise parameter (for example, Leq) to ensure a single noise event does not exceed a limit.

- **Lmin** = minimum sound level

This parameter gives you the lowest time-weighted sound level that occurs during the measurement time.

- **L** = instantaneous sound level

This parameter shows the instantaneous time-weighted sound level as measured by the instrument.

- **L(SPL)** = sound pressure level

This parameter calculates the maximum time-weighted sound level during the latest second.

 **Note:** Lpeak,1s, L and L(SPL) are instantaneous values, as such they are for display only and are not saved with the measurement.

About time weightings

The instrument uses three standard-defined time weightings: F, S and I. Time weightings define the exponential averaging in the root-mean-square (RMS) measurement to average the fluctuations in sound levels and create useful readings.

Time weightings use time constants. Time constants define the time it takes for the instrument to respond to a change in sound levels.

 **Note:** If you are measuring to a standard, check if the standard defines which time weighting to use.

- **F** = 125 ms time constant, decay of 34.7 dB/s

The fast rise and decay of this time weighting means it will show a lot of the variations in the acoustic signal. You can use this weighting to measure sounds that fade rapidly, such as a dog bark, or to measure sounds that have a lot of transients (changes).

 **Note:** F time weighting can be used for most measurements.

- **S** = 1 s time constant, decay of 4.3 dB/s

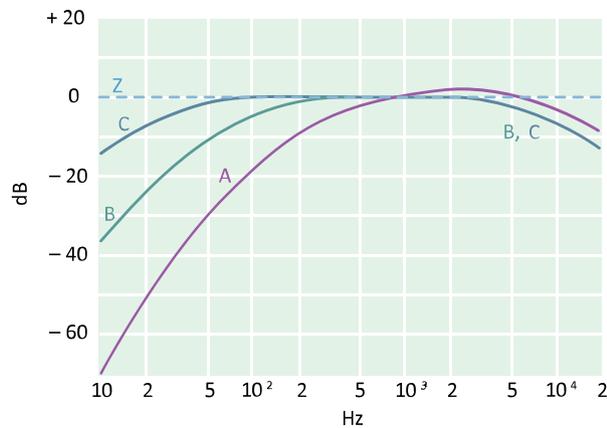
The relatively slow rise and decay of this time weighting means it will smooth the variations in the acoustic signal. You can use this weighting to measure sounds that fade slowly, such as a bell toll, or to measure sounds that are fairly constant.

- **I** = 35 ms time constant, decay of 2.9 dB/s

When choosing a time weighting to use, ask yourself if you want to track or smooth the variations in sound levels over time.

About frequency weightings

Frequency weightings mimic how humans hear sound.



A-weighting

- Represents the human ear's response at low to medium sound levels
- Equal loudness curve: 40 dB
- The most commonly applied frequency weighting
- Can be used for all sound levels

B-weighting

- Represents the human ear's response at medium sound levels
- Equal loudness curve: 70 dB

C-weighting

- Represents the human ear's response at fairly high sound levels
- Equal loudness curve: 100 dB
- Mainly used to assess peak values of high sound pressure levels (LCpeak)

Z-weighting

- No frequency weighting
- Used to collect unweighted data

 **Note:** An **equal loudness curve** is a frequency response curve. Equal loudness curves are the experimental results of presenting pure tones and levels at different frequencies to young people with no hearing impairment. Along a contour line the young, average, normal listener will judge tones presented with different combinations of frequency and dB to be equally loud.

Table of parameters

This table gives an overview of all the possible parameter/frequency weighting combinations.

 **Note:** The parameters are listed as they appear in the Broadband parameters menu.

	A	B	C	Z
Leq	LAeq	LBeq	LCeq	LZeq
Lpeak	LApeak	LBpeak	LCpeak	LZpeak
LFmax	LAFmax	LBFmax	LCFmax	LZFmax
LSmax	LASmax	LBSmax	LCSmax	LZSmax
LFmin	LAFmin	LBFmin	LCFmin	LZFmin
LSmin	LASmin	LBSmin	LCSmin	LZSmin
LFTeq	LAFTeq			
Lleq	LAlleq			
Llmax	LAlmax			
Lpeak,1s	LApk,1s	LBpk,1s	LCpk,1s	LZpk,1s
LE	LAE	LBE	LCE	LZE
LF	LAF	LBF	LCF	LZF
LS	LAS	LBS	LCS	LZS
LF(SPL)	LAF(SPL)	LBF(SPL)	LCF(SPL)	LZF(SPL)
LS(SPL)	LAS(SPL)	LBS(SPL)	LCS(SPL)	LZS(SPL)

Spectrum parameters

The Spectrum parameters setting allows you to enable and disable parameters for spectral analysis.

Spectral analysis has many uses. For example, it can be used to see the sound levels at low, medium and high frequencies, to see where the sound energy is in the frequency spectrum, or to assess sounds with distinct tones.

The instrument can perform 1/1- or 1/3-octave frequency analysis on spectrum parameters with frequency weightings and time weightings (F or S).

B&K 2245 has frequency weightings A, B, C and Z. The instrument can perform spectral analysis with one frequency weighting.

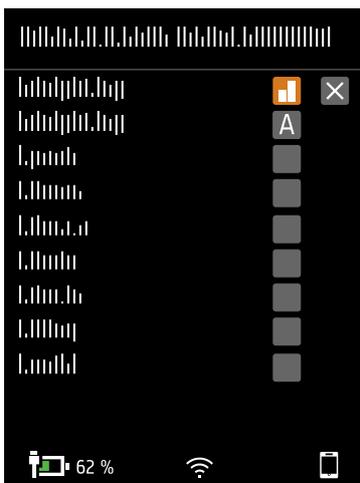
HBK 2255 has frequency weightings A, B, C, and Z. The instrument can perform spectral analysis with up to two frequency weightings simultaneously. If the BZ-7452 licence is installed and enabled on HBK 2255, the instrument will also have frequency weighting G.

Note: HBK 2255 filters the number of frequency weightings and the available frequency weightings according to the Setup mode setting.

Go to: **Measurement settings > Spectrum parameters.**

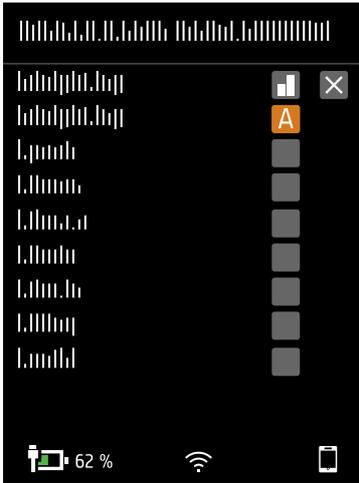
Set up spectrum parameters using the instrument

1. Press  to navigate to the bandwidth box.

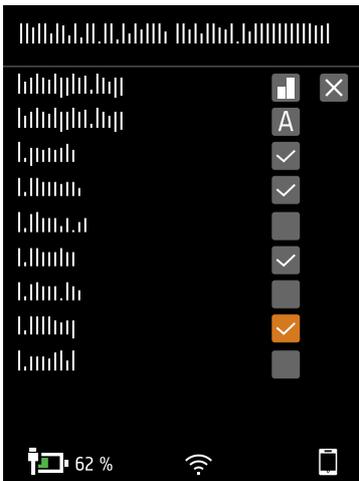


2. Press  to toggle between bandwidths.
 -  = 1/1-octave
 -  = 1/3-octave

3. Enable a frequency weighting.



- a. Press ▼ to navigate to the weighting box.
 - b. Press ⌵ to scroll through the frequency weightings.
4. Enable measurement parameters.



- a. Press ▼ to navigate to a parameter.
 - b. Press ⌵ to enable / disable parameters.
5. Navigate to X.
 6. Press ⌵ to close the parameter selection menu.

Set up spectrum parameters using the mobile app

1. Select the bandwidth of frequency analysis.
 - a. Tap **Bandwidth**.
 - b. Select a bandwidth: *1/3-octave* or *1/1-octave*.

See [About bandwidth](#) for more information.

- c. Tap **Back**.
2. Select the frequency weighting.
 - a. Tap **Weighting**.
 - b. Select the desired frequency weighting.
See [About frequency weightings](#) for more information.
 - c. Tap **Back**.
3. Enable measurement parameters.
 - a. Tap a parameter.
 - b. Tap **On** to enable or **Off** to disable the parameter.
See [About parameters](#) and [About time weightings](#) for more information.
4. Tap **Done** to return to the project menu or tap **Back** to return to the instrument settings menu.

About bandwidth

The bandwidth of the frequency analysis. You can choose 1/3-octave (third-octave) or 1/1-octave (full-octave). 1/3-octave will give you a finer analysis of the frequency than 1/1-octave.

	B&K 2245	HBK 2255		
		Normal	Extended	Very low
1/3-octave	12.5 Hz to 20 kHz	12.5 Hz to 20 kHz	6.3 Hz to 20 kHz	0.8 Hz to 20 kHz
1/1-octave	16 Hz to 16 kHz	16 Hz to 16 kHz	8 Hz to 16 kHz	1 Hz to 16 kHz

About parameters

- **Leq** = equivalent continuous sound level

This parameter calculates a constant level of noise spectrum with the same energy content as the varying acoustic noise signal being measured.

- **Lmax** = maximum sound level

This parameter gives you the highest time-weighted sound level per frequency band that occurs during the measurement time.

Lmax is often used in conjunction with another noise parameter (for example, Leq) to ensure a single noise event does not exceed a limit.

- **Lmin** = minimum sound level

This parameter gives you the lowest time-weighted sound level per frequency band that occurs during the measurement time.

- **L** = instantaneous sound level

This parameter shows the instantaneous time-weighted sound level spectrum as measured by the instrument.

 **Note:** L is an instantaneous spectrum, as such it is for display only and is not saved with the measurement.

About time weightings

The instrument uses three standard-defined time weightings: F, S and I. Time weightings define the exponential averaging in the root-mean-square (RMS) measurement to average the fluctuations in sound levels and create useful readings.

Time weightings use time constants. Time constants define the time it takes for the instrument to respond to a change in sound levels.

Note: If you are measuring to a standard, check if the standard defines which time weighting to use.

- **F** = 125 ms time constant, decay of 34.7 dB/s

The fast rise and decay of this time weighting means it will show a lot of the variations in the acoustic signal. You can use this weighting to measure sounds that fade rapidly, such as a dog bark, or to measure sounds that have a lot of transients (changes).

Note: F time weighting can be used for most measurements.

- **S** = 1 s time constant, decay of 4.3 dB/s

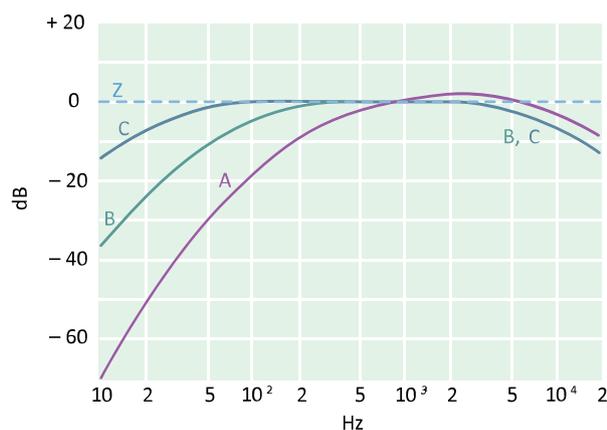
The relatively slow rise and decay of this time weighting means it will smooth the variations in the acoustic signal. You can use this weighting to measure sounds that fade slowly, such as a bell toll, or to measure sounds that are fairly constant.

- **I** = 35 ms time constant, decay of 2.9 dB/s

When choosing a time weighting to use, ask yourself if you want to track or smooth the variations in sound levels over time.

About frequency weightings

Frequency weightings mimic how humans hear sound.



A-weighting

- Represents the human ear's response at low to medium sound levels
- Equal loudness curve: 40 dB
- The most commonly applied frequency weighting
- Can be used for all sound levels

B-weighting

- Represents the human ear's response at medium sound levels
- Equal loudness curve: 70 dB

C-weighting

- Represents the human ear's response at fairly high sound levels
- Equal loudness curve: 100 dB
- Mainly used to assess peak values of high sound pressure levels (LCpeak)

Z-weighting

- No frequency weighting
- Used to collect unweighted data

 **Note:** An **equal loudness curve** is a frequency response curve. Equal loudness curves are the experimental results of presenting pure tones and levels at different frequencies to young people with no hearing impairment. Along a contour line the young, average, normal listener will judge tones presented with different combinations of frequency and dB to be equally loud.

Table of parameters

This table gives an overview of all the possible parameter/frequency weighting combinations.

 **Note:** The parameters are listed as they appear in the Spectrum parameters menu.

	A	C	Z	B
Leq	LAeq	LCeq	LZeq	LBeq
LFmax	LAFmax	LCFmax	LZFmax	LBFmax
LSmax	LASmax	LCSmax	LZSmax	LBSmax
LFmin	LAFmin	LCFmin	LZFmin	LBFmin
LSmin	LASmin	LCSmin	LZSmin	LBSmin
LF	LAF	LCF	LZF	LBF
LS	LAS	LCS	LZS	LBS

Fast logging

The Fast logging setting allows you to enable and disable parameters for fast logging.

HBK 2255 can fast log broadband parameters with one frequency weighting and spectrum parameters with up to two simultaneous frequency weightings. Fast logging is very similar to regular logging, the difference is that data is logged at shorter intervals. Fast logging requires the BZ-7301 or BZ-7450 licence to be installed and enabled on your instrument.

Menu location: **Measurement settings > Fast logging**

How to set up fast logging measurements

1. Go to **Measurement settings > Measurement control**.
 - a. Enable the logging mode.
 - b. Set the fast logging interval for broadband (BB) and/or spectrum parameters.
2. Go to **Measurement settings > Fast logging**.
3. Enable fast logging parameters.

 **Note:** If you do not enable one or more parameters, the instrument will not fast log data.

See [Measurement control](#) for more information about enabling logging mode and setting the fast logging interval.

How to enable fast logging parameters

HBK 2255 can fast log broadband and spectrum parameters (Leq, LF and/or LS).

When you enable fast logging parameters, the frequency weightings and bandwidth (for spectrum fast logging) are inherited from the Broadband parameters and Spectrum parameters settings.

- For broadband fast logging: The instrument can measure broadband parameters with up to three simultaneous frequency weightings, and you have the option to fast log broadband parameters with one of the enabled frequency weightings.
- For spectrum fast logging: The instrument can perform spectrum analysis with up to two simultaneous frequency weightings, and you can fast log spectrum parameters for each of the enabled frequency weightings.

See [Broadband parameters](#) for information about setting the frequency weighting for broadband measurements.

See [Spectrum parameters](#) for information about setting the bandwidth and frequency weighting for spectrum analysis.

Use the instrument

To fast log broadband parameters:

1. Navigate to the BB weighting box.
2. Press  to scroll through the frequency weightings.
3. Navigate to the parameter boxes below the BB weighting box.
4. Press  to enable / disable parameters.

To fast log spectrum parameters:

1. Navigate to the parameter boxes under the Bandwidth and Spec. weighting boxes.
2. Press  to enable / disable parameters.

To exit the menu:

1. Navigate to .
2. Press  to close the parameter selection menu.

Use the mobile app

1. Use the navigation bar to select the type of parameters you want to fast log: broadband or spectrum.
2. For broadband parameters, set the desired frequency weighting.
3. Tap a parameter to enable or disable the parameter.

Statistical parameters

The Statistical parameters settings allow you to set up the instrument to sample measurement data for statistical analysis.

Broadband statistics can be calculated for measurements made with B&K 2245 or HBK 2255.

Spectral statistics can be calculated for measurements made with HBK 2255.

Go to: **Measurement settings > Statistical parameters.**

Broadband statistics

Broadband statistics can be calculated for single measurements. LN values are calculated for the total measurement only and stored with the total measurement data.

When performing logging measurements with statistics, the broadband data for calculating the LN values is stored within the measurement. This enables Enviro Noise Partner to calculate statistics based on markers.

Broadband statistics are calculated with 0.2 dB class width over 130 dB range.

Basis parameter

The Basis parameter setting specifies the parameter to sample for broadband statistics. In other words, the parameter you choose will characterize the statistical data that the instrument collects for a single broadband parameter.

- **LAF** is sampled every 16 ms.
LAF is the instantaneous time-weighted (F) sound level with frequency weighting A.
- **LAS** is sampled every 125 ms.
LAS is the instantaneous time-weighted (S) sound level with frequency weighting A.
- **LAeq** is sampled every 1 s.
LAeq is the equivalent continuous sound level with frequency weighting A.

Spectral statistics

When performing logging measurements with statistics, the spectrum data used for calculating the LN values is stored with the measurement. This enables Enviro Noise Partner to recalculate the LN values and, for example, exclude part of the profile from the statistics.

Spectrum basis parameter

The Spectrum basis parameter setting specifies the parameter to sample for spectral statistics. In other words, the parameter you choose will characterize the statistical data that the instrument collects for a single spectrum parameter.

The bandwidth and frequency weighting for spectral statistics is set from the Spectrum parameters settings. The bandwidth and frequency weighting settings in the left-most column will be used for the statistics. For this reason, the parameters available in the Spectrum basis parameter dialog box are LXF, LXS or LXeq, where X is the frequency weighting listed in the left-most column of the Spectrum parameters settings.

- **LXF** is sampled every 16 ms.
LXF is the instantaneous time-weighted (F) sound level with frequency weighting X.
- **LXS** is sampled every 125 ms.
LXS is the instantaneous time-weighted (S) sound level with frequency weighting X.
- **LXeq** is sampled every 1 s.
LXeq is the equivalent continuous sound level with frequency weighting X.

Percentiles

You can set up to five percentile levels (LN values).

Percentile level values are calculated for the total measurement. The percentile levels that you specify will tell you the distribution of sound levels in your measurement. For example, if you set a percentile level of 90, the result is the sound level that is exceeded for 90% of the measurement period.

Audio recording

Audio recordings allow you to listen to a measurement while you analyse it. For example, you may want to investigate the cause of a sudden change in levels or to identify sounds during a measurement.

Menu location: **Measurement settings > Audio recording**

Recording quality

B&K 2245 can record listen-quality audio while measuring.

HBK 2255 can record listen-quality audio while measuring.

If the BZ-7451 licence is installed and enabled on HBK 2255, the instrument can record analysis-quality audio while measuring. The sound signal is recorded as 24 bit samples at 65536 Hz.

Listen quality

The instrument records audio in a format suitable for listening but not for analysis, using MP3 compression. MP3 recordings are compressed to 48 kbps, approximately 3% of the original signal size.

Analysis quality

The instrument records audio in a format suitable for analysis. The raw time signal is compressed using the FLAC (free lossless audio codec) format, which retains all of the information in the raw time signal while reducing file size.

The size of FLAC recordings depends on the signal. Low-level signals are typically compressed down to approximately 15% of the original signal size, while high-level signals are typically compressed to approximately 60% of the original signal size.

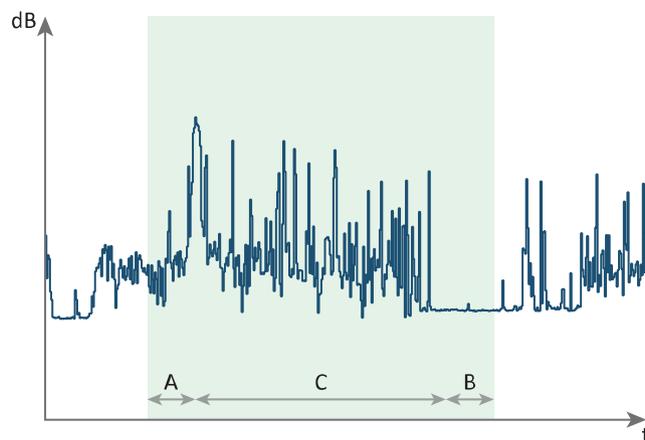
Audio recording settings

	B&K 2245	HBK 2255
Disabled	Do not record audio.	Do not record audio.
Enabled	Record audio for the duration of each measurement.	
Continuous		Record audio for the duration of each measurement.
Triggered		Record audio when trigger conditions are fulfilled while measuring (requires the BZ-7450 licence).

Triggered recordings

If the BZ-7450 licence is installed and enabled on HBK 2255, you can set up the instrument so an event triggers audio recordings to start and stop. To set up a triggered recording:

1. Set the **Listen quality** setting, the **Analysis quality** setting, or both settings to *Triggered*.
This enables the settings for triggered recordings, which are described below.
2. Use the **Pre-recording**, **Post-recording** and **Maximum duration** settings to set up some basic rules for audio recordings.
3. Set up trigger conditions.
 - Select **Level trigger** (1, 2, 3 or 4) to use triggers based on sound or wind speed levels.
 - Select **Periodic trigger** to use a trigger based on time.



A = Pre-recording

B = Post-recording

C = Maximum duration

X-axis shows time, Y-axis shows sound levels, the shaded area represents the total (maximum) recording length.

Pre-recording

The Pre-recording setting allows you to specify a length of time for which the recording starts before the trigger conditions are fulfilled.

You can specify a length of time between 00:00:00 and 00:01:00 (HH:mm:ss). For example, if **Pre-recording** = 00:00:30, the audio recording will start 30 s before the trigger condition is fulfilled.

 **Note:** Recording cannot start before the measurement start time, regardless of the Pre-recording setting.

Post-recording

The Post-recording setting allows you to specify a length of time for which the recording continues after the trigger conditions are no longer fulfilled.

You can specify a length of time between 00:00:00 and 23:59:59 (HH:mm:ss). For example, if **Post-recording** = 00:00:30, the audio recording will continue 30 s after the trigger conditions are no longer fulfilled.

 **Note:** Recording will stop when the measurement is stopped, regardless of the Post-recording setting.

Maximum duration and duration

Together, the Maximum duration and Duration settings allow you to set a maximum length for triggered audio recordings, not including any pre- or post-recordings.

1. Set the **Maximum duration** setting to *Enabled*.
2. Enter a length of time in the **Duration** setting.

You can specify a length of time between 00:00:01 and 23:59:59 (HH:mm:ss).

Level trigger 1 to 4

You can specify conditions for up to four unique level triggers.

See [Level triggers](#) for information about level trigger settings.

Periodic trigger

You can specify one periodic trigger.

See [Periodic trigger](#) for information about periodic trigger settings.

Level triggers

On HBK 2255 you can specify conditions for up to four unique level triggers, and each trigger can be enabled or disabled individually. This allows you to set up a few standard triggers and use them flexibly.

How do level triggers work?

A level trigger uses the characteristics of levels, either sound levels or wind speed, to cause an audio recording during a measurement. To do this, we tell the instrument what to look for by entering some basic settings. The settings act as a set of conditions that, once fulfilled, triggers the instrument to record audio.

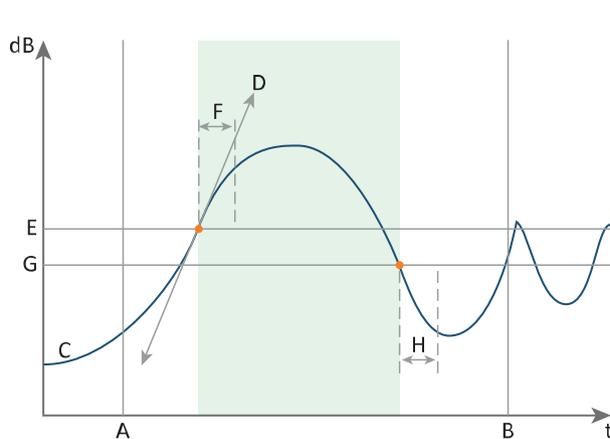
 **Note:** Level triggers based on wind speed require a weather station.

See [External devices](#) for more information about using weather stations with the instrument.

Level trigger settings

To set up a level trigger:

1. Go to: **Measurement settings > Audio recording.**
2. Set the **Listen quality** setting and/or the **Analysis quality** setting to *Triggered*.
3. Select a **Level trigger** (1, 2, 3 or 4).
4. Set **Trigger** to *Enabled*.
This enables the settings for the level trigger.
5. Use the settings to set up your trigger conditions.



A = Start time

B = Stop time

C = Parameter

D = Start slope (in this case, Rising)

E = Start level

F = Start duration

G = Stop level

H = Stop duration

X- axis shows time, Y-axis shows sound levels, the shaded area represents the recording.

Trigger

The Trigger setting allows you to enable or disable the trigger.

Note: The **Trigger** setting must be set to *Enabled* to enable the settings for the trigger.

Start and stop time

Together, the Start time and Stop time settings set the times of day between which the level trigger is active.

You can set the times between 00:00:00 and 23:59:59 (HH:mm:ss).

Parameter

The Parameter setting defines the parameter used for the level trigger.

Sound level parameters	LXeq, LXYmax, LXYmin, LXpeak, LavS4, LavS5 or LXeq(f1 - f2) where: <ul style="list-style-type: none"> • X = Any frequency weighting in use: A, B, C or Z • Y = Any time weighting in use: F or S
Weather station parameters	Wind speed

See [Broadband parameters](#) and [Spectrum parameters](#) for information about setting measurement parameters, including frequency and time weightings.

Start slope, start level and start duration

Together, the Start slope, Start level and Start duration settings define the characteristics of the level which will trigger an audio recording to start. To start an audio recording, the level of the parameter must cross the start level in the direction of the start slope for the start duration.

Note: When a measurement is started or continued, and the level of the parameter is above (or below) the start level, then an audio recording will start automatically (without waiting for the start duration to pass).

The **Start slope** setting defines the behaviour of the level of the parameter which will trigger an audio recording to start.

- *Rising*: Starts an audio recording when the parameter level rises above the start level for the start duration. The audio recording stops when the parameter level falls below the stop level for the stop duration.
- *Falling*: Starts an recording when the parameter level falls below the start level for the start duration. The audio recording stops when the parameter level rises above the stop level for the stop duration.

The **Start level** setting defines the level of the parameter which will trigger an audio recording to start.

- If the Parameter setting is set to a sound level parameter, you can set the level between 0.0 and 200.0 dB.
- If the Parameter setting is set to the wind speed parameter, you can set the level between 0.0 and 200.0 m/s (or mph).

The **Start duration** setting allows you to adjust the sensitivity of your trigger. You can set a length of time for which the level of the parameter must be above (or below) the start level before an audio recording will be triggered to start.

You can set a length of time between 00:00:01 and 00:01:00 (HH:mm:ss).

Stop level and stop duration

Together, the Stop level and Stop duration settings define the characteristics of the level that will trigger an audio recording to stop. To stop an audio recording, the level of the parameter must cross the stop level in the opposite direction of the start slope for the stop duration.

Note: The Start slope setting determines the stop slope, which is the opposite of the Start slope setting. For this reason, there is not a setting for the stop slope.

The **Stop level** setting defines the level of the parameter which will trigger the audio recording to stop.

- If the Parameter setting is set to a sound level parameter, you can set the level between 0.0 and 200.0 dB.
- If the Parameter setting is set to the wind speed parameter, you can set the level between 0.0 and 200.0 m/s (or mph).

The **Stop duration** setting allows you to adjust the sensitivity of your trigger. You can set a length of time for which the level of the parameter must be below (or above) the start level before an audio recording will be triggered to stop.

You can set a length of time between 00:00:01 and 00:01:00 (HH:mm:ss).

Hold off

The Hold off setting is a way to define a minimum pause between two triggered audio recordings. After a triggered audio recording has stopped, another audio recording cannot be triggered until the length of time set in the Hold off setting has passed. The Hold off setting can help to reduce the number of triggered audio recordings.

Note: If the parameter level rises above (or falls below) the start level during the hold-off period and stays above (or below) the start level for the duration of the hold-off period, the parameter level must fall below (or rise above) the start level before another audio recording can be triggered to start.

Combining level triggers

The instrument handles multiple enabled level triggers with the Boolean operator AND, which means an audio recording starts when all trigger conditions are fulfilled for all enabled triggers. Similarly, an audio recording stops when all trigger conditions are no longer fulfilled for all enabled triggers.

Using multiple level triggers allows you to refine the conditions that trigger an audio recording.

Example

This example shows how you can use two level triggers to reduce the number of audio recordings triggered by wind-generated noise.

Level trigger 1	Level trigger 2
<p>The trigger is set to start an audio recording when LAeq \geq 80 dB for more than 2 seconds.</p> <ul style="list-style-type: none"> • Trigger = Enabled • Start time = 08:00:00 • Stop time = 16:00:00 • Parameter = LAeq • Start slope = Rising • Start level = 80.0 dB • Start duration = 00:00:02 • Stop level = 70.0 dB • Stop duration = 00:00:02 • Hold off = 00:30:00 	<p>The trigger is set to stop an audio recording when wind speed \geq 3 m/s for more than 5 seconds.</p> <ul style="list-style-type: none"> • Trigger = Enabled • Start time = 08:00:00 • Stop time = 23:59:59 • Parameter = Wind speed • Start slope = Falling • Start level = 2.5 m/s • Start duration = 00:00:05 • Stop level = 3.0 m/s • Stop duration = 00:00:05 • Hold off = 00:00:00

Basically, the result of combining the two level triggers is that an audio recording will only start if LAeq \geq 80 dB and wind speed $<$ 3 m/s.

Other things to note about this example:

- An audio recording can only be triggered between 08:00:00 and 16:00:00 because both triggers must be active to fulfil both sets of conditions.
- The Hold off setting of Level trigger 1 will pause audio recordings for 30 minutes after an audio recording stops even though there is no hold off set for Level trigger 2.

Periodic trigger

On HBK 2255, you can specify conditions for one periodic trigger, which can be enabled or disabled. This allows you to save the settings even when the periodic trigger is not in use.

How do periodic triggers work?

A periodic trigger causes the instrument to record the audio signal at regular intervals throughout a measurement. To do this, we tell the instrument when, how often, and for how long to record audio.

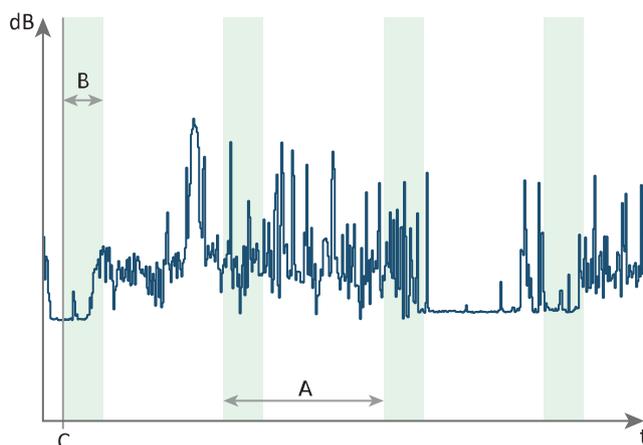
Periodic trigger settings

To set up a periodic trigger:

1. Go to: **Measurement settings** > **Audio recording**.
2. Set the **Listen quality** setting and/or the **Analysis quality** setting to *Triggered*.
3. Select **Periodic trigger**.
4. Set **Trigger** to *Enabled*.

This enables the settings for the periodic trigger.

5. Use the **Period**, **Duration** and **Sync periods to** settings to set up your trigger conditions.



A = Period

B = Duration

C = Sync periods to

X-axis shows time, Y-axis shows sound levels, the shaded area represents the audio recording.

Trigger

The Trigger setting allows you to enable or disable the trigger.

✍ **Note:** The **Trigger** setting must be set to *Enabled* to enable the settings for the trigger.

Period

The Period setting controls how often a recording is triggered.

You can set the instrument to trigger a recording between 00:01:00 and 48:00:00 (HH:mm:ss). For example, if **Period** = 01:00:00, the instrument will make an audio recording every hour.

Duration

The Duration setting controls how long the instrument records audio.

You can set the instrument to record for a length of time between 00:00:01 and 24:00:00 (HH:mm:ss). For example, if **Duration** = 00:05:00, the instrument will record audio for five minutes.

Sync periods to

The Sync periods to setting tells the instrument at what time to start the first audio recording.

A simple example	Period = 01:00:00 Sync periods to = 00:10:00 A measurement is started at 14:46:25.	Audio recordings will start every hour at 10 minutes past the hour, starting at 15:10:00.
A more complex example	Period = 01:30:00 Sync periods to = 00:10:00 A measurement is started at 14:46:25.	Audio recordings will start every 1.5 hours, starting at 15:10:00. 15:10:00, 16:40:00, 18:10:00...

How are trigger conditions fulfilled?

- An audio recording can only take place during a measurement, therefore a measurement must be in progress to trigger an audio recording. This rule applies to level triggers, periodic triggers and any external triggers you have set up using the programming interface for the instrument (Web-XI).
- If both the **Listen quality** and **Analysis quality** settings are set to *Triggered*, the trigger conditions will be common to the two audio recordings.
- The instrument handles multiple triggers of different types with the Boolean operator OR, which means an audio recording starts when one trigger condition is fulfilled and continues until all conditions are no longer fulfilled. The different types of triggers are level triggers, periodic triggers and external triggers.
- When multiple level triggers are enabled, the instrument handles the level trigger conditions with the Boolean operator AND, which means an audio recording starts when all level trigger conditions are fulfilled for all enabled level triggers. Similarly, an audio recording stops when all level trigger conditions are no longer fulfilled for all enabled level triggers.

Level triggers

The tables describe how audio recordings start and stop in relationship to the start and stop times as well as the start slope.

When **Start time** < Current time < **Stop time**:

Start slope = Rising	Start slope = Falling
Audio recording starts when the sound level of Parameter \geq Start level for Time \geq Start duration .	Audio recording starts when Parameter \leq Start level for Time \geq Start duration .
Audio recording stops when one of the following is true: <ul style="list-style-type: none"> • Parameter \leq Stop level for Time \geq Stop duration • Current time \geq Stop time. 	Audio recording stops when one of the following is true: <ul style="list-style-type: none"> • Parameter \geq Stop level for Time \geq Stop duration • Current time \geq Stop time

If Current time = **Start time**:

Start slope = Rising	Start slope = Falling
Audio recording starts if Parameter \geq Start level .	Audio recording starts if Parameter \leq Start level .
Audio recording stops when one of the following is true: <ul style="list-style-type: none"> • Parameter \leq Stop level for Time \geq Stop duration • Current time \geq Stop time 	Audio recording stops when one of the following is true: <ul style="list-style-type: none"> • Parameter \geq Stop level for Time \geq Stop duration • Current time \geq Stop time

If Current time < **Start time** or Current time > **Stop time**:

Start slope = Rising	Start slope = Falling
Audio recording will not start.	Audio recording will not start.

Display settings

Display settings control how the instrument screen looks (brightness, colour scheme), the brightness of the light ring, and the data that is displayed.

Go to: **Display settings**.

Screen brightness

Screen brightness controls how bright the screen on the instrument is. You can choose from six levels of brightness.

Light ring brightness

Light ring brightness controls the brightness of the light ring on the instrument. Choose from four settings: *Off*, *Low*, *Normal* or *High*.

Colour scheme

This setting controls the colour of the screen and text.

- *Light* is a light background with dark text.
- *Dark* is a dark background with light text.

Display views

SLM view

Set up the instantaneous display (bar graph) and the readout for one broadband parameter (single measurement).

The SLM view displays the readout of a single broadband parameter level in a large font so it is easy to see. Use the display when you only want to view a single parameter.

List view

Set up the instantaneous display (bar graph) and readouts for multiple broadband parameters (single measurement).

You can display three parameters on the instrument and five parameters on the mobile app.

Spectrum view

Set up the display of frequency analysis spectra.

Profile view

Set up the display of logged measurement parameters, also called the logging profile, on the instrument.

About data view

Display information about the instrument and the data.

Display view settings

The following list contains information about the settings for the different views.

- **Graph parameter** (SLM view, List view)
The Graph parameter setting defines the parameter for the bar graph; that is, the instantaneous (or fast) display of instantaneous sound levels.
- **Parameter** (Spectrum view)
The Parameter setting defines the parameter for the spectrum display; that is, the display of the sound level for each frequency band.
B&K 2245 can display one spectrum parameter. HBK 2255 can display two parameters.
- **Parameter** (Profile view)
The Parameter setting defines the parameter for the profile display; that is, the display of logged sound levels by time.

- **Graph max level, Graph min level** (SLM view, List view, Spectrum view, Profile view)

Together, the Graph max level and Graph min level settings define the range (maximum and minimum levels) for the bar graph in dB.

The range that you define should match the dynamics of the signal you are measuring. In other words, it should include all the sound levels that are present.

- **Lower display limit, Higher display limit** (HBK 2255: Spectrum view)

Together, the Lower display limit and Higher display limit settings define the display range on the X-axis. This allows you to exclude frequencies from the spectrum view which are not of interest.

- **Parameter** (SLM view)

The Parameter setting defines the parameter to display in the area below the bar graph.

- **Parameter 1, 2 and 3** (List view)

The Parameter settings define the parameters to display as a list below the bar graph. The instrument can display up to three parameters. Choose *None* to leave a list item blank.

- **Display**

The Display setting allows you to enable or disable each type of display.

About data view

About data view displays information about the instrument with which you are measuring. It can also include the location of the instrument (latitude and longitude) using GPS (global positioning system).

To enable latitude and longitude coordinates in About data view:

1. Enable Service mode on the instrument.
 - a. Press  briefly to open the menu.
 - b. Go to: **System settings > Advanced settings > Service mode.**
 - c. Select **Enabled.**
2. Using the instrument or the mobile app, go to: **System settings > Advanced settings > GPS location.**
3. Select **Enabled.**

 **Note:** To use the mobile app to enable latitude and longitude coordinates in About data view, Service mode must be enabled on the instrument. You cannot use the mobile app to enable Service mode.

Regional settings

The Regional settings group controls settings that often vary by your geographical location: language, date, time, numerical formats and measurement units.

Menu location: **System settings > Regional settings.**

Language

Choose the language of the user interface of the instrument.

Note:

- If the mobile app and the instrument are not set to display the same language, text in the graphical user interface (GUI) of the mobile app will be in two languages.
- Access the settings on your mobile device to set your language preference for the device, or to set your language preference for the app.

Time zone

Set the time zone in which you are measuring.

Note: It is very important that the instrument, mobile device and PC are all set to the same time zone. Otherwise, you may not be able to import measurements from the instrument to the PC application.

Date format

Choose the order of day, month, year (in numerical format).

Time format

Display time as a 24- or 12-hour clock.

Date separator

Choose the symbol that separates the day, month and year.

Decimal point and places

Choose the decimal separator: decimal comma or decimal point.

Choose the number of decimal places to display: 1 or 2.

Measurement units: Wind speed, temperature and dimensions

HBK 2255 works with weather station kits MM-0316-A and MM-0256-A, which are based on Vaisala weather stations.

The measurement unit settings allow you to choose your preferred measurement unit for wind speed, temperature and dimensions.

- SI = metric system
- US/UK = imperial system

Note: Wind speed and temperature data requires a weather station. See [External devices](#) for more information.

Power management

Use the Power management settings to switch off the screen or instrument after periods of inactivity. These settings can be helpful if you want to maximise battery life for long, unattended measurements.

Menu location: **System settings > Power management.**

Switch screen off after

Use this setting to switch off the screen on the instrument automatically after a period of inactivity (that is, when you are not pushing its buttons). The instrument will stay on and continue to measure even if the screen is off.

- *Never*: The screen will not switch off.
- *2, 5 or 10 minutes*: After 2, 5 or 10 minutes, the screen switches off.

Shut down after

Use this setting to shut down the instrument automatically after a period of inactivity (that is, when you are not pushing its buttons).

- *Never*: The instrument will not turn off.
- *2, 5 or 10 minutes*: After 2, 5 or 10 minutes, the instrument turns off.

✂ **Note:** If the instrument is measuring, it will not shut off. If the instrument is charging, it will shut off.

Data management

Data management settings include settings for storing a backup and for data retention.

Go to: **System settings > Data management**.

Backup settings

You can set up your instrument to store backups of your data to a USB stick or network storage (either a network attached storage (NAS) device or a shared folder). Data transfers automatically when the storage device is available. An icon on the instrument indicates the status of the backup.

Store a backup on network storage

You will need:

- Network storage
- Your instrument

✂ **Note:** If you are using NAS, you will need to set it up according to the manufacturer's instructions first.

Procedure:

1. Go to: **Backup settings > Backup**.
2. Select **Disabled**.
3. Enter the host name or IP address of the device or network (so the instrument can find it).
4. Enter the user name and password (so the instrument can access the device or network).
5. Specify the path (so the instrument knows where to upload the data).
6. Specify the domain if the network belongs to a domain.
7. Set **Backup** to *Network storage*.

Store a backup on a USB stick

You will need:

- A USB-C™ (or USB-A with an adaptor) memory stick with at least 16 GByte formatted as FAT32 or exFAT
- Your instrument

Procedure:

1. Go to: **Backup settings > Backup**.
2. Select **USB stick**.
3. Connect the USB stick. The transfer will start automatically.

Data retention

Data retention is set to *Manual* by default. This means that you will need to manually move data to Trash.

To set the instrument to remove data automatically:

1. Set **Data retention** to *Automatic*.
2. Use the **Retention period** setting to specify how long to keep the data.

After the specified time, data will be moved to Trash.

 **Note:** Data that is in the Trash folder is deleted only when you empty the folder or if space is needed.

Network settings

Network settings enable you to control your local (or remote) network connections. There are also settings to give the instrument a nickname, to protect it with a password and to view the instrument GUI in a web browser.

See [Local connections](#) and [Remote connections](#) for more information.

Go to: **System settings > Network settings**.

Nickname

A nickname can make your instrument easier to identify if you have multiple instruments. This is because the default name of an instrument is based on its type and serial number, so they all look very similar.

Add a nickname using the mobile app

1. Tap **Nickname**.
2. Use the keypad to enter a nickname.
3. Tap **Done**.

 **Hint:** You can also use emojis!

Add a nickname using the instrument

1. Select **Nickname**.
2. Use the arrow keys to enter a name.
3. Press  to exit the dialog.

 **Hint:** Use the mobile app, it is much easier.

Tips for nicknames

- Make the nickname short.
- Make the nickname unique.
- Use a naming pattern such as the phonetic alphabet.
- Use the location of the instrument.

Password

This setting allows you to password protect your instrument. The password will be required to connect to the instrument through Wi-Fi or Ethernet.

You can add or change the password using either the instrument or the mobile app.

Add a password using the instrument

1. Go to: **System settings > Network settings**
 2. Select **Password**.
-  **Note:** If the instrument is already password protected, you will need to confirm that you want to enter a new password.
3. Use the arrow keys to enter a password.
 4. Press .

 **Hint:** Use the mobile app, it is much easier.

Add a password using the mobile app

1. Tap **Password**.
2. Use the keypad to enter a password.
3. Tap **Done**.

Web server display

Web server display is a setting that allows you to view the instrument GUI on a web browser that is connected to the same network as the instrument. This can be useful if more than one person wants to be able to monitor a measurement from a distance.

 **Note:** The display is not interactive, it is for viewing purposes only.

The setting can be accessed from either the instrument or the mobile app. See [Web server display](#) for more information.

Wi-Fi settings

Wi-Fi settings control the wireless connections of the instrument.

Wi-Fi mode: Airplane mode

Use this setting to switch off Wi-Fi and Bluetooth on the instrument.

Wi-Fi mode: Connect to network

Use this setting to connect your instrument to your local wireless network, such as your work or home network. The instrument will be able to communicate with the other devices on the network, that is your iOS device or PC.

1. Set **Wi-Fi mode** to *Connect to network*.
2. If you are using the instrument, select **Wi-Fi name**.
If you are using the mobile app, the iOS device will search for the available networks.
3. Select your network from the list of available networks.
4. Enter the network password.

Wi-Fi mode: Act as hotspot

Use this setting to enable the instrument's hotspot to which you can connect your iOS device or PC so they can communicate.

1. Set **Wi-Fi mode** to *Act as hotspot*.
2. Connect your iOS device or PC to the hotspot as per the manufacturer's instructions. If you are using the mobile app, follow the prompts to connect your iOS device to the hotspot.

Change the hotspot password on the instrument

1. Select **Password**.
2. Use ▲ and ▼ to scroll through the character menu.
3. Press (⏏) to confirm the changes.

 **Note:** Restart the instrument to apply the new password.

Change the hotspot password using the mobile app

 **Note:** To edit the hotspot password on the mobile app, the mobile device must be connected to the instrument's hotspot.

1. Tap **Password**.
2. Use the keypad to enter a new password.
3. Tap **Done**.

The instrument and mobile app will reconnect automatically.

Reset network settings

You can reset the network settings so that the instrument will forget all networks to which it has connected. This will not affect any settings that have been saved on your iOS device.

This setting can only be accessed from the instrument.

How to reset network settings

1. Select **Reset network settings**.
2. Select **Yes**.

External devices

For HBK 2255, the External devices setting includes settings that allow you to output the analog signal and to connect the instrument to a weather station.

See [Voltage output](#) for information about how to output the analog signal.

Menu location: **System settings > External devices**

Weather station

The atmospheric conditions, such as humidity and wind speed, in which measurements are made are an essential part of environmental measurements.

HBK 2255 works with weather station kits MM-0316-A and MM-0256-A, which are based on Vaisala weather stations.

- MM-0316-A measures wind speed and wind direction.
- MM-0256-A measures wind speed, wind direction, ambient temperature, ambient pressure, relative humidity and rainfall.

MM-0316-A and MM-0256-A connect to the instrument using either a wired or a wireless connection.

- Wired: USB Adapter ZH-0698 and a USB-C to USB-A female adapter
- Wireless: via Bluetooth®

Set **Weather station** = *Vaisala* if you have connected a weather station to the instrument.

The measured weather parameters are saved with data and displayed together with the broadband parameters.

See [Regional settings](#) for information about how to set the measurement unit for wind speed, temperature and dimensions.

 **Hint:** If you have the BZ-7450 licence installed and enabled on your instrument, you can set up the instrument to trigger audio recordings based on wind speed during a measurement.

See [Level triggers](#) for more information.

Voltage output

The Voltage output setting allows you to output the analog signal through the USB-C™ socket on the bottom of the instrument. To output the signal requires an output cable. One option is the AO-0846 cable, which has a stereo-mini plug for connecting headphones.

How to output the analog signal

1. Select the analog signal to output.

For B&K 2245, go to **Menu > System settings > Voltage output > Source**.

For HBK 2255, go to **Menu > System settings > External devices > Voltage output**.

- *Input X-weighted*: Output the frequency-weighted input signal for listening purposes.
- *LXF*: Output the frequency-weighted instantaneous sound level with time weighting F as 10 mV/dB.

 **Note:**

- *X* = the frequency weighting.
- The frequency weightings available correspond to the parameters that the instrument is set to measure.

2. Attach the output cable to the instrument.
3. Start a measurement.

Timer settings

For HBK 2255, the Timer settings group of settings allows you to set up the instrument to switch on and make a measurement at a specific time on a specific day. This allows you to make measurements without being present, which is useful for long-term environmental monitoring. The timer functionality requires the BZ-7450 licence to be installed and enabled on your instrument.

Menu location: **System settings > Timer settings**

How to set up a timer on the instrument

There are 9 timers on the instrument, numbered from 01 to 09. Each timer can be set for one specific time, and applied to one or more days of the week.

1. Go to **System settings > Timer settings > Timer number**.
2. Select a timer: *01, 02, ... , 09*.
3. Use the Start time setting to set the time at which you want a measurement to start.
4. To apply the timer to one or more days, navigate to the desired day and select **On**.
5. To turn on the timer, set **Timer** to *Enabled*.
6. Switch off the instrument.

When you switch off the instrument, there will be a message which states the next time the instrument will switch on.

Examples

To make a measurement at 12:00:00 every day of the week, set up one timer as follows:

- Timer number = 1
- Timer = Enabled
- Start time = 12:00:00
- Monday = On
- Tuesday = On
- Wednesday = On
- Thursday = On

- Friday = On
- Saturday = On
- Sunday = On

To make a measurement on Monday, Wednesday and Friday at 12:00:00, and a measurement on Tuesday and Thursday at 13:00:00, set up two timers as follows:

<ul style="list-style-type: none"> • Timer number = 1 • Timer = Enabled • Start time = 12:00:00 • Monday = On • Tuesday = Off • Wednesday = On • Thursday = Off • Friday = On • Saturday = Off • Sunday = Off 	<ul style="list-style-type: none"> • Timer number = 2 • Timer = Enabled • Start time = 13:00:00 • Monday = Off • Tuesday = On • Wednesday = Off • Thursday = On • Friday = Off • Saturday = Off • Sunday = Off
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How timers work

State of the instrument:	What happens at the start time:
Off	Instrument switches on and starts a measurement
On and idle	Instrument stays on and idle
On and measuring	Instrument stays on and continues to measure

The instrument must be off for timers to work. The instrument will turn on a few minutes before the time set in the Start time setting. The measurement will start at the time set in the Start time setting.

Measurements will be performed according to the configuration in Measurement settings. In particular, the Measurement time setting is important:

- When **Measurement time** = *Free*, the instrument will turn on and start a measurement which will continue until you stop the measurement manually or the battery runs out. The instrument will not turn off automatically.
- When **Measurement time** = *Preset*, the instrument will turn on and start a measurement. After the time specified in the Preset time setting has elapsed, the instrument automatically stops and saves the measurement, then turns off.

See [Measurement control](#) for more information about the Measurement time setting.

Metadata

Metadata is information which describes data in the context of the measurement process and helps you to make sense of your data. The instrument automatically stores information about the data it collects, such as the date and time of each measurement, the measurement number, the microphone used, and the GPS coordinates (if enabled).

For HBK 2255, the Metadata setting allows you to create custom metadata. Custom metadata is stored with the measurement and supported in the Enviro Noise Partner and Building Acoustics Partner PC applications. If you export your measurement data from the PC application, the export file includes the custom metadata.

Menu location: **Metadata**

How to create custom metadata

To use custom metadata on your measurements, you will need to create metadata before you start to measure. There are 9 metadata on the instrument, numbered from 1 to 9.

1. Enable metadata collectively (as a whole).
 - a. Go to: **Metadata > Metadata**.
 - b. Select *Enabled*.
2. Enable metadata individually (one by one).
 - a. For example, go to **Metadata 1 > Metadata 1**.
 - b. Select *Enabled*.

Once a metadata is enabled, you will be able to edit it.

3. Use the **Name** setting to name the metadata.

This is the name you will see when prompted to edit/confirm metadata before saving each measurement.

4. Use the **Type** setting to define the format of the metadata.
 - Choose *Text* for metadata which consists of letters, numbers, symbols and spaces.
 - Choose *Number* for metadata which consists of numbers only. Values can be from 000 to 999.
 - Choose *Picklist* to create a list from which you can pick a value.
5. If **Type** = *Picklist*, you will also need to create entries to populate the list. Entries can consist of letters, numbers, symbols and spaces. You can create up to 11 entries.
6. Enter a default value for the metadata.

Only the setting that corresponds to the type of metadata will be enabled: Text value, Number value or Picklist value.

How metadata works

To add metadata to your measurements, you will need to enable metadata collectively. Each individual metadata (Metadata 1 through Metadata 9) that is enabled will be added to each measurement you make.

Before a measurement is saved, you will be prompted to confirm the metadata. At this point, you can edit the values before you confirm.

 **Note:** Number metadata do not automatically increment with each measurement.

Lock the settings

After you have finished setting up the instrument, you can lock the measurement, display and system settings to prevent changes.

 **Note:** This setting is only accessible on the instrument.

1. Go to: **System settings > Advanced settings > Service mode.**
2. Select **Enabled.**
3. Go to: **Lock settings.**
4. Select **Enabled.**

CALIBRATION CHECK

It is a best practice to check the accuracy of your instrument before and after a measurement by performing a calibration check. A calibration check is not a calibration. **Calibration** includes an adjustment of the instrument's sensitivity. A **calibration check** compares the current sensitivity of the instrument with the sensitivity from its most recent and initial calibrations, checking that it has not changed too much.

When you place a sound calibrator on the microphone, the instrument detects the tone and automatically checks the deviation of the sensitivity of the instrument from its initial calibration.

How to perform a calibration check

You will need:

- The instrument
- A sound calibrator such as Type 4231

A sound calibrator generates a known sound level, against which the measured level can be checked. Type 4231 generates a tone at 1 kHz with levels at 94 dB or 114 dB.

 **Note:** Be sure to add the calibrator's serial number in the calibration settings of the instrument. Go to: **Menu > System settings > Advanced settings > Calibration > Type 4231 no.**

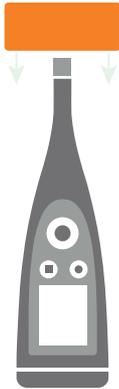
Procedure:

1. Turn on the instrument.

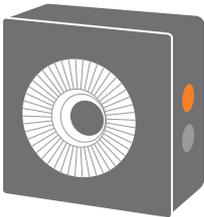


 **Note:** Ensure that the instrument is not measuring and that the menu is not open.

2. Gently seat the calibrator on the microphone.



3. Turn on the sound calibrator.



4. After a short period the instrument will initiate a calibration check, choose **Yes**.

 **Hint:** You can respond to the calibration dialog using the mobile app if you are using B&K 2245 with firmware versions greater than 1.1.3.1653 or HBK 2255 with firmware versions greater than 1.2.1325.

5. The calibration check will have one of two results:
 - *Pass*: The measured sound level is within tolerance. The instrument is ready for use.
 - *Fail*: The measured sound level is greater than the acceptable tolerance. The instrument should be recalibrated or serviced.
6. Exit the calibration check.



Calibration history

To view the history of calibrations and calibration checks, go to: **Menu > Calibration history**.

Calibration settings

Menu location: **Menu > System settings > Advanced settings > Calibration**.

Automatic calibration check

By default, the instrument is set to perform a calibration check automatically when it detects the constant sound level produced by the calibrator. Use the Automatic check setting to disable automatic calibration checks.

If you disable automatic calibration checks, you can still initiate a calibration check.

1. Go to: **Menu > System settings > Advanced settings**.
2. Enable the **Service mode** setting.
3. Go to: **Calibration > Calibrate**.
4. Follow the prompts on the instrument.

Calibration reminder

The instrument is set to remind you when it is time to calibrate by default.

To change the settings:

1. Go to: **Menu > System settings > Advanced settings**.
2. Enable the **Service mode** setting.
3. Go to: **Calibration**.
4. Edit the **Calibration reminder** and **Calibration interval** settings as desired.

Custom calibration

The instrument is set to use Sound Calibrator Type 4231 by default.

To use a different calibrator and set a custom calibration level:

1. Go to: **Menu > System settings > Advanced settings**.
2. Enable the **Service mode** setting.
3. Go to: **Calibration**.
4. Go to: **Calibrator**.
5. Select **Custom**.
6. Use **Custom calibrator no.** to add the calibrator's serial number.
7. Select **Custom level** to specify the sound level in dB.

Charge injection calibration

HBK 2255 can be set up to perform charge injection calibration (CIC) checks automatically during a logging measurement. This functionality requires the BZ-7450 licence to be installed and enabled on your instrument.

Menu location: **Measurement settings > Measurement control > CIC**

About CIC

As the name implies, the CIC method injects an internally generated charge into the microphone and preamplifier input circuit, and the ratio between the measured signal and the injected signal is measured. A CIC check enables the complete measurement chain to be verified, including the microphone, preamplifier, cabling and instrument. CIC checks are useful in situations where an external sound source (such as Type 4231) is not available, for example short- or long-term unattended logging measurements.

The signal generated by HBK 2255 consists of three tones (sines) at three different frequencies: 125 Hz, 1000 Hz and 4000 Hz. The three ratios at the three frequencies are measured by HBK 2255 and compared with reference ratios.

CIC reference

The very first time the instrument performs a CIC check of the calibration (with the initial calibration performed by HBK prior to delivery), the CIC check must pass for the results to be saved. If the CIC check passes, the results are added to the calibration history. The saved results are used as the reference for all subsequent CIC checks.

How to perform a CIC check

If a known microphone is attached to HBK 2255, a calibration check will trigger a CIC check to start automatically after the calibration check is complete. The calibration results are then displayed and saved.

See [Calibration check](#) for more information about calibration checks using an external sound source (such as Sound Calibrator Type 4231).

See [Input settings](#) for information about known and unknown microphones.

How to set up CIC checks

 **Note:** The connected microphone and preamplifier pair must be a known combination.

1. Go to: **Measurement settings > Measurement control**.
2. Enable the Logging mode setting.
3. Go to: **CIC > Daily CIC**.
4. Select the number of times you want the instrument to perform a CIC check.
The instrument can perform up to four CIC checks every day.
5. For each enabled CIC check, set a time at which to perform the check.

For information about the time format, see [Regional settings](#).

After you have set up your instrument to perform CIC checks, the instrument will perform CIC checks during logging measurements.

How CIC checks work in a logging measurement

1. Start a logging measurement.
2. The instrument first performs a CIC check, which is saved as a measurement.
3. After the CIC check, the instrument starts the logging measurement. The logging measurement runs until it is time for the first CIC check, at which point the logging measurement is stopped and saved.
4. The instrument performs the first CIC check then saves the check.
5. The instrument starts the logging measurement again. The logging measurement runs until it is time for the second CIC check, at which point the logging measurement is stopped and saved. Steps 4 and 5 repeat until all CIC checks have been performed or the logging measurement stops.
6. When the logging measurement stops (either by a preset time or manually), the logging measurement is saved.
7. The instrument performs a final CIC check then saves the check.

CIC checks last approximately 13 s and the gap in the logging measurement will be less than 20 s, typically 17 s.

Results

The results of the CIC checks can be displayed in the SLM view or List view displays, just as for measured broadband parameters.

For more information about instrument displays, see [Display settings](#).

1. Go to: **Menu > Display settings > SLM view** or **List view**.
2. Select the **Parameter** setting.
3. Select the CIC check parameter you wish to display from the dialog.
 - *CIC status*: Shows the CIC status message. See the table below for information about the status message.
 - *CIC 125Hz, CIC 1000Hz, CIC 4000Hz*: Shows the comparison of the measured ratio with the reference ratio at the specified frequency.

CIC status message	Meaning
Passed	The expected ratios at 125 Hz, 1000 Hz and 4000 Hz are measured, and the microphone (cartridge and preamplifier pair) seems to be OK.
High background noise	The background noise levels at one or more of the three frequencies are not at least 16 dB below the measured signal.
Outside tolerances	One or more of the three measured signals are more than ± 4 dB from the expected value. This is used when validating the initial references.
Deviates from reference	One or more of the three measured signals are more than ± 0.5 dB from the initial references.
Undefined	A CIC check has not been made.
Undefined reference	The initial calibration and CIC check of the microphone hasn't been done.

PROJECTS (MOBILE)

A project defines common settings for a collection of measurements. The common settings include markers, post-processing parameters and a checklist. Measurements and their annotations are stored in the project from which they were made.

You can create templates from and apply templates to projects. Templates store project settings as well as the measurement settings on the instrument, this allows you to ensure that the same settings are being used every time you open a project. See [Templates \(mobile\)](#) for more information.

Projects are named incrementally by default and organized by date and time.

Projects are stored on the instrument and transferred to the PC application for post-processing (analysis and report generation).

Create a new project using the mobile app

Before you can create a project using the mobile app, you must first connect to the instrument. See [Connect the mobile app to the instrument](#) for more information.

1. Tap **Create new project**.
2. Tap  to add a photo from your mobile device.
3. Tap the Name field to change the name of the project.
4. Tap the Group field to add the project to a group.

See [Project groups \(mobile\)](#) for more information.

5. Edit the settings as desired.

See [Marker settings \(mobile\)](#) for information about the default markers and how to edit them.

See [Post-processing parameters \(mobile\)](#) for information about how to create custom post-processing parameters.

See [Checklist \(mobile\)](#) for information about how to create and use a checklist.

Once you create a project, you can add measurements. See [Add measurements to a project](#) for more information.

How to edit a project

Open a project to make changes to its settings.

How to delete a project

You can delete a project in two ways:

- On a project tile, long tap for the option to delete the project.
- In the list of projects, swipe left and tap **Delete**.

Project groups (mobile)

Groups are a way to organize your projects. You can think of a group like a folder in a file system. You can have multiple groups, and each group may contain multiple projects. However, a project can only be in one group at a time.

Add a project to a group

1. Open an existing project, or create a new one.
2. Tap the Group field.
3. Tap a group in the list of groups to select it, or tap **Create group**.

The first time you add a project to a group, you will need to create a group.

4. Tap **Back**.

The Group field shows the name of the group to which the project belongs. You can change the group at any time.

Filter projects by groups

Once you create a group and add a project to it, you will be able to view your projects organized by group.

1. From the Projects screen with the tiles, tap **Show all projects**.
2. Navigate to the Group tab.

Marker settings (mobile)

Markers are essential to environmental measurements. They are used to categorise sounds so that the measurement data can be interpreted correctly and easily.

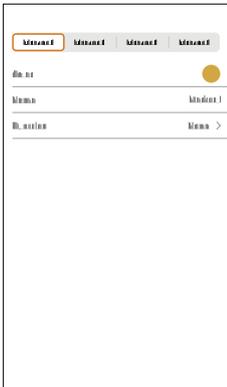
- Mark when the sound of interest is active or inactive.
- Mark sounds that require more investigation.
- Mark sounds you want to exclude from calculations without removing data from the measurement.

The ability to apply markers using the mobile app allows you to mark measurements in the field and makes it easier to do post-processing and reporting back in the office. The mobile app supports four markers. By default, there are three markers to mark ambient, residual and background sounds, and one marker to mark sounds you want to exclude. If you want to customise the markers, it is possible to edit the name and function of each marker.

You can also mark measurements back at the office using the PC application. Each marker has a shortcut key which makes it easy to mark a measurement in the PC application. The PC application also allows you to create new markers and to edit the name, colour, and function of each marker.

How to edit marker settings

The default markers can be edited to suit your needs.



1. Open an existing project, or create a new one.
2. Tap **Markers**.
3. Tap a marker in the marker bar.



4. In the rows of settings below the bar:
 - Tap the marker's name to rename it.
 - Tap the function to select a function for the marker.

Note:

- Changes to markers are not retroactive. In other words, changes to marker settings only affect future measurements.
- You can also edit the Exclude marker.
- You cannot change the colour of the marker using the mobile app, but you can change the colour using the PC application.

About the functions

Functions are assigned to markers, which are applied to logged measurements. The marker function describes the nature of the marked sound.

Within the PC application, the function of a marker determines how the measurement data is handled in calculations. At the moment, the Exclude function is the only function used for calculations in Enviro Noise Partner. Outside the PC application, functions can be used when exporting a project to Microsoft® Excel® to perform your own calculations, such as rating levels.

Ambient sound is all sounds at the measurement location at the time of measurement. This includes sound from the sound source of interest plus all the other sound in the area.

Residual sound is all sounds other than the sound of interest at the measurement location at the time of measurement. Subtract Residual sound from Ambient sound to isolate the sound of interest.

Background sound is the sounds at the measurement location at the measurement time, when the sound source of interest is not active. Use this marker to mark the typical Residual sound as the background level.

Exclude is for sounds that you do not want to include in the measurement calculations.

Assign **None** as a function if you are creating a custom marker and the other functions do not apply.

Post-processing parameters (mobile)

You can add moving-average and difference calculations of broadband and / or statistical parameters to your projects. These calculations are performed in real time, so you can display them on the mobile app during your measurements.

Post-processing parameters are saved to the project and are imported to the Enviro Noise Partner PC application, along with measurements and annotations.

 **Note:** You can also add post-processing parameters to a project using the PC application.

How to add post-processing parameters

1. Open an existing project, or create a new one.
2. Tap **Post-processing parameters**.
3. Tap **Add**.
4. Tap **Post-processing type**.
5. Select the type of calculation you would like to add: *Moving average*, *Difference* or *Report Period*.

The **Moving average** calculation is a series of averages. The average of the levels of one broadband or statistical parameter is taken for a set period of time (Duration) repeatedly over the total measurement time. Moving average is a statistical tool which will show the overall trends of your measurement data.

The Moving average calculation also returns a moving max parameter calculated for each measurement as the maximum of the moving parameter during the elapsed time of the complete measurement. The moving max parameter will be undefined if the elapsed time is less than the duration of the measurement.

Difference is the subtraction of the level of one broadband or statistical parameter from another.

Report period is an average of a parameter for a set period of time. The Report Period post-processing parameter can be used to create daily or hourly reports for example.

6. Tap **Back**.
7. Tap **Based on parameter**.
8. Choose a parameter.

For Moving average and Report Period, this will be the parameter to be averaged.

For Difference, this will be the parameter from which another is subtracted.

 **Note:** The choice of parameters is based on the broadband and statistical parameters that have been enabled in Measurement settings.

9. Do one of the following:
 - For Moving average and Report Period, specify a duration.

When choosing a duration, it is important to consider the length of the logging interval. The number of samples within the duration must be a whole number. In other words, the result of dividing the duration by the logging interval must be an integer.
 - For Difference, specify a parameter to subtract from the parameter specified in the Based on parameter field.

10. For Report Period, enable the Synchronize with midnight setting to start the report period at midnight on the day of measurement start. If the setting is not enabled, the report period will start when the measurement starts.
11. Tap **Done**.

Repeat this process to add more calculations to the project.

Checklist (mobile)

Checklists prevent steps from being forgotten. Create a list of all tasks required to complete a job, listing them in order if important. You can add one checklist per project.

 **Note:** The mobile app will not validate or automate checklists, it is up to you to follow the checklist.

How to make a checklist

1. Open an existing project, or create a new one.
2. Tap **Define checklist**.
3. Tap **Add step**.
4. Use the keypad to enter text.
5. Repeat Steps 3 and 4 as needed.
6. Tap **Back** when the list is complete.

How to edit a checklist

- Tap on a step to edit the text.
- To delete a step, swipe left then tap **Delete**.

How to use a checklist

Once you have created a checklist in a project, you can refer to it when you are making measurements.

1. From the project screen, tap **Measurements**.
2. At the bottom left of the screen, tap **Checklist**.
3. Tap an item in the list to mark it as complete. Tap the item again to mark it as incomplete.

Templates (mobile)

Templates are practical when you are making multiple measurements with identical measurement parameters, using either a single instrument or multiple instruments. A template stores project and measurement settings.

Project settings stored in a template:

- [Marker settings \(mobile\)](#)
- [Post-processing parameters \(mobile\)](#)
- [Checklist \(mobile\)](#)

Measurement settings stored in a template:

- [Input settings](#)
- [Measurement control](#) settings
- Measurement parameter settings: [Broadband parameters](#), [Spectrum parameters](#) and [Statistical parameters](#)
- [Audio recording](#) settings
- [Display settings](#)

Create a template

Create and save a custom template from a project which has been set up to perform specific measurements.

You can create multiple templates. Templates are saved on the instrument, separate from the project from which they were created. This means that you can apply any template to any project.

- See [Projects \(mobile\)](#) for more information.
- See [Configure your instrument](#) for more information.

What to do:

1. Open an existing project, or create a new one.
2. Tap **Save as template**.
3. Use the keyboard to enter a name.
4. Tap **Done**.

Apply a template

When you apply a template to a project, the template settings are pushed to all connected instruments. This ensures the same settings are used every time you open that project. Templates can be applied to any project.

1. Open an existing project, or create a new one.
2. Tap **Apply template**.
3. Tap on the template you would like to use.

 **Note:**

- The name of the template applied to the project appears in the Apply template field. If no template is applied or the template is deleted, the word 'None' appears.
- For multiple instrument setups, the project is stored on the primary instrument. When the template is applied to the project, its settings are pushed to all connected instruments.
- For multiple instrument setups that include both B&K 2245 and HBK 2255, template settings are only pushed to instruments which are the same model as the primary instrument.

Delete a template

1. Open an existing project, or create a new one.
2. Tap **Apply template**.
3. Swipe left on a template.
4. Tap **Delete**.

MEASUREMENTS

The exact steps of a measurement will vary depending on the settings you use in Measurement control.

A basic overview is as follows:

1. Press  to start a measurement.



2. If necessary, press  to pause.
3. Press  to resume.
4. Press  to stop the measurement.



At this point, you can review the results of the measurement.

5. Press  again to clear the data from the last measurement and return the instrument to its ready state.

 **Note:**

- You will not need to stop the measurement if it has a preset time. Go to **Menu > Measurement settings > Measurement control** to enable or disable preset measurement times.
- Data is stored automatically when the measurement stops.
- If you are using the instrument with the mobile app, annotations will be synced with the measurement and saved on the instrument.
- If you are using HBK 2255 and the Metadata setting is enabled, the metadata screen opens immediately after the measurement stops. Once you confirm the metadata, you will have the opportunity to review the measurement.

Data explorer

Menu location: **Menu > Data explorer**

Folder structure

There are two top-level folders in the data explorer: Data and Trash. Within the two folders are subfolders, named by date. Within each date folder are all measurements made that day.

Data folder	Trash folder
Date folders	Date folders
Measurement folders	Measurement folders

Navigate the folders

Each time you open the Data explorer, you will start in the Data folder. With each folder you select, there will be different options depending on your location in the folder structure.

Options for the Data folder	Options for the Trash folder
<ul style="list-style-type: none"> • Show Trash: Opens the Trash folder. • Move Data to Trash: Moves all data to the Trash folder. 	<ul style="list-style-type: none"> • Show Data: Opens the Data folder. • Empty Trash: Deletes all data in the Trash folder permanently.

Options for date folders	
In the Data folder	In the Trash folder
<ul style="list-style-type: none"> • Open: Opens the folder. • Move to Trash: Moves the folder to the Trash folder. 	<ul style="list-style-type: none"> • Recover: Sends the folder and its contents to the Data folder. • Open: Opens the folder. • Delete: Permanently deletes the folder.

Options for measurement folders	
In the Data folder	In the Trash folder
<ul style="list-style-type: none"> • Open: Opens the measurement. • Move to Trash: Moves the measurement to the Trash folder. 	<ul style="list-style-type: none"> • Recover: Sends the measurement to the Data folder. • Delete: Deletes the measurement permanently.

Delete data

There are two stages to remove data from the instrument forever. The first stage is to send the data to the Trash folder and the second stage is to delete data from the Trash folder. By default, you will need to move data to the Trash folder manually.

To learn how to set up the instrument to move data to the Trash folder automatically, see [Data management](#).

 **Hint:** Move data with which you are not currently working to the Trash folder. This will keep the Data folder tidy so you can use the Data folder as you would a working folder. Data in the Trash folder can be returned to the Data folder at any time.

Review measurements

When you open a measurement, you will be able to view and interact with the measurement data in the instrument display.

How to open a past measurement

1. Go to: **Menu > Data explorer**.
2. Navigate to the desired date folder.
3. Press  and select **Open**.
4. Navigate to the desired measurement folder.
5. Press  and select **Open**.

 **Note:**

- Press  to close the measurement.
- Opening a measurement changes the current settings of the instrument to the settings of the measurement.

Measurements (mobile)

When you connect the instrument and the mobile app, the mobile app can be used to control the instrument. This is useful if you want to be able to start or stop a measurement from a distance (so that you do not introduce noise to the measurement). The mobile app and the instrument show the status of the instrument regardless of whether you use the instrument or the mobile app to start, stop or pause the measurement.

 **Note:** Measurement data is only stored on the instrument.

Make a measurement

1. Connect the mobile app to the instrument.
See [Connect the mobile app to the instrument](#) for more information.
2. Open an existing project, or create a new one.
See [Projects \(mobile\)](#) for more information.
3. Tap **Measurements**.

4. Tap **Measure**.
5. Use the controls at the bottom of the screen to start a measurement.

How to control measurements

Use the controls at the bottom of the screen to start, stop and pause measurements.

The exact steps of a measurement will vary depending on the settings you use in the Measurement control settings on the instrument. See [Measurement control](#) for more information.

Controls

Tap  to start a measurement.

To pause, slide  to the left.

Tap  to resume.

Slide  to the right to stop the measurement.

Tap  to reset the analyzers for the next measurement.

Note:

- It will not be necessary to stop the measurement if you specified a measurement time in Measurement control.
- Measurements made while a project is open are added automatically to the project.

Measurements on multiple instruments

The mobile app can control (start, pause and stop) all instruments to which it is connected.

Connecting the mobile app to multiple instruments is an easy way to synchronize measurements made in parallel, that is, measurements made on multiple instruments at different locations at the same time. All instruments will respond (almost) simultaneously. The reaction time of each instrument depends on network latency. For example, a busy wireless network or instruments that are far away from each other can affect reaction times.

Viewing measurements

It is possible to see total and logged data from all connected instruments on the mobile app. The bar graph will show instantaneous data from all instruments at the same time using the same order as on the instrument screen. Logging profiles from up to three instruments can be viewed at the same time.

Add measurements to a project

You can add measurements to a project one of two ways:

- Make a measurement while the project is open.
- Open a project and import past measurements.

Import past measurements

You can add measurements that are stored on the instrument to your project.

1. Open an existing project, or create a new one.
2. Tap **Measurements**.
3. Tap **Import**.
4. Tap to select one or more measurements.
5. Repeat as needed.

List of measurements

You can access the list of measurements stored on an instrument from the mobile app. From the list of measurements, you can open, rename or delete measurements.

1. Open an existing project, or create a new one.
2. Tap the **Measurements** button at the bottom of the project setup screen.
3. Tap the **Measurements** tab to open the list of measurements.

Open past measurements

Tap a measurement to open it.

Rename measurements

Swipe left on a measurement for the option to rename it.

In the mobile app, the default name is the start time of the measurement. To return to the default name, leave the rename field blank.

Measurement names are saved to the project (not the measurement).

Delete measurements

Swipe left on a measurement for the option to delete it from a project.

 **Note:** The measurement is only removed from the project, it is not deleted from the instrument.

Metadata on measurements

You can add metadata to measurements made with HBK 2255. See [Metadata](#) for information about how to set up metadata and how it works.

After a measurement, the Define metadata screen opens automatically. Use the screen to edit and/or confirm the metadata for the measurement.

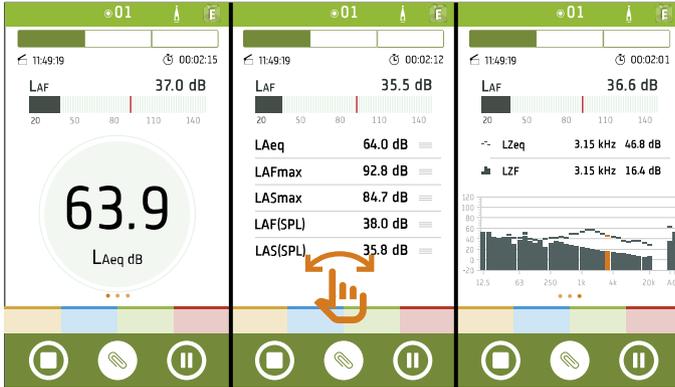
On the measurement page, tap  to open the Define metadata screen at any time.

Measurement views (mobile)

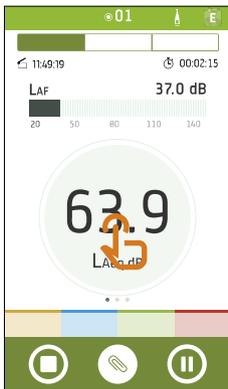
You can change the display of the mobile app before or during a measurement, or while reviewing a completed measurement.

 **Note:** Changes in the mobile app display will not change the instrument settings.

Swipe left or right to switch between views.

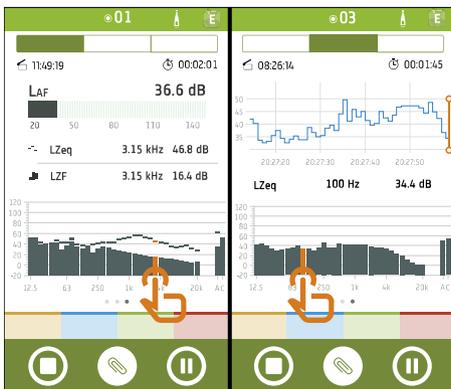


Tap on a readout to change the parameter being displayed.



Tap a frequency in the spectrum in Spectrum view of the Total tab to view total levels at that frequency.

Tap a frequency in the spectrum in Spectrum view of the Profile tab to view the logging profile and readout at that frequency.



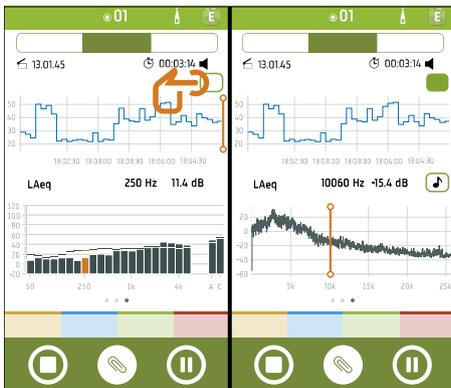
Pinch to zoom in or out on graphs.



Double tap the Y-axis to scale a graph to the data.

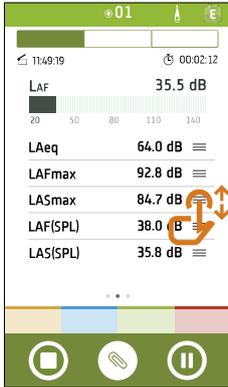


Tap the FFT button in Spectrum view to switch between the FFT and CPB spectra.



Move the cursor to change the readout: tap the FFT graph to show values for the FFT spectrum or tap the profile graph to show the profile value. When the cursor is in the FFT spectrum, tap the readout for options to change the time and frequency weightings. See [FFT analysis \(mobile\)](#) for more information.

Touch and hold  to move items in the list



Markers in measurements (mobile)

Markers are essential to environmental measurements. They are used to categorise sounds so that the measurement data can be interpreted correctly and easily.

- Mark when the sound of interest is active or inactive.
- Mark sounds that require more investigation.
- Mark sounds you want to exclude from calculations without removing data from the measurement.

The ability to apply markers using the mobile app allows you to mark measurements in the field and makes it easier to do post-processing and reporting back in the office. The mobile app supports four markers. By default, there are three markers to mark ambient, residual and background sounds, and one marker to mark sounds you want to exclude. If you want to customise the markers, it is possible to edit the name and function of each marker.

You can also mark measurements back at the office using the PC application. Each marker has a shortcut key which makes it easy to mark a measurement in the PC application. The PC application also allows you to create new markers and to edit the name, colour, and function of each marker.

Add a marker

Add markers during a measurement or while reviewing a completed measurement. You can use all four markers multiple times in each measurement.

Note:

- To enable markers for a measurement, set **Logging mode** to *Enabled*.
See [Measurement control](#) for more information.
- When connected to multiple instruments, markers are added to the measurement on the primary instrument. When measurements are imported to the PC application, the markers on the measurement from the primary instrument are replicated on all other instruments.

Use the marker buttons

You can use the buttons to add a marker during a measurement.



1. Tap a marker at the start of an event.

 **Hint:** Tap a marker button to start a measurement.

2. Tap the marker at the end of the event.
3. Repeat as needed.

Select a range

Add markers to a range selected in a profile graph. You can select a range during a measurement or while reviewing a completed measurement.

1. Touch and hold, then drag to select an area in a profile graph.
2. Tap a marker type to add it to the range.

Markers and multiple instruments

When the mobile app is connected to multiple instruments, markers are made on the primary instrument. During a measurement, marker calculations are made only for the primary instrument. When measurements are imported to the PC application, the markers on the measurement from the primary instrument are replicated on the measurements from all other instruments.

Select a Marker

The markers you place will be indicated by colour-coded bars along the top of the profile graphs. Tap a bar to select a marker. You can select markers during a measurement or while reviewing a completed measurement.

When you select a marker, the mobile app shows its related information:

- The start and duration of the marker
- The level evolution of the marker

A level evolution is a curve that shows the change in the levels of a parameter over a period of time

- The marker total

A marker total is the total measured level of a parameter over the duration of the marker

To see marker totals and level evolutions for other parameters, tap a parameter to change it.

Edit a marker

You can edit markers during or after a measurement.

1. Tap a coloured bar in a profile graph to select a marker.
2. Touch and hold the edges of the marker to change its range.
3. Tap the selected marker to open the marker menu.
 - Delete the marker.
 - Change to a different marker.

Display marker totals for single measurements

You can also view marker totals for single measurements during and after a measurement.

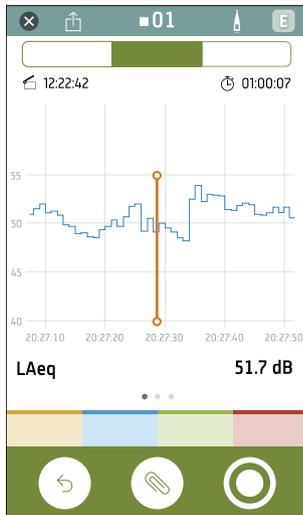
1. In the navigation bar, tap **Total**.
2. Tap a parameter in SLM view, List view or Spectrum view to open Parameter selection.
3. Tap the first row to open the marker menu.
4. Select a marker type.
5. Select a parameter for which you would like to display the marker total.
6. Tap **Done**.

You will notice that the readout text is the colour of the marker.

To view marker totals for other parameters, tap the parameter and select a different parameter from the list.

Review measurements (mobile app)

After you stop a measurement, the measurement stays open to review.



Note:

- If you are using HBK 2255 and the Metadata setting is enabled, the Define metadata screen opens immediately after the measurement stops. Once you confirm the metadata, you will have the opportunity to review the measurement.
- If you are recording analysis-quality audio with HBK 2255, FFT spectra does not display when the measurement is stopped. Open the measurement to reload the data and view the FFT spectra.

You can open past measurements to review in the mobile app. See [Measurements \(mobile\)](#) for information about how to open a past measurement.

You can change the measurement views as during a measurement. See [Measurement views \(mobile\)](#) for more information.

You can view, edit or apply markers. See [Marker settings \(mobile\)](#) and [Markers in measurements \(mobile\)](#) for information about markers.

Tap to close the measurement.

Tap to share the measurement. The measurement is encrypted and uploaded to the Brüel & Kjær cloud, then an email with a download link is generated.

Tap to open the Define metadata screen at any time. See [Metadata](#) for more information about adding metadata to measurements made with HBK 2255.

Tap to open the Setup screen for the instrument.

Tap to access information about the app, app settings and help.

Tap to reset the instrument or tap to start a new recording. This will cause the measurement to close.

Tap to add annotations to the measurement. See [Annotations](#) for information about adding annotations to a measurement.

For past measurements, you can play back recorded audio when the measurement is open. Tap  to play audio recorded during the measurement. See [Audio recording](#) for information.

FFT analysis (mobile)

If the BZ-7451 licence is installed and enabled on HBK 2255, Enviro Noise Partner can perform fast Fourier transform (FFT) frequency analysis on continuously recorded analysis-quality audio from HBK 2255.

You can view the FFT spectrum during a measurement or while viewing a past measurement. The FFT spectrum is not available to view while reviewing a stopped measurement.

1. Set up the instrument to record analysis-quality audio continuously.

Measurement settings > Analysis quality = Continuous

See [Audio recording](#) for information about audio recording settings on the instrument.

2. Start a measurement, or open a past measurement.

See [Measurements \(mobile\)](#) for more information.

3. Navigate to Spectrum view in the Profile tab.

4. Tap the FFT button in Spectrum view to switch between the FFT and CPB spectra.

While viewing CPB spectra, the cursor in the profile graph is active and the readout shows values for the frequency selected in the CPB spectrum. While viewing FFT spectra, the cursor in the FFT spectrum is active and the readout shows values for the FFT spectrum.

The profile graph always shows CPB data. Scroll through the profile to analyse other logging intervals.



5. While viewing FFT spectra, tap the FFT readout to access settings.



About the settings

Weighting: Sets the frequency weighting.

Average time: Sets the averaging time: Linear, Fast or Slow. Note that Fast and Slow can only be viewed while measuring.

Frequency span: Sets the top frequency for analysis. When looking for tones, it makes sense to use a top frequency within the range of audible frequencies (between 20 Hz and 20 kHz).

FFT lines: Sets the number of lines for analysis.

Frequency resolution: The resolution is the frequency span divided by the number of FFT lines. A resolution of 2 to 4 Hz is recommended when looking for tones.

Tonality: Sets the standard used for tone assessment: ISO/TS 20065:2022(E), DIN 45681:2005 or DIN 45681 Ber 2:2006-08.

Note: If the setup conflicts with the tone assessment standard used, an emoji 🙄 is added to the results.

FFT analysis and multi-instrument setups

When the mobile app is connected to multiple instruments, only analysis-quality audio from the primary instrument is analysed on the mobile app. However, you can view and analyse data from all instruments in the PC app.

See [Connect the mobile app to the instrument](#) for more information about connecting to multiple instruments.

See [Import from multiple instruments](#) for more information about importing data to the PC app.

FFT analysis in the PC app

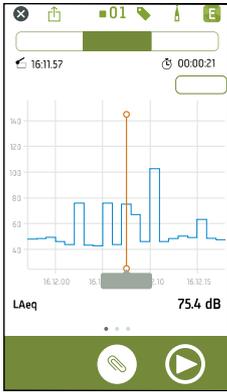
You can also perform FFT analysis on analysis-quality audio from HBK 2255 and signal recordings from Type 2250 or Type 2270 using the PC app. See [FFT analysis](#) for more information about FFT analysis in the PC app.

Impulse assessment (mobile)

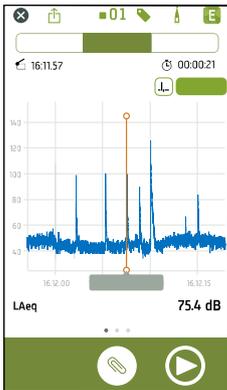
You can perform a quick impulse assessment in the field using the mobile app. The assessment analyzes fast-logged data from HBK 2255 according to DS/ISO/PAS 1996-3:2022 (and BS4142).

See [Fast logging](#) for more information about setting up your instrument to fast-log data.

1. Open a past measurement.
See [Measurements \(mobile\)](#) for information about opening past measurements.
2. Go to either SLM view or List view of the Profile tab.



3. Tap the Fast logging button to show fast data.



4. Tap  to show impulse assessment results.



Each impulse has a readout for its penalty (KI), and the 10 dB/s slope defining the minimum slope for an impulse is marked. For more details – such as the prominence, onset rate and level difference of the impulse – the PC app can be used. See [Impulsivity searches](#) for more information about finding impulsive noises using the PC app.

Pinch to zoom in on an impulse and view its results.

Tap on a smiley to see its warning.

Tone assessment (mobile)

If the BZ-7451 licence is installed and enabled on HBK 2255, the Enviro Noise Partner mobile app can perform fast Fourier transform (FFT) tone assessment on continuously recorded analysis-quality audio from HBK 2255.

See [Audio recording](#) for more information about recording quality and setting up the instrument.

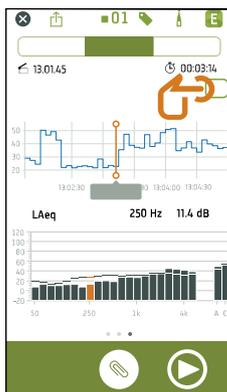
You can only perform tone assessment in the mobile app while reviewing past measurements.

1. Open a past measurement.

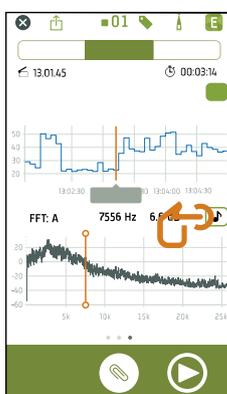
See [Measurements \(mobile\)](#) for information about how to open a past measurement.

2. Tap the **FFT** button to show FFT spectra.

See [FFT analysis \(mobile\)](#) for more information about FFT analysis in the mobile app.



3. Tap the  button to analyse the spectrum for tones.



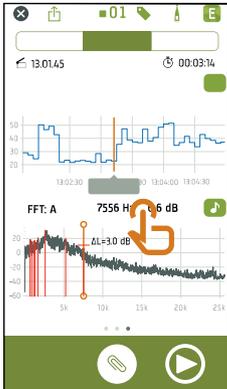
When the analysis is complete, the cursor in the spectrum graph is set at the most prominent tone. When you move the spectrum cursor, the readout for the cursor shows the audibility for the tone that is nearest to the cursor. An asterisk (*) in the readout indicates the prominent tone.

 **Hint:** To return the cursor to the prominent tone, toggle the  button off and on again.

4. Scroll through the profile to analyse other logging intervals or select a marker to analyse it for tones.

See [Markers in measurements \(mobile\)](#) for information about adding markers to a measurement.

5. An emoji 🙄 indicates there is noteworthy information about the analysis. Tap the emoji to see the note.
6. Tap the FFT readout to access settings.



About the settings

Weighting: Sets the frequency weighting.

Average time: Sets the averaging time: Linear, Fast or Slow. Note that Fast and Slow can only be viewed while measuring.

Frequency span: Sets the top frequency for analysis. When looking for tones, it makes sense to use a top frequency within the range of audible frequencies (between 20 Hz and 20 kHz).

FFT lines: Sets the number of lines for analysis.

Frequency resolution: The resolution is the frequency span divided by the number of FFT lines. A resolution of 2 to 4 Hz is recommended when looking for tones.

Tonality: Sets the standard used for tone assessment: ISO/TS 20065:2022(E), DIN 45681:2005 or DIN 45681 Ber 2:2006-08.

🔧 **Note:** If the setup conflicts with the tone assessment standard used, an emoji 🙄 is added to the results.

Tone assessment in the PC app

You can also analyse third-octave or FFT spectra for tones using the Enviro Noise Partner PC application. See [Tonality assessment](#) for more information.

Audio recordings (mobile)

Audio recordings allow you to listen to a measurement while you analyse it. For example, you may want to investigate the cause of a sudden change in levels or to identify sounds during a measurement.

See [Audio recording](#) for information about audio recordings and how to set up your instrument to record audio.

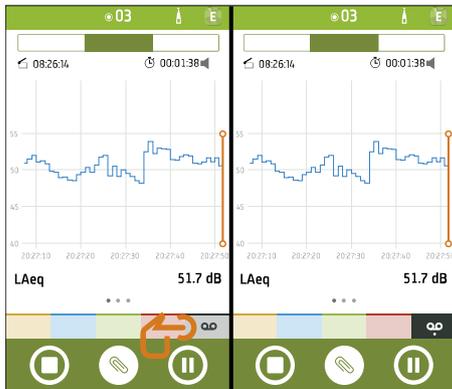
Trigger audio recordings using the mobile app

If the BZ-7450 licence is installed and enabled on HBK 2255, you can use the mobile app to trigger an audio recording.

- Set up the instrument to record audio when triggered.
 - HBK 2255 can record listen-quality audio while measuring. To enable triggered listen-quality audio recordings, set the **Listen quality** setting to *Triggered*.
 - If the BZ-7451 licence is installed and enabled on HBK 2255, the instrument can record analysis-quality audio while measuring. To enable triggered analysis-quality audio recordings, set the **Analysis quality** setting to *Triggered*.

Note: If you do not want to record both listen- and analysis-quality audio, set the unwanted audio recording to *Disabled*. If either Listen quality or Analysis quality is set to *Continuous*, the feature will not be enabled in the mobile app.
- Start a measurement.

See [Measurements \(mobile\)](#) for information about making a measurement using the mobile app.
- In the marker toolbar, tap  to trigger listen- and/or analysis-quality audio recordings. A dark background and dot at the bottom of the button indicate a recording is in progress.



How to listen to audio

Live audio

You can stream continuously recorded listen-quality audio during a measurement using the mobile app.

To enable the feature, set the Listen quality setting to *Continuous*. See [Audio recording](#) for information about setting up the instrument to record audio.

- Start a measurement.

See [Measurements \(mobile\)](#) for more information.
- To start the audio, tap .

The speaker button is located to the right of the measurement duration time.
- To stop the audio, tap the speaker again.

Note: It is not possible to stream live audio and to use the mobile app to trigger audio recordings at the same time.

Playback in the mobile app

Open a past measurement to listen to recorded audio using the mobile app.

 **Note:** If you have just completed a measurement and it is still open in the mobile app, you must close the measurement (or reset the instrument) then re-open the measurement to play back audio recordings.

1. Open a measurement.
See [Open past measurements](#) for more information.
2. Tap  in the lower right corner.
3. Scroll through the profile display to go forwards or backwards in the recording.
4. Press  to stop the playback.

What's next:

Proceed to [Annotations](#) or return to [Impulse assessment \(mobile\)](#).

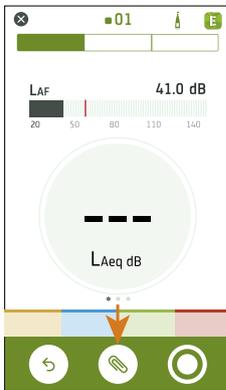
ANNOTATIONS

Use the mobile app to annotate your measurement. Annotations are comments you can attach to a measurement. There are four types of annotations: photo, video, note, and commentary. Every measurement can have multiple annotations of different types.

It is always a good idea to add annotations to your measurements. For example, they can help you and your colleagues identify measurements at a later date and provide valuable information about the context of a measurement.

How to make annotations

1. From the measurement screen, tap .



2. Choose the kind of annotation you want to add:
 -  : Photos
 -  : Videos
 -  : Notes
 -  : Commentary
3. Snap a photo, make a recording or write a note.
4. Repeat as needed.

Note:

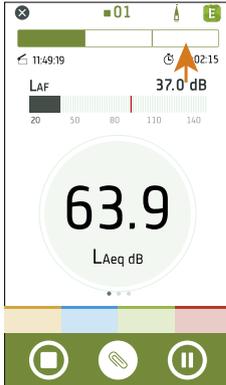
- Long press the photo or video button to use files from the gallery on your mobile device.
- To delete an annotation: Go to **Annotations**, swipe left on the unwanted annotation and tap **Delete**.
- If the mobile app has permission to use the location services of your mobile device, your annotations will have location data and you will be able to see them on the map in the PC application. Go to the mobile device's settings to view/edit the permissions of the mobile app.

You can make annotations before, during and after measurements. Annotations made during a measurement upload to the instrument automatically and are stored with the measurement data to which they belong. Annotations made before and after measurements will be stored on the instrument as unattached annotations, you can attach them to a measurement in the mobile app or the PC application.

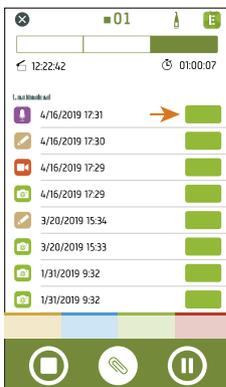
How to attach unattached annotations

To attach an annotation to a measurement, a measurement must be open or in progress.

1. Navigate to **Annotations**.



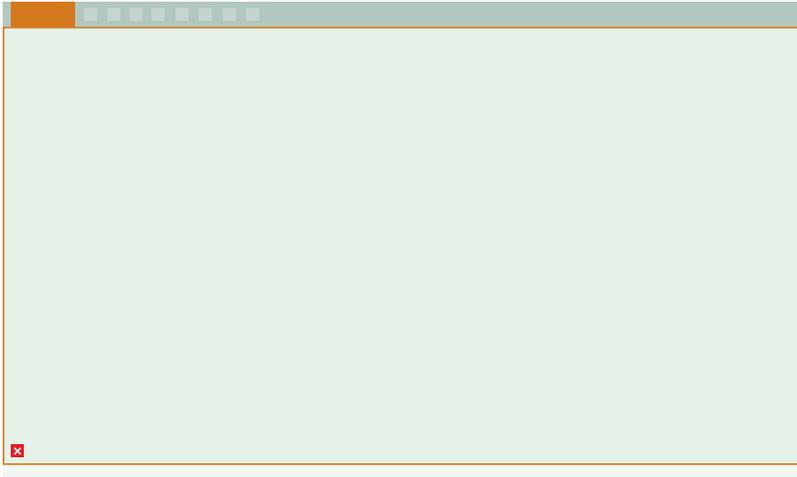
2. Tap **Attach** at the desired annotations (or tap  if you want to create more annotations).



POST-PROCESS USING THE PC APP

PC application GUI

The application tab opens / closes the **application menu** where you will find information about the application and its options.

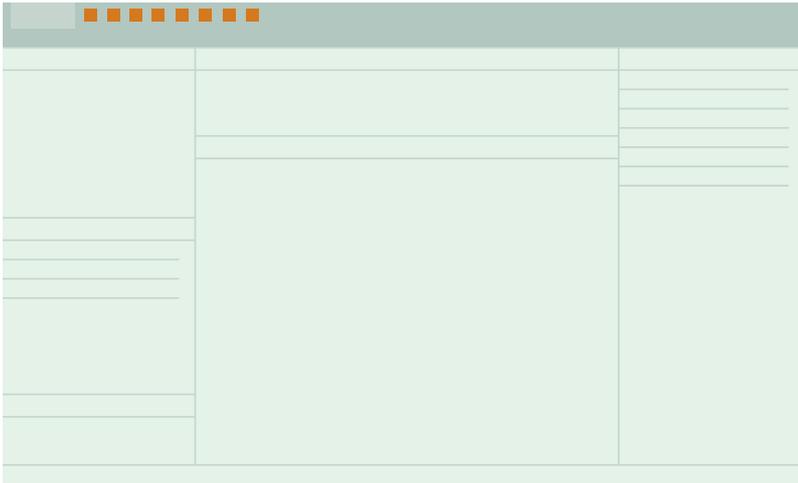


 **Options:** Change the language of the GUI.

 **About:** Information about the application.

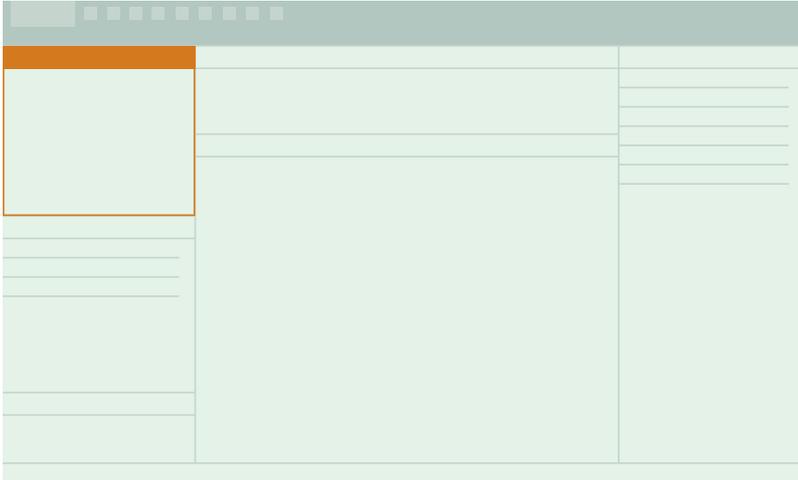
 **Exit:** Close the application.

These are the **tools** that control the operation of the application.



- : Create a new project.
- : Open an existing project.
- : Save the current project.
- : Save the current project under a new name or in another location.
- : Import data from the instrument or network storage.
- : Export project contents into another format.
- : Create a report.
- : Upload project to the cloud and share via email.
- : Open the help.

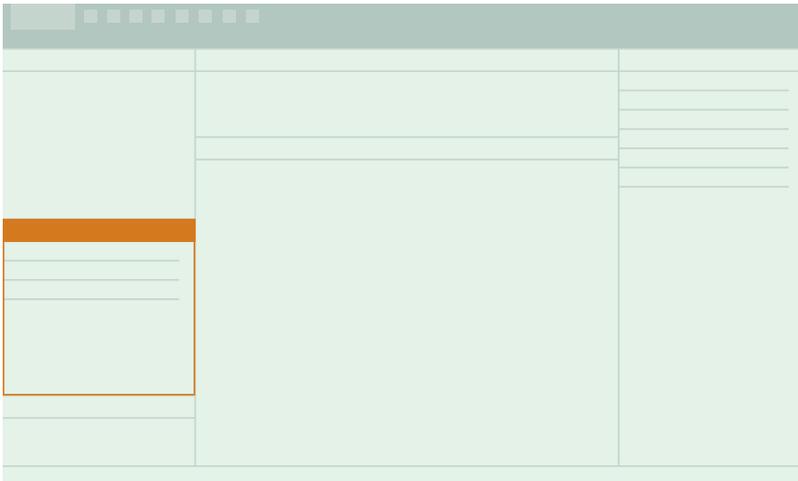
When you open a project or import data, you will see the individual measurements in the **project browser** window. Select measurements to view them.



Project Name: Unnamed projects appear as *Untitled* in the toolbar.

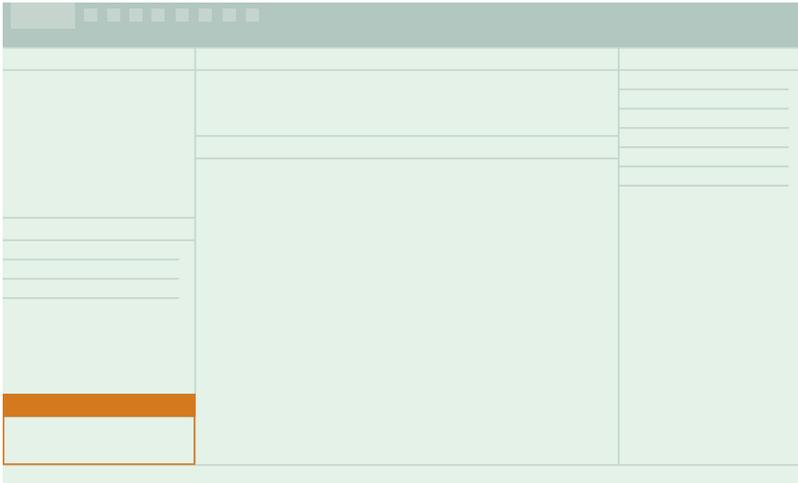
☒: Select all measurements in the project browser.

Unattached annotations displays annotations that are not linked to a measurement.

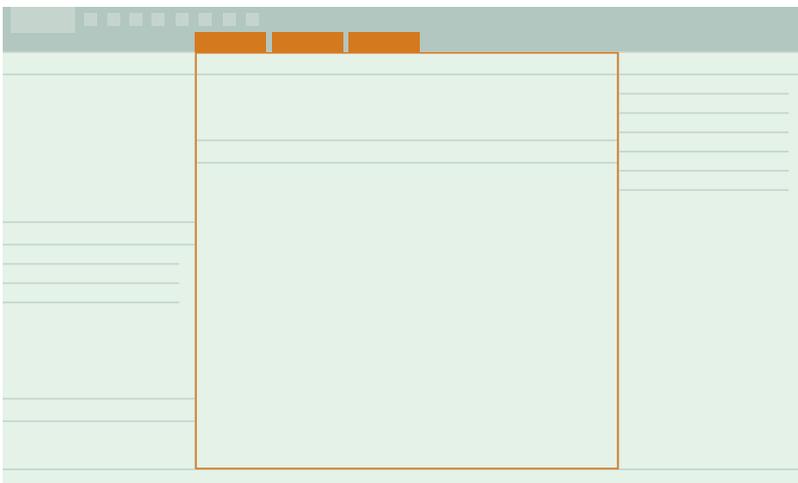


Unattached annotations are organized by type: **Gallery** (photos and videos), **Commentaries** and **Notes**.

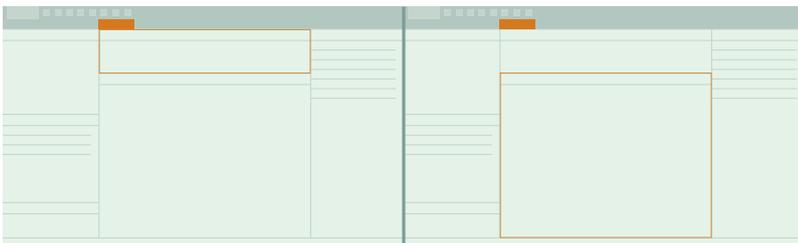
Tasks, such as importing data or exporting a project, are displayed in this window.



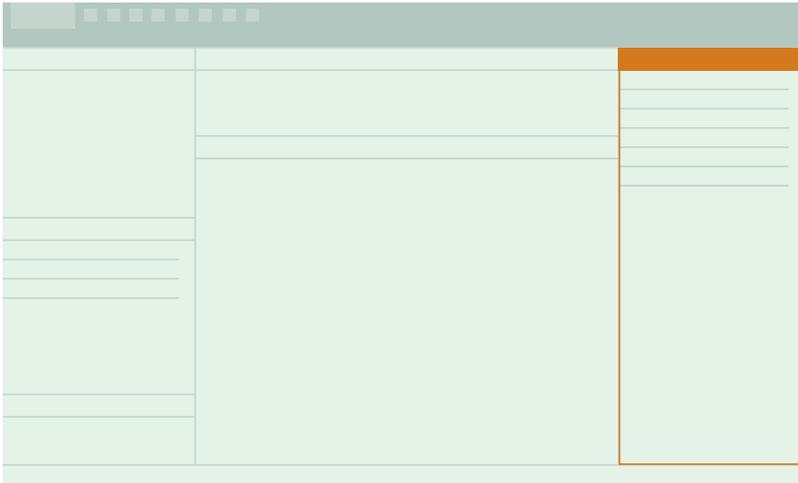
These tabs are for switching between the **Measurement**, **Gallery**, **Map** and **Report period** windows.



Within the Measurement window, there are two areas. The upper section is an **overview** of the selected measurements in a project. It will help keep you oriented while you investigate the graph and table views in the section below.



In this panel, you will find collapsible windows for working with your data and annotations.



Profile search: Search logging profiles for events.

Tonality assessment settings: Set the standard for tone assessment. The settings are enabled for tone assessment results in the spectrum.

Marker settings: View, add or edit markers in the project.

Post-processing parameters: View, add or edit post-processing calculations of measured parameters in the project.

Annotations:

-  (Map): View locations of annotations and measurements on a map.
-  (Gallery): View photos and videos attached to the measurement.
-  (Commentaries): Listen to voice memos attached to the measurement.
-  (Notes): Read the notes attached to the measurement.

Application menu

The application menu in the PC application gives you access to select project tools, as well as options for and information about the application.

Open the application menu

Click on the Enviro Noise Partner tab in the upper left corner to open the application menu. Click the tab again to close the menu.

Project tools

Access tools to create a new project, open a project or save a project, and learn their keyboard shortcuts.

 **Hint:** Open a project from the application menu to choose from a list of recent projects.

Application options

The Options tab opens settings specific to the application.

Language

Use the drop-down menu to set the language of the user interface.

Decimal places

As on the instrument, you can choose to display one decimal place or two for level measurements.

Import of 2250/2270 data

Enable the setting to import 10 ms fast data from Type 2270 via Measurement Partner Suite. Type 2270 has two simultaneous fast-logging rates (10 ms and 100 ms), but Enviro Noise Partner only supports one fast-logging rate per measurement. To import both fast-logging rates, import the data twice (once with the setting enabled and once with the setting disabled).

Impulse detection

Enable the setting to decimate your fast-logged data for fast-logging impulsivity searches according to DS/ISO/PAS 1996-3:2022 (and BS4142).

Decimating a 1, 2, 4, or 8 ms fast logging LAF parameter creates a 16 ms LAF parameter. Enviro Noise Partner uses the decimated LAF parameter for the impulse analysis, which fully complies with the standard as it is equivalent to measuring a 16 ms LAF.

See [Impulsivity searches](#) for more information about searching your data for impulses.

Weather data units

Set the units for weather station data. For each type of data, you can select between SI (metric) or US/UK (US customary units or imperial units).

Connecting to an instrument

If it is not possible to connect to instruments remotely via HTTPS, enable the setting to connect via HTTP. HTTP does not have the certificate requirements of HTTPS, which can cause problems with security features like firewalls. See [Remote connections](#) for more information about connecting to an instrument remotely.

About the application

The About section is where you will find open source licences, the EULA (end user licence agreement), release notes and version numbers.

Open a project

Use the Open dialog to open projects that have been saved to a location on your PC or your local area network (LAN). You can open a project using the  button in the toolbar or from the application menu.

Crash recovery

If the application crashes, there is a crash recovery feature. When you open the application, there will be a list of crashed projects. Open one to recover the project from the point you were at without losing any data.

Create a project using the PC application

In general, projects are created on the mobile app. Projects, including their measurement data and annotations, are stored on the instrument. You can import an entire project from the instrument to the PC application. However, it is possible to create a project in the PC app then import measurements as needed.

See [Import a project](#) for information about importing a projects and [Import measurements](#) for information about importing measurements.

How to create a project

1. Open the PC application.
2. Click .
3. Give the file a name and click **Save**.

The defaults are:

- Name: *Untitled*
- Location: *C:\Users\USER\Documents\Enviro Noise Partner*

You are now ready to add measurements to your project.

Open a project

Use the Open dialog to open projects that have been saved to a location on your PC or your local area network (LAN). You can open a project using the  button in the toolbar or from the application menu.

Import data

The Import dialog allows you to import data to the PC app. You can use the PC app to analyse data, generate reports or to export data into another format.

Once data is imported, it is available in tabular and graphical formats.

Basic import instructions

1. In the PC application, click  to open the Import dialog.
2. On the left, select the source for the import.

You can import from one or more instruments or a backup storage device, such as a network attached storage (NAS) device or a USB stick.

3. On the right, select the data to import.
You can import projects, measurements and annotations.
4. Click **Import**.

Import a project

Projects that are made using the mobile app are stored on the instrument. You can import the entire project to the PC application from the instrument.

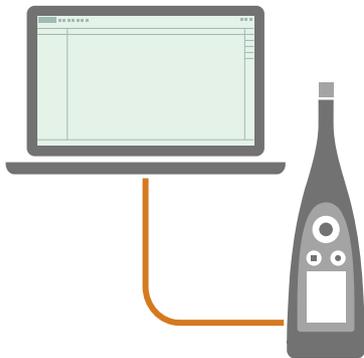
Note: If you have set up the instrument to store a backup of its data on network storage or USB stick, you can import projects from the storage location.

You will need:

- Your instrument
- A project
- A PC installed with the PC application
- A USB cable

How to import a project

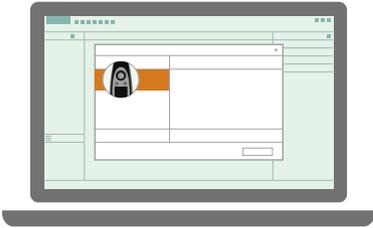
1. Open the PC application.
2. Connect the instrument to the computer using the cable.



Hint: Connect the two devices to the same network using Wi-Fi®.

3. In the PC application, click  to open the Import dialog.

- Find your instrument in the dialog and select it.



 **Note:** To import from a backup, click on the storage location.

- Click **Projects**.
- Select the project you want to import.

 **Note:** You can only import one project at a time.
- Click **Import**.



Import from multiple instruments

Projects can contain measurements from a single instrument or from multiple instruments.

When you import a multi-instrument project, Enviro Noise Partner identifies all the measurements in the project and the instruments on which they are stored.

To import a multi-instrument project:

- Connect all instruments to the PC application.

For more information about connections, see [Local connections](#) and [Remote connections](#).
- In the PC application, click  to open the Import dialog.
- Click on an instrument.

You can start with any instrument, it does not have to be the primary instrument.

4. Click **Projects**.
5. Select the project you want to import.
 - ✍ **Note:** You can only import one project at a time.
6. Click **Import**.

The application will import the measurements from the selected instrument first, then prompt you to import measurements from the other instruments. If an instrument is not connected, the application will prompt you to connect the missing instrument. Once all measurements have been imported, the Import dialog will close and you can start working with the data.

Import measurements

Import measurements to add them to a project. You can add measurements to empty projects or to projects that already contain measurements.

✍ **Note:**

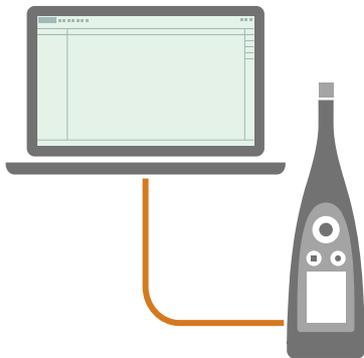
- If you import multiple measurements with markers, the markers from different measurements that have the same name will be treated as the same marker type upon import.
- You can import reverberation time measurements and building acoustics measurements into the Enviro Noise Partner PC application. This allows you to use the functionality of the Enviro Noise Partner PC application, such as [Profile search](#), to inspect your data.

You will need:

- A project open in the PC application
- One or more measurements

How to import measurements

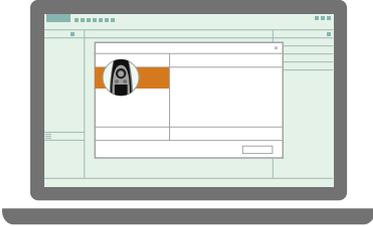
1. Connect the instrument to the computer using the cable.



💡 **Hint:** Connect the two devices to the same network using Wi-Fi®.

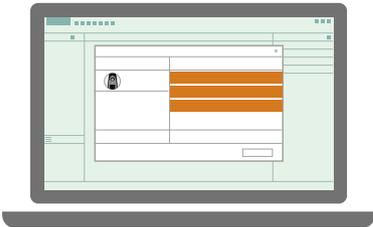
2. In the PC application, click  to open the Import dialog.

3. Find your instrument in the dialog and select it.



 **Note:** To import from a backup, click on the storage location.

4. Select the data you want to transfer.
You can import projects, measurements and annotations.



 **Hint:** Use <Ctrl> or <Shift> to select multiple items.

5. Click **Import**.



Measurement icons

Measurement icons indicate the type of measurement.

- : General sound level measurement
- : Building acoustics level measurement
- : Building acoustics reverberation time measurement
- : Charge injection calibration (CIC) measurement. See [Charge injection calibration](#) for more information.

Import from an IP address

If you want to find an instrument that is not showing up in the list of discovered instruments, such as an instrument on another network, you can manually add the instrument to the list using its IP address.

 **Note:** Use this functionality to connect to your instrument remotely.

1. In the PC application, click  to open the Import dialog.
2. In the import dialog, click .
3. Click **Add instrument from IP address**.
4. Enter the IP address or host name.

For local connections, you can find the IP address of the instrument here: **Menu > System settings > Network settings > Wi-Fi settings** or **Ethernet settings**.

For remote connections, the IP address or host name will depend on your setup. Refer to [Remote connections](#) for information about which IP address or host name to use.

5. Click **OK**.
6. After you connect to the instrument, select the data to import.

You can import projects, measurements and annotations. See [Import measurements](#) and [Import a project](#) for more information.

7. Click **Import**.

Import from a backup

The first time you import from a backup, you will need to tell the PC application where the backup is stored.

You will need:

- An instrument that is set up to store a backup of its data
See [Data management](#) for more information.
- Data in the backup

Procedure:

1. In the PC application, click  to open the Import dialog.
2. In the import dialog, click .
3. Click **Add NAS or USB stick**.

4. Browse to the location of the backup.

 **Note:** Your computer will need to be able to access this location.

5. Select the folder with the matching serial number of your instrument.
6. Click **Select Folder**.
7. After you connect to the storage location, select the data to import.

You can import projects, measurements and annotations. See [Import measurements](#) and [Import a project](#) for more information.

8. Click **Import**.

Import from Measurement Partner Suite

You can import measurements made using Type 2250 or 2270 into the Enviro Noise Partner PC app by exporting the data from Measurement Partner Suite (MPS).

1. Decide where you want the data to go:
 - To an existing project: Open the Enviro Noise Partner project before you export from MPS.
 - To a new project: You do not need to start the Enviro Noise Partner PC application before you export.
2. Open MPS.
3. Select the data you would like to import in the project browser of MPS.
4. Click .
5. Select the **Export to Enviro Noise Partner** option.

 **Note:** The option is only enabled if the application supports the selected data.
6. Click **Finish**.

The PC application will open (if it is not open already) and automatically import the data.

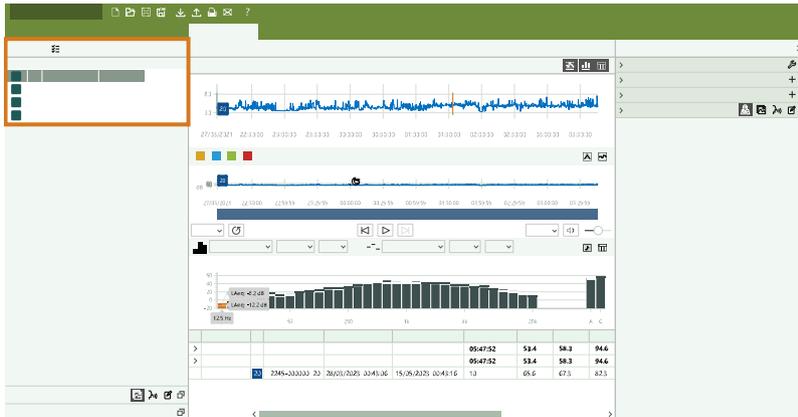
 **Hint:** The Tasks window in MPS provides useful information about the export, including what was exported, what was not exported and why.

 **Note:** If you are importing fast data from Type 2270, use the application menu to set the fast-logging rate to import. See [Application menu](#) for information.

Project browser

The project browser (in the panel on the left) gives an overview of your project (its name and the data it contains) and allows you to select the items to view.

For projects with measurements from multiple instruments, serial numbers help you to easily identify measurements by instrument.



Basic controls

The project browser controls what is displayed in the application. The application displays measurement data, annotations and settings for the item or items selected in the project browser.

- Click an item to select it.
- Right-click a measurement for options to delete, copy, paste and export.
- Right-click a column header to customise the contents of the table.
- Double-click the name to edit it. In the PC app, the default name is the model and serial number of the instrument plus the measurement ID. You can rename measurements using the mobile app or the PC app. If you rename a measurement using the mobile app, the name is preserved when you import the measurement to the PC app. The name is also preserved if you copy data from one instance of the PC app to another instance of the PC app.
- **<Ctrl>** + click to select non-adjacent items.
- **<Shift>** + click to select a range of items.
- Click a header to sort items.

Tools

☒: Select/deselect all measurements in the project browser.

Attach annotations

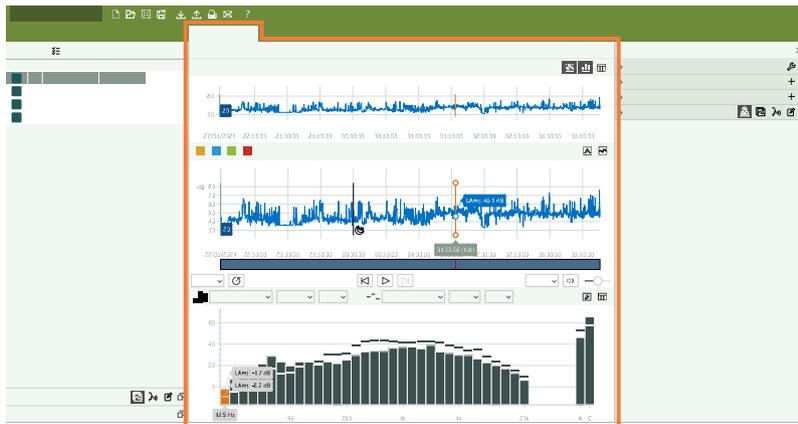
Drag and drop an annotation file on a measurement in the project browser to attach the annotation to the measurement. Files can be a part of the project (as attached or unattached annotations) or stored on your PC.

See [Review annotations in the PC application](#) for more information about annotations.

Measurement window

The Measurement window displays single measurements, logging profiles and spectra. You can view the data in both graphical and tabular formats. You can display one or more measurements at a time, including multiple measurements in parallel (that is, measurements made from multiple instruments at the same time).

Select one or more measurements in the [Project browser](#) to display measurement data.



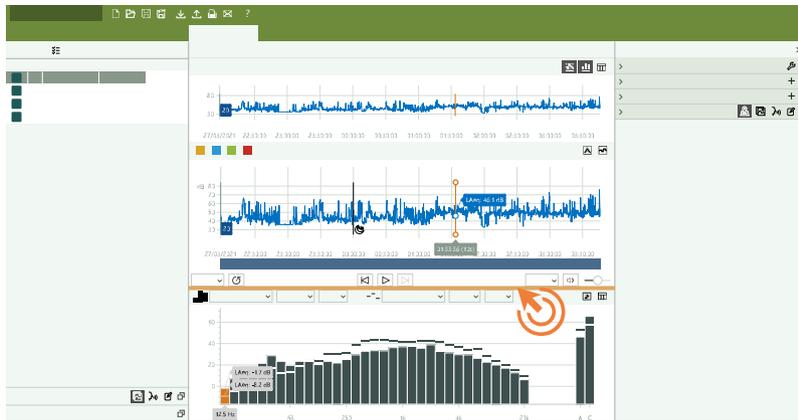
Overview

The uppermost section is the measurement overview, it helps keep you oriented when you, for example, switch to table a table view or zoom in on a section of the measurement.



Adjust the window size

Mouse over a vertical or horizontal boundary. When the cursor changes and the line is highlighted, click and drag to resize the area.



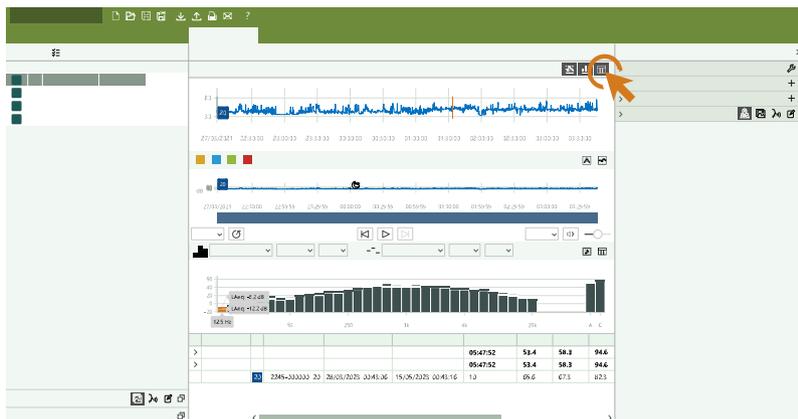
Customise the display

Click  to show or hide the profile view.

Click  to show or hide the spectrum view.

Click  to show or hide the table view.

The overview is always visible, but you can resize its area as needed.



Profile graphs

For **single measurements**, that is when Logging mode is disabled, each measured parameter is a single, calculated dB level for the total measurement time. This means that their graphs will be horizontal lines. You can use this display to easily see the differences in the calculated values for each measured parameter.

For **logged measurements**, each measured parameter is a profile that consists of multiple dB levels calculated at each interval over the total measurement time. This means that you can view the fluctuations of sound levels over time.

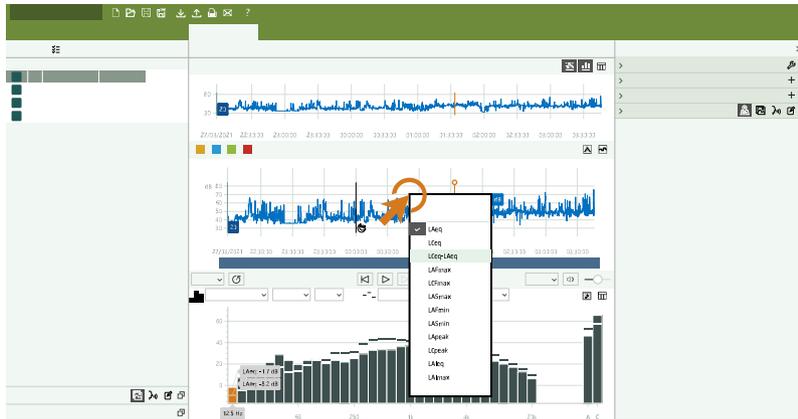
You can display one or more measurements at a time, including **multiple measurements in parallel** (that is, measurements made from multiple instruments at the same time).

Hide or show parameters

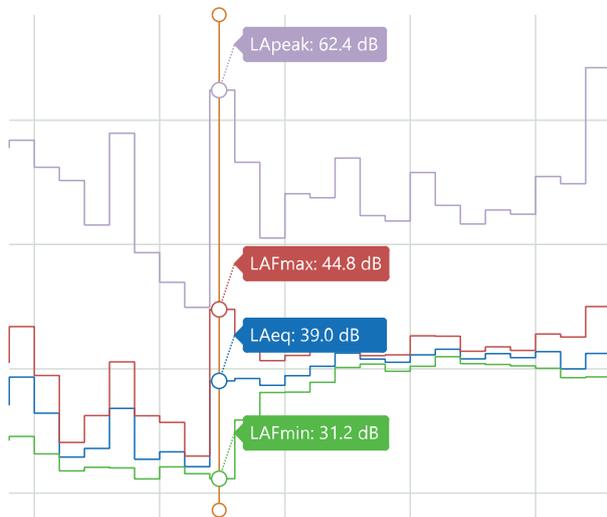
Right-click in the profile to select which parameters to view.

You can view broadband, statistical, post-processing and spectrum parameters.

Note: The right-click menu only shows measured parameters and post-processing parameters based on measured parameters.

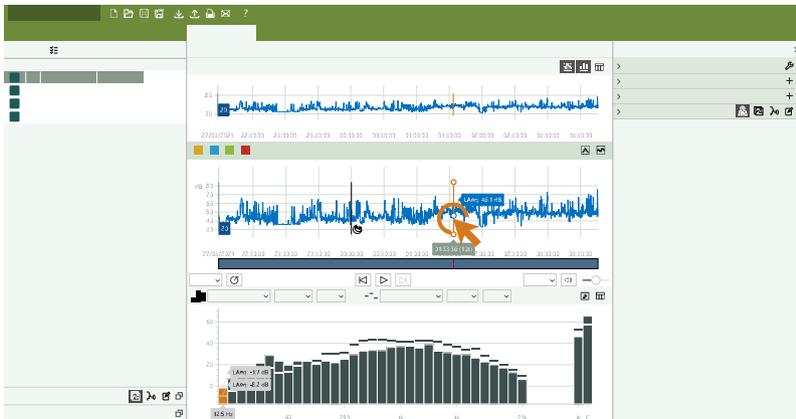


Parameters are colour coded.



The cursor

Click on the overview or the profile to place the cursor.



The cursor has two readouts: one at the bottom which shows the time and sampling rate (in parentheses), and one in the graph which shows the level at that point. When displaying multiple measurements in parallel, the readout in the graph also displays the nicknames of each of the instruments.

The spectrum graph updates automatically to show the frequency analysis data for the time at which the cursor is placed.

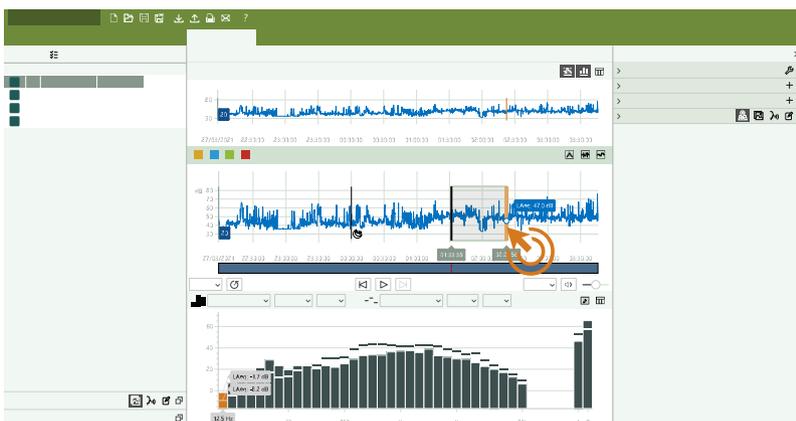
Hint: You can use the left and right arrow keys on your keyboard to move the cursor or click on the time readout to enter a specific time.

Selections

In the overview or the profile, click and drag to select a range.

When you select a range in the overview, the selection acts as a magnifying glass. Click and drag the range to move it.

When you select a range in the profile, you can adjust the boundaries of the selection and play with the functionality of the application.



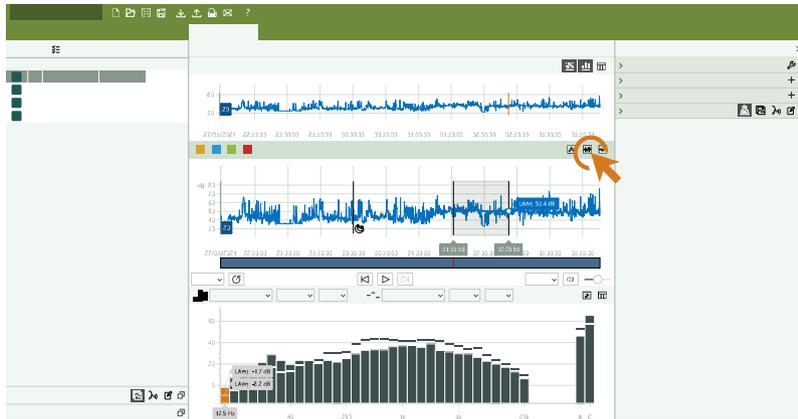
To adjust the selection, click and drag the left or right cursor. Alternatively, use the left and right arrow keys to move a cursor or the entire selection in steps. Click the cursor you want to move to select it, or in the middle of the section to

select the entire selection. The cursor readouts show the times for the start and end of the selection. Click on a time readout to enter a specific time.

Right-click the selection for options:

- Zoom in on the selected range.
- Apply markers to the selected range. See [Markers \(PC\)](#) for more information.
- Create a new measurement from the selection. See below for more information.

Click  to show the level evolution for the selected range. See [Level evolution curve](#) for more information.



When you listen to audio recordings, only the audio for the selected range plays.

Search the profile to make selections based on criteria. See [Profile search](#) for more information.

The spectrum graph automatically shows the frequency analysis of the range that is selected in the profile. See [Spectrum graphs](#) for more information.

Zoom

There are many ways to get a closer look at your data:

- Click on a measurement number to zoom in on the measurement.
- Select a range, then right-click and select **Zoom**. Select **Unzoom** to zoom out.
- Select a range in the upper graph to view it in the lower graph.
- Double-click the Y-axis to scale the graph to the shown levels.
- Hover over the Y-axis and use the mouse wheel to scale the graph vertically.
- Hover over the graph and use the mouse wheel to zoom in or out horizontally from the position of the mouse.

 **Hint:** When you zoom in, you can use the upper graph to keep track of where you are in the project. Double-click on the X-axis of the upper graph to zoom out.

Create a new measurement

You can create a measurement based on a section of an existing measurement. This is useful when creating calculations or analyzing large projects.

1. Select a range.
2. Right-click and select **Create measurement**.

The new measurement is added to the project browser, named as a copy of the original measurement. If you set up the project browser to display the measurement start and end times, you will be able to see easily the relationship between the original and the new measurements. See [Project browser](#) for more information.

The new measurement has the same metadata (location data, for example) and contains the selected section of sound, annotations and markers from the original measurement.

Copy the data

Right-click on the graph to copy it to your clipboard. Paste the image into Microsoft® applications such as Excel®, Word or Powerpoint®. If the application supports vector graphics, the graphs paste as SVGs. Otherwise the graphs paste as bit-maps (PNG).

Spectrum graphs

The spectrum graph shows frequency analysis data for the total measurement, for the cursor or for the selected marker.

The spectrum graph shows full- or third-octave frequency analysis data if spectrum parameters were measured. See [Spectrum parameters](#) for information about setting up the instrument to measure spectrum parameters.

The spectrum graph shows fast Fourier transform (FFT) frequency analysis data if analysis-quality audio was recorded. Analysis-quality audio can only be recorded using HBK 2255 and requires the BZ-7451 licence is installed and enabled on the instrument. See [Audio recording](#) for more information about recording quality and setting up the instrument.

The spectrum view is not enabled if the project does not contain relevant data.

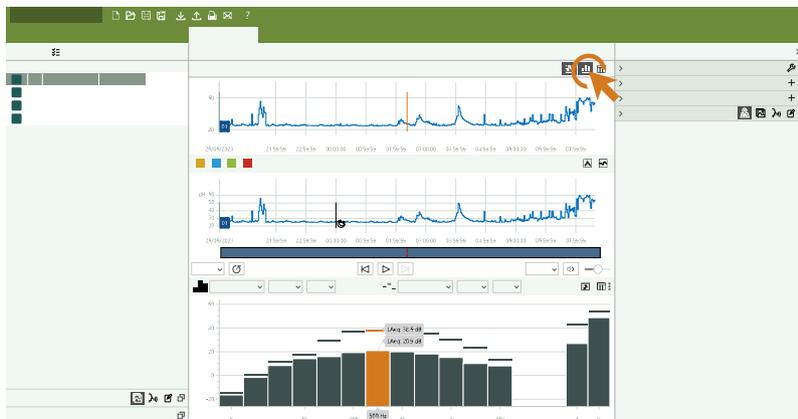
How to show spectra

Click  to show or hide the spectrum view.

Place the cursor, select a marker, or select a total measurement in the table view of the profile. The spectrum graph updates automatically to show the frequency analysis data for the active element in the profile.

The default view is the octave spectrum. If the measurement contains analysis-quality audio, there will be buttons in the local (Spectrum) toolbar to switch between octave and FFT spectra. Click  to view the octave spectrum or click  to view the FFT spectrum.

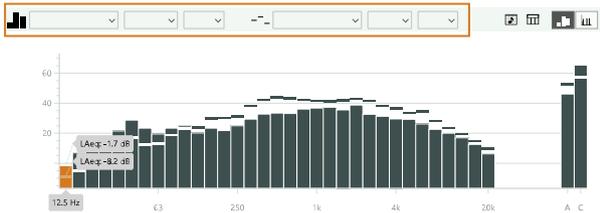
 **Note:** Spectrum buttons may be hidden to save space in the toolbar, click  to show hidden buttons.



Octave spectrum

The octave spectrum shows up to two sets of data simultaneously. One set of data displays as bars ■■■ while the other set of data displays as dashes ---.

The readouts in the toolbar allow you to see quickly which data is being displayed.



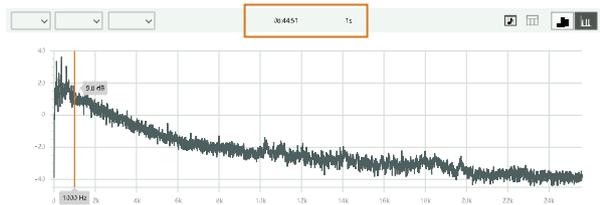
- Use the drop-down menus to change the data being displayed.
- Click to show tone assessment results. See [Tonality assessment](#) for more information.
- Click to show or hide the table view.
- The cursor has three readouts: one at the bottom which shows the centre frequency for the octave, and two which show the levels for the octave (one for each set of data).

FFT spectrum

Click to view the FFT spectrum.

FFT analysis in Enviro Noise Partner is primarily for tone assessments. See [FFT analysis](#) for more information.

The readout in the toolbar indicates the data that was analyzed.



- Use the Cancel button to stop the process if it is taking too long.
- Use the drop-down menus for scaling and frequency weighting options.
- Click to show tone assessment results. See [Tonality assessment](#) for more information.
- Right-click the graph for options to copy the graph or the values, or to unzoom.
- Select a range then right-click for the option to zoom in on the selected area.
- The cursor has two readouts: one at the bottom which shows the frequency, and one which shows the level.

Scale the axes

- Mouse over the graph then scroll up or down.
- Mouse over the area to the left of the Y-axis, tags with the upper and lower boundaries will appear. You can click on the tags to edit the values.
- Double-click in the area next to the Y-axis to auto-scale the axis to the levels of the graph.

Table view

You can view octave spectra in tabular format. Click  to show or hide the table view.

The table opens alongside the graph. The table shows notes and pertinent information in the bottom row.

Right-click on the table and select **Copy table** to copy its contents to your clipboard in CSV format. Paste the data into Microsoft® applications such as Excel®, Word or Powerpoint®.

You cannot view FFT spectra in tabular format in the Enviro Noise Partner interface, but you can copy the values and paste them into a spreadsheet application such as Microsoft Excel. Right-click the FFT spectrum graph to open the context-sensitive menu with an option to copy values.

Tables

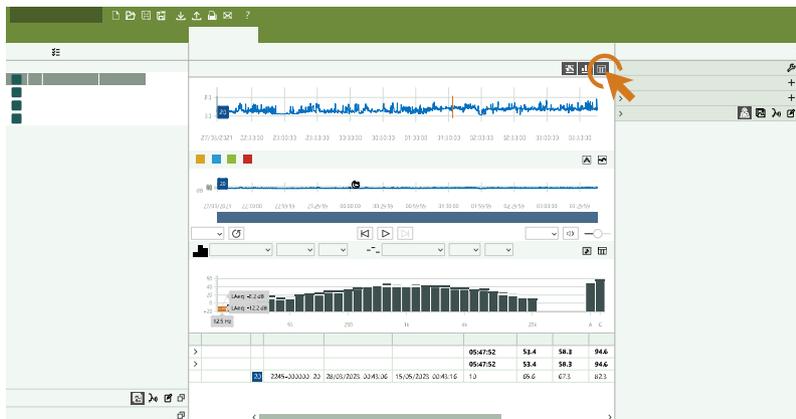
Data is available in both graphical and tabular formats. Tabular formats allow you to copy data points to spreadsheet editors to perform your own calculations, for example.

You can view measurement, frequency analysis and tone analysis data in tabular format.

For projects with markers, the table shows information about each marker in the selected measurements. The table includes calculations of the dB levels for each individual marker as well as the sum of all markers of the same type, and it includes the calculation of Total-Exclude, which is the level of the total measurement minus any Exclude markers.

Show table view

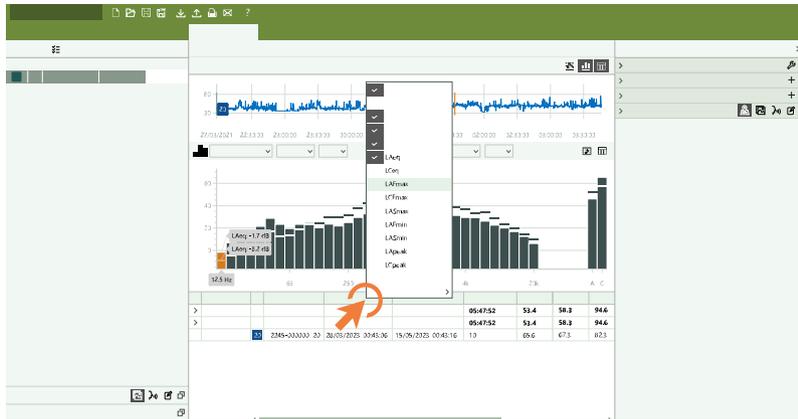
Click  to show or hide the table view.



Customise the contents

Right-click a column header in the measurement table to select which columns to show or hide.

Note: Spectrum tables cannot be customised.



Cursor levels

The measurement and spectrum tables update automatically if you move the cursor.

Tone analysis tables

The tone assessment result table gives information about the found tones. Hover over the border between the graph and the table to resize the windows. Right-click a header to customise the contents of the table.

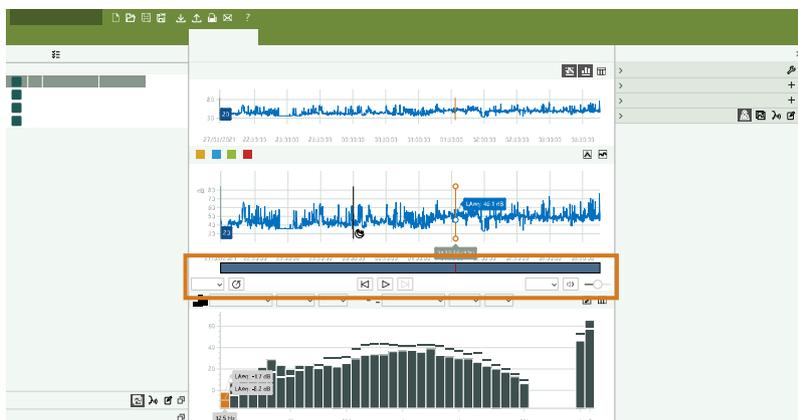
See [Tonality assessment](#) for more information about tone analysis in the pc app.

Copy the table

Right-click on the table and select **Copy table** to copy its contents to your clipboard in CSV format. Paste the data into Microsoft® applications such as Excel®, Word or Powerpoint®.

Audio recordings (PC)

If you have set up the instrument to record audio, the audio playback controls are below the profile graph.



Playback speed options: 1x, 1.25x, 1.5x, 2x or 4x

Repeat loop: Enable this setting to repeat the audio playback in an endless loop. The setting is enabled when the background of the button is dark.

Digital gain allows you to adjust the sound levels for listening purposes. This is because the sound card in your PC cannot recreate the range of sound levels that the instrument can measure.

Auto: The default gain setting. This setting uses dynamic compression to squeeze the measurement range down to what your sound card can play. The compressor has been optimized to maintain natural sounding dynamics of typical measurements while allowing comfortable listening for measurements with extremely high or low levels.

With the Auto setting, you will be able to hear everything in your sound recording without adjusting the volume when the level changes. While this is very convenient, there may be situations where a normal manual gain is more appropriate. For example, when focusing on the relative levels of different sounds.

Manual gain options: Increase the level of measurements from 0 to 60 dB, in 5 dB increments, before the signal is sent to the sound card.

In addition to digital gain, there is also a normal **volume** control and a **mute** button.

 **Hint:**

- When you press play, the recording will start from the location of the cursor.
- If you have selected a range, the application will play back only the audio recording for the selection.
- Move the cursor or click in the audio bar to skip around in the recording.
- You can add markers while listening to audio recordings. Click a marker button once to start a marker, click it again to stop the marker. See [Markers \(PC\)](#) for more information.

Level evolution curve

Level evolution curves show how the logged levels build up over the course of the measurement. You can show the level evolution curve for a range, a marker or for the entire measurement for any measured parameter or calculated post-processing parameter.

- Select a range or a marker then click  to show or hide its level evolution curve.
- Click  to show or hide the level evolution curve of the total measurement.

 **Note:**

- No evolution is shown for Exclude markers. Instead the evolution of all affected (all non-Exclude markers overlapped by the exclude marker) markers are shown. This allows you to see the impact of the exclude marker while adjusting it.
- The level evolution of maximum, minimum and peak parameters also shows the time at which the maximum, minimum or peak level occurs.

Data compression

For measurements with a lot of data, Enviro Noise Partner compresses the data to reduce its complexity. This allows you to view entire measurements and to interact with the data easily, even for a measurement with a high number of data points.

There is no need to compress measurements with a relatively small amount of data, such as single measurements or short logged measurements. But for long logged measurements, for example, measurement data will be downsampled. The logging interval will be scaled 10, 100 or more times depending on the length of the measurement and the logging

interval used. However, no data is lost. When you zoom in on the profile, the scale of the data adjusts automatically to show the raw data.

 **Hint:** You can tell when data is compressed because the cursor shows a logging interval that is higher than the logging interval used for the measurement.

Over the scaled logging interval, parameters are determined as such:

- Leq is the Leq average for the interval.
- Lmin is the minimum value.
- Lmax is the maximum value.
- Lpeak is the maximum value.

Range of values

While compressing data makes it easier to view and interact with large amounts of data, it also reduces the complexity of the data you are viewing. For example, high Leq values are lower in the compressed graph because the Leq levels are averaged over the scaled logging interval. This hides some of the details of the data set, such as the minimum and maximum Leq, 1s values, and can lead to a visual disconnect between the Profile search results and the levels shown in compressed graphs.

To help solve this problem, you have the option to show the range of values for each data point of the compressed data. This makes it easier to see the peaks in your data.

Click  to toggle the display of the range of values of compressed data.

Note:

- This button will only be visible when the data being displayed is compressed.
- The cursor displays the low and high values for each point in the compressed data.

Fast logging data

You can view the fast data from HBK 2255 in the PC app. See [Fast logging](#) for more information about setting up the instrument to fast log broadband and spectrum parameters.

To view measurements with fast logging data:

1. Select a single measurement in the project browser.
2. Open the Measurement window.
3. Click the **Fast logging** button to toggle on fast data in the profile graph.

Note:

- If the measurement contains more than 5000 data points, zoom in on the data in the profile graph to enable the Fast logging button.
- The frequency analysis spectrum shows fast data when you enable fast data in the profile graph.
- Markers are not calculated on fast data.

Analyse fast data for impulses

When fast data is enabled, click  to analyse the data for impulses.

Use the left and right arrows to jump through the found impulses. Each impulse has a readout that shows the penalty for impulses (KI), the prominence, the onset rate (OR) and the level difference (LD).

You can also search fast-logging data for impulses using the Profile search functionality of the app. See [Profile search](#) for more information about profile searches.

See [Application menu](#) for information about a setting that decimates fast-logged data. This setting is useful if your data was sampled at a faster rate than the standard requires.

FFT analysis

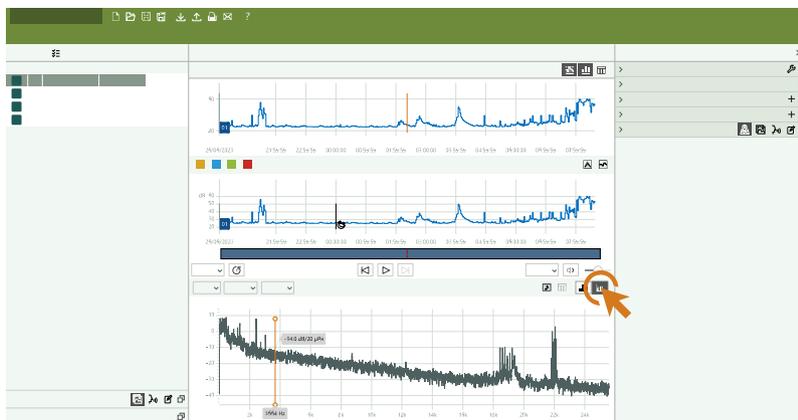
Enviro Noise Partner performs fast Fourier transform (FFT) frequency analysis on analysis-quality audio from HBK 2255 and signal recordings from Type 2250 or Type 2270.

Analysis-quality audio can be recorded using HBK 2255 and requires the BZ-7451 licence is installed and enabled on the instrument. See [Audio recording](#) for more information about recording quality and setting up the instrument.

FFT analysis in Enviro Noise Partner is primarily for tone assessments according to standards. FFT analysis is available for the cursor position, the selected marker, the selected range, the total measurement and the total measurement minus any exclude markers (Total-Exclude).

How to show FFT spectra

1. Place the cursor or select a marker or a range in the profile graph, or select a total measurement in the profile table.
2. In the Spectrum toolbar, click  to analyse the selected data.
 -  **Note:** Spectrum buttons may be hidden to save space in the toolbar, click  to show hidden buttons.
3. Use the Cancel button to stop the process if it is taking too long.



FFT settings

The local (Spectrum) toolbar has drop-down menus with scaling and frequency weighting options and a readout that indicates the data that was analyzed.

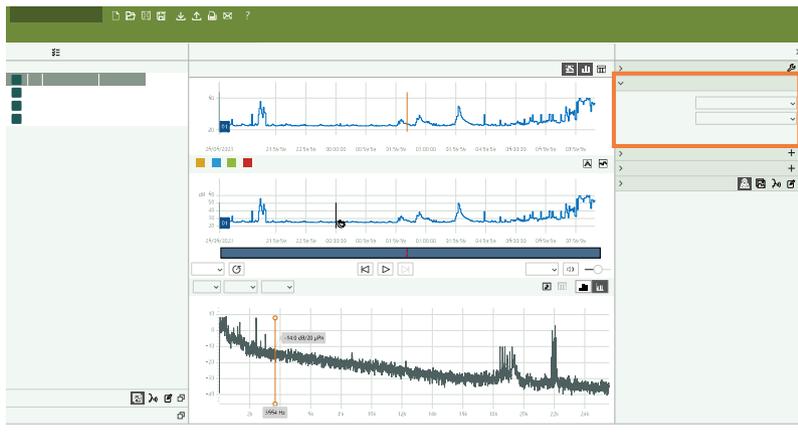
Signal scaling:

- RMS (root mean square): average power
- PWR (power): squares the signal
- PSD (power spectral density): power per frequency
- ESD (energy spectral density): energy per frequency

Frequency weighting: Apply A, C or Z frequency weighting to the analyzed data. A is the default frequency weighting.

Graph scaling: Display the graph in a linear or logarithmic scale.

When you enable FFT analysis, the FFT setup window is enabled in the panel on the right.



Frequency span: Sets the top frequency for analysis. When looking for tones, it makes sense to use a top frequency within the range of audible frequencies (between 20 Hz and 20 kHz).

FFT lines: Sets the number of lines for analysis.

Frequency resolution: The resolution is determined by dividing the Frequency span setting by the FFT lines setting. A resolution of 2 to 4 Hz is recommended when looking for tones.

Context-sensitive menus

Right-click the graph for options to copy the graph or the values, or to unzoom.

Select a range then right-click for the option to zoom in on the selected area.

Sound from Types 2250 and 2270

Projects from Types 2250 and 2270 can be exported from Measurement Partner Suite (MPS) to Enviro Noise Partner for analysis. See [Import from Measurement Partner Suite](#) for information.

Note:

- The frequency range of the analysis depends on the quality of the signal recording.
- Signal recordings from Type 2250 or 2270 with automatic gain (**Automatic Gain Control = On**) cannot be analysed because the automatic adjustments to the gain make the file unsuitable for analysis.

Tone assessment

Click  to analyse the displayed FFT spectrum for tones. See [Tonality assessment](#) for more information.

Use the Tonality assessment settings window (panel on the right) to select the standard for analysis:

- DIN 45681:2005
- DIN 45681 Ber 2:2006-08
- ISO/TS 20065:2022(E)

 **Note:** An emoji 🙄 is added to the results if the FFT settings conflict with the tone assessment standard used.

Tonality search

It is also possible to search your raw measurement data for third-octave or FFT tones using the Profile search window. See [Tonality searches](#) for more information.

 **Note:**

- Tonality searches and tonality assessments are linked, and the two tools share settings.
- If you apply markers to the results of a tonality search, you can select the markers to view easily the tone assessment results in the spectrum window.

Tonality assessment

You can analyse third-octave or FFT spectra for tones using the Enviro Noise Partner PC application.

- Third-octave tone analysis requires third-octave spectra. See [Spectrum parameters](#) for information about setting up your instrument to measure third-octave spectra.
- Fast Fourier transform (FFT) tone assessment requires FFT spectra. FFT spectra requires analysis-quality audio. Analysis-quality audio can only be recorded using HBK 2255 and requires the BZ-7451 licence is installed and enabled on the instrument. See [Audio recording](#) for more information about recording quality and setting up the instrument.

Place the cursor, select a marker, or select a total measurement in the table view of the profile.

If the measurement contains analysis-quality audio, click  to view the octave spectrum or click  to view the FFT spectrum.

Click  to show tone assessment results.



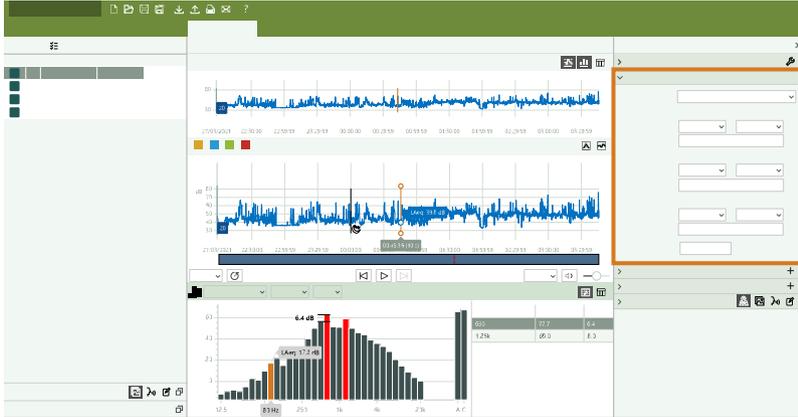
The toolbar allows you to see quickly which data was analysed and to make changes. An emoji 🗨️ in the toolbar indicates there is noteworthy information about the analysis. Hover over the emoji to see the note as a tooltip. Notes are also found at the bottom of the result table.

The graph visualises the standard-dependent criteria. Found tones are coloured red, and the readout for the prominent tone shows the step in dB from neighbouring bands.

The tone assessment result table gives information about the found tones. Hover over the border between the graph and the table to resize the windows. Right-click a header to customise the contents of the table.



When you enable tone assessment results, the Tonality assessment settings window is enabled.

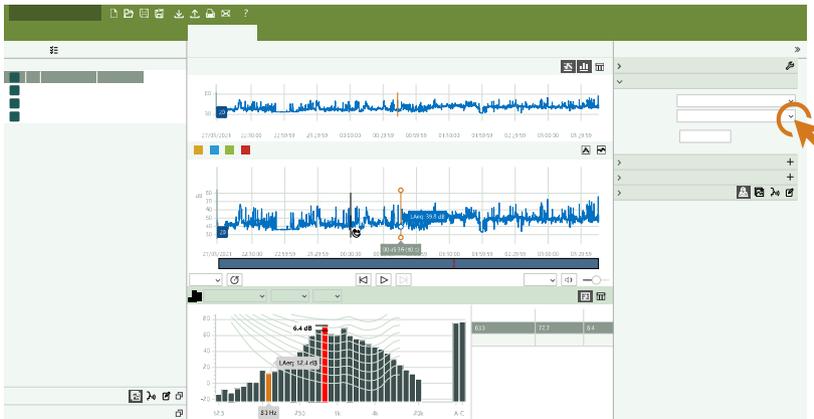


Analysis standard: Defines the standard to use for tone assessment.

For octave spectra, Enviro Noise Partner supports tone assessment according to DM 16-03-1998, ISO 1996-2:2017 and Tonalité marquée (NF S31-010 2016).

For FFT spectra, Enviro Noise Partner supports tone assessment according to DIN 45681:2005, DIN 45681 Ber 2:2006-08 and ISO/TS 20065:2022(E).

When **Analysis standard** = *DM 16-03-1998*, use the ISO 226 contour criteria to define the loudness contours against which the tones are tested.



When **Analysis standard** = *ISO 1996-2:2017*, a group of supplementary fields is enabled. The fields allow you to 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.

Reset to default: Apply the default setup for the standard used to assess tones.

Profile search

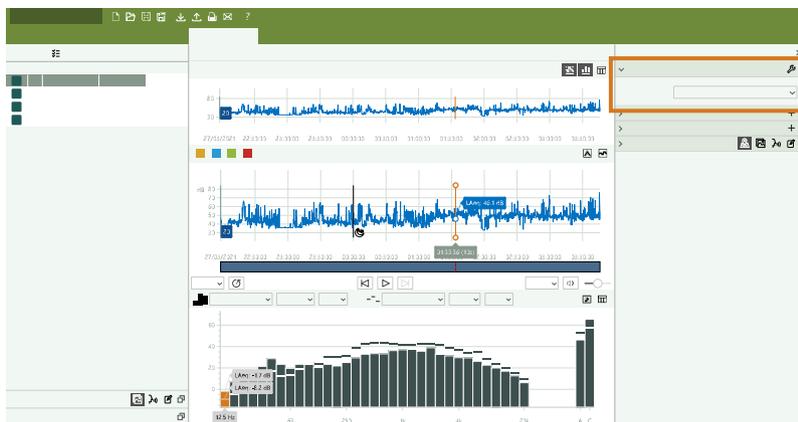
It is also possible to search your raw measurement data for third-octave or FFT tones using the Profile search window. See [Tonality searches](#) for more information.

Note:

- Tonality searches and tonality assessments are linked, and the two tools share settings.
- If you apply markers to the results of a tonality search, you can select the markers to view easily the tone assessment results in the spectrum window.

Profile search

The Profile search window allows you to search for events in a logging profile.



The results of a profile search are shown as selections in the profile graph. These selections are live, that is, they adjust when you change the search criteria.

The selections that result from a profile search can be used, for example, to add markers to your measurement. See [Add markers](#) for more information.

 **Hint:** The description column in the table view of the profile shows a description of markers applied to profile search results.

Types of searches

You can perform the following types of searches:

- **Level:** Search the measurement data for instances of measured levels which are above (or below) a defined level. See [Level searches](#) for more information.
- **Tonality:** Search measurement data for tones. See [Tonality searches](#) for more information.
- **Difference:** Search the difference between the levels of two measured parameters. See [Difference searches](#) for more information.
- **Low frequency:** Search the measurement data for low frequencies. See [Low-frequency searches](#) for more information.

- **Impulsivity:** Search the measurement data for impulses. See [Impulsivity searches](#) for more information.
- **Weather:** Search measured weather data for atmospheric conditions during your measurement. See [Weather searches](#) for more information.

How to set up profile searches

Use the Profile search window to enter your search criteria.

The criteria change according to the type of search you select. Click  to show advanced search criteria.

Multiple measurements in parallel

When searching multiple measurements in parallel (that is, measurements made from multiple instruments at the same time), the shading of selections becomes darker when multiple measurements fulfil the criteria of the search. If you apply markers to the selections, markers will be applied to the individual measurements which meet the criteria.

Level searches

A level search shows where the measured levels are above (or below) the level defined in the Trigger level setting for the parameter defined in the Trigger parameter setting.



Hint:

- Mouse over the bar in the main profile then click and drag to adjust the level. Alternatively, mouse over the Trigger level field and scroll up or down.
- For compressed data, show the range of values for a better visualization of where the logging profile meets the search criteria. See [Range of values](#) for more information.

Search criteria

Trigger parameter: Defines the measured parameter to search. Select a parameter from the drop-down menu. The menu is populated only with the parameters that were measured.

Trigger level: Defines the level for which to search. Enter a level in dB. The default level is 80 dB.

When a Level search is enabled, a bar in both the overview profile and the main profile of the Measurement window shows the defined level.

Advanced search criteria

Click  to show advanced search criteria.

Start slope: Defines where selections start (and stop) for level searches. The search uses the slope of the measurement curve at the points where it intersects with the defined level (Trigger level).

- *Rising:* Starts selections at points with a rising (or positive) slope, and ends selections at points with a falling slope. This setting creates selections which only contain levels above the defined level. Rising is the default setting.
- *Falling:* Starts selections at points with a falling (or negative) slope, and ends selections at points with a rising slope. This setting creates selections which only contain levels below the defined level.

Tonality searches

A tonality search finds third-octave or FFT tones in your raw measurement data.

Third-octave tonality searches are quick and the output is the overall tonality (for example, "Tones in 80.0% of the profile").

FFT tonality searches are slower, so the application does not perform the search automatically. To start the search, click the Analyse button in the Profile search window. The progress dialog that appears during the search gives you the option to cancel the search. The output is the total result (for example, "Tone: $\Delta L = 4.2$ dB"). Click  to view tonality over time as a colour map.

A readout in the profile toolbar displays the output. The readout is temporary, but you can copy the text from the toolbar.

 **Note:** It is also possible to analyse data for tones in the Spectrum window. Click  to show tone assessment results. Tonality searches and tonality assessments are linked, and the two tools share settings. See [Tonality assessment](#) for more information.

Search criteria

Analysis type: Sets/displays the data to analyse: third-octave or FFT spectra. Note that the setting also changes depending on what is selected in the spectrum toolbar.

Third-octave tone search criteria

Minimum duration: Defines the minimum length of time in seconds of the tonal component.

Low frequency, High frequency: The high and low frequency criteria define the frequency range in hertz in which to search.

Based on: Defines the measured parameter to search. Select a parameter from the drop-down menu. The menu is populated only with the parameters that were measured.

Analyse in slices and Duration of slices: Enable the Analyse in slices setting to divide the measurement data into slices, average the data in each slice and search for tones in each slice. Use the Duration of slices setting to define the length of the slice in seconds.

FFT tone search criteria

Minimum duration: Defines the minimum length of time in seconds of the tonal component.

Analyse in slices and Duration of slices: Enable the Analyse in slices setting to divide the measurement data into slices, average the data in each slice and search for tones in each slice. Use the Duration of slices setting to define the length of

the slice in seconds. For sliced analysis the result is the overall time varying result, which is the combined audibility of the slices. If you add markers to the results, the result for each slice is added as a description to the table view.

Advanced search criteria

Click  to show advanced search criteria.

Analysis standard: Defines the standard to use for tone assessment.

- For third-octave tones, Enviro Noise Partner supports DM 16-03-1998, ISO 1996-2:2017 and Tonalité marquée (NF S31-010 2016).

When **Analysis standard** = *DM 16-03-1998*, use the ISO 226 contour criteria to define the loudness contours against which the tones are tested.

When **Analysis standard** = *ISO 1996-2:2017*, a group of supplementary fields is enabled. The fields allow you to 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.

- For FFT tones, Enviro Noise Partner supports DIN 45681:2005, DIN 45681 Ber 2:2006-08 and ISO/TS 20065:2022 (E).

Reset to default: Apply the default setup for the standard used to assess tones.

Difference searches

The difference between two parameters can be used to find prominent events and to find events that are (or are not) correlated at multiple locations.

It may be tempting to look for prominent events by searching measurement data for instances where the sound level exceeds a certain level. However, the method is less reliable on long measurements where the background noise level changes over time. It can be more reliable to compare a parameter that is representative of the background level to a fast-reacting parameter. For example, compare the 1s LAFmax to a longer running LAF90.

The functionality of the difference search in Enviro Noise Partner is built on the Difference post-processing parameter, which allows you to create custom difference searches. See [Add post-processing parameters](#) for more information about the Difference post-processing parameter.

Search criteria

Difference parameter: Sets the Difference post-processing parameter to search. Use the drop-down list to select a parameter that has been defined earlier or click on the Add difference parameter button to open a dialog which allows you to configure a new post-processing parameter. Note that you can configure all types of post-processing parameters using the dialog, but you can only search for post-processing parameters of type *Difference*.

Difference level: Defines the level for which to search.

Advanced difference search criteria

Click  to show advanced search criteria.

Start slope: Defines where selections start (and stop) for the search.

- *Rising:* Creates selections that only contain levels above the defined level. Rising is the default setting.
- *Falling:* Creates selections that only contain levels below the defined level.

See [Application menu](#) for information about a setting that decimates fast-logged data. This setting is useful if your data was sampled at a faster rate than the standard requires.

Simple impulse search criteria

Impulse parameters: Defines the difference parameter to search. Select a parameter from the drop-down menu. The menu is populated only with the parameters that were measured.

Difference level: Defines the level for which to search. Enter a level in dB.

Fast-logging impulsivity search criteria

Minimum KI [dB]: Sets the minimum threshold for impulsivity. The default is 0 dB. The setting allows you to reduce the sensitivity of the search results.

Analyse in slices, Duration of slices: Enable the Analyse in slices setting and set the duration of the slice (in seconds) to divide the data into slices and search each slice for impulses. The default duration of a slice is 30 min. If the Analyse in slices setting is disabled, the app searches each logging interval for impulses.

Advanced search criteria

Click  to show advanced search criteria.

Start slope: Defines where selections start (and stop) for the search.

- *Rising:* Creates selections that only contain levels above the defined level. Rising is the default setting.
- *Falling:* Creates selections that only contain levels below the defined level.

Weather searches

HBK 2255 works with weather station kits MM-0316-A and MM-0256-A, which are based on Vaisala weather stations.

- MM-0316-A measures wind speed and wind direction.
- MM-0256-A measures wind speed, wind direction, ambient temperature, ambient pressure, relative humidity and rainfall.

See [External devices](#) for more information about using a weather station with HBK 2255.

Search criteria

You can search your measurement data for the wind direction and speed, as well as the rainfall (MM-0256-A only). To search for a weather parameter, place a tick mark in the box next to the desired parameters and define a value. You can search for one or more weather parameters at a time. The search handles multiple weather parameters with the Boolean operator AND, which means the search returns selections where the data fulfils all criteria.

Advanced search criteria

Click  to show advanced search criteria.

Start slope: Defines where selections start (and stop) for the search.

- *Rising:* Creates selections that only contain levels above the defined level. Rising is the default setting.
- *Falling:* Creates selections that only contain levels below the defined level.

Within the PC application, the function of a marker determines how the measurement data is handled in calculations. At the moment, the Exclude function is the only function used for calculations in Enviro Noise Partner. Outside the PC application, functions can be used when exporting a project to Microsoft® Excel® to perform your own calculations, such as rating levels.

Ambient sound is all sounds at the measurement location at the time of measurement. This includes sound from the sound source of interest plus all the other sound in the area.

Residual sound is all sounds other than the sound of interest at the measurement location at the time of measurement. Subtract Residual sound from Ambient sound to isolate the sound of interest.

Background sound is the sounds at the measurement location at the measurement time, when the sound source of interest is not active. Use this marker to mark the typical Residual sound as the background level.

Exclude is for sounds that you do not want to include in the measurement calculations.

Assign **None** as a function if you are creating a custom marker and the other functions do not apply.

Measurement window

The Measurement window expands your ability to work with markers. Editing tools allow you to add, adjust, change or delete markers. A level evolution function enables you to see how logged levels build up over time and the table view shows calculated levels for individual markers and for markers of the same type.

Note:

- When displaying multiple measurements in parallel, any changes you make to markers are applied to all displayed measurements.
- The PC app automatically merges overlapping markers of the same type. The PC app does not automatically merge adjacent markers of the same type.

Add markers

You can add markers to a measurement in the PC application.

1. Select a range in the lower graph.
2. Click on a marker button in the toolbar, or type the shortcut number on your keyboard.



You can edit marker names, colours and their functions at any time in the Marker settings window.

 **Hint:** You can apply markers to [Profile search](#) results.

Select a marker

In the lower graph, click on a coloured bar to select a marker.

 **Hint:** The Spectrum window automatically shows the frequency analysis of the marker that is selected in the Measurement window.

Adjust the cursors

Change the boundaries of the marker using the PC application.

1. Select a marker.
2. Move the start and end cursors.
 - Click and drag either cursor.
 - Click a cursor to select it, then use the arrow keys to move it left or right.

Delete a marker

1. Select a marker.
2. Right-click on the marker.
3. Select **Delete marker**.

Change a marker

1. Select a marker.
2. Click on a marker button in the toolbar, or type the shortcut number on your keyboard.

View level evolutions for markers



To view the level evolution of a marker for any measured parameter or calculated post-processing parameter:

1. Tap .
2. Select a marker.
3. Show and hide parameters as desired.

 **Note:** When displaying multiple measurements in parallel, level evolution curves display for all measurements selected in the project browser.

Table view

The table view shows the calculated decibel (dB) levels for each individual marker and for all markers of the same type. Markers of the same type are grouped together. The groups can be expanded or collapsed while viewing the table.

Select markers

You can use the table as a tool to select markers in the logging profile, either individual markers or marker types. When you select a marker type in the table, all instances of the marker type are selected in the logging profile.

 **Hint:** To change all markers of a certain type: select a marker type in the table view, then switch to the logging profile and click the desired marker button in the toolbar.

Add post-processing parameters

Post-processing parameters are calculations based on measured broadband or statistical parameters. They can be configured using the mobile app or the PC application. Post-processing parameters that have been configured with the mobile app will be included with the project upon import. If you export your data to a Microsoft® Excel® workbook or a text file, the exported file contains your configured post-processing parameters.

How to add post-processing parameters

1. In the Post-processing parameters window, click .
2. In the dialog, use the drop-downs to configure the post-processing parameter:

- a. **Post-processing type:** *Moving average, Difference or Report period.*

The **Moving average** calculation is a series of averages. The average of the levels of one broadband or statistical parameter is taken for a set period of time (Duration) repeatedly over the total measurement time. Moving average is a statistical tool which will show the overall trends of your measurement data.

The Moving average calculation also returns a moving max parameter calculated for each measurement as the maximum of the moving parameter during the elapsed time of the complete measurement. The moving max parameter will be undefined if the elapsed time is less than the duration of the measurement.

Difference is the subtraction of the level of one broadband or statistical parameter from another.

Report period is an average of a parameter for a set period of time. The Report Period post-processing parameter can be used to create daily or hourly reports for example.

- b. **Based on parameter:** Choose a parameter.

For Moving average and Report Period, this will be the parameter to be averaged.

For Difference, this will be the parameter from which another is subtracted.

 **Note:** The choice of parameters is based on the measured broadband and statistical parameters.

- c. For Moving average and Report Period, specify a duration.

When choosing a duration, it is important to consider the length of the logging interval. The number of samples within the duration must be a whole number. In other words, the result of dividing the duration by the logging interval must be an integer.

- d. For Difference, specify a parameter to subtract from the parameter specified in the Based on parameter field.
- e. For Report Period, enable the Synchronize with midnight setting to start the report period at midnight on the day of measurement start. If the setting is not enabled, the report period will start when the measurement starts.

How to edit a post-processing parameter

1. Expand the Post-processing parameters window.
2. Right-click on a parameter.
3. Select **Delete parameter** to remove the post-processing parameter from the project or select **Configure parameter** to edit the parameter configuration.

How to view a post-processing parameter

1. Right-click on the lower graph of the Measurement window.
2. Click on a post-processing parameter to enable it.

 **Note:** One or more post-processing parameters must first be configured in the Post-processing parameters window.

Review annotations in the PC application

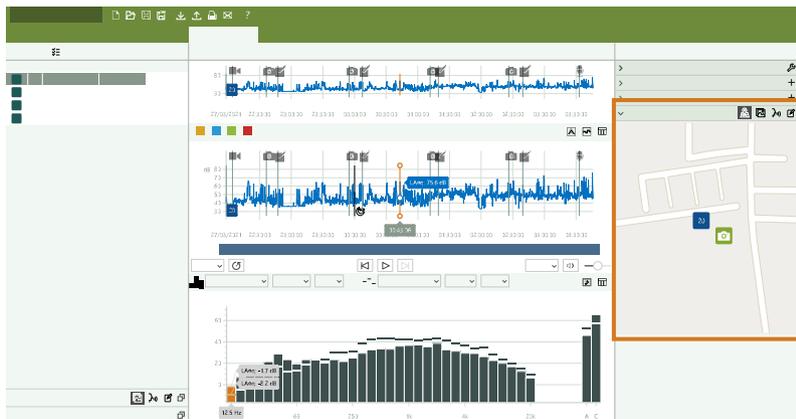
If you created annotations using the mobile app, you can review them in the PC application.

It is always a good idea to add annotations to your measurements. For example, they can help you and your colleagues identify measurements at a later date and provide valuable information about the context of a measurement.

How to view annotations

Select an item in the project browser to view attached annotations. See [Project browser](#) for more information.

When the Measurement tab is open, there is an Annotations window in the panel on the right which allows you to view and edit the attached annotations while viewing measurement data.



The Gallery and Map tabs are dedicated annotation views. When either the Gallery or Map tab is open, the panel on the right shows only annotation options.

The Unattached annotations window in the panel on the left shows imported annotations that are not attached to a measurement.

Annotation symbols:

- Map: 
- Gallery: 
- Commentaries: 
- Notes: 

See where annotations were made

The Map windows show the location of measurements and annotations. Use the context-sensitive menu to toggle on or off the different annotation types.

 **Note:** The map only shows annotations that have location data. To enable location data, the mobile app needs access to the location services of the mobile device. You can view/edit the permissions for the mobile app in the settings menu for the mobile device. See [View locations](#) for more information about measurements and annotations with location data.

Check out the gallery

The Gallery windows show photograph and video annotations.

- Tap  or  to rotate the file.
- Tap  to zoom.
- Use the arrows to browse.
- Use the context-sensitive menu to cut, copy or paste.
- Click on a video to play it.

Listen to commentary

The Commentaries windows show voice recordings.

- Press the play button to listen to the recording.
- Use the slider to move forward or backward in the recording.
- Click  to open the volume slider.
- Use the context-sensitive menu to cut, copy, paste and delete.

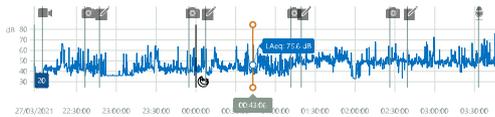
Read notes

The Notes windows show text notes.

Each note is stamped with the date and time. Click on a note to edit the text. The context-sensitive menu has options to cut, copy, paste and delete.

See when annotations were made

Open the **Measurement** window to see when annotations were made during a measurement. Annotation icons overlaid on the measurement graphs show when an annotation was made. Click on an annotation icon to open the annotation in its window.



-  : Photos
-  : Videos
-  : Notes
-  : Commentary

How to attach or detach annotations

Sometimes you need to move an annotation. In the PC application, it is easy to, for example, attach an unattached annotation to a measurement, or move an attached annotation from one measurement to another, or detach an unwanted annotation from a measurement.

1. Find an annotation that you want to move.
2. Do one of the following:
 - Click and drag the annotation where you want it.
 - Right-click on the annotation and select **Cut** or **Copy** then paste it where you want it.

Use files stored on your PC

To add annotation files stored on your PC, drag and drop items from Windows Explorer into the application interface. You can add photo, video, text and audio files.

- To add a file as an unattached annotation, drop the file in the Unattached annotations window.
- To add a file as an attached annotation, drop the file on a measurement in the project browser or select a measurement in the project browser then drop the file in the Annotations window.

View locations

You can view measurements and annotations on the map in the PC application. Being able to see where measurements and annotations were made on a map can make it much easier to identify a specific measurement in the future, both for you and for your colleagues.

 **Note:** To see measurements in the map, enable GPS location on the instrument. To see annotation on the map, allow the mobile app to access location services in the settings for the mobile device. There is more information below.

Map window

The location of each measurement and annotation in a project is marked by icons on the map. There are two Map windows, one in the centre panel and one in the side panel. Both windows have similar functionality, but there are slight

differences between the two.

Measurements show the measured level of one parameter next to the measurement number.

Controls

- Switch between Road (a graphical representation of the map) and Aerial (a photographic representation of the map) views.
- Mouse over the map and scroll up or down to zoom in or out.
- Double-click to zoom in.
- Click and drag to move the map.
- Click on an annotation icon to open the annotation in its window.
- Right-click to open the context-sensitive menu.
 - Turn on and off the display of annotation icons.
 - In the centre panel, change the parameter level being displayed.

How to enable GPS location on the instrument

1. Press  briefly to open the menu.
2. Go to: **System settings > Advanced settings > Service mode.**
3. Select **Enabled.**
4. Go to: **GPS location.**
5. Select **Enabled.**

 **Note:** You will be able to view the GPS coordinates on the instrument if About data view is enabled. See [Display settings](#) for more information.

How to add location data to annotations

Annotations use the functionality of the mobile device on which the app is running, for example, its camera is used to take photos and record video. To add location data to an annotation, the mobile app will need permission to access the location services of the mobile device. The first time you start the mobile app it will ask for permission to access location services. If you ever want to change the permissions for the mobile app, this is done in the settings menu for the mobile device.

Export data

The Export dialog allows you to export data and annotations. Export data to use it in other applications or to perform your own calculations. You can export data to a Microsoft® Excel® workbook or a text file.

The export file also includes any custom metadata applied to measurements. Custom metadata is a feature of HBK 2255, see [Metadata](#) for more information.

How to export

1. In the project browser, highlight the measurements you want to export.
2. Click .
3. Specify the name and location of the export file in the **Destination file** field.
4. Choose the format into which you want to export the measurement data:
 - *Excel Workbook (*.xlsx)*
File extension *.xlsx is compatible with Microsoft Excel 2007 and newer.
 - *Tab separated values (*.txt)*
5. If you are exporting to a workbook, you have the option to use a master file.
When you export a measurement to a workbook, master files tell the PC application what to do with the data. You can create custom master files.
6. If you are exporting to a workbook, the export method sets how the data is written to the workbook.
 - *Auto*: The application chooses the best option; this is the default setting.
 - *Open XML (DOM)*: A memory-based method for writing to a workbook, which can tie up processing resources.
 **Note: The DOM method cannot be used for big exports.**
 - *Open XML (xmlWriter)*: A sequentially-based method for writing to a workbook, which can be time-consuming for large quantities of data.
 - *COM Interop (requires Excel)*: A faster method than the xmlWriter method, if it works. Issues with Microsoft Office installations (this method requires Microsoft Excel to be installed on your PC) and security settings can prevent this method from working.
7. Enable or disable:
 - **Launch Excel after export**: When exporting to an .xlsx file, open the exported Excel file.
 - **Open in file explorer**: When exporting to a .txt file, open the location of the exported file in the file explorer.
 - **Use invariant export language**: Export parameters in a consistent language.
It is recommended that you enable this setting if a program (or macro) is going to interpret the parameters. This setting will output parameters in English and the names of the parameters will be kept over time from version to version of the program. This is not guaranteed for other languages, where the parameter names might change over time.
 - **Export raw statistical data**: Include statistical data in the export.
 - **Export fast data**: Include fast logged data in the export.
 - **Export annotations and signal recordings**: Include annotations and signal recordings in the export. If the project includes annotations: photographs export as .jpg files, notes as .txt files, and commentary and video as .mp3 files. If the project includes audio recordings (signal recordings): listen-quality recordings export as .mp3 files, and analysis-quality recordings export as .flac files.
 - **Convert FLAC files to WAV**: When the Export annotations and signal recordings setting is enabled and the project contains analysis-quality recordings, export .flac files as .wav files.
8. Click **OK**.

How to create master files

You can create your own (custom) Microsoft Excel files that define the data you wish to export. This can be used to filter your measurement data in the exported file, to perform custom calculations or to create graphs automatically.

1. In the Export dialog, set a destination and use the following settings:
 - **Export formats:** *Excel Workbook*
 - **Master file:** *None*
 - **Launch Excel after export**
2. Click **OK**.
3. In the Excel file:
 - a. Delete the unwanted data columns (data columns correspond to measurement parameters).
 - b. Arrange the columns as desired.
 - c. Add sheets for calculations and graphs, for example.
 - d. Select all rows with contents, except for the first row (the header row).
 - e. Right-click and select **Clear Contents**.
4. Use the Save as... option to name and save your new master file.

Note:

- To export to a master file, set the Master file field in the Export dialog to your master file.
- When you export to your master file, it will contain only the sheets and parameters included in that master file.
- Master files work best when exporting measurement data that is similar. The reason is because parameters must be in both the data set and the master file to be included in the exported file. Luckily, you can create multiple master files for use with different types of measurement data.

Report

You can preview and create reports directly from the PC application. The ability to preview the report allows you to ensure the report includes the correct data before you create it.

Reports include relevant information about the instrument as well as the current measurement and spectrum displays (both in graphical and tabular formats).

Create a report

1. Set up the display in the Measurement window.
See [Measurement window](#) for more information.
2. Open the Report preview window to preview the report.
 -  **Hint:** Report preview is an active window, it updates automatically when you make changes to a display.
3. Select a preview format from the drop-down menu: HTML (default) or PDF.

Note:

- The HTML preview is faster but less accurate than the PDF preview.
 - The choice of preview format does not affect the final report when using the  button to generate a report.
 - The HTML preview is platform independent, which is helpful if you do not have Microsoft® Word installed on your PC. The PDF preview requires Microsoft Word.
4. Once you are happy with the preview, do one of the following:
- In the application toolbar, click  to generate a report in .docx, which is the native Word format. Afterwards, you can apply your own custom styles, formats and layouts to the report.
 - In the PDF preview, use the toolbar in the Report preview window to create a PDF of the report or to print out the report.

Share a project

An easy way to transfer projects between colleagues and stakeholders is to use the project sharing feature in the PC application. The project sharing feature encrypts the project, uploads the project to the Brüel & Kjær cloud and generates an email with a download link. The PC app is free to download and use, so anyone with whom you share the link will be able to open the project and work with the data.

 **Note:** To use the sharing feature, the device from which you are sharing must be set up with your email account.

How to share a project

1. Click  to open the project sharing dialog, which immediately prompts you to enter a password to protect the project.
 - A password is recommended but not required. Leave the field blank if you do not wish to protect the project.
 - If used, the recipient will be prompted to enter the password to open the project but not to download the project.
2. Click OK to start the upload.

The entire project, including measurements, annotations and post-processing parameters, is uploaded.
3. Add recipients to the automatically generated email.

Share from the mobile app

You can also share projects and measurements using the mobile app. The feature works the same on the mobile app as it does on the PC app, but with the ability to share individual measurements as well as projects.

Use the  button to share. The button is context-sensitive, so what you share depends on what is open when you tap the button: a measurement or a project.

TERMINOLOGY

A-weighting filter	Frequency weighting corresponding approximately to the 40 dB equal loudness curve, that is to say, the human ear's response at low to medium sound levels. It is by far the most commonly applied frequency weighting and is used for all levels of sound.
B-weighting filter	Frequency weighting corresponding approximately to the 70 dB equal loudness curve, that is to say, the human ear's response at medium sound levels.
C-weighting filter	Frequency weighting corresponding to the 100 dB equal loudness curve, that is to say, the human ear's response at fairly high sound levels. Mainly used when assessing peak values of high sound pressure levels.
Decibel (dB)	<p>The measurement unit for expressing the relative intensity of sound. A direct application of linear scales (in Pa) to the measurement of sound pressure leads to large and unwieldy numbers. As the ear responds logarithmically rather than linearly to stimuli, it is more practical to express acoustic parameters as a logarithmic ratio of the measured value to a reference value. This logarithmic ratio is called a decibel or dB. The advantage of using dB can be clearly seen in the below illustration. Here, the linear scale with its large numbers is converted into a manageable scale from 0 dB at the threshold of hearing (20 μPa) to 130 dB at the threshold of pain (~100 Pa).</p> <p>Our hearing covers a surprisingly wide range of sound pressures - a ratio of over a million to one. The dB scale makes the numbers manageable.</p>
E	Sound Exposure is the energy of the A-weighted sound calculated over the measurement time. The unit is Pa ² h.
'F', 'S' or 'I' time weighting	A time weighting (sometimes called a 'time constant') defines how the exponential averaging in root-mean-square (RMS) measurement is done. It defines how heavily fluctuating sound pressure variations are smoothed or averaged to allow useful readings. The standards define three time weightings: F (Fast), S (Slow) and I (Impulse). Most measurements are carried out using the F time weighting, which uses a 125 ms time constant.
Frequency	The number of pressure variations per second. Frequency is measured in hertz (Hz). The normal hearing for a healthy young person ranges from approximately 20 Hz to 20000 Hz (20 kHz).
Frequency weighting	Our hearing is less sensitive at very low and very high frequencies. In order to account for this, weighting filters can be applied when measuring sound. The most commonly used weighting is the 'A-weighting', which approximates the human ear's response to low - medium noise levels. A 'C-weighting' curve is also used, particularly when evaluating very loud or low-frequency sounds.
G-weighting	Frequency weighting used for infrasound measurements.
LAE	Sound Exposure Level - sometimes abbreviated SEL and sometimes called Single Event Level, is the Sound Exposure expressed as a level. The letter 'A' denotes that the A-weighting has been included.

LAeq	A widely used noise parameter that calculates a constant level of noise with the same energy content as the varying acoustic noise signal being measured. The letter 'A' denotes that the A-weighting has been included and 'eq' indicates that an equivalent level has been calculated. Hence, LAeq is the A-weighted equivalent continuous noise level.
LAF	The instantaneous time-weighted sound level, L_p , is available at any time. 'A' denotes that the A-frequency weighting is used. 'F' denotes that the Fast time-weighting is used.
LAFmax	Maximum time-weighted sound level measured with A-frequency weighting and Fast time weighting. It is the highest level of environmental noise occurring during the measurement time. It is often used in conjunction with another noise parameter (for example LAeq) to ensure a single noise event does not exceed a limit.
LAFmin	Minimum time-weighted sound level measured with A-frequency weighting and Fast time weighting. It is the lowest level of environmental noise occurring during the measurement time (time resolution is 1 s).
LAF90.0	The noise level exceeded for 90% of the measurement period with A-frequency weighting and Fast time weighting. The level is based on statistical analysis of a parameter (LAF or LAS) sampled at 10 ms intervals into 0.2 dB wide classes. The percentage is user-definable. An analysis of the statistical distributions of sound levels is a useful tool when assessing noise. The analysis not only provides useful information about the variability of noise levels, but is also prominent in many standards as the basis for assessing background noise. For example, LAF90 is used as an indicator of background noise levels while LAF10 or LAF5 are sometimes used to indicate the level of noise events.
LA90.0	The noise level exceeded for 90% of the measurement period with A-frequency weighting. The level is based on statistical analysis of LAeq sampled at 1 s intervals into 0.2 dB wide classes. The percentage is user-definable.
LAF(SPL)	The Sound pressure Level (maximum time-weighted sound level during the latest second) is available at any time. 'A' denotes that the A-frequency weighting is used. 'F' denotes that the Fast time-weighting is used.
LAFTeq	Taktmaximal Mittelungspegel as defined by DIN 45641. LAFTeq has also been called LAFTm5 or LATm5F.
LCpeak	Maximum peak sound level during a measurement. 'C' denotes that the C frequency weighting is used. Used for assessing possible damages to human hearing caused by very high short-duration noise levels.
LCpeak,1s	Maximum peak sound level during the latest second - is available at any time. 'C' denotes that the C frequency weighting is used. Used for monitoring the peak levels.
Linear Weighting	'Linear' frequency weighting is without any frequency weighting, that is, equivalent to LIN, Z or FLAT.
Linear	Time-averaged (RMS) weighted acceleration (or voltage) value, averaged over the entire measurement period with frequency weighting Linear.

LGeq	The G-weighted equivalent continuous noise level - used to assess infrasound.
LGpeak	Maximum peak sound level with G-weighting.
Loudness	Loudness is the subjective judgement of intensity of a sound by humans. Loudness depends upon the sound pressure and frequency of the stimulus and whether the sound field is diffuse- or free-field. The unit is the sone. The Zwicker method of calculation of stationary loudness based on 1/3-octave measurements is described in ISO 532 - 1975, Method B.
Loudness Level	Loudness Level = $10 \cdot \log_2(\text{Loudness}) + 40$. The unit is the phon.
Overload	When the broadband sound level is above the measuring range of the instrument. The light ring will flash red quickly for intermittent overloads and will be solid purple for latched overloads.
Peak	Maximum peak of the acceleration, velocity, displacement signal or voltage input with frequency weighting Linear.
Sound	Any pressure variation that the human ear can detect. Just like dominoes, a wave motion is set off when an element sets the nearest particle of air into motion. This motion gradually spreads to adjacent air particles further away from the source. Depending on the medium, sound extends and affects a greater area (propagates) at different speeds. In air, sound propagates at a speed of approximately 340 m/s. In liquids and solids, the propagation velocity is greater - 1500 m/s in water and 5000 m/s in steel.
Sound level or sound pressure level	The level in decibels of the pressure variation of a sound. See also decibel.
TCpeak	The time when the peak sound level occurred. 'C' denotes that the C frequency weighting is used.
Underrange	When the broadband sound level is below the measuring range of the instrument. Underrange is only indicated on the screen; no underrange information is saved with the final result of the measurement.
Z-weighting	'Zero' frequency weighting is without any frequency weighting, that is, equivalent to Linear, LIN or FLAT.