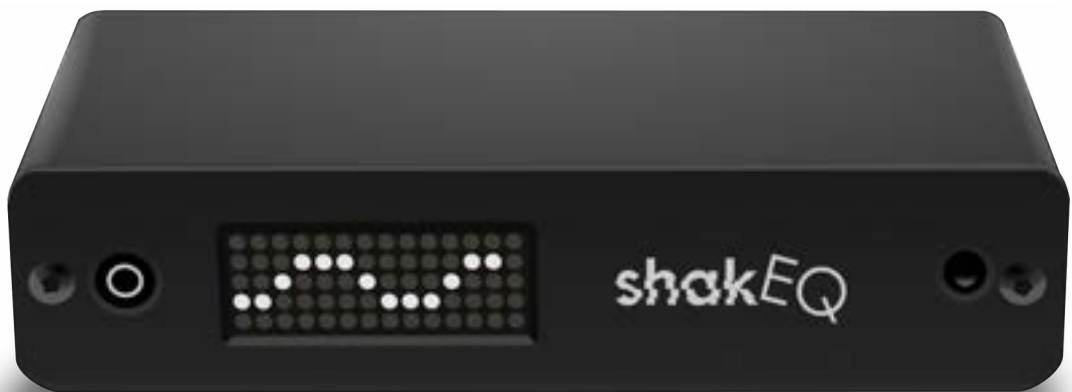


# *DSPeaker* **shakEQ**™

## User's Guide



## Recycling information

ShakeEQ™ is marked according to the **Waste Electrical and Electronic Equipment Directive**. There are take-back systems in place that help to preserve nature and natural resources when products are disposed of appropriately. If you need to dispose of this product, follow the local laws and regulations, and use the take-back system that has dedicated collection facilities for electronic equipment. Do not put the product into household waste disposal!



ShakeEQ™ is manufactured using parts and processes that follow the EU directive of the Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS).

## Safety Instructions



### **WARNING: Do not ingest battery, Chemical Burn Hazard!**

Keep batteries out of reach of children and dispose of the used battery appropriately. If a battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention. If the battery compartment does not close securely or is otherwise damaged, stop using the remote control and keep it away from children.

- **CAUTION: Swallowing and choking hazard.** Keep packaging and all parts out of reach of children and pets to prevent accidents.
- **CAUTION:** The remote control supplied with ShakeEQ™ contains a button cell battery. Only replace it with the same type (CR2025) and in the correct orientation! Check the battery type, opening instructions, and correct replacement orientation from the markings on the backside of the remote.
- ShakeEQ™ is intended for domestic indoors use with cables of up to 3m in length. Observe electrostatic discharge precautions when connecting or disconnecting cables to avoid damage to equipment.
- ShakeEQ™ may produce shaker effects more often and with higher level than a system without it. Follow installation instructions specified in the bass shaker's manual and associated materials.
- The power supply that is shipped with the unit is 12VDC 0.6-1.6A with a 2.1mm/5.5mm connector, center positive. Only use a compatible power supply with specifications of 12VDC and at least 0.6A.

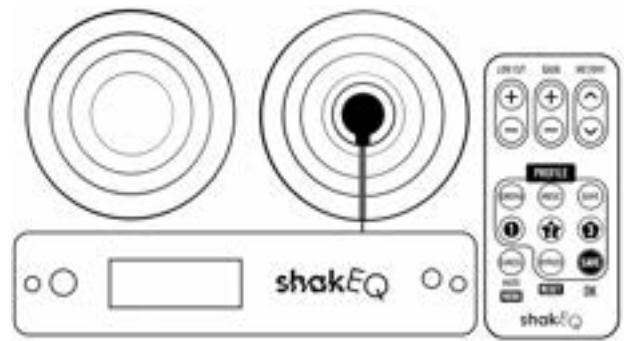
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## 1. Overview

### What's included in the box

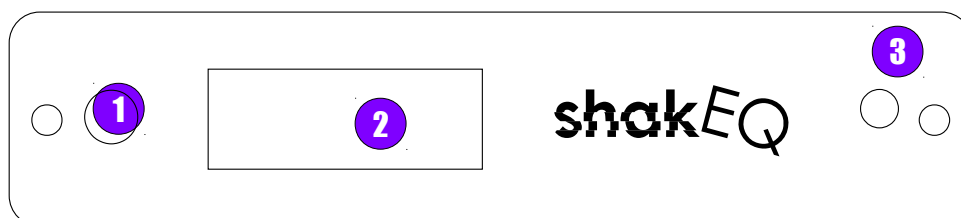
- ✓ The ShakeEQ™ unit
- ✓ A measurement disc with a sensor
- ✓ A dummy measurement disc
- ✓ An infra-red remote controller (with battery, remove the plastic tab before use)
- ✓ A power supply for your country / region (12VDC) (not pictured)
- ✓ This guide (not pictured)



### Basic Information

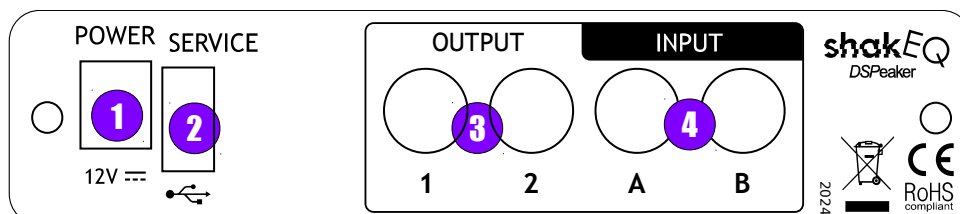
ShakeEQ™ is a state-of-the-art automatic bass shaker enhancer for tactile transducers. It has three enhancing functions. Dynamic processing is an adaptive compression algorithm to improve the dynamic range of the tactile transducer. Bass Extender converts mid-bass audio cues that are normally outside of the range of a heavy bass shaker to a lower-frequency instance of themselves to be felt. And thirdly, ShakeEQ can measure and correct distortion present in your shaker system by Calibration (p. 16). The user can control and fine-tune the characteristics and operation of the tactile transducer by adjusting ShakeEQ settings based on preference and input material.

### Front Panel



- (1) Sensor connector with insertion detection  
(2) Matrix display (3) IR receiver

### Rear Panel

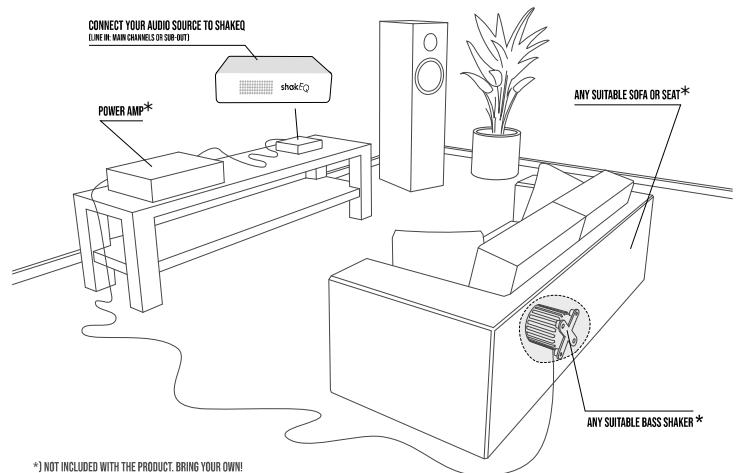


- (1) Power supply connector, 12VDC 0.6A - (2.1mm/5.5mm, center positive)  
(2) USB host port for firmware update and measurement export using a USB memory stick  
(3) 1 and 2 RCA line-level outputs (connect shaker to output 1, optionally subwoofer to output 2)  
(4) A and B RCA line-level inputs (preferably a wide frequency range)

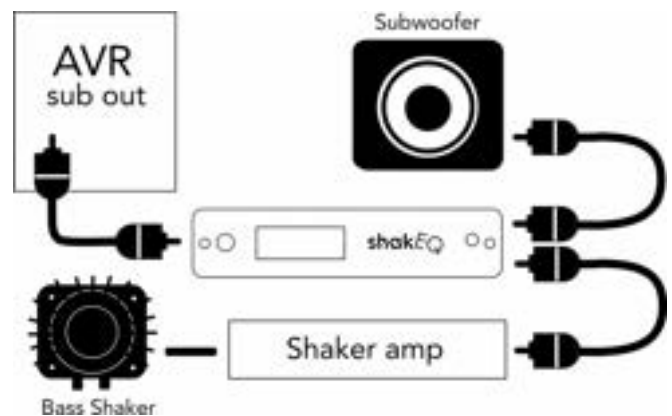
## Connections

Connect analog output 1 of ShakeEQ to the amplifier that controls your bass shaker. Connect your audio source to one (mono source) or both (stereo source) of ShakeEQ's A / B inputs.

In an existing bass shaker system it is natural to start by inserting ShakeEQ at the shaker amplifier's input. Your system may correspond to one of these:



- Stereo system (2 channels): connect the A and B inputs of ShakeEQ to the left and right line-level outputs of your audio source, external DAC, or pre-amplifier. Use Y-splitters if needed.
- Headphones and bass shaker: connect the same full-range signal to headphones and ShakeEQ.
- Alternative connections for a home theater system with a dedicated LFE/Subwoofer output:
  - Connect the A and B inputs to the line-level outputs of the main (left / right) channels with speakers set to “large” in the amplifier’s speaker configuration, i.e. do **not** use the subwoofer / LFE output for ShakeEQ.
  - Connect the AVR’s subwoofer output to the A input of ShakeEQ and to a subwoofer (Y-cable).
  - If you need to adjust the shaker/subwoofer synchronization (the latency of the sub and the shaker do not match), connect the subwoofer(s) to ShakeEQ’s analog output 2, configure the sub output to “A+B” from ShakeEQ’s menu, and connect the A input to the AVR’s subwoofer output. After ShakeEQ setup, perform the speaker level/distance setup of the AVR.
  - If the AVR has both LFE/Sub output and shaker output, connect LFE output to input B and shaker output to input A, and choose “A|B” for the SUB output in ShakeEQ’s menu. After ShakeEQ setup, perform the speaker level/distance setup of the AVR.



When you connect power, the unit automatically starts and enters the home screen.

For more information about setup and tuning, see <https://www.dspeaker.com/shakeq-setup-guide>.

## 2. Operation Modes

ShakeEQ has three main operation modes, each optimized for a different content type and usage. The currently active mode affects the signal enhancement and how the Wet/Dry setting alters the operation.

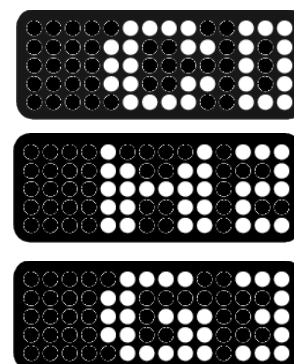
1. **Cinema** - Less intensive effect for long-duration listening, e.g. movies that have a mixture of low frequency sound effects, music, and spoken dialogue.
2. **Music** - Musical mode for a subtle effect that boosts rhythm and low-frequency instruments.
3. **Game** - Dynamic and active mode bringing fore atmospheric sounds and sound effects.

The operation modes can be tweaked in master profiles to gain a more personal and content-dependent experience and also be stored into custom profiles. The three master profiles save settings automatically once modified, the custom profiles can be saved into manually (see Profiles on p.9). The different signal paths and blocks are summarized in Processing Flow on page 7.

### Home Screen

Home Screen is the default view of the user interface. It indicates the active custom profile (if any) by a number from 1 to 3, the operating mode by one character (C, M, or G), and the Wet/Dry setting (the effect amount) by a number. E.g. "C0" is Cinema master profile with Wet setting of 0.

Mode Abbreviation	Full Name
C	Cinema mode
M	Music mode
G	Game mode



### Remote Control Summary

**LOW CUT:** Sets the lowest frequency that is sent to the shaker.

**GAIN:** Adjusts the output level.

**WET/DRY:** Adjusts the effect level.

Cinema, Music, and Game buttons select the respective master profiles. Buttons 1, 2, 3 choose (or save) custom profiles.

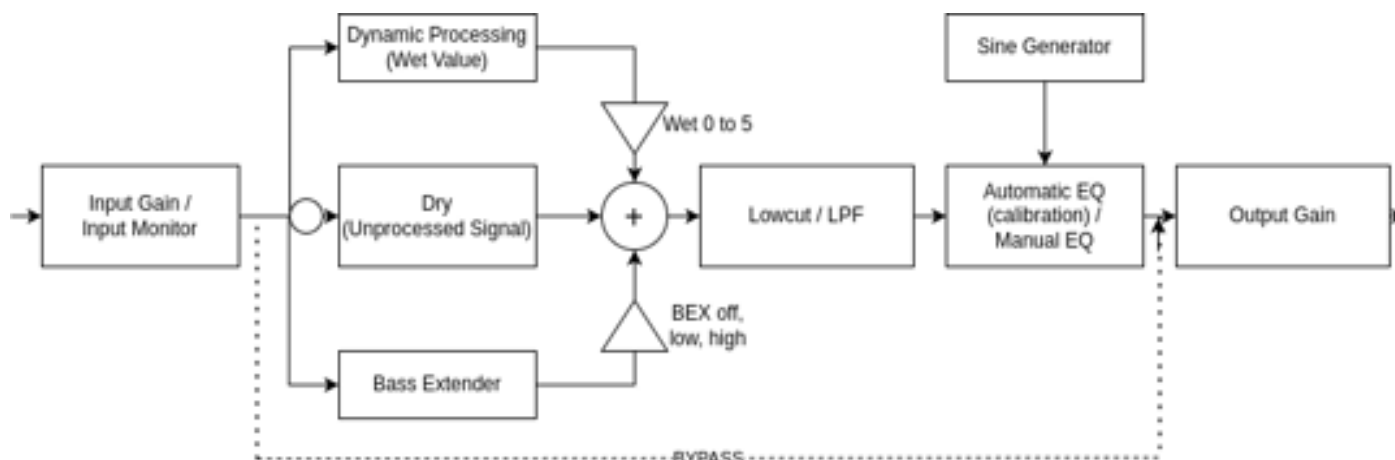
Short press of CANCEL activates/deactivates mute or wakes up from standby mode. A long press of CANCEL enters menu. In menu a short press cancels a change or returns from menu or menu item.

Short press of BYPASS disables/enables processing. A short press while in mute enters standby mode. A long press restores factory settings.

SAVE / OK stores settings and profiles, or confirms selections.



## 3.Processing Flow



The processing flow is shown above. Before making very detailed and fine-tuned adjustments, remember to perform the Calibration (see page 16).

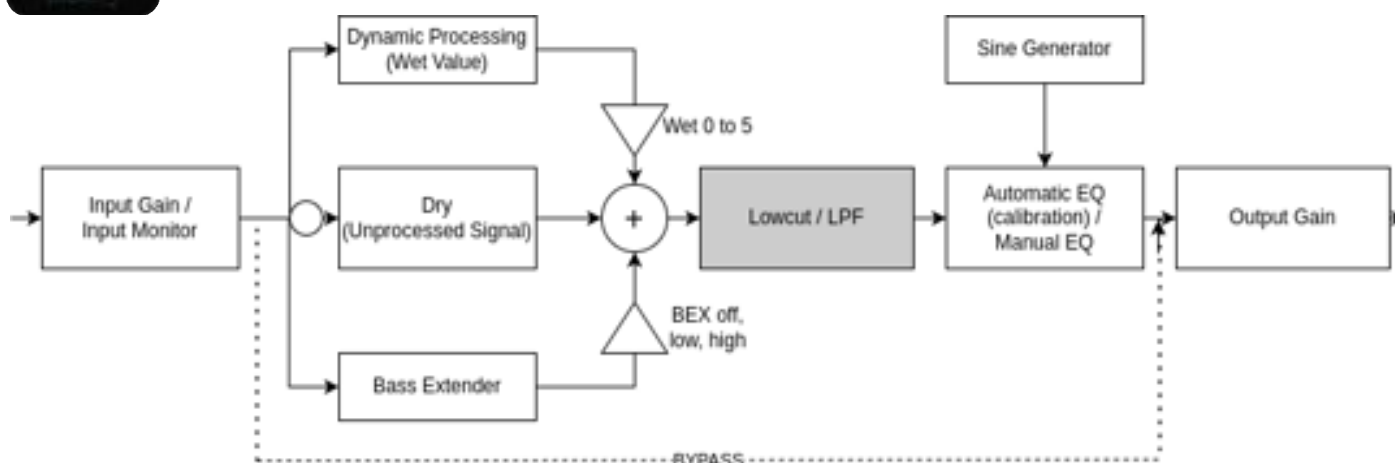
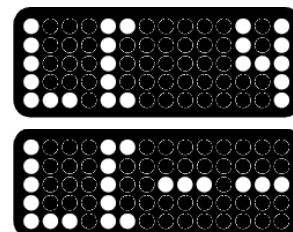
## 4.Quick Adjustments

There are three settings that are directly adjusted from remote buttons: Low Cut, Gain, and Wet/Dry. The first press of one of these buttons shows the current value, next presses adjust it.



### Low Cut Adjustment

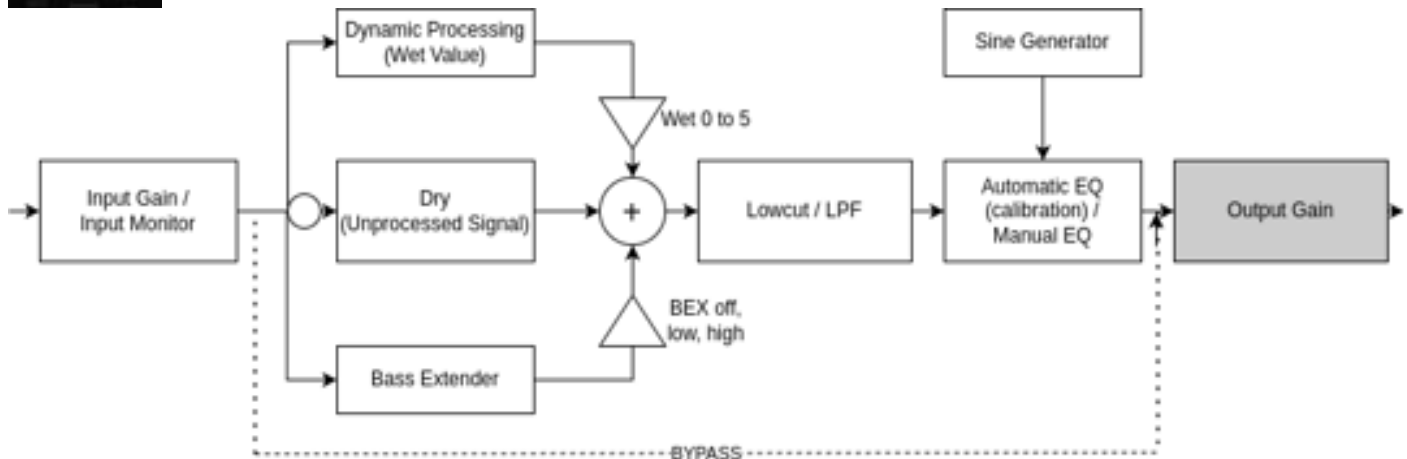
The Low Cut filter is an adjustable highpass (infrasonic) filter which cuts (removes) lower frequencies. In all profiles, you can set the low limit of the output signal with the “Low Cut” +/- buttons. The screen indicates “LC” and a frequency in Hertz (Hz) number from 4 Hz to 88 Hz or “--” for off.





## Gain Adjustment

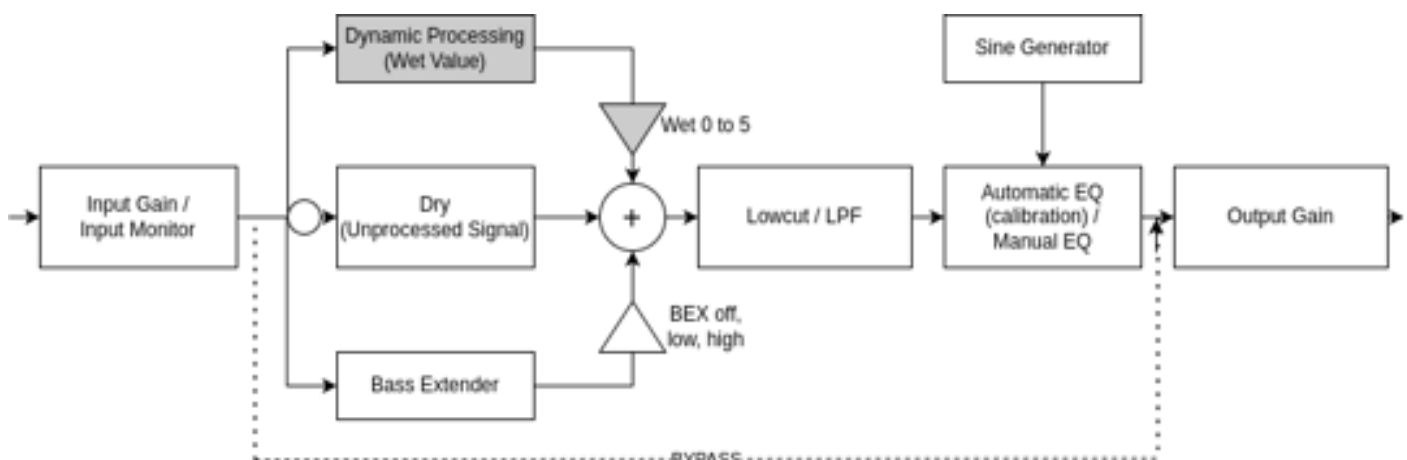
You can adjust the output gain between -9 and +3 (-27 dB to +9 dB) using the remote buttons to adjust the total shaker effect. Avoid using positive values, because that may introduce clipping at the output without any visible indication. See Input Gain / Monitor on page 15 for how to set the input gain.



## Wet/Dry Adjustment

Dynamic processing brings more subtle sounds into perceived levels. The Wet/Dry buttons adjust the effect value from 0 (none or minimum) to 5 (maximum). The values have a different effect in each of the main operation modes. In all modes the value adjusts the dynamic processing effect level.

Additionally, in Music mode the three highest values of Wet (3 to 5) incrementally introduce its own specific Bass Extender effect (see p.14), to produce output from mid-bass transients that would not otherwise produce output from the tactile transducer on their own. In other modes Bass Extender is controlled by the BASX setting.



Wet/Dry setting does not affect the equalization performed during calibration.

Long press of Wet/Dry (in Cinema and Game modes) allows to edit BASX (Bass Extender, p.14).



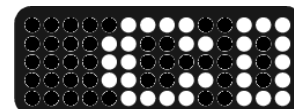
## 5. Other Functions



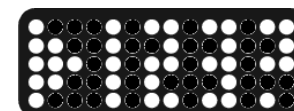
### Profiles

There are three master profiles and three custom profiles. The screen indicates which profile and operation mode is active and the Wet value. The letter in the center stands for C=Cinema, M=Music, and G=Game. Master profiles have no preceding number, custom profiles are numbered 1 to 3. The number on the right indicates the Wet (effects) value.

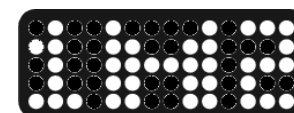
Any adjustments to the Cinema, Music, and Game master profiles (no profile number shown) are automatically saved into their respective profile memories.



The current settings can also be stored into any of the three custom profile slots 1, 2, or 3. To store a custom profile, adjust all of the settings first and then press the SAVE button. After the screen prompts >123?, press the button of the profile you want to store the setting to, or press CANCEL to skip saving. Once stored, these settings can be recalled in the home screen by pressing the associated profile button 1, 2, or 3.



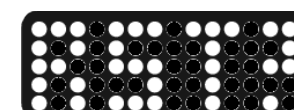
Adjustments to a custom profile (profile number is shown) are only saved explicitly with the SAVE function. For example, you can recall profile 1, make adjustments, then save to profile 2 or recall another profile without settings of profile 1 being changed.



Any of the three custom profiles can be of any type. For example you can have 3 custom profiles for Game, and still have different settings in the Game master profile.

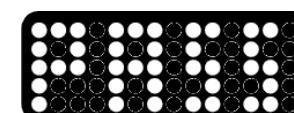
### Factory Reset

To restore all settings to factory values, press and hold the BYPASS button until the display prompts "RST?". To proceed resetting, press the SAVE/OK button. To return without resetting, press the Cancel button.



### Bypass

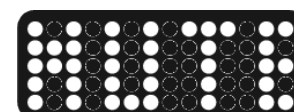
Both the frequency equalization and effects can be disabled on the home screen by pressing the BYPASS button. This is indicated by "PASS" on the screen.



You can adjust volume with Gain +/- during bypass. Press any other button to return to normal operation.

### Mute

You can mute output by pressing MUTE and any button to restore output.



If you have subwoofer output enabled, it is not affected by MUTE.

After 2 minutes in mute, or if you press BYPASS during mute, ShakeQ enters standby mode. When in standby, press CANCEL/MUTE to power on.




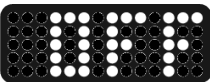


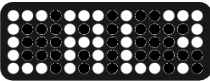
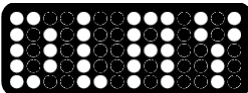
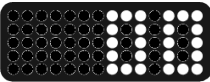
Menu

More settings are available through a menu. Keep MENU/MUTE/CANCEL pressed until the menu activates. WET/DRY UP and DOWN scrolls menu items, press OK to edit or activate.

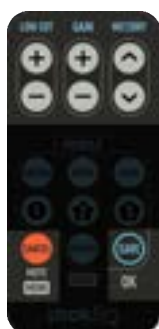
If you have changed a setting, OK saves the value and returns to menu or CANCEL discards the change and returns to menu.

CANCEL leaves the menu, then press any button to unmute.

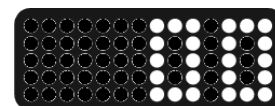
	OK → leave menu UP/DOWN → scroll through menu items		
	Sine Generator OK → start		UP / DOWN adjusts frequency. See Sine Generator on page 12. CANCEL to return.
	Adjustable Master Lowpass Filter OK → adjust	 	+ / - to adjust from 20Hz to 500Hz and OFF in 10Hz steps.
	Correction Amount OK → adjust	 	UP / DOWN adjusts equalization from 0% to 150% in 25% steps. The default is 100%.
	OK → show version		Shows day and month of the current version (e.g. 0307). CANCEL to return from menu.
	Display Dimmer OK → Adjust		UP / DOWN set brightness to OFF, 1, 2, or 3. OFF turns display off after a delay.
	FAT Format OK →	With USB stick inserted press and hold the Game button to confirm format.	Formats a USB stick to FAT32 format to allow measurement export and firmware update.  Needed for 64GB and larger disks which Windows only formats as exFAT filesystem.
	Input Gain / Monitor OK → Show level	  	GAIN + / - adjusts input gain. A horizontal bar displays the signal level going into processing. CLIP indicates signal clipping either after the gain or at the inputs. See Input Gain / Monitor on page 15.

	OK → configure sub output		OFF - (default). Combine A and B inputs, shaker signal goes to outputs 1 and 2.
			A+B - Combine A and B inputs, shaker signal to output 1, subwoofer signal to output 2.
			A B - Individual channels. Process shaker signal from the A input to output 1, sub signal from the B input to output 2.
			If sub output is enabled, and you have a calibration microphone, you can perform Anti-Mode calibration by pressing OK to the "CAL?" prompt and following instructions.
	Delay Adjustment OK → adjust the delay		Positive delay values add delay to the shaker output. If subwoofer output is enabled, negative values add delay to the subwoofer output. Press OK to save the setting and return from menu, CANCEL to discard edits.

## Delay Adjustment



The output can be delayed to synchronize the shaker with subwoofers. Select Menu->DLAY, set the delay between 00 and 99 milliseconds using "Wet/Dry" (1ms steps), "Gain" (5ms steps), or "Low Cut" (10ms steps) plus and minus buttons and store it by pressing the SAVE/OK button (returns from menu). CANCEL cancels the change and returns from menu. The delay setting is shared by all profiles.



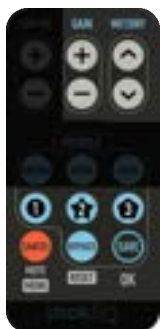
If the subwoofer's latency is lower than the shaker's, enable subwoofer output from the SUB menu and connect your subwoofer to output 2. You can then delay the signal to the subwoofer using also negative values of the delay adjustment (-99 to -1). Adjust the value until the shaker and sub are in sync, then perform AVR speaker setup to match the new subwoofer delay to the speakers.

## Correction Amount



The total system response of the shaker, furniture, and person is measured in calibration and equalizing correction filters are created accordingly. If calibration has been performed, the correction amount adjusts this equalization between 150% (slightly exaggerated) and 0% (off) in 25% steps. 100% is the default. SAVE/OK stores the setting. CANCEL cancels the change or returns from the CORR adjustment. Correction amount is shared by all profiles.



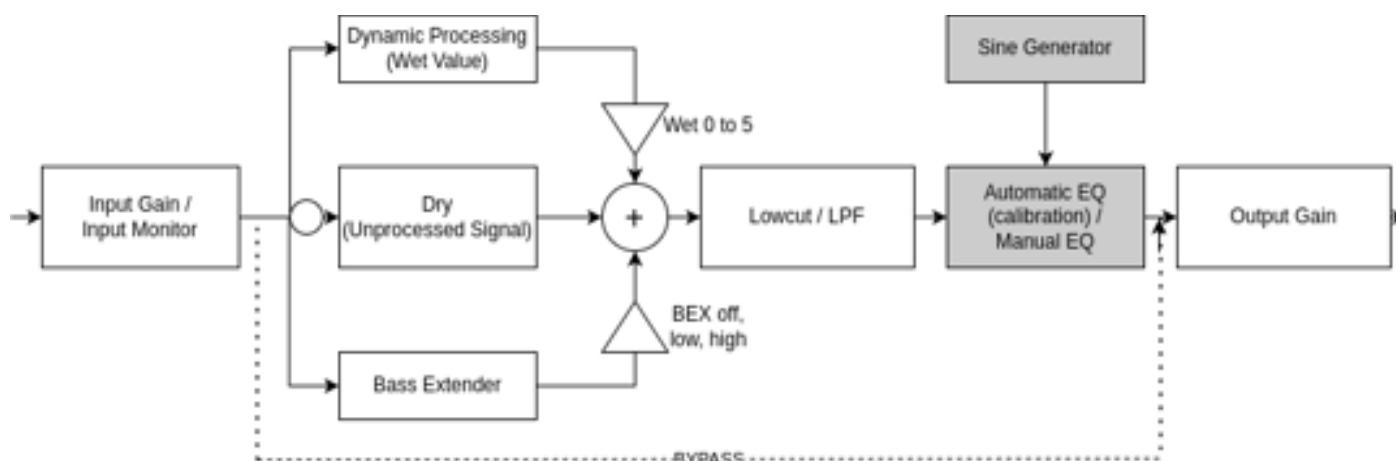


## Sine Generator

The built-in sine generator can be used to observe the frequency response and equalization settings of the shaker. The sine generator can be found in Menu→GEN. The generator outputs a sinusoidal frequency between 3Hz and 199Hz. Wet/Dry UP/DOWN buttons adjust the frequency in 1Hz steps. The display shows the frequency in Hz. Gain can be adjusted with the Gain buttons while the sine generator is active.

To quickly jump between custom set frequencies, press profile buttons 1, 2 and 3. These are by default 20, 40, and 60Hz. To change a quick jump frequency, set the desired frequency first and then press the SAVE/OK button and the displayed frequency starts flashing. Now press the quick set button (profiles 1-3) to store this frequency, or CANCEL to skip storing.

Quick jump frequencies can be a handy tool in discovering the frequency response of the shaker system and the effect of the automatic correction. The Bypass button toggles correction off and on during the sine generator mode too. Bypass is indicated with "B" in the place of the animated signal icon.



## Manual EQ

You can set up to three parametric EQ filters. The filters are configured while in Sine Generator (Menu→GEN). A long press of 1, 2, or 3 lets you edit the corresponding EQ.

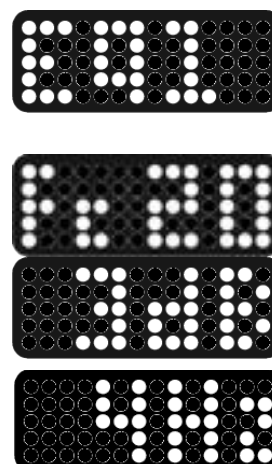
The center frequency of an EQ is initially the corresponding quick jump frequency. Wet/Dry buttons edit the center frequency (Fc).

Gain buttons adjust the EQ gain in decibels (-9 dB to +9 dB).

Low Cut buttons adjust the EQ bandwidth from 2 Hz to 99 Hz. The default is 10 Hz. A bandwidth of 10Hz means that the filter mainly affects frequencies within +/-10Hz of the center frequency. See the example on the next page.

Set gain to 0 to disable the filter. Press CANCEL to reject changes and/or return to Sine Generator, OK to save the settings.

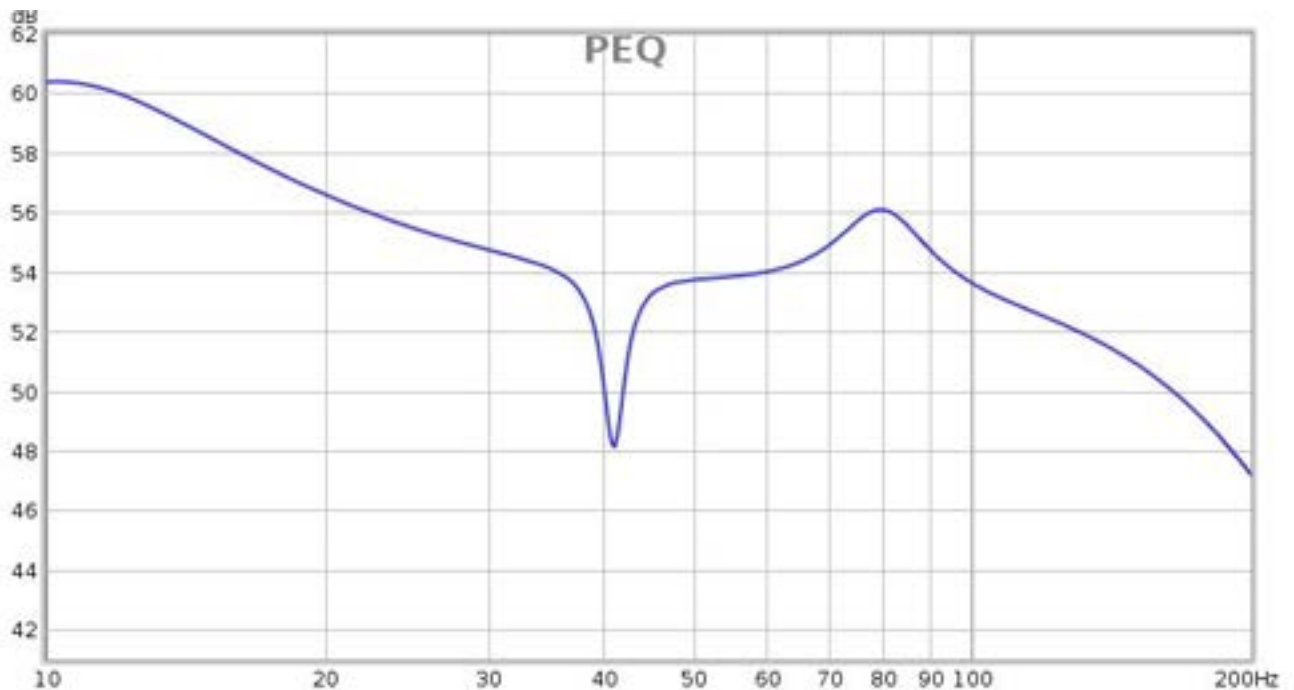
Manual EQ filters are shared by all profiles.



## EQ Example

Some people are more familiar with Q values. The Q-value of a filter is the center frequency divided by bandwidth:  $Q = F_c / BW$ . ShakeEQ uses bandwidth, because for many people it is easier and more intuitive. The following measurement shows an example of manual EQs. In the response, the LowCut (high-pass) filter has been set to off, Lowpass is at 200Hz and all 3 parametric EQs have been applied.

- EQ1:  $F_c=10\text{Hz}$ , gain +8dB, BW=9Hz
- EQ2:  $F_c=41\text{Hz}$ , gain -6dB, BW=2Hz
- EQ3:  $F_c=80\text{Hz}$ , gain +3dB, BW=20Hz



This example response shows how manual EQ can be used to boost extremely low frequencies, cut a narrow notch in the response and yet add a wide midbass-emphasizing effect all on top of the automatic correction and other filters.

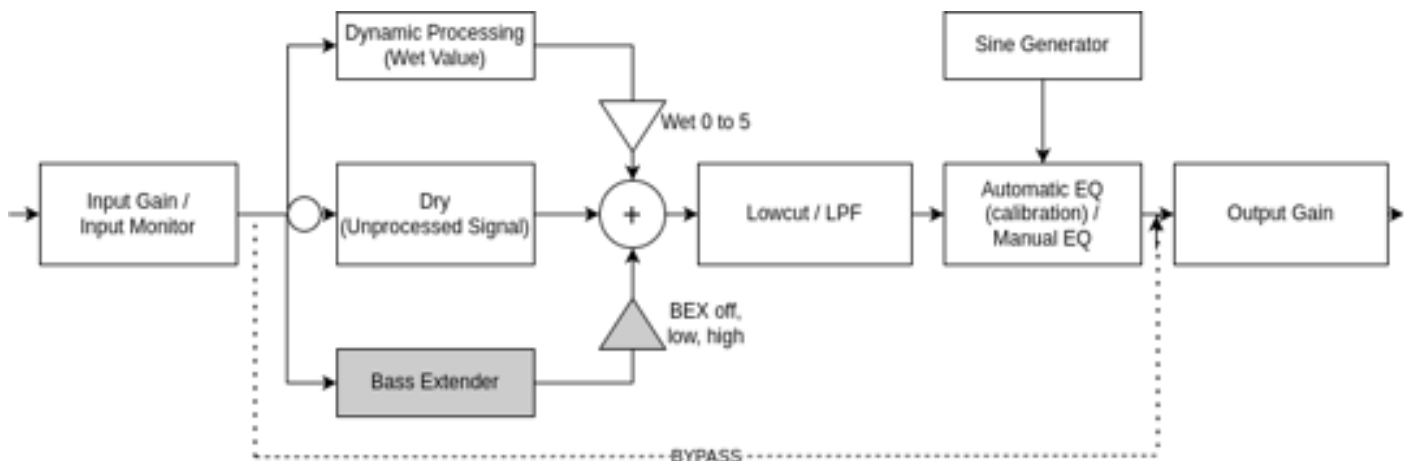
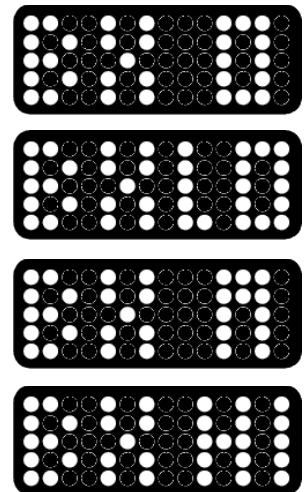




## Bass Extender

The Bass Extender widens the spectrum of the input to offer output from the shaker even when the incoming sound is effectively outside of the frequency range of the shaker. This typically adds presence and impact feedback with transients that are at midbass region just above the reproduction band of the shaker. This feature can be adjusted by a long press of WET/DRY buttons in the home screen in Cinema and Game modes. The

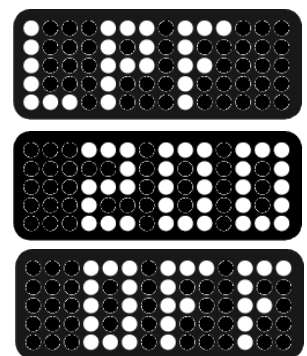
Music mode has a similar bass extender feature gradually activated with the three highest Wet/Dry settings (3 to 5).



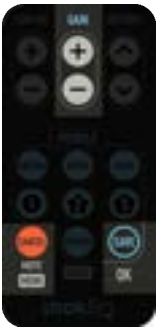
## Adjustable Master Lowpass Filter

Similarly as the Low Cut Adjustment (highpass filter) defines the lower frequency limit of the output for each profile, the upper frequency limit of the shaker system can be defined by a global user-selectable lowpass frequency, which removes frequencies higher than the limit. This effectively prevents higher-frequency unwanted sounds to be reproduced by the shaker system. To

adjust the frequency cutoff for the lowpass filter, go to Menu→LPF and select the desired upper limit of frequencies.

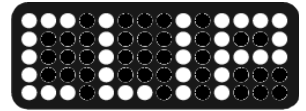
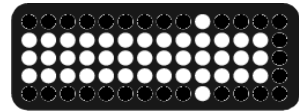


The setting is 200Hz after factory reset. Adjust the value with the "Wet/Dry" (10Hz steps), "Gain" (50Hz steps), or "Low Cut" (100Hz steps) plus and minus buttons. The value adjustment range is from 20 to 500Hz, adjusting above 500Hz disables LPF. Press SAVE to save the value and return from menu, or press CANCEL to restore the saved value (and then CANCEL again to return from menu).

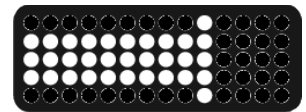


## Input Gain / Monitor

GAIN + / - adjust input gain. The bar displays the maximum level of the combined inputs including the input gain. Each vertical line is 3dB. The maximum input level without distortion has the rightmost vertical line unlit (0 dB). A CLIP text indicates signal clipping at the RCA inputs or after input gain has been applied. If clipping happens, you need to lower the volume of your audio source, remove connection to input B, or reduce input gain.

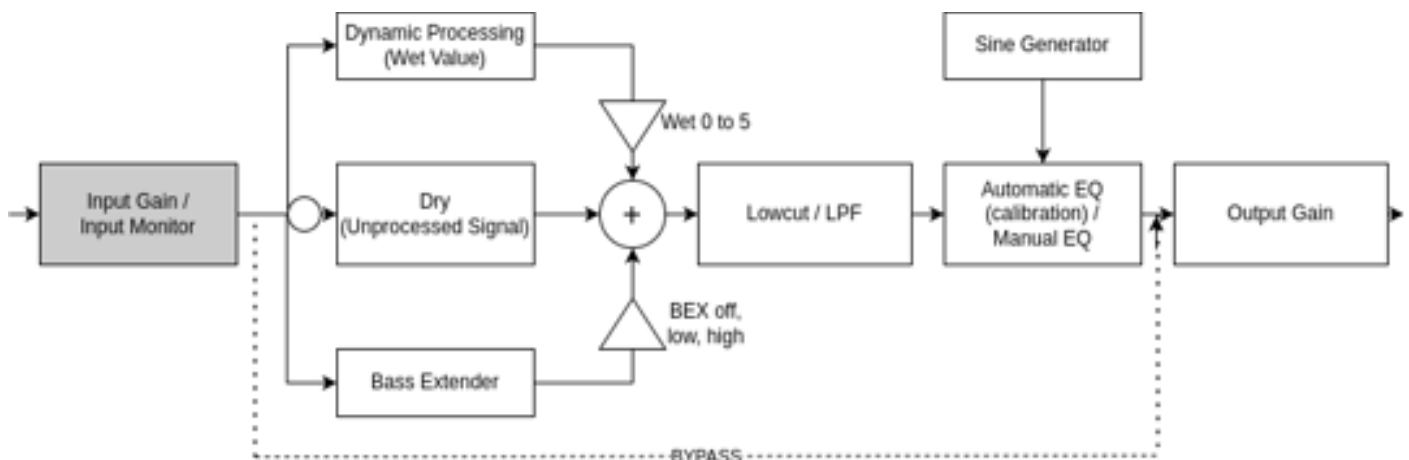


The dots on the top and bottom line show a level to reach during the level setup video. Adjust the volume of your audio source to accomplish this. If this adjustment is not possible or not enough, increase input gain with GAIN +/- until you get to approximately to this level. The available adjustment range is from +0 to +9 (0dB to +27dB).



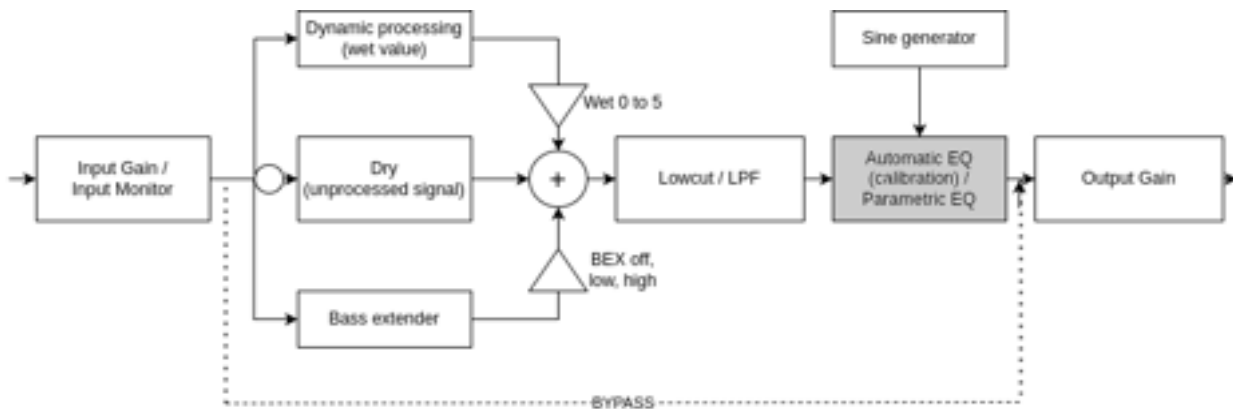
If you do not use the level setup video found from <https://www.dspeakr.com/shakeq-setup-guide>, then use a movie scene with powerful sound and set the volume and gain so that you get the indicatory near the maximum without getting clip warnings.

The CLIP text is also shown during home screen, if clipping occurs.



## 6. Calibration

Calibration determines the combined response of your shaker installation and yourself, then creates equalization filters to make the effect feel more uniform across the shaker's reproduction range.



### Before Calibrating

- Connect the ShakeEQ unit between your audio source and the amplifier that drives the tactile transducer. Refer to **Connections** on page 5. Plug the power supply into a wall socket and the power connector to the ShakeEQ unit.
- For a guided setup and tuning, see <https://www.dspeaker.com/shakeeq-setup-guide>

### Running Calibration

- Make sure the ShakeEQ unit is powered. Take out the measurement discs (one with a sensor and one dummy disc). Connect the 3.5mm sensor jack into the sensor connector on the front panel. This automatically starts the calibration process.
- First a rhythmic noise is generated. Place both measurement discs on the seating position of the furniture to be equalized. The flat side of each disc should be against the furniture. Sit on top of both measurement discs, keeping them exactly centered on each buttock, your ischial bones touching the indentation of the discs as much as possible.
- Adjust volume with the GAIN + /- buttons until the vibration feels the same as in normal listening conditions. Make sure the volume is high enough to feel properly while sitting on the boards, then press SAVE/OK to start the first measurement sweep. Please remain seated and sit relatively still during the measurement sweeps. Parts of the sweeps may not be felt, because the frequency reproduction range of tactile transducers vary a lot. While a moving wave graphics is displayed, the measurement sweep is still in progress. Each sweep takes about 40 seconds.
- The calibration can be interrupted at any time by unplugging the sensor or pressing the MUTE/CANCEL button. If the shaker bottom outs at some frequencies, press CANCEL and try calibration again with a lower gain.





- The calibration requires 3 sweeps at slightly different positions. Once the first position is measured, move yourself and the measurement discs about 10cm (4 inches) (preferably forward or backward) and press OK again. Repeat this one more time to get 3 unique positions measured.
- When the calibration is finished, the unit automatically returns to home screen. You can now remove the sensor plug and return the measurement discs to the box until needed again.

Congratulations, the equalization has been created and your system optimized!

To review the results, see **Export** on page 19. The produced equalization can be disabled by Bypass, but this will also disable the other signal enhancing effects. An integrated sine generator can be used to test the difference of each frequency between 16 and 199Hz. See **Bypass** on p.9 and **Sine Generator** on p.12.

Before proceeding to other adjustments, remember to adjust the signal level that goes in to ShakeEQ by adjusting the gain of your audio source and/or using the input gain setting, see **Input Gain / Monitor** on page 15. This doesn't affect calibration, but is recommended for optimal results later on.

## Optional Anti-Mode™ Calibration for Subwoofer

To use Anti-Mode you need an Anti-Mode calibration microphone or one that is compatible. AVR microphones that physically fit the connector may be compatible. You may verify this by tapping the microphone during the calibration level adjustment screen and seeing if the level meter reacts. You can also export the results after calibration to see if the measured response seems sensible.

When you configure Output 2 as a subwoofer output from the SUB menu item, you're presented the opportunity to perform Anti-Mode calibration.

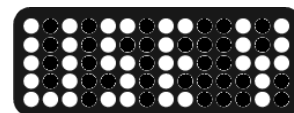
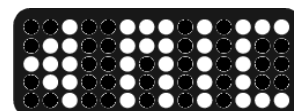
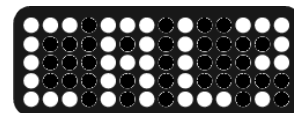
If you press OK, you are prompted to insert a microphone to the sensor input. You can press CANCEL to abort.

If you insert a microphone instead of aborting, you can now adjust the calibration level before pressing OK to start the calibration. One measurement sweep is performed and an Anti-Mode correction is created. After the sweep the ShakeEQ unit restarts and the Anti-Mode subwoofer correction takes effect. Now remove the microphone.

To disable or enable an existing Anti-Mode calibration, configure output 2 as a subwoofer output, and when CAL? Is shown, press BYPASS to choose "use y" (enabled) or "use n" (disabled) and save the setting by pressing OK.

When connecting subwoofer(s) through ShakeEQ with an Audio-Video Receiver (AVR), the suggested order:

- Set subwoofer's lowpass to its highest setting and phase to 0.
- Perform ShakeEQ calibration of the shaker, then optionally Anti-Mode calibration of the sub.
- Perform shaker/sub delay matching on ShakeEQ.
- Perform AVR speaker setup/calibration - this now sees the corrected response and actual latency. If the sub's response is corrected with Anti-Mode, the AVR performs little correction and ShakeEQ receives the least altered signal possible, also benefiting the shaker.



## 7. Version Changes

### Version 20250917 (“1709”)

- Added support for BEQ movie/series soundtrack equalization. When a USB stick is detected during power-up and a file named DSPEAKER.BEQ is found, the filters specified in it modify the input signals before they enter the normal processing. If a title is defined it is scrolled three times on the display before entering the home screen (pressing any remote button skips). Additionally, a file named DSPEAKER.SUB is read and can specify filters that are only run on the subwoofer output signal (keyword “subeq” instead of “filter”). See <http://www.dspeaker.com/downloads> .
- Measurement is now more accurate in the low frequencies (and quicker on the upper).
- You can adjust volume during Bypass mode.
- Added optional support for Anti-Mode™ room correction for the subwoofer output. You need a compatible measurement microphone to use this feature. Some AVR microphones are compatible.

### Version 20250722 (“2207”)

- Added “A|B” individual-channel subwoofer mode, where the signal for shaker processing is taken from input A (and sent to output 1) and subwoofer signal from input B (and sent to output 2). The input monitor shows only the level of the shaker input signal.
- Subwoofer signal (if enabled) is now unaffected by input gain.
- A small adjustment to clip warning level.

### Version 20250710 (“1007”)

- Gain and Low Cut buttons adjust values with larger steps in DLY and LPF menus.
- Visual improvements to the exported response and minor fixes.

### Version 20250703 (“0307”)

- Added standby mode. Press MUTE/CANCEL and then BYPASS to enter standby. Also, after 2 minutes in mute ShakeEQ enters standby mode automatically. Pressing Mute/Cancel during standby restarts normal operation.
- Latency through ShakeEQ was reduced from 25ms to approximately 12ms.
- Added an optional subwoofer output with delay control (enabled from menu).
  - You can match the delay between subwoofer and shaker by delaying either the subwoofer's or the shaker's signal.
- USB memory stick detection was improved for the FMT menu.

## 8. Firmware Update, Export

The firmware of ShakeEQ™ is updated using a USB memory stick.

- Download the firmware file ( FIRMWARE.SQ ) and copy it to the USB memory's root directory. Make sure the USB memory is using the FAT filesystem format (FAT or FAT32). Memories of size 64GB and larger are usually formatted with the exFAT filesystem, which is not supported. You can use Menu→FMT to format a USB memory to FAT32. These are still compatible with Windows.
- Put the ShakeEQ unit to standby by pressing Mute and Bypass.
- Attach the USB stick to the "SERVICE" USB port on the rear panel. Turn on the ShakeEQ by pressing Mute and wait until the system automatically installs the firmware.
- Do not remove the USB stick during the update process. After finishing installation the system reboots normally. Now the USB stick can be removed.

The firmware is not updated if the unit already contains the same version of the firmware. In this case, after checking the contents of the USB stick the unit starts normally.

If you encounter problems during the update, make sure the USB stick is properly connected and contains the firmware file. If the problem persists, try copying the firmware file again on a different USB memory stick. Make sure the USB memory is using the FAT filesystem format. You can use the FMT function from menu to format 64GB and larger USB memories to FAT32 format. Some USB memory sticks may not be compatible with the firmware update.

### Bass Equalization (BEQ)

Some movie and television series releases intentionally limit the level of low frequencies compared to the original movie theater release.

BEQ Catalogue creates filter settings to compensate, bringing low frequencies back to closer to their original level. This is done individually for each movie or television series and is a subjective process.

Each ShakeEQ wakeup tries to read a file named DSPEAKER.BEQ. Using this file you can emphasize the low end of the audio content before it goes to the shaker processing and to the subwoofer. You can find our BEQ exporter here: <https://www.dspeaker.com/beqdatabase> .

See more information from dspeaker-beqformat.pdf found at <https://www.dspeaker.com/downloads> .

### Export

If a USB memory is connected and has a valid FAT filesystem, and a valid DSPEAKER.BEQ file is not found, ShakeEQ creates files containing the calibration results as SVG graphics format. Possibly existing response files are overwritten. A progress bar is shown during the write. This takes only a few seconds. After exporting the unit starts up normally and you can remove the USB memory. You can view the exported files e.g. with a web browser.

## 9. Manufacturer

### **DSpeaker**

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FIN-33720 Tampere  
FINLAND

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Safety / Sales Support: [info@dspeaker.com](mailto:info@dspeaker.com)

## 10. Technical Specifications

### Interfaces

- Analog 2-channel RCA input
- Analog 2-channel RCA output
- Sensor input
- IR receiver for remote control
- Service USB port for firmware update and measurement export

### Analog Specifications (typical)

- Frequency Range: 3.5Hz to 3.5kHz (without lowpass)
- Analog inputs: 2.5 Vrms (max)
- Analog outputs: 3.0 Vrms (max)
- Power consumption: active 0.5W, standby less than 0.1W.

### Mechanical

- Unit Weight: 0.3 kg
- Unit Dimensions: 126mm (width) x 80mm (depth, without cables) x 28mm (height)
- Measurement sensor and remote control included