CORVA

Active Subwoofer Cabinets

Item ref: CORVA-15SA 178.925UK

CORVA-18SA 178.928UK

User Manual

Version 1.0

Caution: Please read this manual carefully before operating
Damage caused by misuse is not covered by the warranty

Introduction

Thank you for choosing a CORVA active subwoofer as part of your sound system.
This product is designed to provide high energy sub frequency content to complement a full range PA system.
Please read this manual to achieve optimum performance from your sub cabinet and avoid damage through misuse.

Package Contents

- CORVA-series active subwoofer
- Mains lead(s)

If you find any part is missing or the product has arrived with any problems, please contact your retailer at once.
This product contains no user-serviceable parts, so make no attempt to try to fix or modify this item yourself as this will invalidate the warranty. We recommend you keep the original package and proof of purchase for any possible replacement or return issues.

Warning

To prevent the risk of fire or electric shock, do not expose any of the components to rain or moisture.
Avoid impact to any of the components.
No user serviceable parts inside - refer servicing to qualified service personnel.

Safety

- Please observe the following warning conventions

CAUTION: RISK OF ELECTRIC SHOCK
DO NOT OPEN

This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

- Ensure that the correct mains lead is used with adequate current rating and mains voltage is as stated on the unit
- Avoid ingress of water or particles into any part of the housing. If liquids are spilled on the cabinet, stop using immediately, allow the unit to dry out and have checked by qualified personnel before further use

⚠ **Warning: this unit must be earthed**

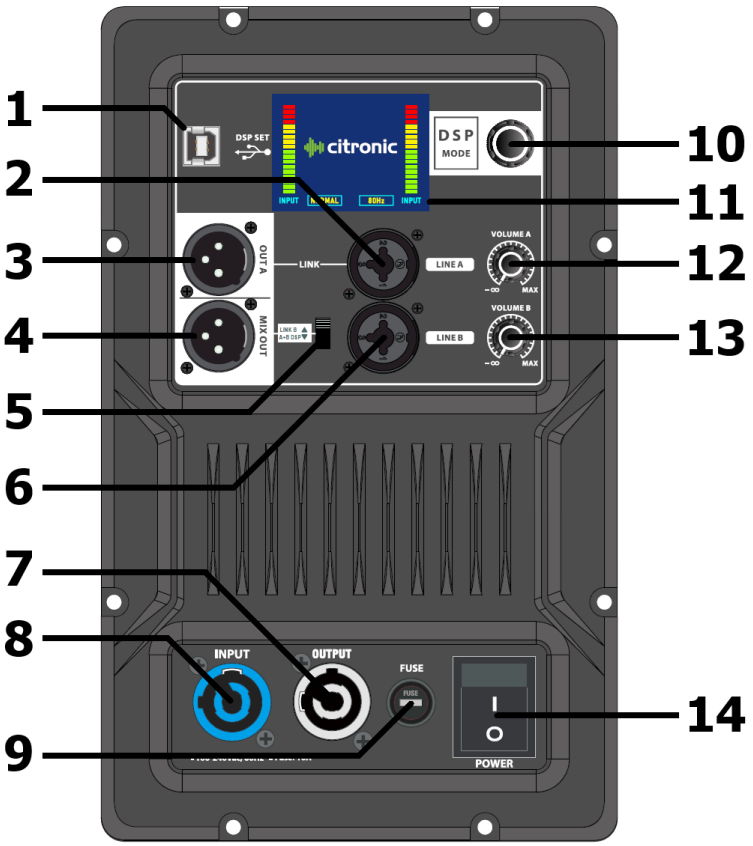
Placement

- Keep the electronic parts out of direct sunlight and away from heat sources.
- Position the cabinet on a stable surface that is adequate to support the weight of the product.
- Allow adequate space for cooling and access to controls and connections at the rear of the cabinet.
- Keep the cabinet away from damp or dusty environments.
- When moving these cabinets, be aware of the weight. A 2-person lift is advised.

Cleaning

- Use a soft dry or slightly damp cloth to clean surfaces of the cabinet
- A soft brush can be used to clear debris from controls and connections without damaging them
- To avoid damage, do not use solvents to clean any parts of the cabinet.

Input panel layout



1. USB type B port
2. XLR/6.3mm line input A
3. XLR Line output A
4. XLR Line output B / A+B mix DSP filtered
5. LINE B / MIX OUT switch
6. XLR/6.3mm line input B
7. Mains power through connection
8. Mains power inlet
9. Mains power fuse holder
10. DSP rotary encoder
11. DSP display
12. LINE A volume control
13. LINE B volume control
14. Power switch

Setting up

Position your CORVA active subwoofer on a stable surface capable of supporting the load and vibrations from the cabinet. For maximum sound delivery, position with the back close to a solid wall or in a corner of the room.

Aim the cabinet towards the audience or listeners and not in direct line of sight with any microphones that are connected to the sound system. This is to avoid feedback (howling or booming caused by the microphone "hearing" itself amplified). Also, keep microphone stands away from the subwoofer to avoid vibrations being transferred to the microphones.

If a single CORVA active subwoofer is to be used with a stereo pair of active full-range speakers, connect both Left and Right outputs from the mixer into the Left + Right inputs of the CORVA active subwoofer (2, 6) and switch the LINE B / MIX OUT switch (5) to LINE B. Connect the Left + Right OUTPUT XLRs (3, 4) to the relative full-range active speaker(s). The outputs A and B in this case will be full range without any DSP filtering (since the DSP can only process 1 channel)

If a CORVA active subwoofer is connected to a single active full-range top cabinet, there is the option to use either LINE A or LINE B input (2, 6) and connect from the MIX A+B output (4) with the LINE B / MIX OUT switch (5) set to A+B DSP. In this scenario, the line output to the full-range speaker can be processed in the DSP settings to remove the sub content at various frequency points for greater definition and efficiency.

When all signal connections are made, connect the power lead provided (or equivalent) from the mains power supply to the IEC inlet on the CORVA subwoofer. Ensure that the mains voltage is as indicated on the rear panel.

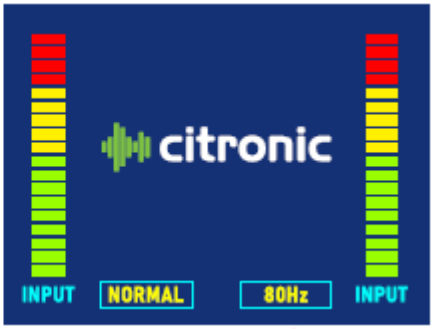
Operation

With VOLUME A and VOLUME B controls turned fully down, switch on power to the CORVA subwoofer.
Ensure that a signal is playing to the input(s) and gradually increase the relative line input volume part way for checking.

All tonal and dynamic characteristics of the sub output are controlled by the internal DSP (Digital Signal Processor)
The DSP has a menu-driven colour display that is controlled via a rotary encoder as described below.

DSP Menu

When first powered up, the CORVA rear display will show a "Citronic" welcome screen, which changes to the play mode display with virtual input VU meters, sub boost mode and low pass frequency setting. During playback, if the signal stays in the red zone for more than a brief moment at a time, the gain will nbeed to be rduced to avoid clipping distortion, which can be damaging to the subwoofer.



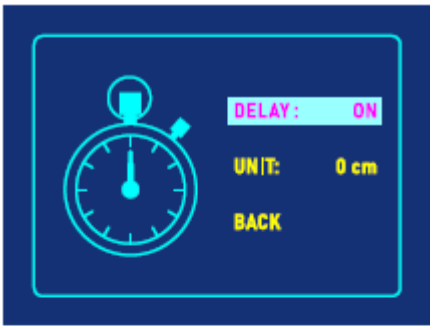
Pressing the rotary encoder enters the main menu.

The first sub-menu is for SETUP. Press the encoder and the SETUP menu will open with options for LED, DELAY, RESET, UPDATE and EXIT.

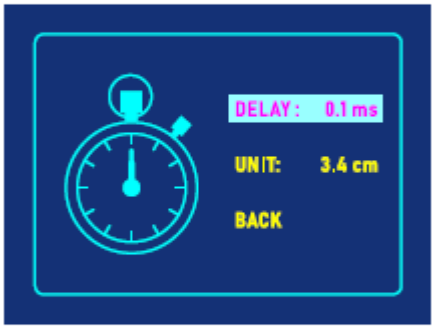
The first option is for LED which is not used (LED is to control a logo badge LED, which the CORVA speakers do not have). Within the LED menu are various options, but these are for development use only, not operational on the CORVA series.

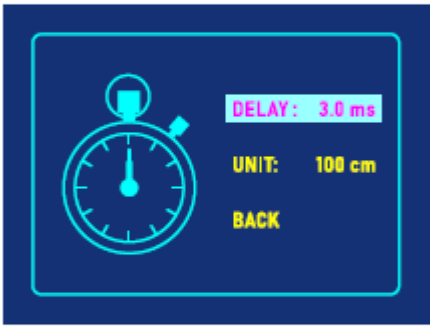
The next option in the menu is for DELAY, which can be used to time-align subwoofers at varying distances from the listener. Press the encoder to open the DELAY menu.

In the menu, rotate the encoder to highlight DELAY and press to set it ON or OFF and to set the delay time in milliseconds (ms)



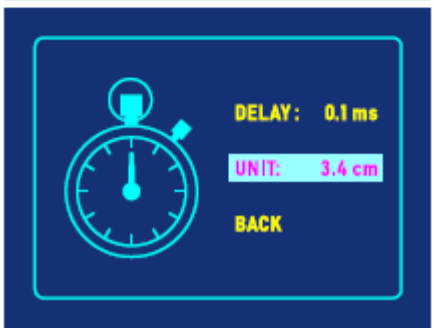
This setting can also be used to help avoid phase cancellation caused by converging subwoofer outputs in some circumstances. In this scenario, it should be used in conjunction with the PHASE setting described further on in this manual.
Sound travels at 343m/s in normal atmospheric conditions, and very low frequencies have wavelengths of several metres, meaning that the sub-frequency outputs from 2 sources separated by some distance can either reinforce each other if they are in phase at that point, or cancel each other out if they are in opposite phase to one another.

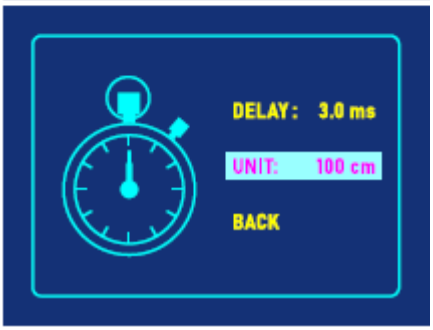




Alternatively, rotating the encoder to highlight UNIT and then press to set the delay based on distance in centimetres (cm). This can be used to time-align the sub to a chosen central point in the listening area.

When delay settings are done, rotate the encoder to highlight BACK and press to return to the main menu.

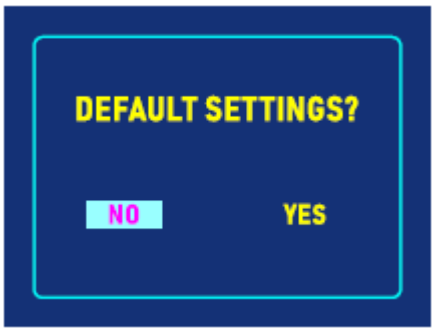




The next option in the SETUP menu is for RESET, which as it states, offers the option to re-set the DSP to its default settings.

Turn the rotary encoder to highlight RESET and press to enter the DEFAULT SETTINGS page.

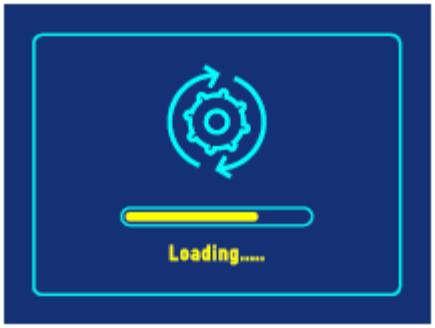
Rotate the encoder to highlight YES and press to confirm returning to default settings, otherwise, press on NO to return to the menu.



The next option in the SETUP menu is for UPDATE to update the firmware for the DSP.

This process requires connection to a laptop and exporting an update file in the CORVA_DSP software (described below)

Turn the rotary encoder to highlight UPDATE and press to begin the update process, which is followed by a status bar.

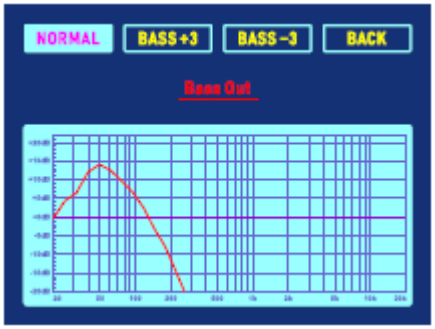


The last option selectable within the SETUP menu is EXIT, which when selected and pressed, will return to the main menu.

In the main menu after SETUP, the next option is for MODE.

This feature has the option for a gain boost or cut in the bass signal.
(i.e. sub-frequency)

Depending on the input signal and how powerful the matching full-range cabinets are, it may be necessary to boost or cut the bass signal into the sub-woofer amplifier section for
balance or bass emphasis.



Turn the encoder to highlight MODE and press to enter the mode menu.
There are 3 tabs at the top of the display, showing NORMAL, BASS+3 and BASS-3.
Below these tabs is a graphic representation of the bass response curve.

NORMAL is without boost or cut to the signal.
BASS+3 adds a 3dB gain boost to the signal.
BASS-3 applies a 3dB cut to the signal.

Turn the encoder to highlight the relevant tab and press to confirm.

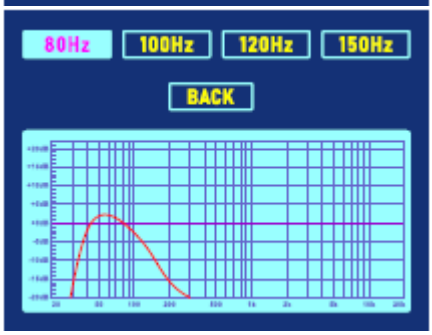
Once the correct option is set, select BACK and press to return to the main menu.

The third option in the main menu is for LOW PASS.This sets the cutoff frequency for the low pass filter that feeds the sub-woofer amplifier.

The band of frequencies below this cutoff point is what will be reproduced.

Turn the encoder to highlight LOW PASS and press to enter the sub-menu.

At the top of the display are 4 tabs with cutoff frequency options for 80Hz, 100Hz, 120Hz and 150Hz. Below the option tabs is a graphic representation of the response curve at the chosen cutoff frequency.



Lower frequencies will focus the signal on only the lowest band of sub audio, whilst higher cutoff frequencies will introduce more low-mid content.

Turn the encoder to highlight the preferred cutoff frequency and press to confirm.

It is worth noting that lower cutoff frequencies cut off more of the signal, and therefore, it may be adviseable to apply a boost in the MODE menu if this causes the output to be too quiet.

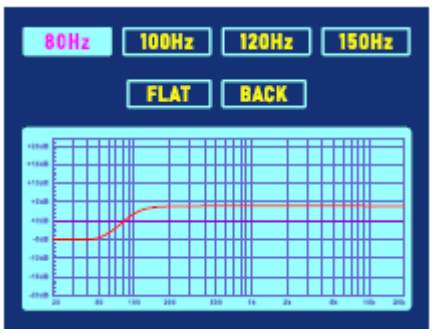
When the required cutoff frequency is set, turn the encoder to highlight BACK and press to return to the main menu.

In addition to the low pass filter, there is a corresponding high pass filter that can be applied to the line output.

This is only active if the LINE B / MIX OUT switch (5) is set to A+B DSP and only affects the output of MIX OUT (4).

Using a high pass filtered output avoids sub frequencies being fed to the full range mid-top cabinet, which cannot efficiently reproduce these frequencies, causing a lot of sub energy to be wasted as heat, so it is better to remove these frequencies and let the subwoofer provide this part of the sound output.

If set at the same cutoff as the low pass filter for the sub, this would also prevent the subwoofer and mid-top cabinet from trying to deliver the same part of the sound and therefore provide a cleaner, more balanced tone profile.

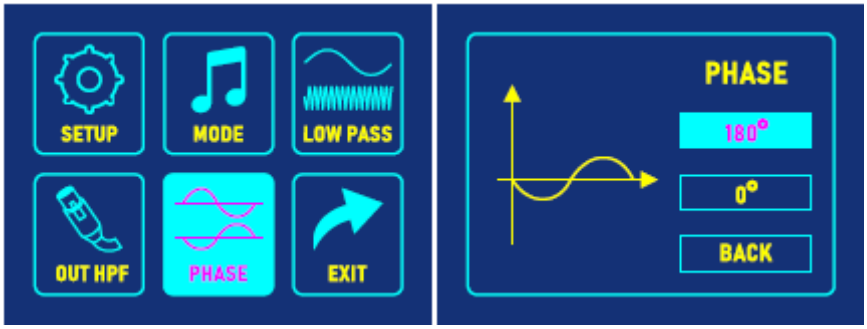


To set a high pass output, turn the encoder to highlight OUT HPF and press to enter the HPF menu. Again, there are the same four cutoff frequency tabs at the top of the display with FLAT as an added option for no filtering.

This time, the graph below these represents the response curve of the output, showing the output frequencies higher than the cutoff frequency.

Turn the encoder to highlight the appropriate cutoff frequency (or FLAT if no filter is to be applied), press to confirm and apply the setting.

When the required HPF cutoff preference is set, turn the encoder to highlight BACK and press to return to the main menu.



The last sub-menu from the main menu is for PHASE, which is used to help correct phase problems where opposing speaker outputs can either fully or partially cancel each other out. This can also help to reduce feedback from microphones in some situations.

Highlight the PHASE symbol and press the encoder to enter the sub-menu. Select either 180° (reverse phase) or 0° (normal) and press to confirm. In some cases, it is possible to calculate which phase will be most effective, but often it is best to try both settings and choose which is most effective for a strong sub output. This can be further fine-tuned using the DELAY function.

After choosing the required reverse or normal phase, highlight BACK and press to return to the main menu.

When all main menu options are set as needed, highlight EXIT and press to return to the play mode display.

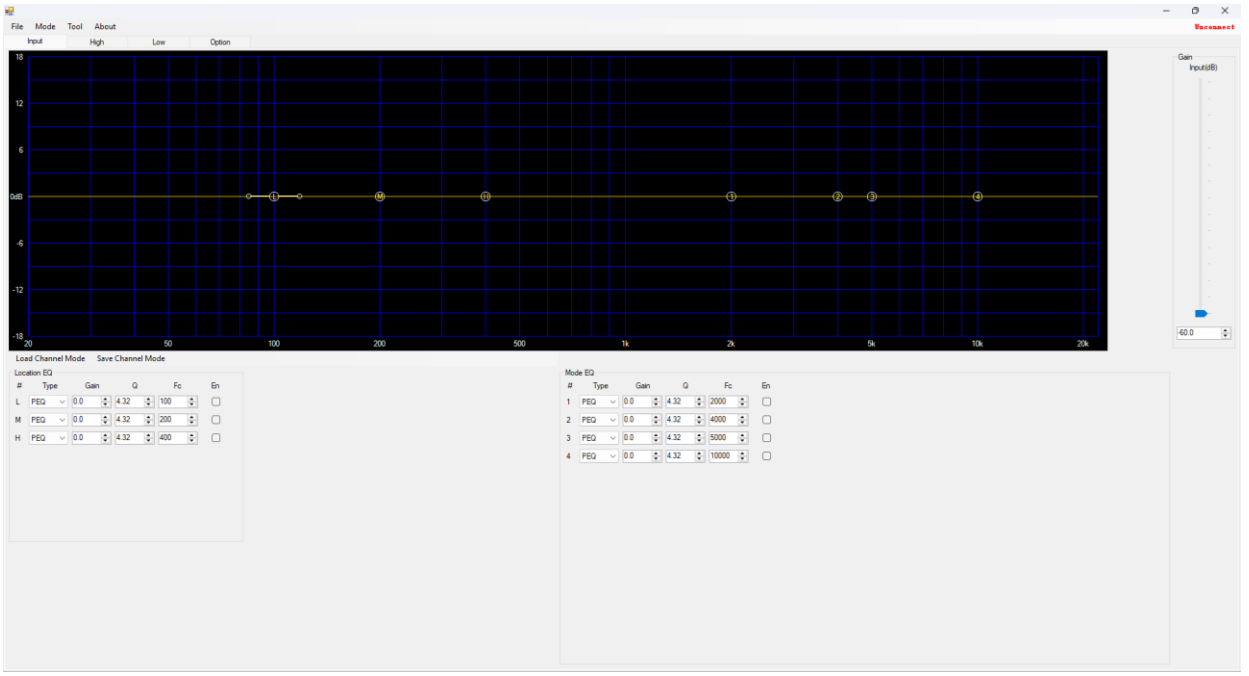
Programming via USB

For more targeted and in-depth programming, the CORVA active cabinets may be edited on a PC via a USB connection, as described below. This offers in-depth access to the tone and dynamics profiles of the internal DSP modes, which can then be saved or recalled as files for customized response.

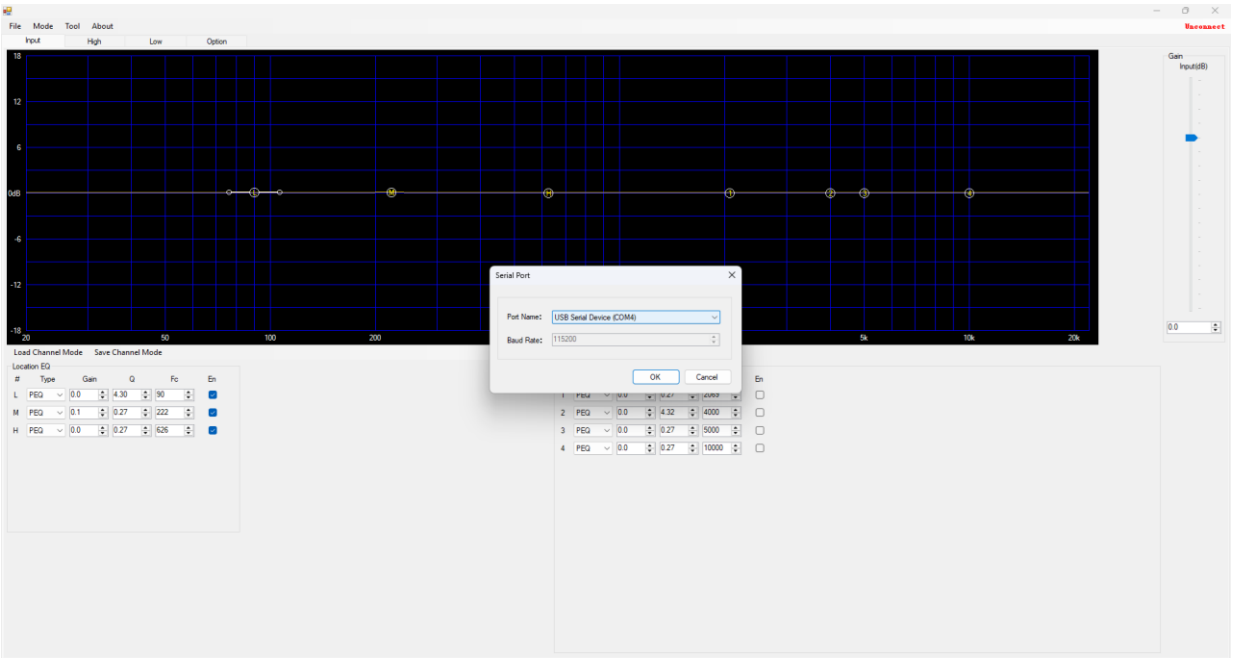
Before connecting the CORVA active speaker to a laptop, please download the "CORVA_DSP" application from the AVSL website…. Please ensure the laptop is running Windows 10 or above.

Connect the USB port of the speaker to the laptop via a USB A to B lead and switch the power on to the CORVA speaker cabinet.

Once connected, run the CORVA_DSP software application on the laptop and the program will open in a window with a graphic representation of the audio spectrum along with editable settings.



Double click on the red Unconnect label at the top right side of the window and a pop up will appear showing the detected serial port and baud rate. Click "OK" and the label on the top right side will show Connected.
(if this fails, check alternative serial port options in the drop down menu and/or re-start the PC or software)

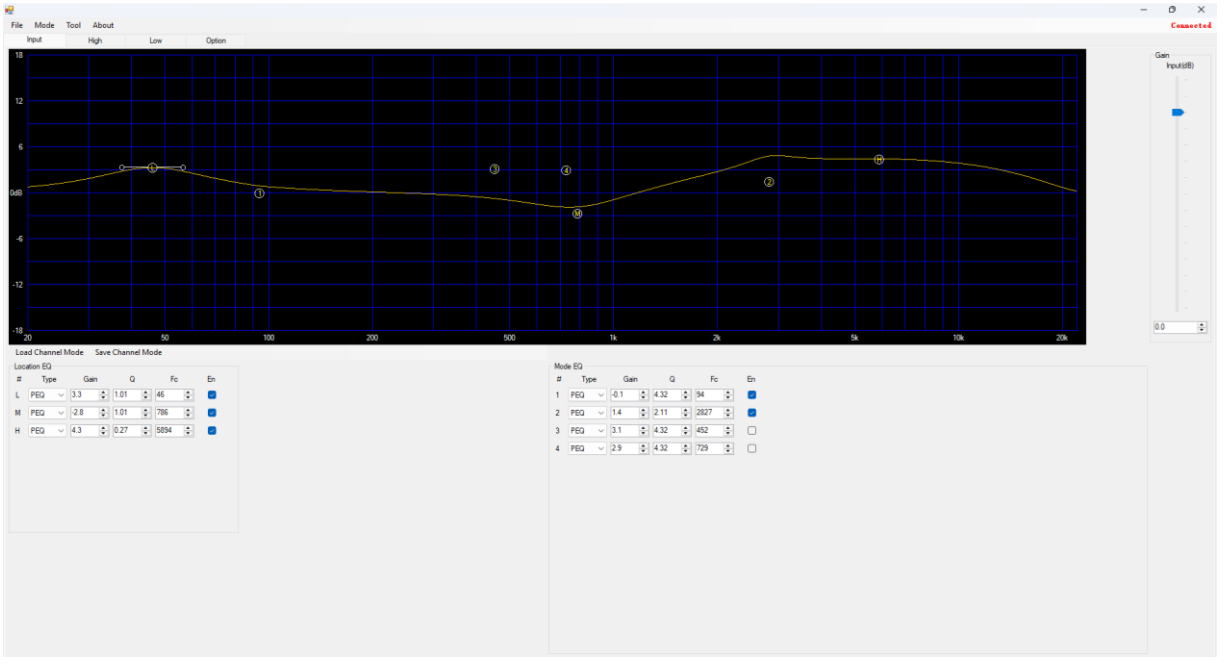


The top left side has options for File, Mode, Tool, and About.

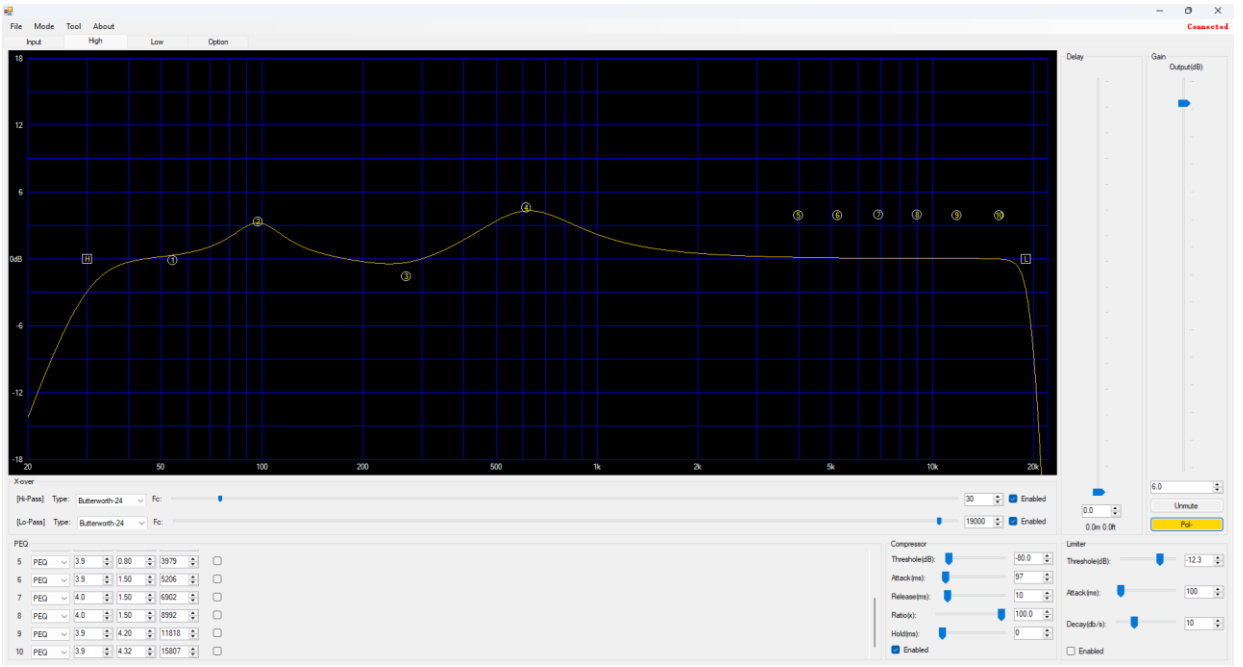
File: This has options to Import or Export the edited settings as a file on the PC.
Mode: Allows the user to Save to or Load from the individual DSP Modes stored in the CORVA speaker. There is also a facility to Download all settings from the PC software into the speaker.
Tool: This is for future development and is not yet functional
About: This has some proprietary information about the CORVA speaker.

Beneath these 4 options are 4 tabs that open pages for Input, High, Low, and Option.
The Input page shows the frequency curve with editable points for Location EQ and Mode EQ.
Each EQ in the CORVA speaker is Parametric (PEQ) with settings for Gain, Width (Q) and Frequency (Fc).
To use any of the Location or Mode EQ elements, it is necessary to check the "En" enable box.

Each point may be dragged directly on the graph or edited numerically in the relevant value fields.
An overall Gain slider is provided to balance any overall boost or cut in the EQ settings.



The following two tabs relate to the **High** (tweeter – not used) and **Low** (woofer) drivers in the Corva speaker.
For each driver, there is a page that shows the frequency curve with directly editable filter points.



Each driver has **Hi-Pass** and **Lo-Pass** shelving crossover filter sliders directly beneath the frequency graphic.
Check the **Enabled** box to activate either crossover, and choose a type from the drop-down list on the left.
As with other filters, these can be edited numerically or by dragging the **H** and **L** points on the graph.
In the case of a subwoofer, we are mostly concerned with a Lo-Pass shelved crossover somewhere lower than 500Hz. If Hi-Pass is shown, it is advised to keep this in the 10-30Hz region.

There are also up to 10 parametric EQs (**PEQ**) per driver (this is separate from the Location and Mode EQs)
In addition to this, each driver has a **Compressor** section for dynamics and a **Limiter** for max level control.

An Output **Gain** slider on the right side enables overall output control for the relative driver.

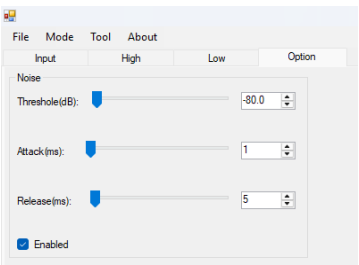
A **Mute/Unmute** switch allows the user to mute the subwoofer to hear the other cabinets in the system for comparison.

A **Delay** setting of up to 16 milliseconds can be applied to either driver for time alignment between speakers. The distance from the focal point of the listener is shown in addition to the time in milliseconds (ms)

A Polarity (**Pol+ / Pol-**) switch is selectable for phase alignment (note the tweeter may be Pol- by default)

Note: it is advised to use the Mute function before editing the Delay to avoid loud pops through the speaker.

After the **High** and **Low** tabs for the driver settings, the last tab is for **Option**.
This has settings for a Noise Gate, which mutes the input to the amplifier when there is no signal to reduce background noise during periods of silence.
There are 3 virtual sliders for Threshold, Attack and Release.



To activate the noise gate, you must check the Enabled box.

Threshold is the input level in deciBels (dB) that the gate will be triggered.
Attack is how many milliseconds (ms) for the noise gate to close when triggered.
Release is how many milliseconds for the gate to re-open when the threshold is exceeded by the input signal.

When the CORVA speaker is not being used for long periods, disconnect from the mains supply

Specifications

Model	CORVA-15SA	CORVA-18SA
Construction	18mm ply - polyurea coated, steel grille - powder coated	
Amplifier: construction	Class-D with DSP control	
Impedance	8 Ohms	
Power supply	90-254Vac, 50/60Hz (Powercon)	230Vac, 50Hz (Powercon)
Sub driver	380mmØ (15")	450mmØ (18")
Voice coil	100mmØ (4")	115mmØ (4.5")
Magnet	4.25kg (150oz)	5.24kg (185oz)
Frequency response	45-150Hz	40-150Hz
Sensitivity @ 1W/1m	99dB	100dB
Max. SPL	132dB	135dB
Output power: rms	1200W	2000W
Output power: max.	2400W	4000W
Dimensions	680 x 625 x 490mm	745 x 700 x 565mm
Weight	39kg	58kg

Disposal: The "Crossed Wheelie Bin" symbol on the product means that the product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

The full text of the EU declaration of conformity for 178.925UK is available at the following internet address:
http://www.avsl.com/assets/exportdoc/1/7/178925UK%20CE.pdf

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