Congratulations on your purchase of Carnaby HE2 and thank you for selecting Cranborne Audio to be a part of your music creation process.

Carnaby HE2 is an evolution of our Carnaby 500 HarmonicEQ® developed into a 19”, rackmount format. While we had always planned for Carnaby HE2 to be more than just ‘two Carnaby 500’s in a box’, we have loved reading about what our customers hoped for in such a box and hope you are as excited as we are about introducing Carnaby HE2 to your workflow.

While the fundamental (no pun intended) sound of Carnaby remains wholly intact, we have set about expanding the tonal options and control that you now have available. Carnaby 500 is an incredible colourbox and audio ‘finisher’, with Carnaby HE2, you now have the ability to delve deeper into the world of saturation like never before. While our HarmonicEQ® circuit appears similar to a conventional parametric EQ, it is a very different beast, and so we encourage you to explore its musicality with your ears, and not with any preconceptions of conventional EQs.

Cranborne Audio, for us, means so much more than metal boxes with components in them. These are our labours of love that embody and demonstrate our demand for excellence. By distilling what matters and putting our soul into these tools, we hope to help other people make magic and express themselves, and in some way, become part of our Cranborne Audio family.

So welcome to the Cranborne Audio family. We care for our family, and we care about making your audio recordings sound as incredible as possible.

Carnaby HE2 User Guide 1.0

So now your Carnaby HE2 is out of its packaging, you're probably itching to get it powered on and making music! But before you get started, please read the sections below that will help guide you through the process of setting up Carnaby HE2.

Carnaby HarmonicEQ®

At its heart, HarmonicEQ is a 3-band parametric EQ with a unique and revolutionary EQ concept conceived and created by us here at Cranborne Audio. It uses harmonic saturation to boost and cut frequency content, enhancing your sources, stems and mixes with genuine analogue harmonic saturation with the feel, familiarity, and control of an equaliser.

Input Dynamics
Each EQ band features a level control that adjusts the saturation level for that band, while the channels global Input and Output controls manage the signal's overall journey through that channel. For instance, you have the option to reduce the mid frequencies (to a maximum of approximately +/- 10dB for each band), and amplify the module as a whole to enhance saturation in the high and low frequencies, keeping the mid frequencies relatively untouched. Conversely, amplifying the mids causes them to reach the saturation threshold sooner than the low and high frequencies, especially if those are kept at +/- 0dB.

As our HarmonicEQ® circuit is highly dynamic, you can change how Carnaby HE2 affects your source audio by adjusting the gain of the signal hitting the Carnaby HE2's input.

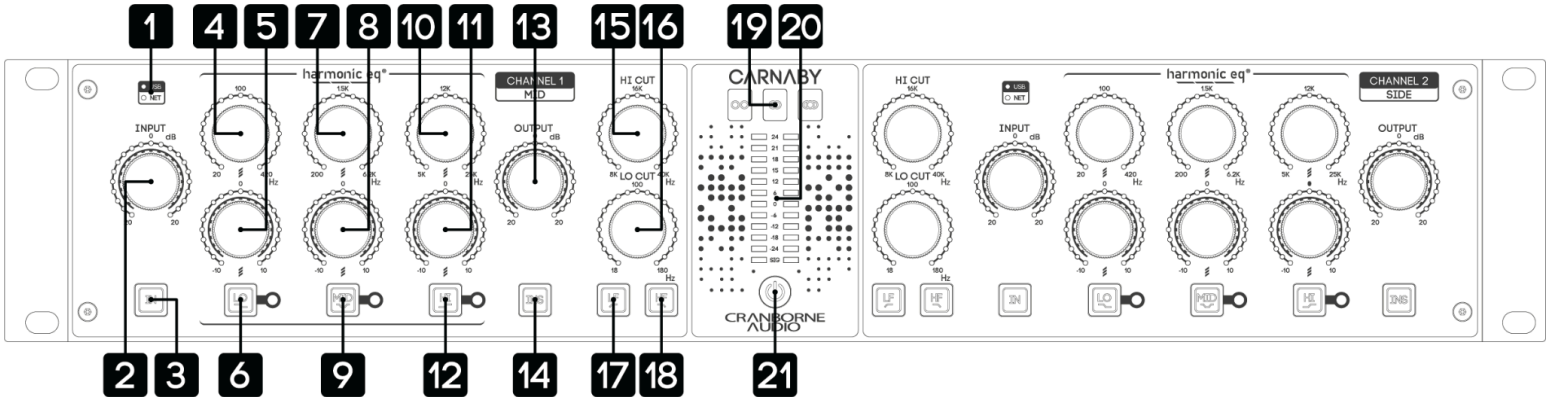
Per-band saturation types
Lo band - Hard clipping from 420Hz down to 20Hz to extend sub harmonic frequencies for a thick, warm bottom end using a shelf.

Mid band - Peaking filter with a fixed Q that affects 200Hz up to 6.2kHz.

Hi band - Saturates for smoother high end from 5kHz to 25kHz, also harnessing a shelf to affect everything above the frequency that's been set.

Because each of Carnaby HE2's EQ bands overlap with one another, when combined with the per-band IN switches, you have at your fingertips a huge array of settings with which to achieve incredible results.

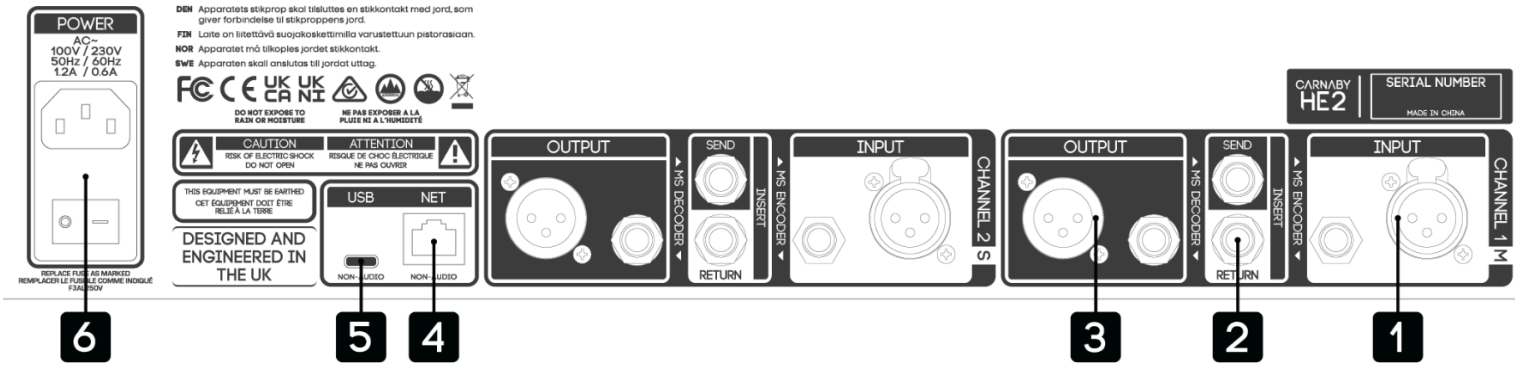
Front Controls and Connectors



[1] USB/Net Indicators: Showing when a connection is established over the USB and/or Network ports.	**[5] Lo Level Control:** **[**±10dB, 0.5dB steps**]** Adjusts up to 10dB of boost/cut for the low shelf filter at the frequency set using the Lo Frequency Control **[**4**]**. This control progressively increases the amount of harmonic saturation added to the signal above the selected frequency in boost and cut positions.
[2] Input Level Control: **[**±20dB, 1dB steps**]** Adjusts the input level and internal saturation circuits. Set around 0dB for nominal settings or push higher for more harmonic saturation.	**[6] Lo Band IN Button:** Engages & disengages the Lo Band for processing. The LED to the right indicates how hard the saturation stages are being driven.
[3] IN Button: Acts as a bypass control for Carnaby HE2.	**[7] Mid Frequency Control: [**200Hz - 6.2kHz**]** Adjusts the mid-point frequency of the mid peaking filter and sets the start frequency where the harmonic saturation is filtered into the dry signal.
[4] Lo Frequency Control: **[**20Hz - 420Hz**]** Adjusts the corner frequency of the low frequency shelf filter and sets the start frequency where the harmonic saturation is filtered into the dry signal.	**[8] Mid Level Control:** **[**±10dB, 0.5dB steps**]** Adjusts up to 10dB of boost/cut for the mid peaking filter at the frequency set using the Mid Frequency Control **[**9**]**. This control progressively increases the amount of harmonic saturation added to the signal within the selected frequency in boost and cut positions.

[9] Mid Band IN Button: Engages & disengages the Mid Band for processing. The LED to the right indicates how hard the saturation stages are being driven.	**[16] Lo Cut Filter:** Progressive slope high-pass filter. 1st order 6dB per octave, 2nd order 12dB per octave, 3rd order 18dB per octave. **[**-3dB, 18Hz-180Hz**]**
[10] Hi Frequency Control: **[**5kHz - 25kHz**]** Adjusts the corner frequency of the high frequency shelf filter and sets the start frequency where the harmonic saturation is filtered into the dry signal.	**[17] LF IN Button:** Engages and disengages Lo Cut Filter **[**16**]**.
[11] Hi Level Control: **[**±10dB, 0.5dB steps**]** Adjusts up to 10dB of boost/cut for the high shelf filter at the frequency set using the HI FREQUENCY CONTROL **[**7**]**. This control progressively increases the amount of harmonic saturation added to the signal above the selected frequency in boost and cut positions.	**[18] HF IN Button:** Engages and disengages Hi Cut Filter **[**15**]**.
[12] Hi Band IN Button: Engages & disengages the Hi Band for processing. The LED to the right indicates how hard the saturation stages are being driven.	**[19] Mode Buttons:** Selects between Carnaby HE2's (L-R) Dual Mono, Stereo & Mid/Side.
[13] Output Level Control: **[**±20dB, 1dB steps**]** Adjusts the output level of the module post processing. Set in accordance with the Input Level Control **[**2**]** to maintain unity through the module.	**[20] 12 Segment LED Meter:** 12 segment peak output meter with clip indicator at 24dBu, signal indicator at -30dBu.
[14] Insert IN Button: Engages & disengages the Carnaby HE2 Insert.	**[21] Power Switch:** Safely powers on and off Carnaby HE2. Tap to power on, press and hold to power off.
[15] Hi Cut Filter: Progressive slope low-pass filter. 1st order 3dB per octave, 2nd order 6dB per octave, 3rd order 12dB per octave. **[**-3dB, 8kHz-40kHz**]**	

Rear Connectors



[1] Channel Input: Connects balanced XLR or TRS balanced ¼” line-level analogue inputs into HE2.	**[4] Net Input:** Network Control & digital recall via Carnaby HE2 Control will be available very soon. (NOT compatible with C.A.S.T system).
[2] Channel Insert Send/Return: Connects external equipment in-line for processing by HE2. Post input level & pre output level. Utilises standard ¼” line-level TRS balanced jack cables for send & return.	**[5] USB port:** Used for software updates and USB control & digital recall via Carnaby HE2 Control. Carnaby HE2 cannot be used as an audio interface.
[3] Channel Output: Sends balanced, line-level output for connection to external converters and equipment.	**[6] Mains Power Inlet/Fuse Holder/Switch:** Provides Carnaby HE2 with mains power via the provided IEC AC power cable when mains switch is set to ON. Fuse is a Littelfuse 0235003. F3AL250V rated part and must only be replaced with equivalent.

Channel Inputs [R1**]**

XLR Input - The rear XLR input accepts balanced and unbalanced Line inputs only.

¼" Jack Input - The ¼" Jack input can accept balanced or unbalanced Line sources.

Note: Each channels ¼" Jack input takes precedence over that channels XLR input. Each Carnaby HE2 channel will default to its ¼" Jack when it is connected irrespective of whether the XLR input is also connected.

Channel Outputs [R3**]**
Each of Carnaby HE2's channels have 2 discrete outputs that can be used simultaneously for multi-routing scenarios and splitting capabilities in the studio or on stage.

XLR Output - The XLR output is a fully balanced line output with a maximum output level of +24dBu. This connection should be used when connecting Carnaby HE2 to an audio interface line-input for recording. This connection can also be safely connected to an unbalanced input without damage using the correct cable.

Impedance Balanced ¼" Jack Output - The ¼" Jack output is an impedance balanced output that can be connected to both balanced & unbalanced sources using a TRS or TS jack cable. The output has a maximum output level of +18dBu.

Inserts [R2**]**
Carnaby HE2 features a bypassable TRS Insert **[**R2**]** on each of its two channels. With these Inserts being post Mid/Side encoding and pre Mid/Side decoding, you can use each of these Inserts to connect outboard hardware before your signal hits the HarmonicEQ® processing.

By utilising the Insert IN buttons for each channel **[**F14**]**, each channels Insert can be engaged and disengaged, allowing for the A/B'ing of your outboard processing.

Dual Mono / Stereo / Mid Side

Select one of the following modes using the Mode Buttons **[**F19**]**.

Dual Mono - When selected, each Carnaby HE2 channel will operate independently, allowing for different settings per channel.

Stereo - When selected, either channel's hardware controls can be used to update the parameters across both channels, this means that both Left & Right audio channels will be processed identically.

Mid/Side - Carnaby HE2 allows for Mid/Side processing, facilitating the application of Harmonic EQ® to the separate mid (centre) and side (stereo width) components of your stereo signal. Your stereo signal will be appropriately encoded for Mid (channel 1) & Side (channel 2) HarmonicEQ® processing, and decoded before passing to the channel outputs **[**R3**]**. This is especially valuable for mastering, mixing, and sound design applications.

Additional Filtering

Carnaby HE2 features two, per-channel global filters for additional fine-tuning. Each filter is independently bypassable using the LF **[**17**]** & HF **[**18**]** IN buttons.

Hi Cut - Features a progressive slope low-pass filter.
1st order 3dB per octave, 2nd order 6dB per octave, 3rd order 12dB per octave. **[**-3dB, 8kHz-40kHz**]**

Lo Cut - Features a progressive slope high-pass filter. 1st order 6dB per octave, 2nd order 12dB per octave, 3rd order 18dB per octave. **[**-3dB, 18Hz-180Hz**]**

Network & USB Control

By connecting Carnaby HE2 via the NET Port* on the rear of HE2 **[**R4**]** to a local area network, it will be possible to control Carnaby HE2 via our Plugin or standalone application running on any device connected to that same local area network.

When connecting Carnaby HE2 to your computer via the rear USB port **[**R5**]**, it is possible to control Carnaby HE2 via our Plugin/standalone application running on that computer.

This USB port ONLY passes data that relates to the remote control of Carnaby HE2, it does NOT pass audio.

Please DO NOT connect any C.A.S.T. equipment to the network port of Carnaby HE2, doing so may damage both pieces of equipment.

*__Please note: This Network Control feature will become active in a future firmware update.__

Package Contents

The following items can be found in the packaging alongside Carnaby HE2:

- IEC power cable
- Allen key (2mm)
- Quickstart Guide

Carnaby HE2 Control Software

The Carnaby HE2 Control software gives you the ability to save and recall settings to the Carnaby HE2 hardware connected by USB. Carnaby HE2 Control is available in several formats, please choose whichever best suits your workflow.

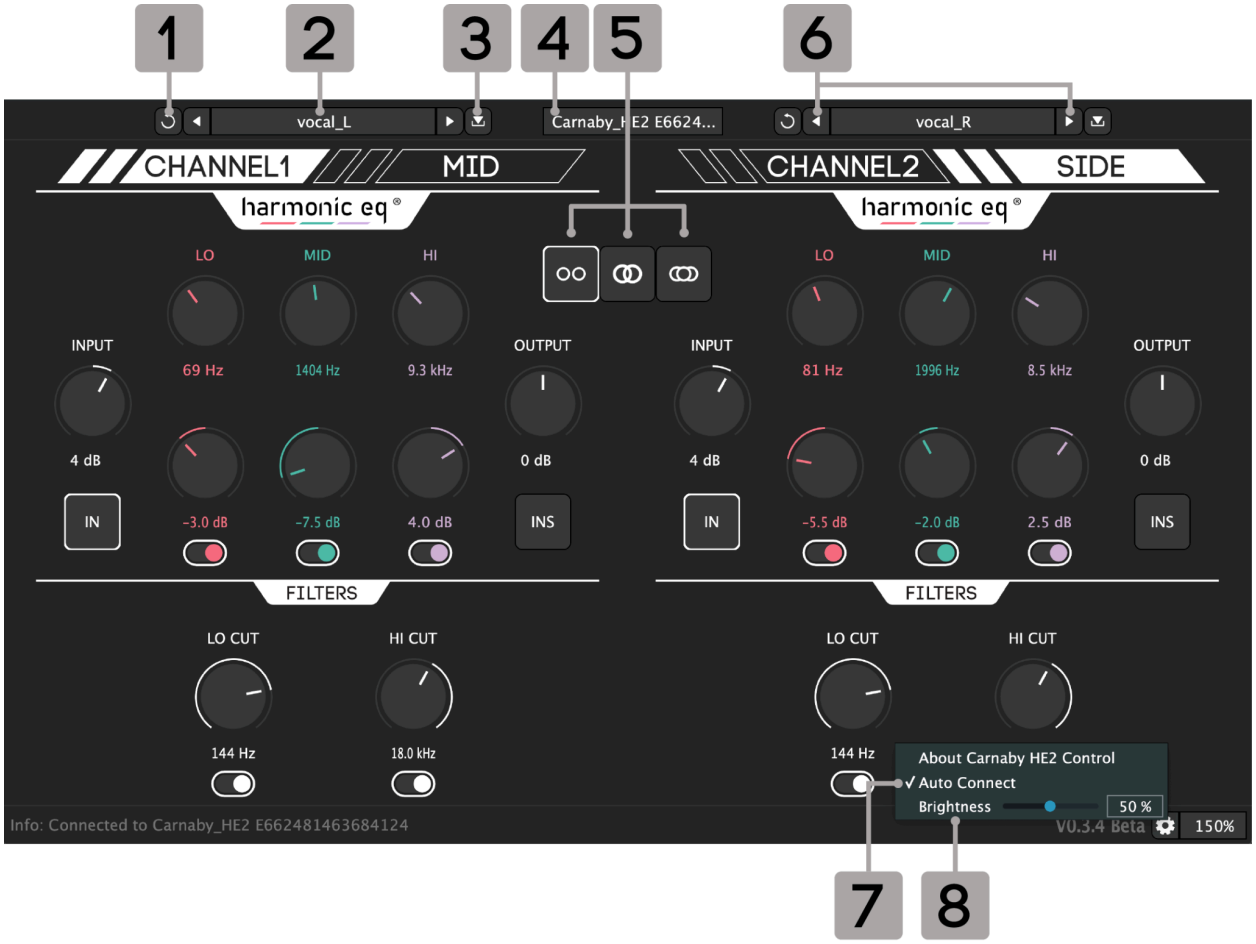
Plugin: VST3 or AU
The Carnaby HE2 Control plugin can be inserted on an audio track as part of your DAW session (some DAWs also support plugins on clips or mixer channels). The plugin does not have to be on the same track that you use to route audio to and from your Carnaby HE2 hardware but it probably makes sense to do this just to match your mental model and save an extra track. The Carnaby HE2 Control plugin allows the digital audio to pass through unaltered.

DAW external plugin insert
Most DAWs have a type of plugin that allows you to route the audio through some spare channels of your audio interface. This allows you to insert external hardware signal processors in much the same way as you would an internal plugin. Our plugin adds session recall and automation possibilities to this workflow. The following DAWs support this sort of external plugin and have been tested with Carnaby HE2 Control. Each DAW is listed hear with the corresponding name of the feature for using an external effect insert:

- Logic Pro 10 - I/O utility
- Live 12 - External Audio Effect
- Cubase 13 - External FX
- WaveLab Pro 12 - External FX
- Nuendo 13 - External FX
- Reaper 7 - ReaInsert
- Studio One 6 - Pipeline

Standalone Application
If you do not use a DAW the standalone version of Carnaby HE2 Control is much the same as the plugin version, except it does not live on an audio track in your DAW session it is its own application. This also communicates to the hardware by USB.

GUI



[1**] Reload Preset** - If settings have changed away from the loaded preset, reload the selected preset settings with this button.

[2**] Preset selector** - This is where you will find any saved presets. When in dual-mono or mid side mode, you are able to select a distinct preset per channel. There is another preset selector on the right for channel 2. When in stereo mode the channel 1 preset will be sent to both channels.

[3**] Save preset** - When you have settings you wish to retain, this allows you to save a preset. Presets are saved, and can be sent as, loadable files.

[4**] Hardware selector** - This is where you select the specific Carnaby HE2 that this instance of the plugin will control. Each Carnaby HE2 will have a unique identifier.

[5**] Mode** - Switches between dual mono, stereo or mid side modes.

[6] Preset selector - Cycle through saves presets using the left and right buttons.

[7] Auto Connect - This is found in the settings menu at the bottom right of the GUI. When "Auto Connect" is ticked, the plugin will automatically connect to its selected HE2 hardware when the DAW session is recalled.

[8] Hardware LED brightness

Getting started with the plugin

The installer for the Carnaby HE2 Control can be downloaded from:
https://www.cranborne-audio.com/carnabyhe2
After running the installer load up your DAW and insert the Carnaby HE2 Control on an audio track. You must then use the "Hardware select" menu to tell the plugin which Carnaby HE2 hardware to connect to. If you want this track to always automatically connect to this hardware when the DAW session is recalled then please tick the "Auto Connect" option from the settings menu.

If you only have one Carnaby HE2 hardware unit but wish to use it on multiple DAW tracks, we do support multiple instances of the Carnaby HE2 Control plugin in the same DAW session; just be careful to only connect one plugin at a time to the hardware. When you are happy with one track, bounce the audio then use the "hardware select" menu to select "none", then go and work on the next track. When a plugin successfully connects to the hardware it pushes its settings to the hardware.

If you have multiple Carnaby HE2 hardware units you can have each one connected to its own dedicated plugin with auto connect on. Recalling your DAW session will then maintain a consistent plugin to hardware relationship.

Preset Location
The Carnaby HE2 does not come with any presets as we believe that it’s better for you to tailor the settings to your specific sonic requirements. If you did use the plugin's own preset function (rather than the DAWs preset system) then the presets will save the channel’s parameters in the following locations.

Mac:
Users/Shared/Cranborne_Audio/Carnaby_HE2_Control

Windows:
Users/Public/Public Documents/Cranborne_Audio/Carnaby_HE2_Control

Mono plugin
Coming in a future release.

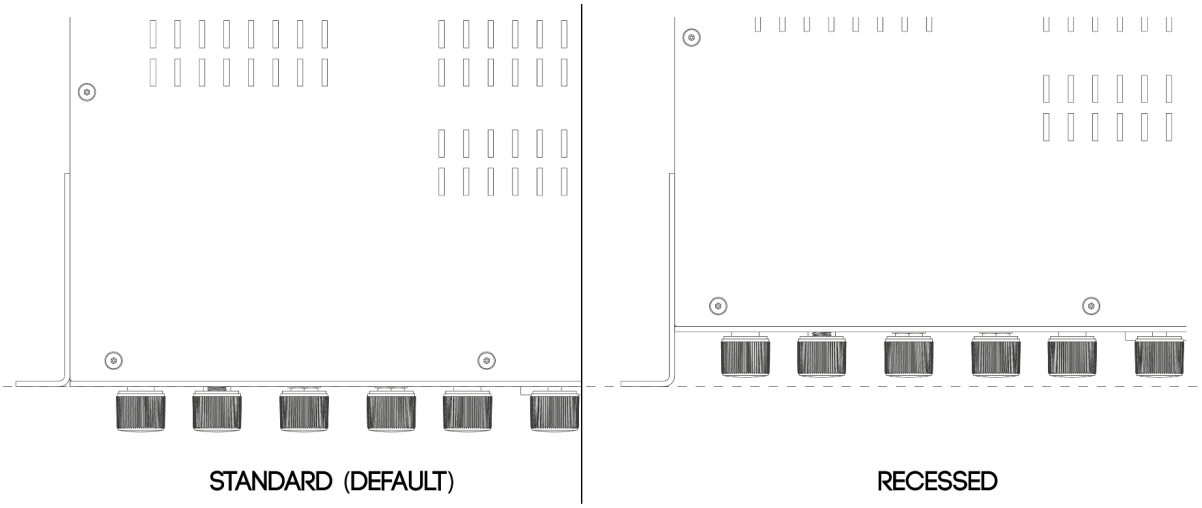
Rack-Ear Orientations

There’s more to Carnaby HE2s rack ears than meets the eye. Carnaby HE2s rack ears can be repositioned in 2 ways to suit particular applications and offer greater protection during transport.

Standard (Default) - Standard rack ear configuration where the rack ears are mounted flush to the front panel of Carnaby HE2.

Recessed - Protective rack ear configuration where the rack ears are brought forward allowing Carnaby HE2 to sit backwards into the rack to protect front panel controls during travelling and location recording.

Depending on your desired use case, you will need to remove the 4 screws securing each rack ear using the supplied 2mm allen key, realign the rack ears with the correct set of holes, and fix them firmly back into place.



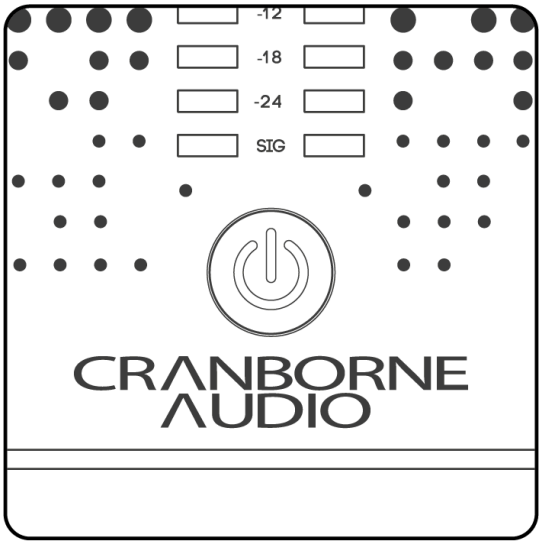
Powering Procedures

Powering On

Please ensure that Carnaby HE2 is powered on before any studio monitors are powered. Turn on the rear mains switch of Carnaby HE2 first, once done, briefly tap the power button located on the lower centre of Carnaby HE2’s front panel. The power icon will illuminate blue and you will see most front LEDs light up momentarily.

Powering Off

Make sure any monitor speakers are switched off and any headphones are disconnected from your system. Press and hold the front power button for approximately

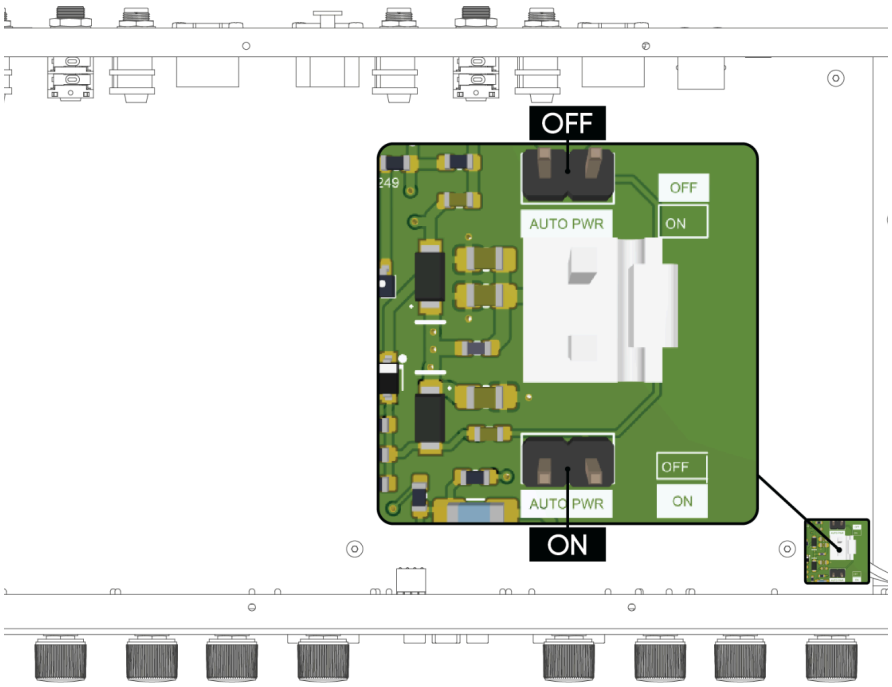


3 seconds. The power icon will deluminate and you will hear the soft ‘clicking’ of the relays indicating that the unit has been powered off.

Auto Power
If Carnaby HE2 is situated in a rack full of other outboard equipment and preamps, it can be configured to automatically power on/off when power is switched on from a central location:

To enable Auto Power, you will need to remove Carnaby HE2s top panel and move a specific jumper:

1. Ensure Carnaby HE2 is *powered off* and the power connector has been *removed.* Wait 30 seconds before continuing.
2. Place Carnaby HE2 on a flat surface and carefully remove the 10 screws fixing the top panel to the chassis
3. Before reaching inside Carnaby HE2, firmly touch its metal chassis to discharge any build-up of static.
4. Locate the ‘Auto Power’ label on the PCB.
5. Carefully remove the black plastic jumper that is installed over the OFF legs, and reposition it over the ON legs. This jumper will then bridge the connection and enable Auto Power On/Off.
6. Re-fix the top panel back onto Carnaby HE2s chassis.



Safety

Information

General Safety

- Read these instructions carefully
- Keep these instructions

- Heed all warnings
- Follow all instructions
- Do not use this apparatus near water
- Clean only with a dry cloth
- Do not block any ventilation openings and install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of a grounding-type plug. A polarised plug has two blades with one wider than the other. A grounding type plug has two blades with a third grounding prong. The wide blade or the 3rd prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories recommended by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do NOT modify this unit, alterations may affect performance, safety and/or international compliance standards.
- Cranborne Audio does not accept liability for damage caused by maintenance, repair or modification by unauthorised personnel.

Installation notes

- This unit is for indoor use only.
- When installing the apparatus either fit it into a standard 19” rack or place it on a secure level surface.
- If the unit is rack mounted, fit all rack screws.
- When rack mounting, allow adequate ventilation above and below the unit to enable cooling.
- Ensure that no strain is placed on any cables connected to this apparatus. Ensure that all such cables are not placed where they can be stepped on, pulled, or tripped over.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
ATTENTION: Afin de réduire les risques de choc électrique, ne pas exposer cet appareil à l'humidité ou à la pluie.

Power Safety

- The unit is supplied with an internal power supply and suitable mains lead. Only use the supplied mains lead, however if you decide to use a mains lead of your choice, bear in mind the following:
- Refer to the rating label of the unit and always use a suitable mains cord.
- The unit should ALWAYS be earthed with the earth on the IEC socket.
- Please use compliant 60320 C13 TYPE SOCKET. When connecting to supply outlets ensure that appropriate sized conductors and plugs are used to suit local electrical requirements.
- Maximum cord length should be 4.5m (15')
- The cord should bear the approval mark of the country it is to be used.
- Connect only to an AC power source that contains a protective earthing (PE) conductor.
- Only connect the unit to single phase supplies with the neutral conductor at earth potential.
- The unit should be connected to a mains circuit protected with a 20A breaker.

GB The apparatus shall be connected to mains socket outlets with a protective earthing connection.
DEN Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.
FIN Laite on lilettävä sojamaadoituskoskettimilla varustettuun pistorasiaan.
NOR Apparatet må tilkoples jordet stikkontakt.
SWE Apparaten skall anslutas till jordat uttag.

ATTENTION: Un-earthed metal parts may be present inside the enclosure. No user serviceable parts inside - to be serviced only by qualified personnel. When servicing, disconnect all power sources before removing any panels.

CE Certification

This unit is CE compliant. Note that any cables supplied with Cranborne Audio equipment may be fitted with ferrite rings at each end. This is to comply with the current regulations and these ferrites should not be removed.

FCC Certification

- Do not modify this unit! This product, when installed as indicated in the instructions contained in the user manual, meets FCC requirements.
- Important: this product satisfies FCC regulations when high quality shielded cables are used to connect with other equipment. Failure to use high quality shielded cables or to follow the installation instructions may cause magnetic interference appliances such as radios televisions and will void your FCC authorisation to use this product in the USA.
- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

RoHS Notice

Cranborne Audio complies with and this product conforms to European Union's directive 2011/165/EU on Restrictions of Hazardous Substances (RoHS) as well as the following sections of California law which refer to RoHS, namely sections 25214.10, 25214.10.2, and 58012, Health and Safety Code Section 42475.2, Public Resources Code.

Instructions for disposal of WEEE by end users in the European Union

The symbol shown here, which is on the product or on its packaging indicates that this product must not be disposed of with other waste. It is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for recycling waste electrical equipment and electronic equipment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

WARNING: cancer and reproductive harm - www.P65Warnings.ca.gov

Evaluation of apparatus based on altitude not exceeding 3000m. There may be some potential safety hazard if the apparatus is operated at altitude exceeding 3000m.

Evaluation of apparatus based on the temperate climate conditions only. There may be some potential safety hazard if the apparatus is operated in tropical climate conditions.

Electromagnetic Compatibility

EN 55032:2015, Class B, EN 55016-2-1:2009 A1 2011. EN 55016-2-3:2010 A1 2010, EN 55035:2017, EN 61000-4-2:2009, EN 61000-4-3:2006 A1 2008 A2 2010, EN 61000-4-4:2012, EN 61000-4-5:2014 A1 2017, EN 61000-4-6:2014, EN 6100-4-11:2004 A1 2017, EN 61000-3-2:2014, EN 61000-3-2:2013, FCC Part 15B Class B, ANSI C63.4:2014, ICES-003 Issue 6: Class B

Audio input and output ports are screened cable ports and any connections to them should be made using braid-screened cable and metal conductor shells in order to provide a low impedance connection between the cable screen and the equipment.

WARNING: Operation of this equipment in a residential environment could cause radio interference.

Environmental

- Operating Temperature: +5 to 35 degrees Celsius.
- Storage: -20 to 50 degrees Celsius.

For more information and guidance, please visit the Cranborne Audio website:

www.cranborne-audio.com