Black Box Analog Design HG-Q

Plugin Manual

BLACK BOX
ANALOG DESIGN

BRAINWORX
by Native Instruments

Plugin Alliance
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1. Welcome to Black Box Analog Design HG-Q

Brainworx and Black Box Analog Design are proud to introduce the HG-Q plugin, a meticulously modeled version of the forthcoming HG-Q hardware EQ. Building on our successful partnership with Black Box that brought the acclaimed HG-2 to life, the HG-Q is a revolutionary EQ that combines analog warmth with cutting-edge flexibility and tonal depth, bringing an entirely new dimension to the world of audio production.

The HG-Q is far more than a traditional EQ; it's a creative powerhouse that reshapes and enhances sound in unique ways. Featuring a six-band structure with three fully independent bands each for boost and cut, the HG-Q offers refined control over every element of a mix. Users can simultaneously sculpt frequencies to remove unwanted elements while enhancing key tonal characteristics, thanks to dynamic phase interactions and the ability to adjust Q values for each band independently.

A standout feature is the saturation circuit, which adds rich harmonic content without muddying transients or mix clarity. Unlike conventional saturation, the HG-Q's circuit brings out lower-level details and enhances the mix's density, resulting in a fuller, more vibrant sound. The "2X" mode further expands the EQ's range, allowing up to 16dB boosts and cuts with intensified saturation that brings out every harmonic nuance. The result is a more cohesive, balanced, and musically engaging sound, achievable even at aggressive settings.

The heart of the HG-Q is a topology where the bands interact with each other in complex ways. Using the built in analyzer on the plugin you will see that boosting or cutting on one band affects frequencies far outside its range. As you start boosting, cutting, adding saturation and switching between series and parallel, you will see that you can achieve wildly complex interactions and curves.

For the Black Box Analog Design HG-Q plugin, we have implemented two options for the UI view, allowing users to choose the layout that best suits their workflow. This functionality can be easily selected from the plugin toolbar. In the Expanded EQ view, all parameters are fully exposed, allowing users direct access to every control for precise adjustments. This view is ideal for those who prefer complete transparency and control over their audio processing. Conversely, the original Hardware EQ view features UI elements that are doubled and tripled in function to maintain a streamlined interface and to match the hardware workflow. To assist users in navigating these multiple parameters, we have integrated helpful tooltips that clarify the various functions associated with each control.

With both views available, users have the flexibility to choose their preferred method of interaction, whether they seek detailed parameter manipulation or a more concise and intuitive interface. This dual approach ensures that the HG-Q plugin caters to a wide range of user preferences, ultimately enhancing creativity and workflow in audio production. Additionally, we have implemented an FFT analyzer that provides visual feedback, further enhancing the user experience.

"When we set out to design and build the HG-Q, our goal was to create an EQ with features, flexibility and character that didn't exist. 7 years later, what we ended up with is something that looks like an EQ but is an entirely new kind of tool. It will be familiar to anyone who has used a mix bus / mastering EQ but its ability to enhance, reshape, contour and dig into a mix is so unlike anything else that they won't find themselves reaching for it to replace other EQs. It really feels like an entirely different way of interacting with a mix.

Another aspect of the HG-Q that we spent a great deal of time on is the way you interact with it. The HG-Q has some incredibly complex things going on under the hood and the features and possibilities are deep. The danger is that it can feel overwhelming and actually interrupt workflow. For that reason, we developed the control system from the ground up, giving the user control of features in intuitive ways with carefully thought out visual feedback. On the surface it looks very much like a standard mixing / mastering EQ with the ability to cut and boost simultaneously. Anyone who has used an EQ can walk up to it and immediately start using it but the HG-Q then allows you to go deeper and deeper, digging into a mix like nothing else, but only if you want to and only as deep as you want or need to go. It quickly feels intuitive, forgiving and is hard to make sound bad!"

Eric Racy & Robert Wainscott, Black Box Analog Design

Thank you for choosing Black Box Analog Design HG-Q. We hope you enjoy it!

2. Key features

The following list gives you an overview of Black Box Analog Design HG-Q's key features:

- **Collaboration with Black Box Analog Design**: The HG-Q plugin is meticulously modeled after the upcoming HG-Q hardware EQ, continuing the successful partnership that produced the acclaimed HG-2.

- **Revolutionary EQ**: Combines analog warmth with cutting-edge flexibility and tonal depth, redefining possibilities in audio production.

- **Six-Band Structure**: Features three independent bands for boost and three for cut, offering refined control over every element of a mix.

- **Simultaneous Frequency Sculpting**: Allows users to remove unwanted frequencies while enhancing key tonal characteristics through dynamic phase interactions.

- **Advanced Saturation Circuit**: Adds rich harmonic content without compromising transients or clarity, enhancing lower-level details for a fuller sound.

- **Tube Saturation in Boost Bands**: Each boost band incorporates a tube saturation stage, adding warmth and harmonic richness to the signal.

- **Solid-State Technology for Cut Filters**: The cut filters utilize solid-state technology, ensuring precise and clean frequency removal.

- **2X Mode**: Expands the EQ's range to allow up to 16dB boosts and cuts, intensifying saturation for deeper harmonic nuances.

- **Musical Phase Interactions:** Adjust the Q of cuts to be narrower and switch between series and parallel modes to create musical phase interactions that enhance mix elements.

- Stereo, M/S, Dual Mono and Mono processing

- Plugin-Only Features:

  - Expanded view with multilayer knobs extracted to dedicated controls

  - Aggressive saturation mode to unleash harmonics

  - High resolution eq-curve to visualize dependencies and interaction between bands

  - Auto-Listen

  - Scalable UI

3. Black Box Analog Design HG-Q Overview

Black Box Analog Design HG-Q consists of the following sections:

1. **Top toolbar**: Additional global controls relevant to the plugin's processing. For more information, refer to *Top toolbar*.

2. **Hardware EQ**: The analog soul of the Black Box Analog Design HG-Q, refer to *Hardware EQ*.

3. **Expanded EQ**: Exclusive user interface for easy access to every parameter, refer to *Expanded EQ*.

4. **Center section**: For global settings, filters and output attenuation, refer to *Center section*.

5. **Spectrum analyzer**: Visual monitoring of interactions. For more information, refer to *Spectrum Analyzer*.

6. **Bottom toolbar**: Preferences, license information, and documentation. For more information, refer to *Bottom toolbar*.

4. Hardware EQ

The Black Box Analog Design HG-Q in it's sheer beauty. A great amount of parameters are housed within the 3HE rack unit. By clicking the rotary encoders, toggling through the knob's layers and coupling of parameters is possible and indicated by flags and LED states.

Full overview of the dedicated parameters can be found in the Expanded EQ view, which we propose using for first experiences with the HG-Q. The individual functions of the multilayer buttons are explained in more detail in the *Expanded EQ* chapter of the manual.

Each band of the original hardware EQ consist of the following controls:

1. **SAT [On]**: Disables/enables saturation in each boost circuit separately.

2. **ALT**: When switched on, an alternative aggressive band saturation is activated to achieve higher saturation.

3. **BOOST**: This multilayer knob toggles between BOOST [gain] (solid blue led-ring) and SAT [level] (single red/purple LED) when clicked.

    > (i) Note that saturation can only be effectively driven if the band being saturated is active and is boosted by at least +0.5 dB.

4. **CUT**: Turn to change the **CUT** [gain] of each band. Clicking the **CUT** knob toggles the band Bypass which is indicated by active/inactive LED-rings.

5. **PAR**: When activated, the cut and boost circuits of the related band are configured parallel and change volume and interaction in comparison to the default serial setup.

6. **Q**: Sets the q-factor of the boost and/or cut circuit. When clicked, this multilayer knob toggles between Q [boost] (B / blue LED), Q [cut] (C / red LED), and Ganged Mode (purple LED when overlap) to setup the filters' q-factor. The **LOW** and **HIGH** bands of each channel offer additional low/high shelf filters.

7. **LOW/MID/HIGH [frequency]**: Offers eight center frequencies in each band to pick. When clicked, this multilayer knob toggles between **LOW**/**MID**/**HIGH** [boost frequency] (B, blue LEDs), **LOW**/**MID**/**HIGH** [cut frequency] (C, red LEDs), and Ganged Mode (purple LED when overlap) to setup the filters' center frequency.

💡 **Ganged Mode**: Enabled by default, each band's q-factor and frequency can be linked individually, preserving a possible offset. It actually is a relative link of two parameters within a single band.

When you hover over multilayer knobs, display flags read out the active value followed by the state of the control: **Lnkd, Bst, Cut** (Linked, Boost, Cut). Once you have clicked a multi layer knob to select a layer, the related cut and/or boost LED-rings will flash to indicate the control's assignment.

5. Expanded EQ

In the extended view, all parameters are fully exposed, allowing users direct access to every control for precise adjustments. This view is ideal for those who prefer complete transparency and control over their audio processing.

The Expanded EQ contains the following sub sections:
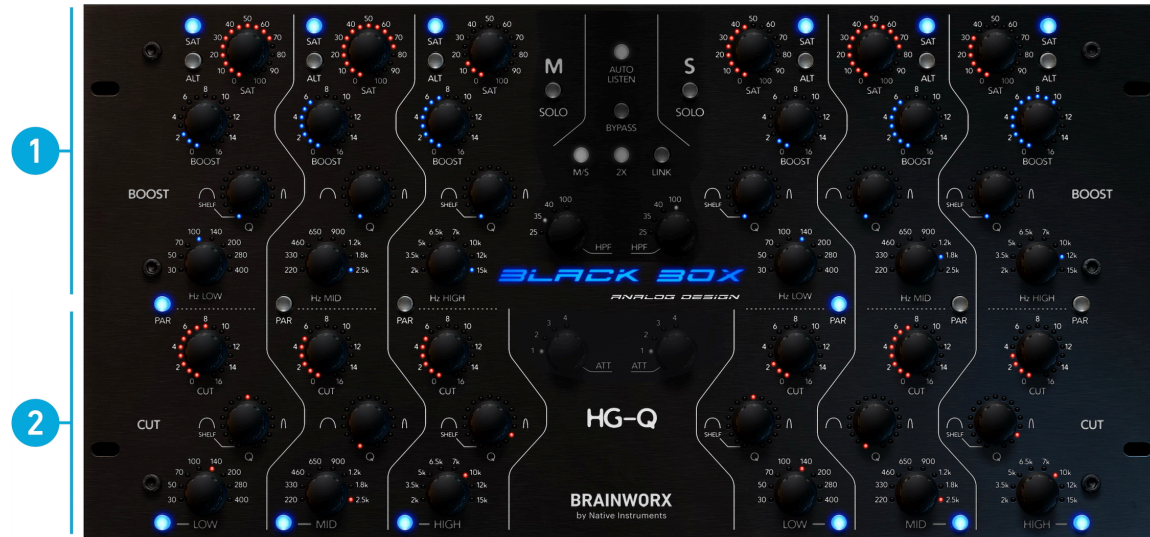
1. **Boost EQ**: Dedicated boost controls to add harmonics where they're needed, refer to *Boost EQ*.
2. **Cut EQ**: Clean removal of problematic frequency ranges, refer to *Cut EQ*.

Boost EQ

The boost circuit is based on a tube design including a saturation stage to add nice harmonic distortion.

In each band, additive tube equalization and saturation is adjusted by the following controls:

1. **SAT [on]**: Disables/enables saturation in each boost circuit separately.
2. **SAT [level]**: Saturates the tube-amplifier (Boost) in the related eq band. Note that both, the band itself and boost amplification must be active to saturate the tube circuit.

3. **ALT**: When switched on, an alternative much more aggressive response of band saturation is activated.

4. **BOOST [gain]**: Positive gain to raise the selected boost frequency range.

5. **Q [boost]**: Set the q-factor / bandwidth of the associated boost filter. The low and high band switch to the shelving option when turned fully counter clock wise. Click to toggle Ganged Mode On/Off.

6. **LOW / MID / HIGH [boost frequency]**: Select the boost filter's frequency range. Click to toggle Ganged Mode On/Off.

7. **PAR**: When activated, the cut and boost circuits of the related band are configured parallel and change volume and interaction in comparison to the default serial setup.

Cut EQ

The cut circuit is a clean solid-state design to achieve high attenuation of problematic frequencies with minimal distortion within the filter.
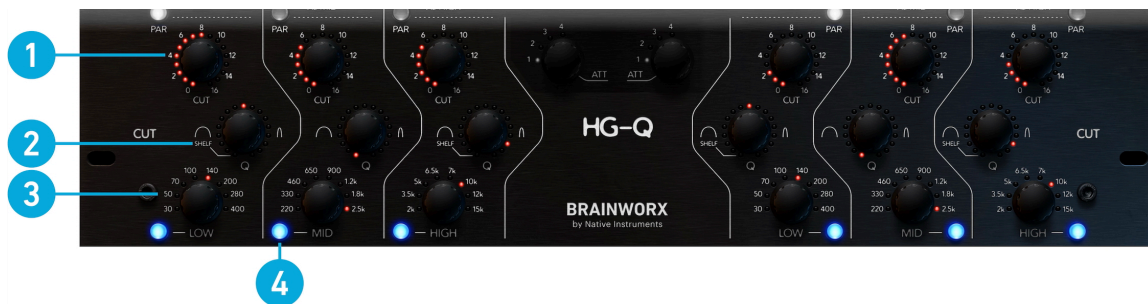
1. **CUT [gain]**: Negative gain to attenuate the selected cut frequency range.

> 💡 The cuts can be used to remove problematic frequencies and energy like a traditional EQ but they can also be used to compensate for the boosts, giving you saturation and color without massive level increases. Try cutting the same amount you boost and then add saturation and use the cuts to further compensate as much as you want.

2. **Q [cut]**: Set the q-factor / bandwidth of the associated cut filter. The low and high band switch to the shelving option when turned fully counter clock wise. Click to toggle Ganged Mode On/Off.

3. **LOW / MID / HIGH [cut frequency]**: Select the cut filter's frequency range. Click to toggle Ganged Mode On/Off.

4. **[Band On]**: Toggles the EQ band Off/On. Set to On by default.

6. Center section

The Center section includes global settings, high pass filters and level controls. It consists of the following parameters:
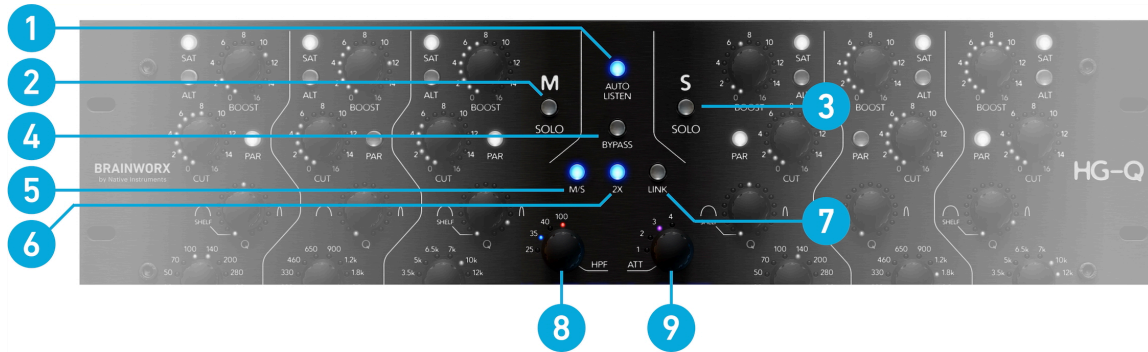
1. **AUTO LISTEN**: If activated, the corresponding filter band is soloed as long as either a frequency or **Q** is adjusted by the user. The bandwidth of the soloed band is dependent to its **Q**.

2. **M SOLO**: Isolates to audit the mid (sum) signal being processed by the plugin. (Stereo only)

3. **S SOLO**: Isolates to audit the side (difference) signal processed by the plugin. (Stereo only)

> 🔅 The Solo function is listed as "Monitoring" within the parameter lists of your DAW or controller surface.

4. **BYPASS**: Disables the Black Box Analog Design HG-Q when engaged and is coupled to the **POWER** button in the top toolbar. Bypass is titled **POWER** in the automation parameter list and controller surfaces to prevent the existence of two parameters with the same use. Bypass On = Power Off.

5. **M/S [processing]**: Dis-/Engages M/S processing. Set to On, the left channel processes the mid (sum) of both channels, the right channel processes the side (difference) of both channels. (Stereo only)

6. **2X [gain range]**: Engaging 2X mode changes the gain ranges of the boost and cut controls from 8db in 0.5db steps to 16db in 1db steps.

7. **LINK [channel]**: Switches linking of parameters between the channels on or off. If **LINK** is active, differences between pairs of parameters are preserved until the controls get adjusted. (Stereo only)

8. **HPF [frequency]**: Select cutoff frequency of the high pass filters. Click knob to select left or right channel and Ganged Mode to link both frequencies while preserving their offset.

9. **ATT [gain]**: Set to 0dB attenuation by default, the output level can be reduced to -4dB in 1dB increments. Click knob to select left or right channel and Ganged Mode to link both gains while preserving their offset.

> ⓘ LINK overwrites Ganged Mode of **ATT** and **HPF** settings. In the Expanded EQ view, Ganged Mode of **ATT** and **HPF** is inactive until returning to the hardware view.

7. Spectrum Analyzer

The heart of the Black Box Analog Design HG-Q is a topology where the bands interact with each other in complex ways. Using the built in analyzer on the plugin you will see that boosting or cutting on one band affects frequencies far outside its range. As you start boosting, cutting, adding saturation and switching between series and parallel, you will see that you can achieve wildly complex interactions and curves.

This section consists of the following elements:
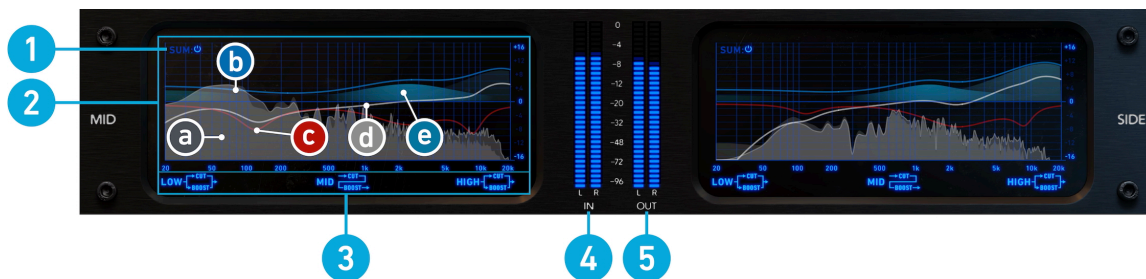
1. **SUM [EQ curve]**: Enabled by default, a summed response curve of all boost and cut filters to monitor abstract interactions of serial and parallel configurations is available.

2. **Spectrum analyzer**: The main display area consists of the following elements:

     a. **Frequency analysis**: Realtime FFT analysis of input and output signals. The outlined area represents the output measurement.

     b. **Boost EQ curve**: Drawn blue, the boost curve displays the frequency response curve of all active boost bands in each channel.

     c. **Cut EQ curve**: Drawn red, the cut curve displays the frequency response curve of all active cut bands in each channel.

     d. **Summed EQ curve**: The white summed EQ curve displays the combined (summed) overall response curve of the Black Box Analog Design HG-Q in each channel.

     e. **Band saturation**: The blue area in amplifying boost bands visualizes the level of saturation by fading in while increasing drive.

3. **Band status**: The band status icons represent both the serial/parallel configuration set with **PAR** and the activity status of the band by dimming these icons when disabled.

4. **Input meter**: Displays the level of incoming audio.

5. **Output meter**: Displays the level of the processed output level.

8. Top toolbar

Additional global controls related to plugin settings and processing are available in the top toolbar.

1. **Power:** Bypasses the processor when disengaged.

2. **UI Size:** Sets the size of the plugin's user interface.

3. **↩ ↪:** Undo and redo changes made to controls up to 32 steps.

4. **Bank A B C D:** Each preset allows you to switch between four banks (A, B, C, D) of controls.

5. **Copy:** Copy the active settings to memory.

6. **Paste:** Paste the copied settings to the active bank.

7. **Reset:** Reset the current bank.

8. **Tips**: Toggles mouse over tips off/on. The mouse over tips will also inform about the upcoming layer to be activated before clicking a multi-layer knob.

9. **Spectrum analyzer**: Enabled by default, the analyzer module of the Black Box Analog Design HG-Q can be hidden/shown by clicking the bottom section icon. For detailed information about this section, refer to *Spectrum Analyzer*.

10. **Expand EQ**: Switches the user interface to the expanded view without multilayer knobs. This offers dedicated controls for every parameter. For detailed information about the expanded UI, refer to *Expanded EQ*.

> 💡 Clicking the company logo or the plugin name will open a splash screen containing team credits and the UI default setting.

9. Bottom toolbar

Preferences, license information, and documentation are available in the bottom toolbar.

1. **Plugin Alliance Logo**: If your computer is online, clicking the Plugin Alliance logo will take you to the Plugin Alliance website via your web browser.

2. **License Info**: The toolbar displays information about the type of license you're running. Trial licenses are displayed along with the number of days until expiration; there is no note for full licenses, as these are unlimited.

3. **Dollar Icon:** If you are using a demo/trial version of a Brainworx product, you can click this icon to open a browser that redirects you to the respective product page in the Plugin Alliance store. Here, you can purchase a product without searching for it on the Plugin Alliance website.

4. **Key Icon:** Clicking on the key icon brings up the activation dialog, allowing you to manually reauthorize a device in the event of a license upgrade or addition. You can also use this feature to activate additional computers or USB flash drives.

5. **Help Icon:** Clicking the help icon opens a context menu that links to the product manual PDF and other helpful links, such as checking for product updates online. You must have a PDF reader installed on your computer to read the manual.

   • **Open Manual...** with your operation system's preferred PDF reader. *You must have a PDF reader installed on your computer to read the manual.*

   • **Product Info...** will take you to the product page of Black Box Analog Design HG-Q if your computer is online.

   • **Download Updates...** leads you to the product page's Downloads-Section.

   • **Legal Info...** opens a pop-up window declaring legal usage of third party technology.

   • **Plugin Alliance Website...** will take you to the Plugin Alliance website via your web browser.

   • **Usage Data Tracking...** will open a pop-up window to activate or deactivate *Usage Data Tracking*.

10. Tips and tricks

Don't think of the HG-Q as an EQ: While it can of course be used as an EQ, the strength of the Black Box Analog Design HG-Q lies in its ability to dramatically contour and reshape the material in extremely musical ways. Think of it more as an enhancement device rather than a surgical tool or even EQ in the traditional sense.

Saturation for enhancement: The goal of the saturation circuit in the HG-Q is not to give you fuzzy distortion that sounds like a guitar amp (although you can push it pretty hard). The real magic of the saturation circuit is the ability to "squeeze" the signal and bring up lower level material to add density and enhance character while adding harmonics. It does this while leaving the detail of the transients, articulation and "front" of the mix alone. It feels as if you are able to manipulate and enhance the lower level material while leaving the mix intact, even at surprisingly aggressive settings.

3 band EQ? Nope! 6 band EQ! On the surface, the HG-Q appears to be a 3 band per channel EQ but each band gives you entirely independent control over the boost and cut, including frequency selection, Q and shelf mode for each. That means that rather than a 3 band EQ, the HG-Q is actually a 6 band EQ with 3 bands of boost and 3 bands of cut per channel!

Boost and Cut together: The cuts can be used to remove problematic frequencies and energy like a traditional EQ but they can also be used to compensate for the boosts, giving you saturation and color without massive level increases. Try cutting the same amount you boost and then add saturation and use the cuts to further compensate as much as you want.

Leverage phase interactions between boosts and cuts: Although you can boost and cut the same frequency and with the same Q to compensate for level, try changing the Q of the cut to be slightly narrower and then switch between series (default) and parallel modes. Also try changing the cut or boost frequency so you are cutting and boosting slightly different frequencies. This will give you musical and useful phase interactions that can bring out and enhance mix elements.

Everything affects everything else: The heart of the Black Box Analog Design HG-Q is a topology where the bands interact with each other in complex ways. Using the built in analyzer on the plugin you will see that boosting or cutting on one band affects frequencies far outside its range. As you start boosting, cutting, adding saturation and switching between series and parallel, you will see that you can achieve wildly complex interactions and curves.

2X: Engaging '2X' mode changes the gain ranges of the boost and cut controls from 8db in 0.5db steps to 16db in 1db steps. On most EQs, this would simply give you more range but because of the tube saturation stages, non linearities and interaction between stages in the topology, 2X mode changes everything. The saturation is more aggressive, the curves change slightly and even the way the stages interact changes. In general, 2X is great for when you really want to push things to be more aggressive but it's helpful to think of it as a whole range of slightly different possibilities.

11. Additional information

Modifier keys

You can use the following keyboard commands to control Black Box Analog Design HG-Q.

Function	AU	VST / VST3	AAX
Fine Control	[shift]	[shift]	• Mac: [command] • Win: [Ctrl]
Jump between default and last setting	[option]	• Mac: [command] • Win: [Ctrl]	• Mac: [option] • Win: [Alt]
Output Link	[command]	• Mac: [option] • Win: [Alt]	[shift]

Installation

Plugin Alliance - Installation Manager

Black Box Analog Design HG-Q is available with our free Plugin Alliance Installation Manager desktop application.

The Installer Manager lets you install any or all of our products in one go. You can also select the plugin formats you need to install (AAX, VST, VST3, AU).

For download and further information, visit *https://www.plugin-alliance.com/en/installation-manager.html*.

Alternatively, you could download an individual offline installer from your account and the product page: *https://www.plugin-alliance.com/en/products/black_box_analog_design_hg-q.html*.

Usage data tracking

Help us improve your experience.

Plugin Alliance by Native Instruments is using data tracking to improve the user experience and usability of our products. Data tracking can be deactivated at any time in the help menu. This data is collected according to our *Privacy Policy*.

Online resources

Black Box Analog Design homepage:

https://blackboxanalog.com/

System requirements & supported platforms:

https://www.plugin-alliance.com/en/systemrequirements.html

Details about your product:

https://www.plugin-alliance.com/en/products/black_box_analog_design_hg-q.html

Installation, activation, authorisation and FAQ:

https://www.plugin-alliance.com/en/support.html

Credits

Concept: Eric Racy, Robert Wainscott

Programming and Modeling: Dustin Malucha

UI-Design: Goran Lizdek

Product Management: Christoph Tkocz, Albert Gabriel