

bx_console AMEK 200

Plugin Manual



bx_console AMEK 200 is part of the growing line of Brainworx TMT console emulation plugins. More details on our patented TMT (Tolerance Modeling Technology) inside this manual. Developed by Brainworx Audio and distributed by Plugin Alliance.

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Introduction

Brainworx's bx_console AMEK 200 is a console plugin that combines the sound of the AMEK EQ 200, AMEK Mastering Compressor, and the expander/gate of the bx_console AMEK 9099; it would be nearly impossible for a console like this to exist in the real world. The complexities of physically integrating the components and the cost associated with such a hardware unit make the bx_console AMEK 200 an analog-modeled dream come true.

The bx_console AMEK 200 is the successor to the bx_console AMEK 9099, which delivers the sound of the Rupert Neve-designed AMEK 9098i Master Console. Featuring an optimized GUI layout, the bx_console AMEK 200 allows you to mix and master your music with transparency, precision, and detail. It's inspired by iconic hardware from the late 70s and early 80s.

The EQ section of the new bx_console provides an 80s take on the ITI MEP-230, released in 1971, which was a pioneer in parametric EQ technology. This plugin also includes the original manufacturer's 19-inch series compressor, which you might know as our AMEK Mastering Compressor.

Built to handle a majority of mixing and mastering tasks, the bx_console AMEK 200 eliminates the need to juggle multiple plugins. It also consumes less CPU than using individual instances of its included tools.

Pro Tip

Add the bx_console AMEK 200 to your DAW's default audio and MIDI track presets for a streamlined workflow.



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The Processing Modules

The bx_console AMEK 200 includes multiple processing modules. By default, audio signals flow through each module in the following order:

- 1 Global Module (Input Stage)
 - Input Gain
 - V-Gain
 - TMT
- 2 Filter Module (pre-position)
- 3 Gate/Expander Module
- 4 Compressor Module
- 5 EQ Module (post-position)
- 6 Limiter Module
- 7 VCA-Clip & THD
- 8 Global Module (Output Stage)
 - MS-Processing and Pan
 - Fader
 - Meters



Please note that certain global module parameters affect your signal at the input stage, while others affect the signal at the output stage. You can also modify the position of the Filter and EQ modules in the signal path.

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1 Filter Module

The Filter module includes a high pass and low pass filter that you can use to cut low-end down to 20 Hz and top-end up to 30 kHz. You have the option to apply these filters at one of three points in the signal chain:

1. **IN:** Applied at the input stage before all dynamic and EQ tonal processing.
2. **POST:** Applied between the compressor and the limiter.
3. **SC:** Applied to the sidechain-path of the gate/expander and compressor modules

2 Gate/Expander Module

The expander/gate from the bx_console AMEK 9099 has been integrated into the bx_console AMEK 200's signal path, providing precise control over the dynamics of your audio. Its "Threshold," "Range," and "Ratio" settings determine when and how much the signal is attenuated. You can also customize the way in which dynamics processing is applied by adjusting the "Attack," "Release," and sidechain filter options.



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1 Compressor Module

The bx_console AMEK 200's compressor module is an adapted version of the AMEK Mastering Compressor, creating a more comfortable console-focused mixing experience. This musical soft/hard knee compressor applies gain reduction based on RMS levels and delivers the original hardware's authentic sonic and dynamic behavior.

2 Limiter Module

The peak-detection circuit from the AMEK Mastering Compressor has been incorporated into the Limiter module to prevent unwanted clipping and overloads. With a "Threshold" knob, "Makeup" gain knob, and "Mix" knob, you can achieve an exceptional level of dynamics control.

3 VCA Module

A VCA clipper has also been included in the limiter module, behaving very much like the Brainworx bx_clipper but with its own unique circuit. You can use this feature to increase loudness and add saturation to your mixes.

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EQ Module

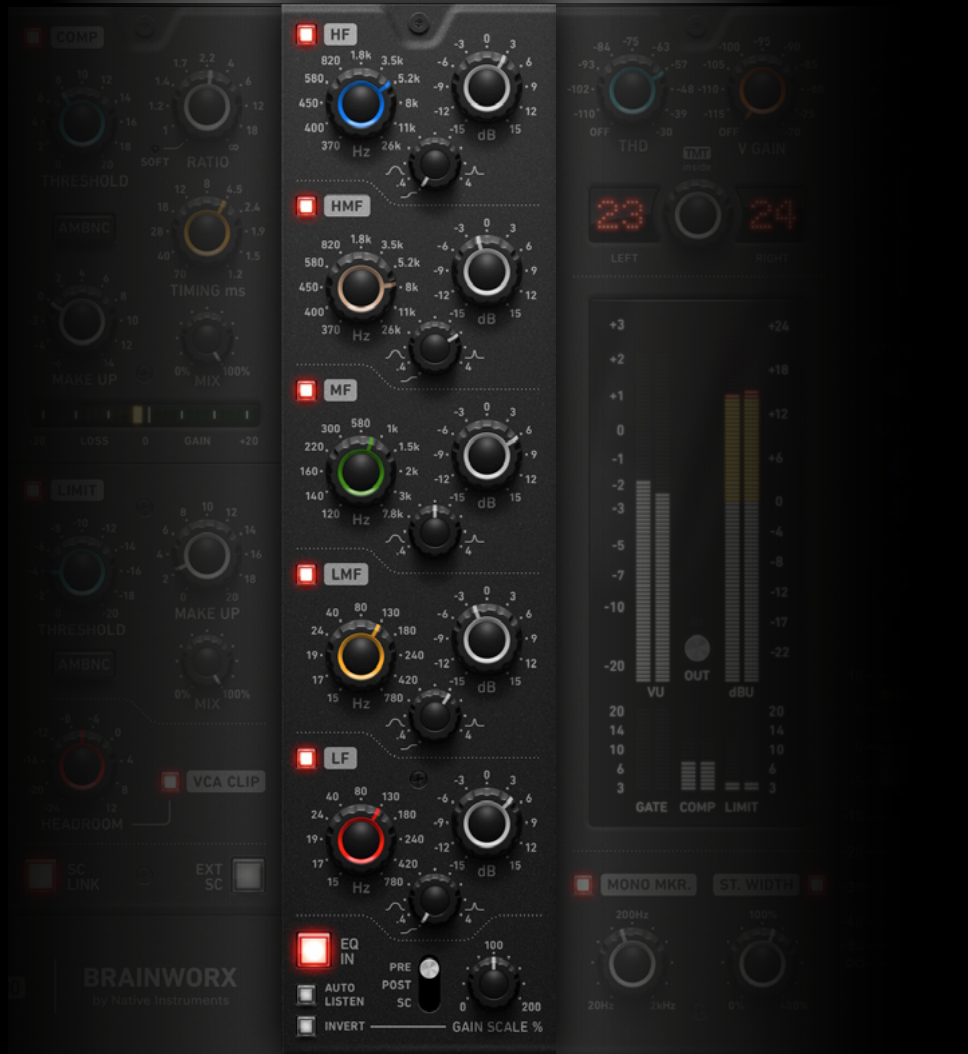
At the core of the bx_console AMEK 200 is an EQ module based on the AMEK EQ 200. This five-band mastering-grade EQ has a precise, natural, and organic sound.

Turning the LF, LMF, HMF and HF's band's Q knobs completely counterclockwise results in shelving filters. The additional LMF/HMF shelvings allow you to apply Pultec-style tone-shaping effects to your audio.

A "Gain Scale" knob allows you to reduce or enhance the intensity of the EQ processing applied, which is especially helpful in a mastering context. Use this feature to proportionally scale the intensity of the tone shaping applied to your signal.

Similar to the Filter module, you can choose where to insert the EQ into your signal path:

1. **PRE:** Applied at the input stage, after the HP/LP filters (PRE), and before all dynamics processing.
2. **POST:** Applied after the compressor but before the HP/LP filters (POST), limiter, and clipper.
3. **SC:** Applied to the beginning of the sidechain circuit prior to all other processing.



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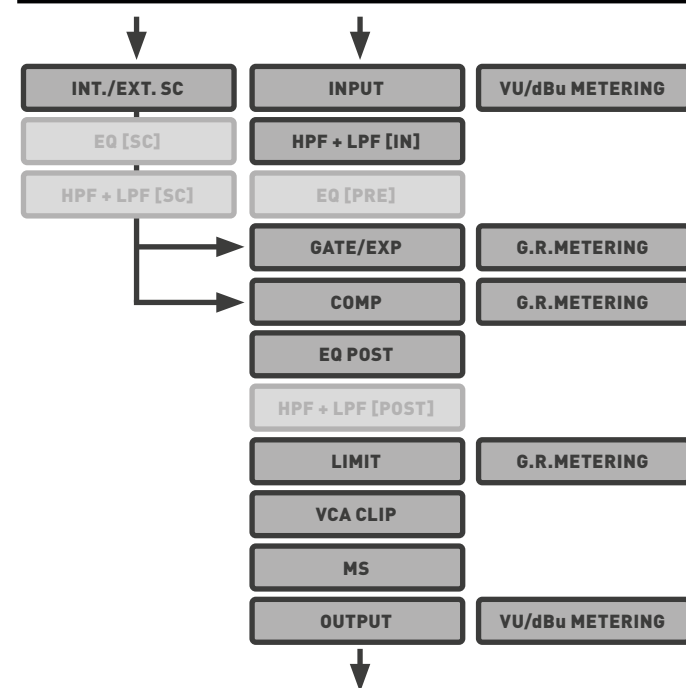
Global Module

The Global module contains an “In Gain” knob, a phase inversion switch, and a “Mute” button. You can also leverage the effects of total harmonic distortion (THD), artificial noise (V-GAIN), and tolerance modeling technology (TMT).

This module includes a “Mono Maker” and a “Stereo Width” knob, gain reduction meters, a VU and a dBu meter. Finally, there’s a pan pot to control the L/R balance of your mix and a master fader to adjust the output level of the plugin.



Signal Path



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Global Parameters - I/O

1 Input Gain

Adjusts the input level of the plugin.

2 V-Gain

Adds noise that is artificially created.

3 THD

Adds colorful saturation and density to EQ output.

4 Phase

Inverts the polarity of the signal.

5 Mute

Mutes the signal output.

6 Mono Maker ON

Switches the Mono Maker On/Off.

7 Mono Maker Frequency

Sweepable from 20 Hz to 2 kHz, this parameter folds the processed sound to mono at and below the frequency set.

8 Stereo Width ON

Switches the stereo width On/Off.

9 Stereo Width

Make your mix wider than it originally was by increasing the Stereo Width without losing the center of your recordings! You will not lose bass drum power or vocals by making your mix wider this way... and it will not sound different played back in mono at all.

10 Panorama

Pan the signal between left and right channels. Available only in the stereo version.

11 Output Gain [Fader]

Adjusts the output level of the plugin.



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1 TMT Channel

Switches between 72 different channels; in a stereo instance, two adjacent channel numbers will be displayed; in a mono instance, only one. Each channel has its own different character by computing resistor and capacitor tolerances in the model that corresponds to the manufacturer's acceptable component specific tolerance range. Channel 1 equals the exact values of our reference hardware.

2 Stereo Mode

Analog: 2 differently modelled TMT channels

Digital: the same TMT channel used for both channels

3 Random ONE

Random ONE overwrites your channel with a randomly selected unused alternative channel number. The plugin will know which channel numbers are already used in a session and use an unused channel number, unless you are using more than 72 channels.

4 Random ALL

If you use many instances of bx_console AMEK 200 in your session, you can make sure to be using different channel numbers for every single instance with a single mouse click.

Pro-Tip

Whenever you instantiate a bx_console plugin on a channel, it will start with the default setup, which are channels 1 and 2 in analog state. Randomizing a channel will slightly change the channels behaviour and can sometimes compliment an instrument's character in one way or another.

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Filter

1 HPF ON

Switches the high pass filter On/Off.

2 HPF

Cutoff frequency of the high pass filter.

The slope of the cut filter is 12 dB per octave.

3 LPF ON

Switches the low pass filter On/Off.

4 LPF

Cutoff frequency of the low pass filter.

The slope of the cut filter is 12 dB per octave.

5 Filter Routing

Routes filters pre-process, into the dynamics side-chain or post-dynamics.

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Dynamics - Gate/Expander

1 Gate/Expander ON

Switches Gate/Expander On/Off

2 Threshold

Sets the threshold level of the Gate/Expander. Signals passing below activate signal-attenuation.

3 -30dB [Threshold Range]

Shifts the threshold range by -30 dB for low level signals.

4 Range

Controls the gain-range (depth) of the Gate/Expander. When turned fully anti- clockwise (Range = 0), this section is inactive.

5 EXP [Mode]

Switches between Expander- and Gate-Mode.

6 INV [Invert]

When activating the inverse mode, you hear the parts of the signal that would otherwise be attenuated by the gate, and vice versa.

7 Ratio [Expander Mode]

This controls the ratio by which the signal is attenuated when it is below the threshold, while the Gate-Range parameter still limits the expander's attenuation.



Hold [Gate Mode]

Determines the time after the signal has decayed below the threshold before the gate closes.



8 Attack

Switches between three different settings for the gate's attack-timing. While medium is the universal setting, fast is designed to maintain the fast transients of material such as drums, while the slow setting is specifically designed to cut off transients for smooth fade-ins.



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1 Linear [Release]

This option offers another release-curve's shape with a linear course, whereas the default mode has an exponential curve: the level decreases faster at the beginning of a release event and slows down towards the maximum gain reduction.

2 Release

Controls the speed at which the Expander/Gate reduces the signal level once it has passed below the threshold.

3 HPF

Activates an additional high pass filter in the gate's side-chain and controls the cutoff frequency.

4 HPF Q

Switches the high pass filter's Q to a high factor in order to pronounce the frequencies right above the cutoff frequency.

5 LPF

Activates an additional low pass filter in the gate's side-chain and controls the cutoff frequency.

6 LPF Q

Switches the low pass filter's Q to a high factor in order to pronounce the frequencies right above the cutoff frequency.

7 Key Listen

Lets you listen to the signal at the gate's side-chain-input which will trigger the gate. This can be an external side-chain-signal or the original input-signal, you will hear the effect of the Gate LPF and HPF filtering. If EQ or filters are routed to the side-chain, you will also hear the effect of those.



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Dynamics - Compressor

1 COMP ON

Switches Limiter On/Off.

2 Threshold

The Compressor Threshold control behaves differently for Hard- and Soft-Knee ratio operation modes:

Soft-Knee (ratio switched position fully CCW)

The threshold actually lowers the level where the soft knee curve departs from the 1:1 characteristic, resulting in more compression at lower levels. Because of this difference, the range of the makeup control is much greater in the positive direction, providing enough gain compensation to allow for unity-gain settings even at large amounts of gain reduction in Soft-Knee mode.

Hard-Knee

Behaves like a gain stage pushing into a static threshold. The amount of gain reduction is dialled in with input gain and later compensated for with the makeup control.

3 Ambience

The Ambience control, inspired by the one found on bx_console AMEK 9099, sends the difference between the dry and the compressed signal to the output. This allows to clearly identify the amount of change and characteristics of the compression applied.

4 Make-Up

The usual compression make-up gain control, but with a range that complements the operation in both Soft and Hard knee modes.



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Ratio

The compressor's ratio range is divided in two different operation modes:

1 Soft-Knee (switched position fully CCW, indicated by green LED)
Positioned fully counter-clockwise, the Ratio is switched to the Soft-Knee mode: Ratio increases progressively for higher input signals in a smooth, exponential fashion. In most cases, with moderate threshold settings, the Ratio will float at around 3:1 and occasionally jumps to something like 6:1 on peaks. With the Threshold-Parameter set to it's last third of its range and a well fed input, the Ratio can be pushed over 10:1; leading to high gain-reduction levels without heavy compromising of the tonal integrity.

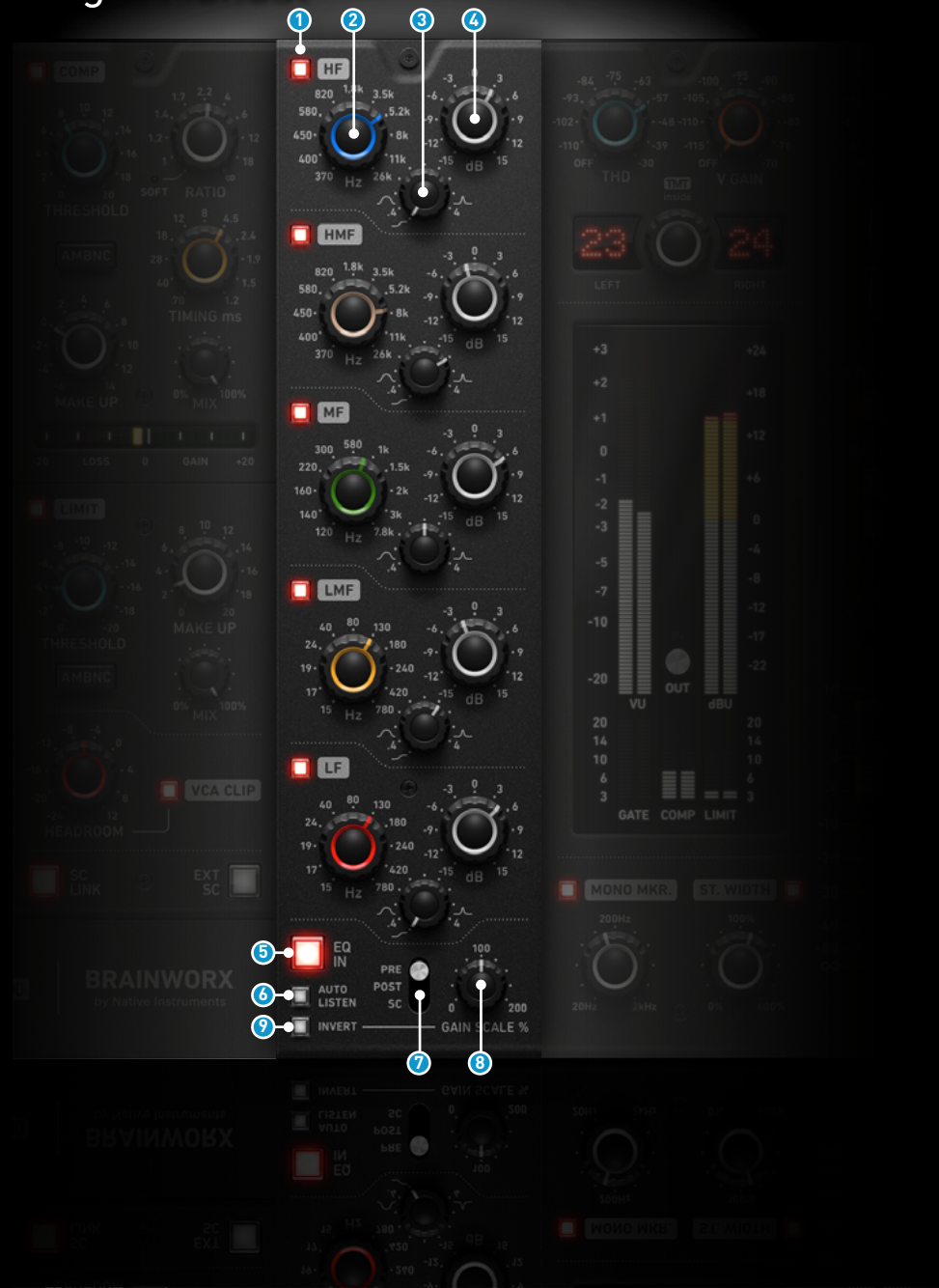
2 Hard-Knee (rotary-range, indexed by scale)
The Ratio above the knee is decided by the Ratio parameter, ranging from almost imperceptible 1.1:1 to brick-wall-limiting "∞:1". The Ratio control will - because of the particular circuit topology - interact slightly with the Threshold's value, providing additional help to keep the output level constant even when changing the Ratio setting!

3 Timing
The Compressor-Timing control decides the length of the RMS detector averaging window, effectively changing both the attack and release times of the RMS detector. It basically replaces attack and release knobs into a single knob controlling both at the same time. Clockwise rotation means faster attack- and release-times.

4 Mix
Blending between the compressed (all compressor section processing, including makeup gain and ambience) and uncompressed signal.

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EQ

1 Filter Band Bypass

Switches each band On/Off.

2 Filter Band Frequency

Controls the Center-Frequency of the different bands.

3 Filter Band Q

Controls the Q-factor/width of the different bands. On the LF-, LMF-, HMF- and HF-band, the maximum left position switches the band type from „bell“ to „shelf“ for higher flexibility and creativity.

4 Filter Band Gain

Controls the Gain of the different bands.

5 EQ in

Switches the entire EQ section On/Off.

6 Auto Listen

If set to „On“ the corresponding filter band is soloed as long as either the frequency or the Q is adjusted by the user. The bandwidth of the soloed band is dependent to its Q.

7 EQ Routing

Routes the EQ section either pre-dynamics, post-dynamics, or into the dynamics' side-chain.

8 Gain Scale

The whole filter including all bands' gains can be increased or decreased according to the setting of this parameter.

9 Gain Invert

The whole filter including all bands can be inverted using this parameter, e.g. a peak setting would be turned into a notch.

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Limiter

The Limiter's position is fixed to the end of the tonal and dynamical sections. After the signal has passed the Limiter it will lead into the VCA and the output-section of the strip.

1 Limiter ON

This switch toggles the Limiter on or off.

2 Threshold

This control sets the level at which limiting starts to take effect.

3 Make-Up

The Make-Up gain control allows you to add post-limiting gain to compensate for attenuation and boost the output signal.

4 Mix

This control blends between the limited signal (which includes all processing from the limiter section, such as make-up gain and ambience) and the unlimited signal.

5 Ambience

The limiter's Ambience control, as the one in the compressor section, allows to clearly listen to the exact signal's portion the process removes.

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VCA Clip

1 VCA Clip ON

VCA Clip switches the clipping behaviour of the console's voltage controlled amplifier On/Off.

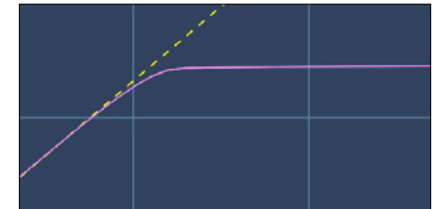
2 Headroom

Adjust the Headroom dial to increase or decrease the amount of clipping applied by the VCA clipper.

PRO-TIP

VCA Clip's Headroom acts like a ceiling-parameter.

- Set left, it will provide harmonics and saturation generated by overdriving the internal VCA from soft- into hard-clipping.
- In opposite, the +12dB setting will effectively avoid VCA-related manipulation of your signal.
- The center-setting at 0dB is calibrated to the original hardware's soft-clipping behaviour.



Sidechain

3 SC Link

This feature links the gain reduction across stereo or multi-channel setups. The gain reduction is applied equally to every channel in the dynamic modules (Gate/Expander, Compressor, and Limiter) and is based on the maximum value of all passing channels.

4 EXT SC [external Key]

This option selects an external key signal to be fed into the side-chain inputs of the Expander/Gate and Compressor.

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Metering

1 VU Meter

By default, the VU Meter is calibrated to 0 VU = -10 dBFS, which is equivalent to +10 dBu. Users can adjust this setting globally for all sessions and instances. To restore the default setting, click the „default“ button in the preferences screen (read below).

2 dBU [Peak Programme Meter]

The PPM Meter is set by default to 0 dBu = -20 dBFS. This setting can also be adjusted globally for all sessions and instances. To revert to the default value, click the „default“ button in the preferences screen (read below).

3 OVL [Overload]

This classic overload alarm monitors and indicates clipping for Input, Side-Chain Input, and Output signals. It triggers when the signal exceeds 1.0 and is not adjustable.

4 OUT/IN [Metering Position]

This feature allows you to switch between metering input and output signals.



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1 GATE [Gain Reduction Meter]

This meter displays the gain reduction achieved by the Expander/Gate section.

2 COMP [Gain Reduction Meter]

This meter shows the gain reduction in the Compressor section, excluding makeup gain and mix controls. The readout may vary based on gain change metering.

3 LIMIT [Gain Reduction Meter]

This meter displays the gain reduction in the Limiter section.

4 COMP [Gain Change Meter, Compressor-Section]

This meter shows the gain change of the signal passing through the compressor. It takes into account the coupled gain from the threshold control in Hard-Knee mode, the output's makeup gain, and any applied gain reduction. In stereo and multichannel use, the meter displays an average value of the channels being processed, shown as a single bar.

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Top Toolbar

1 Power

Hardware bypasses the processor when engaged.

2 UI-Size

Sets the size of the plugin's User Interface.

3 Undo/Redo

You can undo and redo changes you made to the controls for as many as 32 steps.

Bank

A Select Banks A to D

B Copy active setting to memory

C Paste copied setting to selected Bank

D Reset current Bank

4 THD ALL

This parameter allows users to add an offset to the THD parameter for all identical console instances in the current session. Even with the offset, the original range of the THD parameter is never exceeded. If THD is explicitly set to „Off“ (fully counter-clockwise), it will remain Off, even when THD ALL adds an offset.

5 V-Gain ALL

This parameter allows users to add an offset to the V Gain parameter for all identical console instances in their current session. Even with the offset, the original range of the V Gain parameter is never exceeded. If V Gain is explicitly set to „Off“ (fully counter-clockwise), it will remain Off, even when V Gain ALL adds an offset.

6 SOLO [Monitoring]

Solo M or S engaged: Solos the mid(sum)- or side(difference)- signal being processed by the plugin.

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Bottom Toolbar

1 AMEK Logo [Credits, Preferences]

The reference value for both level meters can be adjusted via the corresponding text fields in the info screen, which can be accessed by clicking on the AMEK logo. By default, the PPM meter reference is set to 0 dBu = -20 dBFS. The VU Meter is set to 0 VU = -10 dBFS, which in turn corresponds to 0 VU = +10 dBu in the default setting. Using the text fields, you can customize the meters according to the standard you are used to work with or depending on the 'hotness' of your material. Your settings will be stored for all instances and sessions. You can always go back to the default reference levels by clicking on the default buttons.

2 Plugin Alliance Logo

Clicking the Plugin Alliance logo takes you to the Plugin Alliance website via your web browser, that's if your computer is online.

3 License Type

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

4 \$ [Icon]

If you are using a demo / trial version of our products, you can always click this icon to open a browser that redirects you to the respective product page in the Plugin Alliance store. This is where you can easily purchase a product without having to look it up on our website.



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1 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.

2 ? [Icon]

Clicking the ? icon opens up a context menu that links to the product manual PDF, as well as other helpful links, e.g. to check for product updates online. You must have a PDF reader installed on your computer to be able to read the manual.



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