User Manual

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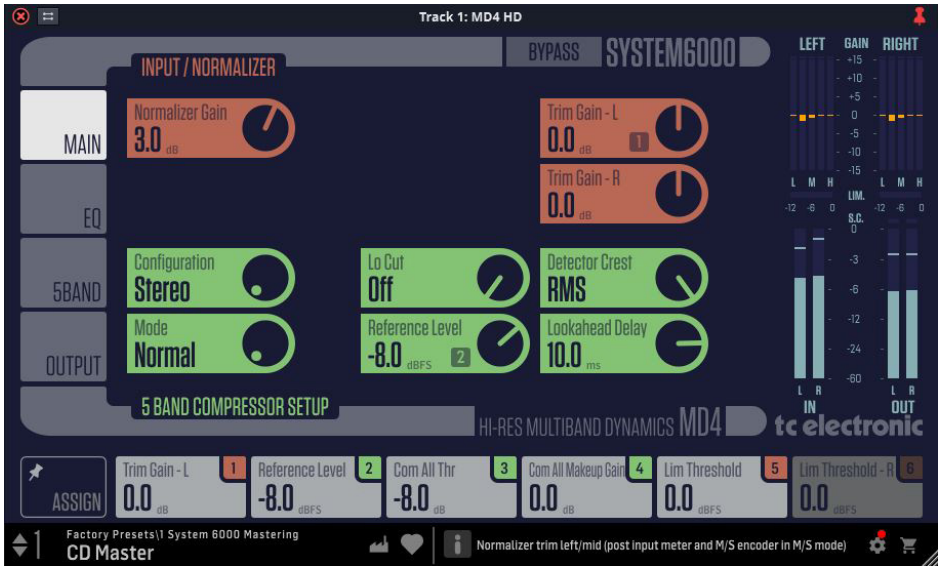

MD4 HD NATIVE MULTIBAND DYNAMICS

EQ, versatile 5-band Compressor and True-Peak Limiter Based on the Legendary and Award-Winning System 6000 as a Native DAW Plug-in for Mixing, Mastering and Post-Production

2021-03-12, Rev. 2

tc electronic

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EN Important Safety Instructions

CAUTION
RISK OF ELECTRIC SHOCK!
DO NOT OPEN!
ATTENTION
RISQUE D'ÉLECTROCUTION !
NE PAS OUVRIR !

Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

Caution
To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

Caution
To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Caution
These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this apparatus near water.

6. Clean only with dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Use only attachments/accessories specified by the manufacturer.

12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. 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.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

17. Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

18. Do not install in a confined space, such as a book case or similar unit.

19. Do not place naked flame sources, such as lighted candles, on the apparatus.

20. Please keep the environmental aspects of battery disposal in mind. Batteries must be disposed-of at a battery collection point.

21. This apparatus may be used in tropical and moderate climates up to 45°C.

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LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see complete details online at musictribe.com/warranty.

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1. Introduction

Congratulations on the purchase of your MD4 HD NATIVE Multiband Dynamics Processor.

Originally launched in 1999 and available in Music, Mastering, Broadcast and Film variants, TC Electronic's Flagship System 6000 processor is recognized as an industry standard for mix, mastering and post-production applications. You will find the System 6000 in literally thousands of world-leading recording, film, post and mastering studios all over the world, and in quite a few OB vans and broadcast production studios as well. The platform has won no less than three of the prestigious TEC Awards over the years: in 2000 for the original System 6000, in 2005 for Mastering 6000 and in 2010 for System 6000 MKII. No longer the preserve of the recording elite, these native DAW plugins will deliver all of the performance of the iconic original unit combined with modern day convenience.

TC Electronic set about re-imagining the legendary System 6000 as native DAW plug-ins, without sacrificing any performance, character or useability. The Danish engineers, including many from the original System 6000 team, refined audio quality whilst staying faithful to the original hardware version. The development team fastidiously re-engineered these new native plug-ins to offer full support for standard DAW automation and project recall with new optimized user interface ergonomics.

MD4 HD NATIVE Main Features

- Six band Parametric EQ (Dual Mono capability)
- Normalizer with softclipper
- Full featured 5-band Compressor
- MS Encode/Decode for operating EQ and Compressor in Mid/Side mode
- Updated True-Peak BrickWall Limiter with legacy sample peak option

Available for the first time as a plugin for DAW based productions, the TC Electronic MD4 HD NATIVE plug-in is tailormade for music and sound production in all forms. The MD4 HD NATIVE is the most transparent high-definition dynamics processor ever made for your DAW, featuring a flexible 6-band EQ, 5-band compressor, soft clipping, and a newly optimized true-peak limiter.

MD4 HD NATIVE features four different highly versatile compression types – normal/downward, parallel/upward, the truly-unique parallel stereo-unlinked mode, and details-focused DXP mode that allows you to lift up low-level detail individually in each band, without touching precious transients. MD4 HD NATIVE offers full dynamics control of each of the 5 bands and with the ability to choose compression of RMS, Peak or anything in between.

MD4 HD NATIVE operates in stereo and true mid/side processing, includes EQ unlinking, dual mono rare artifact-free split and recombination crossover filter banks. MD4 HD NATIVE is for the highly critical ear. It is perfectly suited for any demanding mastering job and is also equally suitable for use for a wide variety of content material in music and post-production, ideal for single sources, buses and master mixes.

TC Electronic wishes you all the best, and we hope that you will enjoy the MD4 HD NATIVE in your audio projects.

About this manual

Read this manual to learn how to install and use your TC Electronic MD4 HD NATIVE multi-band dynamics processor plug-in. This manual is only available in PDF format from the TC Electronic website. To get the most from this manual, please read it from start to finish, or you may miss important information.

To download the most current version of this manual, visit the web page:
www.tcelectronic.com/Categories/c/Tcelectronic/Downloads

If you still have questions about your TC Electronic product after reading its manual, please get in touch with TC Support:
www.tcelectronic.com/brand/tcelectronic/support

2. Plug-in Installation

The MD4 HD NATIVE plug-in installer can be downloaded from the following page:

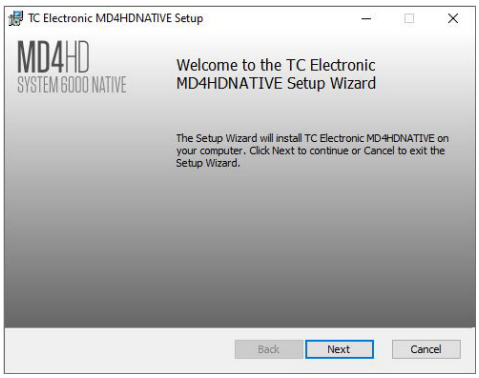
https://www.tcelectronic.com/p/P0ED6

The MD4 HD NATIVE plug-in requires an active PACE iLok license to work. See Chapter 3.

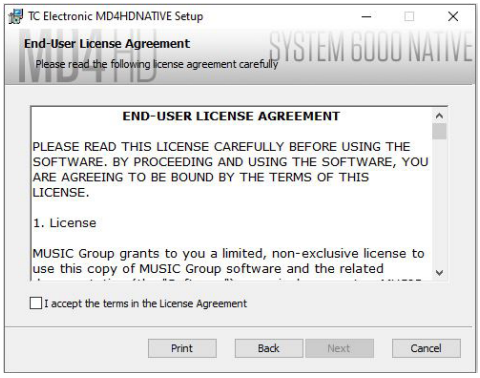
Save the installer file (.pkg or .msi file) in a convenient location on your hard drive.

2.1 Installation on a PC

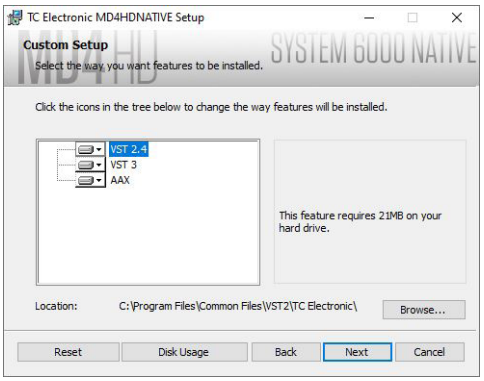
Double click the installer (.msi file). If you get a security warning, click 'Run'.



Accept the license agreement and click 'Next'.



Select which VST and/or AAX components you want to install. Pro Tools uses AAX and most other DAW programs use VST. The installer will offer a default location to save the file, but you can choose another location by clicking the 'Browse' button.



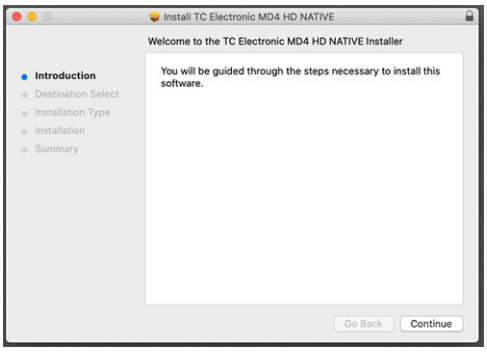
Click 'Next' to begin the installation. When installation is complete, click 'Finish'.

Note: If your DAW fails to detect the newly installed plugin, this can often be fixed by adding the following paths to the Plug-in Manager (or similar) of the DAW. The default paths on a PC are "C:\Program Files\Common Files\VST2" and "C:\Program Files\Common Files\VST3" for VST2 and VST3, respectively.

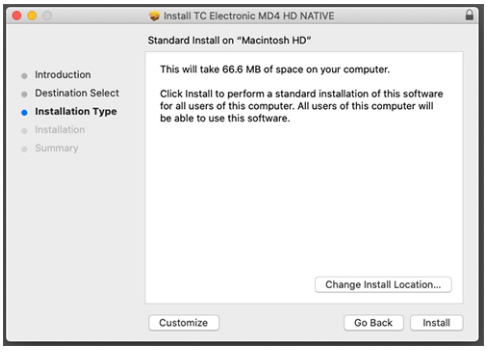
2.2 Installation on a Mac

Double click the installer (.pkg) file.

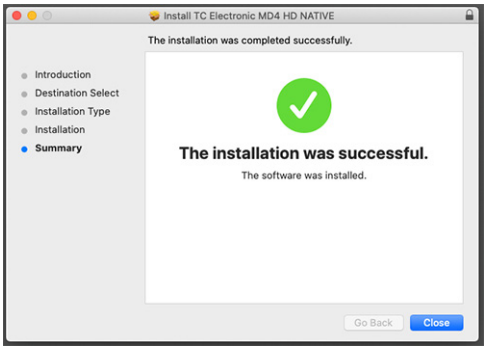
Proceed through the prompts to begin installation.



Click 'Continue.'



A default location will be selected for installation, or you can select another folder manually. If you have administrator authorization in place, you will need to enter your password before beginning installation.



Click 'Close' when done.

3. Activate the MD4 HD NATIVE iLok license

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3.1 Activation

Step 1: Install iLok

The first step is to create an iLok user account at www.iLok.com and install the PACE iLok License Manager on your computer if it's your first time using iLok.

Step 2: Activation

In the received mail when buying the MD4 HD NATIVE, you will find your personal Activation Code. To activate your software, please use the "Redeem an Activation Code" feature in the PACE iLok License Manager.

3.2 Get a Free Demo License

Make use of this hassle-free offer to try out our plug-ins before you buy.

- 14-Day Trial Period
- Fully Functional
- No Feature Limitations
- No Physical iLok Key Needed

Step 1: Install iLok

The first step is to create a free iLok user account at www.iLok.com and install the PACE iLok License Manager on your computer if it is your first time using iLok.

Step 2: Get your free trial license

Go to:

https://www.tcelectronic.com/brand/tcelectronic/free-trial-md4hd-native

and enter your iLok User ID.

Step 3: Activation

Activate your software in the PACE iLok License Manager.

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4. Connection and Setup

4.1 Inserting the MD4 HD NATIVE plug-in in your DAW project

Once you have downloaded the plug-in, you can now apply it to a channel in your DAW to begin using the effect. This process may vary slightly depending on your software, but generally should require these steps:

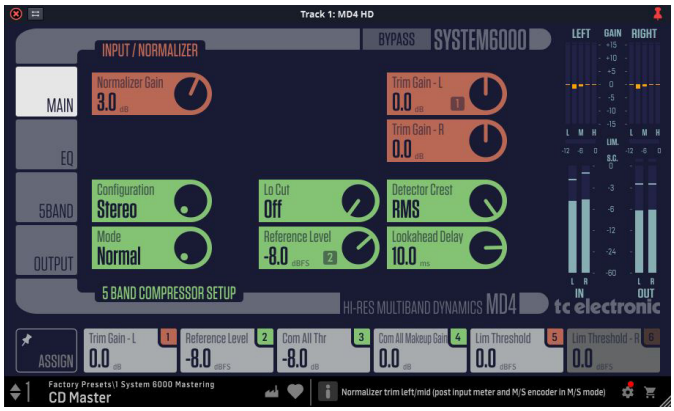
- Select a channel or bus in your DAW to which you would like to add the effect. Access the mixer page where you should see a section dedicated to effect slots.
- Open the menu where you can select from a list of effect types, which probably includes many stock plug-ins that are included with the DAW. There should be submenu to view general VST/AU/AAX options.
- The plug-in will likely be found in a dedicated TC Electronic folder. Select the MD4 HD NATIVE and it will now be added to the signal chain.

Double click on the effect slot that contains MD4 HD NATIVE to view the plug-in UI.

4.2 Operating the MD4 HD NATIVE

After you have installed the plug-in, and activated the iLok license, you can begin working with the plug-in on your tracks.

Adjustments to the effect are done using the plug-in user interface:



Most DAWs offer the ability to move or drag plug-ins from one track/bus to another, and MD4 HD NATIVE supports this as well.

Most DAWs also feature an on/off switch for plug-ins, accessible inside the plug-in window and/or the track itself. Note that some hosts don't offer smooth on/off switching. Use the Global Bypass button on the MD4 HD plug-in interface for a smooth and latency-compensated bypass.

4.2.1 Insert vs Aux Effect

The MD4 HD NATIVE is intended for insertion directly into an effect slot on a single channel, sub mix bus or master bus, which passes the entire signal through the effect.

Be careful if using MD4 HD NATIVE on an auxiliary bus, as mixing the output of MD4 HD NATIVE with the original track sound will potentially create a phasing issue depending on your DAW's ability to correctly compensate for latency in plug-ins.

4.2.2 Mono/Stereo Operation

The MD4 HD NATIVE can be used both as a mono instance on mono tracks and a stereo instance on stereo tracks.

In the case of a mono out instance, the output signal is made by outputting the left plug-in channel only. In this case, panning should not be used.

4.2.3 Bypass

Press the BYPASS button at the top to bypass or engage the MD4 HD NATIVE.

4.2.4 Automation

Please be aware that automation of certain parameters, can cause audible artifacts.

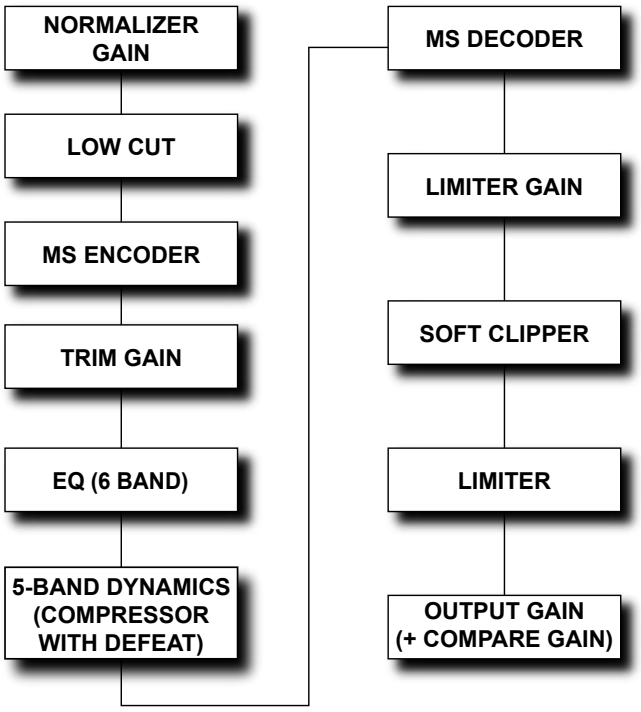
In case you need to automate these parameters, you should take care that changes only take place in parts where no audio is sent to the plug-in.

4.2.5 Parameter Overview

The MD4 HD NATIVE is a 5-band, 2-Channel Dynamics processing algorithm. The algorithm contains:

- Stereo 6-band precision EQ (linked, left/right, or mid/side operation)
- Stereo 5-band compressor (stereo or mid/side operation)
- The MD4 HD NATIVE will run at sample rates up to 192kHz

4.3 Signal flow through the algorithm:



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5. User Interface

5.1 Overview

There are four tabs along the left edge of the interface, that bring up various pages of controls. The controls and features are described in more detail in the following pages. As a general note, the parameters, controls, and graphs are color-coded as shown below:

The top part of the display:

- Bypass: Press this to bypass or engage the MD4 HD NATIVE. This makes it easy for you to listen and compare the overall effect of your work
- The EQ and compressor can be individually bypassed using the ON button (at top right) in each of their control pages

Tabs on the Left

- Main: This brings up controls for the normalizer gain, trim gain left, right (orange), and controls (green) for initial setup of the compressor
- EQ: The parametric equalizer, with controls for adjusting the frequency, gain, EQ type, low, mid and high, EQ bypass. The bands are color coded
- Compressor: Controls (green) for compressor threshold, ratio, makeup gain, attack, release, defeat threshold, defeat ratio, with compressor bypass
- Output: Limiter controls (orange) for gain, soft clip L/R, threshold L/R. Output controls (green) for output gain, compare enable, and compare gain

Controls

- Any of the circular controls can be adjusted either by dragging on the dials or numeric value in the box, or by double-clicking and entering a numeric value.

Meters

- Gain reduction meters for compressor: these show the low, low-mid, mid, high-mid, and high for left/mid and right/side. The meter range is (+/- 15 dB). Note The horizontal orange line on the gain reduction meters indicates the offset of each band. In Normal, Parallel and Parallel UL mode, the GR meters are offset by the Makeup Gain of each band. This gives an indication of the overall effect of the Compressor gain reduction and the Makeup Gains. In DXP mode, the offsets indicate the boost that is applied to signals below the threshold. This depends on the settings of Threshold, Steer and Makeup Gain.
- Input L/R meters (0 to -60 dB range)
- Output L/R meter (0 to -60 dB range with limiter soft clip indication)
- Output Limiter meters (0 to -12 dB range)
- Use the input and output gain/trim controls in the MAIN and OUTPUT pages to adjust the levels if required.

Near the Bottom

- Assign Focus Fields: You can place your own favorite set of parameters in the 6 focus fields. (See section 5.2.1 for more details)
- The EQ and compressor (see the following pages), each have a horizontal row of parameters just below their controls, such as threshold, gain, etc. If you click on any of these, the parameters are shown in this focus fields area. Click again to return the focus fields to your assigned fields.

Along the Bottom Left

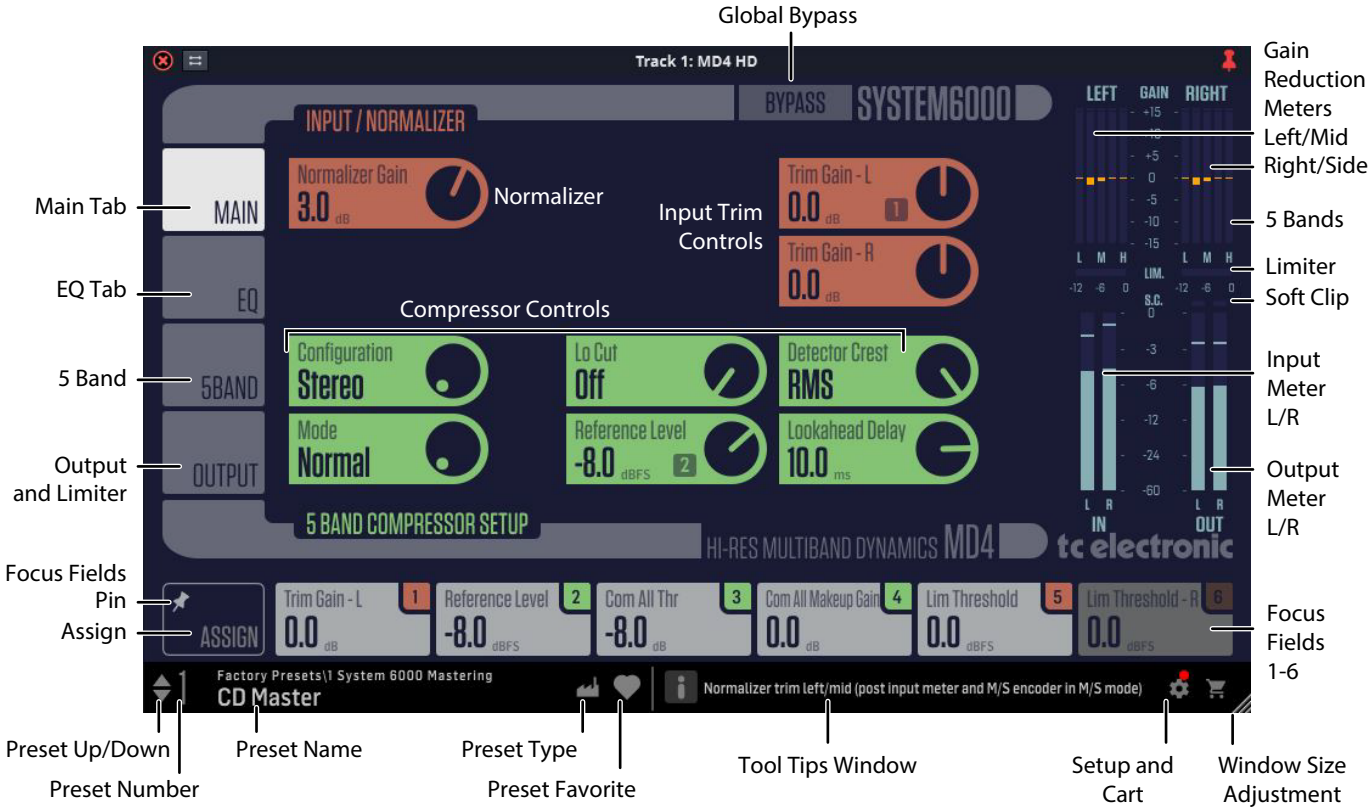
- Preset number, preset name, preset type, preset favorite, preset up/down

Along the Bottom Middle:

- Tool Tips shows useful information about the current selection

Bottom Right Corner:

- Setup, shopping cart, user interface size adjustment



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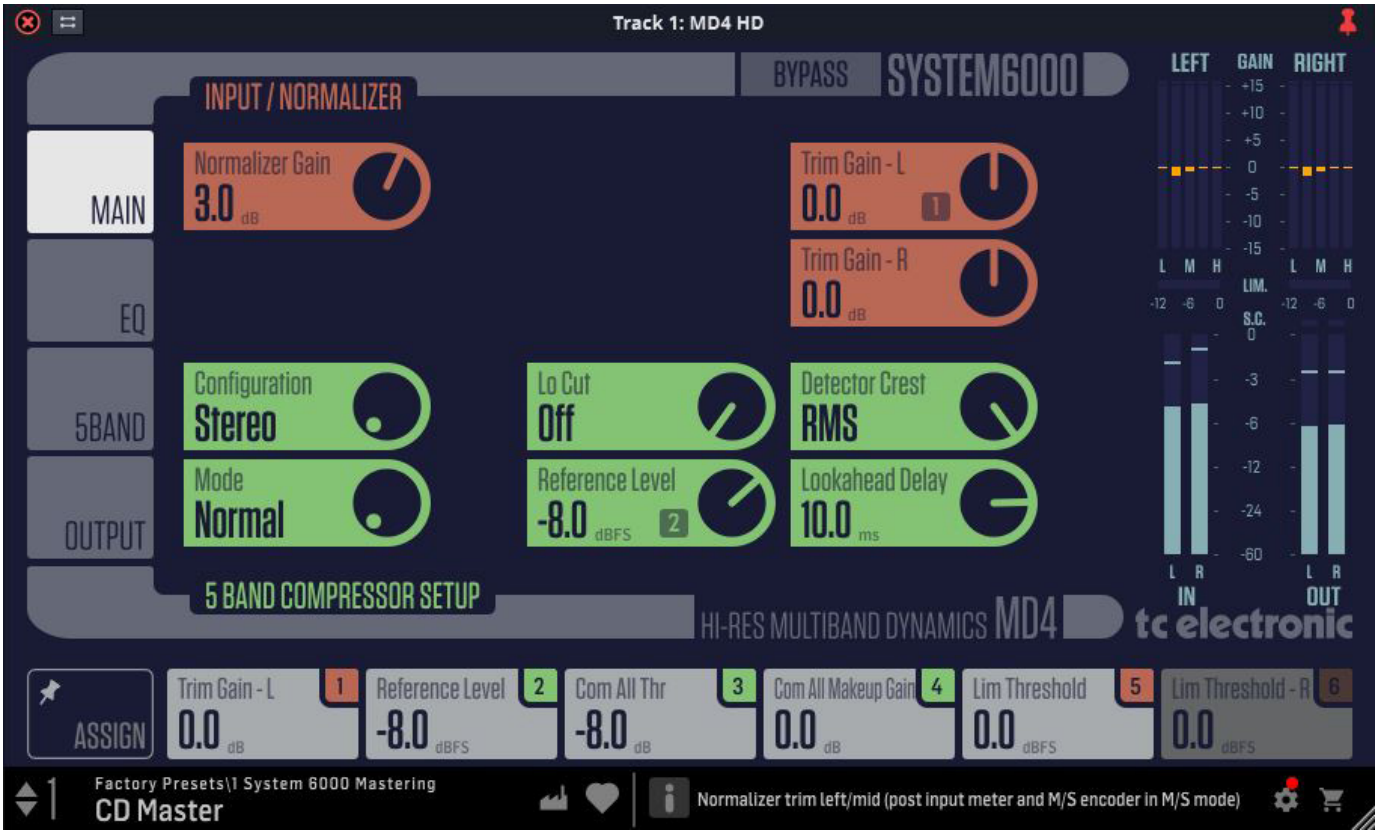
5.2 Main Page



Input (orange controls)

Normalizer Gain

Range: -18 dB to +18 dB in 0.1 dB steps

The Normalizer Gain is the first gain stage in the plugin, used to adjust the overall level of the input signal.

Trim Gain (L/R or M/S)

Range: -12 dB to +12 dB in 0.1 dB steps

Trim the gain level for the two input channels to the EQ.

When using the EQ section, the gain might have been increased or decreased. The Trim Gains are used to optimize the gain before reaching the Compressor section.

5 Band Compressor Setup (green controls)

Configuration

Options: Stereo, Mid/Side

Stereo

In Stereo Mode, the Compressor section of the algorithm uses by default one common Sidechain for both Left and Right channels, and the EQ section is linked. It can be unlinked.

The gain reduction meters show the left and right channels.

Mid/Side (MS)

In this mode, the MS encoder is activated. The Compressor section of the algorithm uses Sidechains as follows:

- When COM LINK is enabled, there is only one Sidechain.
- When COM LINK is disabled there is a separate Sidechain for the Mid and Side channel.

EQ can be linked or unlinked.

In Mid/Side mode, the left meter shows the Mid channel, and the right meter shows the Side channel.

NOTE : When a mono signal is processed, only the left channel of the algorithm is active

Mode

Range: Normal, Parallel, Parallel Unlinked, DXP

Select Normal for downward compression

Select Parallel for upward compression. By default (Wet Gain 0 dB), the dry and compressed signals are added in equal parts and then compensated by -6 dB. This results in a neutral gain when the compressor is not actively reducing the signal. The contribution of the Compressor signal can be adjusted using Wet Gain (see the Compressor Page).

Select Parallel UL for upward compression with unlinked compressor. This works just like Parallel, except that the two channels (L/R or M/S) are compressed independently, so peaks on one channel don't lead to gain reduction on the other channel. Beware that this can lead to changing the stereo image, although this is not as noticable in Parallel mode, because the dry signal still preserves the original stereo image.

NOTE: in M/S Unlinked configuration, Parallel and Parallel UL are identical.

Select DXP compression for lifting up low levels without touching transients. This mode introduces a new parameter on each band: Steer, instead of Threshold. Steer determines the slope and boost of that particular band. Bands hit unity gain (0 dB gain) at the Reference Level, so low-level boosting only takes place below that level, and is at the max below each band's Threshold.

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Lo Cut

Range: Off, 2 Hz to 200 Hz, with increasing step width as frequency increases.

This Low Cut filter is used to remove potential noise at low frequencies

Detector Crest

Range: Peak, 6, 10, 12, 14, 16, 20, 24, RMS

Select the Sidechain level detection method of the compressor between RMS and PEAK for all bands. The dB steps between RMS and Peak are the number of dBs needed for a peak-value to override the RMS measurement, and can be perceived as a Threshold setting.

Example:

If the Crest parameter is set to 6 dB, the Compressor will respond to RMS values and to peaks 6 dB higher than the current RMS value.

Reference Level

Range: -24 dBFS to 0 dBFS in 0.5 dB steps

This parameter sets the reference level in the algorithm.

The reference level is the level at which the Compressor Threshold parameters will start operating when set to 0 dB.

For example, in order to keep "unity gain," it can be beneficial to set the reference level close to the RMS level you are aiming for, and then use the Threshold parameter to set the amount of compression.

Look-ahead Delay

Range: 0 to 15ms

<2ms in 0.1ms steps

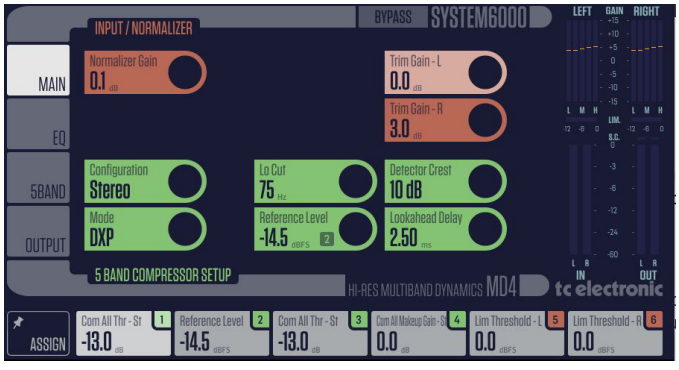
>2ms in 0.5 ms steps

Sets the look ahead Delay of the signal compared to the Sidechain signal. This enables the compressor section to become more responsive to the incoming signal, thereby performing a more precise compression.

5.2.1 Focus Fields

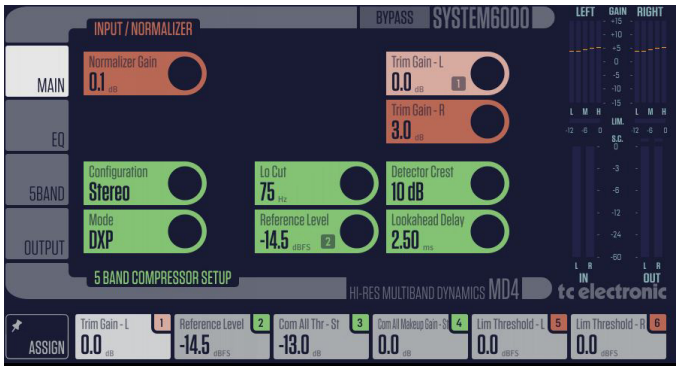
Each of the six Focus Fields along the bottom can be assigned to any of the available controls. These useful assignments remain visible when you switch to different pages. For example, you can adjust the Compressor Threshold while you are on the EQ page.

Click on ASSIGN in the lower left, and you will notice that the control knobs will become blank. (This is a good reminder that you are in ASSIGN mode.) Click and drag any of the controls and drop it down onto the desired Focus Field 1 to 6. You can also click the desired focus field and then click the control to assign to it. When finished assigning, select the ASSIGN button again.

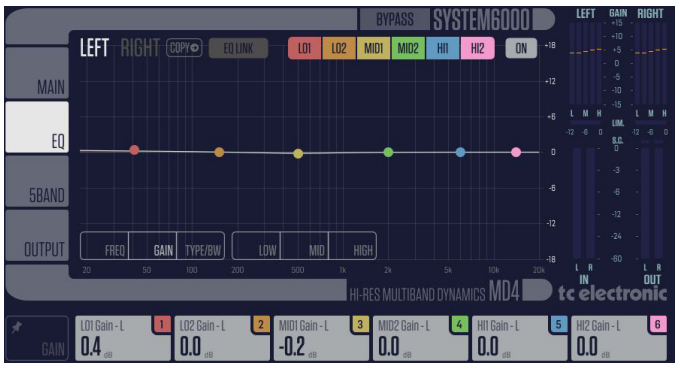


Click on the PIN Icon inside the ASSIGN button, and the Assigned Focus Fields will remain when presets are changed. The numeric values within the Focus Fields will change to the new preset values.

In the example below, Focus Field 1 has become Trim Gain Left by dragging the control down and releasing it over the Focus Field 1 button. It will stay like this, even when you move to the EQ page or Output page. Note that Focus Field 1 is highlighted in color while it is being assigned, as is the Trim Gain L control



In the EQ and 5 Band Compressor pages, the Focus Fields will show other parameters if any of the buttons are selected in the lower area of each page. For example, here are the Focus Fields when GAIN has been selected in the row of buttons below the EQ graph. To return to your assigned Focus Fields, deselect GAIN by pressing it again.



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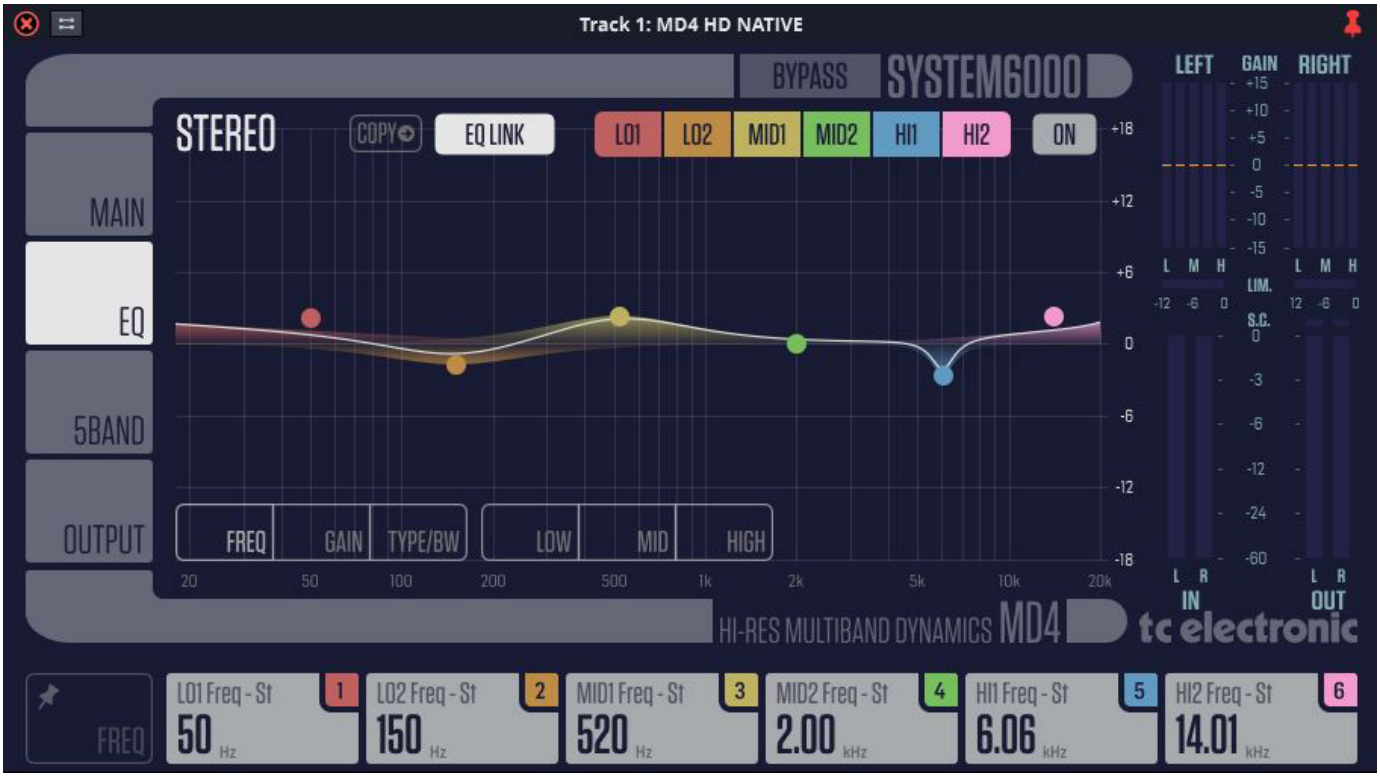
5.3 EQ Page



Introduction

This page features a 6-band parametric EQ, switchable between Notch and Parametric filters. The outer bands can also be changed to Low/High Cut or Low/High Shelving.

- The needle-sharp notch filter has a range down to 0.02 octave
- The parametric equalizer features a natural and well defined bandwidth behavior at all gain and width settings
- The shelving filters have a variable slope, with options of 3, 6, 9, and 12 dB/oct
- The low-cut and high-cut filters are switchable between 12 dB/oct maximum flat amplitude (Butterworth) or flat group delay (Bessel) types

Basic Operation

- Press the colored buttons LO1, LO2, MID1, MID2, HI1, HI2 at the top of the graph, to activate or deactivate the EQ bands. Alternatively, double-click on the colored handles in the graph
- Click and drag left/right the colored handles in the graph to adjust the frequency and drag them up/down to adjust the gain. Use CTRL+Drag (or CMD+Drag on a Mac) to change the bandwidth
- Press the ON button at the graph's top right, to bypass all bands
- Below the graph, select Freq, Gain, Type/BW or Low, Mid, High to access all parameters on individual bands.
- For example, if you press the FREQ button, the Focus Field below it shows the frequency in Hz of all bands.
- Click and drag the value in the Focus Field to adjust it, or double-click on the value and manually enter a valid value

- Press FREQ again, and the Focus Fields will return to their assigned fields
- Select GAIN, and the Focus Fields show the gain in dB for each band. Adjust the values in the Focus Fields as desired

- Select LOW, and the frequency, gain, and type of the LO1 and LO2 bands are shown. Adjust the values in the Focus Fields as desired

- Select MID, and the freqency, gain, and type of the Mid1 and Mid2 bands are shown. Adjust the values in the Focus Fields as desired

- Select HIGH, and the freqency, gain, and type of the High1 and High2 bands are shown. Adjust the values in the Focus Fields as desired

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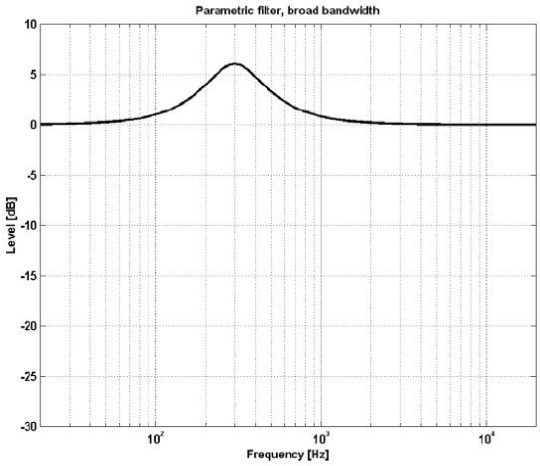
Type /BW Selector

- Select TYPE/BW and use the Focus Fields to select filter types and vary the parameters. Click and drag on the numeric value to scroll through the types and their available values
- LO1 and HI2 filter options: Notch, Parametric, Shelve, and Cut
- LO2, MID1, MID2, HI1 filters options: Parametric and Notch

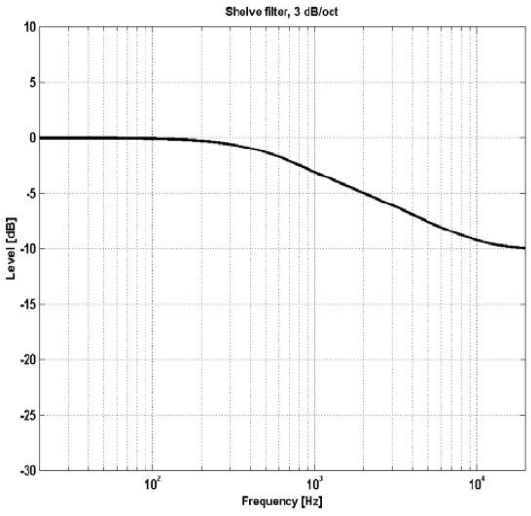
- Typical graphs of the different filter types are shown below:

Parametric Filter - Broad type



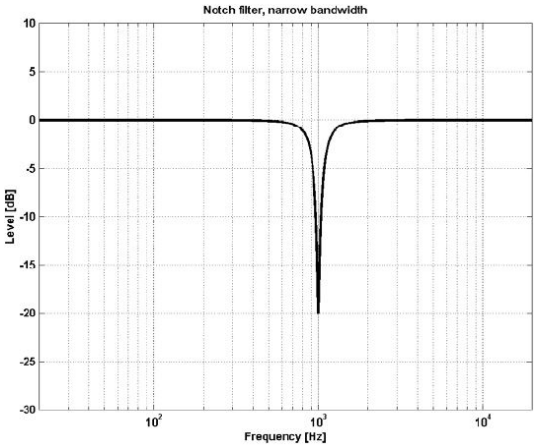
- Bandwidth Range: 0.1 octave to 4 octave
- Frequency Range: 20 Hz to 20 kHz
- Gain Range -12 dB to +12 dB

Shelving Filter



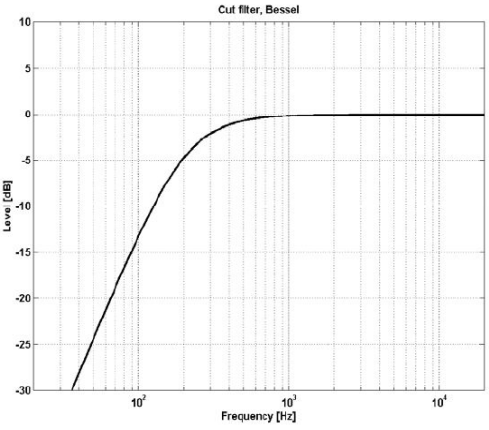
- Bandwidth Range 3, 6, 9, or 12 dB/octave
- Frequency Range: 20 Hz to 20 kHz
- Gain Range -12 dB to +12 dB

Notch Filter - Narrow Type



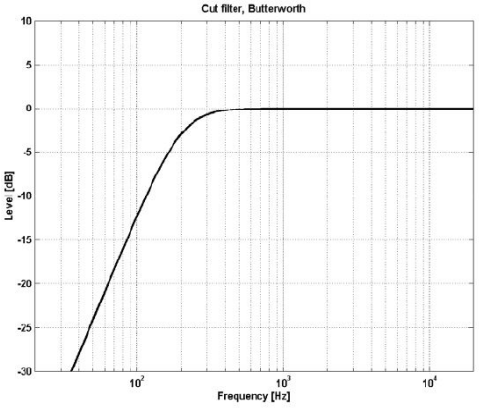
- Bandwidth Range: 0.02 octave to 1 octave
- Frequency Range: 20 Hz to 20 kHz
- Gain Range 0 dB to -100 dB

Cut Filter - Bessel type



- Frequency Range: 20 Hz to 20 kHz

Cut Filter - Butterworth type



- Frequency Range: 20 Hz to 20 kHz

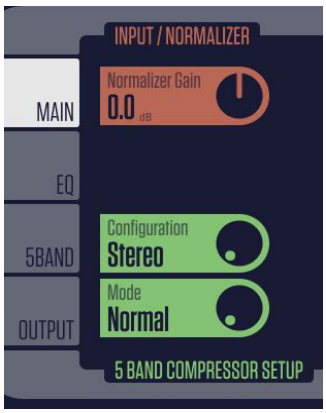
EN

5.4 Compressor Page

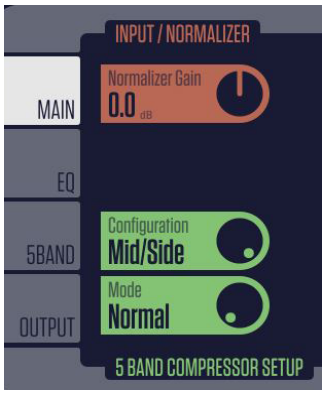
Stereo or Mid/Side

The configuration control in the MAIN page allows you to select Stereo or MID/SIDE for the compressor setup (as well as the EQ, Trim Gains and Meters).

Stereo Configuration

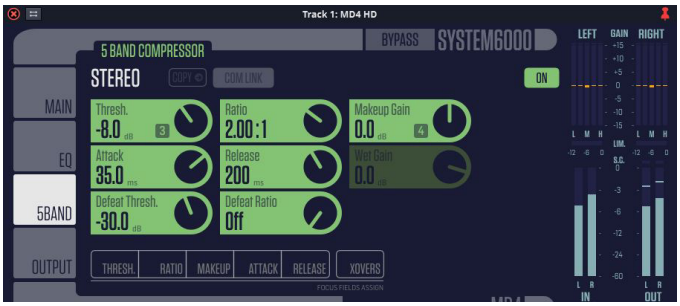


Mid/Side (MS) Configuration



Stereo Operation

If Stereo configuration is selected in the MAIN page, then the top section of the Compressor page shows STEREO, and the gain reduction meters are shown as LEFT and RIGHT.



If Mid/Side configuration is selected in the MAIN page, then the top section of the Compressor page shows STEREO initially, and the gain reduction meters are shown as MID and SIDE. The COM LINK selection allows the compressor controls to be linked between the stereo and mid/side.

Turn off COM LINK to allow separate compressor control of the Mid and Side.

Select SIDE, and the Compressor controls will affect the Side instead of MID.

If at any time you want the SIDE control settings to be the same as the MID settings, press the COPY button. (It will not copy from SIDE to MID).

X Over

The compressor operates in 5 bands, using a low crossover, low-mid, high-mid, and high crossover. The Gain Reduction meters show these 5 bands, with markings for L, M, and H.

Select X OVER and the crossover frequencies can be viewed and adjusted in the first 4 Focus Fields.

The 4 crossover frequencies can be set to OFF (turn all the way down) in order to run MD4 HD NATIVE as a 4-band, 3-band, 2-band, or full band compressor.

Controls

Use the rotary Compressor control knobs to adjust the overall Threshold, Makeup Gain, Ratio, Attack and Release. The knob values correspond to the Comp All values you will see in the 6th Focus Field shown below.

If you select from the row of Threshold, Gain, Ratio, Attack and Release buttons, or if you just click on any rotary control, the Focus Fields will show the Com Lo, Com LoMi, Com Mi, Com HiMi, Com Hi and Com All values for the selected parameter. This allows you to adjust the compressor parameters for the each of the five bands. Adjusting the Com All value in the 6th Focus Feild adjusts the value of all bands. However, the Com Mid value only adjusts itself and the Com All value.

The example below shows RATIO selected, showing the separate ratio values in the Focus Fields for each band, and the "Com All" parameter in the 6th Field. In this example, the Lo band ratio is 3.20:1 and the Mid and Hi are 2.00:1.

The Mid Band value follows the Com All value, and is the same value as the rotary knob. If you vary Com All, then all five bands will change, but keeping in the same relative distances from each other.

Threshold

Range: -25 dB to 20 dB in 0.5 dB steps

Relative to the Ref.Level setting (Main page).

When the Input signal exceeds the Threshold value, the Compressor starts to reduce the dynamic content of the signal according to the set Ratio.

Makeup Gain

Range: Off, and -12 dB to 12 dB in 0.1 dB steps.

Manual Makeup-gain for each compression band.

Where the Gain controls in the Main page compensate for the total gain reduction caused by the Compressor, the Makeup Gain in the Compressor page is used as additional gain control on the individual bands.

Ratio

Range: Off to Infinity

Specifies the Ratio of the performed compression.

Example: With a Ratio setting of 2:1 the compressor will reduce every 2 dB above the Threshold point to only 1 dB. This changes to STEER when in DXP mode.

Attack

Range: 0.3 to 100ms

The Attack time is the time the Compressor uses to reach the gain reduction specified by the Ratio parameter.

Example: If the Input signal increases by 4 dB above the set Threshold, with a Ratio set to 2:1 and the Attack time is set to 20ms, then the Compressor will use 20ms to reach a Gain reduction of 2 dB.

Release

Range: 20ms to 7s

The fallback time. This is the time it takes for the Compressor to release the attenuation of the signal.

Defeat Threshold

Range: -30 dB to -3 dB in 0.5 dB steps

The Defeat Threshold is used in combination with the Defeat Ratio to expand lower levels

Defeat Ratio

Range: Off to 1: Infinity

Specifies the Ratio of the performed compression.

The Defeat Ratio is used in combination with the Defeat Threshold to expand lower levels

Steer (DXP mode only, it takes the place of the Ratio control)

Range: Off, -11 to +10, NORMAL in center position

DXP processing enables boost of only low level material, without affecting material that is already loud enough. The boost is applied to levels below the Reference level, and reaches its max at Threshold. The more Steer, the more audio is steered towards the Ref Level. For more information about this parameter, see the previous description of DXP Mode.

Wet Gain (Parallel or Parallel UL mode only)

Range: Off, -40 dB to 6 dB in 0.5 dB steps

Only active in Parallel or Parallel UL mode.

Use this to adjust the compressed signal's contribution to the parallel mix. "0 dB" means there is an equal amount of dry and compressed signal.

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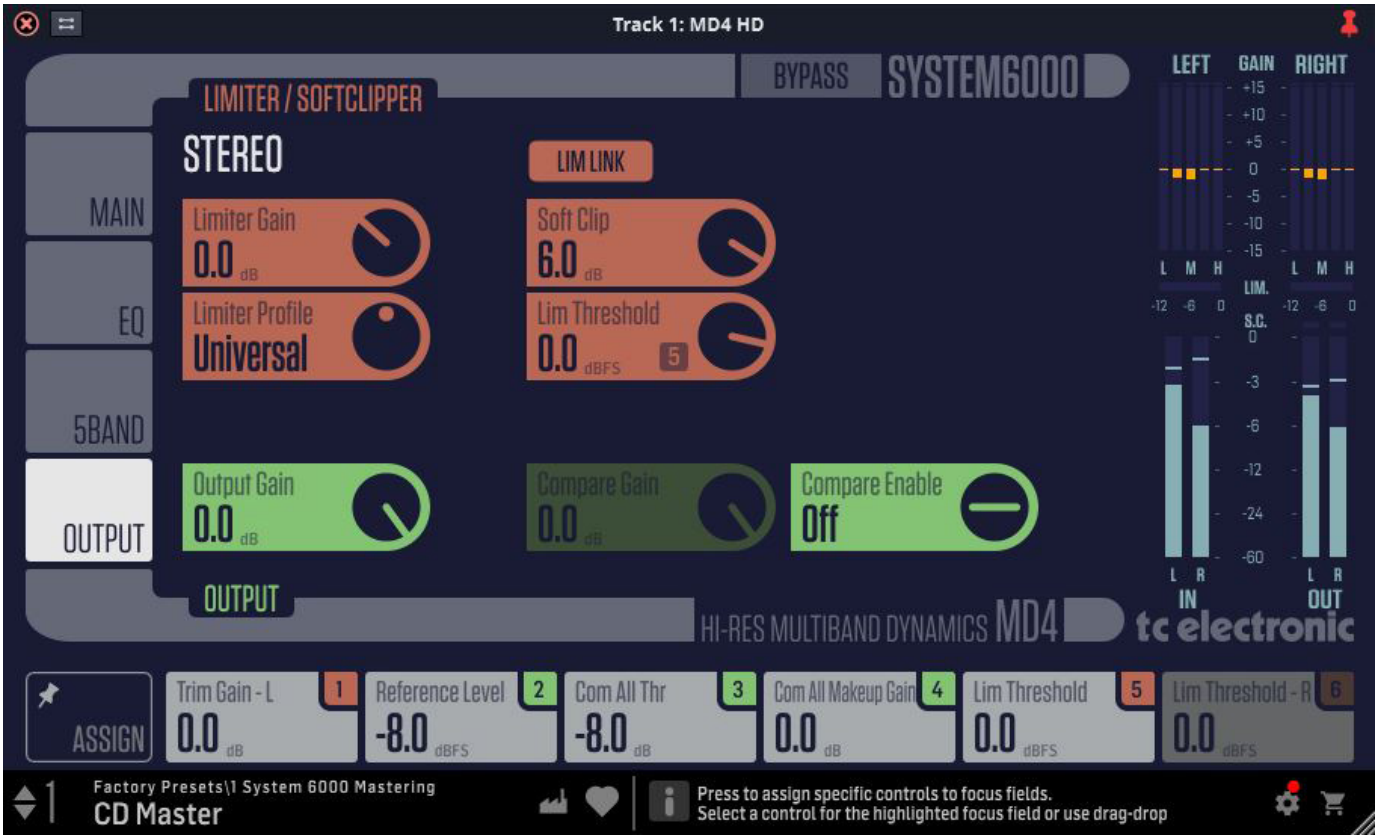
5.5 Output Page



The Limiter

The limiter cannot prevent destruction of dynamic range from happening at earlier stages in the production process, but it can get rid of the signals we know are going to get distorted in consumer CD players, radio processors or data reduction codecs.

The limiter operates with extended precision in both level and time. Double-precision calculations are always used.

The Limiter employs adaptive time constants to combat distortion at low frequencies, while maintaining quick adoption to occasional peaks.

Limiter Gain

Range: -6 dB to +12 dB in 0.1 dB steps

The Limiter Gain is used to control the output loudness (sits between the compressor and the limiter soft clipper)

Limiter Profile

Range: Dynamic, Soft, Universal, Loud, Voice

Dynamic: Gentle adaptive profile for sensitive dynamic/acoustic content

Soft: Gentle adaptive profile for soft audio content

Universal: Adaptive profile for universal use and general audio content

Loud: Fast adaptive profile for loud/agressive rock/pop/electric content

Voice: Adaptive profile for voice/asymmetric content

Limiter Soft Clip L/R

Range: -6 dB to +6 dB in 1 dB steps; OFF

Soft clipper threshold (sits after the Limiter Gain).

The softclip threshold is relative to 0 dBFS - not to the Ref Level.

Limiter Threshold L/R

Threshold is relative to 0 dBFS - not to the Ref Level.

Range: -12 dB to 0 dB in 0.1 dB increments, OFF

Limiter Link

Range: On=Stereo, Off= Left/Right

This links the Limiter in Stereo, or unlinks it in Left and Right

Output Gain

Range: Off to 0 dB (<-40 dB: in 3 dB steps, >-40 in 0.5 dB steps)

Output level adjustment for both channels.

Compare Enable

Click to activate the compare function, and activate these controls. Due to the difference in level, "in-circuit" and "out-of-circuit" comparisons are often difficult to make using the BYPASS key. Use the Compare Gain parameter to compensate.

Compare Gain

Range: -20 dB to 0 dB in 0.1 dB steps

Processing with MD4 HD NATIVE will most often also mean raising the level of the signal.

To make a realistic comparison of processed and unprocessed signal, it is important to compare at equal levels. Use the Compare level to set a level for the processed signal.

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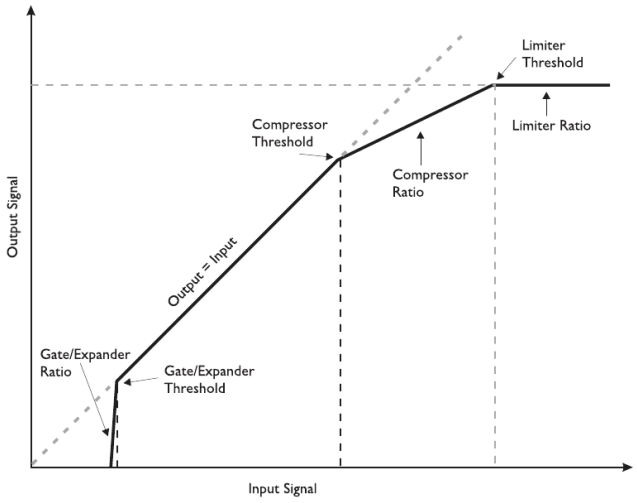
6. Dynamics Processing In-Depth

After the Normalizer Gain, the signal is gently split into 5 overlapping bands - the low, low-mid, mid, high-mid, and high frequencies. It will then compress each band somewhat independently. Thereby, for example, a powerful kick-drum will not modulate the processing of the lead vocals. After compression, the 5 bands are combined again.

6.1 Compressor

The very basis of compression can be reduced to "controlling the dynamic content" of an audio signal. This basically means turning down the loudest parts of the source material and raising the volume of the parts with low level content. But how this is done, and how this is applied in audio production, is slightly more elaborate.

Keep an eye on the illustration below and let us look at the basic compression parameters:



Threshold

The Threshold parameter sets the limit where the compressor kicks-in/ releases its grip of the signal. As soon as the level is above the set threshold the compressor is active. When below - it is not.

Ratio

The Ratio sets the amount of gain reduction applied when the signal exceeds the threshold. In the illustration above, the Ratio is the steepness of the curve after the compressor threshold.

Attack

The Attack time is the time it takes for the compressor to reach the compression amount specified by the set ratio.

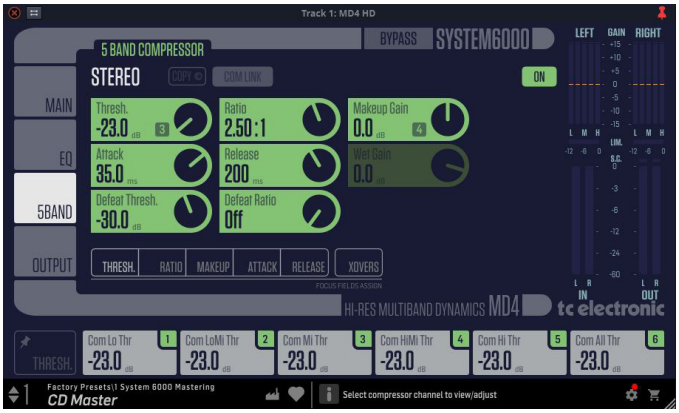
Release

The Release time is the time it takes for the compressor to release the signal after the input signal is below the threshold point again. How each of these parameters are set is very important, and only the correct combination gives the desired result.

Examples of Compressor Threshold and Ratio

Let us look into setting the Threshold and Ratio. In many cases, you would use a low threshold, in combination with a small ratio and vice-versa. Let us choose a low threshold of -23 dB and a small compression ratio of 2.5:1.

We have now set the compressor – but with identical settings for all 5 bands. With identical settings, we are not taking full advantage of the multiband capabilities. This is where the individual band controls come in. For example, click on the Thresh control knob once, or the Thresh button in the row below the controls, and the Focus Fields change to show the Threshold settings for each band. To return to the Assigned Focus Fields, select Thresh again.



The controls allow you to create different settings for each of the 5 bands and All.

Examples of Attack, Release and Crossover Frequencies

Let us look into how to set the Attack and Release Times.

We start with small values for both parameters. If the attack time is too short, we may remove some nice transients or “kick” from the material. This may not be what we want, so we could try a greater value instead. Heavy peaks can be smoothed using the limiter section.

If the release-time is too fast, it may result in a “pumping” effect, because the compressor returns to the uncompressed signal immediately whenever the signal falls below the compressor’s threshold setting. If so, we could increase the value of the release time until we are satisfied with the result.

You could start with an Attack time of 1 ms and a Release time of 200 ms.

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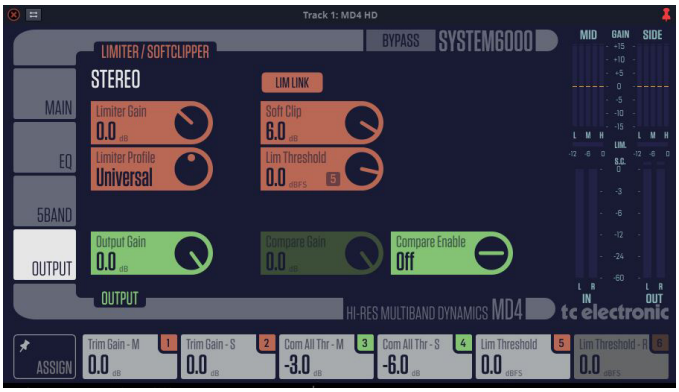
If you do not get the desired result, you could also try some different crossover frequencies. Keep in mind that you have 5 independent bands – why should a bass drum signal affect the mid and high bands when its peak is in the low end? Click on the XOVERS button in the row below the control knobs, and the Focus Fields will show the 4 crossover frequencies. You could start out by using 100 Hz, 400 Hz, 1.6 kHz and 6.3 kHz if applied on drums, or 125 Hz, 500 Hz, 2 kHz and 8 kHz, if applied on a full range mix.

Click the XOVER button again to return to the Assigned Focus Fields.

Note: Sometimes it is easier to adjust the Attack and Release times and the Crossover frequencies by using extreme values for Threshold and Ratio during setup. This will make the effect of your settings much easier to hear.

6.2 Limiter

The Limiter is actually yet another compressor. It uses a very fast attack time and has a ratio of 1 to infinity. But why is the Limiter necessary?



For the compressor to be used as a musical tool, the set attack times are relatively long (from 1 to 100 ms). This gives the disadvantage that certain peaks can pass. Therefore a limiter with an attack time of as little as 0.1 ms and a ratio of 1 to infinity prevents nearly all overshoots.

You may want to use the Limiter carefully, as a limiter is always a somewhat "drastic" tool to apply to your audio. If on a full mix, just a couple of dB should be enough to limit strong peaks. If on a channel, feel free to sculpt your sound but beware that the more compressed and limited it is, then the less "life" and more "ear-fatiguing" it will most likely sound.

6.3 Modern Mastering, Loudness and True-Peaks

The MD4 HD NATIVE is a multi-band dynamics-multi-tool, highly suitable for the mastering process, with many ways to make your mix sound better, but if not used wisely, there are many ways of making it sound worse!

There is a risk of becoming speed-blind in the tuning process, and at first prefer an over-compressed and loud-sounding track. This is a situation that can be avoided by:

- Knowing your music genre deeply
- Using relevant reference tracks for comparison
- Ensuring calibrated monitoring levels
- Using an optimized monitoring environment

The resulting Loudness and Dynamic Compression are two of the most important properties of a track, adjusted finally in mastering. These two properties can be regarded as counterparts to each other. In other words, it is important to:

- Decide how loud your tracks should be
- Design the dynamic profile of your music

Due to the fixed 0 dBFS ceiling in digital audio, louder tracks have less dynamics, and "weaker" tracks will potentially have more dynamics.

We recommend that you do not hyper-compress and limit your tracks to the extreme in the mastering process, in order to achieve a loud track. If you overdo it, it will potentially reduce the audio quality of your work. And often, there is even a penalty in playback stages so your loud track may end up sounding weaker, rather than louder.

6.3.1 Loudness

The Loudness approach to music mastering is based upon similar methods introduced more than a decade ago by the industry producing audio for TV.

Loudness measures how loud we actually hear audio, which is different from "level" PPM meters that look at transients only. The Loudness method includes K-filtering that emulates human hearing, where bass affects the perceived loudness level less, and where frequencies from approximately 2 kHz and up affect the perceived loudness level more.

Loudness is a modern, but still well-rehearsed reference method, which is standardized in BS-1770, and many music streaming services refer to this standard, or similar proprietary methods.

Loudness is measured on the LUFS metering scale. LUFS stands for "Loudness Units Full Scale." The scale does not measure sound as a dB meter or a VU meter would. Rather, it accounts for how the human ear (and brain) perceives the loudness of a track. That is also why there is only one loudness value or level, instead of one per channel.

Loudness examples: Some Streaming Services will aim for -16 LUFS loudness when they play back music tracks with "Sound Check" enabled. The AES community recommend streaming music between -20 and -16 LUFS. Often you will see songs that measure -14, -12, -10 or even -8 LUFS and it will vary for example by music genre.

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6.3.2 True Peak

Often, there can be small peaks of sound in-between digital samples, intersample peaks, that go undetected in most digital tools. Where traditional peak meters and conventional peak limiters fail to read those true peaks of sound, a True Peak meter will provide the mastering engineer with the actual reading.

Without a True-Peak Limiter, a mastered track could go into digital clipping when converted to a lossy format like MP3 or AAC or when being Digital-to-Analog converted in normal playback systems. This can happen, even if no distortion is heard when monitoring the final master.

Although it doesn't have a True-Peak meter, the MD4 HD features a True-Peak Limiter, which ensures that there are no intersample peaks above the level the limiter threshold is set to. Be aware that further processing after the MD4 HD might introduce intersample peaks again.

6.3.3 Beware of The Loudness Wars

An important note on loudness, is that there has been a trend in mastering toward making songs appear louder and louder. Since you can never exceed the 0 dBFS digital ceiling, applying a brickwall Limiter at the final stage, the result often has been to apply very aggressive settings on dynamics tools such as multiband compressors, so-called 'loudness optimizers', as well as the final Brickwall Limiter itself. This phenomenon has been referred to as 'The Loudness Wars'.

This escalated because we naturally perceive a louder version of a song to be better than a softer version, when you compare them directly. Another cause is that record industry people would compare an 'airplay' version of one track to a newly mastered CD track, where the former tended to sound louder and fatter due to FM broadcast processing – leading to a request to make the master louder, with more cowbell. Well, the 'wars' may have peaked, but it is still something that you should be aware of and pay attention to. And while we say that they may have peaked, they are not completely over. . .

Further, if you apply extreme amounts of compression, distortion occurs, which may lead to listening fatigue for you as well as your audience. Of course, the amount of compression that you can use in order to fit a certain music genre can vary, but just stay aware of how it affects your music, and act accordingly.

It is also very important that you always listen to your own mastering project and your reference library at the same loudness level when you compare them. There is no doubt that while a heavily compressed song – dynamically speaking – may sound more impactful at first, you will sacrifice detail and nuance.

Finally and as mentioned above, keep in mind that the current trend in music streaming is a target loudness of approximately -16 LUFS, so if you deliver a significantly louder song, it will get turned down automatically if the listener chooses to apply the 'normalization' feature such as 'SoundCheck' or 'Same Level' that aligns the loudness of the songs in the library. And if that happens, your very loud song may well end up sounding much less impressive than the competition!

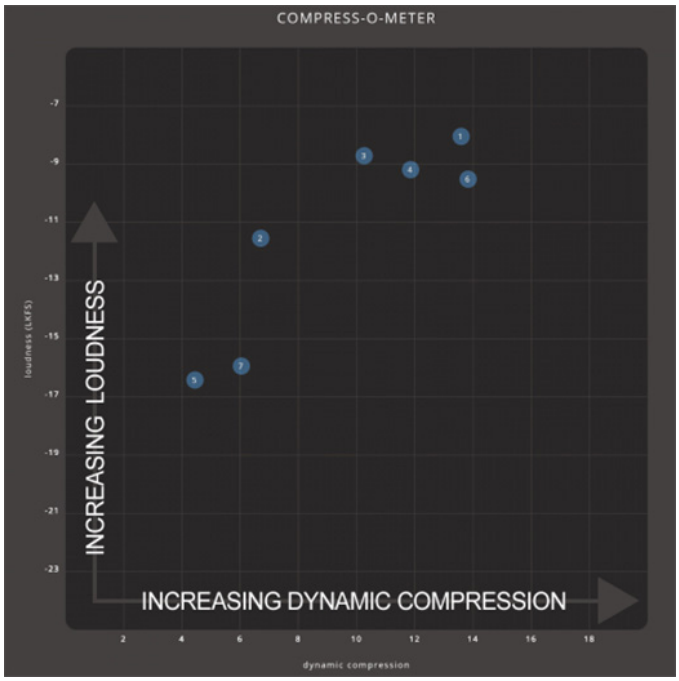
6.3.4 Compress-O-Meter - Master Analyser

TC Electronic has launched a free on-line service at the following address:

https://finalizer.com/analyzer

This analyzer can help you investigate and decide the suitable loudness level and amount of dynamics processing for your music, when you compare it to your preferred reference tracks, or pre-analyzed giant hits through the history.

A central part of this service is the Compress-O-Meter:



The X-axis is the amount of Dynamic Compression. It is unit-less, so you should not add "dB", "ratio", or similar, when thinking about it.

The Dynamic Compression is based on the track's Peak-to-Loudness (PLR) value and a measurement of the micro-dynamics of the track.

- Very dynamic music with lots of transients and loud and soft passages, will have a low Dynamic Compression value, to the left in the Compress-O-Meter.
- Very dense music with little transients, will have a high Dynamic Compression value and show up to the right.

The Y-axis is the full track Loudness value, shown in LUFS (Loudness Units Full Scale).

6.3.5 Additional tools

We recommend using the Icon Series BRICKWALL HD for adding detailed True Peak limiting and loudness awareness to your chain, which will ensure a solid master audio file that will comply with any play back system or streaming service.

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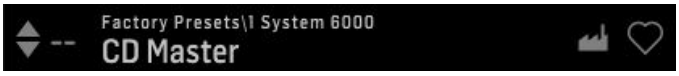
7. Presets

The MD4 HD NATIVE offers a collection of factory presets, as well as the option to create and save your own custom settings as user presets and favourites.

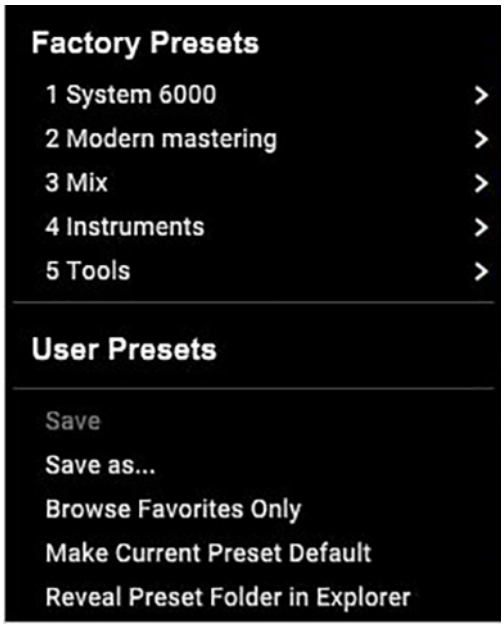
Note that most DAWs have a built-in preset function that appears on every plug-in, which is often found at the top of the plug-in window.

It is not recommended to use this as your primary method of saving presets, as it has limited functionality and does not allow the saved presets to be transferred easily to other DAWs. Instead, we suggest using the Preset section at the bottom corner of the user interface window:



A single click on this PRESET window brings up a menu with several preset-related options. You can recall a factory or user preset from the libraries, save the current preset, or create a new user preset with the 'Save as' option.

Note: the following illustrations are from a different plug-in, but the main features are the same.



The presets menu is divided into Factory Presets and User Presets.

7.1 Factory Presets

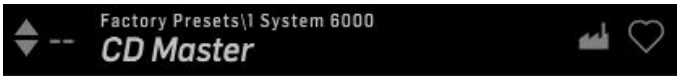
Factory presets are built into the plug-in and cannot be overwritten, so if a factory preset is modified and you want to keep the changes, you need to save it as a User preset. User presets can be edited and organized as you like.

When recalling a Factory preset or saved User preset, the name will appear in plain text as shown below.

It will have a number to the left of the title, if it has been assigned as a favourite (see later), otherwise it will show "--" next to it. Do not be alarmed.

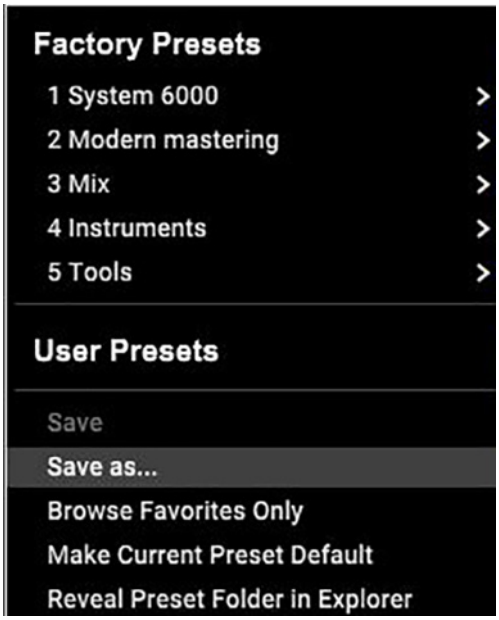
7.2 User Presets

If you make an alteration to any of the parameters in the current preset, the preset name changes to italics as a reminder that something has changed from the original factory preset.



To save this new setting as a User preset, click in the PRESET window, then select the Save As option. Save it with an appropriate name.

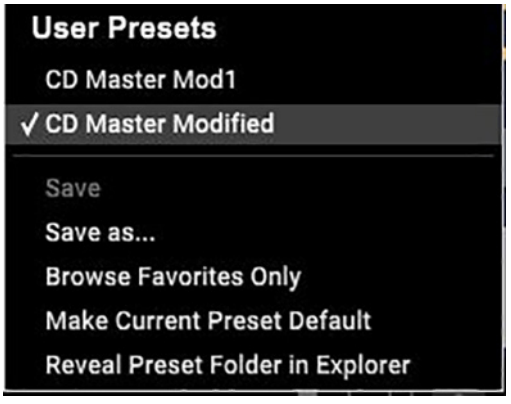
To discard the changes without saving, simply navigate away from that preset.



The altered preset will be saved as a user preset, with your new name for it, and its name will appear in the presets window.

If you modify a saved user preset, you have the option to "Save" (overwriting over the existing user preset) or "Save As" (save as a new user preset).

If you modify a factory preset, then only "Save As" is available (to save as a new user preset). Factory presets cannot be overwritten.



User presets are not given a number unless you assign them as favourites. (See Favourite Presets below.)

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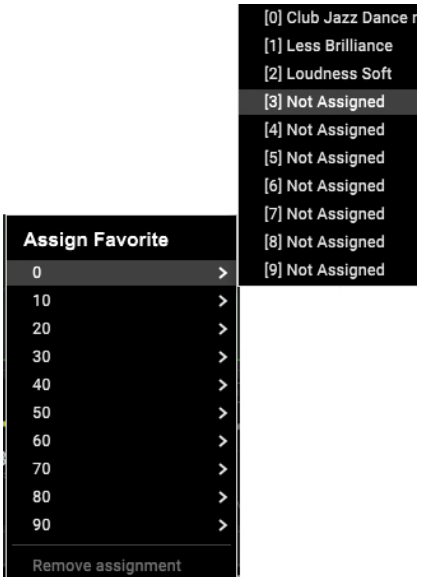
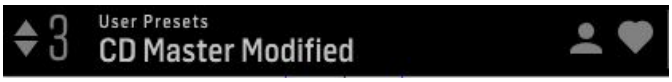
7.3 Favorite Presets

Creating your own presets will make them accessible from the Preset menu, but they will only appear in the list of 100 favorite presets in the plug-in if you set them as a favorite. This is done by assigning a favorite slot number to the preset using the Favorite menu.

Click the FAVORITE (heart-shaped) button at the right edge of the preset window, then select one of the 10 banks. Assign one of your custom presets to a favorite slot, then save the preset.



When a preset is assigned a favorite slot number:

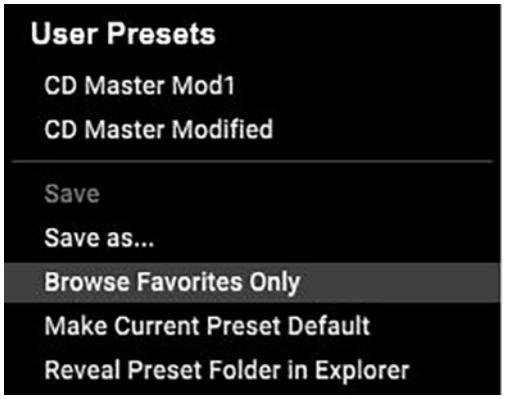


- The preset is part of the 100 presets that can be recalled
- The favorite number will be locked so that two presets cannot be assigned to the same favorite slot number. This is shown in the Favorite menu by graying-out the number in question
- The favorite number will be displayed in brackets when you browse the presets menu

You can remove the favorite assignment by selecting the “Remove Assignment” feature in the Favorite menu, then saving the preset.

7.3.1 Browse Favorites Only

The 'Browse Favorites Only' option in the preset menu allows the UP/DOWN arrows in the bottom bar of the plug-in. Otherwise, scrolling goes through all presets.



7.4 Make Current Preset Default

Selecting 'Make current preset default' will cause this preset to appear every time a new instance of the plug-in is created.

7.5 Reveal User Preset Folder in Explorer

To change the name of a preset, select 'Reveal User Preset Folder in Explorer' and modify the file name. This will open a Finder (Mac) or Explorer (PC) window where the user presets are stored. You can rename as well as delete, copy and paste presets. This allows you to share presets with other users online, simply pasting the new ones in this folder.

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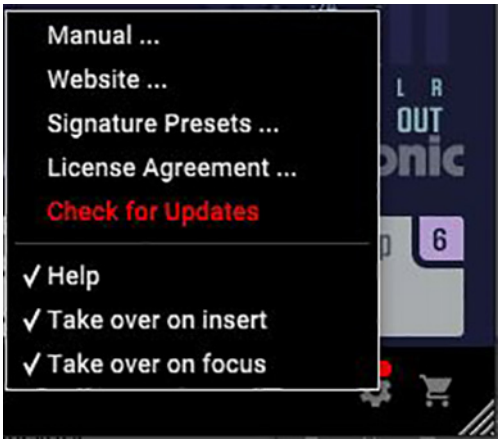
8. Software Updates

New versions of the software may be released to add new features and improve performance. Updates can be detected from the plug-in directly and can be installed after download from the website. See Chapter 2 for plug-in installation.

If the 'Automatically check for updates' option is checked inside the update menu, the red dot will appear on the settings icon when a new plug-in is available.

Click the gear icon and select "Check for Updates" to perform a scan.



9. Specifications

Sound	
Processing	5 Band compression/limiting, softclip
Sample rates	44.1, 48, 88.2, 96, 176.4, 192 kHz

Software Support	
Operating systems	Mac OS X 10.13 High Sierra or above, Windows 7 or above
Plugin formats	AAX-native, Audio Units, VST2.4, VST3. 64 bit

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