



Manual

Master X3 for PowerCore

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If you can't find an answer online, you have the option of submitting a question to our technical support staff who will then reply to you by e-mail. The TC Support Team is on constant alert to help you in any way they can.



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WELCOME TO TC MASTER X3

Knock out Punch for any mixes or masters. Period. Master X3 is the virtual incarnation of the TC Electronic Finalizer™, the standard mastering processor in the pro audio field.

Master X3 expedites the mastering process by integrating several phases of mastering into a single, easy to use interface. It features multiband processing with expansion, compression and limiting separately for each band. High quality uncorrelated dithering is included as well.

The intuitive user interface features many new ideas to make the critical mastering process faster and easier. The overall processing characteristics are controlled via “Target Curves” that simplify the handling by providing a global processing style for all bands in all modules.

The interaction between the bands can be fine tuned by applying “Target Factors” which determine the frequency focus of each processing module, significantly reducing the number of required user parameters to set this complex process up. “Soft Clipping” even provides “analog” sound whenever desired.

And now put on your musical pair of glasses – and ENJOY!

TC Electronic

GENERAL INFORMATION

SYSTEM REQUIREMENTS

Windows

PowerCore software 3.0 or higher
Windows XP
PIII 1,4 GHz or faster
512 MB RAM
VST compatible host application
System must meet requirements of the host application

Mac OS X

PowerCore software 3.0 or higher
Mac OS X (10.4 or higher)
G4/G5 or Intel (1 GHz or faster)
512 MB RAM
VST, Audio Units or RTAS*) compatible host application.
System must meet requirements of the host application

*) RTAS (Pro Tools) is supported via the VST to RTAS adapter from FXpansion (optional). More info on www.tcsupport.tc

GETTING STARTED

Scroll Wheel Support

If you are using a host application that supports this feature, all parameters support scrolling on both Windows XP and Mac OS X. Simply place the mouse over a parameter value field and use the Scroll Wheel to increment/decrement the associated parameter-value.

Key Commands

In most host applications, Plug-Ins support keyboard commands for certain functions. The following key commands are available for all Plug-In parameters.

Key Commands in Mac OS

Reset To Default = [Alt]

Key Commands In Windows

Reset To Default = [Shift] & [Control]

DSP USAGE

For each open instance of the Master X3 on PowerCore devices (X8, FireWire, Compact, Express, mkII, Unplugged), the following DSP usage applies:

@44. 1 kHz:

mono 21%
stereo 21%

@48 kHz:

mono 23%
stereo 23%

@88. 2 kHz:

mono 44%
stereo 44%

@96 kHz:

mono 48%
stereo 48%

USING PRESETS / GENERIC CONTROLS

FACTORY PRESETS

TC Master X3 comes with factory presets. These presets were designed by audio professionals who created them in real-life sessions. The presets are extremely useful to get started quickly, and some users might even feel no need to edit them!

PLUG-IN AUTOMATION

The TC Master X3 parameters can be automated, in case your host application supports automation. Please refer to your host application's manual to check if and how Plug-In automation works.

GENERIC CONTROLS

Before we get into details, here are some basic methods for operating TC Master X.

Fine Trim Mode

If you press the [CONTROL] key while you're moving a fader, you will get into a Fine Trim Mode. This mode allows you to edit values with extra-high accuracy!

Reset

If you want to reset a parameter to its default value, hold the [OPTION (ALT)] key while clicking on the fader.

Group/Ungroup

To group/ungroup faders, for example the band levels or the input faders, hold the [Shift] key while moving the fader(s).

Inactive Controls/Use of color

Inactive controls are grayed out, color signals active controls! In bypass mode all controls are grayed out.

The image shows a software interface for a 3-band audio processor. The interface is divided into several sections:

- Top Section:** Includes a power button, a 'Default' preset dropdown, and a 'File' button. Below this are three frequency bands (L, M, H) with their respective levels (all at 0.0dB) and crossover frequencies (120.0Hz and 2.80kHz).
- Meters and Indicators:** On the right, there are 'CONSECUTIVE CLIPS' meters for IN and OUT (both at -96.0), 'Input/Output PPM Meters' with a scale from 0 to -60, and a 'Target Curve' graph. A 'SOFT CLIP' indicator is also present.
- Processing Controls:** The bottom section contains three columns of controls for an EXPANDER, COMPRESSOR, and LIMITER. Each column has sliders for THRESHOLD, RATIO, RANGE, and RELEASE, and a 'TARGET FACTOR' dropdown set to 'OFF'. The LIMITER also has a 'SOFT CLIP' indicator.
- Bottom Section:** Features a 'PRESET' dropdown set to 'Default', a 'FILE' button, and a 'RESET' button.

Red lines with labels point to various features:

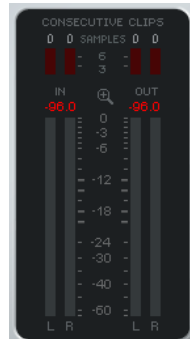
- Look-ahead Delay:** Points to the 'LOOK AHEAD' dropdown set to 3ms.
- Output Dithering:** Points to the 'OUTPUT DITHER' dropdown set to 'Off'.
- Consecutive Clipping Indicator:** Points to the 'CONSECUTIVE CLIPS' meters.
- Band levels:** Points to the three frequency band level meters.
- Crossover Frequencies:** Points to the '120.0Hz' and '2.80kHz' frequency settings.
- Compressor reduction meters:** Points to the 'LIM' and 'EXP' meters for each band.
- Meter zoom:** Points to the 'CONSECUTIVE CLIPS' meters.
- Input/Output PPM Meters:** Points to the vertical PPM meters for IN and OUT.
- Target Curve:** Points to the 'TARGET CURVE' graph.
- 3-Band Expander Controls:** Points to the EXPANDER control section.
- 3-Band Compressor Controls:** Points to the COMPRESSOR control section.
- 3-Band Limiter Controls:** Points to the LIMITER control section.
- Preset Manager:** Points to the 'PRESET' dropdown and 'FILE' button.
- Input Level:** Points to the 'LEFT INPUT' and 'RIGHT INPUT' level sliders.
- Output Level:** Points to the 'OUTPUT' level slider.
- Limiter Soft Clip Indication:** Points to the 'SOFT CLIP' indicator.

TC MASTER X3 – PARAMETERS

METERS & CONSECUTIVE CLIPPINGS

Meters

These PPM meters (Peak Program Meters) include a very accurate Peak Hold function. Set your levels as close to 0 dB as possible, without distorting the signal. The numerical peak display gives you the exact reading you require for that. Clicking on the meters will bring up a pop-up display with a variety of meters options.



Meter Zoom

By clicking on the magnifying glass the meter range will change from -60 dB / 0 dB to -18 dB to 0 dB

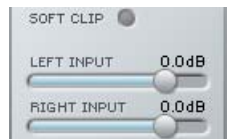
Consecutive Clippings

The CONSECUTIVE CLIPPINGS display is a highly accurate tool which will display any and all clips in your material. The numerical reading even counts single clips. The meters give you an additional visual feedback after the 3rd consecutive clip. Like in the METERS display, clicking on the clipping meters will bring up a menu with a variety of options.

LEFT & RIGHT INPUT

Adjust the signal so you leave the smallest possible headroom and get the compressor working. The separate faders for left and right channel assist you fixing level differences between the channels.

To ungroup the faders, hold the <SHIFT> key on your computer keyboard while moving a channel fader.

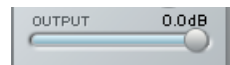


OUTPUT

Sets the Output level. Make sure you set the OUTPUT LEVEL properly, i.e. make sure there are no clips displayed in the OUTPUT METERS.



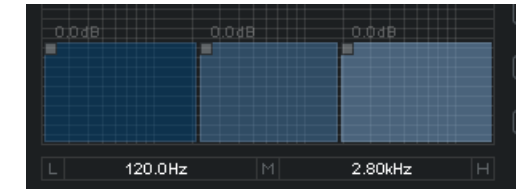
Output-Clips are only displayed, if DIGITAL CEILING is set to 0 dB.



TC MASTER X3 – PARAMETERS

FREQUENCY/LEVELS

Here you set the crossover frequencies and compressor gains for the 3 bands. You could adjust the crossovers by clicking/holding in the numerical fields and moving the mouse to left/right. A third possibility is to click into one of the three blocks and move the mouse to left/right.



The minimal bandwidth of a band is 2 octaves. The gains are adjusted by clicking into one of the 3 blocks and simultaneously moving the mouse up or down. The exact gain is displayed numerically right above the block.

Holding [Shift] while dragging, will allow for simultaneous level editing when moving the mouse up or down.

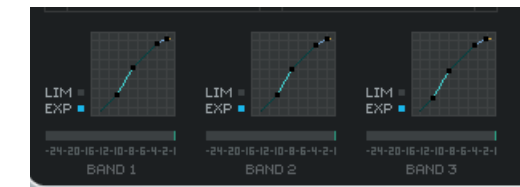
Holding the [Option] key while clicking on a band block, will reset its gain value to 0 dB.

Holding the [Option] key while clicking on the background, will reset all bands.

DISPLAYS

BAND 1/2/3

These displays give you a visual feedback on the dynamics processing applied to each band. Clicking on the display will activate the SOLO function, clicking again will deactivate it again.



The LEDs below the display show if the band's Expander or Limiter section are active. The Gain Reduction Meter displays how much the compressor is working on the signal.

TC MASTER X3 – PARAMETERS

EXPANDER

On-Switch

3-Band Expander on/off

Threshold

Sets the Expander's threshold. Values below the threshold will be lowered in volume according to the ratio set and for the defined range.

Ratio

The Ratio determines how much the output signal will be lowered in proportion to the original signal.

Range

Range defines how far the Expander is able to lower the part of the signal which is below the set Threshold value.

Example: When you set the Threshold to -40 dB, the Ratio to 1:2.0 and the Range to -10 dB, the Expander will only work when your input signal exceeds -50 dB and doesn't go over -40 dB.

Release

Release determines the time the Expander takes to return to the original signal level. This parameter only has an effect, when the Threshold and Range parameters are set in a way that the Expander is actually active.



COMPRESSOR

On/Off

3-Band Compressor on/off.

Threshold

Sets the Compressor's threshold i.e. above what level it starts processing. Values exceeding the threshold will be compressed.



TC MASTER X3 – PARAMETERS

Ratio

Determines the amount of compression, the higher the ratio the “stronger” the processing and the lower the remaining dynamics range.

Range/Attack

The Compressor's attack time determines how fast the compressor will react on signals exceeding the threshold. Shorter attack times will compress harder but might introduce a “pumping” sound.

Release

The Release time determines how fast compressed signal returns to unprocessed, whenever the level falls below the set Threshold.

LIMITER

On-Switch

3-Band Limiter On/Off

Threshold

Whenever the signal surpasses the set Threshold, the Limiter processes it with a ratio of “infinite-to-one” (?:1) to limit the possible maximal level.

Ratio/Softclip

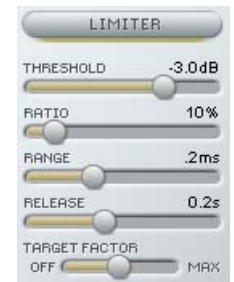
Softclip affects the way the Limiter works. In Off position, the signal will be limited “hard” whenever the Threshold is surpassed. With Softclip active, limiting starts slightly before the set Threshold and then glides into limiting using a much softer curve, making the limiting process less audible. The Softclip LED beneath the Meters will indicate that Softclip is working.

Range/Attack

The Limiter's attack time determines how fast the limiter will react on signals exceeding the threshold.

Release

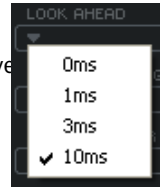
The Release time determines how fast the limited signal returns to unprocessed, whenever the level falls below the set Threshold.



TC MASTER X3 – PARAMETERS

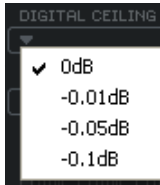
LOOK-AHEAD DELAY

Master X3 can look into the future, whenever this parameter is active. This won't help you fortune-telling, but it'll help Master X3 to be prepared for sudden peaks in your material, thus ensuring a much better quality processing!



DIGITAL CEILING

Digital Ceiling will let you define a marginally lower level than 0 dB maximal value, so you can ensure that you definitely don't have any values reaching 0 dB.



This can be important for mastering – as some devices already show a clip or overload, when 0 dB is reached for one single sample – others take up to 5 or more consecutive clips before they display an overload.



Do not activate Digital Ceiling before you have adjusted the setting to your liking – Master X3 won't display clips with Digital Ceiling active!

TARGET CURVE & TARGET FACTORS

The Target Curves and Target Factors simplify the handling of Master X3 significantly, by reducing the amount of parameters necessary to control the Plug-In by approximately 2/3. Thanks to these innovative parameters it will be easy for you to keep an overview of all relevant settings at all times – and get to a result fast anyway!

Although you are using a 3-Band solution you only have one set of parameters for each module. This is possible due to the use of the Target Meta-Parameters:

The displayed values are always referring to the center band, with Target Curves you define the basic “focus” (like “all equal” or “less treble” etc.) as displayed by the little curve in the Target Curve display – and with the Target Factor you can edit that “focus”, move the target elsewhere in the frequency spectrum.

TC MASTER X3 – PARAMETERS

Target Factor

The Target Factor allows fast editing of the relation between the 3 bands, separately for each module. For example: With just one move of the Target Factor in the Limiter block, you can increase the focus of the Limiter block on the hi frequency spectrum.



In OFF position, the Target Factor is deactivated for the module – all 3 bands will be processed with the setting you see on screen. In MAX position, the selected Target Curve will be applied to the maximum – and the 3 bands will be processed differently. So in a way you could say: The Target Factor determines the amount of differences between the bands.

Target Curves

The Target Curves determine how the 3 bands work together:

Linear

All 3 bands are processed equally. The Target Factor has no effect. (Imagine the frequency characteristics of white noise)



Pink

The Hi band will be processed less. (Imagine the frequency characteristics of pink noise)



Hyped

The Hi band will be processed more.



Smiley

Lo and Hi band are processed more.



MASTER YOUR MIX WITH MASTER X3

Master your miX with Master X3!

...or six easy steps to ultimate happiness! The following chapter introduces the various modules and features of Master X3 in a “hands-on” tutorial.

Let’s imagine we’re working with some rock music. It’s the final mix from that very expensive recording studio down the road, but for some reason there is 5.0 dB of headroom left, wasting precious volume reserves. No compression was applied to the stereo mix. (Actually, we are happy about this because it leaves all options open).

1. Setup

Before we start, let’s set up Master X3 as follows:

LOOK AHEAD DELAY:	3 ms
DIGITAL CEILING:	0 dB
3 BAND LEVELS:	0 dB
OUTPUT:	0 dB
EXPANDER:	OFF
COMPRESSOR:	OFF
LIMITER:	OFF
TARGET CURVE:	LINEAR

2. Input Level Adjustment

Set the input level for both channels to +5.0 dB. In our example, this will bring the input level up to an optimal value of 0 dB. Adjust this value until no clipping is indicated (i.e., until there are no Consecutive Clips in the input). For this example, set it to +4.9 dB.

Remember: as long as you don’t alter any settings in the signal chain before Master X3, you won’t get any changes in the input level, so there is no risk of clipping once you’ve set the level correctly!

3. Turn on the Compressor block

The FREQUENCY/LEVELS display in the upper-half of the Plug-In window, the three displays beneath them, and the Compressor’s parameter faders come to life! The music has probably come up in volume already, and the sound has changed a little too – and perhaps some “pumping” is evident. So, let’s set the Compressor properly to get rid of the pumping, beef up the overall sound, and, yes – we want it louder!

MASTER YOUR MIX WITH MASTER X3

Let’s set the Attack and Release Times to remove the “pumping” from the sound. We start with small values for both parameters. If the attack time is too short, we may remove some “kick” from the material. That’s certainly not what we want, so if it happens, try a greater value. Heavy peaks can be smoothed using the limiter section.

If the release-time is too fast, it will result in a terrible “pumping”, because the compressor returns to the uncompressed signal immediately whenever the signal falls below the compressor’s threshold setting. Increase the value of the release time until you are satisfied with the result. In our example, we have chosen an Attack time of 1ms and a Release time of 0.2 s. If you don’t get the desired result, try some different crossover frequencies. Keep in mind that you have three independent bands – why should a bass drum signal affect the mid and high bands when its peak is in the low end? (We chose 125 Hz and 2.5 kHz as the settings for our example.)



Sometimes it’s 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. Additionally, the band SOLO-Function helps to focus on a single band.

Now we will adjust the compressor’s threshold and ratio. Set these parameters to the desired values. In most cases, you would use a low threshold in combination with a small ratio and vice-versa. Let’s choose a low threshold of -20 dB and a small compression ratio of 2.5:1 to be satisfied.

Satisfied? Why be satisfied? We have now set the compressor – but with identical settings for all three bands! With identical settings, we are not taking full advantage of the multiband capabilities. This is where the famed Target Curves and the Target Factor come in.

The Target Curves create different settings for each of the three bands. The displayed values in each fader section are always the mid-band settings. If the Target Curve is set to “Linear” (or if the Target Factor is set to “Off”), the values will be identical for all three bands. If you select the “Hyped” curve, for example, the high band will be compressed more than the others.

The Target Factor defines how much the target curve characteristics will influence the hi or low band. To set the Target Curve and Factor properly, we recommend that you compare the processed signal with the uncompressed, because you can use it to change the overall sound impression. Does your mix lack treble? Use the “Hyped” curve and adjust the target factor to your liking. Too bright? Select “Pink” and adjust the target factor. Not enough treble and bass?

Go for “Smiley” and you’ll be smiling too!

MASTER YOUR MIX WITH MASTER X3

To get a better impression of how the sound – as opposed to the output volume – is influenced by Master X3, reduce the output level so the bypassed and processed signals are equally loud – but don't forget to bring the output level back up in the end! The band levels in the upper display supply you with an additional tool for easily adjusting the sound of your mix. Use them like a low, mid, treble EQ!

4. Activate the Limiter

We've pumped up the volume and reduced the dynamics to optimize the sound and to make it more compact and "punchy".

But there's something really nasty that can happen when you work with digital audio: digital clipping. If you have more than one tiny sample clip, your whole master will be worthless for serious use – such as putting the music on CD.

That's why there is a Limiter block in Master X3. It ensures that you get only the levels you want, and eliminates the ones that would not only spoil your day but also your whole mix!

You should use the Limiter carefully, as a limiter is always a somewhat "drastic" tool to apply to your audio. Just a couple dB should be enough to limit strong peaks. Softclip will help the limiter work even more smoothly.

For our example we have chosen a threshold of -4 dB. The Attack time is short (50 ms), so the Limiter is capable of preventing clips. The release time is set to a value that avoids unwanted pumping (0.3 s).

Set the target factor in the same way you set the compressor. Trust your ears (and the Consecutive Clips meters) to judge whether a band needs more limiting.

5. Expand!

By compressing the signal we made it sound louder. However, an unwanted side effect is that the ground floor level is also brought up - which may cause you to remark: "Where did all that noise come from?". The noise will be most evident in the pauses. The Expander is one possible cure for this. (Obviously, the Expander can't replace broadband noise reduction – but it will reduce audible noise when applied to vocal tracks, for example.)

MASTER YOUR MIX WITH MASTER X3

Use the Expander carefully. The modulated noise of the ground floor level is much more audible than a higher ground floor level without such modulation.

The Expander's threshold must be lower than the compressor's threshold. If you raise it too much, you might cut into low parts of the signal, such as reverb tails. The Expander's range parameter determines the width of the level range. Also, the target Factor enables you to determine whether to apply different settings to all three bands, and if so, just how different the settings should be!

6. Adjust the Output Level

We are almost finished – just one parameter left: the Digital Ceiling. Set this parameter to a value lower than 0 dB to prevent unwanted clipping.

The most common value is -0.01 dB. With this setting, the maximum output level is -0.01 dB. No portion of your signal will be able to pass this absolute setting. Now you can be absolutely sure that there is no clipping – and the difference from 0 dB will be imperceptible.



If you want to further edit your settings, please make sure that you first switch the Digital Ceiling back to 0 dB. Otherwise, you won't be able to tell if there are internal clips!

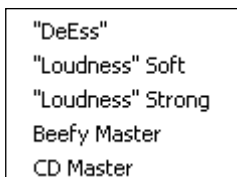
Introduction

We recommend using the dedicated PowerCore file handling system that, apart from recall; store and compare facilities, allows for easy exchange of entire preset folders with other users, between Windows/Mac platforms and also between different host applications.



File

Click “File” to open the File menu.



Load Preset: Select to load presets from the default preset location.

Save Preset: Select to save the preset in My Presets folder.

My Presets: Via “My Presets” you are able to load you own presets.



If you chose to store presets in other locations than the “My Preset” folder, these presets will not appear in the “My Preset” drop down menu. However, you can still navigate to, and load these presets via the Load Preset function.

Preset name

This is the name of the preset.

Up/down

The [UP]/[DOWN] arrow keys can be used to browse through all presets.

A/B

With the A/B compare function you can easily compare different parameter settings when working with the plug-in.

When you start working with your preset, the A/B button is grayed out. This state indicates that the settings in both memory locations A and B are identical - so there is actually nothing to compare.

As soon as you touch one of the parameters, the memory location “A” will be active. All parameter changes will be applied to memory location “A”. If you switch to memory location “B”, you go back to the starting point, and all further changes will now be applied to memory location “B”.

Every time you press the A/B button, you will toggle between these two memory locations.



The A/B memory locations are temporary settings only! Saving a preset, will save the currently selected memory location only. The setting of the other (hidden) memory location will not be saved!

Reset

Click “Reset” to clear memories A/B and return to the originally recalled preset.

DEFAULT PRESET LOCATIONS

The following locations will describe where you can find the presets, which are stored in a folder unique to each plug-in:

Mac OS X preset paths:

Factory presets:

<Macintosh HD>/Library/Application Support/TC Electronic<plug-in name>/Presets/

User presets:

/Users<user name>/Library/Application Support/TC Electronic<plug-in name>/Presets/

Windows preset paths:

Factory presets:

C:\Program Files\TC Electronic<plug-in name>\Presets

User presets:

C:\Documents and Settings\<your user name>\My Documents\TC Electronic\<plug-in name>\Presets

- To delete a preset file, simply move it to the “Trash” or “Recycle bin”.
- To create a new sub-folder that appears in the plug-in menu, simply create a new folder in the plug-in folder that resides in the PRESETS folder of the plug-ins default preset location.



A folder will not appear in the Preset File Menu unless it has at least one preset inside!