



# THE ESSENTIAL GUIDE TO...

# Compression

Mac PC It's the most fundamental dynamics processor of all, so you need to be able to wield it accurately...

## On the DVD

**VIDEO TUTORIAL**  
We've put together a video to accompany our compression walkthrough, which you'll find in the **Videos** folder

### ▶ SIDECCHAINING

A special compressor configuration which allows one signal to control the compressor's gain stage, while the compressor actually processes a completely separate signal. Not all compressors have the features required to support sidechaining.

### ▶ GATE

A feature found in the output stage of some types of compressor. It's used to shut off the output of the compressor when the input falls below a set value – a useful technique for removing background noise on a recording which has been made more noticeable by the compressor's action.

### ▶ DUCKING

A specific implementation of sidechaining. Ducking is often used by radio DJs to talk over a record playing in the background. The presence of the DJ's voice causes the level of the background music to fall automatically.

### ▶ MULTIBAND COMPRESSOR

A special type of compressor which divides the signal up into two or more separate frequency bands. Each band is then processed by a separate compressor, giving a greater degree of control. Multi-band compressors are most commonly used during the mastering process.

### ▶ HARD LIMITING

A specific configuration of parameters that causes the compressor to only operate on (ie, reduce the level of) really excessive peaks in the signal. Hard limiting can be a great way to raise the overall level of a track without sacrificing mix dynamics and clarity.

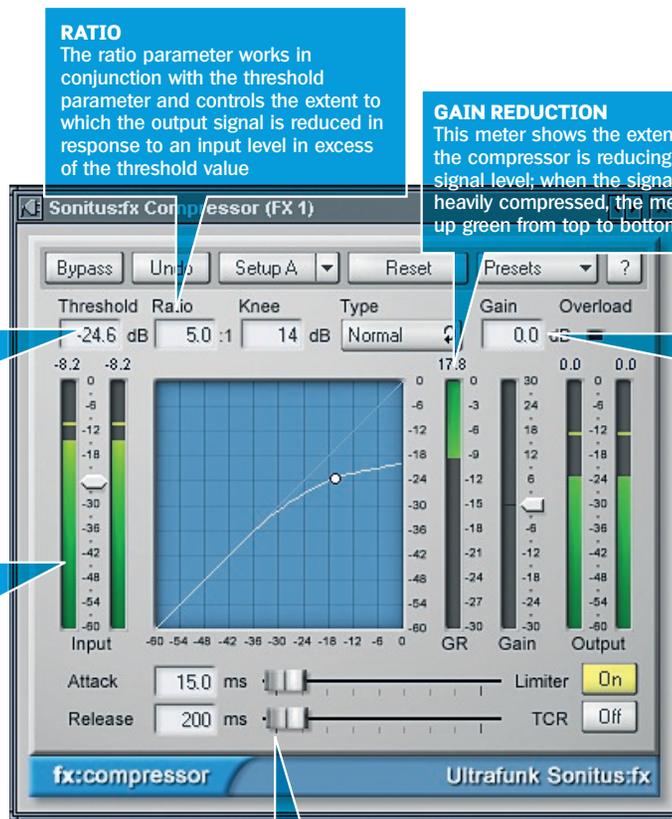
**C**ompressor plug-ins can be a bit of a headache for newcomers to the world of computer music. It's not that they're particularly complicated or have a large number of controls, but it isn't always very easy to find your way around just by experimenting and listening to the results, as you can with effects like reverb or delay. It's therefore more of a challenge to really understand the controls of a

compressor and learn what effect each has on the signal. However, compressors are extremely useful tools – both for problem solving and more creative applications.

Hopefully, by the end of this tutorial, you'll be up to speed on compressor basics and well equipped to start experimenting with this powerful processor in your own projects.

Last month we looked at the

Sonitus:fx Reverb, and this month we'll be illustrating our points with the compressor plug-in supplied as part of the same bundle. The Sonitus:fx Compressor is a good example of a mid-range software compressor – it sounds great and has a clear UI that actually helps the user to understand what's going on underneath it. This tutorial is equally applicable to other compressor plug-ins, however. **cm**



### RATIO

The ratio parameter works in conjunction with the threshold parameter and controls the extent to which the output signal is reduced in response to an input level in excess of the threshold value

### GAIN REDUCTION

This meter shows the extent to which the compressor is reducing the output signal level; when the signal is being heavily compressed, the meter lights up green from top to bottom

### THRESHOLD

The threshold parameter sets the input level at which the compressor starts to reduce the output level. Setting the threshold level low means that the compressor is squashing the signal most of the time

### MAKEUP GAIN

By default, compressors reduce the overall signal level (depending on the input level), so a gain control is usually provided to boost the signal back up again by a fixed amount

### INPUT AND OUTPUT METERS

These display the signal levels at the input and output of the compressor, enabling the user to visualise the changes made to the dynamics of the processed signal

### ATTACK AND RELEASE

These controls specify how quickly the compressor responds to a change in input signal level, in milliseconds. The values of these parameters can have a huge impact on the way the compressed signal sounds

## WHAT IS IT?

So what does a compressor do exactly? Put simply, it monitors the level of the signal at its input and adjusts it on output. If that sounds confusing, imagine adjusting the volume of your stereo in order to hear a quiet piece of music properly, but then turning it down at the start of the next loud track. In doing this

you are, in effect, applying compression manually, by listening out for signal peaks and adjusting the volume for a comfortable listening experience.

To look at it from a more technical point of view, a compressor reduces the dynamic range of the signal fed into it. In other words, it reduces the difference in level between the loudest and quietest parts.

To get an idea of what a heavily compressed audio signal sounds like, just flick on the radio. Most radio stations apply a lot of compression to their material in order to save listeners in a noisy environment from having to constantly reach for the volume control.



▲ On the radio: compression saves us from having to adjust the volume

## WHAT'S IT USED FOR?

Compressors are versatile beasts which can be used in a number of different ways. One common application involves using a compressor to even out the volume of a recorded part in order to make it sit consistently in a mix, removing the need for frantic fader adjustments all over the place. For example, applying compression to a bass or vocal part will help to ensure that it doesn't wander in and out of the mix, providing a more polished and professional sound.

A compressor can also be used during the recording process to manage the dynamic range of a part, allowing it to be captured without clipping or excessive noise. Compressors are also used to treat individual drum sounds, adding impact and enhancing body. Careful attention is required when setting up attack and release settings in this situation.

Finally, compressors are often used as part of the mastering process, to even out excessive peaks and allow the overall level of a track to be raised without any clipping distortion. Judicious use of a compressor can also add punch and weight to a track, but it's easy to over-do it and end up with a cramped sound.

▶ Hardware compressors are no longer a necessity, but this one's a beauty

## HOW DO I USE IT?

A compressor is normally loaded as an insert effect, in contrast to reverbs and delays which are typically loaded as send effects and shared between multiple channels.

As with most effects, experimentation is the best way to find the right sound for a given part, but when it comes to compression, a few rules of thumb should be followed. For example, when processing bass-heavy sounds (kick drums, low toms and, of course, bass parts), it's important to set the attack and decay times carefully, otherwise the compressor can end up following individual waveform cycles rather than the overall level. The secret here is to set both parameters to values in excess of one waveform period (one divided by the frequency value in kHz will give the required time value in milliseconds).

Compressors can be used in several distinct modes, depending on the settings chosen and the situations they're being used in. For example, a compressor can be used to simply smooth off excessive peaks when configured as a hard limiter, so it's only actually compressing the sound a fraction of the time.

Alternatively, it may be configured to compress gently all the time, in which case the overall effect is far more noticeable.



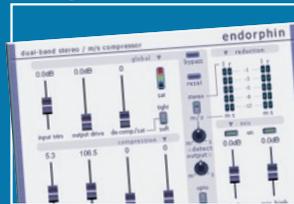
## FIVE TO TRY...

### Vintage Warmer



[www.pspaudioware.com](http://www.pspaudioware.com)

### Endorphin



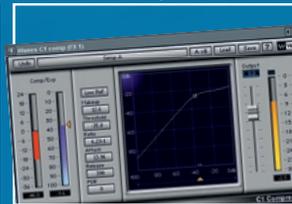
[www.digitalfishphones.com](http://www.digitalfishphones.com)

### MDA Dynamics



<http://mda.smartelectronix.com>

### Waves C1 Compressor



[www.waves.com](http://www.waves.com)

### SV-315 Compressor

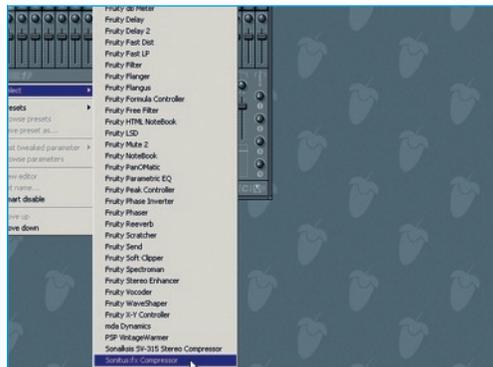


[www.sonalksis.com](http://www.sonalksis.com)

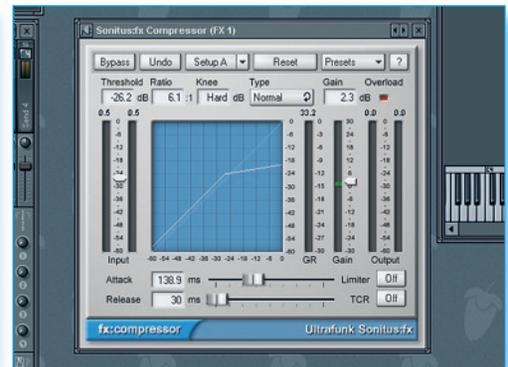
## STEP BY STEP Applying compression in FL Studio



**1** Start FL Studio and add an instance of Fruity Kick to the step sequencer (**Channels**»**Add One...**)»**Fruity Kick**. Click the black drop-down box and select the **Classic** preset, as shown. Lower the **A. Dec** parameter slightly. »



**2** Route the Fruity Kick generator to the first mixer channel, using the green digit at the top right of the Channel settings window. Then add an instance of the **Sonitusfx Compressor** to the first mixer channel. »



**3** Within the compressor window, turn off the **Limiter** and set the other controls as follows: **Threshold: -26.2dB**, **Ratio: 6:1**, **Knee: Hard**, **Gain: 2.3dB**, **Attack: 138ms**, **Decay: 30ms**.