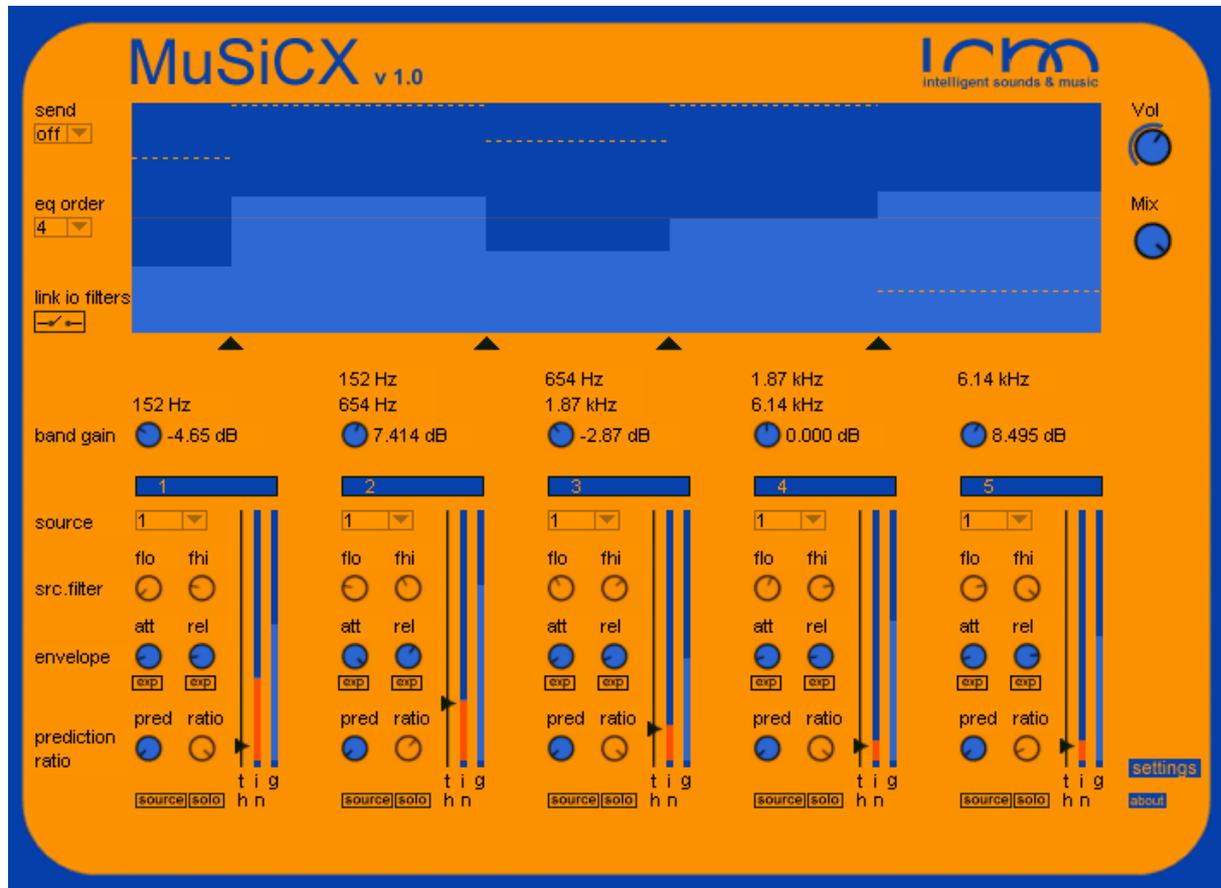


MuSiCX - Multiband Sidechain Compressor Expander



User Manual for MuSiCX v 1.02 Windows

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Introduction

MuSiCX (Multiband Sidechain Compressor & Expander) is a dynamic parametric equaliser with five adjacent bands separated by filters of 2nd to 20th order. Each of these bands' envelope generators can be controlled by prefiltered signals of any track in a project.

The routing between the tracks is done via internal host-independent side chains.

MuSiCX can be used as a mixing tool, e.g. to enhance a vocalist's articulation. Or as an effect for e.g. synth pads pumping with a drum track or "more intelligent" ducking.

And of course it can be a "usual" multiband compressor or even an equaliser.

Presets

The parameters of MuSiCX are highly signal dependent. So please don't expect the presets to work instantly. Take them as templates. You'll always have to do the fine tuning yourself.

The self controlled compressor (preset 2) e.g. might work fine on some signals. For others the pre filtered signals will never reach the thresholds.

Quick Start

Let's have a quick view at some typical applications.

Equalizer

Insert MuSiCX into a track and select the first preset. You can set the band gains by the knobs and the bands' separation frequencies by the black triangles under the diagram.

But it's surely more fun to push a band's gain and mid frequency in the diagram directly using the left mouse button.

Push the right mouse button and move the mouse horizontally to change the band width.

Now try to drag a narrow band's gain down to minimum. You'll hear that the overall volume gets very low. That's cause we use filters of second order that ain't very selective. Try the filters of higher order to avoid that.

self control

Now let's switch to the second preset. The frequency bands' control paths are switched to self control now. The volumes of the prefiltered control signals – the track's own signals in this case - are displayed by the orange vu meters. The sliders to the left of them set the thresholds. And as long as an incoming volume exceeds it's threshold the band's gain (displayed by the light blue vu meter in the right) will be lowered. Set the thresholds so that the input volumes touch them every now and then.

The default ratio is 1:2 which means that the gain will be lowered by 6 dB. Turn one of the ratio knobs of the mid frequencies to the right. After it has passed the middle this frequency band will be treated by an expander. Should be easy to hear.

Try the attack and release knobs.

Press on the band's source button and you'll hear it's prefiltered control signal. The pre filter's cutoff frequencies are coupled to the band's ones cause the [link io filters](#) button is switched on. If you switch it off the flo and fhi buttons will be enabled. Now you can select the controlling frequency range yourself. Try to let the upper mids pump with the low frequency portion of the signal. (Klick the source button again to switch off the monitoring of the control signal).

Press the solo button to hear a band's difference caused by dynamic gain changes. Of course you can't hear if a difference signal is positive or negative. So it always get's louder when the threshold is exceeded.

side chain control

Now let's build a side chain. Select a dynamic track like drums as the side chains source, insert an instance of MuSiCX and select preset 7 send to side chain 1. Then switch to an other track and insert MuSiCX with preset 4 side chain compressor.

The side chain transmitter and all the receiving frequency bands are switched to side chain 1. So if you set the thresholds right you should hear the destination track's signal pump with the source track.

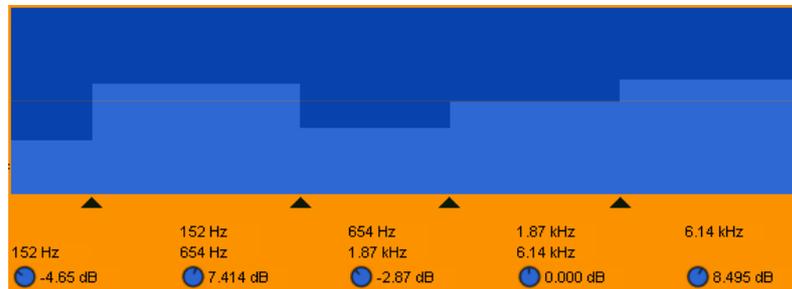
Now repeat the steps of the last sub chapter. Play with ratio, attack and release. Select different cutoff frequencies for pre filtering.

And maybe you'll install a further side chain on another track and let it control one of the frequency bands. You can take preset 7 again but the send to dropdown list will show off. That's cause it also tried to send to side chain 1 and this one is occupied. So select 2 here.

Or you switch an other band to self or off?

Of course one side chain source can control as many destination instances of MuSiCX as you like.

Equaliser



When the dynamic processing is switched off, MuSiCX is a parametric equaliser. The equaliser's separation frequencies can be set by the black triangles under the diagram. The band's static gains can be set by the upper blue knobs (band gain).

In the graphic, the left mousebutton pushes a band's gain and center frequency, the right mousebutton changes the bandwidth by horizontal moves. Also in case of this direct access to the diagram holding the shift button down leads to fine tuning.

MuSiCX provides equalizer filters up to 20th order which can be selected on the left side of the graphic:



In the most cases the 2nd order filters will do the job. And some people even say that higher filter orders cut too deep for mixing.

But in case of dynamic equalising as an effect they'll work wonders. And using 2nd order for a very high or very low band gain affects the neighbour bands too much.

High order filters consume a lot of processor power. So don't be astonished if your computer's cooling fan starts to sing along with your mix when you're using 3 instances of MuSiCX with 20th order filters.

Dynamic Modulation

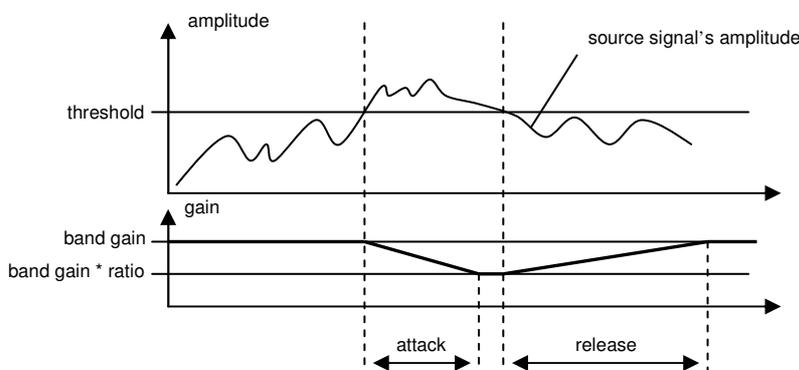
There's one envelope generator for each filter band that provides a compressor / expander function.

When the volume of the prefiltered source signal exceeds the value set by the parameter threshold (th), the band gain moves from it's static value to the destination gain = static gain * ratio.

If ratio is < 1 this is a compression, else it's an expansion.

The duration of this move is set by the parameter att (attack).

When the source volume falls below threshold again, the band gain returns to the static value (set by the parameter band gain) in the time set by the parameter release (rel).



The source band pass filter is controlled by the parameters flo and fhi which set the low and high corner frequencies. Press the source monitor button to hear just the band's filtered input signal. (Press it again to switch off monitoring.)

Switch on the button link io filters to disable the flo and fhi knobs and link the source filter's corner frequencies to those of the band's equaliser filter:



The 3 elements on the right visualize threshold (th), source volume (in) and dynamic gain (g)

So you can see where to set the threshold slider so that it's in the range of the source volume's fluctuation and additionally the effect to the gain is visible – all at a glance.

Next to the envelope knobs, there are buttons to switch the release and attack curves from exponential (exp) to linear (lin) behaviour. The exponential curve is the default cause it fits most needs. But don't forget to try out if the linear setting works better in some cases.

The parameters source and prediction (pred) will be discussed below.

Modulation Sources, Sidechains

Select a band's source signal for dynamic processing from the dropdown list at the top of it's area:



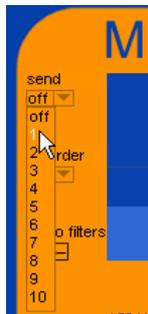
The first entry off disables the band's dynamic processing (you might have thought this ☺). The dynamic controls will be disabled in this case.

Switching all the band's sources to off makes an equaliser out of MuSiCX like mentioned above.

The second entry is self which routes the track's own signal to the source chain. So switching all the sources to self lets MuSiCX behave like a normal multiband compressor/expander.

And furthermore there are numbers from 1 to 10 which identify MuSiCX's internal side chains.

To send a track's signal to one of these side chains insert a new instance of MuSiCX there. Then switch the send dropdown list to the side chain's number:



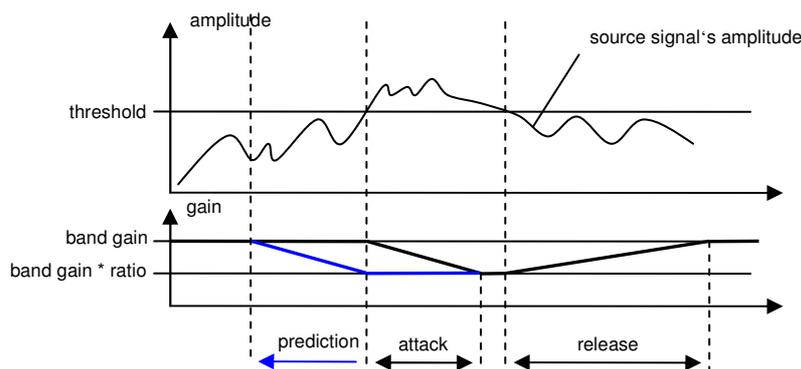
Now the signal is available for every band of every instance of MuSiCX.

Each instance of of MuSiCX can send and receive at the same time. If you use one of them for sending only, please set the static band gains to 0 dB (CTRL + left click on the band gain knobs) and switch the source dropdowns to off. This will minimize processor power consumption.

Prediction

The prediction parameter sets the time MuSiCX looks into the future of the source signal.

With the prediction knob set to 0 an envelope generator is triggered at the moment, the source signal exceeds the threshold. If you turn it to maximum the trigger appears exactly one attack time earlier, so that the effect of the compression or expansion reaches it's maximum when the source signal exceeds the threshold:



This look ahead function is useful for a better limitation of the audio material when using MuSiCX as a multiband (self-) compressor.

The disadvantage is that the prediction sets your host's latency to **100 ms**. So you should only use it for self compressing in an end mix.

To disable the prediction and switch the latency to one host buffer size, click on the settings button and switch it off in the settings dialog:

prediction on

This setting affects every instance of MuSiCX, that is started **after** you made the selection. So if you switch prediction off or on, you'll have to **save and restart your project**.

The source monitor signal has a negative delay when prediction is enabled and turned to a remarkable value – the monitor signal appears before it is played out on it's original track.

In prediction mode only one instance of MuSiCX may be inserted into one track. Else the sidechains won't work for this track (different time zones). And your host's latency will increase by 100 ms per instance.

Monitor

source **solo**

Press a source button to hear just one band's prefiltered control signal.

Press solo to hear a band's dynamic changes, the amount of sound the envelope generator adds or subtracts. **You'll just hear the difference to the static signal. And it even gets louder if more of the signal is subtracted and the real output signal gets lower.**

Output Parameters

Volume: the output volume from $-\infty$ to 6 dB

Mix: from dry (0 %) to wet (100 %).

Controls

Just a few words:

Knobs:



To change a knob's value move the mouse vertically. Holding the shift key down while moving the mouse provides fine tuning here as it does for all the controls of this plugin.

A knob that looks like this:



is disabled.

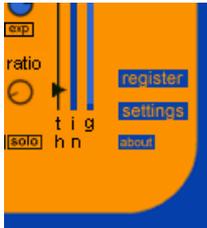
The value of most controls will be displayed at the bottom of the user interface while it is changed or the mouse pointer hovers over the control:

source **solo** h n

-2.87 dB

Registration, License and Demo

After installing MuSiCX (copying it to your VST folder and restarting the VST host), MuSiCX runs in demo mode. The demo version emits a low background noise and a click every now and then. And it's user interface shows the register button:



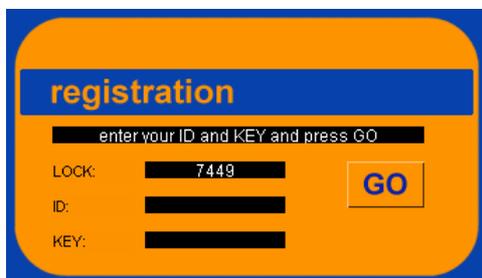
Everything else works like in a registered version.

Please try out the demo before buying MuSiCX. Especially if you're using an unconventional host. If there are problems, we'll try to work them out. And we never failed up to now ☺

If the demo works fine, the registered version will also do.

MuSiCX is tested on different hosts in different versions: Cubase, Live, FL.

For registration please click the register button in the lower right of the user interface. The registration dialog appears:



Just copy the lock number and go to shareit:

<http://www.shareit.com/product.html?productid=300341809&languageid=1>

Here you can pay via paypal or credit card. Don't forget to leave your lock number.

We'll return the id and key for the registration dialog.