SOLID MIX SERIES

SOLID DYNAMICS

Manual

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NI **NATIVE INSTRUMENTS**

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1   Welcome to SOLID DYNAMICS

SOLID DYNAMICS brings the compressor/expander/gate section of one of the most renowned studio mixing consoles of all times into your studio by way of FX Framework.

1.1   What Is a Compressor?

Technically speaking, a compressor is an audio processing unit that reduces the dynamic range of an incoming signal, i.e. reduces the level difference between the signal's quiet and loud sections. This way, it can help to increase the perceived loudness of a signal and attract the listener's attention.

For many studio and live music applications, the usage of compressors is inevitable: they let you "glue" the individual instruments of an instrument group together and make them "sit" in the mix more naturally, which is particularly helpful when mixing drum recordings. Compression can also stretch the decay phase of instruments, mostly drums, and add sustain to the tone of electric guitars.

However, compression can be used for a wide range of applications. Here are a just few examples:

- **Electric guitars and basses**: Compression is applied to picked string instruments in order to smooth the varying intensity of the individual strokes, thus increasing the perceived overall level. At extreme settings, you can get a "wall-of-sound" effect!

- **Drums**: Adding compression to a bass drum or snare track will add punch and help define its sound in your mix.

- **Vocals**: Adding compression to vocals can make them sound more balanced by leveling the soft and loud sounds in the voice.

- **Mixing/pre-mastering**: A slight compression applied to the overall mix (or some specific subgroups) can add cohesion between the various instruments.

Using compression is a fine art: You can easily destroy your sound if you don't carefully set the compression parameters! For each purpose, specific settings are required. A good understanding of each parameter's effect, together with experience gained by using the compressor, will allow you to achieve great results!

In addition to the above listed common applications there is room for your own experiments, so feel free to use your compressor in a way not listed here.

Main Compression Parameters

Compression can be controlled by several parameters. The most important parameters are the following:

- The **threshold** defines the audio level above which compression takes place. Below this threshold level, the incoming signal is left untouched; above this threshold level, the gain of the incoming signal is attenuated.

- You can choose how much attenuation is applied to the signal by defining an input/output **ratio**. For example, when you select a ratio of 2:1, an input level that is 2 dB above the threshold will create an output level that is only 1 dB above the threshold.

> 💡 By setting an extreme compression ratio, you can practically prevent the signal from exceeding the threshold level. The compressor then acts as a limiter.

- Since the compression attenuates the higher levels of your input signal, most compressors allow you to add a fixed **make-up gain** to the output in order to counterbalance the loss of level.

1.2   What Is an Expander/Gate?

The expander and the gate do the opposite of the compressor: instead of reducing the dynamic range of the incoming signal, they extend it. In practice, expanders and gates attenuate the signal level when this falls below a certain threshold — in short, quiet sounds become even quiter.

This can be very useful in several situations. For example, these tools allow you to:

- Manage the noise floor in a track.

- Eliminate unwanted background noise, such as headphones bleed when recording vocals, amplifier hum when recording a guitar or bass, etc.

- Control bleed levels across multiple microphones in a complex recording (e.g. on a drum-set).

> ⚠️ At first, background noise might not seem really disturbing compared to the level of your recorded instrument or vocals. But on the contrary, don't overlook it! It is strongly recommended to thoroughly clean each of your tracks before mixing them together, in order to create as much space as possible for your audio content!

Furthermore, the gate can be used creatively in countless situations, both when composing and mixing!

Differences Between Gate and Expander

The difference between the gate and the expander relies in the way each of them attenuates the signal once its level falls under the threshold:

- The gate simply shifts down the signal level by the defined range (the gate "closes").

- The expander first attenuates the signal in a proportional way with a predefined ratio. For example, with a ratio of 2:1, an input level that is 1 dB below the threshold will create an output level that is 2 dB below the threshold. When the applied attenuation reaches the chosen range value, the expander keeps the signal attenuated by this range, behaving like the gate.

> 💡 The gate can be seen as a brutal expander — an expander with an infinite ratio and no proportional transition. While the gate creates a cleaner track, the expander attenuates the signal in a more natural way.

Main Expanding/Gating Parameters

Expanding and gating can be controlled by several parameters. The most important parameters are the following:

- The **threshold** defines the audio level below which expanding/gating takes place. Above this threshold level, the incoming signal is left untouched; below this threshold level, the gain of the incoming signal is attenuated.

- The **range** defines the maximum attenuation applied to the signal.

1.3   Common Parameters and Features

The compression/gating/expanding process can be further tuned by using additional parameters and features.

Attack and Release

The **attack time** can define how long it takes for the compressor to come into full effect (or for the gate/expander to recover from attenuating the input) when the threshold level is reached. For example, a longer attack time for the compressor can be useful to retain the attack transients on a percussive or plucked string instrument in order to only compress the instrument sound coming after the transients. For this, you could also make use of parallel compression (see below). On the other hand, if the attack time of the gate is too long, you might lose the snap of a drum sound.

Similarly, the **release time** can define how long it takes for the active compressor / open gate or expander to return to its standby/closed state, respectively, after the signal level has fallen below the threshold level.

The right settings for attack and release time strongly depend on both the current purpose of the processing and the kind of instrument that you are working on!

Side-Chain Input

Every compressor/gate/expander uses a detector to decide when to kick in. This detector listens to a control signal and activates the processing when needed.

Usually, the detector listens to the input signal itself and activates the processing whenever the level of the input signal reaches the selected threshold.

A **side-chain input**, on the contrary, allows you to feed the detector with another signal (e.g. another track in your mix). In this setup, compression/gating/expanding is applied according to the level of the other signal. This greatly widens the versatility of your device.

> On a compressor, typically the side-chain input is fed by the bass drum track as a control signal to trigger the compressor on the bass guitar track. Another example is the "auto talk over" feature found on several mixers, which automatically attenuates the level of the music as soon as you talk into the microphone.

Parallel Processing

Sometimes you may want to keep the original signal and blend it with the compressed/gated/expanded signal. Setting up a signal path for **parallel compression/gating/expanding** can help retain some of the sonic characteristics of your original instrument (mainly the transients), for example when a signal is heavily compressed and in need of some top-end sparkle.

1.4   The SOLID DYNAMICS

Originally released in the mid-1970s, the analog mixing console that inspired the SOLID MIX SERIES soon became the central element in many of the greatest studios around the world. Claiming to be the mixer behind more platinum selling albums than all other consoles combined, this mixing console literally contributed to the sound of the 1980s. The precise and transparent sound of its full-featured channel strips set new references for mixing engineers.

The SOLID DYNAMICS brings you the compressor/expander/gate section of this highly acclaimed mixing desk.

Additional Features

Bringing analog hardware into the software world allowed us to add a few great features, which are available here in the SOLID DYNAMICS. For example, the SOLID DYNAMICS offer an additional parallel processing along with an extra input boost. And, of course, as with any effect available through FX Framework, you can save and recall presets for your favorite settings.

2 Using the SOLID DYNAMICS

This chapter describes how to use the SOLID DYNAMICS.

2.1 The Menu Bar

At the very top of the SOLID DYNAMICS interface, you will see the Menu bar. This is primarily used for saving and loading presets, but also has a few other functions.


The Menu bar is located at the top of the interface.

Saving and Deleting Presets

To save a preset:

1. Click the drop-down arrow to the very left of the Menu bar to open the File menu.
2. Select *Save as…* from the File menu:
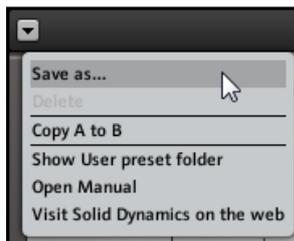
3. Enter the name of your preset in the area under the label New Preset Name:
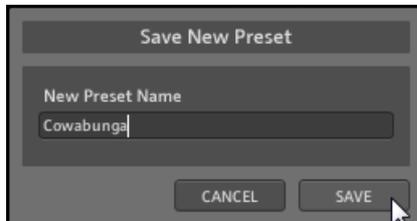
4. Click the SAVE button to finish the process and close the dialog box.

> If you wish to remove a preset you no longer want, you can delete it by selecting *Delete* from the File menu. Please note: you are not able to delete factory content.

Loading Presets

In the center part of the Menu bar, you will see the Preset menu. To navigate through presets, either:

- Click the left and right arrows to cycle through and load the presets one at a time, or

- Click the drop-down menu to view a list of all available presets.

When using the second option, a preset is loaded when you click its name.

The Preset Menu

When you save a preset, the Preset menu is automatically split in two submenus, one containing factory presets and one containing user presets. By selecting a preset from the *User* submenu, the list of presets you have saved is brought to the front of the Preset menu and displayed below the *Factory* and *User* options.
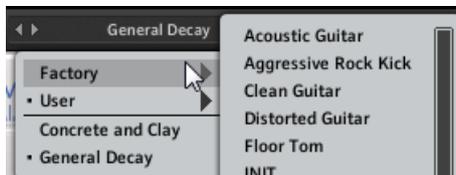
▶ By loading one of the presets from the *Factory* submenu, the factory presets are brought back to the front.

A/B Comparisons

SOLID DYNAMICS offers an A/B comparison system to help you fine tune your settings.

Basically, this feature gives you two slots into which you can enter different parameter settings. You can then quickly switch between the two slots to quickly compare the settings and use whichever sounds better.

By default, you edit the parameters of slot A. To **switch to slot B**:

▶ Click the **A/B** switch located beside the Preset menu.

→   You will now be editing and listening to the parameters of slot B, until you click the switch again.

To **copy the settings of slot A to slot B**:

► Go to the File menu on the left side of the Menu bar and select *Copy A to B* from the list. You can also copy from B to A when editing the parameters of slot B.

Other functions

The File menu also offers the following options:

▪ *Show User preset folder*: opens a system window in the location of where your presets are saved. Here you can rename your presets by changing the file names.

▪ *Open Manual*: opens this PDF document for reference.

▪ *Visit Solid Dynamics on the web*: opens your default web browser and takes you to the SOLID DYNAMICS page on the Native Instruments website.

2.2   The Main Interface

This section describes the SOLID DYNAMICS interface and controls in detail.
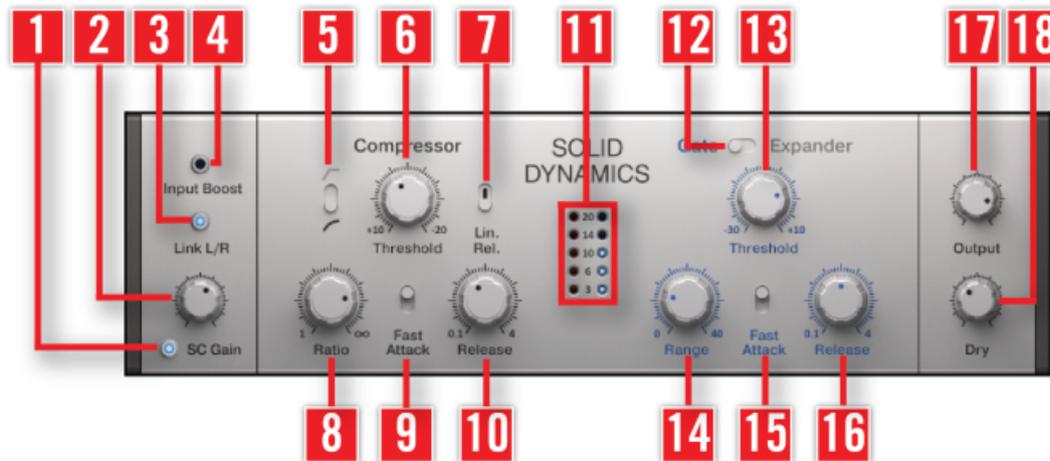
The SOLID DYNAMICS user interface.

(**1**) SC Gain **button**: Enables/disables the side-chain input. The side-chain circuitry allows you to feed the compressor's detector with another control signal instead of the input signal itself (see ↑1.3, Common Parameters and Features for more info on this).

(**2**) SC Gain **knob**: Controls the input gain of the side-chain signal — a signal that can be used as an alternative control source for the compressor.

(**3**) Link L/R **button**: When this button is on (default setting), the mono sum of the left and right channels is used as control signal — thus the same compression/gating/expanding will be applied to both channels. When this button is off, both left and right input channels are processed separately by the unit.

(**4**) Input Boost **button**: Boosts the input-signal level by 10 dB. This notably allows you to achieve more compression.

- The Compressor section holds the following controls:

(**5**) **Knee switch**: Selects from two different curves for the transition between the uncompressed zone and the compressed zone (this transition is known as the "knee").

With this switch set to its upper setting "hard," the transition is abrupt: This allows you to better catch all transients, but it can sound unnatural (or even introduce a slight distortion) on some particular audio material.

With this switch set to its bottom setting "soft," the transition is smoother: The compression actually starts somewhere below the threshold and progressively raises until it reaches the pre-defined ratio somewhere above the threshold. Notably, this setting might sound better on vocals.

(**6**) Threshold **knob**: Adjusts the threshold level, i.e., the level the input signal needs to exceed in order to make the compressor work. Turning this knob clockwise will increase the portion of the input signal that will be treated by the compressor.

(**7**) Lin. Rel. **switch**: Linear Release changes the release curve from logarithmic to linear.

(**8**) Ratio **knob**: Adjusts the compression ratio. This directly affects how much gain reduction is applied to the input signal. At full left (1), no compression is applied and the compressor lets the signal untouched. At full right (∞), the compressor acts as a limiter.

(**9**) Fast Attack **switch**: Activates a faster attack time (3 milliseconds instead of 30 milliseconds for a 20 dB gain reduction).

(**10**) Release **knob**: Adjusts the release time of the compressor, i.e. the time it takes for the compressor to get back to its standby state (no compression) after the signal level has fallen below the threshold level. The release time is measured in seconds. Available values range from 0.1 second to 4 seconds.

> For more information on all these parameters, see ↑1.1, What Is a Compressor? and ↑1.3, Common Parameters and Features.

> This compressor doesn't provide any make-up control. Indeed, the make-up gain is calculated automatically according to the current ratio and threshold values. Note that you still have the possibility to adjust the overall output level via the Output knob (17) — see below.

(**11**) **VU meter**: Allows you to visually monitor the current attenuation applied to the signal both by the compressor (yellow/red LEDs on the left) and by the gate/expander (green LEDs on the right). The attenuation is measured in decibels.

▪ The Gate/Expander section holds following controls:

(**12**) Gate/Expander **switch**: Switches between gate and expander operation. The expander has a fixed ratio set to 2:1.

(**13**) Threshold **knob**: Adjusts the threshold level. Turning this knob clockwise (i.e. raising the threshold) will result in more gating/expanding.

(**14**) Range **knob**: Adjusts the range (maximum attenuation) of the gate/expander. This directly affects how much gain reduction is applied to the input signal. The range is measured in decibels. At full left (0), no gating/expanding is applied and the signal is left untouched. The more you turn this knob clockwise, the more the gain of the input signal is attenuated when it falls under the threshold level.

(**15**) Fast Attack **switch**: Activates a faster attack time (100 microseconds instead of 1.5 milliseconds).

(**16**) Release **knob**: Adjusts the release time of the gate/expander, i.e. the time it takes to close or reduce the signal level once this has fallen below the threshold level. The release time is measured in seconds. Available values range from 0.1 second to 4 seconds.

> For more information on all these parameters, see ↑1.2, What Is an Expander/Gate? and ↑1.3, Common Parameters and Features.

(**17**) Output **knob and** Dry **knob (18)**: Allow you to mix the original signal (Dry knob) and the compressed signal (Output knob). This is called parallel processing (see ↑1.3, Common Parameters and Features for more info on this). When the Dry knob is set fully counter-clockwise, only the compressed signal is output. Turning the Dry knob clockwise progressively blends in the original signal into the compressor output.

> After changing the Dry level, you might have to adjust the Output knob accordingly to ensure that the overall output remains at the optimum level!

Both Output and Dry knobs range from -90 dB to +10 dB.

> The available +10 dB Input Boost can also be useful to adjust the level of the compressed output, in case the automatic make-up gain does not exactly counterbalance the lost of level introduced by the compression.