Solera

FLUX:: Immersive

2/6/23

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1 Solera

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The Solera dynamic processor is a comprehensive dynamic processor providing a compressor, expander, de-compressor and de-expander, that each may be enabled individually, all processing in parallel using one single common detector.

Each of the dynamics sections employs independent Dynamic Ratio and L.I.D. (Level Independent Detector) settings, two parameters that are kind of unique to dynamic processing, using the dynamic range content of the signal and not just the signal levels as standard dynamics processors do.

Dynamic Ratio (23) is controlling the amount of auto-ratio determined by the signal dynamics and the manual ratio setting.

L.I.D. (25) (Level Independent Detector) controls the amount of auto-threshold determined by the signal dynamics and the manual threshold value, providing processing of the audio signal independently of the sound level and instead in regards to the signal dynamic range.

1.1 Display Area

For full visual control over the processing Solera provides a comprehensive display area including:

- Resultant dynamics curve
- Parametric curve for the side-chain EQ
- Input level (VU-Meter referenced to -16 dB FS by default)
- Output level
- Resultant envelope (Compression, De-Compression, Expansion, De-Expansion & Clipper activity)
- Dynamic difference between input and output
- Level difference between input and output

1.2 MS Mode

To conform with the demands of serious audio mastering Solera features a Mid/Side (MS) encoder/decoder section encoding the signal from the stereo inputs by summing left and right channels to produce the Mid, and by phase switching the right channel from the left channel to produce the Side signal.

Processing M and S as separate components with a compressor makes it possible to achieve results that would be impossible with a regular stereo setup.

Example:

A bass drum in the stereo center with a fluctuating level surrounded by a synthesizer pad. The M channel featuring the bass drum can be processed without affecting the S channel featuring the Synthesizer pad. Changing the S gain when decoding allows controlling the stereo width using MS Width (20).

The Solera MS mode should only be used with stereo signal and it is strongly recommended to avoid this on already MS encoded signal.

1.3 Side Chain & Detector Equalizer

Solera features a three band Detector Equalizer for frequency-sensitive processing. The Detector EQ does not affect the direct audio signal, but instead it applies to the signal detection channel that drives the processing, offering the option to shape the actual processing to be performed within a certain frequency range. For further control of the processing, optional external side-chain signal feeding is provided.

Even though the Detector EQ parameters value ranges may seem extreme, with a Q-Factor up to 10, frequencies above 20 KHz and with cumulative gain, really smooth results can be achieved without deteriorating artefacts even when dealing with frequencies out of the audio spectrum. The purpose with this is to be able to use a part of the correction and include it into the audio spectrum; this is one of the secrets behind the “Air” correction often featured on vintage audio processors.

The wide range processing ensures a perfect accuracy in terms of phase and propagation time. Filtering the control signal upstream of the envelope gain generation allows for controlling the overall tonal balance by increasing or decreasing the processing of a particular part of the audio spectrum.

Reducing the gain for the low frequencies before the detection, increase the low frequencies in the processed signal if the processing settings reduce the gain according to the signal level. With this configuration, increasing the gain for the high frequencies makes the processing

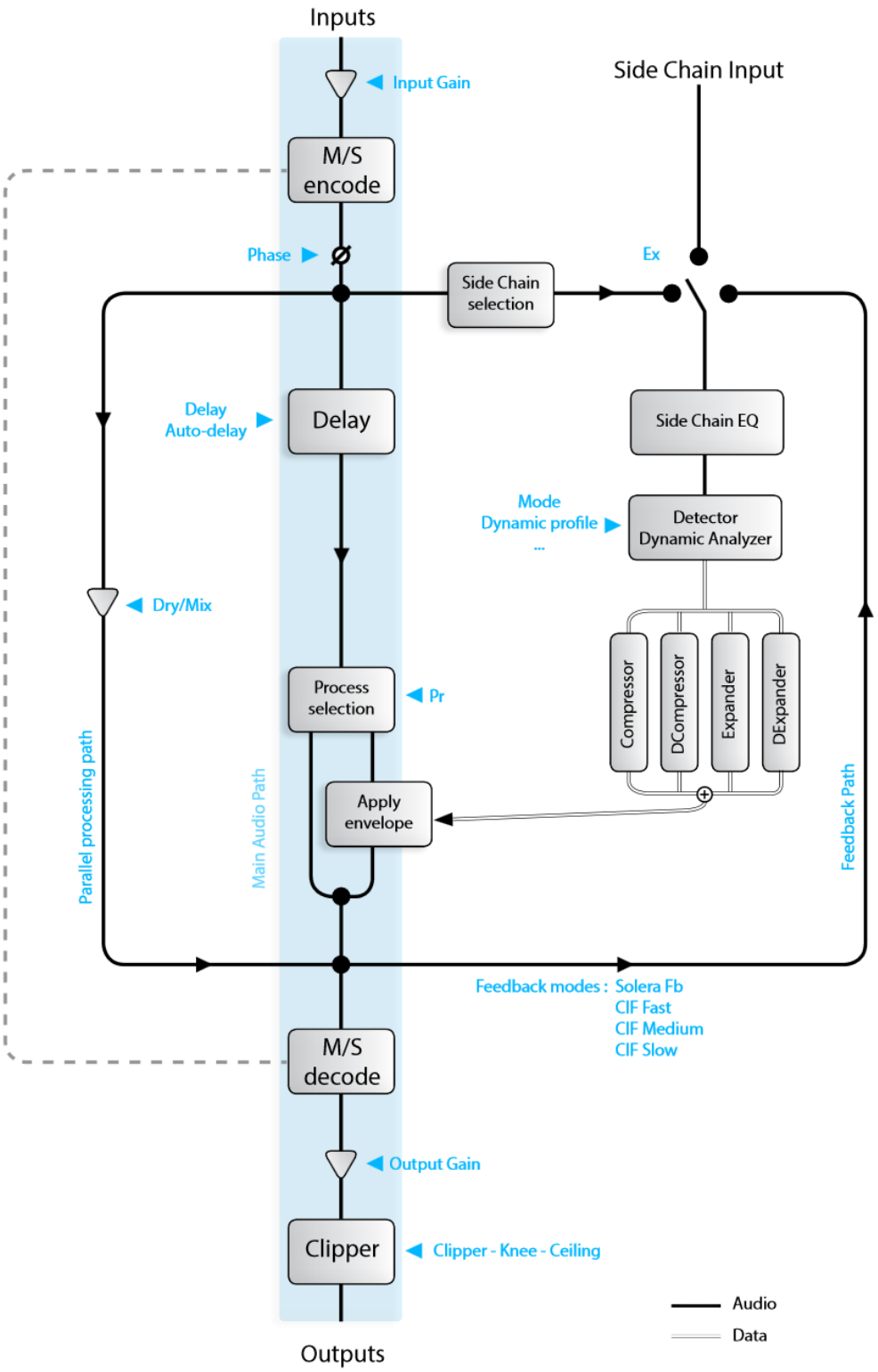
more sensitive to this particular part of the audio spectrum, and turns Solera into a sibilance controller.

1.4 Delay

A delay line can be inserted into the processed signal with the main purpose to produce a zero/null attack time for the processing when the delay value equals the Attack time. The Auto (46) button automatically sets the delay value according to the Attack time. Setting the delay time lower than the Attack time preserves the peaks from the processing.

1.5 Dry Mix

The original dry signal can be mixed with the processed material using the Dry Mix (2) dial. The original audio peaks are kept and added to the processed sound to preserve the sensitive information of the sound attacks. > Note that the Dry Mix function takes the delay that may be introduced by the processing into account. The summing is done before the clipper stage, and the displayed gain also reflects the Dry Mix setting.


Inputs
Input Gain
Side Chain Input
M/S encode
Phase
Ex
Side Chain selection
Delay Auto-delay
Delay
Side Chain EQ
Mode Dynamic profile ...
Detector Dynamic Analyzer
Dry/Mix
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Process selection
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Parallel processing path
Main Audio Path
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Feedback modes : Solera Fb
CIF Fast
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M/S decode
Output Gain
Clipper
Clipper - Knee - Ceiling
Audio
Data
Outputs

2 General Settings

Input Gain (1) Adjusts the gain applied to the dynamics processing input.

Unit: dB
Value Range: -48 / +48
Step: 0.01
Default Value: 0 dB

2.1 Dry Mix (2)

Adjusts the amount of unprocessed signal mixed in with the processed signal.
The mix is made before the Output Gain (3).

Default Value: -144 dB

2.2 Output Gain (3)

Adjusts the global gain applied to the dynamics processing output.

Unit: dB
Value Range: -48 / +48
Step: 0.01
Default Value: 0 dB

2.3 Invert Phase (4)

Inverts the phase of the processed signal by 180 degrees. The phase flip applies to the detector Equalizer Solo (40) as well.

Default Value: Off

2.4 Clipper Enable (5)

Enables the built in discrete peak limiter, applied at the very last stage of the processing.

Default Value: Off

2.5 Clipper Knee (6)

Adjusts the shape of the peak limiter response curve.

Unit: dB
Value Range: 0 / +6
Step: 0.01
Default Value: 1 dB

2.6 Clipper Ceiling (6)

Adjusts the peak limiter output ceiling.

Unit: dB
Value Range: -0.3 / 0
Step: 0.01
Default Value: 0 dB

2.7 Link Channels (7)

When Link Channels is enabled, by default the maximum value issued from all channels feeding the side chain is retained as the source for processing preserving the space information for the processed multi-channel signals.

When Link Channels is disabled, each channel uses its own value for individual processing.

Using this configuration in conjunction with the MS width section, which encode the signal in MS before processing and decodes it at the output, the M signal can be processed while keeping the S channel untouched.

Default: Enabled

2.8 Bypass (8)

Global bypass, when pressed the inputs are routed directly to the outputs.

Default Value: Off

2.9 Channel Processing Selector (9)

On a multi-channel bus Solera by default processes the incoming audio on all channels. Certain situations may require exclusion of some of the channels from processing. Unchecking a channel excludes the audio material from processing.

By using several instances of Solera in series this feature can be used for explicit processing of specific channels.

Default Value: On

2.10 Side-Chain & External Side-Chain Routing (10)

External side-chain is only available in mono and stereo. On a multi-channel bus Solera is by default feeding all channels to the side-chain.

When using the external side-chain feature an additional side-chain channel button presents itself consecutively after the standard side-chain channel buttons. In mono the side-chain channel is presented as channel 2, and in stereo as channel 3.

Different behaviours are exhibited for the external side-chain depending on the host and plug-in type:

- Audio Unit: The side-chain button is displayed when the host actually feeds audio to the side-chain.
- AAX: The side-chain button is only active if a side-chain bus is selected from the plug-in handler.
- VST: No side-chain feature is available.

Using Solera on a multichannel bus and route the audio in the host accordingly to achieve the same functionality, can be accomplished in most hosts.

Some situations may require for certain channels to be omitted from the side-chain feed. Unchecking a side-chain channel button omits that channel from the side-chain feed.

2.11 MS Width Control (20)

Adjusts the stereo width of the processed signal.

When set to -6 dB the stereo width decreases and increases when set to +6 dB. Extreme settings may due to the nature of the processing produce phase issues.

Unit: dB
Value Range: -6 / +6
Step: 0.01
Default Value: 0

2.12 MS Mode On/Off (21)

The stereo width of the mix is controlled using a MS encoder/decoder at the dynamic processing input/output.
When engaged, the side-chain is fed by a MS encoded signal with the M channel corresponding to the standard left channel, and the S channel corresponding to the standard right channel.

This is reflected in the metering section of the graphical display where the label L and R are being replaced by M and S.

This feature is only available when processing two channels (no more, no less).

Default Value: Off

3 Time Related Settings

3.1 Delay (47)

By introducing a delay into the signal path reflecting the attack time, a zero attack time can be produced for the dynamic processing.

Shifting the delay value from the attack time makes it possible to control the transients. A delay value inferior to the attack time value, leaves the peaks untouched by the processing.

For obvious reasons the delay introduces latency in the processing and the different delay values on every band are automatically compensated.

> Note that Solera cannot be used to produce delay-based special effects.

!> Warning: Morphing between presets with different delay values produces sound artefacts.

Unit: ms
Value Range: 0 to 50.0 ms
Default Value: 0 ms

3.2 Auto Delay (46)

Links the Delay (47) to the Attack (49).

> Note that the latency introduced by this equals to the attack time divided by two.

Default Value: Off

3.3 Mode (48)

In order to adapt the dynamic processing for the actual signal a detector examines the incoming signal in advance. Based on how the detection is performed different results can be achieved in the dynamic processing.

3.3.1 Solera provides eight different detection modes:

- **Solera** - The Attack setting also controls the integration time for RMS detection. With Auto Delay (46) engaged the produced attack time is zero.
- **Solera Feed Backward** - The Attack setting also controls the integration time for RMS detection, which is done on the output of the processor. This mode disables the Delay (47) feature. Note that the Solera Feed Backward prevents usage of the external side chain as the processed signal is feeding the side chain.
- **Classic Fast** - The integration time for RMS detection is 10 ms with no direct relation to the Attack setting. Though with Auto Delay (46) engaged the produced attack time is zero.
- **Classic Medium** - The integration time for RMS detection is 40 ms with no direct relation to the Attack setting. Though with Auto Delay (46) engaged the produced attack time is zero.
- **Classic Slow** - The integration time for RMS detection is 80 ms with no direct relation to the Attack setting. Though with Auto Delay (46) engaged the produced attack time is zero.
- **Classic Feed Backward Fast** - The integration time is 10 ms for RMS detection, which is done on the output of the processor. This mode disables the Delay (46) feature. Note that the Feed Backward mode prevents usage of the external side chain as the processed signal is feeding the side chain.
- **Classic Feed Backward Medium** - The integration time is 40 ms for RMS detection, which is done on the output of the processor. This mode disables the Delay (46) feature. Note that the Feed Backward mode prevents usage of the external side chain as the processed signal is feeding the side chain.
- **Classic Feed Backward Slow** - The integration time is 80 ms for RMS detection, which is done on the output of the processor. This mode disables the Delay (47) feature. Note that the Feed Backward mode prevents usage of the external side chain as the processed signal is feeding the side chain.

The Feed Backward modes have been inspired by vintage hardware architectures. They create a sort of auto regulation of the processing which produces a naturally beefy sound.

Default Value: Solera

3.4 Attack (49)

Sets the attack time of the processing envelope. It also controls the way the RMS value is computed from the incoming signal. Warning: The Attack setting also controls the integration time for the RMS detection.

Unit: ms
Value Range: 0 ms to 100 ms
Default Value: 0.0 ms

3.5 Hold (50)

This parameter is the only one in the time related settings that is independent per dynamic processor. The compressor and the expander may have different hold time. Used in the Expander section, this setting allows very precise gating of drum tracks. It can also be used for creative purpose on the other dynamic sections.

Unit: ms
Value Range: 0 ms / 500 ms.
Default Value: 0 ms

3.6 Release Mode (51)

Three release modes are available for the envelop of the dynamic processing.

- Manual - Corresponds to the value you have set.
- Auto - Enables the algorithm to generate a signal dependent value to avoid typical pumping effects.
- Advanced - Gives access to two different values for release and to the control of the velocity of the variations between the maximum and the minimum release values.

Default Value: Auto

3.7 Release (52)

Sets the manual release value and the maximum release value when in Advanced Mode.

Unit: ms
Value Range: 0.67 ms / 10000.00 ms
Default Value: 500.00 ms

3.8 Release Minimum (53)

Sets the minimum release value when in Advanced Mode.

Unit: ms
Value Range: 0.67ms / 5000.00
Step: 0.01
Default Value: 1.30 ms

3.9 Dynamic Factor (54)

Amplify or dim the extracted real time dynamic information.

Unit: x
Value Range: 0 / 3.0
Step: variable
Default Value: 1

3.10 Dynamic Velocity (55)

Sets the speed of variation on the dynamic information.

Unit: %
Value Range: 10 / 1000
Step: 1
Default Value: 50 %

4 Dynamic Section Settings

4.1 Peak Detection Amount (22)

Percentage of the instant peak value used to feed the detector section, making the dynamic processing more sensitive to audio transients. 0 % means 100 % RMS signal feeding the detector section; 100 % means only peak signal is feeding the detector section, and 50 % is fifty-fifty of each.

Unit: %
Value Range: 0 / 100
Step: 1
Default Value: 0 %

4.2 Dynamic Ratio (23)

The Dynamic Ratio setting relaxes the ratio applied to the processor section when the detected signal dynamic rises, and literally opens the sound, increases the dynamic impression and maintains some crest by adjusting the ratio of every dynamic processing section in realtime, both their current ratio settings and the signal content (mainly dynamic range).

Unit: %
Value Range: 0 / 100
Step: 1
Default Value: 0 %

> To start understanding this setting and easily hear it, take a full mixed drum kit or a complete mix with punchy drums, set the compression threshold and ratio to values that makes it close to a pumping or an aggressive compression. Then increase the output gain to compensate the gain lost and toggle between 0 and 100% of Dynamic Ratio. At 100 % you should hear more air in the sound, more transient and less of the compression impression, especially the attack.

4.3 Dynamic Ratio Inverter (24)

When engaged, the behaviour of the Dynamic Ratio is inverted.
The ratio value is increased depending of the detected signal dynamics.

4.4 L.I.D. (Level Independent Detector) (25)

Controls the amount of auto-threshold determined by the signal dynamics and the manual threshold value, providing processing of the audio signal independently of the sound level and instead in regards to the signal dynamic range.

Unit: %
Value Range: 0 / 100
Step: 1
Default Value: 0 %

> Use a full song mix. Set the ratio to 3-4 for the compression to start working and the threshold of the compressor to the max value, the compressor will stop working because the sound level will never reach the threshold. Now increase the L.I.D. and you will hear the compression working again. Next decrease or increase the input gain, the compression will continue to work equally completely independent of the sound level, only depending on Ratio, Knee and sound content.
>
> When you have too much dynamic in the sound, going from -3, -6 dB Vu (or less) to +12 dB, and you want to compress the low levels, you will get a pumping effect when the sound reaches the high levels. The only thing to do with a standard compressor is to increase the threshold to retain the airiness in the sound. But when this is done the compressor will not work any more on the low levels and you will hear differences (in term density, live space, grain etc.) especially when the compressor starts working.
>
> With Solera, adjust the threshold and ratio on the high levels to what you find okay, then increase the L.I.D. (from 20 to 50 %) and listen to the low levels and especially the transition between low and high levels. You can also increase the ratio for a stronger effect, and you will notice that the compression will still be present and still affect the high/loud levels (unless you set 100% L.I.D.) and make the compression very smooth with no more pumping. In addition to the Dynamic Ratio function you will be able to set a constant and very natural envelope that allows to increase low levels, low frequency and to keep the important transients.

4.5 L.I.D.. Threshold (26)

Sets the gain range of the L.I.D. parameter.

- Up: Increasing of the L.I.D. action.
- Down: Decreasing of the L.I.D. action.

Two green lines on the Dynamic Activity display reflect the current L.I.D. threshold value. For Compressor and DCompressor sections, the L.I.D. action is effective only when the orange Dynamic Activity (18) exceeds the area between the two green lines. For Expander and DExpander sections, the L.I.D. action is effective only when the orange Dynamic Activity (18) stays inside the area between the two green lines.

4.6 L.I.D. Maximum (27)

When engaged, the threshold for the processing is determined by the maximum values from RMS/peak detection OR from the signal dynamic detection. The L.I.D. Threshold is still active, but the L.I.D. mix button is disabled. This feature allows the whole process to be more reactive to the signal content, very efficient when used on drum tracks.

4.7 Threshold (28)

Sets the threshold of the specific dynamic processing section. This dB scale refers to an RMS value.

The threshold effective value is modified by the L.I.D, L.I.D. Threshold and L.I.D. Maximum settings.

Unit: dB
Value Ranges:
-32 to +16 (Compressor/DCompressor)
-80 to +16 (Expander/DExpander)
Default Value: 0

4.8 Ratio (29)

Sets the ratio of the specific dynamic processing section. The ratio effective value is modified by the Dynamic Ratio amount.

Unit: dB
Value Range: 1 to 10
Step: 0.01
Default Value: 1

4.9 Infinite (30)

Sets the ratio to its maximum possible value depending of the dynamic section.
The DCcompressor section is limited to 12 when this button is engaged

4.10 Range (31)

Sets the maximum allowed gain variation for a specific dynamic processing section.

Unit: dB
Value Range: 0 to 48/140/24/16 (Compressor/Expander/DCompressor/DExpander)
Default Value: 24/96/12/12

4.11 Knee (32)

Sets the smoothness of the transmission curve for the specific dynamic processing section. The curve is smoothed around the threshold value of the dB amount set with the knee value.

Unit: dB
Value Range: 0 / +24
Default Value: 0

4.12 Dynamic Section On/Off (33)

Activates the specific section.

4.13 Compressor Section Selector (35)

Selects the Compressor section.

4.14 DCompressor Section Selector (36)

Selects the DCompressor section.

4.15 Expander Section Selector (37)

Selects the Expander section.

4.16 DExpander Section Selector (38)

Selects the DExpander section.

4.17 Dynamic Section Activity (34)

The gain is displayed in a 12 dB scale from left to right for gain increase and from right to left for gain decrease for the corresponding dynamic section.

5 Display

5.1 Eq Display (12)

Graphical editing of the three-band Detector EQ is provided. Double click on the EQ display will expand it.

5.2 Input Level Meter (13)

Vu-meter, not peak-meter, referenced to -16 dB Fs by default, with auto scale depending of the threshold values.

When the MS Width section is engaged, the M (Mid) level is displayed on the left meter. S (Side) is displayed on the right meter. The green index reflects the threshold value.

5.3 Output Level Meter (14)

Vu-meter, not peak-meter, referenced to -16 dB Fs by default, with auto scale depending of the threshold values.

When the MS Width section is engaged, the M (Mid) level is displayed on the left meter. S (Side) is displayed on the right meter.

5.4 Resultant Envelope (15)

Vu-meter, not peak-meter, referenced to -16 dB Fs by default.
The scale is +/- 12 dB.
This is the compression, de-compression, expander and de-expander summing envelope.

5.5 Dynamic difference between in and out (16)

Vu-meter, not peak-meter, referenced to -16 dB Fs by default.
The scale is +/- 12 dB.

5.6 Level difference between in and out (17)

Vu-meter, not peak-meter, referenced to -16 dB Fs by default.
The scale is +/- 12 dB. This is the compression, de-compression, expander and de-expander summing envelop which also takes account of the input and output gains of the band.

5.7 Dynamic Activity Display (18)

No scale
Two green lines on the Dynamic Activity display reflect the current L.I.D. Threshold value. For Compressor and DCompressor sections, the L.I.D. action is effective only when the orange Dynamic Activity exceeds the area between the two green lines. For Expander and DExpander sections, the L.I.D. action is effective only when the orange Dynamic Activity () stays inside the area between the two green lines.

5.8 Instant Release Value (19)

Auto Scale depending of the release value(s)

5.9 Resulting Transfer Curve (11)

Auto Scale depending of the threshold value(s)

6 The Side Chain EQ Section

The band selection can be done with the 1, 2, 3 switches or directly from the graphic display. All band parameters can also be set using switches and knobs or from the EQ-Curve graphic display as described below. A Double-click in the graphic display area of the EQ-Curve magnifies it. A new Double-click toggles it back to standard size. From a Right-Click on this area, the behaviour of the vertical scale can be selected with: Auto, 6 dB, 12 dB and 24 dB as available choices.

6.1 In (39)

Enables the complete EQ section on detector section.

Default Value: Off

6.2 Solo (40)

The equalized detector signal can be monitored through the plug-in output when the solo button is enabled.

Default Value: Off

6.3 1-2-3 (41)

Three equalization bands are available on the detector section. Each can be selected to use the parameter knobs for settings. Note that a graphic editing is also available from the graphic curve display.

Default Value: none

6.4 Filter Type (42)

The filter type can be adjusted individually on each of the Detector EQ bands.

- 12 dB per octave high pass filter
- Low shelving
- Parametric
- High shelving
- 12 dB per octave low pass filter

Default Value: Peak

6.5 Gain (43)

Sets the gain for the selected band.

Unit: dB
Value Range: -24 / +24
Step: 0.01
Default Value: 0

6.6 Frequency (44)

Sets the centre frequency for the selected band.

Unit: Hz
Value Range: 5 / 22K
Step: variable
Default Value: 100 / 500 / 2000

6.7 Q-Factor (45)

Sets the quality factor of the selected band if the filter type is parametric.

Value Range: 1 / 100
Step: 0.22
Default Value: 10

7 Preset Management

7.1 Preset Manager Access (56)

Opens a new window accessing the built-in preset manager.

7.2 Loaded Preset Preset Display (57)

Displays the current selected preset name.
Clicking the arrow opens a new window accessing the built-in preset manager.

7.3 Save (58)

Save replaces the selected preset by a new one under the same name featuring the current settings. If you want to keep an existing preset without your new modifications, just select an empty place into the preset list, enter a new name for this modified preset featuring the current settings and press Save.

7.4 Recall (59)

Once a preset is selected from the preset list it must be explicitly loaded into section A or the section B by using the recall button. A preset is effective only after it has been recalled.

7.5 Copy A / Copy B (60)

The current parameters of a section are copied to the other one. The section A or B is re-initialized with the current values and the morphing slider is parked at 100% of the corresponding section.

7.6 Morphing Slider (61)

Morphs the parameter values of both parameter sections.

This horizontal slider has no unity or specific value display, it provides morphing of the current values from both of the parameter sections (A & B).

A double-click on one side of the slider area toggles between the two parameter sections. The actual result of the morphed parameter settings can be saved as a new preset.

7.7 Automation Control of the Morphing Slider (62)

When this button is disabled all of the plug-in parameter values are recorded when writing automation.

When reading automation, if this button is disabled, all the plug-in parameters are controlled by the host automation except for the morphing slider (61), which is then ignored.

When this button is engaged all parameters are recorded when writing automation, including the morphing slider(61), though when reading automation ONLY the morphing slider value is read and applied.

The Automation button must be engaged if the morphing slider is to be mapped on a control surface.

Default Value: Off

8 Specifications

8.1 Availability

Solera is available in:

AU / VST / VST3 / AAX Native/ *AAX AudioSuite*

* *AAX Native & AAX AudioSuite in Pro Tools 11 and later*

8.2 Processing

Solera provides :

- Up to 16 channels Input/Output in VST/VST3/AU/AAX.
- 64-bits internal floating point processing.
- Sampling rate up to 384 kHz.

8.3 Hardware Requirements

A graphic card fully supporting OpenGL 2.0 is required.

- macOS : OpenGL 2.0 required – Mac Pro 1.1 & Mac Pro 2.1 are not supported.
- Windows : If your computer has an ATi or NVidia graphics card, please assure the latest graphic drivers from the ATi or NVidia website are installed.

8.4 Software License Requirements

In order to use the software an iLok.com user account is required (the iLok USB Smart Key is not required).

8.5 Compatibility

All major native formats are supported

8.5.1 Windows – 10, in 64 bits only.

- VST (2.4)
- VST3 (3.1)
- AAX Native*
- AAX AudioSuite*
- AAX DSP

8.5.2 macOS (Intel and ARM)

All versions from Sierra (10.12) to latest. (Compatible with previous versions but not supported)

- VST (2.4)
- VST3 (3.1)
- AU
- AAX Native*
- AAX AudioSuite*
- AAX DSP

* *AAX Native & AAX AudioSuite in Pro Tools 11 and later*