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USER GUIDE

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INTRO

Welcome to the nio User Guide. This document should provide all the information you need to learn how to operate the stylish USB interface. After detailing all of the controls and connections one by one, there are sections describing how to record various sources, as well as defining output streams a and b and how to create monitor mixes. If you haven't already, you may want to also check out the printed Getting Started Guide in the box and the nio Tutorial movies on the Novation website.

If you are having difficulty operating nio and cannot find the solution in this guide, go to the online answerbase at www.novationmusic.com and type any relevant keywords into the search box.

WHAT'S IN THE BOX?

In the box with nio, you'll find:
• Printed Getting Started Guide – to help you with the install process, plugging in and learning about basic operation
• Resources disc – contains the installer and full User Guide pdf
• USB cable – use this to connect to the computer after installation is complete
• Free software disc (e.g. Xcite+ pack) – contains any accompanying software and samples

GETTING STARTED

As outlined in the printed Getting Started Guide, the first stage of setting up nio is to run the installer. Separate PC and Mac installers for nio can be found on the nio resources disc. Running the installer carries out the following actions:

• Installs the Audio driver
• Installs the MIDI driver
• Installs the FX Rack software

PC SETUP

1. Close all running programs
2. With nio disconnected from your computer, locate the nio PC installer on the resources disc and double-click to run it
3. You may be asked to restart your computer to complete installation
4. Once the installer has finished, or once your computer has restarted, connect nio to your computer. A balloon will appear whilst Windows installs the device:

XP
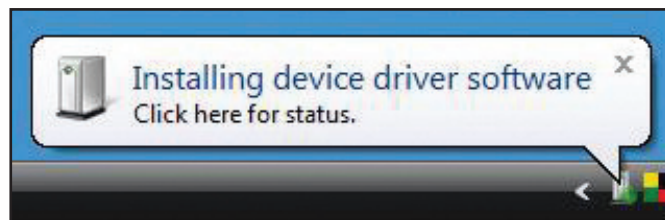
Vista

5. Wait for the balloon to tell you 'Device driver software successfully installed' (Win Vista) or 'Your new device is installed and ready to use' (Win XP)

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MAC SETUP

1. Close all running applications
2. With nio disconnected from your computer, locate the nio Mac installer on the resources disc and double-click to run it
3. You may be asked to restart your computer to complete installation
4. Once the installer has finished, or once your computer has restarted, connect nio to your computer

Nio can now be used as an Audio and MIDI device with your computer. To apply the nio FX to the audio inputs, launch the nio FX Rack software from the Start menu (Windows) or your Applications folder (Mac).

FRONT PANEL CONTROLS

1. Sets the level of Headphones 1
2. Chooses the signal sent to Outputs 1 and 2. This can be 'a' (nio outputs 1/2 from the sequencer) or 'mon' (the monitor mix created in the 'monitor' section below - **12** and **16**)
3. Sets the level of Outputs 1 and 2 on the rear panel
4. Shows the level of Input 1 or Output 1 (dependent on the position of the 'meters' switch below - **14**)
5. Sets the gain (level) of Input 1
6. Sets the gain (level) of Input 2
7. Shows the level of Input 2 or Output 2 (dependent on the position of the 'meters' switch below - **14**)
8. Sets the level of Outputs 3 and 4 on the rear panel
9. Chooses the signal sent to Outputs 3 and 4. This can be 'a' (nio outputs 1/2 from the sequencer), 'b' (nio outputs 3/4 from the sequencer) or 'mon' (the monitor mix created in the 'monitor' section below - 12 and 16)

10. Sets the level of Headphones 2
11. Indicates when nio's Direct FX software is in use
12. Creates the blend of inputs and 'playback' (recorded) tracks for the monitor mix. In the extreme clockwise position, only inputs are heard, whilst in the fully anticlockwise position, only the mix created by the a-b mix dial to the left is heard
13. Pans the inputs left and right respectively (stereo) or both centrally (mono) in the monitoring section ("mon" mix)
14. Selects the source shown by the LED meters above. Choices are Inputs 1/2 in the left position and Outputs 1/2 in the right position
15. Selects the signal sent to the 2 pairs of headphones. Choices are 'a' (nio outputs 1/2 from the sequencer), 'b' (nio outputs 3/4 from the sequencer) or 'mon' (the monitor mix created in the 'monitor' section above - **12** and **16**)
16. Creates a blend between 'a' (nio outputs 1/2 from the sequencer) and 'b' (nio outputs 3/4 from the sequencer). This becomes the a-b 'mix' of playback tracks that can be blended with the inputs using the dial to the right to create the monitor mix

FRONT PANEL CONNECTORS

1. Headphones 1 1/4" jack output

2. Headphones 2 1/4" jack output

3. Mic or instrument 1/4" jack input (can be used to connect a guitar or bass directly). The input source (mic/guitar) is set using the Input 2 Selection switch on the right side of nio

SIDE PANEL SWITCHES

1. Selects the type of source being recorded by Input 2. Choices from left to right are mic (front panel 1/4" Jack connector), line (rear panel RCA/phono connector) and instrument (front panel 1/4" Jack connector)

2. Selects the type of source being recorded by Input 1. Choices are mic in the left position (rear panel XLR connector) and line in the right position (rear panel RCA/phono connector)

3. Activates +48V phantom power on the rear panel XLR connector, to enable a condenser microphone to be used. Switch to the right to activate phantom power

REAR PANEL CONNECTORS

1. XLR microphone connector for Input 1. Can supply phantom power, when required, using the side panel switch

2. Standard MIDI ports for connecting to external MIDI equipment, such as hardware synthesizers

3. RCA/phono connectors for (Line) Inputs 1 and 2

4. RCA/phono connectors for Outputs 3 and 4

5. RCA/phono connectors for Outputs 1 and 2

6. USB socket for connecting to the computer

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CONNECTING NIO TO THE COMPUTER

In the box, you'll find a USB cable that can be used to connect nio to your computer. It is strongly advised that you either use the supplied USB cable or an alternative high quality 28/24 awg cable (this will be sufficiently thick) to ensure that enough power is supplied to nio. The USB bus will supply power to the interface so, a few seconds after connecting, the Novation logo on the front of the hardware will light and the interface will be ready to use. Providing the installer has been run, you can now open up an audio application and select nio as the audio input and/or output device in the software preferences.

CONNECTING NIO TO SPEAKERS OR A DJ MIXER

The RCA/phono Outputs on the rear panel should be used to connect to speakers or a DJ mixer, in the following way:
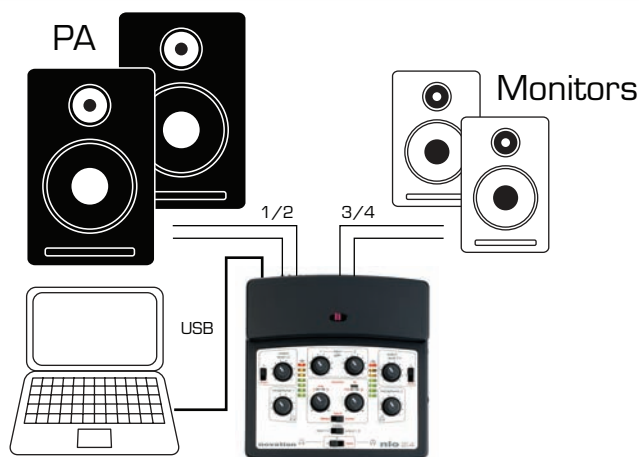
In this setup, the speakers can be connected to directly (using the relevant cable) or via a line level input on an amp. Furthermore, either Outputs 1/2 or 3/4 can be used, as preferred. If Outputs 1/2 are used, Outputs 3/4 are free to be used for another purpose, such as connecting to an additional recording device or booth monitors.
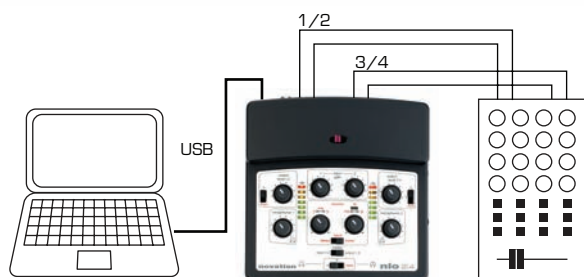
In this 'DJing-style' setup, Outputs 1/2 are connected to Line Inputs 1/2 of an external DJ mixer, whilst Outputs 3/4 are connected to Line Inputs 3/4. Connecting in this way means that the facilities on the mixer, such as EQs or the crossfader, can be accessed.

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SENDING AUDIO TO NIO FROM YOUR RECORDING OR DJING SOFTWARE – WHAT ARE SIGNALS A AND B?

Once nio has been installed and is then connected, the hardware will show up as nio Audio Inputs 1 and 2, as well as nio Audio Outputs 1-4 within your music software. In order to allow you to set up different monitor mixes on the hardware, these sequencer settings do not route directly to the outputs on the hardware. For example, sending the master mix from your music software to nio Outputs 1/2 does not necessarily mean that the mix will appear on the rear panel RCA/phono connectors for Outputs 1/2. Instead, it is dependant on the position of the hardware switches on the Front Panel. This means that you have the option of routing that mix to nio hardware Outputs 1/2, or the headphones, or Outputs 3/4, or any combination of the three.

The way this works is by having options a and b on the hardware, as follows:

a – this is the audio from your music software that's routed to nio Outputs 1/2

b – this is the audio from your music software that's routed to nio Outputs 3/4 (unless the FX Rack is in use – see below)

So, if wanting to send nio Outputs 1/2 from your music software directly to the phono Outputs 1/2 on the rear panel, and Outputs 3/4 from your music software to phono Outputs 3/4, the hardware switches must be set as follows:

Be aware that, when using the FX Rack, signal b becomes the monitor path for the processed signal (within the computer only) so outputs 3/4 from your music software cannot be used to send audio to speakers/headphones. (The 'processed' inputs still appear as 'inputs', rather than 'b', in the hardware monitoring section however.) See the 'Changes to i/o configuration when using the FX Rack' section for more information.

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RECORDING TO YOUR MUSIC SOFTWARE USING NIO WITH...
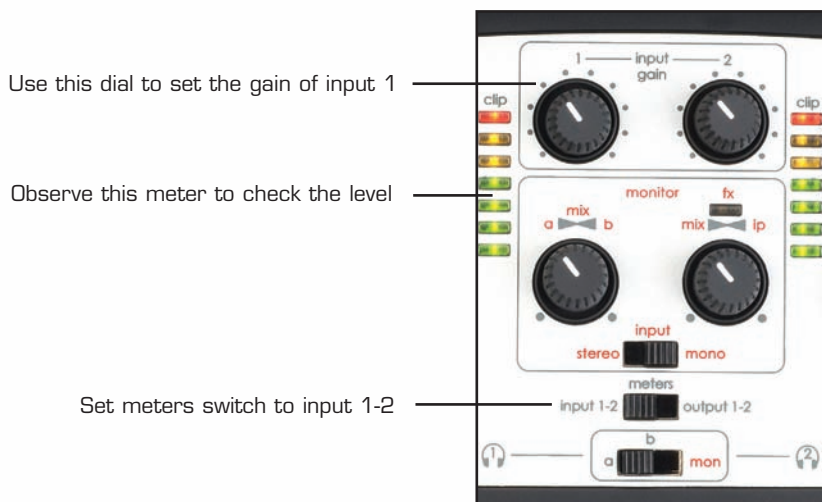
...ONE OR TWO MICROPHONES

Inputs 1 and 2 can both be used to record a microphone source. Input 1 uses the XLR connector on the rear panel, whilst Input 2 uses the 1/4" Jack connector on the front of the interface. Only Input 1 can supply phantom power to a microphone, such as a condenser mic. If you are unsure about whether your microphone requires phantom power, check the microphone's User Guide, as phantom power can damage some microphones, most notably ribbon mics. Phantom power across Input 1 is activated using the side panel switch, as shown in the diagram below.

As well as making the connections shown above, the side panel switches must be set to the 'mic' position, as follows:
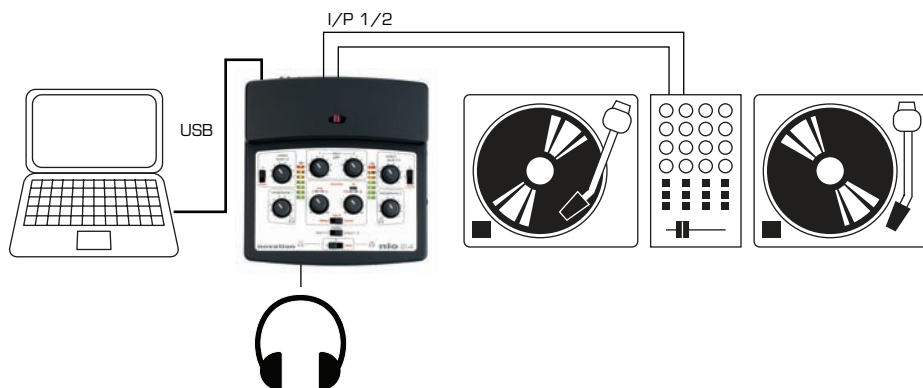

To set up a good recording level, set the 'meters' switch on the front panel to 'input 1-2' (left position) then have your artist make some noise into the mic. Now, rotate the relevant Input Gain dial whilst making sure a good level appears on the LED meter for that input. If the top (red) LED lights then the signal is clipping and will distort, so rotate the relevant Input Gain dial anticlockwise to decrease the gain of that input. For example, to set up Input 1:

Use this dial to set the gain of input 1

Observe this meter to check the level

Set meters switch to input 1-2

If you are recording two vocalists, then you will probably want the 'input' switch in the 'monitor' section to be set to 'mono', to ensure that both vocalists are panned centrally in the headphones. For more information about the monitoring options available for this setup, such as how to send a mix of inputs and backing tracks to a vocalist's headphones, read the 'Direct Mix Monitoring' section of this guide.

Once this setup is complete, nio inputs 1 and 2 in your music software can be used to record the microphones connected to Input 1 and Input 2, respectively. So, to record the microphone connected to Input 1, set the input source on a mono track in the recording software to nio input 1, record enable the track and start recording.

...A LINE-LEVEL SOURCE SUCH AS A CD PLAYER OR SOME DECKS

The two rear panel RCA/phono inputs can be used to record a stereo source like that from a CD player or some decks. In order to do this, the side panel switches must both be set to Line, as follows:
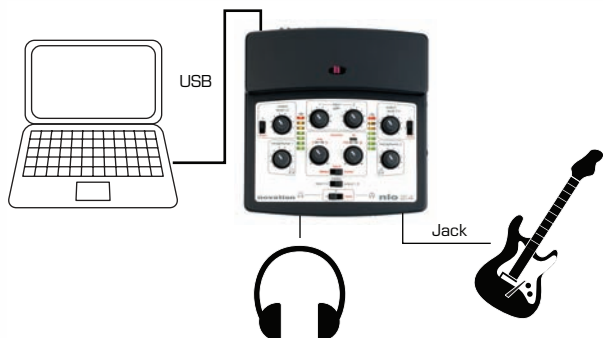

To set up a good recording level, set the 'meters' switch on the front panel to 'input 1-2' (left position) then send a signal from the connected device. Now, rotate the Input Gain dials whilst making sure a good level appears on the LED meters (the dials will need to be in the same position for a stereo signal). If the top (red) LEDs light then the signal is clipping and will distort, so rotate the Input Gain dials anticlockwise to decrease the gain:

Use this dial to set the gain of input 1

Observe this meter to check the level of input 1

Set meters switch to input 1-2

Use this dial to set the gain of input 2

Observe this meter to check the level of input 2

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If recording and monitoring a stereo source, the 'input' switch in the 'monitor' section should to be set to 'stereo', to ensure that the inputs are panned left and right in the headphones or over the monitors. For more information about the monitoring options available for this setup, such as how to send a mix of inputs and backing tracks to a turntablist's headphones, read the 'Direct Mix Monitoring' section of this guide.

Once this setup is complete, nio inputs 1 and 2 in your music software can be used to record the line-level source. This is done by setting the input source on a stereo track in the recording software to nio inputs 1/2, record enabling the track and hitting record.
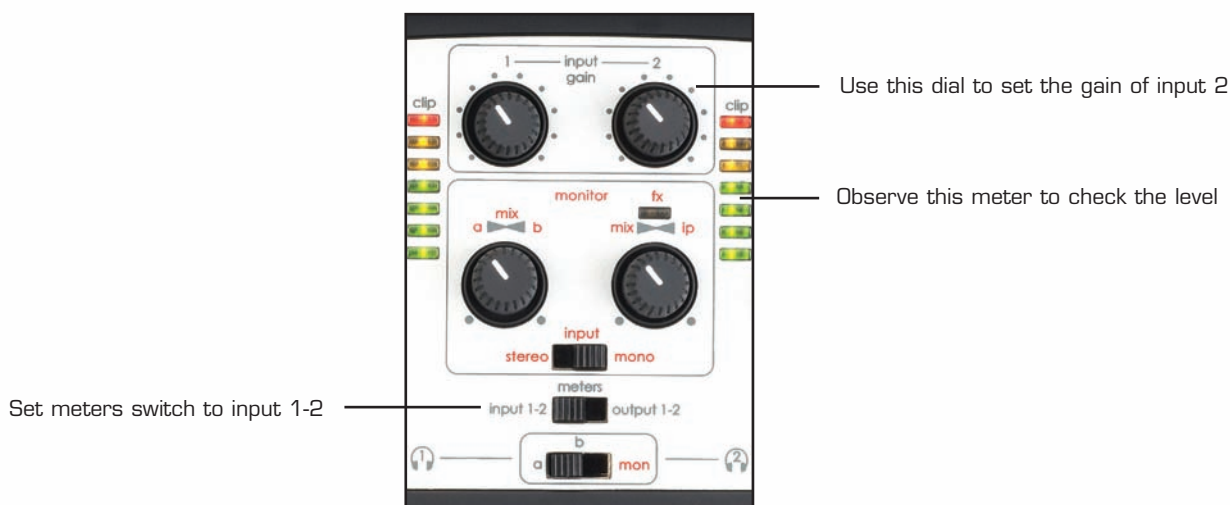
...AN INSTRUMENT SUCH AS A GUITAR

Input 2 can be used to record an instrument such as a guitar directly. To do this, the instrument must be connected to the 1/4" input on the front of the interface. After connecting the instrument, the side panel switch for Input 2 must be set to the 'inst' position and the phantom power switch set to 'off' (to minimise noise on the guitar signal), as follows:

To set up a good recording level, set the 'meters' switch on the front panel to 'input 1-2' (left position) then have your musician play their instrument. Now, rotate the Input 2 Gain dial whilst making sure a good level appears on the right LED meter. If the top (red) LED lights then the signal is clipping and will distort, so rotate the Input Gain dial anticlockwise to decrease the gain:

Use this dial to set the gain of input 2

Observe this meter to check the level

Set meters switch to input 1-2

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If the musician wants to hear the instrument in their headphones, you will probably want the 'input' switch in the 'monitor' section to be set to 'mono', to ensure that the instrument is panned centrally. For more information about the monitoring options available for this setup, such as how to send a mix of inputs and backing tracks to a musician's headphones, read the 'Direct Mix Monitoring' section of this guide.

Once this setup is complete, nio input 2 in your music software can be used to record the instrument. To do this, set the input source on a mono track in the recording software to nio input 2, record enable the track and start recording.

DIRECT MIX MONITORING - CREATING A MONITOR MIX (FOR SPEAKERS OR HEADPHONES)

The front panel controls can be used to set up a mix of inputs and outputs for the headphones and/or outputs 1-4 on the rear panel. This monitor mix is created using the 2 dials and switch in the section labelled 'monitor' on the hardware front panel:

Monitor Mix section

Creates the a-b mix

Blends inputs with the a-b mix

Pans inputs
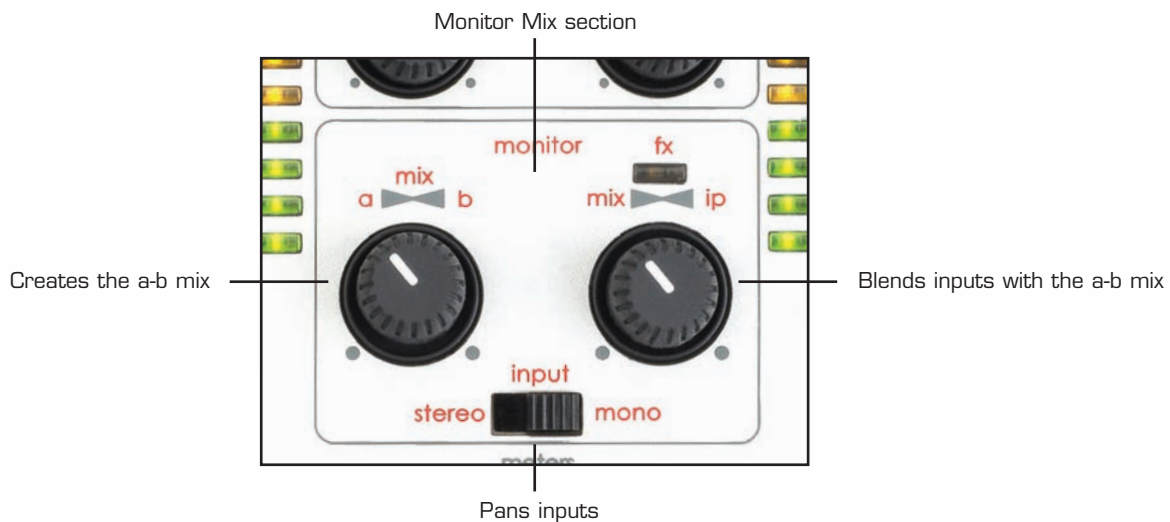
MIXING INPUTS

If just wanting to send the inputs (whatever's being recorded) to the monitor mix then only the right dial is required, as this blends between inputs and playback tracks (recorded tracks from your music software). To set up a mix of inputs alone, set the right dial in the extreme clockwise position. The switch below should then be set according to how the inputs need to be panned in the mix: 'stereo' pans input 1 to the left and input 2 to the right, 'mono' pans both inputs centrally. So, if recording two separate sources like a vocalist and a guitarist, then the switch should be set to 'mono', whereas a stereo source connected to the rear RCAs, like a synth or decks, should be set to 'stereo'.

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Set fully clockwise so just inputs are heard

Pans inputs 1 and 2 left and right respectively (stereo) or both centrally (mono)

MIXING OUTPUTS/PLAYBACK TRACKS (A AND B)

If wanting to send playback (recorded) tracks alone to the monitor mix then both dials should be used. The dial on the right should first be set in the extreme anticlockwise position (so that no inputs are heard). Then, the dial on the left can be used to blend between streams a and b (audio from your music software sent to nio outputs 1/2 and 3/4, respectively). With the dial in either extreme position, only one stream is heard (a to the left and b to the right). With the dial in a central position, equal amounts of both are heard (but the signal will be 6dB down as the crossfader has a 6dB dip in the central position).

Use the dial to blend between a and b (create the a-b mix)

Set fully anti-clockwise so that just the a-b mix is heard

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MIXING INPUTS AND OUTPUTS

A mix of both inputs and playback tracks can be sent to the monitor mix by using the dial on the right to blend between the two. As listed above, with the dial in the extreme anticlockwise position, only the mix of playback tracks/outputs (a and/or b) are heard, whereas the extreme clockwise position produces only inputs. Rotate clockwise to increase the inputs level and decrease the a-b mix, and vice versa in the other direction. In a central position, equal amounts of inputs and the a-b mix are heard.

Use the dial to blend between a and b (create the a-b mix)

Blends inputs with the a-b mix

Pans inputs 1 and 2 left and right respectively (stereo) or both centrally (mono)

SENDING THE MONITOR MIX TO HEADPHONES OR OUTPUTS

There are three signal selection switches on nio's front panel: one for both headphones, one for outputs 1/2 and one for outputs 3/4, as follows:

Routes 'a' or the monitor mix to outputs 1 and 2

Routes 'a', 'b' or the monitor mix to outputs 3 and 4

Routes 'a', 'b' or the monitor mix to both headphones

Set the switches to 'mon' if wanting to route the Monitor Mix to that destination, as shown in the diagram above.

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FX RACK SOFTWARE – ADDING EFFECTS TO THE INPUTS

The FX Rack software allows you to apply a whole host of effects to one or both of the nio inputs for recording, monitoring or performing live. Be aware that recording nio FX to software changes the routing and i/o configuration (see the 'Changes to i/o when using FX' section for details). The software can be opened up at any time by navigating to the application in the following locations:

C:\Program Files\Novation\nio

MacHD - Applications

Although the software will load whether the hardware is attached or not, no audio can be heard until nio is connected to the computer over USB. Once booted up, any combination of effects can be placed in the rack and then applied to either or both inputs, using the following controls:

1. Novation logo will light once the interface has been connected and a window will appear to confirm successful connection
2. Click this window to save/load rack arrangements (global presets) or start again from scratch (default)
3. Turns the rack on/off (like a bypass switch)
4. Selects the source for processing: choose between Inputs 1 + 2, Input 1 or Input 2
5. Sets the level of the signal entering the rack (Input 1 and/or 2)
6. Displays the level of the signal entering the rack (Input 1 and/or 2)
7. Removes the effect from the rack
8. LED goes red when the output level reaches the clipping point
9. Displays the level of the signal leaving the rack (after effects have been applied)

10. Sets the level of the signal leaving the rack (after effects have been applied)
11. Sends the FX to the recording software. Do not activate if just wanting to monitor the effects and not record them
12. Allows effects to be added to the rack. Click and then select from the dropdown list. You can also click any space in the rack to add an effect
13. LED goes green when a sufficient input signal is received
14. Turns the effect on/off – click once with the mouse

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SAVING/LOADING SOFTWARE SETTINGS

Click here to save/load FX Rack Global Presets

Click here to save/load individual effects Presets (e.g. for the Focusrite Compressor in this case)
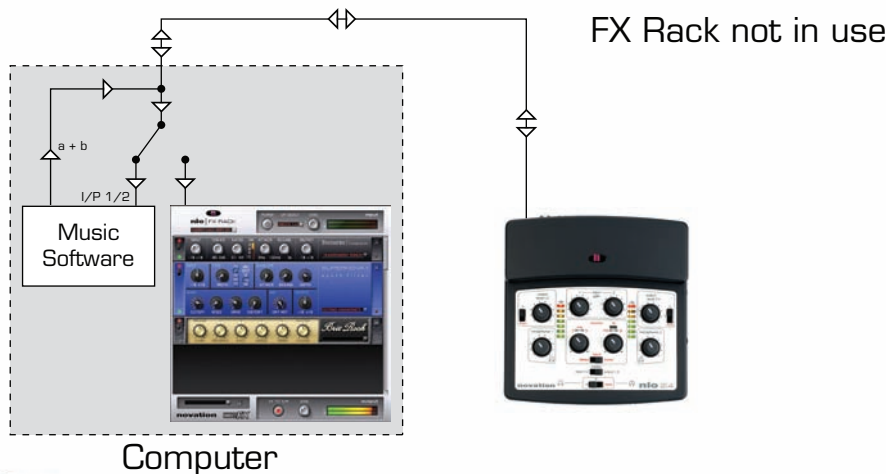

Once you have created an arrangement of effects, you can save it as a Global Preset by clicking on the box below 'nio FX Rack' in the top left corner, as shown in the diagram above. This will activate a menu where you can click 'Save As...' to open a window allowing a name to be typed in. Once the Global Preset name has been entered, it will appear in the menu above 'Save As...' when the box is clicked, and can be loaded by selecting with the mouse cursor. Clicking 'default' in this window will load an empty rack if wanting to start again from scratch.

Similarly, with each effect, the box in the bottom right corner can be clicked, as shown in the diagram above. This activates an identical menu, only this time allows the settings for that individual effect to be saved and recalled.

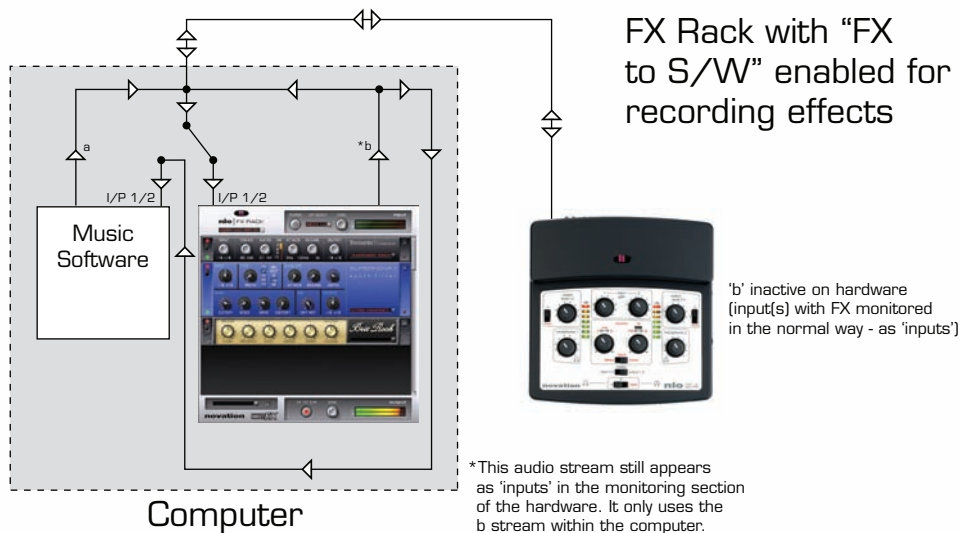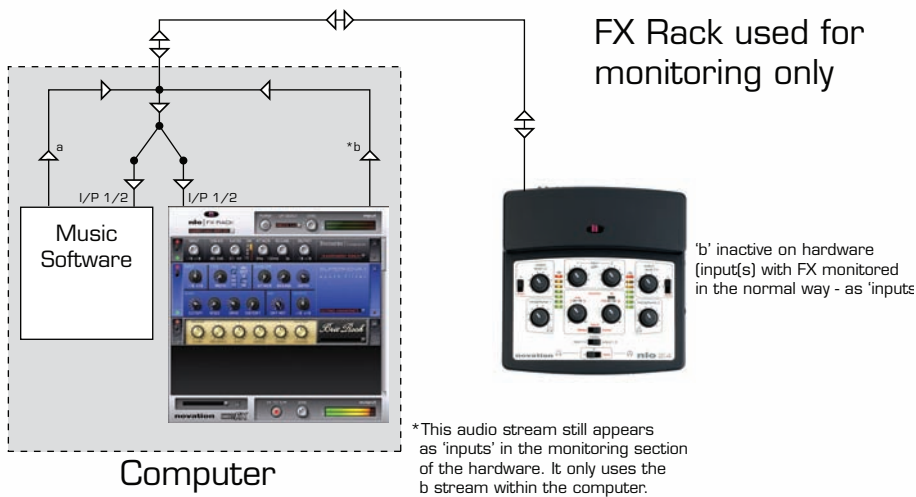# CHANGES TO I/O WHEN DIRECT FX MODE IS ENABLED

When using nio with your music software, the standard setup is one stereo path entering the music software (Inputs 1 and 2) and 2 stereo paths leaving (a and b). When the FX Rack is powered up with nio connected, the second of the stereo paths (b) becomes the return monitor path for latency-free monitoring of processed inputs (although this is only within the computer – 'inputs' are still monitored using the hardware in the normal way). This means that nio outputs 3/4 from your music software (usually signal b on nio) can no longer be used to send audio to headphones or speakers attached to nio, and 'b' is disabled on the hardware.

In addition, if wanting to record the processed input(s) by clicking the 'FX to software' switch at the bottom of the rack, only the input(s) going through the Rack will be sent to the DAW. In other words, the stereo output of the rack becomes nio inputs 1 and 2 in the DAW, rather than the direct input signals. This means that it is not possible to process a guitar connected to nio input 2 through the rack then record it to the DAW whilst simultaneously recording an unprocessed mic (not going through the rack) using input 1. The only way to record 2 separate inputs at once is to have the FX to software switch inactive (unless you are happy to apply exactly the same effects to both inputs of course!). However, the FX Rack can be used to process one or both inputs for monitoring purposes whilst still recording both dry inputs separately.

FX Rack not in use

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FX Rack used for monitoring only

'b' inactive on hardware (input(s) with FX monitored in the normal way - as 'inputs

*This audio stream still appears as 'inputs' in the monitoring section of the hardware. It only uses the b stream within the computer.

Computer

FX Rack with "FX to S/W" enabled for recording effects

'b' inactive on hardware (input(s) with FX monitored in the normal way - as 'inputs')

*This audio stream still appears as 'inputs' in the monitoring section of the hardware. It only uses the b stream within the computer.

Computer

CLASSIC NOVATION EFFECTS

SUPERNOVA II CHORUS

This effect was originally designed to simulate the sound of many people singing together (hence the name 'chorus'). Chorus is an effect produced by mixing a continuously delayed version of the audio signal back with the original. The timing of the delayed version is very small and is controlled by an LFO. The characteristic swirling chorus effect is the result.

The controls are:

RATE Knob - Controls the rate or speed of the chorus effect. At very slow speeds (and with DEPTH and FEEDBACK set fairly high), the chorus can also be used as a flanger

FEEDBACK Knob - Controls how much of the delayed signal is fed back to the input of the chorus generator. The chorus effect benefits from low levels of feedback

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DEPTH Knob - Controls the amplitude of the LFO, which affects the amount of time variation that the delayed signal undergoes

CENTRE Knob – Controls the separation between right and left channels, within the limits set by depth. The effect of the dial is much more noticeable at higher values of feedback and depth, and could be described as a 'feedback spectrum modifier'

MIX Knob – Blends between the completely unprocessed (fully anticlockwise) and completely processed (fully clockwise) signal

SUPERNOVA II DELAY

A delay effect is produced by creating a single or repeated echo of the original signal, a certain amount of time after the initial sound.

The controls are:

TIME Knob - Controls the amount of time it takes for the delayed signal to be heard after the original signal

FEEDBACK Knob - Controls how much of the delayed signal is fed back into the delay input. No feedback produces a slap-back echo effect: just one delayed sound with no repeats. Small amounts of feedback produce repeated sounds resulting in a multiple echo effect. Large amounts of feedback can produce infinite echoes

FILTER Knob – Acts as a high- or low- pass filter for the delayed signal. Rotate anti-clockwise to produce a low-pass filter effect, where the maximum cut-off (lowest frequency) is set in the extreme anticlockwise position. Rotate clockwise to create a high-pass filter effect, where the maximum cut-off (highest frequency) is set in the extreme clockwise position. In the centre, no filtering of the delayed signal occurs

WIDTH Knob - Sets the Stereo spread between the long and short delay times. With a width setting of zero, both delays appear in the middle of the stereo field (Mono). At maximum width setting, the longer delay will appear on one output and the shorter on the other, producing a dramatic stereo effect.

STEREO MODES (RATIO) Menu – Nio's delay effect is actually a stereo delay and it is possible to set different delay times on the left and right audio outputs. The STEREO MODES menu allows you to select the ratio of the longest delay time and the shortest delay time into timings that are musically useful. Click on the ratio window to select one of the following ratios: 1/1, 4/3, 3/4, 3/2, 2/3, 2/1, 1/2, 3/1, 1/3, 4/1, 1/4, 1/OFF, OFF/1

A simple equal 1 to 1 ratio is the first entry in the table. This setting sends a delay of equal time to the left and right output channels. The number in the left column of the table indicates the ratio of the delay time that will be in the left channel versus the number in the right column. For example, if a delay of twice the time is required in the left channel compared to the right, select the 2/1 option. The final 1/OFF and OFF/1 options will result in no delay being heard in the channel indicated by the 'OFF'.

Note: Selecting a 1/1 ratio will produce a mono effect regardless of the stereo WIDTH setting since the timing of the echoes are equal.

TAP Button – Allows the delay to be synchronised to a beat. Clicking four times on the box (whilst following a beat) sets a delay time based on the timing between clicks

MIX Knob – Blends between the fully dry signal (with no delay) in the anticlockwise position and fully wet signal (just delay) in the clockwise position

SUPERNOVA II PHASER

A Phaser works in a similar way to a chorus effect, only rather than modulating the delay of the original sound, it modulates the phase (start point along the waveform). A portion of the audio signal is split off and phase shifted at a certain frequency. It is then mixed back with the original signal to generate the characteristic swishing effect.

The controls are:

RATE Knob – Sets the frequency that the phase shift is modulated at. Rotate clockwise to increase

FEEDBACK Knob – Controls how much of the phase-shifted signal is fed back to the input of the phaser

DEPTH Knob – Sets the size of the phase shift. Rotate clockwise to increase

MIX Knob – Blends between the completely unprocessed (fully anticlockwise) and completely processed (fully clockwise) signal

SUPERNOVA II FILTER

The Supernova filter works in a number of different modes to help sculpt and shape the sound. If wanting to remove bass or treble then high-pass and low-pass modes can be used, respectively. Or, if wanting to just isolate a small area of the frequency range then band-pass mode is suitable. A wide band-pass mode is also available for isolating a larger section, with adjustable width, as well as a twin peak (dual band) mode for creating more interesting effects, also with adjustable width (distance between peaks).

The first three modes have various different slope options: 6, 12 or 24 dB per octave. In all cases, the greater the value, the steeper the slope, so the more higher frequency components are removed. However, as the slope becomes steeper, a small peak occurs at the cut-off frequency, which makes the filter more obvious. This effect is similar to increasing the resonance.

An Envelope section is also included to allow the frequency of the filter to be modulated by an envelope. Rotating the +/- dial in an anticlockwise direction modulates the filter frequency in a downwardly direction (decreases it), whilst rotating the dial in a clockwise direction modulates it upwards (increases it). There are attack and release parameters to define how long the filter frequency takes to start (once a signal is received) and stop (after the modulation frequency has been reached) modulating, respectively. In a central position, no envelope modulation occurs.

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The controls are:

INPUT Knob – Increases or decreases the level of the signal at the filter input. No gain modification occurs with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

TYPE Section – Indicates the type of filter in use. This is selected using the box just below the 'Supernova Filter' text

WIDTH Knob – Controls the size of the wide band and the distance between peaks, in wide band and twin peaks modes

MODULATION SECTION – 3 controls

ATTACK Knob – Sets the speed with which modulation of the filter frequency begins when a signal is received

RELEASE Knob – Sets the speed with which modulation releases after the maximum frequency has been reached

MODULATION Knob – Defines how much modulation occurs and in what direction. In a central position, no modulation occurs. Rotate clockwise to modulate upwards and anticlockwise to modulate downwards, with maximum modulation occurring at either extreme

TYPE Box – Click to select the type of filter from the list that appears. Choices are low-pass filter with 12dB slope, band-pass filter with 6dB slope, high-pass filter with 12dB slope, low-pass filter with 24dB slope, band-pass filter with 12dB slope, high-pass filter with 24dB slope, twin peak and wide band

CUTOFF Knob – Selects the cutoff frequency of the low/high-pass filter, or central frequency of the band-pass, twin peak (between peaks) or wide band filters

RESONANCE Knob – Sets the amount of resonance (colouration/harmonics) of the filter

OVERDRIVE Knob – Adds distortion to the filter output

Q-NORM Knob – Compensates for increases in level caused by setting a high resonance. In a fully anticlockwise position, no compensation occurs (level will increase as resonance does). In a fully clockwise position, the level at the filter output is maintained regardless of the resonance setting

MIX Knob – Blends between fully unfiltered/dry (fully anticlockwise) and fully filtered/wet (fully clockwise)

OUTPUT Knob – Increases or decreases the level of the signal at the filter output. No gain modification occurs with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

SUPERNOVA II TREMELO

Tremelo is a rapid fluctuation in the level of a signal, often heard in instrumental solos such as a violin. It is also occasionally used to describe the wavering in pitch. In this case, the input signal gain is modulated by a sine wave of varying amplitude and frequency. There is also the option of delaying (lagging) the modulation on the right channel to create an interesting panning effect.

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The controls are:

DEPTH Knob – Sets the amplitude of the modulating sine wave, e.g. how much the gain of the signal is modulated. Rotate clockwise to increase

SPEED Knob – Sets the frequency (or speed) of the modulating sine wave, e.g. how quickly the gain is modulated. Rotate clockwise to increase

PHASE Knob – Sets the amount that the right channel's modulation is delayed by. Rotate clockwise to increase

OVERLOUD EFFECTS

To allow for high quality guitar or bass recording and performing, a total of 5 amplifier and 4 distortion pedal emulations have been included in the list of nio effects. All of these guitar effects are mono, rather than stereo. The following is a guide to each one.

AMPS

BRIT ROCK

GAIN Knob – Adds overdrive. This increases the input signal in the preamp to saturate the valves

PRESENCE Knob – Increases clarity by emphasising higher frequency components

BASS Knob – Defines the amount of low frequency

MIDDLE Knob – Defines the amount of mid frequency

TREBLE Knob – Defines the amount of high frequency (brightness)

MASTER VOLUME Knob – Sets the level

TWEED BASS

BASS Knob – Defines the amount of low frequency (bass)

MIDDLE Knob – Defines the amount of mid frequency (presence)

TREBLE Knob – Defines the amount of high frequency (brightness)

VOLUME Knob – Sets the level

TWEED TWIN

BASS Knob – Defines the amount of low frequency

MIDDLE Knob – Defines the amount of mid frequency (presence)

TREBLE Knob – Defines the amount of high frequency (brightness)

VOLUME Knob – Sets the level

US MODERN VALVE

GAIN Knob – Sets the amount of harmonic distortion

PRESENCE Knob – Gives the signal more strength

BASS Knob – Defines the amount of low frequency

MID Knob – Defines the amount of mid frequency

HIGH Knob – Defines the amount of high frequency (brightness)

MASTER Knob – Sets the level

V-AC

BASS Knob – Defines the amount of low frequency

TREBLE Knob – Defines the amount of high frequency (brightness)

TOP CUT Knob – Filters out the high frequency by acting as a low-pass filter. Rotate clockwise to reduce the cut-off frequency and so increase the amount of high frequency that is removed

MASTER VOLUME Knob – Sets the level

DISTORTION/OVERDRIVE PEDALS

70s FUZZ

VOLUME Knob – Sets the volume

FUZZ Knob – Sets the amount of distortion

DISTORTER

TONE Knob – Acts in the same way as the filter knob on other effects; rotating in a clockwise direction filters out bass and rotating in an anticlockwise direction removes high frequency. In a central position, no filtering occurs

VOLUME Knob – Sets the volume

DISTORTION Knob – Sets the amount of harmonic distortion

FAT PIE

VOLUME Knob – Sets the level

TONE Knob – Acts in the same way as the filter knob on other effects; rotating in a clockwise direction filters out bass and rotating in an anticlockwise direction removes high frequency. In a central position, no filtering occurs

SUSTAIN Knob – Allows the duration of notes to be extended

GREEN OVERDRIVE

DRIVE Knob – Sets the amount of overdrive, which creates a subtler distortion

TONE Knob – Acts in the same way as the filter knob on other effects; rotating in a clockwise direction filters out bass and rotating in an anticlockwise direction removes high frequency. In a central position, no filtering occurs

LEVEL Knob – Sets the volume

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FOCUSRITE EFFECTS

COMPRESSOR

The nio Compressor is modelled on the legendary Focusrite hardware devices, with individually tuned optos to help create the sound of vintage 1960s compression. The plug-in can be used to squash the dynamics of a sound in varying degrees, e.g. remove the sudden loud bursts, so that the overall level can then be turned up to make the signal as loud as possible. A compressor essentially acts like an automatic volume control, turning down the volume of a signal if it gets too loud. This reduces variation between loud and quiet passages, as it automatically reduces the gain when the signal exceeds a given volume, defined as the threshold. Using the Compressor helps to even out a performance, stopping a signal from clipping and/or disappearing in the mix, and can also give it a whole new sonic character.

The controls are:

INPUT Knob – Increases or decreases the level of the signal at the compressor input. No gain modification occurs with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

THRESHOLD Knob – Sets the level at which compression begins. The lower this value is set, the more of the signal will be compressed as the audio will compress when the threshold is reached. Rotate the TRSHLD dial anticlockwise to lower the threshold and so increase the compression

RATIO Knob – Determines how much the signal is reduced by when it exceeds the threshold. For example, a ratio of 10:1 means that when the level of the uncompressed signal exceeds the threshold by 10dB, the compressed signal will only increase by 1dB.The higher the ratio therefore (the further the dial is rotated in a clockwise direction) the more heavily the signal is compressed

GAIN REDUCTION Meter – Indicates when compression is occurring by showing the gain reduction that the signal is undergoing

ATTACK Knob – Defines how quickly the compressor kicks in, e.g. how fast the signal is turned down when it exceeds the threshold. In other words, setting a slower/longer attack time by rotating the dial clockwise will mean more of the loud part of the signal gets through uncompressed, which makes the signal much more punchy but also more likely to clip

RELEASE Knob – Defines how quickly the compressor stops acting on the signal after it has begun to compress. Setting a quicker/shorter release time by rotating the dial anticlockwise will normally make the signal louder overall, however this is dependant on how often the level exceeds the threshold and how fast the attack time is

OUTPUT Knob – Defines how much the level of the compressed signal is increased after compression. This means that a heavily compressed signal can be turned up loud to give it much more presence without fear of any overload or clipping occurring

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EQ

Equalisation of sound is an essential part of the recording process, necessary to remove or boost various sections of the audible frequency spectrum. The nio EQ is 4-band, with 2 fully parametric mid bands and the option of shelving or high-/low-pass on bands 1 and 4, and exhibits the same curves as the classic Focusrite EQ; all that's required to sculpt sound with truly professional flair!

The two central bands have the same 3 knobs for modifying parameters: Frequency, Gain and Q. When band 1 or band 4 are in high- or low- pass mode (switch in lower position), the Gain knob changes into Q. This is because there is no cut or boost option with a high- or low- pass filter, just a slope of variable Q at a selected cut-off frequency. The shelving mode doesn't require a Q control because the slope is fixed.

The controls are:

INPUT Knob – Increases or decreases the level of the signal at the EQ input. No gain modification occurs with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

FREQUENCY Knobs – Set the frequency that the band affects, e.g. the centre frequency in bell mode, the cut-off frequency in high-/low- pass mode or the start of the shelf in shelving mode

GAIN Knobs – Increase or decrease the level of the corresponding band of EQ. The band will have no effect with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

Q Knobs – Set the level of resonance of the band, making the band have a more pronounced effect. Increasing Q decreases the band width so that the bell acts on less of the frequency range

SHELVING/HIGH- or LOW-PASS Switch – Selects a low-shelf (upper) or high-pass (lower) for band 1, and a high-shelf (upper) or low-pass (lower) for band 4

OUTPUT Knob – Increases or decreases the level of the signal at the EQ output. No gain modification occurs with the knob in a central position. Rotate clockwise to increase and anticlockwise to decrease the level by up to 18dB

GATE

A gate is a useful tool for removing unwanted background noise, or merely isolating transients to create interesting performance effects. The gate's action reduces or cuts (cuts in this case) any of the signal that falls below a certain level so that only the loudest sections are heard. When the signal is cut, the gate is described as closed.

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The controls are:

THRESHOLD Knob – Sets the level at which the gate closes/opens from 0dB (maximum signal level) to -80dB (80dB below clipping level). Rotate clockwise to raise the threshold. The higher the threshold, the more the signal is affected as the gate closes when the signal falls below the threshold. So, set at 0dB (max), none of the signal will be heard as the gate will be permanently closed

HOLD Knob – Sets the amount of time that the gate stays open for when the signal rises above the threshold. Increasing this value will mean that more of the signal is heard. Setting this to maximum will mean that faster transients will have little or no effect on the gate, as the gate will remain open for longer periods of time (dependent on the threshold, attack and release)

RANGE Knob – Sets the amount of gain reduction that occurs when the gate closes. Rotate anticlockwise to increase by up to 80dB (scale is -80 to 0dB/max level). At the lowest setting (-80dB), the signal will virtually mute when the gate closes

GAIN REDUCTION Meter – Indicates when gating is occurring by showing the gain reduction that the signal is undergoing (when the gate closes)

ATTACK Knob – Sets the speed at which the gate opens when the signal rises above the threshold. Rotate clockwise to increase the attack time. The larger the attack time, the slower the gate will open and so the more likely faster level variations will be unaffected, e.g. quick rises in level will pass through without being heard before the level falls again (dependent on the threshold, hold and release)

RELEASE Knob – Sets the amount of time for which the gate closes, when the signal has fallen below the threshold. Rotate the dial clockwise to increase the release time. The larger the release time, the slower the gate will close, resulting in more of the signal being heard when the gate opens. Unlike hold, release is a gradual close so creates a gentler and less abrupt effect (dependent on the threshold, attack and hold)

MODES – Sets the sidechain mode (whether one or both channels control the gate). These can be useful if wanting to gate a vocal (connected to Input 1) with a guitar part (connected to Input 2) to create interesting performance effects. Click in a space on the switch groove to set a different mode. The options are:
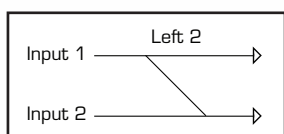
Normal: Left and Right channels (Inputs 1 and 2) are linked together – equal gain reduction on both sides - both inputs are heard
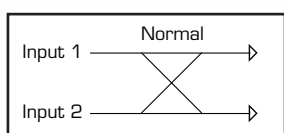
Left 1: Left channel (Input 1) gates the right channel (Input 2) – hear only the right channel (Input 2)
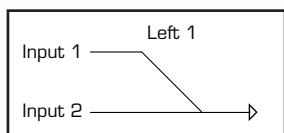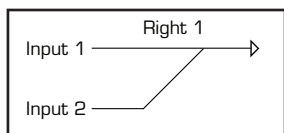

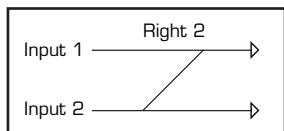**Left 2**: Left channel (Input 1) gates the right channel (Input 2) – hear both sides

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Right 1: Right channel (Input 2) gates the left channel (Input 1) – hear only the left channel (Input 1)

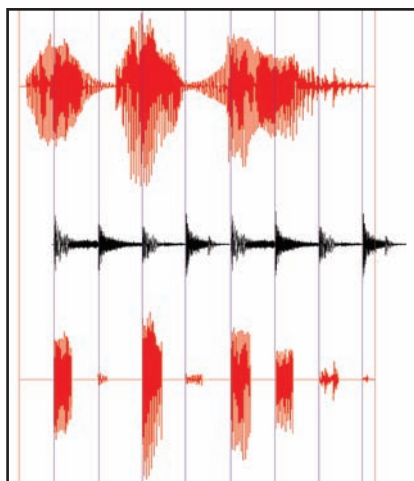**Right 2**: Right channel (Input 2) gates the left channel (Input 1) – hear both sides

Input 1 (Vocal)

Input 2 (Guitar)

Gate Output
(Set to Right 1 -
guitar gates vocal and
only vocal is heard)

REVERB

Reverberation is an effect that creates an environment for the affected signal. It does this by adding a reverberant tail of reflected sound, the properties of which correspond to a space of varying dimensions.

The controls are:

SIZE Knob – Defines the size of the reverberant space. Rotate clockwise to increase. Increasing the size makes the reverberation greater, e.g. more time between initial sound and early reflections, plus longer decay time

PRE-FILTER Knob – Acts as a high- or low- pass filter for the reflected sound (removes the bass or treble, respectively). Rotate anti-clockwise to produce a low-pass filter effect, where the maximum cutoff (lowest frequency) is set in the extreme anticlockwise position. Rotate clockwise to create a high-pass filter effect, with the maximum cutoff (highest frequency) is set in the extreme clockwise position. In the centre, no filtering of the reflected sound occurs

AIR Knob – Sets the amount of absorption (or damping) of reflected sound (the more absorption, the less 'airiness'). In a fully anticlockwise position, absorption is at a maximum so there is very little air. Rotate clockwise to decrease absorption and increase 'air'

MIX Knob – Blends between fully dry/no reverb (fully anticlockwise) and fully wet/just reverb (fully clockwise)

NIO EFFECTS

HOT TUNA

Hot Tuna is an effect that allows you to tune an instrument connected to a nio input. There are no controls available, only displays. When a note is received, the closest semitone will appear to the left of the meter, e.g. F#. The exact tuning of the note will then be displayed on the meter, showing up to half a semitone either side of the displayed note, e.g. +/- 50. Adjust the tuning of the instrument until the LED meter displays 0 (a central position). Note that most guitarists like to tune using harmonics on the 12th fret. This can make tuning a lot easier.

SMART HUM KILLER
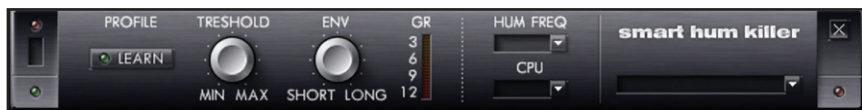
The hum killer can be used to remove mains hum from a signal. Hum is a buzzing sound that can be caused by the mains electricity supply. The hum killer works by filtering out and gating the signal. The gate has Threshold and Envelope controls, where the latter is a combination of attack, hold and decay. The killer also has the ability to analyse and act intelligently on a signal using Learn mode.

The controls are:

LEARN – Click to activate Learn mode. Do not play or send a signal through the effect whilst learning. The killer will then analyse the signal for a few seconds to isolate the hum, after which the LED will light to indicate that the killer has deactivated Learn mode and is acting on the signal

THRESHOLD Knob – Sets the threshold of the gate. Rotate clockwise to increase the threshold. Increasing the threshold makes the gating more obvious

ENVELOPE Knob – Sets the envelope of the gate. In the short position, there is just a brief attack. Rotate clockwise to introduce a decay, then increase both attack and decay times. As the dial is rotated further, a gradually increasing hold time is also introduced

GAIN REDUCTION Meter – Displays the amount of gain reduction occurring as a result of gating

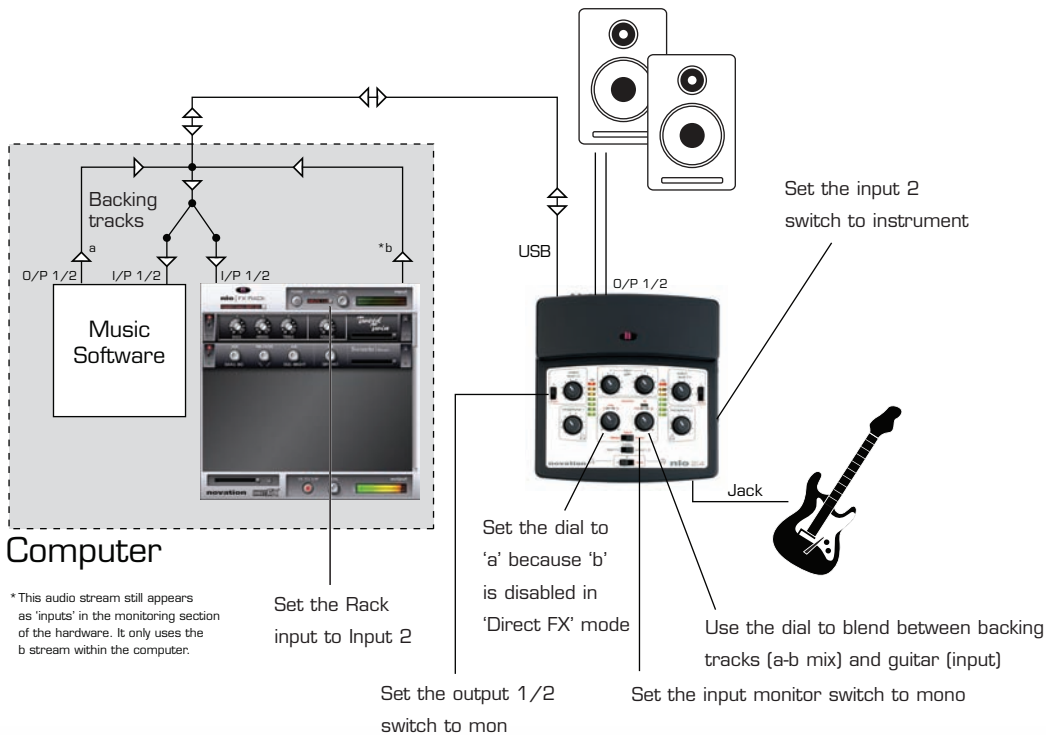**HUM FREQ** – Selects the type of mains supply value in use. Choose the setting that applies to your country. For the UK, choose 50Hz, and for the US, choose 60Hz

CPU – Sets the CPU usage to Hi-res or Lo-res. High res uses more CPU power and filters out a wider range of sound (main bands, plus sidebands). Lo-res just focuses on the main bands and uses less CPU power
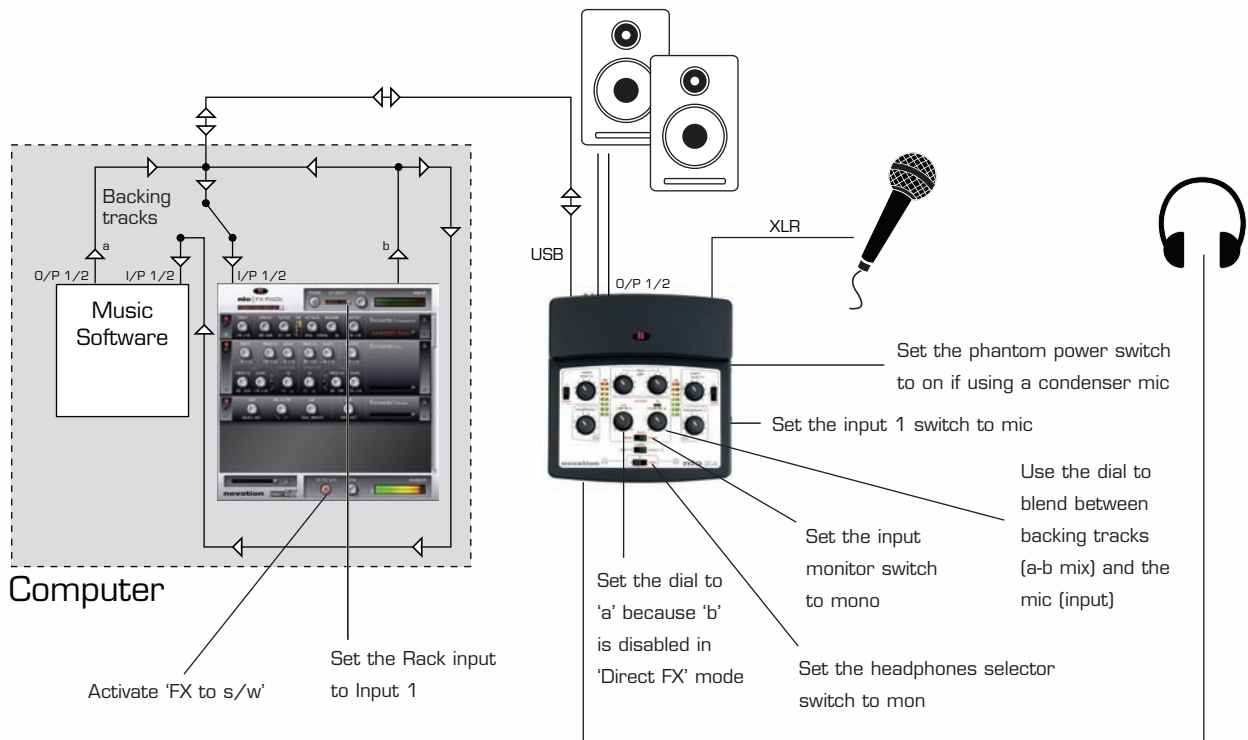
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EXAMPLE SETUP DIAGRAMS

1. PERFORMING GUITAR USING DIRECT FX AND WITH BACKING TRACKS

Set the input 2 switch to instrument

USB

O/P 1/2

Jack

Backing tracks

O/P 1/2   I/P 1/2   I/P 1/2   *b

Music Software

Computer

*This audio stream still appears as 'inputs' in the monitoring section of the hardware. It only uses the b stream within the computer.

Set the Rack input to Input 2

Set the dial to 'a' because 'b' is disabled in 'Direct FX' mode

Use the dial to blend between backing tracks (a-b mix) and guitar (input)

Set the output 1/2 switch to mon

Set the input monitor switch to mono

In this setup, the 'b' stream is inactive (it is used for the guitar's direct monitor path from the rack to the hardware) so nio outputs 3/4 from your music software (normally b) cannot be used to route audio to connected speakers or headphones. The 'processed' guitar still appears as 'inputs' in the hardware 'monitor' section.

2. RECORDING A MICROPHONE WITH DIRECT FX

Backing tracks

O/P 1/2   I/P 1/2   I/P 1/2   b

Music Software

USB

O/P 1/2

XLR

Computer

Set the phantom power switch to on if using a condenser mic

Set the input 1 switch to mic

Use the dial to blend between backing tracks (a-b mix) and the mic (input)

Set the input monitor switch to mono

Activate 'FX to s/w'

Set the Rack input to Input 1

Set the dial to 'a' because 'b' is disabled in 'Direct FX' mode

Set the headphones selector switch to mon

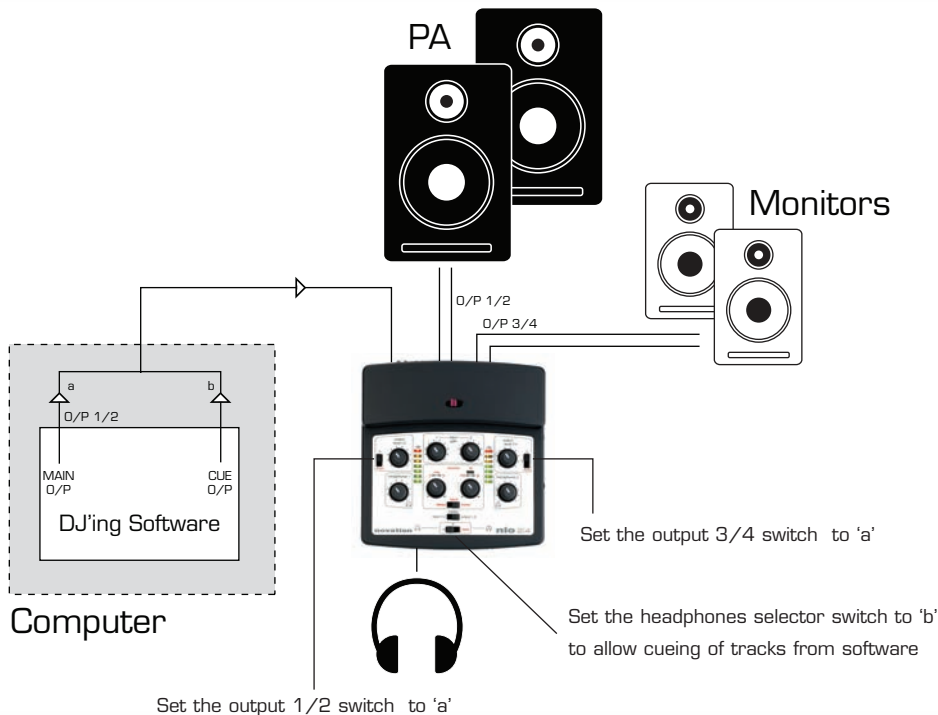*(Description of diagram on next page)*

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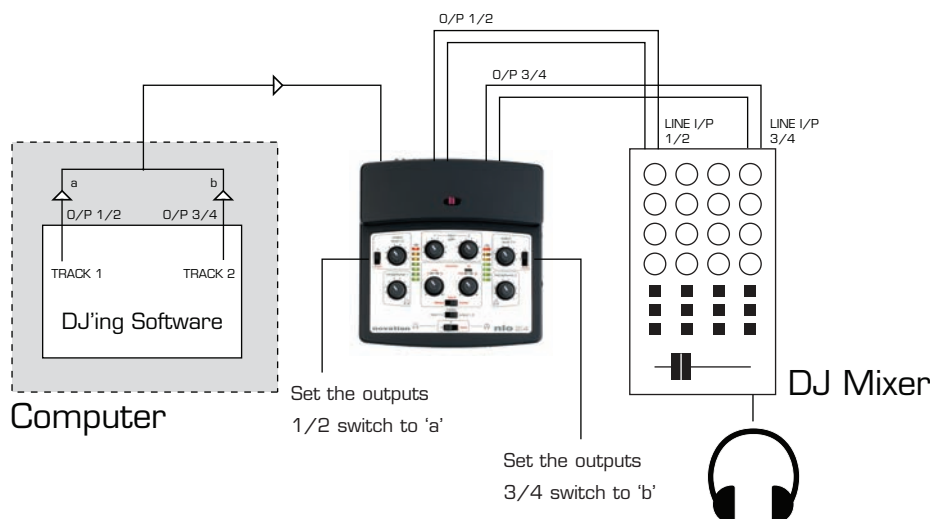
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In this setup, the 'b' stream is inactive (it is used for the guitar's direct monitor path from the rack to the hardware) so nio outputs 3/4 from your music software (normally b) cannot be used to route audio to connected speakers or headphones. Additionally, input 2 cannot be used to record a separate source (without FX) in this setup because nio inputs 1/2 in the music software becomes the stereo output of the FX Rack once 'FX to s/w' has been activated. However, if wanting to record two microphones with identical FX Rack processing, simply connect a mic to input 2 and set the Rack input to Inputs 1+2. Although 'b' is used as the FX Rack output, the 'processed' mic still appears as 'inputs' in the hardware 'monitor' section.

3. DJING SETUP 1

PA

Monitors

O/P 1/2
O/P 3/4

a   b
O/P 1/2

MAIN O/P   CUE O/P

DJ'ing Software

Computer

Set the output 3/4 switch to 'a'

Set the headphones selector switch to 'b' to allow cueing of tracks from software

Set the output 1/2 switch to 'a'

In this setup, the crossfader in the DJ software should be used to blend between tracks. The main PA (outputs 1/2) and the booth monitors (outputs 3/4) should be set to 'a', whilst the headphones should be set to 'b' so that nio outputs 3/4 within the DJ software can be used to cue tracks.

4. DJING SETUP 2

O/P 1/2

O/P 3/4

LINE I/P 1/2   LINE I/P 3/4

a   b
O/P 1/2   O/P 3/4

TRACK 1   TRACK 2

DJ'ing Software

Computer

DJ Mixer

Set the outputs 1/2 switch to 'a'

Set the outputs 3/4 switch to 'b'

In this setup, nio is simply being used to send 'a' to one channel of a standard DJ Mixer and 'b' to another, so that the DJ Mixer can be used in the normal way to EQ and crossfade between tracks.

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SPECIFICATIONS

AUDIO INTERFACING

Inputs:
1 XLR (with phantom power)
1 TS 1/4" Jack
2 RCA Phono

Outputs:
4 RCA Phono
2 stereo 1/4" Headphones Jack

OTHER INTERFACING
Data ports: 1 x USB 2.0 compatible port
2 Standard MIDI Ports

DIMENSIONS:
45.4mm(H) x 144mm(W) x 149mm(D)

WEIGHT:
633g

SYSTEM REQUIREMENTS
Operating system: Mac OSX 10.3.9 or greater or Windows XP SP2
Computer spec: Apple G4/800 MHz or Pentium 1.4 GHz or better
Interfacing: USB 1.1/2.0 compatible USB connector, 28/24 awg USB cable recommended

EFFECTS

GUITAR BASED FX (MONO)

Distortion Pedals
• Green Screamer
• Fat Pie
• Distorter
• 70s Fuzz

Amps
• Brit Rock
• Tweed Twin
• Tweed Bass
• US Modern Valve
• V-AC

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FOCUSRITE FX (STEREO)

• Gate
• Compressor
• EQ
• Reverb

NOVATION SUPERNOVA II FX

• Filter (low-, band- and high- pass) with envelope follower and LFO (stereo)
• Delay (stereo)
• Chorus (mono)
• Phaser (mono)
• Tremelo (stereo)

NIO FX

• Hot Tuna (mono)
• Smart Hum Killer (stereo)

E & O.E.

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