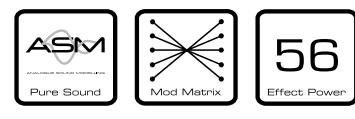


NOVA



NOVA Owners Manual

For Operating System Version 4.1

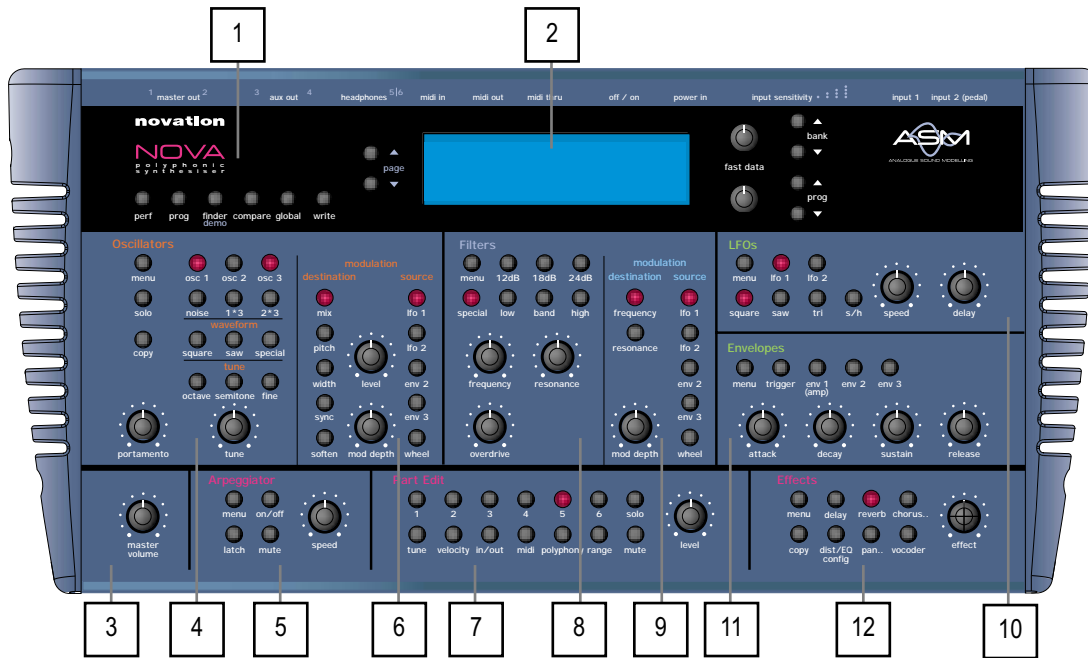
Introducing

DoubleSaw



 **novation**
In music, anything is possible.

Front Panel	2
Rear Panel	3
Setting Up	4
Playing the Factory demo	5
Basic Setup	6
Advanced Setup	7
About Analogue Synthesis	8
About Effects	16
Novationish	20
About Programs	21
About Performances	22
Selecting Programs & Performances	24
Editing & Writing Arpeggiator Patterns	25
Editing & Writing Programs	28
Editing & Writing Performances	30
Master Volume Section	34
Mode Section	35
Display section	46
Arpeggiator Section	47
Oscillator Section	53
Filter Section	67
LFOs Section	75
Envelopes Section	78
Effects Section	83
Part Edit section	96
Multitimbral Use	103
Using the Inputs	105
Using Expression Pedals & Footswitches	108
Troubleshooting	110
Compatibility with other Novation Products	112
Loading Additional Sounds	114
Upgrading the Operating System	115
Specification	117
MIDI Implementation	118
MIDI Controller Table	119
MIDI NRPN Tables	120
Notes	129
MIDI Bank Messages	130
MIDI Clock Sync	131
Programs Bank A	132
Programs Bank B	133
Performances	134
Monophonic Preset Patterns	135
Polyphonic Preset Patterns	136
Index	137
Menu Map	142



1 - Mode Section

This section contains the Performance, Program, Finder / Demo, Compare, Global, & Write buttons.

2 - Display & Data Entry Section

This section contains the Display, two Page buttons, two Fast Data Knobs, Bank Up, Bank Down, Prog Up & Prog Down buttons.

3 - Master Volume Section

This section contains the Master Volume Knob.

4 - Oscillator Section

This section contains all the controls associated with the Oscillators.

These include the Tune & Portamento Knobs & the Solo, Osc 1, Osc 2, Osc 3, 1*2, 1*3, Noise, Special, Saw, Square, Octave, Semitone, Fine & Menu buttons.

5 - Arpeggiator Section

This section contains the Speed Knob & the On/Off, Latch On/Off, Arp Mute & Menu buttons.

6 - Oscillator Modulation Section

This section contains all the knobs & buttons associated with modulation of the Oscillators.

These include the Level & Mod Depth Knobs & the Pitch, Width, Sync, Soften, Mix, LFO 1, LFO 2, Env 2, Env 3 & Wheel buttons.

7 - Part Edit Section

This section contains all the knobs & buttons associated with the Parts of a Performance.

These include the Level Knob & all the 6 Part buttons & the associated Tune, Velocity, Output, MIDI, Polyphony, Range, Mute & Solo buttons.

8 - Filter Section

This section contains all the knobs & buttons associated with the Filter.

These include the Frequency, Resonance & Overdrive Knobs & the Special, Menu, 12db, 18db, 24db, Low, High & Band buttons.

9 - Filter Modulation Section

This section contains all the knobs & buttons associated with modulation of the Filter.

These include the Mod Depth Knob & the Frequency, Resonance, LFO 1, LFO 2, Env 2, Env 3 & Wheel buttons.

10 - LFO Section

This section contains all the knobs & buttons associated with the two LFOs.

These include the Speed & the Delay Knobs & the Menu, LFO 1, LFO 2, Square, Saw, Tri & S/H buttons.

11 - Envelopes Section

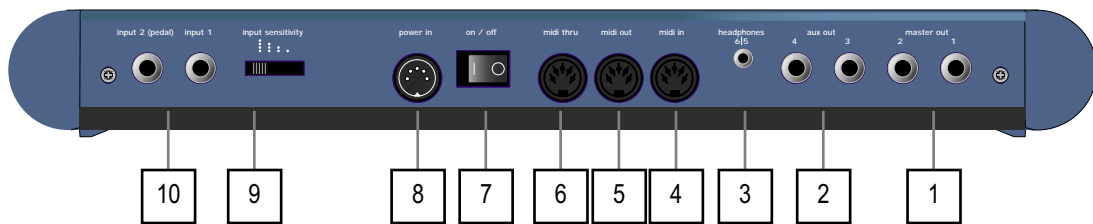
This section contains all the knobs & buttons associated with the three Envelopes.

These include the Attack, Decay, Sustain & release Knobs & the Menu, Trigger, Env1, Env 2 & Env 3 buttons.

12 - Effects Section

This section contains all the knobs & buttons associated with the effects.

these include the Distortion, Reverb, Chorus/Flanger/Phaser, Delay & Pan buttons & there associated Menu buttons plus the Special button.



1 - Master 1 (Left) & 2 (Right) Audio Outputs.

These 1/4 inch Jack sockets deliver a Stereo Line Level output signal for connection to a mixing desk or amplifier. The level of these outputs is controlled by the Master Volume Knob on the front panel.

2 - Aux. Out 3 (Left) & 4 (Right) Audio Outputs.

These 1/4 inch Jack sockets deliver a Stereo Line Level output signal for connection to a mixing desk or amplifier. These outputs can be used in addition with the Master Audio Outputs for more flexibility in live & studio applications.

3 - Headphones (Output 5 & 6) Audio Outputs.

This 3.5mm Jack socket delivers a Stereo Headphone output & via a breakout cable (not supplied) provides Line Level output signal for connection to a mixing desk or amplifier. These outputs can be used in addition with the Master Audio & the Aux 1 Outputs for even more flexibility in live & studio applications.

4 - MIDI IN

This connector is used to receive MIDI Data from an external device.

5 - MIDI OUT

This connector is used to transmit MIDI Data to an external device.

6 - MIDI THRU

This connector re-transmits MIDI Data received by the MIDI IN socket to an external device.

7 - Power On/Off Switch

This switch turns the Nova On & Off.

8 - Power Supply Socket

This socket is for the supplied power supply. CAUTION: Only use the supplied Novation Power Supply Model No KA60A.

9 - Input Sensitivity Switch

This switch selects the sensitivity of the 2 Audio Inputs. In the single dot position the sensitivity is greatest & is suitable for microphones. In the 2 dot position the sensitivity is suitable for your average guitar. In the 3 dot position the sensitivity is suitable for consumer audio electronics (- 10dB). In the 4 dot position the sensitivity is suitable for professional level signals (+ 4dB).

10 - Audio Inputs 1 & 2

These 1/4 inch jack sockets allow external signals to be processed by the Nova's synth engine and/or effects. Input 2 can also double as an Expression pedal/Footswitch input.

SETTING UP

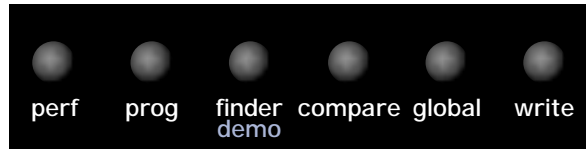
Connect the Master left & Right Audio Outputs (& the Aux. & Headphones Audio Outputs if required) of the Nova to a suitable amplifier or mixing desks stereo inputs & set the Master Volume control on the Nova to a reasonably high output level (9 - 10). This will maintain a good signal to noise ratio. Make sure the input volume on your amplifier or mixing desk is initially set to zero. Make sure that the Nova's mains switch is in the "OFF" position. Connect the MIDI out of your Master Keyboard or Sequencer to the MIDI IN on the Nova. Connect the output of the Power Supply unit to the Power In socket on the Nova. Connect the supplied mains lead to the Mains Socket on the Nova's Power Supply. Connect the other end to the mains supply & switch the supply on. The display should now illuminate showing the performance or program that was selected the last time Global data was written into memory. Refer to page 36 for details on this function. Now switch on your amplifier & adjust the volume accordingly whilst the Sequencer is playing or you are playing the Master Keyboard.

The Master Keyboard or Sequencer will be playing the currently selected Performance or Program. To listen to all the Factory sounds, make sure you are in the Performance or Program Mode by pressing the Performance or Program Button & use the Bank & Prog buttons to the right of the display to call up different sounds.

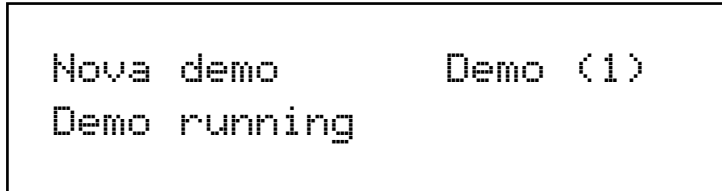
For details on how to select the different Performances & a Programs & what they are refer to pages 21 for details on Programs & page 22 for details on Performances.

If no sound is heard, check that you are transmitting on MIDI Channel 1 as the Nova is set-up to receive on MIDI Channel 1 at the factory.

The Demo mode is activated by either pressing the 'Global' button & while this is active (lit) pressing the 'Finder/Demo' button.



When demo mode is activated the display shows :



There are two different demo's in the Nova. The current one playing is indicated on the top line of the display. To change the demo to a different one simply select a new demo by turning the higher Fast data knob to the right of the display.



NOTE:

Once a demo has finished, the next demo in sequence will automatically start.



NOTE:

Once the last demo has finished playing, the sequence of demos loop & the first demo starts again.

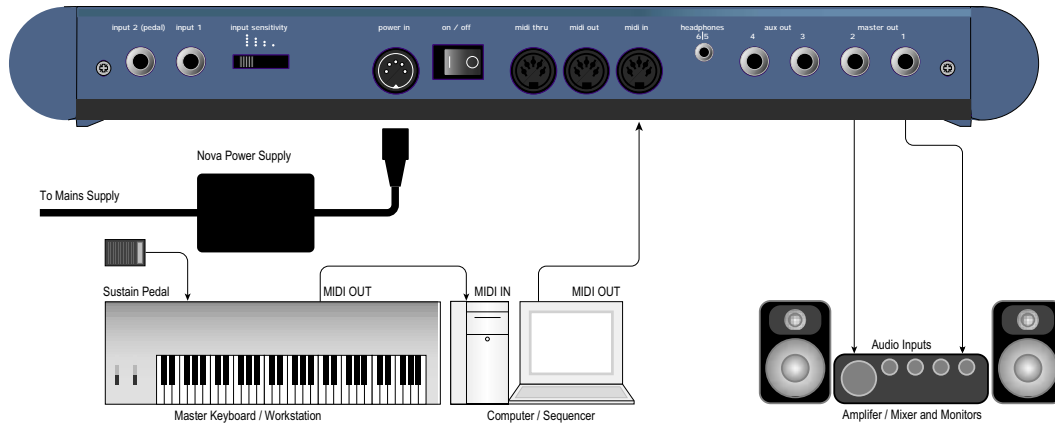


NOTE:

A demo can be stopped at any time by pressing the 'Finder/Demo' button again while the demo is playing.

A playing demo may also be stopped & Demo Mode exited by simply selecting any normal mode button or selecting any Menu button.

BASIC SETUP

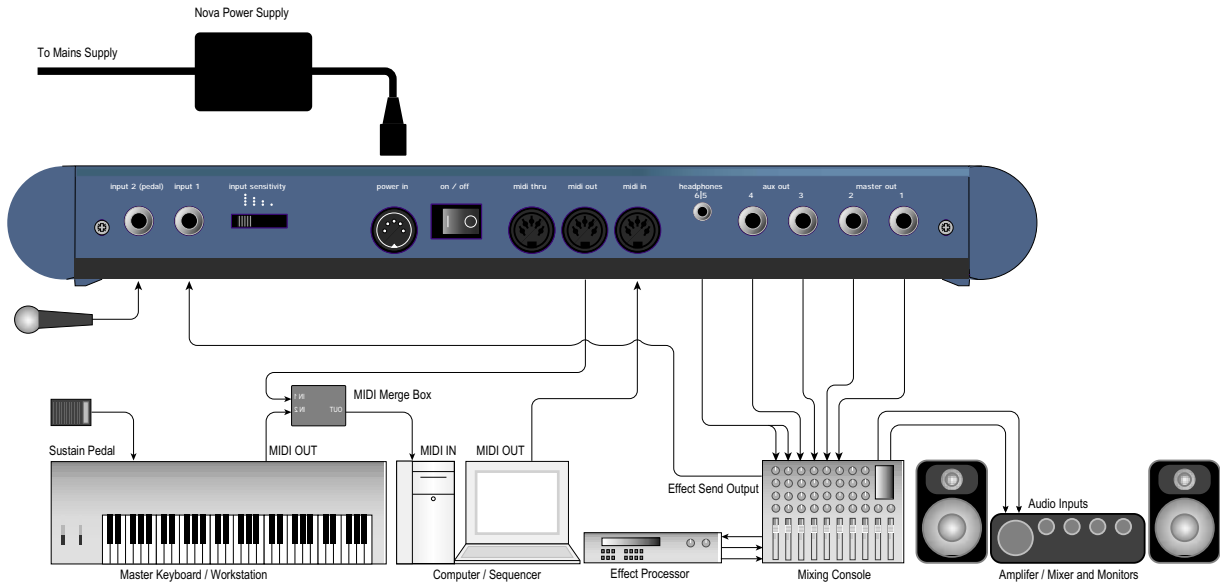


Above is a diagram of the basic way to set-up the Nova. Normally the set-up would be as follows: If the Master Keyboard is a "Workstation" i.e. it has a synthesiser built in, turn "Local Off" or the equivalent in its MIDI set-up (Refer to the Manufacturers Owners Manual on how to do this). Turn the Computer Software / Sequencer's "Soft Thru" (or sometimes called "Echo Back") to the "ON" or "Enabled" position. Now when selecting a "Track" in the computer Software / Sequencer that is assigned to the same channel as the Nova is set to receive on (If this is a Performance you can set the receive channels individually for each "Part" refer to page 103 for details, If this is a Program, Programs are played on the "Global MIDI Channel". Refer to page 36 for details). Playing the keyboard should play the Nova through the Headphones / Monitors. Similarly, "Tracks" in the Computer Software / Sequencer that are assigned to MIDI Channel(s) of the "Workstation" should make it produce sound. If not please refer to the Keyboard & Computer Software / Sequencer manufacturers owners manuals for details on how to do this.



NOTE:

This set-up does not allow the recording of knob movements on the Computer Software / Sequencer. This is because the MIDI output of the Nova is not connected to the MIDI input of the Sequencer / Computer. To record knob movements in real-time refer to the advanced set-up on page 7.



This is the advanced way to set up the Nova. This set-up allows real-time recording of knob movements onto Computer Software / Sequencer as both the MIDI output of Nova & the MIDI output of the keyboard are merged with an external (not supplied) MIDI Merge box.

If the Master Keyboard is a "Workstation" i.e. it has a synthesiser built in, set it to "Local Off" or the equivalent in its MIDI set-up (Refer to the Manufacturers Owners Manual on how to do this). Turn the Computer Software / Sequencer's "Soft Thru" (or sometimes called "Echo Back") to the "ON" or "Enabled" position. Now when selecting a "Track" in the computer Software / Sequencer that is assigned to the same channel as the Nova is set to receive on (If this is a Performance you can set the receive channels individually for each "Part" refer to page 103 for details, If this is a Program, Programs are played on the "Global MIDI Channel". Refer to page 36 for details). Playing the keyboard should play the Nova through the Headphones / Monitors. Similarly "Tracks" in the Computer Software / Sequencer that are assigned to MIDI Channel(s) of the "Workstation" should make it produce sound. If not please refer to the Keyboard & Computer Software / Sequencer manufacturers owners manuals for details on how to do this.

As can be seen there are 3 stereo pairs of Output connected to the mixer (The Headphones socket has been designed so that it can double as an extra 2 outputs). This allows individual sounds to be processed externally by the mixer & other outboard equipment. To direct "Parts" of a "Performance" to these separate outputs refer to page 98 for details. Additionally the Nova automatically redirects the effects outputs for the selected part to go to the same outputs as the part, so even if separate outputs are assigned the associated effects follow automatically.

Additionally it can be seen a Microphone is connected to input 2. This allows external acoustic signals such as your voice to be processed by the Nova. This includes passing the signal through the Nova's effects section, through the Nova's Filters & Effects, as a Carrier or Modulator for the Nova's Vocoder section or any combination of all of the above. Input 1 is connected to the Aux send of the Mixing desk, allowing the Nova's effects to be used during performance & mixdown for any signals running through the desk.

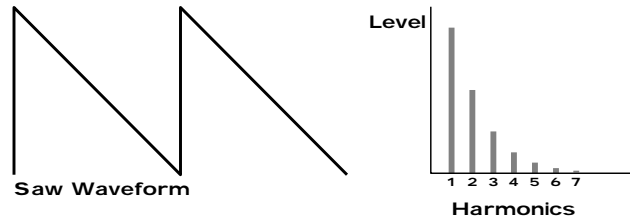
Input 2 can function as an expression pedal input. When used in this way the pedal can be assigned to do virtually anything you like. To do this simply connect an Expression pedal to Input 2 & set the Pedal Mode parameter on page 9 of the Global mode to Breath T (Tip) or Breath R (Ring) depending on the type of Expression pedal you have. Refer to page 40 for details on common types of pedals. After this has been done, set the Breath control parameter on page 4 of the Global mode to whatever MIDI controller is required. A good starting point is the MW (Mod Wheel) setting as this allows the expression pedal to control all the Programs with M-Wh at the end of their names in exactly the same way as the Mod wheel itself would. This setting by default also allows control over a large amount of parameters at once via the "Wheel" parameter in all the Nova's Mod Matrixes & Effect menus.

The Nova can have virtually any parameter controlled via MIDI. The movement of any knob, the pressing of any button or change to any parameter can be recorded with this setup. These recordings can then be easily edited on a sequencer. Details on all the controllers & NRPN's Nova uses can be found on page 119 to page 128.

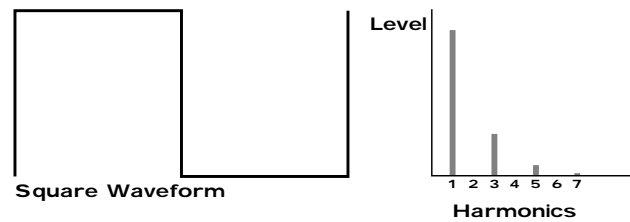
ABOUT ANALOGUE SYNTHESIS

OSCILLATORS - *pitch*

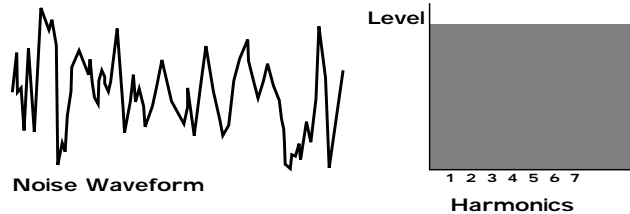
To understand synthesis it is necessary to have some understanding about sound itself. Sound is a vibration or oscillation. These vibrations create changes in air pressure which is picked up by your ears & is perceived as sound. When dealing with musical sounds the vibrations or oscillations occur at regular intervals & are perceived as the "Pitch" or "Frequency" of a sound. The simplest musical sound is a sine wave because it contains only one "Pitch" & is perceived as a very "Pure" tone similar to a whistle. Most musical sounds consist of several different "Pitches" or "Frequencies". The lowest is referred to as the "Fundamental" & determines the perceived "Pitch" of the note. The other frequencies present are called "Harmonics" & in musical sounds usually occur in multiples of the fundamental frequency. i.e. if the fundamental note is 440Hz then a musical harmonic series would be 2nd harmonic = 880Hz, 3rd harmonic = 1320Hz, 4th harmonic = 1760Hz, 5th harmonic = 2200hz etc. The number & loudness of these "Harmonics" determines the "Timbre" of a sound. This gives a sound character & is why a violin sounds different from a guitar & a piano sounds different again. In an Analogue synthesiser you have the choice of several different waveforms. Each waveform has different amounts of harmonics & so the "Timbre" of each one is quite different. Below are descriptions of some of the waveforms & indications on what they can be best used for.



Sawtooth waves have all the harmonics of the fundamental frequency. As you can see every harmonic has half the amplitude of the previous one. This sound is pleasing to the ear & is useful for basses, leads, & synthesising stringed instruments.



Square waves have only the odd harmonics present. These are at the same amplitudes as the odd harmonics in a saw wave. Square waves have a hollow / metallic sound to them & so are useful in creating unusual synthesiser sounds & oboe like sounds.



White noise has no fundamental & all harmonics are at the same level. This wave can be used by itself to synthesise explosions or wind & when used in conjunction with other waveforms can be used to create the illusion of "Breath" in an instrument.

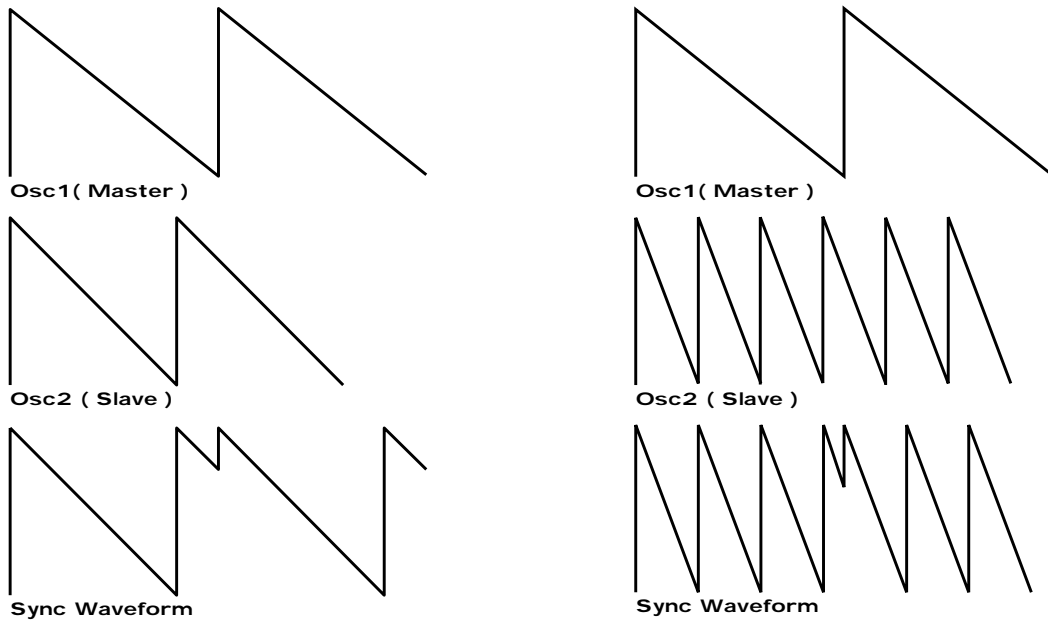
PWM (PULSE WIDTH MODULATION)

The choice of waveform is important as it determines the basic "Timbre" of the sound you are making. There are additional methods of synthesis that allow more harmonics to be generated. The First of these is Pulse Width Modulation. PWM for short. Essentially the duty cycle of the normally symmetrical square wave is varied. This means the wave form goes from a Square wave to a Pulse wave like so:



This has a very pleasant "thickening" chorus like effect & is often used in Pad type & String section type sounds.

Additionally there is a synthesis method called Oscillator sync. This takes two oscillators & uses one (the Master) to reset the other (The Slave) each time it starts a new cycle. The effect is most noticeable when the two oscillators are out of tune as shown below.

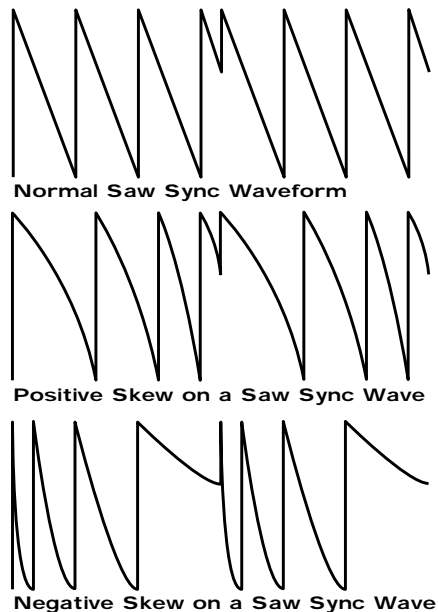


This Sync Effect creates very piercing & metallic sounds & are used a lot as lead sounds. It is worth noting that the Nova does not require 2 oscillators to create this effect. The Sync "Effect" is created by the Analogue Sound Modelling process without the need for a Sync Oscillator, there is merely a "Sync" parameter that creates the classic Sync Effect. This means that each of the 3 oscillators in one Nova "voice" can be independently Sync'ed as if there were 3 Master & 3 Slave oscillators.

Analogue Sound Modelling technology also enables the creation of some new "Sync" related parameters that are not found on analogue synthesisers. These are "Key Sync", "Sync Skew" & "Formant Width"

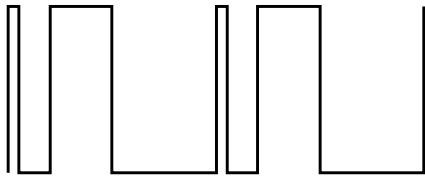
Normally in an analogue synthesiser even though the Master & Slave oscillators are detuned relative to each other, they both track keyboard pitch equally. i.e. if you play notes one octave apart, both the Master & the Slave oscillator will be transposed one octave. "Key Sync" allows the slave oscillator to have its pitch tracking adjusted independently. This means that the "Sync Effect" will change as you play different notes up & down the keyboard.

Sync Skew manipulates the frequency of the "virtual" slave oscillator within one cycle of the master oscillator. As can be seen the effect is the Sync Effect seems to have a higher frequency at the end of each cycle with positive modulation & at the start of the cycle with negative modulation. This parameter makes the sync waveform sound even harsher. This is particularly good for aggressive lead sounds.

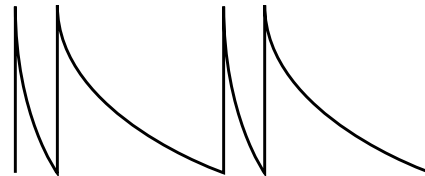


ABOUT ANALOGUE SYNTHESIS

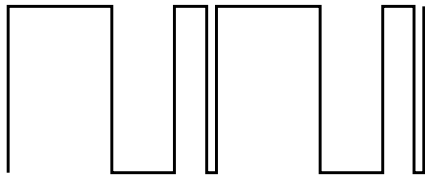
Skew also effects the standard Square & Saw waveforms. The effect is to “squash” the waveform at the end of its cycle with positive modulation & squashing the waveform at the beginning of the cycle. On a square wave moderate amounts of this effect produce similar effects to Pulse width modulation except width modulation over 100% can be achieved allowing many cycles to be “squashed” into one original one. This can also be described as Frequency Modulation within the cycle & so mimics classic “Cross Modulation” with a Saw wave. This can produce effects similar to Sync but when this parameter is used in conjunction with Formant Width the results can be very different. Below are examples of Skew on standard Square & Saw waveforms. Note how the wave is squashed at one end & more than one cycle has been squashed into the original cycle.



Negative Skew on a Square Wave



Negative Skew on a Saw Wave



Positive Skew on a Square Wave

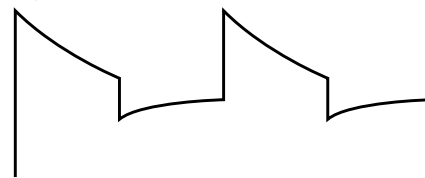


Postive Skew on a Saw Wave

Formant width is a parameter that controls the level of the cycles of the “virtual” slave oscillator. This can be used to simulate resonance within the oscillator itself by using the “Soften” parameter to smooth out the sharp edges of this wave form. As can be seen the effect is to reduce the level of every successive slave cycle. Additionally this parameter has an effect on the normal Saw & Square waveforms. The effect is to boost the treble content of these waves.



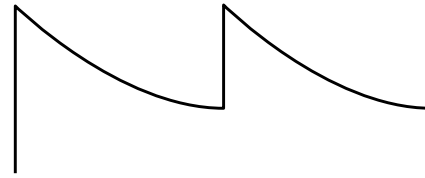
Sync Waveform



Formant Width on a Square Wave

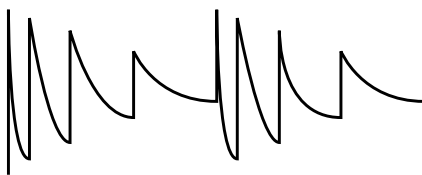


Sync Formant Width Waveform

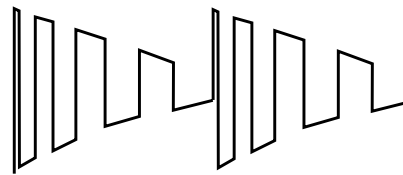


Formant Width on a Saw Wave

Both Skew & Formant Width can be used in conjunction to create yet even more waveforms. Below are examples.

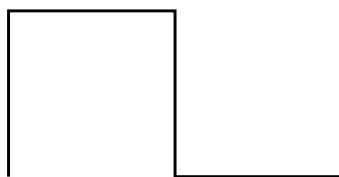


Negative Skew & Formant Width on a Saw Wave

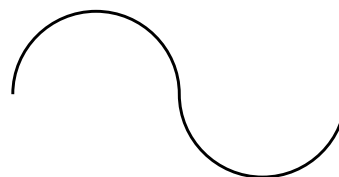


Negative Skew & Formant Width on a Saw Wave

Analogue Sound Modelling technology allows even more control over the waveform. Once you have selected your basic oscillator waveforms you can further modify then using a “Softening” process. This “Softening” rounds off all the “Sharp” edges of the waveform, thereby reducing it’s harmonic content. Below is an example of the “Soften” parameter on a Square wave.

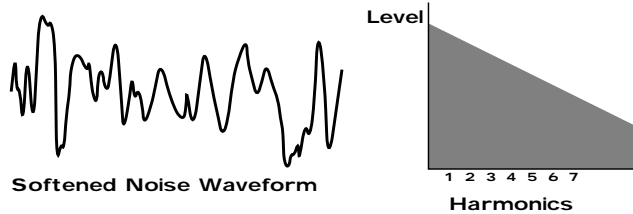
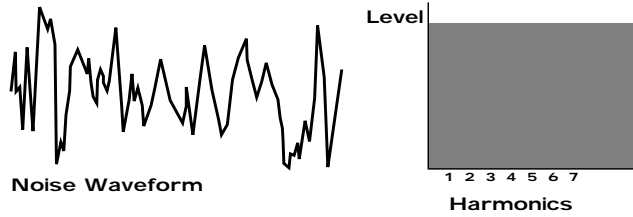


Square Waveform

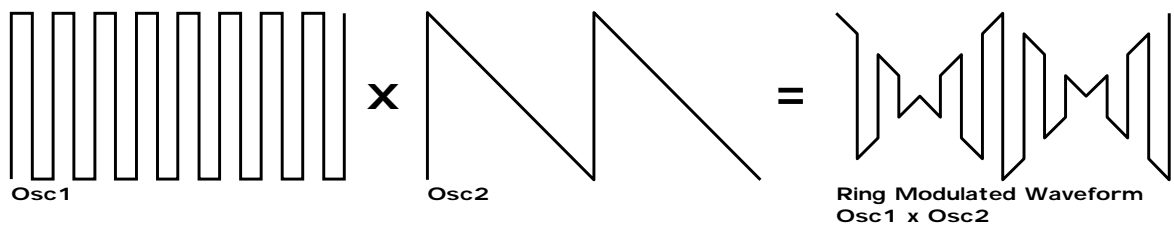


Softened Square Waveform

The Soften parameter is completely variable & as can be seen can reduce a square wave to only one harmonic producing a Sine wave. The Soften process can also be applied to the noise generator providing control over the harmonic content of the noise. Below is an example of the “Soften” parameter on Pink Noise.

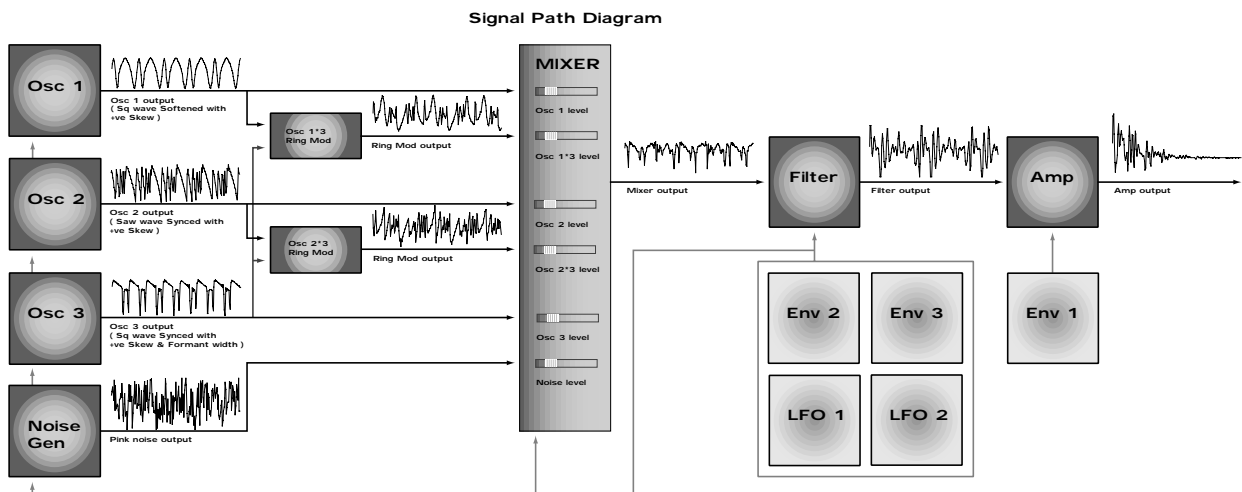


Finally there is Ring modulation. This uses two oscillators but instead of adding them together as would happen in a mixer, they are multiplied together. This is very similar to FM & produces the kind of effect shown below:



The Ring Mod effect creates metallic & bell like sounds & is used generally for lead sounds but if used subtly can produce Electric Pianos etc & if used radically can produce unusual sound effects.

All these methods further enhance the basic Oscillator waveforms to include many more or a useful mix of harmonics. Once the waveforms have been selected you can then “fine tune” the harmonic content of the mixture of different waveforms by passing them through a “Filter” to remove unwanted harmonics. The filter in an Analogue synthesiser is a very powerful “Tone Control”. Like the tone control on a stereo, the filter can alter how things sound but it cannot change the style of music being played on the record, & so the filter in a synthesiser can alter the “tone” of a sound but is restricted by the basic “Timbre” of the waveforms. For this reason, several waveforms are available at once & you can “Mix” them together to provide more harmonically rich waveforms. Below is a diagram showing the signal path in the Nova & all the waveforms at various locations.

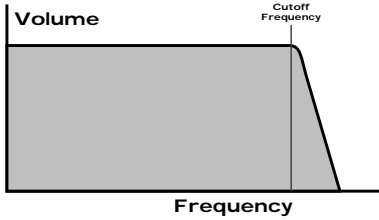


As can be seen different waveforms are being produced by different oscillators using different techniques. The Oscillators, Ring Modulators & the Noise Generator are all being Mixed together & feed to the filter. The signal is then in turn fed to the Amplifier. Oscillator 1 is using a Square wave modulated by Skew & then Softened. To create a sine-like wave except it has an extra bump in it this produces a Whistle like sound. Oscillator 2 is using a Saw wave modulated by Skew & Sync producing a Harsh sound & Oscillator 3 is using a Square wave modulated by Skew & Formant width to produce a bright PWM like waveform. The 1*3 Ring modulator & the 2*3 Ring modulator are producing complex waveforms & these along with all the Oscillators & the Noise generator are fed to the Mixer.

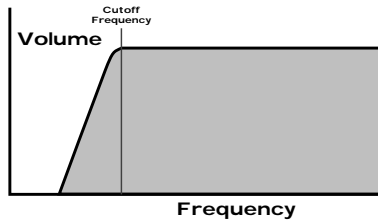
ABOUT ANALOGUE SYNTHESIS

FILTER - tone

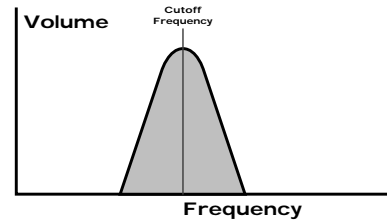
There are several different types of filter. These are Low Pass Filter, High Pass Filter & Band Pass Filter. The Low Pass Filter allows harmonics below a set frequency to pass through the filter. Hence the name Low Pass Filter. The High Pass Filter allows harmonics above a set frequency to pass through the filter. Hence the name High Pass Filter. The Band Pass Filter allows harmonics at a set frequency to pass through the filter, the harmonics above & below the set frequency do not pass through the filter. Hence the name Band Pass Filter. Below are the frequency response curves of the three types of filters.



Low Pass Filter Response Curve

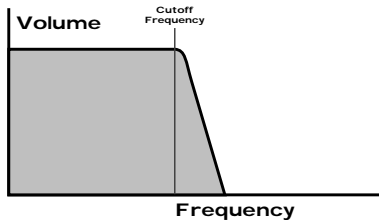


High Pass Filter Response Curve

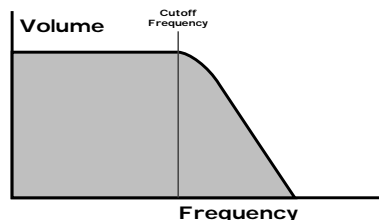


Band Pass Filter Response Curve

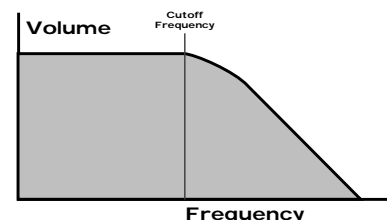
Additionally the slope of the curve at which the filter rejects unwanted harmonics can be altered. The effect is similar to a "Q" control on a parametric EQ. In the 12dB position the Cutoff Frequency slope is less steep so the higher frequencies are not attenuated as much as they are in the 24 or 18dB positions. This makes the resulting filtering in the 12dB position more subtle than the 24 or 18dB positions which you should select if you want the Cutoff Frequency to be more obvious. The slope is measured in dB per Octave & below are the response curves of a Low Pass Filter with 24, 18 & 12 dB per Octave slopes.



24dB/oct LPF Response Curve

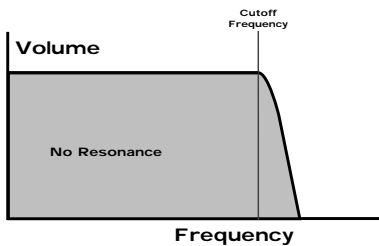


18dB/oct LPF Response Curve

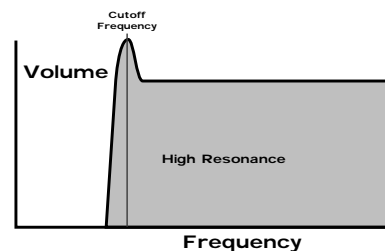
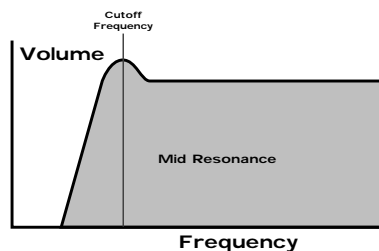
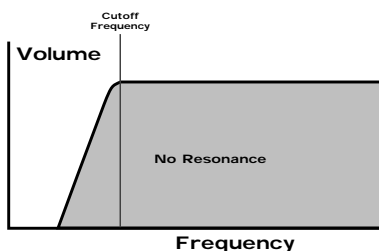
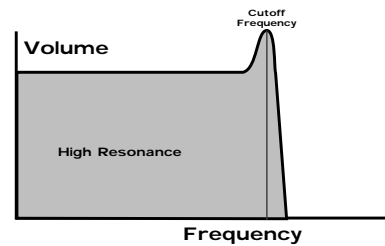
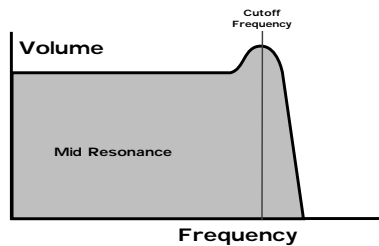


12dB/oct LPF Response Curve

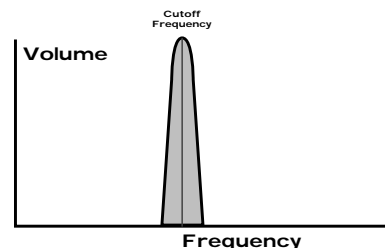
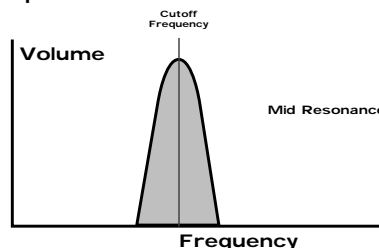
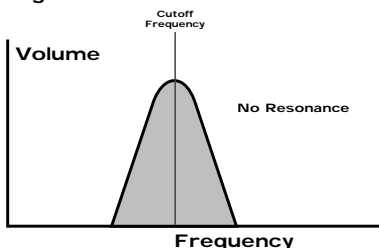
All these filters have a Resonance parameter. This has the effect of emphasising harmonics at the cutoff frequency of the filter. This is very useful for creating large tonal differences to a basic waveform. The effect is shown below as both frequency response curves when resonance is applied in the Filter.



Low Pass Filter with Resonance Response Curves



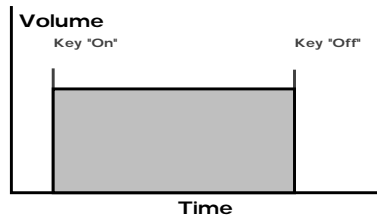
High Pass Filter with Resonance Response Curves



Band Pass Filter with Resonance Response Curves

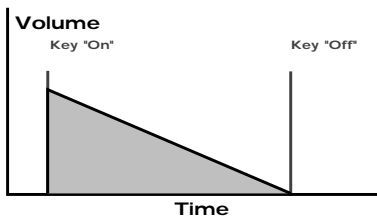
AMPLIFIER - volume

The last major process that makes up a sound is it's "Volume". The "Volume" of sounds vary as time goes by & so an Organ has very different volume characteristics than that of a Piano or String section. See the following diagrams for details.



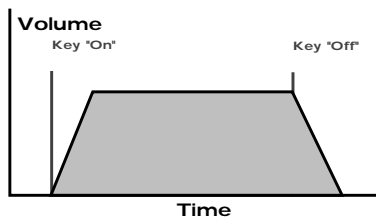
"Organ" Type Volume Response Curve

The "Organ" can be seen to go to full volume instantly when a key is pressed & then stay there until the key is released at which point the volume drops instantly to zero.



"Piano" Type Volume Response Curve

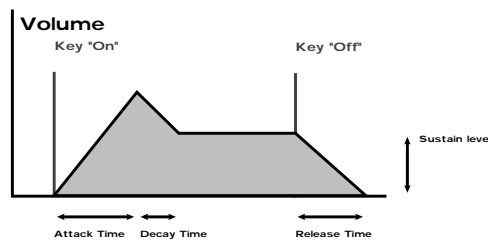
The "Piano" can be seen to go to full volume instantly when a key is pressed & then gradually fall back down to zero over several seconds.



"String Section" Type Volume Response Curve

The "String section" can be seen to go to full volume gradually over several seconds when a key is pressed & then stay there until the key is released when gradually over a couple of seconds the volume drops to zero.

These curves are called "Envelopes" & in an Analogue synthesiser "Envelope Generators" are used to recreate them. Envelope Generators have 4 parameters which are used to adjust the shape of the envelope, see the diagram below



ADSR Type Volume Response Curve

Attack time is used to adjust the time it takes when the key is pressed for the envelope to go from zero to full value (Fade in).

Decay time is used to adjust the time it takes for the envelope to go from full value to the value set by the Sustain level (Piano like decay of volume).

Sustain level is used to set the level that the envelope remains at while the key is held down.

Release time is used to adjust the time it takes when the key is released for the level to go from the sustain value to zero (Fade out).

ABOUT ANALOGUE SYNTHESIS

An Analogue Synthesiser can be broken down into three main elements.

- 1 - The Oscillator is the part of a synthesiser that generates "Waveforms" at a certain "Pitch".
- 2 - The type of "Waveform" selected in the Oscillator & the settings of the "Filter" determine the "Tone" of the sound.
- 3 - The sound is then passed through an "Amplifier" which is controlled by an "Envelope Generator". These alter the "Volume" of a sound over time.

All of these three main elements can be controlled by various methods for example:

The "Pitch" of a note can be played on a keyboard or a synthesiser & additionally it can be manipulated in real time using the "Pitch Bend Wheel" to create "Slides" & "Bends" in pitch. LFOs (Low Frequency Oscillators) can be used to "Wobble" the pitch of a note at a specific rate creating a "Vibrato" effect. An Envelope Generator can also be used to "Slide" the pitch automatically.

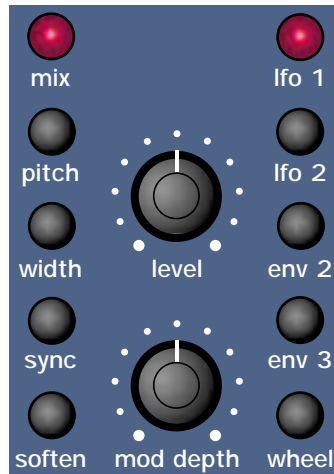
The Filter can be manipulated by LFOs to vary the "Tone" of a sound at a specific rate creating a "Wah Wah" type of effect. An Envelope Generator can also be used on the Filter so that the "Tone" of a sound changes over time. A feature called "Keyboard Tracking" can also be used on the Filter so that the "Tone" of a sound changes depending on the note being played.

The Amplifier can be manipulated by Envelope Generators so that changes in the "Volume" of a sound over time can make the sound short & percussive, or more like a piano or even like an organ. Additionally the "Velocity" at which you hit the keys can also be used to manipulate volume making a sound more "expressive".

The elements that manipulate these three main synthesis elements are called "Modulation Sources".

The Nova features 3 Envelope generators & 2 LFOs (Low Frequency Oscillators) as Modulation "Sources". In addition to this Velocity (The dynamics of your keyboard playing. i.e. ppp to fff), Aftertouch (Pressure on the keyboard while note(s) are held) & the Modulation Wheel are included in a as additional "Sources" of modulation signals in a "Modulation Matrix". This allows almost any "Source" to modulate a given parameter. It is even possible to have combinations of different "Sources" modulating one parameter. In the Nova this has been neatly arranged on the front panel so that accessing all the possible combinations of modulation is quick & easy. Below is the Modulation Matrix for the Oscillator section.

Oscillator Modulation Matrix



Simply by pressing the desired “Source” (the row of buttons on the left) & the desired “Destination” (the row of buttons on the right) & adjusting the “Level” or “Mod Depth” knobs allows the creation of complex modulation setups easily. On older modular Analogue Synthesisers this was done with “Patch” leads that physically connected the “Sources” & “Destinations” together.

This allows some very powerful performance features to be implemented. i.e. It is possible to sweep the “Sync” effect, “Soften” effect, Pulse Width Modulation & alter the Mix of all three oscillators independently plus open the Filter Cutoff Frequency, Reduce the Filter Resonance, add lots more Distortion & Delay & reduce the Chorus & Reverb, all by simply moving the Mod Wheel forward! With the Modulation Matrix relationships like this are quick to set up & will transform a “static” sound into one with real “hands on” control & flexibility.

This is where most synthesisers end, however the Nova features a very powerful Effect section. It could be said that effects are as much “part” of a sound as the raw sound itself, some of the larger old Analogue systems had built in spring reverb, & with the development of DSP technology digital effects have become available in modern synthesisers. However when in a “Multibrain” application all the sounds generally are passed through one set of effects.

In the Nova a block of 7 effects is part of the “Program” & can be considered to be part of the synthesis engine. These include Distortion, EQ, Reverb, Chorus/Flanger/Phaser, Delay, Panning & Comb Filter effects. These can simulate “Real World” effects like Echo & Room Reverberation etc. Or they can be used to do really weird things to your sound! For details on what each effect does & how best to use them refer to the About Effects section part of this manual on page 16 for details.

The best thing to do is just get in there & tweak those knobs, after all that’s why we put them there! Experiment & you’ll soon be creating your own sounds. Don’t worry about erasing the factory sounds in the memory. If you want, the factory sounds can be recalled. To do this refer to page 40 for details.

ABOUT EFFECTS

The Nova's effect section is arguably one of the most powerful in a synthesiser of this type today. With all this power it is possible to obtain a level of production that was previously unattainable.

Effects can be "Effects" or they can be "Acoustic Simulations". Both are useful in the production of modern music, in fact they are almost essential. Clever use of effects can enhance a track beyond compare. However, slapping loads of effect on everything can do the reverse.

In the Nova there are 7 effects units per Program. They are: Distortion, EQ (Equalisation), Comb Filter, Reverb, Chorus/Flanger/Phaser (This is one effect that can be a Chorus or a Flanger or a Phaser), Delay & Panner/Tremolo. Lets look at all of these effects one by one.

Distortion. (This is found in the "dist/EQ/config" Menu of the Effects Section)

This is usually an effect reserved for Guitar players. As the name suggests, this has the effect of distorting the incoming signal as can be seen in the diagram below.



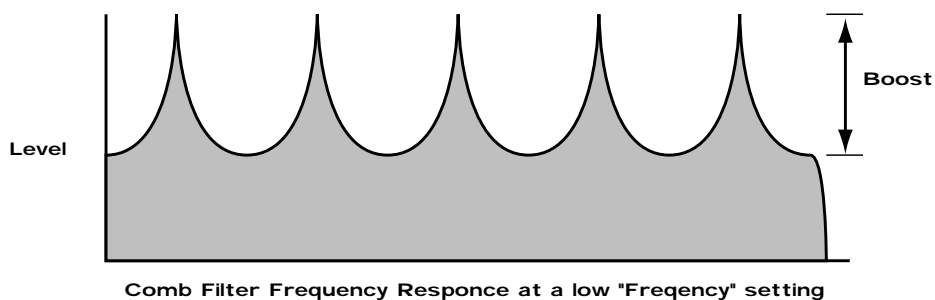
This effect not only gives the sound a hard edge & a dirty kind of quality, it also has several other characteristics that are worthy of note. Firstly, low level harmonics within the waveform are exaggerated. "Resonant" waveforms & indeed any resonance or additional harmonics will jump out if this effect is used. Secondly, as can be seen, the maximum level that comes out of the distortion effect is relatively constant so there is a definite compression effect as well. This can be useful for mixing, as the level of the sound is the same. The Distortion parameter as its name implies introduces Distortion.

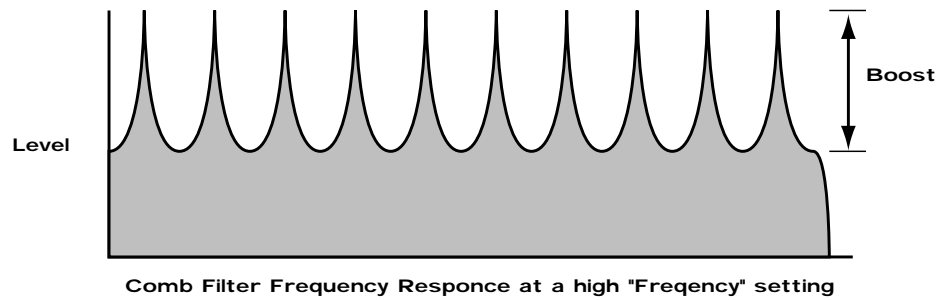
EQ. (This is found in the "dist/EQ/config" Menu of the Effects Section)

This effect is not normally found on most synthesisers, but is found on mixing desks & is very useful for fine tweaking the individual sounds to make them "fit" together in a mix. Very often a sound may be too "muffled" sounding or a bass too "twangy" sounding. This is where EQ comes in. Muffled sounds have insufficient treble, so adjusting the Treble EQ will either boost or reduce the treble. Similarly, the Bass EQ will either boost or reduce the bass. In the Nova there is a Treble EQ control & a Bass EQ control.

Comb Filter. (This is found in the "dist/EQ/config" Menu of the Effects Section)

This effect is a filter that generates many peaks in the frequency response of the signal. This can be seen in the frequency response curve below.

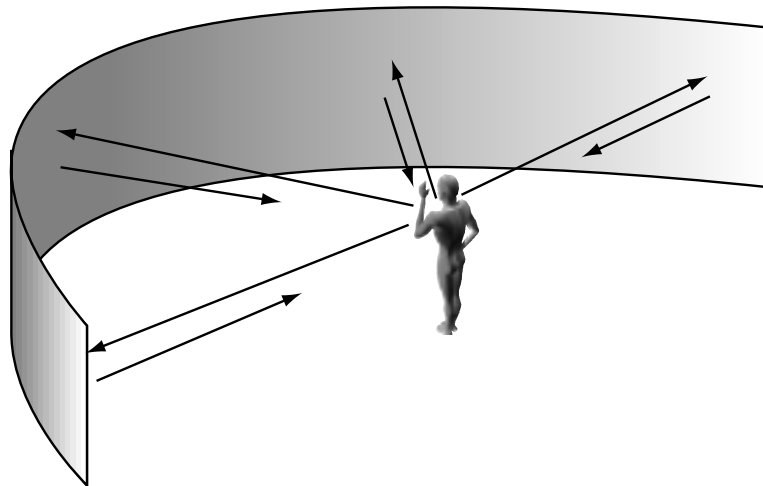




As can be seen there are many peaks & they look like a “comb” hence the name Comb Filter. There are two parameters associated with this effect. Comb frequency controls the “frequencies” at which the peaks occur & Comb boost controls how high the peaks are. The effect is to alter the timbre of the sound. Although similar to EQ, this effect can produce effects not possible using a standard EQ. The resulting sound tends to be quite “Metallic” sounding especially when large “Boosts” are applied.

Reverb.

This is an “Acoustic Simulation of a room. Why does singing sound good in the toilet? Reverb that’s why. The Reverb Effect is a computer model of the acoustics of a room. The type of room is up to you, anywhere from the toilet to the local Concert hall is possible. Below is a simplified diagram of the reflections of sound in a room. Note there are many reflections from all directions.



When the Reverb button is pressed, the knob in the effect section controls how much Reverb there is. Anticlockwise there is little effect. This can be thought of as being very close to the sound source within the hall. Fully clockwise there is lots & this can be thought of as being at the other end of the hall from the sound source. Basically one way of looking at this parameter is “where you are & where the sound source is in the hall”.

Different types of rooms & halls have different acoustics. For this reason Nova features several different Reverb types. These range from very, very small rooms like the “Dry Chamber” setting to the very large hall like the “Large type 2” setting. Additionally “special” types have been included. These are “Gated” types & are an artificial type of reverberation that sustains for a period & then typically dies away suddenly rather than smoothly decaying away as reverb does naturally. These types can be used as a special effect, especially on drums.

Most rooms have dominant large reflective surfaces (Larger walls typically) & these create dominant echoes in the reverberated signal. Early ref (reflection) level simulates these reflections. Large amounts of Early ref level will produce strong signal at the beginning of the reverb.

Decay Time is the time it takes for the Reverb to die away after the sound has stopped. This can be thought of a “what the hall is made of”. Very acoustically reflective rooms tend to have long decay times & very non reflective rooms have short ones.

HF damp is short for High Frequency Damping. This controls the “tone” of the decaying Reverb. This can be thought of as the amount of carpet & drapes in the hall. Carpet & drapes tend to absorb high frequencies as a sound “bounces” around the hall , giving you your Reverb effect. With each bounce the sound looses a little treble. No HF Damping is a little unusual in the “real” world but can be used to emphasise sibilant or trebly sounds. Normally a little HF Damping is applied to give the Reverb a natural kind of sound.

ABOUT EFFECTS

Chorus/Flanger/Phaser.

This is one effect that can be a Quad Chorus or a Chorus / Flanger or a Phaser.

Chorus - an overview.

This is an effect originally designed to simulate the effect when many people sing together as opposed to one person or the sound of a 12 string guitar as opposed to a 6 string guitar. Chorus is an effect that is produced by detuning the signal slightly & mixing it back together with the original signal. The characteristic Chorus swirling effect is produced by an LFO that controls the amount of detuning the chorus performs.

Quad Chorus.

This is a effectively 4 Choruses running at once from one LFO but in different phases. This creates a particularly “thick” Chorus effect suitable for String Ensemble & other “Lush” sounds.

Chorus/Flanger.

Normal Chorus & Flanger effects are quite similar. Using this effect as a Chorus provides a Stereo effect with a smooth swirling sensation that fattens up sounds & provides a stereo image. This type of Chorus differs from the Quad Chorus in the sense that although not as “thick” sounding, this Chorus retains the “definition” of the effected sound making it more suitable for basses, organs & percussive sounds. The Flanger effect is similar to a chorus but tends to use more detuning & feedback to produce an effect with a pronounced swirling sensation that emphasises the harmonics in the sound as it sweeps through them.

Phaser.

This effect is almost the reverse of a Flanger. A small amount of phase shift is applied to the signal via an LFO. When this is added back together with the original signal a pronounced swirling effect is produced that cancels out harmonics in a sound as it sweeps through them.

Speed. This parameter controls how fast the LFO for this effect is going. Generally a fairly slow speed is used. Higher speeds tend to induce a vibrato like quality to the sound.

Mod Depth controls the amount of detuning or phase shift that the effect’s LFO produces. Again large amounts of modulation from this parameter will produce a more noticeable effect. Generally moderate amounts are used but you will find that bass sounds benefit with more Mod Depth than normal. Feedback controls how much of the treated signal is fed back into the input. Subtle effects like chorus benefit from low levels of feedback. Flangers & Phasers on the other hand sound better with more feedback. Feedback emphasises the harmonics in a Flanger & emphasises the cancellation of harmonics in a Phaser.

The Type parameter determines if this effect is going to be a Chorus or a Flanger or a Phaser. Select the one you want.

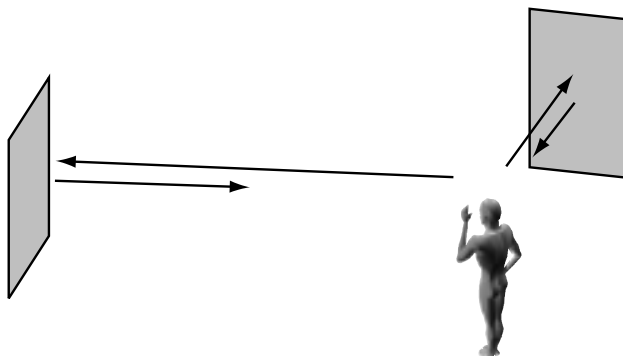


NOTE:

The effects LFO should not be confused with the front panel Program LFOs.

Delay.

This effect is normally a single acoustic reflection of a sound. This is commonly called Echo. This effect can be heard naturally anywhere where there is a large flat surface, like a concrete wall. A “Stereo” version can be considered to be two concrete walls & this is the type that the Nova uses. The distance from the walls determines the delay time & as can be seen in the example below the distance between the left wall & left ear of the listener is different to the distance between the right wall & the right ear of the listener. This creates a Stereo “staggering” effect of the echoes & is normally referred to as “Multi Tap Delay” or “Tap Delay”.



Delay Time. This parameter controls the amount of time it takes for the delayed signal to be heard after the original signal. In the example given above this is the same effect as the distance you are from the wall. A large distance produces a long delay & a short distance produces a short delay. In the Nova, the Delay time is the time of the Longest delay. The shorter delay will be a percentage of this value (See "Ratio" below).

Feedback. This parameter controls how much of the delayed signal is fed back into the delay's input. No feedback produces a "Slapback Echo" effect, that is just one delayed signal with no repeats. Small amounts of feedback produce "repeated" signals giving the "Echo" effect. This can be thought of as standing in-between two parallel concrete walls. The sound bounces back & forth between them. In this case the Decay Time represents the distance between the walls.

HF Damping. HF Damping is short for High Frequency Damping. This controls the "tone" of the decaying Echo. This can be thought of as the amount of drapes on the walls. Drapes tend to absorb high frequencies, so as a sound "bounces" from wall to wall giving you your Echo effect, with each bounce the sound loses a little treble. No HF Damping is a little unusual in the "real" world but can be used to emphasise sibilant or trebly sounds. This characteristic was found in older "Tape" based echo units. Higher values of this parameter simulates the effect of worn out tape or heads in a tape echo. Normally a little HF Damping is applied to give the Echo a natural kind of sound.

Ratio. The Ratio parameter automatically adjusts the "Ratio" of the longest Delay time & the shorter Delay time into timings that are useful for Musical use. This parameter does not effect the Delay Time parameter but does alter the shorter Delay time so that it works well with the Delay Time setting.

Width is the Stereo spread between the long & shorter Delay times. When set to 0 width both delays appear in the middle of the stereo field (Mono). At a width of 127 the long delay will appear on one output & the shorter delay on the other producing a dramatic stereo effect.

Pan.

This effect controls where the sound "sits" in the stereo field. In the Nova this performs exactly the same function as Pan does on a Mixing console. It can be used to statically position a sound anywhere from Left to Right in the stereo field. This (as everything else on Nova) can be controlled via MIDI controllers.

Pan Type determines if the Pan is set to Pan automatically. If set to "Autopan" the sound will swing from side to side of the stereo field at a rate determined by the Speed parameter. If set to "Tremolo" the sound goes up & down in volume at a rate determined by the Speed parameter.

Speed determines the speed of the Autopan & Tremolo effects.

Depth determines how much the Autopan & Tremolo effects control the Volume of the sound, small amounts produces subtle movements & full amount produces change from no sound to full volume.

Vocoder.

The Vocoder effect allows your Nova to speak. What it actually does is it transfers the spectrum of any incoming signal from either Audio Input onto any internal or external sound. A typical use is to use a Microphone signal as the "Modulator" (that is the sound the spectrum will be copied from) & place the same characteristics onto an internal sound. (this sound is called the "Carrier")

When the Vocoder button is pressed, the knob in the effect section becomes an elegant Balance control between the Un-vocoded "Carrier" when fully anticlockwise, the Vocoded "Carrier" in the mid position & the "Modulator" in the fully clockwise position. This allows a variety of mixes to be achieved.

A special High Pass Filter is included in the vocoder to transfer harmonics that are rarely found in normal keyboard type sounds from the "Modulator" to the "Carrier". The level of the output of this filter is controlled with the "Sibilance level" parameter & when this is turned up, the Sibilant (Trebly) elements of the "Modulator" are added to the "Carrier" signal.

Sibilance can be further modified using the "Sibilance type" parameter. This either filters the sibilant elements from the "Modulator" when set to H (High) Pass or artificially uses Noise to do this job if set to Noise. When this is set to Noise, the Sibilance can not only be Trebly but also Bassey. This can be very effective when using things like Drum Loops as the "Modulator".

A Translation of terms used throughout this manual.

In this manual there are several terms used that may lead to confusion if not fully understood. Below is an explanation of all the Novationish used in this manual

Performance

This is the most complex type of sound Nova can create. It is made up of 6 different sounds called Parts. These Parts can be layered or set up as splits to form the Performance. Performances are accessed by pressing the Performance button. Other Manufacturers sometimes call these Multis, Multisetups or Combinations.

Part

This is one of the 6 sounds or Parts of a Performance. The sound assigned to a Part is called a Program. Other Manufacturers sometimes call these Timbres.

Program

This is the simplest type of sound Nova can create. These are accessed by pressing the Program button. Other Manufacturers sometimes call these Patches or Partials.

Voice

This is a measurement of polyphony. One voice is the equivalent of one note being played. One voice in the Nova uses three Oscillators, two Ring Modulators & a Noise generator as sound sources. All these sound sources can be used simultaneously in one Voice.

Oscillator

This is the basic waveform generator in the Nova. As described above there are three Oscillators per Voice.

Sync Effect

This is a parameter of one oscillator that simulates the "Sync Effect" generated by 2 Analogue oscillators in an "Oscillator Sync" configuration. For more details refer page 8 - About Analogue Synthesis.

Soften Effect

This is a parameter that controls the harmonic content of any waveform. Full Soften Effect on a waveform produces a near sine wave.

For more details refer page 8 - About Analogue Synthesis.



Analogue Sound Modelling™

This is the Synthesis System the Nova uses to create sound. Created by Novation, this new method of synthesis was first used in the Award winning Novation Drum Station.



NOTE:

When this symbol appears in the manual this indicates an important feature, or a destructive function such as Writing data to memory etc.

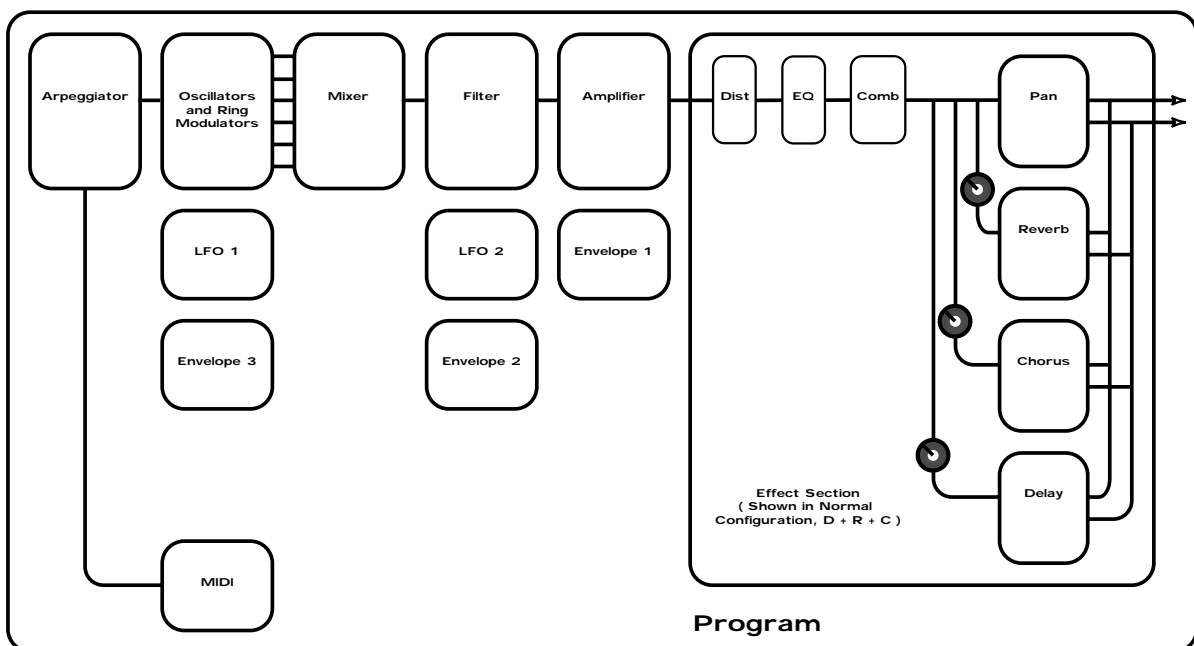
There are two types of “Sounds” you can select in the Nova. They are Programs & Performances.

When the Program Button is selected a single Program is recalled from memory. A Program is the most basic type of sound in the Nova. This sound is made up of the 3 oscillators, the 2 ring modulators & the noise generator. These are Mixed together & are fed through the Filter, Amplifier & effects processors. The sound produced by a Program in Program Mode comes out of outputs 1 & 2. A Program uses the “Global MIDI Channel” to receive MIDI Data. A Program covers the entire range of notes on a keyboard & has the standard velocity curve. In other synthesisers a “Program” is sometimes referred to as a “Patch” or “Partial”. This is fairly standard amongst synthesisers except the Nova differs in 2 areas.

Firstly the Effects Section is memorised with the Program. Although this may seem standard in comparison to other equipment, the real difference happens when a Performance is selected. Because the Nova can run 42 Effects at once, all 6 “Parts” of a Performance have their own Effects Section. This allows all the “Parts” of a Performance to sound exactly the same in Performance mode as they do in Program mode. This is unique to the Nova & Supernova series & is literally like having the equivalent of 6 separate synthesisers with 6 sets of effects sections allowing a very high level of production to be achieved with just one box.

Secondly the Arpeggiator Sections parameters are also memorised with a Program. Similarly because the Nova can run 6 Arpeggiators at once, all 6 “Parts” of a Performance have their own Arpeggiation.

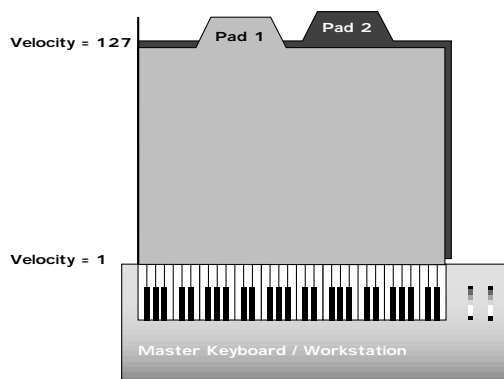
Below is a simplified block diagram of a “Program” in the Nova.



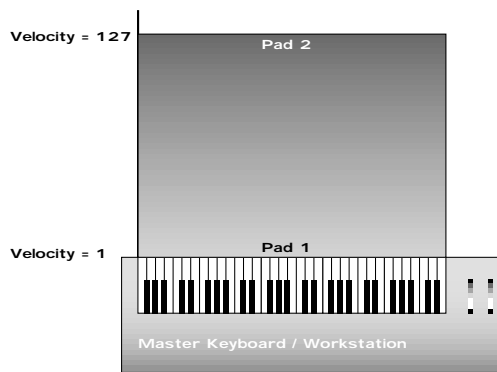
As can be seen in a Program incoming MIDI messages get processed by the Arpeggiator (If it is “On”) & control the Oscillators. The signals produced are mixed together in the Mixer section & the resulting signal is passed on to the Filter. The signal then is passed to the Amplifier which then sends the signal into the effects section. This signal path is reflected on the front panel of the Nova allowing easy understanding of the synthesis process. All the essential controls of this process are on the front panel & in Program mode adjusting the controls will directly effect the sound produced. For a deeper understanding of the creation of sounds refer to the section “About Analogue Synthesis” on page 8 for details.

ABOUT PERFORMANCES

A Performance is a more complex arrangement where several Programs can be used at once. This allows the creation of much more complex sounds that are either layered together to create a “Fatter” sound or a Split of 2 or more sounds on the keyboard. In fact a Performance consists of up to 6 “Parts”. Each one of the parts can have its own Program & as explained before this means each “Part” has its own Effects Section & Arpeggiator. This means it is possible to layer up to 6 Programs or create a 6 way split of different sounds across the keyboard or any combination of the two. Below are some examples.

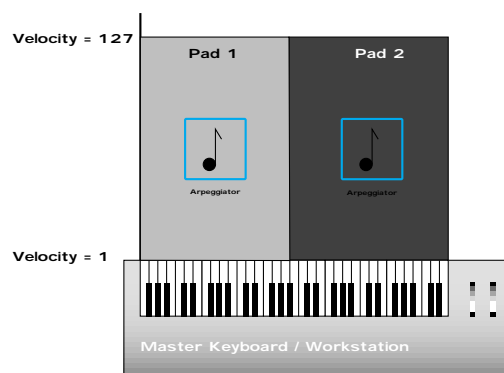


Keyboard Range
PERFORMANCE LAYER EXAMPLE

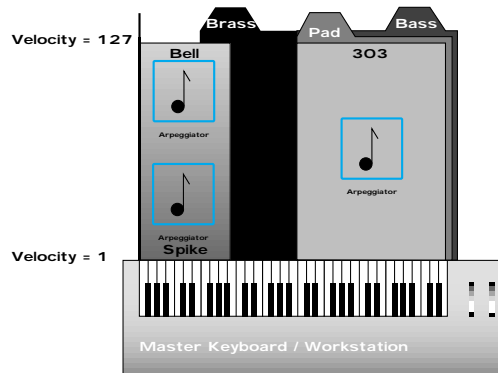


Keyboard Range
PERFORMANCE VELOCITY CROSSFADE EXAMPLE

As can be seen in the Performance Layer example there are 2 Pad Programs layered together over the entire range of the keyboard. Playing any one note will play both the sounds on that note. As can be seen in the Velocity Crossfade example playing the keyboard softly will mean Pad 1 is heard, playing the keyboard hard & Pad 2 will be heard, playing the keyboard with medium feel will produce a mixture of Pad 1 & Pad 2.



Keyboard Range
PERFORMANCE SPLIT EXAMPLE

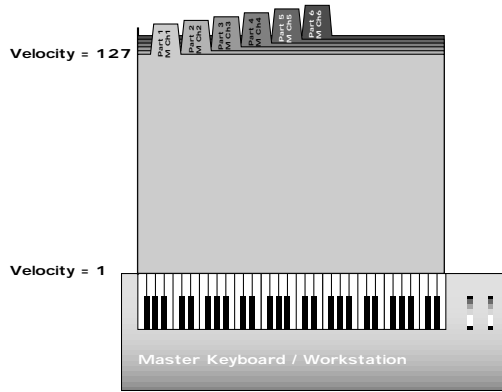


Keyboard Range
PERFORMANCE MULTIPLE EXAMPLE

As can be seen in the Performance Split example, play the higher end of the keyboard & Pad 1 will be heard. Play the low end & Pad 2 will be heard. Additionally to this it can be seen that different Arpeggiators are assigned to the Lower & Upper parts of the keyboard. Both of these can be played at the same time.

As can be seen the Performance Multiple example is much more complex, a Performance can have 6 “Parts”, in this case all 6 have been used. The lower half of the keyboard is a 3 way layer of Programs. There is a Pad, a Bass & an Arpeggiated 303 sound. These all sound at the same time when a note is pressed within their range. A little further up the keyboard a Brass sound has been assigned. Further up the keyboard still 2 Arpeggiated sounds are assigned. They are arranged in a Velocity crossfade so that playing the keyboard in this range softly produces a Spike sound with an Arpeggiation & playing it heavily produces a Bell sound with a different Arpeggiation. To set the split points use the “Range” Parameter to specify over which “Range” of notes the selected “Part” will sound. To set the velocity crossfades use the “Velocity Curve” Parameter to specify how the selected “Part” will respond to velocity.

Performance mode is also the mode in which you can use the Nova “Multitimbrally”. This allows the Nova to play up to 6 different sounds simultaneously on 6 different MIDI Channels. Each “Part” of a Performance can have a separate MIDI channel setting. This is how you use the Nova Multitimbrally.



Keyboard Range
MULTI TIMBRAL PERFORMANCE EXAMPLE

Above is an example of 6 different sounds assigned to 6 different MIDI Channels. Set the individual “Parts” to the required MIDI channels & make sure the “Part” Ranges are set to cover the full range of the keyboard & Velocities are set to the normal setting otherwise unexpected results may occur. Also it can be seen that combinations of Multitimbral & Split/Layered Performances can be made, for example a performance could be set up so that parts 1 to 4 were assigned to MIDI Channels 1 to 4 & part 5 & 6 assigned to MIDI channel 5 with key ranges set for parts 5 & 6 so that a split is created.



NOTE:

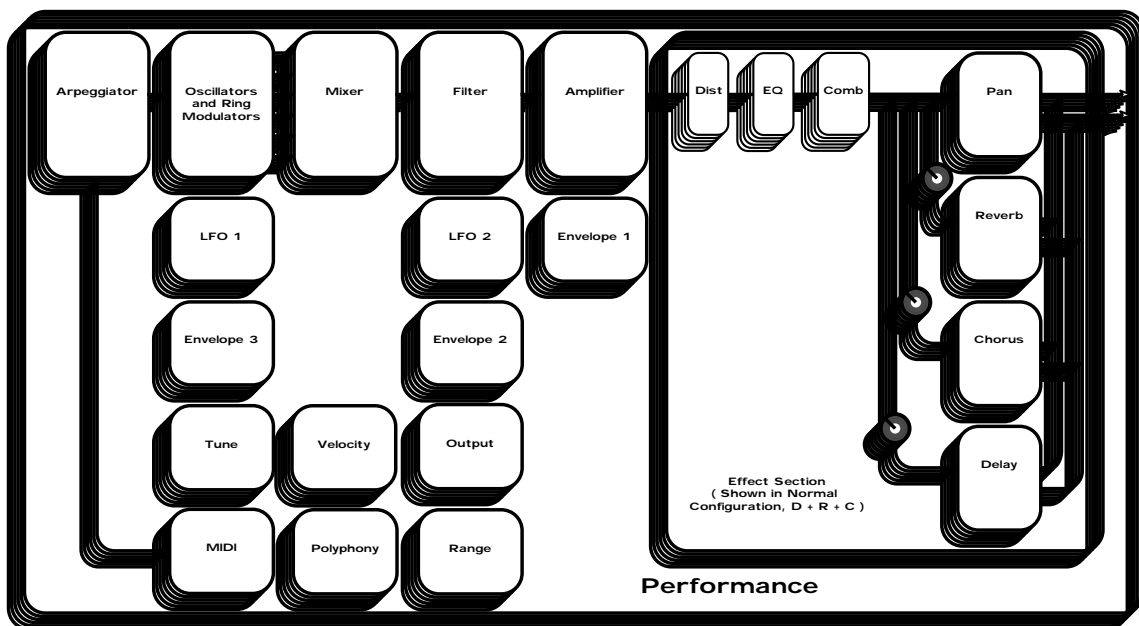
When a Program change message is received on the Global MIDI channel it will change the selected Program or Performance. If a Program change is received on a Part MIDI Channel that is not the Global one it will change the assigned Program for that Part. When it does so the effects settings stored in the Program will be loaded into the Parts Effects section if the Effects used parameter in the Output menu is set to “Program”. If this parameter is set to “Part” the Program will change but the effects setting for that part will not be altered. Additionally the Arpeggiator Parameters from the Program will be loaded into the Part’s Arpeggiator.



NOTE:

There is only one Arpeggiator Speed control in a Performance. Adjusting the speed of any Parts Arpeggiator will control all 6 Arpeggiators.

Below is a simplified block diagram of a “Performance” in the Nova.



As can be seen a Performance is literally a duplication of 6 Programs, including the Effects Sections & the Arpeggiators.

SELECTING PROGRAMS & PERFORMANCES

There are a lot of sounds in Nova & they are arranged into "Banks" of 128 sounds. There is 1 Bank of 128 Performances & 2 Banks of 128 Programs. So in total there are 128 Performances & 256 Programs in 2 Banks (A & B). Pressing the Program button will activate the Program Mode & the display will show:

```
Sintillator M-Wh
                Prog A000
```

As can be seen it is a Program because the Program button is lit & the bottom line of the display is indicating "Prog" followed by the Bank & number of the sound. The top line is displaying the name of the sound.

Pressing the Bank Up button & the display changes to:

```
Filtered H20
                Prog B000
```

This indicates that the B Bank has been selected. If the number you wish is different to the one currently selected, press either of the prog buttons until the desired number is found or turn the lower fast data knob. If you press the prog up button once from the position indicated above the display shows.

```
SuperBassSt'n 19
                Prog B001
```

And the sound has changed.

Pressing the Bank down button will bring Nova back to the A Bank.

Selecting Performances is done in exactly the same way.

When sounds are selected the appropriate MIDI Bank & Program change messages are sent as changes are made on the front panel & can be recorded on Computer Software / Sequencer. Selecting sounds via MIDI is very simple, just send the appropriate MIDI Bank number & Program change commands to Nova from the Master keyboard or Computer Software / Sequencer. To change Programs & Performances these messages should be sent on the Global MIDI Channel. If however you have a Multitimbral Performance individual Parts can be changed with suitable Bank number & Program change messages on the individual MIDI Channels assigned to the "Parts" of the Performance.

There is a chart on page 130 outlining all the different Bank numbers for selecting the different modes via MIDI.

Editing & writing Arpeggio patterns is a bit like “Step” sequencing. It is not immediate & requires understanding of all the parameters necessary to create a Arpeggio pattern that performs how you want.

To fully understand this guide it is necessary to have a good understanding of all the standard Arpeggiator’s parameters.

The first thing to do is select a Program you want to use with an Arpeggiation. Use the Program, Bank & Keypad to make your selection.

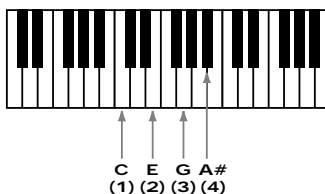
Next, turn on the Arpeggiator if not already on with the Arp On/Off button. Now assign a “User” pattern to the arpeggiator with the “Pattern Bank” Parameter in page 2 of the Arpeggiator Menu button pages. You now have to decide what type of Pattern you wish to create.

There are two basic types of Arpeggio patterns available. These are Monophonic, i.e. a chord is played on the master keyboard & single notes are played from that chord sequentially at a speed determined by the “Speed” knob & Polyphonic, i.e. a chord is played on the master keyboard & all the notes are played simultaneously, but may be transposed, at a speed determined by the “Speed” knob. To make a Monophonic pattern select a “User” pattern in page 2 of the Arpeggiator Menu button pages. Select a pattern between 000 & 063 (these are Monophonic) & make a note of the pattern number you have selected. For reasons that become clear below we suggest that for the purposes of learning initially set the “Sync” parameter to a low value. i.e. 8th’s & the “Fill In” parameter to “Off”. Both of these parameters are on page 5 of the Arpeggiator Menu button pages. Go to the Global Mode by pressing the Global Button. Go to page 7 & switch the Memory Protect parameter to Off. Go to page 15 & select the same pattern you assigned to the Arpeggiator in the Program. You are now ready to start creating a Pattern. The procedures for editing Monophonic & Polyphonic patterns are slightly different.

Monophonic Patterns

A Monophonic pattern can be 1 step long, although there would not be much point in this except for recreating effects like LFO triggered basslines, to 64 steps long. Bear in mind that this can be also thought of as the “Resolution” of the pattern as the pattern can be “Synchronised” at differing time signatures. i.e. a 16 Step pattern synchronised at 16th’s would be the same time duration as a 32 step pattern synchronised at 32nds. Decide on the number of steps you want to use & set the “Pattern Steps” parameter to suit. We suggest that for the purposes of learning initially set this to a low value. i.e. 8, this will mean that The Arpeggiator is synchronised to 8ths & the Number of steps you have assigned to the Pattern is 8. So this is a 1 bar pattern.

In a Monophonic pattern you decide which “Order” the individual “notes” within the “chord” you play are played. Imagine you are playing the notes shown below:



As can be seen there are 4 notes being played C, E, G & A# creating a C 7 Chord. The Nova scans the keyboard & “labels” each of the played notes with a note number, starting with the lowest (if the “Fill in” parameter is set to “Off-Up” or “On-Up”). In this case C = 1, E = 2, G = 3 & A# = 4. If a D was played instead of the E the numbering would be as follows C = 1, D = 2, G = 3 & A# = 4. If a D was played instead of the C the numbering would be as follows D = 1, E = 2, G = 3 & A# = 4. It is important to understand this relationship to understand the next step.

As you remember there are 8 steps in the assigned pattern. You can edit each step individually by selecting the step you wish to edit with the “Step” parameter on Page 9 & altering the “Note” number assigned to that step on page 10 with the “Note” parameter (Note that a “Gate type” of “Norm” or “Glide” must be assigned to the currently selected step on page 9 for the “Note” parameter on page 10 to become available). For example to create a simple Up/Down pattern program the following:

Step 1 = Note 1, Step 2 = Note 2, Step 3 = Note 3, Step 4 = Note 4, Step 5 = Note 4, Step 6 = Note 3, Step 7 = Note 2, Step 8 = Note 1.

As can be seen the sequence of notes played is 1,2,3,4,4,3,2,1 etc. etc.



If more or less notes are played than you have programmed, the pattern will not play as expected. In the above example if 6 notes were played the 5th & 6th notes played would not sound. In the above example if 2 notes were played the following would occur:

Step 1 = Note 1, Step 2 = Note 2, Step 3 = Note 2, Step 4 = Note 2, Step 5 = Note 2, Step 6 = Note 2, Step 7 = Note 2, Step 8 = Note 1.

EDITING & WRITING ARPEGGIATOR PATTERNS

As can be seen the sequence of notes played is 1,2,2,2,2,2,1 etc. etc. This is why the "Fill In" parameter is there. It should be currently in the "Off" position. In this position you can program your patterns more efficiently but for the best results when played, it should be set to "On". In this position the missing notes are inserted by the Arpeggiator so that larger or less numbers of notes than are programmed into the pattern are used.



NOTE:

In Monophonic patterns there is a limit of 12 note values that can be programmed into a pattern.

Of course much more interesting sequences are possible. i.e.

Step 1 = Note 4, Step 2 = Note 1, Step 3 = Note 3, Step 4 = Note 2, Step 5 = Note 3, Step 6 = Note 2, Step 7 = Note 1, Step 8 = Note 4.

This produces the sequence of notes 4, 1, 3, 2, 3, 2, 1, 4 etc. etc. A kind of inside-out Up/Down sequence of notes. When you consider that there are 64 steps available it can be seen that there are many things possible. There are 2 other parameters associated with programming Monophonic patterns. On page 18 of Global you can assign velocity values for each of the steps & the Gate type can be assigned for each step of the pattern. When the "Gate" parameter is set to "Normal" the setting of the "Gate type" parameter in page 6 of the Arpeggiator Menu applies. When the "Gate" parameter is set to "Tie" the note is "Tied" to the note in the previous step. This allows syncopated rhythms to be created & can be used to great effect if the pattern is set to have many steps. When the "Gate" parameter is set to "Rest" no note is played on the selected step & finally when the "Gate" parameter is set to "Glide" the Portamento is engaged when the selected step switches to the next step & then the Portamento is switched off. This is great for creating those TB303 type patterns with slides.



NOTE:

Glide will only work when the polyphony of the Program / Part is set to Mono.

Patterns do not have to be entered in step time. Patterns can be entered in via a MIDI keyboard Note & Velocity settings for each step can be easily entered & using a sustain pedal also allows gate characteristics to be entered. Refer to the "Arp pattern editing" Parameter on page 44 for details.

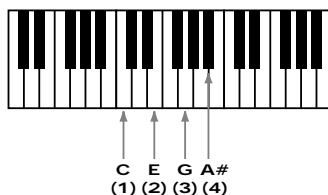


NOTE:

The Constant pitch parameter does not apply to Monophonic patterns & in this mode will do nothing if set to On or Off.

Polyphonic patterns

To make a Polyphonic pattern select a "User" pattern on page 2 of the Arpeggiator Menu button pages Select a pattern between 064 & 127 (these are Polyphonic) & make a note of the pattern number you have selected. Polyphonic patterns differ in the sense that all the notes played sound at once. Initially this can be thought of as a kind of "Gater". Instead of assigning which "Note" out of the ones you are playing will be played at each step in the pattern, in a Polyphonic pattern all the notes may be transposed at each step by a definable amount. Here is an example, the notes being played are shown below:



As can be seen this is a C7 chord. Below is an example Polyphonic Pattern, again of 8 steps in length:

Step 1 = Note 0, Step 2 = Note 2, Step 3 = Note -2, Step 4 = Note 0, Step 5 = Note 0, Step 6 = Note 12, Step 7 = Note -12, Step 8 = Note 0.

This results in a chord sequence of C7, D7, A#7, C7, C7, C7 (one octave up), C7 (one octave below), C7. etc. etc.



NOTE:

In Polyphonic patterns there is a limit of -36 to +36 semitones range that can be programmed into a pattern.

As can be seen, negative as well as positive values can be entered into the "Note" parameter in polyphonic patterns. Again when you consider that there are 64 steps available in a pattern there are many things possible. Like the Monophonic patterns there are 2 other parameters associated with programming Polyphonic patterns. They perform the same functions in Polyphonic patterns or Monophonic patterns. On page 18 of Global you can assign velocity values for each of the steps & the gate time can be assigned for each step of the pattern. When the "Gate" parameter is set to "Normal" the setting of the "Gate Time" parameter in page 6 of the Arpeggiator Menu applies. When the "Gate" parameter is set to "Tie" the note is "Tied" to the note in the previous step. This allows syncopated rhythms to be created & can be used to great effect if the pattern is set to have many steps. When the "Gate"

parameter is set to "Rest" no note is played on the selected step & finally when the "Gate" parameter is set to "Glide" the Portamento is engaged when the selected step switches to the next step & then the Portamento is switched off. This is great for creating those TB303 type patterns with slides.



NOTE:

The "Fill In" parameter does not apply for Polyphonic patterns & does nothing if switched "On" or "Off".
Glide will only work when the polyphony of the Program / Part is set to Mono.

Several Monophonic & Polyphonic patterns can be used at once in a Performance. One doing a Bass type Pattern, One doing a TB303 thing, One doing a "Classic" Up/Down thing etc. etc. It is even possible to have the Arpeggiators in the different programs synchronised to different time signatures. When doing this turning the "Speed" knob will alter the speed of all the arpeggiators, in other words it is not possible to have arpeggiators running on different clock speeds, if you wish the arpeggiators to run at differing speeds set the "Sync" parameter in the Arpeggiators to differing values.

Editing Programs is easy on the Nova as virtually all the controls needed to create a sound are on the front panel.

First make sure that the Nova is in the Program mode. The Program button should be lit. Now it is just a case of adjusting the knobs & buttons in the Oscillator, Filter, LFOs, Envelopes, Arpeggiator & Effects Sections until the desired sound is created. Notice that the display changes to display the name of the rotary control you are currently editing. The display will remain displaying this parameter after you stopped adjusting the rotary control (unless currently in a "Menu"). The display shows the first rotary to be adjusted, of course many rotary controls can be adjusted at once but the display only shows the last.

Writing Programs into Memory



NOTE:

Writing Programs is a destructive operation. It is strongly advised to make back-ups of your data occasionally to a Computer, Sequencer or Data filing device. Factory sounds can be recalled from ROM see page 40 for details

Once a sound has been created it may be stored in any of the two banks of 128 Programs. To do so press the Write button. The display shows:

```
Write Prog A000 to A000?  
Sintillator M-Wh
```

As can be seen, the top line of the display shows the current Program location & the Programs destination. The bottom line displays the Programs name, in this case Sintillator M-Wh.

While in this mode it is possible to change the destination of the new sound using the bank & the prog buttons or the upper fast data knob. For example, pressing the Bank Up button in the above example, the display will show:

```
Write Prog A000 to B000?  
Filtered H2O
```

As can be seen Bank B has now been selected. It is possible to alter the location within the destination bank with the prog buttons or higher fast data knob. For example pressing the prog up button twice & the display shows:

```
Write Prog A000 to B002?  
Width Bass M-Wh
```

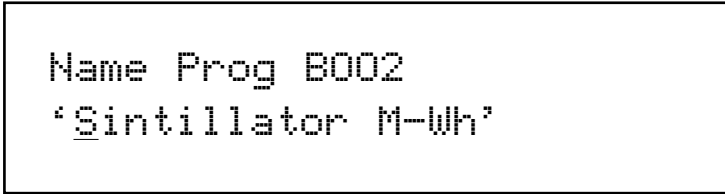
As can be seen the destination of the sound to be written is now B Bank number 002.



NOTE:

While in this mode the Compare button has a different function to its normal operation. The Compare button in this mode toggles between the currently edited sound & the destination Program. The "Program" button will flash & the Compare button will be lit when this function is active.

Once the destination for the Program has been decided press the Write button again & the display shows:



The name of the Program can be altered when in this mode. As can be seen in the display the first character of the Programs name has a cursor under it. Using the higher Fast Data knob you can scroll through the character set for that character. Using the lower Fast Data knob you can move the cursor horizontally.



NOTE:

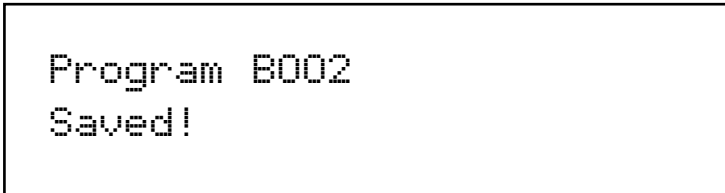
Pressing the Page Up button while in this mode inserts a space at the cursor position & pressing Page Down while in this mode deletes the character to the right of the cursor.

Once the name has been selected, press write again & the display shows:

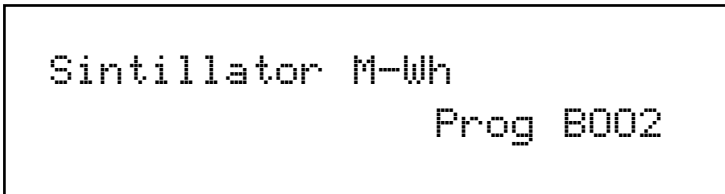


As can be seen the Nova is asking confirmation that you wish to write over the destination Program, replacing it with the newly edited sound. Also on the top line of the display it can be seen that there is the category parameter. This is where you set the category of the Program so that the "Finder" mode can locate programs with the same category assigned. To adjust this parameter use the higher Fast Data knob. There are 20 categories. Refer to page 35 for details on the categories.

To complete the operation press the Write button to confirm & the display shows:



This will stay on the screen for several seconds then revert back to the standard Program page.



NOTE:

At any stage during the write procedure pressing the Program button will exit the write procedure & return the Display to showing the Program name & location.



NOTE:

The current selection of Oscillator, LFO & ENV2 or 3 plus the selection of Mod Sources & Mod Destinations in the Oscillator & Filter sections are memorised when the sound is written into memory. This allows any setup to be recalled when the program is recalled which can be very useful in live performance.

EDITING & WRITING PERFORMANCES

Editing Performances is very easy. After Pressing the Performance button the button lights & the Display shows:

```
Blaster Master
                Perf A000
```

Performances are made up of 6 Parts. The next thing to do is select the "Part" of the Performance you wish to edit. To do this press the appropriate Part button in the Part edit section. In the above example pressing Part 1 button the display will show:

```
DigiTrowserCough
                Prog A030
```

The display is showing the Program currently assigned to the selected Part. Any Program from any one of the Program Banks can be assigned to any Part of a Performance. You can use the Bank button & the Prog Up & Prog Down buttons to alter the Program assigned to this Part of the Performance.

When in this mode pressing the Tune, Velocity, Output, MIDI, Polyphony & Range buttons will display the relative parameters for the currently selected Part. If any of the Tune, Velocity, Output, MIDI, Polyphony & Range buttons are pressed it will flash indicating that it has been selected. This allows comparison of values in different Parts easy. For example. Press the MIDI button when a Part 1 of a Performance has been selected & the display will show:

```
Sustain                Enable
Midi Channel           Global
```

The MIDI button is flashing indicating it is selected. Pressing another Part button will light the selected button & the display will show the MIDI parameters for the newly selected Part as shown below.

```
Sustain                Disable
Midi Channel           8
```

To exit any of the Tune, Velocity, Output, MIDI, Polyphony & Range Menus simply press the Performance button again & the display will change back to showing the currently selected Performance as shown below:

```
Blaster Master
                Pref A000
```

For details on the parameters in the "Tune", "Velocity", "Output", "MIDI", "Polyphony", & "Range" menus. For details refer to the "Part Edit Section" of this manual on page 96.



NOTE:

Pressing any of the Part buttons when in Performance mode not only makes the display show the Program name & location but also brings the selected Part up on the front panel controls. This allows editing of Programs possible while in Performance mode. All the edits made are transmitted as Controllers & NRPNs on the MIDI channel assigned to the Part of the Performance, so in a Multitimbral Performance each Part can be individually edited, recorded on a sequencer & played back into the Nova.



NOTE:

At any stage during editing a Performance, pressing the Performance button will exit the “Part” display & return the Display to showing the Performance name & location.

It is possible to “Solo” Parts of a Performance allowing the easy auditioning of separate Parts of a Performance. This is done by selecting the Part to be soloed & simply pressing the Solo button in the Part Edit section. The Soloed Part will be lit & the rest will flash indicating they are muted. To return to normal operation simply press the Solo button again.

It is possible to “Mute” Parts of a Performance temporarily allowing the easy auditioning of separate Parts of a Performance whilst editing or during live Performance in a Multitimbral Performance. This is done by simply pressing the Mute button in the Part edit section. When this button is lit the “Mute” mode is active. When the Mute button is lit (active) pressing any Part will mute & it will flash indicating that it is muted. Any number of Parts can be muted. Unlike the solo function the mute status is retained when you exit the mute mode. This is exactly like a mixing desk, if a Part is muted you will have to enter into the mute mode (mute button lit) to un-mute it.

This “mute status” is also memorised with a Performance. This means that you can recall a Performance with several or even all Parts muted. This allows separate sounds to be manually dropped in & out during Performance & the Performance is set up ready with the desired Parts muted.



NOTE:

More than one Part button can be pressed at once while in the mute mode (Mute button lit). For example if Part 1 is flashing (muted) & Part 2 is not (active) then pressing Part 1 & 2 buttons simultaneously when the Mute button is lit will make Part 1 active (unlit) & Part 2 muted (flashing). This is great in live Performance.



NOTE:

To assign no Program to a Part (Off) press set the Polyphony Parameter in the Polyphony button menu to “Off”.



NOTE:

Only one Performance can be used at any one time. Performances cannot be used as Parts of other Performances & you cannot assign different Performances to different MIDI channels & expect to get Multiple Performances.



NOTE:

When Performance mode is entered whatever Part was selected when the Performance was saved is selected. To adjust the Program assigned to any Part, for example Part 1, press Part 1 button even if it is already lit. It will stay lit & the display will change from showing the Performance Bank, Number & Name to displaying the Part, Program, Number & name. To return to the Performance Bank, Number & Name press the Performance button.



NOTE:

Solo part mode will be cancelled whenever a new Performance is selected.

Writing Performances into Memory



NOTE:

Writing Performances is a destructive operation. It is strongly advised to make back-ups of your data occasionally to a Computer, Sequencer or Data filing device. Factory sounds can be recalled from ROM see page 40 for details

Once a Performance has been created, you can store the Performance in any of the 128 Performances. To do so press the Write button. The display shows:

```
Write Perf A000 to A000?  
Blaster Master!
```

As can be seen the top line of the display shows the current Performance location & the Performances destination. The bottom line displays the Performances name, in this case Blaster Master!

While in this mode it is possible to change the destination of the new sound using the Prog Up & Prog Down buttons. For example, pressing the Prog Up button or turning the higher Fast data knob in the above example the display will show:

```
Write Perf A000 to A001?  
Pac on Spec
```

As can be seen the destination of the Performance to be written is now A001.



NOTE:

While in this mode the Compare button has a different function to its normal operation. The Compare button in this mode toggles between the currently edited Performance & the destination Performance. The "Performance" button will flash & the Compare button will be lit when this function is active.

Once the destination for the Performance has been decided press the Write button again & the display shows:

```
Name Perf A001  
'Blaster Master!  '
```

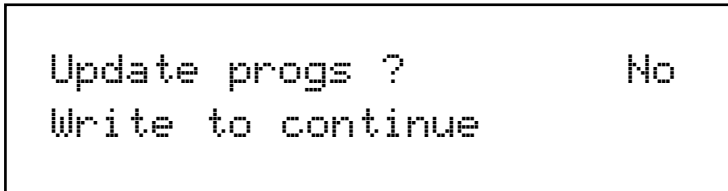
The name of the Performance can be altered when in this mode. As can be seen in the display the first character of the Performances name has a cursor under it. Using the higher Fast Data knob you can scroll through the character set for that character. Using the lower Fast Data knob or nudge buttons you can move the cursor horizontally.



NOTE:

Pressing the Page Up button while in this mode inserts a space at the cursor position & pressing Page Down while in this mode deletes the character to the right of the cursor.

Once the name has been selected, press write again & the display shows:



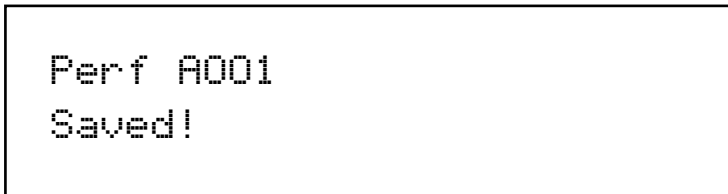
As can be seen the Nova is asking confirmation that you wish to write over the destination Performance, replacing it with the newly edited Performance. On the top line of the display Nova is asking if you wish to update (re-write) all the Programs used in the currently selected Performance. If this parameter is set to "No" then the Performance only is written into memory. If this parameter is set to "Yes" then any alterations made to the Programs (excluding the over-rides such as Part Volume, Arp On/Off & Effects settings if the Parts Effects used parameter in the Output menu is set to Part) will be written into all the Programs used in the selected Performance. If this parameter is set to "Each" then any alterations made to the Programs (excluding the over-rides such as Part Volume, Arp On/Off & Effects settings if the Parts Effects used parameter in the Output menu is set to Part) can be selectively saved one by one. The Nova asks for confirmation to save each Part individually, showing the Part number & the Program number. Individual Parts can be left unsaved (Skipped) by turning the lower Fast Data knob while in this mode.



NOTE:

When in this mode the Compare button toggles between the Destination Program & the edited Program. Both the Performance & the Program buttons will flash & the Compare button will be lit when the Compare mode is active.

To complete the operation press the Write button to confirm & the display shows:



This will stay on the screen for several seconds then revert back to the standard Performance page.



NOTE:

At any stage during the write procedure pressing the Performance button will exit the write procedure & return the Display to showing the Performance name & location.



Volume - Knob

This knob adjusts the overall output of the Nova on the Left & Right outputs.



NOTE:

This can be overridden by MIDI Controller Data. If a MIDI Controller 97 with a value of "0" has been received by the Nova, no output will be heard regardless of the position of this knob. To reset the volume either transmit the relevant MIDI Volume level or move the Volume knob (This automatically overrides the MIDI setting).



NOTE:

The volumes of each "Part" in a Performance can be set individually using the Part select buttons & the Level rotary in the Part Edit Section.



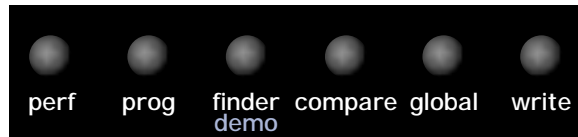
NOTE:

This is a Global control. If the Nova is used in "Local Off" mode the this knob will not change the volume unless a MIDI loop is present. When the "Local" parameter on page 7 of the Global menu is set to "Off" this knob (& all the other knobs & buttons) will not directly control the synthesiser but only output the relevant MIDI data. In this case the knob will appear to do nothing when turned unless a MIDI loop that maps the MIDI data transmitted by the Nova back to the Nova on the Global MIDI channel.



NOTE:

The Master Volume Knob always behaves as if the "Knob mode" parameter on page 11 of the Global menu is set to "Normal". In other words the Master Volume Knob is always live & turning this Knob will always alter the volume immediately regardless of the "Knob mode" parameter's setting.



This is where you select the various operating modes of the Nova, initiate the Demo/Finder function, Write & Compare Performances & Programs.

Performance - Button

The Performance button is used to select the Performance mode. A Performance is the most complex sound Nova can create. A Performance is made up of 6 “Parts”. A “Program” is assigned to each “Part” & these can be set up into layers or splits etc. For more details on Performances refer to page 22.

Program - Button

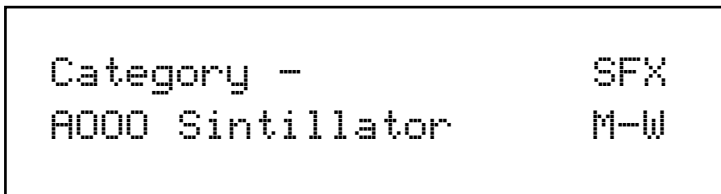
The Program button is used to select the Program mode. A Program is a single sound played across the entire keyboard. For more details on Programs refer to page 21.

Demo/Finder - Button

With so many sounds it can be a little difficult to find your favourite sounds quickly. For this reason Nova features a “Finder” mode that can find similar types of sounds. The Nova has 20 “Categories” of sounds. They are as follows:

1	Bass	9	Pad	17	User 2
2	Hard Bass	10	Strings	18	User 3
3	Soft Lead	11	Keyboard	19	User 4
4	Hard Lead	12	SFX	20	User 5
5	Porta Lead	13	Drums		
6	Arpeggio	14	Pianos		
7	Motion	15	Organ		
8	Bell	16	User 1		

Each Program in the Nova has a “Category” assigned to it. The Finder uses categories to find similar sounds. To use the Finder, press the Demo / Finder button & a small sequence will play. There are 20 different sequences, one for each of the categories. The Demos will play once then stop, to hear the demo again press the Demo/Finder button again. The display shows:



As can be seen the higher parameter is “Category”. In this case with a value of SFX. This parameter determines which category of sound you wish to find. Use the higher Fast Data knob to adjust the value of this parameter. The range of this parameter is Bass, Hard Bass, Soft Lead, Hard Lead, Porta Lead, Arpeggio, Bell, Pad, Strings, keyboard, SFX, Drums, Piano & User 1 to 5.

As can be seen the Lower parameter is a Program in the selected category. In this case with a value of A000 Sintillator M-W. Use the lower Fast Data knob to select the sounds.

To return to normal operation press the Program or Performance button.

Compare - Button

This button is used to activate the Compare function. When editing a Program, it is often convenient to monitor the original in comparison to the newly modified version. This is called the compare function. To enable this feature simply press & hold down the Compare button. As soon as the button is released, the modified version of the Program will once again be available.



While the Compare button is held, it is also possible to inspect any of the original Program's knob parameters - simply adjust any knob while the Compare button is being held. The display will show for a short while the value of the original Program's setting then revert back to the last edited parameter. No knob parameter can actually be altered while the Compare button is held.



If you wish to inspect the value of a modified Program knob parameter (rather than the original Program), simply follow the above procedure, & once you have finished turning the relevant knob, release the Compare button quickly before the temporary display disappears. As soon as the Compare button is released, the temporary display will revert to showing the current modified Program's parameter rather than the original Program's parameter



In the "Write" phase, the Compare button performs a different function to its normal operation. The Compare button in this mode toggles between the currently edited Performance or Program & the destination Performance or Program. When the destination Program or Performance is selected, the Program and/or Performance buttons will flash & the Compare button will be lit indicating that the sound currently being produced by the Nova is the original still stored in memory.

Global - Button

The Global Mode has all the parameters that effect the "Global" operation of the Nova. This mode is accessed by pressing the Global button.



When any Global data is written into memory, the currently selected Program or Performance will become the "Power Up" sound. i.e. the sound the Nova defaults to when switched on.

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Global Mode there are 18 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameters values.

Page 1 looks like so:

Master tune	+00
Global MIDI chan	1

As can be seen the higher parameter is "Master tune". In this case with a value of +00. This parameter determines Global tuning of Nova. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is -64 to +63 cents. This parameter is memorised as Global.



To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "Global MIDI chan". In this case with a value of 1. This parameter determines the Global MIDI Channel for the Nova. This Channel is used when in Program Mode & for transmission & reception of Sysex data . Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is 1 to 16. This parameter is memorised as Global.



NOTE:

When using the Nova Multitimbrally set the Global MIDI channel to a MIDI channel not being used buy one of the parts as incoming program change messages on the Global MIDI channel will change the Performance itself.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

Page 2 looks like so:

```
Sysex transmission -
                Single program
```

As can be seen the higher parameter is "Sysex transmission". In this case with a value of Single Program. This parameter selects the type of data to be dumped via MIDI. Use the lower Fast Data knob to adjust this parameter. Whatever value is set on the lower line of the display is transmitted when the MIDI button is pressed in the Part edit section. The range of this parameter is Single program, All programs, Single prog request, All progs request, Single performance, All performances, Single perf request, All perfs request, Single arp pattern, All arp patterns, Single patt request, all patts request, Global parameters, Globals request, Total data, Total data request, Program bank A, Program bank B, Program bank A request, Program bank B request, Performance bank A & Performance bank A request. This parameter is memorised as Global.



NOTE:

The Nova can accept System Exclusive dumps while in any mode.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

Page 3 looks like so:

```
Sysex reception -
                Normal (RX as sent)
```

As can be seen the higher parameter is "Sysex Reception". In this case with a value of Normal (Rx as sent). This parameter determines if incoming Sysex data will be received & if it is Bank dumps, where it will be stored. Use the lower Fast Data knob to adjust this parameter. If this parameter is set to "Normal (Rx as sent)" the system exclusive is enabled & any incoming bank dumps will be stored in the same location as they were sent. i.e. a Prog bank A dump will be stored in Prog bank A. If this parameter is set to "All progs to bank A" any incoming Program bank dump will be written into Program bank A regardless of their original location. All banks of Programs are accounted for. If this parameter is set to "All perfs to bank A" any incoming Performance bank dump will be written into Performance bank A regardless of their original location (this is primarily for use when dumping from a Supernova). All banks of Performances are accounted for. If this parameter is set to "Disabled" no sysex will be received. The range of this parameter is Disabled, Normal (Rx as sent), All progs to bank A, All progs to bank B & All perfs to bank A. This parameter is memorised as Global.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

Page 4 looks like so:

MIDI clock	Int
Breath control	Off

As can be seen the higher parameter is "MIDI clock". In this case with a value of Int.

This parameter determines if the Nova is syncing to Internal or External MIDI Clock. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is Int & Ext. This parameter is memorised as Global.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "Breath control". In this case with a value of Off.

This parameter determines if the Nova re-maps incoming Breath Control MIDI data (CC no 2) into Mod wheel data (CC no 1), Aftertouch data or any controller from 3 to 119, Pitchbend data & a selection of NRPN's . Use the Lower Fast Data knob to adjust this parameter. This allows incoming Breath Control data to manipulate most of Nova's key parameters directly. The range of this parameter is Off, MW, A/T, CC3 to 119, Bend, Bend+, Bend-, NRPN75 to NRPN77, NRPN95 & NRPN96. This parameter is memorised as Global.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

Page 5 looks like so:

Breath mode	Absolute
Breath sensing	Norm

As can be seen the higher parameter is "Breath mode". In this case with a value of Absolute.

This parameter determines how incoming Breath controller information is interpreted by the Nova. Use the higher Fast Data knob to adjust this parameter. If this is set to Absolute then the destination (the parameter assigned with the "Breath control" parameter on Page 6 of global mode) will be modulated directly regardless of its setting in the currently assigned program. If this parameter is set to Mod+ then the breath control value would be added to the value of the destination in the currently loaded program. If this parameter is set to Mod- then the breath control value would be subtracted from the value of the destination in the currently loaded program. i.e. If the destination was Cutoff Frequency & the currently assigned programs Cutoff Frequency was assigned to a level of 64, in Absolute mode when a breath control message with a value of 1 was received the Cutoff Frequency would change to 1. If in this case this parameter was set to Mod+ the value of the Cutoff Frequency would be 65 & if in this case this parameter was set to Mod- the value of the Cutoff Frequency would be 63. The range of this parameter is Absolute, Mod+ & Mod-. This parameter is memorised as Global.



NOTE:

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "Breath sensing". In this case with a value of Norm.

This parameter determines how sensitive the Nova is to incoming breath controller messages. Incoming Breath control messages can be dealt with as they are when this parameter is set to normal. If this parameter is set to a negative number (-3 for example) incoming breath control messages are scaled down, alternatively incoming breath control messages can be exaggerated , or amplified, by setting this parameter to a positive number (+3 for example). Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is -5 to -1, Norm & +1 to +5. This parameter is memorised as Global.

Page 6 looks like so:

Arp trans chan	2
Arp trans ref	C3

As can be seen the higher parameter is "Arp trans chan". In this case with a value of 2.

This parameter determines which MIDI channel the Arpeggiator uses to perform the Arpeggiator Realtime Transpose function. Use the higher Fast Data knob to adjust this parameter. If this is set to 2 & if a Program or Performance is set up to play on MIDI Channel 1 & the Realtime Transpose parameter in the Arp Menu is set to "On" then you can transpose the whole arpeggiation by playing a note on the "Realtime Transpose Channel" in this case channel 2. The amount of transposition depends on the note value set in the "Arp Reference Note" Parameter relative to the note on received on the Transpose channel. The range of this parameter is 1 to 16.

**NOTE:**

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "Arp trans ref". In this case with a value of C3.

This parameter determines the reference note as described above for the Arpeggiator Realtime Transpose function. Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is C-2 to G8.

**NOTE:**

To write any changes to this parameter into memory press the "Write" button while in this mode. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

Page 7 looks like so:

Local control	On
Memory protect	Off

As can be seen the higher parameter is "Local Control". In this case with a value of On.

This parameter is normally set to On. In this position any knob movements or button presses on the front panel are transmitted via MIDI & also control the synth engine directly. i.e. turning a knob will alter the sound produced regardless of any MIDI setup. If this parameter is set to Off, knob movements & button presses on the front panel still transmit MIDI data but make no alteration to the sound directly. This is the best way to use the Nova with a sequencer as all the Channel re - mapping features in sequencers can be take fully advantage of fully. This parameter is memorised as Global.

**NOTE:**

If there is no MIDI feedback loop connected at all (a sequencer with MIDI out of the Nova connected to MIDI in on the sequencer & MIDI out of the sequencer connected to MIDI in on the Nova for example) & local control is set to off, the knobs & buttons on the front panel will appear to do nothing although changing parameters values may be displayed on the display.

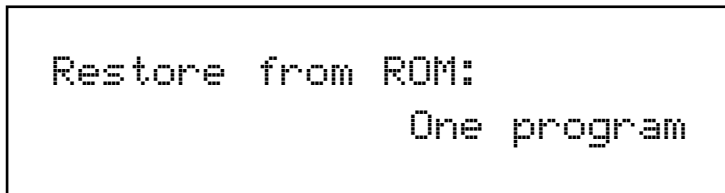
**NOTE:**

If local control is set to off & Parts are muted or soloed in Performance mode, flashing Part buttons will indicate the MIDI information transmitted, not necessarily relevant to each Parts current mute status.

As can be seen the lower parameter is "Memory protect". In this case with a value of Off.

This parameter determines if the memory can be written to or not. Use the lower Fast Data knob to adjust this parameter. In the "On" position Programs, Performances, Patterns or Global Data cannot be written into memory. In the "Off" position Programs, Performances, Patterns or Global Data can be written into memory. This parameter is memorised as Global.

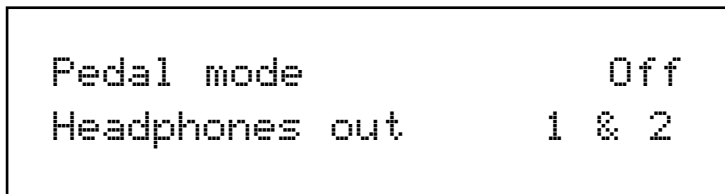
Page 8 looks like so:



NOTE:
Pressing the Write button while this page is displayed starts the Restore procedure.

As can be seen the parameter is "Restore from ROM:". In this case with a value of One program. This parameter allows the factory Programs, Performances & Global data & Arp Pattern data to be restored to the Factory settings. Use the lower Fast Data knob to adjust this parameter. Whatever selection is made with the lower Fast Data knob is restored into memory (ERASING WHAT WAS THERE!!) when the "Write" button is pressed while in this mode. Additional pages appear depending on the selection. i.e. if "All data" is selected Nova asks for confirmation which is set with the lower Fast Data knob, if you set this to "Yes" & press the "Write" button again all the factory setting will be restored. If however "One prog" was selected Nova asks which Program you want to restore, which is selected using the lower Fast Data knob, & then pressing the "Write" button again Nova asks for the location (Program bank & number) that you wish to store the program in. The range of this parameter is One prog, One perf, One patt, All progs, All perfs, All patts, Prog Ch table, Globals, All data, Prog bank A, Prog bank B & Perf bank A.

Page 9 looks like so:



Input 2 on the Nova can double as a Expression pedal / Sustain pedal input.

As can be seen the higher parameter is "Pedal mode". In this case with a value of Off. This parameter determines what Input 2 is going to do. In the Off position the Input 2 is configured for use as an Audio Input. In the Breath-R position, Input 2 is configured to work as an expression pedal input & is re-mapped into breath controller. In this case an expression pedal with the control output on the ring of the pedal jack. In the Breath-T position, Input 2 is configured to work as an expression pedal input & is re-mapped into breath controller. In this case an expression pedal with the control output on the tip of the pedal jack. i.e. a Korg EXP2 expression pedal. In the Sustain position Input 2 is configured to work as an sustain pedal input. In this case a sustain pedal that is normally open. In the Sustain-I position Input 2 is configured to work as an sustain pedal input. In this case a sustain pedal that is normally closed. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is Off, Breath-T, Breath-R, Sustain & Sustain-I. This parameter is memorised as Global.

As can be seen the lower parameter is "Headphones out". In this case with a value of 1 & 2. This parameter determines if the Headphone outputs (Outputs 5&6) are configured for use as Headphones or as separate outputs. Use the lower Fast Data knob to adjust this parameter. In the 1 & 2 position the Headphones monitor signals from outputs 1 & 2. In the 3 & 4 position the Headphones monitor signals from outputs 3 & 4. In the 5 & 6 position the Headphones can be used as additional outputs 5 & 6. In the Mix position the Headphones monitor signals from outputs 1, 2, 3, 4, 5 & 6. The range of this parameter is 1 & 2, 3 & 4, 5 & 6 & Mix. This parameter is memorised as Global.

Page 10 looks like so:

Finder demos	Off
--------------	-----

The higher parameter is "Finder demos". In this case with a value of Off.

This parameter determines if the "Finder" plays a demo or not when activated. Use the higher Data knob to adjust this parameter. In the On position whenever the Finder mode is activated a small demo tune will play in the style of the category currently assigned to the selected program. In the Off position the finder function still works but no demo plays. This is useful when working with an external sequencer & auditioning sounds while the sequencer is running. The range of this parameter is On & Off. This parameter is memorised as Global.

Page 11 looks like so:

Vel sensing	Hard
Knob mode	Pickup

The higher parameter is "Vel sensing". In this case with a value of Hard.

This parameter alters the velocity response of the Nova. Use the upper Data knob to adjust this parameter. This is global & applies to all modes. In the Hard position, large Velocity changes are required to create a big change in response. This is good for weighted & semi-weighted keyboard actions. In the Soft position, not so large Velocity changes are required to create a big change in response. This is good for cheaper keyboard actions. The range of this parameter is Hard & Soft. This parameter is memorised as Global.

The lower parameter is "Knob mode". In this case with a value of Pickup.

This parameter determines if the values of Knob parameters (with the exception of the Volume Knob) jump immediately to the actual position of the Knob as soon as it is turned or if the Knob has to pass "through" the value of the edited parameter before the knob starts editing the parameter. Use the lower Data knob to adjust this parameter. In the Normal position the value of the parameter being edited jumps to the value of the Knob as soon as a knob is turned. This is good when creating sounds as the parameters are always "Live". In the Pickup position no change to the parameter being edited will take place until the Knob is turned so that it has passed "through" the value of the edited parameter, thereby "picking it up". The knob then becomes "live" & will start editing the parameter & will start to transmit the appropriate controller. The range of this parameter is Normal & Pickup.



NOTE:

When this parameter is set to "Pickup" mode no controller data will be sent & no edits to the parameter by Knob movements will occur until the Knob parameter has been picked up.



NOTE:

The Master Volume Knob always behaves as if the "Knob mode" parameter is set to "Normal". In other words the Master Volume Knob is always live & turning this Knob will always alter the volume immediately regardless of the "Knob mode" parameter's setting.

Page 12 looks like so:

Incoming control change	Enabled
----------------------------	---------

As can be seen the parameter is "Incoming control change". In this case with a value of Enabled.

This parameter determines if the Nova responds to incoming MIDI controller messages or not. Use the higher Fast Data knob to adjust this parameter. This filter is global & applies to all modes. The range of this parameter is Enabled & Disabled. This parameter is memorised as Global.



The Incoming Control Change filter does not filter Bank select messages. (CC00 & CC32) These can be filtered using the Incoming Program Change filter if required.

Page 13 looks like so:

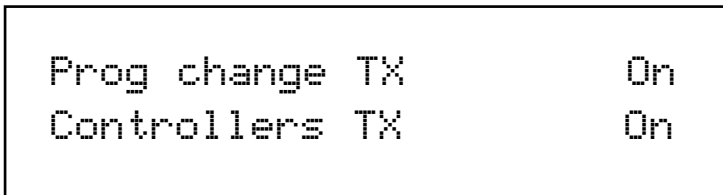


As can be seen the parameter is "Incoming program change". In this case with a value of Enabled. This parameter determines if the Nova responds to incoming MIDI program change messages or not. Use the higher Fast Data knob to adjust this parameter. When this parameter is set to Enabled any Program Change messages sent on Bank 0 will refer to the Program Map. This can be overridden by sending Bank & Program Change messages to a different Bank. Refer to page 130 for details on the Bank messages received by Nova. When this parameter is set to Program map any Program Change messages will always refer to the Program map table regardless of any Bank messages that have been received. When this parameter is set to Disabled, Bank & Program Change messages ignored. This filter is global & applies to all modes. The range of this parameter is Enabled & Disabled. This parameter is memorised as Global.



If the Incoming Program Change filter is set to Disabled it also filters out Bank select messages (CC00 & CC32).

Page 14 looks like so:



The higher parameter is "Prog change TX". In this case with a value of On. This parameter determines if the Nova transmits MIDI program change & Bank messages when a new Program or Performance is selected (This includes program changes within a Part of a Performance). Use the higher Data knob to adjust this parameter. In the On position whenever a new Program or Performance is selected the appropriate Program change message & Bank message is sent on the appropriate channel. In the Off position no Program change or Bank change messages will be transmitted. The range of this parameter is On & Off. This parameter is memorised as Global.

The lower parameter is "Controllers TX". In this case with a value of On. This parameter determines if the Nova transmits MIDI Controller messages. Use the lower Data knob to adjust this parameter. In the On position whenever a knob, slider or switch is manipulated appropriate Controller messages are sent on the appropriate channel. In the Off position no Controller messages will be transmitted. The range of this parameter is On & Off. This parameter is memorised as Global.



This does not affect transmission of Bank select controllers when selecting new Programs / Performances or the transmission of Modulation Wheel.

Page 15 looks like so:

Program change	002
Selects	Perf A010

The Nova features a "Program map" that allows any incoming MIDI Program Change command to call up any Program or Performance from any Bank, or select a new Arpeggiator Pattern for the currently selected program. The Program Map is user programmable & is Memorised as Global. To select the Program Map send a Bank Message of 0 (Controller 32 with a value of 0). When this Bank is selected any incoming Program Changes conform to the sequence in the Program Map.

As can be seen the higher parameter is "Prog change". In this case with a value of 002.

This parameter shows which Part of the Performance Map will be displayed / edited. Use the higher Fast Data knob to adjust this parameter. The Performance Map allows incoming MIDI Program Change Messages to call up any sound in the Nova. This not only allows keyboards & sequencers that do not support MIDI Bank Select Messages access to any sound via MIDI but also allows a user "Order" of sounds to be created which can be very useful in live performance. The range of this parameter is 000 to 127. This parameter is memorised as Global.



NOTE:

The Program map can be made active at all times by setting the "Incoming program change" parameter on page 13 of the Global mode to "Program map".



NOTE:

When the Nova is switched on, "the Program Change Table" is automatically active. This means that if any Program/Part receives a Program Change Message via MIDI IN, it will reference the Performance Map until that particular Program/Part receives a valid Bank Select Message (Controller 32). This allows Master Keyboards which do not transmit Bank Select Messages to be able to call up any Program or Performance in any Bank.



NOTE:

When a Program/Part receives a valid Bank Select Message (Controller 32) via MIDI IN, the bank will continue to remain selected for the Program/Part until another Bank Select Message is received via MIDI IN.



NOTE:

This "Map" is assigned to MIDI Bank 0(Controller 32 with a value of 0). If this message is received the Nova will switch from normal operation to the Performance Map. Any Program changes received after that will be re-mapped according to the Performance Map. This can be disabled by sending another MIDI Bank Message calling up either one of the Program or Performance Banks. See page 130 for details on the Bank Messages received by the Nova.



NOTE:

To write any changes to the performance map into memory press the "Write" button while this page is displayed. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "Selects". In this case with a value of Perf A010.

This parameter shows which sound is assigned to the selected Program Message set in the parameter above. Use the lower Fast Data knob & the Bank button to adjust this parameter. In this case the sound assigned is Performance A010. Pressing the Bank button while in this mode allows the selection of any of the Performance or Program Banks. Using the lower Fast Data knob allows any sound from the selected Bank to be set. The range of this parameter is Curr, Prog A, Prog B, Perf A, Arp M, Arp P & Arp U. This parameter is memorised as Global.

Page 16 looks like so:

```
Arp pattern editing
via MIDI           Off
```

As can be seen the parameter is "Arp pattern editing via MIDI". In this case with a value of Off.

This parameter determines if the Arpeggiator pattern data can be entered via a MIDI keyboard or not. When this parameter is set to Off, editing of Arpeggiator patterns via a keyboard / MIDI is not possible, only the step type editing on pages 18 of the Global mode. If this parameter is set to On, Notes & Velocity can be entered directly from a MIDI Keyboard. To do this set this parameter to On, then select a Pattern & select the number of steps in the pattern required in page 17 of Global mode. Now go to page 18 of global mode & check that the pattern is on step 1. While in page 18 pressing a note on the Keyboard will enter the note value & velocity value directly into the pattern. The note off will automatically advance the pattern to the next step. A sustain pedal on the keyboard can also be used when in this mode. If no note is held down & the sustain pedal is pressed a Rest is inserted at the current step. Releasing the sustain switch advances the pattern to the next step. Similarly, pressing the pedal while no note is being played then, while still pressing the sustain switch, a note is played on the keyboard, inserts a tie at the current step. Releasing the Note on the keyboard then advances the pattern to the next step. Similarly, pressing the pedal while a note is being played inserts a Glide to at the current step. Releasing the Note on the keyboard then advances the pattern to the next step. The range of this parameter is Off, On, Note only, Vel only & Gate only. This parameter is memorised as Global.



NOTE:

When Arp pattern editing via MIDI is activated, Note/Sustain data can be entered on any channel.

Page 17 looks like so:

```
User pattern       000
No of steps       32
```

As can be seen the higher parameter is "User Pattern". In this case with a value of 000.

This parameter determines which of the User Patterns for the Arpeggiator is to be edited with the following pages. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised as Global.



NOTE:

User Pattern 000 to 63 are User Monophonic Patterns & User Pattern 64 to 127 are User Polyphonic Patterns.



NOTE:

To write any changes to the currently selected pattern into memory press the "Write" button while any of the pattern edit pages are displayed. Also note the "Memory Protect" has to be set to "Off" for this to be possible.

As can be seen the lower parameter is "No of Steps". In this case with a value of 32.

This parameter determines The number of steps in the chosen User Pattern. Use the lower Fast Data knob to adjust this parameter. The range of this parameter is 01 to 64. This parameter is memorised as Pattern data.

Page 18 looks like so:

Step	<u>Note</u>	Vel.	Gate
01	01	127	Norm

The higher parameter is "Step Note Vel. Gate". In this case with a value of Note.

This parameter determines what type of pattern parameter is going to be edited with the lower Data knob. Use the upper Data knob to select the parameter to be edited. The cursor indicates the current selection, in this case Note. When this parameter is set to "Step" the value of the parameter below it determines the step to be edited. Use the lower Data knob to adjust this parameter. The range of this parameter is 01 to 64 but depends on the value set in the "No of Steps" parameter above. When this parameter is set to "Note" the value of the parameter below it determines the note value of the currently selected step. Use the lower Data knob to adjust this parameter. The range of this parameter is 01 to 12 for the User Monophonic patterns (000 to 063) & -36 to +36 for the User Polyphonic patterns (064 to 127) When this parameter is set to "Vel." the value of the parameter below it determines the velocity of the note at the currently selected step. Use the lower Data knob to adjust this parameter. The range of this parameter is 1 to 127. When this parameter is set to "Gate" the value of the parameter below it determines the gate time of the note at the currently selected step. In the Normal position the gate equals one step unless the following step is a tie. In the Tie position the notes are tied together. Use the lower Data knob to adjust this parameter. In the Rest position the note is silent. in the Glide position the Portamento effect is engaged as it does in Autoglide. The range of this parameter is Norm, Tie, Rest, Glide. Refer to page 25 for details on programming user patterns. These parameters are memorised as Pattern data.



NOTE:

The Note parameter can only be accessed if the current step's gate is set to Norm or Glide.



NOTE:

To write any changes to the currently selected pattern into memory press the "Write" button while any of the pattern edit pages are displayed. Also note the "Memory Protect" has to be set to "Off" for this to be possible.



The display shows the currently selected Performance or Program Name, Bank & Number. When editing Knobs on the front panel the relevant parameter name & value is displayed.

Page - Buttons

When editing parameters in Menus there are usually several “Pages” within each menu. The Default page on pressing any menu button is the page selected when the sound was saved. Higher pages can be accessed by pressing the “Page Up” button & lower pages can be accessed by pressing the “Page Down” button. These buttons are lit when more pages are available. If the “Page Up” button is lit there are higher pages available in the selected menu. If both page buttons are lit then pages are available in either direction in the currently selected menu. If the “Page Up” button is lit there are higher pages available in the selected menu. If the “Page Down” button is lit there are lower pages available in the selected menu.

Fast Data - Knobs

In Program mode the higher “Fast Data” knob will change Banks & in Program or Performance mode the lower “Fast Data” knob will change the currently selected Program or Performance. Turning this knob fast will sweep through many sounds very quickly. When editing parameters in Menus the higher “Fast Data” Knob on the right of the display is used to edit the higher parameters value. Similarly the lower parameters value can be edited in the same way using the lower “Fast Data” knob.

Prog Up/Down - Buttons

These buttons select the programs in the Nova. Pressing the Prog Up button increments the program selected by 1. Pressing the Prog Down button decrements the program selected by 1. Holding either button down will scroll through the programs.



NOTE:

When these buttons are lit, they will change a Program.

Bank Up/Down - Buttons

These buttons select the banks of programs in the Nova. Pressing the Bank Up button changes the program selected to the same number program in the B bank. Pressing the Bank Down button changes the program selected to the same number program in the A bank.



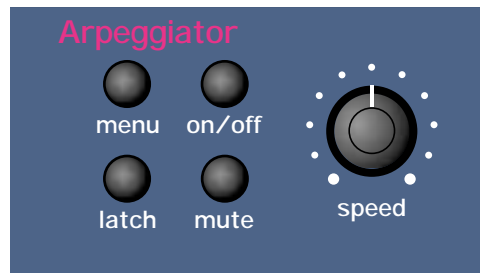
NOTE:

When these buttons are lit, they will change a Performance.



NOTE:

These buttons have no function when selecting Performances as there is only 1 bank of Performances available.



This section contains all the knobs & buttons associated with the Arpeggiator.

Speed - Knob

This knob controls the speed at which the Arpeggiator sweeps through its patterns. Anticlockwise the speed is slow, clockwise the speed is fast. The range of this parameter is 64 bpm to 191bpm. This parameter is memorised with Programs in Program mode & Performances in Performance mode.



NOTE:

If the LFOs are synchronised to Internal MIDI Clock this control sets the speed of the Internal MIDI Clock & the LFOs & / or Delay will be synchronised with the Arpeggiator at whatever time signature has been selected in the LFOs & / or Delay.

On/Off - Button

This buttons determines if the Arpeggiator is active or disabled in the currently selected program. Pressing this button makes the Arpeggiator active & the button will light. Pressing it again will deactivate the Arpeggiator & the light will go out. The range of this parameter is On & Off. This parameter is memorised with Programs in Program mode & Performances in Performance mode.

Latch - Button

This button determines the way in which the Arpeggiator remembers which notes you are playing or have played on the Master Keyboard. When this is "Off" (unlit) the Arpeggiator will only sweep through its patterns when you hold down notes on the Master Keyboard. If you are not playing any notes on the Master Keyboard no arpeggio will be heard. If the "latch" is set to "On" (Lit) the Arpeggiator remembers what notes you last played. i.e. If you play a C triad & then release the keys on the Master Keyboard the Arpeggiator will not stop, it will continue to sweep through the C triad until a new set of notes is played, then it will sweep through the new notes until another set it played. etc. etc. The range of this parameter is On & Off. This parameter is memorised with a Program.



NOTE:

This parameter can be controlled via MIDI in the Performance mode. To do so connect a Sustain Pedal to the Master Keyboard. The Nova can read MIDI sustain information as Arpeggiator latch On / Off, so depressing the sustain pedal will switch the Arpeggiator Latch "On" & releasing the sustain pedal will switch it "Off". For this to work properly the Master Keyboard should be transmitting on the same MIDI channel as Nova is set to receive on & set the "Sustain" parameter in the MIDI button menu for the selected Part to "Arp Latch". Additionally, this parameter may work in reverse to the manner described if the incorrect footswitch is used with the Master Keyboard. If this is the case, set the Sustain parameter in the MIDI button menu for the selected part to Arp latch (I). In Program Mode, the sustain pedal always latches the Arpeggiator while it is enabled. If the Arpeggiator is not enabled, the sustain pedal will act as a normal sustain.

Mute - Button

This button determines if the Arpeggiator is heard in the currently selected Program. When this button is unlit the Arpeggiator is on & the sound can be heard. In the "Muted" (Lit) position, the Arpeggiator is still running in the background but is no longer passing the notes to the Program or MIDI & the sound can no longer be heard. This parameter is memorised with a Program.

ARPEGGIATOR SECTION

Menu - Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section.

In the Arpeggiator Section there are 8 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameters values.

Page 1 looks like so:

Key reset	Off
-----------	-----

As can be seen the parameter is "Key reset". In this case with a value of Off.

This parameter controls the way the Arpeggiator resets itself when new notes are played on the Master Keyboard. Use the higher Fast Data knob to adjust the value. In the "Off" position the cycle of the Arpeggiator is not interrupted when new notes are played on the Master Keyboard, the Arpeggiator simply changes the notes being played to the new ones. In the "On" position the cycle of the Arpeggiator is reset to the start of its patterns when new notes are played on the Master Keyboard. In this condition if the Quantise parameter on page 3 of the Arp menu is set to "Off" it behaves like triggering a loop in a sequencer. If the Quantise parameter is set to modes 1 or 3, the reset will occur at the start of the next step. If the Quantise is set to modes 2 or 4, notes played slightly late will reset immediately & following steps will be in sync. The range of this parameter is On & Off. This parameter is memorised with a Program.

Page 2 looks like so:

Pattern Bank	Mono
Pattern no.	120

As can be seen the higher parameter is "Pattern bank". In this case with a value of Mono.

This parameter determines type of Pattern the Arpeggiator will use. Use the Higher Fast Data knob to adjust the value. The "Mono" Bank is 128 preset patterns that are Monophonic (a single note is played at any one time). The "Poly" Bank is 128 preset patterns that are Polyphonic(all the notes played on the Maser Keyboard are played at once & transposed). The "User" Bank is 128 patterns that are user programmable in the Global Mode. Patterns 000 to 063 in this bank are Monophonic & 064 to 127 are Polyphonic. The range of this parameter is Mono, Poly, & User. This parameter is memorised with a Program.

As can be seen the lower parameter is "Pattern no.". In this case with a value of 120.

This parameter determines which pattern in the bank specified by the parameter above is used by the Arpeggiator. Use the lower Fast Data knob to adjust the value The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Page 3 looks like so:

Latch type	Constant
Quantise	Mode 1

As can be seen the higher parameter is "Latch type". In this case with a value of Constant.

This parameter determines how the "Latch" function behaves. Use the higher Fast Data knob to adjust the value.

In the "Constant" position, when the "Latch" is "On", the Arpeggiator remembers what notes you last played. i.e. If you play a C triad & then release the keys on the Master Keyboard, the Arpeggiator will not stop, it will continue to sweep through the C triad until a new set of notes is played, then it will sweep through the new notes until another set it played. etc. etc. In the "Pattern" position the Arp will behave as above except that it will stop when it reaches the end of the pattern. This is like playing a loop on a sampler. Again another powerful feature for live performance. The range of this parameter is Constant & Pattern. This parameter is memorised with a Program.

As can be seen the lower parameter is "Quantise". In this case with a value of Mode 1.

This parameter determines if the Arpeggiation played is quantised to the Arp Sync parameters time signature or not. Use the lower Fast Data knob to adjust the value. The Arpeggiator can correct timing errors for you in several different ways. The arpeggiator can correct timing errors by quantising the played notes like a sequencer package (we will refer to this method as "Quantised"). This corrects the mistakes but can introduce a "Skip" if you play late. i.e. the first note played is on the next quantised step. This is what would happen in a sequencer as well but is not so useful for live performance so we have introduced a kind of "Intelligent Quantise". i.e. if you play slightly late those notes will sound immediately & the *next* step will be quantised. Additionally things change if MIDI Clock is being used. The Arpeggiator reads MIDI Start/Continue Messages. The pattern will start when one of these messages is received, but will not make any sound. When the keyboard is played in this condition, the Arpeggiator will play the correct step in the pattern, not start from the beginning of the pattern. Below is a table showing the different options:

MODES

- Off Not quantised.
- Mode 1 Quantised.
- Mode 2 Intelligently quantised.
- Mode 3 Quantised with the pattern locked to the sequencer & other quantised Arpeggiators.
- Mode 4 Intelligently quantised with the pattern locked to the sequencer & other quantised Arpeggiators.

The range of this parameter is Off, Mode 1, Mode 2, Mode 3 & Mode 4. This parameter is memorised with a Program.



NOTE:

In Performances if more than one Part has a Program with Arpeggiators activated & if these Programs have the Arpeggiators "Quantise" parameter set to active (modes 1, 2, 3 or 4) then activating any Arpeggiator will start all of the Arpeggiators in the Performance in Sync with each other (Although you wont actually hear them until the correct Range &/or MIDI channel is triggered). This means that the phrases created by the separate Arpeggiators are always in sync even if triggered at different times.



NOTE:

This parameter also affects how the Key reset parameter on page 1 of the Arp menu behaves. Refer page 48 for details.

Page 4 looks like so:



As can be seen the higher parameter is "Velocity". In this case with a value of Played.

This parameter determines how the velocity of the notes played effect the notes in the arpeggiation. Use the higher Fast Data knob to adjust the value . If this parameter is set to "Played" then the velocities of the notes played will be duplicated in the notes played in the arpeggiation. If this parameter is set to "Full" then the velocities of the notes played will be at full velocity (127). If this parameter is set to "Half" then the velocities of the notes played will be at half velocity (63). If this parameter is set to "Prog" then the velocities of the notes played will be at the values programmed into the patterns. The range of this parameter is Played, Full, Half & Prog. This parameter is memorised with a Program.

As can be seen the lower parameter is "Octave range". In this case with a value of 2.

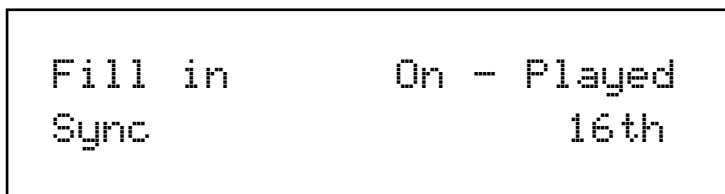
This parameter determines the number of octaves the Arpeggiator will sweep through. Use the lower Fast Data knob to adjust the value The range of this parameter is 1, 2, 3 & 4 octaves. This parameter is memorised with a Program.



NOTE:

When this parameter is set to use octaves greater than 1, then the "Fill in" parameter will affect how the the pattern sweeps through the octaves on the Monophonic Up/Down patterns (Mono 000 to 003). Refer to the notes on the "Fill in" parameter on page 50 for details.

Page 5 looks like so:



As can be seen the higher parameter is "Fill-in", in this case with a value of On - Played.

This parameter applies only to MONOPHONIC patterns, it has no effect on polyphonic patterns. Use the higher fast data knob to adjust the value. In fact, this parameter can be thought of as two different parameters combined. The first Part (always "On" or "Off") determines how the Arpeggiator behaves when you play more or less notes than the Arpeggiator pattern was written to cope with.

When this Part of the parameter is set to "Off", if you play less notes than the pattern is expecting, the highest note you have played will be used for all the notes in the pattern data which are greater than your highest played note. If however, you have played more notes than the pattern was written to cope with, then played notes which are higher than the highest note in the pattern data are never sounded. When this Part of the parameter is set to "On", if you play less notes than the pattern is expecting, your played notes will be used intelligently for all the notes in the pattern data which are greater than your highest played note. If however, you have played more notes than the pattern was written to cope with, then played notes which are higher than the highest note in the pattern data are used, replacing their corresponding lower notes, every other time the pattern cycles around.

Perhaps the best way to understand how this works is by experimentation - altering the values & number of notes played while a mono arpeggiation is running. The second Part of the parameter ("Up", "Down" or "Played") determines which note ordering system is used for the monophonic pattern. When set to "Up", note 1 in the pattern data will refer to the lowest note played, note 2 the next note up & so on. When set to "Down", note 1 in the pattern data will refer to the highest note played, note 2 the next note down & so on. When set to "Played", note 1 in the pattern data will refer to the earliest note played, note 2 the next note to be played & so on. By adjusting this value, you can in effect, treble the number of available monophonic patterns you have access to !

The most musical settings for this parameter are any of the "On" options. The range of this parameter is Off - Up, On - Up, Off - Down, On - Down, Off - Played & On - Played. This parameter is memorised with a Program.



NOTE:

When the Arpeggiator is using one of the standard Up / Down patterns (Mono patterns 000 to 003), Fill-in can be used to determine how the pattern sweeps through the number of octaves set on page 4 of the Arpeggiator Menu. When the Fill-in parameter is set to any of the "On" settings, the pattern will sweep through all of the available in octaves in a single pass of the pattern. When the Fill-in parameter is set to any of the "Off" settings, the pattern will use each octave in turn for a single pass of the pattern. When using these patterns, previous OS Versions always behaved as if Fill-in was set to "Off".



NOTE:

The Note Ordering part of the Fill-in parameter is ignored by Mono Patterns 000 to 010 which generate arpeggios by algorithms rather than fixed pattern data.

As can be seen the Lower parameter is "Sync". In this case with a value of 16ths

This parameter determines the time signature at which the Arpeggiator runs from the Internal or External MIDI Clock.

Use the lower Fast Data knob to adjust the value of this parameter. The range of this parameter is 32nd Triplet, 32nd, 16th Triplet, 16th, 8th Triplet, 16th Dotted, 8th, 4th Triplet, 8th Dotted, 4th, 2nd Triplet, 4th Dotted, 2nd, 1 Bar Triplet, 2nd Dotted, 1 Bar, 2 Bar Triplet, 1 Bar Dotted, 2 Bars, 4 Bar Triplet, 3 Bars, 5 Bar Triplet, 4 Bars, 3 Bar Dotted (4.5 Bars), 7 Bar Triplet, 5 Bars, 8 Bar Triplet, 6 Bars, 7 Bars, 5 Bar Dotted (7.5 Bars), 8 Bars, 6 Bar Dotted (9 Bars), 7 Bar Dotted (10.5 bars) & 8 Bar Dotted (12 Bars). This parameter is memorised with a Program.



NOTE:

There is a conversion chart on page 131 giving specific MIDI tick values for each of the options of this parameter.

Page 6 looks like so:

Real time trans	Off
Gate time	75%

As can be seen the higher parameter is "Real time trans". In this case with a value of Off.

This parameter determines if the Realtime Transpose function is On or Off. Use the higher Fast Data knob to adjust the value . If this parameter is set to "On" then any notes received on the "Realtime Transpose Channel" (Set in the Global Mode) will Transpose the Arpeggiator's output by the number of semitones difference between the note played on the "Realtime Transpose Channel" & the note assigned in the "Arp Reference Note" (Set in the Global Mode). Basically if this is "On" then you can transpose the whole arpeggiation by playing a note on the "Realtime Transpose Channel". The amount of transposition depends on the note value set in the "Arp Reference Note" Parameter. The amount of transposition being the difference in semitones between the Arp reference note & the note played on the realtime transpose channel. Both the "Realtime Transpose Channel" & the "Arp Reference Note" Parameters can be found in the Global Mode. Another Great live performance feature. Set Arp Latch to "On" & away you go! The range of this parameter is On & Off. This parameter is memorised with a Program.

As can be seen the Lower parameter is "Gate time". In this case with a value of 75%

This parameter determines the gate time of each note the arpeggiator plays. Use the lower Fast Data knob to adjust the value of this parameter. Small values of Gate time produce a "Staccato" effect & large values produce a "Legato" effect to the Arpeggiation. The range of this parameter is 25%, 50%, 75% & 99%. This parameter is memorised with a Program.

Page 7 looks like so:

Arpeggio notes to :	
	Program & MIDI

As can be seen the parameter is "Arpeggio notes to:". In this case with a value of Program & MIDI.

This parameter determines if the Arpeggiation is sent to the Nova's sound engine, MIDI output or both. Use the lower Fast Data knob to adjust the value . If this parameter is set to "Program", then when the Arpeggiator is triggered, the Nova is played by the Arpeggiator but no MIDI data is output If this parameter is set to Program & MIDI then the Nova is heard playing the Arpeggiation & the Arpeggiation is also output via MIDI. If this parameter is set to "MIDI Only" then no sound is heard from Nova when the Arpeggiator is triggered as the Arpeggiation is output via MIDI & the Nova is not played directly. The range of this parameter is Program Only, Program & MIDI & MIDI Only. This parameter is memorised with a Program.



NOTE:

In program mode, the MIDI channel used for Arp transmission is the Global channel. In Performance mode, the part's MIDI channel is used. If the part's MIDI channel is set to Global or Omni, the Global channel is used.

Page 8 looks like so:

Constant pitch	Off
Output ranging	Off

As can be seen the higher parameter is "Constant pitch". In this case with a value of Off.

This parameter applies only to Polyphonic patterns. If this parameter is set to "On" then all Arpeggiator note(s) will be sounded at a constant pitch regardless of where they have been played from the keyboard. If this parameter is set to "Off" then the transposition of the notes played by the Arpeggiator will be at the values programmed into the patterns. Use the higher Fast Data knob to adjust the value. The range of this parameter is On & Off. This parameter is memorised with a Program.



The purpose of this parameter is to allow a sequence of notes to be played in exactly the same musical key regardless of where it has been triggered from the keyboard (real time transposing can still be used to transpose poly patterns if required). This is especially important if the Arpeggiator is being used to trigger drum patterns on an external Drum Machine or Sampler where each drum sound has a specific note value.



When Constant Pitch is activated, the Arpeggiator Poly pattern behaves monophonically, since if a chord was played on the keyboard, it would be pointless to send several NOTE ONs to the Program / MIDI OUT each with exactly the same note value.

As can be seen the lower parameter is "Output ranging". In this case with a value of Off.

This parameter applies when Arpeggiators are used in Performance Mode. When set to 'On', this parameter checks to see if the Arpeggiator's final note value (taking into account the current 'octaves' shift & any 'real-time' transposing) falls within the Part's note range parameters. If the final note value falls outside this range, it is not passed on to the Program or MIDI. When Output Ranging is set to 'Off', the final note value will always be passed on to the Program or MIDI. Previous OS Versions always behaved as if Output Ranging was set to 'On'. Use the lower Fast Data knob to adjust the value. The range of this parameter is On & Off. This parameter is memorised with a Program.



When Output Ranging is set to 'On', it is possible to obtain interesting Arpeggiator pattern variations by adjusting the Part's range values in such a way that certain Arpeggiated notes fall outside the Part's range & are not sounded.



This section contains all the knobs & buttons associated with the Oscillators & Mixer.

- Osc 1** - **Button**
- Osc 2** - **Button**
- Osc 3** - **Button**
- Noise** - **Button**
- 1*3** - **Button**
- 2*3** - **Button**

All these buttons “select” which oscillator is going to be manipulated by the other parameters in this section. Osc 1 button selects Oscillator 1, Osc 2 button selects Oscillator 2, Osc 3 button selects Oscillator 3, Noise button selects the Noise Generator, 1*3 button selects the output of the Ring Modulator between Oscillators 1 & 3 & the 2*3 button selects the output of the Ring Modulator between Oscillators 2 & 3. For example, to adjust the “Octave” setting of Oscillator 1 press the “Osc 1” button, (it will light up indicating it is selected) & then press the “Octave” button within the Tune Part of this section. Adjusting the “Tune” knob will now change the octave setting of Oscillator 1. The display will change to indicate the parameter that has been selected & display the newly edited value. The Display will stay like this until another parameter is adjusted, in which case it will change to display the new parameter. To return to the display of the Program / Performance name & number press the appropriate Program or Performance button.



NOTE:

Only one Oscillator or one of the Ring Modulators or the Noise Source can be selected / edited at one time.



NOTE:

Some parameters do not apply to all sound sources. i.e. The “Octave” parameter has no effect on the Noise generator. If this is the case, the display will read “Not Available” when the control is adjusted.

Solo - Button

This button is similar to a “solo” button on a mixing console. Pressing this button activates the solo function (The button is lit) & the currently selected sound source will be soloed. When the solo button is active (lit) the display will momentarily indicate that the selected sound source has been soloed. To return to normal operation press the solo button again. (unlit)

Copy - Button

This button activates a Copying utility & allows the settings of one Oscillator to be quickly copied to another. Pressing the Copy button (the button is lit) activates the copying function for the currently selected Oscillator (also lit . Eg. If this is Oscillator 1 the display shows:

```
Copy oscillator 1
to?
```

It is now a simple matter of pressing the destination (the oscillator that you wish to copy oscillator 1's settings to). i.e. Press the Oscillator 2 button & the display shows:

```
Oscillator 1 copied
to oscillator 2
```



NOTE:

It is only possible to copy an Oscillator to another Oscillator.



NOTE:

To exit this mode without copying an Oscillator, press the copy button again (the Copy button is unlit).

Saw Waveform	-	Button
Sq waveform	-	Button
Special Waveform	-	Button

This is a menu of oscillator waveforms for the oscillator selected with the Osc 1, 2, & 3 buttons. To adjust the waveform of oscillator 1 press the "Osc 1" button & select the waveform required. The selected waveform will light. The Saw button selects a Sawtooth waveform, the Sq button selects a Square waveform & the Special button selects either Audio input 1, Audio input 2 or the DoubleSaw "special" waveform.

DoubleSaw

When the DoubleSaw waveform is selected, the currently selected Oscillator actually becomes 2 Saw waves that can be independently phase shifted or detuned with the use of an LFO. If all Oscillators are set to Double Saw then each voice has effectively 6 Oscillators. This has no effect on total Polyphony & can allow Unison type sounds to be created without the need to use the Unison feature, thereby saving voices, but then again it is possible to Unison a Double Saw Program to create truly HUGE sounds (Whoever said size does not matter is deluding themselves!).



NOTE:

All the functions like Mix, Pitch, Sync & Soften still apply but modulate both Saw waves simultaneously.

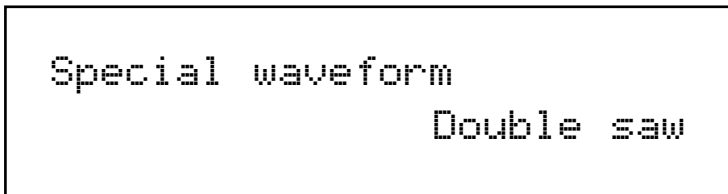


NOTE:

Sync sounds can cause clicks when LFOs are used to detune Double Saw waves. This will happen when the modulating LFO is set to anything BUT Tri waves.

Special Waveform - Button

When the Special button in the Oscillator Section is pressed the Display shows:



The parameter is "Special waveform" In this case with a value of Double saw. This parameter determines what special waveform the currently selected oscillator is going to have. Use the lower Data knob to adjust this parameter. If this parameter is set to Audio input (1), Audio input 1 will be substituted for the standard Oscillator. If this parameter is set to Audio input (2), Audio input 2 will be substituted for the standard Oscillator. If this parameter is set to Double saw the Double saw waveform as described above will be substituted for the standard Oscillator. The range of this parameter is Audio input (1), Audio input (2) & Double saw. This parameter is memorised with a Program.

How to use the Double Saw waveform

Width - Button
Level - Knob

When the Double Saw wave is selected the Width part of the matrix is used to control the "Difference" in phase between the 2 Saw waves. The Level control controls the static phase difference between the 2 Saw waves. When this is set to 000 there is no difference between the waves & so at this setting Double Saw waves sound just the same as a standard Saw wave.



NOTE:

As both waves are adding together exactly when no phase difference is set between the 2 Saw waves the resulting "Single" Saw wave is twice as loud as a standard Saw wave. This can be handy when severe filtering is being employed.

When this parameter is set to a positive value the phase difference between the 2 Saw waves is modulated by a positive amount. Similarly negative values produce a negative phase shift between the 2 Saw waves. Fully clockwise or fully anticlockwise the phase shift is 180° has been shifted positive or negative respectively. The range of this parameter is -64 to +63. This parameter is memorised with a program.

The key way to understand how this works is to understand that detuning can be expressed as a continually accelerating (or decelerating) phase shift. When looking at the waves of detuned Oscillators on an oscilloscope it can be clearly seen that one waveform accelerates (or decelerates, the result is the same) in respect to the other. The greater the detuning the greater the difference in phase shift acceleration or deceleration between the two Oscillators.

So how is this done? The answer is with an LFO. Because the modulation of an LFO has been tailored to modulate a Double Saw wave exactly from 0° phase shift to 360° when set to FULLY positive or negative modulation (180° phase shift of modulation of each positive & negative cycle are used providing 360° of phase shift) continuous detuning effects can be reproduced.

To create straight pitch shift detuning effects use a Saw wave on the modulating LFO. Moderate speed is required. Typically 110 when set to "Slow". Slow speeds produce small pitch shifts. Fast speeds produce large ones.

To create chorus like detuning effects use a Tri wave on the modulating LFO. Fairly slow speeds are all that is required.



NOTE:

Anything less than FULL positive or negative modulation will result in less than 360° phase shift & clicks will occur.

OSCILLATOR SECTION

Tips & Tricks

Try setting the modulating LFOs Keysync parameter to Keysync to get really percussive attacks to Double Saw sounds. This simulates all the Oscillators starting in phase. Setting this parameter to Freewheel means all Oscillators will start at random phase locations.

Below is an example of how to set up a detuning effect using a Double Saw wave.

Width	-	Button
Mod Depth	-	Knob
LFO 1	-	Button

This combination can be used to create a Pitch shift using LFO 1. The first thing that needs to be done is to set an LFO (in this case LFO 1) to a Saw wave running at a moderate speed, i.e. 110 when set to Slow. Turning the Mod Depth Knob clockwise introduces a pitch shift in one of the Saw waves in a positive direction. Turning the Mod Depth Knob anticlockwise introduces a pitch shift in one of the Saw waves in a negative direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63. This parameter is memorised with a Program.



NOTE:

This is actually set up in Program D126 "DOUBLE SAW Init". In this program LFO1 is used positively & negatively on 2 oscillators & LFO2 is used at a slightly different speed to make sure all 6 oscillators are at different pitches.



NOTE:

The detune effect will not be smoothly produced if anything other than a modulation level of either -64 to +63 is used. Anything else may produce clicky artifacts, But these in themselves may be interesting.



NOTE:

These buttons do not apply to the Ring Mod Oscillators (1*3 & 2*3) or the Noise Generator.

Octave	-	Button
Semitone	-	Button
Fine	-	Button
Tune	-	Knob

The three buttons determine if the Tune knob edits the Octave setting, Semitone transposition or fine tuning of the selected Oscillator.

If the Octave button is selected, the Tune knob will shift the selected oscillator up 2 octaves when turned fully clockwise & down 2 octaves when turned fully anticlockwise.

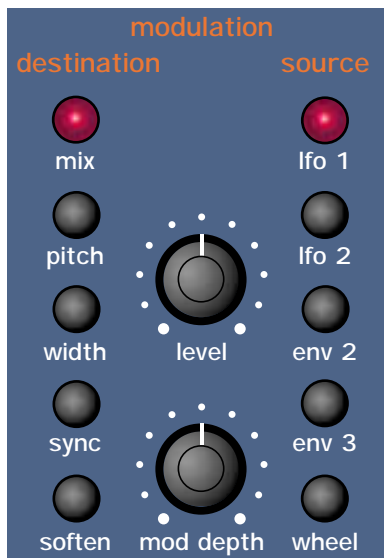
If the Semitone button is selected, the Tune knob will shift the selected oscillator up 12 semitones when turned fully clockwise & down 12 semitones when turned fully anticlockwise.

If the Fine button is selected, the Tune knob will shift the selected oscillator up 63 cents when turned fully clockwise & down 64 cents when turned fully anticlockwise. These parameters are memorised with a Program.

Portamento - Knob

This knob adjusts the Portamento effect on the currently selected Program. Fully anticlockwise no Portamento is heard. Turning the knob clockwise brings in the Portamento effect & notes will smoothly glide from one pitch to the next. The range of this parameter is 000 to 127 semitones. This parameter is memorised with Programs.

Oscillator Modulation Matrix



This is an extremely powerful feature of the Nova. These controls effect the modulation of the selected oscillator. The buttons on the left are all "Destinations". They can all be modulated by the "Sources" which are the buttons on the right. The amount of modulation applied from any source is determined by the setting of the Mod Depth Knob. This can be either *Positive* modulation (Turning the Mod Depth Knob Clockwise) or *Negative* modulation (Turning the Mod Depth Knob Anticlockwise). Additionally there is a manual Level Knob that allows a static "Offset" or "level" to be applied to any of the destinations.

For example, to adjust the level of the "Soften" setting of Oscillator 1 press the "Osc 1" button (it will light up indicating it is selected) & then press the "Soften" button within the modulation section to define the modulation destination. Now adjusting the Level knob will change the Soften setting of Oscillator 1.

Similarly to adjust the level of envelope 3 modulation of the "Soften" setting of Oscillator 1, press the "Osc 1" button (it will light up indicating it is selected) & then press the "Soften" button within the modulation section to define the modulation destination. Press the Env 3 button to define the modulation source. Now adjusting the Mod depth knob clockwise will modulate the Soften setting of Oscillator 1 by envelope 3.



NOTE:

This makes it possible for *all* modulation sources to effect any one destination in varying amounts & even in different polarities.

The display will change to indicate the parameter that has been selected & display the newly edited value. The Display will stay like this until another parameter is adjusted, in which case it will change to display the new parameter. To return to the display of the Program / Performance name & number press the Program or Performance button.



NOTE:

Only one source & destination can be edited at one time.



NOTE:

Even though only one source & destination combination can be edited at one time, all available combinations can happen at the same time



NOTE:

Some combinations do not apply. i.e. Pulse Width Modulation of Noise Generator. When such a parameter is edited the display shows "Not Available" & no audible effect is heard.

Possible Combinations & the effects Produced.



NOTE:

All these parameters are memorised with a Program.

Mix - **Button**
Level - **Knob**

This combination controls the Volume of the selected Oscillator, Noise Generator or Ring Modulator. Turning the Level Knob fully clockwise turns the selected sound source to full volume & fully anticlockwise turns the selected sound source to off (No Volume). The range of this parameter is 000 to 127.

Mix - **Button**
Mod Depth - **Knob**
LFO 1 - **Button**

This combination controls the modulation of the Mix of the selected Oscillator, Noise Generator or Ring Modulator by LFO 1. Turning the Mod Depth Knob fully clockwise introduces Mix modulation from LFO 1 to the selected sound source in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Mix modulation from LFO 1 to the selected sound source in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.

Mix - **Button**
Mod Depth - **Knob**
LFO 2 - **Button**

This combination controls the modulation of the Mix of the selected Oscillator, Noise Generator or Ring Modulator by LFO 2. Turning the Mod Depth Knob fully clockwise introduces Mix modulation from LFO 2 to the selected sound source in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Mix modulation from LFO 2 to the selected sound source in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.

Mix - **Button**
Mod Depth - **Knob**
ENV 2 - **Button**

This combination controls the modulation of the Mix of the selected Oscillator, Noise Generator or Ring Modulator by ENV 2. Turning the Mod Depth Knob fully clockwise introduces Mix modulation from ENV 2 to the selected sound source in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Mix modulation from ENV 2 to the selected sound source in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.

Mix - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the modulation of the Mix of the selected Oscillator, Noise Generator or Ring Modulator by ENV 3. Turning the Mod Depth Knob fully clockwise introduces Mix modulation from ENV 3 to the selected sound source in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Mix modulation from ENV 3 to the selected sound source in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.

Mix - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the modulation of the Mix of the selected Oscillator, Noise Generator or Ring Modulator by the Mod Wheel. Turning the Mod Depth Knob fully clockwise introduces Mix modulation from the Mod Wheel to the selected sound source in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Mix modulation from the Mod Wheel to the selected sound source in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.

Pitch Level - **Button**
 - **Knob**

This combination controls the Pitch Tracking of the selected oscillator. Turning the Level Knob fully clockwise makes the selected Oscillator track the keyboard in the normal way. i.e. Notes played one octave a Part on the Master Keyboard on the keyboard are transposed one octave apart. In the "Mid" position notes played one octave a Part on the Master Keyboard are transposed 1/2 an octave a Part & fully anticlockwise notes played one octave a Part on the Master Keyboard produces no transposition at all. This can be useful for Ring Mod effects. The range of this parameter is 000 to 127.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected.

Pitch Mod Depth LFO 1 - **Button**
 - **Knob**
 - **Button**

This combination controls the Pitch Modulation of the selected Oscillator by LFO 1. Turning the Mod Depth Knob fully clockwise introduces Vibrato from LFO 1 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Vibrato from LFO 1 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Pitch Mod Depth LFO 2 - **Button**
 - **Knob**
 - **Button**

This combination controls the Pitch Modulation of the selected Oscillator by LFO 2. Turning the Mod Depth Knob fully clockwise introduces Vibrato from LFO 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Vibrato from LFO 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Pitch Mod Depth ENV 2 - **Button**
 - **Knob**
 - **Button**

This combination controls the Pitch Modulation of the selected Oscillator by ENV 2. Turning the Mod Depth Knob fully clockwise introduces Pitch shift from ENV 2 to the selected Oscillator in a *Positive* direction (Up). Turning the Mod Depth Knob fully anticlockwise introduces Pitch shift from ENV 2 to the selected Oscillator in a *Negative* direction (Down). In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

OSCILLATOR SECTION

Pitch - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the Pitch Modulation of the selected Oscillator by ENV 3. Turning the Mod Depth Knob fully clockwise introduces Pitch shift from ENV 3 to the selected Oscillator in a *Positive* direction (Up). Turning the Mod Depth Knob fully anticlockwise introduces Pitch shift from ENV 3 to the selected Oscillator in a *Negative* direction (Down). In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Pitch - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the Pitch Modulation of the selected Oscillator by the Mod Wheel. Turning the Mod Depth Knob fully clockwise introduces Pitch shift from Mod Wheel to the selected Oscillator in a *Positive* direction (Up). Turning the Mod Depth Knob fully anticlockwise introduces Pitch shift from Mod Wheel to the selected Oscillator in a *Negative* direction (Down). In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This parameter is calibrated in semitones, so a setting of 12 will produce an octave shift (Up) in the selected oscillator when a Mod Wheel value of 127 is received.



NOTE:

This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Level - **Knob**

This combination controls the Pulse Width of the selected Oscillator. Turning the Level Knob fully clockwise makes the selected Oscillator Pulse Width very thin. In the mid position the Pulse Width is 25% - 75% & fully anticlockwise the Pulse Width is 50% - 50%. The range of this parameter is -64 to +63.



NOTE:

This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Mod Depth - **Knob**
LFO 1 - **Button**

This combination controls the Pulse Width Modulation of the selected Oscillator by LFO 1. Turning the Mod Depth Knob fully clockwise introduces Pulse Width Modulation from LFO 1 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Pulse Width Modulation from LFO 1 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Mod Depth - **Knob**
LFO 2 - **Button**

This combination controls the Pulse Width Modulation of the selected Oscillator by LFO 2. Turning the Mod Depth Knob fully clockwise introduces Pulse Width Modulation from LFO 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Pulse Width Modulation from LFO 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Mod Depth - **Knob**
ENV 2 - **Button**

This combination controls the Pulse Width Modulation of the selected Oscillator by ENV 2. Turning the Mod Depth Knob fully clockwise introduces Pulse Width Modulation from ENV 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Pulse Width Modulation from ENV 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the Pulse Width Modulation of the selected Oscillator by ENV 3. Turning the Mod Depth Knob fully clockwise introduces Pulse Width Modulation from ENV 3 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Pulse Width Modulation from ENV 3 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Width - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the Pulse Width Modulation of the selected Oscillator by the Mod Wheel. Turning the Mod Depth Knob fully clockwise introduces Pulse Width Modulation from the Mod Wheel to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Pulse Width Modulation from the Mod Wheel to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This parameter only works for Square waves & the DoubleSaw waveform. This does not apply to the Oscillators that have Saw Waveforms selected or the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

OSCILLATOR SECTION

Sync Level - **Button**
- **Knob**

This combination controls the Sync Effect on the selected Oscillator. Turning the Level Knob fully clockwise introduces the maximum Sync Effect fully to the selected Oscillator & fully anticlockwise there is no Sync Effect at all. The range of this parameter is 000 to 127.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Sync Mod Depth LFO 1 - **Button**
- **Knob**
- **Button**

This combination controls the modulation of the Sync Effect on the selected Oscillator by LFO 1. Turning the Mod Depth Knob fully clockwise introduces Sync Effect from LFO 1 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Sync Effect from LFO 1 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Sync Mod Depth LFO 2 - **Button**
- **Knob**
- **Button**

This combination controls the modulation of the Sync Effect on the selected Oscillator by LFO 2. Turning the Mod Depth Knob fully clockwise introduces Sync Effect from LFO 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Sync Effect from LFO 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Oscillators that have the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Sync Mod Depth ENV 2 - **Button**
- **Knob**
- **Button**

This combination controls the modulation of the Sync Effect on the selected Oscillator by ENV 2. Turning the Mod Depth Knob fully clockwise introduces Sync Effect from ENV 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Sync Effect from ENV 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Sync Mod Depth ENV 3 - **Button**
- **Knob**
- **Button**

This combination controls the modulation of the Sync Effect on the selected Oscillator by ENV 3. Turning the Mod Depth Knob fully clockwise introduces Sync Effect from ENV 3 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Sync Effect from ENV 3 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Sync - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the modulation of the Sync Effect on the selected Oscillator by the Mod Wheel. Turning the Mod Depth Knob fully clockwise introduces Sync Effect from the Mod Wheel to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Sync Effect from the Mod Wheel to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the Noise, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Soften - **Button**
Level - **Knob**

This combination controls the Soften Effect on the selected Oscillator & noise waveforms. Turning the Level Knob fully clockwise introduces the Soften effect fully to the selected Oscillator & fully anticlockwise there is no Softening at all. The range of this parameter is 000 to 127.



NOTE:

This does not apply to the 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Soften - **Button**
Mod Depth - **Knob**
LFO 1 - **Button**

This combination controls the modulation of the Soften effect of the selected Oscillator by LFO 1. Turning the Mod Depth Knob fully clockwise introduces Soften from LFO 1 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Soften from LFO 1 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the Oscillators that have the, 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Soften - **Button**
Mod Depth - **Knob**
LFO 2 - **Button**

This combination controls the modulation of the Soften Effect on the selected Oscillator by LFO 2. Turning the Mod Depth Knob fully clockwise introduces Soften Effect from LFO 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Soften Effect from LFO 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

OSCILLATOR SECTION

Soften - **Button**
Mod Depth - **Knob**
ENV 2 - **Button**

This combination controls the modulation of the Soften Effect on the selected Oscillator by ENV 2. Turning the Mod Depth Knob fully clockwise introduces Soften Effect from ENV 2 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anti-clockwise introduces Soften Effect from ENV 2 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Soften - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the modulation of the Soften Effect on the selected Oscillator by ENV 3. Turning the Mod Depth Knob fully clockwise introduces Soften Effect from ENV 3 to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anti-clockwise introduces Soften Effect from ENV 3 to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Soften - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the modulation of the Soften Effect on on the selected Oscillator by the Mod Wheel. Turning the Mod Depth Knob fully clockwise introduces Soften Effect from the Mod Wheel to the selected Oscillator in a *Positive* direction. Turning the Mod Depth Knob fully anticlockwise introduces Soften Effect from the Mod Wheel to the selected Oscillator in a *Negative* direction. In the "Mid" position there is no modulation at all. The range of this parameter is -64 to +63.



NOTE:

This does not apply to the 1*3 & 2*3 Ring Modulator outputs. No audible effect to these sound sources will be heard if an attempt is made to adjust this parameter when these sound sources are selected & the display will show "Not Available".

Menu - Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Oscillator section there are 3 pages available. These are selected using the Page Up & Page Down buttons to the left of the display. There are a maximum of 2 parameters displayed on any page. One for each line on the display. The “Fast Data” Knobs on the right of the display are used to alter these parameter’s values.

Page 1 looks like so:

MWheel LFO1 amt	+10
ATouch LFO1 amt	+10

As can be seen the higher parameter is “MWheel LFO1 amt”. In this case with a value of +10. This parameter determines how the Mod Wheel on the Master Keyboard effects the amount of LFO1 modulation on the selected Oscillator. Use the higher Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the amount of modulation individually for each oscillator. The range of this parameter is -64 to +63. This parameter is memorised with a Program.



Mod Wheel LFO Amt does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show “Menu Only Available For Osc 1,2 or 3” whilst the adjustment is being made then the display will revert back to the last edited parameter.

As can be seen the lower parameter is “AT LFO1 amt”. In this case with a value of +10. This parameter determines how the Aftertouch on the Master Keyboard effects the amount of LFO1 modulation on the selected Oscillator. Use the lower Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the amount of modulation individually for each oscillator. The range of this parameter is -64 to +63. This parameter is memorised with a Program.



Aftertouch LFO1 Amt does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show “Menu Only Available For Osc 1,2 or 3” whilst the adjustment is being made then the display will revert back to the last edited parameter.

Page 2 looks like so:

Formant width	010
Sync skew	+10

As can be seen the higher parameter is “Formant width”. In this case with a value of 010. This parameter determines how much Formant Width is applied to the selected Oscillator. Use the higher Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the amount of modulation individually for each oscillator. Refer to page 8 in the “About Analogue Synthesis section” for details on this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program.



Formant Width does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show “Menu Only Available For Osc 1,2 or 3” whilst the adjustment is being made then the display will revert back to the last edited parameter.

OSCILLATOR SECTION

As can be seen the lower parameter is "Sync skew". In this case with a value of +10.

This parameter determines how much of the Sync Skew effect is applied to the selected Oscillator. Use the lower Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the amount of modulation individually for each oscillator. Refer to page 8 in the "About Analogue Synthesis section" for details on this parameter. The range of this parameter is -64 to +63. This parameter is memorised with a Program.



Sync Skew does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show "Menu Only Available For Osc 1,2 or 3" whilst the adjustment is being made then the display will revert back to the last edited parameter.

Page 3 looks like so:

Sync key follow	010
Pitch bend range	+10

As can be seen the higher parameter is "Sync key follow". In this case with a value of 010.

This parameter determines how the "Virtual" Sync oscillator is transposed across the keyboard for the selected Oscillator. Use the higher Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the amount of modulation individually for each oscillator. Refer to page 8 in the "About Analogue Synthesis section" for details on this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program.



Sync Key Follow does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show "Menu Only Available For Osc 1,2 or 3" whilst the adjustment is being made then the display will revert back to the last edited parameter.

As can be seen the lower parameter is "Pitch bend range". In this case with a value of +10.

This parameter determines how the Pitch Bend Wheel on the Master Keyboard effects the pitch of the oscillators. Use the lower Fast Data knob to adjust the value of this parameter. With this parameter it is possible to set the pitch bend range individually for each oscillator allowing the creation of effects like using the Pitch bend control to bend into a chord. The range is -12 to +12 in semitone steps. This parameter is memorised with a Program.



Pitch bend Range does not apply to the 1*3, 2*3 or Noise buttons. If you attempt to alter this parameter when these buttons are selected the display will show "Menu Only Available For Osc 1,2 or 3" whilst the adjustment is being made then the display will revert back to the last edited parameter.



This section contains all the knobs & buttons associated with the Filter

- 12dB** - **Button**
- 18dB** - **Button**
- 24dB** - **Button**

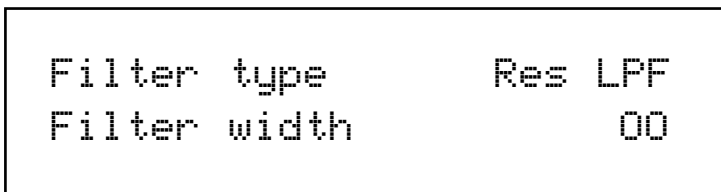
These buttons select the slope of the cutoff curve of the Filter. Only one can be selected at once. The effect is similar to a “Q” control on a parametric EQ. In the 12db position the Cutoff Frequency slope is less steep so in a Low Pass Filter the higher frequencies are not attenuated as much as they are in the 24 or 18db positions. This makes the resulting filtering in the 12db position more subtle than the 24db or 18db positions which you should select if you want the Cutoff Frequency to be more obvious.

- Low** - **Button**
- High** - **Button**
- Band** - **Button**

These buttons select the type of Filter to be used in this program. All have a very different sound. Below is a description of what parts of the sound the different Filters allow through the Filter. The Low button configures the Filter into a Low Pass Filter. A Low Pass Filter allows harmonics below a set frequency to pass through the Filter. Hence the name Low Pass Filter. The High button configures the Filter into a High Pass Filter. A High Pass Filter allows harmonics above a set frequency to pass through the Filter. Hence the name High Pass Filter. The Band button configures the Filter into a Band Pass Filter. A Band Pass Filter allows harmonics at a set frequency to pass through the Filter, the harmonics above & below the set frequency do not pass through the Filter. Hence the name Band Pass Filter. The setting of these buttons is memorised with a Program.

- Special** - **Button**

When the special filter button is pressed the display shows:



The higher parameter is “Filter type”. In this case with a value of Res LPF. This parameter determines what type of Special filter is applied. Use the Higher data knob to adjust this parameter. There are 9 different special filters. Each one is made up of 2 filter blocks. The “Hyper Resonant” types are in series & are the Res LPF, Res BPF & Res HPF filters. These types are very resonant & the Filter width parameter allows the Cutoff frequencies of each filter block to be set at different frequencies. The rest of the filter types have the 2 filter blocks in parallel. Again the Filter width parameter allows the Cutoff frequencies of each filter block to be set at different frequencies. The range of this parameter is Res LPF, Res BPF, Res HPF, Notch, LPF + LPF, BPF + BPF, HPF + HPF, LPF + BPF, & BPF + HPF. This parameter is memorised with a program.

FILTER SECTION

The lower parameter is "Filter width". In this case with a value of 00.

This parameter determines the spacing/offset in filter cutoff frequencies between the two elements of the "Special" filters. This is a duplicate of the Special type filter width parameter that is displayed on page 6 of the Filter menu. The reason for this is that it was found to be nice for the display to jump back to this parameter when editing & as this parameter is duplicated in the Filter menu it will do that when the Filter menu is selected. This can provide "Formant" type filters & speech like qualities can be easily realised. The Filter width is calibrated in semitones & a range of pre-set intervals are available. The range of this parameter is 00, 08, 16, 24, 32, 40, 48 & 56. Note that the Resonance modulation Knob in the Filter Modulation Matrix actually modulates the "Filter width" parameter & not the resonance when the "Special" filters are selected. The Resonance knob still retains its function as filter Resonance when in this mode. This parameter is memorised with a program.



Adjusting the value of this parameter will alter the value in the Filter menu. It is not possible to have different values set in the 2 pages.

Frequency - Knob

This knob controls the "Cutoff Frequency" of the Filter. Fully Clockwise & the Filters Cutoff frequency is set to the highest position, generally this produces a very trebly sound. Fully anticlockwise & the Filters Cutoff frequency is set to the lowest position, generally producing a very mellow sound. The range of this parameter is 000 to 127. This parameter is memorised with a Program.



It is possible to set the Filter so that it Filters out all of the sound. This normally happens at extreme settings. i.e. The Frequency knob set fully anticlockwise in Low Pass Filter mode or the Frequency knob set fully clockwise in the High Pass Filter mode.

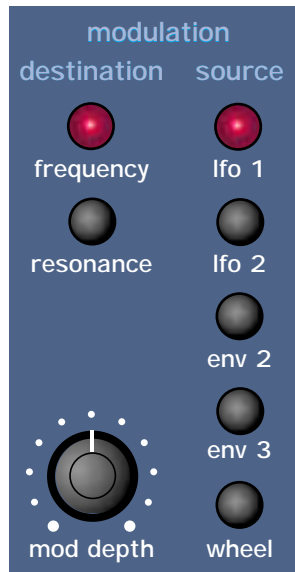
Resonance - Knob

This knob controls the amount of Resonance the Filter has. The effect is to emphasise the harmonics around the Cutoff Frequency (Set by the Frequency knob above). For this reason on some synths this control is known as Emphasis. Fully anticlockwise there is no boosting of the Cutoff Frequency, but as you turn the knob clockwise this frequency will be boosted until fully clockwise it goes in to oscillation producing a new pitched element (similar to feedback on an electric guitar). Increasing the Resonance is very good for bringing out modulation (movement or change) in the Filters Cutoff Frequency, such as TB303 basslines. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Overdrive - Knob

This knob determines how much Overdrive is applied to the Filter. This can warm sounds up & give them a different harmonic content from the standard waveforms, "Warmer" sounds are produced by modelling the "Saturation effect" common in classic Analogue Filters. Fully anticlockwise the signal will be unaffected by the Overdrive. Fully clockwise & full drive will be applied. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Filter Modulation Matrix



This is an extremely powerful feature of the Nova. These controls effect the modulation of the Filter. The Buttons on the left are “Destinations”. They can all be modulated by the “Sources” which are the buttons on the right. The amount of modulation applied from any source is determined by the setting of the Mod Depth Knob. This can be either positive modulation (Turning the Mod Depth Knob Clockwise) or negative modulation. (Turning the Mod Depth Knob Anticlockwise)

For example to adjust the level of Envelope 2 modulation of the the “Freq” setting of the Filter press the “Frequency” button to define the modulation destination, it will light up indicating it is selected. Press the Env 2 button to define the modulation source. Now adjusting the “Mod depth” knob clockwise will modulate the Frequency setting of the Filter by Envelope 2.



NOTE:

This makes it possible for *all* modulation sources to effect any one destination in varying amounts & even in different polarities.

The display will change to indicate the parameter that has been selected & display the newly edited value. The Display will stay like this until another parameter is adjusted, in which case it will change to display the new parameter. To return to the display of the Program / Performance name & number press the Program or Performance button.



NOTE:

Only one source & destination can be edited at one time.



NOTE:

Even though only one source & destination combination can be edited at one time, all available combinations can happen at the same time.

Possible Combinations & the effects Produced.



NOTE:

The range of all these parameters is -64 to +63. All these parameters are memorised with a Program.

Frequency - **Button**
Mod Depth - **Knob**
LFO 1 - **Button**

This combination controls the amount of change to the Filter Cutoff Frequency (Initially set by the Frequency knob) by LFO 1. In the central position there is no change to the Filter Cutoff Frequency. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will be closed more by LFO 1. Clockwise of centre the modulation is *Positive*. i.e. The Filter will be increasingly opened by LFO 1.

Frequency - **Button**
Mod Depth - **Knob**
LFO 2 - **Button**

This combination controls the amount of change to the Filter Cutoff Frequency (Initially set by the Frequency knob) by LFO 2. In the central position there is no change to the Filter Cutoff Frequency. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will be closed more by LFO 2. Clockwise of centre the modulation is *Positive*. i.e. The Filter will be increasingly opened by LFO 2.

Frequency - **Button**
Mod Depth - **Knob**
ENV 2 - **Button**

This combination controls the amount of change to the Filter Cutoff Frequency (Initially set by the Frequency knob) by ENV 2. In the central position there is no change to the Filter Cutoff Frequency. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will be closed more by ENV 2. Clockwise of centre the modulation is *Positive*. i.e. The Filter will be increasingly opened by ENV 2.

Frequency - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the amount of change to the Filter Cutoff Frequency (Initially set by the Frequency knob) by ENV 3. In the central position there is no change to the Filter Cutoff Frequency. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will be closed more by ENV 3. Clockwise of centre the modulation is *Positive*. i.e. The Filter will be increasingly opened by ENV 3.

Frequency - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the amount of change to the Filter Cutoff Frequency (Initially set by the Frequency knob) by the Mod Wheel. In the central position there is no change to the Filter Cutoff Frequency. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will be closed more by the Mod Wheel. Clockwise of centre the modulation is *Positive*. i.e. The Filter will be increasingly opened by the Mod Wheel.

Resonance - **Button**
Mod Depth - **Knob**
LFO 1 - **Button**

This combination controls the amount of change to the Resonance (Initially set by the Resonance knob) by LFO 1. In the central position there is no change to the Resonance. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will become less resonant by LFO 1. Clockwise of centre the modulation is *Positive*. i.e. The Filter will become more resonant by LFO 1.

Resonance - **Button**
Mod Depth - **Knob**
LFO 2 - **Button**

This combination controls the amount of change to the Resonance (Initially set by the Resonance knob) by LFO 2. In the central position there is no change to the Resonance. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will become less resonant by LFO 2. Clockwise of centre the modulation is *Positive*. i.e. The Filter will become more resonant by LFO 2.

Resonance - **Button**
Mod Depth - **Knob**
ENV 2 - **Button**

This combination controls the amount of change to the Resonance (Initially set by the Resonance knob) by ENV 2. In the central position there is no change to the Resonance. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will become less resonant by ENV 2. Clockwise of centre the modulation is *Positive*. i.e. The Filter will become more resonant by ENV 2.

Resonance - **Button**
Mod Depth - **Knob**
ENV 3 - **Button**

This combination controls the amount of change to the Resonance (Initially set by the Resonance knob) by ENV 3. In the central position there is no change to the Resonance. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will become less resonant by ENV 3. Clockwise of centre the modulation is *Positive*. i.e. The Filter will become more resonant by ENV 3.

Resonance - **Button**
Mod Depth - **Knob**
Wheel - **Button**

This combination controls the amount of change to the Resonance (Initially set by the Resonance knob) by the Mod Wheel. In the central position there is no change to the Resonance. Anticlockwise of centre there will be an increasing amount of *Negative* modulation. i.e. The Filter will become less resonant by the Mod Wheel. Clockwise of centre the modulation is *Positive*. i.e. The Filter will become more resonant by the Mod Wheel.

FILTER SECTION

Menu - Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Filter section there are 5 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameters values.

Page 1 looks like so:

Filter tracking	063
Q norm amount	000

As can be seen the higher parameter is "Filter tracking". In this case with a value of 063 This parameter controls the amount of change to the Filter Cutoff Frequency (initially set by the Frequency knob.) by the pitch of the note being played. Placing the higher Fast Data knob fully anticlockwise means that playing notes at different pitches will have no effect on the Cutoff Frequency of the Filter. Clockwise from this position there will be an increasing amount of modulation. i.e. The Filter will be opened more as higher notes are played in the keyboard. This control is used to determine how the timbre of a sound changes over the keyboard. At the fully clockwise position the Filter tracks the pitch changes in a 1:1 ratio. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

As can be seen the lower parameter is "Q norm amount". In this case with a value of 000 This parameter determines how the Resonance of the Filter behaves. Use the lower Fast Data knob to adjust this parameter. Fully Anticlockwise the Resonance is *added* to the incoming signal to the filter. This means that higher levels of resonance will produce a louder output signal form the Filter. Fully Clockwise the output level of the filter is maintained regardless of the position of the resonance control. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Page 2 looks like so:

Fq Mwh LFO2 amt	+63
Res Mwh LFO2 amt	+63

As can be seen the higher parameter is "Fq MWh LFO2 amt". In this case with a value of +63. This parameter determines how the Modulation Wheel on the Master Keyboard effects the amount of Modulation of the Cutoff Frequency of the Filter from LFO 2. This produces a Wah Wah type of effect. In the central position of the higher Fast Data knob there is no change to the Filter Cutoff Frequency when the Master Keyboard's Modulation Wheel is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be closed more by LFO 2 when the Master Keyboard's Modulation Wheel is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly opened by LFO 2 when the Master Keyboard's Modulation Wheel is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "Res MWh LFO2 amt". In this case with a value of +63. This parameter determines how the Modulation Wheel on the Master Keyboard effects the amount of Modulation of the Resonance of the Filter from LFO 2. In the central position of the lower Fast Data knob there is no change to the Filter Resonance when the Master Keyboard's Modulation Wheel is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be made less Resonant by LFO 2 when the Master Keyboard's Modulation Wheel is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly made more Resonant by LFO 2 when the Master Keyboard's Modulation Wheel is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 3 looks like so:

Fq AT LFO2 amt	+63
Res AT LFO2 amt	+63

As can be seen the higher parameter is "Fq AT LFO2 amt". In this case with a value of +63.

This parameter determines how the Aftertouch on the Master Keyboard effects the amount of Modulation of the Cutoff Frequency of the Filter from LFO 2. This produces the Growl effect. In the central position of the higher Fast Data knob there is no change to the Filter Cutoff Frequency when the Master Keyboard's Aftertouch is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be closed more by LFO 2 when the Master Keyboard's Aftertouch is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly opened by LFO 2 when the Master Keyboard's Aftertouch is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "Res AT LFO2 amt". In this case with a value of +63.

This parameter determines how the Aftertouch on the Master Keyboard effects the amount of Modulation of the Resonance of the Filter from LFO 2. In the central position of the lower Fast Data knob there is no change to the Filter Resonance when the Master Keyboard's Aftertouch is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be made less Resonant by LFO 2 when the Master Keyboard's Aftertouch is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly made more Resonant by LFO 2 when the Master Keyboard's Aftertouch is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 4 looks like so:

Fq AT amt	+63
Res AT amt	+63

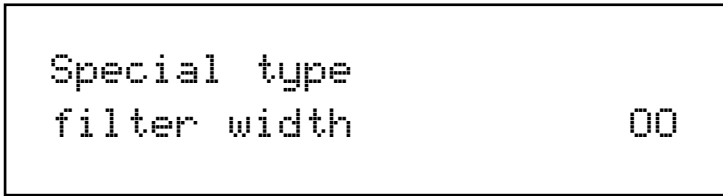
As can be seen the higher parameter is "Fq AT amt". In this case with a value of +63.

This parameter determines how the Aftertouch on the Master Keyboard effects the amount of Modulation of the Cut-off frequency of the Filter. In the central position of the higher Fast Data knob there is no change to the Filter Cutoff Frequency when the Master Keyboard's Aftertouch is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be closed more when the Master Keyboard's Aftertouch is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly opened when the Master Keyboard's Aftertouch is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "Res AT amt". In this case with a value of +63.

This parameter determines how the Aftertouch on the Master Keyboard effects the amount of Modulation of the Resonance of the Filter. In the central position of the lower Fast Data knob there is no change to the Filter Resonance when the Master Keyboard's Aftertouch is engaged. Anticlockwise of centre there will be an increasing amount of Negative modulation. i.e. The Filter will be made less Resonant when the Master Keyboard's Aftertouch is engaged. Clockwise of centre the modulation is Positive. i.e. The Filter will be increasingly made more Resonant when the Master Keyboard's Aftertouch is engaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 5 looks like so:



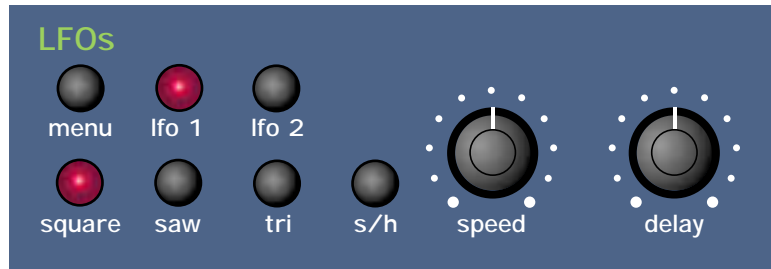
The parameter is "Special type filter width". In this case with a value of 00.

This parameter determines the spacing/offset in Filter cutoff frequencies between the two elements of the "Special" filters. This is a duplicate of the Filter width parameter that is displayed when the special page is active. The reason for this is that it was found to be nice for the display to jump back to this parameter when editing & as this parameter is duplicated here in this menu it will do exactly that. This can provide "Formant" type filters & speech like qualities can be easily realised. The Filter width is calibrated in semitones & a range of pre-set intervals are available. The range of this parameter is 00, 08, 16, 24, 32, 40, 48 & 56. Note that the Resonance modulation Knob in the Filter Modulation Matrix actually modulates the "Filter width" parameter & not the resonance when the "Special" filters are selected. The Resonance knob still retains its function as filter Resonance when in this mode. This parameter is memorised with a program.



NOTE:

Adjusting the value of this parameter will alter the value in the Special page. It is not possible to have different values set in the 2 pages.



This section contains all the knobs & buttons associated with the LFOs. The LFOs (Low Frequency Oscillators) produce regular electronic variation which are normally too low a frequency to be heard when converted into audio vibrations. However when used to modify various elements of the sound they can be used to create regular changes in pitch (Vibrato) or Pulse width & Filter Modulation.

(these create tonal changes in the waveforms) for example.

- LFO 1** - **Button**
- Filter** - **Button**
- Speed** - **Knob**
- Delay** - **Knob**

The LFO 1 & LFO 2 buttons select which LFO the Speed & Delay knobs are going to adjust. To adjust LFO 1 press the LFO 1 button. To adjust the LFO 2 press the LFO 2 button.

With the LFO 1 button selected & lit, the Speed knob controls the rate at which LFO 1 oscillates. Turning the Speed knob fully anticlockwise sets the LFO running at its slowest speed (which is actually stopped) & turning the Speed knob fully clockwise sets the LFO running at its highest speed (Which can be KHz).

With the LFO 1 button selected & lit the Delay knob controls how long after the note is struck before LFO 1 begins to take effect. If the knob is fully anticlockwise LFO 1 will begin immediately. As the knob is turned clockwise it will take increasingly longer for the LFO effect to be introduced.



This is particularly useful for vibrato effects where if present as the note is struck, can make the note sound out of tune. Turning the Delay Knob slightly clockwise, LFO 1 will not be introduced until after the note is struck, thereby removing the problem.



If you have problems getting LFO 1 to take effect, make sure the delay knob is not set fully clockwise.

- Square** - **Button**
- Saw** - **Button**
- Tri** - **Button**
- S/H** - **Button**

These Buttons select which waveform the selected LFO has.

The Tri button selects a Triangle waveform. This waveform gives the smoothest, continuous change in level to the LFO & is therefore probably the most useful setting. When used in the Oscillator Section it gives you vibrato (if used at moderate speed & subtle amount) or “Siren” effects (if used at slow speeds & large amount) or FM type effects (if used at high speed & subtle amount). If used with the Filter slow speeds produce Wah Wah effects.

The Saw button selects a Sawtooth waveform. This waveform looks like the teeth of a saw (from which it gets its name) & gives you a falling level which suddenly jumps back up to full level. When used in the Filter it produces a rhythmic pulsating effect, similar to a sequenced repeated bass line. When used in the Oscillator Section it can be used to create “Alarm” type sounds.

The Square button selects a waveform that looks square (from which it gets its name) & changes instantly from one level to another. This is useful for Trill & Computer Game effects.

LFOS SECTION

The S/H button selects the Sample & Hold waveform (sometimes called Random). At a regular interval (governed by the Speed knob) the level of the LFO jumps to a new random level & stays there until the next jump. This creates a rhythmic effect particularly if used on the Filter & assigned to the Cutoff Frequency (refer Filter section on page 67 for details). Useful results can also be obtained when used in the Oscillator Section in the creation of Computer Game effects. The setting of these buttons are memorised with a Program.

Menu - -Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the LFO section there are 4 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameters values.

Page 1 looks like so:

Offset amount	020
Env 3 speed mod	+63

As can be seen the higher parameter is "Offset amount". In this case with a value of 020. This parameter allows the LFO to have a DC shift applied to the LFO waveform. This allows the creation of realistic Stringed instrument Vibrato effects by allowing creation of vibrato which does not decrease the pitch of a played note. Turning the higher Fast Data knob fully Anticlockwise there is no effect on the normal operation of the selected LFO. Tuning the higher Fast Data knob clockwise of this position introduces an increasing amount of offset applied to the LFO waveform until at fully clockwise the LFO waveform is only in the upwards direction. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

As can be seen the lower parameter is "Env 3 speed mod". In this case with a value of +63. This parameter determines how the Envelope 3 effects the speed of the selected LFO. In the central position of the lower Fast Data knob there is no change to the selected LFOs speed. Anticlockwise of centre there will be an increasing amount of negative modulation. i.e. the selected LFO will slow down as the Envelope rises & speed back up as the envelope falls. Clockwise of centre there will be an increasing amount of positive modulation. i.e. the selected LFO will speed up as the Envelope rises & slow down as the envelope falls. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 2 looks like so:

MWh speed mod	+10
AT speed mod	+10

As can be seen the higher parameter is "MWh speed mod". In this case with a value of +10. This parameter determines how the Master Keyboard's Mod Wheel effects the speed of the selected LFO. If this parameter is set to 0 there is no change to the selected LFO's speed. Negative values of this parameter will produce an increasing amount of negative modulation. i.e. the selected LFO will slow down as the Master Keyboard's Mod Wheel is moved forward & speed back up as it is brought back. Positive values of this parameter will produce an increasing amount of positive modulation. i.e. the selected LFO will speed up as the Master Keyboard's Mod Wheel is moved forward & slow down as it is brought back. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "AT speed mod". In this case with a value of +10. This parameter determines how the Master Keyboard's Aftertouch effects the speed of the selected LFO. If this parameter is set to 0 there is no change to the selected LFO's speed. Negative values of this parameter will produce an increasing amount of negative modulation. i.e. the selected LFO will slow down as the Master Keyboard's Aftertouch is applied & speed back up as it is disengaged. Positive values of this parameter will produce an increasing amount of positive modulation. i.e. the selected LFO will speed up as the Master Keyboard's Aftertouch is applied & slow down as it is disengaged. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 3 looks like so:

Sync	16th
LFO Range	Slow

As can be seen the higher parameter is "Sync". In this case with a value of 16th.

This parameter determines where the selected LFO gets its Clock. Turning the higher Fast Data knob fully anticlockwise selects the "Off" option which means the selected LFO is running on its own clock & is not in sync with anything else. Turning the knob clockwise from this position makes the selected LFO sync to Internal or External MIDI Clock in various signatures ranging from 12 Bars to 32nd Triplets. Refer to page 38 to see details on how to set the Global MIDI clock parameter when syncing the LFO to external MIDI Clock. The range of this parameter is Off, 32 Triplet, 32nd, 16th Triplet, 16th, 8th Triplet, 16th Dotted, 8th, 4th Triplet, 8th Dotted, 4th, 2nd Triplet, 4th Dotted, 2nd, 1 Bar Triplet, 2nd Dotted, 1 Bar, 2 Bar Triplet, 1 Bar Dotted, 2 Bars, 4 Bar Triplet, 3 Bars, 5 Bar Triplet, 4 Bars, 3 Bar Dotted (4.5 Bars), 7 Bar Triplet, 5 Bars, 8 Bar Triplet, 6 Bars, 7 bars, 5 Bar Dotted (7.5 Bars), 8 Bars, 6 Bar Dotted (9 Bars), 7 Bar Dotted (10.5 bars) & 8 Bar Dotted (12 Bars). This parameter is memorised with a Program.

As can be seen the lower parameter is "LFO range". In this case with a value of Slow.

The LFOs in the Nova are capable of reaching audio frequencies. This allows the creation of unique sounds currently unavailable on any other equipment. However this means that the Speed knob has to cover a frequency range of 0 (Stopped) to several KHz. Turning the higher Fast Data knob anticlockwise will set the Range parameter to "Slow". In this mode the Speed knob of the selected LFO will have a Range that goes from stopped to moderate speeds. Turning the higher Fast Data knob to the mid position will set the Range parameter to "Norm". In this mode the Speed knob of the selected LFO will have a Range equivalent to that found on a normal synthesiser. Turning the knob clockwise will set this parameter to "Fast". In this mode the full range of speed will be available on the selected LFO. The range of this parameter is Slow, Norm & Fast. This parameter is memorised with a Program.

Page 4 looks like so:

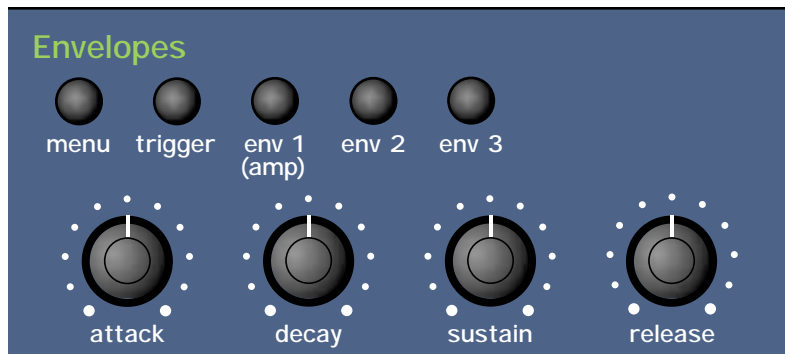
Triggering	Keysync
Delay trigger	Multi

As can be seen the higher parameter is "Triggering". In this case with a value of Keysync.

This parameter determines how the selected LFO is triggered. Turning the higher Fast Data knob anticlockwise selects the "Freewheel" option which means all the LFOs of the "Voices" that are being played are not in phase or in sync. This is the most natural sounding for vibrato effects etc. Turning the higher Fast Data knob clockwise selects the "Keysynced" option which means all the LFOs of the "Voices" that are being played are in phase & the cycles of the LFOs are reset to start from the beginning when a new note is struck. This is the most useful setting for use with Sequencers & the Arpeggiator. The range of this parameter is Freewheel & Keysynced. This parameter is memorised with a Program.

As can be seen the lower parameter is "Delay trigger". In this case with a value of Multi.

This parameter determines how the "Delay" parameter is triggered on the selected LFO. Turning the lower Fast Data knob anticlockwise selects the "Multi" option which means the LFO Delay Time is reset to the start value every time any key is pressed. Turning the lower Fast Data knob clockwise selects the "Single" option which means the LFO Delay Time is reset to the start value only if no other keys are currently held down. The range of this parameter is Multi & Single. This parameter is memorised with a program.



This section contains all the knobs & buttons associated with the Envelopes. The Envelopes are used to shape a sound over time. Env 1 (the Amplifier Envelope) is assigned to the Amplifier & controls the Volume of the Program. It is used to decide how quickly the sound starts when you play a note & how it sustains & dies away. Similarly Env 2 & Env 3 can be used to create tonal changes over time by modulating the Filter's Cutoff Frequency and/or Resonance in a similar fashion or can be used to create sweeping pitch shifts, Pulse Width Modulation, Sync & Osc Mix sweeps.

ENV 1 (AMP) - Button
ENV 2 - Button
ENV 3 - Button

These buttons select which Envelope the Envelope knobs are going to adjust.

Attack - Knob

This knob sets how quickly the Envelope rises to its maximum level when a note is struck. Fully anticlockwise, this is instantaneous increasing exponentially to 20 seconds fully clockwise. To shorten Attack times turn this knob anticlockwise & to lengthen Attack times turn this knob clockwise. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Decay - Knob

This knob sets how quickly the Envelope drops off to the Sustain level once the Maximum level has been reached by the Attack time. Fully anticlockwise this is instantaneous increasing exponentially to 20 second fully clockwise. To shorten Decay times turn this knob anticlockwise & to lengthen Decay times turn this knob clockwise. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Sustain - Knob

This knob sets the level at which the Envelope remains at after the Decay phase until the note is released. Fully anticlockwise the Envelope will decay all the way to zero without being interrupted. As the knob is moved clockwise, the level at which the Decay is halted increases until full clockwise there is no Decay at all. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Release - Knob

This knob sets how quickly the Envelope drops from the Sustain level to zero once the note has been released. Fully anticlockwise this is instantaneous increasing exponentially to 20 seconds fully clockwise. To shorten Release times turn this knob anticlockwise & to lengthen Release times turn this knob clockwise. The range of this parameter is 000 to 127. This parameter is memorised with a Program.

Menu - Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section.

In the Envelope section there are 4 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

Page 1 looks like so:

```
Env 1 velocity      +63
```

As can be seen the higher parameter is "Env1 velocity". In this case with a value of +63. This parameter determines how the Velocity of the notes played on the Master Keyboard effect the amount of modulation produced by Envelope 1. In the central position of the higher Fast Data knob there is no volume velocity response to the sound. Anticlockwise of centre there will be an increasing amount of negative modulation. i.e. The volume of the sound will decrease as notes are struck harder (with more Velocity) on the Master Keyboard. Clockwise of centre there will be an increasing amount of positive modulation. i.e. The volume of the sound will increase as notes are struck harder (with more Velocity) on the Master Keyboard. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Page 2 looks like so:

```
Env 2 velocity      +63
Env 2 delay          10
```

As can be seen the higher parameter is "Env 2 velocity". In this case with a value of +63. This parameter determines how the Velocity of the notes played on the Master Keyboard effect the amount of modulation produced by Envelope 2. In the central position of the higher Fast Data knob there is no change to Envelope 2 amount of modulation. Anticlockwise of centre there will be an increasing amount of negative modulation. i.e. Envelope 2 amount of modulation will decrease when notes are struck harder (with more Velocity) on the Master Keyboard. Clockwise of centre there will be an increasing amount of positive modulation. i.e. Envelope 2 amount of modulation will increase when notes are struck harder (with more Velocity) on the Master Keyboard. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "Env 2 delay". In this case with a value of 10. This parameter introduces a Delay time before Envelope 2 starts when a note is struck on the Master keyboard. With the lower Fast Data knob fully anticlockwise there no delay. i.e. Envelope 2 will start immediately when a note is struck on the Master Keyboard. Turning this knob clockwise will introduce an increasing amount delay before Envelope 2 starts. After a note has been received from the Master keyboard. The range of this parameter is Off, 1 to 127. This parameter is memorised with a Program.

Page 3 looks like so:

```
Env 3 velocity      +63
Env 3 delay          10
```

As can be seen the higher parameter is "Env 3 velocity". In this case with a value of +63. This parameter determines how the Velocity of the notes played on the Master Keyboard effect the amount of modulation produced by Envelope 3. In the central position of the higher Fast Data knob there is no change to Envelope 3 amount of modulation. Anticlockwise of centre there will be an increasing amount of negative modulation. i.e. Envelope 3 amount of modulation will decrease when notes are struck harder (with more Velocity) on the Master Keyboard. Clockwise of centre there will be an increasing amount of positive modulation. i.e. Envelope 3 amount of modulation will increase when notes are struck harder (with more Velocity) on the Master Keyboard. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the lower parameter is "Env 3 delay". In this case with a value of 10. This parameter introduces a Delay time before Envelope 3 starts when a note is struck on the Master keyboard. With the lower Fast Data knob fully anticlockwise there no delay. i.e. Envelope 3 will start immediately when a note is struck on the Master Keyboard. Turning this knob clockwise will introduce an increasing amount delay before Envelope 3 starts. After a note has been received from the Master keyboard. The range of this parameter is Off, 1 to 127 . This parameter is memorised with a Program.

ENVELOPES SECTION

Page 4 looks like so:

```
Env 1 MWheel      +10
Env 1 ATouch      +10
```

As can be seen the lower parameter is "Env 1 MWheel". In this case with a value of +10.

This parameter controls the volume of the Program using the Master Keyboard's Mod Wheel. With the lower Fast Data knob fully anticlockwise when the Mod Wheel on the master keyboard is applied the volume of the Program drops correspondingly. With the lower Fast Data knob fully clockwise when the Mod Wheel on the master keyboard is applied the volume of the Program gets louder correspondingly. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

As can be seen the higher parameter is "Env 1 ATouch". In this case with a value of +10.

This parameter controls the volume of the Program using the Master Keyboard's Aftertouch. With the higher Fast Data knob fully anticlockwise when the Aftertouch on the master keyboard is applied the volume of the Program drops correspondingly. With the higher Fast Data knob fully clockwise when the Aftertouch on the master keyboard is applied the volume of the Program gets louder correspondingly. The range of this parameter is -64 to +63. This parameter is memorised with a Program.

Trigger - Button

When this button is pressed a series of pages is available on the display containing parameters relevant to this section.

In the Trigger Menu there are 6 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

Page 1 looks like so:

```
Envelope triggering
1:Mult 2:Mult 3:Mult
```

As can be seen the parameter is "Envelope triggering". In this case with a value of 1:Mult 2:Mult 3:Mult.

This parameter determines how the Envelopes trigger. Turning the lower Fast Data knob selects the various triggering options. All three Envelopes are displayed on the lower Part of the display. All are currently set to "Multi" Triggering. When "Multi" (Multi) is selected for any envelope any new note received will retrigger the envelope. When "Sing" (Single) is selected there must be a gap in-between received notes for the envelope to retrigger. Legato notes will not retrigger the envelope. The range of this parameter is 1:Mult 2:Mult 3:Mult, 1:Mult 2:Mult 3:Sing, 1:Mult 2:Sing 3:Mult, 1:Mult 2:Sing 3:Sing, 1:Sing 2:Mult 3:Mult, 1:Sing 2:Mult 3:Sing, 1:Sing 2:Sing 3:Mult & 1:Sing 2:Sing 3:Sing. This parameter is memorised with a Program.

Page 2 looks like so:

```
Porta type      Glissando
Porta mode      Exp
```

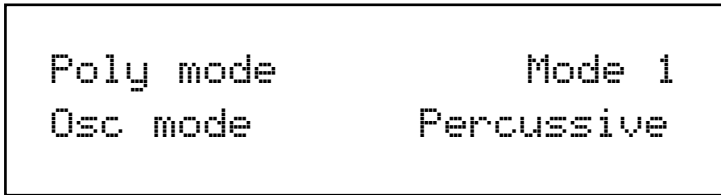
As can be seen the higher parameter is "Porta type". In this case with a value of Glissando.

This parameter determines If the Portamento effect is smooth or stepped in semitones. Use the higher Fast Data knob to adjust the value of this parameter. In the Porta position the Portamento effect is smooth, notes glide smoothly from one pitch to another determined by the Porta Time setting. In the Gliss position the Portamento effect is Glissando, notes glide in semitone steps from one pitch to another determined by the Porta Time setting. The range is Porta & Gliss. This parameter is memorised with a Program.

As can be seen the lower parameter is "Porta mode". In this case with a value of Exp.

This parameter determines if the glide of the Portamento effect is Linear or Exponential. Use the lower Fast Data knob to adjust the value of this parameter. Some synthesisers like the TB303* have an Exponential curve which gives them a "Character" to the way slides are performed, on the other hand for Portamento lead, Linear is the norm. The range is Lin & Exp. This parameter is memorised with a Program.

Page 3 looks like so:



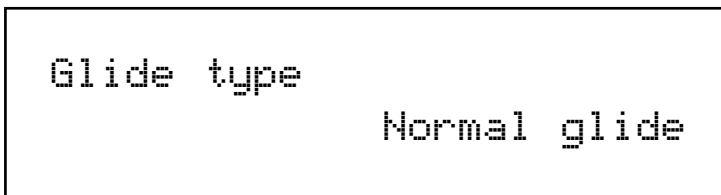
As can be seen the higher parameter is "Poly mode". In this case with a value of Mode 1.

This parameter determines If new voices are used when the same note is played. Use the higher Fast Data knob to adjust the value of this parameter. In the "Mode 1" position the voice allocation behaves like most modern synthesisers. i.e. a new voice is allocated to every new note played even if the new note is being already played by another voice. In the "Mode 2" position the voice allocation behaves like vintage 8 / 6 voice analogue synthesisers. i.e. If a new note is played that is already being played by another voice the existing voice is soft retriggered & plays the new note. No new voice is allocated. The range is Mode 1 & Mode 2. This parameter is memorised with a Program.

As can be seen the lower parameter is "Osc mode". In this case with a value of Percussive.

This parameter determines if the Oscillators are reset on note on or not. Use the lower Fast Data knob to adjust the value of this parameter. In the "Percussive" position the Oscillators are reset on note on. This makes it possible to create "Punchy" basses & Drum sounds. In the "Ensemble" position all the Oscillators are free running & this allows the creation of fat string sounds etc. The range is Percussive & Ensemble. This parameter is memorised with a Program.

Page 4 looks like so:



As can be seen the lower parameter is "Glide type". In this case with a value of Normal Glide.

This parameter determines how the Portamento is controlled. Turning the lower Fast Data knob fully anticlockwise sets this parameter to the "Normal" position. In this mode the Portamento behaves normally. Turning this knob clockwise selects the "AutoGlide" option". In this mode the Portamento will be switched off when notes are played with a gap in-between them however when Legato (overlapping) notes are received the Portamento effect is switched on. This is particularly useful as it makes TB303* type glides in a sequencer very easy to program by simply overlapping the notes where you want the glide to occur. From this position turning the knob clockwise brings up the Preglide options. When these options are selected a "Preglide" is applied to the pitch of the oscillators starting a a pitch determined by the PreGlide selected & gliding up or down to the normal pitch. The time it takes to do this is determined by the Portamento time. The Preglide is triggered with every note received. Below is a description of the different types of PreGlide available.

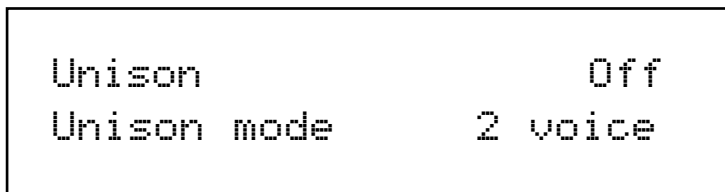
- | | |
|-------------------|---|
| 2 semitones down | A Glide from 2 semitones down is applied to the Oscillators. |
| 2 semitones up | A Glide from 2 semitones up is applied to the Oscillators. |
| 5 semitones down | A Glide from 5 semitones down is applied to the Oscillators. |
| 5 semitones up | A Glide from 5 semitones up is applied to the Oscillators. |
| 7 semitones down | A Glide from 7 semitones down is applied to the Oscillators. |
| 7 semitones up | A Glide from 7 semitones up is applied to the Oscillators. |
| 12 semitones down | A Glide from 12 semitones down is applied to the Oscillators. |
| 12 semitones up | A Glide from 12 semitones up is applied to the Oscillators. |

The range of this parameter is Normal Glide, Auto Glide, 2 semitones down, 2 semitones up, 5 semitones down, 5 semitones up, 7 semitones down, 7 semitones up, 12 semitones down & 12 semitones up. This parameter is memorised with a Program.



You cannot have different settings of this parameter in different Envelopes.

Page 5 looks like so:



The higher parameter is “Unison”. In this case with a value of Off.

This parameter activates the Unison mode. Use the upper Data knob to adjust the value of this parameter. When this parameter is set to Off only one voice is used per note in a Program. When this parameter is set to On more than one voice is used per note in a Program. The number of voices used per note is determined by the Unison mode parameter on the lower line of this page. The range of this parameter is On & Off. This parameter is memorised with a Program.

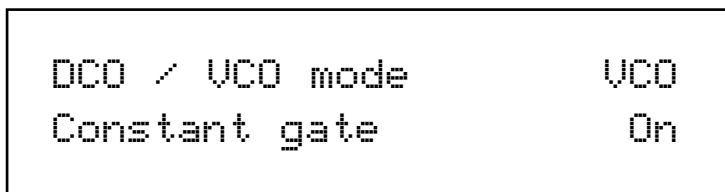
The lower parameter is “Unison mode”. In this case with a value of 2 voice.

This parameter determines the number of voices used on one note when the Unison mode is active. Use the lower Data knob to adjust the value of this parameter. Larger values tend to create fatter sounds. The range of this parameter is 2 to 8. This parameter is memorised with a Program.



Large voice settings of the Unison mode can be quite polyphony hungry. For example a setting of 8 voice will produce a fat sound but 2 notes will consume all 16 voices.

Page 6 looks like so:



The higher parameter is “DCO / VCO mode”. In this case with a value of VCO.

This parameter determines the behaviour of the Oscillators tunings. Use the higher Data knob to adjust this parameter. When this parameter is set to DCO the tuning between the oscillators is perfect. This is the case on “DCO” (Digitally Controlled Oscillator) synthesisers such as the Roland Juno 106* or Juno 60*. Setting this parameter to VCO recreates the classic “VCO” (Voltage Controlled Oscillator) characteristics of imperfect oscillator tuning. The range of this parameter is DCO & VCO. This parameter is memorised with a Program.

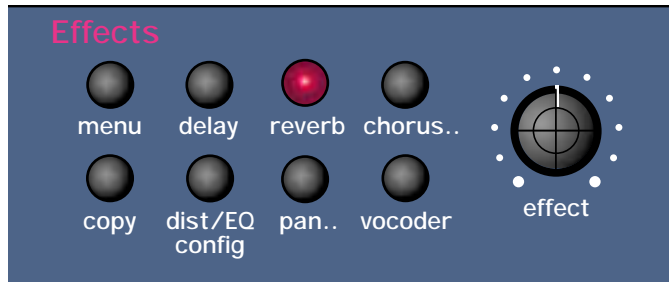
* Juno 106 & Juno 60 are trademarks copyright of Roland Corp. Japan.

The lower parameter is “Constant gate”. In this case with a value of On.

This parameter determines if the envelopes are “constantly” gated on as if C3 was being played & held down. Use the lower Data knob to adjust this parameter. When this parameter is set to On the signals fed into the Inputs (& that are assigned as Special waveforms to the Oscillators) are passed through the Nova’s synthesis engine without requiring a MIDI Note message to trigger the envelopes. Also this feature can be used to create sustained sound effects that require no trigger note. When a Program that has this parameter set to On is selected, the Program will sound straight away as if C3 was played. This will continue until another program is selected. When this parameter is set to Off normal operation occurs. i.e. a note on message is required to trigger the envelopes before any sound can be heard. The range of this parameter is On & Off. This parameter is memorised with a Program.



When the Arpeggiator is active Constant gate no longer functions.



This section contains all the knobs & buttons associated with the Effects Section.

There are 7 effects available on each Program in the Nova.

Delay	-	Button
Reverb	-	Button
Chorus	-	Button
Dist/EQ/Config	-	Button
Pan	-	Button
Vocoder	-	Button

These buttons select the effect that will assigned to the Effect knob & which set of effects parameters will be displayed when the Menu button is pressed. i.e. If the Delay button is pressed (lit) the the effect knob controls the amount of Delay & the Delay parameters are displayed when the menu button is pressed, similarly if the Reverb button is pressed (lit) then the effect knob controls the amount of Reverb & the Reverb parameters are displayed when the menu button is pressed. etc. etc.

Effect - Knob

This knob controls the amount of effect that is currently selected in the effects section. i.e. If the Delay button is pressed (lit) the the effect knob controls the amount of Delay, similarly if the Reverb button is pressed (lit) then the effect knob controls the amount of Reverb. etc. etc. Fully anticlockwise no effect will be heard & as the knob is rotated clockwise more & more effect is added. When the Vocoder button is selected the knob controls the balances between the Carrier, Modulator & Vocoder output signals. At a position of 000 the Program (Carrier) only will be heard. Turning the knob to the mid position will fade this into the Vocoder's output. At the Mid position only the Vocoder's output will be heard. Tuning the knob clockwise from the mid position fades out the Vocoder's output & fades in the Modulator's signal. At the fully clockwise position only the Modulator will be heard. The range of these parameters is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.



NOTE:

Setting the Vocoder balance to anything other than 000 activates the Vocoder.



NOTE:

When a Performance / Program, "[V]" will appear after the Performance / Program name.

Menu - Button (Delay selected)

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Delay section there are 4 pages available. These are selected using the Page Up & page Down buttons to the left of the display.

There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

Page 1 looks like so:

Delay time	020
Feedback	090

As can be seen the higher parameter is "Delay time". In this case with a value of 020 This parameter determines the Delay time of this effect. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is 00 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.



NOTE:

If the Sync (Delay) parameter is set to anything but "Off", this parameter will not work.

As can be seen the lower parameter is "Feedback". In this case with a value of 090. This parameter determines how much feedback there is in the Delay effect. Use the Lower Fast Data knob to adjust this parameter. The higher the value of this parameter the more "Repeats" are in the delayed signal. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 2 looks like so:

Stereo width	010
Delay ratio	1:1

The higher parameter is "Stereo width". In this case with a value of 010. This parameter determines how wide the stereo image of the delay is. Use the upper Data knob to adjust this parameter. In the 000 position the Delay is mono. In the 127 position the delay is fully stereo. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

The lower parameter is "Delay ratio". In this case with a value of 1:1. This parameter determines the relationship of the Delay times in the Delay. In the 1:1 position the Left & Right channel Delays are the same Delay time. In the 1:0.5 position the Right Delay is half the time of the Left Delay. In the 0.5:1 position the Left Delay is half the time of the Right Delay. In the Off:1 position there is no output from the Left Delay & there is an output from the Right Delay at the specified delay time. The range of this parameter is 1:1, 1:0.75, 0.75:1, 1:0.66, 0.66:1, 1:0.5, 0.5:1, 1:0.33, 0.33:1, 1:0.25, 0.25:1, 1:Off & Off:1. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 3 looks like so:

Sync	32nd triplet
Delay HF damp	020

As can be seen the higher parameter is "Sync". In this case with a value of 32nd Triplet. This parameter determines if the delay is synchronised to MIDI Clock or not & at what resolution. Use the higher Fast Data knob to adjust this parameter. Turning the higher Fast Data knob fully anticlockwise selects the "Off" option which means the Delay is running on its own clock & is not in sync with anything else. Turning the knob clockwise from this position makes the Delay sync to Internal or External MIDI Clock in various signatures ranging from 12 Bars to 32nd Triplets.

The range of this parameter is Off, 32 Triplet, 32nd, 16th Triplet, 16th, 8th Triplet, 16th Dotted, 8th, 4th Triplet, 8th Dotted, 4th, 2nd Triplet, 4th Dotted, 2nd, 1 Bar Triplet, 2nd Dotted, 1 Bar, 2 Bar Triplet, 1 Bar Dotted, 2 Bars, 4 Bar Triplet, 3 Bars, 5 Bar Triplet, 4 Bars, 3 Bar Dotted (4.5 Bars), 7 Bar Triplet, 5 Bars, 8 Bar Triplet, 6 Bars, 7 bars, 5 Bar Dotted (7.5 Bars), 8 Bars, 6 Bar Dotted (9 Bars), 7 Bar Dotted (10.5 bars) & 8 Bar Dotted (12 Bars). This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.



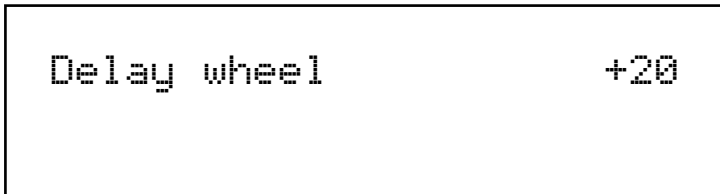
NOTE:

If this parameter is set to anything but "Off", the Delay Time parameter will not work.

As can be seen the lower parameter is "Delay HF damp". In this case with a value of 20.

This parameter determines the rate at which High Frequencies decay away in repeats of the Delay. Use the lower Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 4 looks like so:



As can be seen the higher parameter is "Delay Wheel". In this case with a value of +20.

This parameter determines how much the Mod Wheel controls the amount of Delay effect. Use the higher Fast Data knob to adjust this parameter. Fully anticlockwise, the Delay will be reduced with full modulation of the Mod Wheel. Fully clockwise, the Delay will be increased with full modulation of the Mod Wheel. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

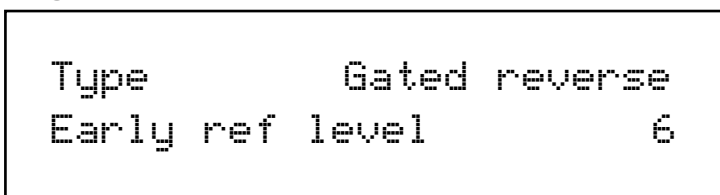
Menu - Button (Reverb selected)

When this button is pressed, a series of pages is available on the display containing parameters relevant to this section.

In the Reverb section there are 3 pages available. These are selected using the Page Up & Page Down buttons to the left of the display.

There are a maximum of 2 parameter's displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameters values.

Page 1 looks like so:



As can be seen the higher parameter is "Type". In this case with a value of Gated reverse.

This parameter determines the type of Reverb effect. Use the higher Fast Data knob to adjust this parameter. There are 16 different types of reverb available in the Nova. Turning the higher Fast Data knob fully anticlockwise selects Gated reverse reverb. This is a special reverb where the reverb builds to a point & then stops as opposed to decaying away like normal reverb. Turning the Fast Data knob clockwise one click selects Gated rising, again this is a gated type of reverb that is slightly reverse in characteristic. Turning the Fast Data knob clockwise one click selects Gated gentle which is a classic gated sort of reverb. Turning the Fast Data knob clockwise one click selects Gated falling which is a gated type of reverb but does decay away slightly like normal reverb. Turning the Fast Data knob clockwise one click selects Dry chamber. This is the first of the normal reverb types & represents a very small room. The rest of the reverbs model rooms that gradually get bigger & bigger, the last one being Large plate 2. The range of this parameter is Gated reverse, Gated rising, Gated gentle, Gated falling, Dry chamber, Echo chamber, Small room, Big room, Medium type 1, Medium type 2, Medium plate 1, Medium plate 2, Large type 1, Large type 2, Large plate 1 & Large plate 2. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

EFFECTS SECTION

As can be seen the lower parameter is "Early ref level". In this case with a value of 6.

This parameter determines the level of early reflections in the reverb. Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is 0 to 7. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 2 looks like so:

Reverb decay	099
Reverb HF damp	020

As can be seen the higher parameter is "Reverb decay". In this case with a value of 099.

This parameter determines the rate at which the Reverb effect decays away. Use the Higher Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "HF damp". In this case with a value of 020

This parameter determines the rate at which High Frequencies decay away in the Reverb & is called High Frequency Damping. Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 3 looks like so:

Reverb wheel	+50
--------------	-----

As can be seen the higher parameter is "Reverb wheel". In this case with a value of +50

This parameter determines How much the Mod Wheel controls the amount of Reverb effect. Use the higher Fast Data knob to adjust this parameter. Fully anticlockwise the Reverb will be reduced with full modulation of the Mod Wheel, fully clockwise the Reverb will be increased with full modulation of the Mod Wheel. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Menu - Button (Chorus/Flanger/Phaser selected)

When this button is pressed a series of pages is available on the display containing parameters relevant to this section.

In the Chorus/Flanger/Phaser section there are 3 pages available. These are selected using the Page Up & Page Down buttons to the left of the display. There are a maximum of 2 parameters displayed on any page. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

Page 1 looks like so:

Type	Quad chorus
Speed 1	010

As can be seen the higher parameter is "Type". In this case with a value of Quad Chorus.

This parameter determines the type of effect the Chorus/Flanger/Phaser will be. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is Quad Chorus, Chorus/Flanger & Phaser. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "Speed". In this case with a value of 010.

This parameter determines the speed of the Chorus/Flanger/Phaser LFO. Use the lower Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 2 looks like so:

Mod depth	032
Feedback	+00

As can be seen the higher parameter is "Mod depth". In this case with a value of 032.

This parameter determines the depth of Chorus/Flanger/Phaser LFO Modulation to the delay time of the Chorus. Higher values tend to sound a bit wobbly. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "Feedback". In this case with a value of 00.

This parameter determines the amount of Feedback within the Chorus/Flanger/Phaser. Use the lower Fast Data knob to adjust this parameter. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 3 looks like so:

Chorus wheel	+32
--------------	-----

As can be seen the higher parameter is "Chorus wheel". In this case with a value of +32.

This parameter determines how much the Mod Wheel controls the amount of Chorus effect. Use the higher Fast Data knob to adjust this parameter. Fully anticlockwise the Chorus will be reduced with full modulation of the Mod Wheel, fully clockwise the Chorus will be increased with full modulation of the Mod Wheel. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Menu - Button (Dist/EQ/config selected)

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Dist/EQ/config section there are 5 pages available.

Page 1 looks like so:

Distortion wheel	+63
------------------	-----

As can be seen the higher parameter is "Distortion wheel". In this case with a value of +63.

This parameter determines how much the Mod Wheel controls the Distortion effect. Use the higher Fast Data knob to adjust this parameter. Fully anticlockwise the Distortion will be reduced with full modulation of the Mod Wheel, fully clockwise the Distortion will be increased with full modulation of the Mod Wheel. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 2 looks like so:

EQ treble	+04
EQ bass	+04

As can be seen the higher parameter is "EQ treble". In this case with a value of +04.

This parameter adjusts the Treble of the selected Program. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "EQ bass". In this case with a value of +04.

This parameter adjusts the Bass of the selected Program. Use the Lower Fast Data knob to adjust this parameter. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 3 looks like so:

Comb frequency	069
Comb boost	+10

As can be seen the higher parameter is "Comb frequency". In this case with a value of 069.

This parameter adjusts the Frequency range of the Comb Filter. Use the higher Fast Data knob to adjust this parameter. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.



NOTE:

No effect will be heard when altering this parameter if the Comb Boost parameter is set to 00

As can be seen the lower parameter is "Comb boost". In this case with a value of +10.

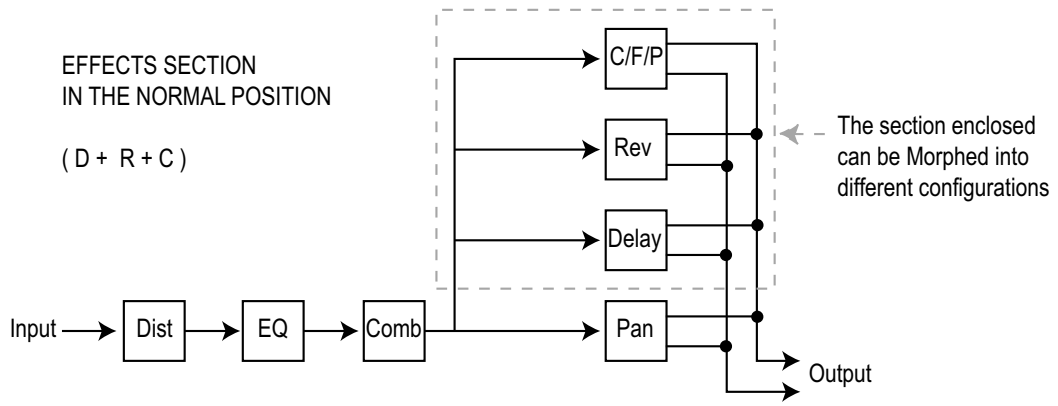
This parameter adjusts the amount of boost to harmonics the Comb Filter provides. Use the Lower Fast Data knob to adjust this parameter. If this parameter is set to the mid position (00) no effect will be heard. If turned Clockwise or anticlockwise from this position boost will be applied to harmonics in the sound. The range of this parameter is -64 to +63. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 4 looks like so:

Fx config	D + R + C
Config morph	+10

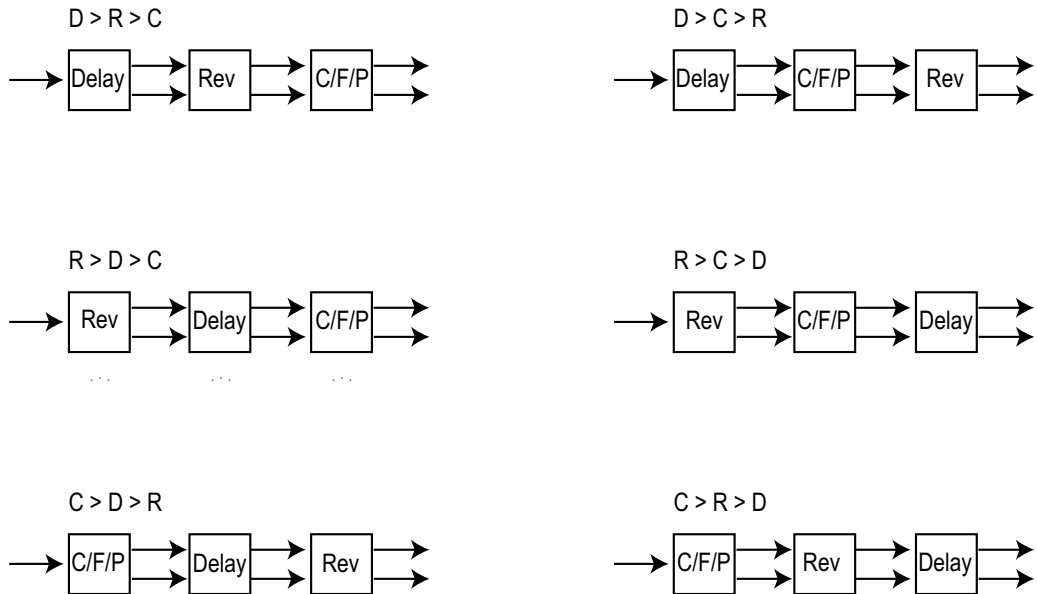
As can be seen the higher parameter is "Fx config". In this case with a value of D + R + C.

This parameter changes the order/arrangement of the Delay, Reverb & Chorus/Flanger/Phaser effects. Use the higher Fast Data knob to adjust this parameter. Different configurations can make the effects sound quite different. i.e. a sound that is delayed then reverbed & then chorused sounds quite different to a sound that has been Chorused then Delayed then Reverbed. There are 19 different effects configurations available in the Nova. Below is a diagram showing how the "Normal" effects configuration.



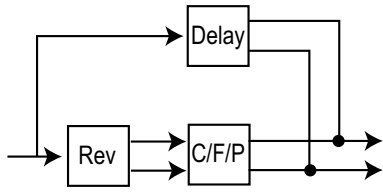
Below are diagrams showing how the different effects are connected in different configurations.

SERIES CONFIGURATIONS

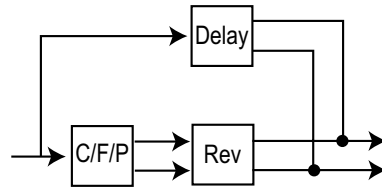


SERIES/PARALELL CONFIGURATIONS

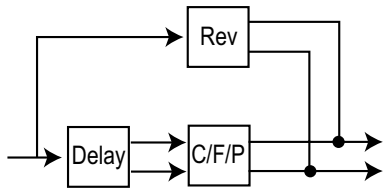
$D + [R > C]$



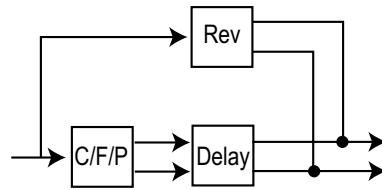
$D + [C > R]$



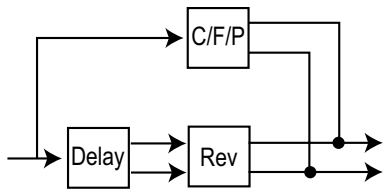
$R + [D > C]$



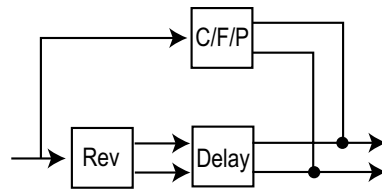
$R + [C > D]$



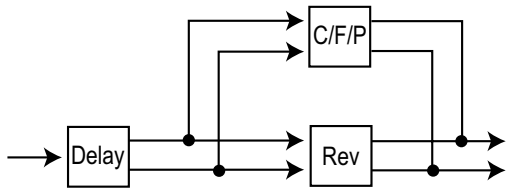
$C + [D > R]$



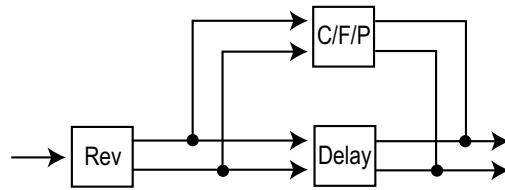
$C + [R > D]$



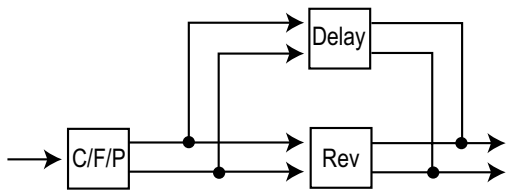
$D > [R + C]$



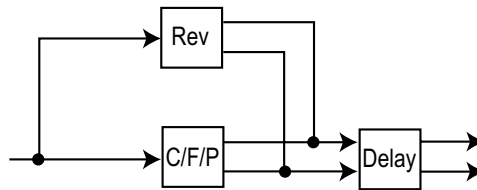
$R > [D + C]$

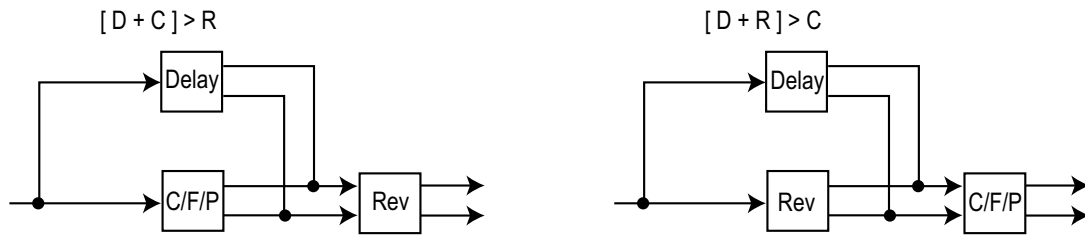


$C > [D + R]$



$[R + C] > D$





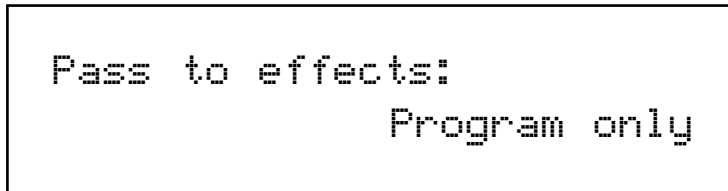
The range of this parameter is $D+R+C$, $D>R>C$, $D>C>R$, $R>D>C$, $R>C>D$, $C>D>R$, $C>R>D$, $D+[R>C]$, $D+[C>R]$, $R+[D>C]$, $R+[C>D]$, $C+[D>R]$, $C+[R>D]$, $D>[R+C]$, $R>[D+C]$, $C>[D+R]$, $[R+C]>D$, $[D+C]>R$ & $[D+R]>C$. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

**NOTE:**

To use the different configurations, the Config morph parameter should be set to 127. If this parameter is set to 000, the "Normal" configuration $D+R+C$ applies.

As can be seen the lower parameter is "Config morph". In this case with a value of +10.

This parameter morphs the effect configuration from the "Normal" $D+R+C$ configuration to any configuration selected by the Fx config parameter. Use the Lower Fast Data knob to adjust this parameter. If this parameter is set to the fully anticlockwise position (00) the config is "Normal" $D+R+C$. If this parameter is set to 127 the configuration will be the one selected by the Fx config parameter. In-between this, the configuration is somewhere between the two. This allows many interesting "Cross connections" to occur between the different effects blocks. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 5 looks like so:

As can be seen the parameter is "Pass to effects:". In this case with a value of Program only.

This parameter allows the Audio inputs to be connected into the effects. Use the Lower Fast Data knob to adjust this parameter. If this parameter is set to Program only then the program will be connected to the effects chain of the Program or Part if in performance mode.

If this parameter is set to Audio input (1) only then the Audio from Input one will be connected to the effects chain of the program or Part if in performance mode & the program will be disconnected. If this parameter is set to Program & input (1) only then the Audio from Input one & the Program will be connected to the effects chain of the program or Part if in performance mode. Similar values are provided for Audio input 2. The range of this parameter is Program only, Audio input (1) only, Program & input (1), Audio input (2) only, & Program & input (2). This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Menu - Button (Pan selected)

When this button is pressed, a series of pages is available on the display containing parameters relevant to this section. In the Pan section there are 3 pages available.

Page 1 looks like so:

Pan type	Autopan
Pan speed	040

As can be seen the higher parameter is "Pan type" In this case with a value of Autopan. This parameter determines in what way the panning effects are used. Use the higher Fast Data knob to adjust this parameter. In the Autopan position the Program is "Panned" automatically from Left to Right & back again. In the Tremolo position both Left & Right are controlled in sync creating the classic "Tremolo" effect. Another 2 phases are provided L-R & R-L. these are similar to Autopan but the effect is not symmetrical. The range of this parameter is Autopan, Tremolo, L-R & R-L. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "Pan speed". In this case with a value of 040. This parameter determines the rate at which the Autopan & Tremolo effects run. Use the lower Fast Data knob to adjust this parameter. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 2 looks like so:

Pan depth	080
Dry level	020

As can be seen the higher parameter is "Pan depth" In this case with a value of 080. This parameter controls the intensity of the Autopan & Tremolo effects. Use the higher Fast Data knob to adjust this parameter. In the 000 position there is no movement of sound in the stereo field & no change to the Program's volume (No Autopan or Tremolo effects will be heard). As the value of this parameter is increased the Autopan & Tremolo have more & more effect. The range is 000 to 127 Off. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

As can be seen the lower parameter is "Dry level". In this case with a value of 020. This parameter determines how much "Dry" signal is in the mix. Use the lower Fast Data knob to adjust this parameter. This allows "Pre" effects "Sends" arrangements to be realised. If this parameter is set to 000 no "Dry" sound from the Program will be heard. The sound you will hear will be 100% effect signals. i.e. If the Chorus "Send" is set to 127 & the "Dry level" parameter is set to 000 you will hear only the "Chorused" signal, none of the original. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.

Page 3 looks like so:

Pan effects	No
-------------	----

The higher parameter is "Pan effects". In this case with a value of No.

This parameter determines how the Effects behave when a sound is Panned between Left & Right in the Stereo image. Use the higher Data knob to adjust this parameter. When this parameter is set to No the sound is panned as it would be on a mixing desk. i.e. the sound can be panned hard Left or Right but *Stereo* effects such as the Comb filter, Phaser/Flanger/Chorus/Ensemble/Rotary Speaker, Delay & Reverb will cause effects to appear on *both* the Left & Right channels (just like Aux returns on a mixing desk). Setting this parameter to On *forces* the Stereo effects to be panned as well as the source sound. i.e. if a sound is panned hard Left & this parameter is set to On, then only the Left side of the Stereo effects are heard. The range of this parameter is Yes & No. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode depending on the value of the Part's "Effects Used" parameter.



NOTE:

This is particularly handy when using the separate audio outputs as *Mono* outputs. Normally the audio outputs are treated as "Stereo pairs" when the "Pan effects" parameter is set to "No" as the "Pan" parameter behaves like it does on a Mixing console with effects routed via an Aux return. Setting the "Pan effects" parameter to "Yes" allows the user to pan *the sound & the effects to a single Mono output*.



NOTE:

If the "Pan effects" parameter is set to "Yes" & the sound is panned hard to the Left, then only the Left channel of the Stereo effects (the Comb filter, Phaser/Flanger/Chorus/Ensemble/Rotary Speaker, Delay & Reverb) will be heard. In the case of the Phaser/Flanger/Chorus/ Ensemble/Rotary Speaker effect this may introduce a slight "Wobbling" sensation to the sound. This is due to the Stereo nature of the effect & is normal (If you monitor only one side of a Stereo version of the sound on your Mixer you will experience the same thing).

Menu - Button (Vocoder selected)



NOTE:

There is only 1 vocoder in the Nova. You cannot have a Performance with several different vocoders on different parts.

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the Pan section there are 4 pages available.

Page 1 looks like so:

Sibilance level	15
Sibilance type	Hpass

As can be seen the higher parameter is "Sibilance level" In this case with a value of 15.

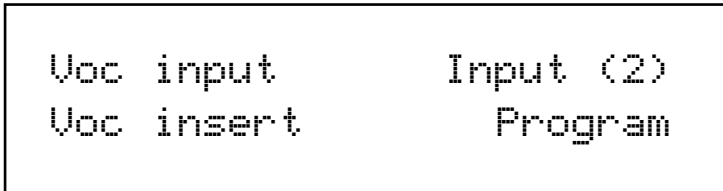
This parameter determines the amount of sibilance there will be in the vocoded signal. Typically these are the "S" type of sounds in speech. Use the higher Fast Data knob to adjust this parameter. If this parameter is set to 00 no sibilance from the modulator's signal will be passed to the output of the vocoder. If this parameter is set to 15 then large amounts of sibilance from the modulator will be passed to the output of the vocoder. The range of this parameter is 00 to 15. This parameter is memorised with a Program in Program Mode or memorised with Performance in Performance Mode.



If there is no sibilance in the modulator's signal then this parameter will appear to do nothing.

As can be seen the lower parameter is "Sibilance type". In this case with a value of Hpass. This parameter determines if the vocoder uses real sibilance filtered from the modulator or artificially generates it using noise. Use the lower Fast Data knob to adjust this parameter. In the Hpass mode, a High pass filter is used to extract the sibilance from the modulator. In the Noise mode noise is used to artificially generate sibilance. The range of this parameter is Hpass & Noise. This parameter is memorised with a Program in Program Mode or memorised with a Performance in Performance mode.

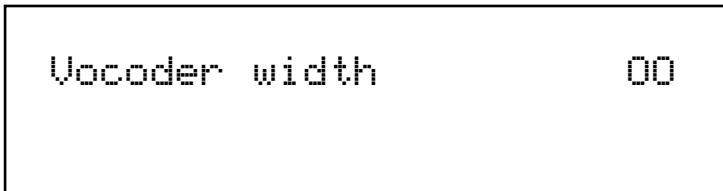
Page 2 looks like so:



As can be seen the higher parameter is "Voc input" In this case with a value of Input 2. This parameter determines what is going to be the "Modulator" of the vocoder. Use the higher Fast Data knob to adjust this parameter. If this parameter is set to Input 1, input 1 will be the modulator. If this parameter is set to Input 2, input 2 will be the modulator. In performance mode, parts 1 to 6 can also be selected. The range of this parameter is Input 1 & input 2 in program mode & Input 1, Input 2 & parts 1 to 6 in performance mode. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode .

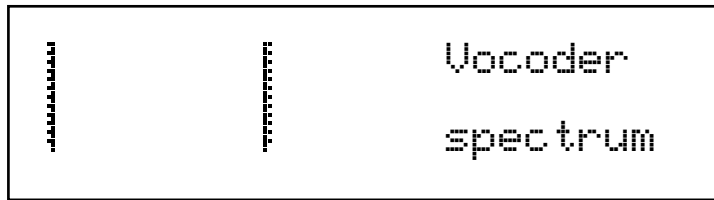
As can be seen the lower parameter is "Voc insert". In this case with a value of Program. This parameter determines what is going to be the "Carrier" for the vocoder. Use the lower Fast Data knob to adjust this parameter. In Program mode, only the currently selected program can be used as the carrier for the vocoder & this parameter shows only the Program option for clarity. In Performance mode, any of the 6 parts can be used as the carrier for the vocoder. The range of this parameter is Program in Program Mode, Part 1 to Part 6 in Performance Mode. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode.

Page 3 looks like so:



As can be seen the parameter is "Vocoder width" In this case with a value of 00. This parameter determines how wide the stereo output of the vocoder will be. Use the higher Fast Data knob to adjust this parameter. If this parameter is set to 00, the output of the vocoder will be Mono. If this parameter is set to 15, the output of the vocoder will be Stereo. The range of this parameter is 00 to 15. This parameter is memorised with a Program in Program Mode or memorised with a Program or Performance in Performance Mode.

Page 4 looks like so:



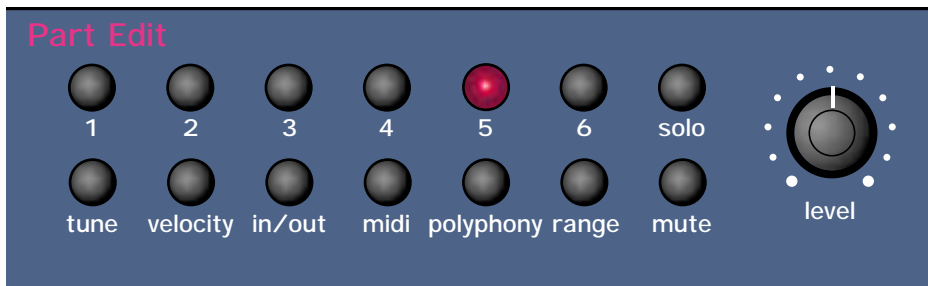
As can be seen the display is showing "Vocoder spectrum".

In this page the Nova displays the Audio spectrum of the modulator in 40 bands on the screen. This is for display & is not memorised.

Copy - Button

This button only works in Performance mode.

The copy button in the effects section allows quick copying of effects parameters from a Program into the Performance Part buffer. This allows you to use a Program with completely different effects setting from that originally in the Program. It is not necessary to save the edited program to a memory location as the effects changes are stored with the Performance. Copying the effects is easy, just press the Copy button (Copy button lit) & select which effect you wish to copy from the Program - Delay, Reverb, Chorus, Dist/EQ/Config, Pan or Vocoder & Nova copies all the settings over.



This section contains all the knobs & buttons associated with the Part Edit Section.

Level - Knob

This knob adjusts the level of the currently selected Program. In Program mode this knob controls the “gain” of the Program. This can be considered to be similar to “gain” on a mixers channel. Use this knob in Program mode to set the headroom of the Program. If the Program has too much level in Program mode, distortion will occur in all Program & Performance mode. In Performance mode this knob controls the “level” of the Program. This can be considered to be similar to “Volume” slider on a mixers channel. If the Program is distorting regardless of the setting of this knob in Performance mode, the Program mode “level” is set to high. Select the distorting Program in Program mode & adjust this parameter until distortion ceases & rewrite the Program to memory. Then it will stop distorting in Performance mode. Fully anticlockwise the Program is not heard. Turning the knob clockwise turns the volume of the currently selected Program up. The range of this parameter is 000 to 127. This parameter is memorised with a Program in Program Mode or memorised with Performance in Performance Mode.



NOTE:

If a Program or Performance is distorting, it is most likely because the “Level” of the Program is too high. Try reducing the level until distortion ceases.

Part 1 - Button

Part 2 - Button

Part 3 - Button

Part 4 - Button

Part 5 - Button

Part 6 - Button



NOTE:

These buttons select “Parts” in Performance Mode. In Program mode they can be used to Audition the currently selected Program. Simply press the Part buttons & a note will play as long as the button is held down. Part 1 button plays C1, Part 2 button plays F1, Part 3 button plays C2, Part 4 button plays F2, Part 5 button plays C3 & Part 6 button plays F3. Additionally in Program mode these buttons light to display the sequence of steps of an Arpeggiator pattern (If the Arpeggiator is on & playing).

These buttons select which Part of a Performance is going to be edited. Pressing any Part button will assign all the front panel to the Program assigned to the selected Part. To assign a different Program to this Part use the Bank & Prog Up & Down buttons to select in a new Program. Moving any knob will bring up the Parameter name on the display in the normal way. To return to the display showing the Part’s assigned Program simply press the appropriate Part button again. Any modifications to the Program made in this mode will have to be written into the Program. See *Editing & Writing Performances* on page 30 for details.



NOTE:

Part selection can be transmitted & recorded as controller data to a sequencer & the played back to the Nova.

Tune - Button



NOTE:

This button only works in Performance mode.

This button alters the Tuning of the Program assigned to the currently selected Part. When this button is pressed the display shows parameters relevant to this section.

When this button is pressed the display shows:

Part semitone	+07
Part detune	+25

As can be seen the higher parameter is "Part semitone". In this case with a value of +07.

This parameter Transposes the Program by the number of semitones selected using the higher Fast Data knob. The range of this parameter is -24 to +24 semitones. This parameter is memorised with the Performance.

As can be seen the lower parameter is "Part detune". In this case with a value of +25

This parameter Detunes the Program by the amount selected using the higher Fast Data knob. The range of this parameter is -64 to +63 cents. This parameter is memorised with the Performance.

Velocity - Button

This button only works in Performance mode.

This button assigns which Velocity curve is assigned to the currently selected Part. When this button is pressed the display shows parameters relevant to this section.

When this button is pressed the display shows:

Part velocity curve	Normal
---------------------	--------

As can be seen the higher parameter is "Part velocity curve". In this case with a value of Normal.

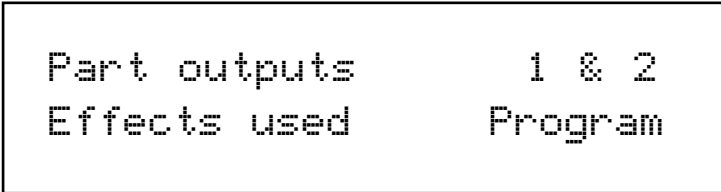
This parameter determines the velocity response of the currently selected Part. Values are selected using the higher Fast Data knob. In the "Normal" position the Program plays in a normal velocity sensitive way (If the Velocity parameter for the selected Program has been set to any positive value). In the "Inverse" position the response is inverse to the normal velocity curve. i.e. Louder sounds are produced by playing softly rather than hard (If the Velocity parameter for the selected Program has been set to any positive value). These two curves are ideal for creating velocity Cross fades between two different parts for Organ type sounds. The Cross Fade - Low & Cross Fade - High options are similar but provide a "Normal" overall response when used together in two different parts. The remaining options provide "Normal" velocity curve response "Up to" or "From" specific Velocity values. This enables "Velocity Switch" arrangements to be easily made by setting up appropriate curve on two parts. i.e. To Value 100 on one Part & From Value 101 on another. The range of this parameter is Normal, Inverse, Cross fade - High, Cross Fade - Low, To Value 60, From Value 61, To Value 70, From Value 71, To Value 80, From Value 81, To Value 90, From Value 91, To Value 100, From Value 101, To Value 110 & From Value 111. This parameter is memorised with the Performance.

In/Out - Button

This button works in Program & Performance mode.

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the In/Out menu there are 2 pages available. There are a maximum of 2 parameters displayed. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values

Page 1 (Performance Mode) looks like so:



As can be seen the higher parameter is "Part outputs". In this case with a value of 1&2. This parameter determines which set of outputs the currently selected Part will be output from. Use the higher Fast Data knob to adjust this parameter. It is possible to have each Part go to an individual output (Mono). To do this set Part 1& 2 to go to outputs 1&2 then pan Part 1 to the Left (output 1) & Part 2 (output 2) to the Right with the panpot. Set Part 3&4 to go to outputs 3&4 then pan Part 3 to the Left (output 3) & Part 4 (output 4) to the Right with the panpot. Set Part 5&6 to go to outputs 5&6 then pan Part 5 to the Left (output 5) & Part 6 (output 6) to the Right with the panpot. The range of this parameter is 1&2, 3&4, 5&6 & 7&8. This parameter is memorised with the Performance.



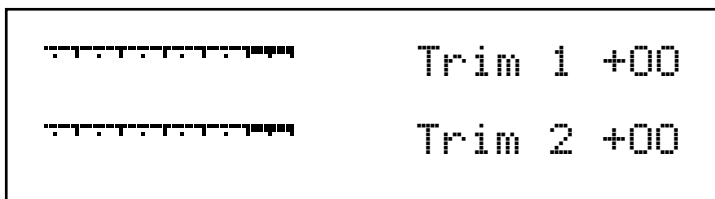
NOTE:

If the Delay, Reverb, Chorus/Flanger/Phaser or Vocoder effects are used they will produce stereo signals over an output pair. To isolate a sound to a single mono output, it is necessary to make sure the send levels of these effects are set to 000.

As can be seen the lower parameter is "Effects used". In this case with a value of Program. Use the lower Fast Data knob to adjust this parameter. This parameter determines if the Effects to be used by the Part will change when a MIDI Program Change message is received from the current settings to the settings of the new Program or not. This can be useful for dramatic changes in Effects by setting this parameter to Program, or this parameter can be useful for retaining the effects used on this Part when a MIDI Program Change is received by setting it to "Part".

The range of this parameter is Program & Part. This parameter is memorised with the Performance.

Page 1 (Program mode) Page 2 (Performance mode) looks like so:



The inputs 1 & 2 can be monitored using this page. PPM meters show the level of both inputs. The levels of both of these signals can be boosted or cut by 10 dB using the Fast Data knobs. These parameters are memorised as Global.



NOTE:

The setting of these parameters is saved along with all the other Global parameters when the Global parameters are saved while in the Global menu.

MIDI - Button

This button only works in Performance mode.

When this button is pressed a series of pages is available on the display containing parameters relevant to this section. In the MIDI menu there are 3 pages available. There are a maximum of 2 parameters displayed. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.



NOTE:

If you are currently on the Sysex transmission page of the Global menu, pressing this button will initiate a sysex dump.

Page 1 looks like so:

Sustain	Enable
Midi channel	Global

As can be seen the higher parameter is "Sustain". In this case with a value of Enable.

This parameter determines how the selected Part will respond to incoming MIDI Sustain pedal data (Controller 64). This parameter is adjusted using the higher Fast Data knob. If this parameter is set to "Enable" the Envelopes are held at their sustain phases if a MIDI Sustain pedal message of "On" is received (This is similar to the Damper pedal on a Piano). The Sustain pedal message can be set to do other things as well though. If this parameter is set to "Arp Latch" the Arp latch function will be switched "On" when a Sustain pedal message of "On" is received & switched "Off" when a pedal "off" is received. Similarly if this parameter is set to "Arp Mute" or "Part Mute" the respective mute function will be controlled in the same way. Some manufacturers have different polarity pedals, which can make this parameter behave in reverse, so inverse parameters have been added as an option. Additionally it is often useful when layering 2 or more Parts to have one Part enabled & the other(s) disabled, so an "Off" option is available. If this parameter is set to "Program + 1", the Part's Program advances by one when a Sustain pedal "On" message is received & if set to "Program - 1", the Part's Program decreases by one when a Sustain pedal "On" message is received. If this parameter is set to "Pattern + 1", the Part's arpeggiator pattern increases by one when a Sustain pedal "On" message is received & if set to "Pattern - 1," the Part's arpeggiator pattern decreases by one when a Sustain pedal "On" message is received. If this parameter is set to "Voc freeze", whenever a Sustain pedal "On" message is received the Vocoder will freeze & whatever harmonic spectrum was being used as a modulator will be sustained until a Sustain pedal "Off" message is received & then normal operation of the Vocoder will resume.



NOTE:

This only freezes the Vocoder if the currently selected Part is supplying the Vocoder's carrier signal (i.e. the Part is the same as the Vocoder's "Insert" parameter on page 2 of the Vocoder menu).

The range of this parameter is Enable, Arp Latch, Arp Mute, Part Mute, Enable (I), Arp Latch (I), Arp Mute (I), Part Mute (I), Program + 1, Program - 1, Pattern +, Pattern - 1, Voc freeze & Off. This parameter is memorised with the Performance.

The lower parameter is "MIDI channel". In this case with a value of Global.

This parameter selects the MIDI Channel the Part will receive & transmit MIDI Data on. Use the lower Data knob to adjust this parameter. If this parameter is set to "Global" the Part will play on whatever channel is set as the "Global MIDI channel" on page 1 of the Global menu. If this parameter is set to "Omni" the Part will play on any MIDI channel. The range of this parameter is 1 to 16 Omni & Global. This parameter is memorised with the Performance.



NOTE:

The MIDI channel for the Part can be set via MIDI by holding down the Page down button & while holding it down playing a note into the Nova on the desired channel. It is not possible to set the Part's MIDI channel to Omni or Global using this method.

Page 2 looks like so:

Prog change filt	Off
Controller filt	Off

As can be seen the higher parameter is "Prog change filt". In this case with a value of Off.

This parameter determines how the selected Part will respond to incoming MIDI Program Change messages. This parameter is adjusted using the higher Fast Data knob. If this parameter is set to "Off" the Part will ignore any Program Change messages sent on the Part's MIDI channel. If this parameter is set to "On" the Part will recognise any Program Change messages sent on the Part's MIDI channel. The range of this parameter is On & Off. This parameter is memorised with the Performance.



If the Global Program Change filter on page 11 of the Global menu is set to Disabled, then no Program Change messages will be recognised regardless of this parameter's setting.



If the Program Change filter is set to On it also filters out Bank select messages. (CC00 & CC32)

As can be seen the lower parameter is "Controller Filt". In this case with a value of Off. This parameter determines how the selected Part will respond to incoming Controller messages. This parameter is adjusted using the lower Fast Data knob. If this parameter is set to "On", the Part will ignore any Controller messages sent on the Part's MIDI channel. If this parameter is set to "Off", the Part will recognise any Controller messages sent on the Part's MIDI channel. The range of this parameter is On & Off. This parameter is memorised with the Performance.

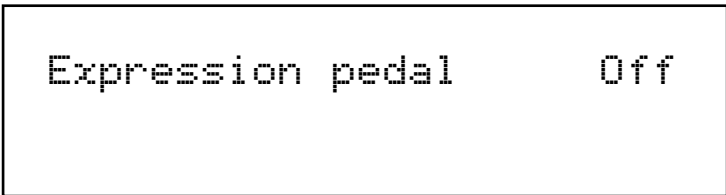


If the Global Control Change filter on page 10 of the Global menu is set to Disabled, then no Control Change messages will be recognised regardless of this parameter's setting.



The Control Change filter does not filter Bank select messages. (CC00 & CC32) These can be filtered using the Program Change filter if required.

Page 3 looks like so:

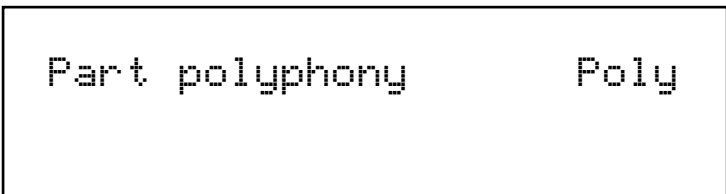


As can be seen the parameter is "Expression pedal". In this case with a value of Off. This parameter determines if the currently selected Part responds to any data generated by a connected Expression / Sustain pedal. The type of data generated by a connected pedal can be specified by setting the Pedal Mode parameter on page 9 of the Global menu. This parameter is adjusted using the higher Fast Data knob. If this parameter is set to "Off" pedal data is ignored by the Part. If this parameter is set to "On" pedal data is recognised by the Part. This parameter is memorised with a Performance.

Polyphony - Button

This button works in Performance & Program mode. This button alters the Polyphony of the currently selected Program or Part. When this button is pressed, the display shows parameters relevant to this section. There are a maximum of 2 parameters displayed. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

When this button is pressed the display shows:



As can be seen the higher parameter is "Part polyphony". In this case with a value of Poly. This parameter assigns how the much polyphony is assigned to the selected Part & is adjusted using the higher Fast Data knob & nudge buttons. If this is set to Off (Performance mode only) the Part is disabled. No sound will come from this Part & it will not respond to MIDI. If this parameter is set to Mono, only one voice is assigned to the Part (Monophonic). If this is set to Poly, voices are dynamically allocated to the Part. All voices will be dynamically shared by the Parts. If this parameter is set to Prog, the Polyphony setting of the currently selected Program in the currently selected Part is mirrored by the Part. i.e. If a Monophonic Program was selected in the Part then the Part's polyphony would be Monophonic & if a Polyphonic sound was selected then the

polyphony would automatically change to Polyphonic. In Program mode, the display is different. It shows "Program Mode" on the top line of the display & "Polyphony" on the bottom line. When in Program mode, use the lower Fast Data knob & nudge buttons to adjust this parameter. The range of this parameter in the Performance mode is Off, Poly, Mono, & Prog. In the Program mode the range is Poly & Mono. This parameter is memorised with Programs in Program Mode & Performances in Performance Mode.

When this button is pressed when in Program mode the display shows:

Program mode	
polyphony	Mono

When in Program mode, the display is different but the function is the same. Use the lower Data knob to adjust this parameter. The range of this parameter in the Program mode is Off, Poly, Mono, & Prog. In the Program mode the range is Poly & Mono. This parameter is memorised with Programs in Program Mode & Performances in Performance Mode.

Range - Button

This button only works in Performance mode.

This button alters the Key Range of the currently selected Part. When this button is pressed, the display shows parameters relevant to this section. There are a maximum of 2 parameters displayed. One for each line on the display. The "Fast Data" Knobs on the right of the display are used to alter these parameter's values.

When this button is pressed the display shows:

Highest note	C8
Lowest note	C0

As can be seen the higher parameter is "Highest note". In this case with a value of C8.

This parameter selects the Highest note the currently selected Part will play on & is adjusted using the higher Fast Data knob. The range of this parameter is C0 to C8. This parameter is memorised with the Performance.

As can be seen the lower parameter is "Lowest note" In this case with a value of C0.

This parameter selects the Lowest note the currently selected Part will play on & is adjusted using the Lower Fast Data knob. The range of this parameter is C0 to C8. This parameter is memorised with the Performance.



NOTE:

If the Lowest note is set higher than the Highest note, a reverse window can be created. For example:

If Part Highest key is set to C2 & Part lowest key is set to C3. The sound appears on the keyboard from C0 to C2 & from C3 to C8. In other words there is a "Hole" in the middle of the keyboard.



NOTE:

The Range for the Part can be set via MIDI by holding down the page up (for the Highest note) or page down (for the Lowest note) buttons & while holding down, playing a note into the Nova the desired split point. You can set both parameters simultaneously by holding down both page buttons.

Solo - Button

This button works only in performance mode.

Pressing this button (Solo button is lit) solos the currently selected Part. All other Parts flash to indicate they are muted. The Solo mode can be cancelled by pressing the Solo button again (Solo button is unlit).



NOTE:

Solo mode is cancelled when a new Performance is selected.



In solo mode, any currently muted Parts (not soloed) are memorised when a performance is saved.

Mute - Button

This button works only in performance mode.

Pressing this button (Mute button is lit) activates the Mute mode. When this is active, pressing any Part Mutes it & it flashes. Unlike solo, exiting the Mute mode by pressing the Mute button again (Mute button is unlit) does not cancel the Mute status of the parts. To un-mute a Part select the Mute mode by pressing the Mute button (Mute button is lit) & press the flashing (muted) Part. The Part will stop flashing & become active again. This is so that the Mutes behave like those on a Mixing desk. Additionally, the Mute Status of each Part is memorised in a Performance so that a Performance can be recalled with some or all Parts muted but set up & ready to go. Mutes can be transmitted & recorded as controller data to a sequencer & then played back at the Nova.



Whenever a Part is Muted the Program Name display will show "(Muted)" underneath the Program's name.

The Multi Mode for the Nova II keyboard is "Performance" mode. To make a multitimbral setup follow this procedure. Press the Global Button & select page 1.

```
Master tune           +00
Global MIDI chan     16
```

Set the Global MIDI Channel to 16.

Make sure the Nova II keyboard is in the Performance Mode by pressing the Performance Button. It will light. Select Performance A 126 "Multi Ch 1-6" of the Performances as a starting point as this is set up specifically for Multitimbral use & is a good starting template. In this Performance, Part 1 is assigned to MIDI channel 1, Part 2 is assigned to MIDI channel 2 etc. etc. Hence its name "Multi Ch 1-6". (If you wish to alter the MIDI channel setting press the "MIDI" button & set the MIDI Channel to whatever channel required but make sure it is not the same as the MIDI channel setting as the Global MIDI channel)

```
Multi Ch 1-6
Perf A126
```

To assign a Bass sound to MIDI Channel 1 for example, press the "Part 1" button & the display will change to indicate the current sound assigned to that Part. (In the Factory Programs this is Bank A Program number A000 "Sintillator")

```
Sintillator M-Wh
Prog A000
```

Now use the Bank & keypad buttons to select the desired sound. For example Bank A Prog Number 002 "Softena Bass".

```
Softena Bass
Prog A002
```

You should now hear the Bass sound when MIDI channel 1 is played into the Nova II keyboard.

To assign a String sound to MIDI Channel 2 for example, press the "Part 2" button & the display will change to indicate the current sound assigned to that Part. (In the Factory Programs this is Bank A Program number A000 "Sintillator")

```
Sintillator M-Wh
Prog A000
```

Now use the Bank & keypad buttons to select the desired sound. For example Bank A Prog Number 012 "Stringz".

```
Stringz
Prog A012
```

You should now hear the String sound when MIDI channel 2 is played into the Nova II keyboard.

The other Parts are assigned in a similar way & 6 Parts can be used at once.



NOTE:

If 2 or more Parts are assigned to the same MIDI Channel all these Parts will sound at once when that MIDI channel is received by the Nova II keyboard.



NOTE:

Some parameters of a Program in a “Part” of a Performance are over-rideable without having to alter the original Programs settings. These include the “Level” of the “Part”, the Arpeggiator “Speed” the “Arpeggiator On/Off” and *all* the Effects parameters if the Effects used parameter in the Parts Output menu is set to “Part”. This allows the creation of completely different effects settings on a individual Part without effecting the source programs settings.



NOTE:

The Part can be optimised so that when Program changes are received on that Part the Nova II keyboard will keep the above settings you have made in the Performance & ignore the settings of the newly selected Program. This is done by setting the Effects used parameter in the “Output Menu” to “Part”. Alternatively, the whole of the effects can change when a Program change message is received by a Part by setting this parameter to “Program”. Pressing the “Copy” button in the effects section activates a Copy mode where the Part’s Program effects are copied into the Part effects buffer.



NOTE:

Only one Performance is available at any time. It is not possible to create a Multi type setup with multiple Performances.



NOTE:

When a Program change message is received on the **Global MIDI channel** it will change the selected Program or Performance. If a Program change is received on a Part MIDI Channel that is not the Global one it will change the assigned Program for that Part. When it does so the effects settings stored in the Program will be loaded into the Parts Effects section if the Effects used parameter in the Output menu is set to “Program”. If this parameter is set to “Performance” the Program will change but the effects setting for that Part will not be altered. Additionally the Arpeggiator Parameters from the Program will be loaded into the Part’s Arpeggiator.



NOTE:

WHEN A PROGRAM CHANGE / BANK MESSAGE IS RECEIVED ON THE GLOBAL CHANNEL THIS WILL RESULT IN A POSSIBLE MODE CHANGE FROM PERFORMANCE TO PROGRAM MODE.



NOTE:

FOR THE ABOVE REASON IT IS STRONGLY RECOMMENDED THAT THE GLOBAL MIDI CHANNEL SHOULD BE SET TO A CHANNEL THAT IS NOT ASSIGNED TO ANY PART. IN THE CASE OF PERFORMANCE A126 “MULTI CH 1-8” THE GLOBAL CHANNEL SHOULD BE SET TO ANY ONE OF THE UNUSED CHANNELS 7-16.



NOTE:

There is only one Arpeggiator Speed control in a Performance. Adjusting the speed of any Part’s Arpeggiator will control all 6 Arpeggiators.



NOTE:

If you create your own Performance from existing Performances other than the Factory Init Performances, parameters may have been set in individual Parts so that in a multi setup strange things may happen. Here’s the check list:

Velocity behaves strangely on one Part - The Velocity Curve parameter in the Velocity menu is *not* set to “Normal”.

The Part is Monophonic & should be Poly - The Polyphony parameter in the Polyphony menu is set to “Mono”.

The Part is polyphonic & should be Mono - The Polyphony parameter in the Polyphony menu is set to “Poly”.

The Part is Muted / No response at all - If the Part light flashes steadily, even with no MIDI input, the Part is Muted.

The Part is Muted / No response at all - Does the Part light flash when MIDI is sent?

- Yes - The Assigned outputs may be different to the ones connected, check the setting of the Outputs menu for the offending Part.

- No - The MIDI Channel for the Part is set to the incorrect channel in the MIDI menu.

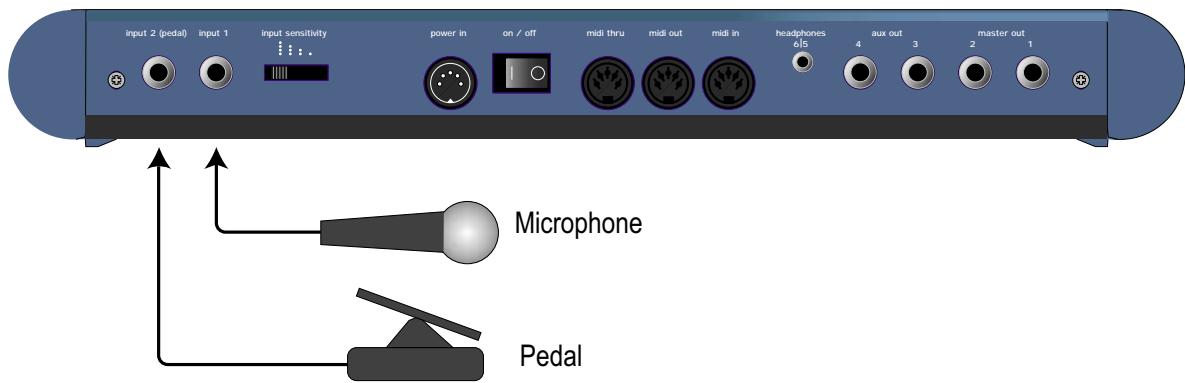
- No - Polyphony parameter in the Polyphony menu is set to “Off”.

The Part is in a different key to the others - The Part Semitone parameter in the Tune menu is *not* set to “0”

The Part is out of tune with the others - The Part Detune parameter in the Tune menu is *not* set to “0”

The sustain pedal behaves in reverse on the assigned Part - The Polarity of the pedal is set incorrectly, set the Sustain parameter in MIDI menu to “Enable” or “Enable (I)” so that the desired effect is produced.

The Sustain pedal does not work on the assigned Part - The Sustain parameter in the MIDI menu is *not* set to “Enable” or “Enable (i)”.

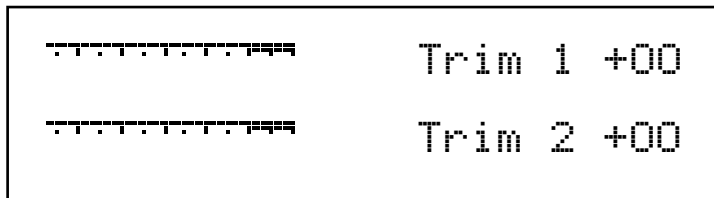


Located on the Nova's rear panel are two 1/4" jack sockets labelled "Input 1" & "Input 2 (pedal)" which may be used to connect either an audio source (from a microphone, CD player, sampler etc.).The input 2 (pedal) socket can also be used to connect an expression pedal (such as the KORG EXP2) to the Nova allowing control over various parameters to be made in real time.

Setting up the Sensitivity/Input level of the Inputs.

Plug a sound source into one of the Nova's Inputs. Adjust the sensitivity with the Input sensitivity switch & the Trim Parameter on Page 1 (Program mode) or Page 2 (Performance mode) of the In/Out menu in the Part Edit section to suit the type of sound source connected. As a guideline in the • position of the Input sensitivity switch the input sensitivity is suitable for accepting signals from Studio equipment such as Samplers, Synths, Workstations, Mixers etc. (+4dB). In the •• position the sensitivity is suitable for Consumer Audio Equipment such as Cassette decks etc. (-10dB). In the ••• position the sensitivity is suitable for guitars etc. (-25dB). In the •••• position the sensitivity is suitable for Microphones etc. (-55dB). These settings may vary from equipment to equipment.

To set this correctly press the In/Out menu of the Part edit section & go to Page 1 (Program mode) or Page 2 (Performance mode). The display looks like so:



In this page meters are available showing the level of incoming signals on the 2 Inputs. The 2 Data knobs access "Trim" controls allowing fine adjustment of boost or gain to the signal. When the meters reach the highest segment of the display the signal is clipping. Set the "Trim" & "Input sensitivity" switch to get the loudest possible signal without clipping.



NOTE:
The "Trim" can be set individually for each channel.

The Inputs on the Nova can be used in 3 different ways, Firstly an Input can be used to "Tack on" to an effects chain in a Program or to the Effects chain of a Part of a Performance. Secondly as a waveform that can be processed by the Filter, LFOs, ENVs & in turn the Effects. Thirdly as a Modulator or Carrier in a Vocoder setup. Lets look at these individually.

Setting the Inputs to be routed to the effects.

Set up the Input sensitivity with the "Trim" parameters as shown above. To connect an Input to an effects chain in Program or Performance mode simply press the Dist/EQ/Config button in the Effects section then press the Menu button in the Effects section. Go to page 5 of the Effects sections Dist/EQ/Config menu & the display will show:

Pass to effects:
Program only

& set the "Pass to effects:" parameter to either "Input 1", "Input 2" or "Program & Input 1" or 2. Input 1 or "Program & Input 2" settings mean only the selected Input goes to the effects on the selected Program or Part & the sound assigned to the Program or Part is mute. Program & Input 1 or 2 settings mean that the selected Input & the sound assigned to the Program or Part go the effects. Remember there are 7 effects available in each Program or Part so a lot of effects processing can be used on the Inputs. Additionally in a Performance the output of the effects can be routed to different output pairs allowing separate returns to be realised. To do this select the Part of the Performance you wish to re-route & set the Part outputs parameter on page 1 of the In/Out menu in the Part edit section to the output pair you require.

Passing an Input signal through the Filter & effects.

Passing loops & other signals through Filters has become popular over the last couple of years & the Nova allows either Input signals to be processed in this way. Set up the Input sensitivity with the "Trim" parameters as shown above. Simply selecting the Program B125 Input1 Program will assign Input one to an Oscillator & will therefore pass this signal through the Filter. Additionally this Program also uses the "Constant Gate" parameter meaning no MIDI event is required to trigger the envelopes. Alternatively you can set up your own Program.

To set this up it is necessary create a Program that is set up so that an Oscillator waveform is substituted with an Input signal & to supply a MIDI note to "trigger" the Envelopes (the Amp Envelope in particular) or set the Constant gate parameter to On so that you can hear the signal.

The best thing to do is to use B127 Init Prog as a starting point from which to create an "Input" Program. Select Prog B127 Init Prog. Select Oscillator 1 & then press the Mix button (so that it is lit) in the Oscillator Mod Matrix. Turn the Level knob in the Oscillator Mod Matrix fully clockwise to a value of 127 (This turns Osc 1 up to a volume of 127). Select Oscillator 2 & then press the Mix button (so that it is lit) in the Oscillator Mod Matrix. Turn the Level knob in the Oscillator Mod Matrix fully anticlockwise to a value of 000 (This turns Osc 2 down to a volume of 000). Select Oscillator 3 & then press the Mix button (so that it is lit) in the Oscillator Mod Matrix. Turn the Level knob in the Oscillator Mod Matrix fully anticlockwise to a value of 000 (This turns Osc 3 down to a volume of 000). Now the only audible Oscillator should be Oscillator 1. Select Oscillator 1 & then press the Special waveform button. Use the lower fast data knob to select the desired Input. Now when pressing a note on the Master keyboard the Input signal should be heard.



NOTE:

If no signal is present on the Input no sound will be heard.



NOTE:

If no MIDI note is sent to the Nova & the Constant gate parameter is set to Off no sound will be heard & if no signal is present on the assigned Input at the moment the MIDI Note is played then no sound will be heard.

Now all that remains to be done is set up the Filter, Envelopes, LFOs & Effects to the type/settings that you require. Once that is done then save the Program so you can recall it later. Some cool things can be done here. Filter sweeps can be carried out by the envelopes & / or LFOs. LFOs of course can be synced to MIDI clock & used to Modulate the Oscillator Mix level thereby creating "Gater" effects. In an unsynced mode & with the LFO range parameter set to Fast strange effects can be achieved when "Gating" the Inputs at Khz (similar to Decimator type effects). Remember that Envelope 3 can also modulate the speed of the LFO that is used for the "Gating" effect.



NOTE:

Input choices are memorised with the program so different programs could use different Inputs or even both at once by using Oscillator 2 or 3 for the other Input.

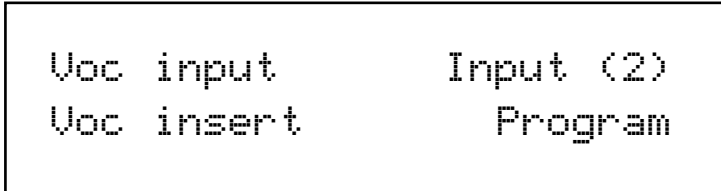
Using Inputs with the Vocoder Effect

The Vocoder can use either input as a Modulator or Carrier. Set up the Input sensitivity with the "Trim" parameters as shown on page 98. Simply selecting the Program B124 Vocoder Program will assign Input one as a Modulator for the Vocoder effect. Alternatively you can set up your own Program.

The simplest way to set up a Vocoder type program is to use B127 Init Prog as a starting point (This example will use internal waves as a Carrier). Select B127 Init Prog.

Press the Vocoder button in the Effects section, then press the Menu button in the Effects section.

Go to page 2. The display shows:



Set the "Voc input" parameter (This sets the Modulator for the Vocoder effect) to Input 1.

Now when pressing note(s) on the Master keyboard the Input signal should be heard.



NOTE:

If no signal is present on the Input 1 no sound will be heard.

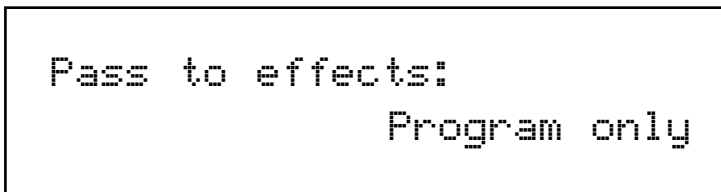


NOTE:

If no MIDI note is sent to the Nova & the Constant gate parameter is set to Off no sound will be heard & if no signal is present on the assigned Input at the moment the MIDI Note is played then no sound will be heard.

Now all that remains to be done is adjust the Sibilance level, Sibilance type & Width parameters to suit your taste.

To assign an input as a Carrier is similar to assigning an input to an effect (actually that's exactly what you do as the Vocoder is an effect!). This can be done by simply "Passing" the input to the effects. Set up the Input sensitivity with the "Trim" parameters as shown on page 98. To connect an Input to an effects chain in Program or Performance mode simply press the Dist/EQ/Config button in the Effects section then press the Menu button in the Effects section. Go to page 5 of the Effects sections Dist/EQ/Config menu & the display will show:



Set the "Pass to effects:" parameter to either "Input 1", "Input 2" or "Program & Input 1" or "Program & Input 2". "Input 1" or "Input 2" settings mean only the selected Input goes to the effects on the selected Program or Part & the sound assigned to the Program or Part is mute. "Program & Input 1" or "Program & Input 2" settings mean that the selected Input & the sound assigned to the Program or Part go to the effects.



NOTE:

The Carrier should be a different sound source from the Modulator & therefore care should be taken to assign ONE of the inputs to the "Voc input" parameter (the Modulator) & the OTHER input to the "Pass to effects" parameter (the Carrier).

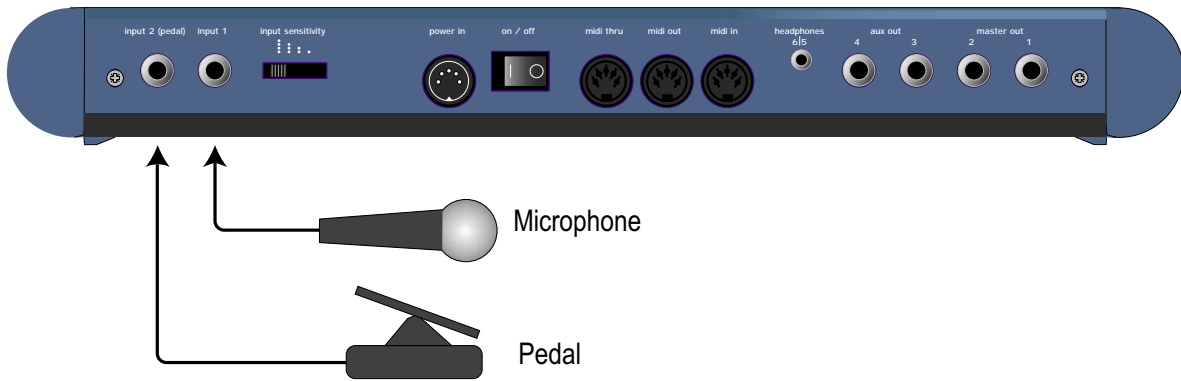
The Filters can be also applied to the Carrier, but to do this the input that is to be the Carrier must be assigned to an oscillator as on page 106. Additionally the Vocoder can be "frozen" allowing the user to "Capture" the Harmonic spectrum of the Modulator & sustain it for as long as desired. To do this set the "Sustain" parameter on page 1 of the Midi menu in the Part edit section to "Voc freeze".

Now whenever a Sustain pedal "On" message is received the Vocoder will freeze & whatever harmonic spectrum was being used as a modulator will be sustained until a Sustain pedal "Off" message is received & then normal operation of the Vocoder will resume.



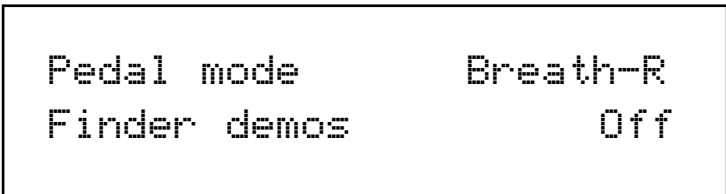
NOTE:

This only freezes the Vocoder if the currently selected Part is supplying the Vocoder's carrier signal (i.e. the Part is the same as the Vocoder's "Insert" parameter on page 2 of the Vocoder menu).



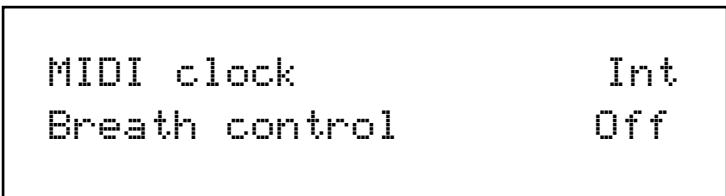
Foot pedals & Footswitches should always be connected to the jack marked “Input 2 (pedal)”. To configure the jack socket for use with an expression pedal, you should set the “Pedal mode” parameter on page 9 of the Global menu to either “Breath-R” or “Breath-T”. To configure the jack socket for use with a Footswitch, you should set the “Pedal mode” parameter on page 9 of the Global menu to either “Sustain” or “Sustain-I”.

Page 10 looks like so:



The reason why this parameter is set to one of the “Breath” positions is because you will use the Breath control re-mapping function to assign what parameter the Foot pedal is going to modulate. Use “Breath-R” for expression pedals which have the control output on the ring of the pedal jack. Use “Breath-T” for expression pedals which have the control output on the tip of the pedal jack (for example a Korg EXP2 pedal). If you are not sure which type of expression pedal you have, try the “Breath-R” option first. If the pedal then seems to behave in the opposite manner to what you would expect, then come back to this menu & change the parameter to “Breath-T” instead. Similarly there are 2 types of Footswitches available. These are the “normally open” & “normally closed” types. In the Sustain position Input 2 is configured to work as a sustain pedal input. In this case a sustain pedal that is normally open. In the Sustain-I position Input 2 is configured to work as a sustain pedal input. In this case a sustain pedal that is normally closed. Go to page 4 of the Global menu & the display shows:

Page 4 looks like so:



The Breath control determines if the Nova re-maps incoming Breath Control MIDI data & Pedal data (if the “Pedal mode parameter above is set to a “Breath” option) into Mod wheel data (CC no 1), Aftertouch data or any controller from 3 to 119, Pitchbend data & a selected number of NRPN's. This allows incoming Breath Control data to manipulate most of Nova's key parameters directly.



Remember to save your Global parameters if you wish the Nova to remember the expression pedal setting after it has been turned off.



If the input 2 (pedal) is assigned to be a pedal (that is the Pedal mode parameter is set to anything other than Off), then the input 2 (pedal) cannot be used as an input, only as an expression pedal input.

Pedals & MIDI

An expression pedal connected to the “Input 2 (pedal)” jack transmits MIDI CC 2 (also known as breath control).



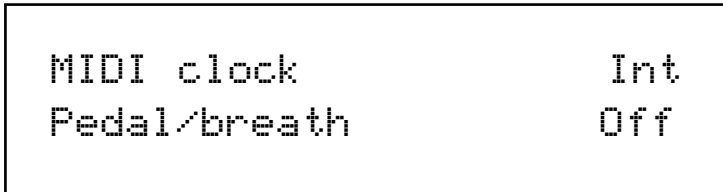
NOTE:

In Performance Mode, MIDI messages will only be transmitted if at least one Part has the “Expression pedal” on page 3 of the Part edit Midi menu set to “On”.

What the Pedal does in Program mode

An expression pedal connected to the “Input 2 (pedal)” jack generates breath control data which can then be re-mapped according to the setting of the “Breath control” parameter on page 4 of the Global menu.

Page 4 looks like so:

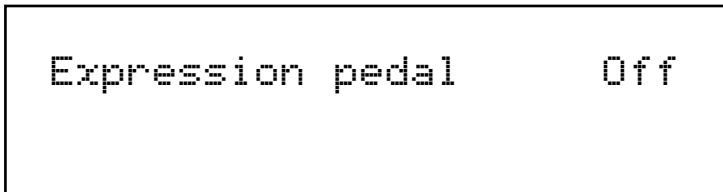


For example, if the “Breath control” parameter in the Global menu was set to “MW”, all data generated by the pedal would be passed on to the currently selected Program as if it were modulation wheel data (CC 1) taking into account all of the Wheel settings in the Program’s modulation matrices.

What the Pedal does in Performance mode

In Performance Mode, each individual Part has its own settings which determine whether it transmits Pedal data & how the Part responds to any MIDI data generated by a Pedal (both when received directly from the pedal or played back later from a sequencer). These parameters are accessed on pages 3 & 4 in the Part edit Midi menu.

Page 3 looks like so:



The “Pedal/breath” parameter on page 3 of the Midi menu determines whether the Part will respond to breath/pedal MIDI messages (CC 2). These messages could be generated directly by an expression pedal connected to the “Input (pedal)” jack or received from a sequencer via MIDI In. When this parameter is set to “On”, the breath control data which is then re-mapped according to the setting of the “Breath control” parameter on page 4 of the Global menu. For example, if this parameter in the Global menu was set to “MW”, all data generated by the pedal would be passed on to the Part as if it were modulation wheel data (CC 1) taking into account all of the Wheel settings in the Parts Program’s modulation matrices.

Footswitch does not appear to work when connected to the "Input 2 (pedal) socket.

Make sure the Input 2 (pedal) socket is not set to "Off" on page 9 of the Global menu.

Make sure the Input 2 (pedal) socket is not configured for "Pedal-T" or "Pedal-R" on page 9 of the Global menu.

Pedal / footswitch works fine in Program Mode but does not appear to work in Performance Mode.

Make sure Part is enabled (its Polyphony setting is not set to "Off"). Make sure the jack socket is set to "On" for the Part (page 3 in the Part edit Midi menu).

Pedal / footswitch works, but behaves in the opposite manner to the way expected.

Switch to the opposite type of pedal / footswitch configuration (page 9 in the Global menu).

No Power.

Power Supply not connected properly. If applicable, check fuse in mains plug.

No Sound.

Check the "Volume" knob is not set at zero. Check that the correct MIDI receive Channel is selected. Check that all mixer parameters are not set to zero. Check that a Volume MIDI Message of zero is not being transmitted to Nova. Check that the Filter Frequency knob or Sustain & Decay knobs of Env1 are not set to zero. Check that Local On/Off in Global Mode is not set to Off. Check Arp Mute is not active. (lit) Check Part Polyphony is not set to Off. Check Pass to Effects parameter in Dist/EQ/Config menu is not set to Input 1 or 2 but program. Check that the Arpeggio notes to: parameter in Arp Menu is not set to MIDI only. Check Part levels in a Performance are not set to 0. Another possibility is that the Program being monitored is an Arpeggiated one & the MIDI clock parameter in the Global menu is set to external and there is no MIDI clock being received.

LFOs, Delays and/or Arpeggiator do not sync to MIDI Clock.

Check the Clock parameter in the Global Mode is set to Ext. (refer page 38) If this is set to external, check the Nova is synced by varying the tempo of the Sequencer. If the Nova speeds up & slows down accordingly, the Nova is synced to MIDI Clock. However it is possible to synchronise the LFOs, Delay & Arpeggiator to many different time signatures. This can lead to a situation where the Nova may be synced but synchronised at a strange time signature. Check the synchronisation parameters refer to page 77 for the LFOs, page 84 for the Delay & page 50 for the Arpeggiator for details.

LFOs, Delay and/or Arpeggiator is stuck/stopped/does not work.

This is almost certainly because the LFOs, Delay and/or Arpeggiator are set to sync to MIDI Clock. To check this see if the Clock parameter in the Global Mode is set to Ext. (refer page 38) If it is set to External then setting this parameter to internal will restore the operation of the LFOs, Delay & or Arpeggiator. If you wish these to be synced to MIDI Clock, leave this parameter in External & confirm that the sequencer is actually sending MIDI Clock. A lot of software sequencers default to NOT transmitting MIDI Clock. If the LFO / Delay / Arp is stuck / not functioning & you have the Clock parameter in the Global Mode is set to Ext, the sequencer is not sending MIDI Clock. There is no other reason.

Cannot record knob movements on the sequencer.

Some sequencers / software feature a "filter" for filtering out unwanted data. Controllers is usually an option. This data must not be filtered out by the program. Consult the sequencer / software's owners manual for details.

Cannot change "Banks" via MIDI.

Bank changes are different from program changes & are actually two messages. For this reason, some sequencers / software have a "Bank Box" or similar in an attempt to simplify things. However sometimes on early versions of software this function may not be available. If this is the case & your sequencer does not have a "Bank Box" or similar you will have to enter in the data manually in a "List Edit" or similar function within the sequencer. You will have to enter a controller with specific values & then a program change message, all with the right values & in the right order & on the right channels. If the message you send does not change the bank on the Nova then you are not sending the right messages & values. Consult your sequencer / software owners manual for details. Bank change messages are as follows. They must be sent as shown & in the correct order. A Program Bank "A"

message is as follows: enter a controller 32 message with a value of 5 followed by a program change message with the value of the program you want. i.e. for program 6 enter 7. A Program Bank "B" message is as follows: enter a controller 32 with a value of 6 followed by a program change message with the value of the program you want. Alternatively simply select the desired Performance / Program from the Nova's front panel while recording into a sequencer. Make sure the MIDI output of the Nova is connected to the MIDI input of your sequencer / computer either directly or via a merge box.



There is a Table of Bank messages recognised by the Nova on page 130.

Nova does not respond to MIDI Program Change / Bank select messages.

Check that the Incoming Program change parameter in the Global mode is set to Enabled &/or the Prog change filt parameter in MIDI menu of the Part edit section is not On.

Nova does not respond to Controller messages.

Check that the Incoming control change parameter in the Global mode is set to Enabled &/or the Controller filt parameter in the MIDI menu of the Part edit section is not On.

The knobs & buttons do not alter the sound / do anything.

Check that the Local On/Off parameter in Global mode is not set to Off.

Cannot receive Sysex dumps (Progs-Perfs)

Check that Memory Protect is set to Off & Sysex reception is set to Normal (RX as sent). If you are sending B bank Perfs or C/D Bank Progs from a Supernova to the Nova, then these sounds will not go into the Nova as corresponding banks do not exist in the Nova. You can however specify All Progs to bank A or B & All Perfs to bank A to get around this.

Only the signals from outputs 1&2 appear on outputs 5&6.

This is because the "Headphones out" parameter on page 9 of the Global mode is set to 1&2 (refer page 40 for details). This is the default setting so that outputs 5&6 can be used as Headphones that monitor the master 1&2 outputs. Simply reassign the parameter to 5&6 & these out puts will behave as outputs 5&6 & no longer monitor as headphones would.

The Nova switches itself from Perf mode to Prog mode.

This is because the MIDI out & MIDI in of the Nova is connected to a sequencer which is remapping Bank/Program messages (generated by changing Program/Bank on a Part) to a channel corresponding to the Global channel of the Nova. The solution is to Filter out Bank messages in the Sequencer, or disconnect the midi out of the Nova, or disable the "Thru" function on the sequencer, or to change the Global channel of the Nova to one not being used in the sequencer.

When editing a Part in Perf mode, other parts are being edited as well.

This is because the MIDI out & MIDI in of the Nova is connected to a sequencer which is remapping controller messages (generated by editing parameters on a Part) to a channel corresponding to the channel of the other Part. The solution is to switch the local control parameter in global to off. This means all edits will be carried out via the MIDI chain rather than directly & the sequencer will dictate which part is being edited by the MIDI channel setting on the track. The alternatives are not very friendly, they are to filter out controller messages in the Sequencer, or disconnect the midi out of the Nova, or disable the "Thru" function on the sequencer.

Data compatibility with SN II series

Limited provision has been made for the Nova Laptop to load system exclusive dumps from a Supernova II Keyboard, Nova II Keyboard or Supernova II Rack.

However, it will not be possible to take across all of the parameters into the Nova Laptop. Certain features such as FM algorithms, extended envelope parameters and extended effects parameters are unique to the 2nd generation series and cannot be taken across. These features will be ignored if taken across via Sysex.

Other features such as special filter width and unison are common to both series, but are available in a reduced form on the Nova Laptop. In such cases, the settings will be approximated as closely as possible when taken across via Sysex.

New features common with 2nd generation series (can be taken across) :

- Osc special waveform : Double saw
- Filter special types (all)
- Unison on/off
- Unison voices
- Special filter width modulation
- Pan effects
- Constant gate
- Global prog change tx option
- Global controllers tx option
- Global finder demo switch
- Global knob mode



The Pan effects, Special Filter width & VCO Drift parameters can only be transferred successfully if the transmitting Supernova II or Nova II has the forthcoming OS 2 or above installed.

New features common with 2nd generation series in limited form (can be taken across) :

- Unison detune (default unison detune value applied when Unison is on)
- Special filter width (rounded to nearest pre-set value)
- VCO drift (converted to DCO/VCO mode)
- Arp gate time (rounded to nearest pre-set value)

Features unique to 2nd generation series (cannot be taken across) :

- FM configurations
- Envelope level tracking
- Envelope level note
- Envelope A-D repeat
- Envelope sustain rate
- Envelope sustain time
- Oscs start phase
- Arp output channel
- Filter overdrive curve
- Oscs filter bypass
- Effects bypass
- Comb filter speed
- Comb filter depth
- Comb filter spread
- Comb filter freq wheel
- Comb filter boost wheel
- Distortion output level
- Distortion gain compensate
- Distortion curve
- Chorus delay
- Chorus LFO wave
- Chorus speed 2
- Chorus inertia
- Chorus stereo width
- Chorus type : Ensemble
- Chorus type : Rotary speaker
- LFO delay fade
- LFO slew amount
- Drum played as
- Global input/switch settings
- Global aftertouch tx option
- Global velocity tx option
- Global arp kbd note tx option
- Global sysex tx delay
- Global temp display time
- Arp transpose zone settings
- All external part settings
- Drum maps
- Digital i/o card options

Squarewave pulse width compatibility

Before OS4.0, maximum or minimum setting of "width" (+63 or -64) for an oscillator set to square wave gave a 5% pulse width. For compatibility with series 2, this has changed to 0% (ie silence). OS4.0 does not automatically adjust this.

Few programs use these extreme settings and it is unlikely that any change will be heard.

However, if upgrading to OS4.0 has made any of your programs silent or distinctly different, please check oscillators using square wave and reduce extreme settings of width by 3 or 4 counts.

LOADING ADDITIONAL SOUNDS

Additional sound banks are available on our web site <http://www.novationuk.com>. To install the new sounds follow the procedure below. This is actually very similar to upgrading the OS in your Nova.

- 1 - Download the Midi file of the Sounds for the Nova.
- 2 - Connect the MIDI out of the sequencer to the MIDI in of the Nova.
- 3 - Turn the Memory Protect OFF (in page 7 of the Global mode) & make sure your Nova is set to Global MIDI channel 1 (page 1 of the Global mode).
- 4 - Load the Midi file into your sequencer.
- 5 - Play the sequence (The display will show the status of incoming messages).



If you experience problems with this file, it is probably due to similar problems that can occur when updating the OS. Please Refer to page 115 "Upgrading the Operating System".

Please follow the instructions below for details on how to upgrade you Nova's Operating System.

- 1 - Download the latest Operating System from our site.
- 2 - BACK UP YOUR DATA.
Make a backup of your data to computer. By this I mean everything. Use the "Total data" setting in the Sysex transmission parameter in global mode.
- 3 - VERIFY YOUR BACKUP.
Change the name of one of the sounds & write the change in. Then reload your sounds from YOUR BACKUP that you have just made. If the name has changed back to what it was when you made the backup, chances are the backup is OK.
- 4 - SWITCH THE NOVA OFF.
- 5 - CONNECT MIDI OUT OF THE SEQUENCER TO MIDI IN ON THE NOVA.
- 6 - LOAD THE NovaOS4n.mid FILE INTO YOUR SEQUENCER.
- 7 - HOLD DOWN PART MUTE BUTTON & SWITCH THE NOVA ON WHILE STILL HOLDING IT DOWN.

The display should show:

```
Waiting for midi O/S
```

- 8 - PLAY THE SEQUENCER.

If everything is OK you'll get a display like so indicating the amount of file received.

```
Receiving OS 4.0  
progress...10%
```

Once the file has reached 100% the display will show:

```
OK - updating flash  
progress...10%
```

The Nova is now updating the OS in Flash Memory.



NOTE:

Under no circumstances switch off the Nova while this procedure is happening. Doing so may result in very erratic behaviour & may lead to the Nova needing to be sent back for service! Once the Flash has been loaded the Nova will automatically reboot as normal running the new OS.

While we have taken every precaution in designing the OS to be upgraded trouble free, sometimes problems can occur. This is not solely down to us but in almost all cases rests with the sequencer/hardware used to perform the upgrade.

If an error occurs during the upgrade process the display will show:

```
Packet error!!  
Switch off and re-try
```

This is an indication that an error has occurred in the download process that does not make any sense to the Nova.



This is not caused by the Nova but by the transmitting device. This is caused by the software or the hardware used to transmit the OS to the Nova. Do what it says, switch the Nova off & re-try.

If the problem re-occurs, then please look below.

PCs

PCs have the most problems. As said above this is not a fault in the Nova but the transmitting device. In these devices it seems to be a compound problem with hardware & software. Some applications will work with some MIDI interfaces & not with others.

Solution 1 is try another sequencer / application.

Solution 2 is try another MIDI interface.

Solution 3 is try another sequencer / application with a different MIDI interface.

Cubase works most of the time depending on the version & interface.

Cakewalk works sometimes depending on the version & interface.

Logic works most of the time depending on the version & interface.

Media Player works sometimes depending on the version & interface.

Freelader works most of the time depending on the version & interface.

Some USB MIDI interfaces do seem to have problems handling this data. Please contact the manufacturer to get the latest Drivers / Operating systems for the interfaces. At the point of writing no USB interface known can reliably do this.

If none of this works...Try a different computer. Feel free to ask the sequencer manufacturer why large sysex files as .mid files are incompatible with their application. (.mid files are meant to be an international standard)

Macintosh

Mac's seem to be relatively trouble free. Problems have been encountered with older ones though. If you experience problems, the same solutions as described above for PC apply.

Solution 1 is try another sequencer/application.

Solution 2 is try another MIDI interface.

Solution 3 is try another sequencer / application with a different MIDI interface.

Some USB MIDI interfaces do seem to have problems handling this data. Please contact the manufacturer to get the latest Drivers / Operating systems for the interfaces. At the point of writing no USB interface known can reliably do this.

If none of this works...Try a different computer. However this is rarely necessary.

ATARI

Never had a problem ever, an 8meg 16 bit machine can cream the lot of them.

AMIGA

Bars & Pipes Pro works but it could be down to the interface.

WORKSTATIONS

Workstations such as KORG's Trinity/X-series/O1w & ROLAND Workstations do not to our knowledge at this stage support sysex as .mid files. They have Utility modes which can load sysex files but not in the Midi File format.

Basically this means the files downloadable from our site are not compatible with your workstation. You will have to use a computer to upgrade your unit with this file.

Synthesis System	Analogue Sound Modelling.
Polyphony	16 Voices.
Sound Sources per Voice	3 Oscillators, 2 Ring Modulators and a Noise Generator.
Modulation Matrix	Comprehensive Modulation Matrix with 130 possible routings.
Multitimbral capacity	6 part Multitimbral.
Filter	12, 18 and 24 dB per octave Resonant filter configurable in Low Pass, High Pass and Band Pass modes. The filter also features an overdrive control & 9 dual filter modes.
LFOs	2 LFOs capable of oscillating at Audio rates.
Program Effects	Distortion, Comb Filter, EQ, Reverb, Chorus/Flanger/Phaser, Delay and Panning effects for each Program.
Total number of Effects	42 Effects available simultaneously. 7 Effects for each of the 6 Parts of a Performance.
Vocoder	40 Band Vocoder that can run simultaneously with the Full Synth Engine (no reduction of polyphony etc).
Number of Outputs	6 assignable polyphonic outputs with 128 x Oversampling Delta Sigma DACs for each output.
Number of Inputs	2 Audio Inputs. Signals can be routed through the Synth Engine (Filters), Effects or both. 20 bit ADCs.
Input Sensitivity	Selectable between Microphone, Guitar, -10dB and +4dB Levels.
Metering	PPM Metering with Variable Trim & 40 Band Spectrum Analyser on the Display.
Number of Programs	256 Programs in 2 banks.
Number of Performances	128 Performances.
Arpeggiator	Built in Arpeggiator with 384 Preset Polyphonic, Preset Monophonic and User Programmable Polyphonic and Monophonic Patterns. 6 Arpeggiators are available simultaneously in Performance mode.
Control	All knobs, switches and Parameters transmit MIDI Controllers and NRPNs.
Operating System	Flash upgradeable operating system via MIDI.
Power Requirement	Multi Voltage external power supply.
MIDI	In/Out/Thru.
Dimensions	6U Rackmount (Rack Kit Included) H63mm (including knobs) D193mm W383mm.
Weight	4kg.



NOTE:

Specification subject to change without prior notice due to improvements.

MIDI IMPLEMENTATION

Function	Transmitted	Recognised	Remarks
Basic Default Channel Changed	1-16	1-16	Memorised
Mode Default Messages Altered	x 888888888888	2 x	
Note Number Voice True	nn 888888888888	nn nn	
Velocity Note On Note Off	o x	o x	Velocity is transmitted by the Arpeggiator.
After Touch Keys Ch's	x x	o o	Key Aftertouch recognised but treated as Channel Aftertouch.
Pitch Bender	x	o 0-12 Semi	
Control Change	3-98, 100-119 (See Controller Map)	1-98, 100-119 (See Controller Map)	CC 0 ignored CC 99 ignored CC 2 re-mapable See Controller and NRPN Tables for full details
Program Change True*	o 0-127 888888888888	o 0-127	
System Exclusive	o	o	Voice & User Pattern Parameters, Write & Dump requests
System Clock Real Time	x	o	Start, Stop, Continue& Clock
Aux Messages Local Off All notes Off Active Sense Reset Control All Sound Off	o x x x x	o o x o o	
Mode1: Omni On, Poly Mode3: Omni On, Mono Mode2: Omni Off, Poly Mode4: Omni Off, Poly Version 4.0 Date: 3/5/01 o =Yes x = No			

0 – Bank Select MSB	64 – Sustain / Arp Latch
1 – Modulation Wheel	65 – Arp Latch
2 – Breath Controller	66 – Osc 1 Pitch Env 3
3 – Arp Pattern Select	67 – Osc 2 Pitch Env 3
4 – Ring Modulator 2 * 3 Mix Level	68 – Osc 3 Pitch Env 3
5 – Portamento Time	69 – Osc 1 Width LFO 2
6 – Data Entry	70 – Osc 2 Width LFO 2
7 – Part / Program Volume	71 – Osc 3 Width LFO 2
8 – Effects Config Morph Amount	72 – Filter Res Env 2
9 – Arp Speed (Internal Clock Rate) [*]	73 – Filter Res LFO 1
10 – Pan	74 – Env 3 Delay
11 – Osc 1 Fine Tune	75 – Env 3 Attack
12 – Osc 3 Fine Tune	76 – Env 3 Decay
13 – Osc 1 Soften	77 – Env 3 Sustain
14 – Osc 2 Soften	78 – Env 3 Release
15 – Osc 3 Soften	79 – Env 3 Velocity
16 – LFO 1 Speed	80 – LFO 1 Speed Env 3
17 – LFO 1 Delay	81 – LFO 2 Speed Env 3
18 – LFO 2 Speed	82 – LFO 1 Offset
19 – LFO 2 Delay	83 – LFO 2 Offset
20 – Osc 1 Pitch Env 2	84 – Reverb Mod Wheel Depth
21 – Osc 1 Pitch LFO 1	85 – Filter Res Env 3
22 – Osc 1 Pulse Width	86 – Filter Res LFO 2
23 – Osc 2 Fine Tune	87 – Chorus Speed
24 – Noise Soften	88 – Chorus Mod Depth
25 – Osc 2 Pitch Env 2	89 – Chorus Feedback
26 – Osc 2 Pitch LFO 1	90 – Distortion Level
27 – Osc 2 Pulse Width	91 – Reverb Send Level
28 – Osc 1 Mix Level	92 – Delay Send Level
29 – Osc 2 Mix Level	93 – Chorus Send Level
30 – Noise Mix Level	94 – Chorus Mod Wheel Depth
31 – Ring Modulator 1 * 3 Mix Level	95 – Reverb Decay
32 – Bank Select LSB	96 – Reverb HF Damp
33 – Osc 3 Mix Level	97 – Master Volume Level [*]
34 – Filter Tracking	98 – NRPN Select LSB
35 – Filter Freq LFO 2	99 – NRPN Select MSB
36 – Osc 1 Mix Env 2	100 – Reverb Type / Early Ref Level [**]
37 – Osc 2 Mix Env 2	101 – Delay Time
38 – Osc 3 Mix Env 2	102 – Delay Feedback
39 – Noise Mix Env 2	103 – Delay HF Damp
40 – Osc 3 Pitch Env 2	104 – Filter Overdrive
41 – Osc 3 Pitch LFO 1	105 – Filter Cutoff Freq
42 – Osc 3 Pulse Width	106 – Filter Resonance
43 – Osc 1 Width Env 2	107 – Filter Freq Env 2
44 – Osc 2 Width Env 2	108 – Env 1 Attack
45 – Osc 3 Width Env 2	109 – Env 1 Decay
46 – Osc 1 Width LFO 1	110 – Env 1 Sustain
47 – Osc 2 Width LFO 1	111 – Env 1 Release
48 – Osc 3 Width LFO 1	112 – Env 1 Velocity
49 – Osc 1 Sync	113 – Env 2 Delay
50 – Osc 2 Sync	114 – Env 2 Attack
51 – Osc 3 Sync	115 – Env 2 Decay
52 – Osc 1 Sync Env 2	116 – Env 2 Sustain
53 – Osc 2 Sync Env 2	117 – Env 2 Release
54 – Osc 3 Sync Env 2	118 – Env 2 Velocity
55 – Osc 1 Sync LFO 1	119 – Delay Mod Wheel Depth
56 – Osc 2 Sync LFO 1	120 – All Sound Off
57 – Osc 3 Sync LFO 1	121 – Reset Controllers
58 – Distortion Mod Wheel Depth	122 – Local Control [*]
59 – Filter Freq Env 3	123 – All Notes Off
60 – Filter Freq LFO 1	124 – All Notes Off
61 – Osc 1 Soften Env 2	125 – All Notes Off
62 – Osc 2 Soften Env 2	126 – All Notes Off
63 – Osc 3 Soften Env 2	127 – All Notes Off

MIDI NRPN TABLES

NRPN	Hexadecimal	LSB	MSB	Description
0	0	0	0	Multi purpose packed NRPN
1	1	1	0	Multi purpose packed NRPN
2	2	2	0	Osc 1 Mod knob LFO 2 pitch
3	3	3	0	Osc 1 Mod knob Wh pitch
4	4	4	0	Osc 1 Mod knob Env 3 width
5	5	5	0	Osc 1 Mod knob Wh width
6	6	6	0	Osc 1 Mod knob Env 3 sync
7	7	7	0	Osc 1 Mod knob LFO 2 sync
8	8	8	0	Osc 1 Mod knob Wh sync
9	9	9	0	Osc 1 Mod knob Env 3 hardness
10	A	10	0	Osc 1 Mod knob LFO 1 hardness
11	B	11	0	Osc 1 Mod knob LFO 2 hardness
12	C	12	0	Osc 1 Mod knob Wh hardness
13	D	13	0	Osc 1 Mod knob Env 3 mix
14	E	14	0	Osc 1 Mod knob LFO 1 mix
15	F	15	0	Osc 1 Mod knob LFO 2 mix
16	10	16	0	Osc 1 Mod knob Wh mix
17	11	17	0	Osc 1 Man knob pitch
18	12	18	0	Osc 2 Mod knob LFO 2 pitch
19	13	19	0	Osc 2 Mod knob Wh pitch
20	14	20	0	Osc 2 Mod knob Env 3 width
21	15	21	0	Osc 2 Mod knob Wh width
22	16	22	0	Osc 2 Mod knob Env 3 sync
23	17	23	0	Osc 2 Mod knob LFO 2 sync
24	18	24	0	Osc 2 Mod knob Wh sync
25	19	25	0	Osc 2 Mod knob Env 3 hardness
26	1A	26	0	Osc 2 Mod knob LFO 1 hardness
27	1B	27	0	Osc 2 Mod knob LFO 2 hardness
28	1C	28	0	Osc 2 Mod knob Wh hardness
29	1D	29	0	Osc 2 Mod knob Env 3 mix
30	1E	30	0	Osc 2 Mod knob LFO 1 mix
31	1F	31	0	Osc 2 Mod knob LFO 2 mix
32	20	32	0	Osc 2 Mod knob Wh mix
33	21	33	0	Osc 2 Man knob pitch
34	22	34	0	Osc 3 Mod knob LFO 2 pitch
35	23	35	0	Osc 3 Mod knob Wh pitch
36	24	36	0	Osc 3 Mod knob Env 3 width
37	25	37	0	Osc 3 Mod knob Wh width
38	26	38	0	Osc 3 Mod knob Env3 sync
39	27	39	0	Osc 3 Mod knob LFO 2 sync
40	28	40	0	Osc 3 Mod knob Wh sync
41	29	41	0	Osc 3 Mod knob Env 3 hardness
42	2A	42	0	Osc 3 Mod knob LFO 1 hardness
43	2B	43	0	Osc 3 Mod knob LFO 2 hardness
44	2C	44	0	Osc 3 Mod knob Wh hardness
45	2D	45	0	Osc 3 Mod knob Env 3 mix
46	2E	46	0	Osc 3 Mod knob LFO 1 mix
47	2F	47	0	Osc 3 Mod knob LFO 2 mix
48	30	48	0	Osc 3 Mod knob Wh mix
49	31	49	0	Osc 3 Man knob pitch
50	32	50	0	1*3 Mod knob Env 2 mix
51	33	51	0	1*3 Mod knob Env 3 mix
52	34	52	0	1*3 Mod knob LFO 1 mix
53	35	53	0	1*3 Mod knob LFO 2 mix
54	36	54	0	1*3 Mod knob Wh mix
55	37	55	0	2*3 Mod knob Env 2 mix
56	38	56	0	2*3 Mod knob Env 3 mix
57	39	57	0	2*3 Mod knob LFO 1 mix
58	3A	58	0	2*3 Mod knob LFO 2 mix
59	3B	59	0	2*3 Mod knob Wh mix
60	3C	60	0	Noise Mod knob Env 2 hardness
61	3D	61	0	Noise Mod knob Env 3 hardness
62	3E	62	0	Noise Mod knob LFO 1 hardness
63	3F	63	0	Noise Mod knob LFO 2 hardness

NRPN	Hexadecimal	LSB	MSB	Description
64	40	64	0	Noise Mod knob Wh hardness
65	41	65	0	Noise Mod knob Env 3 mix
66	42	66	0	Noise Mod knob LFO 1 mix
67	43	67	0	Noise Mod knob LFO 2 mix
68	44	68	0	Noise Mod knob Wh mix
69	45	69	0	Osc 1 Wh LFO 1 intensity
70	46	70	0	Osc 2 Wh LFO 1 intensity
71	47	71	0	Osc 3 Wh LFO 1 intensity
72	48	72	0	Osc 1 Aftertouch LFO 1 intensity
73	49	73	0	Osc 2 Aftertouch LFO 1 intensity
74	4A	74	0	Osc 3 Aftertouch LFO 1 intensity
75	4B	75	0	Osc 1 Sync formant width
76	4C	76	0	Osc 2 Sync formant width
77	4D	77	0	Osc 3 Sync formant width
78	4E	78	0	Osc 1 Key sync
79	4F	79	0	Osc 2 Key sync
80	50	80	0	Osc 3 Key sync
81	51	81	0	Osc 1 Sync skew
82	52	82	0	Osc 2 Sync skew
83	53	83	0	Osc 3 Sync skew
84	54	84	0	Multi purpose packed NRPN
85	55	85	0	LFO 1 Speed Aftertouch depth
86	56	86	0	LFO 2 Speed Aftertouch depth
87	57	87	0	Filter Mod knob Wh frequency
88	58	88	0	Filter Mod knob Wh resonance
89	59	89	0	Filter frequency Wh LFO 2 intensity
90	5A	90	0	Filter resonance Wh LFO 2 intensity
91	5B	91	0	Filter frequency Aftertouch LFO 2 intensity
92	5C	92	0	Filter resonance Aftertouch LFO 2 intensity
93	5D	93	0	Filter Aftertouch frequency
94	5E	94	0	Filter Aftertouch resonance
95	5F	95	0	Comb filter frequency
96	60	96	0	Comb filter boost
97	61	97	0	Effects dry level
98	62	98	0	Panning speed
99	63	99	0	Panning depth
100	64	100	0	Multi purpose packed NRPN
101	65	101	0	Delay width
102	66	102	0	Vocoder balance
103	67	103	0	LFO 1 speed Wh depth
104	68	104	0	LFO 2 speed Wh depth
105	69	105	0	Env 1 Wh
106	6A	106	0	Env 1 Aftertouch
107	6B	107	0	EQ treble
108	6C	108	0	EQ bass
109	6D	109	0	Multi purpose packed NRPN
110	6E	110	0	Multi purpose packed NRPN
111	6F	111	0	Part semitone detune
112	70	112	0	Part cents detune
113	71	113	0	Multi purpose packed NRPN
114	72	114	0	Part range highest note
115	73	115	0	Part range lowest note
116	74	116	0	Global master tune [*]
117	75	117	0	Breath / Pedal CC02 re map option [*]
118	76	118	0	Arp realtime transpose channel [*]
119	77	119	0	Arp realtime transpose ref note [*]
120	78	120	0	Favourites map edit location [*]
121	79	121	0	Favourites map program number [*]
122	7A	122	0	User pattern number edit select [*]
123	7B	123	0	User pattern edit step [*]
124	7C	124	0	User pattern edit note value [*]
125	7D	125	0	User pattern edit velocity value [*]
126	7E	126	0	User pattern edit no. of steps [*]
127	7F	127	0	Filter Q normalise

[*] Always sent & received on the Global MIDI channel

MIDI NRPN TABLES

Packed NRPN 0

Data	Description	Data	Description
0	Osc 1 square wave	64	Osc 1 semitone tune +7
1	Osc 1 saw wave	65	Osc 1 semitone tune +8
2	Osc 1 Audio input 1 wave	66	Osc 1 semitone tune +9
3	Osc 1 Audio input 2 wave	67	Osc 1 semitone tune +10
4	Osc 1 double saw wave	68	Osc 1 semitone tune +11
5	Not Currently Used	69	Osc 1 semitone tune +12
6	Not Currently Used	70	Osc 2 semitone tune -12
7	Not Currently Used	71	Osc 2 semitone tune -11
8	Not Currently Used	72	Osc 2 semitone tune -10
9	Not Currently Used	73	Osc 2 semitone tune -9
10	Osc 2 square wave	74	Osc 2 semitone tune -8
11	Osc 2 saw wave	75	Osc 2 semitone tune -7
12	Osc 2 Audio input 1 wave	76	Osc 2 semitone tune -6
13	Osc 2 Audio input 2 wave	77	Osc 2 semitone tune -5
14	Osc 2 double saw wave	78	Osc 2 semitone tune -4
15	Not Currently Used	79	Osc 2 semitone tune -3
16	Not Currently Used	80	Osc 2 semitone tune -2
17	Not Currently Used	81	Osc 2 semitone tune -1
18	Not Currently Used	82	Osc 2 semitone tune 0
19	Not Currently Used	83	Osc 2 semitone tune +1
20	Osc 3 square wave	84	Osc 2 semitone tune +2
21	Osc 3 saw wave	85	Osc 2 semitone tune +3
22	Osc 3 Audio input 1 wave	86	Osc 2 semitone tune +4
23	Osc 3 Audio input 2 wave	87	Osc 2 semitone tune +5
24	Osc 3 double saw wave	88	Osc 2 semitone tune +6
25	Not Currently Used	89	Osc 2 semitone tune +7
26	Not Currently Used	90	Osc 2 semitone tune +8
27	Not Currently Used	91	Osc 2 semitone tune +9
28	Not Currently Used	92	Osc 2 semitone tune +10
29	Not Currently Used	93	Osc 2 semitone tune +11
30	Osc 1 octave -2	94	Osc 2 semitone tune +12
31	Osc 1 octave -1	95	Osc 3 semitone tune -12
32	Osc 1 octave 0	96	Osc 3 semitone tune -11
33	Osc 1 octave +1	97	Osc 3 semitone tune -10
34	Osc 1 octave +2	98	Osc 3 semitone tune -9
35	Osc 2 octave -2	99	Osc 3 semitone tune -8
36	Osc 2 octave -1	100	Osc 3 semitone tune -7
37	Osc 2 octave 0	101	Osc 3 semitone tune -6
38	Osc 2 octave +1	102	Osc 3 semitone tune -5
39	Osc 2 octave +2	103	Osc 3 semitone tune -4
40	Osc 3 octave -2	104	Osc 3 semitone tune -3
41	Osc 3 octave -1	105	Osc 3 semitone tune -2
42	Osc 3 octave 0	106	Osc 3 semitone tune -1
43	Osc 3 octave +1	107	Osc 3 semitone tune 0
44	Osc 3 octave +2	108	Osc 3 semitone tune +1
45	Osc 1 semitone tune -12	109	Osc 3 semitone tune +2
46	Osc 1 semitone tune -11	110	Osc 3 semitone tune +3
47	Osc 1 semitone tune -10	111	Osc 3 semitone tune +4
48	Osc 1 semitone tune -9	112	Osc 3 semitone tune +5
49	Osc 1 semitone tune -8	113	Osc 3 semitone tune +6
50	Osc 1 semitone tune -7	114	Osc 3 semitone tune +7
51	Osc 1 semitone tune -6	115	Osc 3 semitone tune +8

Packed NRPN 1

Data	Description	Data	Description
0	Filter 12db slope	64	Breath sensing : Norm [*]
1	Filter 18db slope	65	Breath sensing : +1 [*]
2	Filter 24db slope	66	Breath sensing : +2 [*]
3	Filter LPF type	67	Breath sensing : +3 [*]
4	Filter BPF type	68	Breath sensing : +4 [*]
5	Filter HPF type	69	Breath sensing : +5 [*]
6	Filter Res LPF type	70	Arp constant pitch Off
7	Filter Res BPF type	71	Arp constant pitch On
8	Filter Res HPF type	72	Arpeggiator On
9	Filter Notch type	73	Arpeggiator Off
10	Filter LPF+LPF type	74	Arp keysync On
11	Filter BPF+BPF type	75	Arp keysync Off
12	Filter HPF+HPF type	76	Arp pattern bank : Mono
13	Filter LPF+BPF type	77	Arp pattern bank : Poly
14	Filter BPF+HPF type	78	Arp pattern bank : User
15	Not Currently Used	79	Arp latch type : Constant
16	LFO 1 square wave	80	Arp latch type : Pattern
17	LFO 1 saw wave	81	Arp quantize : Off
18	LFO 1 triangle wave	82	Arp quantize : Mode 1
19	LFO 1 s/h wave	83	Arp quantize : Mode 2
20	LFO 2 square wave	84	Arp quantize : Mode 3
21	LFO 2 saw wave	85	Arp quantize : Mode 4
22	LFO 2 triangle wave	86	Arp velocity : Played
23	LFO 2 s/h wave	87	Arp velocity : Full
24	LFO 1 triggering : Freewheel	88	Arp velocity : Half
25	LFO 1 triggering : Keysync	89	Arp velocity : Programmed
26	LFO 2 triggering : Freewheel	90	Arp mute Off
27	LFO 2 triggering : Keysync	91	Arp mute On
28	LFO 1 range : Slow	92	Arp realtime transpose On
29	LFO 1 range : Normal	93	Arp realtime transpose Off
30	LFO 1 range : Fast	94	Arp edit gate : Norm
31	LFO 2 range : Slow	95	Arp edit gate : Tie
32	LFO 2 range : Normal	96	Arp edit gate : Rest
33	LFO 2 range : Fast	97	Arp edit gate : Glide
34	Env triggering : Multi, Multi, Multi	98	Part outputs : 1 & 2
35	Env triggering : Multi, Multi, Sing	99	Part outputs : 3 & 4
36	Env triggering : Multi, Sing, Multi	100	Part outputs : 5 & 6
37	Env triggering : Multi, Sing, Sing	101	Reserved
38	Env triggering : Sing, Multi, Multi	102	Arp output : Program only
39	Env triggering : Sing, Multi, Sing	103	Arp output : Program & MIDI
40	Env triggering : Sing, Sing, Multi	104	Arp output : MIDI only
41	Env triggering : Sing, Sing, Sing	105	MIDI clock : Internal [*]
42	Glide type : Normal glide	106	MIDI clock : External [*]
43	Glide type : Auto glide	107	Prog table edit : Current bank [*]
44	Glide type : 2 semitones down	108	Prog table edit : Perf bank A [*]
45	Glide type : 2 semitones up	109	Reserved
46	Glide type : 5 semitones down	110	Prog table edit : Prog bank A [*]
47	Glide type : 5 semitones up	111	Prog table edit : Prog bank B [*]
48	Glide type : 7 semitones down	112	Reserved
49	Glide type : 7 semitones up	113	Reserved
50	Glide type : 12 semitones down	114	Reserved
51	Glide type : 12 semitones up	115	Reserved

MIDI NRPN TABLES

Packed NRPN 84

Data	Description	Data	Description
0	Osc 1 pitch bend range -12	64	Osc 3 pitch bend range +2
1	Osc 1 pitch bend range -11	65	Osc 3 pitch bend range +3
2	Osc 1 pitch bend range -10	66	Osc 3 pitch bend range +4
3	Osc 1 pitch bend range -9	67	Osc 3 pitch bend range +5
4	Osc 1 pitch bend range -8	68	Osc 3 pitch bend range +6
5	Osc 1 pitch bend range -7	69	Osc 3 pitch bend range +7
6	Osc 1 pitch bend range -6	70	Osc 3 pitch bend range +8
7	Osc 1 pitch bend range -5	71	Osc 3 pitch bend range +9
8	Osc 1 pitch bend range -4	72	Osc 3 pitch bend range +10
9	Osc 1 pitch bend range -3	73	Osc 3 pitch bend range +11
10	Osc 1 pitch bend range -2	74	Osc 3 pitch bend range +12
11	Osc 1 pitch bend range -1	75	Part effects used : Program
12	Osc 1 pitch bend range 0	76	Part effects used : Part
13	Osc 1 pitch bend range +1	77	Part Sustain Rx option : Enable
14	Osc 1 pitch bend range +2	78	Part Sustain Rx option : Arp latch
15	Osc 1 pitch bend range +3	79	Part Sustain Rx option : Arp mute
16	Osc 1 pitch bend range +4	80	Part Sustain Rx option : Enable (I)
17	Osc 1 pitch bend range +5	81	Part Sustain Rx option : Arp latch (I)
18	Osc 1 pitch bend range +6	82	Part Sustain Rx option : Arp mute (I)
19	Osc 1 pitch bend range +7	83	Part Sustain Rx option : Off
20	Osc 1 pitch bend range +8	84	Osc trigger mode : Percussive
21	Osc 1 pitch bend range +9	85	Osc trigger mode : Ensemble
22	Osc 1 pitch bend range +10	86	Poly mode : Mode 1
23	Osc 1 pitch bend range +11	87	Poly mode : Mode 2
24	Osc 1 pitch bend range +12	88	Sysex Tx : Single Program [*]
25	Osc 2 pitch bend range -12	89	Sysex Tx : All Programs [*]
26	Osc 2 pitch bend range -11	90	Sysex Tx : Single Prog request [*]
27	Osc 2 pitch bend range -10	91	Sysex Tx : All Progs request [*]
28	Osc 2 pitch bend range -9	92	Sysex Tx : Single Performance [*]
29	Osc 2 pitch bend range -8	93	Sysex Tx : All Performances [*]
30	Osc 2 pitch bend range -7	94	Sysex Tx : Single Perf request [*]
31	Osc 2 pitch bend range -6	95	Sysex Tx : All Perfs request [*]
32	Osc 2 pitch bend range -5	96	Sysex Tx : Single Arp pattern [*]
33	Osc 2 pitch bend range -4	97	Sysex Tx : All Arp patterns [*]
34	Osc 2 pitch bend range -3	98	Sysex Tx : Single Arp patt request [*]
35	Osc 2 pitch bend range -2	99	Sysex Tx : All Arp patts request [*]
36	Osc 2 pitch bend range -1	100	Sysex Tx : Global parameters [*]
37	Osc 2 pitch bend range 0	101	Sysex Tx : Global parameters req [*]
38	Osc 2 pitch bend range +1	102	Sysex Tx : Total data [*]
39	Osc 2 pitch bend range +2	103	Sysex Tx : Total data request [*]
40	Osc 2 pitch bend range +3	104	Sysex Tx : Prog bank A [*]
41	Osc 2 pitch bend range +4	105	Sysex Tx : Prog bank B [*]
42	Osc 2 pitch bend range +5	106	Reserved
43	Osc 2 pitch bend range +6	107	Reserved
44	Osc 2 pitch bend range +7	108	Sysex Tx : Prog bank A request [*]
45	Osc 2 pitch bend range +8	109	Sysex Tx : Prog bank B request [*]
46	Osc 2 pitch bend range +9	110	Reserved
47	Osc 2 pitch bend range +10	111	Reserved
48	Osc 2 pitch bend range +11	112	Sysex Tx : Perf bank A [*]
49	Osc 2 pitch bend range + 12	113	Reserved
50	Osc 3 pitch bend range -12	114	Sysex Tx : Perf bank A request [*]
51	Osc 3 pitch bend range -11	115	Reserved

Packed NRPN 100

Data	Description	Data	Description
0	Delay sync : Off	64	Input (2) trim : -4 [*]
1	Delay sync : 32 nd triplet	65	Input (2) trim : -3 [*]
2	Delay sync : 32 nd	66	Input (2) trim : -2 [*]
3	Delay sync : 16 th triplet	67	Input (2) trim : -1 [*]
4	Delay sync : 16 th	68	Input (2) trim : 0 [*]
5	Delay sync : 8 th triplet	69	Input (2) trim : +1 [*]
6	Delay sync : 16 th dotted	70	Input (2) trim : +2 [*]
7	Delay sync : 8 th	71	Input (2) trim : +3 [*]
8	Delay sync : 4 th triplet	72	Input (2) trim : +4 [*]
9	Delay sync : 8 th dotted	73	Input (2) trim : +5 [*]
10	Delay sync : 4 th	74	Input (2) trim : +6 [*]
11	Delay sync : 2 nd triplet	75	Input (2) trim : +7 [*]
12	Delay sync : 4 th dotted	76	Input (2) trim : +8 [*]
13	Delay sync : 2 nd	77	Input (2) trim : +9 [*]
14	Delay sync : 1 bar triplet	78	Input (2) trim : +10 [*]
15	Delay sync : 2 nd dotted	79	Constant gate Off
16	Delay sync : 1 bar	80	Constant gate On
17	Delay sync : 2 bar triplet	81	Unison Off
18	Delay sync : 1 bar dotted	82	Unison On
19	Delay sync : 2 bars	83	Unison : 2 voice
20	Delay sync : 4 bar triplet	84	Unison : 3 voice
21	Delay sync : 3 bars	85	Unison : 4 voice
22	Delay sync : 5 bar triplet	86	Unison : 5 voice
23	Delay sync : 4 bars	87	Unison : 6 voice
24	Delay sync : 3 bar dotted	88	Unison : 7 voice
25	Delay sync : 7 bar triplet	89	Unison : 8 voice
26	Delay sync : 5 bars	90	Knob mode : Normal [*]
27	Delay sync : 8 bar triplet	91	Knob mode : Pickup [*]
28	Delay sync : 6 bars	92	Oscillators in DCO mode
29	Delay sync : 7 bars	93	Oscillators in VCO mode
30	Delay sync : 5 bar dotted	94	Finder demos On [*]
31	Delay sync : 8 bars	95	Finder demos Off [*]
32	Delay sync : 6 bar dotted	96	Global program change Tx : On [*]
33	Delay sync : 7 bar dotted	97	Global program change Tx : Off [*]
34	Delay sync : 8 bar dotted	98	Global controllers Tx : On [*]
35	Global velocity sensing : Hard [*]	99	Global controllers Tx : Off [*]
36	Global velocity sensing : Soft [*]	100	Pan effects : No
37	Input (1) trim : -10 [*]	101	Pan effects : Yes
38	Input (1) trim : -9 [*]	102	Filter special width : 00
39	Input (1) trim : -8 [*]	103	Filter special width : 08
40	Input (1) trim : -7 [*]	104	Filter special width : 16
41	Input (1) trim : -6 [*]	105	Filter special width : 24
42	Input (1) trim : -5 [*]	106	Filter special width : 32
43	Input (1) trim : -4 [*]	107	Filter special width : 40
44	Input (1) trim : -3 [*]	108	Filter special width : 48
45	Input (1) trim : -2 [*]	109	Filter special width : 56
46	Input (1) trim : -1 [*]	110	Delay ratio : 1:Off
47	Input (1) trim : 0 [*]	111	Delay ratio : Off:1
48	Input (1) trim : +1 [*]	112	Not Currently Used
49	Input (1) trim : +2 [*]	113	Not Currently Used
50	Input (1) trim : +3 [*]	114	Not Currently Used
51	Input (1) trim : +4 [*]	115	Not Currently Used

MIDI NRPN TABLES

Packed NRPN 109

Data	Description	Data	Description
0	Reserved	64	Part MIDI channel : Omni
1	Arp octave range : 1	65	Part MIDI channel : Global
2	Arp octave range : 2	66	Sysex Rx : Disabled [*]
3	Arp octave range : 3	67	Sysex Rx : Normal (Rx as sent) [*]
4	Arp octave range : 4	68	Sysex Rx : All Progs to bank A [*]
5	Arp gate time : 25%	69	Sysex Rx : All Progs to bank B [*]
6	Arp gate time : 50%	70	Reserved
7	Arp gate time : 75%	71	Reserved
8	Arp gate time : 99%	72	Sysex Rx : All Perfs to bank A [*]
9	Reserved	73	Reserved
10	Reserved	74	Reserved
11	Reserved	75	Reserved
12	Reserved	76	Reserved
13	Reserved	77	Reserved
14	Reserved	78	Reserved
15	Reserved	79	Reserved
16	Reserved	80	Part velocity curve : Normal
17	Reserved	81	Part velocity curve : Inverse
18	Reserved	82	Part velocity curve : Cross fade - high
19	Reserved	83	Part velocity curve : Cross fade - low
20	Reserved	84	Part velocity curve : To value 60
21	Reserved	85	Part velocity curve : From value 61
22	Reserved	86	Part velocity curve : To value 70
23	Reserved	87	Part velocity curve : From value 71
24	Reserved	88	Part velocity curve : To value 80
25	Reserved	89	Part velocity curve : From value 81
26	Reserved	90	Part velocity curve : To value 90
27	Reserved	91	Part velocity curve : From value 91
28	Reserved	92	Part velocity curve : To value 100
29	Reserved	93	Part velocity curve : From value 101
30	Reserved	94	Part velocity curve : To value 110
31	Reserved	95	Part velocity curve : From value 111
32	Global MIDI channel : 1 [*]	96	Delay ratio : 1:1
33	Global MIDI channel : 2 [*]	97	Delay ratio : 1:0.75
34	Global MIDI channel : 3 [*]	98	Delay ratio : 0.75:1
35	Global MIDI channel : 4 [*]	99	Delay ratio : 1:0.66
36	Global MIDI channel : 5 [*]	100	Delay ratio : 0.66:1
37	Global MIDI channel : 6 [*]	101	Delay ratio : 1:0.5
38	Global MIDI channel : 7 [*]	102	Delay ratio : 0.5:1
39	Global MIDI channel : 8 [*]	103	Delay ratio : 1:0.33
40	Global MIDI channel : 9 [*]	104	Delay ratio : 0.33:1
41	Global MIDI channel : 10 [*]	105	Delay ratio : 1:0.25
42	Global MIDI channel : 11 [*]	106	Delay ratio : 0.25:1
43	Global MIDI channel : 12 [*]	107	Reserved
44	Global MIDI channel : 13 [*]	108	Reserved
45	Global MIDI channel : 14 [*]	109	Reserved
46	Global MIDI channel : 15 [*]	110	Reserved
47	Global MIDI channel : 16 [*]	111	Reserved
48	Part MIDI channel : 1	112	Reserved
49	Part MIDI channel : 2	113	Reserved
50	Part MIDI channel : 3	114	Reserved
51	Part MIDI channel : 4	115	Reserved

Packed NRPN 110

Data	Description	Data	Description
0	Arp sync : 32 nd triplet	64	LFO 1 sync : 3 bar dotted
1	Arp sync : 32 nd	65	LFO 1 sync : 7 bar triplet
2	Arp sync : 16 th triplet	66	LFO 1 sync : 5 bars
3	Arp sync : 16 th	67	LFO 1 sync : 8 bar triplet
4	Arp sync : 8 th triplet	68	LFO 1 sync : 6 bars
5	Arp sync : 16 th dotted	69	LFO 1 sync : 7 bars
6	Arp sync : 8 th	70	LFO 1 sync : 5 bar dotted
7	Arp sync : 4 th triplet	71	LFO 1 sync : 8 bars
8	Arp sync : 8 th dotted	72	LFO 1 sync : 6 bar dotted
9	Arp sync : 4 th	73	LFO 1 sync : 7 bar dotted
10	Arp sync : 2 nd triplet	74	LFO 1 sync : 8 bar dotted
11	Arp sync : 4 th dotted	75	Global Rx controllers : Enabled [*]
12	Arp sync : 2 nd	76	Part prog change filter Off
13	Arp sync : 1 bar triplet	77	Part prog change filter On
14	Arp sync : 2 nd dotted	78	Arp output ranging On
15	Arp sync : 1 bar	79	Arp output ranging Off
16	Arp sync : 2 bar triplet	80	LFO 2 sync : Off
17	Arp sync : 1 bar dotted	81	LFO 2 sync : 32 nd triplet
18	Arp sync : 2 bars	82	LFO 2 sync : 32 nd
19	Arp sync : 4 bar triplet	83	LFO 2 sync : 16 th triplet
20	Arp sync : 3 bars	84	LFO 2 sync : 16 th
21	Arp sync : 5 bar triplet	85	LFO 2 sync : 8 th triplet
22	Arp sync : 4 bars	86	LFO 2 sync : 16 th dotted
23	Arp sync : 3 bar dotted	87	LFO 2 sync : 8 th
24	Arp sync : 7 bar triplet	88	LFO 2 sync : 4 th triplet
25	Arp sync : 5 bars	89	LFO 2 sync : 8 th dotted
26	Arp sync : 8 bar triplet	90	LFO 2 sync : 4 th
27	Arp sync : 6 bars	91	LFO 2 sync : 2 nd triplet
28	Arp sync : 7 bars	92	LFO 2 sync : 4 th dotted
29	Arp sync : 5 bar dotted	93	LFO 2 sync : 2 nd
30	Arp sync : 8 bars	94	LFO 2 sync : 1 bar triplet
31	Arp sync : 6 bar dotted	95	LFO 2 sync : 2 nd dotted
32	Arp sync : 7 bar dotted	96	LFO 2 sync : 1 bar
33	Arp sync : 8 bar dotted	97	LFO 2 sync : 2 bar triplet
34	Global Rx prog ch : Enabled [*]	98	LFO 2 sync : 1 bar dotted
35	Global Rx prog ch : Favourites [*]	99	LFO 2 sync : 2 bars
36	Global Rx prog ch : Disabled [*]	100	LFO 2 sync : 4 bar triplet
37	Prog table edit bank : Arp Mono [*]	101	LFO 2 sync : 3 bars
38	Prog table edit bank : Arp Poly [*]	102	LFO 2 sync : 5 bar triplet
39	Prog table edit bank : Arp User [*]	103	LFO 2 sync : 4 bars
40	LFO 1 sync : Off	104	LFO 2 sync : 3 bar dotted
41	LFO 1 sync : 32 nd triplet	105	LFO 2 sync : 7 bar triplet
42	LFO 1 sync : 32 nd	106	LFO 2 sync : 5 bars
43	LFO 1 sync : 16 th triplet	107	LFO 2 sync : 8 bar triplet
44	LFO 1 sync : 16 th	108	LFO 2 sync : 6 bars
45	LFO 1 sync : 8 th triplet	109	LFO 2 sync : 7 bars
46	LFO 1 sync : 16 th dotted	110	LFO 2 sync : 5 bar dotted
47	LFO 1 sync : 8 th	111	LFO 2 sync : 8 bars
48	LFO 1 sync : 4 th triplet	112	LFO 2 sync : 6 bar dotted
49	LFO 1 sync : 8 th dotted	113	LFO 2 sync : 7 bar dotted
50	LFO 1 sync : 4 th	114	LFO 2 sync : 8 bar dotted
51	LFO 1 sync : 2 nd triplet	115	Global Rx controllers : Disabled [*]

MIDI NRPN TABLES

Packed NRPN 113

Data	Description	Data	Description
0	Part polyphony : Off	64	Part 2 mute On [*]
1	Part / Program polyphony : Mono	65	Part 3 mute On [*]
2	Part / Program polyphony : Poly	66	Part 4 mute On [*]
3	Part polyphony : Prog	67	Part 5 mute On [*]
4	Part sustain Rx option : Program + 1	68	Part 6 mute On [*]
5	Part sustain Rx option : Program - 1	69	Reserved
6	Part sustain Rx option : Pattern + 1	70	Reserved
7	Part sustain Rx option : Pattern - 1	71	Pass to effects : Program only
8	Part sustain Rx option : Voc freeze	72	Pass to effects : Audio input (1) only
9	Not Currently Used	73	Pass to effects : Program & input (1)
10	Not Currently Used	74	Pass to effects : Audio input (2) only
11	Pedal : Off [*]	75	Pass to effects : Program & input (2)
12	Pedal : Pedal-R [*]	76	Select Part 1 [*]
13	Pedal : Pedal-T [*]	77	Select Part 2 [*]
14	Pedal : Switch [*]	78	Select Part 3 [*]
15	Pedal : Switch-I [*]	79	Select Part 4 [*]
16	Vocoder sibilance type : Hpass [*]	80	Select Part 5 [*]
17	Vocoder sibilance type : Noise [*]	81	Select Part 6 [*]
18	Vocoder input : Audio input (1) [*]	82	Reserved
19	Vocoder input : Audio input (2) [*]	83	Reserved
20	Vocoder input : Part 1 [*]	84	Arp patt edit via kbd : Off [*]
21	Vocoder input : Part 2 [*]	85	Arp patt edit via kbd : On [*]
22	Vocoder input : Part 3 [*]	86	Arp patt edit via kbd : Note only [*]
23	Vocoder input : Part 4 [*]	87	Arp patt edit via kbd : Vel only [*]
24	Vocoder input : Part 5 [*]	88	Arp patt edit via kbd : Gate only [*]
25	Vocoder input : Part 6 [*]	89	Breath mode : Absolute [*]
26	Reserved	90	Breath mode : Mod + [*]
27	Reserved	91	Breath mode : Mod - [*]
28	Vocoder insert : Part 1 [*]	92	Phones : 1 & 2 [*]
29	Vocoder insert : Part 2 [*]	93	Phones : 3 & 4 [*]
30	Vocoder insert : Part 3 [*]	94	Phones : 5 & 6 [*]
31	Vocoder insert : Part 4 [*]	95	Phones : Mix [*]
32	Vocoder insert : Part 5 [*]	96	Vocoder sibilance level 0 [*]
33	Vocoder insert : Part 6 [*]	97	Vocoder sibilance level 1 [*]
34	Reserved	98	Vocoder sibilance level 2 [*]
35	Reserved	99	Vocoder sibilance level 3 [*]
36	Effects config : D + R + C	100	Vocoder sibilance level 4 [*]
37	Effects config : D > R > C	101	Vocoder sibilance level 5 [*]
38	Effects config : D > C > R	102	Vocoder sibilance level 6 [*]
39	Effects config : R > D > C	103	Vocoder sibilance level 7 [*]
40	Effects config : R > C > D	104	Vocoder sibilance level 8 [*]
41	Effects config : C > D > R	105	Vocoder sibilance level 9 [*]
42	Effects config : C > R > D	106	Vocoder sibilance level 10 [*]
43	Effects config : D + [R > C]	107	Vocoder sibilance level 11 [*]
44	Effects config : D + [C > R]	108	Vocoder sibilance level 12 [*]
45	Effects config : R + [D > C]	109	Vocoder sibilance level 13 [*]
46	Effects config : R + [C > D]	110	Vocoder sibilance level 14 [*]
47	Effects config : C + [D > R]	111	Vocoder sibilance level 15 [*]
48	Effects config : C + [R > D]	112	Vocoder width 0 [*]
49	Effects config : D > [R + C]	113	Vocoder width 1 [*]
50	Effects config : R > [D + C]	114	Vocoder width 2 [*]
51	Effects config : C > [D + R]	115	Vocoder width 3 [*]

MIDI BANK MESSAGES

Bank No	Nova Bank
0	Program Change Lookup Table
1	Performance Bank A
2	RESERVED
3	RESERVED
4	RESERVED
5	Program Bank A
6	Program Bank B
7	RESERVED
8	RESERVED
9	RESERVED
10	RESERVED
11	RESERVED
12	RESERVED
13	Arpeggiator Pattern Bank Mono
14	Arpeggiator Pattern Bank Poly
15	Arpeggiator Pattern Bank User

Sync Setting	MIDI Clocks (Ticks)
Off	NA
32 Triplet	2
32nd	3
16th Triplet	4
16th	6
8th Triplet	8
16th Dotted	9
8th	12
4th Triplet	16
8th Dotted	18
4th	24
2nd Triplet	32
4th Dotted	36
2nd	48
1 Bar Triplet	64
2nd Dotted	72
1 Bar	96
2 Bar Triplet	128
1 Bar Dotted	144
2 Bars	192
4 Bar Triplet	256
3 Bars	288
5 Bar Triplet	320
4 Bars	384
3 Bar Dotted (4.5 Bars)	432
7 Bar Triplet	448
5 Bars	480
8 Bar Triplet	512
6 Bars	576
7 bars	672
5 Bar Dotted (7.5 Bars)	720
8 Bars	768
6 Bar Dotted (9 Bars)	864
7 Bar Dotted (10.5 bars)	1008
8 Bar Dotted (12 Bars)	1152

PROGRAMS BANK A

0	Sintillator M-Wh	64	Pulsebass
1	Skewed Arp	65	Synth Scratch
2	Softena Bass M-Wh	66	Staccato Filter
3	Velo 303	67	Vienna Bender
4	Velocity Mutes	68	Piki
5	Its Not OK	69	Rez Square M-Wh
6	Garage Kick	70	DetuneBass M-Wh
7	FM EP	71	Randevous 2 harp
8	T-chu Wave	72	Comb Snare
9	Ravin On	73	Arpy 30Dist
10	Velo 303 Dist	74	Hard Bass
11	SyncHeathHazard	75	LFO madness
12	Stringz	76	Arp Fingers
13	SimpleEnvVeloArp	77	Sweep 12 dB
14	Synthi Harp M-Wh	78	Strillan M-Wh
15	Square Basics	79	Waterphones
16	Synus M-Wh	80	Pulse Clav M-Wh
17	PunchiPick M-Wh	81	SimpleAnaBass-Wh
18	Sparkx	82	Burbler
19	Morph Brass M-Wh	83	InVinceable M-Wh
20	Flathead Bass	84	Pinchi Pick M-Wh
21	U-no polysynth 1	85	Down Osc
22	MW BPF	86	DontSurrender-Wh
23	Perc Organ Bass1	87	Sinker M-Wh
24	Pickled on...	88	No FM Huh?
25	Slynkie Slide	89	909 Clap
26	"I"	90	Perckie Saw M-Wh
27	Vorsprung...M-Wh	91	Coke Filter M-Wh
28	909 Snare 1	92	Sup Jup Horn M-Wh
29	Pad 4 Landing	93	Clockworks M-Wh
30	DigiTrouserCough	94	Comatose
31	Anafuzzy logik	95	Open High Hat 1
32	Spectra Pad	96	Your Pad or Mine
33	Vindalo Noise	97	Xtal Drop
34	SlapBass1	98	S-ash Tray M-Wh
35	Techno crat	99	Uplifting M-Wh
36	Obie Paddiviv	100	Subbass M-Wh
37	Soft Brit Sound?	101	Clix Organ
38	Echoed Maj 3rd	102	Swidge M-Wheel
39	Naked	103	Delicate Arp
40	Uni*Syn	104	Syncapation
41	EP	105	Closed High Hat 1
42	Ambient Line	106	Juice Bass
43	RainPicks	107	X mod Bass
44	No Moralies M-Wh	108	Ahh Voices 2
45	Highly Strung	109	Obie Jumpin
46	ItsKindaPhasedWh	110	Novebella
47	BP 303 2	111	Pianola M-Wh
48	Clock Clang	112	Talker
49	Skwusha 2 M-Wh	113	Poms Bass3
50	Jungle sine	114	Just Cant Get It
51	303 Groover 1 M-Wh	115	Bubble Arp
52	Pick Bass M-Wh	116	909 Tom M-Wh
53	Sonar (C3) M-Wh	117	Virtual Panpipe
54	TeaSub Bass	118	Glider 2 Pad M-Wh
55	Bright EP	119	Hard Nosed
56	Brass	120	Drubex SQ
57	Eleventh HourPad	121	Piano Pad M-Wh
58	SuperStrings1	122	Raver Pad M-Wh
59	Electric Insect	123	Roundhouse Bass
60	All The Rave	124	Pick 'n' Mix
61	Stack HPF M-Wh	125	Rain Piz
62	Infiltrator SFX	126	Mechatron Arp
63	Cheesy Spice	127	Poms Bass2

0	Filtered H2O	64	SuperBassSt'n 1
1	SuperBassSt'n 19	65	Synth Backslip
2	Width Bass M-Wh	66	Staccato Square
3	Wheel 303	67	Leader
4	Lonely Olive	68	D'you know Pick
5	Z-Plane VeloPick	69	Perci Blip M-Wh
6	Kickin Hardcore	70	Simple Bass 2
7	Giggin EP	71	Snotty Nose
8	Chatter Arp M-Wh	72	NeedleBleep M-Wh
9	Screaming Raver	73	Harmonic Dist303
10	DistortOrgan	74	Dat D'nBassM-Wh
11	Bigger 1	75	Obie String Pad
12	Polysikz Strings	76	Random Arp
13	Voxi Organ	77	Sweep 24dB
14	Lead Gat	78	Filmskore
15	HolidayLeadBass	79	Liquinova M-Wh
16	Sine-us	80	FM Clav
17	Bottie End	81	VeloReso
18	StaccatoString	82	PVC Pipe/Tom M-Wh
19	Obie Brass	83	Rhythm Sweep
20	Flatter Head M-Wh	84	BP Organ
21	Synthi Trumpet	85	Self Osc
22	Squeege M-Wh	86	Clean'n'Clear jh
23	Organ Perc Bass2	87	Syncker
24	Don't Pick!	88	Psy1
25	Stab	89	Sawtooth Seq. jh
26	Dance Bass	90	Perckie Sq M-Wh
27	Hartkem M-Wh	91	Obie Extravert
28	909 Snare 2	92	SupJup BrassM-Wh
29	Devolution M-Wh	93	Throbba M-Wh
30	DualFiltStringWh	94	Wineglass
31	Syn Section M-Wh	95	HiRage Kick M-Wh
32	Spectrux Pad M-Wh	96	Phillharmonic
33	Filter Sweep KHz	97	Obie Tootle
34	SlapBass2	98	Wheelreso
35	VeloUniSync	99	Slow Sweepa
36	Choral Pad M-Wh	100	2 Osc & M-Wh Sub
37	Messy Sync M-Wh	101	MultiHigh Hat
38	Old'n'Rickety	102	Radar>Comms
39	Trance6 M-Wh	103	Rio Mod Wheel
40	DualFiltPWMingWh	104	VeloQuack
41	Velo Stabber	105	Boogie Lead
42	Dreamy Arp	106	Emerald
43	Ringglass	107	FilterBass M-Wh
44	Handbagin Bass	108	Rubber Filter M-Wh
45	Stringie Thingie	109	Sync Brass Pad
46	Lead 1	110	Tinkerbell
47	Worry free Pad	111	BP Barker
48	Bell 1	112	Whiteout
49	Garage Swelch	113	Sync & Ring Bass
50	Single Sub Wheel	114	Needle Pick M-Wh
51	303 Groover 2 M-Wh	115	Electro Wire
52	PWM Crunchie	116	TecknoTecknoM-Wh
53	BlubberPick M-Wh	117	Low Transmitter
54	Simple Bass	118	Strings Ens
55	Super Nova TramP	119	Boot Bass
56	Brassic	120	Clickie Pickie(Moved 124)
57	Upstairs@Holgers	121	Chirpy Novae(Moved 125)
58	SuperStrings2	122	Simple Arp M-Wh(Moved126)
59	Max Bass	123	Tin Can Wire M-Wh
60	Attacka M-Wh	124	Vocoder Init
61	Xfade HPF	125	Input 1 Init
62	Explosion	126	Doublesaw Init
63	Pocket stylophone	127	Init Program

PERFORMANCES

0	Blaster Master	64	Juicy Gaff
1	Pad on Spec	65	Agro Pad
2	Tech Terror	66	Ambi Bambi
3	Liquid Goo	67	Solaris
4	SQ Law	68	Perci Organ
5	SuperStabber	69	Brass+Lead
6	Popsickle	70	TooPad
7	SintillatedWorry	71	Chime On
8	Cool Pad	72	Choccie
9	The Pizzacato	73	PaddiWhack
10	Klavikle	74	OrchStrings
11	Ravers in 7th!	75	Liquid Sweep
12	Donna Supernova!	76	Classic Combo
13	AbsoluteMassive	77	Multimode BPF
14	The Glide	78	Annialator
15	Skwelchi 7th	79	Masterbasse
16	Electric Aaah	80	Swept
17	Hypersynus	81	Analogue Bleep!
18	Ambient Nation	82	Synced Clavinux
19	Brass Section	83	Tinkler
20	HardToTheKore!	84	The Three Arps
21	Pink Phycosis	85	Synced Twice
22	Fatty	86	I Feel Funky
23	Naked String	87	A Bunch Obiewan
24	TwinOvaHead303's	88	Staccato Square
25	Puff Pipe	89	Worry Free
26	Layered Pianos	90	Ambient Groover
27	SupSupSupJup	91	Twin Organ
28	Pionus	92	Lead & Pad
29	Worry Free	93	2ForkinRavers
30	Conetik	94	Synth Strings
31	Layered Spectra	95	Cave Trippy
32	Novestra	96	Psy Pad
33	Kit 1	97	7th Heaven
34	EP & Strings	98	3rd & 7th
35	String+PluckLead	99	Perky Synth Pad
36	Good Ole 80's	100	MooZ At 72ooz..
37	Filming in Space	101	Staccato Saw
38	AttackVelo-Chord	102	Blip & Co
39	Probe	103	Trouser Fat
40	3rd Party Pad	104	Invert Filta Pad
41	Two Big Ones	105	Perci Fellow
42	Trance Nation	106	Flutter Pad
43	Morphwave	107	Liquid Sweep
44	Synth Section	108	JammyLoop
45	LiquidNarcotic	109	When U Wanna...
46	Piano+Padding	110	Chimez
47	1 Finger LSO	111	Layered Sweeps
48	Teci	112	TinCanDiffusion
49	Fantasam	113	Brass Section 2
50	Tingly & Drugged	114	Endless Arps
51	Sync's 'R' Us!	115	Atmospherics
52	Layered Pianos 2	116	Super Unisyn 2
53	Super Fat	117	Wet Sintillation
54	Squelchie	118	Comp 1
55	Heaven OrganPad	119	Vocoder
56	Super Unisyn	120	FX Processor 1
57	Space Pad	121	FX Processor 2
58	PiciGater Pad	122	FX Processor 1&2
59	Multimode BPF	123	Init Velo Xfade
60	2 Nasties	124	Init VeloSw V110
61	Lead & H20	125	Init Split at C3
62	Minor Evil	126	Multi Ch 1-6
63	Botty & Sparks	127	Init Perf

MONOPHONIC PRESET PATTERNS

0	UP	64	3/3 Up Slightly Accented
1	DOWN	65	3/3 Dn Accented
2	UP & DOWN1	66	3/3 Dn Slightly Accented
3	UP & DOWN2	67	3/3 Up/Dn Accented
4	PLAYED	68	3/3 Up/Dn Slightly Accented
5	WALKINGUP	69	9/8 Pattern Accented
6	WALKINGDOWN	70	9/8 Pattern Slightly Accented
7	WALKINGPLAYED	71	Walking Up2 Accented
8	RANDOM1	72	Walking Up2 Slightly Accented
9	RANDOM2	73	Walking Dn2 Accented
10	RANDOM3	74	Walking Up2 Slightly Accented
11	TB1	75	Walk Up/Dn2 Accented
12	TB2	76	Walk Up/Dn2 Slightly Accented
13	TB3	77	Walk Dn/Up2 Accented
14	TB4	78	Walk Dn/Up2 Slightly Accented
15	TB5	79	Walk3 Up Accented
16	TB6	80	Walk3 Up Slightly Accented
17	TB7	81	Walk3 Dn Accented
18	TB8	82	Walk3 Dn Slightly Accented
19	TRANCE1	83	House 1 Accented
20	TRANCE2	84	House 1 Slightly Accented
21	TB9	85	Walk Accented
22	TB10 UP	86	Walk Slightly Accented
23	TB11 DN	87	MUSO 2 Accented
24	TB12 UP/DN	88	MUSO 2 Slightly Accented
25	TRANCE BASS1	89	Shuffle Accented
26	TRANCE BASS2	90	Shuffle Slightly Accented
27	TB13	91	80's 2 Accented
28	TB14	92	80's 2 Slightly Accented
29	TB15	93	80's 3 Accented
30	TB16	94	80's 3 Slightly Accented
31	TB17	95	C52's Accented
32	TB18	96	C52's Slightly Accented
33	80'S 1	97	C52's Variation Accented
34	TB GLIDE1	98	C52's Variation Slightly Accented
35	TB19	99	Walking up 1 Accented
36	TB GLIDE2	100	Walking up 1 Slightly Accented
37	TB GLIDE3	101	Walking Dn 1 Accented
38	TB20	102	Walking Dn 1 Slightly Accented
39	Muso 1 Accented	103	Walking Up/Dn Accented
40	Muso 1 Slightly Accented	104	Walking Up/Dn Slightly Accented
41	Trill Dn Accented	105	Walking Dn/Up Accented
42	Trill Dn Slightly Accented	106	Walking Dn/Up Slightly Accented
43	Trill Up Accented	107	Techno Accented
44	Trill Up Slightly Accented	108	Techno Slightly Accented
45	Trill Dn/Up Accented	109	Techno Accented
46	Trill Dn/Up Slightly Accented	110	Techno Slightly Accented
47	Trill Up/Dn Accented	111	UPUPUPDN
48	Trill Up/Dn Slightly Accented	112	UPUPDNUP
49	Rave 1 Accented	113	UPDNUPUP
50	Rave 1 Slightly Accented	114	DNUPUPUP
51	Rave 2 Accented	115	DNDNUPUP
52	Rave 2 Slightly Accented	116	DNDNDNUP
53	Shimmie Accented	117	DNDNUPDN
54	Shimmie Slightly Accented	118	DNUPDNNDN
55	Running Up Accented	119	UPDNNDNDN
56	Running Up Slightly Accented	120	UPDNNDNUP
57	Running Dn Accented	121	DNUPUPDN
58	Running Dn Slightly Accented	122	HARM UP1
59	R'ning Up/Dn Accented	123	HARM UP2
60	R'ning Up/Dn Slightly Accented	124	HARM UP3
61	R'ning Dn/Up Accented	125	HARM DN 1
62	R'ning Dn/Up Slightly Accented	126	HARM DN2
63	3/3 Up Accented	127	HARM DN3

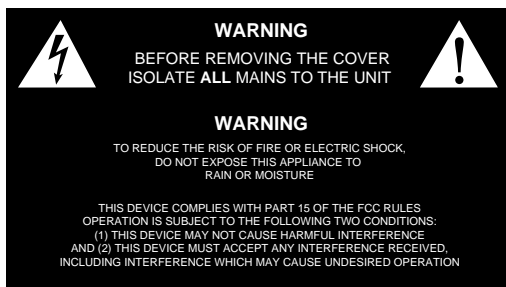
POLYPHONIC PRESET PATTERNS

0	Bass Trance 1	64	BASS5
1	303 Trance 1	65	BASS6
2	303 Trance 1v1	66	BASS7
3	303 Trance 2	67	BASS8
4	Bass Trance 2	68	BASS9
5	303 Trance 3	69	BASS10
6	303 Trance 3v1	70	BASS11
7	303 Trance 4	71	BASS12
8	303 Trance 4v1	72	BASS13
9	303 Trance 5	73	BASS14
10	UP DN Variation	74	BASS15
11	303 Trance 6	75	BASS16
12	Minor UP DN	76	BASS17
13	Bleep 1	77	BASS18
14	Bleep 2	78	BASS19
15	Bleep 3	79	BASS20
16	Bleep 4	80	TECHNO1
17	Bleep 4v1	81	TECHNO2
18	Bleep 5	82	TECHNO3
19	Bleep 6	83	TECHNO4
20	UP DN Runner	84	TECHNO5
21	Bleep 7	85	TECHNO6
22	Bleep 8	86	TECHNO7
23	Bleep 9	87	TECHNO8
24	303 Trance 7	88	TECHNO9
25	Bleep 10	89	TECHNO10
26	Bleep 11	90	TECHNO11
27	Bleep 12	91	TECHNO12
28	303 Trance 8	92	TECHNO13
29	303 Trance 9	93	TECHNO14
30	303 Trance 10	94	TECHNO15
31	Bleep 13	95	TECHNO 16
32	303 Trance 11	96	TECHNO 17
33	Bleep 14	97	TECHNO 18
34	303 Trance 12	98	D-D-DAA
35	303 Trance 12v1	99	D-D-DAA2
36	303 Trance 12v2	100	DADADADA
37	303 Trance 12v3	101	DADADA2
38	Bass Trance 3	102	OHH
39	Bass Trance 4	103	CHH
40	NAG1	104	BD
41	NAG2	105	Bass lick
42	NAG3	106	Octave Pulse
43	NAG4	107	Nag 10
44	NAG5	108	Nag 11
45	NAG6	109	Nag 12
46	NAG7	110	Nag 13
47	NAG8	111	Nag 14
48	NAG9	112	Nag 15
49	DNDNDNUP	113	Nag 16
50	DNDNUPDN	114	Nag 17
51	DNDNUPDN2	115	Nag 18
52	DNDNUPUP	116	Nag 19
53	DNUPDNDN	117	Nag 20
54	DNUPUPUP	118	Nag 21
55	UPDNDNDN	119	Nag 22
56	UPDNUPUP	120	Nag 23
57	UPUPDNDN	121	Nag 24
58	UPUPDNUP	122	Nag 25
59	UPUPUPDN	123	Nag 26
60	BASS1	124	Nag 27
61	BASS2	125	Nag 28
62	BASS3	126	Nag 29
63	BASS4	127	Nag 30

- 1*3 - Button 53
- 12dB - Button 67
- 18dB - Button 67
- 2*3 - Button 53
- 24dB - Button 67
- A**
- About Analogue Synthesis 8
- About Performances 22
- About Programs 21
- Advanced Setup 7
- Aftertouch 65, 73, 76, 80
- Amplifier 13, 14
- Analogue Sound Modelling 9, 20
- Arp Latch 99
- Arp Mute 99
- Arp pattern editing via MIDI 44
- Arp trans chan 39
- Arp trans ref 39
- Arpeggiator 23, 25, 44, 47, 82, 110
- Arpeggiator Section 2, 21, 47
- Arpeggio notes to: 51
- AT LFO1 amt 65
- AT speed mod 76
- Attack 13, 78
- Attack - Knob 78
- Audio input 55, 91
- Audio Inputs 3
- Audio Inputs I & 2 3
- AutoGlide 81
- Autopan 19, 92
- Aux. Out 3 (Left) and 4 (Right) Audio Outputs 3
- B**
- Band - Button 67
- Band Pass Filter 12
- Bank 24, 111, 130
- Bank Select Message 43
- Bank Up/Down - Buttons 46
- Banks 24
- Basic Setup 6
- Bass 88
- BPF 67
- Breath control 38, 108, 109
- Breath mode 38
- Breath sensing 38
- C**
- Carrier 19, 94, 107
- Category 35
- Cents 56, 97
- Chorus 18, 86, 87
- Chorus - Button 83
- Chorus wheel 87
- Chorus/Flanger 18
- Chorus/Flanger/Phaser 18, 86
- Clock 77
- Comb boost 88
- Comb Filter 16, 88
- Comb frequency 88
- Compare 28, 32, 33, 35, 36
- Compare - Button 35
- Compatibility 112
- Compatibility with other Novation Products 112
- Config morph 91
- Configuration 88, 91
- Constant gate 82, 106
- Constant pitch 26, 51
- Controller Filt 100
- Controller messages 100, 111
- Controllers TX 42
- Copy 54
- Copy - Button 54, 95
- Cross Modulation 10
- Cutoff Frequency 12, 67, 68, 70, 72, 73
- D**
- Damper 99
- Data Entry 2
- DCO 82
- DCO / VCO mode 82
- Decay 13, 78
- Decay - Knob 78
- Decay Time 17
- Delay 18, 77, 79, 84, 85
- Delay - Button 83
- Delay - Knob 75
- Delay HF damp 85
- Delay ratio 84
- Delay Time 19, 84
- Delay trigger 77
- Delay Wheel 85
- Demo/Finder - Button 35
- Depth 19
- Destination 15, 57, 69
- Display 2
- Display section 46
- Dist/EQ/config 87
- Dist/EQ/Config - Button 83
- Distortion 16
- Distortion wheel 87
- DoubleSaw 54
- Dry level 92
- E**
- Early ref 17
- Early ref level 86
- Echo 18
- Editing & Writing Arpeggiator Patterns 25
- Editing & Writing Performances 30
- Editing & Writing Programs 28
- Effect 16, 83
- Effect - Knob 83
- Effects Section 2, 21, 23, 83
- Effects used 98
- Ensemble 81
- ENV 1 (AMP) - Button 78
- Env 1 ATouch 80
- Env 1 MWheel 80
- ENV 2 59, 70, 71
- ENV 2 - Button 58, 59, 61, 62, 64, 70, 71, 78
- Env 2 delay 79
- Env 2 velocity 79
- ENV 3 60, 70, 71
- ENV 3 - Button 58, 60, 61, 62, 64, 70, 71, 78
- Env 3 delay 79
- Env 3 speed mod 76
- Env 3 velocity 79
- Env1 velocity 79
- ENV2 58, 61, 62, 64
- ENV3 58, 61, 62, 64
- Envelope triggering 80
- Envelopes 13, 78
- Envelopes Section 2, 78
- EQ 16
- EQ bass 88
- EQ treble 88
- Exponential 81
- Expression peda 40
- Expression pedal 3, 100, 108, 109
- F**
- Factory settings 40
- Fast 77
- Fast Data - Knobs 46
- Feedback 19, 84, 87
- Fill in 25, 49
- Fill-in 50
- Filter 12, 14, 67, 106
- Filter - Button 75
- Filter Modulation Matrix 69
- Filter Modulation Section 2
- Filter Section 2, 67
- Filter tracking 72
- Filter type 67
- Filter width 68, 74
- Fine - Button 56
- Flanger 18, 86, 87
- FM 11
- Footswitch 3, 108, 110
- Formant width 10, 65
- Fq AT amt 73
- Fq AT LFO2 amt 73
- Fq MWh LFO2 amt 72
- Freewheel 77
- Frequency - Button 70
- Frequency - Knob 68
- Front Panel 2
- Fx config 88
- G**
- Gate 45
- Gate Time 26, 51
- Gate type 25
- Glide 25
- Glide type 81
- Glissando 80
- Global - Button 36
- Global data 36
- Global MIDI chan 36
- Global Mode 36
- H**
- Harmonics 88
- Headphones 40
- Headphones (Output 5 & 6) Audio Outputs. 3
- Headphones out 40
- HF damp 17, 86
- HF Damping 19

- High - Button 67
- High Pass Filter 12
- Highest note 101
- HPF 67
- I**
- In/Out - Button 98
- Incoming program change 42
- Input 94, 105, 107
- Input level 105
- Input Sensitivity Switch 3
- Inputs 82, 91
- K**
- Key Range 101
- Key reset 48, 49
- Key Sync 9
- Keysync 77
- L**
- Latch 47
- Latch - Button 47
- Latch type 48
- Layer 22
- Level - Knob 55, 58, 59, 60, 62, 63
- Level - Knob 96
- LFO 75
- LFO 1 58, 59, 60, 62, 63, 70, 75
- LFO 1 - Button 56, 58, 59, 60, 62, 63, 70
- LFO 1 - Button 75
- LFO 2 58, 59, 61, 62, 63, 70, 71, 72, 75
- LFO 2 - Button 58, 59, 61, 62, 63, 70, 71
- LFO range 77
- LFO Section 2
- LFOs 14
- LFOs Section 75
- Linear 81
- Loading Additional Sounds 114
- Local Control 39
- Low - Button 67
- Low Pass Filter 12
- Lowest note 101
- LPF 67
- M**
- Master 9
- Master 1 (Left) and 2 (Right) Audio Outputs. 3
- Master tune 36
- Master Volume Section 2, 34
- Memory Protect 37, 39
- Menu - -Button 76
- Menu - Button 48, 65, 72, 78
- Menu - Button (Chorus/Flanger/Phaser selected) 86
- Menu - Button (Delay selected) 83
- Menu - Button (Dist/EQ/config selected) 87
- Menu - Button (Pan selected) 92
- Menu - Button (Reverb selected) 85
- Menu - Button (Vocoder selected) 93
- Menu Map 139
- MIDI 30
- MIDI - Button 98
- MIDI Bank Messages 130
- MIDI channel 99
- MIDI clock 38, 77, 84, 110
- MIDI Clock Sync 131
- MIDI Controller messages 42
- MIDI Controller Table 119
- MIDI Implementation 118
- MIDI IN 3
- MIDI NRPN Tables 120
- MIDI OUT 3
- MIDI Program Change 43, 99, 111
- MIDI program change & Bank messages 42
- MIDI THRU 3
- Mix - Button 58
- Mix - Button 58
- Mixer 11
- Mod Depth 18, 87
- Mod Depth - Knob 56, 58, 59, 60, 62, 63, 64
- Mod Depth - Knob 61, 70, 71
- Mod Depth Knob 57
- Mod Wheel 58, 60, 61, 63, 64, 65, 70, 71, 76, 80, 85, 86, 87
- Mode Section 2, 35
- Modulation 57
- Modulation Matrix 14, 15
- Modulation Sources 14
- Modulator 19, 94, 107
- Monophonic pattern 25, 44
- Monophonic Preset Patterns 135
- Multi 80
- Multi Tap Delay 18
- Multitimbral 23
- Multitimbral Use 103
- Mute 102
- Mute - Button 47, 102
- MWheel LFO1 amt 65
- MWheel speed mod 76
- N**
- No of Steps 44
- noise 8
- Noise - Button 53
- Note 45
- Notes 129
- Novationish 20
- O**
- Octave 56
- Octave - Button 56
- Octave range 49
- Offset amount 76
- Omni 99
- On/Off - Button 47
- Operating System 115
- Osc mode 81
- Osc1 - Button 53
- Osc2 - Button 53
- Osc3 - Button 53
- Oscillator 20
- Oscillator Modulation Matrix 57
- Oscillator Modulation Section 2
- Oscillator Section 2, 53
- Oscillator sync 9
- OSCILLATORS 8
- Output 23, 30
- Output ranging 52
- Outputs 98, 111
- Overdrive 68
- Overdrive - Knob 68
- P**
- Packet error!! 115
- Page - Buttons 46
- Pan 19, 92
- Pan - Button 83
- Pan depth 92
- Pan effects 93
- Pan speed 92
- Pan type 92
- Part 20, 22, 30, 96
- Part 1 - Button 96
- Part 2 - Button 96
- Part 3 - Button 96
- Part 4 - Button 96
- Part 5 - Button 96
- Part 6 - Button 96
- Part detune 97
- Part Edit Section 2, 96
- Part Mute 99
- Part outputs 98
- Part polyphony 100
- Part semitone 97
- Part velocity curve 97
- Pass to effects: 91, 106, 107
- Pattern 25
- Pattern bank 48
- Pattern no. 48
- Pedal 100, 108, 110
- Pedal mode 40, 108
- Pedals & MIDI 109
- Percussive 81
- Performance 20, 22, 23, 30, 32, 35, 96
- Performance - Button 35
- Performances 21, 24, 134
- Phaser 18, 86, 87
- Pitch 8, 14, 59
- Pitch - Button 60
- Pitch - Button 59
- Pitch Bend 14
- Pitch bend range 66
- Playing the Factory demo 5
- Poly mode 81
- Polyphonic patterns 26, 44
- Polyphonic Preset Patterns 136
- Polyphony 30, 100
- Polyphony - Button 100
- Porta type 80
- Portamento 56, 80, 81
- Portamento - Knob 56
- Power 110
- Power On/Off Switch 3
- Power Supply Socket 3
- PPM meters 98
- Preglide 81
- Prog change 43

- Prog change filt 99
 Prog change TX 42
 Prog Up/Down - Buttons 46
 Program 20, 21, 24, 28, 35
 Program - Button 35
 Program map 43
 Programs 21
 Programs Bank A 132
 Programs Bank B 133
 Pulse Width 60
 Pulse Width Modulation 8, 15, 60
 PWM 8
- Q**
- Q norm amount 72
 Quad Chorus 18, 86
 Quantise 49
- R**
- Random 76
 Range 22, 30
 Range - Button 101
 Ratio 19
 Real time trans 51
 Rear Panel 3
 Release 13, 78
 Release - Knob 78
 Res AT amt 73
 Res MWh LFO2 amt 72
 Resonance 12, 68, 70, 71, 72, 73
 Resonance - Button 70, 71
 Resonance - Knob 68
 Rest 26, 27
 Restore from ROM 40
 Reverb 17, 85, 86
 Reverb - Button 83
 Reverb decay 86
 Reverb type 17
 Reverb wheel 86
 Ring modulation 11
- S**
- S/H - Button 75
 Sample & Hold 76
 Saw - Button 75
 Saw Waveform - Button 54
 Sawtooth 8, 75
 Selecting Programs & Performances 24
 Selects 43
 Semitone 56, 97
 Semitone - Button 56
 Sensitivity 105
 Setting Up 4
 Sibilance 19, 93
 Sibilance level 19, 93
 Single 80
 Slave 9
 Slow 77
 Soften 10, 15, 20, 63
 Soften - Button 64
 Soften - Button 63
 Solo 53, 101
 Solo - Button 53, 101
 Sound 110
 Source 15, 57, 69
- Special - Button 67
 Special type filter width 74
 Special waveform 55
 Special Waveform - Button 54, 55
 Specification 117
 Speed 18, 23, 47, 87, 92
 Speed - Knob 47, 75
 Split 22
 Sq waveform - Button 54
 Square 8, 75
 Square - Button 75
 Step 25, 45
 Stereo width 84
 Sustain 13, 99, 107, 108
 Sustain - Knob 78
 Sync 9, 15, 20, 50, 62, 66, 77, 84
 Sync - Button 63
 Sync - Button 62
 Sync key follow 66
 Sync Skew 9, 66
 Sysex 111
 Sysex Reception 37
 Sysex transmission 37
 System Exclusive 37
- T**
- Tap Delay 18
 tone 12
 Treble 88
 Tremolo 19, 92
 Tri - Button 75
 Triangle 75
 Trigger - Button 80
 Triggering 77, 80
 Trim 105, 106
 Troubleshooting 110
 Tune 30
 Tune - Knob 56
 Tune - Button 96
 Tuning 96
 Type 85, 86
- U**
- Unison 82
 Unison mode 82
 update 33
 Upgrading the Operating System 115
 User Pattern 44
 Using Expression Pedals & Footswitches 108
 Using the Inputs 105
- V**
- VCO 82
 Vel. 45
 Velocity 30, 45, 49, 79, 97
 Velocity - Button 97
 Velocity Crossfade 22
 Vibrato 59
 Voc freeze 99, 107
 Voc input 94, 107
 Voc insert 94
 Vocoder 19, 93, 99, 107
 Vocoder - Button 83
 Vocoder spectrum 95
- Vocoder width 94
 Voice 20
 Volume 13, 58
 Volume - Knob 34
- W**
- Wheel - Button 58, 60, 61, 63, 64, 70, 71
 Width 19
 Width - Button 56, 61
 Width - Button 55, 60
 Write 28, 29, 32, 33, 36
 Writing Performances into Memory 32
 Writing Programs into Memory 28



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The Exclamation point within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying this product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

- 1 Read all the instructions before using the product.
- 2 Do not use this product near water . For example, near a bathtub, washbowl, kitchen sink, in a wet basement or near a swimming pool, or the like.
- 3 This product should only be used with a cart or stand that is recommended by the manufacturer.
- 4 This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
- 5 this product should be located so that its location or position does not interfere with its proper ventilation.
- 6 The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
- 7 The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
- 8 The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
- 9 Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 10 The product should be serviced by qualified service personnel when:
 - A The power supply cord or the plug has been damaged.
 - B Objects have fallen onto, or liquid has been spilled into the product.
 - C The product has been exposed to rain.
 - D The product does not appear to operate normally.
 - E The product has been dropped, or the enclosure damaged.
- 11 Do not attempt to service the product beyond that described in the user - maintenance instructions. All other servicing should be referred to qualified service personnel.

GROUNDING INSTRUCTIONS

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

This product is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER:

Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or servicemen if you are in any doubt as to whether the product is properly grounded. Do not modify the plug provided with is product - if it will not fit the outlet, have a proper plug installed by a qualified electrician.

FCC Information (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT! This product, when installed as indicated in the instructions contained in this Manual, meets FCC requirements. Modifications not expressly approved by Novation may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorisation to use this product in the USA.

3 NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilise power outlets that are on different branch (Circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/re orient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorised to distribute this type of product.

The statements above apply ONLY to products distributed in the USA.

CANADA

The digital section of this apparatus does not exceed the "Class B" limits for radio noise emissions from digital apparatus set out in the radio interference regulation of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la "Classe B" prescrites dans le reglement sur le brouillage radioelectrique edicte par le Ministere Des Communications du Canada.

This only applies to products distributed in Canada.

Ceci ne s'applique qu'aux produits distribues dans Canada.



CE mark for European Harmonised Standards

CE mark which is attached to our company's products of AC mains operated apparatus until December 31, 1996 means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

And, CE mark which is attached after January 1, 1997 means it conforms to EMC Directive (89/336/EEC), CE mark Directive (93/68/EEC) and Low Voltage Directive (73/23/EEC).

Also, CE mark which is attached to our company's products of Battery operated apparatus means it conforms to EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

Trademarks

All trademarks or registered trademarks used in this manual are the property of their respective holders.

Specifications subject to change:

The information contained in this manual is believed to be correct at the time of going to press. However, Novation reserves the right to change or modify the specification without notice or obligation to update existing units. While every effort is made to make sure no errors are present in this document, Novation cannot accept responsibility or liability for loss of data, incorrect operation or misleading operation due to errors.

Oscillator Menu

MWheel LFO 1 amt	+10
ATouch LFO 1 amt	+10

Formant width	+10
Sync skew	+10

Sync key follow	+10
Pitch bend range	+10

Copy Button

Copy oscillator 1 to?

Special Button

Special waveform	Double saw
------------------	------------

Filter Menu

Filter tracking	000
Q norm amount	000

Fq Mwh LFO2 amt	+63
Res Mwh LFO2 amt	+63

Fq AT LFO2 amt	+63
Res AT LFO2 amt	+63

Fq AT amt	+63
Res AT amt	+63

Special type	
filter width	000

Special Button

Special type	Res LPF
filter width	000

LFO Menu

Offset amount	000
Env 3 speed mod	+63

MWh speed mod	+10
AT speed mod	+10

Sync	16th
LFO range	Slow

Triggering	Keysync
Delay trigger	Multi

Envelope Menu

Env 1 velocity	+10
----------------	-----

Env 2 velocity	+10
Env 2 delay	+10

Env 3 velocity	+10
Env 3 delay	+10

Env 1 MWheel	+10
Env 1 ATouch	+10

Trigger Menu

Envelope triggering	
1:Mult 2:Mult 3:Mult	

Porta type	Glissando
Porta mode	Exp

Poly mode	Mode 1
Osc mode	Percussive

Glide type	Normal Glide
------------	--------------

Unison	Off
Unison mode	2 voice

DCO / VCO mode	DCO
Constant gate	Off

Effects Menus

Delay Menu

Delay time	055
Feedback	035

Stereo width	010
Delay ratio	1:1

Sync	16th
Delay HF damp	020

Delay wheel	+20
-------------	-----

Reverb Menu

Type	Medium type 2
Early ref level	6

Reverb decay	083
Reverb HF damp	020

Reverb wheel	+20
--------------	-----

Chorus Menu

Type	Quad chorus
Speed 1	027

Mod depth	032
Feedback	+00

Chorus wheel	+00
--------------	-----

Distortion/EQ/Config Menu

Distortion wheel	+00
------------------	-----

EQ treble	+20
EQ bass	+64

Comb frequency	069
Comb boost	+10

Fx config	D + R + C
Config morph	000

Pass to effects :	
	Program only

Pan Menu

Pan type	Autopan
Pan speed	040

Pan depth	080
Dry level	020


Pan effects	No
-------------	----

Vocoder Menu

Sibilance level	15
Sibilance type	Hpass

Voc input	Input (2)
Voc insert	Program

Vocoder width	00
---------------	----

	Vocoder spectrum
---	------------------

Effects section Copy Button

Copy program effects to part effects

Part Edit Section

Tune Menu

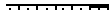
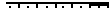
Part semitone	+07
Part detune	+25

Velocity Menu

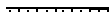
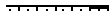
Part velocity curve	Normal
---------------------	--------

In/Out Menu
(Performance)

Part outputs	1 & 2
Effects used	Part

	Trim 1 +00
	Trim 2 +00

In/Out Menu
(Program)

	Trim 1 +00
	Trim 2 +00

MIDI Menu

Sustain	Enable
MIDI channel	Global

Prog change filt	Off
Controller filt	Off

Expression pedal	Off
------------------	-----

Poly Menu
(Performance)

Part polyphony	Poly
----------------	------

Poly Menu
(Program)

Program mode	polyphony
	Mono

Range Menu

Highest note	C8
Lowest note	C0

Arp Menu

Key reset	On
-----------	----

Pattern Bank	Mono
Pattern no.	120

Latch type	Constant
Quantise	Mode 1

Velocity	Played
Octave range	1

Fill in	On
Sync	4th

Real time trans	On
Gate time	75%

Arpeggio notes to:	
	Program and MIDI

Constant pitch	Off
Output ranging	Off

Utilities

**Oscillator section
Copy Button**

Copy oscillator 1 to?

**Effects section
Copy Button**

Copy program effects to part effects

Global Menu

Master tune	+00
Global MIDI chan	1

Sysex transmission -	
	Single program

Sysex reception -	
	Normal (RX as sent)

MIDI clock	Int
Breath control	Off

Breath mode	Absolute
Breath sensing	Norm

Arp trans chan	1
Arp trans ref	C3

Local control	On
Memory protect	Off

Restore from ROM:	
	One program

Pedal mode	Off
Headphones out	Mix

Finder demos	Off
--------------	-----

Vel sensing	Hard
Knob mode	Pickup

Incoming control change	Enabled
----------------------------	---------

Incoming program change	Enabled
----------------------------	---------

Prog change Tx	On
Controllers Tx	On

Program change	002
Selects	Perf A010

Arp pattern editing via kbd	Off
--------------------------------	-----

User pattern	U000
No of steps	32

Step	Note	Vel.	Gate
01	01	127	Norm

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