

PROTEUS

16 BIT MULTI-TIMBRAL DIGITAL SOUND MODULE

OPERATION MANUAL

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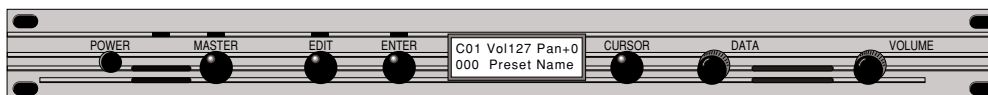
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WARRANTY

INTRODUCTION

INTRODUCTION



What is PROTEUS?

Proteus is a musical instrument whose sounds are based on actual digital recordings of "real" instruments. In this way the Proteus is very similar to a sampling instrument. With the Proteus, we have done the sampling for you and loaded it with some of the cleanest 16 bit sounds ever sampled.

Proteus begins with sound. Four megabytes (internally expandable to 8 megabytes) of the highest quality 16 bit samples selected from the Emulator III sound library and stored in ROMs for instant access. Everything you need to play and compose in a wide range of contemporary styles. You simply plug in and play.

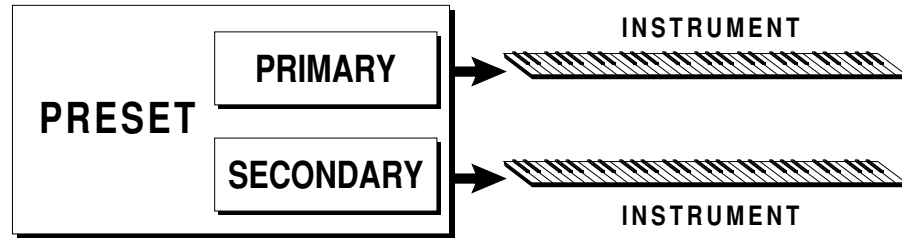
But this is only the beginning. Proteus gives you the ability to literally take these sounds apart and reassemble them into an almost limitless number of entirely new sounds, combining parts of one sound with another or with any of a selection of digital waveforms also stored on ROM. For example, the attack of a flute can be faded out as a vibe tone is faded in, giving you a completely new sound! The monophonic and true stereo 16 bit samples are arranged into 192 preset locations, 64 of which are user-programmable.

Proteus also features 32 voice polyphony allowing you to take full advantage of its layering capabilities (up to 8 sounds on each key) and its ability to respond multi-timbrally to all 16 MIDI channels makes it ideally suited for multitrack sequencing and composing using a MIDI sequencer.

Other features include 3 stereo outputs for individually processing sounds (also configurable as 6 polyphonic submixes with fully programmable panning), integral sends and returns to allow the addition of external effects units without the need for a separate mixer, user definable alternate tuning, and of course, an extensive MIDI implementation.

THE PROTEUS SYSTEM

Proteus is organized as shown in the diagram below.



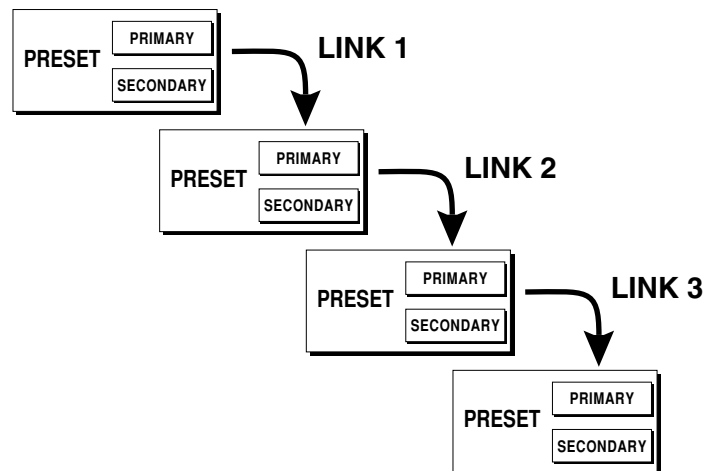
The *Preset* is a complete set of all program parameters for a complete Proteus sound. There are 192 preset locations in the Proteus.

Presets 0-63 are unalterable factory presets, presets 64-127 are user presets which can be changed, and presets 128-191 are unalterable factory presets.

Each preset consists of one or more instruments. An instrument is a complete set of samples or a digital waveform which covers the entire keyboard range. An instrument can be assigned to each of the *Primary* and *Secondary* layers of the preset.

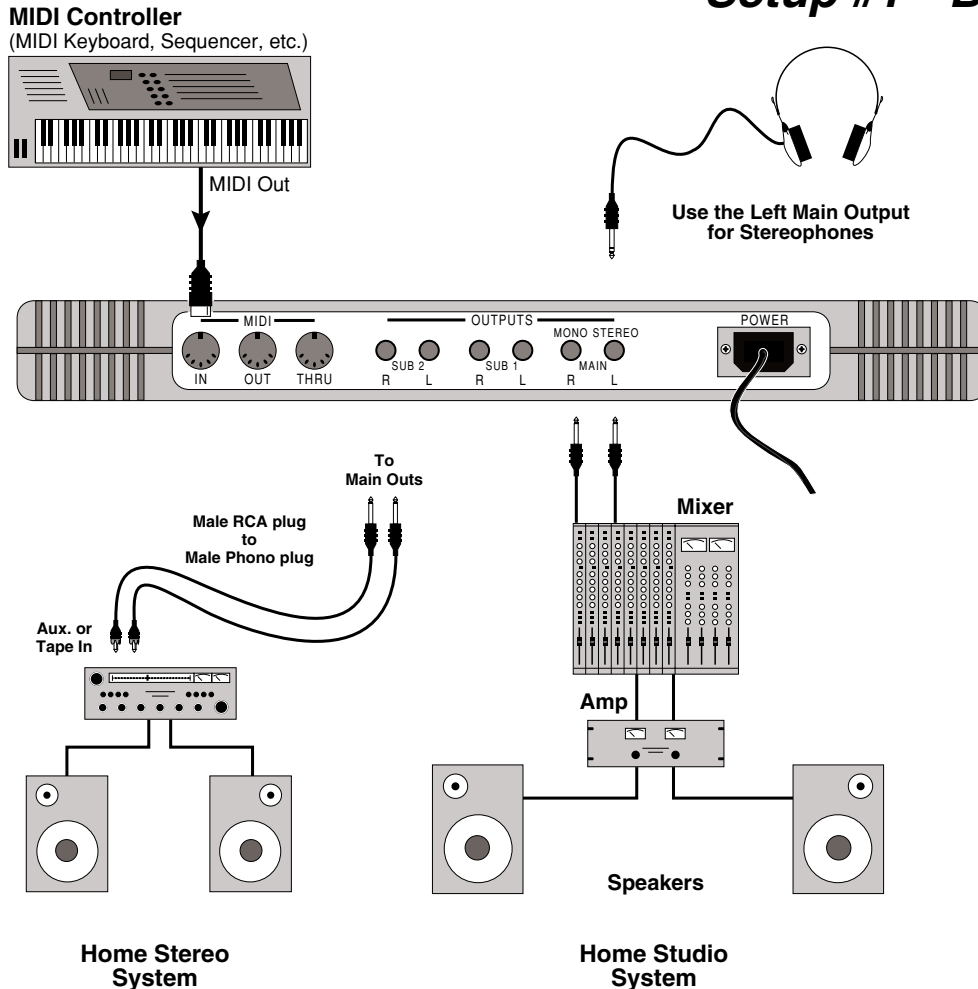
The primary and secondary layers are essentially two complete sounds stacked or placed adjacent to each other, and can be switched or crossfaded together in various ways.

Up to four presets can be *Linked* in order to have more than one preset on the keyboard at a time. The linked presets may overlap each other for layered sounds or be adjacent to each other to create keyboard "splits".



CONNECTION INSTRUCTIONS

Setup #1 BASIC SETUP



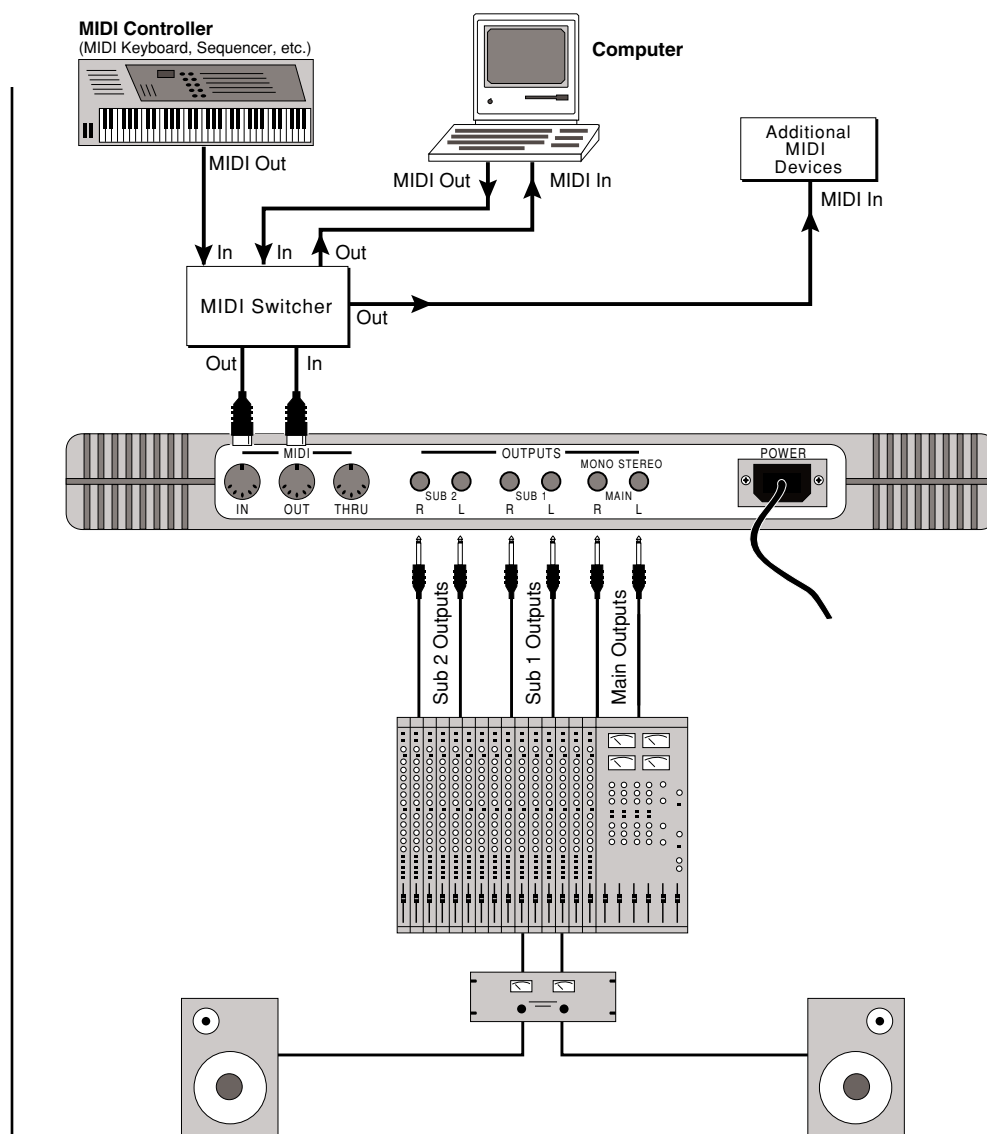
If Proteus does not seem to be responding correctly, make sure that both Proteus and your MIDI Controller are set to the same MIDI channel.

This diagram shows a typical equipment setup for the Proteus.

MIDI In - Proteus is controlled by MIDI messages received at the MIDI In connector. Connect the MIDI In of the Proteus to the MIDI Out connector of a MIDI controller such as a MIDI keyboard, MIDI wind controller, or MIDI guitar controller.

Outputs - Proteus is a high quality, stereo audio device. In order to reproduce its wide dynamic range and frequency response, use a high quality amplification and speaker system such as a keyboard amplifier or home stereo system. A stereo setup is highly desirable because of the added realism of stereophonic sound. Headphones can be used if an amplifier and speaker system is not available. Plug stereo headphones into the Left Main output jack. The Right Main output jack serves as a mono output when the left jack is not plugged in.

Setup #2 STUDIO SETUP

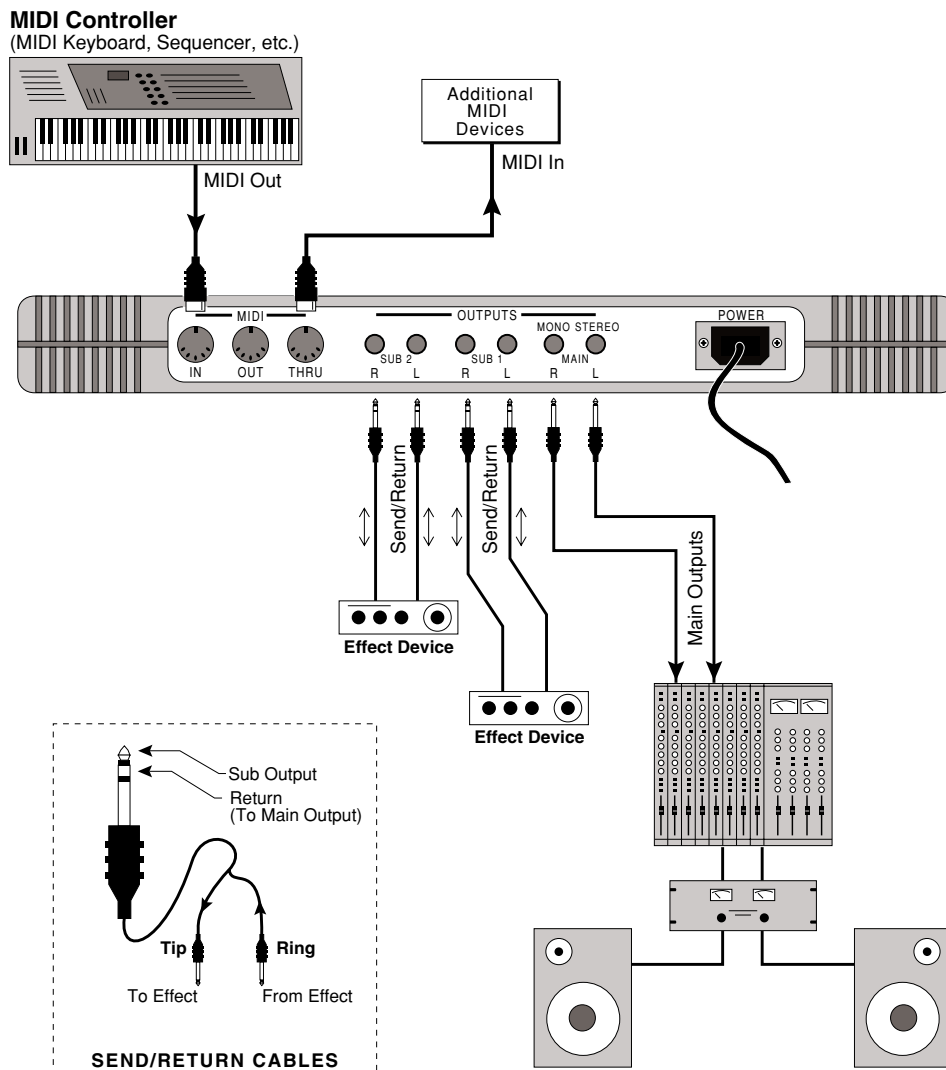


MIDI In - In this setup, Proteus is controlled by MIDI messages received at the MIDI In connector which have been routed by a MIDI switcher. The MIDI switcher allows any MIDI controller such as a MIDI keyboard, MIDI wind controller, or a computer to be easily connected.

MIDI Out - The MIDI Out jack is normally used to transmit program data to a computer or other device.

Outputs - Proteus has three sets of programmable stereo outputs; Main, Sub 1, and Sub 2. Specific Proteus instruments can be routed to one of these stereo pairs in order to be further processed or mixed separately.

Setup #3 PERFORMANCE SETUP



MIDI In - Proteus is controlled by MIDI messages received at the MIDI In connector. Connect the MIDI In of Proteus to the MIDI Out connector of a MIDI controller such as a MIDI keyboard, MIDI wind controller, or MIDI guitar controller.

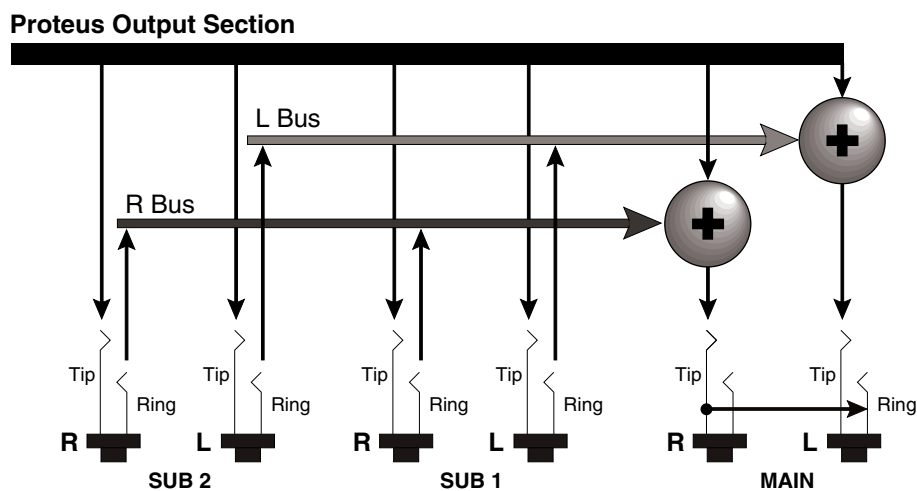
MIDI Thru - The MIDI Thru jack is used to connect additional MIDI devices onto the MIDI chain. MIDI Thru transmits an exact copy of the messages received at the MIDI In jack.

Outputs - Each of the Sub 1 and Sub 2 output jacks on the Proteus are stereo jacks. The tip of each jack (accessed when a standard phone plug is inserted) connects to the left or right output of that group.

If a stereo plug is inserted, the Ring of the stereo plug serves as a signal Return which sums into the Main outputs.

Therefore, the Sub 1 and Sub 2 jacks can serve as effect sends and returns in order to further process selected instruments and then return them to the main mix.

The diagram shows the Sub 1 and Sub 2 jacks being used as send/returns in order to further process selected Proteus instruments without using the effects bus on the mixing board. In a pinch, the effect returns could also be used to sum additional instruments into the main outputs of the Proteus.



The Sub 1 and Sub 2 jacks can be used as effect returns to the Main Outputs.

POWERUP!

The power switch is located on the left side of the front panel. The Proteus and its MIDI controller may be turned on in any order. When power is applied, the liquid crystal display will light, indicating that the Proteus is operating.

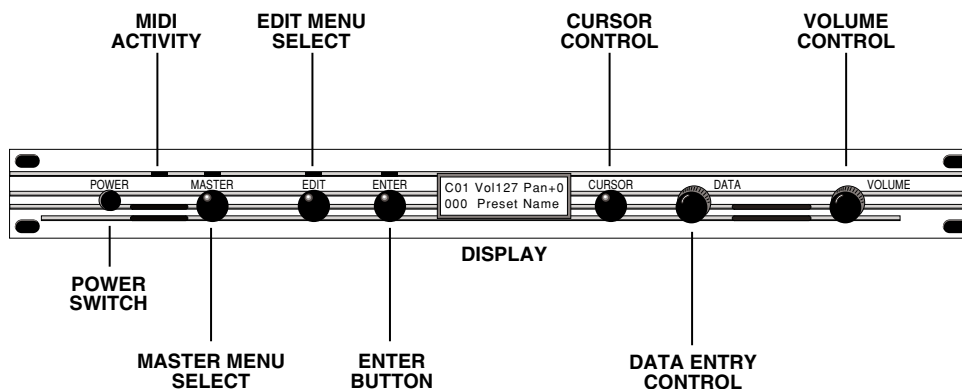
You may have noticed that there is no 110/220 Volt power selector switch on the Proteus.

Proteus automatically switches itself for 110 or 220 Volt operation.

BASIC OPERATION

BASIC OPERATION

MAIN CONTROLS



- **Power Switch** - Switches AC power to the Proteus ON and OFF.
- **MIDI Activity LED** - Indicates that MIDI data is being received.
- **Master Menu Select Button** - The *Master* menu contains parameters that affect the entire machine, not just certain presets. An illuminated LED above the button indicates that you are in the Master menu.
- **Edit Menu Select Button** - The *Edit* menu is used when you want to change parameters of a preset. An illuminated LED above the button indicates that you are in the Edit menu.
- **Enter Button** - The *Enter* button is used to initiate a particular operation within the Proteus. The red LED above the enter button flashes to let you know that the Proteus is waiting for your response.
- **Cursor Control** - This button moves the cursor to the next parameter on the display. (The cursor is a little flashing line underneath one of the parameters in the display.) Press the cursor control repeatedly until the cursor is underneath the desired parameter. The cursor can also be moved bidirectionally using the data entry control while the cursor select button is being held down (i.e. Press and hold the cursor button and turn the data entry knob).
- **Data Entry Control** - The data entry control is a stepped, variable control which is used to change parameter values. The control increments or decrements the current value one unit with each click.
- **Volume Control** - This is the master volume control for all audio outputs. Note: For maximum dynamic range, set this control at full level.

BASIC OPERATION

■ If your Proteus is not responding properly or plays the wrong preset, make sure that Proteus and your MIDI controller are set to the same MIDI channel and that the MIDI Volume is turned up.

For more information about MIDI, see MIDI Realtime Controls on page 36.

MIDI CHANNEL SELECTION

Press the cursor key repeatedly until the cursor is underneath the channel number. (The cursor is a little flashing line underneath one of the parameters in the display.) Rotate the data entry control to select MIDI channel 01-16. As the channel is changed, the display will change to show the preset, volume and pan associated with the displayed channel.

```
C01 Vol127 Pan+0
000 Preset Name
```

PRESET SELECTION

Press the cursor key repeatedly until the cursor is underneath the preset number. (The cursor is a little flashing line underneath one of the parameters in the display.) As the data entry control is rotated, the preset number and name will change. The displayed preset will be assigned to the displayed MIDI channel. Preset numbers range from 000 to 191 on a standard Proteus or from 000 to 383 on the Proteus XR.

```
C01 Vol127 Pan+0 ÷ MIDI Channel Parameters
000 Preset Name ÷ Preset Information
```

CHANNEL VOLUME

Press the cursor key repeatedly until the cursor is underneath the volume value. Rotate the data entry control to select volume 00-127. (This is the same parameter as MIDI volume control #7, and changes made over MIDI will be shown in the display.)

CHANNEL PAN

Press the cursor key repeatedly until the cursor is underneath the pan value. Rotate the data entry control to select pan values -7 to +7 or "P". When "P" is selected, the pan value specified in the preset is selected. Any other value will override the pan parameter in the preset. (This is the same parameter as MIDI pan control #10, and changes made over MIDI will be shown in the display.)

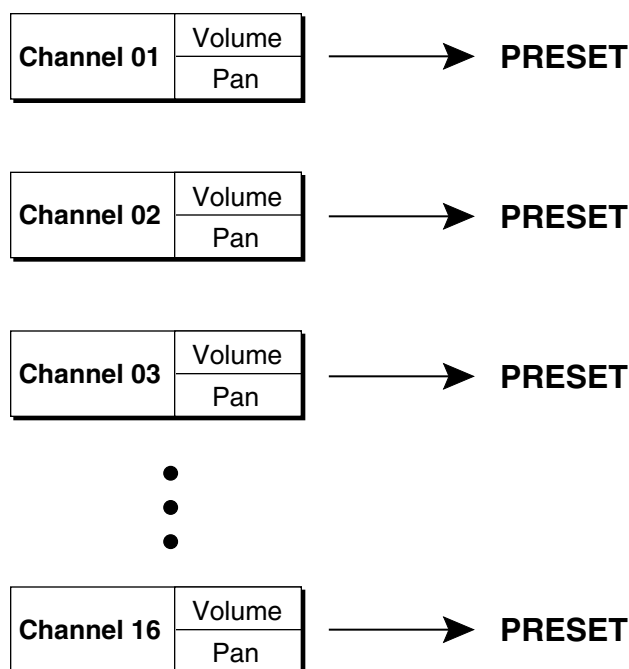
■ Channel Pan should normally be set to "P" unless realtime control of panning is desired. This will allow the pan settings programmed for each preset to be used.

BASIC OPERATION

MULTI-TIMBRAL OPERATION

Multi-timbral operation means that the Proteus can play more than one sound at the same time. To access multiple presets on different MIDI channels simultaneously, follow these instructions:

1. Set the MIDI mode to MULTI-Mode, using the MIDI mode function in the Master menu (page 18).
2. Decide which MIDI channels you wish the Proteus to receive, and turn all other channels OFF using the MIDI Enable function in the Master menu (page 19). *Up to 16 channels can be selected simultaneously!*
3. Select the desired preset for each of the MIDI channels you wish the Proteus to receive using the MIDI Channel/Preset selection screen (see previous instructions).
4. Proteus will now respond multi-timbrally on the MIDI channels you have specified. The volume and pan position parameters can be adjusted over MIDI (for each MIDI channel) or using the Cursor and Data Entry control in the MIDI Channel/Preset selection screen.



Each of the 16 MIDI channels can be assigned to play a specific preset in Proteus.

MASTER MENU

The Master menu contains functions that affect the overall operation of the Proteus. For example, changing the Master Tune will change the tuning of all the presets, not just the one currently displayed.

To enable the Master menu: Press the Master key, lighting the LED. The current screen will be the one most recently selected since powering up the Proteus. The cursor will appear underneath the first character of the screen heading on line one.

To select a new screen: Press the cursor key repeatedly (or hold the cursor key while turning the data entry control) until the cursor is underneath the screen title heading. Rotate the data entry control to select another screen.

To modify a parameter: Press the cursor key repeatedly (or hold the cursor key while turning the data entry control) until the cursor is underneath the parameter value. Rotate the data entry control to change the value.

To return to Preset Select mode: Press the Master key, turning off the LED.

MASTER MENU FUNCTIONS

MASTER TUNE

Master Tune adjusts the overall tuning of all presets so that the Proteus can be tuned to other instruments. The master tuning range is ± 1 semitone in $1/64$ th semitone increments. A master tune setting of "00" would indicate that the Proteus is perfectly tuned to concert pitch (A=440 Hz).

MASTER TUNE +63

MASTER MENU**TRANSCOPE**

This function transposes the key of the Proteus in half-step intervals. The transpose range is ± 12 semitones or one octave.

TRANSCOPE
+12 semitones

GLOBAL BEND

This function sets the range of the pitch wheel *only* when it is routed to control pitch. The maximum pitch bend range is ± 12 semitones. This function only affects presets which have their individual pitch bend range set to global.

GLOBAL BEND
+- 12 semitones

GLOBAL VELOCITY CURVE

Incoming velocity data can be modified by a velocity curve in order to provide different types of dynamics in response to your playing or to better adapt to a MIDI controller. This function allows you to select one of the four velocity curves or leave the velocity data unaltered (off). Global velocity curve only affects presets which have their individual velocity curve set to global. For more information on the velocity curves, see page 57.

GLOBAL VEL CURVE
4

MASTER MENU

MIX OUTPUT

This function allows you override the output assignments made in each preset and instead assign the outputs according to MIDI channel. This also allows you to change the output assignment of the factory presets. For each of the 16 MIDI channels, you can select the Main, Sub 1, or Sub 2 outputs, or "P". When "P" is selected, the output assignment selected in the preset is used. If no plugs are inserted into the sub outputs, the audio will be automatically directed to the main outputs.

MIX OUTPUT channel 01:P

MIDI MODE

This function selects one of the four MIDI modes and the MIDI system exclusive ID number.

■ *Omni mode* - Proteus responds to note information on all MIDI channels and plays the preset currently displayed in the main screen.

■ *Poly mode* - Proteus only responds to note information received on the currently selected MIDI channel (on the preset selection screen) and plays that channel's associated preset.

■ *Multi mode* - Proteus responds to data on any combination of MIDI channels and plays the specific preset associated with each of the MIDI channels.

■ *Mono mode* - Proteus responds to data on any combination of MIDI channels but plays each channel monophonically. If a new note on a channel is played before the last note is released, the envelopes will not be retriggered (legato). Mono mode is particularly useful with alternate controllers such as MIDI guitars, etc.

■ *ID number* - This function allows an external programming unit to distinguish between multiple Proteus units. In the case of multiple Proteus units, each Proteus should have a different ID number.

▼ *Warning: Presets will not be transferred between two Proteus' unless the ID numbers of both units match.*

MIDI MODE	ID
Omni	00

MASTER MENU

MIDI MODE CHANGE

This function selects whether or not MIDI mode change commands are accepted or ignored when received over MIDI (see MIDI Mode).

MIDI MODE CHANGE
Disabled

MIDI OVERFLOW

When on, if you play more notes than the Proteus has channels (32), the additional note data will be directed out the MIDI Out port to a second Proteus or other MIDI device. MIDI Overflow can be turned On or Off.

MIDI OVERFLOW
Off

MIDI ENABLE

When in MIDI Multi mode, this function lets you turn each MIDI channel On or Off. This is useful when you have other MIDI devices connected and do not want the Proteus to respond to the MIDI channels reserved for the other devices. MIDI Enable only operates in Multi Mode.

MIDI ENABLE
channel:01 On

PRESET CHANGE

This function lets the Proteus utilize or ignore incoming MIDI preset change commands for each channel. Note that MIDI can only select presets 000-127. Presets 128-191 can either be selected manually or over MIDI using the mapping function "MIDI PROGRAM →PRESET".

PRESET CHANGE
channel:01 On

MASTER MENU

MIDI CONTROLLER ASSIGN

The Proteus allows you to assign up to four realtime control sources from your MIDI controller. These control sources could be modulation wheels, data sliders or whatever. In this screen, you set up which controllers will be received by the Proteus. What effect the controller will have is programmed separately for each preset. The Proteus MIDI controllers are each assigned a letter, A-D. Each controller letter can be assigned to a MIDI realtime controller from 01-31. Note: If controller numbers 7 or 10 are selected, they will override the standard MIDI volume and pan control routings. For more information, see MIDI Realtime Controls in the Programming Basics section.

Some of the standard MIDI Controller numbers are listed below.

- 1 - Modulation Wheel or Lever
- 2 - Breath Controller
- 3 - Pressure: Rev 1 DX7
- 4 - Foot Pedal
- 5 - Portamento Time
- 6 - Data Entry
- 7 - Volume
- 8 - Balance
- 9 - Undefined
- 10 - Pan

CONTROLLER #	
A:01	B:02

Next Screen:

CONTROLLER #	
C:03	D:04

MIDI FOOTSWITCH ASSIGN

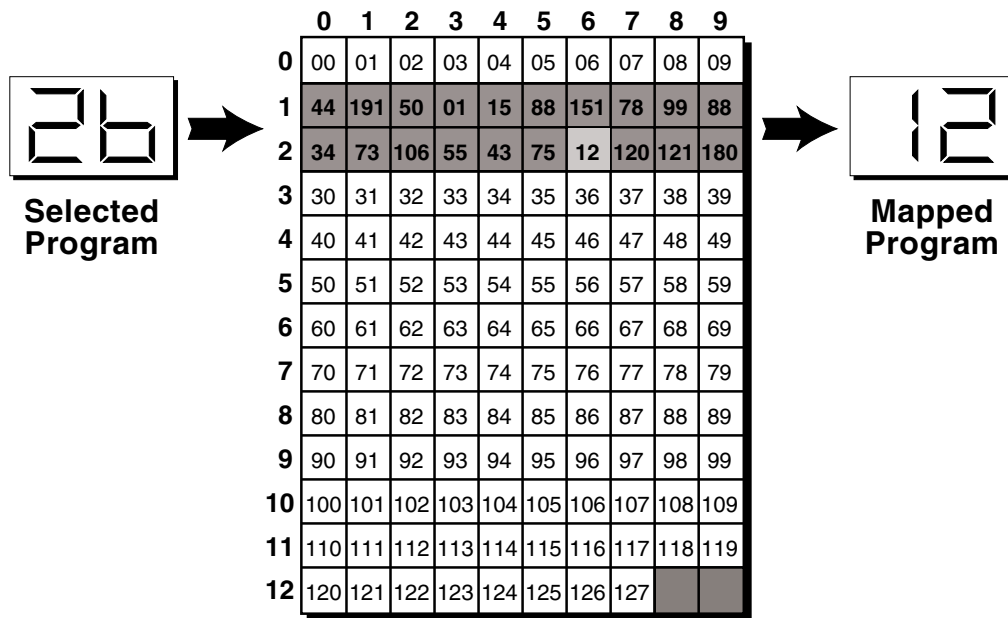
Like the MIDI Controllers, 3 MIDI footswitches can be assigned to MIDI footswitch numbers. Footswitches can be assigned numbers from 64-79. Destinations for the footswitch controllers are programmed in the Edit menu.

Some of the standard MIDI switch numbers are listed below.

- 64 - Sustain Switch (on/off)
- 65 - Portamento Switch (on/off)
- 66 - Sostenuato (chord hold, on/off)
- 67 - Soft Pedal (on/off)
- 69 - Hold Pedal 2 (on/off)

FOOTSWITCH #		
1:64	2:65	3:66

MASTER MENU



This chart shows how MIDI preset changes can be re-mapped. In this example, program changes 10-29 have been re-mapped. All other programs will be selected normally.

MIDI PROGRAM → PRESET

Incoming MIDI program changes can be “mapped” to call a different numbered preset. This is a handy feature when you want a specific preset number sent from the master synth to be linked with a specific preset on the Proteus. Simply selecting a preset on the master synth will automatically call up the proper Proteus preset. Any of the presets in the Proteus can be mapped to any incoming MIDI program change number. This feature also allows you to call up the presets 128-383, which are not normally accessible over MIDI.

```
MIDI PROG>PRESET
000 > 000
```

MASTER MENU

To Record MIDI Data into a Sequencer:

1. Setup sequencer to receive system exclusive data.

2. Place sequencer into record mode, then Send Preset Data.

To Receive MIDI Data from a Sequencer:

1. Simply play back the sequence into Proteus.

■ The Preset, Volume, and Pan information for all 16 channels is included when the Master settings are transmitted or received.

▼ Warning: When transferring SysEx data from one Proteus to another, the ID numbers of both units must match.

Application:

The user key tuning can be used to tune individual percussion instruments.

SEND MIDI DATA

This function will send MIDI System Exclusive data to the MIDI Out port of the Proteus. The MIDI data can either be sent to a computer/sequencer or to another Proteus. Using the cursor key and the data entry control, select the type of MIDI data you wish to transmit. The choices are:

Master Settings: Transmits all parameters in the Master menu except tuning table, program/preset map and viewing angle.

Program/ Preset Map: Transmits only the program/preset map.

Tuning Table: Transmits only the user tuning table.

Factory Presets: Transmits all the factory presets.

User Presets: Transmits all the user presets.

Any Individual Preset: Transmits only the selected preset.

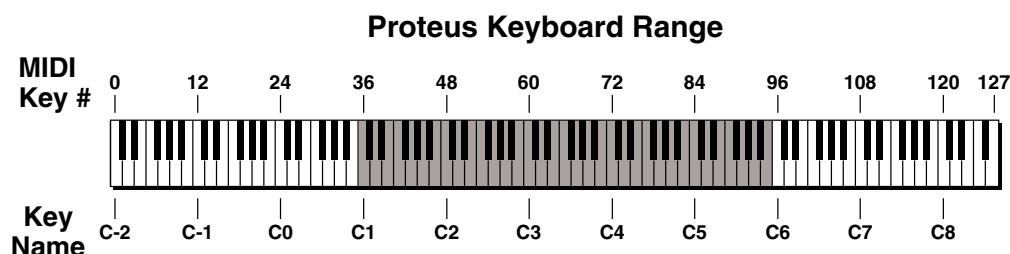
The Enter LED will be flashing. Press the Enter button to confirm the operation. To receive MIDI data, simply send the MIDI data into Proteus from another Proteus or your sequencer.

```
SEND MIDI DATA
000 Stereo Piano
```

USER KEY TUNING

In addition to standard twelve tone equal temperament, the Proteus contains four additional preset tuning tables (Just C, Vallotti, 19 tone, and Gamelan) and one user definable tuning. User Key Tuning allows you to alter the parameters of the user definable tuning stored in memory. The initial frequency of every key can be individually tuned, facilitating the creation of microtonal scales. Using the cursor key and the data entry control, select the key name, the MIDI key number and the fine tuning. The key name is variable from C-2 to G8. MIDI key number is variable from 0 to 127. The fine tuning is variable from 00 to 63 in increments of 1/64 of a semitone (approx. 1.56 cents). For each preset, the specific tuning table is selected in the Edit menu.

```
USER KEY TUNING
Key:C1 036.00
```


MASTER MENU

 = Standard 5 Octave Keyboard Range

VIEWING ANGLE

This function allows you to change the viewing angle of the display so that it may be easily read from either above or below. The angle is adjustable from +7 to -8. Positive values will make the display easier to read when viewed from above. Negative values make the display easier to read from below.

VIEWING ANGLE
+7

DEMO SEQUENCE

Proteus contains a play-only sequencer in order to give you an idea of what is possible using this amazing machine. Press the cursor switch to move the cursor to the bottom line of the display. The Enter LED will begin flashing. Press the Enter switch to start the sequence. The Enter LED will be lit and the bottom line of the display will change to "Stop". Pressing the Enter button again will stop the sequence.

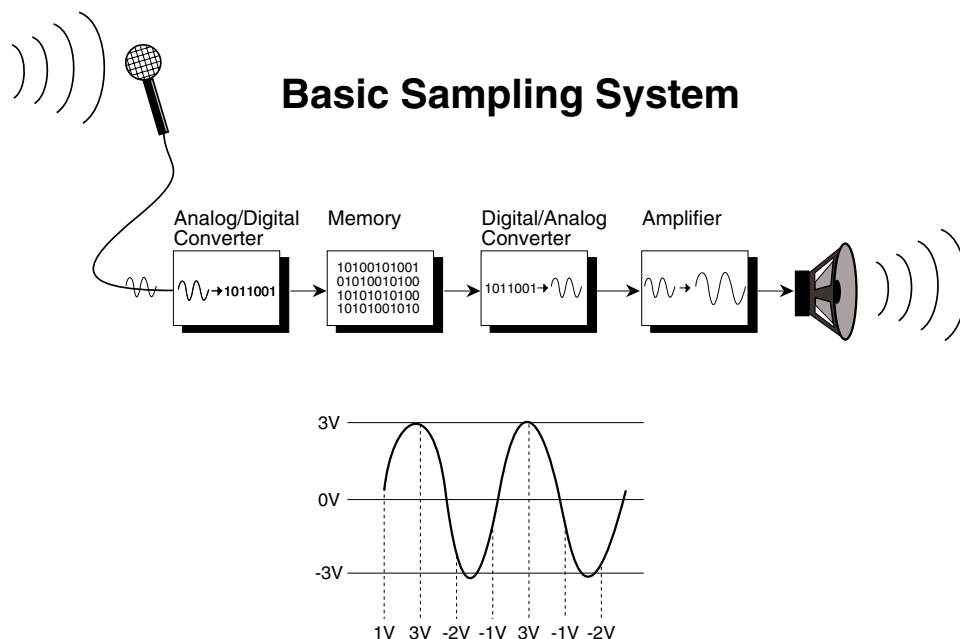
DEMO SEQUENCE
Start Sequence

about **PROTEUS**

Proteus, unlike most synthesizers, utilizes digital recordings of real instruments for the basis of its sound. This is similar to a tape recorder except that in the Proteus, the sounds are permanently recorded on digital memory chips.

To perform this modern miracle, sounds and instrument waveforms are first sampled into the Emulator III, our top of the line, 16 bit stereo digital sampler. After the sounds and waveforms have been truncated, looped and processed, they are “masked” into the Proteus ROM (Read Only Memory) chips.

Conceptually, the sampling process is very simple, as shown in the Basic Sampling System diagram. As a sound wave strikes the diaphragm of a microphone, a corresponding voltage is generated. To sample the sound, the voltage level is repeatedly measured at a very high rate and the voltage measurements are stored in memory. To play the sound back, the numbers are read back out of memory, converted back into voltages, then amplified and fed to a speaker which converts the voltage back into sound waves. Of course, playing back 32 channels at different pitches tends to complicate matters, but this is basically how it works. In Proteus, we have left out the Analog/Digital converter stage since the sounds are already sampled for you.



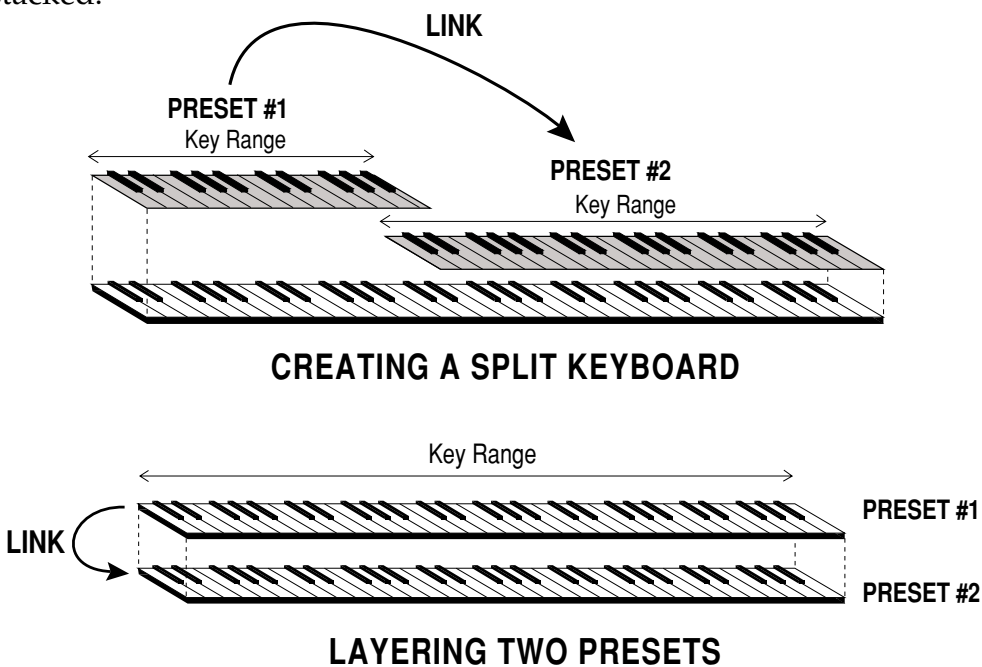
PROGRAMMING BASICS

PROGRAMMING BASICS

Your initial involvement with the Proteus will most likely consist of using the existing presets and selecting MIDI channels. While the factory presets are very good, there are probably some things you would like to change, perhaps the LFO speed, or the attack time. You may also want to make your own custom presets using complex modulation routings. Entirely new sounds can be created by combining the attack portion of one sound with the body of another sound or by combining the digital waveforms with sampled sounds. There are 64 user locations (64-127) available to store your own creations or edited factory presets. Best of all, it's easy to edit or create new presets using the edit menu.

Presets can be made up of both a primary and secondary instrument. Presets can also be "linked" with up to 3 additional presets to create layering or splits.

One way to create a keyboard split is assign an instrument to a specific range and then link it to other presets which fill in the empty keys. Using a combination of 4 linked presets and the primary and secondary instrument ranges, up to 8 keyboard splits can be produced. If linked presets overlap on the same keyboard range, the presets will be doubled or stacked.



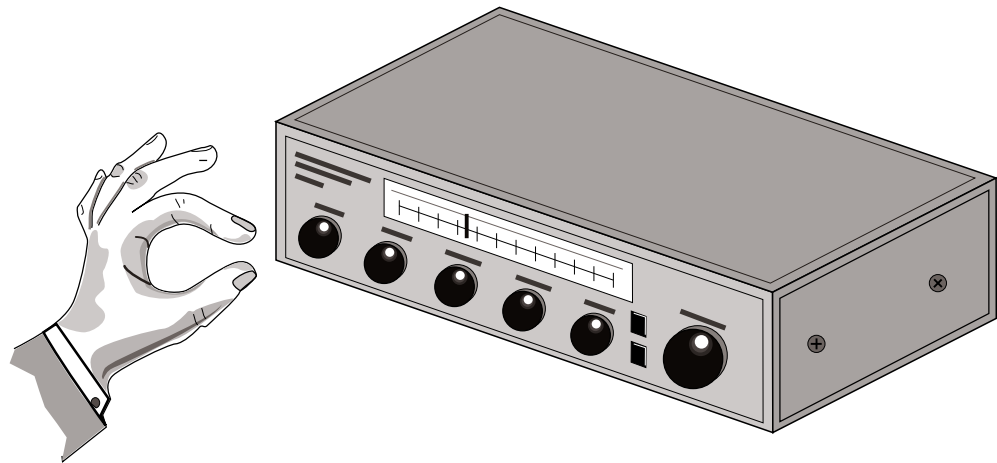
These diagrams show how keyboard splits and layers can be created by linking presets. Remember that each preset can consist of both a primary and secondary instrument.

PROGRAMMING BASICS

Proteus has an extensive modulation implementation using two multi-wave LFO's (Low Frequency Oscillators), two envelope generators and the ability to respond to multiple MIDI controllers. You can simultaneously route any combination of these control sources to multiple destinations.

MODULATION

Modulation means to *dynamically change* a parameter, whether it be the volume (amplitude modulation), the pitch (frequency modulation), or whatever. Turning the volume control on your home stereo rapidly back and forth would be an example of amplitude modulation. To modulate something we need a modulation *source* and a modulation *destination*. The source is your hand turning the knob, and the destination is the volume control. If we had a device that would automatically turn the volume control, we would also call that device a modulation source. The Proteus is designed so that for each of the variable parameters, such as the volume, there is an initial setting which can be changed by a modulation source. Therefore in the case of volume, we have an initial volume and we can change or modulate that volume with a modulation source. Two main types of modulation sources on the Proteus are *Envelope Generators* and *Low Frequency Oscillators*. In the example above, an envelope generator could be routed to automatically turn the volume control as programmed by the envelope. Or, a low frequency oscillator could be routed to automatically turn the volume control up and down in a repeating fashion.



Turning the volume control back and forth on your home stereo is an example of Amplitude Modulation.

PROGRAMMING BASICS

MODULATION SOURCES

The Proteus uses three kinds of modulation sources.

■ **KEYBOARD and VELOCITY MODULATION**

Values which are generated at the start of a note and do not change during the note.

Keyboard Key - Which key is pressed.

Key Velocity - How hard the key is pressed.

■ **REALTIME MODULATION**

Values which can be continuously changed during the entire duration of the sound.

Pitch Wheel - A synthesizer pitch bend wheel.

Miscellaneous Controllers (4) - Any type of MIDI controller data.

Keyboard Pressure (mono aftertouch) - Key pressure applied after the key is initially pressed.

Polyphonic Key Pressure - Pressure from a controller capable of generating polyphonic pressure data.

Low Frequency Oscillators (2) - Generate repeating waves.

Envelope Generators (2) - Generate a programmable "contour" which changes over time when a key is pressed.

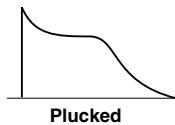
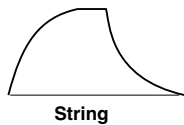
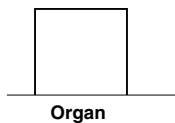
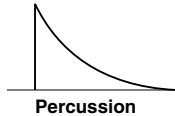
■ **FOOTSWITCH MODULATION**

Changes a parameter when one of the three footswitches are pressed. The footswitches can be programmed to switch: Sustain (pri/sec/both), Alternate Volume Envelope (pri/sec/both), Alternate Volume Release (pri/sec/both), or Cross-Switch between the primary and secondary instruments.

PROGRAMMING BASICS

ENVELOPE GENERATORS

An envelope can be described as a “contour” which can be used to shape the sound in some way over time. Each channel of the Proteus contains two envelope generators. One of the envelope generators, the Alternate Volume Envelope, controls the volume of the primary or secondary instrument and has 5 stages, Attack, Hold, Decay, Sustain, and Release. The other envelope, the Auxiliary Envelope, can be routed to any realtime control destination and is a general purpose envelope. The Auxiliary Envelope has 6 stages: Delay, Attack, Hold, Decay, Sustain, and Release. The Envelope parameters can be described as follows:



■ The generalized envelope shapes of a few types of sounds are shown above.

■ **Delay** - The time between when a key is played and when the attack phase begins.

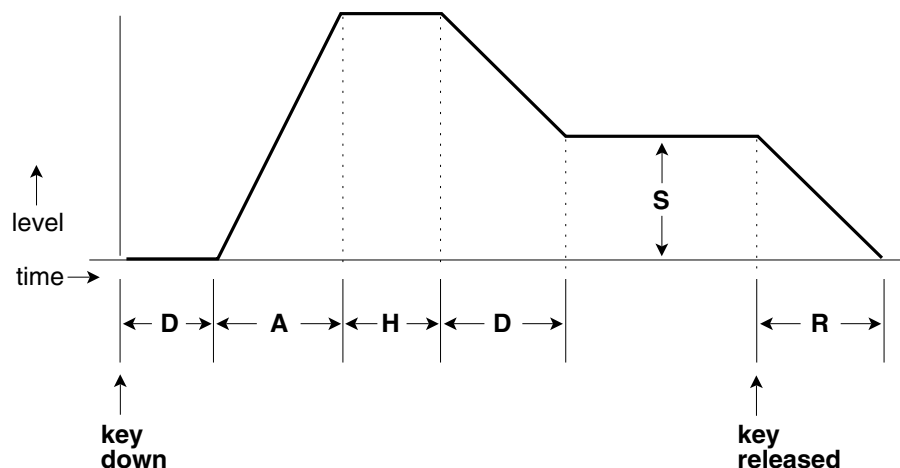
■ **Attack** - The time it takes to go from zero to the peak (full) level.

■ **Hold** - The time the envelope will stay at the peak level before starting the decay phase.

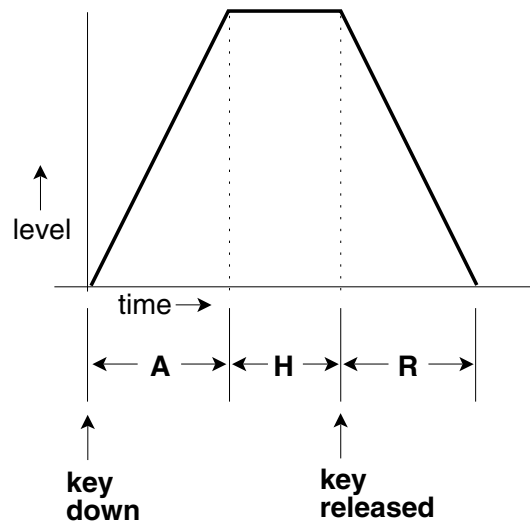
■ **Decay** - The time it takes the envelope to go from the peak level to the sustain level.

■ **Sustain** - The level at which the envelope remains as long as a key is held down.

■ **Release** - The time it takes the envelope to fall to the zero level after the key is released.



PROGRAMMING BASICS

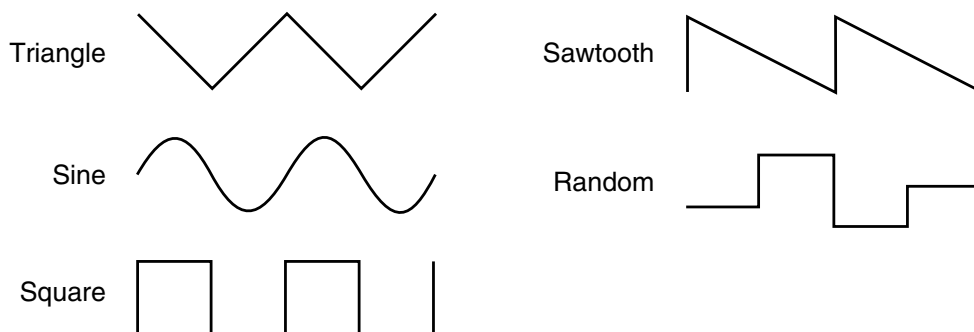


If the key is released during the Hold (H) phase, the Release (R) phase begins.

LOW FREQUENCY OSCILLATORS (LFOs)

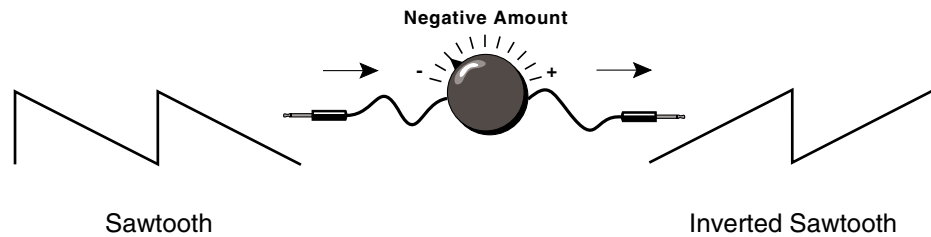
A Low Frequency Oscillator is simply a wave which repeats at a slow rate. The Proteus has two multi-wave LFOs for each of its 32 channels. The LFO waveforms are: Triangle, Sine, Square, Sawtooth, and Random, which is a random "sample and hold" type of wave.

By examining the diagram of the LFO waveforms, you can see how the LFO will affect a modulation destination. Suppose we are modulating the pitch of an instrument. The sine wave looks smooth, and will smoothly change the pitch. The square wave changes abruptly, and will abruptly change the pitch from one pitch to another. The sawtooth wave smoothly decreases, then abruptly changes back up. The sound's pitch will follow the same course. Controlling the pitch of an instrument is an easy way to hear the effects of the LFO waves.



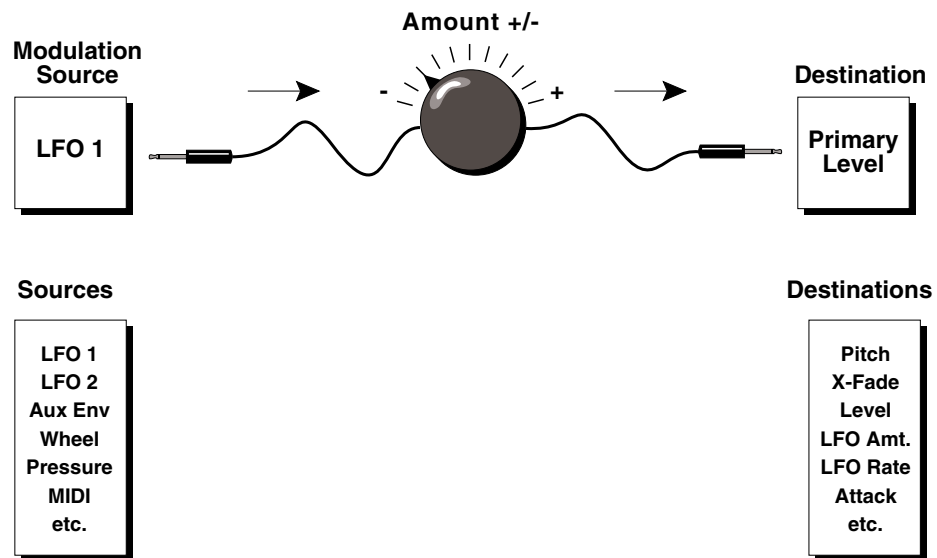
PROGRAMMING BASICS

When the amount of an LFO is a negative value, the LFO shape will be inverted. For example, inverting the sawtooth wave produces a wave that smoothly increases, then instantly resets down.

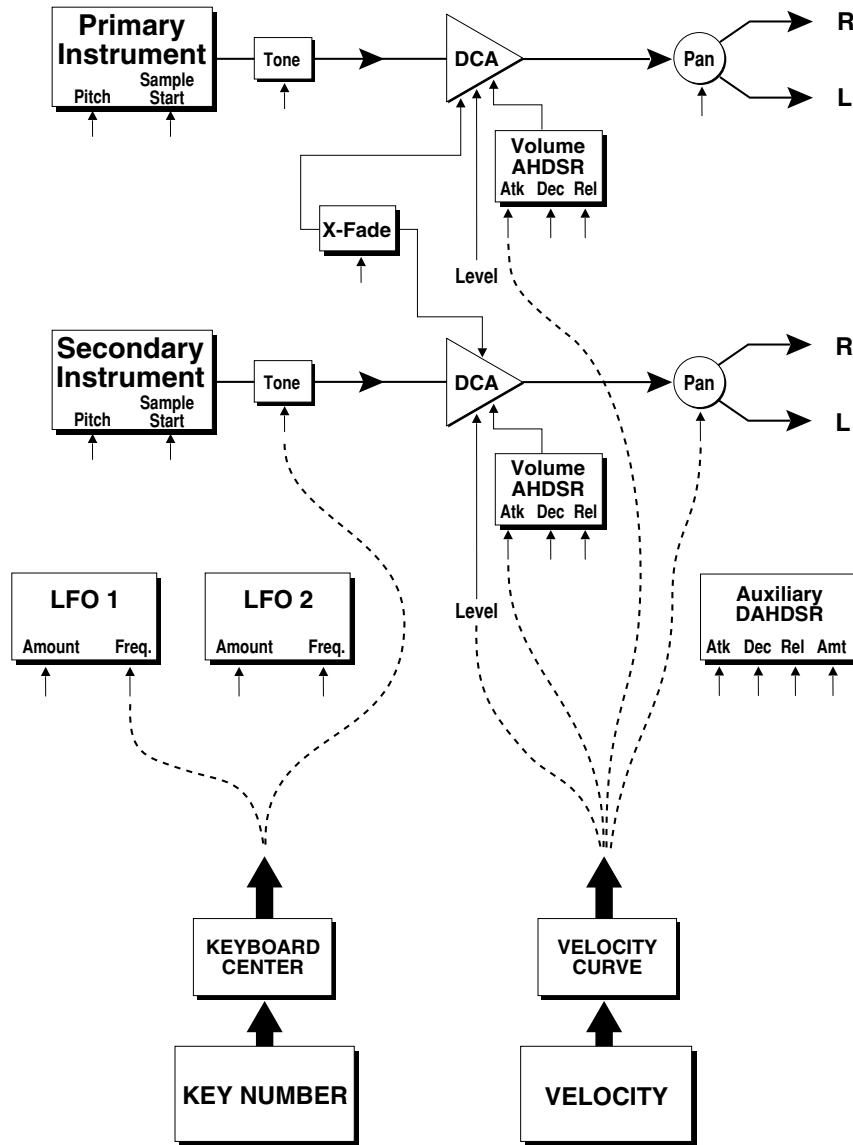


MIDIPATCH

Connecting a modulation source to a destination is called a *patch*. Proteus lets you connect the modulation sources in almost any possible way to the modulation destinations. You can even modulate other modulators. Each patch also has an amount parameter which determines "how much" modulation is applied to the destination. The modulation amount can be positive or negative and will either add or subtract from the initial value. Keyboard and velocity sources can be simultaneously patched to any 6 of the 33 destinations for each preset. Realtime modulation sources can be simultaneously patched to any 8 of the 24 destinations for each preset.



PROGRAMMING BASICS



Keyboard and Velocity Modulation Sources

KEYBOARD and VELOCITY MODULATION

The Keyboard and Velocity Modulation diagram shows the possible routing of Key Number (which key is pressed), and Velocity (how hard the key is pressed). These modulation sources can control any of the destinations indicated by the small arrows. A modulation source can control up to six destinations or one destination can be controlled by up to six modulation sources. The possible modulation routings are completely flexible as shown in the example above.

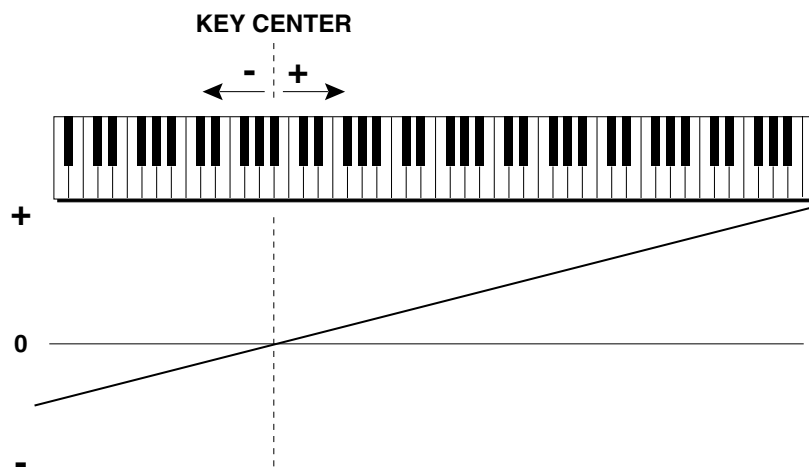
Modulation Sources:
Key Number and Key Velocity

Destinations: Off, Pitch, Primary Pitch, Secondary Pitch, Volume, Primary Volume, Secondary Volume, Attack, Primary Attack, Secondary Attack, Decay, Primary Decay, Secondary Decay, Release, Primary Release, Secondary Release, Crossfade, LFO 1 Amount, LFO 1 Rate, LFO 2 Amount, LFO 2 Rate, Auxiliary Envelope Amount, Auxiliary Envelope Attack, Auxiliary Envelope Decay, Auxiliary Envelope Release, Sample Start, Primary Sample Start, Secondary Sample Start, Pan, Primary Pan, Secondary Pan, Tone, Primary Tone, Secondary Tone

PROGRAMMING BASICS

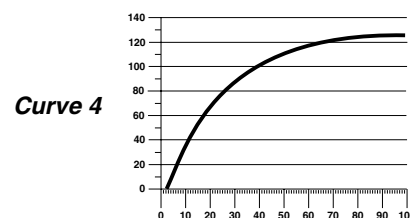
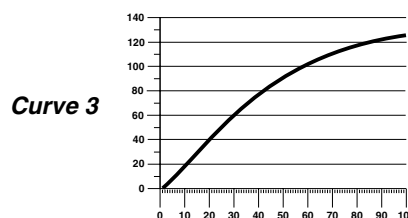
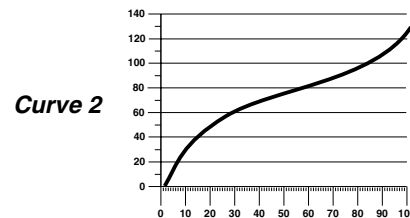
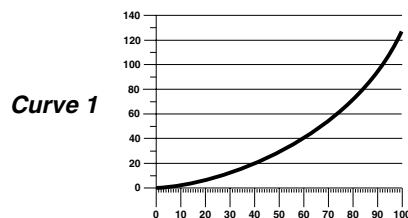
KEY NUMBER

The Key Number is affected by the Keyboard Center parameter which can be set to any key from A-1 to C7. The keyboard center establishes a reference point for keyboard modulation; keys above this point will have a positive value, while keys below it will be negative. For example, if we wished to change the volume of an instrument using key number and the key center were set to middle C, the instrument would get progressively louder above middle C and progressively softer below middle C.

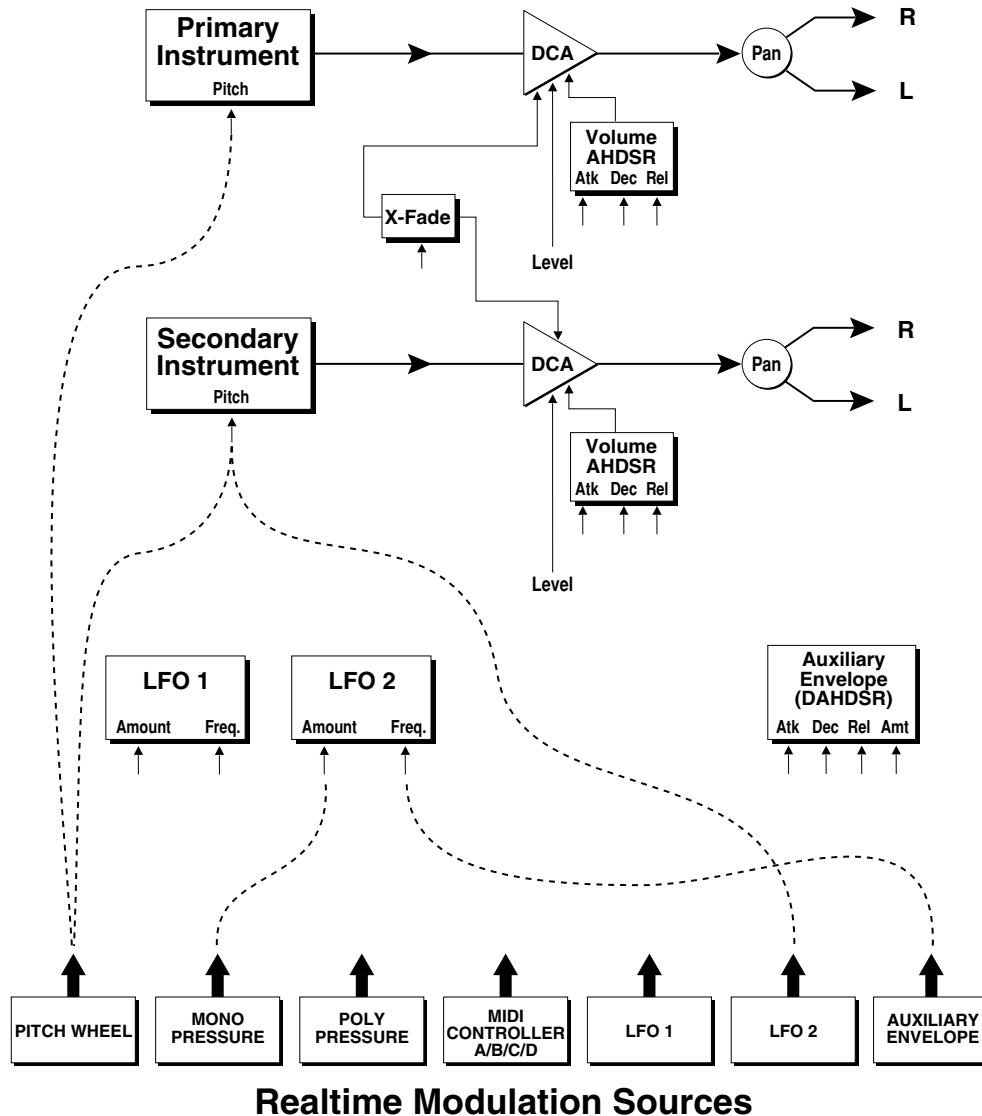


VELOCITY CURVES

Incoming velocity values can be scaled by one of the four velocity curves in order to match your playing style or better adapt to the MIDI controller. Experiment with the four curves to find the one that works best for your style and MIDI controller.



PROGRAMMING BASICS



Modulation Sources:

Pitch Wheel,
MIDI Control A,
MIDI Control B,
MIDI Control C,
MIDI Control D,
Mono Pressure,
Polyphonic Pressure,
LFO 1, LFO 2,
Auxiliary Envelope

Destinations:

Off,
Pitch, Primary Pitch,
Secondary Pitch,
Volume,
Primary Volume,
Secondary Volume,
Attack,
Primary Attack,
Secondary Attack,
Decay,
Primary Decay,
Secondary Decay,
Release,
Primary Release,
Secondary Release,
Crossfade, LFO 1
Amount, LFO 1 Rate,
LFO 2 Amount,
LFO 2 Rate, Auxiliary
Envelope Amount,
Auxiliary Envelope
Attack, Auxiliary
Envelope Decay,
Auxiliary Envelope
Release

REALTIME MODULATION

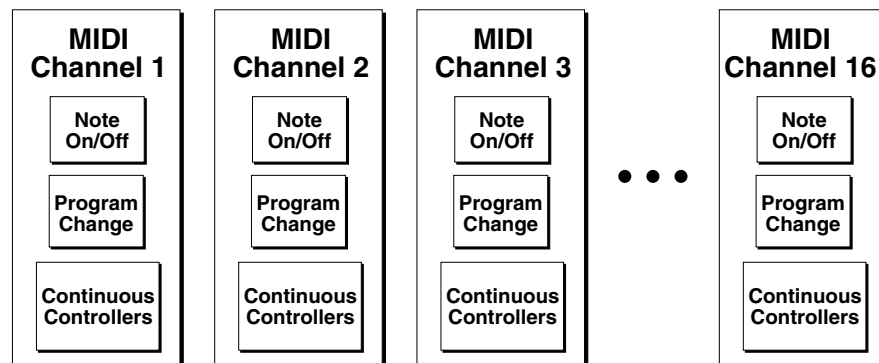
In addition to keyboard and velocity modulation, Proteus has multiple realtime modulation sources. Realtime modulation sources are parameters which vary over time. The velocity and keyboard modulations, in comparison, are set at the key depression. The realtime modulation sources can control any of the destinations except Sample Start, Tone and Pan as indicated by the small arrows. A modulation source can control up to eight destinations or one destination can be controlled by up to eight modulation sources. The possible modulation routings are completely flexible as shown in the example above.

PROGRAMMING BASICS

MIDI REALTIME CONTROLS

The MIDI realtime controllers may seem confusing at first, but they are really very simple to understand. You probably already know that there are 16 MIDI channels that can be used. Each of the 16 MIDI channels uses basically 3 types of messages; *note on/off*, *program changes*, and *continuous controller* messages. Your MIDI keyboard, in addition to telling Proteus which note was played, may also send *realtime control* information, which simply means occurring in real time or live. (You may be using a MIDI device other than a keyboard, but for simplicity's sake we'll presume that you're using a keyboard.) Realtime control sources include such things as pitch wheels or levers, modulation wheels or levers, control pedals, aftertouch, etc. and are used to add more expression or control. Your MIDI keyboard sends out realtime controller information on separate channels called *continuous controller channels*. There is a set of 32 continuous controller channels for each of the 16 MIDI channels. Some of the controller channels, such as pitch wheel, volume, and pan have been standardized. For example, volume is usually sent on continuous controller channel #7.

*MIDI wind controllers may work better if you assign one of the MIDI A, B, C, D controllers to control volume. This will allow the MIDI volume to be **added** to the current volume.*



Common realtime controllers such as the pitch wheel, volume, pan and pressure are pre-programmed to their proper destinations. Your keyboard may have other realtime controls such as a control pedal or data slider which can also be programmed to control most of the parameters on Proteus.

The Proteus is equipped with a sophisticated *MidiPatch™* system, which allows you to route any continuous controller to any realtime modulation destination. The MidiPatch system is also very easy to use. First, you must know which controller numbers your keyboard can transmit.

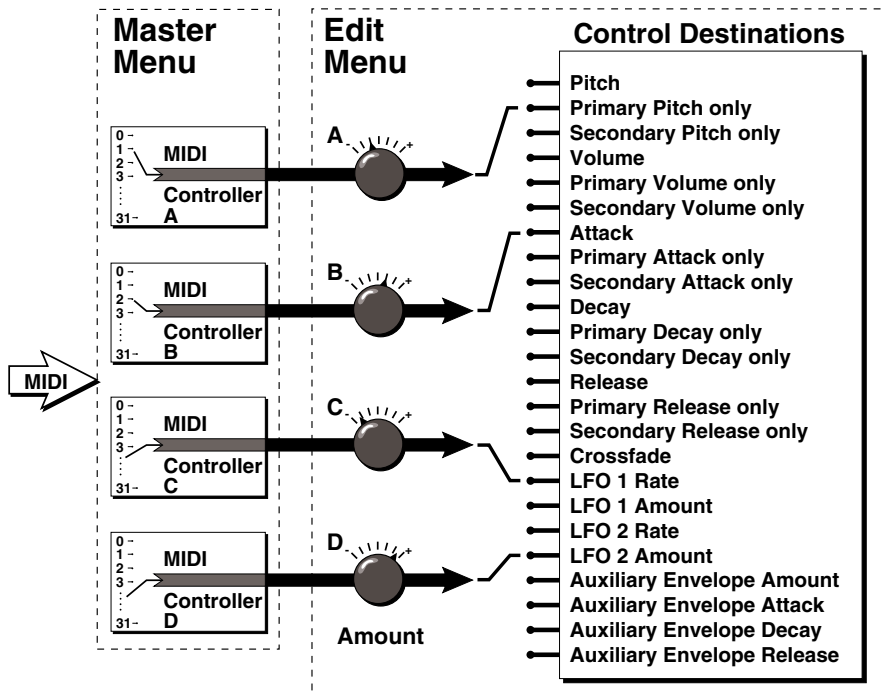
PROGRAMMING BASICS

Let's say for instance, that you are using a Yamaha DX7 as your master keyboard. The DX has pitch and mod. wheels, a breath controller, a data slider and a foot pedal, all of which transmit their values over MIDI. The standard MIDI controller numbers for the controls are listed below (the pitch wheel has a dedicated controller, PWH). First, we would go to the Master menu, MIDI Controller Assign and define the 4 MIDI controllers that we wish to use. Assign each controller number to one of the letters A-B-C-D.

- 01 - Modulation Wheel A
- 02 - Breath Controller B
- 04 - Foot Pedal C
- 06 - Data Entry D

To complete the connections for a particular preset, go to the Edit menu, Realtime Control, and route the MIDI A, B, C, D to the desired destinations. These could be patched to any 4 destinations or even to the same destination. The MIDI Controller Amount menu, (in the Edit menu) allows you to scale the amounts of each of the controllers by a positive or negative value. The signal flow is shown in the diagram below.

- Standard MIDI Controller Numbers:**
- 1- Modulation Wheel
 - 2- Breath Controller
 - 3- Pressure Rev 1 DX7
 - 4- Foot Pedal
 - 5- Portamento Time
 - 6- Data Entry
 - 7- Volume
 - 8- Balance
 - 9- Undefined
 - 10- Pan



The MIDI controllers A-B-C-D must have both a source (0-31), and a control destination assigned.

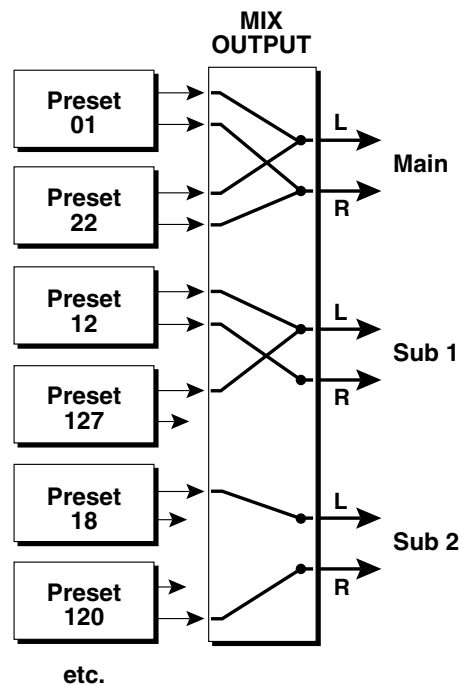
PROGRAMMING BASICS

STEREO MIX OUTPUTS

Proteus has three sets of polyphonic stereo outputs (Main, Sub 1, Sub 2). The channels used by a particular preset may be directed to appear at any one of these three stereo outputs. This feature is useful for signal processing (EQ, reverb, etc.) of individual sounds prior to final mixdown.

By panning a preset completely left or right, it can be routed to a single output jack.

Note: All presets will be automatically routed to the Main outputs unless plugs are inserted into the Sub 1 or Sub 2 outputs.



Each preset can be routed to one (and only one) set of stereo outputs.

EDIT MENU

EDIT MENU

The edit menu contains functions that can be modified by the user and then saved as preset information in one of the user presets. For example, the LFO speed or other parameter can be edited, then the preset can be saved to a user location (64-127 on standard Proteus, 0-255 on Proteus XR).

While the Edit menu is activated, incoming MIDI preset changes are ignored. This is a quick and easy way to temporarily turn MIDI Preset Change OFF.

WARNING: *Changes made in the Edit menu will be forever lost unless the preset is "saved" using the Save Preset function (page 60) before changing the preset.*

To enable the Edit menu: Press the Edit key, lighting the LED. The current screen will be the one most recently selected since powering up the machine. The cursor will appear underneath the first character of the screen heading on line one.

To select a new screen: Press the parameter key repeatedly (or hold the parameter key while turning the data entry control) until the cursor is underneath the screen heading. Rotate the data entry control to select the screen.

To modify a parameter: Press the parameter key repeatedly (or hold the parameter key while turning the data entry control) until the cursor is underneath the screen heading. Rotate the data entry control to change the value.

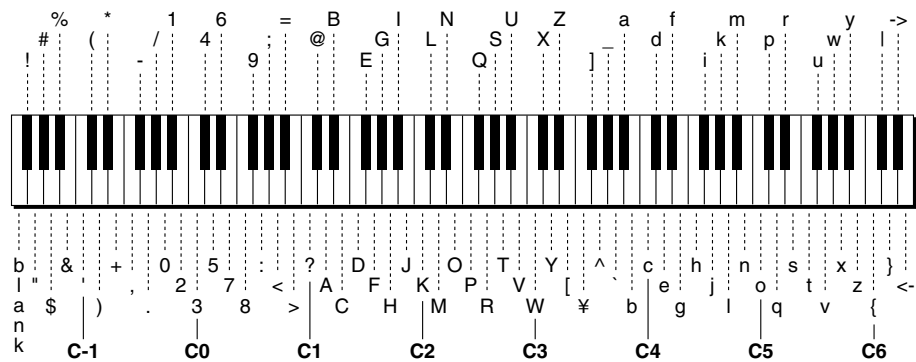
To return to Preset Select mode: Press the Edit button, turning off the LED.

EDIT MENU

EDIT MENU FUNCTIONS

PRESET NAME

Preset Name allows you to name each of the user presets with a name of up to 12 characters. Position the cursor under the character location and use the data entry control to change the character. The keyboard can also be used to select characters. The charts below show the keyboard character assignment.



	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	Pitch
-2						blank	!	"	#	\$	%	&	
-1	'	()	*	+	,	-	.	/	0	1	2	
0	3	4	5	6	7	8	9	:	;	<	=	>	
1	?	@	A	B	C	D	E	F	G	H	I	J	
2	K	L	M	N	O	P	Q	R	S	T	U	V	
3	W	X	Y	Z	[¥]	^	_	`	a	b	
4	c	d	e	f	g	h	i	j	k	l	m	n	
5	o	p	q	r	s	t	u	v	w	x	y	z	
6	{		}	▶	◀								

Octave No.

EDIT MENU**MIX OUTPUT**

This function allows you to direct the channels used by a particular preset to appear at one of these three stereo outputs (Main, Sub 1, Sub 2).

MIX OUTPUT
Main

PRIMARY INSTRUMENT

This function allows you to select which of the available instrument sounds (or none) will be placed on the primary layer of the current user preset.

INSTRUMENT pri
I002 Piano Pad

SECONDARY INSTRUMENT

This function allows you to select which of the available instrument sounds (or none) will be placed on the secondary layer of the current user preset.

INSTRUMENT sec
I001 Piano

KEY RANGE

Key range sets the keyboard range of both primary and secondary instruments. This sets the keyboard range for the entire preset and will further limit the primary and secondary keyboard ranges. The key range can be set anywhere from C-2 to G8.

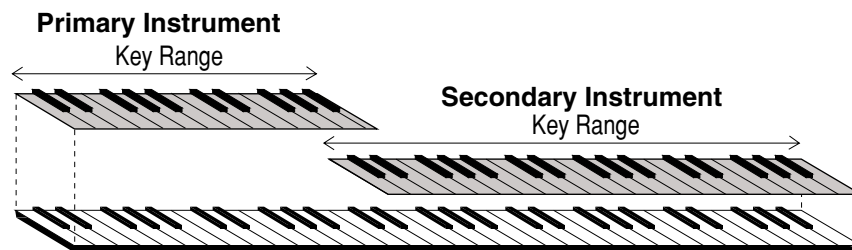
KEY RANGE
C-2 -> G8

Simply changing the instrument creates a new sound while retaining all other parameters of the preset.

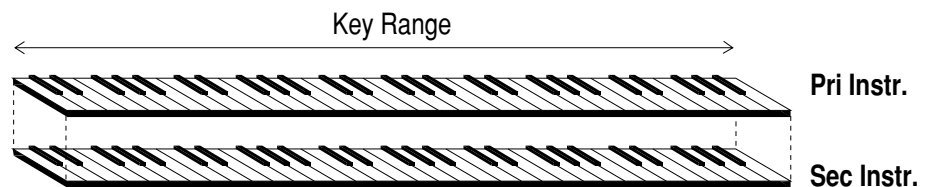
EDIT MENU**PRIMARY KEY RANGE**

Key range sets the keyboard range of the primary instrument. This is useful for creating positional crossfades and keyboard splits between the primary and secondary layers. The key range can be set anywhere from C-2 to G8.

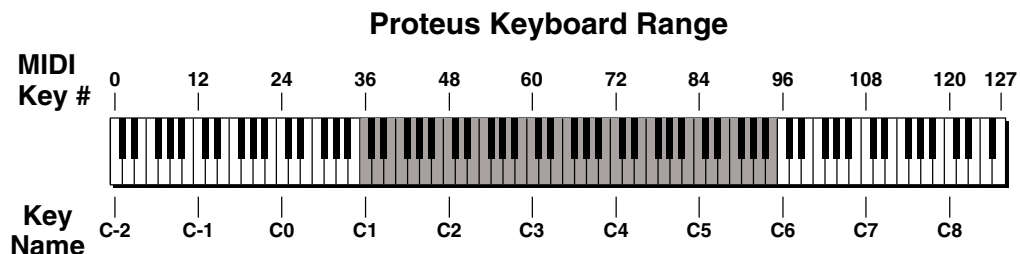
```
KEY RANGE pri
C-2 -> G8
```



This diagram shows how a "split" keyboard can be programmed using the primary and secondary instruments.



This diagram shows how instruments can be layered or "stacked" using the primary and secondary instruments.

EDIT MENU

 = Standard 5 Octave Keyboard Range

SECONDARY KEY RANGE

Key range sets the keyboard range of the secondary instrument. The key range can be set anywhere from C-2 to G8.

```
KEY RANGE sec
C-2 -> G8
```

VOLUME

Volume sets the amplitude of the primary and secondary instruments. This function also allows you to compensate for the relative volume differences between instruments.

```
VOLUME
pri:127 sec:64
```

PAN

Pan allows you to independently set the initial pan position of the primary and secondary instruments. A value of -7 pans the instrument hard left and a value of +7 pans the instrument hard right. This pan setting is only valid if "P", for preset pan, is selected in the main display.

```
PAN
pri:-7 sec:+7
```

EDIT MENU**COARSE TUNING**

This function allows you to change the tuning of the primary and secondary instruments in semitone intervals. The coarse tuning range is -36 to +36 semitones. A coarse tuning setting of "00" would indicate that the instrument is tuned to concert pitch (A=440 Hz).

```
TUNING coarse
pri:+00  sec:+00
```

FINE TUNING

This function allows you to change the tuning of the primary and secondary instruments in 1/64 semitone intervals (approx. 1.56 cents). The fine tuning range is ± 1 semitone.

```
TUNING fine
pri:+00  sec:+00
```

CHORUS

Chorus "thickens" the sound by doubling the sound and then detuning it. Proteus/1 chorus can only be turned On or Off. Proteus/2 and above allow you select the chorus amount from a range of 1 to 15. When Chorus is on, the number of channels used by an instrument will be doubled.

Proteus/1

```
CHORUS
pri:On  sec:Off
```

Proteus/2 and above

```
CHORUS
pri:Off  sec:07
```

DELAY

Delay varies the time between when a MIDI Note On message is received and the onset of a note. The delay time is adjustable from 0 to 13 seconds (000-127).

```
DELAY
pri:000  sec:000
```


EDIT MENU**SOLO MODE**

Solo mode provides the playing action of a monophonic instrument with single triggering and last-note priority. This mode does not allow you to play a chord. Solo mode will not retrigger the envelope generators if a new note is played while another is being held. This allows a legato playing technique to be used. Solo mode also provides more realistic effects when working with guitar and wind controllers.

```
SOLO MODE  
pri:Off  sec:On
```

SOUND START

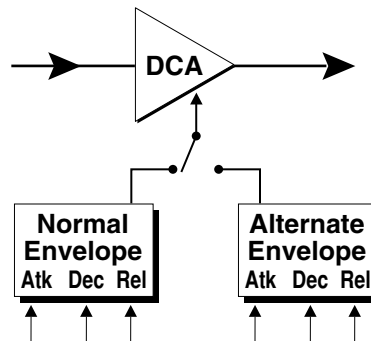
This function allows you to set where a sample begins playing when you hit a key. A setting of 000 plays a sound from the beginning, higher values move the sample start point toward the end of the sound.

```
SOUND START  
pri:000  sec:000
```

REVERSE SOUND

When reverse sound is turned On, the instrument will be played backwards. When an instrument is reversed, any loops in the sound will be ignored, which means that the sound will not sustain indefinitely.

```
REVERSE SOUND  
pri:Off  sec:On
```

EDIT MENU**ALTERNATE ENVELOPE ON/OFF**

Each instrument has its own factory preset AHDSR volume envelope which is normally employed. If a programmable volume envelope is desired, the alternate envelope is used.

```
ALT ENVELOPE
pri:Off  sec:On
```

PRIMARY ALTERNATE ENVELOPE PARAMETERS

This function allows you to adjust the alternate volume envelope parameters for the primary instrument. The parameters are Attack time, Hold time, Decay time, Sustain level, Release time and are adjustable from 00 to 99.

```
P: A H D S R
   00 00 00 99 16
```

SECONDARY ALTERNATE ENVELOPE PARAMETERS

This function allows you to adjust the alternate volume envelope parameters for the secondary instrument. The parameters are Attack time, Hold time, Decay time, Sustain level, Release time and are adjustable from 00 to 99.

```
S: A H D S R
   00 00 00 99 16
```

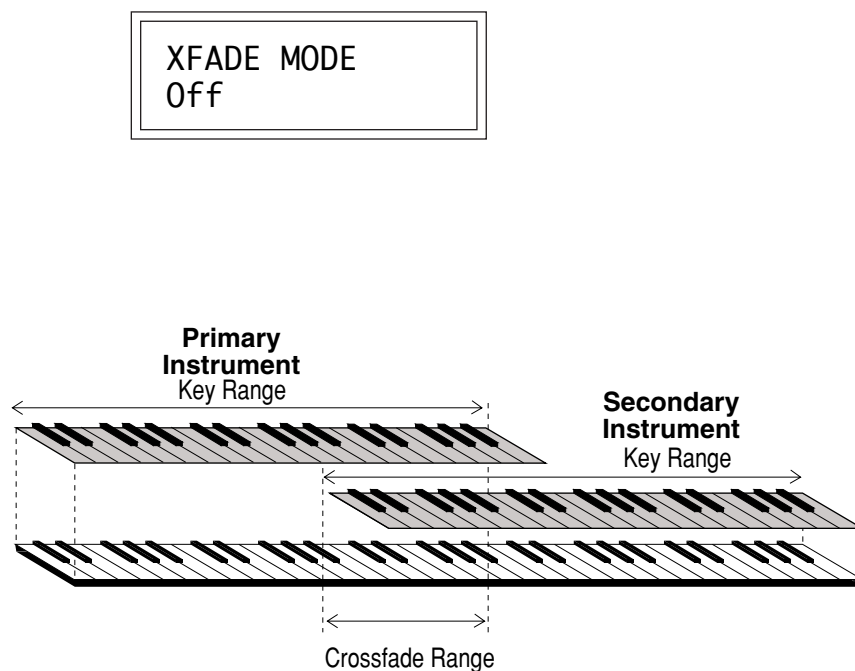
EDIT MENU**CROSSFADE MODE**

This function determines which of the following crossfade modes will be selected: Off, Crossfade, or Cross-Switch.

Off: When “off” is selected, none of the crossfade parameters will have any effect.

Crossfade: When “crossfade” is selected, a control input is used to fade between the primary and secondary. Any modulation source may be used as an input (velocity, wheel, etc.)

Cross-switch: When “cross-switch” mode is selected, the switched layer is selected if the input crosses a certain threshold or if a footswitch controlling cross-switch is activated. The switch occurs only at the start of the note; no further switching takes place while the key is held down. If key position or velocity is routed to cross-switch, the threshold is the switch point. Realtime controllers do not have any effect when routed to cross-switch. For more information, see Cross-Switch Point on page 51.



By overlapping the primary and secondary instruments, you can crossfade or cross-switch between the two layers.

EDIT MENU

CROSSFADE DIRECTION

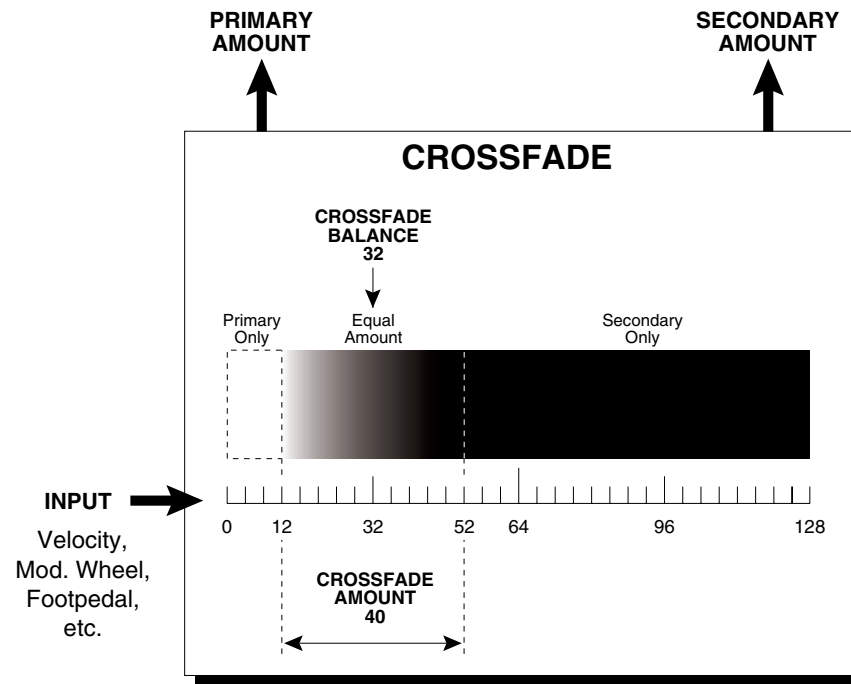
This function determines the polarity of the crossfade or cross-switch. The direction is either primary → secondary, or secondary → primary.



CROSSFADE BALANCE

The crossfade balance parameter determines the initial balance between the primary and secondary layers. Any modulation is subsequently added to this value. Crossfade balance is variable between 000 and 127.

■ A Crossfade Balance setting of 000 would be appropriate with a source such as a modulation wheel or footpedal which only change the value in a positive direction.

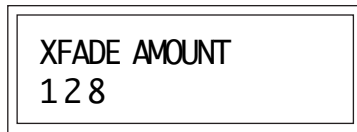


Crossfading between Primary and Secondary instruments will occur between the values of 12 and 52. Above and below these points, the output will be completely Primary or Secondary.

EDIT MENU

CROSSFADE AMOUNT

The crossfade amount parameter determines the range over which crossfading will occur. Crossfade amount is variable from 000 to 255. The larger the value, the more modulation will be required to effect a complete crossfade.



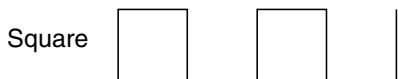
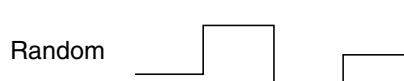
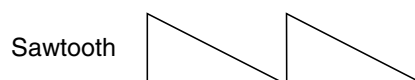
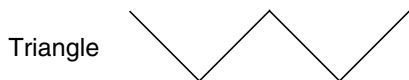
CROSS-SWITCH POINT

The cross-switch point parameter determines the point at which cross-switching will occur when key position or velocity is controlling cross-switch.



LFO 1 - SHAPE and AMOUNT

This screen controls the waveshape and amount of Low Frequency Oscillator 1. The LFO can be used to produce vibrato (when routed to pitch), or tremolo (when routed to volume). The five LFO waveshapes are: Triangle, Sine, Square, Sawtooth, and Random. The amount can be varied from -128 to +127. Negative values will produce inverted wave-shapes.

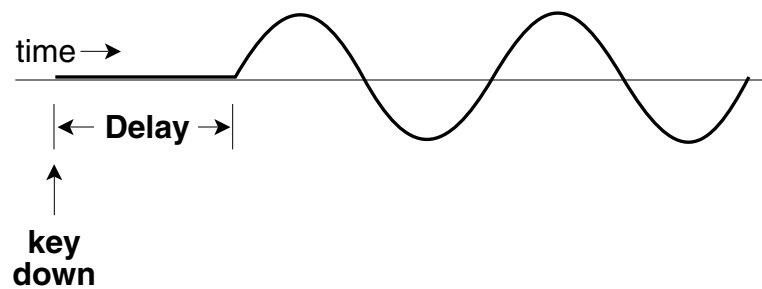


EDIT MENU**LFO 1 - RATE, DELAY and VARIATION**

This screen controls the rate, delay and variation of LFO 1.

■ **LFO Rate:** varies the LFO speed from 0.052 Hz to 25 Hz (000-127).

■ **LFO Delay:** sets the amount of time between hitting a key and the onset of modulation. This can be used to simulate an effect often used by acoustic instrument players, where the vibrato is brought in only after the initial note pitch has been established. The delay range is variable from 0 to 13 seconds (000-127).



The LFO wave begins after the specified delay time has elapsed.

■ **LFO Variation:** sets the amount of random variation of an LFO each time a key is pressed. This function is useful for ensemble effects, where each note played has a slightly different modulation rate. The higher the number, the greater the note to note variation in LFO rate. LFO variation is variable from 000-127.

LF01	RT	DLY	VAR	
		000	000	000

LFO 2 - SHAPE and AMOUNT

LFO 2 is functionally identical to LFO 1.

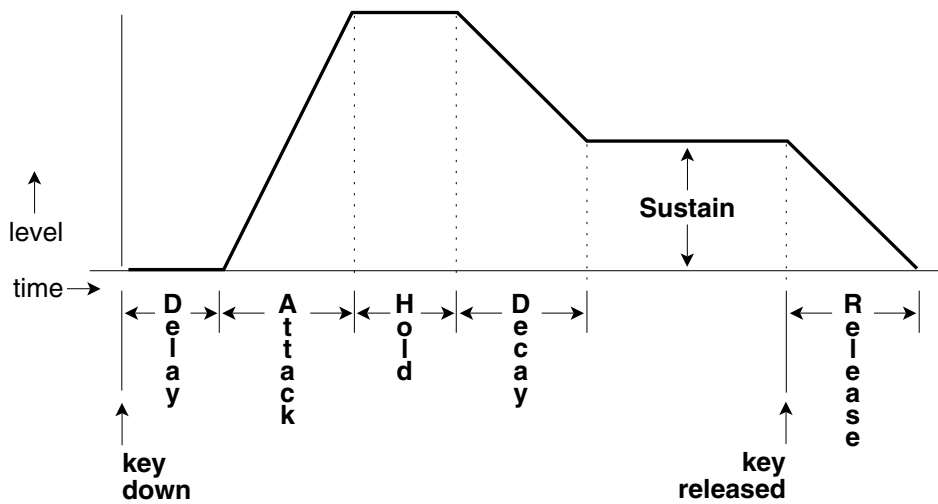
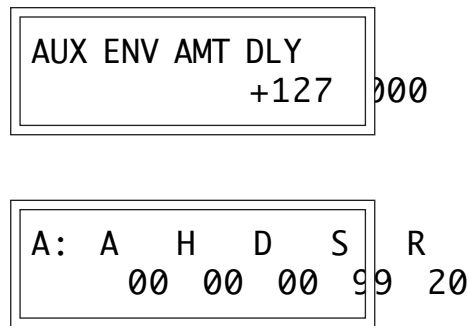
LFO 2 - RATE, DELAY and VARIATION

LFO 2 is functionally identical to LFO 1.

EDIT MENU

AUXILIARY ENVELOPE

This is a supplementary, utility envelope that can be routed to any realtime control destination. The auxiliary envelope parameters are: Envelope Amount, Delay, Attack Time, Hold Time, Decay Time, Sustain Level, and Release Time. The delay time is variable from 0 to 13 seconds (000-127). The envelope amount is variable from -128 to +127. Negative values will produce inverted envelopes.



This diagram shows the six stages of the Auxiliary Envelope Generator.

EDIT MENU

Modulation Sources:
Key Number and Key Velocity

Destinations: Off, Pitch, Primary Pitch, Secondary Pitch, Volume, Primary Volume, Secondary Volume, Attack, Primary Attack, Secondary Attack, Decay, Primary Decay, Secondary Decay, Release, Primary Release, Secondary Release, Crossfade, LFO 1 Amount, LFO 1 Rate, LFO 2 Amount, LFO 2 Rate, Auxiliary Envelope Amount, Auxiliary Envelope Attack, Auxiliary Envelope Decay, Auxiliary Envelope Release, Sample Start, Primary Sample Start, Secondary Sample Start, Pan, Primary Pan, Secondary Pan, Tone, Primary Tone, Secondary Tone

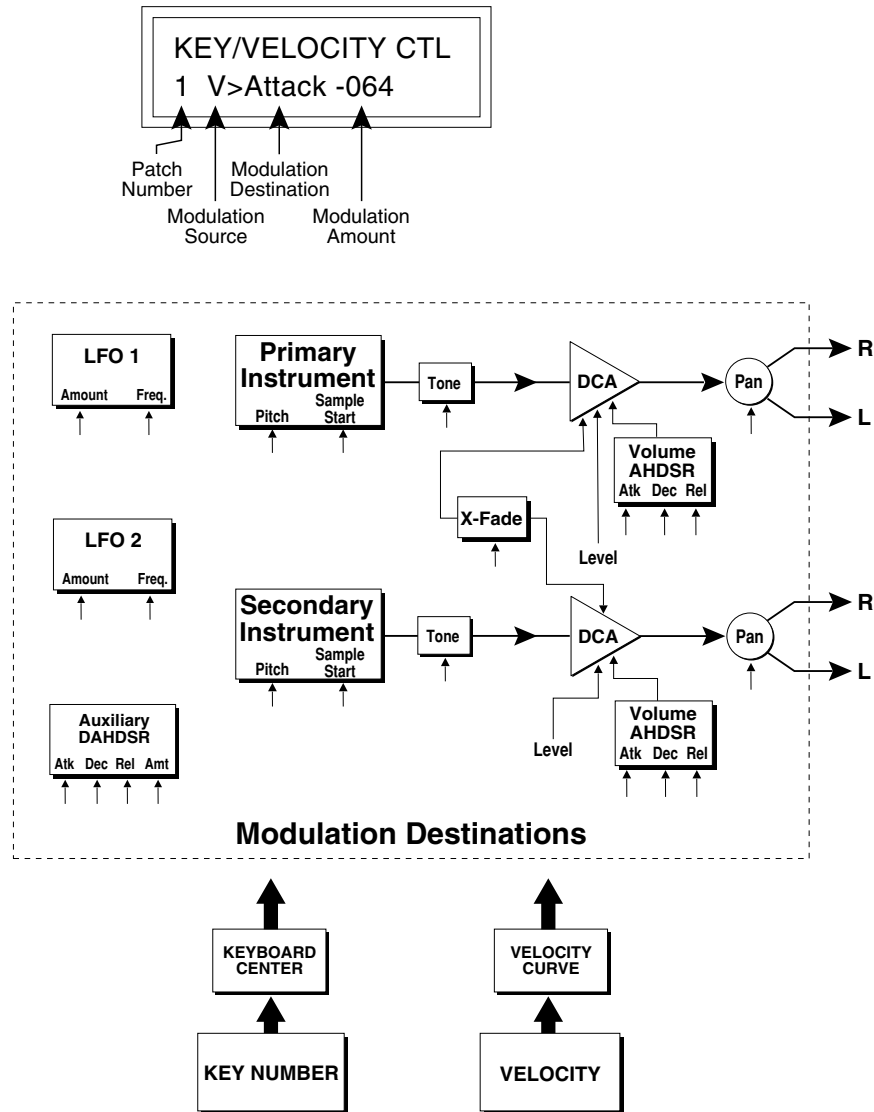
When Modulating Envelope Attack, Decay, or Release Times:

Positive amounts of modulation **increase** the time.

Negative amounts of modulation **decrease** the time.

KEYBOARD and VELOCITY MODULATION CONTROL

These functions allow you to route keyboard and velocity information to any of the modulation destinations on the Proteus. Up to 6 simultaneous paths or “patches” may be programmed. For each modulation patch, there is a source (keyboard or velocity), and a corresponding amount parameter which is variable from -128 to +127. **Place the cursor under the appropriate parameter and change the patch number, modulation source, modulation destination, or the amount using the data entry control.** If a parameter is not labeled either primary or secondary, it affects both.

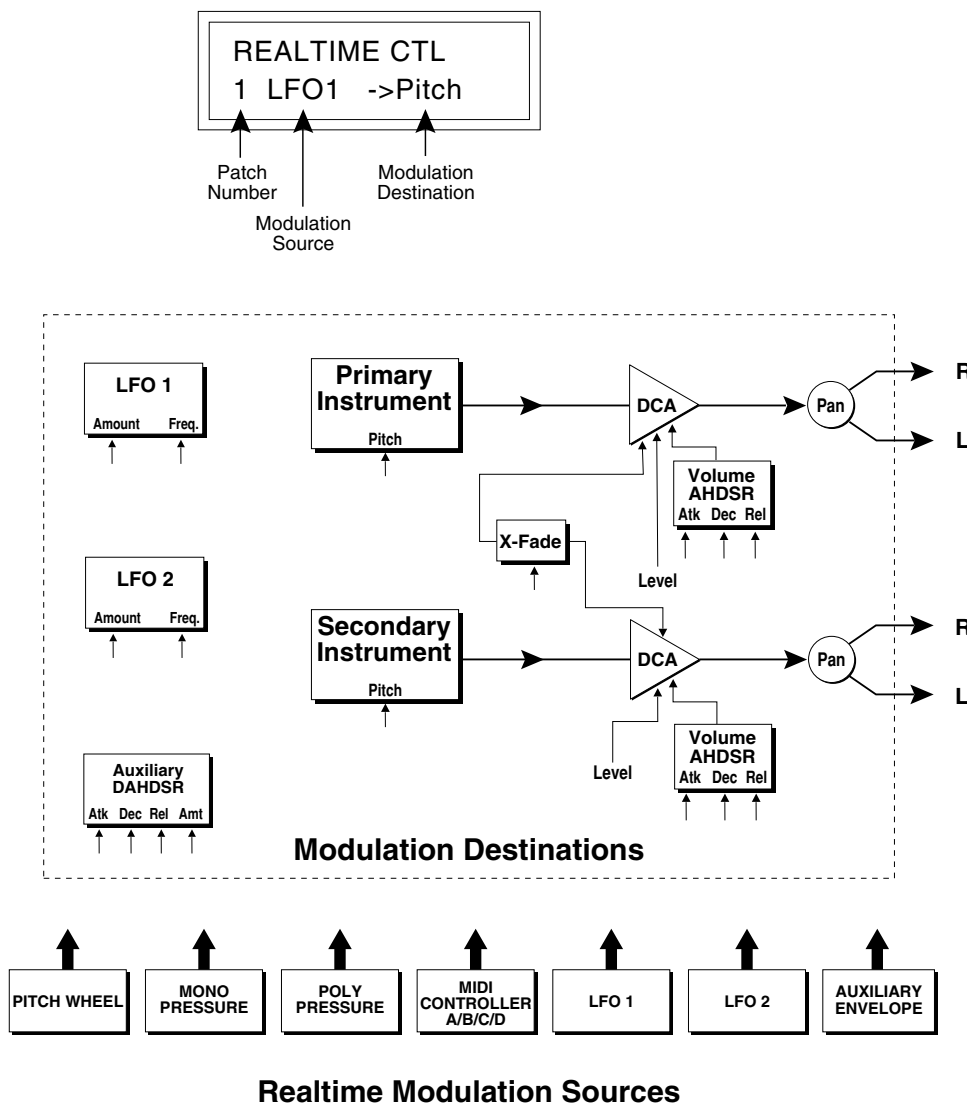


Keyboard and Velocity Modulation Sources

EDIT MENU

REALTIME MODULATION CONTROL

These functions allow you to route realtime controllers to any of the modulation destinations on Proteus except Tone, Sample Start and Pan. Up to 8 simultaneous patches may be programmed. For each modulation patch, there is a source and a destination parameter. **Place the cursor under the appropriate parameter and change the patch number, modulation source or modulation destination using the data entry control.** If a parameter is not labeled either primary or secondary, it affects both.



Modulation Sources:

Pitch Wheel, MIDI Control A, MIDI Control B, MIDI Control C, MIDI Control D, Mono Pressure, Polyphonic Pressure, LFO 1, LFO 2, Auxiliary Envelope

Destinations:

Off, Pitch, Primary Pitch, Secondary Pitch, Volume, Primary Volume, Secondary Volume, Attack, Primary Attack, Secondary Attack, Decay, Primary Decay, Secondary Decay, Release, Primary Release, Secondary Release, Crossfade, LFO 1 Amount, LFO 1 Rate, LFO 2 Amount, LFO 2 Rate, Auxiliary Envelope Amount, Auxiliary Envelope Attack, Auxiliary Envelope Decay, Auxiliary Envelope Release

EDIT MENU

FOOTSWITCH CONTROL

This function allows you route the 3 footswitch controllers (1, 2 or 3) to any of the footswitch destinations. The footswitches can be routed to switch: Sustain (pri/sec/both), alternate volume envelope (pri/sec/both), alternate volume release (pri/sec/both), or cross-switch between the primary and secondary instruments.

```
FOOTSWITCH CTL  
1 -> Sustain
```

MIDI CONTROLLER AMOUNT

This function allows you to specify an amount parameter (variable from -128 to +127) for each of the MIDI controllers.

```
CONTROLLER AMT  
A:+127      B:-090
```

```
CONTROLLER AMT  
C:+127      D:-090
```

PRESSURE AMOUNT

This function allows you to specify an amount parameter for mono or poly keyboard pressure data. The pressure amount is variable from -128 to +127.

```
PRESSURE AMOUNT  
+127
```

EDIT MENU**PITCH BEND RANGE**

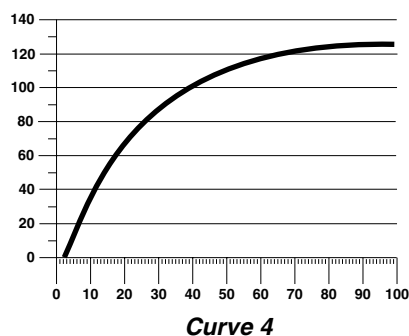
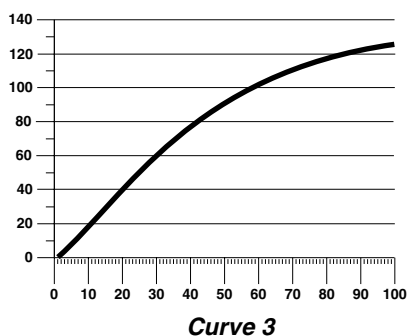
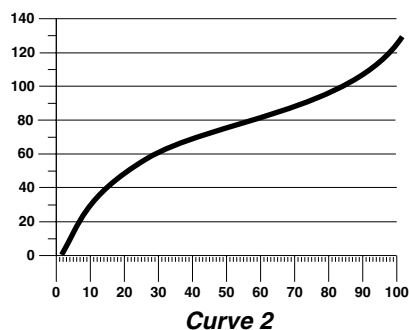
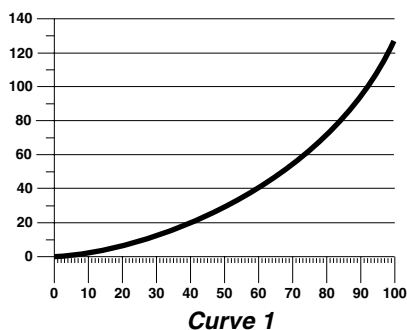
This function allows you to specify the pitch wheel range for the current preset or it can be set to be controlled globally (set in the Master menu). Pitch bend range is only applied when the pitch wheel is used to control pitch.

PITCH BEND RANGE
+- 12 semitones

VELOCITY CURVE

Incoming velocity data can be modified by a velocity curve in order to provide different types of dynamics in response to your playing or better adapt to the MIDI controller. This function allows you to select one of the four velocity curves or leave the velocity data unaltered (off). In addition, the velocity curve can be set to "Global", which means that the global velocity curve (programmed in the Master menu) is used.

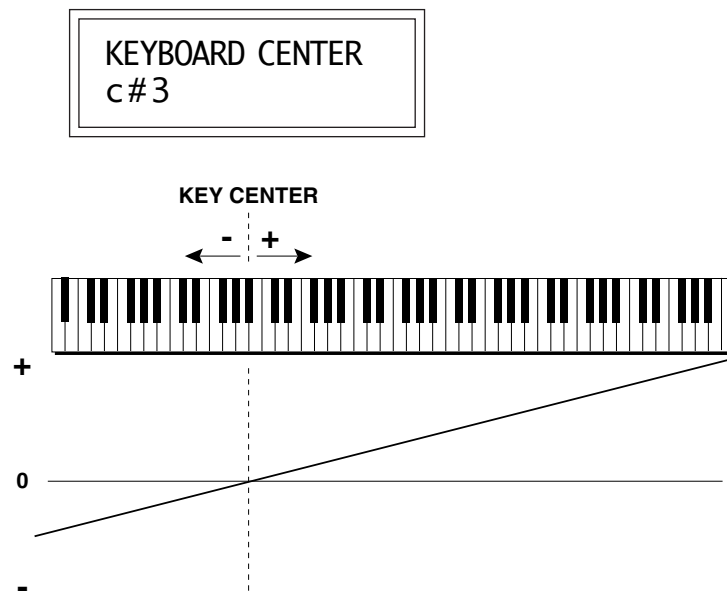
VELOCITY CURVE
Global



EDIT MENU

KEYBOARD CENTER

The Keyboard Center parameter establishes a reference point for keyboard modulation. Keys above this point will have a positive value and keys below it will be negative. The keyboard center can be set to any key within the range A-1 to C7.



KEYBOARD TUNING

In addition to the standard equally divided octave tuning, Proteus contains three other types of scale tuning and one user-definable tuning. This function selects which tuning will be used in the current preset. The choices of keyboard tunings are:

Equal tuning (12 tone equal temperament)

Standard Western tuning

Just C tuning (just intonation)

Based on small interval ratios; sweet and pure; non-beating intervals

Vallotti tuning (Vallotti and Young non-equal temperament)

Similar to 12 tone equal temperament; for a given scale, each key has a different character

19 Tone tuning (19 tone equal temperament)

19 notes per octave; difficult to play but works well with a sequencer

Gamelan (Javanese) tuning (5 tone Slendro and 7 tone Pelog)

Pelog-white keys; Slendro-black keys; exotic tunings of Gamelan flavor

User tuning which is defined in the Master menu.

EDIT MENU

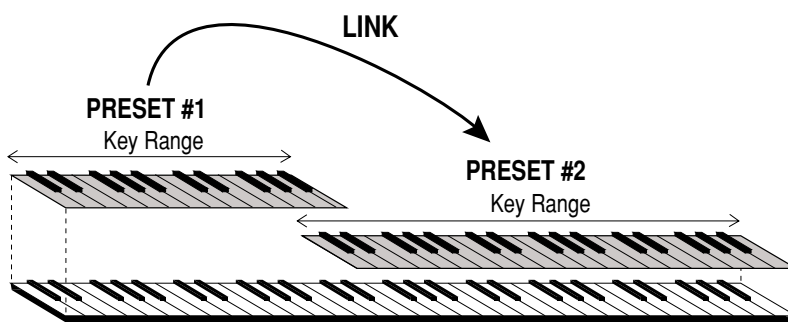
PRESET LINKS

Presets may be linked to other presets in order to create layering or keyboard splits. The current preset can be linked with up to three other presets. Each linked preset can be assigned to a specific range in order to easily create keyboard splits. The modulation parameters specified in each preset remain in effect for each preset in the link.

```
LINK 1 c#1->f#1
000 Preset Name
```

```
LINK 2 c#1->f#1
191 Preset Name
```

```
LINK 3
Off
```



CREATING A SPLIT KEYBOARD



LAYERING TWO PRESETS

EDIT MENU

SAVE PRESET

Changes made to a preset in the Edit menu are not made permanent until the preset is *Saved*. To save a preset, move the cursor to the bottom line and select the location for the new preset with the data entry control. The Enter LED will be flashing. Pressing the Enter switch will confirm the operation. Any user preset (64-127) may be selected using the data entry control. Writing to a user preset erases the existing preset in that location. Make sure that the destination preset does not contain information that you wanted to keep.



SAVE PRESET to
064 Preset Name

To Save a Preset:

1. Select the new location
2. Press Enter

PROGRAMMING PROTEUS

PROGRAMMING PROTEUS

This section is an introduction to the Edit menu, explains the concept of Proteus Synthesis, and contains specific programming examples and tips.

LINKING PRESETS

Linking presets is a quick and easy way to create new sounds by “layering presets” and also to “split” the keyboard into sections containing different sounds.

LAYERING TWO PRESETS

- 1) Select the first preset you wish to layer.
- 2) Press the Edit button.
- 3) Use the data entry control to move through the screens until you find one of the “LINK” screens.
- 4) Move the cursor to the second line of the display, then select the preset that you want to be linked with this preset. You may want to play the keyboard as you scroll through the various presets in order to hear the results.
- 5) If you want the link to be a permanent part of the preset, be sure to “SAVE PRESET”.

CREATE A SPLIT KEYBOARD USING LINKS

- 1) Follow steps 1 through 4 above.
- 2) Now set the range of the linked preset while still in the LINK menu.
- 3) Save the preset.
- 4) Now go back to the first preset, press the Edit button and use the data entry control to move through the screens to KEY RANGE.
- 5) Set the range of this preset so that it fills the remaining range of your keyboard.
- 6) Save the preset.

PROGRAMMING PROTEUS

EDITING PRESETS

The easiest way to make a preset is to edit an existing preset. This is also an excellent way of becoming familiar with Proteus. If you don't like what you hear, simply change the preset and Proteus reverts back to the original sound. Changes are not made permanent until you *Save* them using the "SAVE PRESET" function, which is the last screen in the Edit menu. Let's experiment and modify a few parameters of an existing preset. We'll start with functions that have an obvious effect on the sound like Instrument select, Coarse Tuning, Chorus, and Reverse Sound. First, choose a preset that strikes your fancy and press the Edit button.

CHANGING THE INSTRUMENT

This is probably the easiest way to modify existing presets. Scroll through the Edit menu functions until you come to:

```
INSTRUMENT pri
IXXX Instr Name
```

Move the cursor down to the bottom line (using the cursor button) and change the primary instrument with the data entry control. Play the keyboard as you scroll through the various instruments. When you find an interesting instrument, move the cursor back up to the first line and select:

```
INSTRUMENT sec
IXXX Instr Name
```

Repeat the process for the secondary instrument. Find an instrument that sounds good when combined with the first one you selected. You can probably see that with all these great instruments to work with, you really can't go wrong. Now let's play with the tuning.

CHANGING THE TUNING OF AN INSTRUMENT

Scroll through the Edit menu functions until you come to:

```
TUNING coarse
pri:+00  sec:+00
```

PROGRAMMING PROTEUS

If the numbers are "00" as in the example above, it means that the instruments are tuned to concert pitch (A=440 Hz). Each whole number in coarse tuning represents a semitone interval. To tune one or both of the instruments up an octave, move the cursor to the number (using the cursor button) and set the number to +12 using the data entry control. Try tuning one of the instruments to a perfect fifth above the other. Simply set the coarse tuning to +7.

CHORUS

This is an easy one. With the cursor on the top line of the display, turn the data control until you find CHORUS. Chorus can be turned on or off for each of the primary and secondary instruments. Chorus works by doubling the instruments and detuning them slightly. Try it.

```
CHORUS
pri:Off  sec:Off
```

REVERSING THE SOUND

A simple concept. The instrument sounds can be played in reverse. This will normally make an instrument sound quite a bit different. It also virtually doubles the number of raw instruments you have to work with, and it's fun.

```
REVERSE SOUND
pri:Off  sec:Off
```

You're probably getting the idea by now. Remember not to change presets or the preset will return to normal. If you want to save your creation, select the last screen in the Edit menu and select a destination preset location for your masterpiece, then press Enter. That's it.

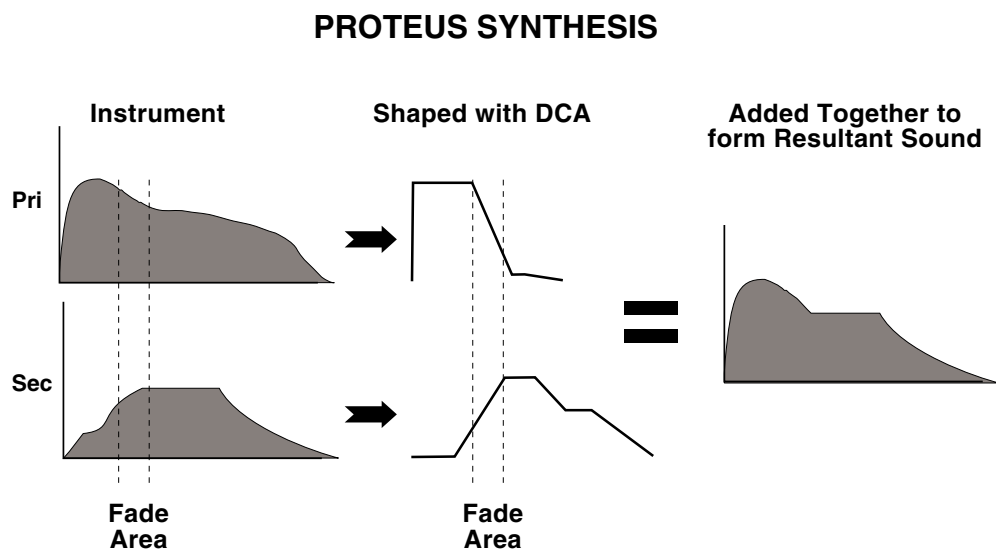
The previous examples were offered solely to pique your curiosity. By all means, go ahead and experiment with any of the other functions. Some of the best sounds have been discovered by accident. If it sounds good ... Do it!

PROGRAMMING PROTEUS

PROTEUS SYNTHESIS

Oh, no! Not another form of synthesis to learn.
Relax. It's easy.

Proteus Synthesis is actually just a form of additive synthesis. Only, instead of building a sound from simple sine waves, Proteus starts with complete sampled sounds or complex waveforms and combines all or part of these together to form a new sound. The process is illustrated below.



Portions of two sounds are dynamically crossfaded in order to produce a new sound containing elements of both.

The envelope generators controlling the DCAs (digitally controlled amplifiers) can be used to fade between two instruments (primary and secondary) during the course of a note. This powerful technique allows you to combine elements of different instruments together to form completely new sounds. New sounds that are totally natural, because they are based on natural sounds. Proteus also contains many digitally generated waveforms that can be combined with other digital waves or with sampled instruments in order to change the character of the sound, perhaps to add a digital "edge" or add more bottom. In addition to the envelope generators, parameters such as Delay, Sample Start, and Crossfade allow you to further control the blend of primary and secondary instruments.

PROGRAMMING PROTEUS

As an example, let's combine the electric guitar and a synthesized waveform to create a new instrument. Refer to the Edit menu parameters in the chart below. The Electric Guitar is the basic sound and is augmented by a chorused, synthesized wave which adds a digital sheen. Note that the guitar has a slower attack, which completely changes its character. Basically, the attack of the guitar has been replaced by the synthesized wave. In addition, the guitar is tuned up one octave and the two sounds have been panned to different positions in the stereo field.

Primary	Secondary
Instrument: Oct. 7 All	Instrument: El. Guitar
Alt Envelope: On	Alt Envelope: On
A H D S R 00 00 51 00 36	A H D S R 05 05 27 88 44
Volume: 45	Volume: 88
Chorus: On	Chorus: Off
Tuning: +00	Tuning: +12
Pan: +2	Pan: -2

ANOTHER EXAMPLE

As another example, we'll use the attack portion of the Soft Flute and the sustain portion of the Tenor Sax as raw material. This time we will use the Delay and Sample Start parameters as well as the Alternate Envelopes to blend the two instruments. The attack portion of the secondary instrument is removed using the sample start parameter and then delayed slightly so it will sound only after the flute attack portion begins to decay.

Primary	Secondary
Instrument: Soft Flute	Instrument: Tenor Sax
Alt Envelope: On	Alt Envelope: On
A H D S R 04 02 16 00 16	A H D S R 06 00 38 85 40
Volume: 109	Volume: 83
Fine Tuning: +05	Fine Tuning: +00
Tuning: +12	Tuning: +12
Delay: 000	Delay: 002
Sound Start: 000	Sound Start: 040

PROGRAMMING PROTEUS

The alternate envelopes are used to "fine tune" the splice. Furthermore, the flute attack has been detuned a bit sharp so the composite sound will start sharp and fall into correct pitch. Continue your experiments using this example, but changing the primary and secondary instruments. When you have found a good combination, "fine tune" the delay, sample start, volume and envelope parameters. Feel free to play with the modulation parameters as well.

USING PROTEUS WITH A SEQUENCER

We thought you'd never ask. Proteus was designed from its conception with multi-timbral sequencing in mind. Just take a look at the main screen.

C01	Vol127	Pan+0
000	Preset Name	

The preset for each MIDI channel is selected from the main screen. Press the cursor button to move the cursor up so that it is underneath the channel number.

<u>C</u> 01	Vol127	Pan+0
000	Preset Name	

Turn the data entry control and you will see that every MIDI channel has a preset assigned to it. Just select a preset for each of the MIDI channels. It's simple! In order to respond to multiple MIDI channels, Proteus must be in Multi-Mode. Multi-Mode is selected in the Master menu. Press the Master menu button and use the data entry control to scroll through the screens until you find MIDI MODE.

MIDI MODE	ID
<u>M</u> ulti	00

PROGRAMMING PROTEUS

Move the cursor down to the second line and change the mode to Multi as shown. Proteus will now respond to multiple MIDI channels.

MORE ADVANCED SEQUENCING

PRE-SEQUENCE SETUP

Suppose that you want to have your sequencer set up everything for you before the start of the song. Good idea. This will make the Proteus setup procedure automatic and prevent the wrong presets from playing.

The basic idea of a pre-sequence setup is to send out MIDI information just before the start of the song. This MIDI information will select all the proper presets, adjust the mix, and pan positions of each preset.

Note: Proteus setup information should be transmitted from the sequencer *before* the song actually starts, perhaps during a lead-in measure or countdown. DO NOT send setup information just before the first beat of the song or MIDI timing errors could result.

INITIAL SETUP

In the Master menu:

- 1) Turn ON Multi-Mode
- 2) Turn ON Preset Change enable for each channel.
- 3) Turn OFF MIDI Enable on MIDI channels that are to be used for other synthesizers.

PRESET, VOLUME and PAN SETUP

Program your MIDI sequencer to transmit the following information before the song starts.

- 1) Select the proper presets for each MIDI channel used on Proteus.
- 2) Send MIDI volume information (controller #7) for each MIDI channel used on Proteus.
- 3) Send MIDI pan information (controller #10) for each MIDI channel used on Proteus.

■ The Preset, Volume, and Pan information for all 16 channels is included when the Master settings are transmitted or received.

PROGRAMMING PROTEUS

The following Proteus/1 presets use only one output channel:

- 5. Acoustic Guitar
- 14. Rock Drums 1
- 20. Velocity Falls
- 25. Special FX 1
- 30. Latin Drums
- 31. Wind Chimes
- 35. Baritone Sax
- 36. Solo Trumpet
- 46. Latin Percussion
- 48. Grand Piano
- 53. Solo Trombone
- 124. Tremolo Vibe
- 127. Barber Pole
- 160. Low Grand
- 161. Bright Piano
- 162. Xpressive String
- 163. String Vel.-> Atk.
- 164. Choir
- 165. Dark Choir
- 167. Alto Sax
- 168. Tenor Sax
- 170. French Horn
- 171. Trombone 2
- 172. Trom./Trumpet
- 173. Guitar Mutes
- 174. Electric Guitar
- 176. Rock Bass
- 177. Flint Bass
- 178. Bass Synth 2
- 179. Harmonics
- 180. Marimba
- 181. Vibes Wheel
- 182. Percussives
- 183. Rock Drums 2
- 184. Rock Drums 3
- 185. Snares/Drums
- 186. Kick Drums
- 187. Cymbals
- 188. Tom Toms
- 189. Conga Trans.
- 190. Block Trans.

Now your song will play perfectly every time using the proper presets, volumes and pan positions. In addition, presets, volumes and pan positions (or anything else for that matter) can be adjusted in realtime during the song. Note: If the wrong presets are being selected, check the MIDI Program -> Preset map.

To carry the pre-sequence setup even further, you can even include preset data for each preset used in the sequence. See page 22 for details.

USING THE 32 CHANNELS

As stated earlier, Proteus has 32 independent audio channels which are utilized dynamically. With 32 channels and 192 presets, you have a universe of sonic textures at your disposal. But you have probably noticed that many of the best sounding presets in Proteus are linked with other presets or have chorus applied to them in order to make them sound larger. While this is fine when the preset is played solo, you may begin to run out of channels when Proteus is played multi-timbrally. Linking and chorusing cause twice as many channels to be used by the preset. Learn to "budget" your output channels for maximum efficiency.

CHANNEL RIPOFF

When Proteus uses up all its 32 channels and needs more, it steals a channel from the key that has been held the longest. This is commonly known as "channel ripoff". You will most commonly encounter this "ripoff" when using Proteus in multi-timbral mode. Since Proteus dynamically allocates channels as needed, to eliminate ripoff you must either, play fewer notes, use simpler sounds, turn off doubling (pri/sec, chorus, or linked presets), or use MIDI overflow to another Proteus.

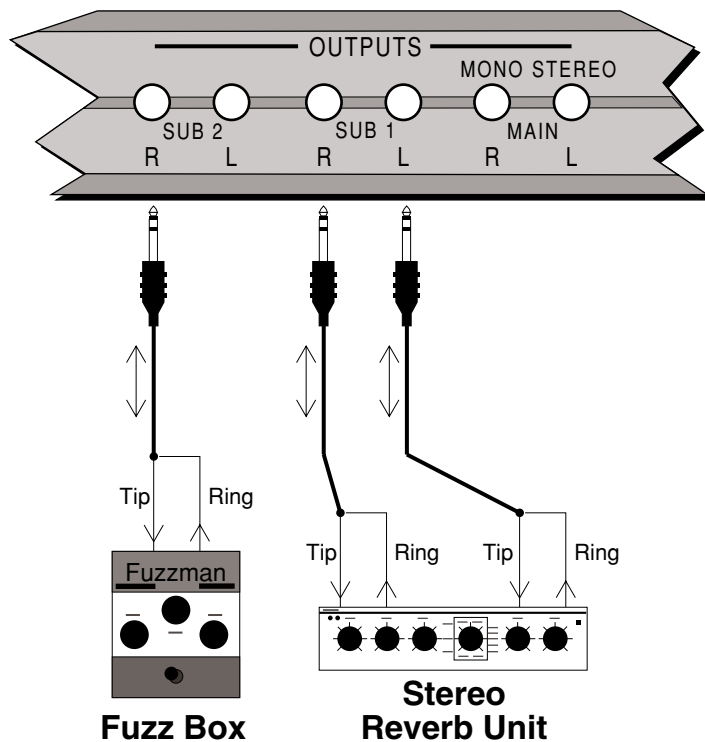
INSTRUMENT DEFINITION

If your sequence has a instrumental section using numerous chords, it may be advantageous to use a basic preset without links or chorus. A preset will sound much different alone than when combined with an ensemble. Try to resist the temptation to make every sound as fat as possible or you can wind up with "MIDI Soup"; a huge, stifling sound with every possible audio frequency filled. A solo saxophone in a band isn't chorused and it sounds great. Each voice in your composition should have it's own identity. Save the monster sounds for solos or dramatic effects.

PROGRAMMING PROTEUS

USING EXTERNAL PROCESSING

Don't be afraid to use external processing on specific sounds if you feel the urge. The submix sends and returns on Proteus are there for a reason. In many instances a bit of reverb or EQ will be just the thing an instrument needs to give it a distinct identity. Incidentally, an external fuzz box can work wonders on the clean electric guitar sound. If you think about it, adding distortion to a clean guitar sound is much closer to the way an electric guitar is normally processed. By dedicating one of your old fuzz boxes to a submix out/in, you can have programmable distortion for use on guitars, organs, or whatever.



Using the programmable outputs and returns, specific presets can be routed through your favorite effects without using up precious mixer channels.

This patch sheet may be photocopied and used to keep written records of your favorite Proteus sounds.

PROTEUS Patch Sheet

MIX OUTPUT	
PRI INSTRUMENT	
SEC INSTRUMENT	
KEY RANGE	
Pri KEY RANGE	
Sec KEY RANGE	
Pri VOLUME	
Sec VOLUME	
Pri PAN	
Sec PAN	
Pri COARSE TUNE	
Sec COARSE TUNE	
Pri FINE TUNE	
Sec FINE TUNE	
Pri CHORUS	
Sec CHORUS	
Pri DELAY	
Sec DELAY	
Pri SOLO	
Sec SOLO	
Pri SOUND START	
Sec SOUND START	
Pri REVERSE	
Sec REVERSE	
Pri ALT. ENVELOPE	
Sec ALT. ENVELOPE	

Pri ATTACK	
Pri HOLD	
Pri DECAY	
Pri SUSTAIN	
Pri RELEASE	
Sec ATTACK	
Sec HOLD	
Sec DECAY	
Sec SUSTAIN	
Sec RELEASE	
XFADE MODE	FD Xsw
XFADE DIRECTION	→
XFADE BALANCE	
XFADE AMOUNT	
SWITCH POINT	
LFO 1 SHAPE	
LFO 1 AMOUNT	
LFO 1 RATE	
LFO 1 DELAY	
LFO 1 VARIATION	
LFO 2 SHAPE	
LFO 2 AMOUNT	
LFO 2 RATE	
LFO 2 DELAY	
LFO 2 VARIATION	
AUX ENV AMOUNT	
AUX ENV DELAY	
AUX ENV-ATTACK	
AUX ENV-HOLD	
AUX ENV-DECAY	
AUX ENV-SUSTAIN	
AUX ENV-RELEASE	

KEY/VELOCITY CONTROL	
1 >	
2 >	
3 >	
4 >	
5 >	
6 >	
REALTIME MOD. CONTROL	
1 - →	
2 - →	
3 - →	
4 - →	
5 - →	
6 - →	
7 - →	
8 - →	
FOOTSWITCH CONTROL	
1 →	
2 →	
3 →	
CONTROLLER AMOUNT	
CONTROLLER A	
CONTROLLER B	
CONTROLLER C	
CONTROLLER D	
PRESSURE AMT.	
P-BEND RANGE	
VEL. CURVE	
KYBD CENTER	
KYBD TUNING	
LINK 1 →	
LINK 2 →	
LINK 3 →	

REFERENCE SECTION

PROTEUS/1 FACTORY PRESETS

PROTEUS Presets	
0-63	ROM
64-127	RAM
128-191	ROM

PROTEUS XR Presets	
0-255	RAM
256-383	ROM

■ The RAM presets may be modified or replaced as you desire, but the ROM presets are stored permanently in the Proteus.

KEYBOARDS

- 0. (256) Stereo Piano
- 9. (265) B3 Mod->Leslie
- 16. (272) Heaven
- 18. (274) Electric Piano
- 32. (288) Harpsikord
- 39. (295) String Bass/Piano *
- 48. (304) Grand Piano
- 66. (66) Space Clavier**
- 69. (69) Ball Game**
- 80. (80) Vibrant Piano ***
- 96. (96) Piano Drama**
- 99. (99) Reedy Keys**
- 112. (112) Winston Grand**
- 122. (122) Mr. Minister**
- 128. (320) Piano & Synth *
- 144. (336) Saloon Piano
- 160. (352) Low Grand
- 161. (353) Bright Piano

STRINGS

- 1. (257) Hall Strings
- 33. (289) String Orchestra
- 49. (305) Flange String
- 65. (65) Isham Strings ***
- 90. (90) Synth String**
- 100. (100) String Swell**
- 110. (110) Hall 2 Strings ****
- 111. (111) Hall 2 Link ****
- 113. (113) STRings**
- 129. (321) String Chamber
- 132. (324) New Orchestra *
- 151. (343) Orchestra Hit
- 162. (354) Xpressive String
- 163. (355) String Vel. ->Atk.

VOICES

- 2. (258) InChoirIrie
- 34. (290) Human Voices
- 58. (314) Octave Choir
- 66. (66) WeAteFlangers**
- 116. (116) Vibes/Choir ***
- 145. (337) Crystal Choir *
- 146. (338) Herbal Verbal
- 164. (356) Choir
- 165. (357) Dark Choir

BRASS

- 3. (259) Big City Brass
- 19. (275) French Horn Sect.
- 20. (276) Velocity Falls
- 36. (292) Solo Trumpet
- 52. (308) Miles Solos
- 53. (309) Solo Trombone
- 68. (68) Hard Trumpet**
- 83. (83) Orchestral Brass**
- 84. (84) Low Octave Bones**
- 91. (91) Space Trumpet**
- 123. (123) Bone Face**
- 131. (323) Trumpet Combo
- 132. (324) New Orchestra *
- 147. (339) Section Falls
- 148. (340) Section Horns *
- 170. (362) French Horn
- 171. (363) Trombone 2
- 172. (364) Tromb./Trumpet

REEDS/FLUTES

- 4. (260) Stereo Sax
- 17. (273) Verb Flute
- 35. (291) Baritone Sax
- 115. (115) Uboe**
- 130. (322) Breathly Flute
- 132. (324) New Orchestra *
- 166. (358) Soprano Reed
- 167. (359) Alto Sax
- 168. (360) Tenor Sax
- 169. (361) Synth. Clarinet

PLUCKED

- 5. (261) Acou. Guitar
- 6. (262) Modern Guitar
- 21. (277) Stereo Mutes
- 37. (293) 12 String *
- 38. (294) Modern Harp
- 47. (303) SpaceBkwdGuitar
- 54. (310) Xpr. El. Guitar
- 59. (315) Gitano
- 70. (70) Clean Stratocaster**
- 97. (97) Punctuate**
- 107. (107) BanJovi**
- 118. (118) Rock Gitaro**
- 125. (125) Dulcimer**
- 133. (325) Ster. Acou. Guitar
- 134. (326) Shamisen
- 173. (365) Guitar Mutes
- 174. (366) Electric Guitar
- 175. (367) Ster. El. Guitar
- 179. (371) Harmonics

SYNTHESIZER

- 8. MiniMoog Bass
- 10. (266) Phantazia
- 11. (267) Zound Trax
- 26. (282) Har. Synth
- 27. (283) Beyond FM
- 40. (296) Mythical Pad
- 41. (297) PianoBell
- 43. (299) Empyrean
- 50. (306) White Veil
- 51. (307) Dark World
- 55. (311) Space Bass Pad
- 56. (312) Dune
- 57. (313) RB's Wine
- 64. (64) FM Style Piano ***
- 66. (66) WeAteFlangers**
- 67. (67) Space Clavier**
- 73. (73) Space Horn**
- 74. (74) Blue Ice**
- 75. (75) Embered Tines**
- 81. (81) Emperor ***
- 82. (82) NoiseFree LA ***
- 85. (85) Synthibell**

Bold Type ... indicates a User Preset.

Number in Parenthesis = XR Preset Number

* indicates that the preset is linked to another preset.

** indicates that the two adjacent presets are linked.

PROTEUS/1 FACTORY PRESETS

SYNTHESIZER

- 86. (86) Space Steel
- 89. (89) Squarish Lead
- 90. (90) Synth String
- 91. (91) Space Trumpet
- 98. (98) Lunar Window
- 101. (101) Jingle Pad
- 102. (102) Solo Lead
- 104. (104) Bass & Synth *
- 105. (105) Gillectro
- 106. (106) Pop Pad
- 114. (114) Sharp Edge
- 117. (117) Solo Synth 3
- 121. (121) Bed Tine
- 128. (320) Piano & Synth *
- 136. (328) Rock Attitude
- 137. (329) Tocatta Seven
- 138. (330) Pop Art
- 139. (331) Mini Solo
- 140. (332) Airimba
- 149. (341) Hollow Solo
- 152. (344) Keys Please
- 155. (347) Crazy Man
- 156. (348) Clock Chimes
- 178. (370) Bass Synth. 2

BASS

- 7. (263) Thunder Bass
- 8. (264) MiniMoog Bass
- 22. (278) Stone Bass & Har.
- 23. (279) Slap/Pop Bass
- 24. (280) Rap Bass
- 39. (295) String Bass/Piano *
- 55. (311) Space Bass Pad
- 71. (71) Noze Bass/Pad
- 72. (72) Wide Neck *
- 103. (103) Buzzy Frets
- 104. (104) Bass & Synth *
- 109. (109) Slippery Bass
- 135. (327) Stone Slap Bass
- 150. (342) Fat Boy Bass
- 176. (368) Rock Bass
- 177. (369) Flint Bass

- 178. (370) Bass Synth. 2
- 179. (371) Harmonics

TUNED

PERCUSSION

- 12. (268) Vibe n Me
- 13. (269) Tiki Threat
- 44. (300) Glockenspiel
- 45. (301) Wide Marimba
- 61. (317) Medicine Drum
- 76. (76) Odd Vibes
- 77. (77) Bright Steel *
- 92. (92) Metal Throat
- 93. (93) Light Mallet
- 94. (94) Congablock
- 108. (108) Malletumba
- 116. (116) Vibes/Choir *
- 124. (124) Tremolo Vibe
- 126. (126) Block Head
- 140. (332) Airimba
- 141. (333) Steel Drums
- 157. (349) Vibe & Marimba
- 180. (372) Marimba
- 181. (373) Vibes Whl-Mod.
- 189. (381) Conga Trans.
- 190. (382) Block Trans.

PERCUSSION

- 14. (270) Rock Drums 1
- 30. (286) Latin Drums
- 46. (302) Latin Percussion
- 61. (317) Medicine Drum
- 62. (318) Radical Drum
- 142. (334) Modern Drums
- 153. (345) Metal Toys
- 158. (350) Ster. Slap Drum
- 182. (374) Percussives
- 183. (375) Rock Drums 2
- 184. (376) Rock Drums 3
- 185. (377) Snares/Drums
- 186. (378) Kick Drums
- 187. (379) Cymbals
- 188. (380) Tom Toms

WORLD

- 28. (284) Kyoto Forest
- 29. (285) Balinesia
- 42. (298) Noh Way! *
- 60. (316) Thai Bath House
- 78. (78) Native Power *
- 134. (326) Shamisen

SOUND EFFECTS

- 15. (271) Metal Vapor
- 25. (281) Special FX 1
- 31. (287) Wind Chimes
- 63. (319) Mtlphone Arp. 9
- 79. (79) Insects
- 87. (87) Jet Boom **
- 88. (88) Jet Boom **
- 95. (95) Hold & Sample
- 119. (119) Animal 1 **
- 120. (120) Animal **
- 127. (127) Barber Pole
- 143. (335) Space Texture
- 153. (345) Metal Toys
- 154. (346) Weather
- 156. (348) Clock Chimes
- 159. (351) Flying Module
- 191. (383) Default Patch

Bold Type ... indicates a User Preset.

Number in Parenthesis = XR Preset Number

* indicates that the preset is linked to another preset.

** indicates that the two adjacent presets are linked.

PROTEUS INSTRUMENTS

SAMPLED SOUNDS

1. Piano 9 foot Grand Piano
2. Piano Pad Piano with slow attack and sustained loop
3. Loose Piano Old style Grand Piano
4. Tight Piano Contemporary 9 foot Grand Piano
5. Strings String section with Basses, Cellos, Violas and Violins
6. Long Strings String section with long attack and release
7. Slow Strings Section Strings with longer attack and release
8. Dark Strings Section Strings with a darker tone
9. Voices Female Choir
10. Slow Voices Female Choir with longer attack and release
11. Dark Choir Female Choir with a darker tone
12. Synth Flute Genuine Flute with a short loop
13. Soft Flute Slow attack Flute
14. Alto Sax Alto Sax
15. Tenor Sax Tenor Sax
16. Baritone Sax Baritone Sax
17. Dark Sax Tenor sax with a darker tone
18. Soft Trumpet Soft blown Trumpet
19. Dark Soft Trumpet Soft blown Trumpet with a darker tone
20. Hard Trumpet Hard blown Trumpet
21. Dark Hard Trumpet Hard blown Trumpet with a darker tone
22. Horn Falls Descending pitch Trumpets
23. Trombone 1 Trombone
24. Trombone 2 Trombone
25. French Horn French Horn
26. Brass 1 Combination Trombone/Soft Trumpet
27. Brass 2 Combination Trombone/Hard Trumpet
28. Brass 3 Combination Trombone/Soft Trumpet/Hard Trumpet
29. Trombone/Sax Combination Trombone and Sax
30. Guitar Mute Palm muted Electric Guitar
31. Electric Guitar Clean, Humbucking Electric Guitar
32. Acoustic Guitar Steel String Acoustic Guitar
33. Rock Bass Carbon Fiber Bass Guitar
34. Stone Bass Rare, Aluminum Neck Bass Guitar
35. Flint Bass Bass Guitar with altered harmonics
36. Funk Slap Lower two Bass Guitar strings slapped
37. Funk Pop Popped Bass Guitar strings (combine with Funk Slap)
38. Harmonics Bass Guitar Harmonics
39. Rock/Harmonics Combination Rock Bass and Bass Harmonics

PROTEUS/1 INSTRUMENTS

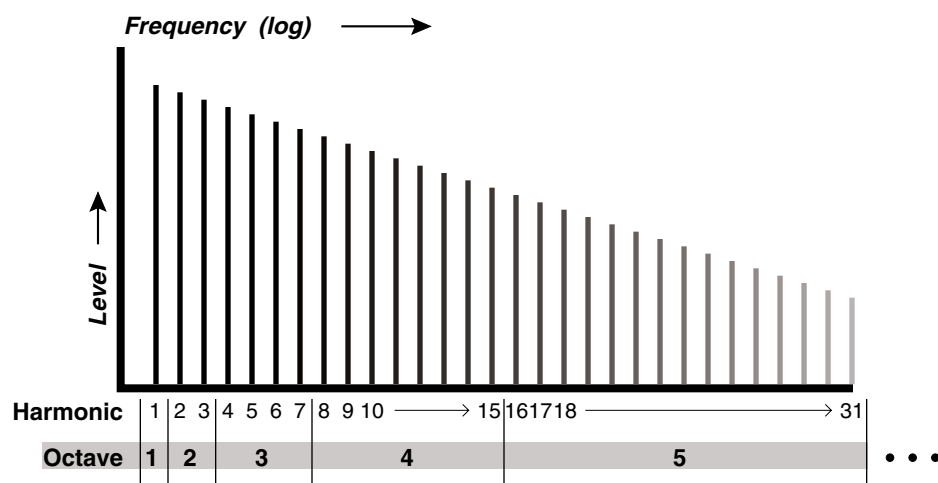
- | | |
|--|---|
| 40. Stone/Harmonics .. | Combination Alum. Neck Bass and Harmonics |
| 41. Nose Bass | Chunky, Popped Bass Guitar |
| 42. Bass Synth 1 | Classic, Analog Synthesizer Bass Sound |
| 43. Bass Synth 2 | Digital Bass Synthesizer |
| 44. Synth Pad | Fat, Digital Synthesizer pad |
| 45. Medium Envelope Pad | Digital Synth pad with altered envelope |
| 46. Long Envelope Pad | Digital Synth pad with long attack and release |
| 47. Dark Synth | Digital Synthesizer with a darker tone |
| 48. Percussive Organ | Classic, Tone Wheel Organ sound |
| 49. Marimba | Marimba |
| 50. Vibraphone | Vibraphone |
| 51. All Percussion (balanced levels) | <p>See the
 Percussion
 Instrument Location
 Diagrams
 on the following pages.</p> |
| 52. All Percussion (unbalanced levels) ... | |
| 53. Standard Percussion Setup 1 | |
| 54. Standard Percussion Setup 2 | |
| 55. Standard Percussion Setup 3 | |
| 56. Kicks | |
| 57. Snares | |
| 58. Toms | |
| 59. Cymbals | |
| 60. Latin Drums | |
| 61. Latin Percussion | |
| 62. Agogo Bell | |
| 63. Woodblock | |
| 64. Conga | |
| 65. Timbale | |
| 66. Ride Cymbal | |
| 67. Percussion FX1 | |
| 68. Percussion FX2 | |
| 69. Metal | |

PROTEUS/1 INSTRUMENTS

HARMONIC WAVEFORMS

- 70. Oct 1 (Sine)
- 71. Oct 2 All
- 72. Oct 3 All
- 73. Oct 4 All
- 74. Oct 5 All
- 75. Oct 6 All
- 76. Oct 7 All
- 77. Oct 2 Odd
- 78. Oct 3 Odd
- 79. Oct 4 Odd
- 80. Oct 5 Odd
- 81. Oct 6 Odd
- 82. Oct 7 Odd
- 83. Oct 2 Even
- 84. Oct 3 Even
- 85. Oct 4 Even
- 86. Oct 5 Even
- 87. Oct 6 Even
- 88. Oct 7 Even
- 89. Low Odds
- 90. Low Evens
- 91. Four Octaves

Starting from the first octave (fundamental), the harmonic waveforms contain the harmonics (odd, even, or all) present in each octave. In each successive octave the number of harmonics doubles. By combining (pri/sec or link) the harmonic waveforms in various amounts (volume), and transposing them (coarse/fine tuning), a vast range of timbres may be produced.



The Harmonic Waveforms have been designed so that almost any harmonic combination may be assembled.

PROTEUS/1 INSTRUMENTS

SINGLE CYCLE WAVEFORMS

- 92. Synth Cycle 1
- 93. Synth Cycle 2
- 94. Synth Cycle 3
- 95. Synth Cycle 4
- 96. Fundamental Gone 1
- 97. Fundamental Gone 2
- 98. Bite Cycle
- 99. Buzzy Cycle 1
- 100. Metalphone 1
- 101. Metalphone 2
- 102. Metalphone 3
- 103. Metalphone 4
- 104. Duck Cycle 1
- 105. Duck Cycle 2
- 106. Duck Cycle 3
- 107. Wind Cycle 1
- 108. Wind Cycle 2
- 109. Wind Cycle 3
- 110. Wind Cycle 4
- 111. Organ Cycle 1
- 112. Organ Cycle 2

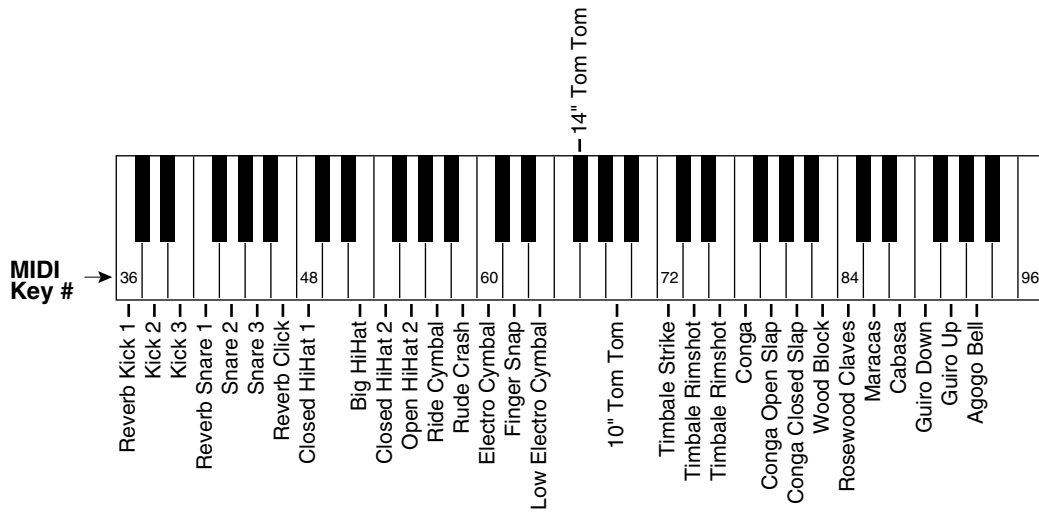
These single cycle waveforms were either synthesized or taken from actual sampled sounds. They were chosen for their diversity and interesting qualities.

MULTI-CYCLE WAVEFORMS

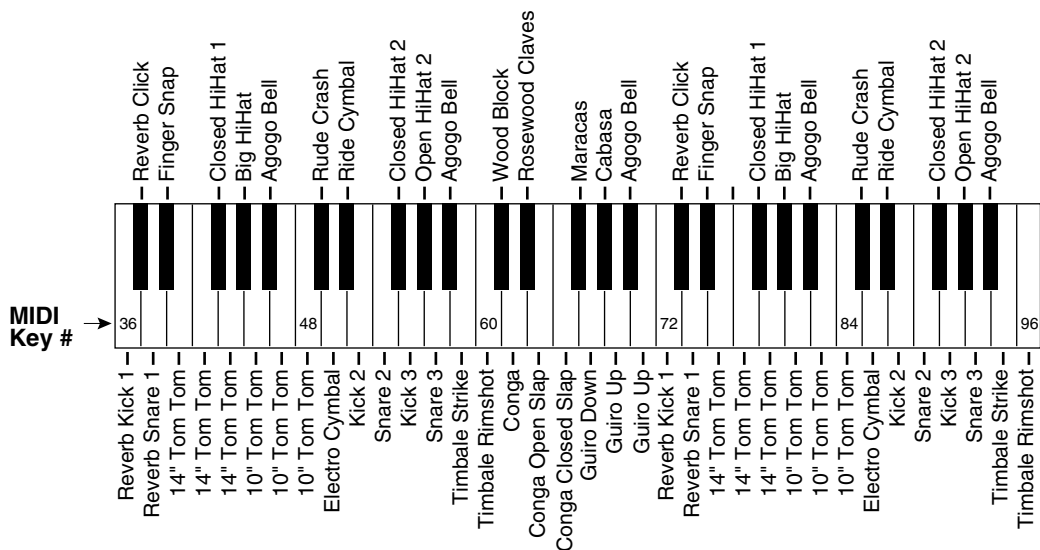
- 113. Noise
- 114. Stray Voice 1
- 115. Stray Voice 2
- 116. Stray Voice 3
- 117. Stray Voice 4
- 118. Synth String 1
- 119. Synth String 2
- 120. Animals
- 121. Reed
- 122. Pluck 1
- 123. Pluck 2
- 124. Mallet 1
- 125. Mallet 2

The multi-cycle cycle waveforms are short sections of sampled sounds.

PROTEUS/1 PERCUSSION INSTRUMENT LOCATIONS

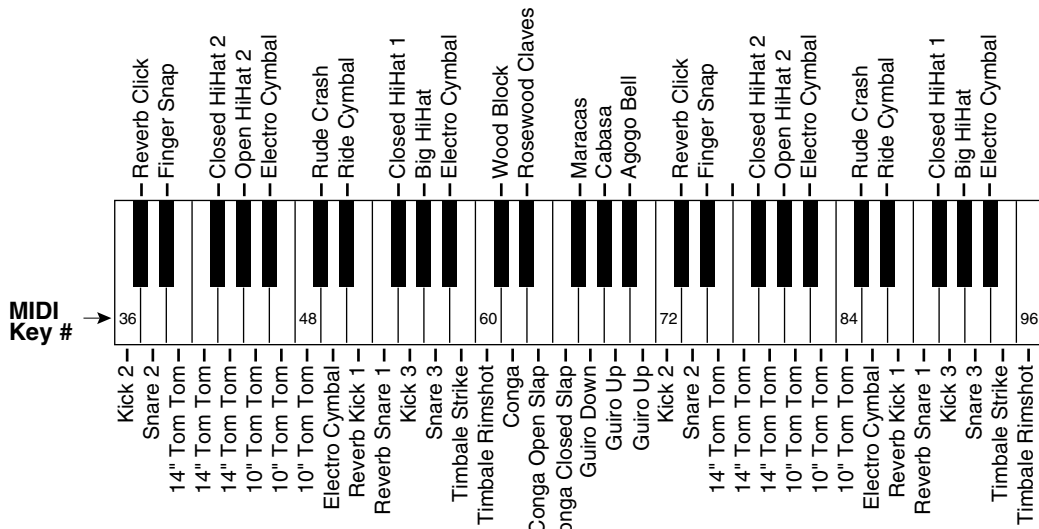


All Percussion
Instruments 51, 52

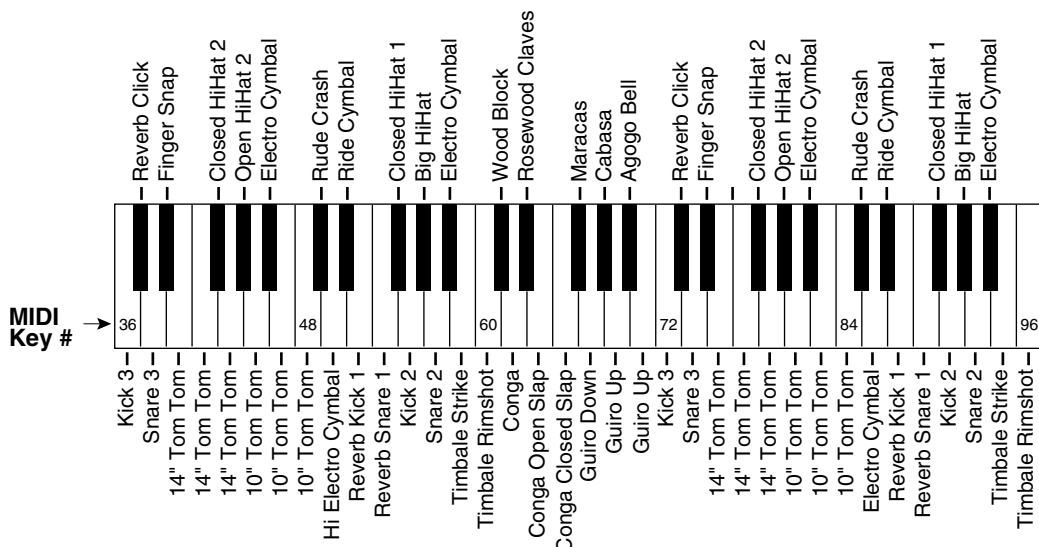


Standard 1
Instrument 53

PROTEUS/1 PERCUSSION INSTRUMENT LOCATIONS



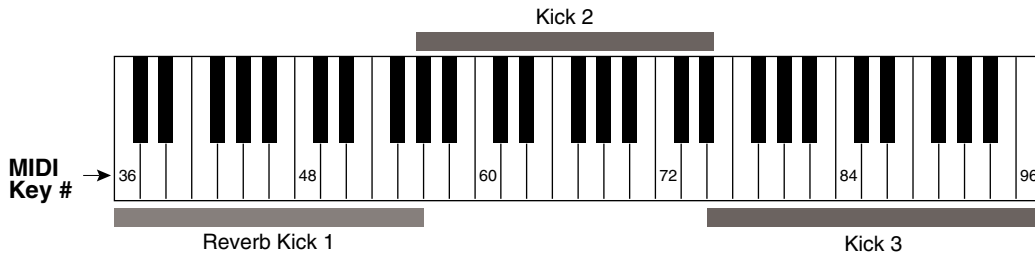
Standard 2
Instrument 54



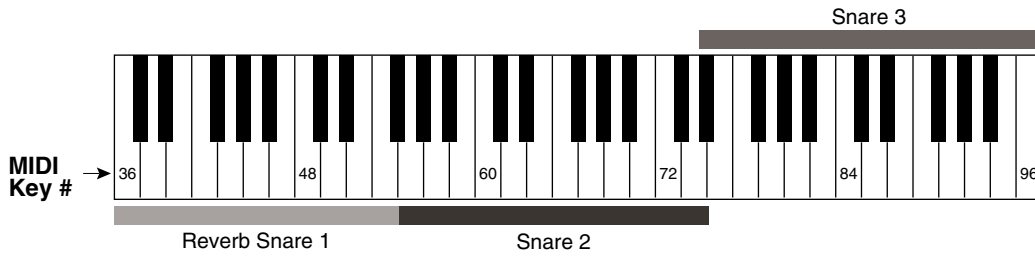
Standard 3
Instrument 55

Standard percussion setups 1, 2, and 3 are compatible with the Alesis HR16, Korg M1, Dr. T's "Dr. Drum" patterns as well as other devices and programs.

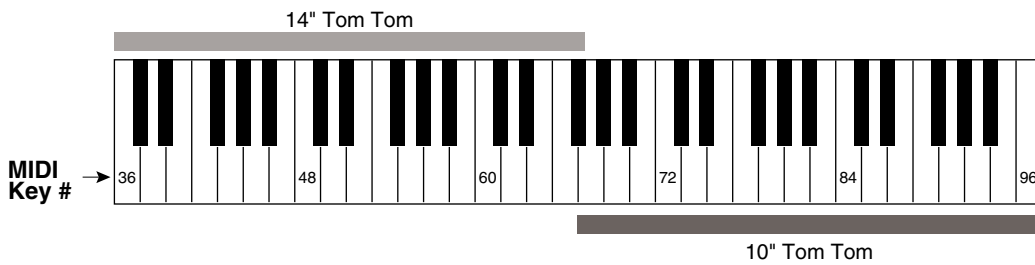
PROTEUS/1 PERCUSSION INSTRUMENT LOCATIONS



Kicks
Instrument 56

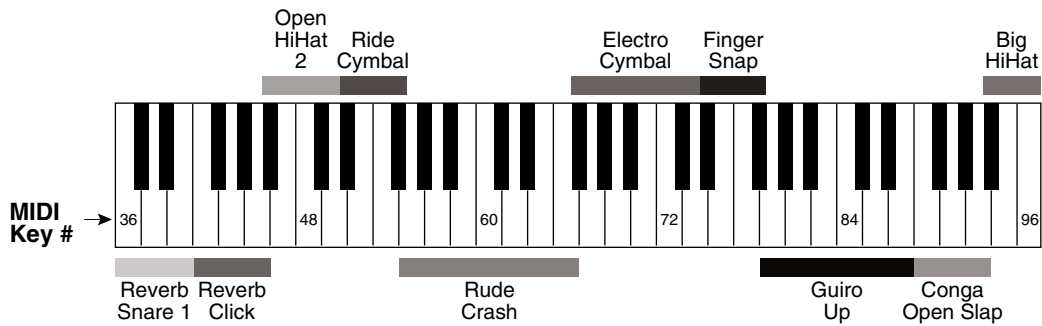


Snares
Instrument 57

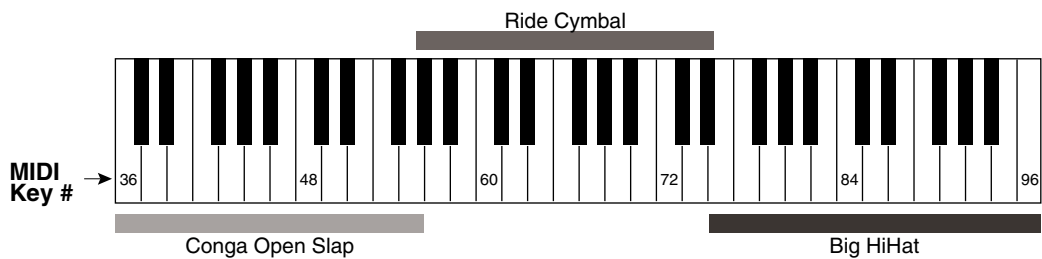


Toms
Instrument 58

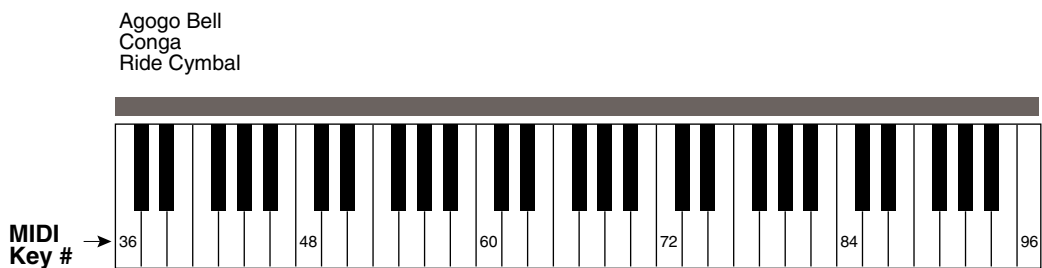
PROTEUS/1
PERCUSSION INSTRUMENT LOCATIONS



Percussion FX 1
Instrument 67



Percussion FX 2
Instrument 68



Agogo Bell, Conga, Ride Cymbal
Instruments 62, 64, 66

PROTEUS/1 *Plus* 2
PRESETS and INSTRUMENTS

ORCHESTRAL ROM PRESETS

STRINGS

- 384. Solo Cello
- 385. Solo Viola
- 386. Solo Violin
- 387. Quartet
- 388. Solo Chamber
- 389. StrHarmonic
- 391. Gamba Musik
- 392. Cellophane
- 393. Vienna Dream
- 394. RoomOfStrings
- 395. Legato Str
- 396. Concerto
- 397. Power Cello
- 398. Devil Dance
- 399. Just Violin
- 400. Violin&Viola
- 401. BassoViolino
- 402. Celli Viola
- 403. String Stuff*
- 404. Pizz Basses
- 405. Pizz Celli
- 406. Pizz Violas
- 407. Pizz Violins
- 408. Pizzicato 1
- 409. Pizzicato 2
- 410. Bowed () Pitz
- 412. 3 Octave Pix*
- 413. Paper Pizza
- 414. Synth-N-Pitz
- 420. PizzBass 8vb
- 421. PizzVlns 8va
- 474. Harpsomatic
- 475. Harpsicato

WOODWINDS

- 427. Piccolodeeyo
- 428. Oboe
- 429. English Horn
- 430. Clarinet
- 431. Verb Clarinet
- 432. Bass Clarinet
- 433. Bassoon
- 434. ContrBassoon
- 437. Chamber Wind
- 438. Section Winds
- 439. Wind Stack*
- 440. Double Reeds
- 441. Krummhorns S
- 442. Asian Reed S
- 444. Myth Maker
- 445. Egyptian Reed S
- 447. BassClar 8vb
- 448. Cntrbsn 8vb
- 449. Clarinet/Bb
- 450. Clarinet/A
- 451. BassClar/Bb
- 452. Eng.Horn/F

BRASS

- 443. Fusion Horn
- 453. Harmon Mute
- 454. Harmony Room

ENSEMBLES

- 390. Quintoctave
- 417. Violin&Oboe
- 418. Oboe/Strings
- 422. Strgs/Winds
- 423. Pizz/Piccolo
- 424. Divertimento
- 425. Pluck d'Bois
- 426. Clarinola
- 435. Flute/Oboe
- 436. Clar/Bassoon
- 446. Piano Winds
- 499. SawBass/Lead*
- 511. Piano Pizz

PERCUSSION

- 455. Timpani
- 456. Tam Tam
- 457. Tubular Bells
- 458. Timba Mallet
- 459. Deep Drum
- 460. Bell Ensemble
- 461. Warm Mallet
- 464. Mongol Man
- 465. Timp w/Tone
- 466. Gamelan Vibe

va indicates that the preset is shifted an octave up.

vb indicates that the preset is shifted an octave down.

* indicates that the preset is linked to another preset.

S Synthesized - the preset was created in Proteus, not sampled.

ORCHESTRAL ROM PRESETS

KEYBOARD

419. Piano Trio
 467. Notre Dame
 468. Carousel S
 469. Requiem
 470. Chapel Organ S
 471. Sepulcher
 473. Harpsikord 2 S
 474. Harpsomatic
 476. Lurch Pluck
 479. Deep Pad
 482. Phaedra
 488. Tarkus Twin
 490. Sympathetic
 492. Glitter God
 493. Tinker Bell
 494. Bronze Pad
 495. ShimmerWays
 496. Link2Shimmer*
 497. Analog Pad
 502. Square One
 503. Square Link*
 504. Nice Night
 505. Prophet Lead*
 506. Prophet Link
 507. Mystery Scene
 508. ElectricLady
 509. AnalogueMood
 510. Kosmos Keys

TEXTURES

462. Magic Bells
 472. Pipe Dream
 477. Whistl'n Joe
 478. Winter Signs
 489. Wrong Room
 498. Electrovoal

SOUND EFFECTS

480. Cyberspace
 481. Grim Reaper
 483. Darn Saucers
 485. Space Cowboy
 486. Infinite One
 491. Boat Haus
 500. Psychlotron
 501. Vampirical

BASS

411. Jazz Bass S
 415. PizzMoogBass
 416. Amplify Bass
 463. Sub It
 484. Kool Bass
 487. Turbo Bass

va indicates that the preset is shifted an octave up.

vb indicates that the preset is shifted an octave down.

* indicates that the preset is linked to another preset.

S Synthesized - the preset was created in Proteus, not sampled.

Plus INSTRUMENTS

Your Proteus/1 *Plus* Orchestral contains a full 8 Megabytes of true 16-bit Pop/Rock and Orchestral samples. In addition, because you purchased the *Plus* Orchestral, you get an extra 128 ROM presets. To make room for the additional presets, the Demo Sequence has been deleted. The new instruments and presets have been added on to the end of the Proteus/1 lists.

ORCHESTRAL SAMPLED SOUNDS

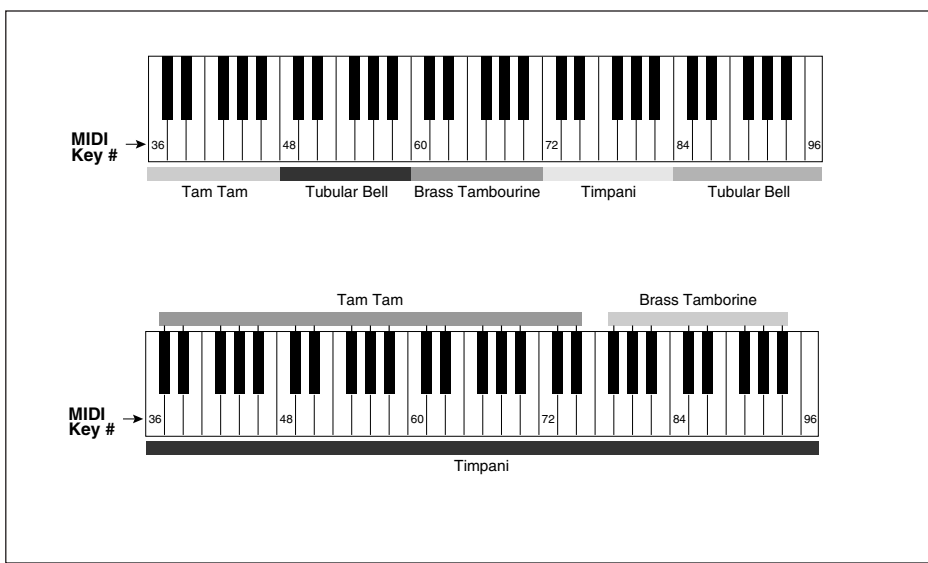
126. Solo Cello	Bowed, Solo Cello with natural vibrato
127. Solo Viola	Bowed, Solo Viola with natural vibrato
128. Solo Violin	Bowed, Solo Violin with natural vibrato
129. Gambambo	Cello, Violin with no vibrato
130. Quartet 1	Celli, Viola, Violin
131. Quartet 2	Bass, Celli, Violas, Violins
132. Quartet 3	Celli, Viola, Violin
133. Quartet 4	Celli, Violin
134. Pizz Basses	Bass section, plucked
135. Pizz Celli	Celli section, plucked
136. Pizz Violas	Viola section, plucked
137. Pizz Violin	Violin section, plucked
138. Pizzicombos	Pizzicato Bass, Celli, Violas, Violins
139. Bass Clarinet	Sustained Bass Clarinet
140. Clarinet	Sustained Clarinet
141. Bass Clarinet/Clarinet	Bass Clarinet and Clarinet split at C3
142. Contra Bassoon	Contra Bassoon
143. Bassoon	Bassoon
144. English Horn	English Horn with natural vibrato
145. Oboe	Oboe with natural vibrato
146. Woodwinds	Contra Bassoon, Bassoon, English Horn, Oboe
147. Harmon Mute	Solo Trumpet, Harmon Mute
148. Tubular Bell	Orchestral Tubular Bell
149. Timpani	Timpani
150. Timpani/Tubular Bell	Timpani/Tubular Bell split at C2
151. Tamborine	Brass Tamborine
152. Tam Tam	Tam Tam
153. Percussion 3	See Percussion 3 Chart
154. Special Effects	See Special Effects Chart
155. Oboe noVib	Oboe with no vibrato
156. Upright Pizz	Pizzicato Bass transposed across entire range

■ *Quartets 1-4 have been designed so that they can be layered without having the individual instruments overlap each other. This gives you a much richer sound than you would get by simply layering the same instruments on top of each other.*

Plus INSTRUMENTS

DIGITAL WAVEFORMS

- | | |
|------------------------|-----------------------|
| 157. Sine Wave | 180. Lead Beam |
| 158. Triangle Wave | 181. Steel Extract |
| 159. Square Wave | 182. Winter Glass |
| 160. Pulse 33% | 183. Town Bell Wash |
| 161. Pulse 25% | 184. Orchestral Bells |
| 162. Pulse 10% | 185. Tubular SE |
| 163. Sawtooth | 186. Soft Bell Wave |
| 164. Sawtooth Odd Gone | 187. Swirly |
| 165. Ramp | 188. Tack Attack |
| 166. Ramp Even Only | 189. Shimmer Wave |
| 167. Violin Essence | 190. Moog Lead |
| 168. Buzzoon | 191. B3 SE |
| 169. Brassy Wave | 192. Mild Tone |
| 170. Reedy Buzz | 193. Piper |
| 171. Growl Wave | 194. Ah Wave |
| 172. HarpsiWave | 195. Vocal Wave |
| 173. Fuzzy Gruzz | 196. Fuzzy Clav |
| 174. Power 5ths | 197. Electrhode |
| 175. Filtered Saw | 198. Whine 1 |
| 176. Ice Bell | 199. Whine 2 |
| 177. Bronze Age | 200. Metal Drone |
| 178. Iron Plate | 201. Silver Race |
| 179. Aluminum | 202. Metal Attack |
| | 203. Filter Bass |



PROTEUS/2 PRESETS and INSTRUMENTS

PROTEUS/2 FACTORY PRESETS

PROTEUS
Presets
0-63 **ROM**
64-127 **RAM**
128-191 **ROM**

PROTEUS XR
Presets
0-255 **RAM**
256-383 **ROM**

■ On the Proteus XR, ROM presets 256-319 are duplicated in the first 64 RAM locations.

STRINGS

- 0. Solo Cello †
- 1. Solo Viola †
- 2. Solo Violin †
- 3. Quartet
- 4. Solo Chamber
- 5. Arco Basses †
- 6. Arco Celli †
- 7. Arco Violas †
- 8. Arco Violins †
- 9. Marcato 1
- 10. Marcato 2
- 11. Legato Str
- 12. Concerto
- 13. Pizz Basses †
- 14. Pizz Celli †
- 15. Pizz Violas †
- 16. Pizz Violins †
- 17. Pizzicato 1
- 18. Pizzicato 2
- 19. Trem Strings
- 20. Tremulus
- 60. Harp
- 74. Exotic Harp
- 96. Vienna Dream**
- 99. RoomOfStrings**
- 109. String Thing**
- 132. Koto *E*
- 136. Soft Harp
- 139. Classic Gtr *E*
- 141. StrHarmonic *E*
- 142. Cellophane
- 143. Gamba Musik

WOODWINDS

- 24. Flute †
- 25. Piccolo †
- 26. Oboe †
- 27. English Horn †
- 28. Clarinet †
- 29. Bass Clarinet †
- 30. Bassoon †
- 31. Contrbassoon †
- 32. Chamber Winds
- 33. Section Winds
- 85. Piccolodeeyo**
- 131. Recorder *E*
- 135. Asian Reed *E*
- 154. Krummhorns *E*
- 156. Soft Flute
- 157. Hi Wind Solo
- 158. Verb Clarinet
- 159. PiccoloPeace
- 160. Flute/Oboe
- 161. Clar./Flute
- 162. Clar/Bassoon
- 163. Double Reeds
- 164. Bassoon/Horn
- 165. Alto Flute
- 184. Clarinet/Bb †
- 185. Clarinet/A †
- 186. BassClar/Bb †
- 187. EngHorn/F †

ENSEMBLES

- 21. Strgs/Flutes
- 22. Resting Pad
- 23. Divertimento
- 34. Epilogue
- 35. Wind Stack
- 49. BrassStrings
- 61. Harpstrings
- 84. Gently Now ***
- 107. Pizz/Piccolo**
- 144. Quintoctave

ENSEMBLES

- 145. Basses&Vios
- 146. Violin&Celli
- 147. ArcoViolins
- 148. Arco Duet
- 149. Str Section
- 150. Arco Strings
- 151. In The Pit
- 152. <<InThePit<<
- 153. Rotary Chmbr
- 166. WindEnsemble **
- 167. DblReeds/Hrn **

BRASS

- 36. French Horn 1 †
- 37. French Horn 2 †
- 38. Section Horns
- 39. Trumpet 1 †
- 40. Trumpet 2 †
- 41. Two Trumpets
- 42. Harmon Mute †
- 43. Trombone 1 †
- 44. Trombone 2 †
- 45. Tuba †
- 46. Back Brass
- 47. Bright Brass
- 48. Chamber Brass
- 168. Verb Horn
- 169. Xprsv Cornet
- 170. Bone&Trumpet
- 171. Bone&Tuba
- 172. Trombones
- 173. Sfz Brass
- 174. Horn Vel+Wh
- 188. FrenchHorn/F †
- 189. Trumpet/Bb †
- 190. Trumpet/D †

Bold Type... indicates a User Preset.

* indicates that the preset is linked to another preset.

** indicates that the two adjacent presets are linked.

† the keyboard range is limited to the actual range of the instrument.

E Ersatz; the instrument was created in Proteus, not sampled.

PROTEUS/2 FACTORY PRESETS**PERCUSSION**

50. Timpani
 51. Gong/Cymbal
 52. Bass/Snare +
 53. Temple Block
 54. Xylophone
 55. Glockenspiel
 56. Celesta
 57. Tubular Bells
 58. Percussion 1
 59. Percussion 2
 60. Harp
 70. Marimbala
 77. Vibraphone *E*
 83. Early Perc
 102. Sub It!
 104. CloudChamber
 138. Grandfather
 140. Temple Bell *E*
 175. Afroblocks *E*
 176. Timba Mallet
 177. Timp w/Tone
 178. Bass Drum
 179. TimpLowBlock
 180. Deep Drum
 181. Triangle
 182. Big Log *E*
 183. Gamelan *E*

KEYBOARD

62. Harpsikord *E*
 63. Notre Dame
 65. Deep Pad
 67. Bell Ensemble
 72. Tinker Bell
 73. Carousel *E*
 76. Bronze Pad
 87. ShimmerWays *
 89. Requiem
 91. Analog Pad
 92. Chapel Organ
 95. SawBass/Lead
 98. Tarkus Twin
 101. Reginatron
 105. Sepulcher
 106. Lurch Pluck
 111. Square One **
 112. Square Link **
 115. Master Tron
 117. Sympathetic
 120. Glitter God
 122. Nice Night
 123. Prophet Lead **
 124. Prophet Link **
 126. Link2Shimmer *
 128. Harpsomatic
 129. Phaedra
 130. Cimbalon *E*

TEXTURES

64. Winter Signs
 80. Sombre Winds
 81. Space Cowboy
 82. The Machine
 90. Wrong Room
 93. Electrovoal
 97. Vertigo Pad
 103. Psychotron
 108. Vampirical
 113. <*>
 114. Sardonicus
 116. Lo Wind Inst
 127. Ascending

SOUND EFFECTS

66. Portamento/F
 68. Cyberspace
 71. Grim Reaper
 75. Darn Saucers
 78. Astral Flute
 86. Infinite One
 100. Magic Bells *E*
 110. Galapagos
 118. Wind Chimes *E*
 119. Boat Haus
 125. Whistl'n Joe
 133. Dream Garden
 138. Grandfather

BASS

69. PizzMoogBass
 79. Kool Bass
 88. Turbo Bass
 94. Fat Boy Tuba
 121. Story Bass
 134. Amplify Bass
 137. Jazz Bass *E*
 155. C.Bsn/DbI Bs *E*

191. Default

Bold Type ... indicates a User Preset.

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E Ersatz - the instrument was created in Proteus, not sampled.

PROTEUS/2 INSTRUMENTS

SAMPLED SOUNDS

1. Arco Basses Bowed, 3 piece Bass section
2. Arco Celli Bowed, 4 piece Celli section
3. Arco Violas Bowed, 10 piece Viola section
4. Arco Violin Bowed, 16 piece Violin section
5. Dark Basses Bass section with a darker tone
6. Dark Celli Celli section with a darker tone
7. Dark Violas Viola section with a darker tone
8. Dark Violin Violin section with a darker tone
9. Low Tremolo Tremolande Bass section
10. High Tremolo Tremolande Violin section
11. Tremolande Tremolande Basses and Violins
12. Strings 1 Section Bass, Celli, Violas, Violins
13. Strings 2 Section Bass, Celli, Violas, Violins
14. Strings 3 Section Bass, Celli, Violas, Violins
15. Solo Cello Bowed, Solo Cello with natural vibrato
16. Solo Viola Bowed, Solo Cello with natural vibrato
17. Solo Violin Bowed, Solo Cello with natural vibrato
18. Quartet 1 Cello, Viola, Violin
19. Quartet 2 Bass, Cello, Viola, Violin
20. Quartet 3 Cello, Viola, Violin
21. Quartet 4 Cello, Violin
22. Gambambo Cello, Violin with no vibrato
23. Pizz Basses Bass section, plucked
24. Pizz Celli Celli section, plucked
25. Pizz Violas Viola section, plucked
26. Pizz Violin Violin section, plucked
27. Pizzicombo Pizzicato Bass, Celli, Violas, Violins
28. Flute w/Vib Solo Flute with natural vibrato
29. Flute noVib Darker Flute with no vibrato
30. Alt. Flute Flute with natural vibrato
31. Piccolo Piccolo
32. Bass Clarinet Sustained Bass Clarinet
33. Clarinet Sustained Clarinet
34. Bass Clarinet/Clarinet Bass Clarinet and Clarinet split at C3
35. Contra Bassoon Contra Bassoon
36. Bassoon Bassoon
37. English Horn English Horn with natural vibrato
38. Oboe w/Vib Oboe with natural vibrato
39. Oboe noVib Oboe with no vibrato
40. Alt. Oboe Different Oboe with no vibrato

PROTEUS/2 INSTRUMENTS

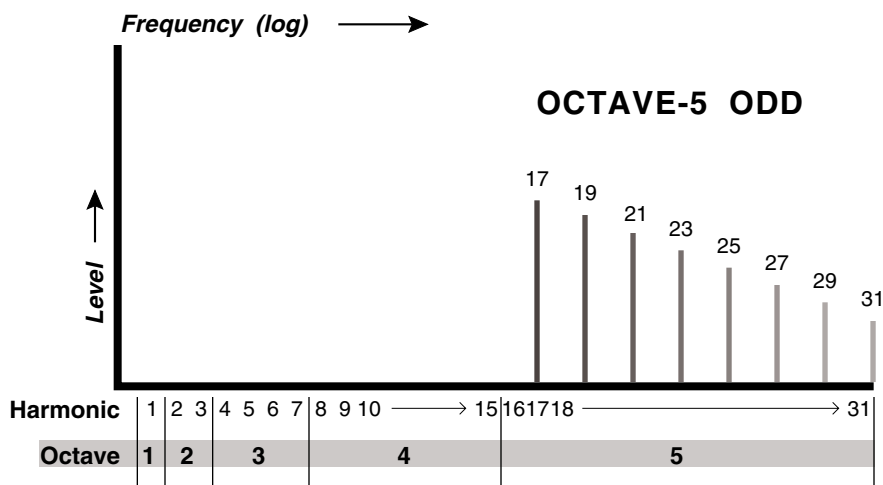
41. Woodwinds	Contra Bassoon, Bassoon, English Horn, Oboe
42. Hi Trombone	Trombone
43. Lo Trombone	Slightly different Trombone
44. mf Trumpet	Solo Trumpet, MF attack
45. ff Trumpet	Solo Trumpet, Forte attack
46. Harmon Mute	Solo Trumpet, Harmon Mute
47. mf French Horn	Solo French Horn, MF attack
48. ff French Horn	Solo French Horn, Forte attack
49. Tuba	Tuba
50. ff Brass	Trombone, French Horn, Trumpet
51. mf Brass	Tuba, French Horn, Trumpet
52. Harp	Concert Harp
53. Xylophone	Xylophone
54. Celesta	Celesta
55. Triangle	Triangle
56. Bass Drum	Bass Drum
57. Snare Drum +	See Snare Drum + Chart
58. Piatti	Piatti
59. Temple Block	Temple Block
60. Glockenspiel	Glockenspiel
61. Percussion 1	See Percussion 1 Chart
62. Percussion 2	See Percussion 2 Chart
63. Low Percussion 2	Same as Percussion 2, but at lower pitch
64. High Percussion 2	Same as Percussion 2, but at higher pitch
65. Tubular Bell	Orchestral Tubular Bell
66. Timpani	Timpani
67. Timpani/Tubular Bell	Timpani/Tubular Bell split at C2
68. Tambourine	Tambourine
69. Tam Tam	Tam Tam
70. Percussion 3	See Percussion 3 Chart
71. Special Effects	See Special Effects Chart

PROTEUS/2 INSTRUMENTS

HARMONIC WAVEFORMS

- 72. Oct 1 (Sine)
- 73. Oct 2 All
- 74. Oct 3 All
- 75. Oct 4 All
- 76. Oct 5 All
- 77. Oct 6 All
- 78. Oct 7 All
- 79. Oct 2 Odd
- 80. Oct 3 Odd
- 81. Oct 4 Odd
- 82. Oct 5 Odd
- 83. Oct 6 Odd
- 84. Oct 7 Odd
- 85. Oct 2 Even
- 86. Oct 3 Even
- 87. Oct 4 Even
- 88. Oct 5 Even
- 89. Oct 6 Even
- 90. Oct 7 Even
- 91. Low Odds
- 92. Low Evens
- 93. Four Octaves

These are the same waveforms that are in the Proteus/1 and are very useful, either to accent certain harmonics in the sampled sounds, or combined with other waveforms for synthesized and additive timbres.

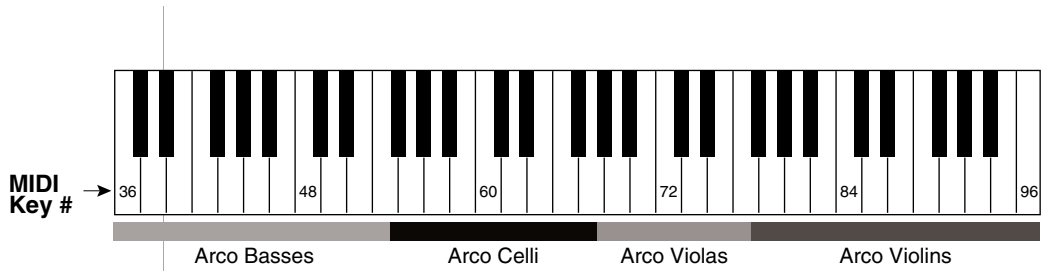


As an example, this chart shows the harmonics present in the **Octave 5 Odd** waveform.

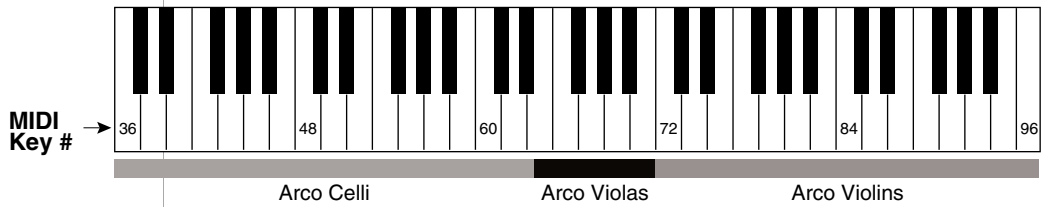
PROTEUS/2 INSTRUMENTS**DIGITAL WAVEFORMS**

- 94. Sine Wave
- 95. Triangle Wave
- 96. Square Wave
- 97. Pulse 33%
- 98. Pulse 25%
- 99. Pulse 10%
- 100. Sawtooth
- 101. Sawtooth Odd Gone
- 102. Ramp
- 103. Ramp Even Only
- 104. Violin Essence
- 105. Buzzoon
- 106. Brassy Wave
- 107. Reedy Buzz
- 108. Growl Wave
- 109. HarpsiWave
- 110. Fuzzy Gruzz
- 111. Power 5ths
- 112. Filtered Saw
- 113. Ice Bell
- 114. Bronze Age
- 115. Iron Plate
- 116. Aluminum
- 117. Lead Beam
- 118. Steel Extract
- 119. Winter Glass
- 120. Town Bell Wash
- 121. Orchestral Bells
- 122. Tubular SE
- 123. Soft Bell Wave
- 124. Swirly
- 125. Tack Attack
- 126. Shimmer Wave
- 127. Moog Lead
- 128. B3 SE
- 129. Mild Tone
- 130. Piper
- 131. Ah Wave
- 132. Vocal Wave
- 133. Fuzzy Clav
- 134. Electrhode
- 135. Whine 1
- 136. Whine 2
- 137. Metal Drone
- 138. Silver Race
- 139. Metal Attack
- 140. Filter Bass
- 141. Upright Pizz
- 142. Nylon Pluck 1
- 143. Nylon Pluck 2
- 144. Plucked Bass

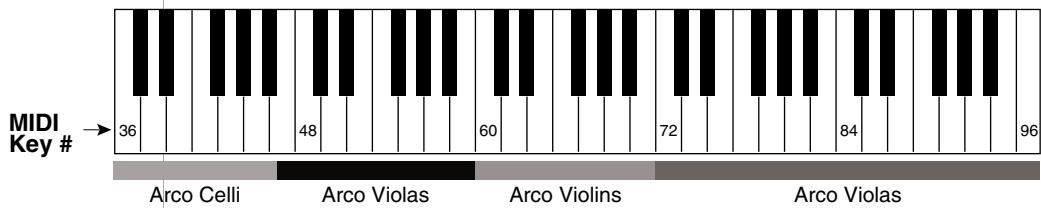
PROTEUS/2 INSTRUMENT LOCATIONS



Strings 1
Instrument 12

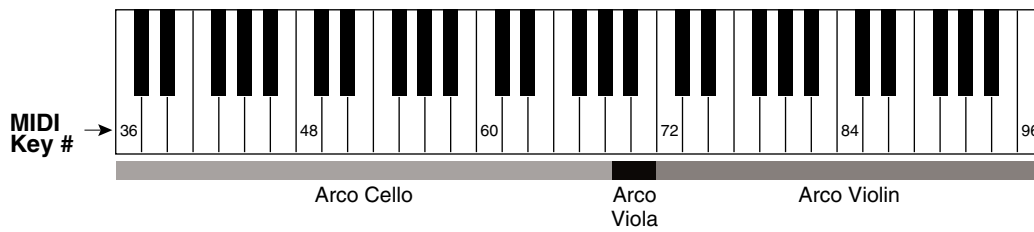


Strings 2
Instrument 13

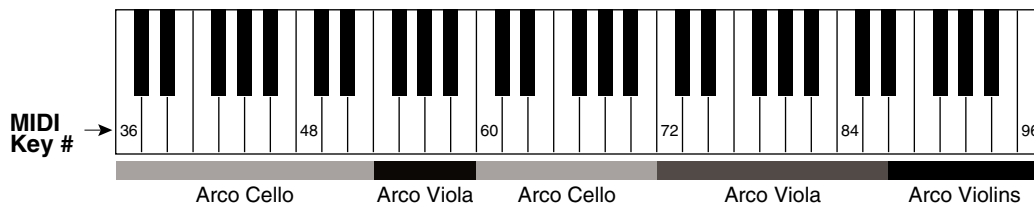


Strings 3
Instrument 14

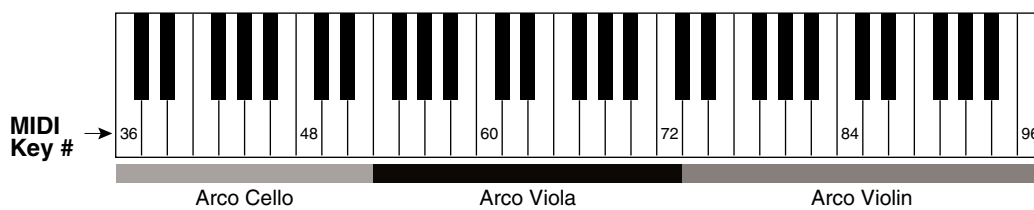
PROTEUS/2 INSTRUMENT LOCATIONS



Quartet 1
Instrument 18

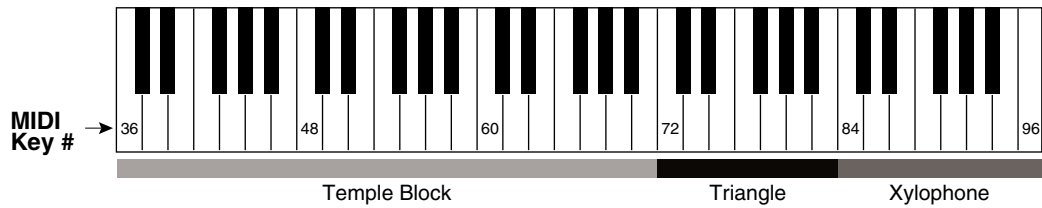


Quartet 2
Instrument 19

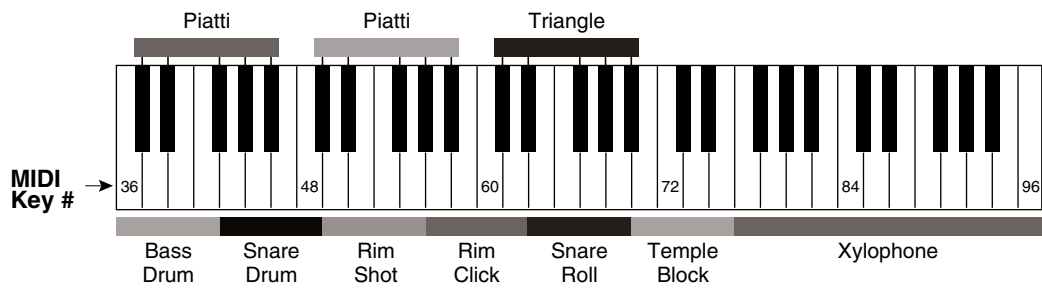


Quartet 3
Instrument 20

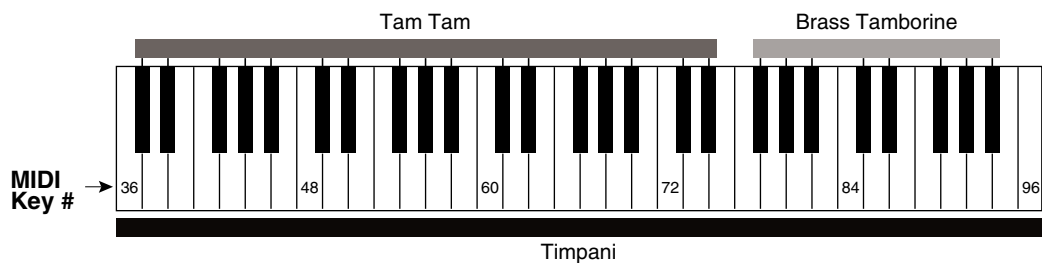
PROTEUS/2 INSTRUMENT LOCATIONS



Percussion 1
Instrument 61

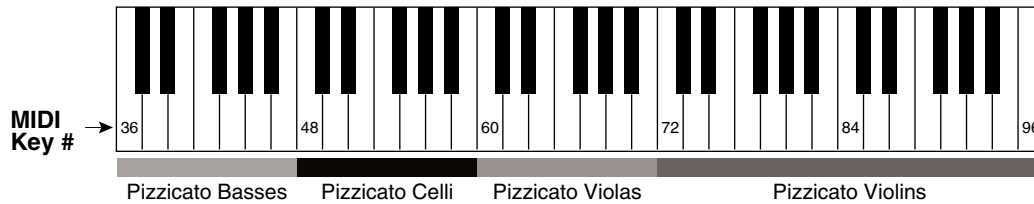


Percussion 2
Instrument 62

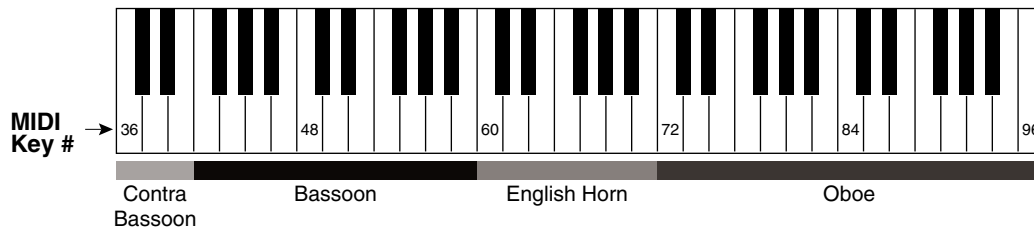


Percussion 3
Instrument 70

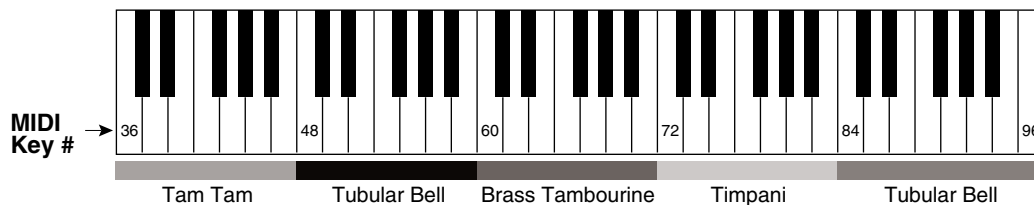
PROTEUS/2 INSTRUMENT LOCATIONS



Pizzicombino
Instrument 27



Woodwinds
Instrument 41



Special Effects
(Transpositions)
Instrument 71

PROTEUS/3 PRESETS and INSTRUMENTS

PROTEUS/3 FACTORY PRESETS

PROTEUS Presets	
0-63	ROM
64-127	RAM
128-191	ROM

PROTEUS XR Presets	
0-255	RAM
256-383	ROM

0	USER
63	
64	USER
127	
128	USER
191	
192	USER
255	
256	ROM
319	
320	ROM
383	

■ On the Proteus XR, ROM presets 256-319 are duplicated in the first 64 RAM locations.

TRUMPETS/HORNS

- 2. Desert Dawn
- 11. Shofars
- 14. Didjeridu 1
- 91. Heralds**
- 137. Trombone (329)
- 138. Trumpet (330)
- 139. French Horn (331)
- 161. Didjeridu 2 (353)

STRINGS/PLUCKED

- 0. Troubadour
- 3. Blue Grass
- 6. Koto
- 10. Irish Harp
- 12. Psaltery
- 13. Fragrant Tar
- 16. Dulcimer
- 20. Nylon Guitar
- 23. Lotus Land
- 24. AmbiJewsHarp
- 26. Oud *E*
- 30. Pizzicatos
- 33. Mod Sitar
- 34. Mbira *E*
- 36. Cimbalom *E*
- 40. Harp Tones
- 43. Shamisen *E*
- 46. Tamburas
- 60. Santur *E*
- 66. Er-Hu**
- 80. Star of Siam**
- 86. Yesir Rebab**
- 106. Bass Mbira *E***
- 128. Stereo Harp (320)
- 149. Likembeleo (341)
- 154. Harpluck 5th (346)
- 156. Nylon Pad (348)
- 162. Juicy Slap (354)
- 171. Ravoozle (363)
- 173. Camelot (365)
- 175. Banjo (367)
- 177. Juicy Pizz (369)
- 185. Berimbau *E* (377)

FLUTES

- 5. Ney Flute
- 15. Pan Flute
- 35. Shakuhachi
- 45. Ocarina Solo
- 55. Suling *T*
- 61. Fifths Ney
- 65. Flautissimo**
- 79. Whistling**
- 100. Uduhachi**
- 131. Herbal Ney (323)
- 141. Chiff Flute (333)
- 148. Stereo Siku (340)
- 153. FluteTransform (345)
- 159. Rhythm Flutes (351)
- 164. Gamelan Flute *T* (356)
- 170. ShakuWhistle (362)
- 187. Pennywhistle (379)

REEDS

- 1. Accordion
- 17. Bagpipe
- 21. Mizmars
- 25. Shenai
- 31. Mod Harmonica
- 41. Paris Musette *E*
- 51. Fsw->Bagpipe
- 97. Clarinet *E***
- 129. Chanter Pipes (321)
- 180. Dali Drone (372)

KEYBOARDS

- 27. Harmonium *E, T*
- 41. Paris Musette *E*
- 71. Europa I**
- 76. Elec. Piano *E***
- 77. Eurostructur**
- 129. Chanter Pipes (321)
- 150. Electro Tine *E* (342)
- 180. Dali Drone (372)

PERCUSSION

- 8. Percussion 1
- 18. Percussion 2
- 28. Bata Drums
- 48. Udu Tones
- 58. Pitchin' Perc
- 140. Stereo Bata (332)
- 147. World Drums (339)
- 151. Repique (343)
- 163. Gongs (355)
- 165. Plexi Delay (357)
- 178. Udu Grande (370)
- 179. Drum Stacks (371)
- 186. Log/Shaker (378)
- 189. Panned Perc (381)

TUNED PERCUSSION

- 32. Temple Gong
- 38. Baya Suwuk
- 52. Sake Bell
- 54. Brite Bonang
- 63. Shinto
- 67. Miya Daiko**
- 75. Tabla Tarang**
- 85. Saronkembe**
- 88. Bali Bells *T***
- 89. Stereo Shake**
- 92. Bender Bells**
- 94. Flautaland**
- 107. Heavy Tibet**
- 113. Afro Mallets**
- 118. Sandrum**
- 122. Balafon**
- 124. Vodun Drums**
- 130. The Temple (322)
- 134. Punch Ocarina (326)
- 136. Stereo Steel (328)
- 160. Titse Drum (352)
- 169. Timpani *E* (361)
- 172. Syndrums *T* (364)
- 174. Chimes *E, T* (366)
- 188. Gamelan *T* (380)

Bold Type indicates a User Preset.
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 ** indicates that the adjacent presets are linked.
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T Tuning; the instrument uses an alternate tuning table.

PROTEUS/3 FACTORY PRESETS**SYNTHESIZERS**

- 19. Hanoi Drone
- 37. Hybrid Winds
- 42. Nu Age
- 49. Jade Spring
- 57. Psaltines
- 64. **Dream I**
- 68. **So Dark**
- 73. **Whambambu**
- 82. **Analogue I**
- 83. **Silk & Spice**
- 90. **Arctic Vista**
- 96. **Air Gamelan**
- 98. **Krafter Bass**
- 99. **Resokeys**
- 104. **Orgon**
- 110. **Deep Synth**
- 112. **Rubber Band**
- 127. **Balithang**
- 131. Herbal Ney (323)
- 181. Gonggnod Mod (373)

SYNTHETIC BLENDS

- 22. Back in Bowl!
- 44. Syn Kalimba
- 50. Hybrid Pluck
- 62. Ethnocentric
- 69. **Breathing**
- 72. **Dream II**
- 78. **Spanish Ney**
- 80. **Star of Siam**
- 87. **Sukiyaki**
- 94. **Flautaland**
- 108. **Bali Reeds**
- 117. **Automan Empire**
- 119. **Ice Bella**
- 121. **Sundareem**
- 123. **Groan Drone**
- 153. Flute Transform (345)
- 158. Tarmon Down (350)
- 166. Air Guitar (358)
- 182. Lotus Moon (374)
- 183. Neydashofar (375)
- 190. Zendo (382)

SYNTH PADS

- 39. Peter's Pad
- 47. Dulcet Bow
- 59. Mizmarized
- 71. **Europa I**
- 77. **Eurostructur**
- 95. **On Land**
- 101. **Brass Pad**
- 102. **Requiem**
- 105. **Dream III**
- 107. **Heavy Tibet**
- 109. **Asiatic Drone**
- 111. **Xanax**
- 114. **Europa II**
- 116. **New Jerusalem**
- 120. **Good Breath**
- 143. Big Theme (335)
- 146. Ersatz Ahs (338)
- 152. Lhasa (344)
- 155. Netherworld (347)
- 167. Ben Hur (359)

WEIRD/SOUND FX

- 4. Spirit Catch
- 9. Waterphone *T*
- 29. Deep Sea Life *T*
- 74. **Forboding**
- 84. **Disembodied**
- 89. **Stereo Shake**
- 93. **Brook Babble**
- 103. **Metal Cutter**
- 115. **Fried Eggs**
- 126. **Jungle Book**
- 132. SpiriSprite ** (324)
- 133. SpiriSprite ** (325)
- 135. Vast Sea (327)
- 145. Reverse Drums (337)
- 157. Big Noise (349)
- 168. Spacethang (360)
- 176. Gorgon (368)
- 184. Catch Rhythm (376)

ENSEMBLES

- 7. East Indian
- 53. Celtic Split
- 142. Akhmirs Tent (334)
- 144. Raga (336)

BASS

- 56. Pizz Bass
- 70. **Reso Bass**
- 81. **Basov Chorus**
- 98. **Krafter Bass**
- 125. **Bass**
- 191. Default (383)

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T Tuning; the instrument uses an alternate tuning table.

PROTEUS/3 INSTRUMENTS

SAMPLED SOUNDS

AFRICA

- 53. Udu Drum Combination - **See Udu Drum Chart**
- 56. Wood Drum Combination - **See Wood Drum Chart**
- 75. Buzz/Likembe ... Combination - Likembe Buzz, Likembe
- 76. Likembe African Sansa or "thumb piano"
- 77. Likembe Buzz African Sansa with buzz
- 89. Udu Tone African Clay Pot with Open Side Hole
- 90. Udu Release African Clay Pot - hand released from side hole
- 91. Udu Finger African Clay Pot - ring tapping on side
- 92. Udu Slap African Clay Pot - slapping on side
- 117. Rosewood Bass ... African Tonal Drum
- 118. Rosewood Tick ... African Tonal Drum
- 119. Rosewood Harm. African Tonal Drum - harmonic
- 120. Rosewood Finger African Tonal Drum
- 121. Tanzanian Shaker Wooden Shaker from Tanzania

AUSTRALIA

- 4. Down Under Combination - **See Down Under Chart**
- 37. Roarer/Catcher ... Combination Bull Roarer/Spirit Catcher
- 38. Bull Roarer Australian Aerophone - wood plate and cord
- 40. Didjeridu Combination - A, B & C Didjeridus
- 41. Didjeridu A Tubular Australian Trumpet - looped pattern
- 42. Didjeridu B Australian Trumpet - looped tone
- 43. Didjeridu C Australian Trumpet - single complex event
- 116. Clapper Stick Australian Flat Wood Clapper

EUROPE

- 1. Renaissance Combination - **See Renaissance Chart**
- 5. Troubadour French Nylon String Folk Harp
- 7. Dulcimer Steel String Hammered Dulcimer
- 11. Guitar Nylon String Classical Guitar
- 17. Pizz Bass Plucked Double Bass
- 19. Accordion Modern Keyboard Accordion - looped
- 20. Harmonica Harmonica Tone - looped
- 21. Vib. Harmonica ... Harmonica Tone with Vibrato - looped
- 25. Ocarina Clay Ocarina
- 44. Jews Harp Combination - A, B, C, & D Jews Harps

PROTEUS/3 INSTRUMENTS**EUROPE (cont)**

- 45. Jews Harp A Metal Jews Harp - playing style A
- 46. Jews Harp B Metal Jews Harp - playing style B
- 47. Jews Harp C Metal Jews Harp - playing style C
- 48. Jews Harp D Metal Jews Harp - playing style D
- 49. Trombone Trombone
- 50. French Horn French Horn
- 51. Trumpet Trumpet
- 74. Castanet Spanish Castanets

INDO-ASIAN

- 2. East Indian Combination - **See East Indian Chart**
- 12. Sitar Indian Sitar
- 13. Tamburas Indian Tamburas
- 18. Tam/Sitar Combination - Tambura/Sitar
- 23. Shanai Indian Double Reed Shawm-1 semi rise
- 55. The Tabla Combination - **See Tabla Chart**
- 72. Wood Block Chinese Wood Block
- 100. Baya Tone Indian Low Tabla - tone, slightly rising pitch
- 101. Baya Slap Indian Low Tabla - slap
- 102. Baya Hit Indian Low Tabla - sharp hit
- 103. Tabla Tone Indian High Tabla - tone
- 104. Tabla Mute A Indian High Tabla - dull mute
- 105. Tabla Mute B Indian High Tabla - strong mute
- 106. Tabla Mute C Indian High Tabla - high pitched mute
- 107. Tabla Open Indian High Tabla - slightly tonal mute
- 108. China Gong Chinese Brass Gong
- 109. Nepal Cymbal Nepalese Brass Cymbal
- 110. Tibetan Bowl Highly Resonant Brass Bowl

INDONESIA

- 57. Gamelan Combination - Kenong, Bonang, Saron
- 58. Bonang Kenong ... Combination - Bonang, Kenong
- 59. Kenong Bonang ... Combination - Kenong, Bonang
- 60. Seribu Pulau Combination - Tibetan Bowl, Saron, Bonang
- 112. Bonang Small Javanese Bronze Tuned Gong - Gamelan
- 113. Kenong Medium Javanese Bronze Gong - Gamelan
- 114. Saron Javanese "Xylophone" - Gamelan
- 115. Suwuk Gong Large Shallow Javanese Gong - Gamelan

PROTEUS/3 INSTRUMENTS

INDONESIA (cont)

- 122. Hula Stick Bamboo Shaker from the Pacific Islands
- 123. Log Drum Pitched Indonesian Wooden Drum

IRELAND

- 6. Irish Harp Steel String Folk Harp
- 24. Penny Whistle Irish Tin Whistle

JAPAN

- 8. Koto Japanese 13-string Zither
- 30. Shakuhachi Japanese End-blown Bamboo Flute

MIDDLE EAST

- 10. Hi Tar Iranian Lute
- 14. Psaltry Middle Eastern Bowed Psaltry
- 22. Mizmars Middle Eastern Double Reed Shawms
- 26. Shofar A Hebrew Ceremonial Ram's Horn
- 27. Shofar B Hebrew Ceremonial Horn - 1 semitone rise/fall
- 28. Shofars Combination - Shofar A/Shofar B
- 31. Ney Flute Side Blown Wooden Flute
- 52. Mid East Drum Combination - **See Mid. Eastern Drum Chart**
- 80. Deff Slap Egyptian Frame Drum
- 81. Deff Mute Egyptian Frame Drum - muted
- 82. Bendir Middle Eastern 16" Gut Snare Drum
- 83. Req Open Middle Eastern Tambourine
- 84. Req Slap Middle Eastern Tambourine - slapped
- 111. Crotales Small Egyptian Pitched Cymbals

SCOTLAND

- 32. Bagpipe Drone Scottish Highland Drone Pipe
- 33. Chanter A Scottish Highland Bagpipe - dbl. reed chanter
- 34. Chanter B Scottish Highland Bagpipe - dbl. reed chanter
- 35. Drone/ChanterA Combination Drone/Chanter A
- 36. Drone/ChanterB. Combination Drone/Chanter B

PROTEUS/3 INSTRUMENTS

SOUTH AMERICA

- 29. Siku South American End-blown Flute
- 61. Surdo Drum Combination - Surdo Open/Surdo Mute
- 62. Maracas Combination - Maraca A/B/C/D
- 78. Surdo Open Large South American Bass Drum
- 79. Surdo Mute Muted South American Bass Drum
- 85. Maraca A Latin American Gourd Maraca- shake
- 86. Maraca B Latin American Gourd Maraca- shake
- 87. Maraca C Latin American Gourd Maraca- mute
- 88. Maraca D Latin American Gourd Maraca- short mute
- 99. Crickets Brazilian Wooden Blown Rattle

USA

- 3. Folk America Combination - **See Folk America Chart**
- 9. Banjo American Five String Banjo
- 15. Waterphone 1 Bowed Water Vessel - complex attack
- 16. Waterphone 2 Bowed Water Vessel - simple attack
- 39. Spirit Catcher Aerophone - rubber band on wooden "kite"
- 63. Plexitones Combination - Plexitone styles.
- 68. Snare Drum Standard Double-headed Side Drum
- 69. Kick Drum Double-headed Bass Drum
- 70. Hi-Hat Closed Hi-hat Cymbal Closing
- 71. Hi-Hat Open Hi-hat Cymbal Open
- 124. Plexi-Tone Six-foot Plexiglass Tube
- 125. Plexi-Slap A Six-foot Plexiglass Tube
- 126. Plexi-Slap B Six-foot Plexiglass Tube
- 127. Plexi-Slap C Six-foot Plexiglass Tube

WEST INDIES

- 54. Bata Drums Combination - **See Bata Drum Chart**
- 73. Steel Drum Steel Drum from Trinidad - Second Pan
- 93. Bata Ipu Tone Cuban, Conical Drum - tone
- 94. Bata Ipu Slap Cuban, Conical Drum - slapped edge
- 95. Bata Enu Tone Cuban, Conical Drum - tone
- 96. Bata Hi Tone Cuban, Conical Drum - tone
- 97. Bata Hi Mute Cuban, Conical Drum - head slightly muted
- 98. Bata Hi Slap Cuban, Conical Drum - slapped edge

PROTEUS/3 INSTRUMENTS

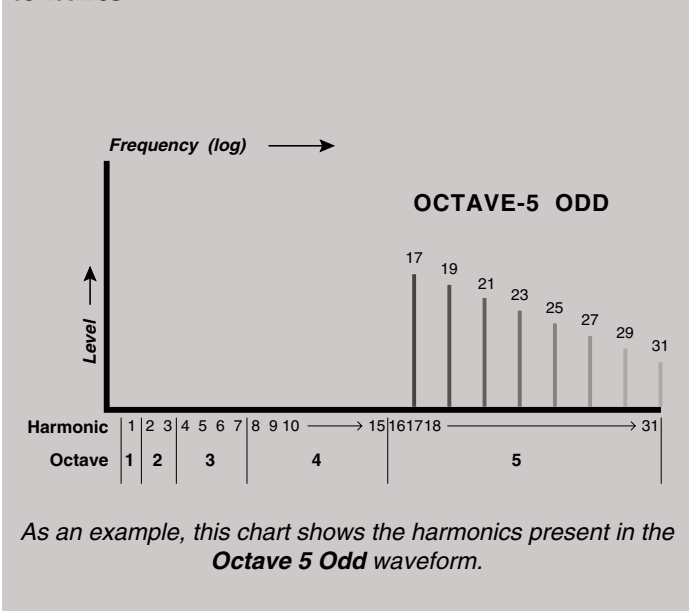
COMBINATION

- 64. Traps Combination - **See Traps Chart**
- 65. All Percussion 1... Combination - **See All Percussion 1 Chart**
- 66. All Percussion 1P Same as All Percussion 1 with panning
- 67. All Percussion 2... Combination - **See All Percussion 2 Chart**

HARMONIC WAVEFORMS

- 128. Oct 1 (Sine)
- 129. Oct 2 All
- 130. Oct 3 All
- 131. Oct 4 All
- 132. Oct 5 All
- 133. Oct 6 All
- 134. Oct 7 All
- 135. Oct 2 Odd
- 136. Oct 3 Odd
- 137. Oct 4 Odd
- 138. Oct 5 Odd
- 139. Oct 6 Odd
- 140. Oct 7 Odd
- 141. Oct 2 Even
- 142. Oct 3 Even
- 143. Oct 4 Even
- 144. Oct 5 Even
- 145. Oct 6 Even
- 146. Oct 7 Even
- 147. Low Odds
- 148. Low Evens
- 149. Four Octaves

The Harmonic Waveforms are extremely useful. They can be used to add specific harmonics to sampled sounds, or be combined with other waveforms to create synthesized and additive textures.



SINGLE CYCLE WAVEFORMS

- 150. Synth Cycle 1
- 151. Synth Cycle 2
- 152. Synth Cycle 3
- 153. Synth Cycle 4
- 154. Fundamental Gone 1
- 155. Fundamental Gone 2
- 156. Bite Cycle
- 157. Buzzy Cycle 1

PROTEUS/3 INSTRUMENTS**SINGLE CYCLE WAVEFORMS (cont)**

- 158. Metalphone 1
- 159. Metalphone 2
- 160. Metalphone 3
- 161. Metalphone 4
- 162. Duck Cycle 1
- 163. Duck Cycle 2
- 164. Duck Cycle 3
- 165. Wind Cycle 1
- 166. Wind Cycle 2
- 167. Wind Cycle 3
- 168. Wind Cycle 4
- 169. Organ Cycle 1
- 170. Organ Cycle 2

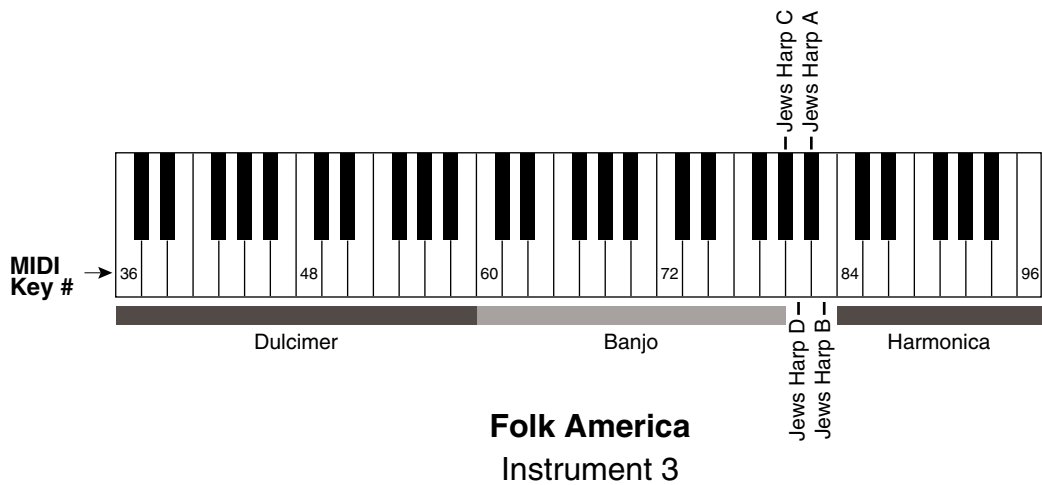
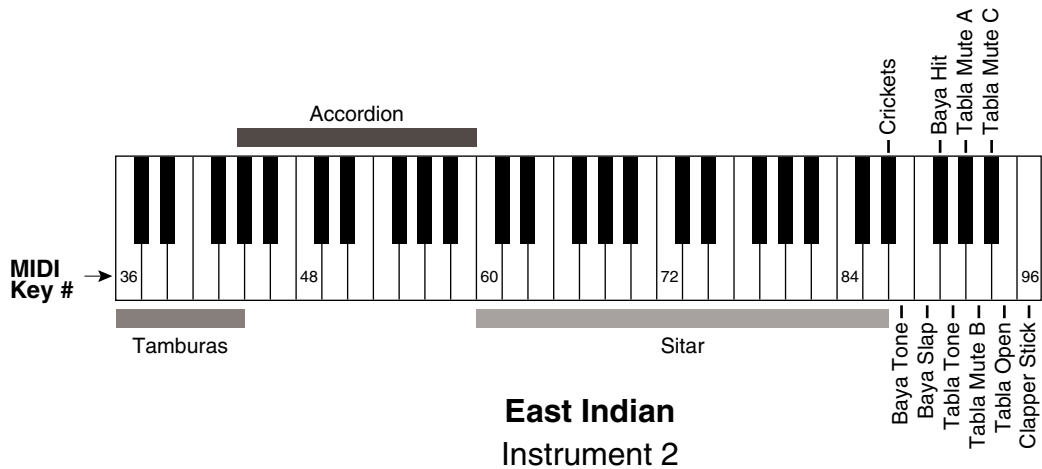
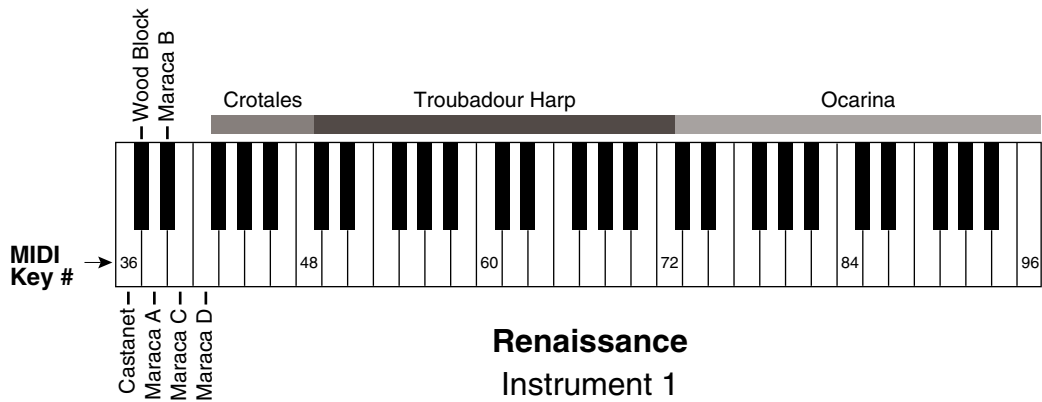
DIGITAL WAVEFORMS

- 171. Noise
- 172. Dark Noise
- 173. Triangle
- 174. Square
- 175. Sawtooth
- 176. Sawtooth Odd Gone
- 177. Ramp
- 178. Ramp Even Only
- 179. Violin Essence
- 180. Buzzoon
- 181. Brassy Wave
- 182. Reedy Buzz
- 183. Growl Wave
- 184. HarpsiWave
- 185. Fuzzy Gruzz
- 186. Power 5ths
- 187. Filtered Saw
- 188. Ice Bell
- 189. Bronze Age
- 190. Iron Plate
- 191. Aluminum
- 192. Lead Beam
- 193. Steel Extract
- 194. Winter Glass

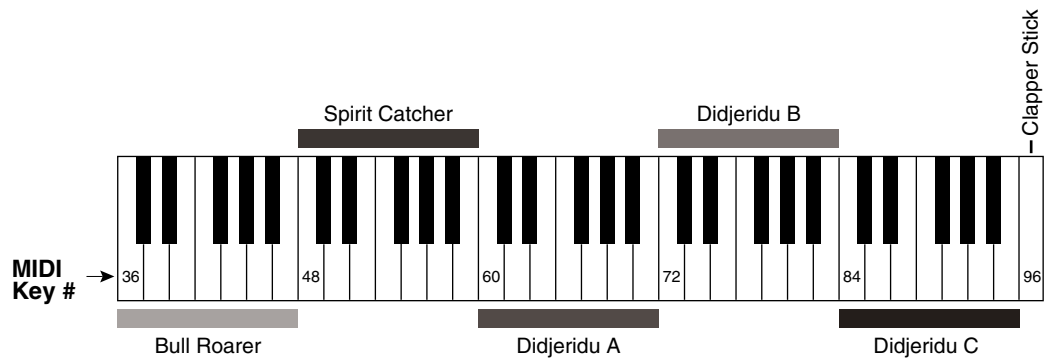
**CONTRIVED
INSTRUMENTS**

- 195. Asian Gongs 1
- 196. Asian Gongs 2
- 197. Suwak Wave
- 198. Savannah Land
- 199. Swamp Thing
- 200. Bugs 1
- 201. Bugs 2
- 202. Bugs 3
- 203. Bugs 4
- 204. Bugs 5
- 205. Bugs 6
- 206. Crickets
- 207. Woodpecker 1
- 208. Woodpecker 2
- 209. Frogz
- 210. Tribe 1
- 211. Tribe 2

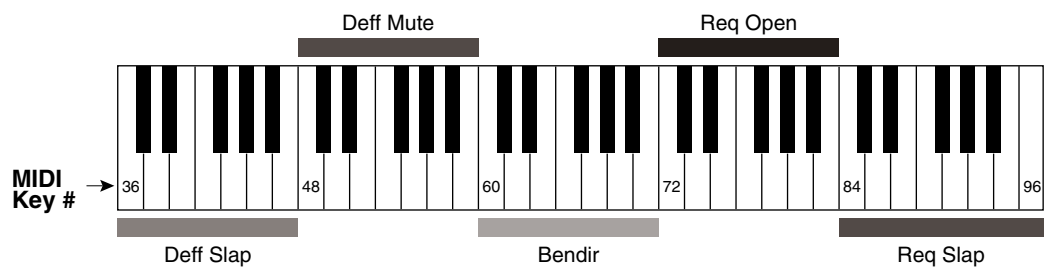
PROTEUS/3 INSTRUMENT LOCATIONS



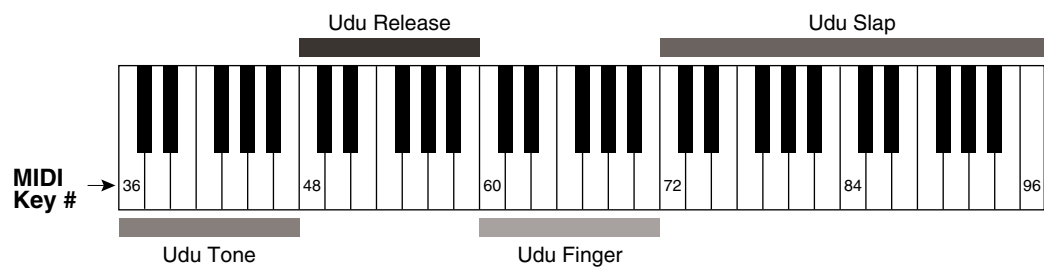
PROTEUS/3 INSTRUMENT LOCATIONS



**Down Under
Instrument 4**

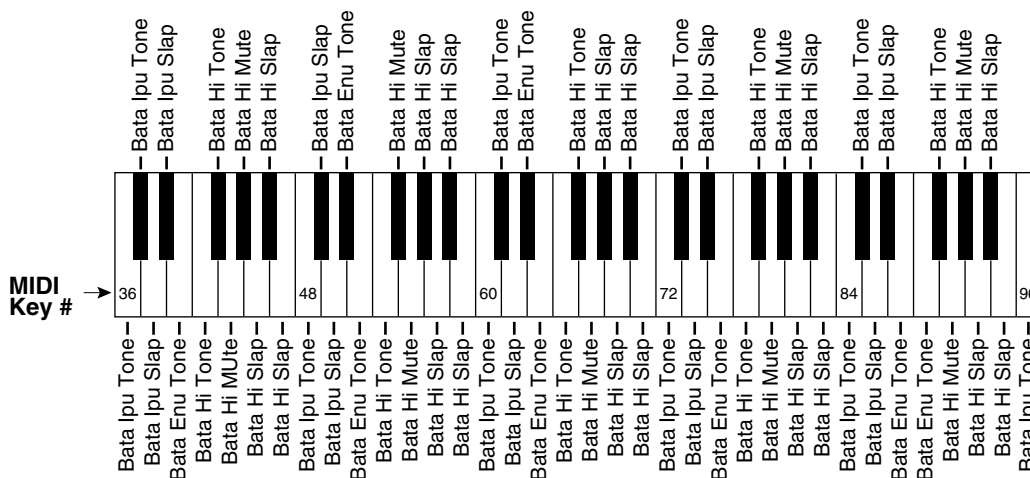


**Middle Eastern Drum
Instrument 52**

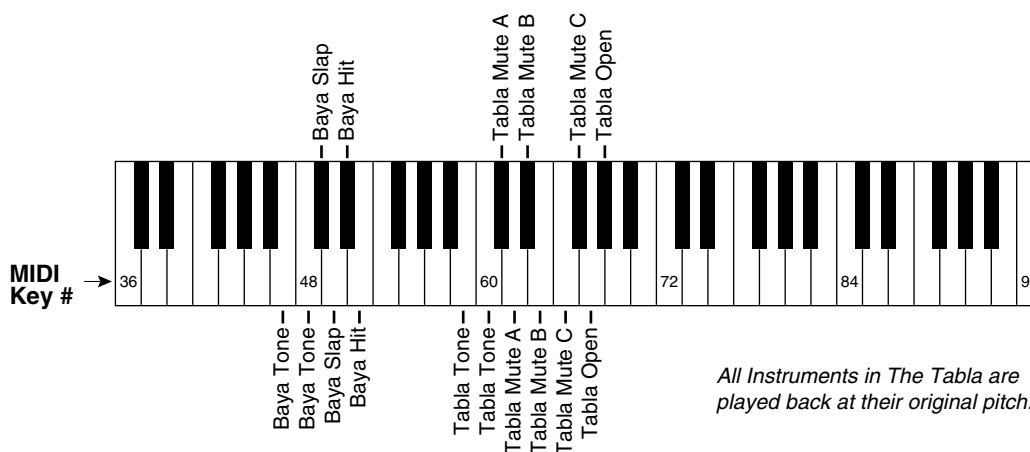


**Udu Drum
Instrument 53**

PROTEUS/3 INSTRUMENT LOCATIONS

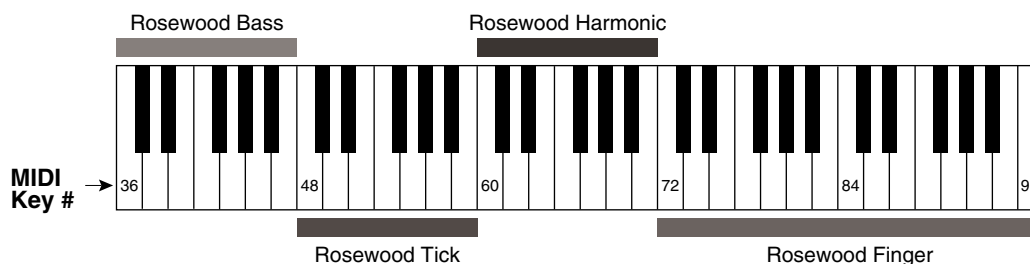


Bata Drums
Instrument 54



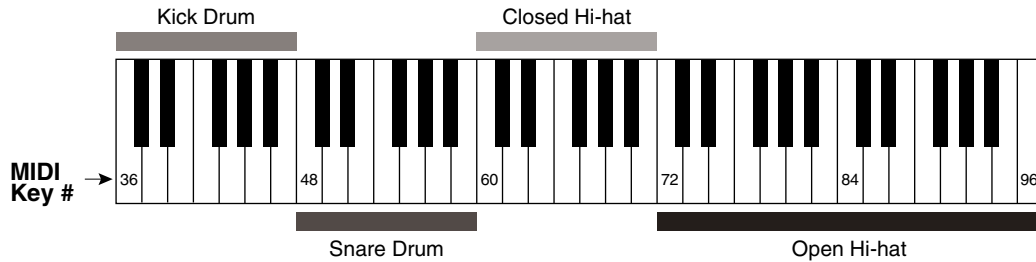
All Instruments in The Tabla are played back at their original pitch.

The Tabla
Instrument 55

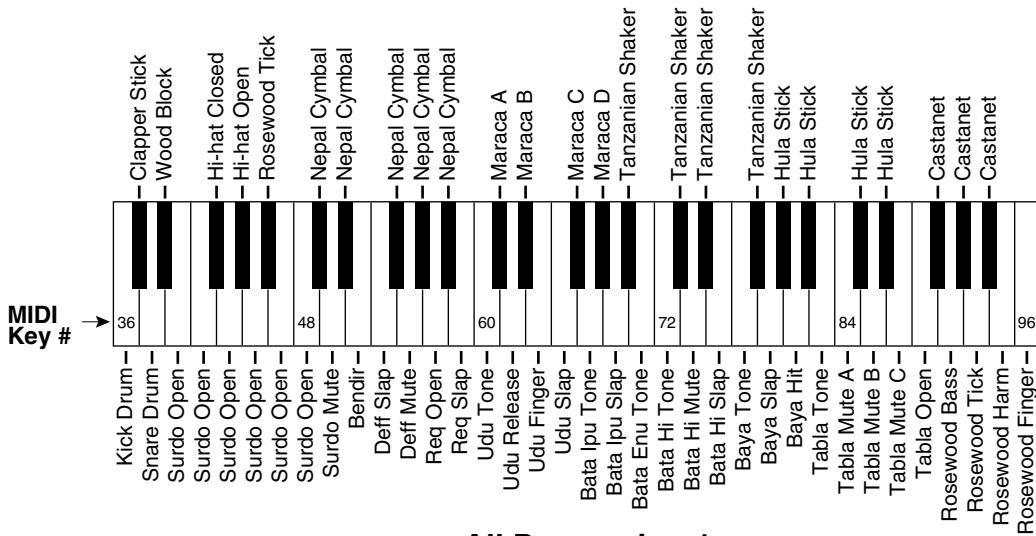


Wood Drum
Instrument 56

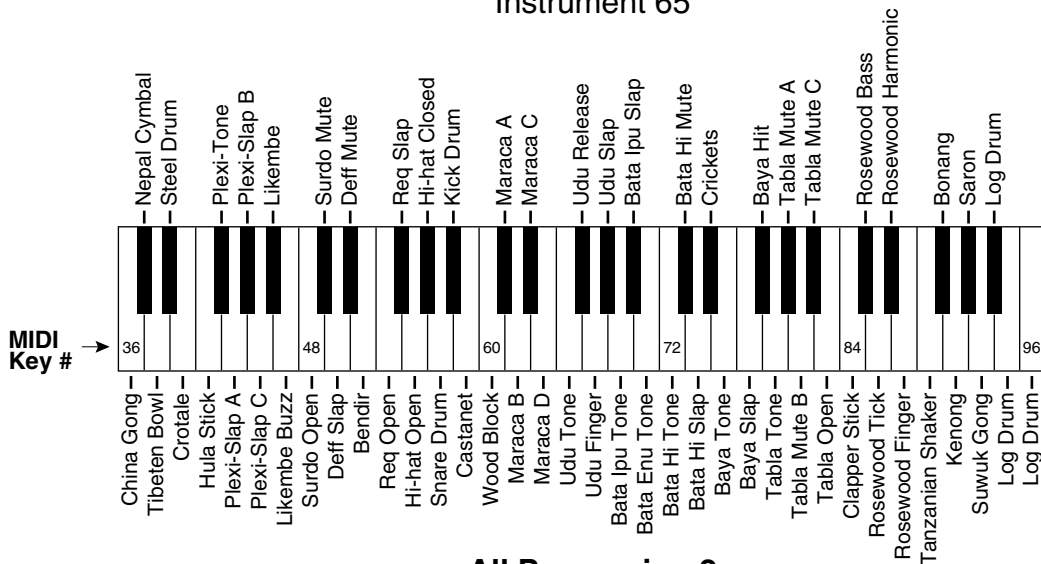
PROTEUS/3 INSTRUMENT LOCATIONS



Traps
Instrument 64



All Percussion 1
Instrument 65



All Percussion 2
Instrument 67

LFO, DELAY and ENVELOPE TIMES

LFO RATES

Knob	Rate (Hz)
000	.052
5	.1
10	.6
15	.8
20	1.33
25	1.8
30	2.2
40	3.3
50	7
60	10
80	16
127	25

Delay time applies to both instrument delay and envelope delay.

The alternate and auxiliary envelope parameters are identical except for the attack times.

DELAY

Knob	Time (sec)
000	0
5	.125
10	.25
20	.6
32	1
40	1.5
64	2.5
75	3.5
80	4.2
96	6.2
100	7
127	13

ALTERNATE ATTACK

Knob	Time (sec)
0	0
5	.125
10	.25
15	.4
20	.6
30	1.2
40	2.2
50	4
60	9
75	15
80	20
99	60

AUXILIARY ATTACK

Knob	Time (sec)
0	0
5	.125
10	.25
15	.5
20	.8
30	1.5
40	2.75
50	5.25
60	9
75	23
88	99
99	136

HOLD

Knob	Time (sec)
0	0
5	.125
10	.25
20	.4
30	.8
40	1.3
50	1.75
60	2.3
70	3.2
75	3.5
80	4.2
99	6.5

DECAY

Knob	Time (sec)
0	0
5	.125
10	.25
20	.4
30	.75
40	1.5
50	3
60	5
70	9
75	12
80	18
99	40

RELEASE

Knob	Time (sec)
0	0
5	.125
10	.25
15	.4
20	.6
30	1.2
40	2.2
50	4
60	9
75	15
80	20
99	60

TECHNICAL SPECIFICATIONS

Audio Channels: 32
Audio Outputs: 6
Submix Inputs: 4
Max. Output Level: +4 dB into 600 Ω
Output Impedance: 100 Ω
MIDI: In, Out, Thru
Data Encoding: 16 bit Linear
Sample Playback Rate: 39kHz
Signal to Noise: >90 dB
Dynamic Range: >90 dB
Frequency Response: 20Hz-18kHz
THD +N: <.05%
IMD: <.05%

Power Requirements: 25 watts
Operating Temperature: 110°F Max.
Dimensions: H: 1.75" W: 19" L: 8.5"

Weight: Proteus/1 4lb, 7oz (2 Kg)
Proteus/1 *Plus 2* . 4lb, 7oz (2 Kg)
Proteus/2 4lb, 7oz (2 Kg) *or* 4lb, 12.5 oz (2.173Kg)
Proteus/3 4lb, 7oz (2 Kg)

MIDI SPECIFICATIONS

RECEIVED CHANNEL COMMANDS

Channels number (n) = 0-15. Message bytes are represented in hex. All other numbers are decimal.

Command	Message	Comments
Note Off	8n kk vv	release velocity is ignored
Note Off	9n kk vv	velocity 0 = note off
Key Pressure	An kk pp	
Program Change	Cn pp	
Channel Pressure	Dn pp	
Pitch Wheel	En ll mm	l = lsb, m = msb
Realtime Controller	Bn cc vv	cc = 00-31
Footswitch	Bn cc vv	cc = 64-79, vv ≥ 64 = on
Volume	Bn 07 vv	
Pan	Bn 0A vv	0 = hard left, 127 = hard right
Reset All Controllers	Bn 79 00	ignored in omni mode
All Notes Off	Bn 7B 00	ignored in omni mode
Omni Mode	Bn 7D 00	forces all notes & controls off
Mono Mode	Bn 7E 00	forces all notes & controls off
Poly Mode	Bn 7F 00	forces all notes & controls off

MIDI SPECIFICATIONS**RECEIVED SYSTEM COMMANDS**

For system exclusive commands, the following format is used:

```

F0  system exclusive status byte
18  E-mu ID byte
04  product ID byte
dd  device ID byte
cc  command byte
...  data bytes (256 bytes/preset)
F7  EOX

```

Two MIDI bytes (lsb, msb) are required for each 14 bit data word. Bits 0-6 are sent first, followed by bits 7-13 in the next MIDI byte. All data words are signed 2's complement values with sign-extension out to the most significant bit (bit 13). This convention applies to all data words, regardless of the parameter's value range.

Command	Message	Comments
Preset Data Request	F0 18 04 dd 00 ll mm F7	ll = preset # lsb, mm = preset # msb
	7F 7F = all user presets 7E 7F = all factory presets	
Preset Data	F0 18 04 dd 01 ll mm cs F7	cs = checksum = sum of all data bytes
Parameter Value Request	F0 18 04 dd 02 pl pm F7	pl = parameter # lsb pm = msb
Parameter Value	F0 18 04 dd 03 pl pm vl vm F7	vl = value lsb vm = msb
Tuning Table Request	F0 18 04 dd 04 F7	
Tuning Table	F0 18 04 dd 05 F7	
Program Map Request	F0 18 04 dd 06 F7	
Program Map Data	F0 18 04 dd 07 F7	

MIDI SPECIFICATIONS

TRANSMITTED SYSTEM COMMANDS

Command	Message	Comments
Preset Data	F0 18 04 dd 01 ll mm CS F7	cs = checksum = sum of all data bytes
Parameter Value	F0 18 04 dd 03 pl pm vl vm F7	pl = parameter # lsb pm = msb vl = value lsb vm = msb
Tuning Table	F0 18 04 dd 05 F7	TT data = 256 bytes
Program Map Data	F0 18 04 dd 07 F7	

Parameter Editing

Preset and setup parameters may be edited individually using system exclusive commands. The preset being edited is the active preset (the preset which is assigned to the received channel). The value of a given parameter may be changed by sending a *parameter value* command. The value of a parameter may be read by sending a *parameter value request*, to which the machine will respond by sending back the parameter value.

Preset data may also be transmitted or received in a single block (one complete preset) using system exclusive commands. A *preset data request* may be issued by a host computer, to which the machine will respond sending the data block for the requested preset. Conversely, the computer may send new preset data which will replace the specified preset currently in the machine. Additionally, a front panel command will transmit one or all user presets for backup onto an external sequencer. These presets may be restored by simply playing back the sequence into the machine.

Alternate Tuning

The "user tuning table" allows any key to be tuned to an arbitrary pitch over an 8 octave range. If selected in the preset, an alternate tuning may be achieved by modifying the tuning values from the front panel or downloading a new table into the machine. The table consists of 128 words, corresponding to the MIDI key range, kept in non-volatile memory. Each word is a pitch value expressed in 1/64 semitones, offset from key number 0 (c-2). Therefore, for equal temperament, each entry in the table would be equal to its key number times 64.

MIDI SPECIFICATIONS

Preset Data Format

Preset data is transmitted and received using the following format: The standard system exclusive header (described below) is followed by the preset number (lsb, msb), a 14 bit word for each preset parameter (lsb, msb) starting at parameter #0 and continuing upward, a one-byte checksum, and the end-of-exclusive byte (F7). The checksum is the modulo 128 sum of all the parameter value bytes; that is, all of the data bytes following the preset number and before the checksum.

PRESET PARAMETERS

Parameter Number	Parameter Name
0-11	preset name (12 ascii characters)
12-14	link 1-3
15-18	low key 0-3
19-22	high key 0-3
23	pri instrument
24	pri sample start offset
25	pri tuning (coarse)
26	pri tuning (fine)
27	pri volume
28	pri pan
29	pri delay
30	pri low key
31	pri high key
32	pri alt attack
33	pri alt hold
34	pri alt decay
35	pri alt sustain
36	pri alt release
37	pri alt envelope on
38	pri solo mode
39	pri chorus
40	pri reverse sound
41	sec instrument
42	sec sample start offset
43	sec tuning (coarse)
44	sec tuning (fine)
45	sec volume
46	sec pan

MIDI SPECIFICATIONS

PRESET PARAMETERS (cont)

Parameter Number	Parameter Name
47	sec delay
48	sec low key
49	sec high key
50	sec alt attack
51	sec alt hold
52	sec alt decay
53	sec alt sustain
54	sec alt release
55	sec alt envelope on
56	sec solo mode
57	sec chorus
58	sec reverse sound
59	crossfade mode
60	crossfade direction
61	crossfade balance
62	crossfade amount
63	switch point
64	LFO 1 shape
65	LFO 1 frequency
66	LFO 1 delay
67	LFO 1 variation
68	LFO 1 amount
69	LFO 2 shape
70	LFO 2 frequency
71	LFO 2 delay
72	LFO 2 variation
73	LFO 2 amount
74	aux delay
75	aux attack
76	aux hold
77	aux decay
78	aux sustain
79	aux release
80	aux amount
81-86	key/vel source 1-6
87-92	key/vel dest 1-6
93-98	key/vel amount 1-6
99-106	realtime source 1-8
107-114	realtime dest 1-8

MIDI SPECIFICATIONS**PRESET PARAMETERS (cont)**

Parameter Number	Parameter Name
115-117	footswitch dest 1-3
118-121	controller amount A-D
122	pressure amount
123	pitch bend range
124	velocity curve
125	keyboard center
126	submix
127	keyboard tuning

GLOBAL/SETUP PARAMETERS

Parameter Number	Parameter Name
256	MIDI basic channel
257	MIDI volume
258	MIDI pan
259	current preset
260	master tune
261	transpose
262	global pitch bend range
263	global velocity curve
264	MIDI mode
265	MIDI overflow
266-269	controller A-D numbers
270-272	footswitch 1-3 numbers
273	mode change enable
274	device ID number
384-399	MIDI channel enable
400-415	MIDI program change enable
416-431	mix out (per MIDI channel)
512-639	MIDI program/preset map

Program Mapping

MIDI program changes will normally correspond to internal preset numbers 0-127. However, the user may "re-map" any MIDI program number, assigning it to an arbitrary internal preset. This feature allows any of the internal presets to be selected from a MIDI keyboard controller.

MIDI SPECIFICATIONS

PROTEUS XR

Several commands have been added to support external control of the Proteus XR.

Preset Data Request

Proteus presets are organized into banks. Each bank consists of 64 presets. Proteus XR has six banks of presets (0-383), while the standard Proteus only has the first three (0-191). Banks may be requested using the preset request command and the appropriate preset code listed below.

Bank	Preset Range	Requested Preset #	MIDI Message	
0	0-63	1024 (0x400)	F0 18 04 dd 00 00 08 F7	
1	64-127	1025 (0x401)	F0 18 04 dd 00 01 08 F7	
2	128-191	1026 (0x402)	F0 18 04 dd 00 02 08 F7	
3	192-255	1027 (0x403)	F0 18 04 dd 00 03 08 F7	
4	256-319	1028 (0x404)	F0 18 04 dd 00 04 08 F7	
5	320-383	1029 (0x405)	F0 18 04 dd 00 05 08 F7	
<i>Prot./1 Xpander only -</i>	6	384-447	1030 (0x406)	F0 18 04 dd 00 06 08 F7
<i>XR only -</i>	0-3	0-255	-3	F0 18 04 dd 00 7D 7F F7
<i>XR only -</i>	4-5	256-383	-4	F0 18 04 dd 00 7C 7F F7

The original commands for requesting user presets (-1:64-127) and factory presets (-2:0-63) are still supported to retain compatibility with existing software.

Master Settings Request

A new command has been added which requests the master settings as a group. The master settings request is: **F0 18 04 dd 08 F7**.

Proteus will respond by sending the master settings as a string of parameter changes. This is identical to the data that is sent when the procedure is initiated from the front panel.

Version Request

A new command has been added to allow identification of machine type and software revision.

The version request command is: **F0 18 04 dd 0A F7**.

Proteus will respond to this command with the version data:

F0 18 04 dd 0B vv r1 r2 r3 F7

where vv = version code (0=standard Proteus, 1 = XR)

r1, r2, r3 = software revision # in ascii (decimal point between r1& r2)

ADDENDUM TO MIDI SPECIFICATION

PROTEUS/2, PROTEUS/3 and PROTEUS EXPANSION SETS

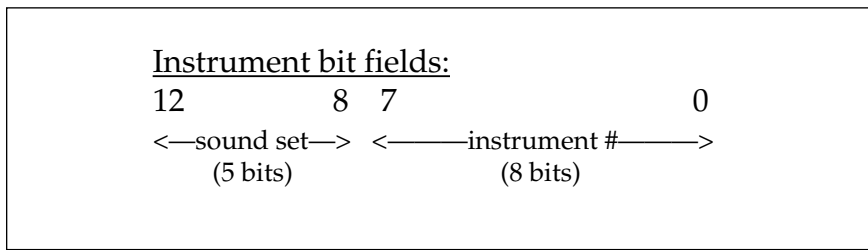
Revision 4 3-4-92

Please note changes to "Instrument List" command and the addition of variable chorus.

SOUND SETS

A Proteus sound set consists of 4 Megabytes of sample data (sound ROMs), plus additional instrument data in the program ROMs. Proteus may contain one or two complete sound sets. Each sound set has a unique ID number; the "Pop/Rock" sound set in Proteus/1 is sound set #0. Proteus/2 contains sound sets #1 and #2. It is desirable to be able to support "mix-and-match" configurations, and be able to successfully transfer presets from one configuration to another. For example, it should be possible to exchange presets between a Proteus/2 and an expanded Proteus/1 if the instruments come from common sound sets.

In order to achieve this compatibility between different Proteus configurations, it is necessary to include the sound set number as part of the instrument number when exchanging data. The instrument number (as expressed over MIDI) now contains two fields: bits 8-12 specify the sound set (0-31) and bits 0-7 specify the instrument within the sound set (0-255). Since Proteus/1 contains sound set #0, compatibility with existing products is maintained.



Within any given sound set, the first instrument is #1, and #0 selects "None".

ADDENDUM TO MIDI SPECIFICATION

EXPANDED PRESETS

An expanded Proteus/1 will contain additional factory presets in ROM. The additional presets can be uploaded using the “preset/bank request” command. The new presets will be in bank #3 (0x403) for non-XR, and bank #6 (0x406) for XR versions.

PRODUCT ID

The product ID code is the same for all configurations.

CONFIGURATION MESSAGE

A new MIDI command has been added to identify the sound sets in a given Proteus. The configuration request command is:

F0 18 04 dd 0C F7

Proteus will respond to this command with the configuration message:

F0 18 04 dd 0D pl pm s1 l1 m1 s2 l2 m2 F7

where pl and pm are the lsb and msb of the total number of presets, s1 and s2 are the ID numbers of the sound sets contained in this unit, and n1=l1,m1 and n2=l2,m2 represent the lsb and msb of the number of instruments in each sound set. If no expansion set is present, s2 will be 7F and n2 will be zero. If the Proteus contains firmware earlier than version 2.10, no response will be given, and one can assume sound set #0.

The current configurations are as follows:

Product	Sound Set(s)
Proteus/1	0
Proteus/2	1, 2
Proteus/1 + Orchestral	0, 2
Proteus/1 + Invision	0, 3
Proteus/3	4

ADDENDUM TO MIDI SPECIFICATION

INSTRUMENT LIST

A new MIDI command has been added to allow external software to upload the instrument list as an array of ascii strings. The instrument list request command is:

```
F0 18 04 dd 0E F7
```

Proteus will respond to this command with the instrument list message:

```
F0 18 04 dd 0F (14 bytes per instrument) ... .. F7
```

The instruments are transmitted in the same order they appear to the user on Proteus. Note that a given instrument's position in this list may be different from its actual number within the sound set.

```
instrument entry:  il im (11 ascii bytes) 00
```

Each instrument entry in the list consists of the actual instrument number (as defined in "Sound Sets" above) in lsb, msb format, followed by the instrument name (11 ascii characters plus a zero terminator) for a total of 14 (decimal) bytes. The first instrument is #1 as displayed on Proteus. The total number of instrument names is equal to (n1+n2) in the configuration message above. Proteus firmware earlier than version 2.10 will not respond to this command.

PRESET LIST

A new MIDI command has been added to allow external software to upload all preset names as an array of ascii strings. The preset list request command is:

```
F0 18 04 dd 12 F7
```

Proteus will respond to this command with the preset list message:

```
F0 18 04 dd 13 (13 bytes per preset) ... .. F7
```

Each preset name is 12 ascii characters, plus a zero terminator, for a total of 13 (decimal) bytes. The first preset is #0. The total number of preset names is equal to pp in the configuration message above. Proteus firmware earlier than version 2.10 will not respond to this command.

ADDENDUM TO MIDI SPECIFICATION

■ *Proteus only receives the MIDI Standard Bulk tuning dumps. For more information on the MIDI Tuning Standard and Bank Select format, contact the International MIDI Association.*

VARIABLE CHORUS

Proteus firmware starting with version 2.10 features a variable chorus depth. The range of values is now 0 (Off) through 15, with a value of 7 corresponding to 1 (On) in Proteus/1. The MIDI parameter number is unchanged.

BULK TUNING DUMP

Proteus/3 and above can now receive MIDI Tuning Standard dumps in addition to its own SysEx tuning table dumps. Proteus will *only* transmit in it's own SysEx tuning format. The MIDI Tuning Standard is as follows:

F0 7E dd 08 01 tt <tuning name (16 ascii)> ... F7

dd= device ID **tt**= tuning prog # (ignored) **tuning name** = (ignored)

... = data (xx yy zz) *frequency data for one note repeated 128x*

xx yy zz = 0xxxxxxx 0abcdefg 0hijklmn

xxxxxxx = semitone **abcdefghijklmn** = fraction of semitone in .0061 cent units. **Examples:** Middle C = 3C 00 00 A440 = 45 00 00

TRANSFER OF PRESETS FROM PROTEUS MODULES TO THE MASTER PERFORMANCE SYSTEM

Presets may be transferred from the Proteus sound module to the Master Performance System using the Send MIDI Data function in the Master menu if the two units have the same sound sets. Parameters on the Master Performance System (such as effects) which do not exist on the Proteus modules, will be set to a default value. Presets will be placed into the matching location on the Master Performance System and will overwrite presets currently residing there. If there is no RAM location on the Master Performance System corresponding to that of Proteus, then the preset will simply not be received. For example, when transferring the RAM bank of presets 64-127 from Proteus to the Master Performance System, only presets 100-127 will be received, since locations 64-99 do not exist in RAM on the Master Performance System. Presets 64-99 must first be moved above location 99 in order to be transferred. A computer based preset editor/librarian helps immeasurably in this operation and is highly recommended. If the Proteus contains sound sets (Orchestral, World, InVision) which are not contained in the Master Performance System, the preset will transfer but the instrument will be set to 000 (off).

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