

# Introduction To Pulsar

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# Foreword

Thanks for choosing Pulsar! The Introduction chapter of the manual will help you learn the basics. The manual has been designed to be comfortable to use without the need to "zoom in" on things to be able to read them. It is intended to be used simultaneously with Pulsar, so you can immediately try out the things you read.

What makes Pulsar special is that it allows you to alter the functionality of the hardware *while* it is being used. The Pulsar card contains four powerful digital signal processors (DSPs) which handle all signal processing. Their high combined processing capacity allows them to numerically simulate synthesizers, mixing consoles and audio effects in various combinations, in realtime.

In addition, the extensive interfacing capabilities of Pulsar – both hardware and software – not only allow the smooth integration of external devices such as ADAT recorders into the Pulsar environment, but also permit Pulsar to work directly with MIDI and hard disk audio recording software such as Cubase VST, Logic Audio and CakeWalk Audio *running on the same computer*. You can combine ADAT tracks with sequenced audio tracks and MIDI-sequenced Pulsar synths, mix everything down in a Pulsar mixer, add Pulsar and external effects to the mix, and deliver a digital final mix via S/P-DIF to a DAT recorder.

The number of synths, effects, etc. which Pulsar can simultaneously generate depends primarily upon the devices themselves. Pulsar synths, effects and mixers place varying demands upon the computing capacity of the DSPs. The Pulsar sample players additionally draw upon the computing and data transfer capacity of your PC. Thus, the limit also depends to some extent upon the configuration of your system.

But within these limits – there are scarcely any limits. If you want to sing live through a Modular synth filter – it's easy. If you can think of it, you can probably do it.

# Getting Started

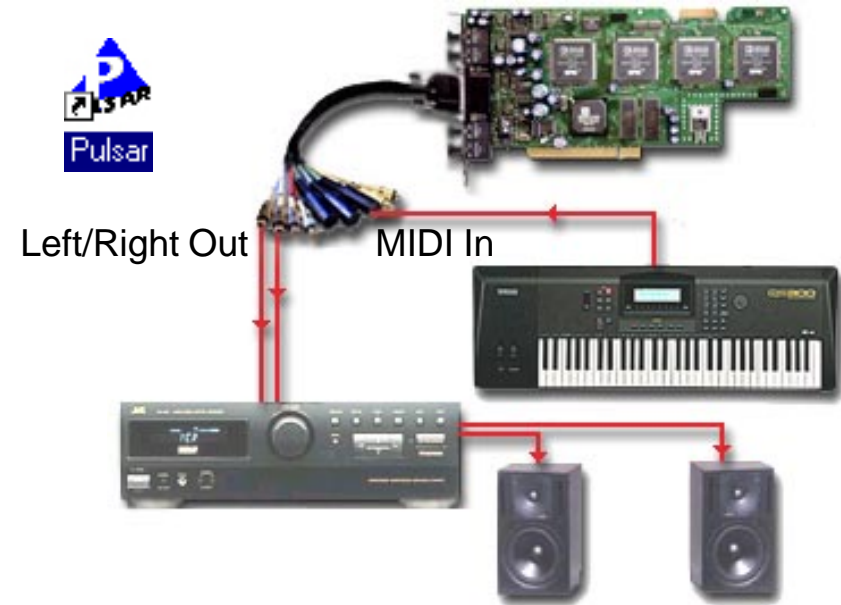
If you haven't already completed the installation of the Pulsar card and software according to the **Installation Guide** – now's the time! Come on back when you're done.

To finish setting up, all that's left is to connect Pulsar's **MIDI In** to the MIDI output of a MIDI keyboard or controller of your choice, and connect the Pulsar **Analog Outputs** to a monitoring system. (These connections are made via the Pulsar Cable Assembly.) When you're done, your setup should roughly resemble the picture at right. Now you've got everything you need to proceed through the following sections of the Introduction and be able to try things out as you read about them.

(If you absolutely can't wait and you want to poke around onscreen first, you can even do without the external connections. But – surely you'll want to *hear* something!)

To begin, *turn your amplifier down* (transients on the card outputs during program startup are possible). Double-click on the Pulsar icon on your desktop (see above right). In a few moments you'll be looking at the Pulsar screen.

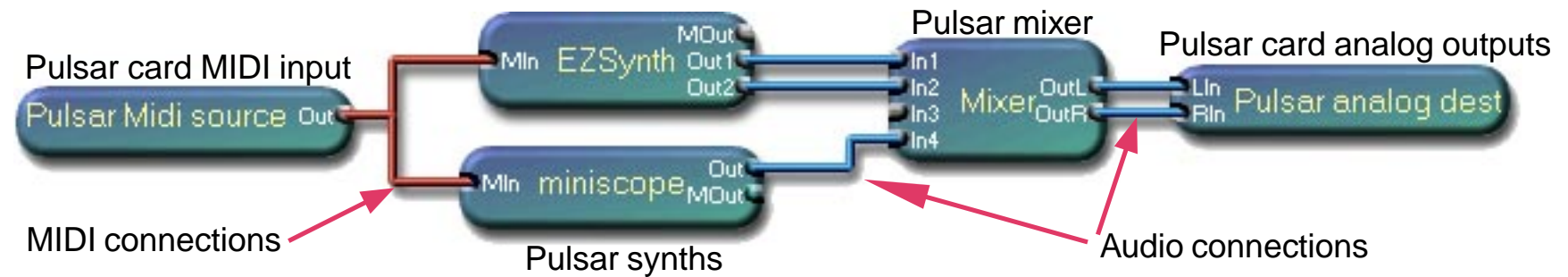
Open the **File** menu at top left and click on **Load Project**. Navigate into the `..\Pulsar\Examples` folder and double-click on **Discover.pro**. When this is done loading, a small but complete Pulsar project will appear in the Project window. Go ahead – play a few notes!



The Discover project is discussed on the next page. Simple though it is, it illustrates many basic but important Pulsar features. After you've played around with it a bit, continue through the rest of the Introduction to get into the basic features in more depth. Don't be afraid to experiment or even to take the Discover project completely apart. That's the idea! You can always reload the project – directly from the CD, if all else fails.

Next, in the **Projects** chapter, you'll find information about more advanced Pulsar features and applications, including the use of Pulsar in tandem with other PC audio and MIDI software and with external audio and MIDI devices.

# The "Discover" Project



This example project is installed with Pulsar. To load it, follow the instructions on the previous page.

The project consists of two Pulsar synths and a mixer. Both synths get their MIDI input from the Pulsar MIDI Source *module*, which represents the Pulsar card MIDI input. The synths are mixed via a small mixer, whose outputs are routed to the Pulsar Analog Dest (destination) *module*, which represents the Pulsar card analog outputs.

Thus, the *modules* at both ends represent hardware. The ones in the middle – the synths and mixer – are strictly data. But they work, as you can easily demonstrate.

Play a few chords. Both synths are in Omni mode, so both will play at once. In this project, the **EZSynth** is 4-voice polyphonic, the **miniscope** monophonic. Thus, with each chord you play, the miniscope produces a bass tone on *one* of the chord notes.

At the bottom of the screen you'll spot the *minimized* synth and mixer **icons**. Double-click on these to see the full-size **device surfaces**, where you can make adjustments such as setting MIDI channels or muting mixer channels.

On each device surface there is also a *Presets* button which opens the device's preset list. Simply double-click on a name in this list to load a new synth preset. Try this now with the EZSynth. To hear the changes more clearly, open the mixer surface (by double-clicking on the mixer icon) and mute mixer channel 4 to silence the miniscope.

As you proceed through the rest of the Introduction, you can use this project to try out the things you read about. Be fearless! No matter how much you tear things apart, you can reload the original project at any time.

# Workspace Basics

This section and the ones which directly follow give an overview of the Pulsar workspace – the menus, windows and other onscreen widgets with which you carry out your activities in Pulsar. Much of this will be quickly recognizable to Windows users (even though the Pulsar version is substantially better-looking!)

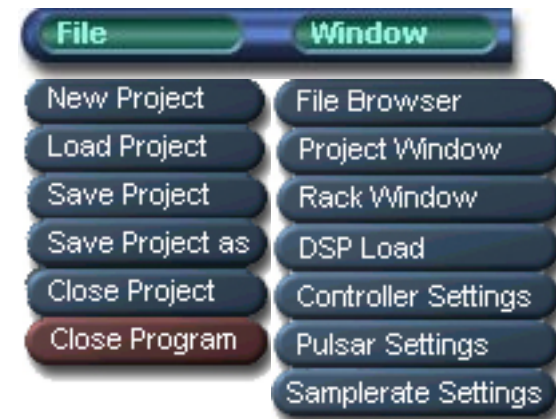
Fixed at the top of the screen is the Pulsar **Menu** bar. At its far right end are two small buttons. The **Close** button ends the Pulsar program. The **Minimize** button leaves Pulsar running but sweeps it from the screen, letting whatever is behind it show through. Synths, mixers etc. remain active. This is handy for getting at the Windows desktop (program icons, etc.) without having to exit from Pulsar. (You can also switch directly to other *already-loaded* programs *without* minimizing Pulsar.) To bring Pulsar back onscreen, click on the Pulsar entry in the Windows Task bar or use the standard Windows **Alt-Tab** task switching function.

Also found on the Menu bar are the **File** and **Window** menus. The **File** menu is for the big stuff: loading, saving, and dumping projects and exiting from Pulsar. The **Window** menu gives you control over your workspace, letting you open and close the various Pulsar windows and control panels. Any element of the Pulsar workspace can be hidden away when not needed.

Minimize program window



Close (exit) program



# The File Menu

The **File Menu** is for opening and closing Pulsar **projects**.

A **project** is a file which contains complete information about *everything* going on in Pulsar – which mixer and/or synths are loaded, where they are onscreen, how they're connected, all of their settings, etc.

**Save Project** stores a complete picture of your current Pulsar setup. Use it in the early AM before going off to bed, or if you leave the computer alone for a minute, or *anytime* you'd hate to lose what you've set up.

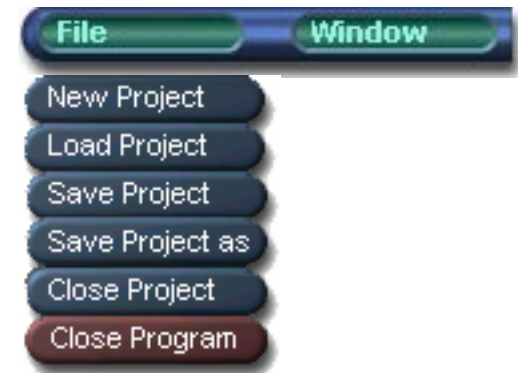
**Save Project As** lets you save a variation on a project under a new name or in a different place, when you don't want to write over the original project file.

**Load Project** reloads a project exactly as it was saved.

**New Project** sets the stage for new project creation by loading a default project (which you can customize to suit your own needs, by the way).

**Close Project** simply clears out the existing project. Your next step will be either New Project or Load Project. Or maybe **Close Program**, which exits Pulsar.

Load Project, New Project and Close Project/Program wipe out your currently loaded project. Thus, they all give you a chance to save it first, if it hasn't been saved yet.





# The Window Menu

The **Window** menu lets you open and close Pulsar workspace windows and control panels.

## Using The Window Menu

Any desired combination of Pulsar windows and control panels can be open at one time. If a window or control panel is already open, you switch to it simply by clicking on it. If it isn't, you use the Window menu to open it.

When a window or control panel is already open, selecting it in the Window menu will close it. Each window and control panel has a Close button (in its upper right corner) which can also be clicked on to close it directly.

## Items In The Window Menu

Some of the items in this menu are covered later in the Introduction. A few require more in-depth description and are more appropriately dealt with elsewhere than in the Introduction:

- Details of the **Project Window** and of the **Pulsar Settings**, **Controller Settings** and **DSP Load** control panels are presented in the *Projects* chapter.
- The **Sample Rate Settings** control panel is described in the *Sample Rate Settings* section of the *Pulsar Card* chapter.



# Windows And Control Panels

## Window / Control Panel Common Features

- Each one can be freely **repositioned** onscreen via click-and-drag. With a window, you use the top side of the window frame for this. To move a control panel, click and drag on any blank part of the control panel surface. Windows and control panels become transparent while being moved so you can see what's behind them.
- Each one has a **Close** button which you can use to remove it from the screen. You can also use the Window menu for this. When a window or control panel has been closed, you must use the Window menu to open it again.

## Features Which Apply Only To Windows

- Windows have **Minimize** buttons which shrink them to icons in the lower left-hand corner of the screen. Double-click on an icon to restore it to full size.
- Windows can be **resized** by dragging on side or bottom edges of the window frame or its lower right-hand corner.
- Windows *sometimes* have **scroll bars** on their right-hand or bottom edges. These appear and disappear automatically depending upon whether a window is large enough to display its entire contents at once.



# The File Browser

The **File Browser** is used to add devices and modules to a project. (Don't confuse the File Browser with the File *menu* used for loading, saving and closing projects.)

## Getting Around In The File Browser

The browser displays a list of files from the currently selected folder in the large field at bottom. The full name of this folder appears in the strip directly above this field.

If the current folder also contains **folders**, these are shown in blue at the beginning of the filename list, with "(dir)" next to each folder name. To go "down" into a folder, double-click on its name. Double-click on the blue "<.." at the top of the list to go back "up" one level in the file hierarchy (to the folder which contains the current folder). In each case, the folder name display above the filename list changes to show you where you are.

The row of buttons along the left edge of the browser show the available **disk drives** in your system. Click on them to switch directly from drive to drive.

## Adding Devices Or Modules To A Project

Click and drag on the name of a device or module (.dev or .mdl – see below). The name won't move from the list, but the cursor changes its shape to show that it's "loaded".



Let the mouse button go when the cursor is over the Project or Rack window to add the device to the project. Then hook it up via either of these windows.

**Note:** If the Project or Rack window is empty ("No Project") and Pulsar **won't let you drop a device or module** there, you need to click on **New Project** in the File menu first.

## File Browser Function Buttons

These buttons at the top of the File Browser, with functions as shown at right, are similar to those in Windows Explorer and other Windows programs. They let you perform many common file management tasks directly within Pulsar.

**Up to next folder level** is a quick alternate method for going "up" one level in the file hierarchy to the folder which contains the current folder.

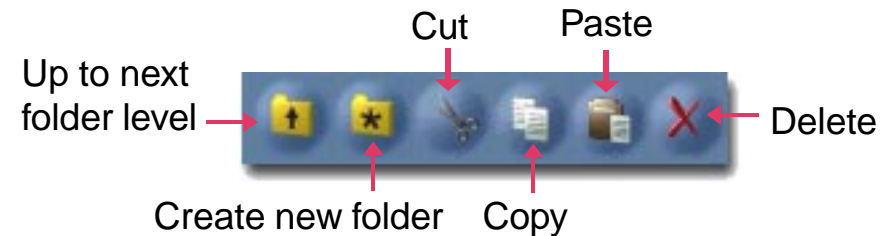
**Create new folder** creates a new folder within the current folder.

**Cut** and **Copy** work together with **Paste**. Use Cut and Paste to **move a file** as follows:

- Click on the filename to highlight it.
- Click on **Cut**.
- Switch to the destination folder and click on **Paste**.

If you use Copy instead of Cut in the above procedure, the Paste operation will **create a copy of the file** in the destination directory – the original file stays where it was.

To **delete a file or folder**, first click on its name in the list to highlight it, then click on the Delete button.



## Pulsar File Types – Filtering The View

Pulsar uses various **file types**, which it identifies via their filename extensions: **.pro/.dev/.mdl/.pre/.s/.p** = project/device/module/preset/sample(Akai)/program(Akai).

The File Browser view is pre-filtered – it shows only Pulsar file types, plus folders. Usually, you'll want to see only one Pulsar file type at a time. Click the **file type buttons** (just above the folder name display) in and out to control which file types appear in the list.

The **Dev/Smp** button in the upper right corner **switches the Browser view directly between your Pulsar device and sample (CD) folders** – a real timesaver.

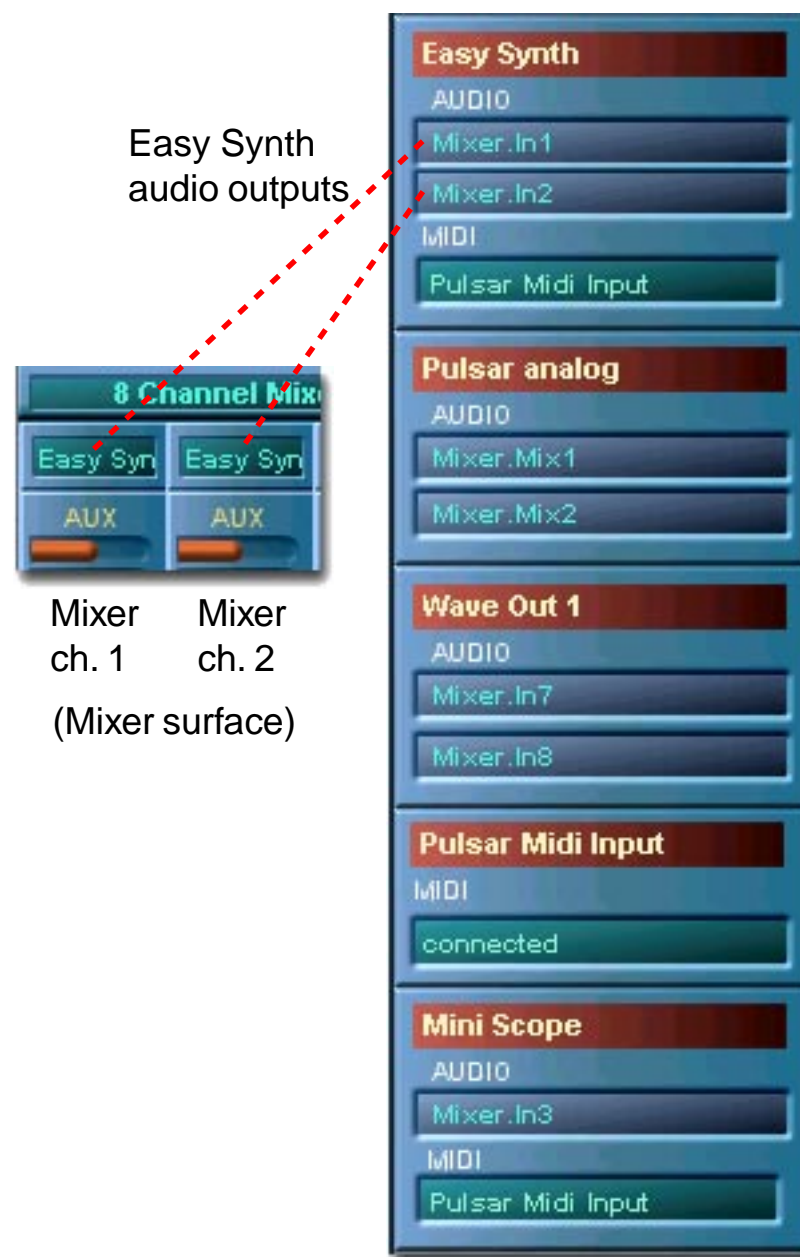
# The Rack Window

The **Rack window** gives you a simplified overview of your project. All currently loaded devices (except mixers – see below) appear here as "rack boxes", letting you see at a glance what's in your setup. Audio and MIDI connections for each device are shown as text entries in the small display fields which appear on each box.

Most **project configuration** tasks can be handled in this window, without the need to go to the Project window:

- You can **add a device** to a project by dragging its name from the File Browser into the Rack window.
- You can **make or change audio connections** between devices by clicking on an audio output field of one device's rack window representation and then on an audio input field of another device (or vice versa – the order doesn't matter). The text in both fields is updated to show that they are connected to one another.
- **MIDI connections** are handled in the same way.

**Mixers** don't appear in the Rack window, because of the large number of connections they have. However, **mixer surfaces** also work with the connection method described above. Connections can be made directly between mixer inputs/outputs and those of Rack window devices using this method (see diagram at right).



# Device Surfaces

## A Better Front Panel

Every Pulsar device has a "virtual" front panel via which you interact with it. In PulsarSpeak, this is called a **device surface**. Practically everything you can do with a Pulsar device is done via its surface. A Pulsar device surface contains an approachable (and of course, *very* attractive) layout of knobs, faders, switches and displays which invite you to *play*.

The powerful, flexible Pulsar graphics system permits the custom-crafting of device controls to fit the parameters they adjust. This extends to types of controls which have no counterpart in the "hard" world, but which help you visualize the thing they control – be it an envelope, an LFO, or whatever – or simply let you work more fluidly with it.

In turn, this flexibility lets Pulsar devices offer features which otherwise would be technically possible but simply too difficult to use.

## Moving Device Surfaces Around

Device surfaces can be moved wherever you want to put them. Just click and hold the left mouse button on an empty spot on the surface – it'll become transparent (if it doesn't, you need to pick a different spot – see below).

Now you can drag it and drop it where you like – for example, way off to one side, leaving only a small corner visible to grab hold of later. (Note: for snappier screen response while moving device surfaces and windows around, switch off the *Display windows while moving* option in the **Pulsar Settings** control panel.)

Device surfaces can overlap one another just like windows on the desktop. Click on any visible part of a partially-obscured device surface to bring it all the way "up front" again. If it's completely hidden by another device surface, just move the other surface aside so you can click on the surface you want to use.

You do need to be a bit careful about where you "grab". You can't move a surface around by grabbing one of its controls – if you do, you'll just end up adjusting the control!

Grabbing a surface by one of its open drawers (see the following section) is also ineffective for moving it around.

## The Works In A Drawer

Some Pulsar device surfaces include "drawers" containing additional controls in logical groups. These stay tucked away out of sight when not needed, to keep the surface from becoming overly large or cluttered. Some drawers even contain drawers of their own! So, when you're first

getting acquainted with a new device surface, it's a good idea to look for drawers and open them up to see what's inside.

Drawer "handles" usually appear as ridged strips with labels indicating what's inside. Click on the handle to pop the drawer open or slide it shut again.

### **Screen Cleanup – Minimizing Device Surfaces**

Every device surface has a Minimize button, generally somewhere near the upper right-hand corner of the surface. When you're using a device in your setup, but not planning to twiddle its knobs right away, you can click on this button to shrink the surface down to a tiny **icon** – a miniature version of itself. It appears along the bottom of the screen and can then be moved wherever you want.

Minimizing a device surface has no effect on the device – it stays connected and active in your setup. Only the controls are temporarily out of reach. When you want to get at them again, double-click on the icon to restore it to full size.

# Device Controls

The control and display elements of Pulsar device surfaces take on a lot of different visual forms, thanks to the advanced capabilities of the Pulsar graphics system (and a bunch of over-the-top graphic designers!) But most of them fall into just a few categories which show up again and again in different devices. These are: **knobs and faders, switches, and number/text fields**.

## Knobs And Faders

Knobs and faders are used for adjustment of **continuously-variable** parameters of all kinds – volume, filter and envelope settings, etc. To use them, you put the mouse cursor on the control – the center of a knob, or the handle of a fader – hold the left mouse button down, and move the mouse. When you let the mouse button up, the control is released and stays where you left it.

The various types of knobs and faders are basically alike except for the **mouse motion** they call for. You move the mouse cursor in circles around a knob, which rotates to "follow" the cursor. With faders, you use up-and-down or side-to-side motion, depending upon whether the fader is a vertical or horizontal one.

The mouse button must be held down while adjusting a control, but you *don't* have to keep the mouse cursor directly over a control after you click on it. In fact, a bit of

distance often helps – the **adjustment becomes smoother and finer as the mouse cursor is moved further away from the control**. With faders this means moving off to one side of the fader (above or below it, if it's a horizontal fader).

Double-clicking on a knob or a fader handle will send it directly to its **center position**. Doing so again will restore it to the position it previously had.

## Switches

**Pushbuttons** are simple – just click on them. They're either **momentary** or **push-on/push-off**.

Some **rocker** and **toggle** switches are also actually push-on/push-off – click anywhere on the switch and it'll switch to the opposite state each time. With others, you click on one end or the other to flip the switch in that direction.

Multi-position **slide switches**, such as are used for selecting oscillator or LFO waveforms, can be thought of as "stepped" faders, because you do have to "grab" the switch handle with the mouse and slide it around – just clicking on a different switch position won't make the switch go there.

## Number/text fields

These are really another type of stepped fader control – but one which doesn't look like a fader at all. Device MIDI channel select controls are generally of this type. You click and hold with the mouse directly on the number or text value and move the mouse up and down to change it.

## Knob/Number and Fader/Number Controls

Some knobs and faders have number fields attached. The control setting is displayed in the field and changes when you move the control.

You can also take it the other way around – you can click on the field and type in new values directly from the keyboard. The new value takes effect – and the knob or fader changes its position to match – when you do one of three things: hit the Enter key, click again on the field, or click somewhere else on the surface. With the first two methods, the field stays open and you can immediately type in another value.

## Envelope And Curve Editing Controls

When dealing with complex functions such as multi-point envelopes, EQ curves and so on, a graph is often the most compact, effective and natural representation.

Some Pulsar devices include graphical "widgets" for editing such curves directly. Some of these widgets are small surfaces in their own right. Each one is tailored to the function it controls – therefore, each is described in detail in the manual section for its specific device. But knowing a few simple points which apply to most of them is enough to get you started quickly:

If you see colored dots on a curve, you can:

- Grab them with the mouse and move them around.
- Double-click on them to delete them.

If you *don't* see colored dots on a curve, you can:

- Double-click on the curve to create new dots.

The curves either fit themselves smoothly to the outline of the dots, or *points*, or are actually drawn point-to-point (that's right – connect the dots!)