Operation Manual

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Introduction

Welcome!

Thank you for purchasing V-ST*ACK*!

Since Steinberg introduced the VST 2.0 plug-in format a few years back, there's been a rapid development of VST Instruments – software synthesizers and other sound sources played and controlled from within a host application. There is now a huge number of VST Instruments available, ranging from simple synthesizers and drum machines to exact software replicas of vintage synths and extremely advanced sound modules with no equivalent in hardware.

VST Instruments can often be more flexible than hardware synthesizers, allowing for total recall and full automation of all parameters, patching and mixing in the digital domain, graphic interfaces and solutions that wouldn't be possible in hardware, etc. However, any computer can only play so many VST Instruments at a time – and typically, the more advanced a VST Instrument is, the more processing power it requires.

Enter Steinberg's VST System Link! This revolutionary system makes it possible to have several computers working together as one large system, with no other requirements than ASIO compatible audio interfaces with digital audio connections. Computers connected via VST System Link will freely exchange audio and MIDI data, all in perfect sync, creating a digital audio network system.

This provides an excellent solution to the problem of CPU-hungry VST Instruments: let one computer play audio and MIDI tracks and dedicate another computer to running VST Instruments only, taking full advantage of all available processor power!

V-ST*ACK* is the perfect application for this: a stand-alone VST Instrument host, supporting up to 16 VST Instruments with full mixing capabilities and VST effect support. The VST Instruments are controlled via MIDI over VST System Link or from a regular MIDI interface (e.g. for live use) and the audio can be freely routed to any outputs on your audio interface. Since there is no editing, event handling, etc. all processing power can be focused on VST Instruments and effects!

We hope you will enjoy working with V-ST*ACK*!

Your Steinberg team.

About the program and the manual

V-ST*ACK* comes for two different operating systems or “platforms”; Windows and Mac OS X. This manual describes all features in the program, for both platforms. While all features are available for both platforms, items and naming may differ slightly – whenever this is the case it is clearly mentioned in the manual text. In other words:

- **If nothing else is said, all descriptions and procedures in the documentation are valid both under Windows and Mac OS X.**
  The screenshots are taken from the Windows version.

Key command conventions

Some key commands in V-ST*ACK* use modifier keys, some of which are different depending on the operating system. For example, the default key command for Copy is [Ctrl]-[C] under Windows and [Command]-[C] under Mac OS X.

When key commands with modifier keys are described in this manual, they are shown with the Windows modifier key first, in the following form:

[Win modifier key]/[Mac modifier key]-[key]

For example, **[Ctrl]/[Command]-[C]** means “press [Ctrl] under Windows or [Command] under Mac OS X, then press [C]”.

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Installation and requirements for Windows

About this chapter

This chapter describes the system requirements and installation procedures for V-ST*ACK* for Windows. Installing V-ST*ACK* for Mac OS X is described on page 21.

Requirements

To use V-ST*ACK*, you need the following:

- A PC with either Windows XP or Windows 2000 installed.
  A USB Port is also required.

  For more details about the computer requirements, see below.

- A compatible audio hardware.
  By audio hardware we mean an audio interface capable of recording and playing back digital audio using your hard disk as a storage medium. For use with VST System Link, the audio interface must have an appropriate ASIO driver (see page 14) and digital inputs and outputs. For using V-ST*ACK* without VST System Link, audio interfaces with Windows Multimedia or DirectX drivers can be used, although we strongly recommend ASIO drivers for best performance.

- To be able to play VST Instruments in V-ST*ACK* without using VST System Link, you will also need at least one MIDI interface.

Computer requirements

Hardware

The absolute minimum requirements for running V-ST*ACK* on a PC are as follows:

- A 233 MHz Pentium computer with 128 MB of free RAM or an equivalent AMD processor.
  Recommended configuration for optimum performance: Dual PIII or Athlon procesor, 1 GHz or faster with 512 MB RAM.

RAM

VST Instruments don't necessarily require a lot of RAM. However, if you are using a software sampler or drum machine, these typically play the samples from RAM memory. This means the amount of RAM in the computer limits the number (and size) of samples you can play. So, as a general rule, "the more RAM the better" applies.

Wheel mouse

Although a regular mouse will work perfectly fine with V-ST*ACK*, we recommend that you use a wheel mouse, as this will speed up parameter editing considerably (allowing you to change parameter values by scrolling).

Audio hardware

V-ST*ACK* will run with audio hardware that meets the following basic specifications:

- Stereo.
- 16 bit.
- Support of at least the 44.1kHz sampling rate.
- Is supplied with a special ASIO driver, or a DirectX or Windows Multimedia compatible driver as described below.

❒ **To be able to use V-ST*ACK* with VST System Link you must have an audio interface with ASIO drivers and digital inputs and outputs!**

About drivers

A driver is a piece of software that allows a program to communicate with a certain piece of hardware. In this case, the driver allows V-ST*ACK* to use the audio hardware. For audio hardware, there are three different cases, each requiring different driver configurations:

If the audio hardware has a specific ASIO driver

Professional audio cards often come with an ASIO driver written especially for the card. This allows for communication directly between V-ST*ACK* and the audio card. As a result, audio cards with specific ASIO drivers can provide lower latency (input-output delay), which is crucial when using VST Instruments. Furthermore, the ASIO driver provides the means to communicate with another computer via VST System Link.

Audio card-specific ASIO drivers are provided by the card manufacturers. Make sure to check the manufacturer's web site for the latest driver versions.

❒ **We strongly recommend that you use ASIO compatible audio hardware (even if you don't plan to use VST System Link).**

If the audio card communicates via DirectX

DirectX is a Microsoft "package" for handling various types of Multimedia under Windows. V-ST*ACK* supports DirectX, or to be more precise, DirectSound, which is a part of DirectX used for audio input and output. This requires two types of drivers:

- A DirectX driver for the audio card, allowing it to communicate with DirectX. If the audio card supports DirectX, this driver should be supplied by the audio card manufacturer. If it isn't installed with the audio card, please check the manufacturer's web site for more information.
- The ASIO DirectX Full Duplex driver, allowing V-ST*ACK* to communicate with DirectX. This driver is included with V-ST*ACK*, and does not require any special installation.

- **DirectX drivers allow you to use V-ST*ACK* as a stand-alone VST Instrument host, played via a regular MIDI interface. VST System Link functionality is not supported.**

If the audio card communicates via Windows Multimedia system

If the card is Windows compatible, it can be used in V-ST*ACK*. The card then communicates with Windows Multimedia system, which in turn communicates with V-ST*ACK*. This requires two types of drivers:

- A Windows Multimedia driver for the audio card, allowing it to communicate with the Windows Multimedia system. This driver should be supplied by the audio card manufacturer, and is normally installed when you install the audio card.
- The ASIO Multimedia driver, allowing V-ST*ACK* to communicate with the Windows Multimedia system. This driver is included with V-ST*ACK*, and does not require any special installation.

- **Windows Multimedia drivers allow you to use V-ST*ACK* as a stand-alone VST Instrument host, played via a regular MIDI interface. VST System Link functionality is not supported.**
  Note also that with Windows Multimedia drivers, the latency is often too high to allow comfortable real-time VST Instrument playing.

Hardware installation

Installing the audio hardware and its driver

1. Install the audio card and related equipment in the computer, as described in the card's documentation.

2. Install the driver for the card.
   There are three types of drivers that could apply: card-specific ASIO drivers, DirectX drivers and Windows Multimedia drivers:

Specific ASIO driver

If your audio card has a specific ASIO driver it may be included with the audio card, but you should always make sure to check the audio card manufacturer's web site for the most recent drivers. For details on how to install the driver, refer to the manufacturers instructions.

DirectX driver

If your audio card is DirectX compatible, its DirectX drivers will most likely be installed when you install the card (as with the Windows Multimedia driver). If you have downloaded special DirectX drivers for the audio card, you should follow the manufacturer's installation instructions.

Windows Multimedia driver

These drivers are normally included with all types of regular PC audio cards. Some are even included with Windows itself. Depending on whether the audio card is "Plug'n'Play compatible" or not, the installation of the card is done differently:

- If the card is "Plug'n'Play compatible", Windows will detect the card once it is plugged in, and ask for the necessary driver disks.

- If not, you need to use the "Add New Hardware" feature in the Control Panel to install the card and its drivers.
  Refer to the documentation that comes with the card.

❒ **Should you have an audio card but no driver, please check the manufacturers web site, or ask your music or computer dealer for help.**

Testing the Card

To make sure the audio card will work as expected, perform the following two tests:

- Use any software included with the audio card to make sure you can play back audio without problems.
- If the card is accessed via a standard Windows driver, use the Media Player application (included with Windows) to play back audio.

Installing a MIDI interface

Installation instructions for a MIDI interface should be included with the product. However, here's an outline of the necessary steps:

1. Install the interface inside your computer or connect it to a "port" (connector) on the computer.
   Which is right for you depends on which type of interface you have.
2. If the interface has a power supply and/or a power switch, turn it on.
3. Install the driver for the interface, as described in the documentation that comes with the interface.
   It is likely that you will need a CD ROM or floppy disk supplied by the manufacturer of the MIDI interface. Also please make sure to check the manufacturer's web site for updated drivers.

Installing V-ST*ACK*

Defragment the hard disk

If you plan to record audio on a hard disk where you have already stored other files, now is the time to *defragment* it. Defragmentation reorganizes the physical allocation of space on the hard disk in order to optimize its performance using a special defragmentation program.

❒ **It is crucial to the audio recording performance that your hard disk is optimized (defragmented). You should make sure to defragment regularly.**

Installation

To install V-ST*ACK*, simpy run the V-ST*ACK* installer application and follow the directions in the dialogs that appear.

- At one point during the installation, you will be asked to fill in your serial number.
  You should have received this serial number when purchasing and downloading the program over the internet. If you purchased the CD version of the program, you will find the serial number on the registration card in your package.

This completes the installation of your V-ST*ACK* program!

Register your software!

Registering your software will make sure you are entitled to technical support and kept aware of updates and news regarding V-ST*ACK*.

If your computer has a working Internet connection, you can register online. From the Steinberg V-ST*ACK* program group on the Windows Start menu, select the Registration item and follow the instructions. You can also select this option from the Help menu of the program.

If your computer does not have a working Internet connection, you can also register from another computer.

The items on the start menu

If you open the Windows Start menu, you will find a V-ST*ACK* group on the “Programs” submenu. This contains the following items:

- V-ST*ACK* Operation Manual.
  Opens the manual you are reading right now.

- ASIO DirectX Full Duplex Setup.
  This is where you make settings if your audio hardware uses DirectX for audio playback and recording.

- ASIO Multimedia Setup.
  This opens a dialog with settings for the ASIO (Audio Stream Input Output) system, which handles audio playback in V-ST*ACK* if you are using the ASIO MME driver. This dialog can also be opened from within V-ST*ACK*. See the chapter "Setting up your system" in this manual.

- V-ST*ACK*.
  This launches the actual program.

  There may also be additional items (such as Readme files) available on the Start menu. Please read all such files before launching V-ST*ACK*, since they may contain late information not included in the manual.

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Installation and requirements for Mac OS X

About this chapter

This chapter describes the system requirements and installation procedures for V-ST*ACK* for Mac OS X. Installing V-ST*ACK* for Windows is described on page 11.

Requirements

To use V-ST*ACK*, you need the following:

- A Macintosh computer running Mac OS X (version 10.2 or later).

  For more details about the computer requirements, see below.

- Mac OS X compatible audio hardware.
  While the built-in audio hardware of the Macintosh may be adequate for basic audio playback, we strongly recommend audio hardware that is specifically designed for audio recording and music applications.

For MIDI

- At least one MIDI interface.
- At least one MIDI instrument.
- Any audio equipment necessary to listen to the sound from your MIDI devices.

Computer requirements

Hardware – Mac

The absolute minimum requirements for running V-ST*ACK* on a Macintosh are as follows:

- Macintosh with a G4 processor, 256 MB RAM and OS X 10.2.
  We recommend 512 MB RAM or more.

RAM

Audio work requires a lot of RAM! In fact, there is a direct relation between the amount of available RAM and the number of audio channels that you can have running. As specified earlier, 256 MB is the minimum requirement, but as a general rule “the more the better” applies.

Hard disk size

- The size of the hard disk determines how many minutes of audio you will be able to record.
  Recording one minute of stereo CD quality audio, requires 10 MB of hard disk space. That is, eight stereo tracks in V-ST*ACK* use up at least 80 MB of disk space per recording minute.

Hard disk speed

The speed of the hard drive also determines the number of audio tracks you can run. That is the quantity of information that the disk can read, usually expressed as “sustained transfer rate”. Again, “the more the better” applies.

Mouse

Although a regular mouse will work perfectly fine with V-ST*ACK*, we recommend that you use a wheel mouse with two mouse buttons.

- Having a wheel mouse will speed up value editing and scrolling considerably.
- If your mouse has two mouse buttons you should program the right mouse button to generate a [Ctrl]-click (this is typically the default behaviour of the right mouse button).
  This will allow you to bring up context menus by right clicking.

Audio hardware

V-ST*ACK* will run with audio hardware that meets the following basic specifications:

- Stereo.
- 16 bit.
- Support of at least the 44.1kHz sampling rate.
- Is supplied with proper Mac OS X (Core Audio) drivers.

A basic rule of thumb is: if the hardware works under Mac OS X, you can use it in V-ST*ACK*.

- **V-ST*ACK* also supports audio hardware with Mac OS X compliant ASIO drivers.**
  ASIO drivers may provide special support for routing, monitoring, synchronization, etc. Note that the ASIO drivers must be written specifically for Mac OS X – Mac OS 9.X ASIO drivers cannot be used.

Using the built-in audio hardware of the Macintosh

As of this writing, all current Macintosh models have built-in 16 bit stereo audio hardware. Depending on your preferences and requirements, this may be sufficient for use with V-ST*ACK* (although we recommend using multi-output audio hardware). The built-in audio hardware is always available for selection in V-ST*ACK* – you don't need to install any additional drivers.

❒ **Some Macintosh models have audio outputs but no inputs. This means that you can only play back audio – recording is not possible without additional audio hardware.**

Hardware installation

Installing the audio hardware and its driver

1. Make sure you have the latest Mac OS X drivers for the audio hardware!
   Please check the manufacturer's web site for the latest versions.
2. Install the driver(s) for the audio hardware.
   This is usually done by running an installer application.
3. Install or connect the audio interface, as described in the card's documentation.

Installing a MIDI interface

1. Make sure you have the latest Mac OS X drivers for the MIDI interface!
   Please check the manufacturer's web site for the latest versions.
2. Install the driver(s) for the interface.
   This is usually done by running an installer application.
3. Connect the MIDI interface to the computer, as described in the interface documentation.

Installing V-ST*ACK*

Defragment the hard disk

If you plan to record audio on a hard disk where you have already stored other files, now is the time to *defragment* it. Defragmentation reorganizes the physical allocation of space on the hard disk in order to optimize its performance using a special defragmentation program.

❒ **It is crucial to the audio recording performance that your hard disk is optimized (defragmented). You should make sure to defragment regularly.**

Installing V-ST*ACK*

To install V-ST*ACK*, simpy run the V-ST*ACK* installer application and follow the directions in the dialogs that appear.

- At one point during the installation, you will be asked to fill in your serial number.
  You should have received this serial number when purchasing and downloading the program over the internet. If you purchased the CD version of the program, you will find the serial number on the registration card in your package.

  This completes the installation of your V-ST*ACK* program! The installation procedure puts all files in the right places, automatically.

  You can now start the program from your Applications folder. When you launch V-ST*ACK* for the first time, you will be asked whether you want to add a V-ST*ACK* icon to the Dock.

Register your software!

Registering your software will make sure you are entitled to technical support and kept aware of updates and news regarding V-ST*ACK*.

If your computer has a working Internet connection, you can register online. Launch V-ST*ACK* and select “Register Online…” from the V-ST*ACK* menu.

If your computer does not have a working Internet connection, you can also register from another computer.

4

Setting up your system

About this chapter

This chapter describes how to make the necessary connections and set up audio and MIDI in V-ST*ACK*. As already mentioned, there are two different ways to use the program:

- As a stand-alone VST Instrument host, played via MIDI from a regular MIDI interface.
- With VST System Link, where the VST Instruments are played by MIDI signals from another computer in the VST System Link network.

Connections and settings are different for these two methods, and they are described separately on the following pages.

- **If you just want to get started and try out V-ST*ACK*, we recommend that you start with setting up the program for stand-alone (non-VSL) use (see page 29) and then move on to the chapters about VST Instruments and mixing.**
  After you've got to know the program, go back to the section about setting up VST System Link (see page 35).

This chapter also contains a section about optimizing your performance – see page 45.

Setting up audio (stand-alone)

This section describes how to set up your system for basic VST Instrument playback – setting up VST System Link is described on page 35.

❒ **Always make all connections with all equipment turned off!**

Connecting audio

Making audio connections is a relatively simply matter in V-ST*ACK*: you just need to connect the outputs on your audio interface to your listening equipment, recording devices, etc.

- If you are using an audio interface with a single stereo output, you would typically connect the outputs to an amplifier, powered monitors, headphones, etc.
- If your audio interface has more than a single stereo output, you would typically connect the outputs to a hardware mixer.

Driver and helper application setup

The audio hardware setup application

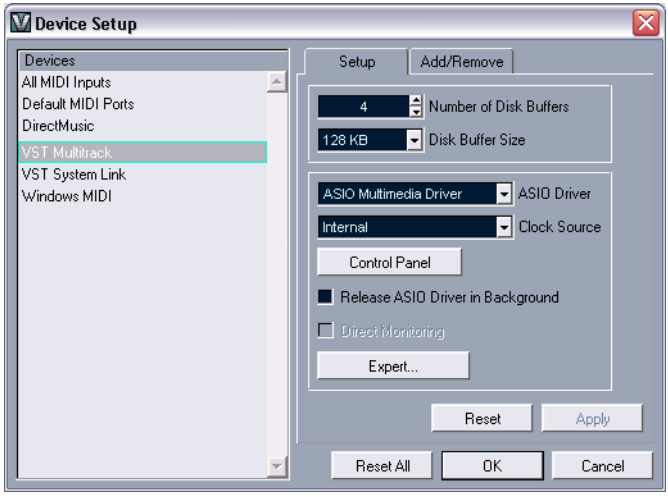
Most audio cards come with one or more small applications that allow you to configure the inputs of the hardware to your liking.
This includes:

- Selecting which outputs are active.
- Setting levels for the outputs, so that they match the equipment you use for monitoring.

For more details about your audio hardware setup application please refer to the documentation that came with the hardware.

VST Multitrack setup – Basic Settings

1. In V-ST*ACK*, select Device Setup from the Devices menu and click on VST Multitrack in the list.
   Make sure the "Setup" tab is selected.



   The VST Multitrack panel in the Device Setup dialog.

2. Select your audio hardware from the ASIO Driver menu.
   There may be several options here that all refer to the same audio hardware:

❒ **We strongly recommend that you access your hardware via an ASIO driver written specifically for the hardware, if available. If no ASIO driver is installed we recommend that you check with your audio hardware manufacturer if they have an ASIO driver available, for example for download via the Internet.**

3. Bring up the control panel for the audio hardware and adjust the settings as recommended by the audio hardware manufacturer.

- Normally, you can open the control panel by clicking the Control Panel button in the VST Multitrack panel.
  The control panel that appears when you click this button is provided by the audio hardware manufacturer and not V-ST*ACK* (unless you use DirectX or MME, see below). Hence it will be different for each audio card brand and model. The settings may include options for buffering, synchronization, digital input and output formats etc.

  The Control panels for the ASIO Multimedia and ASIO DirectX drivers are an exception, as they are provided by Steinberg. They provide their own help information, opened by clicking the Help button in the respective dialog. See also the notes below.

- If you are using non-ASIO audio hardware under Mac OS X, you will find the control panel for your audio hardware in the System Preferences ("Other" section), opened from the Apple menu or from the Dock.
  If you are using the built-in audio hardware of the Macintosh, you use the "Sound" control panel in the System Preferences to set levels, balance, etc.

4. If you plan to use several audio applications simultaneously, you may want to activate the option "Release ASIO Driver in Background". This will allow another application to play back via your audio hardware even though V-ST*ACK* is running.
   The application that is currently active (i.e. the "top window" on the desktop), will get access to the audio hardware. Make sure that any other audio application accessing the audio hardware is also set to release the ASIO (or Mac OS X) driver so V-ST*ACK* can use it when becoming the active application again.

5. Click Apply and then OK to close the dialog.

If you are using audio hardware with a DirectX driver (Windows only)

If your Windows audio hardware doesn't have a specific ASIO driver, a DirectX driver is the next best option for stand-alone use. An ASIO DirectX driver is available with V-ST*ACK*, "ASIO DirectX Full Duplex".

❒ **Windows 2000 users should use DirectX version 8.1.**

When the ASIO DirectX Full Duplex driver is selected in the Device Setup you can open the ASIO Control Panel and adjust the following settings (for more details, click the Help button in the control panel):

- Direct Sound Ports
  In the list to the left in the window, all available Direct Sound output ports are listed. In many cases, there will only be one port in each list. To activate or deactivate a port in the list, click the check box in the left column.If the check box is ticked, the port is activated.
- You can edit the Buffer Size and Offset settings in this list if necessary, by double clicking on the value and typing in a new value.
  In most cases the default settings will work fine. The audio buffer is used when audio data is transferred between V-ST*ACK* and the audio card. Having a large buffer ensures that playback will occur without glitches. However, the time between the moment V-ST*ACK* sends out the data and when it actually reaches on the output the "latency" will be longer.

If you are using audio hardware with a Windows Multimedia (MME) driver (Windows only)

When you select the ASIO Multimedia Driver for the first time, the system will ask you whether you want to test the configuration. We strongly recommend that you perform this test. If it fails, or if you for other reasons need to make adjustments to your ASIO Multimedia configuration, click the Control Panel button to open the ASIO Multimedia Setup control panel included with V-ST*ACK*. This control panel comes with an HTML Help describing the features and procedures.

Setting up MIDI (stand-alone)

This section describes how to connect and set up MIDI for basic VST Instrument playback – setting up MIDI with VST System Link is described on page 43.

❒ **Always make all connections with all equipment turned off!**

Making connections

Since V-ST*ACK* doesn't control external instruments and sound modules via MIDI, we don't have to worry about any MIDI devices other than the MIDI interface and the keyboard (or similar) you will use to play the VST Instruments:

1. Connect a MIDI cable from the MIDI output of your MIDI keyboard to a MIDI input on your MIDI interface.
2. If your MIDI interface has more than one input, you may want to connect another keyboard or MIDI controller to that, in the same way.
   For each VST Instrument in V-ST*ACK* you can specify which MIDI input should be used – this allows you to play several different VST Instruments at the same time if you like.

- **There is one case when you need to use two-way MIDI connections: if you are using a remote control device to control the Mixer in V-ST*ACK*.**
  Some of these devices feature "MIDI feedback" in the form of indicators, displays or motorized controls on the device. For these to work properly you need to connect a MIDI cable from the MIDI Out on your MIDI interface to the MIDI In on the remote device. See page 124 for details.

Setting up MIDI ports in V-ST*ACK*

The Device Setup dialog lets you set up your MIDI system in the following ways:

- **Note: After changing a setting in the Device Setup dialog, you should click Apply and then click OK to close the dialog.**

Showing or hiding MIDI Ports

Under Windows, the MIDI ports are listed in the Device Setup dialog on the DirectMusic page and/or the Windows MIDI page (depending on your system). By clicking in the "Show" column for a MIDI input or output, you can specify whether or not it should be listed on the MIDI pop-up menus in the program.

Under Mac OS X, you can hide or show MIDI ports on the MIDI System page in the Device Setup dialog.

- **Hiding a MIDI port from view does not turn it off if it's already selected as input for a VST Instrument.**

Setting up the "All MIDI Inputs" option

When you play VST Instruments in V-ST*ACK*, you can specify which MIDI input each instrument should use. However, you can also select the "All MIDI Inputs" option, which causes any MIDI data from any MIDI input to be sent to the instrument.

The All MIDI Inputs page in the Device Setup dialog allows you to specify which inputs should be included when you select All MIDI Inputs for a VST Instrument. This can be especially useful if your system provides several instances of the same physical MIDI input – by deactivating the duplicates you make sure only the desired MIDI data is sent to the instrument.

All done!

Now you are ready to play VST Instruments in V-ST*ACK* from your MIDI controller keyboard. If you want to set up the program for VST System Link, read on. If you want to get to know the program, go to page 49.

Setting up VST System Link

Introduction

VST System Link is a network system for digital audio that allows you to have several computers working together in one large system. Unlike conventional networks it does not require Ethernet cards, hubs, or CAT-5 cables; instead it uses the kind of digital audio hardware and cables you probably already possess in your studio.

VST System Link has been designed to be simple to set up and operate, yet give enormous flexibility and performance gains in use. It is capable of linking computers in a “ring” network (the System Link signal is passed from one machine to the next, and eventually returns to the first machine). VST System Link can send its networking signal over any type of digital audio cable, including S/PDIF, ADAT, TDIF, or AES, as long as each computer in the system is equipped with a suitable ASIO compatible audio interface.

In the case of V-ST*ACK*, VST System Link allows you to use the program as a dedicated VST Instrument device, played and controlled from another computer in the VST System Link network. You may listen to the audio signals from the VST Instruments in V-ST*ACK* directly from the V-ST*ACK* computer, or you can route them to the application on the other computer.

Requirements

The following equipment is required for VST System Link operation with V-ST*ACK*:

- One computer running V-ST*ACK*.
- At least one other computer running a VST System Link compatible application (e.g. Cubase SX, Cubase 5.2s or Nuendo 1.6 or later).
  The computers can be of the same type or use different operating systems. For example, you can link an Intel-based PC to an Apple Macintosh without problems.
- Each computer must have audio hardware with specific ASIO drivers, installed and working.
- The audio hardware must have digital inputs and outputs.
  Of course, to be able to connect the computers the digital connections must be compatible (i.e. the same digital formats and connection types must be available).
- At least one digital audio cable for each computer in the network.
- To be able to hear the audio, one of the computers needs to have more than one physical set of audio outputs.
  When using V-ST*ACK* with e.g. Cubase SX, you would typically want the Cubase SX computer to have one set of outputs (digital) connected to the V-ST*ACK* computer via VSL and another set of outputs (analog or digital) connected to your listening equipment.

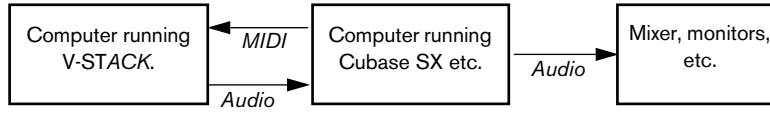
Making connections

Below, we will assume that you are connecting two computers. Should you have more than two computers, it's still best to start with two and add the others one by one once the system is working – this makes troubleshooting easier if you run into problems. For two computers, you will need two digital audio cables, one in each direction:

1. Connect a digital audio cable from the digital output of the V-ST*ACK* computer to the digital input of the other VST System Link computer.
2. Connect the other cable from the digital output of another VST System Link computer to the digital input of the V-ST*ACK* computer.

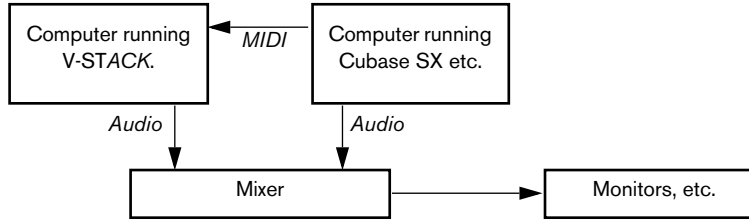
- If a card has more than one set of inputs and outputs, choose whichever one that suits you – for simplicity usually the first set is best.

3. Connect the other VST System Link computer to your listening equipment, using an additional set of outputs (analog or digital).
With this connection, signals will be sent in the following way:



This setup allows you to mix all sound sources in the other application (VST Instruments from V-ST*ACK* and audio tracks from the other application), with common mixer automation.

- **If there are additional outputs available for both computers, you could also consider connecting both computers to an external mixer.**
This would give you the following signal paths:



With this setup, a mixer is required (if you want to listen to the audio from both computers). All mixing is done separately for the two applications and you cannot automate the mixing of the VST Instrument channels.

Setting up clock sync

Before you proceed you need to make sure that the clock signals on your ASIO cards are synchronized correctly. This is essential when cabling any kind of digital audio system, not just VST System Link.

❒ **All digital audio cables by definition always carry a clock signal as well as audio signals, so you don't need to use a special Word Clock input and output for this (although you may find that you get a slightly more stable audio system if you do, especially when using multiple computers).**

The Clock Mode or Sync Mode is set up in the audio hardware's ASIO Control Panel. In V-ST*ACK*, you proceed as follows:

1. Pull down the Devices menu and open the Device Setup dialog.
2. Select the VST Multitrack device and make sure the Setup tab is selected to the right.
3. Click the Control Panel button.
   The ASIO Control Panel appears.
4. Open the ASIO Control Panel on the other computer as well.
   Please check the documentation for the other VST System Link application for details on how to open the ASIO Control Panel (hint: in Steinberg's Nuendo and Cubase SX, the procedure is the same as in V-ST*ACK*).
5. Now, you need to make sure that one audio card (and only one!) is set to be the Clock Master, and all the other cards must be set to listen for the clock signal coming from the Clock Master i.e. they must be Clock Slaves.
   The naming and procedure for this differs depending on the audio hardware – consult its documentation if required.

- Typically, the ASIO Control Panel for an audio card contains some indication of whether the card receives a proper sync signal or not, and the sample rate of that signal.
  This is a good indication that you have connected the cards and set up clock sync properly. Check your audio hardware's documentation for details.

❒ **It's very important that one and only one card is the clock master, otherwise the network cannot function correctly. Once you have set this up, all the other cards in the network will take their clock signal from this card automatically.**

The only exception to this procedure is if you are using an external clock – which could be from a digital mixing desk or special Word Clock synchronizer for example. If so, you must then leave all your ASIO cards in Clock Slave or AutoSync mode, and make sure that each of them is listening for the signal coming from the synchronizer, usually passed through your ADAT cables or Word Clock connectors in a daisy chain fashion.

Minimizing the latency

The general definition of latency is the amount of time it takes any system to respond to whatever messages are sent to it. For example, if your system's latency is high and you play VST instruments in real time, you will get a noticeable delay between when you press a key and when you hear the sound of the VST instrument. Nowadays, most ASIO-compatible audio cards are capable of operating with very low latencies. Also, all VST applications are designed to compensate for latency during playback, making the playback timing tight.

However, the latency time of a VST System Link network is the total latency of all the ASIO cards in the system added together. Therefore it's extra important to minimize the latency times for each computer in the network.

- **The latency does *not* affect the synchronization – it's always perfectly in time. But, it can affect the time it takes to send and receive MIDI and audio signals, or make the system seem sluggish.**

  To adjust the latency of a system, you typically adjust the size of the buffers in the ASIO Control Panel – the lower the buffer size, the lower the latency. Generally speaking it's best to keep to fairly low latencies (buffer sizes) if your system can handle it – about 12 ms or less is usually a good idea.

Setting up your software

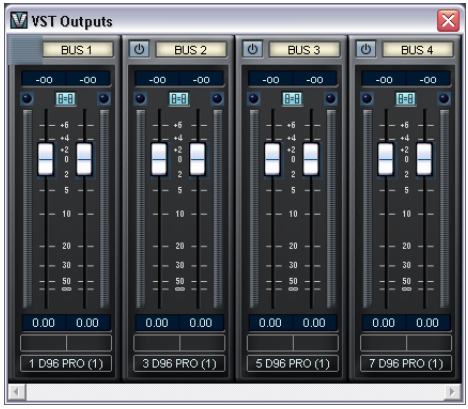
Now it's time to set up your programs. For details on how to perform the steps below in the other VST System Link application, see its documentation.

Setting up inputs and outputs

1. In the other VSL application, enable the desired number of outputs.
   You need one output bus (digital output) for VST System Link connected to the V-ST*ACK* computer, and one or more output buses (analog or digital outputs) connected to your listening equipment, mixer, etc.

2. Enable the desired number of audio inputs in the other application.
   To make it simple you will probably want to enable all inputs available in the cable you are using. For example, if you are using an ADAT connection this would mean activating the first four stereo input pairs. See the documentation for the program for details on how to do this.

3. In V-ST*ACK*, open the VST Outputs window from the Devices menu.
   This shows all available output buses – the number of stereo buses corresponds to the number of outputs on your audio interface.



4. Enable the output buses you need.
   Usually these should match up to the input buses you enabled in the other application. In our ADAT example, this would mean the first four stereo outputs.

Now, the audio output of the VST Instruments in V-ST*ACK* will be sent via the digital connection into the other computer. However, there's still no MIDI connection – first you have to activate VST System Link.

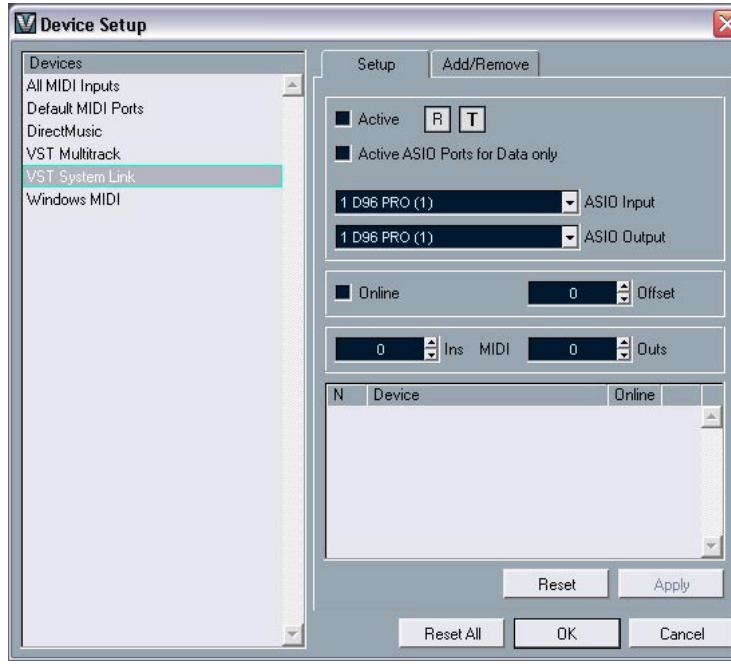
Activating VST System Link

After setting up the inputs and outputs, you now need to define which input/output should carry the actual VST System Link information.

The System Link networking signal is carried on only one bit of one channel. This means that if you have an ADAT based system which normally carries eight channels of 24-bit audio, once you activate VST System Link you will have seven channels of 24-bit audio and one channel of 23-bit audio (the least significant bit of this last channel is what we will use for networking). In practice this makes no discernible difference to the audio quality, since you will still have around 138dB headroom on this channel.

To set things up we need to open the VST System Link panel:

1. Open the Device Setup dialog on the Devices menu.
2. Select the VST System Link device and make sure the Setup tab is selected to the right.



3. Use the ASIO Input and ASIO Output pop-up menus to define which channel should be the networking channel (and thus become a 23-bit audio channel, in our example).
   Quite often you will be able to just leave these pop-ups the way they are.

4. Click the Active checkbox at the top of the panel.

5. Repeat the steps above for every computer on the network.

   As the computers are made active, you should see the small T (Transmit) and R (Receive) lights flashing on each active computer, and the name of each computer should appear in the list at the bottom of the pane. Each computer is assigned a random number – don't worry about this, it's just so the network knows internally which one is which.

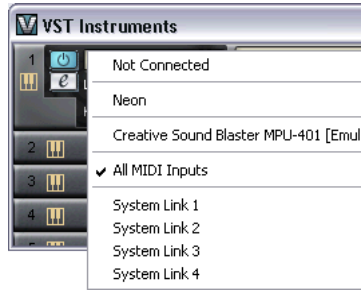
- You can double click on the name in bold (which is the name of the computer you're currently working on) and set it to whatever other name you wish.
  This name will appear in the System Link window of every computer on the network.

- **If you don't see the name of each computer appearing once you have made it active, you may have to check your settings.**
  Go through the procedure above again and make sure that all ASIO cards are listening to the digital clock signals correctly, and that each computer has the correct inputs and outputs assigned to the System Link network.

Setting up MIDI for VST System Link

VST System Link supplies up to 16 MIDI ports, each with 16 channels. You set this up as follows:

1. In the VST System Link Setup tab in V-ST*ACK*, use the MIDI Ins and Outs value boxes to specify the number of MIDI input ports you need.
   For V-ST*ACK* you don't need any MIDI output ports.
2. In the other application, specify the same number of MIDI output ports.
3. If you now check the MIDI input pop-up menu for a VST Instrument in V-ST*ACK*, you will find the specified System Link ports added to the list of MIDI inputs.
   Similarly, MIDI tracks in the other application will have a number of System Link MIDI output ports.



To route a MIDI track from the other application to a VST Instrument in V-ST*ACK*, proceed as follows:

4. Select a System Link port as output for the MIDI track.
5. Select the same System Link port on the MIDI input pop-up menu for the VST Instrument in V-ST*ACK*.

   Now, any MIDI data played back on the MIDI track is routed to the VST Instrument. To play the VST Instrument live, you would need to activate MIDI thru/monitoring for the track or record enable it (depending on the application), so that incoming MIDI is routed to the track's output (i.e. to the VST Instrument in V-ST*ACK*).

The “Active ASIO Ports for Data only” setting

If you are sending huge amounts of MIDI data at once, there is a small possibility that you might run out of bandwidth on your VST System Link network. This will manifest itself by notes “choking” or timing becoming erratic.

If this happens, you can devote more bandwidth to MIDI by selecting Active ASIO Ports for Data only in the VST System Link Setup panel. When this is active, the VST System Link information will be sent on the entire channel instead of just one bit, more than enough for all the MIDI you could ever hope to use. The downside is that you can no longer use this ASIO channel for audio transfer (do not connect it to a speaker!), thus leaving you only 7 channels of audio in our ADAT cable example. Depending on how you work might be a reasonable compromise.

Optimizing audio performance

This section of the chapter gives you some hints and tips on how to get the most out of your V-ST*ACK* system, performance-wise. Some of this text refers to hardware properties and can be used as a guide when upgrading your system. This text is very brief. Look for details and current information at www.steinberg.net!

Two aspects of performance

There are two distinct aspects of performance in respect to V-ST*ACK*:

Tracks and effects

Simply put: the faster your computer, the more tracks, effects and EQ you will be able to play. Exactly what constitutes a "fast computer" is a science almost in itself, but some hints are given below.

Short response times (latency)

Another aspect of performance is response times. Latency is a phenomenon based on the fact that in a computer, audio has to be "buffered" (stored) in small chunks during various steps of the recording and playback process. The more and larger those chunks, the higher the latency.

High latency is most troublesome when playing VST Instruments and when monitoring through the computer, that is when listening to a live audio source via the V-ST*ACK* Mixer and effects. However, very long latency times (several hundred milliseconds) can hamper other processes like mixing, since e.g. a fader movement will affect the audio noticeably late.

While Direct Monitoring and other techniques reduce the problems associated with very long latency times, a system that responds fast will always be more convenient to work with.

- Depending on your audio hardware, it may be possible to "trim" your latency times, usually by lowering the size and number of buffers.
  For details, refer to the audio hardware documentation, or, if you are using a DirectX or MME driver under Windows, the HTML Help.

System factors that affect performance

CPU and processor cache

It goes without saying that the faster the computer processor, the better. But there are a number of factors that affect the apparent speed of a computer: the bus speed and type (PCI is strongly recommended), the processor cache size and of course, the processor type and brand.

V-ST*ACK* relies heavily on floating point calculations. When shopping for a processor, please make sure you get one that is powerful in calculating floating point arithmetics.

Audio hardware and driver

The hardware and its driver can have some effect on regular performance. A badly written driver can reduce the performance of your computer. But where the hardware driver design makes the most difference is with latency.

❒ **Again, we strongly recommend that you use audio hardware for which there is a specific ASIO driver, even if you don't plan to use VST System Link! ASIO drivers written specifically for the hardware are more efficient than MME or DirectX and normally produce shorter latency times.**

This is especially true when using V-ST*ACK* for Windows:

- Under Windows, ASIO drivers written specifically for the hardware are more efficient than MME or DirectX and normally produce shorter latency times.
- Under Mac OS X however, audio hardware with properly written Mac OS X (Core Audio) drivers can be very efficient and produce very low latency times.

Making settings that affect performance

Choosing a driver for your audio hardware

As described on page 30, it is recommended to install and use a standard ASIO driver if available for your specific hardware. Check the manufacturers web site for the latest drivers etc.

Making audio buffer settings

Audio buffers affect how audio is sent to and from the audio hardware. The size of the audio buffers affect both the latency and the audio performance. Generally, the smaller the buffer size, the lower the latency. On the other hand, working with small buffers can be demanding for the computer. If the audio buffers are too small, you may get clicks, pops or other audio playback problems.

- Under Mac OS X, you can adjust the size of the buffers on the VST Multitrack page in the Device Setup dialog.
  You may also find buffer settings in the control panel for the audio hardware.
- Under Windows, you adjust the buffer size settings in the control panel for the audio hardware (opened by clicking the Control Panel button on the VST Multitrack page in the Device Setup dialog).

The Expert settings

In the VST Multitrack panel you will find a button called “Expert…”. Normally you will not need to touch these settings, but if you run into problems with audio playback you should investigate whether changing these settings will help you. Generally, they allow you to adjust how much processing power is used for recording and playing back audio.

Optimizing processor scheduling (Windows only)

To get the lowest possible latencies when using ASIO under Windows 2000 or XP (on a single CPU system), the system performance has to be optimized for background tasks:

Windows 2000

1. Open the Control Panel from the Start menu and select System.
2. Select the Advanced tab and click the Performance Options button.
3. In the dialog that appears, select “Optimize performance for: Background services”.
4. Click OK to close the dialogs.

Windows XP

1. Open the Control Panel from the Start menu and select System.
2. Select the Advanced tab and click the Settings button in the Performance section.
   The Performance Options dialog appears.
3. Select the Advanced tab.
4. In the Processor Scheduling section, select “Adjust for best performance of: Background services”
5. Click OK to close the dialogs.

Related Information (Windows only)

ACPI vs. Standard PC mode

Windows 2000 users should consider the important information relating to audio performance as presented on the Steinberg Knowledge Base. The address is “http://service.steinberg.net/knowledge_pro.nsf/show/acpi_and_audio_performance”.

5

Guided tour

The main windows in V-ST*ACK*

The Mixer

The Mixer is where you mix your VST Instrument channels, that is, adjust the levels (volume), stereo panning, effect sends, EQ, insert effects, etc. There are also four group channels, for submixing, etc.

Channel Settings

The Channel Settings window is used for adding effects and EQ to individual audio channels. Each channel in the Mixer has its own Channel Settings window.

VST Instruments

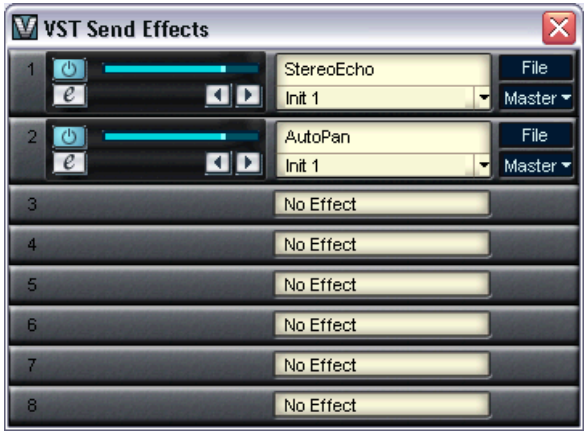
This is where you activate and set up your VST Instruments (up to 16).

You can select a preset for the VST Instrument from the Preset pop-up menu or by clicking the arrow buttons. Note that each active VST Instrument slot has a MIDI input pop-up menu, allowing you to route MIDI directly to each VST Instrument.

You can also determine to which keyboard range the VST Instrument will respond using the LoKey and HiKey settings. The “Semi.” and “Octa.” settings adjust the pitch of the instrument.

VST Send Effects

The VST Send Effects “rack” is where you select and activate send effects. You can have up to eight send effects in V-ST*ACK*.



VST Master Effects

This window allows you to add up to four master effects; effects inserted in the master output bus (affecting all instruments routed to the master bus). Note that the first three inserts are pre-fader, while the last insert is post-fader.

VST Outputs and Master Gain

In the VST Outputs window you can set the output level of each output bus. The number of buses depends on your audio hardware.

The output level of the master bus is controlled with the Master Gain fader in the Mixer.

Transport panel

V-ST*ACK* provides you with a transport panel that allows you to control transport functions when using VST System Link. Also, when using V-ST*ACK* as a stand-alone host for VST Instruments and effects, you can set the tempo and time signature in the transport panel, allowing you to tempo-sync your instruments or effects.

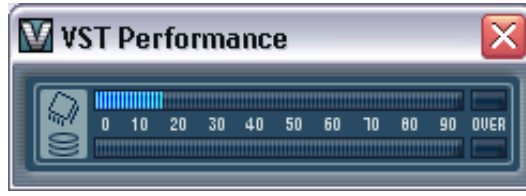
You can show or hide the transport panel by selecting the corresponding option from the Devices menu or by pressing [F2].

The transport panel

- On the transport panel you will find buttons for starting, stopping, fast forward, rewind and for jumping to the beginning and end of the project, similar to the transport controls on a conventional tape recorder. Above the transport buttons are the position controls and position display. You can move the project cursor position in steps of one frame, second, tick, or sample, depending on the display format set for the project, by clicking the + or – buttons. The position display format depends on the display setting in the pop-up menu opened by clicking on the arrow button to the right of the display section.
- When you click on the Click button so that it lights up, V-ST*ACK* will play a metronome click when playing back the current project. [Ctrl]-clicking on this button will open the Metronome Setup dialog where you can make all settings regarding the metronome click.
- The Sync button lights up to indicate that the Online option in the VST System Link setup is switched on. You can switch this option on or off by activating or deactivating the Sync button.

- The Tempo display is linked to the Tempo button and shows the tempo currently set in V-ST*ACK*.
  When you use V-ST*ACK* as a stand-alone application, you can switch off the Tempo button and set your own tempo. This allows you to tempo sync your VST Instruments and/or effects. When you use V-ST*ACK* with VST System Link, V-ST*ACK* "links up" with the tempo transmitted over the network, and this will be displayed in the transport panel. When you switch on the Tempo button, a default tempo of 120 bpm is set.
- The time signature display allows you to set a time signature for the metronome click and when using V-ST*ACK* as stand-alone application.
- The field at the bottom right displays the VST System Link state of the computer.
- To the far right of the transport panel you will find a MIDI input/output activity meter. As V-ST*ACK* doesn't play back MIDI data, the MIDI Out activity meter is not relevant.

About the VST Performance Window



To open this window, select VST Performance from the Devices menu. It indicates the current load on the CPU. It is recommended that you check this from time to time, or keep it open always. Even though you have been able to activate a number of VST Instruments in the project without getting any warning, you may possibly run into performance problems when adding EQ or effects.

- The upper bar graph shows the CPU (processor) load.
  If the red Overload indicator lights up, you need to decrease the number of VST Instruments, EQ modules and/or active effects.
- The lower bar graph shows the hard disk transfer load.
  As V-ST*ACK* doesn't record or play back from hard disk, this meter is not relevant.

6

VST Instruments

Introduction

VST Instruments are software synthesizers (or other sound sources) that are contained within V-ST*ACK*. They are played internally via MIDI, and their audio outputs appear on separate channels in the Mixer, allowing you to add effects or EQ. Technically, VST Instruments are VST 2 plug-ins, capable of receiving MIDI.

Installing VST Instruments

V-ST*ACK* doesn't include any VST Instruments when you install it – you need to install these separately. VST Instruments are widely available for purchase (or for download from the internet). If you have other VST compatible programs (such as Cubase SX or Nuendo, necessary if you want to use VST System Link), you can also copy the VST Instruments from these programs and install them for V-ST*ACK*.

Installation is done differently depending on the platform:

❒ **Make sure the VST Instruments are created specifically for Mac OS X! Plug-ins in Mac OS 9.X format cannot be used.**

To install a VST Instrument under Mac OS X, quit V-ST*ACK* and drag the plug-in file to one of the following folders:

- /Library/Audio/Plug-Ins/VST/
  This is only possible if you are the system administrator. Plug-ins installed in this folder will be available to all users, for all programs that support them.
- Users/Username/Library/Audio/Plug-Ins/VST/
  "Username" above is the name you use to log on to the computer (the easiest way to open this folder is to go to your "Home" folder and use the path /Library/Audio/Plug-Ins/VST/ from there). Plug-ins installed in this folder are only available to you.

  When you launch V-ST*ACK* again, the new VST Instruments will be available for selection in the program.
- **A VST Instrument may also come with its own installation application, in which case you should use this.**
  Generally, always read the documentation or readme files before installing new plug-ins.

Windows

Under Windows, VST Instruments are usually installed simply by dragging the files (with the extension ".dll") into the Vstplugins folder in the V-ST*ACK* application folder (or into the Shared VST Plug-in folder – see page 104). When you launch V-ST*ACK* again, the new VST Instruments will be available for selection in the program.

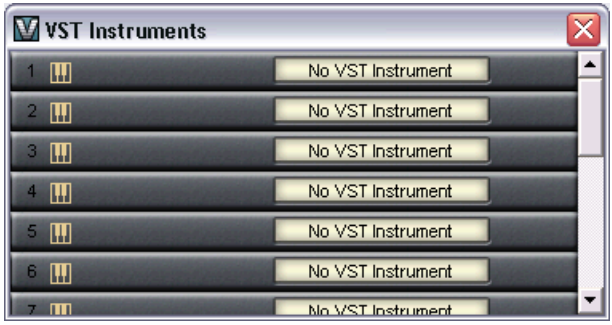
- **If the VST Instrument comes with its own installation application, you should use this.**
  Generally, always read the documentation or readme files before installing new plug-ins.

Organizing and managing VST Instruments

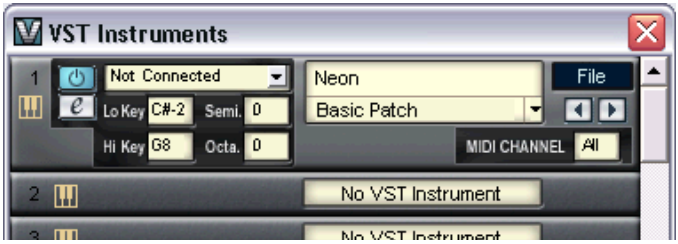
VST Instruments are managed and organized along with VST effect plug-ins. This is described on page 118.

Activating and using VST Instruments

1. If the VST Instruments panel isn't open, open it by selecting it from the Devices menu.
   The VST Instruments panel has 16 slots, each capable of holding a VST Instrument.



2. Pull down the pop-up menu for an empty slot in the panel and select the desired instrument.
   The selected instrument is loaded into the slot and a number of settings are shown:



3. Pull down the MIDI input pop-up menu to the left in the slot and select the MIDI input you want to use.
   If you are using VST System Link, you should select a "System Link" MIDI port (see page 43). If you are playing V-ST*ACK* by itself, you should select the MIDI input to which you have connected your MIDI keyboard or similar.

4. If you are using VST System Link, you need to route a MIDI track in the host application so that it plays the VST Instrument in V-ST*ACK*.
   Select the "System Link" MIDI port as output for the MIDI track (the same port you selected as input for the VST Instrument in the previous step).

Depending on the selected VST Instrument, you may also need to send MIDI on a specific MIDI channel. For example, if the VST Instrument is multi-timbral (check its documentation for details) it can play back different sounds on different MIDI channels:

- If you are using VST System Link, select the desired MIDI channel for the MIDI track in the host application.
- If you are using V-ST*ACK* by itself, make sure your MIDI keyboard is connected to the correct MIDI port and sends on the desired MIDI channel. Select this MIDI channel from the MIDI Channel pop-up in the bottom right corner of the instrument slot. You can also select the All option to receive on all MIDI channels. To easily stack multiple VSTis, simply set them to receive on the same port and channel.

  Now you have activated the VST Instrument and routed MIDI to it. You need to make sure the audio from the instrument goes where it should:

5. Look at the Mixer (if it's not shown, open it from the Devices menu).
   You will find one or more additional channel strips for the instrument's audio outputs. VST Instrument channel strips may be in mono or stereo, depending on the instrument (the features are the same for mono and stereo channels, but stereo channels have "double-width" level meters, showing the level for both sides of the stereo signal).
6. Use the pop-ups at the bottom of the channel strips to route the Instrument audio to the desired output.

- If you are using VST System Link, you should select one of the output buses used for VST System Link – this will route the audio from the VST Instrument into the other application.
  There you will need to select the corresponding bus as input for an audio track and activate monitoring for the track, to hear the sound.
- If you are using V-ST*ACK* by itself, you simply select the output connected to your listening equipment, mixer, etc.

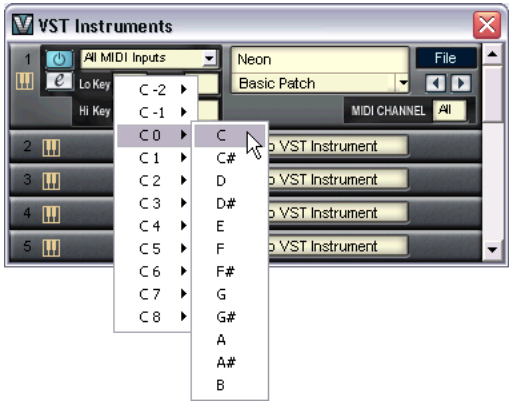
  Try playing the instrument, from your MIDI keyboard or by playing back the MIDI track in the other VST System Link application. You should see the level meters moving and hear the sound of the instrument, provided that your listening equipment is properly set up.
- **You can use the Mixer to adjust level and pan, add effects and equalizing – this is described on page 68.**

Setting a key zone and transposition for your VST Instrument

When loading a VST Instrument, you can specify a key zone that will be used to play the notes for the VST Instrument and also its transposition. The key zone setting works like a filter (similar to the settings for the MIDI port and channel): only notes falling into the specified key zone will be routed to the VST Instrument. These notes will be played using the transposition settings. Proceed as follows:

1. Load the desired VST Instrument in a slot in the VST Instruments window and specify the desired MIDI port and MIDI channel (see above).

2. Specify a key zone by clicking on the Lo Key and Hi Key value fields and selecting a note value from the pop-up menus that appear.



3. Specify the desired transposition by clicking on the “Semi.” and/or “Octa.” value fields and selecting a transposition (± 11 semitones or ± 5 octaves) from the pop-up menus that appear.

   When you stack several VST Instruments that receive on the same MIDI port and channel, you can use different key zones to trigger different VST Instruments. When you want the instruments to play the same notes simultaneously, simply leave all key zone and transposition settings as they are.

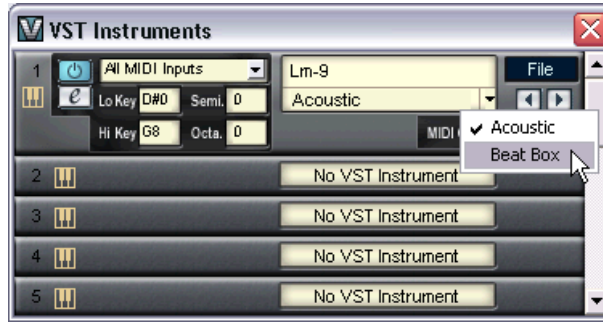
A note about VST Instruments and CPU power

You can have up to 16 VST Instruments activated at the same time, different models or several instances of the same instrument. However, software synthesizers can consume quite a lot of CPU power – keep an eye on the VST Performance window to avoid running out of processor power.

- **Although it's possible to deactivate a VST Instrument by clicking its "power button", it will still require some processor power. To minimize unnecessary CPU load, remove all VST Instruments that you do not need by pulling down the pop-up menus for the slots and selecting "No VST Instrument".**

Selecting patches

To select a patch for a VST Instrument, use its patch pop-up menu in the VST Instruments window.



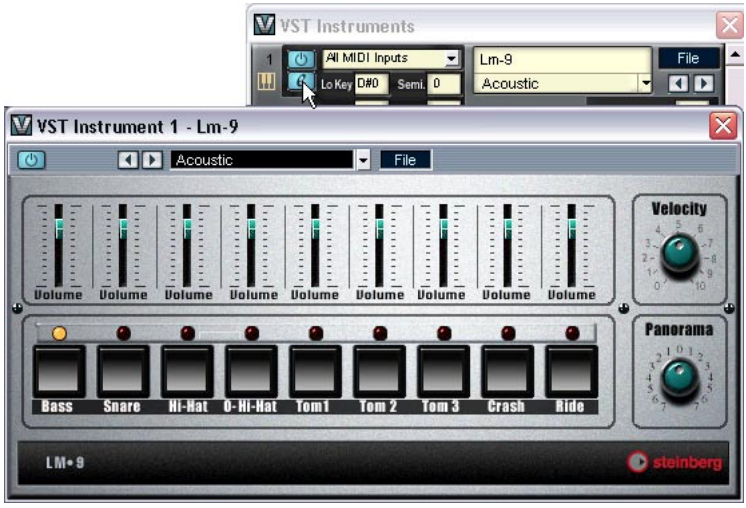
The available patches depend on the VST Instrument. Not all VST Instruments come with pre-configured patches.

Selecting patches via MIDI

If the VST Instrument supports the VST 2.1 standard (or later), it responds to MIDI Program Change and Bank Select messages, just as with "real" physical MIDI instruments. This means you can select patches from your MIDI keyboard or from the other VST System Link application.

Editing VST Instruments

To access the parameters for the VST Instrument, click the Edit (“e”) button in the VST Instruments window or in its channel strip (at the bottom of the fader strip) in the Mixer. This opens a “control panel” for the VST Instrument where you can view and adjust the parameters.



For details about the parameters, see the documentation of the VST Instruments.

- Please note that all VST Instruments can be edited using a simplified control panel (horizontal sliders only, no graphics) if you prefer this. To edit an instrument using this “basic” control panel instead, press [Ctrl]/[Command]+[Shift] and click on the Edit button for the slot.
- When you remove a VST Instrument from a slot in the VST Instruments rack, V-ST*ACK* saves all settings regarding MIDI port, MIDI channel, patch, transposition and keyzone range. When you load this instrument again, the settings are restored.

Common settings in the control panel

Although the parameters are different for different VST Instruments, all control panels have a common area at the top (Windows) or bottom (Mac OS X). Here you can do the following:

- Turn the VST Instrument on or off by clicking the power button.
- Select a patch by using the patch pop-up menu or the arrow buttons.
  These are the same as in the slot in the VST Instruments window.
- Name a patch you have created by typing a new name in the name field (patch pop-up menu).
  The settings you have made are automatically saved with the project, regardless of whether you name it or not.
- Save the settings you have made as a program file, by selecting “Save Instrument” from the File pop-up menu.
  This saves the program on disk as a separate file (extension “.fxp”), allowing you to load it into the VST Instrument at any time. You can also save the complete set of programs currently in the VST Instrument by selecting “Save Bank”.
- Load programs from disk by selecting “Load Instrument” or “Load Bank”.
  If you load a bank, it will replace the current set of all VST Instrument programs. If you load a single program, it will replace the currently selected program only.

7

The Mixer

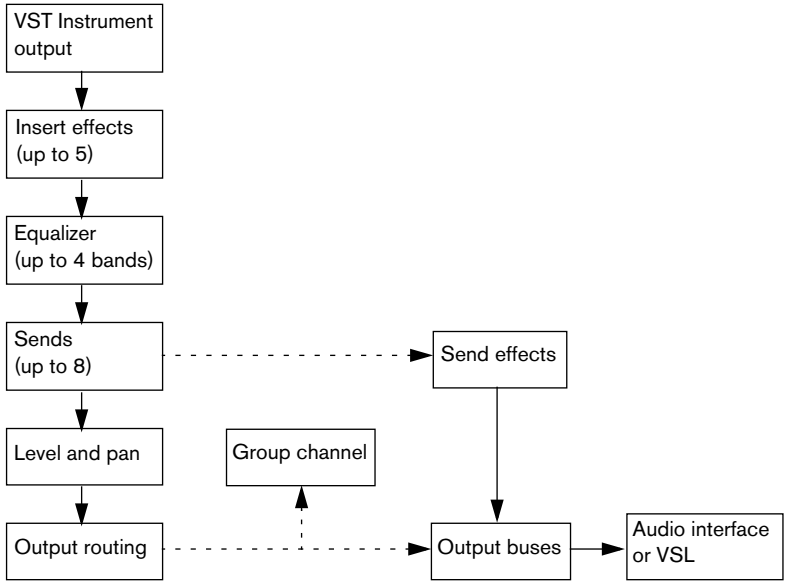
About this chapter

This chapter describes how to mix the sound from your VST Instruments, adjusting level and pan and adding EQ.

- **Effect handling is described on page 105.**

About the signal flow

The following figure shows a simplified diagram of the signal flow:

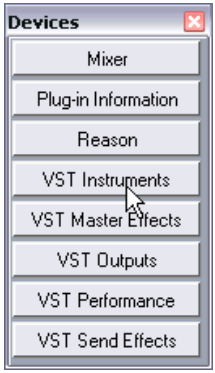


The sound from a VST Instrument goes to one or several channels in the Mixer (depending on the instrument). Each channel can have up to five insert effects and an equalizer with up to four bands. There are eight effect sends for sending the signal to any of the eight VST send effects (or directly to a group or output bus). The final sound of the VST Instrument channel can be routed to an output bus or to a group channel, for further processing.

A word about window handling

All the “VST windows” (Mixer, VST Instrument windows, effect windows, etc.) are available on the Devices menu.

- To show or hide a window, select it from the Devices menu.
  You can also use key commands, as listed on the Devices menu.
- If you like you can also manage the windows from the Devices panel, opened by selecting “Show Panels” on the Devices menu.
  To hide or show a window, click on its button on the Devices panel.



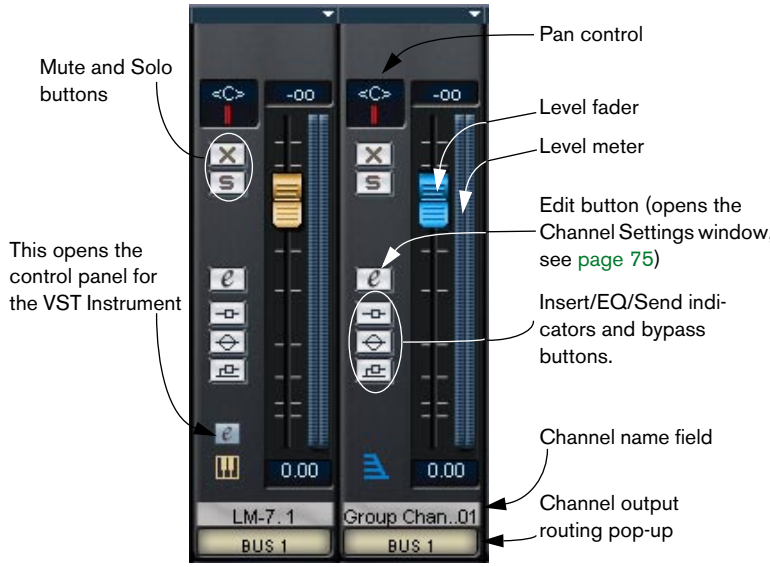
Mixer overview

There are three different basic elements in the mixer:

- The channel strips. This is where you mix and adjust the sound of the VST Instruments. Here you will also find four group channels, for submixing several instrument channels.
- The common panel. This panel to the left of the channel strips contains global settings for the Mixer and the channels.
- The Master section. This is where you adjust the master level.

Below you will find separate overviews of these elements along with two related windows, the VST Output window and the Channel Settings window.

The channel strips

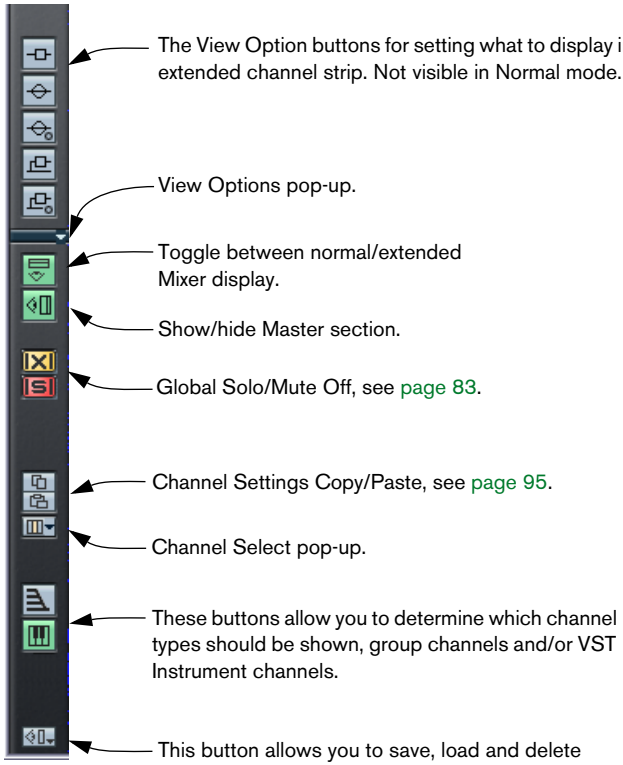


A VST Instrument channel strip and a group channel strip. As you can see, these have the same controls except for the lower “e” button on the VST Instrument channel strip (which opens the control panel for the instrument).

- **You can also extend the Mixer to include an upper area for the channel strips. This can show EQ, sends or insert effects. See page 76.**

The common panel

The common panel appears to the left in the Mixer and contains settings for changing the look and behavior of the Mixer, as well as global settings for all channels.



The Master section

The Master section allows you to control the output level of the Master bus (the main output bus). With the Mixer in extended mode, the Master section will also contain the Master effect slots. This section can be shown or hidden in the Mixer by clicking the Show Master button in the common panel.

Click this button to hide or show the Master section.

Master effect slots (shown in the extended mixer panel)

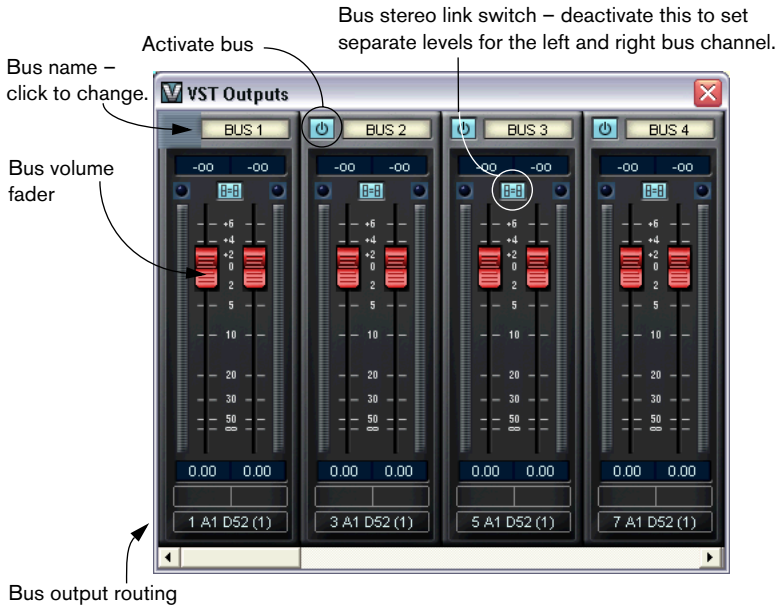
Master volume fader

Master level meters

Master Mono/Stereo switch

Output routing pop-up

The VST Outputs window



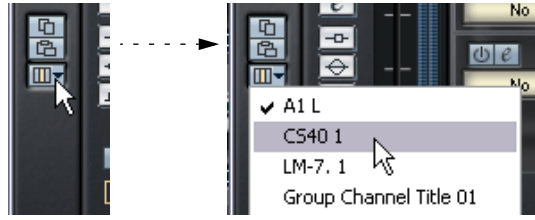
This is a separate window, opened from the Devices menu. If your audio hardware has several outputs (more than a single stereo pair), the VST Outputs window will show one stereo bus for each stereo output pair. Use the settings in the window to activate or deactivate buses, route each bus to the desired output on your audio hardware and control the bus volumes.

The Channel Settings window

Each audio channel strip in the Mixer has an edit (“e”) button. Clicking this opens the Channel Settings window, in which you can make detailed settings for a single channel (level, pan, EQ, effects, etc.).

The Channel Settings window always shows the settings for the selected channel. Therefore:

- To show the settings for another channel, select that channel in the Mixer (by clicking the name field below the fader or clicking its “e” button) or use the Channel Select pop-up menu on the common panel (available both in the Channel Settings window and in the Mixer).



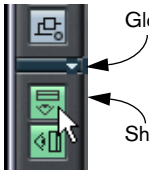
If you specifically want to open several Channel Settings windows, [Alt]/[Option]-click the Edit buttons for the desired channels.

Mixer View options

The Mixer can be configured in various ways to suit your needs and to save screen space. Here's a run through of the various view options:

Normal vs. Extended channel strips

There are two main modes for the Mixer: "normal" or "extended". You switch between these modes by selecting the corresponding item on the View Options pop-up menu on the common panel, or by clicking the button just below it.



In normal mode, channel strips only show the fader panels with the associated vertical row of buttons. In extended mode, channel strips will show an extra panel above the fader panel.

Selecting what to show in the extended audio channel strip

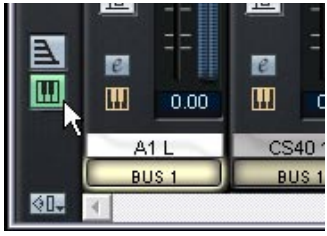
You select what to display in the upper (extended) area for each channel by using the View Options pop-up menu (the down arrow above the fader section of each channel strips). The following options are available:

Option	The upper panel shows:
Narrow	Nothing (narrow channel strip).
Wide	Nothing (wide channel strip).
inserts	Five insert effect slots.
EQs	The four-band EQ, shown with the controls as sliders (see page 85).
EQ+	The four-band EQ, shown with the controls as parameter dials (see page 85).
Sends	The eight effect sends, shown with send level sliders (see page 105).
Sends+	The eight effect sends, shown with parameter dials (see page 105). Note that the send pre/post fader switch and edit button aren't shown in this mode.

- Selecting one of these options from the View Options pop-up in the common panel will change the view in the upper panel globally for all channels in the Mixer.
  The global view options are also available as buttons in the upper part of the common panel – click a button to change the view in the upper panel for all mixer channels.

Selecting what channel types should be shown

You can specify whether the Mixer should show VST Instrument channels, group channels or both. This is done by clicking the buttons in the lower part of the common panel – when a button is lit, the corresponding channel type is shown.

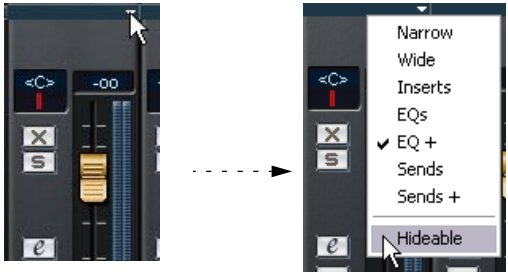


- You can also change this setting on the View Options pop-up in the common panel.
  Pull down the pop-up menu and activate or deactivate the “Group” and “VSTi” options to show or hide channel types.

Hiding individual channels

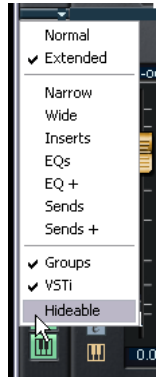
You can also hide individual channels in the Mixer. This is useful if you want to view the channels from a specific VST Instrument only, or hide additional unused channels for an instrument with multiple outputs. Proceed as follows:

1. Open the View Options pop-up for a channel that you wish to hide by clicking on the down arrow at the top of the channel strip.
2. Activate the “Hideable” item from the menu.
   The menu item is now ticked, but the channel strip is still visible.



3. Repeat steps 1-2 for each channel that you wish to hide.

4. When you have activated “Hideable” status for all channels you wish to hide, pull down the Global View Options pop-up on the common panel and deactivate the “Hideable” option.



When the “Hideable” item is deactivated (unticked) on the common panel View Options pop-up, all individual channel strips that are set to “Hideable” status will be hidden in the Mixer.

5. To make hidden channels visible again, activate Hideable on the common panel View Options menu.
You can store different configurations of the show/hide status for channels by using the Channel View Sets function, see page 80.

Setting the width of channel strips

Each channel strip’s width can be sized to either “Wide” or “Narrow” mode from the View Options pop-up at the top of each channel strip.

- Narrow channel strips contain a narrow fader, miniature buttons, plus the View Options pop-up.
Only a blank panel is shown in the extended section for narrow channel strips. If you select to show parameters in the extended section of a narrow strip, the channel strip will automatically be resized to wide.

- When selecting wide or narrow channel strips from the common panel View Options pop-up, all channel strips are affected.

Channel View Sets

Channel View Sets are user definable configurations of the Mixer windows. If you are working with a large number of channels, it may be convenient to be able to hide certain channels (or channel types). Proceed as follows:

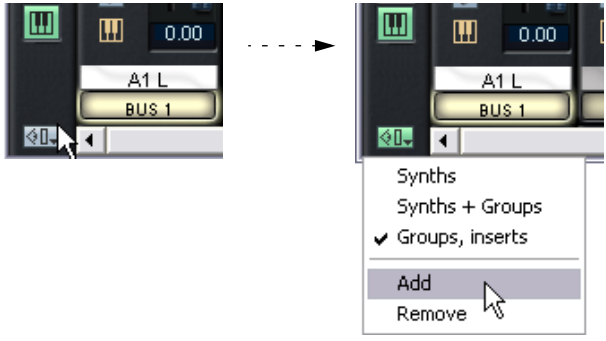
1. Set up the Mixer the way you wish to store it as a View Set.

   The following settings will be stored:

- Settings for individual channel strips (e.g. narrow or wide mode and whether the channel strip is hidden or not).
- The hide/show status for channel types and for the Master section.
- Settings for what is shown in the extended view of the Mixer.

❒ **The Mixers' display status (whether Normal or Extended mode is selected) is not saved with the View Set.**

2. When you have set up the Mixer as you want it, click the "Create/Select Channel View Sets" button at the bottom of the Common Panel, and select "Add" from the pop-up menu that appears.
   By selecting from the items on this menu, you can create, load and delete View Sets. If no View Sets have been stored there will only be two items on the menu: Add and Remove.



   The items at the top of the menu in the picture to the right are previously stored Channel View Sets.

3. A dialog appears, allowing you to type in a name for the View Set.
   Do so and click OK to store the current Mixer View Set.

- You can return to this saved configuration at any time, by clicking the Channel View Sets button and selecting it from the pop-up menu.
- To remove a stored Channel View Set, select it from pop-up so that the View Set is active, pull down the pop-up again and select Remove.

❒ **Some remote control devices (such as Steinberg's Houston) feature this function, which means that you can use the remote device to switch between the Channel View Sets.**

Basic mixing procedures

Setting volume in the Mixer

In the Mixer, each channel strip has a fader for volume control.

- The fader settings are displayed numerically below the faders, in dB.
  You can click in the fader value fields and enter a volume setting by typing.
- To make fine volume adjustments, hold down [Shift] when you move the faders.
- If you hold down [Ctrl]/[Command] and click on a fader, it will automatically be set to position 0.0 dB.

About the level meters for audio channels

When playing VST instruments in V-ST*ACK*, the level meters in the Mixer show the level of each instrument channel. If the peak level of the audio goes above 0dB, the numerical level indicator will then show a positive value (i.e. a value above 0dB).

V-ST*ACK* uses 32 bit floating point processing internally, so there is virtually limitless headroom – signals can go way beyond 0dB without introducing distortion. Therefore:

❒ **Having higher levels than 0 dB for individual channels and groups is not a problem in itself. The audio quality will not be degraded by this.**

This is however not the case for the buses in the VST Outputs window (including the Master bus, which can be shown in the Mixer as well)! In the output buses, the floating point audio is converted to the resolution of the audio hardware. In the audio domain, the maximum level is 0dB. Levels higher than 0 dB will cause the clip indicators above the meters for each bus to light up. If the clip indicators light up for a bus, this indicates actual clipping – digital distortion which should be avoided.

❒ **If the Clip indicator lights up for the Master bus or any other output bus, reset the clip indicator by clicking on it, and lower the level until the indicator no longer lights up.**

Using Solo and Mute

The Mute (top) and Solo buttons.

You can use the Mute and Solo buttons to silence one or several channels. The following applies:

- The Mute button silences the selected channel.
  Clicking the Mute button again un-mutes the channel. Several channels can be muted simultaneously. A muted channel is indicated by a lit Mute button, and also by the lit Global Mute indicator on the common panel.

A Muted Channel in the Mixer.

A lit Global Mute indicator on the common panel shows that one or more channels are muted.

- Clicking the Solo button for a channel mutes all other channels.
  A soloed channel is indicated by a lit Solo button, and also by the lit Global Solo indicator on the common panel. Click the Solo button again to turn off Solo.
- Several channels can be soloed at the same time.
  However, if you press [Ctrl]/[Command] and click the Solo button for a channel, any other soloed channels will automatically be un-soloed (i.e. this Solo mode is exclusive).
- [Alt]/[Option]-clicking a Solo button activates “Solo Group” for that channel.
  In this mode (indicated by a red solo button without any other channels being muted) the channel will not be muted if you solo another channel (see page 116 for a practical use of this). To turn off Solo Group, [Alt]/[Option]-click the Solo button again.
- You can un-mute or un-solo all channels by clicking the Mute or Solo indicator on the common panel.

Setting pan in the Mixer

The pan control

The Pan controls in the Mixer are used to position a channel between the left and right side of the stereo spectrum. For stereo channels they control the balance between the left and right channels.

- To make fine pan adjustments, hold down [Shift] when you move the pan control.
- To select center pan position, hold down [Ctrl]/[Command] and click on the pan control.

  Note also that the faders in the VST Outputs window determine the levels of each “side” in the stereo output. There are no pan controls for VST output buses or the Master bus.

Using the Master Gain fader

The Master Gain fader in the Master Section (to the right in the Mixer) controls the output level of the Master bus (this is where all channels are routed by default – see page 90).

- You can hide or show the Master Section with the Show Master button on the common panel.
- Up to four Master insert effects can be applied to the Master bus. See page 112.

Making EQ settings

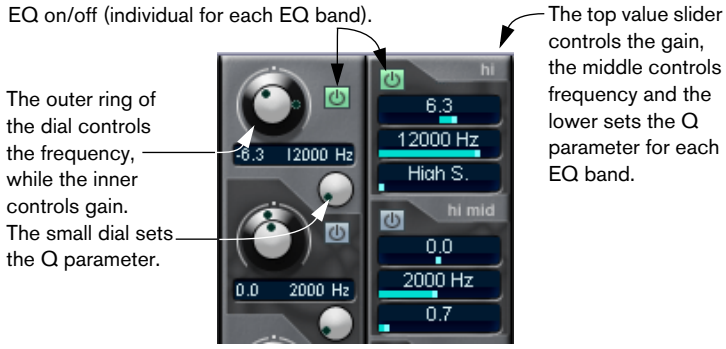
Each channel has a built-in parametric equalizer with four bands or “modules”. You make settings for this in the upper area of the channel strips (extended mode) or in the Channel Settings window. The parameters are the same in both cases, but only the Channel Settings window gives you access to EQ presets and the Reset function.

To make equalizer settings, activate as many EQ modules you need (up to four) by clicking their power buttons and adjust the gain, frequency and Q parameters. The parameters work as follows:

Parameter	Description
Gain	Governs the amount of boost or attenuation around the set frequency. The range is ± 24dB.
Frequency	The center frequency for the equalization. Around this frequency, the sound will be boosted or attenuated according to the Gain setting. The range is 20Hz to 20kHz.
Q	Determines the width of the frequency band around the center frequency to be affected. The narrower the frequency band, the more drastic the effect of the boost or attenuation.

- **EQ module 1 and 4 can also work as high/low shelving or high/low-pass filters, in the following way:**
  If the Q-value for EQ module 1 is set to minimum, it will act as a low shelving filter; if it is set to maximum, it will act as a high-pass filter.
  If the Q-value for EQ module 4 is set to minimum, it will act as a high shelving filter; if it is set to maximum, it will act as a low-pass filter.

Here's an overview of how the EQ parameters are laid out in the different panels:



The EQ in the extended mixer panel, "EQ+" mode (left) and "EQs" mode (right).

The EQ in the Channel Settings window.

You can also click in the value fields and type exact parameter values.

Using the EQ curve display

In the Channel Settings window you can also make EQ settings in the graphic EQ curve display above the parameter section.

- Double-click (or click and drag) in the display to add a new “EQ point” (activate an EQ module).
  Each point in the curve corresponds to an EQ module, as indicated by the number next to the point. Up to four points can be added, one for each module.
- Click a point and drag it to change the EQ curve.
  This allows you to change the Gain and Frequency parameters at the same time. The knobs turn accordingly when you drag points.
- If you press [Ctrl]/[Command] while dragging, only the Gain parameter will be set.
- If you press [Alt]/[Option] while dragging, only the Frequency parameter will be set.
- If you press [Shift] while dragging, only the “Q” parameter will be set.
- To deactivate an EQ module double click its point in the display or drag its point outside the display.

EQ bypass

As soon as one or more EQ modules are activated, the EQ indicator next to the fader in the channel strip will light up in green.

- Clicking this lets you momentarily turn the whole EQ section off (bypass) for the channel, useful for comparing the sound with and without EQ.
  When the EQ is in Bypass mode, the EQ button is yellow.

EQ reset

The Reset button in the lower left corner of the EQ section in the Channel Settings window will reset all EQ parameters to their default values and turn off all EQ modules.

Using EQ presets

Some useful basic presets are included with the program. You can use them as they are, or as a starting point for further "tweaking". To call up a preset, pull down the presets pop-up menu at the bottom of the EQ section in the Channel Settings window, and select one of the available presets.

Storing and removing EQ presets

If you have made EQ settings you wish to store for use elsewhere in a project, you can store them in a preset. Proceed as follows:

1. After making settings, click on the store button (plus sign) to the right of the presets pop-up menu.
   The settings are stored with the default name "Preset" and a number.
2. Double click in the preset pop-up field and type in a new name if you wish.

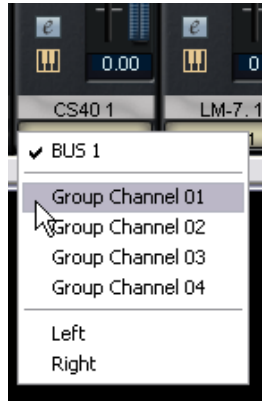
- **To remove a preset, simply select it and click the remove (minus sign) button.**

Routing

Using group channels

You can route the outputs from multiple VST Instrument channels to a group channel. This enables you to control the channel levels using one fader, apply the same effects and equalization to all of them etc. There are four group channels in V-ST*ACK*. Proceed as follows:

1. Pull down the Output routing pop-up menu for the VST Instrument channel you want to route to a group.
   This is the pop-up menu at the very bottom of the channel strip.



2. Select one of the four group channels from the pop-up menu.
   By default, these are titled “Group Channel 01-04” but you can rename them by clicking and typing in the name fields below the faders.

- You can route the output of a group to an output bus or to another group with a higher number.
  You cannot route a group to itself or to groups to the left of it in the Mixer. Routing is done with the pop-up menu at the bottom of each channel strip.

- Solo and Mute functionality is automatically linked for a channel routed to a group and the group channel itself, in the following way:
  If you mute or solo a group channel, all channels routed to the group are automatically muted or soloed as well.

Activating and routing buses

The number of buses shown in the VST Outputs window depends on the number of physical outputs you have on your audio hardware. As with inputs, you need to activate the buses you want to use, and assign each bus to an output pair on your audio hardware. This is done in the VST Outputs window:

1. Pull down the Devices Menu and select VST Outputs.
   The window will contain a number of stereo "channel strips", one for each bus:

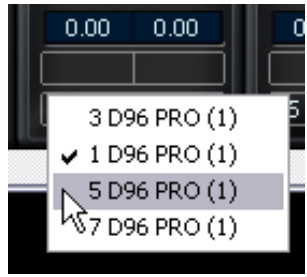
2. Activate the buses you need by clicking on their "On" buttons.
   The indicator in the button lights up to show that the bus is active.

   To conserve processor power, you should avoid activating buses that you don't need to use.

❒ **The Master bus (Bus 1) is always available and activated. This is why it doesn't have an "On" button. By default, all channels are assigned to the Master bus.**

❒ **The bus settings are saved with the project. However, if you select another ASIO Device and then open the project, you will be alerted that the saved bus settings will be ignored.**

3. Use the pop-up menus at the bottom of the window to route each active bus to an output pair on your audio hardware.



4. To rename a bus, click on its label and type in a new name.

5. Set the output levels for each active bus.
   Dragging one of the faders for a bus will automatically move the other fader as well. To move the left or right fader for a bus independently, hold down [Alt]/[Option] and drag, or deactivate the stereo link switch for the fader pair.

Routing channels to buses

To route the output of a group or VST Instrument channel to one of the active buses, you proceed as when routing to groups: Pull down the output routing pop-up menu at the bottom of the channel strip and select one of the buses.

Routing an effect send to a bus or group

All group channels and active buses will also appear on the effect send pop-up menus. This allows you to route a send directly to a group (for stereo send effects – see page 116) or to an output, for use with external effects, etc. The routing is done by selecting a group or bus on the send pop-up menu in the send section (extended mixer panel or Channel Settings window).

Utility functions

Link/Unlink channels

This function is used to “link” selected channels in the Mixer so that any change applied to one channel will be mirrored by all channels in that link group. You can link as many channels as you like, and you can also create as many groups of linked channels as you like. To link channels in the Mixer, proceed as follows:

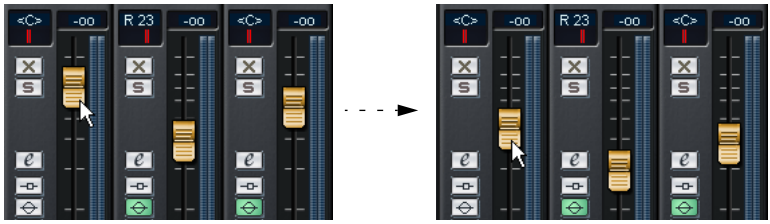
1. Press [Shift] and click on the channel name field for all the channels that you want to Link.
   Selected channels are indicated by highlighted name fields.

2. Right-click (Win) or [Ctrl]-click (Mac) somewhere on the grey Mixer panel.
   The Mixer context menu appears.
3. Select “Link Channels” from the context menu.

What will be linked?

The following rules apply for linked channels:

- Fader levels will be “ganged”.
  The relative level offset between channels will be kept if you move a linked channel fader.



The three channels shown are linked. Pulling down one fader changes the levels for all three channels, but keeps the relative level mix.

- Any individual channel settings you have made before linking will remain until you alter the same setting for any of the linked channels.
  For example, if you link three channels, and one of them was muted at the time you applied the Link Channel function, this channel will remain muted after linking. However, if you mute another channel then *all* linked channels will be muted. Thus, the individual setting for one channel is lost as soon as you change the same parameter setting for any of the linked channels.
- Channel settings you make after linking the channels will affect all linked channels of the same channel type.
- By holding down [Alt]/[Option], you can change parameter settings separately for channels that are linked.

The following settings are *not* affected by the Link Channel function (i.e. they remain individual for each channel):

- Insert effect settings
- Pan
- Output routing

Unlinking channels

To unlink channels, simply select any of the linked channels, and select “Unlink Channels” from the Mixer context menu.

❒ **It is not possible to remove individual channels from Link status. If you want to make individual settings to a linked channel, press [Alt]/[Option] when changing the setting.**

Copying settings between channels

It is possible to copy all channel settings for a channel and paste them into another channel. This applies to both channel types (you can e.g. copy EQ settings from an instrument channel and apply these to a group channel or vice versa). Proceed as follows:

1. Select the channel from which you want to copy settings by clicking its channel name field (a highlighted name indicates a selected channel).
   You can also select channels with the Channel Select pop-up menu – see page 75.

Selecting a channel in the channel strip (left), and in the common panel (right).

2. Click the “Copy” button in the common panel.

3. Select the channel you want to copy the settings to and click the Paste button.
   The settings are applied to the selected channel.

4. To copy the same settings to several channels, repeat step 3.
   The copied settings are retained in memory until you copy new channel settings, or close the project.

Initialize Channel

The Initialize Channel button can be found at the bottom of the Channel Settings common panel. It resets the selected channel to the default setting. Default settings are:

- All EQ, Insert and Send effect settings are deactivated and reset.
- Solo/Mute is deactivated.
- The fader is set to 0dB.
- Pan is set to center position.

Changing the meter characteristics

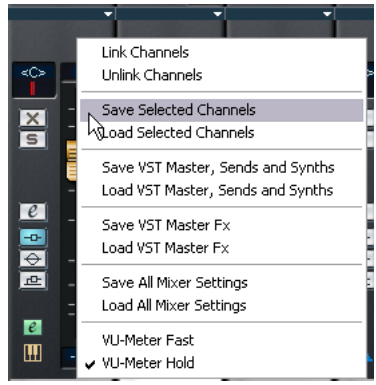
You can change the Mixer's level meters characteristics for audio channels: right-click anywhere on the Mixer panel to bring up the Mixer context menu. On the menu there are two options for Meter characteristics: "VU-Meter Fast" and "VU-Meter Hold".

- If "Fast" is activated (ticked), the meters respond very quickly to level peaks.
  If "Fast" is deactivated, the meters respond more like standard VU meters.

- If "Hold" is activated (ticked), the highest registered peak levels are "held" and are shown as static horizontal lines in the meter.

Hold activated

Saving Mixer settings



It is possible to save complete Mixer settings for selected or all audio channels in the Mixer. These can then later be loaded into any project. Channel settings are saved as Mixer settings files. These have the Windows file extension ".vmx".

Right-clicking (Win) or [Ctrl]-clicking (Mac) somewhere on the Mixer panel or in the Channel Settings window brings up the Mixer context menu where four Save/Load items can be found. The following options are available:

- "Save Selected Channels" will save all channel settings and the output bus routing for the selected channels.
  Effects loaded in the VST Send Effects panel will not be saved. Thus, the send routing assigned for the selected channel(s) will not be saved, although the send levels, pre/post and on/off settings are. Insert effects settings are saved.
- "Save Master, Sends and VSTi" will save the Master setup, VST output bus levels and active status, Master mix level, and all assignments and settings in the VST send effects, VST Instruments and Master effects panels.
  You do not have to select channels for this operation.
- "Save Master Fx" will save current Master effects configuration and settings.
- "Save All Mixer Settings" saves everything.
  This is the same as using "Save Selected Channels" with all channels selected, and using "Save Master, Sends and VSTi" and "Save Master Fx", all in one go.

When selecting any of these items, a standard file dialog opens where you can select a name and storage location on your disk for the file.

Loading Mixer settings

Load Selected Channels

To load Mixer settings saved for selected channels, proceed as follows:

1. Select the same number of channels in the new project to match the number of channels you saved settings for in the previous project.
   For example, if you saved settings for six channels, then select six channels in the Mixer.

- Mixer settings will be applied in the same order as they appear in the Mixer, when saved.
  Thus, if you save settings from channels 4, 6 and 8 and apply these settings to channels 1, 2 and 3, the settings saved for channel 4 would be applied to channel 1, the settings saved for channel 6 to channel 2 and so on.

2. Right-click (Win) or [Ctrl]-click (Mac) the mixer panel to open the context menu, and select “Load Selected Channels”.
   A standard file dialog appears, where you can locate the saved file.

3. Select the file and click “Open”.
   The channel settings and their corresponding output bus routing is applied to the selected channels.

❒ **If you select to apply Mixer settings to fewer channels than you saved, the order of the saved channels in the Mixer applies – i.e. the saved channels that are “left over” and not applied will be the channels with the highest channel numbers (or furthest to the right in the Mixer).**

Load Master, Sends and Synths

As these settings are global for the whole Mixer, no channels need to be selected.

1. Right-click (Win) or [Ctrl]-click (Mac) the mixer panel to open the context menu and select "Load Master, Sends and Synths".
   A standard file dialog appears, where you can locate the saved file.

2. Select the file and click “Open”.
   The Master setup, Master mix level, VST output levels, VST instruments and all send and Master effect assignments and settings are applied to the project.

Load Master Fx

This item allows you to load Master effect combinations and settings.

1. Right-click (Win) or [Ctrl]-click (Mac) the mixer panel to pull down the context menu, and select “Load Master Fx”.
   A standard file dialog appears, where you can locate the saved file.
2. Click “Open” to recall the saved Master Effects.

Load All Mixer Settings

Selecting “Load All Mixer Settings” from the context menu allows you to open a saved Mixer Settings file, and have the stored settings applied to all channels for which there is information included in the file. All channels, master settings, VST Instruments, sends and master effects will be affected.

8

Audio effects

Background

V-ST*ACK* allows you to process your VST Instruments through VST effect plug-ins in various configurations. There are three basic "effect types":

- Send effects
  Up to eight send effects can be used. When you use send effects, audio is routed through the effect processors via independent effect sends for each channel, just like on a "real" physical mixer. The output from each effect processor is then routed to one of the buses or the master fader, where it is mixed with the "dry" signal, if any. Send effects are mono in – stereo out.

- Insert effects
  An insert effect is inserted into the signal chain of an audio channel, which means that the whole channel signal passes through the effect. This makes inserts suitable for effects for which you don't need to mix dry (direct) and wet (processed) sound, e.g. distortion, filters or other effects that change the tonal or dynamic characteristics of the sound. You can have up to five different insert effects per channel.

- Master effects
  Up to four effect processors can be added to the signal on the Master bus, the final mix. Please note that there is no mixing of the dry/fx signals as there is with the send effects (except if included in the parameters of the individual effects). Typical uses for master effects would be compressor/limiter effects, noise suppression units, etc.

Installing effect plug-ins

V-ST*ACK* doesn't include any effect plug-ins when you install it – you need to install these separately. There is a wide range of effect plug-ins available in the two formats supported by V-ST*ACK* (VST and DirectX). The two formats are handled differently when it comes to installation:

VST plug-ins

Under Windows, VST plug-ins are usually installed simply by dragging the files (with the extension ".dll") into the Vstplugins folder in the V-ST*ACK* application folder, or into the Shared VST Plug-in folder – see below. When you launch V-ST*ACK* again, the new effects will appear on the Effect pop-up menus.

- **If the effect plug-in comes with its own installation application, you should use this.**
  Generally, always read the documentation or readme files before installing new plug-ins.

- **If you have other VST compatible programs (such as Cubase SX or Nuendo) you can also copy the VST plug-ins from these programs and install them for V-ST*ACK*.**

Organizing VST plug-ins

If you have a large number of VST plug-ins, having them all on a single pop-up menu in the program may become unmanageable. Therefore, you can place your plug-ins in subfolders within the Vstplugins folder if you like. When you launch the program and pull down an Effects pop-up menu, the subfolders will be represented by hierarchical submenus, each listing the plug-ins in the corresponding subfolder.

- Under Mac OS X, you cannot change the hierarchic arrangement of the "built-in" VST plug-ins.
  You can however arrange any additional plug-ins you have installed (in the /Library/Audio/Plug-Ins/VST/ folders, see above) by placing them in subfolders. In the program, the subfolders will be represented by hierarchical submenus, each listing the plug-ins in the corresponding subfolder.

About shared VST plug-ins (Windows only)

While V-ST*ACK*'s own plug-ins reside in the Vstplugins folder within the V-ST*ACK* program folder, the program can also access plug-ins in an additional location, called the shared VST plug-ins folder. This lets you use plug-ins installed by other VST compatible applications, etc. You can change what folder is considered the "shared" vstplugin folder at any time in the Plug-In Information window, see page 118.

DirectX plug-ins (Windows only)

To be able to use DirectX plug-ins, you must have Microsoft DirectX installed on your computer (Version 8.1 recommended).

DirectX plug-ins should *not* be placed in the Vstplugins folder, as these are installed under the operating system rather than for V-ST*ACK* exclusively. Rather, you should follow the installation instructions included with the plug-ins. See also page 121.

- **On the effect menus, all DirectX plug-ins are listed on the DirectX submenu at the bottom.**
  Selecting, activating and editing them are done as with VST effects.

Using effects

Using send effects

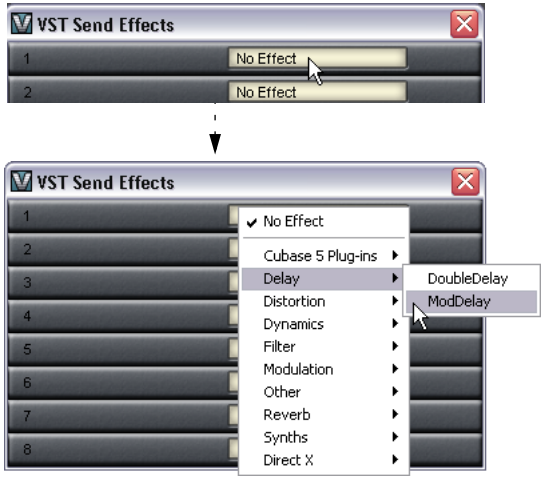
This procedure is divided into three steps: Activating effects, setting up the send section and making effect settings.

❒ **Note that it's also possible to route sends to groups, and use the insert effects for the groups as additional effect racks. See page 115.**

Activating send effects

1. Pull down the Devices menu and select VST Send Effects.
   The VST Send Effects panel opens. You can have up to eight separate "processors" arranged on top of each other. If no effect is selected for a slot, it will be labeled "No Effect".

2. Pull down the pop-up menu by clicking in the "No Effect" slot.

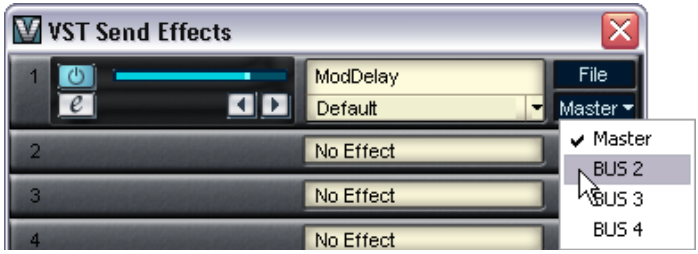


The pop-up menu will list the effects you have installed.

3. Select an effect from the list.
   When you select an effect, an effect panel opens in the slot.

4. By default, the effect processor is activated when selected. This is indicated by the On button. Make sure this is lit.

5. Make sure the effect output is routed to the desired output bus, by checking the Bus pop-up (below the File pop-up).



6. If you wish to activate more effects, repeat steps 2 to 5.
Remember that the effects rely heavily on the CPU power in your computer. The more activated effect units, the more computer power will be used for effects.

- **To turn off an effect completely, pull down the effect type pop-up menu and select "No Effect".**
You should do this for all effects that you don't intend to use, to minimize unnecessary CPU load.

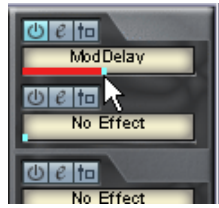
Setting up the sends

This can be done in the upper panels for the channel strips in the (extended mode) or in the Channel Settings window. The figures below show the Channel Settings window, but the procedures are similar for all three sections:

1. Bring up the Channel Settings window or the “Sends” or “Sends+” pane in the extended Mixer.
   Each of the eight sends has the following controls and options:

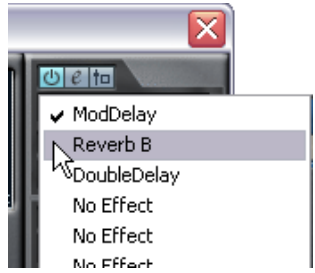
- A send on/off switch
- A send level slider or dial
- A pre/post fader switch (not available in the Sends+ Mixer pane)
- An Edit button (not available in the Sends+ Mixer pane)

2. Click the on button for one of the effect sends and set the corresponding send level slider (or dial) to a moderate value.



Setting the Send level.

3. Pull down the pop-up menu for the send.
   This is the Send Routing pop-up menu, used for routing the send to the desired effect processor.



The first items on this menu correspond to the activated internal effects (up to eight) while the following items route the send to buses and groups. A practical application of routing a send to a group is described on page 116.

4. Select an effect from the pop-up menu.

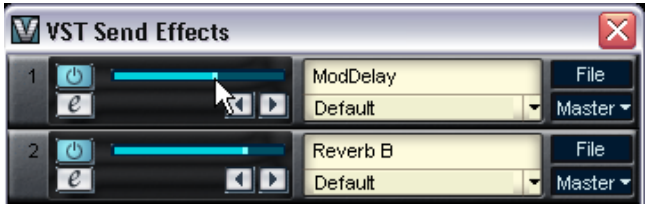
5. If you want the signal to be sent to the effects before the fader, click on the Pre fader button for the send.
   With pre-fader effect sends, the amount of effect for the channel is not affected by the volume fader. With post-fader effect sends (Pre/Post button not pressed), the amount of effect is proportional to the channel volume, and will change with the volume fader movements.

6. If you want to use several effects for this channel, repeat steps 3 to 6 above for the other effect sends.

- **When one or several sends are activated for a channel, the Send Effects button lights up in blue in the mixer channel strip. Click the button for a channel to bypass (disable) all its effect sends.**
  When the sends are bypassed, the button is yellow. Click the button again to enable the sends.

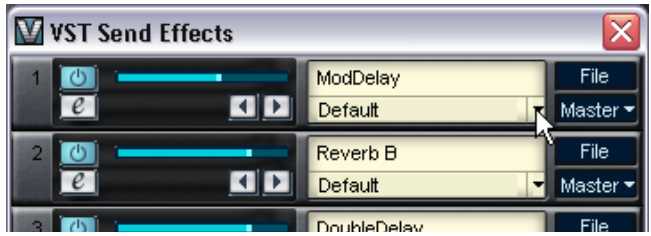
Making settings for the effects

1. Open the VST Send Effects window and use the Effects Master slider to the left on the processor panel to set the input level to an effect processor.

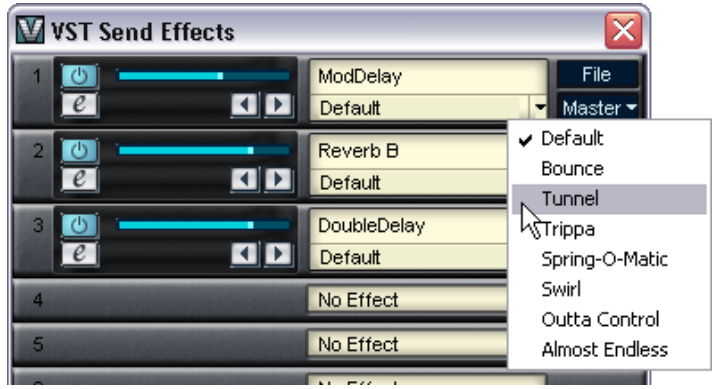


2. Use the send level slider or dial in the Channel Settings window or upper channel strip pane to control the amount of effect for the channel.

3. You can switch between different effect program presets by pulling down the Program pop-up in the VST Send effects panel.
The number of program locations depends on the selected effect type.



Clicking here...



...opens the Program pop-up.

4. If you have several effects activated, repeat steps 1 to 3 for these.

- **You can also edit the effect parameters. See page 113.**

Using insert effects

- You can apply up to five different insert effects per channel.
- The signal passes through the effects in series from the top downwards.
- Each channel (group or VST Instrument channel) has its own set of insert effects, totally independent of the other channels.

❒ **Insert effects require the same processing power as any other effect type. This means that applying insert effects on many channels uses up far more processing power than the send effects (eight in total for the whole program). Remember that you can use the VST Performance window to keep an eye on the CPU load.**

Which effect plug-ins can I use as insert effects

Most effect plug-ins will work fine as insert effects. In general, the only restrictions are with the number of inputs and outputs in the effects:

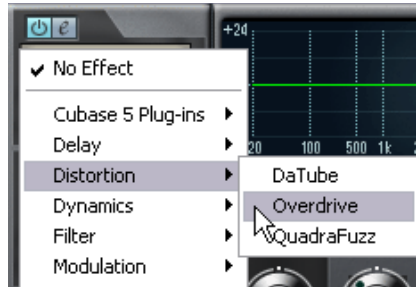
- For a plug-in to be usable as an insert effect, it has to have 1 or 2 inputs and 1 or 2 outputs.
  The number of inputs and outputs is determined by whether you use the insert effects on a single (mono) audio channel or on a stereo channel pair:
- For stereo channels, you need to use an effect with stereo inputs.
  It is possible to use a mono-input effect with a stereo channel pair, but then only the left channel in the pair will be processed, which is probably not what you want.
- For mono channels, you can use mono- or stereo-input effects.
  However, since the audio channel is in mono, the output of the effect will also be in mono. For stereo output effects, the left channel will then be used.

Routing an audio channel through insert effects

Insert effect settings are available in the Mixer (extended mode) and the Channel Settings window. The figures below show the Channel Settings window, but the procedures are similar for all three send sections:

1. Bring up the Channel Settings window or the “Inserts” pane in the extended Mixer.
   In the Channel Settings, the inserts are located to the right of the channel strip.

2. Pull down the effect type pop-up for one of the insert slots, and select an effect.



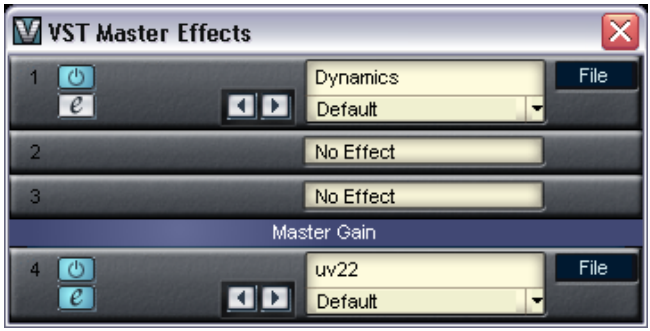
- If you hold down [Ctrl]/[Command] while selecting an insert effect, this effect will be selected in the same insert slot for all Mixer channels.

3. Make sure that the effect is activated (the power button for the insert slot should be lit).

4. If required, open the effect’s control panel by clicking the Edit button and use the Mix parameter (if available) to adjust the balance between dry and effect signal.
   See page 113 for details about editing effects.

- **When one or several insert effects are activated for a channel, the Insert Effects button lights up in blue in the mixer channel strip. Click the button for a channel to bypass (disable) all its inserts.**
  When the inserts are bypassed, the button is yellow. Click the button again to enable the inserts.
- **To turn off an effect completely, pull down the effect type pop-up menu and select “No Effect”.**
  You should do this for all effects that you don’t intend to use, to minimize unnecessary CPU load.

Using Master effects



There are four Master effect slots, available in a separate window or in the Master section in the extended Mixer. To select and activate Master effects, proceed as follows:

1. Either select the “Extended” mode for the Mixer and show the Master section, or pull down the Devices menu and select “VST Master Effects” to bring up the Master effect window.
   You can also bring up the VST Master Effects window by clicking the “e” button above the Master gain fader.

2. Pull down the pop-up menu for one of the Master effect slots and select an effect.

- **Note that the last Master effect slot is “post master gain fader”, i.e. it appears after the Master Gain fader in the signal path.**
  This is typically used for effects such as dithering, which must be at the very end of the signal path to give the proper result.

3. To make settings for the effect, click the Edit button to bring up its control panel.
   See page 113.

- **To turn off a Master effect, select “No Effect” for the corresponding slot.**
  You can also bypass all Master effects by clicking the button next to the “e” button above the Master gain fader in the Mixer. When bypassed, the button is yellow.

❒ **Master effect plug-ins must be stereo in/out. If you have a plug-in in your VST Plug-ins folder that you can’t assign as a master effect, the reason is probably that it is a mono plug-in.**

Editing effects

All inserts, master effect slots and effect sends (except in the “Sends+” pane in the extended Mixer) have an Edit (“e”) button. Clicking this opens the selected effect’s control panel in which you can make parameter settings.

The contents, design and layout of the control panel depends on the selected effect. However, all effect control panels have an on/off button, a program selection pop-up menu and a File pop-up menu for saving or loading programs. In V-ST*ACK* for Mac OS X these are located at the bottom of the control panel, whereas it is at the top of the control panel in V-ST*ACK* under Windows.

An effect control panel.

- Note that all effects can be edited using a simplified control panel (horizontal sliders only, no graphics) if you prefer this. To edit effects using this “basic” control panel instead, press [Ctrl]/[Command]+[Shift] and click on the Edit button for the effect send or slot.

Making settings

Effect control panels may have any combination of knobs, sliders, buttons and graphic curves. See the documentation for each effect.

Naming effects

If you edit the parameters for an effect, these settings are saved automatically in the project. If you want to name the current settings, the following points apply:

- The basis for the current settings may have been a preset effect program, in which case there is a name in the Program Name field.
- The basis for the current settings may have been a default setting program location in which case “Init” is displayed in the Program Name field.

In both cases, if you have changed any effect parameter settings, these are already saved! To name the current settings, click the Name field, type in a new name and press [Return]. The new name replaces the previous name on the Program pop-up menu.

Saving effects

You can save your edited effects for further use (e.g. in other projects) by using the File pop-up menu to the right of the Name field.

1. Pull down the File pop-up menu.

- If you want to save the current program only, select “Save Effect”.
  Effect Programs have the Windows file extension “fxp”.
- If you want to save all programs for the effect type, select “Save Bank”.
  Effect Banks have the Windows file extension “fxb”.

2. In the file dialog that appears, select a name and location for the file and click Save.
   It might be a good idea to prepare a special folder for your effects.

Loading effects

1. Pull down the File pop-up menu.
2. Select “Load Effect” or “Load Bank”.
3. In the file dialog that opens, locate the file and click Open.
   If you loaded a Bank, it will replace the current set of all effect programs. If you loaded a single effect, it will replace the currently selected effect program only.

Effect routing – a few tips

A note about stereo effects

Some plug-in effects affect the stereo image, in the form of panning, stereo enhancement or stereo ambience. However, for this to be heard, the output of the effect must be routed to a stereo channel or bus (since otherwise, the output will be mixed to mono). In short: Stereo image effects will not be heard if the effect is used as an insert effect for a mono audio channel.

- For example, if you want to apply an auto-panner effect to a mono audio channel, there are two ways to do this:
  1) Use a send effect (you would probably want to activate the Pre-fader Send switch and turn down the volume fader for the audio channel).
  Or
  2) Route the mono audio channel to a group channel and apply the effect as an insert effect for the group channel.

About group channels and effects

There are certain factors to consider when using send effects from channels routed to groups. If a channel routed to a group uses send effects, the effect return signal will still be audible if you mute or pull down the fader for the group channel, which might be undesirable. There is a method you can use to remedy this:

- You can remove the send routing from the channels being routed to a group, and apply the effects to the group channel instead.
  This works well if you want all channels routed to the group processed by the same effect(s) and by the same amount. See below for a practical example on how you can set up a more flexible effects routing system using groups.

Using stereo sends and insert effects

Send effects are practical because you can control the dry/effect balance individually for each channel. Insert effects offer the advantage of "chaining" effects, meaning that the output of an effect can be further processed by another effect. If you route a channel send directly to a group channel, this allows you to use insert effects (applied to the group channel) much like "send effects".

This method has several advantages:

- You can take advantage of effects with stereo inputs, since the sends will be stereo.
  If you route a stereo channel send directly to a send effect, as opposed to a group, the send will be mono, regardless of the chosen effect.
- You can set up insert effect chains for a group, and then control how much the individual channels are processed by this effect chain.
  For example, you could have the output of a reverb sent to an EQ and then on to a compressor. If you simply routed several channel *outputs* to a group and then applied insert effects (to the group), you would have no way of controlling the dry/effect balance for the individual channels, only for the group as a whole.

An example

The following example describes how to route a stereo send to a group with an insert effect.

The example assumes that you have access to a stereo VST Instrument channel and an unused group channel in the Mixer. Proceed as follows:

1. Open the Channel Settings for the VST Instrument channel, and route one of the sends directly to the group channel.
   As it is a stereo channel, the send will be stereo. Note that the channel itself should not be routed to this group, only one of its sends (see page 107). The channel output routing could be any bus, or another group – it doesn't matter.
2. Activate the send, and drag the corresponding Send level slider to a moderate value.
   The send's "Pre fader" button should not be activated.
3. Activate an insert effect for the group channel.
   Choose a typical "send effect" like reverb for this example.

4. Open the effect's control panel by clicking the Edit button and use the Mix parameter to adjust the balance between "dry" and effect signal, to 100% effect.
   This is because the effect/dry balance can now be controlled using a combination of send level and the group channel fader – see below.

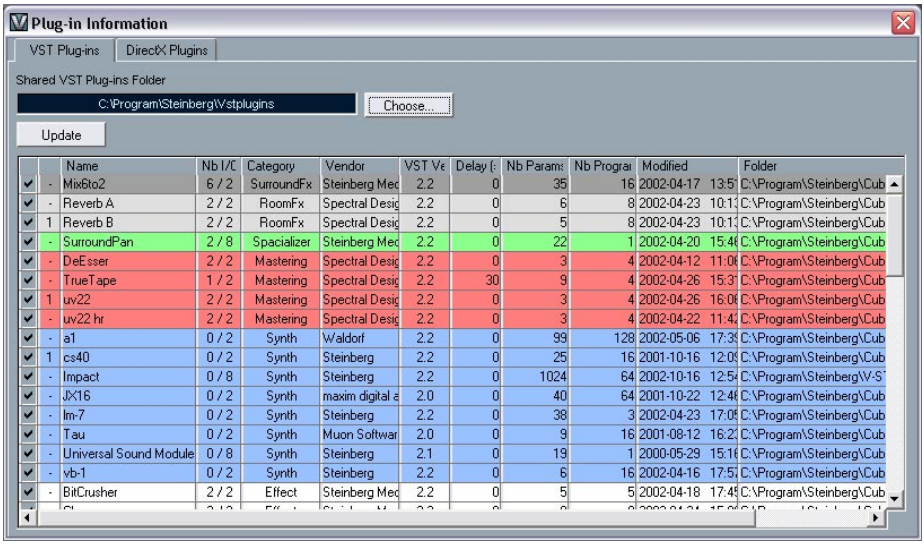
5. Press [Alt]/[Option] and click on the Solo button for the group channel to activate Solo Group.
   In this mode, the group channel will not be muted if you solo another channel in the mixer (see below).

6. Play the VST Instrument.

   The following is now possible:

- By adjusting the send level you will control the amount of channel signal sent to the "effect" (or to be accurate, the group channel).
- The level fader for the group channel now serves as effect return level control, allowing you to set the dry/effect balance.
  If you pull down the group channel fader, you should now hear the signal with no effect.
- Since Solo Group is activated for the group channel, you can solo any of the channels without having the effect return (the group) muted.
  If you need to turn off Solo Group, [Alt]/[Option]-click the Solo button for the group channel again.
- Adding more insert effects to the group allows you to process the effect output further.
- Simply repeat steps 1- 2 for all (stereo) channels you wish to process using this method.
- Since there are four group channels in V-ST*ACK*, you can have up to four different "multi-effects" with this method.

The Plug-in Information window



On the Devices menu, you will find an item called “Plug-in Information”. Selecting this opens a dialog listing all the available VST and DirectX compatible plug-ins in your system (including VST Instruments).

Managing and selecting VST plug-ins

To see which VST plug-ins are available in your system, click the “VST Plug-ins” tab at the top of the window. The window now displays all plug-ins in the V-ST*ACK* and the shared vstplugins folder.

- To enable a plug-in (make it available for selection), click in the left column.
  Only the currently enabled plug-ins (shown with a check sign in the left column) will appear on the Effect menus.
- The second column indicates how many instances of the plug-in are currently used in V-ST*ACK*.
  Clicking in this column for a plug-in which is already in use produces a pop-up showing exactly where each use occurs.

❒ **Please note that a plug-in may be in use even if it isn't enabled in the left column. You might for example have opened a Song containing effects that currently are disabled on the menu. The left column purely determines whether or not the plug-in will be visible on the Effect menus.**

- All columns can be resized by using the divider in the column header.

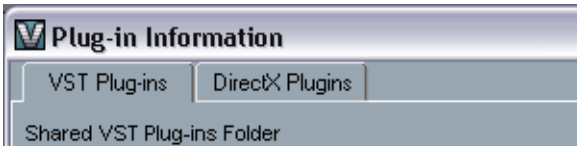
  The rest of the columns show the following information about each plug-in:

Column	Description
Name	The name of the plug-in.
Nb I/O	This column shows the number of inputs and outputs for each plug-in.
Category	This indicates the category of each plug-in (such as VST Instruments, effects, etc.).
Vendor	The manufacturer of the plug-in.
VST Version	Indicates with which version of the VST protocol each plug-in is compatible.
Delay (sample)	This shows the delay (in samples) that will be introduced if the effect is used as an Insert. This is however automatically compensated for by V-ST*ACK*.
Nb Params	The number of parameters for the plug-in.
Nb Programs	The number of programs for the plug-in.
Modified	The last modification date of the plug-in file.
Folder	The path and name of the folder in which the plug-in file is located.

Update Button

Pressing this button will make V-ST*ACK* re-scan the designated Vstplugins folders for updated information about the plug-ins.

Changing the Shared Plug-ins Folder (Windows only)



If you like, you can change what folder is to be the “shared” Vstplugins folder. For example, if you have Steinberg’s Cubase SX installed on your computer, you can get access to the Cubase SX-specific plug-ins in V-ST*ACK* by switching to the Vstplugins folder within the Cubase SX folder.

The currently selected Shared Folder is displayed in the text field at the top of the window. Clicking the “Choose...” button opens a file dialog where you can browse to another Vstplugins folder on your hard drive. Clicking OK selects the new folder as the shared VST plug-ins folder.

❒ **After selecting a new shared plug-ins folder, you need to restart V-ST*ACK* for the effects in the new folder to become available.**

Managing and selecting DirectX plug-ins (Windows only)

To see which DirectX plug-ins are available in your system, click the "DirectX Plug-ins" tab at the top of the window.

- To enable a plug-in (make it available for selection), click in the left column.
  Only the currently enabled plug-ins (shown with a check sign in the left column) will appear on the Effect menus.

  The idea here is that there could be a variety of DirectX plug-ins in your system, many of which are not intended for musical audio processing. Disabling these helps you keep the Effect menus in V-ST*ACK* more manageable.

- The second column indicates how many instances of the plug-in are currently used in V-ST*ACK*.
  Clicking in this column for a plug-in which is already in use produces a pop-up showing exactly where each use occurs.

❒ **Please note that a plug-in may be in use even if it isn't enabled in the left column. You might for example have opened a project containing effects that currently are disabled on the menu. The left column purely determines whether or not the plug-in will be visible on the Effect menus.**

9

Remote controlling the Mixer

Background

It is possible to control the V-ST*ACK* Mixer via MIDI. Currently, the following MIDI control devices are supported:

- Steinberg Houston (see page 127)
- Mackie Control (see page 127)
- CM Automation Motor Mix (see page 128)
- JL Cooper CS-10 (see page 129)
- JL Cooper MCS-3000 (see page 130)
- Radikal SAC-2k (see page 132)
- Roland MCR8 (see page 131)
- Tascam US-428 (see page 134)
- Yamaha 01V (see page 135)
- Yamaha DM2000 (see page 127)

There is also a Generic Remote Device, allowing you to use any MIDI controller to remote control V-ST*ACK*.

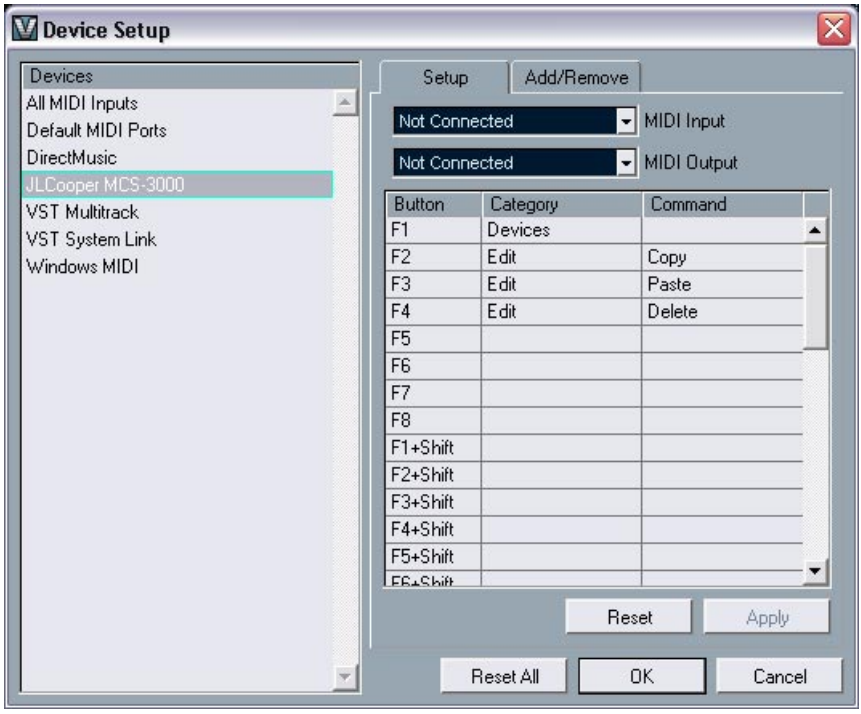
Operations

Selecting a remote device

1. Make sure the MIDI control device is connected to your MIDI interface.
   You need to connect the MIDI Out on the remote unit to a MIDI In on your MIDI interface. Depending on the remote unit model, you may also need to connect a MIDI Out on the interface to a MIDI In on the remote unit (this is necessary if the remote unit features "feedback devices" such as indicators, motorized faders, etc.). See the MIDI control device specifications on the following pages for details.
2. Pull down the Devices menu and select Device Setup.
   A dialog window opens with a list of devices shown in the left part of the window.
3. If you can't find the remote device you are looking for, click on the Add/Remove tab and select it from the Device Classes menu.
   Click "Add" to add it to the Devices list.

- Note that it is possible to select more than one remote device of the same type.
  If you have more than one remote device of the same type, these will be numbered in the Device list.

4. Now click the Setup tab and select your MIDI control device model from the Devices list.
   Depending on the selected device, either a list of programmable function commands or a blank panel is shown in the right half of the dialog window.



A JL Cooper MCS-3000 selected as remote control device.

5. Select the correct MIDI input from the pop-up menu.

6. If necessary, select the correct MIDI output from the pop-up menu.

7. Click OK to close the dialog.
   You can now use the MIDI control device to move faders and knobs, activate mute and solo, etc. The exact parameter configuration depends on which external MIDI control device you are using.

Assigning remote key commands

For some of the supported remote devices, you can assign V-ST*ACK* functions to generic buttons, wheels or other controls. As of this writing, these devices are:

- JL Cooper MCS 3000
- JL Cooper CS-10
- CM Automation Motor Mix

Proceed as follows:

1. Open the Device Setup and select one of the remote devices that support this feature.
   On the right side of the window there are three columns. This is where you assign commands.
2. Use the “Button” column to locate a Remote device control or button to which you wish to assign a V-ST*ACK* function.
3. Click in the “Category” column for the control, and select one of the V-ST*ACK* function categories from the pop-up menu that appears.
   A typical use would be to select the “Devices” category and have the buttons open and close different VST windows.
4. Click in the “Command” column, and select the desired V-ST*ACK* function from the pop-up menu that appears.
   The available items on the pop-up menu depend on the selected category.

   Click “Apply” when you are done.The selected function is now assigned to the button or control on the remote device.

Remote control device specifics

Steinberg Houston

Houston is a MIDI/USB remote control device designed especially for use with VST audio applications such as V-ST*ACK*. With clearly laid out controls (including touch sensitive motorized faders, rotary knobs, transport controls and a jog/shuttle wheel) Houston allows you to control virtually every Mixer parameter in V-ST*ACK*, without having to use the computer keyboard or mouse.

- For details about parameters and hands-on mixing techniques, please see the Houston documentation.

Mackie Control

Mackie Control is an automated touch-sensitive control surface. It is a nine-fader (eight channels and master) MIDI controller that provides in-depth mixing, editing, automation and navigational control for any supported digital audio workstation.

- For details about parameters and hands-on mixing techniques, please see the separate pdf documentation describing the use of Mackie Control with V-ST*ACK*.

Yamaha DM2000

The Yamaha DM2000 is a digital mixing console that provides full automation of virtually all console parameters. It is designed to integrate effectively with digital audio workstations such as V-ST*ACK*.

- For detailed information about features, parameters, etc., please see the documentation which comes with the Yamaha DM2000.

CM Automation Motor Mix

The CM Motor Mix can control any number of channels in groups of 8.

- Fader level, mute, solo control the equivalent V-ST*ACK* functions.
- Left and right View buttons: select channels 1-8, 9 -16 etc.
- Top button row (above the rotary knobs) selects channel.
- The two rows of buttons on each side of the faders can be assigned functions in the Device Setup dialog.
  All except the Shift button, which acts like [Shift] on your computer keyboard.
- The rotary knobs are multi-functional, depending on the selected Rotary setting.

  The following parameters can be remote controlled with the 8 rotary knobs:

- Pan
- Effect sends 1-8
- EQ Enable
- EQ Freq
- EQ Gain
- EQ Q

- The first two rows of buttons below the rotary knobs are also multi-functional, depending on the status of the buttons to the left and right of these two rows.
  Note that the “Group” button is not assigned any parameter.

  The following parameters can be remote controlled with the 8 buttons on the first row below the rotary knobs:

- EQ Master Bypass
- Insert On

JL Cooper CS-10

The CS-10 can remote control 32 channels (in groups of 8). The following CS-10 controls will remote control the following parameter for each channel strip:

- Fader: volume
- Solo and Mute: solo and mute
- Sel: select channel for editing

The following parameters can be remote controlled for each *selected* channel using the six rotary knobs on the CS-10:

Dial	**Parameter**
Send 1	Effect send 1
Send 2	Effect send 2
Pan	Pan
Boost/cut	EQ 1 Gain
Frequency	EQ 1 Frequency
Bandwidth	EQ 1 Q Factor

- The CS-10 function keys 1 - 4 are used to select channels 1 - 32 in groups of 8.
  Function key 1 selects channels 1 - 8, function key 2 selects channels 9 - 16, and so on.
- If you hold down the function key "Shift" and then move a fader, the two indicators beside the fader will indicate whether the fader position is below or above the current fader level in V-ST*ACK*.
  If the upper indicator is lit, the fader position on the panel is above the fader level in V-ST*ACK* and vice versa. When both indicators are dark, the fader positions are matched for that channel.

❒ **The CS-10 supports "MIDI Feedback", allowing the mute, solo and selection status of the channels in V-ST*ACK* to be indicated on the panel. For this (and the fader position indication described above) to work, you need a two-way MIDI connection between the CS-10 and V-ST*ACK*.**

JL Cooper MCS-3000

The MCS-3000 can control 32 Mixer channels remotely (in groups of 8). The following MCS-3000 controls will remote control the following Mixer parameter for each channel strip:

- Fader: volume
- Solo and Mute: solo and mute
- Sel: Select channel for editing

These parameters can be remote controlled for each selected channel using the dials on the MCS-3000 and switching between Pages 1 - 4:

Page 1		**Page 2**	
Dial	**Parameter**	**Dial**	**Parameter**
1	Pan	1	EQ 1 Gain
2	Effect send 1	2	EQ 1 Freq
3	Effect send 2	3	EQ 1 “Q”
4	Effect send 3		
5	Effect send 4		

Page 3		**Page 4**	
Dial	**Parameter**	**Dial**	**Parameter**
1	EQ 2 Gain	1	EQ 3 Gain
2	EQ 2 Freq	2	EQ 3 Freq
3	EQ 2 “Q”	3	EQ 3 “Q”

- The MCS-3000 bank keys 1 - 4 are used to select channels 1 - 32 in groups of 8.

  Bank key 1 selects channels 1 - 8, bank key 2 selects channels 9 - 16 and so on.

❒ **The MCS-3000 supports “MIDI Feedback”, allowing fader settings and channel mute, solo and selection status to be indicated on the panel. For this to work, you need a two-way MIDI connection between the MCS-3000 and V-ST*ACK*.**

Roland MCR-8

❒ **Before you can initiate remote control operation, the MCR-8 "Mode" switch must be set to "4".**

The Roland MCR-8 can control 16 Mixer channels. The "A/B switch" is used to switch between controlling channels 1 - 8 and 9 - 16. The following MCR-8 parameters control the equivalent parameters for each channel strip:

- Fader level, mute, solo and pan.

❒ **The MCR-8 does not support "MIDI feedback", that is, the current status of parameters in V-ST*ACK* is not indicated on the MCR-8. Therefore, you only need a one-way MIDI connection between the MCR-8 and V-ST*ACK*.**

Radikal Technologies SAC-2K

The SAC-2K can control 32 channels (in groups of 8). The following SAC-2K parameters control the equivalent parameters for each channel strip:

- Fader: volume
- Solo and Mute: solo and mute (depending on the solo/mute state switch)
- Select: select channel for editing in Channel Strip mode

Encoder operation modes and display layout

The SAC-2K supports two operation modes for the encoder dials and the display. Mixer Mode will assign the same parameter for each channel strip to the encoder dials, e.g. EQ1-Gain for each channel. Channel Strip mode will assign a parameter set for one selected channel to the encoder dials, e.g. all 8 send levels for the selected channel.

The first row of the displays above the channel strips will display the name of the channels. The second row will display the value of the parameter assigned to the encoder dials. The first row of the rightmost display will show the name of the selected channel, the assignment for the encoder dials and the channel range. The second row will display any value of the parameter assigned to the encoder dials in Channel Strip mode:

- Display for encoder operation in Mixer mode “Pan”:

Chn1	Chn2	Chn3	Chn4	Chn5	Chn6	Chn7	Chn8	Chn1	Pan	VST 1-8
Pan	Pan	Pan	Pan	Pan	Pan	Pan	Pan			

- Display for encoder operation in Channel Strip mode “EQs”:

Chn1	Chn2	Chn3	Chn4	Chn5	Chn6	Chn7	Chn8	Chn1	EQ	VST 1-8	
Freq1	Freq2	Freq3	Freq4	Freq5	Freq6	Freq7	Freq8	Q1	Q2	Q3	Q4

In order to access all parameters of a parameter set with the encoder dials, the parameter set buttons need to be pressed repeatedly to cycle through the parameter assignments.

When pressing an encoder dial the currently selected band of EQ or FX-Send will be activated or deactivated.

Assignment mapping for the Mixer mode buttons:

Mode	Assignment
Pan	Pan
High	EQ4 Gain, EQ4 Freq, EQ4 On, EQ4 Q
HiMid	EQ3 Gain, EQ3 Freq, EQ3 On, EQ3 Q
LowMid	EQ2 Gain, EQ2 Freq, EQ2 On, EQ2 Q
Low	EQ1 Gain, EQ1 Freq, EQ1 On, EQ1 Q
Snd/Ins1	Send1 Level, Send1 On, Send1 Pre, Send1 Bus
Snd/Ins2	Send2 Level, Send2 On, Send2 Pre, Send2 Bus
Snd/Ins3	Send3 Level, Send3 On, Send3 Pre, Send3 Bus
Snd/Ins4	Send4 Level, Send4 On, Send4 Pre, Send4 Bus

Assignment mapping for the Channel Strip buttons:

Mode	Assignment
EQs	EQs
Inserts/Sends	Send Level, Send On, Send Pre, Send Bus

- The buttons “1-8”, “9-16”, “17-24” and “25-31” will switch to the according channels.
- The following buttons of the Mixer-Mode section have no assignment: “Snd/Ins”, “MIDI”, “Input”, “Inst”, “Group” and “Bus”.
- The following buttons of the Channel Strip section have no assignment: “Dynamics”, “MIDI” and “Instruments”.

❒ **The SAC-2K supports “MIDI Feedback”, allowing fader settings and channel mute, solo and selection status to be indicated on the panel. For this to work, you need a two-way MIDI connection between the SAC-2K and V-ST*ACK*.**

Tascam US-428

The US-428 can remote control up to 64 Mixer channels.

- When the Tascam US-428 device is added in the Device Setup dialog, you can open the Remote Status window by selecting “Tascam US-428” from the Devices menu.
  This indicates which bank (group of eight channels in V-ST*ACK*) is currently being controlled by the remote device. To select another bank, use the pop-up menu in the window or use the Bank Left/Right buttons on the remote device.

The Remote Status window

- If you hold down the function key [Null] and then move a fader, the Select and Rec indicators above the fader will indicate whether the fader position is below or above the current fader level in V-ST*ACK*.
  If the upper indicator is lit, the fader position on the panel is above the fader level in V-ST*ACK* and vice versa. When both indicators are dark, fader positions are matched for that channel.

- The US-428 supports “MIDI Feedback”, allowing for mute/solo, channel selection, EQ band and Aux 1 to 4 status to be indicated on the panel. For this (and the fader position indication described above) to work, you need to select the “US-428 Control” port as input and output.

  The following US-428 controls will remote control the following Mixer parameter for each channel strip:

- Fader: volume
- Mute/Solo: mute and solo (selected via the Solo switch)
- Select: selects channel for editing
- Pan-Dial: pan
- EQ-Gain
  Controls the EQ gain for each band selected with the Low, LoMid, HiMid and High buttons. These correspond to the four EQ bands in V-ST*ACK*, starting from the leftmost band.

- EQ-Freq
  Controls the EQ frequency for each band selected with the Low, LoMid, HiMid and High buttons. These correspond to the four EQ bands in V-ST*ACK*, starting from the leftmost band.
- EQ-"Q"
  Controls the EQ "Q" for each band selected with the Low, LoMid, HiMid and High buttons. These correspond to the four EQ bands in V-ST*ACK*, starting from the leftmost band.
- Aux 1 to Aux 4 and shuttle wheel:
  The effect send levels for sends 1 to 4.
- Holding down the "Asgn" button and pressing the Low, LoMid, HiMid and High EQ buttons switches the corresponding EQ band "On" button status.
- Holding down the "Asgn" button and pressing the Aux1 to Aux4 buttons switches the corresponding Effect Send 1-4 "On" button status.

Yamaha 01V

Before you can initiate remote control operation, the 01V must be set up in the following way:

- MIDI Parameter Change and Receive must be enabled.
- MIDI Control Change and Receive must be disabled.
- Device ID / MIDI Channel Receive must be set to "1".
- Local Control should be set to "Off".
  As soon as Local Control is set to "Off", remote control of the Mixer is enabled.

The 01V remote operation of the V-ST*ACK* Mixer is very straightforward, with (almost) every parameter having the equivalent parameter controller in the 01V mixer. The current status of all controllable parameters is fed back to the 01V and indicated on the panel, using the motorized faders, indicators, etc. (for this to work, you need a two-way MIDI connection between the 01V and V-ST*ACK*).

To facilitate 32 channel remote control, two separate control "Layouts" are used, each controlling 16 Mixer channels. The "Memory" button on the 01V is used to switch between VST layout 1 and 2. Page 1 displays VST Layout 1 and page 2 VST Layout 2.

The following parameters are remote controllable for Channels 1-32 in the Mixer:

❒ **The value ranges for the parameters in the 01V may not match the ranges for the corresponding parameters in all cases.**

- Fader level, mute and pan.
  01V controls for these parameters control the equivalent V-ST*ACK* parameters.
- Effect sends 1 - 6.
  01V Aux 1 - 4 control effect send 1 - 4, 01V effect 1 and 2 control effect send 5 and 6.
- EQ Frequency, Gain and Q (4 Bands).
  01V controls for these parameters control the equivalent V-ST*ACK* parameters.
- Stereo Master Volume.
  The 01V control for this parameter controls the equivalent V-ST*ACK* parameter.
- Send effects master volume 1 - 4 are controlled by 01V Aux Master 1 - 4. Send effects master 5 and 6 are controlled by 01V effect master 1 and 2.

  With Layout 1 the 01V controls the following channels:
- Channel 1 - 12, 13/14 and 15/16 will control channels 1 - 14.
- 01V Return 1 and 2 will control channels 15 and 16.

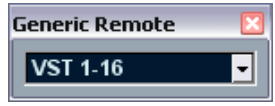
  With Layout 2 the 01V controls the following channels:
- Channel 1 - 12, 13/14 and 15/16 will control channels 17 - 30.
- 01V Return 1 and 2 will control channels 31 and 32.

The Generic Remote device

If you have a generic MIDI controller, you can use this for remote control of V-ST*ACK* by setting up the Generic Remote device:

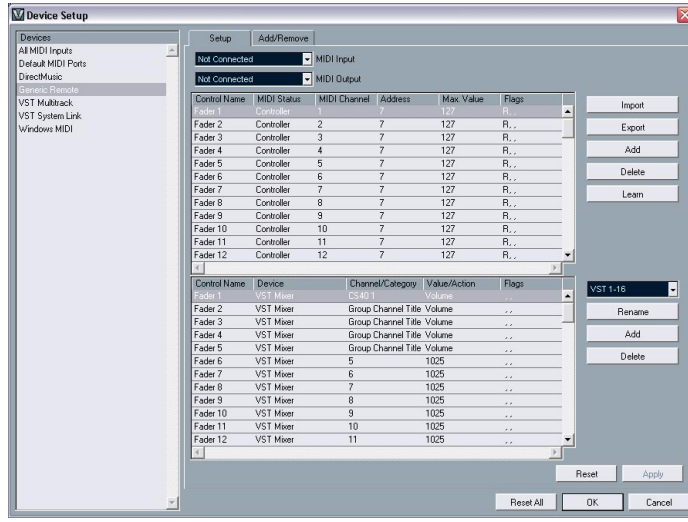
1. Open the Device Setup dialog on the Devices menu.
   If the Generic Remote device isn't on the Devices list, you need to add it:
2. Click the "Add/Remove" tab and select the "Generic Remote" device in the list to the right.
3. Click the Add button.

- When the Generic Remote device is added in the Device Setup dialog, you can open the Remote Status window by selecting "Generic Remote" from the Devices menu.



The Remote Status window

4. Click the Setup tab and select the Generic Remote device in the Devices list to the left.
   The settings for the Generic Remote are displayed, allowing you to specify which control on your device should control which parameter in V-ST*ACK*.



5. Use the MIDI Input and Output pop-up menu to select the MIDI Port(s) to which your remote device is connected.

6. Use the pop-up menu to the right to select a bank.
   The concept of banks is based on the simple fact that most MIDI devices can control a limited number of channels at a time (often 8 or 16). For example, if your MIDI control device has 16 volume faders, and you are using 32 Mixer channels in V-ST*ACK*, you would need two banks of 16 channels each. When the first bank is selected you control channel 1 to 16; when the second Bank is selected you control channel 17 to 32.

7. Set up the upper table according to the controls on your MIDI control device.
   The columns have the following functionality:

Column	Description
Control Name	Double clicking this field allows you to enter a descriptive name for the control (typically a name written on the console). This name is automatically reflected in the Control Name column in the lower table.
MIDI Status	Clicking in this column pulls down a pop-up menu, allowing you to specify the type of MIDI message sent by the control. The options are Controller, Program Change, Note On, Note Off, Aftertouch and Polyphonic Pressure. Also available are Continuous Control NRPN and RPN, a way to extend the available control messages. The “Ctrl JLCooper” option is a special version of a Continuous Controller where the 3rd byte of a MIDI message is used as address instead of the 2nd byte (a method supported by various JL-Cooper remote devices).
MIDI Channel	Clicking in this column pulls down a pop-up menu, allowing you to select the MIDI channel on which the controller is transmitted.
Address	The Continuous Controller number, the pitch of a note or the address of a NRPN/RPN Continuous Controller.
Max. Value	The maximum value the control will transmit. This value is used by the program to “scale” the value range of the MIDI controller to the value range of the program parameter.
Flags	Clicking in this column pulls down a pop-up menu, allowing you to activate or deactivate three flags: • Receive – activate this if the MIDI message should be processed on reception. • Transmit – activate this if a MIDI message should be transmitted when the corresponding value in the program changes. • Relative – activate this if the control is an “endless” dial, which reports the number of turns instead of an absolute value.

- If you find that the upper table holds too many or too few controls, you can add or remove controls with the Add and Delete buttons to the right of the upper table.

- If you are uncertain of which MIDI message a certain controller sends, you can use the Learn function:
  Select the control in the upper table (by clicking in the Control Name column), move the corresponding control on your MIDI device and click the Learn button to the right of the table. The MIDI Status, MIDI Channel and Address values are automatically set to those of the moved control.

8. Use the lower table to specify which V-ST*ACK* parameters you want to control.
Each row in the table is associated to the controller in the corresponding row in the upper table (as indicated by the Control Name column). The other columns have the following functionality:

Column	Description
Device	Clicking in this column pulls down a pop-up menu, used for determining which device in V-ST*ACK* should be controlled. The special option "Command" allows you to perform certain command actions by remote control. One example of this is the selection of remote banks.
Channel/ Category	This is where you select the channel to be controlled or, if the "Command" Device option is selected, the Command category.
Value/Action	Clicking in this column pulls down a pop-up menu, allowing you to select the parameter of the channel to be controlled (typically, if the "VST Mixer" Device option is selected you can choose between volume, pan, send levels, EQ, etc.). If the "Command" Device option is selected, this is where you specify the "Action" of the category.
Flags	Clicking in this column pulls down a pop-up menu, allowing you to activate or deactivate two flags: • Push Button – When activated, the parameter is only changed if the received MIDI message shows a value unequal to 0. • Toggle – When activated, the parameter value is switched between minimum and maximum value each time a MIDI message is received. The combination of Push Button and Toggle is useful for remote controls which do not latch the state of a button. One example is controlling mute status with a device on which pressing the Mute button turns it on, and releasing the Mute button turns it off. If Push Button and Toggle are activated, the Mute status will change between on and off whenever the button is pressed on the console.

9. If needed, select another bank and make settings for this.
   Note that you only need to make settings in the lower table for this – the upper table is already set up according to the MIDI remote device.

- If you need, you can add banks by clicking the Add button below the Bank pop-up.
  Clicking the Rename button lets you assign a new name to the currently selected bank, and you can remove an unneeded bank by selecting it and clicking the Delete button.

10. When you are finished, close the Generic Remote Setup window.
    Now, you can control the specified V-ST*ACK* parameters from the MIDI remote device. To select another bank, use the pop-up menu in the Remote Status window (or use a control on the MIDI remote device, if you have assigned one for this).

Importing and Exporting Remote Setups

The Export button in the upper right corner of the Generic Remote Setup window allows you to export the current setup, including the Control configuration (the upper table) and all banks. The setup is saved as a file (with the Windows file extension ".xml"). Clicking the Import button allows you to import saved Remote Setup files.

- The last imported or exported Remote Setup will automatically be loaded when the program starts or the Generic Remote control is added in the Device Setup dialog.

10

File handling

File Operations

New Project

A "project" in V-ST*ACK* contains all information about loaded VST Instruments and effects, Mixer settings, window positions, etc. The New Project command on the File menu allows you to create a new empty project, either empty or based on a template. Note:

- **V-ST*ACK* can only have one open project at a time – creating a new one will close the current project.**
  If there are unsaved changes in the current project you will be asked whether you want to save this before proceeding.

Open

The Open command on the File menu is used for opening saved V-ST*ACK* project files (extension ".cpr"). Note:

- **V-ST*ACK* can only have one open project at a time – creating a new one will close the current project.**
  If there are unsaved changes in the current project you will be asked whether you want to save this before proceeding.

Opening Cubase SX or Nuendo projects

It is possible to open a project created in Steinberg's Cubase SX or Nuendo for use in V-ST*ACK*. However, all non-V-ST*ACK* information (tracks, events, etc.) will be disregarded.

Close

The Close command on the File menu closes the active window. There is no way to actually close the current project – either create a new project, open an existing project or quit the program.

Save and Save As

The Save and Save As items allow you to save the project as a project file (file extension ".cpr"). The Save command stores the project under its current name and location, while Save As allows you to rename and/or relocate the file. If you haven't yet saved the project, or if it hasn't been changed since it was last saved, only Save As will be available.

A word about file extensions

Under Windows, file types are indicated by three letter file name extensions (such as *.cpr for V-ST*ACK* Project files). Under Mac OS X, it is not necessary to use file name extensions, since the file types are stored internally in the files. However, if you want your V-ST*ACK* Projects to be compatible with both platforms, you should make sure the option “Use File Extension in File Dialog” is activated in the Preferences dialog (User Interface page) – this is the default setting. When this is activated, the proper file name extension is automatically added when you save a file.

11

Menu reference

About this chapter

This chapter lists all main menu items in V-ST*ACK*, for quick reference. However, you won't find deeper explanations, backgrounds or procedures here – for this, please refer to the previous chapters in the manual.

V-ST*ACK* menu (Mac OS X only)

About V-ST*ACK*

This opens a window with information about the V-ST*ACK* version number etc.

Quit V-ST*ACK*

This quits the program. If there are any unsaved changes in an open project, you will have the option of keeping these or discarding them before the program quits.

This menu also contains the standard Mac OS X options for hiding or showing V-ST*ACK* and/or any other running applications.

File menu

New Project

This item allows you to create a new empty project. Creating a new project will close the current project, allowing you to save it first if necessary.

Open...

This item opens a file dialog allowing you to locate and open saved project files. Project files have the extension ".cpr". Opening a new project will close the current project, allowing you to save it first if necessary.

Close

This closes the active window.

Save

This saves any changes made to the project since you last saved. The Save command stores the project under its current name and location.

Save As...

Save As allows you to specify a new name and a new project folder for the project.

Linear Knob Mode

Use this menu item to change the operating mode of knobs from circular to linear. In circular knob mode, when you want to change the setting of a knob on the V-ST*ACK* user interface (e.g. in the VST Channel Settings window), click on the control and drag the mouse in a circle, much like turning a "real" knob. When you click anywhere along the knob's edge, the setting is immediately changed.

In linear knob mode, to change a knob setting, you click on it and drag up or down with the mouse button pressed – as if the knob were a vertical slider.

Recent Projects

This submenu provides shortcuts to the most recent projects you have been working with. The list is chronological with the most recent project at the top of the list.

Quit

- **Under Mac OS X, this item reached from the V-ST*ACK* menu.**

  This quits the program. If there are any unsaved changes in an open project, you will have the option of keeping these or discarding them before the program quits.

Edit menu

Copy/Paste

These items allow you to copy and paste settings from one Mixer channel to another – see page 95.

Devices menu

Mixer

This opens the Mixer. All VST Instrument output channels have a corresponding channel strip in the Mixer, along with the four group channels. The Master bus fader can also be shown in the Mixer.

Plug-in Information

The Plug-in Information window lists all installed VST and DirectX plug-ins, and shows various information about them.

VST Instruments

This opens the VST Instruments window, where you can select up to 16 VST Instruments. When a VST Instrument has been selected for a slot in the window, a MIDI input pop-up menu will appear for the slot, allowing you to route MIDI directly to the instrument. For each active VST Instrument, one or several channel strips will appear in the Mixer.

VST Master Effects

Up to 4 Master effects can be added to the signal on the Master bus. The last effect slot is post Master gain, which is useful for dithering plug-ins.

VST Outputs

The VST Outputs window shows the output buses connected to the physical outputs on your audio hardware.

VST Performance

This window indicates the current CPU load.

VST Send Effects

This is used for selecting global send effects. Up to 8 send effects can be selected.

Transport Panel

Choosing this option lets you show or hide the transport panel.

Show Panels

This opens a panel where you can directly select any of the current devices on the Device menu.

Device Setup…

This dialog allows you to add or remove remote control devices and to make various basic settings for audio and MIDI such as selecting ASIO drivers and MIDI ports etc. This is also where you set up and activate VST System Link.

Help menu

Operation Manual

Select this item to open the V-ST*ACK* operation manual as a pdf file (requires the Adobe Acrobat Reader application which you can download via the Internet from www.adobe.com)

Steinberg on the Web

This opens a submenu with links to various Steinberg Internet sites. Please visit our web pages to learn about our company and products.

Be-Cool.org

Please visit www.be-cool.org where you will find information regarding software piracy and what we all can do to stop it.

Register Online…

This will launch the online registration process that allows you to register your product via the Internet. Your computer requires a working Internet connection for this to work.

On a Macintosh, you will find this option in the V-ST*ACK* menu.

About V-STack

This opens a window showing information about your version of V-ST*ACK*. To close the window again simply click on it.

On a Macintosh, you will find this option in the V-ST*ACK* menu.

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