Expert Sleepers
Silent Way ES-4 Controller
v1.7.0beta
User Manual

BETA Release

This is a beta release and will expire at the end of December 2011. A new release will be provided on the Expert Sleepers website before that date.

Contents

Introduction

The Silent Way ES-4 Controller plug-in is a special element of the Silent Way plug-in suite, dedicated to controlling the Expert Sleepers ES-4 module.

Unlike the rest of the Silent Way plug-ins, the ES-4 Controller does not time out, allowing unrestricted use without a Silent Way licence. However, some advanced features of the ES-4 Controller are only available to owners of a active licence.

The ES-4 Controller offers:

- Two MIDI/CV channels, offering the features of a standard MIDI/CV converter, driving the ES-4's two pitch outputs (1 & 2).
- Controls that directly set the exact output signal of the ES-4's five channels.
- MIDI note on/off control over the 40 possible gate outputs.
- A MIDI out generator, allowing an ES-4 Gate Expander output to be used as a MIDI output, transmitting all the usual MIDI messages, including MIDI clock.
- Inputs for routing generic CV sources (e.g. other Silent Way plug-ins) or audio to the ES-4's outputs (requires a Silent Way licence).

Current Limitations

The current release of the ES-4 Controller is an early version of the software, released to support the first customers of the ES-4 modules. It is anticipated that the software will mature quickly in response to customer feedback. Also, there are a number of features that are definitely required that have not yet been implemented:

- The MIDI/CV channels need a trigger output, as well as a gate output.
- The MIDI/CV channels don't have a generic MIDI CC response (e.g. for mod wheel), though you can achieve the same thing by using the DAW's MIDI parameter control to drive the direct output controls.
- There is currently no pitchbend support.
- While the plug-in has now been integrated with the rest of the Silent Way suite, giving access to the powerful Silent Way LFO, we may build LFOs and envelopes into the ES-4 Controller itself.

A note on MIDI channels

The ES-4 Controller packs a lot of functionality into one plug-in, and to address all of that functionality via MIDI, the various blocks of the plug-in let you choose which MIDI channel they respond to.

However, not all DAWs pass MIDI to plug-ins on multiple MIDI channels. Ableton Live, for example, always passes MIDI to plug-ins on channel 1, no matter what the MIDI channel of the messages arriving into Live itself.

The exact implications of this will vary from DAW to DAW, but it's worth bearing in mind, if things don't appear to be working as you expect.

Gate Expander outputs

A number of the plug-in's controls let you choose ES-4 Gate Expander outputs. These are listed as a pair of numbers e.g. "1/6" is gate 6 on the Gate Expander connected to the ES-4's channel 1; "5/2" is gate 2 on the Gate Expander connected to the ES-4's channel 5.

Plug-in variants

The ES-4 controller is supplied in both 'instrument' and 'effect' variants. These are identical; they simply appear in different places in your DAW's plug-in lists, and are provided to allow maximum flexibility in how you use the plug-in.

Installation

Mac OS X, Audio Unit (AU)

The plug-in files have the extension "`.component`".

Simply copy the files to the folder:

`Library/Audio/Plug-Ins/Components`

Mac OS X, VST

The plug-in files have the extension "`.vst`".

Simply copy the files to the folder:

`Library/Audio/Plug-Ins/VST`

Windows (VST)

The plug-in files have the extension "`.dll`".

Simply copy the files to your VST plug-ins folder.

System Requirements

Mac OS X

Silent Way requires at least Mac OS X version 10.4.11.

The plug-ins are Universal Binaries and so will work on PowerPC or Intel Macs.

The Audio Unit versions will work in any Audio Unit host.

The VST versions require a "VST 2.4" compatible host.[1]

Windows

Silent Way has been developed and tested with Windows XP SP2 and Windows 7. It may work with other versions of Windows (Vista included) but this is by no means guaranteed.

The plug-ins require a "VST 2.4" compatible host.

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[1] VST is a trademark of Steinberg Media Technologies GmbH.

Using Silent Way

Using the controls

Knobs

Basic use of the knobs is to click on them and drag the mouse up and down. However you can obtain different results by holding keys as follows:

- Shift : Values change more slowly as you move the mouse.
- Command[1] (Mac OS X) / Alt (Windows) : The knob assumes its default position.
- Option[2] (Mac OS X) / Control (Windows): The knob assumes integer values only.

Dropdown menus

Clicking on the menu displays the list of options. Move the mouse over the desired option and release the mouse to select it.

Value edit boxes

These boxes (below each knob and slider) let you enter parameter values directly. Clicking on the value highlights it in green - you can then type the desired value using the keyboard. Press enter to finish and accept the new value.

While you're typing the value, the box goes red to indicate that the value you see has not yet been accepted.

Name/value display

As you move the mouse around the interface, the name and current value of the control currently under the mouse is displayed in the top right of the window. This area also provides tool-tips for buttons.

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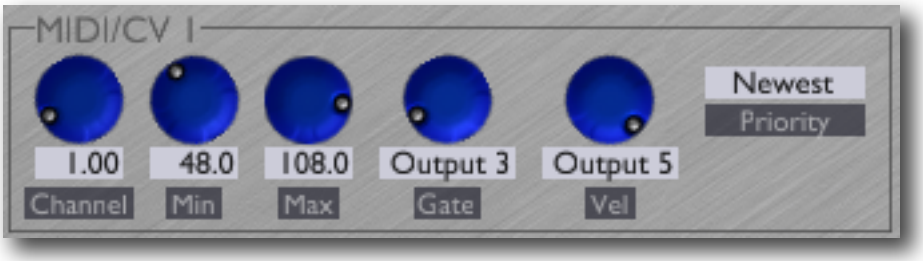
[1] The 'Command' key is also known as the 'Apple' key - the one next to the spacebar.

[2] The 'Option' (alt) key is the one between the Control (ctrl) key and the Command (cmd) key.

The ES-4 Controller Controls

MIDI/CV 1/2

These two groups of controls provide functionality similar to that of a traditional standalone MIDI/CV converter, for each of the ES-4's pitch CV outputs (outputs 1 & 2).



Channel

Specifies the MIDI channel that the converter responds to, or 'Off' to disable the converter completely.

Min & Max

Specify the range of MIDI notes that the converter responds to. This lets you set up a keyboard split, using the two converters on the same MIDI channel.

Gate

Specifies the ES-4 output to use for the gate signal (an on/off CV signal reflecting whether a note is held or not). You can choose any of the ES-4's 5 outputs, or one of the 40 possible Gate Expander outputs. Setting this to 'Off' disables the gate signal.

Vel

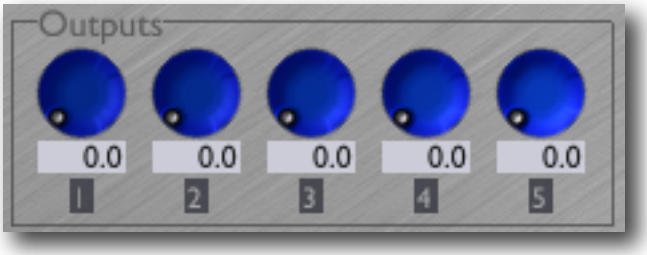
Specifies the ES-4 output to use for the velocity signal (a CV reflecting the velocity of the MIDI note being played). You can choose any of the ES-4's 5 outputs. Setting this to 'Off' disables the velocity signal.

Priority

Sets the note priority mode. Since the ES-4 Controller behaves as a monophonic synth, a scheme is required to determine which note sounds when multiple keys are held at the same time. The options are:

- Newest - the most recently pressed key sounds.
- Lowest - the lowest note sounds.
- Highest - the highest note sounds.

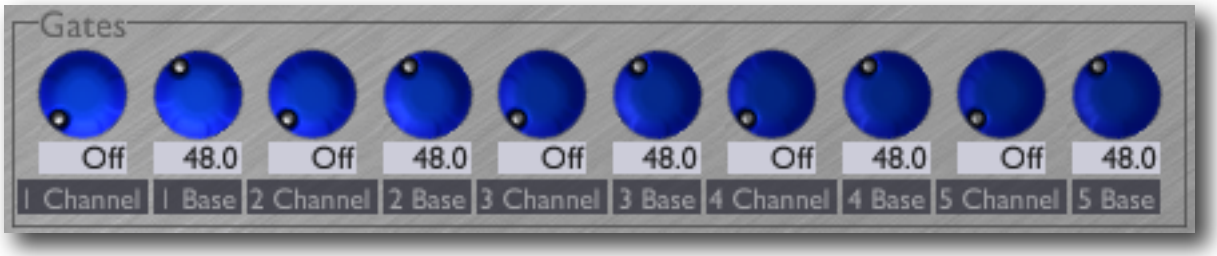
Outputs



These controls let you directly set the output levels of the ES-4's 5 outputs. The values range from 0 to 255 (an 8 bit value).

These can be particularly useful when combined with MIDI controller mapping in your DAW to, say, map a synth mod wheel to a CV output for filter cutoff. Via OSC or MIDI, you have the possibility to control the ES-4 and/or the Gate Expanders down to the individual bit (i.e. gate).

Gates

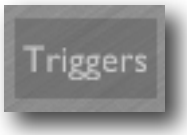


This section offers MIDI note on/off control over the 40 gate outputs from the ES-4 Gate Expanders.

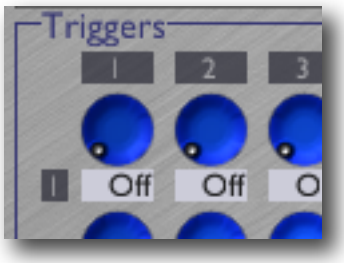
There is a pair of controls for each of the ES-4's 5 channels i.e. the 5 possible Gate Expanders. "Channel" sets the MIDI channel to respond to, or "Off". "Base" sets the base note to respond to, which will control the Gate Expander's output 1. The remaining 7 outputs will be controlled by the 7 MIDI notes above the base note e.g. if the base note is 48, outputs 1 to 8 on the Gate Expander will be controlled by notes 48 to 55.

Triggers

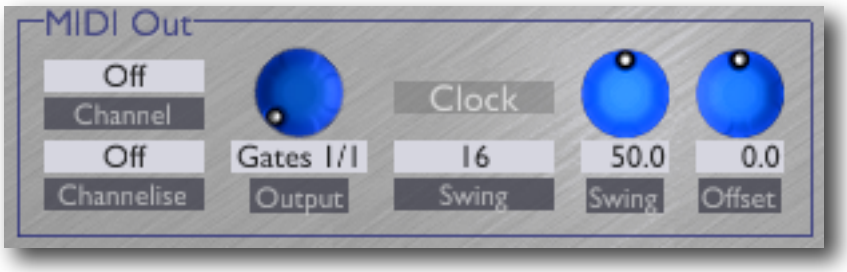
The 'Triggers' button exposes a new section of controls, which allow each of the 40 possible gate outputs above to be used as a trigger instead i.e. a short pulse is emitted at each MIDI note on, and note offs are ignored.



Each trigger length control sets the trigger time, in milliseconds, or 'Off' to allow normal gate functionality.



MIDI Out



This section allows a Gate Expander output to be used as a MIDI output. Because the ES-4's outputs are derived from an audio signal, the MIDI messages sent from an ES-4 are free from the timing problems often associated with regular (e.g. USB) MIDI interfaces.

Note: The MIDI out feature is available when the input sample rate is 48kHz or above. In particular, it may not work reliably at 44.1kHz, though some users have reported success at this sample rate with certain hardware.

Channel

Specifies the MIDI channel to receive on. All MIDI messages from this channel are echoed out to the ES-4's output. "Off" disables this feature (but not the MIDI clock output, if enabled). "Omni" receives messages on all MIDI channels.

Channelise

If set to "Off", MIDI messages are sent out on the same channel on which they are received. If set to a channel number (1-16), the incoming MIDI messages are sent out on the specified channel.

Output

Selects the Gate Expander output that will carry the MIDI signal.

Clock

If enabled, causes the plug-in to send MIDI timing clock messages, synced to the DAW's transport.

When Clock is enabled, MIDI clock is generated when the host DAW's transport is running. The MIDI clock generation always begins at the start of a bar; if the host transport is started in the middle of a bar, the plug-in waits for the next bar before starting the MIDI clock.

Swing

These controls allow you to add 'shuffle' or 'swing' timing to the clock output.

Swing has two controls. The knob sets the amount of swing, in percent. 50% means no swing (the middle sixteenth note is 50% of the way between the neighbouring notes, as

normal). Higher values of swing make the middle note later; lower values make it earlier. At 100%, the middle note is right on top of the following note.

The dropdown menu chooses between sixteenth and eighth note swing.

Offset

The Offset control applies a small delay or advance in the timing of the MIDI clock, relative to the host's transport. This can be used to compensate for any difference in the response time of the hardware being synced.

Misc

The "Test" control causes the plug-in to emit various diagnostic signals. Users should not need to worry about this in normal use.

Output Indicators

The row of numbers just above the 'Prefs' button show the values currently being output on the 5 ES-4 output channels.

Inputs

This section controls the routing of other signals into the plug-in and on to the ES-4.

The plug-in has 8 inputs, organised as 4 stereo pairs. Quite how this is handled by the DAW will vary considerably from DAW to DAW. Some DAWs are very flexible (e.g. Ableton Live) while some make it very hard to route audio into such a plug-in (e.g. Logic Pro). If your DAW of choice is lacking in this regard, we recommend the use of Plogue Bidule, which provides a very flexible and modular plug-in environment, and can itself be used as a plug-in within the DAW.

Each menu in this section lets you choose from the available input channels, or set the connection to 'Off'.

Thru

The 'Thru' input connection is designed to allow multiple ES-4 Controllers to be 'stacked', their outputs being combined in a logical manner. By default the Thru connection is taken

from the first stereo pair of inputs, which is what will be connected if you simply insert a sequence of ES-4 Controller plug-ins on the same track in your DAW.

This is how you would, for example, use multiple ES-4 Controllers to generate multiple streams of output MIDI (using the MIDI Out section, above).

This is also useful when you want to use the two MIDI/CV outputs on separate MIDI channels and the DAW doesn't provide a way to send two MIDI channels to one ES-4 Controller. Stack two instances of the plug-in, use MIDI/CV 1 on one instance and MIDI/CV 2 on the other, and then send your two MIDI streams to the two plug-ins.

1-5

Note: the use of inputs 1-5 requires a full Silent Way licence. Without a licence, the inputs will work for 15 minutes and then time out.

These inputs simply route audio (or CVs) from the selected plug-in input to the relevant ES-4 output. This is how you would, for example, use the Silent Way LFO plug-in to send LFO signals out of the ES-4.

Input Modes

These menus work in conjunction with the input 1-5 options above, and define how the incoming audio/CV stream is mapped onto the ES-4's output range.

'Unipolar' means that positive inputs from 0.0 to 1.0 will be mapped to the ES-4's output range (0 to 255). Negative inputs will be clamped at zero.

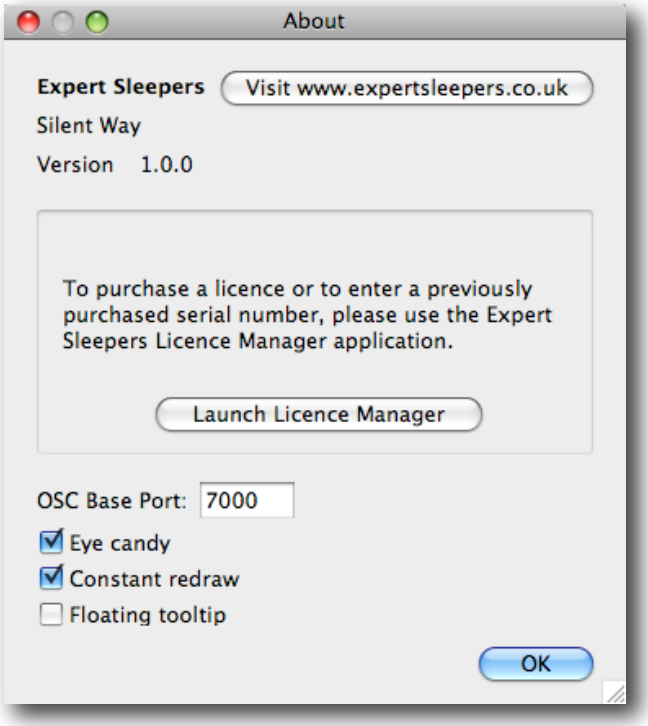
'Bipolar' means that inputs from -1.0 to 1.0 will be mapped to the ES-4's output range, with 0.0 being mapped to a mid-scale output on the ES-4 (128).

To some extent these settings will want to match the ES-4's jumper settings, but this is by no means a necessity.

For sending audio to the ES-4, it is recommended to use an input set to Bipolar, and with an ES-4 channel with the jumper in the bipolar (±5V) setting. For CVs, use whatever works well for you.

Preferences

Pressing the 'Prefs' button brings up a dialog where various preferences are set. These settings are shared by all instances of Silent Way, and are not stored with presets.



The top section shows the product version. The central section will show your serial number once you've bought a registration.

OSC Base Port

Sets the base port number for OSC. See the section on OSC, below.

Eye candy

Enables the pretty graphics. Turn off if you don't like them, or if your computer has compatibility issues with drawing such things.

Constant redraw

Is on by default. If turned off, the GUI is only redrawn when a control changes. Use this if you're concerned that the GUI is wasting your CPU resources.

Floating tooltip

Causes the parameter name and value display (usually in the top right of the GUI) to be displayed above the mouse pointer.

OSC Control

Silent Way plug-ins can be controlled via the Open Sound Control (OSC) protocol.

If you're new to OSC, start by visiting opensoundcontrol.org.

Two settings control what port the plug-in uses to listen on for OSC commands. One is the base OSC port, set in the preferences. The second is the OSC Port Offset control. If the port offset is set to something other than 'Off', then the two numbers are added together and the result used as the port number. E.g. if the base port is 6000 and the port offset is 1, then the plug-in will listen on port 6001.

Reference

All Expert Sleepers plug-ins that support OSC share a common implementation. This is documented in the 'OSC Control Manual', available from the Expert Sleepers website.

MIDI & OSC Scripting

It is possible to extend the plug-in's MIDI & OSC functionality via user-writeable scripts. Indeed, the standard MIDI functionality described above has been re-implemented using such a script, which you can use as reference for your customisations.

The language used for the MIDI scripts is Lua. You will find a complete description of the language, and some useful tutorials, at the Lua website: www.lua.org

All the standard language features of Lua are available in the scripts, plus some extra functions specific to the Expert Sleepers system.

Reference

All Expert Sleepers plug-ins that support MIDI/OSC scripting share a common implementation. This is documented in a the 'MIDI & OSC Scripting Manual', available from the Expert Sleepers website.

Script locations

The plug-in name for constructing the script locations is
`Silent Way ES-4 Controller`

Version History

1.7.0 24/11/11

- Fixed the plug-in's response to MIDI channels (previously it would respond to messages on any and all MIDI channels) and added a 'Channelise' capability to the MIDI Out section.
- Removed the DIN sync generator, which is now available (and extended) in the separate Silent Way Sync plug-in.
- Fixed various issues with parameter automation and GUI updates.

1.6.14 31/10/11

- Added Trigger Length controls.

1.6.12 18/10/11

- MIDI clock and DIN sync reimplemented.
- Added Offset control to MIDI clock and DIN sync.

1.6.11 5/10/11

- Slight tweak to the input calculation, to match the Silent Way Voice Controller and Silent Way Quantizer's ES-4 modes.

1.6.9 15/9/11

- Added inputs.
- Plug-in now exists in effect and instrument variations.
- Corrected VST plug-in name.

1.6.8 2/9/2011

- First release.

Contact

The Expert Sleepers website is here:

http://www.expert-sleepers.co.uk/

Or you can email

info@expertsleepers.co.uk

Or you can use the Expert Sleepers forum, which is here:

http://www.kvraudio.com/forum/viewforum.php?f=85

Or you can use the dedicated Silent Way forum, which is here:

http://www.muffwiggler.com/forum/viewforum.php?f=35

Acknowledgements

The software described in this manual makes use of the following open source projects. The author is greatly indebted to them for their efforts and generosity.

Below are reproduced the various copyright notices and disclaimers that accompany these software projects, in accordance with their terms of use.

Lua

oscpack

oscpack -- Open Sound Control packet manipulation library
http://www.audiomulch.com/~rossb/code/oscpack

glew

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libpng

http://www.libpng.org/pub/png/libpng.html

zlib

http://www.zlib.net/