

ISLA Instruments

S2400

User Manual



Copyright © 2020-2021 ISLA Instruments

Revised March 17, 2021

This manual is a work in progress. Updates will be posted as they are written.

The most up to date version can be downloaded from
<https://islainstruments.com>

Foreword

First and foremost, if you're reading this user manual then the likelihood is that you have either already purchased an S2400 or are perhaps considering doing so. If you have, then thank you.

I've had a serious drum machine fetish for about 25 years now. The first machine I bought was a broken MXR-185 for cheaps at a local thrift store circa 1996. Broken only in the sense that it had been abused so much that the insides of the switches had a sticky residue on them from a certain plant species, resulting in them not releasing after being pressed. After I got it all running, I was hooked and spent countless evenings making up my own drum patterns.

Not long after that, I got my first sampler; an 8-bit parallel port attachment for my Commodore Amiga 2000. Sequencer One and OctaMED were my music software weapons of choice for this machine. From these formative experiences, my fate was set. Electronics repair, computers, music gear, and music production is pretty much all I've ever done, and have been my lifelong love ever since those early days.

The engineering side of me pretty much took a hiatus for the best part of a decade as I worked as a co-producer and record label manager for the DJ/Producer Ian Carey. Fast forward to 2015, and again, a visit to a thrift store here in the USA (I'd emigrated here from the UK a few years before, via Spain for seven years) resulted in me walking out with a broken Alesis HR-16 drum machine of which I started modifying and hot rodding into being able to do all sorts of things including reading samples from custom burnt EPROMS. I uploaded the results of my modifications onto YouTube (lookup: Rhythm Imposer) and pretty soon after was bombarded with emails from folks wanting me to make them a similar machine.

I guess the universe was trying to tell me something, and that was to culminate my love of electronics, music production, and old-skool hardware workflows into a modern, yet familiar machine with the aesthetic and sonic character that pays tribute to some of the most inspiring and prolific machines of the 80s and 90s. And, Dave Rossum, a true pioneer, and a personal hero of mine, I hope this machine pays tribute to you as well.

Bringing this machine to life has been a labour of love from a very small team of like-minded and dedicated individuals of whom, with the exception of myself, are an absolute crock-pot full of talent and experience, without which, there would be no S2400.

Once again, THANK YOU to our customers and followers, for believing in this project enough to crowd-fund it into existence. I for one can't wait to see what you come up with on your machine.

Now, switch your machine on, take a deep breath, relax... and turn the page.



Brad Holland
ISLA Instruments

Acknowledgements

Vision/Design: Brad Holland

Audio Engine: Vladimir Pantelic

UI/Sequencer: Mickey Delp

PCB & CAD: Supul Sapukotana

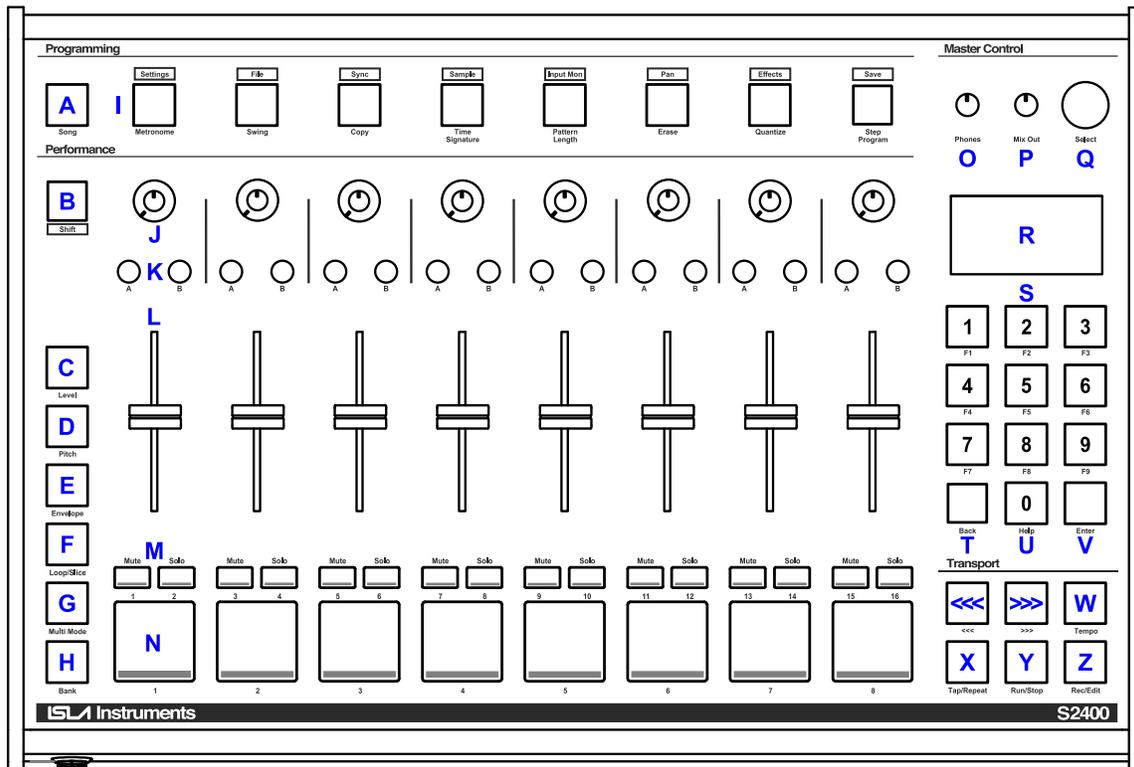
Beta Testers & Factory Content: Alex Ball, Chaz Emphatic, David Noller, Dennis Ferrer, DJ Battlecat, DJ Jazzy Jeff, Doug Terrebonne, E-A-Ski, Easy Mo Bee, Fred Wreck, Jamie Lidell, Just Blaze, Ken Flux Pierce, Kenny Dope, Lisa Vazquez, Questlove, Rory Dow, Ski Beatz, Steve Mac, Sunshine Jones, Todd Terry, Young Guru, Matt Jones, Goldbaby, Grant Nelson, Burning Rainbow

Additional Thanks: Bill Behrendt, Paul Schreiber, Rob Orr, Dave Rossum, Marco Alpert, Adventure Kid, Erin Parr

Contents

Foreword	2
Acknowledgements	3
Contents	4
Front Panel	5
Rear Panel.....	7
Instant Gratification	8
User Interface Elements	9
Files and SD Card	13
Assigning Sounds to Tracks.....	16
Pattern Mode	17
Fader Modes.....	18
Multi Mode.....	25
Pattern Functions and Settings	26
Step Program	29
Playback Features.....	31
Record Features.....	32
Live Looping.....	33
Song Mode.....	35
Track Settings	37
Settings	39
File	42
Sync	44
Sample Mode.....	48
Resampling	50
Input Monitor	51
Pan.....	52
Effects	53
Save	53
Output Channels.....	54
F-Key Quick Reference.....	56

Front Panel

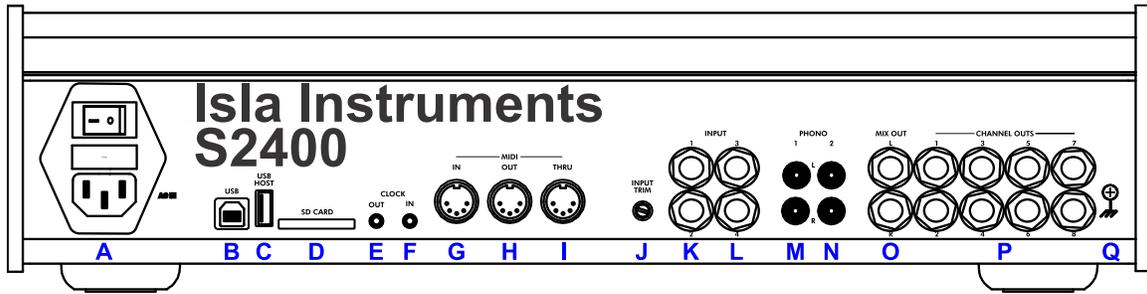


- A. Song:** Switches between Song and Pattern modes.
- B. Shift:** Shift is used in conjunction with other controls for additional features.
- C. Level:** Sets the Level fader mode.
- D. Pitch:** Sets the Pitch fader mode.
- E. Envelope:** Sets the Envelope fader mode.
- F. Loop/Slice:** Sets the Loop/Slice fader mode.
- G. Multi Mode:** Engages Multi Mode, which spreads eight values of a parameter across the faders/knobs for a single track.
- H. Bank:** Change the track bank. There are four banks of eight tracks.
- I. Top Row Buttons:** Dedicated buttons for the most commonly used Pattern mode functions: Metronome, Swing, Copy, Time Signature, Pattern Length, Erase, Quantize, and Step Program.
Holding Shift and pressing the top row buttons accesses configuration options: Settings, File, Sync, Sample, Input Monitor, Pan, Effects, and Save.
- J. Knobs:** Context-specific, multi-purpose dual knobs that control filter cutoff, resonance, loop points, and more depending on the fader mode.
- K. A & B:** Two Context-specific, multi-purpose lighted buttons that control various options depending on the fader mode, they also light up to indicate mode-specific information.

ISLA Instruments S2400 User Manual

- L. Faders:** The focus of the front panel. They control level, pitch, and various parameters depending on the [Fader mode](#).
- M. Mute & Solo:** A pair of illuminated buttons to [mute/solo](#) a track. They double as step buttons in [TR Mode](#).
- N. Pad:** Velocity sensitive, RGB illuminated pads for triggering sounds.
- O. Phones:** Volume control for the headphones.
- P. Mix Out:** Volume control for the mix out jacks.
- Q. Select:** A rotary [encoder](#) with integrated pushbutton. The encoder is used for editing settings, scrolling, and a multitude of other things.
- R. Screen:** White OLED screen that displays menus, waveforms, envelopes, and lots of information.
- S. Keypad:** Used for [numeric entry](#) as well as [F-keys](#).
- T. Back:** The Back button exits menus and modes.
- U. Help:** The [help button](#) displays context sensitive information about the active mode. Press Help for a reminder of what the F-keys, faders, knobs, and buttons do in the active mode.
- V. Enter:** Confirms data entry. On some screens, Enter is used a tab button.
- W. Tempo:** Press Tempo to set the tempo. Pretty straight forward.
- X. Tap/Repeat:** Works as a tap-tempo button when setting the tempo, or as a pad repeat button when playing or recording the pads.
- Y. Run/Stop:** Starts and stops the sequencer.
- Z. Rec/Edit:** Turns recording of patterns on/off. In [Step Program](#) mode, turns editing on/off.
- <> Left & Right Arrows:** Function just like turning the encoder left and right. Long-press the arrow keys to auto-repeat.

Rear Panel



- A. Power Inlet:** Accepts a C13 style power cord. Input voltage can be 125 or 250. Above the inlet is the main power switch.
- B. USB:** USB type B jack for connecting the S2400 to a computer.
- C. USB Host:** USB type A jack for connecting controllers to the S2400.
- D. SD-Card:** SD-Card slot for saving samples and projects.
- E. Clock Out:** 3.5mm clock out jack clocking external hardware or modules.
- F. Clock In:** 3.5mm clock in jack for clocking the S2400 from external hardware or modules.
- G. MIDI In:** MIDI DIN jack for controlling the S2400 via MIDI.
- H. MIDI Out:** MIDI DIN jack for controlling other MIDI devices from the S2400.
- I. MIDI Thru:** MIDI DIN jack which outputs the same data that is on the MIDI In jack.
- J. Input Trim:** Knob adjusts the hardware amplifier that is internally connected to the sampler. Note that higher is clockwise – when adjusted from the front of the machine, not the rear.
- K. Input 1 & 2:** Two ¼" mono jacks for sampling input. Connected to a preamp.
- L. Input 3 & 4:** Two ¼" mono jacks for sampling input. Connected to a preamp.
- M. Phono 1:** A pair of phono jacks for sampling turntables. Connected to RIAA preamps.
- N. Phono 2:** A pair of phono jacks for sampling turntables. Connected to RIAA preamps.
- O. Mix Out:** Two ¼" mono jacks output the sum of the eight channels. If a plug is inserted into only one of the Mix Out jacks, it will include both signals, albeit at a slightly lower volume.
- P. Channel Outs:** Eight individual channel output jacks. They are switched jacks, so when a plug is inserted into an individual output, that output is mechanically removed from the mix out. The channel outs are pseudo balanced. Which means they are TRS jacks, but the ring does not carry an inverted copy of the signal as with actual balanced jacks. Instead, the ring is connected to ground with an impedance matching that of the signal on the tip. This configuration still gives noise reduction when connected to a balanced input, albeit with a 6dB reduction in level.
- Q. Ground:** Grounding screw for connecting turntables.

Instant Gratification

You just got your S2400 and you want to make some beats now!

Make Some Sounds

Connect the Mix Out jacks on the back to an amp, mixer, or audio interface.

Or, plug headphones into the headphone jack on the front.

Turn on the S2400 with no SD card inserted.

A default kit will load from the internal memory.

Press the pads. Wee! Sounds!

Shift the Pitch

Press the Pitch key on the left.

The faders now control the pitch of the sounds.

Pads 7 and 8 in the default kit are toms and sound great pitch shifted.

Record a Pattern

Press and hold the Rec/Edit key, then press the Run/Stop key.

The S2400 is now recording.

Press pads to record sounds into the pattern.

The pattern will repeat.

Press more pads to add to the pattern.

Learn More

The S2400 can do a whole lot more!

Read the whole manual to learn all of its secrets.

Watch the [S2400 Video User Manual on YouTube](#).

User Interface Elements

Highlighted Field

When a field on the screen is highlighted (black text on a white background), then that field is currently being edited. Its value will change when the arrow keys are pressed or the encoder is turned, or, in the case of a numeric field, when the number keys are pressed, and in some cases, when a fader is moved.

The Encoder

Turning the encoder always does the same thing as pressing the arrow keys, and pressing the encoder always does the same thing as pressing the Enter key. They are just two different ways of interacting with the machine.

Press and hold the arrow keys to repeat the key. Only the arrow keys repeat when held.

Shift

Shift+Key means hold the Shift key, then press another key. Shifted keys are used all over.

The keys across the top of the S2400 are all dual function, except Song. Press the key to access the function written under the key, and press Shift+ the key to access the function written above it.

Sticky Shift key allows single handed Shift+Key presses. Press and release Shift *without* pressing any other key to "stick" Shift. The Shift key's LED will be illuminated. The next key pressed while Shift is stuck will behave as if Shift was held, and then Shift will be unstuck. Pressing and releasing the Shift key when it is stuck will unstick it.

F-Keys

The F-keys (function keys) are context specific. They do different things depending on what screen is active. They share the same buttons as the number keys. If a numeric field is highlighted, pressing the number keys changes that field, so the F-keys are activated by either Shift+ the number key, or by long-pressing the number key. When a non-numeric field is highlighted, then the F-keys can be accessed with or without Shift or long-press.

Help

The help key displays the built-in help. Help is context sensitive and gives information about the active screen or mode. The built-in help is not this user manual, but more of a quick reference. It lists the functions of all of the faders, knobs, buttons, and F-keys, which change depending on the active screen or mode.

Help shares a key with the number zero, so the same rules apply to it as to the F-keys.

Navigating Menus

Most of the keys across the top of the screen open a menu. Some other keys, like Shift+A bring open a menu depending on the active mode. Menus contain settings and actions. Most menus have a specific purpose and sub-menus are kept to a bare minimum.

Use the arrow keys or encoder to scroll through the menu and highlight an action or setting. Press the encoder or Enter key to execute the action, or edit the setting. Press Enter or Back to stop editing and return to highlighting. Press Back while highlighting to exit the menu.

Settings have the name on the left, and the value on the right. Action menu items are indicated by an arrow on the far right.

Some settings have a track as the value. Pressing a pad while the setting is highlighted sets the value to the track whose pad was pressed.

Some menus have settings that are track specific. Pressing a pad will scroll to the first menu item specific to that pad.

A setting can have one of four types of values: on/off, numeric, list, or text.

On/off fields look like a check box. Press the encoder or enter to toggle the value.

Editing a Numeric Field

Arrows/Encoder: Increments/decrements the number. For settings with a range of 99 or more, arrow key autorepeat or encoder fast turn changes the number by 10 instead of 1.

Shift+Arrows/Encoder: For any field with a decimal point, hold Shift to change the fractional part of the number. Without shift, the whole part of the number is changed.

Enter/Encoder Press: Saves the setting value and exits edit mode.

Back: Exits edit mode. If a multi-digit number is partially typed, Back clears the number without exiting edit mode.

Number Keys: Allows for directly typing the setting value. Leading zeros are optional. Editing ends when all digits have been entered or when Enter is pressed.

F1: Changes the sign of a numeric field, if the range can be negative.

If a numeric field is highlighted, but not yet selected for editing, pressing a number key begins editing it, the same as pressing Enter, then pressing the number.

When typing a field that has decimals, a leading zero is needed when the value has fewer than the maximum allowable digits. For example, to set tempo to 91.2, type 0912.

Editing a List Field

List fields have a list of possible values. The values may be text, numeric, or a mix of both. The values in a list field are not edited, just selected.

Arrows/Encoder: Scrolls to the previous/next value in the list.

Shift+Arrows/Encoder: Scrolls to first/last list value.

Enter/Encoder Press or Back: Exits edit mode for the setting.

Number Keys: Some list fields have numeric shortcut keys. When editing, pressing a valid shortcut key selects the associated list value. If a list field is highlighted, but not selected, pressing a valid shortcut key is like selecting the field, then pressing the key.

For channel lists, pressing 1-8 selects the channel. For time lists, the keys 4, 8, 1, 3, and 6 correspond to 1/4, 1/8, 1/16, 1/32, 1/64.

Editing a Text Field

Accented characters are converted to their non-accented equivalents when a text field is edited. Unsupported characters are converted to a question mark when a text field is edited.

Arrows/Encoder: Move underline cursor. During editing, arrows scroll through the list of valid characters. For a space, select the "SP" character.

Shift+Arrows: Move the cursor to the beginning or end of the field. During editing, Shift+Arrows scroll to the beginning or end of the alphabetic characters.

Shift: During editing, Shift changes the case of the character being edited. It is not necessary to hold Shift when using F-keys in the text editor, but it is necessary for Help.

Enter/Encoder Press: Selects a character to be edited. During editing, enter selects the highlighted character and moves the cursor to the right one position.

Back: Exits the text editor, discarding any changes.

F1: Deletes the character above the cursor or the character being edited. If the cursor is at the end of the text, F1 works like backspace.

Shift+F1: Clears the entire text field.

F2: Inserts a character at the cursor location.

F3: Saves changes made to the text field and exits the text editor. A blank text field cannot be saved.

F4-F9: Cellphone-style alpha keys. Pressing an alpha key scrolls the character editor to the first character in that keys group. Additional presses of the same character select the next character in the group. The number-character assignments are not the same as on a phone. They are rather easy to remember since most of the groups begin with a vowel.

The character groups are:

ABCD EFGH IJKL
MNOP QRST UVWXYZ
0-9

0/Help: The zero key cycles through numbers like F4-F9 cycle through letters. To display the help screen, hold shift and press zero. Sticky-Shift will not work here because Shift changes case.

Browsing Files and Folders

The S2400 has a file browser that is used for selecting sounds, kits, and projects to load, and for selecting the folder where a new sample will be saved.

The top row of the file browser, above the line, shows the action being performed, e.g. Load Kit, or Select Sample Folder. Below the line is the list of folders and files.

The first row of the list has the name of the current folder, and to the left of that, an up arrow. Highlight the up arrow and click the encoder or press enter to go up one level in the folder structure. Pressing Shift+Back has the same effect.

When the action is selecting a folder, the current folder name is highlightable and clickable. This is necessary to select a folder that has sub-folders.

Arrows/Encoder: Highlights the next or previous file/folder.

Shift+Arrows/Encoder: Scrolls to the first or last file.

Arrows Autorepeat: Scrolls a file list by a page at a time.

Encoder fast turn: Scrolls a file list by a page at a time.

Back: Exits the file browser.

Shift+Back: Goes up one folder level.

Enter/Encoder Press: When a folder is highlighted, navigates into the folder. When a file is highlighted selects that file and exits the file browser.

File Browser F-Keys: Several typical file system functions are available while browsing.

Note: Do not rename files that are inside project or kit folders. Use the rename project, kit, or track functions. See the [Files and SD Card](#) section for more details.

F1: File/Folder Info

F2: Make New Folder

F3: Delete File/Folder

F4: Resample WAV File to 26Khz 12-bit

F6: Rename File/Folder

Files and SD Card

SD Card Format

The S2400 uses an SD Card to store samples, kits, projects, and settings. It must be formatted as FAT32, which is standard for most new SD cards. We have tested it with up to 512 GB cards. An inserted SD card can be formatted by the S2400 with the [format option](#) in the File menu.

File and Folder Names

The S2400 can only read valid FAT32 file and folder names. A square character (□) in a file or folder name indicates an untranslatable Unicode character. It also means that it is an invalid FAT32 name, and the S2400 cannot open that file/folder. MacOS allows invalid folder names (including trailing spaces and embedded slashes) that no other OS can read. Rename invalid folders/files on your computer.

Samples

Samples (.WAV files) can be saved to and loaded from any folder on the SD card. When saving a sample to a project, the project must exist. If no project was loaded or saved before sampling, the new project must be named and saved before the sample is saved. If the project exists, the sample is saved in the project directory, but the project itself is not saved at that time.

Sample Size

There is no limit on the length of a sample that can be played from the SD card. The only size limits are on [sampling time](#), and [waveform editing](#).

Supported Sample Formats

File Format: WAV

Sample Rates: 26KHz, 44.1KHz, and 48KHz

Bit Depth: 16-bit, 24-bit, 32-bit, and 32-bit float

Files other than WAV are not loaded. Sample rates other than those listed play at 48KHz. Bit depths other than those listed do not play.

Optimal Sample Format

The S2400 Audio Engine is 48KHz, 16-bit, so that is the optimal sample format for playback.

44.1KHz files are supported because they are so common, however, they have to be resampled to 48KHz during playback, which can add some aliasing.

Samples with a bit depth higher than 16-bit are converted during playback. So, there is no benefit to loading files of higher bit depth. They will also take up more memory and CPU resources.

Kits

A kit is a set of sample files and their settings file. When a kit is saved, all of the samples currently assigned to tracks are copied (not moved) to the kit's folder. All of the track settings and channel settings are saved in a file with the same name as the folder and a KIT file extension. If a track is not assigned to a sound, the settings for that track are not saved. When a kit is loaded, only those tracks that are in the kit are loaded, and other tracks will not have their settings overwritten.

New kits are each saved in their own folder inside of the KITS folder in the root of the SD card. Kits that are stored in folders other than the KITS folder can be opened, edited, and saved.

The Load Kit function can load a stand-alone kit, or a project's kit.

Projects

A project folder contains:

1. A project file with the same name as the folder and an S24 extension.
2. A kit file with the same name as the project file and a KIT extension.
3. Optionally, a MIDI map file with the same name as the project file and a MAP extension.
4. All of the samples in the project's kit, and the LiveLoops. Samples that are assigned to tracks are copied (not moved) to the project folder when the project is saved.

New projects are each saved in their own folder inside of the PROJECTS folder in the root of the SD card. Projects that are stored in folders other than the PROJECTS folder can be opened, edited, and saved.

To make a copy of a project, load the project then "save as" a different project name. When a project is "saved as" on the S2400, it will be saved in a new folder inside the PROJECTS folder. The original folder and its contents are not changed.

Global Settings File

Global settings are saved in a file called S2400.SET in the root of the SD card. The file contains all settings found in the Global Settings, Sync, Input Monitor, and Metronome menus, plus the sampling settings. The global settings file is automatically saved whenever a setting is changed, and it is automatically loaded at power-on.

MIDI Maps

MIDI Map files have a MAP file extension. Maps can be loaded from any folder, but are always saved in the MIDI MAPS folder. See the [MIDI Mapping](#) section for more details.

Editing the SD Card

The SD card can be edited on a computer, either by inserting it into an SD card slot on the computer, or with a USB SD card reader, or by leaving the card in the S2400 and enabling [MSC mode](#) from the File menu.

In general, the S2400 saves files to specific folders, but can read them from any folder. Samples, kits, projects, and maps can be copied to and from the card. If a more complex directory structure is desired, kits and projects saved by the S2400 in the PROJECTS and KITS folders can be moved to other folders, or into sub-folders. They will still be accessible on the S2400. Likewise, kits and projects downloaded from other users can be placed anywhere. Because the Open Project function starts in the PROJECTS folder, it is helpful to create a sub-folder under that for other people's projects.

If a project folder is renamed, the associated S24 file should be renamed also. If not, it will take an extra click to open it. If the KIT file does not have the same name as the S24 file, the sounds and their settings will not be loaded when the project is loaded. Either rename both files, or use the [rename project function](#) on the S2400 File menu.

Do not rename the WAV files inside of a kit or project folder. The KIT file contains the name of each WAV file and if that file name does not exist, the sound will not be loaded when the project or kit is loaded. Use the [rename track](#) function on the S2400 Track Settings menu.

Assigning Sounds to Tracks

There are four ways to assign sounds to tracks.

Assign Sound

Press Shift+Pad, or select Track Settings from the Settings menu, then select Assign Sound. The [File Browser](#) is displayed. Navigate to a folder containing WAV files. As you scroll over files, they are previewed. Repeat the preview by pressing the pad. When pressing the pad, sounds will preview using the track's settings (pitch, envelope, etc.). Press Enter or click the encoder to select a sound and assign it to the track.

Load Kit

Select Load Kit from the File Menu. In the file browser, highlight a kit folder, and press Enter or click the encoder to load the whole kit of sounds and their settings. As long as the KIT file has the same name as the folder, there is no need to navigate into the folder. If the names do not match, then selecting a kit folder will open it, and highlighting the KIT file and pressing enter or clicking the encoder will load it.

Load Sounds Folder

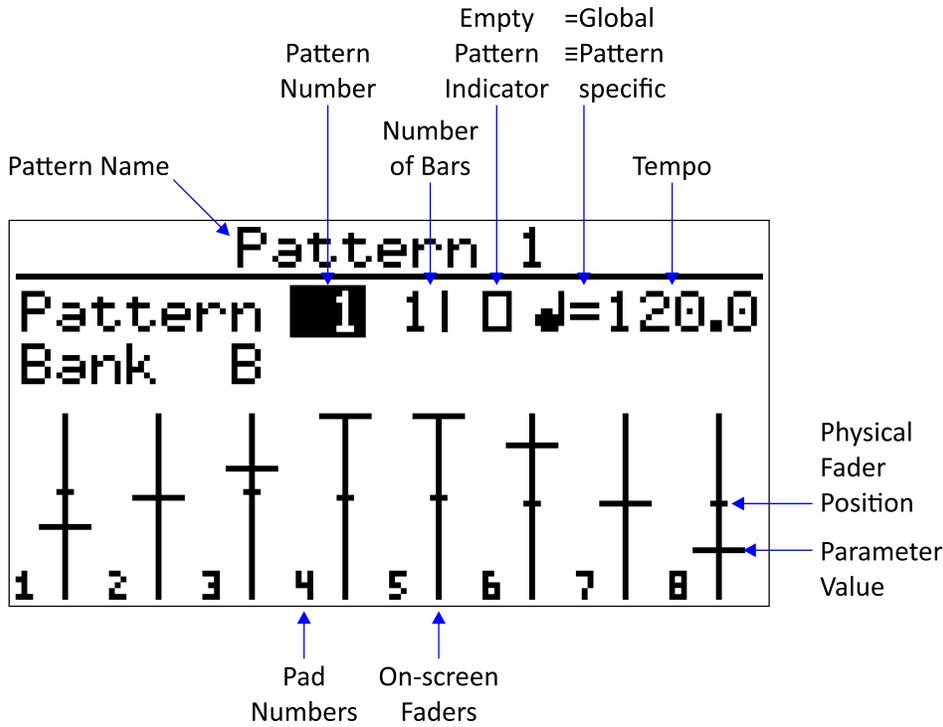
Select Load Sounds Folder from the File Menu. Navigate to a folder containing sounds. The sounds will preview as you scroll over them. Highlight a WAV file and press Enter or click the encoder. The sounds from the highlighted file down will be loaded. The sounds will load starting at the last track with no sound assigned, and filling as many tracks as are empty. If track D8 has a sound assigned, then the sounds are assigned to tracks starting at A1, overwriting what used to be assigned to those tracks.

Browse Files

Select Browse Files from the File Menu. This mode shows all file types, not just WAVs. Navigate to a folder containing sounds. To preview a sound, press Enter or click the encoder. Press a pad to assign a sound to that track.

Pattern Mode

Pattern mode is the base mode of the machine. It is the mode in which patterns are created.



Some Handy Key Combos

Shift+Back: All sounds off in any mode.

Back+Pad: Resets all sound parameters (level, pitch, filters, etc) to their defaults for that track. Does not reset multi parameters.

Shift+Tempo: Toggles global tempo or pattern-specific tempo for the current pattern.

Shift+Repeat: Locks the Repeat button. Press Repeat to unlock it.

Shift+Run/Stop: When running, restarts the pattern at the beginning. When stopped, continues running from last stop point. When using an external clock source, forces a start.

Shift+Bank: Go back one bank.

Bank+Number Keys 1-4: Go directly to bank A-D.

Fader Modes

The row of buttons on the left (Level, Pitch, Envelope, and Loop/Slice) set the fader mode, that is, which parameter the faders control. The key is illuminated to indicate the current mode. Changing a parameter value will affect the sound when a pad is pressed and when the track is recorded into a pattern. The faders, knobs, and A/B buttons have different functions in each of the five modes, as described below.

Fader Lock

Pressing F8 locks the faders for the current fader mode. Pressing F9 locks the faders for all modes. When locked, moving the faders has no effect on their associated parameter.

Holding Shift while moving a fader acts the opposite of the current lock state. That is, if the faders are locked, holding Shift while moving a fader will modify the parameter, and if the faders are not locked, holding Shift moves the fader without affecting the parameter. This is especially useful for aligning the physical fader with the parameter before modifying it.

Parameter Settings

Pressing Shift+A (or Shift+B for filter) displays the parameter settings for the current fader mode. All of the settings are per-track. All parameter settings menus have a “*Set for all tracks” function which copies the value of all settings marked with an asterisk to all tracks.

Modify Pattern

The Modify Pattern function is also common to all parameter settings menus. This function sets either the selected parameter or all parameters for either the selected track or all tracks to the current fader/knob values throughout the whole pattern. In Multi Mode there is also the option to modify only the selected track+pad in the pattern.

Mixer Mode

When no fader mode key is illuminated, then the faders are in Mixer mode. In Mixer mode, the faders set the playback volume of the tracks. The mixer volume is not recorded into the pattern, only the track level is. The levels that were recorded in the pattern are not changed, but are combined with the mixer volume during playback.

Shift+A: Displays the mixer mode settings. On this screen the range of the mixer faders can be set for each track. Since mixer mode is a performance feature, it is sometimes useful to limit the range to what is useful during playback. The upper range can go beyond 0dB. At 0dB, the sounds will play at full volume, beyond that the sound will be amplified. At some point, the sound will clip. A tube-like soft clipping algorithm is used which can actually sound great for some samples.

Top Knob: Controls the cutoff frequency of the digital filter.

Bottom Knob: Controls the resonance of the digital filter.

B Button: During playback, toggles filter [Parameter Playback Override](#) on or off.

During recording it toggles [Live Parameter Record Overwrite](#).

Shift+B: Displays filter settings such as the filter mode (low pass, band pass, or high pass), and the common parameter settings.

Level Fader Mode

The faders set the level of each track. Level is recorded into the pattern. If [dynamic pads](#) are turned on, then the pad pressure sets the level, and the level faders are ignored. Note that the dynamic level comes from how hard the pads are pressed, not how fast (velocity).

A Button: During recording it toggles [Live Parameter Record Overwrite](#) on or off. During playback, the A button has no effect.

Shift+A: Displays the level settings menu.

The knobs and B button control the filter as described above for Mixer Mode.

Pitch Fader Mode

The faders set the pitch for each track. The on-screen faders show the number of semitones that the pitch is offset from its original pitch.

A Button: During playback, toggles pitch [Parameter Playback Override](#) on or off. During recording it toggles [Live Parameter Record Overwrite](#).

Shift+A: Displays the pitch settings menu.

In addition to the common parameter settings. There is the Fine Pitch setting which allows for fine adjustments of the pitch shift to an exact number of semitones and cents. The Fine Pitch setting is available even when the pitch resolution is not set to Fine. It is not available when the pitch resolution is set to Classic. This is just a more precise way of doing the exact same thing the faders do. It is not the same as the track [Transpose](#) setting.

The knobs and B button control the filter as described above for Mixer Mode.

Envelope Fader Mode

Every track has two HiFi envelopes, and, optionally, a Classic volume envelope. The type of volume envelope for a track can be set in track settings (Shift+Pad), or in Track Envelope Settings (Shift+A in envelope fader mode). The descriptions below assume that the machine is in envelope fader mode.

Classic Volume Envelope

A Classic volume envelope has two-stages: a sustain time at maximum volume, followed by a release time. Both values are fixed times for each of the 32 envelope settings. When a Classic envelope is set to maximum, then there is no volume envelope at all. This accurately duplicates the functionality and sound of the Classic machine, including the 8-bit aliased release. The slider selects the classic envelope length, and the knobs do nothing. On the screen, a classic envelope is indicated with the same line and dash style of display used for other fader modes.

HiFi Volume Envelope

When HiFi Volume Envelope is selected, envelope 1 controls the volume of the sample. The slider controls the release and the top knob controls the attack. On the screen, HiFi envelopes are drawn accurately, albeit tiny and tilted to the left. This mode shows eight envelopes at a glance and is sufficient for editing simple A/R envelopes. The HiFi envelope editor is more precise.

Switching Envelopes

Pressing B switches between envelope 1 and envelope 2, and the classic envelope if it is enabled for the track. The volume envelope is indicated on-screen by a V over the fader number. Envelope 1 (if it is not the volume envelope) is indicated by a single dot, and envelope 2 by two dots.

HiFi Envelope Editor

Pressing A brings up the HiFi Envelope Editor, similar to the way that pressing A in loop/slice brings up the HiRes slice editor. HiFi envelopes have six parts: attack, attack hold, decay, sustain, sustain hold, and release. Sustain is the volume level that the envelope falls to after the decay. All of the other parameters are time, expressed as a percentage of the total sample length.

Synthesizers have oscillators which are always running. In a synthesizer the envelope parts are actual times. Increase any of them and the whole sound plays for more time. In the S2400, the envelope parts are percentages of the total sample length. For example, if the sustain hold is set to 50.0 and the decay to 50.0, with all other parts being zero, then the sound will begin to decay half way through.

At the top right of the screen, next to the Σ symbol, is the total length of the envelope, which is also expressed as a percentage. The envelope can be shorter than the full length of the sample. For example, set the total to 75.0 to cut off the last 25% of the sound.

To switch between envelope 1 and 2, select and modify the envelope number at the top of the screen, or press the B button for the appropriate track.

HiFi Envelopes as Modulators

Envelopes can modulate pitch and/or filter cutoff. Either parameter can be modulated by either or both HiFi envelopes, even if a Classic volume envelope is used. At the top of the HiFi Envelope Editor screen are pitch modulation amount and filter modulation amount. Pitch modulation amount is specified in semitones and cents. Filter modulation amount is specified in Hertz. Note that modulation amounts can be positive or negative.

HiFi Envelope Editor Controls

Enter/Encoder Press: Tab between fields to edit. Hold Shift to tab backwards. Another way to tab between the fields is to hold Enter or Encoder then press Arrows or turn the Encoder.

Arrows/Encoder: Change the value of the selected field.

Fader 1-6: Change the six envelope parts.

Fader 7: Change the pitch modulation amount. The fader sets whole semitone values only, and the encoder/arrows adjust one cent at a time.

Fader 8: Change the filter modulation amount. The fader is a coarse setting, and the encoder/arrows allow fine adjustments.

Knob 7: Change the pitch (not the modulation amount).

Knob 8: Change the filter cutoff and resonance (not the modulation amount).

F1: Undo changes made to the envelope. Long-press to completely reset the envelope.

F2: Undo changes made to pitch or filter modulation. Long-press to set all modulation to zero.

Loop/Slice Fader Mode

In Loop/Slice mode the sound can be truncated and/or looped. The start or end point of sound can be changed, and a loop point set. This mode shows eight slices/loops at a glance and is sufficient for coarse editing. The waveform editor is more precise.

When looping is on, the sound plays once from the start point to the end point, then plays repeatedly from the loop point to the end point. When assigning a sound to a track, the S2400 reads the loop point data from the WAV file. It reads the "smpI" data chunk, which is different from cue or marker points. If a loop point exists in the file, the S2400 automatically enables looping, sets the loop point, sets the loop time to 2 seconds, and turns on gate mode.

With Classic envelopes, the loop time is determined by the fixed sustain and release time of the Classic envelopes. Setting the Classic envelope to maximum makes the loop continue forever, until it is stopped. It can be stopped by pressing Shift+Back, by being choked by another sound playing on the same channel, or, if it is in a pattern, when the pattern is stopped.

With HiFi envelopes, the loop time is set explicitly. Press Shift+A for the Loop/Slice settings, and set the loop time in seconds and milliseconds. For an exact number of repetitions, set the loop reps, which will calculate the exact loop time. Setting the loop time to an exact number of repetitions is handy for making flams, slap-back echo, and other effects.

Fader: Change start position.

Top Knob: Change end position.

Bottom Knob: Change loop position.

A Button: Switch to waveform editor mode.

Shift+A: LoopSlice settings for the track.

B Button: Turn on looping. Looping is indicated by a line connecting the right side of the loop and end points. Only samples that fit in the 2MB playback buffer can be looped. See the [Memory Usage](#) section for more details.

Shift+B: Lock length. The fader moves the start, end, and loop point at the same time. Locking is indicated by a line connecting the left side of the start and end points.

Waveform Editor

The waveform editor is for precise editing of slices and loops. The top row of the display shows the exact start and end points in minutes:seconds.milliseconds+samples format. If looping is turned on for the sample, the second row of the screen shows the exact loop point, and the loop time in seconds.

The screen scrolls automatically to the point being edited. When zooming in and out, the screen is centered around the point being edited.

Save: Save the whole sample or a slice of it, and optionally assign it to a track

Level: Normalize (see below for details)

F1: Zoom out, long-press zooms all the way out

F2: Zoom extent (the range of the start and end points), long-press locks zoom extent, the key is illuminated to indicate locked, press F2 again to unlock

F3: Zoom in, long-press zooms all the way in

F4: Shift slice left. In multi-mode, F4 sets the start to the previous slice's end.

F5: Force selected point to zero crossing, long-press to force all points to zero crossing.

F6: Shift slice right. In multi-mode, F6 sets the end to the next slice's start.

F7: Reverse slice, long-press to undo. (see below for details)

F8: Set the loop time based on a number of repetitions.

F9: Toggle fader lock on/off specifically for the waveform editor.

Shift slice (F4 and F6) does not change the length of the slice. It will not shift if there is no room to do so. For example, if the start is at 5 and the length is 10, the slice cannot be shifted left.

Either the faders, or the encoder/arrow keys, or a combination of both, can be used to edit the start and end points.

Using the Encoder/Arrow Keys

Resolution of the encoder is determined by the zoom level. Each arrow press or encoder turn moves the start or end point one pixel. For finer editing resolution, zoom in. The lowest zoom level gives single sample resolution.

Enter/Encoder Press: Tab between fields to edit. Hold Shift to tab backwards. Another way to tab between the fields is to hold Enter or Encoder then press Arrows or turn the Encoder.

Arrows/Encoder: Move the point (start, end, or loop) being edited. If neither is selected, then arrows scroll the screen.

Shift+Arrows/Encoder: Always scrolls the screen no matter which field is selected.

Using the Faders

The same precision can be obtained using faders as with the encoder by using multiple faders for each point.

Fader 1: Coarse adjust start. The range and precision depend on the length of the sample.

Fader 2: Adjust start in milliseconds (ms). The range is 500 ms (1/2 second).

Fader 3: Adjust start in samples. The range is 5 ms.

Fader 4: Coarse adjust loop point. The range and precision depend on the length of the sample.

Fader 5: Adjust loop point in milliseconds (ms). The range is 500 ms (1/2 second).

Fader 6: Adjust end in samples. The range is 5 ms.

Fader 7: Adjust end in milliseconds (ms). The range is 500 ms (1/2 second).

Fader 8: Coarse adjust end. The range and precision depend on the length of the sample.

Note that the precision of the faders increases from the outer faders inward. The coarse adjust faders are the first and last fader which makes it easy to find the right fader without having to read the labels.

When a fader is moved, the corresponding value is highlighted on-screen. That makes it easy to move the fader for a course adjustment, then use the encoder for more precision.

If you intend to use the faders for editing, it is recommended that you start with the first three faders at the bottom, and the last five at the top.

Normalize

Press the Level key to normalize the sample to a specific dB level. The sample's peak dB is displayed. The normalize setting number is an absolute number, not relative to the sample's peak.

Normalization is non-destructive, and can be changed multiple times without modifying the sample data. When the sample or slice is saved, the normalization level is permanently applied to the saved file. The sample must be saved to retain the normalization, otherwise it is lost when exiting the waveform editor.

Reverse

Press F7 to reverse the area between the start and end points. Multiple reverses of multiple slices are possible. Long-press F7 to undo all reverses, or optionally, just the last one (even if the start/end points have been moved).

Reversing is destructive, meaning that it changes the actual sample in memory. To make the changes permanent, save the sample.

For short samples, (size < 2MB), the reverse(s) are still in memory after exiting waveform editor, the reversed sound will be saved when the kit/project is saved. If the file was not already in the kit/project directory, it will be copied as usual, but with the reverse(s) applied. If it was already in the kit/project directory when it was reversed, the file will be overwritten with the reversed version. For long samples (2MB < size < 64MB), the reverse(s) will be lost if you exit the waveform editor without saving.

Saving Slices

Press the Save button while using the waveform editor to save the sound, or a slice of it. The saved file will contain the sound between the start and end points with the current normalization and reversing applied. Multiple slices can be saved from the same sound.

The save screen has the following fields:

Save To: The destination for the resampled file. Options are:

Project: The project folder

Folder: Any folder of your choosing

Same File: This option will overwrite the original file, which will truncate the sound at the slice start and end points, both in memory and in the file. This option is only available with files loaded from the SD card, not a loaded from internal flash, or with newly sampled sounds which exist only in memory.

Project: The name of the project where the file will be saved. Project is only shown when Save To is set to Project. If the current project has not been saved, then this field is editable, and there will be an asterisk next to the word Project indicating that a new project will be created.

Folder: The destination folder where the file will be saved. If Save To is set to Same File, then this field is not editable. Folder is not shown when Save To is set to Project. Select the folder name to display the file browser and pick a different folder.

Name: The name of the file. Defaults to Sample plus a sequential three-digit number which is automatically set. Select the name to edit the file name.

Assign to Track: After saving, the new file can be assigned to a track. Select the desired track from the list, or press a pad to fill in the track.

Waveform Editor Memory

Normally, the 64 MB sample RAM is divided into 32 play buffers. Sounds smaller than 2 MB can be edited in the play buffer. Sounds larger than 2 MB but less than 64 MB can be edited by using the whole sample RAM as the edit buffer. A pattern or song cannot be playing while editing a sound larger than 2 MB. Sounds larger than 64 MB cannot be edited in the waveform view.

Maximum length of a sound for it to be editable (assuming 16-bit WAV files):

Rate	Channels	2 MB	64 MB
48 KHz	Mono	00:21.835	11:39.040
48 KHz	Stereo	00:10.917	5:49.520
44.1 KHz	Mono	00:23.766	12:40.860
44.1 KHz	Stereo	00:11.883	6:20.430
26 KHz	Mono	00:40.310	21:30.535
26 KHz	Stereo	00:20.155	10:45.268

Multi Mode

With the normal fader modes, the eight pads/faders/knobs control eight tracks (one bank). Multi Mode takes a single track and spreads eight different values of one parameter (level, pitch, envelope, loop/slice) across the pads/faders/knobs. Those eight multi values are in addition to the main, non-multi value.

When the Multi Mode key is pressed, the last track whose pad was pressed becomes the active track. The other seven pads will change to the same color as the active track, but dimmer. To change the active track, hold the Multi Mode key and press a pad. That has the same effect as pressing Multi Mode, pressing another pad, then pressing Multi Mode again.

The filter does not have its own fader mode button, but it also has eight multi values when the machine is in in level or pitch Multi Mode.

When recording a pattern in multimode, the pad that was pressed is also recorded into the pattern. That enables features such as erasing a specific multi from the pattern.

Multi Mode Sync

With normal, non-synced Multi Mode, only one parameter is in Multi Mode at a time. For example, when in level Multi Mode, the eight pads play at eight different levels, but they all play at the same pitch, envelope, and loop/slice parameters (the main parameters).

When Multi Mode is turned on for a parameter, then the eight multi-values of that parameter are also used in the other three Multi Modes. For example, if Multi Mode Sync is turned on for pitch, then when in level Multi Mode, the pads are eight different levels, and eight different pitches – but still use the main envelope and main loop/slice parameters.

Each of the four fader modes and the filter has its own Multi Mode Sync setting, which can be turned on in any combination. The Multi Mode Sync settings are per track, so each track can have a different combination.

To turn on Multi Mode Sync, press Shift+A to edit the track / fader mode settings. There is also a “Set for all tracks” option to copy a track’s settings to all tracks.

Pattern Functions and Settings

When in pattern mode, the top row of buttons gives quick access to the most common pattern functions and settings. In the descriptions below, the term trigger refers to the point at which a track is played in a pattern.

Metronome

Metronome settings are global, not per project. There is a separate setting to turn on the metronome while playing, recording, or sampling.

When the metronome plays, the pitch is higher on the first beat of each measure.

Scale: The metronome can be set to play on quarter, eighth, sixteenth, or thirty-second notes, or triplets thereof. Faster metronome settings are helpful with slower tempos.

Count-in: The metronome can be set to count in for a number of measures before recording starts. The range is zero (no count-in) to nine measures.

Level: Level is the volume of the metronome.

Output: The metronome can be set to play on any one of the eight channels, or only in the headphones.

Swing

Swing, also known as shuffle or groove, adds rhythmic variation to the pattern, giving it a more human feel. Any or all tracks can be swung, in either the same or different amounts.

Swing delays every other note. A swing amount of 50% means that the swung note happens half way between the note before it and the note after it. So, 50% is the same as no swing. Swing amount can be set to 50%, 52%, 54%, 56%, 58%, 60%, 63%, 65%, 67%, 69%, 71%, 73%, or 75%.

Below is a graphical representation of swing:

50%	♪	♪	♪	♪	♪	♪	♪	♪
63%	♪	♪	♪	♪	♪	♪	♪	♪
75%	♪	♪	♪	♪	♪	♪	♪	♪

Swing notes can be set to sixteenth notes, or eighth notes (like the Classic). Swing only affects those triggers that fall exactly on eighth or sixteenth notes. If there is a 32nd note in the middle, it is unaffected by swing. If all of the triggers for a track are on eight notes, then setting swing notes to 16ths will have no effect.

There is a default swing setting, and separate swing settings for each track. If a track's swing is set to default, then its swing setting will change when the default is changed.

Swing settings are saved with the project, not the kit.

Copy

Fill in the From and To pattern numbers and the number of copies to make, then highlight the on-screen copy button, and press Enter or click the encoder.

A pattern can be copied to itself, thereby extending the pattern and repeating the existing pattern events. For example, make a one-measure pattern into a four-measure pattern, set the From and To pattern numbers the same, and set the number of copies to three.

If a pattern is copied to another pattern that is not empty, a popup will appear giving the option to either overwrite the existing pattern data, or append the From pattern to the end of the To pattern.

If a pattern is copied to an empty pattern, or if the To pattern is overwritten, it inherits the length and time signature of the From pattern.

Time Signature

The time signature specifies how many beats are contained in each measure, and which note value is equivalent to a beat. For example, 4/4 time (also known as common time) has four quarter notes per measure, and 3/4 time has three quarter notes per measure.

Time signatures are written with one number over another. The beats per measure is the top number and the beat unit is the bottom number.

In written music, time signatures are sometimes used to indicate tempo. For example, 6/8 time would be played faster than 3/4 time. In the S2400, the tempo is a separate setting, so both of those time signatures equate to the same measure length, because 6 eighth notes and 3 quarter notes take the same amount of time to play.

The time signature also affects the metronome because it is higher pitched on the first beat of each measure. For example, in 4/4 time, with the metronome set to quarter notes, plays tick, tock, tock, tock. Whereas in 3/4 time, it would play tick, tock, tock.

Pattern Length

Changing the pattern length will extend or truncate the current pattern. Extending the pattern length does not copy any of the existing pattern data. To do that, use the [copy](#) function.

Erase

The erase function can erase an entire pattern, or only erase the data for a single track. On the Erase screen, press a pad to erase that track's data from the current pattern. A confirmation will appear and the erase can be canceled if the pad was pressed in error.

The erase button can be used two other ways.

While recording, hold the Erase key and hold down a pad to remove that track from the pattern as the track is triggered in the pattern. As triggers are erased, the sound will not be heard, but the pad will blink (if [Blinkenpads](#) is turned on).

While playing a pattern, or if playback is stopped, holding the Erase key and pressing a pad erases the entire track from the current pattern. This is a shortcut to using the Erase menu, and it does not ask for or give confirmation. In Multi Mode, Erase+Pad erases only pattern events recorded with that multi pad.

Quantize

With quantization turned on, a pad can be pressed slightly before or after the actual note, and its timing will be rounded to the nearest note. For example, if quantization is set to sixteenth notes, every note recorded will be accurately timed to a sixteenth note.

The finest level of quantization is 256th note triplets. That is the equivalent of non-quantized. There is an asterisk next to 64th note triplets indicating that is the Classic “fine” quantization.

There is a default quantize setting, and a separate quantize setting for every track. If a track’s quantization is set to default, then its quantization will change when the default setting is changed. Changing quantization does not affect anything recorded prior to the change.

The quantize setting also controls the repeat rate when using the Tap/Repeat key.

Quantize settings are saved with the project, not with the kit.

Step Program

The Step Program button is the far-right button on the top row.

Step program mode is an alternative method of creating and editing patterns. The screen displays a pattern in a DAW-like grid. The tracks are listed down the left side, and time across the top. The measure number is indicated in a time line at the top. Up to eight tracks are visible at a time. If more than eight tracks are present in the pattern, changing the bank will scroll the display vertically to show that bank's tracks.

Step program mode is particularly useful for precisely placing triggers in a pattern, such as triggering tracks at the exact beginning of the pattern, or the beginning of each a measure.

Patterns can be created entirely in Step Program mode, or recorded live and then edited in Step Program mode.

Pad Press: Adds a trigger to the pattern at the cursor position. If the track is already triggered there, then it is re-added with whatever parameters are currently set (level, pitch, filter, etc), overwriting the parameters in the pattern.

Erase+Pad: Removes trigger from pattern at the cursor position (if it is there).

Arrows/Encoder: Move cursor / scroll grid.

Shift+Arrows: Move cursor / scroll grid by one measure, or less if zoomed in and a measure is wider than the screen.

Enter: Edit step parameters for a trigger at the cursor position. See [Edit Step Parameters](#).

Shift+Enter: Change pattern number. Press Enter to switch back to cursor scrolling.

Rec/Edit: Toggle editing. When editing is off, pads can be pressed without recording them, for instance to audition parameter changes before inserting a trigger into the pattern. When editing is off and the pattern is playing, the cursor follows the play position. The Rec/Edit key has no effect in TR mode.

F1: Quantize Higher / Zoom Out

F2: Enter/Exit TR mode, long-press F2 to switch the TR Mode LED colors

F3: Quantize Lower / Zoom In

F6: Rename Pattern

The max zoom level is determined by the maximum resolution of the pattern being edited. If the pattern contains triggers on 256t steps, then it will always be at max zoom. F1 and F3 will still change the quantization level, but not affect the zoom.

TR Mode

TR mode allows editing a pattern in style of a TR-x0x step sequencer. The 16 mute and solo buttons become step buttons. The step numbers are printed below the buttons. The buttons light up to show that the track is triggered on that step. The measure being edited and displayed on the buttons follows the on-screen cursor. Scroll the cursor to change the current measure.

When a mute/solo button is pressed, a step is added to or removed from the pattern. When a step is added, the current parameters (level, pitch, etc.) are recorded into the pattern for that step.

Press a pad to select the track to edit. A second press of the pad plays the sound, so parameter values can be auditioned before a step is added.

In TR mode, only sixteenth notes can be inserted or removed. If there are triggers in the pattern between the sixteenth notes, they are unaffected.

Edit Step Parameters

In this mode the recorded parameters can be changed for a given track on a given step. The changed parameters can be previewed by pressing the pad. If the pattern is running, the changed parameters will be played on that step.

In Step Program, scroll the cursor to the step to edit and press Enter. When the edit screen first appears, the trigger number is highlighted. If there is only one trigger on the selected step, the trigger number will say 1/1, if there are, for example, three triggers, then it will say 1/3. Use the Arrows/Encoder to select the trigger to edit.

The relative position in the pattern is shown on the horizontal bar. When playing, the play position is also shown on the bar.

Enter/Encoder Press: Tab between fields to edit. Hold shift to tab backwards. Another way to tab between the fields is to hold Enter or Encoder then press Arrows or turn the Encoder.

Arrows/Encoder: Change the value of the highlighted field

Fader Mode Buttons: Highlight a field to edit

Fader: Change the value of the highlighted field, just as it does in pattern mode

Knobs: Change the filter parameters, or slice end and loop point, just as they do in pattern mode

Multi Mode: Adjust all parameters using all eight faders

F1: Undo parameter changes

F2: Fine pitch adjustment for the trigger in cents. Has no effect with classic fader resolution.

F3: Save parameter changes to the pattern (in memory, not on the SD card)

When editing the envelope or loop/slice parameters, the A and B buttons work the same way they do in pattern mode. That is:

A Button: Open the HiFi envelope editor or waveform/fine slice editor

B Button: Switch envelope or turn on looping

Shift+B: Lock slice length

Playback Features

Mute/Solo

In modes other than Step Program TR mode, the rectangular buttons above the pads control mute and solo. Solo and mute only affect pattern playback. The tracks can still be triggered by pressing the pads.

Solo overrides muting, essentially muting all non-soloed tracks. Multiple tracks can be soloed at once. Muted tracks are silenced immediately, when unmuted, the track will not be heard again until it is re-triggered in the pattern.

Mute/Solo Undo/Redo

- If any tracks are muted, Shift+any mute button un-mutes all tracks.
- If no tracks are muted, Shift+any mute button re-mutes what was previously un-muted.
- If any tracks are soloed, Shift+any solo button un-solos all tracks.
- If no tracks are soloed, Shift+any solo button re-solos what was previously un-soloed.

Parameter Playback Override

During playback, the filter and pitch controls can override what is recorded in the pattern. The pattern is not changed in any way. This is a playback-only performance feature.

Toggle pitch override with the A button when in pitch fader mode. Toggle filter override with the B button in pitch, level, or mix fader mode.

Set the override method by pressing Shift+A for pitch settings, or Shift+B for filter settings. The override method can be different for each track, and for each parameter.

The override methods are:

Override All: The fader/knob controls the parameter, overriding whatever parameter values were recorded in the pattern.

Default Only: Only sounds that do not have an adjusted value for the parameter will be overridden, preserving the parameter values that were recorded in the pattern. For pitch override, only triggers that were not pitch shifted will have their pitch changed. For filter override, only triggers that do not have the default (maximum) filter setting will have their filter changed.

Transpose: The parameter values in the pattern are combined with the fader/knob, modifying that parameter while retaining the relative parameter values that were recorded.

Record Features

Live Parameter Record Overwrite

Level, pitch, and filter parameter values that are recorded into the pattern can be changed on the fly. The pattern is changed and the new parameter values will be saved with the pattern.

While recording (not in playback), in level or pitch fader mode, press A to enable level or pitch overwrite and press B to enable filter overwrite. This setting is separate from the Playback Parameter override setting.

Live Parameter Record Overwrite operates similarly to the live erase function. While overwrite is enabled, pressing the pad will change the parameter values to the current fader or knob values as the track is triggered in the pattern. In Multi Mode, each of the eight multi parameters can be overwritten separately.

To change all triggers to the same parameter value, use the [Modify Pattern](#) function from the parameter settings menu. Modify Pattern can also modify envelope or loop/slice parameter values.

Live Looping

The S2400 can operate like an 8-track looper pedal, while still playing and recording patterns. Press F7 in Pattern mode to enable Live Looping. The tracks in Bank D become Live Loops. Any sounds previously assigned to those tracks will not play, but the machine will remember all of the track data. If Live Looping is disabled (by pressing F7 again), Bank D goes back to its usual behavior.

Set the input monitor input source to the jacks to be recorded and looped. Set the input mix to Left Only to record a single mono input, set it to L+R Mixed to record a stereo input or two mono inputs. Live Loops are recorded in mono. If input monitor input mix is set to stereo, the Live Loop will record the same as L+R Mixed.

A pattern must be running in order to record Live Loops, although it can be an empty pattern. Recording happens in a temporary memory buffer. The buffer can be cleared, or merged into the active Live Loop. After it is merged, the record buffer is cleared and ready for more recording. The record buffer is also merged into the active Live Loop and cleared when active Live Loop changes.

The A button is illuminated for each Live Loop that is not empty. The B button is illuminated for the active Live Loop if the record buffer is not empty.

Each loop can be up to 19.4 seconds, which is 8 measures, assuming 4/4 time, and a tempo of 100 BPM or faster.

Live Loop Controls

Pad: Set the active Live Loop. Pad turns green. If that is already the active Live Loop, then start recording. Pad blinks red. If the active Live Loop is recording, and another pad is pressed, recording continues on the newly selected active Live Loop.

Shift+Pad: Live Loop settings and functions.

Erase+Pad: Erase one of the Live Loops. The erase menu can also be used.

A Button: Merge the record buffer into the active Live Loop;

B Button: Clear the record buffer (undo).

Mute/Solo: Turn the Live Loops on and off. Solo overrides muting, essentially muting any non-soloed Live Loops. Multiple Live Loops can be soloed at once.

Shift+Mute/Solo: Turn the Live Loops on and off using the opposite of the immediacy setting for that Live Loop.

Faders: Set the level of the Live Loop.

Top Knob: Change the filter cutoff.

Bottom Knob: Change the filter resonance.

Level: Toggles view between: Live Loop levels, Input Monitor scope, and Live Loop waveform

Live Loop Settings

Press Shift+Pad to open the Live Loop settings and functions for each loop.

Output Channel

The output channel that the loop will play through.

Divisions

A Live Loop can be the full length of the pattern (one division), or it can be a fraction of the pattern length. For example, if divisions is set to two, then the Live Loop will be half the length of the pattern, and will play twice each time the pattern plays through.

Mute/Solo

Mute and solo buttons can take effect immediately, or at the beginning of the pattern. Pending mute/solo actions are indicated by a blinking mute/solo button.

Filter Mode

Each Live Loop has its own filter, and each one can be either low pass, band pass, or high pass.

Save as Sample

If the selected Live Loop has sound recorded in it, the sound can be saved to a WAV file.

The save screen has the following fields:

Save To: The destination for the resampled file. Options are project folder, or any selected folder.

Project: The name of the project where the file will be saved. Project is only shown when Save To is set to Project. If the current project has not been saved, then this field is editable, and there will be an asterisk next to the word Project indicating that a new project will be created.

Folder: The destination folder where the file will be saved. If Save To is set to Same File, then this field is not editable. Folder is not shown when Save To is set to Project. Select the folder name to display the file browser and pick a different folder.

Name: The name of the file. Defaults to Sample plus a sequential three-digit number which is automatically set. Select the name to edit the file name.

Assign to Track: After saving, the new file can be assigned to a track. Select the desired track from the list, or press a pad to fill in the track.

Song Mode

A song is a list of events. Most events will be patterns, but a song can also include changes in tempo, mute/solo states, and mix levels.

The song mode key is illuminated while in song mode. The key blinks if a pattern is playing while the machine is in song mode, or if a song is playing while in pattern mode.

The top of the song mode screen shows the song number. Switch to a different song by entering a number or using the arrows/encoder. If the song is playing, a playing symbol will appear next to the song number. If a different song is playing, then the playing song number and the playing symbol will be shown in parenthesis. The top line also shows the song's tempo. Each song has its own tempo setting.

Below the line is the list of events. The first entry in the list is always the song name, and it cannot be erased. Press Enter or F6 when the song name is highlighted to rename the song. The song can also be renamed by pressing F6 when the song number is highlighted. The last event is always the end of song event, and it cannot be erased.

Controls

Song editing works like most screens on the S2400. Highlight a row with the arrow keys, or by turning the encoder. Press Enter or encoder to edit it. The editable part is highlighted.

Encoder/arrows change the value. Enter or encoder click saves the change. Back cancels the change. F-keys can be pressed while editing.

Rec/Edit: Edit the current song (the one displayed on the screen).

Run/Stop: Play the current song, or stop the playing song (even if not current).

Shift+Run/Stop: When no song is playing: start the song from the selected step.

When viewing the currently playing song: restart the song from the beginning.

When viewing a different song than the one playing: play the current song from the beginning.

Enter: Edit the highlighted event.

Erase: Erase the highlighted event or the song

F1: Insert any type of event. New events are always added after the highlighted event. Pressing F1 or F2 while editing an event, saves the current event and adds a new one without having to press enter/encoder.

F2: Insert a pattern event. F2 is just a shortcut for adding the most common event type. A song can be created quickly using just F2 and the arrows or encoder.

F3: Add an event, to or remove it from, a repeat group. If an event comes after a group, pressing F3 moves it, and any events that come before it, into the group. If an event is inside a repeat group, pressing F3 removes it, and any events that come after it, out of the group. If there is no repeat group before the selected event, pressing F3 creates a repeat group and adds the selected event to it.

F4: Move the highlighted event back in the event order. If a repeat event is selected, the whole group moves.

F5: Move the highlighted event or repeat group forward in the event order.

F6: Rename the song or the highlighted pattern.

Event Types

- **Pattern**
Plays a pattern.
- **Tempo**
The song starts at its base tempo, which is set at the top of the screen. Tempo changes can be inserted into a song. Any change in tempo stays in effect until another change or the song restarts. Tempo changes can be either absolute (e.g. tempo=120) or relative (e.g. tempo+5). Absolute tempo changes override the song's tempo. Relative tempo changes are relative to the song's base tempo, which is set at the top of the screen. If a song contains only relative tempo changes, then changing the song's tempo, changes the speed of the whole song.
- **Mute**
All songs start with no tracks muted. Mute events affect everything that happens after them in the song. If a track is muted, then it remains so until changed by another mute event, or the song restarts. Each mute event affects tracks in a single bank. Muting tracks in multiple banks requires multiple events. When editing a mute event, the bank is changed with the arrow keys or encoder, or by pressing press the bank button. The mute state of each track is changed either by pressing the numbers 1 through 8, or by pressing the actual mute buttons.
- **Solo**
Works exactly like mute.
- **Repeat**
A single event or group of events can be repeated. For example, a song plays these pattern numbers: 1, 2, 3, 2, 3, 2, 3, 4. That could be represented as 1, repeat 3x [2, 3], 4. Repeat groups save memory, and they make the organization of the song easier to visualize, and repeat groups can be moved as a group when rearranging a song. Any event can be inside of a repeat group, not just patterns. Repeat groups cannot be nested, that is, a repeat group cannot be inside of another repeat group.
- **Sub-Song**
Plays another song once, then continues with the current song. The end action of the sub-song is ignored, so the sub-song will not replay forever, or go to a different song. Sub-songs inside a sub-song are ignored.
- **End of Song**
When the song ends, it can stop, replay forever, or go to another song and play it. A replaying song is stopped by pressing Run/Stop, by playing another song, or by exiting Song mode and playing a pattern. The end of song event is always last, and it cannot be erased.

Build a Song in Pattern Mode

Press F2 in pattern mode to append the current pattern to the end of the current song. The pattern event and any necessary tempo and mute/solo changes are automatically inserted into the song.

Track Settings

To edit a track's settings, press Shift+Pad, or select Track Settings from the Settings menu. Press a different pad to see and edit another track's settings without having to press shift. Press Back to exit track settings.

Assign Sound

Assign sound is discussed in the section on [Assigning Sounds to Tracks](#).

Rename

Selecting rename track will open the text editor. Press F3 in the editor to save the new name. The corresponding WAV file is not renamed until the kit or project is saved.

Track Info

Shows the length of the sound, the sample rate, and whether it is stereo or mono.

Output Mix

If the file is stereo, there are three choices for how it plays. Select Left Only for stereo files that actually contain the same sound on both left and right, which is quite common. Select Mono to mix the left and right into one mono channel. Select stereo to play left and right in separate channels. See the [Output Channels](#) section for more detail about how stereo sounds are played.

Audio Engine

The options are HiFi or Classic. The Classic audio engine recreates the old school drop sample method of pitch shifting. Classic also plays back sounds at 12-bits, regardless of how they were recorded.

Pitch Resolution

Classic pitch resolutions faithfully recreate the pitch scaling of the Classic which were approximately, but not precisely, one semitone apart. Semitones, Diatonic (Ionian or major scale), and Aeolian (natural minor scale) resolutions are +/- 20 true semitones. Fine resolution is in cents.

Transpose

Sets the base pitch of a sample. When the track is played, the transpose amount is added to the pitch set with the faders, in a pattern, or via a MIDI message. When pitch resolution is set to Classic16/32, transpose can only be set in Classic steps, and is equivalent to the Classic machine's initial pitch setting. For other resolutions it is specified in semitones and cents.

Keep in mind that transpose does not change the maximum amount the pitch can be shifted. If, for example, a track is transposed up one semitone, then in pitch fader mode, +19 and +20 will be the same pitch (because there is no +21). The selected pitch shift is still stored in the pattern, so if, in our example the transpose amount is later changed back to zero, the +19 and +20 pitch shifts in the pattern will be two different pitches.

Volume Envelope

Choices are the Classic two-stage sustain and release envelope, or HiFi AHDSHR envelope. See the [Envelope Fader Mode](#) section for more details.

Gated

When the track is in gated mode, pressing the pad starts playing the sound, and releasing the pad stops playing it. Gated mode is not available with Classic volume envelopes. Non-gated mode is usually referred to as one-shot mode.

Gated mode especially well with looped sounds. Remember that the envelopes are still based on a percentage of the total time, so if you want a decay on a very short sample, make loop time long enough.

Channel and Alternate Channel

See the [Output Channels](#) section for details.

Color

The color of the pad can be set to one of nine predefined colors in the list, or can be set to any color using the fader. The pad color can be set to black, however the S2400 uses pad color and brightness to clarify what is going on, and that help is lost if the pads are not lit.

Swing Amount and Swing Notes

Set the track-specific swing settings which can also be set in the [swing menu](#).

Quantize

Set the track-specific quantization which can also be set in the [quantize menu](#).

Quant. Shift

The track specific quantization shift setting can be set to a specific number of 96 PPQN clock ticks. Using this setting, a track can be quantized, but actually trigger a few ticks before or after the true note. The range of the shift is +/- half of the quantization. For example, if the track is quantized to eighth notes, the range is +/- one sixteenth note. This setting is not on the quantize menu.

Move/Copy Track

Displays the same screen as the Settings menu [Move/Copy Track](#) option.

Resample

This option [resamples](#) an already assigned sound, and assigns the resampled file to the track.

Clear Sound

Clear the sound from a track. This feature does not delete the previously assigned WAV file.

Settings

Open the Settings menu by pressing Shift+Settings (the second key from the left in the top row).

Global Settings

Tap Tempo Avg

The number of taps of the Tap/Repeat key to average when setting the tempo.

Dynamic Pads

When dynamic pads is turned on, the level that a sound is played or recorded is set by the amount of pressure on the pad, not the level fader.

Pad Threshold

The pad threshold is amount of pressure needed to trigger a sound. The setting goes from zero to 2000. Set it to whatever level feels comfortable.

Default Measures

The default number of measures in a pattern. Setting default measures changes the length of *empty* patterns in the current project, new projects, and projects loaded from the SD card.

MultiOrder

When a sound is assigned to a track, the multi values are set to defaults. The defaults can either go from lowest on pad 1 to highest on pad 8, or Classic (high to low).

Blinkenpads

When a track is triggered, either manually or in a pattern, the corresponding pad can either blink white, blink off, or not blink at all.

Tempo Blink

The tempo key blinks in time with the tempo. It is a sort of visual metronome. Blinking can be turned off.

Load@Start

When the S2400 is powered on, it can load the last used kit, the last project, or nothing.

Fader Lock @Start

When the S2400 is powered on, faders are either all locked or all unlocked. See the [fader lock](#) section for more details on how locking works.

Sleep Time 0=off

Sleep time is the number of minutes of inactivity before the S2400 goes into sleep mode. Sleep mode turns off the screen and all key LEDs, and displays an animation on the pad LEDs. When sleep time is set to zero, the S2400 never sleeps. The S2400 will not enter sleep mode if a pattern or song is playing.

Sleep Color

Sleep color sets the color of the sleep mode pad LED animation.

Sleep Speed

Sleep speed sets the speed of the sleep mode animation.

Other Settings and Actions

Track Settings

This is one way to open the [Track Settings](#) menu. The other way is to press Shift+Pad.

Move/Copy Track

On the Move/Copy Track screen, the From Track and To Track can be set either by pressing a pad, or selecting the track from the list. The Action describes what happens when a track is moved or copied.

In the example below, From Track is A2 (SD) and To Track is A6 (RS). Tracks affected by the action are shown in bold.

Action	A1	A2	A3	A4	A5	A6	A7	A8
Before	BD	SD	LT	MT	HT	RS	CP	CB
Swap	BD	RS	LT	MT	HT	SD	CP	CB
Move & Insert	BD	LT	MT	HT	RS	SD	CP	CB
Move & Overwrite	BD		LT	MT	HT	SD	CP	CB
Move & Shift	BD		LT	MT	HT	SD	RS	CP
Copy & Overwrite	BD	SD	LT	MT	HT	SD	CP	CB
Copy & Shift	BD	SD	LT	MT	HT	SD	RS	CP

Swap and Move & Insert are always non-destructive. All sounds are still there, just rearranged.

When Overwrite is selected, the To sound is overwritten and no longer assigned to a pad. The sound file remains where it was on the SD card.

When Shift is selected, and From is less than To (as in the above example), sounds are shifted up. If From is greater than To, sounds are shifted down. Shifting stops when an empty track is found. If all tracks have a sound assigned, then whatever sound was assigned to D8 or A1 will be lost.

Clear all Patterns

Clears all pattern data from memory.

Clear all Songs

Clears all song data from memory.

Clear all Samples

All tracks are unassigned, but no other memory is cleared.

Clear Everything

Clears all patterns, songs, and tracks from memory. This option also resets the project name, and ensures that if the save button is pressed, the previous project will not get overwritten.

Memory

Shows the amount of memory remaining for patterns and songs.

Firmware Version

Displays the date of the UI (user interface) and AE (audio engine) firmware.

S2400 Credits

Displays the names of the development team and beta testers.

File

Open the File menu by pressing Shift+File (the third key from the left in the top row).

Please read the [Files and SD Card](#) section before this section.

Rename Project

Prompts for the new name, then renames the existing project folder and the S24, KIT, and MAP files. The project must have already been saved for this option to be visible.

New Project

Prompts for a project name, then clears all data from memory, creates the project folder and creates default S24 and KIT files.

Load Project

Loads a project from the SD card. All data in memory is erased when before the selected project is loaded.

Save Project

Saves any changes to a previously loaded or saved project. If the project has not yet been saved, you will be prompted to name the new project. This option does the same thing as pressing the Save key.

Save Project As

Saves the current project in a new folder with a new name. Loading a project, then selecting Save Project As will make a copy of the project.

Delete Unused WAVs

Deletes WAV files from the project folder that are not assigned to tracks. The project must have already been saved for this option to be visible.

Save Kit

If a kit was loaded or saved, and a project was not loaded or saved after that, then the Save Kit menu option is available to save edits made to kit parameters. This option also copies any WAV files to the folder that were assigned to tracks since the kit was last loaded or saved.

Save Kit As

The Save Kit As option creates a new folder, copies all WAV files that are assigned to tracks to the new kit folder, and creates the KIT file of track settings in the new folder.

Load Kit

Load kit is discussed in the section on [Assigning Sounds to Tracks](#).

Load Sounds Folder

Load sounds folder is discussed in the section on [Assigning Sounds to Tracks](#).

Browse Files

Opens the [File Browser](#). This view shows all files in the internal flash and on the SD card regardless of file type. Folders can be created, deleted, or renamed, and files can be renamed or deleted.

USB MSC Mode

Puts the S2400 into USB Mass Storage Class mode. The S2400 will appear to a computer as a mass storage device like a USB drive. The SD card in the S2400 can then be viewed and edited on the computer.

Format SD Card

If an SD card is not the correct format, or if you just want to delete everything from an old card, then it can be formatted by the S2400.

Most new SD cards come preformatted as FAT32, and will work fine in the S2400. Cards reformatted on a computer may not have the right format. We have even seen some cards that appeared to work, and the S2400 could even read files from them, but it could not save files to the card. Reformatting those cards in the S2400 made them fully functional.

Sync

Open the Sync menu by pressing Shift+Sync (the fourth key from the left in the top row).

Sync settings control how the S2400 interacts other devices and computer software. The sync settings, including track mapping, are saved in the global settings file (S2400.SET).

Clock Source

There can only be one clock source. The choices are Internal (meaning the S2400 controls its own clock), MIDI DIN, USB B, USB Host, or clock in (3.5mm jack).

When clocked externally, the Run/Stop button is disabled, but Shift+Run/Stop will force the S2400 to run. Once a MIDI start message is received the external clock takes over. Pressing Run/Stop+Rec/Edit (which normally starts recording) will arm the record function, so that when a start message is received, recording will start with it. Pressing Shift+Run/Stop+Rec/Edit will force the S2400 into record mode.

Control Settings

These are the settings that determine how the S2400 can be controlled over MIDI.

Device ID

This sets the device ID for MMC and future custom SysEx messages.

MMC Input

Enable this option to accept MIDI Machine Control messages. MMC messages will be accepted from any source that has transport in enabled (see below). The supported MMC messages are: 1 / 9 (Stop / Pause), 2 / 3 (Play / Deferred Play), 6 (Record Strobe), 7 / 8 (Record Exit / Record Pause).

Channel

This is the MIDI channel on which the S2400 will listen for control messages. As of this writing, only pattern change messages are supported, but other messages may be added in the future.

Pattern Chg

The S2400 can accept a MIDI message to change the current pattern. If ProgChg is selected, then MIDI program change messages will set the pattern number. If CC 32 is selected, then MIDI Continuous Controller number 32 messages will set the pattern number. If none is selected, then no MIDI message will change the pattern number.

MIDI Jack Settings

Each jack has its own settings to control which messages are sent and received on that jack. The MIDI DIN, USB B, and USB Host jacks all have the same settings.

Clock Out

Send clock and transport (start, stop, continue) messages. If an external clock source is selected, clock out will not be sent to that jack even if this option is checked.

Notes Out

Send MIDI note on/off messages when tracks are triggered.

Transport In

Accept start, stop, continue, and song position pointer messages. If an external clock source is selected, then only transport messages from that source are accepted, even if this option is checked.

Notes In

Accept MIDI note on/off messages to trigger tracks. If a track is triggered via MIDI, the note on/off messages will not be echoed back to the source of the trigger.

Velocity In

If accepting MIDI notes in, also accept the velocity from the note on message. If this option is off, then the level faders on the S2400 control the level. This works much the same way as the dynamic pads option.

Clock In Jack

The 3.5mm clock in and out jacks can be configured for a variety of functions.

Function

Ignored, clock, reset, or it can trigger any one of the 32 tracks

Clock Speed

If the function is clock, the S2400 needs to know the incoming clock resolution: 96, 48, 24, or 12 PPQN, or 16th notes. For resolutions lower than the S2400's native clock speed of 96 PPQN, the S2400 will interpolate the in-between clock ticks.

MissedTicks=Stop

The S2400 will interpret a number of expected but not received clock pulses as a stop. Set this to zero to disable the function.

Clock Out Jack

Function

Options are Clock (at 96, 48, 24, or 12 PPQN, or 16th or 8th notes), Run/Stop (on when running, off when stopped), Reset (to beginning of pattern), or a pulse can be sent when any one of the 32 tracks is triggered.

Note Swing

When sending clock out, swing can be any of the available [swing settings](#), or to the default swing setting of the S2400. A setting of 50% is no swing.

Pulse Length

The length of the output pulse in milliseconds. If the function is set to clock, then the output is a square wave.

MIDI Track Map

MIDI Mapping refers to the mapping of S2400 tracks to output MIDI notes, which are output when tracks are triggered and will trigger tracks when received. All mapping options can be edited on the S2400 Sync screen, or loaded from a MAP file.

Load Map File

Loads a MIDI map file from disk. The file format is discussed below.

Save Map File

Prompts for a file name, then saves the current track map settings to a MAP file in the MIDI MAPS folder on the SD card.

Save to project

Saves the current track map settings to a MAP file in the in the project folder. The file will have the same name as the project and a MAP extension. When the project is loaded in the future, the MAP file will automatically be loaded at the same time. To disassociate the map from the project, delete the file using a computer or the Browse Files function on the File menu. This menu option is only visible if there is a project loaded.

Clear Map

This function sets all of the tracks' modes to none, channels to 10, and note numbers to 36-67.

Track Settings

Open the Track Settings accordion to edit the MIDI mapping for each track. These settings determine what MIDI messages will be sent when a track is played, and what incoming MIDI messages will trigger the track. A MIDI note on message includes a channel number, a note number, and the velocity of the note.

Pressing a pad will scroll the menu to that track's settings. While editing one of the settings, a received MIDI note on message will automatically fill in the channel and note number. This makes it quick and easy to map a controller to tracks.

Mode

None: No MIDI message will be sent for the track, and no MIDI message will trigger it.

Percussion: MIDI note on/off messages will be sent and received with a fixed note number.

Pitched: The received note number is interpreted as pitch, and the sent note number corresponds to the pitch at which the S2400 is playing the track.

Note

For percussion tracks, this is the note number that will be sent when the track is played and the incoming note number that will trigger the track.

For pitched tracks, the note corresponds to the un-shifted sample. Pitch shifted notes output note numbers above and below that base note, and received note numbers are translated into the appropriate amount of shifting. For example, if the sound assigned to the track is an F#, the unpitched note number should be set to an F# so that it plays in tune. The octave of the note can be set to whatever is convenient, such as note number 78 (F# above middle C).

Channel

This is the channel that MIDI notes will be sent on, and the channel that will trigger the track.

Typically, percussion notes are sent and received on channel 10, but any channel can be used. Pitched tracks are usually each assigned to a unique channel, otherwise multiple sounds will be triggered by the same note on message.

MIDI Monitor

The MIDI monitor shows a scrolling list of all incoming MIDI messages from all three jacks. The first column is the source (D=DIN, U=USB B, H=USB Host). The other columns are a description of the message, the channel, and the parameter values. MIDI clock and transport messages are not displayed.

F1: Pause the display of incoming messages, for when the screen is scrolling too fast to read.

F2: Toggle between showing note name or note number for note on/off messages.

MAP File Format

S2400 MIDI MAP files are text files with a MAP file extension (e.g. MyCntrlr.MAP). They can be created by the S2400 or from scratch, and are edited on a computer. If you create a map for a particular controller or software, you can share it with other users in the S2400 file sharing section of the Isla forum. Likewise, you can search the forum for a map before going to the effort of mapping it yourself.

The MAP file format is similar to the common INI file format. Each line is a key=value pair. Nothing is case sensitive. All blank lines, spaces, and tabs are ignored. Lines beginning with a semicolon are comments. MIDI channel numbers are 1 to 16. MIDI note numbers are 0 to 127.

Consider the sample map below.

```
; S2400 MIDI Map
Channel=10
A1=36
A2=37
A3=38
Channel=1
A8=60
A8=pitched
```

The MIDI channel is specified with a CHANNEL=# line. The channel affects all notes that come after it in the file. In the above example, tracks A1 through A3 will send and receive MIDI note on messages on channel 10 (typically used for percussion instruments). Track A8 will send and receive MIDI note on/off messages on channel 1. If not specified in the file, the channel is 10.

To specify the note number for a track, type the track designator, equal sign, note number (such as A1=36). To specify that a track should be pitched, not percussion, type the track designator, equal sign, and the word pitched, as on the last line of the example map.

Any track not mentioned in the map file will have its mode set to none, not output a note, and not be triggered by incoming messages.

Sample Mode

Enter Sample Mode by pressing Shift+Sample (the fourth key from the left in the top row).

Sample mode is where the S2400 records sounds and saves them to the SD card.

Sample Mode Keys

Arrows/Encoder: Highlight a setting, or change the value of the selected setting.

Enter/Encoder Press: Select a setting and edit it.

Rec/Edit: Start and stop recording.

Back: Exits sample mode.

Input Mon or Metronome: Displays the appropriate setting screen.

Sampling Settings

Below the line at the top of the Sampling screen are sampling settings. Editing them works like other settings menus, except that this one is a single line which shows one setting at a time.

Gain

Gain is used to amplify a quiet signal before sampling it.

Line inputs 1&2 and phono input 1 have a hardware gain multiplier which is applied before the gain amplifier knob on the back of the S2400. Gain can be set to $\times 1$ (no extra gain), $\times 10$, or $\times 100$.

Line inputs 3&4 and phono 2 have an optional $\times 10$ software gain multiplier.

Source

This sets the input jacks that will be sampled as well as the sample rate and bit depth.

Line in 1&2 and Phono 1 can be routed through the Classic anti-aliasing filter that is required to sample at 26KHz, so those inputs have the option of sampling at either 48KHz or 26KHz. Line in 3&4 and Phono 2 can only be sampled at 48KHz.

Samples recorded at 26KHz are 12-bits, and at 48KHz are 16-bits.

Mix

The input mix can be set to Left Only to sample from only one of the pair of input jacks, L+R Mixed to sample both jacks to a mono sound, or Stereo.

Threshold

Threshold sets the minimum input level to trigger the start of sampling. After the Rec/Edit key is pressed, sampling does not start until the sound must reach threshold level. Then, sampling starts at next zero crossing.

Sample Time

The S2400 has 64 MB of sample RAM. New samples can be up to 64 MB long. Maximum sample time depends on the bit rate and number of channels.

Rate	Channels	Max Time
48 KHz	Mono	11:39.040
48 KHz	Stereo	5:49.520
26 KHz	Mono	21:30.535
26 KHz	Stereo	10:45.268

Sample Analysis

After recording, the screen changes to the sample analysis screen. The title says "Sample is good" or some other adjective. The body of the screen is an amplitude histogram. The X axis is the amplitude, and the Y axis is the count of the number of samples at that amplitude. A smoothly sloping downward curve is good. A flat curve indicates over-saturation. A spike at the far right (highest amplitude) means clipping.

Press Enter, Back, or Rec/Edit to exit this screen. Or, press Run/Stop to exit the screen and play the sample.

Sample Review Mode

After exiting the Sample Analysis screen, the screen changes to the [Waveform Editor](#). There the whole sample, or slices of it, can be saved and assigned tracks.

The same keys used in the waveform editor are used here, plus the following:

Run/Stop: Start/stop playback of the sample.

Back or Rec/Edit: Returns to sample recording mode.

Resampling

When a WAV file is selected in the file browser, press F4 to resample it.

Resampling plays a wave file through the Classic anti-aliasing input filter and rerecords it at 26KHz and 12 bits.

Make sure the gain knob on the back is turned all the way up.

Press Rec/Edit during resampling to cancel the process. The partially resampled file is still saved.

The resampling settings screen has the following fields:

Save To

The destination for the resampled file. Options are:

Project: The project folder

Same Folder: The same folder as the original file

Other Folder: Any folder of your choosing

Project

The name of the project where the resampled file will be saved. Project is only shown when Save To is set to Project. If the current project has not been saved, then this field is editable, and there will be an asterisk next to the word Project indicating that a new project will be created.

Folder

The destination folder where the resampled file will be saved. If Save To is set to Other Folder, then this field is editable. Folder is not shown when Save To is set to Project. Select the folder name to display the file browser and pick a different folder.

Name

The name of the resampled file. Defaults to the original file name plus _resample.

Pitch Shift

When the original file is played, the pitch can be shifted up or down. The resulting resampled sound will retain that pitch shift.

Pitch like 33@45

Set the pitch shift to +5.37 semitones, which is the equivalent of playing a 33 RPM record at 45 RPM. The sample can then be pitched down 5 or 6 semitones for that Classic sound.

Input Monitor

Open the Input Monitor menu by pressing Shift+InputMon (the fifth key from the left in the top row).

The S2400 can monitor any pair of input jacks and send the signal to a pair of output channels or to the headphones only.

On/Off

Turns monitoring on or off. Quickly double-clicking the Input Mon button toggles this setting and closes the menu.

Input Source

The input source is the pair of jacks to monitor. The options are Input 1&2, Input 3&4, Phono 1, or Phono 2.

Input Gain

Sets the hardware gain amplification. The gain knob on the back of the S2400 also affects input monitoring.

Input Mix

The options are Left Only, Left+Right Mixed, or Stereo. When monitoring a single mono source, plug it into the left jack and select Left Only.

Output Channel

The options are 1&2, 3&4, 5&6, 7&8, or HP (headphones).

Output Level

This setting attenuates the input signal. A setting of 99 is maximum volume.

Pan

The pan screen controls how the channels are mixed into the Mix Out jacks. Some planning is necessary when using stereo samples to ensure that the track's channels are properly panned, and that no mono samples play on those channels.

See the [Output Channels](#) section for more pertinent information.

Faders: Correspond to the eight channels. When a fader is moved, the channel is highlighted.

Enter/Encoder Press: Tab between channels to edit. Hold Shift to tab backwards. Another way to tab between the channels is to hold Enter or Encoder then press Arrows or turn the Encoder.

F1: Pan highlighted channel hard left

F2: Set highlighted channel to center

F3: Pan highlighted channel hard right

F4: Pan all channels hard left

F5: Set all channels to center

F6: Pan all channels hard right

F7: Hard pan highlighted pair of channels left and right

F8: Hard pan all pairs of channels left and right

Channel pairs are 1&2, 3&4, 5&6, and 7&8.

Effects

Addition effects settings may be added to the Effects menu in the future.

Analog Filters

The S2400 has the same analog filter circuitry as the Classic machine. The only difference is that in the S2400 the filters can be switched on and off.

Dynamic Filters

Channel 1 and channel 2 have optional dynamic low pass filters. They use the SSI2144 filter chip, the modern version of the SSM2044 chip used in the Classic. They are dynamic in that there is a simple decay envelope that modulates the cutoff frequency. The maximum cutoff frequency is 13KHz, just like the Classic.

Fixed Filters

Channels 3, 4, 5, and 6 can optionally go through fixed low pass filters. Each channel has a slightly higher cutoff frequency than the previous one.

Note:

The filters will not be heard on headphones. The headphones are a digital mix of the eight channels, pre-filter.

Save

Saves the current project. If the project was not previously saved, it will prompt for a new project name first. See the [Files and SD Card](#) section for more information on how projects are stored. The save button is also used in the [Waveform Editor](#) to save a sample.

Output Channels

Choking

There are eight output channels, and eight choke groups, sometimes called mute groups.

If two mono tracks are both assigned to the same channel, then they will choke (cut off) each other. For example, track A1 and A2 are both assigned to channel 1. If track A1 is playing when A2 is triggered, A1 will be choked.

Each track can also, optionally, be assigned to an alternate channel. In that case, the sound will play on the alternate channel if there is already a sound playing on the main channel. In the above example, if A2's alternate channel is 2, then it will play on channel 2, and not choke the sound playing on channel 1.

Stereo samples with the mix set to stereo play on odd/even channel pairs. For example, a stereo track assigned to channel 1 will play left on channel 1 and right on channel 2. And, a stereo track assigned to channel 2 will also play left on channel 1 and right on channel 2 (not 2 & 3). Stereo samples follow the same exact choke rules as mono samples. They choke playing sounds based on their main and alternate channel. The second channel of a stereo sound just comes along for the ride. To reiterate, the S2400 can play eight stereo samples simultaneously.

Consider the examples below. The choking behavior is the same whether the samples are mono or stereo. If track A1 is playing when track A2 is triggered...

- A1: Channel 1, Alternate 1
- A2: Channel 1, Alternate 1
 - A2 will choke A1
 - If A2 mono, plays on channel 1
 - If A2 stereo, plays on channels 1 and 2
- A2: Channel 2, Alternate 2
 - A1 not choked
 - If A2 Mono, plays on channel 2
 - If A2 Stereo, plays on channels 1 and 2
- A2: Channel 1, Alternate 2
 - A1 not choked
 - If A2 Mono, plays on channel 2
 - If A2 Stereo, plays on channels 1 and 2

When a track plays on its alternate channel, it chokes anything already playing on that channel.

For example: A1: Channel 1, Alt 1; A2: Channel 1, Alt 2; A3: Channel 2, Alt 2

If A1 and A3 are playing when A2 is triggered, A2 will play on its alternate and choke A3.

Track Priority

Even if tracks are triggered at the exact same time in a pattern, they are still processed sequentially in track order. Consider this example: A1: Channel 1, Alt 2; A2: Channel 1, Alt 1

If a pattern has a trigger for A1 and A2 at the same time, A1 is triggered first on channel 1, then A2 is triggered on channel 1 (because A2 has no alternate channel), and chokes A1. The fact that A1 has an alternate channel does not come into play because when A1 was triggered, nothing was playing on channel 1.

F-Key Quick Reference

Pattern		Add to Song	
			Rename
	Live Loop	Lock Faders	Lock All Faders

Song	Insert Event	Insert Pattern	Change Repeat
	Move Prev.	Move Next	Rename

Step Program	Zoom Out	TR Mode LP: Toggle Color	Zoom In
			Rename
		Lock Faders	Lock All Faders

Step Parm Edit	Undo Changes	Fine Pitch	Save Changes

Envelope Editor	Undo Env LP: Reset Env	Undo Mod LP: Zero Mod	
		Lock Faders	Lock All Faders

Waveform Editor	Zoom Out LP: All the way	Zoom Extent LP: Lock	Zoom In LP: All the way
	<- Shift Points	Zero Cross Snap LP: All points	Shift Points ->
	Reverse LP: Undo	Loop Reps	Lock Faders

Pan	Hard Left	Center	Hard Right
	All Hard Left	All Center	All Hard Right
	Pair L/R	All Pairs L/R	

File Browser	File Info	Make Dir	Delete
	Resample		Rename

Text Editor	Delete	Insert	Save
	ABCD	EFGH	IJKL
	MNOP	QRST	UVWXYZ