ISLA Instruments
S2400
User Manual

Copyright © 2020 ISLA Instruments

Revised December 10, 2020

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
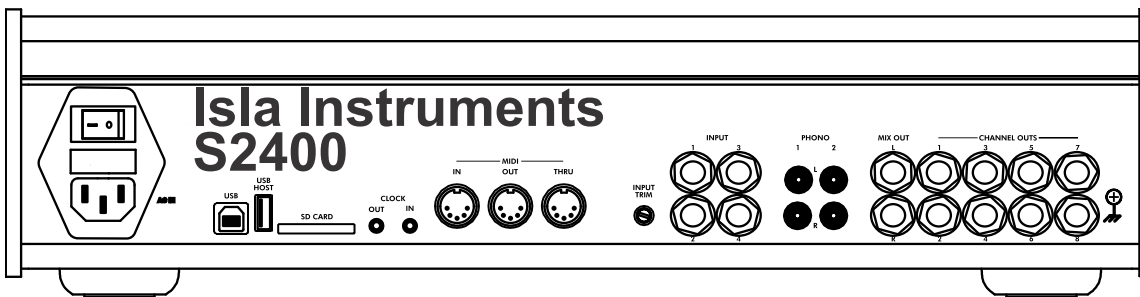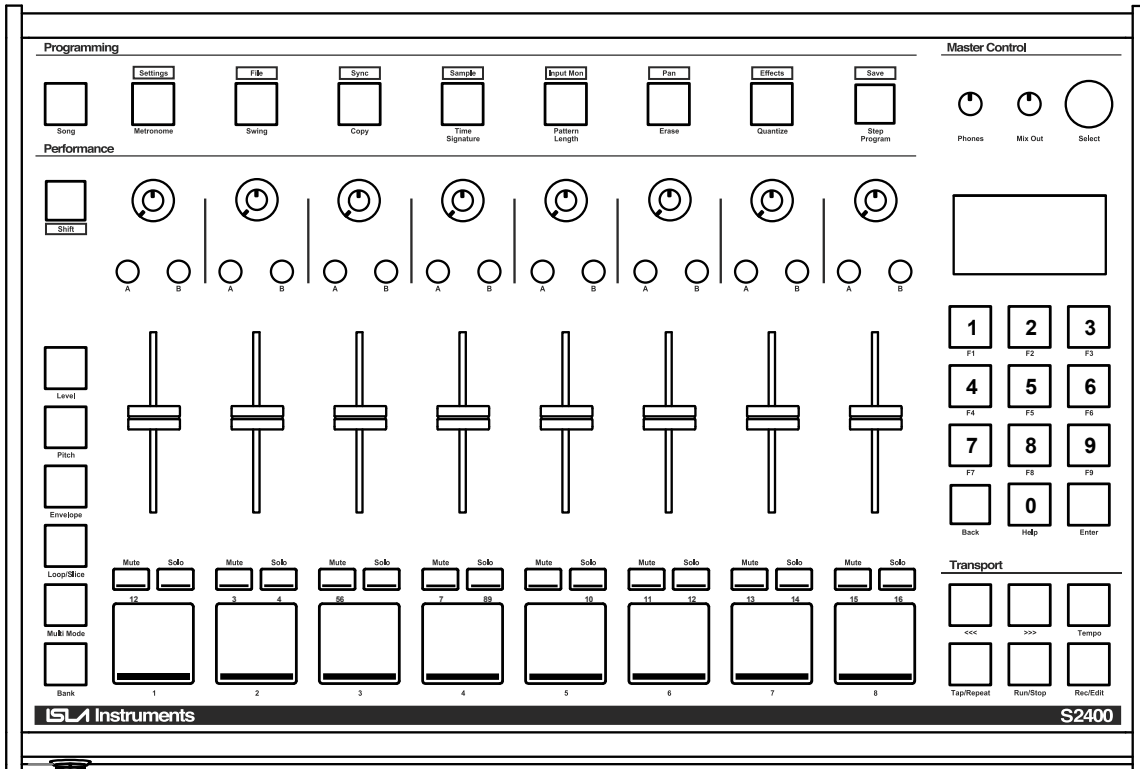
PCB & CAD: Supul Sapukotana

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

Panel Layout

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.

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.

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

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.

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
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 cads. We have tested it with up to 512 GB cards.

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.

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 during playback which can add some aliasing.

Samples with a bit depth other 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. 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 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.

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. 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 pad's settings (pitch, envelope, etc.). Press Enter or click the encoder to select a sound and assign it to the pad.

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.
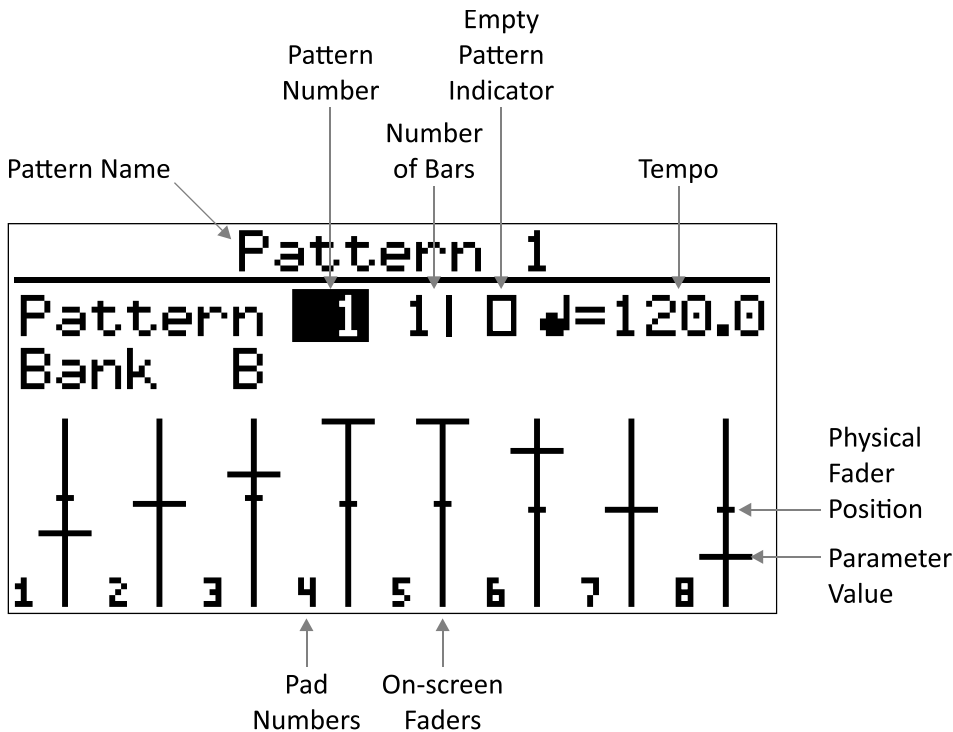
Browse Files

Select Browse Files from the File Menu. 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 pad.

Pattern Mode

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

There is much to say here. This section will be updated next.

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 pattern-specific tempo or global tempo for the current pattern.

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

Shift+Run: When running, rewinds to the beginning of the pattern. When stopped, continues running from stop point.

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 modem 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. All of a track

Fader Lock

Pressing F8 locks the faders for the current mode. Pressing F9 locks the faders for all modes. When locked, the faders have 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.

Mixer Mode

If no fader mode key is illuminated, then the faders are in Mixer mode. In Mixer mode, the faders set the playback level of the tracks, but do not affect the recorded levels. The range of the mixer mode faders is from zero up to the level set for that track in Level fader mode.

The top knob controls the cutoff frequency of the digital filter. The bottom knob controls the resonance. The B button turns filter playback override on or off. See the Parameter Override section for more details. Press Shift+B to edit filter settings such as override method and filter mode (low pass, band pass, or high pass). The settings screen also has a Set for all tracks option.

Level Fader Mode

The faders set the level of each track. If dynamic pads are turned on, then the pad pressure sets the level, and the level faders are ignored.

The knobs and B button work the same as they do in 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.

The A button turns pitch playback override on or off. See the Parameter Override section for more details. Press Shift+A to edit pitch settings such as override method and pitch resolution. The settings screen also has a Set for all tracks option.

The knobs and B button work the same as they do in 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 five 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. In a synthesizer which has free-running oscillators, the envelope parts are actual times. Increase one and the whole sound is longer. In the S2400, the envelope parts are specified as percentages of the total sample length. For example, if the sustain 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 6: Change the pitch modulation amount. The fader sets whole semitone values only, and the encoder/arrows adjust one cent at a time.
Fader 7: Change the filter modulation amount. The fader is a course setting, and the encoder/arrows allow fine adjustments.
Knob 6: Change the pitch.
Knob 7: Change the filter cutoff and resonance.
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.

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 sample slice
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: Force start point to zero crossing
F5: Force loop point to zero crossing
F6: Force end point to zero crossing
F7: Shift slice left. In multi-mode, F7 sets the start to the previous slice's end.
F8: Set the loop time based on a number of repetitions.
F9: Shift slice left. In multi-mode, F9 sets the end to the next slice's start.

Shift slice (F7 and F8) 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..

In memory, 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.

Saving Slices

Press the Save button while using the waveform editor to save a slice, or the whole sample. The saved file will contain the sound between the start and end points.

Multiple slices can be saved from the same recording. There is also an option to Overwrite Same File, which will truncate sound at the slice start and end points, both in memory and in the file. Overwrite only works with files loaded from the SD card, not a newly sampled sounds which exist only in memory.

Memory Usage

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 that tracks 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 terms note and trigger are both used to refer 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 note 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.

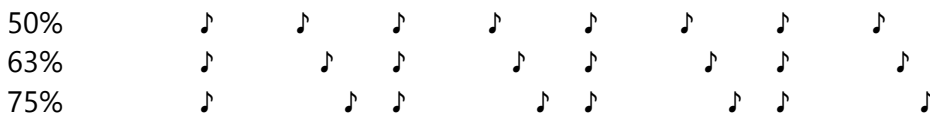**Level:** Level is the volume of the metronome.

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 played in real time. 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.

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

The quantize setting also controls the repeat rate.

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 useful for visualizing a pattern

Step program mode is particularly useful for visualizing a pattern

Triggering tracks at the beginning of the pattern, or the beginning of each a measure, such as long recorded drum

Patterns can be created entirely in Step program mode, or

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).

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. 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

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 notes 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.

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
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

Parameter Override

During playback, the filter and pitch controls can override what is recorded in the pattern. 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.

Mute/Solo

In modes other than Step Program TR mode, the rectangular buttons above the pads control mute and solo. Solo overrides muting, essentially muting all non-soloed tracks. Multiple tracks can be soloed at once.

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.

Live Looping

The S2400 can operate as an 8-track looper pedal, while still playing 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 to the audio source to be recorded and looped. The 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.

Erase+Pad: Erase the Live Loop. The erase menu can also be used.

Shift+Pad: Live Loop settings and functions.

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. The mute/solo action can take effect immediately when the button is pressed, or at the beginning of the pattern.

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 each 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.

Length

The loop can be the full length of the pattern, or 1/2, 1/4, 1/8, or 1/16 of the pattern length. If the length is shorter than the full pattern, the Live Loop repeats.

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 to Project

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

Save to project saves the Live Loop in the project folder and gives the option of assigning it to a pad. If the project has not been created, it prompts for a new project name.

Save to Folder

Save to folder saves the Live Loop as a WAV file in any folder on the SD card.

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.

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.

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.

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.

Clear Sound

Select Clear Sound to clear the sound from a track. This does not delete the WAV file.

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 lost.

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.

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.

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. See the Swing section for more details.

Quantize

Set the track-specific quantization which can also be set in the quantize menu. See the Quantize section for more details.

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 quantization menu.

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.

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).

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.

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

This brings up the same screen as the Move/Copy Track option on the Track Settings menu.

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.

File

Please read the <u>Files and SD Card</u> section before this section.

Rename Project
Prompts for the new name, then renames the existing project folder and the S24 and KIT 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 <u>Assigning Sounds to Tracks</u>.

Load Sounds Folder
Load sounds folder is discussed in the section on <u>Assigning Sounds to Tracks</u>.

Browse Files
Opens the <u>File Browser</u>.

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

Sync settings control how the S2400 interacts other devices and computer software.

Note: As of this writing, only outputs are fully functional. MIDI and 3.5mm clock inputs are in development.

Clock Source

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

MIDI Jack Settings

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

Clock Out

Send clock and transport (start, stop, continue) messages.

Notes Out

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

Transport In

Accept start, stop, continue, and song position pointer messages.

Notes In

Accept note on/off messages to trigger tracks.

3.5mm Clock Jack Settings

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

Clock In Jack

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

Clock Speed: (if function is clock): 96, 48, 24, or 12 PPQN, or 16th notes

Clock Out Jack

Function: Clock at 96, 48, 24, or 12 PPQN, or 16th or 8th notes, Run/Stop, Reset (to beginning of pattern), or triggered when any one of the 32 tracks is triggered

Note Swing: When sending clock out, swing can be any of the available swing settings

Pulse Length: The length of the output pulse in milliseconds

MIDI Mapping

NOTE: Currently, only output mapping is implemented. Input mapping is in progress and coming very soon.

MIDI Mapping refers to the mapping of S2400 tracks to output MIDI notes, and mapping controller/DAW MIDI input messages to S2400 pads, faders, and knobs. All mapping options can be set from the S2400 Sync screen. The options can be saved to, or loaded from a MAP file. MAP files are text files that can be edited on a computer.

The format is similar to the common INI format. Each line is a key=value pair. Nothing is case sensitive. All blank lines, spaces, and tabs are ignored. All MIDI numbers start at 1 (not zero). Lines beginning with a semicolon are comments.

Consider the sample output map below.

```
; S2400 MIDI Output Map
Channel=10
A1=60
A2=61
A3=62
A4=63
Channel=11
A5=64
A6=65
A7=66
A8=67
Channel=1
B1=pitch
```

The MIDI output channel is specified with a CHANNEL=# line. The channel affects all notes that come after it in the file. In the above example, A1-4 will be sent on channel 10, notes A5-8 will be sent on channel 11, and B1 will be sent on channel 1. If not specified in the file, the default channel is 10.

The lines with a track designation followed by a number (e.g. A1=60) mean that track will send that MIDI note number when the track is triggered, either by a pad, or in a playing pattern.

If the track designation is followed by the word pitch, that means that instead of sending a note on message with a fixed note number, that track will send a pitch that corresponds to the pitch of the sample. An un-shifted pitch is note number 60 (C3).

Any track not mentioned in the map file will not output a note.

If you create an input map for a particular controller, you can share it with other users in the S2400 file sharing section of the Isla forum. Likewise, search the forum for a map before going to the effort of mapping it yourself.

Sample Mode

Arrows/Encoder: Highlight a parameter, or change the value of the selected parameter.
Enter/Encoder Press: Edit the selected parameter.
Rec/Edit: Start/stop recording.
Back: Exits sample mode.
Input Mon or Metronome: Brings up the appropriate settings.

Scope and VU meter are zoomed in when setting the record threshold.

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 access 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 screen. The same keys used on that screen are used here, plus the following:

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

Rec/Edit: Returns to sample recording mode.

Back: Returns to sample recording mode.

Gain

For input sampling, monitor, and Live Looping, the gain multiplier (X1, X10, X100) is applied before the gain amplifier knob on the back.

Sample Time

The S2400 has 64 MB of sample RAM. Recording a new sample uses the whole sample RAM. 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

Input Monitor

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 paned, 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 the filters 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 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.

Fixed Filters

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

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.

Output Channels

There are eight output channels, and eight choke groups.

If two mono tracks are both assigned to the same channel, then they will choke 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 (cut off).

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.

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
•   Mono, plays on channel 2

•   Stereo, plays on channels 1 and 2

•   A2: Channel 1, Alternate 2
•   A1 not choked
•   Mono, plays on channel 2

•   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, Alternate 1 * A2: Channel 1, Alternate 2 * A3: Channel 2, Alternate 2

If A1 and A3 are playing when A2 is triggered, A2 chokes 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, Alternate 2 * A2: Channel 1, Alternate 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.