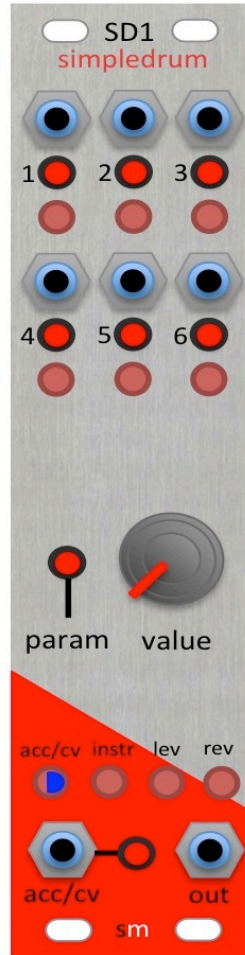


soundmachines



SD1simplifiedrum User's Manual

- Introduction
- Care and feeding
- Specifications

Introduction/quick start

Congratulations! You just added a very peculiar weapon to your eurorack arsenal! The SD1simplifiedrum is a very dense drum kit module with many surprising features. 6 drum voices and more in just 6hp. Three centimeters of percussive heaven!

SD1simplifiedrum is a PCM based percussion module with six independent channels and several drum sounds per channel. At the very basic level you 'create' your kit by pushing the channel button (LED will lit up), then selecting the parameter to modify (LED will lit up) and operating on the 'param' pot to modify the value. You can choose which parameter modify with the four buttons 'acc/cv', 'instr', 'lev' and 'rev'.

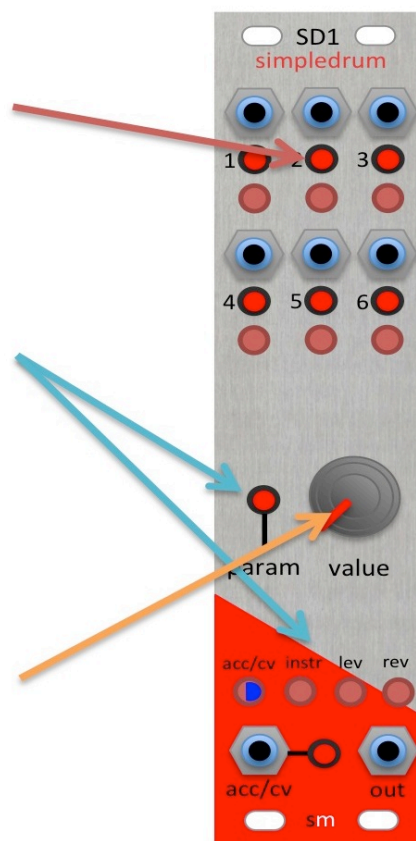
In the picture below you can see the 'control flow' to setup your SD1simplifiedrum:

1: select channel

2: select param

3: modify value!

- Set Accent amount
- Select Channel Instrument
- Set Instrument Level
- Set Global Reverb



Care and Feeding

The SD1simplifiedrum module complies with the eurorack power standard set by the community patriarch (and friend!) Dieter Doepfer. The holy ribbon will supply the necessary power to the SD1 if connected correctly.

On the back of the module, near the 10pins IDC connector, the polarity is clearly indicated. As a matter of fact, you must connect the ribbon cable with the red stripe aligned with the -12V silkscreen writing. The supplied cable is correctly mated to a female IDC 16pin connector that will be joined to your bus board.

The module will need up to 150 mA on the +12V line and < 5mA on the -12V. As with all our other modules, the SD1 does not need the +5V supply.

All the trigger and CV inputs are rated at 0-5V. Don't exceed those values. The module is protected to overvoltages but correct functions are not guaranteed and the module could be ruined.

Specifications

Soundmachine's SD1simplifiedrum is a powerful, fun and small module that will open up the percussive realm on your system or integrate the modules that you already have in place. Six channels of drum sounds could be configured for sound, volume, accent and overall reverb intensity at the touch of your finger and in real time. Although those are already very good capabilities we tried to put many more features in it adding a 'cv' mode that opens up very interesting opportunities. Among other things there are 'humanize' functions and also a 'synth' mode that will make your SD1 a great tiny groovebox! Don't forget that the SD1 has also a save/recall mode with six memories, to switch quickly between settings (everything is memorized, the instruments, the levels, even the advanced functions) during your live sets or in the studio.

User Interface:

The user interface follows a top-down flow as the trigger input jacks, the selction button and the channel leds are on the top of the panel, the configuration area is right in the middle and the single output jack is located bottom-right.

Each of the six channels has three panel elements: the input jack, the selection button and the LED. The input jack is the trigger input. As with most modern eurorack modules, the rated input voltage is 0 to 5V and, although protected to higher voltages, we suggest to follow this specification to avoid malfunctions. The trigger inputs are sensible to positive-going signals and don't care about the duration of the trigger impulse, as long as it is more than few tens of microseconds. The button selects the channel and, in save/recall mode, the memory location (more on this later). The LED shows, when continuously lit, that the channel is selected and it will blink (in positive when the channel is not selected, in negative when it is) when the trigger signal is active.

The middle section groups the parameters functions and it includes a button ('param'), a potentiometer ('value') and four leds that shows the parameter being modified. At a glance, you can see what parameter of what channels is 'active' in that very moment.

When you press the button the four parameter LEDs will cycle. At any time, you can modify the value by rotating the pot. The pot action has a 'sensitivity' that permits to cycle throught the functions without accidentally change the parameters. Only when you touch and move slightly the pot the action takes place and the value modified.

A particular note for the acc/cv LED. This LED has two colours, red and blue. The blue color will be active when the advanced 'cv' mode is selected by the 'acc/cv' button described in the next section. The acc/cv selection button will operate only when the 'acc/cv' LED is already selected (and lit RED).

The last section of the module is the lowest and includes the accent/cv input, the acc/cv button and the output jack. The accent/cv input, as the name implies, have two different behaviours: digital, when the standard mode (accent) is selected and analog, when the advanced mode (cv) is active. The latter is indicated by the blue color on the 'acc/cv' LED.

Standard Functions:

Selecting the instruments for each channel:

For each channel you can select few instruments to play. First you select the channel with the relative button. You will see the LED lit solid that confirms your choice. Now push the 'param' button until the 'instr' LED lights up. By rotating the potentiometer you can change the sound associated with the selected channel. Some of the instruments includes two sounds in one and the level acts

on both sounds identically. The sounds are divided in families per channel and the following is the overall categorization:

1. BASS DRUM (11 instruments)
2. CLOSED HI HAT (9 instruments)
3. OPEN HI HAT (6 instruments)
4. SNARE (7 instruments)
5. PERC1 (14 instruments)
6. PERC2 (24 instruments)

Mixing the instrument levels:

This is a pretty much simple thing to do, you just select the 'lev' function by pressing the 'param' button until the relevant LED is lit and then you rotate the 'value' pot to modify the instrument volume.

Keep in mind that the default volume for each instruments is 100 out of 127 so, out of the box, you can either rise or lower the individual volume. This value should be well understood when you want to use the 'accent' function (next paragraph).

Modifying the accent amount:

In standard 'accent' mode (the acc/cv led is RED) you can set the amount of volume that the selected channel will rise when the 'acc/cv' input is HIGH and the trigger input receive an impulse. The default amount of accent for each channel is 0, i.e. no accent effect when the input is at a high level. You can set an accent amount from 0 to 60. This value is added to the instrument level when played. The result saturates to 127 when an overflow occurs so you don't have to worry about this. In standard 'accent' mode, the input is treated as a digital one and the 'high level' treshold is set at 1V.

Setting the global reverb send level:

The IC that generates the drum sounds has an internal reverb algorithm that could be used on the whole kit (i.e. no individual instruments sends). By selecting the 'rev' function (press and release the 'param' button until the 'rev'

LED is lit) you can change the reverberation amount to suit your sonic intentions...

Please consider that, like in real outboard processors, the reverb can saturate/distort when high levels of the instruments are used. Regulate the mix levels according to this.

Advanced Functions:

As we introduced, the SD1simplifiedrum has a few aces up its sleeve. The SD1simplifiedrum can manage 6 advanced modes or functions that relies on the transformation of the accent input in an analog control voltage. The IC that we use to generate the percussive sound is a small sound generator that can also supply melodic sounds, albeit simple. Few of those sounds are actually quite good so we decided, as a very welcomed bonus, to include a way to play some basslines or lead sounds. There is even a piano sample!

Taking in consideration those two aspects we will describe the advanced modes in the following chapters.

We have to consider a little conceptual modification to the UI introducing a dual function for some of the user interface components.

We already talked about the 'acc/cv' button and realtive led and this is the heart of the advanced modes. You enter this alternate set of functions by activating the blue LED on the 'acc/cv' indicator:

Activating the Advanced CV Mode:

You first have to select the 'acc/cv' LED with the 'param' pushbutton and then press the acc/cv button. This sequence will light up the BLUE led alongside the RED one that is already lit. From this moment on, the advanced CV modes are fully operative.

When acc/cv led is red and blue at the same moment, the rotation of the 'value' potentiometer will actually change the advanced mode between the following:

1. Humanize Hi-Hats
2. Humanize Hi-Hats and Snare
3. CV control of reverb
4. Channel 6 scan
5. Channel 5 and 6 scan

6. Synth Mode

The following picture shows the 'mapping' of the advanced functions on the potentiometer rotation. Remember that, for usability reasons, the selection of the particular advanced mode will take place after 0.5 seconds that the potentiometer has stopped its motion (this has been introduced to avoid selecting all the modes in between the starting one and the target..).



Advanced Mode 1(HH): Humanize Hi Hats

In this mode, the acc/cv input will be used to change the 'humanization' of the hi hats. Humanization is a process that applies random level variations on each involved channel. To allow the user to use this mode without an external control voltage, we 'inverted' the logic so that when 0V signals are inserted at the acc/cv input (including the absence of a cable connected!) the effect is maximum. The higher the value of the 'acc/cv' input (up to 5V) the smaller the humanize effect.

The 'Humanize' effect will add or subtract (remember that this value is randomized for each trigger impulse) from +/- 4 to +/-30 to the instrument 'lev' level that you configured, simulating the inconsistencies of a human drummer.

Advanced Mode 2(HHS): Humanize Hi Hats and Snare

The same process is applied also to the snare channel. This is very good for those crazy Venetian Snares[®] rolls!

Advanced Mode 3(REV): Reverb CV control

This mode will associate the reverb fx send to the incoming CV that is measured at the 'acc/cv' jack. The higher the control voltage, the 'wetter' the effect output will be!

Advanced Mode 4(SC6): Channel 6 scan

In this mode the voltage on the 'acc/cv' input will be used to scan the instrument table for the sixth channel. This way you can add an interesting variety in sounds according to a CV signal in realtime. Obviously the 0-5V range will be mapped to the entire set of instruments so if you only want a particular 'timbral' region you have to limit the incoming CV signal to suit your need (offsets plus attenuators!!!)

Advanced Mode 5(SC56): Channel 5+6 scan

Identical behaviour as the Advance Mode 4 but this is impacting both channel 5 and 6 altogether.

Advanced Mode 6(SYN): Synthesizer Mode

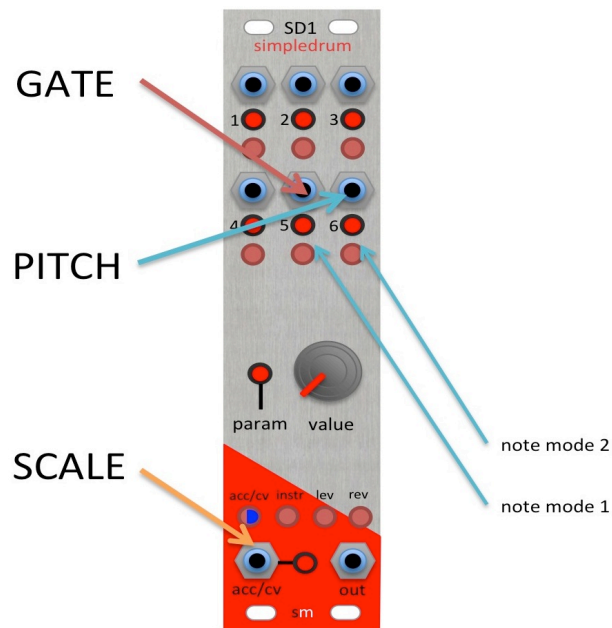
This is the most fun and surprisingly useful mode that we included in the SD1simplifiedrum. When you activate this mode, the module will become a small and fun groovebox capable, at the same time, of generating drums and bass or lead lines!

To achieve this we exchanged two channels of percussion for a classic GATE/PITCH inputs!!! Respectively channel 5 and channel 6 become the GATE

and (quantized!!!) PITCH inputs for the synth section, while the ACC/CV input become the SCALE input.

The SD1simplifiedrum retains four channel of drumming and adds a full 20 sounds synthesizer with quantized input!!!

The following picture explains the new structure:



Synth mode and drums are not mutually exclusive. You just loose the last two channels of the drum sounds but you retain all the triggering, level setting and global drum reverb capabilities. You obviously loose the advanced drum modes and the accent capability (the latter due to the transformation of the 'acc/cv' input to a SCALE control voltage).

In Synthesizer mode you have a simple quantized synthesizer at your disposal. By connecting a gate and pitch source (i.e. a stepsequencer, a random voltage, a ribbon controller, other stuff) to the channel 5 and 6 and a voltage source to the the acc/cv input (to set the scale) you can start playing the internal synthesizer with a quantized output that spans a little less than 5 octaves in pitch.

When you select either channel 5 or 6 you can, as with the drum voice, modify some parameters like:

- the instrument (you have 20 PCM sounds to choose from)
- the volume of the synth channel

- the reverb on the synth channel (this is not the same as the drum global reverb but it impacts only the synth sound)

The selection of channel 5 or 6 operates also another distinction, as indicated on the previous picture. We called it "Note Mode" and it can be of two types:

- Note Mode 1 (select channel 5): A synth note is played when the GATE is high AND when the quantizer changes note according to the CV input.
- Note Mode 2 (select channel 6): A synth note is played only when the GATE (connected to channel 5) transitions from low to high.

Note: The two modes are necessary because, with certain sounds with longer decay times (remember that the internal sound generator is polyphonic) by moving the input CV along the quantized scale a lot of notes will be generated and played, possibly leading to an non harmonic impression or to a saturation of the internal voices. You can switch dynamically between them.

The following are the scales implemented. Those are linearly mapped to the 'acc/cv' analog voltage (from 0 to 5V):

- minor (this is selected also without a jack inserted)
- major
- pentatonic
- dorian
- major7
- minor7
- whole tones
- chromatic

Save and Recall

The SD1simplifiedrum has a meaning of saving and recalling up to six 'scenes' or full configurations. The 'scene' includes the following parameters:

- Instrument, accent and level for each channel
- global reverb
- advanced mode (if active)
- synth parameters (instrument, level and reverb)

Those are the full sets of parameters that describes a configuration of the module. The only information lacking are (obviously) the 'volatile' ones like the SCALE (when in Synth mode) and the note information (in Synth mode too).

To SAVE a 'scene' you have to press for THREE seconds one of the channel buttons AND the 'param' buttons. After three seconds, the module communicates back to the user the result of the operation with a SINGLE FLASH of the four parameter leds.

To RECALL a 'scene' you have to press for three seconds the channel button that corresponds to the saved scene. After three seconds the four parameters leds will FLASH ONCE.

Both save and recall can be used while the module is active (i.e. playing something)

Note: If the result of the SAVE and RECALL is a DOUBLE FLASH you have to repeat the operation.

Reset the generator IC

During our tests in harsh environments (very disturbed power environment including 2x overcharged power supplies and hot insertions and detaching of modules on the power bus) we had a very few occurrence of stuck notes and an increase in the noise floor of the generator IC. To be able to reset the IC without having to power cycle the entire system we put a 'quick reset' of the unit that will take place by PRESSING CONCURRENTLY THE CHANNEL 4 AND 6 BUTTONS. This will immediately reinitialize the generator IC by reloading all the possible configurations that were active before the reset. The reset lasts only few tens of milliseconds.

Note: although this is extremely boring stuff, all the cited trade marks and registered product names are property of their legal owners.

