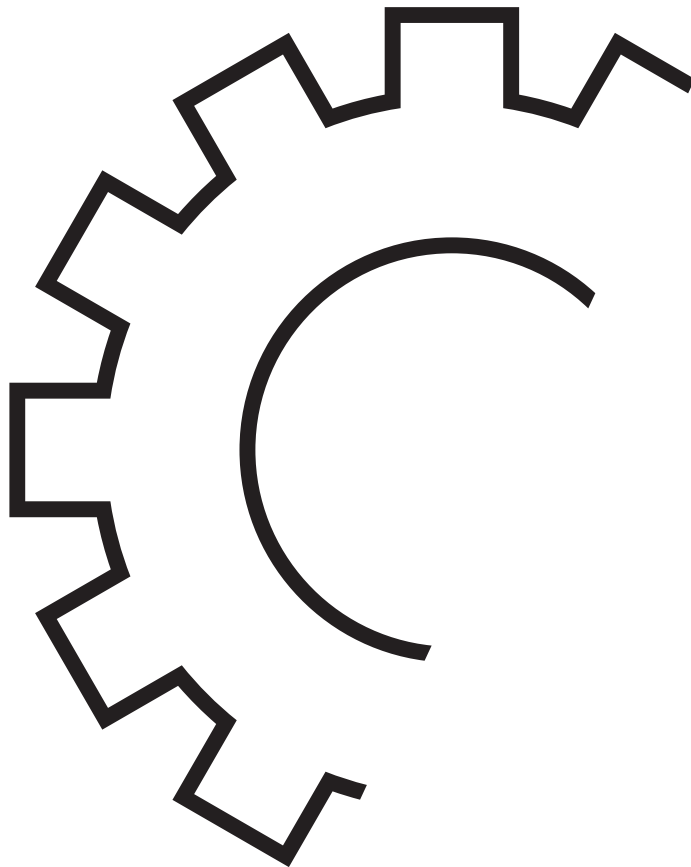




SID
8Bit Groovebox
(including Software)



User Manual
November 2012

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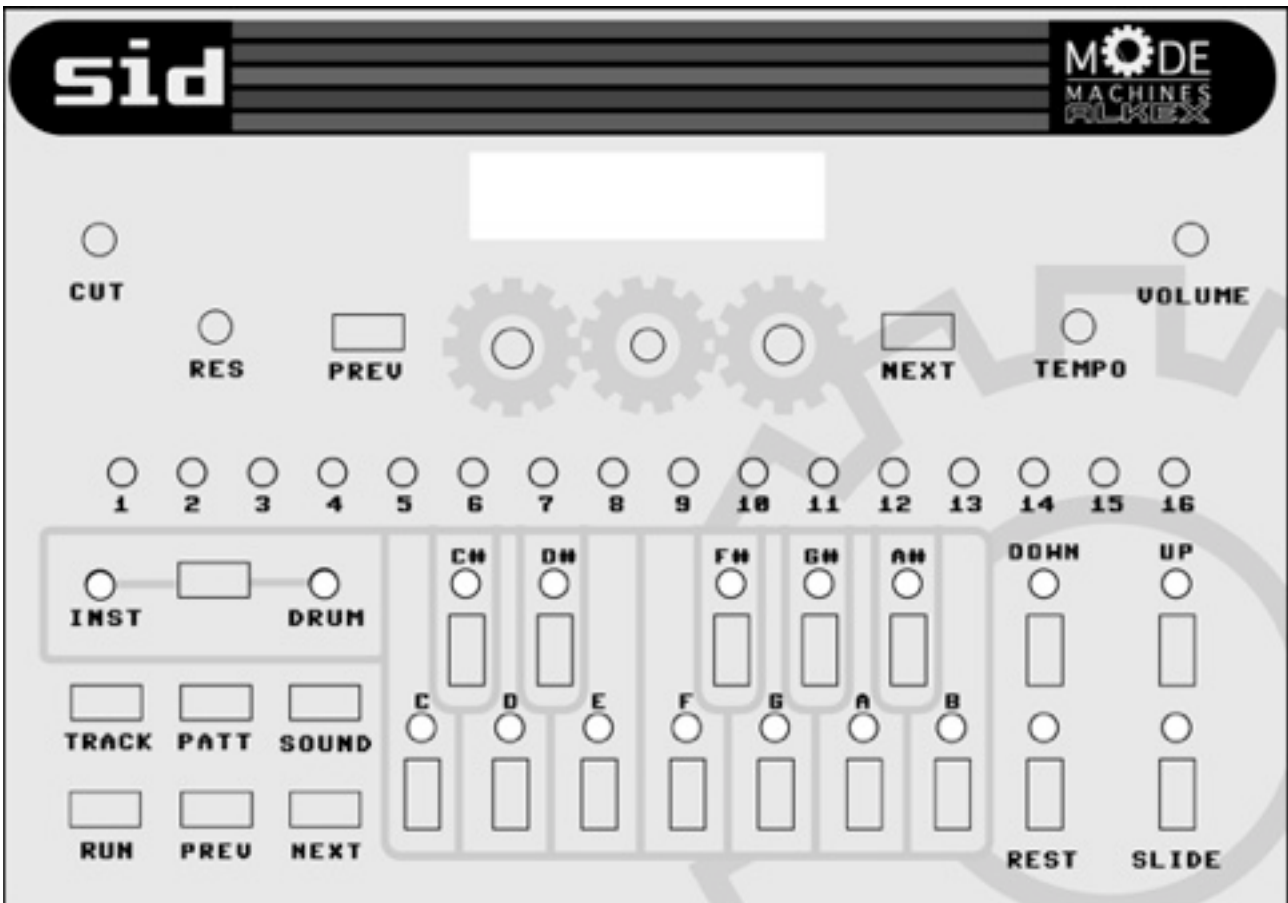
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- 11.1 SID/SWINSID

1. Knobs ,buttons & LED's



1.1 Expression knobs

These 3 knobs functions depend on the preset you have loaded. They can be mapped to any of the 26 parameters within the SID librarian software.

The modulation wheel of your midi keyboard (and Midi CC#1) has the same effect as expression knob 1.

1.2 Cut & Res knobs

These knobs control the cutoff frequency and resonance amount of the SID's filter section.

1.3 Tempo knob

The tempo knob controls the tempo (speed) of the sequencer. Tempo is displayed on the LCD in BPM (beats per minute).

It is recommended to slave your SID to a midi clock (from your favorite DAW or sequencer) for optimal tempo accuracy

1.4 Volume

The volume knob controls the sound level of the SID on both main and phones outputs.

1.5 Piano buttons and LED's

The said piano buttons serve multiple functions depending on the current mode:

- In sound mode, they become piano keys that can be tapped to play like a keyboard. In this case the LED's light up as you tap a key. The LED's also display the notes received from an external MIDI source.
- In pattern mode the buttons are used to program notes into your pattern. The LED's display the note currently programmed into the selected STEP.

NOTE: in pattern REC mode, the selected STEP automatically advances to the next every time you hit a key, hence the LED's won't necessarily be showing the note you just programmed

1.6 Up/Down buttons and LED's

These buttons serve multiple functions:

-In sound mode they change the octave of the keyboard buttons.

(note: the octave buttons have no effect on the midi notes received)

-In pattern modes they transpose the selected STEP up and down by 1 octave.

Both LCD and LED's reflect the current octave transposition.

1.7 Channel select button and LED's

This buttons toggles between DRUM and INST(instrument) modes. The LED's indicate which of the 2 modes is selected.

1.8 Rest & Slide buttons and LED's

These buttons serve multiple functions:

-in sound mode the rest buttons serves as a midi panic button in the event that a note is "stuck" (this can occur if a MIDI connection is broken in between a note ON and note OFF midi message). Hold the slide button in sound mode to activate sliding (glissando) between notes.

-in pattern mode the rest button mutes the selected step and it's LED indicates it's status (on=muted). The slide button makes the selected step slide to it's note (up or down depending on the previous step). LED on=sliding.

1.9 Upper PREVIOUS/NEXT buttons

These buttons have multiple functions:

-In sound mode, they change the selected instrument. Press once to display the next or previous patch on the lcd. Hold to "scrub" faster through the list. Then press RUN to load the patch.

-In pattern mode these buttons change the currently selected instrument or drum pattern.

-In Track Play/Select mode these buttons change the selected instrument or drum track.

-In Track Edit mode these buttons change the pattern of the currently selected track STEP.

1.10 Lower PREVIOUS/NEXT buttons

These buttons serve multiple functions:

- In sound mode, they transpose the keyboard up and down by a semi tone within a range of 1 octave. (note: this has no effect on the midi notes received)
- In pattern mode they change the selected step of a pattern. When you reach the end of a pattern, you will “jump” back to the first step and vice versa. These buttons can also be used to program the pattern lengths and speeds when prompted by LCD.
- in track mode they change the selected track step.

1.11 Run/Stop buttons

This button starts and stops the sequencer. Please note that this button is disabled when SID is slaved to a midi clock.

1.12 Track/Patt/Sound mode buttons

These buttons change the operation mode of the SID to track mode, pattern modes and sound mode respectively. See sections 2-4 of this manual for an in-depth description of these modes.

2 Sound Modes

The sound mode button toggles between sound and sound/poly modes.

2.1 Sound Mode

In sound mode SID becomes a live synthesizer that can be performed either with the keyboard buttons or via midi. You can also change the instrument patch in this mode using the upper PREV/NEXT buttons.

2.2 Poly Mode

In Poly mode SID becomes a 3 voice poly-synth that can be performed either with the keyboard buttons or via midi. In this mode, modulation is restricted and rhythm is disabled as all 3 voices of the SID chip are allocated to play notes.

3 Pattern Modes

The SID can store 32 instrument and drum patterns in its EEPROM memory. SID offers 4 pattern modes: edit, rec, length and speed. Tap the PATT button to toggle through the modes.

3.1 Step Edit

In this mode you can program the parameters of any pattern, step by step. First select a pattern to edit using the upper prev/next buttons. Then select a step to edit using the lower prev/next buttons. Each step has Note, Octave, Slide and Rest data that can be programmed using the respective buttons.

The data is automatically updated in the EEPROM memory.

3.2 Step Rec

This mode has the same functionality except that you can program the notes in a sequence without the need to change steps manually. In this mode, incoming MIDI notes can also be used to fill a pattern step by step.

3.3 Pattern Length

In this mode you can change the length (between 1 and 16) of the selected pattern using the lower PREV/NEXT buttons.

3.3 Pattern Speed

In this mode you can change the speed of the selected pattern using the lower PREV/NEXT buttons. You can choose between 1x 2x 4x and 8x. You can also mute a pattern by lowering it's speed to 0x.

4 Track Mode

You can arrange your patterns in sequence to build tracks to be considered as songs. There are two modes:

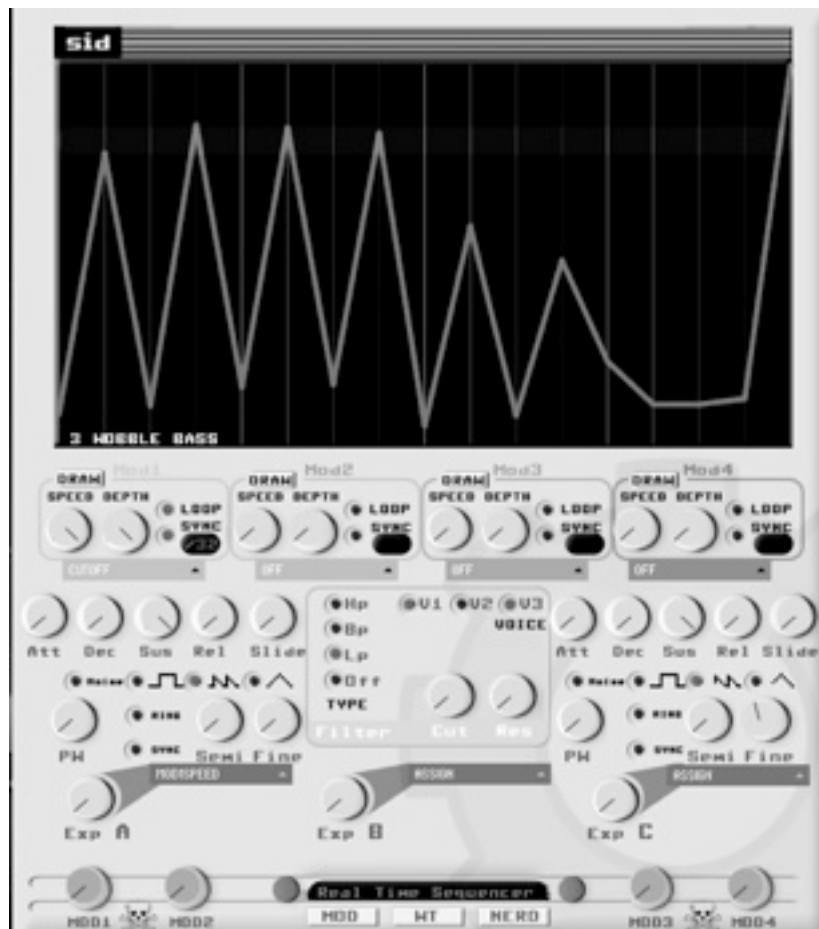
4.1 Track play/select:

choose a track to play using the upper next/prev buttons

4.1 Track edit:

In this mode you can edit your tracks in a similar fashion to patterns. Select the track STEP using the lower NEXT/PREV buttons and select a pattern using the upper NEXT/PREV buttons. This defines the pattern to be played at this step of the track.

5.1 Main control panel:



The SID librarian software enables you control every parameter of the synthesizer and manage a whole library of sounds. Each library contains 100 presets and 24 wavetable sounds. You can even export and share it with your friends!

Be sure to download the latest version from the Mode Machines website!

The main panel controls voice specific parameters such as envelope, glide and tuning. Here you can also control the filter section.

5.2 Modulators:

The SID has four 16 step internal modulators built in that can control many parameters of the synth.



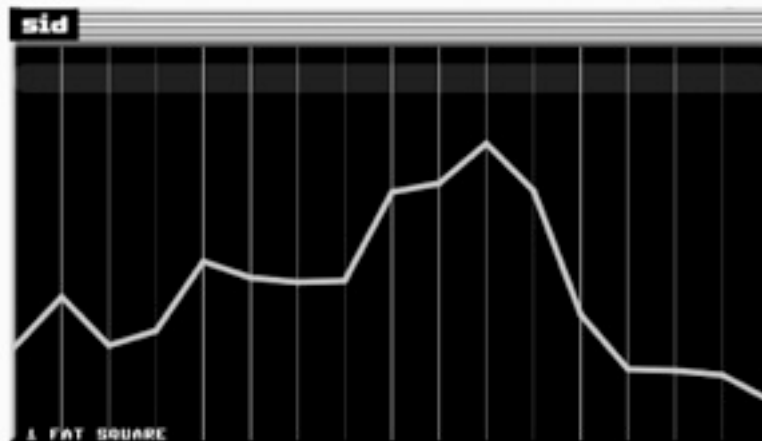
modulator has speed, depth, loop and sync parameters and can be assigned to the following parameters:

FLTER CUTOFF, PULSEWIDTH1, PULSEWIDTH2, COARSE TUNING1 (AKA NOTES), COARSE TUNING2, FINE TUNE1, FINE TUNE2, WAVEFORM1, WAVEFORM2, MOD SPEED1, MOD SPEED2, MOD SPEED3 AND MOD SPEED4

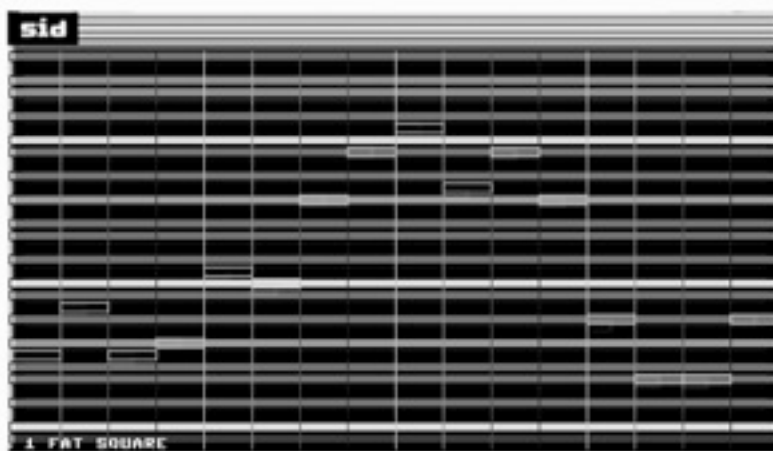
You can use a modulator as a 1-shot effect or continuous using the loop radio button.

When sync is activated, the modulator will sync up to the incoming midi clock. This is where the magic happens!

Click one of the 4 **draw** buttons to edit it's respective graph:



You can conveniently draw the modulation graphs with the mouse and SID will receive the update in real time. In coarse tune mode, the graph is replaced by blocks on a grid which resembles the piano roll of a midi sequencer the gray lines indicate white keys and the the black represent the black ones. The bright white lines represent the beginning of a new octave. In coarse mode, the modulator becomes a midi sequencer. Fun for creating sequences and arpeggios!



When a modulator is associated with the waveform of a voice it becomes a mini wavetable sequencer:



This is a fun way of creating gated effects and modulated sounds. In one shot mode it can add a little accent to the beginning of a note.



MOD (Modulation) Mode
SID Librarian Software

5.3 Expression knobs:

This is where you configure the 3 expression knobs. Each expression knob can control one of the following 26 parameters:

- 1) Cutoff
- 2) Resonance
- 3) Pw 1
- 4) Pw 2
- 5) Coarse1
- 6) Coarse2
- 7) Fine 1
- 8) Fine 2
- 9) Mod1 Speed
- 10) Mod1 Depth
- 11) Mod2 Speed
- 12) Mod2 Depth
- 13) Mod3 Speed
- 14) Mod3 Depth
- 15) Mod4 Speed
- 16) Mod4 Depth
- 17) Attack1
- 18) Decay1
- 19) Sustain1
- 20) Release1
- 21) Attack2
- 22) Decay2
- 23) Sustain2
- 24) Release2
- 25) Slide 1
- 26) Slide 2

5.4 Hazard knobs:

Dial up these knobs to add randomness to the respective modulators. Use with caution!

6 Wavetable Mode

The wavetable mode is the heart of the classic sid sound FX and percussion sounds. Each WT sound consists of 12 steps, 10ms in length.

6.1 Sound Select

Select one of the 24 sounds you wish to edit by clicking in it's box at the top. Clicking the sound number also triggers that sound. "spacebar" on your keyboard will also trigger the selected drum sound. All wavetable parameters are sent to SID in real time as you tweak them, so hit away at that space bar!

You can control up to 3 parameters per step: PITCH, PULSEWIDTH and WAVEFORM. Drag your mouse vertically within a box to edit it's parameter:



6.2 Pitch

Here you can modify the pitch across time. 1 unit = 1 semitone.

6.3 Pulsewidth

Here you can modify the pulsewidth.



6.4 Waveform

Here you can modify the waveform. When the name of the waveform is **WHITE** it the gate is open, when the waveform is **RED** the gate is closed. The final step of the wavetable sequence is automatically considered **RED** (closed) to avoid endless sound.

6.5 Envelope

Here you can set the envelope of the sound values of ATTACK, DECAY, SUSTAIN and RELEASE range from 0 to 16 (4 bit).

7. Nerd Mode

Nerd mode enables the user to control the sid chip pin by pin. Explore the datasheet and manual set the sid's registers. This is a fun way to learn how the protocol works.

Simply click on the squares to toggle on and off the bits of both address and data registers and tap the space bar to send the command.

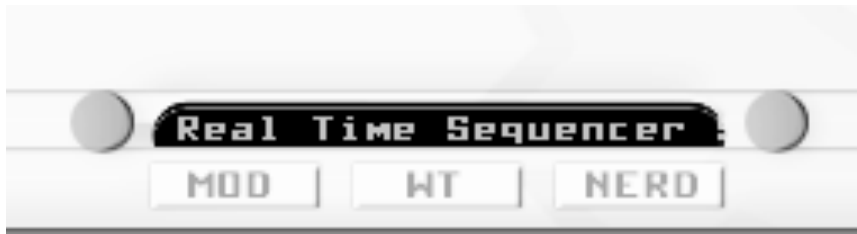
8. Library Management

Use the **import** button to load a library, the **export** button to save your library to an external file. Be sure to use the **save** button when you make a satisfactory change.

9 MIDI Setup

9.1 Connecting SID to the library software

The SID uses MIDI to send and receive information. You need a computer with a minimum of one midi output to use the SID Librarian software effectively. Select the Midi device that you have connected SID to using the **circular buttons** on either side of the midi device name at the bottom of the screen.



9.2 MIDI Implementation Chart

Below are the midi CC values to control the SID's parameters.

Parameter	CC#	Values
Pulsewidth 1	5	1-127
Pulsewidth 2	4	1-127
Tune1	41	1-127
Tune2	42	1-127
Fine1	47	1-127
Fine2	48	1-127
Slide1	97	1-127
Slide2	98	1-127



MIDI Setup
SID 8Bit Groovebox

Kaos1	93	1-127
Kaos2	94	1-127
Kaos3	99	1-127
Kaos4	100	1-127
Modulation Speed1	38	1-127
Modulation Depth 1	37	1-127
Loop1	36	1=On 0=Off
Sync1	43	1=On 0=Off
Assign1	35	1-12
Modulation Speed2	34	1-127
Modulation Depth 2	33	1-127
Loop2	32	1=On 0=Off
Sync2	44	1=On 0=Off
Assign2	31	1-12
Modulation Speed3	30	1-127
Modulation Depth 3	29	1-127
Loop3	28	1=On 0=Off
Sync3	45	1=On 0=Off



MIDI Setup
SID 8Bit Groovebox

Assign3	27	1-12
Modulation Speed4	26	1-127
Modulation Depth 4	25	1-127
Loop4	24	1=On 0=Off
Sync4	46	1=On 0=Off
Assign4	23	1-12
Attack1	22	1-127
Decay1	21	1-127
Sustain1	20	1-127
Release1	19	1-127
Sync FX1	17	1=On 0=Off
Ring mod FX1	3	1=On 0=Off
Attack2	16	1-127
Decay2	15	1-127
Sustain2	14	1-127
Release2	13	1-127
Sync FX2	11	1=On 0=Off
Ring mod FX2	2	1=On 0=Off



MIDI Setup
SID 8Bit Groovebox

Filter Type	10	1-3
Filter Channel1	9	1=On 0=Off
Filter Channel2	8	1=On 0=Off
Filter Channel3	6	1=On 0=Off
Filter Resonance	39	1-127
Filter Cutoff	40	1-127



10 Connectivity

Note about DC Input: Please only use the DC adapter supplied with the SID. Incorrect voltages can result in frying your instrument and more!

Note about Audio In: Audio IN is inactive when using the built-in SWINSID hardware emulation. Please use 8580 or 6581 IC for audio input.

11 Hardware Configuration

11.1 SID/SWINSID

SID Ships with a Swinsid SID Hardware emulation installed but you have the option to install a real 8580 or 6581 chip if you have one. Just follow these 3 steps:

- 1: Open the case by removing the 4 screws from the bottom.
- 2: Locate the **JUMPER** above the right hand side of the LCD labeled **SWINSID ON-OFF**. Reposition the jumper between pins 2 and 3 of the connector to deactivate the SWINSID.
- 2: Locate the power selection jumper located on the smaller circuit board used for

IMPORTANT: The 8580 and 6581 SID chips require different voltages. it is essential to configure this correctly to avoid damage to the SID chip!

connections. Reposition the jumper accordingly.

- 3: Locate the filter sockets near the main SID socket and install the correct capacitors. 8580 requires 22nF and 6581 requires 470pF.

12. Downloads



Dear customer,

we have provided for an extensive offer of free data to download on our website. Here you can find all pictures and documents of the required products.

Product-related you can find all instructions to the respective products also in other languages. These are provided as a PDF file free of charge to download.

We are happy to offer you any time an extensive service.
If there are any questions for a product or a question including the manual you please send us an e-Mail. We are happy to help you!

info@modemachines.com



General Information
Mode Machines

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www.modemachines.com



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