USER GUIDE

EKSSPERIMENTAL
SOUNDS STUDIO ES01

INTRODUCTION

Thank you for choosing Ekssperimental Sounds ES01 Analog Synthesizer.

The ES01 incorporates advanced synthesizer technology and features developed for the Reason rack environment with the added convenience and versatility of a powerful Touch Data Programmer for advanced internal routing and customization.

We urge you to read this user guide thoroughly in order to make the most of your ES01 Analog Synthesizer.

BASIC SETTINGS

Power/Volume
This control serves the multi function of power switch, volume control and note indicator.
If rotated clockwise the unit is turned ON and the indicator LED is lit.
Volume increases as the control is rotated towards the "10" at the end of its scale. The LED will flash when ES01 receives notes via CV Gate or MIDI.

GLOBAL SETTINGS
The ES01 is a by default a monophonic synthesizer but can be configured to play up to 16 voices simultaneously in the Polyphonic Mode, with Unison activated the total voices is reduced to 8.
Find all settings for polyphony, filters and oscillators under the tab "GLOBAL SETTINGS" in the Touch Data Programmer.

VCO

The Voltage Controlled Oscillator is the basic sound generator of the ES01.
The pitch of its signal is determined by the input of CV and MIDI message from your keyboard or sequencer.

Feet Selector
This selector determines the ground range of the ES01 pitch. If this selector is set to "WN" white noise is produced. By applying filtration to this noise with the VCF the sound of wind, waves and other cool effects can be created.

Sub Oscillator
ES01 has one Sub Oscillator that can be set to -1 or -2 octaves.
It follows the regular oscillator.
Activate and adjust the level and waveform of the Sub Oscillator in the GLOBAL SETTINGS tab in the Touch Data Programmer.

Pitch Lever
This is the ES01 tuning control It permits a tuning of -/+50 cents so that you can match the pitch of ES01 with that of other instruments.

Glissando
Creates a glissando between notes played. The transition between notes can be set to either "Stepped" or "Smooth" via GLOBAL SETTINGS in the Touch Data programmer.

Waveform Selector
Determines the waveform produced by the VCO. The different waveforms have different types and numbers of harmonics and therefor different sounds.
The ES01 offers four waveforms and a pulse width modulation feature as shown in this chart:

Triangular wave	Subdued, ideal for flute sounds.
Sawtooth wave	Bright, perfect for string and brass sounds.
Square wave	Woody tone, good for clarinet sound.
Rectangular wave	Vibrant, great for trumpet, oboe etc.
PWM	Thick, rich sound. Awesome for acid techno and synthetic sounds.

Try switching the FEET and/or the wave selector while playing or modulating it with the LFO, CV input or other sources via the MOD panel in the Touch Data Programmer.

VCF

The Voltage Controlled Filter alters the sound by cutting off frequencies.

VCA

Voltage Controlled Amplifier

Freq Cut Off

Setting the VCF to the "H" end allows upper harmonics to pass, thereby creating a bright tonality. Moving the control towards the "L" end of the scale gradually cuts off more and more harmonics, creating a softer tonality. You can increase the range of this control via GLOBAL SETTINGS in the Touch Data Programmer by switching Filter Mode from Original Range to Extended. You can also change the slope of this filter from the default 12 dB/octave to a more drastic 24 dB/octave.

EG Depth

Determines to what degree the envelope settings of the EG section affects the VCF cut off frequency. This permits creation of a broad range of interesting time-based tonal variation effects.
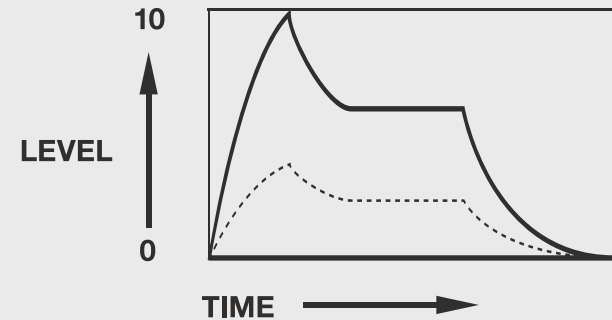
LEVEL

12dB/oct

0

FREQUENCY

LEVEL

24dB/oct

0
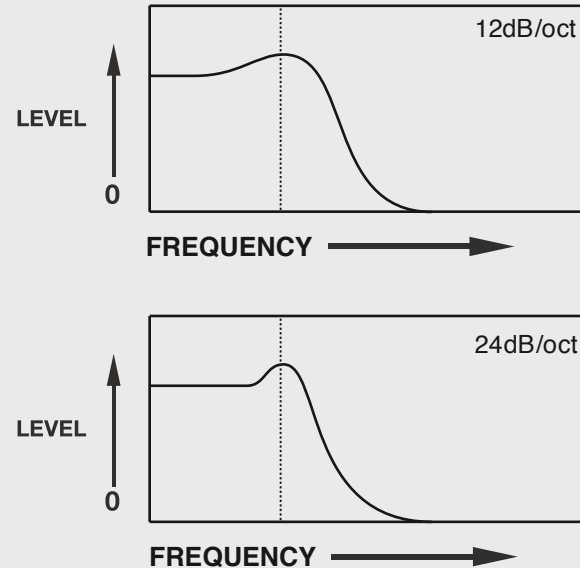
FREQUENCY

Resonance selector

Set to the "H" position frequencies near the filter cut off frequency are emphasized for a "sharper" sound. By setting the Filter Mode in GLOBAL SETTINGS to "Extended Range" you will also increase the resonance range.

10

LEVEL

0

TIME

VCA EG Depth

This lever determines to what degree the envelope settings of the EG section affects the level of the sound (dB).
When using a Breath Controller signal (BC IN) you might want to lower this lever to let the BC IN signal decide the amount of sound amplification.
You can also modulate the VCA Level via the Mod Matrix in the Touch Data Programmer.

ENVELOPE GENERATOR

The EG block contains the ES01 envelope generator controls.

Attack Time
This controls the time for the sound to reach maximum level when a note is played.

Decay Time
Controls how long it take for the sound the decrease to sustain after the maximum level has been reached. If the sustain control is set to maximum no decay effect will be noticeable.

Sustain Level
Determines the continuous level to be maintain after attack and decay have finished, as long as a note is played.

Release Time
The time it take for the sound to completely fade out after the note has been released.
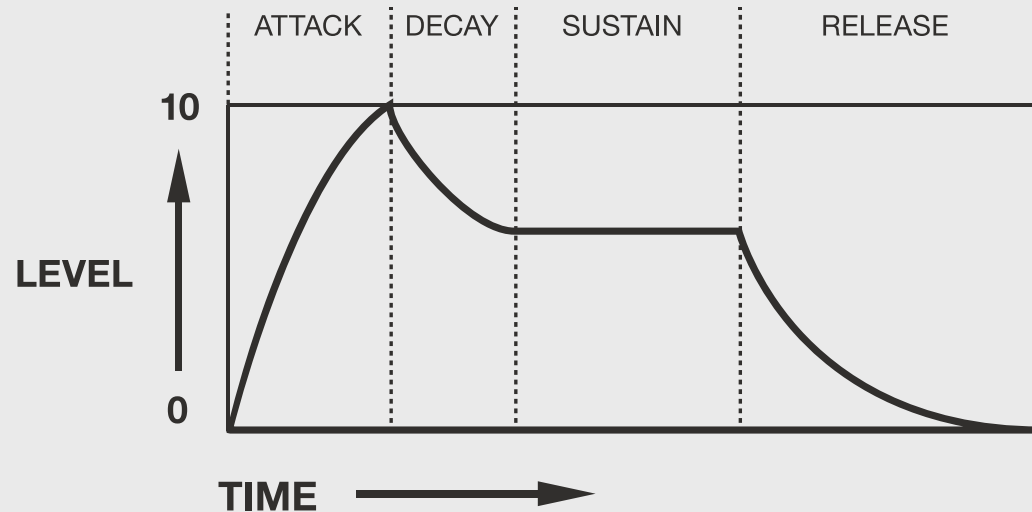
MODULATION

There are many ways to modulate the sound within the ES01, either by LFO, PWM, Mod Matrix or CV input.

LFO (Low frequency oscillator)
The LFO is prerouted to the Mod Wheel which has a three way switch allowing you to send the modulation to VCO, VCF or VCA to create periodic variations in pitch, tone or volume. This routing can be deactivated via the GLOBAL SETTINGS tab in the Touch Data Programmer. The LFO can also be accessed in the MOD matrix.

LFO WAVE
Select the character of the modulation from these five waveforms:

Sine   *Triangle*   *Saw*
Pulse   *Random*

LFO SPEED
Determines the frequency of the LFO from S (slow) to F (fast).

CV (Control Voltage)
The CV jacks on the backside can be used for modulation and is accessible via the MOD matrix.

BC CV IN
The ES01 can be modulated via Breath Control or the BC CV jacks prerouted to the control knobs on the front panel.
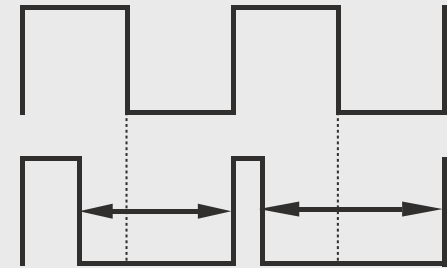
PWM (Pulse width modulation)
This function varies the width of the pulse in each cycle determined by the speed set by the PWM SPEED control. This function can be used to create a variety of chorus-like effects and add organic feel to your tones.
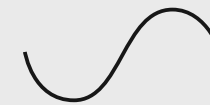
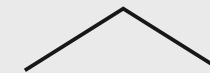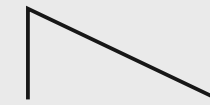**PITCH BEND**
Pitch can be bent by 1 octave up or down.

Square wave

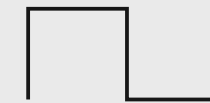*Pulse Width Modulation*

Sine

Triangle

Saw

Pulse

Random

TOUCH DATA PROGRAMMER

MODULATION MATRIX

MOD 1 & MOD 2

The modulation matrix provides a total of 16 slots divided on two pages, MOD1 & MOD2.

As an example try selecting "LFO Unipolar" as the source, dial in -79 as the amount and select FEET as the destination.
Set the LFO wave selector to Sawtooth and the Feet selector to 4' and hear a 4 octave arpeggio controlled by the speed of the LFO.

You can sync the LFO to the tempo of the song by changing it from "Original Speed" to "Tempo Synced" under the GLOBAL SETTINGS tab in the TOUCH DATA PROGRAMMER.
Feet changes at these + and – values: 20, 40, 60, 80, 100

MOD 1		MOD 2		GLOBAL SETTINGS	
SOURCE		**DESTINATION**		**SCALE**	
LFO Unipolar	-79	Feet	0		
	0		0		
	0		0		
	0		0		
	0		0		
	0		0		
	0		0		
	0		0		

Modulating FEET with LFO for an arpeggio like effect

The BC Knobs are prerouted for quick modulation via the front panel. The prerouting can be switched off under GLOBAL SETTINGS, making the knobs suitable as SOURCE and SCALE controls within the modulation matrix.

The vast possibilities of the modulation matrix makes the ES01 much more versatile then the first impression might imply.

All Destination and Scale amounts can be controlled via Combinators and automation.

TOUCH DATA PROGRAMMER

GLOBAL SETTINGS

VOICES
ES01 can be set to Mono Retrig (Default), Mono Legato and Polyphonic (16 voices) mode.

Unison ON multiplies the voice by 4 and spreads the new voices in the stereo field with a slight detune of each voice, creating a fatter and more vibrant sound. In polyphonic mode the voices are reduced from 16 to 8 when Unison is ON.

SUB OSC
The sub oscillator can be set to OFF, -1 Octave and -2 Octaves.

Triangle, Square, Saw and Noise can be selected as the waveform. When Noise is selected the -1 Octave option produces white noise while the -2 Octaves produces pink noise.

VCF
Original Range limits the filter to a fine tuned range. The Extended range opens this limit and allows for much more extreme filtering.

LFO
The Low Frequency Oscillator can be set to Original Speed, Extended Speed and to Tempo Sync.

Retrig ON causes the LFO to restart on each new note.

PWM
The Pulse Width Modulation speed can be set to Original Speed, Extended Speed and to Tempo Sync.

Retrig ON causes the PWM cycle to restart on each new note.

MOD WHEEL
The range of the Mod Wheel can be set to Original or Extended Depth. Prerouting can be switched ON or OFF.

GLISSANDO
Can be set to ON or AUTO. With the AUTO option the Glissando is activated only when notes are played Legato.
Glissando can be set to either Stepped or Smooth.

BC
With Hold Notes set to ON the last played note is held, making it possible to produce sound with a Breath Controller even when the key has been released.
Prerouting ON / OFF activates and deactivates the BC VCF and VCA controll knobs.

TOUCH DATA PROGRAMMER

Mod Functions

Sources & Destinations

Most of the options have a clear link to the controls on the panel or an obvious function. Here are a brief explanation of the more special ones:

Glissando
Similar to Note Number but also looks at the current note value of the glissando.

Held Notes
In poly mode when holding more then one note each held note increases the value.

Latched CV
The CV value at Note on-event

Random
Each new Note On event gives a random value

LFO

Bipolar (default) generating both negative and positive values based on the LFO waveform. (Fig.1a)

Unipolar shifts the base of the waveform to only modulate positive or negative values (Fig.1b)

Shifted 90 degrees is a bipolar modulation where the waveform is shifted 90 degrees meaning it will be one 4th cycle shifted in time. (Fig.2)

The three options above are dependent on the position of the WAVE selector but all individual LFO waveforms can be accessed in the modulation menu. The individual waveforms are always bipolar.
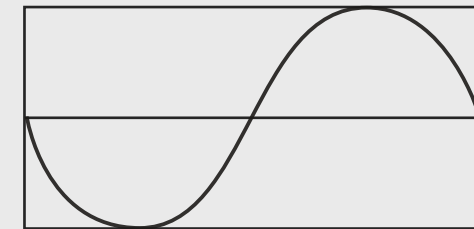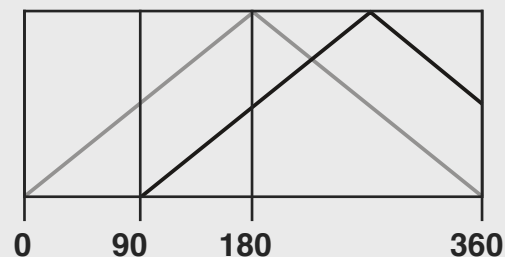
BIPOLAR SINE *Fig.1a*
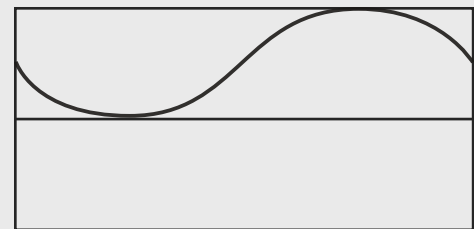
UNIPOLAR SINE *Fig.1b*

0   90   180   360
SHIFTED TRIANGLE *Fig.2*

ES01

EKSSPERIMENTAL SOUNDS STUDIO

RoboticBean

Concept and GUI by EKSSPERIMENTAL SOUNDS STUDIO
DSP Development by ROBOTIC BEAN CREATIVE

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