Studio Electronics SE-1

Instruction Manual

By: Greg St. Regis

STUDIO ELECTRONICS
18034 Ventura Blvd. Suite 169
Encino, California 91316
818-776-8104

TABLE OF CONTENTS

Welcome to the world of Analog synthesis and the wonderful sounds it produces. The SE-1 is built around the authentic circuitry of the Minimoog filter, oscillators, and VCA. We've added the filter of the Oberheim S.E.M. for greater tonal expression. Four envelopes, three LFO's, full MIDI implementation, and a host of original extra features await you.

This manual is divided into sections which correspond to the SE-1's front panel. Let's begin.

OSC BANK

Wave form selection: (Triangle) (Sawtooth) (Pulse). These can be selected either individually or collectively.

PULSE WIDTH: Adjusts the harmonic content of the pulse wave. A square wave can be obtained by setting the knob at 12 o'clock. (Effective when pulse wave is selected.)

FREQ 1, FREQ 2, FREQ 3: Controls the pitch of each oscillator. Stepped (quantized) in semi-tones over a five octave range

SYNC 2: Forces Oscillator 2 to follow Oscillator 1 in hard synchronization so it will therefore tune only to harmonic frequencies of Oscillator 1. Intermediate frequency settings of Oscillator 2 will produce unusual wave shapes and timbres.

SYNC 3: Forces Oscillator 3 to follow Oscillator 1 in hard synchronization...

* Use sync feature in conjunction with Envelopes 3 and 4 assigned to Swp 2, and or Swp 3 for subtle and dramatic harmonic filtering effects.

OSCILLATOR TUNE PAGE

Displays octave and fine tune settings of oscillators.

Functions accessed on this page:

MASTER TUNE: Continuously varies overall pitch flat or sharp just over a semitone.

FINE 2: Continuously varies pitch of Oscillator 2 flat or sharp just over a semitone.

FINE 3: Continuously varies pitch of Oscillator 3 flat or sharp just over a semitone.

FILTER

FREQUENCY: This adjusts the cutoff frequency of the 12db and 24db filters. It is rather like a tone control. As you rotate the knob clockwise the higher the frequencies are which pass through the filter; thus, the brighter the sound.

RESONANCE: Adjusts the amount of filter resonance which emphasizes the cutoff frequency region and makes the presence of harmonics more apparent. As the knob setting is increased beyond 3 o'clock (24db filter only) the filter begins to oscillate and acts like a sine wave audio source.

24DB: When lit, the 24db (Moog) filter is active. When not, the 12db (S.E.M.) filter is active.

TRACKING: Applies keyboard CV (control voltage) to the filter. The more tracking used, the brighter the sound will get as you ascend the keyboard.

ENVELOPES

The SE-1 has four envelopes. Envelope 1 is permanently assigned to the filter and Envelope 2 is permanently assigned to the amplifier. Envelopes 3 and 4 can be assigned to a variety of functions via the edit page.

VCF

The filter envelope generator shapes the timbre by controlling the filter cutoff frequency and resonance. The contour pattern is initiated when a key is struck, producing a gate (or note). The initial appearance of the gate triggers the envelope to proceed through it's ATTACK and DECAY times. After the ATTACK and DECAY times have elapsed, the generator will produce a steady control voltage; playing the sound at the level set by the SUSTAIN knob for as long as the gate (or note) is held. When the key is released the rate at which the sound disappears is set by the RELEASE knob.

ATTACK: Adjusts the length of time for the envelope generator's output to go from zero level (when key is initially pressed) to maximum level.

DECAY: Adjusts the length of time for the envelope generator's output level to go from maximum level to sustain level.

SUSTAIN: Adjusts the sustain level from zero to maximum. This is a level control, not a time control. Sustain time is determined by touch.

If sustain is set at maximum, then the decay knob setting is irrelevant. There is no level below maximum for the envelope to decay to.

RELEASE: After releasing key, adjusts the length of time for the envelope generator's output to go from sustain level to zero.

If sustain is set at zero, then the release knob setting is irrelevant. There is no level for the envelope to release from.

VCA

The ATTACK, DECAY, SUSTAIN, and RELEASE (ADSR) controls for the VCA shape the amplifier output in the same manner as the corresponding controls do to the filter.

ENV AMNT 1: Sets the depth of the applied envelope to VCF cutoff frequency and resonance.

ENV AMNT 3: Sets the depth of the applied envelope to the chosen destination. (See LCD edit page).

ENV AMNT 4: Sets the depth of the applied envelope to the chosen destination. (See LCD edit page).

ENV 3,4: When this switch is lit, front panel envelope knobs control envelope generators 3 and 4.

ENVELOPE EDIT PAGE

Displays Envelopes 1 - 4, their destinations and velocity sensitivity settings.

Functions that Envelopes 3 and 4 can be applied to:

PW1	(OSC 1 pulse width)	MIX3	(level of OSC 3)
PW2	(OSC 2 pulse width)	SWP3	(frequency of OSC 3)
PW3	(OSC 3 pulse width)	RMOD	(ring mod level)
MIX2	(level of OSC 2)	NOIS	(noise level)
SWP2	(frequency of OSC 2)	RESO	(resonance)

DYN%: (1 - 4) Percentage of velocity information sent to each envelope amount.

* When using Envelopes 3 and 4 for Noise, Mix 2, or Mix 3, turn down output level in Audio Mix page for maximum effect. Note: Only one envelope at a time can be assigned to any one destination.

MOD

RATE: Adjusts the speed of LFO's 1 - 3. Each LFO can be set at a different rate.

LFO 2: When this switch is lit, RATE and DEPTH controls affect LFO 2

LFO 3: When this switch is lit, RATE and DEPTH controls affect LFO 3.

DEPTH: Adjusts the amount of the selected LFO.

MODULATION EDIT PAGE

Displays LFO's 1 - 3, their destinations and waveforms.

Functions that LFO's 1 - 3 can modulate:

*OSC123	(freq of all Osc's)	RMODMX	(ring mod level)	OSC3PW	(Pulse width)
OSC1FM	(freq of Osc 1)	NOISMX	(noise level)	VOLUME	(main level)
OSC2FM	(freq of Osc 2)	VCFRES	(filter resonance)	NOASSN	(nothing)
OSC3FM	(freq of Osc 3)	VCFFM	(filter frequency)		
OSC2MX	(level of Osc 2)	OSC1PW	(pulse width)		
OSC3MX	(level of Osc 3)	OSC2PW	(pulse width)		

Waveforms: Triangle, square, sawtooth up, sawtooth down, noise, sample & hold.
* LFO 1 only.

CONTROL

VOLUME: Adjusts main output level.

GLIDE: Sets glide (portamento) time for pitch slides from note to note.

SHIFT:**Holding this button and pressing **<** or **>** or turning **Q** knob in programmer section will advance through edit pages. Use to get to Midi Edit Page #2 for setting midi channel. Holding SHIFT and pressing SAVE will toggle edit-compare function.

SAVE: Pressing this button once will initiate "Save to". Pressing again completes this function. Pressing SHIFT following SAVE will cancel it. (Use this as an escape from an edited patch to get to main page).

PROGRAMMER

Patch number is shown on red L.E.D. and patch name on L.C.D. Up arrow selects bank. Left - right arrows, and **Q** knob select patch. When periods appear, patch selected has been edited. L.C.D. displays all edit pages. Use up, down, left, and right arrows for moving through pages, and **Q** control knob for editing selected parameter.

AUDIO MIX LEVEL EDIT PAGE

Displays and adjusts output levels of Oscillators 1,2, and 3, Ring modulator and Noise. *** With multiple wave forms and or multiple oscillators selected, some high end distortion may occur from over-loading of the filter input. Adjust (decrease) mix levels accordingly. **N2VCA** - if ON, routes noise around filters and directly into the VCA. This is useful for keyclick simulation, etc. (Assign noise to either Env 3, or Env 4).

MISCELLANEOUS EDIT PAGE #1

GLIDE: Turns glide or auto bend on and off.

AUTO GLIDE: Pitch bends from chosen interval to note being played. Interval is selected in semitone increments up or down one octave. Glide pot on panel sets the bend rate. Normal glide is defeated when any auto bend interval is chosen.

MULT TRIGGER: When on, filter envelope is triggered with each key stroke. When off, the envelope is triggered only when key is fully released then re-struck.

NOTE PRIORITY: Selects either LOW, LAST, or HIGH note priority.

MISCELLANEOUS EDIT PAGE #2

12 DB TYPE: Selects LP (low pass), or HP (high pass) for 12 DB (S.E.M.) filter.

ENV INVERT: Selects the inverting of Envelopes 1 and or 3.

ENV CURVE: Selects a LIN (linear) or EXP (exponential) curve for all envelopes.

OSC BOUNCE: Turn on or off special control voltage punch.

MIDI EDT PAGE #1

This page displays and selects assignments to Mod wheel, After touch, Continuous controller 1, and Continuous controller 2.

Functions that can be controlled via midi:

LFO 1 (depth of Lfo 1)	PW1 (pulse width of Osc 1)	MIX 2 (level of Osc 2)
LFO 2 (depth of Lfo 2)	PW2 (pulse width of Osc 2)	MIX 3 (level of Osc 3)
LFO 3 (depth of Lfo 3)	PW3 (pulse width of Osc 3)	MIX R (level of Ring mod)
OSC 2 (freq of Osc 2)	VCF (filter cutoff frequency)	MIX N (level of Noise)
OSC 3 (freq of Osc 3)	RESO (filter resonance)	ENV 3 (env. 3 amount)
	ENV 1 (env. 1 amount)	ENV 4 (env. 4 amount)

The range of each controller can be scaled from 0% (no effect) to 99% (full effect). Controller 1 and Controller 2 can be assigned to receive any of the 128 possible Midi controllers, with these exceptions:

CON #1 Reserved for Mod wheel	CON #64 Reserved for Sustain pedal
CON #2 Reserved for Glide time	CON #65 Reserved for Glide on/off
CON #7 Reserved for Main volume	CON #121-127 Reserved for mode messages

Note: Midi controllers add data to the function selected from what is set up in the patch. Only one Midi controller at a time can be assigned to any one destination.

MIDI EDIT PAGE #2

CHANNEL: Selects reception channel 1 - 16.

MEM PROTECT: ON1 - no saving can be done. ON2 - no saving can be done and front panel pots are disabled. OFF - memory protect off.

SYSX:SEND PROGRAM
SELECT,SAVE-SEND: Initiates System Exclusive functions. Select an individual program or entire memory (ALL), then press SAVE.

BEND PAGE

PITCH: Sets bend range from 0 to one octave in semitone increments.

CUTOFF: Assigns bender to control filter frequency in semitone increments.

TRANSPOSE: Overall pitch transposition. HIGH is up one octave, MED is normal LOW is down one octave.

NAME PROGRAM PAGE

Use this page to name your patches.

The cursor will default to the first character. Use the **Q** knob to select the letter or character. Use the left arrow and right arrow to go forwards and backwards. Pressing the up or down arrow makes a blank space. After programming name save patch again to save name.

COMMON FUNCTIONS

1. Setting midi Channel: Hold shift button and press left arrow twice to get to Midi page.

2. Saving a patch: Press save button once, the switch will be lit and SAVE TO: will appear. You can save over the old patch with the new edited patch by pressing the save button once again, or you can choose a new destination by turning the **Q** knob to another patch location that will be displayed. To save to a different bank, use the up arrow, then select patch location. If you want to cancel the process or get back to the main page press the shift button.

3. Escaping from an edited patch: Hit save button once then hit shift button. This will get you to the main page, you can then select a new patch using the **Q** knob.

4. Accessing edit pages: While holding the shift button press the **<** **>** arrow buttons or turn the **Q** knob.

5. Selecting second memory bank - Bank B: In the Main program page, or the Save to page, up arrow toggles between bank A and bank B.

SCREEN JUMPS

By pressing these buttons or moving these knobs, the display will change to the corresponding edit pages.

Pressing	LFO2 / LFO3	will jump to:	MODULATION EDIT PAGE
"	SYNC (Osc. 3)	"	OSCILLATOR TUNE PAGE
"	24DB	"	MISCELLANEOUS EDIT PAGE #2
"	ENV 3,4	"	ENVELOPE EDIT PAGE
Moving	GLIDE	"	MISCELLANEOUS EDIT PAGE #1
"	FREQ 1,2,or 3	"	OSCILLATOR TUNE PAGE