

HASPIC

OSS 107

[ONE SMALL SYNTH 107]

Simple subtractive synthesizer

USER MANUAL



INTRODUCTION

The OSS 107 is a simple subtractive synthesizer designed to provide some simple “analog” style sounds using a classic synthesizer architecture.

This device has been designed with the idea of giving the user the mean to access to every parameter using a low cost MIDI controller, the Berhinger BCR-2000. For that purpose almost every parameter has been mapped to one of this specific MIDI controller control elements (encoder and switch).

As the link between the hardware control surface (i.e. the BCR-2000) and the host control surface (i.e. the SCOPE device control surface) is achieved using MIDI Control Change Message, any other choice of control surface could also be used. The only change would be in the physical position of the control elements which could be different.

The sound generation structure is rather simple but a few “special features” have been added to try to provide some enhancements towards similar already existing synthesizer device already available for the CreamWare/SonicCore SCOPE platform. The general signal path can be described as follow:

- ⇒ an oscillator pool with level adjustment capabilities
- ⇒ the resulting mix is fed to a low-pass filter
- ⇒ the filtering result is provided as an input for an amplifier section
- ⇒ the amplified signal is panned to the stereo output of the synth.

Special thanks to people having help me in the building of this SCOPE plug-in:

- Neutron for providing some example projects which have much helped me to understand the SDK handling.
- ShroomZ for providing me most of the great GUI elements used to build up the SCOPE host user interface.
- My many friends from MaoMusique (www.maomusique.com) and PlanetZ (www.planetz.com/forums) communities for their support and advices
- The kind people who take time to beta test the first version of the device and helped me to identify and remove most of the bugs of the first versions and especially the first of them JoyLulu/Audiographe.

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SPECIFICATIONS

Voices

16 max per instance.

Typical polyphony:

- ⇒ 1,5 note per DSP chip
- ⇒ 5 notes on a Scope Home/Luna 3-DSP board
- ⇒ 10 notes on Scope Project/Pulsar II 6-DSP board
- ⇒ 25 notes (two instances) on a Scope Professional 15-DSP board

Sound generators

The sound generation is mainly achieved using the UKNOW type of oscillator.

Main oscillator

The main oscillator provides simultaneously 3 types of wave-shapes:

- ⇒ a Pulse wave oscillator providing some Pulse Width Modulation features and phase adjustment settings
- ⇒ a Saw wave oscillator providing a Saw wave at the same pitch as the pulse with phase adjustment settings
- ⇒ a Sub oscillator providing a Square wave one octave down from the oscillator pitch.

This 3 sound generators offer their own dedicated level adjustment control to mix them

Noise generator

An additional noise generator is provided to offer some unvoiced sound elements.

Ghost oscillator

The Ghost oscillator is a special feature providing some additional sound generation possibilities with a non-pitch modulated oscillator similar to the main oscillator with some of its parameters fixed and an additional simple shaper.

Global pitch settings

The global pitch settings allows to set the general pitch features of the generators including Fine and Coarse tuning, Pitch Wheel Range adjustment, and Portamento mode and amount settings.

Pitch modulation

The pitch of the main oscillator can be modulated by:

- ⇒ the LFO
- ⇒ a dedicated pitch ADSR envelope

The level of this modulation can be adjust with some dedicated pot or using some MIDI real-time control message (Velocity, Modwheel, Breath Controller, Expression).

PWM modulation

The Pulse wave of the main oscillator can be modulated by the LFO. A dedicated pot is available for this purpose.

Filters

Type

The type of the filter of this synthesizer is a “classical” 24 dB/octave resonant low-pass filter.

Fixed settings

The filter offer parameters for setting:

- ⇒ the Cutoff frequency
- ⇒ the Resonance of the filter

Cutoff modulation

The filter cutoff can be modulated by:

- ⇒ the LFO
- ⇒ a dedicated filter ADSR envelope

The level of this modulation can be adjust with some dedicated pot or using some MIDI real-time control message (Velocity, Modwheel, Breath Controller, Expression).

Amplifiers & Pan

VCA

The amplifier section allows to control with a dedicated envelope the signal level evolution of the filter output. Further modulation possibilities offer an additional level modulation possibility by the LFO using the real-time control elements to adjust the level of this modulation.

Pan

The panning of the amplifier output is done by setting the dedicated fixed pan pot.

Additional pan modulation possibilities are available using the LFO with a modulation level adjustment provided by the real-time control elements.

Envelope generators

This device provides 3 dedicated ADSR envelopes.

Pitch envelope

The Pitch ADSR envelope level can be set by:

- ⇒ the dedicated pitch envelope pot
- ⇒ the ModWheel and Expression real-time control can be used to give real-time control access to this setting

A dedicated slope pot is available to allow the adjustment of the Attack, Decay and Release segment from linear to exponential shape.

Filter envelope

The Filter ADSR envelope level can be set by:

- ⇒ the dedicated filter envelope pot
- ⇒ the ModWheel and Expression real-time control can be used to give real-time control access to this setting

A dedicated slope pot is available to allow the adjustment of the Attack, Decay and Release segment from from linear to exponential shape.

Amplifier envelope

The Amplifier ADSR envelope level can be set by the global out pot

A dedicated slope pot is available to allow the adjustment of the Attack, Decay and Release segment from from linear to exponential shape.

LFO

Settings

The LFO provide settings for the rate of modulation and the shape of this Low Frequency Oscillator to be chosen among 7 shapes:

- ⇒ Sine wave
- ⇒ Square wave
- ⇒ Saw up wave
- ⇒ Saw down wave
- ⇒ Triangle wave
- ⇒ Random wave
- ⇒ Noise

Destinations

The LFO modulation can be routed through the fixed modulation matrix to:

- ⇒ main oscillator pitch modulation (VIBRATO)
- ⇒ pulse wave Pulse Width Modulation
- ⇒ filter cutoff modulation
- ⇒ amplifier level modulation (TREMOLO)
- ⇒ pan modulation from right to left output

Real-Time Modulations

Velocity

The MIDI velocity sensitivity can be adjusted using the dedicated pot and then routed to several destinations among which:

- ⇒ LFO pitch modulation additional level
- ⇒ Additional Filter cutoff adjustment
- ⇒ Amplifier LFO modulation level
- ⇒ Pan LFO modulation level

Modulation Wheel (Midi CC 1)

The MIDI modulation wheel signal can be routed two several destinations among which:

- ⇒ Pitch envelope modulation additional level
- ⇒ Filter envelope modulation additional level
- ⇒ Amplifier LFO modulation level
- ⇒ Pan LFO modulation level

Breath control (Midi CC 2)

The MIDI Breath control signal can be routed two several destinations among which:

- ⇒ LFO pitch modulation additional level
- ⇒ Additional Filter cutoff adjustment

- ⇒ Amplifier LFO modulation level
- ⇒ Pan LFO modulation level

Expression pedal (Midi CC 11)

The MIDI expression pedal signal can be routed to several destinations among which:

- ⇒ Pitch envelope modulation additional level
- ⇒ Filter envelope modulation additional level
- ⇒ Amplifier LFO modulation level
- ⇒ Pan LFO modulation level

Requirements

CreamWare/SonicCore Scope platform hardware and software.

A PC computer featuring a Pentium 3-4 or equivalent for optimal use.

Scope 4.0/4.5 software.

INSTALLATION

To install the device package proceed as follow:

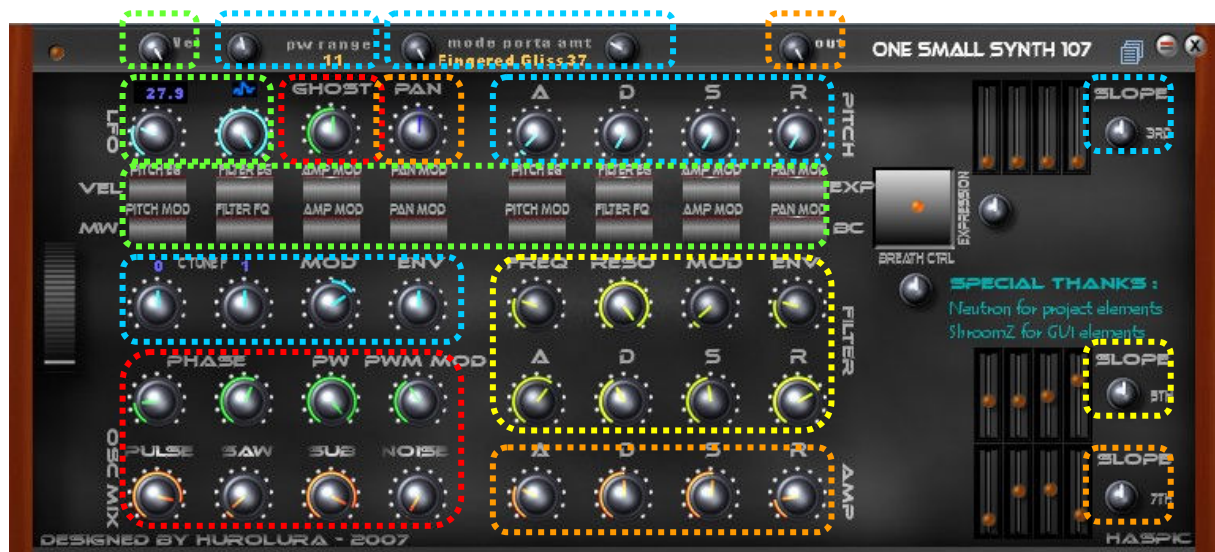
- ⇒ Copy OSS 107.dev file to your devices folder (normally c:\SCOPE\devices)
- ⇒ Copy OSS 107.pre file to your preset files folder (normally c:\SCOPE\presets)
- ⇒ Drag the device from the File browser or windows explorer and connect midi in and audio outputs as necessary (see image capture bellow).
- ⇒ Download the provided BCR 2000 template file OSS 107.syx to your BCR 2000 if available using a tool like the bcfredit v0.41.
- ⇒ Play with the device!!!



FRONT PANEL

The general structure of the host front panel is described bellow:

Sound generators
Pitch control
Filter
Amplifier & Pan
Modulation & real time control matrix



Sound generators

The figure below show the position of the sound generation elements on the control surface:



Main oscillator phase



These controls let adjust the relative phase of the pulse and saw oscillator.

PWM modulation



These controls let adjust the fixed pulse width and the level of the LFO modulation of the pulse width.

Main oscillator mix level



These controls let adjust the input level of the 3 main oscillator components (Pulse wave, Saw wave and Sub wave level) in the filter section.

Noise generator level



This control let adjust the input level of the white noise generator in the filter section.

Ghost oscillator

This control let adjust the input level of the Ghost Oscillator in the filter section.

Pitch control

The figure below show the position of the pitch control elements on the control surface:



Pitch wheel range



This control is dedicated to pitch wheel range setting.

Portamento



These controls are dedicated to portamento mode and amount setting.

The portamento mode can be selected between:

- ⇒ off
- ⇒ Portamento
- ⇒ Glissando
- ⇒ Fingered portamento
- ⇒ Fingered glissando

Global pitch settings



These controls are dedicated to main oscillator coarse and fine tuning.

The coarse tuning parameter is ranging from – 24 (2 octave down) to + 24 (2 octave up).

The fine tuning parameter is ranging from – 100 to + 100.

Pitch modulation



These controls are dedicated to main oscillator LFO mod level and Pitch envelope modulation level settings. They range from – max to max with a zero setting and the center pot position.

Pitch envelope



These controls are dedicated to ADSR envelope settings. A, D, R segments range from 60 ms to 500 ms. The Sustain level is set from 0 to max.

The Slope setting range from linear (0) to exponential (max) and affect the A, D, and R segments.

Filters

The figure below show the position of the filter elements on the control surface:



Fixed settings



These first two controls are dedicated to fixed cutoff and resonance filter settings.

Cutoff modulation



These controls are dedicated to main oscillator LFO mod level and Filter envelope modulation level settings.

Filter envelope



These controls are dedicated to ADSR envelope settings. A, D, R segments range from 60 ms to 500 ms. The Sustain level is set from 0 to max.

The Slope setting range from linear (0) to exponential (max) and affect the A, D, and R segments.

Amplifiers & Pan

The figure below show the position of the amplifier elements on the control surface:



VCA



This control is dedicated to global output level setting.

Amplifier envelope



These controls are dedicated to ADSR envelope settings. A, D, R segments range from 60 ms to 500 ms. The Sustain level is set from 0 to max.

The Slope setting range from linear (0) to exponential (max) and affect the A, D, and R segments.

Pan



This control is dedicated to fixed level panoramic setting.

Modulation matrix & real time control elements

The figure below show the position of the other modulation source elements on the control surface:



LFO

Settings



These two controls are dedicated to the LFO modulation rate and waveform (7 waveforms available) adjustment.

Destinations

The LFO can modulate several different destinations among which:

- ⇒ Main Oscillator Pitch
- ⇒ Pulse Width Modulation
- ⇒ Filter Cutoff
- ⇒ Amplitude Modulation with a fixed triangle waveform
- ⇒ Pan Modulation with a fixed triangle waveform

Real-Time Modulations

Velocity



This control let you select the velocity sensitivity which directly change the amplifier envelope time and level segments.



These switches are selecting the influence of the velocity on the Pitch EG, the Filter EG and the Amplitude and Panoramic modulation.

Modulation Wheel (Midi CC 1)



These switches are selecting the influence of the modulation wheel on the Pitch LFO level, the Filter cutoff and the Amplitude and Panoramic modulation.

Breath control (Midi CC 2) & Expression pedal (Midi CC 11)

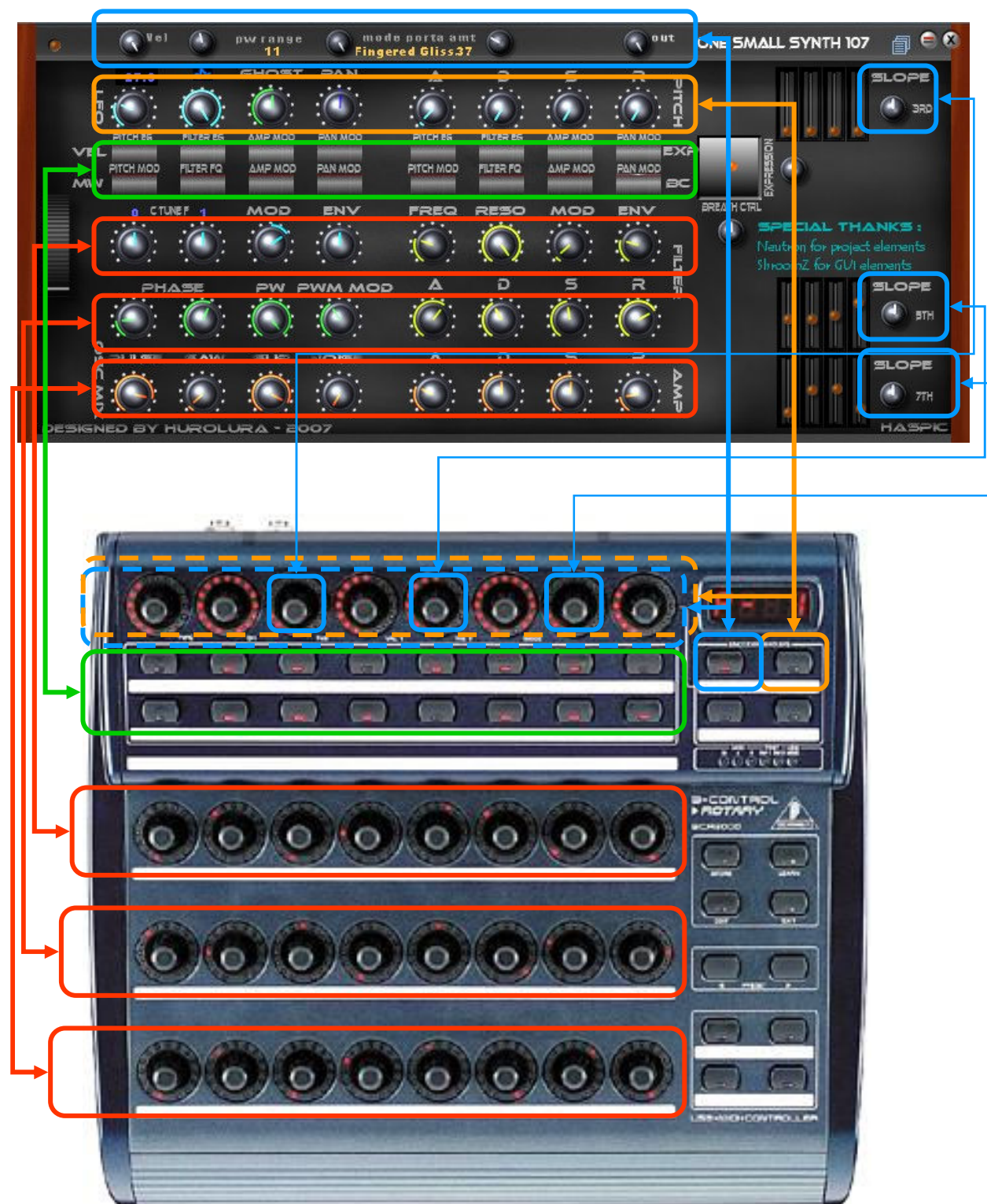


The 4 upper switches are selecting the influence of the expression on the Pitch EG, the Filter EG and the Amplitude and Panoramic modulation.

The 4 lower switches are selecting the influence of the breath control on the Pitch LFO level, the Filter cutoff and the Amplitude and Panoramic modulation.

BCR 2000 CONTROL MAPPING

To allow comfortable sound design using the OSS 107 the MIDI CC message are set by defaults to some dedicated values thus allowing the BCR 2000 to directly control plug on Midi channel 1 after downloading the template to the BCR 2000 to one of the 32 BCR 2000 preset memory.

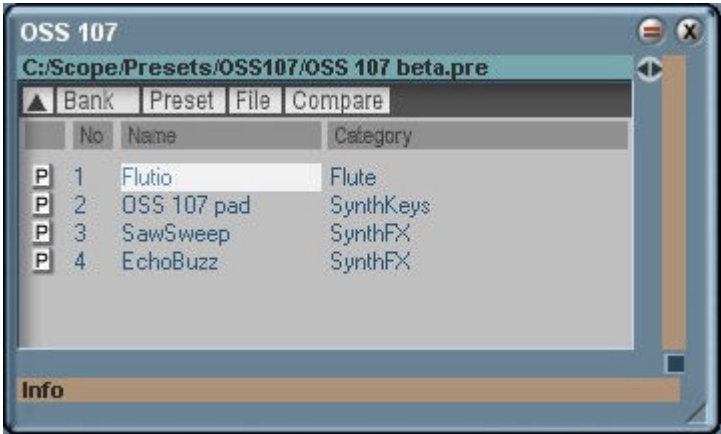


As the SCOPE host surface control has been set in a similar way as the BCR 2000 most control elements are set at the same place on the BCR 2000 and the host surface. Then you can use the Scope host surface control as an enhance visualisation tool for adjusting the sounds without using the mouse except for preset handling...

The MIDI CC mapping chart provides the information necessary to set up templates for other model of MIDI controllers.

PRESET LISTS

OSS 107 provides a single preset list for the whole 56 parameters settings.
Press the preset button to open the preset list window shown bellow.
The preset handling is similar to the one provided on some of the latest already available synthesizer plugs like for example the MINIMAX.



MIDI CC MAPPING CHART

Below is represented the MIDI CC mapping of each of the 56 parameters of the device:

