The SynthiMuse

The SynthiMuse is random music composer/re-composer that creates MIDI notes.

It can do a number of different things:

1.   It can create endless random sequences of MIDI notes derived from the genuine random internal noise generator that is the same circuit as that used in the analog synthesizers of the 1970's
The notes created are truly random. Any note sequence it generates has never been heard before, and if you don't save it to a loop, it'll never be heard again.

Sequences are generated by setting the parameters on the controls that can influence the notes.

You can set the Key and the Scale and the generated notes, velocities and lengths can be affected by LFO, Noise, and Audio.

2.   It can 're-compose' notes passed to it from the MIDI input
You can play any note melody in to it (or no melody at all, just a repeating single note) and, using the setups on the SynthiMuse panel, it will create new melodies.

3.   It can trigger off audio picked up from the internal microphone or an external audio source.
You can sing or speak in to the SynthiMuse and it can either be influenced by the audio or actually triggered by it.
The SynthiMuse is sensitive to the **pitch** of the audio so singing/playing high and low notes can influence the pitch of the MIDI notes created.

4.   It's an arpeggiator that can create simple or complex arpeggios on the MIDI notes played in to it.

5.   It is a loop machine that memorises the last 64 notes created and can save them in to 4 loop memories.
The loop memories are 64 notes deep and each loop can play a section of this memory from 1 to 32 notes long.
The memories are non-volatile meaning you won't ever lose them when you switch off the SynthiMuse.

6.   It can create 'Variations' on the stored loops. Using buttons on the panel, you can use the SynthiMuse's parameters to create variations of the lengths or pitches of all the notes in a loop.

Contents

1 Power

Power requirements :
9 Volts to 20 Volts DC at 100 milliamps.

The SynthiMuse is powered by it's recommended and supplied DC Power Pack.
The DC connection is a 2.1mm pin DC socket which has the centre pin + Positive.

The SynthiMuse is protected from reverse polity connection and, if its supplied power pack is mislaid, a suitable replacement meeting the above criteria **may** be suitable. While all reasonable precautions have been taken to allow the SynthiMuse to protect itself from damage if a non-approved supply is used, no guarantee can be made that an alternative supply will work without damage to the unit.

2 Audio In

The SynthiMuse has a built in microphone and a gain control that allows you to set its sensitivity to external sounds.

Adjust the 'Gain' control to adjust the sensitivity to the audio input.

You'll know if the sound is being picked up if you see the Amber LED in the 'Audio In' section flashing.

Don't set the Gain knob too high as this will make it difficult for the SynthiMuse to distinguish between high and low pitches.

If you wish, there's an external audio 3.5mm socket on the rear of the unit to allow it to react to input from an MP3/iPhone or the audio from a keyboard.

For convenience, there's an 'Audio Thru' socket if you should want to pass the external audio to headphones or an amplifier. **Please see important warning below on the use of this socket.**

When you have sound registered by the SynthiMuse, you can use its pitch to influence the notes generated. Do this by turning the Pitch -> Audio control in the positive direction.
In this direction, the higher the note the SynthiMuse registers, the higher the MIDI note it will create.

You can inverse this effect by turning the Pitch -> Audio control in the negative direction.

If you like, you can have the SynthiMuse **trigger** from the Audio input, either microphone or external.

To do this, put the 'Aud Trig' switch in the down position.

Notes will now be triggered by the incoming sounds. You may have to adjust the Gain control to get ideal triggering.

To allow you to limit the amount of 'double triggering' : where tiny gaps in the audio can trigger unwanted extra notes, the Length -> Offset control allows you to set the allowable minimum gap between notes.

2.1 Audio Thru

There is an 'Audio Thru' socket on the rear of the SynthiMuse that allows any audio passed in to the 'Audio In' socket to be channelled straight out to allow the audio to be passed to another device.

This socket would be useful if you were using the headphone output of an MP3 player or iPhone to pass audio to the SynthiMuse. You can connect your headphones to the 'Audio Thru' socket to monitor the sound.

!!Important !!

When there is no audio connected to the 'Audio In' socket, the 'Audio Thru' socket carries the signal from the internal Microphone. This signal has a DC offset offset of 2.5 volts and will cause a 'thump' to be heard when plugged in to a mixer. Please be careful not to connected other audio equipment that can be damaged by this voltage .

The 'Audio Thru' socket should be used with care.

3 Clock

The clock has a master rate control that allows you to set the speed at which notes can be generated.

The master clock of the SynthiMuse can be from any one of the following 3 sources, set by the Clock -> MIDI/Ext/Int switch.

3.1 Clock – Rate

This control sets the rate at which notes are generated by the SynthiMuse.
When the SynthiMuse is in internal clock mode, the note rate is entirely dependant on the Rate control.
When the SynthiMuse is in MIDI clock mode, the Rate control acts as a divider of the MIDI clock rate.

3.2 Clock -> MIDI

When set to MIDI, the SynthiMuse derives its clock from an external sequencer or synth connected to its MIDI input on the rear.

Please note that USB MIDI takes precedence over DIN MIDI so if you connect the USB, the DIN MIDI will be ignored.

Be sure that there is a valid clock from the external source or the SynthiMuse will not generate any notes.

When triggered by a MIDI clock, the SynthiMuse is able to play in time with external MIDI tracks played in to its MIDI input.

The master rate settings are different divisions of the MIDI clock rate.
For a 120 BPM MIDI Clock, some possible settings are as follows:
4 = 1 notes per bar
3 = 2 notes per bar
2 = 3 notes per bar
1 = 4 notes per bar
1/2 = 8 notes per bar
1/3 = 12 notes per bar
1/4 = 16 notes per bar (This setting isn't marked on the graphics.)
                          (It is midway between 1/3 & 1/6)
1/6 = 24 notes per bar
1/8 = 32 notes per bar

3.2.1 MIDi Start/Stop

When the SynthiMuse is in MIDI Clock Mode, it will respond to the MIDI Start & Stop commands sent over the MIDI interface. This allows the unit to be silent until an external DAW may wish it to start playing at a particular time.

3.3 Clock -> Ext

When set to Ext, the SynthiMuse will only play a note when it receives either a note played on an external MIDI keyboard/sequencer or it gets a trigger from an audio source.

3.4 Clock -> Int

This is the default setting on the clock and allows the SynthiMuse to free run.

3.5 Clock -> MIDI Pitch Offset.

This switch, when in the down position, allows an external MIDI keyboard to offset the pitch of the SynthiMuse, whether in loop, or live mode.

Careful though, as it can sum with the Pitch -> Key control and result in generated notes in a completely different key from what you expect.

It's mainly intended for offsetting the key of loops while they are being played.

4 Pitch

The pitch controls allow various sources to be mixed together to influence the pitches of the generated MIDI notes.

4.1 Pitch -> LFO

This sets the influence that the Low Frequency Oscillator.

By setting it in the '+' direction, you will hear the pitch of generated notes going up and down with the brightness of the LED on the LFO section.

Setting the Pitch -> LFO control in the '-' direction influences the pitch by the opposite direction to the brightness of the LFO LED.

4.2 Pitch -> Rand

The Pitch -> Rand control sets the 'randomness' of the generated notes. When set to zero, there is no randomness. As you turn the control up, the notes generated will show greater and greater range until, at the maximum setting, the notes will span the full musical range.

4.3 Pitch -> Audio

The Pitch -> Audio control sets the influence that the approximate pitch of the audio input has. Obviously, if there is no Audio input, this control will have no effect.

If there is an audio input, either by microphone or by external input, then the pitch of the generated notes can be influenced by that audio.

Please note, this effect is only intended to be approximate. The SynthiMuse is unable to track the *exact* pitch of the incoming audio, only its approximate pitch.

4.4 Pitch -> Offset

The Pitch -> Offset control sets where the average pitch of the generated notes is from MIDI note 0 to MIDI note 127. The value 5 is approximately Middle C

4.5 Pitch -> Scale

There are 12 scales that can be selected and they are labelled around the 'Scale' control.

The list of scales are :

'Ch'   : The Chromatic scale - every note on the keyboard can be played.

'Maj'   :   The Major scale

'Min'	:	The Minor scale
'Blu'	:	The Blues scale
'PentM'	:	The Pentatonic Major scale
'Pentm'	:	The Pentatonic Minor scale.
'Whole'	:	The Whole Note scale.
'HarMaj'	:	The Harmonic Major scale
'HarMin'	:	The Harmonic Minor scale
'ArpHold'	:	Arpeggiator Held
'ArpMom'	:	Arpeggiator Momentary
'Rand/User'	:	Random or User scale.

The last 3 scale positions are different from all the other standard scales.

ArpHold sets the SynthiMuse to arpeggiate on whatever chords or notes that are input on the MIDI input from a keyboard, sequencer or MIDI player. The notes only play as long as notes are held on the keyboard.

ArpMom sets the SynthiMuse to arpeggiate on whatever chords or notes that are input on the MIDI input from a keyboard, sequencer or MIDI player. The notes will continue playing until a new chord or note is played in to the MIDI input.

Rand/User can be a random scale or that is generated in the background as the SynthiMuse is running. Press the red button below the 'Rand/User' scale marker to assign a new random scale.

If you don't like what you hear, or it doesn't sound musical, just keep pressing the Rand button until you hear something you like.

If you press and **hold** the 'Rand/User' button, the random scale will, instead, be filled with any notes from the MIDI input while the 'Rand/User' button is held.
What this means is that you can play a tune or pass a sequence over MIDI to the SynthiMuse and it will use this series of notes as its scale.
This is one of the important features of the SynthiMuse; it can take an existing tune or set of notes and use them to compose new tunes.

5 Accent

The accent row of the SynthiMuse allows you to control how loud the notes are under the influence of the LFO, Random source, the Audio input and an offset.

5.1 Accent -> LFO

This sets the influence that the Low Frequency Oscillator.

Set the Accent -> Offset to the midpoint(5) and, by setting the Accent -> LFO in the '+' direction, you will hear the amplitude of the generated notes going up and down with the brightness of the LED on the LFO section.

Setting the Accent -> LFO control in the '-' direction influences the pitch by the opposite direction to the brightness of the LFO LED.

5.2 Accent -> Rand

The Accent -> Rand control sets the 'randomness' of the loudness of generated notes. When set to zero, there is no randomness. As you turn the control up, the notes generated will show greater and greater volume range until, at the maximum setting, the loudness of the notes will span the full volume range.

5.3 Accent -> Audio

The Accent -> Audio control sets the influence that average volume of the incoming audio has on the accent of the generated notes. Obviously, if there is no Audio input, this control will have no effect.

If there is an audio input, either by microphone or by external input, then the amplitude of the generated notes can be influenced by the average amplitude of that audio.

5.4 Accent -> Offset

The Accent -> Offset control sets where the average amplitude of the generated notes is from MIDI velocity 0 to MIDI velocity 127. The value 5 is approximately half maximum.

5.5 Accent -> Quantize

This control sets how coarse the range is of velocities that are created.

If the Accent -> Quantize control is set to 0, the created note accents can be any number in the range 0 to 127, determined by the sum of all the Accent controls.

If you set the Accent -> Quantize to higher values, it makes the output velocities more coarse; i.e. velocities will go in stepped values such as 0, 7 , 15, 23, 31, 39 etc.

Higher settings of the Accent -> Quantize control will make the velocities coarser still such as 0, 31, 63, 95, 127

6 Length

6.1 Length -> LFO

This sets the influence that the Low Frequency Oscillator.

Set the Length -> Offset to the midpoint(5) and, by setting the Length -> LFO in the '+' direction, you will hear the length of the generated notes going up and down with the brightness of the LED on the LFO section.

Setting the Length -> LFO control in the '-' direction influences the note lengths by the opposite direction to the brightness of the LFO LED.

6.2 Length -> Rand

The Length -> Rand control sets the 'randomness' of the length of the generated notes. When set to zero, there is no randomness. As you turn the control up, the note lengths will show greater and greater range until, at the maximum setting, the lengths span a full note period and can overlap in to the next note trigger.

6.3 Length -> Rand Rest

The Length -> Rand Rest control sets the influence that the random source has on whether there should be a note played or if there should be a musical rest.

Not all music has a note on every beat. Often there is varying note lengths as well as rests. This control allows you to set the chance of there being a rest.

When set to zero, there will never be a rest. When increased, there will be more and more rest notes.

6.4 Length -> Offset

The Length -> Offset control sets where the average length of the generated notes. The range goes from staccato all the way to legato.

6.5 Length -> Quantize

This control sets how coarse the length of the notes that are created.

When set to 64th, the length can be anywhere between a 64th note and the full length of a note gate.

Musically, though, it's more desirable to have the note lengths constrained to be 1/64ths 1/32nds, 1/16ths, 1/8ths, 1/4rs, ½ or whole notes.

This is important if you are saving the notes to loops for sequencing later on. It wouldn't fit in with other timings in a song if loops were of unpredictable length.

The Length -> Quantize allows you to constrain the length of the musical notes to adhere to notation conventions.

7 Loop

7.1 Loop Capture

The first and most important thing to know about the Loop section is how to capture the notes you have just heard.

If you've been listening to the SynthiMuse create notes in its 'Live' mode, you may have heard a series of notes you want to capture.

While holding down the Loop -> Store button, press any one of the 4 'Loop' buttons. This stores the most recently generated 64 notes in to the chosen loop memory with the most recent notes at the end.

After the saving of a loop from the 'live' generated data, the Loop Length is set to 32 and the 32 notes played are the ones most recently heard before the Loop-> Store button is pressed.

To hear a loop, put the Loop -> On switch to the down position. Whichever one of the 4 loops is selected, that is the loop that will be heard to repeat.

The length of the loop can be set by the Loop -> Length control.

Once you've made any changes to your loop such as nudge, rotate or length adjust, while holding the Loop -> Store button, press the button for the present loop. This will store the latest loop settings to the loop memory.

When the loop gets to the first note, the Loop -> '1' LED will flash.

7.2 Loop Rotate

You may want to 'rotate' the loop so that the first note makes sense to the listener.

To do this, press the << Rotate >> buttons to rotate the loop. This doesn't *change* the loop in any way, it just changes what it sees as the first note of the loop. This will be important when you wish to select different loops and you want each loop to start with a predictable note.

The SynthiMuse captures 64 notes but in loop playback mode, you can only loop on up to 32 notes.

7.3 Loop Nudge

If you want to change which part of the 'window' on the memory that forms the loop, you can 'nudge' the loop window.

While holding down the Loop -> Nudge button, press the << Rotate >> buttons to move the loop 'window' up or down the loop memory.

As a note disappears of one end of the loop, another will appear at the beginning of the loop.

If you wish to pitch offset any loop while it is playing, the Clock -> MIDI Pitch Offset switch can be enabled and this allows an external MIDI note to offset the loop pitch.

Playing a 'C' on the MIDI keyboard will bring no offset on the loop, 'C#' will bring a semitone offset and so on up the musical scale.

7.4 Loop Copy & Paste

For the purposes of creating variations on a loop, it helps to be able to copy and paste it in to another loop memory.

To do this, select the loop you want to copy by pressing any one of the 4 loop buttons.

Pressing the 'Copy' button will tell the SynthiMuse which loop to copy from.

Select a different loop and press the 'Paste' button. The original loop will now be duplicated to the new loop memory.

7.5 Loop -> Vary -> Note

Use this feature if you wish to create variations of all of the note pitches in a loop,

At this stage, put the Loop -> On switch to the 'UP' (Off) position so that you hear the SynthiMuse in 'Live' mode.

You may wish to select a different key and scale in the 'Pitch' section and perhaps vary the other playing parameters.

Once you are happy with the style of the notes being generated, put the SynthiMuse back in to 'Loop' mode by putting the Loop -> On switch DOWN (On)

Select the loop you want to vary by pressing one of the 4 loop buttons.

Now, while holding down the 'Store' button. Press the 'Note' button.

The selected loop will have all of its note pitches varied while leaving the lengths unchanged.

7.6 Loop -> Vary -> Length

Use this if you wish to create variations of all the note lengths in a loop.

At this stage, put the Loop -> On switch to the 'UP' (Off) position so that you hear the SynthiMuse in 'Live' mode.

You may wish to adjust the playing parameters and note rate to get a different feeling to the generated notes.

Once you are happy with the style of the notes being generated, put the SynthiMuse back in to 'Loop' mode by putting the Loop -> On switch DOWN (On)

Select the loop you want to vary by pressing one of the 4 loop buttons.

Now, while holding down the 'Store' button. Press the 'Length' button.

The selected loop will have all of its note lengths varied while leaving the pitches unchanged.

8 LFO

8.1 LFO-MIDI Sync

When the LFO -> MIDI Sync switch is in the down (On) position, the LFO rate is derived from the external MIDI clock, if present.

This allows the LFO to modulate the generated music in time to an external sequencer or MIDI player.

When a MIDI Start or Stop command is received by the SynthiMuse, it restarts the LFO so that its waveform will always be in sync with external MIDI input.

8.2 LFO -> Rate

The rate control sets how fast the LFO changes value.

When in MIDI Sync mode, the Rate control acts as a divider of the MIDI clock to allow the LFO to modulate in time with external sequences.

8.3 LFO -> Shape

The Low Frequency Oscillator has 8 waveforms that can be used to influence the parameters of the SynthiMuse

Sine
Triangle
Pulse
Square

Trapezoid
Ramp
Smooth Sample/Hold
Stepped Sample/Hold

All the waveforms are self explanatory from the graphics but the last two Sample/Hold positions need some explanation.

The Smooth Sample/Hold position allows the LFO to generate a random value that **gradually** changes at a rate set by the LFO -> Rate control.

The Smooth Sample/Hold position allows the LFO to generate a random value that changes in steps at a rate set by the LFO -> Rate control.

When the LFO -> Rate control is set to minimum, the LFO generates a very slowly changing random value.

When set at higher and higher rates, the random values changes more frequently.

9   MIDI Channel

The SynthiMuse defaults to MIDI channel 1 on first power up.

If you wish to change the default MIDI channel, connect a MIDI keyboard or DAW to the MIDI input of the SynthiMuse then press and hold 'Loop 3' button as you power up.

The green 'Note' LED will light and at this point, press a key on the keyboard or send a note on command from your sequencer. Whatever channel the 'note on' command is set to, the SynthiMuse will assign that channel as its default MIDI channel.

This setting is non-volatile, meaning that you won't lose it on switch off of the unit.

9.1 MIDI Channel Change 'On the Fly'

The MIDI channel can be changed 'on the fly' by holding the 'Store' button and pressing either of the 'Rotate' buttons.

You can increment/decrement the MIDI channel by pressing the Rotate Left/Right buttons.

The value shown is the binary value of the MIDI channel value - 1 so

MIDI Ch 1 Shows 0 0 0 0
MIDI Ch 2 Shows 0 0 0 1
MIDI Ch 3 Shows 0 0 1 0
-
-
MIDI Ch 16 Shows 1 1 1 1

The MIDI channel will change for the next note played.

Once you let the store button go, after a 2 second time out, the Loop LEDS will return to normal operation.

One key thing is that the default, power up MIDI channel can still only be changed by the usual method of assigning it at power up.

This is so that you always know what the MIDI channel will be at next power up.

10 Software Update

The software update of the SynthiMuse works on the '3 strikes and you're out' scenario.

You download a sysex file either over USB or MIDI 3 times in a row.:

First Transfer : The SynthiMuse checks the file looks OK.

Second Transfer : It checks it again and if the file is still ok, it gets ready to overwrite the software on the next attempt.

Third Transfer : It writes the software in to the memory and re-starts the SynthiMuse.

10.1 Procedure

Download the SynthiMuse SysEx (.syx) file from the www.synthimuse.com website and save it on to a convenient location on your computer.
The SynthiMuse update file will have the name 'SMFW****.syx' where the '****' portion of the file name will be the revision number of the software.
'SMFW1111.syx' is the original release version and all later releases increment from this number so that you can always tell the latest version of the software by searching for the highest number.

With the SynthiMuse switched OFF, connect your computer either by USB or to the SynthiMuse MIDI Input port.

While holding down the 'Loop 4' button, switch the unit on.

After about ½ a second, the 'Loop 4' LED will come on and there will be no other sign of activity on the SynthiMuse panel. The unit is waiting for a sysex file to be transferred.

Using your preferred Sysex Transfer program ' Mac – Sysex Librarian' or PC 'MIDI-Ox', Set up the transfer parameters to :
Delay Between Buffers   : 200mS
Delay After F7   : 50 mS

Start the transfer of the SysEx file and you will see the 'Loop 4' LED flash as the file is read. You should continue to see the Loop 4 LED flash as the progress of the file download proceeds.

Once the file transfer has been completed, it must be transferred a further 2 times. As stated at the beginning of this section;

First Transfer : The SynthiMuse checks the file is correctly formatted.
Second Transfer : It checks it again and if the file still verifies ok and if so, it prepares to overwrite the software on the next transfer.
Third Transfer : It writes the software in to the memory and re-starts the SynthiMuse.

On the first and second transfers, you will only see Loop 4 LED flash. When the firmware is actually written to the SynthiMuse on the third transfer, the Loop 2 LED will also be seen to flash.

Once the third transfer is successful, the SynthiMuse will reset and show on its Loop LEDs, the software revision. You can use this pattern to verify that the software update has been successful.

Congratulations. You have successfully updated the firmware of the SynthiMuse.