

Introduction

This document details the latest enhancements.

Detection of ‘all note off’ control change

The module only recognises a subset of the control change messages in the MIDI standard.

It was an omission that ‘all notes off’ was never included originally, because this is a useful feature. This has now been added to version 2 ! It actually processes control change 123 (all notes off) and 120 (all sounds off) exactly the same, although the MIDI standard talks about subtle differences in meaning.

Here the Master Controller, on receiving either of these message, scans the allocation table for any active notes and sends the corresponding ‘note off’ message to the Mixer>Tone Processors.

Increase in MIDI Buffer size

After experiencing some issues playing MIDI files, it was discovered that the MIDI buffer size was unnecessarily small (64 bytes). It has now been increased to 204 bytes, i.e just over 3 times bigger.

Some background:

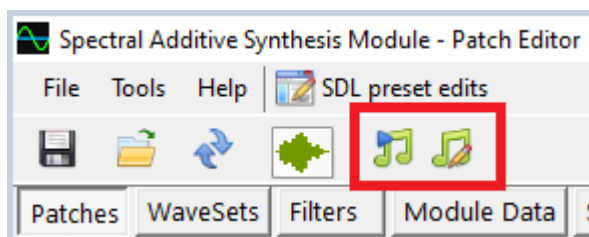
Music with chords covering many notes is particularly challenging, especially if the notes are precisely quantised to the time interval division, because there is a cascade of note on events when all the notes start to play, and a corresponding cascade of note off events. Each event is 3 bytes and so the buffer can be hit by quite a large volume of bytes all in a very small space of time. The buffer, as it’s name implies, is there to alleviate the situation and give the Microcontroller time to process the note and take action as required. This actually involves quite complex note allocation and deallocation, mapping to the relevant Tone Processors and tone instances.

MIDI Buffer overflow alert

In the (now less likely) event that the MIDI buffer does overflow, the code now halts after setting the MIDI alert LED permanently on. So the system crashes but at least there is an indication as to why.

Basic USB MIDI

The Windows App now has a ‘Play Note Sequence’ option (as well as a related editor under ‘Edit Note Sequence’). This is a very rudimentary way of sending some test notes to the module.



Version 2 and upwards of the Master Firmware supports this feature (you must select V2 or above in Tools>Setting of the app to make the new app feature visible).

