

## Introduction

The document details the latest enhancements.

## Bigger SPI Buffers

Both SPI1 and SPI2 buffers have been given an 8-fold increase in size, from 128 words to 1024 words. This is to cope with sudden data surges, especially relating to dense MIDI being processed.

## Busy LED also tracks audio output

The 'Busy' LED on the Mixer previously just tracked when Patch data was being transmitted. I've now modified it to also track 'when there is sound'. It looks at the peak signal in the look-ahead AGC window, i.e 128 samples ahead, and if this peak is above zero then we know that the Mixer is outputting sound. If the peak is zero then we reliably know that the Mixer is silent.

One potential use of this is to add noise-gate functionality to the circuit. The beauty of this idea is that we already have the look-ahead functionality, and because we are in a completely digital world within the Mixer, then zero really means zero - there is no circuit noise to contend with here, and a noise gate could in theory be very effective. The 'gate' would somehow operate on the op-amps. It's a sad fact that the DAC has a fair amount of quiescent noise when no sounds is being sent through it, so a noise gate could help (even though the overall system noise level is pretty low anyway).

I've tried a crude noise gate solution that didn't work (using FET switches), so have parked this idea. However it still seems a good idea to have 'Busy' meaning 'the Tone processors and whole system is processing sound', as well as any reception of patch data.