The Internal Dimming Engine

It can be useful to slowly fade lights up and down. One method to set this up in a sequencer is to transmit a series of 16th (or even 32nd) notes, with ever increasing or decreasing velocity / loudness levels, to the DecaBox:

However, this can be tedious and is in fact unnecessary. The DecaBox includes a 128 built-in dimming engines, one for each DMX channel. These engines run simultaneously and in parallel, and can be set to any speed at any time.

Here's how it works:

On the main screen, the S value encodes the currently selected fade speed. In this case, S = 0, signifying instantaneous changes. This speed is changed by sending a MIDI Patch Change / Program Change message. A patch change message is used to specify a MIDI instrument, such as grand piano, pipe organ, bass drum, etc.

There are 128 programs in the general MIDI command set, and each has a corresponding value in the range [0 127]. The DecaBox receives these messages and multiplies their value by 0.25 seconds. Thus a basic acoustic piano corresponds to instant changes, a pipe organ (#17) sets the engine to an approximate 4 second fade time, and so forth.

In this photo, the message 'change to Kalimba' was sent:

What's useful is that MIDI note messages and PC messages may be interleaved in any combination. The most recently received PC message sets the dimming speed for all subsequent note messages until a new PC message is received.

For example, suppose channels 1, 2 and 3 should fade up slowly. But while they are fading, channel 4 should flash on and off instantly. Here's the message flow:

- PC#81 (synth, sets the fade speed to 80 * 0.25 seconds = 20 seconds)
- Note On #1 Velocity 127 (100% brightness)
- Note On #2 Velocity 127
- Note On #3 Velocity 127
- Wait 1-2 seconds
- PC#0 (piano, sets the fade speed to 0 * 0.25 seconds = 0 seconds)

- Note On #4
- Wait 1 second
- Note Off #4
- Wait 1 second
- Note On #4
- Wait 1 second
- Note Off #4
- (At this point, DMX channels 1, 2 and 3 are still slowing fading up)
- PC#4 (piano, sets fade speed to 4 x 0.25 seconds = 1 second)
- Note Off #1, #2, #3