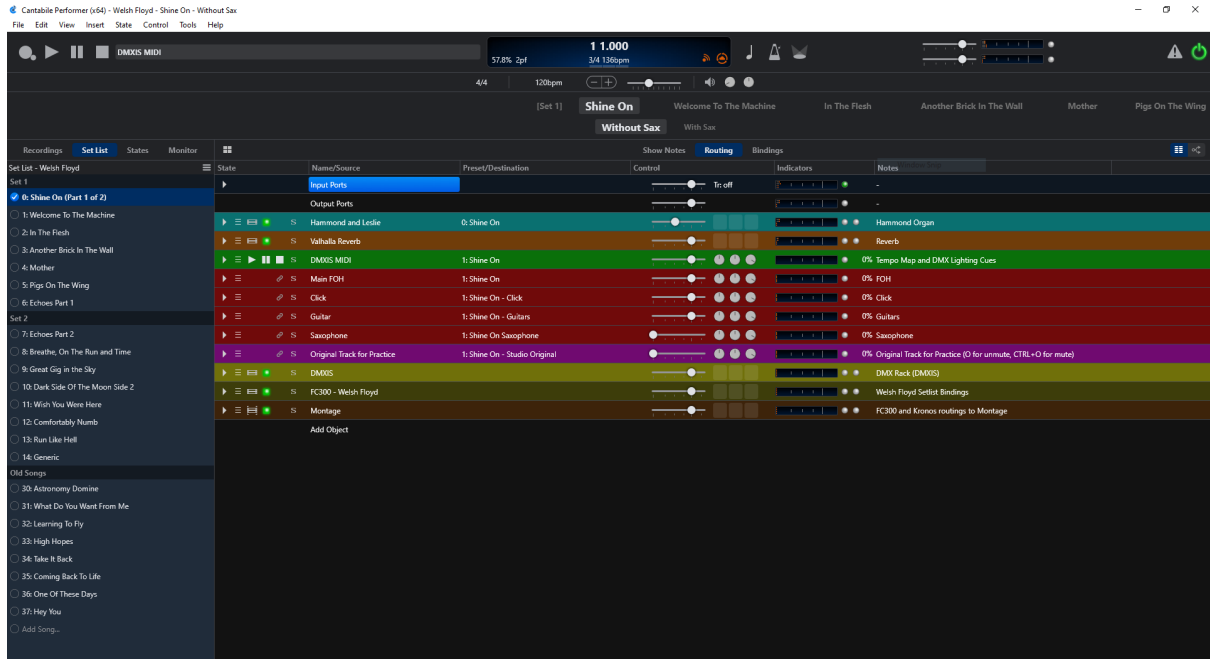


# Using Cantabile and DMXIS Together

## Derek Cook © 2021



## Using Cantabile and DMXIS

This Guide shows how I have used Top Ten Software's [Cantabile](#) program and the [ENTEC DMXIS](#) interface together to create shows that use both backing tracks and a beat perfect tempo synchronised lightshow using [DMX](#) compatible light fixtures, driven using Cantabile and the DMXIS software which will work in any VST compatible host.

I play totally live in some bands (with no backing), but in other bands, like Welsh Floyd, we make use of backing tracks running in Cantabile to get the full Floyd sound including effects, and I quickly realised the potential to integrate DMX lighting control into the tracks so that the light show is fully synchronised to the music. After a lot of research on the DMX control options, I picked the DMXIS solution. There are of course other solutions out there, but this is the solution that I use and can write about. I guess I ought to also disclose that I made this choice over eight years ago, so there may well be other new options out there that I have not looked at.

I picked DMXIS because it came with a VST plugin which meant you could use it within any VST hosting platform, such as Cantabile, or your DAW of choice to build the light show in the first place.

I have written this guide to hopefully inspire other people to make the move to integrate a DMX lighting solution into their Cantabile gig rig. Please see my companion [Gig Rack Guide](#) on how the rack is constructed and also my [Cantabile Guide](#) for general guidance on how to setup and use Cantabile.

Even if you do not play to backing tracks, it may be still useful to get your light show to respond to MIDI CCs from your controllers if you do not have a dedicated light board and lighting technician.

The intent of this guide is not to be a detailed tutorial on how to use Cantabile, as that is well covered by Cantabile's own [Support Guides](#) and the [Cantabile Community](#) is also an excellent resource. My intent is to show an example of how I am using it with DMXIS.

Cantabile itself comes in three versions:

- Cantabile Lite – free edition;
- Cantabile Solo - for lightweight live performance and/or home studio use;
- Cantabile Performer – has all features required for serious heavyweight stage use.

This description is written around Cantabile Performer, so not all features may be present in the other versions.

You can get Cantabile on a 30-day evaluation license to check it out.

Please note, some of the screenshots in the guide are low contrast as this is the colour scheme best suited to a dark stage.

Just to put things in the context of my gig setup, here is a picture of my gig rack.



Gig Rack, including Cantabile PC, audio interface, IEM transmitter, Mixer, Nord G2 Modular rack (With DMXIS, USB hub and MIDI hub not visible)

The DMXIS interface is a USB device, which is within the rack behind the NUC PC that you can see in the bottom right-hand side of the rack. However, you can see it on the following internal shot, and it simply connects via the USB hub to the small NUC (bottom right corner of the rack).



DMXIS Interface inside the Gig Rack

I then have a short DMX lead from the DMXIS interface to a bulkhead connector to make it nice and easy to connect to the lighting rig when on stage. DMX is a “daisy chained” interface based on RS485, so you only connect your first light to the DMXIS interface, and then daisy chain the other lights (with a signal terminator on the DMX output port of your last light in the chain).

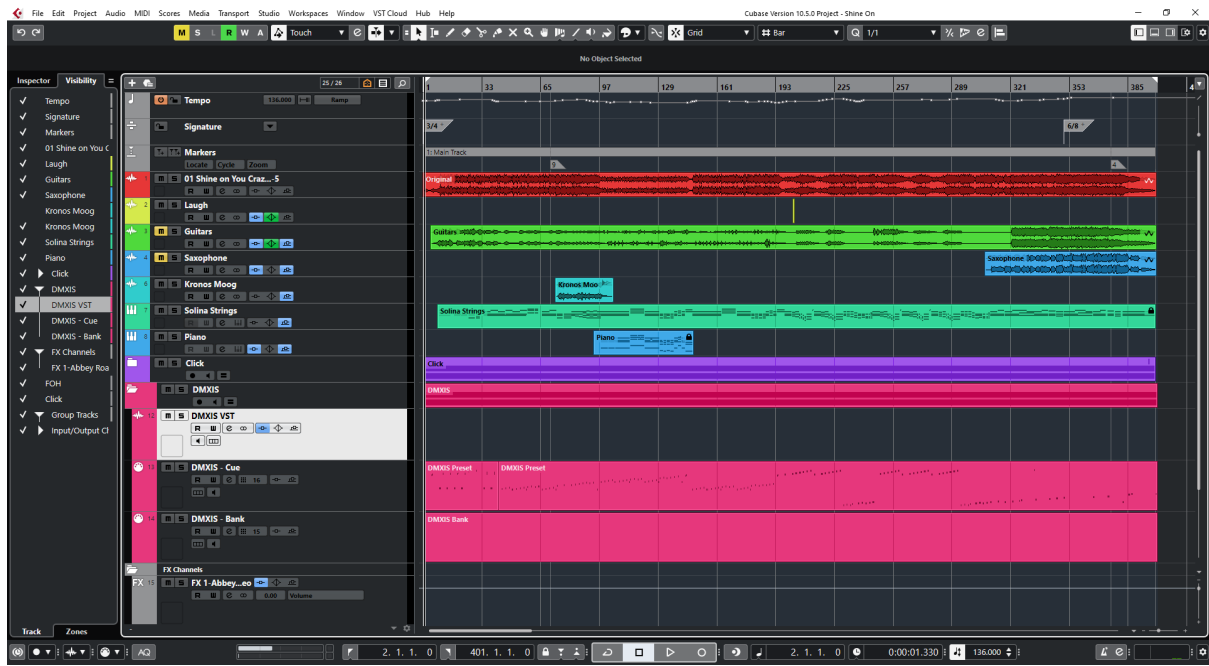


DMX OUT to the first device in the Lighting Rig

## Step 1 – Making Your Backing Tracks

The first step is of course creating the backing tracks that you need!

Here is the first song in the Welsh Floyd set, “Shine on You Crazy Diamond” (of course!) open in Cubase.



This is a reasonably complicated song. The way I work to build my backing tracks is quickly explained below:

1. I load the original song in Cubase as an audio file (the red track)
2. I then build a tempo and time signature map using Cubase's warp functions against that reference track;
3. I then build the click track that goes to our IEMs;
4. I then add the audio material we are going have on the backing tracks, the effects and supplemental instruments;
5. I then build the light show!

Regarding the light show, you can see that I have a folder called DMXIS, within which I have

- **DMXIS VST:** An Audio Track, which is hosting DMXIS as a VST plugin;
- **DMXIS Cue:** A MIDI Track for DMXIS Cue selection<sup>1</sup>;
- **DMXIS Bank:** A MIDI Track for DMXIS Bank (song) selection.

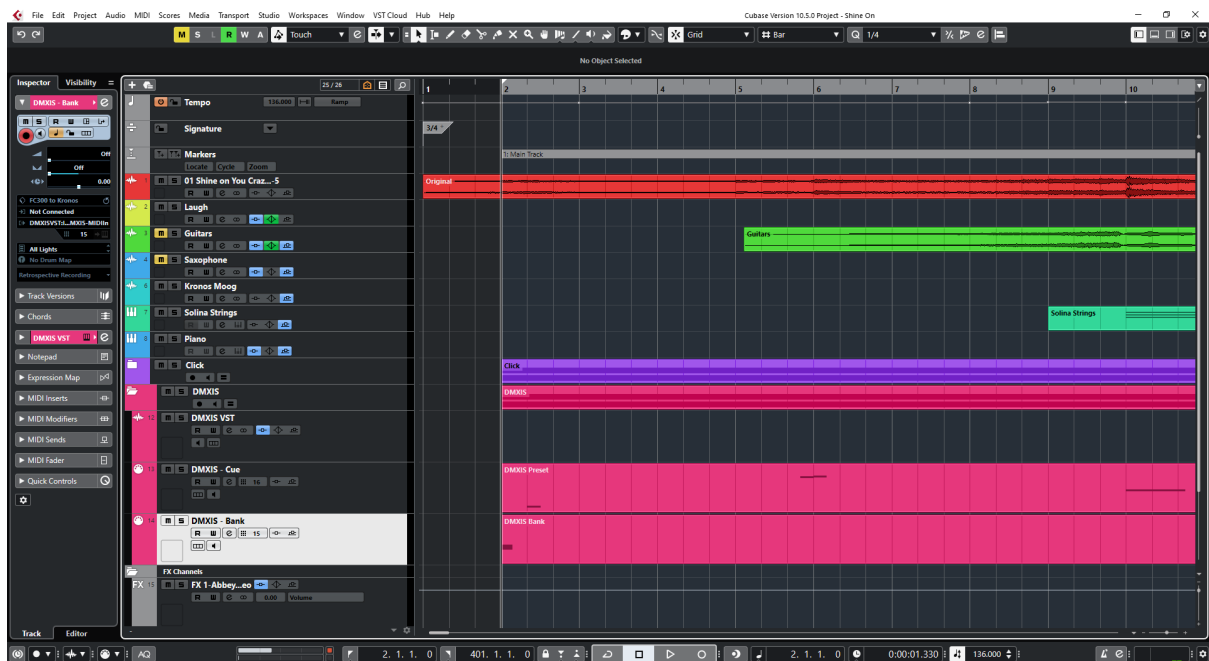
The Audio track is only used to host DMXIS as a VST plugin. It processes no audio in this context.

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<sup>1</sup> A lighting cue is simply the combination of light settings that you want at a point in time

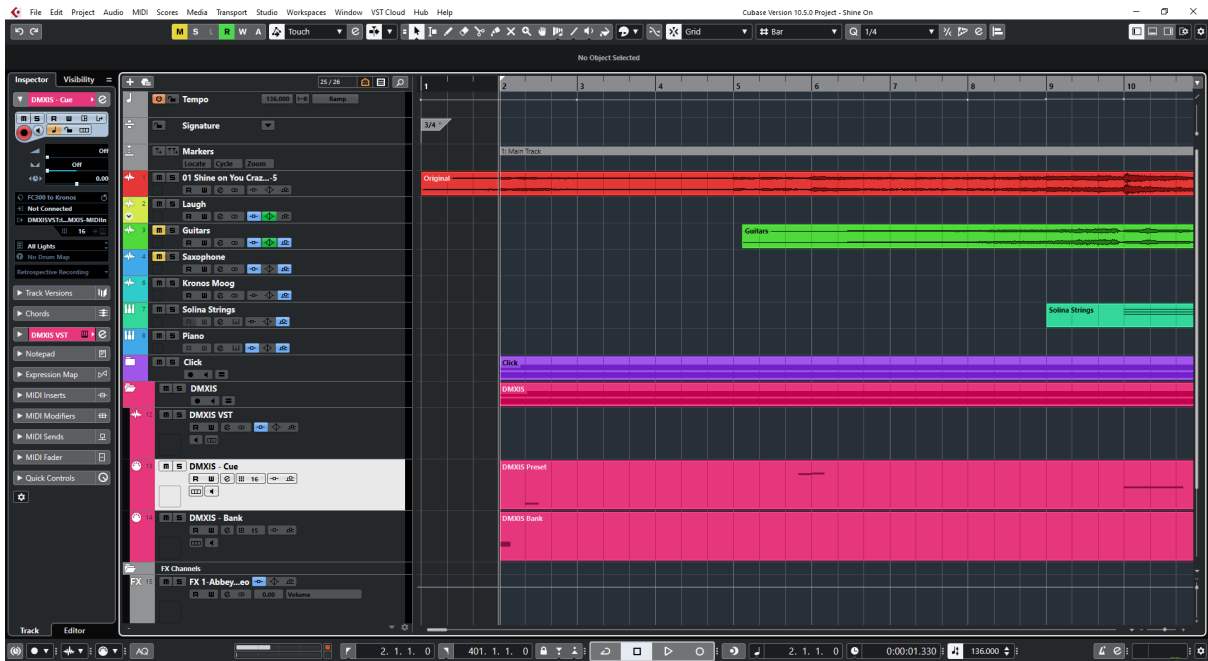
The Bank Track is used to select DMXIS Cue Banks. I use a different bank for each song, so at the very start of each song I have a note trigger to select the DMXIS bank in the Bank Track. MIDI Notes are used to select the bank, which means you can have up to 128 banks (songs) (0 to 127), and they are sent on MIDI Channel 15, and you can see that the MIDI track is routed to the DXMIS plugin.

Note that I also select the Bank/first Cue within Cantabile, so having them in the track is a little belt and braces, but handy for a reset when you are developing the cues in your DAW.

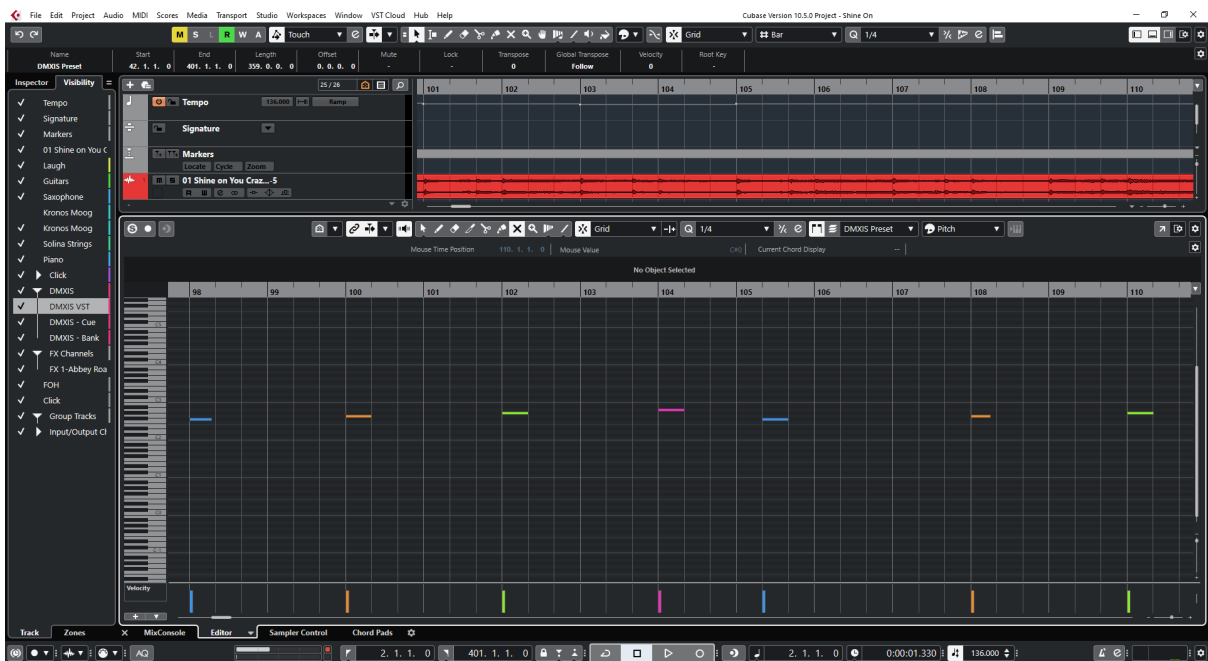


The Cue track is the track where you use MIDI notes to select the DMXIS cue you wish at that point, which means you can have up to 128 cues in a song (0 to 127). DMIX responds to note on commands. Cues are transmitted on MIDI Channel 16, and you can see that the MIDI track is routed to the DXMIS plugin.

The start of the cue track is shown below.



A zoomed in version of the cue track is shown below. You can see that the note base cues are aligned to the grid as needed, and it is this level of precision that interested me in terms of putting on a good light show (and being honest, avoiding another mouth to feed in the band!).



It is literally as simple as that in terms of DAW setup. You added the note triggers for the cues where you want them, and of course develop what the cue looks like in DMXIS at the same time by programming what fixtures are doing what in DMXIS, which can be a combination of static triggers or you can automate effects as well which can also be synced to the tempo. I use a combination based on the song and how busy you want the light show to be.

Sometimes "less is more", and you want to "keep your powder dry" a little. When we first started programming lights, we went a little over the top, and then soon realised to pull things back unless you really want to go wild – and it also takes a lot of effort to program a lot of cues! A song like "Run Like Hell" as the set finale is where I go crazy! And the great thing about DMXIS and precise tempo sync are the subtle effects that even a very good light man could not do. For example, at the start of "Speak to Me/Breathe" where it starts with the heartbeats I have the lights pulsing in time to the heart beats, building up from low light intensity to high light intensity as the intro builds.

### **Exporting the Tracks**

Once this is all built up, you then need to get your tracks into Cantabile, so you need to export them using your DAW facilities

I have the song locators set as needed to cover the start and end of all tracks and will export the audio files first. For some songs that may just be one track, but for something like Shine On, there are several tracks. We also found that for some songs especially where there is background percussion (like "Learning to Fly") it is very hard to judge what the right overall mix is, so it is best to have separate tracks and you can set the mix in Cantabile when you are at rehearsal.

When I export the DMXIS MIDI, I solo the DMXIS folder so only the two DMXIS tracks are exported to the MIDI file.

The other thing to note is that you want a MIDI event right at the end of the **DMXIS Cue** MIDI track to match the end of the audio, otherwise playback of the audio in Cantabile may cut short. So, I simply repeat the last note cue right at the end of the track and set it so that the last cue note is beyond any audible audio.

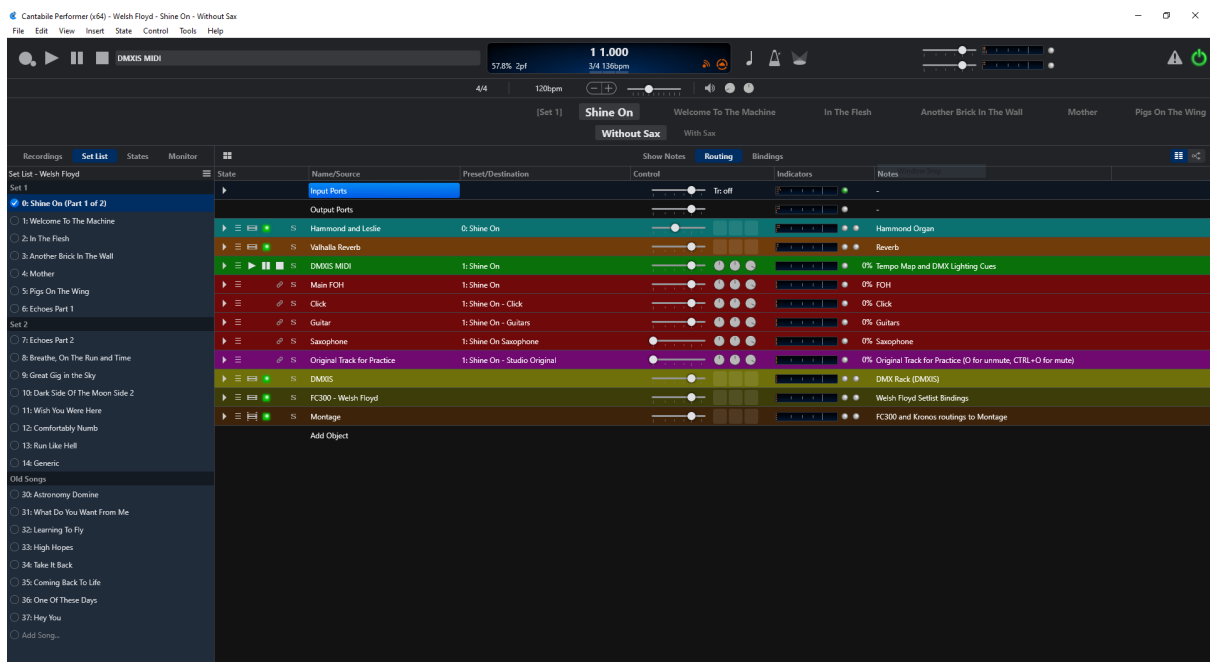
That's it for Step 1. Now onto Cantabile!

## Step 2 – Setting up DMX IS in Cantabile

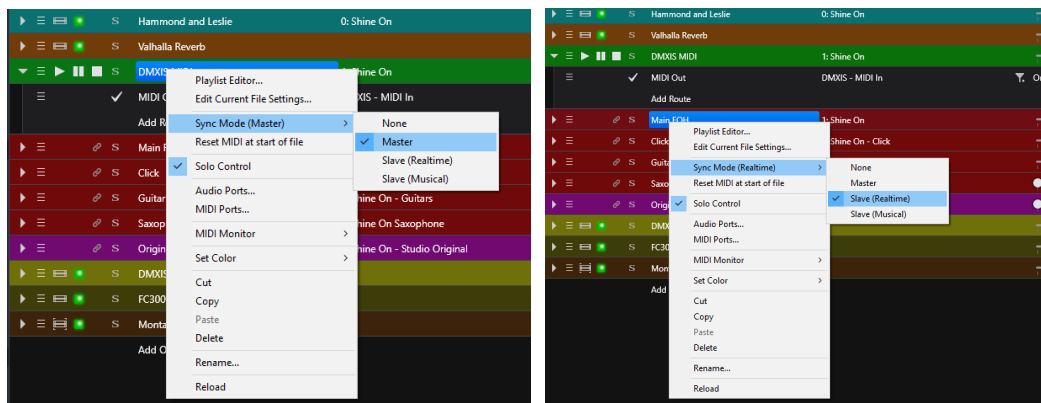
This is quite straight forward, as you have done all of the hard work building the tracks in your DAW. I have a copy of Cantabile on my DAW PC, to build all the songs and check them. Once happy, I will then copy the entire finished result of a set to my GIG PC.

The following screen shot shows my "Shine on you Crazy Diamond" Cantabile song, where you can see numerous racks and media players.

The two key objects for DMXIS are the MIDI Media player itself called **DMXIS MIDI** and coloured in green, which I use as the master media player, and the **DMXIS Rack** towards the bottom in gold.

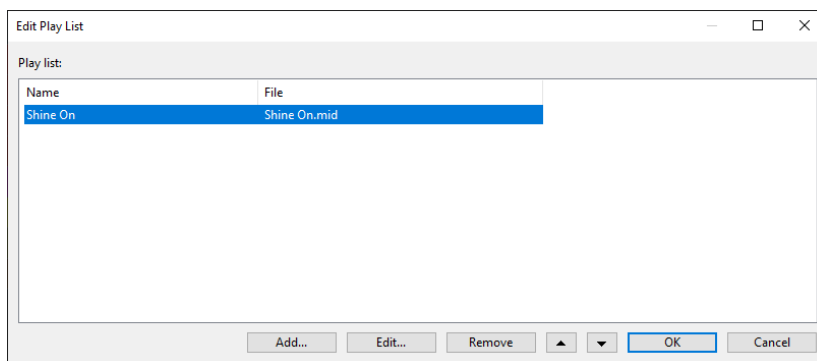


The DMXIS Media Player is configured as my **Master** Track, as the MIDI file contains tempo and time signature information. Whilst not essential, it is nice to see Cantabile's transport in sync to that. It is set using the right mouse button menu item as shown below on the left, and all the audio tracks are set to be **Slave (Realtime)** tracks using the menu option shown on the right.

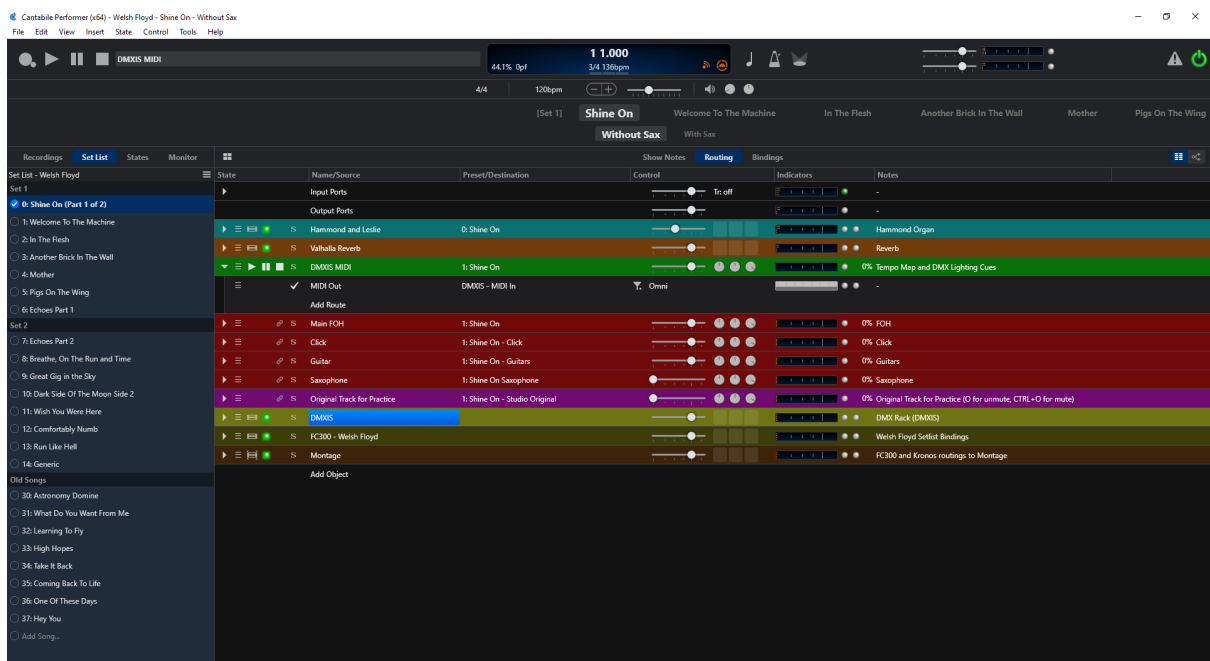




The Media player is simply setup to reference the MIDI file exported from Cubase.



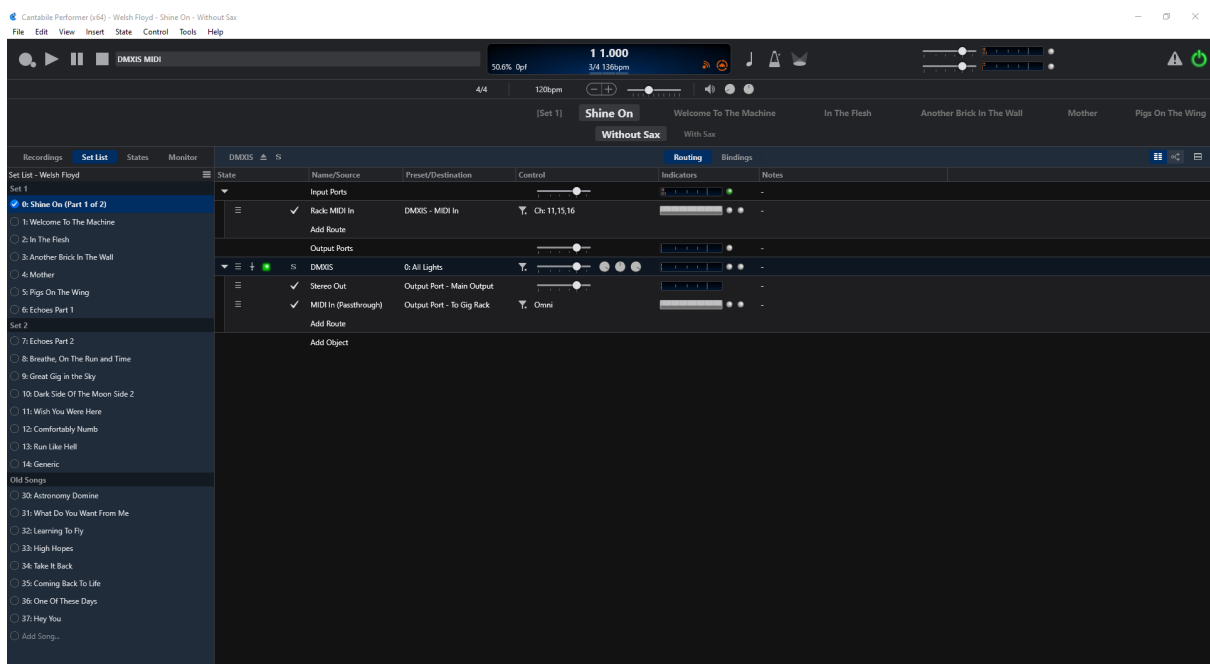
The routing of the **DMXIS MIDI** Media player is sent to the MIDI input of the **DMXIS Rack**.



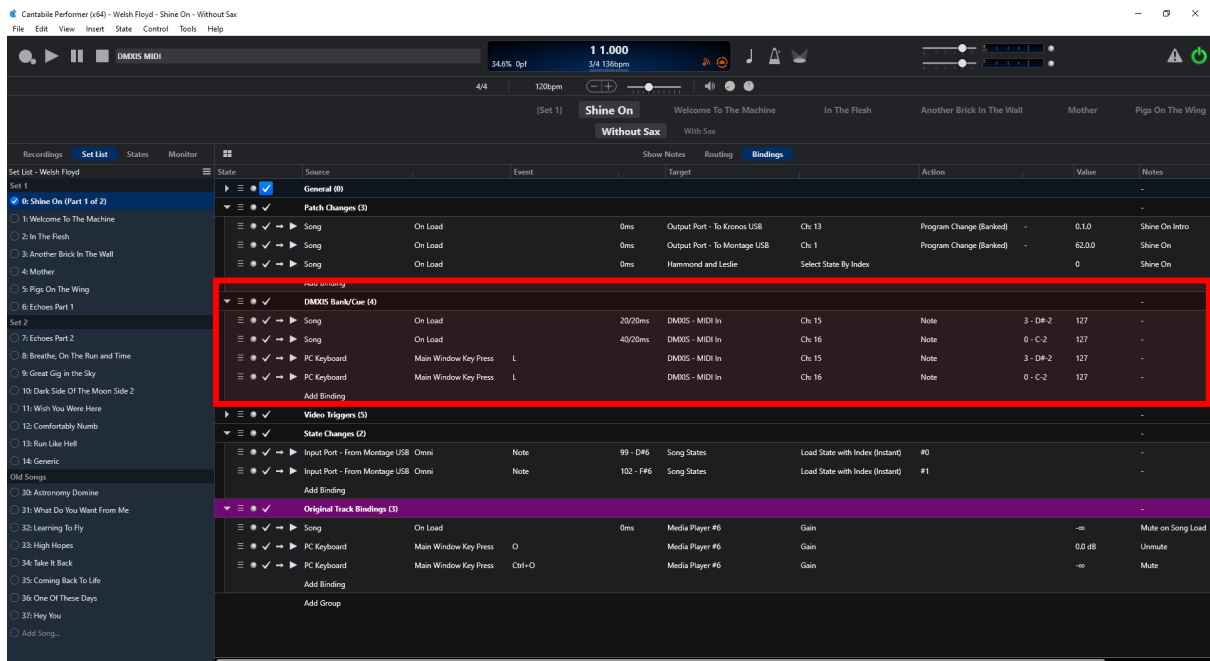
The **DMXIS Rack** is a linked rack that I have in all of my songs, so it stays loaded across all songs.

The rack simply contains the DMXIS VST plugin, and I also have a filter on the MIDI input so that only channels 11, 15 and 16 go through. Channels 15 and 16 are the tracks that DMXIS uses for the Bank and Cues. I also pass channel 11 through as that is my "control" channel. I have set the **next cue** button in DMXIS via MIDI learn to perform cue stepping on a designated MIDI CC, which is generated from a foot pedal on my FC300. This is for cases where I need to advance a cue manually.

For example, the opening of Shine On is played free form until the keyboard intro and opening guitar solo are over, so I have the opening cue, a "stage left" keyboard cue to light me up, a "stage right" cue to light up our guitar player, and then a faded down cue for when the solo is over before we start the backing track for the rest of the song. On the end of songs like "Comfortably Numb" and "Run Like Hell" which are chances for the band to go a little wild, the lights are set in "wild mode" at the end of the song by the last cue in the MIDI file. During our finale the backing track will end, and I need to advance to a more "settled, lights down" cue when we end by foot controller.

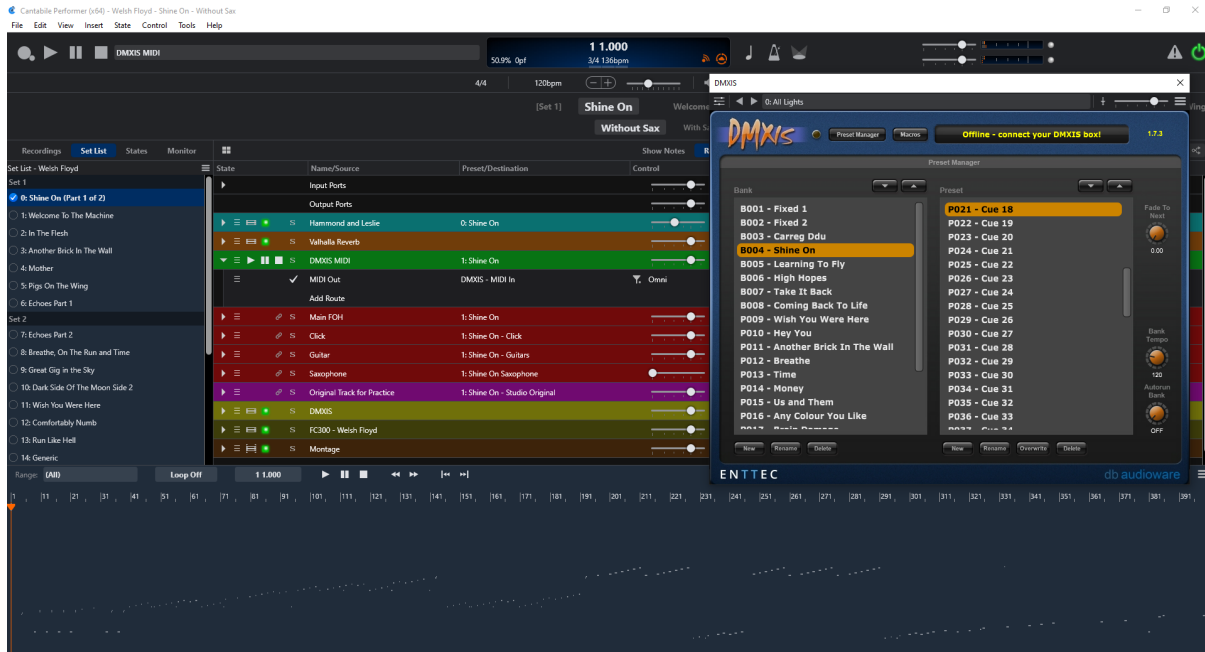


I also have bindings setup in the song as follows



- When the song loads, I send the respective bank/cue MIDI Note on values to DMXIS to ensure that the correct bank and cue are selected before we start. As I have the cue of the last song also set to be the cue of the current song, there should be no difference, but this is all “just in case” defensive programming.
- You can also see that I have the same bindings but driven from the computer keyboard (L for "Lights"), which is simply a "panic measure" to get the lights into a known state if we must stop the song for some reason.

This final shot shows the timeline line view focused on the DMXIS MIDI track (where you can see quite a few cues as “Shine On” is a busy song lighting cue wise) and the DMXIS MIDI plug in is open. Ignore the offline warning in the DMXIS plugin, when I took these screen shots, I did not have it plugged into my DAW PC. In fact, I never do now, as it is buried in the guts of my GIG PC rack. Therefore, I have some routing setup between the two PCs when I am developing and checking light shows. You can see the note triggers in the timeline view, and you can see how I have DMX Banks and Cues setup.



## Conclusion

I hope that this guide has been useful and shows how simple it is to setup DMXIS and Cantabile together.

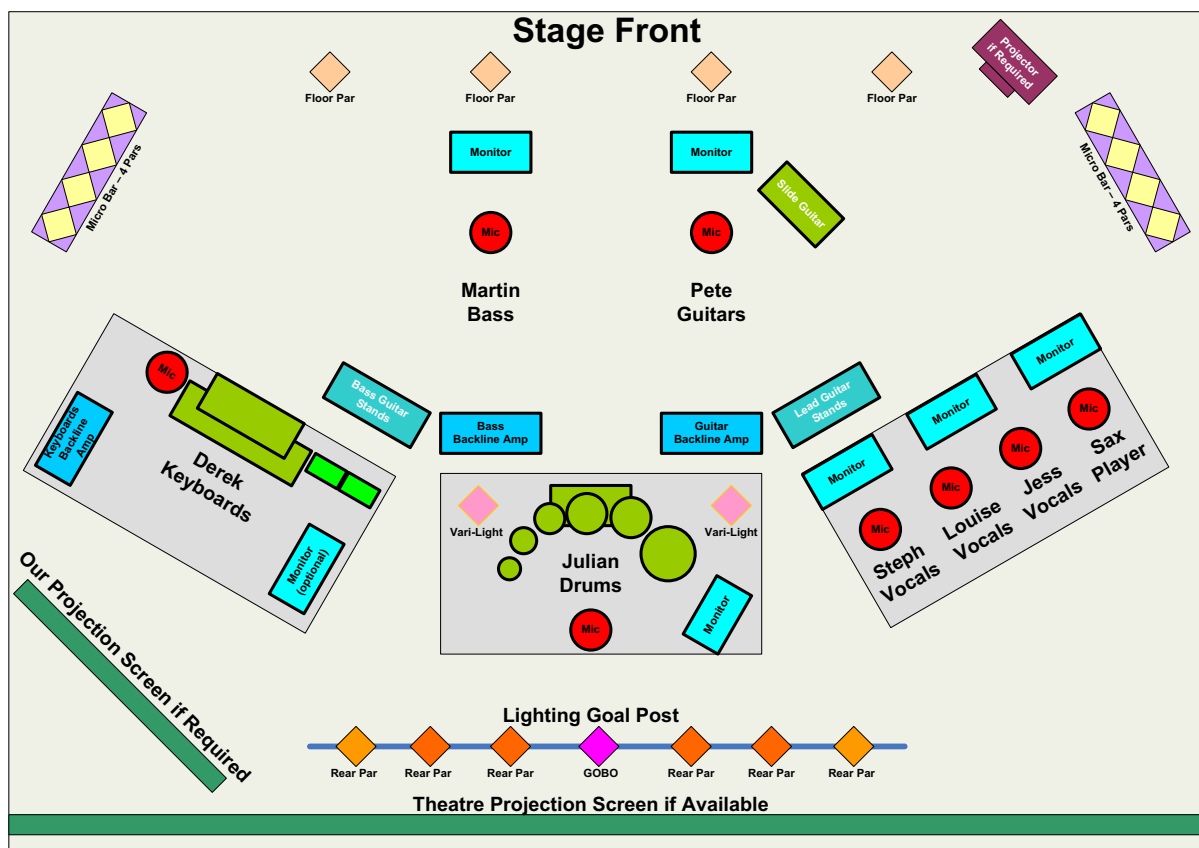
In the following Annex, I will say a little more about my light setup, as that hopefully will give some guidance and ideas for how to setup your light fixtures with DMXIS.

## Annex – Light Fixtures and DMXIS

This Annex shows our light setup for Welsh Floyd and how it maps to the Light Fixtures and DMXIS. I provide it as a guide on what to setup (and some tips I have learnt the hard way), and it hopefully helps provide some ideas for how to setup your own lights.

Here is our overall stage setup, which we try and keep constant, and you can see we have a combination of lights around the stage (all linked via DAISY chained DMX leads), which give us floor lights at the front (pointing back at the band), side fills from the Microbars and also the Varilights we tend to have on the drum riser (these are my favourite lights – you can have a lot of fun with these!) and of course backlighting from behind.

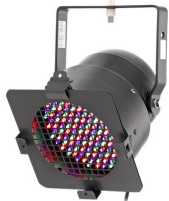



Depending on the size of the venue we can put out fewer lights, and the great thing about DMX and its “addressable, daisy chain” approach is that you do not need to change anything when you do that.



- Backline Amplifier
- Stage Monitor
- Microphone + Stand
- Instrument
- Instrument Stand
- Laptop
- Micro Bar – 4 Pars
- Rear Par – Type 1
- Rear Par – Type 2
- Floor Par
- GOBO
- VARI-Light
- Projection Screen
- Projection

## DMX Lighting Fixtures

The following table shows the type of lighting fixtures we have, I grouped them together by type and also found web links to manuals which you will need for the programming details when you come to program cues in DMXIS.

Type	Manufacturer	Product	Weblinks	Quantity	Image	DMXIS File	Proposed Use
1	Stairville	LED Par 56	<a href="#">Thomann Web Link</a> (manual can be found on web page)	4		LED PAR SPOT 5CH	Floor Pars
3	Stairville		<a href="#">Tomann Web Link</a> (manual can be found on web page)	2		PAR64 10mm RGB 7 WAY	Rear PARs, one on each side at extreme right and left
4	Showtec	LED Par 56 Short Eco	<a href="#">Showtec Web Store</a> <a href="#">LED Par 56 Short Eco Manual.pdf</a>	4		Showtec-Led par 56	Rear PARs two each side of
5	Chauvet	Intimidator SPOT LED 150		1		Chauvet-Intimidator Spot Led 150	Floor mixed in with Floor PARs,

## DMX Addressing

The next important step is to consider your lights and the addresses that they will have. DMX supports 512 addresses on one DMX "universe", and you need to ensure that each light can be separately addressed, with the number of addresses allocated to each unit that it needs to support all of its features.

For example, I started with my Microbars and GOBO, so they have the lowest addresses. Microbar 1 needs 15 addresses, so starts at Channel 1, Microbar 2 is set to start at channel 17 so it maps nicely in the DMXIS page structure (two rows of 16 addresses per page), the GOBO is at channel 33 and so on. You can also see that I have pairs of par cans (e.g. 2 and 5, 4 and 6) mapped to the same addresses. In effect this means that these lights will respond to the cue in the same way.

Stage Rear								
Name	Rear PAR 1	Rear PAR 2	Rear PAR 3	GOBO	Rear PAR 5	Rear PAR 6	Rear PAR 7	
Type	3	4	4	HELIOS	4	4	4	
DMX CH	97 (01100001)	37 (00100101)	43 (00101011)	33	37 (00100101)	43 (00101011)	113 (01110001)	
								
Stage Front								
Name	BAR 1	Floor PAR 1	Varilight 1	Floor PAR 2	Floor PAR 3	Varilight 2	Floor PAR 4	BAR 2
Type	Micro BAR	4	5	4	4	5	4	Micro BAR
DMX CH	1	49 (00110001)	65	54 (00110110)	49 (00110001)	81	54 (00110110)	17
								

You will note that for the lights that have DIP switches to set the addresses, I have included the binary settings in the table. I also have the binary DIP settings on the labels I have on the lights to identify them. This is a little "lesson learnt" from the time when I accidentally knocked a DIP switch during setup and didn't know what it needed to be! Likewise for the lights where it is programmed internally, it is still worth noting, just in case they reset themselves.

Once you have your addressing sorted, you can then setup DMXIS accordingly noting that you can load in existing fixture definition files, or create your own if you need to (and send off to add to the database of fixtures) so that the slider at each address has a meaningful name.

DMXIS shows you banks of 32 addresses on each page as two rows of 16, so first of all there are my microbars on the first page as shown below, and you can see that everything is labelled for identification:

- Microbar 1 across channels 1 to 15, with each channel function identified
- Microbar 2 across channels 17 to 31 so that both bars line up
- You can also see that I have assigned the spare channels 16 and 32 to other devices that only need a single channel.





Next up are my GOBO, DMX compatible hazing machine (which only needs a single channel) and the front and rear par groups, noting that they are grouped as per the addressing shown above



Next are my Varilights, which need quite a few channels each. Again, their addresses are set so they "line up" in the DMXIS GUI to make them easy to program



Finally, my end fill pars 1 and 7



## In Use

As I mentioned previously, it is best to not go "over the top" all the time with lights, so I tend to keep Pars 1 and 7 (which have a little more control than the others), the GOBO and the Varilights for emphasis only.

All other pars will be on all the time, but will be set so they are not at full intensity most of the time, so you have somewhere to go with them as well when you want a little extra!