



## **DMX Sequencer**

The DMX Sequencer is an ideal dynamic DMX generator for exhibitions, displays and retail applications. The Sequencer will store up to 60 DMX scenes each of up to 124 channels. The running order, duration and cross-fade time between scenes may be specified and the module provides 4 inputs to allow dynamic changes to the running order based on external events eg PIRs and time-clock. Scenes may be loaded into the Sequencer either by grabbing an incoming external DMX data stream or from a PC using the software available from our web site.

### **Operation**

The Sequencer stores 128 bytes of data for each of up to 60 scenes.

Bytes 1-124 are the DMX channel information for this particular scene.

Bytes 125 to 128 are the run-time configuration bytes:

Byte 125 is the duration for the current scene- ie how long it will be displayed (in units of 2 seconds) until the next scene is selected.

Byte 126 is the cross-fade time to the next scene (units of 65msecs). Value 0 represents an instant change, 255 represents a cross-fade time of approximately 17 seconds.

Byte 127 is the next scene number- 1 through 60

Byte 128 is reserved

Eg if the following data is in bytes 125-127 in scene 1: <10><50><4> then scene 1 will be displayed for  $10 \times 2 = 20$  seconds and thereafter will cross-fade to scene #4 in a time of  $50 \times 65 = 3$ secs.

### **Run Mode (Mode switch set to Run)**

The Sequencer always starts-up in scene 1 and will execute the scenes in the order and manner stored in the run-time configuration bytes.

Sequence switches 1-4 and the Step switch may be used to modify the play-back sequence on-the-fly:

### **STEP Switch**

Press the Step button during a scene to over-ride the scene duration with a value of 4 seconds. Keep the button pressed to over-ride any cross-fade time and force an instant change to the next scene. (Note that the Step button is not active when the module is in the middle of a cross-fade). The STEP button is useful for quickly running through the scenes to check for correct running order.

### **Sequence Switches**

The four sequence switches may be used to modify the running order of play-back depending on external inputs- eg PIRs or time-clocks.

[ Each of switches 1-4 is pulled to +5V via a 10K resistor. Short to ground to action. Switch action may be momentary or toggle]

Closing one of switches 1-4 will cause the play-back to jump back to scene 1 – 4 from wherever the current play-back position. So, for example it is possible to create a dynamic sequence that changes when a PIR operates on switch 3

Normal running sequence:

1,10,11,12,13,14,15,16,1,10,11,.....

If switch 3 is pressed:

1,10,11,12,.....3,21,22,23,24,25,26,3,21,22,...

And if then switch 3 is released and switch 1 pressed:

21,22,23,24.....1,10,11,12,13....

The sequence returns to the original play-back sequence.

The switches 1-4 are read continuously- if the result is non-zero then that selected switch is actioned and the result of the switch read stored. Subsequent switch reads are compared to this stored value if the result is non-zero. If the switch result differs from the last-stored value then the switches will be evaluated again in the sequence SW1 to SW4. So- if you wish to have a compound switching function, you could set the first action on switch 4 which will move the play-back sequence to a particular loop, then with switch 4 still closed, switches 1-3 would still cause further changes to the play-back sequence.

During Run mode, the current and next scene numbers are transmitted via the RS232 link and may be easily seen with a standard Terminal programme.

### **Data Load (Mode switch set to Load)**

DMX data may be inputted from an attached PC or gathered from an attached external DMX source. The run-time configuration bytes (bytes 125 through 128) are always loaded and edited via an attached PC. The DMXSequencer programme from our web-site is provided to both load DMX data and to enter and edit the run-time configuration bytes.

#### RS232 Data Source

Download and run the provided programme.

Select the appropriate Comm port and baud rate (the baud rate is factory set to 9.6kB- it may be changed to 19.2kB by moving the baud jumper on the pcb).

Ensure the RS232 Data Source button is pressed.

In 'RS232 data source' mode, the outgoing DMX stream is generated internally from the information stored in the Sequencer eeprom.

To load and view the data already in the Sequencer eeprom, select: file/readeprom.

To load an existing, PC stored data set select :- file/open/file\_name.txt

The loaded data file will be shown on the screen, downloaded to the eeprom and the DMX-OUT stream generated using the data from the currently highlighted scene.

Click on a different scene to highlight that scene. The DMX-OUT stream will change to the data contained in the new scene.

Any data value or run-time configuration byte may be edited by clicking on that cell and changing its value. If the cell is on a different scene to that currently highlighted, the new scene will be highlighted and the DMX data stream switched to the new scene. Newly edited values will be automatically uploaded to the eeprom and will appear in the DMX stream.

Make sure the last scene loops back to the first scene for continuous displays. If continuous loops are not required then the last scene should point to itself and have a duration of 255 and a cross-fade time of 0.

To save the displayed data set select:- file/save as/file\_name.txt

### External DMX Source

The Sequencer incorporates the ability to grab and save real-time DMX data from an external source.

Download and run the DMXSequencer programme.

Select the appropriate Comm port and baud rate (the baud rate is factory set to 9.6kB- it may be changed to 19.2kB by moving the baud jumper within the case).

Connect an external source of DMX to the DMX-In socket.

If just powered up, the Sequencer will be generating the DMX output locally from the internal eeprom (the default setting).

Click to highlight the scene to where you wish to load and save the new external DMX data.

Click the DMX source to External DMX Source- the DMX-OUT stream will now be the same as the incoming External DMX stream. DMX switching is always performed during 'break' periods

Click the 'Save External DMX' button. The Sequencer will grab the first 124 bytes of the incoming DMX stream, save them to internal eeprom under the currently selected scene number and upload them to the PC for viewing or editing.

Return the DMX source to 'RS232 Source'. The DMX-OUT will now be the just stored values obtained from the External DMX stream (though only the first 124 bytes). Use the edit keys to add the run-time configuration data- eg scene duration/next scene and cross-fade values.

Load additional scenes as required in a similar way and then save the data to a PC file.

## Firmware Commands

For those customers who wish to create their own interface or drive the Sequencer from a custom controller, the commands are as follows: (all data is sent as bytes { not ASCII characters} in 8-N-1 format, no handshaking - ensure the baud rate you use matches the setting on the pcb!).

Sorry, but please note that we are unable to support development/trouble-shooting associated with customer's own interfaces.

Note that these commands are only valid when the Sequencer is in Load Mode.

Commands valid when in either RS232 or External DMX Source modes:

Invalid codes return \$58

\$07            Change data source to RS232- responds with 'S'  
\$08            Change data source to Ext DMX- responds with 'D'  
\$03<X>        Change current scene to scene X- responds with \$55

Commands only valid in RS232 Data Source mode:

\$01 <high\_byte\_address><low\_byte\_address><data1><data2><data3>.....

Write the following data to the eeprom starting at address high\_byte, low\_byte. Data bytes may be continuously written to consecutive locations as long as the time gap between successive bytes is less than 50 msecs. After this time, the comms routine re-sets and further writes must be preceded with the write command and address bytes.

Returns with the byte value of the arithmetic sum of the data bytes followed by \$55.

Note that the eeprom start address for scene 1 is 0,128 - scene 2 at 1,0 etc

\$04  
Read the entire data set from the currently selected scene. Returns with 128 data bytes followed by \$55.

Commands only valid in External DMX Data Source mode:

\$09            Read the current incoming DMX stream, save bytes 1-124 to the current scene and upload them via the RS232 link.  
Responds with 124 data bytes followed by \$55. If no return then no incoming DMX to be read.

## Mechanical

Power Supply: 9-12V DC at 0.5Amps (24V DC version also available to special order)

Size (cased): 135x55x 140mm deep

