Artnet Lighting Driver.

This driver allows you to control a room of up to Twenty lighting fixtures of various types using Art-Net. The driver has been tested using a Chauvet DMX-AN2 Art-Net Node but should work with any Art-Net node that conforms to the Art-Net standard.

Warning!!!

This driver will cause very high CPU usage if not setup correctly.
Art-Net requires that a constant stream of Art-Net packets is sent between the processor and the Art-Net node. This takes CPU time to calculate the value for each channel, build the packets and send them over the network. If we keep the packets as short as possible then there will not be any issues with CPU usage.
To do this, keep your fittings as close together as possible starting from address 1. If you only had one single channel fitting but put it at address 510, this would cause CPU usage issues. Using 100 channels on an XP-8s processor will use about 14% CPU according to XP Diagnostics. In the worst case if you had 20 RGBW fittings this would only use (20 x 4) 80 channels if they all used adjacent addresses.
I have left the capability of using higher channel numbers as newer processors may have better CPU performance in future.
Examine the example file and documentation with this driver for how to setup a typical DMX system and set addresses in an efficient way.

Configuration:

General Settings:
IP Address: This is the IP address of the Art-Net node you are going to be using. This must be on the same network as you RTI processor.
Art-Net Universe: This is the Art-Net universe that your node is set to. The default is 1 and this will work for most situations. You may need to use the web interface of the Art-Net node to set the correct IP address and universe. The Chauvet DMX-AN2 has two outputs, if you set both outputs to universe 1 you then have two duplicated outputs that you can use.

Room Setup:
Room Name: Give the room a descriptive name.
Number of Fittings Used: This is the number of discrete fittings in your design that you want to control.
Room Fade Time: This is the default fade time in milliseconds for all the fittings in the room. This can be changed later using the 'Room Fade Time' function.

Fitting Setup:
Fitting Name: Give each fitting a descriptive name to help identify it as you progress your design. The fitting names are used to create a list that can be used with the inbuilt layer switch for easy selection of the fitting the user wants to change. ID11 seems to like lists!
Fitting Type: Here you specify the type of fitting from 5 types listed below.
Single Channel Dimmable, 1 DMX Channel: This fitting would be something like a downlight that is controlled from either a mains voltage dimmer or a low voltage DMX LED driver.
Red, Green, Blue (RGB) 3 DMX Channels: This fitting can be anything that has three channels identified as red, green & blue. RGB tape is a good example or RBG stage lighting like LED PAR cans.
Red, Green, Blue, White (RGBW) 4 DMX Channels: This type of fitting uses 4 channels specified as red, green, blue & white and is suited to RGBW tape.
Switched. 1 DMX Channel: This type is for something that cannot be dimmed. Some low voltage lights with inductive loads or switch mode power supplies may not be dimmable. A DMX relay could be used to switch the supply. The level of this channel can only be 0 or 255. The level will go to zero when the Room Master is set to zero.
Warm White/Cool White: 2 DMX Channels: This is for LED tape or downlights that have two colour channels, Warm White and Cool White. The temperature of the tape can be tuned using the 'Colour

Temperature' function.
Fitting DMX Address: This is the base address that the DMX controlled fitting is set to. The base address for an RGB fitting is the address that the Red channel is on. Green and Blue are than on consecutive channels. So if the base address is 5, Red is on 5, Green on 6 and Blue on 7. Make sure you do not address any other fittings to use addresses 5, 6 or 7 as this will cause a conflict and strange things will happen.

Functions:

Room Functions:
Master Dimmer: This function sets the master level globally for the whole room. The levels of all the other lights in the driver are calculated using this level. If you are getting no output from any fittings, make sure you have the master level turned up.
Master Dimmer Up: Changes the value of the Room Master in 10% steps.
Master Dimmer Down: Changes the value of the Room Master in 10% steps.
Room Fade Time: Sets the room fade time in Milliseconds. When you change any values the current fade time will be used. If the fade time is very long (> 10 seconds) then user experience may not be what they expect as the channels take 10s to catch up. Longer fade times are good for storing into presets but not so good for normal use.
Room Presets: room presets act like scenes and can be recalled at any time. Presets store the room master, room fade time and all the settings of each fitting as a snapshot. Presets are stored in persistent memory so are maintained after a power cycle or reboot. There are 8 presets available.
Fitting Functions:
Fitting Dimmer: Every fitting has a fitting dimmer. The output of each channel associated to the fitting is calculated using the fitting dimmer and the room dimmer.
Dimmer Up: Changes the fitting dimmer by 10%.
Dimmer Down: Changes the fitting dimmer by 10%.
Toggle Switch: (Switched fittings only) This turns a switched fitting to the opposite of its current state.
RGB: (RGB & RGBW fittings only) Sets the values of Red, Green and Blue for RGB and RGBW fittings. The white value for RGBW fittings is calculated by the driver.
Colours: (RGB & RGBW fittings only) This allows you to set one of 12 preset colours.
Colour Temperature: (WW/CW fittings only) This allows you to tune the colour temperature from warm to cool. Depending how you have wired the warm white and cool white to your LED driver will determine which direction is warm or cool.
Temperature Up: Changes the colour temp by 10%
Temperature Down: Changes the colour temp by 10%
Layer Switch: A built in layer switch can be used to display layers or button states depending on which fitting is selected. Only one fitting can be selected at one time. The layer switch also works with the 'Fitting List' variable and the selected fitting will be highlighted in the list.

Variables:

Master Dimmer: (Integer) Value of the room master dimmer as a percentage.
Fitting Dimmer: (Integer) Value if the fitting dimmer as a percentage.
Red: (Integer) Value of the fittings red channel as a percentage.
Green: (Integer) Value of the fittings green channel as a percentage.
Blue: (Integer) Value of the fittings blue channel as a percentage.
On/Off: (Boolean) True is a switched fitting is on.
Temperature: (Integer) Value of the Colour Temperature of Warm / Cool fittings.
Layer Switch: (Boolean) Each fitting had a 'Selected' variable that can be used to switch layer.
Fitting List: (List) A list built using the fitting names entered in the configuration settings. Use names that the user will understand rather than names that may be obvious to the programmer. "Ceiling Downlights" rather than "Dimmable Fitting 3 on driver box 4"

Revision History:

Version 1.1 26/1/2024:

Found updated firmware in Chauvet DMX AN2 caused intermittent DMX output from the driver. Changes were made to pad out the full DMX package to 512 bytes rather than just the number of bytes required for the fittings used. Also added a sequence byte so that Art-Net packets can be correctly played out on slow networks, or if there are network issues.

Version 1.2 28/1/2024
Increased number of presets from 4 to 8.