

Anytronics DMX to PWM LED Driver : Installation Guide

The Anytronics DMX to PWM LED driver provides four controllable PWM outputs for controlling constant voltage LED loads connected with common anodes to a single supply in the range 12-24V dc. Where necessary, multiple supply configurations are also possible provided that the unit is also powered from the highest supply voltage in the range 12-24V.

The start address for controlling DMX data can be set in the range 1-512 and data at one, two or four DMX addresses used to control the four outputs, each of which is rated and protected at 3A. RJ45 computer style connectors are provided for DMX in and DMX through, with a +5V supply output on the DMX In connector for powering a variety of DMX sources such as Anyscene, Anycolour or AMD architectural panels.

Alternatively screw terminals can be fitted to connect DMX wiring.

Getting Started

1. Fix unit in place using the fixing holes in the extended flanges.
2. The main dc supply should be connected to 0V and +Vin terminals.
3. The load LEDs should be connected with their anodes all connected to the +Vout terminal, and cathodes to the individual channel outputs as required, up to a load current of 3A per channel.
4. Connect a DMX source to the RJ45 DMX input, and set the appropriate DMX address on the three bcd address switches.

Anytronics DMX to PWM LED Driver : USER GUIDE

1.0 Features

- Provides PWM control for four channels of constant voltage LED lighting
- Individual overcurrent and short circuit protection on each output
- Full DMX addressing range
- One, two or four decoded DMX addresses control the outputs
- Standard RJ45 DMX In and Through connectors
- +5V power on DMX In connector to power Anyscenes, AMD4, Anycolour etc
- Phased PWM outputs reduce peak loading on power supplies when dimming
- 16 bit dimming provides selectable linear and square law dimming laws
- Selectable fast (~5Hz) and slow (~1Hz) responses
- Synchronised outputs for higher current rating circuits
- DMX data hold on DMX disconnection

1.1 Overview

The unit has a main power in/out connector and two RJ45 DMX connectors. There are three rotary bcd coded switches for setting the DMX address, and seven indicator LEDs, green for 'power', yellow for 'DMX data detect', red for 'overcurrent fault detected' and one red mimic LED for each channel output.

The green power LED shows when the unit is powered up, and the yellow data LED indicates that the unit is receiving valid data at the set DMX address from a DMX source. The mimic LEDs indicate the control level on each output, and the red fault LED will light if a short circuit or over current is detected on any of the outputs.

1.2 Power Supply / LED connections

The diagrams on the last page show recommended connection strategies for supplies in the range 12-24V dc when driving constant voltage LED loads.

1.3 Overcurrent / Short circuit Protection

In the event that an excessive current is detected on any of the four output channels, that output will be shut down and the red fault LED on the unit will be illuminated. The unit will attempt to repower the faulty output circuit after a ten second delay, but if the overcurrent condition still exists, it will immediately shut down again. After five attempts this shut down period will extend to 40 seconds. After ten attempts, the output will be disabled and the red fault LED will remain on until the unit is repowered. The other channels will continue to work as normal.

1.4 DMX Address setting

A DMX address of 000 will disable the unit with all outputs off. Normal DMX start addresses in the range 1-512 can be set to enable DMX operation from that address. Addresses in the range 512 to 599 are interpreted as address 512. Addresses above 600 have special functions as explained below.

2.0 Operational Options

Rather than setting options with internal switches or jumpers, all options can be selected and memorised at power up by setting unique DMX addresses starting from 600 before applying power. With the Hundreds DMX switch set to 6, the Tens and Units switches will select different operational options which are shown in the table below. These settings are read at power up and then memorised in the unit, so that the required operating DMX address (range 1-512) can

immediately be set without repowering the unit and the unit will power up with the same memorised options set in future.

2.1 DMX mappings

At switch on, with DMX address 600+, the Units DMX address switch will select one of the three DMX mappings and the number of data addresses which are to be decoded, 1, 2 or 4. After then going on to set the DMX start address (SA) the DMX address which then controls each output is indicated below :-

DMX address at switch on	DMX addresses used	Output 1	Output 2	Output 3	Output 4
6x1	1	SA	SA	SA	SA
6x2	2	SA	SA	SA+1	SA+1
6x4	4	SA	SA+1	SA+2	SA+3

This mapping will be memorised, and then recalled by the unit every time the unit is powered up, so the required DMX start address can be set and left after once selecting the required mapping at start up.

2.2 Further options

At switch on, with DMX address 600+, several further operational options can be selected using the Tens address switch. This takes place at the same time as that explained for the Units switch mapping selection above, so that these addition functions and the required DMX mapping must be set together in one start up operation by setting the appropriate DMX address above 600.

There are thus unique DMX addresses starting from 600 for each different combination of these functions, the Units and Tens switches selecting the different operational options (see table below).

Linear or square law dimming is selected by setting either even or odd numbers on the Tens DMX switch.

The Tens switch also sets either Slow (~1 Hz) or fast (~5Hz) response speeds, and phased or synchronised PWM outputs as shown below.

DMX address	Outputs	Dimming Law	Speed	Phasing
6x1	1	-	-	-
6x2	2	-	-	-
6x4	4	-	-	-
60x	-	Linear	Slow	Phased
61x	-	Square	Slow	Phased
62x	-	Linear	Fast	Phased
63x	-	Square	Fast	Phased
64x	-	Linear	Slow	Synchronised
65x	-	Square	Slow	Synchronised
66x	-	Linear	Fast	Synchronised
67x	-	Square	Fast	Synchronised

The factory set default corresponds to address setting 604 above.

2.3 Phased or Synchronised PWM

Normally the four PWM outputs are driven with a relative phase shift of 90° per output in an attempt to minimise the peak currents drawn from a common power supply. This phased mode of operation is strongly recommended for all normal use.

If it were necessary to drive a fitting with load current in excess of the 3A per channel rating, it is possible to connect two outputs in parallel, but the outputs then need to be mapped to the same controlling DMX address and have their PWM outputs synchronised.

With a two address DMX mapping selected and synchronised operation selected, outputs 1 & 2 would then work in synchronism as would 3 & 4, and these outputs pairs could be tied together (but NOT 1 or 2 to either 3 or 4) to raise the current rating on that circuit.

With a single address DMX mapping selected and synchronised operation selected, the PWM on outputs 1 & 2 & 3 & 4 should then work in synchronism and could be tied to raise the overall current rating, but generally it would be more preferable to split the load across the channels.

With a four address DMX mapping, synchronous operation is disabled. Unpredictable operation will result from tying outputs together in any phased mode.

2.4 Test Functions

In addition to the start up settings at address 600+ detailed in 2.1 to 2.3 above, there are a number of test DMX addresses which can be accessed at any time to drive selected outputs in test mode. Note that addresses in the seven hundreds do nothing.

Setting address 950 will drive all outputs full on, whilst address 850 will drive them all with the level corresponding to DMX data of 128.

Addresses 901, 902, 903, 904 will put data corresponding to full level into the DMX input registers for input channels 1, 2, 3, 4 respectively, whilst 801, 802, 803, 804 will force in data corresponding to a DMX level of 128. Note that if a two address mapping has been selected, setting address 901 will force both channel 1 and 2 full on, address 902 will force both channels 3 and 4 full on whilst addresses 903, 904 will do nothing.

3.0 DMX loading / connection / termination / power supply considerations

3.1 DMX loading

A maximum of 32 DMX receivers is allowed along a single DMX line without buffering. In practice the maximum number used before buffering is required is usually rather less than this out of consideration for the effects of impedance discontinuities at each connection. Each Anytronics DMX to PWM unit represents a normal unit DMX load.

3.2 DMX wiring / installation

The DMX specification is based on the use of a single DMX source at one end of a twisted pair and ground reference, with receiving equipment connected along the twisted pair, the last receiving apparatus along the line having a termination resistor. The DMX line should be linear from start to finish with no branches or junctions.

Although the DMX standard was originally based on use of XLR connectors, the RJ45 connection system has been shown to work equally well with Category 5 cabling and it also provides the means to carry +5V power to ancillary equipment. This regulated +5V power is available on the 'DMX In' RJ45 connector, and is designed to supply a maximum of 100mA to Anyscene or Anycolour memory units, AMD controllers or similar Anytronics products.

The PCB can also be ordered with screw terminal connections for permanent installations.

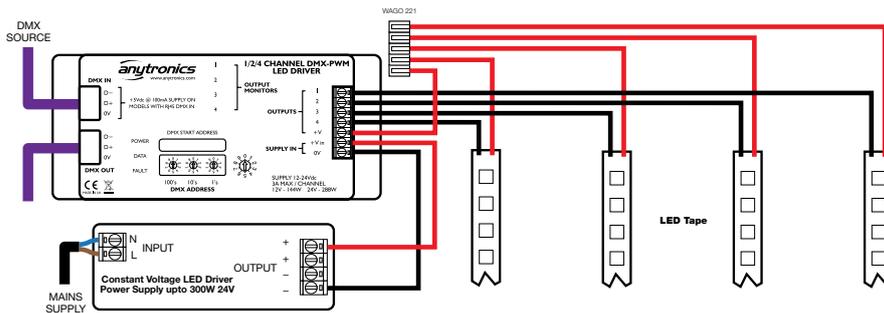
4.0 Specification

- Supply In** : +12 to +24V dc with power supply matched to load currents
- Outputs** : Four PWM controlled outputs for common anode LED connection
Outputs rated and protected to 3A rating
RJ45 'Data In' connector provides +5V, 100mA dc supply
- Controls** : DMX input on RJ45 connector for Category 5 data and supply cable use a Cat 5 shielded cable in noisy environments
- Temperature** : Recommended ambient in range 0 - 40°C
- Dimensions** : 132 (+ two 13mm flanges = 158) x 70 x 25 mm
- Weight** : Gross inc packaging 0.4 kg

5.0 Connection Diagrams

Single supply example

CAUTION: DO NOT HOT WIRE. Ensure all connections to driver are in place before powering up



Multiple supply example

In this example two 12V drivers have been installed with two 24V drivers in the group. The PWM unit should be powered from the highest supply voltage.

