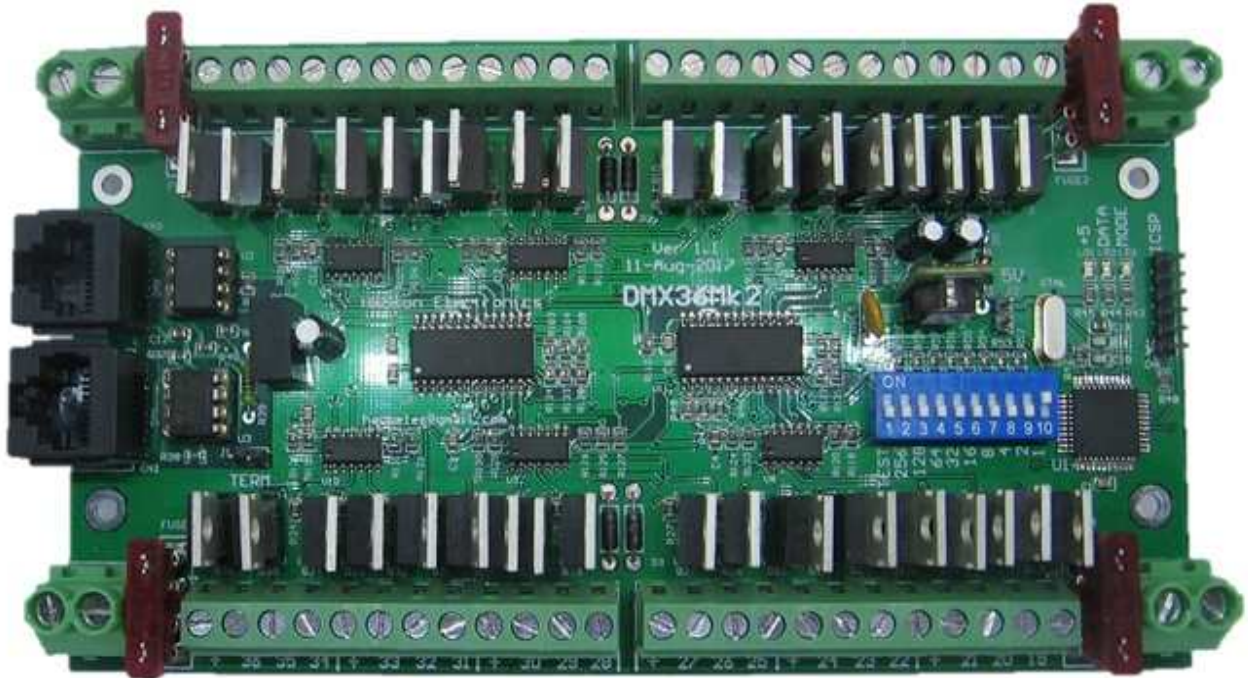


DMX36Mk2

USER MANUAL

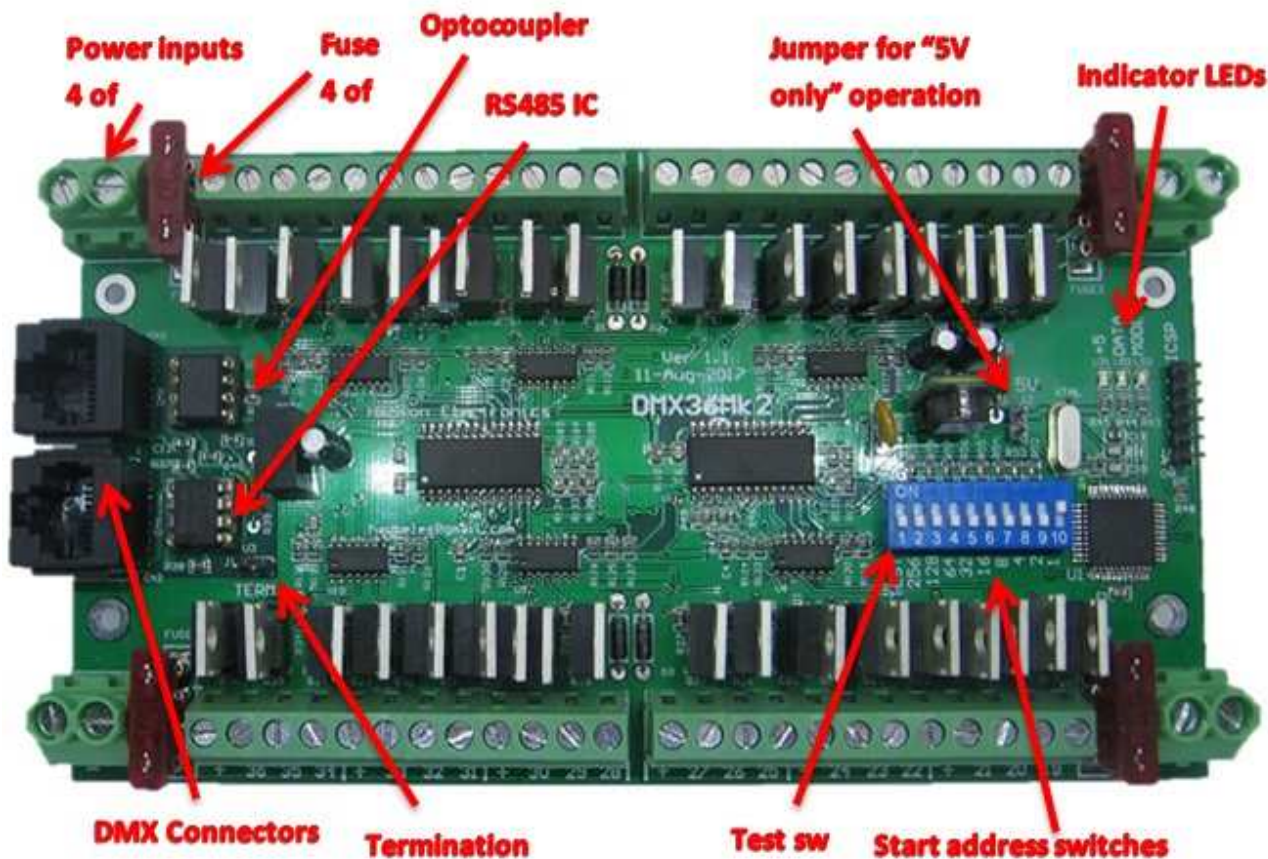


Features

- The DMX36Mk2 controller receives DMX data input and drives 36 DC channels.
 - Quad DC input (5V, 7 - 35V) (large screw terminals)(30A overall max per 9 channels)
 - 4x ATO blade fuses (supplied with 4 x 10A, max 4 x 30A)
 - 36 DC outputs (5A max per channel). Common anode (common positive) configuration.
 - Output terminals arranged as +, Ch, Ch, Ch (particularly suits RGB)
 - True electrically isolated DMX input with ESTA pinout (2x RJ45 sockets for looping)
 - Remaining zones will continue working if any fuse blows
 - Dipswitch selectable start address
- PCB size is 165mm x 93mm

Revision 1.1
Suits PCB revision 1.1->
26 September 2018

<http://www.hansonelectronics.com.au>



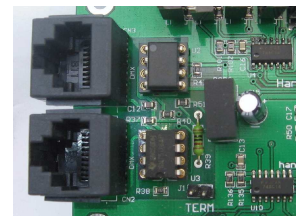
Connections

Dmx Data

There are 2 RJ45 dmx sockets on the board. These are designed for loop in and loop out.

If the DMX36Mk2 is the last dmx device on the dmx cable then the signal should be terminated with the termination jumper. Basically if only 1 cable is plugged in to the dmx sockets then the termination jumper should be installed. If both sockets are used then the termination jumper should be left off.

The DMX36Mk2 uses the ESTA pinout. If connecting to a LOR device (dongle or controller) an adaptor cable or adaptor will need to be connected in between.



DC Power Input

The 4 large 2 way green connectors are the DC inputs from your power supply. Each of the 4 zones of 9 channels can use a separate power supply or you can feed them all from one common power supply. Separate wiring (back to the power supply) for each of the zones is recommended to minimise voltage drop. The + terminals are positive and the - terminals are negative. The board will control any DC voltage up to 35V. At least 1 zone will need to be 5V or above. If all 4 zones are running off 5V it is necessary to install the "5V only" jumper. Installing this jumper if more than 5.5V is applied to any of the zones may damage the pcb. The negative (-V) terminals are commoned between the 4 zones so this must be taken into account when wiring up to the power supply/supplies. Each of the 4 zones has a standard ATO (automotive) fuse adjacent to the power terminals. The DMX36Mk2 comes supplied with 10A fuses fitted. Fuses up to 30A can be used. It is recommended changing the fuse to the closest size for the total current that the zone will be supplying.

Dimmer Outputs

There are 36 channel outputs; 18 per side with each side divided into 2 zones. Each side can be run at the same, or a different supply voltage. Any DC voltage in the range of up to 35V can be used for each of the banks.

The maximum load per channel is 5 Amps, but remember that the overall limit per bank/zone of 9 outputs is 30 Amps. This means that you can't turn on all 9 outputs of a zone with the maximum load. In reality, this should not be a problem as most loads will be less than 2 Amps.

There are 36 dimmer outputs which are in banks of 9 with each zone of 9 fused separately. Each group of 3 outputs is grouped into 4 terminals. These are the 3 outputs and a common positive. RGB lights with a single common anode should have the common wire connected to the terminal + (the 4 banks have common -ve terminals) and the red, green and blue

wires to channels 1,2,3 (or 4,5,6 etc). The order and specific channels is actually dependant on what is configured in your sequencing software. For lights that have single colours (or single channels) per pair of wires then 1 wire gets connected to the + and 1 gets connected to the channel output. For led lights which require the polarity to be around the right way then the anode (positive) gets connected to + and the cathode (negative) goes to the channel. For lights that do not have three channels commoned then 3 wires will be joined and fitted to the + for the 3 channels.

See the Connection Examples section for the various methods of connecting lights.

USING THE DMX36Mk2

Status Leds

There are 3 small LEDs at the right of the PCB adjacent to the micro.

Red led-5V Power, Blue led-MODE, Green led-DATA

-Red led	5V power	
-Blue MODE led on solid.	Green DATA led flashing	Normal run mode. Dmx packets being received
-Blue MODE led on solid.	Green DATA led off.	Normal run mode. No dmx data
-Blue MODE led flashing 10Hz.	Green DATA led off.	Address setting error
-Blue MODE led flashing slowly.	Green DATA led off.	Test mode

Test mode takes precedence over normal running so errors/status message other than test mode won't be displayed if in test mode.

Start Channel

The start channel is set via 9 dipswitches. The channel is set in binary by turning on the relevant switches. DMX addresses can be anywhere between 1 and 512. The address of the DMX36Mk2 can be anywhere in the range of 1 to 477 (a start address of 477 uses the addresses from 477 up to the maximum 512). If the address is set outside of this range an error is indicated via the 2 status leds. See Status Leds. The start channel can be changed at any time.

The start address can be calculated by adding up the totals for the switches that are on. For example 64 + 16 + 1 would give a start address of 81. A table is provided later in the manual that lists the dmx start addresses.

Test Mode

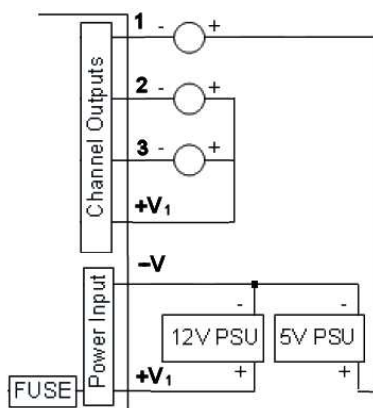
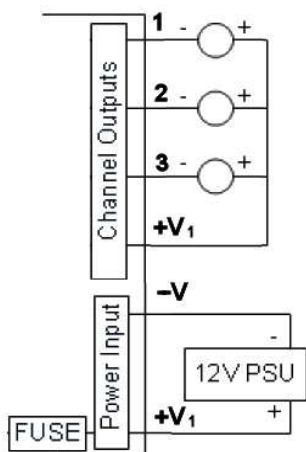
There is a switch which places the control into a test mode. In this mode a test program runs and all 36 outputs are cycled through. This mode allows for soak testing of lights without the need for a source of dmx data. The control will cycle through 12 modes of testing from 1 led on at a time, through all reds on, all greens etc. The test mode switch is the left most dipswitch and is labelled TEST.

Connection Examples

Typical connection arrangement showing 3 leds and a 12V power supply. The lights can be single colour, multicolour, RGB or whatever. For individual lights with 2 wires the positive wires would be joined and connected to the +V terminal.

Connection example showing channel 1 connected to a second power supply. This method is used where lights other than the main power supply voltage is needed. This method can be used for ACL strobes or similar devices. The primary power supply powering the DMX36Mk2 needs to be in the range of 5V to 35V DC. The secondary power supply can be any voltage up to a maximum of 60V DC. This method can also be used if an output is used to control a relay at a voltage other than the supply voltage.

As it possible to run the DMX36Mk2 off up to 4 different power supplies a light on 1 zone can be powered by the supply on another zone.



Connecting DMX boards

DMX is an implementation of an RS485 network. It is commonly connected via Cat5 or Cat6 RJ45 patch cables or 3 core cable with 3 pin or 5 pin Cannon connectors when used for stage equipment. The normal method of connection is from a data source daisy chained from controller to controller before the final board is terminated either via an onboard termination or via a connector with a 120 Ohm resistor in it.

In general most DMX boards will have 2 DMX connectors. These are connected directly in parallel and it doesn't matter which is used for the data in and which is used for the data out. There are 2 exceptions to this general rule. Some cheap Chinese DMX modules only have a single point to connect the DMX data too and it is necessary to tee off at that point to other boards. The other exception is some stage type DMX devices that have a Master and a Slave connector. This is because there is internal electronics that allow the device to generate effects that can be sent downstream to other devices.

All devices on a DMX cable are on the same DMX universe and that is configured on whatever is sending out the data, not on the devices. All DMX devices have a "start address". This is the 1st address that the device uses and it will use that address and the next "n" data bytes. The cabling order of DMX devices doesn't matter. The only requirement is that the final device is terminated to prevent data issues. Terminating any other device is likely to cause data reliability issues.



USB dongle connects to PC, Pi or BBB

Connection via Cat5 patch cables.
Max 1200m(theoretical)

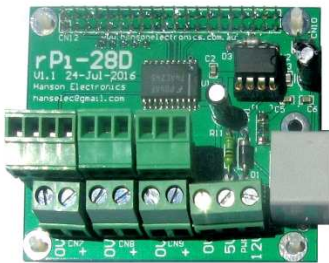
No termination on these boards



Start address set via software

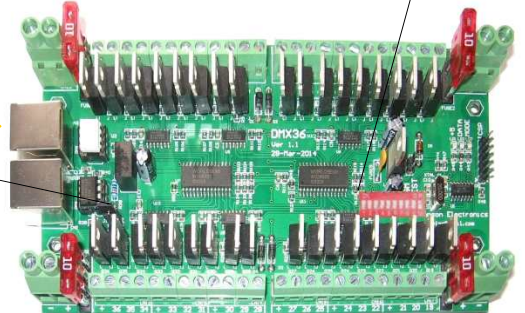


Start address set via dipperswitches



Alternately the DMX can be sent from rPi-28D or E1.31 pixel controller that has DMX output/s

This board terminated

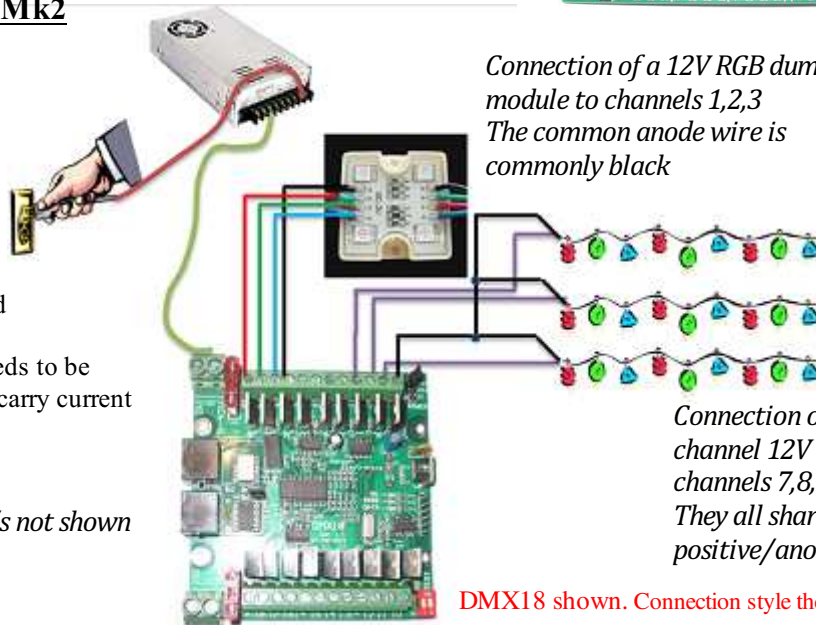


Connecting lights to DMX36Mk2

12V DC power supply as this example uses 12V lights. 5V-35V can be used

-V (GND) and +V (power)
Wire size needs to be sufficient to carry current

DMX network connection/s not shown



Connection of a 12V RGB dumb module to channels 1,2,3
The common anode wire is commonly black

Connection of 3 single channel 12V lights to channels 7,8,9
They all share the positive/anode connection

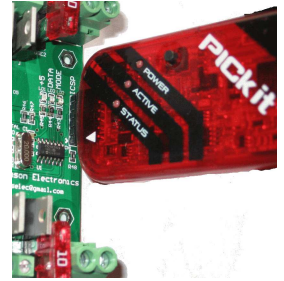
DMX18 shown. Connection style the same on DMX36Mk2

Firmware Updates

See website <http://www.hansonelectronics.com.au/product/dmx36mk2/> on the firmware updates tab for information on updating firmware.

ICSP Connector

An ICSP (in circuit serial programming) header connector is provided for initial programming of the microprocessor and for program (firmware) updates.



Faultfinding

Fault

Power Led (red led) not lit

Solution/solutions

- Fuse/s blown (note the control only needs power to 1 zone for power led to be on and for that zone to work). Check fuses
- Power supply faulty or not turned on.
- Power supply section of pcb damaged. No user repairable parts. Return for repair

1 or more Zones not working

- Fuse for that zone is blown, power supply powering that Zone is faulty or there is a wiring fault

Channel failing to turn on

- Mosfet transistor has been damaged. Can be replaced but warranty may be voided. The mosfet must be replaced with the exact same type to ensure correct operation
- PCB track has been burnt out. Should be evident if bottom of pcb is inspected

Channel turned on all the time

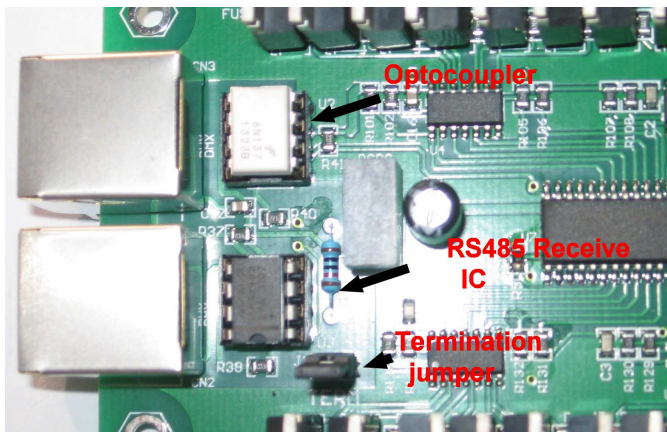
- Mosfet transistor has been damaged. Can be replaced but warranty may be voided. The mosfet must be replaced with the exact same type to get correct operation

No DMX signal

- Termination jumper is installed when both DMX sockets are in use
- No termination jumper is installed on final DMX board/device
- No data is being sent. Check software, dongle, cable etc
- DMX (RS485) receive IC is damaged. IC is socketed for easy replacement. It is U3 (a MAX1483 or compatible)
- Insufficient channels being sent by sequencing/test software

Fuse blowing

- Fuse selection too low for lights that are connected
- 1 or more lights connected have short circuited wires



Warranty

This dmx light controller is covered by a warranty for a period of 12 months from the time of purchase.

The warranty covers only faulty material and workmanship if properly setup and operated in accordance with the specifications and setup sections of this document.

The repair and or replacement of this controller will only be at the workshop of Alan Hanson. The cost of freight to/from will be borne by the user.

The warranty does not cover damage to the controller due to misuse i.e.. shorting of outputs, connecting AC supply, connecting a supply higher than the rated voltage.

The controller is supplied as is. Alan Hanson and Hanson Electronics reserves the right to make changes to the firmware, specifications and the design without notification.

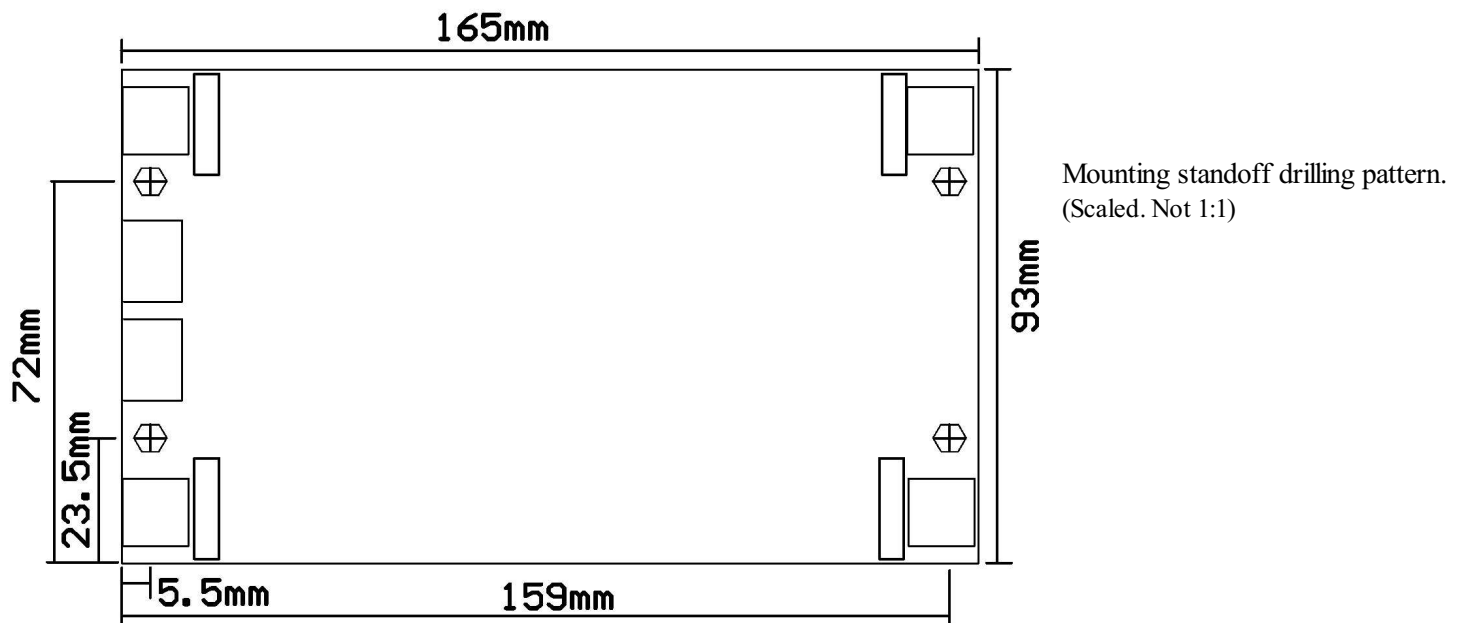
Misuse, using this for other than its designed use, water damage, mechanical damage or attempting to modify or repair your controller will void this warranty.

Alan Hanson and Hanson Electronics shall not be liable for any incidental damage, inconvenience, rental, loss of profits or any other loss due to the unsuitability, failure or use of this controller.

If the user does not agree to these terms the cost of the product (minus freight) will be refunded on the return of the product. The controller must be in unused condition and must be returned within 14 days.

Please return this controller with a copy of your invoice if it develops a fault. Any controller returned without a copy of the invoice will be charged at a standard repair rate. The warranty does not cover freight.

**Drawings in this manual show typical configurations. Individual +, - and other connections not necessarily shown.
All wiring should be done by competent and/or licenced persons only.**



Enquiries/Repairs :-

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