InPhase DMX 1432

1/4/8/32-channel LED Driver with DMX Interface

Care and Feeding Guide

Revision Date	Version	Change	By
19 Apr 2011	1.0	Initial draft.	BB
06 Dec 2011	1.1	Added 8-channel mode.	BB
07 Dec 2011	1.2	Content changes, specification updates.	BB
30 Mar 2012	1.3	Contact info changes	BB

Introduction

The DMX-1432 is proudly designed and manufactured in the USA.

The DMX-1432 will drive up to 60A in LED loads – 720W at 12Vdc, or up to 2,880W at 48Vdc. This translates to 10 rolls of 12Vdc RGB LED tape, or up to 120 rolls of single-color (white) LED tape – up to 480 square feet[1] of coverage.

The DMX-1432 allows a great deal of flexibility in configuring its outputs, featuring four output modes:

In 1-channel mode, all 32 outputs respond to a single DMX address.

In 4-channel mode, the unit responds to 4 consecutive DMX addresses.

In 8-channel mode, the unit responds to 8 consecutive DMX addresses.

In 32-channel mode, the unit responds to 32 consecutive DMX addresses.

These different modes allow outputs to be ganged together to increase current-handling capacity while decreasing the number of DMX addresses used. For example, the DMX-1432 can safely drive ten rolls of standard 12Vdc RGB LED tape. In 32-channel mode, each roll would be controlled independently, and 30 consecutive DMX addresses would be required. In 4-channel mode, all the rolls would be controlled together, and only 3 DMX consecutive addresses would be required.

The DMX-1432 features full galvanic isolation from the DMX input, and utilizes a 7kHz PWM frequency, preventing LED flickering on camera – SD and HD.

The DMX-1432 is designed to safely drive resistive (tungsten) and LED loads. It should not be used to drive inductive loads, such as dc motors or mechanical relays.

---

1   Assuming a 6" deep lightbox, with LED tape on 3" centers and a 48Vdc system power supply.
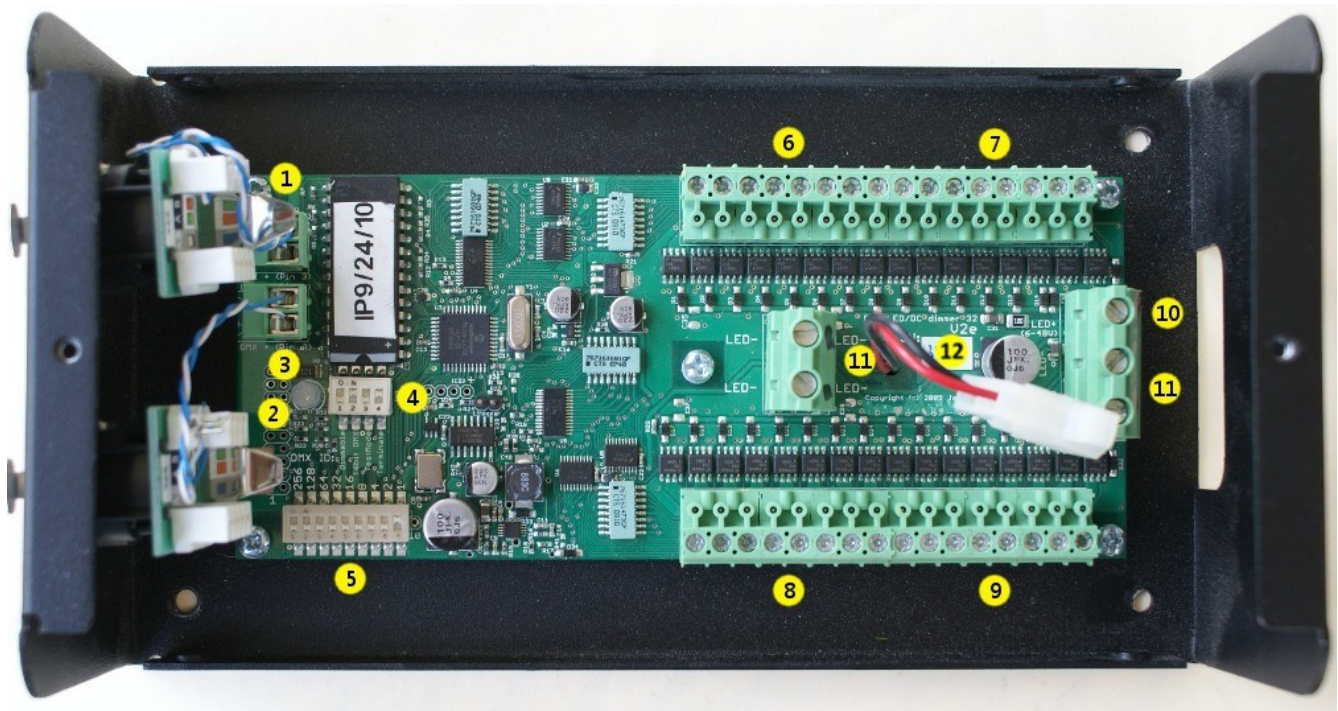
DMX-1432 Internal View

1. DMX Input

Chassis-mounted RJ-45 jack pinned per USITT standard; Pin 1 = Data +, Pin 2 = Data -. The optional secondary link (pins 3 and 6) is not supported. The Signal Common pins (7 and 8) are passed through to the DMX Output.

The DMX-1432 incorporates internal galvanic isolation on its DMX interface.

The optional 3-pin or 5-pin male XLR connector is pinned per the USITT standard: Pin 1 = Signal Common, Pin 2 = Data -, Pin 3 = Data +. On the 5-pin XLR, the optional secondary link is not supported.

2. DMX Output

Unbuffered, non-isolated DMX signal pass-through. Chassis-mounted RJ-45 jack pinned per USITT standard; Pin 1 = Data +, Pin 2 = Data -. The optional secondary link (pins 3 and 6) is not supported. The Signal Common pins (7 and 8) are fed through from the DMX Input.

The optional 3-pin or 5-pin male XLR connector is pinned per the USITT standard: Pin 1 = Signal Common, Pin 2 = Data -, Pin 3 = Data +. On the 5-pin XLR, the optional secondary link is not supported.

3. Status LED

Solid red, then orange during startup self-test. After self-test, blinks green slowly with no DMX traffic, blinks green rapidly with valid DMX traffic, blinks red rapidly with invalid DMX traffic (check DMX signal polarity).

4. Operating Mode DIP Switch

Dimmable:	Output mode select switch.
16bit DMX:	Output mode select switch.
TestMode:	Leave in 'OFF' position for normal operation.
Terminate:	'ON' = enable onboard 120-ohm terminator resistor.

The Dimmable and 16bit DMX switches control the output channel ganging mode as follows:

	1-channel mode	4-channel mode	8-channel mode	32-channel mode
Dimmable switch	ON	OFF	ON	OFF
16bit DMX switch	OFF	ON	ON	OFF

TestMode is used to diagnose LED load wiring issues. It will fade all outputs up slowly, then flash each output in sequence. The test pattern will repeat until TestMode is set to 'OFF'. With TestMode = 'ON', the status LED will flash green and red, slowly as the outputs fade up, then rapidly as the outputs flash in sequence. The DMX input is ignored while TestMode = 'ON'.

The onboard termination should be used if the end-to-end cable run from the DMX source is over 200 feet. If multiple DMX devices are connected, only the last unit in the chain should set Terminate = 'ON'; all other units should set Terminate = 'OFF'.

TestMode may be changed with the DMX-1432 powered on; channel-mode switch changes must be made with the DMX-1432 powered off.

5. DMX ID DIP Switch

This switch sets the unit's **DMX ID**, or DMX starting address. It uses a simple additive procedure to set the **DMX ID**:

DMX ID	Switch Setting
1	'1' = 'ON', all others = 'OFF'
6	'2' = 'ON', '4' = 'ON", all others = 'OFF' (2+4=6)
55	'1' = 'ON', '2' = 'ON', '4' = 'ON', '16' = 'ON', '32' = 'ON', all others = 'OFF' (1+2+4+16+32=55)
337	'1' = 'ON', '16' = 'ON', '64' = 'ON', '256' = 'ON', all others = 'OFF' (1+16+64+256=337)

Any changes to **DMX ID** must be made with the DMX-1432 powered off.

6. Outputs 1-8
7. Outputs 9-16
8. Outputs 17-24
9. Outputs 25-32

Table 1 shows how the DMX-1432 outputs map to DMX addresses in the various channel modes.

The columns in *Table 1* correspond to which mode the DMX-1432 is set to – 1-channel, 4-channel, 8-channel or 32-channel. The row indicates what to add to the base DMX address for that output.

For example, given a base DMX address of 1, output 16 would respond to DMX address 1 in 1-channel mode, to DMX address 2 in 4-channel mode, DMX address 4 in 8-channel mode or DMX address 16 in 32-channel mode.

As another example, given a base DMX address of 80, output 25 would respond to DMX address 80 in 1-channel mode, to DMX address 83 in 4-channel mode, DMX address 86 in 8-channel mode or DMX address 104 in 32-channel mode.

Each channel can sink up to 8A, subject to a board maximum of 60A. The outputs should be connected to the low side ('-', cathode or ground) of the loads. The high side ('+' or anode) of all loads should be commoned to the power supply's positive output.

32	8	4	1	OUTPUT			OUTPUT	1	4	8	32
A+16	A+4	A+2	A	17			1	A	A	A	A
A+17	A+4	A+2	A	18			2	A	A	A	A+1
A+18	A+4	A+2	A	19			3	A	A	A	A+2
A+19	A+4	A+2	A	20			4	A	A	A	A+3
A+20	A+5	A+2	A	21			5	A	A	A+1	A+4
A+21	A+5	A+2	A	22			6	A	A	A+1	A+5
A+22	A+5	A+2	A	23			7	A	A	A+1	A+6
A+23	A+5	A+2	A	24			8	A	A	A+1	A+7
A+24	A+6	A+3	A	25			9	A	A+1	A+2	A+8
A+25	A+6	A+3	A	26			10	A	A+1	A+2	A+9
A+26	A+6	A+3	A	27			11	A	A+1	A+2	A+10
A+27	A+6	A+3	A	28			12	A	A+1	A+2	A+11
A+28	A+7	A+3	A	29			13	A	A+1	A+3	A+12
A+29	A+7	A+3	A	30			14	A	A+1	A+3	A+13
A+30	A+7	A+3	A	31			15	A	A+1	A+3	A+14
A+31	A+7	A+3	A	32			16	A	A+1	A+3	A+15

A = DMX ID (Starting Address)

Table 1: DMX-1432 Output to DMX Address Mapping.

IMPORTANT! In 4-channel and 8-channel modes, <u>all</u> the outputs for a particular channel must be tied together electrically. This allows proper load sharing. For example, in 8-channel mode, outputs 1-2-3-4 must be tied together, outputs 5-6-7-8 must be tied together, and so on. In 1-channel mode, all odd-numbered outputs (1, 3, 5 etc.) should be tied together and used as the output.

The circuitry itself does not perform any current-limiting. It is the system designer's responsibility to ensure that all loads attached to the DMX-1432 do not violate the board's maximum ratings.

The DMX-1432 is designed only to power resistive (incandescent) or LED loads, including solid-state relays. Do not connect inductive loads – motors or electromechanical relays.

10. Power Supply Positive Input

This terminal should be connected to the positive output of the system's dc power supply. This terminal has a spot of red paint applied to the terminal block for easier identification. The DMX-32 will operate on a supply voltage of 6-48Vdc. Typical power draw for the board, excluding loads, is less than 100mA.

Do not use this terminal as the common tie point for the high side of the loads.

11. Power Supply Ground Inputs

There are four terminals provided for the ground (negative or '-') connection to the system's dc power supply. These terminals have a spot of black paint applied to the terminal block for easier identification.

There is a dc current limit of 15A per terminal. The ground wires connected to the system power supply must be sized

according to the total LED load current drawn. For <15A, a single 14AWG (2.0mm²) or larger should be used; for 15A-30A, two 14AWG (2.0mm²) or larger wires should be used; for 30A-45A, three 14AWG (2.0mm²) or larger wires should be used; and for 45A-60A four 14AWG (2.0mm²) or larger wires should be used.

The wiring used to connect the loads' high side to the power supply's positive output must also be sized according to load current draw.

12. Fan Power Supply Connector

A two-pin female connector (Molex p/n 03-06-1023, mates with Molex p/n 03-06-2023 or equivalent) is provided to connect and optional 60mm x 60mm fan. The fan is powered directly by the system's power supply, with no provision for speed control.

Orderable Part Numbers

INP-DMX1432-RJ-RJ   DMX-1432, with 2 @ RJ45 receptacles
INP-DMX1432-X5-RJ   DMX 1432, with 1 @ 5-pin XLR male plug and 1 @ RJ45 receptacle
INP-DMX1432-X3-RJ   DMX-1432, with 1 @ 3-pin XLR male plug and 1 @ RJ45 receptacle

DMX-1432 Specifications

Operating Voltage: 6-48Vdc
Maximum Current: 8A per output, resistive or LED loads only
                                60A board maximum, resistive or LED loads only
Operating Temperature: 0°C to +70°C (+14°F to +158°F)
Operating Humidity: 5% to 95% RH, non-condensing
Signal Input: USITT DMX-512
Outputs: 32 outputs, mapped to 1 or 4 or 8 or 32 DMX addresses

Contact Info:

www.getinphase.com

info@getinphase.com