

## Studio 24 Channel DMX Decoder - 4A per Channel

Part number: **DMX-24-5000-4A**



The Studio 24 Channel DMX Decoder - 4A per Channel is a 24-channel DMX decoder designed for professional high power applications. It is capable of handling four amperes per channel with all channels driven, meaning up to 1,152/2,304W at 12/24V. The DMX-24-5000-4A interface includes RJ45, 5-pin XLR and terminal block connections for DMX in and out. The terminal block connection also serves as a DMX signal amplifier to ensure clean data transmission over long distances. Top-mounted DIP switches are used for setting the starting DMX address, engaging DMX termination, selecting the output PWM frequency and determining the DMX resolution. For extremely sensitive applications, the DMX Decoder-Studio 24 Channel can utilize 5kHz PWM to avoid on-camera flicker and accept 16-bit DMX input resolution for precise color mixing.

## Features

- High 24x4A power rating supports large installations up to 1,152/2,304W at 12/24V.
- Works with 12V and 24V LED lights.
- Switchable output frequency: 5,000 Hz for avoiding flicker when filming with high-speed iris cameras or 250 Hz for reduced heat when not used on film.
- Switchable resolution: 8-bit for standard DMX or 16-bit for precise color mixing and dimming. Note: 16-bit mode uses two standard DMX input channels for each output.
- Built-in switchable DMX termination.
- Top-mounted mechanical DIP switches for easy access to device settings and DMX address, even without power.
- RJ45, 5-pin XLR and terminal block connections for DMX signal in and out.
- Terminal block DMX output includes a DMX signal amplifier for clean transmission through long cables.
- Rugged chassis with integrated mounting tabs.

## Applications

- Any application requiring conversion of DMX to PWM signals for driving LEDs.
- 24 output channels can drive up to eight independent sections of conventional four-wire Red-Green-Blue LED lighting or 24 sections of single-color LED lighting.
- High PWM frequency output makes this suitable for use on TV and movie sets.
- High power DMX LED lighting systems.

## Specifications

Part Number	<b>DMX-24-5000-4A</b>
Dimensions	12.2" x 4.8" x 1.30"
	310 mm x 122 mm x 33mm
Channels	24
Input Voltage	12-24 Volts DC
Max. Current Load	24x4A (96A Total)
Max. Output Power	1,152W/2,304W (12V/24V)
PWM Frequency	250Hz or 5000Hz
DMX Ports	RJ45, Terminal Block, 5-pin DMX



# Operation

1. Confirm the output voltage of the power supply (12 or 24VDC) is the same as the required input voltage of the LED strip lights before connecting power.
2. Power inputs should be spread across the DC+ and DC- terminal blocks. Each screw terminal must be limited to 16A or less.
3. If multiple power supplies are used in parallel, their output voltage must be matched to avoid a current imbalance. Power supplies with active current sharing or remote voltage sense are recommended for these applications.

## Wiring:

- Make sure the power supply is turned off while wiring the decoder.
- Connect the 12-24V DC power supply to the “DCV-” and “DCV+” terminals. Make sure to observe correct polarity.
- Connect the positive LED wire(s) to the “V+” terminals.
- Connect the negative side LED wires to the terminals marked “R”, “G” and “B” for red, green and blue. Refer to the DMX Address section below for more information about controlling each output.

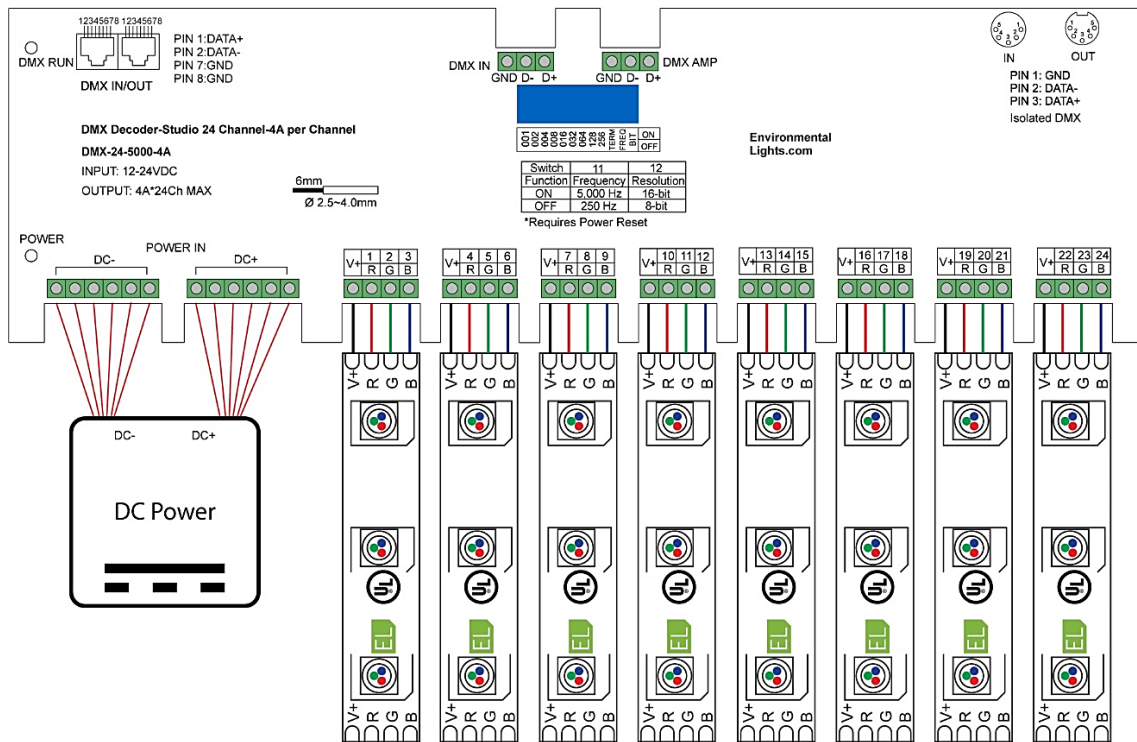


Figure 1: Wiring Diagram

## DMX Connections:

The DMX-24-5000-4A has three ports each for DMX input and output. These include RJ45, 5-pin XLR and terminal blocks.

- Each decoder can have only one DMX input signal at a time.
- Any of the DMX outputs may be used, regardless of the input connection. For example, DMX IN may be connected via 5-pin XLR and DMX out may be connected via RJ45.
- The DMX AMP terminal block amplifies the outgoing DMX signal, which helps to compensate for long cable runs.
- If no DMX OUT port is being used, move slider #10 on the DIP switch to the “ON” position to engage the internal DMX termination.

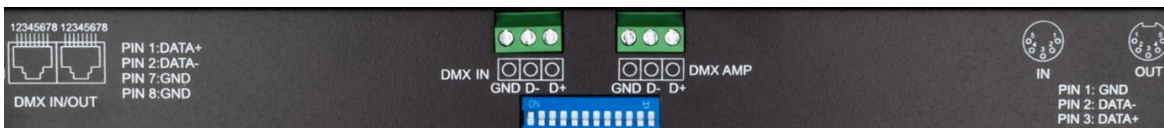


Figure 2: Connection Pin-Outs

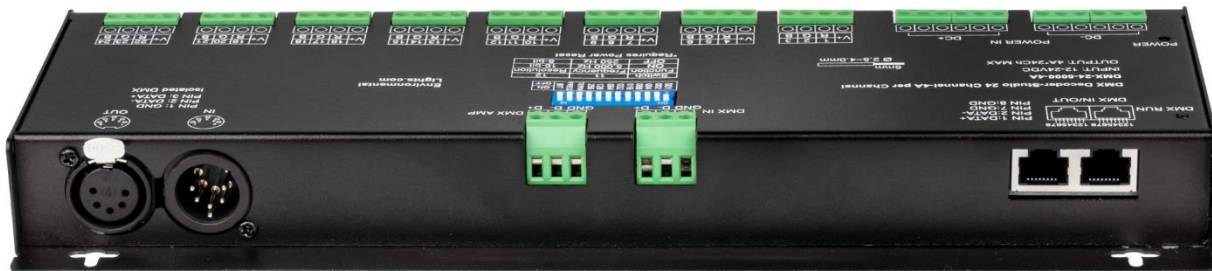
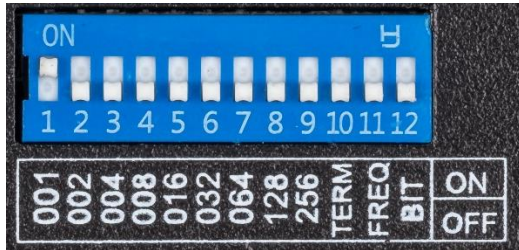


Figure 3: Connections

## DMX Address:

The starting DMX address is set using sliders 1-9 on the DIP switch. Each switch is marked with its DMX value below. Moving any of the switches to the “ON” position adds the indicated value to the starting DMX address. The default setting is when DIP switch 1 is set to the “ON” position. This sets the starting DMX address to 001, meaning that output 1 on the decoder corresponds with DMX channel 001 and output 24 corresponds to DMX channel 024. Setting the starting address to 064 means that output 1 corresponds to DMX channel 064 and output 24 corresponds with DMX channel 088. Examples are shown below.



DIP Switch Setting (1 indicates ON)	DMX Starting Address
100000000	001
010000000	002
100001000	033
001001001	292

Figure 4: DIP Switches and Examples

### Test Mode:

Test mode is engaged by moving all DIP switches 1-9 to the down “OFF” position. Test mode will cause the decoder to cycle through each output channel, turning them on and off individually. Exit test mode by setting a DMX address with any of the DIP switches 1-9.

### Other Settings:

DIP switches 11 and 12 control the output PWM frequency and DMX resolution. **The power should always be turned off before changing either of these settings.**

Switch	11	12
Function	Frequency	Resolution
ON	5,000 Hz	16-bit
OFF	250 Hz	8-bit

\*Requires Power Reset

Figure 5: Other Settings

### PWM Frequency:

The PWM frequency should be left at 250Hz unless the LEDs will be used on-camera. There is no visible flicker to the naked eye at 250Hz and this allows the decoder to run cooler. Setting the PWM frequency 5,000Hz is recommended when the LEDs will be used with high-speed iris cameras to avoid flicker.

### DMX Resolution:

Standard DMX resolution is 8-bits per channel. The decoder should be left in 8-bit mode unless the DMX controller is configured for 16-bit operation. With 16-bit resolution, two DMX channels are dedicated to each output channel. This allows extremely precise control of dimming and color mixing, but requires double the amount of DMX channels to control the same amount of LEDs.

## Safety Precautions

Please take the following precautions:

1. This equipment, like all electrical equipment, should be installed by a qualified person.
2. Do not expose these LEDs, dimmers or power supplies to intense electro-magnetic fields, including lightning.
3. The controllers and power supplies are not waterproof. Keep them dry.
4. Always observe proper polarity.

When installing LED lighting, it is a good idea to follow this “dry-run” procedure:

1. Be sure you have everything you need before you start.
2. Lay out your lights and power supply on the floor or table.
3. There is some resistance in the LED lighting. If you see any color fading or dimming at the end of a long run, you may have too many LEDs for your power supply and you might need a bigger supply or shorter runs. Use a bus structure as described in [rgb\\_manual.pdf](#). Call if you need assistance with larger projects.
4. Connect everything and test it to be sure it works and you have it connected properly. It is unlikely, but possible, that some part of your system is defective or was damaged during shipment. If that is the case, it will be very helpful to you to know that before you do all the work involved in installing custom LED lighting systems. You will also know if you damage anything during installation, which is really helpful in trouble-shooting because manufacturing defects and installation damage typically have very different solutions.

Once you have tested the system successfully, you are ready to install it. We recommend you install LEDs, electronic controls and dimmers in such a way that you have access to them in case they fail. All electrical components can fail.