

## Studio 4 Channel DMX Decoder - 10A per Channel Manual

Part number: DMX-4-5000-3-10A / DMX-4-5000-5-10A



The Studio 4 Channel DMX Decoder - 10A per Channel is a four channel DMX decoder designed for professional high power applications. It is capable of handling 10 amperes per channel with all channels driven, meaning up to 480/960W at 12/24V. These decoders are switchable for standard 8-bit or high resolution 16-bit operation. The DMX-4-5000-3-10A interface includes two RJ45 ports and two 3-pin DMX ports, one each for in and out. The DMX-4-5000-5-10A substitutes 5-pin DMX ports in place of the 3-pin DMX ports. Both versions have top-mounted DIP switches for setting the starting DMX address, without needing to apply power. Both decoders have built-in DMX terminations, in addition to a 5kHz PWM frequency to avoid flicker when used for video recording.

### Features

- High 4x10A power rating supports large installations up to 480/960W at 12/24V.
- Works with 12V and 24V LED lights.
- Output frequency is 5,000 Hz. Great for shooting TV shows or movies using high-speed iris cameras because the camera won't see any flicker. We recommend these fast decoders for any lighting that may be featured on camera.
- Switchable between 8-bit and 16-bit operation using the front toggle.
- Top mounted mechanical DIP switches for easy access and setting the DMX address without power.
- Built-in switchable DMX termination.
- RJ45 and available 3-pin or 5-pin DMX ports for multiple connectivity options.
- Rugged chassis with integrated mounting tab

## Applications

- Drives conventional 4-wire Red-Green-Blue or 5-wire Red-Green-Blue-Other LED lighting using DMX signals. This is for any application requiring conversion of DMX to PWM signals for driving LEDs. Provides up to 4 channels of output, suitable for 1 Red-Green-Blue-Other device or 4 different white channels, for example.
- Because the output is high frequency (5,000 Hertz), we recommend this decoder for any lighting that may be featured on camera.
- High power DMX LED lighting systems.
- TV and movie sets.

## Specifications

Part Number	<b>DMX-4-5000-3-10A</b>
Dimensions	4.17" x 4.80" x 1.30" 106 mm x 122 mm x 33mm
Channels	4
Input Voltage	12-24 Volts DC
Max. Current Load	4x10A
Max. Output Power	480W/960W (12V/24V)
PWM Frequency	5000Hz
DMX Ports	2xRJ45, 2x3-pin DMX



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## 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. **Consult the wiring diagrams for specific instructions when using greater than 30A total.** The positive side of the power supply should be split across several terminals to evenly distribute the current and prevent overloading of the terminal blocks.

### Wiring for Under 30A:

- 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 “LED+” terminals.
- Connect the negative side LED wires to the terminals marked “R”, “G”, “B” and “X” for red, green, blue and white. Refer to the DMX Address section below for more information.

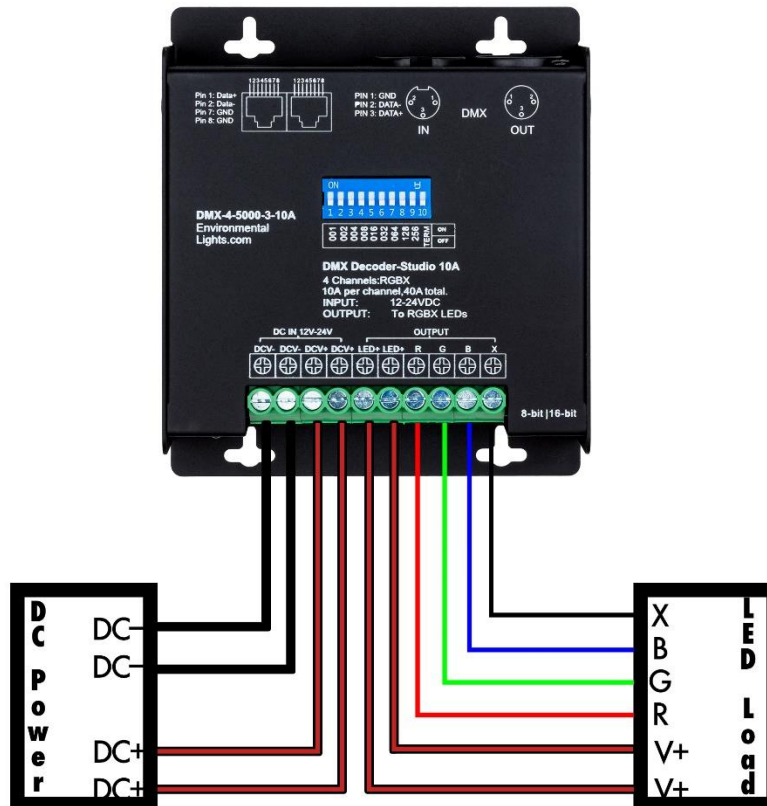


Figure I: Wiring Diagram for Under 30A

## Wiring for Over 30A:

- Make sure that the power supply is turned off before wiring the device.
- Use at least 14AWG stranded wire for power supply connections and at least 12AWG for runs greater than 10ft or 3m.
- Connect the negative side of the power supply to both “DCV-” terminals. Use two runs of wire into each terminal for connections over 10ft or 3m.
- Connect the positive side of the power supply and the positive LED leads to both “DCV+” and both “LED+” terminals.
- Connect the negative side LED wires to the terminals marked “R”, “G”, “B” and “X” for red, green, blue and white. Refer to the DMX Address section below for more information.

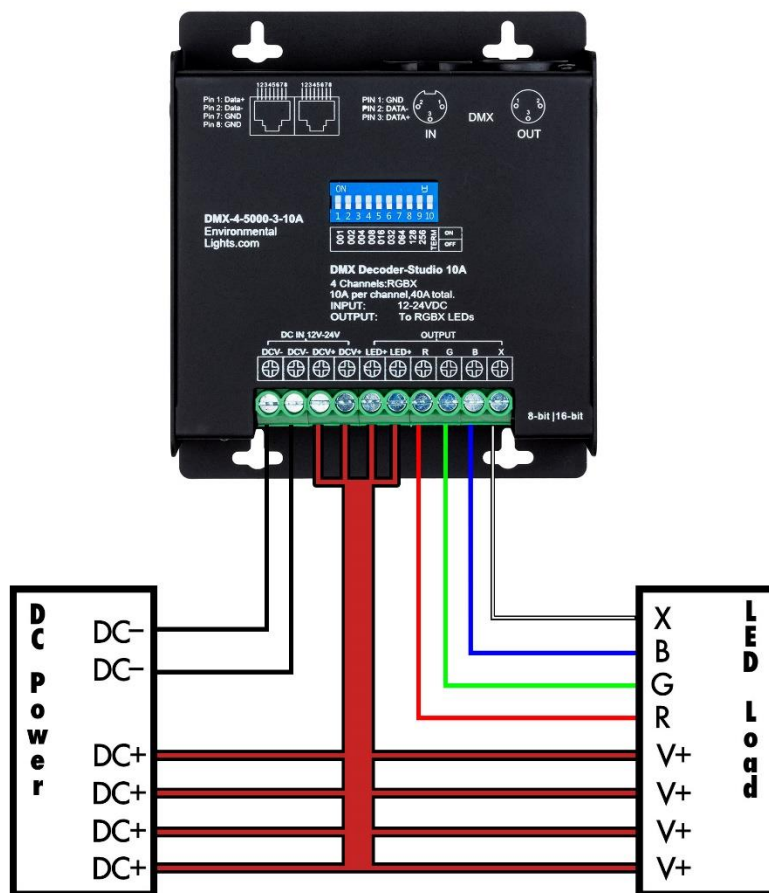


Figure II: Wiring Diagram for Over 30A

## DMX Connection:

Both the DMX-4-5000-3-10A and DMX-4-5000-5-10A each have four ports available for DMX input and output. Pin out diagrams for both are shown below in Figure III and Figure IV respectively.

- Each decoder can have only one DMX input signal at a time.
- Either RJ45 port can be used as an input or output.
- The DMX IN port should be used for DMX input when connecting with DMX cables.
- The DMX OUT port can be used as a DMX pass-through.
- If the DMX OUT port is not being used, move slider #10 on the DIP switch to the “ON” position to engage the internal termination.



Figure III: Connector Pinout for DMX-4-5000-3-10A



Figure IV: Connector Pinout for DMX-4-5000-5-10A

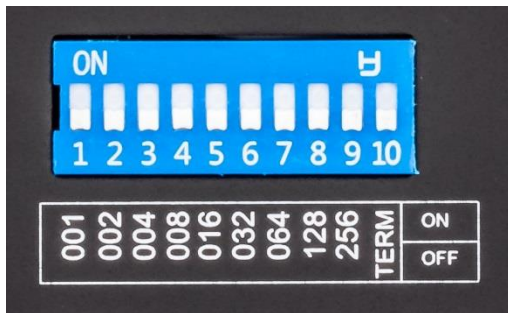
**8-bit and 16-bit Modes:**

These decoders are capable of operating in standard 8-bit DMX mode or in high-resolution 16-bit mode. The decoder should be left in 8-bit mode unless the DMX controller is configured specifically for 16-bit resolution. 16-bit mode assigns two DMX input channels for each of the four outputs. The first channel operates like a normal DMX channel, 256 steps between off and maximum brightness. The second channel provides 256 micro-steps between each step of the first channel. This allows for over 65,536 adjustment steps, but requires twice as many DMX channels.

**Always turn off power to the decoder before changing between 8- and 16-bit modes.**

**DMX Address:**

The starting DMX address is set using switches 1-9 on the 10 slider 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 1 in the on position. This sets the starting DMX address to 001. A reference table and examples are shown below.



8-bit Mode	
Output Channel	DMX Address
R	Set by DIP Switch
G	Channel R + 1
B	Channel R + 2
X	Channel R + 3

DIP Switch Setting (1 indicates ON)	DMX Starting Address
10000000	001
01000000	002
100001000	033
001001001	292

16-bit Mode	
Output Channel	DMX Address
R	Set by DIP Switch
G	Channel R + 2
B	Channel R + 4
X	Channel R + 6

**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.

## 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.