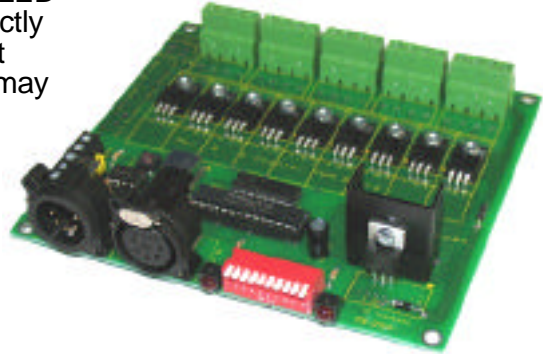


# DMX- 9 Channel LED Driver

## Overview

The DMX- 9 Channel LED driver board allows up to 9 LED Arrays or 3 RGB Strips to be driven and controlled directly from a DMX512 network. The board provides 9 output channels of PWM running at 2 kHz. The base address may be set anywhere between 1 and 503.

Option 1: 9 x LED arrays or 3 x RGB strips.



## Connections:

**DMX:** Dual 5 Pin XLR and 2 x 3-pin terminal connections 1/G = Cable Screen, 2/ 2= Data -, 3/ 3 = Data +.

**Power:** terminal connections 0V/ GND & V+ (9-15Vdc) Standard Board power requirements are 9-15V DC at 0.5 Amps + LED's load current: Maximum 9 amps if using terminal connectors as Figure 1 (18 amps if wired as Figure 2)

**LED Array/ RGB Outputs:** 9 +/- PWM outputs @ 1 Amp per channel via screw terminals (2 amps per channel @ 15 Vdc if wired as Figure 2)

## LED PWM/ RCD 24 mode:

The value on the base address channel controls the PWM drive on output 1 a DMX value of 0 will switch the load OFF and a value of 255 will switch the load ON. 128 will generate a 50% duty PWM signal running at 2kHz. The resolution of the PWM stream is 8-bit. The value on the base address controls output 1, Base address +1 controls output 2 etc. The PWM signal is set to OFF when a valid DMX signal is not being received.

## Base Address Selection:

The base address may be set between 1 and 503 using the DIP switches. Calculate the setting by adding the value of the switches that are set to the ON position. The Base Address is continuously read, No address selected (address = 000, defaults to address 001).

## Outputs:

The 9 output channels are rated at **2 Amps Maximum** (18 amps total) @ 9-15 VDC if wired as Figure 2 and are arranged as open collector outputs. LED arrays should be wired as Arrays option (Figure 1 or 2) RGB LED's should be common anode format wired to the "+" input and the cathodes to the relevant "-" input on the board RGB option (Figure 1 or 2). N.B. All LED Arrays / RGB strips must include suitable current limiting resistors, **Max 1 Amp** per channel @ 9-15Vdc, if Arrays/RGB strips require 2 Amps per channel connect as Figure 2.

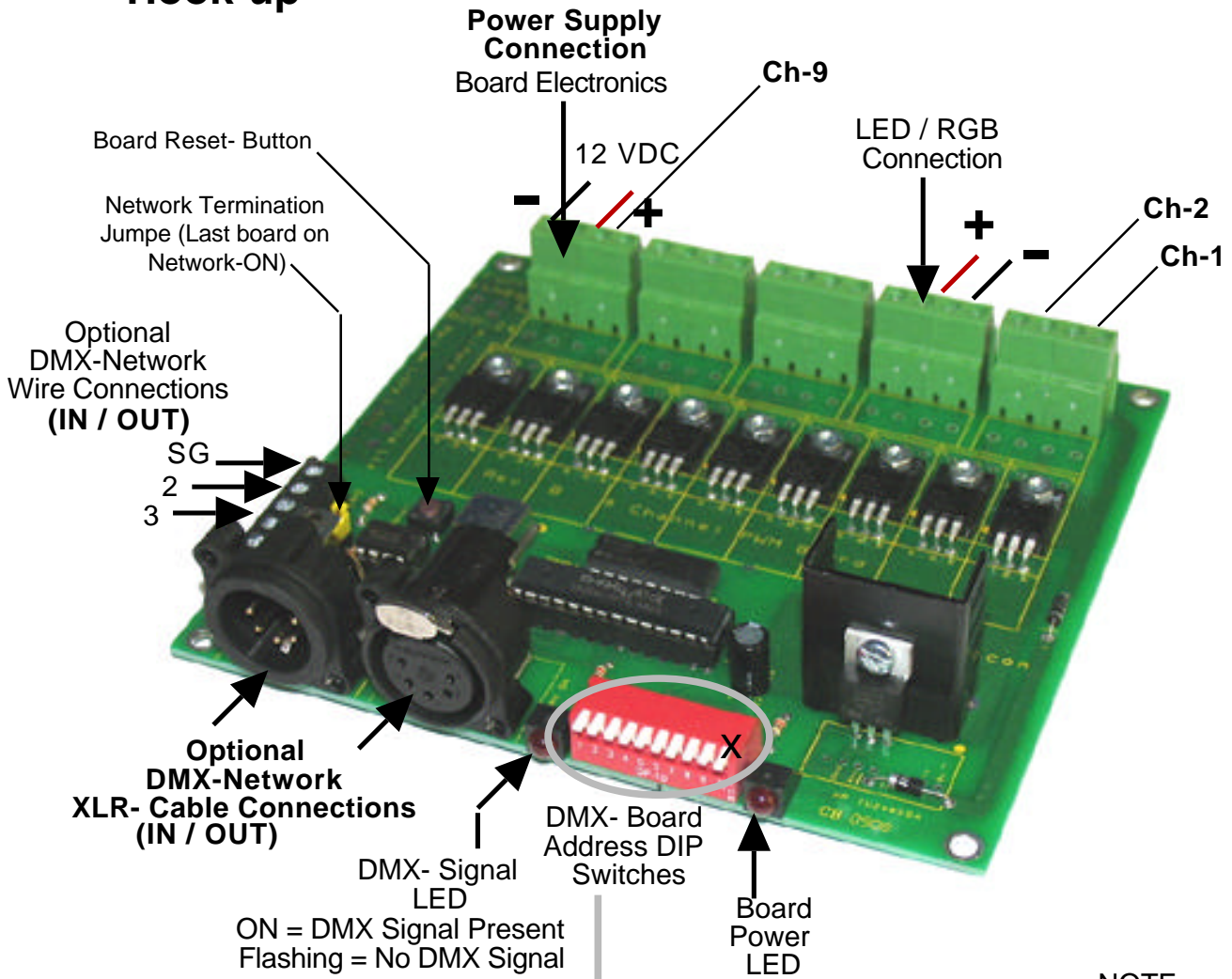
## Indicators:

Power LED solid red LED when power applied.

DMX Status LED when a valid DMX signal being received- solid red LED. No DMX signal, flashing red LED.

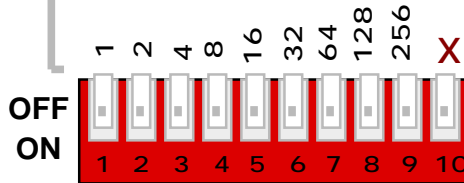
# DMX- 9 Channel LED Driver

## Hook-up



ON = DMX Signal Present  
Flashing = No DMX Signal

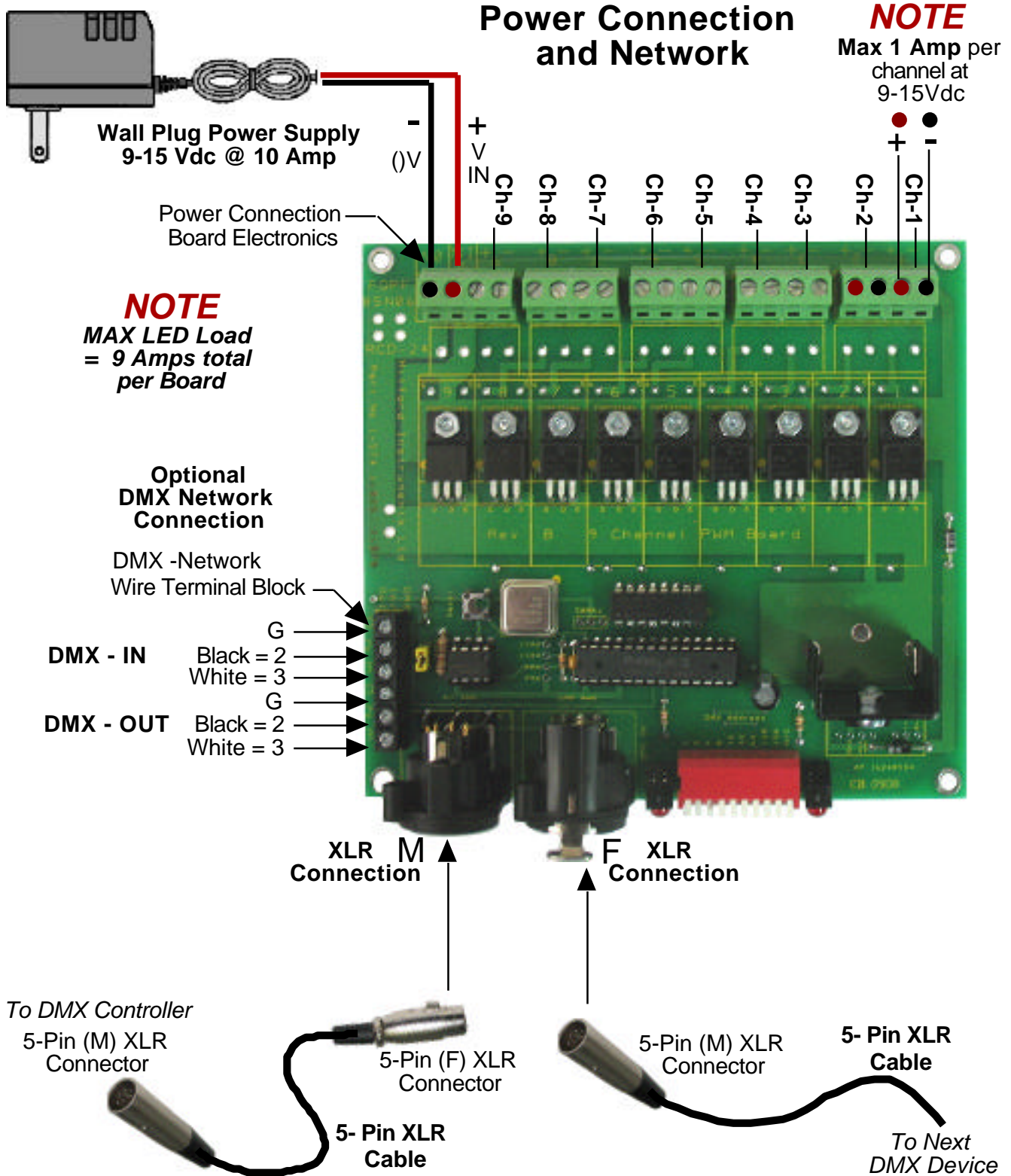
### DIP Switches (Addressing)



NOTE:  
DIP Switch Numbers

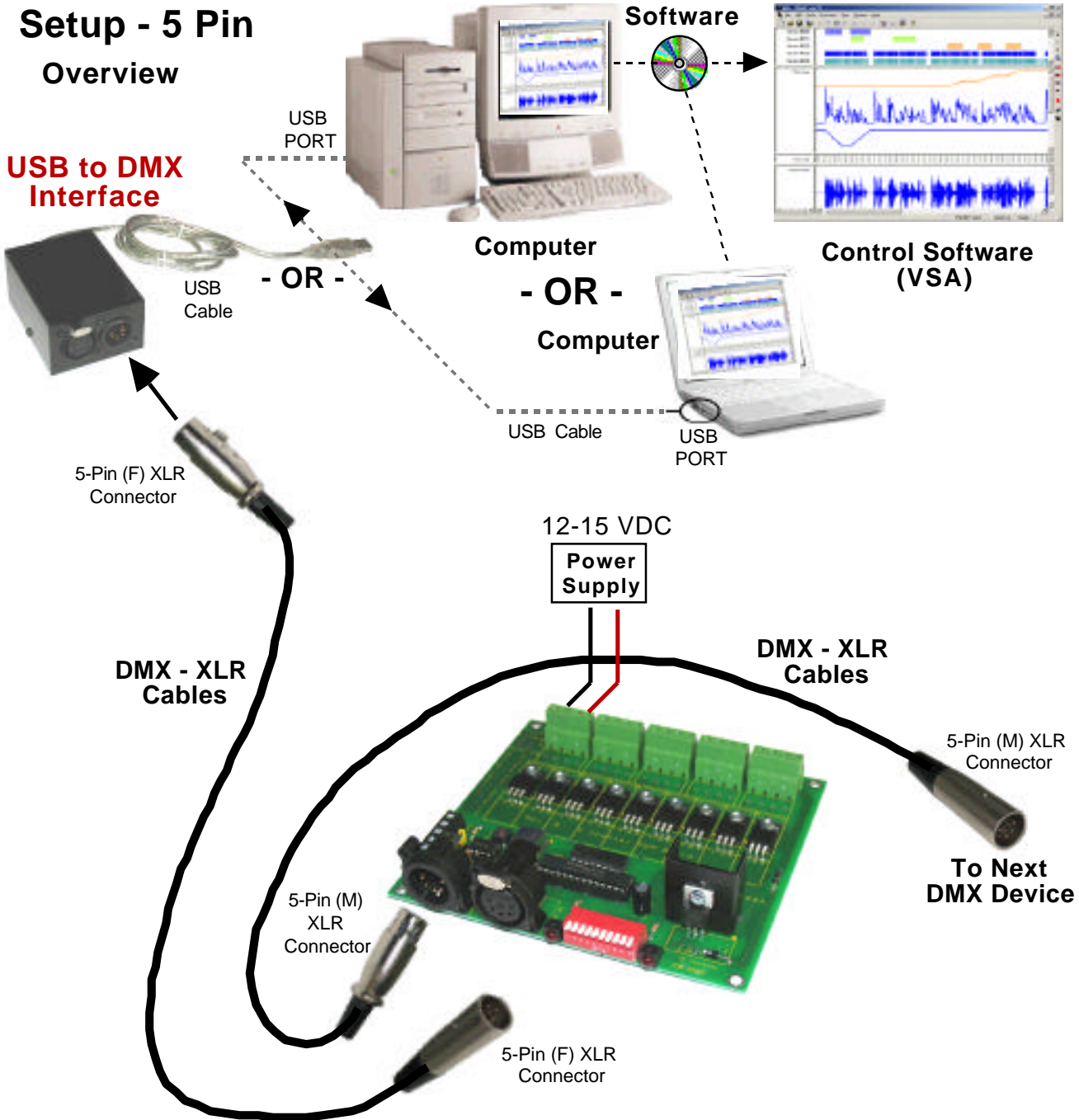
- 10 = N/C
- 9 = 256
- 8 = 128
- 7 = 64
- 6 = 32
- 5 = 16
- 4 = 8
- 3 = 4
- 2 = 2
- 1 = 1

# DMX- 9 Channel LED Driver



# DMX- 9 Channel LED Driver

## DMX Network Setup - 5 Pin Overview

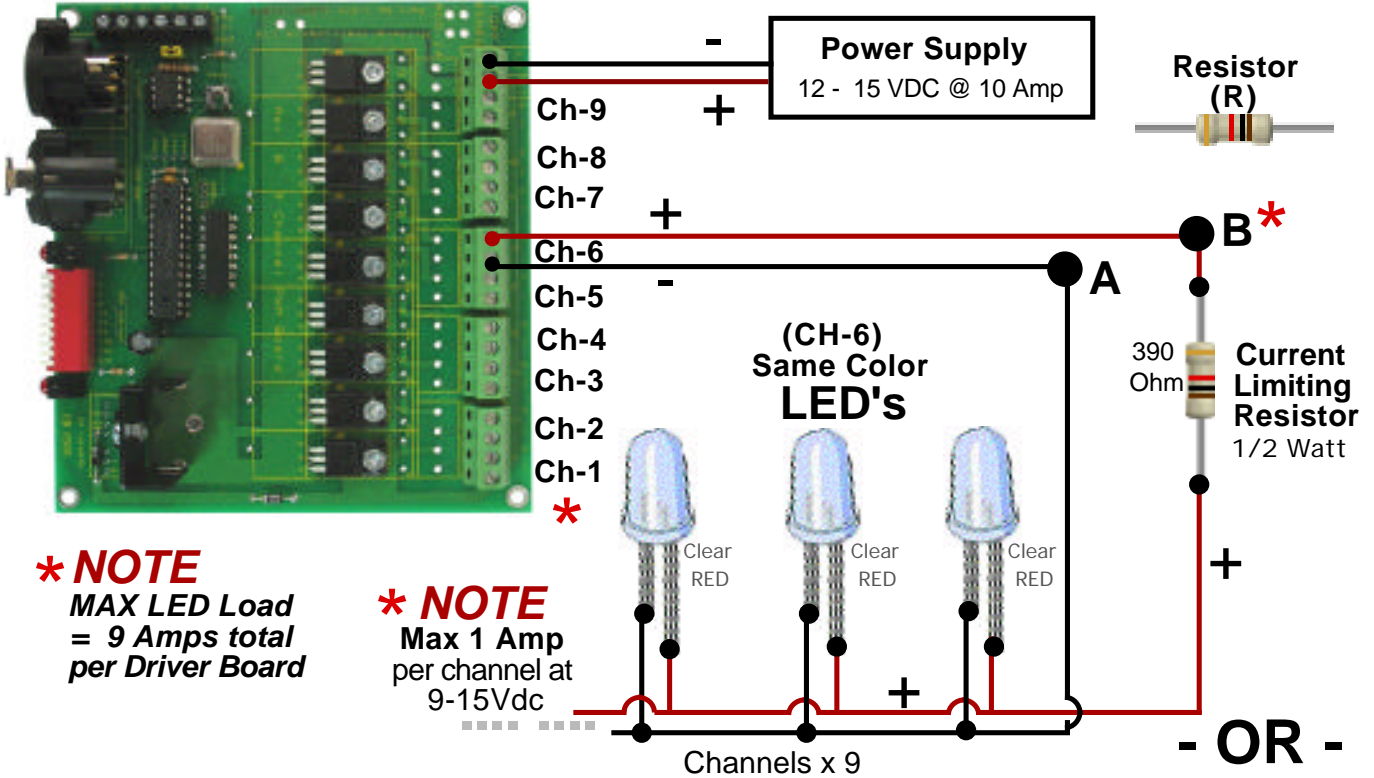


# DMX- 9 Channel LED Driver

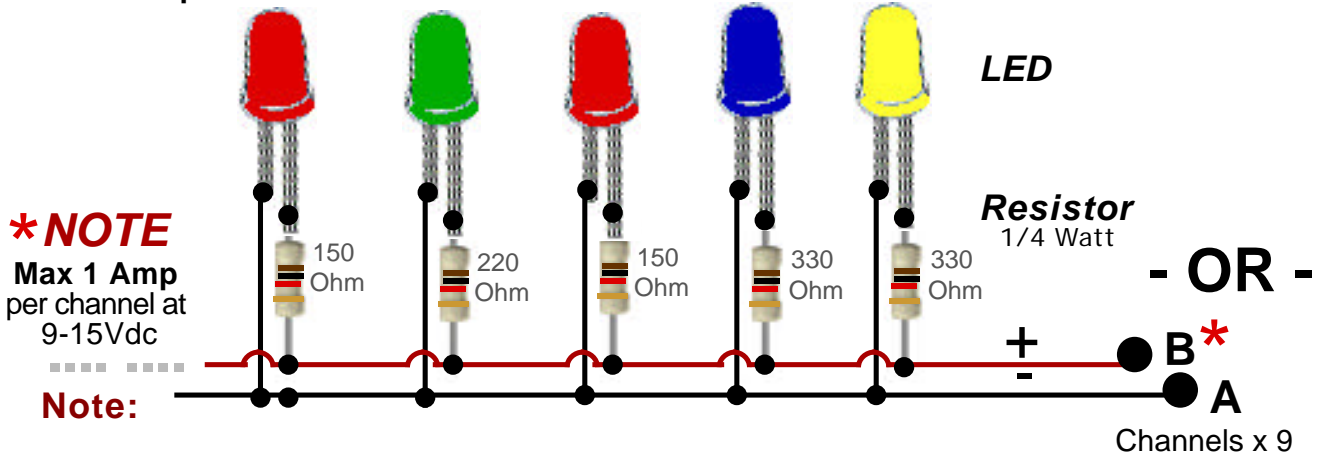
## LED Connection Overview

## LED Array Option

Figure - 1



## Multiple Color LED's



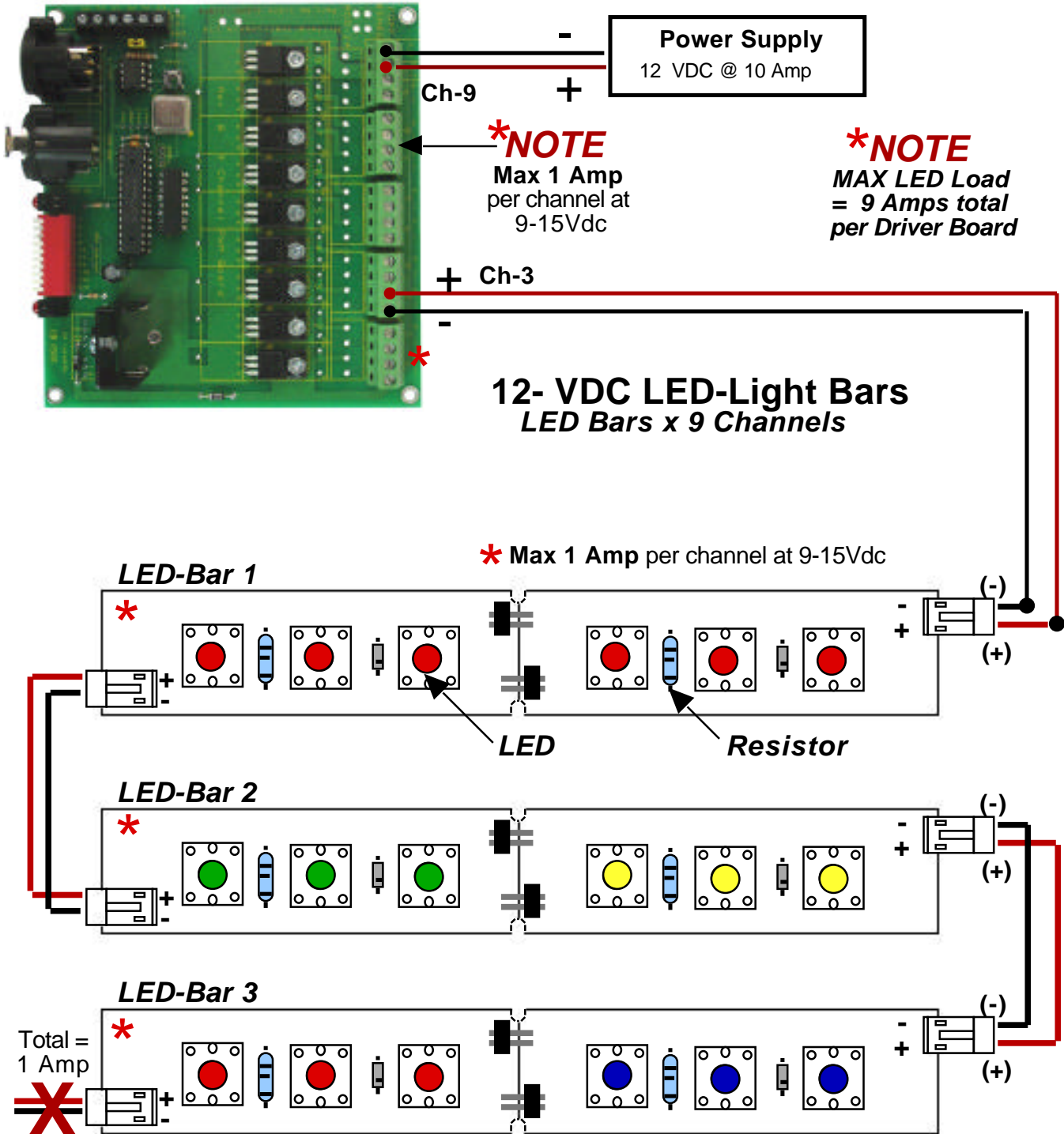
Each Resistor is calculated on Power Supply / LED Operating Voltage and Current / Resistance needed  
(See chart on calculating resistors needed)

# DMX- 9 Channel LED Driver

## LED Connection Overview

## LED Array Option

Figure - 1a



Note: It takes around 33 LED bars at 30 mA each to equal 1 Amp  
 30 mA = 0.030 Amps      33 x 0.030 A = 0.99 Amps +/-  
 12 VDC

# DMX- 9 Channel LED Driver

## LED Connection Overview

Figure - 1b

## RGB Option

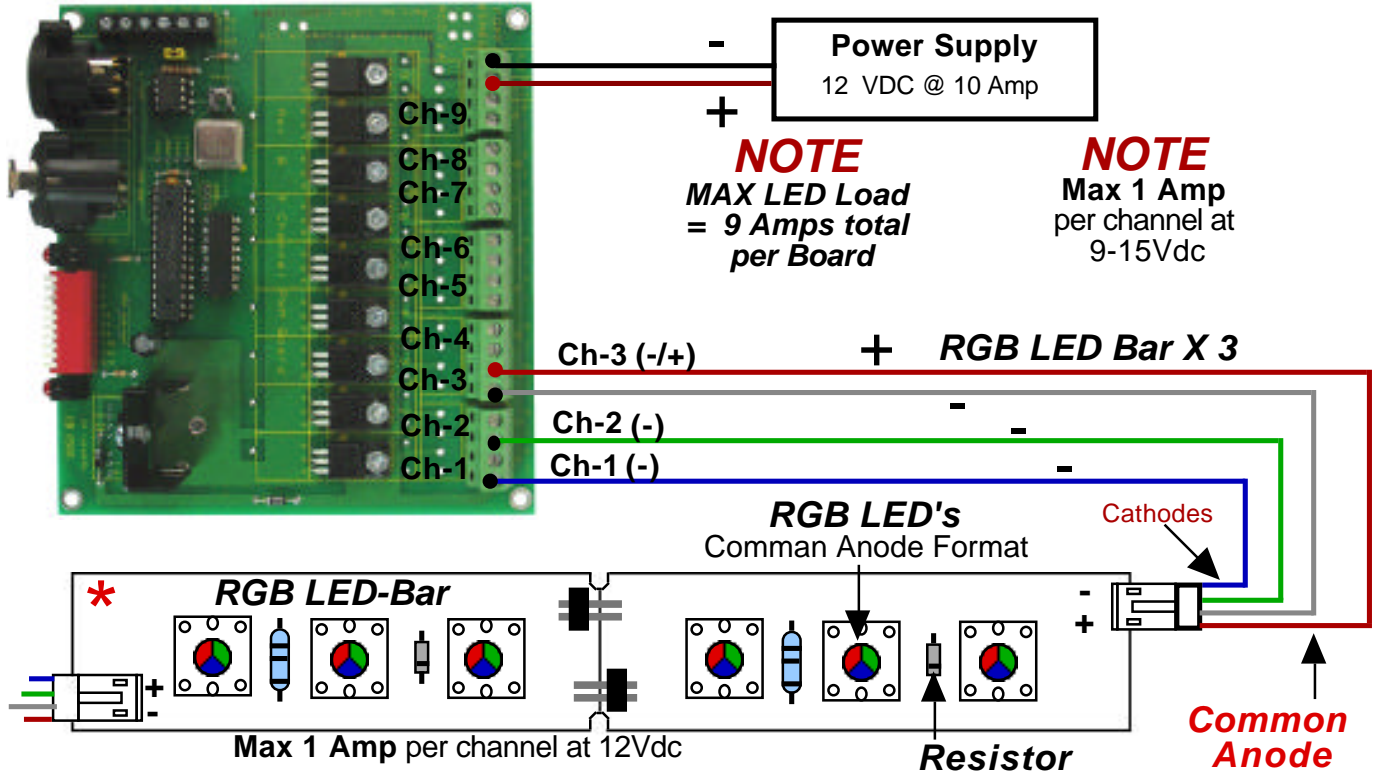
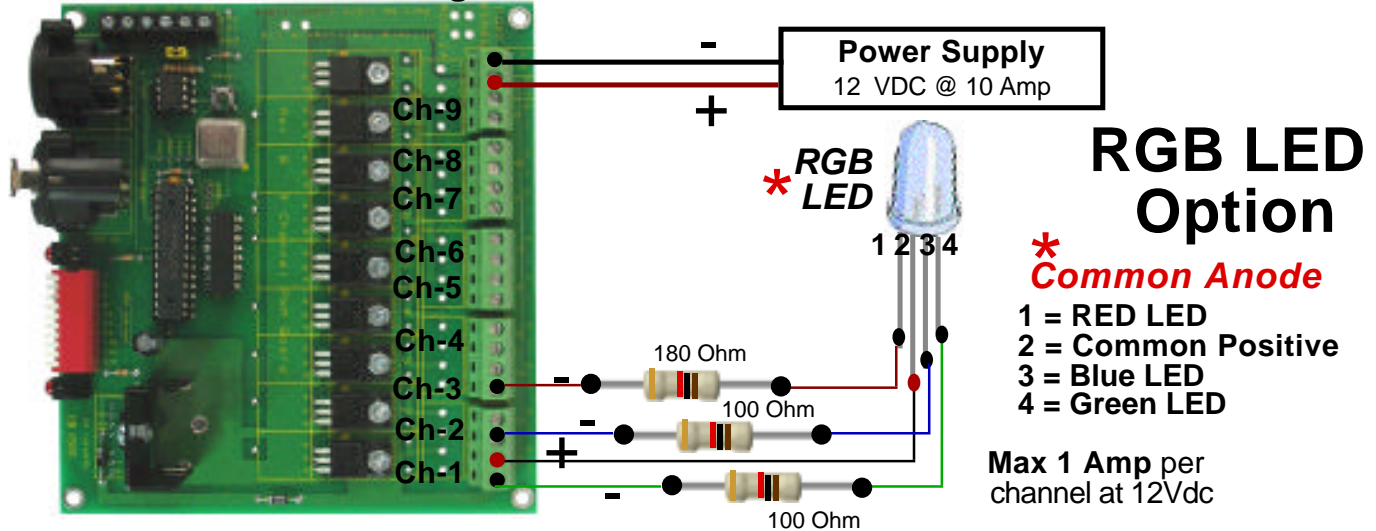


Figure - 1c



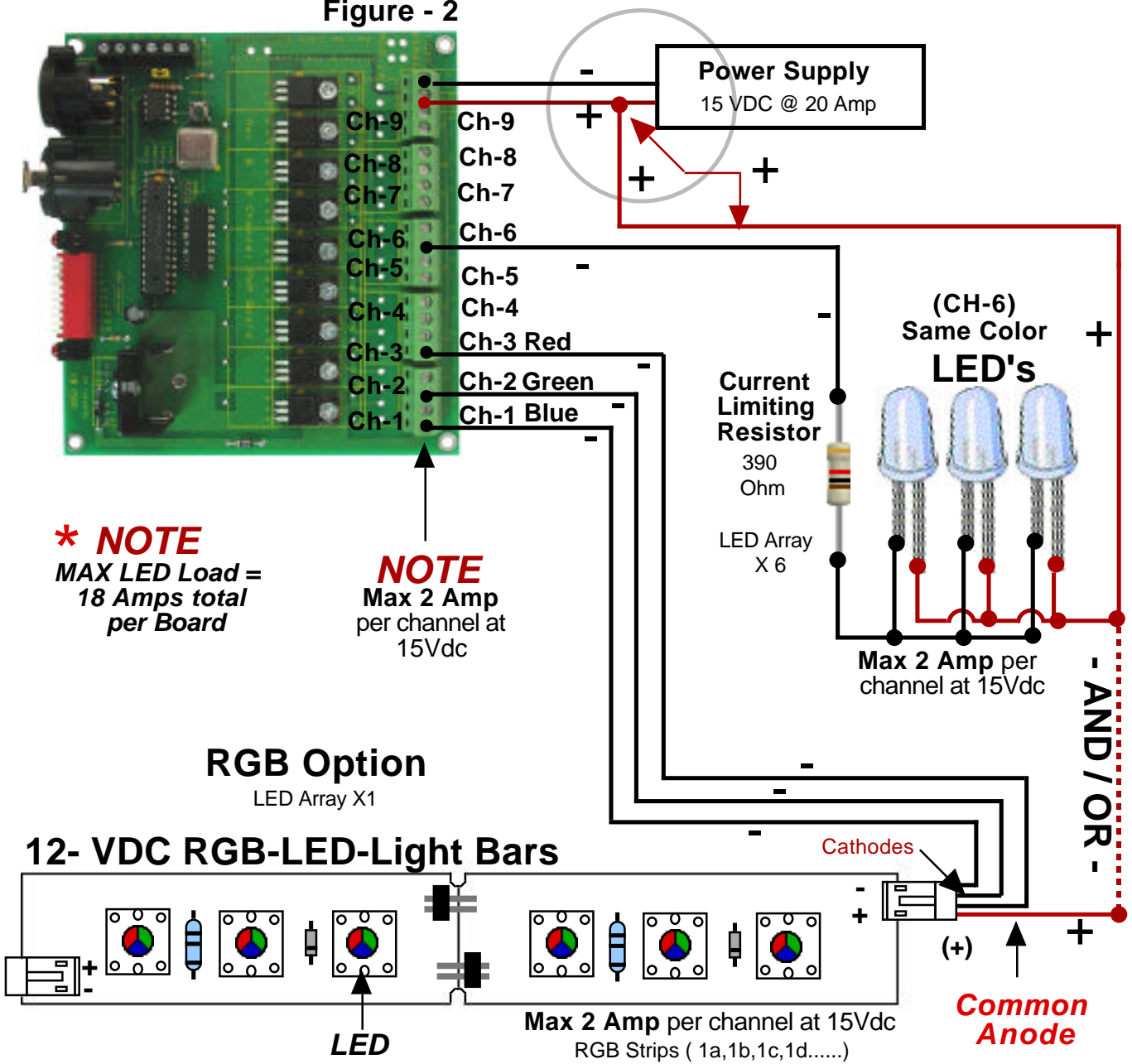
**Note:** Each Resistor is based on the RGB specifications. Check with manufacture for resistor values needed.

# DMX- 9 Channel LED Driver

## LED Connection Overview

## LED Array Option

Figure - 2



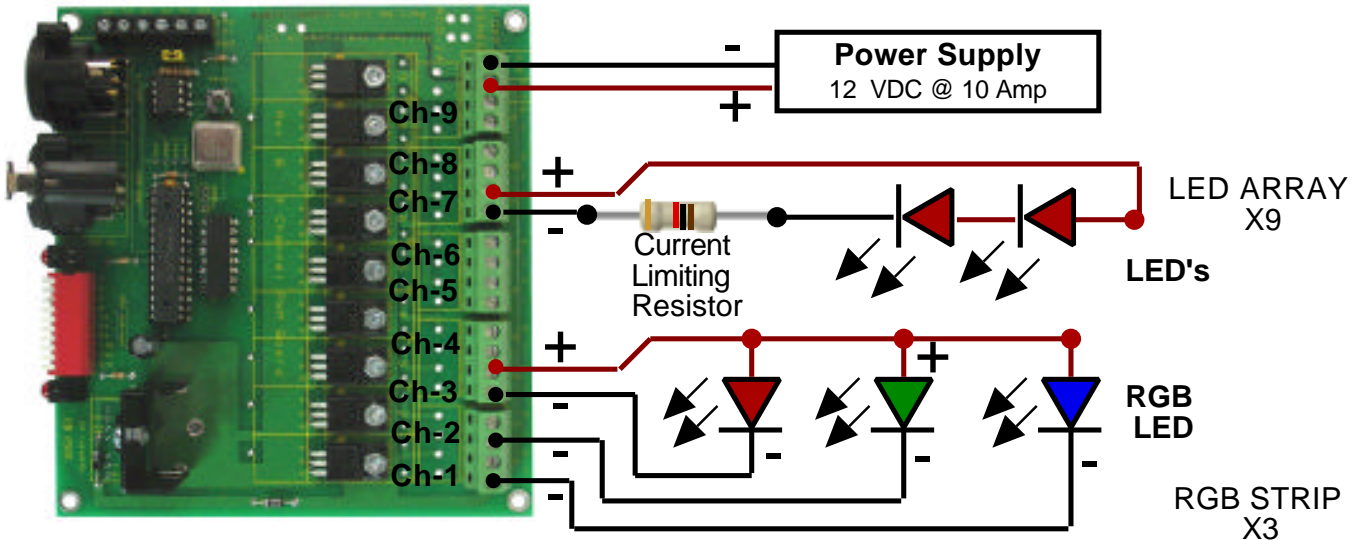


# DMX- 9 Channel LED Driver

## LED Connection

MAX LED Load = 9 Amps total  
per Driver Board

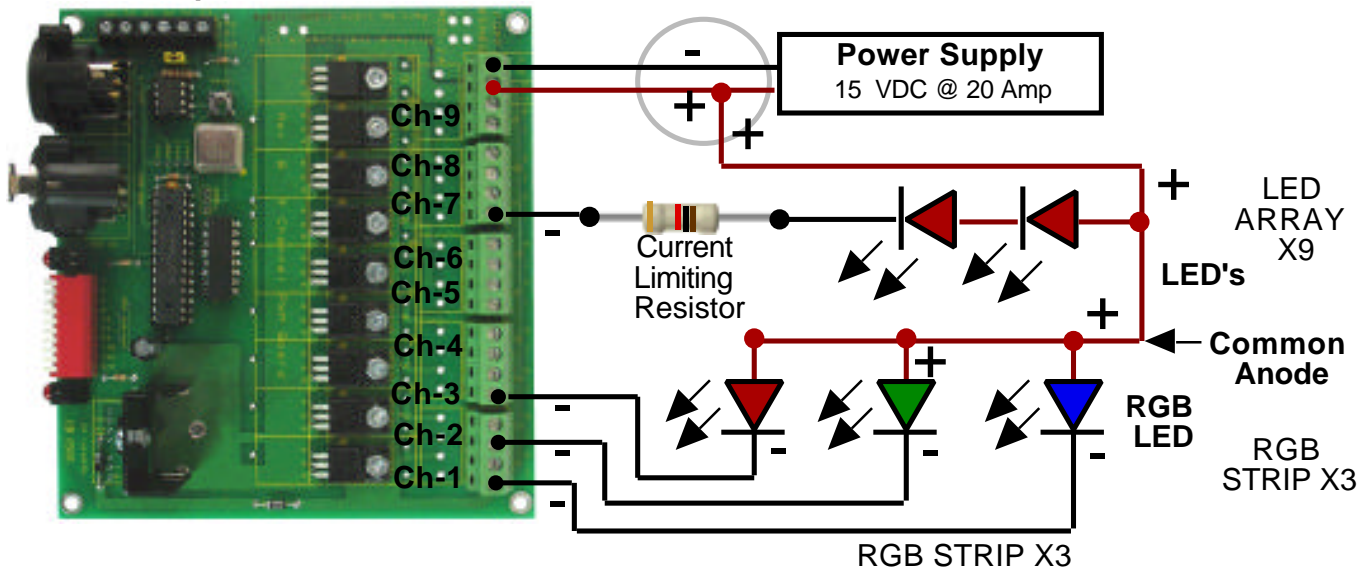
### Overview Common Anode



**NOTE**  
Max 1 Amp per channel at 12Vdc

MAX LED Load = 18 Amps total  
per Driver Board

**NOTE**  
Max 2 Amp per channel at 15Vdc



# DMX- 9 Channel LED Driver

## LED Connection Overview

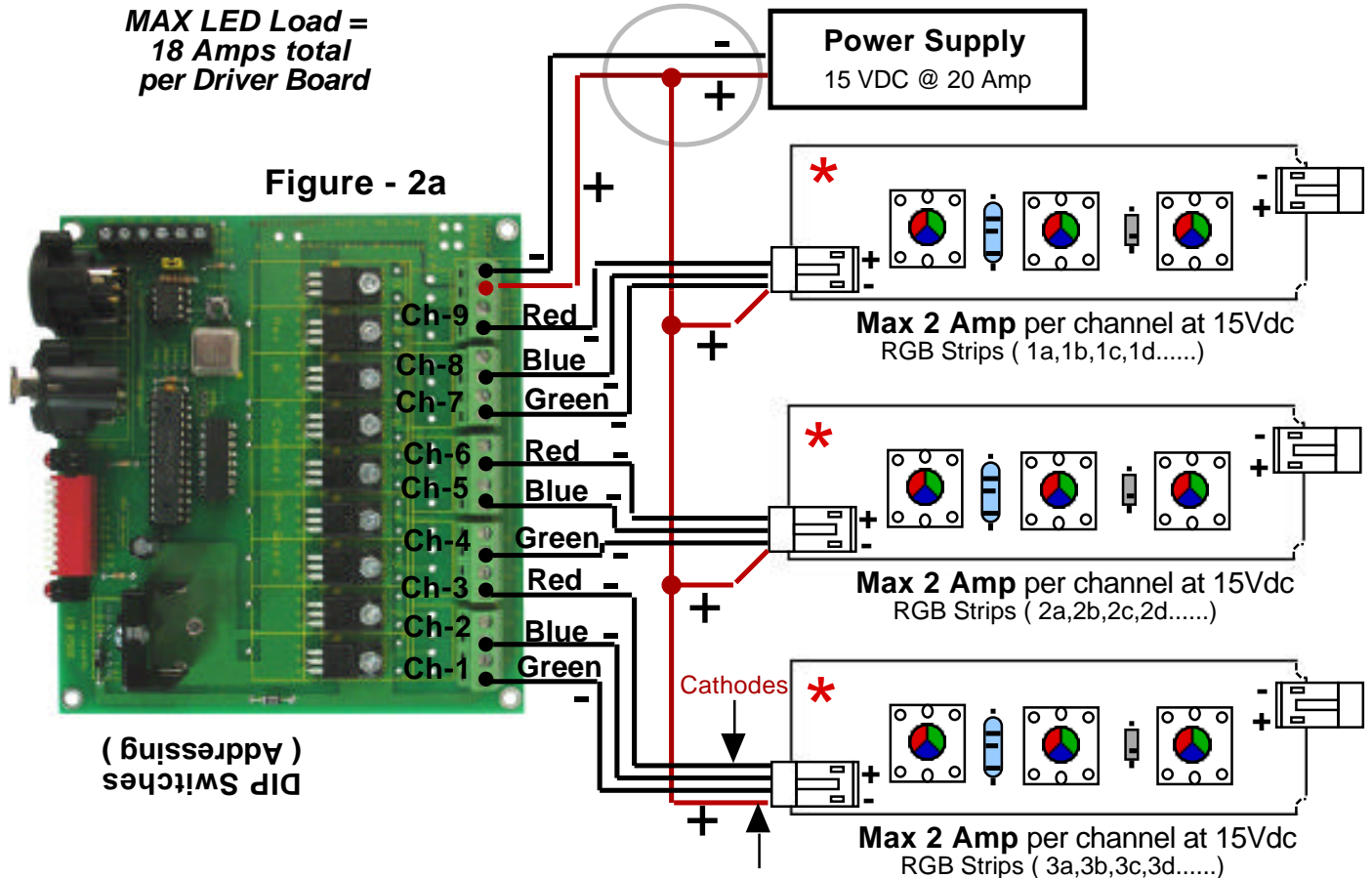
### RGB Option 12- VDC RGB-LED-Light Bars *Common Anode*

RGB Strip X 3

**\* NOTE**

MAX LED Load =  
18 Amps total  
per Driver Board

Figure - 2a



( Addressing )  
DIP Switches

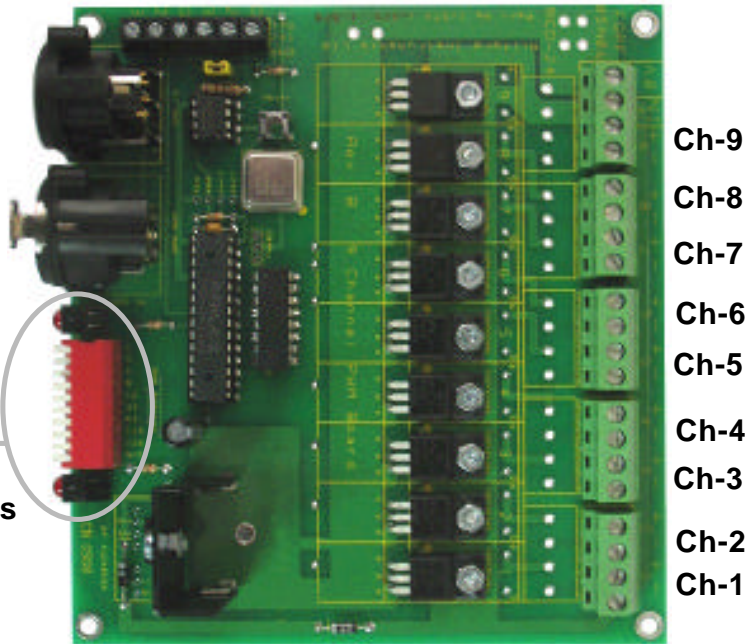
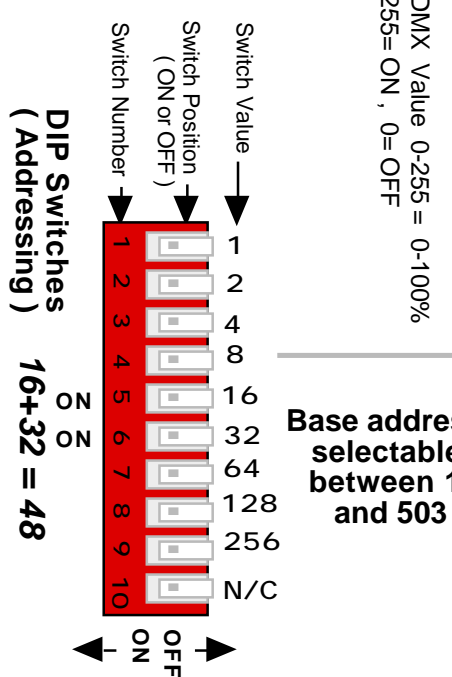
**NOTE**

RGB LED's  
Common Anode Format

**Common  
Anode**

# DMX- 9 Channel LED Driver

Board Address  
DMX - Values



DMX Value 0 = Load OFF  
 DMX Value 255 = Load Full ON  
 DMX Value 128 = generate a 50% duty PWM signal running at 2kHz / 8Bit PWM stream  
 DMX Value 1-254 - Various PWM Levels (LED Intensity)

NOTE: Address=000 defaults to Address 001

### Setting the base address of LED Channel Outputs

Add the value of the address DIP switches set to the **ON** position to calculate the base address.  
 Example: DIP switches 5 and 6 set to **ON** position, the base address is now 48, (16+32) this setting is used to determine the starting address output of **Channel-1**, the next Channel would be address 49 for **Channel-2**, and the next 50 for **Channel-3**, 51 for **Channel-4**, 52 for **Channel-5**, etc.

### LED Arrays

Sending a DMX Value of 0 will turn OFF the LED's.  
 A value of 255 will turn ON the LED's.  
 A value of 128 will set the LED to 50% level (PWM Signal)  
 A value between 1 and 254 will set various LED Dimming levels (PWM Signal)

### RGB LED's

Sending a DMX Value of 0 will turn OFF the RGB LED's.  
 A value of 255 will turn ON the RGB LED's.  
 Setting a value between 1 and 254 will set the various RGB LED Color levels (PWM Signal)

### RGB LED Example: RGB LED Connection to DMX LED 9 Driver Board

- R** LED Lead (1) is connected to CH 3 - Negative Wire Terminal (-)
- B** LED Lead (3) is connected to CH 2 - Negative Wire Terminal (-)
- G** LED Lead (4) is connected to CH 1 - Negative Wire Terminal (-)
- + Common Anode Lead (2) is connected to CH 1- Positive Wire Terminal (+)

Control: Ch3- ON = **RED**  
 Ch2- ON = **BLUE**  
 Ch1- ON = **GREEN**

Setting a value between 1 and 254 on each channel 3,2,1 will set the various RGB LED Color levels

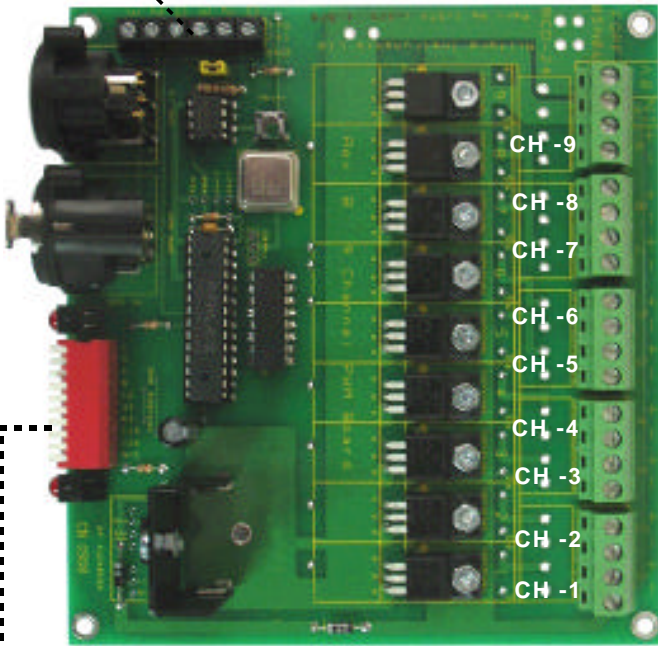
# DMX- 9 Channel LED Driver

## Notes / Worksheet:

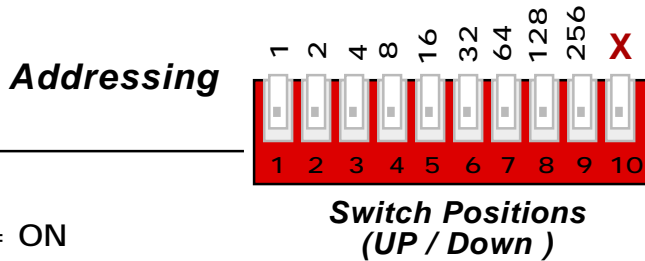
DMX LED-9 BOARD NO: \_\_\_\_\_

DMX LED-9 BOARD Application: \_\_\_\_\_

TRM = (ON /OFF) \_\_\_\_\_



Addressing	Output Application
Ch -9	_____
Ch -8	_____
Ch -7	_____
Ch -6	_____
Ch -5	_____
Ch -4	_____
Ch -3	_____
Ch -2	_____
Ch -1	_____



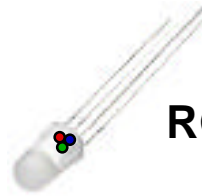
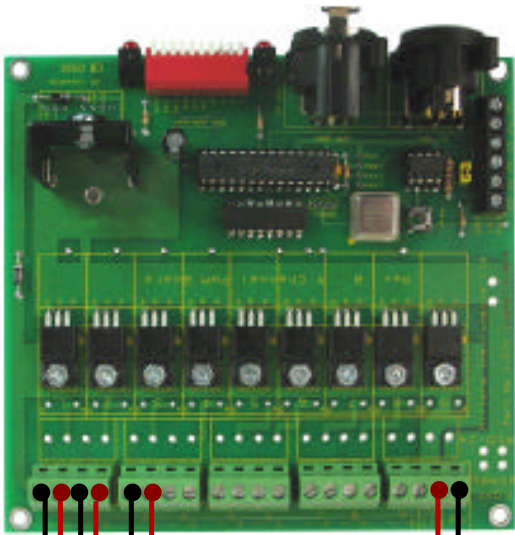
1 = ON  
0 = OFF

Value	0	1
	OFF	ON
SW-1	_____	_____
SW-2	_____	_____
SW-3	_____	_____
SW-4	_____	_____
SW-5	_____	_____
SW-6	_____	_____
SW-7	_____	_____
SW-8	_____	_____
SW-9	_____	_____
<b>BASE Addressing</b>		
	DMX	Position

# DMX- 9 Channel LED Driver

## RED-GREEN-BLUE LED Strip Lighting Method

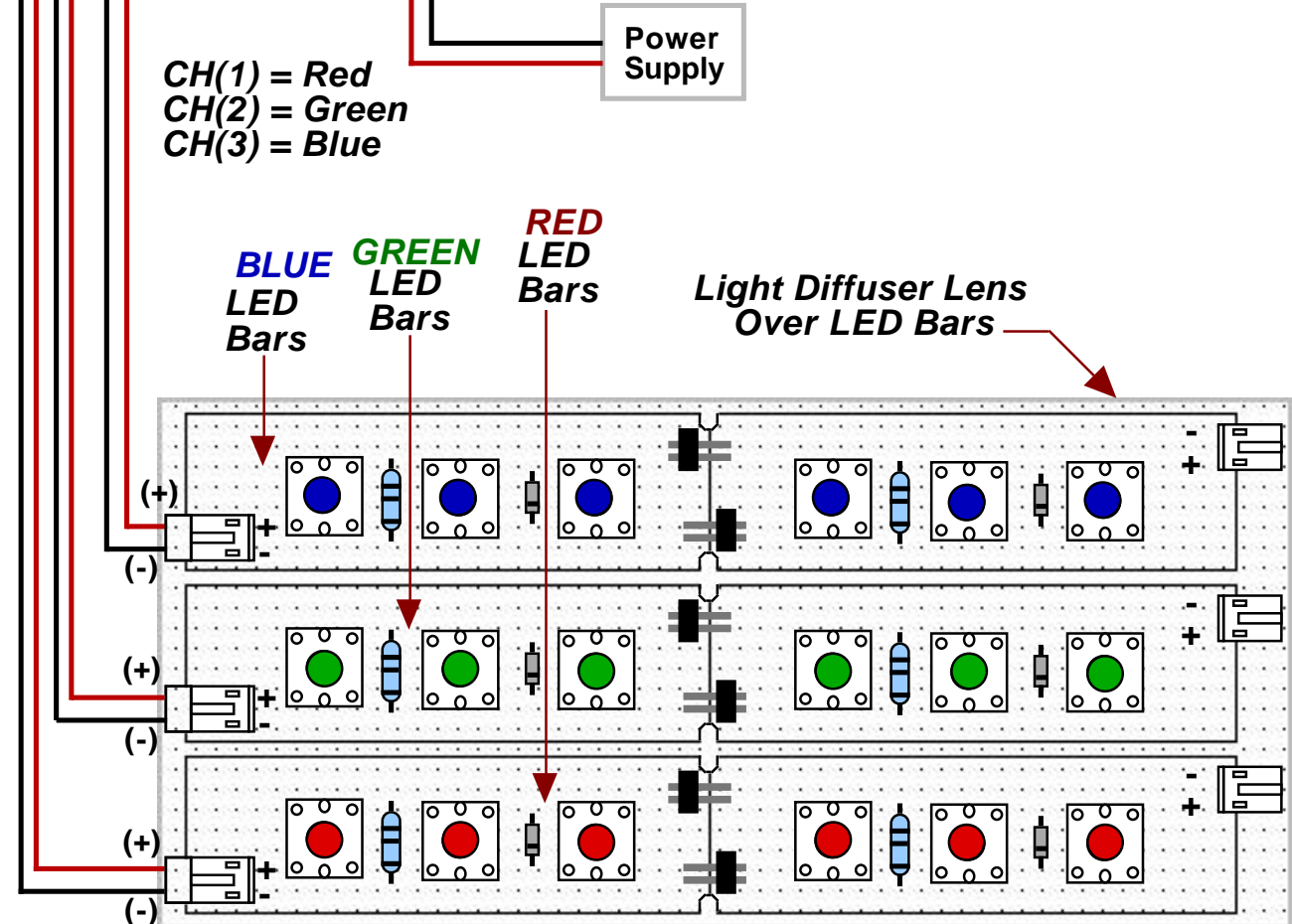
**HINT:** You can create RGB lighting effects by using strips of Single Color LED and turn each one of them **ON** and **OFF** in RGB numerical equivalent color patterns to generate the various different colors.



**RGB LED**

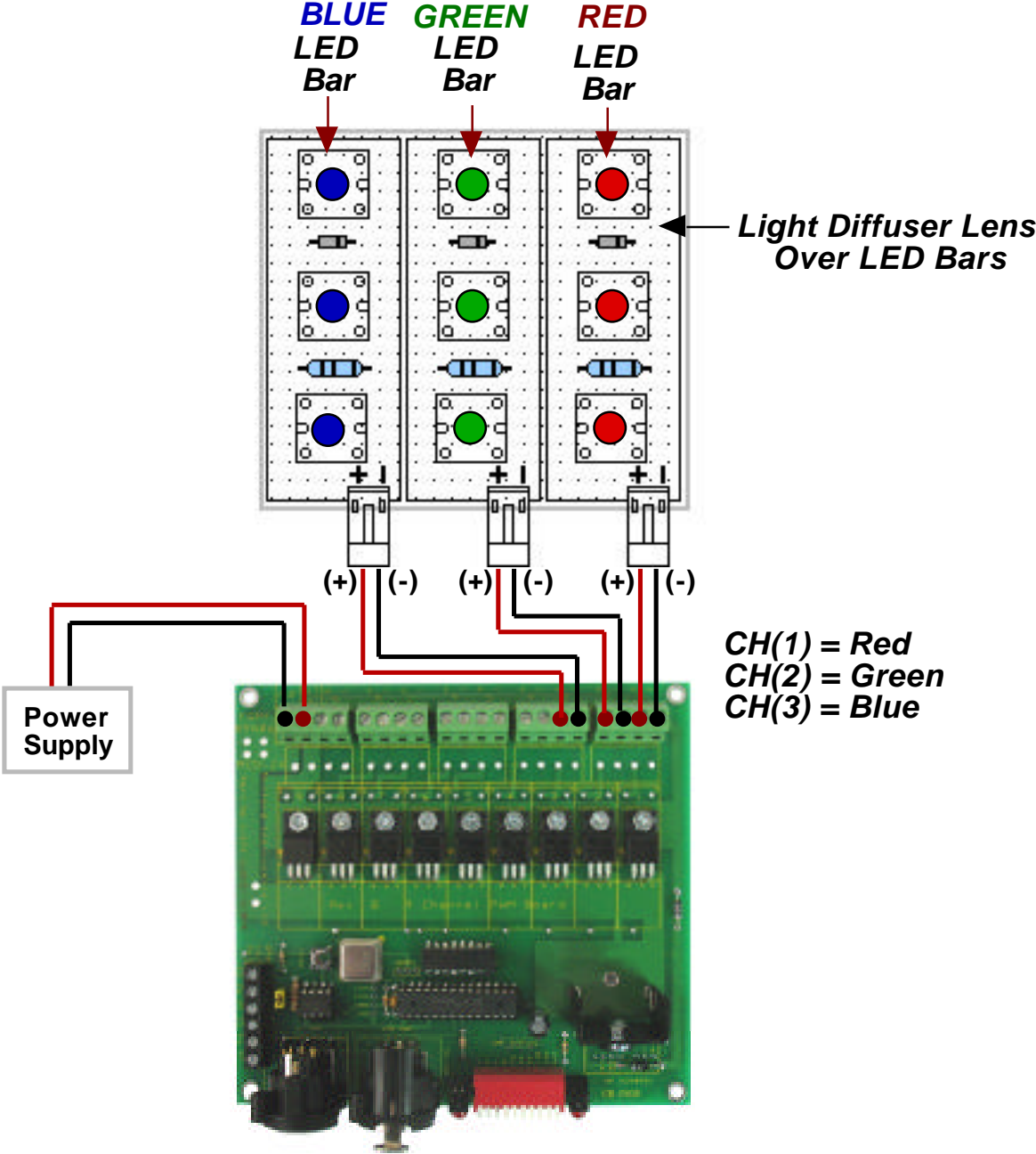
- OR -

**Single Color Light Bars**



# DMX- 9 Channel LED Driver

## RED-GREEN-BLUE LED Strip Lighting Method





# DMX- 9 Channel LED Driver

Technical

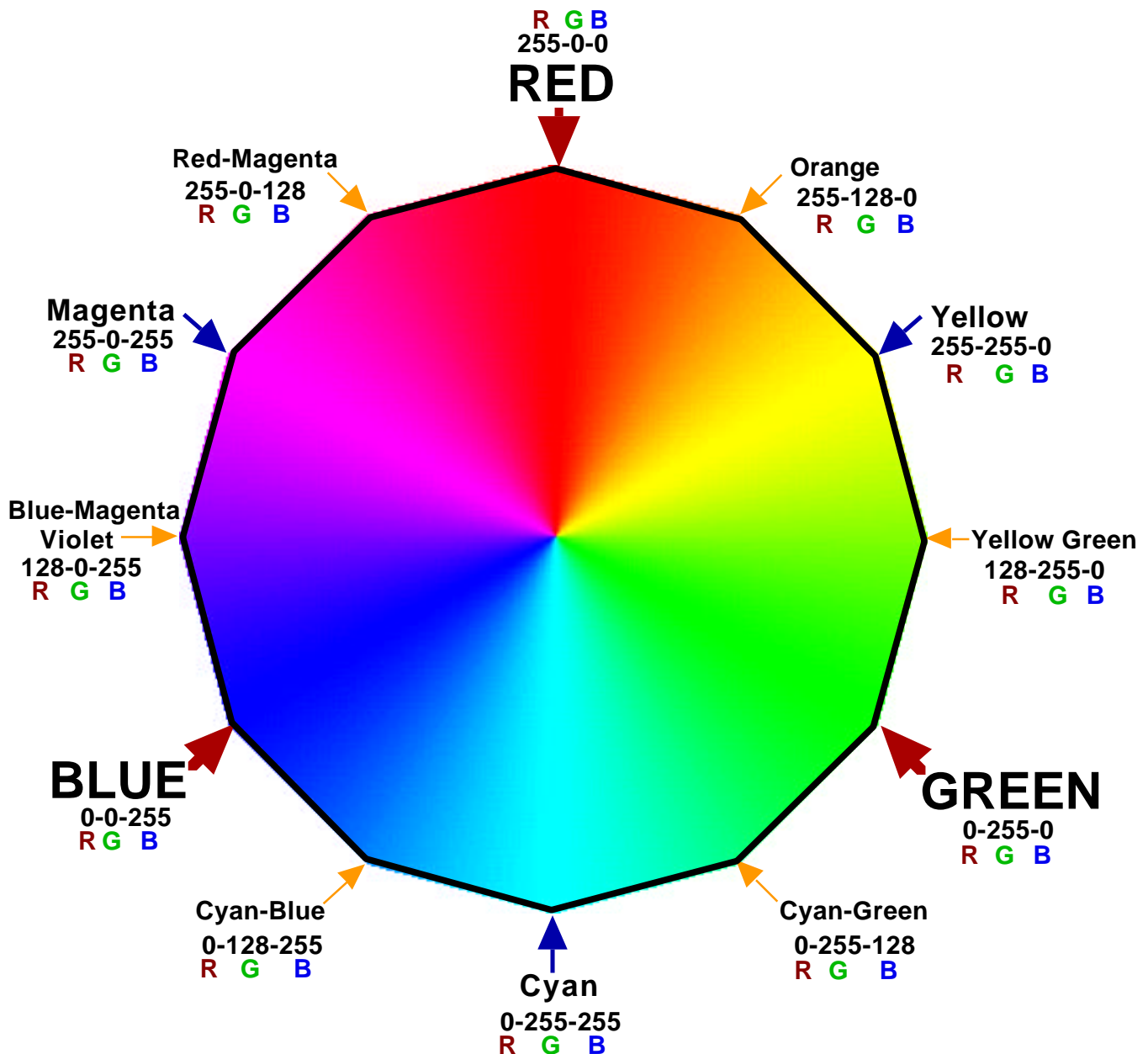
T

## RGB Numerical Equivalents

NOTE:  
Printer Page Not Actual  
Colors +/- 10% Shift

0= OFF  
255= ON FULL  
128= 50% Dim

RGB Color Values  
**RED-GREEN-BLUE**  
255 255 255





# RGB LED Setup

5mm - RGB LED on quick wire adapter with current limiting resistors on board.  
Adapter is set up for 9-12 Vdc Input.

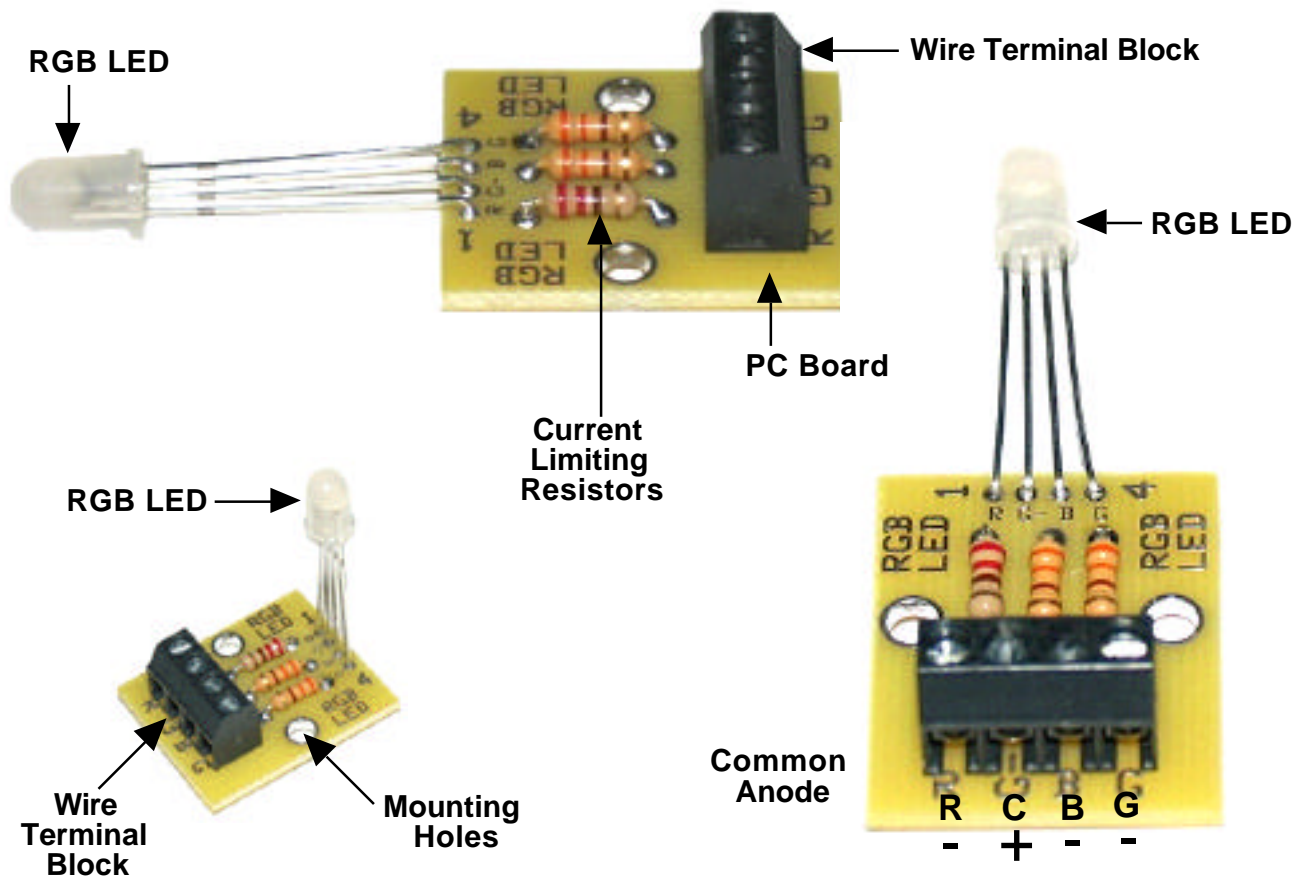
(Red- Resistor 220 Ohm at 9-12 VDC power supply  
Green / Blue- Resistor 330 Ohm at 9-12 VDC power supply

RGB LED ( 4 lead wires from LED )

Common Anode (Positive) configuration

Emits: Red-Green-Blue Light - Defused Lens for even coloration

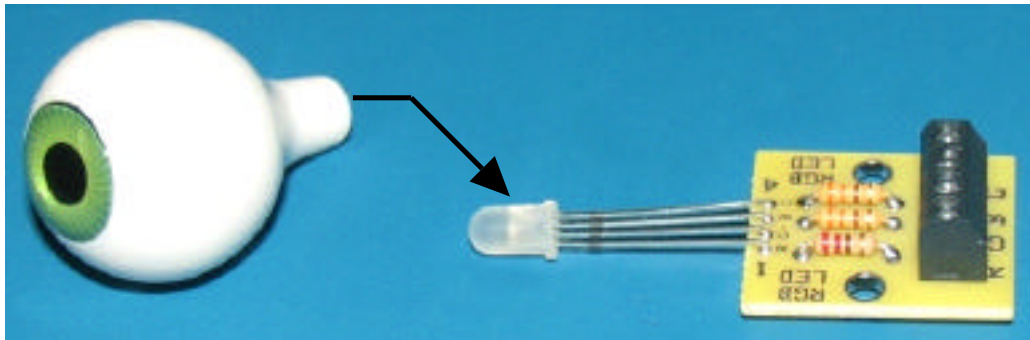
Color	VDC	mA	View Angle	MCD	Wavelength:
RED	2.0	50mA	60 Deg	565	RED = 5624nm
GREEN	3.5	30mA	60 Deg	650	GREEN = 525nm
BLUE	3.5	30mA	60 Deg	120	BLUE = 1470nm



## RGB Eyeball Application

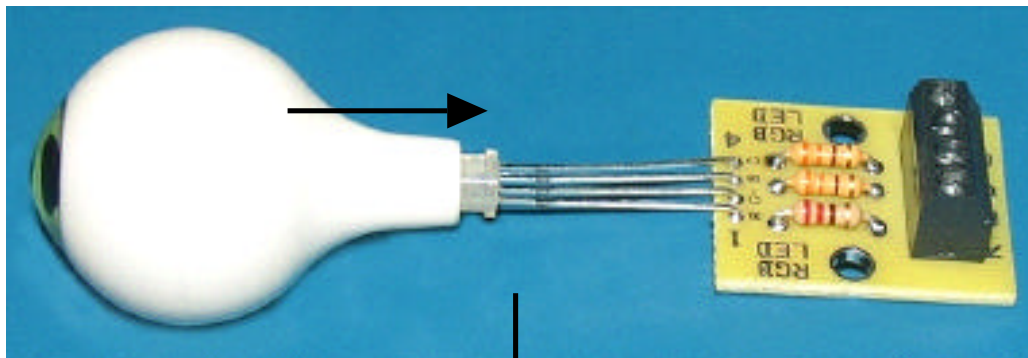
Plastic Eye

RGB LED Module



Plastic Eye

RGB LED Module

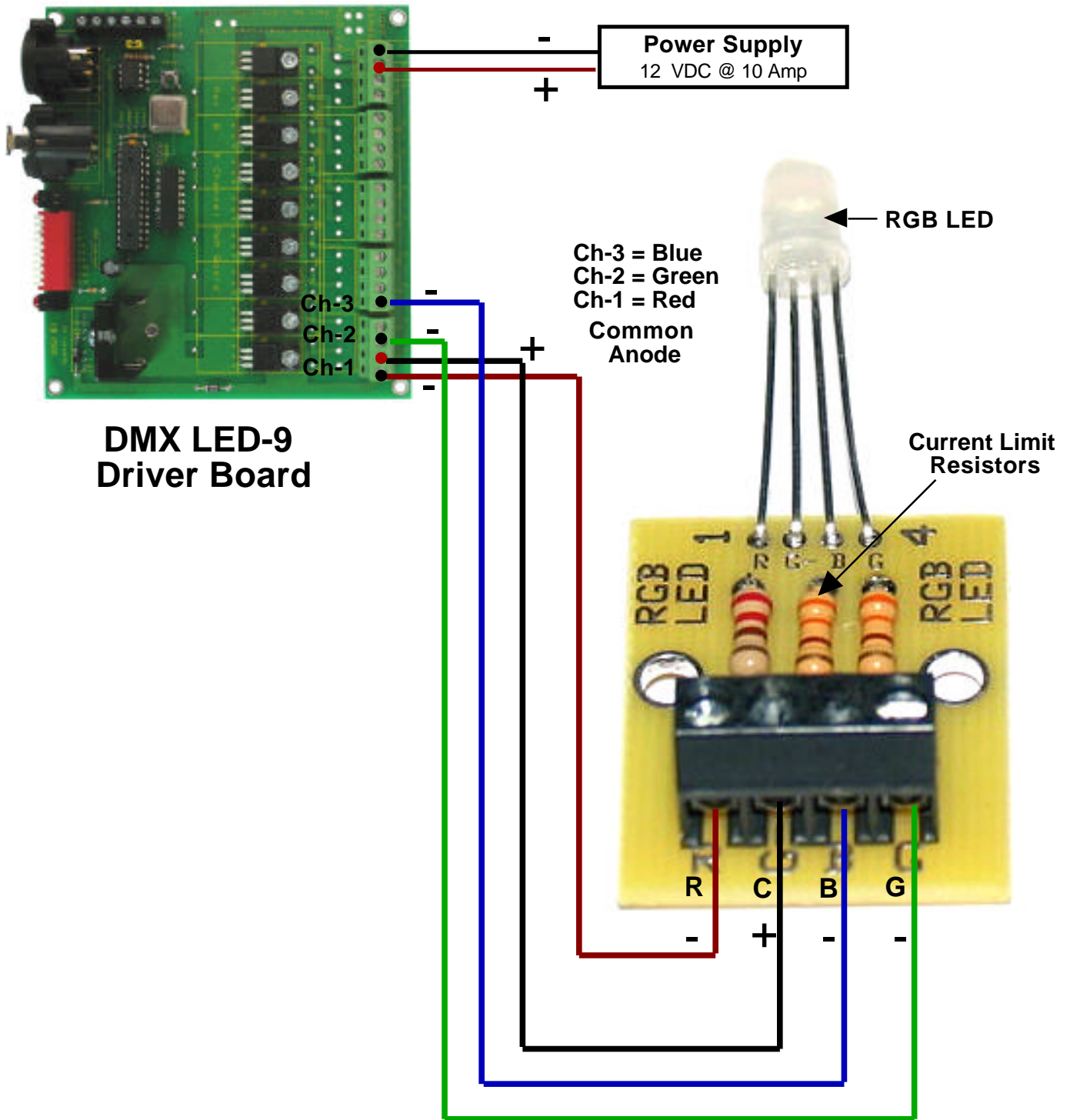


**X 2**

Left - Right Eyeballs

# RGB LED Setup

LED's



# RGB LED Setup

## RGB Eyeball Application

