

User manual

LEDVD5CH20A-V2

Voltage driver whereby the brightness, color or color temperature of the LED strips are set by the user (without user interface circuit board)



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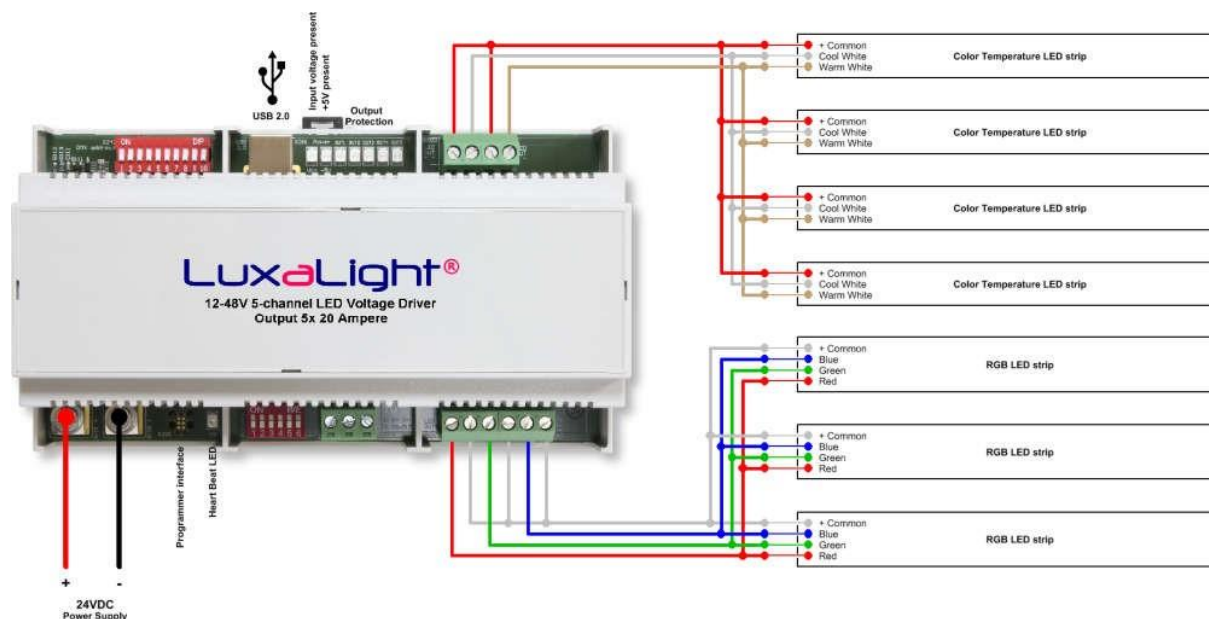
Deze versie is een volwaardige RGB controller voor het instellen van kleuren en kleurtemperatuur, en het rustige doorlopen van het kleurenspectrum. De gebruiker kan op ieder moment de lichtsterkte, kleur of kleurtemperatuur van de ledstrips aanpassen via de pc/laptop. Verder kan er nog kleurtemperatuur ingesteld worden tussen warmwit en koelwit. Deze kunnen ook in de EEPROM van de controller opgeslagen worden waarna de spanningdriver deze gebruikt, ook als deze van de voedingspanning af geweest is.

Control via PC or laptop:

The voltage driver can be adjusted and programmed by means of a PC/laptop via the USB cable with a terminal program.

Connecting and adjustments:

Schematics



The above diagram shows the use of this version of the controller

The power supply:

On the left at the bottom side of the voltage driver there are two large terminals. This, the power supply wires are connected. The total requested flow from the diet can be with all five channels at full load up to 100 Amps. If the power wires between power supply and voltage driver no more than 1 to 1.5 meters, it is sufficient 2x 10mm², 16mm² is recommended for longer lengths.

The outputs:

The outputs of the voltage driver are located on the right side on the PCB and the order of the channel numbers is counterclockwise, starting on the bottom.

To the right on the circuit board at the bottom, a connecting block (X502) is located with 6 ports, starting from the left-hand connection:

1 Output	1 –
2 Output	1 +
3 Output	2 –
4 Output	2 +
5 Output	3 –
6 Output	3 +

To the right on the circuit board at the top, a connecting block (X503) is located with 4 ports, starting from the right-hand connection:

7 Output	4 –
8 Output	4 +
9 Output	5 –
10 Output	5 +

Setting colors and effects:

Each of these five channels (voltage outputs) can be adjusted in 256 steps from completely dark to full brightness level. The possibilities are dependent on the implementation of software, which can also be customized for the benefit of the customer.

Connect the voltage driver to the power supply, preferably with LED strips on the outputs, only to test your settings. Connect a PC or laptop with a terminal program (such as "Termite") with an USB cable to the USB connector (X301) of the voltage driver. Set the correct COM port (depending on the PC or laptop), 9600 baud, 8 data bits and stop bits 1 and set "Add CR" on it.

Download the USB driver for the Voltage driver from this website <https://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx> and install the version that fits to your operating system. The terminal program comes with a help menu if you type "help".

Setting up zones and design colors:

For setting the light intensity on the channels use the terminal command:

setDutyx yyy

where "x" is the channel;

1 for channel 1

2 for channel 2

3 for channel 3

4 for channel 4

5 for channel 5

and "yyy" the PWM value (duty cycle) between 000 and 255. Make sure you type in the leading zero's for the PWM value. e.g. 063.

Example:

We're going to Channel 1 set to 25% brightness with the command:

setDuty0 063

We see, if there is a LED strip is connected to channel 1 that it adjusts the light intensity directly.

To store the set brightness in the EEPROM is the terminal command:

writeDutyx

where "x" is the channel. The PWM value is not entered here, the value set is used with setDuty.

Example:

We're going to save the set brightness of channel 1 in the EEPROM using the command:

writeDuty0

The terminal program reports that the write operation was successful. The voltage driver now also remembers without power set value of channel 1.

When switching on the voltage PWM driver this stored value is used to set the corresponding voltage channel output. If no channel number is specified by write-duty command, then currently PWM values for all channels will be stored in the EEPROM.

To retrieve the stored EEPROM value is the terminal command:

getDutyx

where "x" is the channel.

Example:

We're going to ask for the set brightness of channel 1 in the EEPROM using the command:

getDuty0

The terminal program then comes back with the PWM value that was saved once before, and for that channel is used by the voltage driver during startup.

Setting colors and color temperature and combinations:

For the set of colors and the color temperature are 5 channels reserved in the software as follows:

Channel 1: Red

Channel 2: Green

Channel 3: Blue

Channel 4: Warm white

Channel 5: Cool white

For adjusting the color, the software is programmed so that color, color saturation and brightness can be adjusted with the terminal commands:

setHue *yyy*

setSat *yyy*

setVal *yyy*

where *yyy* is a value between 0 and 255.

For the following colors apply to the corresponding setHue values:

Red: **setHue 000**

Orange: **setHue 021**

Light orange: **setHue 031**

Amber: **setHue 037**

Yellow: **setHue 043**

Yellow green: **setHue 063**

Green: **setHue 085**

Cyan: **setHue 127**

Blue: **setHue 169**

Violet: **setHue 190**

Magenta: **setHue 212**

Red pink: **setHue 233**

All values between 000 and 255 are allowed. With the LED strip to full brightness you can go with 256 steps through the color spectrum (without adjusting the color saturation and brightness).

For color saturation, the following setSat values:

Colorless, corresponds to white: **setSat 000**

Pastel Tint, 50% color blended with white: **setSat 127**

Saturated, full color: **setSat 255**

All values between 000 and 255 are allowed.

For the brightness the next setVal values apply:

Off: **setVal 000**

Half dim: **setVal 127**

Full on: **setVal 255**

All values between 000 and 255 are allowed.

To store the colors in the EEPROM use these terminal commands:

writeHue

writeSat

writeVal

The terminal program reports that the write operations were successful. The voltage driver will set these values at startup.

To set the color temperature, the software is programmed so that the ballasts can be adjusted between warm white and cool white with terminal commands:

setTemp *yyy*

setBright *yyy*

where *yyy* is a value between 0 and 255.

If the warm white LED strip is about 3300K and cool white 8000K about, then globally apply to the color temperature of the following setTemp values:

Warm white 3300K: **setTemp 000**
Neutral white 4000K: **setTemp 038**
White 5500K: **setTemp 120**
Cool white 8000K: **setTemp 255**

All values between 000 and 255 are allowed.

With the LED strip to full brightness the color temperature can be set by 256 steps from fully warm white to fully cold white (without adjusting the brightness).

To save the color temperature and brightness in the EEPROM use the terminal commands:

```
writeTemp  
writeBright
```

The terminal program reports that the write operations were successful. The voltage driver will set these values at startup.

Color effects:

As color effect, there is really only one that is nice and quiet in practice, and that's going through the color spectrum. This goes with the terminal commands:

```
setSpeed yyy
```

where yyy is a value between 0 and 255.

In order for the voltage driver through the color spectrum walk we give the command:

No loop: **setSpeed 000**
Lowest speed run: **setSpeed 001**
Highest speed run: **setSpeed 255**

All values between 000 and 255 are allowed. At the lowest speed, the strip need about 42 minutes to go throughout the whole color spectrum. At the highest speed, the strip need about only 10 seconds to go throughout the whole color spectrum (40ms per step).

To save the running speed in the EEPROM use the terminal command:

```
writeSpeed
```

The terminal program reports that the write operation was successful. The voltage driver will set these values at startup.

LED indicators:

On the board are what LED indicators. The green LED's at the top indicate that the supply voltage on the print is present and hence the 5V for the controller electronics. The green flashing LED at the bottom indicates the "heart beat" of the controller as a sign that it is working properly. There are also some red LEDs OUT 1 t / m OUT5, which light up as soon as a voltage output is overloaded. Above a certain value is, moreover, the overloaded channel turned off by software.

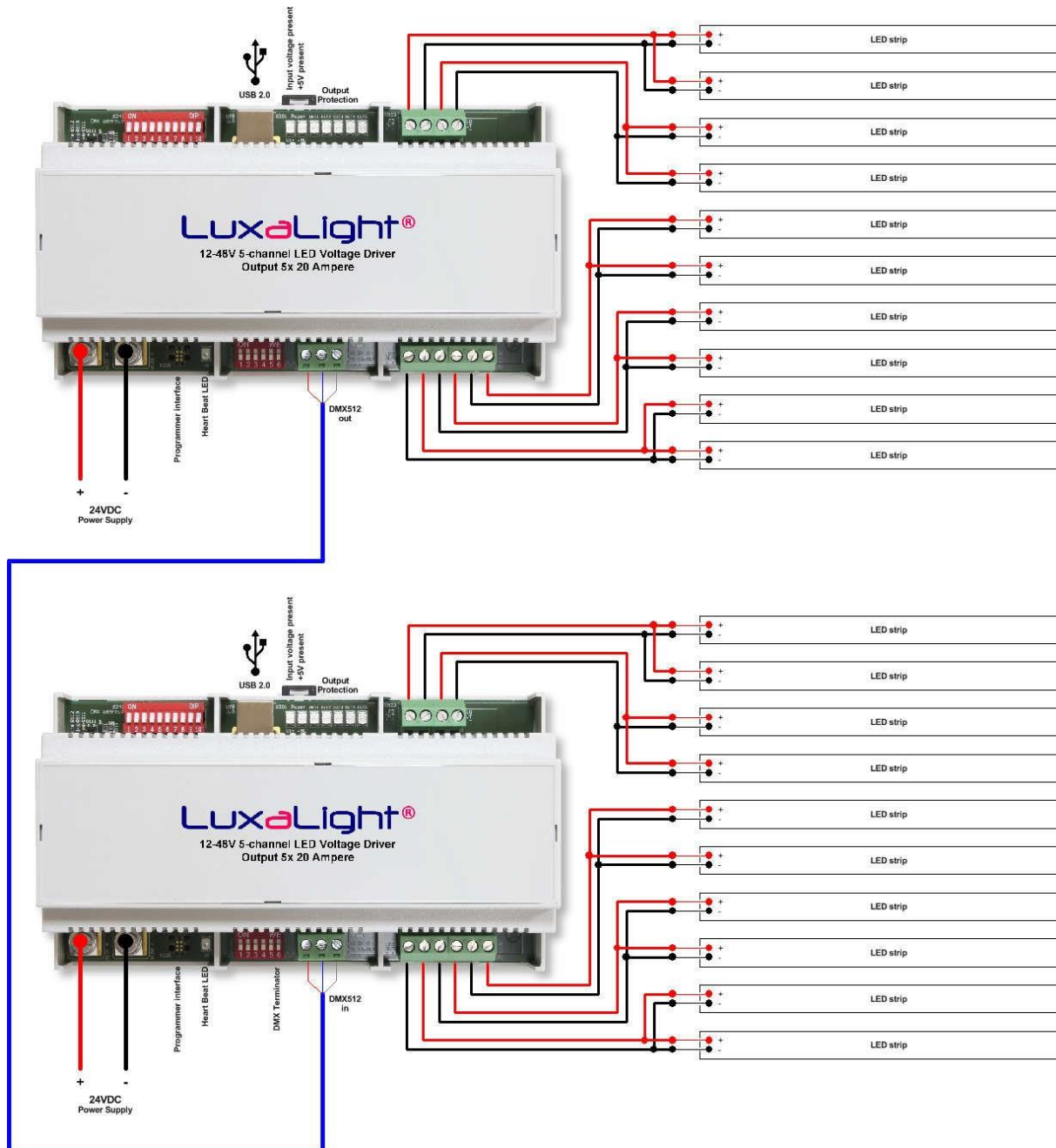
Custom made options:

The LuxaLight voltage driver provides the proprietary software options for customer-specific applications, such as connecting a light sensor. The hardware of the voltage driver offers this possibility, but an additional light sensor has to be made and should also be made an extensions in the software here. Customization options will be included in the offer.

Cascading the drivers:

The colors and color effects which can be created by the driver themselves are also available on the DMX connector with fixed DMX channels 1 to 5. This allows other voltage drivers to be linked, and to follow the color settings and color effects.

See circuit diagram below:



Specifications:

Input Voltage	12...48V
Maximal input current	100A (sum of the output currents)
Standby current	18mA (outputs)fully dimmed)
Own power consumption	5W at 2400W load
Efficiency	Approx. 99.8%
Output current per channel	20 Ampere up to 24 Volt
Ouput power	12V – 5x 240 Watt = 1200 Watt (20A/channel)
	24V – 5x 480 Watt = 2400 Watt (20A/channel)
	36V – 5x 540 Watt = 2700 Watt (15A/channel)
	48V – 5x 576 Watt = 2880 Watt (12A/channel)
Overvoltage protection	Yes, up to 60 Volts
Short circuit protection	Yes
DMX512	DMX512 input/output
On-board DMX512 terminator	Yes, switchable
PWM frequency	250 Hz
No. of brightness steps per channel	256 (8-bit)
Color resolution	8-bit (16.7 million colors, true-color)
Outputs are EMC filtered	Yes
Temperatuurbereik	-20°C ... +40°C
Housing, b x h x d	DIN rail housing, 159mm x 90mm x 58mm
IP-class	IP20
Cooling	On circuit board, with coolfan on fan controller

Compliant:

Meets standards:

- CE mark is attached to the PCB
- RoHS directive 2002/95/EC
- EMC directive 2014/30/EC