



FEATURES

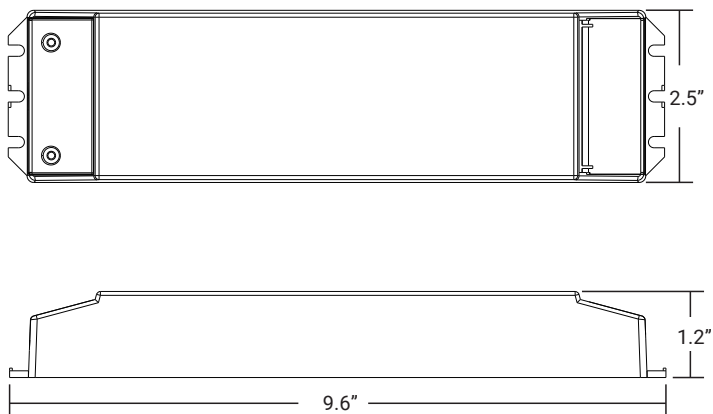
The LB-2108-24-96CVF is a UL, ENEC, and TUV approved RDM-enabled DMX 96W dimmable LED driver with 4 channels of 24VDC constant voltage output and a 100-277VAC universal input. The driver boasts a power factor of over 0.9 and efficiency exceeding 90%, ensuring smooth and deep dimming down to 0.1% without flickering or buzzing noise.

It supports DMX channel quantities of 1/2/3/4, configurable via buttons, allowing control of single-color, tunable white, and RGB/RGBW LED lighting. DMX addresses can be manually assigned using the buttons and displayed on the digital display. Compliant with DMX512(2008), DMX512-A, and RDM V1.0 (E1.20 - 2006 ESTA Standard) protocols, this DMX driver is compatible with universal DMX consoles, and its UL, ENEC, and TUV certification ensures high safety performance for worldwide use.

Various features can be configured via the visible numeric digital display and buttons, including DMX address, DMX channel quantity, PWM output resolution (8-bit or 16-bit), PWM output frequency (adjustable from 500Hz to ultra-high 30kHz, ideal for professional film lighting), GAMMA ray dimming curve value (adjustable from 0.1-9.9, with optional logarithmic and linear dimming), and DMX decoding modes (optional, with default mode set to dp1.1).

- Dimmable 24V LED Driver, Max. output power 96W.
- Built-in DMX512 interface, support RDM bi-directional communication.
- 100-277VAC wide input voltage.
- Supports 4 DMX512 addresses with 4 channels output. The DMX channel quantity can be set from 1CH to 4CH.
- PWM output resolution adjustable between 8-bit and 16-bit.
- Output PWM frequency adjustable from 500Hz to 35kHz.
- Output dimming curve gamma value adjustable from 0.1 to 9.9.
- Compatible with universal DMX512 consoles.
- Class 2 power supply with fully isolated plastic casing.
- High power factor and efficiency.
- IP20 rating, suitable for indoor LED lighting applications.

DIMENSIONS



TECHNICAL DETAILS

Input Voltage	100-277 VAC
LED Channels	4
Frequency Range	50/60Hz
DC Voltage	24V DC
Dimensions	9.6"X2.5"X1.2"

Rated Power	Max. 96W (no minimum load required)
Certifications	FCC / RoHS
Color	White
Warranty	5 Years limited warranty

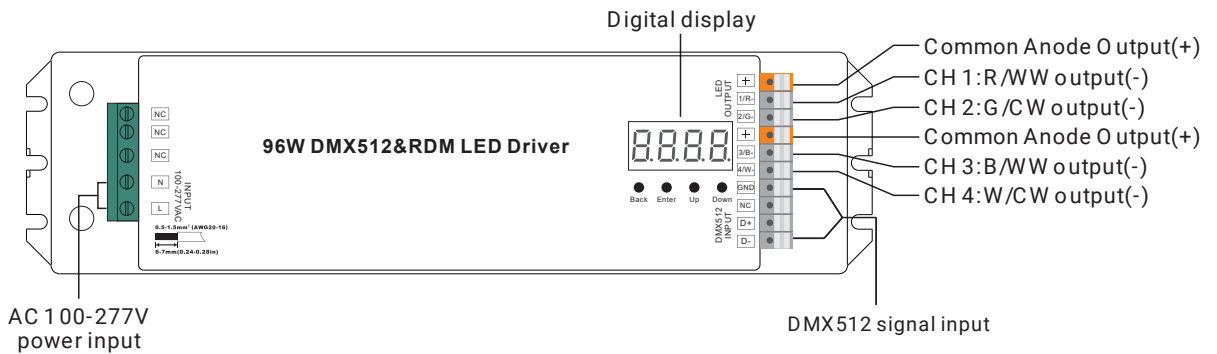
Refer to the next page for additional Technical Details.



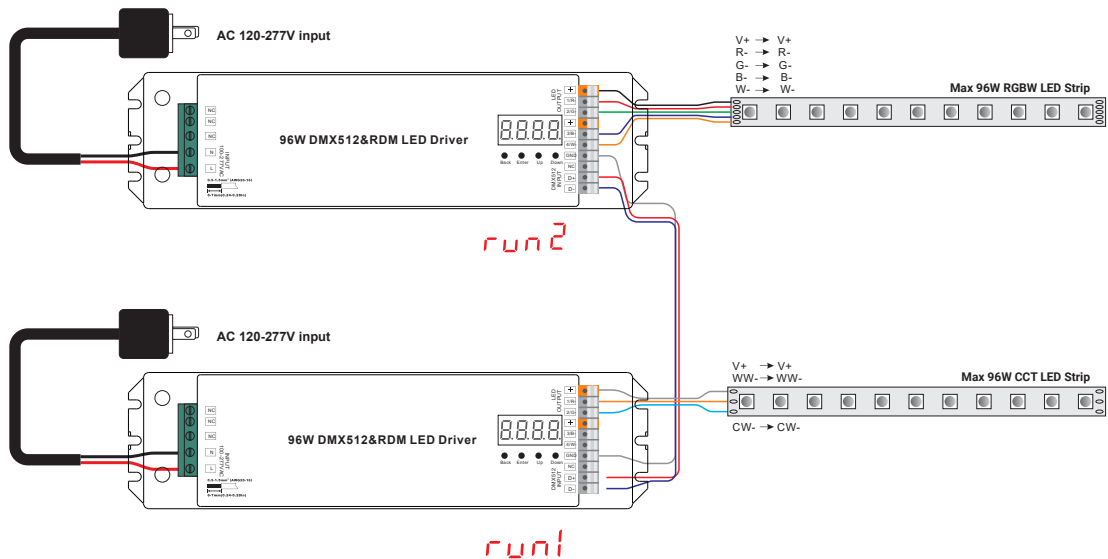
TECHNICAL DETAILS

Output	LED Channel	4
	DC Voltage	24V DC
	Rated Current	Max. 4A/CH, C H1+CH2+CH3+CH4=4A
	Voltage Tolerance	± 1%
	Rated Power	max. 96W (no minimum load required)
	Ripple & Noise (max.)	240mVp-p
	Line Regulation	± 0.5%
	Load Regulation	± 0.5%
	Setup Time	1500ms @ 115V, 1000ms @ 230V
	Holdup Time (Typ.)	20ms @ 115V, 230V
Input	Voltage Range	100-277V AC
	Frequency Range	50/60Hz
	Power Factor (Typ.)	> 0.90 @ 230VAC
	Total Harmonic Distortion	THD ≤ 15% (@ full load / 230VAC)
	Efficiency (Typ.)	90% @ 230VAC full load
	AC Current (Typ.)	1.2A @ 100VAC, 0.5A @ 230VAC
	Inrush Current (Typ.)	COLD START Max. 50A at 230VAC
	Leakage Current	< 0.5mA / 230VAC
Control	Dimming Interface	DMX/RDM
	Dimming Range	0.1% - 100%
	Dimming Method	Pulse Width Modulation
	Dimming Curve	Linear, Logarithmic
Protection	Over Current	Yes, recovers automatically after fault condition is removed
	Over Temperature	Yes, recovers automatically after fault condition is removed
Environment	Working Temp.	-20°C - 50°C / -4°F - 122°F
	Max. Case Temp.	176°F
	Working Humidity	10% ~ 95% RH non-condensing
	Storage Temp. & Humidity	-40°F ~ +176°F, 10% ~ 95% RH
Safety & EMC	Safety Standards	UL8750, CAN/CSA C22.2 No. 250.13-14, EN61347-1, EN61347-2-13 approved
	Withstand Voltage	I/P-O/P: 3.75KVAC
	Isolation Resistance	I/P-O/P: 100M Ohms / 500VDC / 77°F / 70% RH
	EMC Emission	EN55015, EN61000-3-2, EN61000-3-3
	EMC Immunity	EN61547, EN61000-4-2,3,4,5,6,8,11, surge immunity Line-Line 1KV
Others	MTBF	188300H, MIL-HDBK-217F @ 230VAC at full load and 25 ambient temperature
	Dimension	9.6"X2.5"X1.2"

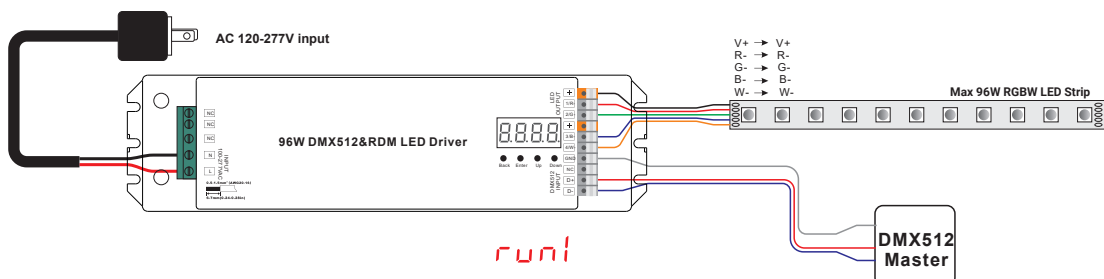
WIRING DIAGRAM



1.Master Mode



2.Decoder Mode



Note: Ensure that the stripped wires are fully inserted into the terminal blocks and that screws are tightened securely.

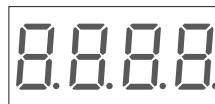
OPERATION

Before proceeding with other settings, please ensure that the device is set to either Master or Decoder mode.

run1 = DMX Decoder mode, **run2** = DMX Master mode(stand alone).

Continuously press the Down button to cycle through options until 'run1' or 'run2' is displayed. Press Enter to confirm your selection, and then use the Down button again to choose either 1 or 2. After making your selection, press the Back button.

Once you have chosen either 'run1' or 'run2', please power off the device and then power it on again



1. In run2 DMX Master mode: After powering on the device, continue pressing the Up button. This will display the below menu options on the screen.

8.8.8.8 This section refers to the brightness settings for each output PWM channel. The first digit '1' corresponds to PWM output channel 1, which can be selected from channels 1 to 4 by using the 'UP' or 'Down' buttons.

The second part, '01', indicates the brightness level. After selecting the desired channel, press the 'Enter' button. The display will flash, indicating readiness for adjustment. Use the 'UP' or 'Down' buttons to select a brightness level ranging from 00 to 99, or 'FL' for full brightness (100%). Confirm your selection by pressing the 'Back' button."

P. XXX Refers to programs, with a total of 1 to 31 programs available.

B- XX Refers to the brightness level of the RGB running effect, with a total of 1 to 8 levels available.

SP- X Indicates the play speed of the effect, with a total of 1 to 9 speed levels.

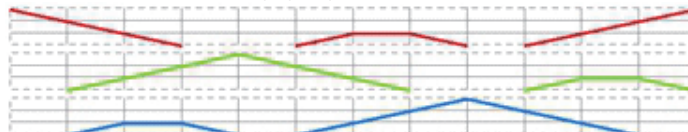
P-XX means RGB color changing modes, with a total of 31 programs:

- 00- RGB off
- 01- Static red
- 02- Static green
- 03- Static blue
- 04- Static yellow (50% red+50% green)
- 05- Static orange (75% red+25% green)
- 06- Static cyan (50% green+50% blue)
- 07- Static purple (50% blue+50% red)
- 08- Static white (100% red+100% green+100% blue)

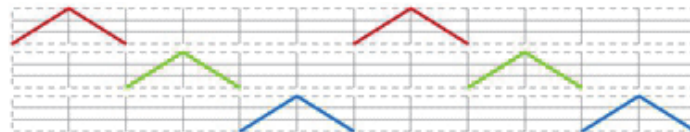
09- Any two colors of RGB mix fade, changing diagram as follows:



10- RGB colors mix fade, changing diagram as follow:



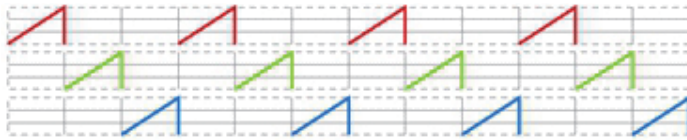
11- RGB FADE OUT & FADE IN, changing diagram as follow:



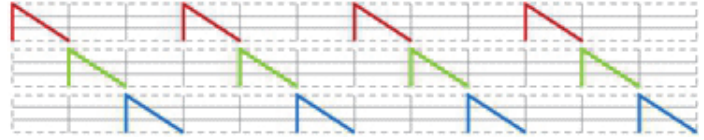
12- RGB jump changing, changing diagram as follow:



13- RGB FADE IN, changing diagram as follow:



14- RGB FADE OUT, changing diagram as follow:



15- RGB 3 colors strobe

16- White color strobe (100% red+100% green+100% blue)

17- 7 colors FADE OUT & FADE IN (red, orange, yellow, green, cyan, blue, purple FADE OUT & FADE IN)

18- 7 colors jump changing (red, orange, yellow, green, cyan, blue, purple jump changing)

19- 7 colors strobe (red, orange, yellow, green, cyan, blue, purple strobe)

20- Red-white (100% red+100% green+100% blue) circle gradual changing

21- Green-white (100% red+100% green+100% blue) circle gradual changing

22- Blue-white (100% red+100% green+100% blue) circle gradual changing

23- Red-orange circle gradual changing

24- Red-purple circle gradual changing

25- Green-yellow circle gradual changing

26- Green-cyan circle gradual changing

27- Blue-purple circle gradual changing

28- Blue-cyan circle gradual changing

29- Red-yellow-green circle gradual changing

30- Red-purple-blue circle gradual changing

31- Green-cyan-blue circle gradual changing

II. For run1 DMX decoder mode: After powering on the decoder, if you continue to press the up button, you will find the following menu displayed.

DMX signal indicator ● :: When DMX signal input is detected, the indicator on the display following after **A** turns on red **A.XXX**

If no DMX signal input is detected, the indicator will remain off, and the status will flash intermittently.

8888 you will get this after power on the decoder, it means this decoder supports firmware OTA update function.

A.XXX Means the DMX address default setting is 001.

88XX Refers to the quantity of DMX channels. Factory default setting is CH 04

88XX Means Bit (8bit or 16bit). factory defaults setting is 16bit

88XX Refers to the output PWM frequency, with the factory default setting being 1 kHz.

88XX Refers to the output dimming curve gamma value, with the factory default setting being gamma 1.5

88XX Refers to the decoding mode, with the factory default setting being dp 1.1.

To restore to default settings, press and hold the Back + Enter buttons simultaneously for over 5 seconds until the display turns off.

OPERATION

Firmware OTA Update:

This function facilitates firmware updates provided by the manufacturer. The update process requires a Windows computer and a USB to serial port converter. The converter establishes a connection between the computer and the decoder's hard-wired DMX port. A software RS485-OTW on the computer is utilized to initiate the firmware transfer to the decoder.

To execute the update:

Connect the computer and the decoder via the USB to serial port converter.

If updating multiple decoders, connect the converter to the first decoder's DMX port.

Subsequently, connect the other decoders to the first decoder in a daisy chain configuration through the DMX port.

Note: It is essential not to power on the decoders during the update process.

To execute the firmware update process, run the OTA tool RS485-OTW on the computer. Select the correct communication port "USB-SERIAL", set the baud rate to "250000", and the data bit to "9", while maintaining default settings for other configurations. Click the "File" button to select the new firmware from the computer, then click "Open Port" to establish the connection. Once connected, click "Download Firmware" to initiate the transfer. The right-side state column will indicate "send link". Power on the decoders before "wait erase" displays on the state column; the digital display will show **8888**. Upon "wait erase" appearing, indicating the start of the update, the OTA tool will write data to the decoders. The state column will show the progress, and upon completion, the digital display will flash **8888** confirming a successful firmware update.

2. DMX address setting:

select menu **8 XXX**, click button "Enter", display flashes, then click or hold button "Up" / "Down" to set DMX address (click is slow, hold is fast.), then click button "Back" to confirm.

3. DMX channel quantity setting:

Select menu **88 XX**, click button "Enter", display flashes, then click button "Up" / "Down" to set DMX channel quantity, then click button "Back" to confirm.

For example the DMX address is already set 001.

CH01=1 DMX address for all the output channels, which are all address 001.

CH02=2 DMX addresses, output 1&3 is address 001, output 2,4&5 is address 002

CH03=3 DMX addresses, output 1, 2 is address 001,002, output 3,4&5 is address 003

CH04=4 DMX addresses, output 1,2,3,4 is address 001,002,003,004

4. PWM output resolution Bit setting:

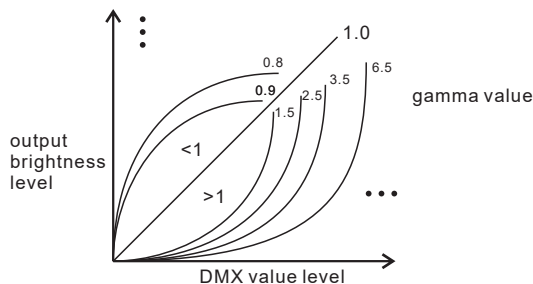
select menu **88 XX**, click button "Enter", display flashes, then click button "Up" / "Down" to choose 08 or 16 bit, then click button "Back" to confirm.

5. output PWM frequency setting:

select menu **88 XX**, click button "Enter", display flashes, then click button "Up" / "Down" to choose 00~35, then click button "Back" to confirm. 00=500HZ, 01=1kHz, 02=2kHz.....25=25kHz, 35=35kHz.

6. output dimming curve gamma value setting:

select menu **88 XX**, click button "Enter", display flashes, then click or hold button "Up" / "Down" to choose 0.1~9.9, then click button "Back" to confirm.



7. DMX decoding mode setting:

Select menu **88 XX**, click button "Enter", display flashes, then click or hold button "Up" / "Down" to choose the decoding mode, then click button "Back" to confirm. "dPxx" means the DMX address quantity used for control of corresponding PWM output channel quantity. 1st "x" is DMX address quantity, 2nd "x" is PWM channel quantity.

The fine dimming effect becomes noticeable when the dimming curve gamma value is set below 1.4. Additionally, the lower the gamma value, the more pronounced the fine dimming effect becomes.

DMX OPERATION

DMX address is 001, CH01

DMX Console Slider number	dp1.1	dp2.1
DMX channel		
1	for all output dimming	for all output dimming
2	No use	for all output fine dimming

DMX address is 001, CH02

DMX Console Slider number	dp1.1	dp2.1	dp3.2
DMX channel			
1	for output 1&3 dimming	for output 1&3 dimming	for output 1&3 dimming
2	for output 2,4 &5 dimming	for output 1&3 fine dimming	for output 2,4 &5 dimming
3		for output 2,4 &5 dimming	for all output dimming
4		for output 2,4&5 fine dimming	

DMX address is 001, CH03

DMX Console Slider number	dp1.1	dp2.1	dp4.3	dp5.3
DMX channel				
1	for output 1 dimming	for output 1 dimming	for output 1 dimming	for output 1 dimming
2	for output 2 dimming	for output 1 micro dimming	for output 2 dimming	for output 2 dimming
3	for output 3,4 dimming	for output 2 dimming	for output 3,4 dimming	for output 3,4 dimming
4		for output 2 micro dimming	for all output master dimming	for all output master dimming
5		for output 3,4 dimming		strobe effects
6		for output 3,4 micro dimming		

DMX address is 001, CH04

DMX Console Slider number	dp1.1	dp2.1	dp5.4	dp6.4
DMX channel				
1	for output 1 dimming	for output 1 dimming	for output 1 dimming	for output 1 dimming
2	for output 2 dimming	for output 1 micro dimming	for output 2 dimming	for output 2 dimming
3	for output 3 dimming	for output 2 dimming	for output 3 dimming	for output 3 dimming
4	for output 4 dimming	for output 2 micro dimming	for output 4 dimming	for output 4 dimming
5		for output 3 dimming	for all output master dimming	for all output master dimming
6		for output 3 micro dimming		strobe effects
7		for output 4 dimming		
8		for output 4 micro dimming		

The data definitions for strobe channel are as follows:

```
{0, 7},//undefined
{8, 65},//slow strobe-->fast strobe
{66, 71},//undefined
{72, 127},//slow push fast close
{128, 133},//undefined
{134, 189},//slow close fast push
{190, 195},//undefined
{196, 250},//random strobe
{251, 255},//undefined
```

RDM Discovery Indication:

When utilizing RDM to discover the device, both the digital display and the connected lights will flash simultaneously at the same frequency. This flashing indicates the discovery process. Once the display stops flashing, the connected lights will also cease flashing, indicating the completion of the discovery process.

Restore to Factory Default Setting

Press and hold down both "Back" and "Enter" keys until the digital display turns off, then release the keys, system will reset and the digital display will turn on again, all settings will be restored to factory default.

Default settings are as follows:

```
DMX Address Code: a001
DMX Address Quantity: SW1=0: ch04, SW1=1:
ch03
PWM Resolution Mode: bt16
PWM Frequency: pf01
Gamma: ga1.5
Decoding Mode: dp1.1
```

Safety & Warnings

- DO NOT install with power applied to the device.
- DO NOT expose the device to moisture.