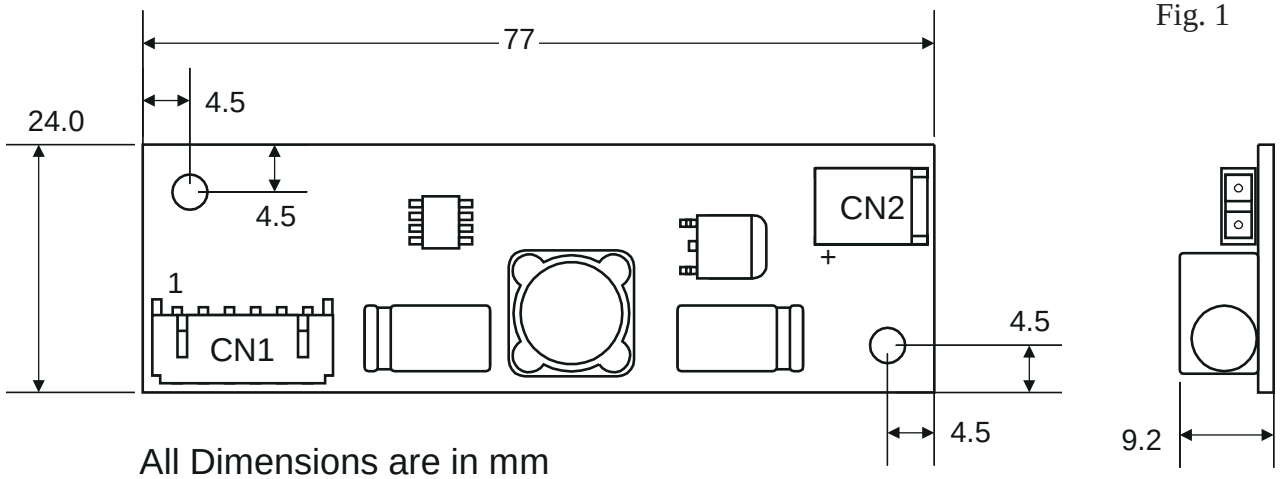
LD310 LED Driver

for LMG259A-121X1 VHB LCD

Fig. 1



Introduction

The LD310 is a high efficient LED driver that operates the single LED strip backlights in Landmark VHB (very high brightness) LCD modules. It can drive one LED strip with a maximum current about 325 mA. Each LD310 is factory tuned to drive the LED strip in the specified VHB LCD module before shipping. Mismatching between the LD310 and the LED strip of the LCD module may damage the LED backlight. Please refer to page 2 for details.

The LD310 operates at a 12V DC supply voltage. The following table shows the maximum and the minimum values of the supply voltage, the operating temperature and humidity, as well as the storage temperature and humidity.

The LCD screen brightness is adjusted with a DC voltage (Vd) from 0 to 3V. The maximum screen brightness occurs at Vd = 0V. As the Vd value increases to 3V, the LCD screen brightness decreases linearly versus the Vd value.

Absolute Maximum Rating

Parameters	Min.	Max.	Units
Supply Voltage (Vin)	11.0	13.0	Vdc
Operating Temperature Range	-20	70	^{o}C
Storage Temperature Range	-30	80	^{o}C
Operating Humidity (without dewdrop)		80%	R.H
Storage Humidity (without dewdrop)		95%	R.H

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Recommended Operating Conditions

Parameters	Min.	Typ.	Max.	Units	Remark
Supply Voltage (Vin)	11.5	12	12.5	Vdc	
LED String Voltage (Vf)			36	Vdc	
LED String Driving Current			325	mA	
ON/OFF Control - OFF		0		Vdc	
- ON		3.0		Vdc	
Analog Dimming Voltage (Vd)					
Max. brightness		0		Vdc	
Min. brightness		3.0		Vdc	

LD310 LED Strip Driving Current Tuning

Each LD310 shipped is factory tuned to the maximumdriving current of the LED strip used in the sepcified VHB LCD module. This information is on the product label at the back of the board. For example, the label shown on the right side has the part number LD310-LMG259A. Below it has the tuned current (270mA). Then the production date code "28/15". The LD310-LMG259A means that this drive board is tuned to drive the LED strip in the LMG259A LCD module. The maximum current drive the LED strip in LMG259A is set at 270 mA.

LD310 -LMG259A
(270 mA) 28/15

Caution: If this driver board is used to drive the LED strip of other LCDs, please make sure that the maximum LED strip driving current specified on this label does not exceed the maximum LED current rating of the LED strip by 5% or more. Overdriving the strip beyond that level may cause severe damage to the LED strip.

Connector Pin Assignments

LD310 Input Connector CN1 (CviLux C10106M1HR0-LF)

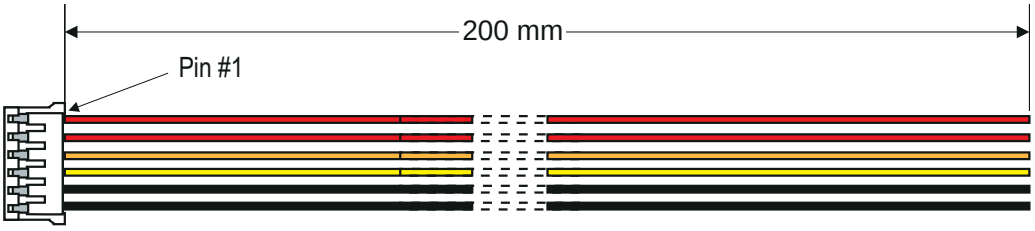
Pin #	Symbol	Function	Pin #	Symbol	Function
1, 2	Vin	+12 V DC Input	4	Vd	Brightness control
3	On/Off	Backlight on/off control	5. 6	Gnd	Ground

LD310 Output Connectors for LED strip - CN2 JST SM02B-BHS-1-TB

Note 2 - The brightness control input (pin #4) must be connected to a DC voltage between 0 - 3.0V. If left unconnected (floating), the LED backlight may operate at an unstable brightness.

Input Cable Harness - C320-CL06S

The following figure shows the cable harness plugged into the CN1 connector. On the right side, it shows the color of the wires for each pin. For example, pins #1 and #2 have red colored wires for the 12V power input (Vin)



Connector part number - CviLux CI0106S0000

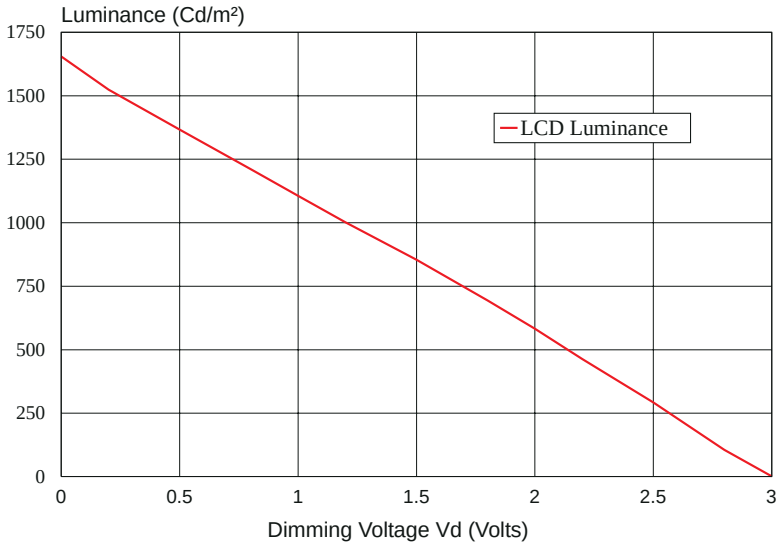
Pin #	Symbol	Wire Color
1	Vin	Red
2	Vin	Red
3	On/Off	Orange
4	Dimming	Yellow
5	GND	Black
6	GND	Black

LCD Screen Brightness Adjustment

The LD310 uses a DC voltage ranging from 0 - 3.0V to control the LCD brightness. This dimming voltage Vd is fed into the drive board at Pin #4.

The dimming characteristics with the Landmark 12.1" LMG259A-121X1 LCD module is shown in the figure on the right. At Vd = 0V, the LCD screen brightness is slightly over 1,600 nits. At this level, the current drain from the 12V DC supply to the LD310 is 0.89A. As Vd increases to 3V, the brightness drops to less than 5 nits. So, the dimming ratio is well over 100:1. Currently, we do not recommend to operate the LD310 with more than 100:1 dimming.

LMG259A-121X1 Dimming Characteristics
with LD310 LED drive board



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