



**RGBY/W Quadcolor 4*1W LED
Built-in Driver Panel Board
User's Guide**

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RGBY/W Quadcolor 4*1W LED Built-in Driver Panel Board

NOTES:

Product Version : Ver 1.0

Document Version : Ver 1.0

Chapter 1. Overview

1.1 Overview

Thanks for buying RGBY/W Quadcolor 4*1Watt LED Built-in Driver Panel Board series by Sure Electronics.

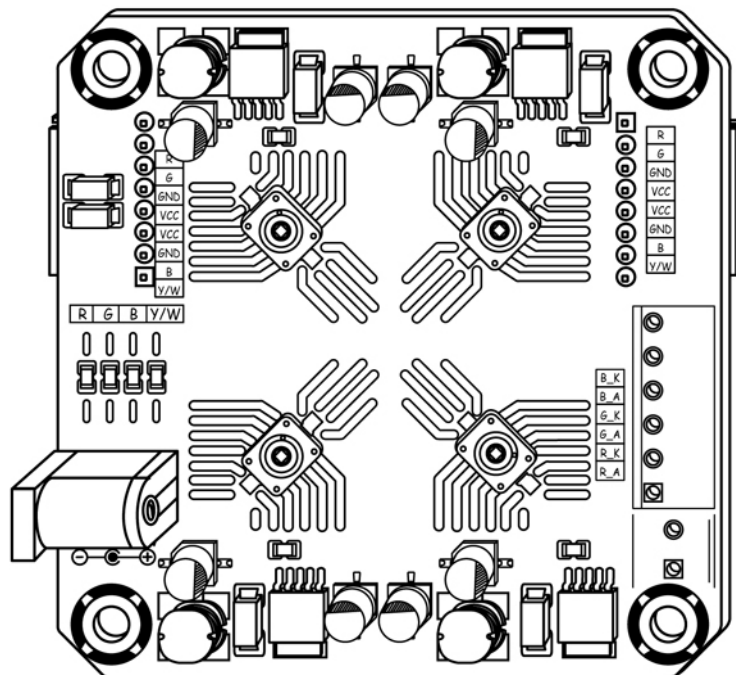
As a special design of Sure Electronics, RGBY(W) is dedicated to create a surroundings of your own through color and lighting. To enjoy the functions and excellence of LED board, please read the following instructions carefully for first-time use.

TABLE 1-1 PRODUCT SERIES

Product No.	Product Name	LED
LE-LL21112	RGBY Quadcolor 4*1Watt LED Built-in Driver Panel Board	Red, Green, Blue, Yellow
LE-LL21113	RGBY Quadcolor 4*1Watt LED Built-in Driver Board w Ext Interface	
LE-LL21115	RGBW Quadcolor 4*1Watt LED Built-in Driver Panel Board	Red, Green, Blue, White
LE-LL21116	RGBW Quadcolor 4*1Watt LED Built-in Driver Board w Ext Interface	

LED lighting board consists of 4 1W Osram-made golden dragon LEDs in 4 different colors-red, green, blue and yellow (or white). You can adjust the color, saturation or brightness of LEDs with the help of PWM modulation or even connect as many as 6 LED lighting boards in series. In addition, with our extended controller you can create a more splendid lighting effect. Therefore, LED lighting board can be used widely in stage, party, buildings or items decorations.

FIGURE 1-1 OVERVIEW (LE-LL21112 AND LE-LL21115)



RGBY/W Quadcolor 4*1W LED Built-in Driver Panel Board

FIGURE 1-2 OVERVIEW (LE-LL21113 AND LE-LL21116)

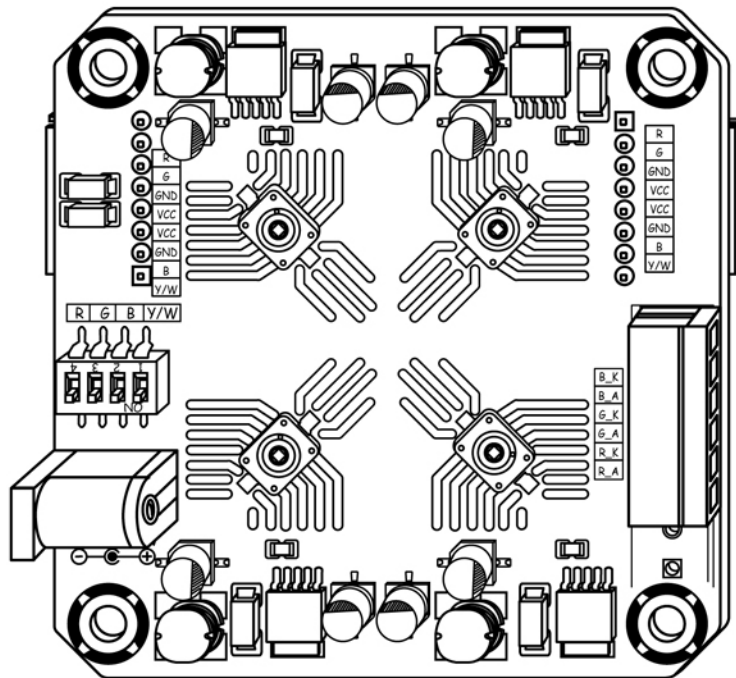


FIGURE 1-3 ACCESSORIES (LE-LL21112 AND LE-LL21115)



8pin 2510 cable

FIGURE 1-4 ACCESSORIES (LE-LL21113 AND LE-LL21116)



2-pin terminal block 6-pin female terminal block



8pin 2510 cable

Note: All diagrams in this manual are for reference only.

1.2 Features

- Powered by DC 9 to 25V
- 1W*4 R-G-B-Y LED
- Miniaturized size, fashionable, easy installation
- Easy operation, PWM-based adjustment
- DC IN port on either external controller or LED board can be used to access power supply
- Extension interface and 4-slide DIP switch for control of external LEDs (LE-LL21113 and LE-LL21116)
- The attraction of colors is in the palm of your hands
- Special LED design, low power consumption, Long service time
- Allow for up to 6 LED lighting boards in series
- Up to 3 external LEDs are allowed to be connected in series (LE-LL21113 and LE-LL21116)

1.3 Applications

- Stage lighting
- Glass cabinet lighting
- Effect and accent lighting, e.g. display cases, furniture illumination,
- Marker lights
- Video walls on building facades
- Signal and symbol luminaire

Note:

1. This LED board serves as source of light to create household atmosphere rather than spotlight for illuminance. Do not illuminate on-board LEDs at full capacity for a long time.
2. Keep LED boards away from kids since it is not for entertainment.
3. Do not use it in humid environment.

1.4 Quick Start

1. Please observe the following steps to complete a simple verification to ensure the products are intact during transit.

- Open the LED lighting board package and make sure the product is intact (No missing or damaged components and no deformation).
- Feed LED board with 9 to 25V supply via the DC input jack.
- Upon the connection with power supply, the on-board LEDs would be turned on.

2. When using this lighting board, you can choose [Audio Synchronized Color LED Driver](#) or Tester RGB RGBW LED Built-in Driver Board from Sure Electronics as the controller for a wide range of applications.

Suggested connection is shown in Figure 1-2 and Figure 1-3. Audio Synchronized Color LED Driver is used as an example in the following content.

RGBY/W Quadcolor 4*1W LED Built-in Driver Panel Board

FIGURE 1-2 CONNECTION SCHEMATIC (LE-LL21112 AND LE-LL21115)

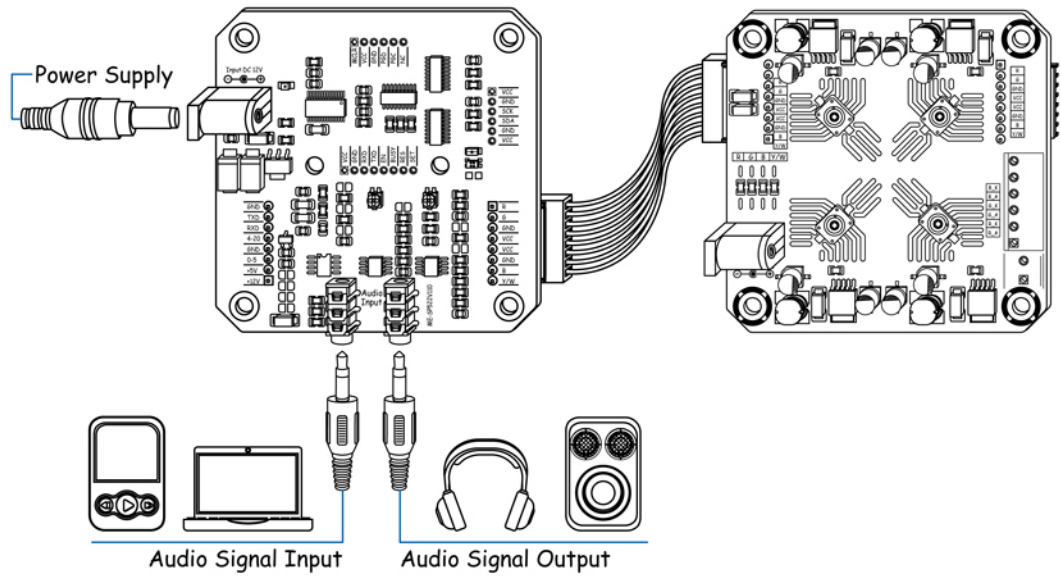
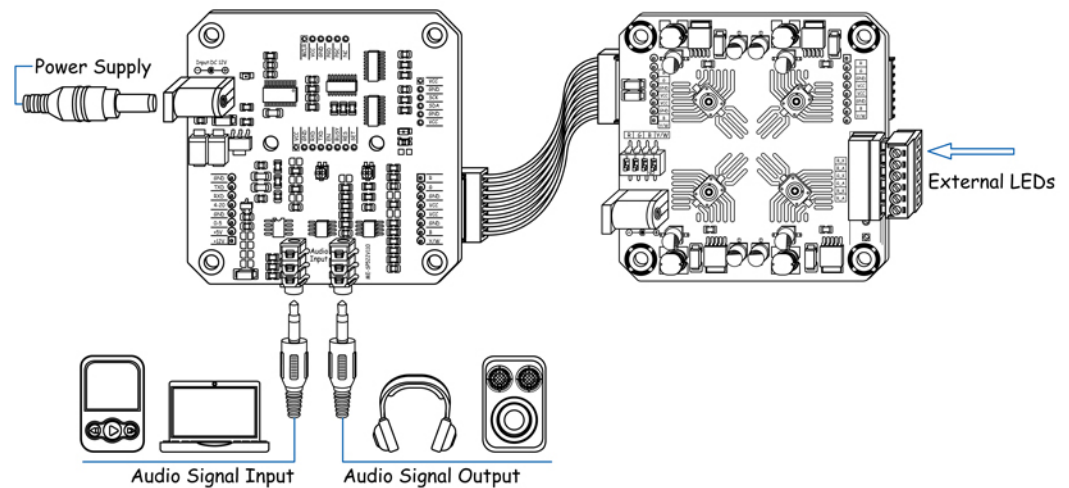


FIGURE 1-3 CONNECTION SCHEMATIC (LE-LL21113 AND LE-LL21116)



Chapter 2. Hardware Detail

2.1 Power Supply

When an external controller is connected to the lighting board, both ports on LED board and controller for DC Input can be used to connect power supply.

TABLE 2-1 CONNECTOR DESCRIPTION

Connector Mark		Description	
DC Input Jack	J5	DC 9 to 25V Power Supply	
2510 Terminal Block	J2, J3	Pin4(VCC) Pin5(VCC)	Positive of DC 9 to 25V Input
		Pin3(GND) Pin6(GND)	Negative of DC 9 to 25V Input

Note: Never feed the LED board with different power supplies at the same time.

2.2 LED

The LED board employs totally 4 pcs different color OSRAM-made golden dragon 1W LEDs in parallel, working at 330mA operating current (tolarence±10mA).

TABLE 2-2 LED DESCRIPTION

Part number	Color	Description
D2	Red	LR W5SM
D6	Green	LT W5SM
D10	Blue	LB W5SM
D4	Yellow/White	LY W5SM/LW W5SM

2.3 Pin Definition

2510 terminal block is default for this product's power supply and signal transmission. Each pin is defined as follows:

TABLE 2-3 PIN DESCRIPTION

2510 Terminal Block	Port	Description	
Pin1	R	PWM signal for Red LED Brightness controlling.	When the input voltage of PWM terminal set to logic high or left floating the device active fully operational. If set to low the device will turn off current output.
Pin2	G	PWM signal for Green LED Brightness controlling.	
Pin7	B	PWM signal for Blue LED Brightness controlling.	
Pin8	Y / W	PWM signal for Yellow/White LED Brightness controlling.	
Pin4 & Pin5	VCC	Power Supply Input, DC9V to 25V	
Pin3 & Pin6	GND	System Ground	

2.4 Connection with Next Board

1. Each board shall follow the connection schematic when you are hooking up.
2. Never connect over 6 LED boards in series. However, if you insist, replace the cable with a powerful one.
3. Keep a certain distance from the adjacent one and you may use fans to help remove the heat if required.

RGBY/W Quadcolor 4*1W LED Built-in Driver Panel Board

FIGURE 2-1 CONNECTION SCHEMATIC (LE-LL21112 AND LE-LL21115)

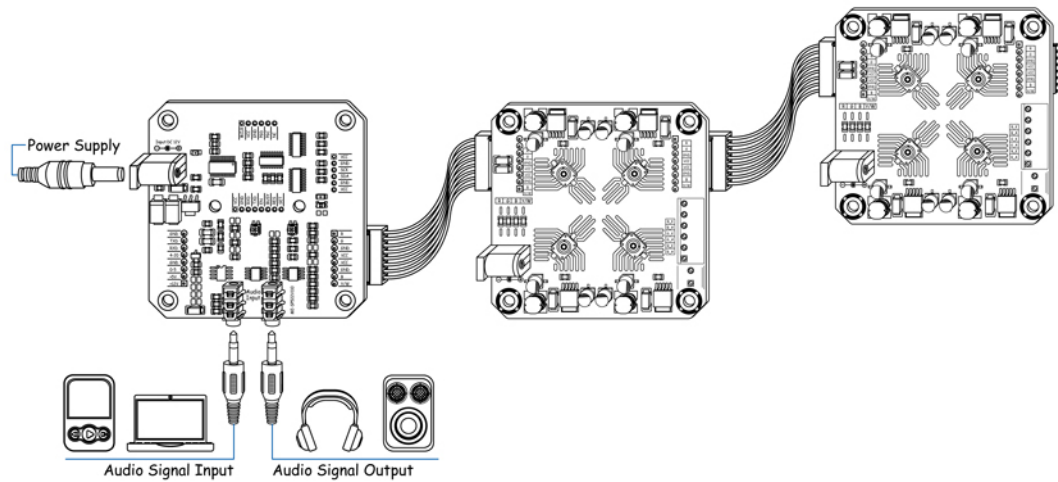
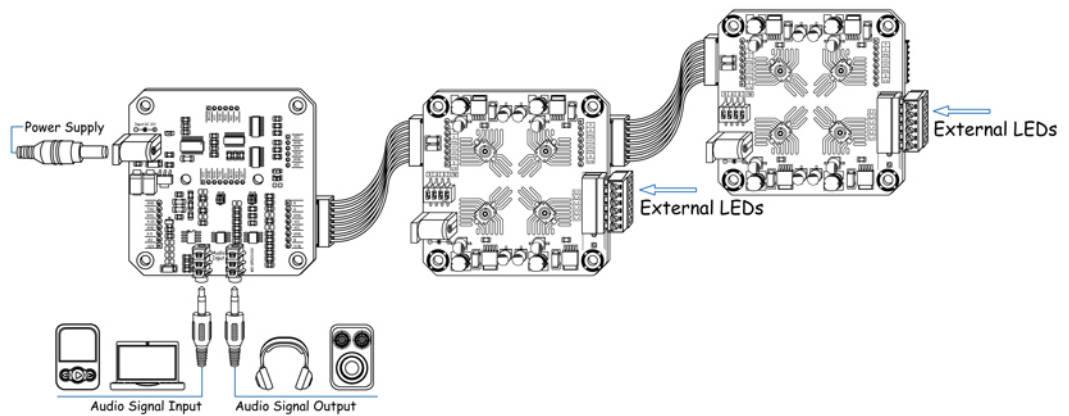


FIGURE 2-2 CONNECTION SCHEMATIC (LE-LL21113 AND LE-LL21116)



2.5 Extension Interface (LE-LL21113 and LE-LL21116)

A 6-pin pluggable male socket is soldered on board for connection with LEDs.

FIGURE 2-3 EXTENSION INTERFACE FOR RGB LEDs

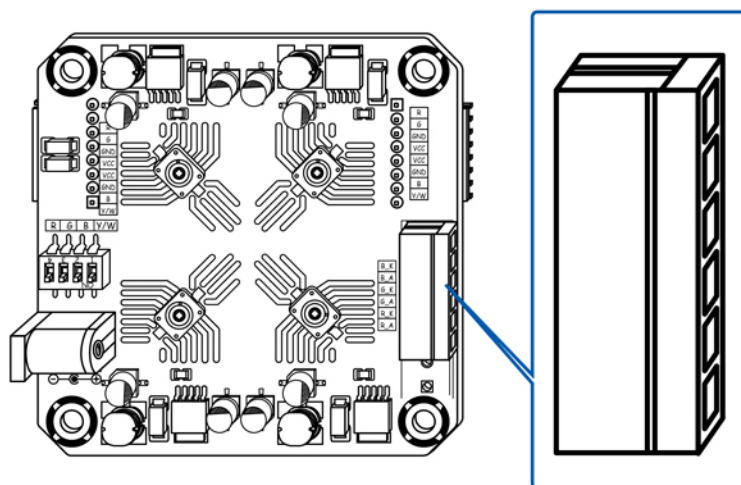
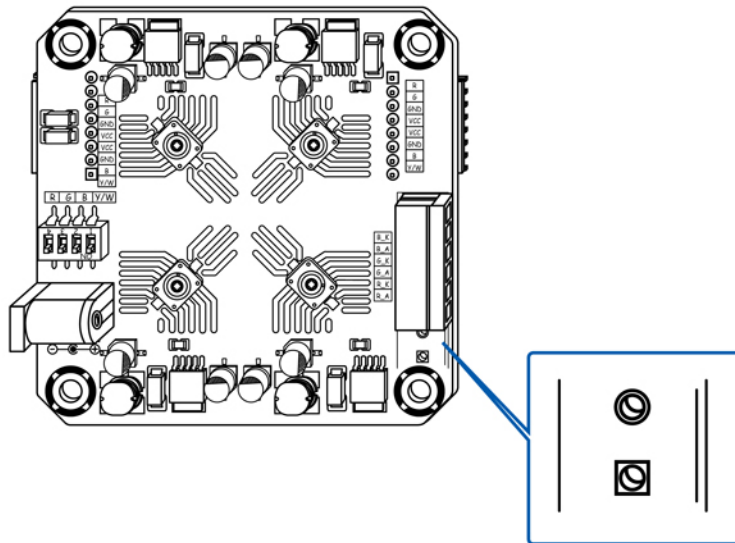


TABLE 2-4 PIN DESCRIPTION

Pin	Symbol	Description
Pin1	B_K	Connect the cathode of blue LED
Pin2	B_A	Connect the anode of blue LED
Pin2	G_K	Connect the cathode of green LED
Pin4	G_A	Connect the anode of green LED
Pin5	R_K	Connect the cathode of red LED
Pin6	R_A	Connect the a node of red LED

An interface for connection with yellow or white LEDs is reserved. A 2-pin terminal is provided and you can soldered it on the board yourself if necessary.

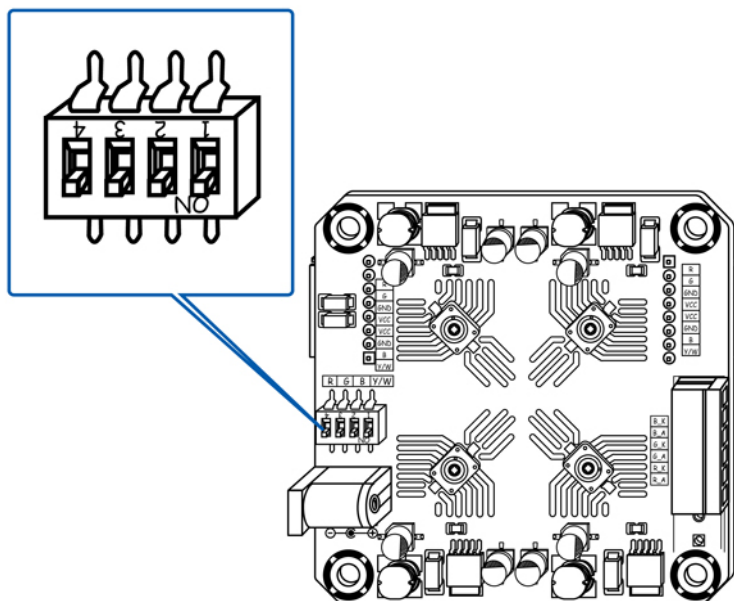
FIGURE 2-4 EXTENSION INTERFACE FOR W/Y LEDs



2.6 DIP Switch (LE-LL21113 and LE-LL21116)

A 4-slide DIP switch is soldered on board to control the function of the extension interface. Each key individually controls corresponding LEDs.

FIGURE 2-5 DIP SWITCH



RGBY/W Quadcolor 4*1W LED Built-in Driver Panel Board

TABLE 2-5 SWITCH DESCRIPTION

SW1	ON/OFF	Function
K1,K2,K3,K4	ON	Only on-board LED available
	OFF	Both on-board and external LEDs available

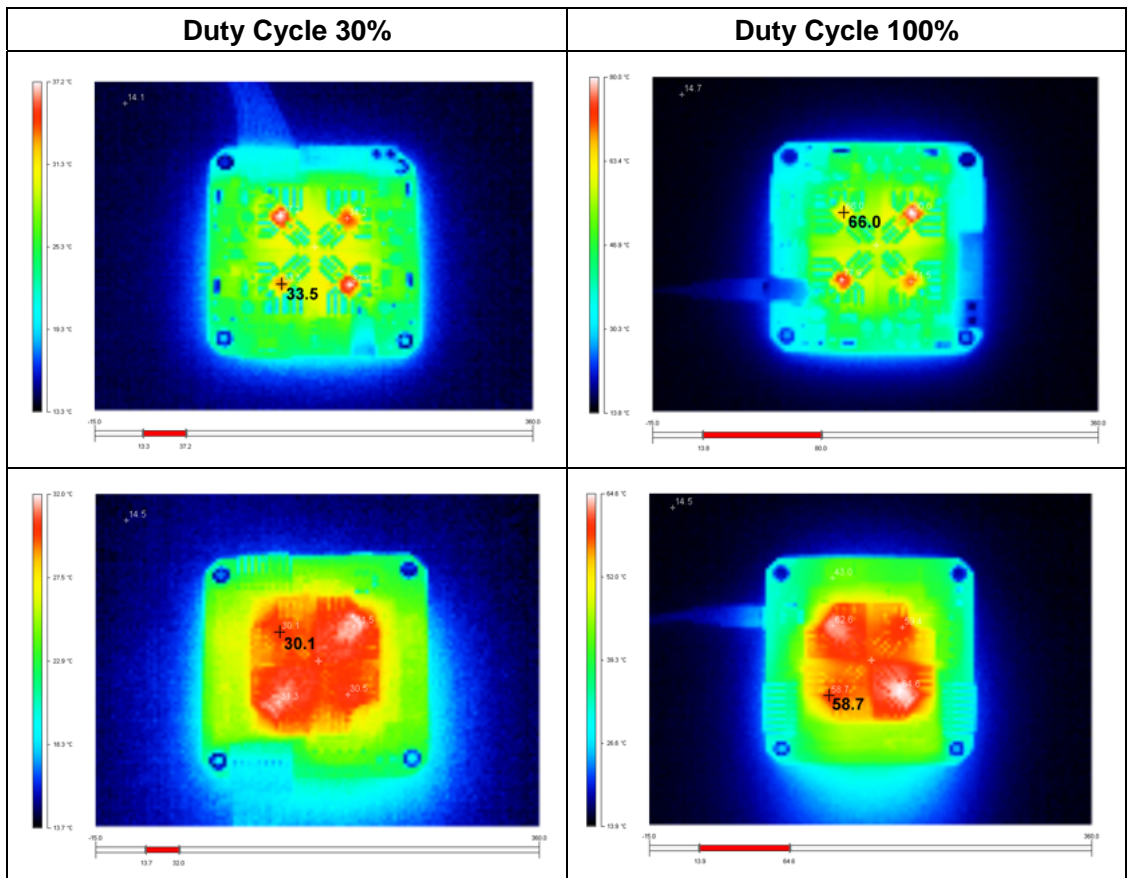
2.7 PWM-based Dimming

The PWM frequency is from 100Hz to 1kHz. The duty cycle range of PWM signal applied to DIM pin is from 1% to 100%.

2.8 Heat Dissipation

Having good design of the heat dissipation, following are the infrared thermal images. With the board working for one hour with the duty cycle of the PWM signal set to 30% (close to the actual working condition: an audio sync or breathing light), the temperature only reaches 37°C.

FIGURE 2-3 INFRAERED THERMAL IMAGE



Note:

1. It's not recommended to use on-board LEDs for illuminance at full capacity. It'll reduce the service life of the LEDs.
2. Burn care.

Chapter 3. Electrical Characteristics

3.1 Electrical Characteristics of Lighting Board

TABLE 3-1 PARAMETERS (@ T = 25°C, DUTYCYCLE = 100% UNLESS OTHERWISE SPECIFIED)

Parameters	Symbol	Min.	Typ	Max	Units
Working Voltage	VCC	9	12	25	V
Working Current	lin @9V	510	530	550	mA
	lin @12V	390	405	430	mA
	lin @25V	220	225	230	mA

Note: [19V 2.1A AC/DC Switching Power Adapter](#) is recommended.

3.2 LED Characteristics

The following table lists some typical data. For more specifications, please refer to the data sheet of OSRAM Golden Dragon LED.

TABLE 3-2 LED CHARACTERISTICS

Type	Color	Wavelength	Typ. Output/Current
LR W5SM	Red	625 nm	45 lm @ 400 mA
LT W5SM	Green	530 nm	75 lm @ 350 mA
LB W5SM	Blue	470 nm	23 lm @ 350 mA
LY W5SM	Yellow	590 nm	43 lm @ 400 mA
LW W5SM	White	x / y 0.32/0.31*	75 lm @ 350 mA

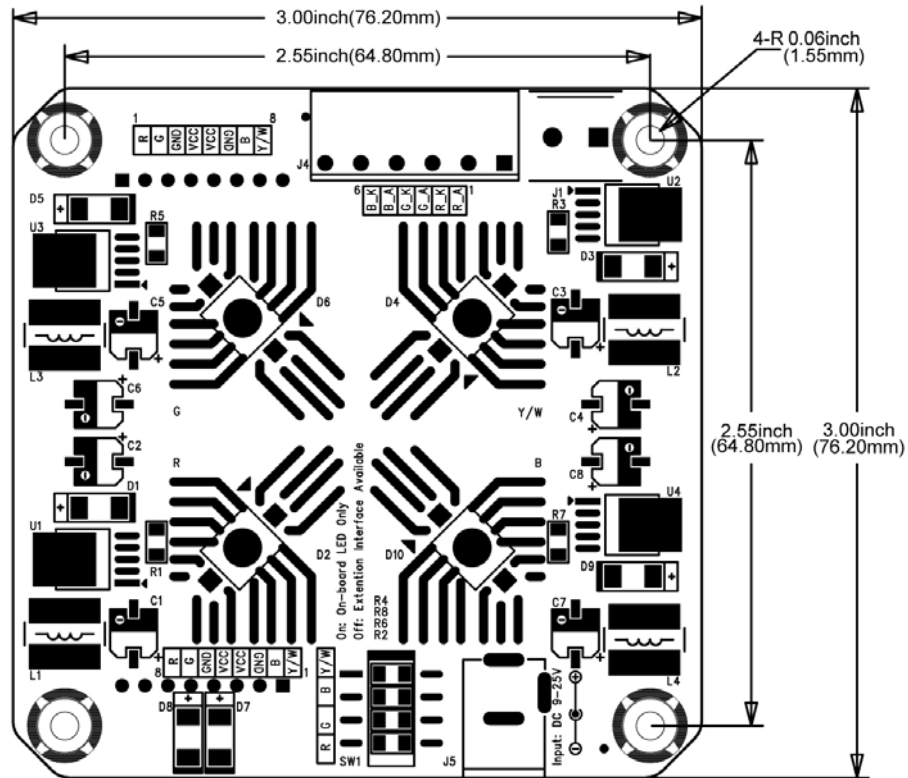
Advantages:

1. A new dimension of brightness
2. Dazzling bright white light with typical 80 lm @ 350 mA is emitted from a tiny surface. Due to its embedded lens the Golden DRAGON offers even higher brightness and efficacy levels.
3. High reliability
4. The Golden DRAGON is characterized by a long lifetime of up to 50,000 hours, due to excellent thermal design and silicone encapsulation.
5. Flexible applications
6. The availability of the complete color portfolio and external optics as well as the extraordinary brightness opens up new possibilities for almost any lighting application.

Note: The LED specifications by OSRAM.

Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING





RGBY(W) 1*4 WAY LIGHTING BUILT-IN DRIVER PANEL BOARD USER'S GUIDE

Chapter 5. Contact Us

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