



Audio Synchronized Color LED Driver User's Guide

Table of Contents

Chapter 1. Overview	1
1.1 Overview	1
1.2 Main Features	2
1.3 Quick Start	2
1.3.1 Setting	2
1.3.2 How to Use.....	3
Chapter 2. Command Set	4
2.1 Setting of the Corresponding Relationship of Colors and frequencies.....	4
2.2 Manual Gain Setting.....	5
Chapter 3. Electrical Characteristics	6
Chapter 4. Mechanical Drawing.....	7
Chapter 5. Appendix	8
Chapter 6. Contact Us	9

Audio Synchronized Color LED Driver

NOTES:

Product Version : Ver 1.0

Document Version : Ver 1.0

Chapter 1. Overview

1.1 Overview

Thanks for using this Audio Synchronized Color LED Driver by Sure Electronics. Please read this manual carefully prior to the installation.

DE-DD13111 is a LED driver with an audio synchronization mode that virtually eliminates the need for real-time software processing for LED lighting effects, especially for use with RGBY(W) LED lighting color displays (CD-001-xxx series) by Sure Electronics in audio application where PC, MP3 player, CD, DVD or cell phone can be used as the audio source. Connected with the driver which is powered by DC12V, RGBY(W) LED lighting color displays will dynamically display the variation of the incoming audio signal.

The audio input signal is filtered into four kinds of frequency: low, medium, medium-high and high, with each kind frequency assigned to a specific PWM driver. Four PWM outputs respectively control one of red, green, blue and yellow LEDs. This driver can be directly set via Hyper Terminal that you can write commands to specify each LED color to a corresponding frequency you want and adjust the gain of each frequency to change LED intensity. LED intensity can also be controlled by duty cycle which is adjusted by the amplitude of the spectrum. In addition, any of two jacks on board can be used for audio signal input and the other for signal output.

TABLE 1-1 RGBY(W) LED LIGHTING COLOR DISPLAY SERIES

Product No.	Product Name
CD-001-010	RGBY 2*4 Way Lighting Color Display
CD-001-011	RGBY 4-color LED Cluster Lighting Panel Board Display
CD-001-013	RGBY 1*4 Way Lighting Color Display
CD-001-015	RGBW 4-color LED Cluster Lighting Panel Board Display
CD-001-016	RGBW 1*4 Way Lighting Color Display

Audio Synchronized Color LED Driver

FIGURE 1-1 OVERVIEW

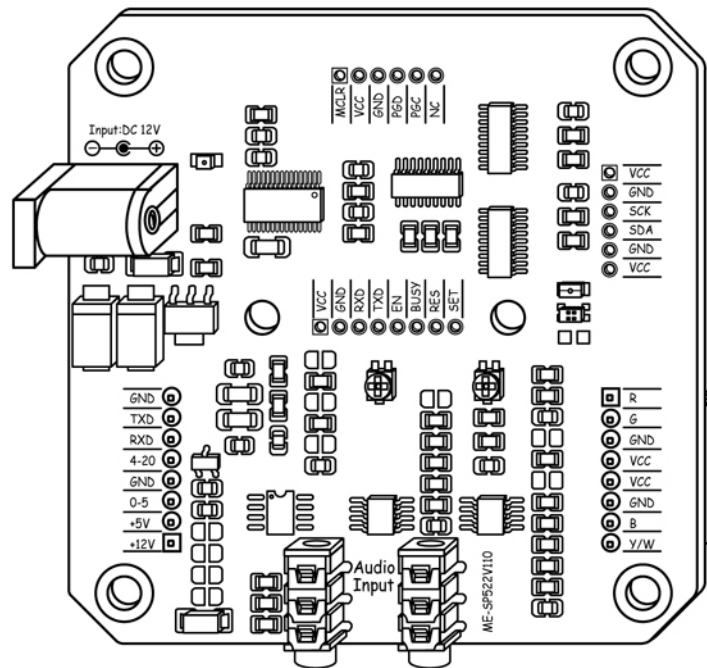


FIGURE 1-2 ACCESSORY



8-pin 2510 connector

Note:

- All the diagrams in this manual are for reference only.
- Frequency definition:
 - Low frequency - 150HZ
 - Medium frequency - 600HZ
 - Medium-high frequency - 3KHZ
 - High frequency - 6KHZ

1.2 Main Features

- Four PWM outputs control four color LEDs
- Available to set the corresponding relationship of colors and frequency
- Individual PWM gain setting of four ways

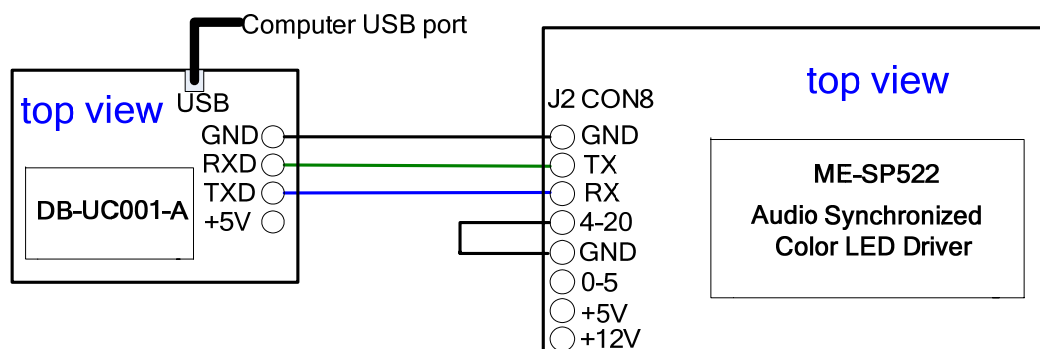
1.3 Quick Start

1.3.1 Setting

Default corresponding relationship of colors and frequencies is as follows: Y/W - low frequency, B - medium frequency, G - medium-high frequency and R - high frequency. Default gain of each of four frequency bands is 10. The corresponding relationship of colors and frequency and the gain of the four frequencies can be set via Hyper Terminal.

You may choose CP2102 USB-RS232 Serial Convert Communication Module (DB-UC001) by Sure Electronics as the converter. The connection diagram is shown as follows.

FIGURE 1-3 CONNECTION DIAGRAM

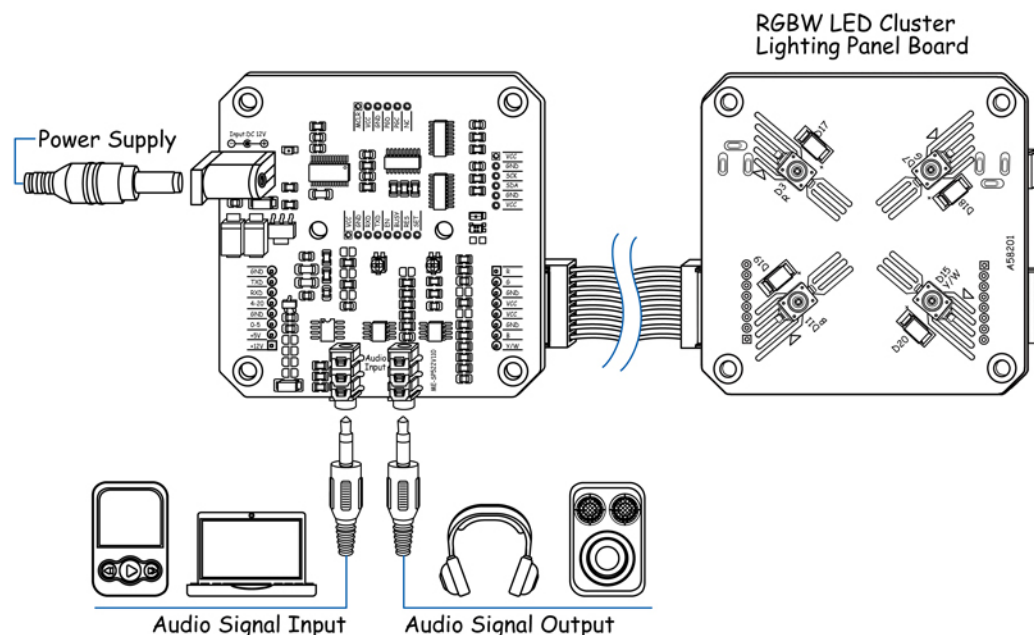


As shown above, 4-20 of J2 CON8 are as setting pins which should be connected with GND. Please refer to Chapter 3 for the commands and the format used for setting. Please refer to the manual of DB-UC001 for more information.

1.3.2 How to Use

After setting the corresponding relationship of colors and the four frequencies, connect the driver and an RGBW LED board. Input the audio signal to the driver via J3 (or J4) and output the audio signal via J4 (or J3).

FIGURE 1-4 CONNECTION SCHEMATIC



Chapter 2. Command Set

Please set the parameters as follows: baud rate as 9600bps, parity bit as None, data bit as 8bits and stop bit as 1bit. The end mark of commands is '\r' whose corresponding hexadecimal is 0D.

2.1 Setting of the Corresponding Relationship of Colors and frequencies

Command: \$ORDER_SET\$XY\$'\r'

\$ORDER_SET\$ are the first characters. The following data will be dealt with only when the first characters are correct. XY is two-digit code value which ranges from 01 to 24. Each code value corresponds to a unique relationship of colors and frequencies.

Match respectively R, G, B and Y with a corresponding frequency via PC and the codes generated will be sent to the driver. Please refer to Table 3-1 for details.

TABLE 2-1 CODE VALUE

Color	Frequency											
R	1	1	1	1	1	1	2	2	2	2	2	2
G	2	2	3	3	4	4	1	1	3	3	4	4
B	3	4	2	4	2	3	3	4	1	4	1	3
Y/W	4	3	4	2	3	2	4	3	4	1	3	1
Code	01	02	03	04	05	06	07	08	09	10	11	12
Color	Frequency											
R	3	3	3	3	3	3	4	4	4	4	4	4
G	1	1	2	2	4	4	1	1	2	2	3	3
B	2	4	1	4	1	2	2	3	1	3	1	2
Y/W	4	2	4	1	2	1	3	2	3	1	2	1
Code	13	14	15	16	17	18	19	20	21	22	23	24

Note:

- R, G, B, Y/W are respectively red, green, blue, yellow/white.
- 1, 2, 3, 4 corresponds respectively to low frequency, medium frequency, high-medium frequency and high frequency.

S is check sum, which is the unit of the sum of X and Y. For example, if XY is 19, S is 0.

The driver may return one of the following messages after it receives the codes:

- Error in command!
- Wrong parity!
- Sequence Setting is abnormal!
- Sequence Setting is OK!

For example:

Set the corresponding relationship of colors and the frequencies as follows:

- R - low frequency (1)
- G – high-medium frequency (3)
- B – medium frequency (2)

Audio Synchronized Color LED Driver

- Y/W – high frequency (4)

The corresponding code value is 03. The command to be sent is \$ORDER_SET\$033\r'

2.2 Manual Gain Setting

Command: \$MANU_GAIN\$ABCDEFGHS\r'

\$MANU_GAIN\$ are the first characters. The following data will be dealt with only when the first characters are correct. AB, CD, EF and GH are respectively the gain of low frequency, medium frequency, medium - high frequency and high frequency.

For example, set gain of low frequency, medium frequency, high-medium frequency and high frequency as 15, 12, 10 and 08. The command to be sent is

\$MANU_GAIN\$151210088\r'.

S is the check sum, which is the unit of sum of the eight numbers. If AB, CD, EF and GH are respectively 15, 12, 10 and 08, S is 8 (that is $S = (1+5+1+2+1+0+0+8) \% 10$).

The driver may return one the following messages after it receives the commands:

Error in command!

- Wrong parity!
- Manual Gain Setting is abnormal!
- Manual Gain Setting is OK!

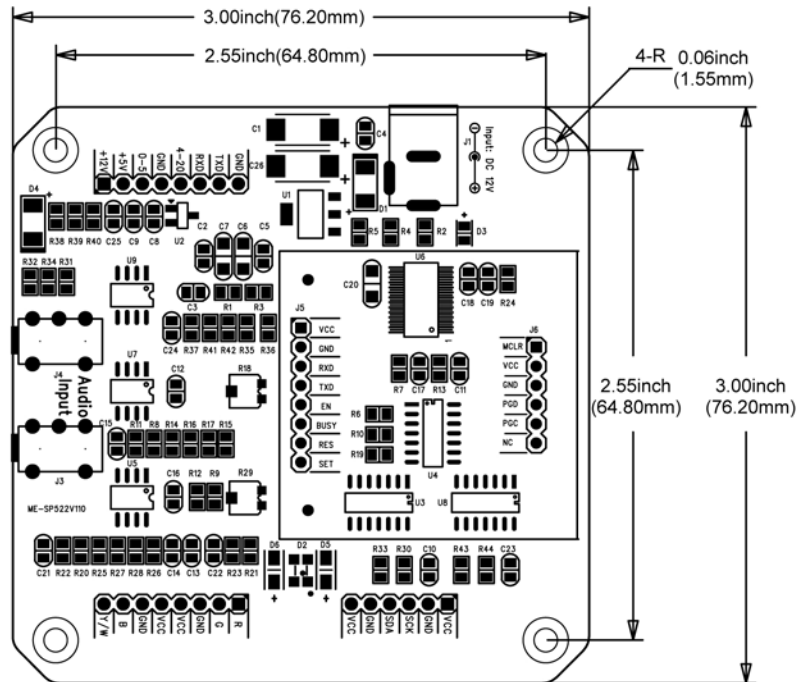
Chapter 3. Electrical Characteristics

TABLE 3-1 PERFORMANCE SPECIFICATION

Parameter	Min.	Typ.	Max.	Units
Supply Voltage	-	12	-	V
Performance				
Input Sensitivity	-	±0.5	-	V
Operating Temperature	-10	-	60	°C
Storage Temperature	-40	-	75	°C
Humidity	0	-	85	%RH

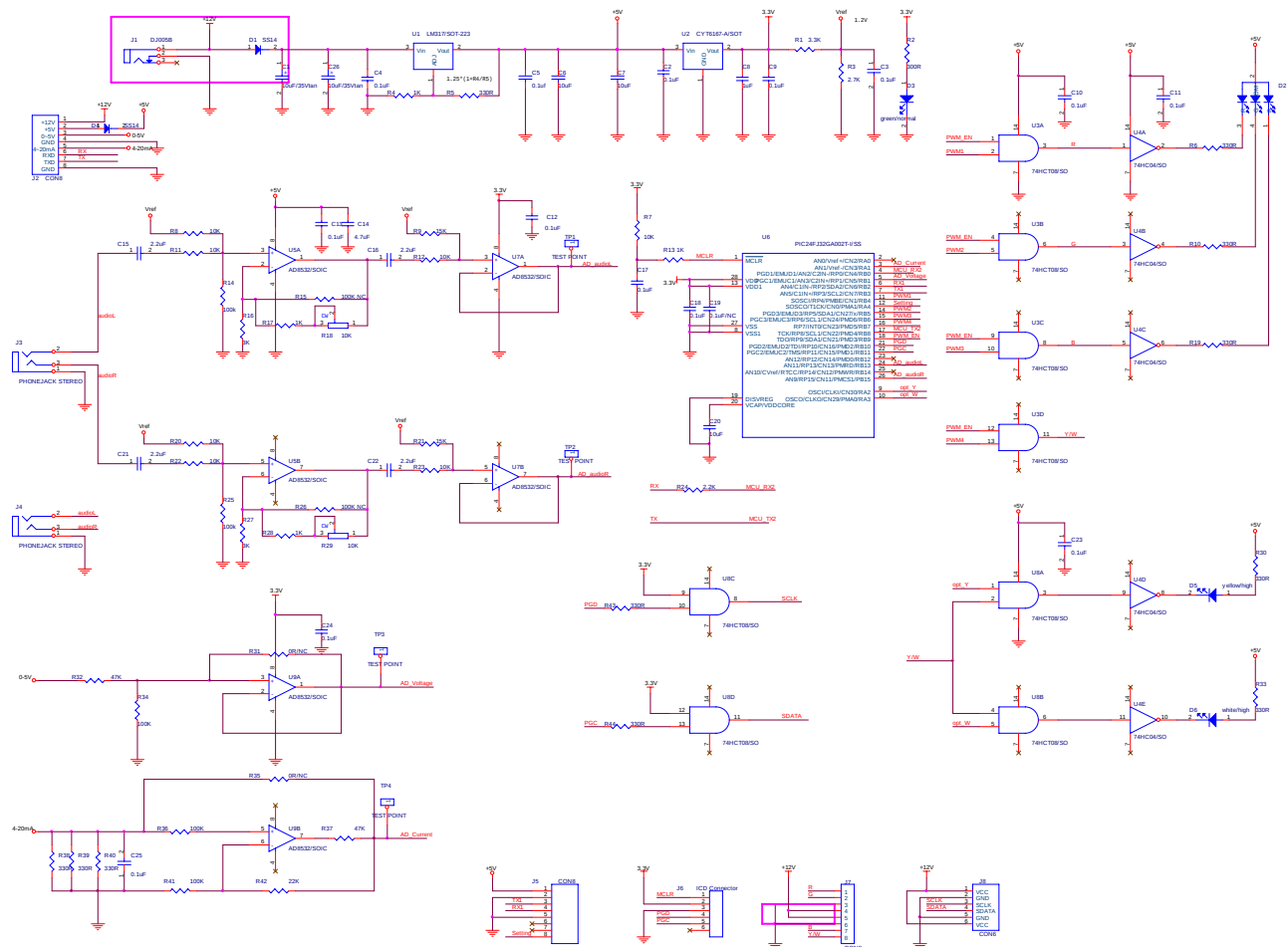
Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING



Chapter 5. Appendix

FIGURE 5-1 SCHEMATIC



Chapter 6. Contact Us

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