

ELECTRO FUNCTIONAL GARMENT

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Abstract: *Electro Functional Garment is one of the modern experiments of combining electronic world with textile world to produce a very effective product. It is the Garment that has the Quality of Illumination and auto change of color, image or videos, text and different geometric effects. It can show thousands of textile designs within seconds and also with different textural and background colors, and also can hold the ability to show videos and also have the ability to illuminate with music beats.*

The garment will change its designs automatically by using only three electronics items, led controller, led stripes and battery. This is a garment that have automatic led controller which controlled the led stripes and give us different effects. A micro SD card is used for data storage and effect changing, that is inserted into LED controller. The final product of this garment gives variable effect of thousands of colors at a time.

All of these product are eco-friendly and have are not environmentally harmful.

1. Introduction

Electro Functional Garment is one of the modern experiments of combining electronic world with textile world to produce a very effective product [1].

Electro Functional Garment is the Garment that has the Quality of Illumination and auto change of color, image or videos, text and different geometric effects. It can show thousands of textile designs within seconds and also with different textural and background colors. it can hold the ability to show videos and also have the ability to illuminate with music beats.[2]

EFG has very simple working technique. It only can require a LED stripe of required measurements and one SD card controller and one battery or power supply. It can work on very low voltage of about 5~12V. Images are edited by software available with these controllers as required and then these images are saved in micro SD card and then card is inserted in the controller. The controller will read the file and start showing effects and images as settled. The speed of controller is controlled by remote [3].

2. Experimental

EFG can be made with different techniques. It can be made by simply pasting or by making panel of RGB Led Stripe on the already made garment.

Secondly, it can be made by weaving these stripe with different fibers like nylon, cotton etc. for example



Figure 1: EFG in weaving

2.1 Graphic Material

EFG has very simple working technique. It only can require a LED stripe of required measurements and one SD card controller and one battery or power supply. It can work on very low voltage of about 5~12V. All of these product are very friendly and have are not environmentally harmful.

Images can be shown on these stripes in the way that image can be first edited by software available with these controllers as required and then it should be save as (filename. led) and then it should be save in micro SD card and then card is inserted in the controller. The controller will read the file and start showing effects and images as settled. The speed of controller can also be controlled by remote.

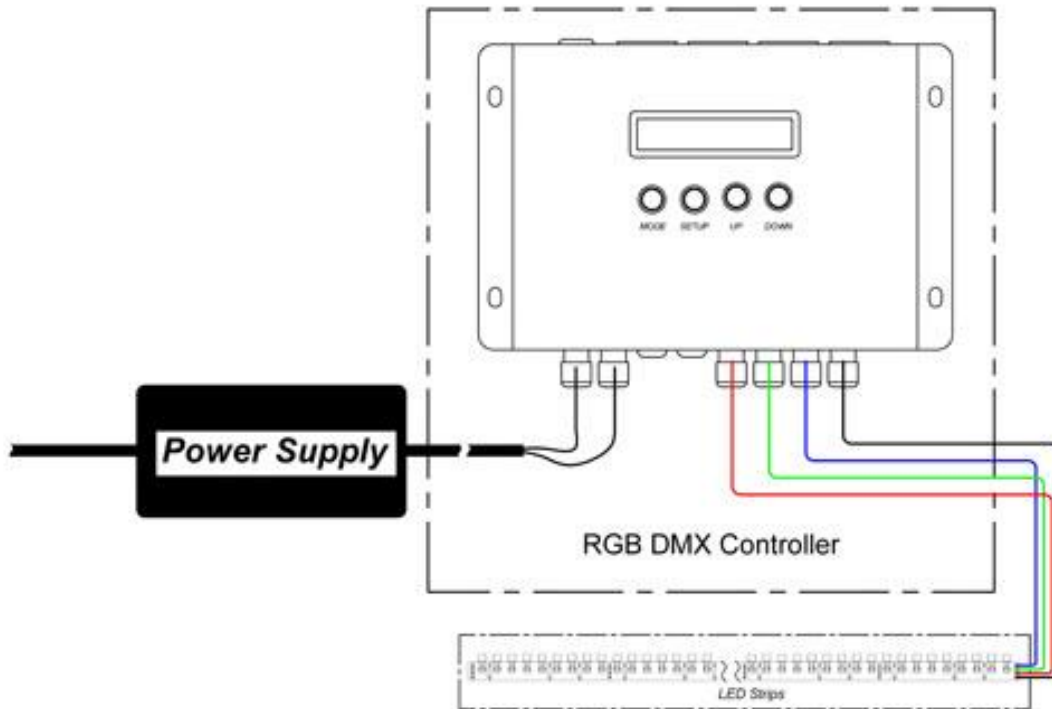


Figure 2: The circuit diagram of connecting the all products

3. Effects Shown By EFG

EFG has the ability to show different effects and designs and colors at a time. It can work on (filename. led) type file to show image. Some effects of EFG are



Figure 3: Each panel have different color



Figure 4: EFG showing different textile Designs

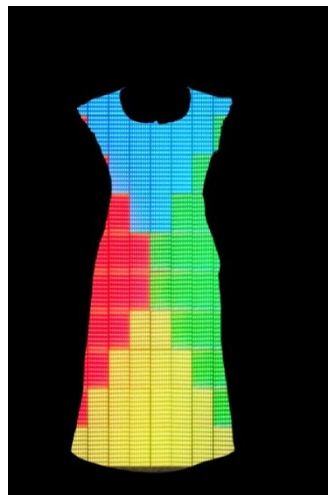


Figure 5: effect of dividing colors



Figure 6: EFG showing logo

4. Specification Of EFG Material

4.1 01---LED DMX Controller

4.1.1 Specification

1. Weight-150g + 50g (remote controller)
 2. Size-100mmx72mmx25mm
 2. Dimension-- 100mmx72mmx25mm
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3. Input/output Voltage-- 12V/24V DC
4. Control All colors
5. Output signal-- 256 levels brightness, PWM 4-wire and 3-loop controller, common anode
6. Connector-- plug terminal
7. Memory capacity-- 16KB
8. Wireless remote control, the control distance is 50~100M at open field
9. Standard DMX512 signal Input/output connector

4.1.2 Features

1. Programs can be customized.

There is built-in memorizer for memorizing programs. After editing programs with software on the computer, you can down-load the programs into the built-in memorizer. It is convenient for customers to make and change programs. This controller can contain more than 200 programs which includes 7 fixed programs.

2. It can adjust the brightness of static programs freely.
3. It can adjust the speed of color changing programs freely.
4. It can enhance the RGB remote signal and increase the remote distance.
5. Both manual control and wireless remote control are available, remote signal enhancement mode allow the remote distance to reach 50~100M at a wide area.
6. It can automatically record the display model and data setting. It plays the program and data automatically recorded when it starts.
7. Standard DMX512 slave model and many pieces of controller can be connected together one by one.
8. It can code DMX address in series automatically.

4.1.3 Functions

1. Programs display

A. It will display the memorized program playing last time. You can change the programs by adjusting the button "program" or the remote key "A". You can push the button "+" "-" or remote key "B" "C" to adjust the brightness of static programs or the speed of dynamic programs. NO. 1~7 are the fixed programs of single color. Numbers from 8 are customized programs and there are 9 models at present. So the total programs are 16, then you can select programs from 1~16.

2. Work synchronously

Many pieces controllers can realize synchronous effects by connection of the DMX signal input and output one by one. Just connect the DMX output port of first controller to the DMX input port of the second controller, one by one like this way, and then all the controllers after the first controller will become slaves and being controlled by the first controller. The total connection length should be less than 100M.

4.2 Waterproof 5V DC SMD 5050 RGB LED Magic ribbon light Strips

4.2.1 Specifications

- 1) 5050 LED Magic Stripe
 - 2) Waterproof/ non-waterproof
 - 3) 40LEDs/M available
 - 4) Every 2 LEDs can be cut
 - 5) CE RoHS approved
- IP65 Waterproof 32LEDs/M 5050 RGB LED Magic Stripe; 5050 Magic Stripe, LED Magic Strip

4.2.2 Specifications of 5050 RGB LED Magic Stripe

Size: 1000mm*16mm*3.6mm
LED quantity: 32/40pcs 5050 RGB LED
Working Voltage: DC 5 V
Wave Length: 625-630nm(R), 465-470nm (G), 515- 520nm (B)
Viewing Angle: 120 Degree
Waterproof Rate: IP65

References

- [1] Hussein Chilean, Modern Textile Designer UK.
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[2] Lumalive garment, Philips International.

[3] www.ledison.lightingapx.com

[4] Bradley, Q. Techno Fashion. N.Y: Oxford (2002).

[5] Lee, S., Fashioning the Future: Tomorrow's Wardrobe, L.D.: Thames & Hudson (2005).

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