

SCColorMix is a 3 channels PWM controller designed to control the color output of RGB Leds.

Duty cycle of is channel is controlled with serial command through its RS232 Port.

10 LED colors can be programmed onto its EEPROM memory.

In auto sequencing mode , the controller output the sequence of the 10 programmed LED color with user's programmable fade speed and hold time.

Fade speed the time when the color slowly changes from one to another.

Hold time is the time the controller hold the current sequence of LED color before changing to the next color.

Each channel is capable of sinking 300mA current.

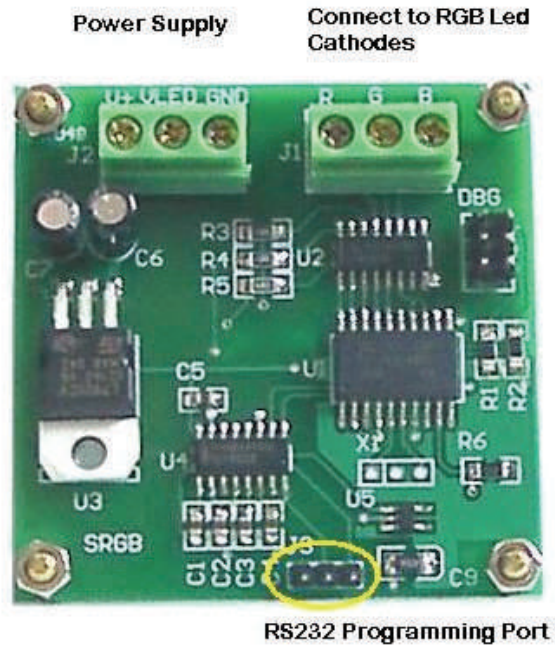


Figure 1: SCColorMix Front View

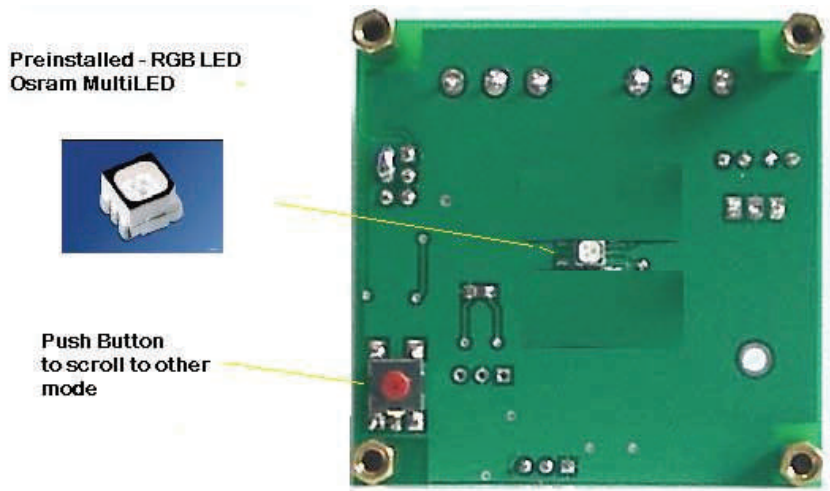


Figure 2: Back View with on board RGB Led

Mode of Operation

- Mode 0 Serial Command to control the PWM duty cycles.
- Mode 1 Auto Sequencing Mode* * Factory Default
- Mode 2 Output Color Setting 1
- Mode 3 Output Color Setting 2
- Mode 4 Output Color Setting 3
- Mode 3 Output Color Setting 4
- Mode 5 Output Color Setting 5
- Mode 6 Output Color Setting 6
- Mode 7 Output Color Setting 7
- Mode 8 Output Color Setting 8
- Mode 9 Output Color Setting 9
- Mode 10 Output Color Setting 10

Communication

RS232 Serial Port

8 Data bytes, no parity, 1 stop bit (8N1)

Baud rate 9600 bps

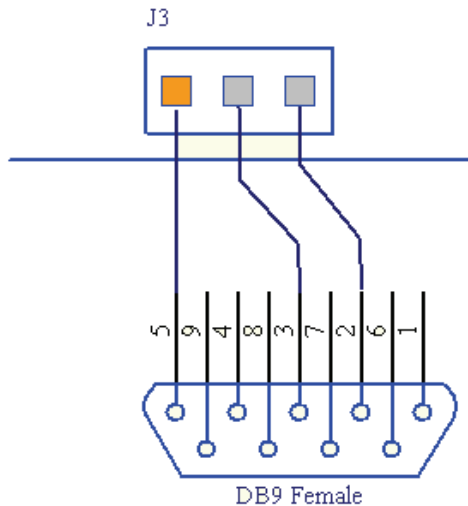


Figure 3: Connection to DB9

Serial Command Mode (Mode 0)

Set Led Color command

0xFF , 0x01 , [Red_Value], [Green_Value], [Blue_Value]

Max value : 255, minimum value : 0

The composition of the 3 colors value determine the output color of the RGB Leds

SCColorMix automatically goes into Mode 0 when it receives the set color command.

Save the color onto the memory

0xFF, [memory location], [Red_Value],[Green_Value], [Blue_Value]

Memory location : 2 to 11 (10 locations)

Auto Sequencing Mode (Mode 1)

In this mode LED colors slowly change from color 1 to color 10 stored in the memory.

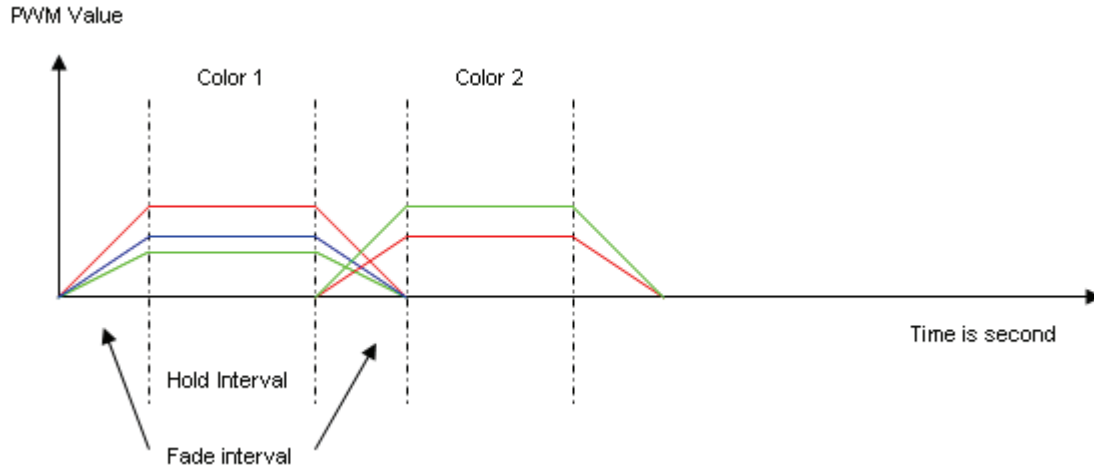


Figure 4: Auto Sequencing Mode

Set fade interval command

0xFF, 0x14, [f], 0xFE, 0xFE]

f = 0 ; fade interval = 1.25s

f = 1 ; fade interval = 2.5s

f = 2 ; fade interval = 5 s

Set hold interval command

0xFF, 0x1E, [hold interval], 0xFD, 0xFD

Where hold interval is 0 to 240 s

Fixed Color Mode (Mode 2 to 11)

This command set the LED color to the stored settings.

0xFF, 0x28, [mode] , 0xFC, 0xFC

Set mode = 1 for auto sequencing mode.

Saving the settings on EEPROM

All changes made can be saved onto the EEPROM with command

0xFF, 0x32, 0xFB, 0xFB, 0xFB

SCColorMix responses with 0xFE, 0xAA if the save is successful.

Read EEPROM contents

Command: 0xFF,0x3C, 0xFB,0xFB,0xFB

Response:

0xFF, [mode], [fade], [hold], [red1], [blue1],[green1],, [red10],[green10], [blue10], 0xFE

Total : 35 Bytes

Connecting to External LEDs

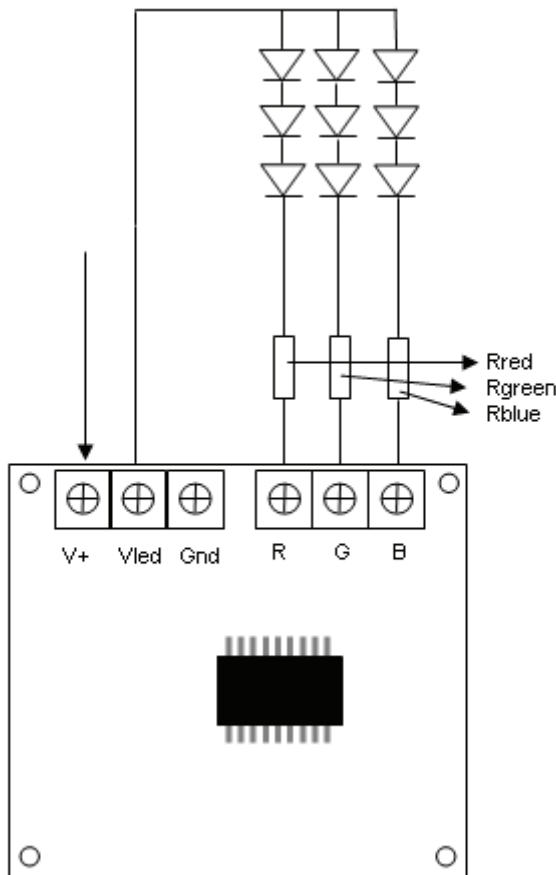


Figure 5: External LEDs connection

V+ is the power supply to the controller.

Max: 24V ; Min : 7V

Vled is voltage supply to the LED Anodes.

Vled = V+

Maximum current is 300mA per Channels

Current limiting resistors should be added to limit the current to the LED specifications.

Current limiting resistor calculation.

$$R = \frac{(Vled - 1) - (n \times Vf)}{Imax}$$

Where n = number of LED in a string

Vf = forward voltage drop of one LED

Imax = Maximum allowable current through LED

Example:

$$Rred = \frac{(12 - 1) - (3 \times 2)}{20mA} = 250 \text{ ohm}$$

Resistor Power Dissipation = Voltage Drop Across Resistor x Current

$$= 5V \times 20mA = 100mW$$

Assuming Vled = 12V , Vf = 2V, If = 20mA

ColorMix2 Software

This software runs on Windows PC designed to test and configure SCColorMix Module.

Available from www.siliconcraft.net/download.htm

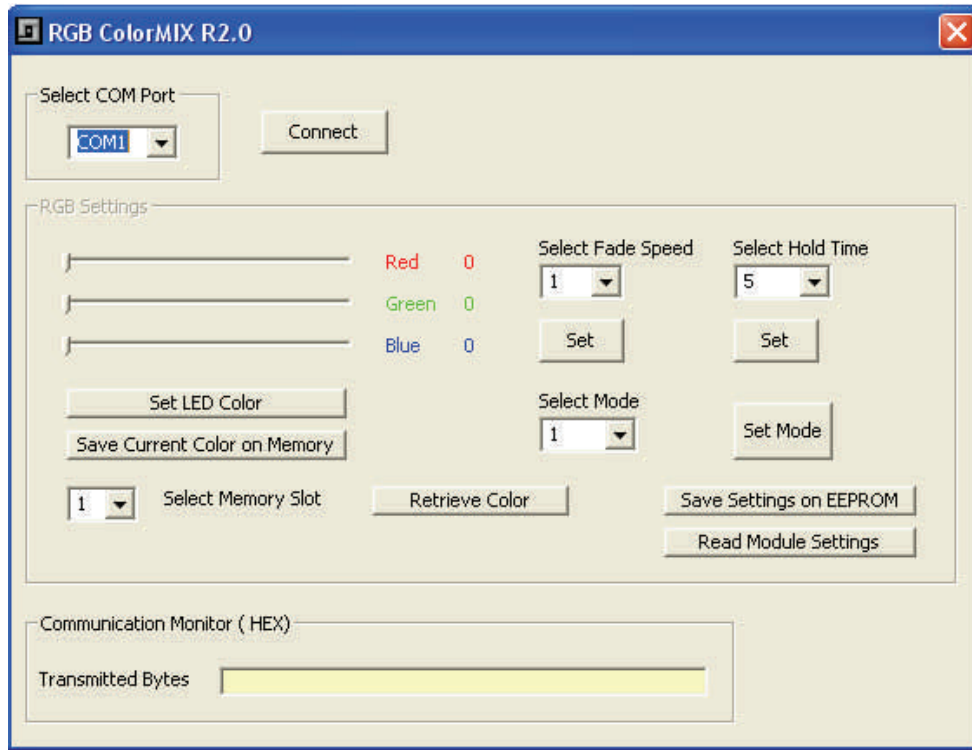


Figure 6: Screenshot of ColorMix2

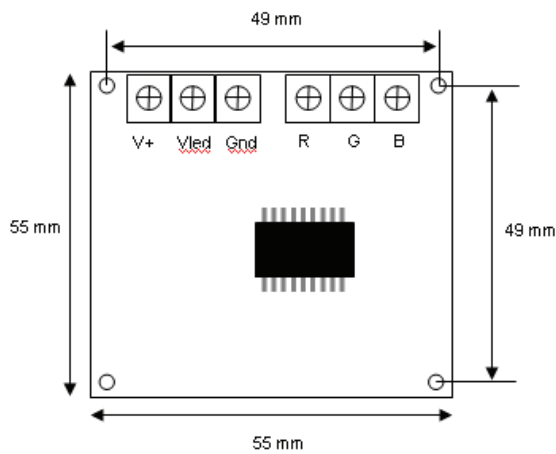


Figure 7: Physical Dimension