

Programmable RGB LED Sequencer

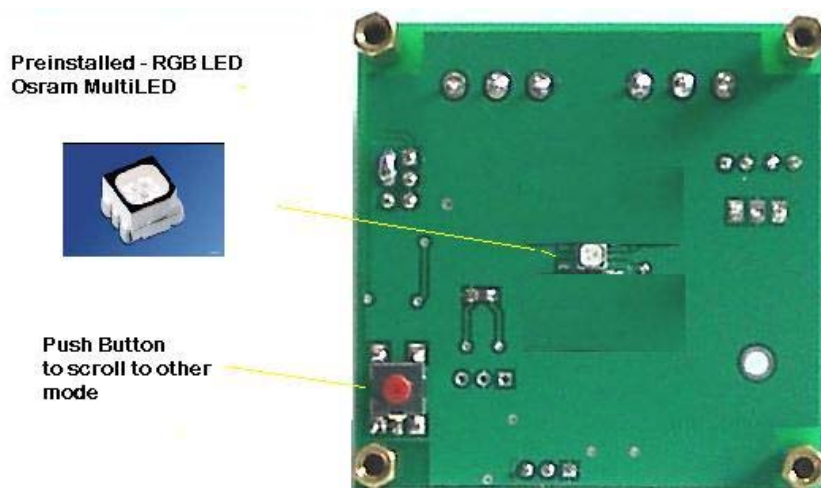
SCColorMix is a 3 channels PWM controller designed to control the color of RGB Led.

The duty cycle of individual PWM channel is controlled by serial command.

Alternatively, it can works independently where it auto change LED color or display selected fixed color. Up to 10 colors of user’s choices can be programmed using the free ColorMix Application Software which can be downloaded from www.siliconcraft.net/download.



Front View



Back View

Mode of Operations

There are three operating modes:

1. Serial Command Mode
2. Auto Scroll Mode
3. Fixed Color Mode

Serial Command Mode (Mode 0)

In this mode, the color of the LED is controlled via serial command to its RS232 serial port.

Serial Port Setting : 9600bps, 8 data bits, No Parity, 1 Stop Bit.

Serial Command Format:

[0xFF] [0x01] [Red] [Green] [Blue]

The composition of Red, Green and Blue values will determine the color output of the LED.

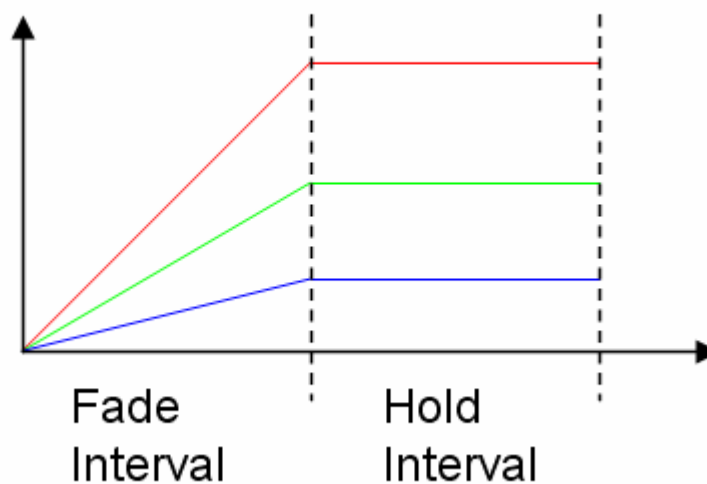
This command controls the onboard OSRAM LED and the external LEDs.

Auto Change Mode (Mode 1)

This mode changes the color of the LED automatically from Color 1 to Color 10. The module is preloaded with 10 different colors that can be reprogrammed with user's choice of colors.

The fade interval and the hold interval can be programmed too.

PWM Value



The fade interval determines the transition time between color changes. It can be programmed to slow (5 sec) , moderate (2.5 sec) or Fast (1.25 s).

Default value is moderate.

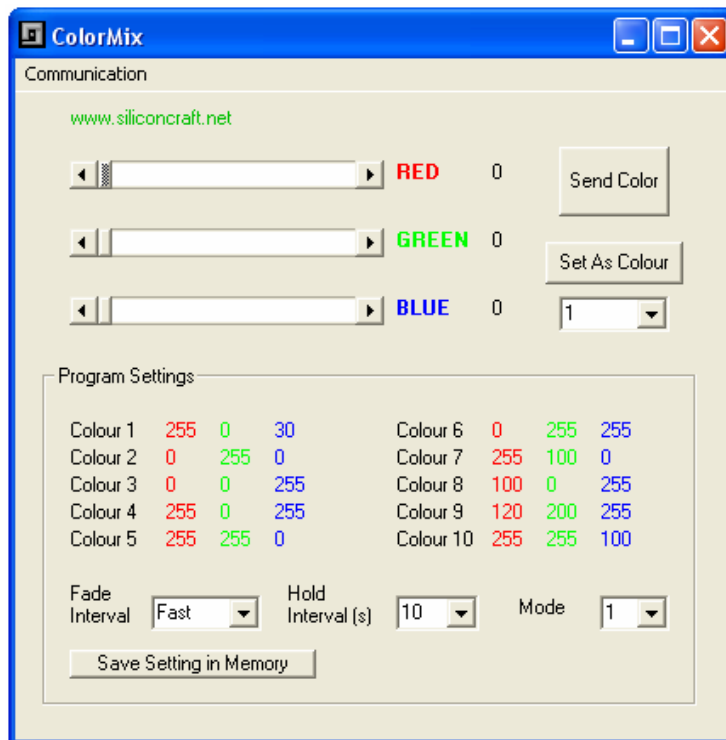
The hold interval determines the time that any color stays. It can be programmed to between 0 second to 60 seconds.

Fixed Color Mode (Mode 2 to 11)

This mode shows default color on power up. The color will depends on the selected start up mode. This is particularly useful for channel backlighting application where the backlight is set at a particular color.

Mode 2	Color 1
Mode 3	Color 2
Mode 4	Color 3
Mode 5	Color 4
Mode 6	Color 5
Mode 7	Color 6
Mode 8	Color 7
Mode 9	Color 8
Mode 10	Color 9
Mode 11	Color 11

Using ColorMix Software



Step 1 : Connect the serial cable to J3 and power up the module

Step 2 : Start the ColorMix Software from the Windows Start Menu.

Step 3 : Make sure the correct Serial Port is selected from Communication Menu.

Step 4 : If this is done correctly, the current settings is displayed.

Adjust scroll bar RED, GREEN or BLUE and click on SEND. The selected color will be displayed on the onboard LED.

Save the color settings into its desired position 1 to 10.

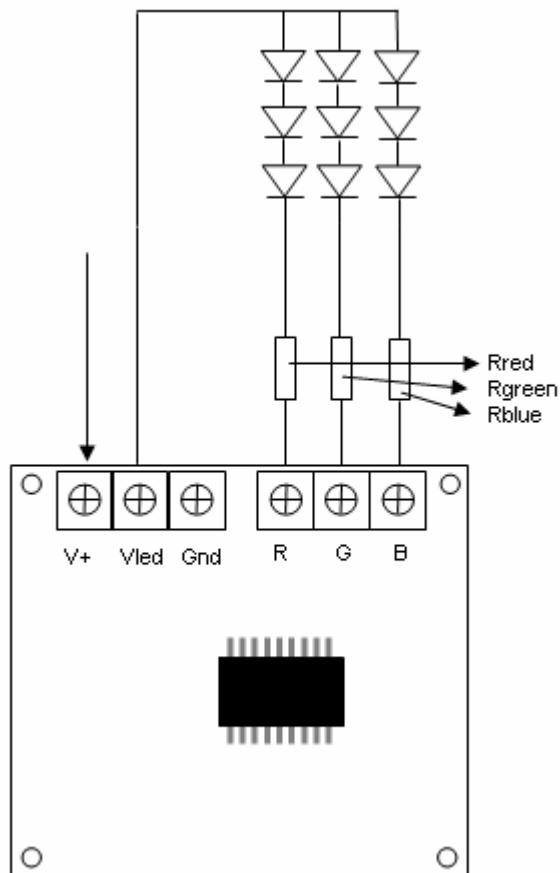
Select the Fade & Hold interval.

Select the start up mode. i.e. the default mode on power up.

Click on “ Save Setting in Memory “ when you have done.

You need to power off the module before the changes take effect.

Connecting External LEDs



V+ is the positive supply to the module.

Vled is the positive supply to the LED. Vled equal to V+.

V+ maximum should not exceed 24Vdc. Maximum current into each channel should not be more than 500mA.

Current limiting resistor calculation.

$$R = \frac{(V_{led} - 1) - (n \times V_f)}{I_{max}}$$

Where n = number of LED in a string

Vf = forward voltage drop of one LED

I_{max} = Maximum allowable current through LED

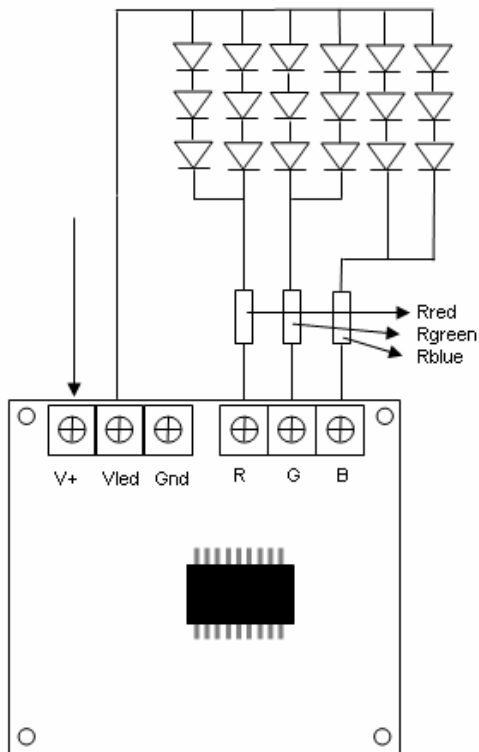
Example:

$$R_{red} = \frac{(12 - 1) - (3 \times 2)}{20mA}$$

$$= 250 \text{ ohm}$$

Resistor Power Dissipation = Voltage Drop Across Resistor x Current
 = 5V x 20mA
 = 100mW

Parallel LEDs Connection



Current limiting resistor calculation.

$$R = \frac{(V_{led} - 1) - (n \times V_f)}{I_{max} \times 2}$$

Where n = number of LED in a string

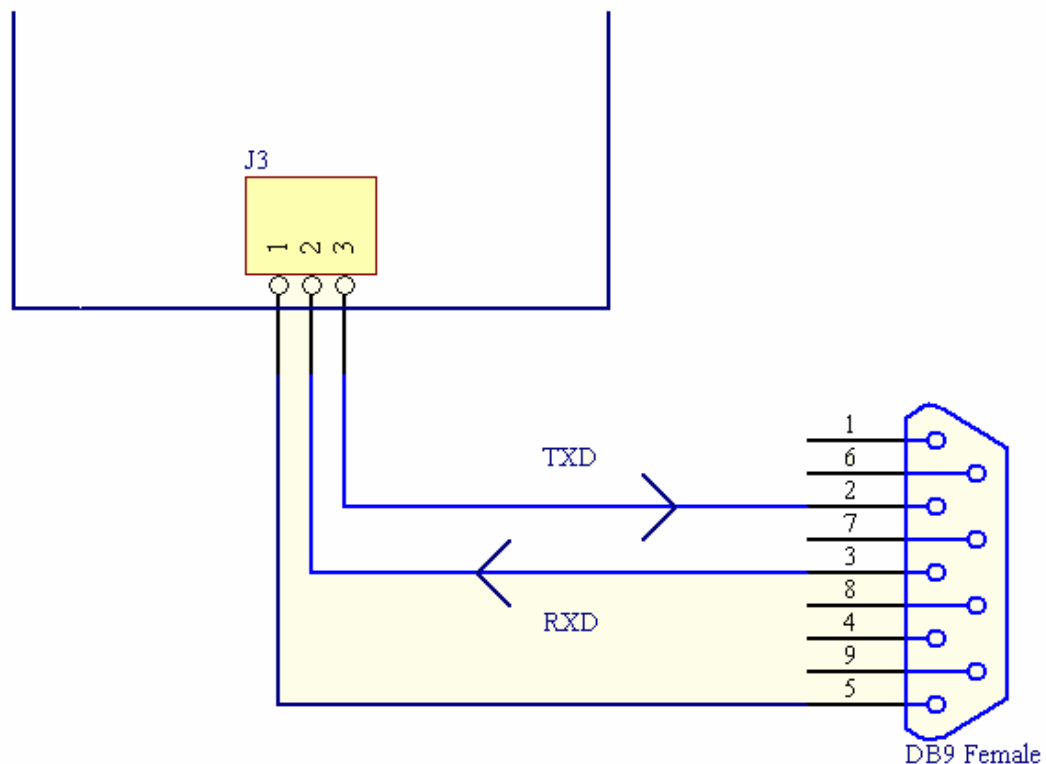
V_f = forward voltage drop of one LED

I_{max} = Maximum allowable current through LED

Example:

$$\begin{aligned} R_{red} &= \frac{(12 - 1) - (3 \times 2)}{20\text{mA} \times 2} \\ &= 125 \text{ ohm} \end{aligned}$$

$$\begin{aligned} \text{Resistor Power Dissipation} &= \text{Voltage Drop Across Resistor} \times \text{Current} \\ &= 5\text{V} \times 40\text{mA} \\ &= 200\text{mW} \end{aligned}$$

Serial Cable ConnectorMechanical Dimension

