

Tricolor Layer



Description

The Tricolor layer contains a full-spectrum red-green-blue LED, capable of displaying millions of colors. Individual color change and fade commands can be sent to the board through the main Tower bus when connected through the I²C layer.

Hardware Detail

The Tricolor layer is an off-board Tower layer. It does not stack on top of the Tower as other layers do, but rather connects via bus cables to the I²C breakout layer. The cables are four wires, and each tricolor layer has four sockets to allow for the simple creation of complex spatial topologies. The Ledtronics DIS-1024 LED itself has integrated red, green, and blue diodes all inside of it, to allow for the easiest color mixing. One important thing to note about this layer, is that it has a button located underneath it. The button allows the easy creation of complex topologies, by making it simple to dynamically assign addresses as boards are connected. While most Tower layers can have their I²C addresses changed in software, the Tricolor layer can have its address reset to the default value by holding down the button when the board is plugged in or power is turned on.

Layer Code

The include file for the Tricolor layer contains one function for fading the LED to a desired color value. *(This function is written for the PIC Foundation. The include files used with other foundations differ slightly, due to the presence of local variables.)*

The **tricolor** function takes five arguments, the address of the tricolor board to talk to, the individual red, green, and blue values from 0 to 255, and the fade time to transition to that color, in hundredths of a second, also ranging from 0 to 255. The values are all sent, in order to the layer itself, preceded by a "0" to indicate that a color fade is being performed.

```
to tricolor :addr :r :g :b :time
  i2c-start
  i2c-write-byte :addr
  i2c-write-byte 5
  i2c-write-byte 0
  i2c-write-byte :r
  i2c-write-byte :g
  i2c-write-byte :b
  i2c-write-byte :time
  i2c-stop
end
```

Examples of Use

Using the Tricolor layer is as simple as just calling the **tricolor** function with the desired color value. For now, let's say that we want to make the LED on address 28 fade to purple, and take 1 second to get there. We can just type:

```
tricolor 28 255 0 255 100
```

In RGB values, purple is 255, 0, 255, meaning that both red and blue are at full, and green is at zero. Since the time argument is in hundredths of a second, and we wanted a 1 second fade time, we sent a value of 100 for that argument.

There really aren't any more complicated things to do with the Tricolor layer, but just for fun, let's have it fade to random color every two seconds. The code to do that would look like this:

```
loop [tricolor 28 (random % 256) (random % 256) (random % 256) 200 wait 200]
```

In this loop, the tricolor function is called with three random color values, each a random value modulo 256, to give the desired 0 to 255 range. Since we want a new color every two seconds, we send a 200 as the fade time argument.