



## Christmas tree with Espruino and Olimex STM32

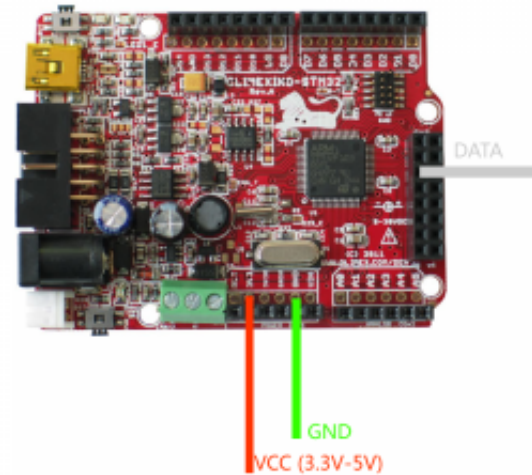
You will need for this project:

- Olimex STM32 [<https://www.olimex.com/Products/Duino/STM32/OLIMEXINO-STM32/open-source-hardware>] board with Espruino Loader (use Espruino 1.70!) -
- LED Stripe 32 [<https://www.olimex.com/Products/Components/LEDs/LED-STRIPE-32/>] with TM1804 chipset. Also any other versions (8/16/24) will work, but you need to adjust code
- Any power adapter [<https://www.olimex.com/Products/Power/SY0612E/>], that will power STM32 with 9-30V. In urgent cases you can use USB connector for power. For mobile applications you can use 3.7V LiOn battery connected to STM32

Wiring:

Connect LED STRIPE to STM32 as follows:

- RED cable (VCC-3.3V) to 3.3V on Olimex STM32
- GREEN (GND) to GND on STM32
- WHITE (DATA) to pin D34 on Olimex STM32. Use espruino chart [[http://www.espruino.com/ReferenceOLIMEXINO\\_STM32](http://www.espruino.com/ReferenceOLIMEXINO_STM32)] Pin 34 is located on EXT connector and refers to PIN#5 or D27 based on original Olimex STM32 manual [<https://www.olimex.com/Products/Duino/STM32/OLIMEXINO-STM32/resources/OLIMEXINO-STM32.pdf>]



Setup:

Power the STM32, connect wires and setup with:

```
SPI2.setup({baud:3200000, mosi:D34});  
SPI2.send4bit([255,0,0], 0b0001, 0b0011); // turn first LED Red  
SPI2.send4bit([255,0,0, 0,255,0, 0,0,255], 0b0001, 0b0011); // turn first 3 LEDs, Red, Green, and Blue
```

If diodes will light-on, continue with complete setup

```
SPI2.setup({baud:3200000, mosi:D34}); //if you use other pin, change D34 to different  
var rgb = new Uint8Array(32*3); //if you use other LEDstripe change 32 to number of led segments
```

```
var pos=0;
```

```
var patterns = [];  
patterns.push(function() {  
  pos++;  
  for (var i=0;i<rgb.length;i+=3) {  
    var col = (Math.sin(i+pos*0.2)+1) * 127;  
    rgb[i ] = col;  
    rgb[i+1] = col;  
    rgb[i+2] = col;  
  }  
})
```

```

});
patterns.push(function() {
  pos++;
  for (var i=0;i<rgb.length;i+=3) {
    rgb[i  ] = (1 + Math.sin((i+pos)*0.1324)) * 127;
    rgb[i+1] = (1 + Math.sin((i+pos)*0.1654)) * 127;
    rgb[i+2] = (1 + Math.sin((i+pos)*0.1)) * 127;
  }
});
patterns.push(function() {
  for (var i=0;i<rgb.length;i+=3) {
    rgb[i  ] = 0;
    rgb[i+1] = 0;
    rgb[i+2] = Math.random()*255;
  }
});
var getPattern = patterns[0];
function doLights() {
  getPattern();
  SPI2.send4bit(rgb, 0b0001, 0b0011);
}

var patternNumber = 0;
function changePattern() {
  patternNumber = (patternNumber+1) % patterns.length;
  getPattern = patterns[patternNumber];
}

setWatch(changePattern, BTN, { repeat: true, edge:'falling' });
setInterval(doLights,50);

```

When you press the button BUT, lights mode will change (3 different modes)!



If you are happy, flash it to permanent memory using `save()` command

```
>save();  
=undefined  
Erasing Flash.....  
Programming 8580 Bytes.....  
Checking...  
Done!
```

Power consumption is fair, vary from 50mA on mode with less led on up to 110mA with all led-s on STRIPE32. For another details, check

<http://www.espruino.com/WS2811> [<http://www.espruino.com/WS2811>] <http://www.espruino.com/Individually+Addressable+LEDs>  
[\[http://www.espruino.com/Individually+Addressable+LEDs\]](http://www.espruino.com/Individually+Addressable+LEDs)