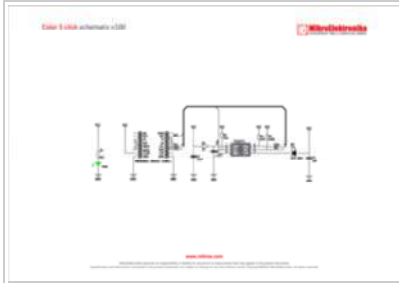# Color 3 click

From MikroElektonika Documentation

Color 3 click is a mikroBUS™ add-on board with a TCS3771 color sensor (also known as a light-to-digital converter) and a narrow beam Infrared LED. The circuit can also function as a proximity sensor.

Features and usage notes

TCS3771 is a RGBC sensor (red, green, blue and clear). It consists of an array of 4x4 photodiodes and integrated amplifiers, 16-bit ADCs, accumulators, clocks, buffers, comparators and state machines.

The IC performs well under a variety of lighting conditions and can be covered with different attenuation materials.

Paired with an onboard IR LED, the TCS3771 device works a proximity sensor (the emitted IR LED is reflected back to the photodiodes). Since the sensor has a large dynamic range of operation, Color 3 click can take both short distance measurements behind dark glass; or it can be configured for longer distance measurement, for example, human presence detection in front of monitors or laptops.

Schematic also available in PDF (http://cdn-docs.mikroe.com/images/0/0b/Color_3_click_schema

For power-saving, TCS3771 has an internal state machine that can put the device into a low power mode between successive RGBC and proximity measurements.

TCS3771 is also fast enough to give off proximity information at a high rate of repetition. This makes it useful for proximity detection in portable devices (such as a phone coming near to a speaker's ear).

Color 3 click communicates with the target MCU through the mikroBUS™ I2C interface, with additional functionality provided by an INT pin. Designed to use a 3.3 power supply only.

Color 3 click

Color 3 click	
IC/Module	TCS3771 (http://ams.com/eng/Products/Light-Sensors/Color-Sensors-Proximity-Detection/TCS37717)
Interface	I2C, INT
Power supply	3.3V
Website	www.mikroe.com/click/color-3 (http://www.mikroe.com/click/color-3)

Programming

The following code snippet shows how to send temperature readings from Color 3 click to a TFT display.

```
1  void main()
2  {
3      //Local Declarations
4      uint8_t _i2c_address = 0x29;
5      color_t my_color;
6
7          // GPIOs
8      GPIO_Digital_Input( &GPIOD_BASE, _GPIO_PINMASK_10 );
9      Delay_ms(300);
10
11      // I2C
12      I2C1_Init_Advanced( 100000, &_GPIO_MODULE_I2C1_PB67 );
13      Delay_ms(300);
14
15      //Color 3
16      color_3_init( _i2c_address );
17      Delay_ms(300);
18
19      color_3_get_rgb_data( &my_color );
20
21      while(1)
22      {
23
24      }
25  }
```
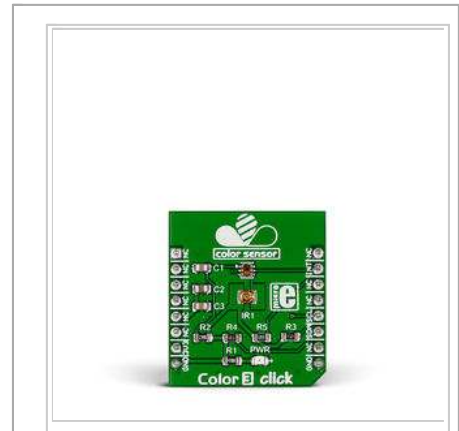
Code examples that demonstrate the usage of Color 3 click with MikroElektronika hardware, written for mikroC for ARM, AVR, dsPIC, FT90x, PIC and PIC32 are available on Libstock (http://libstock.mikroe.com/projects/view/1925/color-3-click).

Resources

- Vendor's data sheet (http://ams.com/eng/Products/Light-Sensors/Color-Sensors-Proximity-Detection/TCS37717)

- Color 3 click Libstock example (http://libstock.mikroe.com/projects/view/1925/color-3-click)

- mikroBUS™ standard specification (http://download.mikroe.com/documents/standards/mikrobus/mikrobus-standard-specification-v200.pdf)

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