Guide to the ColorPAL.h Arduino Library

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1. Introduction

The ColorPAL Arduino library was written to ease the process of interfacing with the Parallax ColorPAL sensor (product page: https://parallax.com/product/28380) by abstracting away the serial communications of a software-defined serial port.
This library was developed for the Arduino IDE and can work with any Arduino board type i.e. Uno, Leonardo or Mega.

2. Hardware/Wiring

Figure 1: Parallax ColorPAL Sensor

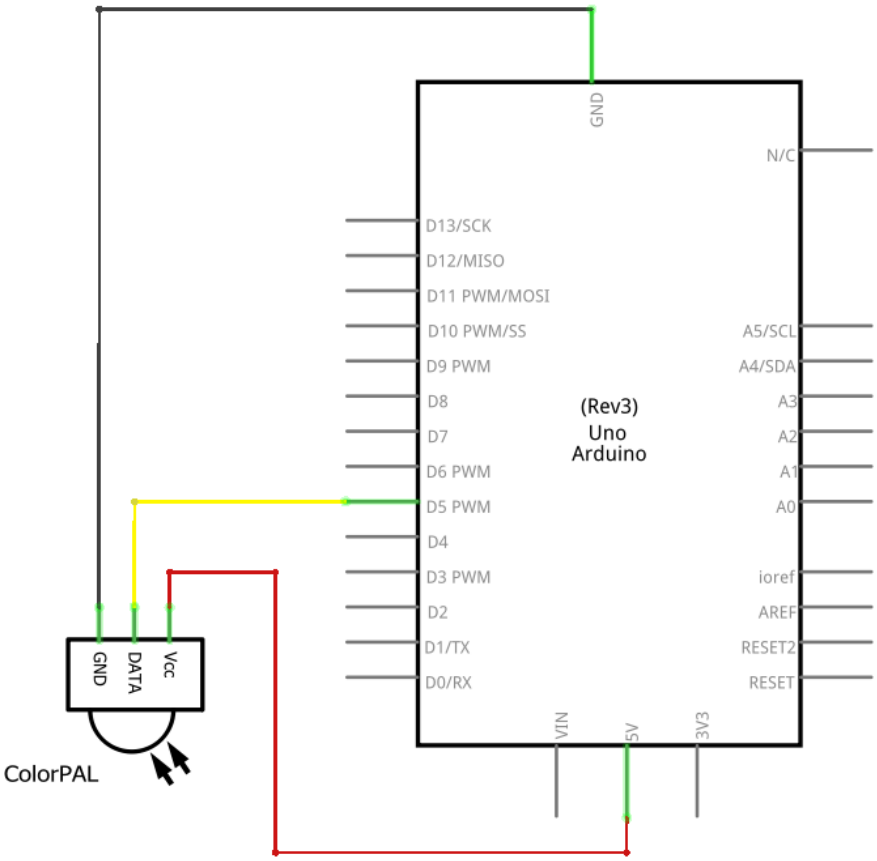

Figure 2: Circuit schematic with Arduino Uno (Fritzing)

3. ColorPAL header file

The <ColorPAL.h> file gives you access to the 'ColorPAL' class which contains five methods: *attachPAL*, *redPAL*, *greenPAL*, *bluePAL* and *detectPAL*.

3.1 ColorPAL

- ***3.1.1 Description:*** This is the class constructor which is used to create an object of type *ColorPAL*.
- ***3.1.2 Syntax:*** `ColorPAL mySensor;`
- ***3.1.3 Parameters:*** None
- ***3.1.4 Returns:*** None

3.2 attachPAL( )

3.2.1 ***Description:*** Attaches the sensor variable to a user-defined pin.

3.2.2 ***Syntax:*** `mySensor.attachPAL(pin#);`

3.2.3 ***Parameters:*** *Pin#* - the number of the digital pin to which the sensor is connected to. Must be of type integer.

3.2.4 ***Returns:*** None

3.3 redPAL( )

3.3.1 ***Description:*** This function reads the sensor output, extracts only the red component detected in reflected light and returns this value.

3.3.2 ***Syntax:*** `mySensor.redPAL();`

3.3.3 ***Parameters:*** None

3.3.4 ***Returns:*** Integer in the range of 0 – 255.

3.4 greenPAL( )

3.4.1 ***Description:*** This function reads the sensor output, extracts only the green component detected in reflected light and returns this value.

3.4.2 ***Syntax:*** `mySensor.greenPAL();`

3.4.3 ***Parameters:*** None

3.4.4 ***Returns:*** Integer in the range of 0 – 255.

3.5 bluePAL( )

3.5.1 ***Description:*** This function reads the sensor output, extracts only the blue component detected in reflected light and returns this value.

3.5.2 ***Syntax:*** `mySensor.bluePAL();`

3.5.3 ***Parameters:*** None

3.5.4 ***Returns:*** Integer in the range of 0 – 255.

3.6 detectPAL( )

3.6.1 ***Description:*** This function takes in three integers (corresponding to red, green and blue values), performs a three-way comparison and returns the highest value of the three components.

3.6.2 ***Syntax:*** `mySensor.detectPAL(red, green, blue);`

3.6.3 ***Parameters:*** red: integer from 0 – 255 as returned by redPAL()
green: integer from 0 – 255 as returned by greenPAL()
blue: integer from 0 – 255 as returned by bluePAL()

3.6.4 ***Returns:*** A single character ‘r’, ‘g’ or ‘b’ depending on which of the three integers above were the largest. Returns ‘w’ if the comparison is inconclusive, likely indication of an error.