

## Color 11 Click



PID: MIKROE-5894

**Color 11 Click** is a compact add-on board that provides an accurate color-sensing solution. This board features the TCS34083M, an ALS/color sensor with selective flicker detection from ams-OSRAM. The sensor features ambient light and color (RGB) sensing and flicker detection, which suppresses cross-coupling from 940nm IR if generated by adjacent circuits. The main benefits of this sensor are invisible ALS and color sensing under any glass type, unique fast ALS integration mode, and more. It features configurable programmable gain and integration time, tailored ALS and color response, ALS/color interrupt with thresholds, and many more. This Click board™ makes the perfect solution for the development of brightness management for displays, color management for displays, camera image processing, flicker-immune camera operation, and more.

### How does it work?

Color 11 Click is based on the TCS34083M, an ALS/Color sensor with selective flicker detection from ams-OSRAM. This sensor's Ambient Light and Color Sensing function provides five concurrent ambient light sensing channels: Red, Green, Blue, Clear, and Wideband. The RGB and Clear channels have a UV/IR blocking filter. This architecture accurately measures ambient light and enables the calculation of illuminance, chromaticity, and color temperature to manage display appearance. The device integrates direct detection of 50Hz or 60Hz ambient light flicker. Flicker detection is executed parallel with ambient light and color sensing and has an independent gain configuration. The flicker detection engine can also buffer data for calculating other flicker frequencies externally.

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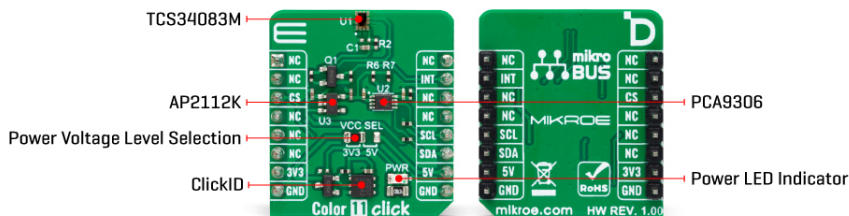
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ISO 27001: 2013 certification of informational security management system.  
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OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).



The sensor works at 1.8V, so the Color 11 Click is equipped with the [AP2112](#), a CMOS LDO from Diodes Incorporated. The [PCA9306](#), a dual bidirectional voltage level translator from Texas Instruments, is used to meet higher logic levels besides additional circuits.

Color 11 Click uses a standard 2-Wire I2C interface to communicate with the host MCU, supporting clock frequency of up to 400kHz. The TCS34083M is an interrupt-driven device. Over the INT pin, the sensor will output interrupts of ALS/color according to the thresholds, flicker detection, and more.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

## Specifications

Type	Color Sensing, Optical
Applications	Can be used for the development of brightness management for displays, color management for displays, camera image processing, flicker-immune camera operation, and more
On-board modules	TCS34083M - ALS/color sensor with selective flicker detection from ams-OSRAM
Key Features	Invisible ALS and color sensing under any glass type, unique fast ALS integration mode, integrated ambient light flicker detection on-chip, integrated status checking for all functions, low power consumption, programmable gain and integration time, tailored ALS and color response, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)

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Input Voltage	3.3V or 5V
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## Pinout diagram

This table shows how the pinout on Color 11 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	<b>INT</b>	Interrupt
ID COMM	<b>CS</b>	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	<b>SCL</b>	I2C Clock
	NC	6	MOSI	SDA	11	<b>SDA</b>	I2C Data
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	<b>5V</b>	Power Supply
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Power/Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

## Color 11 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Spectral Response (C/R/G/B/WB/FD1/FD2)	625/615/525/465/750/770/720			nm

## Software Support

We provide a library for the Color 11 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

## Library Description

This library contains API for Color 11 Click driver.

### Key functions

- `color11_get_als_data` Color 11 get ALS data function.
- `color11_get_illuminance` Color 11 get illuminance function.

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- `color11_get_data_valid_status` Color 11 get data valid status function.

## Example Description

This library contains API for the Color 11 Click driver. The demo application sets sensor configuration and reads and displays ALS data measurement results.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.Color11

## Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 Click](#) or [RS232 Click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE [compilers](#).

## mikroSDK

This Click board™ is supported with [mikroSDK](#) - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

## Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click Boards™](#)

[ClickID](#)

## Downloads

[PCA9306 datasheet](#)

[AP2112 datasheet](#)

[Color 11 click example on Libstock](#)

[Color 11 click 2D and 3D files](#)

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[Color 11 Click schematic](#)

[TCS3408 datasheet](#)

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