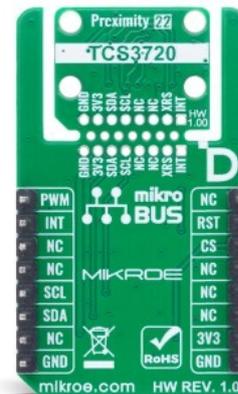
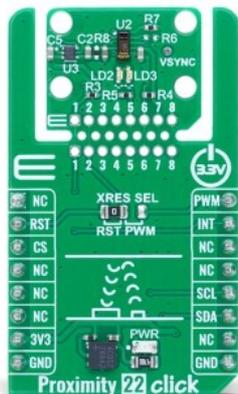


Proximity 22 Click



PID: MIKROE-6552

Proximity 22 Click is a compact add-on board designed for accurate proximity, ambient light, and color sensing in various low-light and display-adaptive applications. It is based on the [TCS3720](#) sensor from [ams OSRAM](#), which integrates proximity detection, RGB and clear light sensing, and ambient light compensation. The board also supports I2C communication with interrupt output, and includes a configurable XRES SEL jumper for selecting the sensor's multifunctional pin mode as either hardware reset or PWM input. The unique Click Snap format allows the sensing area to be detached and independently mounted, providing additional flexibility in integration. Proximity 22 Click is ideal for applications such as display brightness and color adjustment, presence detection, and gesture-based interaction in mobile devices, consumer electronics, and industrial panels.

For more information about **Proximity 22 Click** visit the official [product page](#).

How does it work?

Proximity 22 Click is based on the TCS3720, an ALS/color and proximity sensor from ams OSRAM. This device offers a combination of ambient light, color (RGB), and proximity detection capabilities, making it ideal for applications requiring precise environmental awareness and object detection. The proximity function uses two OSRAM [PLPVYL1 940A_E](#) infrared LEDs operating at 940nm, positioned adjacent to the TCS3720 sensor to actively illuminate nearby objects with invisible IR light. The reflected signal is captured by the IR channel of the sensor, enabling reliable proximity measurements even in challenging low-light environments. The dual-LED configuration ensures enhanced coverage, delivering accurate detection across a broader range of object surfaces and angles. This Click board™ is ideal for display brightness and color management, as well as proximity detection in mobile and handheld devices.

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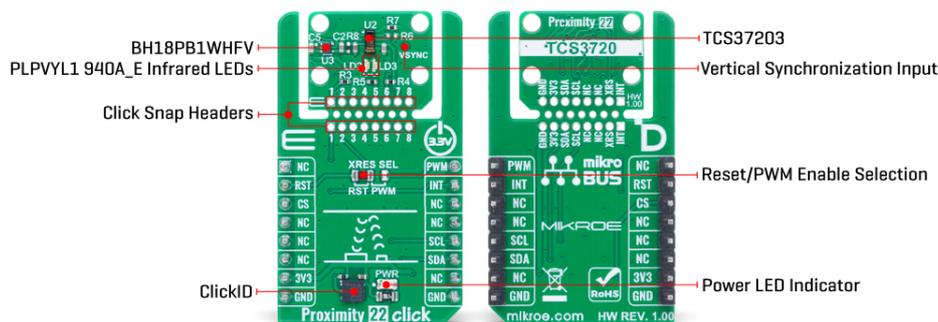
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For ambient light and color sensing, the TCS3720 provides four concurrent sensing channels - Red, Green, Blue, and Clear - all protected by an integrated UV/IR blocking filter. This design allows precise measurement of ambient light intensity and color composition, enabling calculation of illuminance and correlated color temperature, which is particularly useful for dynamic brightness and color management in display systems. The sensor architecture incorporates features such as self-maximizing dynamic range, ambient light subtraction, advanced crosstalk cancellation, and interrupt-driven I2C communication, ensuring optimal performance and system integration.

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the TCS3720 can operate autonomously by accessing its signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

As mentioned, this Click board™ uses an I2C interface with clock speeds of up to 400kHz, ensuring fast communication with the host MCU. The proximity engine recognizes detect/release events and produces a configurable interrupt (INT) whenever the proximity result crosses upper or lower threshold settings. In addition to the interrupt functionality, the Click board™ features a configurable jumper labeled XRES SEL, which allows users to select the function of the sensor's multipurpose pin. Depending on the jumper position and proper register configuration, this pin can be used either as a hardware reset for resetting the sensor or as a PWM input for synchronizing the proximity sensing engine with external modulation sources.

The VSYNC test point on the Click board™ exposes the vertical synchronization input pin of the TCS3720 sensor. This pin allows the host MCU to externally trigger the start of a new color measurement cycle. While not connected to mikroBUS™ by default, it is available for advanced use cases where precise control of integration timing is required. The TCS3720 does not require a specific Power-Up sequence but requires a supply voltage of 1.8V to work correctly. Therefore, a small regulating LDO is used, the BH18PB1WHFV, providing a 1.8V out of mikroBUS™ power rail.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic

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levels. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the [official page](#) dedicated to this feature.

Specifications

Type	Proximity
Applications	Ideal for applications such as display brightness and color adjustment, presence detection, and gesture-based interaction in mobile devices, consumer electronics, and industrial panels
On-board modules	TCS3720 - ALS/color and proximity sensor from ams OSRAM
Key Features	Integrated proximity, ambient light, and RGB color sensing, high-sensitivity IR detection, I2C communication, configurable interrupt output for proximity threshold events, selectable hardware reset or PWM input, advanced ambient light subtraction and crosstalk cancellation, self-maximizing dynamic range, UV/IR blocking filter over all color channels, support for external VSYNC triggering, Click Snap, and more
Interface	I2C,PWM
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Proximity 22 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	PWM	PWM Signal
Reset	RST	2	RST	INT	15	INT	Interrupt
ID COMM	CS	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	

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	NC	5	MISO	SCL	12	SCL	I2C Clock
	NC	6	MOSI	SDA	11	SDA	I2C Data
Power Supply	3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2-LD3	LD2-LD3	-	PLPVYL1 940A_E Infrared LEDs
JP1	XRES SEL	Left	Reset/PWM Enable Selection RST/PWM: Left position RST, Right position PWM

Proximity 22 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Spectral Responsivity (CLR/R/G/B)	660/660/530/470			nm
Proximity IR Wavelength	-	940	-	nm

Software Support

[Proximity 22 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

This example demonstrates the use of the Proximity 22 Click board by reading and displaying proximity, ambient light (ALS), and temperature measurements. The data is read only when a new measurement is ready, indicated by an interrupt.

Key Functions

- `proximity22_cfg_setup` This function initializes Click configuration structure to initial values.
- `proximity22_init` This function initializes all necessary pins and peripherals used for this Click board.
- `proximity22_default_cfg` This function executes a default configuration of Proximity 22 Click board.
- `proximity22_get_int_pin` This function returns the logic state of the INT pin.
- `proximity22_read_data` This function reads proximity, temperature, and ALS data if available.

Application Init

Initializes the logger and the Proximity 22 Click driver, then sets the default configuration.

Application Task

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Waits for a data ready interrupt and then reads the proximity, temperature, and ALS data (red, green, blue, and clear channels), displaying the results via UART approximately every 200 ms.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[Proximity 22 click example package](#)

[Proximity 22 click 2D and 3D files v100](#)

[TCS37203 datasheet](#)

[PLPVYL1 940A_E datasheet](#)

[Proximity 22 click schematic v100](#)

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