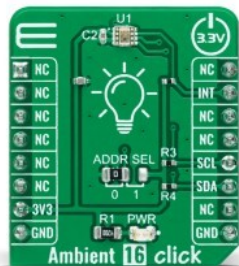


Ambient 16 Click



PID: MIKROE-4933

Ambient 16 Click is a compact add-on board used to measure the amount of the present ambient light. This board features the [BH1726NUC](#), a 16-bit digital-output ambient light sensor with an I2C interface from [Rohm Semiconductor](#). The BH1726NUC can detect a wide range of illuminance up to 30klx and provides excellent responsivity close to the human eyes' response. It is designed to control the brightness in various applications based on ambient light availability, brightness for optimum visibility, and energy efficiency. Operation in a temperature range of -40°C to 85°C ensures stable operation under extreme conditions. This Click board™ is the most suitable for obtaining ambient light data for adjusting brightness in applications that require power saving and better visibility.

Ambient 16 Click is supported by a [mikroSDK](#) compliant library, which includes functions that simplify software development. This [Click board™](#) comes as a fully tested product, ready to be used on a system equipped with the [mikroBUS™](#) socket.

How does it work?

Ambient 16 Click as its foundation uses the BH1726NUC, a 16-bit digital-output ambient light sensor from Rohm Semiconductor. The BH1726NUC can detect a wide range of illuminance up to 30klx and provides an excellent responsivity close to the response of human eyes. It also has stable performance over a wide temperature range of -40°C to 85°C, and a voltage range suitable to measure the amount of the present ambient light.

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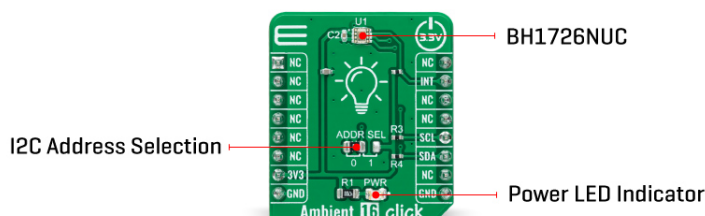
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ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.



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



The BH1726NUC is designed to control the brightness in various applications based on ambient light availability, brightness for optimum visibility, and energy efficiency. This IC can change its ambient-light sensitivity used to compensate for the effect of attenuation by the optical window. Adjustment is made by changing the measurement time. For example, when the transmission rate of the optical window is $1/n$ (measurement result becomes $1/n$ times if the optical window is set), the effect of the optical window is compensated by changing sensor sensitivity from default to n times.

Ambient 16 Click communicates with MCU using the standard I2C 2-Wire interface to read data and configure settings, supporting Standard Mode operation with a clock frequency of 100kHz and Fast Mode up to 400kHz. Besides, the BH1726NUC allows choosing the least significant bit (LSB) of its I2C slave address using the SMD jumper labeled ADDR SEL. It also possesses an additional interrupt signal, routed on the INT pin of the mikroBUS™ socket labeled as INT, indicating when a specific interrupt event occurs.

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 levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used, as a reference, for further development.

Specifications

Type	Optical
Applications	Can be used for obtaining ambient light data for adjusting brightness in applications that require power saving and better visibility
On-board modules	BH1726NUC - 16-bit digital-output ambient light sensor from Rohm Semiconductor
Key Features	Low power consumption, corresponds to a dark window because of high sensitivity, close responsivity to the human eye, I2C interface with selectable slave address, wide illumination range, stable performance over temperature and voltage, and more
Interface	I2C

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ClickID	No
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Ambient 16 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	NC	
	NC	2	RST	INT	15	INT	Interrupt
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	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
JP1	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Ambient 16 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Illuminance Measurement Range	0	-	30.000	lx
Sensitivity Variations	-	±15	-	%
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the Ambient 16 Click as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

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

Library Description

This library contains API for Ambient 16 Click driver.

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Key functions

- `ambient16_get_part_id` Ambient 16 get part ID function.
- `ambient16_set_gain` Ambient 16 set ADC gain function.
- `ambient16_read_data` Ambient 16 get data in lux function.

Example Description

This is an example that demonstrates the use of the Ambient 16 Click board™ by measuring illuminance and displaying the value in Lux.

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

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.Ambient16

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 MikroElektronika [compilers](#).

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MikroElektronika 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™](#)

Downloads

[Ambient 16 Click schematic](#)

[BH1726NUC datasheet](#)

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[Ambient 16 click 2D and 3D files](#)

[Ambient 16 click example on Libstock](#)

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