

UVC Light Click



PID: MIKROE-4177

UVC Light Click is Click board™ with ultraviolet LEDs with 275nm wavelength which can be complemented with [UVC Click](#) for measuring exact dose of UV radiation. UVC radiation refers to wavelengths shorter than 280 nm. Because of the spectral sensitivity of DNA, only the UVC region demonstrates significant germicidal properties. As evident by multiple research studies and reports, when biological organisms are exposed to deep UV light in the range of 200 nm to 300 nm it is absorbed by DNA, RNA, and proteins. With two 0.7W (1.4W combined power) UVC Light Click is a perfect solution as a small surface disinfection tool.

UVC Light Click board™ 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.

WARNING: UV Light Hazard Avoid Looking Directly at Light!!!

How does it work?

UVC Light Click board™ includes uses two 0.7W, 275nm LEDs and one green LED that allow users to see approximate area where UVC light is shinning since these UV wavelengths are not visible to human eye and should avoid direct exposure to eye.

Mikroe produces entire development toolchains for all major microcontroller architectures.

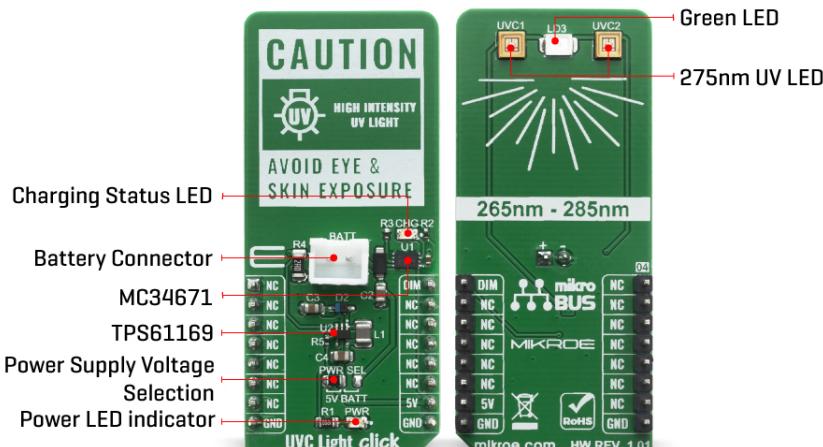
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ISO 27001: 2013 certification of informational security management system.
 ISO 14001: 2015 certification of environmental management system.
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ISO 9001: 2015 certification of quality management system (QMS).



The reason UVC Light Click can be used as desinfection tool is that UV light in the range of 200 nm to 300 nm it is absorbed by DNA, RNA, and proteins. Absorption by proteins can lead to rupture of cell walls and death of the organism. Absorption by DNA or RNA (specifically by thymine bases) is known to cause inactivation of the DNA or RNA double helix strands through the formation of thymine dimers. If enough of these dimers are created in DNA, the DNA replication process is disrupted, and the cell cannot replicate.

It is widely accepted that it is not necessary to kill pathogens with UV light, but rather apply enough UV light to prevent the organism from replicating. The UV doses required to prevent replication are orders of magnitude lower than required to kill, making the cost of UV treatment to prevent infection commercially viable.

UVC Light Click is implementing [TPS61169](#) LED driver with PWM brightness control to drive LEDs in series and [MC34671](#) battery charger to allow charging of battery when Click board™ is inserted in mikroBUS™ socket, CHG LED will indicate the charging in progress and will turn off once the battery charging is finished. When PWR SEL jumper is repositioned to the right position you can use UVC Light Click standalone if no dimming is necessary or high mobility is needed.

Specifications

Type	LED Drivers, UVC Light
Applications	Disinfection, chemical and biological analysis and many more
On-board modules	3535UVC1W, TPS61169
Key Features	Deep Ultraviolet LED, Flat View Angle, Peak Wavelength at 275nm
Interface	GPIO
ClickID	No
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	5V

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Pinout diagram

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

Notes	Pin	mikro™ BUS					Pin	Notes
	NC	1	AN	PWM	16	DIM	Dimming	
	NC	2	RST	INT	15	NC		
	NC	3	CS	RX	14	NC		
	NC	4	SCK	TX	13	NC		
	NC	5	MISO	SCL	12	NC		
	NC	6	MOSI	SDA	11	NC		
	NC	7	3.3V	5V	10	5V	Power Supply	
Ground	GND	8	GND	GND	9	GND	Ground	

Onboard settings and indicators

Label	Name	Default	Description
PWR	LD1	-	Power LED Indicator
PWR SEL	JP1	Left	Power Supply Voltage Selection 5V/Battery, left position 5V, right position battery
CHG	LD5	-	Charging Status LED. CHG LED will indicate the charging in progress and will turn off once the battery charging is finished.

Technical specification

Characteristic	Value
Peak wavelength	275nm
Spectra half-width	15nm
UVC LEDs power dissipation	1.4W

Software Support

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

Library Description

The library contains basic PVM LED control functions.

Key functions:

- `uint32_t uvclight_pwmInit(uint16_t freq)` - PWM init functions
- `void uvclight_pwmSetDuty(uint16_t duty)` - PWM set duty cycle

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Examples description

The application is composed of three sections :

- Application Initialization - Initialize PWM module and sets frequency
- Application Task - Increases and decreases the pwm duty cycle.

The full application code, and ready to use projects can be found on our [LibStock](#) page.

Other mikroE Libraries used in the example:

- PWM Library

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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

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

[UVC Light click 2D and 3D files](#)

[TPS61169 datasheets](#)

[MC34671 datasheets](#)

[UVC Light click example on Libstock](#)

[UVC Light click schematic](#)

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