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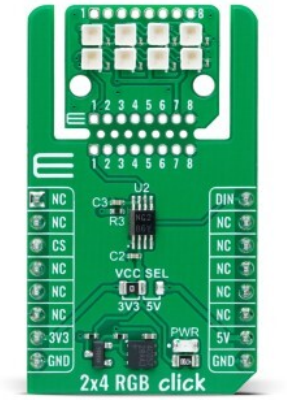
2x4 RGB Click



PID: MIKROE-6378

2x4 RGB Click is a compact add-on board for dynamic and colorful lighting control. This board features an array of 2x4 RGB LEDs (WL-ICLED 1312121320437) from Würth Elektronik, featuring individual control of each red, green, and blue component via an integrated IC and pulse width modulation (PWM) technology. The board also includes an LSF0102 voltage translator, ensuring seamless operation with both 3.3V and 5V logic systems, and supports MIKROE's innovative Click Snap feature for flexible installation options. With its precise color control and flexible design, 2x4 RGB Click is ideal for applications such as ambient lighting, displays, and visual indicators in various consumer electronics and industrial environments.

How does it work?

2x4 RGB Click is based on an array of 2x4 RGB LEDs (WL-ICLED 1312121320437) from Würth Elektronik, specially designed for dynamic and colorful lighting applications. These LEDs incorporate an integrated circuit (IC), often called addressable or smart LEDs, allowing for individual control of each diode's red, green, and blue components through pulse width modulation (PWM). This enables precise control over color mixing, creating a broad spectrum of color outputs. To ensure compatibility with both 3.3V and 5V logic systems, the Click board™ features the LSF0102 voltage translator, which provides seamless control of the LEDs regardless of the MCU's logic level, ensuring reliable performance in various system configurations.

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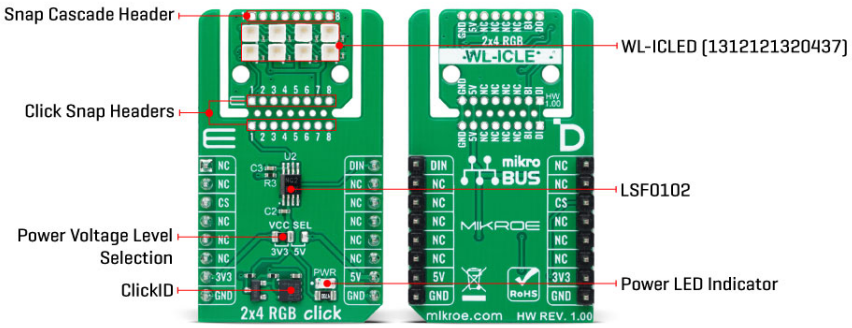

2x4 RGB Click is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main IC area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the 1312121320437s 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, and an unpopulated header labeled J1 at the top, allowing for daisy-chaining and control of multiple Snap units in a series.

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.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, introducing a new level of flexibility and ease of use. This feature allows for easy detachment of the main sensor area by simply snapping the PCB along designated lines, enabling various implementation possibilities. For detailed information about Click Snap, please visit the official page dedicated to this feature.

Specifications

Type	LED Matrix
Applications	Ideal for ambient lighting, displays, and visual indicators in various consumer electronics and industrial environments
On-board modules	1312121320437 - WL-ICLED integrated controller within LED from Würth Elektronik
Key Features	Individually addressable RGB LEDs with integrated IC, compatibility with both 3.3V and 5V logic systems, PWM control, Click Snap feature, header for cascading multiple Snap units, and more

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Interface	PWM
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on 2x4 RGB 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	**DIN**	PWM Signal
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

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

2x4 RGB Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

Software Support

We provide a library for the 2x4 RGB 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 2x4 RGB Click driver.

Key functions

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- c2x4rgb_set_leds_intensity This function sets the brightness and current gain level of all LEDs in the led matrix.
- c2x4rgb_set_led_color This function sets the color of the selected LED in the LED matrix.
- c2x4rgb_write_led_matrix This function writes the LED matrix data from the click context object.

Example Description

This example demonstrates the use of 2x4 RGB click board by cycling through a set of colors, gradually increasing the brightness of each LED in a sequence, and then decreasing the brightness before moving on to the next color in the array.

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.2x4RGB

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

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2x4 RGB click example on Libstock

1312121320437 datasheet

LSF0102 datasheet

2x4 RGB click 2D and 3D files v100

2x4 RGB click schematic v100

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