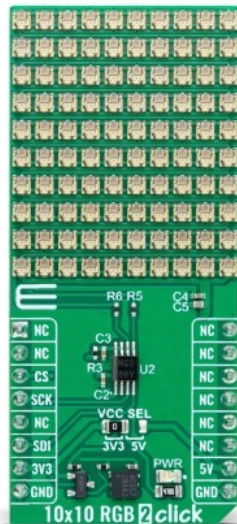


10x10 RGB 2 Click



PID: MIKROE-5976

10x10 RGB 2 Click is a compact add-on board designed for creating vibrant LED displays and lighting solutions. This board features the IN-PC20TBT5R5G5B, an RGB LED with an advanced IC for seamless operation from Inolux. The board features a 10x10 matrix of "smart" RGB LEDs capable of dual-wire transmission and a sophisticated control circuit for dynamic color rendering. It incorporates CMOS technology for low power consumption and supports 256 grayscale levels for precise PWM dimming, along with 32 levels of brightness control. Additionally, the board operates on a 5V supply from the mikroBUS™ 5V power rail, supported by the LSD0102 level translator, making it compatible with both 3.3V and 5V MCUs. This Click board™ is ideal for developing LED-based display screens, decorative LED string lights, and ambient scene lighting, offering a flexible platform for creative lighting projects.

10x10 RGB 2 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the [mikroBUS™](#) standard. It comes with the [mikroSDK](#) open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this [Click board™](#) apart is the groundbreaking [ClickID](#) feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

10x10 RGB 2 Click is based on the IN-PC20TBT5R5G5B, an RGB LED with integrated IC from Inolux. At its core, the 10x10 RGB 2 Click showcases a dynamic grid of 100 "smart" RGB LEDs configured into a compact 10x10 display. These LEDs stand out for their dual-wire transmission capability, encompassing a three-channel (RGB) smart control circuit for driving and illumination. Noteworthy features include a signal decoding module, a data buffering system, an inbuilt constant current circuit, and an RC oscillator. The whole solution is tailor-made for

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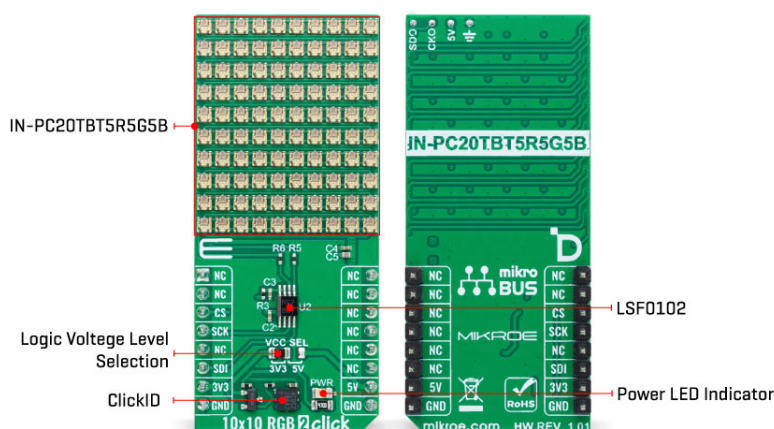


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ISO 9001: 2015 certification of quality management system (QMS).

various applications, such as LED-based display screens, vibrant LED string lighting, and ambient scene illumination.



The IN-PC20TBT5R5G5B is made with CMOS technology, ensuring minimal voltage requirements and reduced power consumption. It supports 256 grayscale levels for PWM dimming and offers 32 levels of brightness control. The RGB LEDs on the board exhibit distinct characteristics for each color: the red LED operates within a wavelength range of 620-630nm and delivers a light intensity between 100-200mcd, the green LED features a wavelength span of 520-530nm with a brightness of 300-500mcd, and the blue LED emits light in the 460-475nm range with an intensity ranging from 50-100mcd.

The diodes are designed to function exclusively on a 5V supply sourced from the mikroBUS™ 5V power rail. To accommodate this, their control is managed through the LSF0102, a bidirectional voltage-level translator from Texas Instruments. This design choice ensures compatibility with both 3.3V and 5V MCUs, enhancing the board's versatility. A special feature of these diodes is the existence of two output signals, data and clock, routed on test points next to 5V and GND test points on the back of the board.

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	LED Matrix
Applications	Ideal for developing LED-based display screens, decorative LED string lights, and ambient scene lighting, offering a flexible platform for creative lighting projects
On-board modules	IN-PC20TBT5R5G5B - RGB LED with integrated IC from Inolux
Key Features	10x10 matrix of smart RGB LEDs, dual-wire transmission for efficient data handling, integrated control circuit, supports 256 grayscale levels for PWM dimming and 32

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	levels of brightness control, control via the LSD0102 bidirectional voltage-level translator, and more
Interface	SPI
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on 10x10 RGB 2 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	NC	
ID COMM	CS	3	CS	RX	14	NC	
SPI Clock	SCK	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
SPI Data IN	SDI	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	Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

10x10 RGB 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Wavelength (R/G/B)	625/525/468			nm

Software Support

We provide a library for the 10x10 RGB 2 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](#).

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Library Description

This library contains API for 10x10 RGB 2 Click driver.

Key functions

- `c10x10rgb2_write_char` This function writes a single ASCII character in a 8x8 font size.
- `c10x10rgb2_write_string` This function writes a text string in a 8x8 font size by scrolling characters to the left side.
- `c10x10rgb2_draw_picture` This function draws a 10x10px picture on the screen.

Example Description

This example demonstrates the use of the 10x10 RGB 2 click board by showing a practical example of using the implemented functions.

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.10x10RGB2

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™](#)

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Downloads

[10x10 RGB 2 click example on Libstock](#)

[LSF0102 datasheet](#)

[IN-PC20TBT5R5G5B datasheet](#)

[10x10 RGB 2 click 2D and 3D files v100](#)

[10x10 RGB 2 click schematic v100](#)

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