MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

B102C Click

PID: MIKROE-6088

B102C Click is a compact add-on board designed for Bluetooth 5.0 (BLE) communication in various wireless applications. This board features the B102C, a Bluetooth module from Amphenol based on the Realtek RTL8762CMF chip. The board offers BLE v5.0 support, a 20MHz Arm® Cortex® M4F processor, and an integrated antenna for 2.4GHz communication, with low-power modes for optimal energy efficiency. It includes UART and USB Type-C connectivity, a PROG header for debugging, and fully programmable GPIOs. This Click board™ is ideal for beacons, building automation, remote control toys, lighting products, and many others.

How does it work?

B102C Click is based on the B102C, a Bluetooth 5.0 (BLE) module from Amphenol. This module is built around the Realtek RTL8762CMF, offering BLE v5.0 support, a robust 20MHz Arm® Cortex® M4F processor, and exceptional power efficiency. It provides a complete RF solution with an integrated antenna operating in the 2.4GHz range (2402 - 2480MHz), along with a low-power crystal that optimizes power consumption by enabling advanced power-saving modes. Ideal for various applications, B102C Click can be used in beacons, building automation, remote control toys, lighting products, and many more.

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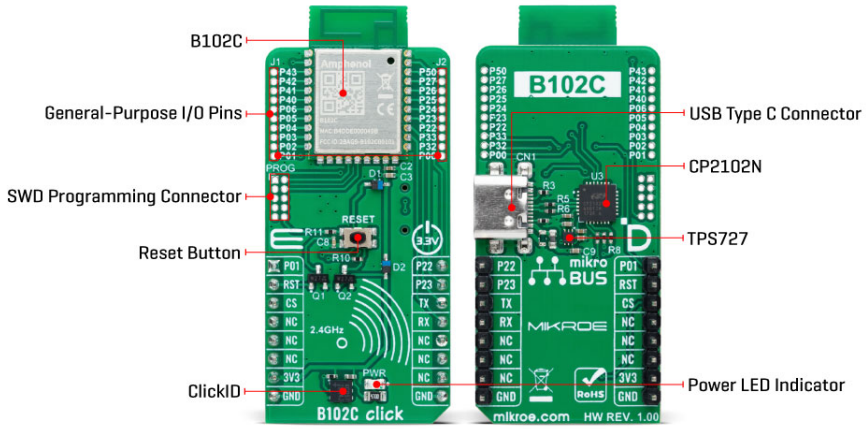

The B102C module comes preloaded with Amphenol firmware, supporting Bluetooth Low Energy Serial Port Service and simultaneous peripheral and central roles, all configurable through AT commands. It also allows full flexibility in adding custom applications on its built-in Cortex-M4 with 4Mbits of Flash, 4Kb eFuse, and 160KB SRAM. Regarding the board's connectivity features, this Click board™ uses a UART interface for communication with the host MCU, using standard UART RX and TX pins to exchange AT commands. By default, it communicates at a baud rate of 115200bps. Additionally, the Click board™ is equipped with a USB Type-C connector, allowing power supply and configuration via a PC. This is achieved by the CP2102, a highly integrated USB-to-UART bridge, and a TPS727 LDO regulator, which provides the necessary 3.3V power supply for the module out of the USB supply.

Additionally, on the left side of the board, there is an unpopulated PROG header that provides full support for debugging and programming. This header allows the user to utilize a Serial Wire Debug (SWD) interface for programming and debugging via the SWD interface pins. Along with the communication and control pins, this Click board™ also includes a reset pin (RST) and a RESET button, enabling easy module resetting.

All GPIO pins of the module are routed to two unpopulated J1 and J2 headers. These pins are fully programmable, with selectable pull-up and pull-down resistors for each pin. They retain their last state when the system enters Sleep mode and allow the module to be awakened by any GPIO while in Sleep mode. Three of these pins are also routed to the mikroBUS™ socket (P01, P22, and P23) to the AN, PWM, and INT default positions, allowing users to use these functions or configure them as desired, given that they are user-configurable pins.

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. Also, it comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	BT/BLE
Applications	Ideal for beacons, building automation, remote control toys, lighting products, and more
On-board modules	B102C - Bluetooth 5.0 (BLE) module from Amphenol

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Key Features	BLE module based on Realtek RTL8762CMF, 5.0 module version, 2.4GHz operating range, power efficiency, UART interface, SWD for programming and debugging, fully programmable GPIO pins, reset feature, and more
Interface	UART,USB
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on B102C Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
P0_1 General-Purpose I/O	**P01**	1	AN	PWM	16	**P22**	P2_2 General-Purpose I/O
Reset	**RST**	2	RST	INT	15	**P23**	P2_3 General-Purpose I/O
ID COMM	**CS**	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
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
T1	RESET	-	Reset Button
J1-J2	J1-J2	Unpopulated	General-Purpose I/O Pin Headers
J3	PROG	Unpopulated	SWD Programming Header

B102C Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Operating Range	2402	-	2480	MHz
Receiver Sensitivity	-	-98	-	dBm

Software Support

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We provide a library for the B102C 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 B102C Click driver.

Key functions

- b102c_send_cmd This function sends a specified command to the B102C Click module.
- b102c_send_cmd_with_params This function sends a command with specified parameter to the click module.
- b102c_send_cmd_params_check This function checks the command that is sent.

Example Description

This example demonstrates the use of B102C Click by processing the incoming data and displaying them on the USB UART.

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.B102C

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™

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