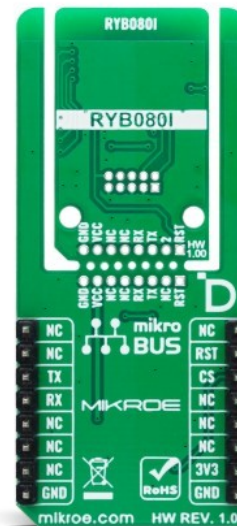
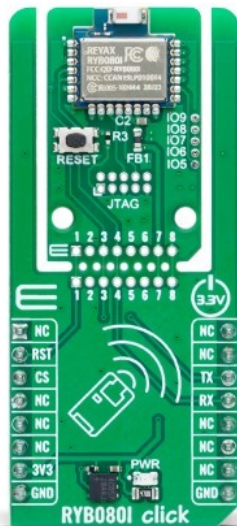


RYB080I Click



PID: MIKROE-6352

RYB080I Click is a compact add-on board for seamless Bluetooth Low Energy (LE) communication in various wireless applications. This board features the RYB080I, a 2.4GHz Bluetooth 4.2/5.0 LE module with an integrated antenna from REYAX, based on the TI CC2640R2F ARM® Cortex®-M3 MCU. This module supports dual-device connectivity, operates in both Host and Client roles, and includes a metal cover for EMI protection, ensuring stable performance even in noisy environments. With support for the Generic Attribute Profile (GATT) and easy setup via REYAX AT commands, integration into diverse systems is simplified. The board also features Click Snap, enabling flexible module placement by detaching the PCB for standalone operation. Ideal for remote monitoring and control, smart home automation, and indoor positioning, RYB080I Click offers robust Bluetooth communication for modern IoT solutions.

How does it work?

RYB080I Click is based on the RYB080I, a 2.4GHz Bluetooth 4.2/5.0 Low Energy (LE) module from REYAX. Featuring an integrated antenna, this module is designed for seamless connectivity with smartphones and various Bluetooth-enabled devices. This module is based on the TI CC2640R2F ARM® Cortex®-M3 microcontroller, an industry-standard chip known for its efficient performance and reliability, and supports a dual-connection feature, enabling it to maintain simultaneous communication with two Bluetooth devices. It also supports both Host and Client roles, making it highly adaptable for various wireless communication scenarios. With its robust functionality, this Click board™ is ideal for remote monitoring and control applications, smart home systems, and indoor positioning solutions.

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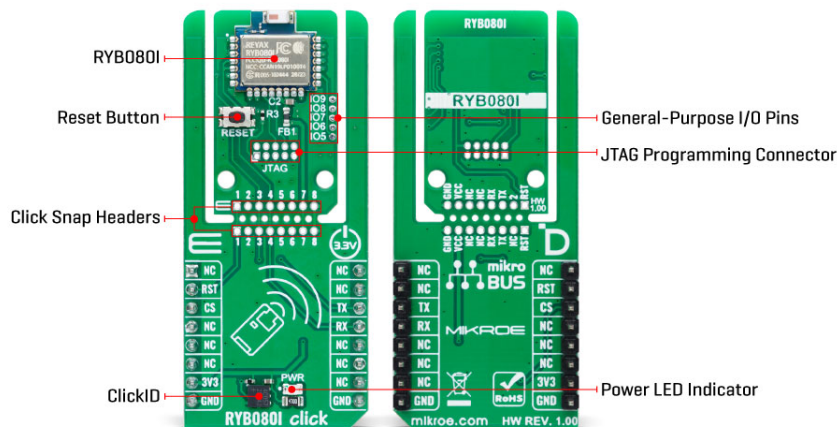
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One of the module's key advantages is the integrated metal cover, which protects against electromagnetic interference (EMI), ensuring stable and reliable operation even in environments with significant signal noise. It operates on the widely adopted Generic Attribute Profile (GATT), enabling smooth interaction with Bluetooth Low Energy devices. Control and configuration are easily managed using REYAX-developed AT commands, simplifying setup and integration into various projects. Certified under FCC CFR47 Part 15 (US), NCC (Taiwan), and MIC (Japan), the RYB080I meets rigorous international standards, offering compliance and reliability for global applications.

This Click board™ 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 module area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the RYB080I 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.

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, unpopulated JTAG header pins provide full support for debugging and programming. This header allows users to use a Joint Test Action Group (JTAG) industry standard for programming and debugging via these JTAG 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 and a six test point that connects to the module general-purpose I/O pins, allowing further customization.

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. It also comes equipped with a library containing functions and 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

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possibilities. For detailed information about Click Snap, please visit the [official page](#) dedicated to this feature.

Specifications

Type	BT/BLE
Applications	Ideal for remote monitoring and control, smart home automation, and indoor positioning
On-board modules	RYB080I - 2.4GHz Bluetooth 4.2/5.0 Low Energy (LE) module with an integrated antenna from REYAX
Key Features	Bluetooth 4.2/5.0 Low Energy (LE) compliant, based on CC2640R2F ARM® Cortex®-M3, UART interface, Click Snap, Host and Client roles supported, EMI protection, Generic Attribute Profile (GATT) BT profile, JTAG, and more
Interface	UART
Feature	Click Snap, 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 RYB080I 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	NC	
Reset	RST	2	RST	INT	15	NC	
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

RYB080I Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V

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Frequency Range	2400	-	2483.5	MHz
Output Power	-21	2	5	dBm
Sensitivity	-	-97	-	dBm

Software Support

We provide a library for the RYB080I 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 RYB080I Click driver.

Key functions

- `ryb080i_cmd_run` This function sends a specified command to the click module.
- `ryb080i_cmd_set` This function sets a value to a specified command of the click module.
- `ryb080i_cmd_get` This function is used to get the value of a given command from the click module.

Example Description

This example demonstrates the use of RYB080I Click by processing data from a connected BT device.

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.RYB080I

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.

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For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[RYB080I click example on Libstock](#)

[RYB080I click 2D and 3D files v100](#)

[RYB080I datasheet](#)

[RYB080I click schematic v100](#)

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