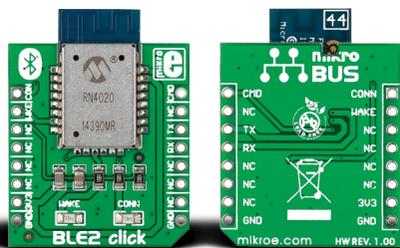# BLE2 click™

1. Introduction

BLE2 click™ is a simple solution for adding **Bluetooth 4.1** to your design Alternatively known as Bluetooth Low Energy (BLE) or BlueTooth smart, Bluetooth 4.1 provides a similar communication range and performance of Bluetooth Classic, but with reduced energy expenditure. BLE2 click™ carries the **RN4020 module**, with a complete Bluetooth stack onboard. BLE 2 communicates with the target board microcontroller through **mikroBUS™** RX, TX and PWM (here, CMD) lines, AN (con.) and RST (wake). The board is designed to use a 3.3V power supply only.
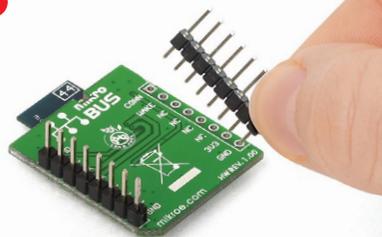
2. Soldering the headers

Before using your click™ board, make sure to solder 1x8 male headers to both left and right side of the board. Two 1x8 male headers are included with the board in the package.
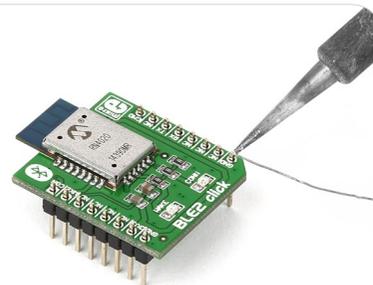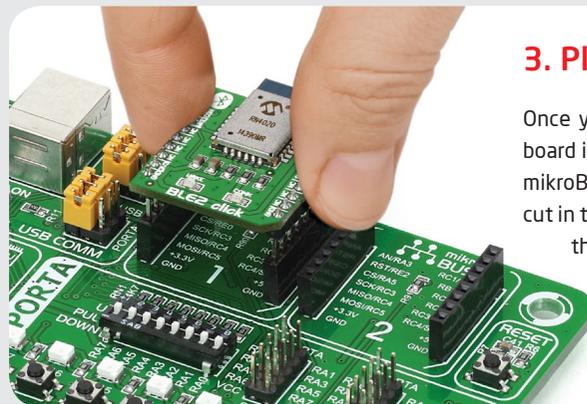
❶
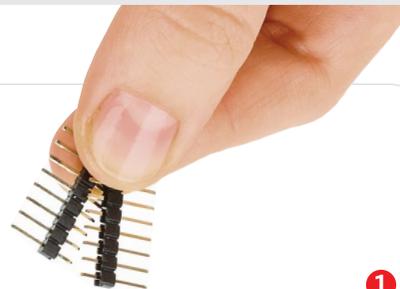
❷ Turn the board upside down so that the bottom side is facing you upwards. Place shorter pins of the header into the appropriate soldering pads.

❸ Turn the board upward again. Make sure to align the headers so that they are perpendicular to the board, then solder the pins carefully.

3. Plugging the board in

Once you have soldered the headers your board is ready to be placed into the desired mikroBUS™ socket. Make sure to align the cut in the lower-right part of the board with the markings on the silkscreen at the mikroBUS™ socket. If all the pins are aligned correctly, push the board all the way into the socket.
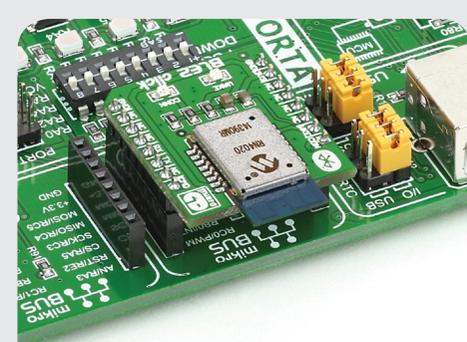
4. Essential features

The RN4020 Bluetooth module aboard BLE2 click™ **can act both as a client or a server**. It supports 13 public profiles and 17 public services, including the **MicroChip Low-energy Data Profile** (MLDP) which enables an asynchronous serial data connection between two RN4020 devices (which could be two BLE2 clicks). To enter MLDP, set the CMD pin to high. The conn. pin outputs a high when connected to a peer device. The wake pin, when set at high, wakes up the module and sets it into Active mode. BLE2 click™ also supports user-defined profiles.

5. BLE2 click™ board schematic

M1

RN4020

GND	GND
AIO2	VDD
AIO1	RSVD
AIO0	RSVD
Tx	RSVD
Rx	PIO7
WAKE_SW	PIO6
CMD/MLDP	PIO

BT_UART_TX
BT_UART_RX
SWAKE
CMD/MLDP

GND PIO1 PIO2 PIO3 PIO4 PIO5 WAKE_HW GND

CONN   WAKE

VCC_3.3V

C1 100nF
E1 4.7uF

WAKE
R1 1K

CONN
R2 1K

SWAKE
R3 10K

LD1   LD2

CONN
SWAKE

	AN		PWM		CMD/MLDP
	RST		INT		
	CS		TX		BT_UART_TX
	SCK		RX		BT_UART_RX
	MISO		SCL		
	MOSI		SDA		
VCC_3.3V	+3.3V		+5V	
	GND		GND	

MIKROBUS DEVICE CONN.
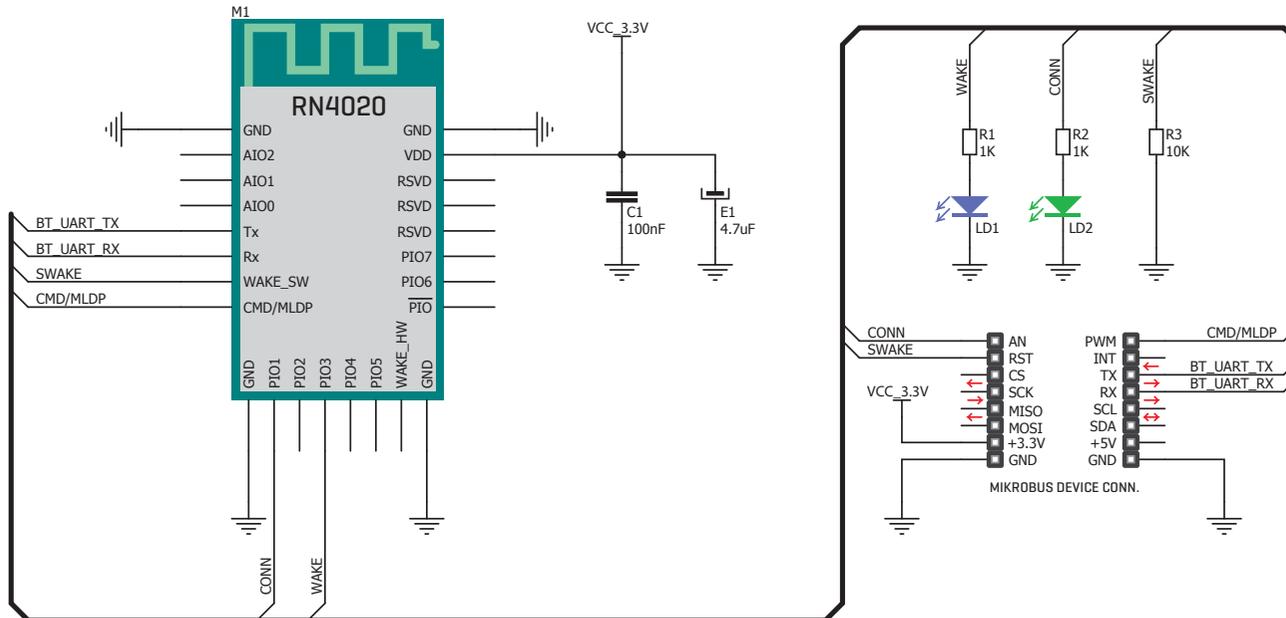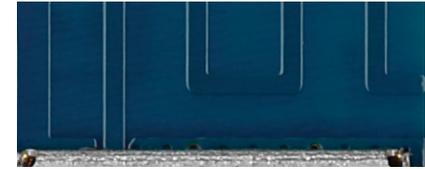
6. PCB antenna

The RN4020 module aboard BLE2 click™ incorporates a **PCB antenna** with a range of at least 30m.

7. Code examples

Once you have done all the necessary preparations, it's time to get your click™ board up and running. We have provided examples for mikroC™, mikroBasic™ and mikroPascal™ compilers on our **Libstock** website. Just download them and you are ready to start.

LIBSTOCK.com

8. Support

MikroElektronika offers **free tech support (www.mikroe.com/support)** until the end of the product's lifetime, so if something goes wrong, we're ready and willing to help!

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