

## BT Audio 2 Click



PID: MIKROE-4117

**BT Audio 2 Click** is Bluetooth audio stream add on board based on [BM62](#) module from [Microchip](#). It's a Stereo Audio module which is fully qualified Bluetooth v5.0 dual-mode (BDR/EDR/BLE) to be added in any wireless audio and voice application. With features like high resolution up to 24-bit, 96 kHz audio data format, Bluetooth Low Energy data rate up to 1Mbps/s, connection of two hosts with HFP/A2DP profiles simultaneously, seamless serial data over UART interface and many more it's perfect solution for applications like portable speakers and headsets.

BT Audio 2 Click board™ is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

### How does it work?

BT Audio 2 Click includes advanced audio features, such as multi-band dynamic range control, parametric multi-band equalizer, audio widening and virtual bass are inbuilt. The audio effect algorithms improve the user's audio listening experience in terms of better audio quality after audio signal processing.

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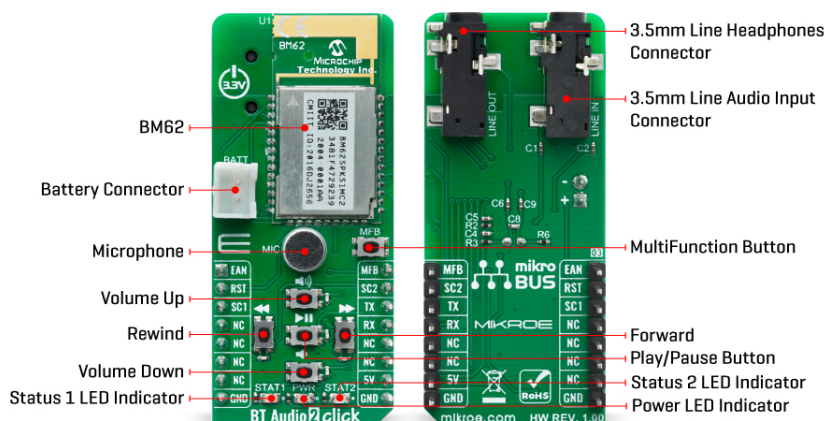
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The input and output audios have different stages and each stage can be programmed to vary the gain response characteristics. A Digital Signal Processor (DSP) is used to perform speech and audio processing. The advanced speech features, such as acoustic echo cancellation and noise reduction are inbuilt. To reduce nonlinear distortion and to help echo cancellation, an outgoing signal level to the speaker is monitored and adjusted to avoid saturation of speaker output or microphone input.

BT Audio 2 Click supports one analog (line-in) signal from the external audio source. The analog (line-in) signal can be processed by the DSP to generate different sound effects (multi-band dynamic range compression and audio widening), which can be configured by using the DSP tool. Also, module has an AFH function to avoid RF interference. It has an algorithm to check the nearby interference and to choose clear channel for transceiver Bluetooth signal.

The on-chip Power Management Unit (PMU) has two main features: lithium-ion and lithium-polymer battery charger, and voltage regulator. A power switch is used to switch over the power source between the battery and an adapter. Also, the PMU provides current to drive two LEDs. The LED and button settings can be configured.

This Click Board™ uses the UART communication interface and is designed to be operated only with a 3.3V logic level. A proper logic voltage level conversion should be performed before the Click board™ is used with MCUs with different logic levels.

## Specifications

|                  |                                                                                                                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type             | BT/BLE                                                                                                                                                                                                          |
| Applications     | Portable speaker, Multiple speakers, Headset and many more                                                                                                                                                      |
| On-board modules | BM62SPKS1MC2-0001AA                                                                                                                                                                                             |
| Key Features     | Qualified for Bluetooth v5.0 specification, high resolution up to 24-bit, 96 kHz audio data format, Bluetooth Low Energy data rate up to 1Mbps/s, connection of two hosts with HFP/A2DP profiles simultaneously |
| Interface        | GPIO, UART                                                                                                                                                                                                      |
| Feature          | No ClickID                                                                                                                                                                                                      |

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|                  |                     |
|------------------|---------------------|
| 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 BT Audio 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

| Notes                         | Pin        |  |      |     |    | Pin        | Notes                                |
|-------------------------------|------------|-----------------------------------------------------------------------------------|------|-----|----|------------|--------------------------------------|
| External address bus negative | <b>EAN</b> | 1                                                                                 | AN   | PWM | 16 | <b>MFB</b> | Multi-function button / power-on key |
| System reset                  | <b>RST</b> | 2                                                                                 | RST  | INT | 15 | <b>SC2</b> | System configuration pin             |
| System configuration pin      | <b>SC1</b> | 3                                                                                 | CS   | RX  | 14 | <b>TX</b>  | UART data transmit                   |
|                               | NC         | 4                                                                                 | SCK  | TX  | 13 | <b>RX</b>  | UART data receive                    |
|                               | NC         | 5                                                                                 | MISO | SCL | 12 | NC         |                                      |
|                               | NC         | 6                                                                                 | MOSI | SDA | 11 | NC         |                                      |
|                               | NC         | 7                                                                                 | 3.3V | 5V  | 10 | <b>5V</b>  | Power Supply                         |
| Ground                        | <b>GND</b> | 8                                                                                 | GND  | GND | 9  | <b>GND</b> | Ground                               |

## Onboard settings and indicators

| Label      | Name | Default | Description                   |
|------------|------|---------|-------------------------------|
| PWR        | LD1  | -       | Power LED Indicator           |
| STAT1      | LD2  | -       | Configurable indication LED 1 |
| STAT2      | LD3  | -       | Configurable indication LED 2 |
| MFB        | -    | -       | Multi-Function button         |
| REV        | -    | -       | Reverse command button        |
| VOL_DN     | -    | -       | Volume-down command button    |
| FWD        | -    | -       | Forward command button        |
| VOL_UP     | -    | -       | Volume-up command button      |
| PLAY/PAUSE | -    | -       | Play/Pause command button     |

## Software Support

We provide a library for the BT Audio 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

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(recommended), downloaded from our [LibStock™](#) or found on [MIKROE github account](#).

## Library Description

This library contains API for BT Audio 2 Click driver.

Key functions

- `btaudio2_set_device_name` This function sets the local device name.
- `btaudio2_make_call` This function makes a call to the specified phone number.
- `btaudio2_volume_up` This function increases the volume of a specified gain mask.

## Example Description

This example demonstrates the use of BT Audio 2 Click by reading the commands received from remote device and performing adequate actions accordingly.

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.BTAudio2

## 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

[BT Audio 2 click 2D and 3D files](#)

[BM62 datasheet](#)

[BT Audio 2 click example on Libstock](#)

[BT Audio 2 click schematic](#)

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