

# BT Audio click

From MikroElektronika Documentation

**BT Audio click** features Microchip's RN52 Bluetooth audio module capable of streaming high quality audio. The module combines class 2 Bluetooth radio and an embedded DSP processor, controlled and configured by simple ASCII commands and GPIO. The board has two audio jacks, input (microphone) and line out (for connecting speakers).

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## Features and usage notes

### 1. BT Audio click can stream audio files

DSP, or digital signal processor, is what makes this module special, because the module can actually stream audio – it converts and compresses the radio waves sent from your phone or computer into digital data, and then sends it to your speakers or headphones.

### 2. Quality of sound over Bluetooth

You can be glad to know that the module supports aptX, audio codec for high quality stereo audio streaming over a Bluetooth connection. So the quality of the sound is not something you will have to compromise on, as aptX encodes a CD-quality (16-bit / 44.1kHz) audio stream.

### 3. Connectivity to Apple devices

The module also supports iAP profile discovery for connecting BT Audio click to Apple devices like iPods, iPhones or MAC computers.

- The RN52 supports HSP/HFP, A2DP, AVRCP and SPP, as well as digital I/O, stereo speaker output, stereo microphone input, up to 11 General Purpose I/O's, and 2 LED status outputs.
- The HSP/HFP stands for Hands-Free Profile and Headset Profile for an audio connection between Bluetooth on your phone and the headset.

### 4. Bluetooth range

The BT Audio click has a 10m range in open space, but it might be less indoors, because of all the walls and other kinds of barriers. But it is enough range to cover your house or apartment, so you can move your phone to the kitchen without losing the connection to the speakers.

BT Audio click communicates with the target board MCU through MikroBUS UART. A green LED indicates that power is on.

The BT Audio click runs on 3.3V power supply only.

## Key features

The demo is a GUI application made for the mikromedia+ for STM32F7 with a shield. The Application uses BT Audio library to interface between the touch screen and click board to play music and make phone calls.

```
1 void play_btnOnClick()
2 {
3     connection_status_t connection;
4
5     bt_audio_query_connection_status( &connection );
6     if( !connection.A2DP_connection )
7         return;
8     if( music_state_t == PAUSED )
```

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<b>IC/Module</b>	RN52 ( <a href="http://ww1.microchip.com/downloads/en/DeviceDoc/70005120A.pdf">http://ww1.microchip.com/downloads/en/DeviceDoc/70005120A.pdf</a> )
<b>Interface</b>	UART
<b>Power supply</b>	3.3V
<b>Product page</b>	<a href="http://www.mikroe.com/click/bt-audio">www.mikroe.com/click/bt-audio</a> ( <a href="http://www.mikroe.com/click/bt-audio">http://www.mikroe.com/click/bt-audio</a> )
<b>Schematic</b>	BT Audio click schematic ( <a href="http://cdn-docs.mikroe.com/images/b/b0/BT-Audio-click-schematic_v100.pdf">http://cdn-docs.mikroe.com/images/b/b0/BT-Audio-click-schematic_v100.pdf</a> )

```


9  {
10     bt_audio_pause_play_track();
11     music_state_t = PLAYING;
12     if( first_song )
13     {
14         get_track_data();
15         first_song = false;
16     }
17 }
18 }

```

The complete project is available on Libstock (<http://libstock.mikroe.com/projects/view/1947/bt-audio-click>).

## Pinout diagram

This table shows how the pinout on BT Audio click corresponds to the pinout on the mikroBUS™ socket.

Notes	Pin	 mikroBUS™		Pin	Notes
Defines baud rate of module	<b>BAUD</b>	1	AN	16	<b>CMD</b> Puts module in command/data operation
		2	RST	15	<b>FIRST</b> Factory reset
Powers up the module	<b>POWER_EN</b>	3	CS	14	<b>RX</b>
		4	SCK	13	<b>TX</b>
		5	MISO	12	
		6	MOSI	11	
+3.3V power input	<b>+3.3V</b>	7	+3.3V	10	<b>NC</b> <i>This click supports 3.3V only</i>
Ground	<b>GND</b>	8	GND	9	<b>GND</b> Ground

## Resources

- Data sheet (<http://ww1.microchip.com/downloads/en/DeviceDoc/70005120A.pdf>)
- BT Audio URL Demo code / Library (<http://libstock.mikroe.com/projects/view/1947/bt-audio-click>)
- Learn link Multimedia Station Tutorial (<http://learn.mikroe.com/m52-media-station>)
- mikroBUS™ standard specifications (<http://www.mikroe.com/mikrobus/>)

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