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

AM/FM 2 Click

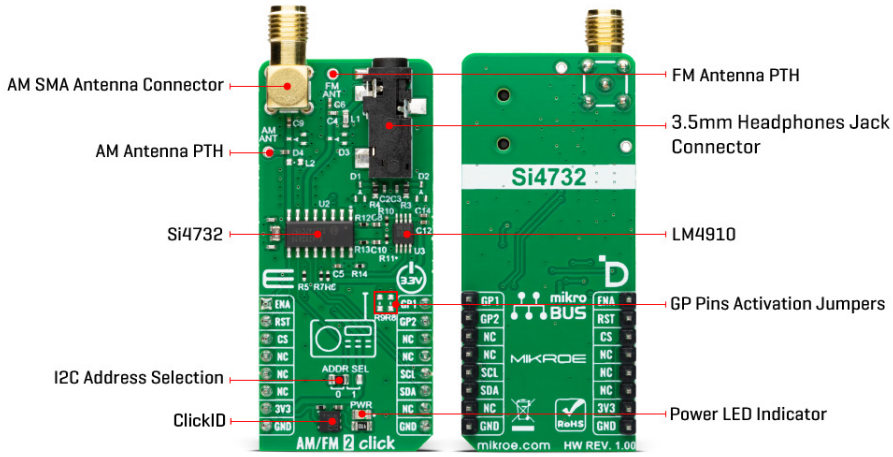
PID: MIKROE-5793

AM/FM 2 Click is a compact add-on board that can be used to listen to music from the AM and FM radio bands. This board features the Si4732, a broadcast AM/FM/SE/LW/RDS radio receiver from Skyworks. This radio receiver integrates the complete broadcast tuner and receiver function from antenna input to digital audio output. In addition to the radio receiver, this Click board™ is equipped with the LM4910, a Boomer output capacitor-less stereo 35mW headphone amplifier from Texas Instruments. This amplifier can deliver 35mW of continuous average power to a 32Ω load with less than 1% distortion. This Click board™ makes the perfect solution for the development of table and portable radios, mini/micro systems, stereo boom boxes, and more.

How does it work?

AM/FM 2 Click is based on the Si4732, a broadcast AM/FM/SE/LW/RDS radio receiver from Skyworks. It features TDMA noise immunity, superior radio performance, high-fidelity audio power amplification, advanced AN/FM seek tunning, automatic frequency control (AFC), and automatic gain control (AGC). It also features a digital FM stereo decoder, programmable de-emphasis, advanced audio processing, and seven selectable AM channel filters. The Si4732 integrates an RDS/RBDS processor, which allows the embedding small amounts of digital information in conventional FM radio broadcasts.

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



The Si4732 can receive the FM band broadcast in a range of 64 up to 108MHz, and AM band from 520 up to 1710KHz. In addition, the receiver supports the SW band (2.3 – 26.1 MHz) and LW band (153 – 279 KHz). The AM/FM 2 Click uses an SMA connector and external antenna to receive both AM and LW radio signals, while it also comes with a PTH for usage with a wire antenna. The FM and SW bands use a 3.5mm audio jack and connected earphones as an antenna, although a wire antenna is left as an option over an additional PTH. The Si4732 can receive or transmit the FM signal over the antenna but can not use both modes simultaneously.

The audio signal from the output of the Si4732 is brought to the onboard 3.5mm female audio jack over the LM4910, eliminating the need for any external amplifier. There are four selectable digital sample precisions (8, 16, 20, and 24 bits). The sample rate can be set between 320000 and 48000Hz.

AM/FM 2 Click uses a standard 2-Wire I2C interface to communicate with the host MCU. The I2C address can be selected over the ADDR SEL jumper with 0 default position. In cases where the AM reception is too strong, the front-end attenuators can be engaged using the GP1 pin. The radio receiver has interrupt abilities, which can be used over the GP2 pin. Both GP1 and GP2 are turned off over unpopulated R8 and R9 resistor jumpers. To use them, you should solder 0Ω resistors. There is also an additional RST pin for resetting the radio receiver. The LM4910 features a low-power consumption shutdown mode activated over the ENA pin with LOW logic.

This Click board™ can only be operated with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. However, the Click board™ comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	FM
Applications	Can be used for the development of table and portable radios, mini/micro systems, stereo boom boxes, and more
On-board modules	SI4732 - broadcast AM/FM/SE/LW/RDS radio receiver from Skyworks LM4910 - Boomer output capacitor-less stereo 35mW headphone amplifier from Texas Instruments

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

Key Features	Easy to set, high-quality integrated AM/FM/SW/LW radio receiver, RDS/RBDS processor, automatic gain control, automatic frequency control, advanced audio processing, adjustable soft mute control, digital tunning for all bands, digital audio out, and more
Interface	I2C
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 AM/FM 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™				Pin	Notes
Amplifier Enable	**ENA**	1	AN	PWM	16	**GP1**	General-Purpose I/O
Reset / ID SEL	**RST**	2	RST	INT	15	**GP2**	General-Purpose I/O
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	6	MOSI	SDA	11	**SDA**	I2C Data
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
JP1	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1
R8-R9	R8-R9	Unpopulated	GP Pins Activation Jumpers

AM/FM 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
FM band support	64	-	108	MHz
AM band support	520	-	1710	kHz
SW band support	2.3	-	26.1	MHz
LW band support	153	-	279	kHz
Output Power (@ 32Ω load)	-	35	-	mW

Software Support

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

We provide a library for the AM/FM 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 (recommended), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for AM/FM 2 Click driver.

Key functions

- amfm2_seek_station AM/FM 2 seek station function.
- amfm2_tuning_freq AM/FM 2 tuning frequency function.
- amfm2_get_tuning_freq AM/FM 2 get tuning frequency function.

Example Description

This example demonstrates the use of the AM/FM 2 Click board™. The app represents a radio tuner that supports worldwide AM/FM bands and has features such as automatic frequency control, seek station, and volume control.

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.AMFM2

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™

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

mikroSDK

Click board™ Catalog

Click Boards™

ClickID

Downloads

AM/FM 2 click example on Libstock

AM/FM 2 click 2D and 3D files

LM4910 datasheet

AM/FM 2 click schematic

Si4732 A10 datasheet

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Mikroe:

MIKROE-5793