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

Rec&Play 2 Click

PID: MIKROE-6167

Rec&Play 2 Click is a compact add-on board for voice recording and playback applications. It is based on the ISD1616B, a single-message voice record and playback IC from Nuvoton. The board features an on-chip oscillator, a microphone preamplifier with Automatic Gain Control (AGC), an omnidirectional microphone, and a speaker driver for high-quality audio recording and playback. Voice data is stored in onboard Flash memory without digital compression, ensuring clear and reliable sound. It supports both manual and digital control, as well as flexible message durations from 10 to 24 seconds. This Click board™ is ideal for applications such as alarms, voice prompts, and automated announcements where reliable audio performance is crucial.

How does it work?

Rec&Play 2 Click is based on the ISD1616B, a single-message voice record and playback IC from Nuvoton designed for voice recording and playback applications. This highly integrated solution includes all the necessary components to deliver superior audio recording and playback functionality. It features an on-chip oscillator, a microphone preamplifier with Automatic Gain Control (AGC), and an omnidirectional electret microphone (CMC-2242PBL-A) for optimal audio capture. The built-in anti-aliasing filter ensures smooth, high-quality recording, while the Multi-Level Storage (MLS) array provides efficient data handling. Voice and audio data are stored directly in the onboard Flash memory without digital compression, ensuring high-quality playback. A smoothing filter and Pulse Width Modulation (PWM) Class D speaker driver control the integrated speaker (AS01508AO-SC-R), delivering clear and precise audio output. With zero-power message storage, recordings remain intact even without a power supply. Rec&Play 2 Click is ideal for various audio playback applications, including alarms, voice prompts, and automated announcements, where clear and reliable audio is

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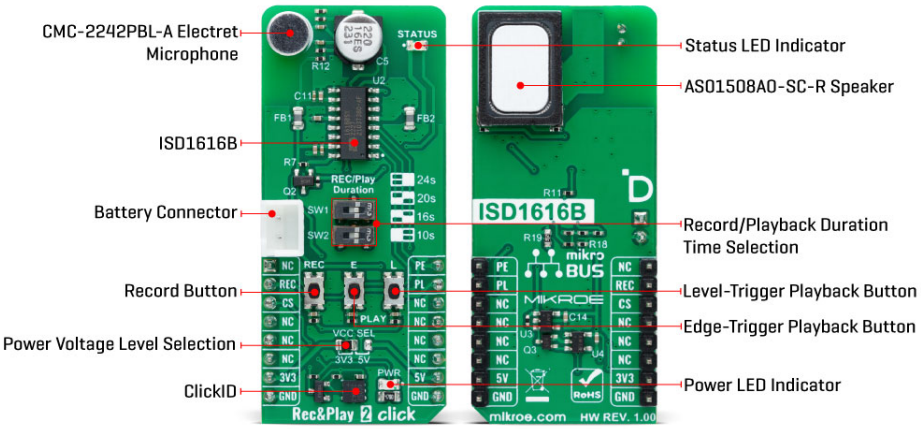
essential.



The ISD1616B can be managed both manually and digitally. Manual control is available through dedicated buttons: REC, E, and L. The REC button enables voice recording, which continues as long as the button remains pressed. The E and L buttons handle playback, offering two distinct modes: the E button is used for edge-trigger playback, while the L button is for level-trigger playback. In edge-trigger playback mode, pressing the E button for longer than the specified debounce time initiates playback from the beginning of the memory, continuing until an End-Of-Message (EOM) marker is reached, after which the device automatically enters standby mode. In level-trigger playback mode, pressing the L button starts playback from the beginning of the memory, and it runs until an EOM marker is reached, then powers down automatically. These same functions can also be controlled digitally via the REC, PE, and PL pins on the mikroBUS™ socket.

The message duration is user-selectable, ranging from 10 to 24 seconds, depending on the configuration of the onboard REC/Play Duration switches. In addition to these switches, the board features a visual guide to indicate the switch positions and corresponding recording/playback durations of 10, 16, 20, or 24 seconds. It also includes an orange status LED indicator, which stays illuminated during recording and blinks several times per second during playback, providing visual feedback on the operation status.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. It also supports battery power, enabling standalone applications without needing an external power supply. Additionally, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	Speakers
Applications	Ideal for applications such as alarms, voice prompts, and automated announcements where reliable audio performance is crucial
On-board modules	ISD1616B - single-message voice record and playback IC from Nuvoton

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Key Features	High-quality voice recording and playback, on-chip microphone preamplifier with Automatic Gain Control (AGC), omnidirectional electret microphone, Multi-Level Storage (MLS) array, onboard speaker, selectable message duration, manual and digital control, and more
Interface	GPIO
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V,External

Pinout diagram

This table shows how the pinout on Rec&Play 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™				Pin	Notes
	NC	1	AN	PWM	16	**PE**	Edge-Trigger Playback Control
Record Control	**REC**	2	RST	INT	15	**PL**	Level-Trigger Playback Control
ID COMM	**CS**	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	STATUS	-	Status LED Indicator
JP1	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
T1	REC	-	Record Control Button
T2	L	-	Level-Trigger Playback Control Button
T3	E	-	Edge-Trigger Playback Control Button
SW1-SW2	REC/Play Duration	Right	Record/Playback Duration Time Switches

Rec&Play 2 Click electrical specifications

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Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Record/Playback Duration Time	10	-	24	sec

Software Support

We provide a library for the Rec N Play 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 Rec N Play 2 Click driver.

Key functions

- recnplay2_set_pl_pin This function sets the PL pin on the selected level of Rec N Play 2 click board.
- recnplay2_record_sound This function is used to record sound with Rec N Play 2 click board.
- recnplay2_play_sound This function is used to play recorded sounds with Rec N Play 2 click board.

Example Description

This example demonstrates the use of Rec N Play 2 Click by recording and then playing recorded sound.

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.RecNPlay2

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

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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™

ClickID

Downloads

Rec&Play 2 click example on Libstock

Rec&Play 2 click 2D and 3D files v100

ISD1616B datasheet

Rec&Play 2 click schematic v100

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