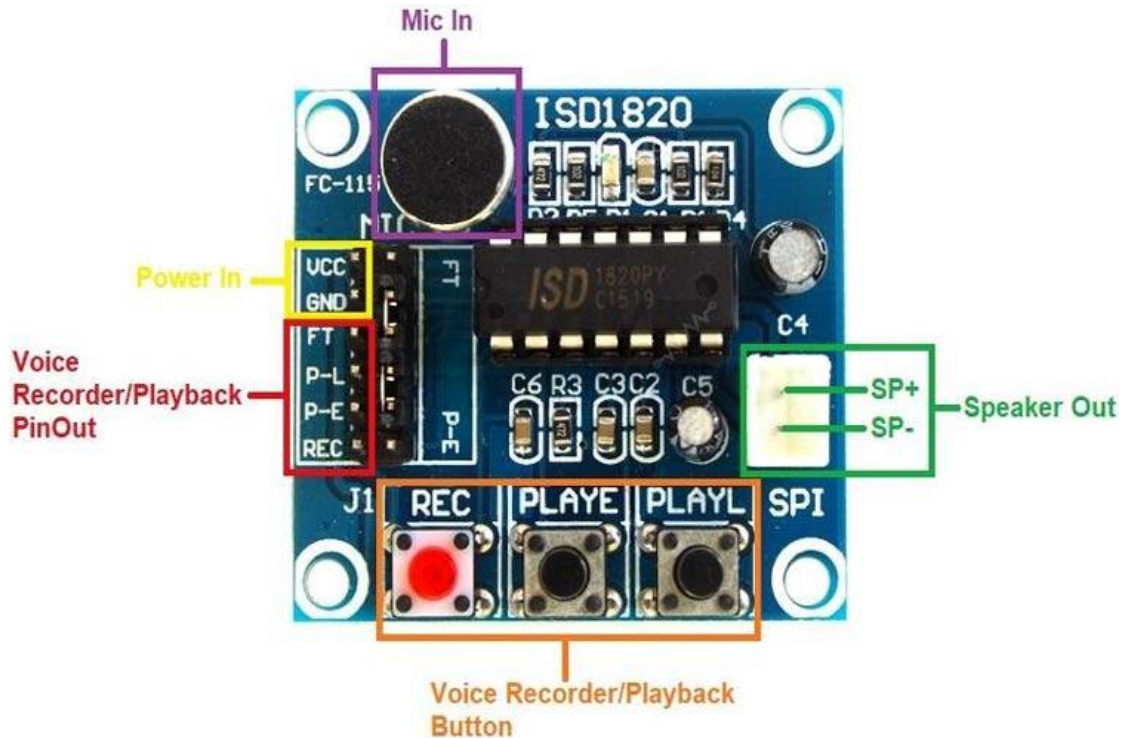# ISD1820 Record and Playback Module

ISD1820 is a small Voice Recorder and Playback module that can do the multi-segment recording. The user can achieve a high quality of recording (for 8 to 20secs) for each application with the adjustment of the on-board resistor. This Voice Recorder/Playback module is designed with embedded-Flash memory, which can hold data for up to 100 years and erase/record the life cycle up to 100,000.

Pin Description of ISD1820 Recorder/Playback Module

Pin Name	Description
VCC	DC 2.4-5.5V
GND	Ground
FT	FeedThrough: This mode enables the Microphone to drive the speaker directly.
REC/REC (Button)	The REC input is an active-HIGH record signal. The module starts recording whenever REC is HIGH. This pin must remain HIGH for the duration of the recording. REC takes precedence over either playback (PLAYLorPLAYE) signal.
P-E/PLAY-E (Button)	Playback, Edge-activated: When a HIGH-going transition is detected continues until an End-of-Message (EOM) marker is encountered or the end of the memory space is reached.
P-L/PLAY-L (Button)	Playback, Level-activated, when this input pin level transits for LOW to HIGH, a playback cycle is initiated.
SPI	The SP+ and SP- pins provide a direct drive for loudspeakers with impedances as low as 8Ω. **Note: This is not Serial Parallel Interface Pins.**
MIC	Microphone In: the microphone input transfers its signals to the on-chip pre-amplifier.

The pinout can be easily seen in the Board Legend.

Features

- Operating Voltage: Wide power supply ranges from 2.4V to 5.5V DC
- With the internal audio amplifier, this board can drive 8 Ohm 0.5W speakers directly.
- An on-board microphone.
- Dual operating modes

   1. Standalone mode
   2. Microcontroller Driven mode

- Push-button interface, playback can be edge or level activated
- Record up to 20 seconds of audio
- Automatic power-down mode (standby mode)
- Dimensions (LxWxH) in cm 8 x 6 x 3

Note: Complete technical details can be found in the **ISD1820 Datasheet** linked at the bottom of this page.

This ISD1820 Voice Recorder/Playback Module reproduces high-quality, natural voice and audio from the recorded audio by Mic or driven through Microcontroller. Because of its dual operation mode (Standalone and Microcontroller driven), we can easily use this as per requirement and with a slight change of the onboard resistor, we can get flexibility in the sampling frequency of the recording duration & quality.

ROSC	Duration	Sample Rate	Bandwidth
80K Ω	8 secs	8. 0KHz	3. 4KHz
100K Ω	10 secs	6. 4KHz	2. 6KHz
120K Ω	12 secs	5. 3KHz	2. 3KHz
160K Ω	16 secs	4. 0KHz	1. 7KHz
200K Ω	20 secs	3. 2KHz	1. 3KHz

In this module, Voice signals can be fed through differential onboard microphone input.

For outputs, the module provides an 8Ω 0.5W speaker out directly from the board.

There are two modes to play the voice in the voice chip:

1. Playback, Edge-activated: If the module detects the HIGH signal on the pin, then the device starts the playback cycle. Playback cycle continues until an End-of-Message (EOM) marker is encountered or the end of the memory space is reached. After completion of the playback cycle, the device automatically powers down itself and into the standby mode.

2. Playback, Level-activated: If the module detects the LOW to HIGH signal on this pin, then a playback cycle is initiated. Playback continues until PLAYL is pulled LOW or an End-of-Message (EOM) marker is detected, or the end of the memory space is reached. The device automatically powers down to standby mode upon completion of the playback cycle.

Interfacing Diagram

The ISD1820 based voice recorder and playback module can easily be controlled using any microcontroller like PIC, Arduino, etc. via three digital I/O communication pins.

DQ — PLAY-E
D1 — REC
SPEAKER+ — SP+
SPEAKER- — SP-
Microcontroller   ISD1760 Module
VCC — VCC
GND — GND
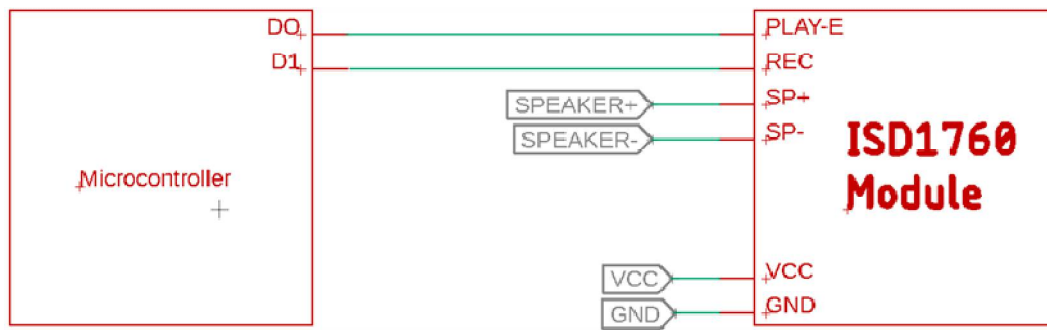
Applications

- Voice Recorder
- Microcontroller based audio playback
- Sound recorder