SBC-SOUNDMODULE
Soundrecorder ISD1820

JOY-IT

1. GENERAL INFORMATION

Dear Customer,
Thank you for choosing our product. In the following, we will show you what to consider during commissioning and use.

Should you encounter any unexpected problems during use, please feel free to contact us.

This sound module has a sound recorder and a playback device. It is equipped with an ISD1820 chipset and has a recording time of about 8 to 20 seconds. It can be controlled via a built-in keypad and has a 0.5 watt speaker and microphone.

2. CHANGING THE RECORDING TIME AND SAMPLING RATE

To set the recording duration and sampling rate to a different value, it is necessary to solder on a different resistor. The value of the resistor determines the duration of the recording and the sampling rate, which can vary in the range from 8 to 20 seconds (with a sampling rate of 3-8 kHz). In the following picture the resistor to be changed is marked. A table shows you which resistors are required for which settings.

Resistance value	Duration	Sampling rate	Bandwidth
80K Ω	8 Seconds	8.0KHz	3.4KHz
100K Ω	10 Seconds	6.4KHz	2.6KHz
120K Ω	12 Seconds	5.3KHz	2.3KHz
160K Ω	16 Seconds	4.0KHz	1.7KHz
200K Ω	20 Seconds	3.2KHz	1.3KHz

3. MODULE EXPLANATION

In this section we briefly explain the individual functions of the pins to which you can connect your microcontroller or single board computer. **This is not a detailed explanation and only serves to explain the pins.**
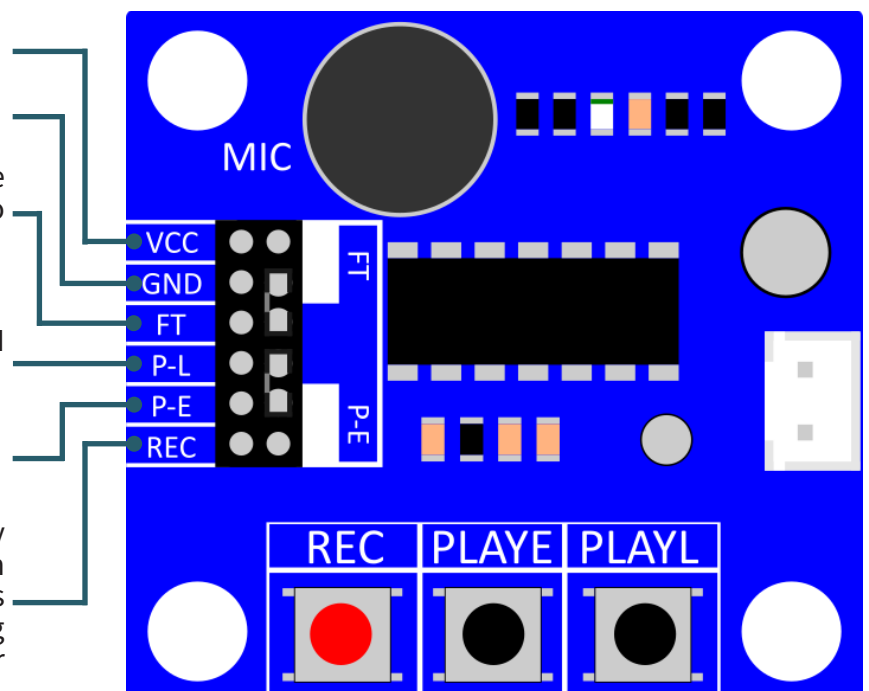
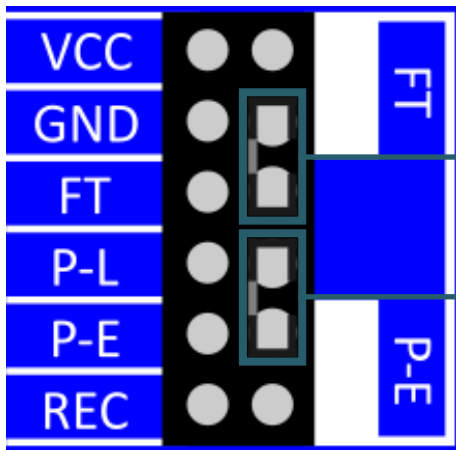VCC: 3.3V Power supply.

GND: Ground connection.

FT (Feed Through): Allows the microphone to be output directly to the speaker.

P-L (PLAYL): As long as the pin is HIGH the recorded is played.
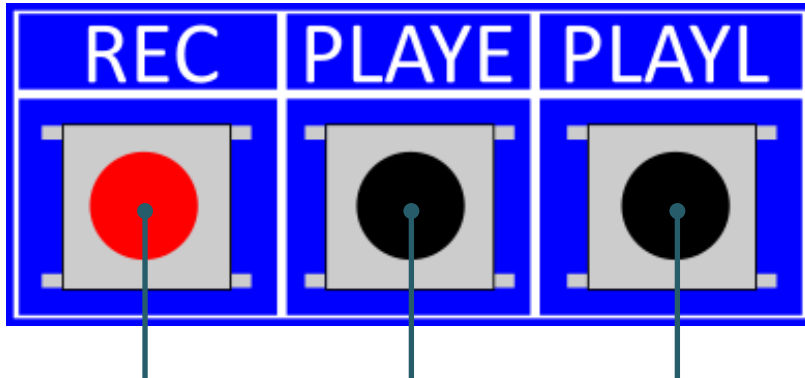
P-E (PLAYE): Plays the recorded once.

REC: Is Active-HIGH and has priority over the P-E and P-L signals. When the pin is set HIGH, this activates recording. The recording runs as long as the pin is set HIGH. Not longer than the set recording time.

FT Jumper (Feed Through): Allows the microphone to output directly to the speaker.

P-E (PLAYE): Play endlessly, Plays the recorded over and over again.

REC: Is Active-HIGH and has priority over the P-E and P-L signals. When the pin is set to HIGH, this activates the recording. The recording runs as long as the pin is set HIGH. Not longer than the set recording time.

P-E (PLAYE): Plays the recorded once.

P-L (PLAYL): As long as the pin is HIGH the recorded is played back.

Speaker connection: The enclosed 8 Ohm 0.5 W speaker is connected here.

SP+

SP-

Note with the included speaker that you have to solder the cables to it yourself. Please note that you have to solder the cables in a certain way in order not to mix up plus and minus.

On the back of the speaker you will find the solder pads where you have to solder the included cable. Make sure that you solder the cable with more points on the back to the "**+ pad**" of the speaker and the cable with the few points on the back to the "**- pad**" of the speaker.
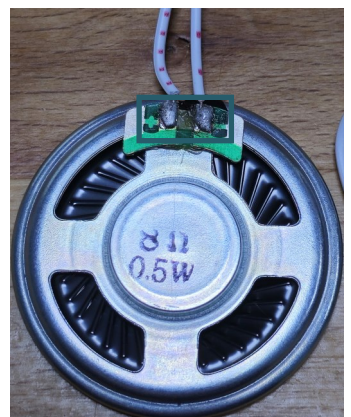
4.1 Connection of the module

In this tutorial we use the Arduino compatible microcontroller **ARD-R3DIP**.

Connect the recording device to the pins of the ARD-R3DIP as shown in the following picture or table.

Please note that the module is a 3 V module. Therefore a voltage translator is needed to convert the voltage of the digital pins of the ARD R3DIP from 5 V to 3,3 V. We recommend the **KY-051VT from Joy-IT**.
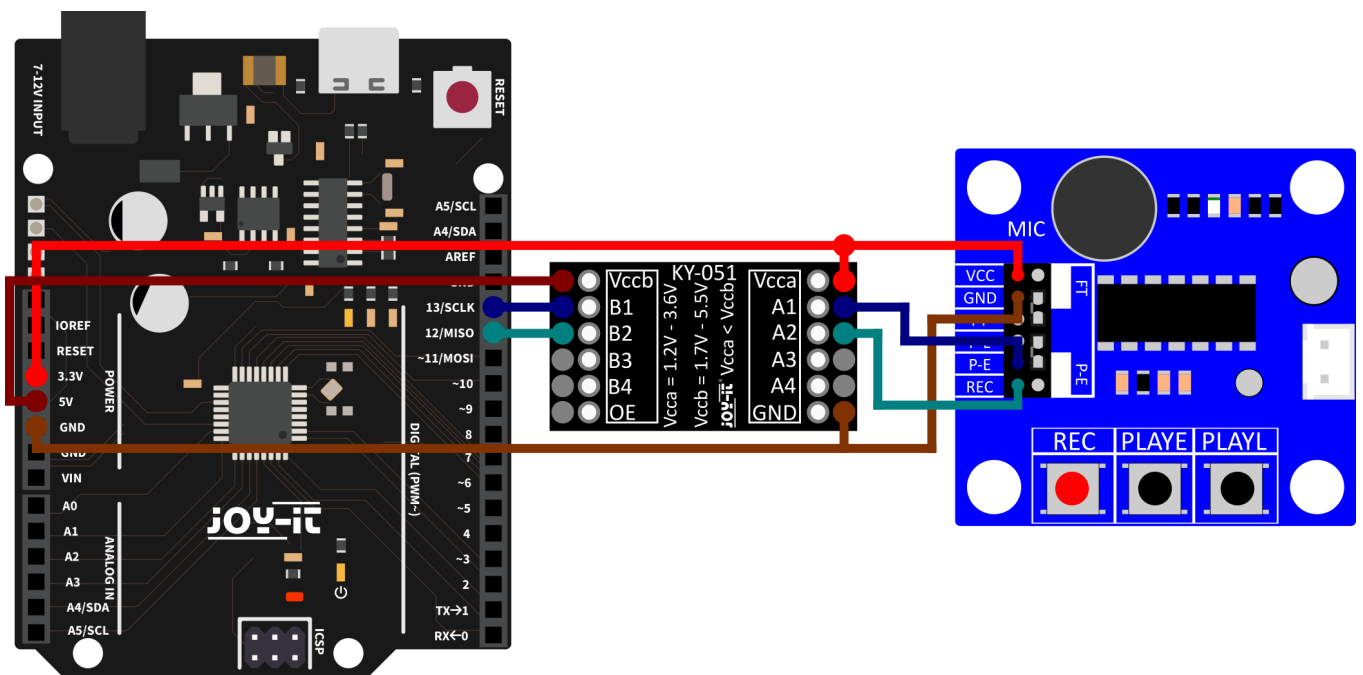
ARD-R3DIP	Soundmodule	KY-051VT
3,3 V	VCC	Vcca
5 V		Vccb
GND	GND	GND
	P-E	A1
	REC	A2
13		A1
12		A2

4.2 Code example

Please copy the following sample code completely into your Arduino IDE. You can then **upload** this code example to your Arduino. Please make sure that **port** and **board** are set correctly under **Tools**. Alternatively you can download the code sample **here**.

After successful transfer of the code, the module will alternately start a 10-second recording and play it back afterwards.

```arduino
int recording = 12;
int play = 13;

void setup()
{
  Serial.begin(9600);
  pinMode(recording , OUTPUT);
  pinMode(play, OUTPUT);
}

void loop()
{
  Serial.println("Recording started!");
  digitalWrite(recording , HIGH);
  delay(10000);
  digitalWrite(recording , LOW);
  Serial.println("Recording finished!");
  delay(5000);
  Serial.println("Playback started!");
  digitalWrite(play, HIGH);
  delay(100);
  digitalWrite(play, LOW);
  Serial.println("Playback finished!");
  delay(100);
}
```
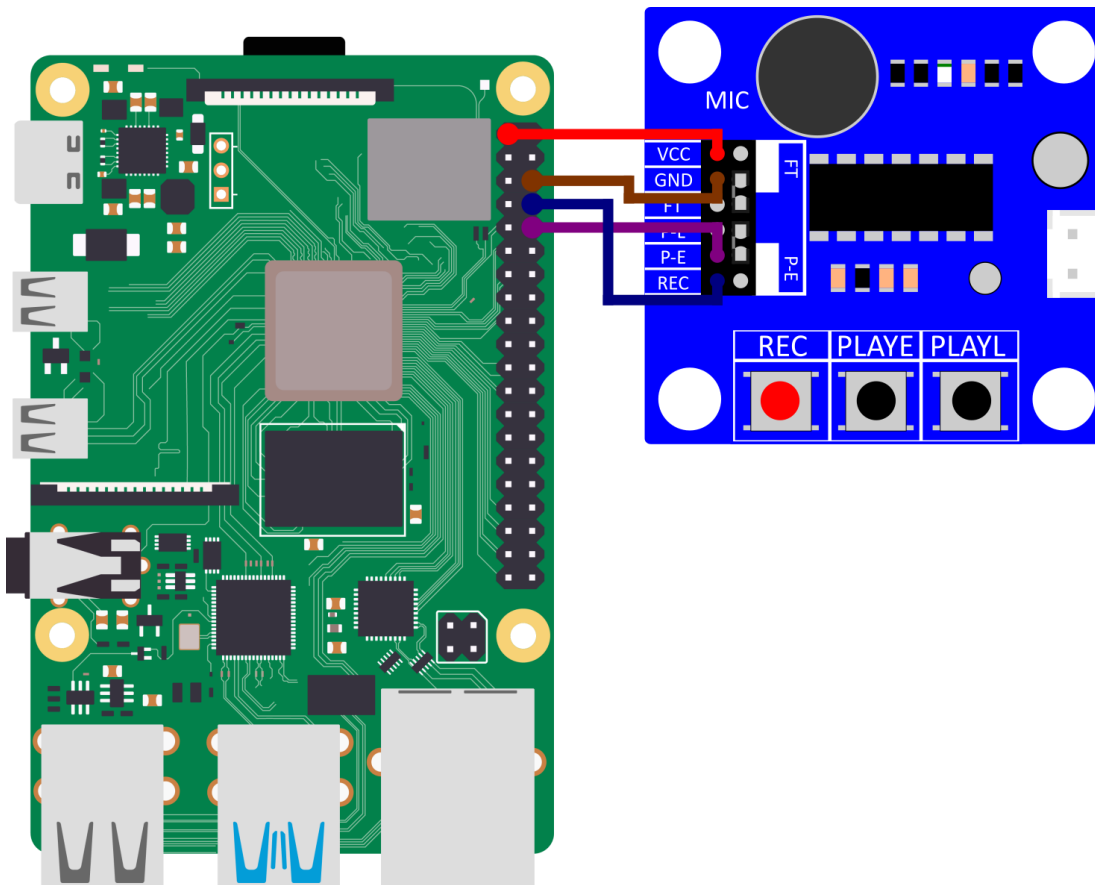
i   This guide was written under Raspberry Pi OS Bookworm for the Raspberry Pi 4 and 5. It has not been checked with newer operating systems or hardware.

5.1 Connecting the module

Connect the capture device to the pins of the Raspberry Pi as shown in the following picture or table.

Raspberry Pi	Soundmodule
3,3 V	VCC
GND	GND
GPIO 15 (Pin 10)	P-E
GPIO 14 (Pin 8)	REC

5.2 Code example

Once you have started your Raspberry Pi, open the terminal console and run the following command:

```
nano ISD1820.py
```

In the window that opens, please enter the following code completely. Alternatively you can download the code example here download it **here** .

```python
from time import sleep
from gpiozero import OutputDevice

rec = OutputDevice(14)
pe = OutputDevice(15)

def recording():
    sleep(3)
    print("Recording starts")
    rec.on()
    sleep(10)
    rec.off()
    sleep(5)
    print("Recording finished")

def play():
    print("Playback starts")
    pe.on()
    sleep(0.1)
    pe.off()
    sleep(10)
    print("Playback finished")

while True:
    recording()
    play()
```

You can save your input with the key combination **CTRL+O** and leave the editor with **CTRL+X**.
You can then start the example with

```
python3 ISD1820.py
```

and end it with **CTRL+C**.

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)

Symbol on electrical and electronic equipment:

This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point.

Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options:

As an end user, you can return your old device (which essentially fulfills the same function as the new device purchased from us) free of charge for disposal when you purchase a new device.

Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours:

SIMAC Electronics GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn, Germany

Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by email at **Service@joy-it.net** or by telephone.

Information on packaging:

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

Email: **service@joy-it.net**
Ticket system: **http://support.joy-it.net**
Telephone: +49 (0)2845 9360-50 (Mon - Thurs: 09:00 to 17:00 o'clock CET,
Fri: 09:00 to 14:30 o'clock CET)

For further information please visit our website:
www.joy-it.net

Published: 2024.04.17