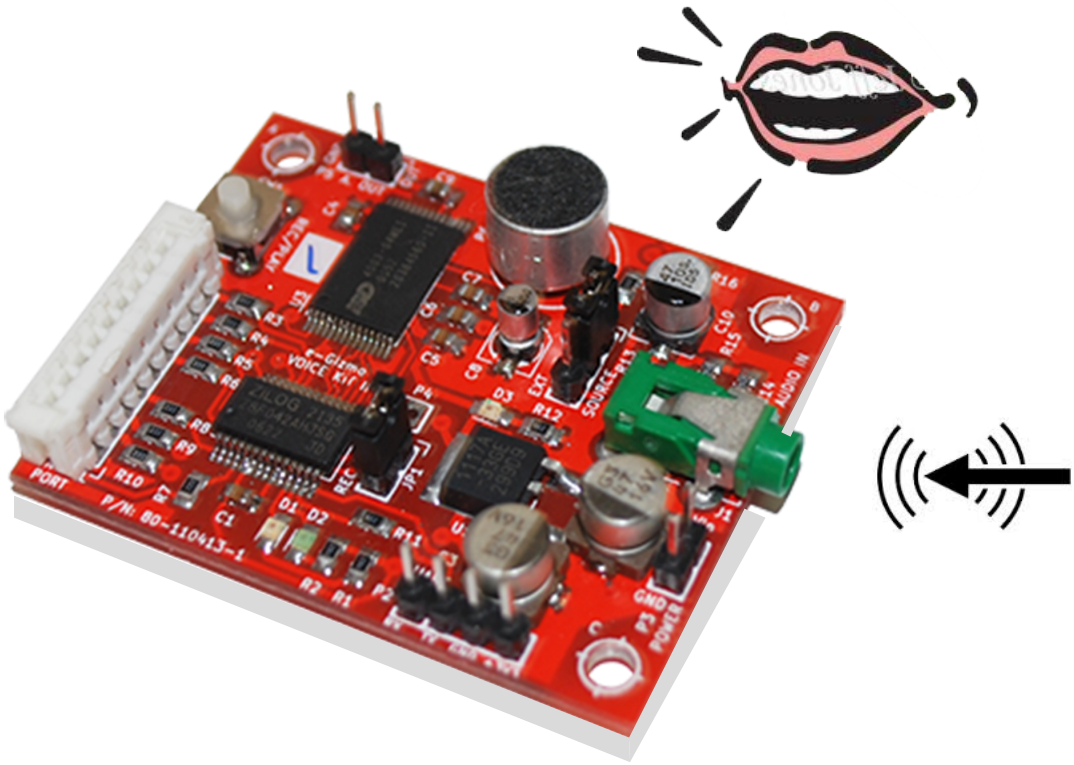
VOICE KIT II

Voice/Sound Recorder kit

Technical Manual Rev 2r0



Features & Specifications:

- Up to 64 recording address.
- Duration: max. 4 minutes (Standard)
- High-quality natural voice/audio.
- Can handle multiple messages.
- With built-in Microphone.
- Any sound formats.
- Automatic stored address consecutively.

General Specifications:

Power Supply: *9 - 12VDC*
Voice Chip: **ISD4003***-04M*
Controller: *Zilog Z8F042A*
Control I/F: *Serial RS-232C*
Serial TTL
Audio Output: *500mW @ 9V, 8 ohms speaker*
250mW @ 9V, 16-ohms speaker

The e-Gizmo Voice Kit II makes use of the ISD4003 voice chip for recording and playing audio. The kit can record an audio input with a maximum of 4 minutes. Each recorded audio is stored in an addressable segment that can be accessed through the 64 recording addresses.

It inclues an on-board microphone for on the spot recording with an alternative way of plugging in an external microphone if higher quality of audio recording is desired.

One can also record manually using the on-board ports to specify the address where the recorded audio should be assigned. The recorded audio can also be accessed using its UART communications port made for microcontrollers and alike.

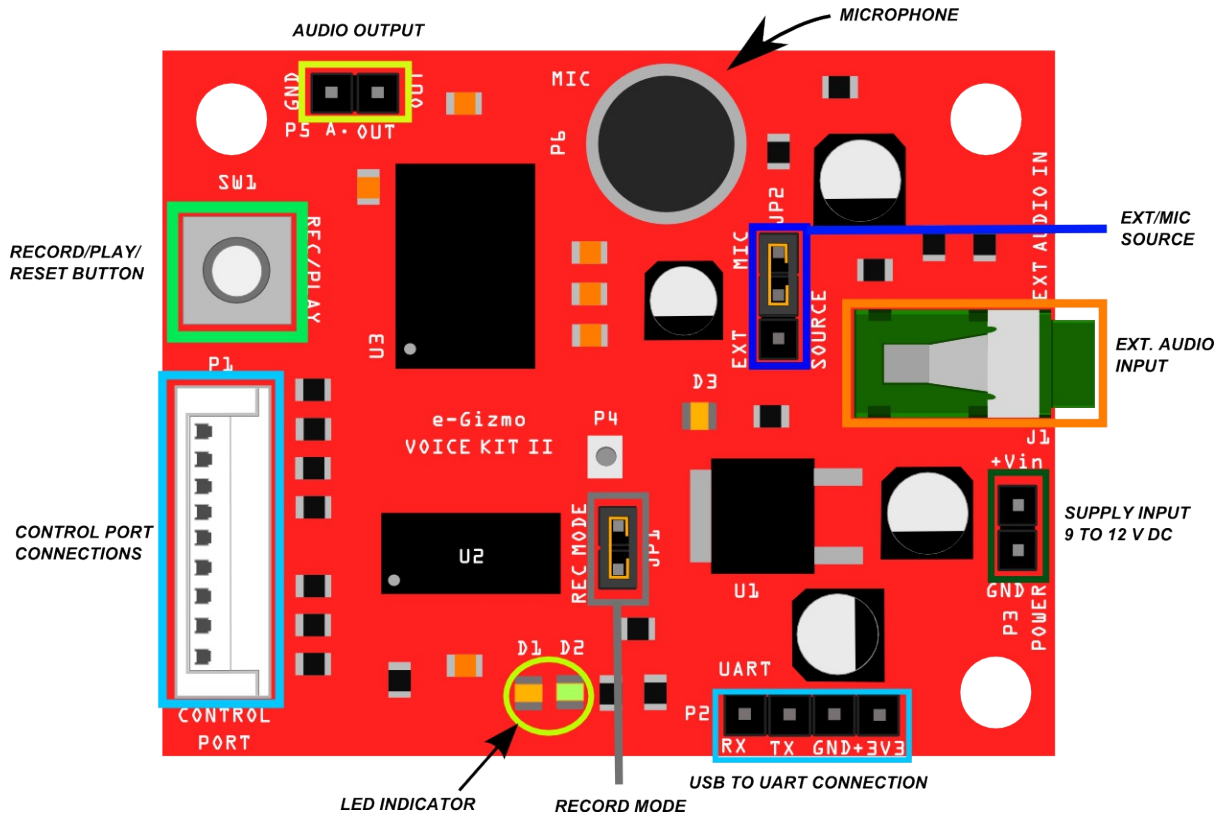


Figure 1. *VOICE KIT II terminals, connections and LED indicator.*

Table 1. *P3 Power Input*

PIN NO.	PIN I.D	Descriptions
1	+Vin	9 - 12 VDC Power Input
2	GND	Ground

Table 2. *P5 Speaker Connector*

PIN NO.	PIN I.D	Descriptions
1	OUT	Speaker Connector Audio Out
2	GND	Ground

Table 3. *P2 USB to UART Connection*

Figure 2. *Illiustation for UART connection.*

PIN NO.	PIN I.D	Descriptions
1	RX	Received
2	TX	Transmit
3	GND	Ground
4	VCC	+3.3V Supply Voltage

Table 4. *P1 Control port*

PIN NO.	PIN I.D	Descriptions
1	GND	Ground
2	A0	Input Address 0
3	A1	Input Address 1
4	A2	Input Address 2
5	A3	Input Address 3
6	A4	Input Address 4
7	A5	Input Address 5
8	ST	Start input
9	EOM	End of Message Output

Table 5. *JP2 Microphone and External recording.*

PIN NO.	PIN I.D	Descriptions
1	MIC	Microphone (pin 1 & 2)
2		Common pin (for audio reception)
3	EXT	External (pin 2 & 3)

Figure 3. *Jumper settings for using on-board microphone*

Figure 4. *Jumper settings for using the external audio source*

Referring to Table 5, these pins are used for choosing the enabled audio source. Pins 1 and 2 of JP2 are shorted using a 2-pin jumper to enable the on-board microphone. However, pins 2 and 3 are shorted if an external microphone will be used.

Figure 5. *Jumper settings for enabling chip recording mode*

Referring to Table 6, JP1 is shorted if recording mode is enabled. Pulling out the jumper disables the recording mode.

Table 6. *JP1 Record Input*

PIN NO.	PIN I.D	Descriptions
1	REC MODE	Sound record input
2		Ground

MANUAL VOICE RECORDING

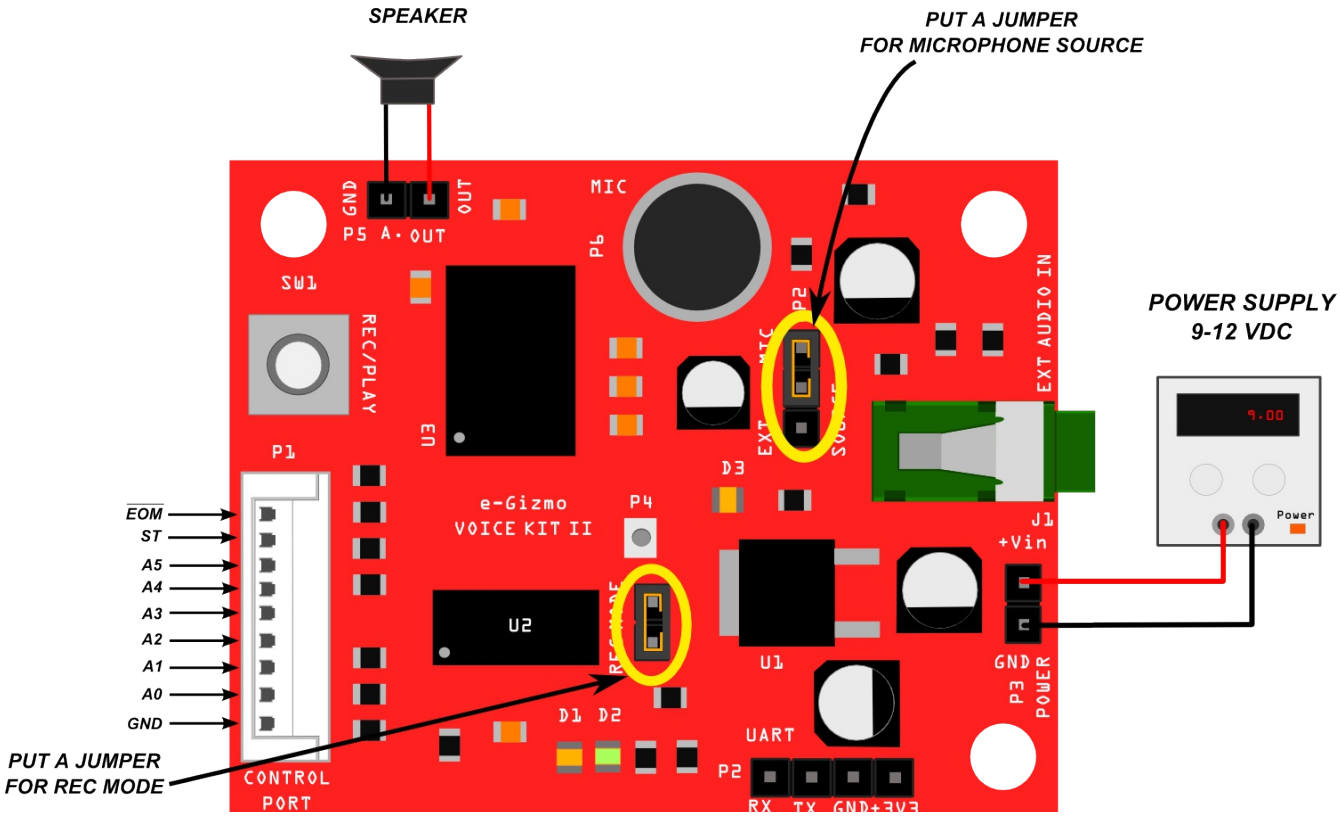


Figure 6. *Wiring Diagram of Voice Kit II using the on-board microphone for recording.*

Settings for microphone

Referring to Figure 6, the voice kit has two type of sources to choose from: *the Microphone and External source* (e.g.Computer/laptop, and other portable device). It is chosen using the steps provided on the previous page of this hardware manual.

To enable recording, the REC MODE pins are shorted. To play the recorded audio, remove the jumper in REC MODE. However, if the memory of the chip is full, one must reset the voice kit to erase all stored audio avoiding bad addressing errors.

Resetting the voice kit

1. Remove all power sources connected to the voice kit.

2. Hold the REC/PLAY button then connect the power source while holding the button. After a few seconds, release the REC/PLAY button immediately when D1 and D2 are on).

3. Press again the REC/PLAY button, wait until D1 and D2 turns on then turns off again eventually. The indicators show whether the removal is successful.

WARNING: Once you do this, all your recordings are gone. You cannot recover your stored data once you erase it.

APPLICATIONS

HARDWARE BASED RECORDING:

Start recording

After you reset the voice kit, it is ready for recording. Press/hold the REC/PLAY button wherein the time of recording varies depending on how long you press the button. Releasing the button automatically saves your recorded message. The message you recorded shall be stored in address 0 and will be automatically played right after.

Control port

The control port P1 provides a simple way to manually operate the voice kit. P1 is used to indicate the address lines A0-A5. This is used to avoid overlapping of voice recording since unable to change the address line overwrites the voice recording. This is also one way to choose that voice input will be played.

NOTE: If the recording exceeds to a segment of time, it will automatically record over the next segment address.

SOFTWARE BASED RECORDING:

Communication Settings:

Baud Rate : 9600
Data : 8 bits
Stop bits : 1
Parity : none
Handshake : None

Serial Communication Format:

[STX]Command[ETX]

where [STX] = 0x02 (hex ascii)
[EXT] = 0x03 (hex ascii)
[STX

Implemented Commands:

V - Version Stamp
Format: V
Example: Inquire Voice Recorder software revision

[STX]V[ETX]

M - Number of Messages in recorder
Format: M
Example: Inquire Number of messages

[STX]M[ETX]

P - Play
Format: Pnn
Where nn = message number (0-63)
Example: Play message 4

[STX]P4[ETX]

S - Stop Record/Play
Format: S
Example: Stop Playing or Recording message

[STX]S[ETX]

R - Record a message
Format: R
Records a new message on top most free message slot.
Format: Rnn
Where nn = message number (0-63)
Records over an Existing slot. If the message is longer than the existing message, it will also overwrite next existing slot(s).
Example: Record a new message [STX]R[ETX]
Example: Record new message over (and starting)message number 2. [STX]R2[ETX]

X - Reset message counter
Format: X
Reset voice recorder to restart new recordings form message numner 0 and reset message count to 0.

SAMPLE EXTERNAL SOURCE RECORDING

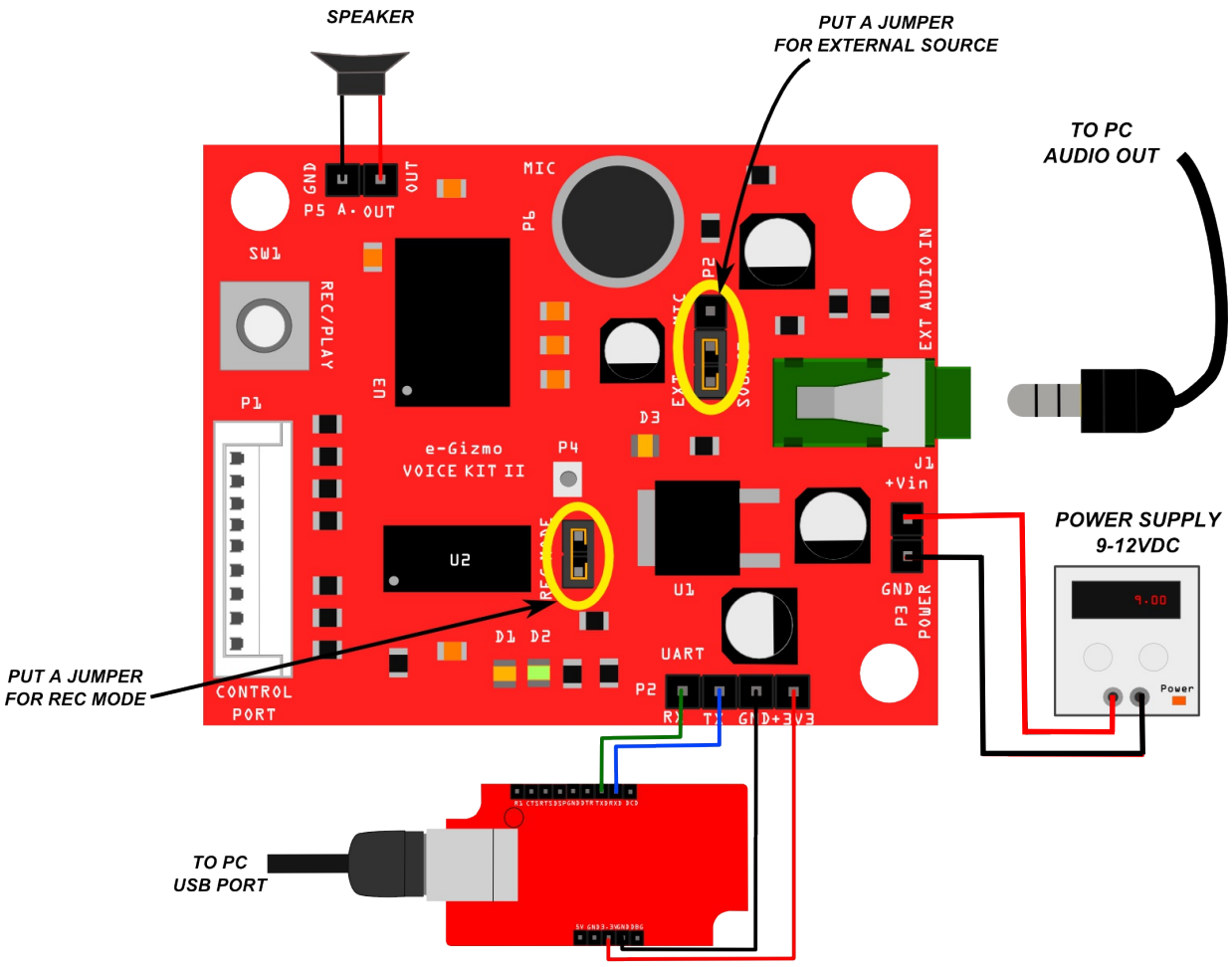


Figure 7. *Wiring Diagram of Voice Kit II using the External source for sounds recording.*

Settings for External source

Contruct this wiring diagram if you are using an external audio source. Use a male to male audio cord connected to your PC audio output. Also, connect a speaker to your voice kit's audio output. Using a serial bridge such as the USB-UART kit, connect the respective pins shown in Figure 7.

Connect a jumper to the REC MODE pins and also to the EXT SOURCE pins.

Sample application(sound)

Open your e-Gizmo CD>e-gizmo KITS>"Voice kit II">VB >ISD4003> ISD4003> double-click "ISD4003.vb" to open file.

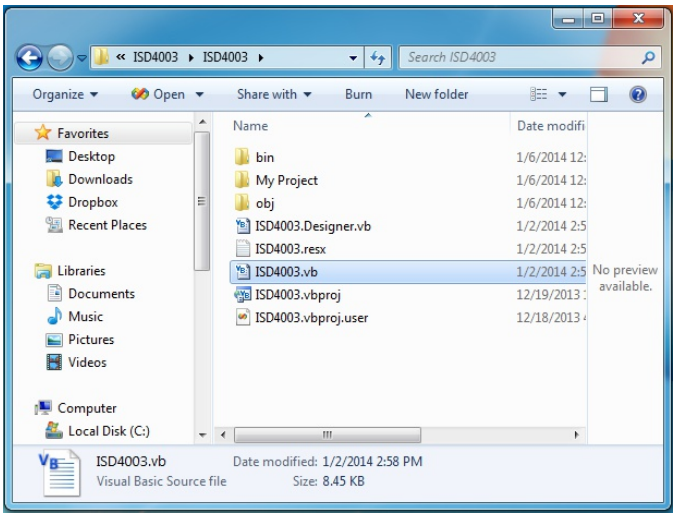


Figure 8. *The ISD4003.vb file, (Visual Basic application) for sounds recording.*

OTHER APPLICATIONS

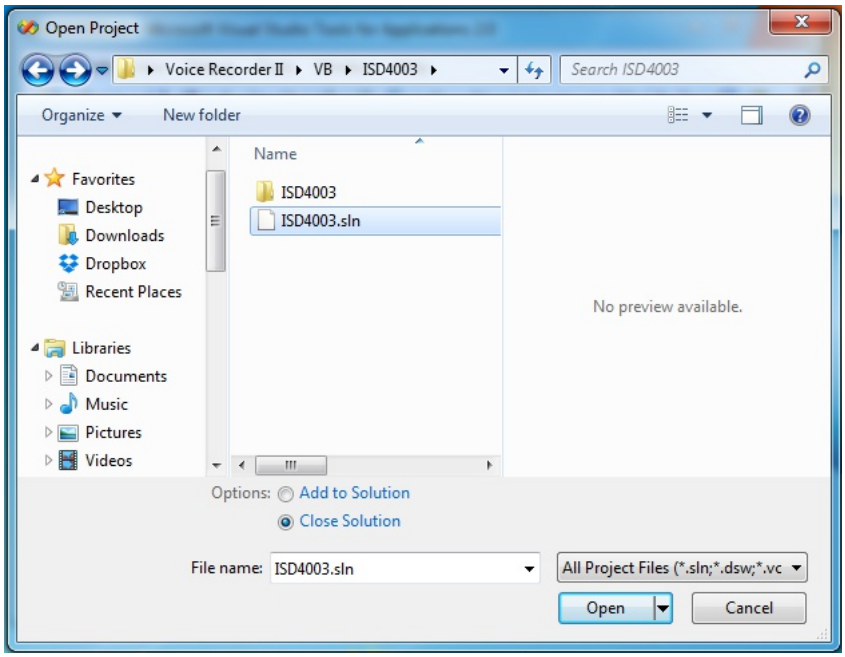


Figure 9. *Open ISD4003.sln file, (Visual Basic application) for sounds recording.*

Once you open the ISD4003.vb file on visual basic. Go to File> Open project> ISD4003> Select the "ISD4003.sln" then click Open.

Click the  to Start debugging. The ISD4003 Voice Recorder Kit Demo windows will open (see below).

Click the dropdown button to select the COM PORT number. Click 'Add' button, to add an audio file, on this example ".mp3". Any format is accepted. Then change the "1" address to "0" address for your first recording. Now record your sound by Clicking the 'Record' button once. You can see "Recording:C:\Users\V\..." to address 0. To playback, Click 'Play' button with address set to 0.

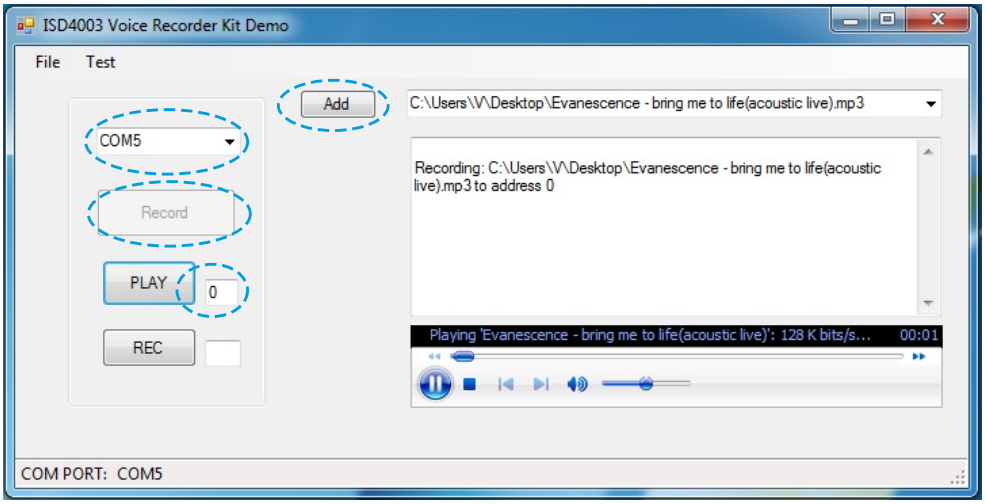


Figure 10. *ISD4003 Voice Recorder kit Demo project for sounds recording.*

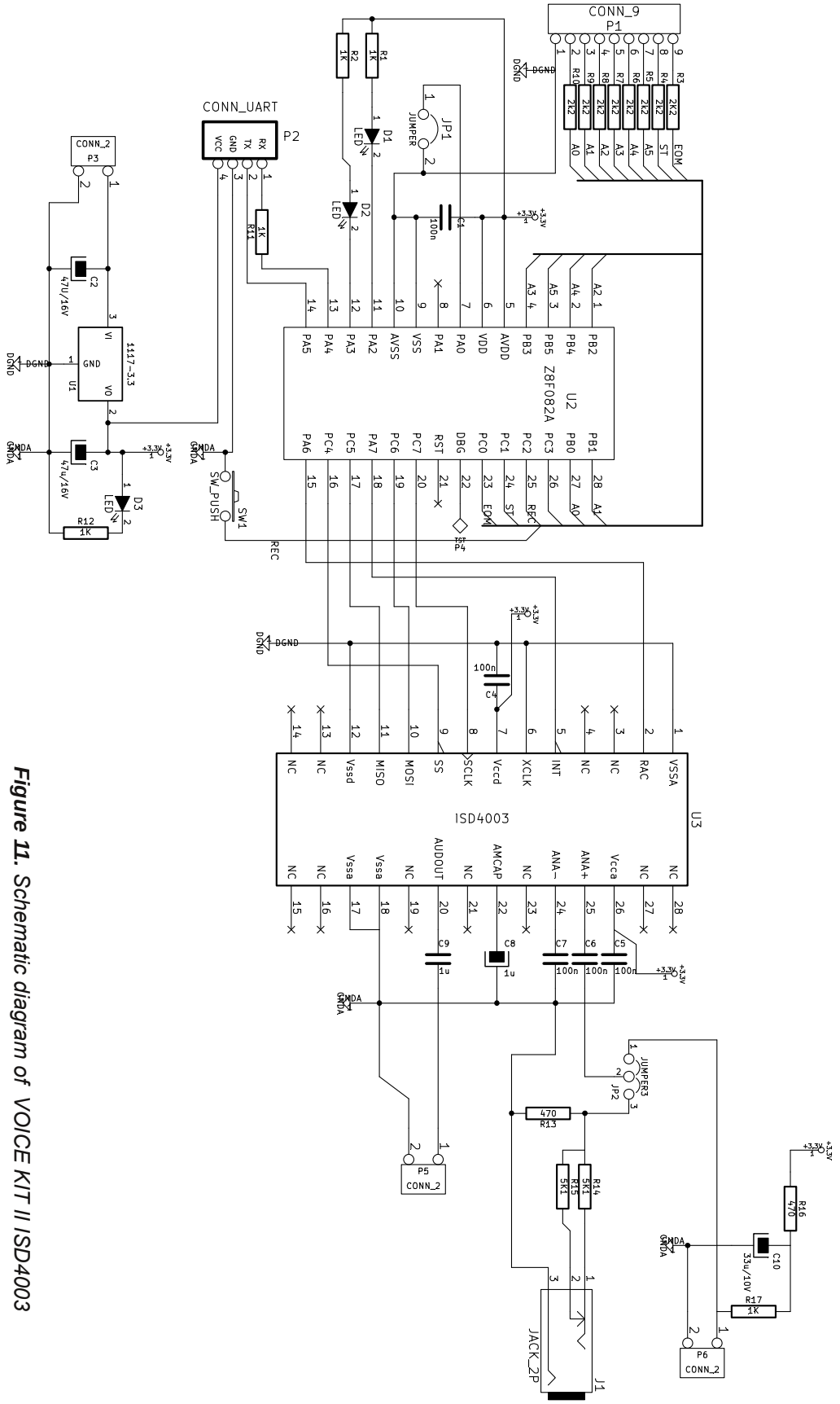


Figure 11. *Schematic diagram of VOICE KIT II ISD4003*

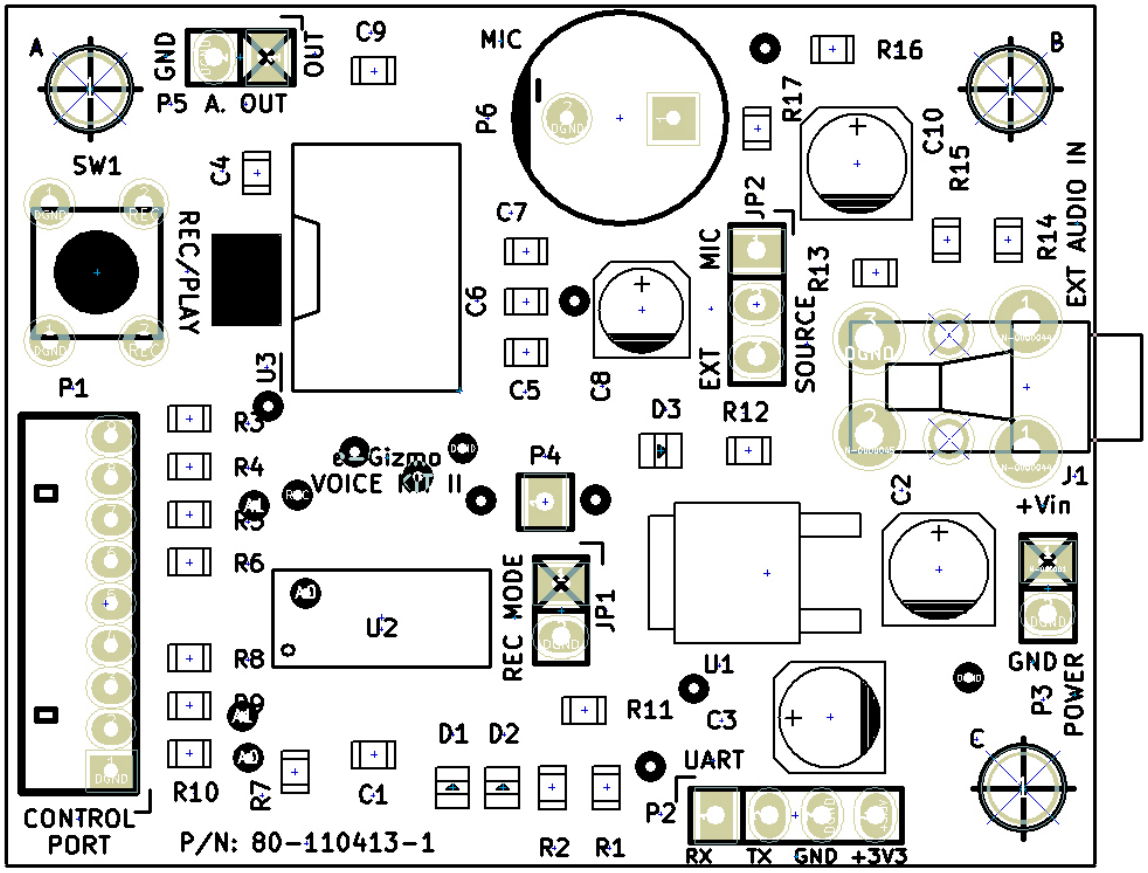


Figure 12. *PCB Layout for Voice Kit II ISD4003*