ISD-ES1900_DEMO User Manual

Version 0.1

Board version: Rev_A

新唐科技 nuvoTon INTELLECTUAL PROPERTY

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Board Overview

This manual is for ISD-DEMO1900 Rev_A.

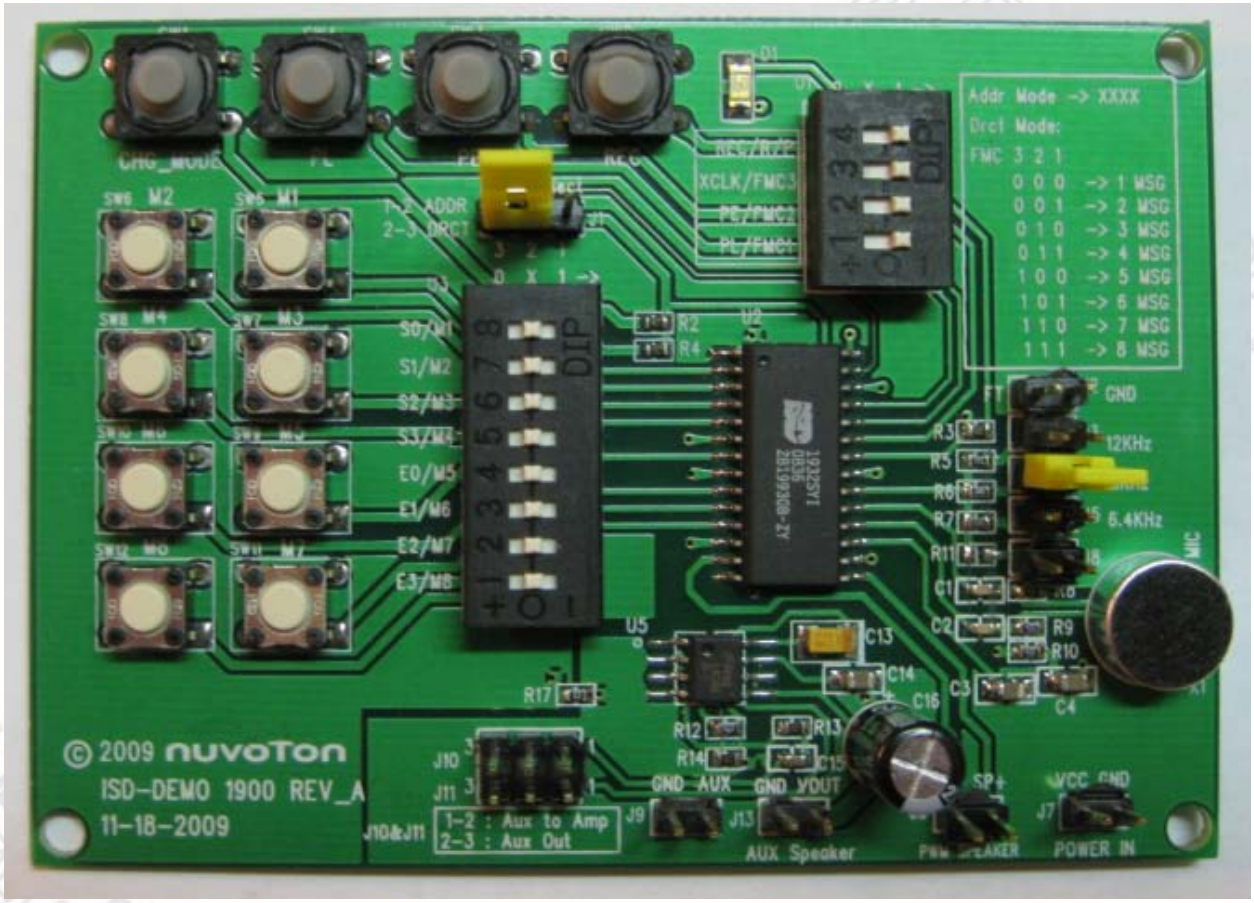

Figure 1 -- Top view of ISD-DEMO1900 Rev_A board

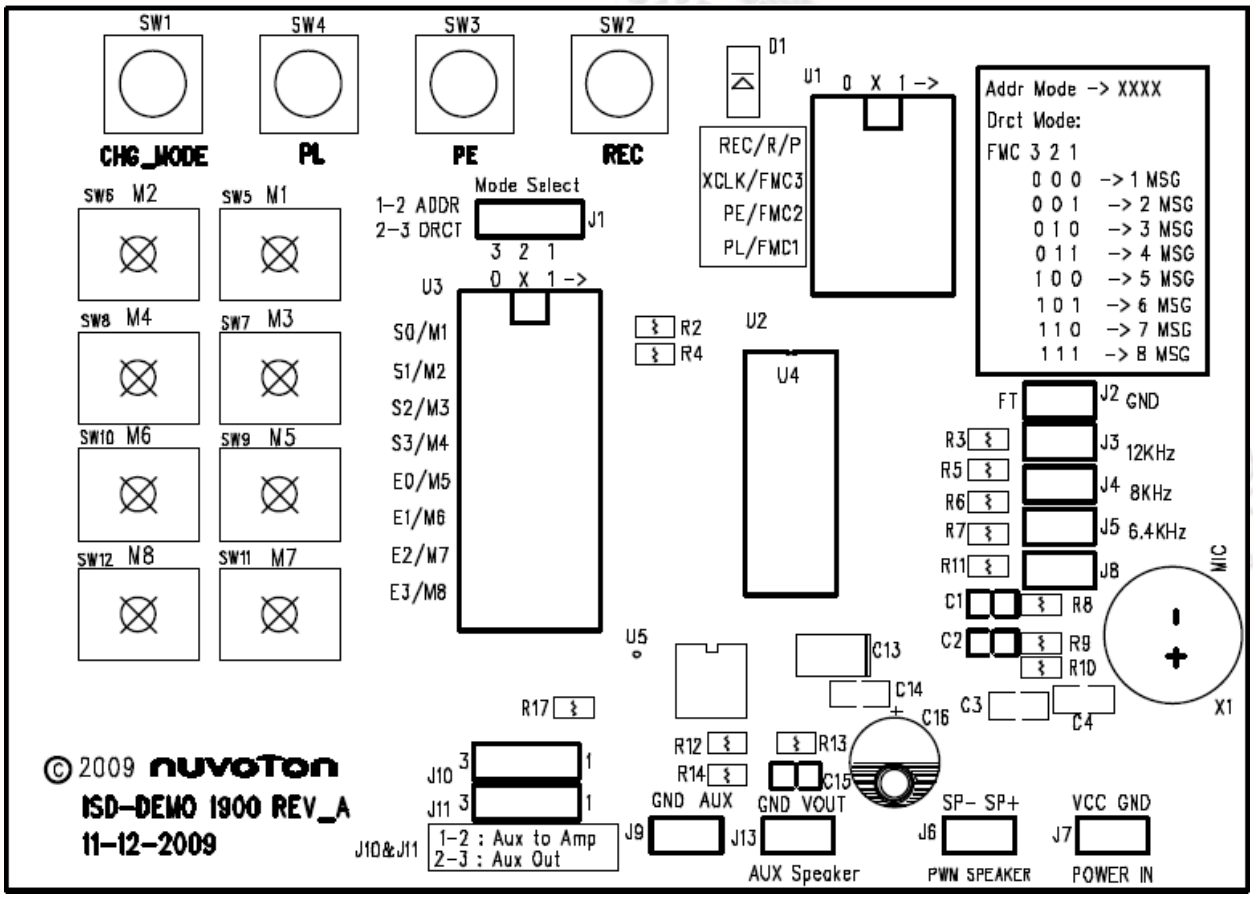

Figure 2 – Top view of demo board PCB silk label

PWM vs AUX

Based on the output type, the ISD1900 series devices fall into two groups: PWM-Output only and AUX-Output only. Judged by part number, if the device's part number ends with 01 then it is AUX output only; otherwise it is PWM output only. For example part number "1932SYI" indicates that the device's output is PWM output. In contrary, "1932SYI01" means device's output is AUX output.

ISD1900 device PWM output can drive a speaker directly, while AUX output needs to be amplified before driving a speaker.

For demo boards with AUX output, users can choose either to use the on board LM386 to amplify the ISD1900 device output signal then connect to a speaker, to evaluate the sound; or draw the signal out to their own amplifier for further evaluation.

As a reminder, please check what kind of ISD1900 device is populated on your demo board, before heading for further evaluation.

Figure 3 is attached below aiming to help user to judge what kind of ISD1900 device is on the demo board.

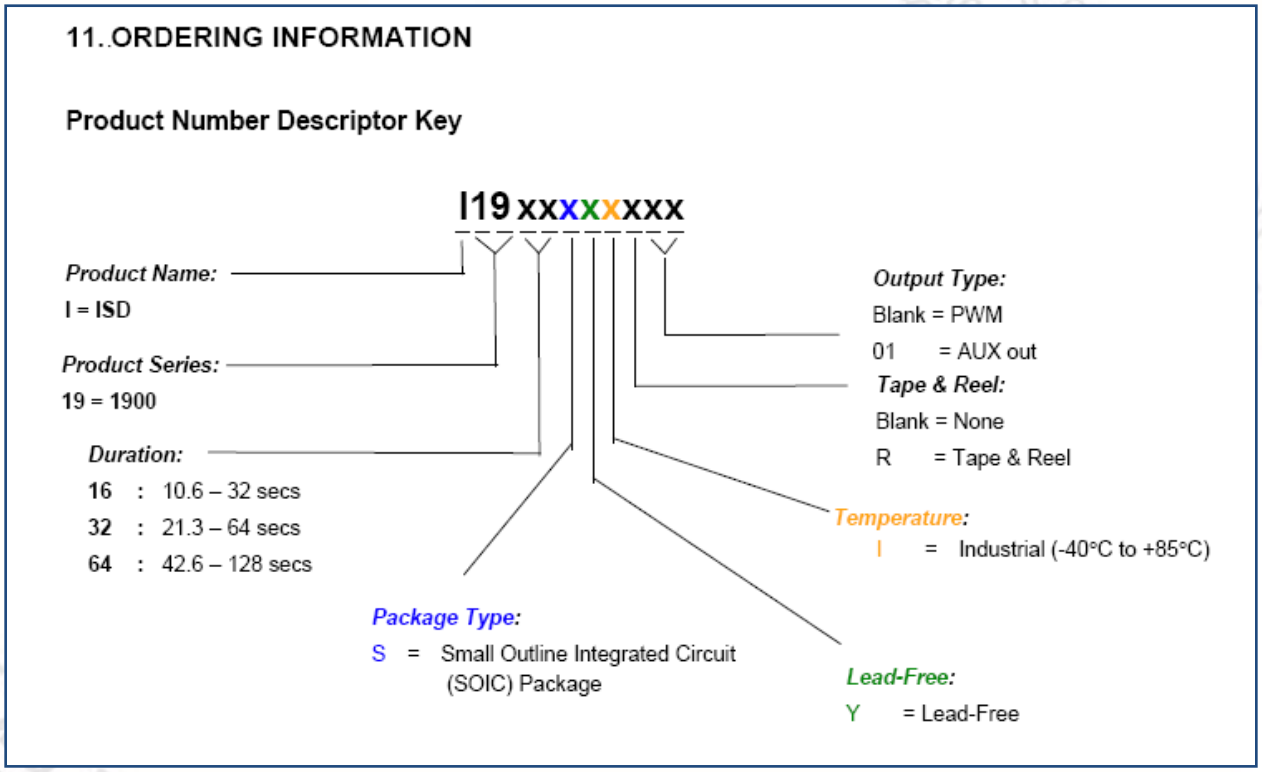

Figure 3 – ISD1900 ordering information → AUX out type device has “01” ending.

Default settings

The following pictures show the default jumper settings

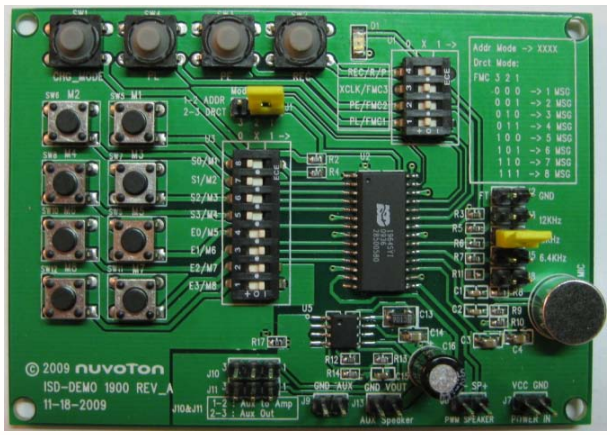

Figure 4 – Address Mode Settings

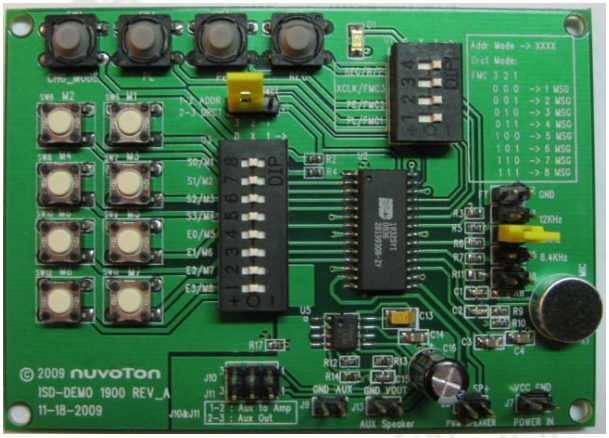

Figure 5 – Direct Mode Settings

Operation

The recommended operation sequence is, step by step

1. Connect jumpers, set switch positions, connect speaker;
2. Without power connected, press CHG_MODE button (located at the upper-left corner of the board) to fully discharge the ISD1900 device.
   This step is to prevent confusion when user changes operation mode between Address Mode and Direct Mode. If device is not fully discharged during mode change, device may stall.
3. Apply power;
4. Use function buttons such as PL (Level-hold play), PE (Edge trigger play), REC and Message buttons (SW1-SW8) to record and playback messages.
   This board only supports MIC +/- record.
   - Once power is on and there is no mode change, user can change start address/end address or FMC values (U1 setting) at any time. There is no need to discharge device during operation.

Address Mode operation

No matter what kind of ISD1900 device is used on demo board, for Address Mode operation, jumper settings need to follow the list below:

- Address Mode jumper/switches settings (shown in Figure 4):
  - U1 – put all 4 switches at middle position (floating).
  - U2 – all 8 switches will be at either left or right position, to indicate a definite start address and an end address.
    - Start address can be any number between 0000 to 1111;
    - End address needs to be equal or greater than the start address.
  - J1 – at right, connects 1 &2 → Address Mode.
  - Install jumper to choose sampling frequency. In Figure 4, 8 KHz sampling frequency is chosen.

- Connect speaker at J6 (if PWM only device), press CHG_MODE once, apply power.
  *Note: It is always recommended to press CHG_MODE right before applying power.

- Since the start address (U3 S0-S3) and the end address (E0-E3) are set, user can now press
  - PL – level hold play to play;
  - PE – Edge trigger play to play;
  - REC – to record

Direct Mode Operation

No matter what kind of ISD1900 device is used on demo board, for Direct Mode operation, jumper settings need to follow the list below:

- Direct Mode jumper/switches settings (shown in Figure 5):
  - U1 –all 4 switches need be at either left or right position, to indicate a definite FMC value and operation mode: to record or to play.

    Record or playback
    - U1 REC/R/P is at left (0) position – to record;
    - U1 REC/R/P is at right (1) position – to play;

FMC values table

FMC3	FMC2	FMC1	Number of messages
0	0	0	1
0	0	1	2
0	1	0	3
0	1	1	4
1	0	0	5
1	0	1	6
1	1	0	7
1	1	1	8

  - U2 – all 8 switches need be at middle position (floating)
  - J1 – at left, connects 2&3.
  - Install jumper to choose sampling frequency. In Figure 5, 8 KHz sampling frequency is chosen.

- Connect speaker at J6 (if PWM only device), press CHG_MODE once, apply power,
- Since the FMC value is set, depends on how many messages can be recorded and playback, user can now press message button M1-M8 to
  - Record a message if U1 REC/R/P is at left position → to record;
  - Playback a message if U1 REC/R/P is at right position → to play.
  -

PWM only – vs – AUX only

The only difference between PWM mode and AUX mode operations is that the jumper settings are different.

For PWM only devices:

- Connect speaker at J6: AUX speaker.
- Do not install J9, J10, J11 and J13.

For AUX only devices:

- Do not install J6.
- Connect speaker at J13: AUX speaker.
- J10 → connected at 1&2; Aux output signal will be sent to amplifier.

- J11 → connected at 1&2; Aux amplifier will be powered.

Note:

ISD-DEMO1900 Rev_A has no support on ANAIN recording function. This is a design miss. However, user can wire the signal to MIC+, install Jumper J2 (FT) to evaluate this function. This requires user to modify the board hardware before being able to do so. We will revise the demo board and shall bring user the convenience to evaluate ANAIN record/playback functions with the next version.

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Board Schematic

