



ISD93xx Evaluation Board User Manual

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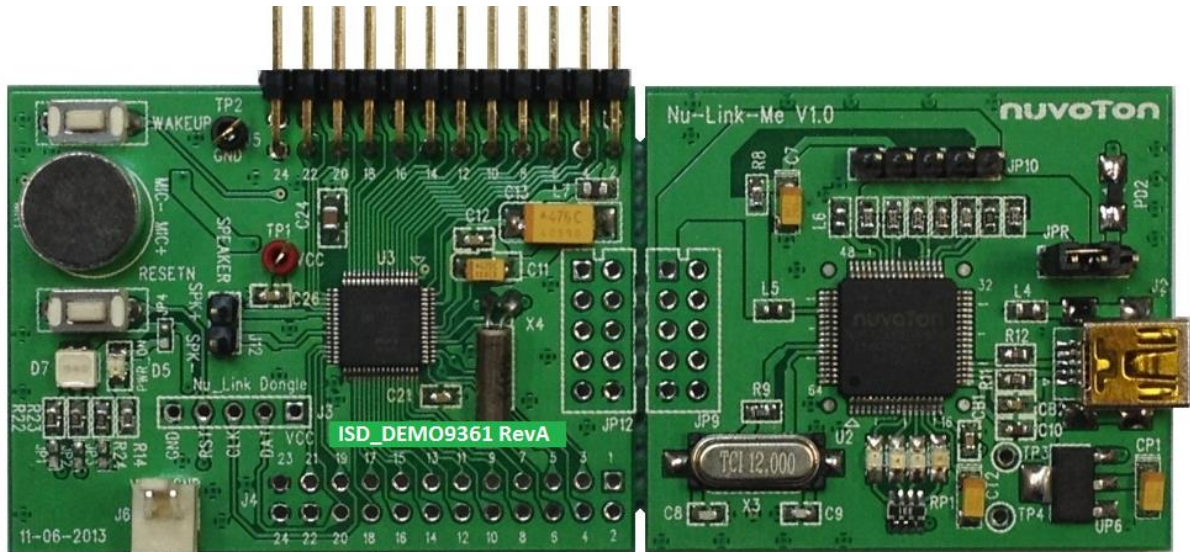
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1 Introduction

The ISD93xx evaluation board – picture shown below, is a small but rather functionally complete and flexible board. It consists of two parts, of which if broken either one can run independently.



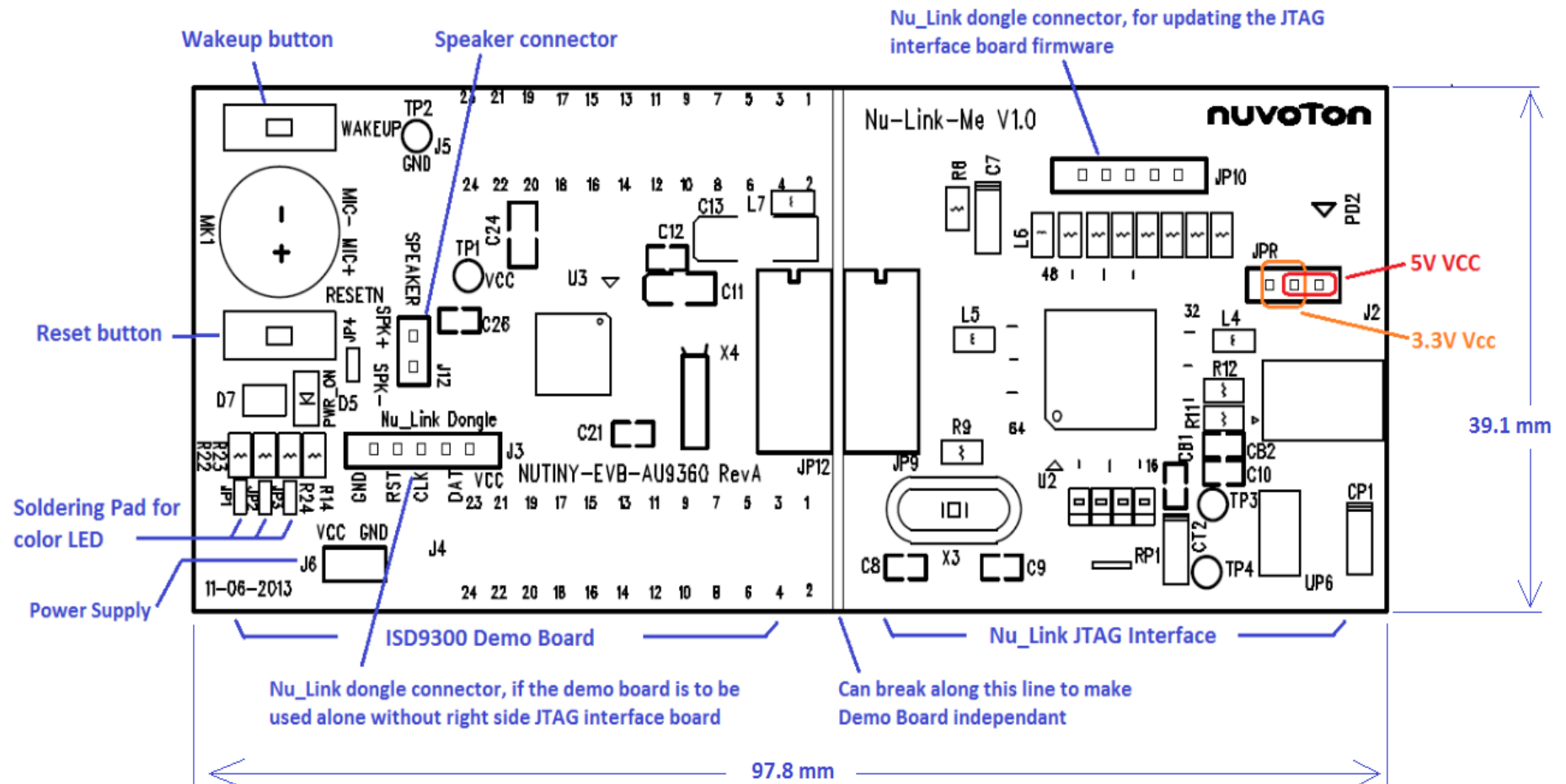
- Left part – the ISD93xx demo board
- Right part – the ISD_Nulink JTAG interface board, which is a Nuc123 application system

With a USB cable, the evaluation board provides the user a complete hardware environment for the ISD93xx project development. Under Keil the user can burn the project program code into the in-system flash and do debugging; also the user can use ICP tool provided by Nuvoton to burn the ISD93xx configuration bytes, in-system application ROM, in-system data flash, and the external SPI flash on the ISD93xx demo board.

In the later stage of a project development, the ISD93xx demo board might be required to run in standalone mode. In this case, the user can simply break the evaluation board, and let the left part – the ISD93xx demo board run alone. After the evaluation board is broken into two pieces, and if the user needs to re-program or debug the system, then user may either reconnect the two boards back together again via JP9 and JP12, or use Nu_Link JTAG dongle to provide control interface, see picture below.



2 Jumper and Button



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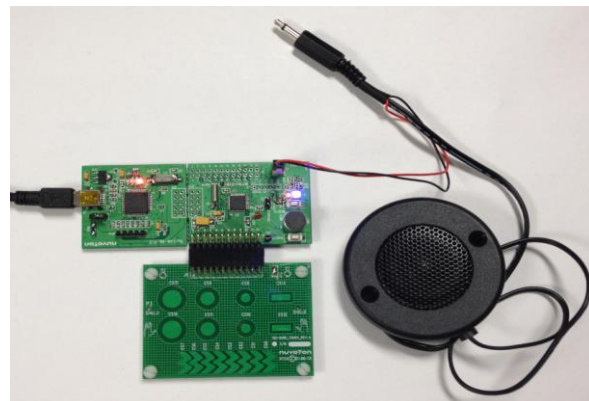
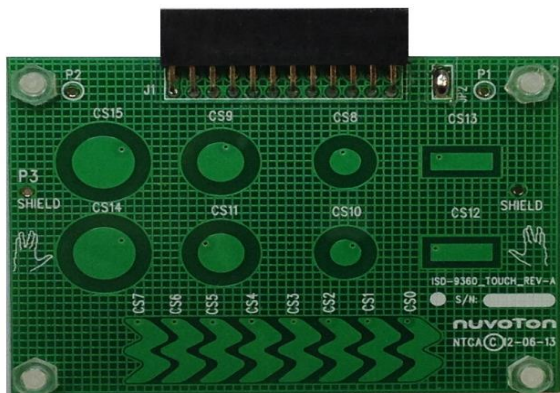
Jumper setting and button operation are described below:

	Part Number	Description	Default
L: ISD93xx demo board	JP1	Soldering pad for RGB LED blue color	Not soldered
	JP2	Soldering pad for RGB LED red color	Not soldered
	JP3	Soldering pad for RGB LED green color	Not soldered
	JP4	Soldering pad for power indicator red LED	Not soldered
	J3	Nu_Link dongle connector	Not populated
	J4	GPIO expansion port.	Not populated
	J5	GPIO expansion port connector. Used to connect ISD9300 Touch Board.	
	J6	Power supply	
	J12	Speaker connector	
	J13	Soldering pad for VCCD connection	Soldered on bottom side
	Wakeup Button	wakeup device from deep power down	
	Reset Button	Device reset button	
	JP12	connector to JTAG interface board	
R: Nu_Link JTAG board	J2	Mini USB Type B connector	
	JP9	Connector to ISD93xx demo board	
	JP10	Nu_Link dongle connector for Nu_Link JTAG interface board.	Not populated
	JPR	VCC selection for whole system: 5V or 3.3V	Jumper connects pin1 & 2. VCC is 3.3V. *Note: Remove jumper when power is provided from J6 of ISD93 demo board

3 Demo Code

The ISD9300 series evaluation board comes with demo functions ready, which means the ISD93xx device on board are shipped with default demo code burned. Once the ISD93xx Touch Board and power supply are connected – see below for the complete demo system, the system is ready to demo the following functions:

- RGB LED randomly changes color when device is idle
 - Driven by three channel PWM
- Simple sound effect playback
 - Touch CS15 once to start loop play one of the four pre-recorded sound effects; touch CS15 again to stop the playback.
- Voice Record and Playback
 - Touch CS12 + CS9 then release CS9 to start recording (CS12 is irrelevant after recording starts)
 - Touch CS9 to stop recording
 - Now every touch of CS9 will playback the recorded sound effect
- Playback volume adjustment
 - Swipe the bottom CS0-7 row to increase (from CS7→CS0, Left to right) or decrease (from CS0 → CS7, right to left) the playback volume, during playback, or when there is no active playback.
 - The RGB LED turns green during playback. The brightness of green color varies indicating volume change.
- Voice Recognition (VR)
 - VR is constantly running when device is idle. In this idle state, the device only responds to the leading command which is ***“Fruit_Color”***.
 - Once the leading command ***“Fruit_Color”*** is recognized, the RGB LED will be turned off indicating the device is waiting for further fruit commands: ***“apple”, “banana”, “blueberry”, “kiwi”, “orange”*** or ***“peach”***.
 - When the RGB LED is off, saying the fruit command to the device will let the RGB LED show the corresponding color for ~3 seconds; then the RGB LED will revert back to off state. In this off state, saying ***“Fruit_Color”*** again will make the system back into idle, indicated by RGB LED randomly changing color.



ICE INTERFACE connecting NUC120 ICE board and ISD9340 demo board

Nu_Link Dongle

Power Supply

MIC Interface

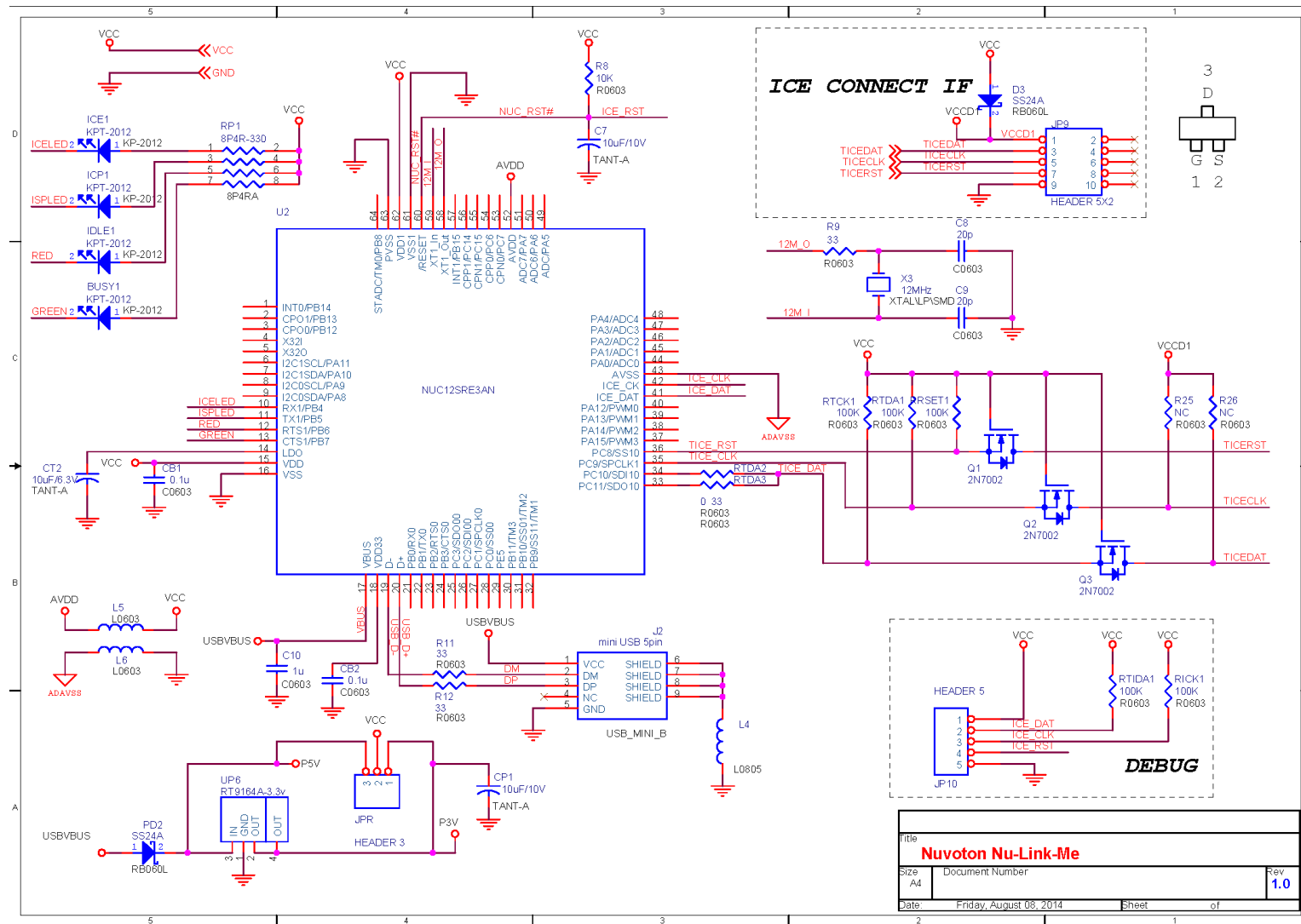
RGB LED

Serial Flash

Reset

Novotek ISD9340_Rev-B

Pin	Function
1	GPIO0_0
2	GPIO0_1
3	GPIO0_2
4	GPIO0_3
5	GPIO0_4
6	GPIO0_5
7	GPIO0_6
8	GPIO0_7
9	GPIO0_8
10	GPIO0_9
11	GPIO0_10
12	GPIO0_11
13	GPIO0_12
14	GPIO0_13
15	GPIO0_14
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95	GPIO0_94
96	GPIO0_95
97	GPIO0_96
98	GPIO0_97
99	GPIO0_98
100	GPIO0_99



5 Revision History

Version	Date	Description
0.1	May 02, 2014	First draft
1.0	Jun 08, 2014	First release
1.1	Apr 08, 2016	RevB, Schematic update
1.2	Apr 20, 2016	Description update.

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