November 1, 2004

LM4931 Evaluation Package Instructions

The LM4931 Evaluation Package includes the following:

LM4931 Demoboard
I^2C/SPI Card
I^2C/SPI Cable
Software (From Website)

Hardware Installation Instructions:

1) Plug the I^2C/SPI Card to the parallel port (LPT1) of the PC.
2) Determine whether you are going to use I2C or SPI.
3) Connect the LM4931 Demoboard to the I^2C/SPI Card with the I^2C/SPI Cable. Refer to the Silkscreen for the corresponding pin locations of SCL, SDA, extV_{DD} and GND. The I^2C/SPI Cable uses the following color coding scheme:

(Green – SCL/SLK; Blue – ADDR/ENB; Orange – SDA/SDI)
(White/Green – extV_{DD}; White/Blue – VSS_D)

SCL/SCK (pin2)	ADDR/ENB (pin4)	SDA/SDI (pin6)
extVDD (pin1)	VSS_D (Digital GND -pin3)	VSS_D (Digital GND –pin5)

I^2C/SPI Silkscreen Pinout (Eval board/ I^2C Card)

Green	Blue	Orange
White/Green	White/Blue	

Code for I^2C/SPI Cable

Location of I^2C/SPI Interface on Eval Board (JP11)

FIGURE 10. LM4931ITL Demo Board Silkscreen

I^2C/SPI Card Instructions:

1) Attach the I^2C/SPI Card to the PC's parallel port using the I^2C/SPI Card's male DB-25 connector.
2) The LED indicator on the I^2C/SPI card will light up when a proper connection is made.
3) Attach the I^2C Cable to the I^2C/SPI Card's corresponding 6-pin header.
4) The I^2C/SPI Card can be powered up either through the PC's parallel port (pcVdd) or the LM4931 Demoboard's power supply (extVdd).

5) For pcVdd operation, the slide switch on the I^2C/SPI Card must be set to the pcVdd position.
6) For extVdd operation, the slide switch on the I^2C/SPI Card must be set to the extVdd position.

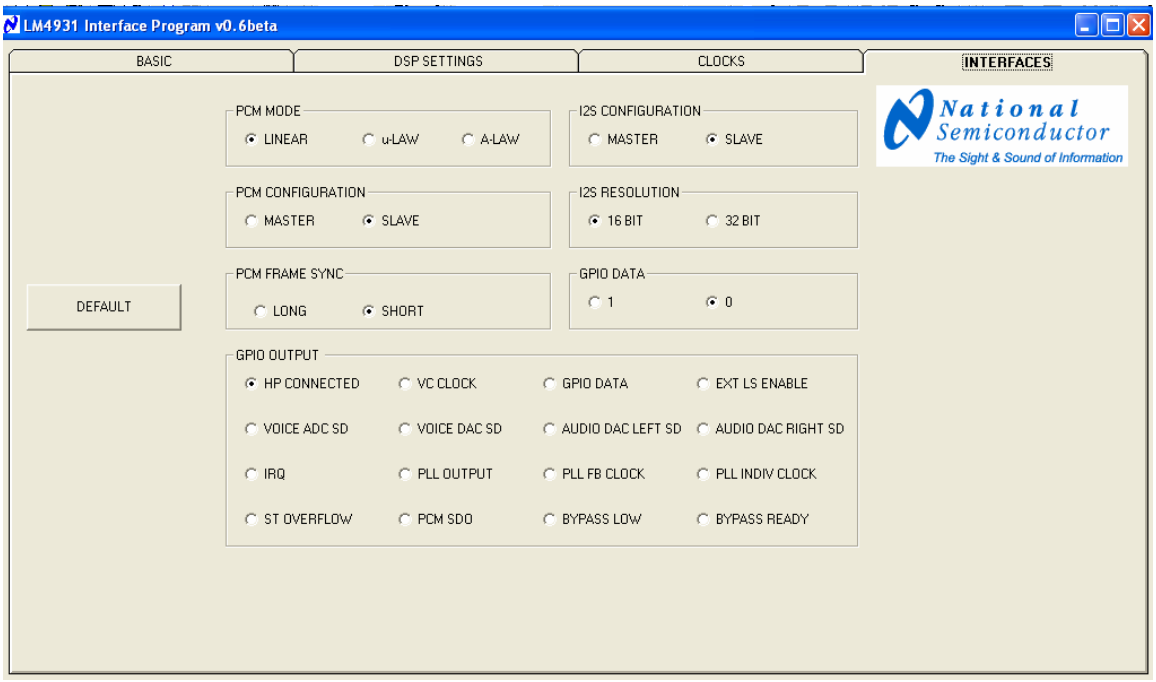
LM4931 Demoboard Instructions:

1) The supply pin, ground pin, inputs, and outputs are all easily accessed through the header pins of the LM4931 Demoboard. Each header pin is labeled accordingly on the Demoboard's Silkscreen layer.
2) Attach the I^2C Cable to the LM4931 Demoboard's corresponding 6-pin header.
3) Connect a power supply to the Vdd and GND pin of the LM4931 Demoboard for power-up.
4) Connect input through the I2S interface (pin designations on datasheet)
5) More detailed instructions and connection descriptions can be found in the LM4931 datasheet

Software Installation Instructions:

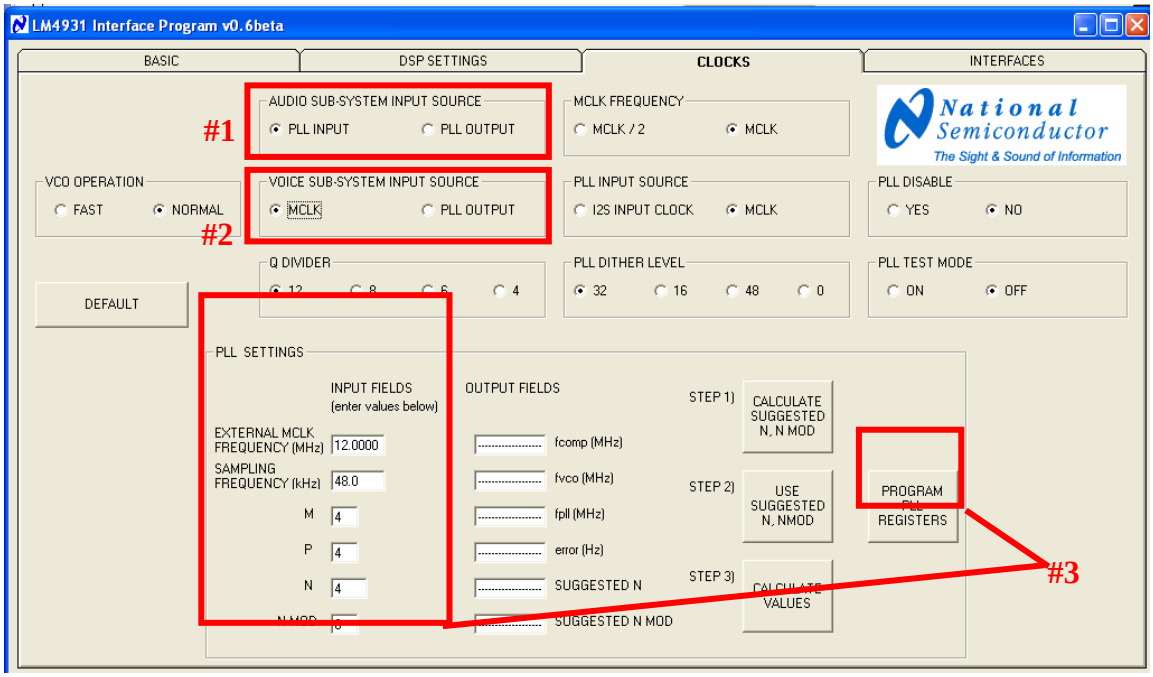
1) A Windows95/98/NT/2000/XP operating system is required.
2) Run *setup.exe* to begin the software installation.
3) Run LM4931v0_6beta*.exe* to begin the software program.
4) Refer to datasheet for modes and default settings
5) To begin working with the GUI and demo board, please refer to settings below from **tabs** within the GUI.

Setting **Interface** Tab:



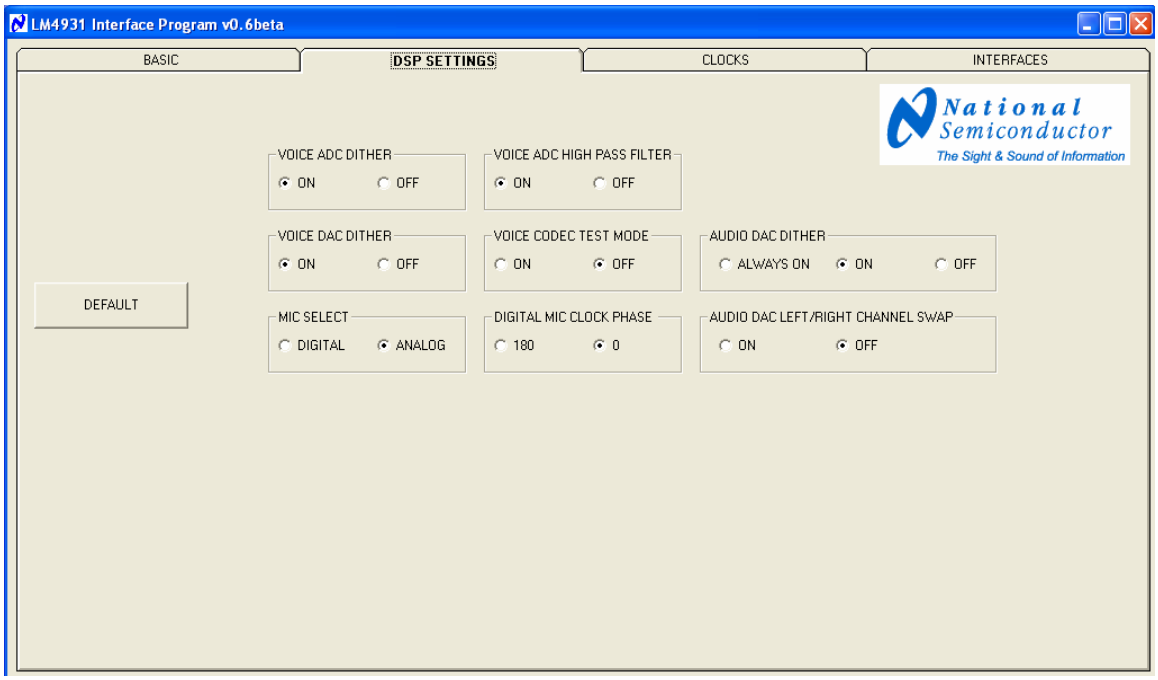
1) Please refer to the Application Information section (starting on pg.35) in the LM4931 datasheet if changing from default settings is necessary. (Software interface information is mainly on pg.42 and pg.43)

Setting **Clocks** Tab**:**

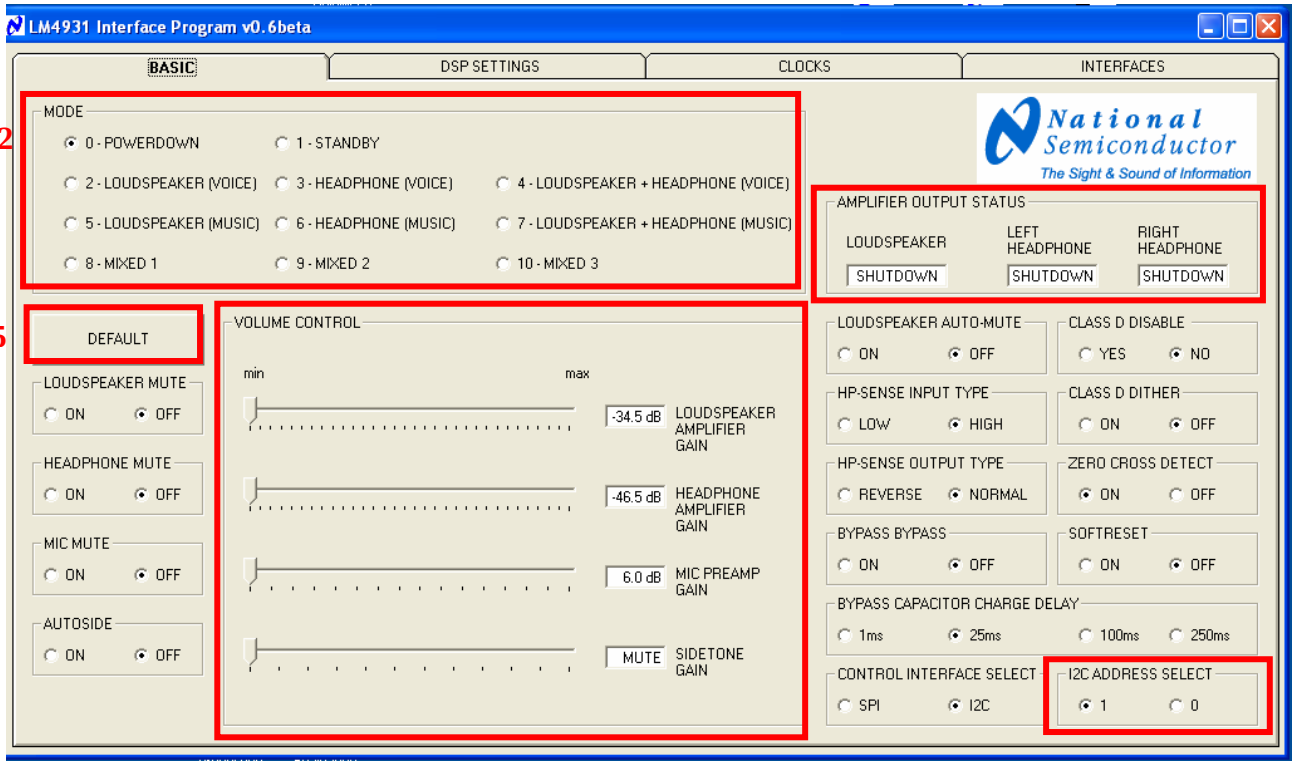


1) Set Audio Sub-system input source to PLL input if a 12.288MHz or 11.2896MHz master clock is available. This bypasses the PLL.
2) Voice sub-system input source should be checked to MCLK to bypass PLL if a 12.288MHz or 11.2896MHz master clock is available.
3) If the PLL must be used, fill in the input fields under the PLL settings frame and follow steps 1 through 3. Click the “PROGRAM PLL REGISTERS” button to set the PLL.

Setting **DSP** Tab:



1) Please refer to the register settings of the LM4931 datasheet if changes from the default settings are necessary. For further information also view Application Information section starting at pg.35. (Key information on Dithering is also on pg. 44)



Settings of the **BASIC** Tab:

1) Volume controls are accessed through the slider bars on bottom of GUI interface.
2) Output modes and other features are accessed through the radio buttons on top of GUI.
3) The status of each audio output is given in the corresponding text boxes located in the top right section of the GUI.
4) The address bit is set through the I2C software high or low. If ADDR is low, then the chip address is set to 0010000b. If ADDR is high, the address is set to 1110000b.
5) The DEFAULT button resets the GUI back to the default I2C/SPI settings.
6) Place in power down mode (0) before switching modes.
7) The LM4931 can be reset, excluding the I2C/SPI registers and PLL, by turning on “SOFTRESET”. To resume normal operation, “SOFTRESET” must be turned off.

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