

Hardware Description

The ISL21400 evaluation board is designed to be connected to the Intersil ISLUSBCEVAL1Z evaluation board. There is a connector (USB Board) on the ISL21400 evaluation board which mates with the ISLUSB evaluation board.

The ISL21400 device is mounted on top of the board on a copper pad with vias to a copper pad on the bottom. This provides good thermal conductivity to the underside of the board. The surrounding area has copper on both top and bottom of the board in an area 0.375"x0.375", with many vias for conducting heat from the underside of the board to the top side.

The ISL21400 evaluation board has all address pins shorted to ground; therefore, only slave address 50h can be selected.

The ISL21400 device on the board is powered by the 3.3V regulator from the ISLUSB evaluation board. If a different V_{CC} is desired, please remove the J2 jumper on the ISLUSB evaluation board and connect the desired V_{CC} to the V_{CC} connector on the ISL21400 evaluation board.

Software Guide

Installation

Insert the CD into the PC CD drive. Do not connect the evaluation board to the PC with USB cable. Click on ISL21400 Customer Interface Ver 2.0.exe to start the installation program. Follow the instructions on the installer windows and finish completion.

Connect the evaluation board with a USB cable to the PC. The "Found New Hardware Wizard" in Microsoft Windows will pop up. Please follow the following:

1. Select "Install the software automatically (Recommended)", then click Next.
2. Wait for the Windows to find the driver installed with "ISL21400 Customer Interface Ver 2.0.exe", then click Finish.

After the driver installation is completed, please start the evaluation software by going to START->All Program->Intersil-> ISL21400 Customer Interface->ISL21400 Customer Interface Ver 2.0 to start the program. You may also make a shortcut to the .exe file and place it on your desktop.

In the upper right corner of the ISL21400 program window (see Figure 1), there is a small window for selecting the slave address. The slave address contains 4-bits of device

ID, which are fixed at 0101, followed by the 3 individual address bits. The setup is as follows:

0	1	0	1	A2	A1	A0	R/W
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The address bits are the same as that selected by the hardware address pins on the IS21400 device in the evaluation circuit. The ISL21400 evaluation board has the address pins tied to ground (address = 50h). The last bit of the slave byte is the read/write bit and is set to zero by this selection window (it will be changed by the read/write commands). If other ISL21400 devices accessed using this software are configured with a non-zero address, the slave address will be an even number.

The software provides a window for displaying the contents of all registers. A simple read can be done by clicking on the Read All button. This will perform a page read and display the data of each register. Clicking on an individual bit in this window will select that bit to change in that register, and the hex value will be shown next to the register. By clicking the Write button next to the register it will write the selected value to the register. By clicking Write All, all registers will be written by the program. Bright and released Yellow for a bit indicates a zero, dim and pressed yellow indicates a one.

The "QUIT" button is used to suspend execution of the program.

Summary

Figure 1 shows five registers:

1. The first register allows the user to program the value of the voltage of the reference device. This 8-bit register will accept values from 0 to 255.
2. The second register allows the user to program the temperature slope of the ISL21400. Like the first register, this is also 8-bits.
3. The Gain0 and Gain1 bits of the third register allow the user to program the gain of the reference (1x, 2x, 4x) as follows:

GAIN1	GAIN0	OUTPUT GAIN, A_y
0	0	x1
0	1	x2
1	0	x2
1	1	x4

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4. The output voltage is programmable and is determined by Equation 1:

$$V_{OUT} = A_V \cdot \left(V_{REF} \cdot \frac{n}{255} + V_{TS} \frac{(2 \cdot m) - 255}{255} \right) \quad (\text{EQ. 1})$$

where:

A_V = Gain (1, 2, 4)

V_{REF} nominal = 1.200V

$V_{TS} = K(T - T_0)$; $K = -2.1 \text{ mV}/^\circ\text{C}$, $T_0 = +25^\circ\text{C}$

m: Temperature Slope register (0 to 255)

n: V_{REF} register (0 to 255)

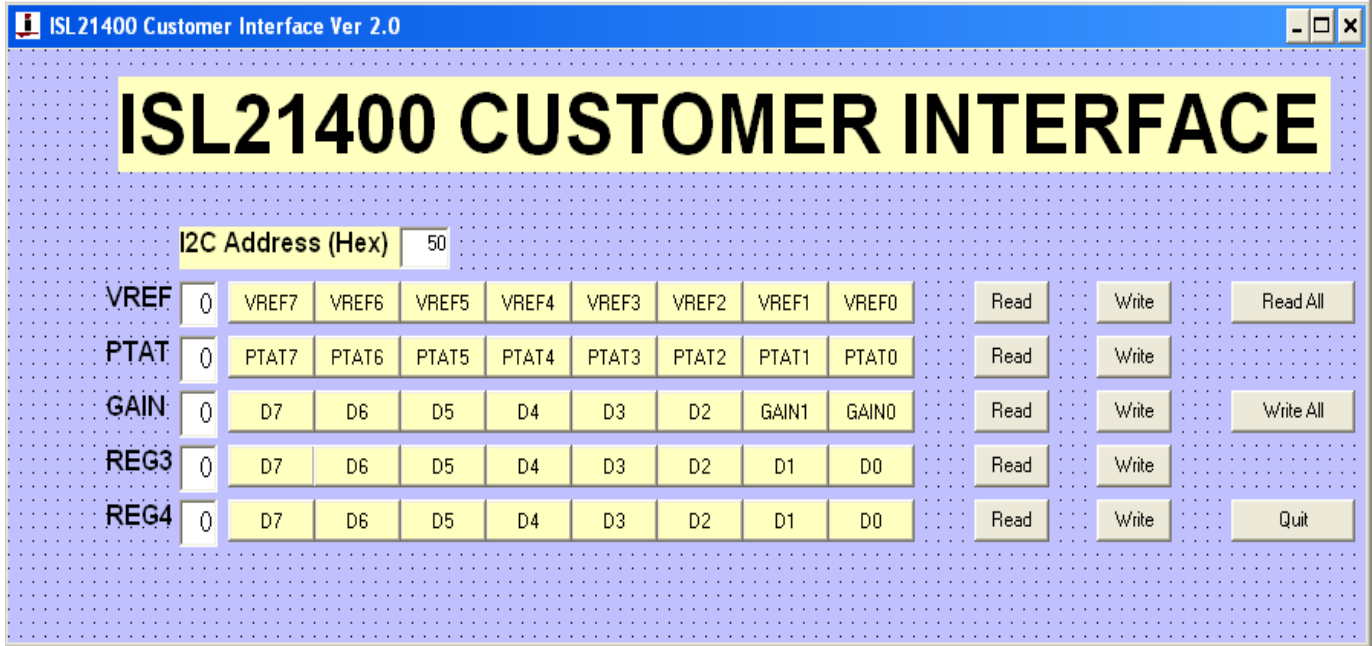


FIGURE 1. ISL21400 GUI WINDOW

Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that the Application Note or Technical Brief is current before proceeding.

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