

1. Required Hardware

- 1.1. One ISL88731EVAL2Z board
- 1.2. One USB 2.0 A/B cable.

2. Required Software

- 2.1. USB- interface module driver, ISL88731 Control Software, National Instruments Runtime Engine and USB-SMBUS_WDM.inf driver information file (all available on the self extracting archive file "ISL88731 Install.exe" available for download from www.Intersil.com).
- 2.2. ISL88731 CONTROL application software and National Instruments runtime engine (all available on the self extracting archive file "ISL88731 Install.exe" available for download from http://www.intersil.com/data/ev/isl88731_v2.1_installer.exe).

3. Download and Extract the Installation Files

- 3.1. Download and run the "ISL88731 Installer.exe" files. It will create a folder ("ISL88731 Installer") in the folder that holds the self extracting file. A dialog box will give you the opportunity to change the location of the extracted files.

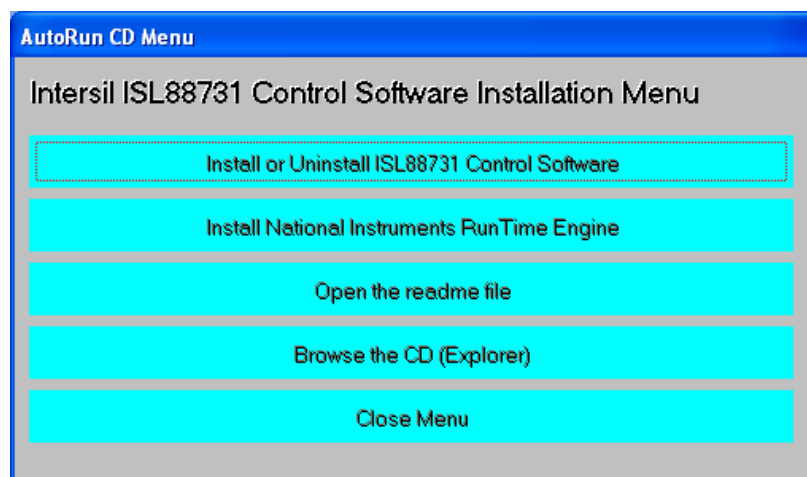
4. Software Installation

- 4.1. Both the ISL88731 control program and the National Instruments runtime engine are installed from the "ISL88731 Installer" Folder. Navigate to the "ISL88731 Installer" Folder and double click the "Autoexec.exe" file.

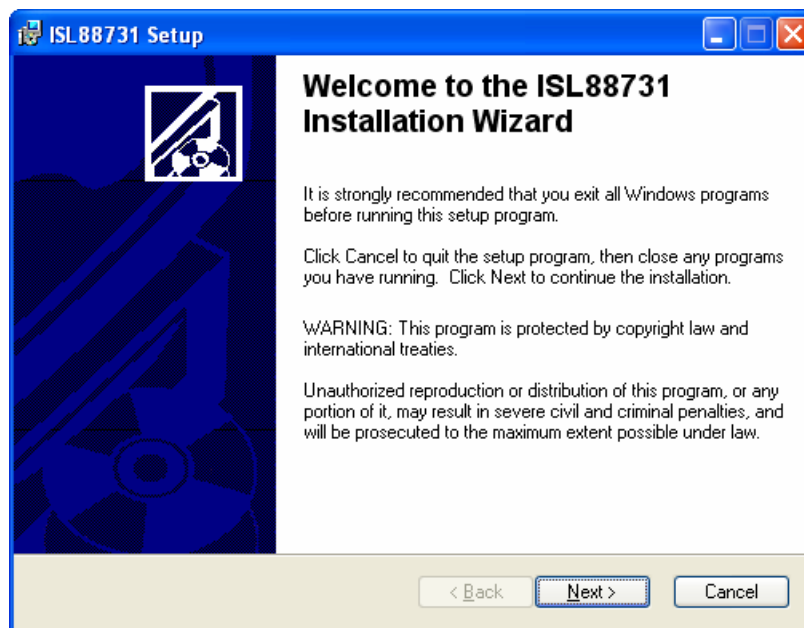
Note: The National Instruments Runtime Engine must be installed before connecting the eval board to your PC. The Runtime Engine contains driver files required by the New Hardware Wizard.

Figure 1

ISL88731 Control Software Installation Menu



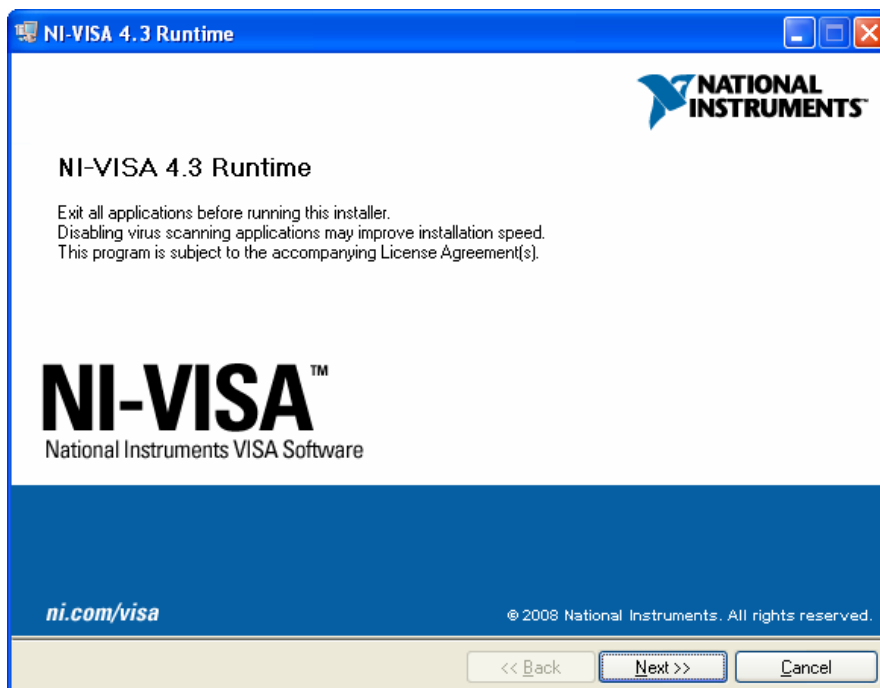
- 4.2. Click on the top button to run the Installation Wizard.



In most PCs the National Instruments Runtime Engine will be installed automatically after the ISL88731 software. You should see the window in figure 2. Follow the instructions to install the Runtime Engine. If it does not, click on the second button (see figure 1) after installation, click on the Close Menu button.

Figure 2.

National Instruments Runtime Engine Installation Window



5. Driver Installation

5.1. Connect the ISL88731EVAL2Z to the USB port of your PC.

Note: The SMBus part of the ISL88731 and the USB-SMBus interface are powered by the 5V from the USB port on the PC. It is not necessary to have other power supplies connected to the eval board to read or write to the ISL88731.

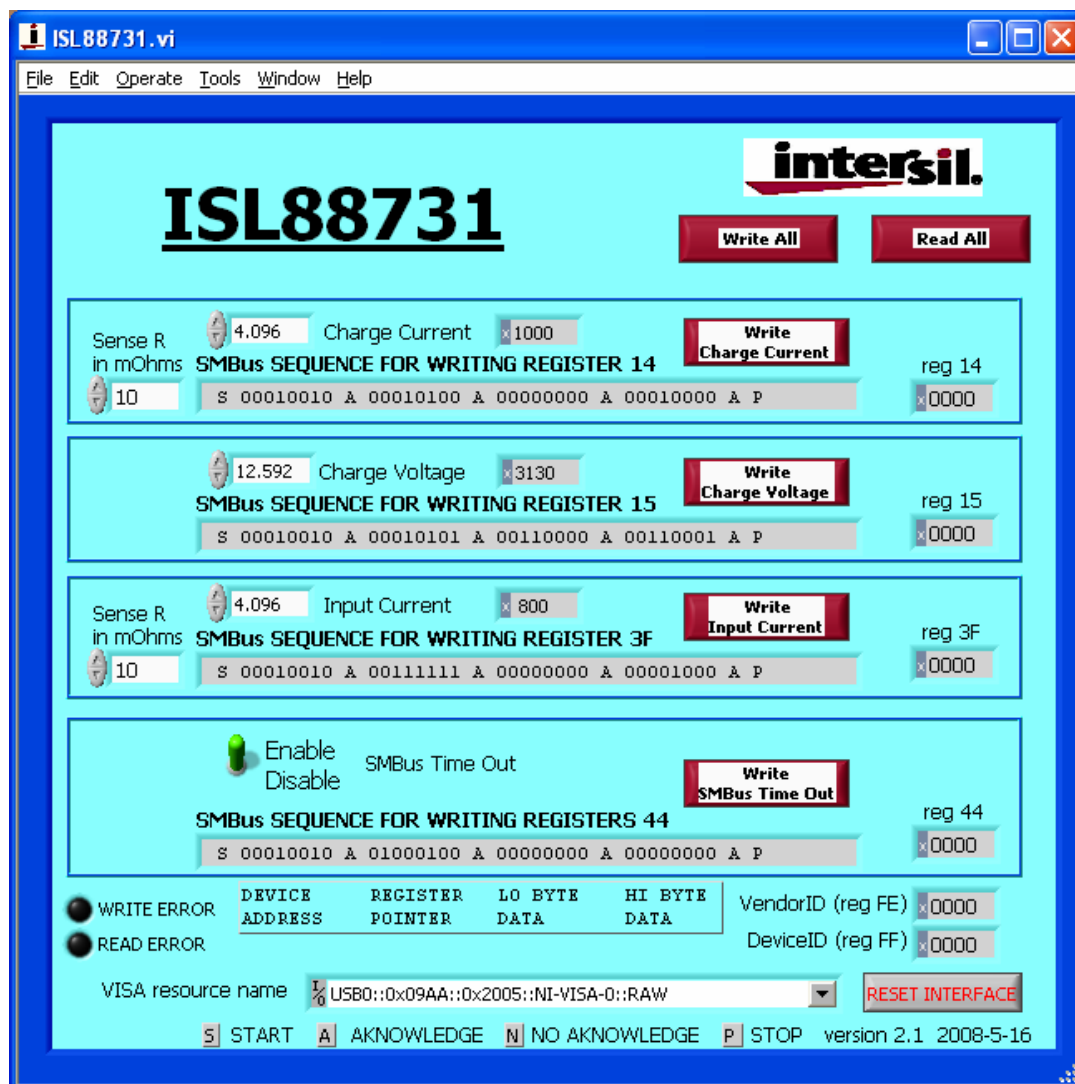
5.2. When WINDOWS detects new hardware, direct it to search the "ISL88731 Installer" folder (extracted from the downloaded file). In some systems, it may be necessary to specify the driver information file (USB-I2C_WDM.inf).

6. Run the ISL88731 Application

6.1. **ISL88731 should now appear in your START / ALL Programs list. Click on it should run the application.**

7. Communication Between ISL88731 and Your PC

Below is a screen shot of the ISL88731 user interface



Description of the user interface controls and display information



Clicking this button will write the indicated SMBus sequences to registers 14, 15, 3F and 44 in the ISL88731.

Note: The SMBus part of the ISL88731 and the USB-SMBus interface are powered by the 5V from the USB port on the PC. It is not necessary to have other power supplies connected to the eval board to read or write to the ISL88731.



Clicking on the **Read All** button will read all 6 registers in ISL88731 and display the results in the grey indicators below the Read All button. If the device and the interface are operating normally, the **VendorID** and the **DeviceID** will be as below.

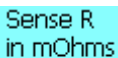


If the **VendorID** and **DeviceID** remain 0000 it indicates a communication problem.




Clicking on the **RESET INTERFACE** button may correct the problem. If not, try closing the software, remove power and USB connections from the eval board then reconnect and restart.

*NOTE the register contents are updated ONLY when the **Read All** button is clicked*



The Sense R inputs are used to calculate the hexadecimal (hex) values and the SMBus sequences for the Charge Current limit and Input Current limit entered in the white boxes. The eval board is built with 10mO sense resistors. If you change them to another value, enter the new value to get correct indications.



The small white window accepts inputs in Amps, and converts them the hexadecimal (hex) value to be written to the ISL88731 in the grey window. The hex value depends on the value entered in Sense R. The value can be incremented and decremented with the up/down arrows at the left of the window.

After entering a number in the white box, hitting the enter key or clicking on another area will enter the value and the resulting hex value and SMBus sequence will be calculated and displayed. The value in the white window will be forced to the nearest valid number that can be produced by the DAC in the ISL88731. That is, after entering 4 and hitting the enter key, the display will change to 3.968. After entering 4.1 and hitting the enter key, the display will change to 4.096.

SMBus SEQUENCE FOR WRITING REGISTER 14

```
S 00010010 A 00010100 A 00000000 A 00010000 A P
```

DEVICE ADDRESS	REGISTER POINTER	LO BYTE DATA	HI BYTE DATA
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S = the Start condition, A = the Acknowledge, P = the Stop condition

NOTE:

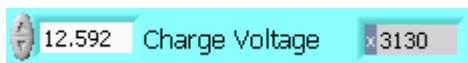
*The LO byte is sent first. The HI byte is sent second.
When writing 0x41A0, 0xA0 is written first and 0x41 is sent second*

IMPORTANT NOTE

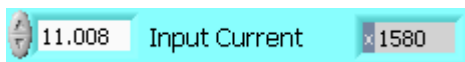
*The SMBus commands are NOT sent until one of the WRITE buttons is clicked (i.e. **Write All** or **Write Charge Current**)*



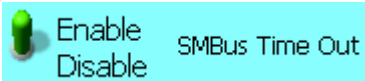
The Write Charge Voltage button writes only the **ChargeVoltage** register. Other registers are unchanged.



The small white window accepts Charge Voltage (in Volts) and calculates the hexadecimal value and the SMBus sequence to write to the ISL88731. The SMBUS command is not sent until the **Write Charge Voltage** or **Write All** button is clicked.



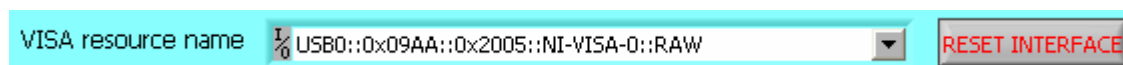
The small white window accepts Input Current Limit in Amps and calculates the hex value and the SMBus sequence to be written to the ISL88731. The SMBUS command is not sent until the **Write Input Current** or **Write All** button is clicked.



ISL88731 will shut down unless it receives SMBUS commands every 175 seconds. This is a safety feature that prevents over charging batteries when the buss master has stopped functioning. This feature can be disabled or enabled by writing the correct value to register 44.

Interface Trouble Shooting

When the eval board is connected to the PC by a USB cable and the software is running, the software assigns a VISA resource name



If this window is blank, it indicates a problem with communication between the PC and the micro controller on the eval board.

1. Check and correct the connection of the USB cable to your PC and the eval board.
2. Click on the RESET INTERFACE button.
3. If you still get no VISA resource name, contact your Intersil FAE for assistance.