Using the Intersil ALS Software (v520) with Intersil Ambient and Infrared Light-to-Digital Converter with IR LED Driver ISL29015

Application Note   *August 6, 2008*   *AN1412.0*

Table of Contents

0.0 Evaluation Package

• Demo Board

• Evaluation CD

• USB 2.0 Cable

1.0 System Requirements

• Windows 98/NT/2000/XP/VISTA

• CD Drive

• Available USB Port

2.0 Hardware Setup

• Connect USB 2.0 cable to PC first and then to evaluation board

• Computer may ask about installing software for new found hardware, select "Yes", this time only. On the following screen, it will ask about how to install hardware. Select the recommended option, installing from CD and follow the directions.

• USB is only connector needed

3.0 Software Installation

• Insert Intersil CD into CD Drive/player when asked to by the Hardware wizard
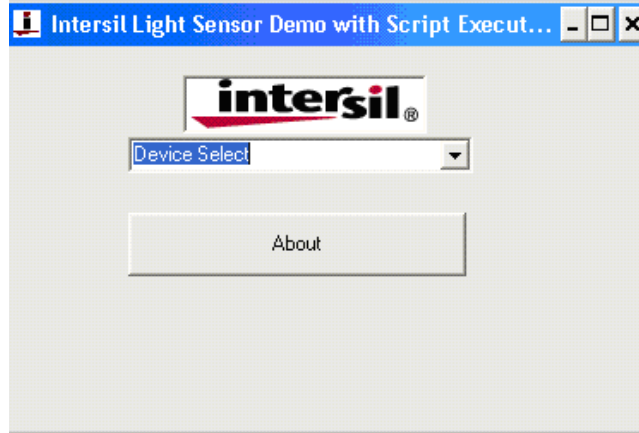
• Install the Intersil software

4.0 Software Setup

• To open program, go to "Start" menu, Start -> Intersil ->Intersil_ALS_Comm -> Intersil_ALS_Comm
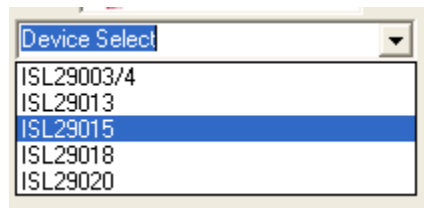
intersil
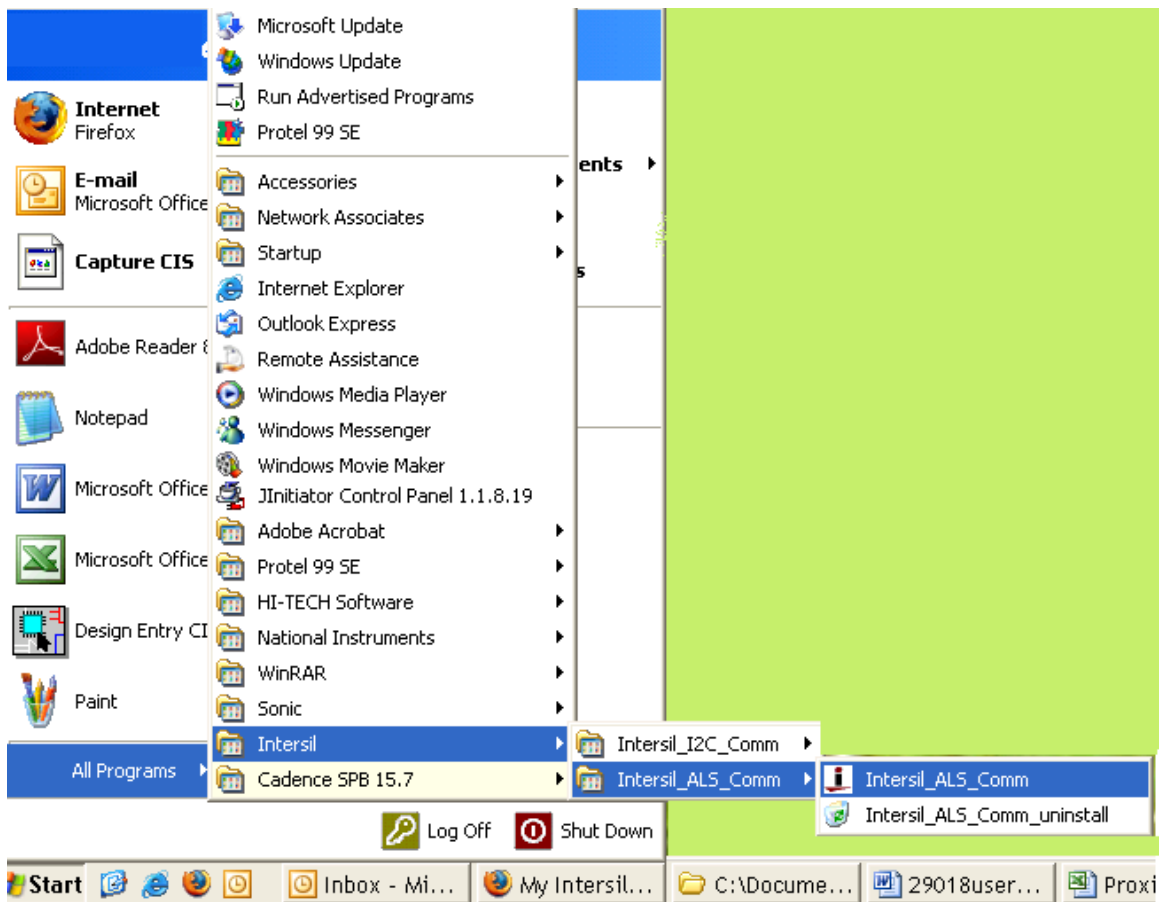
Once you have double clicked the program, the following window will open.

Go to "Device Select" tab, Select whichever device you have connected to your computer. For this example, we will use the "ISL29015 Light Sensor".

One window will open, "ISL29015 Multi-Function Sensor Evaluation Software". This is the main window in which all demonstrations will be done.
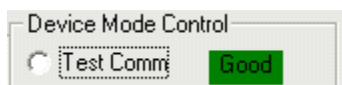
USB Communication

Check to make sure this light is green, if it is not green, check your connection.
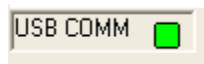
Test Communication

With IC, click this button; if it shows "good", then Hardware and Software are properly set up; if it says "fail"- then check your connections. If problem still persists than you may want to restart the software.

Note: This is common for all devices

5.0 Multi-Function Sensor Evaluation Software Guide

From menu on left, choose the specific **"Mode"** you want to operate the IC in. A detailed explanation is described in the data sheet. Table 1 on page 4 summarizes the different modes.
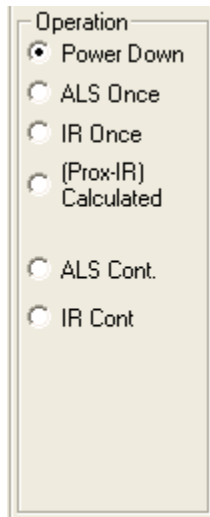
TABLE 1. SUMMARY OF MODES

| MODE	EXPLANATION
Power-Down	Turn off and keep data in registers
ALS Once	Ambient Light Sense for one conversion then Power-Down
IR Once	Infrared Sense for one conversion then Power-Down
(Prox-IR) Calc	Proximity Infrared Sense for one conversion then Power-Down
ALS Cont.	Ambient Light Sense continuously and continue to refresh registers
IR Cont	Infrared Sense continuously and continue to refresh registers

Integration Time - corresponds to the resolution of the internal ADC, the number of bits allocated to representing Count. Higher resolution (more bits) requires a large number of counts and will need longer acquisition (integration) time.
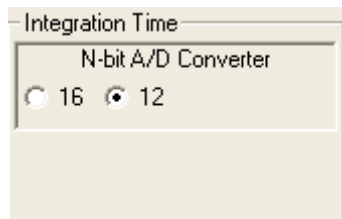

Sensitivity-Range Select - allows you to choose the sensitivity of the sensor based on external conditions/object detection. For example, a really bright object would require a higher range (i.e. 64000), vs a dark object which will require a low range (i.e. 1000). Higher range reduces photo detector sensitivity.
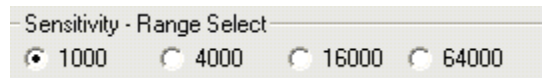
Source current - allows you to adjust the IR LED driving current. A greater current allows for detection of objects at farther distances.
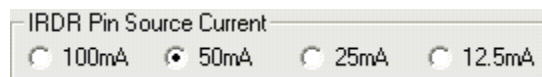

IR Modulation Frequency - allows you to modulate the IR LED driving current. Increasing the frequency parameter allows for better noise immunity.
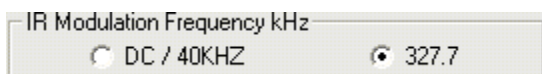
Collect Data Graphical Real Time Data - allows you to sample data (whether ALS, IR, or Prox-IR). Samples are now being taken and are being plotted, and appropriate values are displayed on the right in the corresponding box.

Stop Data Acquisition - To stop sampling of data
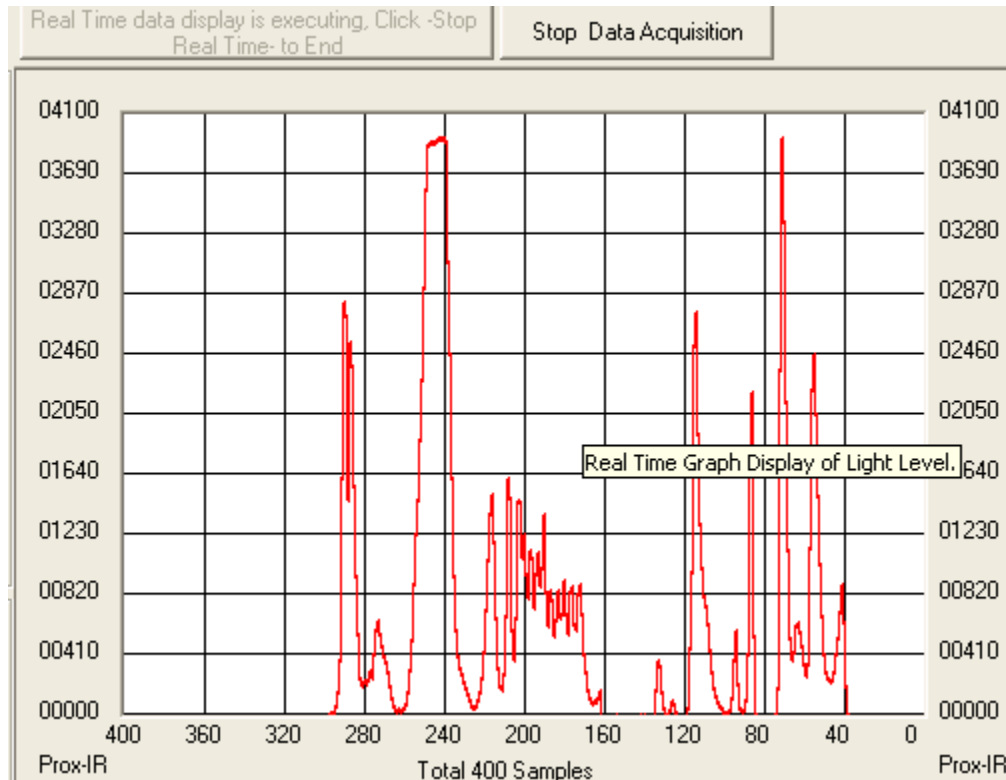
Here, the scale can be adjusted to meet your sampling needs. "**Manual Re-Scale**" allows you to type in the Maximum and Minimum values for the scale (vertical axis) in the appropriate boxes. The "**Automatic Re-Scale**" button is useful if sampled data is out-of-range of graph or need to zoom-in on data. It will rescale the vertical axis to an appropriate field of view.

Exit - this button closes the entire program.

The value in the "**ADC Reading**" and/or "**Lux Reading**" fields are the appropriate output coming out of the sensor according to which Mode is engaged.

Max Count - this is the maximum value that can be measured based on the resolution chosen (Integration Time). Max count increases with more integration time.

6.0 Troubleshooting

- If suffering from poor USB connection; USB port may need to change.

- If Proximity sensor is unable to measure anything within a certain distance, the sensor has saturated and the Selectivity parameter needs to be increased.

- If the program says connection fail and instantly the sensor stops working, then simply unplug it from the computer and plug it back in. If problem still persists then unplug, close program, plug it back in and reopen program.

- If during a measurement, program crashes or instantly the evaluation board is no longer detected as being connected, then unplug and plug back in.

- If too much noise is being picked up, then increase the frequency parameter.

- If you require better detection of far distances, then increasing the current parameter will help.

For information regarding Intersil Corporation and its products, see www.intersil.com