Sensor Board Guide for the VCNL4030X01

INTRODUCTION

The VCNL4030X01 sensor board is intended to be used in conjunction with Vishay's SensorXplorer demonstration kit, or as a standalone unit, to evaluate the capabilities of the VCNL4030X01 proximity sensor.

SensorXplorer™

The SensorXplorer (Fig. 1) is a demonstration kit designed to help evaluate Vishay's digital sensors featured on Vishay's sensor boards. These boards, along with their respective software modules, can be used to demonstrate and test each sensor's functionalities, allowing the user to quickly understand how various settings affect the sensor's results. The SensorXplorer board includes an USB to I^2C interface chip, a 3.3 V regulator, several indicator LEDs, as well as multiple GPIOs to control the functionality of each board and allow data to be read and displayed on a PC. To get an overview of available sensor boards, as well as to download the software modules and board design files, please visit: www.vishay.com/optoelectronics/SensorXplorer. Here you will also find a link next to each board showing its availability at each of our distributors.

Complete information about the SensorXplorer kit as well as all available sensor boards is available at www.vishay.com/optoelectronics/SensorXplorer. The same page also allows you to check inventory of SensorXplorer kits and Vishay sensor boards at our distributors.

The SensorXplorer installation guide is available for download from the following link: www.vishay.com/doc?84922

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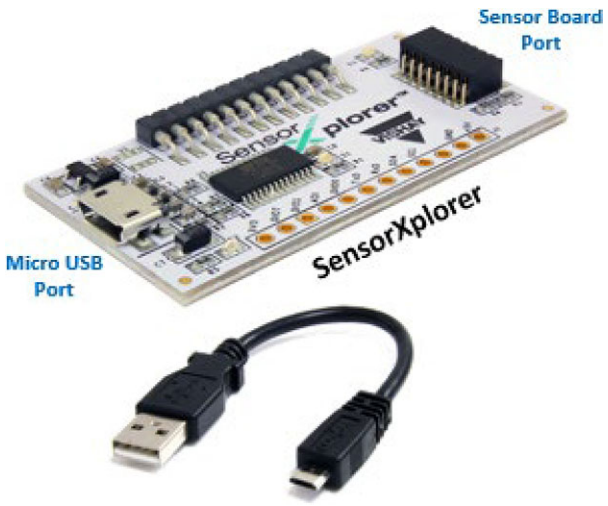

Fig. 1 - SensorXplorer

USING THE SENSOR BOARD WITH THE SensorXplorer

Following the instructions in the SensorXplorer installation guide, install the SensorXplorer software on your PC, then connect the SensorXplorer evaluation board to your PC and the Vishay sensor board.

The respective demo board software module can then be downloaded from: www.vishay.com/landingpage/SensorXplorer/

Once the module is unzipped the software can be run without the need for further installation.

You are now ready to explore the sensor and its different settings to see how they will work in your application.

For technical questions, contact: sensorstechsupport@vishay.com
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HOW TO USE THE DEMOSOFTWARE

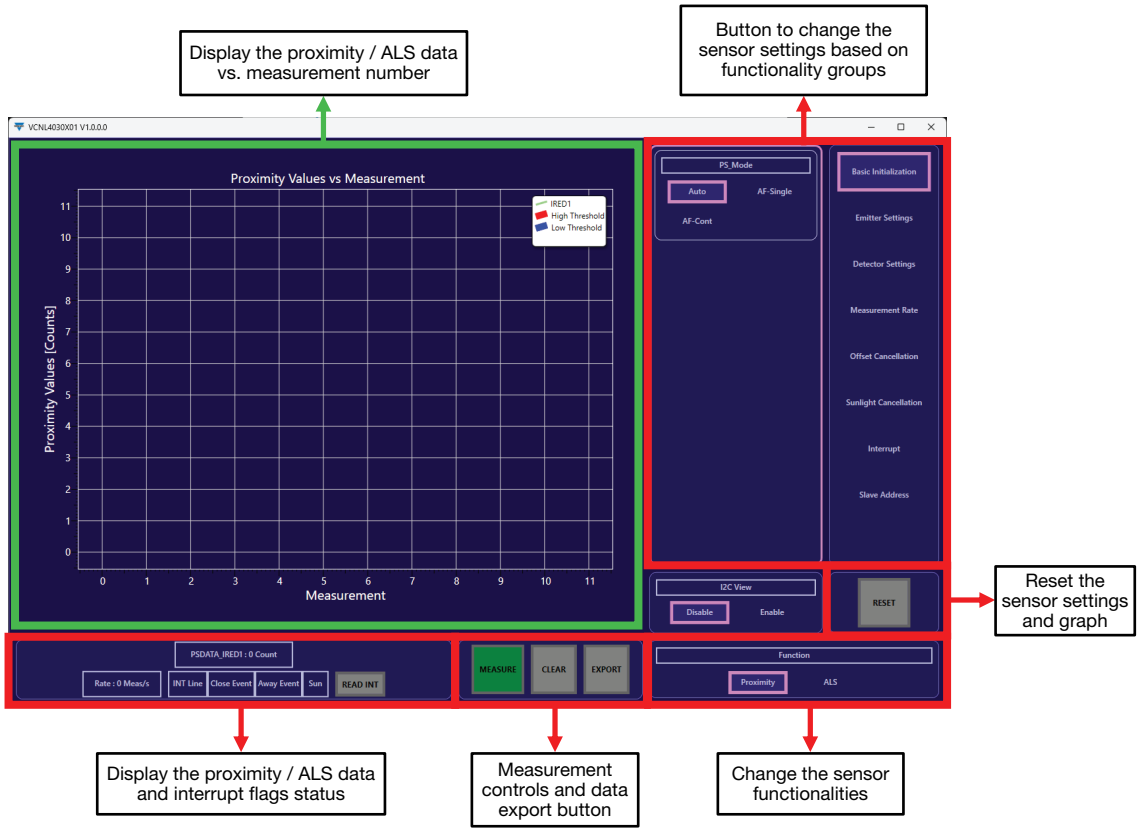

Fig. 2 - Demosoftware GUI Summary

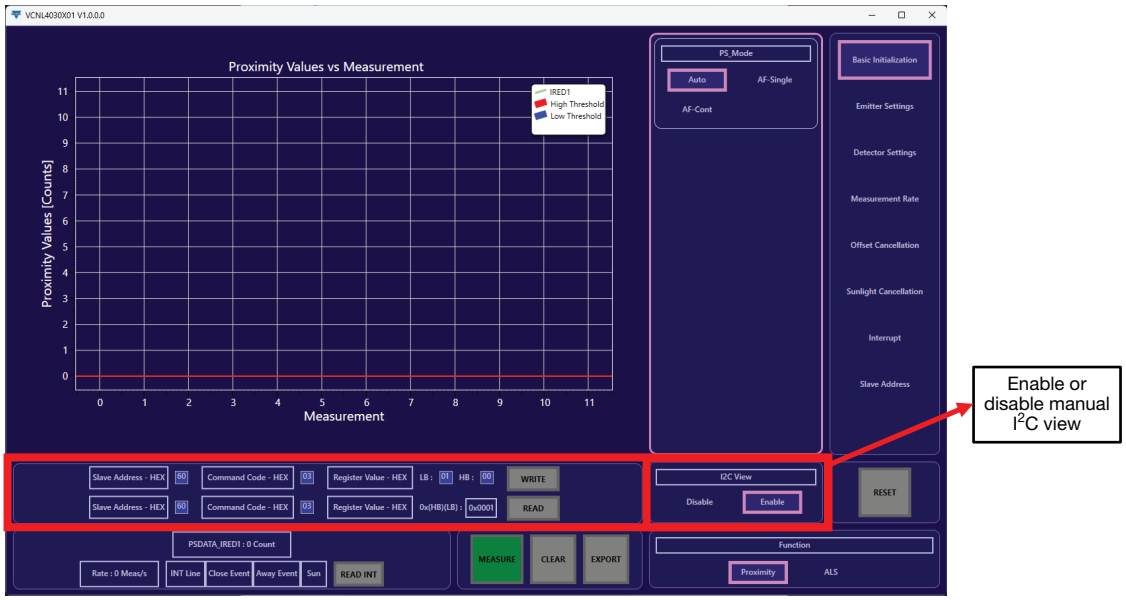

Fig. 3 - Enable or Disable Manual I²C View

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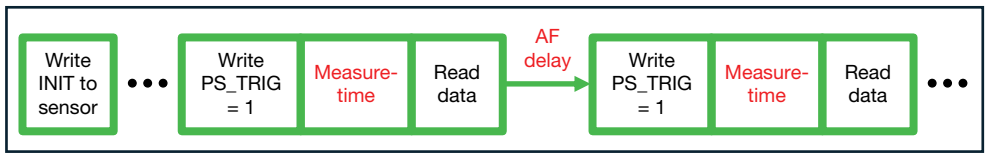
VCNL4030X01 timing diagram for active force mode (AF mode)



PS_IT (ms)	Recommended Min AF Wait (ms)
1T to 1.5T	1
2T to 4T	2
8T	4

AF wait-time delay to allow for the measurement to be completed before reading the data registers

AF delay time is the time delay between measurements to determine the measurement rate

Fig. 4 - AF Wait and Delay Parameters

Change sensor settings group button to go to the specific register settings, which belong to its respective functionality group

Fig. 5 - Register Settings are Arranged by Functionality Groups

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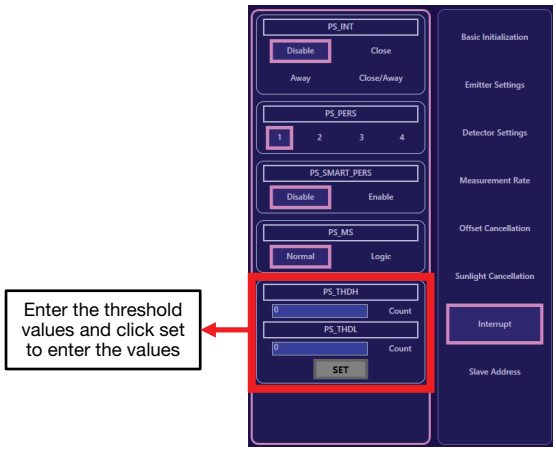

Fig. 6 - Threshold Settings for the Interrupt

USING THE SENSOR BOARD FOR ITSELF

If you want to use the sensor board within your own application and with your own I^2C master, simply connect the board to the power supply (1.8 V, 3.3 V, GND) and the I^2C lines (SDA, SCL) test pins as shown in Fig. 7.

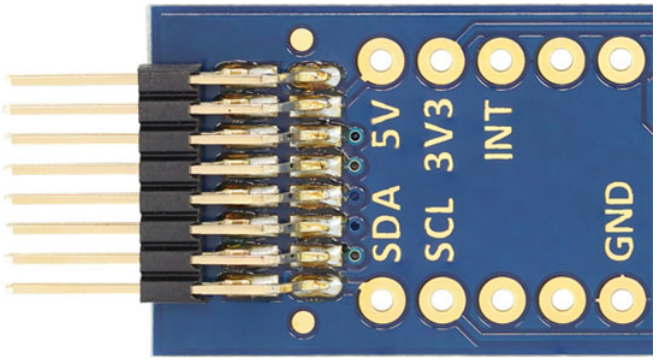

Fig. 7 - Connection of the Sensor Board (power supply and I^2C lines)

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SCHEMATIC OF THE VCNL4030X01 SENSOR BOARD

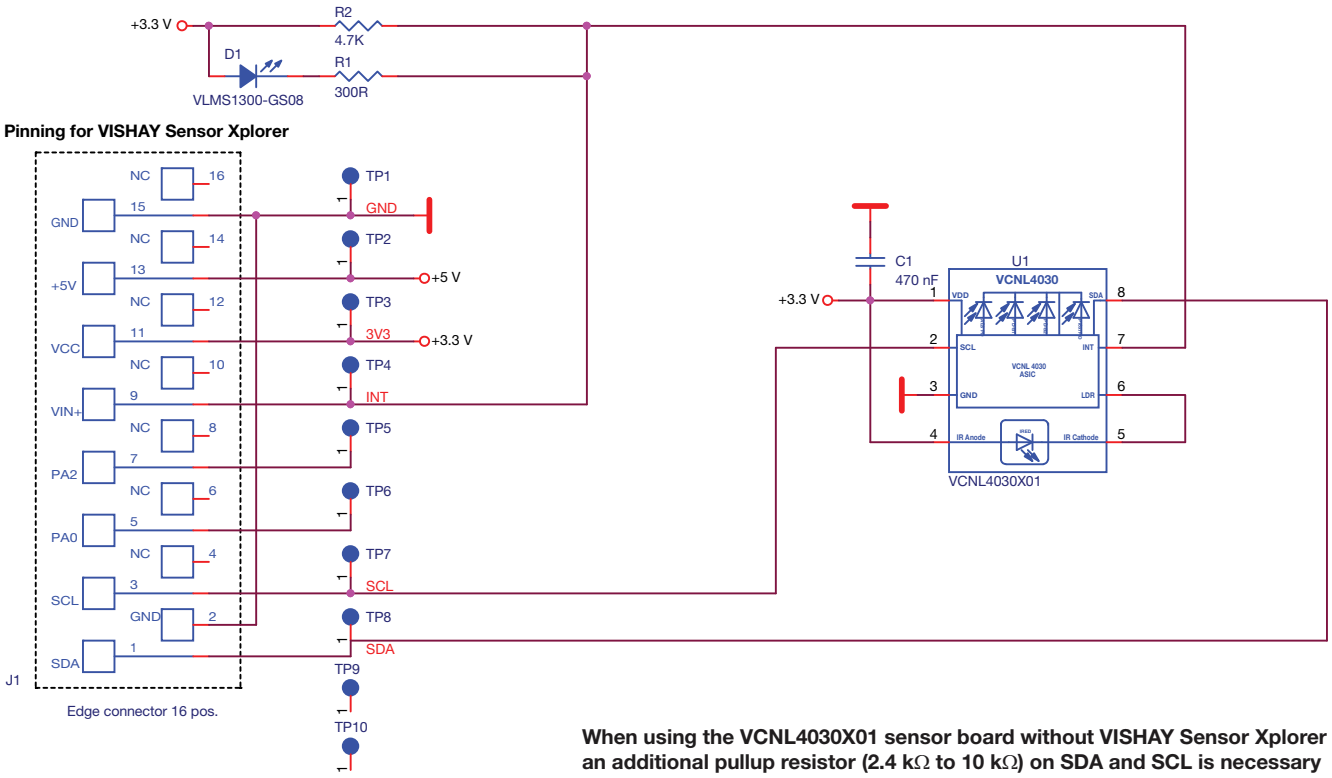
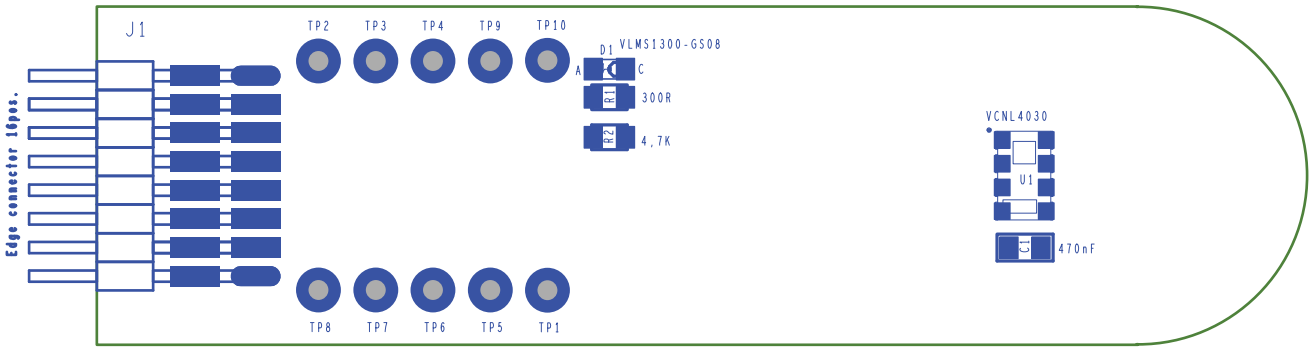


Fig. 8 - Schematic of the VCNL4030X01 Sensor Board

ASSEMBLY OF THE VCNL4030X01 SENSOR BOARD

VCNL4030X01 sensor board, rev. 3



Assembly top

BILL OF MATERIALS					
ITEM	QUANTITY	REFERENCE	PART	VALUE	PACKAGE
1	1	C1	Capacitor	470 nF	0805
2	1	D1	LED	VLMS1300	0805
3	1	R1	Resistor	300 Ω	0603
4	1	R2	Resistor	4.7 kΩ	0603
5	1	U1	Sensor	VCNL4030X01	SMD
6	1	J1	Edge connector	2 x 8 pos.	SMD

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