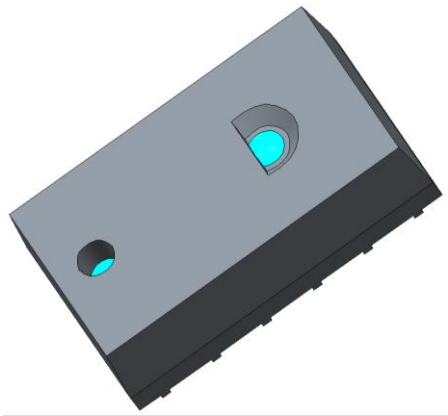
GP2AP03VT
Windows Application Manual
Time-of-Flight ranging Sensor



Contents

1. Introduction

GP2AP03VT is a high accuracy Time-of-Flight (TOF) sensor.
The purpose of this Application Manual is to describe how to use evaluation software.

2. To connect the board

Connect a GP2AP03VT Evaluation Board to the USB port of your Windows PC.
NOTE:
When you connect a board for the first time, a device driver will be installed automatically.
This driver is for FT232RL, which is a MCU located on the board.
Please click "YES" when the following message is displayed.
".NET Framework v4.5.2" will be installed.

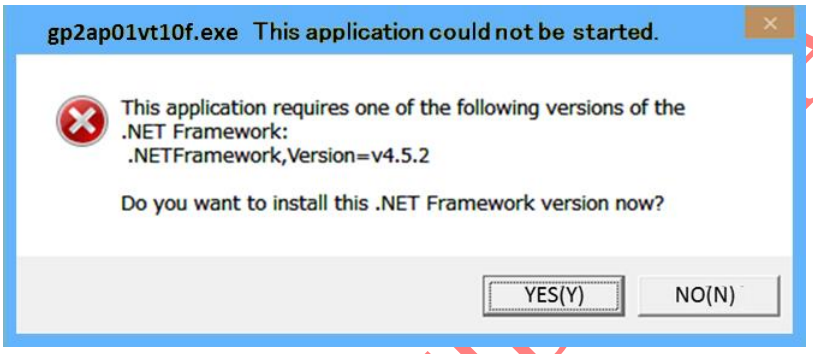


Fig.1 Error Message

3. Application

3.1. To start the application

3.1.1. Open an exe file

Open an EXE file, gp2ap03vt.exe to run the sensor evaluation program.
Then, following window appears.

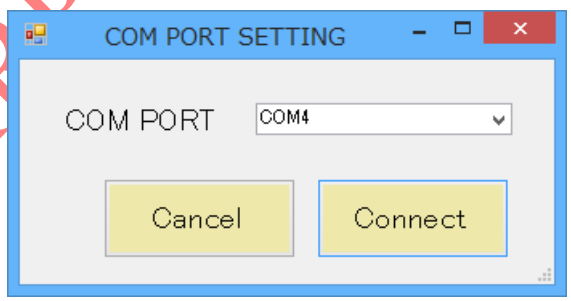


Fig.2 COM port setting

3.1.2. Select the port

Click button on the right end of combo Box to show a pulldown list.

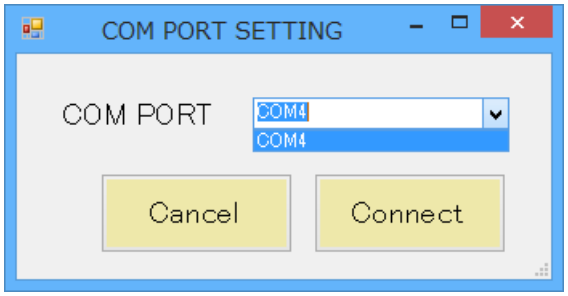


Fig.3 Selected COM port

Click an item (port) of the list to select it.

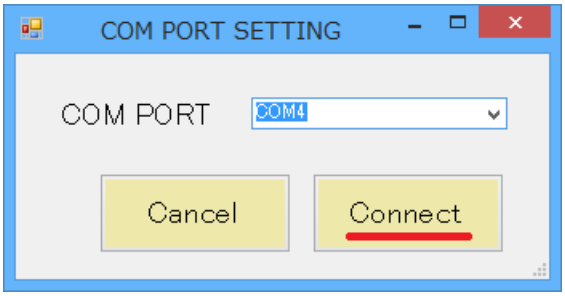


Fig.4 Selected COM port

Click “Connect”.
Then, following window appears.

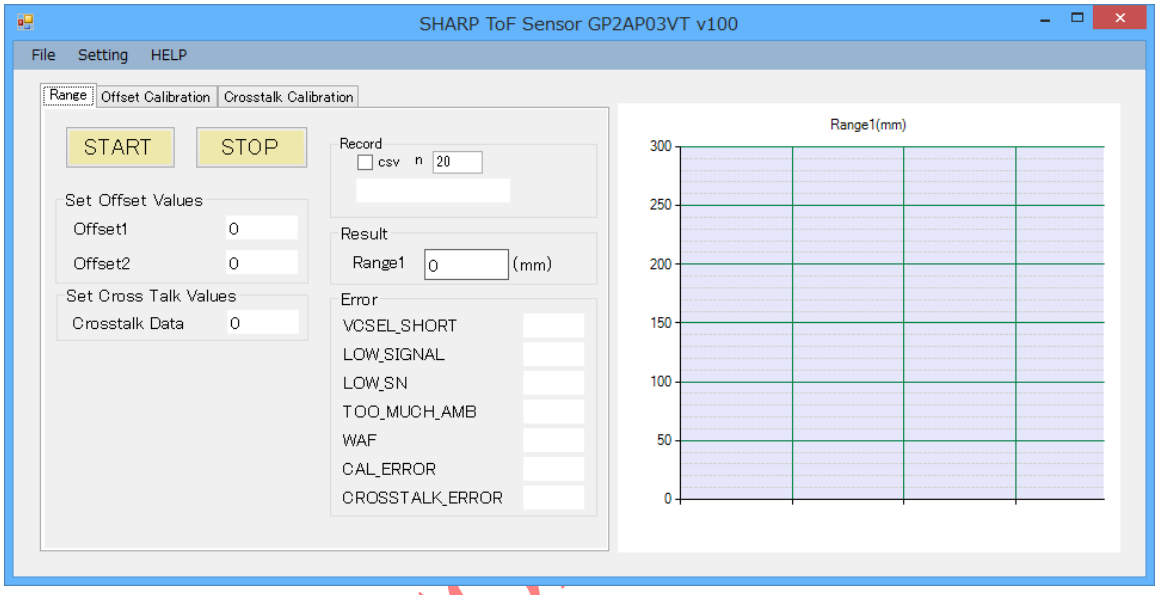


Fig.5 Main Window

3.2. To use GP2AP03VT sensor

3.2.1 Starting and stopping measurement

Here, you can start and stop the measurement of GP2AP03VT sensor, by clicking “START” button and “STOP” button, respectively.
When “START” button is clicked, parameters and values specified are set to the registers, sensor is once shutdown, and the measurement starts.
The measurement results are displayed in the box below “Result”.
The error result are displayed in the box below “Error”. Table.1 shows description of error.
Once “START” button is clicked, the successive measurement results will be plotted on the graph. The graph scrolls to the right while the measurement continues.
NOTE :
Data is logged once in every 200 milliseconds. (±20milliseconds)

The meaning of the error status is shown below.

Error Code	Error Status	Description
0x00	VALID_DATA	Valid data.
0x01	VCSEL_SHORT	When the VCSEL is short-circuited. If this error occurs, the VCSEL current will not flow inside the IC.
0x02	LOW_SIGNAL	The amount of reflected light obtained from the detected object is small.
0x04	LOW_SN	The ratio of reflected light from the detected object and disturbance light is small.
0x08	TOO_MUCH_AMB	Disturbance light is large.
0x10	WAF	Wrap around error.
0x20	CAL_ERROR	Internal calculation error.
0x80	CROSSTALK_ERROR	Crosstalk from the panel is large.

Table.1 Error Status

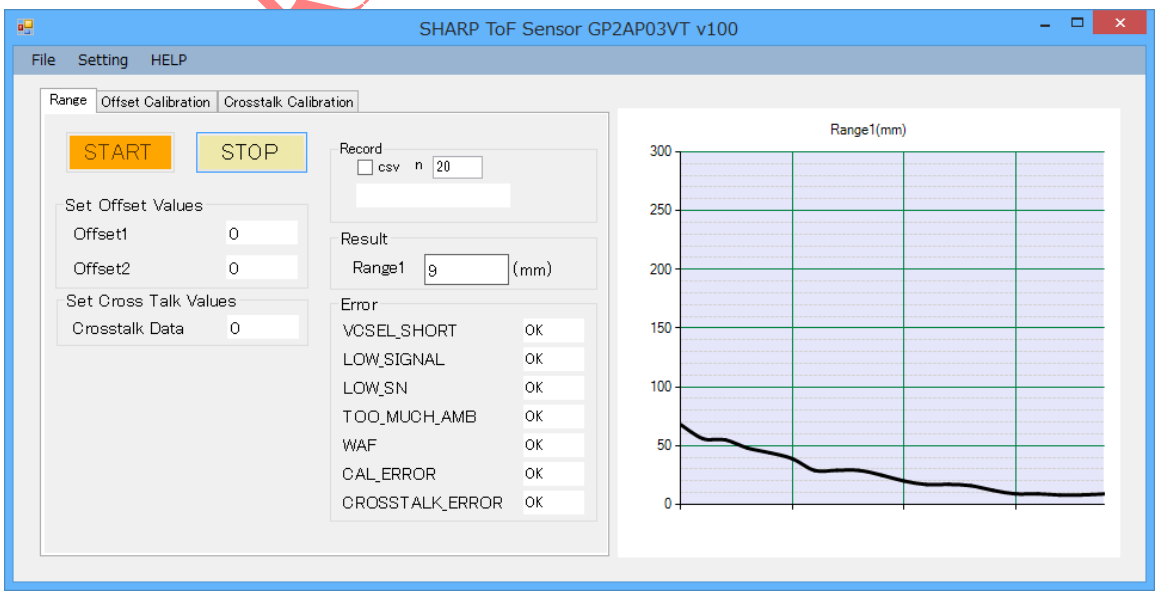


Fig6. Measurement

3.2.2. Restoring measurement results into a CSV file

You can restore measurement results using the check Box denoted "csv".
When you check "csv", a window similar to the following appears.
Here, you can specify the file into which the measurement results will be restored.
Specify a file name and then click "Save", then, the file is opened and is ready to restore the successive measurement results hereafter.

NOTE:
If you specify a file which does not exist, a new file will be generated.
If you specify an existing file, the file will be appended with new measurement results.

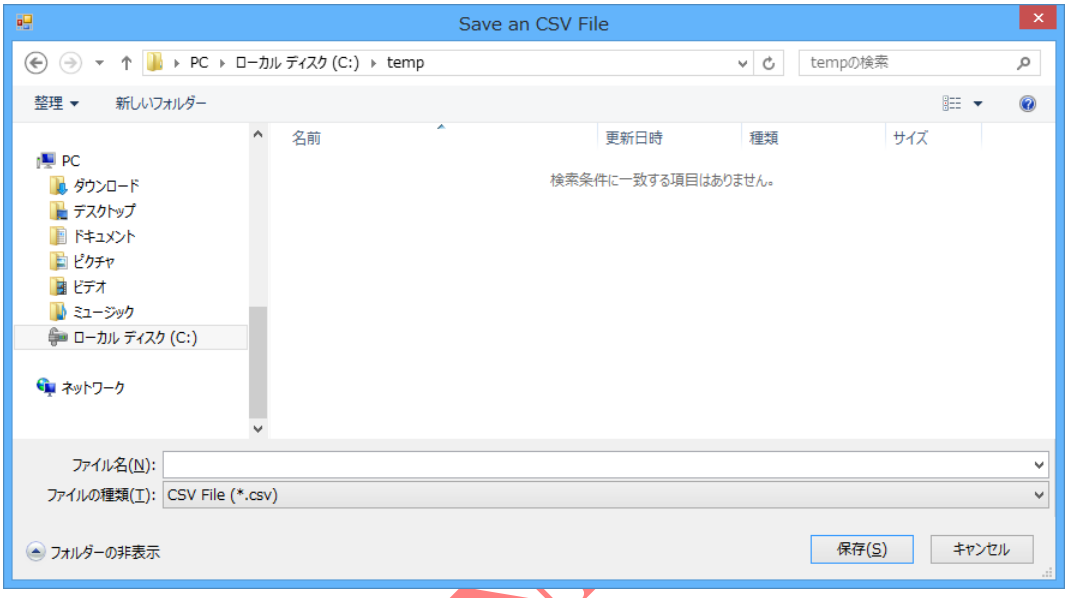


Fig7 Save csv file window

Following is the part of the output file, log.csv

Header	Description
Range1	Measured distance(mm)
Error	Error status
OFFSET1	Offset value1
OFFSET2	Offset value2
CROSSTALK	Cross talk data

Table.2 logged data and description

3.2.3. Offset calibration

Perform offset calibration before measurement.
The offset calibration can also correct the distance shift by panel attached to the sensor surface.
Click “Offset Calibration” tab in control window.

Offset calibration test requirements and conditions:
- Measurement for calibration tests should be done in a dark room.
- Target distance is 100mm.
- Target object is a White Card (88% reflectance) which size is larger than A4 paper.

Click “START CALIBRATION” button. Then, the offset correction is output to the pink textbox.

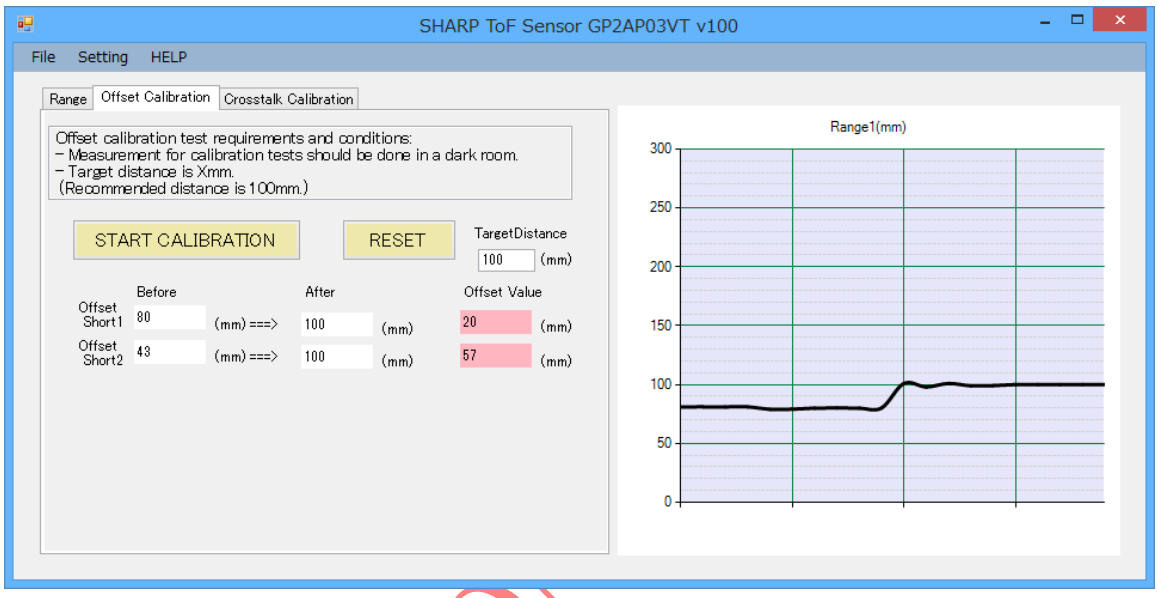


Fig.8 Offset calibration window

3.2.4. Crosstalk calibration

Crosstalk from the panel will occur when the panel is attached to the sensor.
Measurement distance may change due to this crosstalk.
The Crosstalk calibration compensates for measured distance.

Click “Crosstalk Calibration” tab in control window.

Crosstalk calibration test requirements and conditions:
- Measurement for calibration tests should be done in a dark room.
- Do not put anything within 600mm from the sensor.

Click “START CALIBRATION” button. Then the crosstalk calibration value is output to the pink text box.

NOTE:
If crosstalk calibration is failed, Cross Talk Data1 is over 0.025.

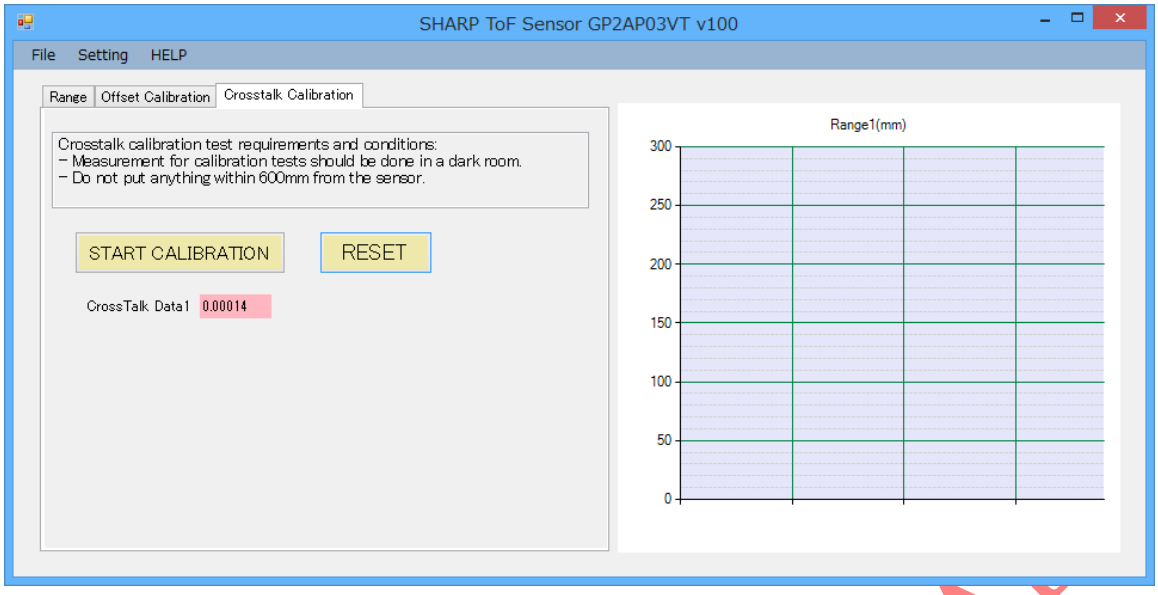


Fig.9 Crosstalk calibration window

3.2.5 To exit from the program

Click “Menu” in the menu bar of the control window, then a pulldown menu appears.
Select “Exit”, here.
Then, the control window closes and the program ends.

3.3. To get information

You can check information of sensor, evaluation board and this application.
Click “HELP” in the menu bar of the control window, then a pulldown menu appears.
Select “About” here.
If some problem occurs while using this application, please report this information.

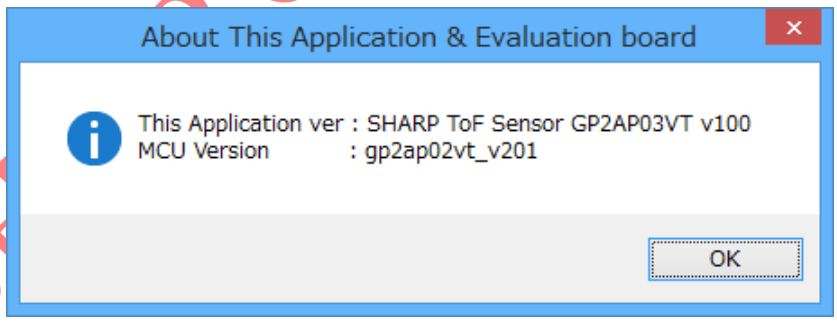


Fig.10 Information Window