QUICK START GUIDE

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PVC3000 MEMS Thermopile Vacuum Sensor Evaluation Kit

Posifa Technologies has created this evaluation kit to allow you to test our PVC3000 MEMS thermopile vacuum sensor in two different ways:

- Using Posifa's free PC software (requires Windows 10 operating system) and a third-party USB / I^2C adapter board (must be purchased separately). This is ideal for fast benchtop data collection with no programming required and as a reference for troubleshooting
- Direct I^2C communication to our evaluation board when custom software integration into your system is required

Evaluation Kit Contents:

- 1 x PVC3000 evaluation board (PTCD20-EVB-1.0)
- 2 x PVC3001 vacuum sensor units
- 1 x PVC3001-S reference sensor
- 1 x harnessed connector with PVC3000 receptacle

Evaluation Board Software

A driver program and additional required PC software are available for download here:

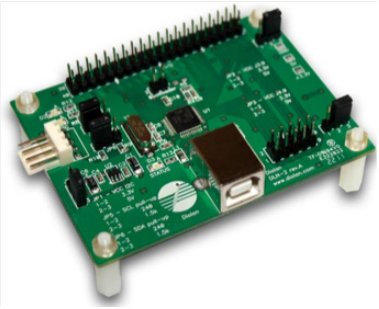
https://drive.google.com/open?id=1u-XQJeO04cJXJiey0Eb-Aex7TLmX1hJ-

Recommended USB-I2C Adapter Board

Diolan DLN-2 USB-I2C/SPI/GPIO Adapter. Available at https://diolan.com/dln-2

Configuration of DLN-2

- JP1(Vcc I2C): 2-3, 5V
- JP2: 2-3, 5V
- JP3: 2-3, 5V
- JP5 (SCL pull-up): 2-3, 1.5K
- JP6 (SDA pull-up): 2-3, 1.5K



Please note the "MS Windows Setup Package" must be installed on your PC before the DLN-2 adapter can be used. You can find the link to the download on the "DOCUMENTATION AND DOWNLOADS" tab of the DLN-2 product page.

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Set-Up Instructions

Step 1. Connect the measurement sensor to the evaluation board

- The PVC3001 measurement sensor can be mounted on two separate locations: On the board itself on the "Fixed Connector," or on the end of the "Harnessed Connector" (see Figure 1)
- We recommend connecting the PVC3001 measurement sensor to the harnessed connector for additional flexibility in mounting the measurement sensor to your vacuum test chamber
- Match the alignment tab on the PVC3001 header with that of the PVC3000 receptacle at the end of the harness

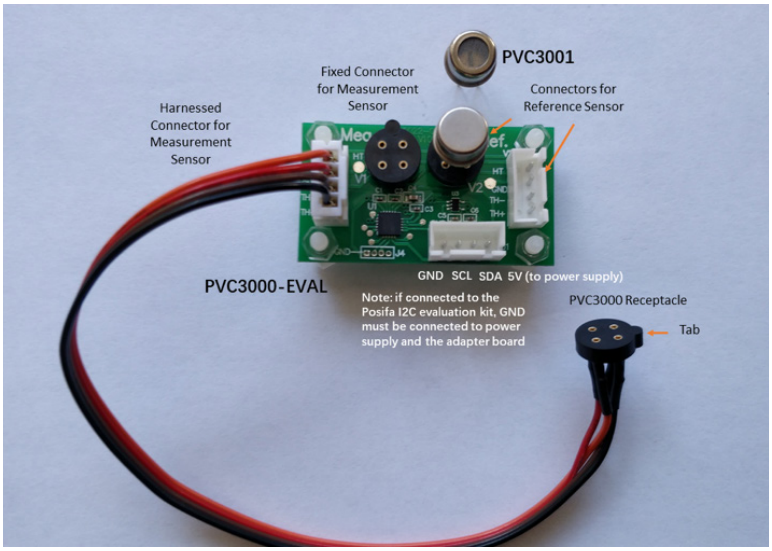


Figure 1

Step 2. Connect reference sensor to evaluation board

- Match the alignment tab on the PVC3001-S header to that of the PVC3000 receptacle for the reference sensor
- Connect the PVC3001-S to the receptacle. In Figure 1, PVC3001-S is already plugged into the fixed connector for the reference sensor

Step 3. Seal the measurement sensor PVC3001 to vacuum

- The PVC3001 sensor on the harnessed connector should be sealed to the vacuum

Step 4. Connect the Posifa evaluation board to the DLN-2 USB/I²C adapter board

- Connect the SDA and SCL pins of the Posifa evaluation board to the DLN-2 adapter board (see Figure 2)
- Do not connect the power pin from the DLN-2 adapter board to the Posifa evaluation board. Instead, connect the Vcc pin of the evaluation board directly to a 5V power supply (Figure 3)
- Connect the GND pins of the evaluation board, the adapter board, and the power supply together

Pin	Description
1	To device SCL
2	N/C
3	To device GND
4	To device SDA

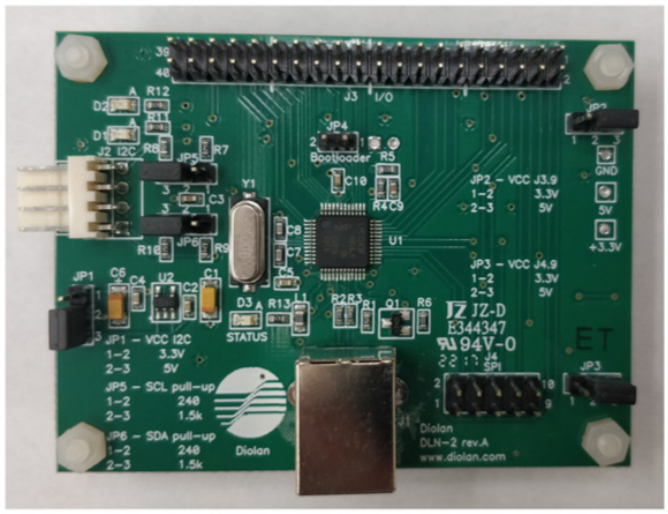


Figure 2

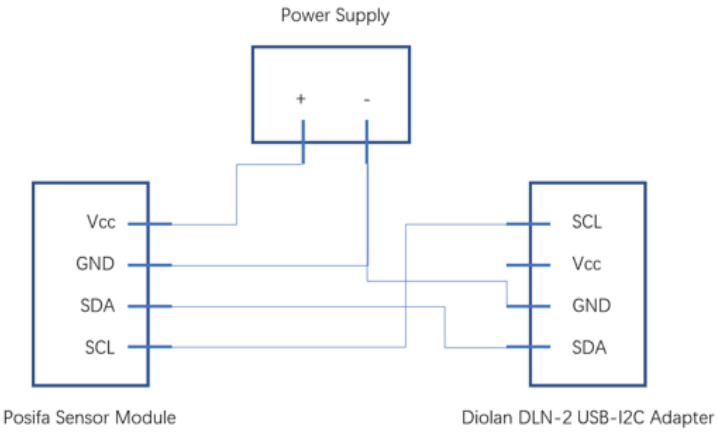
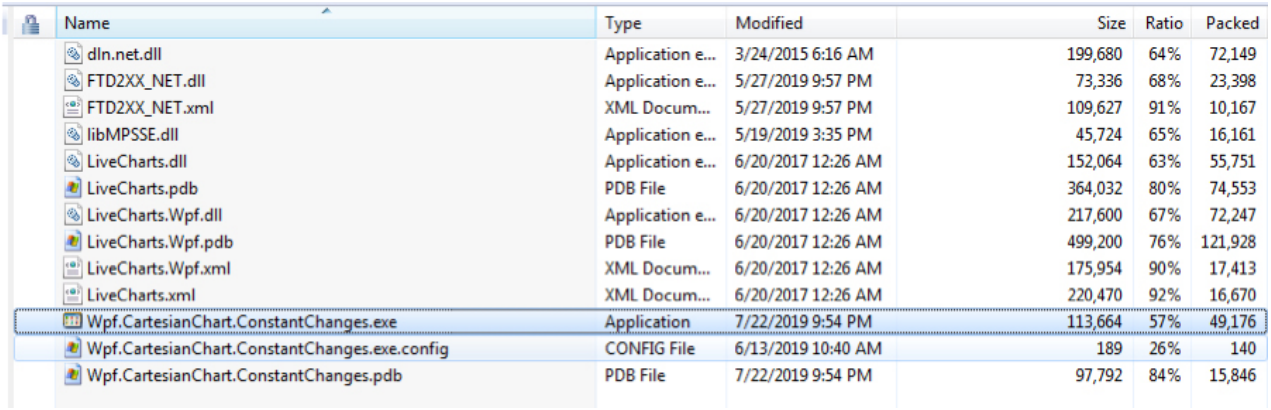


Figure 3

Step 5. Connect the DLN-2 USB-I²C adapter to a Windows PC via a USB cable (not provided)

Step 6. Unzip SensorGraph.Settings.zip

- Keep all files in the same unzipped folder. Do not edit or modify any files
- Open the single .exe file in the folder (see Figure 4)



Name	Type	Modified	Size	Ratio	Packed
dln.net.dll	Application e...	3/24/2015 6:16 AM	199,680	64%	72,149
FTD2XX_NET.dll	Application e...	5/27/2019 9:57 PM	73,336	68%	23,398
FTD2XX_NET.xml	XML Docum...	5/27/2019 9:57 PM	109,627	91%	10,167
libMPSSE.dll	Application e...	5/19/2019 3:35 PM	45,724	65%	16,161
LiveCharts.dll	Application e...	6/20/2017 12:26 AM	152,064	63%	55,751
LiveCharts.pdb	PDB File	6/20/2017 12:26 AM	364,032	80%	74,553
LiveCharts.Wpf.dll	Application e...	6/20/2017 12:26 AM	217,600	67%	72,247
LiveCharts.Wpf.pdb	PDB File	6/20/2017 12:26 AM	499,200	76%	121,928
LiveCharts.Wpf.xml	XML Docum...	6/20/2017 12:26 AM	175,954	90%	17,413
LiveCharts.xml	XML Docum...	6/20/2017 12:26 AM	220,470	92%	16,670
Wpf.CartesianChart.ConstantChanges.exe	Application	7/22/2019 9:54 PM	113,664	57%	49,176
Wpf.CartesianChart.ConstantChanges.exe.config	CONFIG File	6/13/2019 10:40 AM	189	26%	140
Wpf.CartesianChart.ConstantChanges.pdb	PDB File	7/22/2019 9:54 PM	97,792	84%	15,846

Figure 4

- In the pop-up window that appears next (Figure 5), use Select Sensor drop-down menu to select PLF Protocol:

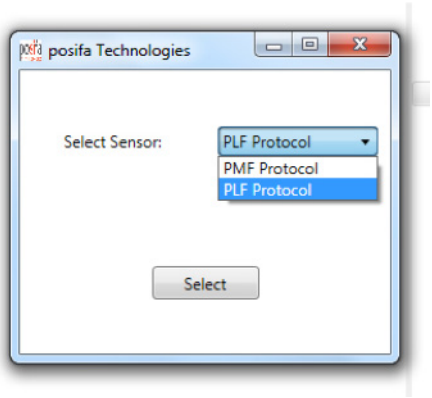


Figure 5

Step 7. Start measuring data

- A sensor data graph with time tracked on the x-axis and pressure on the y-axis will appear (Figure 6)
- Click on "Get Data" to start receiving data from the vacuum sensor

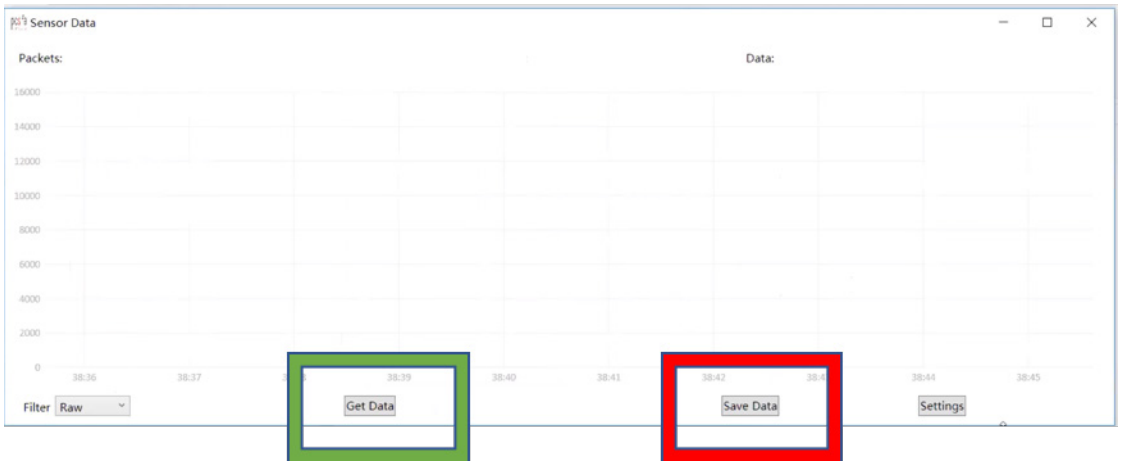


Figure 6

Step 8. Select the type of filtering you require

You may select Raw, which displays data collected directly from the evaluation board, or an n-point moving average (where n = 16, 32, 64, 128, or 256) of the data collected from the evaluation board (Figure 7).

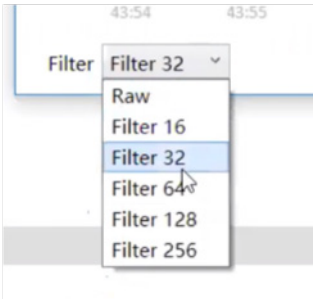
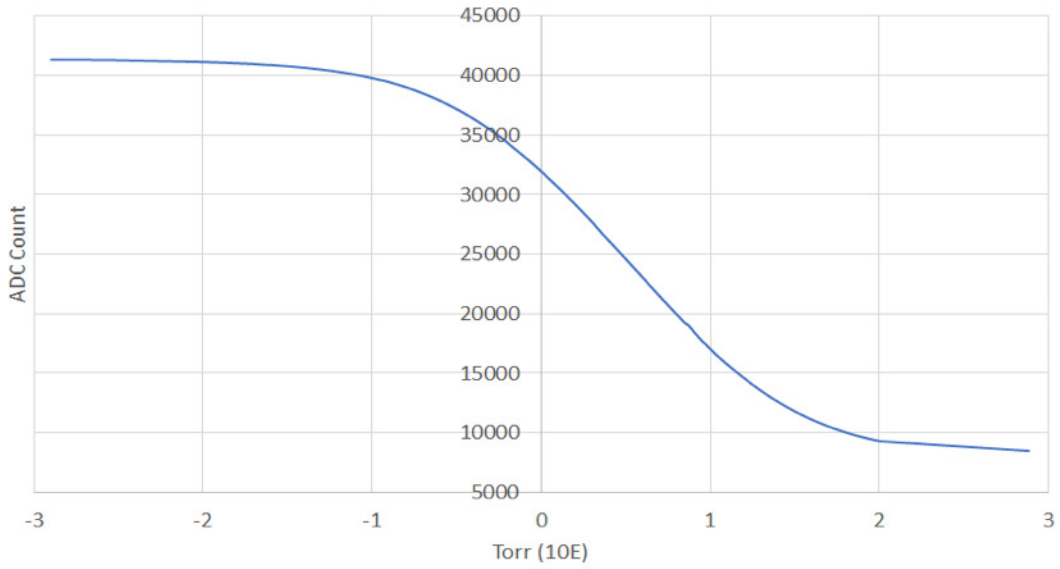


Figure 7

Step 9. Save your data

- Click on “Stop,” then click on “Save Data”
- Data is available to be saved as a .csv file

Below is a typical vacuum sensor response curve.



APPENDIX A

Default configuration of the PTCD20-EVB-1.0 board

- Gain: 8
- Excitation voltage applied to the heater of the sensor die: 1.5 V (not to be confused with the supply voltage to the evaluation board)
- Output: uncalibrated count between 0 to 65535
- Nominal output at atmosphere: 8400