
AdafruitVL6180X Library Documentation

Release 1.0

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CircuitPython module for the VL6180X distance sensor. See [examples/vl6180x_simpletest.py](#) for a demo of the usage.

CHAPTER 1

Dependencies

This driver depends on:

- [Adafruit CircuitPython](#)
- [Bus Device](#)

Please ensure all dependencies are available on the CircuitPython filesystem. This is easily achieved by downloading the [Adafruit library and driver bundle](#).

CHAPTER 2

Installing from PyPI

On supported GNU/Linux systems like the Raspberry Pi, you can install the driver locally [from PyPI](#). To install for current user:

```
pip3 install adafruit-circuitpython-vl6180x
```

To install system-wide (this may be required in some cases):

```
sudo pip3 install adafruit-circuitpython-vl6180x
```

To install in a virtual environment in your current project:

```
mkdir project-name && cd project-name
python3 -m venv .env
source .env/bin/activate
pip3 install adafruit-circuitpython-vl6180x
```


CHAPTER 3

Usage Example

See `examples/vl6180x_simpletest.py` for a demo of the usage.

CHAPTER 4

Contributing

Contributions are welcome! Please read our [Code of Conduct](#) before contributing to help this project stay welcoming.

CHAPTER 5

Documentation

For information on building library documentation, please check out [this guide](#).

6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/vl6180x_simpletest.py

```
1  # Demo of reading the range and lux from the VL6180x distance sensor and
2  # printing it every second.
3  # Author: Tony DiCola
4  import time
5
6  import board
7  import busio
8
9  import adafruit_vl6180x
10
11
12 # Create I2C bus.
13 i2c = busio.I2C(board.SCL, board.SDA)
14
15 # Create sensor instance.
16 sensor = adafruit_vl6180x.VL6180X(i2c)
17
18 # Main loop prints the range and lux every second:
19 while True:
20     # Read the range in millimeters and print it.
21     range_mm = sensor.range
22     print('Range: {0}mm'.format(range_mm))
23     # Read the light, note this requires specifying a gain value:
24     # - adafruit_vl6180x.ALS_GAIN_1 = 1x
25     # - adafruit_vl6180x.ALS_GAIN_1_25 = 1.25x
26     # - adafruit_vl6180x.ALS_GAIN_1_67 = 1.67x
27     # - adafruit_vl6180x.ALS_GAIN_2_5 = 2.5x
```

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```

28 # - adafruit_vl6180x.ALS_GAIN_5 = 5x
29 # - adafruit_vl6180x.ALS_GAIN_10 = 10x
30 # - adafruit_vl6180x.ALS_GAIN_20 = 20x
31 # - adafruit_vl6180x.ALS_GAIN_40 = 40x
32 light_lux = sensor.read_lux(adafruit_vl6180x.ALS_GAIN_1)
33 print('Light (1x gain): {0}lux'.format(light_lux))
34 # Delay for a second.
35 time.sleep(1.0)

```

6.2 adafruit_vl6180x

CircuitPython module for the VL6180X distance sensor. See examples/simpletest.py for a demo of the usage.

- Author(s): Tony DiCola

6.2.1 Implementation Notes

Hardware:

- Adafruit VL6180X Time of Flight Distance Ranging Sensor (VL6180) (Product ID: 3316)

Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based boards: <https://github.com/adafruit/circuitpython/releases>
- Adafruit's Bus Device library: https://github.com/adafruit/Adafruit_CircuitPython_BusDevice

class `adafruit_vl6180x.VL6180X` (*i2c*, *address=41*)

Create an instance of the VL6180X distance sensor. You must pass in the following parameters:

Parameters `i2c` – An instance of the I2C bus connected to the sensor.

Optionally you can specify:

Parameters `address` – The I2C address of the sensor. If not specified the sensor's default value will be assumed.

`range`

Read the range of an object in front of sensor and return it in mm.

`range_status`

Retrieve the status/error from a previous range read. This will return a constant value such as:

- `ERROR_NONE` - No error
- `ERROR_SYSERR_1` - System error 1 (see datasheet)
- `ERROR_SYSERR_5` - System error 5 (see datasheet)
- `ERROR_ECEFAIL` - ECE failure
- `ERROR_NOCONVERGE` - No convergence
- `ERROR_RANGEIGNORE` - Outside range ignored
- `ERROR_SNR` - Too much noise
- `ERROR_RAWUFLOW` - Raw value underflow

- ERROR_RAWOFLOW - Raw value overflow
- ERROR_RANGEUFLOW - Range underflow
- ERROR_RANGEOFLOW - Range overflow

read_lux (*gain*)

Read the lux (light value) from the sensor and return it. Must specify the gain value to use for the lux reading: - ALS_GAIN_1 = 1x - ALS_GAIN_1_25 = 1.25x - ALS_GAIN_1_67 = 1.67x - ALS_GAIN_2_5 = 2.5x - ALS_GAIN_5 = 5x - ALS_GAIN_10 = 10x - ALS_GAIN_20 = 20x - ALS_GAIN_40 = 40x

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