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# **Adafruit VL53L0X Library Documentation**

*Release 1.0*

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CircuitPython driver for the VL53L0X distance sensor.



# CHAPTER 1

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## Dependencies

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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

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### Installing from PyPI

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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-v15310x
```

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

```
sudo pip3 install adafruit-circuitpython-v15310x
```

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-v15310x
```



## CHAPTER 3

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### Usage Example

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See usage in the `examples/v15310x_simpletest.py` file.



## CHAPTER 4

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### Contributing

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



## CHAPTER 5

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### Documentation

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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/vl53l0x\_simpletest.py

```
1 # Simple demo of the VL53L0X distance sensor.
2 # Will print the sensed range/distance every second.
3 import time
4
5 import board
6 import busio
7
8 import adafruit_vl53l0x
9
10 # Initialize I2C bus and sensor.
11 i2c = busio.I2C(board.SCL, board.SDA)
12 vl53 = adafruit_vl53l0x.VL53L0X(i2c)
13
14 # Optionally adjust the measurement timing budget to change speed and accuracy.
15 # See the example here for more details:
16 # https://github.com/pololu/vl53l0x-arduino/blob/master/examples/Single/Single.ino
17 # For example a higher speed but less accurate timing budget of 20ms:
18 #vl53.measurement_timing_budget = 20000
19 # Or a slower but more accurate timing budget of 200ms:
20 #vl53.measurement_timing_budget = 200000
21 # The default timing budget is 33ms, a good compromise of speed and accuracy.
22
23 # Main loop will read the range and print it every second.
24 while True:
25     print('Range: {0}mm'.format(vl53.range))
26     time.sleep(1.0)
```

## 6.2 adafruit\_vl53l0x

CircuitPython driver for the VL53L0X distance sensor. This code is adapted from the pololu driver here: <https://github.com/pololu/vl53l0x-arduino>

See usage in the examples/vl53l0x\_simpletest.py file.

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### 6.2.1 Implementation Notes

#### Hardware:

- Adafruit VL53L0X Time of Flight Distance Sensor - ~30 to 1000mm (Product ID: 3317)

#### 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](https://github.com/adafruit/Adafruit_CircuitPython_BusDevice)

**class** `adafruit_vl53l0x.VL53L0X` (*i2c*, *address=41*, *io\_timeout\_s=0*)  
Driver for the VL53L0X distance sensor.

**measurement\_timing\_budget**

The measurement timing budget in microseconds.

**range**

Perform a single reading of the range for an object in front of the sensor and return the distance in millimeters.

**signal\_rate\_limit**

The signal rate limit in mega counts per second.

## CHAPTER 7

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### Indices and tables

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