Adafruit VL53L0X Library Documentation

Release 1.0

Tony DiCola

Jan 15, 2019

Contents

CircuitPython driver for the VL53L0X distance sensor.

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

Usage Example

See usage in the examples/vl53l0x_simpletest.py file.

Contributing

Contributions are welcome! Please read our Code of Conduct before contributing to help this project stay welcoming.

Building locally

To build this library locally you'll need to install the [circuitpython-build-tools](#) package.

```
python3 -m venv .env
source .env/bin/activate
pip install circuitpython-build-tools
```

Once installed, make sure you are in the virtual environment:

```
source .env/bin/activate
```

Then run the build:

```
circuitpython-build-bundles --filename_prefix adafruit-circuitpython-vl53l0x --
→library_location .
```

4.1 Sphinx documentation

Sphinx is used to build the documentation based on rST files and comments in the code. First, install dependencies (feel free to reuse the virtual environment from above):

```
python3 -m venv .env
source .env/bin/activate
pip install Sphinx sphinx-rtd-theme
```

Now, once you have the virtual environment activated:

```
cd docs
sphinx-build -E -W -b html . _build/html
```

This will output the documentation to `docs/_build/html`. Open the index.html in your browser to view them. It will also (due to -W) error out on any warning like Travis will. This is a good way to locally verify it will pass.

CHAPTER 5

Table of Contents

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/vl53l0x_simpletest.py

```python
# Simple demo of the VL53L0X distance sensor.
# Will print the sensed range/distance every second.
import time

import board
import busio

import adafruit_vl53l0x

# Initialize I2C bus and sensor.
i2c = busio.I2C(board.SCL, board.SDA)
vl53 = adafruit_vl53l0x.VL53L0X(i2c)

# Optionally adjust the measurement timing budget to change speed and accuracy.
# See the example here for more details:
#   https://github.com/pololu/vl53l0x-arduino/blob/master/examples/Single/Single.ino
# For example a higher speed but less accurate timing budget of 20ms:
#vl53.measurement_timing_budget = 20000
# Or a slower but more accurate timing budget of 200ms:
#vl53.measurement_timing_budget = 200000
# The default timing budget is 33ms, a good compromise of speed and accuracy.

# Main loop will read the range and print it every second.
while True:
    print('Range: {0}mm'.format(vl53.range))
    time.sleep(1.0)
```

5.2 `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.

- Author(s): Tony DiCola

5.2.1 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

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.

Indices and tables

- genindex
- modindex
- search

Python Module Index

a

Index