
Adafruit VC0706 Library Documentation

Release 1.0

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Aug 20, 2018

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CircuitPython module for use with the [VC0706 serial TTL camera](#). Allows basic image capture and download of image data from the camera over a serial connection. See examples for demo of saving image to a SD card (must be wired up separately) or internally.

CHAPTER 1

Dependencies

This driver depends on:

- [Adafruit CircuitPython](#)

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 [examples/snapshot.py](#).

CHAPTER 3

Contributing

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

CHAPTER 4

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-vc0706 --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.

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/snapshot_internal.py

```
1  # VC0706 image capture to internal storage demo.
2  # You must wire up the VC0706 to the board's serial port, and enable writes
3  # to the internal filesystem by following this page to edit boot.py:
4  #   https://learn.adafruit.com/cpu-temperature-logging-with-circuit-python/writing-to-
   ↳the-filesystem
5  import time
6
7  import board
8  import busio
9
10 import adafruit_vc0706
11
12 # Configuration:
13 RX_PIN = board.RX      # RX pin of board, connected to VC0706 TX
14 TX_PIN = board.TX      # TX pin of board, connected to VC0706 RX
15 IMAGE_FILE = '/image.jpg' # Full path to file name to save captured image.
16                          # Will overwrite!
17
18 # Setup SPI bus (hardware SPI).
19 spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
20
21 # Setup VC0706.
22 vc0706 = adafruit_vc0706.VC0706(RX_PIN, TX_PIN)
23
24 # Print the version string from the camera.
25 print('VC0706 version:')
26 print(vc0706.version)
```

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```

27
28 # Set the image size.
29 vc0706.image_size = adafruit_vc0706.IMAGE_SIZE_640x480 # Or set VC0706_320x240 or
30                                                         # VC0706_160x120
31 # Note you can also read the property and compare against those values to
32 # see the current size:
33 size = vc0706.image_size
34 if size == adafruit_vc0706.IMAGE_SIZE_640x480:
35     print('Using 640x480 size image.')
36 elif size == adafruit_vc0706.IMAGE_SIZE_320x240:
37     print('Using 320x240 size image.')
38 elif size == adafruit_vc0706.IMAGE_SIZE_160x120:
39     print('Using 160x120 size image.')
40
41 # Take a picture.
42 print('Taking a picture in 3 seconds...')
43 time.sleep(3)
44 print('SNAP!')
45 if not vc0706.take_picture():
46     raise RuntimeError('Failed to take picture!')
47
48 # Print size of picture in bytes.
49 frame_length = vc0706.frame_length
50 print('Picture size (bytes): {}'.format(frame_length))
51
52 # Open a file for writing (overwriting it if necessary).
53 # This will write 50 bytes at a time using a small buffer.
54 # You MUST keep the buffer size under 100!
55 print('Writing image: {}'.format(IMAGE_FILE), end='')
56 with open(IMAGE_FILE, 'wb') as outfile:
57     wcount = 0
58     while frame_length > 0:
59         # Compute how much data is left to read as the lesser of remaining bytes
60         # or the copy buffer size (32 bytes at a time). Buffer size MUST be
61         # a multiple of 4 and under 100. Stick with 32!
62         to_read = min(frame_length, 32)
63         copy_buffer = bytearray(to_read)
64         # Read picture data into the copy buffer.
65         if vc0706.read_picture_into(copy_buffer) == 0:
66             raise RuntimeError('Failed to read picture frame data!')
67         # Write the data to SD card file and decrement remaining bytes.
68         outfile.write(copy_buffer)
69         frame_length -= 32
70         # Print a dot every 2k bytes to show progress.
71         wcount += 1
72         if wcount >= 64:
73             print('.', end='')
74             wcount = 0
75 print()
76 print('Finished!')

```

Listing 2: examples/snapshot.py

```

1 # VC0706 image capture to SD card demo.
2 # You must wire up the VC0706 to the board's serial port, and a SD card holder
3 # to the board's SPI bus. Use the Feather M0 Adalogger as it includes a SD

```

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```

4  # card holder pre-wired to the board--this sketch is setup to use the Adalogger!
5  # In addition you MUST also install the following dependent SD card library:
6  #   https://github.com/adafruit/Adafruit_CircuitPython_SD
7  # See the guide here for more details on using SD cards with CircuitPython:
8  #   https://learn.adafruit.com/micropython-hardware-sd-cards
9  import time
10
11 import board
12 import busio
13 import digitalio
14 import storage
15
16 import adafruit_sdcard
17 import adafruit_vc0706
18
19
20 # Configuration:
21 SD_CS_PIN = board.SD_CS # CS for SD card (SD_CS is for Feather Adalogger)
22 RX_PIN = board.RX       # RX pin of board, connected to VC0706 TX
23 TX_PIN = board.TX       # TX pin of board, connected to VC0706 RX
24 IMAGE_FILE = '/sd/image.jpg' # Full path to file name to save captured image.
25                               # Will overwrite!
26
27 # Setup SPI bus (hardware SPI).
28 spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
29
30 # Setup SD card and mount it in the filesystem.
31 sd_cs = digitalio.DigitalInOut(SD_CS_PIN)
32 sdcard = adafruit_sdcard.SDCard(spi, sd_cs)
33 vfs = storage.VfsFat(sdcard)
34 storage.mount(vfs, '/sd')
35
36 # Setup VC0706.
37 vc0706 = adafruit_vc0706.VC0706(RX_PIN, TX_PIN)
38
39 # Print the version string from the camera.
40 print('VC0706 version:')
41 print(vc0706.version)
42
43 # Set the image size.
44 vc0706.image_size = adafruit_vc0706.IMAGE_SIZE_640x480 # Or set IMAGE_SIZE_320x240 or
45                                                         # IMAGE_SIZE_160x120
46 # Note you can also read the property and compare against those values to
47 # see the current size:
48 size = vc0706.image_size
49 if size == adafruit_vc0706.IMAGE_SIZE_640x480:
50     print('Using 640x480 size image.')
51 elif size == adafruit_vc0706.IMAGE_SIZE_320x240:
52     print('Using 320x240 size image.')
53 elif size == adafruit_vc0706.IMAGE_SIZE_160x120:
54     print('Using 160x120 size image.')
55
56 # Take a picture.
57 print('Taking a picture in 3 seconds...')
58 time.sleep(3)
59 print('SNAP!')
60 if not vc0706.take_picture():

```

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```

61     raise RuntimeError('Failed to take picture!')
62
63     # Print size of picture in bytes.
64     frame_length = vc0706.frame_length
65     print('Picture size (bytes): {}'.format(frame_length))
66
67     # Open a file for writing (overwriting it if necessary).
68     # This will write 50 bytes at a time using a small buffer.
69     # You MUST keep the buffer size under 100!
70     print('Writing image: {}'.format(IMAGE_FILE), end='')
71     with open(IMAGE_FILE, 'wb') as outfile:
72         wcount = 0
73         while frame_length > 0:
74             # Compute how much data is left to read as the lesser of remaining bytes
75             # or the copy buffer size (32 bytes at a time). Buffer size MUST be
76             # a multiple of 4 and under 100. Stick with 32!
77             to_read = min(frame_length, 32)
78             copy_buffer = bytearray(to_read)
79             # Read picture data into the copy buffer.
80             if vc0706.read_picture_into(copy_buffer) == 0:
81                 raise RuntimeError('Failed to read picture frame data!')
82             # Write the data to SD card file and decrement remaining bytes.
83             outfile.write(copy_buffer)
84             frame_length -= 32
85             # Print a dot every 2k bytes to show progress.
86             wcount += 1
87             if wcount >= 64:
88                 print('.', end='')
89                 wcount = 0
90     print()
91     print('Finished!')

```

5.2 adafruit_vc0706

VC0706 serial TTL camera module. Allows basic image capture and download of image data from the camera over a serial connection. See examples for demo of saving image to a SD card (must be wired up separately).

- Author(s): Tony DiCola

5.2.1 Implementation Notes

Hardware:

- Adafruit TTL Serial JPEG Camera with NTSC Video (Product ID: 397)

Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based boards: <https://github.com/adafruit/circuitpython/releases>

class adafruit_vc0706.VC0706(rx, tx, *, baudrate=38400, timeout=250, buffer_size=100)

Driver for VC0706 serial TTL camera module.

Parameters

- **rx** (*Pin*) – Receive pin

- **tx** (*Pin*) – Transmit pin
- **baudrate** (*int*) – Serial connection speed
- **timeout** (*int*) – Read timeout in seconds
- **buffer_size** (*int*) – Receive buffer size

frame_length

Return the length in bytes of the currently capture frame/picture.

image_size

Get the current image size, will return a value of IMAGE_SIZE_640x480, IMAGE_SIZE_320x240, or IMAGE_SIZE_160x120.

read_picture_into (*buf*)

Read the next bytes of frame/picture data into the provided buffer. Returns the number of bytes written to the buffer (might be less than the size of the buffer). Buffer MUST be a multiple of 4 and 100 or less. Suggested buffer size is 32.

take_picture ()

Tell the camera to take a picture. Returns True if successful.

version

Return camera version byte string.

CHAPTER 6

Indices and tables

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