
AdafruitEPD Library Documentation

Release 1.0

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This library is for using CircuitPython with e-ink displays with built in SRAM.

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

Usage Example

```
import digitalio
import busio
import board
from adafruit_epd.epd import Adafruit_EPD
from adafruit_epd.il0373 import Adafruit_IL0373

# create the spi device and pins we will need
spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
ecs = digitalio.DigitalInOut(board.D10)
dc = digitalio.DigitalInOut(board.D9)
srcs = digitalio.DigitalInOut(board.D8)
rst = digitalio.DigitalInOut(board.D7)
busy = digitalio.DigitalInOut(board.D6)

# give them all to our driver
display = Adafruit_IL0373(152, 152, rst, dc, busy, srcs, ecs, spi)

# clear the buffer
display.clear_buffer()

r_width = 5
r_pos = display.height

#draw some rectangles!
color = Adafruit_EPD.BLACK
while r_pos > display.height/2:
    if r_pos < display.height - 50:
        color = Adafruit_EPD.RED
    display.rect(display.width - r_pos, display.height - r_pos,
                display.width - 2*(display.width - r_pos),
                display.height - 2*(display.height - r_pos), color)
    r_pos = r_pos - r_width

display.display()
```


CHAPTER 3

Contributing

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

4.1 Zip release files

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-epd --library_
↪location .
```

4.2 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.

Table of Contents

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/epd_simpletest.py

```

1  import digitalio
2  import busio
3  import board
4  from adafruit_epd.epd import Adafruit_EPD
5  from adafruit_epd.il0373 import Adafruit_IL0373
6  from adafruit_epd.il91874 import Adafruit_IL91874 # pylint: disable=unused-import
7  from adafruit_epd.il0398 import Adafruit_IL0398 # pylint: disable=unused-import
8
9  # create the spi device and pins we will need
10 spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
11 ecs = digitalio.DigitalInOut(board.D10)
12 dc = digitalio.DigitalInOut(board.D9)
13 srcs = digitalio.DigitalInOut(board.D7) # can be None to use internal memory
14 rst = digitalio.DigitalInOut(board.D11) # can be None to not use this pin
15 busy = digitalio.DigitalInOut(board.D12) # can be None to not use this pin
16
17 # give them all to our driver
18 print("Creating display")
19 #display = Adafruit_IL91874(176, 264, spi, # 2.7" Tri-color display
20 #display = Adafruit_IL0373(152, 152, spi, # 1.54" Tri-color display
21 #display = Adafruit_IL0373(128, 296, spi, # 2.9" Tri-color display
22 #display = Adafruit_IL0398(400, 300, spi, # 4.2" Tri-color display
23 display = Adafruit_IL0373(104, 212, spi, # 2.13" Tri-color display
24             cs_pin=ecs, dc_pin=dc, sramcs_pin=srcs,
25             rst_pin=rst, busy_pin=busy)
26
27 # IF YOU HAVE A FLEXIBLE DISPLAY (2.13" or 2.9") uncomment these lines!

```

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```

28 #display.set_black_buffer(1, False)
29 #display.set_color_buffer(1, False)
30
31 display.rotation = 1
32
33 # clear the buffer
34 print("Clear buffer")
35 display.fill(Adafruit_EPDM.WHITE)
36 display.pixel(10, 100, Adafruit_EPDM.BLACK)
37
38 print("Draw Rectangles")
39 display.fill_rect(5, 5, 10, 10, Adafruit_EPDM.RED)
40 display.rect(0, 0, 20, 30, Adafruit_EPDM.BLACK)
41
42 print("Draw lines")
43 display.line(0, 0, display.width-1, display.height-1, Adafruit_EPDM.BLACK)
44 display.line(0, display.height-1, display.width-1, 0, Adafruit_EPDM.RED)
45
46 print("Draw text")
47 display.text('hello world', 25, 10, Adafruit_EPDM.BLACK)
48 display.display()

```

5.2 adafruit_epd.epd - Adafruit EPD - ePaper display driver

CircuitPython driver for Adafruit ePaper display breakouts * Author(s): Dean Miller

```
class adafruit_epd.epd.Adafruit_EPDM (width, height, spi, cs_pin, dc_pin, sramcs_pin, rst_pin, busy_pin)
```

Base class for EPD displays

command (*cmd, data=None, end=True*)
Send command byte to display.

display ()
show the contents of the display buffer

fill (*color*)
fill the screen with the passed color

fill_rect (*x, y, width, height, color*)
fill a rectangle with the passed color

hardware_reset ()
If we have a reset pin, do a hardware reset by toggling it

height
The height of the display, accounting for rotation

hline (*x, y, width, color*)
draw a horizontal line

image (*image*)
Set buffer to value of Python Imaging Library image. The image should be in RGB mode and a size equal to the display size.

line (*x_0, y_0, x_1, y_1, color*)
Draw a line from (x_0, y_0) to (x_1, y_1) in passed color

pixel (*x, y, color*)

draw a single pixel in the display buffer

power_down ()

Power down the display, must be implemented in subclass

power_up ()

Power up the display in preparation for writing RAM and updating. must be implemented in subclass

rect (*x, y, width, height, color*)

draw a rectangle

rotation

The rotation of the display, can be one of (0, 1, 2, 3)

set_black_buffer (*index, inverted*)

Set the index for the black buffer data (0 or 1) and whether its inverted

set_color_buffer (*index, inverted*)

Set the index for the color buffer data (0 or 1) and whether its inverted

set_ram_address (*x, y*)

Set the RAM address location, must be implemented in subclass

text (*string, x, y, color, *, font_name='font5x8.bin'*)

Write text string at location (x, y) in given color, using font file

update ()

Update the display from internal memory, must be implemented in subclass

vline (*x, y, height, color*)

draw a vertical line

width

The width of the display, accounting for rotation

write_ram (*index*)

Send the one byte command for starting the RAM write process. Returns the byte read at the same time over SPI. index is the RAM buffer, can be 0 or 1 for tri-color displays. must be implemented in subclass

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Indices and tables

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