
AdafruitPCD8544 Library Documentation

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A display control library for Nokia 5110 PCD8544 monochrome displays

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](#).

1.1 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-pcd8544
```

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

```
sudo pip3 install adafruit-circuitpython-pcd8544
```

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-pcd8544
```


CHAPTER 2

Usage Example

See examples folder for demos of pixels, lines, and text!

CHAPTER 3

Contributing

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

CHAPTER 4

Documentation

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

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/pcd8544_simpletest.py

```
1 import time
2 import board
3 import busio
4 import digitalio
5
6 import adafruit_pcd8544
7
8 # Initialize SPI bus and control pins
9 spi = busio.SPI(board.SCK, MOSI=board.MOSI)
10 dc = digitalio.DigitalInOut(board.D6) # data/command
11 cs = digitalio.DigitalInOut(board.D5) # Chip select
12 reset = digitalio.DigitalInOut(board.D9) # reset
13
14 display = adafruit_pcd8544.PCD8544(spi, dc, cs, reset)
15
16 display.bias = 4
17 display.contrast = 60
18
19 # Turn on the Backlight LED
20 backlight = digitalio.DigitalInOut(board.D10) # backlight
21 backlight.switch_to_output()
22 backlight.value = True
23
24 print("Pixel test")
25 # Clear the display. Always call show after changing pixels to make the display
26 # update visible!
27 display.fill(0)
```

(continues on next page)

```
28 display.show()
29
30 # Set a pixel in the origin 0,0 position.
31 display.pixel(0, 0, 1)
32 # Set a pixel in the middle position.
33 display.pixel(display.width // 2, display.height // 2, 1)
34 # Set a pixel in the opposite corner position.
35 display.pixel(display.width - 1, display.height - 1, 1)
36 display.show()
37 time.sleep(2)
38
39 print("Lines test")
40 # we'll draw from corner to corner, lets define all the pair coordinates here
41 corners = (
42     (0, 0),
43     (0, display.height - 1),
44     (display.width - 1, 0),
45     (display.width - 1, display.height - 1),
46 )
47
48 display.fill(0)
49 for corner_from in corners:
50     for corner_to in corners:
51         display.line(corner_from[0], corner_from[1], corner_to[0], corner_to[1], 1)
52 display.show()
53 time.sleep(2)
54
55 print("Rectangle test")
56 display.fill(0)
57 w_delta = display.width / 10
58 h_delta = display.height / 10
59 for i in range(11):
60     display.rect(0, 0, int(w_delta * i), int(h_delta * i), 1)
61 display.show()
62 time.sleep(2)
63
64 print("Text test")
65 display.fill(0)
66 display.text("hello world", 0, 0, 1)
67 display.text("this is the", 0, 8, 1)
68 display.text("CircuitPython", 0, 16, 1)
69 display.text("adafruit lib-", 0, 24, 1)
70 display.text("rary for the", 0, 32, 1)
71 display.text("PCD8544! :) ", 0, 40, 1)
72
73 display.show()
74
75 while True:
76     display.invert = True
77     time.sleep(0.5)
78     display.invert = False
79     time.sleep(0.5)
```


5.2 adafruit_pcd8544

A display control library for Nokia 5110 PCD8544 monochrome displays

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5.2.1 Implementation Notes

Hardware:

- [Nokia 5110 PCD8544 Display](#)

Software and Dependencies:

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

```
class adafruit_pcd8544.PCD8544 (spi, dc_pin, cs_pin, reset_pin=None, *, contrast=80, bias=4,  
                                baudrate=1000000)  
    Nokia 5110/3310 PCD8544-based LCD display.
```

bias

The cached bias value

contrast

The cached contrast value

extended_command (*cmd*)

Send a command in extended mode

invert

Whether the display is inverted, cached value

reset ()

Reset the display

show ()

write out the frame buffer via SPI

write_cmd (*cmd*)

Send a command to the SPI device

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