cfag12864b LCD Driver Documentation

License: GPLv2
Author & Maintainer: Miguel Ojeda <ojeda@kernel.org>
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1. Driver Information

This driver supports a cfag12864b LCD.

2. Device Information

Manufacturer: Crystalfontz
Device Name: Crystalfontz 12864b LCD Series
Device Code: cfag12864b
Webpage: http://www.crystalfontz.com
Device Webpage: http://www.crystalfontz.com/products/12864b/
Type: LCD (Liquid Crystal Display)
Width: 128
Height: 64
Colors: 2 (B/N)
Controller: ks0108
Controllers: 2
Pages: 8 each controller
Addresses: 64 each page
Data size: 1 byte each address
Memory size: 2 * 8 * 64 * 1 = 1024 bytes = 1 Kbyte

3. Wiring

The cfag12864b LCD Series don't have official wiring.

The common wiring is done to the parallel port as shown:

```
Parallel Port                          cfag12864b

  Name Pin#                            Pin# Name

Strobe ( 1)--------------------------------(17) Enable
Data 0 ( 2)--------------------------------( 4) Data 0
Data 1 ( 3)--------------------------------( 5) Data 1
Data 2 ( 4)--------------------------------( 6) Data 2
Data 3 ( 5)--------------------------------( 7) Data 3
Data 4 ( 6)--------------------------------( 8) Data 4
Data 5 ( 7)--------------------------------( 9) Data 5
Data 6 ( 8)--------------------------------(10) Data 6
Data 7 ( 9)--------------------------------(11) Data 7
       (10)                        [+5v]---( 1) Vdd
       (11)                        [GND]---( 2) Ground
       (12)                        [+5v]---(14) Reset
       (13)                        [GND]---(15) Read / Write
  Line (14)--------------------------------(13) Controller Select 1
       (15)
  Init (16)--------------------------------(12) Controller Select 2
Select (17)--------------------------------(16) Data / Instruction
Ground (18)---[GND]                [+5v]---(19) LED +
Ground (19)---[GND]
Ground (20)---[GND]                E    A             Values:
Ground (21)---[GND]         [GND]---[P1]---(18) Vee    - R = Resistor = 22 ohm
Ground (22)---[GND]                   |                - P1 = Preset = 10 Kohm
Ground (23)---[GND]         ----    S ------( 3) V0     - P2 = Preset = 1 Kohm
Ground (24)---[GND]         |   |
Ground (25)---[GND]  [GND]---[P2]---[R]---(20) LED -
```

4. Userspace Programming

The cfag12864bfb describes a framebuffer device (/dev/fbX).

It has a size of 1024 bytes = 1 Kbyte. Each bit represents one pixel. If the bit is high, the pixel will turn on. If the pixel is low, the pixel will turn off.

You can use the framebuffer as a file: fopen, fwrite, fclose... Although the LCD won't get updated until the next refresh time arrives.

Also, you can mmap the framebuffer: open & mmap, munmap & close... which is the best option for most uses.

Check samples/auxdisplay/cfag12864b-example.c for a real working userspace complete program with usage examples.