Crystalfontz

GRAPHIC LCD BREAKOUT BOARD DATASHEET

CFA10110

Revision A0
Datasheet Release: 2021-03-10

Compatible with:
CFAG12864T3-NFH
CFAG12864T3-TFH
CFAG12864U3-NFH
CFAG12864U3-TFH

Crystalfontz America, Inc.

Table of Contents

1. General Information

Datasheet Revision History
Datasheet Release: 2021-03-10 Datasheet for the CFA10110 breakout board

Product Change Notifications
You can check for or subscribe to Part Change Notices for this part on our website.

Variations
Slight variations between lots are normal (e.g., contrast, color, or intensity).

Volatility
This board has volatile memory.

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2. Introduction

This breakout board helps bring up a family of monochrome graphic LCDs. By breaking the ZIF tail of the compatible displays out to a 16-position 0.1" header connecting the display is a breeze. Simply use 0.1" jumper wires to connect into your project.

The board also includes two 2-56 threaded standoffs for mounting the display and board to a final design.

This breakout board is compatible with the following displays:

- 1.1" Small Transflective Graphic LCD (CFAG12864T3-NFH)
- 1.1" Small Backlit Sunlight Readable LCD (CFAG12864T3-TFH)
- 2.2" Low Power 128x64 Graphic LCD (CFAG12864U3-NFH)
- 2.2" 128x64 Backlit Low Power LCD (CFAG12864U3-TFH)

3. Header and Jumper Locations and Functions

3.1. J2 – Main header

J2 is the main header on the breakout board. This header provides 16 pins to connect the breakout board (and thus the display) to a microcontroller, such as a Seeeduino (an Arduino Uno clone that switches to 3.3v). Please note that connecting the board to 5v may permanently damage both the display and the board.

Additionally, note that the even and odd columns are flipped. Refer to the silkscreen on the board.

Pin	Symbol	Function
J2 Connection		
1	GND	Ground
2	3v3	Supply Voltage
3	RES	Hardware Reset (active low)
4	NC	No connection
5	DC	Data Command (Register select). Data high, command low.
6	CS	Chip select, selected when low.
7	RD/E	**SPI** – No connection **6800** – Read/Write Enable **8080 –** Read enable (active low)
8	WR/RW	**SPI** – No connection **6800** – Read/Write **8080 –** Write enable (active low)
9	D0	**SPI** – No connection **8080 and 6800** – D0-D5
10	D1	
11	D2	
12	D3	
13	D4	
14	D5	
15	D6	**SPI** – Serial Clock **8080 and 6800** – D6
16	D7	**SPI** – Serial Data **8080 and 6800** – D7

3.2. P/S-> 3v3 and C86->3v3

These jumpers control the interface selection for the display. When both jumpers are open, as shipped, the display will communicate using SPI.
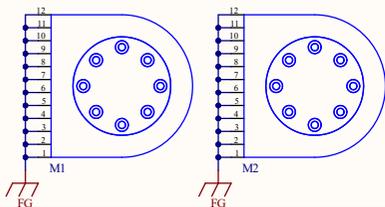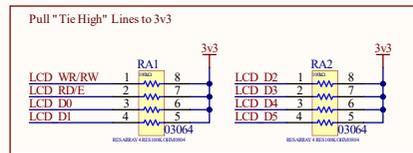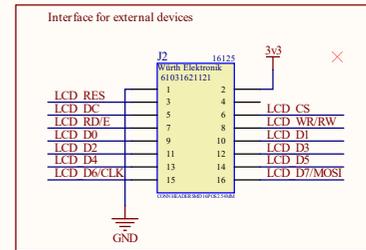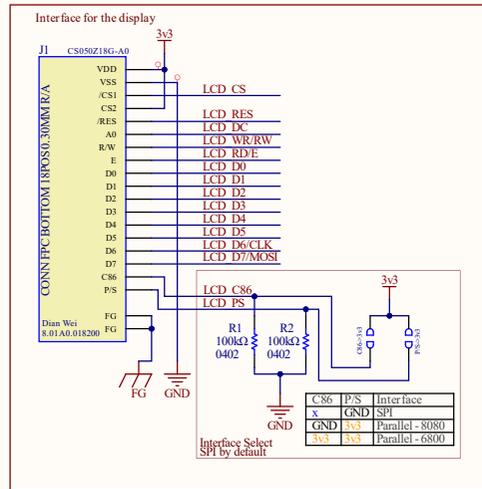The P/S jumper selects between parallel and serial. When it is closed, parallel is selected.
The C86 jumper selects between 8080 and 6800 parallel when the P/S jumper is closed. When open, the display is set to communicate in 8080 mode. When closed (high) the display is set to communicate in 6800 mode.
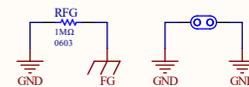
4. Schematic

Interface for the display

J1   CS050Z18G-A0

VDD	
VSS	LCD_CS
/CS1	LCD_RES
CS2	LCD_DC
/RES	LCD_WR/RW
A0	LCD_RD/E
R/W	LCD_D0
E	LCD_D1
D0	LCD_D2
D1	LCD_D3
D2	LCD_D4
D3	LCD_D5
D4	LCD_D6/CLK
D5	LCD_D7/MOSI
D6	
D7	
C86	LCD_C86
P/S	LCD_PS
FG	
FG	

CONN FPC BOTTOM 18POS 0.30MM R/A

Dian Wei
8.01A0.018200

R1 100kΩ 0402
R2 100kΩ 0402

3v3

C86	P/S	Interface
x	GND	SPI
GND	3v3	Parallel - 8080
3v3	3v3	Parallel - 6800

Interface Select
SPI by default

Interface for external devices

J2   16125
Würth Elektronik
61031621121

LCD_RES	1	2	LCD_CS
LCD_DC	3	4	
LCD_RD/E	5	6	LCD_WR/RW
LCD_D0	7	8	LCD_D1
LCD_D2	9	10	LCD_D3
LCD_D4	11	12	
LCD_D5	13	14	LCD_D5
LCD_D6/CLK	15	16	LCD_D7/MOSI

CONN HEADER SMD 16POS 2.54MM

GND

Pull "Tie High" Lines to 3v3

RA1

LCD_WR/RW	1	8
LCD_RD/E	2	7
LCD_D0	3	6
LCD_D1	4	5

03064
RESARRAY 4 RES 100K OHM 0804

RA2

LCD_D2	1	8
LCD_D3	2	7
LCD_D4	3	6
LCD_D5	4	5

03064
RESARRAY 4 RES 100K OHM 0804

ESD border discharge

RFG
1MΩ
0603

Scope Grounds

M1

M2

FG

FG

Cannot **Crystalfontz America, Inc.**

CFA-10110: CFAG12864U3/T3 Adapter Board

Page 1 / 1 : Full Schematic

PCB NUMBER:
CFA10110

PCB REVISION:
h0v1

Size: B

File: cfa_10110.SchDoc

Getting Started Guide
CFAG12864[U3|T3] and Adapter Board


1. What You Need

- Your display with CFA10110 adapter board
- 3.3v microcontroller (e.g., Seeeduino v4.2)
- USB cable (e.g., WR-USB-27)
- Jumper cables (e.g., WR-JMP-Y40 or WR-JMP-41)
- Headers (e.g., CFAPN01855)
- A sketch

2. Wiring

Using the jumper wires, connect the CFA10110 board to the microcontroller. We're using an Arduino clone, thus "ARD".

```
//  ARD  | LCD  | Color
// ---------+--------+-------
// 3v3     | 3v3   | Red
// GND     | GND   | Black
// D8      | DC    | Green
// D9      | RES   | Blue
// D10     | CS    | Purple
// D11     | D7    | Gray
// D13     | D6    | Orange
```
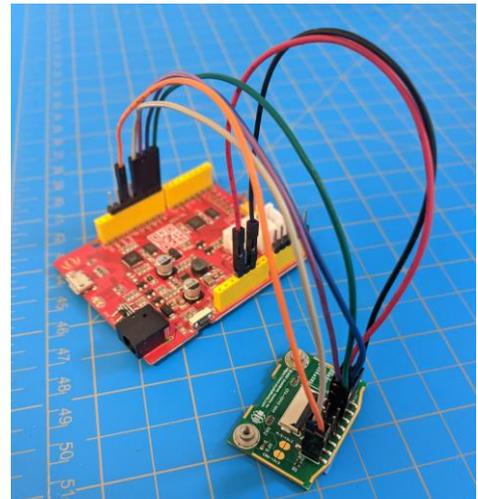

3. Connect the Display Tail to the CFA10110

If you ordered a kit (PN ending in E1-1 or E1-2), this will be done for you. Insert the tail, shiny pins down, into the connector and close the connector by pressing down on the black latch.
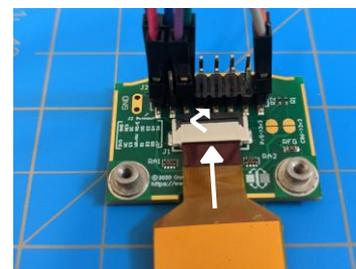
4. Upload Sketch

Connect your microcontroller to you computer and upload a sketch, such as the demo code available on our website. If you're using our demo code, check that the correct display is defined in LCD_Low.h

Questions? Check out the blog post, forum.crystalfontz.com, or email us at support@crystalfontz.com