



Crystalfontz America, Incorporated

CFA10009 Demonstration Board Kits User Guide



Photo Of Demonstration Board Kit For CFAL9664B-F-B1 OLED Module

User Guide Release Date 2013-07-03
for

CFA10009 Demonstration Board Kits for OLEDs

CFA10009 Hardware Version v1.1, Firmware Version v2.0

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CFA10009 Family Data Sheet Revision History

Data Sheet Release Date: 2013-07-03	
<ul style="list-style-type: none">● Added CFAL9664B-F-B1 to the list of modules that are compatible with the CFA10009 Demonstration Board.● Deleted modules from the list that were discontinued. See a list of these modules in Part Change Notification #10344.● Deleted modules from the list that were not sold on our website.● Update external URLs to best locations.● Updated User Guide formatting and content to current guide template standards, including the CARE AND HANDLING PRECAUTIONS (Pg. 6).	
2010-12-10	Current Data Sheet version: v1.1 In the table listing CFA10009 Kit Configurations, <ul style="list-style-type: none">● Added CFAL12832C-B-B1.● Deleted modules in the series CFAL12864Z-xxx-B6xx. These modules are not available and/or do not work with the CFA10009 Demonstration Board.
2009-06-25	Data Sheet version: v1.0 New Data Sheet.

Hardware and Firmware Revisions

For information about firmware and hardware revisions for the CFA10009 Demonstration Board, see Part Change Notifications (PCNs) under the Notices tab on the website page for the kit part number.



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QUICK START

The CFA10009 demonstration board is shipped with one of two compatible OLED modules (CFAL12864C-Y-B1 or CFAL9664B-F-B1) installed and tested. Simply plug the power supply (included) into an AC outlet. The CFA10009 will initialize and turn on the display, then run the demonstration script from the included microSD card.

INTRODUCTION

The CFA10009 Demonstration Board Kits have everything you need to easily demonstrate and experiment with one of the two compatible CrystalFontz OLED modules (CFAL12864C-Y-B1 or CFAL9664B-F-B1). The kits can also be used as a reference for your designs that use these modules.

You can easily modify the miniBASIC scripts and bitmaps on the microSD card to make your own test screens, or even to model user interface functions. All that is needed is the included microSD USB reader, a [text editor](#) (for example, Notepad), an [image editor](#) (for example, MS Paint), and a simple, open-source format conversion utility ([Image2Code](#)) that we offer free of charge.

Beyond demonstrations, the CFA10009 allows you to easily measure current of the different portions of the circuit under operation.

The schematic, bill of materials, and even the PCB layout is available to download from our website. As always, no registration is required. Since the design materials are available before purchase, there is no risk of being “surprised” late in the design.

The CFA10009 is preprogrammed with a microSD boot loader. You can load our simple C example code, the miniBASIC interpreter, or build your own application for the CFA10009's versatile Atmel [ATMEGA2561-16AU](#) microcontroller using [Atmel Studio](#) and [WinAVR](#), both free.

The board has a JTAG port for more advanced programming and debugging. All the ports are on 0.1" centers so you can connect them to anything you need. The CFA10009 is so versatile that you may want to use it as a base development platform for your projects.

KIT CONFIGURATIONS

OLED Module	With This Controller	Order This Demonstration Board Kit
CFAL9664B-F-B1	Solomon SSD1332	DMOL9664BFB1
CFAL12864C-Y-B1	Solomon SSD1305	DMOL12864CYB1



CONTENTS OF DEMONSTRATION BOARD KIT

- CFA10009 Demonstration Board (PCB).
- Installed OLED module of your choice. (Selected at time of ordering. See choices in the table above.)
- 110 VAC Power adapter.
- MicroSD memory card loaded with BASIC demonstration program and bitmap images.
- USB reader for the microSD memory card.

HOW TO MAKE A CUSTOM DEMONSTRATION

The CFA10009 is programmed with firmware that will read a BASIC program file from the microSD memory card. The BASIC program can read bitmap image files from the microSD memory card and display them on the OLED module. The BASIC program can also read the four demonstration board buttons and change the brightness settings.

By using the USB reader, a text editor, and a graphic conversion utility (provided), you can customize the demonstration to include your own bitmap images. The large capacity of the microSD card allows you to create complex demonstrations.

For the most recent version of sample script and sample image for customizing the demonstration, download the zipped folder on the modules' website page ([CFAL9664B-F-B1](#) and [CFAL12864C-Y-B1](#)).

LOADING A CUSTOM HEX FILE

The CFA10009 Demonstration Board Kit is shipped with the miniBasic-AVR interpreter loaded into the microcontroller Atmel ATMEGA2561's flash memory.

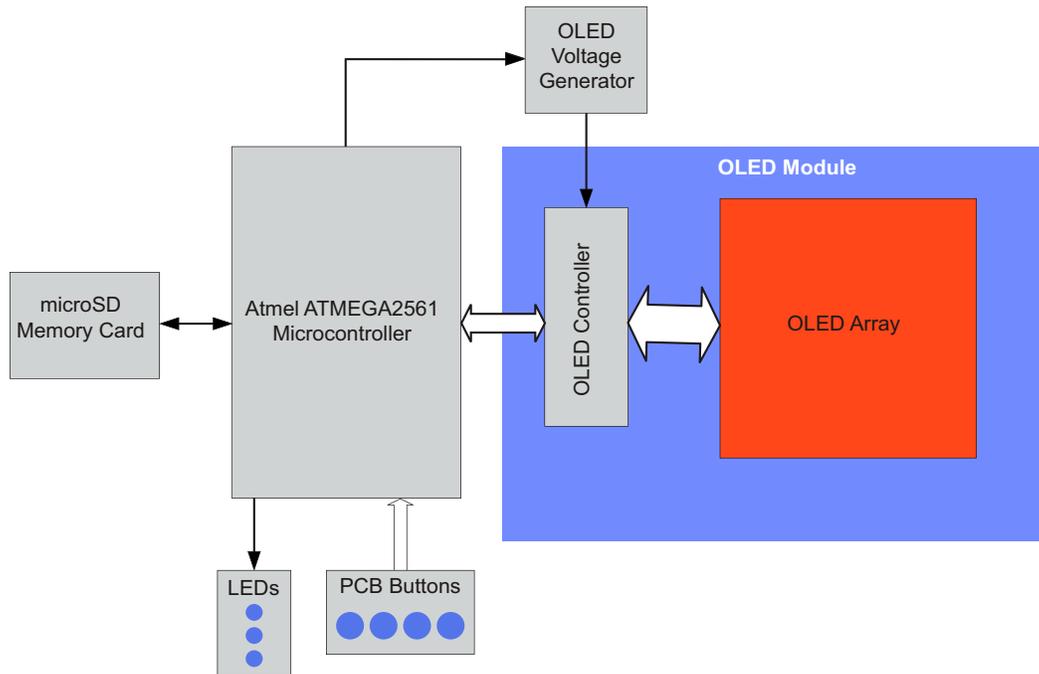
If you want to load our simple demonstration or your own program, simply name the hex file "cfa10009.hex" and copy it into the root the directory of the microSD card. When the CFA10009 boots, the boot loader will program the ATMEGA2561's flash with "cfa10009.hex" and then execute it.

Acknowledgement Note: The miniBASIC-AVR is a derivative of Minibasic by [Malcolm McLean \(a.k.a bgy1mm\)](#). The miniBASIC-AVR also includes the [EFSL embedded filesystems library](#).



HARDWARE DESIGN INFORMATION

BLOCK DIAGRAM



CONTENTS OF HARDWARE DESIGN FOLDER

The zipped folder on the CFA10009 website page includes the complete [hardware design files](#) for the CFA10009 Demonstration Board.

- Schematic.
- PCB layout.
- Bill Of Materials (BOM) as an XLS spreadsheet.
- Simple OLED initialization code and bitmap display code.

The schematic and PCB layout were created with CadSoft EAGLE. EAGLE is a capable and low-cost electrical CAD system. You can download a freeware light edition of EAGLE from www.cadsoftusa.com to load, view, and print the schematic and layout files

CARE AND HANDLING PRECAUTIONS

The kit is sold with a module mounted on it. If you attempt to modify the board to work with other modules, the warranty is void. Do not disassemble or modify the CFA10009 Demonstration Board Kit.

For optimum operation of the module and demonstration board and to prolong their life, please follow the precautions below. Please also read the Care and Handling Precautions in the Data Sheets for the OLED modules.



ESD (ELECTRO-STATIC DISCHARGE)

The circuitry is industry standard CMOS logic and susceptible to ESD damage. Please use industry standard antistatic precautions as you would for any other PCB such as expansion cards or motherboards, or integrated circuits. Ground your body, work surfaces, and equipment.

AVOID SHOCK, IMPACT, TORQUE, OR TENSION

- Do not expose the demonstration board and module to strong mechanical shock, impact, torque, or tension.
- Do not drop, toss, bend, or twist the demonstration board and module.
- Do not place weight or pressure on the demonstration board and module.

CAUTION

All electronics may contain harmful substances. Avoid contamination by using care to avoid damage during handling. If any residues, gases, powders, liquids, or broken fragments come in contact with your skin, eyes, mouth, or lungs, immediately contact your local poison control or emergency medical center.

OPERATION

- The module ships with a protective film over the display. Please peel off the protective film slowly. Peeling off the protective film abruptly may generate static electricity.
- Use only the included AC adapter to power the board.
- Observe the operating temperature limitations for the module: from -20°C minimum to +70°C maximum with minimal fluctuations. Operation outside of these limits may shorten the life and/or harm the display.
- Operate away from dust, moisture, and direct sunlight.

STORAGE AND RECYCLING

- Store in an ESD-approved container away from dust, moisture, and direct sunlight with humidity less than 90% noncondensing.
- Observe the storage temperature limitations: from -30°C minimum to +80°C maximum with minimal fluctuations. Rapid temperature changes can cause moisture to form, resulting in permanent damage.
- Please recycle at an approved facility.