

# 0.96" OLED Display Module For Raspberry Pi SKU: DFR0413



## Introduction

Sometimes your Pi projects require a display to output system information, e.g. system status, temperature, IP address, etc. Having a full sized display attached is inconvenient if you want your project to be portable. Use this small OLED to output your required information and keep your product in a nice portable configuration. The display is a 0.96" 128 x 64 px OLED. The controller is a SSD1306 and communicates via 4-wire SPI. The display also includes a built in backlight and is high contrast with an extremely wide viewing angle.

## Specification

- Operating Voltage: 3.3V (1.6~3.6V)
- Continuous Current: 12.25uA
- Maximum Current: 100uA
- Ultra low power supply
- Internal DC/DC voltage converter
- SPI driver support, AT64MHz[TYP] 125MHZ[OB]
- FP frequency: 64fps[TYP] 368fps[OB]

## Tutorial

You Will Need:

- Hardware
   Raspberry Pi x 1
   0.96 Inch OLED x 1
   HDMI cable x 1
   USB Keyboard and Mouse x 1
   Display with HDMI port x 1
   8G SD card x 1
- Software

Raspian System Image (or similar) click to download https://www.raspberrypi.org/downloads/ Win32diskimager click to download http://www.onlinedown.net/soft/110173.htm

#### Install OS to SD Card

1. Use an 8GB SD card at least, preferably class 4 or greater. Using a low speed card has a direct impact on the speed of the operating system.

2. Download Raspian system image file at the following address: http://www.raspberrypi.org/downloads

3. Install Win32diskimager

Download: http://www.onlinedown.net/soft/110173.htm

#### Installation

1. Unzip the downloaded system from the archive. Change the extension to .img, e.g. "raspian.img"

Pi\system\debian6-19-04-2012				
名称 🔺	大小	类型	修改日期	
🖬 debi an6-19-04-2012, ing	1, 904, 297 KB	IMG 文件	2012-4-19 17:25	
debi an6-19-04-2012. isg. shal www.shumcipai.net	1 KB	SHA1 文件	2012-4-19 18:15	

3. Extract and run Win32diskimager

🍓 Vin32 Di	sk Imager			
Image File -	0.20			Device
				[I:\] 💌
MD5 Hash:				
Progress				
5	Cancel	Read	Write	Exit
www.shumeipa	i.net	· · · · · ·	19	

4. Select the .img file, and select your SD card under "Device", and then select "Write", if the next dialog box appears, select "Yes"



The card will then be written to. The speed will depend on the speed of your SD.

Image File				Device
Pi/system/del	i an6-19-04-2012/	debian6-19-	04-2012.img	🔄 [I:\] 🖌
MD5 Hash:				
MDS Hash: Progress				
MD5 Hash: Progress				14%

5. When complete a dialog box will pop up. If the installation was unsuccessful, please try turning off your firewall and re-inserting the SD card.

Device
() I = 1 = 1
Exit

6. Insert the system SD card into the Raspberry Pi



7. Connect the USB keyboard and mouse



8. Connect the HDMI cable



9. Connect the USB power cord and turn on the power



## **Booting the Pi**

1. The power monitor will display the startup process as shown. If no display appears, check the SD card is properly inserted and the HDMI cable is connected properly



2. The flow of text will stop at the user login screen. Enter user name: "pi", password: "raspberry"



3. If you see this text displayed your Pi may be under powered. Check your peripherals. Consider using a powered USB hub to power peripherals if your Pi is under powered.

r6:f200b200 r5:60000013 r4:c02426f4 r3:c0066738 Function entered at (cc0008100) from (cc000ddd4)) Exception stack(0xcb931ed8 to 0xcb931f20) lec0: lec0: 00000000 00000000 cb9e68d8 cb9e9804 cb9e9c00 cb9e9924 ( 1f00: 00000000 cb931f5c 00000000 cb931f20 c0066738 c02426f4 6 Function entered at (cc024326c>) from (cc024328>) Function entered at (cc0243044>) from (cc0243040>) Function entered at (cc0243044>) from (cc0243080>) Function entered at (cc0243044>) from (cc02408070>) Function entered at (cc02437fe0>) from (cc038070>) Function entered at (cc0243044>) from (cc038070>) Function entered at (cc03807fe0) from (cc038070>) Function entered at (cc038070>) Function entered at (cc03807fe0) from (cc038070>)	0000 0000

4. Enter the correct username and password, the following screen appears, indicating that Raspberry Pi has been properly started

raspberrypi login: pi Password:
Login incorrect raspberrypi login: pi Password: Last login: Thu Jan 1 01:00:57 BST 1970 on tty1 Limax raspberrypi 3.1.9+ 090 Wed Apr 18 18:23:05 BST 2012 armu61
The programs included with the Debian GNU/Linux system are free software: the exact distribution terms for each program are described in the individual files in /usr/share/doc/w/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARNATY, to the extent permitted by applicable law. Bute and Time are unknown - using 2012-04-17 14:20 as an approximation Correct the date and time using e.g: sudo dateaet="2012-04-17 14:20" pikewapherrypi:"S _

5. Type "startx" to start the Pi's GUI



## OLED Driver

## Connecting the OLED to the Raspberry Pi

Because connect the OLED to the Pi's GPIO headers as shown:



Product Size

#### **Activate SPI Pins**

The Pi's default SPI and I2C pins are disabled, you must activate them before use. Use a terminal on the Pi connected to another display, or SHH in to the Pi from another PC and run the following command:

sudo nano /etc/modprobe.d/raspi-blacklist.conf

Find the line "blacklist spi-bcm2708" and place a # before it to comment it out. This will enable the SPI interface on the Pi.

If you want you can also find the line "blacklist i2c-bcm2708" and place a # before it to comment it out. This will enable the i2c interface on the Pi.

Type ctrl+x and then y to save changes to the configuration file.

Reboot your Pi by typing "sudo reboot" in to the command line.

When the Pi has rebooted the SPI GPIO pins will be activated. You should see two files in the /dev directory: spidev0.0 spidev0.1 spidev0.0 corresponds to SPI pin 0 spidev0.1 corresponds to SPI pin 1

### Use C to Drive the LCD via SPI

Terminal or SSH in to your Pi and run the following commands:

sudo apt-get update sudo apt-get install vim sudo apt-get install build-essential sudo apt-get install cmake sudo apt-get install git mkdir oledtest cd oledtest vim oledtest.c **download** https://github.com/Arduinolibrary/Resource-0.96-Inch-OLED-Display-Module-For-Raspberry-Pi/

• The program will be copied into ledtest.c lcdtest and compile :

gcc -Wall -o oledtest oledtest.c -lwiringPi sudo ./oledtest



## **Expected Results**



Sample code **oledtest.c** and product details **download**.

https://github.com/Arduinolibrary/Resource-0.96-Inch-OLED-Display-Module-For-Raspberry-Pi/

https://www.dfrobot.com/wiki/index.php/0.96%22\_OLED\_Display\_Module\_For\_Raspberry\_Pi\_SKU:\_DFR0413 5-3-17