diymore 030526

Diymore 2.42 inch OLED Display Module (SSD1309) User Manual

INTRODUCTION

This manual provides instructions for the Diymore 2.42 inch OLED Display Module, model 030526. This module features a 128x64 pixel resolution and is driven by an SSD1309 IC. It supports both SPI and I2C serial communication interfaces, making it suitable for various electronic projects, including those with Arduino development boards.

Figure 1: Front view of the Diymore 2.42 inch OLED Display Module with example display content.

SETUP INSTRUCTIONS

The Diymore 2.42 inch OLED module offers flexible connectivity options. It is factory-set for SPI communication but can be configured for I2C. Ensure all connections are secure before applying power.

1. Pinout Overview

The module features a row of pins for connection. Refer to the image below for pin identification.
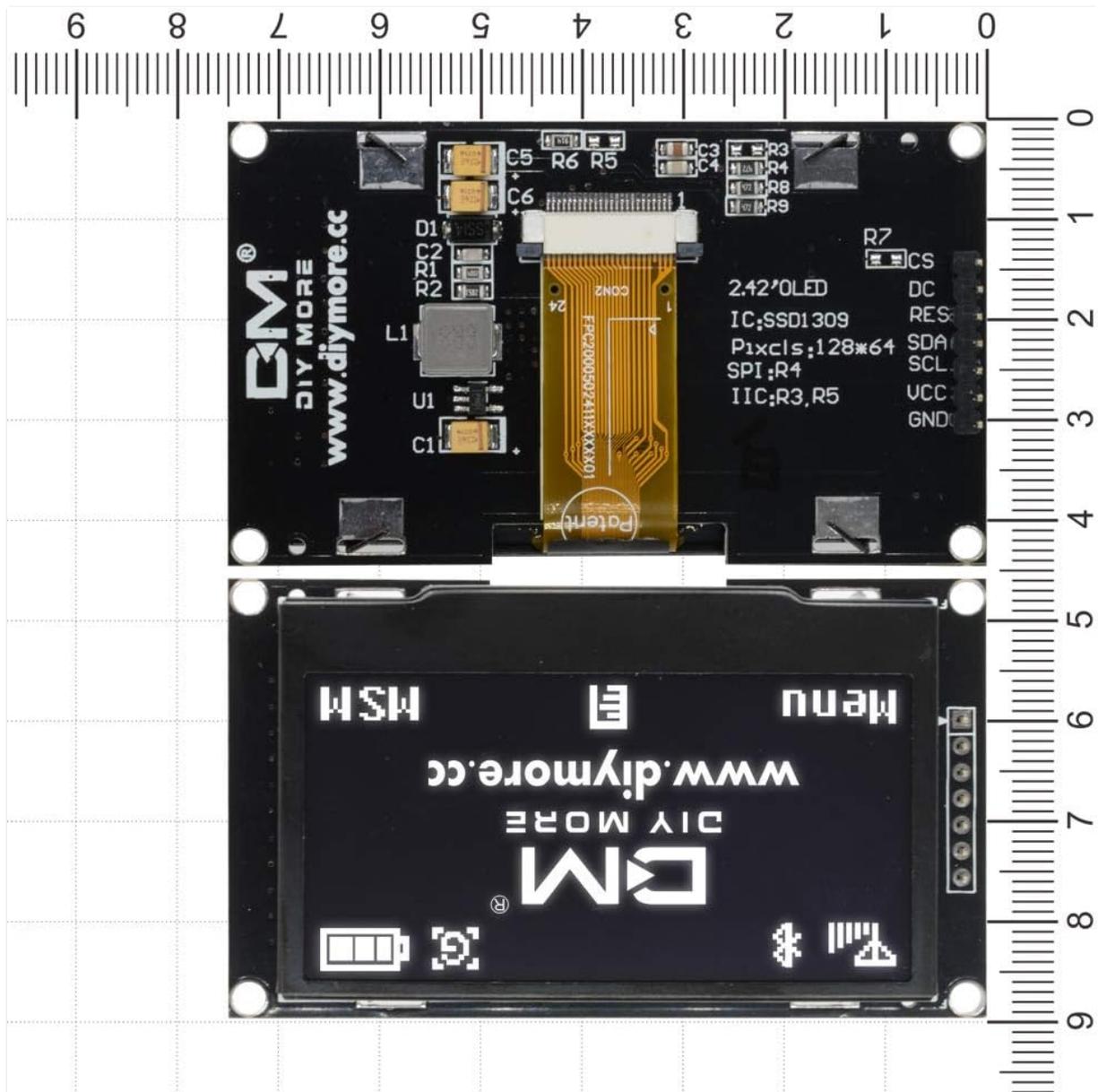

Figure 2: Back view of the OLED module with pin labels (CS, DC, RES, SDA, SCL, VCC, GND) and resistor locations (R3, R4, R5).

2. SPI Communication Setup (Factory Setting)

The module is configured for 4-wire SPI communication by default. Connect the module to your microcontroller (e.g., Arduino Nano) as follows:

- **MOSI** (Module) <--> Digital Pin 9 (Arduino Nano)
- **CLK** (Module) <--> Digital Pin 10 (Arduino Nano)
- **DC** (Module) <--> Digital Pin 11 (Arduino Nano)
- **CS** (Module) <--> Digital Pin 12 (Arduino Nano)
- **RESET** (Module) <--> Digital Pin 13 (Arduino Nano)
- **VCC** (Module) <--> 5V (Arduino Nano)
- **GND** (Module) <--> GND (Arduino Nano)

This configuration utilizes hardware SPI on some Arduino boards, but the example above uses specific digital pins for a software SPI or bit-banged approach, which is common for compatibility.

3. I2C Communication Setup

To enable I2C communication, a hardware modification is required:

1. **Resistor R4 to R3:** Carefully move the resistor from position R4 to position R3 on the back of the module.
2. **Solder R5:** Solder a 0 ohm resistor (or bridge the pads with solder) at position R5.

After modification, connect the module to your microcontroller as follows:

- **SDA** (Module) <--> SDA Pin (Microcontroller)
- **SCL** (Module) <--> SCL Pin (Microcontroller)
- **RESET** (Module) <--> Digital Pin (Microcontroller) or directly to VCC (with a pull-up resistor if needed, or to a dedicated reset pin on your devkit).
- **VCC** (Module) <--> 3.3V or 5V (Microcontroller, check module specifications for exact voltage tolerance)
- **GND** (Module) <--> GND (Microcontroller)

Note that the module's pins are labeled for I2C (SDA, SCL) even when factory-set for SPI. This can cause initial confusion, but the resistor modification correctly enables I2C functionality.

OPERATING INSTRUCTIONS

Once the module is correctly wired, you can begin programming your microcontroller to display content. The SSD1309 driver IC is largely compatible with libraries designed for the SSD1306.

1. Software Libraries

For Arduino projects, the Adafruit_SSD1306 library is widely used and compatible with this module. Install it via the Arduino IDE's Library Manager.

2. Initialization

After including the library, initialize the display object in your code, specifying the resolution (128, 64) and the communication interface (SPI or I2C) along with the corresponding pins. For example, for SPI:

```
#include <Adafruit_SSD1306.h>

#define OLED_MOSI   9
#define OLED_CLK   10
#define OLED_DC    11
#define OLED_CS    12
#define OLED_RESET 13

Adafruit_SSD1306 display(128, 64, OLED_MOSI, OLED_CLK, OLED_DC, OLED_RESET, OLED_CS);
```

For I2C, after the hardware modification, the initialization might look like this:

```
#include <Adafruit_SSD1306.h>

#define OLED_RESET 4 // Or connect to your board's reset pin

Adafruit_SSD1306 display(128, 64, &Wire, OLED_RESET); // Using default I2C pins (SDA, SCL)
```

Refer to the library's examples for detailed usage, including drawing text, shapes, and bitmaps.

Figure 3: Front view of the OLED module with a blank screen, indicating it is powered off or not initialized.

Maintenance

To ensure the longevity and optimal performance of your OLED display module, follow these maintenance guidelines:

- **Handling:** Handle the module by its edges to avoid touching the display surface or sensitive components.
- **Cleaning:** If necessary, gently clean the display surface with a soft, lint-free cloth. Avoid abrasive materials or harsh chemicals.
- **Environment:** Store and operate the module in a dry environment, away from direct sunlight, extreme temperatures, and high humidity.
- **Power Supply:** Always use a stable power supply within the specified voltage range to prevent damage to the module.

Troubleshooting

If you encounter issues with your Diymore OLED display module, consider the following troubleshooting steps:

- **Display Not Lighting Up:**
  - Verify VCC and GND connections are correct and receiving power.
  - Ensure the chosen communication interface (SPI or I2C) matches the hardware configuration (resistor positions).
  - Check that the RESET pin is properly connected and toggled by your microcontroller, or connected to a stable high signal if not actively controlled.

- **Garbled or Incorrect Display:**
  - Confirm all data and clock lines (MOSI, CLK, DC, CS for SPI; SDA, SCL for I2C) are correctly wired to the microcontroller.
  - Ensure the software library initialization parameters (e.g., pin numbers, I2C address) match

your wiring and module configuration.

- If using I2C, double-check that resistor R4 has been moved to R3 and R5 has been bridged.

- **Module Overheating:**

  - Immediately disconnect power.
  - Verify that the input voltage and current are within the module's specified operating limits.
  - Check for any accidental short circuits on the module or connections.

- **SPI/I2C Confusion:** The module's pins are labeled for I2C (SDA, SCL) but it defaults to SPI. If you intend to use I2C, the resistor modification is essential. If using SPI, connect to the appropriate SPI pins on your microcontroller, ignoring the I2C labels for the data lines.

SPECIFICATIONS

Feature	Detail
Resolution	128 x 64 pixels
Driver IC	SSD1309
Diagonal Screen Size	2.42 inch
Interface Options	4-wire SPI (Default), I2C (requires modification), 8-bit interfaces
Unsupported Interface	3-wire SPI
Approximate Dimensions (Package)	3.5 x 2.1 x 0.5 inches
Approximate Item Weight	0.634 ounces
Model Number	030526

WARRANTY INFORMATION

This Diymore OLED Display Module is covered by an **18-month warranty** from the date of purchase. This warranty covers manufacturing defects and ensures the product functions as described under normal use. Please retain your proof of purchase for warranty claims.

CUSTOMER SUPPORT

For any questions, technical assistance, or support regarding your Diymore 2.42 inch OLED Display Module, please contact our customer support team. We offer **24-hour customer support** to assist you with your inquiries.

For contact information, please refer to the seller's page on Amazon or the official Diymore website.