

DWEII DW-WH11412

DWEII 2.42 inch 128x64 OLED LCD Display Module SSD1309 User Manual

Model: DW-WH11412

1. INTRODUCTION AND OVERVIEW

This manual provides detailed instructions for the DWEII 2.42 inch 128x64 OLED LCD Display Module, featuring the SSD1309 driver. This module is designed for various DIY electronic projects, including integration with platforms like Arduino UNO R3. The OLED technology offers high contrast and fast response times without requiring a backlight, making it suitable for diverse applications.

2. PRODUCT FEATURES

- **Display Type:** OLED (Organic Light Emitting Diode)
- **Screen Size:** 2.42 inches (diagonal)
- **Resolution:** 128 x 64 pixels
- **Driver IC:** SSD1309
- **Interface Options:** Supports both SPI (Serial Peripheral Interface) and IIC (Inter-Integrated Circuit, also known as I2C) serial communication.
- **High Contrast:** Achieves superior contrast ratios, especially in low ambient light.
- **Fast Response Time:** Provides quick display updates.
- **No Backlight Required:** OLED pixels emit their own light.
- **Compatibility:** Designed for DIY electronic projects, compatible with microcontrollers such as Arduino UNO R3.

3. WHAT'S IN THE BOX

- 1 x DWEII 2.42 inch 128x64 OLED LCD Display Module (White Light)

4. SPECIFICATIONS

| Specification | Value |
|--------------------------------|---|
| Brand | DWEII |
| Model Number | DW-WH11412 |
| Screen Size | 2.42 inches |
| Resolution | 128x64 pixels |
| Driver IC | SSD1309 |
| Connectivity Technology | SPI, I2C (IIC) |
| Compatible Devices | Arduino UNO R3, other microcontrollers |
| Operating System Compatibility | Linux (for development environments) |
| CPU Manufacturer | Atmel (for compatible microcontrollers) |
| UPC | 701715516403 |

5. SETUP

5.1 Pin Definitions

The module features a 7-pin interface. Understanding these pins is crucial for proper connection:

- **1. GND:** Power Ground
- **2. VCC:** Power Supply Positive (typically 3.3V or 5V, refer to module specifications for exact voltage)
- **3. SCL:** Clock Line (SPI: SCK, IIC: SCL)
- **4. SDA:** Data Line (SPI: MOSI, IIC: SDA)
- **5. RES:** Reset Line
- **6. DC:** Data / Command Selection Line (SPI: DC, IIC: Address selection)
- **7. CS:** Chip Select Line (Used for SPI, typically tied high or low for IIC)

5.2 Interface Selection (SPI / IIC)

The module supports both SPI and IIC communication protocols. The selection is made by configuring specific resistors on the module, typically R3, R4, and R5. Refer to the silkscreen markings on your specific module for the exact configuration. Generally:

- **For SPI:** A specific resistor configuration (e.g., R5 bridged, R4 & R9 open as per some module variations) enables SPI mode.
- **For IIC (I2C):** A different resistor configuration (e.g., R5 open, R4 & R9 bridged as per some module variations) enables IIC mode.

Note: This often involves soldering or desoldering small surface-mount resistors. Exercise caution or seek professional assistance if you are not experienced with fine soldering. Some modules may have these resistors located under the flexible ribbon cable connecting the OLED panel to the PCB, requiring careful temporary detachment of the cable.

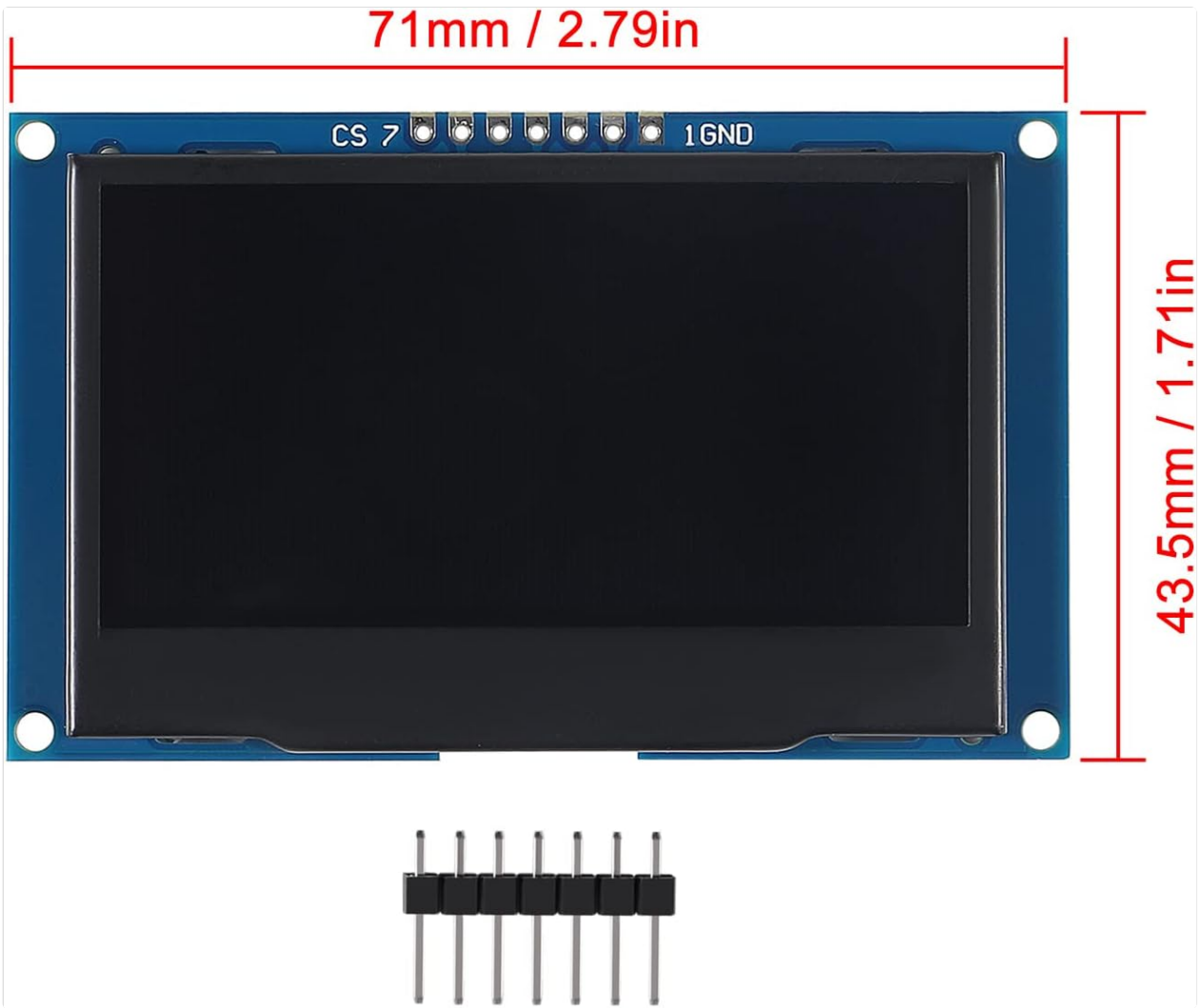


Figure 2: Physical Dimensions of the OLED Display Module. This image provides the length and width measurements for integration into projects.

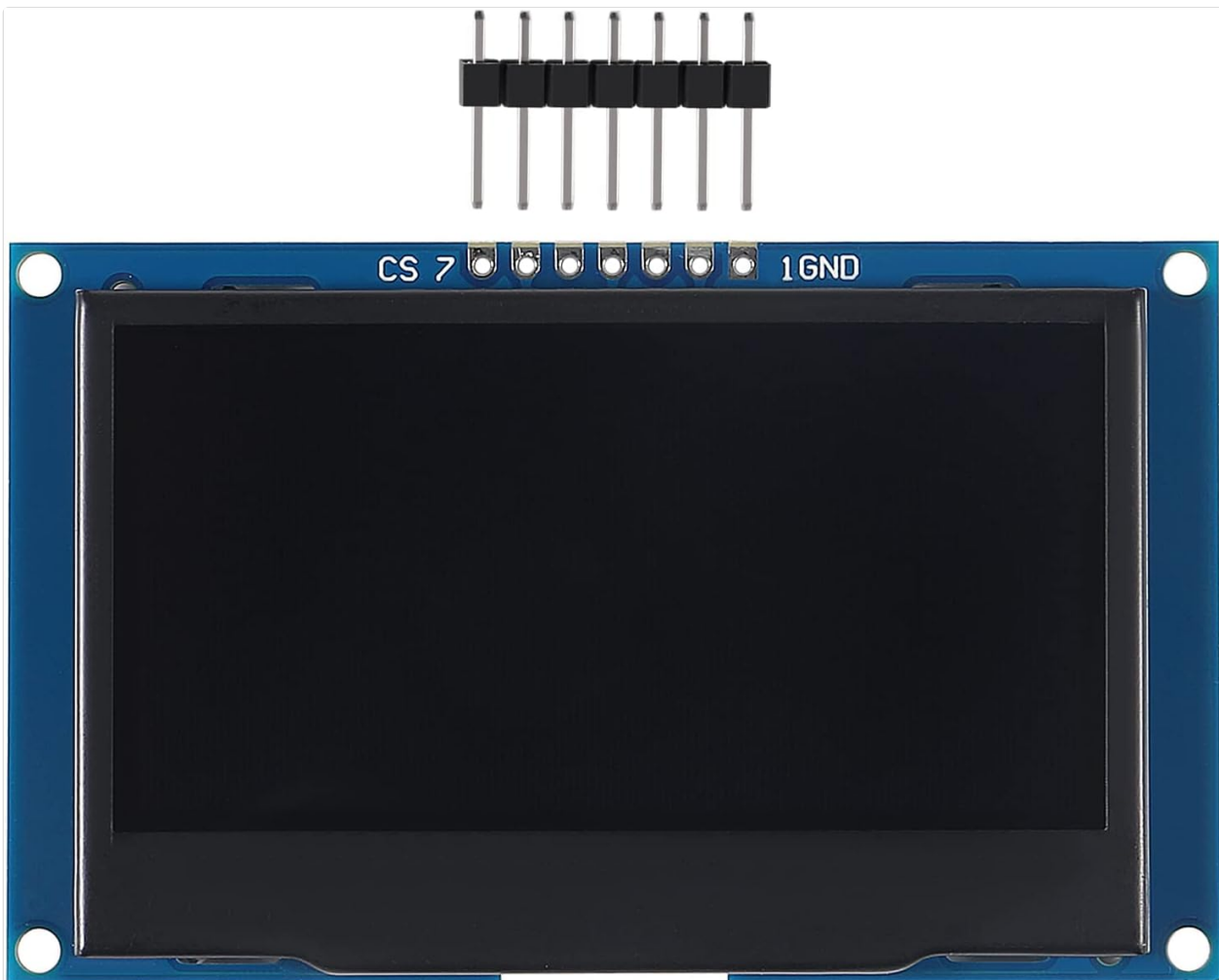


Figure 3: Front View of the OLED Display Module with Pin Header. This image highlights the display surface and the connection pins.

IIC (I2C) Connection:

- **GND** to Arduino GND
- **VCC** to Arduino 3.3V or 5V (depending on module's voltage tolerance)
- **SCL** to Arduino A5 (SCL)
- **SDA** to Arduino A4 (SDA)
- **RES** to a digital pin (e.g., D4) or a power-on-reset circuit (see Troubleshooting)
- **DC** to GND for I2C address 0x3C, or VCC for I2C address 0x3D (or leave floating for default 0x3C)
- **CS** (Chip Select) can be tied to GND or VCC for I2C mode, as it's primarily for SPI.

SPI Connection:

- **GND** to Arduino GND
- **VCC** to Arduino 3.3V or 5V
- **SCL** to Arduino D13 (SCK)
- **SDA** to Arduino D11 (MOSI)
- **RES** to a digital pin (e.g., D4)
- **DC** to a digital pin (e.g., D5)
- **CS** to a digital pin (e.g., D10)

6. OPERATING INSTRUCTIONS

6.1 Software Libraries

To operate the OLED display, you will typically use a compatible software library for your microcontroller platform. For Arduino, the Adafruit_SSD1306 library is widely used and often works with SSD1309-based displays, despite the name difference. Ensure you install the necessary dependencies, such as the Adafruit GFX Library.

6.2 Basic Initialization (IIC Example)

After wiring, initialize the display in your code. Here's a conceptual example using the Adafruit_SSD1306 library for IIC:

```
#include <Wire.h>
#include <Adafruit_GFX.h>
#include <Adafruit_SSD1306.h>

#define SCREEN_WIDTH 128 // OLED display width, in pixels
#define SCREEN_HEIGHT 64 // OLED display height, in pixels

// Declaration for an SSD1306 display connected to I2C (SDA, SCL pins)
// The I2C address can be 0x3C or 0x3D, depending on the DC pin state.
Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &Wire, -1); // -1 for no hardware reset pin

void setup() {
  Serial.begin(9600);

  // SSD1306_SWITCHCAPVCC = generate display voltage from 3.3V internally
  if(!display.begin(SSD1306_SWITCHCAPVCC, 0x3C)) { // Address 0x3C for 128x64
    Serial.println(F("SSD1306 allocation failed"));
    for(;;); // Don't proceed, loop forever
  }

  // Clear the buffer
  display.clearDisplay();

  // Display text
  display.setTextSize(1);
  display.setTextColor(SSD1306_WHITE);
  display.setCursor(0,0);
  display.println("Hello, World!");
  display.display();
}

void loop() {
  // Your main program loop
}
```

Adjust the I2C address (0x3C or 0x3D) and the reset pin parameter (-1 if using a power-on-reset circuit or not connecting the RES pin, otherwise specify the digital pin number) according to your setup.

7. MAINTENANCE

- **Cleaning:** Use a soft, dry, anti-static cloth to gently wipe the display surface. Avoid abrasive cleaners or excessive moisture.
- **Handling:** Handle the module by its edges to avoid touching the display area or sensitive electronic components.

- **Storage:** Store the module in a dry, cool environment, away from direct sunlight and extreme temperatures.
- **Power:** Ensure the power supply voltage is within the specified range for the module to prevent damage.

8. TROUBLESHOOTING

8.1 Display Not Lighting Up

- **Power Check:** Verify that VCC and GND connections are correct and receiving the appropriate voltage.
- **Connections:** Double-check all data and clock line connections (SDA, SCL/MOSI, SCK) to your microcontroller.
- **Reset Pin (RES):** The RES pin is critical. Ensure it is properly connected to a digital pin on your microcontroller and toggled during initialization, or implement a power-on-reset circuit (e.g., a 10k resistor from VCC to RES and a 1uF capacitor from RES to GND) if you prefer not to use a dedicated microcontroller pin.
- **Interface Selection:** Confirm that the module's hardware configuration (resistors R3, R4, R5) matches your chosen communication protocol (SPI or IIC).

8.2 Incorrect or Garbled Display

- **I2C Address:** For IIC mode, ensure the correct I2C address (0x3C or 0x3D) is used in your code, corresponding to the state of the DC pin.
- **Library Compatibility:** While Adafruit_SSD1306 often works, ensure your library is compatible with the SSD1309 driver.
- **Code Logic:** Review your code for correct initialization, buffer clearing, text/graphics drawing, and the `display()` command to update the screen.
- **Data Integrity:** Check for loose connections or interference that might corrupt data transmission.

9. WARRANTY INFORMATION

This DWEII OLED LCD Display Module comes with a limited warranty. Please refer to your purchase documentation or contact the retailer for specific warranty terms and duration. Typically, a 1-year warranty covers manufacturing defects under normal use.

10. SUPPORT

For further assistance, technical support, or inquiries regarding the DWEII 2.42 inch 128x64 OLED LCD Display Module, please refer to the seller's support channels or visit the manufacturer's website. Online communities and forums dedicated to Arduino and OLED displays can also be valuable resources for project-specific questions.