

## Waveshare 0.49" inch OLED Display Screen Module

The **Waveshare 0.49 Inch OLED Display Module** is a compact, high-contrast, and energy-efficient screen designed for electronics enthusiasts, students, engineers, and embedded system developers. With its ultra-small form factor and clear monochrome white display, this OLED module is the perfect solution for projects that require a lightweight, low-power, and easy-to-read screen. Whether you are working on a wearable device, IoT sensor, or a custom Arduino or Raspberry Pi project, this OLED display brings reliability and clarity in the smallest package.

Unlike traditional LCD screens, **OLED (Organic Light Emitting Diode) technology** does not require a backlight. Each pixel generates its own light, which allows for **deeper blacks, higher contrast, and sharp visibility even in low-light environments**. This gives the display module a significant advantage in applications where power efficiency and readability are critical.

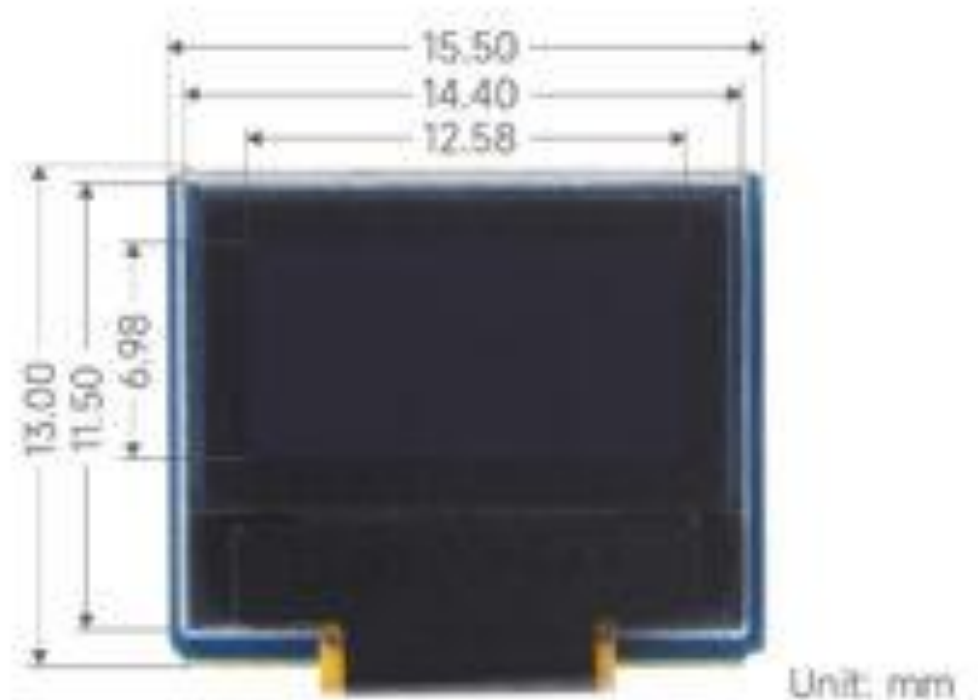






## Key Features of the Waveshare 0.49 Inch OLED Module

- **Display Type:** OLED (Organic Light Emitting Diode)
- **Display Size:** 0.49 inch (ultra-compact)
- **Resolution:**  $64 \times 32$  pixels (sharp graphics for icons, text, and symbols)
- **Interface Options:** I<sup>2</sup>C/SPI (depending on module version), ensuring compatibility with a wide range of microcontrollers
- **Power Efficiency:** Extremely low power consumption, ideal for battery-powered devices
- **Wide Viewing Angle:** Over 160°, making the display easy to read from multiple directions
- **Operating Voltage:** Compatible with 3.3V and 5V logic, ensuring flexibility with most development boards
- **Temperature Range:** Works reliably from -30°C to +70°C, suitable for various environments
- **Compact Dimensions:** Perfect for space-constrained projects like wearables, IoT sensors, and handheld gadgets



## Advantages of OLED Technology

OLED displays are known for their **superior visual performance** compared to LCD screens. Since each pixel emits light independently, the screen delivers **true blacks and high contrast**, improving readability in different lighting conditions. Additionally, OLED modules have **fast response times**, making them suitable for animations and dynamic indicators in embedded projects.

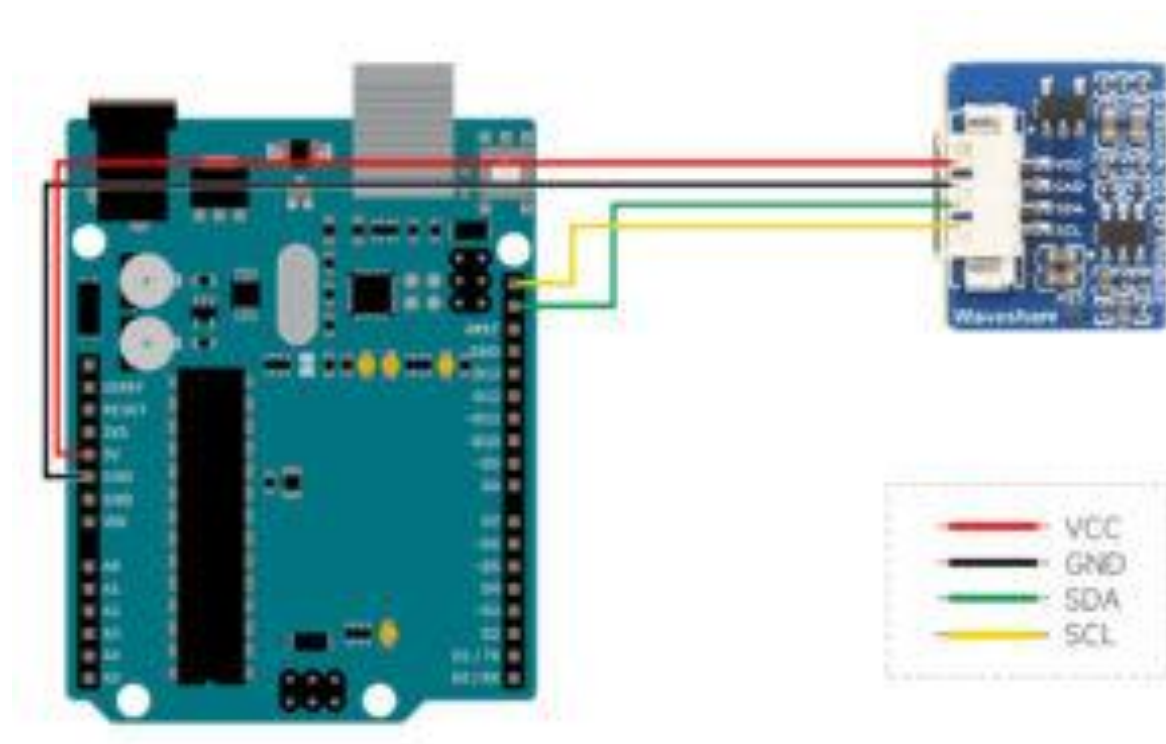
Another key advantage is **power efficiency**. Unlike LCDs with a backlight, OLED screens only consume power for the lit pixels, which significantly reduces energy usage. This makes the Waveshare 0.49 inch OLED module an excellent choice for portable and battery-operated devices.

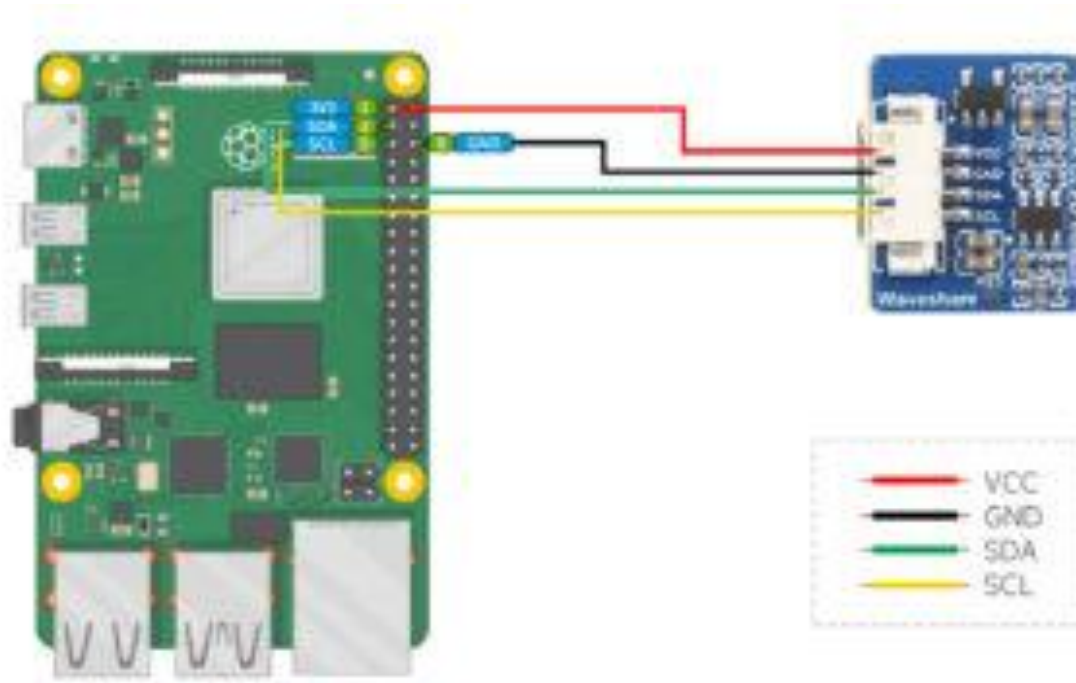
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## Applications of the 0.49 Inch White OLED Display

Thanks to its **small size, low power, and high readability**, this display is widely used in a variety of applications, including:

- **Wearable Electronics:** Smartwatches, fitness trackers, and health monitoring devices
- **IoT Devices:** Compact displays for smart sensors, home automation products, and data monitoring systems
- **Portable Gadgets:** MP3 players, handheld test tools, and DIY electronics
- **Robotics:** Displaying real-time data such as speed, battery level, or sensor readings
- **Prototyping & Learning:** Perfect for students and hobbyists working with Arduino, Raspberry Pi, ESP32, STM32, and other microcontrollers
- **Industrial Equipment:** Simple indicators and status screens in machines where space is limited





## Why Choose the Waveshare 0.49 Inch OLED Module?

1. **Ultra-Compact Size** – At just 0.49 inches, this display fits into the smallest devices without sacrificing readability.
2. **Excellent Contrast** – Monochrome white pixels against a deep black background ensure high clarity for text and graphics.
3. **Flexible Connectivity** – Supports I<sup>2</sup>C and SPI communication interfaces, making it compatible with a wide range of controllers.
4. **Energy Efficient** – Consumes minimal power, ideal for low-power and portable designs.
5. **Reliable & Durable** – Designed to operate under a wide temperature range, ensuring long-term stability.

## Technical Specifications

- **Display Type:** OLED, self-luminous
- **Screen Size:** 0.49 inch
- **Resolution:** 64 × 32 pixels

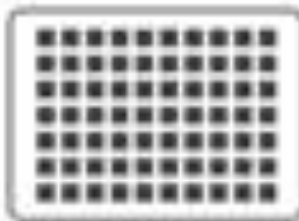
- **Color:** White (monochrome)
- **Interface:** I<sup>2</sup>C/SPI (depending on module version)
- **Operating Voltage:** 3.3V ~ 5V
- **Viewing Angle:** >160°
- **Power Consumption:** Extremely low (suitable for battery-powered devices)
- **Operating Temperature:** -30°C to +70°C

Size



0.49"

Resolution



64×32

Display Color



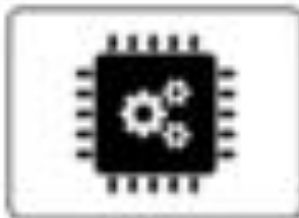
Black/White

Display Panel



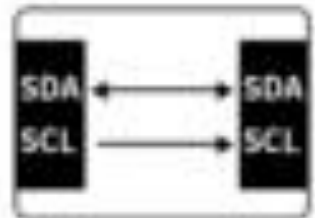
OLED

Driver



SSD1315

Interface



I2C

## Perfect for Makers, Students, and Professionals

The **Waveshare 0.49 Inch White OLED Display Module** is a must-have component for anyone working on small electronic projects. Whether you are designing a DIY smartwatch, building a



mini robot, or creating an IoT device with limited space, this display module provides the perfect balance of **compact size, energy efficiency, and high readability**.

For **students and hobbyists**, it's an excellent learning tool to understand OLED technology and practice integrating displays with microcontrollers. For **professionals**, it's a reliable and durable solution for compact embedded systems that need a clear and simple visual interface.

## Conclusion

If you are looking for a **small yet powerful display module**, the **Waveshare 0.49 Inch White OLED Display** is the ideal choice. Its **ultra-compact size, sharp white monochrome output, and energy-saving performance** make it perfect for wearables, IoT devices, robotics, and portable electronics. Backed by Waveshare's reputation for quality, this display module ensures reliability and versatility in your next project.