OLED 24P Shield

24P OLED Adapter Shield

User Manual

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1 Overview

OLED 24P Shield is an OLED display shield compatible with the standard Arduino interface. Its onboard 24P FPC connector (P2) accepts OLED displays with a 24-pin FPC interface, while the header pins on the underside match the universal Arduino standard interface, so it plugs straight into any board that supports the Arduino interface and adds OLED display capability to any project.

The shield communicates over I2C: only two signal lines, SDA and SCL, are needed to drive the display, leaving all other I/O free for the controller. With the onboard address-selection jumper and power circuitry, it is ready to use once installed, with no extra wiring.



Figure 1 OLED 24P Shield adapter board

2 Specifications

Item	Specification / Description
Model	OLED 24P Shield (Rev 1.0)
Main board interface	Universal Arduino interface, works with any board that supports it
Display interface	24P FPC connector (P2), for 24-pin FPC OLED displays
Communication	I2C interface (SDA / SCL)
I/O usage	Only SDA and SCL are used, all other pins are NC (not connected)
Operating voltage	3.3V, supplied from the 3V3 pin of the main board
Address selection	Onboard I2C address jumper, switchable between two addresses to avoid conflicts
Installation	Header pins plug straight into the main board, stacking like a shield

Table 1 Product specifications

3 Hardware Interfaces

3.1 Interface Layout

The main connectors on the shield are header P1, which mates with the main board and carries the 3V3, GND, SDA and SCL labels, and the 24P FPC connector P2 for the OLED display. All key signals are marked in silkscreen, which makes wiring and troubleshooting easy.



Figure 2 I/O usage of the shield (unmarked pins are NC)

3.2 I/O Pin Usage

The shield uses very few I/O pins on the main board, as listed in the table below. All other unmarked pins are NC and serve no function, so those pins on the main board remain fully available.

Signal	Direction	Description
3V3	Power out	Powers the OLED at 3.3V, from the 3V3 pin of the main board
GND	Power	Common ground, shared with the main board
SDA	Bidirectional	I2C data line, A4 on the standard Arduino UNO layout
SCL	Input	I2C clock line, A5 on the standard Arduino UNO layout
Other pins	—	NC, not used, the corresponding board pins remain available

Table 2 I/O pin usage

Note On R3 and later Arduino standard interfaces, dedicated SDA/SCL pins sit next to AREF and are electrically connected to A4/A5; the shield works with them as well.

4 System Setup and Versatility

A complete display system consists of three parts: an Arduino main board + OLED 24P Shield + 24P OLED display. Stacking them together completes the hardware setup.

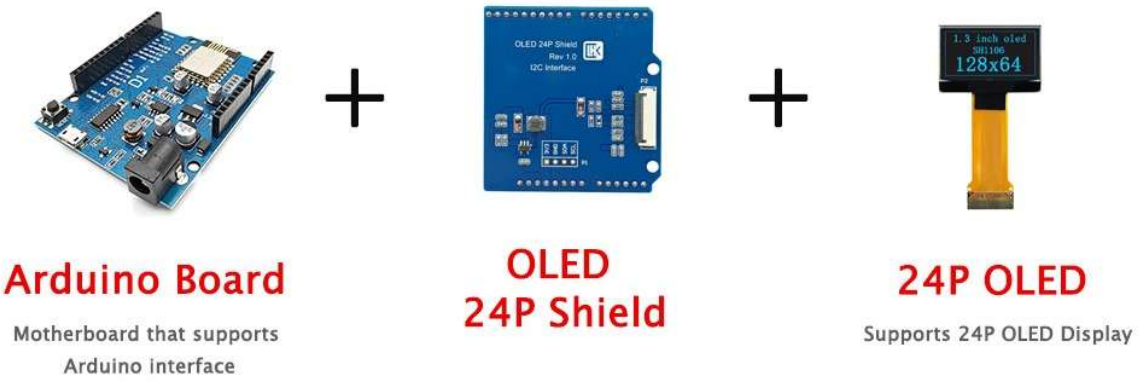


Figure 3 Example of a typical system setup

4.1 Connecting to a Main Board

Any board with the standard Arduino interface, such as Arduino UNO, Leonardo or Mega, as well as the many Arduino-compatible boards, can be used: align the shield with the headers and plug it in, with no adapters or jumper wires. Neither the model nor the brand matters, the shield works with all of them.

4.2 OLED Compatibility

The shield accepts a variety of OLED displays with a 24P FPC interface, such as the common 1.54-inch 128x64 OLED. To change the display, simply plug a new 24P OLED into connector P2; the shield itself needs no modification, so one shield serves many displays.

Note The same OLED 24P Shield can be reused across different projects, main boards and displays, greatly reducing the cost of materials and debugging in multi-display development.

5 Important Notes

- **Display insertion:** Make sure the FPC of the OLED is inserted in the correct direction, with the metal contacts facing the connector contacts; reversing it may leave the display dark or damage it.

- **Supply voltage:** The shield is powered from the 3V3 pin of the main board; do not connect it to a 5V power pin, as this exceeds the OLED operating voltage.
- **I2C address:** When several I2C devices share the bus and their addresses conflict, change the OLED address with the onboard address-selection jumper.
- **Signal quality:** Use pull-up resistors on the I2C bus, which most boards already include, and keep wiring as short as possible to avoid interference.
- **ESD and handling:** Disconnect power from the main board before inserting or removing the shield, to prevent damage from hot-plugging.

6 Technical Support

For more product information, the latest documentation and technical support, please contact OLIGHKER. If you run into a problem, provide the main board model, the OLED specifications and a description of the symptom so it can be located quickly.