

OLED 30P Shield

FPC 30P OLED Adapter Shield • User Manual

Rev 1.0 · I2C Interface

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1 Overview

OLED 30P Shield is a display expansion board (Shield) from OLIGHKER that complies with the Arduino interface standard. It carries an onboard FPC 30P connector for directly attaching OLED displays with an FPC 30P interface, and works with any main board that supports the standard Arduino interface.

The shield communicates over I2C and occupies only 4 main board pins (3V3, GND, SDA, SCL) to power the OLED display and transfer data, preserving the board's I/O resources for other expansions.



Fig. 1 OLED 30P Shield product view

Tip: The Arduino interface is a universal standard. As long as the main board's pin headers follow this standard, the shield can be stacked directly — no extra wiring required.

2 Key Features

Standard Arduino interface	Stacks directly onto any main board with the standard Arduino interface — plug and play
FPC 30P display connector	Onboard 30P FPC connector supports a wide range of OLED displays with a 30P interface
I2C communication	Occupies only 4 pins (3V3 / GND / SDA / SCL), saving main board I/O resources
Solder-free design	Pin-header stacking and pluggable FPC connection — easy assembly and disassembly
High reusability	One shield works with different main boards and different 30P OLEDs — one board, many uses

3 Specifications

Item	Specification
Product model	OLED 30P Shield
Display interface	FPC 30P connector
Communication interface	I2C
I/O usage	3V3, GND, SDA, SCL (4 pins in total)
Supply voltage	3.3 V (from the main board's 3V3 pin)
Compatible main boards	Any main board with the standard Arduino interface
Compatible displays	OLED displays with an FPC 30P interface (e.g. 1.3-inch 128×64 SH1106)

4 Interface Description

4.1 Pin Definition & I/O Usage

The shield connects to the main board through the standard Arduino interface. Only 4 pins are actually used; all other pins are left unconnected (NC) on the board, so stacking the shield does not affect other shields on the main board. Pin functions are listed below:

Pin	Direction	Function
3V3	Power output	Provides 3.3 V power to the OLED display
GND	Power	Common ground
SDA	I2C data	I2C data line, connected to the main board's SDA
SCL	I2C clock	I2C clock line, connected to the main board's SCL



All unmarked are: NC

Fig. 2 Shield I/O usage (unmarked pins are NC)

Note: Unmarked pins in the figure are unused (NC). After stacking this shield, all other pins of the main board remain available.

4.2 FPC 30P Connector

P3 on the board is the FPC 30P connector for the OLED display. To connect the display, gently lift the connector's locking cap, insert the FFC ribbon with the gold fingers facing up

smoothly, then press the cap down to lock it. Do not plug or unplug the ribbon while powered.

5 System Composition & Compatibility

5.1 Three-Module Architecture

A complete display solution consists of three parts: main board + OLED 30P Shield + FPC 30P OLED display. The three modules are independent and freely combinable — any of them can be replaced as needed.



Fig. 3 System composition: main board + OLED 30P Shield + 30P OLED

5.2 Board & OLED Compatibility

Main board side: the Arduino interface is a universal standard, so Arduino UNO, Mega and all kinds of compatible boards work directly with this shield, as long as they provide standard Arduino header pins.

Display side: any OLED display with an FPC 30P interface and an I2C driver protocol (common drivers include SSD1306, SH1106, etc.) can be used — screen size and resolution are not limited.

💡 Tip: The OLED 30P Shield is a highly reusable expansion board: no need to replace the adapter board when changing the main board, nor when changing the display — one board serves many projects.

6 Quick Start

Follow the steps below to assemble the system and light up the OLED display:

Step 1 Align the OLED 30P Shield with the main board's header pins and press it down evenly until fully seated. Make sure the pins are not reversed.

Step 2 Lift the FPC connector's locking cap, insert the display's FFC ribbon into the connector (gold fingers facing up), then press the cap down to lock it.

Step 3 Install an OLED driver library such as U8g2 or Adafruit_SSD1306 in your development environment.

Step 4 In the example sketch, set the I2C address to the one used by your display (commonly 0x78), then compile and upload it to the main board.

Step 5 Power on — once the display shows content, the setup is complete.

💡 Note: The I2C address differs between displays. If the display stays blank, try a different address and check whether SDA/SCL are swapped.

7 Result Showcase

The photo below shows the actual result after assembly: main board + OLED 30P Shield + OLED display working together.

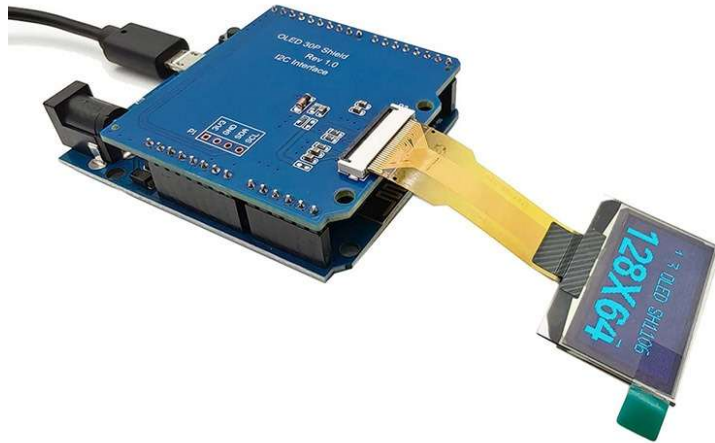


Fig. 4 Actual usage

8 Precautions

1. Power off before wiring or stacking to avoid damage from hot-plugging.
2. When inserting the FFC ribbon, mind the gold-finger orientation — a reversed ribbon may keep the display from lighting up or even damage it.
3. This shield is powered from the main board's 3V3 pin. Do not apply any external voltage higher than 3.3 V to the display circuit.
4. When stacking, make sure header pins and sockets align one-to-one in the correct orientation to avoid short circuits caused by misalignment.
5. If other devices share the I2C bus, watch out for address conflicts.
6. Avoid using or storing this product in humid, high-temperature or strongly electrostatic environments.