

1.28" ESP32 Round TFT Screen Development Board

User Manual - Version V1.12 (2024-09-24)

Revision History

Date	Version	Release Notes
2023-08-31	V1.0	Initial release
2023-11-07	V1.01	Added circuit explanations for user modifications
2024-03-28	V1.1	Improved button quality; optimized power efficiency and reduced heating; added IPEX connector
2024-07-04	V1.11	Corrected manual: serial port requires power ON for recognition.
2024-09-24	V1.12	Added FPC interface description.

1. Product Overview

This development board features a 1.28-inch round TFT display with GC9A01 driver, 240x240 resolution, and 65K colors. The display communicates with the onboard ESP32 via SPI, with driver examples provided. The Type-C port supports programming, serial communication, and power input. A 3.7V lithium battery can be connected for charging via the USB port. Battery voltage can be monitored through ADC using onboard resistive voltage dividers. Three side buttons are provided: one for power and two user-configurable. A TF card slot is available for external storage. External buttons can be wired via side solder pads.

2. Specifications

Product Type	ESP32-TFT Development Board
Input Voltage	USB 5V / 3.7V Li-ion battery
Operating Current	Typically <100mA (depends on code)
CPU	ESP32 dual-core, 240MHz
Flash	16MB
PSRAM	8MB (4MB usable)
Antenna	Onboard + IPEX connector (default: onboard)
Wireless	Wi-Fi 2.4GHz + Bluetooth
Display	1.28" IPS TFT (GC9A01 driver)
Peripherals	TF card slot x1, buttons x2, battery measurement interface x1
Mounting	M2 standoffs (4.5mm height)
Dimensions	41x37mm (no TF card) / 41x44mm (with TF card)

3. Functional Description

The Type-C port is used for power, battery charging, flashing, and serial communication. Use a USB 3.0 port or quality charger to prevent resets from insufficient current. The charging IC supports up to 500mA, limited to ~300mA by default to control heat. Charging current can be modified by changing resistor values as below.

Resistor (Ω)	Charge Current (mA)
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20K	50
10K	100
5K	200
4K	250
3K	300
2K	400
1.6K	500

The CH343 high-speed USB-UART chip supports up to 6Mbps, improving reliability over CH340/CP2102. Ensure the power switch is ON when flashing. Factory firmware plays video from SD card. Reverse battery connection may damage the board. There is no over-discharge protection; use protected batteries. Power-off current <1µA. TF cards of 1G, 2G, and 32G are supported; use branded cards.

4. Notes

- Compact design may cause noticeable heating – normal behavior.
- Use screws $\leq 4.5\text{mm}$ with M2 standoffs.
- FPC 3.3V output shares ESP32 power rail – avoid high-load devices.
- Example code tests major features; further updates will expand functions.