

The ESP32 Cheap Yellow Display Book

Projects Using Arduino IDE and the LVGL Graphics Library



Dogan Ibrahim

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the LVGL Graphics Library



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Preface

The ESP32 is probably one of the most popular microcontrollers used by many people, including students, hobbyists, and professional engineers. Its low cost, combined with rich features, makes it a popular device to use in many projects. The ESP32 microcontroller features ADC and DAC modules, Wi-Fi and Bluetooth modules, touch screen support, external and timer interrupts, a large number of GPIO ports, SPI and I²C modules, and many more highly sought features available only in expensive microcontrollers.

Recently, a board called the **ESP 32 Cheap Yellow Display** (CYD for short) has become available from manufacturers. This board includes a standard ESP32 microcontroller along with a 320x240 pixel TFT display. Additionally, the board provides several connectors for interfaces such as GPIO, serial port (TX/RX), power, and ground. The inclusion of the TFT display is a real advantage, as it enables users to design complex graphics-based projects without the need to use external LCD or graphic displays.

The advantages of using this board are:

- **Affordability** – A cost-effective way to add a display to your project without breaking the bank.
- **Compact Size** – Its small form factor makes it ideal for embedded systems and portable applications.
- **Built-in Sensors** – Some variants include additional sensors/modules, increasing versatility for various projects.
- **ESPHome Compatibility** – Works well with ESPHome, allowing easy integration with smart home setups.
- **Graphics Support** – Capable of displaying gauges, bar graphs, and other UI elements using powerful libraries such as the LVGL graphics library.
- **High Resolution** – Despite its affordability, it offers a decent pixel density for clear visuals.
- **Touchscreen Functionality** – Includes a touchscreen, making it interactive for user inputs.
- **Expandable Storage** – Features a microSD card slot for additional storage needs.
- **RGB LED Integration** – Includes an RGB LED for status indication or aesthetic effects.
- **Modular Design** – Can be seamlessly integrated into various projects, from smart home setups to IoT applications.

The book describes the basic hardware of the ESP32 CYD board and provides details of its on-board connectors. The main aim of the book is to teach readers how to use the on-board TFT display in various projects. It includes many basic, simple, and intermediate-level projects based on the ESP32 CYD, using the highly popular Arduino IDE 2.0 integrated development environment. The book also includes projects that demonstrate how to use the popular LVGL graphics library with the ESP32 CYD. All the projects used in the book have been tested and work without requiring any modifications.

The author hopes that you enjoy reading the book and, at the same time, learn how to use the ESP32 CYD board and the LVGL graphics library in your future projects.

Dogan Ibrahim