GODIYMODULES 1.47 Inch Full Color TFT IPS Display Module

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Model: B0GTY23P2N

1. Introduction

This manual provides comprehensive instructions for the GODIYMODULES 1.47 Inch Full Color TFT IPS Display Module. It covers essential information regarding product features, technical specifications, pinout details, setup procedures, operational guidelines, maintenance tips, and troubleshooting steps to ensure optimal use of your display module.

2. Product Overview

2.1 Features

- 1.47 Inch Full Color TFT IPS Display Module
- 172x320 Resolution HD
- SPI Interface LCD LED Screen
- 3.3V SPI Interface
- Module Power Supply: 2.8-3.3V
- Interface Mode: SPI
- Driver IC: ST7789

2.2 What's in the Box

- 1 x 1.47 Inch Full Color TFT IPS Display Module
- 1 x Pin Header Set (for connection)

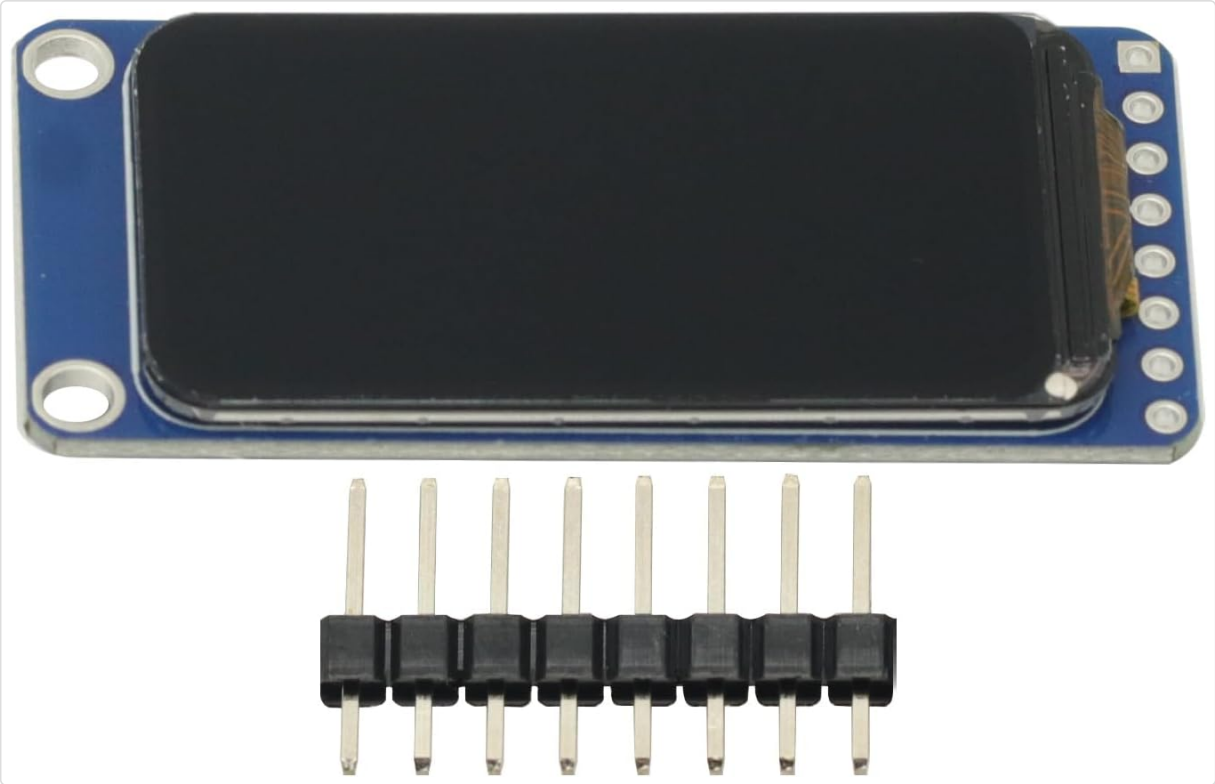

Image: The 1.47 Inch TFT IPS Display Module shown with its accompanying pin headers.

3. Specifications

Specification	Value
Brand	GODIYMODULES
Display Size	1.47 Inch
Resolution	172x320 pixels
Display Type	TFT IPS Full Color
Interface	SPI (Serial Peripheral Interface)
Driver IC	ST7789
Power Supply	2.8V - 3.3V (3.3V recommended)
Manufacturer	GODIYMODULES
ASIN	B0GTY23P2N

4. Pinout Description

The display module features a standard pinout for SPI communication and power. Refer to the diagram below for pin identification and their functions.

Image: Technical drawing showing the dimensions of the module in millimeters and the pinout definitions.

- **VDD** / **GND:** Power supply (3.3V recommended) and ground connection.
- **SCL** / **SDA:** SPI clock and data signals for communication.
- **RES:** Reset pin for initializing the display controller.
- **DC:** Data/Command selection pin (high for data, low for command).
- **CS:** Chip Select pin (active low, enables SPI communication with the display).
- **BL:** Backlight control pin (typically for enabling/disabling or controlling backlight brightness).

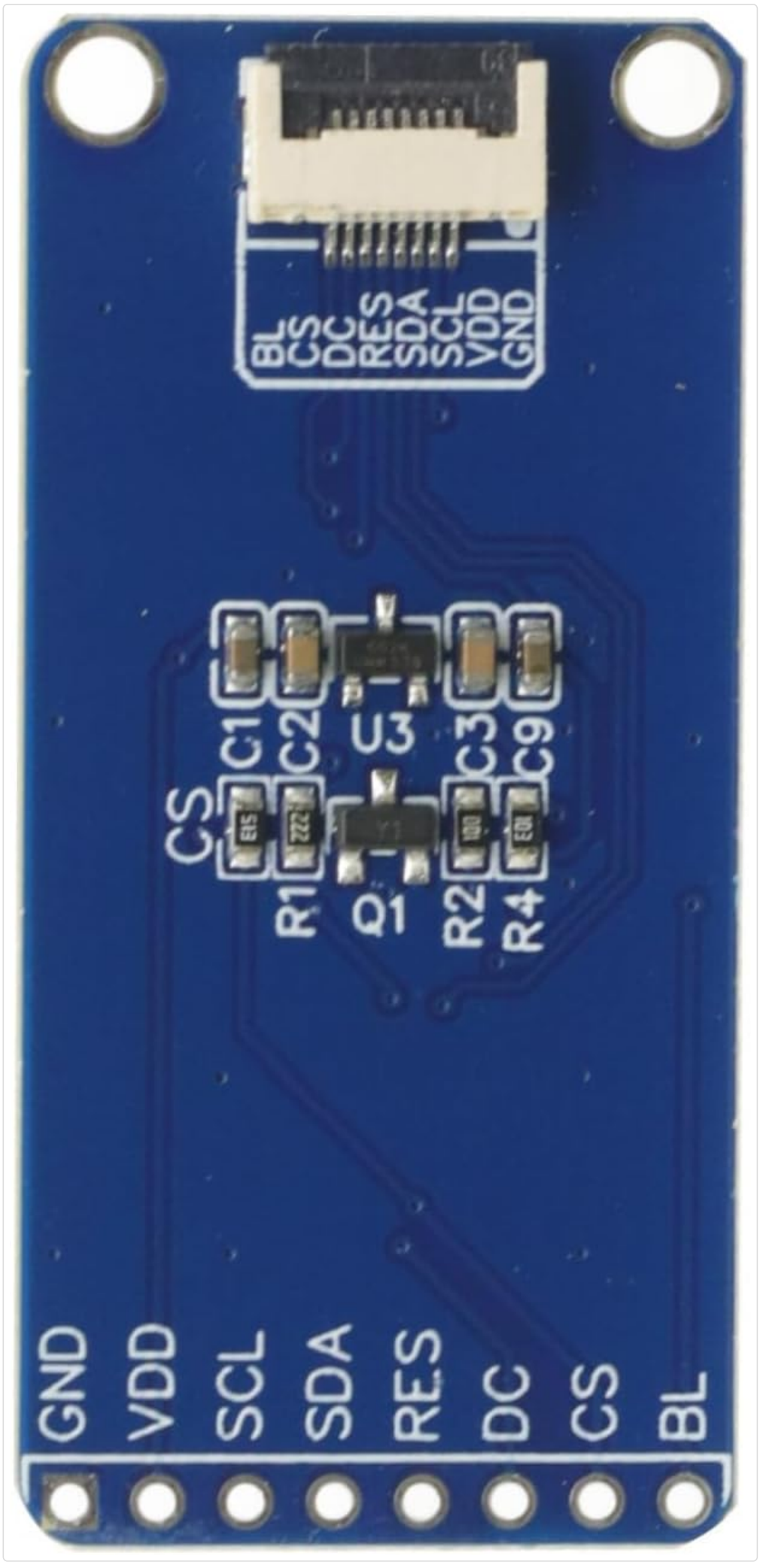
BL
CS
DC
RES
SDA
SCL
VDD
GND
C1
C2
U3
C3
C9
CS
R1
Q1
R2
R4
GND
VDD
SCL
SDA
RES
DC
CS
BL

Image: Rear view of the display module's printed circuit board (PCB), showing components and pin labels.

5. Setup

Follow these steps to connect and prepare your display module for use with a microcontroller or development board.

1. **Power Connection:** Connect the VDD pin to a 3.3V power supply and the GND pin to the ground of your microcontroller. Ensure the power supply is stable and within the 2.8V-3.3V range.
2. **SPI Signal Connection:** Connect the SCL (Serial Clock), SDA (Serial Data), CS (Chip Select), DC (Data/Command), and RES (Reset) pins from the display module to the corresponding SPI pins on your microcontroller. Refer to your microcontroller's documentation for specific pin assignments.
3. **Backlight Control:** Connect the BL (Backlight) pin. This can be connected directly to 3.3V for constant backlight or to a PWM-capable pin on your microcontroller for brightness control.
4. **Physical Mounting:** Secure the display module to your project enclosure or breadboard using appropriate standoffs or mounting hardware.

Image: Front view of the 1.47 Inch TFT IPS Display Module, showing the display area.

6. Operating Instructions

To operate the display, you will need to write firmware for your microcontroller that communicates with the ST7789 driver via the SPI interface.

1. **Initialization:** After power-up, send the necessary initialization commands to the ST7789 driver. This typically involves a software reset, setting display orientation, color mode, and other display parameters.
2. **Sending Commands and Data:** Use the DC pin to switch between command mode (DC low) and data mode (DC high). All commands and pixel data are sent via the SPI data line (SDA) synchronized by the SPI clock (SCL).
3. **Drawing Graphics:** To display graphics or text, define a drawing window (column and row address

set) and then send the pixel data. The display supports 172x320 resolution.

4. **Backlight Control:** Control the backlight via the BL pin. For simple ON/OFF, set the pin high or low. For brightness control, use Pulse Width Modulation (PWM) on the BL pin.

Refer to the ST7789 datasheet for detailed command sets and programming sequences. Many open-source libraries are available for common microcontrollers (e.g., Arduino, ESP32) that simplify interaction with ST7789-based displays.

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7. Maintenance

Proper care and maintenance will extend the lifespan of your display module.

- **Cleaning:** Gently wipe the display surface with a soft, lint-free cloth. For stubborn smudges, use a small amount of isopropyl alcohol on the cloth. Avoid abrasive cleaners or direct spraying of liquids onto the module.
- **Handling:** Always handle the module by its edges to avoid touching the display area or sensitive electronic components.
- **Static Discharge:** Take precautions against electrostatic discharge (ESD) when handling the module, as static electricity can damage electronic components. Use an ESD-safe workstation if possible.
- **Storage:** Store the module in a dry, dust-free environment, away from direct sunlight and extreme temperatures.

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8. Troubleshooting

If you encounter issues with your display module, consider the following troubleshooting steps:

- **No Display / Blank Screen:**
  - Verify power connections (VDD, GND) and ensure the module is receiving 3.3V.
  - Check all SPI signal connections (SCL, SDA, CS, DC, RES) for proper wiring.
  - Ensure the backlight (BL) pin is correctly connected and receiving power.
  - Confirm that the display driver (ST7789) is being correctly initialized in your code.
- **Incorrect Colors / Distorted Image:**
  - Check the color mode settings in your initialization code (e.g., 16-bit, 18-bit color).
  - Verify that pixel data is being sent in the correct format and byte order.
  - Ensure the display orientation settings match your desired view.
- **Partial Display / Incorrect Resolution:**
  - Confirm that the column and row address set commands are correctly configured for 172x320 resolution.
  - Check for any offset settings that might be shifting the display area.
- **SPI Communication Errors:**
  - Verify SPI clock speed is compatible with both the microcontroller and the display module.
  - Check for proper logic levels (3.3V) on all SPI lines.

9. Warranty and Support

9.1 Warranty Information

This GODIYMODULES display module is covered by a **2-year manufacturer's warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use. It does not cover damage caused by misuse, accident, unauthorized modification, or improper installation.

9.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact the seller or manufacturer directly through the platform where the product was purchased. Provide your product model number (B0GTY23P2N) and a detailed description of the issue to facilitate support.