SMART DISPLAY MODULE SPECIFICATION

7-1024X600-ESP32-P4-C6-TOUCH-DISPLAY	
Model:	UEP4S070H1024V600C-WBA
Version:	V1.2
Date:	2025-12-25

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Customer Confirmation

Approved by	Notes

REVISION HISTORY

Revision	Date	Contents of Revision Change	Remark
V1.0	20250921	Preliminary release	
V1.1	20251212	Add datasheet Link， Optimize the content document	
V1.2	20251225	Update model name	

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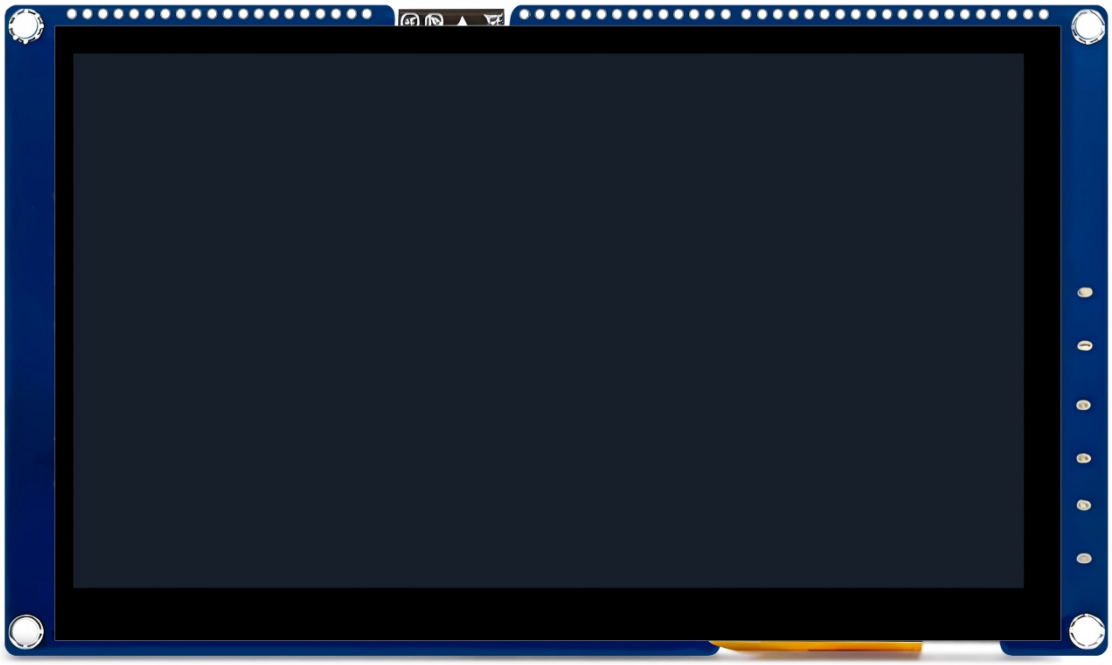
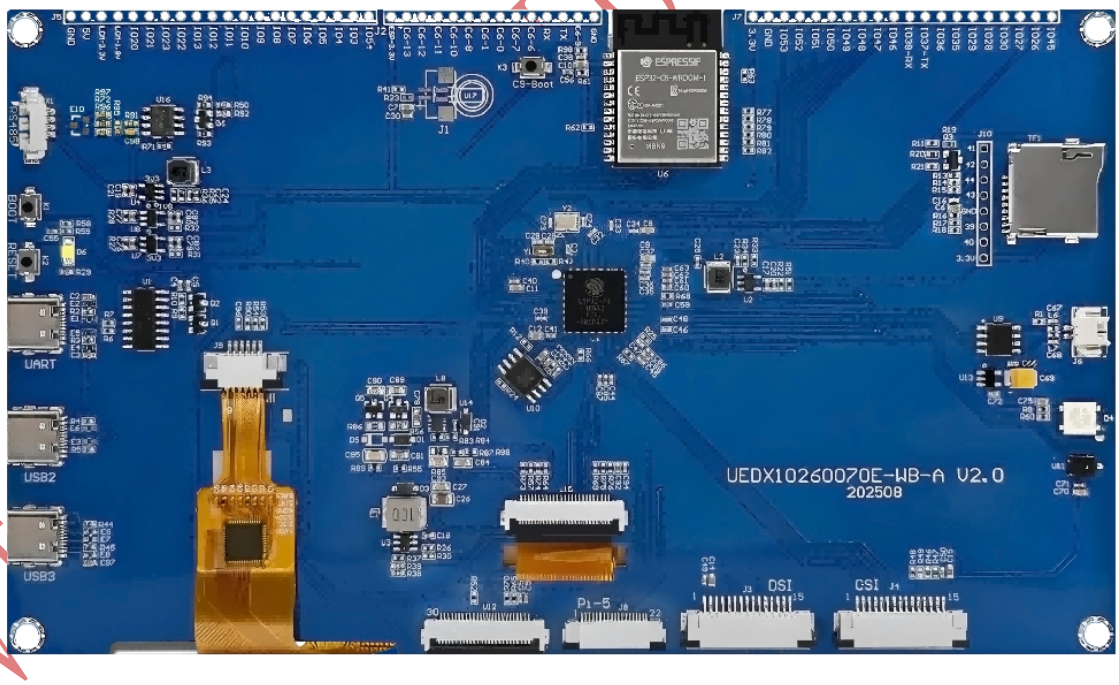
1.Introduction





UEP4S070H1024V600C-WBA is a high-performance ESP32-P4 development board equipped with a 7-inch MIPI screen (1024*600). It is designed by VIEWE based on the ESP32-P4 chip and ESP32-C6 module, supporting 2.4GHz Wi-Fi 6 and Bluetooth 5 (LE). The ESP32-P4 is equipped with a dual-core 360MHz RISC-V processor.

1.1 Product Features

CPU:

1) Processor
   - ✧ Equipped with a RISC-V 32-bit dual-core processor (HP system), with DSP and instruction set extensions, floating-point arithmetic unit (FPU), and a main frequency of up to 400 MHz
   - ✧ Equipped with a RISC-V 32-bit single-core processor (LP system), with a main frequency of up to 40 MHz
   - ✧ Equipped with an ESP32-C6 WIFI/BT coprocessor, expanding functions such as WIFI 6/Bluetooth 5 through SDIO
2) Memory
   - ✧ 128 KB of high-performance (HP) system read-only memory (ROM).
   - ✧ 16 KB of low-power (LP) system read-only memory (ROM).
   - ✧ 768 KB of high-performance (HP) L2 memory (L2MEM).
   - ✧ 32 KB of low-power (LP) SRAM.
   - ✧ 8 KB of system tightly coupled memory (TCM).
   - ✧ 32 MB PSRAM is stacked and sealed inside the package, and 16MB Nor Flash is connected through the QSPI interface
3) Peripheral Interfaces
   - ✧ Two 2*20 Pin Headers are on-board to引出 34 programmable GPIOs, supporting a rich variety of peripheral devices
   - ✧ On-board SDIO3.0 SD card slot and Type-C UART programming port, facilitating use in different scenarios
   - ✧ On-board MIPI-CSI high-definition camera interface, supporting full HD 1080P video capture and encoding, integrating an image signal processor (ISP) and H264 video encoder, supporting H.264 & JPEG video encoding (1080P @30fps)
   - ✧ On-board 2 MIPI-DSI high-definition display interfaces, integrating a pixel processing accelerator (PPA) and 2D graphics acceleration controller (2D DMA), supporting JPEG image decoding (1080P @30fps), providing strong support for high-definition displays and smooth HMI experiences

For more information on ESP32-P4-NRW32, please refer to the following link:datasheet_en.pdf

Display:

1) Size: 7.0 Inch
2) Mode: TFT
3) Driver IC：JD9165BA
4) Resolution: 1024(RGB)*600
5) Interface Mode：MIPI
6) Brightness: 400 cd/m2
7) Display Color：16.7M
8) Touch IC：GT911
9) Viewing Direction：ALL　O’clock

More information about Display can be found here:Display Specification.pdf

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Other：

1) Power: DC 5V, 450mA
2) Operation Temperature：-10~60℃
3) Storage Temperature：-20~70℃

1.2 Applications

With low power consumption, ESP32-P4 is an ideal choice for IoT devices in the following areas:

- Smart Home
- Industrial Automation
- Health Care
- Consumer Electronics
- Smart Agriculture
- Retail Self-Service Terminals (POS, Vending Machines)
- Service Robot
- Multimedia Player
- Cameras for Video Streaming
- High-Speed USB Host and Device
- Smart Voice Interaction Terminal
- Edge Vision AI Processor
- HMI Control Pane

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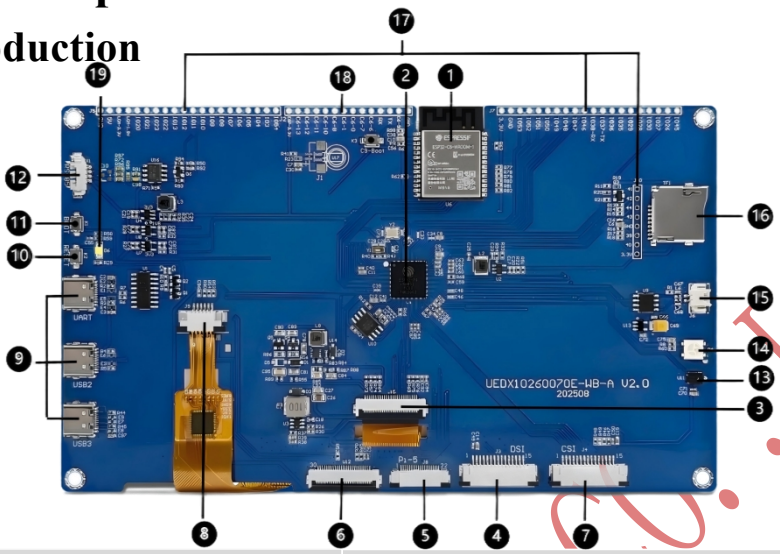
2. Hardware Description

2.1 Module Introduction



1、ESP32-P4NRW32
ESP32-P4 stacked with 32MB PSRAM and 16MB Flash

2、ESP32-C6
SDIO interface protocol, expanding ESP32-P4-SmartDisplay Wi-Fi 6 and Bluetooth 5

3、7inch Display interface (MIPI 2-lanes**)**

4、15pin Display interface (MIPI 2-lanes**)**
Compatible with RPi4B/3/… display
4-DSI-TOUCH
7-DSI-TOUCH
10.1-DSI-TOUCH

5、22pin MIPI-DSI Display interface(MIPI 2-lanes**)**
Compatible with RPi 5B display

6、33pin Universal Display Interface(MIPI 2-lanes**)**
Universal Display Interface for VIEWE

7、15pin CSI Camera interface
pitch 1.0mm connector for connecting MIPI (2-lanes) cameras

8、7inch Touch interface

9、Type-C interface (USB2、USB3、UART)
Can be used for power supply, program burning, and debugging， USB3 is a USB 2.0 full-speed OTG interface

10、RESET button

11、BOOT button
Press when powering on or resetting to enter download mode

12、PH2.0 4PIN RS485 Header
for connecting to RS485 devices

13、SMD microphone

14、RGB-LED (WS2812B)

15、PH 2.0 Speaker Header(ES8311、NS4150B**)**

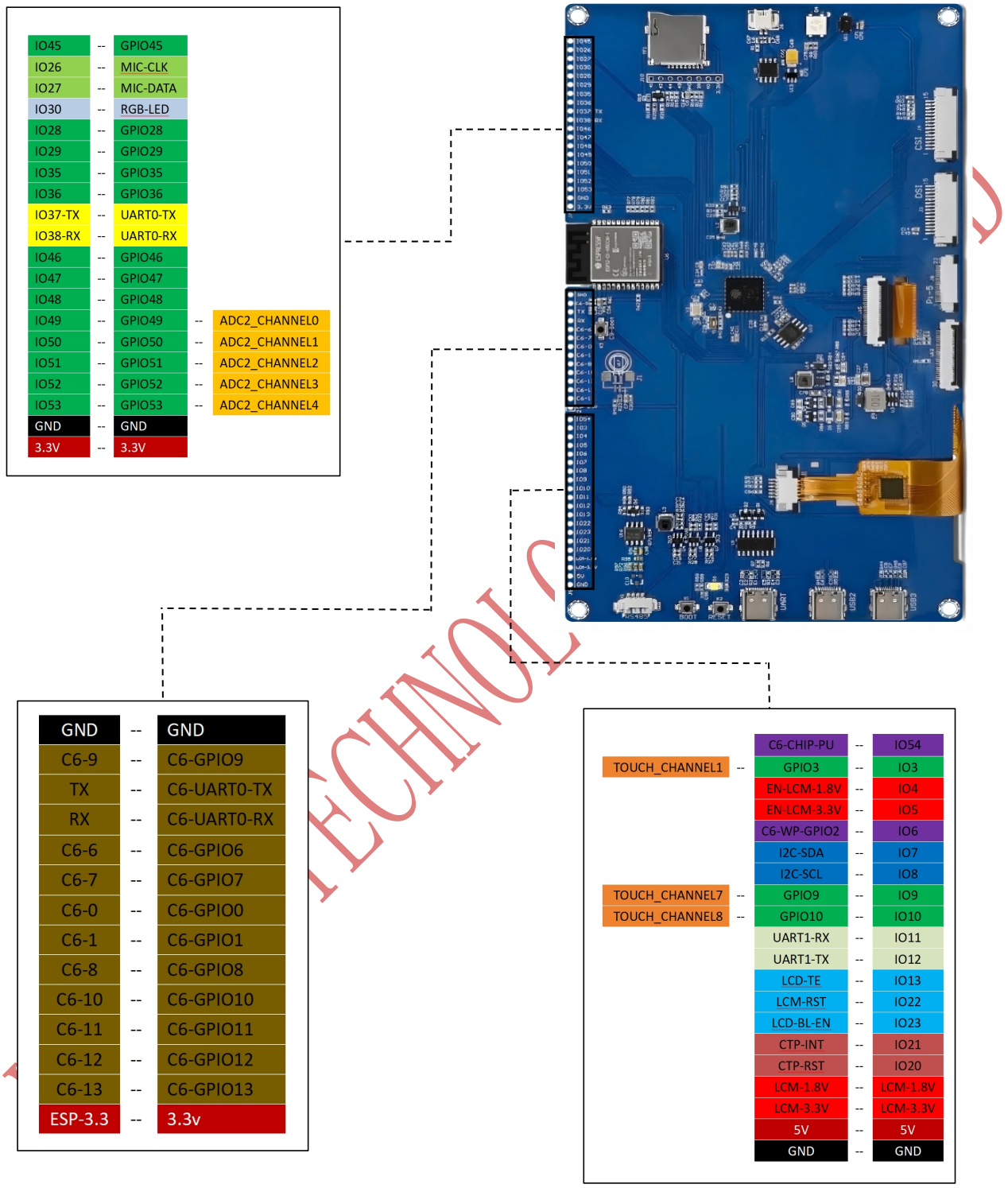
16、TF card slot (SDIO 3.0 interface protocol)

17、P4 GPIO interface（2*20Pin pitch 2.54mm）

18、C6 GPIO interface（14Pin pitch 2.54mm）

19、USER-LED
Power indicator light

2.2 GPIO Definition



2.3 GPIO Introduction

GPIO2	GPIO2	GPIO29	GPIO29
GPIO3	GPIO3	GPIO30	RGB LED
GPIO4	EN-LCM1V8	GPIO31	I2S-CTRL
GPIO5	EN-LCM3V3	GPIO32	I2S-LRCLK
GPIO6	C6-WP	GPIO33	I2S-BCLK
GPIO7	I2C-SDA	GPIO34	I2S-SDATA
GPIO8	I2C-SCL	GPIO35	GPIO35
GPIO9	GPIO9	GPIO36	GPIO36
GPIO10	GPIO10	GPIO37	UART0-RX
GPIO11	UART1-RX	GPIO38	UART0-TX
GPIO12	UART1-TX	GPIO39	SD1-D0
GPIO13	LCD-TE	GPIO40	SD1-D1
GPIO14	SD3-D0	GPIO41	SD1-D2
GPIO15	SD3-D1	GPIO42	SD1-D3
GPIO16	SD3-D2	GPIO43	SD1-CLK
GPIO17	SD3-D3	GPIO44	SD1-CMD
GPIO18	SD3-CLK	GPIO45	SD1-PWRn
GPIO19	SD3-CMD	GPIO46	GPIO46
GPIO20	CTP-RST	GPIO47	GPIO47
GPIO21	CTP-INT	GPIO48	GPIO48
GPIO22	LCM-RST	GPIO49	GPIO49
GPIO23	LCD-BL-EN	GPIO50	GPIO50
GPIO24	USB-P1-N	GPIO51	GPIO51
GPIO25	USB-P1-P	GPIO52	GPIO52
GPIO26	MIC-CLK	GPIO53	GPIO53
GPIO27	MIC-DATA	GPIO54	C6-CHIP-PU
GPIO28	GPIO28		

GPIO MIC UART0 I2C

Power LCD Power UART1 LCD Pin

C6-GPIO Touch Channel ADC Channel USB2.0

SD1-TF SD3-C6 I2S RGB LED

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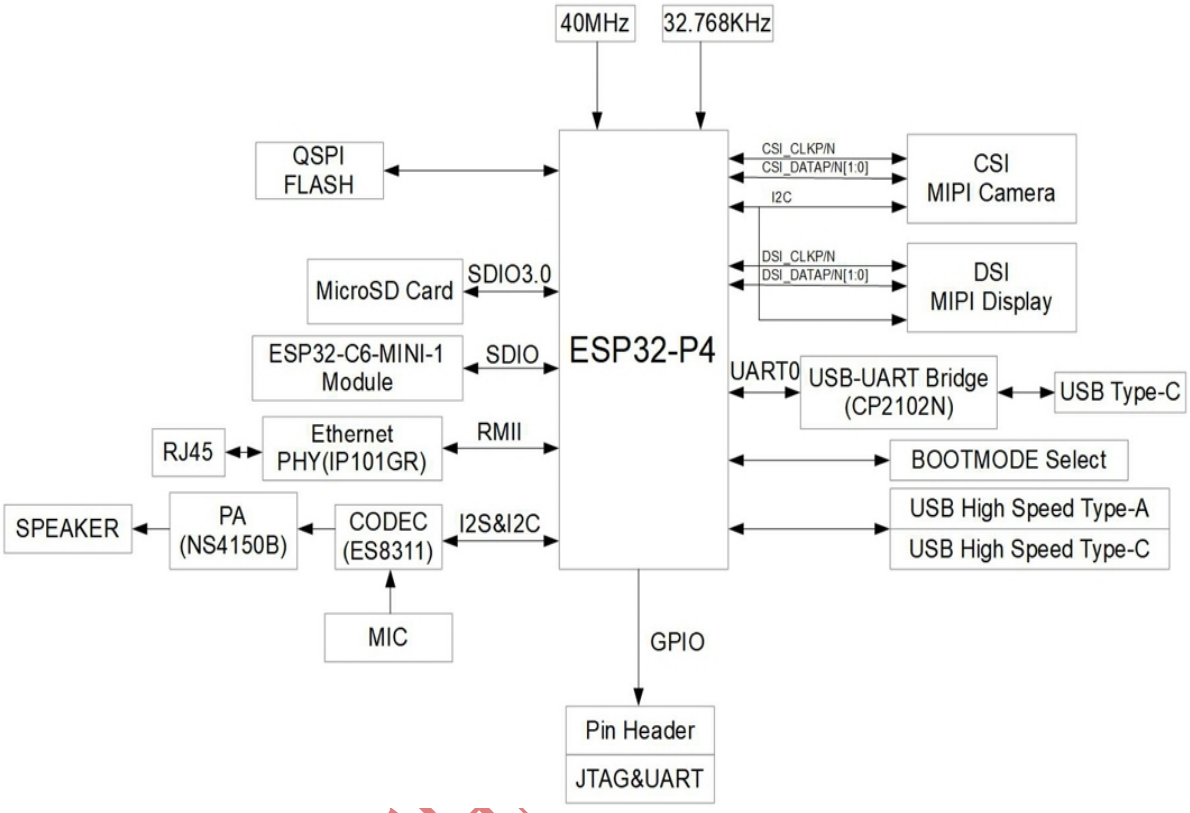
3. Functional Block Diagram

The main components and connection methods of the UEP4S070H1024V600C-WBA are shown in the following figure:



Note: This board is the most basic version, and there are no external Ethernet.And we have also replaced the audio part, which consists of msm261d and ns4168. We will lead out the pin and can directly insert the expansion board later, and also reserve more creative possibilities for everyone

4. Instructions for Use

This tutorial aims to guide users to set up the software environment for ESP32-P4 hardware development, and demonstrates how to use the ESP-IDF configuration menu, compile, and download firmware to the ESP32-P4 development board through simple examples.

- Preparation
  - Hardware
    - ESP32-P4-SmartDisplay Development Board
    - USB data cable (Type-A to Type-C, prepared as needed)
    - Computer (Windows, Linux or macOS)
  - Software (It is recommended to install ESP-IDF using an integrated development environment. If you are familiar with ESP-IDF, you can start directly from the ESP-IDF terminal. You can choose any of the following development methods.)
    - VSCode + ESP-IDF plugin (recommended)

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- ✧ Eclipse + ESP-IDF plugin (Espressif-IDE)
- ✧ Arduino IDE

- Getting-start
  - Please go to ESP-IDF Quick Start to see how to quickly set up the development environment and burn the application to your development board.
  - The application examples for the development board are stored in Examples. You can configure the project options by entering idf.py menuconfig in the example directory.

5. Related Documents

- UEP4S070H1024V600C-WBA Schematic Diagram (PDF)
- Camera Specification (PDF)
- Display Specification (PDF)
- Display Chip Specification (PDF)
- ESP32-C6 Datasheet(Chinese)
- ESP32-C6 Datasheet(English)
- ESP32-P4 Datasheet (Chinese)
- ESP32-P4 Datasheet (English)
- ESP32-P4 Technical Reference Manual (Chinese)
- ESP32-P4 Technical Reference Manual (English)
- Other Datasheet

6. Examples

- Github:VIEWESMART/7-1024X600-ESP32-P4-C6-TOUCH-DISPLAY
- Gitee:VIEWESMART/7-1024X600-ESP32-P4-C6-TOUCH-DISPLAY

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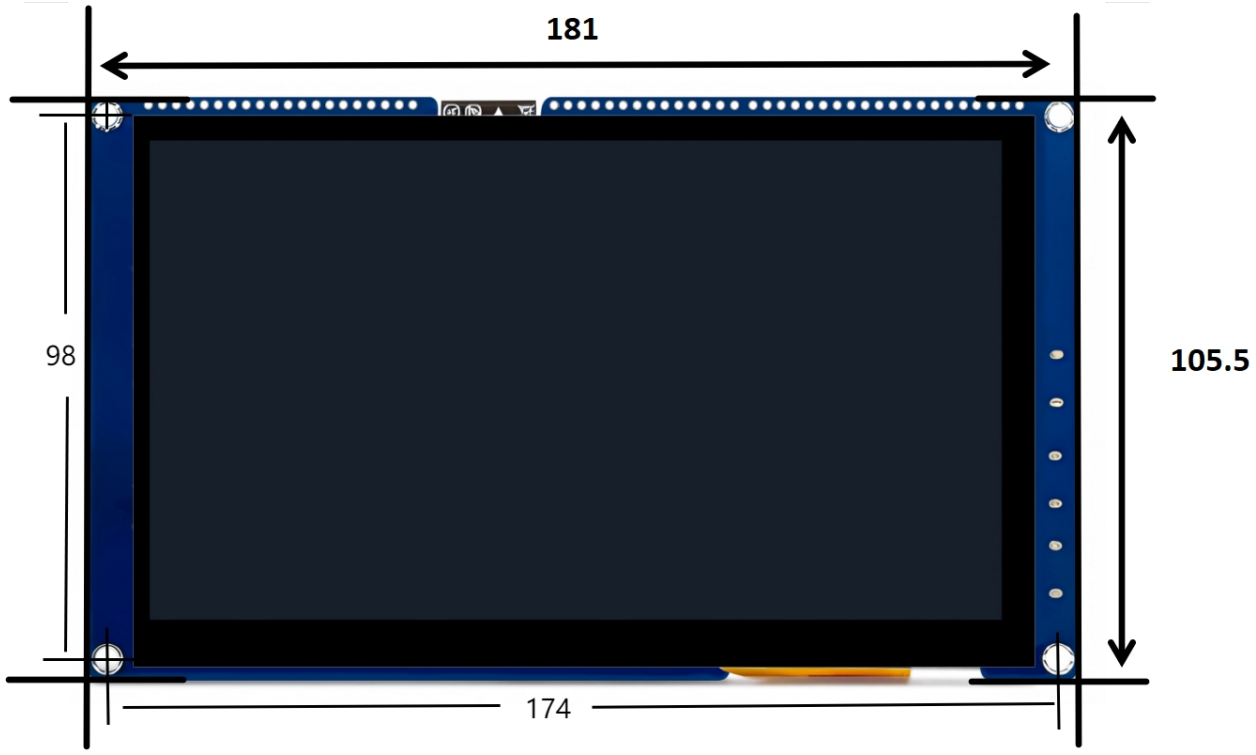
7. dimension drawing



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