SMART DISPLAY MODULE SPECIFICATION

1.9 Inch Smart Display with TOUCH	
Model:	UEDX17320019E-WB-A
Version:	V3.2
Date:	2024-11-14

Customer Confirmation

Approved by	Notes

REVISION HISTORY

Revision	Date	Contents of Revision Change	Remark
V1.0	20240611	Preliminary release	
V1.1	20240628	Change to English version	
V2.0	20240711	Upgrade mechanical drawing	
V2.1	20240721	Add environment configuration links	
V3.0	20240812	Add schemata, GitHub project links	
V3.1	20240830	Upgrade mechanical drawing	
V3.2	20241114	Add the hardware introduction of the development b the usage of the reserved GPIO, the data manual of t control IC and the specifications of the screen	

TABLE of CONTENTS

1. Introduction

1.1 Features

Brief Info:

1) Button control: one is the reset button, the other is the boot button.
2) Backup IO: download ports and multiple IO leads to use on both sides of the periphery.
3) Power: DC 5V, 200mA

System

1) OS: RTOS
2) CPU: ESP32-S3 240Mhz
3) RAM: 8MB
4) Flash: 16MB
5) Interface: UART/USB
6) Support 2.4GHz Wi-Fi、BLE 5、BLE Mesh
7) Support Peripherals:
   GPIO, SPI, LCD interface, Camera interface, UART, I2C, I2S, remote control, pulse counter,LED PWM, full-speed USB 2.0 OTG, USB Serial/JTAG controller, MCPWM, SDIO host, GDMA, TWAI® controller (compatible with ISO 11898-1), ADC, touch sensor, temperature sensor, timers and watchdogs

For more information on ESP32-S3-WROOM-1, please refer to the following link:datasheet_en.pdf

Display

1) Size:1.9 Inch
2) Resolution:170*320
3) Mode: IPS
4) Pixel Arrangement：RGB Vertical Stripe
5) Interface Mode：MCU 8/16BIT/SPI
6) Touch: CTP
7) Driver IC： GC9307 TP IC: CHSC6413
8) Brightness: 500 cd/m^2
9) Backlight Type：White LED
10) Display mode：Normally Black,
11) Pixel Density：182 PPI

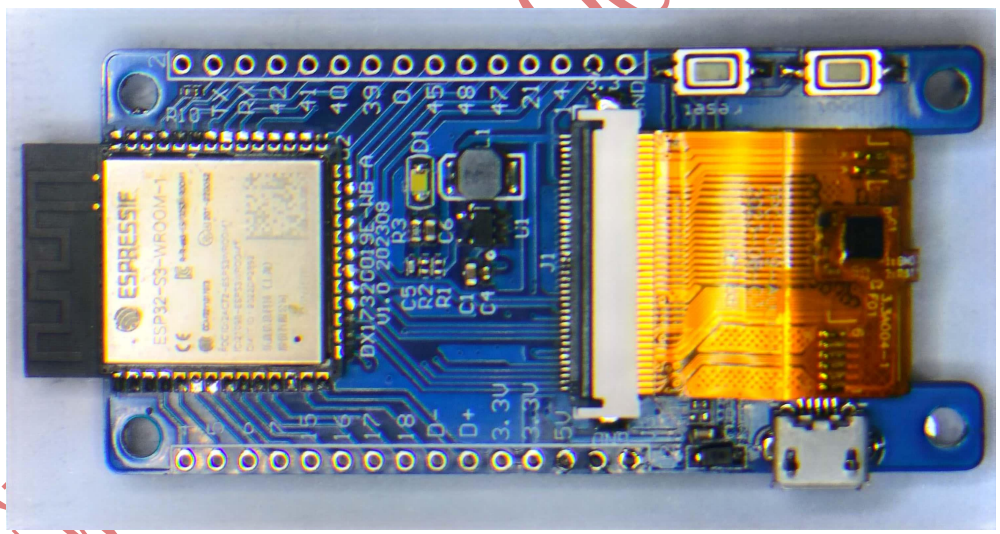
More information about Display can be found here:Display Specification.pdf

Other

1) Operation Temperature：-20~70℃
2) Storage Temperature：-30~80℃

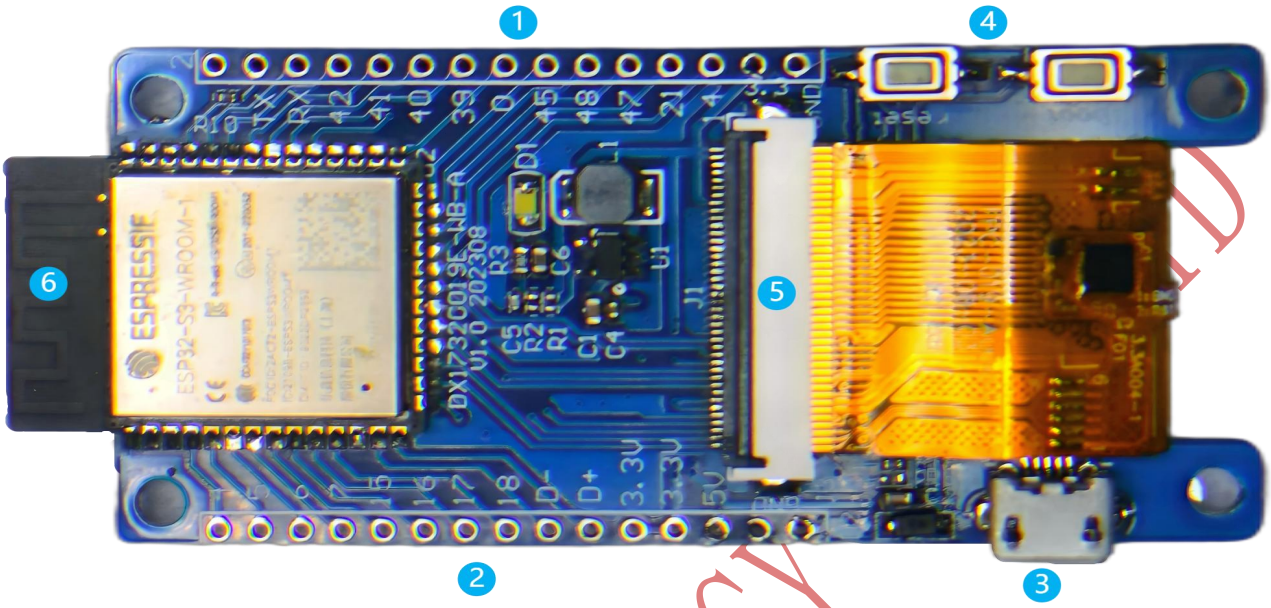
1.2 Appearance picture

（This UI is only a picture, please refer to the actual）



2. Product information

2.1 Interface Description



① **External GPIO and**

Pin NO.	Symbol	Description	Voltage Range	Remarks
1	GPIO2	GPIO2, Reserve IO	0-3.3V	did not use
2	TX	UART Transmit	0-3.3V	Can be reused
3	RX	UART Receive	0-3.3V	Can be reused
4	GPIO42	GPIO42, Reserve IO	0-3.3V	did not use
5	GPIO41	GPIO41, Reserve IO	0-3.3V	did not use
6	GPIO40	GPIO40, Reserve IO	0-3.3V	did not use
7	GPIO39	GPIO39, Reserve IO	0-3.3V	did not use
8	GPIO0	GPIO0, Reserve IO	0-3.3V	Can be reused
9	GPIO45	GPIO45, Reserve IO	0-3.3V	did not use
10	GPIO48	GPIO48, Reserve IO	0-3.3V	did not use
11	GPIO47	GPIO47, Reserve IO	0-3.3V	did not use
12	GPIO21	GPIO21, Reserve IO	0-3.3V	did not use
13	GPIO14	GPIO14, Reserve IO	0-3.3V	did not use
14	3.3V	Power 3.3V	3.3V	
15	GND	Grounds	0V	

② **External GPIO**

Pin NO.	Symbol	Description	Voltage Range	Remarks
1	GPIO4	GPIO4, Reserve IO	0-3.3V	did not use
2	GPIO5	GPIO5, Reserve IO	0-3.3V	did not use
3	GPIO6	GPIO6, Reserve IO	0-3.3V	did not use
4	GPIO7	GPIO7, Reserve IO	0-3.3V	did not use
5	GPIO15	GPIO15, Reserve IO	0-3.3V	did not use
6	GPIO16	GPIO16, Reserve IO	0-3.3V	did not use
7	GPIO17	GPIO17, Reserve IO	0-3.3V	did not use
8	GPIO18	GPIO18, Reserve IO	0-3.3V	did not use
9	D-	USB D-	-	
10	D+	USB D+	-	
11	3.3V	Power 3.3V	3.3V	
12	3.3V	Power 3.3V	3.3V	
13	5V	Power 5V	5V	
14	GND	Grounds	0V	
15	GND	Grounds	0V	

The connector specifications is two 15PIN 2.54mm pitch

Note:

- A pin can be used for other purposes when it is not used at the same time.
- You can also use an external gpio to drive other device
- Refer to the schematic diagram for the use of other pins: 4. Schematic

③ **Display Interface:**

Pin No.	Symbol	I/O	Description
1	**XL /CTP-SCL**	I	I2C clock signals for CTP; Option XL for RTP
2	**YU /CTP-SDA**	I	I2C data signal for CTP, Option YU for RTP
3	**XR /CTP-RST**	I	The signal will reset the CTP,Signal is active low, Option XR for RTP
4	**YD /CTP-INT**	I/O	Interrupt signals for CTP, Option YD for RTP
5	**GND**	P	Power Ground

6	**IOVCC**	P	Power supply for I/O system
7	**VCI**	P	Power supply for analog circuits
8	**TE**	O	Tearing effect signal is used to synchronize MCU to frame memory
9	**SPI_CS /MCU_CS**	I	Chip selection pin. Low-active
10	**SPI_SCL /MCU_RS**	I	Display data/command selection pin in MCU interface In SPI mode, this pin is used as SCL
11	**SPI_RS /MCU_WR**	I	Write enable in MCU parallel interface RS=1 display data or parameter;RS=0 register index / command
12	**MCU_RD**	I	Read enable in 8080 MCU parallel interface. Low-active.
13	**SPI_SDA**	I/O	Serial communication data input and output, internal pull low.
14	**SPI_SDO**	O	SPI interface output pin
15	**RESET**	I	The signal will reset the LCM, Signal is active low.
16	**GND**	P	Power Ground
17-32	**DB0-DB15**	I/O	data bus for MCU
33	**LED-A**	P	Power supply for backlight anode
34-36	**LED-K**	P	Power supply for backlight cathode
37	**GND**	P	Power Ground
38	**IM0**	I	The MCU interface mode select.
39	**IM1**	I	The MCU interface mode select.
40	**IM2**	I	The MCU interface mode select.

I：Input；O：Output；P：Power

④ **USB:**

USB is used for power and download.

⑤ **button:**

the boot button on t and the reset button on the right.

⑥ **Main Control Chip: ESP32S3-MCN16R8**

Dual-core processor, up to 240MHz operating frequency

2.2 Display Information

Item	Specification	Unit	Remark
Pixel Driving element	IPS TFT	-	-
Screen Size	1.99	Inch	Diagonal
Resolution	170(W)*3(RGB)*320(H)	Dots	-
Interface	MCU 8/16BIT/SPI	-	40PIN
Module Power Consumption	0.28	Watt	Typ.
Active Area	22.695(W)*42.72(H)	mm	-
Pixel pitch (W*H)	0.1335(W)*0.1335(H)	mm	-
Module Size (W*H*D)	28.00(W)*58.00(H)*2.72(D)	mm	-
Luminance	500	cd/m^2	Typ.
Viewing Direction	ALL	O'clock	-
Display Color	262K	Colors	18bits

2.3 Voltage & Current

Item	Conditions	Min	Typ	Max	Unit
Power Voltage	DC	4. 0	5.0	5.5	V
Operation Current	VCC= +5V, Maximum backlight current	-	200	-	mA
	VCC= +5V,backlight off	-	100	-	mA
Recommended power supply:5V 1A DC					

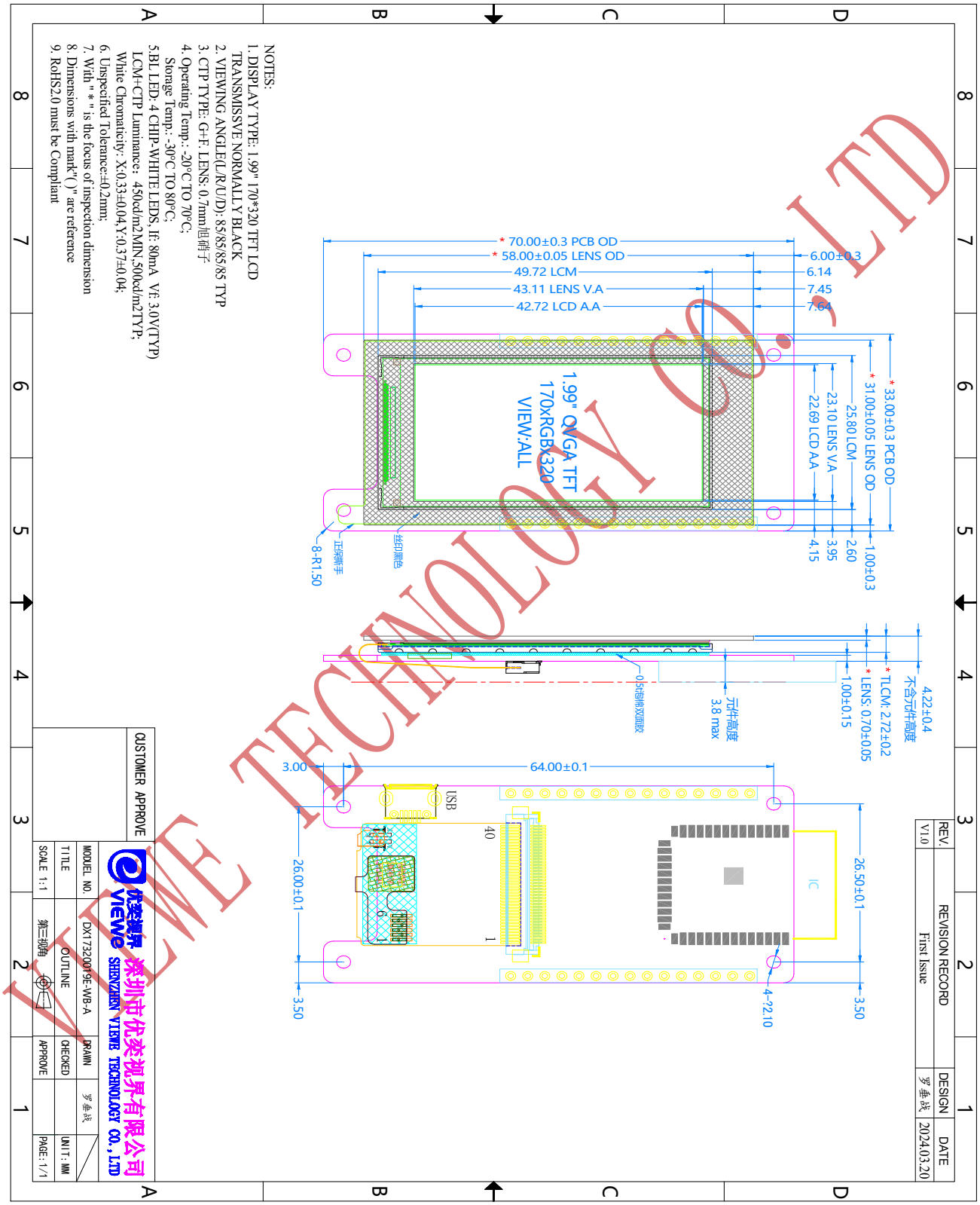
2.4 Reliability Test

Item	Conditions	Min	Typ	Max	Unit
Working Temperature	60%RH at 5V voltage	-20	25	70	C
Storage Temperature	---	-30	25	85	C
Working Humidity	25°C	10%	60%	90%	RH
ESD	---	Contact: ±4KV Air: ±8KV			KV

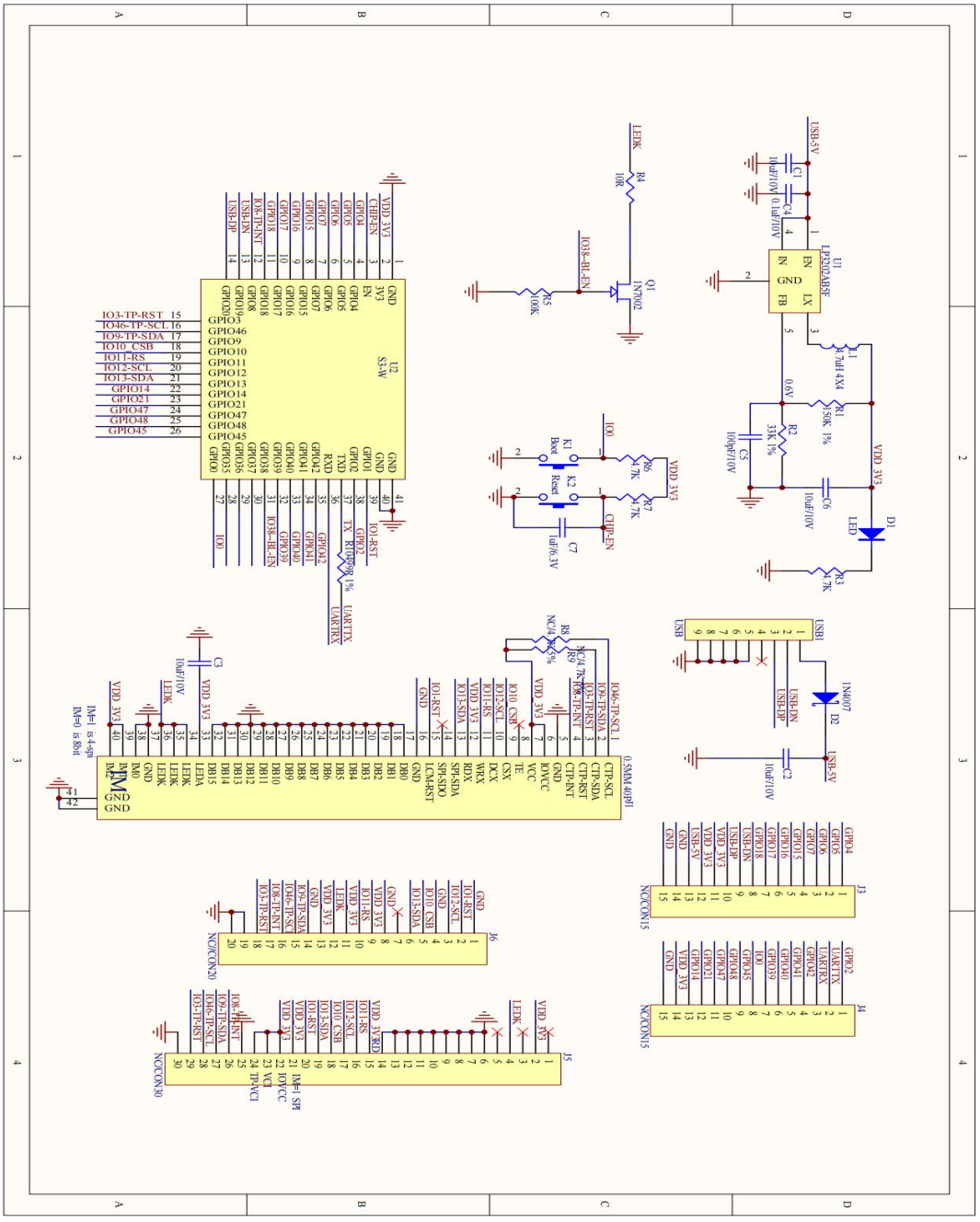
2.6 Related software

Software name	Version	Software associated configuration	Development environment configuration link
Arduino IDE	2.0.17 (esp32)	1. Board: ESP32S3 Dev Module 2. CPU Frequency: 240MHz (WiFi) 3. Flash Frequency: NO 4. Flash Mode: QIO 80MHz 5. Flash Size: 16MB (128Mb) 6. Partition Scheme: Default 4MB with spiffs (1.2MB APP/1.5MB SPIFFS) 7. PSRAM: OPI PSRAM 8. Programmer: Esptool	ESP32-Arduino config (github.com)
ESP-IDF	5.1.1 5.2.2	Once configured, no configuration is required （If you have any problem with the configuration, please contact us, we will help you） The SDK of the IDF architecture of the development board has not been developed, so look forward to it	ESP-IDF config (github.com)

3. MECHANICAL DRAWING



4. Schematic



5. Related downloads

5.1 Arduino relevant information

ESP32-Arduino/examples/1.9inch/DX17320019E-WB-A-Arduino-SDK at main • VIEWESMART/ESP32-Arduino (github.com)

5.2 Libraries required for Arduino

ESP32-Arduino/examples/1.9inch/libraries at main • VIEWESMART/ESP32-Arduino (github.com)

5.3 IDF relevant information

enjoy looking forward to