

Smart Panlee

Smart Serial LCD Display

WT32S3-86V

(ZX3D95CE01S-AR-4848)



Revision History:

Date	Modified by	Description
2023/02/06	Hades	Release

Features:

1. Based on Wireless-Tag's WT32-S3-WROVER-N16R8 (16MB Flash/8Line 8M die inside)
2. 480*480 high-resolution RGB display with capacitive touch
3. Everest Semiconductor's ES8388 audio CODEC; Support dual microphone + speaker output
4. 86box product appearance, convenient for embedding in smart home applications
5. Support online rapid prototyping on the 8MS development platform
6. Onboard RS485 chip

Core Materials (Tab. 0):

No.	Name	Model	Remark
1	ESP32-S3 module	WT32-S3-WROVER-N16R8	
2			
3			

Hardware Interface:

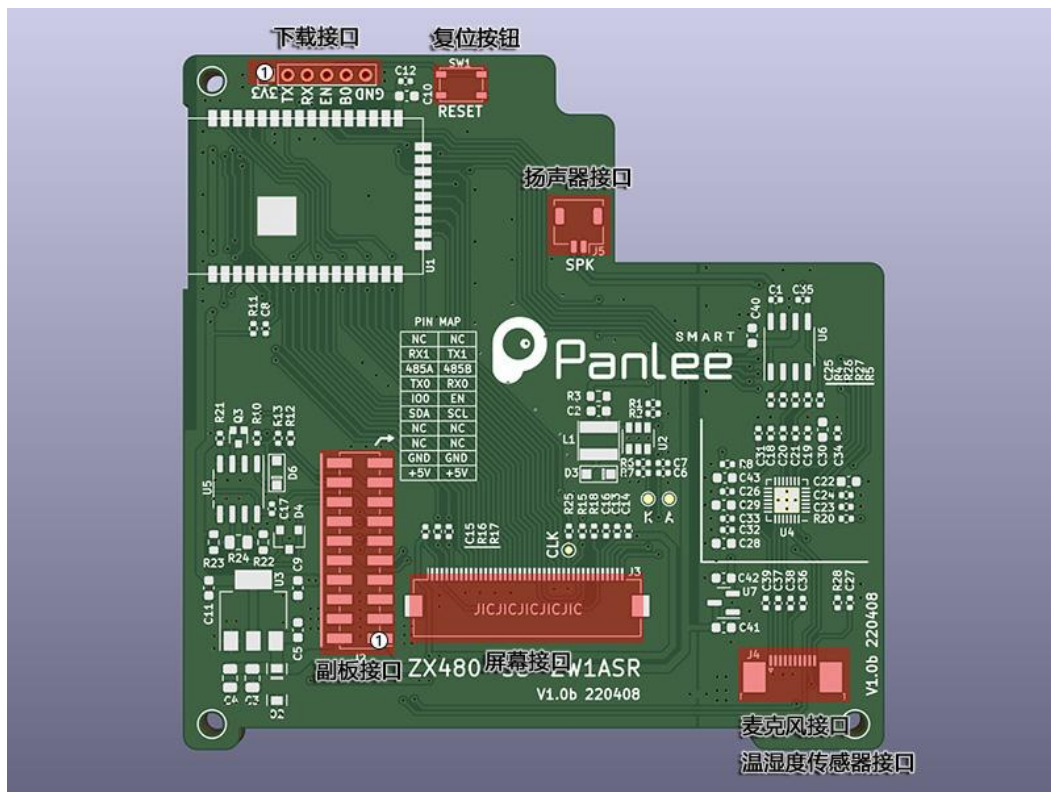


Fig.1 Hardware Interface

Interface Description:

[1] Download Interface(Tab.1)

Pin	Description	Module Pin	Voltage Range	Remark
1	3V3	VCC	3.3V	Module power supply
2	TXD	TXD0	3.3V TTL	Download and debug serial interface
3	RXD	RXD0	3.3V TTL	Download and debug serial interface
4	EN	EN	0~VCC	Chip enable
5	BOOT	GPIO 0	0~VCC	BOOT select
6	GND	GND	0V	Ground

[2] Sub Board Interface (Tab.2)

Pin	Description	Module Pin	Voltage Range	Remark
1、 2	+5V	-	5V±5%	Board power supply
3、 4	GND	-	0V	Ground
5-8	NC	-	-	should be left floating
9	IIC_SCL	GPIO 6	3.3V TTL	IIC bus, multiplexed with multiple peripherals
10	IIC_SDA	GPIO 7	3.3V TTL	IIC bus, multiplexed with multiple peripherals
11	EN	EN	0~VCC	Chip enable
12	GPIO 0	GPIO 0	0~VCC	BOOT select, multiplexed with LCD_CS
13	RXD	RXD0	3.3V TTL	Download and debug serial interface
14	TXD	TXD0	3.3V TTL	Download and debug serial interface
15	485 B	-	RS485	485 bus negative, unavailable when an output interface is used
16	485 A	-	RS485	485 bus positive, unavailable when an output interface is used
17	TXD_EXT	GPIO 4	3.3V TTL	Multiplexed with 485 serial interface
18	RXD_EXT	GPIO 5	3.3V TTL	Multiplexed with 485 serial interface
19、 20	NC	-	-	not connect

[3] Display Interface (Tab.3)

Description	Module Pin	Remark
TP_RST	-	RC reset is used
TP_SCL	GPIO 6	Touch panel IIC, multiplexed with multiple peripherals
TP_SDA	GPIO 7	Touch panle IIC, multiplexed with multiple peripherals
TP_INT	-	Not connect
LCD_RST	-	RC reset is used
LCD_CS	GPIO 0	LCD SPI bus CS
LCD_SCLK	GPIO 10	LCD SPI bus SCLK
LCD_MOSI	GPIO 9	LCD SPI bus MOSI
RGB_PCLK	GPIO 14	LCD RGB interface PCLK
RGB_DE	GPIO 13	LCD RGB interface DE
RGB_VS	GPIO 12	LCD RGB interface VS
RGB_HS	GPIO 11	LCD RGB interface HS
RGB_D0	GPIO 10	LCD RGB interface D0
RGB_D1	GPIO 9	LCD RGB interface D1
RGB_D2	GPIO 40	LCD RGB interface D2
RGB_D3	GPIO 20	LCD RGB interface D3
RGB_D4	GPIO 19	LCD RGB interface D4
RGB_D5	GPIO 41	LCD RGB interface D5
RGB_D6	GPIO 46	LCD RGB interface D6
RGB_D7	GPIO 3	LCD RGB interface D7
RGB_D8	GPIO 42	LCD RGB interface D8
RGB_D9	GPIO 8	LCD RGB interface D9
RGB_D10	GPIO 18	LCD RGB interface D10
RGB_D11	GPIO 2	LCD RGB interface D11

RGB_D12	GPIO 17	LCD RGB interface D12
RGB_D13	GPIO 16	LCD RGB interface D13
RGB_D14	GPIO 1	LCD RGB interface D14
RGB_D15	GPIO 15	LCD RGB interface D15
LCD_BL	GPIO 45	LCD backlight control, active high
RGB_D7	GPIO 3	LCD RGB interface D7
RGB_D8	GPIO 42	LCD RGB interface D8
RGB_D9	GPIO 8	LCD RGB interface D9
RGB_D10	GPIO 18	LCD RGB interface D10
RGB_D11	GPIO 2	LCD RGB interface D11
RGB_D12	GPIO 17	LCD RGB interface D12
RGB_D13	GPIO 16	LCD RGB interface D13
RGB_D14	GPIO 1	LCD RGB interface D14
RGB_D15	GPIO 15	LCD RGB interface D15
LCD_BL	GPIO 45	LCD backlight control, active high

[4] Microphone Connector/Temperature and Humidity Sensor Interface

Connect dual microphones and IIC temperature and humidity sensor by using an expansion board.

Interface Encapsulation:

interface description	Interface Encapsulation	Remark
Download interface	2.54mm 1×6P Pin Header	2.54mm Header test points (not soldered)
Sub board interface	L2.0mm 2×10P Pin Socket	2.0mm row mother
Microphone interface/Temperature and humidity sensor interface	FPC 10P 0.5mm Flip Cover Connector	

Hardware Peripherals(Tab.4):

Peripheral Name	Description
RS485	485 module
LCD	LCD with RGB interface

[1] CODEC Definition (Tab.5)

Description	Module Pin	Remark
IIS_MCLK	GPIO 38	IIS bus MCLK
IIS_SCLK	GPIO 48	IIS bus SCLK
IIS_LRCK	GPIO 47	IIS bus LRCK
IIS_SDO	GPIO 21	IIS bus SDO
IIS_SDI	GPIO 39	IIS bus SDI
IIC_SCL	GPIO 6	IIC bus, used to configure CODEC, multiplexed with multiple peripherals
IIC_SDA	GPIO 7	IIC bus, used to configure CODEC, multiplexed with multiple peripherals

POWER

2x10_P2.00mm J2

U3 AH1117-3.3

U2 AP3010A

UART TO RS485

U5 SP1485

U4 ES8388

LCD PORT

J5 FPC 10.5mm 40P

IO MAP

TPS

RGB_PCLK

LCD_BL

LCD_CS

LCD_RST

LCD_MOSI

LCD_SCLK

LCD_MISO

RGB_D0

RGB_D1

RGB_D2

RGB_D3

RGB_D4

RGB_D5

RGB_D6

RGB_D7

RGB_D8

RGB_D9

RGB_D10

RGB_D11

RGB_D12

RGB_D13

RGB_D14

RGB_D15

IIC_SCL

IIC_SDA

IIS_MCLK

IIS_SCLK

IIS_SDI

IIS_LRCK

TXD_ID

RXD_ID

TXD_EXT

RXD_EXT

BACK LIGHT

U2 AP3010A

U3 AH1117-3.3

ESP32-S3

U1 WT32-S3-WROVER

CODEC

U4 ES8388

U5 SP1485

U6 LPA4871

U7 XC6206P332NR

U8 1N4148WS

U9 1N4148WS

U10 1N4148WS

U11 1N4148WS

U12 1N4148WS

U13 1N4148WS

U14 1N4148WS

U15 1N4148WS

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U200 1N4148WS

U201

Specification Parameters:

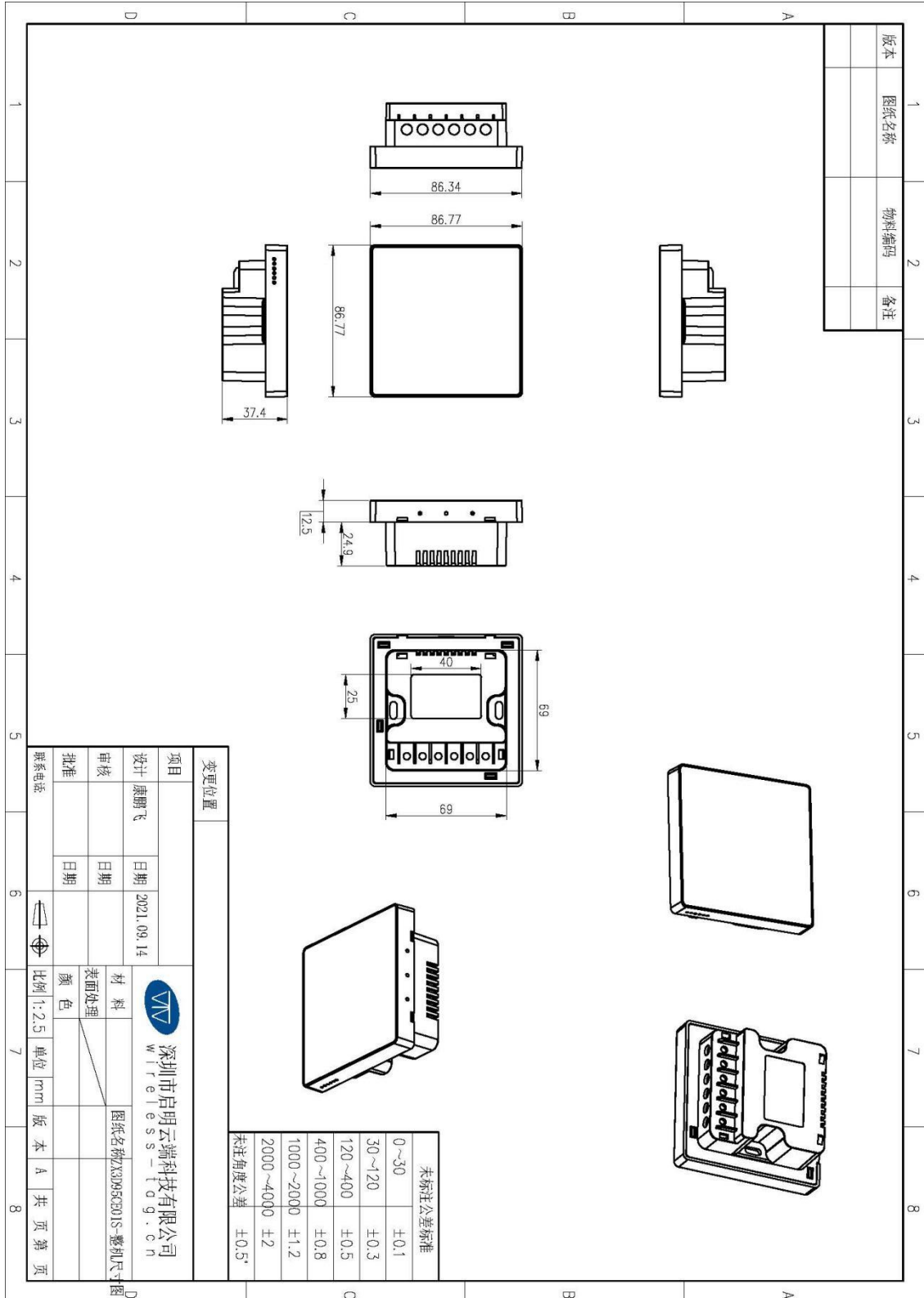
[1] Display Parameters (Tab.6)

LCD panel size	3.95inch
Display type	IPS
Drive IC model	GC9503V
Visual angle	FREE
Physical dimensions	84.00*84.00*3.13mm
Resolution	480(H)x3(RGB)x480(V)
Interface	RGB
Color	16.7M
Backlit mode	8 white LEDs in 4S2P
Backlight brightness	

[2] Touch Parameters (Tab.7)

Touchscreen type	Capacitive touch
Drive IC model	
Interface	I2C
Touchscreen structure	
Touch mode	Surface touch
Surface hardness	
Light transmittance	

Outline Dimensional Drawing (Fig.2)



Firmware Burning:

1. Connect the downloader (ZXACC-ESPDB) via a USB-Type C cable. And then connect the WT32S3-86V board with the downloader (ZXACC-ESPDB) through a data cable. As the downloader (ZXACC-ESPDB) has automatic data flow processing capabilities, the firmware can be downloaded automatically through the ESP32 Flash Download Tools.



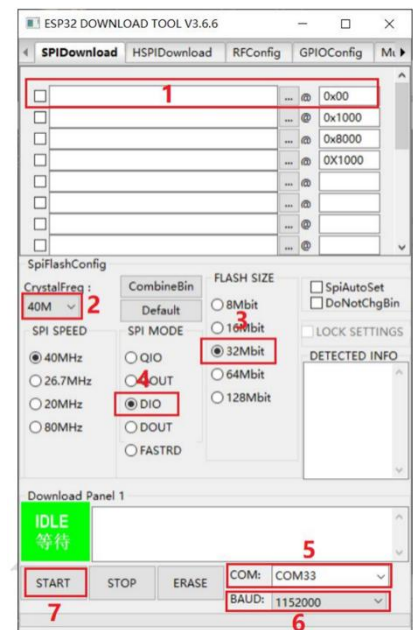
Fig.3

2. As shown in Fig. 4: Select the firmware path at mark 1, and then fill in the burning address, usually 0X00. Note that this checkbox must be checked; Set the crystal frequency to be 40MHz at mark 2; Select 32Mbit for Flash size at mark 3; Select DIO for SPI MODE at mark 4; Select the COM port number recognized by the computer at mark 5; Select the baud rate at mark 6 (the higher the value is, the faster the firmware will be downloaded. Max. 1152000bps).

Fig.4

3. After the previous configuration, click START at mark 7 to start burning the firmware.

4. Complete the above steps, and then press the reset button on the back of the development board to start running the firmware you just burned.



Online GUI Designer:

Users can use our online GUI designer platform, which is similar to MIT APP Inventor, to realize the rapid GUI development with building blocks. Currently, the platform has perfected the graphic interface development, and more driver code blocks will be further improved in the future.

Login Page: <http://8ms.xyz/login>

User Manual: <https://doc.smartpanle.cn/ESP32-S3/index.html>

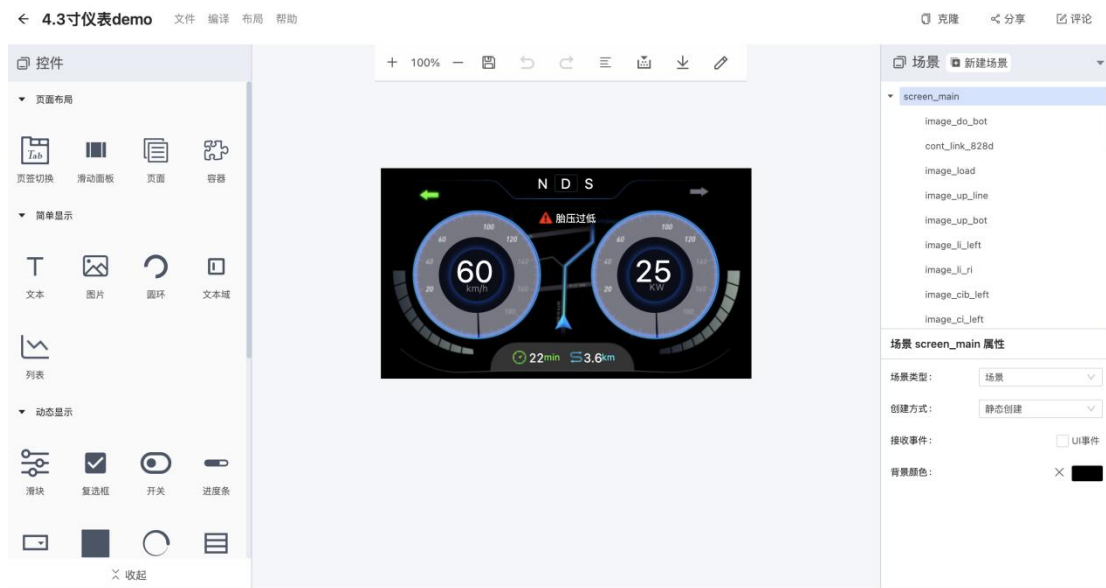


Fig.5

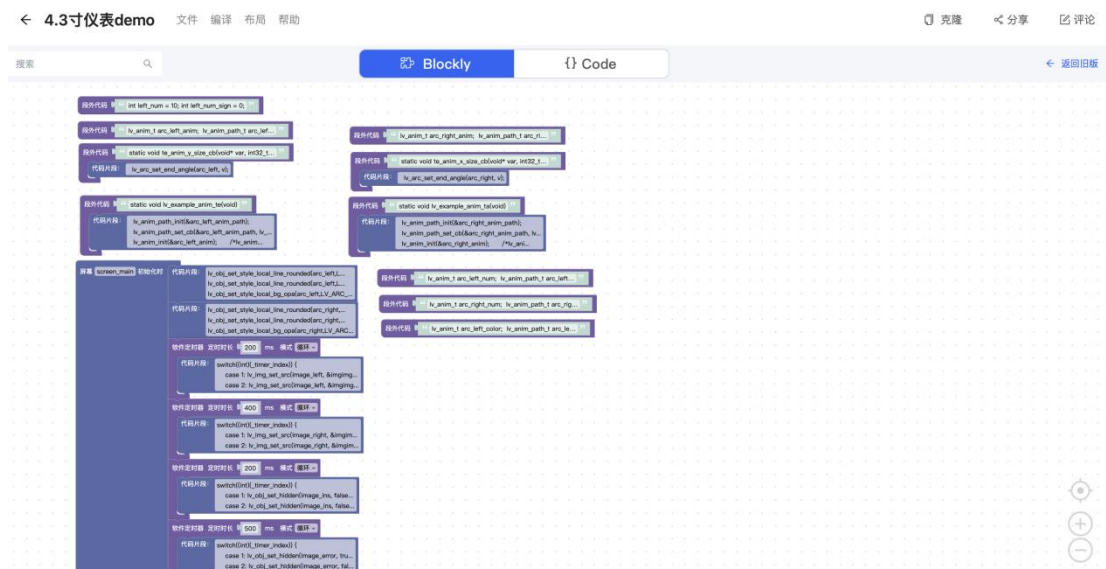


Fig.6