

# Smart Serial LCD Display

WT32S3-07S

(ZX7D00CE01S-8048)



## Revision History:

Date	Revised by	Description
February 9, 2023	Hades	First release

## Features:

1. Support rapid prototyping

## Core Materials (Tab. 0):

No.	Name	Model	Remark
1	ESP32-S3 Module	WT32-S3-WROVER-N16R8	

Hardware interface diagram:



## Interface Description:

### [1] USB Interface (Tab.1)

*Note: By default, the USB connector is only used for power supply, and a USB strobe resistor needs to be pasted when using as a USB interface. And be careful not to use the GPIO\_19 and GPIO\_20 in the IO expansion interface.*

### [2] Debug Interface (Tab.2)

Pin	Description	Module Pin	Voltage Range	Remark
1	+5V	-	5V	
2	+3.3V		3.3V	For reference, not for power input
3	ESP_TXD	TXD0	3.3V TTL	
4	ESP_RXD	RXD0	3.3V TTL	
5	EN	EN	0-3.3V	Chip enable
6	BOOT	GPIO 0	0-3.3V	
7	GND		0V	Ground

### [3] Touch Interface (Tab.3)

Description	Module Pin	Remark
TP_SCL	GPIO 47	Multiplexed with IIC
TP_SDA	GPIO 48	Multiplexed with IIC
TP_INT		Not connected
TP_RST	AW9523 P11	Connect to the IO expansion chip

### [4] LCD Interface (Tab.4)

Description	Module Pin	Remark
BL_PWM	GPIO 45	Backlight IO

LCD_RST	AW9523 P10 chip	Connect to the IO expansion chip
LCD_RGB_D15	GPIO 14	Backlight IO
LCD_RGB_D14	GPIO 13	Connect to the IO expansion chip
LCD_RGB_D13	GPIO 12	RGB interface
LCD_RGB_D12	GPIO 11	
LCD_RGB_D11	GPIO 10	
LCD_RGB_D10	GPIO 18	
LCD_RGB_D9	GPIO 08	
LCD_RGB_D8	GPIO 03	
LCD_RGB_D7	GPIO 46	
LCD_RGB_D6	GPIO 00	
LCD_RGB_D5	GPIO 21	
LCD_RGB_D4	GPIO 06	
LCD_RGB_D3	GPIO 07	
LCD_RGB_D2	GPIO 15	
LCD_RGB_D1	GPIO 16	
LCD_RGB_D0	GPIO 17	
LCD_RGB_PCLK	GPIO 09	
LCD_RGB_HS	GPIO 05	
LCD_RGB_VS	GPIO 38	
LCD_RGB_DE	GPIO 39	

[5] Extended IO Interface (Tab.5)

Pin	Description	Module Pin	Remark
1/2/39/40	+5V		5V power supply for input and output

3/4/37/38	+3.3V out		3.3V output power, not input
5~8/33~36	GND		Ground
11	EXT_LSIO_0	AW9523 P00	Connect to the IO expansion chip, 3.3V TTL input/output
12	EXT_LSIO_1	AW9523 P01	
13	EXT_LSIO_2	AW9523 P02	
14	EXT_LSIO_3	AW9523 P03	
15	EXT_LSIO_4	AW9523 P04	
16	EXT_LSIO_5	AW9523 P05	
17	EXT_LSIO_6	AW9523 P06	
18	EXT_LSIO_7	AW9523 P07	
23	EXT_GPIO_0	GPIO 20	Connect to ESP32-S3 GPIO, 3.3V TTL input/output
24	EXT_GPIO_1	GPIO 19	
25	EXT_GPIO_2	GPIO 41	
26	EXT_GPIO_3	GPIO 40	
27	EXT_GPIO_4	GPIO 04	
28	EXT_GPIO_5	GPIO 42	
29	EXT_GPIO_6	GPIO 01	
30	EXT_GPIO_7	GPIO 02	
31	IIC_SCL	GPIO 47	IIC port, 3.3V TTL input/output
32	IIC_SDA	GPIO 48	

## Interface Encapsulation:

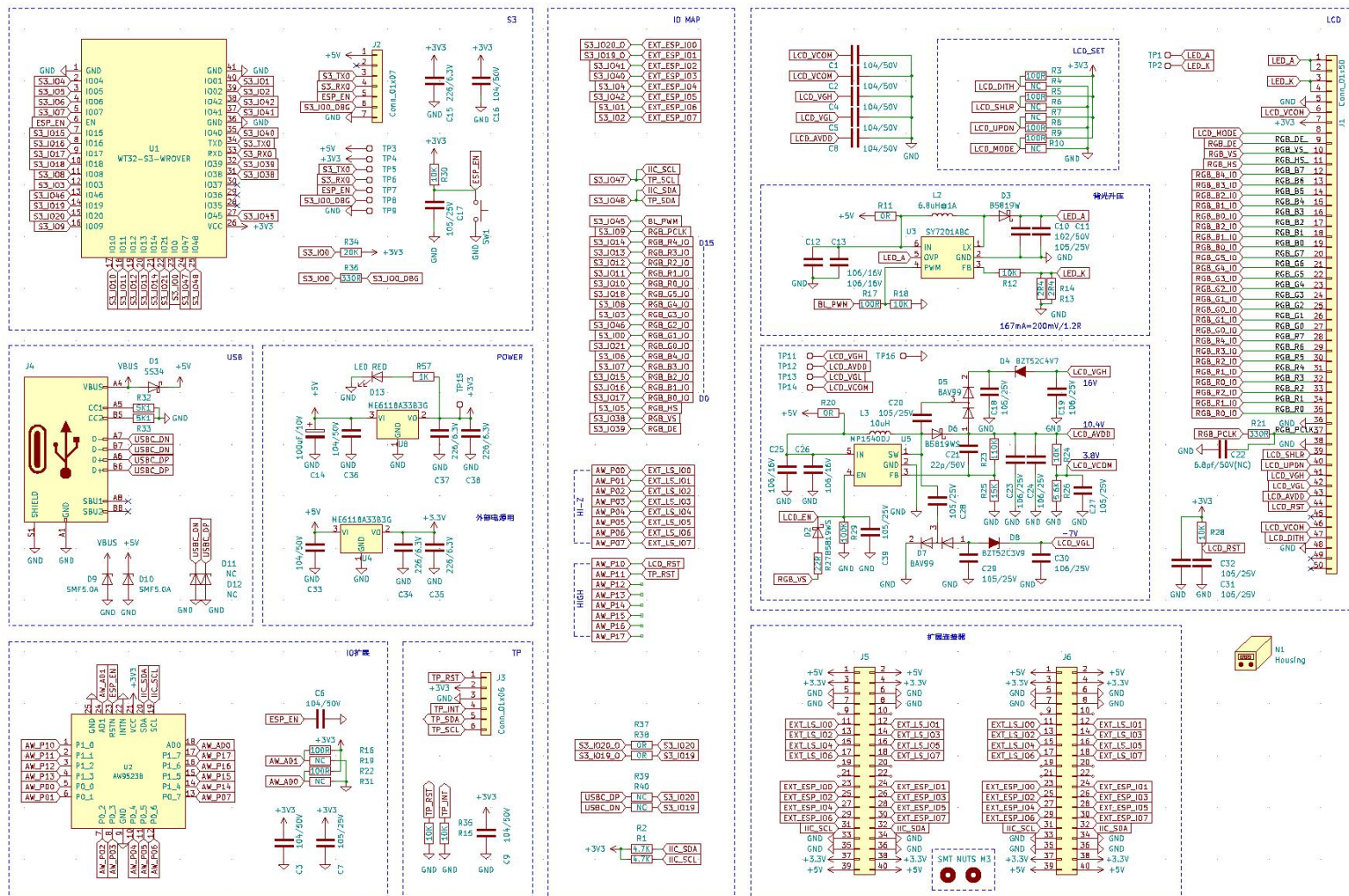
Interface Description	Interface Encapsulation	Remark
Debug Interface	Molex SD-53261-0771 (7Pin) WAFER MX1.25 7P Horizontal Patch	MX1.25
USB Interface	-	USB-typeC
Extended IO Interface 1	2.00mm 2×20P Pin Socket SMT	2.0mm 2×20P Double-row Pin Socket
Extended IO Interface 2	2.54mm 2×20P Pin Header/Socket SMT	2.54mm 2×20P Double-row Pin Header/Socket

## Hardware Peripherals:

Peripheral Name	Description
LCD	7 Inch display with RGB interface
Touch Panel	IIC port, no interrupt, reset using expansion IC
IO Expansion Chip	Model AW9523B, mounted on board IIC bus



### Schematic:





## Specification Parameters:

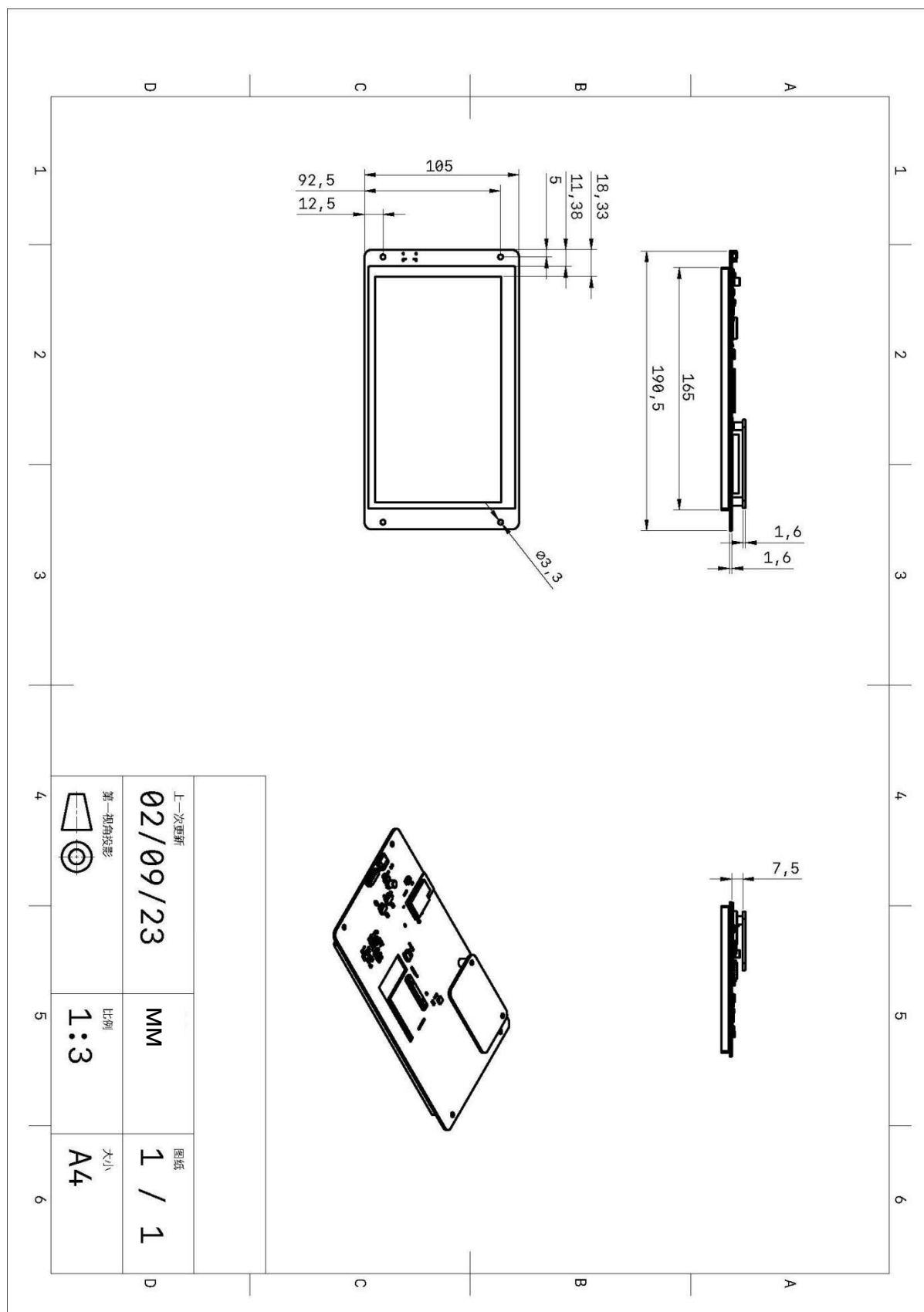
### [1] Display Parameters (Tab.6)

Display Type	TN
Drive IC Model	EK9716BD4
Visual Angle	30°
Resolution	800*480
Interface	RGB
Color	RGB888
Backlight Mode	LED

### [2] Touch Parameters (Tab.7)

Touchscreen Type	Capacitive touch
Drive IC Model	GT911
Interface	I2C
Touchscreen Structure	G+F
Touch Mode	Surface touch
Surface Hardness	6H
Light Transmittance	-

## Outline Dimensional Drawing (Fig.2)



## Firmware Burning:

1. Connect the downloader (ZXACC-ESPDB) via a USB-TypeC cable. And then connect the WT32S3-07S 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.

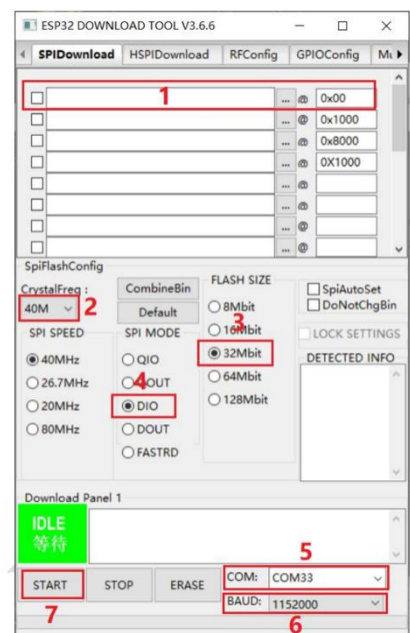
Fig.3



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 finishing 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.



## Software Design Reference:

URL: <https://www.espressif.com.cn/en/support/documents/technical-documents>

## Online GUI Designer:

Users can use our online GUI designer platform, which is similar to MIT APP Inventor, to achieve 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.panel-tag.com/ESP32-S3/index.html>

