QS154-S2MI1 Serial screen specifications

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Table of contents

1 Introduction....3
1.1 Purpose....3
1.2 scope....3
1.3 Terms and Abbreviations....3
1.3.1 term....3
1.3.2 Acronym....3
1.4 reference documents....3
2 product description....5
2.1 Introduction....5
2.2 Appearance....5
2.3 product definition....6
2.4 product specification....6
2.5 Product Features....8
2.6 wireless function....8
3 parameter configuration....9
3.1 Mod properties....9
3.2 Schematic diagram of the circuit....10
3.3 Interface Description....11
3.3.1 LCD interface....11
3.3.2 Power supply/extension interface....12
3.3.3 WIFI Antenna....13
3.3.4 PCBA size....13
4 Software Development....14

1 Introduction

1.1 Purpose

The purpose of this product manual is to fully describe the functions achieved, facilitate users to understand the scope of use and use of the product, and provide necessary information for the maintenance and update of the product.

This section mainly introduces some appearance reference diagrams and hardware configuration diagrams of the product.

1.2 scope

At present, the applicable market scope includes: industrial automation, intelligent home appliances, transportation rails, data rooms, charging piles, power medical, national defense security, shared equipment and other display fields

1.3 Terms and Abbreviations

1.3.1 Terminology

Serial port screen: a set of display scheme by single-chip microcomputer or PLC with controller, the communication part in the display scheme is communicated by serial port, UART serial port or SPI serial port, etc.; It is composed of three parts: display driver board, shell, LCD display screen. Receive instructions sent by the user's single-chip microcomputer serial port to complete all operations on the LCD.

1.3.2 Abbreviations

GUI, Graphical User Interface (GUI, also known as Graphical User Interface) refers to the computer operation user interface displayed graphically.

1.4 Reference Documentation

Table 1 Reference Document List

name	serial number	author	release date	Remark

2 Product introduction

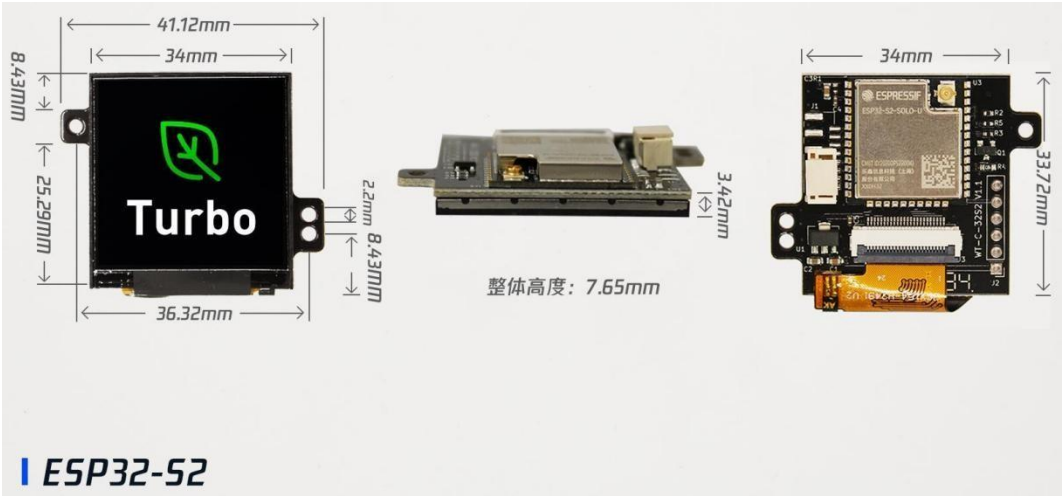
2.1 Introduction

ZX154-S2MT1 is a multi-interface serial screen, equipped with ESP32-S2 processor, supports clock frequency up to 240 MHz. ESP32-S2-SOLO-U uses the ESP32-S2 chip. The ESP32-S2 chip is equipped with an Xtensa® 32-bit LX7 single-core processor with an operating frequency of up to 240 MHz. Users can power down the CPU and use the low-power coprocessor to monitor the state changes of peripherals or whether certain analog quantities exceed thresholds. ESP32-S2 also integrates rich peripherals, including SPI, I2S, UART, I2C, LED PWM, TWAITM, LCD interface, Camera interface, ADC, DAC, touch sensor, temperature sensor and up to 43 GPIOs, as well as a full-speed USB 1.1 On-The-Go (OTG) interface.

2.2 Product Appearance

The following is the reference picture of the appearance of the product and the corresponding product specifications, as shown in Figure 1.

Figure 1 product appearance and specifications



Illustrate:

Model: "ZX154-S2MT1".

1. Unit: mm

2. Note: The unmarked tolerance is ±0.1mm

3. The shape and size of the drawing are for reference only, and the actual data is subject to the actual measurement.。

2.3 product specification

Table 2 Product Specifications

Product parameters	
Product number	ZX154-S2MT1
Product Series	IoT
Product size (length x width x height)	34x41x6mm
Module model	ESP32-S2-SOLO-U（8M）
Operating system	Embedded real-time operating system（Free RTOS）
Color screen size	1.54inch
Resolution	240X240

Product parameters	
storage	128Mbit
color depth	16-bit RGB (565)
Power supply	5V DC
WIFI	have

Table 3 Product Core Competitiveness

Product Core Competitiveness	
Learning cycle	30 minutes to familiarize yourself with the development environment, 3 days to complete the human-computer interaction design
Startup time	It can be debugged on the machine
Configure the controls	Through "http://8ms.xyz/", GUI design and logic function one-stop development are realized
Boot logo replacement	Bulk customers can apply directly to the business
Journey upgrades	Support screen engineering pictures and firmware remote upgrade
life cycle	Using traditional big brand processors, many years of continuous stocking

Table 4 LCD display

LCD display screen	
panel type	IPS
structure size	33.72*31.52 *1.76
Display area	27.72*27.72
resolution	240*240
backlight	White LED *3

LCD display screen	
Interface Type	MCU 8080
voltage	2.8/3.2V

Table 5 Environmental certification

Environmental certification	
Operating temperature	-20℃~+70℃
storage temperature	-30℃~+80℃
vibration test	90%以上
ESD test	The theory is infinite, touch life is related to the working environment (dust, temperature).

Table 6 Customized Services

Customized Services	
UI customization	Can contact customer service
Software function customization	Can contact customer service
hardware customization	Can contact customer service
other	Provide RTOSLinuxAndroid, and other different grades of serial port screen program customization.

2.4 Product function

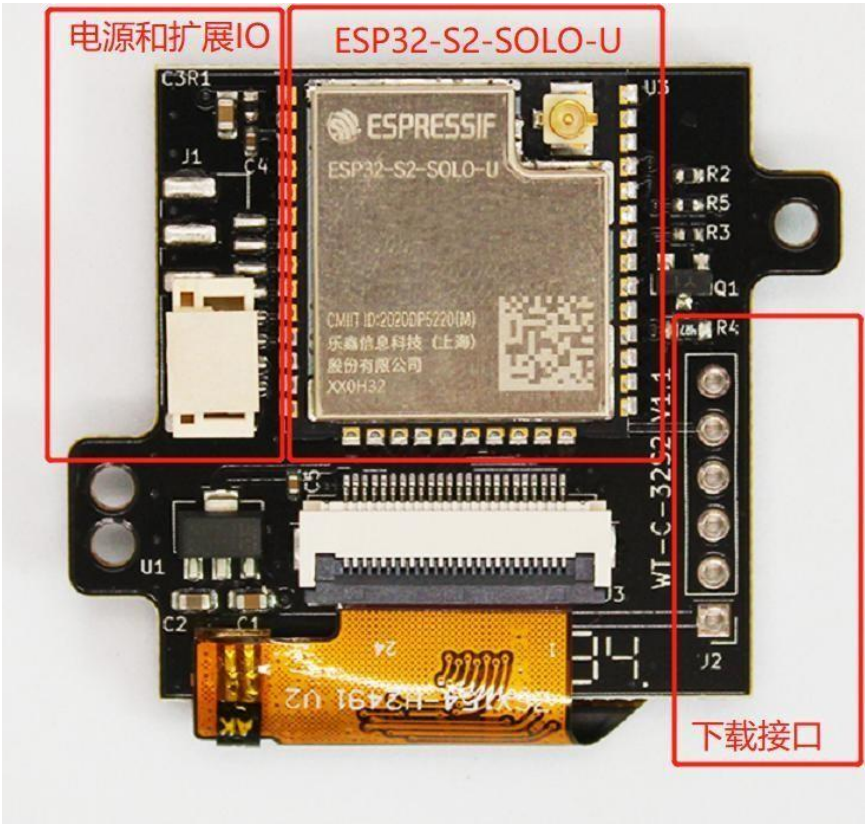
This product is a serial port control function.

2.5 Wireless function

This serial screen has WIFI function, which can expand App and cloud control.

3 parameter configuration

Figure 2 parameter configuration



3.1 Module Features

MCU

- Built-in ESP32-S2 or ESP32-S2R2 chip, Xtensa® single-core 32-bit LX7 microprocessor, supporting clock frequencies up to 240MHz
- 128 KB ROM
- 320 KB SRAM
- 16 KB RTC SRAM

Wi-Fi

- 802.11 b/g/n
- Data rates up to 150 Mbps
- Frame aggregation(TX/RX A-MPDU, RX A-MSDU)
- 0.4 μs guard interval
- Working channel center frequency range: 2412~2484 MHz

hardware

- Module interface: GPI, SPI, LCD interface, UART, I2C, I2S, Camera interface, IR, pulse counter,LEDPWM, TWAITM (ISO11898-1 compatible), USB1.1OTG, ADC, DAC, touch sensor, temperature sensor
- 40MHz integrated crystal oscillator
- 16 MB SPI flash
- 2 MB PSRAM
- Working voltage/supply voltage: 3.0~3.6V
- Recommended operating temperature range: -40~85° C
- Package size: (18.0x19.2x3.2)mm

certified

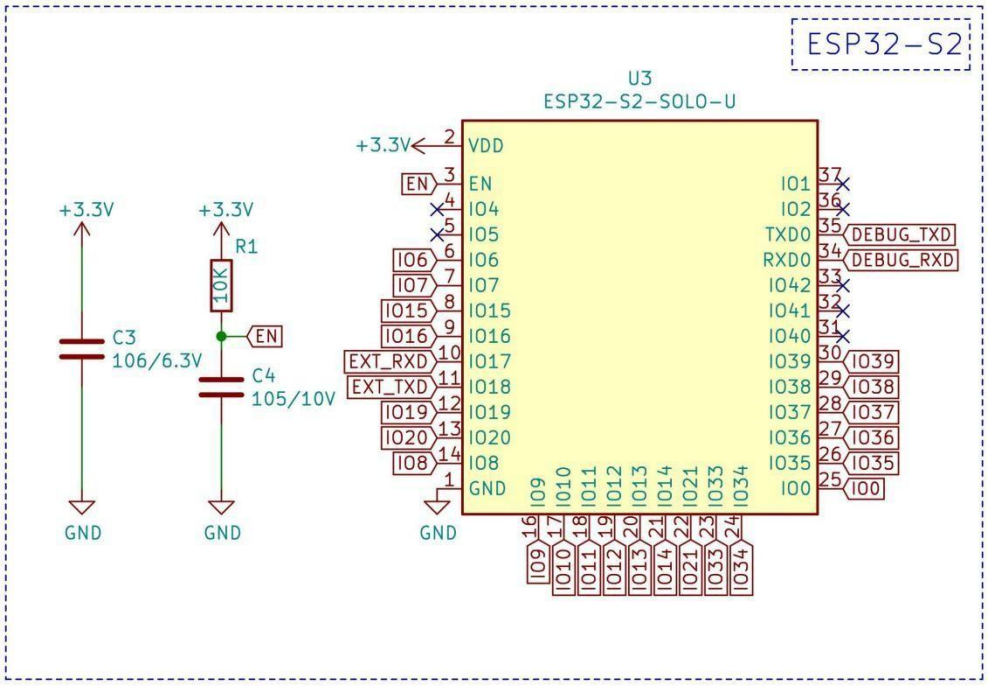
- Environmental certification: RoHS/REACH
- RF certification：FCC/CE-RED/SRRC

test •

- HTOL/HTSL/uHAST/TCT/ESD

3.2 Circuit schematic diagram

Figure 3 Circuit Schematic



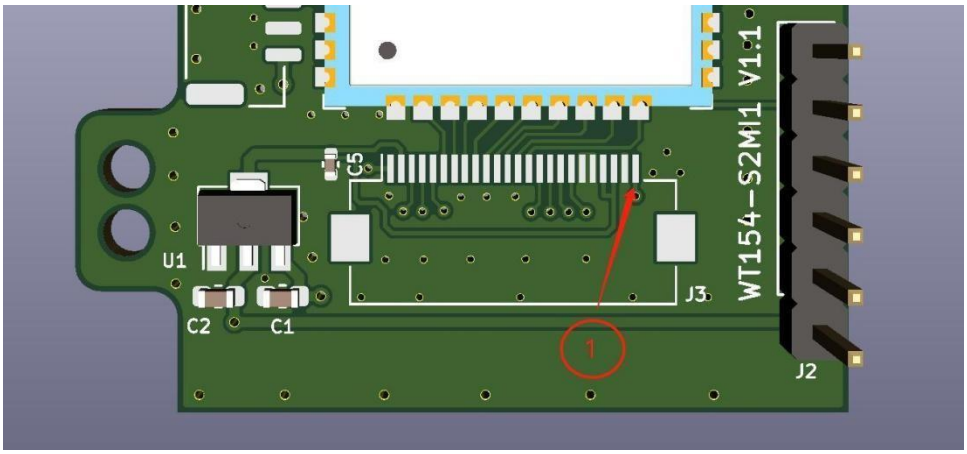
3.3 Interface description

3.3.1 LCD interface

The LCD interface is MCU8080 interface. THE INTERFACE HOLDER IS SPECIFIED IN FPC0.5MM, AS SHOWN IN FIGURE 4.

24P up and down connection (flip), the interface serial number is as follows

Figure 4 Interface serial number



Pin definitions are shown in Figure 5. Figure 5 corresponds to the pin definition

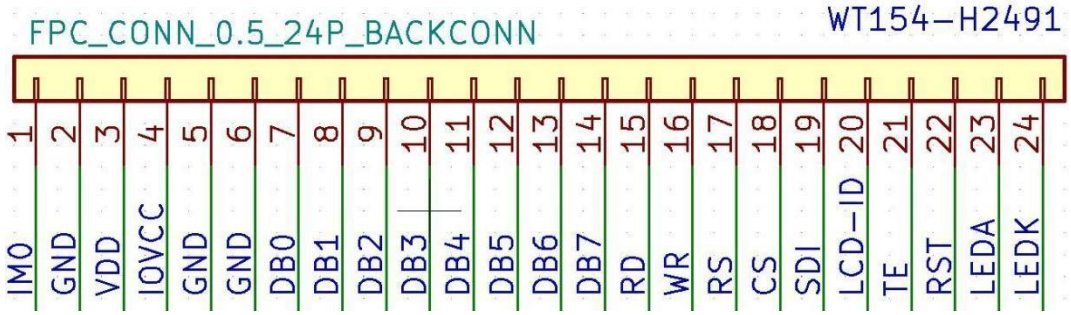


Table 7 Pin Definitions

Pin number	Pin definition	illustrate
1	IM0	The MCU interface mode select
2	GND	Ground
3	VDD	Power supply
4	IOVCC	Power supply
5	GND	Ground
6	GND	Ground
7	DB0	Data
8	DB1	Data
9	DB2	Data

Pin number	Pin definition	illustrate
10	DB3	Data
11	DB4	Data
12	DB5	Data
13	DB6	Data
14	DB7	Data
15	RD	Read enable in parallel interface
16	WR	display data/command selection pin
17	RS	SPI interface Clock pin
18	CS	Chip selection pin low:enable high:disable
19	SDI	SPI interface data pin
20	LCD-ID	
21	TE	Frame synchronization
22	RST	Reset Signal,Active Low
23	LEDA	LED CATHODE
24	LEDK	LED CATHODE

3.3.2 Power supply/extension interface

Figure 6 interface diagram

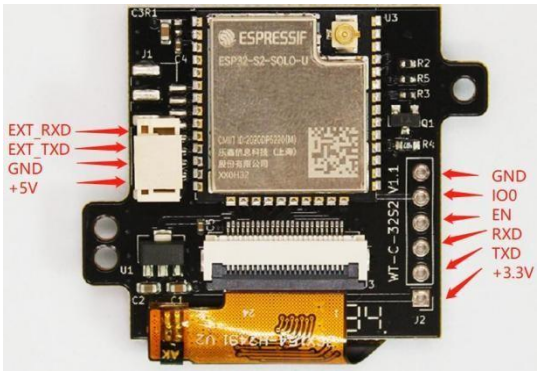
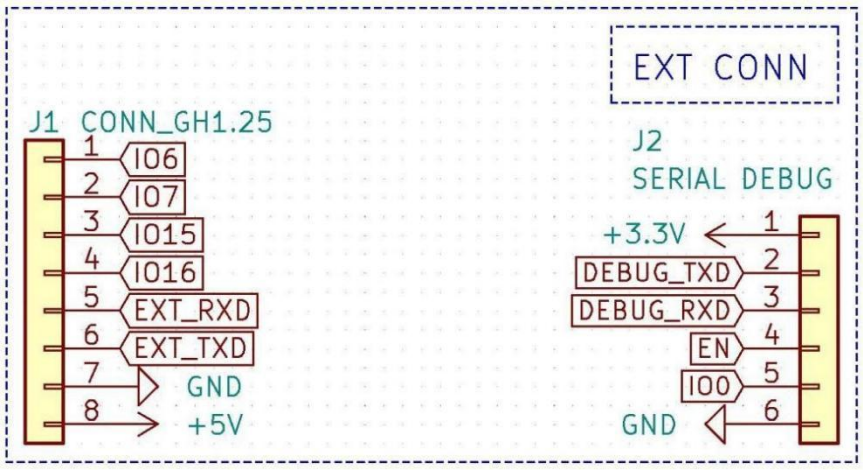


Figure 7 Interface definition



3.3.3 WIFI Antenna

Using ESP32-S2-SOLO-U, PCB on-board antenna.

3.3.4 PCBA size

Figure 8 PCBA Dimensions

Mounting and physical dimensions are shown in Table 7.

Table 8 Dimensions

name	size	weight
single product	34x41x6mm	9.6g

4 software development

8ms visual development platform is a web-based embedded or single-chip terminal UI and functional program visual design system, which can improve the versatility of peripheral applications and UI interfaces. Interface editing and logic code writing can be realized by mouse or touch screen dragging, and the design and development of applications and their UI interfaces can be realized in a low-code or even zero-code way.

The currently supported hardware is ESP32, SigmastarSSD201, and Unisound's Hummingbird and Hummingbird M. The GUI library used is littlevGL7.6, and the logic part of the code is built using Blockly blocks.

ZX154-S2MI1 serial port screen is developed based on the company's 8msGUI platform. After the user creates a new project, implement UI design in the designer and logic design in Blockly. After the code is compiled successfully, download the entire project to ZX154 through the burning tool -S2MI1 serial scre