

Smart Panlee

Smart Serial LCD Display

WT32-SC01 Plus



Revision History:

Date	Modified by	Description
August 1, 2022		First release
September 22, 2022	Hades	Added firmware burning and GUI development platform

Features:

1. Support rapid prototyping
2. WT32-S3-WROVER-N16R2

Core Materials (Tab. 0):

No.	Name	Model	Remark
1	ESP32-S3 module	WT32-S3-WROVER-N16R2	
2			
3			

Hardware Interface:

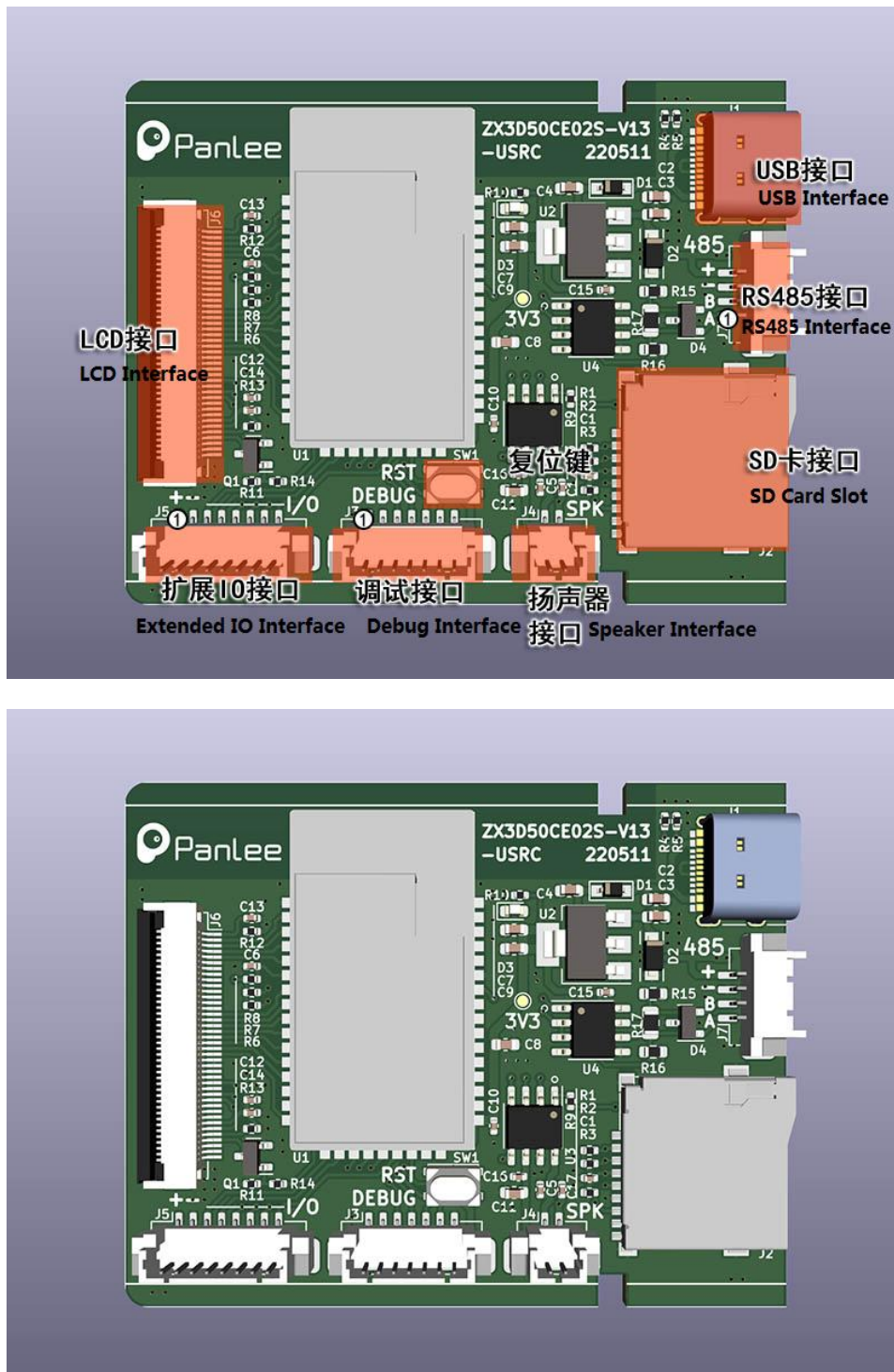


Fig.1 Hardware Interface

Interface Description:

[1] Debug Interface (Tab. 1)

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	GPIO 14	0V	Ground

[2] Extended IO Interface (Tab. 2)

Pin	Description	Module Pin	Voltage Range	Remark
1	+5V	-	5V±5%	Power supply or output voltage
2	GND	-	0V	Ground
3	EXT_IO1	GPIO 10	0-3.3V	Extended IO
4	EXT_IO2	GPIO 11	0-3.3V	
5	EXT_IO3	GPIO 12	0-3.3V	
6	EXT_IO4	GPIO 13	0-3.3V	
7	EXT_IO5	GPIO 14	0-3.3V	
8	EXT_IO6	GPIO 21	0-3.3V	

[3] Speaker Interface (Tab.3)

Pin	Description	Remark
1	SPK+	Speaker positive

2	SPK-	Speaker negative
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[4] SD Card Interface (Tab.4)

Description	Module Pin	Remark
SD_CS	GPIO 41	SD card chip selection
SD_DI (MOSI)	GPIO 40	SD card data input
SD_CLK	GPIO 39	SD card clock
SD_DO (MISO)	GPIO 38	SD card data output

[5] LCD Interface (Tab. 5)

Description	Module Pin	Remark
BL_PWM	GPIO 45	Backlight control, active high
LCD_RESET	GPIO 4	LCD reset, multiplexed with touch reset
LCD_RS	GPIO 0	Command/Data selection
LCD_WR	GPIO 47	Write clock
LCD_TE	GPIO 48	Frame sync
LCD_DB0	GPIO 9	LCD data interface, 8bit MCU (8080)
LCD_DB1	GPIO 46	
LCD_DB2	GPIO 3	
LCD_DB3	GPIO 8	
LCD_DB4	GPIO 18	
LCD_DB5	GPIO 17	

LCD_DB6	GPIO 16	
LCD_DB7	GPIO 15	
TP_INT	GPIO 7	Touch interrupt
TP_SDA	GPIO 6	Touch IIC data
TP_SCL	GPIO 5	Touch IIC clock
TP_RST	GPIO 4	Touch reset, multiplexed with LCD reset

[6] RS485 Interface (Tab. 6)

Pin	Description	Remark
1	RS485-A	RS485 bus
2	RS485-B	SD card data input
3	GND	Ground
4	+5V	Power supply or output voltage

Hardware Peripherals:

Peripheral Name	Description
Audio amplifier	IIS, 2.5W @4R
LCD with touch panel	
SD card	SD card using SPI interface
RS485	Serial port IO with flow control

[1] Audio Amplifier (IIS interface) (Tab.7)

Description	Module Pin
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LRCK	GPIO 35
BCLK	GPIO 36
DOUT	GPIO 37

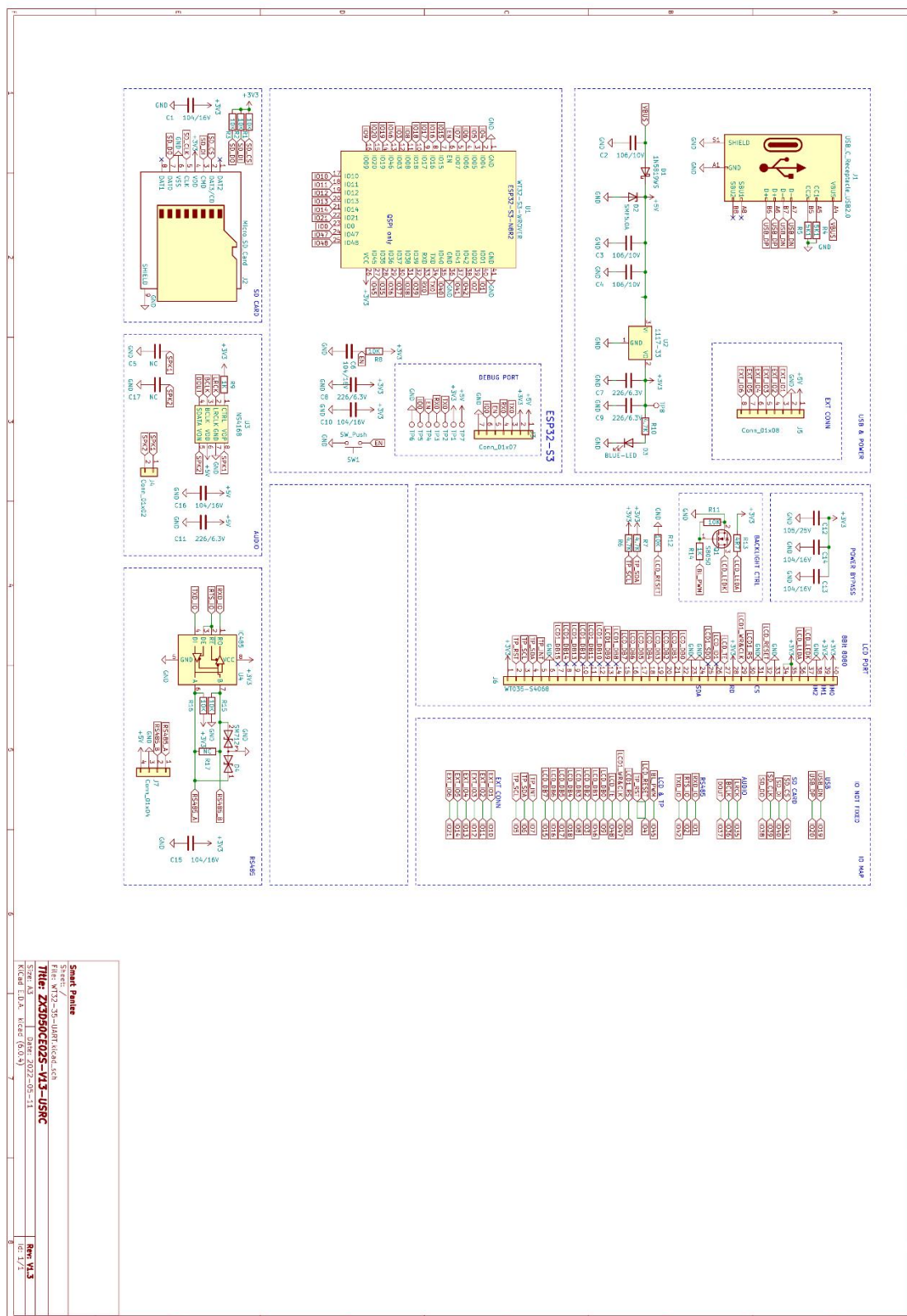
[2] RS485 (Tab.8)

Description	Module Pin
RXD	GPIO 1
RTS	GPIO 2
TXD	GPIO 42

[3] Electrical Parameters (Tab.9)

Parameter	Test conditions	Min.	Typical	Max.	Unit
Operating Voltage	-	4.7	5.0	5.5	V
Operating current	USB provides 5V power, with maximum backlight brightness	170	175	190	mA

Schematic:



Specification Parameters:

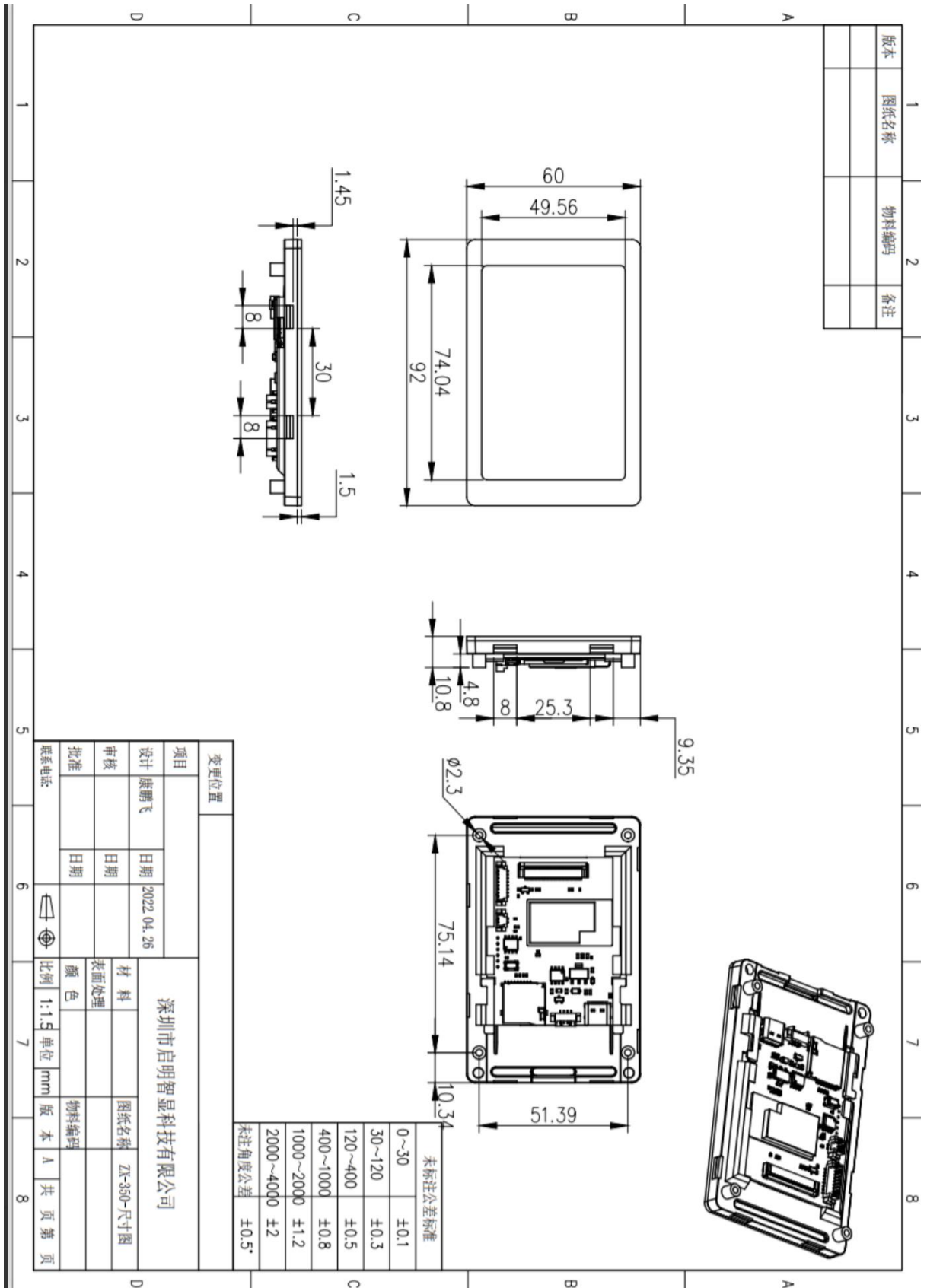
[1] LCD Parameters (Tab. 10)

Display Type	LCD
Driver IC Model	ST7796UI
Viewing Angle	FULL
Resolution	480*320
Interface	MCU8080 8Bit
Color	RGB565
Backlight Mode	
Backlight Brightness	

[2] Touch Parameters (Tab.11)

Touchscreen Type	Capacitive touch
Driver IC Model	FT6336U
Interface	I2C
Touchscreen structure	G+F
Touch Mode	Single 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 WT32-SC01 Plus board with the downloader (ZXACC-ESPDB) through an MX1.25-7P 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).

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.

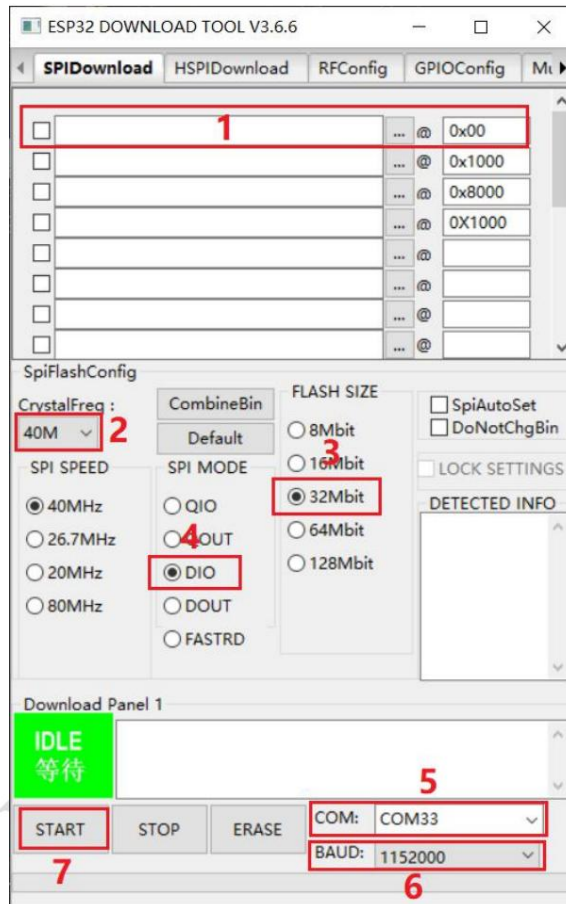


Fig.4

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>

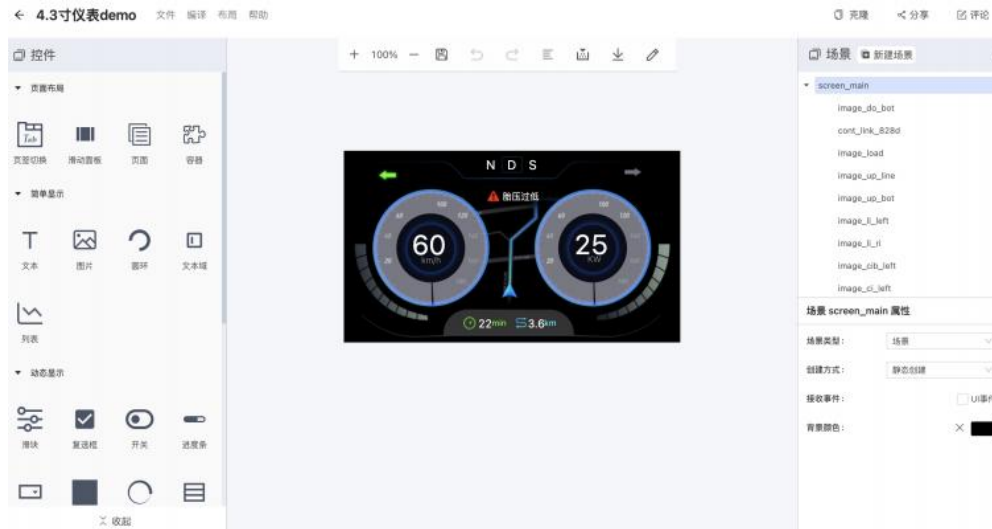


Fig.5

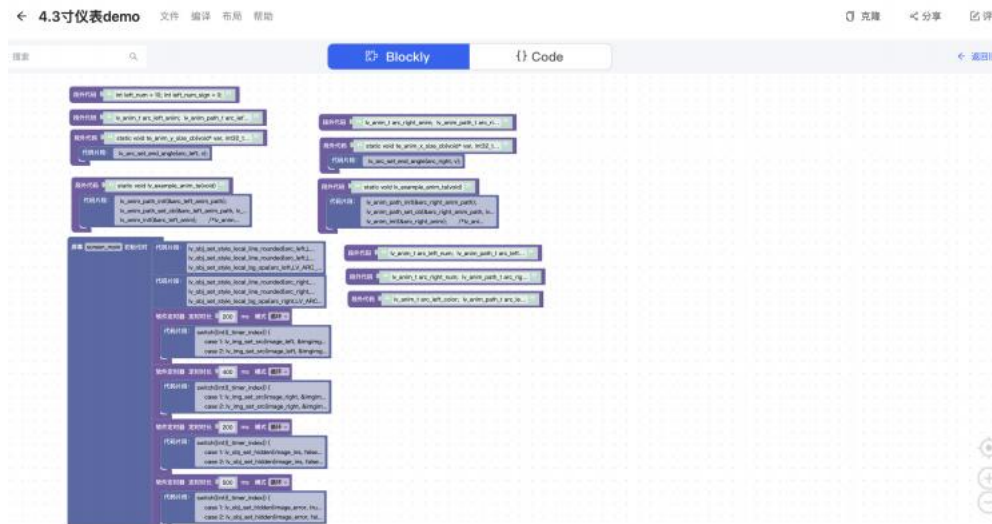


Fig.6