DWIN COF Screen User Manual

2022/2/11

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GUI Development Data

1 Software

T5L_DGUSII_V7.624

*For V4.0 and above kernel.

DGUS Tool V7.624.exe

2 User manual

COF Screen Application Development(T5L_DGUSII) introduces

the user interface functions and hardware configuration methods.

COF Screen Application Development(T5L_DGUSII).pdf

3 Video tutorial

COF screen GUI development tutorial.mp4

How to use development software to create GUI projects.
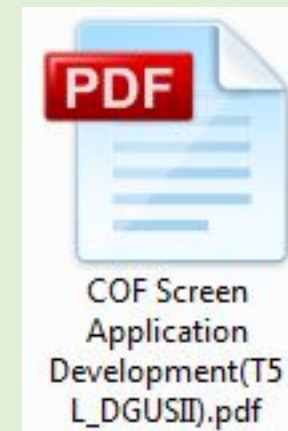
How to make GUI

1 Prepare image files in jpg & bmp format
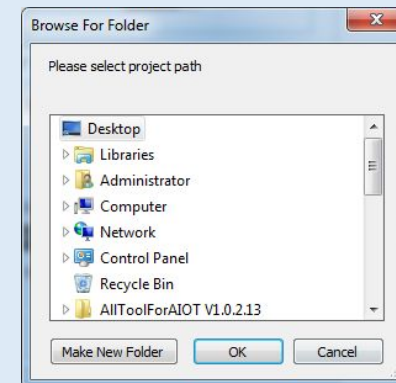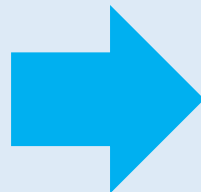
The resolution of background images should be consistent with the screen.

0.jpg

1.jpg

Icon file

0.jpg 1.jpg 2.jpg 3.jpg 4.jpg
5.jpg 6.jpg 7.jpg 8.jpg 9.jpg

2 Open the DGUS V7.624 and create a new project
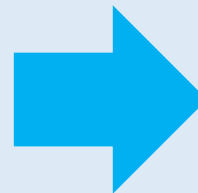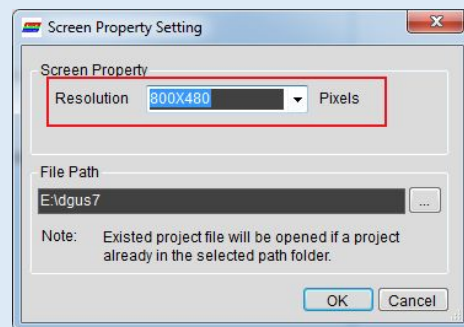
Refer to the video tutorial for more details

New

Screen Property Setting

Screen Property
Resolution 800X480 Pixels

File Path
E:\dgus7

Note: Existed project file will be opened if a project already in the selected path folder.

OK   Cancel

Browse For Folder

Please select project path

- Desktop
  - Libraries
  - Administrator
  - Computer
  - Network
  - Control Panel
  - Recycle Bin
  - AllToolForAIOT V1.0.2.13

Make New Folder   OK   Cancel

New □ Set the resolution
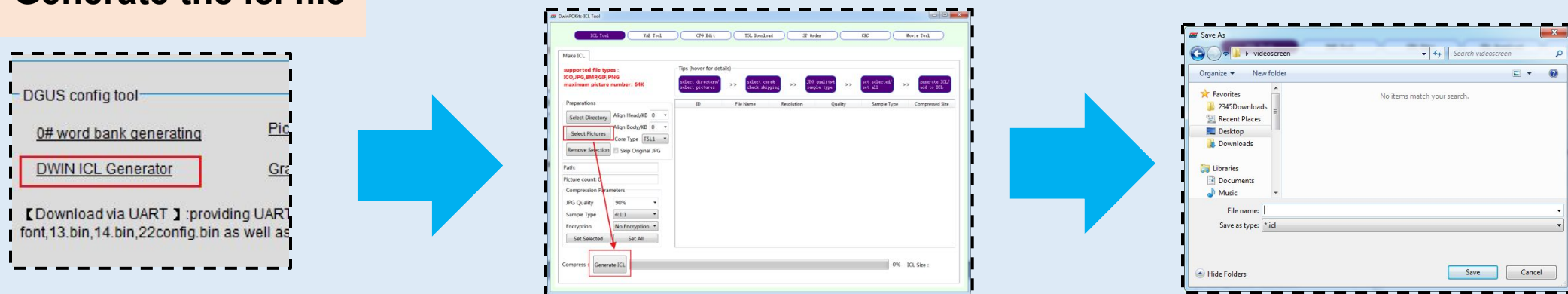**□Set the saving path**

How to make GUI

3 Import the background images

Click "+"□choose the images□ successful import
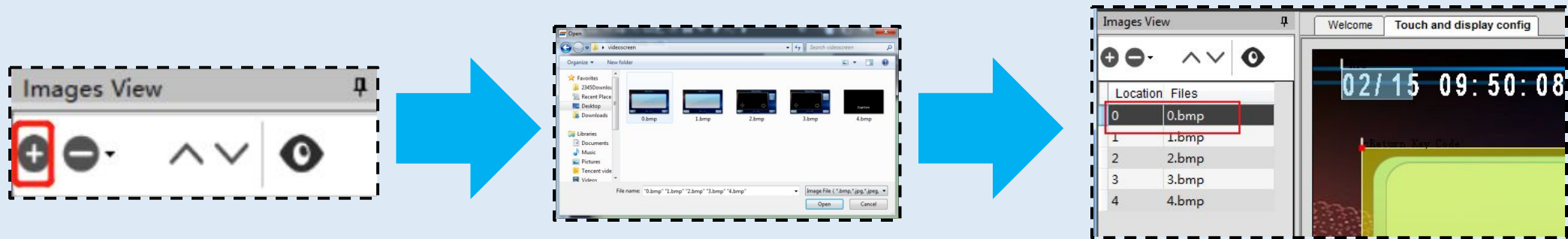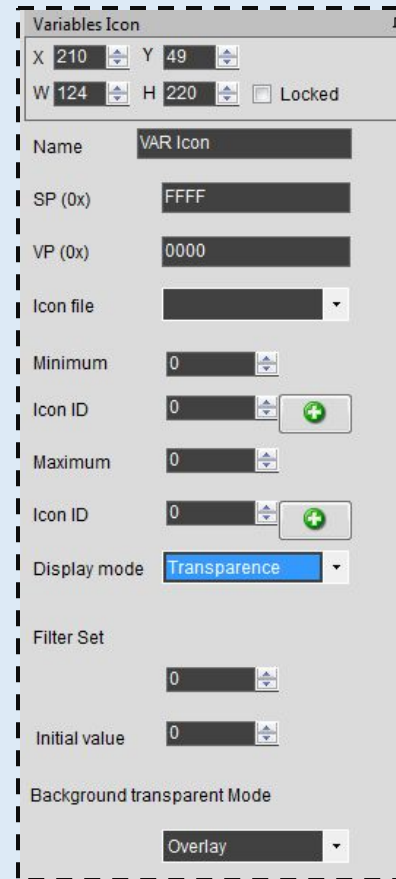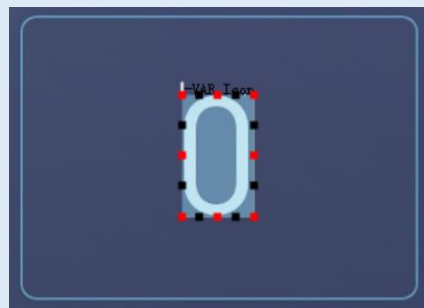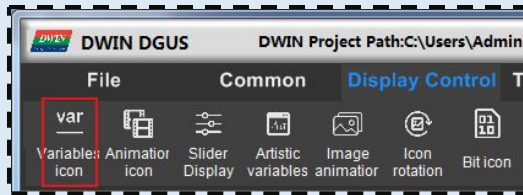

4 Generate the icl file

Click the icl generator□ click generate□ set the saving path
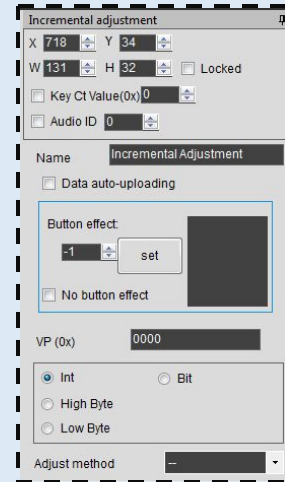
How to make GUI

5 Set the display control

Select the variable icon control □ Set its range on the background image □Click it to view and set the properties.

For detailed descriptions of each control, refer to the **"T5L_DGUSII Application Development Guide"** in the **"Additional Information"**.
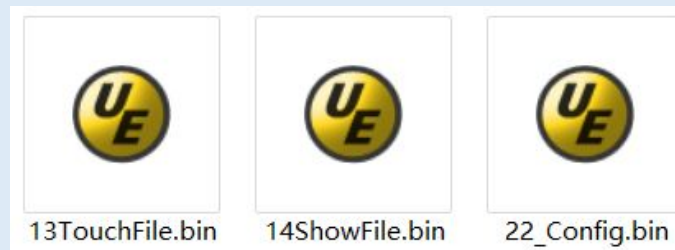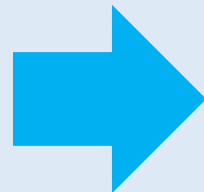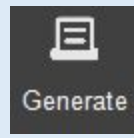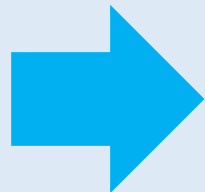
How to make GUI

4 Set the touch control
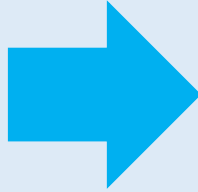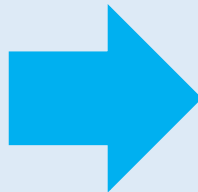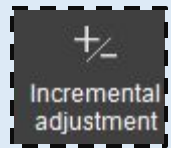
Select the incremental adjustment control
□Set its range on the background image
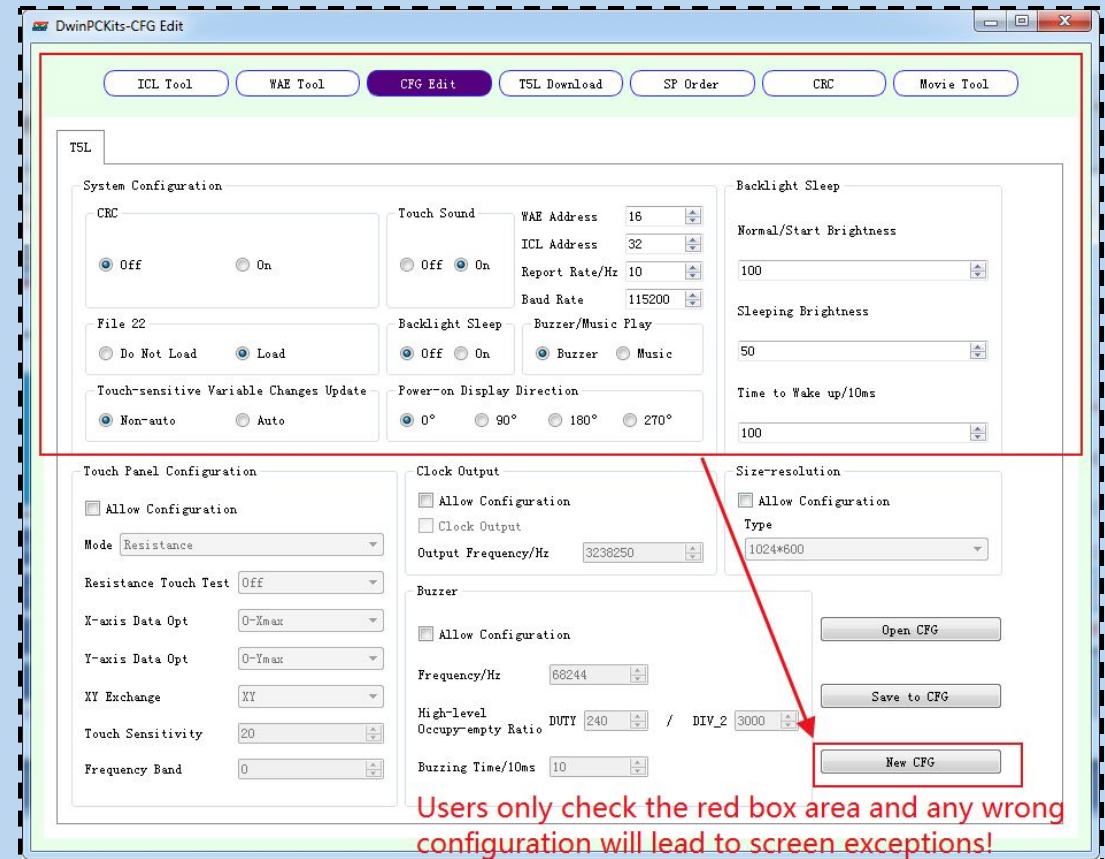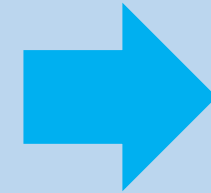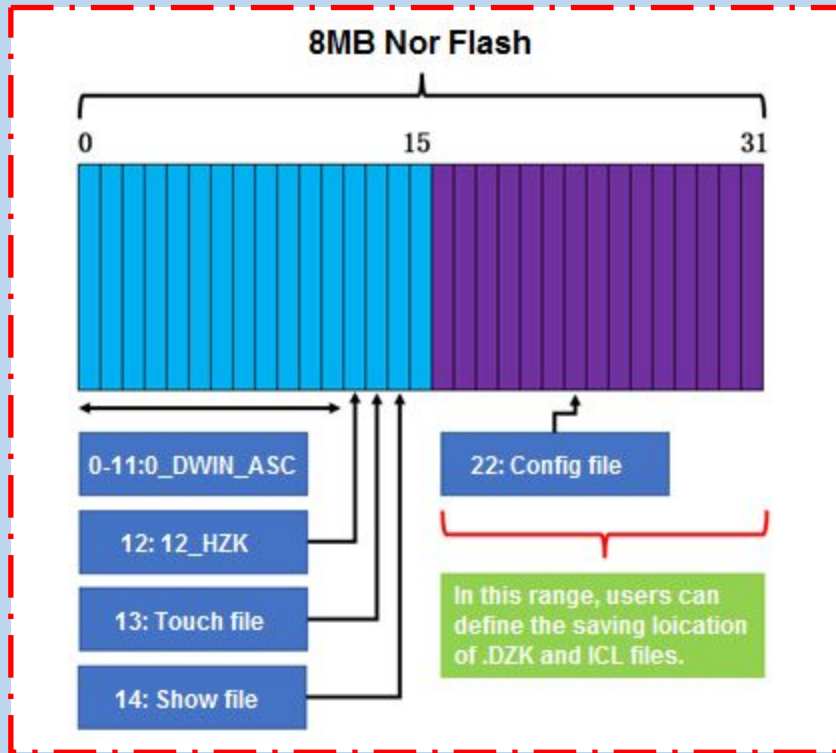□Click it to view and set the properties.
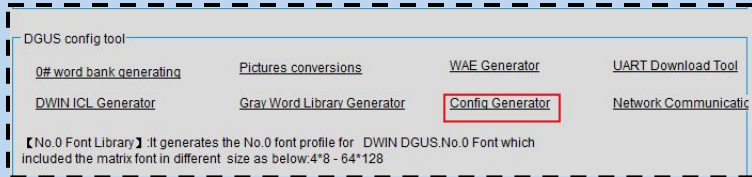
5 Click Save and Generate

The generated configuration Files will be saved in the DWIN_SET folder.

How to make GUI

8 Set the CFG file

Find the Config generator □ Set the WAE and ICL location □ Create a new CFG file and name it "T5LCFG.CFG"

DGUS config tool
- 0# word bank generating
- Pictures conversions
- WAE Generator
- UART Download Tool
- DWIN ICL Generator
- Gray Word Library Generator
- Config Generator
- Network Communicatic

【No.0 Font Library】:It generates the No.0 font profile for DWIN DGUS.No.0 Font which included the matrix font in different size as below:4*8 - 64*128

8MB Nor Flash

0   15   31

0-11:0_DWIN_ASC

22: Config file

12: 12_HZK

13: Touch file

In this range, users can define the saving loication of .DZK and ICL files.

14: Show file

T5LCFG.CFG

DwinPCKits-CFG Edit

ICL Tool | WAE Tool | CFG Edit | T5L Download | SP Order | CRC | Movie Tool

T5L

System Configuration

CRC
- ○ Off   ○ On

Touch Sound
- ○ Off   ● On

WAE Address: 16
ICL Address: 32
Report Rate/Hz: 10
Baud Rate: 115200

File 22
- ○ Do Not Load   ● Load

Backlight Sleep
- ● Off   ○ On

Buzzer/Music Play
- ● Buzzer   ○ Music

Touch-sensitive Variable Changes Update
- ● Non-auto   ○ Auto

Power-on Display Direction
- ● 0°   ○ 90°   ○ 180°   ○ 270°

Backlight Sleep

Normal/Start Brightness: 100

Sleeping Brightness: 50

Time to Wake up/10ms: 100

Touch Panel Configuration
- □ Allow Configuration
- Mode: Resistance
- Resistance Touch Test: Off
- X-axis Data Opt: 0-Xmax
- Y-axis Data Opt: 0-Ymax
- XY Exchange: XY
- Touch Sensitivity: 20
- Frequency Band: 0

Clock Output
- □ Allow Configuration
- □ Clock Output
- Output Frequency/Hz: 3238250

Buzzer
- □ Allow Configuration
- Frequency/Hz: 68244
- High-level Occupy-empty Ratio: DUTY 240 / DIV_2 3000
- Buzzing Time/10ms: 10

Size-resolution
- □ Allow Configuration
- Type: 1024*600

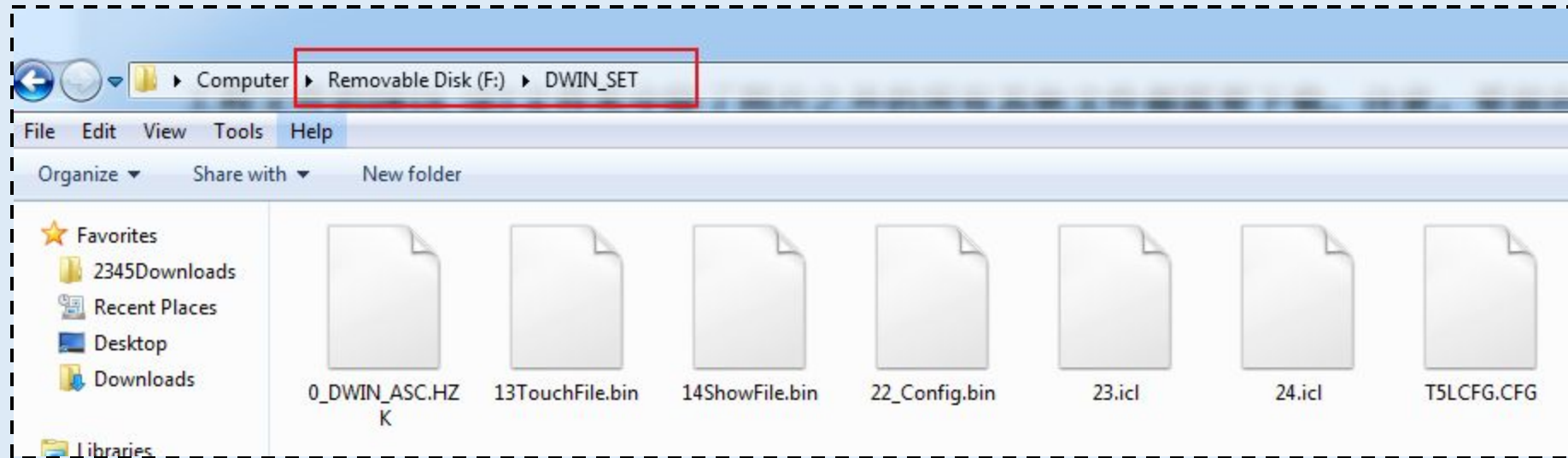Open CFG

Save to CFG

New CFG

Users only check the red box area and any wrong configuration will lead to screen exceptions!
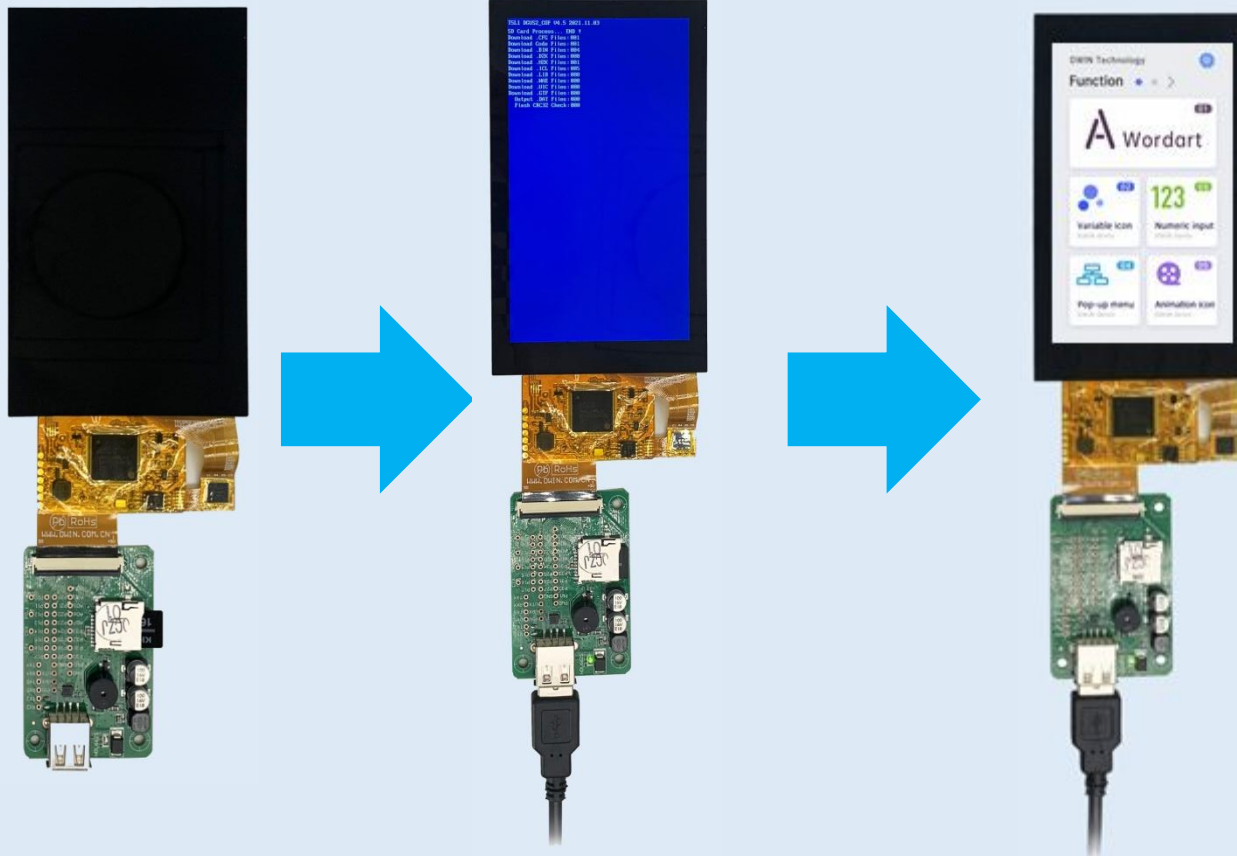
How to make GUI

9 Download the configuration files to the SD card

All the configuration files need to be downloaded.
Note that they should be placed in the DWIN_SET folder of the SD card.

How to make GUI

10 Download the GUI file

Insert the SD card
▫Power up the screen
▫Pull out the SD card and re-power up the screen

OS Development Materials

1 Software

Osbuild 3.0.2.6

For assembly development

OSBuild.exe

2 C51 Tool

DownLoadFor8051

* The C51 files generated by Keil development are converted to bin files by this tool

DownLoadFor8051.exe

3 OS Development Guide

For assembly development

*The original OS program will remain after the DWINOS.bin file is downloaded, and UART2 can be used normally.

OS Development Guide.pdf

4 Development Guide of T5L ASIC

It describes the usage of OS core and T5L peripherals, including AD, PWM, IO, CAN and UART.

Development Guide of T5L ASIC .pdf

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COF Screen Interface

The HDL662S adapter board can be used to connect the USB interface to the SD card interface and lead the signal out to the 2.54mm adapter board.
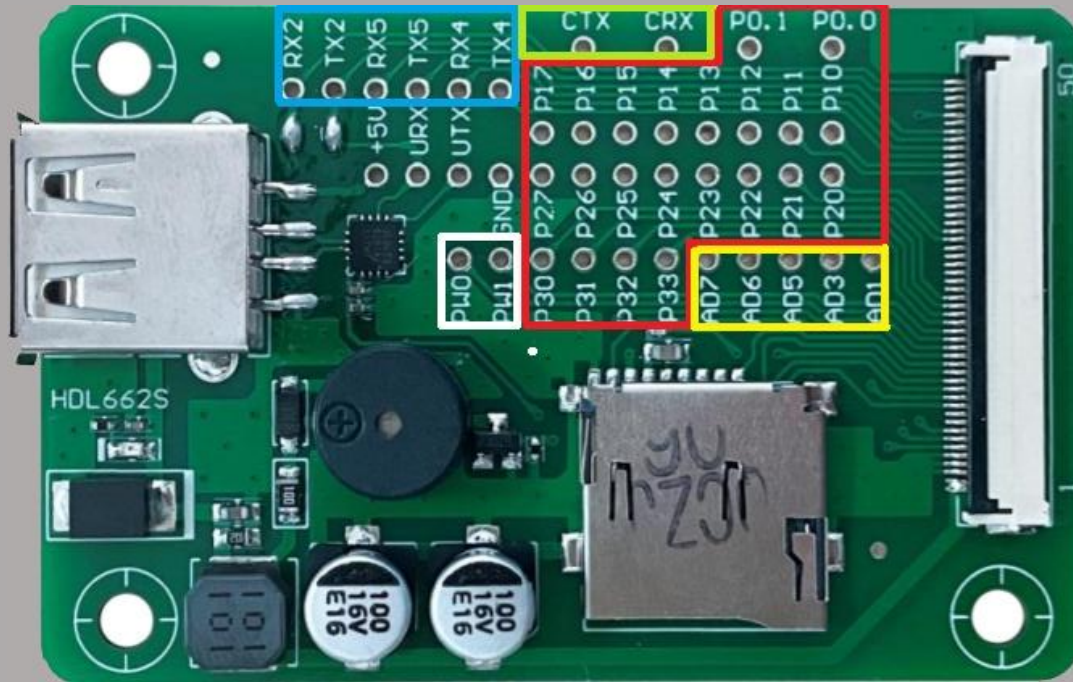
3 UARTs

1 CAN

2 PWM

22 IOs

5 ADs

By UART2, users can communicate with GUI via the 5AA5 command; UART4/5 can be used after parsed.
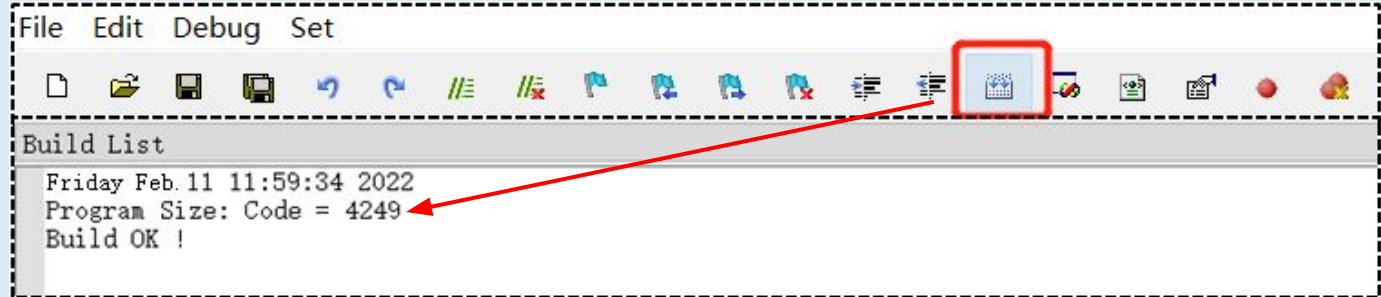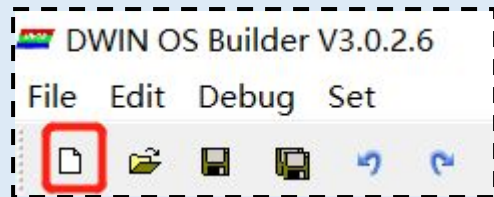
The usage of IO interfaces are similar to the MCU. (Refer to the video tutorials in OS development materials)

The development of 2PWMs and 5 ADs are detailed in the COF screen development guide.

Refer to "COF Screen Application Development(T5L_DGUSII)" for more details.

How to develop OS

1 Assembly development method

DWIN OS Builder V3.0.2.6

File Edit Debug Set

File Edit Debug Set

Build List

Friday Feb.11 11:59:34 2022
Program Size: Code = 4249
Build OK !

```
1 ORG 1000H  The following command will be put in 0x1000.
2 GOTO MAIN  Jump to MAIN.
3 NOP        No operation.
4 NOP
5 NOP
6 ORG 1080H
7
8 MAIN:
9 NOP
10 NOP
11 NOP
12
13 END
```

DWINOS_.bin

Create a new project
Write OS program
Click compile and the program
automatically generates the bin
file.

When finished, users can use the
SD card to download the
DWINOS.bin file.

How to develop OS

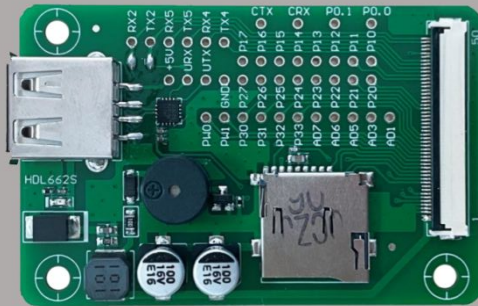## 2 Keil development

C51 compile□ Open DownLoadFor 8051□ Choose C51 program, and click HEX to BIN to generate the configuration file.

T5L51.bin

*COF screen does not support this tool to download the T5L51.bin file.

Common Tools
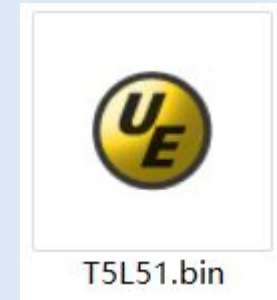
1 HDL662S adapter board

HDL662S is an adapter board designed for DWIN COF screens.

It leads to the user CPU core of 22 IOs, 3 UARTs, 1 CAN, 5 ADs, 2 PWMs.
It supports USB power supply and communication by UART2/4/5 and the default is UART2.
It supports download and update all configuration files by SD card.
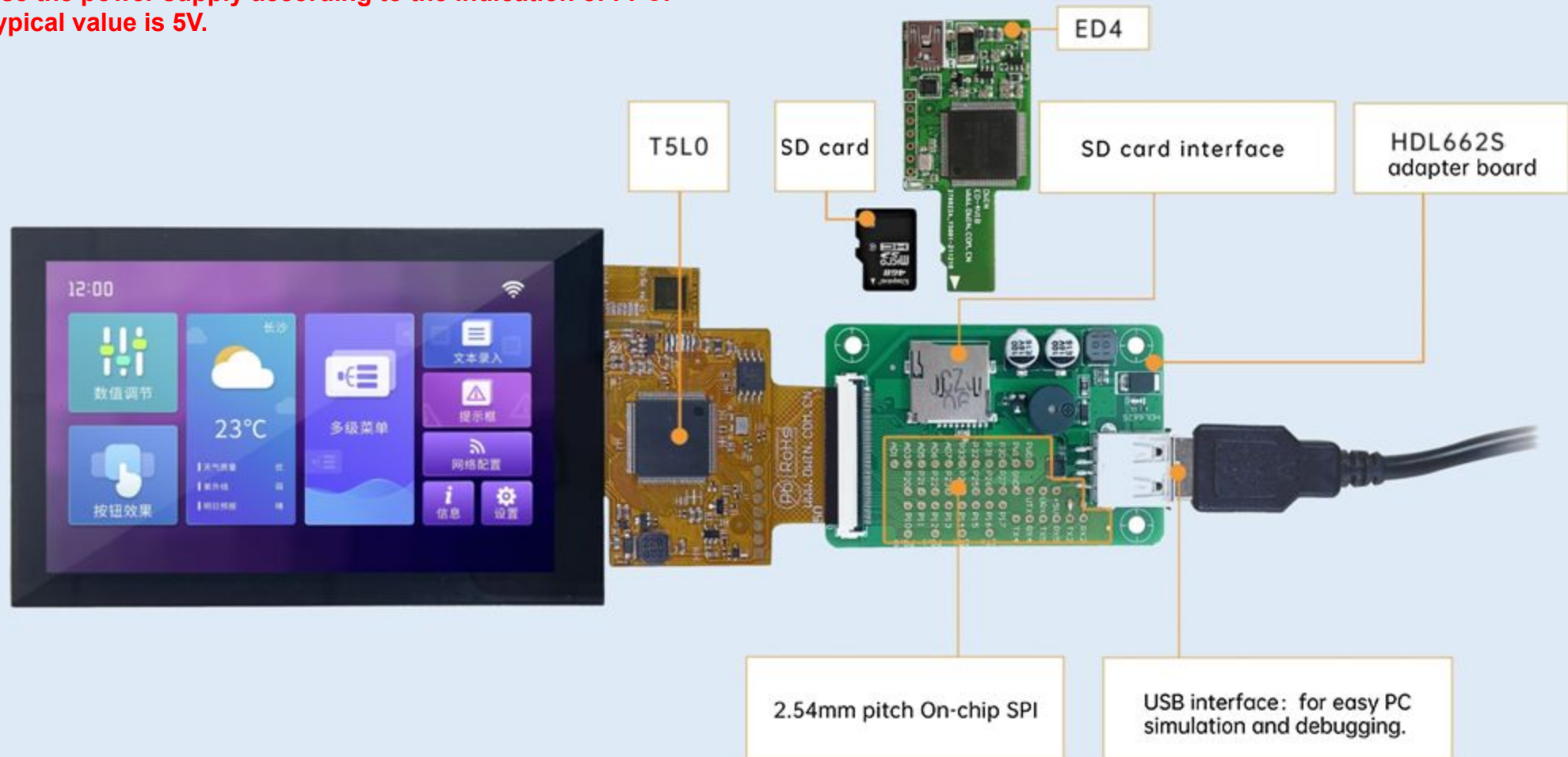
2 ED4 USB downloader

ED4 uses the virtual serial communication protocol to communicate with screen through SD card slot in the virtual serial port mode of 8N1 on the PC side, with a fixed baud rate of 8Mbps.
It can download and update files online without re-powering, which is faster and more stable.

*Both ED4 and SD card are used to download and update files.
 ED4 can restart automatically without powering the screen off and up.

The Wiring Diagram

*Choose the power supply according to the indication of FPC.
 The typical value is 5V.*

ED4

T5L0

SD card

SD card interface

HDL662S adapter board

2.54mm pitch On-chip SPI

USB interface: for easy PC simulation and debugging.

Common Tools

## 1 ED4 USB downloader

VirtualDownload.exe

Based on ED4 USB downloader, the attached ED4 can be downloaded (baud rate fixed at 8Mbps) to quickly accomplish the update of configuration files and communication debugging.

2 ED4 download method

Open the software□ Click Refresh the UARA□ Click Open UART□ Select files□ Click Start download□ The screen will reboot after success download.

*Note that underlying files and CFG file can not be downloaded.

FAQ
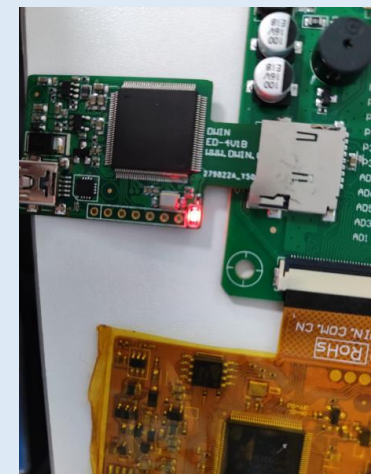
Q1: Why images can't be displayed or black screen/screen flicker occurs after the DEMO files are downloaded?

COF screen uses 8MB Flash. Thus, according to T5L DGUS storage rules, the storage ID range of the font space is 0-31. When the ID of DEMO files beyond the storage range will cause screen maloperation.

Q2: The FPC is frequently bent when in use, now the touch does not work / screen does not light up.

The FPC should be used carefully for frequent bending will shorten its service life.

**Q3: The ID of ICL file is within the range, but the background images can not display in right way.**

Check whether the CFG file settings are consistent with the ID of the ICL file.

Q4: Why is the screen unable to communicate after downloading the C51 file?

The C51 file will override the factory OS underlying program, making UART2 fail to communicate. Therefore, you need to parse the UART by yourself or use DWIN Osbuild 3.0.2.6 to do the secondary development in assembly

Q5: During the SD card download, the screen was mistakenly powered off and the screen went black. Now, it can't download.

The screen cannot be powered off during the download process. In that case, you need to re-burn the underlying files by the T5L-JTAG burner PGT05 to burn the underlying files or send the product back to the customer service department.

VCC
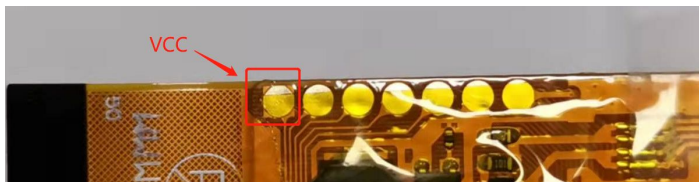
*solder joint marked in the diagram is the positive pole of the power supply