

DMG48270C043_03WTR

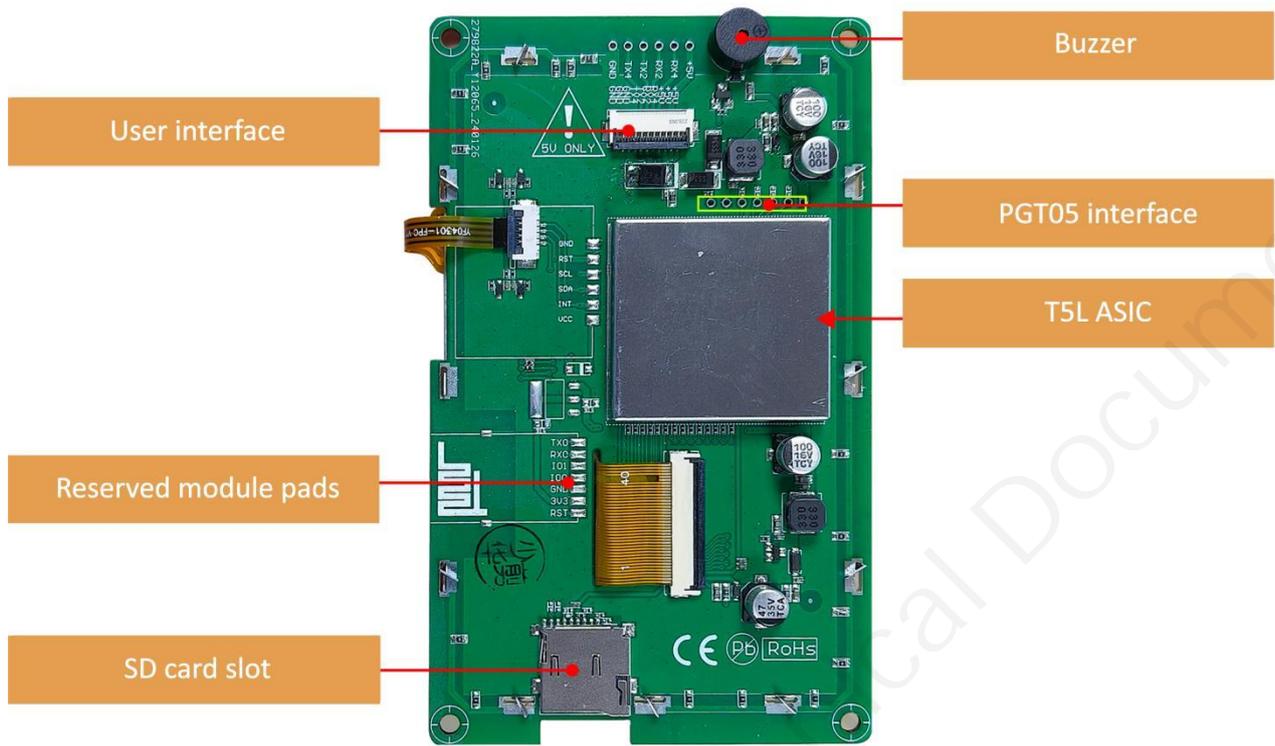
Features:

- Based on the T5L1 ASIC CPU, running the DGUSII human-machine interaction software platform, smart LCM for commercial-grade applications.
- 4.3-inch, 480*272 pixels resolution, 16.7 M colors true-color display, TN-TFT LCD screen.
- High-reliability resistive touch panel suitable for commercial environments.



1. Hardware and interface

1.1 Hardware interface



Hardware interface

Disclaimer:

There are multiple parallel raw materials coexisting to guarantee the stable supply. If customers have particular raw material preferences or requirements, please contact the sales personnel.

1.2 Hardware and interface description

No.	Name	Description
1	T5L1 ASIC	DWIN independently developed, mass production in 2019; patented encryption technology ensures code and data security; low power consumption, strong anti-interference capability, easily passes EMC/EMI tests with dual-sided PCB design
2	User interface	10Pin_1.0mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
3	Flash	16MBytes NOR Flash, can be used to store user UI files such as fonts, images, music, etc., with erase/write cycle >100,000 times
4	Buzzer	3V passive buzzer
5	SD card slot	Supports downloading of all files (user UI files, CFG files, underlying kernel firmware), displays download statistics on the screen, download rate: 4 Mb/s. When downloading files, the SD card needs to be formatted in FAT32 format, with a recommended allocation unit size of 4096
6	Reserved module interface	Supports soldering of WI-FI module and USB download module. WI-FI module model: WI-FI-10; USB module models: HDL702, HDL703
7	PGT05 interface	Used for reprogramming the underlying DGUS firmware

2. Specification parameters

2.1 Display parameters

LCD Type	TN process TFT display screen
Viewing Angle	Normal viewing angle, 70°/70°/50°/70° (L/R/U/D)
Resolution	480×272 pixels (support 0°/90°/180°/270°)
Color	16.7M color (24-bit 8R8G8B)
Active Area (A.A.)	95.00mm (W)×53.90mm (H)
Interface	RGB
Backlight Mode	LED
Backlight Service Life	>20000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
Brightness	250nit
Brightness Control	0~100 grade (When the brightness is adjusted to 1%~30% of the maximum brightness, flickering may occur and is not recommended to use in this range)
Note: You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed page display for a long time.	

2.2 Touch parameters

Type	RTP (Resistive touch panel)
Structure	ITO film + ITO glass
Touch Mode	Single touch and support continuous sliding touch
Surface Hardness	3H
Light Transmittance	Over 80%
Life	Over 1,000,000 times touch

2.3 Serial interface parameters

Mode	UART2: 3.3V & 5V TTL/CMOS UART4: 3.3V & 5V TTL/CMOS (Only available after OS configuration)				
Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1, I _{out} = 1mA	3.0	3.3	-	V
	Output 0, I _{out} = -1mA	-	0	0.3	V
	Input 1, I _{in} = 1mA	2.4	3.3	5.0	V
	Input 0, I _{in} = -1mA	0	-	0.5	V
Baud Rate	3150~3225600bps, typical value of 115200bps				
Data Format	UART2: N81 UART4: N81/E81/O81/N82 , 4 modes (OS configuration)				
Interface Cable	10Pin_1.0mm				

2.4 Electrical specifications

Rated Power	<2W	
Operating Voltage	4.5~5.5V, typical value of 5V	
Operating Current	280mA	VCC = +5V, Backlight on
	100mA	VCC = +5V, Backlight off
Recommended power supply: 5V 1A DC		

2.5 Operating environment

Operating Temperature	-20℃~70℃ (5V @ 60% RH)
Storage Temperature	-30℃~80℃
Conformal Coating	None
Operating Humidity	10%~90%RH, typical value of 60% RH

3. Reliability test

3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: the product was placed on the test bench to perform contact and air discharge in turn of the serial port screen. During the experimental process, it was observed whether the screen is dead, black, white, splash, or reboot. According to the experiment results, the performance is in line with the criteria GB/T 17626.2 B level and above.

Test standard :
 EN 61000-4-2:2009
 IEC 61000-4-2:2008
 GB/T 17626.2-2018
 Other:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-8kV	+8kV	-15kV	+15kV
Screen					Δ	Δ		
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-6kV	+6kV	-8kV	+8kV
Frame					β	β		
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

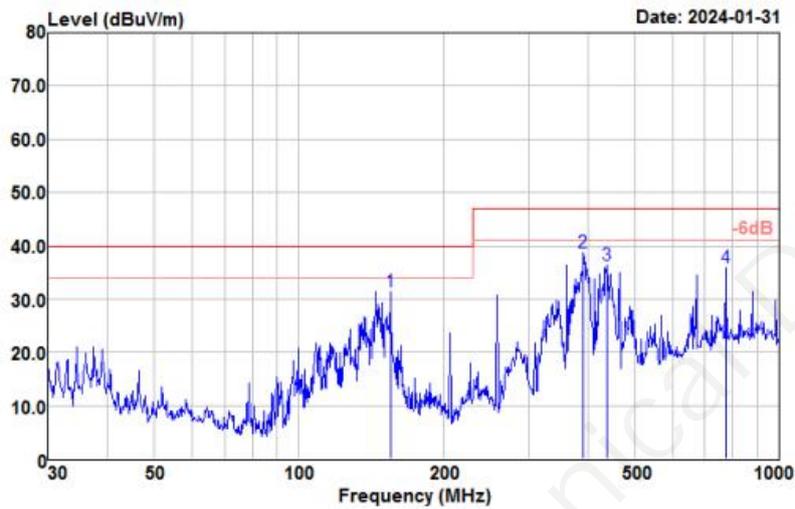
Performance Criterion:

- A. Normal performance within limits specified by the manufacturer, requestor or purchaser;
- B. Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;
- C. Temporary loss of function or degradation of performance, the correction of which requires operator intervention;
- D. Loss of function or degradation of performance which is not recoverable, due to damage to hardware or software, or loss of data.

3.2 RE test

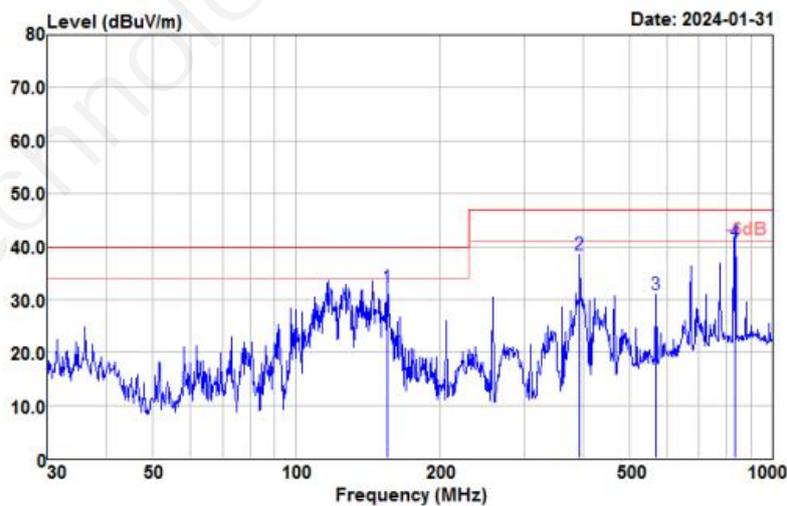
Test Item	Test Standard	Result
RE	Class B	Normal operation

HORIZONTAL



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
154.821	48.03	13.45	2.39	32.50	31.37	40.00	-8.63	Peak
390.723	52.13	15.35	3.84	32.67	38.65	47.00	-8.35	Peak
437.120	48.34	16.55	4.09	32.55	36.43	47.00	-10.57	Peak
774.158	40.67	22.19	5.66	32.60	35.92	47.00	-11.08	Peak

VERTICAL



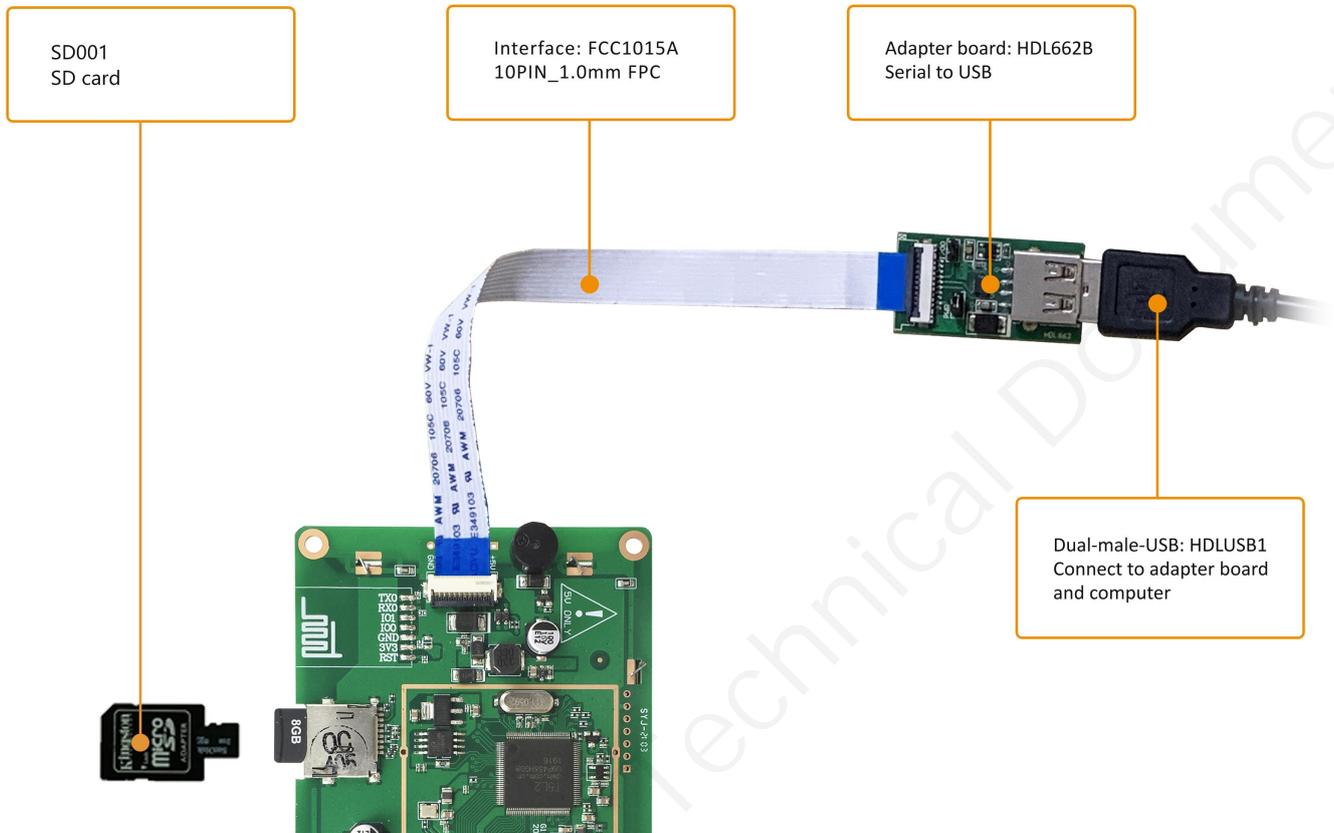
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
154.821	48.90	13.45	2.39	32.50	32.24	40.00	-7.76	QP
393.472	51.94	15.41	3.86	32.68	38.53	47.00	-8.47	Peak
568.613	39.65	18.97	4.88	32.57	30.93	47.00	-16.07	Peak
833.317	45.20	22.38	5.94	32.73	40.79	47.00	-6.21	QP

4.Packaging & dimensions

Form Factor	121.90mm (W)×73.20mm (H)×13.90mm (T)			
Installation Dimensions	Positioning hole: 106.50 (+0.3mm)×68.30 (+0.3mm)			
Net Weight	95g			
Packaging Standards				
Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1:	220mm(L)×160mm(W)×47mm (H)	1	2	2
Carton2:	250mm(L)×200mm(W)×80mm (H)	2	2	4
Carton3:	320mm(L)×270mm(W)×80mm (H)	2	4	8
Carton4:	450mm(L)×350mm(W)×300mm(H)	2	30	60
Carton5:	600mm(L)×450mm(W)×300mm(H)	2	60	120

4. Debugging tools

It is recommended for new users of DWIN smart LCMs to purchase official accessories. For more details, please refer to customer service center.



5. T5L series IC features

- (1) Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T(single instruction cycle)high speed operation.
- (2) Separate GUI CPU Core running DGUS II System:
 - High-speed display memory, 2.4GB/S bandwidth.
 - 2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.
 - Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.
 - Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.
 - 1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.
 - 128Kbytes variable storage space for exchanging data with OS CPU Core and memory.
 - Support DGUS development and simulation on PC. Support background remote upgrade.
- (3) Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:
 - Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.
 - 64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.
 - 28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channle 16-bit PWM of adjustable resolution.
 - Support IAP on-line simulation and debugging with unlimited number of breakpoints.
 - Upgrade code online through DGUS system.
- (4) 1Mbytes on-chip Flash with DWIN patent encryption technology ensure code and data security.
- (5) Operating temperature ranges from -40°C to +85°C(IC operating temperature customizable from -55°C to 105°C).

DWIN encourages users to design your own customized product based on T5L

6. Revision records

Rev	Revise Date	Content	Editor
00	2023-08-04	First Edition	Xu Ying
01	2024-02-22	EMC hardware upgrade, natural consumption of old inventory boards	Xu Ying

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!

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