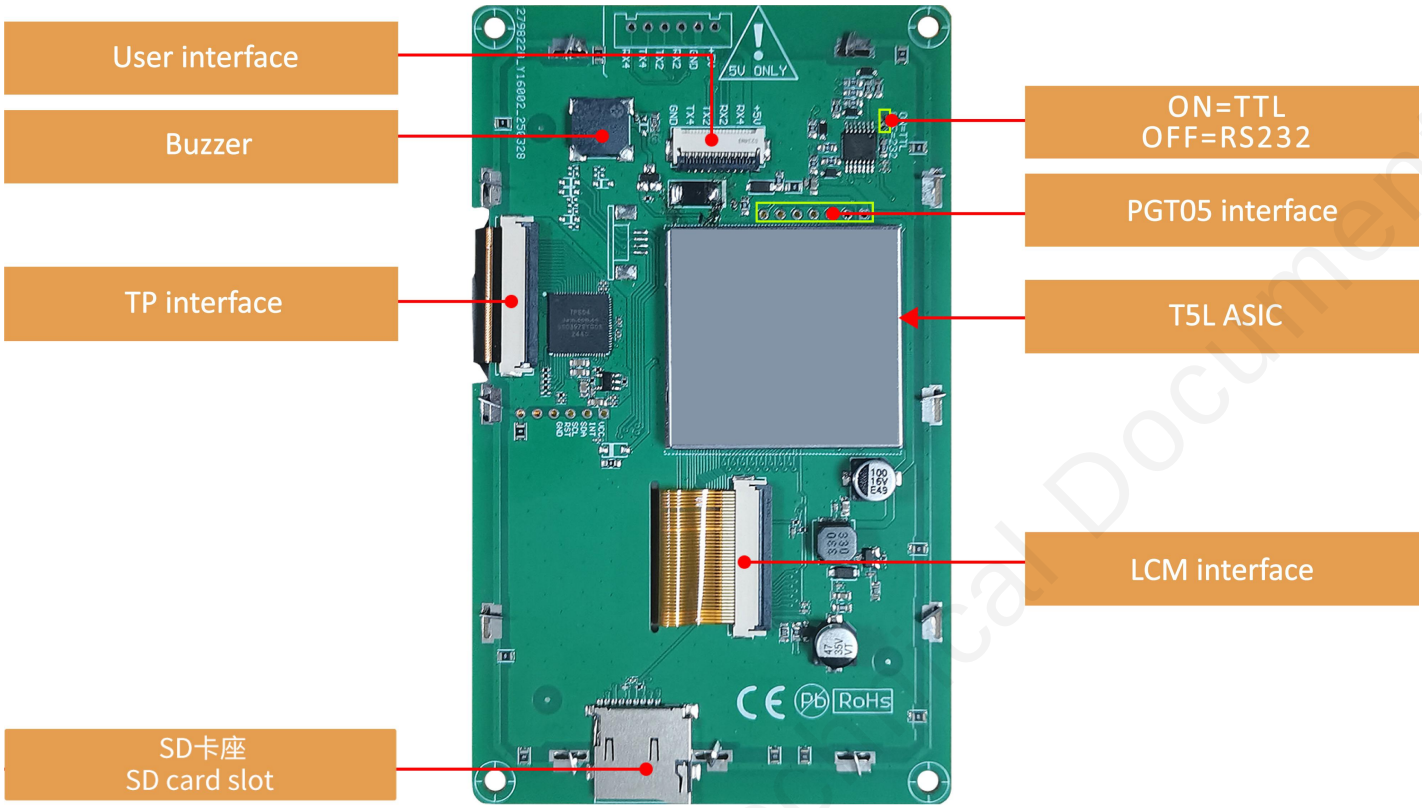
DMG48270C043_05WTC

Features:

- **Powered by T5L0 ASIC, running DGUS II HMI platform, commercial-grade smart LCM.**
- **4.3 inch, 480*272 resolution, IPS-TFT LCD.**
- **Reliable capacitive touch panel.**
- **8MB memory, cost-effective.**

1. Hardware and interface

1.1 Hardware interface diagram



Hardware interface diagram

1.2 Hardware and interface description

No.	Item	Description
1	T5L0 ASIC	DWIN independently developed, mass production in 2020. Dual 8051 cores, GUI and application run on separate 8051 cores.
2	User interface	10Pin_1.0mm socket for power supply and serial communication.
3	Flash	8MB NOR Flash for storing UI files like fonts, images, music, with over 100,000 erase/write cycles.
4	Buzzer	3V passive buzzer.
5	SD card slot	For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate.
6	PGT05 interface	For programming DGUS firmware.

2. Specification parameters

2.1 Display parameters

LCD Type	IPS, TFT LCD.
Viewing Angle	Wide viewing angle (85°/85°/85°/85° typical), high contrast, and good color reproduction.
Resolution	480×272 (0°/90°/180°/270°)
Active Area (AA)	95.04mm (W)×53.86mm (H)
Viewing Area (VA)	96.54mm (W)×55.36mm (H)
Backlight	LED
Backlight Service Life	>20000 hours
Brightness	250nit
Brightness Control	100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range)
Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display.	

2.2 Touch parameters

Type	Capacitive touch panel.
Structure	G+G structure with tempered glass surface and hardness ≥ 6H.
Light Transmittance	>85%

2.3 Serial interface parameters

Mode	UART2: ON=TTL/CMOS; OFF=RS232 UART4: ON=TTL/CMOS; OFF=RS232 (Only available after OS configuration)				
Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1, Iout = -4mA	2.7	3.2	-	V
	Output 0, Iout = 4mA	-	0.1	0.4	V
	Input 1	2.4	3.3	5.5	V
	Input 0	0	-	1.0	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	<5W	
Operating Voltage	4.5-5.5V, typical value of 5V.	
Operating Current	210mA	VCC=5V, max backlight.
	70mA	VCC=5V, backlight off.
Recommended power supply: 5V 1A DC.		

2.5 Operating environment

Operating Temperature	-20℃ to 70℃ (5V @ 60% RH)
Storage Temperature	-30℃ to 80℃
Anti-UV	None
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: Place the product on the test bench fixture (approximately 15cm in height), and perform contact and air discharge tests on the smart LCM. Observe if any freezing, black or white screen, flickering, or rebooting occurs during the test.

Test conclusion: The product's ESD performance meets GB/T 17626.2 Class B standards.

Discharge Type	Discharge Value	Result
Contact discharge	±4KV	Normal operation
Air discharge	±4KV	Normal operation

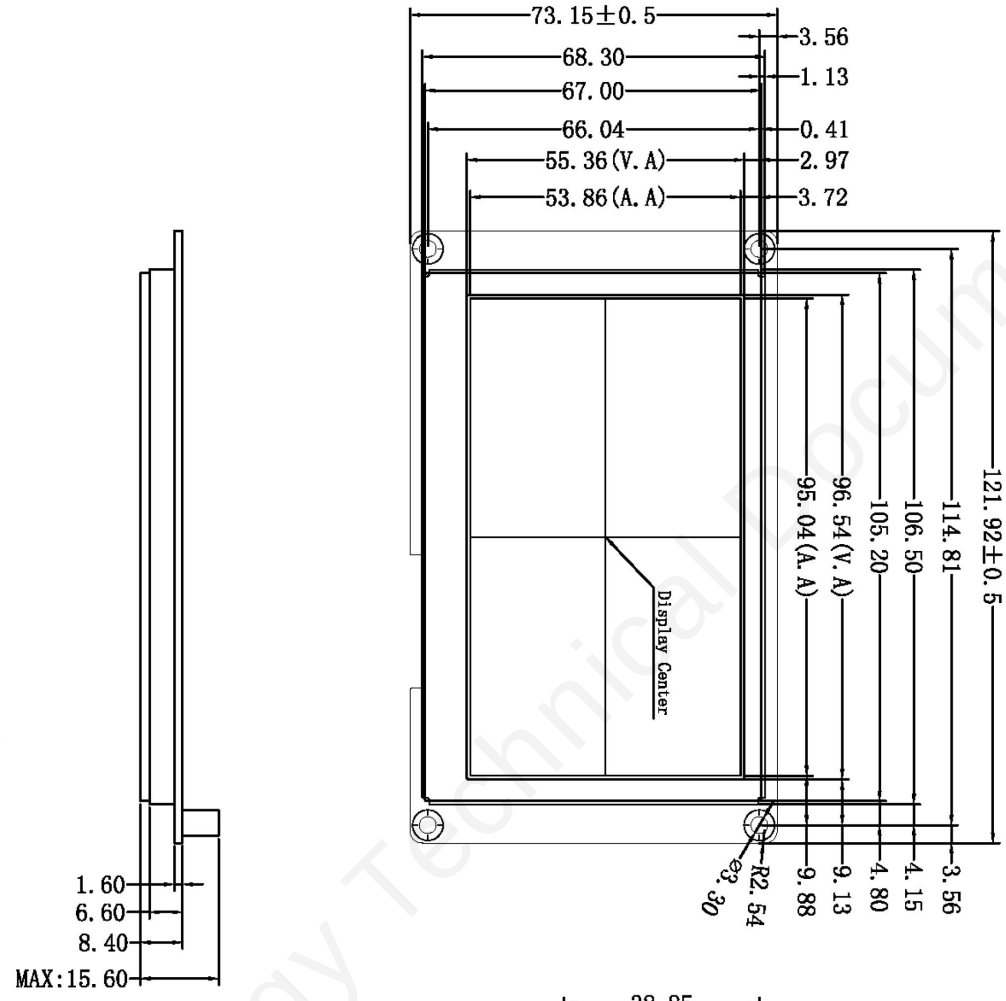
4. Packaging & dimensions

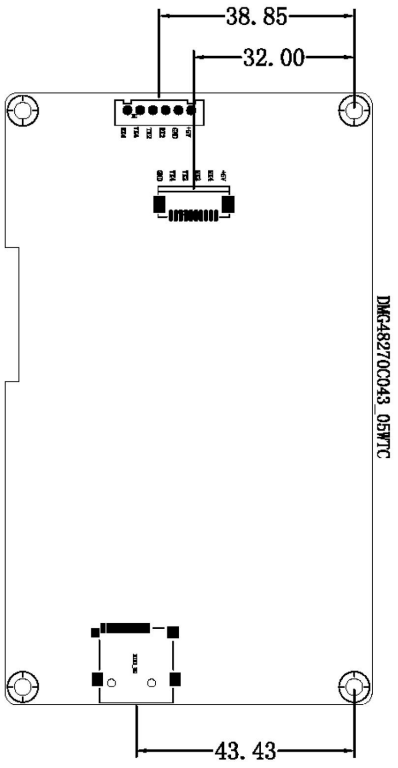
Form Factor	121.92mm (W)×73.15mm (H)×15.60mm (T)
Installation Dimensions	Positioning hole: 106.50(+0.3mm)×68.30(+0.3mm)
Net Weight	115g

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)	1	4	4
Carton3：	320mm(L)×270mm(W)×80mm (H)	1	8	8
Carton4：	450mm(L)×350mm(W)×300mm (H)	2	30	60
Carton5：	600mm(L)×450mm(W)×300mm (H)	2	60	120

Definition	Pin#	Type	Description
GND	8,9,10	P	GND
TX4	7	O	UART4 Output
TX2	6	O	UART2 Output
RX2	5	I	UART2 Input
RX4	4	I	UART4 Input
+5V	1,2,3	P	Power Input





1.Location hole is used as position reference.

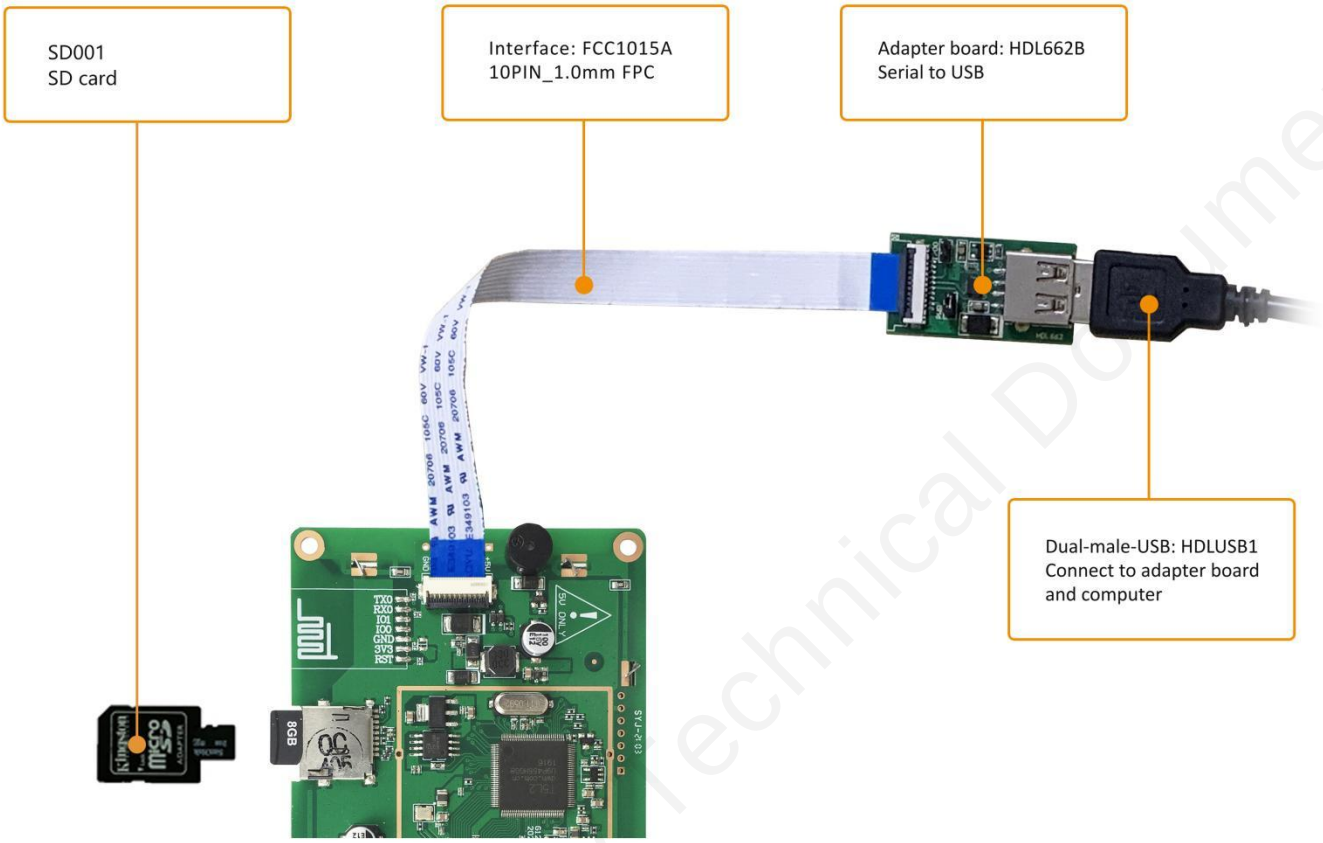
2.Unmarked tolerance is +/-0.3mm.

Note: Active area is marked in dash lines.

Model	DMG48270C043-05WTC				
Drawing	A4	Drawn	G.Y	Date	2021.07.28
Scale	1:1	Review		Date	
Unit	MM	Approval		Date	
DWIN Technology					

5. Debug tools

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



6. 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

7. Revision records

Rev	Revise Date	Content	Editor
00	2024-08-27	First Edition	Xu Ying
01	2025-04-23	Replace touch IC with TPS04	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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