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DMG24240C015_03WN

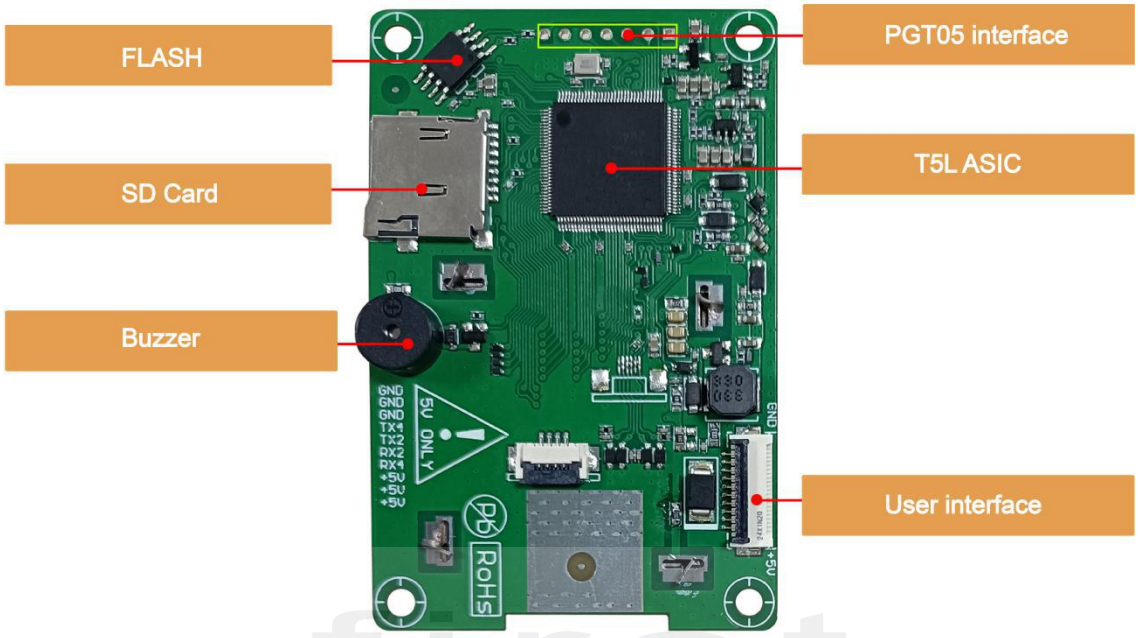
Features:

- **Based on T5L0, running DGUS II system, commercial grade.**
- **1.54-inch, 240*240 Pixels resolution, 262K Colors, IPS-TFT-LCD, Wide viewing angle.**



1. Hardware and interface

1.1 Hardware interface



Hardware interface

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1.2 Hardware and interface description

No.	Name	Description
1	T5L0 ASIC	Developed by DWIN. Mass production in 2020,1MBytes Nor Flash on the chip, 512KBytes used to store the user database. Rewrite cycle: over 100,000 times
2	LCM interface	FPC40_0.5mm, 18 bit RGB+3SPI interface
3	User interface	10Pin_1.0mm latching socket for power supply and serial communication. Download rate(typical value): 12KByte/s
4	Flash	16MBytes NOR Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times
5	Buzzer	3V passive buzzer, Power: <1W
6	SD interface	FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
7	PGT05 interface	When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal

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2. Specification parameters

2.1 Display parameters

LCD Type	IPS, TFT LCD
Viewing Angle	Wide viewing angle,85°/85°/85°/85°(L/R/U/D)
Resolution	240×240 pixels (0°/90°/180°/270°)
Color	18-bit 6R6G6B
Active Area (A.A.)	27.7mm (W)×27.7mm (H)
View Area (V.A.)	-
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	300nit
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.	

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2.2 Serial interface parameters

Mode	UART2: TTL/CMOS; UART4: TTL/CMOS; (Only available after OS configuration)				
Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1, Iout = -4mA	3.0	3.3	-	V
	Output 0, Iout = 4mA	-	0	0.3	V
	Input 1	2.4	3.3	5.0	V
	Input 0	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				

2.3 Electrical specifications

Rated Power	<1W	
Operating Voltage	4.5~5.5V, typical value of 5V	
Operating Current	85mA	VCC=5V, max backlight
	60mA	VCC=5V, backlight off
Recommended power supply: 5V 1A DC		

2.4 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 screen iron frame and display area as shown in Fig.3.1 below. 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.



Electrostatic discharge test

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

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4. Packaging & dimensions

Form Factor	76.0mm (W)×50.0mm (H)×11.4mm (T)
Installation Dimensions	Positioning hole: 35.1(+0.3mm)×32.5(+0.3mm)
Net Weight	25g

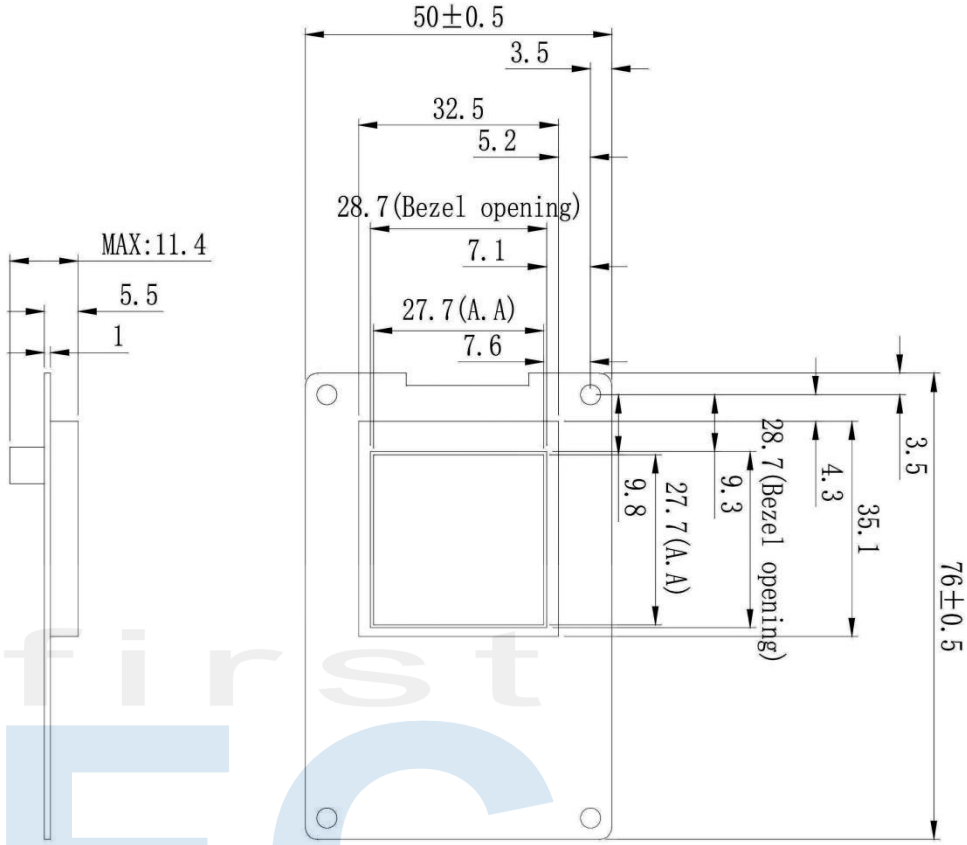
Packaging Standards

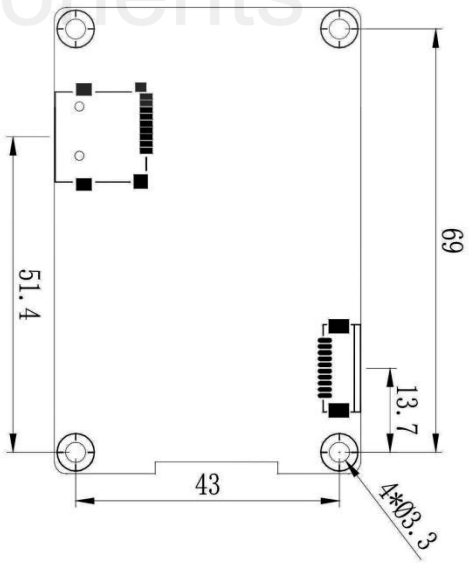
Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1：	220mm(L)×160mm(W)×47mm (H)	1	2	2
Carton2：	250mm(L)×200mm(W)×80mm (H)	2	2	4
Carton3：	320mm(L)×270mm(W)×80mm (H)	2	4	8
Carton4：	450mm(L)×350mm(W)×300mm(H)	3	20	60
Carton5：	600mm(L)×450mm(W)×300mm(H)	3	75	225

Disclaimer: The product design is subject to alternation and improvement without prior notice.

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





1.Location hole is used as position reference.

2.Unmarked Tolerance is +/-0.3mm

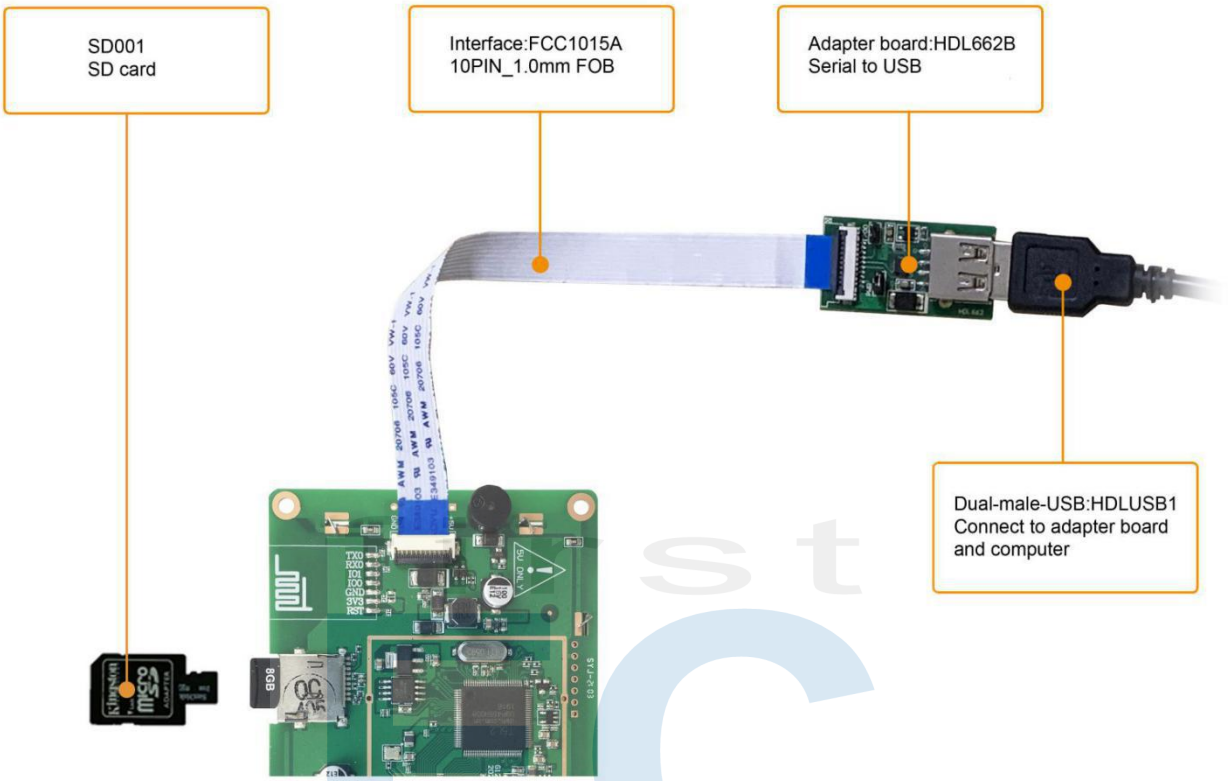
Note: Active area is marked in Dash lines

Model	DMG24240C015-03WN			
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Scale	1:1	Review		Date
Unit	m m	Approval		Date
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5. 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.



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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

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7. Revision records

Rev	Revise Date	Content	Editor
00	2023-01-03	First Edition	Xu Ying

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