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DMG80480K050_03WTC

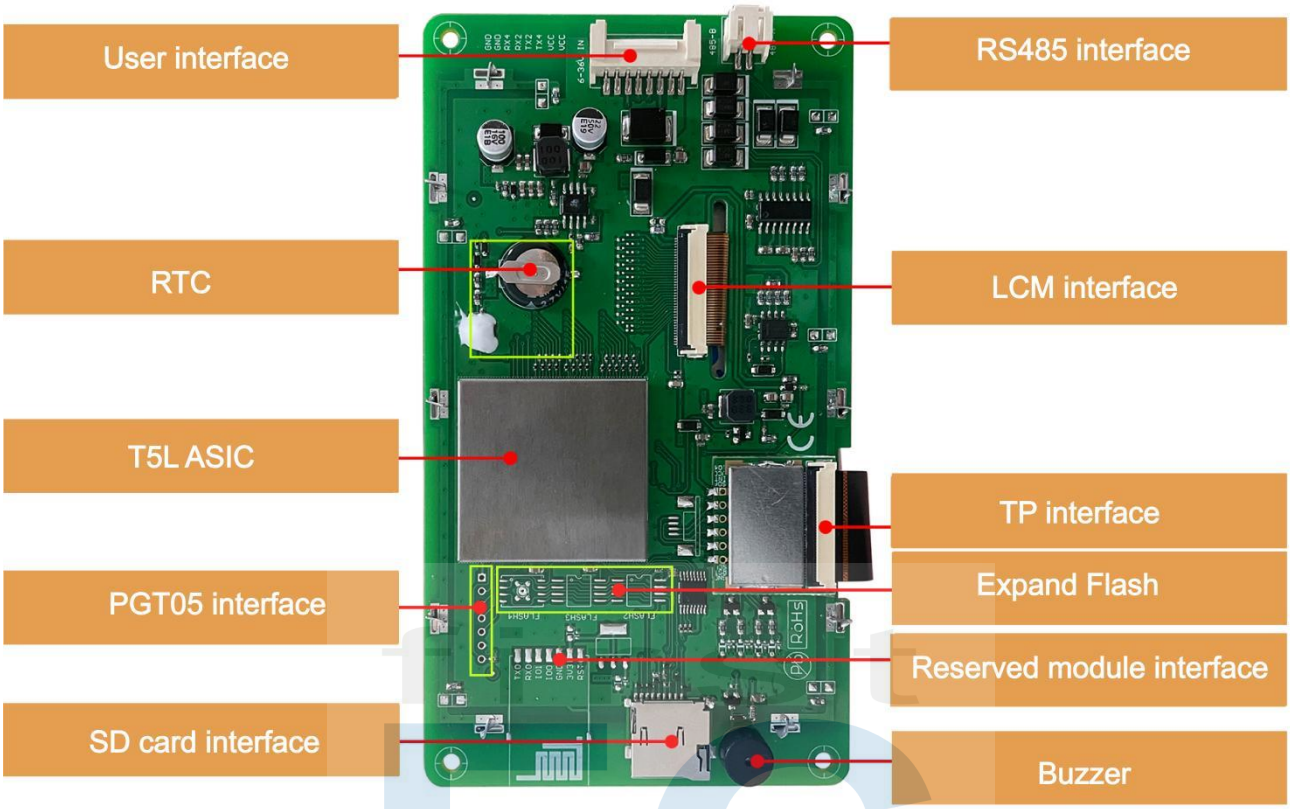
Features:

- **Based on T5L1, running DGUS II system, medical grade products.**
- **5.0-inch, 800*480 pixels resolution, 16.7M colors, IPS-TFT-LCD, wide viewing angle.**
- **Support RS232 and RS485 communication.**
- **Capacitive touch screen.**
- **With conformal coating.**



1. Hardware and interface

1.1Hardware interface



Hardware interface

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1.2 Hardware and interface description

No.	Name	Description
1	T5L1 ASIC	Developed by DWIN. Mass production in 2019,1MBytes Nor Flash on the chip, 512KBytes used to store the user database. Rewrite cycle: over 100,000 times
2	LCM interface	FPC40_0.5mm, RGB interface
3	CTP interface	COB structure, IIC interface
4	User interface	8Pin_2.0mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
5	Flash	16MBytes NOR Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times
6	Expand Flash	Expandable to 64Mbytes NOR Flash or 48Mbytes NOR Flash+512Mbytes NAND Flash
7	Buzzer	3V passive buzzer. Power: <1W
8	RTC	Super-capacitor for power supply. Accuracy: ±20ppm @25℃. It can work normally for 7 days after power failure
9	SD card interface	FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
10	Reserved module interface	Wi-Fi module: connect to the cloud platform to update remotely USB module: download files by USB flash disk
11	PGT05 interface	When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal
12	RS485 interface	2Pin_ 2.0mm horizontal socket: For RS485 communication

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	800×480 pixels (support 0°/90°/180°/270°)
Color	24-bit 8R8G8B
Active Area (A.A.)	108.0mm (W)×64.8mm (H)
View Area (V.A.)	108.6mm (W)×65.4mm (H)
Backlight Mode	LED
Backlight Service Life	>30000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
Brightness	350nit
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	CTP (Capacitive touch panel)
Structure	G+G structure with surface cover of tempered glass
Touch Mode	Single point touch, support continuous sliding touch
Surface Hardness	6H
Light Transmittance	Over 90%
Life	Over 1,000,000 times touch

2.3 Serial interface parameters

Mode	UART2: RS232 UART4: RS232 (Only available after OS configuration) UART5: RS485 (Only available after OS configuration)				
UART2,4 Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1	-	-5.0	-3.0	V
	Output 0	3.0	5.0	-	V
	Input 1	-15.0	-5.0	-	V
	Input 0	-	5.0	15.0	V
UART2,4 Baud Rate	3150~3225600bps, typical value of 115200bps				
UART5 Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1	2.5	5.0	-	V
	Output 0	-	-5.0	-2.5	V
	Input 1	0	2.5	-	V
	Input 0	-	-2.5	-0.2	V
UART5 Baud Rate	3150~921600bps, typical value of 115200bps				
Data Format	UART2: N81 UART4: N81/E81/O81/N82; 4 modes (OS configuration) UART5: N81/E81/O81/N82; 4 modes (OS configuration)				
Interface Cable	8Pin_2.0mm (RS232) 2Pin_2.0mm (RS485)				

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2.4 Electrical specifications

Rated Power	<5W	
Operating Voltage	6~36V, typical value of 12V	
Operating Current	180mA	VCC=12V, max backlight
	90mA	VCC=12V, backlight off
Recommended power supply: 12V 1A DC		

2.5 Operating environment

Operating Temperature	-20℃~70℃ (12V @ 60% RH)
Storage Temperature	-30℃~80℃
Conformal coating	Yes
Operating Humidity	10%~90%RH, typical value of 60% RH
Aging Test	72 hours high temperature charged aging at 50℃

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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.



3.1 Electrostatic discharge test

Discharge Type	Discharge Value	Result
Contact discharge	±8KV	Normal operation
Air discharge	±15KV	Normal operation

3.2 EFT test

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

Test process: the product was placed on the test bench to perform contact and the smart screen is energized by the power supply coupled with a EFT generator as shown in Fig. 3.2 below. During the experimental process, it was observed whether abnormal reset, display or touch phenomena occurs. According to the experiment results, the performance is in line with the criteria GB/T 17626.2 B level and above.



3.2 EFT test

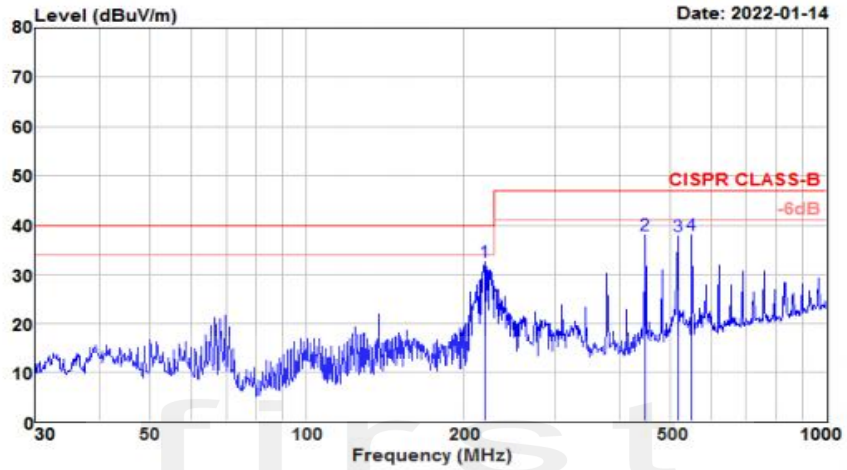
Test Item	Test Standard	Result
Power supply	±2KV;100KHz	Normal operation

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3.3 RE test

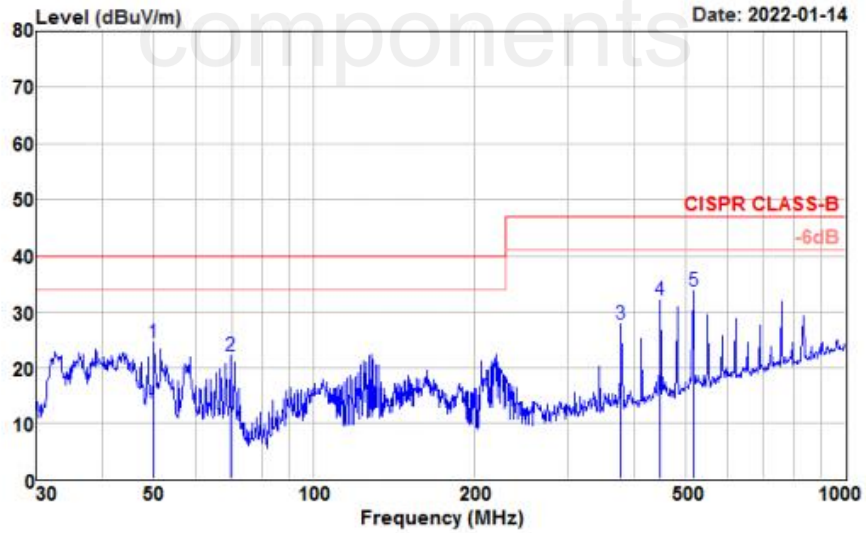
Test Item	Test Standard	Result
RE	ClassB-6dB	Normal operation

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
219.845	52.47	10.03	2.59	32.60	32.49	40.00	-7.51	Peak
447.982	50.58	16.26	3.80	32.75	37.89	47.00	-9.11	Peak
517.248	49.32	17.22	4.10	32.78	37.86	47.00	-9.14	Peak
550.948	48.92	17.66	4.20	32.75	38.03	47.00	-8.97	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
50.057	40.89	15.16	1.16	32.60	24.61	40.00	-15.39	Peak
69.600	41.01	12.42	1.38	32.56	22.25	40.00	-17.75	Peak
378.584	42.24	14.74	3.46	32.68	27.76	47.00	-19.24	Peak
447.982	44.86	16.26	3.80	32.75	32.17	47.00	-14.83	Peak
517.248	45.30	17.22	4.10	32.78	33.84	47.00	-13.16	Peak

3.4 CS test

■ Test standard : ☐EN 61000-4-6:2014 ☐IEC 61000-4-6:2013 ■ GB/T 17626.6-2017
☐Other:

■ Modulation: ■ Amplitude 80%,1kHz sine wave ☐Amplitude 80%,2Hz sine wave ☐Other:

■ Dwell time: ■ 1s ☐3s ☐other:

■ Frequency Step Size : ■ 1 % of preceding frequency value ☐other:

Coupling Line	Frequency Range (MHz)	Voltage Level(e.m.f.) (V)	Result
Power terminal	0.15-80	10	A

3.5 SURGE test

■ Test standard : ☐EN 61000-4-5:2014+A1:2017 ☐IEC 61000-4-5:2014+A1:2017 ■GB/T 17626.5-2019
☐Other:

Table 1: _____DC___ mains power input port

Level	Voltage	Polarity	Path	Result
1	0.5kV	±	/	/
2	1kV	±	Positive to negative	A
3	2kV	±	/	/
4	4kV	±	/	/

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3.6 RS test

■ Test standard : ☐EN 61000-4-3:2006+A1:2008+A2:2010 ☐IEC 61000-4-3:2006+A1:2007+A2:2010
■ GB/T 17626.3-2016 ☐other:

■ Modulation: ■ Amplitude 80%,1kHz sine wave ☐Amplitude 80%,2Hz sine wave ☐Other:

■ Dwell time: ■ 1s ☐3s ☐other:

■ Frequency Step Size : ■ 1 % of preceding frequency value ☐other:

Frequency range (MHz)	Field strength (V/m)	Front side		Rear side		Left side		Right side	
		VER	HOR	VER	HOR	VER	HOR	VER	HOR
80-1000	10	A	A	A	A	A	A	A	A

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.

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4. Packaging & dimensions

Form Factor	143.38mm (W)×80.78mm (H)×15.83mm (T)
Installation Dimensions	Positioning hole: 121.8(+0.3mm)×76.9(+0.3mm)
Net Weight	160g

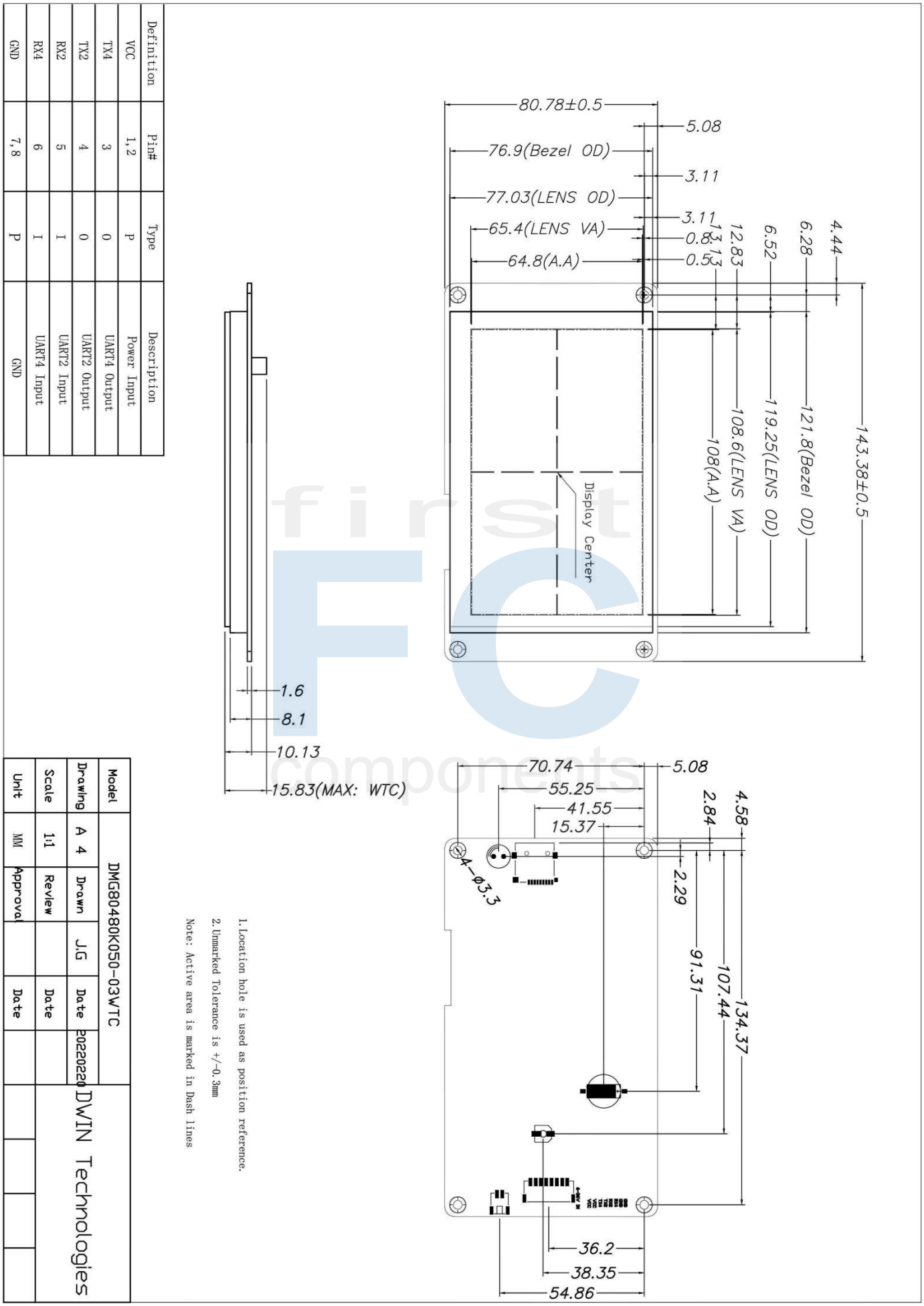
Packaging Standards

Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1：	220mm(L)×160mm(W)×47mm (H)	1	1	1
Carton2：	250mm(L)×200mm(W)×80mm (H)	1	4	4
Carton3：	320mm(L)×270mm(W)×80mm (H)	1	6	6
Carton4：	450mm(L)×350mm(W)×300mm(H)	2	30	60
Carton5：	600mm(L)×450mm(W)×300mm(H)	3	40	120

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

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



1.Location hole is used as position reference.

2.Unmarked Tolerance is +/-0.3mm

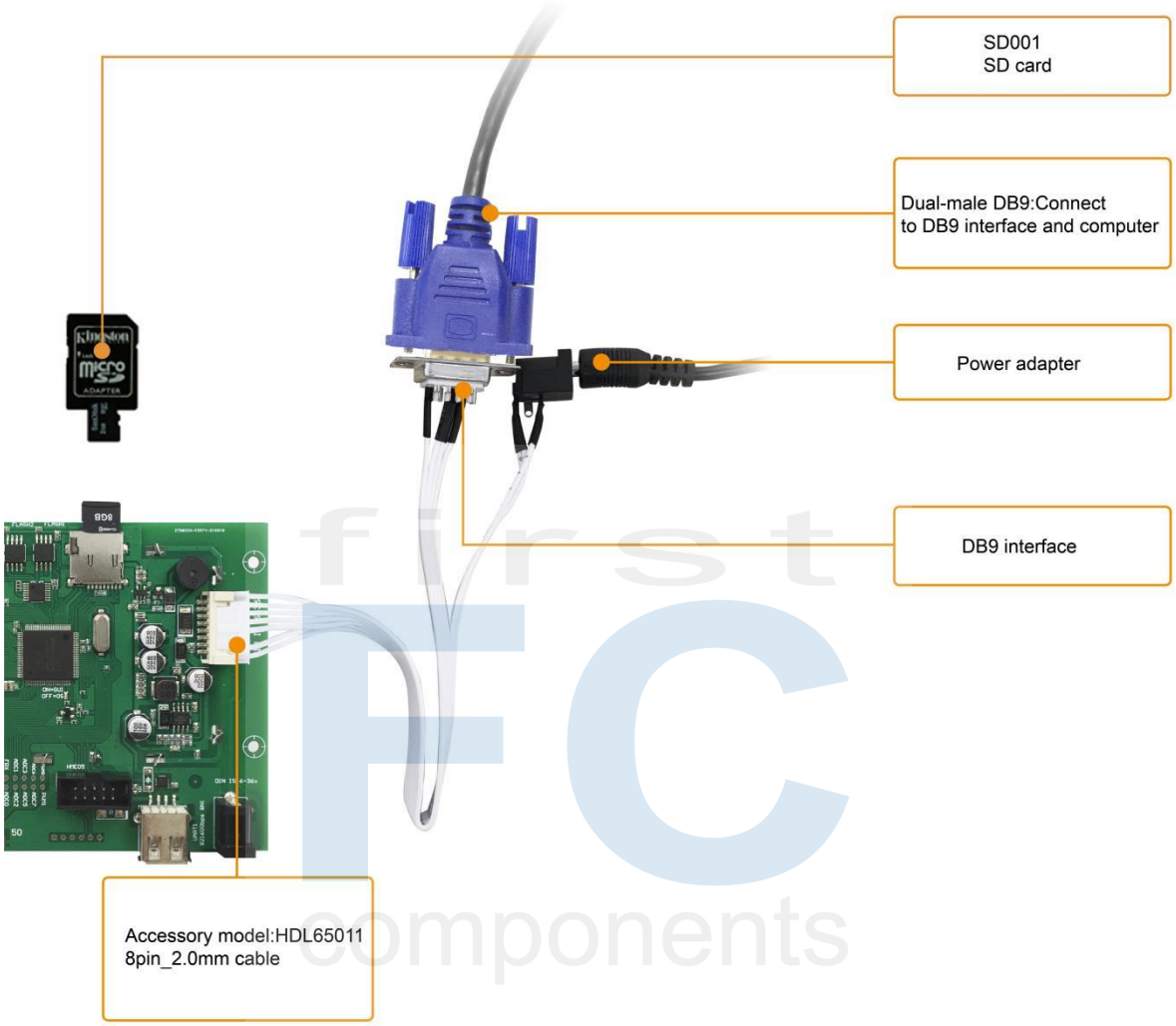
Note: Active area is marked in Dash lines

Model	DMG80480K050-03WTC				
Drawing	A 4	Drawn	J.G	Date	20220220
Scale	1:1	Review		Date	
Unit	MM	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.



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	2023-06-07	First Edition	Xu Ying

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