

# DMG80480T050\_A5WTC

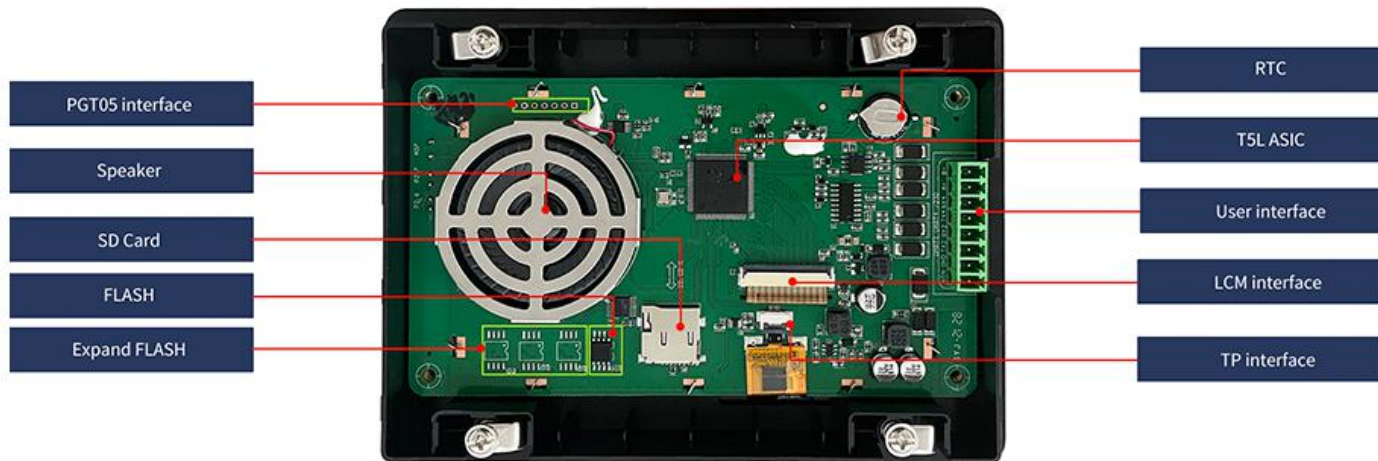
## Features:

- Based on T5L1, running DGUS II system, industrial grade.
- 5.0-inch, 800\*480 pixels resolution, 16.7M Colors, IPS-TFT-LCD, wide viewing angle.
- Capacitive touch screen.
- With shell, with conformal coating.



## 1. Hardware and interface

### 1.1 Hardware interface



Hardware interface

### 1.2 Interface description

No.	Name	Description
1	T5L1 ASIC	Developed by DWIN in 2019. 1MBytes Nor Flash on the chip, 512Kbytes storage for the user database. Rewrite cycle > 100,000 times
2	LCM interface	FPC40_0.5mm, RGB interface
3	CTP interface	IIC interface
4	User interface	8Pin_3.81mm 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 48Mbytes NOR Flash or 32Mbytes NOR Flash+512Mbytes NAND Flash
7	Speaker	Onboard speaker. Power: 2W
8	RTC	Super-capacitor for power supply. Accuracy: $\pm 20\text{ppm}$ @25°C. It can work normally for 30 days after power failure
9	SD card slot	The SD card should be formatted as FAT32 file system. 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

## 2.Specification parameters

### 2.1 Display parameters

<b>LCD Type</b>	IPS, TFT LCD
<b>Viewing Angle</b>	Wide viewing angle, 85°/85°/85°/85°(L/R/U/D)
<b>Resolution</b>	800×480 pixels (support 0°/90°/180°/270°)
<b>Color</b>	24-bit 8R8G8B
<b>Active Area (A.A.)</b>	108.8mm (W) × 65.6mm (H)
<b>Visual Area (V.A.)</b>	-
<b>Backlight</b>	LED
<b>Backlight Lifetime</b>	>30000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
<b>Brightness</b>	300nit
<b>Brightness Control</b>	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)
<b>Note: Long time display of high contrast still image over 30 minutes may lead to display residual shadow, please use screen saver to avoid this problem.</b>	

### 2.2 Touch parameters

<b>Type</b>	CTP (Capacitive touch panel)
<b>Structure</b>	G+G structure with surface cover of Asahi tempered glass
<b>Touch Mode</b>	Support point touch and drag
<b>Surface Hardness</b>	6H
<b>Light Transmittance</b>	Over 90%
<b>Life</b>	Over 1,000,000 times touch

### 2.3 Serial interface parameters

<b>Mode</b>	UART2: RS232				
	UART4: RS232 (Only available after OS configuration)				
	UART5: RS485 (Only available after OS configuration)				
<b>Voltage Level (UART2, UART4)</b>	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
<b>Baud Rate (UART2, UART4)</b>	3150~3225600bps, typical value of 115200bps				

	Test Condition	Min	Typ	Max	Unit
<b>Voltage Level (UART5)</b>	Output 1	2.5	5.0	-	V
	Output 0	-	-0.5	-2.5	V
	Input 1	0	2.5	-	V
	Input 0	-	-2.5	-0.2	V
	<b>Baud Rate (UART5)</b>	3150~3225600bps, typical value of 115200bps			
<b>数据格式 Data Format</b>	UART2: N81 UART4: N81/E81/O81/N82 4 modes (OS configuration) UART5: N81/E81/O81/N82 4 modes (OS configuration)				
<b>Interface Cable</b>	8Pin_3.81mm Socket				

## 2.4 Electrical specifications

<b>Rated Power</b>	<5W	
<b>Operating Voltage</b>	6~36V, typical value of 12V	
<b>Operating Current</b>	130mA	VCC=12V, max backlight
	60mA	VCC=12V, backlight off
<b>Recommended power supply: 12V 1A DC</b>		

## 2.5 Operating environment

<b>Operating Temperature</b>	-20℃~70℃ (12V @ 60% RH)
<b>Storage Temperature</b>	-30℃~80℃
<b>Conformal coating</b>	Yes
<b>Operating Humidity</b>	10%~90%RH, typical value of 60% RH
<b>Protective Level</b>	IP65 (Front)

### 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. 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.

Discharge Type	Discharge Value	Result
Contact discharge	±6KV	Normal operation
Air discharge	±8KV	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. 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.

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

#### 4.Packaging & dimensions

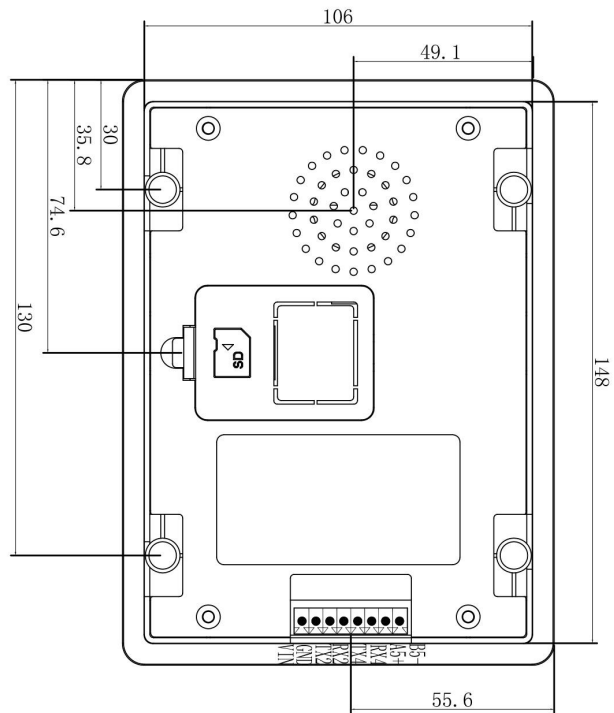
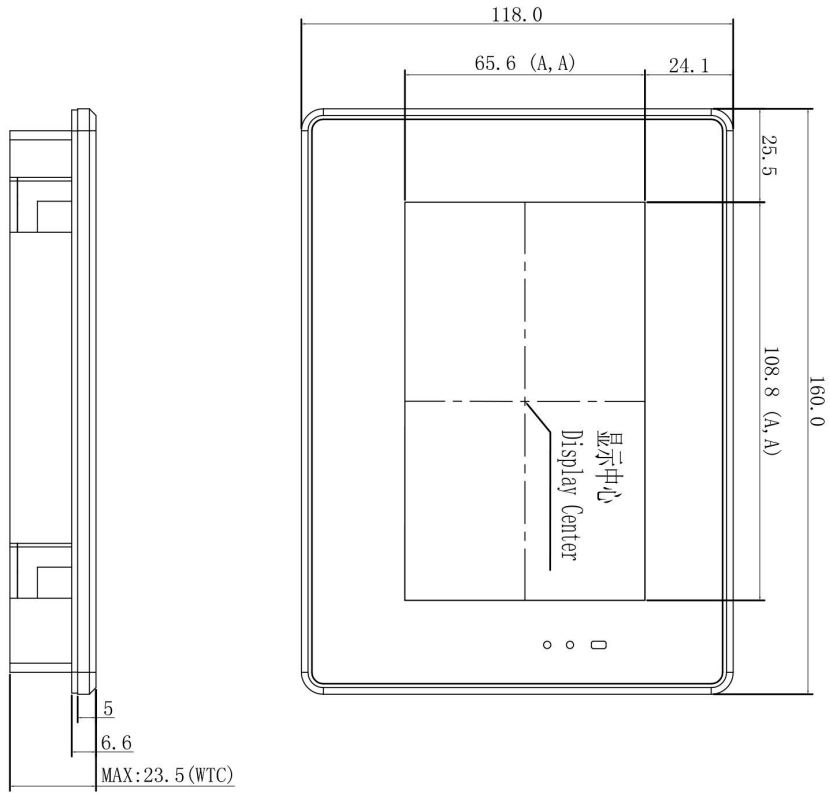
<b>Form Factor</b>	160.0 (W) × 118.0(H)×23.5(T)mm
<b>Installation Dimensions</b>	Positioning hole: 148.0(+0.3mm)×106.0(+0.3mm)
<b>Net Weight</b>	300g

##### 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:	435mm(L)×335mm(W)×290mm(H)	-	-	-
Carton5:	600mm(L)×430mm(W)×290mm(H)	2	30	60

Disclaimer: the data is for reference only and the information of product design that do not affect performance parameters and utilization is subject to alternation without prior notice.

Definition	Pin#	Type	Description
VIN	1	P	Power Input
GND	2	P	GND
TV2	3	0	DOVT
RX2	4	I	DIN
TX4	5	0	DOVT
RX4	6	I	DIN
A5+	7	485+	485+
B5-	8	485-	485-



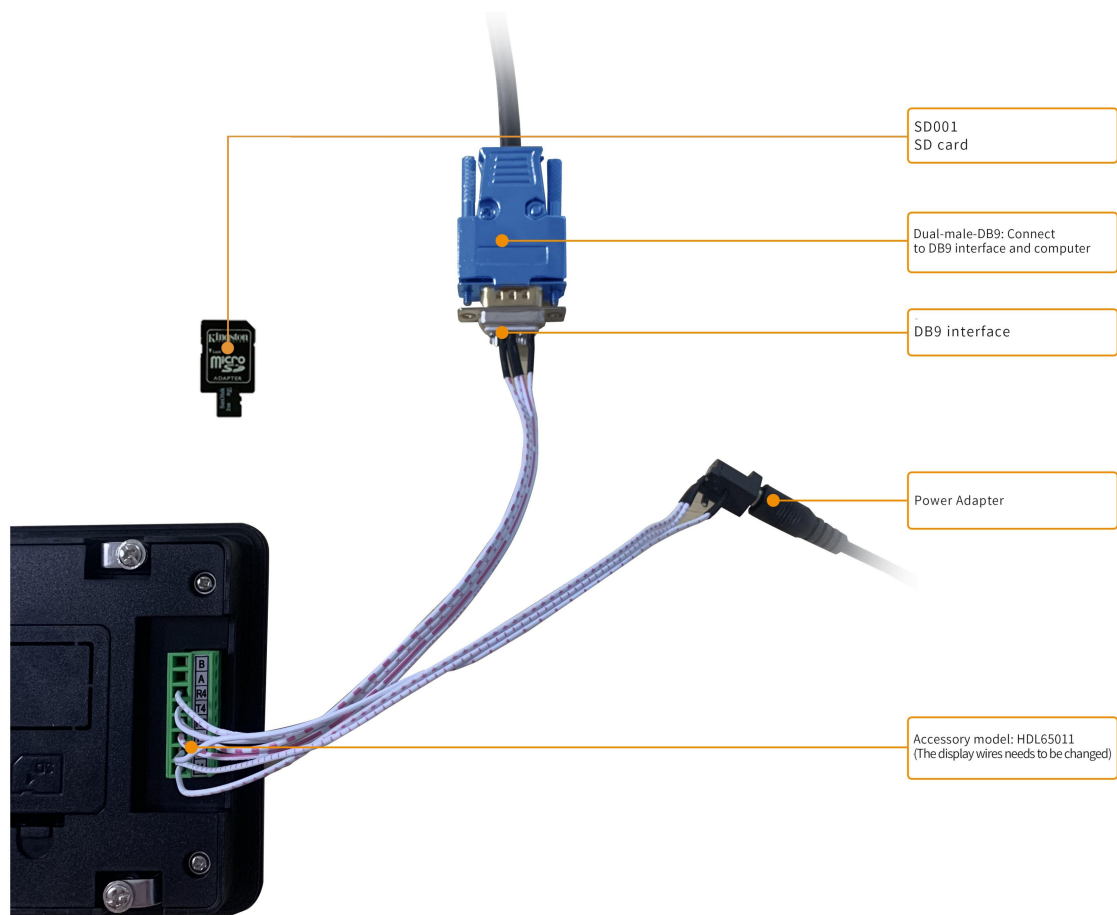
Location hole is used as position reference.  
 Unmarked Tolerance is +/-0.3mm  
 Active area is marked in Dash lines

Model	DMG80480T050_A5WTC		
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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.
- 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 development by DGUS V7.624 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-channel 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	2021-05-21	First Edition	ZK
01	2021-08-05	Modify Flash and Brightness	ZYJ
02	2021-11-05	Upgrade version	ZYJ
03	2022-01-05	Update RTC accuracy description	ZYJ

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!