

# DMG10600T070\_A5WTC

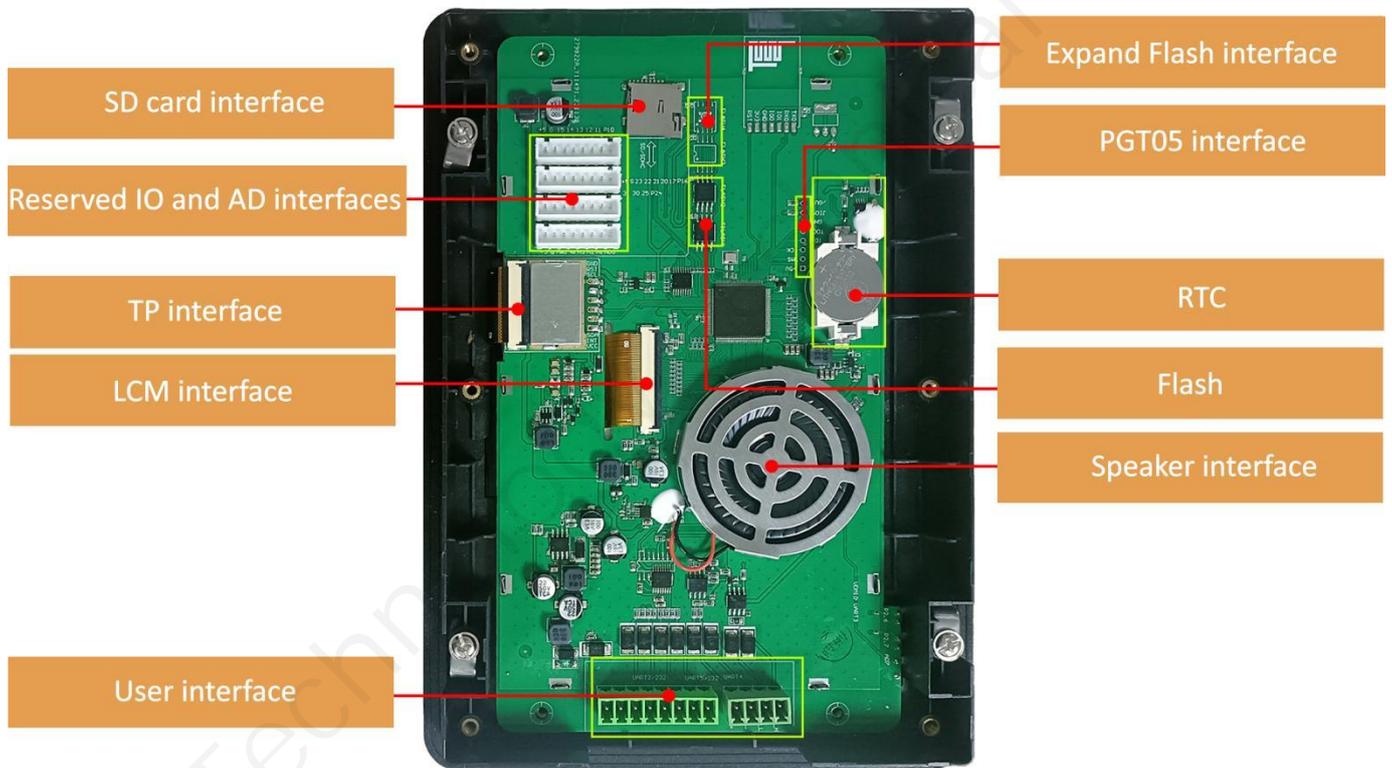
## Features:

- Based on T5L2, running DGUS II system, industrial grade.
- 7.0-inch, 1024\*600 pixels resolution, 16.7M Colors, IPS-TFT-LCD, wide viewing angle.
- Capacitive touch screen.
- With enclosure, Anti-UV, with conformal coating.



# 1. Hardware and interface

## 1.1 Hardware interface



Hardware interface

## 1.2 Hardware and interface description

No.	Name	Description
1	T5L2 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	FPC50_0.5mm, RGB interface
3	CTP interface	COB structure, IIC interface
4	User interface	8Pin_3.81mm socket and 4Pin_3.81mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
5	Flash	32MBytes 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	Speaker	Onboard speaker. Power: 2W
8	RTC	Button cell for power supply. Accuracy: $\pm 20\text{ppm}$ @25°C
9	SD card interface	FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mbit/s
10	Reserved module interface	Wi-Fi module: connect to the cloud platform to update remotely
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>	1024×600 pixels (support 0°/90°/180°/270°)
<b>Color</b>	24-bit 8R8G8B
<b>Active Area (A.A.)</b>	154.20mm (W) ×85.88mm (H)
<b>View Area (V.A.)</b>	155.00mm (W) ×87.50mm (H)
<b>Backlight Mode</b>	LED
<b>Backlight Service Life</b>	>30000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
<b>Brightness</b>	250nit
<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:</b> You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed page display for a long time.	

### 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>	Single touch, support continuous sliding touch
<b>Surface Hardness</b>	6H
<b>Light Transmittance</b>	Over 85%
<b>Life</b>	Over 1,000,000 times and depending on the working environment

### 2.3 Serial interface parameters

<b>Mode</b>	UART2: RS232 UART4: RS485(Only available after OS configuration) UART5: RS232(Only available after OS configuration) CAN*1				
<b>UART2,5 Voltage Level</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>UART2,5 Baud Rate</b>	3150~3225600bps, typical value of 115200bps				
<b>UART4 Voltage Level</b>	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
<b>UART4 Baud Rate</b>	3150~921600bps, typical value of 115200bps				
<b>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 table</b>	8Pin_3.81mm Socket, 4Pin_3.81mm Socket (CAN*1)				

## 2.4 Electrical specifications

<b>Rated Power</b>	<5W	
<b>Operating Voltage</b>	7~36V, typical value of 12V	
<b>Operating Current</b>	320mA	VCC=12V, max backlight
	150mA	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>Operating Humidity</b>	10%~90%RH, typical value of 60% RH
<b>Conformal Coating</b>	Yes
<b>Anti-UV</b>	Yes
<b>Protection Grade</b>	IP65 (Front)

### 3. Reliability test

#### 3.1 Electrostatic discharge test

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

Test process: Place the product flat on the test bench and perform air discharge on the display area 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					A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-6kV	+6kV	-8kV	+8kV
\	\	\	\	\	\	\	\	\

### 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.

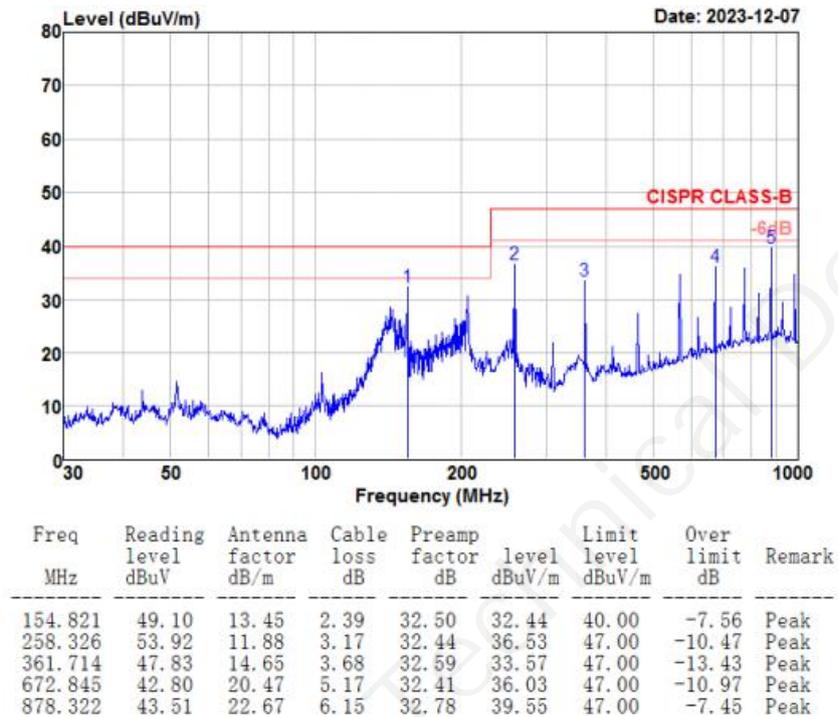
Test standard : 
  EN 61000-4-4:2012 
  IEC 61000-4-4:2012 
  GB/T 17626.4-2018  
 Other:

Test Points		Test Levels(kV)							
		-0.5	+0.5	-1.0	+1.0	-2.0	+2.0	-4.0	+4.0
DC 24V Power ports	L					10	10		
	N					10	10		
	Earth	/	/	/	/	/	/	/	/
	L+N					10	10		
	L + Earth	/	/	/	/	/	/	/	/
	N + Earth	/	/	/	/	/	/	/	/
	L+N+Earth	/	/	/	/	/	/	/	/
Signal ports	___/___	/	/	/	/	/	/	/	/

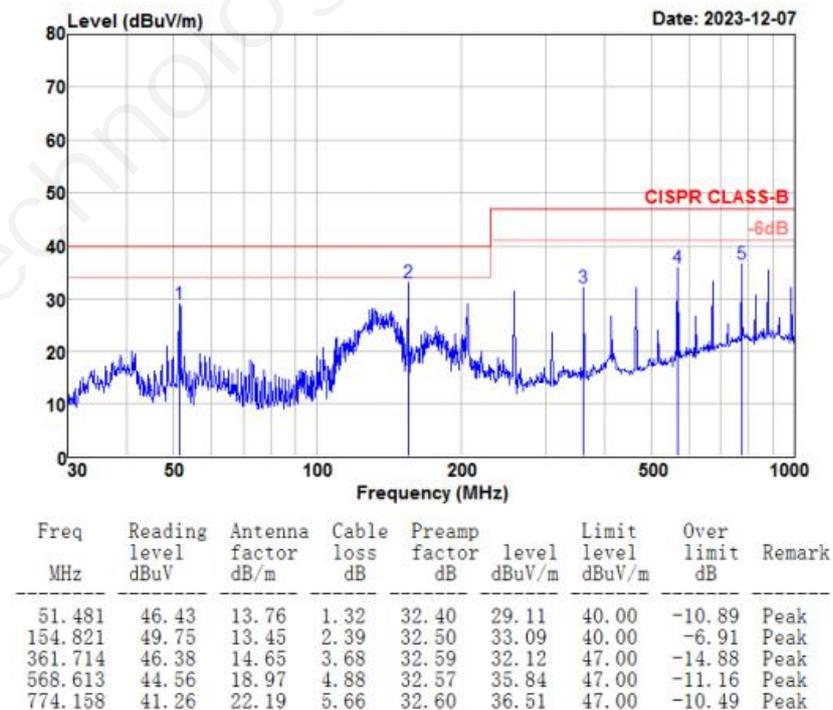
### 3.3 RE test

Test Item	Test Standard	Result
RE	Class B	Normal operation

#### HORIZONTAL



#### VERTICAL



### 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
1/1/1/1	0.15~80	10	A

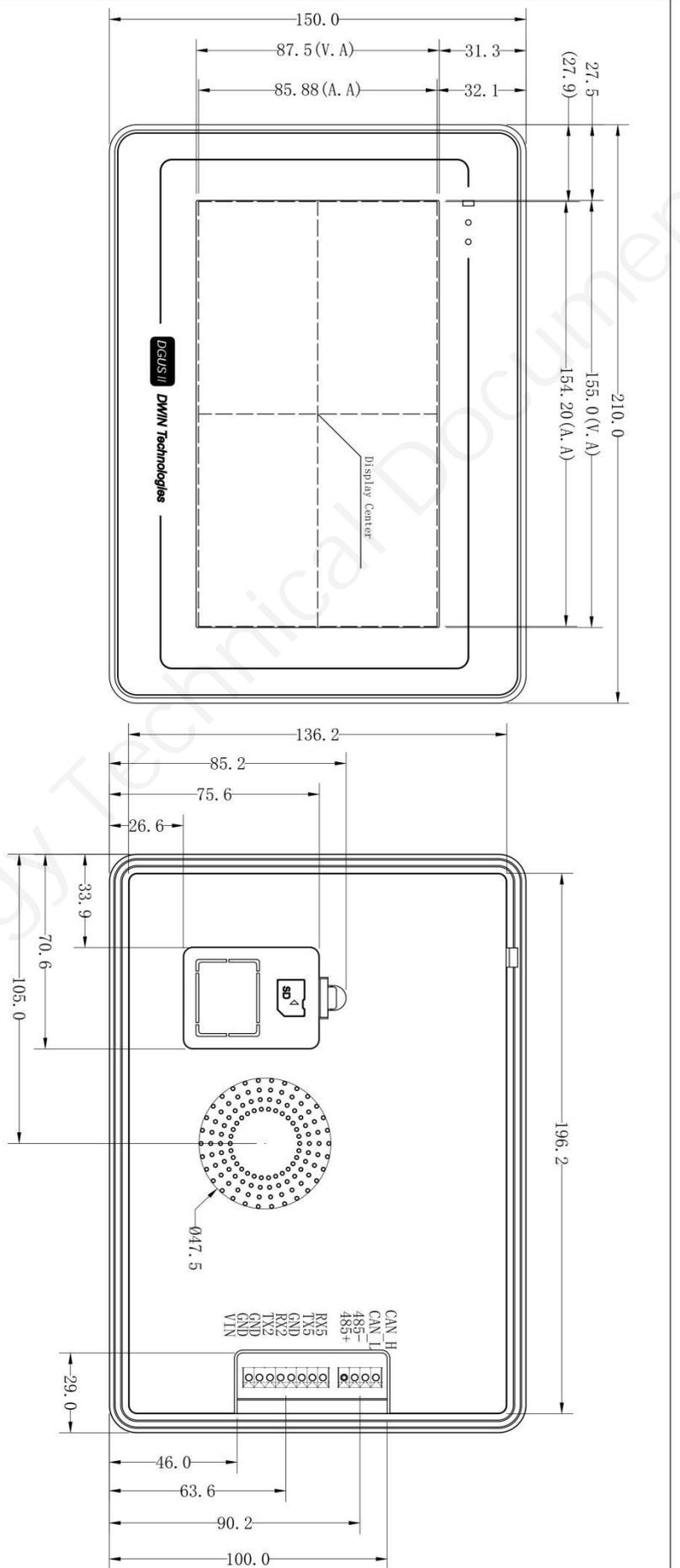
#### Performance Criterion:

- 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.

#### 4. Packaging & dimensions

<b>Form Factor</b>	210.0 (W) × 150.0(H) × 26.9(T)mm			
<b>Net Weight</b>	550g			
Packaging Standards				
<b>Model</b>	<b>Dimensions</b>	<b>Layer</b>	<b>Quantity/Layer</b>	<b>Quantity(Pcs)</b>
Carton1:	220mm(L)×160mm(W)×47mm (H)	-	-	-
Carton2:	250mm(L)×200mm(W)×80mm (H)	1	1	1
Carton3:	320mm(L)×270mm(W)×80mm (H)	-	-	-
Carton4:	450mm(L)×350mm(W)×300mm(H)	2	8	16
Carton5:	600mm(L)×450mm(W)×300mm(H)	2	15	30

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



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

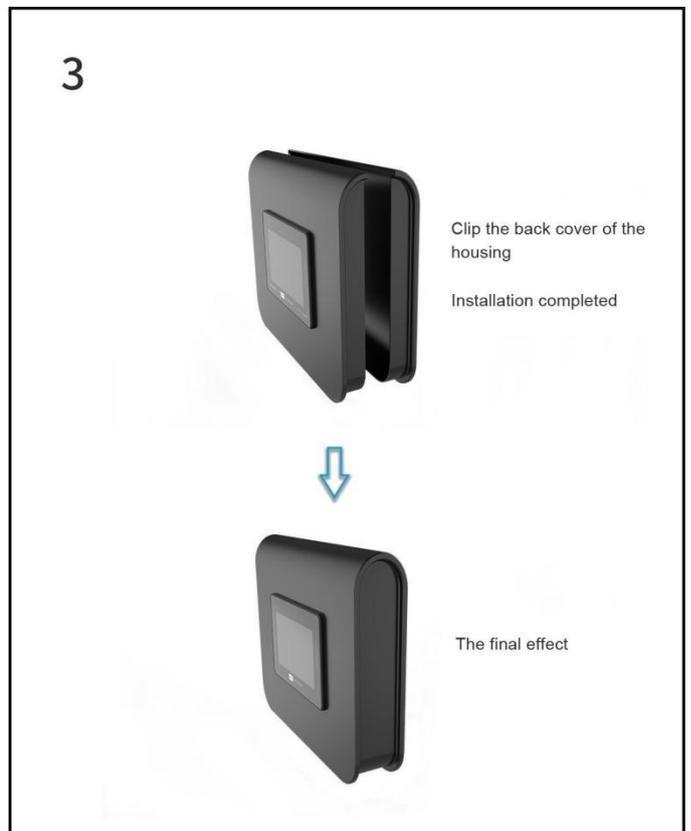
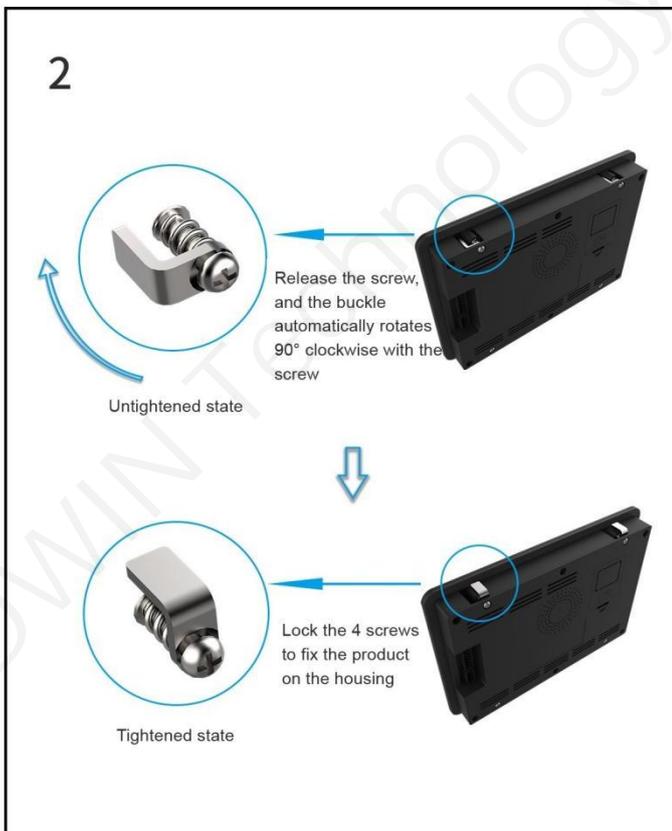
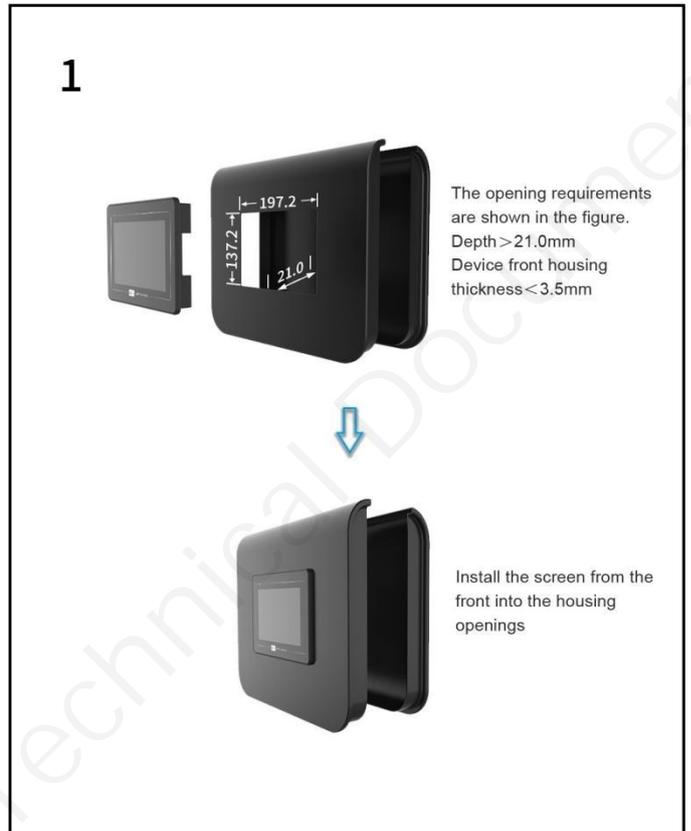
Definition	Pin#	Type	Description
RX5	1	I	UART5 Input
TX5	2	O	UART5 Output
GND	3	P	GND
RX2	4	I	UART2 Input
TX2	5	O	UART2 Output
GND	6	P	GND
GND	7	P	GND
VIN	8	P	Power Input

Definition	Pin#	Type	Description
CAN_H	1	CAN_H	CAN_H
CAN_L	2	CAN_L	CAN_L
485-	3	485-	485-
485+	4	485+	485+

Model		DMG10600T070_A5WTC			
Drawing	A 4	Drawn	DWIN	Date	
Scale		Review		Date	
Unit	MM	Approval		Date	

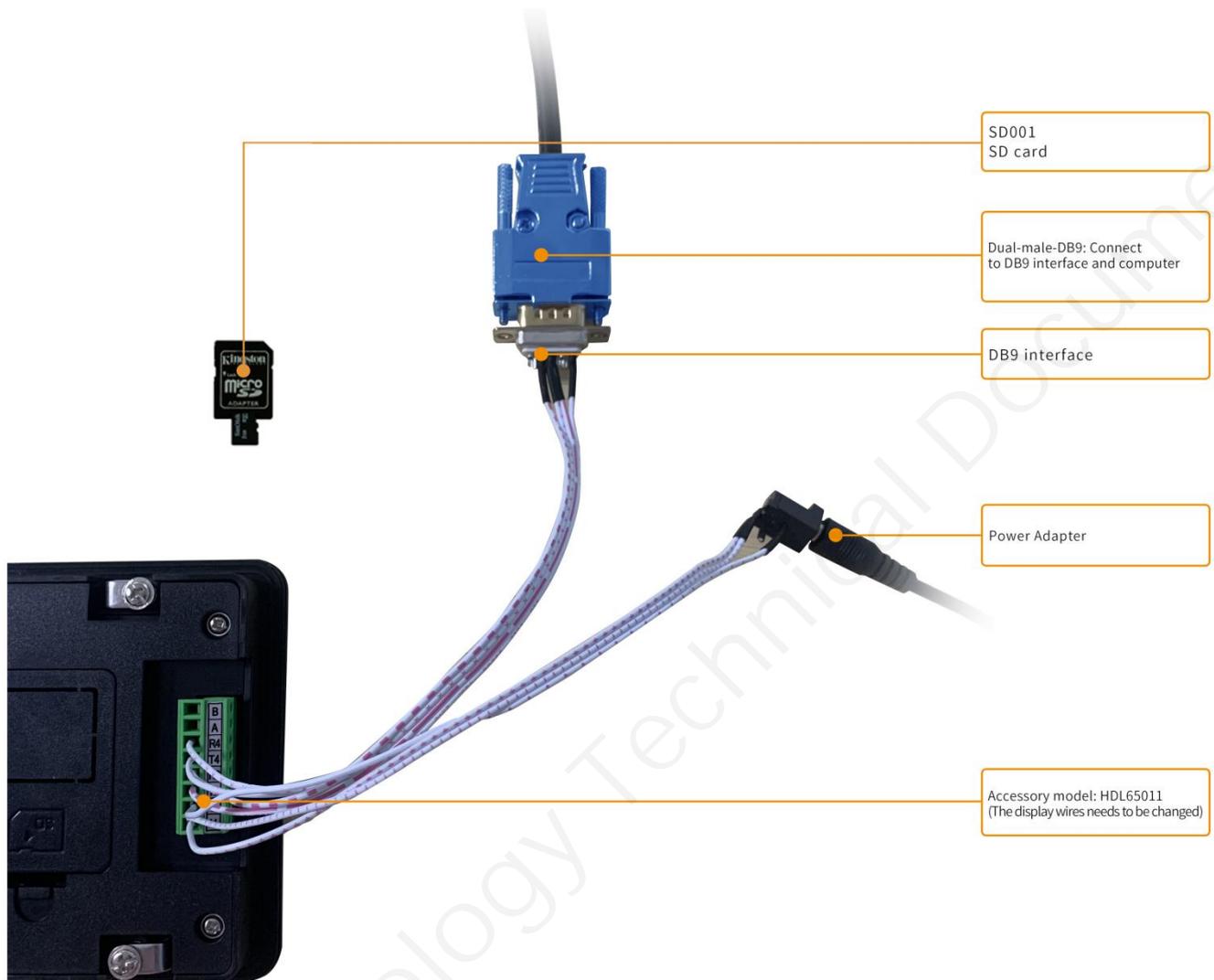
DWIN Technology

# DMG10600T070\_A5W Installation Schematic



## 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**

## 7. Revision records

Rev	Revise Date	Content	Editor
00	2023-04-13	First Edition	Xu Ying
01	2024-01-02	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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- DWIN Developer Forum: <https://forums.dwin-global.com/>

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