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DMG10768T121_01WTR

Features:

- **Based on the T5L2 ASIC CPU, running the DGUS II human-machine interaction software platform, smart LCM for industrial-grade applications.**

- **12.1-inch, 1024*768 resolution, 16.7 M colors true-color display, IPS LCD screen.**

- **High-reliability resistive touch panel suitable for industrial environments.**

- **Equipped with featuring conformal coating.**

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1. Hardware and interface

1.1 Hardware interface

LCM interface	SD card interface
T5L ASIC	ON=TTL OFF=RS232
PGT05 interface	User interface
RTC	Expand Flash interface
Reserved module interface	Flash
	TP interface
	Buzzer
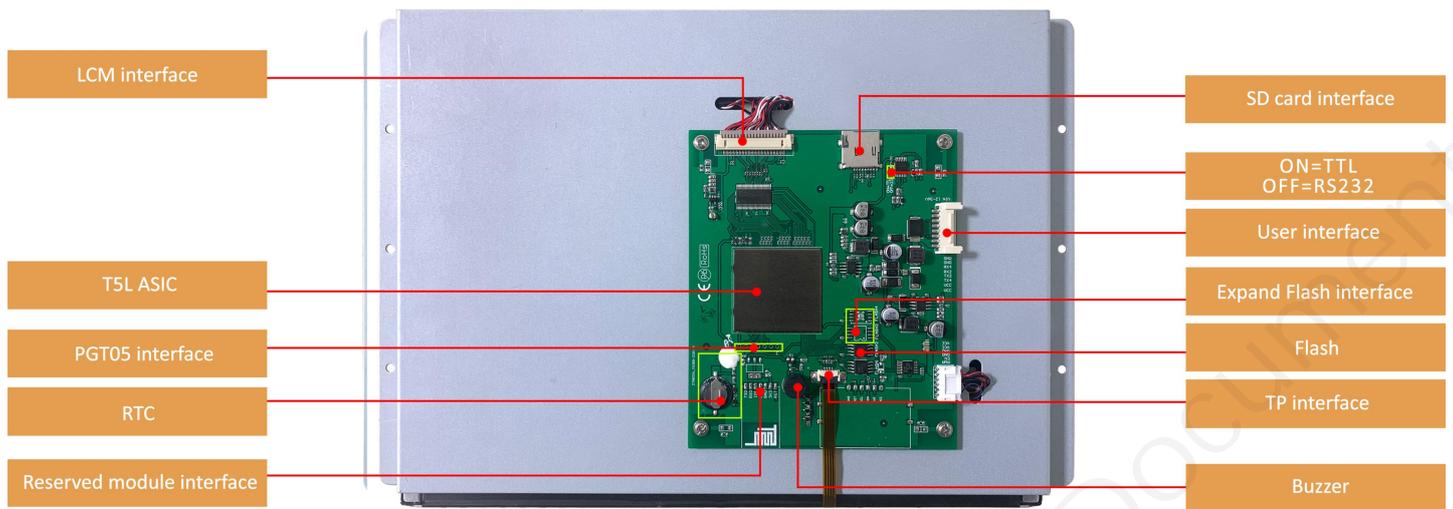
Hardware interface

1.2 Hardware and interface description

No.	Name	Description
1	T5L2 ASIC	DWIN independently developed, mass production in 2019; patented encryption technology ensures code and data security; low power consumption, strong anti-interference capability, easily passes EMC/EMI tests with dual-sided PCB design
2	User interface	8Pin_2.0mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
3	Flash	32MBytes (2*16MBytes NOR Flash), can be used to store user UI files such as fonts, images, music, etc., with erase/write cycles >100,000 times
4	Expand Flash	Two expansion slots are available, supporting expansion of NOR Flash and NAND Flash. The maximum expansion for NOR Flash is up to 64Mbytes. When combining NOR Flash and NAND Flash, the maximum expansion is up to 48Mbytes (using one expansion slots) + 512Mbytes
5	Buzzer	3V passive buzzer
6	RTC	Super-capacitor supplies power to RTC, accuracy: ±20ppm @25℃. Can maintain normal operation for 7 days after power-off. Reserved button cell power supply compatible circuit
7	SD card interface	FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
8	Reserved module interface	Supports soldering of WI-FI module and USB download module. WI-FI module model: WI-FI-10; USB module models: HDL702, HDL703
9	PGT05 interface	Used for reprogramming the underlying DGUS firmware

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2. Specification parameters

2.1 Display parameters

LCD Type	IPS process TFT display screen
Viewing Angle	Wide viewing angle (typical values are 85°/85°/85°/85°), high contrast, and good color reproduction
Resolution	1024×768 pixels (support 0°/90°/180°/270°)
Color	16.7M color (24-bit 8R8G8B)
Active Area (A.A.)	245.76mm (W)×184.32mm (H)
View Area (V.A.)	247.80mm (W)×186.30mm (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	400nit
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	Resistive touch panel
Structure	ITO film + ITO glass
Touch Mode	Single touch and support continuous sliding touch
Surface Hardness	3H
Light Transmittance	>80%
Life	Over 1,000,000 times touch

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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	4.78	5.0	-	V
	Output 0, Iout = 4mA	-	-	0.4	V
	Input 1	2.5	5.0	-	V
	Input 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	8Pin_2.0mm				

2.4 Electrical specifications

Rated Power	<15W	
Operating Voltage	12~36V, typical value of 12V	
Operating Current	1040mA	VCC=12V, max backlight
	320mA	VCC=12V, backlight off
Recommended power supply: 12V 1.5A 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

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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	±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 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 17626.4 B level and above.


3.2 EFT test

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

4. Packaging & dimensions

Form Factor	289.2mm (W)×204.0mm (H)×22.8mm (T)
Installation Dimensions	Positioning hole: 260.5(+0.3mm)×204.0(+0.3mm)
Net Weight	1100g

Packaging Standards

Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1：	220mm(L)×160mm(W)×47mm (H)	-	-	-
Carton2：	250mm(L)×200mm(W)×80mm (H)	-	-	-
Carton3：	320mm(L)×270mm(W)×80mm (H)	1	2	2
Carton4：	450mm(L)×350mm(W)×300mm(H)	2	5	10
Carton5：	600mm(L)×450mm(W)×300mm(H)	2	8	16
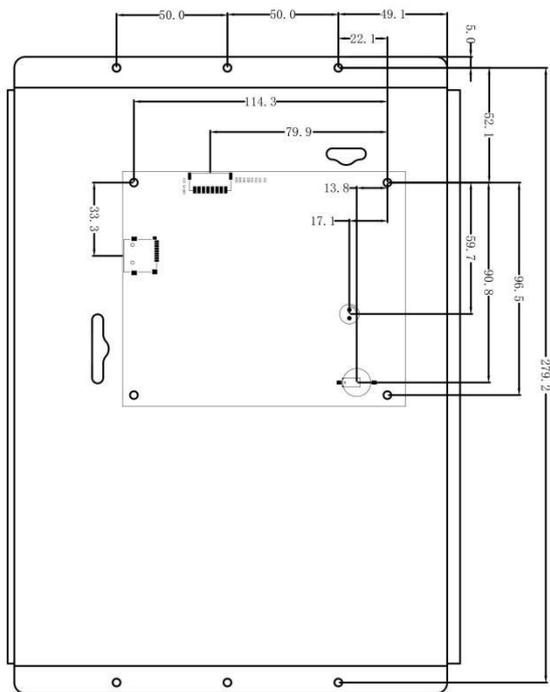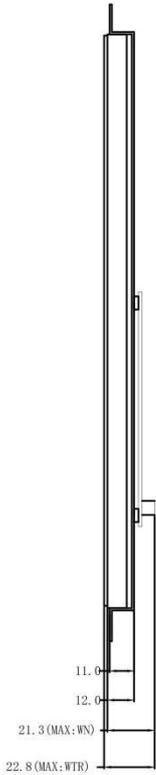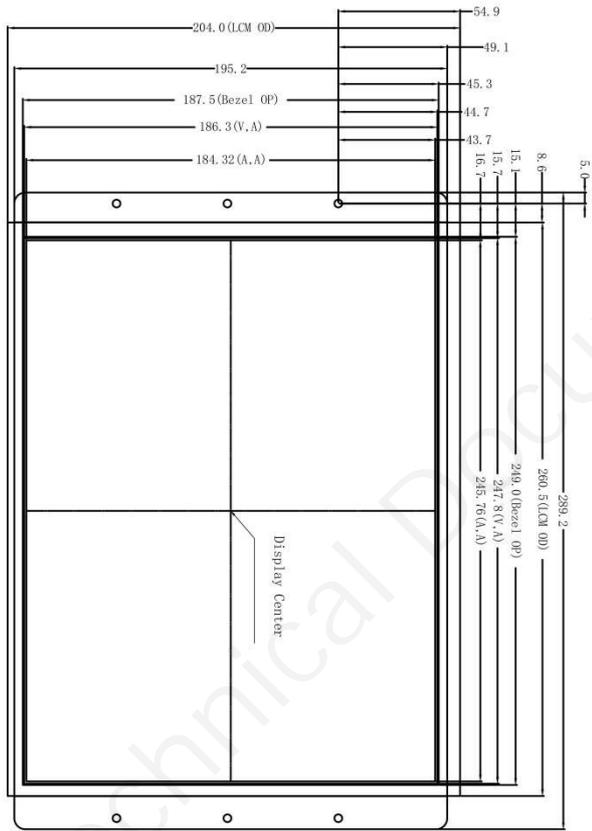
Definition	Pin#	Type	Description
VCC	1,2	P	Power Input
TX4	3	O	UART4 Output
TX2	4	O	UART2 Output
RX2	5	I	UART2 Input
RX4	6	I	UART4 Input
GND	7,8	P	GND

Model		DMG10768T121-01WTR		
Drawing	A 4	Drawn	J.G	Date
Scale	1:1	Review		Date
Unit	MM	Approval		Date

DWIN Technology

1.Location hole is used as position reference

2.Unmarked Tolerance is +/-0.3mm

Note: Active area is marked in Dash lines

204.0(LCM OD)
195.2
187.5(Bezel OP)
186.3(V.A)
184.32(A.A)
54.9
49.1
45.3
44.7
43.7

289.2
260.5(LCM OD)
249.0(Bezel OP)
247.8(V.A)
245.76(A.A)

Display Center

11.0
12.0
21.3(MAX:WN)
22.8(MAX:WTR)

50.0
50.0
49.1
22.1
114.3
79.9
13.8
17.1
33.3
279.2

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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.

SD card

Dual-male-DB9: Connect to DB9 interface and computer

Power Adapter

DB9 interface

Accessory model: HDL65011 8pin_2.0mm cable
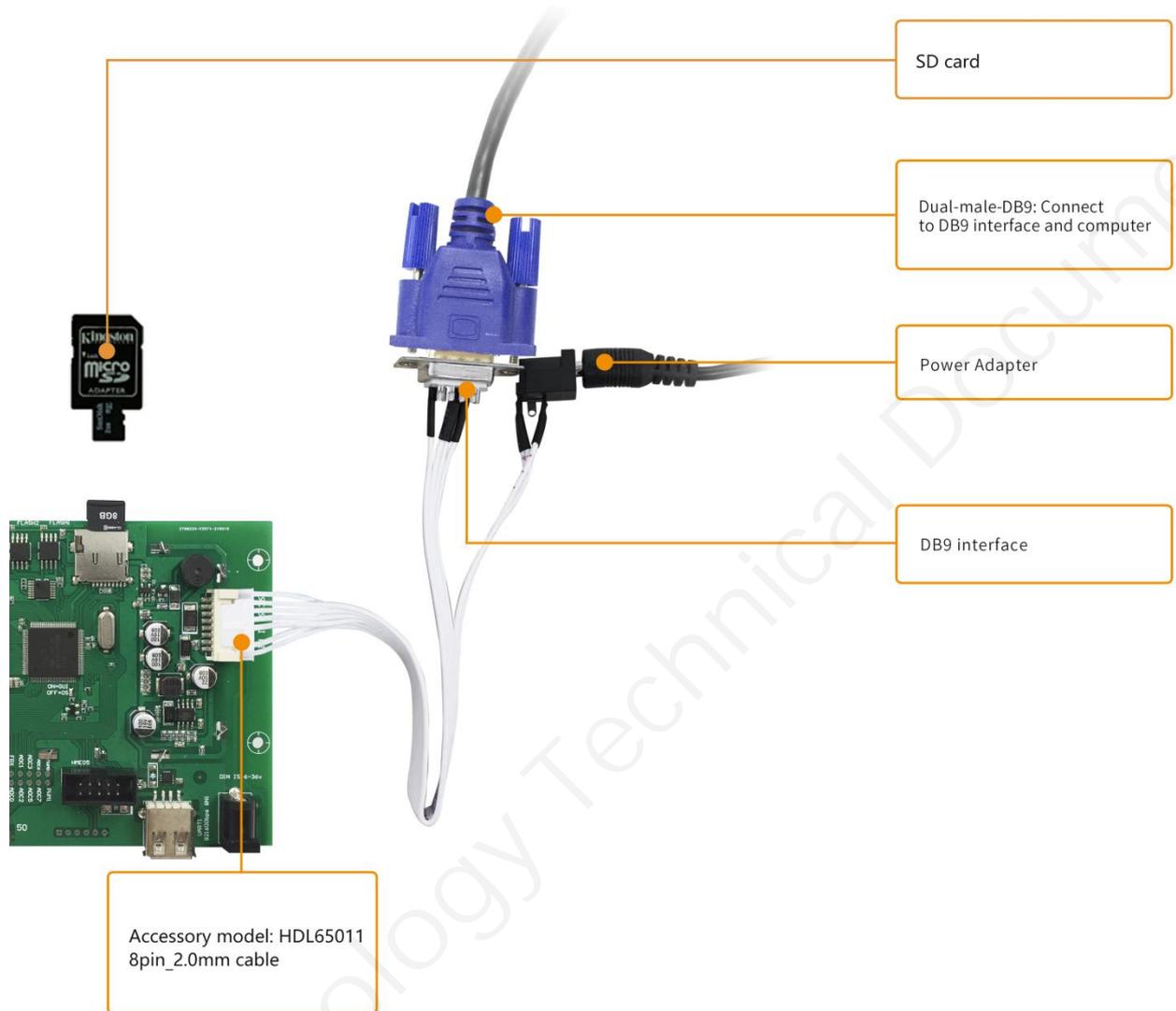
6. T5L series IC features

(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	2024-05-08	First Edition	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!

Important Disclaimer

DWIN reserves the right to make any changes to product designs without prior notice.

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