

# AGM-050A1-I2-R

- T5L0, DGUS II。
- 5.0, 800\*480, 262K, IPS。

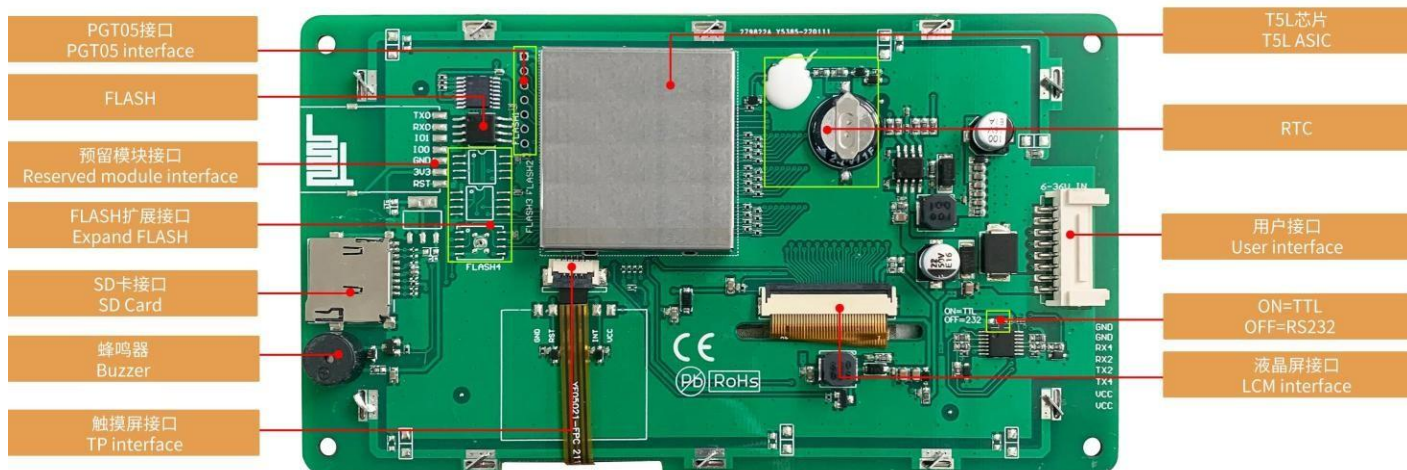
## Features:

- Based on T5L0, running DGUS II system, industrial grade.
- 5.0-inch, 800\*480 pixels resolution, 262K colors, IPS-TFT-LCD, wide viewing angle.
- Resistive touch screen.
- With conformal coating.



# 1、Hardware and interface

## 1.1 Hardware interface



Hardware interface

## 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, RGB interface
3	RTP interface	4Pin_1.0mm 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 pads	Three 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 two expansion slots) + 512Mbytes.
7	Buzzer	3V passive buzzer. Power: <1W
8	RTC	Super-capacitor for power supply. Accuracy: $\pm 20\text{ppm}$ @25 °C. It can work normally for 7 days after power failure
9	SD 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

## 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>	18-bit 6R6G6B
<b>Active Area (A.A.)</b>	108.0mm (W)×64.8mm (H)
<b>View Area (V.A.)</b>	-
<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)
Note: 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>	RTP (Resistive touch panel).
<b>Structure</b>	ITO film + ITO glass.
<b>Light Transmittance</b>	78%±3%

### 2.3 Serial interface parameters

<b>Mode</b>	UART2: ON=TTL/CMOS; OFF=RS232 UART4: ON=TTL/CMOS; OFF=RS232 (Only available after OS configuration)				
<b>Voltage Level</b>	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
<b>Baud Rate</b>	3150~3225600bps, typical value of 115200bps				
<b>Data Format</b>	UART2: N81 UART4: N81/E81/O81/N82 4 modes (OS configuration)				
<b>Interface Cable</b>	8Pin_2.0mm				

### 2.4 Electrical specifications

<b>Rated Power</b>	<5W	
<b>Operating Voltage</b>	9~36V, typical value of 12V	
<b>Operating Current</b>	186mA	VCC=12V, max backlight
	90mA	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>Anti-UV</b>	N(Not recommended for outdoor use)

### 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	$\pm 6\text{KV}$	Normal operation
Air discharge	$\pm 8\text{KV}$	Normal operation

### 3.2 EFT 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.

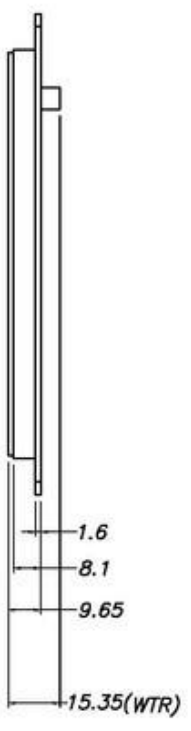
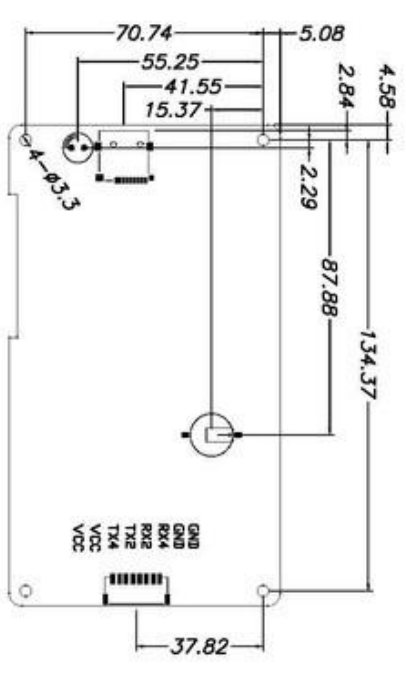
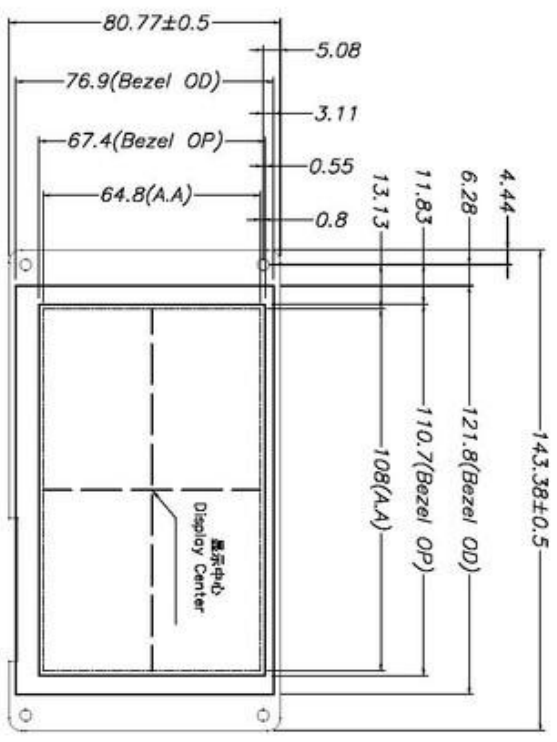


3.1 群脉冲测试图

EFT test

测试项目 Test Item	测试标准 Test Standard	结果 Result
电源端口 Power supply	$\pm 2KV; 100KHz$	正常工作 Normal operation

Document



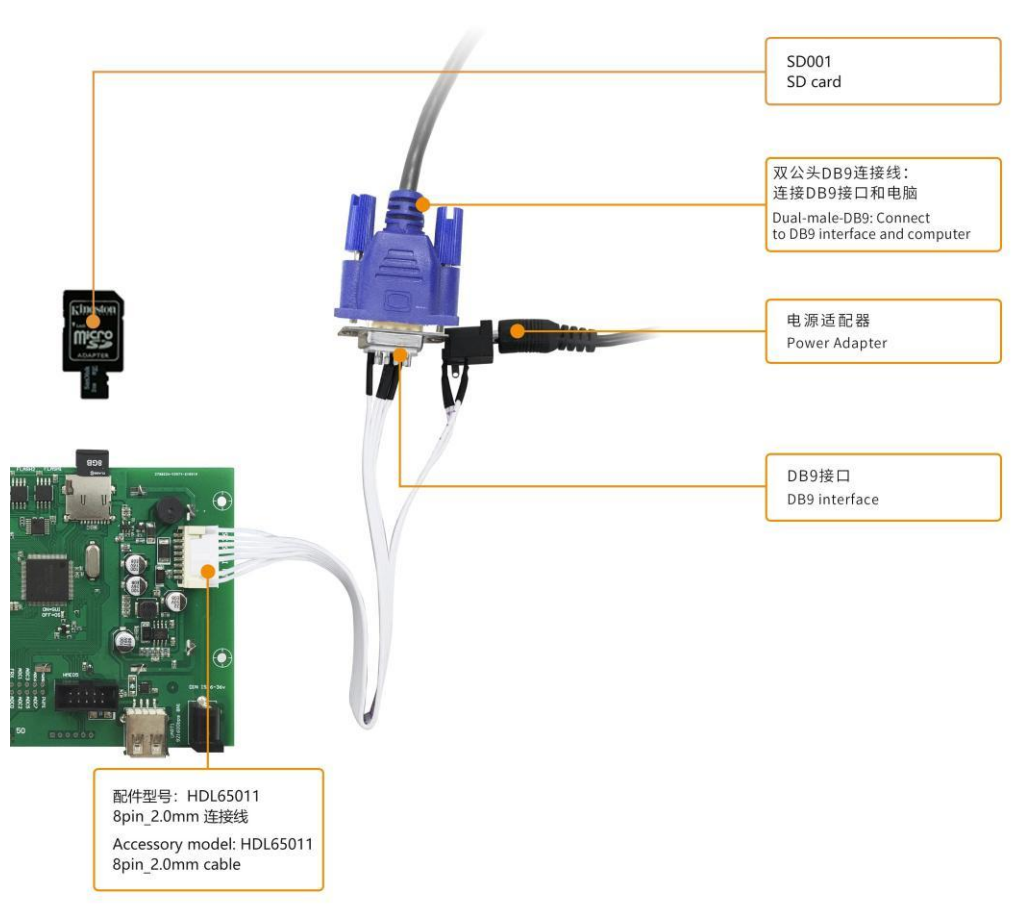
1.尺寸定位基准为定位孔  
Location hole is used as position reference.  
2.未标注公差为 $\pm 0.3\text{mm}$   
Unmarked tolerance is  $\pm 0.3\text{mm}$   
注:虚线标注为有效公差区域  
Active area is marked in Dash lines

定义 Definition	序号 Pin#	类型 Type	说明 Description
VCC	1, 2	P	电源输入 Power Input
TX4	3	O	串口4输出 Output
TX2	4	O	串口2输出 Output
RX2	5	I	串口2输入 Input
RX4	6	I	串口4输入 Input
GND	7, 8	P	公共接地 GND

图号 Model	图版 Drawing	图号 Drawn	日期 Date
A 4	J 6	20210917	
比例 Scale	审核 Reviewer	日期 Date	日期 Date
1:1			
单位 Unit	批准 Approval	日期 Date	日期 Date
MM			

## 5、 Debugging tools

It is recommended for new users of smart LCMs to purchase official accessories. For more details, please refer to customer service center.



## 6、 T5L series IC features

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.

Separate GUI CPU Core running DGUS II System:

- 2.4GB/S。

High-speed display memory, 2.4GB/S bandwidth.

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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.

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Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.

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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.

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128Kbytes variable storage space for exchanging data with OS CPU Core and memory.

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Support DGUS development and simulation on PC. Support background remote upgrade.

CPU:

Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:

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Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.

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64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.

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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.