

AGM-070A1-I3-R

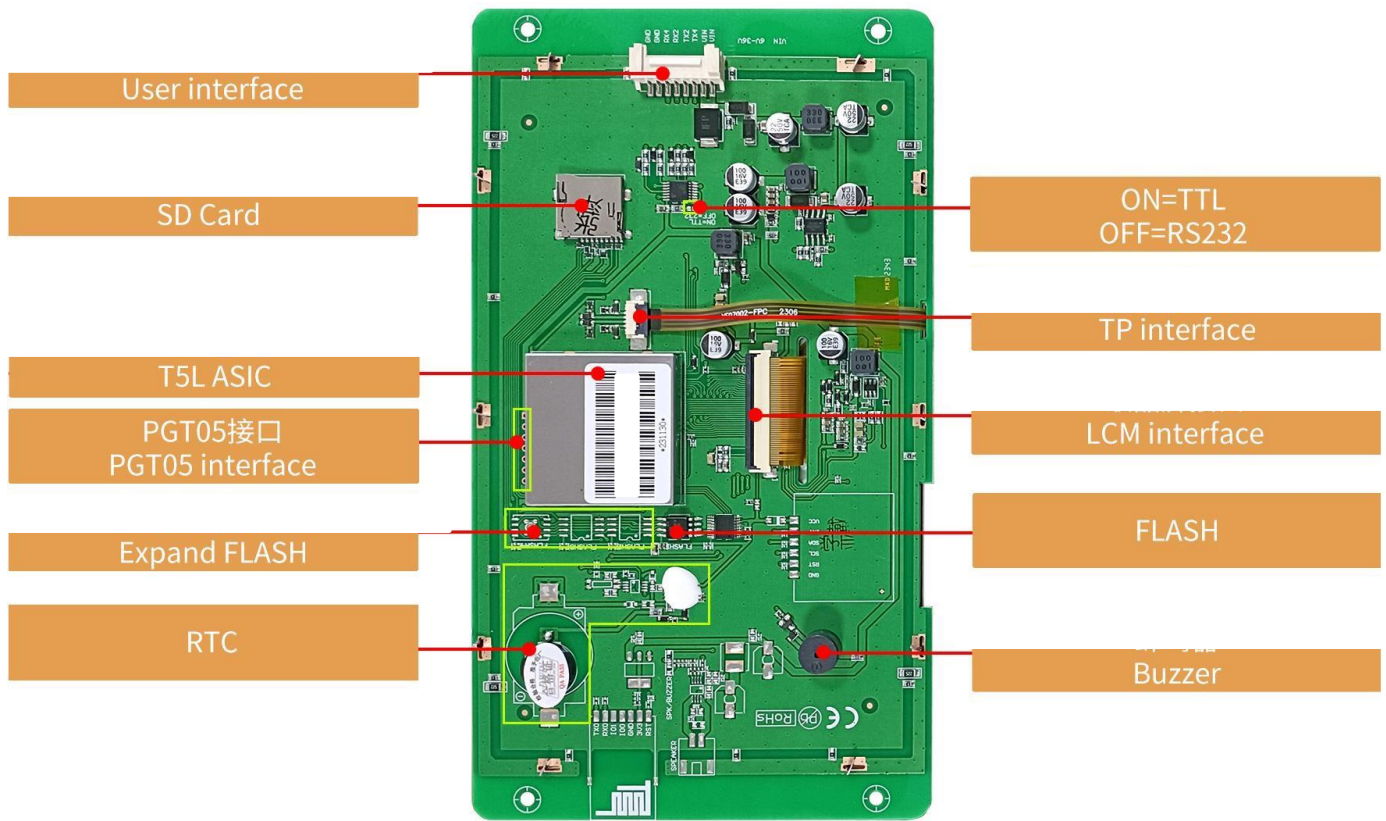
Features:

- Based on T5L0, running DGUS II system, industrial grade.
- 7.0-inch, 800*480 pixels resolution, 262K colors, TN TFT display.
- 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	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	FPC50_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: ± 20 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

LCD Type	TN, TFT LCD
Viewing Angle	Normal viewing angle, 70°/70°/50°/70° (L/R/U/D)
Resolution	800×480 pixels (support 0°/90°/180°/270°)
Color	18-bit 6R6G6B
Active Area (A.A.)	154.08mm (W)×85.92mm (H)
View Area (V.A.)	-
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	250nit
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	RTP (Resistive touch panel).
Structure	ITO film + ITO glass.
Light Transmittance	78%±3%

2.3 Serial interface parameters

Mode	UART2: ON=TTL/CMOS; OFF=RS232 UART4: ON=TTL/CMOS; OFF=RS232 (OS 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	<5W	
Operating Voltage	9~36V, 12V 9~36V, typical value of 12V	
Operating Current	210mA	VCC=12V, max backlight
	80mA	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	有 Yes
Operating Humidity	10%~90%RH, typical value of 60% RH

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	±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.

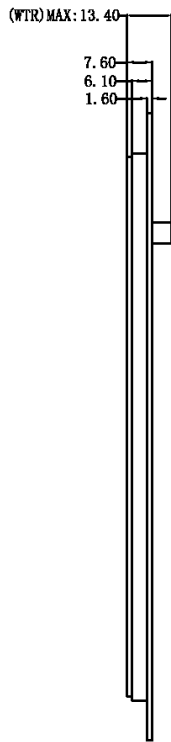
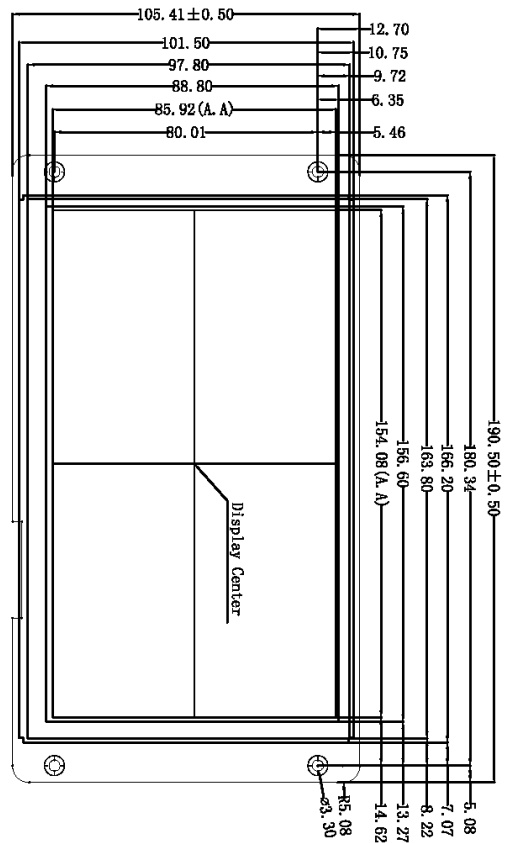


EFT test

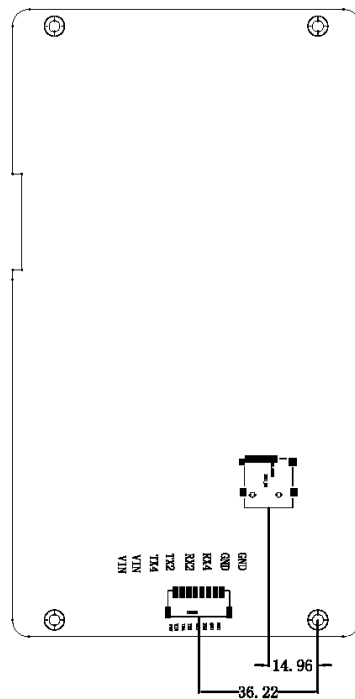
Test Item	Test Standard	Result
Power supply	±2KV;100KHz	Normal operation

4、Packaging & dimensions

Form Factor	190.50mm (W)×105.41mm (H)×13.40mm (T)			
Installation Dimensions	Positioning hole: 166.20 (+0.3mm)×101.50 (+0.3mm)			
Net Weight	255g			
Packaging Standards				
Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
1 Carton1:	220mm(L)×160mm(W)×47mm (H)	1	1	1
2 Carton2:	250mm(L)×200mm(W)×80mm (H)	2	1	2
3 Carton3:	320mm(L)×270mm(W)×80mm (H)	2	2	4
4 Carton4:	435mm(L)×335mm(W)×290mm(H)	-	-	-
5 Carton5:	600mm(L)×430mm(W)×290mm(H)	1	40	40



Pin#	Type	Description
1, 2	P	Power Input
3	0	Output
4	0	Output
5	I	Input
6	I	Input
7, 8	P	GND

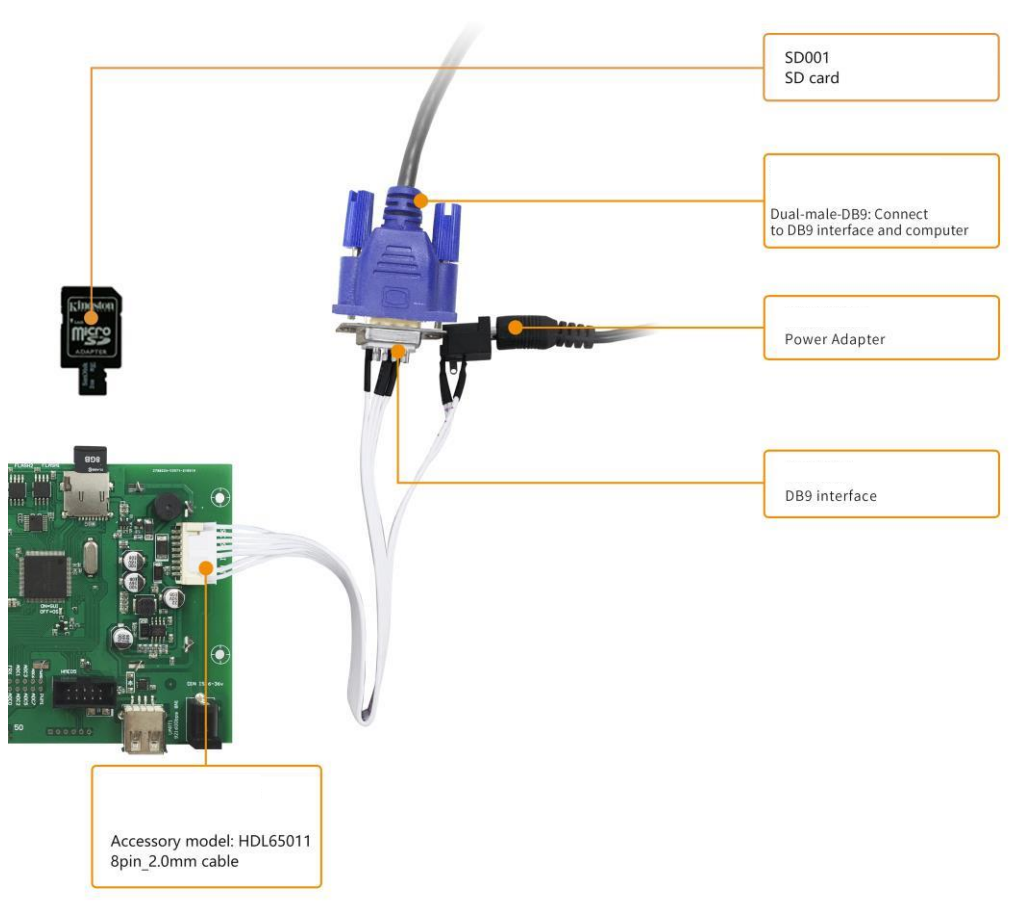


1. Location hole is used as position reference.
 2. Unmarked Tolerance is +/-0.3mm
- Active area is marked in Dash lines

Model	A 4			2021.09.14		
Drawing	A 4	Drawn	G.Y	Date	2021.09.14	
Scale	1 : 1	Review		Date		
Unit	MM	Approval		Date		

5、 Debugging tools

It is recommended for new users 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.

(1) CPU (GUI CPU) DGUS II

Separate GUI CPU Core running DGUS II System:

- 2.4GB/S。

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

- 2D, JPEG 200fps@1280*800, UI

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.

- JPEG 16Mbytes SPI Flash。

Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.

- 400Hz

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

- 1 15bit 32Ksps PWM

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 OS CPU

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

- PC

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

(2) CPU (OS CPU) 8051 CPU:

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

- 8051 64Kbytes 32Kbytes RAM。

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

- 64bit (MDU) , 64bit MAC 64bit

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

- 28 IO, 4 UARTs, 1 CAN 8 12bit A/D, 2 16bit PWM。

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.

- IAP

Support IAP on-line simulation and debugging with unlimited number of breakpoints.

Upgrade code online through DGUS system.

(4) 1Mbytes Flash, 。

1Mbytes on-chip Flash with encryption technology ensure code and data security.

(5) -40°C~+85°C -55°C~105°C IC) 。

Operating temperature ranges from -40°C to +85°C(IC operating temperature customizable from -55°C to 105°C).

7、 Revision records

Rev	Revise Date	Content	Editor
00	2021-09-25	First Edition	
01	2022-01-05	Update RTC accuracy description	
02	2022-11-14	Modify dimension description	
03	2024-01-08	Hardware optimization (RTC design compatible with circuits, adding speaker circuits), natural consumption of inventory	
04	2024-05-27	Add FLASH extension components	
05	2024-08-30	Modify Power Voltage	