

# AGM-150A0-I1-R

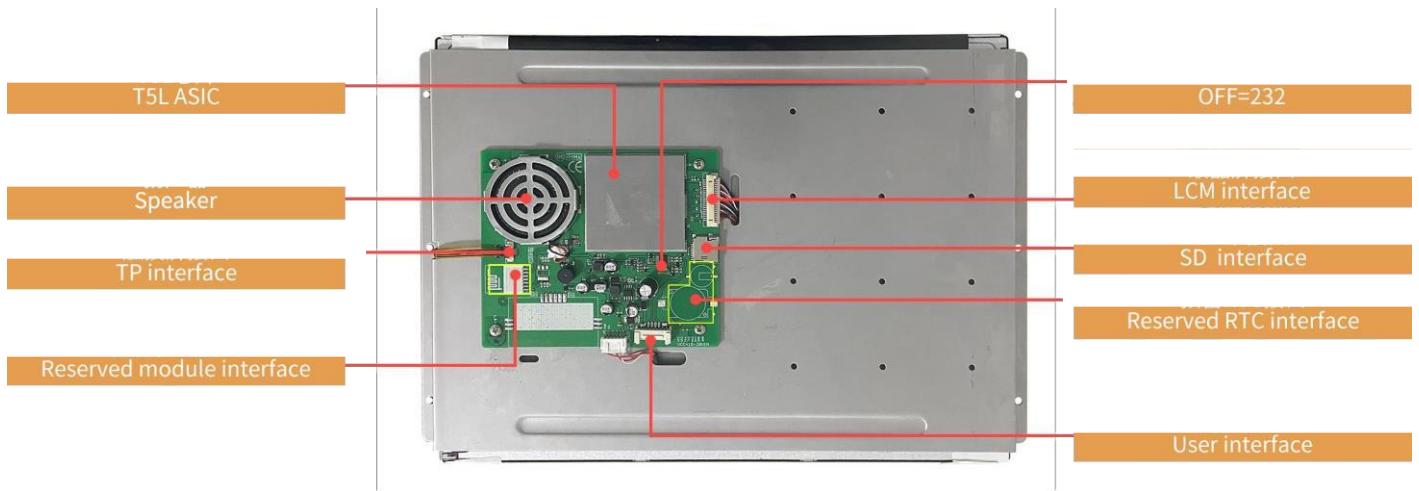
## Features:

- Based on T5L2, running DGUS II system, commercial grade.
- 15.0-inch, 1024\*768 pixels resolution, 16.7M colors, IPS-TFT-LCD, wide viewing angle.
- Resistive touch screen.



## 1、 Hardware and interface

### 1.1 Hardware interface



Hardware interface

## 1.2 Hardware and interface description

| No. | Name                      | Description   |
|-----|---------------------------|---|
| 1   | T5L2 ASIC                 | 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             | Connector 20Pin_1.25mm, LVDS interface  |
| 3   | RTP interface             | FPC4_1.0mm  |
| 4   | User interface            | 8Pin_2.0mm 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 (Inside the shield)                                     |
| 7   | Speaker                   | Onboard speaker. Power: <2.5W   |
| 8   | SD interface              | FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s  |
| 9   | Reserved module interface | Wi-Fi module: connect to the cloud platform to update remotely<br>USB module: download files by USB flash disk                      |
| 10  | PGT05 interface           | When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal (Inside the shield) |

## 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>  | 1024×768 pixels (support 0°/90°/180°/270°)  |
| <b>Color</b>   | 24-bit 8R8G8B   |
| <b>Active Area (A.A.)</b>  | 304.13mm (W) × 228.10mm (H)   |
| <b>View Area (V.A.)</b>  | 307.1mm (W) × 231.1mm (H)   |
| <b>Backlight Mode</b>  | LED   |
| <b>Backlight Service Life</b>  | >20000 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>Touch Mode</b>          | Support point touch and drag |
| <b>Surface Hardness</b>    | 3H                           |
| <b>Light Transmittance</b> | Over 80%                     |
| <b>Life</b>                | Over 1,000,000 times touch   |

### 2.3 Serial interface parameters

|                        |   |     |     |     |      |
|------------------------|---|-----|-----|-----|------|
| <b>Mode</b>            | UART2:ON=TTL/CMOS; OFF=RS232                |     |     |     |      |
| <b>Voltage Level</b>   | Test Condition                              | Min | Typ | Max | Unit |
|                        | Output 1, I <sub>out</sub> = 1mA            | 3.0 | 3.3 | -   | V    |
|                        | Output 0, I <sub>out</sub> = -1mA           | -   | 0   | 0.3 | V    |
|                        | Input 1, I <sub>in</sub> = 1mA              | 2.4 | 3.3 | 5.0 | V    |
|                        | Input 0, I <sub>in</sub> = -1mA             | 0   | -   | 0.5 | V    |
| <b>Baud Rate</b>       | 3150~3225600bps, typical value of 115200bps |     |     |     |      |
| <b>Data Format</b>     | UART2:N81                                   |     |     |     |      |
| <b>Interface Cable</b> | 8Pin_2.0mm                                  |     |     |     |      |

### 2.4 Electrical specifications

|  |                              |                        |
|--|------------------------------|------------------------|
| <b>Rated Power</b>                         | <20W                         |                        |
| <b>Operating Voltage</b>                   | 12~36V, typical value of 12V |                        |
| <b>Operating Current</b>                   | 1300mA                       | VCC=12V, max backlight |
|  | 250mA                        | VCC=12V, backlight off |
| <b>Recommended power supply: 12V 2A DC</b> |                              |                        |

### 2.5 Operating environment

|                              |  |
|------------------------------|--|
| <b>Operating Temperature</b> | -20°C~70°C (12V @ 60% RH)                              |
| <b>Storage Temperature</b>   | -20°C~70°C   |
| <b>Conformal coating</b>     | None   |
| <b>Operating Humidity</b>    | 10%~90%RH, 60%RH<br>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.



3.1

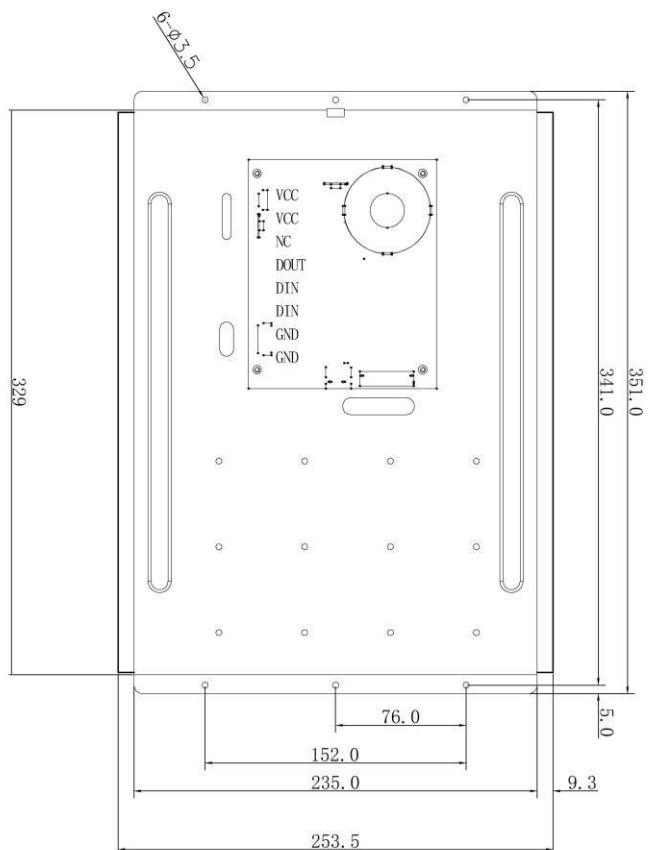
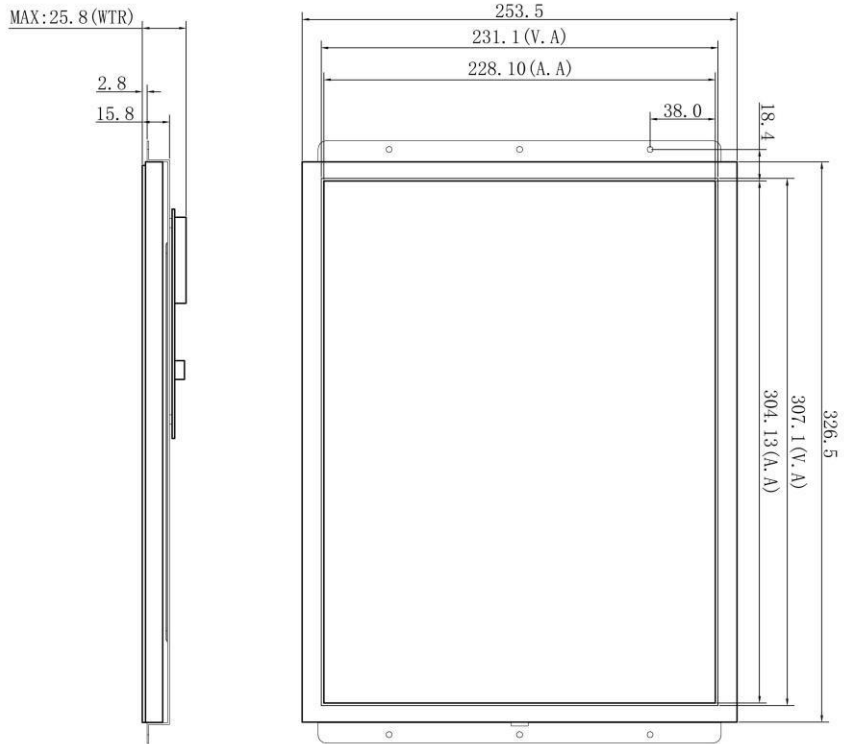
Electrostatic discharge test

| Discharge Type    | Discharge Value | Result           |
|-------------------|-----------------|------------------|
| Contact discharge | ±4KV            | Normal operation |
| Air discharge     | ±4KV            | Normal operation |

#### 4、Packaging & dimensions

| <b>Form Factor</b>             | 351.0(W) x253.5(H) x25.8(T)                   |              |                       |                      |
|--------------------------------|---|--------------|-----------------------|----------------------|
| <b>Installation Dimensions</b> | Positioning hole: 329.0(+0.3mm)x253.5(+0.3mm) |              |                       |                      |
| <b>Net Weight</b>              | 1345g   |              |                       |                      |
| Packaging Standards            |   |              |                       |                      |
| <b>Model</b>                   | <b>Dimensions</b>                             | <b>Layer</b> | <b>Quantity/Layer</b> | <b>Quantity(Pcs)</b> |
| 1 Carton1:                     | 220mm(L)x160mm(W)x47mm (H)                    | -            | -                     | -                    |
| 2 Carton2:                     | 250mm(L)x200mm(W)x80mm (H)                    | -            | -                     | -                    |
| 3 Carton3:                     | 320mm(L)x270mm(W)x80mm (H)                    | -            | -                     | -                    |
| 4 Carton4:                     | 435mm(L)x335mm(W)x290mm(H)                    | -            | -                     | -                    |
| 5 Carton5:                     | 600mm(L)x430mm(W)x290mm(H)                    | 1            | 6                     | 6                    |

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  $\pm 0.3\text{mm}$

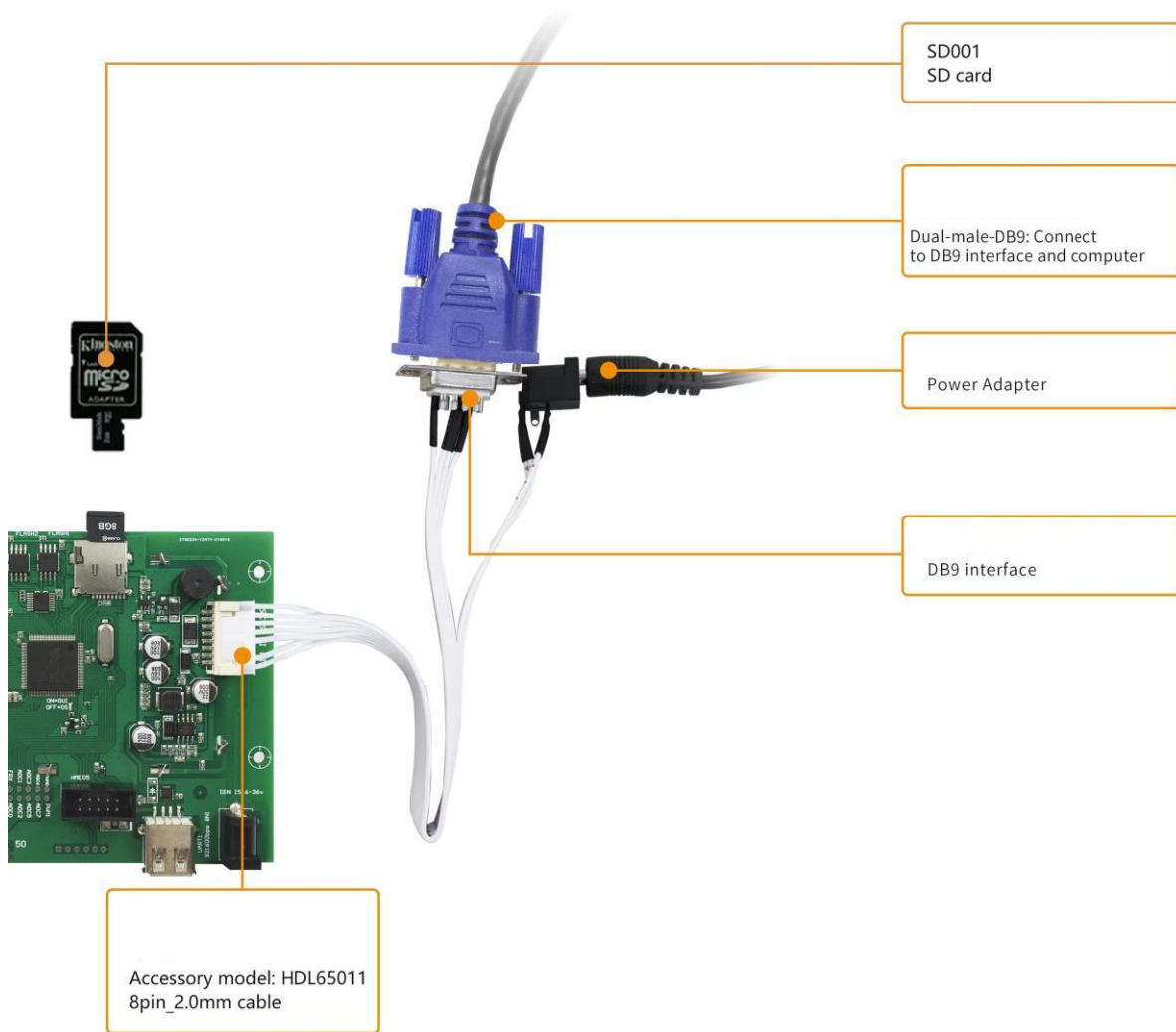
Active area is marked in Dash Lines

| Definition | Pin | Type | Description |
|------------|-----|------|-------------|
| GND        | 8   | P    | GND         |
| GND        | 7   | P    | GND         |
| DIN        | 6   | I    | DIN         |
| DIN        | 5   | I    | DIN         |
| DOUT       | 4   | O    | DOUT        |
| NC         | 3   | -    | /Undefined  |
| VCC        | 2   | P    | Power Input |
| VCC        | 1   | P    | Power Input |

| Model | Drawing |     | Approval |        | Date |  | Beijing DWIN Technology Co. Ltd |  |
|-------|---------|-----|----------|--------|------|--|---------------------------------|--|
| A 4   | 比例      | A 4 | Drawn    | Review | Date |  |                                 |  |
| MM    | Scale   | A 4 | Approval |        | Date |  |                                 |  |

## 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

### (1) 8051, 1T 250MHz。

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) 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.

### (3) CPU (OS CPU) 8051 CPU:

Separate CPU (OS CPU) core runs user 8051 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.

- DGUS。

Upgrade code online through DGUS system.

(4) 1Mbytes Flash,

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

(5)  $-40^{\circ}\text{C}\sim+85^{\circ}\text{C}$   $-55^{\circ}\text{C}\sim105^{\circ}\text{C}$

Operating temperature ranges from  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ (IC operating temperature customizable from  $-55^{\circ}\text{C}$  to  $105^{\circ}\text{C}$ ).

## 7、 Revision records

| <b>Rev</b> | <b>Revise Date</b> | <b>Content</b>  | <b>Editor</b> |
|------------|--------------------|---|---------------|
| 00         | 2019-11-23         | First edition   | ZK            |
| 01         | 2021-11-04         | Upgrade version/Correct current parameters                  |               |
| 02         | 2022-03-18         | COB<br>Change to cob structure, update the physical drawing |               |
| 03         | 2022-11-14         | Modify dimension description                                |               |