

# DMG19108C116\_05WTC

## 产品特点:

- 基于 **2K DGUS** 核心模块, 运行 **DGUS II** 人机交互软件平台, 商业级智能屏。
- **11.6 英寸**, **1920\*1080** 分辨率, **IPS** 液晶显示屏, **2K** 高清智能屏。
- 板载蜂鸣器, 带 **RTC**、扬声器接口。
- 高可靠性电容触摸屏。

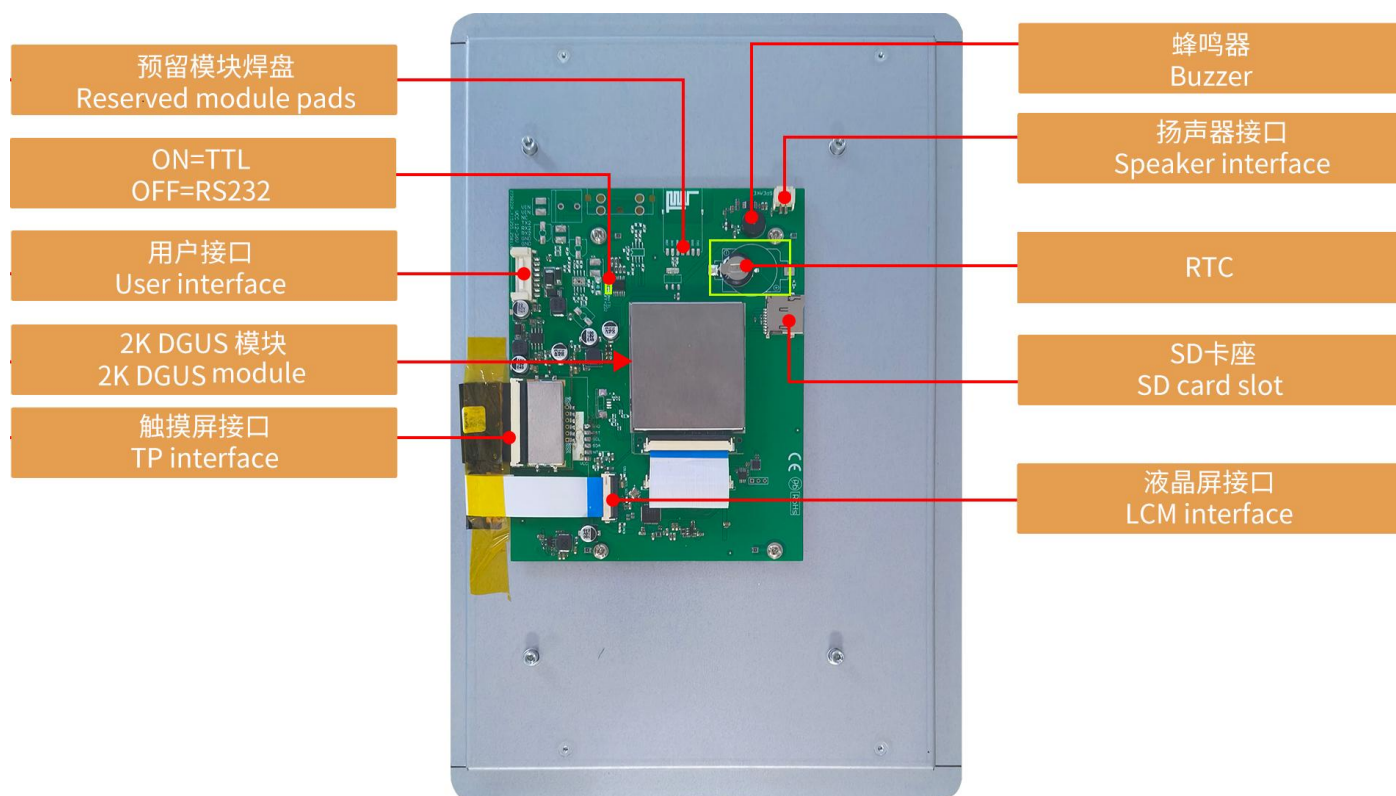
## Features:

- Powered by **2K DGUS** core module, running **DGUS II** HMI platform, commercial-grade smart LCM.
- **11.6 inch**, **1920\*1080** resolution, **IPS-TFT LCD**, **2K HD** smart screen.
- With onboard buzzer, **RTC** and speaker interface.
- Reliable capacitive touch panel.



## 1、硬件及接口 Hardware and interface

### 1.1 硬件接口图 Hardware interface diagram



硬件接口图

Hardware interface diagram

## 1.2 硬件及接口说明 Hardware and interface description

| 序号<br>No. | 项目<br>Item                       | 说明<br>Description                                                                                                                                                                                                                                              |
|-----------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 2K DGUS 模块<br>2K DGUS module     | 迪文自主研发，基于 T5L2 ASIC，运行 DGUS II 人机交互软件平台的一款核心模块。<br>DWIN independently developed, A Core module powered by the T5L2 ASIC, running DGUS II HMI platform.                                                                                                         |
| 2         | 用户接口<br>User interface           | 用于供电和串口通讯，8Pin_2.0mm 座子。<br>8Pin_2.0mm socket for power supply and serial communication.                                                                                                                                                                       |
| 3         | Flash                            | 32MB (2*16MB NOR Flash)，可用于存放字库、图片、音乐等用户 UI 文件，擦写次数>100,000 次。<br>32MB (2*16MB NOR Flash) for storing UI files like fonts, images, music, with over 100,000 erase/write cycles.                                                                                |
| 4         | 扩展 Flash 焊盘<br>Expand Flash pads | 有 2 个扩展位，支持扩展 NOR Flash、NAND Flash。<br>最大可拓展到 64MB (4*16MB NOR Flash) 或 48MB+512MB (3*16MB NOR Flash+1*512MB NAND Flash)。<br>Two expansion slots support NOR or NAND Flash, up to 64MB (4x16MB NOR Flash) or 48MB+512MB (3x16MB NOR Flash + 512MB NAND Flash). |
| 5         | 蜂鸣器<br>Buzzer                    | 3V 无源蜂鸣器。<br>3V passive buzzer.                                                                                                                                                                                                                                |
| 6         | 扬声器接口<br>Speaker interface       | 2Pin_2.0mm 座子，外接扬声器。<br>2Pin_2.0mm socket, speaker interface.                                                                                                                                                                                                  |
| 7         | RTC                              | 法拉电容供电，精度：±20ppm @25℃。掉电后可维持 7 天正常工作。预留电池供电兼容电路。<br>Super-capacitor powered, accuracy: ±20ppm @25℃, maintains operation for 7 days after power-off. Reserved button cell power supply compatible circuit.                                                      |
| 8         | SD 卡座<br>SD card slot            | 用于 DGUS 工程文件下载（UI 文件、CFG 文件、内核等），下载速率：4Mb/s。<br>For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate.                                                                                                                                    |
| 9         | 预留模块焊盘<br>Reserved module pads   | 支持拓展迪文 Wi-Fi 模组（Wi-Fi-20 等）、USB 下载模组（HDL702 等）。<br>Supports DWIN Wi-Fi modules (e.g., Wi-Fi-20) and USB download modules (e.g., HDL702).                                                                                                                       |
| 10        | PGT05 接口<br>PGT05 interface      | 用于烧录 DGUS 底层程序，位于 2K DGUS 模块的屏蔽罩内部。<br>For programming DGUS firmware, located inside the shield of 2K DGUS module.                                                                                                                                             |

## 2、规格参数 Specification parameters

### 2.1 显示参数 Display parameters

|                                                                                                                               |                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 显示屏类型<br>LCD Type                                                                                                             | IPS TFT 液晶屏。<br>IPS, TFT LCD.                                                                                                                                                  |
| 视角<br>Viewing Angle                                                                                                           | 视角宽（典型值是 85°/85°/85°/85°），对比度高、色彩还原好。<br>Wide viewing angle (85°/85°/85°/85° typical), high contrast, and good color reproduction.                                             |
| 分辨率<br>Resolution                                                                                                             | 1920×1080（支持 0°/90°/180°/270°显示模式）<br>1920×1080 (support 0°/90°/180°/270°)                                                                                                     |
| 有效显示区域<br>Active Area (AA)                                                                                                    | 257.30mm (W)×145.20mm (H)                                                                                                                                                      |
| 可视区域<br>Viewing Area (VA)                                                                                                     | 256.30mm (W)×144.20mm (H)                                                                                                                                                      |
| 背光<br>Backlight                                                                                                               | LED                                                                                                                                                                            |
| 背光寿命<br>Backlight Service Life                                                                                                | >20,000H                                                                                                                                                                       |
| 亮度<br>Brightness                                                                                                              | 200nit                                                                                                                                                                         |
| 亮度调节<br>Brightness Control                                                                                                    | 100 级亮度调节（当亮度调节至最高亮度的 1%~30%时，可能出现闪烁现象，不建议在此范围使用）<br>100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range) |
| 注：长时间显示固定画面可能导致残影现象，建议设置动态屏保进行规避。<br>Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display. |                                                                                                                                                                                |

### 2.2 触摸参数 Touch parameters

|                            |                                                                                         |
|----------------------------|-----------------------------------------------------------------------------------------|
| 触摸屏类型<br>Type              | 电容式触摸面板。<br>Capacitive touch panel.                                                     |
| 触摸屏结构<br>Structure         | G+G 结构，表层为钢化玻璃，玻璃硬度≥6H。<br>G+G structure with tempered glass surface and hardness ≥ 6H. |
| 透光率<br>Light Transmittance | ≥85%                                                                                    |

## 2.3 串口参数 Serial interface parameters

|                         |                                                                                  |         |         |         |         |
|-------------------------|----------------------------------------------------------------------------------|---------|---------|---------|---------|
| 串口模式<br>Mode            | UART2: ON=TTL/CMOS; OFF=RS232 (出厂默认 RS232 Default RS232)                         |         |         |         |         |
| 串口电平<br>Voltage Level   | 测试条件 Test Condition                                                              | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 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       |
| 串口波特率<br>Baud Rate      | 3150~3225600bps, 典型值: 115200bps.<br>3150~3225600bps, typical value of 115200bps. |         |         |         |         |
| 数据格式<br>Data Format     | UART2: N81                                                                       |         |         |         |         |
| 接口端子<br>Interface Cable | 8Pin_2.0mm                                                                       |         |         |         |         |

## 2.4 电气规格 Electrical specifications

|                                                                 |                                                   |                                             |
|-----------------------------------------------------------------|---------------------------------------------------|---------------------------------------------|
| 额定功率<br>Rated Power                                             | <10W                                              |                                             |
| 工作电压<br>Operating Voltage                                       | 12~36V, 典型值 12V。<br>12~36V, typical value of 12V. |                                             |
| 工作电流<br>Operating Current                                       | 400mA                                             | VCC=12V, 背光亮度最大。<br>VCC=12V, max backlight. |
|                                                                 | 170mA                                             | VCC=12V, 背光关闭。<br>VCC=12V, backlight off.   |
| 推荐工作电源: 12V 1A 的直流稳压电源。<br>Recommended power supply: 12V 1A DC. |                                                   |                                             |

## 2.5 工作环境 Operating environment

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| 工作温度<br>Operating Temperature | -10℃~60℃ (12V @ 60% RH)                                      |
| 存储温度<br>Storage Temperature   | -20℃~70℃                                                     |
| 防紫外线<br>Anti-UV               | 无<br>N                                                       |
| 三防漆<br>Conformal coating      | 无<br>N                                                       |
| 工作湿度<br>Operating Humidity    | 10%~90%RH, 典型值 60%RH。<br>10%~90%RH, typical value of 60% RH. |

### 3、可靠性测试 Reliability test

#### 3.1 静电放电测试 Electrostatic discharge test

测试环境温度：25°C，测试环境湿度：50%RH。

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

测试过程：将产品放置在测试台面的测试工装上（测试工装高度约 15cm），针对智能屏进行接触放电和空气放电测试，实验过程观察屏幕有无死机、黑屏、白屏、花屏、重启等异常现象。

Test process: Place the product on the test bench fixture (approximately 15cm in height), and perform contact and air discharge tests on the smart LCM. Observe if any freezing, black or white screen, flickering, or rebooting occurs during the test.

测试结论：产品 ESD 性能达到 GB/T 17626.2 B 级。

Test conclusion: The product's ESD performance meets GB/T 17626.2 Class B standards.

■ 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 |
| 屏幕                    |             |      |      |      | △    | △    |       |       |
| /                     | /           | /    | /    | /    | /    | /    | /     | /     |
| /                     | /           | /    | /    | /    | /    | /    | /     | /     |
| /                     | /           | /    | /    | /    | /    | /    | /     | /     |

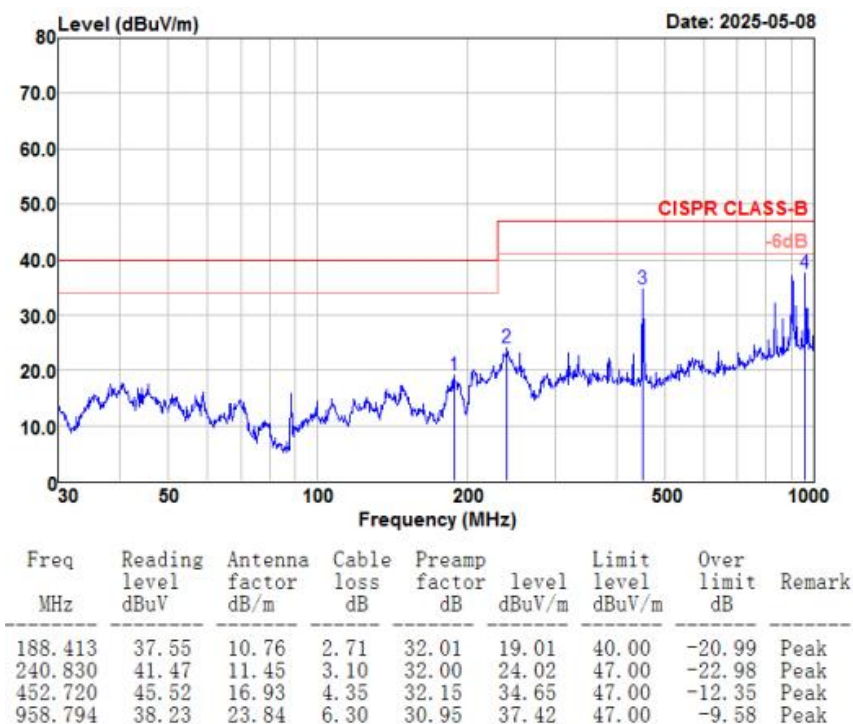
Table 2: Electrostatic Discharge Immunity (Direct Contact)

| Test Points Locations | Test Levels |      |      |      |      |      |      |      |
|-----------------------|-------------|------|------|------|------|------|------|------|
|                       | -2kV        | +2kV | -4kV | +4kV | -6kV | +6kV | -8kV | +8kV |
| 边框 J0                 | /           | /    | /    | /    | /    | /    | /    | /    |
| /                     | /           | /    | /    | /    | /    | /    | /    | /    |
| /                     | /           | /    | /    | /    | /    | /    | /    | /    |
| /                     | /           | /    | /    | /    | /    | /    | /    | /    |

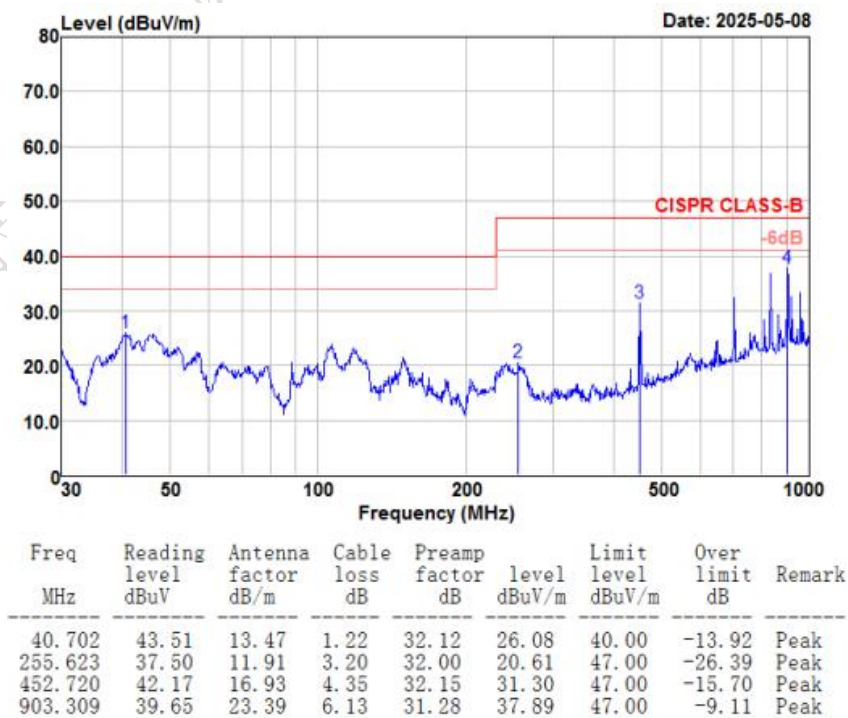
### 3.2 辐射干扰测试 RE test

| 测试项目<br>Test Item | 测试标准<br>Test Standard | 结果<br>Result             |
|-------------------|-----------------------|--------------------------|
| 辐射干扰<br>RE        | Class B               | 正常工作<br>Normal operation |

#### HORIZONTAL

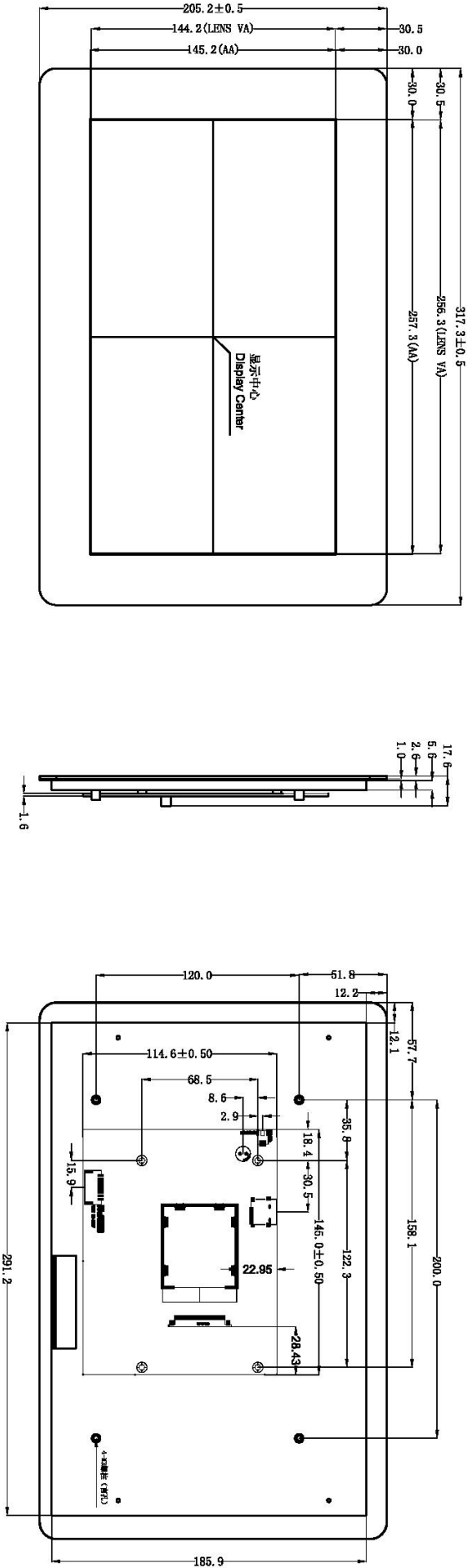


#### VERTICAL



#### 4、包装和物理尺寸 Packaging & dimensions

|                             |                                       |                |                           |                         |
|-----------------------------|---------------------------------------|----------------|---------------------------|-------------------------|
| 外形尺寸<br>Form Factor         | 317.30mm (W)×205.20mm (H)×17.60mm (T) |                |                           |                         |
| 净重量<br>Net Weight           | 1140g                                 |                |                           |                         |
| 包装标准<br>Packaging Standards |                                       |                |                           |                         |
| 包装箱型号<br>Model              | 包装箱尺寸<br>Dimensions                   | 层数（层）<br>Layer | 数量/层（片）<br>Quantity/Layer | 总数量（片）<br>Quantity(Pcs) |
| 1 号箱 Carton1:               | 220mm(L)×160mm(W)×47mm (H)            | -              | -                         | -                       |
| 2 号箱 Carton2:               | 250mm(L)×200mm(W)×80mm (H)            | -              | -                         | -                       |
| 3 号箱 Carton3:               | 320mm(L)×270mm(W)×80mm (H)            | -              | -                         | -                       |
| 4 号箱 Carton4:               | 435mm(L)×335mm(W)×290mm(H)            | -              | -                         | -                       |
| 5 号箱 Carton5:               | 600mm(L)×430mm(W)×290mm(H)            | 1              | 5                         | 5                       |



建议用户使用的M3螺丝孔不可过长，否则容易顶到背板的液晶屏。

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：虚线标注为有效显示区域  
Active area is marked in Dash lines

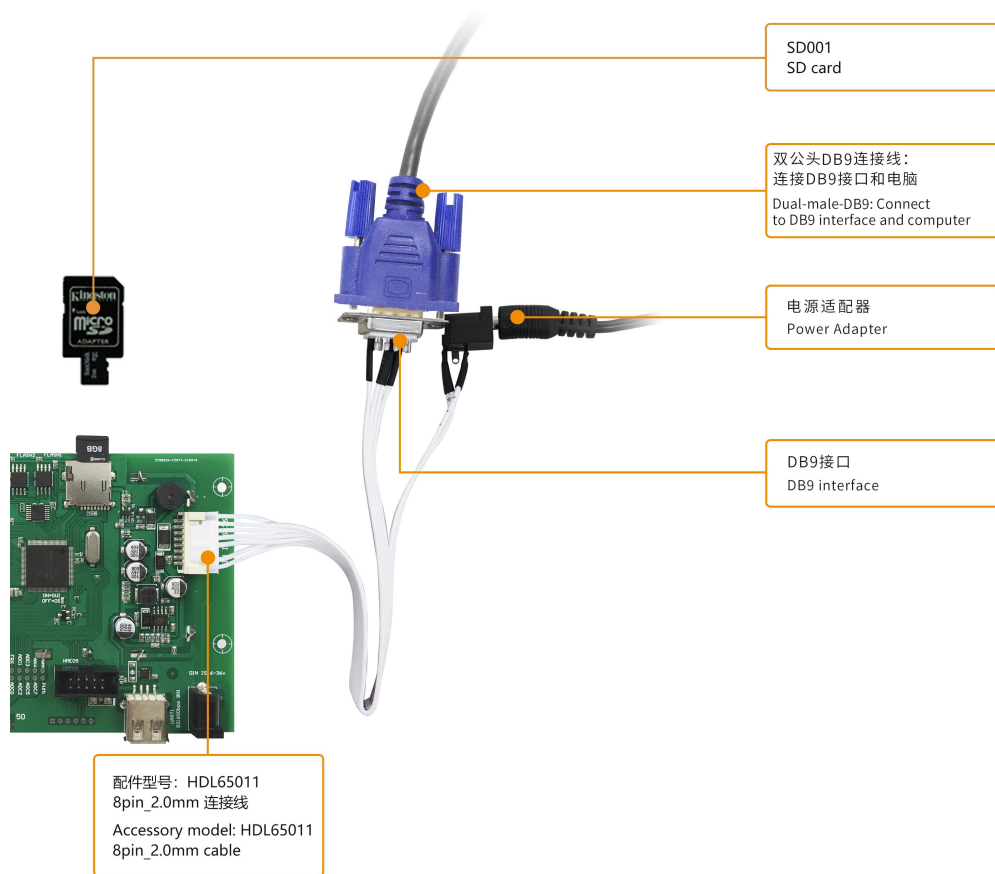
| 定义 Definition | 序号 Pin# | 类型 Type | 说明 Description   |
|---------------|---------|---------|------------------|
| VIN           | 1, 2    | P       | 电源输入 Power Input |
| NC            | 3       | -       | 未定义 Undefined    |
| TX2           | 4       | O       | 串口2输出 Output     |
| RX2           | 5       | I       | 串口2输入 Input      |
| RX2           | 6       | I       | 串口2输入 Input      |
| GND           | 7, 8    | P       | 公共接地 GND         |

|    |                    |    |      |    |        |                           |  |  |  |
|----|--------------------|----|------|----|--------|---------------------------|--|--|--|
| 型号 | DMG19108C116_05WTC |    |      |    |        | 迪文科技<br>DWIN Technologies |  |  |  |
| 图纸 | A 4                | 图纸 | J. G | 日期 | 250701 |                           |  |  |  |
| 比例 | 1:1                | 审核 |      | 日期 |        |                           |  |  |  |
| 单位 | MM                 | 批准 |      | 日期 |        |                           |  |  |  |

## 5、调试工具 Debug tools

建议首次使用迪文智能屏的用户购买标准配件。详细信息可联系客服人员。

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 系列芯片特点 T5L series IC features

(1) 采用应用最广泛、成熟和稳定的 8051 核，1T（单指令周期）高速工作，最高主频 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) 单独 CPU 核（GUI CPU）运行 DGUS II 系统：

Separate GUI CPU Core running DGUS II System:

- 内置高速显存，2.4GB/S 带宽。

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

- 2D 硬件加速，JPEG 解压缩速度高达 200fps@1280\*800，UI 极其流畅。

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 压缩模式存储图片、图标，大幅度缩小外置存储器到低成本的 16Mbytes SPI Flash。

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

- 支持电阻或电容触摸屏，灵敏度可以调节，最快 400Hz 触控打点速度。

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

- 1 路 15bit 32Ksps PWM 数字功放驱动扬声器，实现高品质语音压缩存储和播放。

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 变量存储器空间，存储器接口和 OS CPU 核交换数据，应用及其简单。

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

- 支持 PC 端组态开发和仿真，支持后台远程升级。

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

(3) 单独 CPU 核（OS CPU）运行用户 8051 代码，应用中省掉用户 CPU：

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

- 标准 8051 架构和指令集，64Kbytes 代码空间，32Kbytes 片内 RAM。

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

- 64bit 整数型数学运算单元（MDU），包括 64bit MAC 和 64bit 除法器。

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

- 28 个 IO，4 路 UARTs，1 路 CAN 接口，最多 8 路 12bit A/D，2 路 16bit 分辨率可调的 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.

- 支持 IAP 在线仿真和调试，断点数量无限制。

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

- 可以透过 DGUS 系统在线升级代码。

Upgrade code online through DGUS system.

- (4) 1Mbytes 片内 Flash，迪文专利加密技术，确保代码和数据安全，杜绝山寨和克隆。

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

- (5) -40℃~+85℃工作温度范围（可定制 -55℃~105℃工作温度范围 IC）。

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

迪文欢迎广大用户基于 T5L 自主设计客制化产品。

**DWIN encourages users to design your own customized product based on T5L.**

## 7、修订记录 Revision records

| 版本<br>Rev | 日期<br>Revise Date | 描述<br>Content                                                                           | 编辑人<br>Editor |
|-----------|-------------------|-----------------------------------------------------------------------------------------|---------------|
| 00        | 2022-08-18        | 首次发布<br>First Edition                                                                   | 郑运佳           |
| 01        | 2022-11-11        | 修改尺寸说明<br>Modify dimension description                                                  | 郑运佳           |
| 02        | 2022-12-07        | PCB 变更，去掉 FSK 座子及相应元器件<br>PCB change, remove FSK seat and corresponding components      | 郑运佳           |
| 03        | 2023-01-04        | 功能优化，更新实物图，CAD 图纸<br>Function optimization, updating physical drawings and CAD drawings | 郑运佳           |
| 04        | 2025-05-12        | 设计优化，更新核心模块<br>Design optimization, update core modules                                 | 郑运佳           |
| 05        | 2025-07-04        | 调整屏蔽罩高度，更新 CAD 图纸<br>Adjust the height of the shield, Update CAD                        | 赵方维           |

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迪文开发者论坛 DWIN Developer Forum: <http://inforum.dwin.com.cn:20080/forum.php>

感谢大家一直以来对迪文的支持，您的支持是我们进步的动力！

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

## 重要声明

### Important Disclaimer

迪文有权进行产品设计的任何改善或变更，且不另行单独通知客户。

客户应自行确保在产品应用过程中严格遵循所有相关标准及其他要求，包括但不限于功能安全、信息安全及监管等方面的规定。

对于客户在其产品中采用迪文产品可能引发的任何后果，迪文不承担连带责任。特别地，对于可能导致的重大财产损失、环境危害、人身伤害甚至死亡等风险，尤其是在军事、易燃易爆、生命医疗设备等高风险应用领域，客户应自行评估风险，并采取相应的预防和保护措施，迪文不承担相关责任。

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

Customers should ensure strictly adhering to all the relevant standards and requirements during the product application process, including but not limited to functional safety, information security, and regulatory provisions.

DWIN shall not bear any joint and several liability for any consequences that may arise from customers' adoption of DWIN products. In particular, for risks that may lead to significant property losses, environmental hazards, personal injury, or even death, especially in high-risk application areas such as military applications, flammable and explosive places, and life-saving medical equipment, customers should independently assess the risks and take corresponding preventive and protective measures. DWIN shall not bear any relevant responsibility.