DMG80480T043_01WTR

产品特点：

- **基于 T5L0 芯片，运行 DGUS II 系统，工业级产品。**
- **4.3 英寸，480*800 分辨率，262K 色，IPS 屏，宽视角。**
- **电阻触摸屏。**
- **带三防工艺。**

Features:

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

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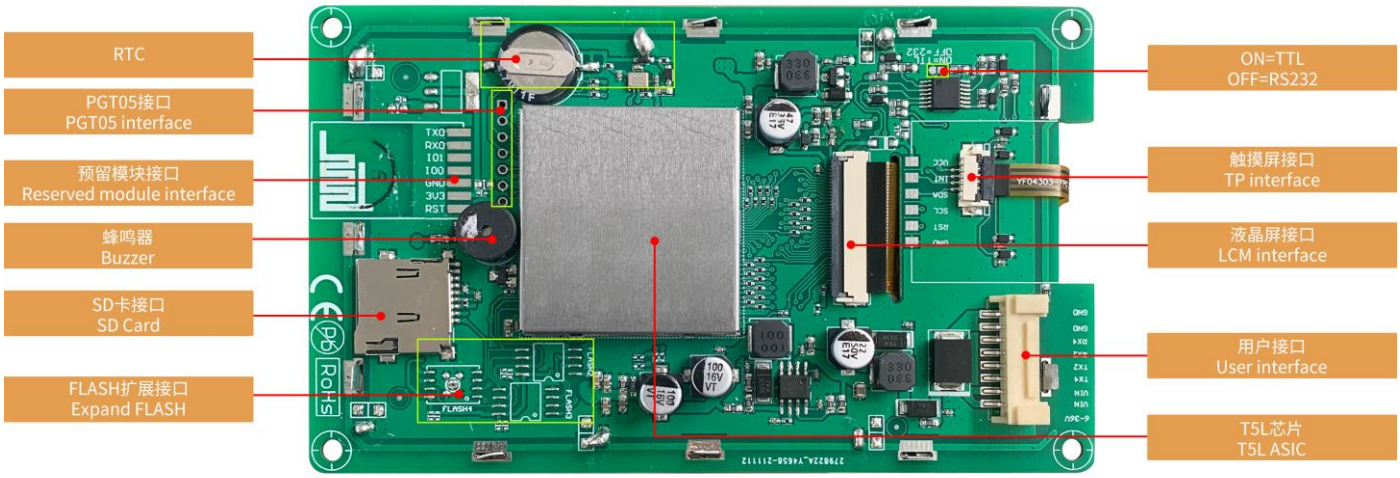
1、硬件及接口 Hardware and interface

1.1 硬件接口图 Hardware interface



硬件接口图
Hardware interface

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1.2 硬件及接口说明 Hardware and interface description

序号 No.	名称 Name	说明 Description
1	T5L0 芯片 T5L0 ASIC	迪文自主研发，2020 年量产，1MBytes 片内 Nor Flash，其中 512KBytes 用于存储用户数据库，擦写次数>100,000 次 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	液晶屏接口 LCM interface	FPC40_0.5mm，TTL 接口 FPC40_0.5mm, TTL interface
3	电阻触摸屏接口 RTP interface	4Pin_1.0mm 接口 4Pin_1.0mm interface
4	用户接口 User interface	用于供电和串口通讯，8Pin_2.0mm 座子。串口下载速率（典型值）：12KByte/s 8Pin_2.0mm socket for power supply and serial communication. Download rate(typical value): 12KByte/s
5	Flash	16MBytes NOR Flash，存放字库、图片、音乐文件，擦写次数>100,000 次 16MBytes NOR Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times
6	扩展 Flash 焊盘 Expand Flash pads	有 3 个扩展位，支持扩展 NOR Flash、NAND Flash。 NOR Flash 最大可拓展到 64Mbytes。 NOR Flash 与 NAND Flash 组合最大可扩展到 48Mbytes（2 个扩展位）+512Mbytes。 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	蜂鸣器 Buzzer	3V 无源蜂鸣器，功率：<1W 3V passive buzzer. Power: <1W
8	RTC	法拉电容供电，精度：±20ppm @25℃。掉电后可维持 7 天正常工作 Super-capacitor for power supply. Accuracy: ±20ppm @25℃. It can work normally for 7 days after power failure
9	SD 卡接口 SD interface	FAT32 格式，下载文件，文件可在屏幕统计显示，下载速率：4Mb/s FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
10	预留模块接口 Reserved module interface	WIFI 模块：焊接 WIFI-10 模块，可连接到云平台实现远程更新 USB 模块：焊接 USB 模块，可通过 U 盘下载文件 Wi-Fi module: connect to the cloud platform to update remotely USB module: download files by USB flash disk
11	PGT05 接口 PGT05 interface	当产品因意外无法正常运行时，可通过 PGT05 更新 DGUS 底层，使产品重新恢复正常 When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal

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2、规格参数 Specification parameters

2.1 显示参数 Display parameters

显示屏类型 **LCD Type**	IPS, TFT LCD
视角 **Viewing Angle**	宽视角，典型值 85°/85°/85°/85°（L/R/U/D） Wide viewing angle, 85°/85°/85°/85°（L/R/U/D）
分辨率 **Resolution**	480×800（支持 0°/90°/180°/270°显示模式） 480×800 pixels (support 0°/90°/180°/270°)
色彩 **Color**	18 位 6R6G6B 18-bit 6R6G6B
AA 区 **Active Area (A.A.)**	93.60mm (W)×56.16mm (H)
VA 区 **View Area (V.A.)**	-
背光模式 **Backlight Mode**	LED
背光寿命 **Backlight Service Life**	>30000 小时（以最高亮度连续工作，亮度减半时间） >30000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
背光亮度 **Brightness**	250nit
背光调节 **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） 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)
注：长时间固定画面显示可能导致屏幕残影，可以用动态图片切换做屏保解决。 Note: You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed page display for a long time.	

2.2 触摸参数 Touch parameters

触摸屏类型 **Type**	电阻式触摸面板。 RTP (Resistive touch panel).
触摸屏结构 **Structure**	ITO 膜+ITO 玻璃。 ITO film + ITO glass.
透光率 **Light Transmittance**	78%±3%

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2.3 串口参数 Serial interface parameters

串口模式 **Mode**	UART2: ON=TTL/CMOS; OFF=RS232 UART4: ON=TTL/CMOS; OFF=RS232 (OS 配置后才能使用 Only available after OS configuration)				
串口电平 **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 **Baud Rate**	3150~3225600bps，典型值：115200bps 3150~3225600bps, typical value of 115200bps				
数据格式 **Data Format**	UART2: N81 UART4: N81/E81/O81/N82 四种模式可选（OS 配置）4 modes (OS configuration)				
接口排线 **Interface Cable**	8Pin_2.0mm				

2.4 电气规格 Electrical specifications

额定功率 **Rated Power**	<5W	
工作电压 **Operating Voltage**	9~36V，典型值 12V 9~36V, typical value of 12V	
工作电流 **Operating Current**	120mA	VCC=12V，背光亮度最大 VCC=12V, max backlight
	53mA	VCC=12V，背光关闭 VCC=12V, backlight off
推荐工作电源：12V 1A 的直流稳压电源 **Recommended power supply: 12V 1A DC**		

2.5 工作环境 Operating environment

工作温度 **Operating Temperature**	-20℃~70℃ (12V @ 60% RH)
存储温度 **Storage Temperature**	-30℃~80℃
三防漆工艺 **Conformal coating**	有 Yes
工作湿度 **Operating Humidity**	10%~90%RH，典型值 60%RH 10%~90%RH, typical value of 60% RH

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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.

试验过程：将产品平置于测试台上，针对串口屏铁框和显示区域依次进行接触和空气放电，如下图 3.1 所示；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。性能符合判据 GB/T 17626.2 B 级及以上。

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 静电放电测试图

Electrostatic discharge test

放电类型 Discharge Type	放电值 Discharge Value	结果 Result
接触放电 Contact discharge	±6KV	正常工作 Normal operation
空气放电 Air discharge	±8KV	正常工作 Normal operation

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3.2 电快速瞬变脉冲群 EFT 测试 EFT 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.

试验过程：将产品平置于测试台上，通过脉冲群发生仪耦合脉冲群后的电源对智能屏进行供电如下图 3.2 所示；实验过程观察屏幕是否出现复位重启、异常显示、触摸异常等现象，性能符合 GB/T 17626.4 B 级及以上。

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 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	±2KV;100KHz	正常工作 Normal operation

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4、包装和物理尺寸 Packaging & dimensions

外形尺寸 **Form Factor**	121.92mm (W)×73.15mm (H)×13.95mm(T)
安装尺寸 **Installation Dimensions**	开孔尺寸：106.50(+0.3mm)×68.30(+0.3mm) Positioning hole: 106.50(+0.3mm)×68.30(+0.3mm)
净重量 **Net Weight**	115g

包装标准 Packaging Standards

包装箱型号 **Model**	包装箱尺寸 **Dimensions**	层数（层） **Layer**	数量/层（片） **Quantity/Layer**	总数量（片） **Quantity(Pcs)**
1 号箱 Carton1：	220mm(L)×160mm(W)×47mm (H)	1	2	2
2 号箱 Carton2：	250mm(L)×200mm(W)×80mm (H)	2	2	4
3 号箱 Carton3：	320mm(L)×270mm(W)×80mm (H)	2	4	8
4 号箱 Carton4：	435mm(L)×335mm(W)×290mm(H)	2	25	50
5 号箱 Carton5：	600mm(L)×430mm(W)×290mm(H)	2	60	120

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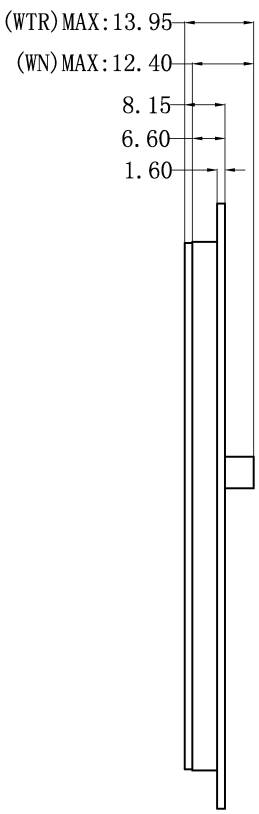
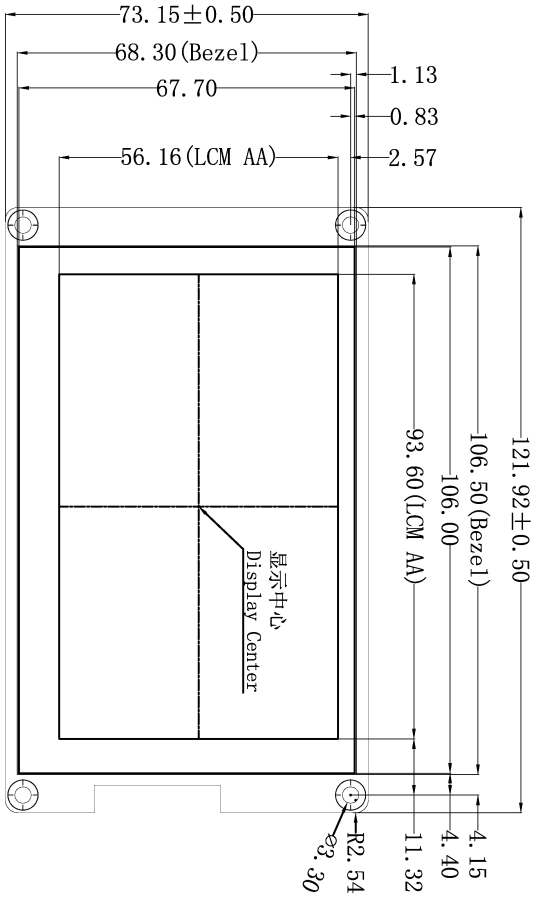
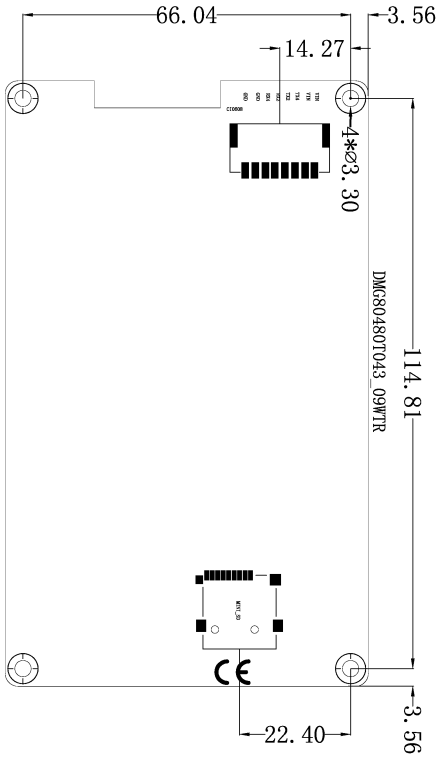




定义 Definition	序号 Pin#	类型 Type	说明 Description
VIN	1,2	P	电源输入 Power Input
TX4	3	O	串口4输出 Output
TX2	4	O	串口2输出 Output
RX2	5	I	串口2输入 Input
RX4	6	I	串口4输入 Input
GND	7,8	P	公共接地 GND



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+/-0.3mm
Unmarked Tolerance is +/-0.3mm
注：虚线标注为有效显示区域
Active area is marked in Dash lines

型号 Model	DMG80480T043-01WTR				
图纸 Drawing	A 4	绘制 Drawn	G.Y	日期 Date	2024.07.29
比例 Scale	1:1	审核 Review		日期 Date	
单位 Unit	MM	批准 Approval		日期 Date	

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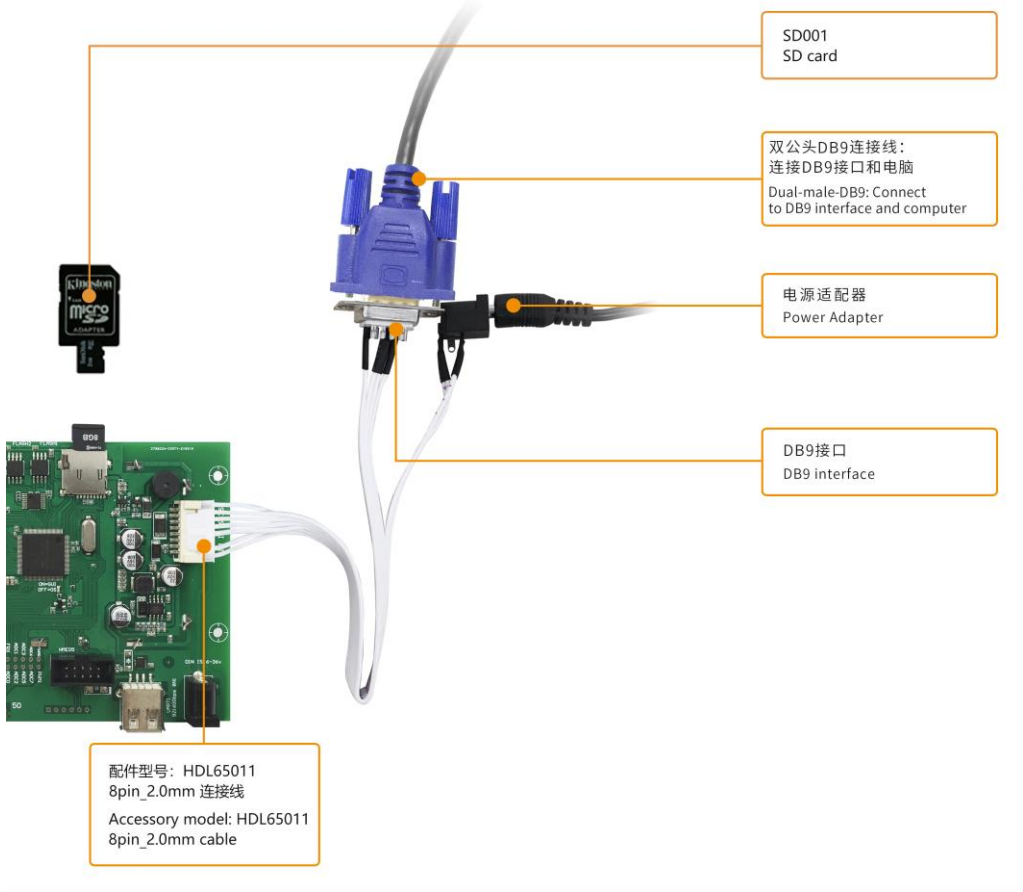
5、调试工具 Debugging tools

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.



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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.

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- 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.

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7、修订记录 Revision records

版本 Rev	日期 Revise Date	描述 Content	编辑人 Editor
00	2021-09-25	首次发布 First Edition	郑运佳
01	2021-12-22	更新实物图 Update physical drawing	郑运佳
02	2022-01-05	更新 RTC 精度说明 Update RTC accuracy description	郑运佳
03	2022-02-15	变更 COB 结构，更新实物图 Change to cob structure and update the physical drawing	郑运佳
04	2022-07-07	DEMO 自然切换为横屏显示 Demo naturally switches to horizontal display	郑运佳
05	2022-09-27	更新 CAD Update CAD	郑运佳
06	2022-11-14	修改尺寸说明 Modify dimension description	郑运佳
07	2024-05-27	增加 FLASH 扩展元器件 Add FLASH extension components	郑运佳
08	2024-07-30	更新 CAD Update CAD	郑运佳
09	2024-08-30	更新供电电压 Modify Power Voltage	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!

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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.

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