深圳市金芯微电子有限公司

SHENZHEN GOLDICWELL ELECTRONIC CO.,LTD.

产 品 规 格 书

Product specification

产品名称 Model Name	1500W 控制板
型号规格 Specification	1500W
产品编码 Product Code	91601505000003
文件版本 File Version	V1.0
生效日期 Effective Date	2022-03-22

客户 Customer：

审核 Checked		日期 Date	
批准 Approved		盖章 Stamp	

制造商 Manufacturers：深圳市金芯微电子有限公司

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文件编号/版本 File No. /Version.

更新履历 Update history

序号 No.	版本 Version	日期 Date	更新说明 Updated instructions
1	V1.0	2022-03-22	制定 Initial release

目录 INDEX

1.产品描述 The product description

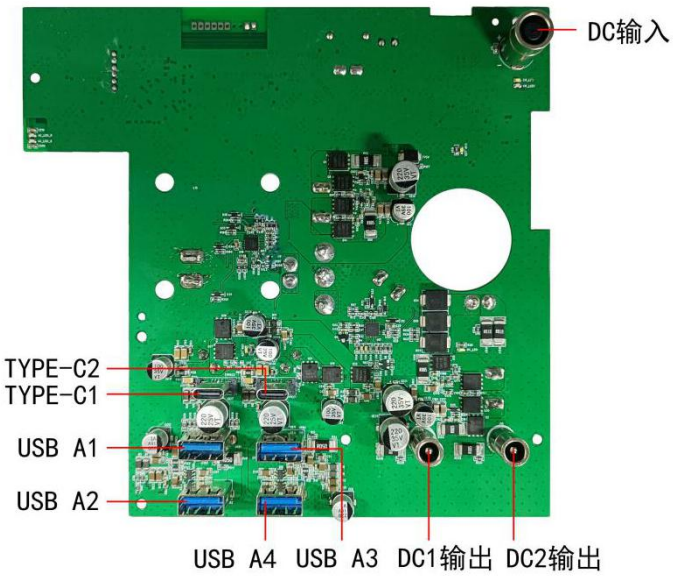
类别 Category	项目 Project	规格要求 Specifications	备注 Note
电池组 The battery pack	电芯组合方式 Combination mode of cell	磷酸铁锂 8 串 Lithium iron phosphate 8 strings	
	电池规格 The battery specification	标称电压：25.6V，充满电压：29.2V Nominal voltage: 25.6V, full voltage: 29.2V	
输出功能 Output function	USB A1、USB A2 USB A3、USB A4	支持 QC2.0/3.0 Support QC2.0/3.0 5V@3.6A，9V@2.5A，12V@2A	
	TYPE-C1	支持 PD 快充协议（PD2.0/3.0） Support PD Fast Charging protocol (PD2.0/3.0) 5V@3A，9V@3A，12V@3A，15V@3A， 20V@3A/20V@5A	单向，100W One-way, 100W 20V@5A 需要 E-mark 线 20V@5A requires e-mark line
	TYPE-C2	支持 PD 快充协议（PD2.0/3.0） Support PD Fast Charging protocol (PD2.0/3.0) 5V@3A，9V@3A，12V@3A，15V@3A， 20V@3A/20V@5A	单向，100W One-way, 100W 20V@5A 需要 E-mark 线 20V@5A requires e-mark line
	DC1、DC2	单口 Stand-up 5V@5A，9V@5A，12V@5A，15V@5A， 24V@5A 双口 Double mouth 5V@10A，9V@10A，12V@10A，15V@10A， 24V@6.25A	总功率 150W Total power 150W
	点烟口放电 Smoke outlet discharges	13V10A 130W	

输入功能 Input function	DC 充电 DC charging	电压 12-30V，电流 10.5A Voltage 12-30V, current 10.5A	
	车充 Car charger	30V12A,360W	
	太阳能充 Solar charger	19V10.5A,200W	

1.1 基本性能 Basic performance

项目 Project	最小值 Min	标准 Standard	最大值 Max	备注 Note
整机休眠后自耗电(μA) Power consumption after sleep (μA)	/	/	800	关闭输出后的内部自耗电,含 AC 逆变器的耗电，关闭 30 分钟后测试 The internal power consumption after shutting down the output, including the power consumption of the AC inverter, shall be tested after 30 minutes of shutting down
输出纹波(mVpp) DC 部分 Output ripple (mVpp) DC part	/	/	500	0-100%负载时，输出端并接 10UF/50V 电解电容和 104/50V 瓷片电容 When the load is 0-100%, the output end is connected with 10UF/50V electrolytic capacitor and 104/50V ceramic capacitor
启动/关闭输出 Start/close the output	按对应键，打开/关闭对应输出 Press the corresponding key to open/close the corresponding output			
常开模式启动/关闭 Normally open mode start/close	按键打开/关闭显示 Button to turn on/off display			
电量指示功能 Electric quantity indicator function	按键打开/关闭显示，充满电后电量显示 100% Button to turn on/off the display, the power display is 100% after being fully charged			
板端转换效率 Board end conversion efficiency	DC 最大效率 95%；TYPE C 及 USB 最大效率 95% DC maximum efficiency 95%; The maximum efficiency of TYPE C and USB is 95%			
LED 照明灯 LED light	最大功率 10W；SOS/爆闪灯光，开启后为上次调光记忆 Maximum power 10W; SOS/ flash light, turn on for the memory of the last dimming			
温度、湿度范围 Temperature and humidity range	存储: 0～25℃ 1 年；-10～45℃ 3 个月，-20～60℃ 1 个月；湿度范围：小于 75%RH Storage: 0 ~ 25℃ for 1 year; -10 ~ 45℃ 3 months, -20 ~ 60℃ 1 month; Humidity range: less than 75%RH			
尺寸 size	160*152*36mm			

1.2 各端口输出参数 Port output parameters



序号 No.	测试项目 Test project	测试内容 The test content	判定标准 Decision criteria	
1	点烟口输出端口（板端） Smoke port output port(The plate end)	输出电压 Output voltage	12.35V-13.65V	
		标准功率 Standard power	130W(13V10A)	超功率时显示报警 Display alarm when overpower
		最大功率 Most powerful	140W(13V10.8A)	超功率显示报警并关闭输出 Overpower display alarm and turn off output
2	DC1 DC2 5521 输出（板端） Output (The plate end)	输出电压可自由选择：5V 9V 12V 15V 24V The output voltage can be selected freely 单口标准 5A，过流 5.5A Single port standard 5A, overcurrent 5.5A 5V@5A，9V@5A，12V@5A，15V@5A，24V@5A		
		双口 5V-15V 标准 10A，过流 11A，20V-24V 标准 6.25A，过流 6.8A Double port 5V-15V standard 10A, overcurrent 11A, 20V-24V standard 6.25A, overcurrent 6.8A 5V@10A，9V@10A，12V@10A，15V@10A，20V-24V@6.25A		
3	USB A1 5V@3.6A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	Apple2.4A USB-DCP-5V-1.5A QC2-9V-12V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.7—4.2A	
	USB A1 9V@2.5A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	2.7—3.2A	
	USB A1 12V@2A（板端）	输出电压 Output voltage	11.40V-12.60V	

	(The plate end)	输出过流 Output flow	2.1—2.6A	
4	USB A2 5V@3.6A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	Apple2.4A USB-DCP-5V-1.5A QC2-9V-12V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.7—4.2A	
	USB A2 9V@2.5A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	2.7—3.2A	
	USB A2 12V@2A（板端） (The plate end)	输出电压 Output voltage	11.40V-12.60V	
		输出过流 Output flow	2.1—2.6A	
5	USB A3 5V@3.6A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	Apple2.4A USB-DCP-5V-1.5A QC2-9V-12V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.7—4.2A	
	USB A3 9V@2.5A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	2.7—3.2A	
	USB A3 12V@2A（板端） (The plate end)	输出电压 Output voltage	11.40V-12.60V	
		输出过流 Output flow	2.1—2.6A	
6	USB A4 5V@3.6A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	Apple2.4A USB-DCP-5V-1.5A QC2-9V-12V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.7—4.2A	
	USB A4 9V@2.5A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	2.7—3.2A	
	USB A4 12V@2A（板端） (The plate end)	输出电压 Output voltage	11.40V-12.60V	
		输出过流 Output flow	2.1—2.6A	
7	TYPE C1 5V@3A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	PD2.0 PD3.0 PPS-3.3V-21V-5A Apple2.4A Samsung-5V-2A
		输出过流 Output flow	3.1—4.2A	

	TYPE C1 9V@3A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	USB-DCP-5V-1.5A QC2-9V-12V-20V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.1－4.2A	
	TYPE C1 12V@3A（板端） (The plate end)	输出电压 Output voltage	11.40V-12.60V	
		输出过流 Output flow	3.1－4.2A	
	TYPE C1 15V@3A（板端） (The plate end)	输出电压 Output voltage	14.25V-15.75V	
		输出过流 Output flow	3.1－4.2A	
	TYPE C1 20V@5A（板端） (The plate end)	输出电压 Output voltage	19.00-21.00V	
		输出过流 Output flow	5.1－6.1A（E-mark 线） (E - mark line)	
	TYPE C1（板端） (The plate end)	PPS 电压 PPS voltage	3.3-21.0V	
		输出电流 Output current	5A	
8	TYPE C2 5V@3A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	PD2.0 PD3.0 PPS-3.3V-21V-5A Apple2.4A Samsung-5V-2A USB-DCP-5V-1.5A QC2-9V-12V-20V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.1－4.2A	
	TYPE C2 9V@3A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	3.1－4.2A	
	TYPE C2 12V@3A（板端） (The plate end)	输出电压 Output voltage	11.40V-12.60V	
		输出过流 Output flow	3.1－4.2A	
	TYPE C2 15V@3A（板端） (The plate end)	输出电压 Output voltage	14.25V-15.75V	
		输出过流 Output flow	3.1－4.2A	
	TYPE C2 20V@/5A（板端） (The plate end)	输出电压 Output voltage	19.00-21.00V	
		输出过流 Output flow	5.1－6.1A（E-mark 线） (E - mark line)	
	TYPE C2（板端） (The plate end)	PPS 电压 PPS voltage	3.3-21.0V	

		输出电流 Output current	5A	

1.3 充电 Charging

项目 Project	详细内容 Detailed content	最小值 Min	典型值 Typical values	最大值 Max	单位 Unit	备注 Note
DC 充电参数配置 DC charging Parameter configuration	输入充电电压 Input charging voltage	12	/	30	V	
	涓流充电阈值 Trickle charging threshold	19.8	20.0	20.2	V	指电池组电压 Refers to the battery string voltage
	恒定充电电流 Constant charging current DC port	3	5	/	A	指输入端电流 Refers to the input current
	恒定充电电压 Constant charging voltage	28.8	29.2	29.6	V	指电池组电压 Refers to the battery string voltage
	充电截止电流 Charge cut-off current	400	600	800	mA	指输入端电流 Refers to the input current

1.4 LCD 触摸屏显示功能及按键功能 LCD touch screen display function and button function

1.BMS 

点击可查看 BMS 信息（电池电压、电池电流、电池电量、电池温度）
Click to view BMS information (battery voltage, battery current, battery power, battery temperature)

2.AC 输出 

AC output

点击可查看 AC 输出信息（输出电压、输出电流、输出功率、输出频率）
Click to view AC output information (output voltage, output current, output power, output frequency)

3.DC 输出 

DC output

点击可查看 DC 输出信息（DC 电压、DC 功率、点烟器电流、点烟器功率、USB/PD/无线充功率）

Click to view DC output information (DC voltage, DC power, cigarette lighter current, cigarette lighter power, USB/PD/ wireless charging power)

4.PV/车 

PV/car

点击可查看 PV/车信息（输出电压、输入电流、输入功率、发电量）
Click to view PV/ vehicle information (output voltage, input current, input power, generation)

5.AC 输入 

AC input

点击可查看 AC 输入信息（充电电压、充电电流、充电功率）
Click to view AC input information (charging voltage, charging current, charging power)

6.功能菜单 
Function menu

点击进入菜单界面（日期与时间、参数设置、语言设置、按键设置、版本信息、故障信息、恢复出厂设置）
Click to enter the menu interface (date and time, parameter setting, language setting, key setting, version information, fault information, restore factory Settings)

日期与时间：时间日期设置
Date and Time: Time date Settings

参数设置：USB 空载关机时间、AC 空载关机时间、DC 空载关机时间、背光亮度设置、DC 输出电压设置、AC 频率设置、背光亮度降低时间
Parameter setting: USB no-load shutdown time, AC no-load shutdown time, DC no-load shutdown time, backlight brightness setting, DC output voltage setting, AC frequency setting, backlight brightness reduction time

语言设置：语言切换（中文、日本语、英文、韩语）
Language setting: Language switch (Chinese, Japanese, English, Korean)

按键设置：按键设置（DC 按键、AC 按键、蓝牙按键、灯按键）
Button setting: Button setting (DC button, AC button, Bluetooth button, lamp button)

版本信息：控制板版本号、逆变板版本号、BMS 版本号、出厂日期
Version information: Control board version number, inverter version number, BMS version number, and delivery date

故障信息：显示发生日期和故障代码
Fault information: Displays the date and fault code

恢复出厂设置：弹出提示框，选择取消和确认
Restore factory Settings: In the dialog box that is displayed, click Cancel and Confirm

7.蓝牙按键 

Bluetooth key

单击,开启/关闭蓝牙
Click to enable or disable Bluetooth

8.AC 按键 

AC key

点击弹出 AC 选择弹窗，选择开启/关闭 AC 逆变器输出功能，有按键指示灯
Click to pop up AC selection window, select to enable/disable AC inverter output function, there is a button indicator

9.DC 按键 

DC key

点击弹出 DC 选择弹窗（USB/PD、无线充、点烟器、DC5521），其中 USB/PD、点烟器、DC5521 有按键指示灯
Click to pop up the DC selection window (USB/PD, wireless charger, cigarette lighter, DC5521), among which USB/PD, cigarette lighter, DC5521 have button indicators

10.LED 按键 

LED key

点击弹出 LED 选择弹窗（可调节灯光强弱度、SOS、爆闪），有按键指示灯
Click to pop up LED selection window (adjustable light intensity, SOS, flash), with button indicator light

1.5 开机启动 Powered up

1　电池电压没有过放，或异常保护条件下执行。
　　The battery voltage is not overdischarge, or abnormal protection conditions.

2　开机后 LCD 全屏图标点亮，自检所有的功能 OK 后，进入待机状态。
　　After the startup, the LCD full-screen icon lights up. After the self-check all functions are OK, it enters the standby state.

3　待机状态时显示要求：默认显示电量标，电量百分比；当前剩余电量在 5%以上，USB 功能允许开启；10％以上 AC、DC 放电允许开启。
　　Standby state display requirements: the default display of power standard, power percentage; If the remaining power is above 5%, the USB function can be enabled. More than 10% AC and DC discharge can be turned on.

4　如开机时电池处在过放状态，则只能充电激活，开机是无法启动的。
　　If the battery is in overdischarge state when it is turned on, it can only be activated by charging, and cannot be started when it is turned on.

1.6 端口定义 Port definitions

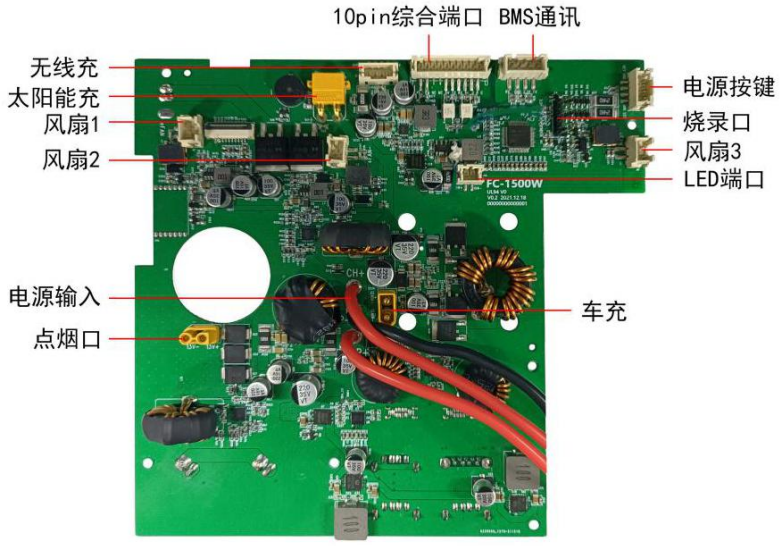


图 Figure	位号 A no.	端口说明 The port that
	J8	10pin 综合端口（如图，从左往右依次） 10pin integrated port (as shown, from left to right) p1-KEY : AC 按键保留 AC keys reserved p2-EN : AC 开启开关 AC switch p3-NC： 空 p4-NC： 空 p5-+5V： 供电 The power supply p6-TXD： 发送数据 To send data p7-RXD： 接收数据 Receive data p8-GND： 指示灯共阴公共 Indicator lights are in common shade p9-R： 逆变器输出红色指示灯(红色指示灯亮表示逆变器故障) Inverter output red indicator (red indicator on indicates inverter failure) p10-G： 逆变器输出绿色指示灯(绿色指示灯亮表示逆变器正常输出) Inverter output green indicator (green indicator on indicates normal inverter output)
	J5	无线充端口（如图，从左往右依次）9V5A Wireless charging port (as shown, from left to right) p1-9V p2-9V p3-GND p4-GND
	J12	BMS 通讯端口（如图，从左往右依次） BMS communication port (as shown, from left to right) p1-RX p2-GND p3-3.3V p4-TX
	J4	电源按键端口（如图，从左往右依次） Power button port (as shown, from left to right) p1-KEY p2-GND p3-GND p4-LED
正极  负极	J1 J6 J17	3 个风扇端口（如图，从左往右依次） Three fan ports (as shown, from left to right) p1-FAN+ p2-FAN-
	J3	烧录口（如图，从左往右依次） Burning mouth (as shown, from left to right) p1-3.3V

		p2-GND p3-TDO p4-TMS p5-TDI p6-TCK
	J13	LED 端口（如图，从左往右依次） LED port (as shown, from left to right) p1-10W+ p2-10W-
正极  负极	J11	点烟器端口（如图，从左往右依次） Cigarette lighter port (as shown, from left to right) p1-13V+ p2-13V-
正极  负极	J16	车充端口（如图，从左往右依次） Car charger port (as shown, from left to right) p1-12AIN+ p2-12AIN-
负极  正极	J9	太阳能充端口（如图，从左往右依次） Solar charging port (as shown, from left to right) p1-SUN- p2-SUN+
	/	电源输入端口（如图，从左往右依次） Power input (as shown, from left to right) p1-CH+ p2-P- p3-P+

1.7 AC 输出功率及功率因数说明 AC output power and power factor description

1　面板显示 AC 功率的是视在功率，计算是电压与电流的乘积。

Panel display AC power is the apparent power, the calculation is the voltage and current product.

2　有功功率是保持用电设备正常运行所需的电功率，也就是将电能转换为其他形式能量(机械能、光能、热能)的电功率。

Active power is the electrical power needed to keep electrical equipment running properly, that is, to convert electrical energy into other forms of energy (mechanical, light, heat).

3　视在功率×cosφ(cosφ指功率因数)=有功功率，负载功率因数最大是 1，纯电阻性负载如白炽灯泡、电炉，则可以带载不超过 1500W。

Apparent power × cosφ(cosφ refers to the power factor)= active power, the maximum load power factor is 1, pure resistive load such as incandescent bulb, electric furnace, can carry not more than 1500W.

4　电感性负载电路的功率因数都小于 1，如电视、电脑、风扇、日光灯、节能灯等，则最大使用功率＝1500W*功率因数。

The power factor of inductive load circuit is less than 1, such as TV, computer, fan, fluorescent lamp, energy-saving lamp, the maximum use power = 1500W* power factor.

5　常用设备的功率因数：电子计算机主机、电风扇为 0.8；电子计算机外部设备为 0.5；电饭锅、电烤箱、电炒锅、白炽灯为 1.0；直管日光灯为 0.5；电视机、节能灯、DVD 为 0.85。

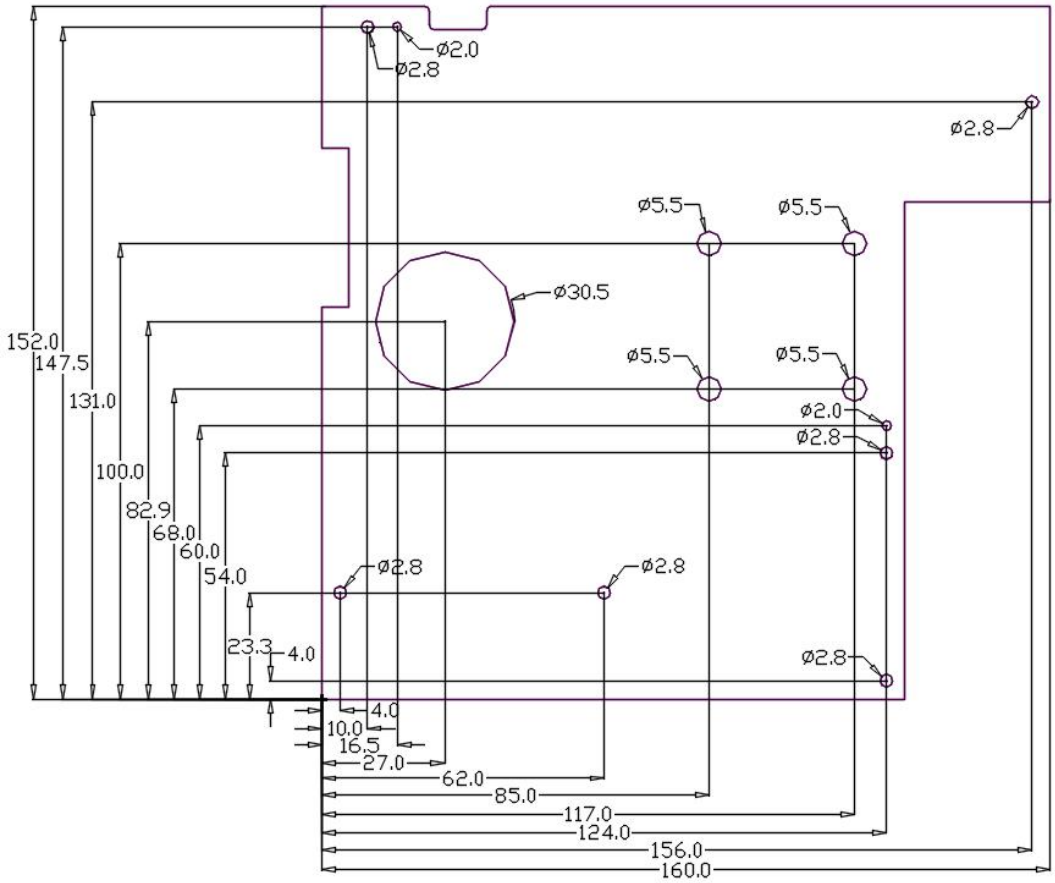
The power factor of common equipment: electronic computer host, electric fan is 0.8; Electronic computer external equipment is 0.5; Electric rice cooker, electric oven, electric frying pan and incandescent lamp are 1.0; 0.5 for straight fluorescent lamps; TV sets, energy-saving lamps and DVDS were 0.85.

2.工作环境参数 Working environment parameters

项目 Project	最小值 Min	标准 Standard	最大值 Max	备注 Note
工作温度 Working temperature	-10℃	---	40℃	产品正常工作的环境温度 Ambient temperature at which the product works normally
存储温度 Storage temperature	-20℃	---	70℃	产品不工作在存储温度范围内，适用于存储 The product does not work in the storage temperature range, suitable for storage
工作湿度 Working humidity	0%	---	65%	产品正常工作的环境湿度 Ambient humidity for normal operation of the product
存储湿度 Store humidity	0%	---	70%	产品不工作在存储湿度范围内，适用于存储 The product does not work in the storage humidity range, suitable for storage

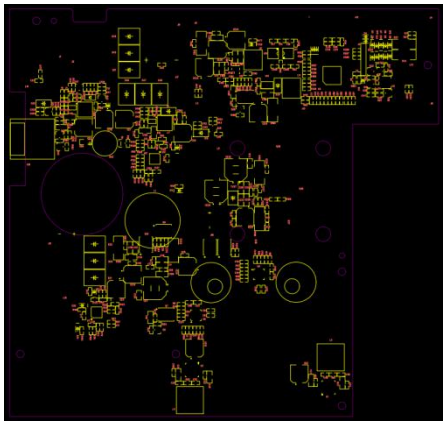
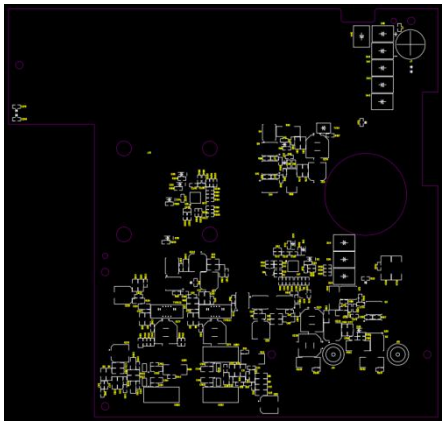
3.图 Figure

3.1 安装孔及 PCB 尺寸 Mounting hole and PCB size

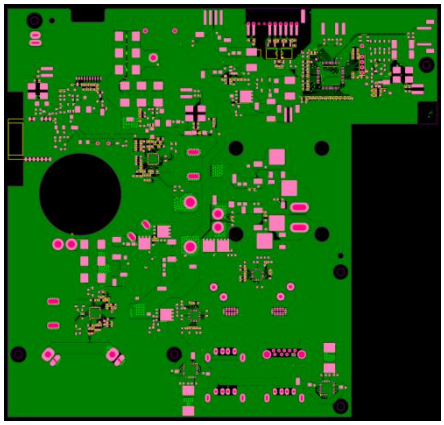
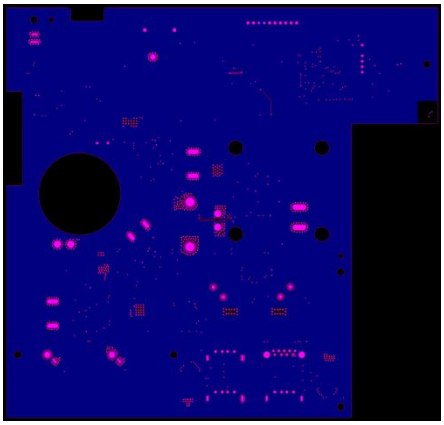
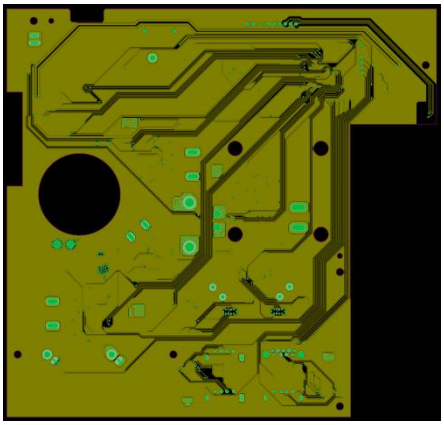
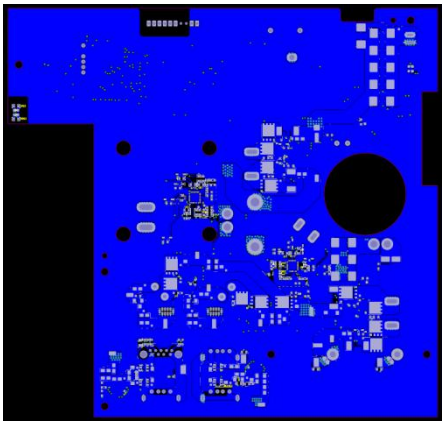


尺寸:长(160mm)*宽(152mm)
Size: L (160mm)* W (152mm)

3.2 元器件丝印图 Silkscreen of components

顶层丝印图 Top screen printing	底层丝印图 Bottom screen printing
	

3.3 布线图 Wiring diagram

1 层 1 layer	2 层 2layer
	
3 层 3 layer	4 层 4 layer
	

4.包装规格 Packing specification

外箱尺寸：601mm*336mm*157mm
Outer box size: 601mm*336mm*157mm

箱内刀卡尺寸：长刀卡 590mm*140mm / 短刀卡 325mm*140mm

Knife card size in the box: long card 590mm*140mm/short card 325mm*140mm

材质：K636K
Material: K636K

包装方式：一箱装 16 个，每个板子气泡袋包裹，刀卡隔开
The packing way: box of 16, each board wrapped in bubble bags, separated by knife cards