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	1000W 控制板
型号规格 Specification	1000W(BKT)
产品编码 Product Code	91601506000006
文件版本 File Version	V1.0
生效日期 Effective Date	2022-07-16

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

审核 Checked	2022/7/18	日期 Date	2022-07-16
批准 Approved		盖章 Stamp	

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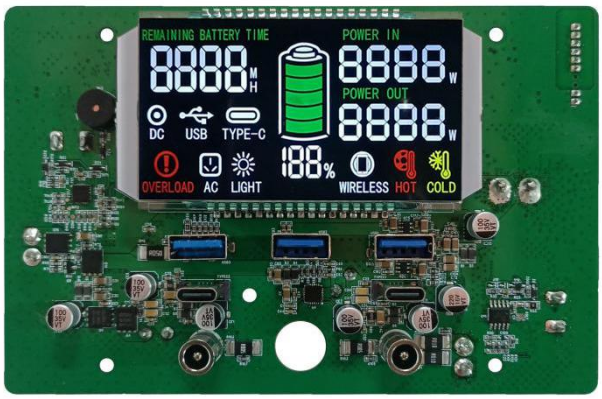
文件编号/版本 File No. /Version.

更新履历 Update history

序号 No.	版本 Version	日期 Date	更新说明 Updated instructions
1	V1.0	2022-07-16	制定 Initial release

目录



1.产品描述 The product description

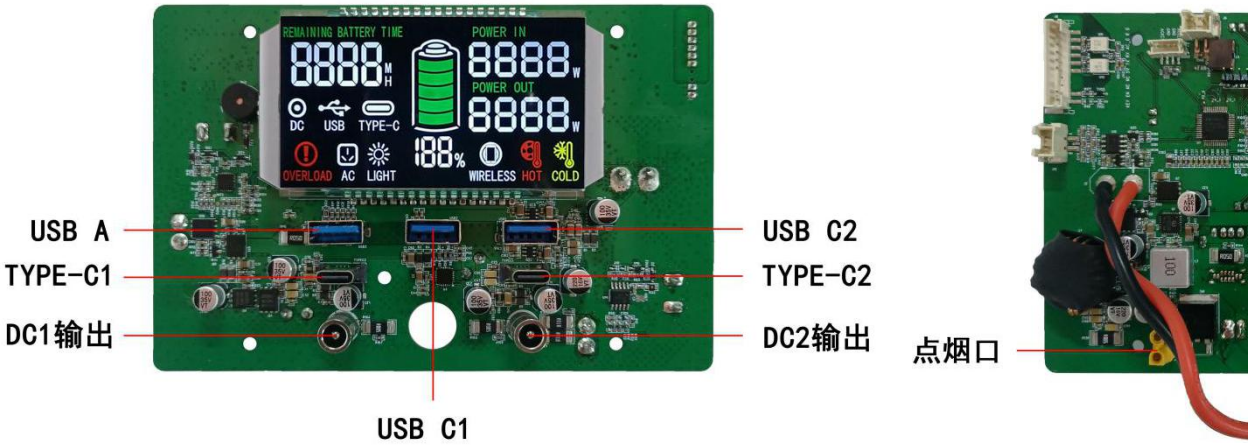
类别 Category	项目 Project	规格要求 Specifications	备注 Note
电池组 The battery pack	电芯组合方式 Combination mode of cell	4S 铁锂	
	电池规格 The battery specification	标称电压：12.8V，充满电压：14.4V Nominal voltage: 12.8V, full voltage: 14.4V	
输出功能 Output function	USB A	支持 QC2.0 Support QC2.0 5V@3.1A	
	USB C1、USB C2	支持 QC2.0 Support QC2.0 5V@3.6A，9V@2.5A，12V@2A	
	TYPE-C1、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	单向，36W One-way, 36W
	DC1、DC2　13V	12.3V5A 61.5W	总功率 120W Total power 120W
	点烟口放电 Smoke outlet discharges	12V10A 120W	
输入功能 Input function	DC 充电 DC charging	电压 10.3-30V，电流 2.9-4.7A Voltage 10.3-30V, current 2.9-4.7A	

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，每个键独立操作 Press the corresponding key to open/close the corresponding output, and each key operates independently			
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%			
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	144*94*28mm			

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	备注 Note
1	点烟口输出端口（板端） Smoke port output port(The plate end)	输出电压 Output voltage	11.4V-12.6V	电池端输入电压大于 12V The battery input voltage is greater than 12V
		标准功率 Standard power	120W(12V10A)	超功率时显示报警 Display alarm when overpower
		最大功率 Most powerful	122W(12V10.2A)	超功率显示报警并关闭输出 Overpower display alarm and turn off output

2	DC1 12.3V 5521 输出端口（板端） Output port(The plate end)	输出电压 Output voltage	11.68V-12.91V	电池端输入电压大于 12.3V The battery input voltage is greater than 12.3V
		标准功率 Standard power	61.5W(12.3V5A)	超功率时显示报警 Display alarm when overpower
		最大功率 Most powerful	67.6W(12.3V5.5A)	超功率显示报警并关闭输出 Overpower display alarm and turn off output
3	DC2 12.3V 5521 输出端口（板端） Output port(The plate end)	输出电压 Output voltage	11.68V-12.91V	电池端输入电压大于 12.3V The battery input voltage is greater than 12.3V
		标准功率 Standard power	61.5W(12.3V5A)	超功率时显示报警 Display alarm when overpower
		最大功率 Most powerful	67.6W(12.3V5.5A)	超功率显示报警并关闭输出 Overpower display alarm and turn off output
4	USB A1 5V@3.1A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	Apple2.4A Samsung-5V-2A USB-DCP-5V-1.5A
		输出过流 Output flow	3.3－3.8A	
5	USB C1 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
		输出过流 Output flow	3.7－4.2A	
	USB C1 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 C1 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 C2 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
		输出过流 Output flow	3.7－4.2A	
	USB C2 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 C2 12V@2A（板端）	输出电压 Output voltage	11.40V-12.60V	

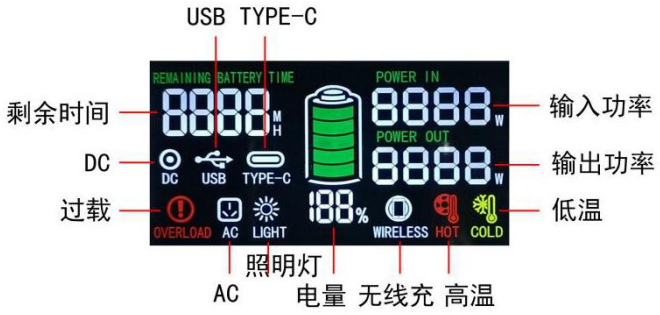
	(The plate end)	输出过流 Output flow	2.1－2.6A	
7	TYPE C1 5V@3A（板端） (The plate end)	输出电压 Output voltage	4.75V-5.25V	PD2.0 PD3.0 PPS Apple2.4A Samsung-5V-2A USB-DCP-5V-1.5A QC2-9V-12V QC3.0 Samsung-AFC-9V-12V Huawei-FCP-9V-2A Huawei-SCP-4.5V-5A
		输出过流 Output flow	3.1－4.2A	
	TYPE C1 9V@3A（板端） (The plate end)	输出电压 Output voltage	8.55V-9.45V	
		输出过流 Output flow	3.1－4.2A	
	TYPE 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 C2（板端） (The plate end)	PPS 电压 PPS voltage	3.3-11.0V	
		输出电流 Output current	3A	
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 Apple2.4A Samsung-5V-2A 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	3.1－4.2A	
	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（板端） (The plate end)	PPS 电压 PPS voltage	3.3-11.0V	
		输出电流 Output current	3A	

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	10.3	/	30	V	
	涓流充电阈值 Trickle charging	10.8	11.2	11.6	V	指电池组电压 Refers to the battery string voltage

	threshold					
	恒定充电电流 Constant charging current DC port	/	4.7	/	A	指输入端电流 Refers to the input current
	恒定充电电压 Constant charging voltage	14.4	14.60	14.80	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

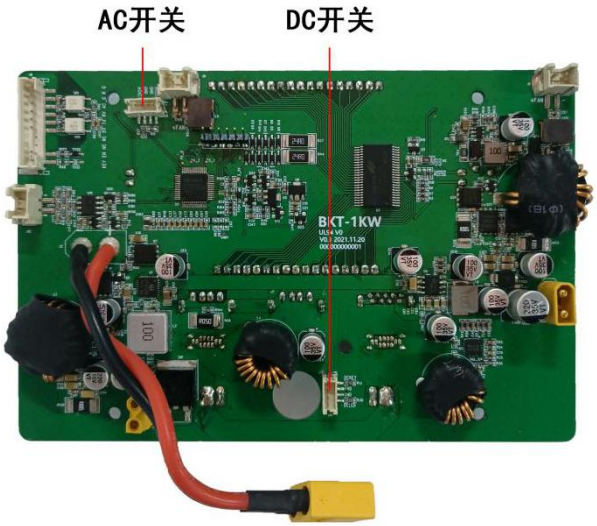
1.4 LCD 屏显示功能 LCD display function



屏显符号 Screen symbols	显示符号说明 Display Symbol Description	
电量指示 Power indicator	放电时 When the discharge	显示当前剩余电量 Displays the current remaining power
	低电量指示 Low power indicator	电量低于 5%时闪烁指示 Flash indicator when the power is below 5%
	充电时 When charging	DC 输入充电时，指示当前电量，百分比个位闪动 DC input charging, indicating the current power, percentage bit flashing
	充电满 Charging full	充电满后静止显示 100% When fully charged, the static display is 100%
开关 Switch	开关按键对应的图标参照面板按键功能 For the icon corresponding to the switch button, refer to the button function on the panel	
USB 带载指示 USB USB load indicator	过载时持续闪烁 Flashing continuously when overloaded	
DC 带载指示 DC DC load indication	过载时持续闪烁 Flashing continuously when overloaded	
TYPE-C 口指示 TYPE-C TYPE - C instructions	放电时 When the discharge	TYPE-C 口有插入设备时，该符号点亮 When a device is inserted into port type-c, the symbol is on
	输出过载时	过载时,该符号持续闪烁

	Output overload	The symbol continues to flash when overloaded
过载  Overload	AC 过载或短路时持续闪烁 Blinking continuously when AC is overloaded or short-circuited	
高温  High temperature	检测到有超温状态时显示 Display when overtemperature status is detected	
低温  High temperature	检测到有低温状态时显示 Display when low temperature is detected	
剩余时间 Low temperature	显示剩余使用时间 Displays the remaining usage time	
功率 Power	显示输入/输出功率 Display input/output power	
AC 功率输出指示 AC power output indicator	AC 输出口有带载时指示其输出的功率；无功率显示 0W，输出功率过载时该功率值闪烁提示；常开模式时显示 000W；输出大于 10W 时显示功率 AC output indicates its output power when there is load; No power display 0W, the power value flashing when the output power overload; Display 000W in normally open mode; Display power when output is greater than 10W	

1.5 面板按键功能 Panel button function



按键操作 keystrokes	对应图标显示 Corresponding icon display	功能描述 Functional description
AC 开关(有响声) AC switch (There is sound)		单击,开启/关闭 AC 逆变器输出功能 Click to enable or disable the output function of the AC inverter
DC 开关(有响声) DC switch (There is sound)		单击,开启/关闭 DC/USB Click to enable or disable the DC/USB

1.6 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.

1.7 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)

	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
正极  负极	J1 J6	2 个风扇端口（如图，从左往右依次） Two fan ports (as shown, from left to right) p1-FAN+ p2-FAN-
	J16	485BMS 通讯端口（如图，从左往右依次） 485BMS communication port (as shown, from left to right) p1-B p2-A
	J4	AC 开关端口（如图，从左往右依次） AC switch port (as shown, from left to right) p1-ACLED p2-GND p3-GND p4-ACKEY
	J14	DC 开关端口（如图，从左往右依次） DC switch port (as shown, from left to right) p1-DCLED p2-GND p3-GND p4-DCKEY
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	J2	电源输入 XT60 端口（如图，从左到右） Power input XT60 port (as shown, from left to right) p1-正极+ p2-负极-
正极  负极	J7	DC 输入 XT30 端口（如图，从左到右） DC input XT30 port (as shown, from left to right) p1-正极+ p2-负极-

1.8 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 1000W。

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 1000W.

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＝1000W*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 = 1000W* 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。

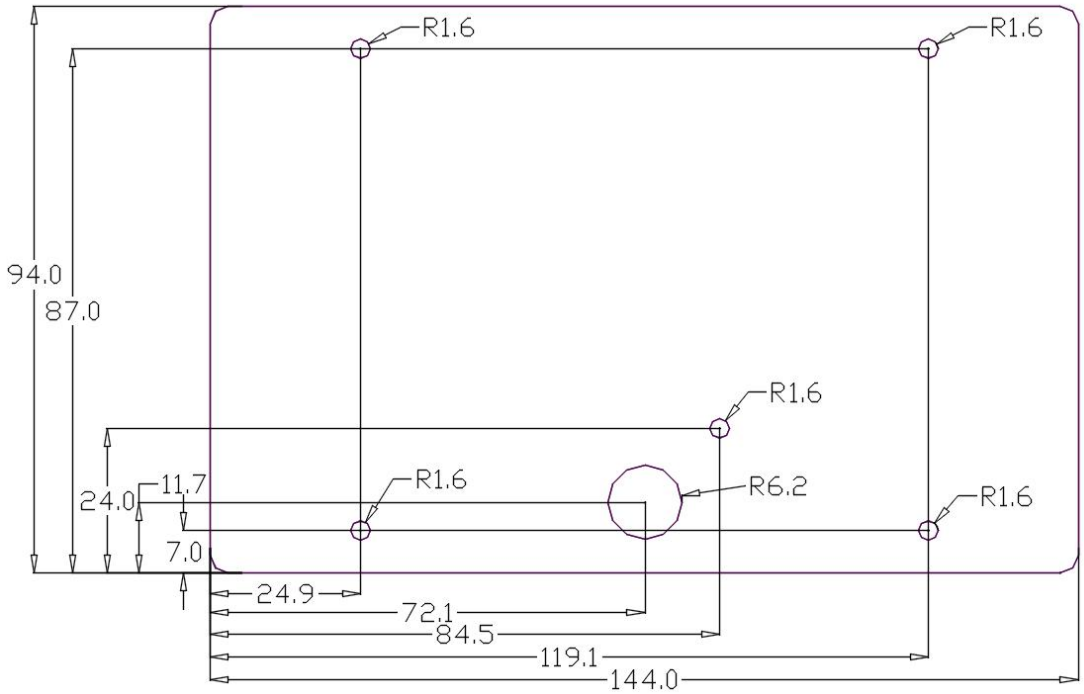
The power factor of common equipment: electronic computer host, electric fan is 0.8; Electronic computer external equipment is 0.5; Electric rice cooker, electric oven, electric frying pan and incandescent lamp are 1.0; 0.5 for straight fluorescent lamps; TV sets, energy-saving lamps and DVDS were 0.85.

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

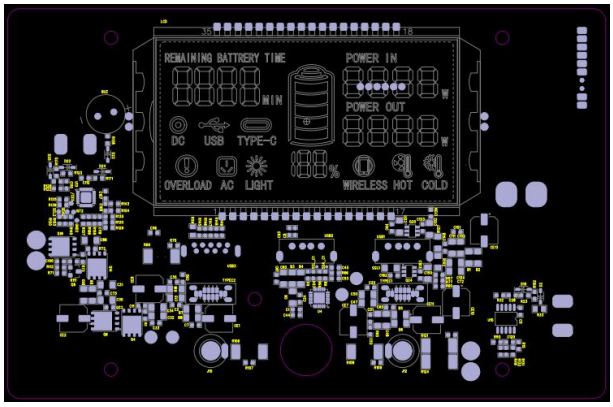
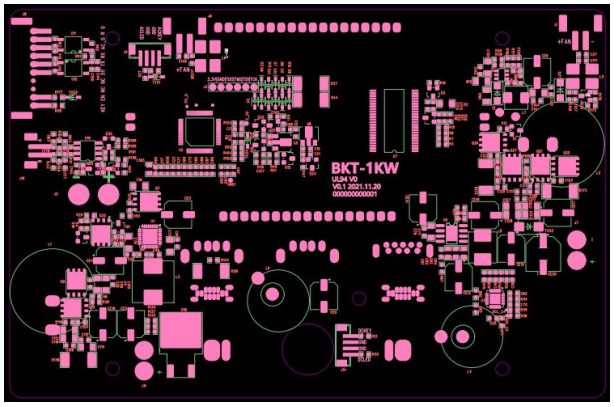
3.图 Figure

3.1 安装孔及 PCB 尺寸 Mounting hole and PCB size



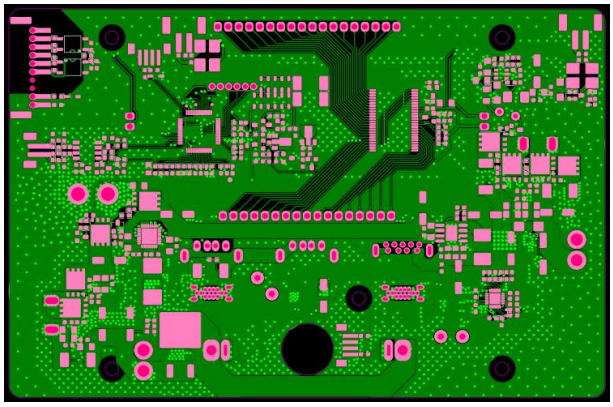
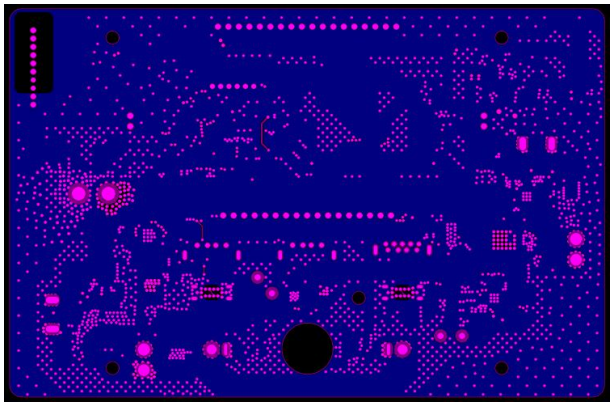
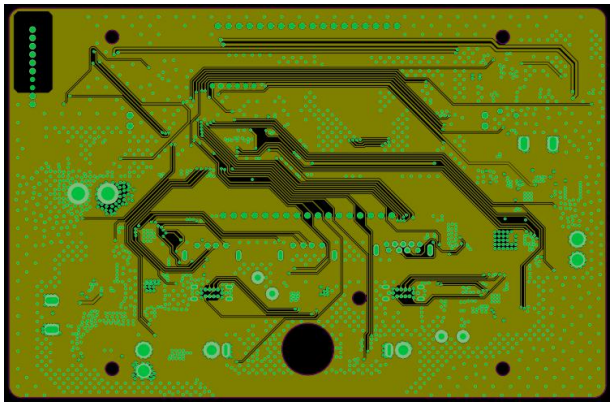
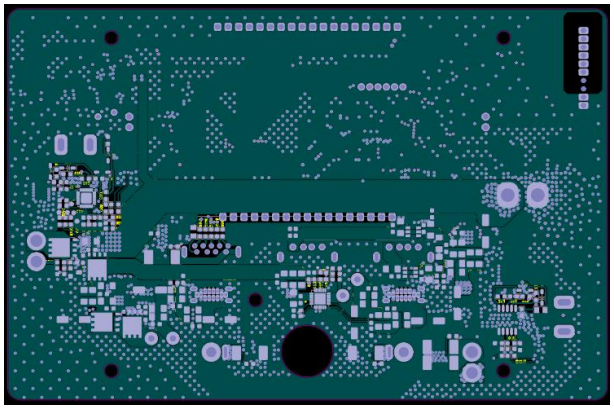
尺寸:长(144mm)*宽(94mm)
Size: L (144mm)* W (94mm)

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：521*360*236mm
Outer box size: 521*360*236mmmm

箱内刀卡尺寸：长刀卡 511*220mm / 短刀卡 350*220mm
Knife card size in the box: long card 511*220mm/short card 350*220mm

材质：K636K
Material: K636K

包方式：一箱装 24 个，每个板子气泡袋包裹，刀卡隔开
Packing: box of 24, each board wrapped in bubble bags, separated by knife cards