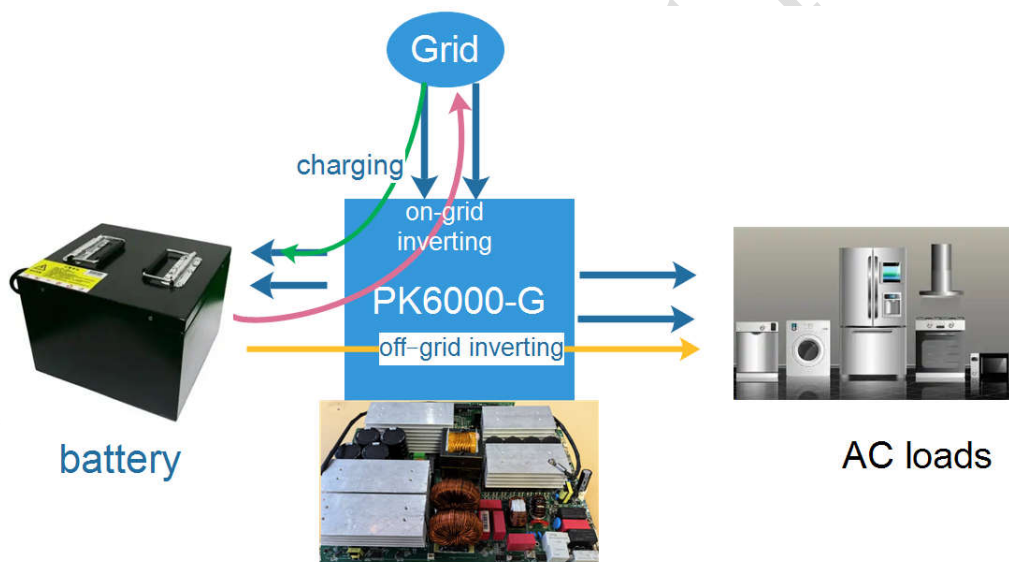# PK6000-G on grid inverter operation guide

The Shiningintl PK6000-G inverter board is the latest inverter board that supports on-grid function and off-grid function, the off-grid function means the PK6000-G board can invert AC output for the loads, at this time the inverter can take the battery DC power storage to the AC loads. And on-grid function means the PK6000-G can invert the battery DC power into the grid.

Shiningintl PK6000-G working diagram

Off-grid inverting: Battery to AC loads

On-grid inverting: Battery to Grid

1. connection，as shown in Figure 1 and figure 2, the connection point (IP.L) is the AC input Live wire, (IP.N) is the AC input Negative wire when in charging，the (BAT+) is the positive pole

for battery, DC power supply or loading, the (BAT-) is the

negative pole to connect to negative of battery , DC power

supply or loading .when in off-grid inverting mode, the OP.L and

OP.N are the output connection pole; when in on-grid inverting

mode, the (IP.L) and (IP.N) will become the output live pole and

negative pole to the grid.

如下图 1，图 2 所示，端子 (IP.L)和(IP.N) 分别接交流电输入火线，

零线；端

子 (OP.L)和 (OP.N)接输出负载；如图 3 所示，电池正端子 (BAT+)

接电池、直流电源或

电子负载正极，电池负接电池端子 (BAT-)、直流电源或电子负载负极。
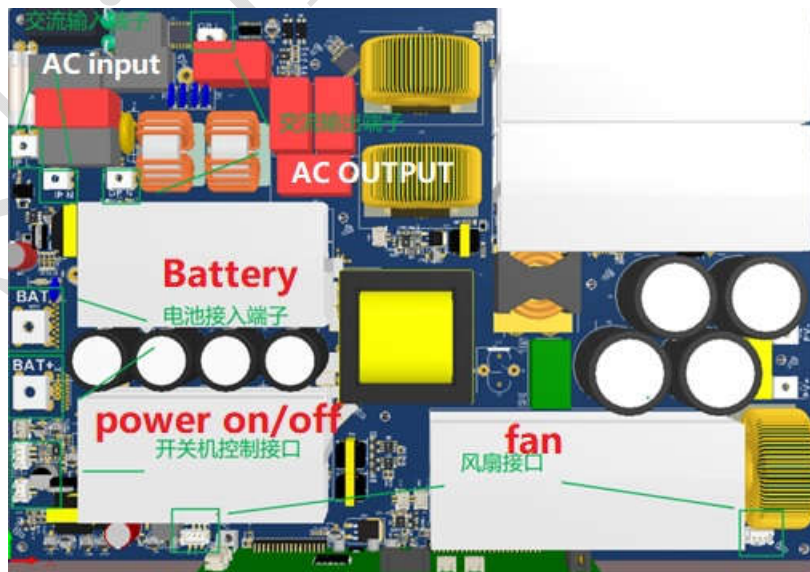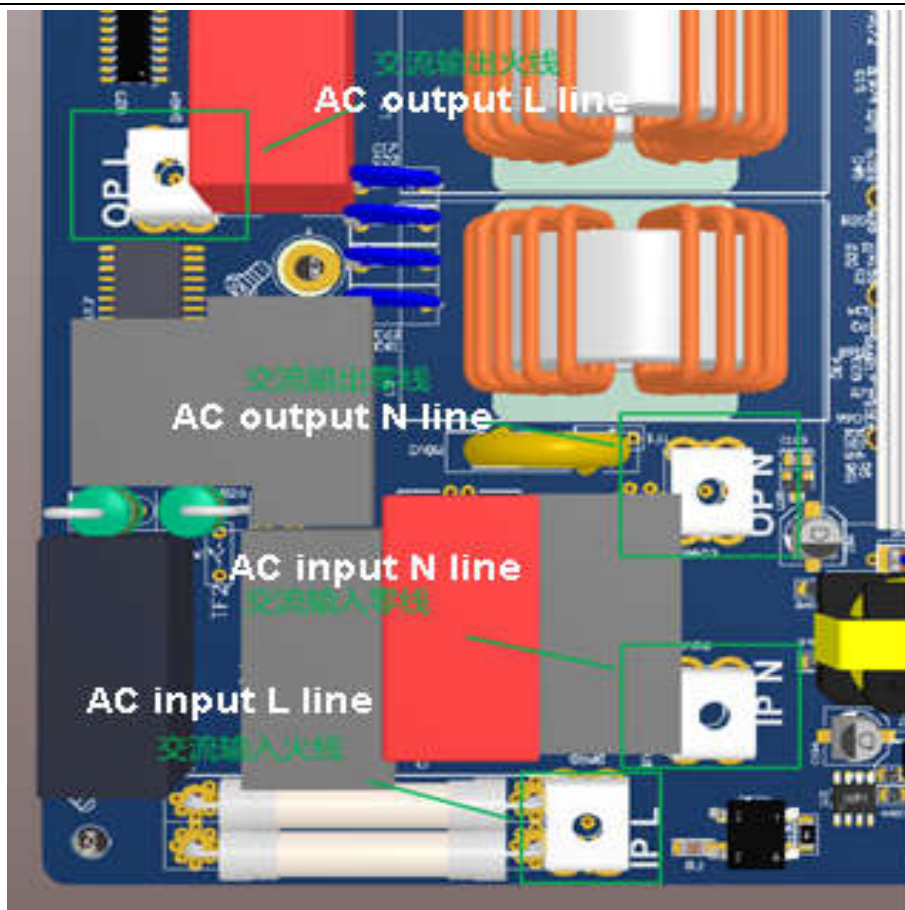
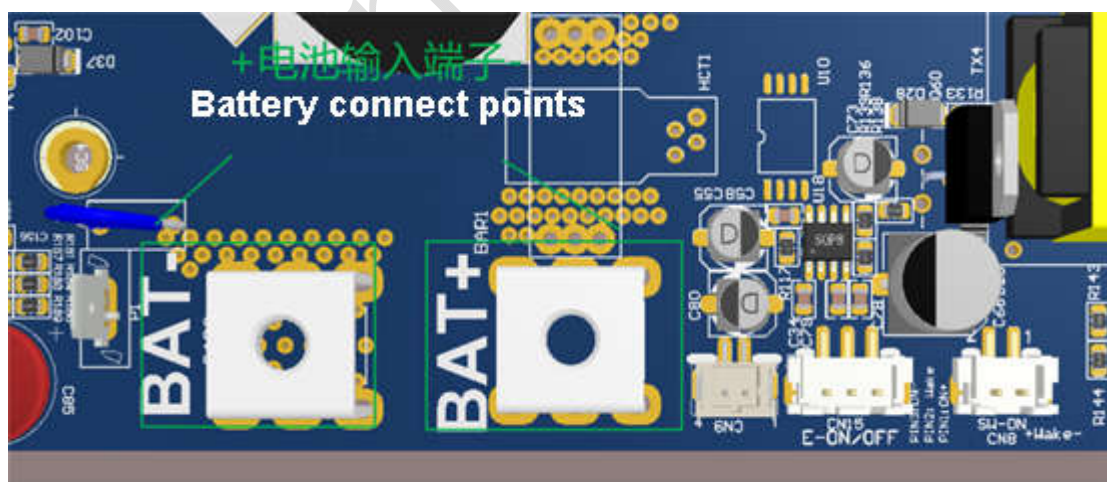在逆变模式时，(IP.L) 和(IP.N)为反向逆变输出端的正极和负极。

图 1

图 2

图 3

2. the fan connectors are CN7,CN13 ,CN12,CN14, total 4 fans support. Pin 1 is positive, pin3 is GND, the recommended fan specification is 12V 0.25A 8025, two fans as a group, one blow air and one pull air. If the box is too spacious, air duct paper should be added to confine the airflow to the main heating component, the fan comes with a continuous stepless speed regulation function, which automatically adjusts the speed according to its own load and temperature.

风扇接口位于板子右上角 CN7,CN13（见图 4、图 5）右下角 CN12,CN14 共 4 个，1 脚为正，3 脚为 GND, 推荐风扇规格为 12V 0.25A 8025 。

风扇 2 颗，一抽一吹，气流由左往右流，可视箱体结构设计情况选用不同数量/尺寸的风 扇，另外也应视箱体情况，若箱体过于空旷，应该加入风道纸， 使气流约束于主要发热元件中间，风扇自带连续无极调速功能，会根据自身负载量及温度自动调整转速。
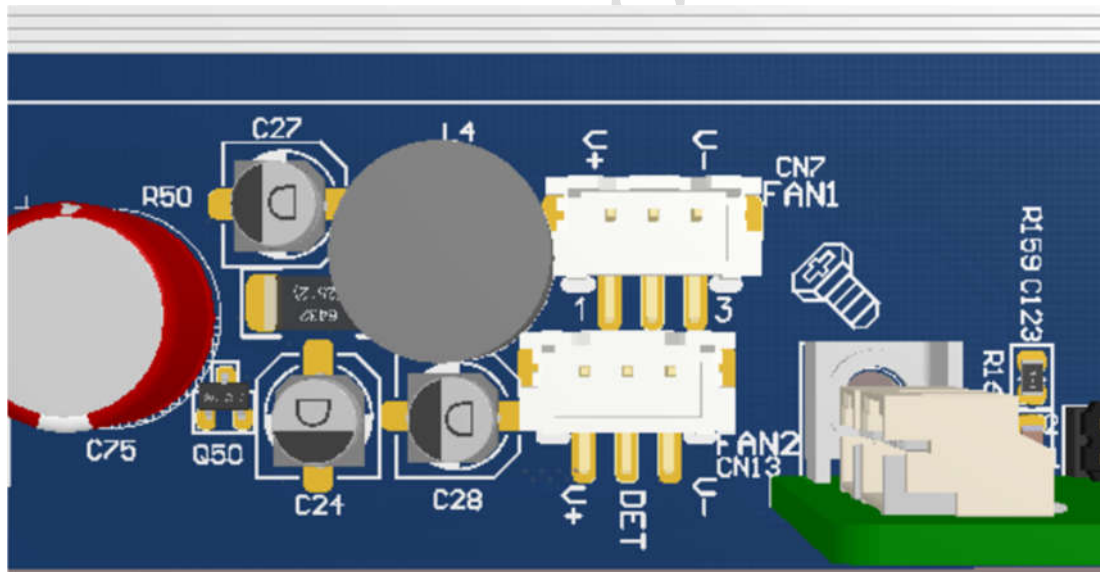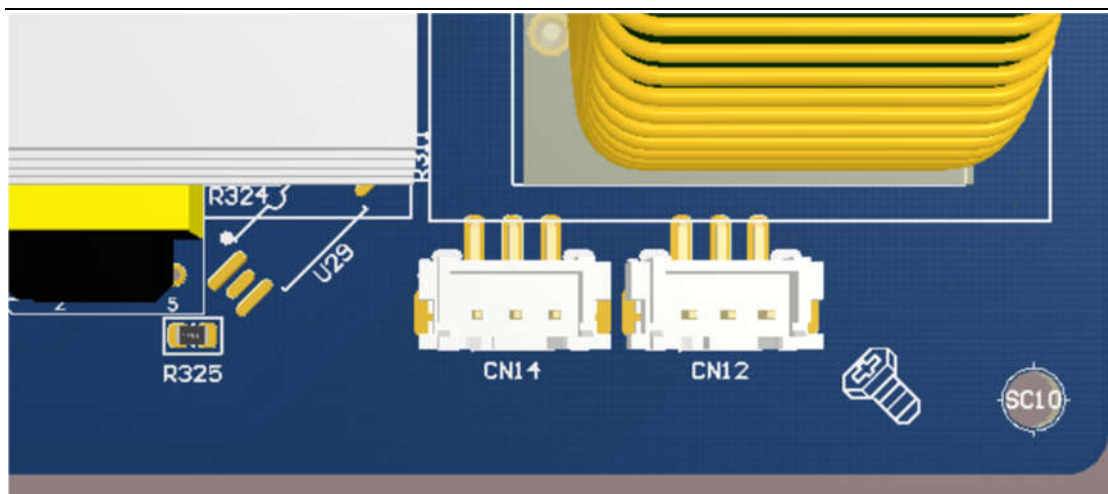
图 4

图 5

3. power on 开机

In battery mode, the inverter is immediately activated when power on. When the grid power input is normal, the bypass mode will be active when startup. There are three methods to power on:

After wiring, as shown in Figure 6, there are three ways to turn on the device
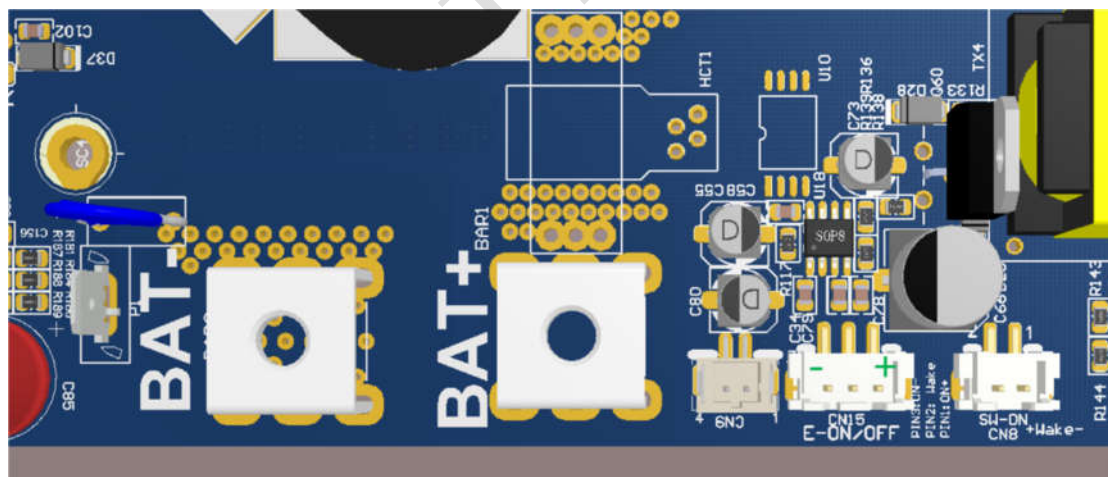
电池模式下开机即开启逆变。市电输入正常时开机即开启旁路输出。

接线后，如下图 6 所示，开机有三种方式 。

图 6

a. on CN15, supplying 5V/10ma high voltage will active the inverter, when in power on status, the low voltage will shut down the inverter, Pin1 is positive , Pin3 is negative.

在 CN15 给 5V/10mA 的信号，1 脚（最右）正极， 3 脚（最左）负极, 如图 4 所示，中间脚位空。 高电平持续开机，开机后电平变低关机 。

b. connect the CN8　to create short circuit,　the board will power up, break the short circuit to power off.

CN8 短路，在 CN8 接开关，开关导通开机，开机后按键断开关机 。

c. power on /power off by sending power on/power off command, please refer to the communication protocol 也可以在点亮机器后由主控发开机指令给逆变器开关机， 具体指令参考通信协议文档。

4．charging 充电

When the grid power is connected, the board will start to charge by receiving the charging command, will automatically stop charging when the battery is full. When detecting the battery voltage is 2V lower than the charging shutting voltage, the charging will restart 1 minutes later.

市电正常时，接入市电机器等待主控发送开启充电指令，充饱后关闭充电。检测到电池电压低于充电终止电压 2V，计时 1 分钟后重新开启充电。

5．inverting 转换

When ECO(UPS function) is enable, if board is in charging mode and grid power is shut off , the invert mode will active within 10ms, when the grid power recover, switch to bypass mode after 4s. When ECO(UPS function) is off, if the board is under charging and now the grid power is lost, the board will go into standby mode, if the board can't receive power on command within 30s, the board will shut down, otherwise it will go into invert mode to supply power.
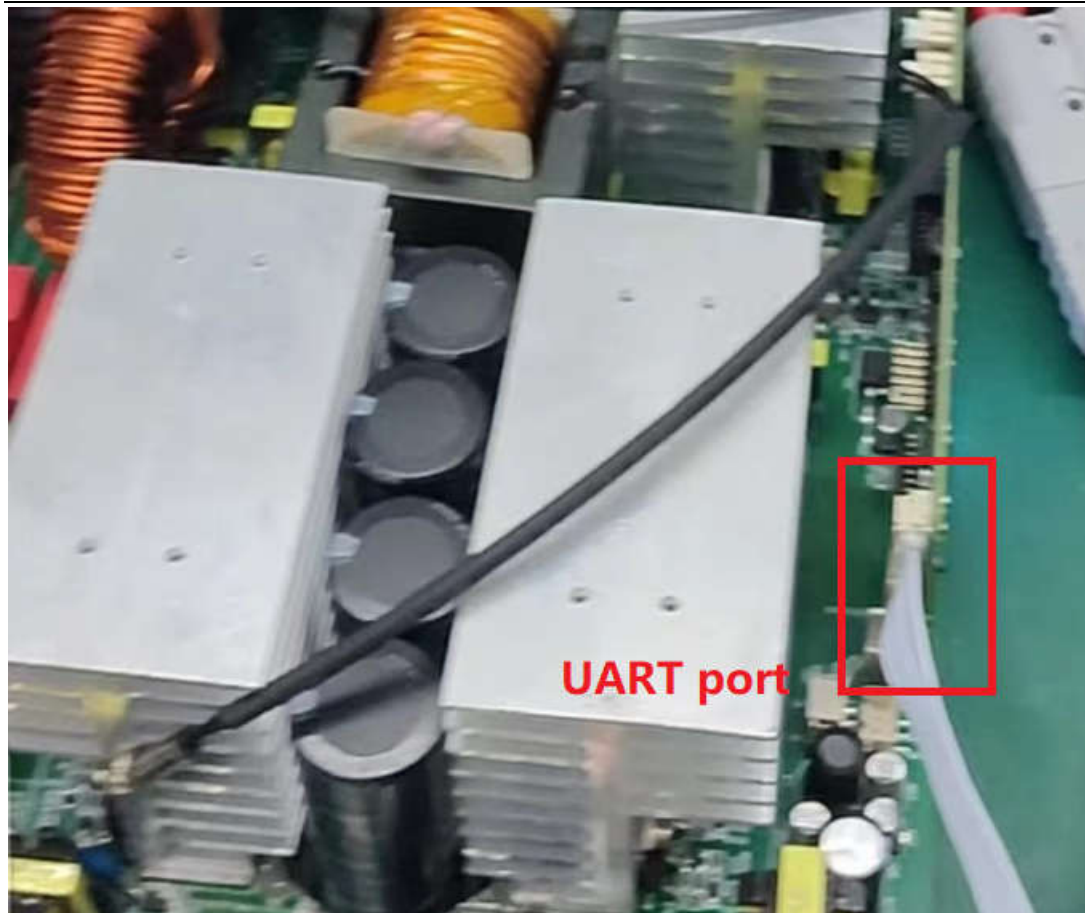
ECO（UPS 功能）使能时，充电状态下断市电 10ms 内转逆变模式，市电恢复约 4s 后转回旁路模式，等待充电指令重新开启充电，否则待在旁路模式。

ECO（UPS 功能）关闭时，充电状态下断市电进入待机模式，30s 内如没有收到主控板发出的开机指令则关掉自己的电源，收到则开启逆变进入电池放电模式。

6. Communication 通讯

Please connect the communication cable as below figure, one side connects to the inverter board, and the another side connect to the USB port of the computer.　Use attached sscom application on windows to communicate with the board. The detail commands please refer to the communication protocol document.

连接 UART 和电脑进行通讯，按照图示进行连接，一边接板上 uart 接口，一边连接电脑USB 口，使用串口通讯软件SSCOM或者类似的软件进行通讯，具体通讯命令请参考通讯
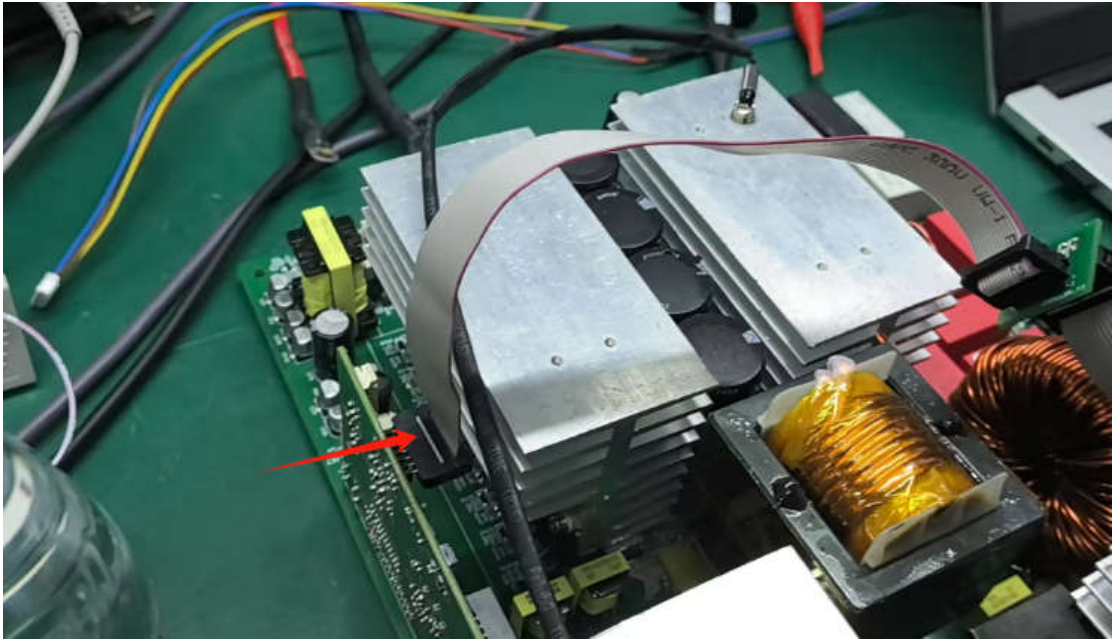
7. We have limited the charging current to over 110A , it means the charging current parameter is 1100,   the command is CHGI1100

8. Program update:

Shiningintl uses the programmer to download firmware to the inverter board, the programmer shown as below, one end to connect the computer, the other end to connect the inverter board JTAG port:

Step 1:

Connect the programmer with the inverter board as below picture shown. The red arrow directs the JTAG port of the board. When download the firmware, it don't need to connect AC power. And the another end ,plug the USB connector to the USB port of computer.

Step 2:
When the connection is correct, the small LED on the board will be lighted as below picture shown

Step 3:
Operate the firmware download procedures as the instructions in **Shiningintl Uniflash operation guide** document.