客服热线：400-830-3938 / 800-830-3938

CASTLE 系列
C1K-3K UPS

使用手册
USER MANUAL

SANTAK®
山特电子(深圳)有限公司

感谢您使用山特产品！

请严格遵守本手册中和机器上的所有警告及操作说明并妥善保管本手册。在没有阅读完所有的安全说明和操作说明以前，请不要操作UPS。

严 正 声 明

监管码声明

为了切实保障您的用电安全，帮助您购买到真正的山特 UPS，请注意以下事项：
1. 认准山特注册商标：SANTAK®、山特®
2. 山特电子（深圳）有限公司在中国从未以任何形式授权委托其它公司生产 UPS；
3. 山特所有产品机身上均贴有“电子监管码”（“电子监管码”是国家质检总局为打击假货推行的一种产品身份识别码）；
4. 消费者可以通过以下途径对产品电子监管码进行查验，并可通过“中国产品质量电子监管网”平台进行投诉、举报。

查询方式：
网站查询：登陆 **www.95001111.com.cn**（中国产品质量电子监管网），输入监管码进行查询 。
电话查询：**95001111**（未开通地区可拨打 **114**）；
短信查询：将监管码发送至 **106695001111**（移动、联通均可）；
如有疑问，可以拨打电话 **95001111** 或登陆 **www.95001111.com.cn** 点击“消费者通道”进行举报投诉。

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请到山特网站www.santak.com.cn下载最新版的产品说明书。

安 全 注 意 事 项

操作安全

1.在使用本产品前，请仔细阅读“安全注意事项”，以确保正确和安全的使用。并请妥善保存说明书。

2.操作时，请注意所有警示标记，并按要求进行操作。

3.避免在阳光直接照射、雨淋或在潮湿的环境使用本设备。

4.本设备不能安装在靠近热源区域，或有电暖炉、热炉等类似的设备附近。

5.放置**UPS**时，在其四周要留有安全距离，保证通风。安装时，请参照说明书。

6.清洁时，请使用干燥的物品进行擦拭。

7.若遇火警，请正确使用干粉灭火器进行灭火。若使用液体灭火器会有触电危险。

电气安全

1.上电前，请确认已正确接地，并检查接线和电池极性的连接正确。

2.当**UPS**需要移动或重新接线时，应将交流输入电源断开，并保证**UPS**完全停机，否则输出端仍可能带电，有触电的危险。

3.请使用山特指定的附加装置和附件。

4.为了符合**EMC**的要求，**UPS**的输出线长度应在**10**米以内。

电池安全

1.电池的寿命随环境温度的升高而缩短。定期更换电池可保证**UPS**工作正常，并保证足够的后备时间。

2.蓄电池维护只能由具备蓄电池专业知识的人员来进行。

3.更换蓄电池，必须使用相同类型和型号的蓄电池，且数量必须相同。

4.蓄电池存在电击危险和短路电流危险。为避免触电伤人事故，在更换电池时，请遵守下列警告：

A.不要佩带手表、戒指或类似金属物体；

B.使用绝缘的工具；

C.穿戴橡胶鞋和手套；

D.不能将金属工具或类似的金属零件放在电池上；

E.在拆电池连接端子前，必须先断开连接在电池上的负载。

5.请不要将蓄电池暴露于火中，以免引起爆炸，危及人身安全。

6.非专业人士请勿打开或损毁蓄电池，因为电池中的电解液含有强酸等危险物质，会对皮肤和眼睛都会造成伤害。如果不小心接触到电解液，应立即用大量的清水进行清洗，并去医院检查。

7.请不要将电池正负极短路，会导致电击或着火。

使用保养

1.使用环境及保存方法对本产品的使用寿命及可靠性有一定影响，因此，请注意避免在下列工作环境中使用：

- 超出技术指标规定（温度0℃～40℃，相对湿度20%～90%）的高、低温和潮湿场所；
- 有振动、易受撞的场所；
- 有金属性粉尘、腐蚀性物质、盐份和可燃性气体的场所。

2.如果长时间放置不使用，必须将UPS（不带电池）存放在干燥的环境中，存贮温度范围：－25℃～＋55℃。UPS开机之前，必须先让环境温度回暖至0℃以上，并维持一段时间。

目　　录

常用符号说明

下述符号有部分或全部会出现在使用手册或使用过程中，请了解它们的含义。

符号及含义	
符号	说明
	注意安全
	当心触电
	交流电
	直流电
	保护接地
	重复循环
	保持清洁，勿与杂物一同放置

城堡系列**UPS**是一种双转换在线式，单相输入，单相输出的不间断电源设备。产品具有高效率和高可靠性，为您的设备提供可靠、优质的交流电源。城堡系列**1～3kVA UPS**体积小巧，方便客户使用，特别适合金融、电信、政府、交通、制造、教育等用户的基础设备。

2.1 UPS 分类与配置

城堡系列**UPS**按照机器中电池部分的不同配置，可分为标准型和长效型两大类，标准型和长效型又各自按功率分：**1kVA**、**2kVA**和**3kVA**。

表2-1 UPS具体分类与配置表

UPS 分类		型号	备注
标准型	1kVA	C1K	内置 1A 充电器，3 节电池
	2kVA	C2K	内置 1A 充电器，6 节电池
	3kVA	C3K	内置 1A 充电器，8 节电池
长效型	1kVA	C1KS	内置 7A 充电器，电池外接
	2kVA	C2KS	内置 8A 充电器，电池外接
	3kVA	C3KS	内置 8A 充电器，电池外接

说明：“S ”表示长效型。

2.2 UPS 外观

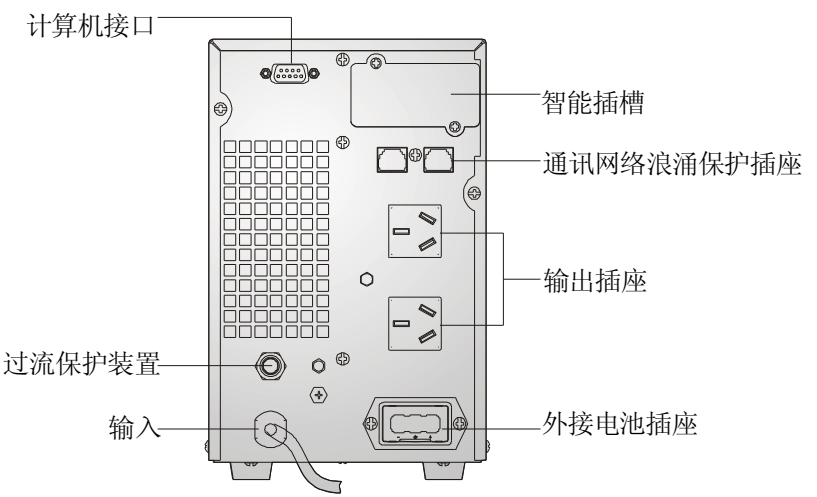


图2-1　C1KS后盖板

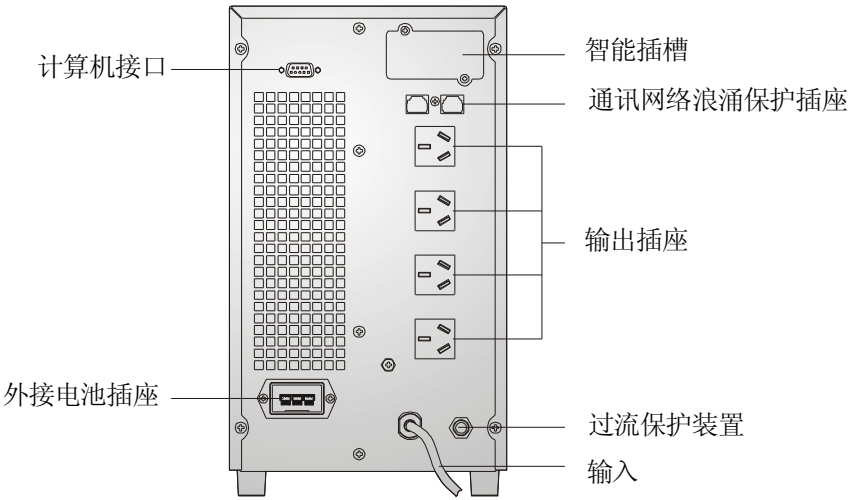


图2-2　C2KS后盖板

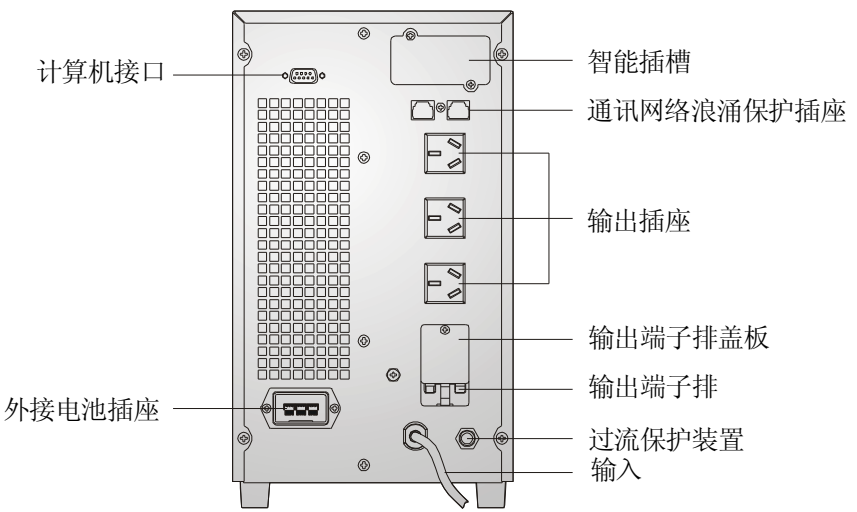


图2-3　C3KS后盖板

说明：*以上外观图都是以“长效型”为例，对应功率的“标准型”无“外接电池插座”。*

2.3 工作原理简介

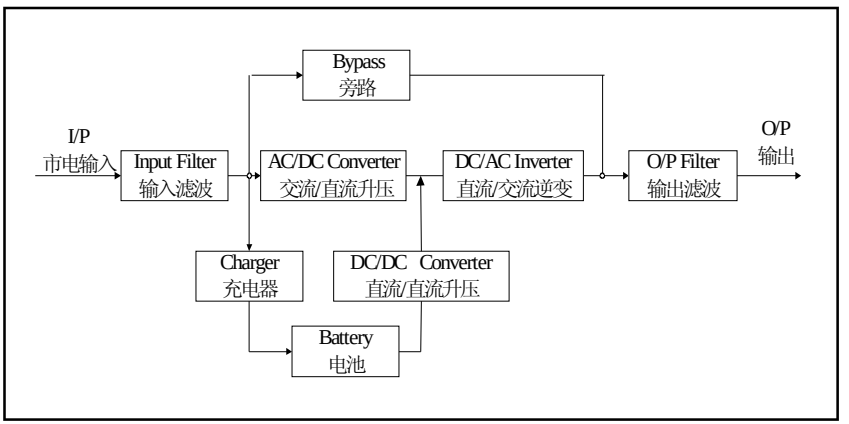


图2-4　UPS工作原理图

1. 输入滤波：完成对输入市电的滤波，为UPS提供干净的电源。
2. AC/DC升压：将经过滤波后的市电进行交流/直流转换，并对转换后的直流升压，供DC/AC逆变使用。
3. DC/DC升压：当UPS工作在电池供电模式时，由该电路进行直流升压处理，供DC/AC逆变使用。
4. DC/AC逆变:将经过升压处理的直流电转换成稳定的交流输出。
5. 旁路：当UPS发生过载、逆变异常等故障时，将自动切换到旁路供电模式保证负载不断电。
6. 充电器：标准型提供1A的充电电流；长效型1kVA提供7A的充电电流，2kVA和3kVA提供8A的充电电流。
7. 电池：适用电池类型为密封式免维护铅酸蓄电池。
8. 输出滤波：完成UPS输出滤波，为负载提供干净的电源。

3.1 开箱检查

1. 拆开UPS包装，目测机器外观，检查其是否在运输中有碰撞损坏。
2. 对照发货附件清单检查随机附件是否齐全（表3-1）。
3. 如发现运输损坏现象或随机附件缺少，请立即联系经销商。

表3-1　UPS发货附件清单

机型	附件名称	数量	单位
标准型	用户手册（光盘）	1	张
	简易安装操作指南	1	张
	环保信息卡	1	张
长效型	外接电池连接线	1	条
	用户手册（光盘）	1	张
	简易安装操作指南	1	张
	环保信息卡	1	张

3.2 安装注意事项

1. 放置UPS的区域需有良好通风，远离水、可燃性气体、腐蚀剂等危险物品，安装环境应符合产品规格要求。
2. 不宜侧放，保持前面板进风孔、后盖板出风口、箱体侧面出风孔通畅。
3. 机器若在低温下拆装使用，可能会有水滴凝结现象，一定要等到机器内外完全干燥后才可安装使用，否则有电击危险。
4. 将UPS放置在市电输入插座附近，任何紧急情况下，立即拔掉市电输入插头、断开电池输入，所有电源插座应连接保护地线。

3.3 接线

3.3.1 UPS输入输出接线

1. UPS输入接线方式

UPS输入电源线的连接请使用有过流保护装置的合适插座，注意插座容量，C1K(S)、C2K(S)、C3K(S)分别为10A、16A、16A以上。市电输入线一端已与UPS相连，另一端接市电插座即可，具体连接方式如下图所示：

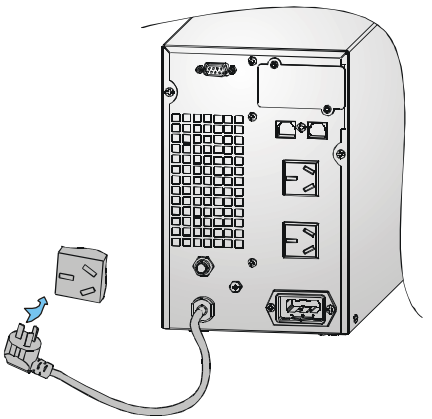


图3-1　C1K(S)～C3K(S)输入接线方式

2.　UPS输出接线方式

表3-2 UPS输出方式归纳表

功率	机型	输出插座数（个）	端子排
1kVA	C1K/ C1KS	**2**	无
2kVA	C2K/ C2KS	**4**	无
3kVA	C3K/ C3KS	**3**	有

◆ C1K(S)、C2K(S) 、C3K(S) **UPS** 都可采用插座输出，将负载电源线插入**UPS**输出插座即可。同时总输出功率不得超过**1kVA/0.8kW，2kVA/1.6kW，3kVA/2.4kW**，具体接线如下图所示：

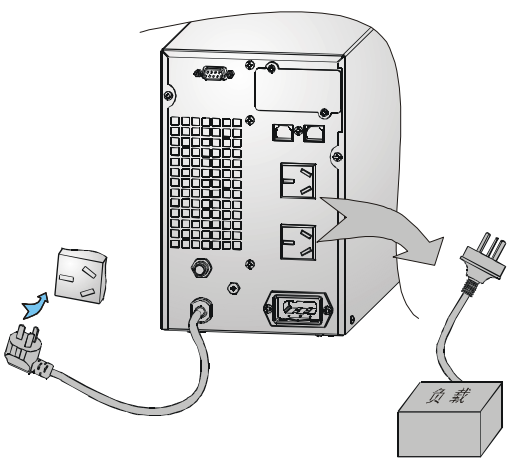


图3-2　C1K(S)～C3K(S)输出接线方式

◆ **C3K(S)**除了使用插座输出外，还提供端子排方式输出，当输出电流大于**10A**时建议用端子排为负载配线，其配线步骤如下：

1) 将端子排盖板取下；
2) 采用 AWG14 或 2.1mm² 的线材进行配线；
3) 配线完毕后，请检查连接的线材是否牢固；
4) 将端子排盖板装回箱体。

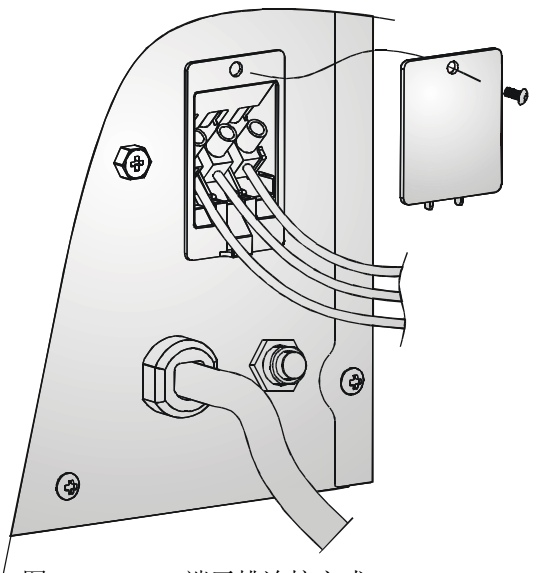


图3-3　C3K(S)端子排连接方式

警告：*非专业人士请勿使用端子排为负载配线，以免触电。*

3.3.2 长效型UPS外接电池接线

电池连接程序非常重要，若未按照程序进行，可能会有电击危险，所以请严格按照下列步骤进行：

1. 先串连电池组确保合适的电池电压，**C1KS**为**36VDC**，**C2KS**为**72VDC**，**C3KS**为 **96VDC**。

2. 取出长效型 **UPS** 附件中的电池连接线，该线一端为插头用以连接 **UPS**，另一端为开放式三根线用以连接电池组。

3. 电池连接线先接电池端（切不可先接 **UPS** 端，否则会有电击危险）红线接电池正极“**+**”，黑线接电池负极“**-**”，黄绿双色线接保护地。

4. 将电池连接线插头插入**UPS**后面板上的外接电池插座，完成**UPS**的连接。

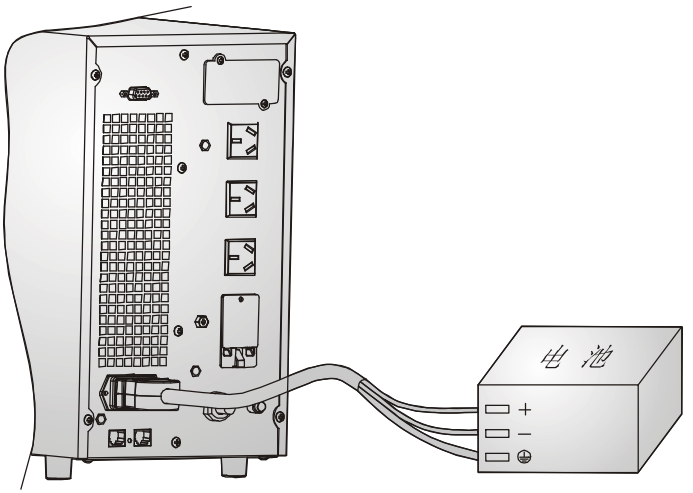
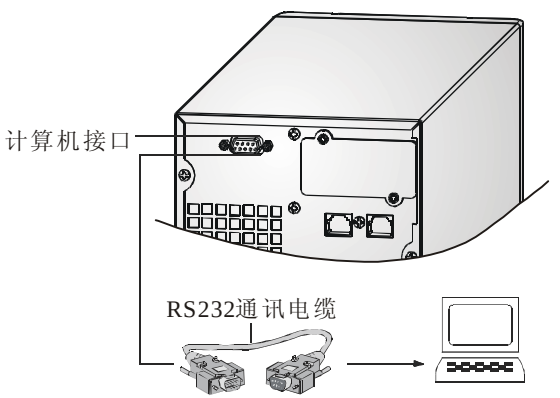


图 **3-4**　长效型 **UPS** 电池连接示意图

注意：*电池连接线为标准配置，如果客户需要更长的电池连接线，请咨询经销商。电池连接线不可无限加长，否则会影响* ***UPS*** *的正常使用。*

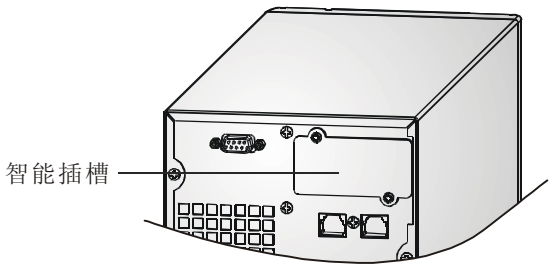
3.3.3 连接通讯线

1. 一般通讯连接



计算机接口：通过通讯电缆连接UPS与监控设备。可使用山特图形化的 **WinPower**监控软件(可从山特网站免费下载)。

2. 选用通讯连接



智能插槽：可选装 AS400 卡、SNMP 卡或 CMC 卡任意一种

a － AS400 卡：可直接利用有 AS400 接口系统的监控功能，对电源进行监控管理

b － SNMP 卡：可以通过 SNMP 卡上网与后台监控计算机通信，实现对 UPS的远程监控

c － CMC 卡：集中监控卡

注意： *1．装入选配的卡之前请将智能插槽上的盖板取掉．*

2．WinPower *软件及* ***AS400***、***SNMP***、***CMC*** *卡的使用请参考其他相关资料，如果对上述接口的使用有疑问，请联络山特客服中心。*

3． *智能插槽适配卡分长卡与短卡，本手册描述的机种需匹配短卡使用。*

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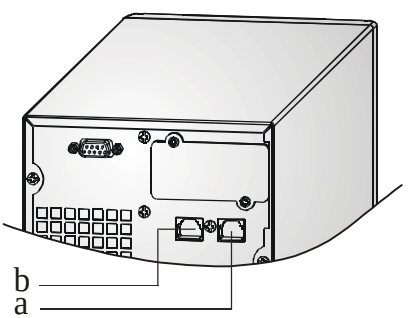
3. 通讯网络浪涌保护接口



a －输出接口：连接需要保护的设备

b －输入接口：连接电话线及网络

4.1 操作显示面板

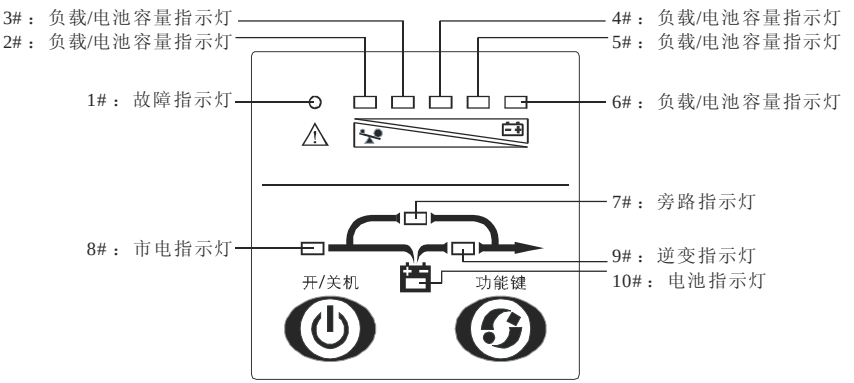


图**4-1**　操作显示面板

1、开 **/** 关机键

开 **/** 关机键的主要功能为：

1) 开机：按开 **/** 关机键 **1** 秒以上即可开机。

2) 关机：当 **UPS** 处于市电模式、电池模式时，按开 **/** 关机键 **1** 秒以上即可关机。

2、功能键

功能键的主要功能为：

1) 电池自检：在市电模式下，按功能键**2**秒以上可启动电池自检，执行电池自操作。

2) 电池模式下的消音：按功能键**2**秒可消除电池模式下的告警声，再持续按功能键 **2** 秒以上，告警恢复。

注意：*功能键的消音功能只能消除电池模式下的告警声，对于* ***UPS*** *的其他所有故障告警声的消除无效。*

3、**LED** 指示灯

包括故障指示灯、负载 **/** 电池容量指示灯、旁路指示灯、市电指示灯、逆变指示灯、电池指示灯。

表 **4-1**　**LED**指示灯显示意义说明

面板灯号	指示灯名称	颜色	说明
1#	故障指示灯	红色	此灯亮表示 UPS 发生异常状况
2#	负载/电池容量指示灯	橙色	表示负载容量或电池容量: 1.市电模式/旁路模式下仅表示负载容量，作为负载指示灯 2.电池模式下仅表示电池容量，作为电池容量指示灯
3#	负载/电池容量指示灯	绿色	
4#	负载/电池容量指示灯	绿色	
5#	负载/电池容量指示灯	绿色	
6#	负载/电池容量指示灯	绿色	
7#	旁路指示灯	橙色	此灯亮表示负载电力直接由市电提供
8#	市电指示灯	绿色	此灯亮市电输入正常
9#	逆变指示灯	绿色	此灯亮表示市电或电池经逆变输出后为负载供电
10#	电池指示灯	橙色	此灯亮表示电池电能为负载供电

4.2 运行模式

UPS 的运行模式可分为市电模式、电池模式和旁路模式。

4.2.1 市电模式

市电模式下运行的面板指示灯如下图所示,此时市电指示灯与逆变指示灯会亮，负载指示灯会根据所接的负载容量大小点亮。

1. 市电指示灯闪烁，表示零、火线接反或者没有接大地，UPS 仍工作于市电模式; 若同时电池指示灯亮，表示市电的电压或频率已超出正常范围，UPS 已经工作在电池模式下。

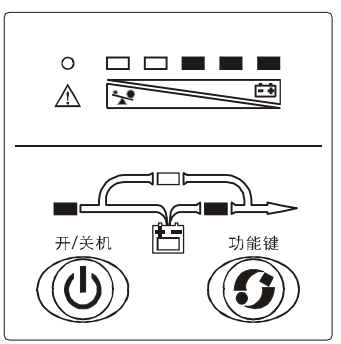


图4-2　市电模式

2. 若负载容量超过100%，蜂鸣器半秒叫一次，它提醒您接了过多的负载,您应该将非必要的负载逐一去除,直到UPS负载量小于100%。

3. 若电池指示灯闪烁，则表示UPS未接电池或电池电压太低，此时应检查电池是否连接好，并按功能键2秒，进行电池自检。确认连接无误，可能是电池故障或老化，请参见第六章故障处理表。

注意：*若接发电机，需按以下步骤运行：*

- *启动发电机，待其运行稳定后将发电机的输出电源接到* ***UPS*** *输入端（此时要确定* ***UPS*** *为空载），然后按开机程序启动* ***UPS***，***UPS*** *启动后再逐个连入负载。*
- *建议以* ***UPS*** *的两倍容量来选择发电机容量。*

4.2.2 电池模式

电池模式下运行的面板指示如下图所示，此时电池指示灯和逆变指示灯亮; 若接入异常之市电,市电灯会同时闪烁。电池容量指示灯会根据电池容量的大小点亮,注意市电模式下的负载指示灯会作为在后备时间内的电池容量水平指示。

1. 在电池模式运行时，蜂鸣器每隔4秒鸣叫一次，若此时持续按功能键2秒以上，UPS执行消音功能，蜂鸣器不再鸣叫报警，再持续按功能键2秒以上，报警恢复。

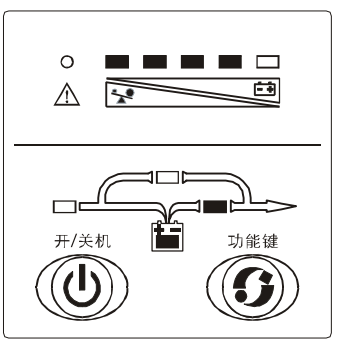


图4-3　电池模式

2. 当电池容量减少时，发光的电池容量指示灯数目会减少，当电池电压下降至预警电位时(此时可保持大于2分钟的备用时间)蜂鸣器每一秒鸣叫一次,提示用户电池容量不足,应抓紧进行负载操作并逐一去除负载)。

3. 可以通过 UPS 不接市电以检验后备功能。

4.2.3 旁路模式

通过 WinPower 设置 UPS 使其工作在旁路状态。旁路模式下运行的面板指示如下图所示,市电指示灯与旁路指示灯亮,负载指示灯会根据所接负载容量大小点亮。UPS 两分钟叫一次。

1. 若市电指示灯闪烁,表示市电的电压或频率已超出正常范围或市电零、火线接反或者没有接大地。
2. 其他面板指示灯与市电模式描述一样。
3. UPS 工作在旁路模式下时，不具备后备功能。此时负载所使用的电源是直接通过电力系统经滤波供应的。

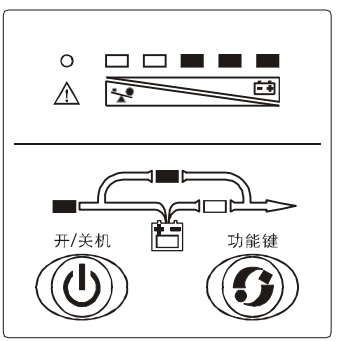


图4-4　旁路模式

4.3 操作

4.3.1 开关机操作

注意：*虽然电池在出厂时已充满电，但经过运输、存储，电量会有所损失， 建议在第一次使用* ***UPS*** *前应先对电池充电* ***10*** *小时，已保证有足够的备用时间。*

1 开机操作

开机操作分为：接市电**UPS**开机和未接市电**UPS**直流开机

1) 接市电**UPS**开机

接通市电，持续按开**/**关机键**1**秒以上，**UPS**进行开机。开机时**UPS**会进行自检。此时，面板上负载**/**电池容量指示灯会全亮，然后从左到右逐一熄灭，几秒钟后逆变指示灯亮，**UPS**已处于市电模式下运行。若市电异常，**UPS**将工作在电池模式下。

2) 未接市电**UPS**直流开机

无市电输入时，持续按开**/**关机键**1**秒以上，**UPS**进行开机。开机过程中**UPS**动作与接市电开机时相同，只是市电指示灯不亮，电池指示灯会亮。

2 关机操作

关机操作分为：市电模式、电池模式

1) 市电模式下**UPS**关机

持续按开**/**关机键**1**秒以上，**UPS**进行关机。若用**WinPower**设置市电逆变关机**UPS**转旁路模式，旁路指示灯会亮， **UPS**工作在旁路模式下，**UPS**仍有输出，若要使**UPS**无输出，只要将市电断开即可，面板上负载**/**电池容量指示灯会全亮并逐一熄灭，**UPS**无输出电压。

2) 电池模式下的**UPS**关机

持续按开**/**关机键**1**秒以上，**UPS**进行关机。关机时**UPS**会进行自检。此时，面板上负载**/**电池容量指示灯会全亮并逐一熄灭，最后面板无显示，**UPS**无输出电压。

4.3.2 电池自检操作

UPS运行期间，用户可通过手动启动电池自检来检查电池状态。启动电池自检的方法为：

1. 通过功能键

在市电模式下，持续按功能键**2**秒以上，直到听到蜂鸣器“嘀”的一声响，**7#**～**10#**指示灯循环闪烁，**UPS**转电池模式，进行电池自检。电池自检默认持续时间**10**秒（用户也可通过**WinPower**设置）。电池

自检期间，如发生电池故障，**UPS** 将自动转市电模式工作。

2. 通过后台监控软件

用户也可通过后台监控软件启动电池自检。

4.3.3 LED显示与告警声

序号	工作状态		面板灯号显示										告警声
			1#	2#	3#	4#	5#	6#	7#	8#	9#	10#	
1	市电工作模式	0%--35%负载量						●		●	●		无
2		36%--55%负载量					●	●		●	●		无
3		56%--75%负载量				●	●	●		●	●		无
4		76%--95%负载量			●	●	●	●		●	●		无
5		96%--105%负载量		●	●	●	●	●		●	●		无
6	电池工作模式	0%--25%电池容量		●							●	●	每一秒鸣叫一次
7		26%--50%电池容量		●	●						●	●	每四秒鸣叫一次
8		51%--75%电池容量		●	●	●					●	●	每四秒鸣叫一次
9		76%--100%电池容量		●	●	●	●				●	●	每四秒鸣叫一次
10		100%电池容量		●	●	●	●	●			●	●	每四秒鸣叫一次
11	旁路工作模式			↑	↑	↑	↑	●	●	●			每两分钟鸣叫一次
12	市电工作模式过载，转旁路		●	●					●	●			长鸣
13	市电异常			↑	↑	↑	↑	●	↑	★	↑	↑	↑
14	电池工作模式过载，预警中		●	●							●	●	每一秒鸣叫两次
15	电池工作模式过载，关断输出		●	●									长鸣
16	过温		●					●	↑	↑			长鸣
17	逆变异常		●				●		↑	↑			长鸣
18	BUS 电压异常		●			●			↑	↑			长鸣
19	市电输入 NTC 开路		●				●	●					长鸣
20	充电器输出电压过高		●		●				↑	↑			长鸣
21	电池电压异常		↑	↑	↑	↑	↑	●				★	↑
22	市电输入零火线接反或未接大地			↑	↑	↑	↑	●	↑	★	↑	↑	每两分钟鸣叫一次
23	充电板或电池损坏		●							↑	↑	★	每一秒鸣叫一次
24	输出短路		●	●			●			↑			长鸣
25	风扇工作异常		●	●				●	↑	↑	↑		每一秒鸣叫一次

灯号显示说明：

●：表示持续亮　　★：表示闪烁　　↑：　表示灯号显示或告警声取决于其它状态

5.1 电池维护

电池是 UPS 系统的重要组成部分。电池的寿命取决于环境温度和放电次数。高温下使用或深度放电都会缩短电池的使用寿命。

1. 标准型内置电池为密封式免维护铅酸蓄电池。**UPS**在同市电连接时，不管开机与否，始终向电池充电，并提供过充、过放保护功能。
2. 电池使用应尽量保持环境温度在 **15** 到 **25**℃之间。
3. 若长期不使用 **UPS**，建议每隔 **3** 个月充电一次。
4. 正常使用时，电池每 **4** 到 **6** 个月充、放电一次，放电至关机后充电。在高温地区使用时，电池每隔 **2** 个月充、放电 **1** 次，标准型 **UPS** 每次充电时间不得少于 **10** 小时。
5. 电池不宜个别更换。更换时应遵守电池供应商的指示。
6. 正常情况下，电池使用寿命为 **3** 到 **5** 年，如果发现状况不佳，则必须提早更换，电池更换必须由专业人员操作。

注意： *1. 更换电池前须先关闭 **UPS** 并脱离市电*
2. 脱下戒指、手表之类的金属物品
3. 使用带绝缘手柄的螺丝刀，不要将工具或其他金属物放在电池上
4. 千万不可将电池正负极短接或反接

5.2 UPS 的功能检查

每次现场维护时，均应对 UPS 进行常规功能检查，主要包括以下几个方面：

1. 检查UPS的工作状况
   如市电正常，UPS 应工作在市电模式；如市电异常，UPS 应工作在电池模式。且两种工作状态下均无故障显示
2. 检查UPS的运行模式切换
   断开市电输入模拟市电掉电，UPS 应切换到电池供电模式并正常运行；然后再接通市电输入，UPS 应切换回市电模式并正常工作
3. 检查UPS的指示灯显示
   以上两项检查过程中，检查 UPS 的指示灯显示是否与其实际运行模式一致。

当您的UPS出现异常情况时，请先按下表进行检查及排除故障。如果问题仍然存在，请与山特客服中心联系。

表6-1 UPS故障处理表

故障现象	原因	解决方法
1#故障指示灯与 6#灯亮，蜂鸣器长鸣	UPS 因内部过热而关闭	确保 UPS 未过载，通风口没有堵塞，室内温度未过高，等待 10 分钟让 UPS 冷却，然后重新启动，如失败，请同您的供应商联系
1#故障指示灯与5#灯亮，蜂鸣器长鸣	UPS 因内部故障关闭	请同您的供应商联系
1#故障指示灯与4#灯亮，蜂鸣器长鸣	UPS 因内部故障关闭	请同您的供应商联系
1#故障指示灯与3#灯亮，蜂鸣器长鸣	UPS 过充电保护动作	UPS 充电器故障，请同您的供应商联系
8#市电指示灯闪烁	市电电压或频率超出 UPS 输入范围（开机时 UPS 一秒两叫，连叫八声）	此时 UPS 正工作于电池模式，保存数据并关闭应用程序，确保市电处于 UPS 所允许的输入电压或频率范围
	市电零、火线接反，UPS 两分钟一叫	重新连接使市电零、火线正确连接
1#故障指示灯与 2#灯亮，蜂鸣器长鸣	电池模式 UPS 过载或负载设备故障	检查负载水平并移去非关键性设备，重新计算负载功率并减少连接到 UPS 的负载数量检查负载设备有否故障
1#故障指示灯与 2#、6#灯亮，蜂鸣器一秒一叫	UPS 风扇未接或风扇损坏	请同您的供应商联系
1#故障指示灯与 2#、5#灯亮，蜂鸣器长鸣	UPS 输出短路	关掉 UPS，去掉所有负载，确认负载没有故障或内部短路，重新开机，如失败，请同您的供应商联系
10#电池灯闪烁	电池电压太低或未连接电池	检查 UPS 电池部分，连接好电池，若电池损坏，请同您的供应商联系
1#故障灯亮，10#电池灯闪烁，蜂鸣器一秒一叫	UPS 充电部分故障	请同您的供应商联系
市电正常，UPS 不入市电	UPS 输入断路器断开	手动使断路器复位
电池放电时间短	电池充电不足	保持 UPS 持续接通市电 10 小时以上，让电池重新充电
	UPS 过载	检查负载水平并移去非关键性设备
	电池老化，容量下降	更换电池，请同您的供应商联系，以获得电池及其组件
开机键按下后，UPS 不能启动	按开机键时间太短	按开机键持续一秒以上，启动 UPS
	UPS 没有接电池或电池电压低并带载开机	连接好 UPS 电池，若电池电压低，先行关电后再空载开机
	UPS 内部发生故障	请同您的供应商联系

当您需要向山特客服人员反映故障情况，请务必记录并告知以下信息：

- **UPS** 型号（**MODEL NO.**）、机器批号（**SERIAL NO.**）
- 故障发生日期
- 完整的问题说明（包括面板指示灯显示、蜂鸣器鸣叫情况、电力情况、负载容量,若为长效机还需提供电池配置情况）

7.1 基本电气性能

型号			C1K	C1KS	C2K	C2KS	C3K	C3KS
额定容量			1kVA/800W		2kVA/1600W		3kVA/2400W	
输入	输入方式		单相接地					
	额定电压		220VAC					
	电压范围		115VAC～300VAC					
	频率		50Hz					
	功率因数		0.98					
	旁路电压		80VAC×(1±5%)～285VAC×(1±5%)					
输出	输出方式		单相接地					
	额定电压		220VAC					
	功率因数		0.8					
	电压精度		±2%					
	输出频率	市电模式	1.输入频率在 46 Hz～54 Hz 时，输出和输入保持一致 2.输入频率小于 46Hz 或大于 54Hz 时输出频率锁定为 50Hz					
		电池模式	50±0.2 Hz					
	过载能力（市电，25℃）		108%±5%<负载≤150%±5%　大于 25s 转旁路并报警 150%±5%<负载<200%±5% 大于 300ms 转旁路并报警					
	转换时间		0ms （市电⇌电池）					
			<4ms（市电⇌旁路）					
	负载峰值比		3:1					
电池	电池组电压		36VDC		72VDC		96VDC	
	电池容量×数量		12VDC×3		12VDC×6		12VDC×8	
	后备时间（25℃）		满载≥5 分钟　(标准型)					
	电池充电时间		5 小时充至 90%　　（标准型） 取决于外接电池组容量（长效型）					

7.2 尺寸和重量

型号	宽*高*深（mm）	净重（kg）
C1K	145×220×355	12 kg
C1KS	145×220×355	6.5 kg
C2K	190×318×383	23 kg
C2KS	190×318×383	10.5 kg
C3K	190×318×433	28 kg
C3KS	190×318×433	11.5 kg

7.3 使用环境

项目	范围
环境温度	0℃～40℃
环境湿度	20%～90%（无冷凝）
海拔高度	小于 1000m 不降额，大于 1000m 每升高 100m 降额 1%
存储温度	-15℃～45℃

7.4 EMC

项目	满足标准等级
静电放电抗扰性（ESD）	IEC61000-4-2 LEVEL4
辐射电磁场抗扰性（RS）	IEC61000-4-3 LEVEL3
快速瞬变电脉冲群抗扰性（EFT）	IEC61000-4-4 LEVEL4
浪涌抗扰性（Surge）	IEC61000-4-5 LEVEL4

7.5 安规

满足 GB4943-2001,IEC62040-1,符合泰尔认证要求。

7.6 行业标准

满足 EN62040，YD/T 1095-2000。

本公司承诺：自购机之日起，为您提供三年免费保修服务：

- 凭经销商有效证明保修
- 凭机器生产序号保修

  如机器发生故障,请与就近的山特服务网点及经销商联系,在保修期间造成运输费用，由用户承担。

作为山特用户，您享有以下服务：

- 三年保修（含从山特购买的电池）
- 24 小时服务热线：

  客户服务热线：400-830-3938 / 800-830-3938
- 全国联合保修
- 网上技术服务支持：

  山特中文网站：http:www.santak.com.cn

发生以下情况，不在保修范围内：

- 人为故障
- 保修期外
- 生产序列号更改、丢失的成品
- 因不可抗拒的外来原因引起的损坏或损失
- 未经授权私自拆机或修改
- 违反机器操作/使用规定
- 使电池深度放电或人为造成损坏

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Thank you for purchasing Santak product.

Observe the warnings on the machine and manual strictly and properly keep the manual. Do not operate the UPS before read safety notes and operation instructions.

Solemn Declaration

Monitoring code Declaration

To protect your security and help you to buy real UPS of SANTAK, please note the following:

1. Make sure the registered trademarks is "SANTAK®、山特®"
2. SANTAK Electronic (Shenzhen) Co. Ltd. has never authorize other companies to product UPS of Santak in China
3. All products of Santak are affixed with a "electronic monitoring code".(General Administration of Quality Supervision, Inspecting and Quarantine of the People's Republic of China push "electronic monitoring code" a identification code of a product to combat fake)
4. Consumer identify the electronic monitoring code through the following methods and complete complaints or prosecution via "Product Identification Authentication Tracking System" website.

Enquireway

Log on to www.95001111.com.cn and enter the electronic monitoring code to enquire the identification,
or by calling the telephone number at 95001111,
You may call 114 and follow the instructions to enquire the identification,
or send SMS to 106695001111 (China Mobile and China Unicom).
Any questions, you may call the telephone number at 95001111 or log on to www.95001111.com.cn for further details or lodge your complaints.

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Safety notes

Operating safety

1. Read safety notes carefully and thoroughly before operation ensure correctly use and save this manual properly.
2. Pay attention to alarm table on the UPS and operating according to it.
3. Avoid installing the UPS in location under direct sunlight, running water, or excessive humidity.
4. Do not install the device in the environment where close to heating facilities such as space heaters or furnaces.
5. Place the UPS in a room with good ventilation and safe distance. Refer to manual to perform installation.
6. Cleaning with dry stuff, do not use liquid or spray detergent.
7. In the event of fire alarm occurring in the vicinity, please use dry power fire extinguishers. The use of liquid fire extinguishing agents may causes electric shock.

Electric safety

1. Verify that cabling and battery cable polarity are correct and earth connection well before switching on the UPS.
2. Before moving or re-wiring the UPS, please disconnect the mains source and make sure the UPS is completely shut down. Or else, the output terminal may carry live voltage, thus presenting electric shock risk.
3. Please use fitting and accessories were appointed by SANTAK.
4. To meet the requirement of EMC, the length of the output should be less than 10m.

Battery safety

1. High ambient temperature shortens the batter's lifetimes, so the battery should be replaced periodically to ensure normal UPS operation and for adequate autonomy time.
2.Servicing of battery should be performed or supervised by personnel knowledgeable of battery.
3. In replacement of battery, please use the same number and type of battery.
4.A battery can present a risk of electrical shock and high short circuit current. The following precaution should be observed when working on batteries.

A. Remove watches, rings, or other metal object from the hands;

B. Use tools with insulated handles;

C. Wear rubber gloves and boots;

D. Do not lay tools or metal parts on top of batteries;

E. Disconnect the load before operate the terminal of battery.

5. Do not dispose of batteries in a fire as they may explode.

6. Do not open or mutilate the battery. It may cause an electrolyte leakage that is toxic and harmful to the skin and eyes. If electrolyte comes into contact with the skin, wash the affected area with plenty of clean water immediately and go to the hospital for a check.

7. Do not make the positive and negative terminals of the battery short circuit; otherwise it may cause electric shock or fire.

Maintenance

1. The operating environment and storage method are two main factors affecting the lifetime and reliability of the UPS. Hence, it is advisable not use the device in the following environments:

- Where the temperature and relative humidity are outside the specifications (temperature: 0℃～40℃, relative humidity: 20%～90%.
- Where vibrations or shocks are existing.
- Dust, corrosive agents or salts or inflammable gas are present.

2. If the UPS will remain idle for a long period, it must be stored in a dry environment. The storage temperature should range between －25℃～＋55℃ (without battery). Make the ambient temperature over 0℃ and keep a period of time before power on the UPS.

Safety notes

1 Introduction

Description of Commonly Used Symbols

Some or all of the following symbols may be used in this manual and may appear in your application process. Therefore, all users should read the form carefully and thoroughly.

Symbol & Description	
Symbol	**Description**
	Caution, danger
	Danger electric shock
	Alternating current (AC)
	Direct current (DC)
	Protective ground
	Recycle
	Do not dispose with ordinary trash

2 Product Description

The On-Line-Series is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for strict load.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the socket outlet to direct current. This direct current charges the batteries and powers the inverter. On the basis of this DC voltage, the inverter generates a sine wave AC power, which permanently supplies the loads.

Designed with the proven on-line, double conversion architecture, this series of UPS offers the greatest degree of availability in power protection and provides continuous, high-quality AC power to connect strict load, especially for the basic equipments in some areas as: finance, communication, government, traffic, manufacture, education and so on.

2.1 System Type and Configuration

There are two types of UPS according to the battery configuration: standard type and long backup time type, each available in the following ratings: 1kVA, 2kVA and 3kVA UPS.

Table 2-1 UPS types and configurations

Type		Model	Remark
Standard	1kVA	C1K	With a 1A internal charger and 3 batteries
	2kVA	C2K	With a 1A internal charger and 6 batteries
	3kVA	C3K	With a 1A internal charger and 8 batteries
Long Backup Time	1kVA	C1KS	With a 7A internal charger and external batteries
	2kVA	C2KS	With a 8A internal charger and external batteries
	3kVA	C3KS	With a 8A internal charger and external batteries

Note: "S" model show Long Backup Time.

2.2 The Appearance of the UPS

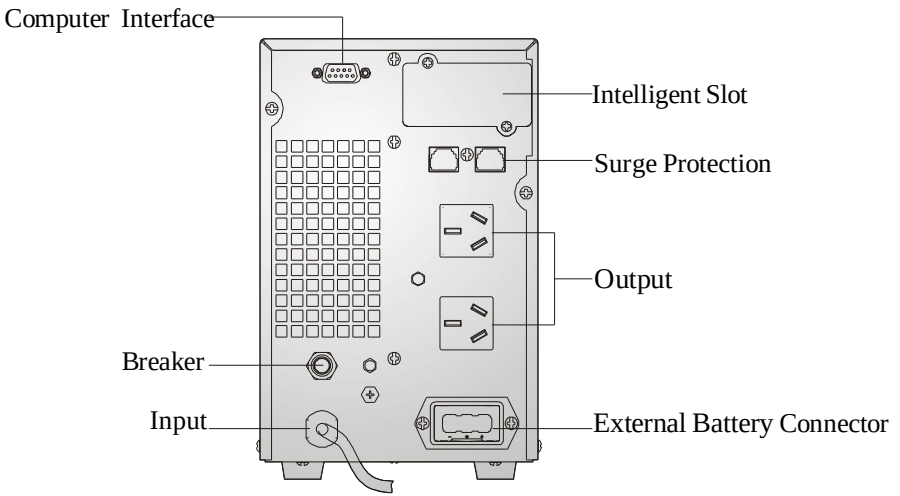


Figure 2-1 The rear panel of C1KS

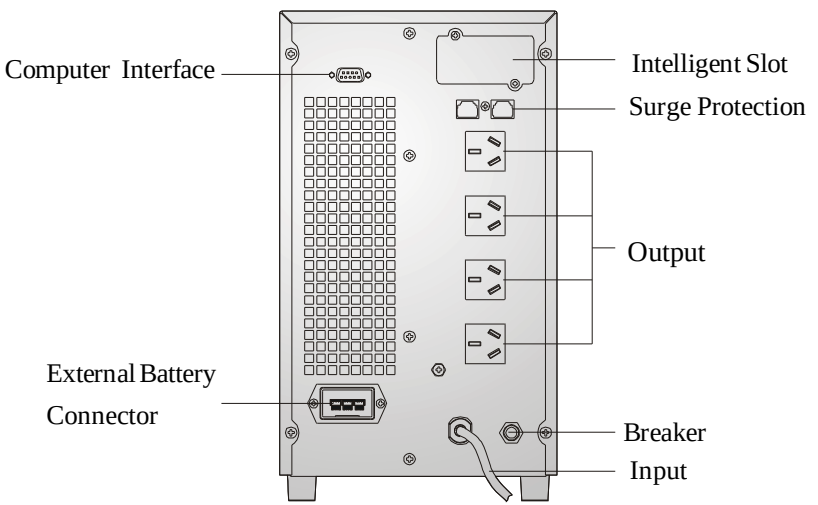


Figure 2-2 The rear panel of C2KS

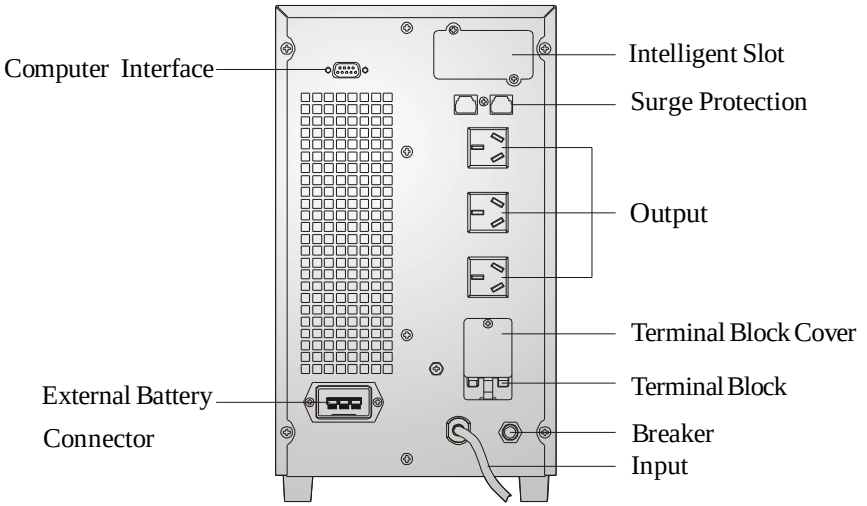


Figure 2-3 The rear panel of C3KS

Note: *The appearances above make example with the long backup time, the standard corresponding is without the "External Battery connector".*

2.3 Operating Principle

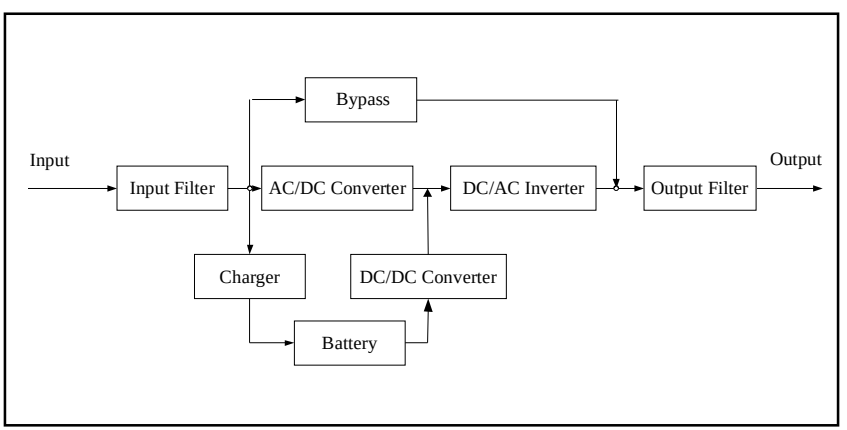


Figure 2-4 The UPS operating principle

2 Product Description

1. Input filter: Perform a filter for input .It provides clean AC power to the UPS.
2. AC/DC converter: In Normal mode, it converts the AC input power to regulated DC power.
3. DC/DC converter: Raises the DC Voltage from the battery system to the optimum operating voltage for the inverter when the UPS operates in Battery mode.
4. DC/AC inverter: In Normal mode, it utilizes the DC output of the AC/DC converter and inverts it into precise, regulated sine wave AC power. In Battery mode, it receives energy from the battery through the DC/DC converter.
5. Bypass: It is very important in the UPS system. In the event of an UPS fault that will not lead to UPS shutdown, the load will be automatically transferred to the bypass. Meanwhile, the LED indicators will indicate the fault type, and the fault information will be reported through the communication ports.
6. Charger: The charger of standard UPS provides 1A charging current; that of 1kVA long backup time provide 7A charging current; and that of 2kVA and 3kVA long backup time provided 8A charging current.
7. Battery: Sealed maintenance-free lead –acid battery can be used as the DC source of the UPS.
8. Output filter: Perform a filter for output .It provides clean AC power to the load.

3 Installation

3.1 Unpacking Inspection

1. Open the packing box of UPS and take it out, visually examine the unit for transit damage.
2. Check against the accessory lists that the accessories of the UPS are present. (Refer to Table 3-1).
3. If the UPS arrives damaged, or there is any missing accessory, please contact the distributor immediately.

Table 3-1 Accessory list of UPS

Model	Accessory	Quantity	Unit
standard	User manual (CD)	1	Pcs
	Simple installation and operation manual	1	Pcs
long backup time	External Battery Cable	1	Pcs
	User manual (CD)	1	Pcs
	Simple installation and operation manual	1	Pcs

3.2 Installation Notes

1. When locating the UPS, make sure there is no hazardous objects around the UPS, and that the installation environment meets the specifications.
2. The UPS should not be titled. The air inlet port at the front panel and the outlet port on the rear panel and two side panels should not be blocked so as to ensure good ventilation.
3. In case if the UPS is unpacked, installed and used at very low temperatures, condensations of water drops may appear. It is necessary to wait until the UPS fully dried inside out before proceeding to installation and use. Otherwise, they may be a risk of electric shock.
4. Place the UPS near the utility power source outlet which supplies power to the UPS. In any emergency, switch off the main input socket, cut off the battery voltage input. All power sockets must be connected with ground protection.

3.3 Cable Connection

3.3.1 Connecting Input and Output Cables

1. Input cable connection

   If the UPS is connected via the power cable, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket: over 10A for C1K(S) , over 16A for C2K(S) and C3K(S). The wiring configuration is shown in the following diagram.

Figure 3-1 Connection Method of Input for C1K(S)～C3K(S)

2. Output cable connection

Table 3-2 Output way of UPS

Rating	Model	Quantity of output socket	Output Terminal Block
1kVA	C1K/ C1KS	2	Nil
2kVA	C2K/ C2KS	4	Nil
3kVA	C3K/ C3KS	3	Available

- The output of C1K(S)/ C2K(S)/ C3K(S) all available to uses sockets. The total output power shall not exceed 1kVA/0.8kW, 2kVA/1.6 kW，3kVA/2.4 kW. Simply plug the load power cable to the output sockets of UPS to complete connection as shown in the following diagram.

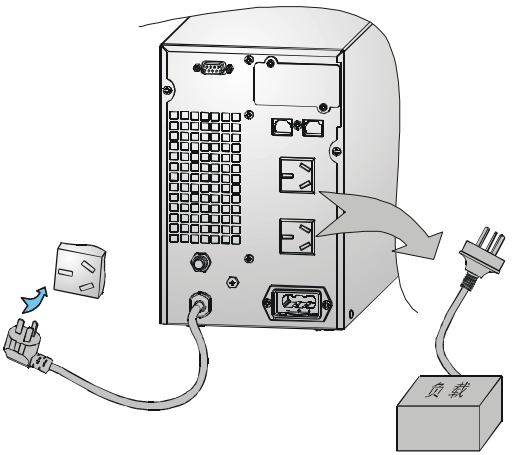


Figure 3-2 Connection method of output for C1K(S)～C3K(S)

- Apart from using the socket for output, C3K(S) has the terminal block available for output as well when the output current over 10A recommended. The wring configuration is shown in the following diagram.

  1) Remove the cover of the terminal block;
  2) Use AWG14 (2.1mm^2) wires for wiring configuration;
  3) Upon completion of the wiring configuration, please check whether the wires are securely affixed;
  4) Put back the terminal block cover to the rear panel.

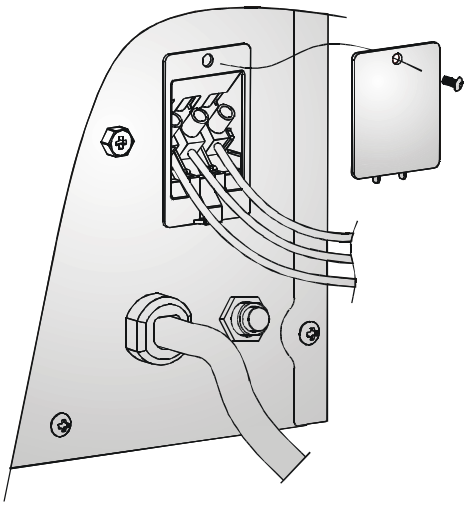


Figure 3-3 Connection method of terminal block for 3K(S)

Caution: *Do not connect the loads with terminal block by the personal without qualified training.*

3.3.2 Operation Procedure of External Battery for Long Backup Time UPS

The battery connection procedure is very important. Any incompliance may result in the risk of electric shock. Therefore, the following steps must be strictly complied with.

1. First connect in series the batteries of the pack to ensure proper battery voltage that C1KS for 36VDC, C2KS for 72VDC, C3KS for 96VDC.
2. Take out the battery cable delivered with the UPS, one end of the external battery cable is a plug for connecting the UPS, the other end has 3 open wires for connecting the battery pack.
3. Connect the external battery cable to the battery terminal (DO NOT connect the battery socket of the UPS first. Otherwise, it may cause electric shock). Connect the red wire to the "+" terminal of the battery. The black wire is connected to the "-" terminal of the battery. The green/yellow wire is grounded for protection purpose.

4.Connect the plug of the external battery cable to the external battery socket on the rear panel of the UPS to complete the connection procedure.

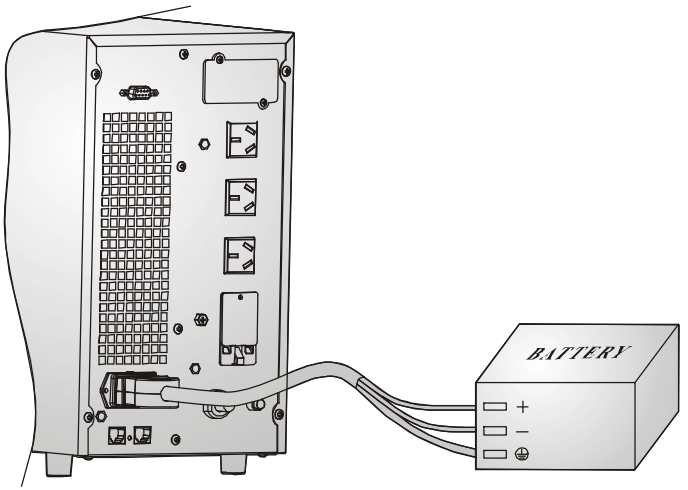
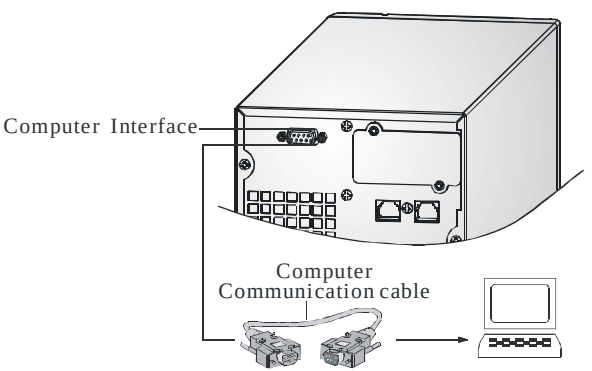


Figure 3-4 Battery connection diagram for Long Backup time models

Note: *The length of the external battery cable is normal, If users need a longer one, please consult the distributor. There is a limit to the length of the external battery cable to ensure normal operation of the UPS.*

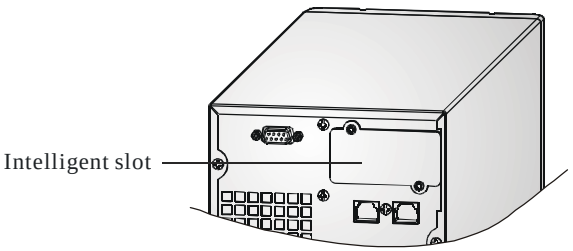
3.3.3 Connecting Communication Cable

1. Computer interface



computer interface: The type of signals, serial command (RS232), is provided by the UPS to communicate with a host computer. User can use WinPower software(download from the web of santak) to monitor the UPS through the port.

2. Alternative connection of communication



Intelligent Slot: It is designed for installing the AS400 card, SNMP card and CMC card. You can choose for one of them to installed

a－AS400: You can utilize AS400's monitor function to manage the power supply directly.

b－SNMP: It enables you monitor the UPS remotely through Internet.

c －CMC: Central monitor card.

Note: *1. Remove the cover board of the intelligent slot before any card is installed.*

2. *Refer to some other relative documents for the use of the WinPower software and the AS400 and SNMP and CMC cards. If you have any question about the above communication ports, please contact customer service center.*

3. *There are two type of card for intelligent slot :short card and long card, the UPS this manual described match for the short card .*

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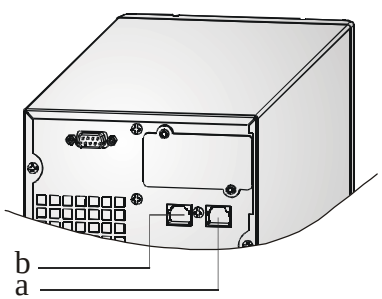
3. Surge-protection connection

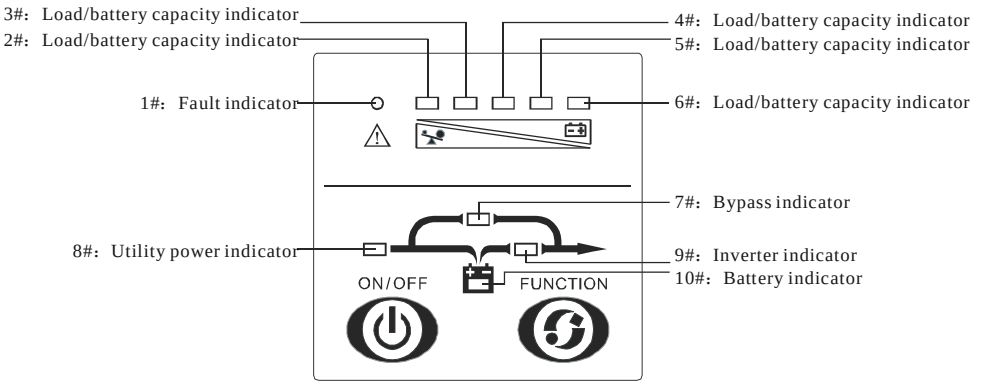


a—Output: Connects the equipment to be protected.

b—Input: Connects the telephone line or network.

4 Operation

4.1 Introduction of Display Panel



1. ON/OFF button:

The ON/OFF button provides the following functions:

1) Turn on UPS system:

By pressing the ON/OFF button more than 1 second, the UPS system is turned on.

2) Turn off UPS system:

By pressing this button more than 1 second turns off the UPS system whenever the UPS run under the normal mode/battery mode.

2. Function button

The Function button provides the following functions:

1) Battery self-diagnosis

When the UPS ran in normal mode, pressing the button for more than 2 seconds can start the battery self-diagnosis.

2) Silence function in battery mode

In battery mode, when the buzzer beeps, pressing and holding the function button for more than 2 seconds can silence the buzzer. Press the button for more than 2 seconds again to resume the alarm function

Note: *The alarm silencing function of the Function button is valid only in battery mode, and invalid for any other UPS alarm.*

3. LED indicators

The LEDs contains Fault indicator, Load/battery capacity indicator, Bypass indicator, utility power indicator, Inverter indicator, Battery indicator.

Table 4-1 Description of indicators

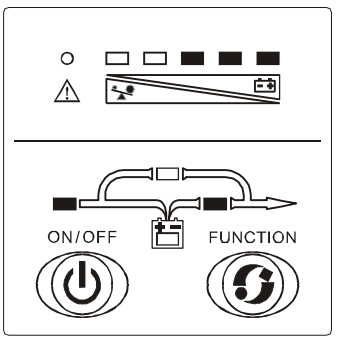
No.	Indicator	Color	Description
1#	Fault indicator	Red	When the indicator on, it shows that the UPS in abnormal condition.
2#	Load/battery capacity indicator	Orange	Show the capacity of load/battery: 1.Indicate the percentage of the load capacity in normal mode and bypass mode 2. Indicate the battery capacity level in battery mode.
3#	Load/battery capacity indicator	Green	
4#	Load/battery capacity indicator	Green	
5#	Load/battery capacity indicator	Green	
6#	Load/battery capacity indicator	Green	
7#	Bypass indicator	Orange	When the indicator on, it shows that the loading current is supplied from the utility power directly.
8#	Utility power indicator	Green	When the indicator on, it shows that the utility power is normal.
9#	Inverter indicator	Green	When the indicator on, it shows that the load current is supplied from utility power or battery via the inverter.
10#	Battery indicator	Orange	When the indicator on, it shows that the load current is supplied from battery via the inverter.

4.2 Operation Mode

4.2.1 Normal mode

In the normal mode, the display on the front panel is shown in the following diagram. The utility power indicator and the inverter indicator are turn on. The load/battery capacity indicator will be turned on in accordance with the load capacity connected.

1. If the utility power indicator blinks, it indicates that there are problems with reversed polarity (L, N) of site wiring or disconnect with ground that may result in shock hazard. UPS is still working in normal mode. If the battery indicator is turn on at the same time, it shows that the voltage or frequency of the utility power is out of the normal input range of the UPS. The UPS works in battery mode.



2. If output overloaded, the load level indicators will be turned on and alarm will beep twice every second. You should get rid of some unnecessary loads one by one to decrease the loads connected to the UPS less than 100% capacity of the UPS.
3. If the battery indicator blinks, it indicates that no battery is connected to the UPS or battery voltage is too low. You should check if battery is properly connected to the UPS. If the connection between battery and UPS is confirmed without any problem, it may be due to the defect or aging of the battery, please refer to the "troubleshooting" in chapter 6 to solve the problem accordingly.

Note: *Connection to the power generator should be made according to the following steps:*

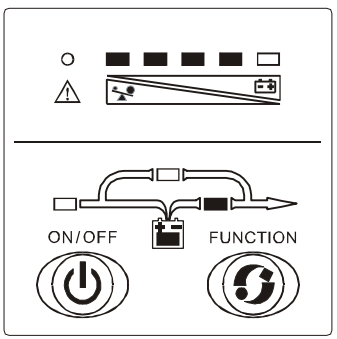
◆*Activate the power generator and wait until the operation is stable before connecting the output of the power generator to the UPS (be sure that the UPS is in idle mode). Then, turn on the UPS according to the start-up procedure. After the UPS is turned on, the loads are connected one by one.*

◆*It recommended that the capacity of the AC generator chosen should double that of the UPS.*

4.2.2 Battery mode

In battery mode the display on the front panel is shown in the following diagram. The battery indicator and the inverter indicator are turn on. If the utility power indicator blinks at the same time, it shows that the utility power is abnormal. The load/battery capacity indicators will be turn on in accordance with the battery capacity. Please note that the load/battery capacity indicator in normal mode will indicate the battery capacity in battery mode.

1. When the ups is running in battery mode, the alarm will beep every 4 seconds. If the "Function" key is pressed for more than 2 seconds, the alarm will not beep（silence function）. Press the "Function" key more than 2 seconds again to resume the alarm function.

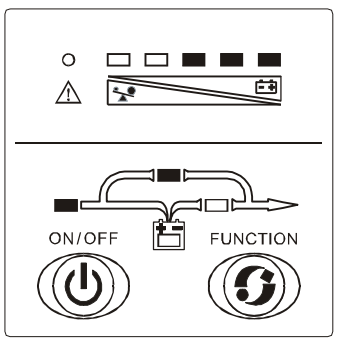


2. When the battery capacity decreases, the number of load/battery capacity indicators turned on will decrease. If the battery voltage drops to the pre-alarm level (capable of maintaining the backup time for more than 2 minutes), the alarm will beep every second to remind the user of insufficient battery capacity. Then, the load operations should be carried out promptly and the load will be eliminated one by one.
3. It is possible to check the backup function via the UPS even though utility power is not connected.

4.2.3 Bypass mode

When operating in bypass mode set up through WinPower software, the display on the front panel is show in the following diagram. The utility power indicator and the bypass indicator are turn on. The load/battery capacity indicator will be turned on in accordance with the load capacity connected. The UPS beeps every 2 seconds.

1. If the utility power indicator blinks, it shows that the voltage or frequency of the utility power is out of the input range of the UPS or there are problems with reversed polarity (L/N) of site wiring or disconnect to the ground for protection.
2. Other display on the front panel is same as those mentioned in normal mode.
3. When operating in bypass mode, the backup function of the UPS is not available and the power used by the load is directly from the utility power via internal EMI filter.



4.3 Operating Instructions

4.3.1 Turning On and Completely Powering Down the UPS

Note: *The battery is fully charged before delivery. However, storage and transportation will inevitably cause some charge loss. Therefore, it is advisable to charge the battery for 10 hours before using it, so as to ensure adequate battery autonomy.*

4 Operation

1. Turning on the UPS

   The operation of turning on the UPS contains: turning on with utility power and turning on without utility power.

   1) Turning on with utility power:
      Connect the mains input to the UPS, press and hold the ON/OFF button for 1 second until the buzzer beeps. At this point, the UPS begins to conduct self-diagnosis, with the load/battery capacity indicators on the front panel turned on and then off one after another. Seconds later, the UPS will begin to operate in Normal mode; meanwhile, the utility power indicator, inverter indicators will turn on. If the utility power is abnormal, the UPS will work in battery mode.
   2) Turning on without utility power:
      With no mains input feed to the UPS, hold and press the ON/OFF button for 1 second until the buzzer beeps. In the power on process, the UPS has the same operation as if it is connected to utility power except that the utility power indicator is not turned on and the battery indicator is turned instead.

2. Powering down the UPS

   The operation of powering down the UPS is shown as follow:

   1) Completely power down the UPS from Normal mode
      Hold and press the ON/OFF button persistently for more than 1 second to power off the UPS. If it is set up to work in bypass mode by WinPower software and the bypass indicator will be turn on to indicate that the UPS is working in bypass mode. In order to cut off the output from the UPS, simply cut off the utility power supply. Finally, not any display is shown on the front panel and no output is available from the UPS outlets.

2) Completely power down the UPS from Battery mode
Press the "ON/OFF" button persistently for more than 1 second to power off the UPS. When being powered off, the UPS will start self-diagnosis and all the load/battery capacity indicators will be turn on and off one after another. Finally, not any display is shown on the front panel and no voltage output is available from the UPS outlets.

4.3.2 Conducting Battery self-diagnosis

In UPS operation, users can manually initiate battery self-diagnosis to check the battery conditions. There are two methods to initiate the battery self-diagnosis:

1. Through the function button
   In normal mode, press and hold the function for more than 2 seconds until the buzzer beeps. At this point the indicators (LED7~10) will blink cyclically, indicating the UPS has worked in battery mode and the battery self-diagnosis has started. The battery self-diagnosis will last for 10 seconds default (Users can set up it through WinPower software). In the event of a battery fault during battery self-diagnosis, the UPS will transfer to normal mode automatically.
2. Through the background monitoring software
   Users can also initiate battery self-diagnosis through the background monitoring software.

4.3.3 Audible alarm and LED indication of UPS operating status and faults

No.	Operating status		LED indicators										Audible alarm
			1#	2#	3#	4#	5#	6#	7#	8#	9#	10#	
1	Normal mode	0%--35% load						●		●	●		None
2		36%--55% load					●	●		●	●		None
3		56%--75% load				●	●	●		●	●		None
4		76%--95% load			●	●	●	●		●	●		None
5		96%--105% load		●	●	●	●	●		●	●		None
6	Battery mode	0%--25% battery capacity		●							●	●	Once every 1 second
7		26%--50% battery capacity		●	●						●	●	Once every 4 seconds
8		51%--75% battery capacity		●	●	●					●	●	Once every 4 seconds
9		76%--100% battery capacity		●	●	●	●				●	●	Once every 4 seconds
10		100% battery capacity		●	●	●	●	●			●	●	Once every 4 seconds
11	Bypass mode			↑	↑	↑	↑	●	●	●			Once every 2 minutes
12	Overloaded in Normal mode, switch to Bypass mode		●	●					●	●			Continually ring
13	Utility power fault			↑	↑	↑	↑	●	↑	★	↑	↑	↑
14	Overload in Battery mode, pre-alarm		●	●							●	●	Twice every 1 second
15	Overloaded in Battery mode, output off		●	●									Continually ring
16	Overheating fault		●					●	↑	↑			Continually ring
17	Inverter fault		●				●		↑	↑			Continually ring
18	BUS voltage fault		●			●			↑	↑			Continually ring
19	Utility power input NTC open circuit		●				●	●					Continually ring
20	Over voltage of charger output		●		●				↑	↑			Continually ring
21	Battery fault		↑	↑	↑	↑	↑	●				★	↑
22	Reversed polarity (L,N) of input wiring or disconnected with ground.			↑	↑	↑	↑	●	↑	★	↑	↑	Once every 2 minutes
23	Charger or battery fault		●							↑	↑	★	Once every 1 second
24	Output short circuit		●	●			●			↑			Continually ring
25	Fan failure		●	●				●	↑	↑	↑		Once every 1 second

●: On

★: Flash

↑: Depending on other conditions

5 Maintenance

5.1 Battery Maintenance

The battery is key component of the UPS. The battery life depends on the ambient temperature, charge and discharge times. High ambient temperature and deep discharge will shorten the battery life.

1. Sealed maintenance-free lead –acid battery be used in the standard. When being connected to the utility power whether the UPS has been turned on or not, the UPS keeps charging the battery and also offers the protective function of charging and discharging.
2. Keep the ambient temperature between 15℃ and 25℃
3. If the UPS has not been used for a long period, charging is recommended at the intervals 3 months.
4. Normally, the battery should be charged and discharged every 4 to 6 months. Charging should be begin after the UPS shout down automatically in the course of discharging. In the regions of hot climates, the battery should be charged and discharged every 2 months. Moreover, the standard charging time should be not less than 10 hours.
5. Batteries should not be replaced individually. All batteries should be replaced at the same time following the instruction of the battery supplier.
6. Under normal conditions, the battery life lasts 3 to 5 years. In case if the battery is found not in good condition, earlier replacement should be made. The battery should only be replaced by qualified service personnel.

Note: 1.*Prior to battery replacement, the UPS must be turned off and disconnected from utility power.*

2. Metal objects such as rings and watches should be removed.

3. Use the screwdriver with insulated handle. Tools and other metal objects should not be placed on the battery.

4. Short circuit or reverse connection between the positive and negative terminal of the battery is strictly forbidden.

5.2 Checking UPS function

Every time when conducting field maintenance, please check the regular function of the UPS, including:

1. Check the operation status of the UPS

   If the main voltage is within the specifications, the UPS should operate in normal mode; if the main voltage is abnormal, the UPS should operate in battery mode. In both cases, there should be no fault indication.

2. Check the transfer between the UPS operation modes

   Disconnect the main input to simulate a mains failure, the UPS should transfer to battery mode and operate normally; then recover the mains input, the UPS should transfer to normal mode and operate normally

3. Check the LED indicators of the UPS

   During the check processes stated above, check that the LED indication of the UPS agrees with the UPS operation mode.

6 Troubleshooting

In the event of an UPS fault, shoot the trouble according to Table 6-1. If the fault still persists, please contact the customer service center.

Table 6-1 UPS troubleshooting

Problem	Possible cause	solution
The #1 Fault LED and #6 LED are on, the buzzer beeps continuously.	Internal overheat	Ensure that the UPS is not overloaded and the ventilation opening is not blocked and ambient temperature is not too high. Wait for 10 minutes for the UPS to cool down before turning it on again. If it does not work. please contact the distributor or service center
The #1 Fault LED and #5 LED are on, the buzzer beeps continuously	Internal fault	Please contact the distributor or Service center
The #1 Fault LED and #4 LED are on, the buzzer beeps continuously	Internal fault	Please contact the distributor or Service center
The #1 Fault LED and #3 LED are on, the buzzer beeps continuously	Over-charging Protection	The charger of the UPS is defective. Please contact the distributor or Service center
The #8 utility power LED blinks	The voltage or frequency of the utility power is out of the input range of the UPS（when being activated, the UPS beeps twice every second for 8 times）	The UPS running in the battery mode. To save you data and then close the application in use. Ensure that utility power is within in the input voltage frequency range permitted by the UPS
	Maybe reversed polarity (L,N) of site wiring. The alarm beeps once every 2 minutes	Please check the polarity of the neutral wiring and the line wiring
The #1 Fault LED and #2 LED are on, the buzzer beeps continuously	The UPS overloaded or the load device is faulty in battery mode	Check the load and remove the non-Critical device. Recalculate the load power and reduce the member of loads connected to the UPS. Check whether the load device is fault
The #1 Fault LED and #2 LED and #6 are on, the buzzer beeps once every second	Fan of UPS is not connected or fault	Please contact the distributor or Service center

6 Troubleshooting

Problem	Possible cause	solution
The #1 Fault LED and #2 LED and #5 are on, the buzzer beeps continuously	The UPS output is short circuited	Turn off the UPS. Remove all loads. Ensure that the loads are not failed or has no internal short before turn on it again. If failed, please contact the distributor or service center
The #10 battery LED blinks	Battery is not connected or its voltage is too low.	Check the battery of the UPS and connect it properly. If the battery is damaged, you must replace it promptly
The #1 fault LED is on. The #10 battery LED is blinks. The buzzer beeps once every second	The charger of the UPS is defective	Please contact the distributor or Service center
The utility power normal and the UPS cannot run in normal mode	The UPS input breaker is tripped	Reset the input breaker
The battery discharge time diminishes	The battery has not been fully charged	Keep the UPS connected to utility power persistently for more than 10 hours to charge the battery again
	The UPS is overloaded	Check the load status and remove the non-critical device
	Battery aged	Replace the batteries. Please contact the distributor to obtain the replacement components for battery
The UPS cannot power on after pressing the power on key	The “ON/OFF” button is pressed to briefly	Press the “ON/OFF” button persistently for more than 1 second
	The UPS is not connect to battery or the battery voltage is too low	Check the connection of the battery. Turn on the UPS without load if the battery voltage is low
	Internal fault	Please contact the distributor or Service center

When reporting UPS fault, please provide the following information:

- The machine model and machine serial No.
- The data of fault happened.
- The detail of fault, contains LED indications, power condition, load capacity, buzzer beeps and configuration of battery (if it is the Long Backup time UPS).

7 Specifications

7.1 Electrical

Model			C1K	C1KS	C2K	C2KS	C3K	C3KS
Rating			1kVA/800W		2kVA/1600W		3kVA/2400W	
Input	Input system		Single phase & earth ground					
	Rated voltage		220VAC					
	Voltage range		115VAC～300VAC					
	Frequency		50Hz					
	Power factor		0.98					
	Voltage range of bypass		80VAC×(1±5%) ～285VAC×(1±5%)					
Output	Output system		Single phase & earth ground					
	Rated voltage		220VAC					
	Power factor		0.8					
	Voltage precision		±2%					
	Output frequency	Normal mode	1.The output frequency synchronizes with the input frequency when the input frequency is in the range of 46 Hz～54 Hz 2.The output frequency is 50Hz when the input frequency is not in the range of 46 Hz～54 Hz					
		Battery mode	50 ± 0.2 Hz					
	Inverter overload capacity（Utility power，25℃）		108%±5%<Load≤150%±5% 25s transfer to bypass 150%±5%< Load <200%±5% 300ms transfer to bypass					
	Transfer time		0ms （Normal mode⇌Battery mode）					
			<4ms（Normal mode⇌Bypass mode）					
	Crest factor		3:1 (max)					
Battery	Batteries voltage		36VDC		72VDC		96VDC	
	Battery capacity× Quantity		12VDC×3		12VDC×6		12VDC×8	
	Backup Time（25℃）		Full load≥5min (Standard)					
	Battery charge time		Charger to 90% battery capacity in 5 hours（Standard） Dependent on the capacity of external batteries（Long backup time）					

7 Specifications

7.2 Mechanical

Model	W*H*D(mm)	Weight(kg)
C1K	145×220×355	12 kg
C1KS	145×220×355	6.5 kg
C2K	190×318×383	23 kg
C2KS	190×318×383	10.5 kg
C3K	190×318×433	28 kg
C3KS	190×318×433	11.5 kg

7.3 Environmental

Item	Normal range
Ambient temperature	0℃～40℃
Environment humidity	20%～90%（No condensation）
Altitude	Lower than 1000m: no derating Over 1000m :1% derating for every 100m rise
Storage temperature	-15℃～45℃

7.4 EMC

Item	Standard	Level
ESD	IEC61000-4-2	LEVEL4
RS	IEC61000-4-3	LEVEL3
EFT	IEC61000-4-4	LEVEL4
Surge	IEC61000-4-5	LEVEL4

7.5 Safety

Comply with GB4943-2001,IEC62040-1 and CE requirements.

7.6 Industry Standard

Comply with EN62040，YD/T 1095-2000 requirements.

8 Warranty

SANTAK its products to be offered free warranty service for three years from the date of purchase

- To obtain service under warranty via an valid guarantee offered by dealers;
- To obtain service under warranty via serial number.

In case of UPS fault, please contact local Santak service center and dealer. The trans portation charges shall be borne by the buyer within the warranty period of 3 years.

As a user of SANTAK, you have the following service:

- Three-year warranty (covering batteries purchased from SANTAK)
- 24-hour helpline:

  Service helpline: 400-830-3938 / 800-830-3938
- Nationwide warranty
- Technical support on our web site:

  China web site: www.stk.com.cn

This limited warranty does not apply to conditions as follows:

- Man-made fault;
- Out of warranty;
- The finished product of which the serial number is changed or lost;
- Damage or loss resulted from force majeure or external causes;
- Disassembly or modifications to the unit with no authorization;
- Disobeying provisions of operating/using the unit;
- Battery over discharged or man-made damage.

山特电子(深圳)有限公司 www.santak.com.cn

厂址：深圳市宝安72区宝石路8号 邮编：518101

客服热线:400-830-3938 / 800-830-3938 客服传真:(0755)27572730

客服中心 E-mail 地址: specialist@santak.com.cn

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