客服热线：400-830-3938　800-830-3938

城堡EX系列
CASTLE EX 20/30/40KVA

使用手册
USER MANUAL

http://www.sunear.net

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，请不要操作本机。

http://www.sunear.net

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）。

查询方式：

网站查询：登陆 www.95001111.com （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 进行查询（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。并请妥善保存此手册。
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、热炉等类似设备的附近。
5.放置 UPS 时，在其四周要留有安全距离，保证通风。安装时，请参照此手册。
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 。
8.安装前要考虑楼层对机器和电池组的承重能力。

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。

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:

A.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;

B.有振动、易受撞的场所;

C.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

第一章 简介

1.1 产品简介

城堡 EX 系列产品是具有高效率和高性能的双转换纯在线、三进三出的UPS，单机容量在20KVA-40KVA，按容量可分为3C3 EX 20KS/3C3 EX 20KS-ISO，3C3 EX 30KS/3C3 EX 30KS-ISO 和3C3 EX 40KS/3C3 EX 40KS-ISO 六个型号。此系列产品不仅提供了完美的电源保护解决方案，解决了断电、市电高压、市电低压、电压瞬时跌落、减幅振荡、高压脉冲、电压波动、浪涌电压、谐波失真、杂波干扰、频率波动等电源问题，而且增强了对复杂应用环境的适应性，使产品可以广泛的应用在计算机设备，通信设备和其他控制类设备中，并且可以应对复杂工业环境。因此，城堡EX系列产品可以广泛的应用在多种行业或领域，比如：电信，金融，交通，政府，制造，能源等。

城堡 EX 系列产品还具有ECO（ECONOMY MODE）模式功能，ECO 工作状态下的UPS，平常由市电供应负载，在市电不正常时，再由蓄电池经逆变器逆变输出供电。ECO 工作状态下的UPS 在市电正常时，其能量转换效率高达98%，因此其节能效果是非常显著的。同时，UPS 的逆变器是处于启动状态，但不输出功率，类似休眠状态，UPS 的逆变器能大大延长寿命。在市电正常时，ECO 模式除了输电质量不及正常双转换模式外，在市电并网的今天，还是能满足大部分用电设备的要求。

注：ECO 模式下，不保证0ms 模式转换时间，只适用于单机。

1.2 常用符号说明

下面一些符号会在本说明书中用到，也可能会在实际应用过程中出现，请正确识别并知其含义。

符号及含义	
符　号	含　义
⚠	注意安全
⚠	当心触电
~	交　流
⎓	直　流

	保护接地
	重复循环
	勿与杂物一同放置

注：请注意设备上所有警告的标签，且勿撕毁和损坏警告标签。

1.3 产品标准

城堡 EX 系列产品符合下列安全标准：

国家标准	GB4943
TLC认证	YD/T1095

城堡 EX 系列产品符合下列等级的电磁兼容标准要求：

EMI	EMS		
Radiation and Conduction: IEC62040-2:2005 C3	ESD:	IEC:61000-4-2	Level-4
	RS:	IEC:61000-4-3	Level-3
	EFT:	IEC:61000-4-4	Level-4
	Surge:	IEC:61000-4-5	Level-4

注：这是一种限制销售范围的UPS 产品，为防止干扰，可能会有安装上的限制和需要附加的措施。

1.4.技术参数指标

输 入

接 线 : 三相四线 + 接地

电 压 : 380 ×(1 +25% / -45%)VAC（输入电压<75% 以内时，输出功率需要降额）

频 率 : 40Hz-70Hz

功率因数 : 0.99 以上

旁路电压范围 : 380（1 ± 15%）

输 出

接 线 : 三相四线 + 接地

电 压 : 380 ×(1 ± 1%) VAC 或 220 ×(1 ± 1%) VAC (带平衡负载)

功率因数 : 0.8

频率误差 : 在 50Hz 条件下为 ± 8%（跟踪旁路输入频率；旁路输入频率超过± 8% 或 在电池供电状态下, 输出频率为额定之 ± 0.1%）。

过载时间 : 大于 10 分钟（110% ＜负载≤ 125%）

大于 1 分钟 （125% ＜负载≤ 150%）

带不平衡负载能力: 100%

电池电压及充电电压

名称 \ 节数		14节	15节	16节
电池标称电压	正电池	+168VDC	+180VDC	+192VDC
	负电池	−168VDC	−180VDC	−192VDC
额定充电电压	正电压	+189VDC	+202.5VDC	+216VDC
	负电压	−189VDC	−202.5VDC	−216VDC

工作环境

- 环境温度 : 0℃- 40℃
- 环境湿度 : 20%- 90 %
- 海拔高度: 小于 1000m
- 储藏温度: -25℃-55℃

注：当 UPS 储藏在低于 0℃的环境下或者放置时间过长，建议客户在开启 UPS 之前先把环境温度回暖至 0℃以上或者先搁置两个小时再使用。

一般规格

型　号 NO.	机器尺寸(mm) 长×宽×高	净重（kg）	毛重（kg）
3C3 EX 20KS	643×420×956	82	122
3C3 EX 20KS-ISO	643×420×956	208	248
3C3 EX 30KS	710×470×1150	110	160
3C3 EX 30KS-ISO	710×470×1150	275	325
3C3 EX 40KS	710×470×1150	114	164
3C3 EX 40KS-ISO	710×470×1150	314	364

1.5.热线电话

如果您有任何问题,请拨打 400-830-3938 或 800-830-3938 热线电话，由我公司专业技术人员为您提供 24 小时的热线服务。

第二章 外观介绍

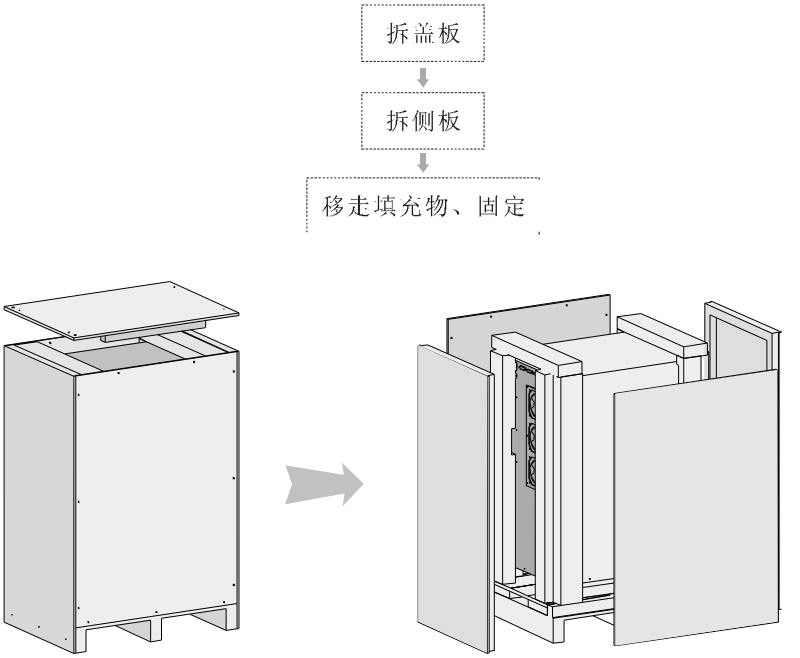
2.1 拆包检验

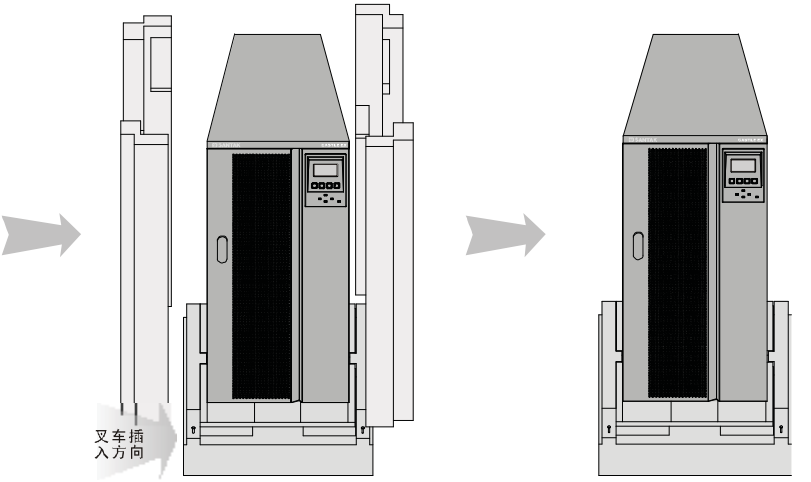
1．打开包装，包装内应有：

- Winpower 光盘一张
- 使用手册一本

2. 检查 UPS 是否在运输中损坏，如发现损坏或部件缺少，请勿开机，立即告知承运商和经销商。

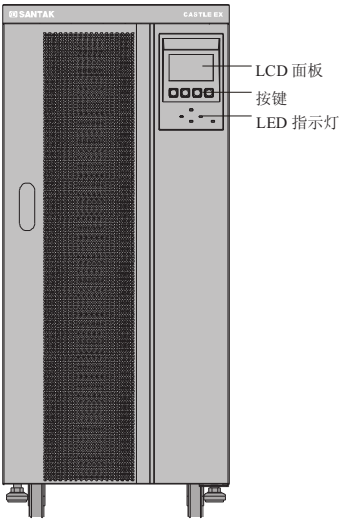
注意：搬运之前先确认门及通道内其他障碍物的高度，机柜拆卸如下图：



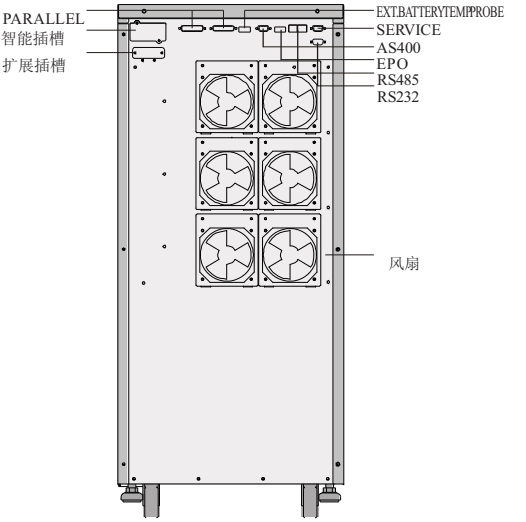


2.2 外观图

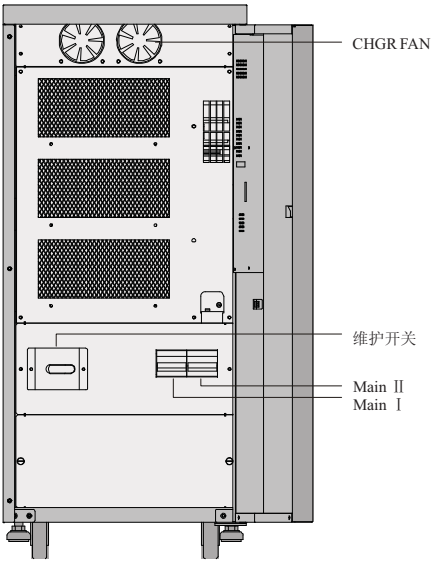
3C3 EX 20KS/3C3 EX 20KS-ISO UPS 外观图



前视图

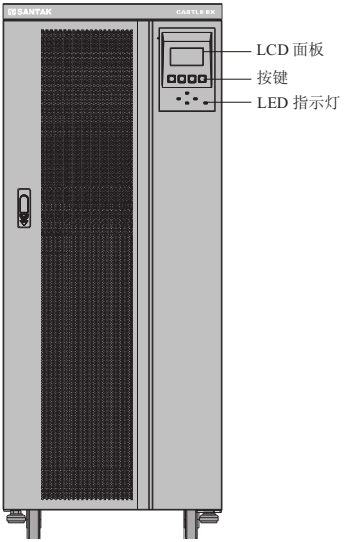


后视图

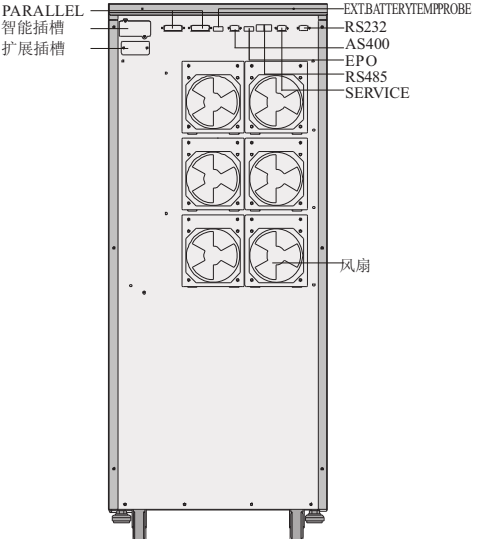


前视图（打开前门板）

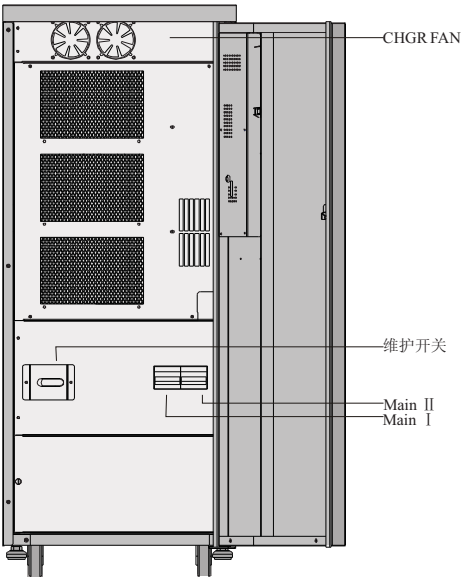
3C3 EX 30KS/3C3 EX 30KS-ISO,3C3 EX 40KS/3C3 EX 40KS-ISO UPS 外观图



前视图

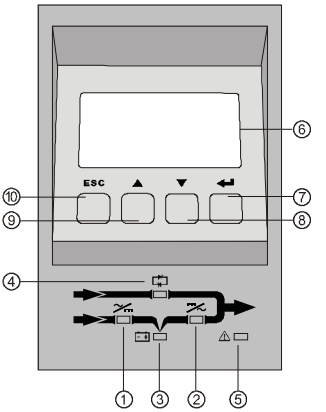


后视图



前视图（打开前门板）

2.3 面板指示说明



①市电：UPS 由市电直接供电时，此灯和逆变灯会亮“绿灯”。

②逆变：UPS 电源通过逆变器到负载时，此灯会亮“绿灯”。

③电池：UPS 由电池供电时，此灯会亮“黄灯”。

④旁路：UPS 由市电经旁路供给负载时，此灯会亮“绿灯”。

⑤故障 ：UPS 发生异常状况，此灯会常亮“红灯”，同时会发出连续的警报声；或闪烁“红灯”，同时会发出间歇的警报声。
⑥液晶显示：显示UPS 状况。
⑦↵：确认 / 输入（ENTER），按此键可以选定某一菜单或确定某一操作。
⑧▼：向下翻页，按此键可以在同一级菜单下翻转到下一屏显示。
⑨▲：向上翻页，按此键可以在同一级菜单下返回到上一屏显示。
⑩Esc：退出，按此键可以返回上一级菜单或取消某一操作。

注：LED 与UPS 状态对应的详细信息请参考附录一。

第三章 安装说明

3.1 单机安装

1) 本机安装须由专业人员，依电工法规执行。

2) 在干净、平稳的环境中安装UPS,避开震动、灰尘、高湿、可燃性气体、可燃性液体或腐蚀性物质环境。

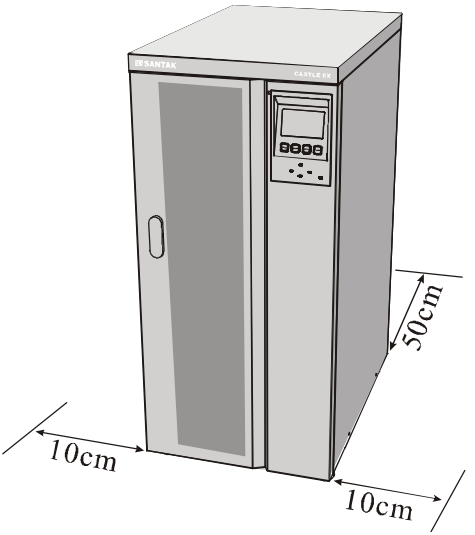
3) UPS正常工作时的环境温度要求在0℃-40℃之间。如果工作在40℃以上的环境里，要求最大带载量按每增加5℃，递减12％额定值实施。UPS工作时的最高环境温度要求不超过50℃。

4) 电池组建议在15℃-25℃之间使用。

5) UPS正常工作时的海拔要求为1000米以下，如果客户使用在1000米以上，必须采取递减额定值输出。如下表所列：

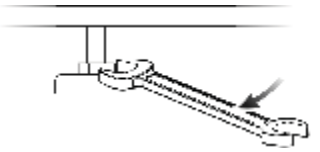
海拔(M)	1000	1500	2000	2500	3000	3500	4000	4500	5000
减额系数	100%	95%	91%	86%	82%	78%	74%	70%	67%

6) 城堡EX系列采取风扇强制冷却，安装场地必须考虑通风问题。同时机内维护是从正面进行，所以也要考虑预留维护空间，安装空间参考下图所示。

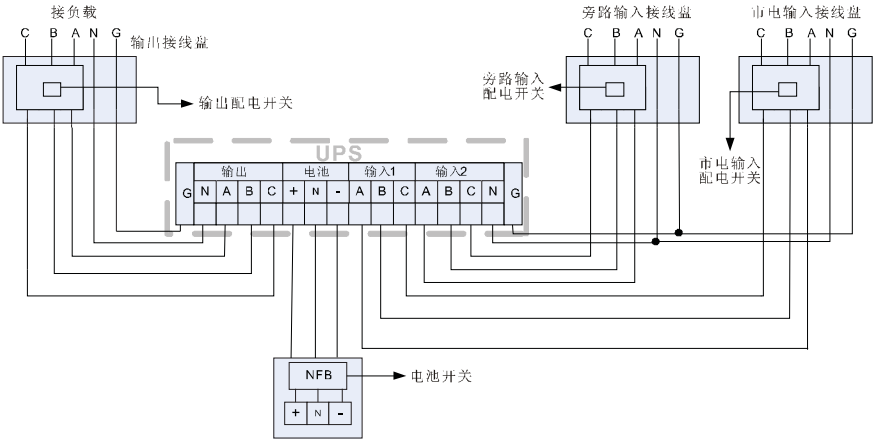


7) 城堡 EX 系列 UPS 外接电池要求是串联连接的两组相同容量的 14-16 颗电池（12VDC 每颗），每组标称电压为 168VDC-192VDC。您可根据需要选择电池的容量和组数。电池组必须要配置电池直流开关（建议客户选配电池开关必须按照安装接线图进行安装）。

8) 刹车垫使用：使用 19 号扳手，按顺时针方向旋转，将刹车垫旋到地面，即可防止机器移动。



9) 安装接线图



10) 城堡 EX 系列 UPS 配线表

机型	额定功率	输入火线线径	市电输入配电开关	输出火线线径	电池正/负线线径/电池N线径	地线线径	输出N线线径	电池开关
3C3 EX 20KS	20KVA/16KW	10AWG/6mm²	3Φ 63A/380VAC	10AWG/6mm²	8AWG/10mm²	8AWG/10mm²	8AWG/10mm²	3Φ125A 250VDC
3C3 EX 20KS-ISO	20KVA/16KW	10AWG/6mm²	3Φ 63A/380VAC	10AWG/6mm²	8AWG/10mm²	8AWG/10mm²	8AWG/10mm²	3Φ125A 250VDC
3C3 EX 30KS	30KVA/24KW	8AWG/10mm²	3Φ 80A/380VAC	8AWG/10mm²	6AWG/16mm²	6AWG/16mm²	6AWG/16mm²	3Φ150A 250VDC
3C3 EX 30KS-ISO	30KVA/24KW	8AWG/10mm²	3Φ 80A/380VAC	8AWG/10mm²	6AWG/16mm²	6AWG/16mm²	6AWG/16mm²	3Φ150A 250VDC
3C3 EX 40KS	40KVA/32KW	6AWG/16mm²	3Φ100A/380VAC	6AWG/16mm²	4AWG/25mm²	4AWG/25mm²	4AWG/25mm²	3Φ200A 250VDC
3C3 EX 40KS-ISO	40KVA/32KW	6AWG/16mm²	3Φ100A/380VAC	6AWG/16mm²	4AWG/25mm²	4AWG/25mm²	4AWG/25mm²	3Φ200A 250VDC

备 注 ：

1. 城堡EX系列UPS机器，输入零线直接接入UPS接线端子排的输入“N”端处；不要经过市电输入空开；

2.在单相电流超过100A时，所用保护空气开关必需带有灭弧装置；

3.电池正/负线线径：表示UPS与电池箱配线线径，正极为红色线,负极为黑色线,N极为蓝色线；

4.请客户根据上述规格，安装机器之前配置好。

11) A、B、C 电源相序应正确连接，否则UPS会显示相序错误，无法开机。

12) 把通讯线的一端接在UPS之RS232端口上，一端接在PC机之RS232端口上。在PC机上安装WinPower监控软件后，可实现PC机对UPS的监控。

3.2 并机安装

1)一般安装要求请遵循安装说明要求。

2)要求机器侧面之间的间距保持在10cm以上，机器后面保持50cm以上（因考虑到要更换风扇的空间）的通风间距。

3) 每台UPS输入之配线请遵循单机之配线要求。各台UPS的输入须接自同一个输入接线盘。

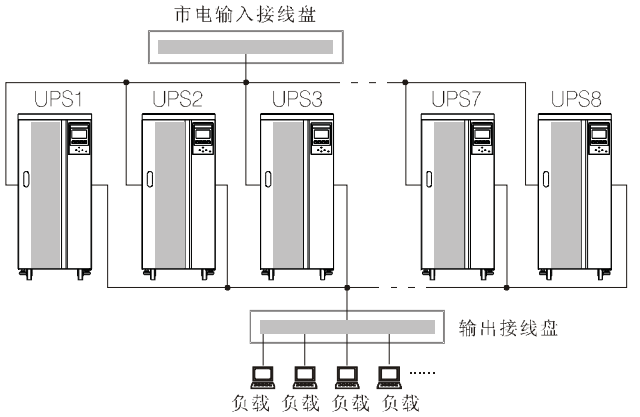
4) 每台UPS输出线接至一输出接线盘，然后由输出接线盘配线去负载。见下图示。

注1：并机支持共用电池组；

注2：每组电池必须采用同一厂家同一型号；

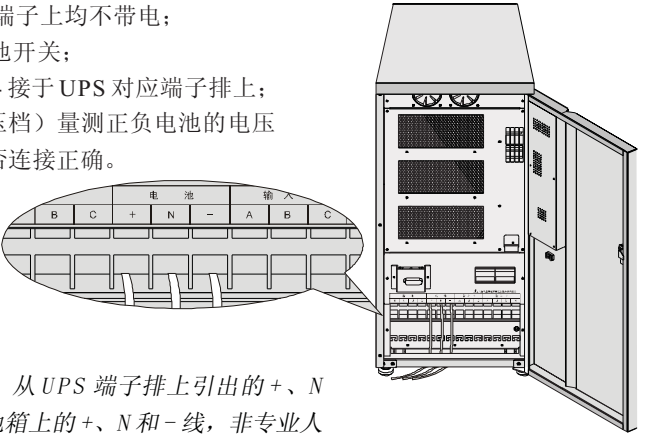
注3：输出配线长度要求：

当每台 UPS 的输出端至输出接线盘间的引线长小于 20 米时，要求各线长差小于 20％
当每台 UPS 的输出端至输出接线盘间的引线长大于 20 米时，要求各线长差小于 10％



3.3 电池箱连接 UPS 的步骤

1.确保 UPS 输入输出端子上均不带电；
2.关闭电池箱上的电池开关；
3.分别将电池 +、N、- 接于 UPS 对应端子排上；
4.用万用表（直流电压档）量测正负电池的电压以及判断电池正负是否连接正确。



注：打开端子排盖板，从 UPS 端子排上引出的 +、N 和 − 线对应连接在电池箱上的 +、N 和 − 线，非专业人士请勿操作，否则有电击危险。

第四章 操作

4.1 单机操作

1.确定A、B、C电源相序接正确，然后送电到UPS。
2.合上电池箱上的开关 (请确定UPS端子排+、N、－与电池箱+、N、－极一一对应)。
3.合上UPS上的“输入开关” （市电输入开关:Main Ⅰ及旁路输入开关:Main Ⅱ），此时风扇转动进行UPS自检，约4秒则自动进入主菜单，然后依下列液晶显示操作。
注：以3C3 EX 20KS为例，以下图中数据为参考值。

1)市电输入

2)约4秒自动进入

3)按ESC键或1分钟内没有任何键被按下则进入

4)按下▼键可以得到以下资料

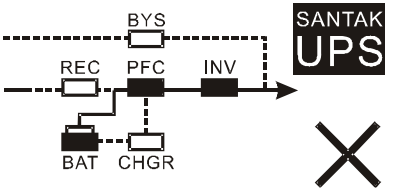
5)再按下▼键可以得到以下资料

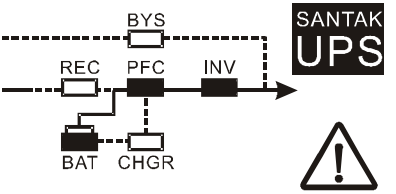
6)再按下▼键可以得到以下资料

7)再按下▼键可以得到以下资料

8)再按下▼键可以得到以下资料

注：当有故障产生时，会在LCD 界面的右下角显示“×”，当有警告产生时，会在LCD 界面的右下角显示“⚠”（如以下界面，以电池模式为列）。





4. 开机动作（按ESC 键可退出上列界面）

1)开机界面

2)按下 ENTER 键

3)选择“是，确认”进行开机

4)开机正常

5)电池供电（切断市电）

5. 关机动作（按 ESC 键可退出上列界面）

1)关机界面

2)如果是单机则显示

3)如果是并机则显示

4)按下 ENTER 键

5)选择“是，确认”进行关机

6)关机正常

注：如果想关闭并机系统中的一台UPS，则选择“单机关机”，如果想关闭整个并机系统，则选择“并机关机”。

6. 查询动作

1) 查询界面

2)在查询画面处按下 ENTER 键

3)在维修专线位置按下 ENTER 键

7. 设定动作（按 ESC 键可退出上列界面）

您可以通过使用者密码（使用者密码初始设置为：1234，用户可以自行更改）进入设定画面，进行以下程序的设定。

1)设定界面（旁路供电）

2)按下▼键

3)按 ENTER 键，出现输入密码显示界面

4)输入密码，按下 ENTER 键

8. 城堡 EX 系列 UPS 可在无市电输入状态下直流开机工作,面板显示相似于市电开机的界面,按照界面提示可执行直流开关机。

9. 直流开机的步骤：

- 在 UPS 旁路模式下设定直流开机功能为开启
- 确认电池正、负、N 线与 UPS 均正确连接
- 合上电池开关
- 轻触 ENTER 键
- 在 LCD 完成自检后约 1min 内手动执行开机命令

注：LCD 完成自检后 1min 内无操作 UPS 会自动断电！

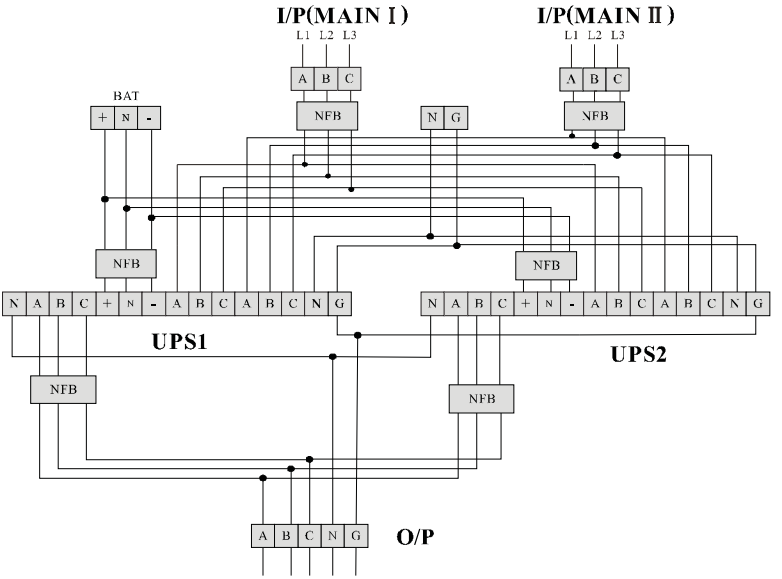
4.2 并机操作

1. 冗余简介

N+X 是目前最可靠的供电结构，N 代表总负载所需的最少 UPS 数，X 代表的是冗余的 UPS 数，也就是系统可以同时承受的故障 UPS 数，当 X 越大，系统的可靠度就会越高。例如有一客户的总负载为 55kVA，采用 20KS 做 N+X 设计，N 为 3，X 可以依可靠度或是成本要求选择，假设用户选择 X=2，平时每台 UPS 均流供电 11kVA。当有 1 台 UPS 故障，其余 4 台 UPS 将以近 14kVA 均流供电。当同时有 2 台 UPS 故障时，剩下 3 台 UPS 将以约 18kVA 均流供电。此系统的最大容许度是同时有 2 台 UPS 故障，这样的机会远小于 1 台 UPS 故障，因此可以大大提高可靠度，对于讲究极高可靠度的使用场合是最佳的方式。

城堡 EX 系列 UPS 具有直接并联功能，只需用并机线（选购件）连接可以进行 2 至 8 台 UPS 并联，来实现功率冗余(N+X)。

2.并机接线图



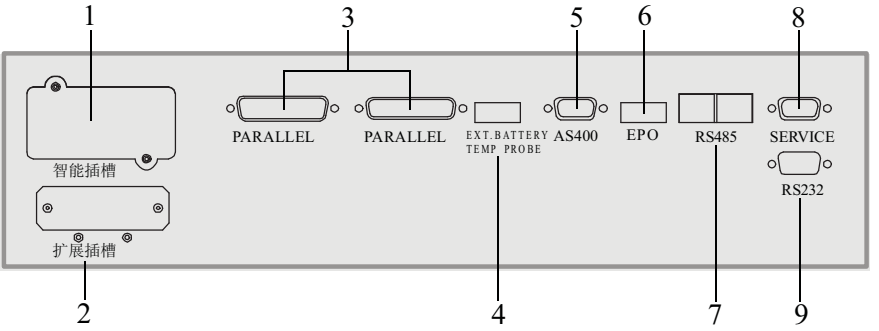
3. 操作说明

1）一般操作要求请遵循单机之操作要求。

2）市电状态下开机后，各台机器会同时跳到逆变状态；关机：逆变状态下关机，当最后一台机器完成关机动作时，各台机器同时关断逆变器而转至旁路状态。

第五章 通讯界面

城堡EX系列UPS提供了智能插槽(Intelligent Slot)、扩展插槽、PARALLEL、EXT. BATTERY TEMP PROBE、AS400、EPO、RS485、RS232及山特内部技术人员专用的SERVICE监控通讯接口。



1. 智能插槽：适用于远程监控管理的WebPower卡（选购件）使用，使您可通过互联网（Internet）对UPS远程监控管理。（智能插槽适配卡分长卡和短卡，城堡EX系列UPS需匹配短卡使用）。

2. 扩展插槽：只提供给特殊需求用户，不对标配用户开放。

3. PARALLEL：并机使用时，并机通讯线接口。

4. EXT.BATTERY TEMP PROBE ：外接电池柜温度接口，可以对电池温度进行监控，从而起到电池智能管理。

5. 标准AS400接口：提供AS400接口，可以直接利用AS400系统的UPS监控功能，实现电源的监控管理（附AS400通讯口的脚位说明）。

6. EPO ：紧急关机开关，提供有紧急关机需求用户，可以直接通过此开关关断UPS输 出 。

7. 标准RS485接口：可以在并机使用时进行UPS的监控管理，使得UPS的电源供应可以完全得到掌握（附RS485通讯口的脚位说明）。

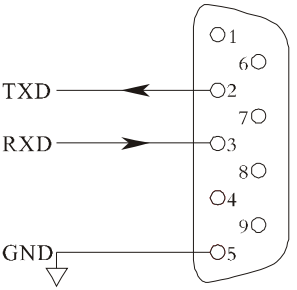
8. SERVICE接口：只提供给山特内部技术人员使用，不对用户开放。

9. 标准RS232接口：可以使用山特图形化管理的WinPower监控软件（附RS232通讯口的脚位说明）。

上述通讯接口的使用问题，请拨打山特400-830-3938或800-830-3938热线咨询。

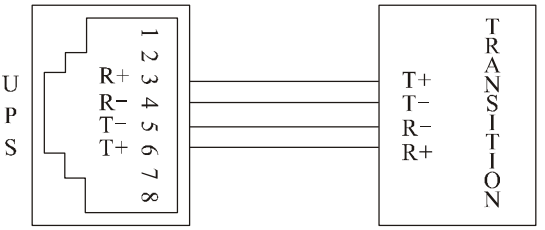
RS232 通讯口的脚位说明：

Pin #	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Output



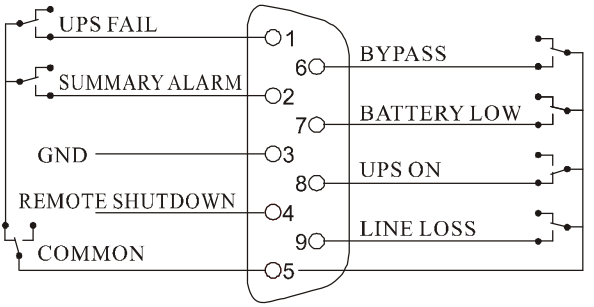
RS485 通讯口的脚位说明：

Pin #	Description	I/O
3	RXDA	Input
4	RXDB	Input
5	TXDB	Output
6	TXDA	Output



AS400 通讯口的脚位说明：

Pin #	Description	I/O
1	UPS Fail	Output
2	Summary Alarm	Output
3	GND	Input
4	Remote Shutdown	Output
5	Common	Input
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Line Loss	Output



第六章　运输、维护与故障排除

搬运 UPS

请遵守下列步骤进行 UPS 的搬运准备。

注意：由于 UPS 很重，需要特殊设备（如叉车）进行装卸。

1. 关闭与 UPS 相连的所有设备。
2. 将 UPS 市电开关及电池组开关断开。
3. 拆除 UPS 端子排的所有连接线。
4. 可将 UPS 放进原来的包装箱进行搬运。

维护与保养

城堡 EX 系列 UPS 只需很少的维护。

1.如果断开电池连接，负载设备将不受停电保护。

2.正常情况下，如果发现电池状况不佳，则必须提早更换，电池更换应由培训合格的专业人员进行，用户不得擅自处理。

注 意：

A.更换电池以前，需关闭 UPS 并脱离市电

B.脱下如戒指、手表之类的金属物品

C.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

D.请勿将电池正负极短接或反接

3. 电池不宜个别更换，整体更换时应遵守电池供应商的指示。

4. 注意 UPS 散热孔的通风顺畅，平均每隔半年清洁一次侧板和风扇的通风孔处的灰尘（清洁前请先断开市电及电池开关）。

故障排除

如果本设备需要检修，请按以下步骤处理：

1．检查 UPS 输入配线是否正确？

2．各空气开关是否跳闸？

3．输入电压是否符合规格要求？

请先参考产品使用手册的“灯号参照表”说明进行适当处理。若问题依然存在，请记录 UPS 的型号、序列号和购买日期、故障现象及灯号状态，LCD 显示故障或警告信息，并拨打山特 400/800 热线电话联系处理（400 热线电话：400-830-3938；800 热线电话：800-830-3938）。

异 常 状 态 表		
问 题	液晶显示或可能原因	处理方法
“故障”灯亮，间歇警报	旁路下或逆变下过载	卸载至要求值。
	市电异常	检查输入配线是否掉线、输入电压是否异常。
	电池未接	检查电池开关是否合上、电池配线是否接触良好。
“故障”灯亮，连续警报	UPS故障	请与山特客服中心联络。
电池放电时间低于初次放电时间1/3以下	电池耗损	
	充电器故障	
LCD面板不显示字符		先断电检查排插是否插好，然后重新上电

附录一 灯号参照表

序号	工作状态	面板指示灯显示					蜂鸣器	面板显示
		旁路灯	市电灯	逆变灯	电池灯	故障灯		
1	standby模式					8秒1闪	8秒1鸣	无输出
2	bypass模式							
	旁路正常	●				2分钟1闪	2分钟1鸣	旁路供电
	电池未接	●				4秒1闪	4秒1鸣	电池未接
	旁路相序错误或者旁路丢失					2秒1闪	2秒1鸣	旁路相序错误或者旁路异常
	旁路过载	●				1秒1闪	1秒1鸣	输出过载
3	line模式							
	正常		●	●			无	三相正常供电
	电池未接		●	●		4秒1闪	4秒1鸣	电池未接
	过载		●	●		1秒1闪	1秒1鸣	输出过载
4	电池模式							
	正常			●	●	4秒1闪	4秒1鸣	电池供电
	电池电压低			●	★	1秒1闪	1秒1鸣	后备时间不足，建议关闭负载
	过载			●	●	2秒1闪	2秒1鸣	输出过载
5	电池自检模式							
	正常	★	★	★	★		无	
	电池电压低	★	★	★	★	1秒1闪	1秒1鸣	
6	故障模式							
	旁路正常在旁路模式	●				长亮	长鸣	UPS故障
	旁路正常在standby模式					长亮	长鸣	
7	Converter模式		●	●			无	Converter模式
8	ECO模式	●		1分钟1闪			1分钟1鸣	ECO模式

若有出现不包含以上的显示或警示状况， 请与经销商或拨打山特服务热线咨询。

● 指示灯点亮

★ 指示灯闪烁

附录二 维修保证

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，请拨打400/800电话联系。作为山特用户，您享有如下服务：

- 三年保修（含从山特购买的电池）；
- 24小时服务热线（热线号码见箱体外盖警告标签）；
- 全国联合保修；
- 网上技术服务支持；
- 提供免费上门维修服务。

发生以下情况，不在保修范围内：

- 人为故障；
- 保修期外；
- 生产序号更改、丢失的成品；
- 因不可抗拒及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。

Thanks for choosing Santak products!

All warnings and operation instructions in the manual and on the machine should be strictly followed and this user manual should be kept properly. Start-up is not allowed until all safety and operation instructions are read.

Solemn Statement

Supervision Code Statement

To ensure safe electricity application and help you purchase authentic SANTAK UPS, the following items should be heeded:

1. Make sure of: SANTAK®, 山特®
2. SANTAK Electronics (Shenzhen) Co. Ltd. never grants authorization in any form to any company to manufacture UPS;
3. Labelled on all SANTAK products is a "electronic supervision code" ("electronic supervision code" is a code of product identification advocated by SIQSAQ in order to strike the counterfeit).
4. Consumers can check and verify electronic supervision code by the following means as well as file a complaint or inform against offense by accessing "Product Identification, Authentification and Tracking System".

Inquiry mode:

Log on to www.95001111.com 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 for further details or lodge your complaints.

Copyright Statement

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Please access www.santak.com.cn to download the latest version of product instructions.

Safety Instructions

Operation Safety

1. Prior to the application, please read “Safety Instructions” carefully to ensure correct and safe application. Please keep the user manual properly.
2. During operation, attention should be paid to all warning symbols and operations should be followed strictly as required.
3. Equipment is not supposed to be used in environment that directly exposed to the sunlight or raindrops or in humid.
4. The equipment should not be installed close to area of thermal sources or any area where there is presence of devices such as electric heaters and furnaces.
5. Make sure the safety space should be left for proper ventilation when placing UPS. Refer to the instructions during installation.
6. Dry items should be used for cleaning.
7. In case of a fire hazard, dry powder extinguisher should be used properly. Using liquid fire extinguisher may result in electric shock hazard.
8. Storey bearing capacity of machine and batteries should be taken into consideration prior to installation.

Electric Safety

1. Before electricity is switched on, make sure earthing is properly done and wire and battery polarity are correctly connected.
2. When UPS relocation or wire reconnection is necessary, AC should be switched off and UPS should be completely turned off, otherwise there might be a danger of electric shock because output terminal might be still electrified.
3. Please use SANTAK specified appendix devices and accessories.

Battery Safety

1. Battery service lifetime will be shortened as ambient temperature rises. Replace batteries periodically to guarantee normal UPS performance and sufficient back-up time.
2. Only personnel with proper expertise can carry out the maintenance of accumulator batteries.

3. Replacement of accumulator batteries requires a match of same type and model with equal quantity.
4. As accumulator batteries may contain potential eletric shock and short-circuit current danger, to avoid accidents that might be thus resulted, the following warnings should be observed during battery replacement:
A. Do not wear watches, rings or similar metallic items;
B. Use insulated tools;
C. Put on rubber shoes and gloves;
D. Do not place metallic tools or similar metallic parts on the batteries;
E. Switch off load connected to the batteries before dismantling battery connection terminals.
5. Do not expose accumulator battery to fire in order to avoid possible explosion that might endanger physical safety.
6. Non-professionals are not allowed to open or destroy accumulator batteries for electrolytes in batteries contain strong acid and other dangerous substances which will cause damages to both human skins and eyes. Should electrolytes come into any contact with human body unintentionally, rinse with clean water and seek medical advice.
7. Do not cause battery positive and negative polarity short circuit otherwise electric shock or inflammation may occur.

Maintenance

1. Working environment and storage means can affect the service term and reliability of this product to some extent. Therefore, the product is not suitable for performance in the following environment:
Locations where temperature exceeds the maximum or goes below the minimum temperature as required by technical specifications or humidity is improper (temperature range: 0℃～40℃; relative humidity range: 20%～90%).
Locations where vibration and collision are constant;
Locations where metallic dusts, corrosive substances as well as salts and inflammable gases are present.
2. For long-term inaction, UPS (without batteries) should be kept in dry environment with temperature ranging from −25℃～+55℃. Before start-up, ambient temperature should be brought back to 0 or above for a certain period of time.

Contents

Chapter 1 Brief introduction

1.1 Product introduction

Castle EX Series products are high-efficiency and high-performance, double conversion, pure-online and three phase input and three phase output UPS, with unit capacity ranging between 20KVA-40KVA. Categorized by capacity, the products can be further divided into 3C3 EX 20KS/3C3 EX 20KS-ISO, 3C3 EX 30KS/3C3 EX 30KS-ISO and 3C3 EX 40KS/ 3C3 EX 40KS-ISO. This series not only provides perfect solution for power source protection and successfully solves problems such as blackout, boost, brownouts, sags, decaying, oscillation, high voltage impulse, voltage fluctuations, surges, harmonic distortion, disturbances, frequency fluctuation etc, but also enhances adaptability to complicated working environments so that the application fields is well extended to computer equipments, communication equipments and other controlling equipments with good adaptability to complicated industrial environments as well. Therefore, Castle EX Series products can be applied in a diversified multi-industries field such as telecommunications, financing, transportation, government, manufacturing and energy sectors.

Castle EX Series products are also capable of ECO mode. Under ECO mode, UPS is powered by AC supply while in case of abnormal AC supply UPS will be supplied by accumulator battery after conversion through inverter. As the energy conversion efficiency reaches as high as 98% under ECO mode when there is normal AC supply, the energy saving effect of UPS is remarkable. Meanwhile, when UPS inverter is at start-up mode but without power output, which is similar to hibernation mode, the inverter life term can be largely extended. At normal AC supply, except that ECO mode displays a relatively poorer power delivery quality compared to normal double conversion mode, it is capable of satisfying the needs of most power-driven equipments in today's AC network incorporation.

Remark: under ECO mode, conversion time of 0ms mode is not guaranteed and it is applicable only to single machine.

1.2 Frequently used symbols

The following symbols will be frequently used in this User Manual as well as in the process of actual application, therefore, correct identification and understanding of their connotations prove necessary.

Symbols and Indications	
Symbol	Description
	Attention
	Dangerous high voltage
	Alternating current(AC)
	Direct current(DC)
	Grounding Protection
	Recycle
	Do not dispose with sundries

Remark: Proper attention should be given to all warning symbols on the equipment and no tearing or damaging of these symbols is allowed.

1.3 Product standard

Castle EX Series products are up to the following safety standards:

National Standard	GB4943
TLC Certification	YD/T1095

Castle EX Series products are up to the following level of EMC requirement:

EMI	EMS		
Radiation and Conduction: IEC62040-2:2005 C3	ESD:	IEC:61000-4-2	Level-4
	RS:	IEC:61000-4-3	Level-3
	EFT:	IEC:61000-4-4	Level-4
	Surge:	IEC:61000-4-5	Level-4

WARNING:This is a product for commercial and industrial application in the second environment-installation restricitions or additional measures may be needed to prevent disturbances

1.4 Technical parameters and specifications

Input

Wire connection: three phase four wire +grounded

Voltage: 380 ×(1 +25% / -45%)VAC (when input voltage<75%, output power derating is required)

Frequency: 40Hz-70Hz

Power factor: over 0.99

Bypass voltage range: 380(1± 15%)

Output

Wire connection: three phase four wire + grounded

Voltage: 380 ×(1 ± 1%) VAC or 220 ×(1 ± 1%) VAC (with balanced load)

Power factor: 0.8

Frequency error: ± 8% at 50Hz (track bypass frequency input; when frequency exceeds ±8% or under the mode of battery power supply, frequency output should be ± 0.1% of the rated amount.)

Overload time: exceed 10min (110% ＜ load ≤ 125%)

exceed 1min (125% ＜ load ≤ 150%)

Unbalanced load capacity: 100%

Battery voltage and charging voltage

Name/Battery number		14	15	16
Battery nominal voltage	Positive battery	+168VDC	+180VDC	+192VDC
	Negative battery	−168VDC	−180VDC	−192VDC
Rated charging voltage	Positive voltage	+189VDC	+202.5VDC	+216VDC
	Negative voltage	−189VDC	−202.5VDC	−216VDC

Operating environment

- Ambient temperature: 0℃ -40℃
- Ambient humidity: 20%-90 %

- Altitude: below 1000m
- Storage temperature: -25℃-55℃

Remark: when UPS has been stored under a temperature of 0℃ or has been inactive for a long time, it is suggested that prior to start-up of UPS environmental temperature should be brought back to 0℃ or above for 2 hours.

General specifications

MODEL NO.	Machine size (mm) L X W X H	N.W. (kg)	G.W. (kg)
3C3 EX 20KS	643×420×956	82	122
3C3 EX 20KS-ISO	643×420×956	208	248
3C3 EX 30KS	710×470×1150	110	160
3C3 EX 30KS-ISO	710×470×1150	275	325
3C3 EX 40KS	710×470×1150	114	164
3C3 EX 40KS-ISO	710×470×1150	314	364

1.5 Telephone hotline

If you have any questions, please call SANTAK toll-free hotline by dialing 4008303938 or 8008303938 and our professional technical personnel will provide 24-hour hotline service for you.

Chapter 2 Exterior appearance

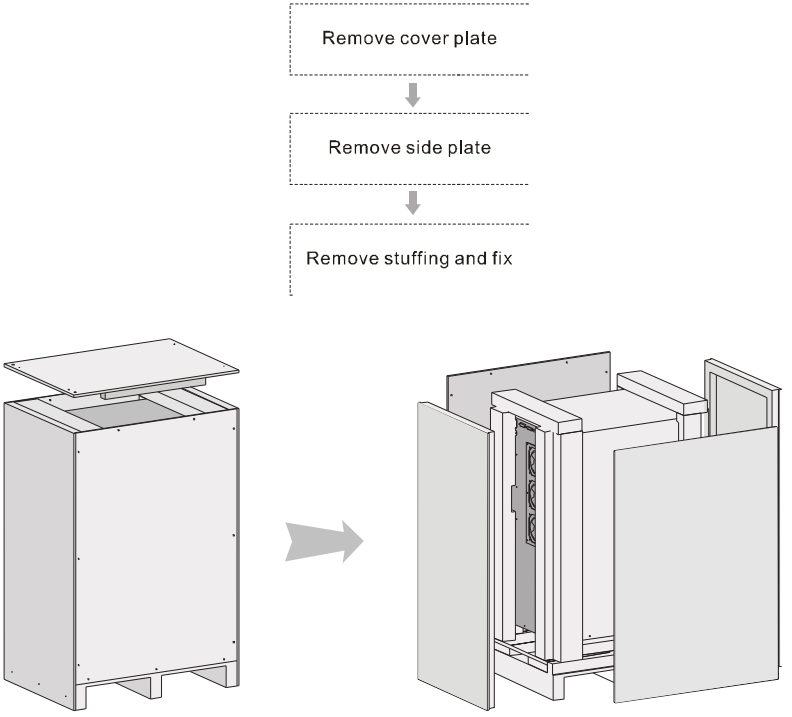
2.1 Unpacking inspection

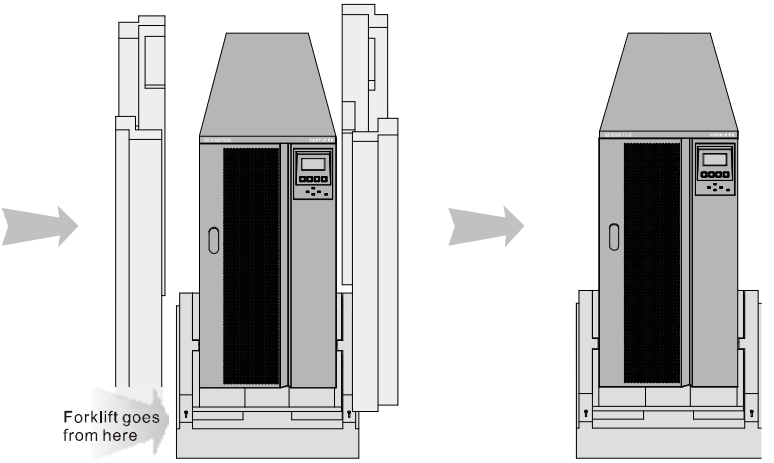
1.Unpack and there should be:

- Winpower disc
- User Manual

2. Check whether UPS is damaged during the process of transportation or not. Should any damage be observed or parts be found missing, do not start the machine. Forwarder and distributor should be immediately advised.

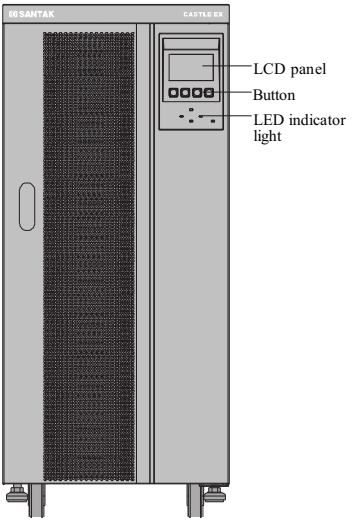
Remark: prior to transportation make sure of the height of the door and other obstacles standing in the passage. Refer to the following figure for the dismantling of machine cabinet:



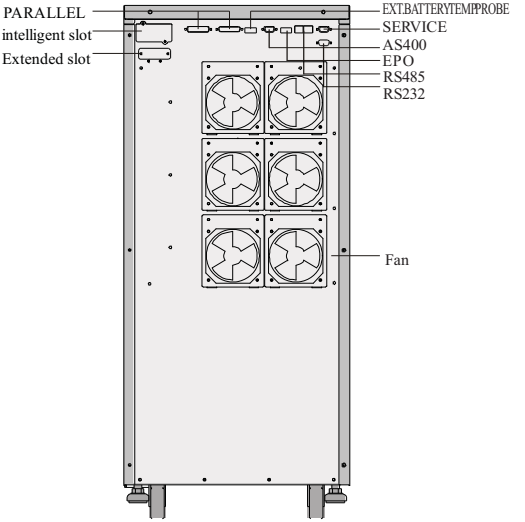


2.2 Exterior figure

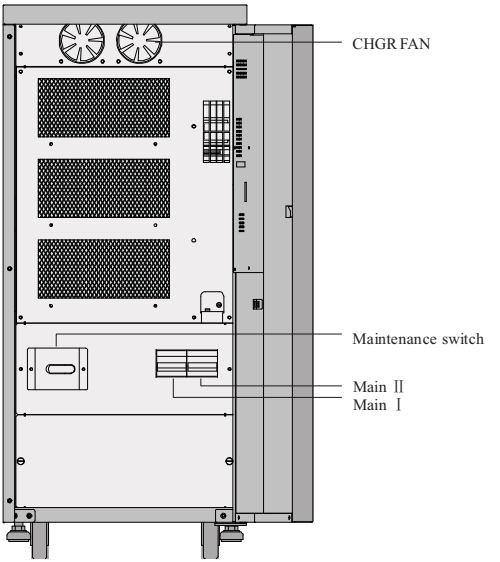
Exterior figure of 3C3 EX 20KS/3C3 EX 20KS-ISO UPS



Front view

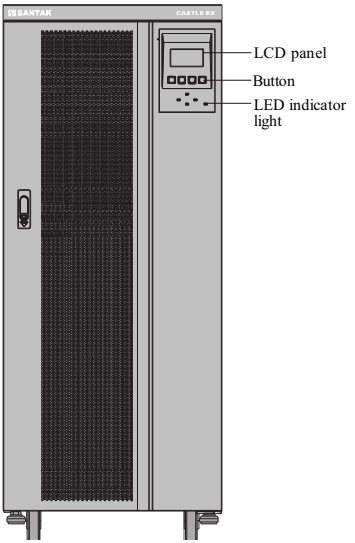


Rear view

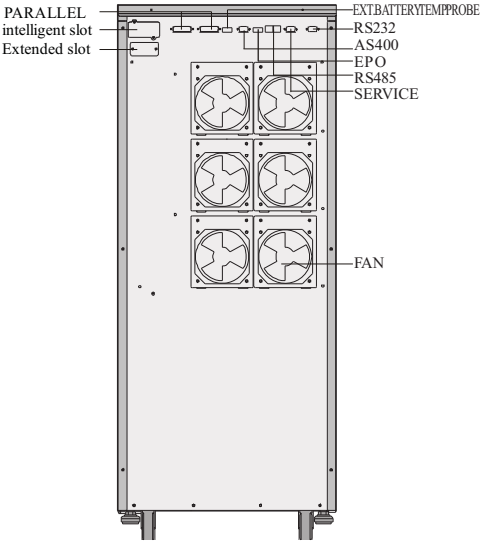


Front view (without front panel)

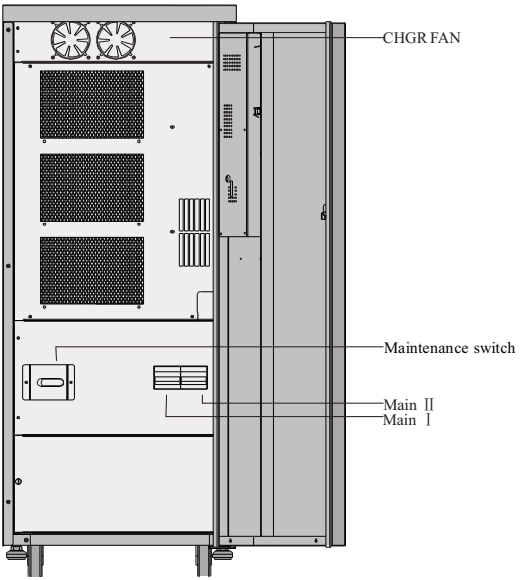
Exterior figure of 3C3 EX 30KS/3C3 EX 30KS-ISO,3C3 EX 40KS/3C3 EX 40KS-ISO UPS



Front view

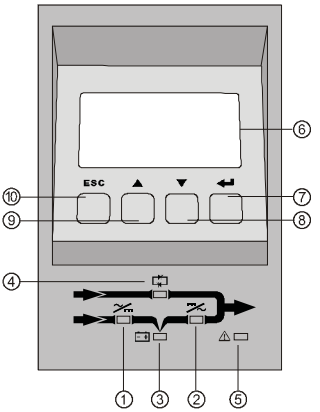


Rear view



Front view (without front panel)

2.3 Panel instructions



① AC: this light and inverter light will turn “green” when UPS is powered directly by AC;

② Inverter: this light will turn “green” when UPS is loaded through the inverter;

③ Battery: this light will turn “yellow” when UPS is powered by batteries;

④ Bypass: this light will turn “green” when UPS is power loaded by AC through bypass.

⑤ Fault: this light will turn and stay “red” with continuous warning tone being given off in case of UPS abnormal function; or flash “red” with intermittent warning tone being given off.
⑥ LCD: display UPS condition.
⑦↵: Confirm/Enter; press this button to select a menu or confirm an operation.
⑧▼: PageDown; press this button to switch to next screen display under the same menu.
⑨▲: PageUp; press this button to return to next screen display under the same menu.
⑩ Esc：Escape; press this button to return to previous menu or cancel a certain operation.

Remark: Refer to Appendix 1 for detailed information of LED in accordance with UPS condition.

Chapter 3 Installation instructions

3.1 Single machine installation

1) The installation of this unit must be performed in compliance with the electrical code by professional personnel.

2) Install the UPS in a clean and stable environment that is free of vibration, dust, high humidity, flammable gas, flammable liquid or caustic substance.

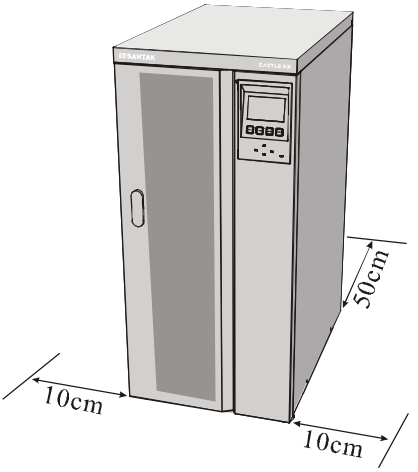
3) To ensure normal UPS performance, ambient temperature should range between 0℃-40℃. If temperature exceeds 40℃, maximum load should be decreased progressively by 12% of the rated amount along with every increase of temperature by 5℃. The maximum ambient temperature for normal UPS performance should not exceed 50℃.

4) It is suggested that battery pack should work within a temperature range from15℃ to 25℃.

5) Altitude for normal UPS function should not exceed 1000m. Should UPS be intended for application above 1000m, progressive decrease of rated output should be applied as listed in the following chart:

Altitude(M)	1000	1500	2000	2500	3000	3500	4000	4500	5000
Derating coefficient	100%	95%	91%	86%	82%	78%	74%	70%	67%

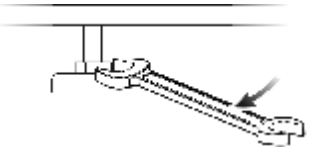
6) Castle EX Series adopt forced fan cooling and installation spot should make allowance for ventilation. Meanwhile, inside maintenance should be carried out from the front side and therefore maintenance space should also be considered in advance. Refer to the following figure for installation space.



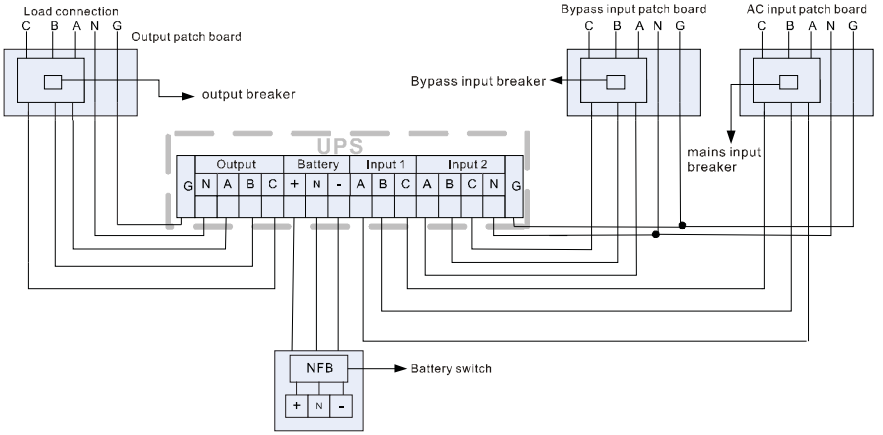
7) External batteries of Castle EX Series UPS require serial connection of two groups of 14-16 batteries (12VDC per battery) with the same capacity, nominal

voltage for each group being168VDC-192VDC. Battery capacity and number of group can be selected at your option. Battery pack must be equipped with DC switch (it is suggested that selection of DC switch should be in line with installation drawing for wire connection).

8) Brake pad: use wrench 19# in clock-wise direction so as to screw the brake pad down to the ground, keeping the machine from moving.



9) Installation and wire connection diagram



10) Jumper list for Castle EX UPS

Machine Model	Rated power	Input live wire Diameter	Input switch	Output live wire Diameter	Battery positive and negative wire Diameter/ battery Diameter	Ground wire Diameter	Output N wire Diameter	Battery switch
3C3 EX 20KS	20KVA/ 16KW	10AWG/ 6mm²	3 Φ 63 A/ 380VAC	10AWG/ 6mm²	8AWG/ 10mm²	8AWG/ 10mm²	8AWG/ 10mm²	3 Φ 125A 250VDC
3C3 EX 20KS-ISO	20KVA/ 16KW	10AWG/ 6mm²	3 Φ 63 A/ 380VAC	10AWG/ 6mm²	8AWG/ 10mm²	8AWG/ 10mm²	8AWG/ 10mm²	3 Φ 125A 250VDC
3C3 EX 30KS	30KVA/ 24KW	8AWG/ 10mm²	3 Φ 80 A/ 380VAC	8AWG/ 10mm²	6AWG/ 16mm²	6AWG/ 16mm²	6AWG/ 16mm²	3 Φ 150A 250VDC
3C3 EX 30KS-ISO	30KVA/ 24KW	8AWG/ 10mm²	3 Φ 80 A/ 380VAC	8AWG/ 10mm²	6AWG/ 16mm²	6AWG/ 16mm²	6AWG/ 16mm²	3 Φ 150A 250VDC
3C3 EX 40KS	40KVA/ 32KW	6AWG/ 16mm²	3 Φ 100A/ 380VAC	6AWG/ 16mm²	4AWG/ 25mm²	4AWG/ 25mm²	4AWG/ 25mm²	3 Φ 200A 250VDC
3C3 EX 40KS-ISO	40KVA/ 32KW	6AWG/ 16mm²	3 Φ 100A/ 380VAC	6AWG/ 16mm²	4AWG/ 25mm²	4AWG/ 25mm²	4AWG/ 25mm²	3 Φ 200A 250VDC

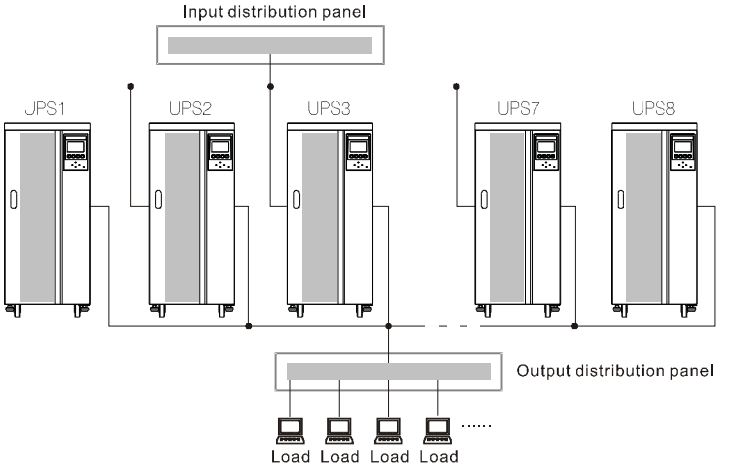
Remark:
1. For Castle EX Series UPS, input neural line should be directly connected to input "N" terminal of UPS wire connection terminal bay without AC input idle-run;
2. When single-phase current exceeds 100A, switches of protective atmosphere should be equipped with arc control devices;
3. Battery positive/negative wire size: indicates UPS and battery box wire size; red wire signifies the positive polarity and black wire the negative,while blue wire the neutral.
4. Proper positioning in line with above specifications should be done prior to installation.

11) Sequence of phase A, B and C should be properly connected otherwise UPS will display wrong phase sequence fault and start-up will fail.
12) Connect one end of communication line to terminal RS232 of UPS while the other end to terminal RS232 of PC. PC supervision over UPS can be realized after successful installation of WinPower supervising software on PC.

3.2 Parallel machine installation

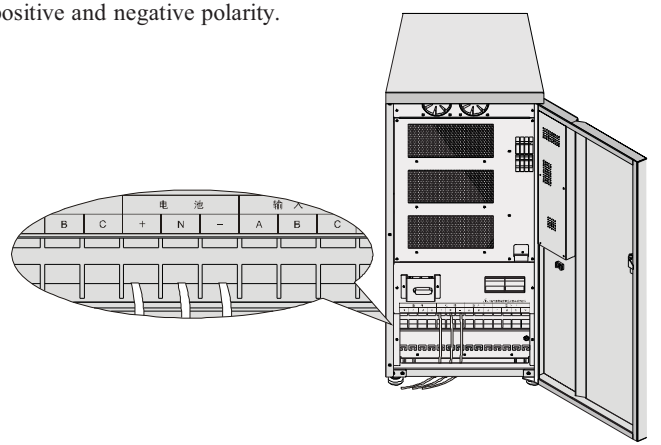
1) Follow installation instructions for general installation requirements.
2)Ventilation spacing between machine flanks should be a minimum of 10cm and a minimum of 50cm (considering the space for replacing fans) for the back for machine.
3) Input wiring for each set of UPS should follow the requirements for that of single unit. Each UPS input should be connected to the same input patch board.
4) Each UPS output wire should be connected to the output patch board, from which wires are distributed for load as illustrated in following figure.

Remark 1: common battery pack is applicable in parallel machine mode;
Remark 2: each battery pack should be of the same model from the same manufacturer;
Remark 3: requirement of output wiring length:
When the lead from the output terminal of each set of UPS to the output patch board is less than 20m, wire difference should be less than 20%;
When the lead from the output terminal of each set of UPS to the output patch board is longer than 20m, wire difference should be less than 10%.



3.3 Procedures of connecting battery box to UPS

1. Make sure that UPS input and output terminals are uncharged;
2. Turn off the battery switch on battery box;
3. Connect “+”, “N” and “-“ of battery to the corresponding terminal bay of UPS;
4. Use multimeter (DC Voltage) to measure the voltage of positive and negative batteries as well as positive and negative polarity.



Remark: remove the panel on the terminal bay and connect “+”, “N” and “-” wires from UPS terminal bay to “+”, “N” and “-” of the battery box. Non-professionals are not allowed to carry out the task otherwise electric shock may occur.

Chapter 4 Operation

4.1 Single machine operation

1. Make sure A, B and C phase sequences are correctly connected and then supply power to UPS.

2. Turn on the switch on battery box (make sure that the "+", "N" and "-" of terminal bay are in accordance with those on the battery box).

3. Switch on "input breaker" (Line input breaker: Main Ⅰ; bypass input breaker: Main Ⅱ) on UPS and fans start to rotate for UPS self-inspection. Main menu can be accessed within about 4sec and then operations should be carried.

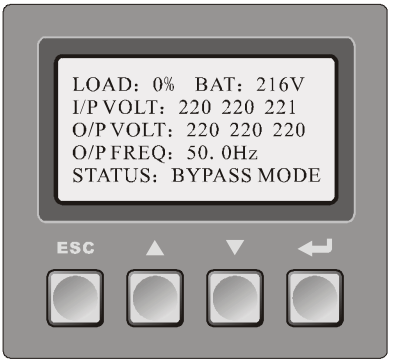
Remark: the following drawing takes 3C3 EX 20KS as an example and statistics are only for reference.

1) Power on

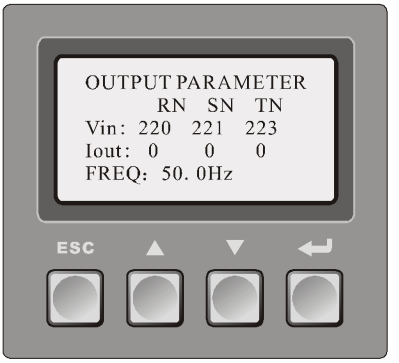
2) Automatic access within about 4s

3) Press ESC to access or automatically access within 1min with no button being pressed

4) Press ▼ to obtain the below information

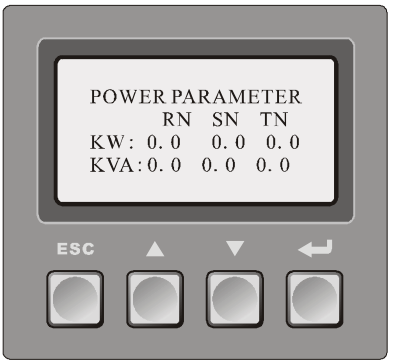


5)Press ▼ again to obtain the below information

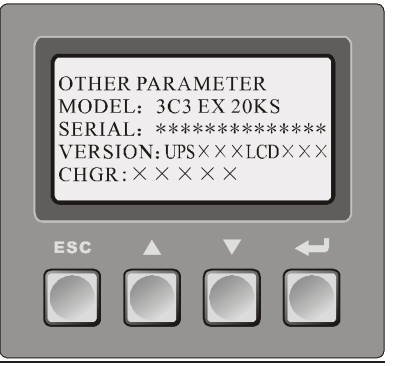


6)Press ▼ again to obtain the below information

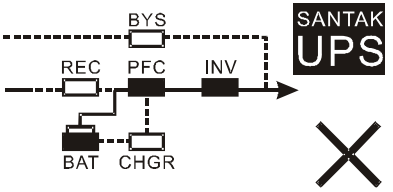
7)Press ▼ again to obtain the below information

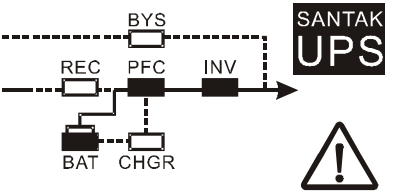


8)Press ▼ again to obtain the below information



Remark: when malfunction occurs, "x" will appear at the lower right corner of the picture while when warning occurs "⚠" will appear at the same position (as illustrated in the below picture with battery mode as an example).

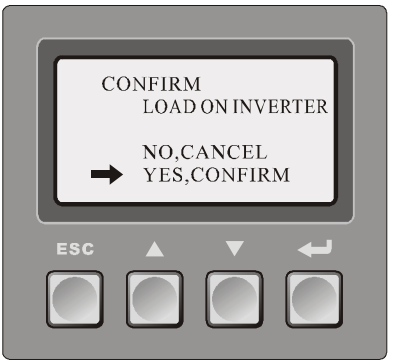




4. Start-up action (press ESC to exit the above picture)

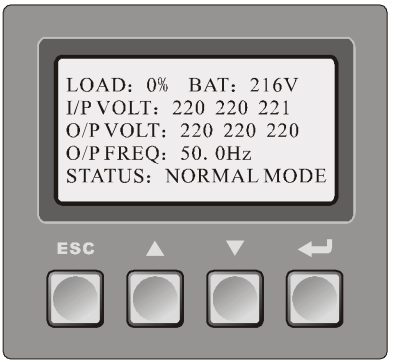
1)Switch-on picture

2)Press ENTER

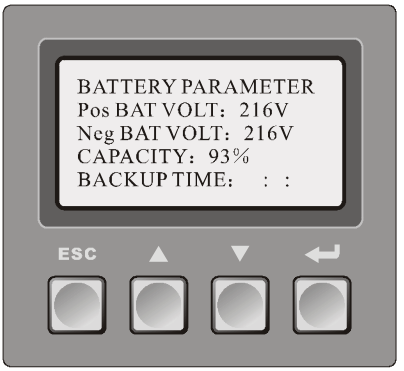


3)Select "Yes, Confirm" to switch on the machine

4)Normal Switch-on



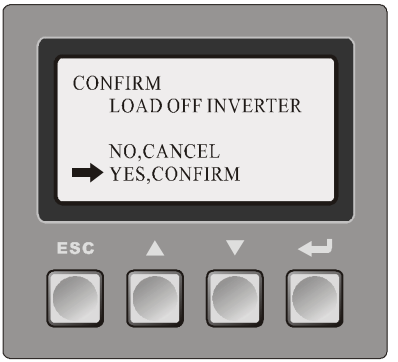
5)Battery power supply (switch off line input breaker)



5. Switch-off action (press ESC to exit above picture)

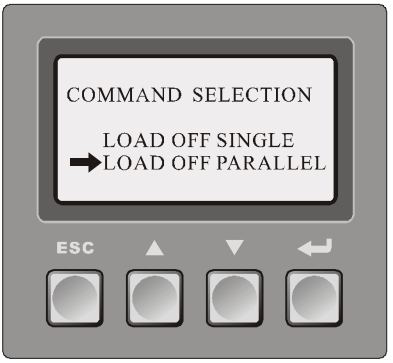
1)Switch-off picture

2)If it is in single machine mode, the following will appear

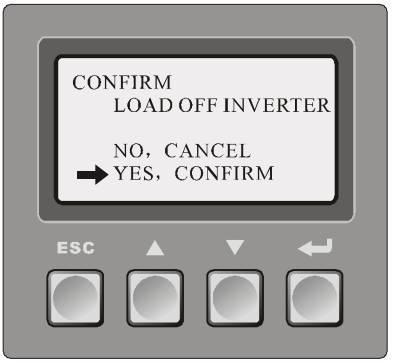


3)If it is in parallel machine mode, the following will appear

4)Press ENTER



5)Select “Yes, Confirm” to switch off the machine



6)Normal Switch-off

Remark: If you intend to switch off only one set of UPS among the parallel machine system, select “single machine switch-off”; if switch-off is intended for the entire parallel machine system, select “parallel machine switch-off”.

6. Help

1) Help picture

2)Press ENTER on help picture

3)Press ENTER on SERVICE HOTLINE picture

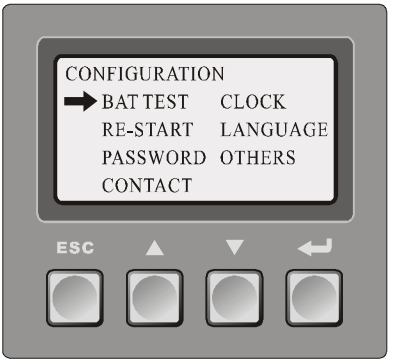
7. Setting action (press ESC to exit the above picture)

You are able to access Setting picture by using user combination (default: 1234, subject to personal modification) so as to set the following programs.

1)Setting picture (bypass power supply) 2) Press ▼

3)Input Password display

4)Input password and press ENTER



8. Castle EX Series is capable of DC start-up without AC input, panel display being similar to switch-on picture with AC supply. DC switch-on and off are available by following instructions appearing in the pictures.

9. Procedures of DC switch-on:

- Activate DC switch-on function set under UPS bypass mode
- Make sure that “+”, “-” and “N” wires of batteries are properly connected to UPS
- Switch on batteries
- Lightly touch ENTER
- Manually conduct switch-on order within about 1min after LCD self-inspection

Remark: UPS will be switched off automatically if there is no operation within 1min after LCD self-inspection is completed!

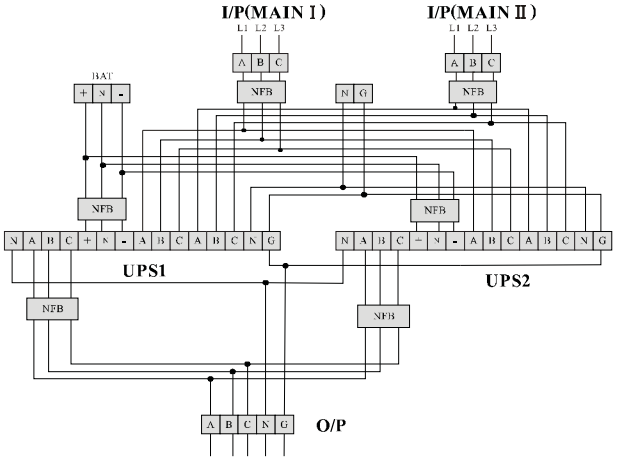
4.2 Parallel machine operation

1. Redundancy introduction

N+X is currently the most reliable power supply structure, in which N indicates the minimum UPS number required for the total load and X is the redundant UPS number, namely, the malfunctioning UPS number that the system can simultaneously bear. The larger X is, the higher reliability of system will be. For instance, if the total load of a customer registers 55kVA, we can use Castle 20KS for N+X design. With N taking up 3, X can be selected in accordance with reliability degree or cost requirement. Supposing customer selects X=2 and equalized UPS power supply is 11kVA for each unit, when one set of UPS breaks down with malfunction, the remaining four sets will provide power with almost 14kVA equalized current; if two sets of UPS fail, the remaining three sets of UPS are supposed to provide power supply with almost 18kVA equalized current. The maximum allowance of this system is for two sets of UPS going down at the same time, the chances of which are much smaller than those of one UPS malfunction. Therefore, the reliability degree can be largely enhanced, making it an optimal mode for application in locations where high degree of reliability is always a focus.

Castle EX Series UPS is capable of direct parallel connection, which only requires the parallel connection wires (optional) for 2 to 8 sets of UPS in parallel connection in order to realize power redundancy (N+X).

2. Parallel machine wire connection drawing

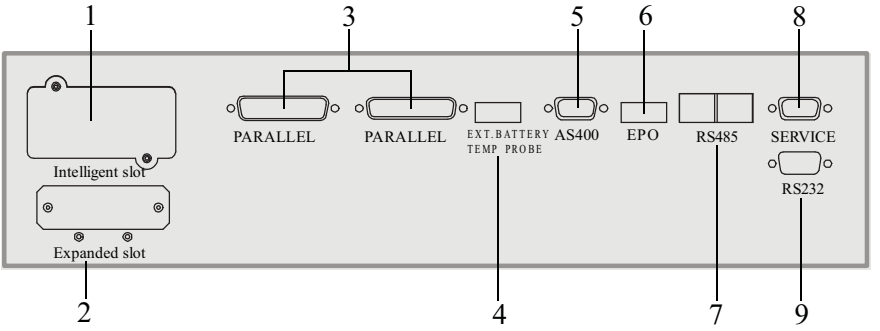


3. Operation instructions

1) Follow single machine operation instructions for general operation.
2) After switch to Line mode, all machines will jump to conversion mode; switch off: when switch-off is conducted under conversion mode, all machines will simultaneously switch off inverter and then convert to the bypass mode after the last machine completes switch-off action.

Chapter 5 Communication Interface

Castle EX Series provide Intelligent Slot, Expanded Slot, PARALLEL, EXT.BATTERY TEMP PROBE, AS400, EPO, RS485 and RS232 as well as SERVICE Supervising Communication Interface exclusively available to SANTAK technical personnel.



1. Intelligent slot: suitable for WebPower card (optional) of remote supervising management, enabling you to realize remote supervising management on UPS by accessing Internet. (Intelligent slot adapter card is divided into long card and short card; Castle EX Series require the latter.)

2. Expanded slot: available only to users with special requirements and not open to those of standard configuration.

3. PARALLEL: communication wire interface under parallel machine mode.

4. EXT.BATTERY TEMP PROBE: temperature interface for external battery cabinet, capable of battery temperature supervision so as to realize battery intelligent management.

5. Standard AS400 interface: provides AS400 and users can directly use UPS supervising function offered by AS400 system to realize power source management (See Appendix for AS400 port Pin).

6. EPO: emergency power off, which provides users having emergency switch-off need with direct UPS output switch-off function.

7. Standard RS485 Interface: capable of UPS supervising management when parallel machine, providing complete control over UPS power supply (See Appendix for RS485 port Pin).

8. SERVICE Interface: available only to SANTAK internal technical professionals and not open to users.

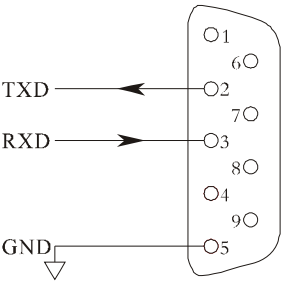
9. Standard RS232 Interface: applicable to WinPower supervising software of graphic man

agement (See Appendix for RS232 port Pin).

For more information regarding the usage of the above communication interfaces, please call SANTAK Hotline 400-830-3938 or 800-830-3938.

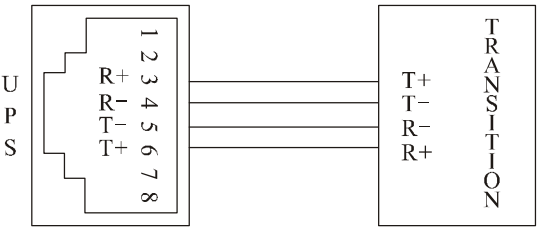
RS232 port:

Pin #	Description	I/O
2	TXD	Output
3	RXD	Input
5	GND	Output



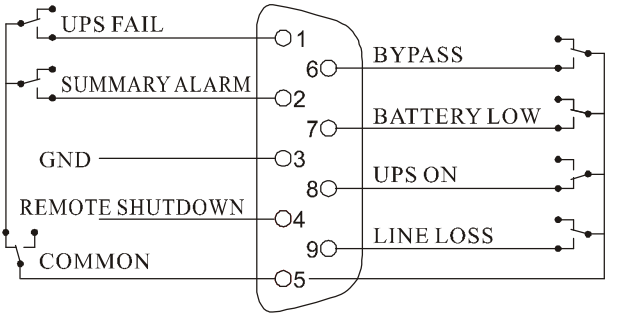
RS485 port:

Pin #	Description	I/O
3	RXDA	Input
4	RXDB	Input
5	TXDB	Output
6	TXDA	Output



AS400 port:

Pin #	Description	I/O
1	UPS Fail	Output
2	Summary Alarm	Output
3	GND	Input
4	Remote Shutdown	Output
5	Common	Input
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Line Loss	Output



Chapter 6 Transportation, Maintenance and Troubleshooting

Remove UPS

Make preparation for UPS relocation according to the following steps.

Remark: special equipment (forklift) is needed for loading and unloading due to the heavy weight of UPS.

1. Switch off all equipments connected to UPS.
2. Turn off UPS AC switch and battery pack switch.
3. Disconnect all wires from UPS terminal bay.
4. Put UPS back into the original carton for relocation.

Maintenance

Castle EX Series UPS requires minimum maintenance.

1. If battery is switched off, loaded equipments will not be covered for power-off protection.
2. Under normal circumstance, batteries should be found in poor performance, replacement should be done as soon as possible only by qualified personal with proper training. Users are not allowed to replace without authorization.

Remark:

A. Prior to battery replacement, switch off UPS and remove it from AC.

B. Take off metallic articles such as rings and watches.

C. Use screw drivers equipped with insulated handles and do not place tools or other metallic substances on the batteries.

D. Short circuit or reverse connection is forbidden for battery polarity connection.

3. It's not recommended to replace batteries individually. Complete replacement should follow instructions given by battery suppliers.
4. Make sure UPS vent are properly ventilated and clean side frames and fan vents from dusts every half a year (switch off AC and battery power prior to cleaning).

Troubleshooting

Should maintenance prove necessary, the following steps should be followed:

1. Check if UPS input wiring is done properly.
2. Check if all air switches are tripped out.
3. Check if voltage input is within specified range.

Please refer to “Light Reference Table” of this User Manual first and then conduct proper treatment. If problems still exist, please record UPS model, serial number as well as purchase date, symptom on fault, light condition, LCD malfunction or warning information, and then call SANTAK Hotline 400/800 for advice (4008303938/8008303938).

Table of Malfunctions		
SYMPTOM	LCD DISPLAY OR POSSIBLE CAUSE	SOLUTION
The Fault LED is lit, periodic beeps	Overloaded in bypass or inverter operation mode	Unloaded to the required value
	Mains out of tolerance	Check that the input wiring and input voltage are normal
	Battery disconnected	Check the battery switch and the battery wiring
The Fault LED is lit, Continuous beeps	UPS Fault	contact SANTAK Customer Service Center
Battery discharging time less than 1/3 of initial discharging time	Battery exhausted	
	charger Fault	
LCD panel has no display		Switch off and make sure socket is properly connected. Power up again

Appendix 1 Light Reference Table

Serial No.	working condition	Indicator					BUZZER	LCD display
		Bypass light	Line light	Inverter light	Battery light	Fault light		
1	Standby Mode					One flashing every 8 seconds	One beep every 8 seconds	No output
2	Bypass Mode							
	Bypass normal	●				One flashing every 2 minutes	One beep every 2 minutes	Power by bypass
	Battery open	●				One flashing every 4 seconds	One beep every 4 seconds	Battery is not connected
	Bypass phase error or bypass loss					One flashing every 2 seconds	One beep every 2 seconds	Bypass phase sequence fault or bypass abnormal
	Bypass Overload	●				One flashing every 1 second	One beep every 1 second	Output overload
3	line Mode							
	Normal		●	●			None	Normal three-phase power supply
	Battery open		●	●		One flashing every 4 seconds	One beep every 4 seconds	Battery is not connected
	Overload		●	●		One flashing every 1 second	One beep every 1 second	Output overload
4	Battery Mode							
	Normal			●	●	One flashing every 4 seconds	One beep every 4 seconds	Powered by battery
	Low battery voltage			●	★	One flashing every 1 second	One beep every 1 second	backup time shortage, advised to close overload
	Overload			●	●	One flashing every 2 seconds	One beep every 2 seconds	Output overload
5	Battery Self Diagnosis Mode							
	Normal	★	★	★	★		None	
	Low battery voltage	★	★	★	★	One flashing every 1 second	One beep every 1 second	
6	Fault Mode							
	Normal under bypass mode	●				Long light	Long beep	UPS Fault
	Bypass normal under standby mode					Long light	Long beep	
7	Converter Mode		●	●			None	Converter Mode
8	ECO Mode	●		One flashing every 1 minute			One beep every 1 minute	ECO Mode

Should any display or warning message excluded in the above table be found, please contact distributor or call SANTAK Hotline for advice.

● Indicator light is on

★ Indicator light flashes

Appendix 2 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.

As a user of SANTAK, if your UPS fails, please contact our 400/800 hotline for the following service:

- Three-year warranty (covering batteries purchased from SANTAK);
- 24-hour toll-free helpline (See the hot line number at the warning label located on the cabinet cover);
- Nationwide warranty;
- Technical support on our web site;
- Toll-free on-site service

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.

http://www.sunear.net

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