飛瑞UPS

3C3-EX SERIES

使 用 手 冊

伊頓飛瑞慕品股份有限公司

EATON PHOENIXTEC MMPL CO., LTD 614-03761-00

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感謝您使用飛瑞產品!

請嚴格遵守本手冊中和機器上的所有警告及操作說明，並妥善保管本手冊。在沒有閱讀完所有的安全說明和操作說明以前，請不要操作本機。

EMC 等級標準

下列產品按 EMC 等級標準製造,VERSION (3C3 EX系列)遵守。
3C3-20000 EX / 3C3-30000 EX / 3C3-40000 EX 系列

EMC測試標準如下：

型 號 NO.	3C3-20000 EX / 3C3-30000 EX / 3C3-40000 EX
EMI	EMS
EMI : CNS 14757-2 商品驗證登錄號碼:R63842	IEC : 61000-4-2 LEVEL 4 61000-4-3 LEVEL 3 61000-4-4 LEVEL 4 61000-4-5 LEVEL 4

警語：

- **這是甲類的資訊產品，在住宅環境中，此一產品可能會造成無線電干擾，在這種情況下，使用者將會被要求採取額外的處置。**
- **熟知本產品的夥伴們，這是一種限制性銷售的產品，因此這個產品的安裝可能會被要求做一些限制或須採取其他的手段以防止干擾的發生。**

・本產品爲精密電子設備，請詳細閱讀本使用手冊，方可操作本產品。

・不管是產品最新訊息或軟體更新，當您需要相關服務時，我們的網址是:

http://www.phoenixtec.com.tw

安 全 注 意 事 項

操作安全

1.在使用本產品前，請仔細閱讀“安全注意事項”，以確保正確和安全的使用。並請妥善保存此手冊。

2.操作時，請注意所有警示標記，並按要求進行操作。

3.避免在陽光直接照射、雨淋或在潮濕的環境使用本設備。

4.本設備不能安裝在靠近熱源區域，或有電暖爐、熱爐等類似設備的附近。

5.放置UPS時，在其四周要留有安全距離，保證通風。安裝時，請參照此手冊。

6.清潔時，請使用乾燥的物品進行擦拭。

7.若遇火警，請正確使用乾粉滅火器進行滅火。若使用液體滅火器會有觸電危險。

8.安裝前要考慮樓層對機器和電池組的承重能力。

電氣安全

1.上電前，請確認已正確接地，並檢查接線和電池極性的連接正確。

2.當UPS需要移動或重新接線時，應將交流輸入電源和電池開關斷開，並保證UPS完全停機10分鐘以上，否則UPS仍可能帶電，有觸電的危險。

3.請使用飛瑞指定的附加裝置和附件。

電池安全

1.電池的壽命隨環境溫度的升高而縮短。定期更換電池可保證UPS工作正常，並保證足夠的後備時間。

2.蓄電池維護只能由具備蓄電池專業知識的人員來執行。

3.更換蓄電池，必須使用相同類型和型號的蓄電池，且數量必須相同。

4.蓄電池存在電擊危險和短路電流危險。爲避免觸電傷人事故，在更換電池時，

請遵守下列警告：

A.不要佩帶手錶、戒指或類似金屬物體；

B.使用絕緣的工具；

C.穿戴橡膠鞋和手套；

D.不能將金屬工具或類似的金屬零件放在電池上；

E.在拆電池連接端子前，必須先斷開電池開關。

5.請不要將蓄電池暴露於火中，以免引起爆炸，危及人身安全。

6.非專業人士請勿打開或損毀蓄電池，因爲電池中的電解液含有強酸等危險物質，會對皮膚和眼睛都會造成傷害。如果不小心接觸到電解液，應立即用大量的清水進行清洗，並去醫院檢查。

7.請不要將電池正負極短路，會導致電擊或著火。

使用保養

1.使用環境及保存方法對本產品的使用壽命及可靠性有一定影響，因此，請注意避免在下列工作環境中使用:

A.超出技術指標規定（溫度0℃～40℃，相對濕度20%～90%）的高、低溫和潮濕場所；

B.有振動、易受撞的場所；

C.有金屬性粉塵、腐蝕性物質、鹽份和可燃性氣體的場所.

2.如果長時間放置不使用，必須將UPS（不帶電池）存放在乾燥的環境中，存貯溫度範圍: -25℃-55℃。UPS開機之前，必須先讓環境溫度回暖至0℃以上，並維持一段時間。

第一章　簡介

1.1 產品簡介

城堡 EX 系列產品是具有高效率和高性能的雙轉換在線上、三相的UPS，按容量可分爲3C3 20KVA EX，3C3 30KVA EX和3C3 40KVA EX。此系列產品不僅提供了完美的電源保護解決方案，解決了斷電、市電高壓、市電低壓、電壓暫態、減幅振盪、高壓脈衝、電壓波動、浪湧電壓、諧波失真、雜波干擾、頻率波動等電源問題，而且增強了對複雜應用環境的適應性，使產品可以廣泛的應用在電腦設備，通信設備和其他控制類設備中，並且可以應對複雜工業環境。因此，城堡EX系列產品可以廣泛的應用在多種行業或領域，比如：電信，金融，交通，政府，製造，能源等。城堡 EX 系列產品還具有ECO（ECONOMY MODE）模式功能，ECO 工作狀態下的UPS，平常由市電供應負載，在市電不正常時，再由蓄電池經變流器輸出供電。ECO工作狀態下的UPS在市電正常時，其能量轉換效率高達98%，因此其節能效果是非常顯著的。同時，UPS的變流器是處於啓動狀態，但不輸出功率，類似休眠狀態，UPS的變流器能大大延長壽命。

注：ECO 模式下，只適用於單機。

1.2 常用符號說明

下面一些符號會在本說明書中用到，也可能會在實際應用過程中出現，請正確識別並知其含義。

符號及其含義	
符號	說明
	提示注意
	高壓危險
	交流
	直流
	保護接地
	重複循環
	勿與雜物一同放置

第二章 外觀介紹

2.1 拆包檢驗

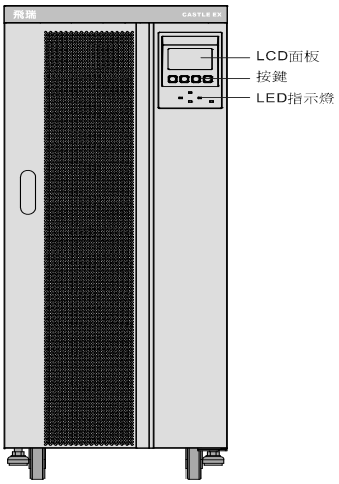
1．打開包裝，包裝內應有：

- 使用手冊一本
- UPS 一臺

2. 檢查UPS是否在運輸中損壞，如發現損壞或部件缺少，請勿開機，立即告知承運商和經銷商。

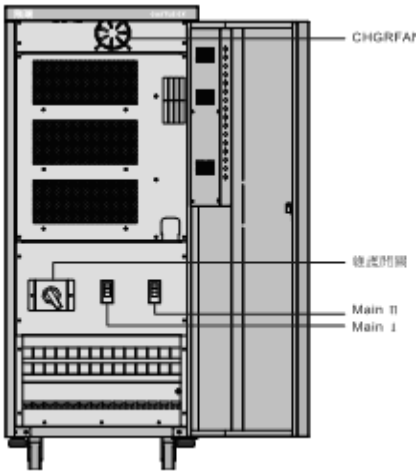
2.2 外觀圖

1）3C3 20KVA /30KVA /40KVA EX



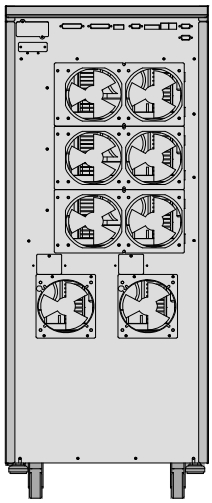
前視圖

2）3C3 20KVA /30KVA /40KVA EX



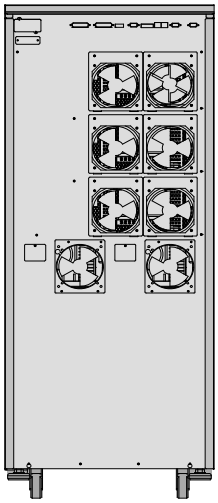
前視圖（打開前門）

3）3C3 20KVA　EX



後視圖

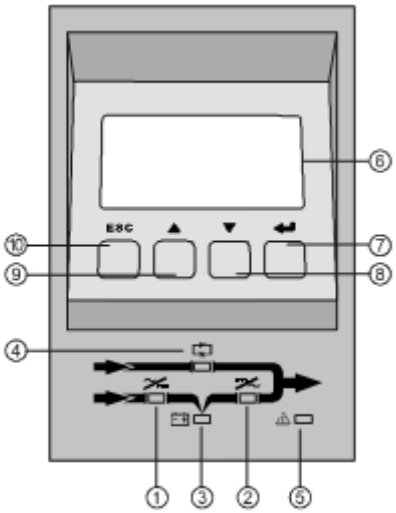
4）3C3 30KVA/40KVA EX



後視圖

2.3 面板指示說明

LCD 面板是用於人機交互的界面，通過 LCD 面板可以對 UPS 進行視覺化操作，爲 UPS 開機、關機、狀態顯示、故障報警、參數設置等功能提供了友好的介面。UPS 安裝完後，用戶對 UPS 的所有操作都可以通過此面板完成。LCD 面板包含狀態顯示燈、LCD 顯示屏、功能鍵三部分。下表分別對狀態指示燈和功能鍵按鈕進行了描述。



■ 狀態指示燈：顯示 UPS 當前的工作模式或狀態

標識	指示燈名稱	顏色	狀態
①	市電	綠色	市電直接供電給負載
②	變流器	綠色	UPS 電源通過變流器供電給負載
③	電池	黃色	市電輸入異常，UPS 由電池供電給負載
④	旁路	黃色	市電經旁路供電給負載
⑤	故障	紅燈	UPS 發生異常，此燈長亮或閃爍，且發出連續或間歇的警報聲

■ ⑥—LCD 顯示屏：詳細的顯示 UPS 資訊

■ 功能鍵：功能表項的選擇、打開、獲取資訊，改變系統參數等

標識	功能鍵	名稱	功能
⑦	↵	選取/輸入	打開所選功能表或確定一操作；密碼操作時確定此位元輸入，進入下一位元密碼輸入；狀態介面下按動此鍵回到主功能表介面.
⑧	▼	向下	LCD 頁數(下)
⑨	▲	向上	LCD 頁數(上)
⑩	**Esc**	離開	退出當前介面返回上一介面或取消一操作；進行密碼操作時可使當前輸入密碼爲零值；主功能表介面下按動此鍵回到狀態介面.

注：LED 與 UPS 狀態對應的詳細資訊可參考附錄二。

第三章 安裝說明

3.1 單機安裝

1) 本機安裝須由專業人員，依電工法規執行。

2) 在乾淨、平穩的環境中安裝UPS,避開震動、灰塵、高濕、可燃性氣體、可燃性液體或腐蝕性物質環境。

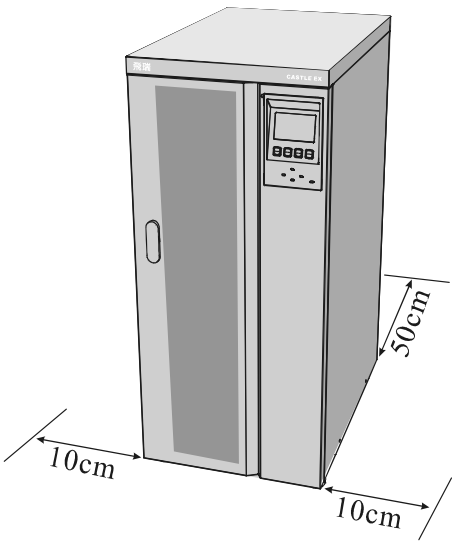
3) UPS正常工作時的環境溫度要求在0℃-40℃之間。如果工作在40℃以上的環境裏，要求最大帶載量按每增加5℃，遞減12%額定值實施。UPS工作時的最高環境溫度要求不超過50℃。

4) 電池組建議在15℃-25℃之間使用。

5) UPS正常工作時的海拔要求爲1000公尺以下，如果客戶使用在1000公尺以上，必須採取遞減額定值輸出。如下表所列：

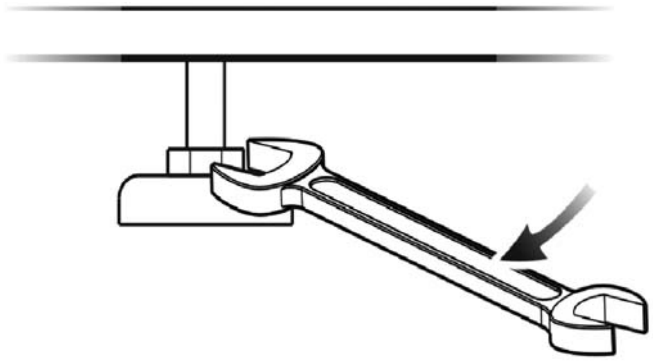
海拔（M）	1000	1500	2000	2500	3000	3500	4000	4500	5000
減額係數	100%	95%	91%	86%	82%	78%	74%	70%	67%

6) 城堡EX 系列採取風扇強制冷卻，安裝場地必須考慮通風問題。同時機內維護是從正面進行，所以也要考慮預留維護空間，安裝空間參考下圖所示：



7) 城堡EX 系列UPS外接電池要求是串聯連接的兩組相同容量的14-16 顆電池（12VDC 每顆），每組標稱電壓爲168VDC-192VDC。您可根據需要選擇電池的容量和組數。電池組必須要配置電池直流開關（建議客戶選配電池開關必須按照安裝接線圖進行安裝）。

8) 剎車墊使用：使用19 號扳手，按順時針方向旋轉，將剎車墊旋到地面，即可防止機器移動。



9) 安裝接線圖:

9-1) 單電源(3Φ4W)輸入：

因只有單電源輸入，因此只需將市電(3Φ4W)接至市電輸入端即可;且旁路輸入端不用接線。並請遵照下列注意事項：

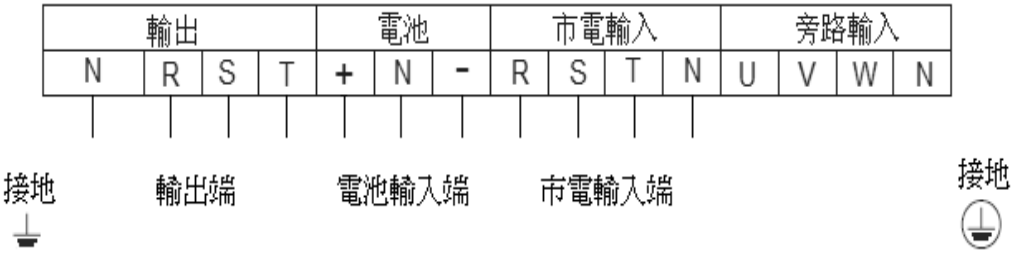
(1).請務必確認輸入電源電壓爲380V/220V；爲3相4線(註1)。

(2).輸出入 N & G 不能接在一起(註2)。

(3).輸入電源需爲正相序，電池極性切勿接錯。

(4).輸出入及電池端子如下圖所示。

註1:如接成3相3線；則會造成UPS故障，無法開機。
註2:因無隔離變壓器，如將 N & G 接在一起，則有可能會發生水線與火線短路。



單電源(3Φ4W): 20kVA~40kVA配線端子圖

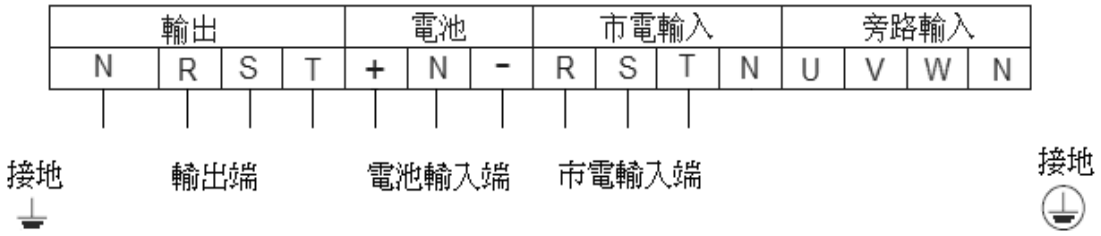
9-2) 單電源(3Φ3W)輸入：

因只有單電源輸入，因此只需將市電(3Φ3W)接至市電輸入端即可；且旁路輸入端不用接線。並請遵照下列注意事項：

(1).請確認輸入電源與UPS輸入額定電壓一樣;且爲(3Φ3W)。

(2).輸入電源需爲正相序，電池極性切勿接錯。

(3).輸出入及電池端子如下圖所示。



單電源(3Φ3W): 20kVA~40kVA 配線端子圖

10) 雙輸入電源配線方式 ：

10-1) 市電輸入端與旁路輸入端皆爲(3Φ4W)：

因有兩個電源輸入，因此首先將市電(3Φ4W)接至市電輸入端，而第二個電源(3Φ4W)接至旁路輸入端。並請遵照下列注意事項：

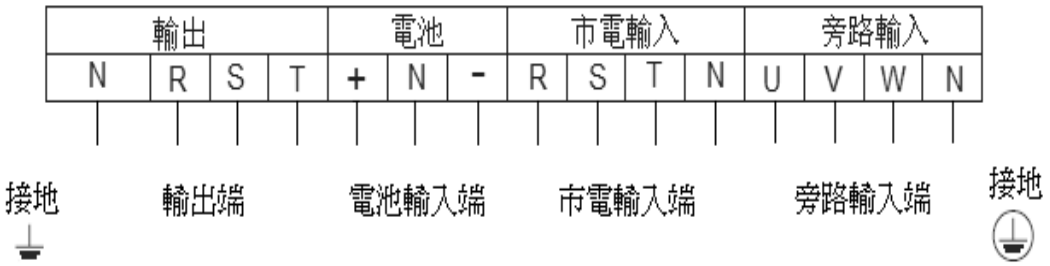
(1).請務必確認市電輸入電源與第二個電源(旁路電源)電壓爲380V/220V；爲3相4線(註1)，且必須同相位。

(2).輸出入 N & G 不能接在一起(註2)。

(3).市電輸入電源與第二個電源需爲正相序且同相位，電池極性切勿接錯。

(4).輸出入及電池端子如下圖所示。

註1:如接成3相3線；則會造成UPS故障，無法開機。
註2:因無隔離變壓器，如將 N & G 接在一起，則有可能會發生水線與火線短路。



雙電源(3Φ4W): 20kVA~40kVA 配線端子圖

10-2) 市電輸入端(3Φ3W)與旁路輸入端皆爲(3Φ4W)：

因有兩個電源輸入，因此首先將市電(3Φ3W)接至市電輸入端，而第二個電源(3Φ4W)接至旁路輸入端。並請遵照下列注意事項：

(1).請務必確認市電輸入電源與UPS輸入額定電壓一樣(3Φ3W);

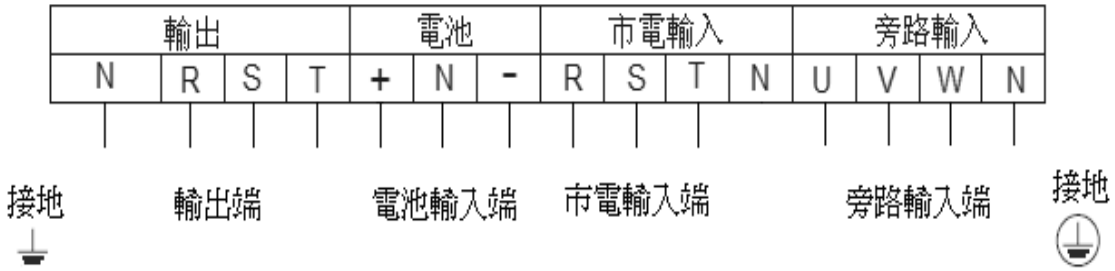
第二個電源(旁路電源)電壓爲380V/220V(3Φ4W)。

(2).輸出入 N & G 不能接在一起(註2)。

(3).市電輸入電源與第二個電源需爲正相序且同頻率，電池極性切勿接錯。

(4).輸出入及電池端子如下圖所示。

註2:因無隔離變壓器，如將 N & G 接在一起，則有可能會發生水線與火線短路。



雙電源:市電輸入(3Φ3W) / 旁路輸入(3Φ4W) : 20kVA~40kVA 配線端子圖

11) 城堡 EX 系列 UPS 配線表：

			輸入電壓等級			
容量	位置	軟硬線徑	208V	220V	380V	480V
20KVA	UPS輸入線	硬線 mm^2	38	38	30	22
		軟線 AWG	4	4	6	6
	配電盤Breaker		100A	100A	50A	50A

			輸入電壓等級			
容量	位置	軟硬線徑	208V	220V	380V	480V
30KVA	UPS輸入線	硬線 mm^2	60	60	50	38
		軟線 AWG	4	4	6	6
	配電盤Breaker		125A	125A	60A	60A

			輸入電壓等級			
容量	位置	軟硬線徑	208V	220V	380V	480V
40KVA	UPS輸入線	硬線 mm^2	80	80	60	50
		軟線 AWG	2	2	6	6
	配電盤Breaker		150A	150A	75A	75A

			輸出電壓等級			
容量	位置	軟硬線徑	200/115	208/120	220/127	380/220
20KVA	UPS輸出線	硬線 mm^2	38	38	38	30
		軟線AWG	8	8	8	10

			輸出電壓等級			
容量	位置	軟硬線徑	200/115	208/120	220/127	380/220
30KVA	UPS輸出線	硬線 mm^2	60	60	60	50
		軟線AWG	6	6	6	8

			輸出電壓等級			
容量	位置	軟硬線徑	200/115	208/120	220/127	380/220
40KVA	UPS輸出線	硬線 mm^2	80	80	80	60
		軟線AWG	4	4	4	6

主機與電池箱連接線

Battery	線徑	長度
26AH	6AWG	3M
40AH	4AWG	3M
65AH	80mm²(軟線)	3M
100AH	80mm²(軟線)	3M

- 用戶配電盤上所使用的線徑與Breaker請參照上述表內所示。
- UPS內部有變壓器，送電時會有一較大之激磁電流，故配電盤Breaker須選擇 ≧ UPS I/P 額定電流*1.25倍，避免送電瞬間造成Breaker有跳脫的可能，負載端Breaker應≦UPS O/P NFB之容量。
- 裝機前請以電表確認端子台無電壓，主機電池端(＋)、(N)、(－) 接點與電池箱電池端 (＋)、(N)、(－) 接點連接正確，電池箱端子台有高電壓，接線前"**請確定所有電池Breaker皆爲OFF狀態**"。

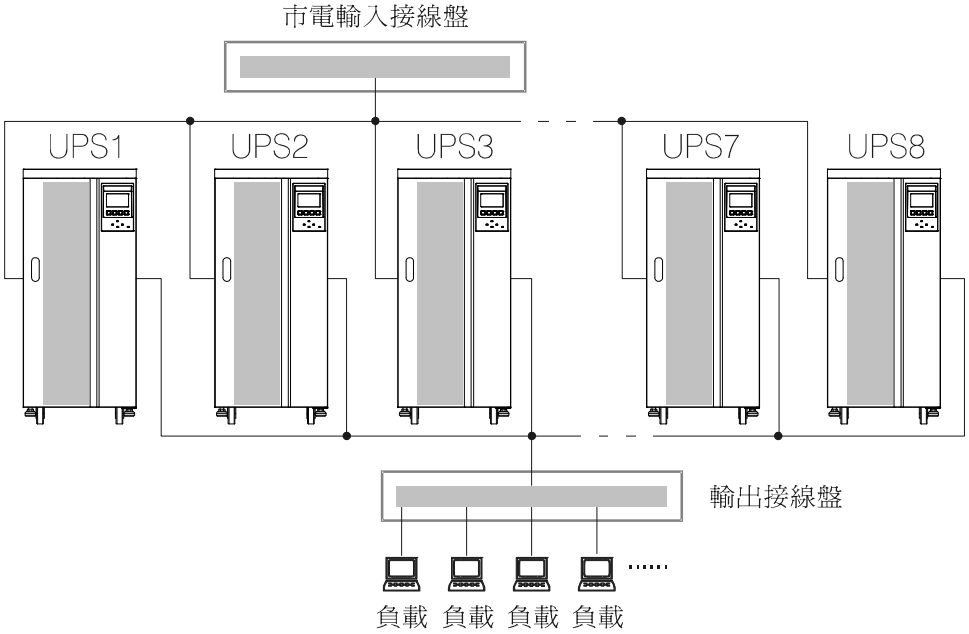
3.2 並機安裝

1.冗餘簡介

N+X是目前最可靠的供電結構，N 代表總負載所需的最少UPS數，X 代表的是冗餘的UPS數，也就是系統可以同時承受的故障UPS數，當X越大，系統的可靠度就會越高。例如有一客戶的總負載爲55kVA，採用20KVA做N+X設計，N爲3，X可以依可靠度或是成本要求選擇，假設用戶選擇X=2，平時每台UPS 均流供電11kVA。當有1 台UPS故障，其餘4台UPS將以近14kVA均流供電。當同時有2台UPS故障時，剩下3 台UPS將以約18kVA均流供電。此系統的最大容許度是同時有2台UPS故障，這樣的機會遠小於1台UPS故障，因此可以大大提高可靠度，對于講究極高可靠度的使用場合是最佳的方式。

2. 城堡EX系列UPS具有直接並聯功能，只需用並機線（選購件）連接可以進行2至8台UPS並聯，來實現功率冗餘(N+X)。機器間距保持在10cm以上，每台UPS輸入之配線請遵循單機之配線要求。各台UPS的輸入/輸出須接自同一個輸入/

輸出接線盤，然後由接線盤配線去負載，見下圖示：



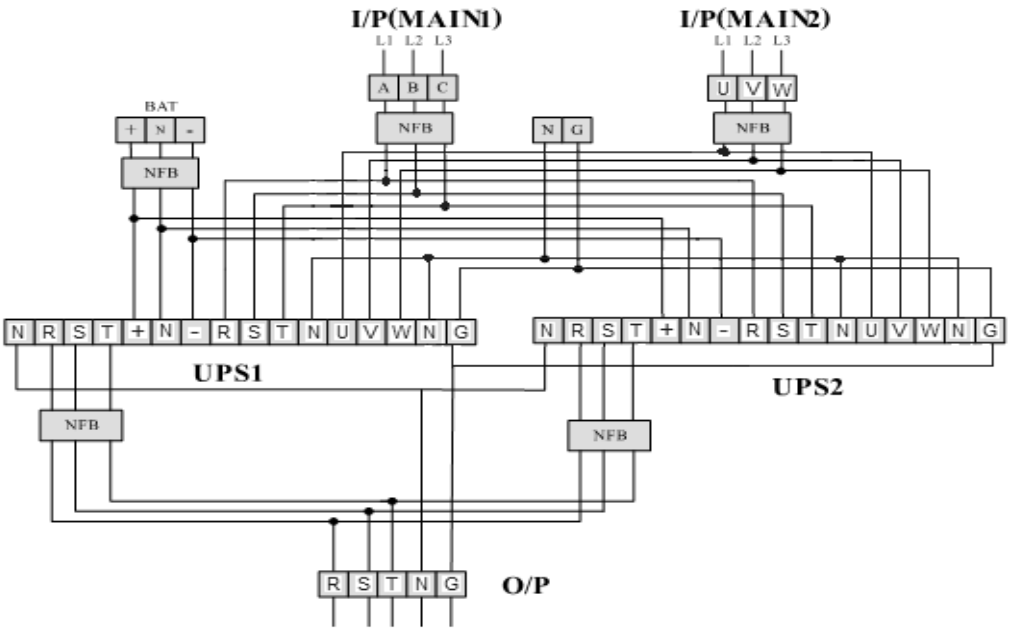
注：1）並機支持共用電池組；每組電池必須採用同一廠家同一型號.

2）輸出配線長度要求：

① 當每台UPS的輸出端至輸出接線盤的引線長小於20米時，要求各線長差小於20%

② 當每台 UPS 的輸出端至輸出接線盤的引線長大於 20 米時，要求各線長差小於 10%

3.並機接線圖(共電池)：



3.3 電池箱連接UPS的步驟

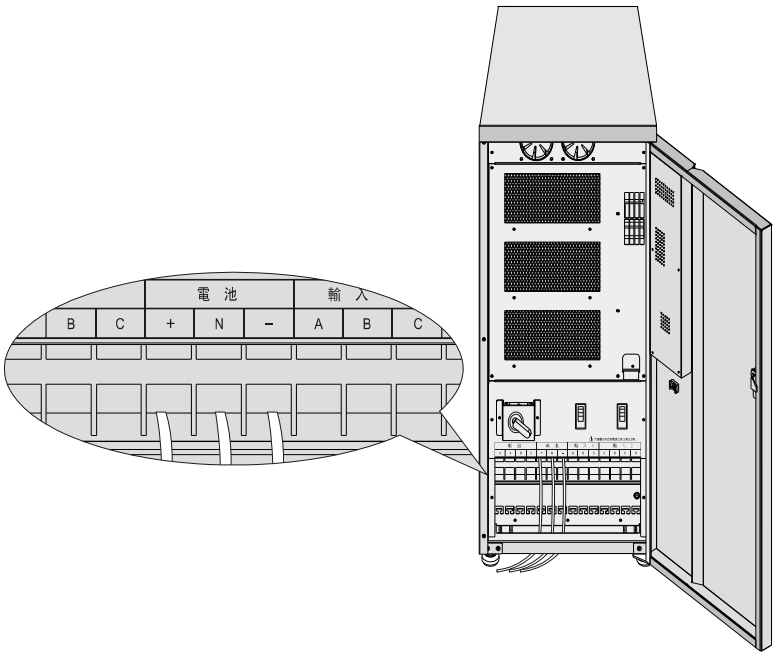
1.確保UPS輸入輸出端子上均不帶電；

2.關閉電池箱上的電池開關；

3.分別將電池+、N、-接於UPS對應端子台上；

4.用電表（直流電壓檔）量測正負電池的電壓以及判斷電池正負是否連接正確。

注：打開端子排蓋板，從UPS 端子台上引出的 +、N和 - 線對應連接在電池箱上的 +、N 和 - 線，非專業人士請勿操作，否則有電擊危險。



第四章 操作

4.1單機操作

1 .確定R、S、T 電源相序接正確，然後送電到UPS。

2.將電池箱的開關Turn ON (請確定UPS端子台+、N、－與電池箱+、N、－ 極性)。

3.將UPS的“輸入開關”（市電輸入開關及旁路輸入開關）Turn ON，此時風扇轉動進行UPS自檢，約4 秒則自動進入主畫面，然後依下列面板顯示操作。

注：以3C3 20KVA EX爲例，以下圖中資料爲參考值。

1)市電輸入

2)約 4 秒自動進入

3)按ESC鍵或1分鐘內沒有任何鍵被按下則進入

4)按下▼鍵可以得到以下資料

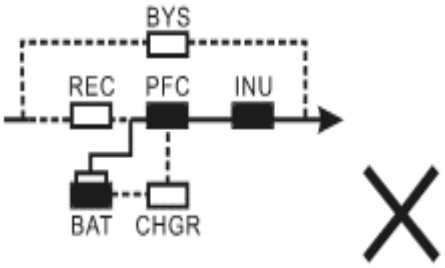
5)再按下▼鍵可以得到以下資料

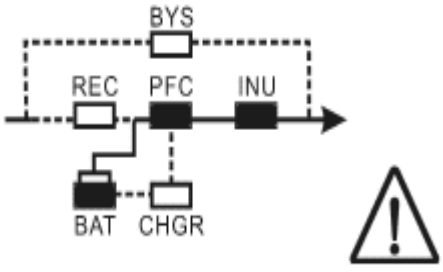
6)再按下▼鍵可以得到以下資料

7)再按下▼鍵可以得到以下資料

8)再按下▼鍵可以得到以下資料

注：當有故障產生時，會在ＬＣＤ 介面的右下角顯示“x”，當有警告產生時，
會在ＬＣＤ 介面的右下角顯示“ ”（如以下介面，以電池模式爲列）:





4. 開機動作（按ESC 鍵可退出上列介面）

1)開機介面

2)按下ENTER鍵

3)選擇“是，確認”進行開機

4)開機正常

5)電池供電（切斷市電）

5. 關機動作（按ESC 鍵可退出上列介面）

1)關機介面

2)如果是單機則顯示

3)如果是並機則顯示

4)按下ENTER鍵

5)選擇“是，確認”進行關機

6)關機正常

注：如果想關閉並機系統中的一台UPS，則選擇“單機關機”，如果想關閉整個並機系統，則選擇“並機關機”。

6. 查詢動作

1)查詢介面

2)在查詢畫面處按下 ENTER 鍵

3)在維修專線位置按下 ENTER 鍵

7. 設定動作（按ESC 鍵可退出上列介面）

您可以通過使用者密碼（使用者密碼初始設置爲：1234，用戶可以自行更改）進入設定畫面，進行以下程式的設定。

1)設定介面（旁路供電）

2)按下▼鍵

3)按 ENTER 鍵，出現輸入密碼顯示介面

4)輸入密碼，按下 ENTER 鍵

8. 城堡 EX 系列 UPS 可在無市電輸入狀態下直流開機工作，面板相似於市電開機的畫面，按照畫面提示可執行直流開關機：

■ 在 UPS 旁路模式下設定直流開機功能開啓

■ 確認電池正、負、N 線與 UPS 均正確連接

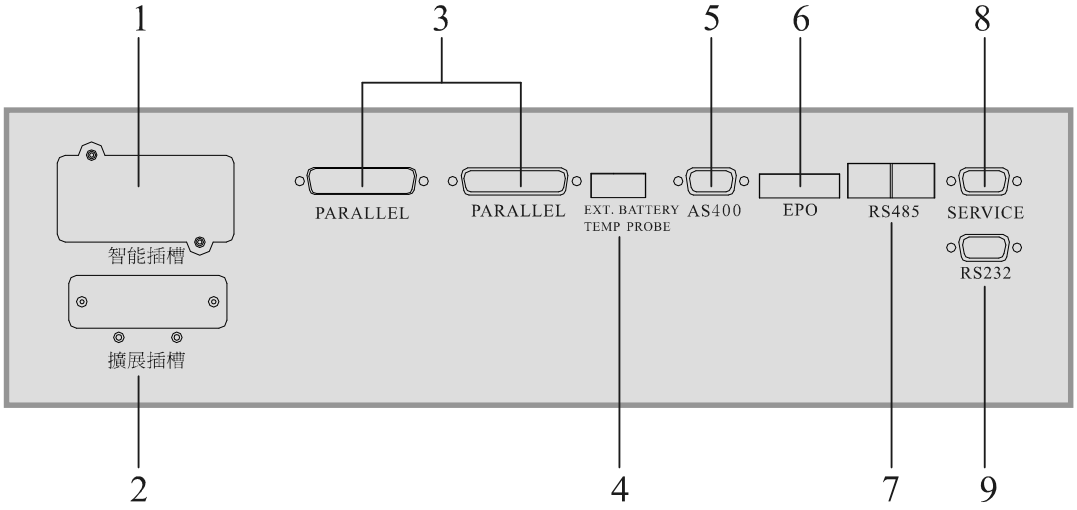
■ 將電池開關 Turn ON

■ 按 ENTER 鍵

■ 在 LCD 完成自檢後 40 秒內手動執行開機命令

第五章 通訊介面

城堡EX系列UPS提供了智能插槽(Intelligent Slot)、擴展插槽、PARALLEL、EXT.BATTERY TEMP PROBE、AS400、EPO、RS485、RS232及飛瑞內部技術人員專用的SERVICE監控通訊介面。



1. 智能插槽：適用于遠端監控管理的WebPower卡（選購件）使用，使您可通過網際網路（Internet）對UPS遠端監控管理。（智能插槽介面卡分長卡和短卡，城堡EX 系列UPS需匹配短卡使用）。

2. 擴展插槽：只提供給特殊需求用戶，不對標配用戶開放。

3. PARALLEL：並機使用時，並機通訊線介面。

4. EXT.BATTERY TEMP PROBE ：外接電池箱溫度介面，可以對電池溫度進行監控，從而起到電池智慧管理。

5. 標準AS400介面：提供AS400介面，可以直接利用AS400系統的UPS監控功能，實現電源的監控管理（附AS400 通訊口的腳位元說明）。

6. EPO ：緊急關機開關，提供有緊急關機需求用戶，可以直接通過此開關關斷UPS輸出。

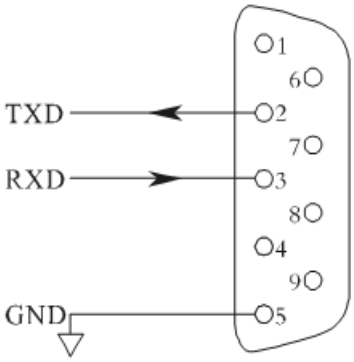
7. 標準RS485介面：可以在並機使用時進行UPS的監控管理，使得UPS的電源供應可以完全得到掌握（附RS485 通訊口的腳位元說明）。

8. SERVICE 介面：只提供給飛瑞內部技術人員使用，不對用戶開放。

9. 標準RS232介面：可以使用飛瑞圖形化管理的WinPower監控軟體（附RS232通訊口的腳位元說明）。

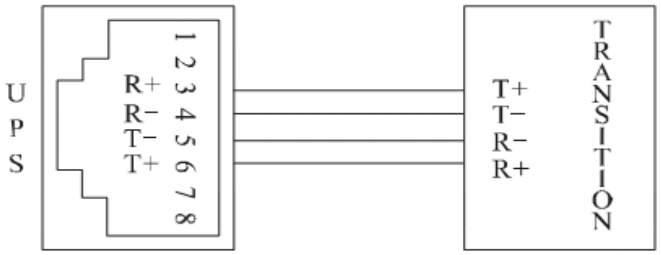
RS232 PORT 腳位說明：

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



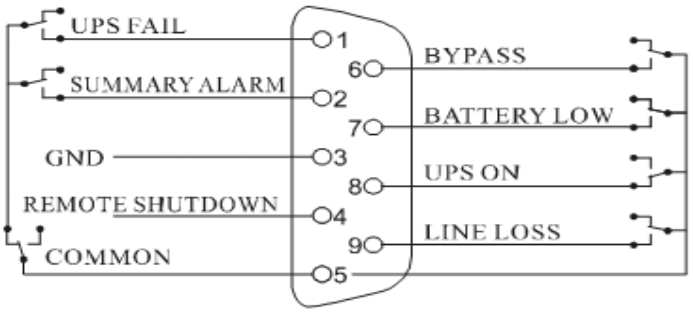
RS485 PORT腳位說明：

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



AS400 PORT腳位說明：

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 運輸、維護與故障排除

搬運UPS

請遵守下列步驟進行UPS的搬運準備。

1. 關閉與UPS相連的所有設備。

2. 將UPS市電開關及電池組開關斷開。

3. 拆除UPS端子台的所有連接線。

維護與保養

城堡EX 系列UPS只需很少的維護。

1.如果斷開電池連接，負載設備將不受停電保護。

2.正常情況下，如果發現電池狀況異常，則必須提早更換，電池更換應由合格的專業人員進行，用戶不得擅自處理。需注意：

A.更換電池以前，需確定電池與UPS已脫離(電池NFB OFF)

B.脫下如戒指、手錶之類的金屬物品

C.不要將工具或其他金屬物放在電池上

D.請勿將電池正負極短接或反接

3.電池不宜個別更換，整體更換時應遵守電池製造商的指示。

4.注意UPS 散熱孔的通風順暢，平均每隔半年清潔一次進風孔和風扇的通風孔處的灰塵（清潔前請先斷開市電及電池開關）。

故障排除

如果本設備需要檢修，請按以下步驟處理：

1．檢查UPS輸入配線是否正確？

2．各開關是否跳脫？

3．輸入電壓是否符合規格要求？

請先參考產品使用手冊的“燈號對照表”說明進行適當處理。若問題依然存在; 請與維修人員聯絡，並請提供下列咨詢:

- 產品型號/機號
- 問題發生時之狀況，面板之LED燈號顯示
- LCD面版顯示的UPS狀態或故障時的故障碼

異常狀況處理表

異　常　狀　況　表		
問　題	可 能 原 因	處　理　方　法
"故障"燈亮，連續警報	UPS故障	請與維修中心聯絡
電池放電時間低於標準時間	電池沒有充飽 電池耗損 充電器故障	充電持續8小時後，重新測試放電時間，若無法達到標準，請與維修中心聯絡

附錄一 電氣規格

型號		3C3 20kVA EX	3C3 30kVA EX	3C3 40kVA EX
額定容量		20kVA/16kW	30kVA/24kW	40kVA/32kW
輸入	相線	三相三線 or 三相四線 (可依客戶需求)		
	頻率範圍	56-64Hz		
	功率因數	≥0.99		
	電壓範圍	額定電壓 (+25% / -45%)VAC（輸入電壓<75% 以內時，輸出功率需要降額）		
	旁路電壓範圍	額定電壓±15%		
輸出	相線	三相四線＋地線		
	額定電壓	380/220 or (可依客戶需求)		
	功率因數	0.8		
	頻率誤差	60Hz±4Hz（跟蹤旁路輸入頻率；旁路輸入頻率超過±4Hz 或在電池供電狀態下, 輸出頻率爲額定之±0.1%）		
	超載時間	110% 60min 自動跳旁路 111%<負載≤125% 10min 自動跳旁路 125%<負載≤150%1min 自動跳旁路		
	帶不平衡負載能力	100%		
使用環境	環境溫度	0-40℃		
	儲藏溫度	－25℃-55℃（當 UPS 儲藏在低於 0℃的環境下或放置時間過長，建議客戶在開啓 UPS 之前，先把環境溫度回暖至 0℃以上或先擱置兩個小時再使用）		
	環境濕度	10-90 % (non-condensing)		
	海拔高度	≤1000m		
電池標稱電壓/額定充電電壓	14 節	±168VDC/±189VDC		
	15 節	±180VDC/±202.5VDC		
	16 節	±192VDC/±216VDC		
重量	淨重/含變壓器(kg)	119/181/224/286	164/235/305/376	171/261/336/426
	毛重/含變壓器(kg)	121/183/226/288	167/238/308/379	174/264/339/429
機器尺寸(寬*深*高)（mm）		420*800*1100	520*885*1320	520*885*1320
安全標準	國家標準	BSMI		
EMS	靜電放電測試 (ESD)	IEC61000-4-2 Level 4		
	輻射電磁耐受測試 (RS)	IEC61000-4-3 Level 3		
	電性快速脈衝測試 (EFT)	IEC61000-4-4 Level 4		
	雷擊測試 (SURGE)	IEC61000-4-5 Level 4		
EMI	傳導與輻射	CNS14757-2		

附錄二 燈號對照表

序號	工作狀態	面板指示燈顯示					蜂鳴器
		旁路燈	市電燈	變流燈	電池燈	故障燈	
1	Standby 模式						
	正常					8 秒一閃	8 秒一鳴
	故障					4 秒一閃	4 秒一鳴
	超載					1 秒一閃	1 秒一鳴
2	旁路模式						
	正常	●				2 分一閃	2 分一鳴
	故障	●				4 秒一閃	4 秒一鳴
	旁路相序錯誤或者旁路異常	●				2 秒一閃	2 秒一鳴
	超載	●				1 秒一閃	1 秒一鳴
3	市電模式						
	正常		●	●			無
	故障		●	●		4 秒一閃	4 秒一鳴
	超載		●	●		1 秒一閃	1 秒一鳴
4	電池模式						
	正常			●	●	4 秒一閃	4 秒一鳴
	電池低電壓			●	★	1 秒一閃	1 秒一鳴
	超載			●	●	1 秒一閃	1 秒一鳴
5	電池自檢模式						
	正常	★	★	★	★	無	無
	故障	★	★	★	★	4 秒一閃	4 秒一鳴
	電池低電壓			●	★	1 秒一閃	1 秒一鳴
	超載			●	●	1 秒一閃	1 秒一鳴
6	故障模式						
	正常					長亮	長鳴
7	Converter 模式						
	正常		●	●		無	無
	Fault		●	●		4 秒一閃	4 秒一鳴
8	ECO Mode						
	Normal	●		1 分一閃		無	1 分一鳴
	Fault	●				4 秒一閃	4 秒一鳴

若有出現不包含以上的顯示或警示狀況， 請與經銷商或撥打飛瑞服務熱線諮詢。

● 指示燈亮

★ 指示燈閃爍

附錄三 一年服務保證

- 憑本保證書自購買日期起，可享有一年之免費維修服務。
- 購買時請向經銷商索取保固書或填寫購買日期並蓋店章，以享有本公司之各項服務。
- 於免費保證服務期間如因下列狀況，本公司酌收材料工本費。

  ✧購買後因運輸、移動、摔落所造成之故障及損壞。

  ✧因不可抗拒之天災人禍所導致之損害。

  ✧誤用、濫用、蓄意破壞、現場環境不良、未依規定使用電源電壓或供電錯誤所導致之損壞。

  ✧非本公司維修人員，自行對產品加以拆修，改裝或附加其它配件因而造成之損壞，且本公司有權拒絕維修。
- 超過免費服務期限者，仍可憑保證書享受本公司完善售後服務，但得酌收材料、工本費。
- 請妥善保存本保證卡，若不慎遺失、或未能出示者，則以產品出廠日期爲購買日期。

產 品 機 號		經銷商蓋章
使 用 者 姓 名		
電 話		
購 買 日 期		

製造廠商：伊頓飛瑞慕品股份有限公司

生產地：台灣

Thanks for choosing Phoenixtec 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.

EMC CONFORMITY DECLARATION:

3C3-EX series product maintains compliance with the following standard levels:

EMI	EMS	
EMI : CNS 14757-2	IEC : 61000-4-2	LEVEL 4
	61000-4-3	LEVEL 3
R63842	61000-4-4	LEVEL 4
	61000-4-5	LEVEL 4

Warning Users: This is the Group's information products, in the living environments may cause radio interference, in this case, the user will be asked to take some appropriate response.

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 Phoenixtec 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 electric 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.

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 20KVA, 3C3 EX 30KVA and 3C3 EX 40KVA. 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.
Remark: under ECO mode, 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.

Chapter 2 Exterior appearance

2.1 Unpacking inspection

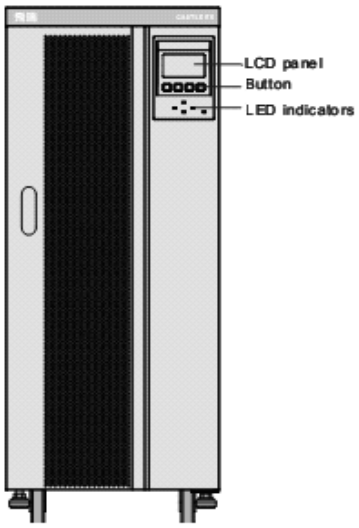
1. Unpack and there should be:

- User Manual
- Ups

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.

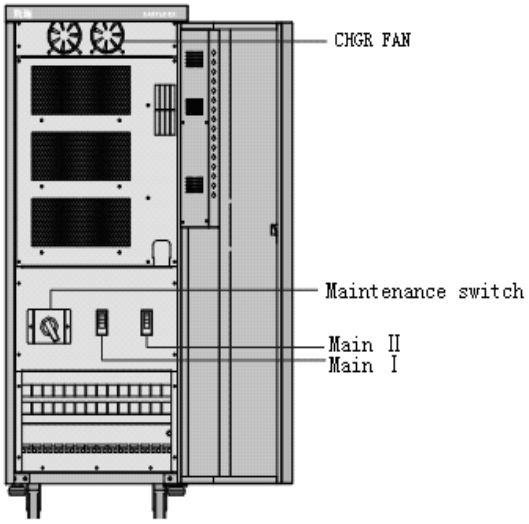
2.2 Exterior figure

1）3C3 EX 20KVA /30KVA /40KVA



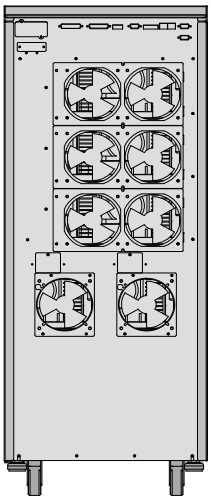
Front view

2）3C3 EX 20KVA /30KVA /40KVA



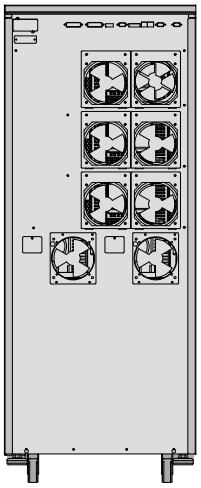
Front view (without front panel)

3）3C3 EX 20KVA



Rear view

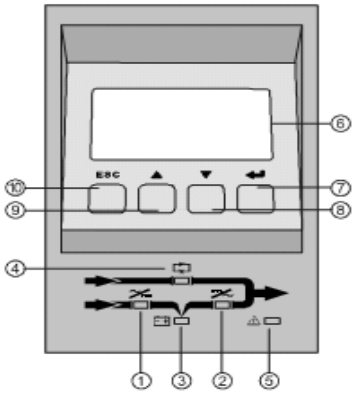
4）3C3 EX 30KVA/40KVA



Rear view

2.3 Panel instructions

Human-machine Interface LCD panel，through which all visualized operations on the UPS can be realized after the installment, supplies friendly interface for start-up, power-off, status display, failure alarm, parameter setting etc. It consists of indicating lights, LCD display and function keys. Indicating lights and function keys are described in the table below.



■Status Indicator LED：Display the current UPS operating mode or status

Identifier	Indicator light	Color	Status
□	Normal	green	Load is powered directly by AC
□	Convertor	green	Load is powering through the inverter
□	Battery	yellow	Normal input fault, UPS is powering by batteries to load
□	Bypass	yellow	UPS is powering the load by AC through bypass
□	Fault	red	LED will solid on or flash when UPS occur fault, and continuous or intermission alarm warning

■ ⑥—LCD display screen：Detailed information of UPS display

■ Key：The choice of menu items, open, access to information, changing system parameters, etc.

Identifier	Key	Name	Function
□	↵	Select/input	Open the selected menu or enter an operation; Enter the present password letter and go to next password letter; Back to main menu from status menu.
□	▼	Down	LCD page down
□	▲	UP	LCD page up
□	**Esc**	Leave	Back to the previous menu from the present one, or cannel an operation; Clear the present password; Back to status menu from main menu.

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, and flammable liquid or caustic substance.

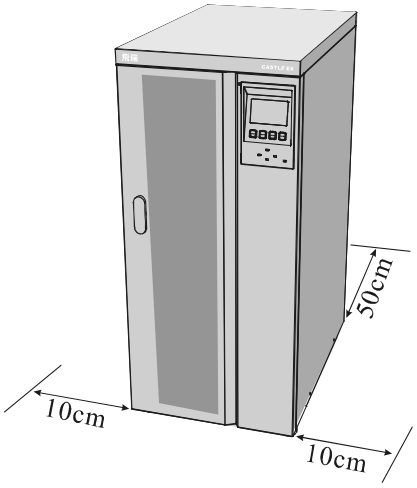
3) To ensure normal UPS performance, ambient temperature should range between 0-40℃. If temperature exceeds 40℃, maximum load should be decreased progressively by 12% of the rated amount along with every increase of temperature by 5℃. The maximum ambient temperature for normal UPS performance should 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:

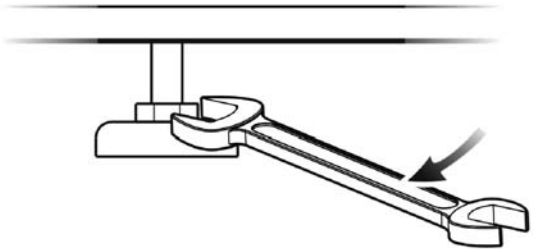
Altitude(M)	1000	1500	2000	2500	3000	3500	4000	4500	5000
Derating coefficient	100%	95%	91%	86%	82%	78%	74%	70%	67%

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.

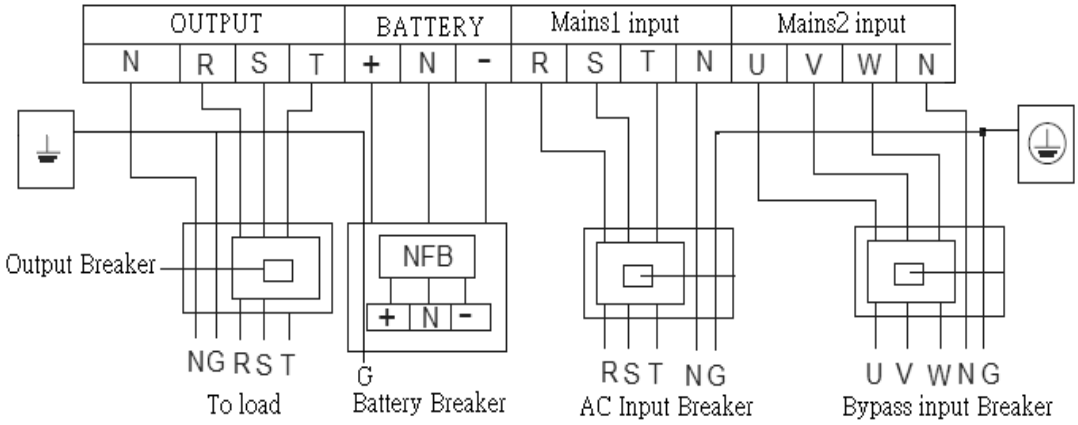


7) External batteries of Castle EX Series UPS require serial connection of two groups of 14-16 batteries (12VDC per battery) with the same capacity, nominal voltage for each group being168VDC-192VDC. Battery capacity and number of group can be selected at your option. Battery pack must be equipped with 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 clockwise 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

			Input grade of voltage			
capability	position	Wire diameter	208V	220V	380V	480V
20KVA	UPS input wire	Hard wire mm^2	38	38	30	22
		Soft wire AWG	4	4	6	6
	Switchboard NFB		100A	100A	50A	50A

			Input grade of voltage			
capability	position	Wire diameter	208V	220V	380V	480V
30KVA	UPS input wire	Hard wire mm^2	60	60	50	38
		Soft wire AWG	4	4	6	6
	Switchboard NFB		125A	125A	60A	60A

			Input grade of voltage			
capability	position	Wire diameter	208V	220V	380V	480V
40KVA	UPS input wire	Hard wire mm^2	80	80	60	50
		Soft wire AWG	2	2	6	6
	Switchboard NFB		150A	150A	75A	75A

			Output grade of voltage			
capability	capability	Wire diameter	200/115	208/120	220/127	380/220
20KVA	UPS output wire	Hard wire mm^2	38	38	38	30
		Soft wire AWG	8	8	8	10

			Output grade of voltage			
capability	capability	Wire diameter	200/115	208/120	220/127	380/220
30KVA	UPS output wire	Hard wire mm^2	60	60	60	50
		Soft wire AWG	6	6	6	8

			Output grade of voltage			
capability	capability	Wire diameter	200/115	208/120	220/127	380/220
40KVA	UPS output wire	Hard wire mm^2	80	80	80	60
		Soft wire AWG	4	4	4	6

Connecting line of the UPS and battery box

Battery	Wire diameter	length
26AH	6AWG	3M
40AH	4AWG	3M
65AH	80mm²(Soft wire)	3M
100AH	80mm²(Hard wire)	3M

- Please refer to the table above for the wires diameter and NFB used in the switchboard.
- The internal transformer of the UPS may cause excitation current when electrifying, so you should choose a switchboard with NFB no less than UPS I/P NFB multiplied by 1.25 to avoid NFB breaking off. And the capacity of the load NBF should be no more than the capacity of the UPS O/P NFB.
- Before the installation, please make sure the ammeter shows no voltage of the terminal board, and the Tenth, N and First terminals of the host battery are respectively connected to the Tenth, N and First terminals of the battery in the cabinet. The high voltage of the terminal board in the battery cabinet may be hazardous, so make sure all the battery NBF are off before operation.
- Please use the M13 or M17 torsional sleeve spanner to lock the terminal boards in the host and battery cabinet. To prevent from a fire or electric shock, you are forbidden to use other types of tools to lock the screws.

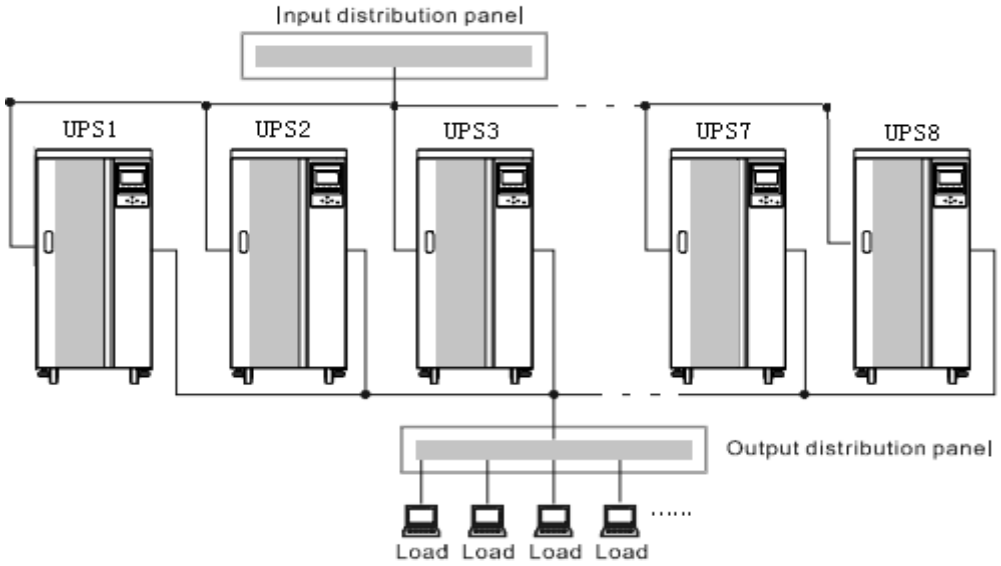
3.2 Parallel machine installation

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 loads of a customer register 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.

2. 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). Ventilation spacing between machine flanks should be a minimum of 10cm，input wiring for each set of UPS should follow the requirements for that of single unit. Each UPS input/output should be connected to the same input patch board, from which wires are distributed for load as illustrated in following figure:

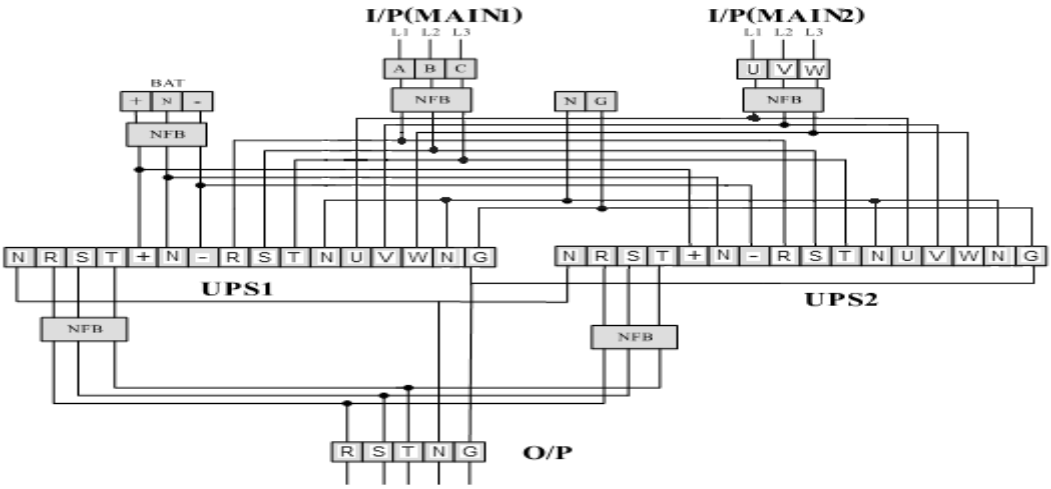


Remark: 1）Common battery pack is applicable in parallel machine mode; each battery pack should be of the same model from the same manufacturer.

2）Requirement of output wiring length:

① 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%;
② 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%.

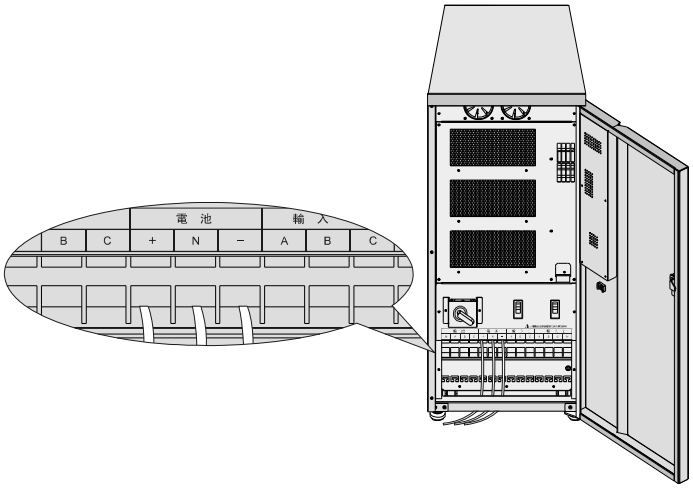
3. Parallel machine wire connection drawing：



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

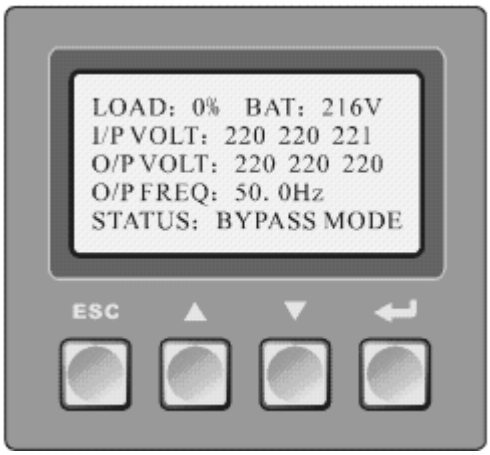
1. Make sure R, S and T phase sequences are correctly connected and then supply power to UPS.
2. Turn on the switch on battery box (make sure that the "+", "N" and "-" of terminal bay are in accordance with those on the battery box).
3. Switch on "input breaker" (Line input breaker: Main1; bypass input breaker: Main2) 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.

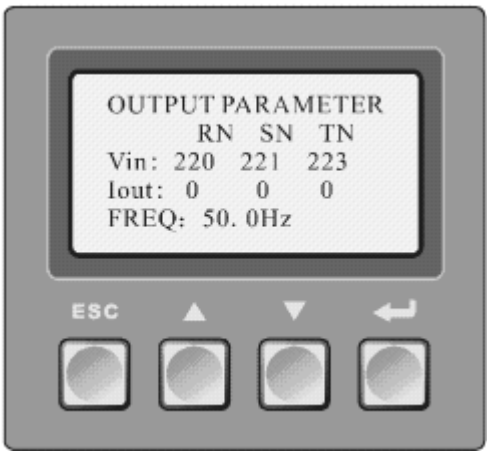
1) Power on

2) Automatic access within about 4s

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

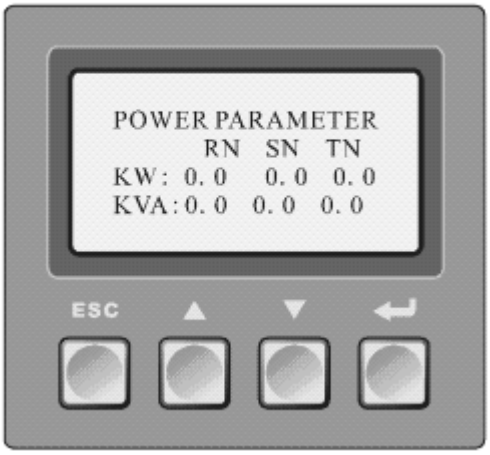


4) Press ▼ to obtain the below information



5)Press ▼ again to obtain the below information

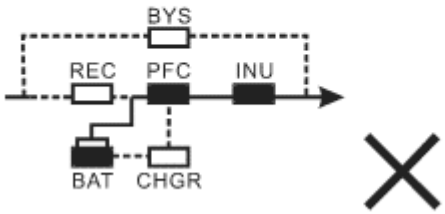
6)Press ▼ again to obtain the below information

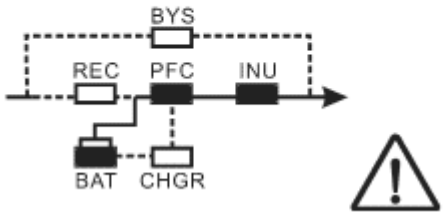


7)Press ▼ again to obtain the below information

8)Press ▼ again to obtain the below information

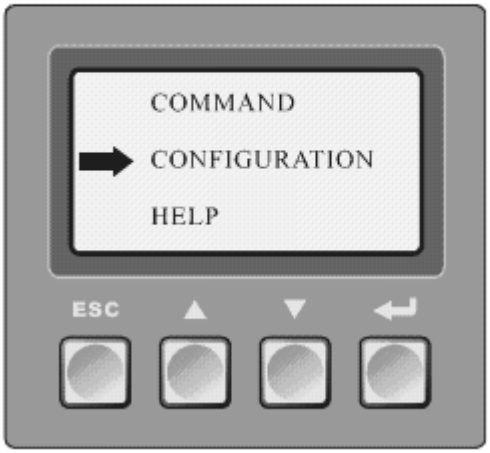
Remark: when malfunction occurs, "x" will appear at the lower right corner of the picture while when warning occurs " ⚠ " will appear at the same position (as illustrated in the below picture with battery mode as an example).



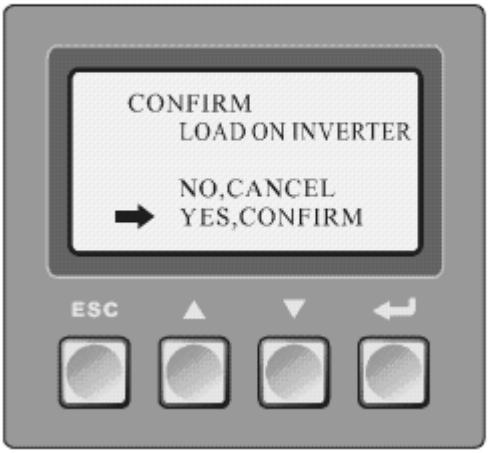


4. Start-up action (press ESC to exit the above picture)

1)Switch-on picture

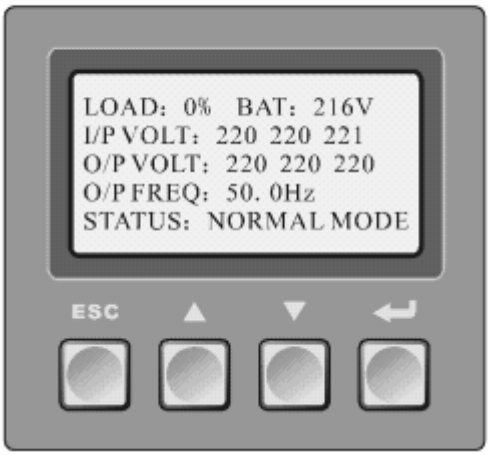


2)Press ENTER



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

4)Normal Switch-on

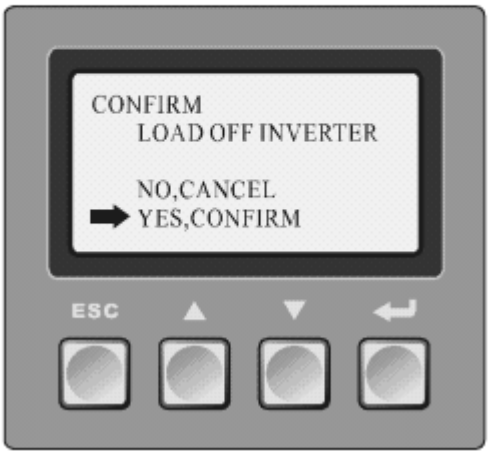


5)Battery power supply (switch off line input breaker)

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

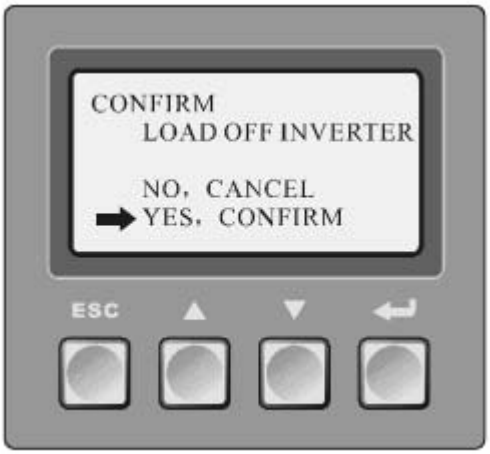
1)Switch-off picture

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

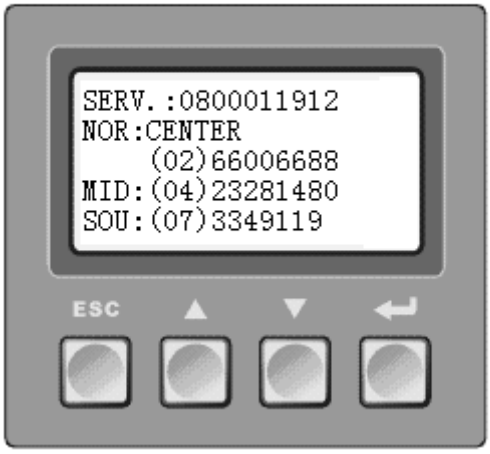
Remark: If you intend to switch off only one set of UPS among the parallel machine system, select "single machine switch-off"; if switch-off is intended for the entire parallel machine system, select "parallel machine switch-off".

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

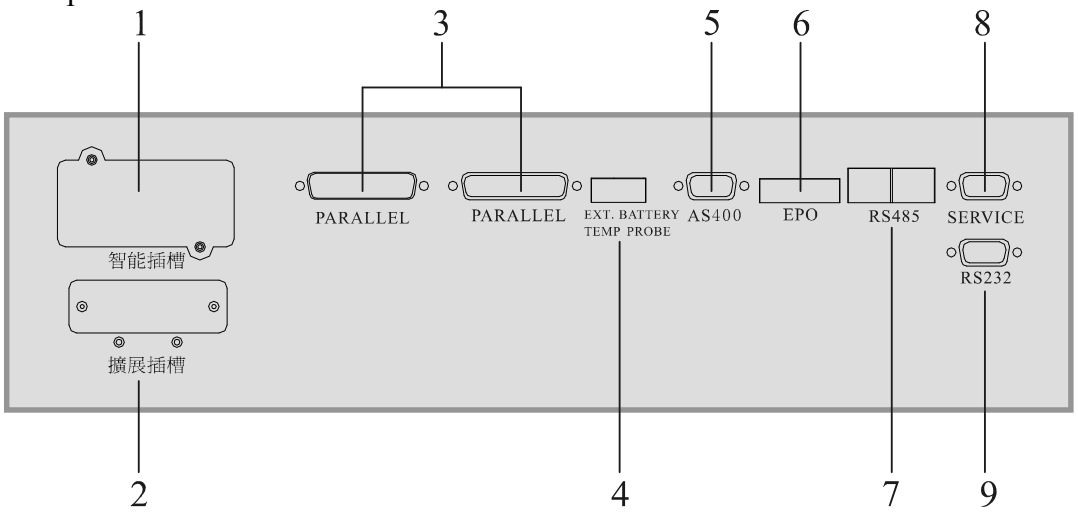
8. Castle EX Series is capable of DC start-up without AC input, panel display being similar to switch-on picture with AC supply. DC switch-on and off are available by following instructions appearing in the pictures:

- 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!

Chapter 5 Communication Interface

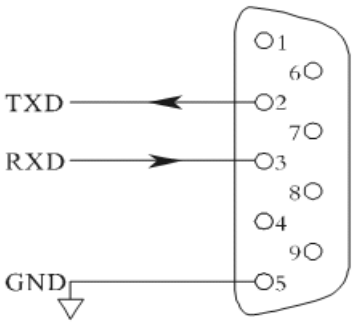
Castle EX Series provide Intelligent Slot, Expanded Slot, PARALLEL, EXT.BATTERY TEMP PROBE, AS400, EPO, RS485 and RS232 as well as SERVICE Supervising Communication Interface exclusively available to Phoenixtec technical personnel.



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 Phoenixtec internal technical professionals and not open to users.
9. Standard RS232 Interface: applicable to WinPower supervising software of graphic management (See Appendix for RS232 port Pin).

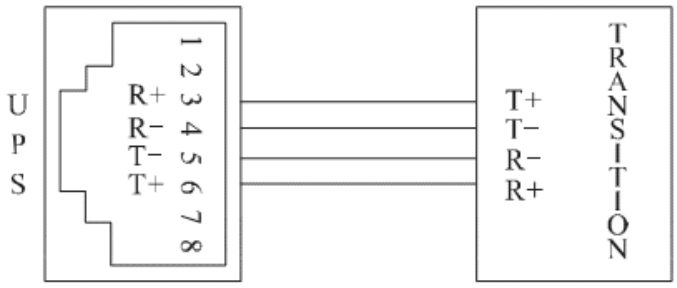
RS232 PORT：

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



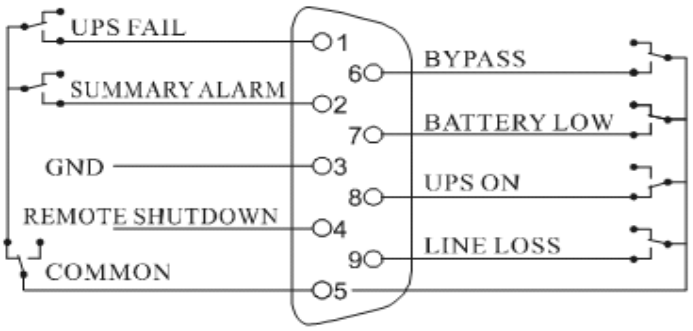
RS485 PORT：

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.

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.

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.28

Please refer to "Light Reference Table" of this User Manual first and then conduct proper treatment. If problems still exist, please connect with maintenance personnel and provide the following information:

- MODEL and SERIAL NO of the UPS；
- Symptom on fault and LED display of the panel；
- LCD malfunction or warning information.

Table of Malfunctions

Symptom	Possible cause	Solution
The fault LED is lit, Continuous beeps	UPS fault	Please contact with customer service center
Battery discharging time less than standard time	Battery undercharge Battery exhausted Charge fault	Charge continuance 8H，retest discharging time, if not up to scratch, please contact with maintenance center

Appendix 1

Model		3C3 20kVA EX	3C3 30kVA EX	3C3 40kVA EX
Power Rating		20kVA/16kW	30kVA/24kW	40kVA/32kW
Input	Connection	3-Phase 3-Wires or 3-Phase +N (Per customer's requirement)		
	Frequency	56~64Hz		
	Power factor	≥0.99		
	Voltage rating	Voltage rating (+25% / -45%)VAC（when input voltage<75% output power derating is required）		
	Bypass Voltage range	Voltage rating±15%		
Output	Connection	3-Phase +N+G		
	Voltage rating	380/220 or (Per customer's requirement)		
	Power factor	0.8		
	Frequency tolerance	60Hz±4Hz（track bypass frequency input ;when input frequency exceeds ±4Hz or under the mode of battery power supply, frequency output should be±0.1%of nominal）		
	Overload capability	110% 60min. Auto-jump bypass 111%< Load≤125% 10min. Auto-jump bypass 125%< load≤150% 1min. Auto-jump bypass		
	Unbalanced load capability	100%		
Operating Environment	Ambient temperature	0-40℃		
	Storage temperature	–25-55℃		
	Ambient humidity	10-90 % (non-condensing)		
	Altitude	≤1000m		
Nominal battery voltage/Rated charging voltage	14 Pcs	±168VDC/±189VDC		
	15 Pcs	±180VDC/±202.5VDC		
	16 Pcs	±192VDC/±216VDC		
Weight	N.W/Contain transformer	119/181/224/286Kg	164/235/305/376Kg	171/261/336/426Kg
	G.W/Contain transformer	121/183/226/288Kg	167/238/308/379Kg	174/264/339/429Kg
UPS Dimension(W*D*H)（mm）		420*800*1100	520*885*1320	520*885*1320
Safety Standard	National Standard	BSMI		
EMS	ESD	IEC61000-4-2 Level 4		
	RS	IEC61000-4-3 Level 3		
	EFT	IEC61000-4-4 Level 4		
	SURGE	IEC61000-4-5 Level 4		
EMI	Radiation and Conduction	CNS14757-2		

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

Appendix 2 Light reference table

NO	Working condition	Indicator					Buzzer
		Bypass LED	Line LED	Inverter LED	Battery LED	Fault LED	
1	Standby Mode						
	Normal					One flashing every 8 sec	One beep every 8 sec
	Fault					One flashing every 4 sec	One beep every 4 sec
	Overload					One flashing every 1 sec	One beep every 1 sec
2	Bypass Mode						
	Normal	●				One flashing every 2 min	One beep every 2 min
	Fault	●				One flashing every 4 sec	One beep every 4 sec
	Bypass phase error or bypass loss	●				One flashing every 2 sec	One beep every 2 sec
	Overload	●				One flashing every 1 sec	One beep every 1 sec
3	Line Mode						
	Normal		●	●			None
	Fault		●	●		One flashing every 4 sec	One beep every 4 sec
	Overload		●	●		One flashing every 1 sec	One beep every 1 sec
4	Battery Mode						
	Normal			●	●	One flashing every 4 sec	One beep every 4 sec
	Low battery voltage			●	★	One flashing every 1 sec	One beep every 1 sec

	Overload			●	●	One flashing every 1 sec	One beep every 1 sec
5	Battery Self Diagnosis Mode						
	Normal	★	★	★	★	None	None
	Fault	★	★	★	★	One flashing every 4 sec	One beep every 4 sec
	Low battery voltage			●	★	One flashing every 1 sec	One beep every 1 sec
	Overload			●	●	One flashing every 1 sec	One beep every 1 sec
6	Fault Mode						
	Normal					Long light	Long beep
7	Converter Mode						
	Normal		●	●		None	None
	Fault		●	●		One flashing every 4 sec	One beep every 4 sec
8	ECO Mode						
	Normal	●		One flashing every 1 min		None	One beep every 1 min
	Fault	●				One flashing every 4 sec	One beep every 4 sec

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

● Indicator light is on

★ Indicator light flashes

Warning include one or more than one of these:

1.EPO active
2.Line loss
3.Neutral loss
4.Line phase error
5.Bypass loss
6.Bypass phase error
7.Battery open
8.Low battery voltage
9.Over charger
10.Battery reverse
11.Charger failure
12.Battery over restrict
13.Battery over temperature
14.Fan over restrict
15.BUS capacitor over restrict
16.Fan failure
17.Fan disconnected
18.Low temperature Battery
19.communication disconnected
20.Auxiliary charger failure

Appendix 3 One year of service guarantee

- With this warranty from the date of purchase will be eligible for one year free maintenance service.
- Please be obtained from the time of purchase dealer warranty book or fill out the date of purchase and covers shops chapter, to enjoy the Company's services.
- In the guarantee services free of charge during the period as a result of the following conditions, the company's small additional fees for materials.
  - ✧ After purchase due to transport, move, drops and the damage caused by the fault.
  - ✧ Because of the irresistible of the damage caused by natural disasters.
  - ✧ Misuse, abuse, vandalism, on-site environment, poor, fails to require the use of power supply voltage or supply of the damage caused by errors.
  - ✧ Non-company maintenance personnel, to overhaul its own products, modified or attach other accessories resulting in the damage, and the company have the right to refuse to repair.
- Exceed the free period of service were still present their guarantees the enjoyment of our perfect after-sales service, but that small additional fees for materials, nominal fee.
- Please save the warranty card, if accidentally lost, or failed to produce persons, places the date for the purchase of product ex-factory date.

SERIAL NO.		The distributor stamps
User Name		
Telephone		
The date of purchase		

Manufacturer:**Eaton Phoenixtec MMPL CO.,LTD.**

Factory: **Taiwan**