

飛瑞集團

PHOENIXTEC GROUP

文件類別
File Type

☐機密文件 Confidential File
☐非機密文件 Non-Confidential file

Page 1 of 1

資料名稱
Data Name

☐初期規格書 Draft Spec. ☐報價規格書 Quote Spec. ☒正式規格書 Formal Spec.

應用類別

Application Type

☒UPS ☐AVR ☐SMR ☐INVERTER ☐u-UPS ☐硬体模組 Module ☐其他 Others :

品名 Description

USER'S MANUAL 1XXX MULTI.LAN EATON

適用材料

料號

規格

備註

料號

規格

備註

Information

Part Number

Specification

Note

Part Number

Specification

Note

for Original

614-06781-00

Type

最初適用機種 (Application Scope)

內 容 記 事 (Particular Information)

1 製造商 (Manufacturer)

2 電氣規格 (Electric Specification)

3 機械結構 (Mechanism Structure)

4 標示說明 (Marking)

5 IQC 檢驗說明 (IQC Checkout)

6 安全規格 (Safety Specification)

7 所需文件 (Demands Documents)

8 其他 (Others)

(1) 製造元件皆需經認可手續後方可進料.
Material for mass production should be approved formally.

(2) 不論電氣或機械結構上之修改, 皆需於進料前再進行認證, 方可進料. Material with change in electrical or mechanical should be verified before mass production.

GP 等級

☐Non-GP

☒GP2 (RoHS)

☐GP3

☐GP3S

☐其它 others:

GP Level

Package Material (610\612\690): ☐GP2P (RoHS)

☐GP3P

☐GP3SP

☐其它 others:

外觀圖 Physical Structure :

说明:

1.印刷尺寸: 210mm*145mm

2.封面封底材质: 157g 铜版纸

内页材质: 100g 书写纸

3.中文在前, 英文在后

4.装订方式: 骑马订

品質保證 (Quality Guarantee) :

變更記錄

Change

Record

變更事項 (變更說明需含版本: 例 00- >01。)
Change items (Including changing version)

核准
Approved

審核
Checked

Layout

安規
Safety

負責人
Proposer

陳永清
11/11/08

郭輝民
11/18/08

11/19/08

汪东梅
11/19/08

11/18/08

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(1) 製造元件皆需經認可手續後方可進料.
Material for mass production should be approved formally.

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GP 等級

☐Non-GP☒GP2 (RoHS)☐GP3☐GP3S☐其它 others:

GP Level

Package Material (610\612\690): ☐GP2P (RoHS) ☐GP3P ☐GP3SP ☐其它 others:

外觀圖 Physical Structure :

说明:

1.印刷尺寸: 210mm*145mm

2.封面封底材质: 157g 铜版纸

内页材质: 100g 书写纸

3.中文在前, 英文在后

4.装订方式: 骑马订

品質保證 (Quality Guarantee) :

變更記錄

Change
Record變更事項 (變更說明需含版本: 例 00→01。)
Change items (Including changing version)核准
Approved審核
Checked

Layout

安規
Safety負責人
Proposer

變更記錄 Change Record	變更事項 (變更說明需含版本：例 00→01。) Change items (Including changing version)	核准 Approved	審核 Checked	Layout	安規 Safety	負責人 Proposer
	變更記錄位置不夠請自行添加，多出也可刪除					

Eaton DX

6000/10000/15000
/20000

用户手册 / user manual



Powering Business Worldwide

前言

致用户：

感谢您选用了伊顿UPS的产品来保护您的电子设备。

Eaton DX 系列UPS的设计最大限度地考虑了各方面的要求。我们建议您仔细阅读本手册，以便充分利用您的UPS诸多特性。

如需进一步了解伊顿的全系列产品的信息，以及可为Eaton DX UPS配置的选件，请您浏览我们的网站

www.eaton.com.cn,

或与伊顿各地的分支机构联系。

安全指导

■ Eaton DX备有自己的电力来源(电池)。故此，即使Eaton DX与市电分隔，输出端仍有电压输出(冷启动状态)；

■ **机柜内有危险性电压，需打开机柜时务必请有经验和资格的工程师操作；**

■ Eaton DX一定要接地；

■ 请勿置放Eaton DX于接近液体或环境潮湿的地方；

■ 请勿让液体或外来物体进入Eaton DX；

■ 请勿阻塞在Eaton DX背面及侧面的通风道；

■ 请勿将Eaton DX直接暴露于阳光之下或将它放于靠近热源的地方；

■ 市电输入开关尽可能靠近Eaton DX，断开市电输入开关可以使输入电源断开；

■ Eaton DX含有密封的铅酸电池，这些电池一定要根据适当的规则正确地处理；

■ 若Eaton DX在使用前要贮存，它应存放于干爽的地方。贮存温度范围：0°C到+40°C；

■ 若Eaton DX长期不用，则为了保持电池的储能和防止电池的永久损坏，应在 4 ~ 6 个月内将Eaton DX接驳市电不少于12小时对电池充电。

■ 包装材料请注意按法规正确回收处理。

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介绍

在关键的场合，您尽可放心地依靠 Eaton UPS的DX系列不间断电源。它们能最大限度地保护您的数据不被破坏，在任何时候Eaton DX UPS都保证提供高品质电源：您能在市电掉电时，继续工作。其内部的智能微型处理器能够检测到UPS的各种异常操作状态，并且在需要校正时，触发警报信号。

除此而外，Eaton在世界各地的专业维修工程师能够随时为您提供满意的服务。毫无疑问，Eaton UPS 为世界UPS的领导者。

Eaton DX 介绍

网络服务器及互联设备对电气扰动非常敏感，电气扰动会造成计算机的数据丢失或硬件损坏（电源，硬盘）。这是一个大问题。Eaton DX是专门为多用户系统（有网路的PCs，UNIX系统等等）、大型服务器、服务器群及互联网络上的平台提供集中保护而设计的。Eaton DX以其自动和手动旁路模块，为您的敏感设备提供真正的容错电源系统。Eaton DX为您提供最大的灵活性和各种联接方式。

Eaton DX结构紧密，工作噪声相当小，可以安装于较小空间。

Eaton DX保证提供稳定的净化电源，市电停电的时候自动供应电源并按照选择的配置提供广泛的信息及控制功能。由于在线式和电气隔离技术的应用，大量设备可以和标准电源插座相联而不必考虑您的电气安装的配置；Eaton DX保证提供连续的高等级保护，以确保为您的工作站、服务器及网络通讯设备提供可靠的电源。

Eaton DX 提供多种功能和特点来简化电源管理：

- 故障发生时，LED提供充分地预先警告信号以进行替换蓄电池。
- 前面板的LED能发出各种故障及警告信号。
- 直方图连续指示蓄电池充电水平或所带负载水平。

本手册适用于 Eaton DX 6-20kVA系列产品，包括：

- Eaton DX 6000(XL)
- Eaton DX 10000(XL)
- Eaton DX 10000XL31
- Eaton DX 15000XL31
- Eaton DX 20000XL31

标准机型和可外接电池的长延时机型(外箱型号有XL字样)。

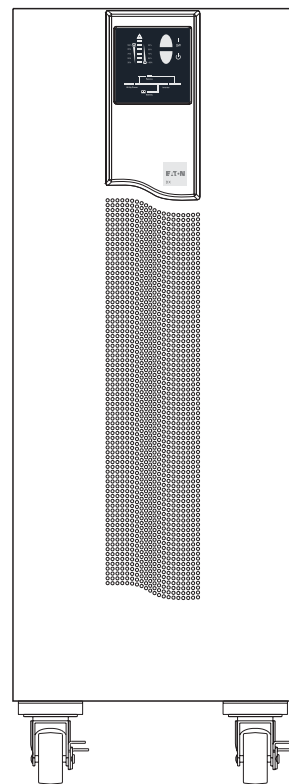
Eaton DX 10kVA长延时机有以下两个機種：

Eaton DX 10000XL为单相输入单相输出。

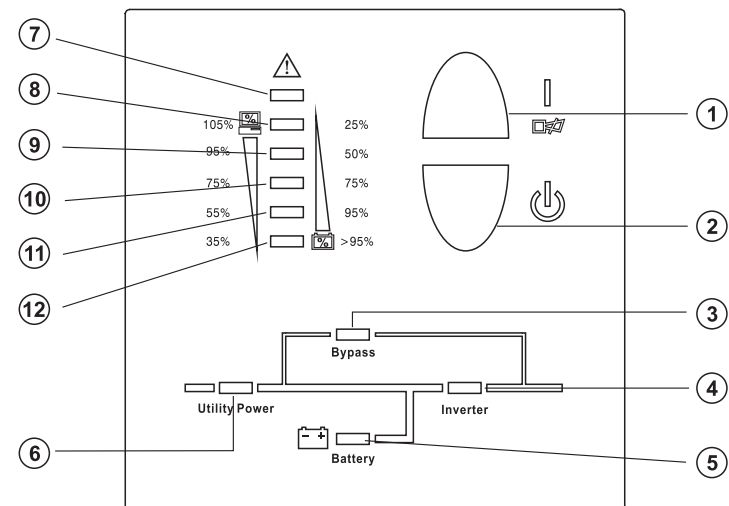
Eaton DX 10000XL31为三相输入单相输出。

1.1 前视图

Eaton DX系列



1.2 控制面板



① 启动与静音

② 关机

③ 旁路运行

④ 在线运行

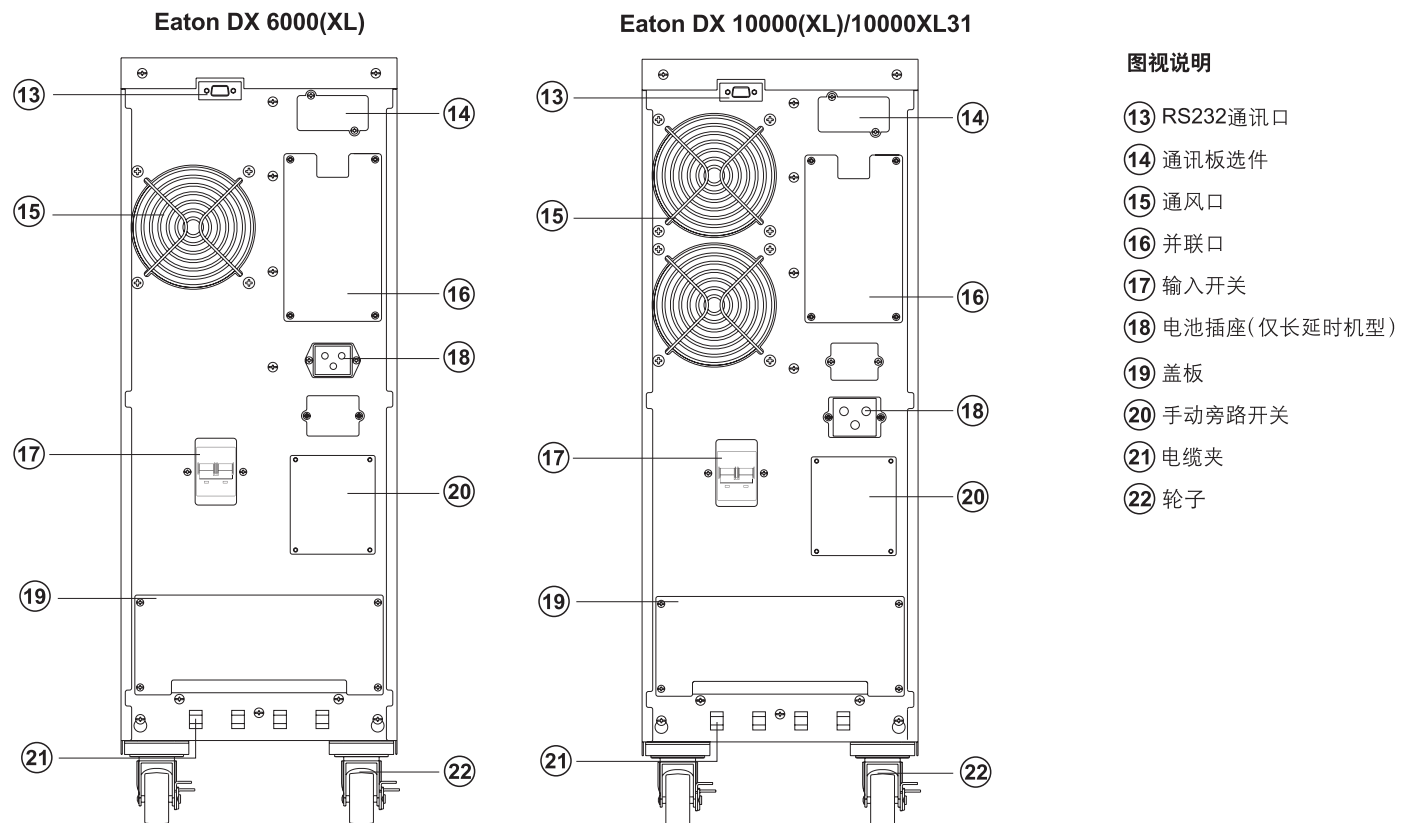
⑤ 电池运行

⑥ 市电状态

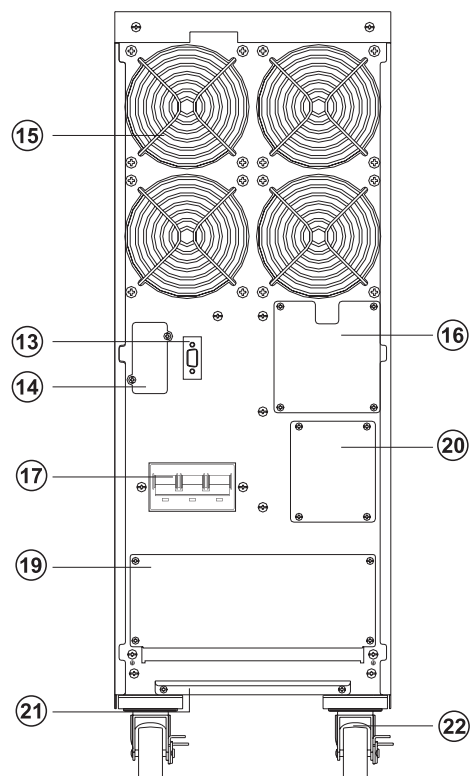
⑦ UPS故障

⑧ ~ ⑫ 负载量 / 电池容量

1.3 后视图



Eaton DX 15000XL31/20000XL31



图视说明

- ⑬ RS232通讯口
- ⑭ 通讯板选件
- ⑮ 通风口
- ⑯ 并接口
- ⑰ 输入开关
- ⑲ 盖板
- ⑳ 手动旁路开关
- ㉑ 电缆夹
- ㉒ 轮子

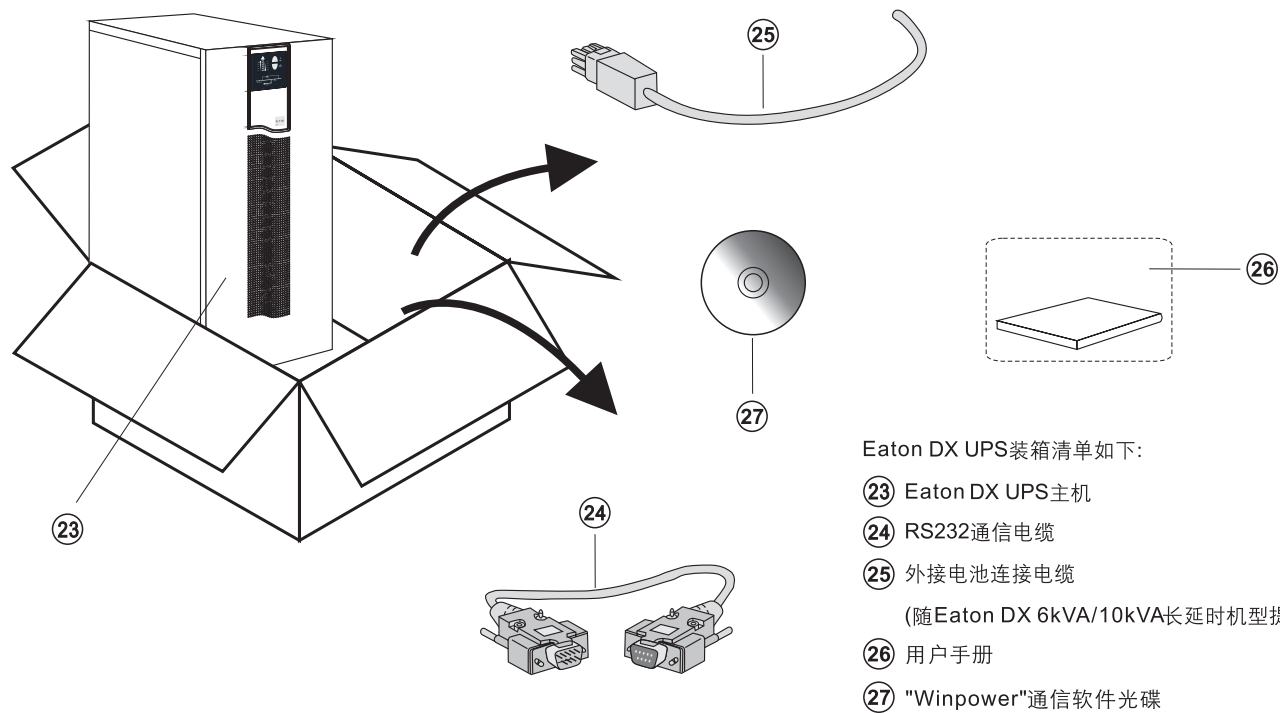
1.4 产品规格

■ Eaton DX输出功率：		Eaton DX 6000(XL)	Eaton DX 10000(XL)
<input type="checkbox"/> 视在功率(KVA)-有功功率(KW)		6KVA/4.2KW	10KVA/7KW
■ 市电：			
<input type="checkbox"/> 电压：		179-275V	
<input type="checkbox"/> 频率：		50Hz ± 8%	
<input type="checkbox"/> 功率因数：		≥0.98	
■ 输出：			
<input type="checkbox"/> 电压：		220V ± 1%	
<input type="checkbox"/> 频率：		50Hz 或 60Hz	
<input type="checkbox"/> 失真：		THD < 2 %(线性满载)	
<input type="checkbox"/> 过载能力：		105% ~ 130%，10分钟； ≥ 130%，1秒	
<input type="checkbox"/> 峰值因数：		3:1	
<input type="checkbox"/> 短路能力：		300毫秒内关断输出	
■ 标准的蓄电池后备时间：		5 - 8分钟 （电池内置于UPS机柜）	
(小心：超过25℃而且每升高10℃，蓄电池寿命会减半)。			
■ 标准效率：		> 88 %	
■ 环境工作温度：		0℃ ~ 40℃	
■ 储存温度：		0℃ ~ 40℃	
■ 相对湿度：		< 95%	
■ 标准根据：			
<input type="checkbox"/> 安全标准：		YD/T 1095-2000，IEC 62040-1	
<input type="checkbox"/> 电磁兼容性：		GB 7260.2，IEC 62040-2	
<input type="checkbox"/> 质量认证：		ISO 9001	
■ 噪音水平（距离1米）：		< 55dB	
■ Eaton DX 尺寸及重量：			
<input type="checkbox"/> 高(毫米) x 宽(毫米) x 深(毫米)		717 × 260 × 570	
<input type="checkbox"/> 重量(不含电池)(千克)：		35	38

■ Eaton DX 输出功率：	Eaton DX 10000XL31	Eaton DX 15000XL31	Eaton DX 20000XL31
<input type="checkbox"/> 视在功率(KVA)-有功功率(KW)	10KVA/7KW	15KVA/10.5KW	20KVA/14KW
■ 市电：			
<input type="checkbox"/> 电压：	310-476V		
<input type="checkbox"/> 频率：	50Hz ± 8%		
<input type="checkbox"/> 功率因数：	≥0.95		
■ 输出：			
<input type="checkbox"/> 电压：	220V ± 1%		
<input type="checkbox"/> 频率：	50Hz 或 60Hz		
<input type="checkbox"/> 失真：	THD < 2 %(线性满载)		
<input type="checkbox"/> 过载能力：	105% ~ 130%，10分钟； ≥ 130%，1秒		
<input type="checkbox"/> 峰值因数：	3:1		
<input type="checkbox"/> 短路能力：	300毫秒内关断输出		
■ 标准的蓄电池后备时间：	5 - 8分钟 （电池外置于电池柜）		
(小心：超过25℃而且每升高10℃，蓄电池寿命会减半)。			
■ 标准效率：	> 88 %		
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<input type="checkbox"/> 质量认证：	ISO 9001		
■ 噪音水平（距离1米）：	< 55dB	< 60dB	< 60dB
■ Eaton DX 尺寸及重量：			
<input type="checkbox"/> 高(毫米) x 宽(毫米) x 深(毫米)	717 × 260 × 570		
<input type="checkbox"/> 重量(千克)	39	55	55

安装

2.1 拆包检查



安装

2.2 连接 Eaton DX

这种连接必须由有资格的电气人员操作。

⚠ 在开始连接之前，请确认上线的保护装置（交流电源）是断开的；如果是长延时机，必须断开电池模块。

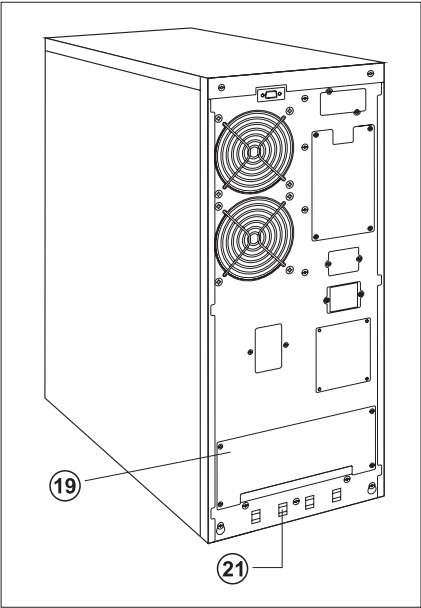
电缆的直径和三根导线的横截面积取决于UPS的额定功率。不可使用额定电流小于UPS最大输入电流的插座做UPS输入电源，以免将插座烧毁。

	每根导线的横截面积(平方毫米)	
	软导线	硬导线
Eaton DX 6 kVA	6以上	6以上
Eaton DX 10 kVA	10以上	10以上
Eaton DX 15 kVA	25以上	25以上
Eaton DX 20 kVA	25以上	25以上

- 1、拆下接线端子排的盖板(19)；
- 2、将输出电缆和输入电缆穿过电缆夹(21)；

⚠ 永远都是先连接地线。

- 4、将输出电缆的三根导线连接到输出端子排；
- 5、将输入电缆的三根导线连接到输入端子排；
- 6、确保接触牢靠，避免接触不良；
- 7、重新装上并用螺丝锁紧盖板(19)；
- 8、接好线后，只要将输入开关置于“开”，UPS会自动为电池充电；
- 9、检查确认安装是否正确。



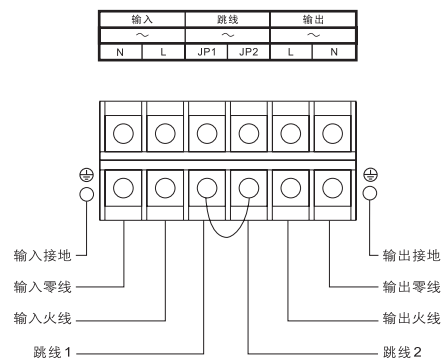
安装

2.3 连接到接线端子

1、Eaton DX 6000(XL)/10000(XL)

若UPS为单机使用，跳线1和2必须用导线连接，Eaton DX 6kVA用4mm²导线，Eaton DX 10kVA用6mm²导线短接。

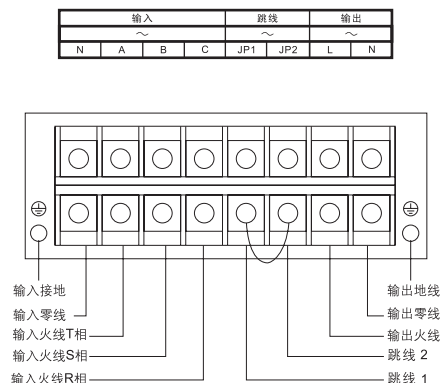
若UPS为并机使用，则必须拆除跳线1和2之间的短接线。



2、Eaton DX 10000XL31

若UPS为单机使用，跳线1和2必须用6mm²导线短接。

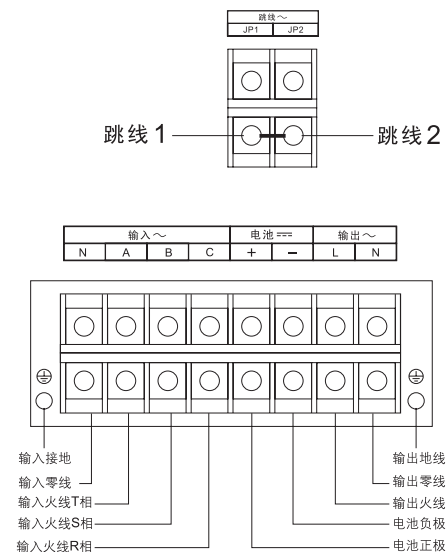
若UPS为并机使用，则必须拆除跳线1和2之间的短接线。



3、Eaton DX 15000XL31/20000XL31

若UPS为单机使用，跳线1和2必须用随机附带的铜片短接。

若UPS为并机使用，则必须拆除跳线1和2之间的铜片。



安装

2.4 Eaton DX长延时XL机型 外接电池的安裝

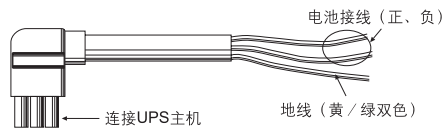
Eaton DX 6-20kVA长延时机采用 20 节电池，串联成240VDC 为1组，可多组电池关联。Eaton DX 6和 Eaton DX10 的电池电缆一端为插头用以连接UPS，另一端为开放式三根线用以连接电池组；Eaton DX 15 和 Eaton DX 20使用与输入输出相同的接线。

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

- 1、确认用户配电市电开关和电池组开关均处于断开位置。
- 2、电池电缆接电池端。

 **不可先接UPS端, 否则有电击危险。**

- 3、将电池线插头接到UPS电池插座即完成连接，UPS先不接任何负载，先将输入电源电缆接好，然后将输入开关置于 " 开 "，将电池组开关置于 " 开 "，UPS开始对电池组充电。



Eaton DX 6kVA和Eaton DX 10kVA的 电池 电缆图

	Eaton DX 6kVA	Eaton DX 10kVA	Eaton DX 15/20kVA
正极	红线	褐线和蓝线并联	红线
负极	黑线	黑线和白线并联	黑线
接地	黄绿双色线	黄绿双色线	黄绿双色线

Eaton DX 15kVA 和 Eaton DX 20kVA 需要用25平方毫米以上的黄绿双色线来连接UPS接地端和电池箱外壳。

安装

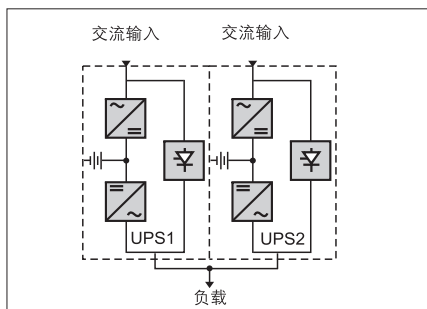
2.5 Eaton DX并机

1、并机安装

- 1)用户需自己购买标准25针并口带屏蔽电缆作为UPS并机电缆，长度以小于3m为宜；
- 2)每台UPS输入请遵循单机之配线要求；
- 3)每台UPS输出电缆接至一输出接线盘，然后由输出接线盘配线去负载；
- 4)必须将输入、输出端子台上的跳线1、跳线2间的短接线或铜片拆除；
- 5)每台UPS需单独配备电池；

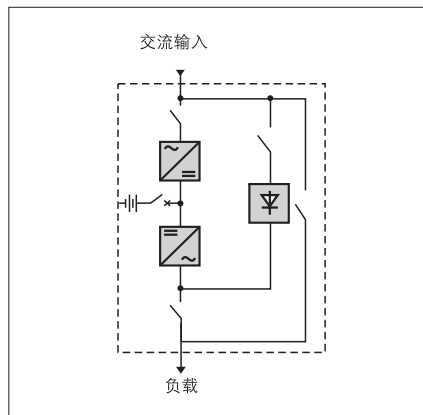
2、模块化并联(主动冗余式)

这种方式通过冗余结构提高了供电系统的可靠性。两台UPS容量相同并平均分配负载，当其中任意一台故障时，另外一台UPS可独立承担整个负载的运行。因此称作1/2冗余系统。



■ 模块化并联

故障UPS可进行隔离维修，每台UPS均具有手动维修旁路。



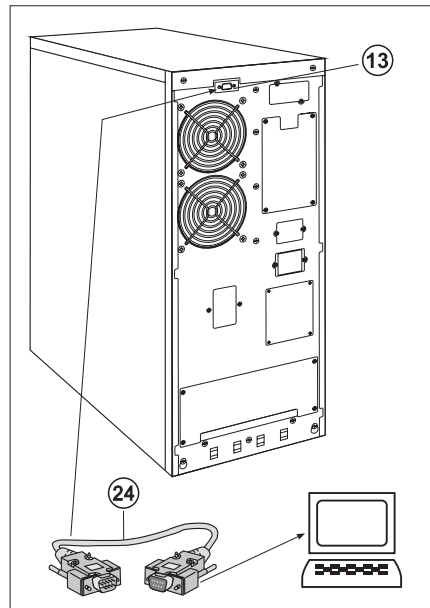
■ 单机UPS及维修旁路

3、操作说明

- 1)一般操作必须依照单机之操作说明；
- 2)开机：市电旁路状态下依次开机后，各台机器会同时跳到逆变状态；
关机：逆变状态下依次关机，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。

安装

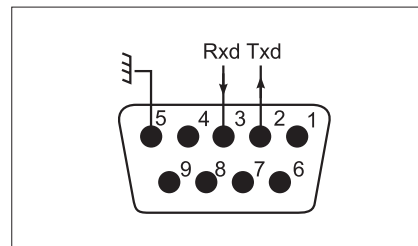
2.6 连接到RS232通讯口(选项)



- 1、将RS232通讯电缆(24)连接到计算机的串行口；
- 2、将RS232通讯电缆(24)连接到UPS的RS232通讯口；

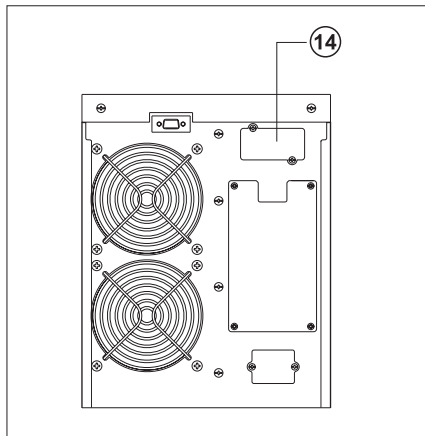
Eaton DX UPS通过RS232通讯电缆与计算机成功连接后，便可以使用Winpower监控软件对UPS进行管理、设置或安全保护。

UPS上的RS232通讯口(13)的脚位图。



安装

2.7 通讯板选件的安装



通讯板的插槽。

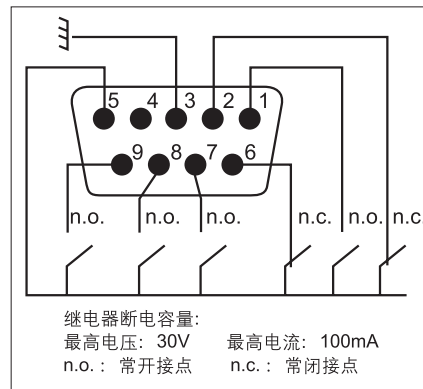
安装通讯板的过程中不需要停止UPS:

- 1、拆下插槽的盖板(14);
- 2、在插槽中插入通讯板;
- 3、用两颗螺丝锁紧通讯板。

1. 状态信息卡 – AS400 (选件)

智能插槽通讯口(14)位于Eaton DX背面板上,提供Eaton DX的状态信息。此通讯口包括SUB-D9母座,其输出情况如下:

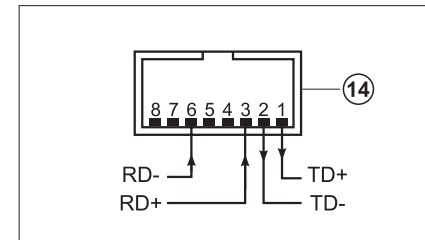
- 1 - UPS故障,
- 2 - 综合报警,
- 3 - 接地,
- 4 - 远程关机,
- 5 - 公共端,
- 6 - 自动旁路供电,
- 7 - 电池低电压的关机信号,
- 8 - 逆变的供电,
- 9 - 电池供电。



继电器断电容量:
最高电压: 30V 最高电流: 100mA
n.o. : 常开接点 n.c. : 常闭接点

2. SNMP 通讯口 (选件)

位于Eaton DX 后面板上的智能插槽通讯口(14),提供SNMP允许的数据。

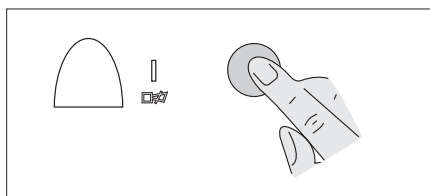


操作

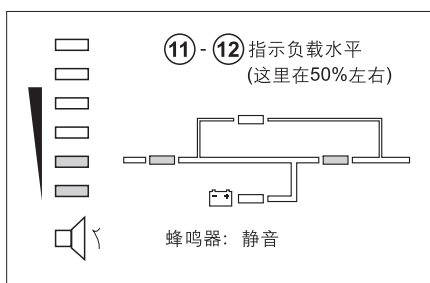
3.1 启动

a) 有市电启动

■ 按下 "启动" 按钮①:



■ UPS正常工作开始, 指示灯处于如下状态:

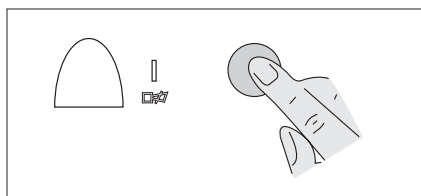


■ 负载由 Eaton DX供电。

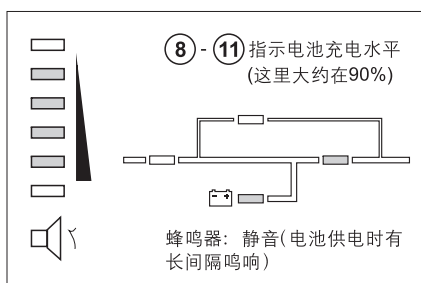
■ 开机时, UPS 会进行自检, 面板上负载 / 电池指示灯会全亮, 从下到上逐一熄灭, 几秒钟后逆变指示灯亮, UPS已处于在线运行状态。若市电异常, UPS将工作在电池运行状态。

b) 无市电启动

■ 按下 "启动" 按钮①:



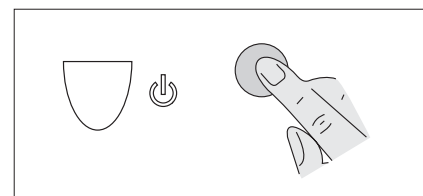
■ 用电池供电的工作开始, 指示灯处于如下状态:



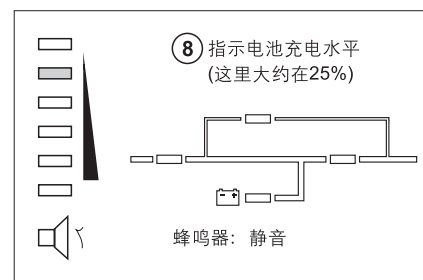
■ 负载由 Eaton DX 从电池供电。

3.2 Eaton DX停机

■ 按下 "停机" 按钮②:



■ Eaton DX会停机, 指示灯处于如下状态:



■ 不再供电给负载。如市电存在可为电池充电。

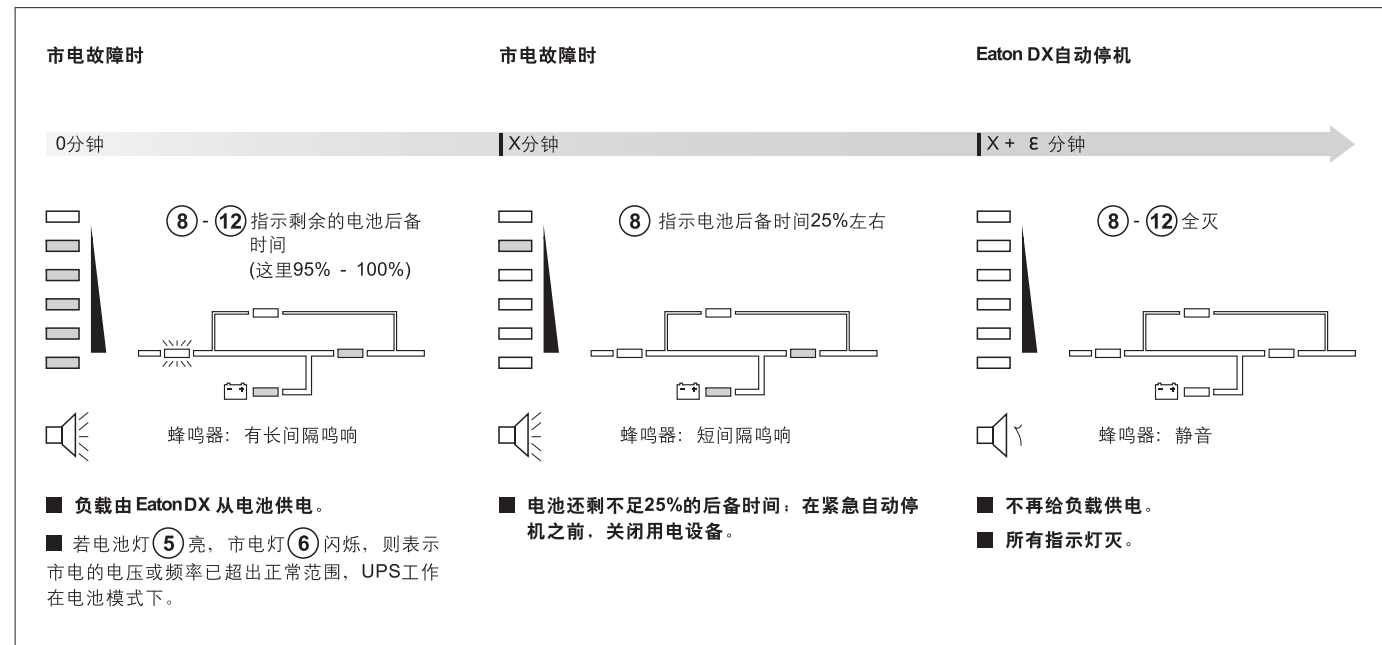
■ 关机时, UPS 会先进行自检, 负载 / 电池指示灯全亮并逐一熄灭, 最后面板无显示, UPS 转入旁路状态。

■ 将市电断开, UPS无输出电压

操作

3.3 电池放电

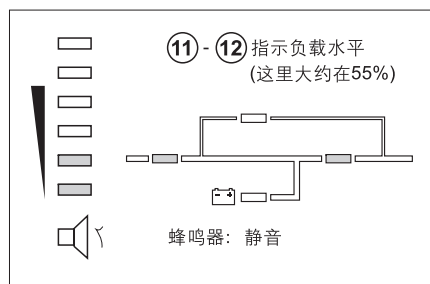
市电故障时，操作程序如下：



操作

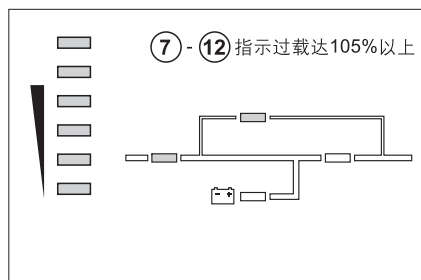
3.4 市电恢复

- 不论处于上述序列的哪一点，市电恢复时，Eaton DX 转变到正常操作状态：



- 负载由 Eaton DX 供电。
- 市电恢复，UPS 会自动测试所有指示灯；
- 测试完毕后显示目前工作状态。

3.5 过载



有市电

- 如果过载在额定值(130%，1秒)以内，则蜂鸣器以每秒二次高速报警，逆变器维持输出；
- 如果过载超过额定值，则负载切换到旁路由市电供电；
- 如过载在一分钟内消失，UPS 会自动将负载切换回逆变器在线运行。

无市电

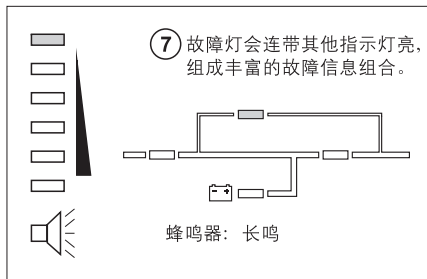
- UPS 会停止供电给负载
- 按 "关机" 钮，拆除非关键性负载及重新启动 Eaton DX。

操作

3.6 操作故障

UPS故障

■ 配有自动旁路模块的UPS:

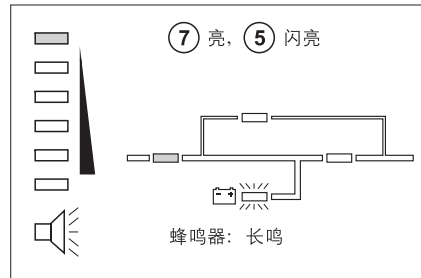


请求技术性的服务。

■ 由于UPS故障有多种, 表现出来的灯号方式各有不同。

电池故障

■ 电池在首次启动时, 要进行测试, 首次启动后可自动测试(测试周期可由软件设置)。如果电池失效, 则会显示:



■ 如为长延时机, 检查电池柜上的电池回路断路器是否闭合, 否则将其闭合;

■ 请求技术性的服务

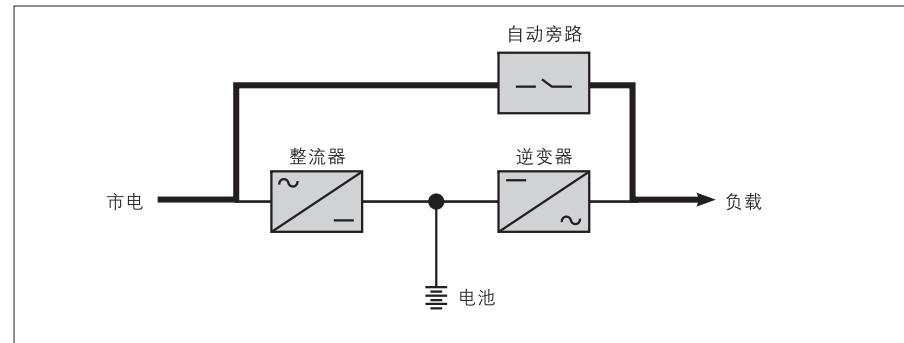
操作

3.7 旁路运行

自动旁路

- 橙色旁路灯③亮；
通过该旁路，负载自动切换到市电(如右图所示)。
- 当有长期过载；
- 若UPS发生故障(红色故障灯⑦亮)。

自动旁路操作图

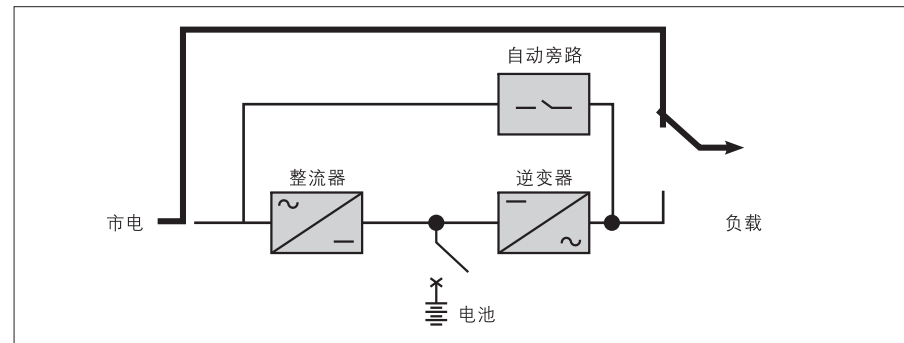


手动旁路

警告：

- 在正常工作环境下，手动旁路开关不能随意切换！如果UPS发生故障，建议关机，确认UPS工作于旁路模式后，由有经验的人员将负载切换到手动旁路供电；
- 若市电的频率和电压是在操作范围内，才能切换负载(见产品规格一节)。

手动旁路操作图



维护

如果指示灯⑦亮，说明有运行异常或报警。

不需要Eaton售后服务人员支持的故障检修

指 示	含 义	纠 正 措 施
指示灯⑦、⑧亮， 蜂鸣器长鸣	UPS过载，过载量太大或持续时间太长， UPS切断给所连接的设备的电源，蜂鸣器连续鸣响。	检查连接到UPS的设备的耗电量，并断开不重要的装置。
指示灯⑦、⑫亮， 蜂鸣器长鸣	机器内部温度超高。  在这种情况下，UPS最长运行8小时。	检查通风口是否阻塞，室内温度是否过高。
指示灯③、⑥、⑫亮， 蜂鸣器2分钟鸣叫一次	UPS以旁路方式运行。	按开机键使UPS转回在线运行。
指示灯⑥闪亮	市电超出输入范围。	负载由电池供电，建议关闭应用程序，保存数据。

需要Eaton售后服务人员支持的故障检修

指 示	含 义	纠 正 措 施
故障灯⑦亮， 蜂鸣器长鸣	UPS的自诊断电路检测到UPS内部发生了故障。 可根据指示灯的不同组合进行判定： 1. 逆变器故障 2. 充电器故障 3. 风扇故障 4. 通讯异常 5. 电池电压异常 6. 输出短路 7. 旁路短路 8. 超载 9. 温度过高	通知售后服务部门。
指示灯⑤闪亮， 蜂鸣器长鸣	在电池测试过程中检测到电池故障。	确认电池的断电器闭合了。如果是闭合的，请 通知售后服务部门，因为电池的确不良了。

环 保 信 息

本产品为绿色环保型产品，符合国家颁布的《电子信息产品污染控制管理办法》中的各项要求。使用前，请仔细阅读《产品使用说明书》，正确使用本产品。在正常情况下，产品中的有毒、有害物质不会产生泄露或挥发，也不会对人体及环境造成危害。

我们一直致力于设计、制造环保型产品，并通过持续的技术研发，进一步降低或消除产品中的有毒、有害物质。以下列出有毒有害物质所在的零件之具体部位，以方便环保部门回收。

附：有毒有害物质和元素表

[illegible]

Foreword

Thank you for selecting Eaton UPS product to protect your electrical equipment.

The Eaton DX range has been designed with the utmost care. We recommend that you take the time to read this manual to take full advantage of the many features of your UPS.

To discover the entire range of Eaton UPS products and the options available for the Eaton DX range, we invite you to visit our web site at www.eaton.com.cn or contact your Eaton UPS representative.

Safety rules

■ Eaton DX contains its own source of power (battery), the load-side power outlets can therefore carry dangerous voltages even when Eaton DX is disconnected from the AC input power;

■ dangerous voltages are also present inside the unit. The units should only be opened by a qualified service technician;

■ Eaton DX must always be earthed;

■ do not place Eaton DX close to liquids or in a very humid environment;

■ do not let liquids or other foreign objects enter Eaton DX;

■ do not obstruct the ventilation grates in the back and sides of Eaton DX;

■ do not expose Eaton DX to direct sunlight or place it near heat sources;

■ the AC outlet from which Eaton DX is powered should be near the unit and remain easily accessible. The primary source of power is removed by disconnecting Eaton DX power cord;

■ Eaton DX contains sealed lead-acid batteries which must be disposed of properly according to applicable regulations;

■ if Eaton DX is put in storage before being used, it should be stored in a dry place. Storage temperature range: 0°C to +40°C ;

■ if Eaton DX remains disconnected from AC input power for extended periods, it is recommended to connect the unit once a month for 12 hours to keep the battery charged and to avoid irreversible battery damage;

■ please disposed of the packaging in accordance with the applicable legislation.

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Presentation

In critical situations, it is reassuring to be able to count on Eaton UPS. Eaton DX uninterruptible power supplies (UPS). They maximize protection to keep your data intact and accessible. In doing so, they guarantee virtually total availability.

Eaton DX UPS ensure top quality power around the clock. An intelligent microprocessor control device also detects any operating anomalies of the UPS and triggers an alarm if corrective action is necessary.

In addition to the high-technology aspect of these UPSs, you can count on a team of local specialists, throughout the world. It's no accident that Eaton UPS is the world leader.

Eaton DX presentation

Network servers and interconnection devices are very sensitive to electrical disturbances of all types, including outages, voltage sags, brownouts, spikes, etc.

The origins of the disturbances also vary, ranging from atmospheric phenomena such as lightning and frost, to nearby devices generating interference such as elevators, photocopy machines, and machine tools, not mention human errors, like the accident at pulling out of power cords or tripping of circuit breakers.

The consequences of these disturbances on computer systems range from data losses to hardware damage (power supplies, hard disks) and this always means problems.

Eaton DX UPS was specially designed to provide centralised protection of multi-user systems (networked PCs, UNIX systems, etc.), large servers, server clusters and internetworking bays.

Eaton DX UPS are genuine fault-tolerant power supply systems for your sensitive equipment. Eaton DX UPS give you maximum flexibility and various connection possibilities (direct connection to a standard socket to terminal blocks, as required).

Eaton DX UPS guarantee a stable supply of clean power, power supply autonomy in a mains outage and vast according to the configuration selected. With On-Line technology, a large number of devices can be connected to a standard power socket without worrying about the configuration of your electrical installation.

Eaton DX UPS guarantee continuous, top-grade protection and availability for your workstations, servers and network communications equipment.

Presentation

Eaton DX offer many functions and characteristics designed to simplify power management:

- automatic battery test carried out periodically. In the event of a fault, a LED provides enough advance warning for battery replacement;
- front panel LEDs signal all types of faults and alarms;
- bar graph continuously indicates the battery charge level or the computer application load level;
- Winpower is a CD-ROM which contains all the tools needed to supervise your UPS.

This manual is designed for the Eaton DX series product, including:

- Eaton DX 6000(XL)
- Eaton DX 10000(XL)
- Eaton DX 10000XL31
- Eaton DX 15000XL31
- Eaton DX 20000XL31

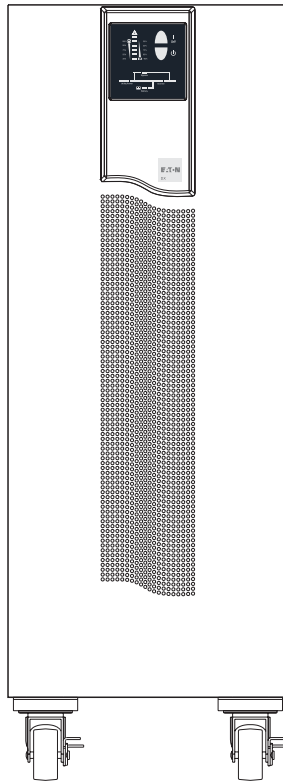
standard model and the long back up time model marked with "XL" model on the carton box.

The Eaton DX 10kVA long back up time model have 2 versions. Eaton DX10000XL indicates UPS is single-phase input and out. Eaton DX10000XL31 indicates UPS is three-phase input and single-phase output.

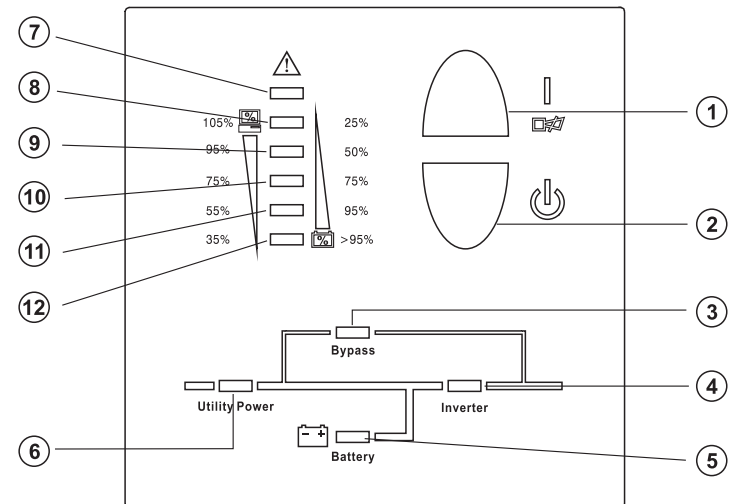
Presentation

1.1 Front view

Eaton DX UPS



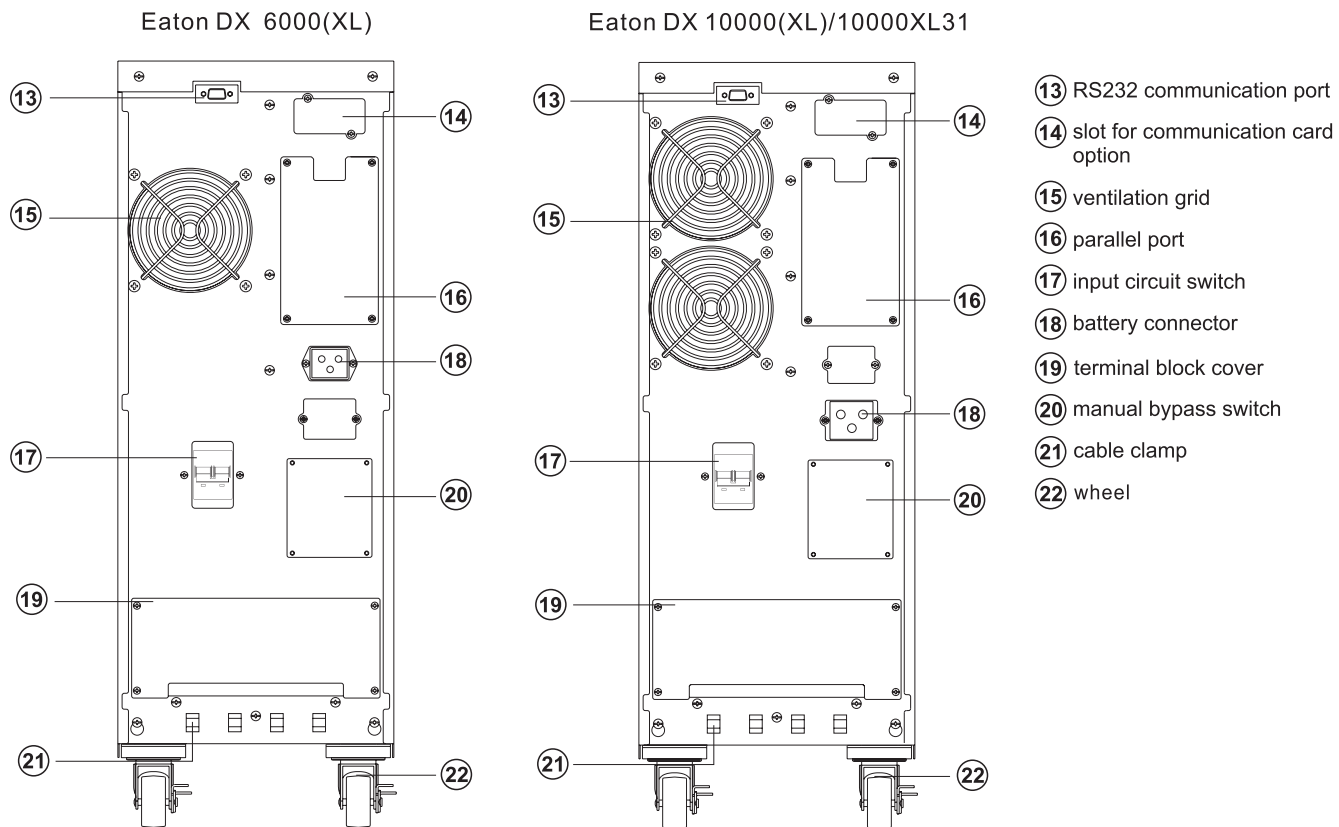
1.2 Control panel



- | | |
|--------------------|------------------------------|
| ① ON or buzzer OFF | ⑤ battery mode |
| ② OFF | ⑥ utility power |
| ③ bypass mode | ⑦ UPS fault |
| ④ inverter mode | ⑧ ~ ⑫ load/battery indicator |

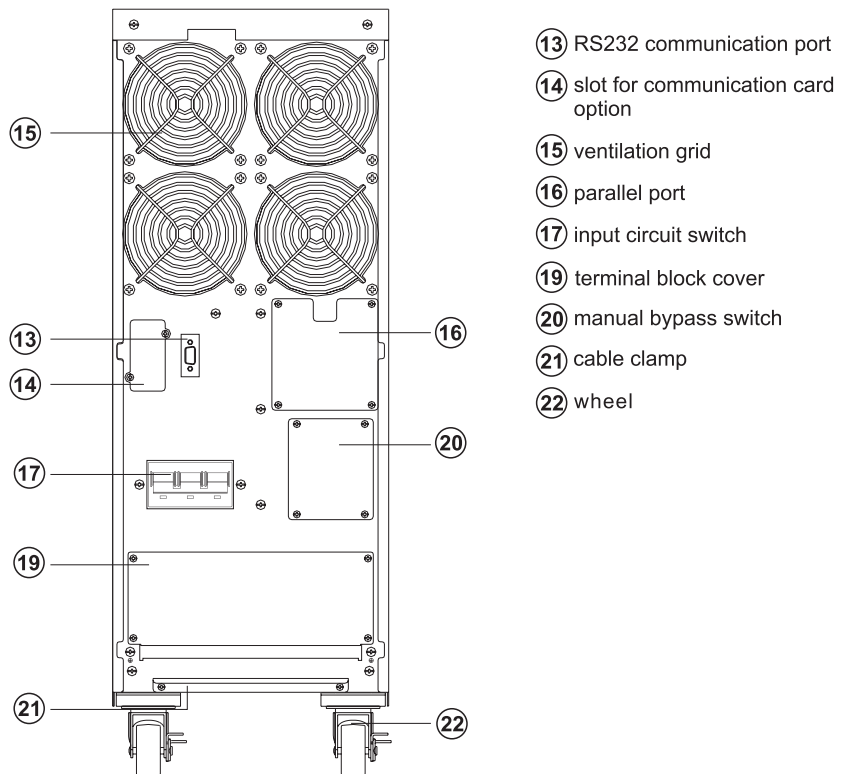
Presentation

1.3 Back view



Presentation

Eaton DX 15000XL31/20000XL31



Presentation

1.4 Technical data

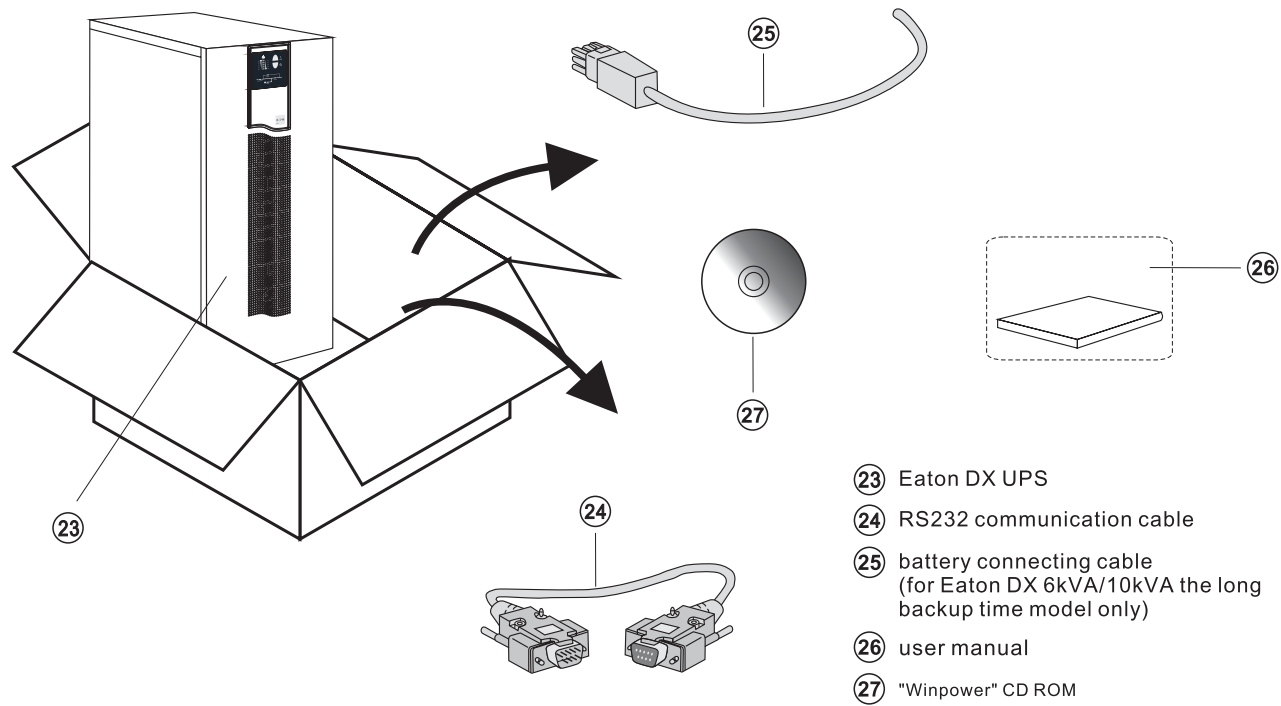
■ Eaton DX output power:	Eaton DX 6000(XL)	Eaton DX 10000(XL)
<input type="checkbox"/> apparent(KVA)-active(KW): Pn	6KVA/4.2KW	10KVA/7KW
■ mains supply:		
<input type="checkbox"/> voltage:	179-275V	
<input type="checkbox"/> frequency:	50Hz ± 8%	
<input type="checkbox"/> power factor:	≥0.98	
■ output specification:		
<input type="checkbox"/> voltage:	220V ± 1%	
<input type="checkbox"/> frequency:	50Hz or 60Hz	
<input type="checkbox"/> distortion:	THD < 2 % on linear load	
<input type="checkbox"/> overload capability:	105% ~ 130%, 10min; ≥ 130%, 1sec	
<input type="checkbox"/> crest factor:	3:1	
<input type="checkbox"/> short-circuit protection:	within 300 ms cut off the output	
■ standard battery backup time: (caution: the battery life is halved every 10°C above 25°C)	5 - 8 min	
■ nominal efficiency:	> 88%	
■ operating temperature:	0°C ~ 40°C	
■ storage temperature:	0°C ~ 40°C	
■ relative humidity:	< 95%	
■ according to standards:		
<input type="checkbox"/> safety:	YD/T 1095-2000, IEC 62040-1	
<input type="checkbox"/> electromagnetic compability:	GB 7260.2, IEC 62040-2	
<input type="checkbox"/> quality certification:	ISO 9001	
■ noise level(at 1 meter):	< 55dB	
■ dimension and weight of Eaton DX:		
<input type="checkbox"/> height(mm) x width(mm) x depth(mm):	717 × 260 × 570	
<input type="checkbox"/> weight(W/O batts.)(kg):	35	38

Presentation

■ Eaton DX output power:	Eaton DX 10000XL31	Eaton DX 15000XL31	Eaton DX 20000XL31
<input type="checkbox"/> apparent(KVA)-active(KW): Pn	10KVA/7KW	15KVA/10.5KW	20KVA/14KW
■ mains supply:			
<input type="checkbox"/> voltage:	310-476V		
<input type="checkbox"/> frequency:	50Hz ± 8%		
<input type="checkbox"/> power factor:	≥0.95		
■ output specification:			
<input type="checkbox"/> voltage:	220V ± 1%		
<input type="checkbox"/> frequency:	50Hz or 60Hz		
<input type="checkbox"/> distortion:	THD < 2 % on linear load		
<input type="checkbox"/> overload capability:	105% ~ 130%, 10min; ≥ 130%, 1sec		
<input type="checkbox"/> crest factor:	3:1		
<input type="checkbox"/> short-circuit protection:	within 300 ms cut off the output		
■ standard battery backup time:	5 - 8 min		
(caution: the battery life is halved every 10°C above 25°C)			
■ nominal efficiency:	> 88%		
■ operating temperature:	0°C ~ 40°C		
■ storage temperature:	0°C ~ 40°C		
■ relative humidity:	< 95%		
■ according to standards:			
<input type="checkbox"/> safety:	YD/T 1095-2000, IEC 62040-1		
<input type="checkbox"/> electromagnetic compability:	GB 7260.2, IEC 62040-2		
<input type="checkbox"/> quality certification:	ISO 9001		
■ noise level(at 1 meter):	< 55dB	< 60dB	< 60dB
■ dimension and weight of Eaton DX:			
<input type="checkbox"/> height(mm) x width(mm) x depth(mm):	717 × 260 × 570		
<input type="checkbox"/> weight(kg):	39	55	55

Installation

2.1 Unpacking and check



Installation

2.2 Connecting Eaton DX

This type of connection must be carried out by the qualified electrical personnel.

⚠ Before carrying out any connections, check the battery circuit breaker is OFF and the upstream protection devices (AC-power source) are open (OFF).

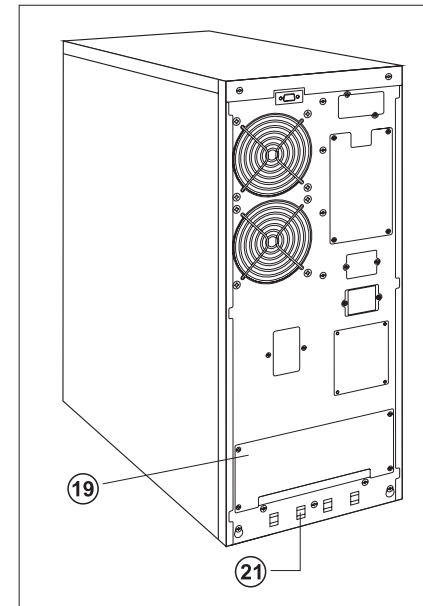
The cable diameter and the cross sectional area of three wires depends on the UPS rating.

	the cross-sectional area of each wire (mm ²)	
	flexible cable	hard cable
EatonDX 6 kVA	6	6
EatonDX 10 kVA	10	10
EatonDX 15 kVA	25	25
EatonDX 20 kVA	25	25

1. remove the terminal-block cover (19) ;
2. loosen the cable clamp;
3. insert the output and input cables through the cable clamp (21) ;

⚠ Always connect the earth wire first!

4. connect the three wires of output cable to the output terminal block;
5. connect the three wires of input cable to the input terminal block;
6. ensure that the cable connection is fastened;
7. refix and secure the terminal block cover (19) ;
8. switch input circuit breaker to the "ON" position, UPS will charge battery automatically;
9. check and confirm the installation is done correctly.



Installation

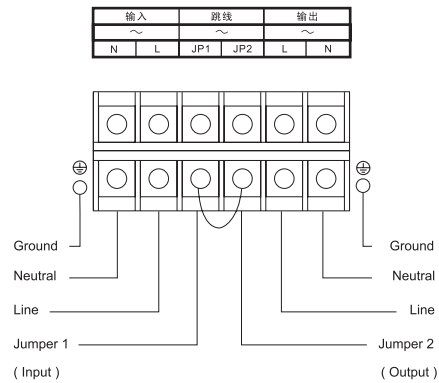
2.3 Cable connection

1. Eaton DX 6000(XL)/10000(XL)

UPS on unitary operation, Jumper 1 and 2 must be connected with a wire.

For Eaton DX 6kVA, the conducting wire is 4mm². For Eaton DX 10kVA, the conducting wire is 6mm².

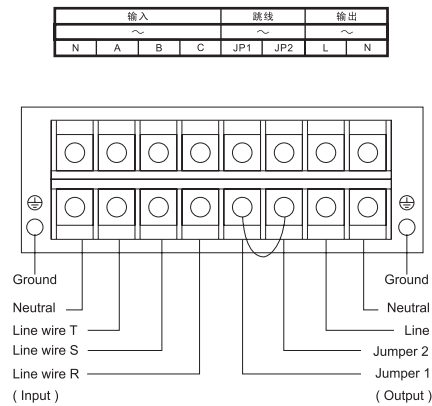
UPS on parallel operation, the conducting wire between the Jumper 1 and 2 must be removed.



2. Eaton DX 10000XL31

UPS on unitary operation, Jumper 1 and 2 must be connected with a 6mm² wire.

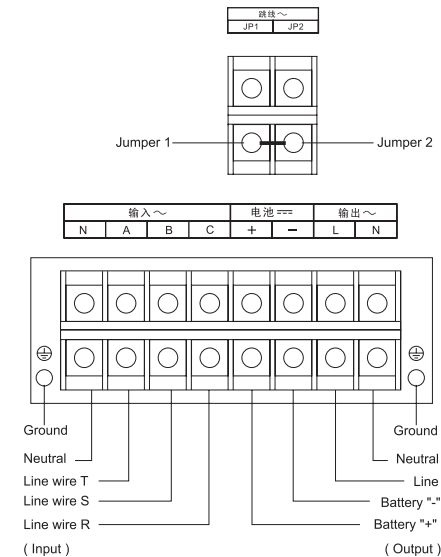
UPS on parallel operation, the conducting wire between the Jumper 1 and 2 must be removed.



3. Eaton DX 15000XL31/20000XL31

UPS on unitary operation, Jumper 1 and 2 must be connected with a copper bar provided together with the UPS.

UPS on parallel operation, the copper bar between Jumper 1 and 2 must be removed.



Installation

2.4 Installation of the external battery cabinet

Eaton DX has 20 batteries are connected in series as a 240VDC battery set. Multiple of battery sets can be connected in parallel.

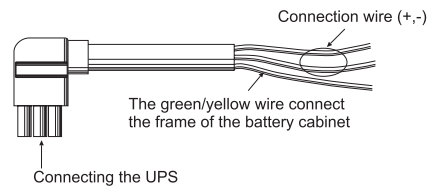
Battery cable connect to Eaton DX6000XL/10000XL(31) by a specific connector and battery cabinet with a 3 or 5 core cable. Battery connection of Eaton DX15000XL31/20000XL31 will be done by a general power cable.

It is very important to follow the battery connecting procedures. Otherwise, there may have electric shock hazard. Please perform the connecting procedures according to the following step strictly:

1. set the battery circuit breaker in the "OFF" position and connect the 20 batteries in series.
2. connect the battery cable to the battery.

⚠ Do not connect the battery cable to the UPS first. Otherwise, there may be electric shock hazard.

3. connect the battery cable connector to the battery receptacle of the UPS.
4. connect the input power cable to the power source first and then set the input switch in the "ON" position.
5. set the battery pack switch in the "ON" position, the UPS will begin to charge the battery pack.



Eaton DX 6kVA and Eaton DX 10kVA battery cable

Battery cable:

Pole	Eaton DX 6kVA	Eaton DX 10kVA	Eaton DX 15kVA/20kVA
+	red wire	brown wire+blue wire	red wire
-	black wire	black wire+white wire	black wire
G	yellow/green wire	yellow/green wire	yellow/green wire

Earth wire (G) is connected to the metal frame of battery cabinet. The earth wire for Eaton DX 15/20 shall be above 25mm² and connect both UPS and battery cabinet.

⚠ Do not connect any loads to UPS before finishing the external battery connection.

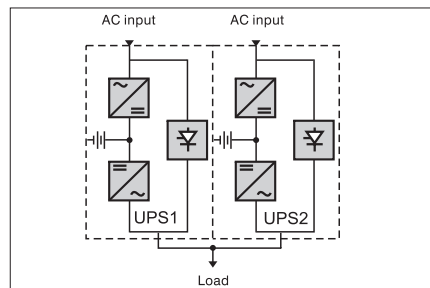
Installation

2.5 Parallel operation

1. Parallel installation

1. users need to buy a standard 25PIN shielded cable as the UPS parallel cable. The length of cable can be less than 3m;
2. connect the input cable of each UPS follows the cable connection requirement;
3. connect the output cable of each UPS to output switchboard and then connect the switchboard to the load;
4. remove the short conducting wires or copper bar between Jumper 1 and 2 on terminal blocks;
5. install battery to each UPS independently.

2. Modular parallel operation (redundancy configuration)

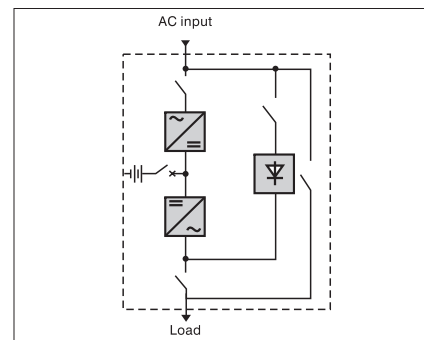


Modular parallel operation

This configuration improves the reliability of the power supply system through the redundancy frame structure. Two UPSs equally share the load. When one UPS fails, the other UPS will take up full load by itself. So it is called the 1+1 redundancy system.

3. Maintenance bypass

Eaton DX includes a manual maintenance bypass. It is designed to isolate UPS from AC source for personnel safety during service and testing.



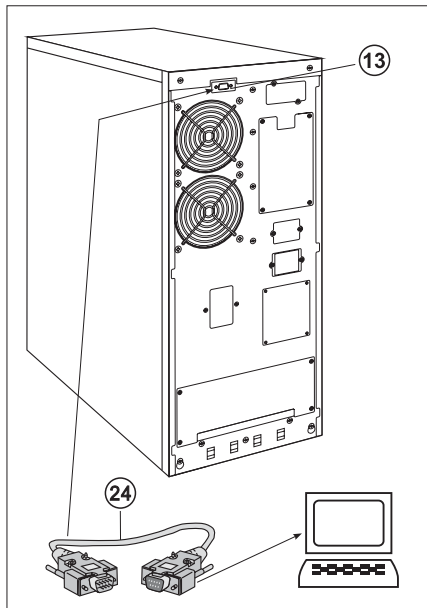
UPS with maintenance bypass

4. Operating instructions

- 1) Please follow the unitary UPS operating guide to perform general operations;
- 2) Startup: UPS start up in sequence from bypass mode, each unit will transfer to the Inverter mode.
Shutdown: UPS shut down in sequence from the Inverter mode. Each unit will shut down its inverter and transfer to the bypass mode.

Installation

2.6 Connecting to the RS232 communication port

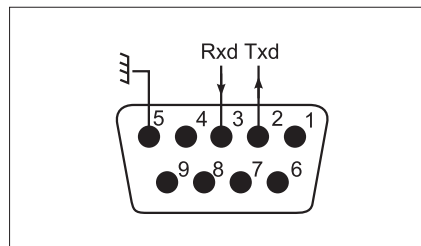


1. connect the RS232 communication cable (24) to the serial port of computer;

2. connect the RS232 cable (24) to the RS232 communication port (13) of Eaton DX.

Now, Eaton DX can communicate with computer by using the winpower software .

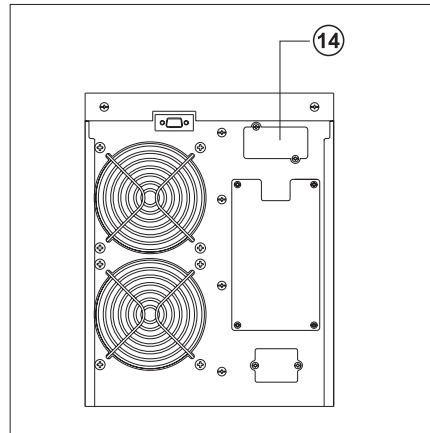
This is the DIN configuration (13) of RS232 interface port on UPS.



Installation

2.7 Installation of the optional communication card

Slot for communication card



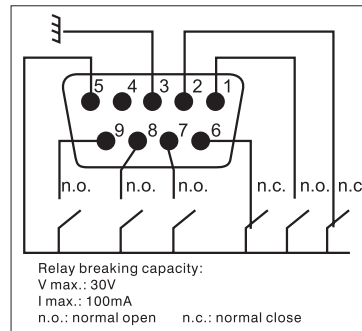
You don't need to stop the UPS during the installation of communication card.

1. remove the cover plate of slot ⑭;
2. insert the communication card into the slot ⑭;
3. secure the communication card with two screws.

1. Status information - AS400 (optional)

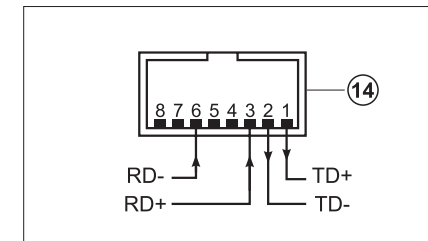
The communication port ⑭ with the installation of AS400 communication card supplies information on the status of UPS. It consists a SUB-9 female connector with following PIN-outs:

1. UPS fault
2. general alarm
3. earth
4. remote shutdown
5. common
6. operation on bypass
7. low battery shutdown warning
8. operation on UPS
9. operation on battery



2. SNMP communication (optional)

The Communication Port ⑭ with the installation of SNMP communication card supplies the SNMP compliant data on an RJ45 connector.

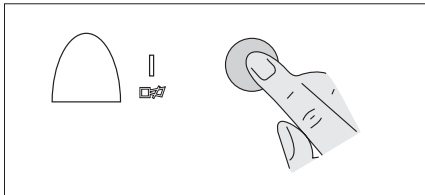


Operations

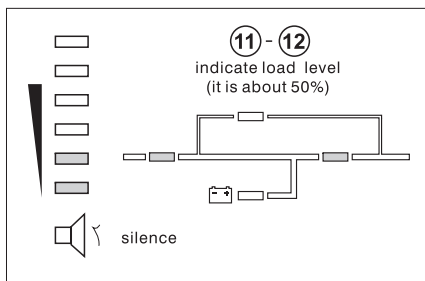
3.1 Start up

a) Startup with the mains

- press down the "ON" button ①:



- normal operation will begin with indicators in the following state:



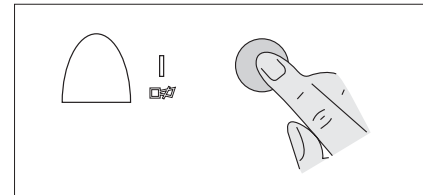
- Eaton DX supplies power to the load.

- once turn "ON", UPS will perform a self-test automatically and all of the load/battery LED on the control panel are on. Then, the indicators will off one by one, from top to bottom.

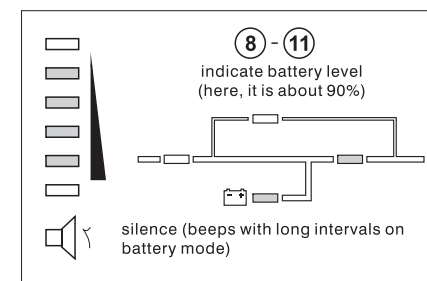
- The Inverter LED will on after a few seconds and UPS is under online mode. If the mains (utility power) is abnormal, UPS runs in battery mode.

b) Startup without the mains

- press down the "ON" button ①:



- UPS starts up on battery mode and the indicators in the following state:

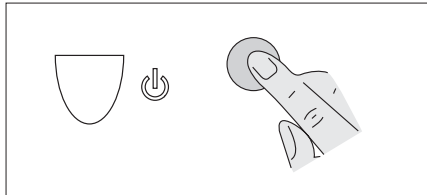


- battery of UPS supplies power to the load

Operations

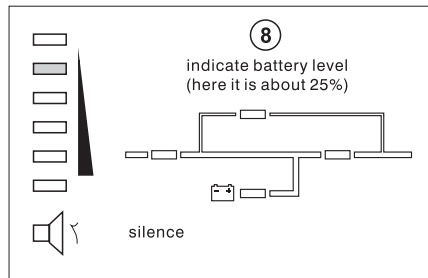
3.2 Shut down

- press down the "OFF" button ②:



- UPS performs a self-test automatically before shut down. All load/battery LEDs are on and then off one by one. Finally, there is no display on the control panel and UPS transfers to bypass mode.
- disconnect UPS from the utility power and UPS has no output voltage.

- Eaton DX will be turn off with the indicators in the following state:

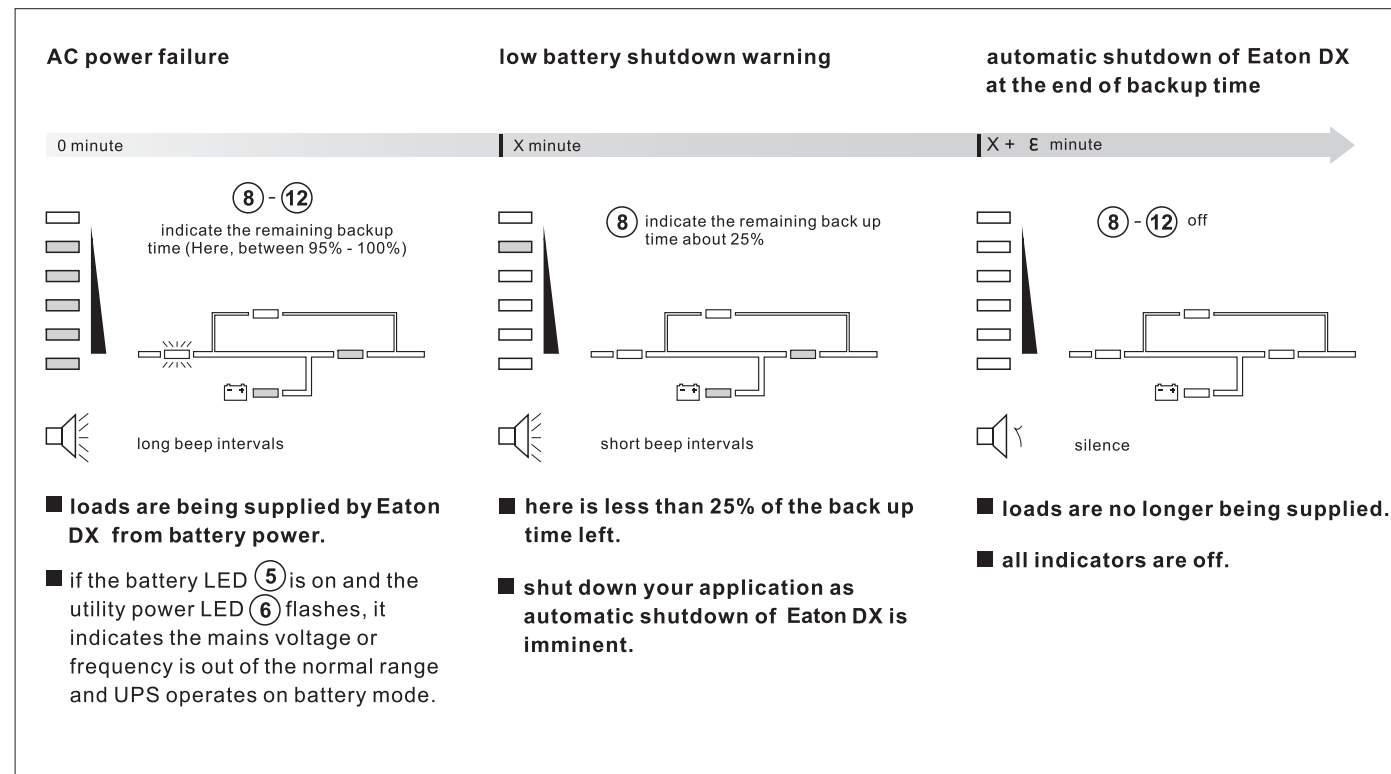


- **UPS does not provide power to the load any more. Battery will be under charging mode if the utility power is available.**

Operations

3.3 Operation on battery

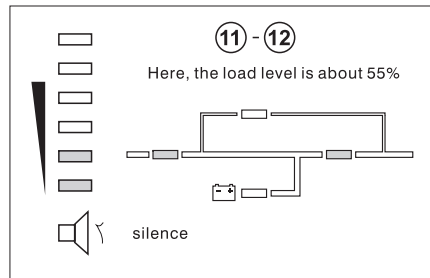
When AC power fails, the operating sequence is the following:



Operations

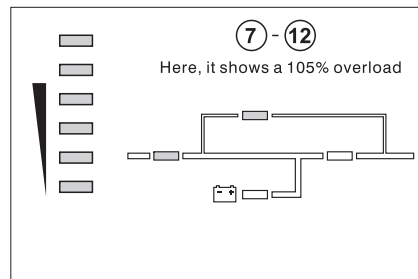
3.4 Return of AC power

- regardless of the point in the above sequence at which AC power is restored, EatonDX will switch to normal operation:



- Eaton **DX** supplies power to the load.
- UPS performs the lamp test automatically when the mains return.
- finishing the lamp test, UPS will display the present operation status.

3.5 Overload



With mains

- if the overload is within the rated value (130%, 1sec), the buzzer give 2 beeps per second and the inverter supplies power to load.
- if the overload is over the rated value, the load is transfered to bypass and supplied by the mains .
- if the overload disappears within one minute, UPS will transfer the load to Inverter mode.

Without mains

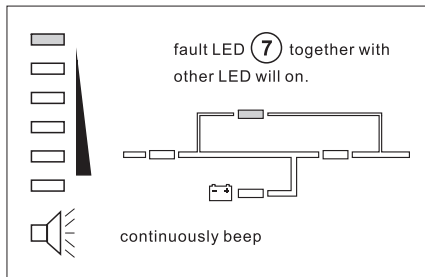
- EatonDX will shut down and the load will no longer be supplied.
- press the "OFF" button, disconnect nonessential load from UPS and restart .

Operations

3.6 Operating fault

UPS fault

- UPS is equipped with automatic bypass module:



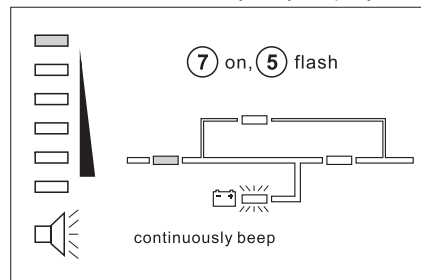
Request technical service

- the fault LED (7) is on with other indicator.
- the different combination with the fault LED (7) and other indicator give the detail information of UPS fault.

Battery fault

- UPS will perform automatic battery-test during start up. this battery test can also carry out during operation by configured via software.

Failure of the battery may display:



- if UPS is the long backup time model, make sure the battery circuit breaker on battery cabinet is close.
- request technical service

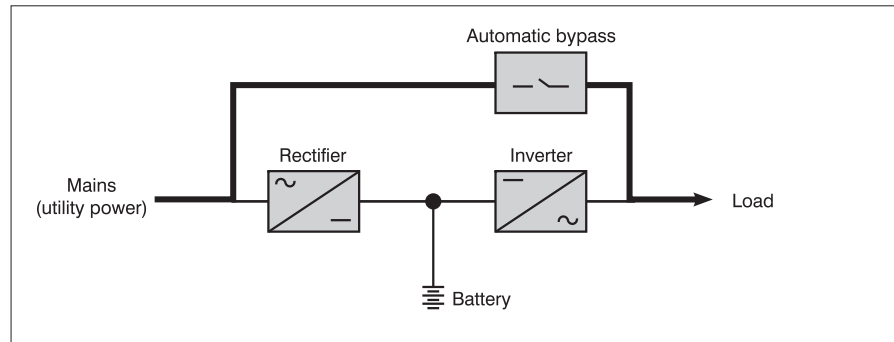
Operations

3.7 Bypass operating

Automatic bypass

- the orange bypass LED ③ is on; the load is transferred to mains (utility power) through the bypass.
- when the overload condition has occurred for long time;
- when UPS has failure (the red Fault LED ⑦ is on).

Automatic bypass operating

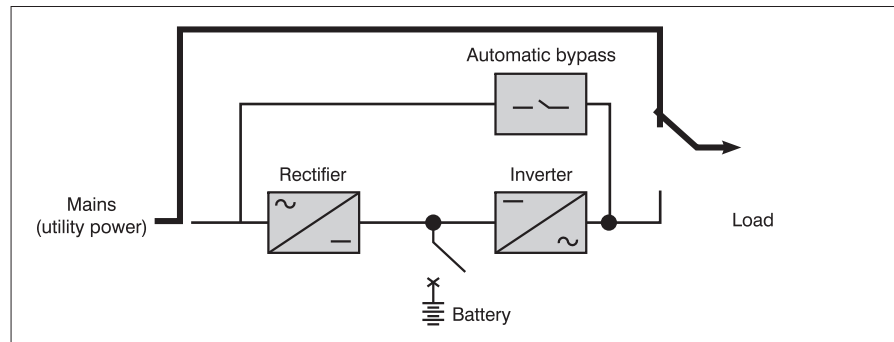


Manual bypass

Warning:

- the manual bypass switch cannot be switched at random. If the UPS has failure, press down the "OFF" button to turn it off then request Eaton after-sales support engineer to switch the load to manual bypass mode. Before switching to the manual bypass, please ensure UPS is under the automatic bypass mode.
- transfer to the maintenance bypass mode only if the frequency and voltage of the mains are within the normal input range.


Manual bypass operating



Maintenance

If the LED ⑦ is on, it indicates that the operation is abnormal or having alarm signal.

Troubleshooting not requiring Eaton UPS after-sales support

indication	signification	correction
LED ⑦ & ⑧ are on, the buzzer beeps continuously	UPS overload. The power drawn by the connected equipment exceeds UPS capacity.	Disconnect any non-priority devices.
LED ⑦ & ⑫ are on, the buzzer beeps continuously	Internal temperature is too high  In this condition, the UPS operates for 8 hours at most.	Check that the air vent is not blocked and if the internal room temperature is normal.
LED ③, ⑥ & ⑫ are on, the buzzer beeps once every 2 minutes	Operates on bypass.	Press the "ON" button and return UPS to online mode.
LED ⑥ flashes	The mains (utility power) is out of the input range of Eaton DX.	UPS supplies power to the load from its batteries. Please turn off the application and save your data.

Maintenance

Troubleshooting requiring Eaton UPS after-sales support

indication	signification	correction
LED ⑦ goes on, buzzer sounds continuously	Internal UPS fault on below will be given by the different combination with the fault LED ⑦ and other LED indicators: 1. inverter fault 2. charger fault 3. fan failure 4. communication fault 5. battery fault 6. output short circuit 7. bypass short circuit 8. overload 9. overtemperature	Call afer-sales support department.
LED ⑤ flashes, buzzer sounds continuously	A battery fault was detected during the automatic battery test.	Check if the battery circuit breaker is closed and call after-sales support department for the battery replacement.

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