



Manual of LBS

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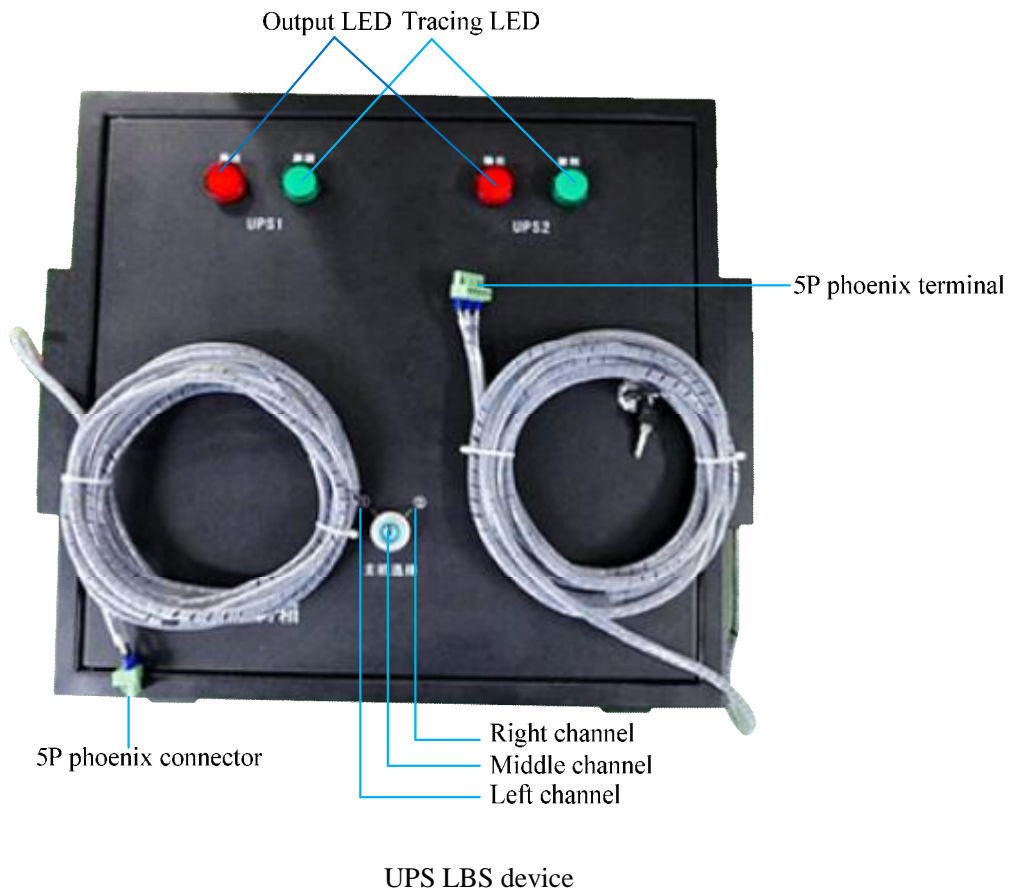
Manual of LBS

1. LBS Introduction

In the N+1 redundancy power supply system, in normal situation, the UPS1 or UPS2 provides power supply to critical load. To achieve higher redundancy and availability, there is a way that makes the UPS1 and UPS2 work equally with its own load. When one UPS goes failure, the system can transfer to the other UPS without interruption. To realize this function, an LBS control device (Load Bus Synchronization) should be added between UPS1 and UPS2, which makes the two UPS system synchronous in phase and transfer without interruption.

2. LBS kits

The following figures show the kit and their structure of an LBS device





Parallel board PS1203_TF4

PS1203_TF4 –J31 definition as following:

Pin	I/O	Signal
1	P	OUT_A
2		
3	P	N
4		
5	P	LBS_V

3. Description of LBS Logic

The LBS device has two types of logics: Active and Passive logic

Active logic:

The output of two UPS are normal, select the switch on the control panel to decide the master or the slave UPS. The slave UPS will trace the master UPS in phase.

1. Turn the switch to the middle channel on the LBS cabinet. This indicates the two UPS don't trace with each other. Tracing LEDs of UPS1 and UPS2 are both off. If the two UPS have outputs, the output LED will be on
2. Turn the switch to the left channel(UPS1),then the UPS1 is selected as master UPS,UPS2 will be slave UPS tracing the output frequency of UPS1,trancing LED of UPS2 will be on
3. Turn the switch to the right channel(UPS2),then the UPS2 is selected as master UPS,UPS1 will be slave UPS tracing the output frequency of UPS2,trancing LED of UPS1 will be on

Passive logic:

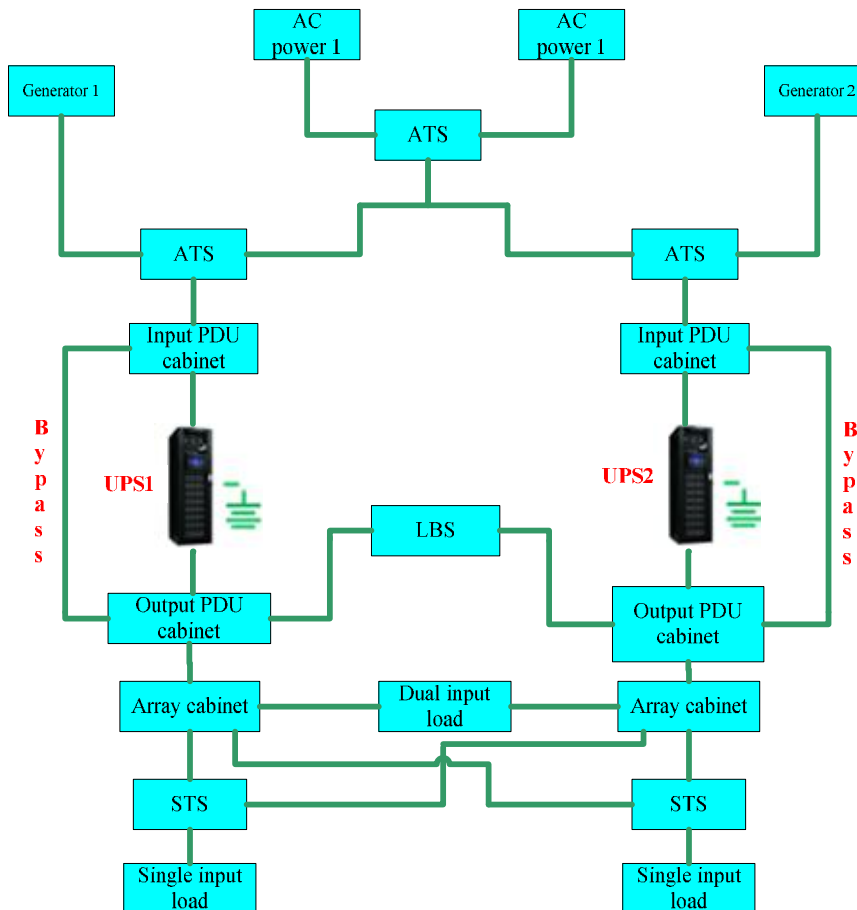
When the switch selects the UPS1 as master but the UPS1 machine is in off condition, UPS2 machine is working normally. UPS2 then automatically becomes master UPS. If UPS1 machine is then powered on, UPS1 will follow the UPS2, and then transfer to inverter mode. When the UPS1 has output, LBS will quit the Passive logic, UPS1 will become master and UPS2 become slave. UPS2 will follow UPS1.

4. LBS application

LBS is applied in three mode: LBS mode, parallel LBS mode and slave LBS mode.

4.1 LBS mode

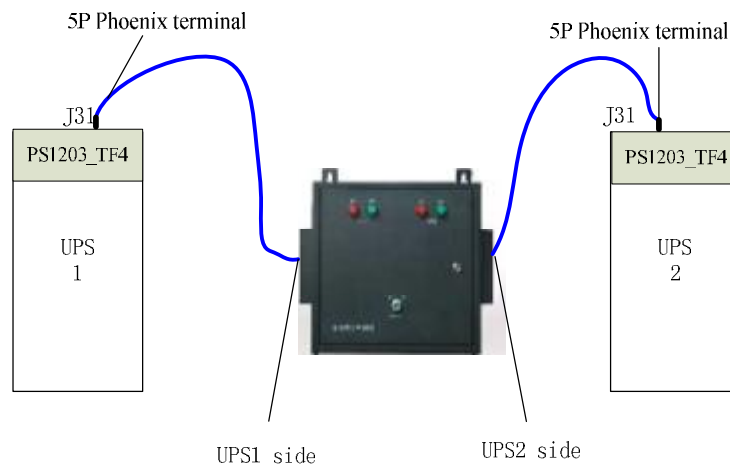
4.1.1 System configuration



4.1.2 LBS mode connection

Connect the 5P phoenix connector of LBS box (from UPS1 side) to port J31of the parallel board of UPS1 machine, Connect the 5P phoenix connector of LBS box (from UPS2 side) to port J31of the parallel board of UPS2 machine.

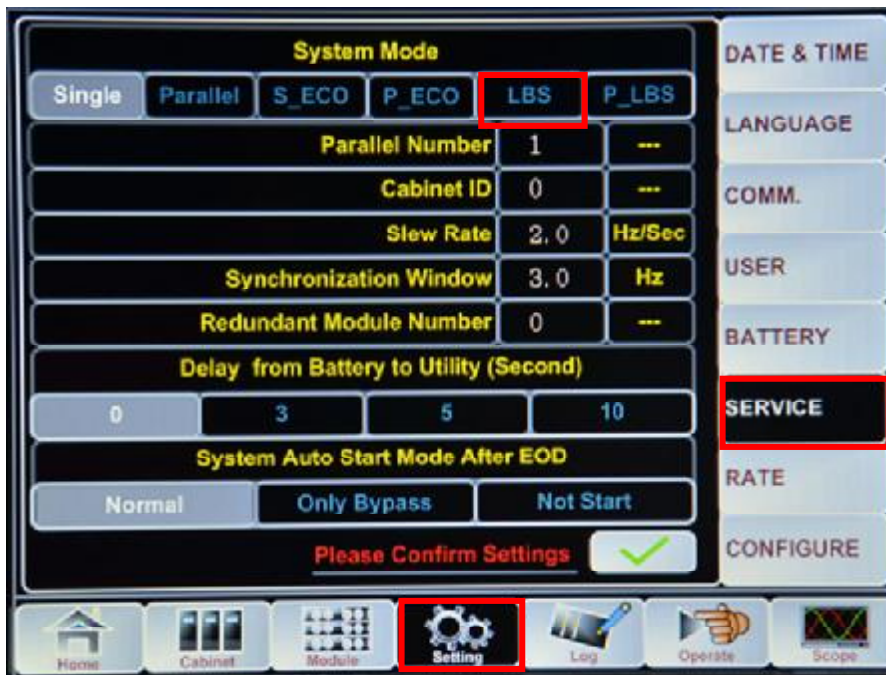
As shown in the following diagram.



LBS mode connection

4.1.3 Software setting

Enter setting page as procedures marked in red



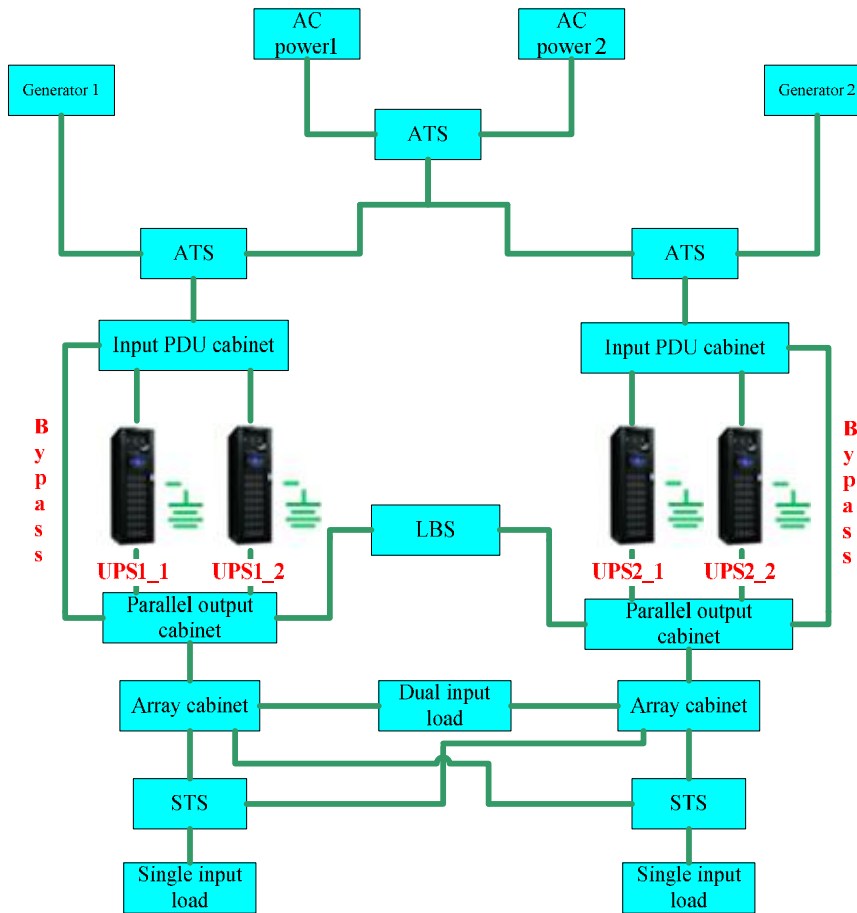
Software setting page

4.1.4 Powering on the system

Close input and output circuit breaker, power on the UPS. Select LBS mode as following: Setting->SERVICE->LBS. Power off the UPS again, after the LCD is completely off, Power on the UPS machine again.

4.2 Parallel LBS mode

4.2.1 System configuration

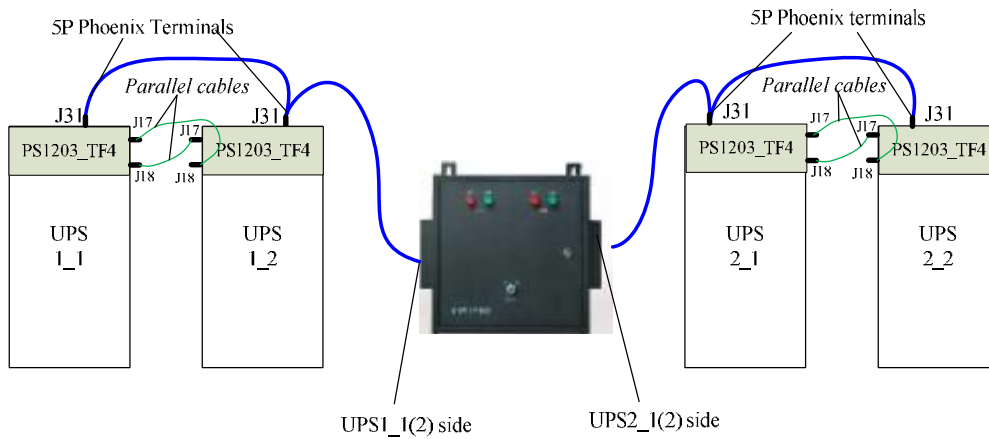


4.2.2 Parallel LBS connection

Parallel UPS1_1 and UPS1_2, and UPS2_1 and UPS2_2 according to the *guide on parallel system*.

Connect the two 5P phoenix connectors of LBS box (from UPS1_1(2) side) to port J31 of the parallel board of UPS1_1 and UPS1_2 machine; Connect the two 5P phoenix connectors of LBS box (from UPS2_1(2) side) to port J31 of the parallel board of UPS2 machine.

As shown in the following diagram.



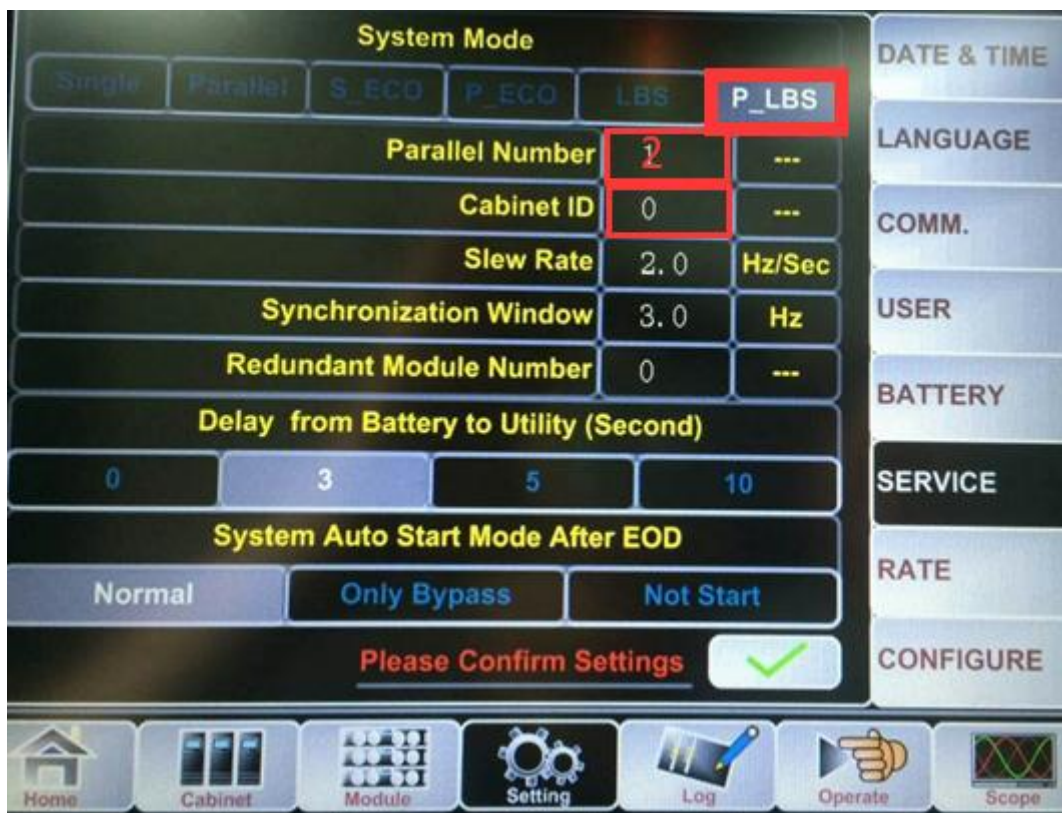
Parallel LBS mode connection

4.2.3 Software setting

Enter the setting page, Select Parallel LBS mode as following: Setting->SERVICE->P_LBS. For the parallel system do the following settings:

Parallel Number: 2

Cabinet ID: For UPS1_1 (UPS2_1) as 0; for UPS1_2 (UPS2_2) as 1



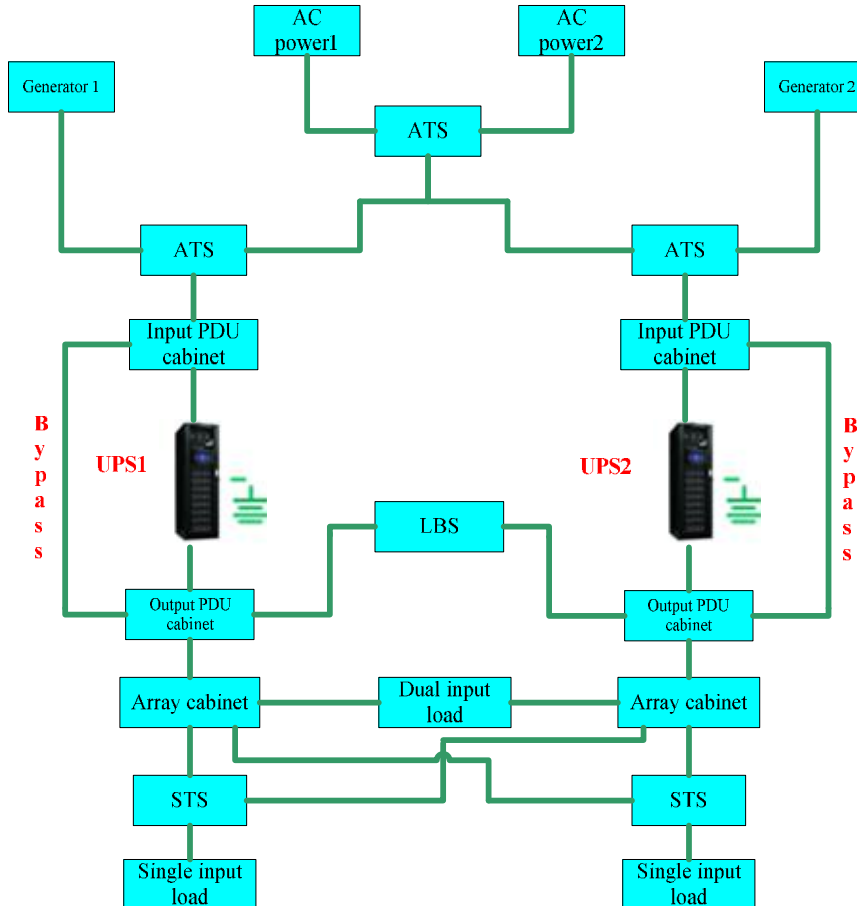
Software setting page

4.2.4 Power on

Open the output circuit breakers of the parallel UPS, take out all the power modules, close the input circuit breaker, powering on the UPS. Choose P_LBS as following:
Setting-> SERVICE -> LBS

4.3 Slave LBS mode

4.3.1 System configuration



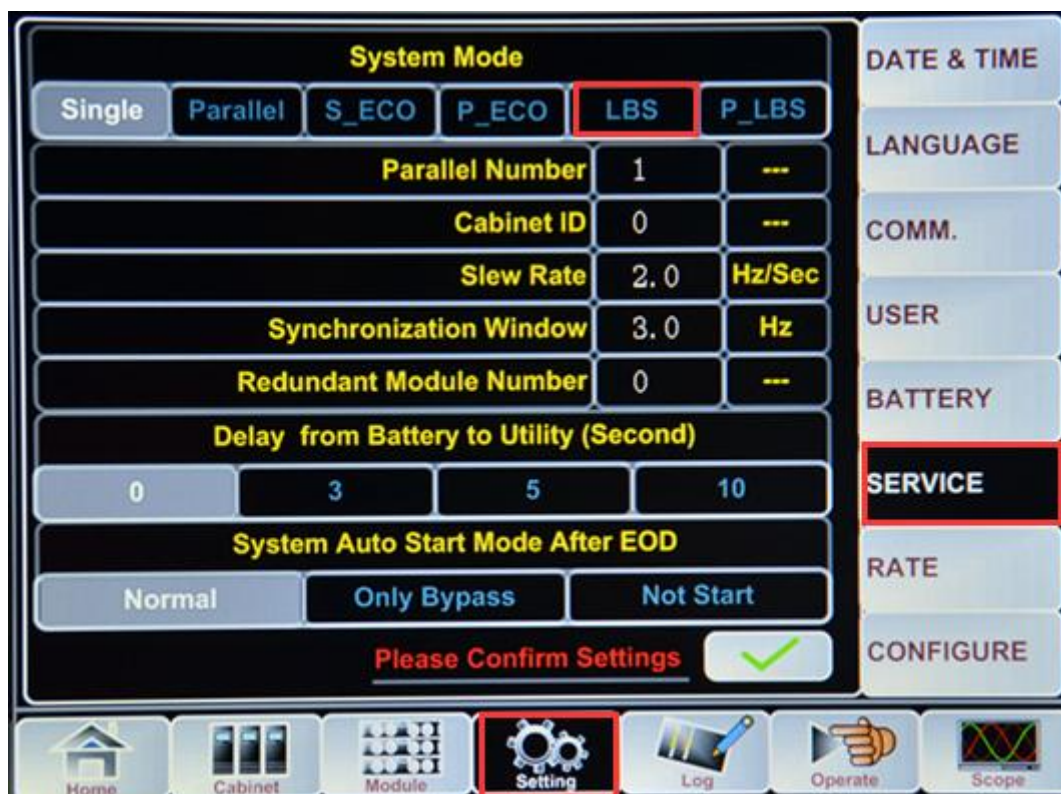
4.3.2 LBS connection

When the UPS1 machine is working as a master UPS, UPS2 machine from INVT is working as a slave UPS. As shown in the following figure, connect *Vout terminal* of UPS1 side of LBS box to the output phase A of UPS1 machine, connect *N terminal* of UPS1 side of LBS box to the output N of UPS1 machine. Connect 5P phoenix terminal connectors (From UPS2 side of LBS box) to the port J31 of parallel board of UPS2 machine



4.3.3 Software setting

Select LBS mode as the following figure



Software setting page

4.3.4 Powering on

Close input and output circuit breaker, power on the UPS. Select LBS mode as following: Setting->SERVICE->LBS. Power off the UPS again, after the LCD is completely off, Power on the UPS machine again.