

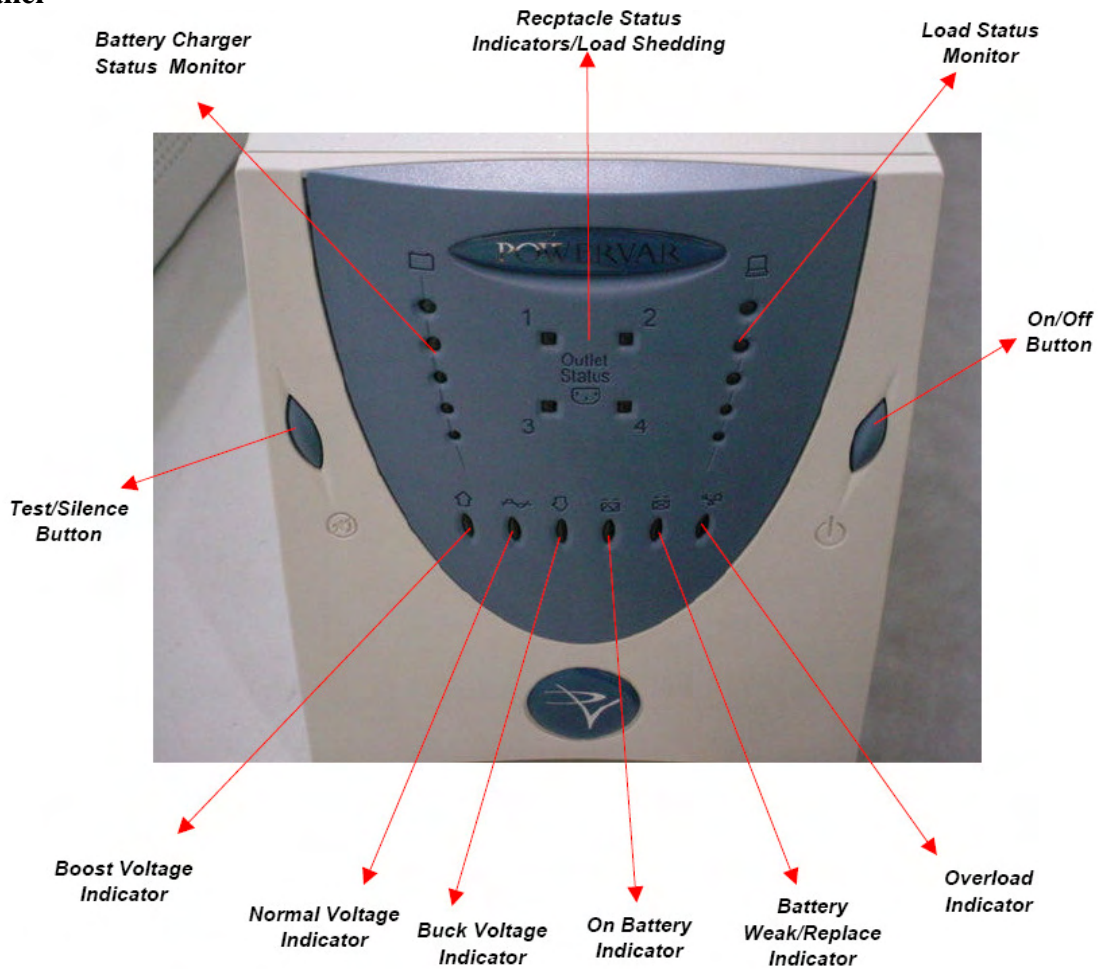
**Subject: U-Scan PowerVar UPS Information and Troubleshooting**

**Overview**

There are a number of UPS's replaced from U-Scan systems that are in-fact not failed units. There are several reasons that could lead to the technician assuming the UPS is bad. This bulletin is intended to provide some general information on the UPS and AC wiring, as well as some specific troubleshooting guidelines. While some of the details indicated below are specific to North America, the general concept will apply to other geographies as well.

**Caution:** The UPS has its own internal power source (battery) and the outlets on the back panel can be live even when the UPS is not connected to an AC power source.

**Front Panel**



<b>INQUIRIES TO:</b>		DATE
Fujitsu Transaction Solutions Inc.		
Exchange:	Sustaining Engineering	Sustaining Engineering
Mail:	Fujitsu USA04, Sustaining Engineering	
FAX:	858-731-4781 (7888-4781)	Product Manager
Internet:	<a href="mailto:SustainingEngineering@ftxs.fujitsu.com">SustainingEngineering@ftxs.fujitsu.com</a>	
FTP:	<a href="ftp://ftp.ftxs.fujitsu.com/">ftp://ftp.ftxs.fujitsu.com/</a>	Author
Original signature copies maintained by Sustaining Engineering.		

**Rear Panels**

**500VA**



**600VA**



Site Wiring Fault LED

Select Switches

Battery Jumper Installed (600 Only)

**Switch Settings**

500VA	
1	OFF
2	OFF
3	OFF
4	OFF

600VA	
1	OFF
2	OFF
3	ON
4	OFF

## Part Numbers

Part Number	Description	U-Scan Model
UPS-1004B	UPS, PowerVar, 500VA – Reference PSB-08-026 for latest Firmware	Next Gen
11000897	UPS, PowerVar, 500VA, UK, No Cord +Fan	Next Gen
11002358	UPS, PowerVar, 600VA, 120VAC, Side Mount, NA	Genesis and late Next Gen
11002359	UPS, PowerVar, 600VA, 220VAC, Side Mount, Eur	Genesis and late Next Gen
54835-01	Battery, PowerVar 500VA	
11002360	Battery, PowerVar 600VA	

## Battery Replacement

If the UPS Battery has been installed for 2-3 years, or the **Battery Weak/Replace Indicator** is on, the battery should be replaced. Note: Before battery replacement see Troubleshooting guide below to rule out other possible causes for the **Battery Weak/Low Indicator** being set.

An old or worn out battery will result in one or more of the following:

- The battery back up time is less than normal during a power outage.
- There is no battery backup during a power outage.

When the battery is replaced, a label should be placed on the front of the UPS indicating the date the new battery was installed. For UPS's that still have the original battery installed, the Serial Number will show the approx build date, reference Serial Number description below.

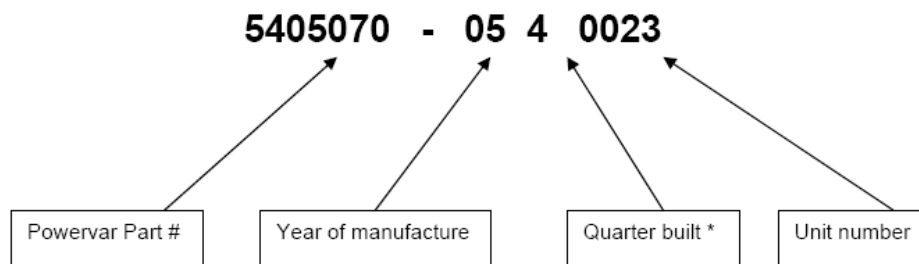
## Serial Number

On the rear panel (also on the front panel of some newer units), you will find a white ID label which contains the PowerVar part number and unit serial number.

A typical serial number would look like this:

**5405070-0540023**

The serial number is broken down as follows:



\* The build quarter is based on the PowerVar fiscal year which starts January 1<sup>st</sup>.

## Testing the UPS

To be sure that the UPS is working properly, follow the steps outlined below to simulate a power outage.

**Note:** This test should be performed with the battery fully charged. The *Normal Voltage Indicator* LED should be illuminated steadily, not flashing.

1. Have all U-Scan devices plugged in and turned on.
2. Push and release the *Test/Alarm Silence* button.
3. The *On Battery Indicator* (amber) LED will illuminate and remain on for approximately 3 seconds.
4. All U-Scan devices fed by the UPS should continue to operate normally without interruption.
5. When the Test is finished, the *On Battery Indicator* LED will extinguish. One or more of the *Battery Charger Status Monitor* LED's will also extinguish but will again illuminate as the batteries recharge after the test.
6. If the *Battery Weak/Replace Indicator* LED comes on during this test, the batteries are defective and should be replaced.

## Troubleshooting

Problem	Possible Solutions
The UPS cannot be turned on and there is no audible alarm.	<ul style="list-style-type: none"> <li>• Press and hold the <i>On/Off</i> button for at least 3 seconds.</li> <li>• Verify that the PowerVar is plugged in and that the outlet has appropriate power. Reference below. Remedy as needed.</li> <li>• Reduce the load on the UPS and reset the circuit breaker.</li> <li>• Follow Voltage Frequency Detect procedure below.</li> </ul>
The <i>Overload</i> LED is on and a continuous audible alarm sounds.	<ul style="list-style-type: none"> <li>• Remove any device (except the PC) from the PowerVar output to reduce the load on the PowerVar. If the <i>Overload</i> LED does not extinguish, contact the U-Scan Support Center or National Tech Support.</li> </ul>
The <i>Battery Weak/Replace</i> LED is on.	<ul style="list-style-type: none"> <li>• For 500VA units, replace the battery.</li> <li>• For 600VA units, ensure that the battery jumper on the back of the unit is installed and the correct start up sequence is followed. Re-perform start up sequence if necessary. If the LED remains on even after following these procedures replace the battery.</li> <li>• Check for excess heat around the UPS. Clean any dust or obstruction from vent holes (UPS and cabinet) and any cabinet fans are functional. If the LED remains on even after following these procedures, replace the battery.</li> <li>• If the LED still comes on after you charge the battery, replace the battery.</li> </ul>
The <i>Site Wiring Fault</i> LED is on.	<ul style="list-style-type: none"> <li>• Call an electrician to check the site wiring.</li> </ul>
Upon Start up, <i>Battery Weak/Replace</i> LED stays on and will not clear.	<ul style="list-style-type: none"> <li>• Caused by AC power being applied before Battery Jumper is installed.               <ol style="list-style-type: none"> <li>1. Press the <i>Silence/Test Button</i> to silence alarm.</li> <li>2. Press the <i>Silence/Test Button</i> to perform the battery test.</li> <li>3. If this does not clear the condition, perform the Voltage Frequency Detect below.</li> </ol> </li> </ul>
The UPS does not provide the expected backup time.	<ul style="list-style-type: none"> <li>• Charge the battery for 24 hours and then test it again. If backup time still too short, replace battery.</li> <li>• If the battery is over 2 years, replace battery.</li> </ul>
The UPS functions normally, but the computer will not turn on.	<ul style="list-style-type: none"> <li>• Verify the computer input power cable is properly connected and turned on.</li> <li>• Test computer with input power cable plugged into normal (non UPS backed up) outlet with verified power.</li> </ul>
The UPS beeps occasionally.	<ul style="list-style-type: none"> <li>• The UPS is operating normally. No action is required.</li> </ul>

One very common fault is caused by the installer plugging the UPS into AC power without the Battery Plug connected.

**The Battery Plug must be installed prior to plugging into AC power (600VA units only).**

### Voltage Frequency Detect

The UPS maintains information regarding what AC Voltage and Frequency it is connected to. There are cases where this memory can become lost or the UPS may be moved from 1 power requirement to another. If the UPS will not start up, perform the following steps prior to UPS replacement (after verifying proper AC power is available).

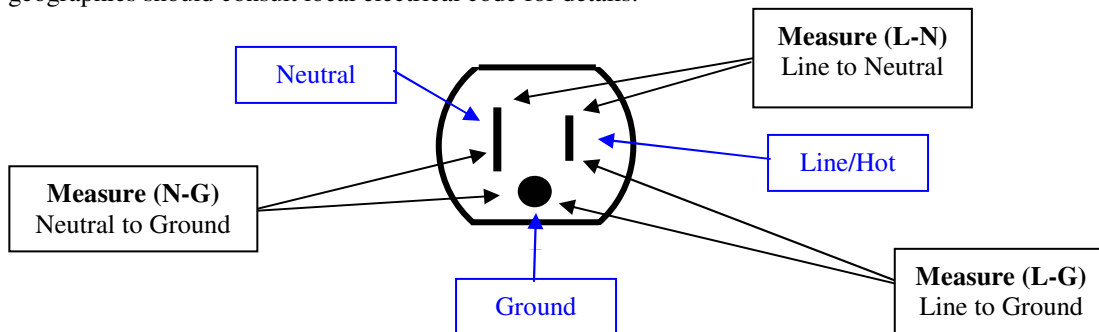
1. Unplug load (robot, cashier, etc)
2. Unplug UPS from power source
3. Unplug battery jumper from UPS (600VA units only)
4. Try to turn on UPS or wait 5-10 minutes (drains all energy from circuits)  
The UPS is now in AutoDetect Mode and will detect the AC Voltage and Frequency of incoming power.
5. Plug in battery jumper
6. Plug in power
7. Plug in load
8. Turn on UPS (hold **ON/OFF** button for 3-5 seconds, until LED display comes on)

### Incoming AC Power

Many UPS's are also needlessly replaced when the fault is poor or even mis-wired incoming AC power. While the diagnosis of many of these issues require special skills and test equipment that is not available to the average Field Engineer, below are some simple guidelines that will detect some of the more basic faults. If it is suspected that the incoming AC power is at fault, you should contact National Tech Support for assistance.

While a True RMS Meter is required for detailed/accurate measurements, the guidelines below can be conducted using a high quality analog or digital AC Volt meter.

When viewed from the front, the typical AC outlet is configured as below. NOTE: This is typical for North America, other geographies should consult local electrical code for details.



L-N	L-G	N-G	Condition
120	120	<3	Correct
208	120	120	2 Lines (Hots)
120+	120	<3	Neutral-Ground Wires Reversed
120	30-70	30-70	Open Ground
120	<3	120	Totally Mis-Wired
120	<3	120	Line-Neutral Wires Reversed
30-90	120	20-50	Open Neutral Wire
<3	120	120	Line-Ground Wires Reversed
<3	120	120	Totally Mis-Wired
<1	<1	0	Open Line