

Enhance UPS operating time

By using high capacity rechargeable battery
(12V battery system)

CAUTION:

- * Protective gears are necessary and pre-caution of SAFETY, damages, fire concern.
- * Please note you may void the warranty of your UPS
- * you Must be very careful to avoid connection error, short circuit of any power source as well as high capacity battery.
Shorting or overloaded power source or high capacity battery will creates spark, explosion, fire, Hugh damage and your safety concern.
- * You responsible of your own modifications, damages and safety etc..
We have no liability and do not responsible of any of your modifications, results, damages and safety issues.

What you need

- ▶ High capacity rechargeable battery
Lead-Acid car battery, for example
Note: Use batteries compatible with your UPS only
- ▶ Electrical wire, high gauge
AWG #14 or bigger
- ▶ Flat connector
- ▶ Wire bushing with strength relief
- ▶ Battery clamps
- ▶ Terminal lugs



Modification – step 1

- ▶ Open the UPS you have, you should see a battery similar to this



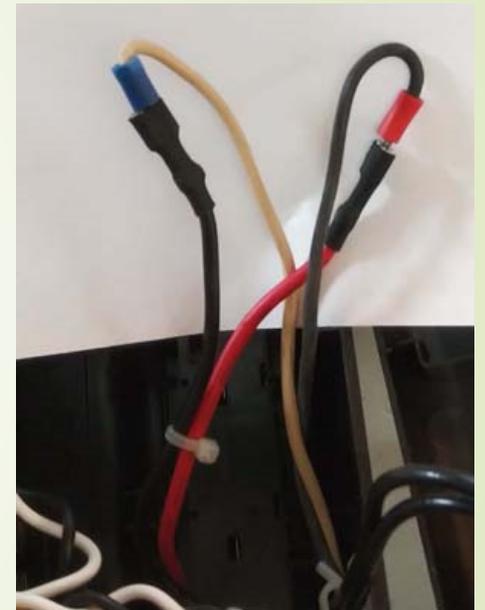
- ▶ Disconnect and remove it from the UPS

Caution:

- * Make sure disconnected AC power before any work
- * Make sure do not short circuit and the loosed battery wires do not touch any part of the UPS

Modification – step 2

- ▶ Locate the original battery connection wires.
Extend the wire either by flat connector or soldering directly as shown
- ▶ Insulate both connections by heat shrink tube or electrical tape



Modification – step 3

- Direct the extended wires out through the original case through Wire bushing with strength relief
Note: I drill a hole on the case for wire bushing



Wire bushing

Modification – step 4

- Connect the battery with the extended wires by terminal lugs and clamp as shown.
 - * Beware of polarities of battery and avoid short circuit.

Terminal lug

Terminal clamp





Testing

- ▶ Double check the wiring and polarities to make sure connection correct
- ▶ Inspect the unit including wiring etc. to make sure no short circuit etc.
- ▶ Connect a table lamp to the UPS battery backup outlet and turn on
- ▶ Do not plug the AC power cord to wall outlet yet.
Press the power button to turn on the UPS.
The UPS should power up at battery mode and the table lamp should be ON.
Wait for 30 seconds to a minute to confirm UPS is working and no fault then press the power button to shut down the UPS.
- ▶ Plug the AC power cord of UPS to wall outlet and make sure no fault, then press the power button to turn on the UPS. The UPS will check the AC then works in normal AC mode and the table lamp should be ON. Wait few minutes to make sure operation is normal and no fault.
- ▶ Unplug the AC power cord and the UPS will beep and switch to battery mode, the table lamp will keep on. Wait for a minute or two then plug the AC power cord back to the wall outlet. The UPS will switch back to AC mode and table lamp should keep ON all the time.
- ▶ Make sure no fault during test, check temperature of UPS and battery, observe both also to make sure no issues.
- ▶ Do a normal use test and observe to make sure no issues.



Tips

- ▶ Check UPS before modification to make sure UPS is function properly
- ▶ Must use heavy wires for battery connection
- ▶ Must use proper battery terminal clamp connector
- ▶ Basic knowledge of electrical/electronic is necessary
- ▶ Observe all the time. Stop and disconnect power source and/or battery once anything is abnormal.
Do not take risk. Check every thing again before start again
- ▶ Use a power bar with circuit breaker or fuse as AC connection instead of plug to the wall outlet directly for additional protection and faster and easier switch off



Fact

- I have two UPS modified. One with group 24 lead acid car battery and the other use a smaller lead acid car battery and both work good
- The UPS with group 24 battery is connected with follows:
 1. Hitron cable modem
 2. ASUS RT-AC68U router
 3. IP phone modem
 4. 8 ports Ethernet switch
 5. Cable signal amplifier
 6. Door camera
 7. 20 watts LED light
 8. 40 inches LCD TV

I had power failure one time and this UPS supported the said equipment for more than 2 hours easily. I can browse, have phone, light and TV during power failure and reported power failure to hydro company by Internet.
- The charging circuit of UPS is not designed to support big batteries for fast charging, however, since over 99.9% of time is charging time (hardly has power failure, right?) and thus it just like slow charging.



Enjoy !

Happy and safe DIY

