An External Battery Pack for a Zire 72 PDA

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This battery pack enabled me to run movies on my Zire 72 for over 10 hours without recharging. All parts are available from Radio Shack and Walgreen's.

My test of this external battery pack consisted of running the video program TCPMP continuously with a color movie and the brightness set at 50%. I set a kitchen timer next to the PDA and checked on the movie every hour. Some time between 11 hours and 12 hours I ran out of power from both the external and internal batteries.

Materials (at today's prices)

1. four AA NiMH rechargeable batteries rated at 2650 mAH (that is milli-ampere hours and is a rating of stored power) (Walgreen's $13.49)
2. battery charger for these batteries (many sources but expect to pay around $20, Walgreen's packages a 2500 mAH set of four AA batteries with a charger for $20.99)
3. battery holder for four AA batteries (Radio Shack: $1.79, Catalog #: 270-391)
4. two male round power plug (Radio Shack: $2.99, Catalog #: 274-1569)
5. one female power plug (Radio Shack: $2.99, Catalog #: 274-1577)

Required tools

1. wire cutter/strippers
2. soldering iron
3. solder

Optional tool

voltmeter

Construction

These next steps are a bit scary but necessary. Read all steps before starting in case it is more than you wish to handle.

1. Unplug your AC wall mounted power supply.
2. Find the midpoint of the cable that runs from this supply to the power plug that goes into the Zire 72.

3. Cut the cable at this midpoint. Steady... steady. It is not the end of the world

4. unscrew the barrel from the female power plug and slide it onto the end of the cable with the Zire 72 power plug on it. Be careful to have the threaded end of the barrel facing towards the cut end of the wire.

5. strip 1/8" of insulation off of the end of each of the two wires in the cable

6. Solder the wire with the white strip on it to the tab connected to the center post of the connector. This is the positive terminal.

7. Solder the wire without the white strip on it to the tab connected to the outer sleeve of the connector. This is the negative terminal.

8. Slide the barrel down and screw it onto the connector. You may have to trim the soldered wires or bend the tabs to make it fit. Take care to not let the tabs touch each other.

9. Take one of the male power plugs apart and slide the barrel onto the AC power supply end of the cable with the threaded part facing towards the cut end

10. strip 1/8" of insulation off of the end of each of the two wires in the cable

11. solder the wire with the white strip on it to the tab connected to the center post of the connector

12. solder the wire without the white strip on it to the tab connected to the outer sleeve of the connector

13. Slide the barrel down and screw it onto the connector. You may have to trim the soldered wires or bend the tabs to make it fit. Take care to not let the tabs touch each other.

At this point you can plug your AC wall mounted power supply cable back together and all should work normally. If you have a voltmeter, verify you wired the connectors up correctly by probing the connector that fits into the Zire 72. Plug the AC wall mounted power supply into a wall outlet. A paper clip may be needed to contact the hole in the center of the connector. You should see over +4V on the inner hole with the meter's COM probe touching the outer sleeve. If you see over -4V, you have wired one of the plugs wrong. If you see close to zero volts, look for a short in one or both of the plugs *AFTER* you unplug the power supply from the wall.

Now we are ready to wire up the battery pack.

1. Remove the barrel from the second male power plug.

2. Slide the barrel onto the two wires connected to the battery holder. Be careful to have the threaded end of the barrel facing towards the cut end of the wire.

3. strip 1/8" of insulation off of the end of each of the two wires in the cable

4. solder the RED wire to the center post of the connector

5. solder the BLACK wire to the outer sleeve of the connector

6. Slide the barrel down and screw it onto the connector. You may have to trim the soldered wires or bend the tabs to make it fit. Take care to not let the tabs touch each other.

At this point you can plug the cable from your PDA into the battery pack. Install four fully charged NiMH batteries into the holder. If you have a voltmeter, verify you wired the connector up correctly by probing the connector that fits into the Zire 72. You should see over +5V on the inner hole with the meter's COM probe touching the outer sleeve. See above if you don't see this this voltage.

That's it for construction!

Operation

To power your PDA from the AC wall mounted power supply, plug the two cables together and plug the supply into the wall.

To power your PDA from the battery pack, plug the cable from your PDA into the battery pack. Your internal battery probably is rated at 1000 mAH so the additional 2650 mAH from your external battery pack will make a big difference.

I had a candy tin large enough to hold the battery pack with room for the connector. Double sided foam tape holds the battery pack in place. I slide a short length of rubber tubing over the connector to prevent it from shorting out.

A few words of caution

1. The green light at the top left corner of your Zire 72 will remain bright even when the PDA is completely dead. When you get the low battery warning, it is for both the internal and external batteries. Turn off your PDA and charge both sets of batteries. I ignored the low battery warning and lost all data until I did a hot sync.

2. If you stick with NiMH batteries, all will be fine. If you try to use non-rechargeable batteries, the Zire 72 will detect too much voltage at its input and not accept the available power. One solution is to use 3 non-rechargeable batteries plus a length of conducting metal that is about the same length and diameter of a AA battery. Alternately, you can solder a wire across the fourth battery compartment. If you always plan to use non-rechargeable batteries, buy a double AA battery holder and a single AA battery holder.

Questions or problems? Feel free to contact me.

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