

tools & toys



PORTABLE CHARGERS FOR YOUR MOBILE GADGETS

Power sources that balance complexity, convenience, and capability

THE BATTERIES in your smartphone, Bluetooth headset, tablet, and pocket digital camera are usually good for a full day—unless you're using them a lot. Then, finding an AC outlet can be critical. There are a plethora of outlet-free solutions, and because the mobile electronics industry is finally making USB the standard for charging, third-party companies have been encouraged to innovate. Even Apple, which has eschewed USB sockets on its mobile products in favor of its own designs, uses a

standard USB connector at the cable end that plugs into a computer or charger.

If you need to charge a tablet—the iPad can require up to 2100 milliamperes of current, roughly double what a smartphone requires—the field is narrowed significantly. Happily, there are tablet-class rechargeable power packs aplenty, with a variety of sizes, weights, capacities, and features. Here's a look at a few that run the gamut.

First up is Innergies' 3000-milliamper-hour

PocketCell (US \$80, pictured in [1], opposite page), a slim battery about the size of a pack of gum that's still capable of delivering 2100 mA. It comes with the company's distinctive **Magic Cable Trio**, a three-in-one USB cable (also shown in [1]; \$20 if bought separately), which combines a mini USB, a micro USB, and a 30-pin Apple connector, cleverly hinged to avoid those all-too-easy-to-lose tips or having to carry three separate cables.

(As a reference point for this and the other packs below, with a 3000-mAh-capacity battery I was able to fully charge my iPhone about one and a half times.)

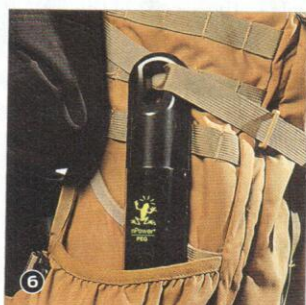
The Trio cable is only about 20 centimeters tip

to tip, so it can include the micro USB connector and still carry iPad-level power at the correct voltage. If you're trying to pack as lightly as possible, the PocketCell is a good choice.

If you think you're going to need a little bit more juice (heavy tablet users, this means you), there's Targus Group's **4800-mAh backup battery for iPad** (\$60, [2]). At 17 by 67 by 112 millimeters—slightly bigger than a deck of cards—the Targus packs a good amount of power into a nice, flat shape.

The **myCharge Peak 6000** (\$100, [3]) incorporates USB, micro USB, and 30-pin Apple plugs on short, permanently attached cables that fold neatly into slots on the front and sides. Storing up to 6000 mAh, it can be charged from an outlet via a set of fold-out prongs or via a USB port or AC adapter. A distinctive feature is its voice alerts, issued when you plug in to charge or connect a gadget.

At 25 by 75 by 133 mm and 240 grams, the Peak might not be something you'd throw into your pocket (unless you're wearing a fishing vest). But it would go easily into whatever you're carrying your tablet in—and you've now got enough power for a tablet (the latest iPad has batteries that store up to 11 700 mAh, so if you have one of those, you'll only get about a half-charge), a smartphone, a Bluetooth headset, and maybe something else.



Satechi's **10 000-mAh portable energy station extended battery charger pack** (\$60, [4]) packs an even bigger charge into a compact package and has two USB charging ports—a 2000-mA port suitable for iPads and other products and a 1000-mA for everything else. The Satechi unit is smaller and lighter than the myCharge Peak—19 by 50 by 140 mm and 210 grams (but that doesn't include cables or an AC charger)—but it's still a little bulky for a pocket.

Unfortunately, the Satechi unit comes with a series of six easy-to-forget-or-lose adapter tips. Unless you need a proprietary connector that matches one of the more exotic tips, I recommend getting an Innergie Magic Cable Trio along with the Satechi and skipping the tips.

OFF THE GRID

OF COURSE, all these battery-containing power packs ultimately have the same problem that mobile devices do: They, too, eventually need to be recharged from an AC outlet (or a laptop connected to an outlet). They are, in effect, AC time shifters.

One AC-free option is a charger that uses AA batteries—easy to carry, easy to buy—like the **Quickertek Little Black Box** (\$29, [5]). But again, that can be a problem if there aren't any stores nearby.

Solar and wind chargers have been around for a while now, but they require enough sun and wind to produce enough energy for a charge. A number of long-anticipated alternatives, however, have gone from “coming soon” to “available.” (And even more options are on the

way, such as the butane-based cartridge system that Lilliputian Systems expects to release next year—see “A Butane Recharger for Your Cellphone” on the *IEEE Spectrum* website.)

None will put out enough current to charge an iPad, but they can recharge the battery packs mentioned above. Note: Although I tested the rechargeable battery packs, I haven't yet checked out the power makers below personally, so caveat emptor.

The **nPower PEG** (\$170, [6]) harvests kinetic energy from vertical motion, storing it in a 2000-mAh battery. Normally, you would put it in a bag or attach it to a backpack to let it harvest energy as you walk around, but if you need power in hurry, the manufacturer says that shaking it for a few minutes will get you enough juice for a quick phone call.

The **Horizon Minipak** (\$114, [7]) uses air-breathing fuel cell cartridges. Each cartridge uses a solid hydride to store 15 watt-hours of energy (equivalent to about 10 AA batteries), so a cartridge or two should see you through most situations. You can buy or recharge cartridges through local dealers in some places, or you can recharge them yourself using Horizon's desktop Hydrofill system, which consumes water and power from either an AC adapter or a solar panel to generate hydrogen for the cartridges.

And if you don't mind being old-school, there are hand-cranked power generators, like the **Freeplay Freecharge 12V** (\$40, [8]). Just make sure you have a Bluetooth headset—you'll need both hands to use this one!

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