



# MiniPak

Handheld fuel cell power supply

Introducing the MiniPak, a pocket-size “personal power plant” for portable electronics that combines Horizon’s mass-produced, low-cost fuel cells and newly developed solid-state hydrogen cartridge systems. Marking the beginning of numerous practical fuel cell products, the MiniPak is the world’s first fuel cell product to integrate refillable metal hydride cartridges that are positioned to compete on price with disposable batteries.



At 1W continuous power delivery by MiniPak  
Runtime of 1 cartridge = 10 AA disposable batteries  
1 cartridge can be refilled 100 times = 10X100 AA disposable batteries



Metal hydride  
energy storage



Fuel Cell  
Power Supply

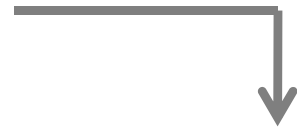
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The Minipak design is connected with the water theme, since water is the by-product of the fuel cell's reaction of hydrogen and oxygen from the ambient air. The Hydrostik cartridge offers a practical and safe solution to hydrogen storage, since hydrogen is stored as a solid as part of a metal alloy matrix.



Hydrogen Fuel cell



5V DC USB



Power on



“HydroSTIK”

10-15L solid state H<sub>2</sub> storage canister

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Introducing the MiniPak, a pocket-size portable electronics charger that combines Horizon’s fuel cells and newly developed solid-state hydrogen cartridge systems. Marking the beginning of numerous practical fuel cell products, the MiniPak is the world’s first fuel cell product to integrate an eco-friendly, low-cost, and high performance alternative to conventional battery based systems.



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## MiniPak unit

|                            |   |
|----------------------------|---|
| Rated Net Power            | 2W  |
| Output                     | 5V@0.5A   |
| Size (Dimensions)          | 13.2 in <sup>3</sup> (4.5x2.6x1.1 in) / 211 cm <sup>3</sup> (11.5x6.8x2.7 cm) |
| Weight (without cartridge) | 2.8 oz / 80g  |
| Weight (with cartridge)    | 5.4 oz / 155g   |
| Electrical Interface       | USB outlet  |
| User Interface             | LED status indicator  |
| Operating Environment      | 0-40C   |



# MiniPak

Handheld fuel cell power supply



Smartphones



Cellphones



USB Fans



Micro-projectors



USB speakers



Gaming devices



digital cameras



GPS



USB Portable lights



Head lights



VHF radios





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The MiniPak will lead to more application-oriented innovations. Now everyone can build a fuel cell “app” of their own, like this fuel cell flashlight using a plug-in USB flashlight. With the thousands of USB applications developed, anything is possible!

**Horizon**  
Fuel Cell Technologies

# MiniPak

## USER GUIDE

**SYSTEM OVERVIEW**

The MiniPak micro-fuel cell power supply is a universal handheld charger and power source compatible with any device with a USB power or charging capability. The system includes several indicator lights that help extend the original usability of cellphones or smartphones and can power numerous devices that have a USB or MicroUSB power port.

Please read the following information carefully to avoid potential misuse or damage to the device.

**LED status indicator light:**

- Flashing red = please wait
- Flashing blue = device ready for function

**Accessories included in this box:**

- Two HYDROSTIK cartridges
- MiniPak service storage pouch
- Cellphone charging adapter (not included)

**SPECIFICATIONS**

| Parameter                      | Value               |
|--------------------------------|---------------------|
| Rated Cell Power               | 1.5W                |
| Voltage Output                 | 5.0V                |
| Current (Maximum)              | 1.0A                |
| Weight (without cartridge)     | 110g                |
| Weight (with cartridge)        | 120g                |
| Dimensions (without cartridge) | 100mm x 45mm x 15mm |
| Dimensions (with cartridge)    | 100mm x 45mm x 25mm |
| Operating Temperature          | 0°C to 40°C         |
| Operating Humidity             | 10% to 90%          |
| Operating Altitude             | 0 to 10,000 ft      |
| Operating Noise                | 20dB A @ 1m         |
| Operating Vibration            | 0.1g                |

**SAFETY & MAINTENANCE:** Read carefully before processing

- Read and understand the user guide prior to operation.
- Keep away from children.
- Do not tamper, disassemble or puncture the MiniPak or HYDROSTIK cartridge.
- Keep MiniPak and HYDROSTIK away from fire, open flame, or heat source.
- Wait for LED indicator to flash blue before connecting external devices. Do not connect while flashing red.
- Remove HYDROSTIK cartridge immediately after use.
- Do not keep used or empty HYDROSTIK cartridge connected to MiniPak.
- Carefully store the MiniPak after use (use the provided storage pouch).
- Avoid pressing the Release Button for longer than one second once HYDROSTIK is connected.
- After use, disconnect the HYDROSTIK by turning it counter-clockwise until the indicator light turns red.

**ACTIVATING THE MINIPAK**

A. Insert HYDROSTIK cartridge into the cartridge bay and turn clockwise until connection is tight. Once connected the red LED status indicator light should start flashing. Wait for flashing red light to flash blue prior to further operation.

**Warning:** check expiration date on the cartridges. If expired, do not use.

B. Once the blue light is flashing, briefly press the Release Button (for less than one second). **Warning:** To avoid permanent damage to the system - do not press for more than 1 second.

If the light continues flashing red, press down the RESET button for one second, then wait for the light to start flashing blue before further operation.

**NOTES:**

- To avoid permanent damage to your MiniPak, please make sure the HYDROSTIK cartridge is disconnected from the MiniPak system immediately after use, even if it is fully depleted. Failing to do so will permanently damage your MiniPak.
- Air vents located on either side of the MiniPak need easy access to breathe ambient air. Do not obstruct these air vents or performance will drop.
- Fuel cells combine hydrogen and oxygen to form water, heat and electricity, therefore the MiniPak will produce tiny amount of water vapor when in use, as well as some heat. These are normal occurrences.

**STORING YOUR MINIPAK AFTER USE**

- Make sure the HYDROSTIK cartridge is fully disconnected and removed from the MiniPak. Failing to disconnect the cartridge from the MiniPak will permanently damage your device.
- Make sure to place MiniPak in the storage pouch provided and seal tight for storage after use.

**REPLACING USED CARTRIDGES**

- A HYDROFILL charging system (sold separately) can recharge your HYDROSTIK cartridges. Check with your vendor for details.
- Contact your vendor for local replenishment solutions near you.

**TROUBLESHOOTING**

**INDICATOR LIGHT CONTINUES TO FLASH RED, DOES NOT FLASH BLUE**

1. The MiniPak must be placed in an upright position. Both air vents located on either side of the MiniPak should have easy access to surrounding air.

2. Press the release button to check for a release sound. If no release sound, your cartridge may not be charged.

3. Remove the HYDROSTIK CARTRIDGE IS CONNECTED indicator light from the MiniPak, then reconnect and restart the MiniPak exhaust step (1).

4. Check the HYDROSTIK CARTRIDGE IS CONNECTED indicator light for an air-release sound.

5. If the indicator light does not flash blue, the MiniPak may not be connected properly to the HYDROSTIK cartridge.

6. Do not touch the MiniPak without using the system, leading to a release sound.

7. Both air vents on both sides of the MiniPak need easy access to ambient air.

8. If the indicator light is on, the MiniPak is powered on and ready to be charged or powered is suitable for use.

9. These are normal occurrences.



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**Accessory  
Sold Separately!**

# HYDROFILL

automatic hydride charging system

*Home hydrogen delivery system  
Electrolyzes water using PEM system  
>40 bar pressure without compressor  
Automatic, self-regulated system design*

Water (H<sub>2</sub>O)



Hydrogen (H<sub>2</sub>)



**HYDROSTIK**  
*10-15L metal hydride  
Store H<sub>2</sub> in solid form  
<15 bar pressure*

The HydroFILL device is able to refill your HYDROSTIK energy storage cartridge. This is an interim yet practical solution while the cartridge refill and replacement distribution network develops