

Portable Power System – 100 Watts



Ball Aerospace & Technologies Corp. has developed a small and lightweight portable fuel cell power system that supplies 100 watts of power at 24 volts. Ball Aerospace's fuel cell power system uses both oxygen from ambient air and externally supplied hydrogen to generate electricity. It is designed to furnish power to charge most rechargeable batteries in the military inventory. It also can supply power for communications base stations, unmanned monitoring site equipment, video and surveillance applications, lighting at emergency scenes or other electrical devices.



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Application: Any device that needs long-duration power such as:

- Base power for communication and GPS
- Military mission power
- Repeater stations
- Motion detectors
- Vibration sensors
- Remote monitoring and surveillance
- Battery charger

100-Watt Power System Specifications

Size (inches)	4.3x8x10
Weight (pounds)	8.5
Power (watts) at 24 volts	100
Peak Power (watts) >20 volts	125

Typical Military Rechargeable Batteries

Battery Type	Power (watts) at 12 volts	Energy (Wh)	System Weight (lb) per 1 kWh
BB390 (NiMH) rechargeable	≈20	86	46.2
BB590 (NiCd) rechargeable	≈60	53	76
BB2847 (Li-Ion) rechargeable	≈15	50	17



The Portable Power System-100 setup for charging rechargeable batteries will supply 900 Wh of energy with the 2.3 Kg tank shown. (1 Kg, 1 kWh, 1 liter hydrogen sources being developed.)

Measuring 4.3x8x10 inches and weighing only 8.5 pounds, this power system minimizes volume and weight, and is rugged, robust and weatherproof. The unit incorporates polycarbonate construction and will withstand shock, vibration and outdoor environments.

The power subsystem features near noise-free power and a low-thermal signature. It provides a user-friendly LCD interface for simple system start-up and shutdown. The internal controller monitors the output voltage and current to the equipment it is powering to ensure the system remains within limits. In addition, an RS232 data port is available for a computer to status and control the power system.

With a battery charger, the portable power system can recharge most rechargeable batteries in the military inventory. If other voltages are required, an external dc-dc converter can be used to obtain power for computers, receivers, transmitters and other equipment.

Operational Specifications and Features

Start-up

- Less than 1 minute when ambient temperature is >1 °C

Operating environments

- -20 °C to 45 °C
- 0 to 95 percent rH
- Up to 9,000 feet
- Works in any position/orientation

Storage

- -20 °C to 70 °C

Shock/Vibration

- Withstands 3-foot drop onto concrete

Reliability

- Low maintenance
- Autonomous/hands-free operation

Fuel Sources

Any hydrogen source with universal quick connect, regulated to <200 PSI.