

At a Glance

What it is

■ The Power Management Kit (PMK) is a lightweight universal system that powers U.S. Navy Explosive Ordnance Disposal (EOD) Platoon equipment. It replaces a large number of batteries and individual chargers. The PMK is extremely effective in austere operating environments.

How does it work

■ The 1-pound Soldier Power Manager (SPM) charges all standard batteries from almost any energy source including, vehicle, solar and alternating current. SPM powers equipment (e.g., radios, laptops, X-ray generators, etc.) from almost any military or commercial battery (BB-2590, DeWalt, etc.), converting voltages as needed. Six universal power ports permit versatile operation of powering devices, managing energy sources and charging up to five connected batteries. All the functions can occur simultaneously.

What it will achieve

■ The PMK reduces the weight, size and number of batteries and chargers that warfighters currently need to carry to power their gear. Initial measurements indicate the PMK, with all cables and the SPM in a soft roll case, weighs 9 pounds, replacing up to 50 pounds of specialized chargers and related equipment. Based on mission, the EOD operator chooses the right components from the PMK required in the field.

Point of Contact

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When powering equipment from attached batteries, the SPM sequentially uses power from the batteries, using up the least-charged battery first, the next least-charged battery and so on. This allows the warfighter to jettison a fully-discharged battery and the associated weight as soon as possible. When charging batteries, the SPM prioritizes charge, applying available power to the most charged battery first, and then the next most-charged so the warfighter has access to a fully charged battery as rapidly as possible. The SPM automatically recognizes the optimal charge algorithm needed by each attached battery and monitors each battery for safe charging conditions. This will abort the charge and warn the user if an unsafe condition exists, allowing for “set and forget” charging capability.



A graphical interface displays information about batteries and sources, power usage, state of charge and operational details. This data is stored every few seconds and can be uploaded to a Microsoft Excel database at the end of a mission for a thorough power use analysis for each stage of the mission. This capability gives the EOD team unprecedented visibility when planning future missions. By enabling the effective field use of alternative energy sources—like a solar cell-covered blanket and fuel cells—it reduces the logistics associated with a large variety of batteries and dramatically reduces the amount of energy discarded in partially used batteries. The PMK can greatly reduce a warfighter’s energy cost and significantly lighten the soldier’s carry weight by reducing the number and variety of batteries needed to power his suite of gear.

The PMK project was initiated in response to a request from returning warfighter’s attending Unit Level Training at EOD Training and Evaluation Unit TWO (EODTEUTWO). TechSolutions asked to provide a universal charger and power management solution. To perform the PMK project, TechSolutions selected Naval Surface Warfare Center Crane in partnership with Protonex Technology Corporation and Science Applications International Corporation. The program launched in mid-2010, with developers producing initial concepts for review in November 2010. Following approval, the SPM, cables and roll kit were approved, bundled into PMKs and supplied to EOD operators preparing for combat deployment.

TechSolutions links warfighters to the government science and technology community to help develop needed technologies as quickly as possible. Sailors and Marines are encouraged to submit requests via the TechSolutions Website at <https://www.onr.navy.mil/techsolutions> (no account needed). Their goal is to have a solution prototype in the hands of a requesting Sailor or Marine within 12-18 months.