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# The Story of the Squad Power Manager: *The Power to Prevail*



The evolution of the Power Manager – “Fat Bastard” in the back, current generation SPM-622 in the front

In recent years there has been a lot of press about soldier protection, lethality and even uniforms and berets. Not so widely known are the stories about advancements in the area of portable power for military units operating in remote or undeveloped areas.

Napoleon is alleged to have once said “An Army marches on its stomach” – meaning that without a steady supply of food and water even a great military

force would be stopped in its tracks. Fast-forward a couple of centuries and Infantry units are now virtually as dependent upon batteries as they are on beans and bullets.

For example, on a typical long patrol mission in Afghanistan, an Airborne Infantryman could carry as many as seven different types of batteries for 12 electronic devices—adding up to as much as 16 pounds of

battery weight alone. For comparison, that weighs more than a dozen fully loaded 30-round M4 magazines. Looking across an entire Infantry Squad that adds up to a lot of weight devoted to batteries. But it’s not just the load burden. From the early days of Operation Enduring Freedom, it also became obvious that limited battery life and the need to swap out batteries on the move was causing disruption to



A Power Manager system delivering power to the communications gear of a Special Operations team on an extended patrol in the jungle

operational and mission success.

So how do you keep troops at the small unit level powered up and in the fight, while also relieving them of as much of this battery pain as possible? One thought was to develop a small, portable, hydrogen fuel cell that could take the place of small internal-combustion-engine powered generators. But this would only be useful at the forward operating base/combat outpost (FOB/COP) level. Troops would still need to carry a lot of batteries when out on patrols, and there are a whole host of logistical challenges of safely storing, transporting and supplying

hydrogen gas to deployed units.

However, that development work did create a sophisticated embedded power conversion and control software platform, which formed the basis for the next phase of solving the small unit power dilemma—the portable power manager.

In 2005 the first portable power manager prototype was developed. Nicknamed “Fat Bastard,” it was not very ergonomic, not very small and not very user friendly. It did prove the concept and it did demonstrate the possibilities and capabilities that could be achieved with further effort. So the

second phase of development was launched. This led to the significantly improved “Battlefield Power Manager” (BPM).

The BPM was a dramatic improvement on “Fat Bastard” but still required a high level of user training and manual configuration. And although it was less than half the size of its predecessor, it was still considered too large and too heavy for practicality.

In 2010, the third generation, and first truly practical, lightweight power manager was developed in response to the Army’s requirements. This device



A Squad Power Manager system charging batteries with power scavenged from a vehicle battery

became known as the “Squad Power Manager” and the SPM-612 from Protonex Technology Corporation was selected for field trials. One significant advantage of the SPM-612 over its predecessors was that it was “smart.” The device would automatically determine what type of power source was plugged in, what type of end-user device or storage battery was connected, what

type of power output was required and convert, balance and deliver that power automatically—no programming or configuring was required by the user.

The SPM-612 was immediately and enthusiastically greeted with positive end-user feedback. Dismounted Infantry and Special Operations teams appreciated the dramatic weight savings that the SPM

brought by enabling them to reduce the number and variety of batteries they needed to take into the field, to repurpose the batteries they did take for running other devices and to recharge their batteries whenever and wherever there was a power source available (such as a vehicle outlet or battery, a solar blanket or panel, A/C outlet, etc.). Although the SPM-612 was



Infantry Squad Power Management Kit with SPM-622 and a variety of adapters and cables for scavenging power, running equipment and recharging batteries

well received by end-users—and it now had the right form factor, weight and ease-of-use—it was not completely ready for use in all operational situations.

In 2015, the fourth generation of the Squad Power Manager was ready for action. Once again the product of Protonex Technology Corporation, the SPM-622 offered several key advantages over the SPM-612. The SPM-622 Squad Power Manager is protected by a rugged housing of machined aircraft-grade aluminum, it is fully waterproof (and can even operate fully submerged), weighs less than a pound and functions perfectly in temperatures ranging from -20° to +60° C. This improved version of the Squad Power Manager was also selected as the Power Management accessory within the Nett Warrior program. The Nett Warrior Power Management Kit provides both basic combat training (BCT) and special operations forces (SOF) units the necessary accessories to make continuous use of the full capability of their organic radios and end-user devices.

The SPM-622 Squad Power Manager packs a tremendous amount of capability and flexibility into each pocket-sized device:

- It is a power “universalizer” that can run any device from any battery and charge any battery from any source.
- It has full built-in system intelligence requiring no

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AUSA, like NIA, respects the privacy of its members and will not share your contact information with anyone outside of the Association. If you do not wish to participate in this benefit, or share your contact information with AUSA, you may opt out by contacting the NIA national office at 706-323-2560 or by sending an email to [info@infantryassn.com](mailto:info@infantryassn.com).

user configuration or programming for true "plug-and-play" capability.

- It reduces the quantity and variety of batteries units need in the field or on patrol—replacing up to 45 pounds (or more) of batteries, chargers and cables.
- It uses solar, vehicle, generator, wall socket and battery power seamlessly for increased operational capability, flexibility and compatibility.
- It supports the majority of currently deployed military radio systems, including; PRC-148, PRC-154, PRC-117F/G, PRC-152, MPU-4, Motorola, etc.
- It recharges most military and commercial rechargeable batteries, including BB2590, BB-2557, 28V Vehicle, Conformal Wearable Battery, power tool batteries and the latest high performance radio batteries.
- Constant operability of mission-

essential electronic devices is ensured—radios, satellite phones, GPS units, tablets, laptops, medical equipment, explosive ordnance disposal (EOD) equipment, power tools, unmanned aerial vehicles (UAV) and unmanned aerial surveillance (UAS) can all be kept running as long as needed with the SPM-622.

• Thanks to its modular software architecture and smart cable technology, new capabilities and devices are easily incorporated as needed.

Besides Infantry units, thousands of power managers have now been deployed to every branch of the U.S. military. Units have particularly embraced the operational capability offered by the Squad Power Manager while deployed on operations in austere environments. SOF medical teams use the SPM-622 to run their specialist equipment to extend the golden hour

for casualties and deliver critical prolonged field care. EOD teams use the SPM-622 with special adapters for X-Ray, mine detection and other specialist equipment. Construction battalions use the SPM-622 to keep their tool batteries charged up when and where a power grid is not established or not reliable. SOF teams operating in remote or austere locations use their SPM-622 kits to maintain constant operational and situational awareness between themselves, partner forces and HQ. Operators of unmanned ground and aerial vehicles use the SPM-622 to keep their systems up and running as long as required in any location.

For more details about rugged power management solutions for austere environments, visit [PTXNomad.com](http://PTXNomad.com).

★ Article submitted by Protonex Technology Corporation