Designing a More Patient-Proof Battery Holder

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As more and more battery-powered medical devices get utilized in the home or get worn by the patient, it is becoming increasingly critical to make this equipment less susceptible to patient-error. An innovative battery holder technology makes battery replacement virtually fool-proof, providing added protection against incorrect battery replacement, which can jeopardize product safety and performance.

For the average person, replacing a battery is highly intuitive, almost second nature. But this may not be the case for individuals who are unable to read, suffer from impaired vision, have faulty judgment, or limited manual dexterity.

Properly replacing a battery requires basic reasoning and certain hand skills to ensure that the correct battery polarity has been maintained. Correct battery replacement often requires the user to follow written instructions or interpret simple schematic drawings. If the patient is too young to read, too aged and infirmed to follow directions, or suffers from a serious ailment that impairs his or her ability to perform simple tasks, that person may run the risk of improperly installing replacement batteries in a timely manner. In turn, incorrect battery replacement

could cause cause confusion or discouragement, and in some cases, cause far more serious and potentially life threatening consequences, especially if the device triggers an alarm, monitors health, offers therapeutic benefits, or dispenses prescription drugs or medications.

While the development of a more ergonomic and patient-proof battery holder has proven useful throughout the field of medicine, its invention was inspired by the computer software giant Microsoft Corporation (www.microsoft.com) which was saw its customer support helpline using up valuable resources to answer misguided service calls. Too often, Microsoft's customer service representatives were being called upon to solve vexing problems that consumers were experiencing, which were totally unrelated to glitches in software design. Instead, these service calls were the result of basic human error among consumers who had incorrectly installed the batteries required to activate a wireless mouse or keyboard. In many cases, these batteries were not factory installed, which could shorten their storage life.

To reduce the incidence of unwarranted calls to the consumer help desk, Microsoft assigned design engineers the task of developing a simple, mechanical solution that would allow a mouse or keyboard to operate properly regardless of the orientation of the orientation of the battery's positive and negative terminals.

This design challenge led to the development of InstaLoad, a patented battery holder technology that enables batteries to be inserted into the device bi-directionally without creating an electrical short or resulting in a failed connection. InstaLoad technology has been proven to be so simple, yet ingenious, that it prompted editors at mashable.com, a tech equipment monitoring website, to report that "frankly, we can't figure out why no one invented this tech until now, but we're glad Microsoft did. They have the reach to really get device manufacturers on board, which will be crucial to InstaLoad's adoption."

Under terms of a long-term licensing agreement with Microsoft, Memory Protection Devices (www.memoryprotectiondevices.com) is now an authorized manufacturer and distributor of InstaLoad battery holders. The InstaLoad system is now available in standard configurations for AAA, AA, C, or D size batteries. Custom configurations are also available.

Instaload technology significantly improves upon earlier attempts to develop a bi-directional, more patient-proof battery holder. While these earlier generation battery holders did allow patients and consumers to insert batteries bi-directionally, they suffered from two major drawbacks. First, these devices required PC board designs to be overly complicated and expensive to manufacture and assemble. Second, they tended to cause continuous drain on the battery, which unnecessarily increases annual battery self-discharge, thus reducing the maximum service life of the device.

Designed specifically for through hole mounting, Instaload battery holders contain a pair of battery contact assemblies capable of mating with either the positive or negative terminal, with plastic setbacks strategically positioned to avoid short

circuits while allowing the battery to be oriented bi-directionally. Use of this device does require some modification of PC board architecture and fabrication, as two alternate sets of traces are required to accept bi-directional power. However, adapting PC board architecture to this configuration can be easily accomplished without the need for any specialized circuitry or non-standard electrical connections. As a result, once in full production, adapting the circuitry to accept bi-directional power will have minimal impact on PC board manufacturing and assembly costs.

While maintaining proper battery orientation is rarely an important concern for youthful, tech savvy consumers, the problem is far more serious for young children who do not know how to read, as well as for or elderly persons who may be losing their sight, suffering from impaired judgment, or have difficulty adapting to modern technology. For millions of individuals, use of InstaLoad battery holder technology will result in a far more satisfying user experience, contributing to better patient outcomes. Also, since Instaload reduces the risk of electrical shorts or other potential damage that my result from incorrect polarity, its use serves to increase long-term product reliability.

The potential benefits of this innovative technology extend well beyond the field of medicine, into areas such as life safety. For example, Instaload battery holders have been proven useful in assisting EMTs and first responders who must make instantaneous life-saving decisions and therefore require immediate and reliable performance from their battery-operated equipment. If there is a fire emergency and the first responder finds himself or herself in a dark, smoke-filled environment, unable to read battery installation instructions, use of the bi-polarity feature of Instaload technology automatically ensures correct battery replacement. Similarly, if a first responder is trapped or crawling through a confined space where battery orientation is difficult or impossible to determine, use of the InstaLoad system can be critical both to the health and wellbeing of the first responder as well as to those in need of assistance.

Instaload technology is also ideally suited for numerous consumer application, including portable lighting, flashlights, battery chargers, remote control devices, wireless computer mice and wireless keyboards. It is also ideal for commercial, military, and law enforcement applications that can benefit from faster, error-free battery replacement.

As more and more battery-powered devices get utilized in everyday life, use of this innovative battery holder technology will makes battery replacement virtually fool-proof, which will enhance product safety and performance

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