UPS and Downs

Since early in time, back up batteries have been a fact of life in intrusion, access and even CCTV systems. Whether it is in a local panel or as part of a power supply enclosure, batteries serve the function of maintaining power during a limited duration power outage. UL standards cover these, requiring 4 hours for access control (UL294), 12 or 24 hours for intrusion (UL 603 and UL 1076), and 24 hours for fire (UL 864 and UL 1481). If video systems are used as sensors in these systems, they may full under the umbrella of these, also.

Uninterruptible power supply (UPS) systems provide protection beyond batteries, supplying line level voltage to certain end devices or to power supply panels themselves. If the power supply itself has battery backup, there is additional redundancy.

Let's examine some design considerations for these systems and features worth considering.

A key consideration in battery back-up is intelligent charging. LifeSafety Power has incorporated a feature in its power supplies that allows the charge voltage to go higher than the main supply voltage, reducing stress and heat generation on attached devices while providing optimum charge to the battery in all phases of the charge cycle. The circuit's "Jumpstart" feature provides maximum current at the beginning of the charge cycle to get battery chemistry moving and reduce the effects of deep discharge.

The dividing line between when to move from batteries to UPS is a judgment call. Says Joseph Holland, VP of Engineering for LifeSafety Power, ""Both the conventional battery backup system and the UPS system are tools to be used to enhance the reliability of the powered system in the most dependable and economic manner. A properly designed power supply with battery charger and monitoring will provide the most efficient and cost effective method for a dedicated specific system. A battery solution however cannot compare with the ability of the UPS to handle the broader based power requirements of the IT world when it comes to maintaining plant and network power."

The typical UPS goes through an AC – DC – AC conversion process, where the DC section is backed up via battery. Failure of the incoming AC voltage is countered by the continuing of conversion of the battery-backed DC power to AC. Minuteman Power Technologies, a key UPS supplier who has made the security market a priority, characterizes power problems and frequency of those as follows: surges (1%), blackouts (5%), spikes (6%), and sags and brownouts (88%). (A spike can be described as a wave of power via over –voltage vs. a spike which is a short duration event of several milliseconds.) Many worry most about the complete loss of power, but equipment powered by AC will have varying degrees of susceptibility to abnormal voltage fluctuations, and UPS systems will effectively clean this up. For the increasing number of systems powered by PoE, attention should be given by the security professional to the performance parameters of the UPS system to insure that device up-time requirements are met. Who's specifying your UPS?

For DC systems, an interesting product is offered by Panduit, providing 35 W of 24 VDC power. Shunning the use of batteries, the system uses capacitance to provide 6+ minutes of backup power, enough to deal with short duration "blips", in a package roughly 3 x 5.5 x 7 inches.

The trend in higher end power supply and UPS systems is to incorporate remote connectivity and management. The companies mentioned in this column, and others including Altronix, have moved to provide remote capabilities that include monitoring of device health and performance levels, potential

trouble in connected devices, and output control. Protocols such as Simple Network Management Protocol (SNMP) will allow network management software to participate in this process.

Smart power devices and smart system design will help deal with the ups and downs of incoming voltage.

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