



Choosing the Right Power Supply Technology Avoids Access Control Malfunction

July 23, 2010 — One of the most common troubleshooting calls customer service representatives receive is about intermittent or failed power supply, lock or access control operation. These malfunctions can easily be avoided by specifying or installing a power supply properly designed and tested and UL Listed for use with access control products.

While there are different technologies available in the security industry, the following information provides insight to why some power supplies may or may not be compatible with access controls and electric locking devices.

SWITCHING POWER SUPPLY

Switching Power Supplies are typically designed for use with resistive or capacitive loads such as low voltage lamps, alarm panels, cameras and signaling devices. They are lighter in weight, efficient (less heat generated) and are cheaper to manufacture. The low price of switching power supplies often encourages its misapplication.

Switching power supplies are not recommended for use with access controls and electric locks for several reasons. Typical switching power supplies have trouble handling the inductive loads produced by locking devices with coils or solenoids due to the limited current reserve available to handle periods of high inrush. Excessive current draw (even for a short period of time) will briefly stop a switching supply from operating and may even permanently damage it.

Another byproduct of the switching power supply is a high frequency noise component that appears in the DC voltage output. A properly designed supply includes a filter circuit to reduce or eliminate this noise. Many switching power supplies do not include more effective output filtering due to cost constraints. The filter part of the supply can cost as much as the regulator circuit so a good high frequency filter is often left out. Although the noise will not harm a simple device like an electric strike, the noise may cause erratic operation of electronic equipment such as access controls, electronically controlled locks, panic bars and door controllers causing them to malfunction and may even damage these units.

These “low cost” switching supplies often require that you supply your own power transformer and assemble these two components in your own box. The result will be a NON UL listed power supply allowing an opportunity for local inspectors to not approve an installation.



602RF 1 Amp Power Supply

LINEAR POWER SUPPLY

Linear Power supplies have been used for years for powering resistive, capacitive and inductive loads (devices with coils or solenoids, such as electromechanical and electromagnetic locks and strikes) due to their ability to handle large inrush currents. Since most of the DC filtering is done with large filter capacitors, there is plenty of reserve power and they can provide extra current for short periods of time without malfunction or damage. The output is also free of high frequency noise found in switching power supplies making them practical for use with access controls. *However, the penalty in using a linear power supply is the heat generated by the regulator component of the supply due to its moderate efficiency. The heat generated can lead to early failure of the temperature sensitive components housed near to the supply board.*

HYBRID POWER SUPPLY:

SDC manufactures Hybrid Access Control Power Supplies that are ideal for powering resistive, capacitive and inductive loads. They combine the efficiency (low heat generation) of a switching supply and the rugged inductive load capability of a linear power supply. Extra filtering is added to the output stage of the SDC 600 series power supplies to provide clean noise free power for access controls and enough current reserve is available to reliably power inductive loads. Built-in inductive kickback protection enables high inrush protection caused by electric lock solenoids and motors. This type of power supply is a good overall choice for powering all access control system components.