



Surge Protection Solutions for Outdoor Airport Areas

Airports present a different security challenge from other multi-building campus facilities. This is partly because they must control access across the perimeters of outdoor areas as well as within the secure building areas. Of course, this is because of the critical nature of our transportation systems. There is a need for highly restricted access to areas that could be vulnerable to sabotage, theft, and other terrorist or criminal activities.

Whenever there is the possibility that an airport perimeter has been breached, security management must consider stopping all regular activities for some period of time. This time is needed to be able to perform a sweep or investigation. Authorities must either confirm that a breach has occurred and catch the unauthorized person(s), or confirm that the breach has not occurred, and that it is safe to resume regular operations.

At the same time, airport managers are aware that while transportation systems make up part of a nation's infrastructure, and that public agencies supply some of the resources that power their operation, airport operations are also a business. If there are any interruptions to operations, these disruptions can have oversized impact on the traveling public and on the companies operating at the airport. If takeoffs and landings are interrupted, then any significant delay can even have a ripple effect on distant airports, because of the interconnected nature of our complex air travel systems.

Thus, it is in the best interest of site and security management to maintain their electronic systems that help them monitor the perimeter and control access to these outdoor areas. In this way, they can make best use of these systems and help to ensure that intruders are detected early and denied entry at the controlled access points.

Electronic systems are naturally vulnerable to surges and spikes in electrical power, and they are also vulnerable to electrical disturbances transmitted via communications and signaling cables that can carry unwanted voltages directly to sensitive electronic circuits if the conditions are unfavorable. Outdoor systems such as those located in outdoor areas of airports are particularly vulnerable. They are exposed to the elements, which can cause water leaks and wind damage among other hazards, and they are in relatively unprotected areas in terms of other electrical pathways to ground such as trees and other buildings with lightning protection.

Consider what happened at one small airport recently, when it became apparent that an access control gate was no longer responding to electronic signals to open. At that specific moment, two jet aircraft were waiting to enter. During the 30 minutes it took to get the gate to open manually, more than \$17,000 in jet fuel was needlessly wasted. Soon after this incident, a random thunderstorm caused lightning to hit the signal control wires, carrying damaging voltage in both directions of the cable. The unprotected keypad at one end of the cable, and the unprotected gate controller at the other end, were both destroyed.

While a direct lightning strike is almost always destructive, voltage surges and spikes that are carried to distant equipment can be controlled with the correct surge protection devices (SPDs). The airport mentioned above called their system



integrator, who brought in DITEK for a site survey. The survey revealed that the system had been completely unprotected from electrical surges and spikes. The integrator accordingly recommended installation of appropriate protectors on both power supplies and communication/signal cables. The entire expense was surprisingly small – and could have prevented the losses in equipment and operational time – not to mention fuel! Since installing appropriate protectors, there have been no further problems with these systems.

Surge Protection Solutions

For any unprotected electronic security system, including access control and intrusion detection systems, the chances are good that it will incur some damage during its lifetime from power surges and spikes. Not every system will fail due to surge events, but every unprotected system has an increased chance of failure versus fully protected systems. For an essential safety and security system such as access control, which has the potential to mitigate serious liability claims or provide vital criminal evidence, the small additional price for protection should be no barrier. The cost of providing surge protection is typically less than the sales tax on the system.

According to best practices, every sensitive electronic system should have surge protection at its [supplied power connection](#), in addition to the surge protection that is installed at the [facility power entry point](#). This is important because damaging power surges can be created inside the facility perimeter. This can be caused by inductive load switching, (by [HVAC systems](#), for example) in addition to coming in through the building power connections.

Best practices for protecting sensitive electronic systems also include surge protection at both ends of all connected network equipment, as the network cabling provides a conductive path for electrical power surges. This is vital for cabling paths that run to exterior areas including outdoor airport facilities for access control readers, gate control panels, electronic locks, or any other networked electronics or sensors.

Even in areas with little or no lightning activity, exterior electronic equipment is vulnerable to the effects of wind, rain and static electricity. Any device that is powered has the potential to create an electrical fault or short circuit that can transmit damaging power surges through the network cabling.

Applicable solutions for these challenges include [rackmount surge protectors](#) for interior network rooms, as well as [single channel protectors](#) for use at the remote networked equipment. There are even special models that are built for connections exposed to [extreme weather conditions](#). Surge protectors for networked cabling are designed to minimize signal losses while passing high-speed digital network traffic.

Closing

Airports and other critical infrastructure facilities depend on electronic access control systems to help protect travelers, their staff, and visitors. Surge protection solutions can protect every critical electronic system from power surges, improving their reliability and extending their useful lives. With a simple installation process, and very modest cost, implementing surge protection with new systems and adding them to existing unprotected systems should be an easy decision for every transportation facility management team.

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