



THOR SYSTEMS, INC.

SURGE APPS SA-007: NECESSITY OF SURGE PROTECTION *(Guidelines and application tools to promote improved Power Quality)*

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Growing Necessity of Surge Protection Not Just an Extra Anymore!

Nearly every electrical device used in today's society has electronic components. This wasn't the case just a few years ago. Technology has become an integral part of almost everything we use in our daily life. Everything from traffic lights to the water that flows in and out of buildings is controlled by electronic devices. These advances are beneficial to society in ways that most people aren't aware of, until something is no longer working as it should – or not at all. Many times it is because the electronic components have been damaged by surges.

Most people equate a surge with something visible such as lightning or an accident taking down a utility pole. However, the reality is:

- Only 20% of surges are caused by “outside” events (lightning, utility grid switching, pole accidents, contractors’ equipment cutting through lines, etc.).
- 80% of all surge events actually come from within the building. Air conditioners, heaters, lighting contactors, printers, copiers, or an endless list of items can induce a power demand change which initiates transient voltage surges.

Ref. Standards:
 UL 1449 4th Ed.
 UL 1283 5th Ed.
 C62.41.1: 2002 IEEE
 C62.41.2: 2002 IEEE
 C62.45: 2002 IEEE
 C62.62: 2010 IEEE
 C62.72: 2007 IEEE
 NEC 2014
 NFPA 70
 MIL-STD 220A

One benefit of technological advancements is that most electrical controls become smaller and more efficient. For example, computers today are a fraction of the size they originally were – mostly due to the size of microchip technology. Microchips

are now the critical part of virtually all electronic devices, both in home and office environments. HVAC systems, building management control systems, and office equipment (computers, servers, printers, copiers, etc.) use microchip sets for more efficient control of their electrical power. The telephone on your desk is comprised of chipsets. As these microchips become smaller, they become much more likely to be damaged by exposure to voltage surge impulses, which constantly occur with regular daily electrical functions within a facility.



Surge Protection on Electrical Distribution Panel

Over time, these electronic devices become degraded by such impulses. Millions of dollars a year are spent replacing blown circuit boards, relays, contactors, and a myriad of other electrical devices. Ten years ago, surge protection was only considered for high end projects or expensive equipment. Today, however is an entirely different story.



**Failed Microchip
(Inexpensive Components
Cause Large Financial Losses)**

Installing properly sized surge protection, listed to the most recent UL 1449 3rd Edition standards, will be a great asset towards protecting not only your most critical and expensive equipment, but other electrical devices regularly used but taken for granted.

We would like to become an information resource for your surge protection applications. THOR SYSTEMS offers products and services that provide protection from the more *obvious external* to the more *frequent internal* transient voltage sources.

Ref. Documents:

- SA-004 Risk Assessment/Sizing SPD
- TSI 085 ID Profit Opportunities
- TSI 068 Product Overview
- TSI 022 Why Surge Protection/TVSS for Electrical & Data/Telco Systems
- TSI 077 Press Release: Surge Protection & Profit Opportunities
- TSI 0119 Site Risk Assessment Spreadsheet

Our consistent focus on improved product performance and increased value to the customer is conveyed by our products’ transparent cover enclosures, showcasing the TILE Architecture, Innovative Design Configurations, and per Mode Status Indication.

Should you have any questions, please feel free to contact us (804.355.1100) or visit our Web site, www.ThorSystems.us.