



GARDIAN & SURGSHIELD

Secondary Level ~ Primary Level

Understanding TVSS Applications

Industrial Grade, Hi-Performance 24/7 Surge Protection

Gar'Dian for Cat. B Application ~ **Surg'Shield** for Cat. C Applications

Featuring Virtual Non-Degrading, "VHE"* Single Element Technology!

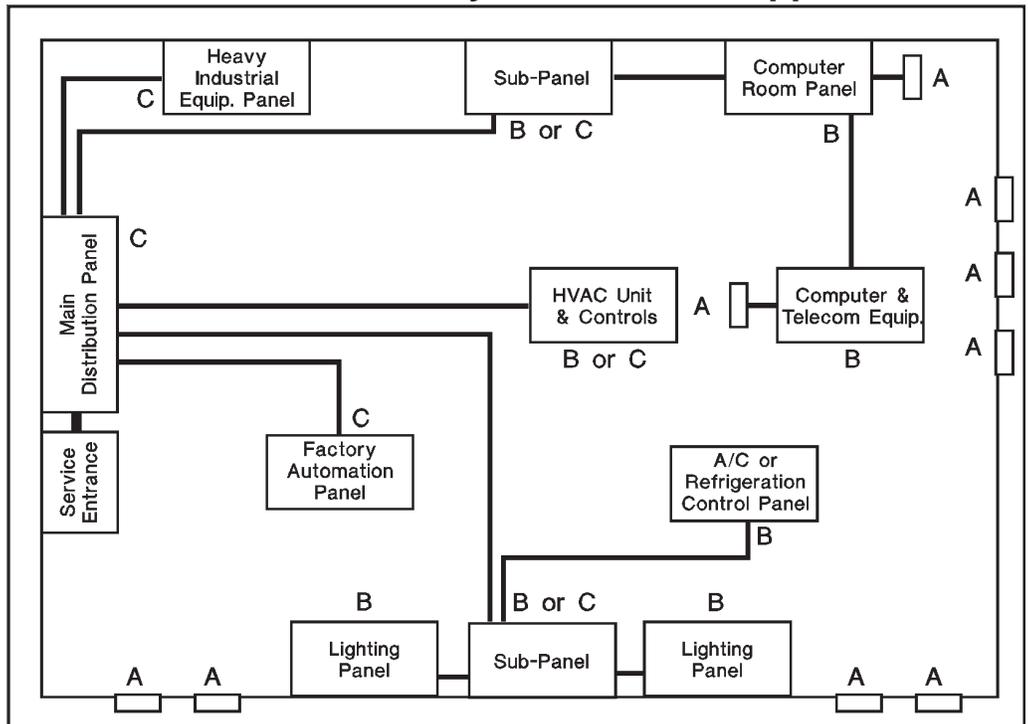
The **Surg'Shield** handles transient surges rated as **Category C or B** without degradation. The **Gar'Dian** is ideal **Category B** protection as long as it is downline from the non-degrading **Surg'Shield**! Designed for high-energy* continuous duty, TVSS locations to protect all inductive loads, lighting panels, factory automation and the most critical computer and telecom systems.

Levels of Protection:

The most basic level of today's "best-buy" in surge protection is not a cheap, hard-wired or plug-in surge protector! Rather it is a robust, "non-degrading, high-energy surge protector, located at the Service Entrance or main panel of your home, business, or industry. This is at your AC power's "point of entry", which is your most vulnerable position, while it is also your most advantageous position to place a continuous duty, high energy surge protector. To be adequately prepared for the eventual catastrophic "big hit", and for practical prevention of typical, long-term system and component degradation, you need to "network" several layers of basic surge protection within your electrical system.

This does not mean that all electrical systems are created equal, and that you simply need a one-size-fits-all miracle box. Practical solutions must consider the economic feasibility of what's at risk. Of the three most common power problems, (Black-outs, Brown-outs and "Electrical Pollution"), electrical pollution is the most costly to ignore, and the least costly to eliminate! However, this requires an understanding of what you can expect over a lifetime from a well designed TVSS system. Total reliance cannot be placed on a single TVSS device. Certainly not on just a low-energy, plug-in surge protector. The causes of your specific hazards and long-term costs must be considered as they originate from both outside and inside your facility. This will often require placement of safe protection modules at critical points at all three levels of IEEE rated, Category A, B, & C locations as illustrated below. It's now practical to build a network of custom components for a lifetime of trouble-free Power Quality with **StediWatt**. If you're the CEO, the CIO, the

Illustration of TVSS^A System Network Applications



For IEEE Category **C** Locations (Outside Feeders, Service Entrance & Critical Inside Loads) choose the **StediWatt Surg'Shield** TVSS Series For Max Continuous Duty Surge Capacity. For Cat. **B** Locations (Distribution & Sub-Panels, short Branch Circuits & Major Eqp/HVAC & Refrg./Control Panels) Choose the **StediWatt Gar'Dian** TVSS Series. For Cat. **A** Locations (Long Branch Circuits & Plug-in Level) Plug in to **StediWatt PowerSafe Series** w/ 6th Sense Diagnostics to verify protection!

MIS Manager, or the Facilities Maintenance Manager, your reputation is on the powerline! All successful operations depend on the reliability of your equipment and the integrity of your data which demands **StediWatt Power**. Contact your local authorized **StediWatt Power Quality Consultant** for a free evaluation of your total risk. **StediWatt** has brought lifelong power quality and protection together with a low cost, risk-free one-time investment!

"If you're the CEO, the CIO, the MIS Mgr. or the Facilities Maintenance Mgr., your reputation is on the Powerline!"

VHE* Very High Energy, Non-degrading TVSS^A (Transient Voltage Surge Suppression)



TVSS Types and Systems Locations



Transient voltage surges are common on all electrical and electronic circuits. All are caused either by nature or by people and their modern, technological tools and conveniences. From various electrical loads cycling on and off, and from distant, nearby, or direct lightning, the causes and the impact are many and varied. Yet the problem has become more severe as most power lines have become overly busy and overloaded, and at the same time, today's equipment becomes more and more complex, sensitive and quite vulnerable, yet so vital.

For example, compare the negligible impact of a small transient surge on a major industrial motor to the devastating impact of a high-energy surge of lightning on a sensitive computer system. Most of today's electronic offices are exposed to whatever power hazards might come in to the nearby electrical wiring and connected equipment regardless of the cause or impact. Therefore, it is essential to evaluate the feasibility of adequate, lifetime surge protection versus the un-nerving and costly risk, whether it be from gradual internal component deterioration or from the risk of immediate catastrophic failure.

The most rugged and effective TVSS* component for safe, reliable surge protection is the MOV (Metal Oxide Varistor) of various types and values. Some power protection applications may employ a combination of MOVs and silicon avalanche diodes or gas tubes.

TVSS (Transient Voltage Surge Suppression)*

All TVSS types are rated for IEEE's Category A, B, or C locations within a given facility. A standard for testing, and evaluating the safety and performance of TVSS design options, as well as the products of various TVSS manufacturers, has been established by UL (Underwriter's Laboratories), IEEE, and by the power industry. The IEEE Std. 587, as well as ANSI C62.41 defines the three classifications of surge levels, based on the strategic location within a facilities' wiring network, where a power problem may be encountered. They classify the TVSS type, the potential impact of transient surges or spikes, and TVSS location as follows:

Category A: Defined as any plug-in receptacles or branch circuits extending more than 10 meters (30 ft.) beyond a Category B location.

Category B: Defined as all major sub-feeders, buss systems, and short branch circuits such as distribution panels, sub panels, industrial busses, and feeder systems, heavy appliance circuits, commercial lighting systems and receptacles less than 10 meters from a Category B location.

Category C: Defined as outside power gear and main service entrance which includes main supply lines, transformer, service connections, and feeder lines to main service entrance panels, main switch gear, any overhead or sub-feeder lines, underground lines to adjacent facilities such as well pump supply lines or other major equipment.



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