

THE PROBLEM

TRANSIENT ENVIRONMENTS

It is critical to invest in protection systems in order to mitigate the damages caused by transients. Investment in our SineTamer® products will cut annual maintenance electrical and/or electronic costs and provide the benefit of return on investment that typically ranges from 3-18 months. Remember that these damages can occur at any time and in various ways; during a thunderstorm, a failure in the electrical system, in a blackout or even by a curious squirrel stumbling into an electrical transformer.

What is a Transient?

A transient is a brief but powerful high-voltage and high-current event that can last just a few microseconds. The transient event can reach as high as 100,000 volts during extreme events such as lightning strike & 10,000 volts due to utility grid switching events.

Transients of over 6,000 volts due to switching large inductive loads and as small, yet equally disruptive as, 2,000 volts can be created internally. These internal causes can account for more than a million events per hour in heavy industrial environments.

Critical System, always in danger

Electronic control systems can be found at: water treatment facilities, traffic control systems, point of sales (POS) terminals, automated industrial process plants, air traffic control systems, data processing centers, communication systems, radio base stations of cellular phone companies, clinics and hospitals, laboratories, financial centers. UPS's, and all manner of military defense systems. The consequences resulting from failures in these delicate circuits can, in many cases, be devastating.

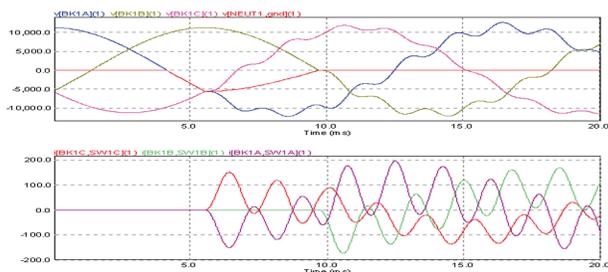
Number One in Power Quality Problems

Transients, spikes, surges... these disturbances are the most destructive, costly and common power quality events in industry today. Throughout the world, these events cost billions of dollars each month due to increased maintenance costs and loss of production. Over recent years, as virtually all control equipment has become increasingly microprocessor based, such failures are more recurrent and more costly.

Other events such as flicker, blackouts and harmonics also cause significant problems which are, without doubt, hugely disruptive.

Transients are able to stop equipment and plants for extended periods of time, causing disruptions in the processes, delays in deliveries and loss of credibility to clientele. Often, the repair costs are minimal compared to the cost of lost profits or deferred production.

Equipment downtime disrupts the delivery of products and services that consumers now expect.



External Reasons - 20%

Dramatic and catastrophic lightning or electrical system failures represent 20% of the transient problems.

Internal Sources - 80%

Switching of internal loads can produce up to 1,000,000 non-catastrophic yet disruptive transients per hour in very active industrial environments. This constant bombardment causes severe cumulative damage (electronic rust) and eventually serious failures.

Why BUY



SineTamer® is backed by a company of professionals in the design, development and implementation of high quality and internationally recognized surge protection systems. Our purpose is to provide our customers with individual attention thanks to the work of our engineers and of hundreds of professionals around the world who provide advisory services to technicians and engineers from many companies. As a result, they have acquired the ability to recommend and select the best alternatives for protection based on the experience, honesty and integrity of all those who form part of the SineTamer® family.

Leadership in the high efficiency design

The best product in a “Real World”. SineTamer® is one of the best performing commercially available suppressor on the market today. We offer features such as “Discrete All Mode Protection” in other words: “True suppression with protection element in all modes”. Compact design, capable of being applied into panel boards, with a high frequency conducting integrated circuit, encapsulated in a heat dissipating resin, with a true Frequency Attenuation system. All features that are now being copied but not equaled. As always our residual voltage remains the central focus of the design. We will never sacrifice its performance for a better commercial presence as other designs do.

“The Ultimate Guarantee of the Industry”

Up to a Twenty Five year guarantee against all failures by any electrical anomaly, including lightning. No fine print. We have many independent analysis and performance assessments of the SineTamer® system available.



The tool you need to make your buying decision

Real performance tests, transparent and complete specification sheets, efficiency tests with real-world applications -- no hidden evidence and false results, without specifications that are far from reality, no partial test nor incomplete specifications. We want you to have real information at hand to make wise decisions.



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RM-LA-ST

Power Units



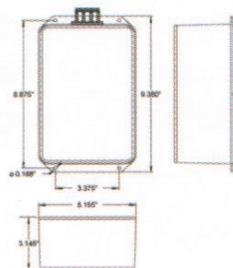
These models are designed to be installed at main panels, automatic transfer switches and distribution boards, and in main breakers of machines, also for individual equipment such as variable frequency drivers or CNC machine or other similar equipment.

The units are designed with the latest advances in circuit board design and computer modeling. All panel

units are highly efficient suppressors with durability and stability carefully engineered in their circuit board and selected components.

We have units from 40kA to 600kA per phase, from 120VAC to 6900 VAC and up to 900VDC. Each are available with various options that are available on all models. Units are designed with fixed threshold clamping or frequency attenuation circuit. Units are also available in various modes of protection—up to 10 discrete modes on three phase WYE systems. The units are complete with heat dissipation resin covering all components to insure long term constant performance, compact design insuring short internal component lead length and standard thermal and current fusing.

All units are tested with the IEEE standards C62.41 and C62.45 for use in categories C, B, and A. Various families are also tested to IEC61643-1 Class 2, 3. Below is an example of that information.



LA-ST Model

LA-ST devices provide the best protection available in units of their kind, units designed up for use in circuits up to 480VAC with capacities up to 300kA per phase, with all models of protection, 10 in WYE, 6 in Delta, 6 in Split phase, and 3 in single phase circuits, with fixed threshold and frequency attenuation clamping, thermal fuse protected varistors, phase current fusing, and an absolute replacement guarantee for 20 years.

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results		
					A1 2kV, 67A 100KHz Ring Wave 270° Phase Angle	ANSI/UL 1449- 2006 (Third Edition) Voltage Protection Rating (VPR)	C3 20kV, 10kA Impulse Wave 90° Phase Angle
LA-ST1201P1	120V, Single Ø (2 wire + ground)	150 L-N 150 L-G 150 N-G	40,000 L-N	L-N	45	500	914
			40,000 L-G	L-G	60	500	1025
			40,000 N-G 120,000 Total	N-G	55	500	1176
LA-ST1201S1	120/240V, Split Ø (3 wire + ground)	300 L-L 150 L-N 150 L-G 150 N-G	40,000 L-L	L-L	75	1000	1119
			40,000 L-N	L-N	45	500	914
			40,000 L-G	L-G	60	500	1025
			40,000 N-G 240,000 Total	N-G	55	500	1176



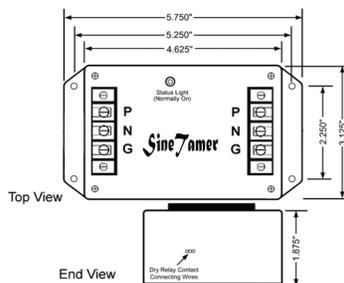
ST-SP, ST-SPT, FSPT FAMILY

Control Power Units



Controlling transients that disrupt the software of modern equipment is essential in proactive maintenance. Systems managed with microprocessors are extremely sensitive in single phase systems which is why they require the most effective protection.

The Family, including ST-SP, ST-SPT and FSPT units, is designed precisely for this purpose. Compact units to be installed in front of the power supplies and/or individual computers such as PLC's, servers, UPS's, laboratory equipment and many others find solution in this family for the most demanding requirements. Their design, through the use of high conductivity integrated circuits, with thermal fused varistors, fixed threshold circuits, frequency attenuation and/or both, allow SineTamer® units with all protection modes, to deliver the lowest residual voltage ensuring the safe and secure operation of hardware and software.



ST-SPT Series

The ST-SPT SineTamer® devices provide the best protection available for such units. These devices are designed for use in 120, 240 and 480 VAC and DC powered equipment in sensitive and critical equipment. They are extremely effective in limiting transients generated inside buildings, industrial plants, and medical centers. These areas often have significant ring wave generated events that attack microprocessors. All of the 15/30amp units provide 60ka of total energy dissipation.

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

Model	High Voltage Continuous operation	Modes	ANSI/IEEE C62.41 - 1991 Through Voltage Testing		
			A1 2kV, 67A 100KHz Ring Wave 180° Phase Angle	A3 6kV, 200A 100KHz onda 90° Phase Angle	B3/C1 6kV, 3kA Impulse Wave 90° Phase Angle
ST-SPT24-15	30 L-N 30 L-G 30 N-G	L-N L-G N-G	20V (D) 43V (D) 29V (S)	66V (D) 133V (D) 66V (S)	197V (D) 252V (D) 385V (S)
ST-SPT120-15	150 L-N 150 L-G 150 N-G	L-N L-G N-G	28V (D) 62V (D) 41V (S)	94V (D) 190V (D) 94V (S)	290V (D) 380V (D) 550V (S)
St-SPT240-15	300 L-N 300 L-G 390 N-G	L-N L-G N-G	38V (D) 70V (D) 51V (S)	121V (D) 220V (D) 121V (S)	610V (D) 605V (D) 605V (S)



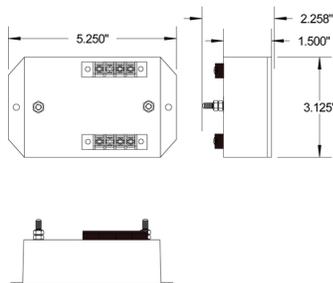
ST-CT/ST-TRJ/ ST-CXF/ST-CXBNC

Telecom Units/Data

SineTamer® has a wide range of data and telecommunications suppressors at your disposal. Designs that provide protection to all forms of telephone lines, including ISDN, E1 and T1. Models ranging from single, with screw-type terminals, in two blocks of connecting multiple pairs capable of protecting up to 25 pairs of lines.

The data lines of all types need to have an efficient lightning and surge protection. SineTamer® has models available for 4/20mA, for load cell and flow meter applications, as well as 2, 10 and 100 Mbits and a single pair up to four pairs and are listed to UL497. SineTamer® is aware that security cameras are of great importance to the protection and safety of personnel and property. We have a complete line of coaxial protection units available - from a single port-dual port - and up to 12 rack mounting panels in ports.

ST Telecom/Data



These devices are designed to protect phone lines with standard voice quality. They are also intended for installation at the telephone demarcation point as well as to allow a common earth point. This device is available for a variety of line connections (1, 2, 3, 4, or 6 pairs) performed by using terminal strips and making installation very simple. An earth terminal is always provided on the face of the unit to ensure low ground impedance discharge path.

The unique design of these devices has turned them into the most versatile TVSS devices on the market, with superior performance specifications and an unrivaled guarantee.

TABLE OF MAXIMUM SUGGESTED OPERATING LIMITS, DATA RATE & ADDITIONAL DEVICE RESISTENCE

Nominal System Operating Voltage (Vnom)	CLP##Ax-B Operating Voltage Model Number	Maximum Continuous Operating Voltage (MCOV)		Maximum Continuous Operating Current (MCOC)	Maximum Digital/Analog Data Rates vs Additional Series Resistance
		Voltage (L-L)	Voltage (L-G)		2 Mbps / 20 MHz
15 = Vnom < 32	ST-CLP24Ax-B	+36 Vpk	+36 Vpk	500mA	5 Ohms per line (10 Ohms per pair/loop)

Let-Through Voltages Using ANSI/IEEE C62.45 & C62.41 Test Environment: Static, positive polarity. All voltages are peak (+/-10%)

Model	Test Mode	Cat. B Impulse Wave 6kV, 3kA
ST-CLP24Ax-B	L-G	< 40
	L-L	< 40

ANS/IEEE C 62.36-2000, C62.41.2-2002, C62.45-2002 Unpowered, Positive Polarity. All voltages are peak (+/-10%)

Let-Through-Voltage Test	
Test Mode	Test Category B3/C1 Impulse Wave 6 kV 3kA
T-R	< 420 V
T/R-G	< 420 V



PFC Engineering Ltd is proud to offer the industry's most complete and capable line of high quality Surge Protective Devices (SPD's) for Industrial, Commercial and Department of Defense applications. Our high quality, ISO 9001 manufactured devices cover the full range of applications for AC/DC power, data, current loop, and telecommunications applications from 5V DC to 7200V AC.

Approaching 50 years of hands on, real world field experience can be seen in the simplicity, functionality and user friendly design of all our products. Simply stated, SineTamer® are the highest quality, best performing surge suppression products available anywhere in the world today.

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