**Transient Voltage
Surge Suppressors By:**

ST-CLMFxx-yz
Data Line Models

Current Loop/Signal Line protection device with Discrete All-Mode Protection

SineTamer
Energy Control Systems

Made in the USA

"Power Quality is our Only Business"

The Series ST-CLMFxx-yz devices are designed to protect current loop process instrument, data transmission, control, and signal line circuits. These devices are intended for installation as close to the electrical power source of the equipment as possible so as to allow for a common point for grounding.

This device is for circuits with up to 3 pair of signal lines connected via the terminal strips provided, making installation a breeze. A ground lug is provided on the side of the unit to insure a low impedance ground discharge path.

The unique design of these devices makes them among the most versatile TVSS devices on the market with superior performance specs and a warranty that is second to none.

GENERAL	
Description:	Series wired transient voltage surge suppressor with encapsulated **O**ptimal **R**esponse **N**etwork™ circuitry for protection of current loop and data/signal type circuits.
Application:	Designed for use on data, signal, current loop and control circuits to protect equipment from damaging transients generated between terminals and equipment in the data collection/transmission system.
Warranty:	**25 Years Unlimited Free Replacement**

MECHANICAL	
Enclosure:	Plastic, UL 94-5VA
Mounting:	External mounting feet
Connection Method:	Wire clamping box terminals located at the input and output sides of the device. Wire size: Lines # 12-22 AWG, Ground # 6-12 AWG.
Shipping Weight:	**<** 1 lbs

CIRCUITRY	
Circuit Design:	Series wired design incorporating discrete all mode protection and utilizing our encapsulated **O**ptimal **R**esponse **N**etwork™ design to provide lowest possible let-through voltages. All suppression circuits are encapsulated in our high dielectric compound to assure long component life and complete protection from the environment and/or vibration.
Protection Modes:	Dedicated protection components and circuitry for each mode. Discrete each L-L (Normal Mode) and each L-G (Common Mode)

| PERFORMANCE	
Maximum Continuous Operating Voltage:	7.5, 15, 36, 54, and 140 V
Maximum Continuous Operating Current:	500 mA
Series resistance:	2 & 10 Mbps models:5 Ohms per wire (10 Ohms loop), 100 Mbps models: 0 Ohms per wire/loop
Maximum Data Rate:	Up to 100 Mbps
Peak Surge Current per Pair:	L-L 10 kA, L-G 10 kA for 2 & 10 Mbps models, 1,500 Watts per mode (4,500 Watts total for 100 Mbps models.
Response Time:	< 1 ns

Table of Maximum Suggested Operating Limits, Data Rate & Additional Device Resistance

Nominal System Operating Voltage (Vnom)	* S-CLMFxx-yz 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: (z = blank) & 10 Mbps/ 100 MHz: (z = X) models:	100 Mbps/ 1 GHz: (z = C) models:
0 > Vnom ≤ 6	ST-CLMF5-yz	± 7.5 Vpk	± 7.5 Vpk	500 mA	5 Ω per line (10 Ω per pair/loop)	0 Ω per line or loop
6 > Vnom < 15	ST-CLMF12-yz	± 15 Vpk	± 15 Vpk	500 mA	5 Ω per line (10 Ω per pair/loop)	0 Ω per line or loop
15 ≤ Vnom < 32	ST-CLMF24-yz	± 36 Vpk	± 36 Vpk	500 mA	5 Ω per line (10 Ω per pair/loop)	0 Ω per line or loop
32 ≥ Vnom < 60	ST-CLMF48-yz	± 62 Vpk	± 62 Vpk	500 mA	5 Ω per line (10 Ω per pair/loop)	0 Ω per line or loop
60 ≥ Vnom ≤ 190	ST-CLMF140-yz	± 140 Vpk	± 140 Vpk	500 mA	5 Ω per line (10 Ω per pair/loop)	0 Ω per line or loop

*Notes: The lower case "y" preceding the model string suffix character "z" is set to: 2, 4 or 6 to specify the number of terminals to be protected. Odd numbers of conductors require the use of the next higher even numbered model or an additional like model. All S-CLMFxx-yz models use 6-position connectors with the appropriate number of labeled working terminals specified by "y".

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 6 kV, 3 kA		10 x 1,000 µs Impulse waveform IPP = 100 Apk
		2 Mbps	10 Mbps	100 Mbps
ST-CLMF5-yz	L-G	< 20	< 20	< 20
	L-L	< 20	< 20	< 20
ST-CLMF12-yz	L-G	< 30	< 30	< 30
	L-L	< 30	< 30	< 30
ST-CLMF24-yz	L-G	< 40	< 50	< 60
	L-L	< 40	< 50	< 60
ST-CLMF48-yz	L-G	< 80	< 60	< 90
	L-L	< 80	< 60	< 90
ST-CLMF140-yz	L-G	< 160	< 220	< 250
	L-L	< 160	< 220	< 250
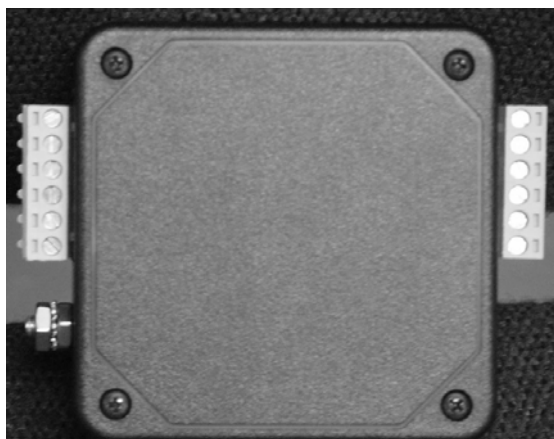
Low speed ST-CLMFxx-y [z = blank (2 Mbps.)] series models are designed to protect current loop circuits, signal lines &/or slow-speed data lines feeding transducers, leak detectors, flow meters and a broad variety of similar sensory devices. High-speed data signal lines and equipment may be protected using the ST-CLMFxx-yX [z = X (10 Mbps)] or the ST-CLMFxx-yC [z = C (100 Mbps)]. *Models may be optioned with 2, 4 or 6 terminal connections as shown above.

Image is ST-CLMFxx-yz Model
Dimensions:
4.5" Wide x 4.5" High x 1.4" Deep
Actual unit may vary from picture