Model: ST-CHLxM

480 kA Per Phase*
with Frequency Attenuation
ANSI/UL1449 Fourth Edition

* Based on 3 Phase Wye, 4 Wire and Ground

Key Features

- **Discrete *"All Mode"* Circuitry: Directly Connected Protection Elements in *"All Modes"* (10 modes for 3 phase Wye circuits) as recommended by NEMA LS-1 and IEEE Std. 1100-2005**
- **Industry Leading Measured Limiting Voltage (let-through) Performance**
- **Multi-stage Hybrid Optimal Frequency Attenuation® Circuit**
- **Local & Remote Diagnostics**
- **Independent Verification of Performance and Safety**
- **No moving parts or springs - No mechanical or electro-mechanical thermal/over-current protection**
- **Rated as Type 2 SPD**
- **Component-Level, Thermal Fusing**
- **Patented Internal, Circuit Board Mounted, Over-Current Fusing**
- **25 Year Unlimited Free Replacement Warranty**

SineTamer
Advantage Series

Application: the ST-CHLxM series was developed to answer a broad variety of demands from our customers. This device is robust enough to handle the punishment of service entrance applications while providing protection from transients that are generated inside their facility. The constant bombardment of these combination transients can damage valuable equipment and waste budget dollars.

ANSI/IEEE C62.41.1 & C62.41.2-2002 environments: Suitable for Categories: A, B & C (Most Severe Electrical Environments)

IEC Environments: Suitable for use in IEC 61643-11 environments

Circuit Topology: Parallel configured combination **Optimal Frequency Attenuation Circuitry®** and **Optimal Response Circuitry™** circuit design incorporating component level thermal fusing and ***Patented*** internal, circuit board mounted, over-current fusing; and discrete ***"All Mode"*** protection (10 modes for 3 phase Wye units). All protection circuits are encapsulated in our high dielectric compound to promote long component life and protection from the weather and vibration.

Protection Modes: Industry-best practice of true all mode dedicated protection components for all operational modes of the electrical system. **Discrete L-N, L-L (Normal Mode) and L-G, N-G (Common Mode)** Example: Directly Connected Protection Elements in All 10 modes for a 3 phase, 4 wire, Wye system, (i.e. 3 L-N modes, 3 L-L modes, 3 L-G modes and 1 N-G mode).

Input Power: 50-60 Hz (60 Hz nominal)

Temperature Rating: Up to 80°C

Insertion Loss Data: (L-N)

Frequency:	10 kHz	100 kHz	1 MHz	Max Attenuation & Freq.
Attenuation:	20 dB	47 dB	26 dB	65 dB @ 135 kHz

Standard Enclosure: NEMA 12 Rated, painted steel enclosure
(Other enclosure options available see pg. 2)

SPD Type: Type 2 SPD (CHLBM, CHLAM)

Nominal Discharge Current (I_n) Rating: 20 kA (CHLBM) 10 kA (CHLAM)

Diagnostics: Green LED's, one per phase, normally on. A wide range of optional diagnostics is available (see page two for details).

Circuit Interrupt: Internal component-level, thermal fusing and patented circuit board mounted, over-current fusing. No external over-current protection required.

Short Circuit Current Rating: 200 kAIC

Product Qualifications:
ANSI/UL 1449 Fourth Edition by CSA (MC# 259700) & UL – (ML#: E363345); UL1283* and CE Compliant (*Type 2 SPDs only) ISO 9001:2000, ANSI C62.72-2007, IEC 61643-1 Class 2&3

Voltage Code	ANSI/UL 1449-2006 (Third Edition) Voltage Protection Rating (VPR)						
	L-N	HL-N	L-G	HL-G	N-G	L-L	HL-L
1S1	500	-	500	-	500	1000	-
3Y1	500	-	500	-	500	1000	-
3D1	500	1000	500	1000	500	1000	1000
3Y2	1000	-	1000	-	1000	1800	-
3N2	-	-	1000	-	-	1000	-
3N4	-	-	1500	-	-	1500	-

US
Made in USA
ISO 9001 MANUFACTURER ISO 9001:2000
FROST & SULLIVAN 2004 2006 Transient Voltage Surge Suppressors Customer Value Enhancement Award

Voltage Code	Circuit Type	Peak Surge Current	MCOV	ANSI/IEEE C62.41.1 & .2-2002 and C62.45-2002 Let-through Voltage Test Results (tested w/6" lead length external to the enclosure per UL 1449)		
				Test Mode	**Cat A, 30 Ω 100 kHz Ring Wave 2 kV / 67 A @ 270° Phase Angle**	**Cat C, 2 Ω Combination Wave 20 kV / 10 kA @ 90° Phase Angle**
1S1	120/240 V 1Ø (Split) (3 wire + ground)	160 kA L-N 160 kA L-L 160 kA L-G 160 kA N-G 960 kA Total	150 V 300 V 150 V 150 V	L-N L-L L-G N-G	36 V 50 V 41 V 38 V	899 V 1,195 V 1,085 V 1,115 V
3Y1	120/208 V 3Ø Wye (4 wire + ground)	160 kA L-N 160 kA L-L 160 kA L-G 160 kA N-G 1,600 kA Total	150 V 300 V 150 V 150 V	L-N L-L L-G N-G	36 V 50 V 41 V 38 V	899 V 1,195 V 1,085 V 1,115 V
3D1	120/240 V 3Ø High-Leg Delta (4 wire + ground)	160 kA L-N 160 kA HL-N 160 kA L-L 160 kA L-G 160 kA HL-G 160 kA N-G 1,600 kA Total	150 V 320 V 300 V 150 V 320 V 150 V	L-N HL-N L-L L-G HL-G N-G	36 V 36 V 50 V 41 V 41 V 38 V	899 V 1,142 V 1,195 V 1,085 V 1,226 V 1,115 V
3Y2	277/480 V 3Ø Wye (4 wire + ground)	160 kA L-N 160 kA L-L 160 kA L-G 160 kA N-G 1,600 kA Total	320 V 550 V 320 V 320 V	L-N L-L L-G N-G	52 V 106 V 80 V 42 V	1,142 V 1,531 V 1,226 V 1,467 V
3N2	240 V 3Ø Delta (NN) (3 wire + ground)	160 kA L-L 160 kA L-G 960 kA Total	320 V 320 V	L-L L-G	52 V	1,226 V 1,226 V
3N4	480 V 3Ø Delta (NN) (3 wire + ground)	160 kA L-L 160 kA L-G 960 kA Total	550 V 550 V	L-L L-G	52 V	1,531 V 1,531 V

Let-through Voltage Test Parameters: Positive Polarity, Net voltages are peak (±10%). All tests are static except 150 V MCOV modes. Let-through voltages on static tests calculated by subtracting sinewave peak from let-through measured from zero. 150 V MCOV mode let-through voltages measured from the insertion point on the sinewave. Each phase is the average of the 3 modes. In order to duplicate the results, the specified mode must be tested for all three phases (except N-G) and averaged together. (Individual mode or shot results may vary by more than 10%. *Scope Settings: Time Base = 10 microseconds, Sampling Rate = 500 Megasamples/sec. These settings assure Let-through voltages test results are accurate).* ***All tests performed with 6" lead length (external to the enclosure), simulating actual installed performance.***

Model Number Example: ST-CHLA3Y2D6

Base Model: ST-CHL	SPD type: A, B	Voltage Code: See Above	Options: See Below

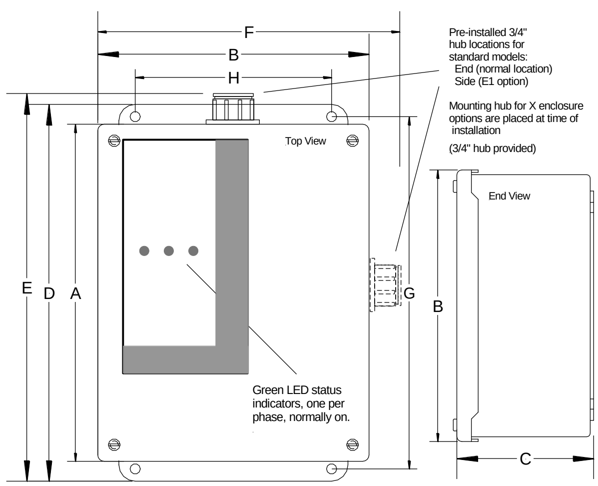
AC = Internal Audible Alarm w/ test button, mute switch and red LED
C = Form C dry relay contacts
D2 = External non-fused disconnect switch (TVSS mounts to outside)
D5 = Integral, non-fused disconnect switch (TVSS unit mounts inside)
D6 = Same as ***D5***, except no external handle
E1 = Hub on side of enclosure
LP = Remote LEDs in individual NEMA 4X housings
N = Removes neutral to ground Sinewave Tracking Circuit
P = Flush Mount Plate
R2 = Remote lights on separate circuit board in separate enclosure
S = Surge counter w/ reset button
W = NEMA 4 Steel Enclosure
X = NEMA 4X Composite Fiberglass Enclosure
XS = NEMA 4X Stainless Steel Enclosure

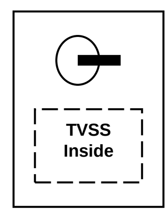
External Accessories: EACS = Externally mounted diagnostic module, combines **AC**, **C**, and **S** options
(Also available: **EAC**, **EC**, **ECS**, and **ES**) *Other options may be available upon request.*

Enclosure Dimensions			
Inches (mm)	**Standard Model**	**Enclosure Options**	
		W	**X**
A	***14.00 (356)***	***14.00 (356)***	***18.00 (458)***
B	***12.00 (305)***	***12.00 (305)***	***16.00 (407)***
C	***6.00 (153)***	***6.00 (153)***	***10.00 (254)***
D	15.50 (394)	15.50 (394)	19.50 (496)
E	15.98 (406)	15.98 (406)	19.98 (508)
F	13.23 (309)	13.23 (309)	17.23 (411)
G	14.75 (375)	14.75 (375)	18.94 (482)
H	10.00 (254)	10.00 (254)	14.00 (356)
Type	**NEMA 12 Steel**	**NEMA 4 Steel**	**NEMA 4X Composite**
lbs. (kg)	30 (13.61)	30 (13.61)	55 (24.95)

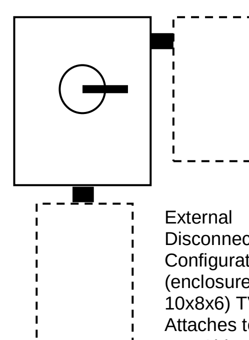
Circuit Connection: #10 AWG wire (pre-installed)

Mounting: 3/4" hub (provided) and integral feet





Integral Disconnect D5, D6 option configuration (Enclosure 24x20x10)



External Disconnect D2 Configuration (enclosure 10x8x6) TVSS Attaches to Any Side

Because we are constantly seeking to improve our products, specifications are subject to change at any time.

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