

**IN OUR WORLD,
SOME THINGS ARE
FORBIDDEN**



LA & RM Series



THE MOST ADVANCED SURGE SUPPRESSOR AVAILABLE TODAY

The **SineTamer®** series of parallel connected panel models represent the state of the art in surge suppression design and performance. The project started with one very simple goal - designing the best performing, safest, surge suppression device in the world. The design team met this goal by blended advanced computer circuit modeling with the tried and true design principals learned over the past twenty-five years. One key design goal, established at very start of the project, was that **SineTamer®** must have the absolute lowest Measured Limiting Voltage. No other performance metric is as critical to the survival of your mission critical electronics. Advanced, low impedance surge paths and high quality suppression components assure that the **SineTamer®** product will exceed your required protection levels.

Our product lines have continued to evolve to meet the widest range of needs. Our LA & RM series of panel mounted products are designed to meet the ever expanding international market requirements. We also have a complete line of Variable Frequency Drive, Programmable Logic Controller (PLC) and industrial power supply products designed specifically for these applications that will not only provide best in class surge and transient protection but work to prevent software confusion as well! Simply put the **SineTamer®** Series of surge protective devices is the absolute best suppression device available today!

LA SERIES

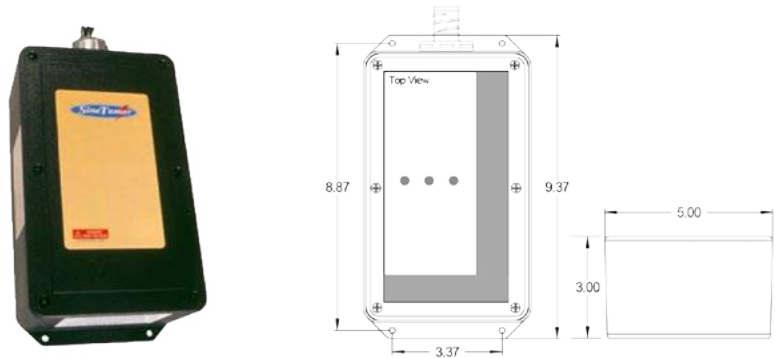
LA-ST60 / LA-ST120 / LA-ST180 / LA-ST240 / LA-ST300

The **SineTamer®** LA series of units blends outstanding high-energy “impulse” suppression with unsurpassed “ring- wave” transient protection utilizing our Frequency Attenuation Network®. This durable device is intended for general purpose and sensitive/ critical load applications. Compact size and non-metallic enclosure design also allow it to be installed directly inside electrical panels and individual equipment disconnects. The internal installation provides the absolute shortest possible lead length and optimum performance. Extremely effective in limiting internally generated transients and is an absolute must on panels feeding office locations and/or microprocessor based equipment. This economical device has features that are not available in devices costing many times its price. Its compact size makes installation a breeze.

Maintenance Free operation and 20 Year Unlimited Free Replacement Warranty provide peace of mind.

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

LA-ST60



GENERAL

DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and Frequency Attenuation Network® circuitry for virtual elimination of ring wave type transients. Unit has a 20ka per mode/60ka per phase rating.
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	20 Years Unlimited Free Replacement

PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3
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MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 4 rated enclosure.
MOUNTING	3/4” conduit conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6lbs

ELECTRICAL

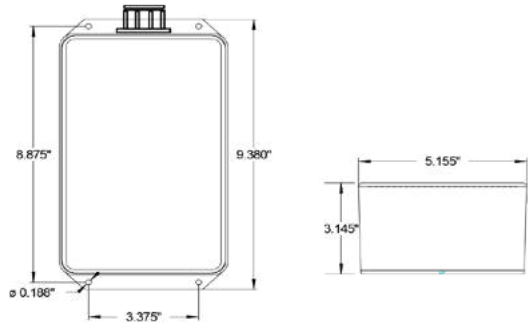
CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating discrete all mode protection (10 modes for 3 phase wye units*) and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	Dedicated protection components and circuitry for each mode. Discrete L-N, L-L (Normal Mode), and Discrete L-G, N-G (Common Mode). 10 modes / 3 phase wye system.
INPUT POWER FREQUENCY	50- 60Hz typical
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on. Dry relay contacts for remote monitoring.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal and Board Level Current Fusing
KAIC RATING	200 kAIC when installed according to installation instructions
OPTIONS	LA-STB = Type 2 20kA IN Type 1 available – contact factory for proper model number.

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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-ST601P1	120V, Single Ø (2 wire + ground)	150 L-N	20,000 L-N	L-N	45	500	914
		150 L-G	20,000 L-G	L-G	60	500	1025
		150 N-G	20,000 N-G 60,000 Total	N-G	55	500	1176
LA-ST601S1	120/240V, Split Ø (3 wire + ground)	300 L-L	20,000 L-L	L-L	75	1000	1119
		150 L-N	20,000 L-N	L-N	45	500	914
		150 L-G	20,000 L-G	L-G	60	500	1025
		150 N-G	20,000 N-G 120,000 Total	N-G	55	500	1176
LA-ST603Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	20,000 L-L	L-L	55	1000	1119
		150 L-N	20,000 L-N	L-N	45	500	914
		150 L-G	20,000 L-G	L-G	60	500	1025
		150 N-G	20,000 N-G 200,000 Total	N-G	55	500	1176
LA-ST601P2	240V, Single Ø (2 wire + ground)	320 L-N	20,000 L-N	L-N	60	1000	1050
		320 L-G	20,000 L-G	L-G	80	1000	1262
		320 N-G	20,000 N-G 60,000 Total	N-G	55	1000	1575
LA-ST603Y2	220/380V, 3ØY 277/480V, 3ØY (4 wire + ground)	550 L-L	20,000 L-L	L-L	130	1800	1344
		320 L-N	20,000 L-N	L-N	60	1000	1050
		320 L-G	20,000 L-G	L-G	80	1000	1262
		320 N-G	20,000 N-G 200,000 Total	N-G	55	1200	1575
LA-ST603N2	240V, 3ØΔ (3 wire + ground)	320 L-L	20,000 L-L	L-L	96	1000	1262
		320 L-G	20,000 L-G	L-G		1000	1262
			120,000 Total				
LA-ST603N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	20,000 L-L	L-L	140	1800	1344
		550 L-G	20,000 L-G	L-G		1800	1344
			120,000 Total				

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

LA-ST120



GENERAL

DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and Frequency Attenuation Network® circuitry for virtual elimination of ring wave type transients. Rated peak surge current of 40 ka per mode / 120 ka per phase.
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels.
WARRANTY	20 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 4 rated enclosure
MOUNTING	3/4" conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6lbs

ELECTRICAL

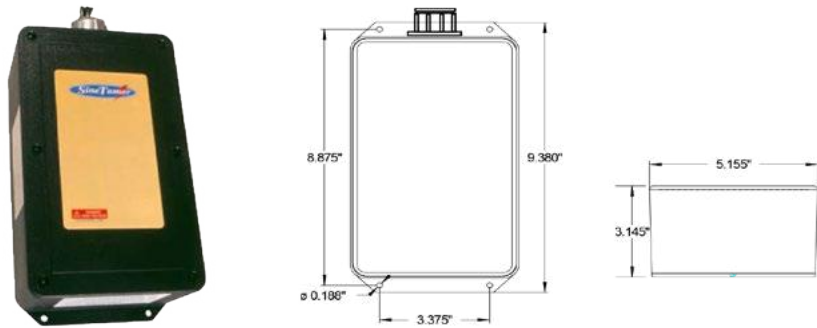
CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating discrete all mode protection (10 modes for 3 phase wye units*) and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	Dedicated protection components and circuitry for each mode. Discrete L-N, L-L (Normal Mode), and Discrete L-G, N-G (Common Mode). 10 modes / 3 phase wye system.
INPUT POWER FREQUENCY	50-420Hz constant (60Hz typical)
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on. Dry relay contacts for remote monitoring.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal and Board Level Current Fusing
KAIC RATING	200 kAIC when installed according to installation instructions
OPTIONS	LA-STB = Type 2 20kA IN Type 1 available – contact factory for proper model number.

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS							
ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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	40,000 L-N	L-N	45	500	914
		150 L-G	40,000 L-G	L-G	60	500	1025
		150 N-G	40,000 N-G	N-G	55	500	1176
		120,000 Total					
LA-ST1201S1	120/240V, Split Ø (3 wire + ground)	300 L-L	40,000 L-L	L-L	75	1000	1119
		150 L-N	40,000 L-N	L-N	45	500	914
		150 L-G	40,000 L-G	L-G	60	500	1025
		150 N-G	40,000 N-G	N-G	55	500	1176
240,000 Total							
LA-ST1203Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	40,000 L-L	L-L	55	1000	1119
		150 L-N	40,000 L-N	L-N	45	500	914
		150 L-G	40,000 L-G	L-G	60	500	1025
		150 N-G	40,000 N-G	N-G	55	500	1176
400,000 Total							
LA-ST1201P2	240V, Single Ø (2 wire + ground)	320 L-N	40,000 L-N	L-N	60	1000	1050
		320 L-G	40,000 L-G	L-G	80	1000	1262
		320 N-G	40,000 N-G	N-G	55	1000	1575
120,000 Total							
LA-ST1203Y2	220/380V, 3ØY 277/480V, 3ØY (4 wire + ground)	550 L-L	40,000 L-L	L-L	130	1800	1344
		320 L-N	40,000 L-N	L-N	60	1000	1050
		320 L-G	40,000 L-G	L-G	80	1000	1262
		320 N-G	40,000 N-G	N-G	55	1200	1575
400,000 Total							
LA-ST1203N2	240V, 3ØΔ (3 wire + ground)	320 L-L	40,000 L-L	L-L	96	1000	1262
		320 L-G	40,000 L-G	L-G		1000	1262
240,000 Total							
LA-ST1203N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	40,000 L-L	L-L	140	1800	1344
		550 L-G	40,000 L-G	L-G		1800	1344
240,000 Total							

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current testing for all modes at rated currents, is in compliance with NEMA LS 1-1992. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

LA-ST180



GENERAL

DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and sine-wave tracking circuitry (60kA per mode or 180 ka per phase - peak surge current) for virtual elimination of impulse and ring wave type transients.
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	20 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, Nema 1 rated
MOUNTING	3/4" conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire // 2.60 mm dia.

SHIPPING WEIGHT	≈ 6 lbs // 2.7 kg
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ELECTRICAL

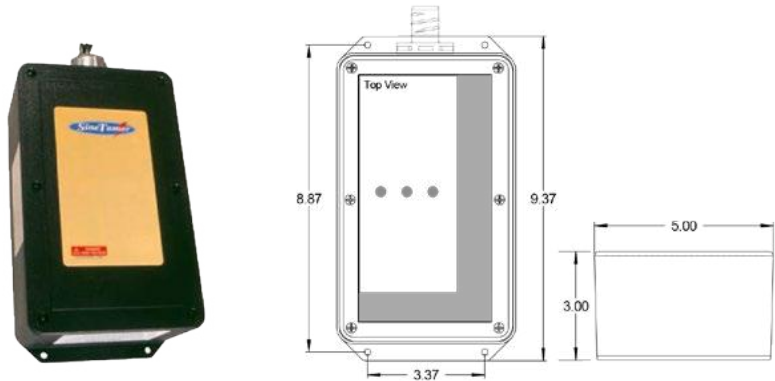
CIRCUIT DESIGN	Parallel connected, internal thermal fusing, hybrid design incorporating discrete all mode protection (10 modes for 3 phase wye units*) and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	Dedicated protection components and circuitry for each mode. Discrete L-N, L-L (Normal Mode), and Discrete L-G, N-G (Common Mode). 10 modes / 3 phase wye system.
INPUT POWER FREQUENCY	50-60Hz
OPTIONS	-S surge counter, -C dry relay contacts NO/NC; LA-STB = Type 2 20kA IN Type 1 available – contact factory for proper model number.
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on. Dry relay contacts for remote monitoring.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Line level and component level thermal cutouts (see installation sheet for full details)

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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-ST1801P1	120V, Single Ø (2 wire + ground)	150 L-N	60,000 L-N	L-N	45	500	914
		150 L-G	60,000 L-G	L-G	60	500	1025
		150 N-G	60,000 N-G 180,000 Total	N-G	55	500	1176
LA-ST1801S1	120/240V, Split Ø (3 wire + ground)	300 L-L	60,000 L-L	L-L	75	1000	1119
		150 L-N	60,000 L-N	L-N	45	500	914
		150 L-G	60,000 L-G	L-G	60	500	1025
		150 N-G	60,000 N-G 300,000 Total	N-G	55	500	1176
LA-ST1803Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	60,000 L-L	L-L	55	1000	1119
		150 L-N	60,000 L-N	L-N	45	500	914
		150 L-G	60,000 L-G	L-G	60	500	1025
		150 N-G	60,000 N-G 300,000 Total	N-G	55	500	1176
LA-ST1801P2	240V, Single Ø (2 wire + ground)	320 L-N	60,000 L-N	L-N	60	1000	1050
		320 L-G	60,000 L-G	L-G	80	1000	1262
		320 N-G	60,000 N-G 180,000 Total	N-G	55	1000	1575
LA-ST1803Y2	277/480V, 240/415V, 220/380V, 3ØY (4 wire + ground)	550 L-L	60,000 L-L	L-L	130	1800	1344
		320 L-N	60,000 L-N	L-N	60	1000	1050
		320 L-G	60,000 L-G	L-G	80	1000	1262
		320 N-G	60,000 N-G 600,000 Total	N-G	55	1200	1575
LA-ST1803N2	240V, 3ØΔ (3 wire + ground)	320 L-L	60,000 L-L	L-L	95	1000	1262
		320 L-G	60,000 L-G 360,000 Total	L-G		1000	1262
LA-ST1803N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	60,000 L-L	L-L	140	1800	1344
		550 L-G	60,000 L-G 360,000 Total	L-G		1800	1344

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

LA-ST240



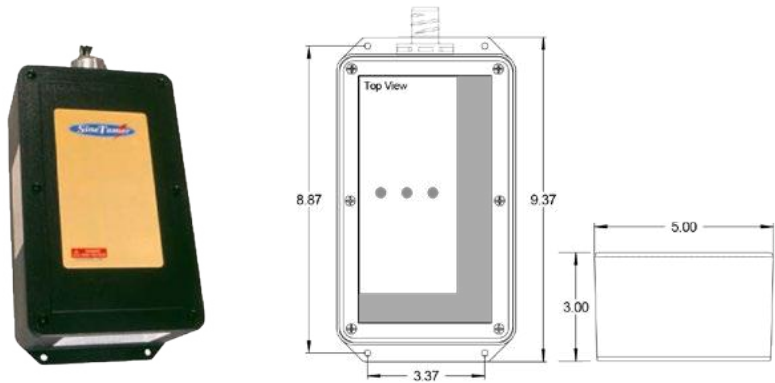
GENERAL	
DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and sine-wave tracking circuitry for virtual elimination of impulse and ring wave type transients. Peak surge current of 240 ka per phase or 80 ka per mode.
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	20 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3
MECHANICAL	
ENCLOSURE	High strength ABS Plastic, Nema 1 and IP66 rated
MOUNTING	3/4” conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6 lbs
ELECTRICAL	
CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating discrete all mode protection (10 modes for 3 phase wye units*) and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive 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 L-N, L-L (Normal Mode), and Discrete L-G, N-G (Common Mode). 10 modes / 3 phase wye system.
INPUT POWER FREQUENCY	50- 60Hz
EMI/RFI NOISE ATTENUATION	40dB Max. from 1kHz to 10MHz (normal and common mode)
OPTIONS	LA-STB = Type 2 20kA IN Type 1 available – contact factory for proper model number.
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Line level and component level thermal cutouts (see installation sheet for full details)
OPTIONS	-V Remove Frequency Attenuation; -S Surge Counter; -C Dry Relay Contacts, Other options available. Call!

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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-ST2401P1	120V, Single Ø (2 wire + ground)	150 L-N	80,000 L-N	L-N	45	500	914
		150 L-G	80,000 L-G	L-G	60	500	1025
		150 N-G	80,000 N-G 240,000 Total	N-G	55	500	1176
LA-ST2401S1	120/240V, Split Ø (3 wire + ground)	300 L-L	80,000 L-L	L-L	75	1000	1119
		150 L-N	80,000 L-N	L-N	45	500	914
		150 L-G 150 N-G	80,000 L-G 80,000 N-G 480,000 Total	L-G N-G	60 55	500 500	1025 1176
LA-ST2403Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	80,000 L-L	L-L	55	1000	1119
		150 L-N	80,000 L-N	L-N	45	500	914
		150 L-G 150 N-G	80,000 L-G 80,000 N-G 800,000 Total	L-G N-G	60 55	500 500	1025 1176
LA-ST2401P2	240V, Single Ø (2 wire + ground)	320 L-N	80,000 L-N	L-N	60	1000	1050
		320 L-G	80,000 L-G	L-G	80	1000	1262
		320 N-G	80,000 N-G 240,000 Total	N-G	55	1000	1575
LA-ST2403Y2	277/480V, 3ØY 220/380V, 3ØY (4 wire + ground)	550 L-L	80,000 L-L	L-L	130	1800	1344
		320 L-N	80,000 L-N	L-N	60	1000	1050
		320 L-G 320 N-G	80,000 L-G 80,000 N-G 800,000 Total	L-G N-G	80 55	1000 1200	1262 1575
LA-ST2403N2	240V, 3ØΔ (3 wire + ground)	320 L-L	80,000 L-L	L-L	95	1000	1262
		320 L-G	80,000 L-G	L-G		1000	1262
			480,000 Total				
LA-ST2403N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	80,000 L-L	L-L	140	1800	1344
		550 L-G	80,000 L-G	L-G		1800	1344
			480,000 Total				

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

LA-ST300



GENERAL

DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and Frequency Attenuation Network® circuitry for virtual elimination of ring wave type transients. Unit has 300 ka per phase – 100 ka per mode peak surge current.
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	20 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 1 rated enclosure.
MOUNTING	3/4” conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6 lbs

ELECTRICAL

CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating discrete all mode protection (10 modes for 3 phase wye units*) and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive 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 L-N, L-L (Normal Mode), and Discrete L-G, N-G (Common Mode). 10 modes / 3 phase wye system.
INPUT POWER FREQUENCY	50- 60Hz
EMI/RFI NOISE ATTENUATION	40dB Max. from 1kHz to 10MHz (normal and common mode)
JOULES	8800 (based on industry accepted 10/1000 wave shape testing)
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal and Board Level Current Fusing
OPTIONS	-V Remove Frequency Attenuation; -S Surge Counter; -C Dry Relay Contacts, Other options available. Call!

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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-ST3001P1	120V, Single Ø (2 wire + ground)	150 L-N	100,000 L-N	L-N	45	500	914
		150 L-G	100,000 L-G	L-G	60	500	1025
		150 N-G	100,000 N-G 300,000 Total	N-G	55	500	1176
LA-ST3001S1	120/240V, Split Ø (3 wire + ground)	300 L-L	100,000 L-L	L-L	75	1000	1119
		150 L-N	100,000 L-N	L-N	45	500	914
		150 L-G 150 N-G	100,000 L-G 100,000 N-G 600,000 Total	L-G N-G	60 55	500 500	1025 1176
LA-ST3003Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	100,000 L-L	L-L	55	1000	1119
		150 L-N	100,000 L-N	L-N	45	500	914
		150 L-G 150 N-G	100,000 L-G 100,000 N-G 1,000,000 Total	L-G N-G	60 55	500 500	1025 1176
LA-ST3001P2	240V, Single Ø (2 wire + ground)	320 L-N	100,000 L-N	L-N	60	1000	1050
		320 L-G	100,000 L-G	L-G	80	1000	1262
		320 N-G	100,000 N-G 300,000 Total	N-G	55	1000	1575
LA-ST3003Y2	220/380V, 3ØY 277/480V, 3ØY (4 wire + ground)	550 L-L	100,000 L-L	L-L	130	1800	1344
		320 L-N	100,000 L-N	L-N	60	1000	1050
		320 L-G 320 N-G	100,000 L-G 100,000 N-G 1,000,000 Total	L-G N-G	80 55	1000 1200	1262 1575
LA-ST3003N2	240V, 3ØΔ (3 wire + ground)	320 L-L	100,000 L-L	L-L	95	1000	1262
		320 L-G	100,000 L-G 600,000 Total	L-G		1000	1262
LA-ST3003N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	100,000 L-L	L-L	140	1800	1344
		550 L-G	100,000 L-G 600,000 Total	L-G		1800	1344

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.



“Surge Protection is Our Business”

RM SERIES

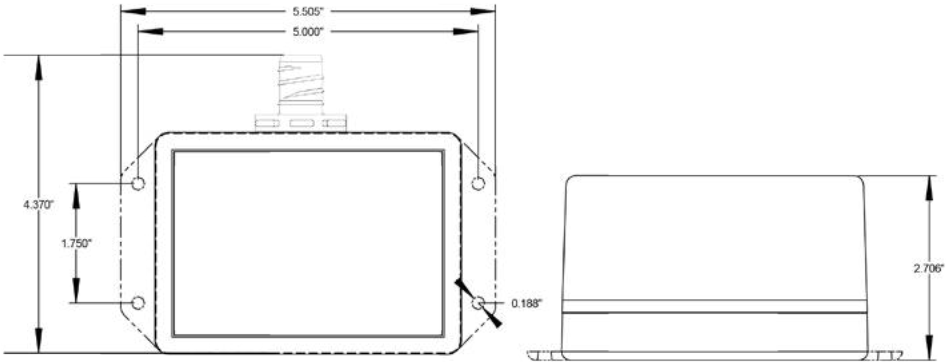
RM-ST40 / RM-ST60 / RM-ST120 / RM-ST180

The **SineTamer®** RM series of units blends outstanding high-energy “impulse” suppression with excellent “ring-wave” transient protection. This durable device is intended for general purpose and sensitive/critical load applications. Compact size and non-metallic enclosure design also allow it to be installed directly inside electrical panels and individual equipment disconnects. The internal installation provides the absolute shortest possible lead length and optimum performance. Extremely effective in limiting internally generated transients and is an absolute must on panels feeding office locations and/or microprocessor based equipment. This economical device has features that are not available in devices costing many times its price. Its compact size makes installation a breeze.

Maintenance Free operation and 15 Year Unlimited Free Replacement Warranty provide peace of mind.

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

RM-ST40



GENERAL	
DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and sine-wave tracking circuitry for virtual elimination of impulse and ring wave type transients. (actively tracking the AC sine wave)
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	15 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	ISO 9001:2008, ANSI C62.72-2007
MECHANICAL	
ENCLOSURE	ABS Plastic, UL94-0
MOUNTING	3/4" conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 3 lbs
ELECTRICAL	
CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating all mode protection, and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	L-N, L-L (Normal Mode), and L-G, N-G (Common Mode). (Seven discrete modes)
INPUT POWER FREQUENCY	50- 60Hz constant
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CAPACITANCE	Up to 3.5 uF Max.
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal Fusing/Phase Level Current Fusing

MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS						
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode/Phase	Mode	ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results	
					A1 2kV, 67A 100KHz Ring Wave 270° Phase Angle	B3/C1 20kV, 10kA Impulse Wave 90° Phase Angle
RM-ST402N1	120V, 2Ø (2 wire + ground)	150 L-L	20,000 / 40,000	L-L	55	445
		150 L-G		L-G		445
RM-ST402N1	120/240V, Split Ø (3 wire + ground)	300 L-L	20,000 / 40,000	L-L	55	1001
		150 L-N		L-N	45	442
		150 L-G		L-G	55	469
		150 N-G		L-G	50	597
RM-ST402N1	240V, 1Ø (2 wire + ground)	320 L-N	20,000 / 40,000	L-N	96	585
		320 L-G		L-G	96	585
RM-ST403Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	20,000 / 40,000	L-L	55	1001
		150 L-N		L-N	45	442
		150 L-G		L-G	55	469
		150 N-G		N-G	50	597
RM-ST403Y2	277/480V, 3ØY 220/380V, 3ØY (4 wire + ground)	550 L-L	20,000 / 40,000	L-L	130	925
		320 L-N		L-N	60	585
		320 L-G		L-G	80	592
		320 N-G		N-G	50	1000
RM-ST403N2	240V, 3ØΔ (3 wire + ground)	320 L-L	20,000 / 40,000	L-L	96	585
		320 L-G		L-G		585
RM-ST403N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	20,000 / 40,000	L-L	140	925
		550 L-G		L-G		925

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

RM-ST60

GENERAL

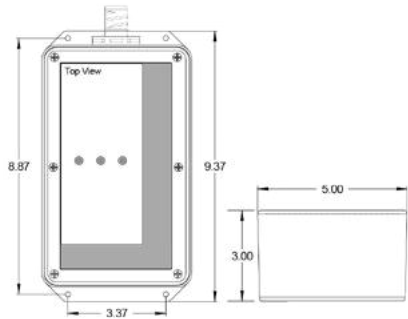
DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and sine-wave tracking circuitry for virtual elimination of impulse and ring wave type transients. (actively tracking the AC sine wave)
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	15 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 1 (IP67) rated enclosure.
MOUNTING	3/4” conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6 lbs

ELECTRICAL

CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating all mode protection, and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	L-N, L-L (Normal Mode), and L-G, N-G (Common Mode). (Seven discrete modes)
INPUT POWER FREQUENCY	50- 60Hz constant
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CAPACITANCE	Up to 3.5 uF Max.
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
TEMPERATURE RATING	Up to 80°C
HUMIDITY	0-99% Non-condensing
ENERGY CONSUMPTION	12mA Total (Approximately 4mA per LED)
FUSING	Component Level Thermal and Board Level Current Fusing
KAIC RATING	200 kAIC when installed according to installation instructions
OPTIONS	-V Remove Frequency Attenuation; -S Surge Counter; -C Dry Relay Contacts, Other options available. Call!



MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results

Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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
RM-ST601P1	120V, Single Ø (2 wire + ground)	150 L-N	20,000 / 40,000	L-N	70	500	925
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	60	500	1200
RM -ST601S1	120/240V, Split Ø (3 wire + ground)	300 L-L	20,000 / 40,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM-ST603Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	20,000 / 40,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM -ST601P2	240V, Single Ø (2 wire + ground)	320 L-N	20,000 / 40,000	L-N	96	1000	1050
		320 L-G		L-G	100	1000	1290
		320 N-G		N-G	100	1000	1290
RM -ST603Y2	277/480V, 3ØY 220/380V, 3ØY (4 wire + ground)	550 L-L	20,000 / 40,000	L-L	135	1800	1400
		320 L-N		L-N	96	1000	1050
		320 L-G		L-G	100	1000	1400
		320 N-G		N-G	100	1200	1575
RM -ST603N2	240V, 3ØΔ (3 wire + ground)	320 L-L	20,000 / 40,000	L-L	96	1000	1275
		320 L-G		L-G		1000	1275
RM -ST603N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	20,000 / 40,000	L-L	140	1800	1375 1375
		550 L-G		L-G		1800	

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

RM-ST120

GENERAL

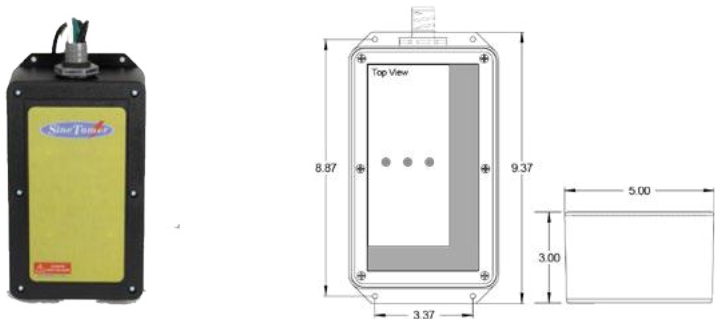
DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and Frequency Attenuation Network® circuitry for virtual elimination of impulse and ring wave type transients. (tracking and monitoring the AC sine wave)
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	15 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 1 rated enclosure.
MOUNTING	3/4” conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6 lbs

ELECTRICAL

CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating all mode protection, and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	L-N, L-L (Normal Mode), and L-G, N-G (Common Mode). (Seven discrete modes)
INPUT POWER FREQUENCY	50- 60Hz constant
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal Fusing/Phase Level Current Fusing
KAIC RATING	200 kAIC when installed according to installation instructions
OPERATING TEMPERATURE	-15° C to 80° C
OPTIONS	-V Remove Frequency Attenuation; -S Surge Counter; -C Dry Relay Contacts, Other options available. Call!



MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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
RM-ST1201P1	120V, Single Ø (2 wire + ground)	150 L-N	40,000 / 80,000	L-N	70	500	925
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	60	500	1200
RM -ST1201S1	120/240V, Split Ø (3 wire + ground)	300 L-L	40,000 / 80,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM-ST1203Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	40,000 / 80,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM -ST1201P2	240V, Single Ø (2 wire + ground)	320 L-N	40,000 / 80,000	L-N	96	1000	1050
		320 L-G		L-G	100	1000	1290
		320 N-G		N-G	100	1000	1290
RM -ST1202N4	480V, Single Ø (2 wire + ground)	550 L-L	40,000 / 80,000	L-L	140	1800	1375
		550 L-G		L-G		1800	1375
RM -ST1203Y2	220/380V, 3ØY 277/480V, 3ØY (4 wire + ground)	550 L-L	40,000 / 80,000	L-L	135	1800	1400
		320 L-N		L-N	96	1000	1050
		320 L-G		L-G	100	1000	1400
		320 N-G		N-G	100	1200	1575
RM -ST1203N2	240V, 3ØΔ (3 wire + ground)	320 L-L	40,000 / 80,000	L-L	96	1000	1275
		320 L-G		L-G		1000	1275
RM -ST1203N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	40,000 / 80,000	L-L	140	1800	1375
		550 L-G		L-G		1800	1375

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

RM-ST180

GENERAL

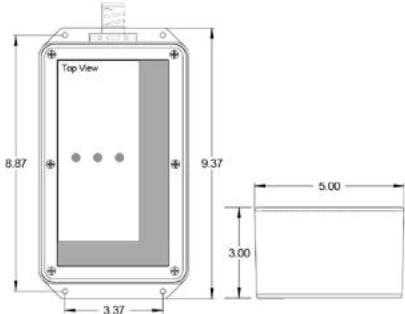
DESCRIPTION	Parallel connected, transient voltage surge suppressor device utilizing both high-energy handling and Frequency Attenuation Network® circuitry for virtual elimination of impulse and ring wave type transients. (tracking and monitoring the AC sine wave)
APPLICATION	Designed for use at ANSI/IEEE Categories C, B and A with susceptibility up to medium exposure levels. Designed to protect sensitive/critical loads fed from distribution panels, branch panels and/or individual equipment panels.
WARRANTY	15 Years Unlimited Free Replacement
PRODUCT QUALIFICATIONS	Listed to ANSI/UL 1449-2006 (3rd Edition) by UL. ML record: E363345; UL1283* and CE Compliant (* Type 2 SPDs only) ISO 9001:2008, ANSI C62.72-2007, IEC 61643-1 Class 2&3

MECHANICAL

ENCLOSURE	High strength ABS Plastic, NEMA 1 rated enclosure.
MOUNTING	3/4" conduit fitting (internally threaded) and external mounting feet.
CONNECTION METHOD	#10 stranded wire.
SHIPPING WEIGHT	≈ 6 lbs

ELECTRICAL

CIRCUIT DESIGN	Parallel connected, internally fused, hybrid design incorporating all mode protection, and utilizing our encapsulated design to provide improved durability. All suppression circuits are encapsulated in our exclusive compound to assure long component life and complete protection from the environment and/or vibration.
PROTECTION MODES	L-N, L-L (Normal Mode), and L-G, N-G (Common Mode). (Seven discrete modes)
INPUT POWER FREQUENCY	50- 60Hz constant
OPTIONS	RM-STB = Type 2 20kA IN Type 1 available – contact factory for proper model number.
EMI/RFI NOISE ATTENUATION	30dB Max. from 1kHz to 10MHz
CIRCUIT DIAGNOSTICS	Super Bright LED, 1 per phase, normally on.
CIRCUIT INTERRUPT	External and internal (see installation instructions for details).
FUSING	Component Level Thermal Fusing/Phase Level Current Fusing
KAIC RATING	200 kAIC when installed according to installation instructions
OPERATING TEMPERATURE	-15° C to 80° C
OPTIONS	-V Remove Frequency Attenuation; -S Surge Counter; -C Dry Relay Contacts, Other options available. Call!



MEASURED LIMITING VOLTAGE PERFORMANCE AND ELECTRICAL SPECIFICATIONS

ANSI/IEEE C62.41 & C62.45 Let-Through Voltage Test Results							
Model	Circuit Type	MCOV	Peak Surge Current (Amps) Per Mode	Mode	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
RM-ST1801P1	120V, Single Ø (2 wire + ground)	150 L-N	60,000 / 120,000	L-N	70	500	925
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	60	500	1200
RM -ST1801S1	120/240V, Split Ø (3 wire + ground)	300 L-L	60,000 / 120,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM-ST1803Y1	120/208V, 3ØY (4 wire + ground)	300 L-L	60,000 / 120,000	L-L	80	1000	1200
		150 L-N		L-N	75	500	914
		150 L-G		L-G	85	500	1200
		150 N-G		N-G	65	500	1200
RM -ST1801P2	240V, Single Ø (2 wire + ground)	320 L-N	60,000 / 120,000	L-N	96	1000	1050
		320 L-G		L-G	100	1000	1290
		320 N-G		N-G	100	1000	1290
RM -ST1802N4	380V, 2ØΔ 480V, 2ØΔ (2 wire + ground)	550 L-L	60,000 / 120,000	L-L	140	1800	1375
		550 L-G		L-G		1800	1375
RM -ST1803Y2	220/380V, 3ØY 277/480V, 3ØY (4 wire + ground)	550 L-L	60,000 / 120,000	L-L	140	1800	1400
		320 L-N		L-N	96	1000	1050
		320 L-G		L-G	100	1000	1400
		320 N-G		N-G	100	1200	1575
RM -ST1803N2	240V, 3ØΔ (3 wire + ground)	320 L-L	60,000 / 120,000	L-L	96	1000	1275
		320 L-G		L-G		1000	1275
RM -ST1803N4	380V, 3ØΔ 480V, 3ØΔ (3 wire + ground)	550 L-L	60,000 / 120,000	L-L	140	1800	1375
		550 L-G		L-G		1800	1375

Let-Through Voltage Test Environment: Positive Polarity. Time base=1ms. All voltages are peak (±10%). Surge voltages are measured from the insertion point of surge on the sine wave to the peak of the surge. All tests are Dynamic (voltage applied) except N-G which is static (no voltage applied). All tests were performed with 6 inches of lead length outside the device enclosure which simulates actual “as installed” performance. Single-pulse, surge current capacities of 200,000 amps or less are determined by single-unit testing of all components within each mode. Present industry test equipment limitations require testing of individual components or sub-assemblies within a mode for single-pulse, surge current capacities over 200,000 amps.

