

Model: CMLx

300 kA Per Phase*
ANSI/UL 1449

A = Type 2 SPD, I_n = 10 kA
B = Type 2 SPD, I_n = 20 kA



* Based on 3 Phase Wye, 4 Wire and Ground
 I_n = Nominal Discharge Current per ANSI/UL 1449-2006

Key Features

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



Application: The CMLx 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 the facility. The constant bombardment of this combination of 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 **Frequency Responsive Circuitry and Voltage Responsive Circuitry** circuit design incorporating component-level, thermal fusing and circuit board mounted, **Patented** internal over-current fusing methodology with 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 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	52 dB	21 dB	55 dB @ 106 kHz

Standard Enclosure: NEMA 1 Rated Standard Enclosure
 (Other enclosure options available see pg. 2)

Nominal Discharge Current (I_n) Rating: 10 kA (CMLA), 20 kA (CMLB**)
 (**Complies with the requirements of UL 96A Master Label for Installation Requirements for Lightning Protection Systems)

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.
 Note: National and local codes may require the use of a circuit interrupt device(s) if conduit is added to make the wired connection to the panel or gear.)

Short Circuit Current Rating: 200 kAIC

Product Qualifications:
 Listed to ANSI/UL 1449 by UL (E340498), CSA (MC#241804); UL1283
 ISO 9001 Certified Manufacturing Facility by NQA

Voltage Code	ANSI/UL 1449 Voltage Protection Rating (VPR)						
	L-N	HL-N	L-G	HL-G	N-G	L-L	HL-L
1S1	600	-	600	-	700	1000	-
3Y1	600	-	600	-	700	1000	-
3D1	600	1200	600	1200	700	1000	1000
3Y2	1200	-	1200	-	1000	1800	-
3N2	-	-	1200	-	-	1000	-
3N4	-	-	1800	-	-	1800	-

Voltage Code*	Circuit Type	Peak Surge Current	MCOV	ANSI/IEEE C62.41.1™-2002, C62.45™-2000 and C62.62™-2010 Measured Limiting Voltages (tested with 6 inches of lead length external to the enclosure per C62.62™-2010 and ANSI/UL 1449)		
				Test Mode	Cat A, 30 Ω 100 kHz Ring Wave 2 kV / 67 A @ 270° Phase Angle	Category C (High) 10 kA 8/20 Current Driven Test†
1S1	120/240 V 1Ø (Split) (3 wire + ground)	100 kA L-N	150 V	L-N	27 V	1,068 V
		100 kA L-L	300 V	L-L	35 V	1,381 V
		100 kA L-G	150 V	L-G	60 V	1,048 V
		100 kA N-G	150 V	N-G	60 V	1,431 V
		600 kA Total				
3Y1	120/208 V 3Ø Wye (4 wire + ground)	100 kA L-N	150 V	L-N	27 V	1,068 V
		100 kA L-L	300 V	L-L	35 V	1,381 V
		100 kA L-G	150 V	L-G	60 V	1,048 V
		100 kA N-G	150 V	N-G	60 V	1,431 V
		1,000 kA Total				
3D1	120/240 V 3Ø High-Leg Delta (4 wire + ground)	100 kA L-N	150 V	L-N	27 V	1,068 V
		100 kA HL-N	320 V	HL-N	57 V	1,334 V
		100 kA L-L	300 V	L-L	35 V	1,381 V
		100 kA L-G	150 V	L-G	60 V	1,048 V
		100 kA HL-G	320 V	HL-G	77 V	1,304 V
		100 kA N-G	150 V	N-G	60 V	1,431 V
3Y2	277/480 V 3Ø Wye (4 wire + ground)	100 kA L-N	320 V	L-N	57 V	1,334 V
		100 kA L-L	550 V	L-L	63 V	1,981 V
		100 kA L-G	320 V	L-G	77 V	1,304 V
		100 kA N-G	320 V	N-G	69 V	1,721 V
		1,000 kA Total				
3N2	240 V 3Ø Delta (NN) (3 wire + ground)	100 kA L-L	320 V	L-L	34 V	1,381 V
		100 kA L-G	320 V	L-G	1,058 V	1,304 V
3N4	480 V 3Ø Delta (NN) (3 wire + ground)	100 kA L-L	550 V	L-L	104 V	1,981 V
		100 kA L-G	550 V	L-G	1,559 V	2,144 V

Measured Limiting Voltage (MLV) Test Parameters: Positive polarity, Category A: Line power applied, Category C: No line power applied, Voltages are peak (±10%). Measured Limiting Voltages are measured from the insertion point on the sine wave to the peak of the surge for powered tests. Each MLV is the average of all phases within that mode of protection. To duplicate the results, the specified mode of protection must be tested in all phases (except N-G) and averaged together. (Individual mode or shot results may vary by more than 10%). Scope Settings: Time Base = 10 microseconds per division, Sampling Rate = 2.5 GigaSamples/sec, Bandwidth = 400 MHz (200 MHz for Cat C), Probes: Tektronix P5100/P6015A. These settings help to assure MLV results are accurate. **All tests performed with 6" lead length (external to the enclosure), simulating actual installed performance.** The MLVs reported above are certified by Third-Party, Independent Testing. Individual test reports are available upon request.

†The MLV reported for the Category C High, 10 kA 8/20 Current Driven Test is determined by measuring the MLV of one of the fifteen 10 kA impulses impressed through the SPD during the Nominal Discharge Current (In) Test from C62.62TM-2010 and ANSI/UL 1449-2006. This is not the MLV recorded during the pre- and/or post-test 6 kV / 3 kA Combination Wave Test used to determine the VPR of the SPD. The VPRs are reported on page 1 of this specification.

*Other voltage configurations may be available. Contact your sales representative for additional assistance.

Model Number Example: CMLA3Y2D3

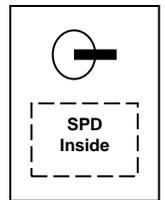
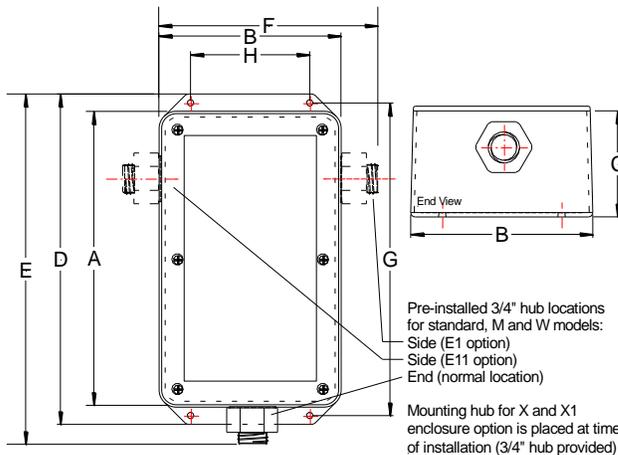
Base Model:	SPD Type and Nominal Discharge Current (In) Rating:	Voltage Code:	Options:
CML	A = Type 2 SPD, In = 10 kA B = Type 2 SPD, In = 20 kA	See Voltage Codes 3Y2	See Option codes D3

- AC10** = Basic Internal Audible Alarm
 - AC11** = Advanced Internal Audible Alarm w/ on, off, and test
 - AC** = Internal Audible Alarm w/ test button, mute switch and red LED
 - AC1** = AC Option w/ Dry Relay Contacts Prewired
 - C** = Form C dry relay contacts
 - C1** = C Option w/ Dry Relay Contacts Prewired
 - D1 (CSA)** = Integral, non-fused disconnect switch (SPD unit mounts inside)
 - D3 (CSA)** = Same as **D1**, except no external handle
 - LP** = Remote LED indicators in individual NEMA 4X housings
 - S6** = Basic Internal Surge Counter*
 - S** = Surge Counter with Reset Button**
- *This option not available with AC Option
**This option not available with AC10 or AC11 Options

- P** = Flush Mount Plate
- R2** = Remote lights on separate circuit board in separate enclosure
- E1** = Hub on upper right side of enclosure
- M** = NEMA 12 Steel Enclosure
- W** = NEMA 4 Steel Enclosure
- X** = NEMA 4X Composite Enclosure (Box-in-box)
- X1** = NEMA 4X Composite Enclosure with Clear Lid (Box-in-box)
- X2** = NEMA 1, 2, 3, 3S, 4, 4X and 12 composite enclosure
- XS** = NEMA 4X Stainless Steel Enclosure
- X3** = NEMA 4X Composite Enclosure (10" x 8" x 4")

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 by request.

Enclosure Dimensions				
Inches (mm)	Standard Model	Enclosure Options		
		M	W	X, X1
A	8.25 (210)	10.00 (254)	10.00 (254)	12.00 (305)
B	5.00 (127)	8.00 (204)	8.00 (204)	10.50 (267)
C	3.00 (77)	4.00 (102)	4.00 (102)	6.00 (153)
D	9.37 (238)	11.50 (293)	11.50 (293)	12.50 (318)
E	9.48 (242)	12.00 (305)	12.00 (305)	13.23 (337)
F	6.23 (159)	9.00 (229)	9.00 (229)	11.73 (299)
G	8.87 (226)	10.75 (274)	10.75 (274)	12.00 (305)
H	3.37 (86)	6.00 (153)	6.00 (153)	8.00 (204)
Type	NEMA 1 ABS	NEMA 12 Steel	NEMA 4 Steel	NEMA 4X Composite
lbs (kg)	5 (2.27)	14 (6.36)	14 (6.36)	11 (4.99)



Integral Disconnect
D1, D3 option configuration
(Enclosure 12x10x6)
(CSA)

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

Flush mount trim plate available for standard and "M" option models.