



**Benefits:**

- UL 1449 Fourth Edition Recognized
- 100kA – 300kA per phase ratings
- All UL required OCP & Safety Coordination included inside
  - Type 1 SPDs intended for Line or Load Side of Main Disconnect
  - Type 2 SPDs intended for Load Side of Main Disconnect
- 20kA Inominal ( $I_n$ )
- 200kA SCCRs (most models)
- UL 96A Lightning Protection Master Label compliant
- Voltage Specific Design – Highly configurable
- All MOV suppression elements monitored
- All Modes of Protection
- Display on 28" cable
- 10 Year Warranty (longer optional)

**Performance Specifications**

Surge Capacities	L-N	L-G	N-G
100kA Per Phase	50kA	50kA	50kA
150kA Per Phase	100kA	50kA	50kA
200kA Per Phase	100kA	100kA	100kA
250kA Per Phase	150kA	100kA	100kA
300kA Per Phase	150kA	150kA	150kA
UL 1449 4th Edition Recognized Type 1 CA, CSA 22.2 No. 269.4-1			
Optional UL 1449 4th Edition Type 2 CA, UL 1283 Recognized, CSA 22.2 No. 269.4-2			
UL 1449 Fourth Edition tested Inominal ( $I_n$ ): 20kA			
UL 1449 Fourth Edition tested SCCR: 200kA & 100kA			
UL 1449 Fourth Edition Voltage Protection Ratings (VPRs):			
– 208Y/120V: as low as 600V			
– 480Y/277V: as low as 1000V			
AC Sinewave Tracking Filter with EMI/RFI Filtering up to -50dB from 10kHz to 100MHz (Type 2 option only, incl. UL 1283 Rec.)			
Repetitive Impulse: 5,000 hits			
Less than 1 nanosecond response time			

**Diagnostic Monitoring**

100% monitoring – Every MOV is monitored, including N-G
Green LED Status indicator per phase
Red LED service indicator
Audible Alarm with Silence Switch
Test Function: Toggles Red Service LED, Audible Alarm & Dry Contact
N-G overvoltage detection
Phase Loss monitoring (toggles LED & dry contacts)
Electrically isolated circuitry ensures surges do not damage diagnostics
Form C Dry Contacts, 240V, 5A (two sets)
Optional Surge Counter, six-digit LCD, with test function, reset & no-maintenance Eprom memory
Installer-locatable display on 28" cable

**Design Attributes**

Designed, Manufactured & Tested consistent with:
– ANSI/IEEE C62.41.1-2002, C62.41.2-2002, C62.45-2002, C62.62-2010, C62.72-2016, IEEE SA 1100-2005 (Emerald Book)
– NEC® Article 285
– NEC® Articles 620.51(E), 645.18, 670.6, 695.15, 700.8 & 708 requiring SPDs
– UL 96A and NFPA 780 Lightning Protection
– IEC 61643, CE
High Energy Parallel Design for Category C-High applications
For Mounting Internal to Switchgear, Motor Controls Centers, Panelboards or Control Panels
Individually Fused & Thermally Protected MOVs
Large-Block, 34mm square, 50kA MOVs
Replaceable Module Construction
Solid State Bidirectional Operation

**Physical Specifications**

Relative Humidity Range: 0 - 95% non-condensing
Operating Frequency: 47 - 63Hz
Operating Temperature: -25°C (-15°F) to +60°C (140°F)
Weight: 5 lbs (2.3 kg)
Standard size: 6.5" x 11" x 4.5" (16.5cm x 29.9cm x 11.4cm)
Lug size: #2 - #14 AWG (w/opt. disconnect: #6 - #1/0)
Typical connection: #6 AWG and 60A breaker

**Quality, Standards & Validation**

Type 1: UL 1449 4th Edition, CSA 22.2 No. 269.4-1
Type 2 (Opt.): UL 1449 4th Edition, CSA No. 269.4-2, UL 1283 Rec.
UL file: VZCA.E321351 at www.UL.com
RoHS-compliant
Burn-In tested prior to shipment
ISO 9001:2008 Quality Management System
ISO 17025:2005 Laboratory Qualification

# Model 450 Number Configurator & Options

**450**  
Model 450  
Product Line

□□□□  
Voltage Codes

**P**  
Per Phase  
kA Rating  
System

□□  
kA Rating  
Per Phase

□  
Modes of  
Protection

□  
Connection  
Type

□  
Monitoring  
Options

**N**  
Enclosure  
(Default)

□  
UL 1449  
Type1/Type 2

**0**  
Accessory/  
Option(s)

## Common Systems

- 120S = 240/120V Split Phase - 1Ø, 3W+Grnd, (Fig 1)
- 120Y = 208Y/120V Wye - 3Ø 4W+Grnd, (Fig 2)
- 240H = 240/120V High Leg Delta (B High), (Fig 3)
- 277Y = 480Y/277V Wye - 3Ø 4W+Grnd, (Fig 2)
- 347Y = 600Y/347V Wye - 3Ø 4W+Grnd, (Fig2)
- 480D = 480V Delta - 3Ø 3W+Grnd, (Fig4) & HRG Wye

## Other Available Systems - Confirmation Encouraged

- 120N = 120V Single Phase (Fig 5)
- 127N = 127V Single Phase (Fig 5)
- 127S = 254/127V Split Phase - 1Ø 3W+Grnd, (Fig 1)
- 127Y = 220Y/127V Wye - 3Ø 4W+Grnd (Fig 2)
- 220Y = 380Y/220V Wye - 3Ø 4W+Grnd (Fig 2)
- 230Y = 400Y/230V Wye - 3Ø 4W+Grnd (Fig 2)
- 240N = 240V Single Phase (Fig 5) - Not split phase
- 240S = 480/240V Split Phase, or Two legs of Wye, (Call)
- 240Y = 415Y/240V Wye - 3Ø 4W+Grnd (Fig 2)
- 240C = 240V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)
- 240D = 240V Delta - 3Ø 3W+Grnd (Fig 4)
- 254Y = 440Y/250V Wye - 3Ø 4W+Grnd (Fig 2)
- 277N = 277V Single Phase (Fig 5)
- 277S = 480/240V Split Phase, or Two legs of Wye, (Call)
- 300N = 300V Single Phase (Fig 5)
- 300Y = 520Y/300V Wye - 3Ø 4W+Grnd (Fig 2)
- 480N = 480V Single Phase (1 Hot, 1 Neu, 1 Grnd) (Fig 5)
- 480C = 480V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)
- 600C = 600V B Corner Grnd Delta, 3Ø 3W+Grnd (Fig 6)  
(Available: 100kA, 150kA)
- 600D = 600V Delta - 3Ø 3W+Grnd (Fig 4) & HRG Wye  
(Available: 100kA, 150kA)

- 10 = 100kA
- 15 = 150kA
- 20 = 200kA
- 25 = 250kA
- 30 = 300kA

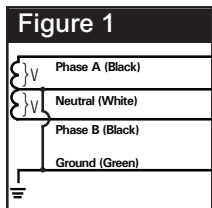
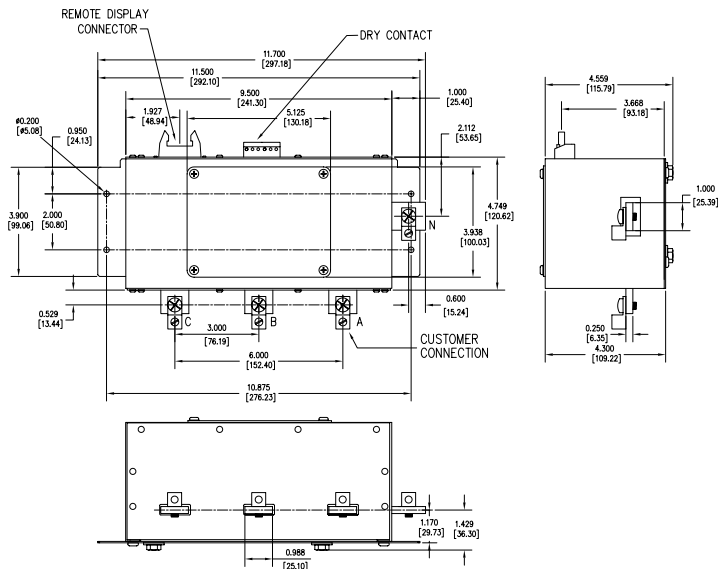
- C = Compression Lugs
- R = Internal Rotary Disconnect Switch

- A = All Standard Modes for that Voltage Code (Default)
- L = Delete L-N Protection
- G = Delete L-G Protection
- N = Delete N-G Protection

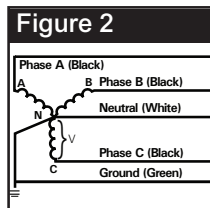
- 1 = UL 1449 Type 1
- 2 = UL 1449 Type 2, (Includes UL1283 Filter)

- 0 = No Trailing Accessory/Option

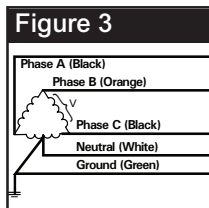
- A = LEDs/Audible Alarm/Relay
- C = LEDs/Audible Alarm/Relay/ Surge Counter



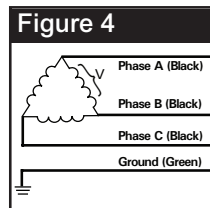
**Figure 1**  
SPLIT  
2 Phases, 1 Neutral,  
1 Ground



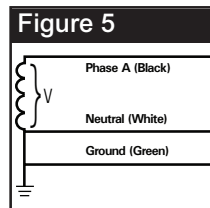
**Figure 2**  
WYE  
3 Phases, 1 Neutral,  
1 Ground



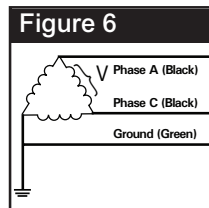
**Figure 3**  
HIGH LEG DELTA  
(B High) 3 Phases,  
(B High), 1 Neutral,  
1 Ground



**Figure 4**  
DELTA & HRG WYE  
3 Phases, 1 Ground



**Figure 5**  
SINGLE POLE  
1 Phase, 1 Neutral,  
1 Ground



**Figure 6**  
CORNER GROUND  
DELTA (B grounded)  
2 Phases, 1 Ground

## Performance Data

Common Power Systems		UL 1449 Fourth Edition Test Data						
		Voltage Protection Ratings (VPR - 3kA)				I <sub>n</sub>	SCCR	MCOV
		L-N	L-G	N-G	L-L			
120S	= 240/120V Split Phase	700	700	700	1200	20kA	100kA	150
120Y	= 208Y/120V 3Ø Wye	700	700	700	1200	20kA	200kA	150
240H	= 240Y/120V B High Leg Delta	700/1200	700/1200	700	1800	20kA	200kA	150 / 320
277Y	= 480Y/277V 3Ø Wye	1200	1200	1200	2000	20kA	200kA	320
480D	= 480V 3Ø Delta	-	1800	-	1800	20kA	200kA	552
347Y	= 600Y/347V 3Ø Wye	1500	1500	1500	2500	20kA	200kA	420

\*VPRs with disconnect switch option could vary. Contact the factory for details.