

## PT250-Family

Surge Protective Device

For Installation at the Service Entrance Panel

### 1.0 GENERAL DESCRIPTION

These specifications describe the electrical and mechanical requirements for a shunt installed AC power line surge suppressor. The specified surge protective device shall provide effective energy surge diversion for application in ANSI/IEEE C62.41-2002 Location Category C3 environments. Testing per ANSI/IEEE C62.45-2002 using ANSI/IEEE C62.41 Category C3 waveforms and amplitudes. UL 1449 listed to UL1449 3<sup>rd</sup> Ed Safety Standard for Surge Protective Devices. The specified surge protective device shall provide:

- 250,000 transient amps, per phase, of surge protection.
- Triple Redundant: Three fused surge paths per phase.
- Protection modes: L-N, L-G, L-L, N-G.
- SCCR: 100kA AIC
- $I_n=5kA$
- MCOV (UL1449 3<sup>rd</sup> Ed): 115% minimum of nominal voltage
- MCOV (Varistors): 125% minimum of nominal voltage
- Three Green, protection present LED's per phase, on front panel.
- Neutral-Ground Voltage monitor: Red LED on front panel.
- Surge Protected 1 Form C relay with Green "Relay Energized" LED on side panel.
- UL recognized, 200 kAIC fuses. All fuses monitored, including thermal varistor fuses.
- Filtering.
- Thermally protected varistors and surge event counter included.
- Twenty year warranty on entire system.

### 1.2 STANDARDS

The specified protector shall be designed, manufactured, tested and installed in compliance with:

- American National Standards Institute and Institute of Electrical and Electronic Engineers (ANSI/IEEE C62.11, C62.41, and C62.45)
- Federal Information Processing Standards Publication 94 (FIPS PUB 94)
- National Fire Protection Association (NFPA 20, 70, 75 and 78)
- Underwriters Laboratories (UL 1449, 3<sup>rd</sup> Ed.) listed
- CAN/C22.2 No. 8-M1986; CSA Electrical Certification Notice No. 516

The system individual units shall be UL listed under UL 1449 3<sup>rd</sup> Ed. Standard for Safety for Surge Protective Devices and the Voltage Protection Ratings (VPR) shall be permanently affixed to the SPD.

### 1.3 DISTRIBUTION PANEL EQUIPMENT ELECTRICAL REQUIREMENTS

#### 1.3.1 Environmental Requirements:

- A. Operating Temperature:** Operating temperature range shall be -40 to +70 degrees C (-40 to +160 degrees F).

- B. Storage Temperature:** Storage temperature range shall be -40 to +85 degrees C.
- C. Relative Humidity:** Operation shall be reliable in an environment with 0% to 95% non-condensing relative humidity.
- D. Operating Altitude:** The system shall be capable of operation up to an altitude of 13,000 feet above sea level.
- E. Operating Voltage:** Maximum continuous operating voltage of varistors shall be no less than 125% of the nominal rated line voltage.
- F. Power Frequency:** The power frequency range shall be at 47 to 63 Hertz.

### 1.3.2 Electrical Requirements:

- A. Unit Operating Voltage:** The nominal unit operating voltage shall be indicated in **Table 1.0**.
- B. Nominal System Operating Voltage shall be:**

\_\_\_\_\_ VAC, \_\_\_\_\_ Phase, \_\_\_\_\_ Wire Plus Ground, \_\_\_\_\_ Type

**Table 1.0**

Model	Voltage	Description	Joules Total (8/20us)	Vpeak L-N 3kA (8/20us)	Vpeak L-N 10kA (8/20us)	UL1449 3rd Edition VPR L-N	UL1449 3rd Edition VPR L-G	UL1449 3rd Edition VPR N-G
-120S	120 VAC	1phase, 2W + gnd	10,300j	620V	850	800V	800V	700V
-120T	120/240 VAC	1phase, 3W + gnd	10,300j	620V	850	800V	800V	700V
-120Y	120/208 VAC	3phase, 4W + gnd, wye	14,720j	620V	850	800V	800V	700V
-220S	220 VAC	1phase, 2W + gnd	31,360j	1140V	1470	1200V	1200V	1200V
-220Y	220/380 VAC	3phase, 4W + gnd, wye	44,800j	1140V	1470	1200V	1200V	1200V
-240DCT	240/120/120*	3phase, 4W + gnd, hi-leg	23,230j	1100/620V	1430/850	1200/800V	1200/800V	700
-240S	240 VAC	1phase, 2W + gnd	31,360j	1140V	1470	1200V	1200V	1200V
-240Y	240/415 VAC	3phase, 4W + gnd, wye	44,800j	1140V	1470	1200V	1200V	1200V
-277S	277 VAC	1phase, 2W + gnd	31,360j	1140V	1470	1200V	1200V	1200V
-277Y	277/480 VAC	3phase, 4W + gnd, wye	44,800j	1140V	1470	1200V	1200V	1200V
-347Y	347/600 VAC	3phase, 4W + gnd, wye	51,520j	1190V	1530	N/A	N/A	N/A

\*High-leg delta center tapped

- C.** Unit shall be installed in parallel with the protected equipment. No series connected protective elements shall be used.
- D.** Protection per mode shall be: L-N 125 kA, L-G 125 kA, L-L 250 kA, N-G 80 kA.

- E. The maximum surge current capacity per phase of the specified system, based on the standard IEEE 8/20 microsecond waveform, shall be at least: 1 Event at 250 kA, the surge life shall be at least 10,000 events @ 12kA. The transient suppression capability shall be bi-directional and suppress both positive and negative impulses.
- F. The protector shall be designed so as to minimize the internal surge path impedance. Direct point-to-point internal wiring is inherently inductive and not acceptable. Connection to the power service shall be constructed as shown in the installation notes for best performance.
- G. Equipment shall be as manufactured by MCG Surge Protection; Model: PT250 Family or engineering department approved equal with supporting test data.

## 2.0 DISTRIBUTION PANEL PROTECTION SYSTEM COMPONENTS

- A. **MOVS:** The protector shall be fused and constructed of multiple 40 kA metal oxide varistors with internal thermal disconnect mechanism.
- B. **Self-Diagnostics:** Solid state green LED indicators shall be provided on the front cover to indicate protection status.
- C. **NEMA 1 Enclosure:** 16 gauge steel provided with mounting flanges.
- D. **Dimensions:** 10.0" x 10.0" x 4.0" (254mm x 254mm x 102mm). Shipping weight: 14 lbs. (6.4kg) maximum.
- F. Furnished with No. 10 AWG leads having a nominal length of 36 inches.

## 3.0 INSTALLATION AND MAINTENANCE

- A. The unit shall be installed in accordance with the manufacturer's printed instruction to maintain warranty. All local and national codes must be observed.
- B. Units shall be installed as close as possible to the panelboard to which it is connected - preferably within 2 feet.

## 4.0 20 YEAR WARRANTY

Manufacturer to provide 20 year warranty to cover repair or the providing of a new device.