

400 Series

Surge Protective Device
For Installation within OEM Equipment

1.0 GENERAL

1.1 DESCRIPTION

These specifications describe the electrical and mechanical requirements for a series installed AC power line SPD (Surge Protective Device). The specified SPD shall provide effective energy surge diversion for application in ANSI/IEEE C62.41-2002 Location Category A3 environments. Testing per ANSI/IEEE C62.45-2002 using ANSI/IEEE C62.41 Category A3 waveforms and amplitudes. UL1449 3rd Ed. recognized. The specified surge protective device shall provide:

- 10,000 transient amps per mode minimum.
- L-N, L-G, N-G protected modes.
- Green protection present LED.
- EMI/RFI filter.
- Low profile construction.
- Cage clamp, touch safe terminal blocks.
- Twenty year warranty.

1.2 STANDARDS

The specified suppressor 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 (UL1449 3rd Edition Recognized)
- CAN/C22.2 No. 8-M1986; CSA Electrical Certification Notice No. 516

The system individual units shall be UL recognized under UL1449 3rd Edition Standard for Safety for Surge Protective Devices (SPD). Protector shall be **Type 4 for use in Type 2** applications.

1.3 LOCAL EQUIPMENT ELECTRICAL REQUIREMENTS

1.3.1 Environmental Requirements:

- Operating Temperature:** Operating temperature range shall be -40 to +71 degrees C (-40 to +160 degrees F).
- 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 (MCOV) for varistors shall be no less than 125% of the nominal rated line voltage. UL1449 3rd Edition defined MCOV shall be no less than 115% nominal line voltage.
- F. **Power Frequency:** The power frequency range shall be 47-63 Hertz.

1.3.2 Electrical Requirements:

- A. **Unit Electrical Specifications: See Table 1.0.**
- B. **Nominal System Operating Voltage shall be:**

_____ VAC, 1 Phase, 2 Wire plus Ground, _____ A RMS (continuous)

Table 1.0

Model	Voltage	Service/Rated Current	Joules Total (8/20us)	UL1449 3rd Edition VPR			Nominal Discharge Current (In)	SCCR
407	120VAC	1PH, 2W+G, 15A RMS	1,460	500V L-N	600V L-G	600V N-G	3kA	5kA AIC
415	120VAC	1PH, 2W+G, 15A RMS	1,140	500V L-N	600V L-G	600V N-G	3kA	5kA AIC
416	120VAC	1PH, 2W+G, 23A RMS	1,140	500V L-N	600V L-G	600V N-G	3kA	5kA AIC
417	240VAC	1PH, 2W+G, 23A RMS	2,300	900V L-N	1000V L-G	1000V N-G	3kA	5kA AIC

- C. Unit shall be installed in series with the protected equipment.
- D. 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 10 kA. The surge life (8/20us) shall be at least 10,000 occurrences @ 500A. The transient suppression capability shall be bi-directional and suppress both positive and negative impulses.
- E. The suppressor 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.
- F. Equipment shall be as manufactured by MCG Surge Protection; Model: 400 Series or engineering department approved equal with supporting test data.
- G. The suppressor shall contain a common mode noise filter with specifications as in **Table 1.1**.

Table 1.1

Filter attenuation(50 ohm)		407	415	416	417
-20db		30 kHz	30 kHz	30 kHz	30 kHz
-30db		90 kHz	90 kHz	90 kHz	80 kHz
-40db		300 kHz	300 kHz	300 kHz	260 kHz
-50db		880 kHz	880 kHz	800 kHz	530 kHz
-60db		1.4 MHz	1.4 MHz	1.0 MHz	700 kHz

2.0 EQUIPMENT LEVEL PROTECTION SYSTEM COMPONENTS

- A. MOV (metal oxide varistors):** The suppressor shall be constructed of multiple 20mm (10kA (8 x 20 microsecond) pulse rating min. each) metal oxide varistors.
- B. Self-Diagnostics:** An illuminated green solid state LED indicator shall be provided on the front cover to indicate protection is present at the device.
- C. Connection:** Cage clamp, touch safe terminal block. Wire gauge range: 26-10 AWG
- D. Enclosure:** High-impact plastic.
- E. Dimensions:** 4.95" x 2.85" x 1.10"
- F. Shipping weight:** <1lb.

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 within the equipment to which it is connected.

4.0 TWENTY YEAR WARRANTY

Manufacturer to provide 20 year warranty to cover repair or replacement with a new device.