

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 5th Ed. recognized component assembly. 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 5th Edition Type 5 CA)
- CAN/C22.2 No. 8-M1986; CSA Electrical Certification Notice No. 516

The system individual units shall be UL recognized under UL1449 5th Edition Standard for Safety for Surge Protective Devices (SPD). Protector shall be UL1449 SPD Type 5 CA.

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 5th 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 5th Edition MLV			Nominal Discharge Current (In)	SCCR
407	120VAC	1PH, 2W+G, 15A RMS	1,460	480V L-N	540V L-G	540V N-G	3kA	5kA AIC
415	120VAC	1PH, 2W+G, 15A RMS	1,140	480V L-N	590V L-G	590V N-G	3kA	5kA AIC
416	120VAC	1PH, 2W+G, 23A RMS	1,140	480V L-N	590V L-G	590V N-G	3kA	5kA AIC
417	240VAC	1PH, 2W+G, 23A RMS	2,300	890V L-N	1080V L-G	1090V 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 1.25"
- 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.