MCG SURGE PROTECTION http://www.mcgsurge.com
12 Burt Drive, Deer Park, New York 11729 USA Phone: 1-631-586-5125 Fax: 1-631-586-5120
Toll Free: 1-800-851-1508
Info1@mcgsurge.com

150M-Family

Surface Protective Device
For Installation at the Service Entrance Panel 299-500-13C

1.0 GENERAL

1.1 DESCRIPTION

These specifications describe the electrical and mechanical requirements for a high energy surge protective device. The specified surge protective device shall provide effective high 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 5th Edition. The specified surge protective device shall provide:

- 160,000 transient amps, per phase, of surge protection.
- Two times redundancy per phase.
- SCCR: 100kA AIC
- I_n : 10kA minimum.
- Protection in all modes, L-N, L-G, L-L, N-G.
- Green, power present LED, red, protection reduced LED on front panel. Internal red LED's to pinpoint problem areas.
- 10 AWG installation cable.
- Fused shared current paths. This device contains 2 redundant (shared paths) protection modules and six fuses.
- 200 kAIC fusing.
- Remote alarm relay contacts (surge protected), Form C.
- Twenty year warranty on entire system.
- Filtering standard.
- LIFETIME "NO NONSENSE" WARRANTY ON FIELD REPLACEABLE PROTECTION MODULES AND FUSES. Replacement protection modules and fuses are sent from factory stock, located in Deer Park, Long Island, New York, USA.

1.2 STANDARDS

The specified SPD 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 (FIP PUB 94)
- National Fire Protection Association (NFPA 20, 70, 75 and 78)
- Underwriters Laboratories (UL 1449, 5th 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 5th. Ed. Standard for Safety for Surge Protective Devices and the Voltage Protection Ratings (VPR) shall be permanently affixed to the SPD.

12 Burt Drive, Deer Park, New York 11729 USA
Phone: 1-631-586-5125 Fax: 1-631-586-5120
Toll Free: 1-800-851-1508
Info1@mcgsurge.com

1.3 ENTRANCE PANEL EQUIPMENT ELECTRICAL REQUIREMENTS

1.3.1 Environmental Requirements:

A. **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

B. **Relative Humidity:** Operation shall be reliable in an environment with 0% to 95% non-condensing relative humidity.

C. **Operating Altitude:** The system shall be capable of operation up to an altitude of 13,000 feet above sea level.

D. **Operating Voltage:** Maximum continuous operating voltage of varistors shall be no less than 125% nominal rated line voltages.

E. **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**

Table 1.0

Model	Voltage	Description	Joules (8/20us)	VPR L-N	VPR L-G	VPR N-G	VPR L-L	Vpk L-N (8/20us) 8kA
150M-120Y	120/208 VAC	3phase, 4W + gnd, wye	9,780j	700	1200	700	1200	584V
150M-120T	120/240 VAC	1phase, 3W + gnd	9,780j	700	1200	700	1200	584V
150M-120S	120 VAC	1phase, 2W + gnd	9,780j	700	1200	700	N/A	584V
150M-220Y	220/380 VAC	3phase, 4W + gnd, wye	28,980j	1200	2500	1200	2500	1096V
150M-220S	220 VAC	1phase, 2W + gnd	28,980j	1200	2500	1200	N/A	1096V
150M-240Y	240/415 VAC	3phase, 4W + gnd, wye	28,980j	1200	2500	1200	2500	1096V
150M-240S	240 VAC	1phase, 2W + gnd	28,980j	1200	2500	1200	N/A	1096V
150M-240DCT	240/120/120*	3phase, 4W + gnd, hi-leg	16,950j	700/1200	1200/2500	700	1200/1800	1096V/584V
150M-277Y	277/480 VAC	3phase, 4W + gnd, wye	28,980j	1200	2500	1200	2500	1096V
150M-277S	277 VAC	1phase, 2W + gnd	28,980j	1200	2500	1200	N/A	1096V

*High-leg delta center tapped

12 Burt Drive, Deer Park, New York 11729 USA Phone: 1-631-586-5125 Fax: 1-631-586-5120
Toll Free: 1-800-851-1508
Info1@mcgsurge.com

B. Unit shall be installed in parallel with the protected equipment. No series connected protective elements shall be used.

C. Protection per mode shall be: L-N 160 kA, L-G 80 kA, L-L 160 kA, N-G 80 kA.

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 160 kA. The surge life (8/20us) shall be at least 10,000 occurrences @ 6kA. The transient suppression capability shall be bi-directional and suppress both positive and negative impulses.

E. The SPD shall be capable of interrupting a 100kA, short circuit current delivered from the AC power line. The interrupt capability must be confirmed and documented by a recognized independent testing laboratory.

F. The SPD 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 Electronics, Inc.; Model: 150M-Family or engineering department approved equal with supporting test data.

2.0 ENTRANCE PANEL PROTECTION SYSTEM COMPONENTS

A. Replaceable modules: The SPD shall be constructed using field replaceable plug-in, pluck-out modules and fuses. Each module shall consist of multiple 40 mm metal oxide varistors. The status of each module shall be locally monitored with two red LEDs one of which will illuminate if module protection is reduced to the 50 percent level. Protector will provide double (2X) shared surge current paths, per phase, with one module per each phase and two replaceable fuses per module.

B. Self-Diagnostics: Red and green solid state LED indicators shall be provided on the hinged front cover to indicate protection status. An illuminated green LED indicates power is present at the protector, and an illuminated red LED shall indicate that one or more of the modules have reduced protection. Both front panel and internal LEDs are required to provide power and fault indications. Relay operation shall be in a fail-safe operating mode i.e., continuously energized so that power failure, reduced protection, or a break in the remote monitoring line will cause a fault indication at the remote monitor. Neon indicators are not permitted.

C. Remote Alarm Capability: Relay alarm contacts shall be provided for remote alarm monitoring capability of unit status. Form C normally open and normally closed contacts shall be provided with voltage and current limiting protection.

D. NEMA 1 Enclosure: Powder coated, 14 gauge steel, with stainless steel hardware.

E. Dimensions: 8" by 8" by 4". Shipping weight: 10 lbs. maximum.

3.0 INSTALLATION AND MAINTENANCE

12 Burt Drive, Deer Park, New York 11729 USA Phone: 1-631-586-5125 Fax: 1-631-586-5120
Toll Free: 1-800-851-1508
Info1@mcgsurge.com

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 panel board to which it is connected - - preferably within 2 feet.

C. Detailed maintenance instructions shall be printed on the front panel to insure safety of maintenance personnel.

D. Plug-in, pluck-out modules and field replaceable fuses are required for simple maintenance. Internal construction should facilitate rapid repair. Repair time should not exceed 5 minutes.

4.0 20 YEAR WARRANTY

Manufacturer to provide 20-year warranty to cover repair or replacement with a new device. Manufacturer to provide no cost replacement of protection modules with coordinated fuses for the life of the SPD.