

Stormin Products Fire Alarm AC Surge Suppression

SERIES "LS-E120HWCP20CB": SURGE PROTECTIVE DEVICE TECHNICAL SPECIFICATION – SYSTEM "L" W/O DISCONNECT

1.0 GENERAL

The following technical specification describes the requirements of the LS-E120HWCP20CB "SPD" Surge Protective Device. The "SPD" system utilizes in series protective devices designed to suppress and divert transient voltages and surge currents. The system shall be designed to provide protection for sensitive electronic devices against the harmful effects of surges, transients and electrical line noise and help eliminate false alarms and lightning damage. The form factor of the system shall be designed to promote ease of installing the system onto the circuit being protected by the device.

2.0 STANDARDS

The SPD shall be designed and manufactured to the following standards:



- 2.1. ETL listing and tested according to Underwriters Laboratory - UL 1449 **third Edition** & 1283
- 2.2. National Electric Code, 1996 (NEC)
- 2.3. American National Standard Institute (ANSI)
- 2.4. Institute of Electrical and Electronic Engineers (IEEE)
- 2.5. National Electrical Manufacturers Association (NEMA)
- 2.6. Occupational Safety and Health Administration (including Pub. 81-123)
- 2.7. ANSI/IEEE C62.41, Categories A, B and C1
- 2.8. ANSI/IEEE C62.45

3.0 ENVIRONMENTAL REQUIREMENTS

The "SPD" system shall be designed for operation in the following conditions:

- | | |
|----------------------------|-----------------|
| 3.1. Operating Temperature | -40C to 60C |
| 3.2. Relative Humidity | 0 - 95% |
| 3.3. Operating Altitude | 0 - 12,000 Feet |

4.0 SUBMITTALS

- 4.1. Shop drawings shall include complete with the system's physical and electrical specification requirements and the manufactures recommended installation requirements. A line item by line item specification compliance matrix is required in the project submittal drawing package to assist the engineer in the equipment approval process.

5.0 ELECTRICAL REQUIREMENTS

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- 5.1. The transient voltage surge suppression system shall have limited 20-amp nominal current handling when installed in a series configuration.
- 5.2. The system voltage shall be 120 VAC, 1 Phase, 2 Wire plus G at 60Hz.
- 5.3. The transient voltage surge suppression system shall be a multi-stage device capable rated to divert the following current levels in each of the listed pathways of protection:
- 20 amps, Line to Neutral
 - 20 amps, Line to Ground
 - 160 amps, Neutral to Ground
 - 160 amps, Per Phase Rating
 - 480 amps, Per System Rating

*All SPD systems feature the same level of surge current protection in each mode of protection.

- 5.4. The maximum response time of the system shall not exceed 5 nanosecond due to the sensitive nature of the protected load. Suppression topology shall be a hybrid platform consisting of Silicon Avalanche Diodes (SAD), Gas Tubes, one electromagnetic 30 amp switch, 20-amp circuit breaker and Metal Oxide Varistors (MOV). Systems that do not contain Silicon Avalanche Diodes are unacceptable.
- 5.5. The system shall prevent reverse polarity or power induced on neutral or ground and will not allow power to pass through until the polarity is corrected.
- 5.6. The system's must comply with UL864 application and shall not be installed inside the panel or it will violate UL864. It is designed to be installed through the knockout from the outside the panel which will maintain UL864 certification of the Fire alarm Panel. Any and all attempts by any kind of surge suppression installed inside a UL listed 864 fire alarm panel is in direct violation. rUL listed products are also a direct violation to UL and UL listing 864 and are not considered by UL as a field ready product.
- 5.7. The system shall operate over a frequency range of -40 dB down -10KHz to 10 MHz.
- 5.8. As assigned by UL, the Clamping Voltage values shall be no greater than the values listed below:

UL 1449-Second Edition Ratings*

<u>Pathway</u>	<u>120</u>	<u>120</u>
Line-Neutral	<u>220</u> VAC peak	<u>154</u> VRMS
Line-Ground	<u>265</u> VAC peak	<u>185</u> VRMS
Neutral-Ground	<u>207</u> VAC peak	<u>145</u> VRMS
Line-Line	N/A	N/A

*This type of voltage configurations will help eliminate false alarms

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6.0 SURGE PROTECTION ELEMENTS

- 6.1. The transient voltage surge suppression system shall consist of a hybrid technology consisting of multiple SAD/MOV circuits designed to suppress transient voltage and divert excess surge currents. The system shall be designed and tested by UL 1449-third Edition standards to suppress the surge current **per each protection mode of protection** as detailed in this specification.
- 6.2. Each suppression pathway contains 160 kAIC fused 20 mm Metal Oxide Varistors rated to dissipate 20,000 amperes of surge current each.
- 6.3. Each individual MOV within the system shall be designed to dissipate multiple IEEE C62.41 Category B3/C1 (6 kV, 3 kA) events.
- 6.4. The number of MOVs within the system is predicated on the overall surge current rating of the system as specified herein.

7.0 CABINET CONSTRUCTION

- 7.1. The system enclosure shall be designed for wall mounting or installed on the panel with 1/2 inch compression fitting. The enclosure shall have the following NTE dimensions: 5" H, 4.5" W, and 2.5" D.
- 7.2. The cabinet enclosure shall be NEMA 4X (waterproof and corrosion resistant) and shall be rated for either indoor or outdoor applications.
- 7.3. The cabinet enclosure shall be made of polycarbonate feature a watertight polycarbonate cover. System's with opaque heat sink potting materials is required for this specification.
- 7.4. The system shall be equipped with interconnection leads consisting of stranded copper wire measuring 18" long maximum. These conductors shall be color-coded by the manufacturer to assist the electrical contractor in the proper installation of the system.

8.0 STANDARD MONITORING FEATURES

- 8.1. Each phase protection pathway shall contain a green, LED indicator for easy viewing on top of the system's gray cover. The normal operation of the protection pathway shall provide positive indication utilizing the green light. Failure of any of the protection pathway shall provide negative indication utilizing no light. The monitoring system shall indicate the failure of any MOV to ensure the user is aware of the full operability of the surge suppression device. Systems that do not indicate an indicator suppression failure condition are prohibited.
- 8.2. A summary contact is not required but a 20 amp circuit breaker is required.
- 8.3. No on-board system monitoring is required.

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9.0 SYSTEM TESTING AND INSTALLATION

- 9.1. The manufacturer shall own/rent and operate a surge simulation system which creates an IEEE C62.41 Category B3/C1 (6 kV, 3 kA) surge event. Each unit must be tested on this test fixture and results commensurate with the IEEE and UL 1449 Third Edition standards shall be shipped with the SPD system to the job site.
- 9.2. A representative from the consulting engineer or the end user shall be welcome to witness test the SPD system(s) at the manufacture. It shall be the cost of the end user to attend such tests if so desired.
- 9.3. The manufacturer shall have a trained Fire Alarm installing representative expert to visit the site to assist the user electrician in the proper installation of the system to ensure maximum performance.

10.0 SYSTEM WARRANTY

The SPD manufacturer shall warrant the entire system against defective materials and workmanship for five years following delivery from the manufacturer. This warranty is in effect as long as the unit is installed in compliance with the manufacturer's owner's/operator's and installation manual, UL listing requirements, and any applicable national or local electrical codes. Care should be taken in identifying the voltage and current rating and configuration of the surge suppression device to maintain this warranty program.

The manufacturer is required to have a nationwide network of factory trained technicians dedicated to repair and service of this product. The manufacturer shall have a dedicated 1-888 telephone number for service problems and questions. This number must be manned by a knowledgeable factory employee to ensure prompt response to any emergency situation that may arise. The manufacturer is required to be able to service the equipment on a local basis without the requirement to return the product to the manufacturer for proper repair.

11.0 ACCEPTABLE MANUFACTURERS

This specification is based on products manufactured by American International Electronics and provided by Stormin Protection Products Inc. (888) 471-1038. Other manufacturers may be acceptable provided they meet the performance requirements of the specification and are not rUL listed. Other manufacturers must provide the consulting engineer the following information at least ten days prior to the bid date for review purposes:

- 11.1. Complete product literature.
- 11.2. Complete copy of a UL 1449 3rd edition file including clamping voltage ratings.
- 11.3. Independent test laboratory reports indicating compliance with ANSI/IEEE C62.41 and C62.45 Cat B3/C1 waveform test print out.

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- 11.4. A line by line specification compliance matrix indicating "comply," "deviate," or "exception" complete with comments for clarification purposes.
- 11.5. Warranty certificate in compliance with specification section 9.0.
- 11.6. Contact and number of local field service support center applicable to this project.
- 11.7. Product will not violate UL864
- 11.8. rUL listed products are not acceptable and according to UL are an unfinished product and not intended for field service.

END OF SPECIFICATION