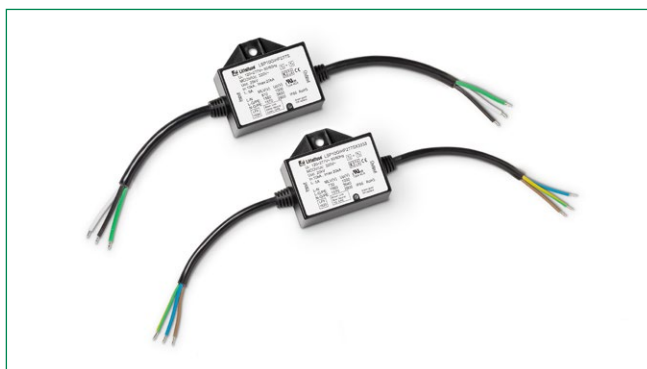





### LSP10GIHP Module Series



#### Agency Approvals

| Agency  | Standard      | Agency File Number |
|---|---------------|--------------------|
|  | UL 1449       | E320116            |
|  | IEC 61643-11* | NL41291            |
|  | EN 61643-11*  | 3187362.01         |

+ = For 120V - 277V Only

#### Additional Information



**Datasheet**



**Resources**



**Samples**

#### Description

The Littelfuse LSP10GIHP thermally protected Surge Protective Device is a self-protected device which is specially designed to be used in outdoor and commercial LED lighting fixtures for transient overvoltage protection. It is constructed with Littelfuse thermally protected varistor technology. Its built-in thermal disconnect function provides additional protection to prevent catastrophic failure and fire hazard even under the extreme circumstances of varistor end-of-life or sustaining over voltage conditions.

The LSP10GIHP provides coordinated surge protection with more LED drivers than other SPDs due to its exceptionally low Measured Limiting Voltage (MLV) and Voltage Protection Level ( $U_p$ ). This lower clamping voltage can also help to extend the life-time of the luminaire. It also features a built-in LED indicator that notifies when replacement of the module is needed.

#### Features

- Suitable for use in luminaire with Class I or Class II installations\*
- Low MLV and  $U_p$
- Built-in LED Indication, saves maintenance time by identifying replacement need
- Thermally Protected
- Double insulation cable wire
- 20kA Maximum Discharge Current ( $I_{max}$ ), 8/20 $\mu$ s
- Meets ANSI C82.77-5-2015: Location C High
- Meets ANSI C136.2-2015: Extreme Level
- Meets IEEE C62.41.2: Location Category C High
- Meets US Dept. of Energy MSSSLC Model Spec.
- High line-to-earth/ground resistance
- IP66 - Dust-tight and water resistant
- Series connected
- UL 1449 Recognized and IEC/EN 61643-11 Approved\*
- RoHS compliant

\* See [Part Numbering System](#) for exact details of voltages available for Class I and Class II installations and [Device Ratings and Specification](#) table for voltage specific approvals.

#### Applications

- Outdoor and Commercial LED Lighting
- Roadway lighting
- Traffic lighting
- Digital signage
- Wall wash lighting
- Parking garage/lot lighting
- Flood lighting
- Tunnel lighting
- Street lighting

### Absolute Maximum Ratings

- For ratings of individual members of a series, see Device Ratings and Specifications chart

| Specifications   | LSP10GIHP Series | Units      |
|--|------------------|------------|
| <b>Continuous:</b>   |                  |            |
| Steady State Applied Voltage:                                    |                  |            |
| Max AC Voltage Range ( $V_{M(AC)RMS}$ )                          | 150 to 510       | V          |
| Continuous Current   | 5                | A          |
| <b>Transient:</b>  |                  |            |
| Maximum Discharge Current, 8/20 $\mu$ s Waveform ( $I_{max}$ )   | 20,000           | A          |
| Nominal Discharge Current, 8/20 $\mu$ s Waveform ( $I_n$ )       | 10,000           | A          |
| Operating Ambient Temperature Range ( $T_A$ )                    | -45 to +75       | °C         |
| Storage Temperature Range ( $T_{STG}$ )                          | -45 to +85       | °C         |
| Isolation Voltage Capability (When the thermal disconnect opens) | 600              | V          |
| Insulation Resistance  | >1,000           | M $\Omega$ |

**CAUTION:** Stresses above those listed in 'Absolute Maximum Ratings' may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

### LSP10GIHP Series Device Ratings and Specifications

| Part Number   | Operating Voltage (VAC) | MCOV/ $U_c$ <sup>1</sup> (VAC) | Maximum Discharge Current <sup>2</sup> $I_{max}$ (A) | Nominal Discharge Current <sup>3</sup> $I_n$ (A) | MLV <sup>4</sup> (V)               | $U_p$ <sup>5</sup> (V)                    | Safety Compliance |        |
|---------------|-------------------------|--------------------------------|--|--|------------------------------------|---|-------------------|--------|
|               |                         |                                |  |  |                                    |   | IEC/EN 61643-11   | UL1449 |
| LSP10GIHP277S | 120-277                 | 320                            | 20,000   | 10,000   | L-N: 810<br>L-G: 1560<br>N-G: 1570 | L-N: 1000<br>L-G/PE: 3800<br>N-G/PE: 2900 | X                 | X      |
| LSP10GIHP480S | 347-480                 | 510                            | 20,000   | 10,000   | L-N:1040<br>L-G:1560<br>N-G:1570   | --  | --                | X      |

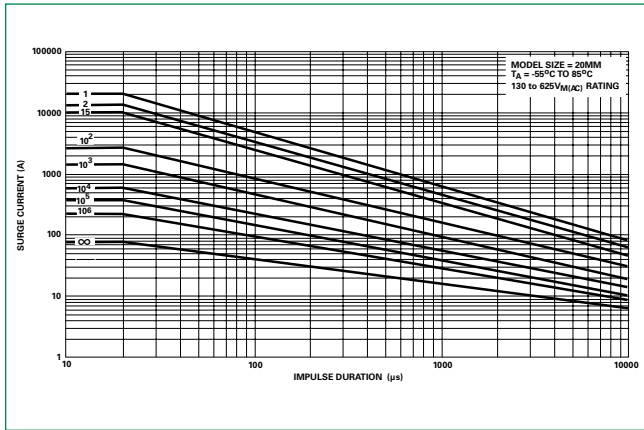
**Glossary:**

- MCOV/ $U_c$ : Maximum Continuous Operating Voltage - maximum r.m.s. voltage that could be continuously applied to the SPD.
- Maximum Discharge Current  $I_{max}$  (A): The maximum discharge current is a measure of the SPDs maximum capability; single impulse of discharge current uses the 8/20 $\mu$ s current waveform. All Devices pass maximum discharge current with possible, safe opening of thermal disconnect.
- Nominal Discharge Current  $I_n$  (A): The nominal discharge current is a measure of the SPDs endurance capability; 15 impulses of discharge current uses the 8/20 $\mu$ s current waveform.
- MLV: UL1449 Measured limiting voltage; the highest value of residual voltage measurements during the application of impulses of 8/20 $\mu$ s nominal discharge current ( $I_n$ ); an average voltage value of 15 impulses.
- $U_c$ : IEC 61643-11 Voltage protection level; the highest value of residual voltage measurements during the application of impulses of 8/20 $\mu$ s nominal discharge current ( $I_n$ ); a rounding voltage value of maximum measurement.

| Specification                                      | Value 120-277V        | Condition  |
|--|-----------------------|--|
| Temporary Overvoltage (V) TOV UT @ $t_T = 5$ s     | 403                   | LV System Fault for TN Power Grid  |
| Temporary Overvoltage (V) TOV UT @ $t_T = 120$ min | 529                   | LV System Fault for TN Power Grid  |
| Power grids  | TN                    | -  |
| Backup fuse (A)                                    | 21                    | Maximum gG Fuse  |
| End of life indication                             | Yes                   | Optical<br>Light ON: SPD is functional<br>Light OFF: SPD has reached end-of-life |
| Max earth leakage current at $U_c$ ( $\mu$ A)      | 50                    | -  |
| IEC 61643-11 Test Classification                   | Test Class II and III | -  |
| EN 61643-11 Type Classification                    | Type 2 and 3          | -  |

| Specification          | Value<br>120-480V | Condition  |
|------------------------|-------------------|--|
| Backup fuse (A)        | 30                | UL Class RK5: FLSR30   |
| End of life indication | Yes               | Optical<br>Light ON: SPD is functional<br>Light OFF: SPD has reached end-of-life |
| UL 1449 Type           | 4CA               |  |

### Repetitive Surge Capability

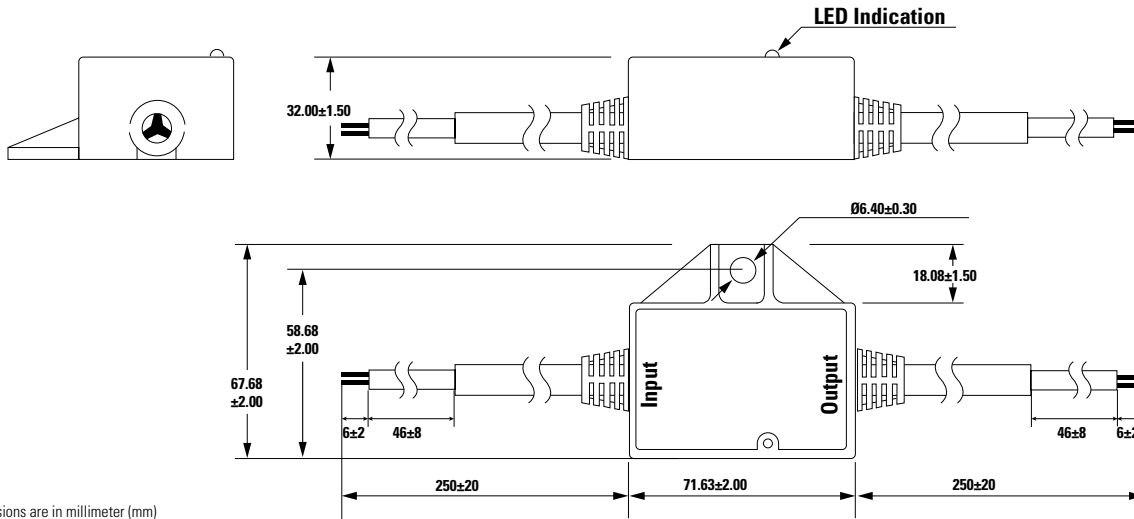


| Pulse Rating<br>(8x20µSec) |         |
|----------------------------|---------|
| Strikes                    | Surge   |
| 1                          | 20,000A |
| 2                          | 15,000A |
| 15                         | 10,000A |
| 100                        | 3,000A  |
| 1,000                      | 1,600A  |
| 1,0000                     | 650A    |
| 1,00,000                   | 400A    |
| 1,000,000                  | 240A    |

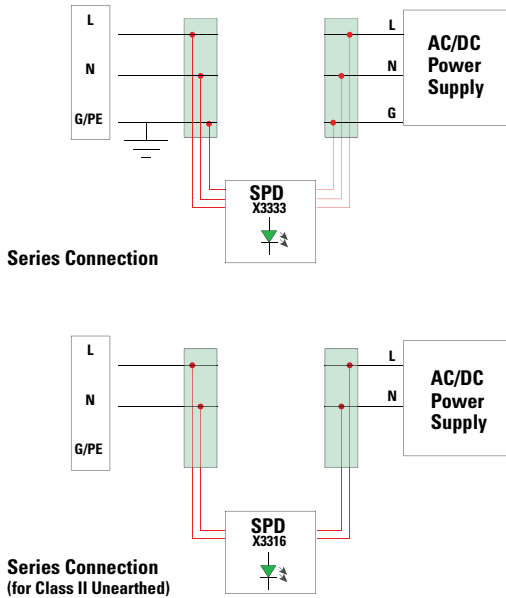
### LSP10GHP Series Wire Specification

| Part Number Extension | Length       | Diameter         | Double Insulation | Installation Class | Color  |
|-----------------------|--------------|------------------|-------------------|--------------------|--|
| X3333                 | 250mm ± 20mm | 1mm <sup>2</sup> | Yes               | I                  | L - Brown<br>N - Blue<br>G/PE - Green with Yellow stripe |
| X3316                 | 250mm ± 20mm | 1mm <sup>2</sup> | Yes               | II                 | L - Brown<br>N - Blue                                    |
| None                  | 250mm ± 20mm | 16AWG            | Yes               | --                 | L - Black<br>N - White<br>G - Green                      |

### Dimensions



### Application/Installation Schematic



- Notes:**
1. Green LED light on: SPD is good
  2. Green LED light off: SPD needs replacement

### Part Numbering System

