

# POWR-GARD® Fuse Datasheet

## SPNH SERIES SOLAR FUSE

1500 V dc • 50–400 A • NH Style



### Description

The SPNH series has been designed to meet the emerging circuit protection needs for 1500 volt photovoltaic systems. These fuses provide full range protection for all potential overcurrent conditions that exist in PV applications. Suitable for PV inverter protection and array combiner applications.

### Features/Benefits

- Compact NH XL sizes
- Low watt loss design
- 1500 V dc rating for high efficiency designs
- Designed to protect against a full range of overcurrents

### Applications

- Inverters
- Re-combiner boxes
- Array/re-combiner application
- PV inverter dc input protection

### Web Resources

- Download technical documents: [Littelfuse.com/SPNH](https://www.littelfuse.com/SPNH)

### Specifications

|                             |                                                      |
|-----------------------------|------------------------------------------------------|
| <b>Voltage Rating</b>       | 1500 V dc                                            |
| <b>Amperage Rating</b>      | 50, 63, 80, 100, 125, 160, 200, 250, 315, 350, 400 A |
| <b>Interrupting Rating</b>  | 30 kA, 50 kA                                         |
| <b>Time Constant</b>        | ≤ 2 ms                                               |
| <b>Material</b>             | Body: ceramic<br>End Bells: copper alloy             |
| <b>Approvals</b>            | UL 248-19 Listed (File: E339112)                     |
| <b>Applicable Standards</b> | UL 248-1, 248-19<br>IEC 60269-6                      |
| <b>Environmental</b>        | RoHS Compliant                                       |

### Part Numbering System

| Series                                                 | Amp Code | Package Quantity | Termination* | Case Size* |
|--------------------------------------------------------|----------|------------------|--------------|------------|
| SPNH                                                   | XXX      | .X               | X            | DL         |
| Refer to Amp Code Column in Ordering Information table |          |                  |              |            |
| X = 1                                                  |          |                  |              |            |
| Blank = solid blade w/Microswitch tab                  |          |                  |              |            |
| DL = S blade                                           |          |                  |              |            |
| DE = U blade                                           |          |                  |              |            |
| DLMS = S blade w/Microswitch tab                       |          |                  |              |            |
| DEMS = U blade w/Microswitch tab                       |          |                  |              |            |
| X = 1XL size                                           |          |                  |              |            |
| 2XL = 2XL size                                         |          |                  |              |            |
| 3L = 3L size                                           |          |                  |              |            |

| SERIES | AMP | PACKAGE QUANTITY | CATALOG NUMBER | ORDERING NUMBER |
|--------|-----|------------------|----------------|-----------------|
| SPNH   | 50  | 1                | SPNH050        | SPNH050.X       |
| SPNH   | 200 | 1                | SPNH200        | SPNH200.X       |
| SPNH   | 400 | 1                | SPNH400        | SPNH400.XXDLMS  |

\*Solid blade option for 1XL case size does not require a case or termination designator for the part number.

### Recommended Accessories

#### 1XL Case Size

**Fuse Holder:** LFNH152001CST

**Fuse Terminal Covers:** LFNH15200FBC

#### 2XL Case Size

**Fuse Holder:** LFNH154001CST

**Fuse Terminal Covers:** LFNH15400FBC

#### 3L Case Size

**Fuse Holder:** LFNH156301CST

**Fuse Terminal Covers:** LFNH15630FBC

#### Microswitch

MSSPNH1500X



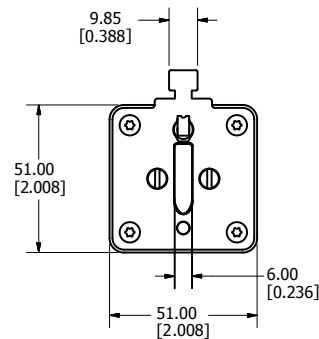
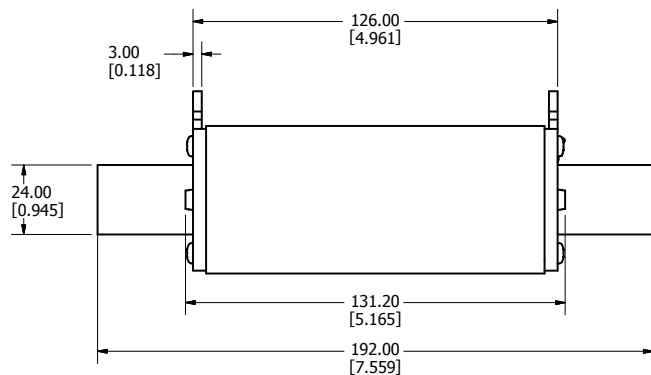
Look for this logo to indicate products that are used in solar applications. Visit our website [Littelfuse.com/solar](https://www.littelfuse.com/solar) for the latest updates on approvals, certifications, and new products.

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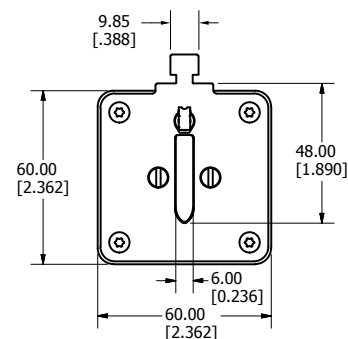
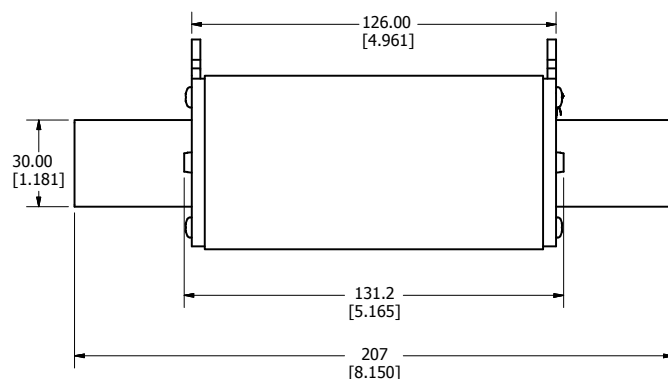
## SPNH SERIES SOLAR FUSE

### Dimensions Millimeters (in)

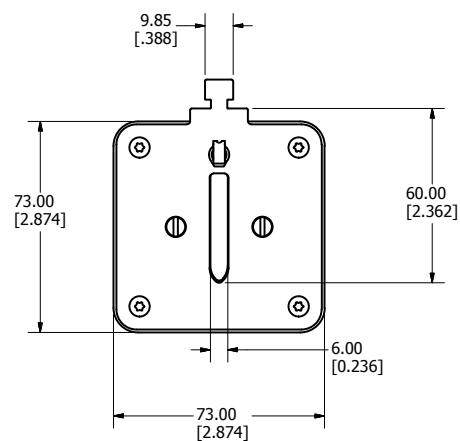
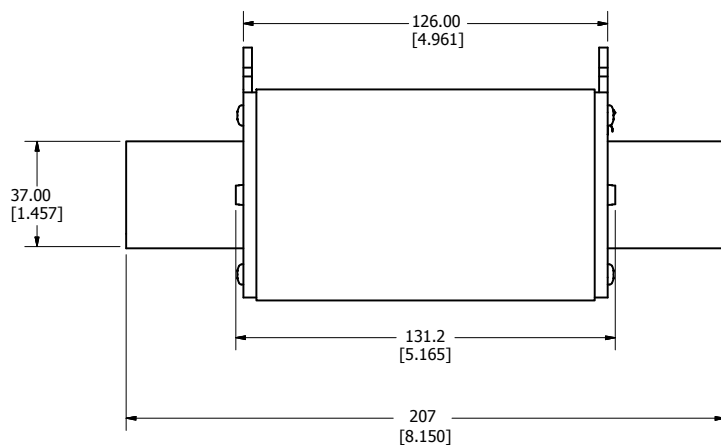
#### Size: 1 XL w/ Microswitch Tab



#### Size: 2 XL w/ Microswitch Tab



#### Size: 3 L w/ Microswitch Tab



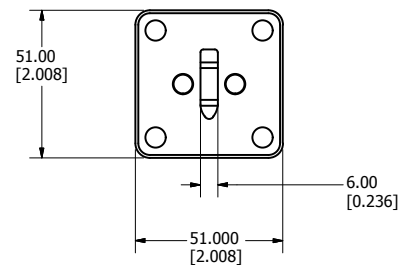
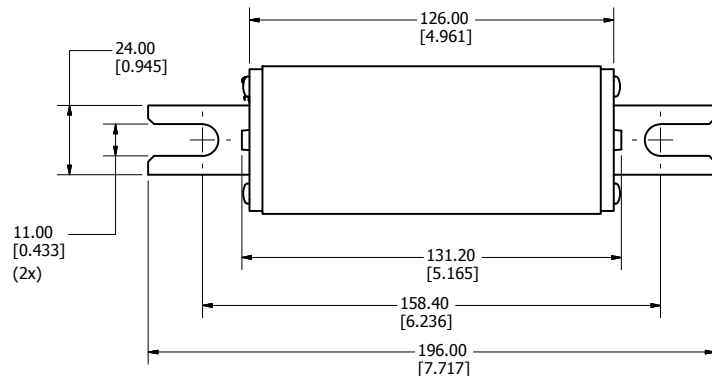
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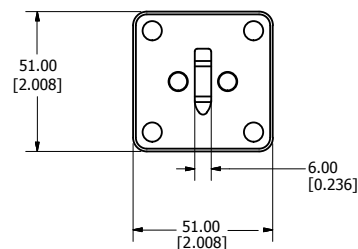
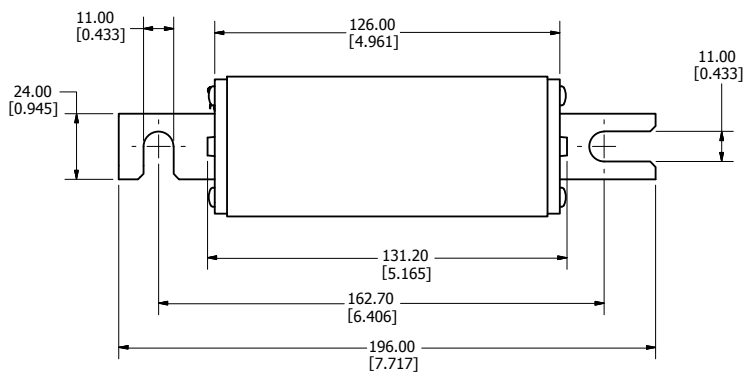
#### Size: 1XL DE Blade

Recommended Torque: 44 Nm\*



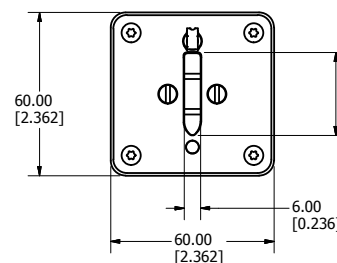
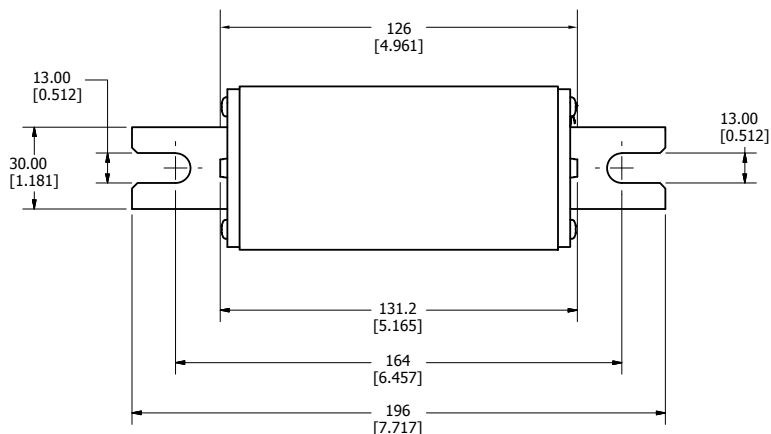
#### Size: 1XL DL Blade

Recommended Torque: 44 Nm\*



#### Size: 2 XL DE Blade

Recommended Torque: 77 Nm\*



\*recommended torque values are for grade 8 steel hardware

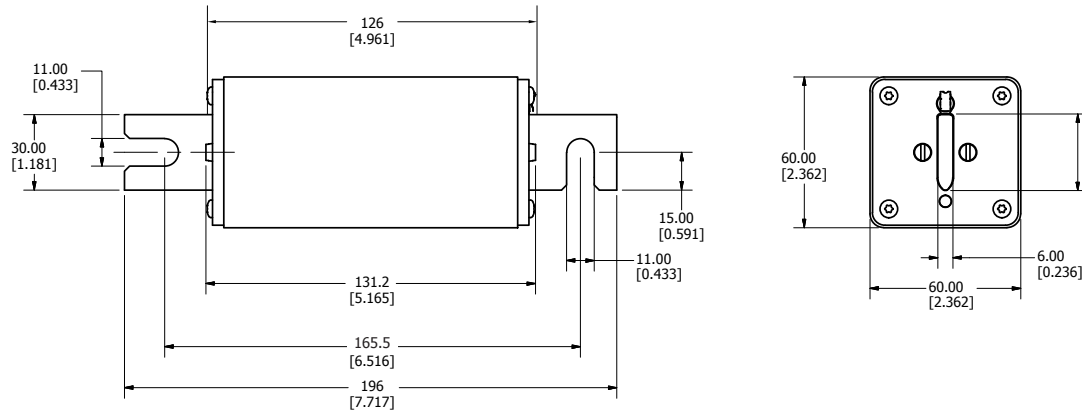
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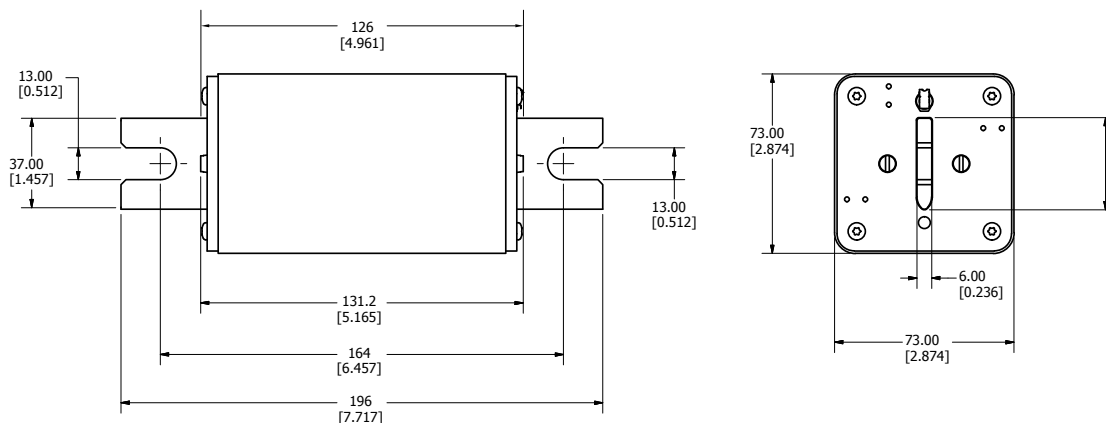
#### Size: 2 XL DL Blade

Recommended Torque: 44 Nm\*



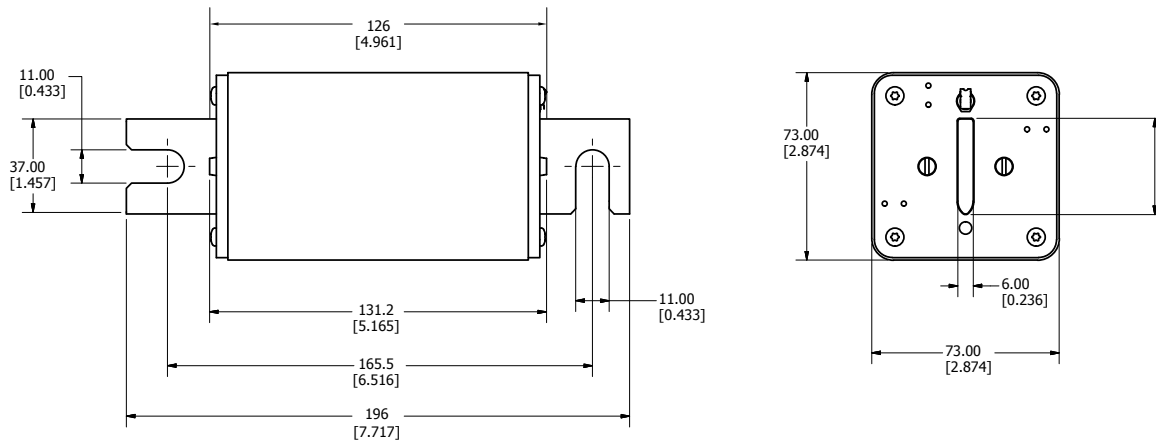
#### Size: 3 L DE Blade

Recommended Torque: 77 Nm\*



#### Size: 3 L DL Blade

Recommended Torque: 44 Nm\*



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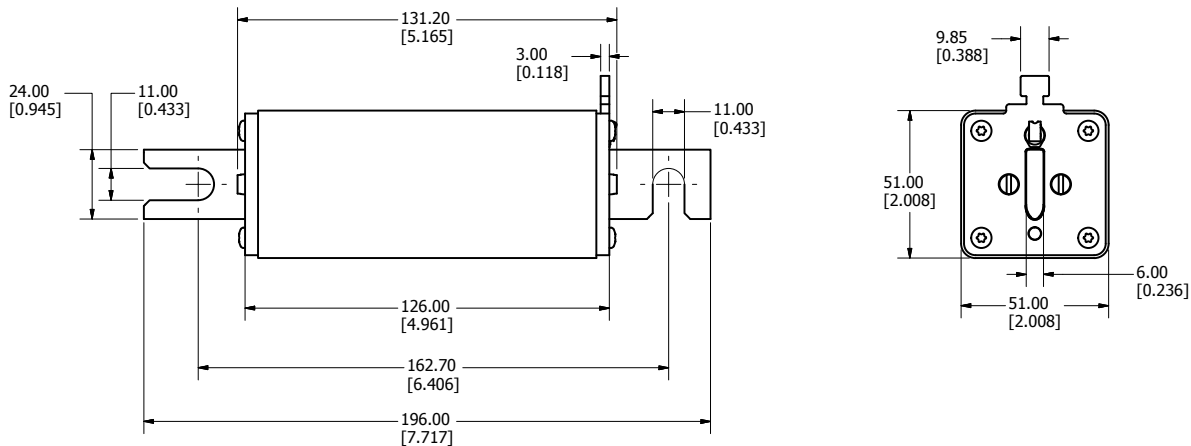
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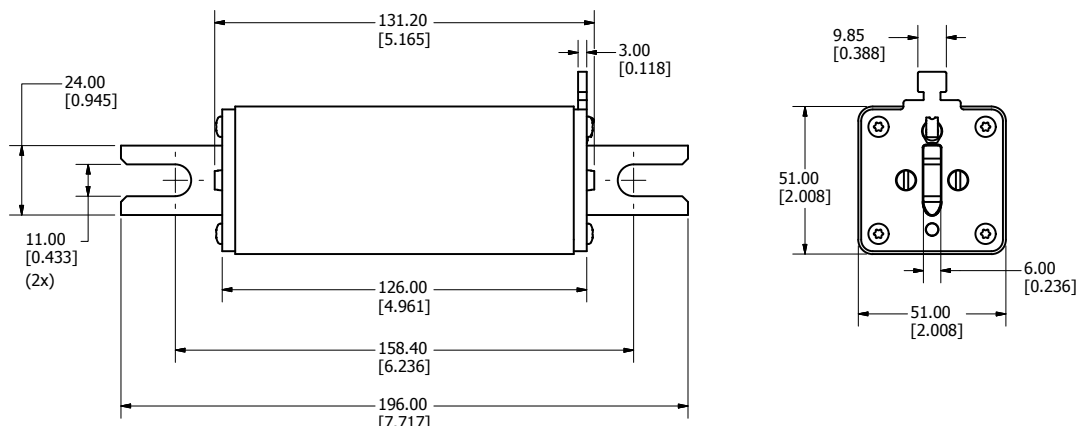
#### Size: 1 XL DL Blade w/ Microswitch Tab

Recommended Torque: 44 Nm\*



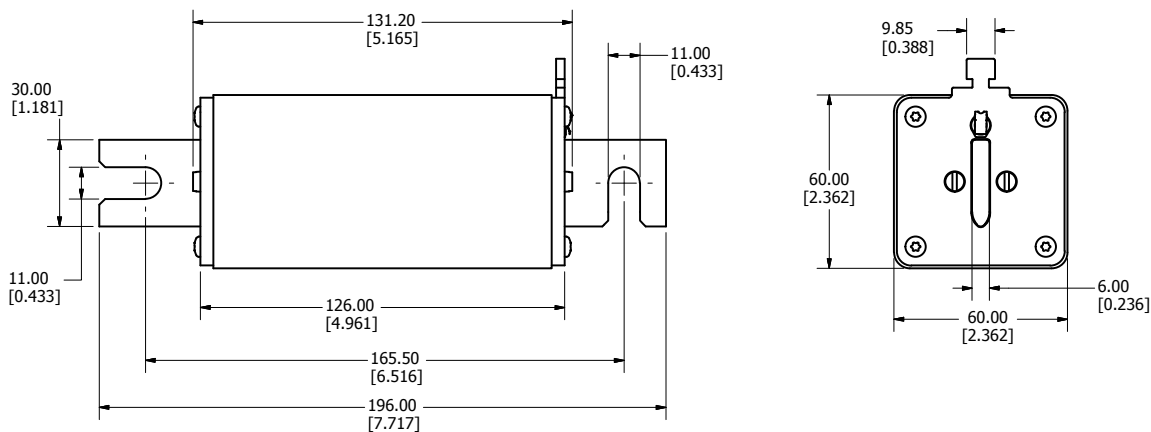
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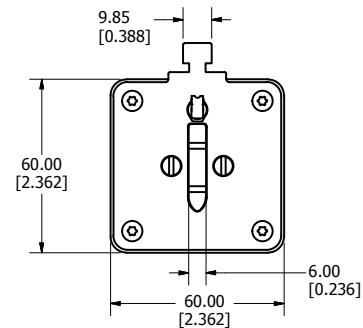
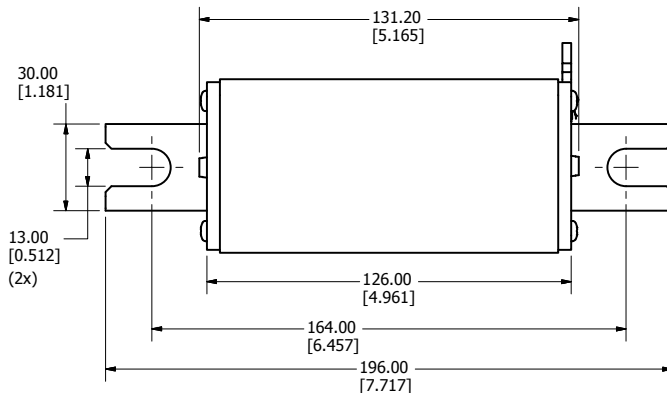
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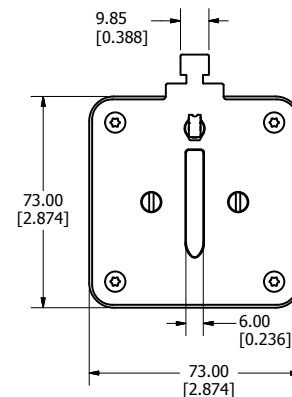
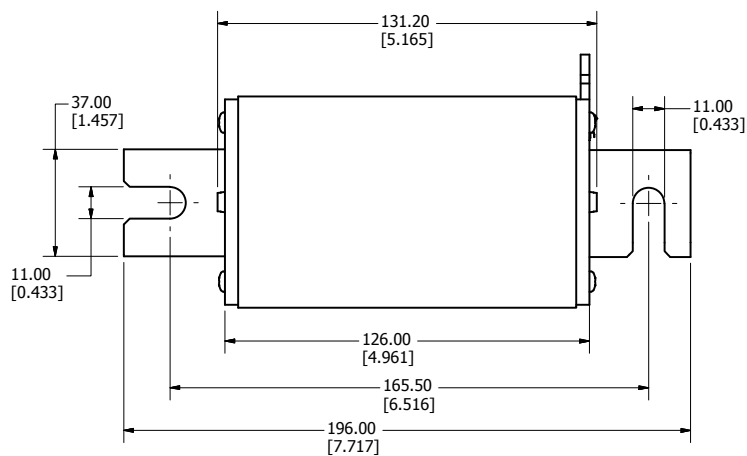
#### Size: 2 XL DE Blade w/ Microswitch Tab

Recommended Torque: 77 Nm\*



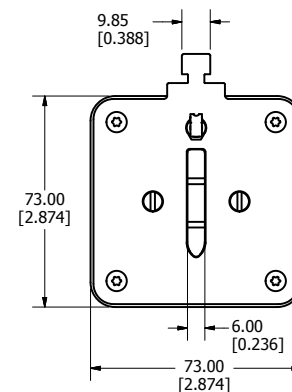
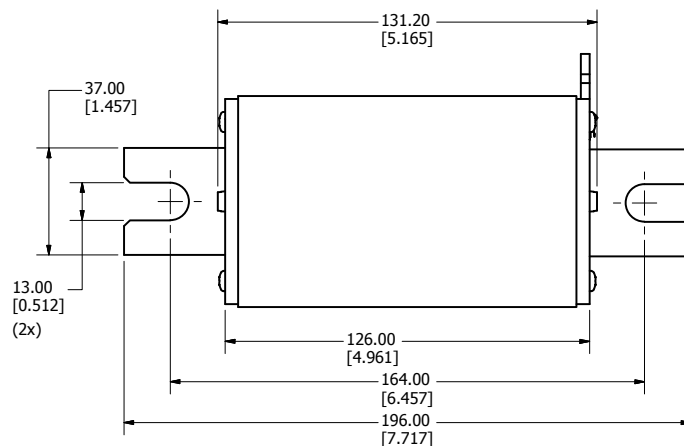
#### Size: 3 L DL Blade w/ Microswitch Tab

Recommended Torque: 44 Nm\*



#### Size: 3 L DE Blade w/ Microswitch Tab

Recommended Torque: 77 Nm\*



\*recommended torque values are for grade 8 steel hardware

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## SPNH SERIES SOLAR FUSE

### Electrical Specifications

| AMPERAGE<br>RATING | VOLTAGE<br>RATING | INTERRUPTING<br>RATING | NOM COLD<br>RESISTANCE<br>(mΩ) | MELTING<br>(PRE-ARC)<br>I <sup>2</sup> T (A <sup>2</sup> s) | TOTAL CLEARING<br>I <sup>2</sup> T (A <sup>2</sup> s) AT RATED<br>VOLTAGE | WATTS LOSS<br>AT 100% RATED<br>CURRENT (W) | WATTS LOSS<br>AT 70% RATED<br>CURRENT (W) | SIZE |
|--------------------|-------------------|------------------------|--------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------|------|
|                    | DC                | DC                     |                                |                                                             |                                                                           |                                            |                                           |      |
| 50                 | 1500              | 30 kA                  | 3.95                           | 800                                                         | 3,500                                                                     | 14                                         | 6                                         | 1 XL |
| 63                 | 1500              | 30 kA                  | 2.96                           | 1,500                                                       | 6,000                                                                     | 14                                         | 6.2                                       |      |
| 80                 | 1500              | 30 kA                  | 2.36                           | 5,000                                                       | 15,000                                                                    | 16                                         | 7                                         |      |
| 100                | 1500              | 30 kA                  | 1.47                           | 10,000                                                      | 26,000                                                                    | 19                                         | 8.3                                       |      |
| 125                | 1500              | 30 kA                  | 1.07                           | 15,000                                                      | 37,000                                                                    | 22                                         | 9.7                                       |      |
| 160                | 1500              | 30 kA                  | 0.85                           | 19,000                                                      | 48,000                                                                    | 30                                         | 13.2                                      |      |
| 200                | 1500              | 30 kA                  | 0.63                           | 22,000                                                      | 75,000                                                                    | 32.5                                       | 13.7                                      | 2 XL |
| 200                | 1500              | 30 kA                  | 0.66                           | 42,000                                                      | 75,000                                                                    | 36                                         | 15.9                                      |      |
| 250                | 1500              | 30 kA                  | 0.51                           | 73,000                                                      | 132,000                                                                   | 44                                         | 19.3                                      |      |
| 315                | 1500              | 50 kA                  | 0.37                           | 65,000                                                      | 300,000                                                                   | 57                                         | 22.2                                      | 3 L  |
| 350                | 1500              | 50 kA                  | 0.33                           | 75,000                                                      | 350,000                                                                   | 61                                         | 23.7                                      |      |
| 400                | 1500              | 50 kA                  | 0.28                           | 85,000                                                      | 450,000                                                                   | 67                                         | 26.8                                      |      |

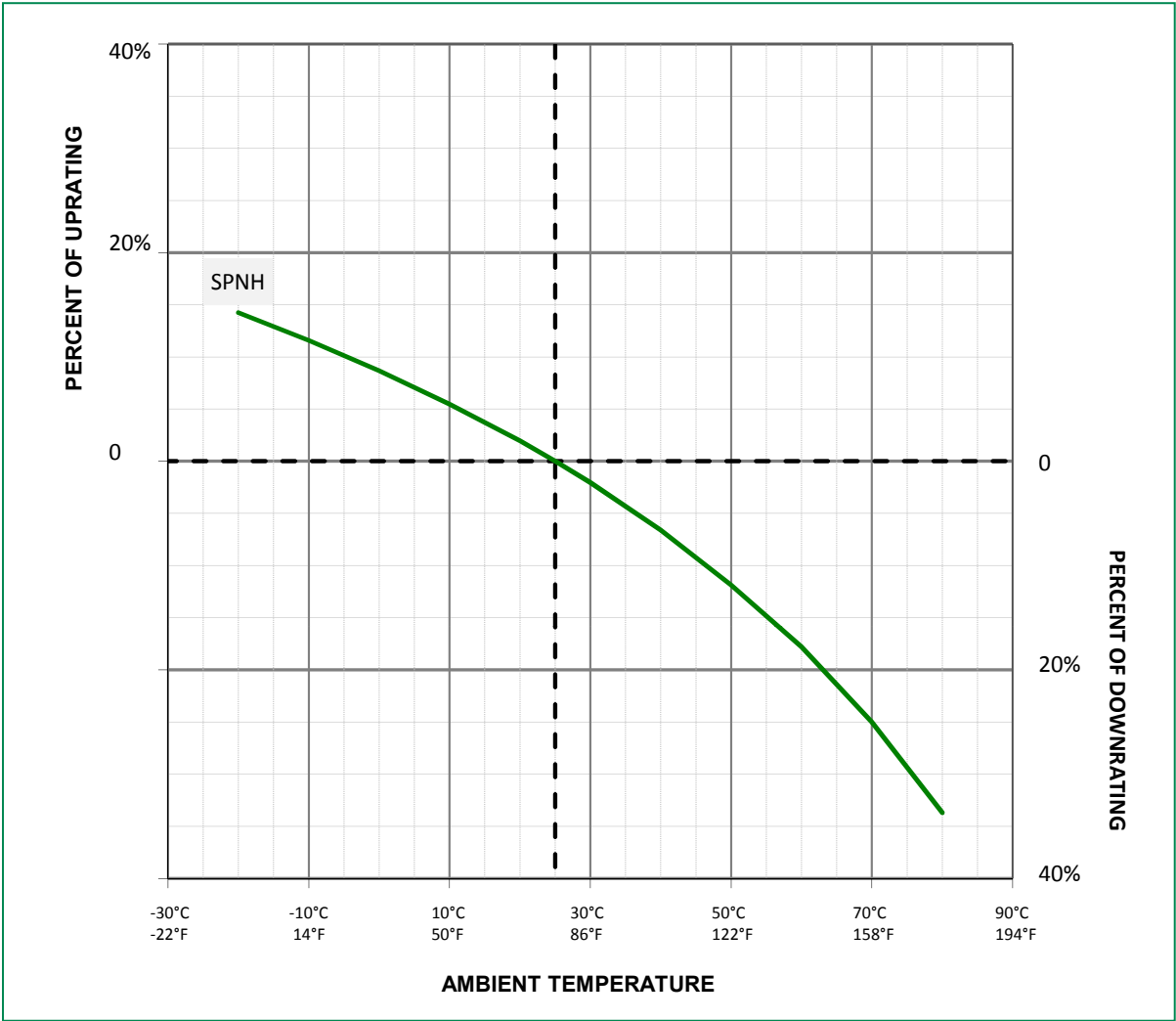
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## SPNH SERIES SOLAR FUSE

### Ordering Information

| CONTACT      | CASE SIZE | AMPERAGE RATING | AMP CODE | CATALOG NUMBER | PRODUCT MARKING | ORDERING NUMBER | UPC         | MICROSWITCH COMPATIBLE CATALOG NUMBER | MICROSWITCH COMPATIBLE PRODUCT MARKING | MICROSWITCH COMPATIBLE ORDERING NUMBER | MICROSWITCH COMPATIBLE UPC | AGENCY APPROVALS |
|--------------|-----------|-----------------|----------|----------------|-----------------|-----------------|-------------|---------------------------------------|----------------------------------------|----------------------------------------|----------------------------|------------------|
|              |           |                 |          |                |                 |                 |             |                                       |                                        |                                        |                            | UL               |
| SOLID BLADE  | 1XL       | 50 A            | 050      | SPNH050        | SPNH 50A        | SPNH050.X       | 07945804294 | SPNH050                               | SPNH 50A                               | SPNH050.X                              | 07945804294                | •                |
|              |           | 63 A            | 063      | SPNH063        | SPNH 63A        | SPNH063.X       | 07945804295 | SPNH063                               | SPNH 63A                               | SPNH063.X                              | 07945804295                | •                |
|              |           | 80 A            | 080      | SPNH080        | SPNH 80A        | SPNH080.X       | 07945804319 | SPNH080                               | SPNH 80A                               | SPNH080.X                              | 07945804319                | •                |
|              |           | 100 A           | 100      | SPNH100        | SPNH 100A       | SPNH100.X       | 07945804359 | SPNH100                               | SPNH 100A                              | SPNH100.X                              | 07945804359                | •                |
|              |           | 125 A           | 125      | SPNH125        | SPNH 125A       | SPNH125.X       | 07945804433 | SPNH125                               | SPNH 125A                              | SPNH125.X                              | 07945804433                | •                |
|              |           | 160 A           | 160      | SPNH160        | SPNH 160A       | SPNH160.X       | 07945804443 | SPNH160                               | SPNH 160A                              | SPNH160.X                              | 07945804443                | •                |
|              |           | 200 A           | 200      | SPNH200        | SPNH 200A       | SPNH200.X       | 07945804552 | SPNH200                               | SPNH 200A                              | SPNH200.X                              | 07945804552                | •                |
|              | 2XL       | 200 A           | 200      | SPNH200-2XL    | SPNH 200A-2XL   | SPNH200.X2XL    | 07945819771 | SPNH200-2XL                           | SPNH 200A-2XL                          | SPNH200.X2XL                           | 07945819771                | •                |
|              |           | 250 A           | 250      | SPNH250-2XL    | SPNH 250A-2XL   | SPNH250.X2XL    | 07945819772 | SPNH250-2XL                           | SPNH 250A-2XL                          | SPNH250.X2XL                           | 07945819772                | •                |
|              | 3L        | 315 A           | 315      | SPNH315-3L     | SPNH 315A-3L    | SPNH315.X3L     | 07945821115 | SPNH315-3L                            | SPNH 315A-3L                           | SPNH315.X3L                            | 07945821115                | •                |
|              |           | 350 A           | 350      | SPNH350-3L     | SPNH 350A-3L    | SPNH350.X3L     | 07945821116 | SPNH350-3L                            | SPNH 350A-3L                           | SPNH350.X3L                            | 07945821116                | •                |
|              |           | 400 A           | 400      | SPNH400-3L     | SPNH 400A-3L    | SPNH400.X3L     | 07945821117 | SPNH400-3L                            | SPNH 400A-3L                           | SPNH400.X3L                            | 07945821117                | •                |
| DL BLADE (S) | 1XL       | 50 A            | 050      | SPNH050-DL     | SPNH 50A-DL     | SPNH050.XXDL    | 07945819843 | SPNH050-DLMS                          | SPNH 50A-DLMS                          | SPNH050.XXDLMS                         | 07945823539                | •                |
|              |           | 63 A            | 063      | SPNH063-DL     | SPNH 63A-DL     | SPNH063.XXDL    | 07945819844 | SPNH063-DLMS                          | SPNH 63A-DLMS                          | SPNH063.XXDLMS                         | 07945823541                | •                |
|              |           | 80 A            | 080      | SPNH080-DL     | SPNH 80A-DL     | SPNH080.XXDL    | 07945819845 | SPNH080-DLMS                          | SPNH 80A-DLMS                          | SPNH080.XXDLMS                         | 07945823543                | •                |
|              |           | 100 A           | 100      | SPNH100-DL     | SPNH 100A-DL    | SPNH100.XXDL    | 07945819846 | SPNH0100-DLMS                         | SPNH 100A-DLMS                         | SPNH0100.XXDLMS                        | 07945823545                | •                |
|              |           | 125 A           | 125      | SPNH125-DL     | SPNH 125A-DL    | SPNH125.XXDL    | 07945819847 | SPNH0125-DLMS                         | SPNH 125A-DLMS                         | SPNH0125.XXDLMS                        | 07945823547                | •                |
|              |           | 160 A           | 160      | SPNH160-DL     | SPNH 160A-DL    | SPNH160.XXDL    | 07945819848 | SPNH0160-DLMS                         | SPNH 160A-DLMS                         | SPNH0160.XXDLMS                        | 07945823549                | •                |
|              |           | 200 A           | 200      | SPNH200-DL     | SPNH 200A-DL    | SPNH200.XXDL    | 07945819849 | SPNH0200-DLMS                         | SPNH 200A-DLMS                         | SPNH0200.XXDLMS                        | 07945823553                | •                |
|              | 2XL       | 200 A           | 200      | SPNH200-2XLDL  | SPNH 200A-2XLDL | SPNH200.X2XLDL  | 07945819850 | SPNH0200-2XLDLMS                      | SPNH 200A-2XLDLMS                      | SPNH0200.X2XLDLMS                      | 07945823551                | •                |
|              |           | 250 A           | 250      | SPNH250-2XLDL  | SPNH 250A-2XLDL | SPNH250.X2XLDL  | 07945819851 | SPNH0250-2XLDLMS                      | SPNH 250A-2XLDLMS                      | SPNH0250.X2XLDLMS                      | 07945823555                | •                |
|              | 3L        | 315 A           | 315      | SPNH315-3LDL   | SPNH 315A-3LDL  | SPNH315.X3LDL   | 07945821118 | SPNH0315-3LDLMS                       | SPNH 315A-3LDLMS                       | SPNH0315.X3LDLMS                       | 07945823557                | •                |
|              |           | 350 A           | 350      | SPNH350-3LDL   | SPNH 350A-3LDL  | SPNH350.X3LDL   | 07945821119 | SPNH0350-3LDLMS                       | SPNH 350A-3LDLMS                       | SPNH0350.X3LDLMS                       | 07945823559                | •                |
|              |           | 400 A           | 400      | SPNH400-3LDL   | SPNH 400A-3LDL  | SPNH400.X3LDL   | 07945821120 | SPNH0400-3LDLMS                       | SPNH 400A-3LDLMS                       | SPNH0400.X3LDLMS                       | 07945823561                | •                |
| DE BLADE (U) | 1XL       | 50 A            | 050      | SPNH050-DE     | SPNH 50A-DE     | SPNH050.XXDE    | 07945819852 | SPNH050-DEMS                          | SPNH 50A-DEMS                          | SPNH050.XXDEMS                         | 07945823538                | •                |
|              |           | 63 A            | 063      | SPNH063-DE     | SPNH 63A-DE     | SPNH063.XXDE    | 07945819853 | SPNH063-DEMS                          | SPNH 63A-DEMS                          | SPNH063.XXDEMS                         | 07945823540                | •                |
|              |           | 80 A            | 080      | SPNH080-DE     | SPNH 80A-DE     | SPNH080.XXDE    | 07945819854 | SPNH080-DEMS                          | SPNH 80A-DEMS                          | SPNH080.XXDEMS                         | 07945823542                | •                |
|              |           | 100 A           | 100      | SPNH100-DE     | SPNH 100A-DE    | SPNH100.XXDE    | 07945819855 | SPNH0100-DEMS                         | SPNH 100A-DEMS                         | SPNH0100.XXDEMS                        | 07945823544                | •                |
|              |           | 125 A           | 125      | SPNH125-DE     | SPNH 125A-DE    | SPNH125.XXDE    | 07945819856 | SPNH0125-DEMS                         | SPNH 125A-DEMS                         | SPNH0125.XXDEMS                        | 07945823546                | •                |
|              |           | 160 A           | 160      | SPNH160-DE     | SPNH 160A-DE    | SPNH160.XXDE    | 07945819857 | SPNH0160-DEMS                         | SPNH 160A-DEMS                         | SPNH0160.XXDEMS                        | 07945823548                | •                |
|              |           | 200 A           | 200      | SPNH200-DE     | SPNH 200A-DE    | SPNH200.XXDE    | 07945819858 | SPNH0200-DEMS                         | SPNH 200A-DEMS                         | SPNH0200.XXDEMS                        | 07945823552                | •                |
|              | 2XL       | 200 A           | 200      | SPNH200-2XLDE  | SPNH 200A-2XLDE | SPNH200.X2XLDE  | 07945819859 | SPNH0200-2XLDEMS                      | SPNH 200A-2XLDEMS                      | SPNH0200.X2XLDEMS                      | 07945823550                | •                |
|              |           | 250 A           | 250      | SPNH250-2XLDE  | SPNH 250A-2XLDE | SPNH250.X2XLDE  | 07945819860 | SPNH0250-2XLDEMS                      | SPNH 250A-2XLDEMS                      | SPNH0250.X2XLDEMS                      | 07945823554                | •                |
|              | 3L        | 315 A           | 315      | SPNH315-3LDE   | SPNH 315A-3LDE  | SPNH315.X3LDE   | 07945821121 | SPNH0315-3LDEMS                       | SPNH 315A-3LDEMS                       | SPNH0315.X3LDEMS                       | 07945823556                | •                |
|              |           | 350 A           | 350      | SPNH350-3LDE   | SPNH 350A-3LDE  | SPNH350.X3LDE   | 07945821122 | SPNH0350-3LDEMS                       | SPNH 350A-3LDEMS                       | SPNH0350.X3LDEMS                       | 07945823558                | •                |
|              |           | 400 A           | 400      | SPNH400-3LDE   | SPNH 400A-3LDE  | SPNH400.X3LDE   | 07945821123 | SPNH0400-3LDEMS                       | SPNH 400A-3LDEMS                       | SPNH0400.X3LDEMS                       | 07945823560                | •                |

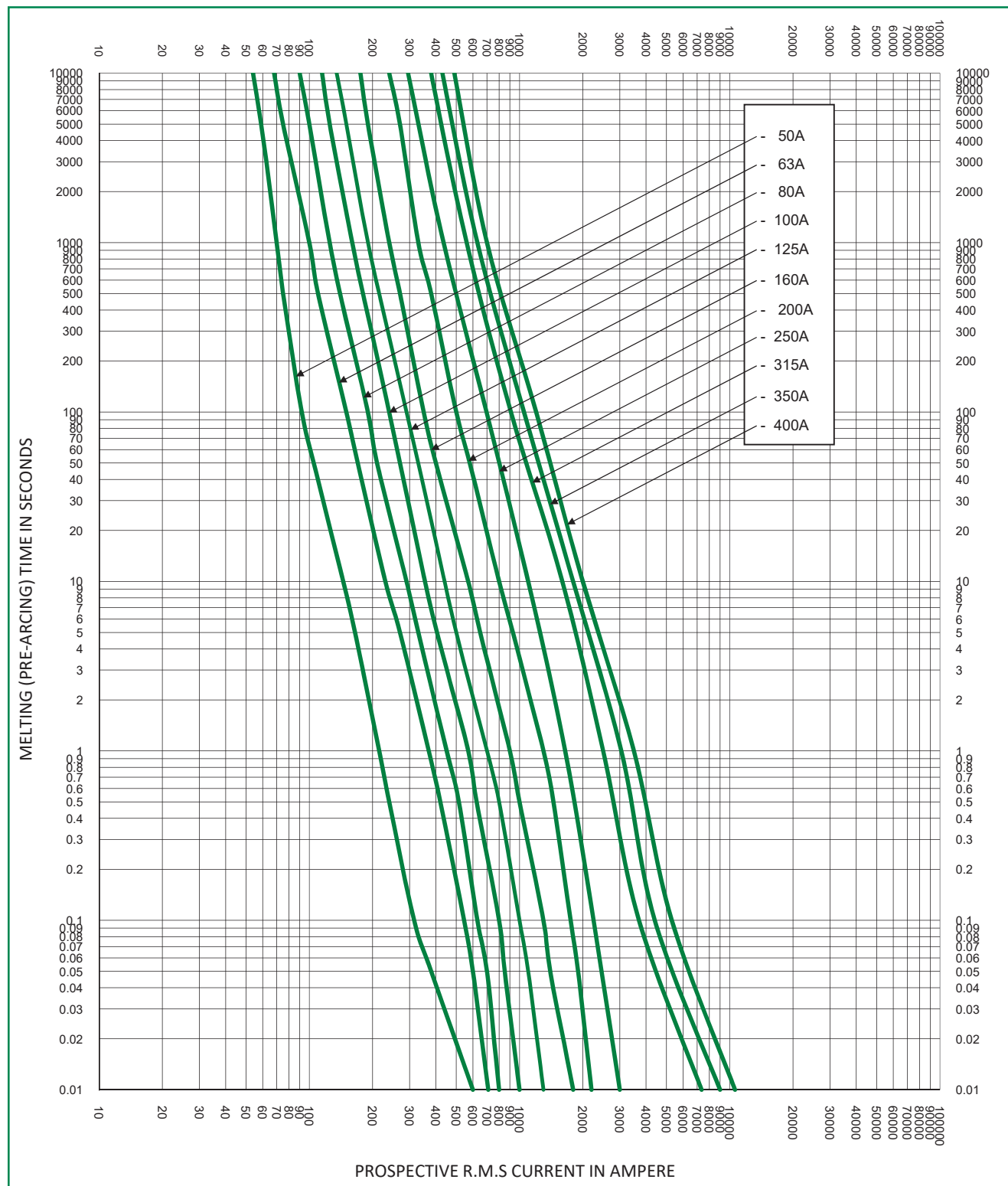
Temperature Derating Curve (Temperature of Air Immediately Surrounding Fuse)



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## SPNH SERIES SOLAR FUSE

### Time Current Curve



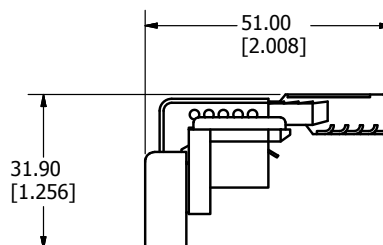
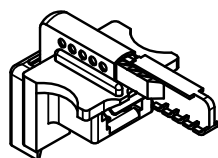
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## SPNH SERIES SOLAR FUSE

### Microswitch

### MSSPNH1500X

### Dimensions Millimeters (in)



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