With over 60 million devices installed in photovoltaic power systems, Littelfuse understands the global challenges of the solar market. Littelfuse offers numerous circuit-protection products that are uniquely suited to protect the equipment and systems subject to the harsh environments of standard photovoltaic installations.

Look for this logo to indicate products that are used in solar applications. Visit our website Littelfuse.com/Solar for the latest updates on approvals, certifications, and new products.
# Solar Products

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**SPXV SERIES IN-LINE SOLAR FUSE**

1500 V dc • 1–60 A

---

### Description

The Littelfuse SPXV solar string fuse has been specifically designed for the protection of photovoltaic (PV) systems. It is available in multiple ampere ratings to match various requirements in a range of applications.

### Features/Benefits

- Offers higher amperage protection in less space for increased design flexibility
- Full range, fast-acting fuse helps eliminate common low-overload faults
- Up to 50,000 A interrupting rating

### Applications

- Inverters
- Combiner boxes

### Recommended Accessories

**1–32 Amperes**
- **Fuse Holder:** LFPXV001
- **Fuse Clips:** 125003

**35–60 Amperes**
- **Fuse Block and Cover:** LFXV15060-BC

### Web Resources

Download technical resources at: [Littelfuse.com/spxv](http://Littelfuse.com/spxv)

---

### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>Voltage Rating</td>
<td>1500 V dc</td>
</tr>
<tr>
<td>Amperage Rating</td>
<td>1, 2, 2.25, 2.5, 3, 3.5, 4, 4.5, 5, 6, 8, 10, 12, 15, 16, 20, 25, 30, 32, 35, 40, 45, 50, 55, 60 A</td>
</tr>
<tr>
<td>Interrupting Rating</td>
<td>SPXV 1 A–20 A: 30 kA (50 kA Self-Certified)</td>
</tr>
<tr>
<td></td>
<td>SPXV 35 A–60 A: 50 kA</td>
</tr>
<tr>
<td>Time Constant</td>
<td>≤ 1 ms</td>
</tr>
<tr>
<td>Material</td>
<td>Body: melamine</td>
</tr>
<tr>
<td></td>
<td>Caps: copper alloy (nickel plated)</td>
</tr>
<tr>
<td>Approvals</td>
<td>UL 248-19 Listed (File: E339112)</td>
</tr>
<tr>
<td>Applicable Standards</td>
<td>UL 248-1, 248-19</td>
</tr>
<tr>
<td>Environmental</td>
<td>RoHS Compliant</td>
</tr>
<tr>
<td>Country of Origin</td>
<td>Mexico</td>
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</table>

### Part Numbering System

**Series**

**SPXV xxx T –**

**Options**

<table>
<thead>
<tr>
<th>Ampere Code</th>
<th>Package Quantity</th>
<th>Catalog Number</th>
<th>Ordering Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>10</td>
<td>SPXV006</td>
<td>SPXV006.T</td>
</tr>
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<td>XM</td>
<td>10</td>
<td>SPXV032</td>
<td>SPXV032.TXM</td>
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<td></td>
<td>50</td>
<td>SPXV020</td>
<td>SPXV020.L</td>
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</table>

---

---
SPXV Dimensions mm (in)

1–20 A

- 84.65 (3.333)
- 10.31 (.406)

35–60 A

- 127.00 (5.000)
- 20.65 (0.813)

SPXV-M Dimensions mm (in)

25–32 A

- 84.65 (3.333)
- 10.31 (.406)
1500 V dc • 1–60 A

**Description**

The Littelfuse SPXI solar fuse is specifically designed for the protection of photovoltaic (PV) systems. It integrates into an in-line assembly within a wire harness and can be electrically insulated by either overmolding or using heat-shrink.

Littelfuse offers multiple ampere ratings to match specific requirements in a variety of applications.

**Features/Benefits**

- Offers higher amperage protection in less space for increased design flexibility
- One-piece cap design, without joints, offers easier wire crimping and more streamlined molding
- No fuse holder required helps save space, time, and money
- 50,000 A interrupting rating

**Applications**

- Photovoltaic high-capacity homerun, trunk harness, and wire harness

**Recommended Crimping Tool**

10-12 AWG: T&B Sta-Kon ERG4002
8 AWG: T&B Sta-Kon ERG4
6 AWG: Burndy MRC840AL

**Specifications**

<table>
<thead>
<tr>
<th>Voltage Rating</th>
<th>1500 V dc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amperage Rating</td>
<td>1, 2, 2.25, 2.5, 3, 3.5, 4, 4.5, 5, 6, 8, 10, 12, 15, 16, 20, 25, 30, 32, 35, 40, 45, 50, 55, 60 A</td>
</tr>
<tr>
<td>Interrupting Ratings</td>
<td>SPXI 1–20 A and SPXI-B 1–20 A: 30 kA</td>
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<tr>
<td></td>
<td>SPXI 35–50 A and SPXI-B 35–60 A: 50 kA</td>
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<tr>
<td></td>
<td>SPXI-M and SPXI-BM 25–32A: 50 kA</td>
</tr>
<tr>
<td>Time Constant</td>
<td>≤ 1ms</td>
</tr>
<tr>
<td>Material</td>
<td>Body: melamine</td>
</tr>
<tr>
<td></td>
<td>Caps: copper alloy (nickel plated)</td>
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<td>TÜV (Cert: J 504957B5)</td>
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<tr>
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<td>UL 248-1, 248-19</td>
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<tr>
<td>Environmental</td>
<td>RoHS Compliant</td>
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<tr>
<td>Country of Origin</td>
<td>Mexico</td>
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<tr>
<td>US Patent</td>
<td>9,564,281</td>
</tr>
</tbody>
</table>

**Part Numbering System**

**SPXI xxx T XB**

- **Series**
- **Ampere Code**
  - Refer to Ampere Code Column in Ordering Information Table
- **Options**
  - Refer to Ordering Number column in Ordering Information Table
- **Package Quantity**
  - T = 10 |
  - L = 50

**Web Resources**

Download additional technical information and view the complete solar portfolio: [Littelfuse.com/spxi](http://Littelfuse.com/spxi)
### SPXI SERIES IN-LINE SOLAR FUSE

#### Dimensions

<table>
<thead>
<tr>
<th>SERIES</th>
<th>AMPS</th>
<th>DIMENSIONS IN MM (INCHES)</th>
<th>WIRE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>SPXI</td>
<td>2.5–4</td>
<td>81.41 (3.205)</td>
<td>10.31 (0.406)</td>
</tr>
<tr>
<td></td>
<td>4.5–20</td>
<td>110.06 (4.333)</td>
<td>10.31 (0.406)</td>
</tr>
<tr>
<td></td>
<td>35–50</td>
<td>158.04 (6.222)</td>
<td>20.65 (0.813)</td>
</tr>
<tr>
<td>SPXI-B</td>
<td>2.5–4</td>
<td>85.4 (3.362)</td>
<td>10.31 (0.406)</td>
</tr>
<tr>
<td></td>
<td>4.5–20</td>
<td>114.05 (4.49)</td>
<td>10.31 (0.406)</td>
</tr>
<tr>
<td></td>
<td>35–60</td>
<td>163.58 (6.44)</td>
<td>20.65 (0.813)</td>
</tr>
<tr>
<td>SPXI-M</td>
<td>25–32</td>
<td>110.06 (4.333)</td>
<td>10.31 (0.406)</td>
</tr>
<tr>
<td></td>
<td>25–32</td>
<td>114.05 (4.49)</td>
<td>10.31 (0.406)</td>
</tr>
</tbody>
</table>
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

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

Part Numbering System

Series | Amp Code | Package Quantity | CATALOG NUMBER | ORDERING NUMBER
---|---|---|---|---
SPNH | XXX | X | DL

Termination* Blank = solid blade w/Microswitch tab DL = S blade DE = U blade DLMS = S blade w/Microswitch tab DEMS = U blade w/Microswitch tab

Case Size* X = 1XL size 2XL = 2XL size 3L = 3L size

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

*Solid blade option for 1XL case size does not require a case or termination designator for the part number.
Dimensions Millimeters (in)

Size: 1 XL w/ Microswitch Tab

Size: 2 XL w/ Microswitch Tab

Size: 3 L w/ Microswitch Tab
Dimensions Millimeters (in)

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
Dimensions Millimeters (in)

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*

*recommended torque values are for grade 8 steel hardware
**Dimensions Millimeters (in)**

**Size: 1 XL DL Blade w/ Microswitch Tab**
Recommended Torque: 44 Nm*

*Recommended torque values are for grade 8 steel hardware*
### Solar Products

**SPNH SERIES SOLAR FUSE**

#### Dimensions Millimeters (in)

**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

---

**Microswitch MSSPNH1500X**
**Description**

The Littelfuse LFXV15 series fuse block and cover is designed to hold 1500 V size 20 x 127 mm fuses rated 35–60 amperes. Suitable for photovoltaic systems (string and high-capacity combiner boxes) with fault currents up to 50 kA.

With available ampere ratings up to 60 A, more strings can be pre-combined in harnesses to reduce the number of inputs into combiner boxes, thereby decreasing installation time and labor costs.

**Features/Benefits**

- Dead-front cover design offers personnel protection
- Ventilated design keeps the fuse running cooler, even at high ambient temperatures and current ratings, to increase fuse longevity
- Narrower width accommodates more blocks in a panel to maximize space
- Designed for easy fuse removal and replacement to minimize maintenance time. No tools required
- 35 mm DIN-rail mounting option for quick assembly and installation
- Accepts both wire and busbar for added flexibility
- Positive lock feature secures the fuse puller in the block when the fuse is absent

**Recommended Fuses**

Littelfuse SPXV 20 x 127 mm fuses rated 35–60 amperes.

**Ordering Information**

<table>
<thead>
<tr>
<th>VOLTAGE (V dc)</th>
<th>AMPERES RATING</th>
<th>POLES</th>
<th>FUSE BLOCK &amp; COVER</th>
<th>ORDERING NUMBER</th>
<th>CONNECTOR TYPE</th>
<th>DRIVE</th>
<th>TORQUE</th>
<th>WIRE RANGE</th>
<th>WIRE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>60</td>
<td>1</td>
<td>LFXV15060-BC*</td>
<td></td>
<td>Box Lug</td>
<td>3/16 Inch Hex</td>
<td>5.6 N-m (50 lb-in)</td>
<td>2–4 AWG (35–25 mm²)</td>
<td>CU only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.8 N-m (25 lb-in)</td>
<td>6–14 AWG (16–2.5 mm²)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*For replacement only: Fuse Block LFXV150601C or Cover LFXV15060FBC

**Specifications**

- Voltage Ratings: 1500 V dc
- Amperage Rating: 60 A
- Withstand Rating: 50 kA
- Power Acceptance: 24.1W Maximum
- Fuse Size: 20 x 127 mm
- Material: Thermoplastic
- Operating Temperature: -55 °C to +125 °C
- Flammability Rating: UL94 V-0
- Temperature Stability: Base: 130 °C, Cover: 140 °C
- Approvals: Block: UL 4248-19 Listed (File E345481), Cover: UL Listed Fuse Accessory (File E184929)
- Environmental: RoHS compliant, Lead (Pb) free, REACH
- Recommended DIN Rail: TH 35-7,5 per IEC 60715

**Web Resources**

Download the complete datasheet and other technical documents: Littelfuse.com/LFXV15
LFXV15 Features & Benefits

- Narrow width of holder accommodates more blocks in a panel to maximize space (34.79 mm; 1.37 in)
- Thermoplastic barriers for additional safety
- Fuse puller hooks facilitate easy removal
- Handle designed for easy fuse removal and replacement to minimize maintenance time. No tools required.
- Dead-front cover design offers personnel protection
- Ventilated design keeps fuse running cooler, even at high ambient temperatures and current ratings, to increase fuse longevity
- SPXV Solar Fuse (not included)
- #10 panel mounting holes available for installation flexibility
- Positive lock feature secures the fuse puller in the block when the fuse is absent
- 35 mm DIN-rail clip mounting option for quick assembly and installation
- Accepts both wire and busbar for added flexibility
Dimensions Millimeters (in)

Fuse Block & Cover Assembly: LFXV15060-BC

Fuse Cover: LFXV15060FBC

Fuse Block: LFXV150601C

Look for this logo to indicate products that are used in solar applications. Visit our website Littelfuse.com/Solar for the latest updates on approvals, certifications, and new products.
Description
The LFPXV series touch-safe dead front fuse holders are designed to hold 1500 V 10x85 mm fuses. These fuse holders are DIN rail mountable and easily removed with no additional fuse pullers or tools.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger-safe design</td>
<td>Maximum safety for personnel</td>
</tr>
<tr>
<td>35 mm DIN rail mountable</td>
<td>Easy installation in various settings</td>
</tr>
<tr>
<td>Compact design</td>
<td>Ultimate flexibility, space-saving</td>
</tr>
<tr>
<td>Evaluated for use with copper alloy busbars</td>
<td>Improve reliability</td>
</tr>
</tbody>
</table>

Applications
- For use with Littelfuse SPXV/SPXV-S Fuses

Look for this logo to indicate products that are used in solar applications. Visit our website littelfuse.com/solar for the latest updates on approvals, certifications, and new products.
Specifications

Voltage Ratings: 1500 V dc
Amperage Rating: 32 A
Withstand Rating: 50 kA
Power Dissipation: 8W Maximum
Fuse Type: 10x85 mm
Material: Thermoplastic
Fuse Clip: Silver plated copper alloy
Screws: Zinc plated steel
Operating Temperature: -55 °C to +125 °C
Flammability Rating: UL94 V-0
Temperature Stability: Body: 130 °C
Carrier: 140 °C
Applicable Standards: UL 4248-19 Listed, IEC 60269-6
Environmental: RoHS compliant, Lead (Pb) free, REACH
Recommended DIN Rail: TH 35-7.5 per IEC 60715
Country of Origin: China

WIRE TYPE

<table>
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<th>Wire Type</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Total Wire Type</td>
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<tr>
<td>75 °C or 90 °C</td>
<td>UL Class B and Class C wire</td>
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<tr>
<td>CU Only</td>
<td>AlphaWire PV series Photovoltaic Wire</td>
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<tr>
<td>Stranded</td>
<td>IEC Class 5 Flexible Wire</td>
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</table>

BUSBAR SPECIFICATIONS

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Thickness</th>
<th>Width</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>0.188 in</td>
<td>0.290 in</td>
<td>24-28 lb-in</td>
</tr>
<tr>
<td></td>
<td>(4.78 mm)</td>
<td>(7.37 mm)</td>
<td>(2.71–3.16 N-m)</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.125 in</td>
<td>0.200 in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.18 mm)</td>
<td>(5.08 mm)</td>
<td></td>
</tr>
</tbody>
</table>

Certification & Compliance

UL: UL listed (File:E345481)
CE: EU Declaration of Conformity (File: LFPXV_200921)
TUV: TUV Certificate (R 50505296)

Accessories

Littelfuse SPXV/SPXV-S Fuses
## Ordering Information

<table>
<thead>
<tr>
<th>SERIES</th>
<th>VOLTAGE (V DC)</th>
<th>POLES</th>
<th>CATALOG NUMBER</th>
<th>ORDERING NUMBER</th>
<th>PACK QTY</th>
<th>TERMINAL INFORMATION</th>
<th>TERMINAL TYPE</th>
<th>NUMBER OF WIRES</th>
<th>WIRE SIZE</th>
<th>TORQUE</th>
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<tbody>
<tr>
<td>LFPXV</td>
<td>1500</td>
<td>1</td>
<td>LFPXV001</td>
<td>LFPXV0001Z</td>
<td>20</td>
<td>1</td>
<td>Box Lug</td>
<td>1</td>
<td>4–14 AWG (25–2.5 mm²)</td>
<td>24–28 lb-in (2.71–3.16 N-m)</td>
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<td></td>
<td>1</td>
<td>16–18 AWG (1.5–0.75 mm²)</td>
<td>16–22 lb-in (2.03–2.49 N-m)</td>
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<td></td>
<td></td>
<td>2*</td>
<td>6–14 AWG (16–2.5 mm²)</td>
<td>26–30 lb-in (2.94–3.69 N-m)</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2*</td>
<td>16–18 AWG (1.5–0.75 mm²)</td>
<td>20–24 lb-in (2.26–2.71 N-m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Must be the same wire type and cross sectioned size

## Dimensions mm (inches)

![Dimensions Diagram]
Description
The LFNH series fuse block is specifically designed for the Littelfuse SPNH 1500 V solar fuse. It meets UL electrical requirements, is available in multiple case sizes and has an optional cover to enclose the lugs.

Features/Benefits
- Narrow width increases space savings
- Range of amperages to match all SPNH fuse options

Specifications
- **Voltage Rating**: 1500 V dc
- **Ampere Rating**: 200, 400, 630 A
- **Interrupt Rating**: 30 kA
- **Termination Type**: Stud Mount
- **Approvals**: UL4248-1, UL4248-19, FILE: E345481 Vol. 2
- **RoHS Compliant**: Yes
- **Material**:
  - Fuse Clip: Silver-Plated Copper
  - Spring: Zinc-Plated Steel
  - Mounting Plate: Zinc-Plated Steel
  - Insulator: Ceramic

Recommended Fuses
- **SPNH Series**

Web Resources
For sample requests, downloadable CAD drawings, dimensions and other technical information:
Littelfuse.com/LFNH

For a comprehensive overview of solar market solutions, visit:
Littelfuse.com/solar

Ordering Information

<table>
<thead>
<tr>
<th>AMPERAGE</th>
<th>ORDERING NUMBER</th>
<th>FUSE SIZE</th>
<th>RECOMMENDED TORQUE</th>
<th>TERMINAL COVER ORDERING NUMBER*</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>LFNH152001CST</td>
<td>NH1XL</td>
<td>283 in-lb (32 N-m)</td>
<td>132 in-lb (15 N-m)</td>
</tr>
<tr>
<td>400</td>
<td>LFNH154001CST</td>
<td>NH2XL</td>
<td>283 in-lb (32 N-m)</td>
<td>132 in-lb (15 N-m)</td>
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<tr>
<td>630</td>
<td>LFNH156301CST</td>
<td>NH3L</td>
<td>283 in-lb (32 N-m)</td>
<td>132 in-lb (15 N-m)</td>
</tr>
</tbody>
</table>

*Terminal covers sold separately
Dimensions Millimeters (in)

Fuse Block
LFNH152001CST

Fuse Terminal Cover
LFNH15200FBC

Specifications

Voltage Rating: 1500 V
Ampere Rating: 200 amperes
Flammability Rating: UL 94 V-0
Material: V0-rated Nylon
Packaging: Sold in pairs
Specifications:

**Fuse Block**

- **Voltage Rating:** 1500 V
- **Ampere Rating:** 400 amperes
- **Flammability Rating:** UL 94 V-0
- **Material:** V0-rated Nylon
- **Packaging:** Sold in pairs

**Fuse Terminal Cover**

- **Model:** LFNH15400FBC

Dimensions Millimeters (in)
Dimensions Millimeters (in)

**Fuse Block**
LFNH156301CST

**Fuse Terminal Cover**
LFNH15630FBC

**Specifications**

- **Voltage Rating:** 1500 V
- **Ampere Rating:** 630 amperes
- **Flammability Rating:** UL 94 V-0
- **Material:** V0-rated Nylon
- **Packaging:** Sold in pairs
**Solar Products**

**SPFJ SERIES SOLAR FUSE**

1000 V dc • 70–450 A • Full Range • Solar-Rated

---

**Specifications**

**Voltage Rating**
- 1000 V dc
- 600 V ac (125–450 A)
- 70–450 A

**Amperage Rating**
- 70–450 A

**Interrupting Rating**
- Ac: 200 kAIC (125–450 A)
- Dc: 70–200 A: 20 kAIC
- 250–400 A: 10 kAIC
- 450 A: 20 kAIC

**Time Constant**
≤ 1ms

**Material**
- Body: Melamine
- End Bells: Copper Alloy

**Approvals**
- cULus (File:E339112), VDE (Cert No. 40033658)**

**Applicable Standards**
- UL 248-1, UL 248-8, UL 248-19,
- IEC 60269-6

**Environmental**
- RoHS Compliant
- Country of Origin: Mexico

---

**Description**

The SPFJ series is the smallest 1000 V dc 70–450 A dc full range fuse available in the market. The SPFJ series is manufactured in Class J case sizes and is suitable for photovoltaic, dc cable protection, EV off-board charging and other dc applications that allow for both fuse holder and busbar mounting configurations. The SPFJ meets both UL and IEC requirements.

**Features & Benefits**

- Higher amperage capacity in standard sizes for more protection in a smaller space
- Full range over-current protection capability, suitable for dc cable protection
- Small footprint offers design flexibility and reduces panel size requirements
- Fuse holder or bus bar mountings available for added versatility

**Applications**

- Inverters
- Re-combiner boxes
- Dc cable protection
- EV off-board (dc fast) chargers

**Recommended Fuse Holder**

LFJ1000 Solar Series

**Web Resources**

Download technical documents: littelfuse.com/SPFJ

---

**Part Numbering System**

- **SPFJ**
- **xxx**
- **X**

**Mounting Options**
- Blank = Std. Class J dimensions
- **XL** = 8.5 mm slot (125–200 A only)

**Package Quantity**
- X = 1

<table>
<thead>
<tr>
<th>SERIES</th>
<th>AMP</th>
<th>PACKAGE QUANTITY</th>
<th>CATALOG NUMBER</th>
<th>ORDERING NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPFJ</td>
<td>70</td>
<td>1</td>
<td>SPFJ070</td>
<td>SPFJ070.X</td>
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<td>SPFJ</td>
<td>200</td>
<td>1</td>
<td>SPFJ200</td>
<td>SPFJ200.XXL</td>
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</tbody>
</table>

**Dimensions Inches (mm)**

- **A**
- **B**
- **C**
- **D**
- **E**
- **F**
- **G**

Look for this logo to indicate products that are used in solar applications. Visit our website littelfuse.com/Solar for the latest updates on approvals, certifications, and new products.
Solar Products
SPF SERIES SOLAR FUSES

1000 V dc • 1–30 A

Description
The SPF Solar Protection Fuse series has been specifically designed for the protection of photovoltaic (PV) systems. This family of midget-style fuses (10 x 38 mm) can safely protect PV modules and conductors from reverse-overcurrent conditions.

As PV systems have grown in size, so have the corresponding voltage requirements. This increase in system voltage has typically been intended to minimize power loss associated with long conductor runs. Standard circuit protection devices are not designed to completely protect photovoltaic panels. However, the SPF series is UL Listed to safely interrupt faulted circuits up to this demanding voltage level.

Littelfuse offers multiple ampere ratings to match specific requirements in a variety of applications.

Features/Benefits
- Full range, fast-acting fuse helps eliminate common low-overload faults
- Prevents power generation losses due to nuisance tripping from changes in temperature
- Both PCB mount and dead-front holder options available

Applications
- Inverters
- Combiner boxes
- Battery charge controllers

Recommended Accessories
Fuse Holder: LPHV 1000 V dc POWR-Safe Series
Fuse Clips: 125003

Web Resources
Download technical documents: Littelfuse.com/SPF

Specifications
Voltage Rating
1000 V dc

Amperage Rating
1, 2, 3, 3.5, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30

Max. Interrupting Rating
20 kA - 1 A - 20 A
50 kA - 25 A - 30 A

Time Constant
≤ 2ms

Material
Body: Melamine
Caps: Copper Alloy

Approvals
UL Listed (File: E339112)
CSA Certified (File: 029862_0_000)
TUV (Cert: J 50494849)

Applicable Standards
UL 248-1, 248-19
IEC 60269-6

Environmental
RoHS Compliant

Country of Origin
Mexico

Part Numbering System

0SPF xxxxx H XR

Mounting Options
Blank = Ferrule
XR = PCB

Series
Refer to Ordering Information table

Amp Code

Package Quantity
T = 10 Fuses
H = 100 Fuses

Dimensions Inches (mm)

Ferrule Version

PCB Version

MOUNTING HOLE
DETAIL

Littelfuse.com/solar
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SPFI SERIES IN-LINE SOLAR FUSE

1000 V dc • 2–30 A

Description
The Littelfuse SPFI solar fuse is designed to integrate into an in-line assembly within a wire harness. It has been specifically engineered to protect photovoltaic (PV) systems meeting UL 248-19 standards. The SPFI can be electrically insulated by either overmolding or using heat-shrink.

Features/Benefits
- One-piece cap design, without joints, offers easier wire crimping and more streamlined molding
- No fuse holder required helps save space, time, and money
- 20,000 A Interrupting Rating

Applications
- Photovoltaic wire harness

Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage Rating</strong></td>
<td>1000 V dc</td>
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<tr>
<td><strong>Amperage Rating</strong></td>
<td>2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30 A</td>
</tr>
<tr>
<td><strong>Interrupting Rating</strong></td>
<td>20 kA</td>
</tr>
<tr>
<td><strong>Time Constant</strong></td>
<td>≤ 1ms</td>
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<tr>
<td><strong>Material</strong></td>
<td>Body: Melamine</td>
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<tr>
<td></td>
<td>Caps: Copper Alloy (Nickel Plated)</td>
</tr>
<tr>
<td><strong>Approvals</strong></td>
<td>UL 248-19 Recognized (File: E339112)</td>
</tr>
<tr>
<td></td>
<td>TUV (Cert: J 50505290)</td>
</tr>
<tr>
<td><strong>Applicable Standards</strong></td>
<td>UL 248-1, 248-19</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>IEC 60269-6 (electrically only)</td>
</tr>
<tr>
<td><strong>RoHS Compliant</strong></td>
<td>REACH</td>
</tr>
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<td><strong>Country of Origin</strong></td>
<td>Mexico</td>
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<tr>
<td><strong>US Patent</strong></td>
<td>9,564,281</td>
</tr>
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</table>

Part Numbering System

- **Series**
- **Amp Code**
  - Refer to Amp Code Column in Ordering Information Table
- **Package Quantity**
  - T = 10
  - L = 50

Web Resources
Downloadable CAD drawings and other technical information: littelfuse.com/SPFI

Recommended Crimping Tool
T&B Sta-Kon ERG4002

Dimensions mm (in)

![Dimensions Diagram]
Solar Products
LFJ1000 SERIES SOLAR FUSE BLOCK

1000 V dc • Clip-to-Box • Stud-to-Stud • Clip-to-Stud

Description
The LFJ1000 series fuse block is specifically designed for the Littelfuse SPFJ 1000 V Solar Fuse. It meets UL electrical requirements, is available in multiple amperages, and comes in a variety of fuse mounting and termination configurations; fuse clip to box lug, fuse stud to wire stud and fuse clip to wire stud.

Features/Benefits
- Narrow width increases space savings
- Range of amperages to match all SPFJ fuse options
- Box Lug termination style accommodates a wide range of cable sizes
- Stud-mounted option increases convenience
- Approval for use with copper or aluminum lugs allowing for design flexibility

Specifications
Voltage Ratings: 1000 V dc
Ampere Ratings: 200, 400, 450 A
Materials:
- Base: Thermoplastic
- Fuse Clip: Tin plated copper alloy
- Box Lug: Aluminum
- Fuse Studs: Zinc plated steel
- Connector Studs: Zinc plated steel
- Flammability Rating: UL94 V-0
- Termination Type: Box Lug or Stud Mount
- Base Temp Rating: 130 °C
- Approvals: UL 4248-18 Listed
  File: E345481 Vol. 1
  (See Ordering Information tables)
- Environmental: RoHS Compliant

Recommended Fuses
SPFJ Solar Series

Web Resources
Sample requests, downloadable CAD drawings, dimensions and other technical information:
Littelfuse.com/LFJ1000
For a comprehensive overview of solar market solutions, visit:
Littelfuse.com/solar

Ordering Information
(Clip-to-Box Lug 1000 V)

<table>
<thead>
<tr>
<th>AMPERAGE</th>
<th>ORDERING NUMBER</th>
<th>WITHSTAND RATING</th>
<th>WIRE RANGE STANDARD (METRIC)</th>
<th>WIRE TYPE</th>
<th>RECOMMENDED TORQUE</th>
<th>UL LISTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>LFJ102001C</td>
<td>20 kA</td>
<td>250 kcmil - #6 [127 mm² - 16 mm²]</td>
<td>Cu/Al Solid/Stranded</td>
<td>275 in-lb (31.1 N-m)</td>
<td>–</td>
</tr>
<tr>
<td>400</td>
<td>LFJ104001C</td>
<td>10 kA</td>
<td>350 kcmil - 1/0 [177 mm² - 55 mm²]</td>
<td>Cu/Al Solid/Stranded</td>
<td>275 in-lb (31.1 N-m)</td>
<td>–</td>
</tr>
<tr>
<td>450</td>
<td>LFJ104501C</td>
<td>20 kA</td>
<td>500 kcmil - #4 [253 mm² - 25 mm²]</td>
<td>Cu/Al Solid/Stranded</td>
<td>375 in-lb (42.4 N-m)</td>
<td>x</td>
</tr>
</tbody>
</table>

(Stud-to-Stud 1000 V)

<table>
<thead>
<tr>
<th>AMPERAGE</th>
<th>ORDERING NUMBER</th>
<th>WITHSTAND RATING</th>
<th>RECOMMENDED TORQUE</th>
<th>MAX. BUSBAR THICKNESS</th>
<th>RECOMMENDED BASE TORQUE</th>
<th>BOLT SIZE</th>
<th>TORQUE</th>
<th>UL LISTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>LFJ102001STST</td>
<td>20 kA</td>
<td>65 in-lb (7.3 N-m)</td>
<td>.774” (19.66 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>LFJ104001STST</td>
<td>10 kA</td>
<td>170 in-lb (19.2 N-m)</td>
<td>.555” (14.10 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>LFJ104501STST</td>
<td>20 kA</td>
<td>300 in-lb (33.9 N-m)</td>
<td>.570” (14.18 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

(Clip-to-Stud 1000 V)

<table>
<thead>
<tr>
<th>AMPERAGE</th>
<th>ORDERING NUMBER</th>
<th>WITHSTAND RATING</th>
<th>RECOMMENDED TORQUE</th>
<th>MAX. BUSBAR THICKNESS</th>
<th>RECOMMENDED BASE TORQUE</th>
<th>BOLT SIZE</th>
<th>TORQUE</th>
<th>UL LISTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>LFJ102001CST</td>
<td>20 kA</td>
<td>200 in-lb (22.6 N-m)</td>
<td>.774” (19.66 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>LFJ104001CST</td>
<td>10 kA</td>
<td>200 in-lb (22.6 N-m)</td>
<td>.555” (14.10 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>LFJ104501CST</td>
<td>20 kA</td>
<td>300 in-lb (33.9 N-m)</td>
<td>.570” (14.18 mm)</td>
<td>1/4” 5/16”</td>
<td>30-40 in-lb 40-50 in-lb</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
Description
The Littelfuse LPHV fuse holder is designed to house 1000 V fuses. It is not designed for load break but is ideal for isolating photovoltaic (PV) module strings for maintenance and meets UL requirements for 1000 V solar fuse protection.

Features/Benefits
• Touch-safe design offers protection when replacing fuses
• Compact design
• 35 mm DIN-rail mountable
• Available in 1-, 2-, 3- and 4-pole configurations
• No fuse pullers or tools required for fuse removal

Specifications
<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Voltage Rating</td>
<td>1000 V dc</td>
</tr>
<tr>
<td>Amperage Rating</td>
<td>30 A</td>
</tr>
<tr>
<td>SCCR Rating</td>
<td>20 kA</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>4 W Maximum</td>
</tr>
<tr>
<td>Fuse Type</td>
<td>10 X 38 mm up to 1000 V dc</td>
</tr>
<tr>
<td>Material</td>
<td>Thermoplastic</td>
</tr>
<tr>
<td>Flammability Rating</td>
<td>UL 94 V-0</td>
</tr>
<tr>
<td>Approval</td>
<td>Self-certified 1000 V dc</td>
</tr>
<tr>
<td></td>
<td>IEC 60269-2, -4, -6</td>
</tr>
<tr>
<td>Environmental</td>
<td>RoHS compliant, Lead (Pb) Free</td>
</tr>
</tbody>
</table>

Multi-Pole Assembly Kit
Kits are used to create multi-pole holders from 1-pole LPHV fuse holders. Please contact factory for more information.

<table>
<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>DESCRIPTION</th>
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<tr>
<td>CYHP001</td>
<td>20 Connector Pincers &amp; 10 Handle Pins</td>
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<tr>
<td>CYHP002</td>
<td>Connector Pincer Only</td>
</tr>
<tr>
<td>CYHP003</td>
<td>Handle Pin Only</td>
</tr>
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</table>

Web Resources
Sample requests, downloadable CAD drawings and other technical information: Littelfuse.com/lphv

More information about solar applications: Littelfuse.com/solar

Recommended Fuses
10 x 38 mm 1000 V dc Fuses
SPF 1000 V Series
FLU 1000 V Series

Dimensions
Inches (mm)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33 (59.18)</td>
<td>Side View</td>
</tr>
<tr>
<td>1.67 (42.42)</td>
<td>Front View</td>
</tr>
<tr>
<td>2.8 (71.12)</td>
<td>Pressure Plate</td>
</tr>
<tr>
<td>2.1 (53.34)</td>
<td>Terminal Type</td>
</tr>
<tr>
<td>1.40 (35.56)</td>
<td>Wire Type</td>
</tr>
<tr>
<td>0.7 (17.78)</td>
<td>Wire Range</td>
</tr>
<tr>
<td>3.06 (77.22)</td>
<td>ROHS</td>
</tr>
</tbody>
</table>

LPHV POWR-SAFE FUSE HOLDERS
1000 V dc
A key objective for panel designers is safe distribution of power to multiple fuse holders in a compact design. The Littelfuse UL 508 Listed bus bar system eliminates most wire terminations in a timesaving package. A power distribution block and associated conductors are no longer needed to feed multiple POWR-safe fuse holders.

**Features/Benefits**
- Touch-safe design offers protection when replacing fuses
- Compact design
- 35mm DIN-rail mountable
- Available in one and three phase configurations
- Can be cut down to optimal size

**Recommended Fuse Holders**
Littelfuse LFPSM / LFPSC / LPSM / LPSC (600 V)
Littelfuse LPHV (1000 V)

**Web Resources**
Download technical documents: Littelfuse.com/busbar

**Specifications**

**Voltage Ratings**
- 600 V ac/dc
- 1000 V dc*

**Current Ratings**

<table>
<thead>
<tr>
<th>CROSS SECTION (mm²)</th>
<th>18 mm²</th>
<th>25 mm²</th>
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<tbody>
<tr>
<td>END FED</td>
<td>80 A</td>
<td>100 A</td>
</tr>
<tr>
<td>CENTER FED</td>
<td>160 A</td>
<td>200 A</td>
</tr>
</tbody>
</table>

**SCCR**
- 10 kA, 100 kA*

**Conductor**
- Copper

**Pitch**
- 17.8 mm

**Approvals**
- UL 508 Listed (File E328654)
- RoHS Compliant
- Lead (Pb) free

*1 Phase 18 mm² rated 1000 V dc up to 160 A when center fed
1 Phase 25 mm² rated 1000 V dc up to 200 A when center fed
1 When protected directly upstream by Class J 175 amperes max (18 mm² bus bar) and Class J 200 amperes max (25 mm² bus bar).

**Ordering Information**

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<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>POLES</th>
<th>LENGTH (mm)</th>
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<tbody>
<tr>
<td>1PH3P18mm</td>
<td>3</td>
<td>50</td>
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<tr>
<td>1PH4P18mm</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td>1PH6P18mm</td>
<td>6</td>
<td>104</td>
</tr>
<tr>
<td>1PH9P18mm</td>
<td>9</td>
<td>155</td>
</tr>
<tr>
<td>1PH12P18mm</td>
<td>12</td>
<td>208</td>
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<tr>
<td>1PH15P18mm</td>
<td>15</td>
<td>270</td>
</tr>
<tr>
<td>1PH5P7P18mm</td>
<td>57</td>
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<table>
<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>POLES</th>
<th>LENGTH (mm)</th>
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</thead>
<tbody>
<tr>
<td>1PH3P25mm</td>
<td>3</td>
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<td>1PH4P25mm</td>
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<td>1PH9P25mm</td>
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<td>1PH12P25mm</td>
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<td>208</td>
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<tr>
<td>1PH15P25mm</td>
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<td>270</td>
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<tr>
<td>1PH5P7P25mm</td>
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<table>
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<th>ORDERING NUMBER</th>
<th>POLES</th>
<th>LENGTH (mm)</th>
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<tbody>
<tr>
<td>3PH6P18 mm</td>
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<td>3PH9P18 mm</td>
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<tr>
<td>3PH12P18 mm</td>
<td>12</td>
<td>214</td>
</tr>
<tr>
<td>3PH15P18 mm</td>
<td>15</td>
<td>266</td>
</tr>
<tr>
<td>3PH5P7P18 mm</td>
<td>57</td>
<td>1009</td>
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</table>

<table>
<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>POLES</th>
<th>LENGTH (mm)</th>
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</thead>
<tbody>
<tr>
<td>3PH6P25 mm</td>
<td>6</td>
<td>104</td>
</tr>
<tr>
<td>3PH9P25 mm</td>
<td>9</td>
<td>158</td>
</tr>
<tr>
<td>3PH12P25 mm</td>
<td>12</td>
<td>214</td>
</tr>
<tr>
<td>3PH15P25 mm</td>
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<td>266</td>
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<tr>
<td>3PH5P7P25 mm</td>
<td>57</td>
<td>1009</td>
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**Accessories**

**Power Feed Lug**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>AMPERAGE RATING</th>
<th>VOLTAGE (ac/dc)</th>
<th>WIRE RANGE</th>
<th>WIRE TYPE</th>
<th>TORQUE</th>
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<tbody>
<tr>
<td>BB17</td>
<td>115</td>
<td>1000</td>
<td>#10 - 1/0 AWG</td>
<td>CU</td>
<td>50 lb-in</td>
</tr>
<tr>
<td>BB18</td>
<td>115</td>
<td>1000</td>
<td>#10 - 1/0 AWG</td>
<td>CU</td>
<td>50 lb-in</td>
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<tr>
<td>BB19</td>
<td>115</td>
<td>1000</td>
<td>#10 - 1/0 AWG</td>
<td>CU</td>
<td>50 lb-in</td>
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<tr>
<td>BB20</td>
<td>115</td>
<td>1000</td>
<td>#10 - 1/0 AWG</td>
<td>CU</td>
<td>50 lb-in</td>
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**Endcaps**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PHASE</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDCP42</td>
<td>Single</td>
<td>50</td>
</tr>
<tr>
<td>EDCP7</td>
<td>Three</td>
<td>50</td>
</tr>
</tbody>
</table>

**Pole Protective Covers**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTPT5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Endcaps are standard with all 3 phase configurations except 57-pole. Endcaps are not needed for the 1 phase configurations from the factory or if the copper bus is trimmed per the supplied instructions. Power feed lugs and protective covers are extra.**
Features/Benefits

• Indicating and non-indicating options available
• 1-, 2-, 3- and 4-pole configurations
• Easy installation and fuse removal with no additional pullers or tools required
• 35 mm DIN-rail mountable
• Ventilated design for cooler operation

Specifications

Voltage Rating 600 V ac/dc
Ampere Rating 30 A
Interrupting Rating 200 kA (Class CC)
100 kA (midget)
Terminal Type Pressure plate
Suggested Torque 17.7 in–lbs
Wire Range #8–#14 CU
Material Thermoplastic
Flammability Rating UL 94 V-0
Approvals UL Listed (LPSC File: E14721)
UL Recognized (LPSM File: E14721)
CSA Certified (LPSC/LPSM File: LR7316)

Environmental RoHS compliant, Lead (Pb) Free

Ordering Information

<table>
<thead>
<tr>
<th>FUSE TYPE</th>
<th>POLES</th>
<th>INDICATING</th>
<th>CATALOG NUMBER</th>
<th>ORDERING NUMBER</th>
<th>NON-INDICATING</th>
<th>CATALOG NUMBER</th>
<th>ORDERING NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class CC</td>
<td>1</td>
<td>LPSC001</td>
<td>LPSC001ID</td>
<td>LPSC001Z</td>
<td>Class CC</td>
<td>LPSC001</td>
<td>LPSC001Z</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>LPSC002</td>
<td>LPSC002ID</td>
<td>LPSC002Z</td>
<td>Class CC</td>
<td>LPSC002</td>
<td>LPSC002Z</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>LPSC003</td>
<td>LPSC003ID</td>
<td>LPSC003Z</td>
<td>Class CC</td>
<td>LPSC003</td>
<td>LPSC003Z</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>LPSC004</td>
<td>LPSC004ID</td>
<td>LPSC004Z</td>
<td>Class CC</td>
<td>LPSC004</td>
<td>LPSC004Z</td>
</tr>
<tr>
<td>Midget</td>
<td>1</td>
<td>LPSM001</td>
<td>LPSM001ID</td>
<td>LPSM001Z</td>
<td>Midget</td>
<td>LPSM001</td>
<td>LPSM001Z</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>LPSM002</td>
<td>LPSM002ID</td>
<td>LPSM002Z</td>
<td>Midget</td>
<td>LPSM002</td>
<td>LPSM002Z</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>LPSM003</td>
<td>LPSM003ID</td>
<td>LPSM003Z</td>
<td>Midget</td>
<td>LPSM003</td>
<td>LPSM003Z</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>LPSM004</td>
<td>LPSM004ID</td>
<td>LPSM004Z</td>
<td>Midget</td>
<td>LPSM004</td>
<td>LPSM004Z</td>
</tr>
</tbody>
</table>

Multi Pole Assembly Kit Ordering No. CYHP0001Z-KIT
(Kit contains 20 connector pincers & 10 handle pins)

Web Resources

Download CAD drawings and other technical information:
littelfuse.com/lpsc
littelfuse.com/lpsm

Recommended Fuses

Class CC
Midget-style (10 x 38 mm)
Description
The KLKD series fast-acting 600 V ac/dc fuses are used in solar combiner boxes and in circuits with dc fault currents up to 50,000 A. These fuses are designed to meet both the UL and IEC photovoltaic fuse specifications and are available in standard and board-mount configurations. The KLKD midget fuses also have high-interrupting and current-limiting capability. They are intended to supplement the primary branch-circuit fuse or breaker to provide backup overcurrent protection. The KLKD fuses are non-indicating and may be used with an indicating fuse block or cover. These fuses are offered in a wide range of ampere ratings to match specific requirements in a variety of applications. Note that 1–5 A meets UL 1741 GFDI requirements.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10x38 mm size</td>
<td>Common dimensions used in a variety of applications</td>
</tr>
<tr>
<td>Fast-acting</td>
<td>Provides fast, reliable short-circuit response within the interrupting rating</td>
</tr>
<tr>
<td>Mounting options</td>
<td>Available in ferrule or PCB mount</td>
</tr>
<tr>
<td>POWR-GARD® technology</td>
<td>Ensures quality backup overcurrent protection</td>
</tr>
<tr>
<td>UL &amp; IEC certifications</td>
<td>Certifications to serve the global market</td>
</tr>
</tbody>
</table>

Applications
- Solar combiner boxes
- Inverters
- Power supplies
- Desktop meters
Specifications

Voltage Rating: 600 V ac / V dc
Ampere Range: 1/4 – 30 A
Interrupting Ratings:
- Ac: 100 kA
- 200 kA Littelfuse self-certified
- Dc: 1/4 – 30: 10 kA (UL 248-19)
- 1/4 – 30: 50 kA (UL 248-14)

Applicable Standards: UL 248-14, UL 248-19, UL 1741 GFDI, CSA, IEC 60269-6

Environmental:
- RoHS Compliant

Material:
- Body: Melamine
- Caps: Copper Alloy

Operating Temperature: See Derating Curve

Country of Origin: Mexico

Certification & Compliance

UL: UL Listed (File E339112 and E10480)
CSA: CSA Certified (File: LR29862)
CE: Declaration of Conformity: EU_DOC-KLKD_201105_3_IEC

VDE*: Certificate No 40033094

*Refer to Ordering Information Table

Accessories

Littelfuse LPSM dead-front series fuse holder (ferrule fuse)
Littelfuse L60030M open-face series fuse holder (ferrule fuse)

Ordering Information (Ferrule Version)

<table>
<thead>
<tr>
<th>AMPERAGE RATING</th>
<th>CATALOG NUMBER</th>
<th>PRODUCT MARKING</th>
<th>PACKING QUANTITY</th>
<th>ORDERING NUMBER</th>
<th>UPC CODE</th>
<th>AGENCY APPROVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>KLKD.100</td>
<td>KLKD 1/4 A</td>
<td>10</td>
<td>KLKD.100T</td>
<td>07945810189</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.100H</td>
<td>07945896442</td>
<td>✔</td>
</tr>
<tr>
<td>1/2</td>
<td>KLKD.125</td>
<td>KLKD 1/2 A</td>
<td>10</td>
<td>KLKD.200T</td>
<td>07945810190</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.200H</td>
<td>07945896443</td>
<td>✔</td>
</tr>
<tr>
<td>3/8</td>
<td>KLKD.200</td>
<td>KLKD 3/8 A</td>
<td>10</td>
<td>KLKD.100T</td>
<td>07945810191</td>
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<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.100H</td>
<td>07945896444</td>
<td>✔</td>
</tr>
<tr>
<td>1/4</td>
<td>KLKD.250</td>
<td>KLKD 1/4 A</td>
<td>10</td>
<td>KLKD.250T</td>
<td>07945810192</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.250H</td>
<td>07945896445</td>
<td>✔</td>
</tr>
<tr>
<td>3/8</td>
<td>KLKD.300</td>
<td>KLKD 3/8 A</td>
<td>10</td>
<td>KLKD.300T</td>
<td>07945810183</td>
<td>✔</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.300H</td>
<td>07945896446</td>
<td>✔</td>
</tr>
<tr>
<td>1/2</td>
<td>KLKD.500</td>
<td>KLKD 1/2 A</td>
<td>10</td>
<td>KLKD.500T</td>
<td>07945810194</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.500H</td>
<td>07945896447</td>
<td>✔</td>
</tr>
<tr>
<td>1/4</td>
<td>KLKD.750</td>
<td>KLKD 1/4 A</td>
<td>10</td>
<td>KLKD.750T</td>
<td>07945810195</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>KLKD.750H</td>
<td>07945896448</td>
<td>✔</td>
</tr>
<tr>
<td>1</td>
<td>KLKD001</td>
<td>KLKD 1 A</td>
<td>10</td>
<td>KLKD001.T</td>
<td>07945810196</td>
<td>✔</td>
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<td></td>
<td></td>
<td>100</td>
<td>KLKD001.H</td>
<td>07945896449</td>
<td>✔</td>
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</tbody>
</table>

AGENCY APPROVALS:
- UL
- VDE
- CSA
### Electrical Specification - Agency Requirements

<table>
<thead>
<tr>
<th>AMPERAGE RATING</th>
<th>OPENING TIME (MINUTES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100% OF AMPERE RATING PER UL</td>
</tr>
<tr>
<td>1/6 - 30</td>
<td>Temperature Stabilization</td>
</tr>
</tbody>
</table>

#### Temperature Stabilization
- Temperature Stabilization: 60 min max, 4 max

#### Dimensions Inches (mm)

**Ferrule Version**

- 1.5 (38.1)
- 0.406 (10.31)

**PCB 1-Tab**

- 1.5 (38.1)
- 1.53 (38.86)
- 0.50 (12.7)
- 0.12 (3.05)
- 0.406 (10.31)

**MOUNTING HOLE DETAIL**

- 0.12 (3.05)
- 0.28 (7.11)
- 0.406 (10.31)
Recommended Process and Soldering Parameters

<table>
<thead>
<tr>
<th>WAVE PARAMETER</th>
<th>LEAD FREE RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat:</td>
<td>(Typical Industry Recommendation)</td>
</tr>
<tr>
<td>Temperature Minimum:</td>
<td>130 °C</td>
</tr>
<tr>
<td>Temperature Maximum:</td>
<td>—</td>
</tr>
<tr>
<td>Pre-heat Time:</td>
<td>75 Seconds Maximum</td>
</tr>
<tr>
<td>Solder Pot Temperature</td>
<td>280 °C Maximum</td>
</tr>
<tr>
<td>Solder Dwell Time</td>
<td>270 °C for 8 Seconds Maximum</td>
</tr>
<tr>
<td>Complete Cycle Time</td>
<td>250 Seconds Maximum</td>
</tr>
</tbody>
</table>

Peak Let-THru Curve
Connectors
Box lug connectors are designed for use with a single or multiple, solid or class B or C stranded conductor. For UL approved use of more than one conductor per connector opening, contact Littelfuse Technical Service. Manufacturers of cable terminations can furnish crimp-on sleeves for fine stranded conductors which permit these conductors to be used with box lugs.

Ampere Ratings
The ampere rating per pole for power distribution blocks is based on the line ampacity of 75 °C insulated conductors per NEC* Table 310.16. If 60 °C insulated conductors are used, load must not exceed the ampacity of 60 °C conductors. Use of conductors rated in excess of 75 °C is permitted (for example 90 °C), however, load must not exceed the ampacity of 75 °C conductors.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Rating</td>
<td>600 V</td>
</tr>
<tr>
<td>Current Rating</td>
<td>Based on NEC Table 310.16, using 75 °C copper wire</td>
</tr>
<tr>
<td>SCCR</td>
<td>Consult factory</td>
</tr>
<tr>
<td>Material</td>
<td>Phenolic rated at 150 °C and Thermoplastic rated at 125 °C (LD1400 and LS1300 series only)</td>
</tr>
<tr>
<td>Connector</td>
<td>Aluminum: Highly conductive aluminum, tin plated</td>
</tr>
<tr>
<td></td>
<td>Copper: Highly conductive copper, tin plated</td>
</tr>
<tr>
<td>Flammability Rating</td>
<td>UL 94 V-0</td>
</tr>
<tr>
<td>Approvals</td>
<td>UL Recognized - 0LD/0LS Series (File: E171395)</td>
</tr>
<tr>
<td></td>
<td>LFD/LFS Series (File: E309688)</td>
</tr>
<tr>
<td></td>
<td>CSA Certified - 0LD/0LS Series (File: LR700111)</td>
</tr>
<tr>
<td></td>
<td>LFD/LFS Series (File: 007316_0_000)</td>
</tr>
<tr>
<td></td>
<td>UL Listed - 0LD57xxxx (File: E482231)</td>
</tr>
<tr>
<td>Environmental</td>
<td>RoHS compliant, Lead (Pb) free</td>
</tr>
</tbody>
</table>

Applications
Typical applications include heating, air conditioning and refrigeration systems, elevator systems, material handling equipment, control panels, motor controls, switchgear, and anywhere power needs to be distributed to more than one load.

Web Resources
For dimension, CAD and 3-D drawings, visit:
littelfuse.com/powrbloks

Description
POWR-BLOKS power distribution blocks offer a safe, convenient way of splicing cables, providing a fixed junction tap-off point or splitting primary power into secondary circuits. Lx2xxx-DIN series offers integral DIN-rail mount and an optional hinged safety cover.

Optional power distribution block covers provide protection against accidental shorting between poles caused by loose wires, tools, or other conductive material. They also protect personnel from accidentally contacting energized connectors.

Hinged Plastic Covers

Clear Plastic Covers

*NEC is a trademark of its respective owner
2410 Photovoltaic Fuse

Description
Littelfuse 400PV Series is a 2410 size Surface Mount Fuse which offers relatively low resistance. It provides UL 248-19 compliant overcurrent protection for photovoltaic (PV) cells.

The 400PV series meets environment standards and is able to operate at high temperatures.

Features & Benefits
- Wide operating temperature range
- 100% lead-free, halogen-free, and RoHS compliant
- Reliable overcurrent performance in high temperature environments
- Small and compact
- Surface mountable
- Compatible with common soldering assembly processes
- Recognized to UL/CSA 248-1 and UL/CSA 248-19

Applications
- Photovoltaic shingles
- Photovoltaic cells

Agency Approvals

<table>
<thead>
<tr>
<th>Agency</th>
<th>Agency File Number</th>
<th>Ampere Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E339112</td>
<td>0.375 A</td>
</tr>
</tbody>
</table>

Electrical Characteristics

<table>
<thead>
<tr>
<th>% of Ampere Rating</th>
<th>Ampere Rating</th>
<th>Opening Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>0.375 A</td>
<td>4 hours, Minimum</td>
</tr>
<tr>
<td>135%</td>
<td>0.375 A</td>
<td>3600 seconds Maximum</td>
</tr>
<tr>
<td>200%</td>
<td>0.375 A</td>
<td>240 seconds Maximum</td>
</tr>
</tbody>
</table>

Electrical Specifications

<table>
<thead>
<tr>
<th>Ampere Rating (A)</th>
<th>Max Voltage Rating (V)</th>
<th>Interrupting Rating</th>
<th>Nominal Cold Resistance (Ohms)</th>
<th>Nominal Melting I^2t (A^2 Sec.)</th>
<th>Agency Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.375</td>
<td>86</td>
<td>10,000 A @ 86 VDC</td>
<td>0.31</td>
<td>0.010</td>
<td>X</td>
</tr>
</tbody>
</table>

Note 1. Nominal Melting I^2t measured at 1 msec. opening time

Additional Information

Resources | Accessories | Samples
Temperature Re-rating Curve

Note
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Example
For continuous operation at 85 degrees Celsius, the fuse should be rerated as follows:
\[ I = (0.75)(0.90)I_n = (0.675)I_n \]

Soldering Parameters – Reflow Soldering

<table>
<thead>
<tr>
<th>Reflow Condition</th>
<th>Pb-free assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Heat</td>
<td>- Temperature Min (T_{\text{S(min)}}) 150°C</td>
</tr>
<tr>
<td></td>
<td>Temperature Max (T_{\text{S(max)}}) 200°C</td>
</tr>
<tr>
<td></td>
<td>- Time (Min to Max) (t_s) 60–180 secs</td>
</tr>
<tr>
<td>Average ramp up rate</td>
<td>- Liquidus Temp (T_L) to peak 3°C/second max.</td>
</tr>
<tr>
<td>(T_{\text{S(max)}}) to (T_L) - Ramp-up Rate</td>
<td>5°C/second max.</td>
</tr>
<tr>
<td>Reflow</td>
<td>- Temperature (T_L) (Liquidus) 217°C</td>
</tr>
<tr>
<td></td>
<td>- Temperature (T_L) 60–150 seconds</td>
</tr>
<tr>
<td>Peak Temperature (T_P)</td>
<td>260°–265°C</td>
</tr>
<tr>
<td>Time within 5°C of actual peak</td>
<td>Temperature (t_p) 10–30 seconds</td>
</tr>
<tr>
<td>Ramp-down Rate</td>
<td>6°C/second max.</td>
</tr>
<tr>
<td>Time 25°C to peak Temperature (T_P)</td>
<td>8 minutes max.</td>
</tr>
<tr>
<td>Do not exceed</td>
<td>260°C</td>
</tr>
<tr>
<td>Wave Soldering</td>
<td>260°C, 10 seconds max.</td>
</tr>
</tbody>
</table>
2410 Photovoltaic Fuse

Product Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Body: Epoxy resin (UL 94 V-0 certified)</td>
</tr>
<tr>
<td></td>
<td>Terminals: Cu/Ni/Sn (100% Pb-free)</td>
</tr>
<tr>
<td>Moisture Sensitivity Level</td>
<td>IPC/JEDEC J-STD-020C, Level 1</td>
</tr>
<tr>
<td>Solderability</td>
<td>IPC/EIC/JEDEC J-STD-002B, Condition B</td>
</tr>
<tr>
<td>Humidity</td>
<td>UL 248-19 Section 6.73</td>
</tr>
<tr>
<td>Thermally Induced Drift</td>
<td>UL 248-19 Section 6.6.1</td>
</tr>
<tr>
<td>Moisture Resistance</td>
<td>MIL-STD-202, Method 106G</td>
</tr>
</tbody>
</table>

Thermal Shock                             MILSTD-202, Method 107G, Condition B-3
Mechanical Shock                          MILSTD-202, Method 213B, Condition A
Vibration                                MILSTD-202, Method 201A
Vibration, High Frequency                MILSTD-202, Method 204D, Condition D
Dissolution of Metallization            IPC/EIC/JEDEC J-STD-002B, Condition D
Terminal Strength                        IEC 60127-4
Temperature Extremes                    UL 248-19 Section 6.6.2

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width: 6.3 [0.248]</td>
</tr>
<tr>
<td>Height: 3.0 [0.118]</td>
</tr>
<tr>
<td>Thickness: 2.5 [0.098]</td>
</tr>
</tbody>
</table>

Part Numbering System

<table>
<thead>
<tr>
<th>Part Numbering Code</th>
<th>Quantity Code</th>
<th>Packaging Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>04000027 M R</td>
<td>M = 1000 pcs</td>
<td>R = Tape and Reel</td>
</tr>
</tbody>
</table>

Packaging

<table>
<thead>
<tr>
<th>Packaging Option</th>
<th>Packaging Specification</th>
<th>Quantity</th>
<th>Quantity &amp; Packaging Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 mm Tape and Reel</td>
<td>EIA-481/IEC 60286-3</td>
<td>1000</td>
<td>MR</td>
</tr>
</tbody>
</table>
Solar Products
IGBT MODULE, HALF-BRIDGE

600/1200 V • S Package • D Package • WB Package

Specifications

Voltage Rating
600 / 1200 V
S Package: 75, 100, 150, 200
D Package: 100, 150, 200, 300, 400
WB Package: 225, 300, 450, 600

Amperage Rating
Half-Bridge
UL Listed (File: E71639)
RoHS Compliant

Circuit Type
Approvals
Environmental

Part Numbering System

Ordering Information

<table>
<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>VOLT</th>
<th>AMPERAGE</th>
<th>PACKAGE TYPE</th>
<th>MOUNTING METHOD</th>
<th>M.O.Q.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG1250S-BA1MM</td>
<td>1200</td>
<td>50</td>
<td>S</td>
<td>SCREW</td>
<td>100</td>
</tr>
<tr>
<td>MG12100S-BN2MM</td>
<td>1200</td>
<td>100</td>
<td>S</td>
<td>SCREW</td>
<td>100</td>
</tr>
<tr>
<td>MG12150S-BN2MM</td>
<td>1200</td>
<td>150</td>
<td>S</td>
<td>SCREW</td>
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</tr>
<tr>
<td>MG1275S-BA1MM</td>
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<tr>
<td>MG06100S-BN4MM</td>
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<td>S</td>
<td>SCREW</td>
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<tr>
<td>MG06150S-BN4MM</td>
<td>600</td>
<td>150</td>
<td>S</td>
<td>SCREW</td>
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</tr>
<tr>
<td>MG06300D-BN4MM</td>
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<td>300</td>
<td>D</td>
<td>SCREW</td>
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</tr>
<tr>
<td>MG06400D-BN4MM</td>
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<td>400</td>
<td>D</td>
<td>SCREW</td>
<td>60</td>
</tr>
<tr>
<td>MG12200D-BA1MM</td>
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<td>200</td>
<td>D</td>
<td>SCREW</td>
<td>60</td>
</tr>
<tr>
<td>MG12300D-BA1MM</td>
<td>1200</td>
<td>300</td>
<td>D</td>
<td>SCREW</td>
<td>60</td>
</tr>
<tr>
<td>MG12300D-BN3MM</td>
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<td>D</td>
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</tr>
<tr>
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<tr>
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<td>WB</td>
<td>PRESS FIT</td>
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</tr>
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<td>WB</td>
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<td>MG12300WB-BN2MM</td>
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<td>WB</td>
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<tr>
<td>MG12450WB-BN2MM</td>
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<td>WB</td>
<td>PRESS FIT</td>
<td>60</td>
</tr>
</tbody>
</table>

Dimensions Inches (mm)

S Package Type

D Package Type

WB Package Type

Description
Half-Bridge Circuit IGBT Modules offer the high efficiency and fast switching speeds of modern IGBT technology in a robust and flexible format. Used for power control applications, Littelfuse offers IGBT modules for flexible and efficient motor control and inverter applications.

Features
- Ultra low loss
- High ruggedness
- High short-circuit capability
- Positive temperature coefficient
- With fast free-wheeling diodes

Benefits
- High efficiency and switching speed
- High reliability in demanding applications
- Reduced protection needs
- Easily paralleled
- Integrated solution in compact module package

Applications
- AC motor control
- Inverter
- Motion/servo control
- Power supplies
- Photovoltaic/fuel cell

Web Resources
Download the complete datasheet and other technical information: littelfuse.com
**What Are Voltage Transients?**

Voltage transients are unwanted short duration surges of electrical energy. They may result from the sudden release of previously stored energy, and can come from internal and external sources. If the voltage magnitude of the transient is large enough, circuit component damage or malfunction of the circuit may result.

Transients can occur either repeatedly or as random impulses. Repeatable transients are frequently caused by the operation of other system components, such as motors, generators or the switching of reactive circuit components. Random transients, on the other hand, are often caused by lightning, electrostatic discharge (ESD), and other outdoor environment events.

**Transient Voltage Suppression Diodes**

TVS Diodes are used to protect semiconductor components from high-voltage transients. Their p-n junctions have a larger cross-sectional area than those of a normal diode, allowing them to conduct large currents to ground without sustaining damage. Littelfuse supplies TVS Diodes with peak power ratings from 200 W to 30 kW, and reverse standoff voltages from 5 V to 512 V. For more information visit Littelfuse.com/tvsdiodes

**TVS and Solar Inverter Protection**

Integration of Transient Voltage Suppression (TVS) components within solar system designs help to prevent the damaging effects of transient events and assure compliance to safety and reliability standards. Solar power inverters are vulnerable to transient voltage effects and its direct connection to other system components allows transient voltage transfer. For example:

- Lighting-induced transient events may pass through the solar array and outdoor cabling to the inverter
- Transients originating from the outside utility power grid may pass through the main circuit panel and cabling to the inverter
- Startup of motorized equipment enables vulnerabilities produced by repeated load changes
- Electrostatic discharge events generated internally and externally to the system may pass between the inverter and sensitive electronic control equipment

It is important to build surge protection in the inverter and at other locations before damaging transients may reach sensitive equipment.
### Protection Application and Needs

**Description:**
Microprocessor-controlled inverter with the ac output synchronized to the ac grid stores energy in utility company and maximizes photovoltaic (PV) array energy output.

**Threats:**
- Power surges on ac or dc input and ac output
- ESD threats through the communication network

**Solutions:**
1. **Ac Input:** Fuse / MOV / GDT
2. **Dc Input:** Dc-rated fuse / Unidirectional TVS / MOV
3. **Ac Output:** Fuse / TVS / MOV
4. **Local Ethernet:** MLV / SPA
5. **Outside Ethernet:** SEP series SIDAcTor® device

### Varistors Products

Varistors possess characteristics that divert transient currents away from sensitive components. Littelfuse offers two types: Miniature surface mount Multi-Layer Varistors (MLVs) for small electronics applications and Metal Oxide Varistors (MOVs) for higher energy applications. For more information visit Littelfuse.com/varistor

<table>
<thead>
<tr>
<th>SERIES NAME</th>
<th>PHOTO</th>
<th>OPERATING V (AC RANGE)</th>
<th>OPERATING V (DC RANGE)</th>
<th>PEAK CURRENT RANGE (A)</th>
<th>PEAK ENERGY RANGE (J)</th>
<th>OPERATING TEMPERATURE</th>
<th>MOUNT/FORM FACTOR</th>
<th>DISC SIZE</th>
<th>AGENCY APPROVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML</td>
<td><img src="image" alt="ML" /></td>
<td>2.7-107</td>
<td>5.5-120</td>
<td>4-500</td>
<td>0.02-2.5</td>
<td>-55 to +125 °C</td>
<td>Surface Mount</td>
<td>Not Applicable</td>
<td>■ ■ ■</td>
</tr>
<tr>
<td>CH</td>
<td><img src="image" alt="CH" /></td>
<td>14-275</td>
<td>18-369</td>
<td>100-400</td>
<td>1.0-8.0</td>
<td>-55 to +125 °C</td>
<td>Surface Mount</td>
<td>Not Applicable</td>
<td>■ ■</td>
</tr>
<tr>
<td>SM7</td>
<td><img src="image" alt="SM7" /></td>
<td>115-510</td>
<td>36-675</td>
<td>1200</td>
<td>10-40</td>
<td>-55 to +85 °C</td>
<td>Surface Mount</td>
<td>Not Applicable</td>
<td>■ ■</td>
</tr>
<tr>
<td>SM20</td>
<td><img src="image" alt="SM20" /></td>
<td>20-320</td>
<td>26</td>
<td>2000-6500</td>
<td>20-150</td>
<td>-55 to +125 °C</td>
<td>Surface Mount</td>
<td>Not Applicable</td>
<td>■ ■</td>
</tr>
<tr>
<td>UltraMOV™</td>
<td><img src="image" alt="UltraMOV" /></td>
<td>130-625</td>
<td>170-825</td>
<td>1750-10000</td>
<td>12.5-720</td>
<td>-55 to +125 °C</td>
<td>Radial Leaded</td>
<td>7, 10, 14, 20 mm</td>
<td>■ ■ ■ ■</td>
</tr>
<tr>
<td>UltraMOV™ 2SS</td>
<td><img src="image" alt="UltraMOV 2SS" /></td>
<td>115-750</td>
<td>150-970</td>
<td>22000</td>
<td>230-890</td>
<td>-55 to +125 °C</td>
<td>Radial Leaded</td>
<td>25 mm</td>
<td>■ ■ ■</td>
</tr>
<tr>
<td>C-III</td>
<td><img src="image" alt="C-III" /></td>
<td>130-660</td>
<td>5-350</td>
<td>3500-8000</td>
<td>40-530</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>10, 14, 20 mm</td>
<td>■ ■ ■ ■</td>
</tr>
<tr>
<td>LA</td>
<td><img src="image" alt="LA" /></td>
<td>130-1000</td>
<td>175-1200</td>
<td>1200-6500</td>
<td>11-360</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>7, 10, 14, 20 mm</td>
<td>■ ■ ■ ■</td>
</tr>
<tr>
<td>ZA</td>
<td><img src="image" alt="ZA" /></td>
<td>4-460</td>
<td>5.5-615</td>
<td>50-6500</td>
<td>0.1-52</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>5, 7, 10, 14, 20 mm</td>
<td>■ ■ ■ ■</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERIES NAME</th>
<th>PHOTO</th>
<th>OPERATING V (AC RANGE)</th>
<th>OPERATING V (DC RANGE)</th>
<th>PEAK CURRENT RANGE (A)</th>
<th>PEAK ENERGY RANGE (J)</th>
<th>OPERATING TEMPERATURE</th>
<th>MOUNT/FORM FACTOR</th>
<th>DISC SIZE</th>
<th>AGENCY APPROVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMOV™ 2SS</td>
<td><img src="image" alt="SMOV 2SS" /></td>
<td>115-750</td>
<td>150-970</td>
<td>20000</td>
<td>170-670</td>
<td>-45 to +75 °C</td>
<td>Industrial Packaged</td>
<td>25 mm</td>
<td>■ ■</td>
</tr>
<tr>
<td>SMOV™ 34S</td>
<td><img src="image" alt="SMOV 34S" /></td>
<td>115-750</td>
<td>150-970</td>
<td>40000</td>
<td>280-1200</td>
<td>-45 to +75 °C</td>
<td>Industrial Packaged</td>
<td>34 mm</td>
<td>■ ■</td>
</tr>
<tr>
<td>TMV® 2SS</td>
<td><img src="image" alt="TMV 2SS" /></td>
<td>115-750</td>
<td>150-970</td>
<td>20000</td>
<td>170-670</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>25 mm</td>
<td>■ ■ ■</td>
</tr>
<tr>
<td>TMV® 34S</td>
<td><img src="image" alt="TMV 34S" /></td>
<td>115-750</td>
<td>150-970</td>
<td>40000</td>
<td>235-1050</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>34 mm</td>
<td>■ ■ ■</td>
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<tr>
<td>TMV®/iTMV®</td>
<td><img src="image" alt="TMV/iTMV" /></td>
<td>115-750</td>
<td>150-970</td>
<td>6000-10000</td>
<td>35-480</td>
<td>-55 to +85 °C</td>
<td>Radial Leaded</td>
<td>14, 20 mm</td>
<td>■ ■ ■</td>
</tr>
</tbody>
</table>

![Diagram](image)
Description

The SE-601 is a microprocessor-based ground-fault relay for ungrounded dc systems. It provides sensitive ground-fault protection without the problems associated with nuisance tripping. Ground-fault current is sensed using an SE-GRM Series Ground-Reference Module—a resistor network that limits ground-fault current to 25 mA. The SE-601 is used on ungrounded dc systems ranging from industrial 24 V dc control circuits to 1000 V dc solar and transportation systems.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable pickup (1-20 mA)</td>
<td>Ten settings provide a wide range of low-level protection</td>
</tr>
<tr>
<td>Adjustable time delay (50 ms - 2.5 s)</td>
<td>Adjustable trip delay allows quick protection or delayed response</td>
</tr>
<tr>
<td>Output contacts</td>
<td>Form A and Form B output contacts for operation of separate annunciation and trip circuits</td>
</tr>
<tr>
<td>Analog output (0-5 V)</td>
<td>Provides means for connecting to a meter (PGA-0500) or a control system</td>
</tr>
<tr>
<td>Non-volatile trip memory</td>
<td>Retains trip state when de-energized to simplify troubleshooting</td>
</tr>
<tr>
<td>Selectable contact operating mode</td>
<td>Selectable fail-safe or non-fail-safe operating modes allow connection to shunt or undervoltage breaker coil</td>
</tr>
<tr>
<td>Microprocessor-based</td>
<td>No calibration required saves on maintenance cost</td>
</tr>
</tbody>
</table>

Accessories

**SE-GRM Series Ground-Reference Module**
Required accessory, used to connect the SE-601 dc Ground-Fault Monitor to the dc bus.

**PGA-0500 Analog % Current Meter**
Optional panel-mounted analog meter displays ground-fault current as a percentage of 22 mA.

Specifications

<table>
<thead>
<tr>
<th>IEEE Device Numbers</th>
<th>Dc Overcurrent Relay (76G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>See ordering information</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H 75 mm (3.0”), W 55 mm (2.2”);</td>
</tr>
<tr>
<td></td>
<td>D 115 mm (4.5”)</td>
</tr>
<tr>
<td>Trip Level Settings</td>
<td>1-20 mA</td>
</tr>
<tr>
<td>Trip Time Settings</td>
<td>0.05-2.5 s</td>
</tr>
<tr>
<td>Output Contacts</td>
<td>Isolated Form A and Form B</td>
</tr>
<tr>
<td>Contact Operating Mode</td>
<td>Selectable fail-safe or non-fail-safe</td>
</tr>
<tr>
<td>Test Button</td>
<td>Local</td>
</tr>
<tr>
<td>Reset Button</td>
<td>Local and remote</td>
</tr>
<tr>
<td>Analog Output</td>
<td>0-5 V</td>
</tr>
<tr>
<td>Conformally Coated Approvals</td>
<td>Consult factory</td>
</tr>
<tr>
<td>Approvals</td>
<td>CSA certified, UL Listed (E340889), CE (European Union), C-Tick (Australian)</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 years</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN, surface (standard)</td>
</tr>
<tr>
<td></td>
<td>Panel (with PMA-55 or PMA-60 adapter)</td>
</tr>
</tbody>
</table>

Note: For optional conformal coating please consult factory.
The EL731 is a microprocessor-based ac/dc Sensitive Earth-Leakage Relay that offers complete coverage for all frequencies from 0 to 6,000 Hz. Two CTs are required for the entire frequency range, or one CT can be used for only low- or high-frequency detection. An RTD/PTC sensor input allows over-temperature protection for a motor or drive. The EL731 offers metering, password-protected alarm and trip settings and optional network communications. It is primarily used to add low-level ground-fault protection to variable-speed drives, and to dc circuits.

**Accessories**

**EFCT Series Earth-Fault Current Transformer**
- Required zero-sequence current transformer specifically designed for low-level detection.

**AC700-CUA Series Communication Adapter**
- Optional network-interface and firmware-upgrade communications adapters field-install in EL731.

**AC700-SMK DIN-rail & Surface-mount Adapter**
- EL731 plugs into adapter for back-plane mounting.

**Ordering Information**

<table>
<thead>
<tr>
<th>ORDERING NUMBER</th>
<th>CONTROL POWER</th>
<th>COMMUNICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL731-00-X0</td>
<td>120/240 V ac/V dc</td>
<td>None</td>
</tr>
<tr>
<td>EL731-01-X0</td>
<td>120/240 V ac/V dc</td>
<td>DeviceNet*</td>
</tr>
<tr>
<td>EL731-02-X0</td>
<td>120/240 V ac/V dc</td>
<td>Profibus*</td>
</tr>
<tr>
<td>EL731-03-X0</td>
<td>120/240 V ac/V dc</td>
<td>EtherNet/IP*</td>
</tr>
<tr>
<td>EL731-04-X0</td>
<td>120/240 V ac/V dc</td>
<td>Modbus* TCP</td>
</tr>
<tr>
<td>EL731-10-X0</td>
<td>48 V dc &amp; 24 V ac</td>
<td>None</td>
</tr>
<tr>
<td>EL731-11-X0</td>
<td>48 V dc &amp; 24 V ac</td>
<td>DeviceNet</td>
</tr>
<tr>
<td>EL731-12-X0</td>
<td>48 V dc &amp; 24 V ac</td>
<td>Profibus</td>
</tr>
<tr>
<td>EL731-13-X0</td>
<td>48 V dc &amp; 24 V ac</td>
<td>EtherNet/IP</td>
</tr>
<tr>
<td>EL731-14-X0</td>
<td>48 V dc &amp; 24 V ac</td>
<td>Modbus TCP</td>
</tr>
<tr>
<td>EL731-20-X0</td>
<td>24 V dc</td>
<td>None</td>
</tr>
<tr>
<td>EL731-21-X0</td>
<td>24 V dc</td>
<td>DeviceNet</td>
</tr>
<tr>
<td>EL731-22-X0</td>
<td>24 V dc</td>
<td>Profibus</td>
</tr>
<tr>
<td>EL731-23-X0</td>
<td>24 V dc</td>
<td>EtherNet/IP</td>
</tr>
<tr>
<td>EL731-24-X0</td>
<td>24 V dc</td>
<td>Modbus TCP</td>
</tr>
</tbody>
</table>

*DeviceNet, Profibus, EtherNet/IP and Modbus TCP are trademarks of their respective owners.

**Note:** When building a part number, replace the “X” with “1” for AS/NZS 2081:2011 Compliant product, “0” otherwise.
Solar Products
SPD2 PV SERIES

Class 2 (IEC)/Type 2 (EN)/Type 1CA (UL)
Pluggable Multi-Pole Surge Protective Device
for PV Systems

Description
Surge protective devices (SPDs) provide equipment protection from transient overvoltage events lasting micro-seconds. By limiting the overvoltage to the equipment during these events, costly damage and downtime can be mitigated.

The surge protective devices for solar string box and inverter applications are available in 1100 and 1500 V dc in the 3+0 configuration.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability to clamp and withstand high-energy transients</td>
<td>Ensures low-residual voltage during high-energy surge events and higher nominal discharge current to prevent disruption, downtime, and degradation or damage to equipment</td>
</tr>
<tr>
<td>No additional overcurrent protection devices required in UL applications</td>
<td>Reduces the number of components and costs required for protection</td>
</tr>
<tr>
<td>Compact footprint</td>
<td>Increases panel design flexibility</td>
</tr>
<tr>
<td>Visual life indicator</td>
<td>Quick visual determines module replacement status to avoid loss of protection</td>
</tr>
<tr>
<td>Pluggable modules</td>
<td>Fast and simple to replace, minimizing maintenance and downtime. No tools required</td>
</tr>
<tr>
<td>Thermal protection</td>
<td>Eliminates catastrophic failure</td>
</tr>
<tr>
<td>IP20 protection rating</td>
<td>Finger-safe design increases worker protection</td>
</tr>
</tbody>
</table>

Module & Base Ordering Information

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>IEC Electrical</th>
<th>UL Electrical</th>
<th>Single Unit Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPD2-PV11-3P0</td>
<td>1100 V</td>
<td>1100 V</td>
<td>50 kA</td>
</tr>
<tr>
<td>SPD2-PV11-3P0-R</td>
<td>1100 V</td>
<td>1100 V</td>
<td>40 kA</td>
</tr>
<tr>
<td>SPD2-PV15-3P0</td>
<td>1500 V</td>
<td>1500 V</td>
<td>40 kA</td>
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<tr>
<td>SPD2-PV15-3P0-R</td>
<td>1500 V</td>
<td>1500 V</td>
<td>9 kA</td>
</tr>
</tbody>
</table>
Module & Base Part Numbering System

SPD2 PV VV XPZ R

Optional Remote Contact
Neutral (1=yes or 0=no)

Series
Photovoltaic
Maximum Continuous Operating Dc Voltage in Hundreds

Module Only Part Numbering System

SPD2 PV VVV M

Module Only Dc Voltage

Replacement Module Ordering Information

<table>
<thead>
<tr>
<th>Ordering Number</th>
<th>Maximum Continuous Operating Dc Voltage (U_{cpv})</th>
<th>Nominal Discharge Current (8/20 μs) (I_{n})</th>
<th>Maximum Discharge Current (8/20 μs) (I_{max})</th>
<th>Total Discharge Current (I_{TPV})</th>
<th>Voltage Protection Level (U_{p})</th>
<th>Short-Circuit Current Rating (I_{SCPV})</th>
<th>Maximum Permitted Dc Voltage (I_{pvdc})</th>
<th>Voltage Protection Rating (VPR)</th>
<th>Short-Circuit Current Rating (SCCR)</th>
<th>Single Unit Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPD2-PV550-M</td>
<td>1100 V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>50 kA</td>
<td>4200 V</td>
<td>9 kA</td>
<td>1100 V</td>
<td>3000 V</td>
<td>20 kA</td>
<td>50 kA</td>
</tr>
<tr>
<td>SPD2-PV750-M</td>
<td>1500 V</td>
<td>15 kA</td>
<td>40 kA</td>
<td>40 kA</td>
<td>4800 V</td>
<td>9 kA</td>
<td>1500 V</td>
<td>4000 V</td>
<td>20 kA</td>
<td>65 kA</td>
</tr>
</tbody>
</table>

Specifications

- **Mode of Protection**: ( + ) - PE, ( - ) - PE, ( + ) - ( - )
- **Nominal Discharge Current (8/20 μs) (I_{n})**: 20 kA
- **Maximum Discharge Current (8/20 μs) (I_{max})**: Up to 40 kA
- **Protective Elements**: High Energy MOV
- **Response Time (t_{r})**: < 25 ns
- **Number of Ports**: 1
- **Mechanical & Environmental Operating Temperature Range (T_{a})**: -40 °C to +80 °C (-40 °F to +185 °F)
- **Permissible Operating Humidity (RH)**: 5% to 95%
- **Altitude (max)**: 4,000 m (13,123 ft)
- **Terminal Screw Torque (M_{max})**: 4.5 Nm (39.9 lb-in)
- **Conductor Cross Section (max)**: 35 mm² (2 AWG) (Solid, Stranded)/25 mm² (4 AWG) (Flexible)
- **Mounting**: 35 mm DIN Rail, EN60715
- **Degree of Protection**: IP20 (built-in)
- **Housing Material**: Thermoplastic: Extinguishing Degree UL 94 V-0
- **Thermal Protection**: Yes

Operating State/Fault Indication

- Green Flag/No Green Flag

Remote Contact Switching Capacity

- Ac: 250 V/1 A, 125 V/1 A
- Dc: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A

Remote Contact Conductor Cross Section (max)

- 1.5 mm² (16 AWG) (Solid)
- UL 1449 4th Edition; E320116

Product Dimensions

- **3TE Module and Base**: H: 90.7 mm (3.57”); W: 53.8 mm (2.11”); D: 66.1 mm (2.60”)
- **1TE Replacement Module**: H: 45.0 mm (1.77”); W: 18.0 mm (0.71”); D: 57.2 mm (2.25”)

Package Dimensions

- **3TE Module and Base**: H: 102.0 mm (4.01”); W: 64.0 mm (2.52”); D: 110.0 mm (4.33”)
- **1TE Replacement Module**: H: 102.0 mm (4.01”); W: 28.0 mm (1.10”); D: 110.0 mm (4.33”)

LS7R0250 1500 V DC DISCONNECT SWITCH

1500 V Dc • 250 A

Description
The Littelfuse LS7R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems. It is a 1500 V dc disconnect for ungrounded systems.

Features/Benefits
- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located ‘sandwich-type’ 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombinder boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications
UL 98B Standards
- Total Voltage Rating: 1500 V dc
- Amperage Rating: 250 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

IEC 60947-3 Standards
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV

Operational Current
- DC21B Rating: 250 A / 1500 V dc

Other Characteristics
- Power Losses at 250 A: 8.26 watts
- Maximum Busbar Connection Range: 1 bar x 5 mm (.20”) H x 32 mm (1.25”) L
- Number of Circuits/Switches: 1
- Tightening Torque: 159 lbf-in (18 N·m)
- Material: Plastic housing
- Base Mounting: Screws

Flammability Rating
- UL 94 V-0
- UL 98B & UL 94

Approvals
- UL Guide WHVA
- UL Listed E511898
- NEC Article 690 for PV systems
- IEC-60947-3
- CE
- EAC

Environmental
- RoHS compliant
- REACH
- Country of Origin: Spain

Recommended Accessories
- Panel Handle with Shaft LDSSA11
  For closed panel door access
- Direct Handle LDSSI11
  For open panel door access
- Auxiliary Contact LDMAU11
  Remotely indicates switch position
- Spacers LDMEL11
  Increase distance between switch and mounting plate
Solar Products
LS7R0250 1500 V DC DISCONNECT SWITCH

Part Numbering System

Ordering Information

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART NUMBER</td>
</tr>
<tr>
<td>LS7R02502PS00L</td>
</tr>
</tbody>
</table>

Dimensions Millimeters (Inches)

Switch - Side View

Panel Handle with Shaft

LDSS11

Switch - 3D Installation View

Busbar

| QTY | COPPER BUSBAR M (TERMINAL TORQUE) (+5 % | -10 %) | COPPER BUSBAR H MAX (CU) | COPPER BUSBAR L MAX (CU) |
|-----|--------------------------------------|--------------------------|--------------------------|
| N+M | M10 | 18 | 159 | 5 | 13/64 | 32 | 1 ¼ |
| M   | M4 | 1.2 | 10.6 | 1.5 | 13.3 |
| *** | M5 | 1.5 | 13.3 |
Description

The Littelfuse LS7R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems. It is a 1500 V dc disconnect for ungrounded systems.

Features/Benefits

- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located “sandwich-type” 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications

- Solar/PV systems: combiner boxes, recombination boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications

UL 98B Standards
- Total Voltage Rating: 1500 V dc
- Amperage Rating: 320 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

IEC 60947-3 Standards
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV
- Operational Current DC21B Rating: 320 A / 1500 V dc

Other Characteristics
- Power Losses at 320 A: 13.55 watts
- Maximum Busbar Connection Range: 1 bar x 5 mm (.20”) H x 40 mm (1.58”) L
- Number of Circuits/Switches: 1
- Tightening Torque: 159 lbf-in (18 N•m)
- Material: Plastic housing
- Flammability Rating: UL 94 V-0
- Environmental: RoHS compliant, REACH
- Country of Origin: Spain

Recommended Accessories

- Panel Handle with Shaft LDSSA11
  For closed panel door access
- Direct Handle LDSSI11
  For open panel door access
- Auxiliary Contact LDMAU11
  Remotely indicates switch position
- Spacers LDMEL11
  Increase distance between switch and mounting plate
### Part Numbering System

<table>
<thead>
<tr>
<th>Series</th>
<th>Amperage</th>
<th>Configuration Type</th>
<th>UL product</th>
<th>Terminal Measurement</th>
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<tr>
<td>LS7R</td>
<td>0320</td>
<td>2P</td>
<td>S</td>
<td>00L</td>
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### Ordering Information

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<tr>
<td>PART NUMBER</td>
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<tr>
<td>LS7R03202PS00L</td>
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### Dimensions Millimeters (Inches)

#### Dc Disconnect Switch

- Switch - Side View
- Panel Handle with Shaft

#### Switch - 3D Installation View

#### Busbar

| QTY | COPPER BUSBAR M (TERMINAL TORQUE) (+5 % | -10 %) | COPPER BUSBAR H MAX (CU) | COPPER BUSBAR L MAX (CU) |
|-----|------------------------------------------|---------------------------------|--------------------------|
| 1   | M10                                      | 18                              | 159                      | 5                         | 13/64                    |
| M   | N*M                                      | 1.2                             | 10.6                     | 40                        | 1 3/64                   |

**MINIMUM BUSBAR SECTION ACCORDING TO UL 988**

- T20: M4
- **: M4
- ***: M5

| QTY | COPPER BUSBAR M (TERMINAL TORQUE) (+5 % | -10 %) | COPPER BUSBAR H MAX (CU) | COPPER BUSBAR L MAX (CU) |
|-----|------------------------------------------|---------------------------------|--------------------------|
| *   | T20                                      | 1.2                             | 10.6                     | 40                        | 1 3/64                   |
| **  | M4                                       | 1.5                             | 13.3                     | 40                        | 1 3/64                   |
| *** | M5                                       | 1.5                             | 13.3                     | 40                        | 1 3/64                   |
**Description**

The Littelfuse LS7R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems. It is a 1500 V dc disconnect for ungrounded systems.

**Features/Benefits**

- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located “sandwich-type” 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

**Applications**

- Solar/PV systems: combiner boxes, recombinder boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

**Specifications**

**UL 98B Standards**

- Total Voltage Rating: 1500 V dc
- Amperage Rating: 400 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

**IEC 60947-3 Standards**

- Insulation Voltage Rating: 1500 V dc
- Impulse Withstand Voltage: 12 kV
- Operational Current: 400 A / 1500 V dc

**Other Characteristics**

- Power Losses at 400 A: 21.15 watts
- Maximum Busbar Connection Range: 2 bars x 4 mm (.16”) H x 32 mm (1.25”) L
- Number of Circuits/Switches: 1
- Tightening Torque: 159 lbf-in (18 N-m) for M10 screw
- Material: Plastic housing, silver-plated copper terminals, screws
- Flammability Rating: UL 94 V-0
- Environmental: RoHS compliant, REACH

**Country of Origin**

Spain

**Recommended Accessories**

- Panel Handle with Shaft LDSSA11
  For closed panel door access
- Direct Handle LDSSI11
  For open panel door access
- Auxiliary Contact LDMAU11
  Remotely indicates switch position
- Spacers LDMEL11
  Increase distance between switch and mounting plate
Part Numbering System

<table>
<thead>
<tr>
<th>Series</th>
<th>LS7R</th>
<th>0400</th>
<th>2P</th>
<th>S</th>
<th>00L</th>
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Amperage Configuration Type UL product Terminal Measurement

Ordering Information

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<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>SINGLE UNIT WEIGHT</th>
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</thead>
<tbody>
<tr>
<td>LS7R04002PS00L</td>
<td>1500 V dc</td>
<td>400 A</td>
<td>Ungrounded</td>
<td>Type 2P</td>
<td>3 kg</td>
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Dimensions Millimeters (Inches)

Dc Disconnect Switch

Switch - Side View

Panel Handle with Shaft

Switch - 3D Installation View

Busbar

<table>
<thead>
<tr>
<th>QTY</th>
<th>COPPER BUSBAR M (TERMINAL TORQUE) (+5 % -10 %) N/MM</th>
<th>COPPER BUSBAR H MAX (CU)</th>
<th>COPPER BUSBAR L MAX (CU)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>COPPER BUSBAR M (TERMINAL TORQUE) (+5 % -10 %) N/MM</td>
<td>COPPER BUSBAR H MAX (CU)</td>
<td>COPPER BUSBAR L MAX (CU)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>M10</td>
<td>18</td>
</tr>
<tr>
<td>M</td>
<td>2</td>
<td>T20</td>
<td>M4</td>
</tr>
<tr>
<td>M**</td>
<td>M4</td>
<td>1.5</td>
<td>13.3</td>
</tr>
<tr>
<td>***</td>
<td>M5</td>
<td>1.5</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Minimum busbar section according to UL 98B

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Description
The Littelfuse LS7R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems. It is a 1500 V dc disconnect for ungrounded systems.

Features/Benefits
- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located "sandwich-type" 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications

**UL 98B Standards**
- Total Voltage Rating: 1500 V dc
- Amperage Rating: 500 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

**IEC 60947-3 Standards**
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV
- Operational Current DC21B Rating: 500 A / 1500 V dc

**Other Characteristics**
- Power Losses at 500 A: 33.05 watts
- Maximum Busbar Connection Range: 2 bars x 5 mm (.20") H x 32 mm (1.25") L
- Number of Circuits/Switches: 1
- Tightening Torque: 212 lbf-in (24 N•m)
- Material: Plastic housing / Silver-plated copper terminals
- Base Mounting: Screws
- Flammability Rating: UL 94 V-0
- Country of Origin: Spain

Recommended Accessories
- **Panel Handle with Shaft LDSSA11**
  - For closed panel door access
- **Direct Handle LDSSI11**
  - For open panel door access
- **Auxiliary Contact LDMAU11**
  - Remotely indicates switch position
- **Spacers LDMEL11**
  - Increase distance between switch and mounting plate
Solar Products
LS7R0500 1500 V DC DISCONNECT SWITCH

Part Numbering System

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<th>Series</th>
<th>LS7R</th>
<th>0500</th>
<th>2P</th>
<th>S</th>
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<th>UL product</th>
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<td>Amperage</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Terminal Measurement</td>
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Ordering Information

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
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</thead>
<tbody>
<tr>
<td>PART NUMBER</td>
</tr>
<tr>
<td>LS7R05002PS00L</td>
</tr>
</tbody>
</table>

Dimensions Millimeters (Inches)

DC Disconnect Switch

Switch - Side View

Panel Handle with Shaft

Switch - 3D Installation View

Busbar

| QTY | COPPER BUSBAR M [TERMINAL TORQUE] (+5 % | -10 %) | COPPER BUSBAR H MAX (CU) | COPPER BUSBAR L MAX (CU) | MINIMUM BUSBAR SECTION ACCORDING TO UL 98B |
|-----|---------------------------------|-----------------|-----------------|--------------------------------|
|     | N•M                             | LBF•INCH        | MM INCH         | MM INCH                        |                                      |
| 2   | M12                             | 24              | 212             | 5                             | 5                             |
| 3   | M13                             | 24              | 25              | 5                             | 13/64                          |
| 4   | M14                             | 24              | 28.5            | 5                             | 32                            |
| 5   | M15                             | 24              | 38              | 5                             | 1/4                           |

* T20 M4 1.2 10.6
** —— M4 1.5 13.3
*** Allen M5 1.5 13.3
**Description**

The Littelfuse LS6R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

**Features/Benefits**

- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located “sandwich-type” 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

**Applications**

- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

**Specifications**

**UL 98B Standards**

- **Total Voltage Rating**: 1500 V dc
- **Amperage Rating**: 250 A
- **SCCR Rating**: 10 kA
- **Ambient Temperature**: -20 to 50 °C (-4 to 122 °F)

**IEC 60947-3 Standards**

- **Insulation Voltage Rating Ui**: 1500 V dc
- **Impulse Withstand Voltage Rating Uimp**: 12 kV
- **Operational Current DC21B Rating**: 250 A/1500 V dc

**Other Characteristics**

- **Power Losses at 250 A**: 4.13 watts
- **Maximum Busbar Connection Range**: 2 bars x 4 mm (.16”) H x 30 mm (1.18”) L
- **Number of Circuits/Switches**: 1
- **Mechanical Operations**: 8,000
- **Tightening Torque**: 212 lbf-in (24 N•m)
- **Material**: Plastic housing
- **Base Mounting**: Screws
- **Flammability Rating**: UL 94 V-0
- **Approvals**: UL 98B & UL 94, UL Guide WHVA, UL Listed E511898, NEC Article 690 for PV systems, IEC-60947-3, CE, EAC
- **Environmental**: RoHS compliant, REACH
- **Country of Origin**: Spain

**Recommended Accessories**

- **Panel Handle with Shaft LDSSA11**: For closed panel door access
- **Direct Handle LDSS11**: For open panel door access
- **Auxiliary Contact LD5LAU01**: Remotely indicates switch position
**Solar Products**  
**LS6R0250 1500 V DC SERIES DISCONNECT SWITCH**

### Part Numbering System

- **Series:** LS6R
- **Configuration Type:** 0250 CB
- **UL product:** S
- **Terminal Measurement:** 00L

### Ordering Information

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
<th>SERIES</th>
<th>TOTAL VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>POLES</th>
<th>SINGLE UNIT WEIGHT</th>
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<tbody>
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<td>1500 V dc</td>
<td>250 A</td>
<td>Grounded</td>
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<tr>
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<td>1500 V dc</td>
<td>250 A</td>
<td>Ungrounded</td>
<td>Type CB</td>
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<td>2</td>
<td>4.5 kg</td>
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### Dimensions Millimeters

#### Busbar

<table>
<thead>
<tr>
<th>BUSBAR H MAX (CU)</th>
<th>BUSBAR L MAX (CU)</th>
<th>COPPER BAR M (TERMINAL TORQUE) (+5 %</th>
<th>-10 %)</th>
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<tbody>
<tr>
<td>MM</td>
<td>INCH</td>
<td>MM</td>
<td>INCH</td>
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<td>4</td>
<td>5/32</td>
<td>36</td>
<td>1 3/16</td>
</tr>
</tbody>
</table>

#### Switch - Side View

- **UP**
- **DOWN**

#### Panel Handle with Shaft

- **LD5SA11**

#### Auxiliary Contact

- **LD5AU01**

---

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Description

The Littelfuse LS6R dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

Features/Benefits

- The patented operation system minimizes damage caused by arcs upon disconnection to increase product reliability and longevity
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located ‘sandwich-type’ 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications

- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications

UL 98B Standards
- Total Voltage Rating: 1500 V dc
- Amperage Rating: 400 A
- SCCR Rating: 10 kA
- Ambient Temperature: -30 to 50 °C (-22 to 122 °F)

IEC 60947-3 Standards
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage: 12 kV

Other Characteristics
- Operational Current: 400 A/1500 V dc
- Power Losses at 400 A: 10.58 watts
- Maximum Busbar Connection Range: 2 bars x 4 mm (.16") H x 32 mm (1.26") L
- Number of Circuits/Switches: 1
- Mechanical Operations: 8,000
- Tightening Torque: 212 lbf-in (24 N•m)
- Material: Plastic housing, Silver-plated copper terminals, Screws
- Environmental: RoHS compliant, REACH
- Country of Origin: Spain

Recommended Accessories

- Panel Handle with Shaft LDSSA11
  For closed panel door access
- Direct Handle LDSS11
  For open panel door access
- Auxiliary Contact LD5LAU01
  Remotely indicates switch position
Solar Products
LS6R0400 1500 V DC SERIES DISCONNECT SWITCH

Part Numbering System

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<tr>
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<tr>
<td>0400</td>
<td>4D = 1 Pole</td>
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<tr>
<td>D</td>
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<td>Terminal Measurement</td>
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Configuration

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<tr>
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Ordering Information

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<th>DC DISCONNECT SWITCH</th>
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<tr>
<td>SERIES</td>
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<td>LS6R04004DD00L</td>
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<tr>
<td>LS6R0400CBD00L</td>
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Dimensions Millimeters

**Dc Disconnect Switch**

**Switch - Side View**

**Panel Handle with Shaft**

**Busbar**

| BUSBAR H MAX (CU) | BUSBAR L MAX (CU) | COPPER BAR M (TERMINAL TORQUE) (+5% | -10%) |
|-------------------|-------------------|-----------------------------|
| MM | INCH | MM | INCH | N•M | LB.INCH |
| 4 | 5/32 | 32 | 1/4 | M12 | 24 | 212 |

Auxiliary Contact

LD5AU01
Solar Products
LS60250 1000 V DC SERIES DISCONNECT SWITCH

1000 V Dc • 250 A

Description
The Littelfuse LS6 dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

Features/Benefits
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located “sandwich-type” 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications

**UL 98B Standards**
- Total Voltage Rating: 1000 V dc
- Amperage Rating: 250 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

**IEC 60947-3 Standards**
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV
- Operational Current DC21B Rating: 250 A/1000 V dc

**Other Characteristics**
- Power Losses at 250 A: 19.59 watts
- Minimum Connection Wire Range/AWG: 400 kcmil/MCM (203 mm²)
- Maximum Connection Wire Range/AWG: 500 kcmil/MCM (253 mm²)
- Number of Circuits/Switches: 1
- Mechanical Operations: 8,000
- Tightening Torque: 159 lbf-in (18 N•m)
- Material: Plastic housing
- Screw: Silver-plated copper terminals
- Flammability Rating: UL 94 V-0

**Approvals**
- UL 98B & UL 94
- UL Guide WHVA
- UL Listed E511898
- NEC Article 690 for PV systems
- IEC-60947-3
- CE
- EAC

**Environmental**
- RoHS compliant
- REACH

**Country of Origin**
- Spain

**Recommended Accessories**
- Panel handle with shaft LDSSA11 for closed panel door access
- Direct handle LDSSI11 for open panel door access
- Auxiliary contacts LD5LAU01 remotely indicate switch position
- Phase barriers LDRSF11 (Type 1M) and LDRSF13 (Type 2E) isolate sections to eliminate arcing between the phases
- Terminal lug LDRTL11W safely connects electrical and mechanical devices (phase barriers must be used in order to maintain the required clearance)
- Terminal shrouds LDRCU13W offer protection against direct contact after wiring
- Spacers LDREL11W increase distance between switch and mounting plate
Solar Products
LS60250 1000 V DC SERIES DISCONNECT SWITCH

Part Numbering System

<table>
<thead>
<tr>
<th>Configuration Type</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1M = 1 Pole</td>
<td>1M (1 Pole)</td>
</tr>
<tr>
<td>2E = 2 Pole</td>
<td>2E (2 Pole)</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
<th>SERIES</th>
<th>TOTAL VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>POLES</th>
<th>SINGLE UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS602501MS00L</td>
<td>1000 V dc</td>
<td>250 A</td>
<td>Grounded</td>
<td>Type 1M</td>
<td>1</td>
<td>2 kg</td>
<td></td>
</tr>
<tr>
<td>LS602502ES00L</td>
<td>1000 V dc</td>
<td>250 A</td>
<td>Ungrounded</td>
<td>Type 2E</td>
<td>2</td>
<td>3 kg</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions Millimeters

Switch + Direct Handle - Side View

<table>
<thead>
<tr>
<th>Terminal Lug Measurements</th>
<th>LDRTL11W</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/0</td>
<td>C/W ONLY</td>
</tr>
<tr>
<td>85 MM² MIN.</td>
<td>M (TERM)</td>
</tr>
<tr>
<td>400 KCMIL</td>
<td>M10</td>
</tr>
<tr>
<td>240 MM² MAX.</td>
<td>LB.INCH</td>
</tr>
</tbody>
</table>

COPPER WIRE ONLY M (TERMINAL TORQUE) (+5% | -10%)

<table>
<thead>
<tr>
<th>CONDUCTOR TEMPERATURE RATING</th>
<th>N M</th>
<th>LB. INCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 °C</td>
<td>18</td>
<td>159</td>
</tr>
</tbody>
</table>

Torque and Cable Capacity Instructions

10-32 UNF T/D 26.55 lb.inch/ 3 Nm
7/8-14 UNF T/D 100 lb.inch 56 Nm
Solar Products
LS60400 1000 V DC SERIES DISCONNECT SWITCH

1000 V dc • 400 A • 1 Pole
1000 V dc • 400 A • 2 Pole (500 V dc per pole)

Description
The Littelfuse LS6 dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

Features/Benefits
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located "sandwich-type" 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries

Specifications
UL 98B Standards
- Total Voltage Rating: 1000 V dc
- Amperage Rating: 400 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)
IEC 60947-3 Standards
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV
- Operational Current DC21B Rating: 400 A/1000 V dc
Other Characteristics
- Power Losses at 400 A: 2 Pole (2E): 18.4 watts/pole
  1 Pole (1M): 36.11 watts total
- Minimum Connection Wire Range / AWG: 300 kcmil/MCM (152 mm²)
- Maximum Connection Wire Range / AWG: 350 kcmil/MCM (177 mm²)
- Number of Circuits/Switches: 1
- Mechanical Operations: 8,000
- Tightening Torque: 212 lbf-in (24 N-m)
- Material: Plastic housing
  Silver-plated copper terminals
- Base Mounting: Screws
- Flammability Rating: UL 94 V-0
- Approvals: UL 98B & UL 94
- UL Guide WHVA: UL Listed E511898
- NEC Article 690 for PV systems
- IEC-60947-3
- CE
- EAC
- Environment: RoHS compliant
- REACH
- Country of Origin: Spain

Recommended Accessories
- Panel handle with shaft LDSLA21 for closed panel door access
- Direct handle LDSLI21 for open panel door access
- Auxiliary contacts LD5LAU01 remotely indicate switch position
- Phase barriers LDRSF21 (Type 1M) and LDRSF23 (Type 2E) isolate sections to eliminate arcing between the phases
- Terminal lug LDRTL22W safely connects electrical and mechanical devices (phase barriers must be used in order to maintain the required clearance)
- Terminal shrouds LDRCU23W offer protection against direct contact after wiring
- Spacers LDREL21W increase distance between switch and mounting plate
**Part Numbering System**

```
LS6  0400  1M   S  00L
```

- **Series**
- **Amperage**
- **Configuration Type**
  - 1M = 1 Pole
  - 2E = 2 Pole
- **UL product**
- **Terminal Measurement**

**Configuration**

- Type 1M (1 Pole)
- Type 2E (2 Pole)

**Ordering Information**

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
<th>SERIES</th>
<th>TOTAL VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>POLES</th>
<th>SINGLE UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LS604001MS00L</td>
<td>1000 V dc</td>
<td>400 A</td>
<td>Grounded</td>
<td>Type 1M</td>
<td>1</td>
<td>2 kg</td>
</tr>
<tr>
<td></td>
<td>LS604002ES00L</td>
<td>1000 V dc</td>
<td>400 A</td>
<td>Ungrounded</td>
<td>Type 2E</td>
<td>2</td>
<td>3 kg</td>
</tr>
</tbody>
</table>

**Dimensions Millimeters**

- **Dc Disconnect Switch**
- **Switch + Direct Handle - Side View**
- **Panel Handle with Shaft**
- **Auxiliary Contact**

**Terminal Lug Measurements**

<table>
<thead>
<tr>
<th>LDRTL22W</th>
<th>3/0 85 MM² MIN. 400 KCMIL 240 MM² MAX.</th>
<th>CONDUCTOR TEMPERATURE RATING</th>
<th>COPPER WIRE ONLY M (TERMINAL TORQUE) (+5%</th>
<th>-10%)</th>
<th>N•M</th>
<th>LB.INCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75 ºC</td>
<td>M10</td>
<td>24</td>
<td>212</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Torque and Cable Capacity Instructions**

- 6 AWG 16 mm² min.
- 350 kcmil 185 mm² max
- Lug Bolt 11/16-16 UNF
- TORQUE / PAR 375 lb.inch 42 Nxm
Solar Products
LS60250 500 V DC SERIES DISCONNECT SWITCH

500 V Dc • 250 A

Description
The Littelfuse LS6 dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

Features/Benefits
- Streamline design eliminates the need for external bridging links (jumpers) to lower heat dissipation for increased energy efficiency, decreased installation and maintenance time, and reduced footprint for added design flexibility
- High-level disconnection insulation provides a barrier to stop conduction when switch is in off position for added safety
- The self-cleaning blade contacts eliminate performance degradation (from increased electrical resistance over time) to ensure consistent behavior across the product’s lifespan
- The internally-located "sandwich-type" 2-contact symmetrical design mitigates the electromagnetic force of repulsion to offer enhanced functionality in short-circuit conditions
- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombiner boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries
- Electrical vehicle chargers

Specifications
UL 98B Standards
- Total Voltage Rating: 500 V dc
- Amperage Rating: 250 A
- SCCR Rating: 10 kA
- Ambient Temperature: -20 to 50 °C (-4 to 122 °F)

IEC 60947-3 Standards
- Insulation Voltage Rating Ui: 1500 V dc
- Impulse Withstand Voltage Rating Uimp: 12 kV
- Operational Current DC21B Rating: 250 A/500 V dc

Other Characteristics
- Power Losses at 250 A: 10.08 watts
- Minimum Connection Wire Range/AWG: 400 kcmil/MCM (203 mm²)
- Maximum Connection Wire Range/AWG: 500 kcmil/MCM (253 mm²)
- Number of Circuits/Switches: 1
- Mechanical Operations: 8,000
- Tightening Torque: 159 lbf-in (18 N•m)
- Material: Plastic housing, Silver-plated copper terminals
- Base Mounting: Screws
- Flammability Rating: UL 94 V-0

Environmental
- RoHS compliant
- REACH compliant
- Country of Origin: Spain

Recommended Accessories
- Panel handle with shaft LDSSA11 for closed panel door access
- Direct handle LDSSI11 for open panel door access
- Auxiliary contacts LD5LAU01 remotely indicate switch position
- Phase barriers LDRSF11 (Type 1V) and LDRSF12 (Type 2L) isolate sections to eliminate arcing between the phases
- Terminal lug LDRTL11W safely connects electrical and mechanical devices (phase barriers must be used in order to maintain the required clearance)
- Terminal shrouds LDRGU11W offer protection against direct contact after wiring
- Spacers LDREL11W increase distance between switch and mounting plate
Part Numbering System

**LS6 0250 1V S 00L**

- **Series**
- **Amperage**
- **UL product**
- **Terminal Measurement**
  - 1V = 1 Pole
  - 2L = 2 Pole

Configuration

Type 1V (1 Pole)

Type 2L (2 Pole)

Ordering Information

<table>
<thead>
<tr>
<th>DC DISCONNECT SWITCH</th>
<th>SERIES</th>
<th>TOTAL VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>POLES</th>
<th>SINGLE UNIT WEIGHT</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>LS602501VS00L</td>
<td>500 V dc</td>
<td>250 A</td>
<td>Grounded</td>
<td>Type 1V</td>
<td>1</td>
<td>2 kg</td>
</tr>
<tr>
<td></td>
<td>LS602502LS00L</td>
<td>500 V dc</td>
<td>250 A</td>
<td>Ungrounded</td>
<td>Type 2L</td>
<td>2</td>
<td>3 kg</td>
</tr>
</tbody>
</table>

Dimensions Millimeters

**DC Disconnect Switch**

**Switch + Direct Handle - Side View**

**Panel Handle with Shaft**

**Auxiliary Contact**

Auxiliary contacts LD5LAU01 diagram

Terminal Lug Measurements

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<tr>
<th>LDRTL11W</th>
<th>3/0 85 MM² MIN</th>
<th>400 KCMIL</th>
<th>240 MM² MAX</th>
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<tbody>
<tr>
<td>CONDUCTOR TEMPERATURE RATING</td>
<td>M10</td>
<td>75 °C</td>
<td>18</td>
</tr>
<tr>
<td>COPPER WIRE ONLY M (TERMINAL TORQUE) (+5%</td>
<td>-10%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Torque and Cable Capacity Instructions

- 10-32 UNF TORQUE / PAR 26.55 lb.inch / 36 Nm
- 7/8-14 UNF TORQUE / PAR 500 lb.inch / 56 Nm

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Description
The Littelfuse LS6 dc series is an energy-efficient, compact disconnect switch that quickly breaks or resumes the flow of current safely to prevent shock hazards when trying to isolate circuits or repair systems.

Features/Benefits
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- Meets UL 94 flammability requirements with self-extinguishing/non-flammable materials to prevent fires

Applications
- Solar/PV systems: combiner boxes, recombination boxes and inverters
- Energy storage systems: disconnection of batteries, containerized batteries
- Oil & gas: dc drives
- Railway: earthing switches and battery disconnection
- UPS: switching and isolation of batteries

Web Resources
For more information, visit: littelfuse.com/DcDisconnectSwitch

Specifications
UL 98B Standards
Total Voltage Rating 500 V dc
Amperage Rating 400 A
SCCR Rating 10 kA
Ambient Temperature -20 to 50 °C (-4 to 122 °F)

IEC 60947-3 Standards
Insulation Voltage Rating Ui 1500 V dc
Impulse Withstand Voltage Rating Uimp 12 kV
Operational Current DC21B Rating 400 A / 500 V dc

Other Characteristics
Power Losses at 400 A 2 Pole (2L): 9.2 watts/pole
1 Pole (1V): 18.4 watts total
Minimum Connection Wire Range / AWG 300 kcmil/MCM (152 mm²)
Maximum Connection Wire Range / AWG 350 kcmil/MCM (177 mm²)
Number of Circuits/Switches 1
Mechanical Operations 8,000
Tightening Torque 212 lbf-in (24 N•m)
Material Plastic housing
Silver-plated copper terminals
Base Mounting Screws
UL 94 V-0
UL Guide WHVA
UL Listed ES11988
NEC Article 690 for PV systems
IEC-60947-3
CE
EAC

Environmental
RoHS compliant
REACH
Country of Origin Spain

Recommended Accessories
- Panel handle with shaft LDSLA21 for closed panel door access
- Direct handle LDSLI21 for open panel door access
- Auxiliary contacts LSDLAU01 remotely indicate switch position
- Phase barriers LDRSF21 (Type 1V) and LDRSF22 (Type 2L) isolate sections to eliminate arcing between the phases
- Terminal lug LDRTL22W safely connects electrical and mechanical devices (phase barriers must be used in order to maintain the required clearance)
- Terminal shrouds LDRCU21W offer protection against direct contact after wiring
- Spacers LREL21W increase distance between switch and mounting plate
Solar Products
LS60400 500 V DC SERIES DISCONNECT SWITCH

Part Numbering System
LS6 0400 1V S 00L
- Series
- Amperage 400 A
- Configuration Type 1V = 1 Pole, 2L = 2 Pole
- UL product
- Terminal Measurement

Configuration
- Type 1V (1 Pole)
- Type 2L (2 Pole)
- Connection diagram

Ordering Information

<table>
<thead>
<tr>
<th>SERIES</th>
<th>TOTAL VOLTAGE</th>
<th>AMPERAGE</th>
<th>INSTALLATION</th>
<th>CONFIGURATION</th>
<th>POLES</th>
<th>SINGLE UNIT WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS604001VS00L</td>
<td>500 V dc</td>
<td>400 A</td>
<td>Grounded</td>
<td>Type 1V</td>
<td>1</td>
<td>2 kg</td>
</tr>
<tr>
<td>LS604002LS00L</td>
<td>500 V dc</td>
<td>400 A</td>
<td>Ungrounded</td>
<td>Type 2L</td>
<td>2</td>
<td>3 kg</td>
</tr>
</tbody>
</table>

Dimensions Millimeters

Dc Disconnect Switch
Switch + Direct Handle
- Side View

Panel Handle with Shaft
- LDSLA21

Auxiliary Contact
- LD5AU01

Terminal Lug Measurements

<table>
<thead>
<tr>
<th>LDRTL22W</th>
<th>16 MM² MIN --- 350 KCMIIL</th>
<th>185 MM² MAX</th>
<th>CONDUCTOR TEMPERATURE RATING</th>
<th>COPPER WIRE ONLY M (TERMINAL TORQUE) (+5% -10%)</th>
<th>N-M</th>
<th>LB.INCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75 °C</td>
<td>M10</td>
<td>24</td>
<td>212</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Torque and Cable Capacity Instructions

DR-TL22
- 6 AWG 16 mm² min
- 350 kcmil
- Lug Bolt 11/16-16 UNF
- TORQUE / PAR 375 lb.inch
- 42 N-m
Description

The Class J Fuse Disconnect Switch combines a switch and multiple fuses in a single, compact device. This switch, with both front or side operation, offers a simpler way to manually open and close a circuit while safeguarding against overcurrent and short circuits. When it detects an overload or short circuit, the fuse blows automatically to open or break the circuit both upstream and downstream and shuts off the equipment.

When installing or maintaining equipment, the Class J Fuse Disconnect Switch makes it easier to connect or disconnect the power in an isolated area. With a higher interrupting rating, it delivers more robust protection, increases personnel safety and offers a longer switch life.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuse isolation</td>
<td>Makes it easy to segregate a particular fuse on the circuit for safe repair or maintenance</td>
</tr>
<tr>
<td>Double break contact system</td>
<td>Breaks circuit upstream and downstream enabling the switch to handle higher voltages and provide a longer switch life</td>
</tr>
<tr>
<td>Small footprint</td>
<td>Saves space and provides design flexibility</td>
</tr>
<tr>
<td>Optional handles (direct handle with push-to-detach system or external handle with shaft) with front or side operations</td>
<td>Offer adaptability to system design. In addition, no tools are required for the frontal direct handle providing easy and quick installation</td>
</tr>
<tr>
<td>Safe-to-touch transparent fuse covers</td>
<td>Cannot be opened in the “ON” position for extra protection and provides visibility to fuses—without opening module—for added convenience</td>
</tr>
<tr>
<td>Lockout-tagout</td>
<td>When the device is in the “OFF” position, a padlock can be added to ensure equipment is properly shut off during maintenance or repair to prevent the release of hazardous energy</td>
</tr>
<tr>
<td>Horizontal (standard), vertical and 45-degree mounting orientations</td>
<td>Offer switch installation options to adapt to system design</td>
</tr>
<tr>
<td>Test position on handle</td>
<td>Permits control circuit auxiliary testing without switching the main contacts on for added safety</td>
</tr>
</tbody>
</table>

Applications

- Industrial: service switchboards, distribution panels, control panels/motor control centers, compressors, drives, voltage stabilizers, UPS systems
- HVAC/R: air handling units, rooftop systems, compressors, chillers, refrigeration racks
- Mining: conveyor systems, main substations
- Solar: auxiliary services transformers
- Battery Energy Storage Systems: auxiliary services transformers
Specifications

UL 98 Standards
Voltage Rating 600 V Ac
Amperage Rating 30 A
SCCR Rating 200 kA
Ambient Temperature -20 °C to 50 °C (-4 °F to 122 °F)
Insulation Voltage Rating Ui 1000 V Ac
Impulse Withstand Voltage Rating Uimp 8 kV

Other Characteristics
Three Phase Maximum HP Rating/Motor FLA Current
240 V ac: 7.5 HP/22 A
480 V ac: 15 HP/21 A
600 V ac: 20 HP/22 A

Fuse
Class J*

FUSE SIZE
21 x 57 mm (0.82 x 2.24")

Connection
Cage

Flange Wire Range
AWG #14-2

Base Mounting
Screws

Materials
Plastic housing, silver-plated copper terminals

Flammability Rating
UL 94 V-0

Applicable Standards
UL98 & UL 94
UL Guide WHTY
UL Guide WHTY7
UL Listed E513470
CSA C22.2 NO 4
CE

Environmental
RoHS Compliant
REACH

Country of Origin
Spain

*Fuses sold separately.

Certification & Compliance

cULus Declaration of Conformity
UL 98, Fourteenth Edition, E513470

CE
(Main Device): EU_DOC-LM3_230731_0
(Accessories): EU_DOC-LM3_Accessories_230731_0

REACH REACH declaration: Regulation (EC) No 1907/2006
Solar Products

LM3030 SERIES CLASS J FUSE DISCONNECT SWITCHES

Accessories

Frontal Direct Handle LDM3SIB1
For open panel door access. Offers front operation. Features an easy push-to-detach system that requires no tools to attach or disassemble the handle.

Frontal External Handle with Shaft ON-OFF-TEST LDM3SAB1
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers front operation only.

Lateral External Handle with Shaft ON-OFF-TEST LDM3SBB1
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers side operation only.

Auxiliary Contact LDM3AUB1
Provides a signal to indicate the position of the switch.

Key Lock Device LDSCAB1 (single)
Locks the operation of the switch with a key to prevent accidents and increase safety.

Key Lock Device LDSCEB1 (double)
Locks the operation of the switch with a key to prevent accidents and increase safety.

Part Numbering System

<table>
<thead>
<tr>
<th>Series</th>
<th>Amperage</th>
<th>Poles</th>
<th>Fuse - Class J</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM3</td>
<td>xx x 3</td>
<td>P</td>
<td>J</td>
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</table>

<table>
<thead>
<tr>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>P = No Neutral</td>
</tr>
<tr>
<td>N = Neutral</td>
</tr>
<tr>
<td>D = Detachable Neutral</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>AMPERAGE</th>
<th>VOLTAGE</th>
<th>NUMBER OF POLES</th>
<th>STANDARD</th>
<th>FUSE CLASS J*</th>
<th>FUSE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM30303PJ</td>
<td>30 A</td>
<td>600</td>
<td>3</td>
<td>No Neutral</td>
<td>JTD/JLS</td>
<td>21 x 57 mm</td>
</tr>
<tr>
<td>LM30303NJ</td>
<td>30 A</td>
<td>600</td>
<td>3</td>
<td>Neutral</td>
<td>JTD/JLS</td>
<td>21 x 57 mm</td>
</tr>
<tr>
<td>LM30303D</td>
<td>30 A</td>
<td>600</td>
<td>3</td>
<td>Detachable Neutral</td>
<td>JTD/JLS</td>
<td>21 x 57 mm</td>
</tr>
</tbody>
</table>

*Fuses sold separately
Dimensions Millimeters (inches)

LM30303PJ – No Neutral

LM30303NJ – Neutral
Switch – 3D Installation View

**Table: Screw Torque**

<table>
<thead>
<tr>
<th>M</th>
<th>(+5 %)</th>
<th>(-10 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N+M</td>
<td>LBF+INCH</td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>M4</td>
<td></td>
</tr>
<tr>
<td>**</td>
<td>M4</td>
<td>1.5</td>
</tr>
<tr>
<td>***</td>
<td>CH3.5</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Table: Copper (Cu) Wire**

<table>
<thead>
<tr>
<th>THERMAL CURRENT RATING</th>
<th>AWG</th>
<th>M (+5 %</th>
<th>-10 %)</th>
<th>N+M</th>
<th>LBF+INCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 A</td>
<td>1x 6</td>
<td>1x 10</td>
<td>2</td>
<td>17.7</td>
<td></td>
</tr>
</tbody>
</table>
Description
The Class J Fuse Disconnect Switch combines a switch and multiple fuses in a single, compact device. This switch, with both front or side operation, offers a simpler way to manually open and close a circuit while safeguarding against overcurrent and short circuits. When it detects an overload or short circuit, the fuse blows automatically to open or break the circuit both upstream and downstream and shuts off the equipment.

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Features & Benefits

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<td>Offer adaptability to system design. In addition, no tools are required for the frontal direct handle providing easy and quick installation</td>
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Applications
- Industrial: service switchboards, distribution panels, control panels/motor control centers, compressors, drives, voltage stabilizers, UPS systems
- HVAC/R: air handling units, rooftop systems, compressors, chillers, refrigeration racks
- Mining: conveyor systems, main substations
- Solar: auxiliary services transformers
- Battery Energy Storage Systems: auxiliary services transformers
Specifications

UL 98 Standards
- Voltage Rating: 600 V Ac
- Amperage Rating: 60 A
- SCCR Rating: 200 kA
- Ambient Temperature: -20 °C to 50 °C (-4 °F to 122 °F)
- Insulation Voltage Rating Ui: 1000 V Ac
- Impulse Withstand Voltage Rating U_imp: 8 kV

Other Characteristics
- Three Phase Maximum HP Rating/Motor FLA Current:
  - 240 V ac: 15 HP/42 A
  - 480 V ac: 30 HP/40 A
  - 600 V ac: 50 HP/52 A
- Fuse Class: J*
- Fuse Size: 27 x 60 mm (1.06 x 2.36")
- Connection Terminal
- Maximum Width Terminal Busbar Connection Range: 20 mm
- Tightening Torque: 53 lb-in
- Flange Wire Range: AWG #6-2/0 (terminal lug required)
- Base Mounting: Screws
- Materials: Plastic housing, silver-plated copper terminals
- Flammability Rating: UL 94 V-0
- Applicable Standards:
  - UL98 & UL 94
  - UL Guide WHTY
  - UL Guide WHTY7
  - UL Listed E513470
  - CSA C22.2 NO 4
  - CE
- Environmental:
  - RoHS Compliant
  - REACH
- Country of Origin: Spain

*Fuses sold separately.

Certification & Compliance

<table>
<thead>
<tr>
<th>Certification &amp; Compliance</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>cULus Declaration of Conformity</td>
<td>UL 98, Fourteenth Edition, E513470</td>
</tr>
</tbody>
</table>
| CE Declaration of Conformity | (Main Device): EU_DOC-LM3_230731_0
| RoHS Directive | (Accessories): EU_DOC-LM3_Accessories_230731_0 |
## Accessories

### Frontal Direct Handle LDM3SIB1
For open panel door access. Offers front operation. Features an easy push-to-detach system that requires no tools to attach or disassemble the handle.

### Frontal External Handle with Shaft ON-OFF-TEST LDM3SAB1
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers front operation only.

### Lateral External Handle with Shaft ON-OFF-TEST LDM3SBB1
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers side operation only.

### Terminal Shrouds LDM3CU02
Protect against direct contact with the terminal.

### Auxiliary Contact LDM3AUB1
Provides a signal to indicate the position of the switch.

### Key Lock Device LDSCAB1 (single)
Locks the operation of the switch with a key to prevent accidents and increase safety.

### Key Lock Device LDSCEB1 (double)
Locks the operation of the switch with a key to prevent accidents and increase safety.

### Terminal Lugs LDM3TLU01 (1 pair)
Fastens the cable to a cage for stability.

## Part Numbering System

<table>
<thead>
<tr>
<th>Series</th>
<th>Amperage</th>
<th>Poles</th>
<th>Standard</th>
<th>Fuse - Class J</th>
<th>Fuse Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM3</td>
<td>xxx</td>
<td>3</td>
<td>P</td>
<td>No Neutral</td>
<td>JTD/JLS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N</td>
<td>Neutral</td>
<td>JTD/JLS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D</td>
<td>Detachable Neutral</td>
<td>JTD/JLS</td>
</tr>
</tbody>
</table>

## Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>AMPERAGE</th>
<th>VOLTAGE</th>
<th>NUMBER OF POLES</th>
<th>STANDARD</th>
<th>FUSE CLASS J*</th>
<th>FUSE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM30603PJ</td>
<td>60 A</td>
<td>600</td>
<td>3</td>
<td>No Neutral</td>
<td>JTD/JLS</td>
<td>27 x 60 mm</td>
</tr>
<tr>
<td>LM30603NJ</td>
<td>60 A</td>
<td>600</td>
<td>3</td>
<td>Neutral</td>
<td>JTD/JLS</td>
<td>27 x 60 mm</td>
</tr>
<tr>
<td>LM30603DJ</td>
<td>60 A</td>
<td>600</td>
<td>3</td>
<td>Detachable Neutral</td>
<td>JTD/JLS</td>
<td>27 x 60 mm</td>
</tr>
</tbody>
</table>

*Fuses sold separately
Dimensions Millimeters (inches)

**LM30603PJ – No Neutral**

**FRONT VIEW**

- 168 [6.619]
- 161 [6.334]
- 146 [5.752]
- 36 [1.427]
- 36 [1.417]
- 36 [1.417]
- 36 [1.417]

**SIDE VIEW**

- 124 [4.884]
- 114 [4.498]
- 98 [3.858]
- 94 [3.701]
- 94 [3.701]
- 23 [0.911]

**LM30603NJ – Neutral**

**FRONT VIEW**

- 204 [8.037]
- 190 [7.480]
- 182 [7.150]
- 84 [3.307]
- 30 [1.189]

**SIDE VIEW**

- 127 [5.000]
- 121 [4.764]
- 142 [5.591]
- 142 [5.591]
- 190 [7.480]

The starting current of motors of more than the standard horsepower ratings may require the use of fuses with appropriate time-delay characteristics.

Continuous load current not to exceed 80 percent of the rating of the fuses employed in other than motor circuits.

Suitable for use on a circuit capable of delivering not more than 200kA R.M.S symmetrical, 600V max.

Use class J fuses.

Use accessories according to instructions:
- Terminal Torque 53 LB.IN.
- Motor-Circuit Switch
- STD
- 98 [3.858]
- 98 [3.858]
- 240
- 240
- 600 Vac 60A 50/60Hz
- 600 Vac 60A 50/60Hz
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15
- 15

Use Cu wire only

© 2023 Littelfuse, Inc.
Switch – 3D Installation View

COPPER (CU) WIRE - S MAX

| THERMAL CURRENT RATING (I_th) | mm² | AWG | M (+5 % | -10 %) |
|------------------------------|-----|-----|------------|
|                              |     |     | N•M | LBF•INCH  |
| 60 A                         | 6-50| 10-2/0 | M8  | 6  | 53  |

Use accessories according to instructions:

4567Z010

Optional terminal lugs for attachment

7/16-20 UNF 2B
Torque/Par 120 lb•in/13.9Nm

DETACHABLE NEUTRAL

M* Allen

LDM3TLU01

2 x
Description

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- HVAC/R: air handling units, rooftop systems, compressors, chillers, refrigeration racks
- Mining: conveyor systems, main substations
- Solar: auxiliary services transformers
- Battery Energy Storage Systems: auxiliary services transformers
# Specifications

**UL 98 Standards**
- **Voltage Rating**: 600 V Ac
- **Amperage Rating**: 100 A
- **SCCR Rating**: 200 kA
- **Ambient Temperature**: -20 °C to 50 °C (-4 °F to 122 °F)
- **Insulation Voltage Rating Ui**: 1000 V Ac
- **Impulse Withstand Voltage Rating U_{imp}**: 12 kV

**Other Characteristics**
- **Three Phase Maximum HP Rating/Motor FLA Current**
  - 240 V ac: 30 HP/80 A
  - 480 V ac: 60 HP/77 A
  - 600 V ac: 75 HP/77 A

**Fuse**
- **Class**: J*

**Fuse Size**
- 29 x 117 mm (1.14 x 4.60”)

**Connection**
- **Terminal**

**Maximum Width Terminal Busbar Connection Range**
- 30 mm

**Tightening Torque**
- 159 lb·in

**Flange Wire Range**
- AWG #3/0 - 300 kcmil (terminal lug required)

**Base Mounting**
- Screws

**Materials**
- Plastic housing, tin-plated copper terminals

**Flammability Rating**
- UL 94 V-0

**Applicable Standards**
- UL98 & UL 94
- UL Guide WHTY
- UL Guide WHTY7
- UL Listed E513470
- CSA C22.2 NO 4
- CE

**Environmental**
- RoHS Compliant
- REACH

**Country of Origin**
- Spain

*Fuses sold separately.

---

# Certification & Compliance

**cULus**
- UL 98, Fourteenth Edition, E513470
- Declaration of Conformity
  - (Main Device): EU_DOC-LM3_230731_0
  - (Accessories): EU_DOC-LM3_Accessories_230731_0

**CE**
- Declaration of Conformity

**RoHS**

**REACH**
Accessories

Frontal Direct Handle LDM3SI11
For open panel door access. Offers front operation. Features an easy push-to-detach system that requires no tools to attach or disassemble the handle.

Frontal External Handle with Shaft ON-OFF-TEST LDM3SA11
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers front operation only.

Lateral External Handle with Shaft ON-OFF-TEST LDM3SB11
For closed panel door access. Includes the ‘TEST’ position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers side operation only.

Terminal Shrouds LDM3CU13
Protect against direct contact with the terminal.

Auxiliary Contact LDM3AUB1
Provides a signal to indicate the position of the switch.

Phase Barriers LDM3SF12
Isolates/separates active parts to increase clearance and decrease creepage.

Key Lock Device LDSCA11 (single)
Locks the operation of the switch with a key to prevent accidents and increase safety.

Key Lock Device LDSCE11 (double)
Locks the operation of the switch with a key to prevent accidents and increase safety.

Terminal Lugs LDM3TLU11 (1 pair)
Fastens the cable to a cage for stability.

Part Numbering System

Series
Amperage
Poles
Fuse - Class J
Standard

P = No Neutral
N = Neutral
D = Detachable Neutral

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<th>VOLTAGE</th>
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<th>STANDARD</th>
<th>FUSE CLASS J*</th>
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</tr>
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<tbody>
<tr>
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<td>No Neutral</td>
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<td>29 x 117 mm</td>
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</tbody>
</table>

*Fuses sold separately
Dimensions Millimeters (inches)

**LM31003PJ – No Neutral**

**FRONT VIEW**

- 223.7 \( [8.81] \)
- 183 \( [7.20] \)
- 164 \( [6.46] \)
- 136 \( [5.35] \)
- 30 \( [1.18] \)
- 247 \( [9.72] \)
- 51.85 \( [2.04] \)
- 30 \( [1.18] \)
- \( \phi 10.5 \ [0.41] \)

**SIDE VIEW**

- 172.2 \( [6.78] \)
- 158 \( [6.20] \)
- 4 \( [0.16] \)
- 34 \( [1.3] \)
- 155 \( [6.10] \)

**LM31003NJ – Neutral**

**FRONT VIEW**

- 278.7 \( [10.97] \)
- 183 \( [7.20] \)
- 164 \( [6.46] \)
- 136 \( [5.35] \)
- 30 \( [1.18] \)
- 302 \( [11.89] \)
- 51.85 \( [2.04] \)
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- 4 \( [0.16] \)
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- 155 \( [6.10] \)
Switch – 3D Installation View

LDMSTLU11

| M   | M (+5 % | -10 %) |
|-----|----------|
| N+M | LBFBINCH |
| *   | M5       | 1.2     | 10.6 |
| **  | M4       | 1.5     | 13.3 |
| *** | P4       | 0.8     | 7.1  |

COPPER (CU) WIRE - S MAX

| THERMAL CURRENT RATING (Ith) | mm² | AWG | M (+5 % | -10 %) |
|------------------------------|-----|-----|----------|
| 100 A                        | 1x 300 | 1x 6 | M10 | 18 | 159 |

FUSE J

| FUSE J SIZE | SCREW LENGTH | M (+5 % | -10 %) |
|-------------|--------------|----------|
|             | mm | in | mm | in |
| 29x177      | M6 | 15 | 0.58 | 20 | 0.78 | 5 | 44.2 |
**Description**

The Class J Fuse Disconnect Switch combines a switch and multiple fuses in a single, compact device. This switch, with both front or side operation, offers a simpler way to manually open and close a circuit while safeguarding against overcurrent and short circuits. When it detects an overload or short circuit, the fuse blows automatically to open or break the circuit both upstream and downstream and shuts off the equipment.

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- HVAC/R: air handling units, rooftop systems, compressors, chillers, refrigeration racks
- Mining: conveyor systems, main substations
- Solar: auxiliary services transformers
- Battery Energy Storage Systems: auxiliary services transformers
## Specifications

**UL 98 Standards**
- **Voltage Rating**: 600 V Ac
- **Amperage Rating**: 200 A
- **SCCR Rating**: 200 kA
- **Ambient Temperature**: -20 °C to 50 °C (-4 °F to 122 °F)
- **Insulation Voltage Rating Uᵢ**: 1000 V Ac
- **Impulse Withstand Voltage Rating Uᵢmp**: 12 kV

### Other Characteristics
- **Three Phase Maximum HP Rating/Motor FLA Current**
  - 240 V ac: 50 HP/130 A
  - 480 V ac: 100 HP/124 A
  - 600 V ac: 125 HP/125 A
- **Fuse Class**: J*
- **Fuse Size**: 41 x 146 mm (1.61 x 5.75”)
- **Connection**: Terminal
- **Maximum Width Terminal Busbar Connection Range**: 30 mm
- **Tightening Torque**: 159 lb-in
- **Flange Wire Range**: AWG #3/0 - 300 kcmil (terminal lug required)
- **Base Mounting**: Screws
- **Materials**: Plastic housing, tin-plated copper terminals
- **Flammability Rating**: UL 94 V-0
- **Applicable Standards**
  - UL98 & UL 94
  - UL Guide WHTY
  - UL Guide WHTY7
  - UL Listed E513470
  - CSA C22.2 NO 4
  - CE

### Environmental
- **RoHS Compliant**: REACH
- **Country of Origin**: Spain

*Fuses sold separately.

## Certification & Compliance

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**Solar Products**

**LM3200 SERIES CLASS J FUSE DISCONNECT SWITCH**

**Accessories**

**Direct Handle LDM3SI11**
For open panel door access. Offers front operation. Features an easy push-to-detach system that requires no tools to attach or disassemble the handle.

**Frontal External Handle with Shaft ON-OFF-TEST LDM3SA11**
For closed panel door access. Includes the 'TEST' position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers front operation only.

**Lateral External Handle with Shaft ON-OFF-TEST LDM3SB11**
For closed panel door access. Includes the 'TEST' position to enable testing of the control circuit auxiliaries without switching the main contacts on to simplify maintenance and increase safety. Offers side operation only.

**Terminal Shrouds LDM3CU13**
Protect against direct contact with the terminal.

**Auxiliary Contact LDM3AUB1**
Provides a signal to indicate the position of the switch.

**Phase Barriers LDM3SF12**
Isolates/separates active parts to increase clearance and decrease creepage.

**Key Lock Device LDSCA11 (single)**
Locks the operation of the switch with a key to prevent accidents and increase safety.

**Key Lock Device LDSCE11 (double)**
Locks the operation of the switch with a key to prevent accidents and increase safety.

**Terminal Lugs LDM3TLU11 (1 pair)**
Fastens the cable to a cage for stability.

**Part Numbering System**

```
Series  L M 3  x x x  P  J  Fuse - Class J
Amperage
Poles  Standard
P = No Neutral
N = Neutral
D = Detachable Neutral
```

**Ordering Information**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>AMPERAGE</th>
<th>VOLTAGE</th>
<th>NUMBER OF POLES</th>
<th>STANDARD</th>
<th>FUSE CLASS J*</th>
<th>FUSE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM32003PJ</td>
<td>200 A</td>
<td>600</td>
<td>3</td>
<td>No Neutral</td>
<td>JTD/JLS</td>
<td>41 x 146 mm</td>
</tr>
<tr>
<td>LM32003NJ</td>
<td>200 A</td>
<td>600</td>
<td>3</td>
<td>Neutral</td>
<td>JTD/JLS</td>
<td>41 x 146 mm</td>
</tr>
<tr>
<td>LM32003DJ</td>
<td>200 A</td>
<td>600</td>
<td>3</td>
<td>Detachable Neutral</td>
<td>JTD/JLS</td>
<td>41 x 146 mm</td>
</tr>
</tbody>
</table>

*Fuses sold separately
Dimensions Millimeters (inches)
LM32003PJ – No Neutral

LM32003NJ – Neutral

Suitable for use on a circuit capable of delivering not more than 200kA R.M.S symmetrical, 600V max.

Use class J fuses.

The starting current of motors of more than the standard appropriate time-delay characteristics.

UL 98
600Vac 200A 50/60Hz
Use Cu wire only

Motor-Circuit Switch

L: 0123456789; NS: 01234
Switch – 3D Installation View
Local Resources for a GLOBAL Market

Sales and Technical Support

- **United States and Mexico**
  - Phone: +1 800 TEC FUSE (+1 800 832 3873)
  - Fax: +1 800 522 7697

- **Brazil**
  - Phone: +55 11 4427 6261

- **Canada**
  - Phone: +1 306 373 5505

- **China**
  - **Hong Kong**
    - Phone: +852 2810 5099
  - **Shanghai**
    - Phone: +86 21 2327 6000
  - **Shenzhen**
    - Phone: +86 755 8207 0760
  - **Taiwan**
    - Phone: +886 2 8751 1234

- **Europe**
  - Phone: +49 4244 819149

- **India**
  - Phone: +65 6885 9185

- **Japan**
  - Phone: +81 45 478 1088

- **Singapore**
  - Phone: +65 6885 9188

- **South Korea**
  - Phone: +82 2 6000 8600

- **United Arab Emirates (UAE)**
  - Phone: +971 4341 3660

Protection Relays & Controls Catalog (PF130N)
The comprehensive line of electronic and microprocessor-based protection relays, timers, and flashers safeguard equipment and personnel to prevent expensive damage, downtime or injury due to electrical faults.

Fuses & Fuse Holders Catalog (PF101N)
Littelfuse offers a complete circuit protection portfolio of industrial power fuses, including time-saving indication products for an instant visual blown-fuse identification.

Surge Protection Devices Catalog (PF612)
These surge protection devices safeguard components from transient overvoltage or surges.

Visit Technical Resources at Littelfuse.com
Technical information is only a click away. The Littelfuse Technical Resources section contains datasheets, product manuals, white papers, application guides, demos, on-line design tools, and more.
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