SMART BATTERY ISOLATOR

Prevents Loads On Auxiliary Battery From Draining The Starting Battery

Description

More flexible than traditional Isolators and works with all alternator types. The Smart Battery Isolators are smaller, lighter, less heat generated. No diode efficiency losses and reduces charging system workload by not connecting auxiliary battery until primary battery is charged to 13.2V. Lower strain on expensive charging components extends their useful life. Allows bi-directional charging from alternator or from shore/ campground power charger/converter when available.

Features and Benefits

- Simple installation - Connect to starting battery, auxiliary battery, and ground.
- LED status indicator.
- Optional Start Assist – Momentary switch allows the auxiliary battery to assist the starting battery.

Specifications Overview

Max Input Voltage: 16V
Continuous Current: 48525 – 85A
48530 – 200A
Ingress Protection: IP65
Vibration: 10-500Hz
Operating Temperature Range: -40 to +85 °C

Web Resources

Download technical resources at: littelfuse.com/SmartBatteryIsolator

Ordering Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>AMPERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>48525</td>
<td>85A</td>
</tr>
<tr>
<td>48530</td>
<td>200A</td>
</tr>
</tbody>
</table>

Dimensions

Datasheet Replaces Hotfeed Number D-617
**Electrical Characteristics**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>MIN</th>
<th>TYPICAL</th>
<th>MAX</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Input Voltage</td>
<td>9V</td>
<td></td>
<td>16V</td>
<td>Voltage range unit is guaranteed to function within specification.</td>
</tr>
<tr>
<td>Continuous Current</td>
<td>85A</td>
<td>200 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connect Voltage</td>
<td>13.2V</td>
<td></td>
<td></td>
<td>After 2 minutes at this level</td>
</tr>
<tr>
<td>Disconnect Voltage</td>
<td>12.7V</td>
<td></td>
<td></td>
<td>After 1 minute at this level</td>
</tr>
<tr>
<td>Quiescent Current</td>
<td>5mA</td>
<td>8mA</td>
<td></td>
<td>Relay off, start signal input open or grounded</td>
</tr>
</tbody>
</table>

**Environmental Specifications**

<table>
<thead>
<tr>
<th>PER SAE J1455</th>
<th>PARAMETER</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>-40 to +85 °C</td>
<td>Operating condition</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP65</td>
<td>Per IEC</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 90% RH</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>10-500Hz</td>
<td>per SAE J1455</td>
</tr>
<tr>
<td>Shock</td>
<td></td>
<td>per SAE J1455</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td></td>
<td>per SAE J1455</td>
</tr>
<tr>
<td>EMI/RF</td>
<td></td>
<td>per SAE J1455 &amp; J1113</td>
</tr>
</tbody>
</table>

**Terminal Torque Specifications**

| Battery Terminals       | 5/16-24            | 50 in-lbs (5.78 Nm)          |
Normal Operation Sequence

1. When the vehicle has been running, the alternator charges both battery banks through the Smart Isolator.

   ![Diagram showing the alternator charging both batteries]

2. When the engine is turned off, the alternator no longer supplies a charge to the batteries, and the loads on the batteries begin to deplete them.

   ![Diagram showing the alternator disconnected]

3. When batteries reach 12.7V, the Smart Battery Isolator senses it, opens the solenoid relay to separate the battery banks, and turns off the status light. This protects the starting battery while allowing the auxiliary battery to continue to power the auxiliary loads.

   ![Diagram showing the batteries separated]

4. When the vehicle is restarted, the starting battery has enough power to crank the engine, but the auxiliary battery is significantly depleted. The Smart Battery Isolator is open and the battery banks are separated.

   ![Diagram showing the batteries separated after restarting]

5. The engine is powering the alternator, and the starting battery has reached 13.2V. Only now does the Smart Battery Isolator reconnect, enabling the depleted auxiliary battery to be charged. By not reconnecting until the main battery is charged, the alternator is protected from excessive loads.

   ![Diagram showing the batteries reconnecting]

6. Now both batteries are charged again.

   ![Diagram showing both batteries charged]

HOW A SMART BATTERY ISOLATOR WORKS
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Using the Auxiliary Battery for a Start Boost

1. The main battery has been depleted and does not have enough power to start the engine. Voltage is greater than 9.5V.

2. The boost switch is pressed. It closes the Smart Battery Isolator solenoid for one minute. Now the power in the auxiliary battery is available for starting.

3. The alternator begins to charge the batteries. After one minute the Smart Battery Isolator reverts to the automatic mode. If the starting battery has not reached 13.2V, it isolates the batteries to reduce stress on the alternator. Once the main battery reaches 13.2V, it reconnects and charges the auxiliary battery.

Connection Schematic

Suggested Part Numbers:

REMOTE STATUS LIGHT
- PL-612-R
- PL-118-RC
- M-326-RC
- M-328-RC
- 9216-03
- 55020-04
- M-826-02
- M-58031-07