Using an External In-line Fuse with Lutron Controls

Tungsten Lamp Control
As lamp manufacturers move towards high-efficiency lighting technology (i.e., LED lamps) and move away from tungsten lamp technology, many of the remaining manufacturers have started making un-fused tungsten lamps in order to reduce manufacturing costs.

Historically, tungsten lamps were fused and posed no issue/risk with lighting control equipment. During initial installation, lamps from reputable manufacturers are typically used. But there is a potential risk during re-lamping, that un-fused tungsten lamps may be used (which poses a higher risk to the lighting control equipment). If an un-fused lamp fails in a manner that causes a short of its filament, it may trip circuit breakers, damage the lighting controls, and cause other potential field issues.

To protect Lutron equipment in the event of a lamp failure, Lutron recommends using an external, IEC 60127-2 compliant or equivalent in-line fuse (installed on the load-side), for each output that is controlling a tungsten load.

**Typical wiring diagram**

![Typical wiring diagram for Tungsten Lamp Control](image)

Plug-in Lamp Control
When controlling plug-in lamps via a Lutron load controller, there is a high risk that plug-in receptacle loads can be disconnected, and high-current motor loads (e.g. vacuum cleaners, shavers, etc.) could be connected. This is more prevalent in international hotel properties if local codes do not mandate a non-standard connection type be used with controlled receptacles/sockets. Disconnecting the low-current lighting load and connecting one of the aforementioned loads can lead to equipment damage, or other potential field issues.

To prevent these issues and protect the Lutron equipment in these applications, Lutron recommends also using an external, IEC 60127-2 compliant or equivalent in-line fuse.

**Typical wiring diagram**

![Typical wiring diagram for Plug-in Lamp Control](image)

All fuses must be used in conjunction with a fuse holder. Fuse holders can be purchased from many different manufacturers see the following page for examples of fuse holders.
ESN 1 A Switching Module (LQSE/MQSE-4S1-D)

The ESN 1 A Switching module is used for the control of lighting loads only. It is rated for loads as defined by IEC/EN 60669, NEMA 410, INC, MLV and ELV. It is not designed to control receptacle loads or loads greater than 1 A on one of its zone outputs.

Since this module is intended for low power applications, it has been designed with an internal fuse that will open when the controller experiences a high current condition. This can be due to overloading, surge, misapplications or mis-wires. When the internal fuse opens the device will no longer operate and must be replaced. To prevent this failure and to protect the module, an external IEC 60127-2 compliant in-line fuse (installed on the load-side) must be connected to each output that is controlling a load. An external fuse allows for simple and easy field replacement.

Typical wiring diagram

Fuse Specifications

Fuse should be IEC 60127-2 compliant

<table>
<thead>
<tr>
<th>Fuse Size</th>
<th>Ampere Rating</th>
<th>Voltage rating (V~)</th>
<th>Melting I2T at 10 ln (A^2 Sec)</th>
<th>Amp Range/Voltage at I.R</th>
</tr>
</thead>
<tbody>
<tr>
<td>2AG or 5x20 mm</td>
<td>3.15 A</td>
<td>250</td>
<td>38</td>
<td>10 A/250 V - 1500</td>
</tr>
</tbody>
</table>

Refer to the fuse holder specifications below.

DIN rail fuse holder
ABB/Entrelec: P/N 010513511

Fuse size (250 V~ max)
2AG/5x20 mm

In-line fuse holder
Littlefuse: P/N 01500274Z

Fuse size (250 V~ max)
2AG/5x20 mm