POWER PACK
RELAY CONTACT PROTECTION

SPECIFICATIONS

FEATURES
- Powers Low Voltage Sensors (PP20/PP20 2P only)
- Self-Contained Relay(s) Switch
- Line Voltage Loads
- Relay Contact Protection
- Plenum Rated

PHYSICAL SPECS
- SIZE (not including chase nipple)
  PP20 / SP20: 3.00" H x 2.25" W x 1.88" D
    (7.62 cm x 5.72 cm x 4.78 cm)
  PP20 2P: 4.13"H x 3.00"W x 1.88"D
    (10.49 cm x 7.62 cm x 4.78 cm)
- WEIGHT: 6 oz
- MOUNTING: 1/2" knockout
- COLOR: Black

ELECTRICAL SPECS
- OPERATING VOLTAGE: 120, 240, 277, or 347 VAC
- RELAY CURRENT REQUIREMENTS: 40 mA
- SWITCHING LOAD: 20 Amps / Pole
- OUTPUT VOLTAGE/CURRENT: 15 VDC, 150 mA (PP20/PP20 2P only)
- CLASS 2: 18 AWG, up to 2000 ft
- MOTOR LOAD: 1 HP

ENVIRONMENTAL SPECS
- OPERATING TEMP: 14º to 160º F (-10º to 71º C)
- RELATIVE HUMIDITY: 20 to 90% non-condensing
- SILICONE FREE
- ROHS COMPLIANT

MOUNTING IN PLENUMS
Power packs are plenum rated. Most local codes allow for small plastic controls in return air plenums. To meet all local codes, the units can be mounted inside an adjacent (deep) junction box as shown.

OVERVIEW
Power packs are the heart of the low voltage sensor system. A PP20 Series power pack transforms Class I high voltage (120/277 VAC or 347 VAC) to Class 2 15 VDC for powering remote sensors. The PP20 and the SP20 Series slave pack are also capable of switching lighting loads on and off using their internal relays. Class 2 wire leads connect to 18 AWG or smaller low voltage cable running to the sensors, making installation easy and clean. Power packs also have an elongated chase nipple that allows it to be mounted either directly through a ½ inch knockout into a junction box, or inside an adjacent box for meeting specific local code requirements in ceiling plenums.

The most versatile power pack is the PP20, which utilizes a patented relay contact protection and can power up to 14 sensors. Dual-circuit control can be handled by two PP20’s, one PP20 2P Series 2-Pole power pack, or a PP20 power pack and a SP20 slave packs.

RELAY CONTACT PROTECTION
The PP20, PP20 2P, & SP20 all have relay contact protection which uses an AC semiconductor, placed in parallel with the power relay, to perform the actual switching function. The switching life of this semiconductor is virtually infinite because it has no moving parts. The power relay contacts are then used to carry the current during the on state, thereby preventing in-rush or inductive kick from damaging the relay contacts. The result is extremely long relay life (tested to 400,000 cycles). When controlling larger loads of electronic ballasts with high in-rush characteristics, relay contact protection is advised. Power/slave packs without relay contact protection are also available (MP20 / MSP20).

SYSTEM DESIGN CONSIDERATIONS
A local override switch may be upstream or downstream of a PP20. However, if an SP20 or a PP20 2P is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the power pack, all subsequent relays will open, turning off all of the loads. If wiring the local switches before the power pack and slave pack, use multiple PP20’s, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, PP20 must be wired before the dimmer, or SP20 may be wired after the dimmer. The SP20 can be used for line voltage auxiliary contact only.

INTERFACING WITH ELECTRONIC CONTROL SYSTEMS
The Relay Switching System is designed to switch Alternating Currents Only. The relay will not switch DC signal inputs to EMS or Lighting Control Systems. Use model MP20, or “R” for signal relay located in Low Voltage Sensor Heads.

OPTIONS

347 VAC (347)
- Allows power pack to be powered by and/or switch 347 VAC

LOW TEMP/HIGH HUMIDITY (LT)
- Sensor is corrosion resistant to moisture
- Operates down to -40º F/C

ORDERING INFO

<table>
<thead>
<tr>
<th>SERIES #</th>
<th># OF POLES</th>
<th>VOLTAGE</th>
<th>TEMP/HUMIDITY</th>
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</thead>
<tbody>
<tr>
<td>PP20</td>
<td>Blank = 1</td>
<td>Blank = 120/277 VAC</td>
<td>Blank = 120/277 VAC **LT = Low Temp</td>
</tr>
<tr>
<td>SP20</td>
<td>2P = 2*</td>
<td>347 = 347 VAC**</td>
<td></td>
</tr>
</tbody>
</table>

*not available for SP20
**not available for with 2P
WIRING (DO NOT WIRE HOT)

POWERING CAPACITY
A power pack’s transformers can supply up to 150 mA of power. Each relay requires 40 mA during the on state. Low voltage remote sensors typically require 3 mA when detecting occupants, and 0.15 mA when in standby. Therefore, each transformer can handle up to 3 relays (including the relay(s) inside the power pack). For example, one PP20 can power its relay (40 mA) and 110 mA of external devices. Because of the ultra low current design of the sensors, up to 14 or more sensors can be connected to a single power pack! If multiple power packs are used together, an additional 110 mA is available.

<table>
<thead>
<tr>
<th>Sensors</th>
<th>Sensors w/ R option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PP20</td>
<td>14</td>
</tr>
<tr>
<td>1 PP20 2P</td>
<td>7</td>
</tr>
<tr>
<td>1 PP20 w/SP20</td>
<td>7</td>
</tr>
<tr>
<td>1 PP20 2P w/SP20</td>
<td>5</td>
</tr>
<tr>
<td>2 PP20</td>
<td>28</td>
</tr>
<tr>
<td>2 PP20 2P</td>
<td>14</td>
</tr>
</tbody>
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**Note 1:** Only three relays may be controlled with one Power Pack. If more than three circuits are required, multiple power packs must be used.

**Note 2:** The R option adds an isolated low voltage relay to a sensor. Only one sensor with this option is typically needed in a room.

Multiple Sensors Controlling One Circuit

Multiple Sensors Controlling Two Circuits

Multiple Sensors Controlling Three Circuits

Multiple Sensors Controlling Four Circuits

Wiring Multiple Power Packs Together

One Sensor Controlling Two Circuits

One Sensor Controlling One Circuit