



**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:  
14° to 160° F (-10° to 71° 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 1 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 1/2 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 semi-conductor, placed in parallel with the power relay, to perform the actual switching function. The switching life of this semi-conductor 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 -40° F/C



TITLE 24  
MADE in U.S.A.  
5 YEAR WARRANTY

**ORDERING INFO**

[SERIES] [# OF POLES] [VOLTAGE] [TEMP/HUMIDITY]

SERIES #	# OF POLES	VOLTAGE	TEMP/HUMIDITY
PP20 SP20	Blank = 1 2P = 2*	Blank = 120/277 VAC 347 = 347 VAC**	Blank = 120/277 VAC LT = Low Temp
	*not available for SP20	**not available for with 2P	

# WIRING (DO NOT WIRE HOT)

## POWERING CAPACITY

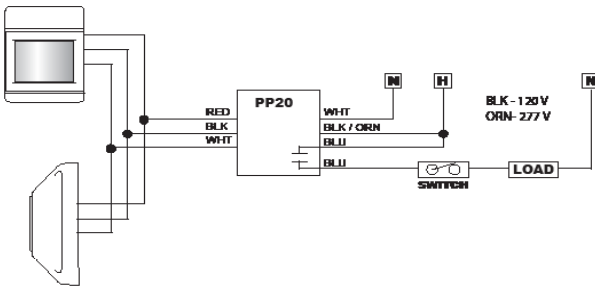
A power pack's transformers can supply up to 150 mA of power. Each relay requires 40 mA during the on state. Low voltage remote sensors typically require 3 mA when detecting occupants, and 0.15 mA when in standby. Therefore, each transformer can handle up to 3 relays (including the relay(s) inside the 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.

	Sensors	Sensors w/ R option
1 PP20	14	8
1 PP20 2P	7	6
1 PP20 w/SP20	7	6
1 PP20 2P w/SP20	5	5
2 PP20	28	16
2 PP20 2P	14	12

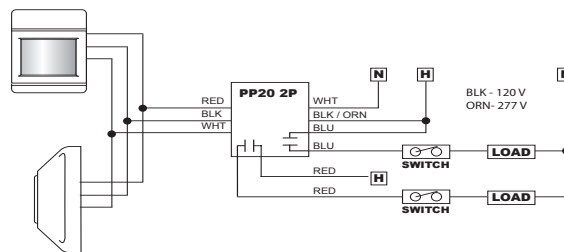
**Note 1:** Only three relays may be controlled with one Power Pack. If more than three circuits are required, multiple power packs must be used.

**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.

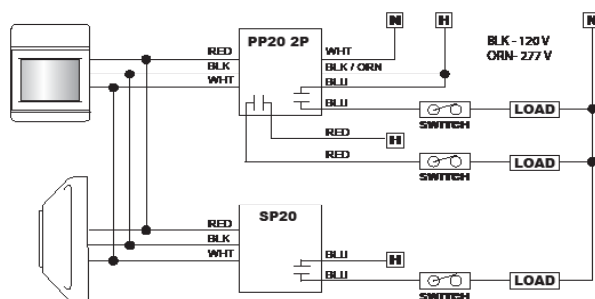
### Multiple Sensors Controlling One Circuit



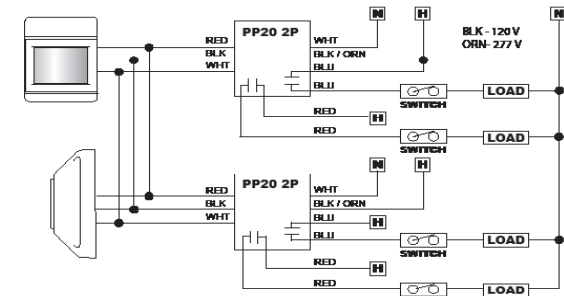
### Multiple Sensors Controlling Two Circuits



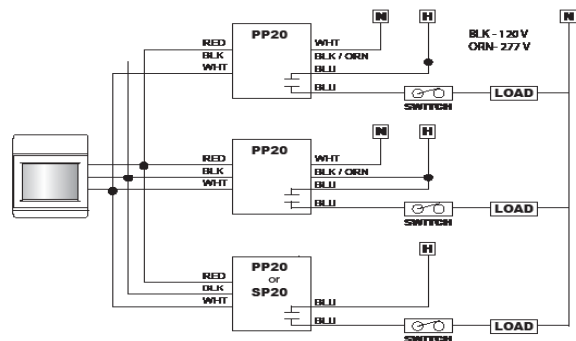
### Multiple Sensors Controlling Three Circuits



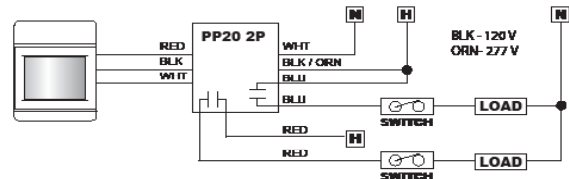
### Multiple Sensors Controlling Four Circuits



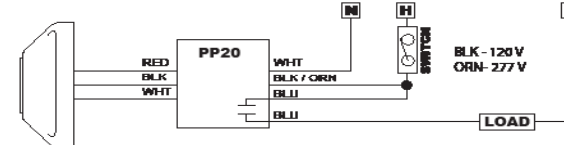
### Wiring Multiple Power Packs Together



### One Sensor Controlling Two Circuits



### One Sensor Controlling One Circuit



**WARRANTY:** Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, Inc., upon prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product.  
**LIMITATIONS AND EXCLUSIONS:** This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.