

# Occupancy Sensor AutoON/Override Power Pack

Cat. No. OSP20-RxH

**Load Ratings:** 20A, 2400W @ 120V, 60Hz - Incandescent / 20A, 2400VA @ 120V, 60Hz - Fluorescent  
20A, 5540VA @ 277V, 60Hz - Fluorescent / 1/2 HP @ 120V - Motor Load / 2 HP @ 240/277V, 60Hz - Motor Load / 0.5A 120V, 1A 30VDC - HVAC Relay

For use with OSCxx, OSWxx, ODCxx, and ODWxx Occupancy Sensors

## INSTALLATION INSTRUCTIONS



### WARNINGS AND CAUTIONS:

- To be installed and/or used in accordance with appropriate electrical codes and regulations.
- If you are unsure about any part of these instructions, consult an electrician.
- Use this device with **copper or copper clad wire only**.
- Disconnect power when servicing fixture or changing lamps.

DI-000-OSP20-00A

### FEATURES

- Title 24 Compliant
- Hold On/ Hold Off capabilities
- Regulated 24VDC, 150mA output current
- Mounts inside Fluorescent Ballast cavity
- Mounts inside or outside Junction Box
- Rated for Plenum spaces

### RATINGS

Part Number	HVAC Relay	Power Input <sup>1</sup>	Power Output <sup>2</sup>
OSP20-RxH	Yes	120-277VAC, 50/60Hz	24VDC, 150mA 3.6W

<sup>1</sup> Input voltage tolerance 10%, Frequency tolerance 5%.

<sup>2</sup> Output voltage tolerance 15%, Output voltage listed at nominal.

### DESCRIPTION

The power pack contains a power supply, a load switching relay and an HVAC relay. The power supply provides Class II low-voltage power for OSCxx, OSWxx, ODCxx, and ODWxx Series Occupancy Sensors. The OSP power packs can also supply power to the OSA20, Add-A-Relay. The relay in the power pack is controlled by the occupancy sensors connected via the 22 Gauge Blue "occupancy" wire. Multiple occupancy sensors can be connected to a single power pack in order to fully cover an area. The power packs include zero cross switching circuitry to minimize inrush current associated with incandescent and electronic ballasts. This reduces wear and tear on the relay contacts making the power pack last longer.

#### Application Notes:

Loads that exceed the ratings of a single power pack can be connected to an Add-A-Relay, which is powered from the low-voltage output of the power pack (OSPxx). The Add-A-Relay contains the load switching and HVAC relays and is powered by an OSPxx Power Pack.

- When a lighting load exceeds a single power pack's rating, the load can be split between multiple power packs. The low voltage occupancy input (Blue wire) and DC return (Black wires) of the power packs must be connected together for all power packs to operate together as one. Connect the Blue (occupancy) wires of all power packs and sensors together. Connect the Black (return) wires of all power packs and sensors together. Connect the Red (+24VDC) wires of the sensors to the Red wires of only one power pack. Never connect the Red (+24VDC) wires of two different power packs together.
- When more sensors are required than one power pack can supply, multiple power packs can be used to supply power to the occupancy sensor, but not switch any load. The primary power pack is the power pack switching the load. The secondary power packs only provide low voltage power to the occupancy sensor(s). Connect as many sensors to the primary power pack as possible (see current capacity section below), by connecting the Red wires of the sensors to the Red wire (+24VDC) of the primary power pack. Connect the Red wires (+24VDC) of the remaining sensors to the Red wires of the secondary power pack. Connect the Black (return) wires of all power packs and all sensors together. Connect the Blue (occupancy) wire of all sensors together to the Blue wire (occupancy) of the primary power pack. Never connect the Red (+24VDC) wires of two different power packs together.

#### FCC COMPLIANCE STATEMENT (OSP20 Only)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### LOW-VOLTAGE CURRENT CAPACITY

**NOTE:** Add-a-Relay current consumption = 50mA per unit.

$$\text{OSP20} \quad \boxed{\text{Total Number of Sensors} + \text{Total Number of Add-a-Relays} \leq 150\text{mA}}$$

### INSTALLATION

**1. WARNING:** TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!

**2. Mount power pack per desired application:**

**A.** To mount outside 4"x4" junction box using 2" EMT nipple, refer to **Figure 1**. Wire per instructions **Step 3A** and **3B**.

**B.** To mount inside 4"x4" junction box, refer to **Figure 2**. Wire per instructions **Step 3A** and **3B**.

- Ensure that conduit/cable entry clamp is located in corner of junction box.
- Dress wires to provide enough clearance when device is installed.

**CAUTION:** Low-voltage wires must also be dressed so they are separate from the high voltage (Class I) conductors. Refer to local building codes for the appropriate installation requirements for the low voltage wiring. Jacketing over the low-voltage wires may be required to provide appropriate insulation from the high-voltage wiring.

**C.** To mount inside ballast cavity of light fixture, refer to **Figure 3A**. Wire per instructions **Step 3A** and **3B**.

**CAUTION:** Low-voltage wires must also be dressed so they are separate from the high voltage (Class I) conductors. Refer to local building codes for the appropriate installation requirements for the low voltage wiring. Jacketing over the low-voltage wires may be required to provide appropriate insulation from the high-voltage wiring.

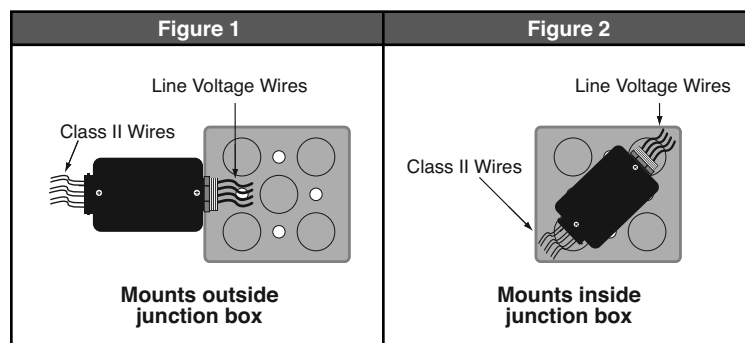
**D.** To mount outside ballast cavity of light fixture, refer to **Figure 3B**. Wire per instructions **Step 3A** and **3B**.

**3A. Line Voltage Wiring:** Remove 5/8" (1.6 cm) of insulation from each circuit conductor. Make sure that ends of conductors are straight. Connect lead wires from Power Pack to LINE circuit per appropriate WIRING DIAGRAM as follows: Twist strands of each lead tightly and, with circuit conductors push firmly into appropriate wire connector. Screw connectors on clockwise making sure that no bare conductor shows below the wire connectors. Secure each connector with electrical tape.

**3B. Class II and HVAC Wiring:** Connect Low-Voltage wires from Power Pack to Sensor per appropriate WIRING DIAGRAM as follows: Twist strands of each lead tightly and, with circuit conductors, push firmly into appropriate wire connector. Screw connectors on clockwise making sure that no bare conductor shows below the wire connectors. Secure each connector with electrical tape.

**4.** Refer to sensor Installation Instructions for further details.

**5.** Restore power at circuit breaker or fuse. **INSTALLATION IS COMPLETE.**



### OPERATION

The AutoOn/Override Power Pack can be turned ON and OFF automatically using an occupancy sensor input, a timer, panel or BAS input, and manually from an optional low voltage momentary switch.

#### AUTO ON (See Wiring Diagram):

The occupancy sensor input, Hold ON input and the optional momentary switch input can all be used to turn the load ON.

When the load is turned OFF using the momentary switch, the power pack does not turn it ON automatically until after the sensor time delay expires (e.g., presentation mode). Pressing the momentary switch before the sensor time delay expires turns the load ON.

When the occupancy sensor's time delay expires, the power pack reverts to AutoON mode and it turns the load ON with the next input from the occupancy sensor.

#### MANUAL ON (See Wiring Diagram):

Occupants must press the low voltage momentary switch to turn the load ON.

When the occupancy sensor is the only input keeping the load ON, the load turns OFF when the sensor time delay expires. If the sensor input re-triggers within 30 seconds after the load turns OFF, the load turns ON again. After the 30 seconds expire with no sensor input press the momentary switch to turn the load ON.

#### LOW VOLTAGE INPUTS

24VDC input wires are provided to control the load relay. The inputs may be used in combination or individually, depending on the application(s). See wiring diagrams for connections.

#### MAINTAINED INPUTS

**Occupancy Sensor (Blue)** - This input is for occupancy sensor AutoON/AutoOFF. Applying 24v closes the relay (Occupied). Remove the voltage and the relay opens (Vacant).

**Occupancy Sensor (Blue/White)** - This input is for occupancy sensor ManualON/AutoOFF. When the attached occupancy sensor detects motion, no action occurs. A local momentary switch is required to manually turn the load ON. Then the sensor will turn the load OFF when the time delay expires.

**Hold ON (Yellow)** - This input is intended for timer or panel input.

Applying 24VDC closes the relay. Remove the voltage and the relay opens if no other input is holding it closed. It overrides the Control ON input.

**Hold OFF (Orange)** - This input is used for timer, panel, BAS or load shed input.

Applying 24VDC opens the relay. Remove the voltage and the relay can accept any other input. It overrides the Control ON and Hold ON inputs.

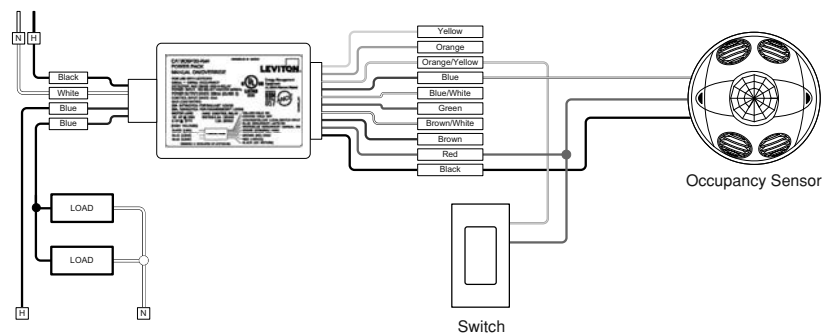
**Local Switch (Yellow/Orange)** - This input is for a low voltage momentary switch.

Applying 24VDC momentary input changes the relay to the opposite state. It overrides the Control ON, Hold ON and Hold OFF inputs.

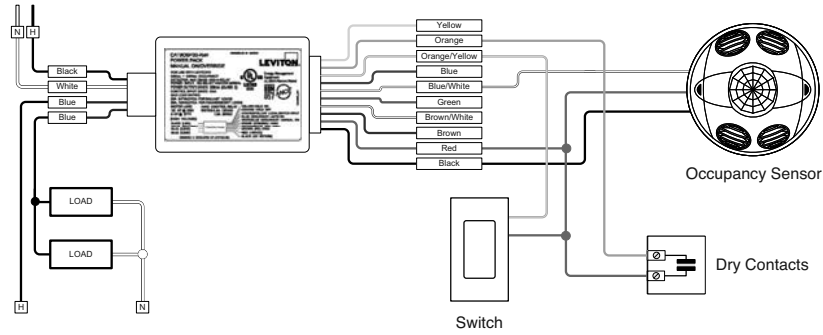
Wire Designations		
Signal Name	Color	Gauge
<b>Line Voltage Wires</b>		
Line 120-277V (OSP20-Rx0)	Black	18 AWG
Neutral	White	18 AWG
Load	Blue	14 AWG
Load	Blue	14 AWG
<b>Class II Wires</b>		
Power (24 VDC)	Red	22 AWG
DC Return	Black	22 AWG
Occupancy Auto ON	Blue	22 AWG
Occupancy Manual ON	Blue/White	22 AWG
Hold ON	Yellow	22 AWG
Hold OFF	Orange	22 AWG
Local Switch Input	Yellow/Orange	22 AWG
<b>HVAC Wires</b>		
HVAC Common	Green	22 AWG
HVAC NO (Normally Open)	Brown/White	22 AWG
HVAC NC (Normally Closed)	Brown	22 AWG
<ul style="list-style-type: none"> <li>All wires rated at 105° C, 600V insulation.</li> <li>Class II wires are Teflon coated, for plenum applications.</li> <li>HVAC wiring is Class I and Class II rated.</li> </ul>		

WEB VERSION

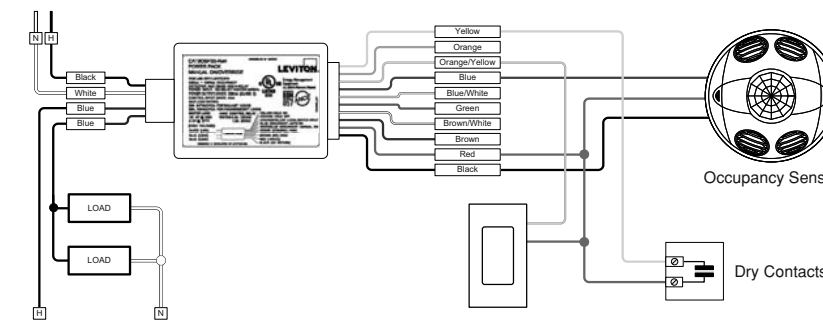
Auto ON/Auto OFF, Manual OFF



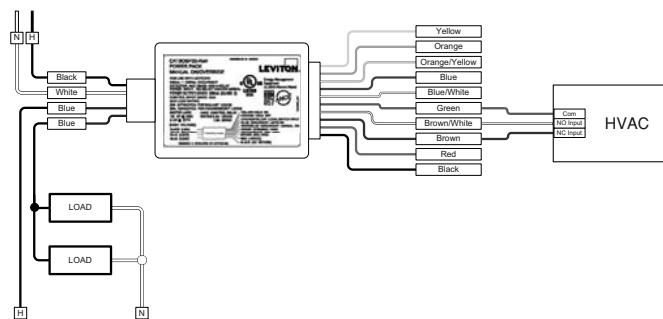
Manual ON, Light Hold OFF, Auto OFF



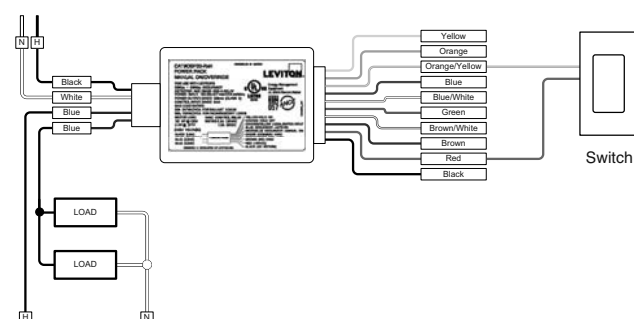
Auto ON, Auto OFF, Light Hold ON



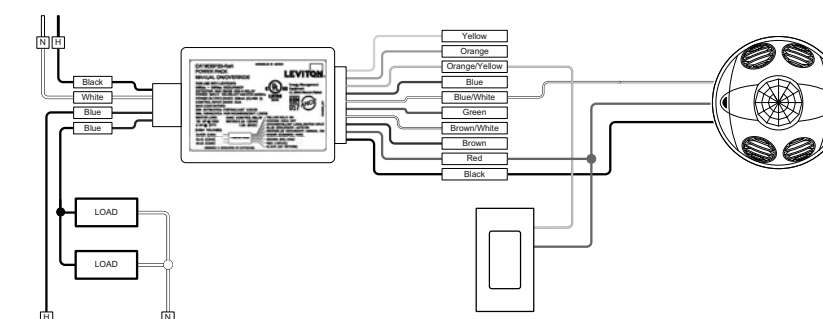
HVAC



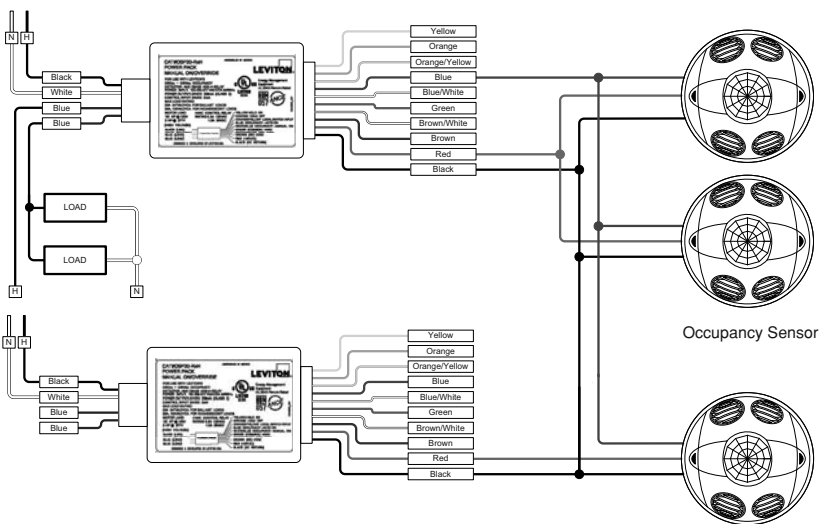
Local Switch



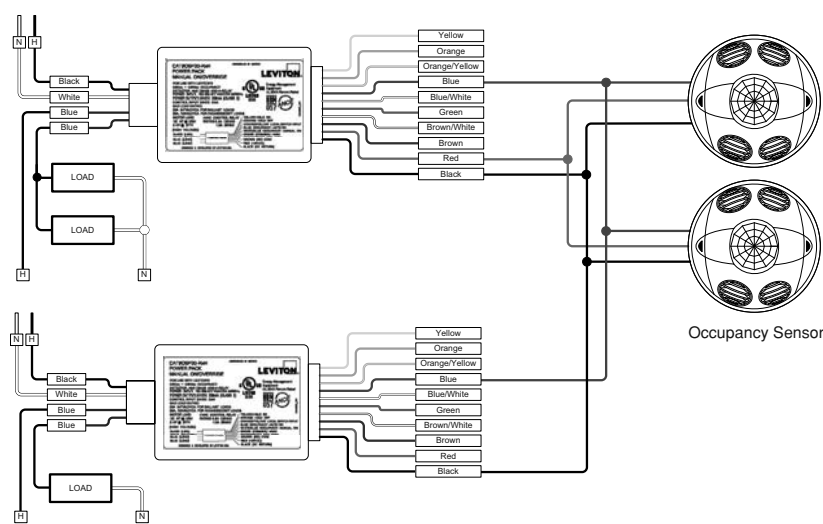
Manual ON, Auto OFF



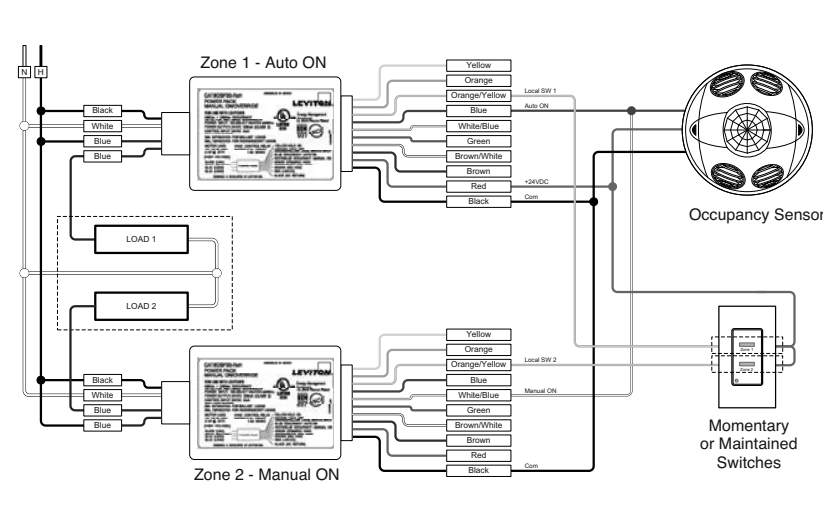
Multiple Occupancy Sensors Exceed Power Supply Ratings



Multiple Loads Exceed Single Power Pack Ratings



OSP20-RxH Bi-Level Switching



LIMITED 5 YEAR WARRANTY AND EXCLUSIONS

Leviton warrants to the original consumer purchaser and not for the benefit of anyone else that this product at the time of its sale by Leviton is free of defects in materials and workmanship under normal and proper use for five years from the purchase date. Leviton's only obligation is to correct such defects by repair or replacement, at its option, if within such five year period the product is returned prepaid, with proof of purchase date, and a description of the problem to Leviton Manufacturing Co., Inc., Attn: Quality Assurance Department, 201 North Service Road, Melville, New York 11747. This warranty excludes and there is disclaimed liability for labor for removal of this product or reinstallation. This warranty is void if this product is installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner, or is not used under normal operating conditions or not in accordance with any labels or instructions. There are no other or implied warranties of any kind, including merchantability and fitness for a particular purpose, but if any implied warranty is required by the applicable jurisdiction, the duration of any such implied warranty, including merchantability and fitness for a particular purpose, is limited to five years. Leviton is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, lost sales or profits or delay or failure to perform this warranty obligation. The remedies provided herein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.

WEB VERSION