Occupancy Sensor Power Pack

Cat. No. OSP20-0D0, OSP20-RD0 (with HVAC relay), OSP15-R30 (with HVAC relay)

Occupancy Sensor Add-A-Relay

Cat. No. OSA20-R00 (with HVAC relay)

LEVITON®

WARNINGS AND CAUTIONS

- **TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER** at circuit breaker or fuse and test that power is off before wiring!
- If you are unsure about any part of these instructions, consult an electrician.
- To be installed and/or used in accordance with appropriate electrical codes and regulations.

WARNINGS AND CAUTIONS

- Use this device with **copper or copper-clad wire only.**
- For **indoor use only.**
- Disconnect power when servicing fixture or changing bulbs.

PK-93960-10-00-0F

INSTALLATION INSTRUCTIONS — ENGLISH

FEATURES

- Regulated 24VDC, 150mA output current (120mA for OSP15)
- Mounts inside Fluorescent Ballast cavity
- Mounts inside or outside Junction Box
- Teflon coated Class II wires for plenum wiring

RATINGS

Occupancy Sensor Power Pack - OSP20-0D0, OSP20-RD0 (with HVAC relay)

Load Ratings:

20A, 2400W @ 120V, 60Hz – Incandescent
20A, 2400VA @ 120V, 60Hz – Fluorescent
20A, 5540VA @ 277V, 60Hz – Fluorescent
1 HP @ 120VAC – Motor Load
2 HP @ 240V, 60Hz – Motor Load
0.5A 125V, 1A 30VDC – HVAC Relay

OSP15-R30 (with HVAC relay)

Load Ratings:

15A, 5200VA @ 347V, 60Hz – Fluorescent
0.5A 125V, 1A 30VDC – HVAC Relay

Occupancy Sensor Add-A-Relay - OSA20-R00 (with HVAC relay)

Load Ratings:

15A, 1800W @ 120V, 60Hz – Incandescent
20A, 2400VA @ 120V, 60Hz – Fluorescent
20A, 5540VA @ 277V, 60Hz – Fluorescent
15A, 5200VA @ 347V, 60Hz – Fluorescent
1 HP @ 120VAC – Motor Load
2 HP @ 240V, 60Hz – Motor Load
0.5A 125V, 1A 30VDC – HVAC Relay

Part Number	HVAC Relay	Power Input[1]	Power Output[2]
OSP20-0D0	No	120-277VAC, 60Hz	24VDC, 150mA 3.6W
OSP20-RD0	Yes	120-277VAC, 60Hz	24VDC, 150mA 3.6W
OSP15-R30	Yes	347VAC, 60Hz	24VDC, 120mA 3.6W[3]
OSA20-R00	Yes	24VDC, 50mA-1.2W	N/A

[1] Input voltage tolerance 10% Frequency tolerance 5%.
[2] Output voltage tolerance 15%, Output voltage listed at nominal.
[3] Voltage range for the OSP15-R30 is 19-27VDC based on load and temperature conditions.

DESCRIPTION

The power pack contains a power supply, a load switching relay and on some models, a 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.

1. 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.
2. 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.

LOW-VOLTAGE CURRENT CAPACITY

OSP20	Total Number of Sensor	+	Total Number of Add-a-Relays	≤	150mA
OSP15	Total Number of Sensor	+	Total Number of Add-a-Relays	≤	120mA

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

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

Close Relay: When the attached occupancy sensor detects motion, it will apply +24V to the Occupancy wire causing the relay to close. This includes the HVAC relay on equipped models.

Open Relay: When the attached occupancy sensor does not detect motion the relay will open. This includes the HVAC relay on equipped models.

WIRE DESIGNATIONS

Signal Name	Color	Gauge
Line Voltage Wires		
Line 120/277V (OSP20-xx0) Line 347V (OSP15)	Black	18AWG
Neutral	White	18AWG
Load	Blue	14AWG
Load	Blue	14AWG
Class II Wires		
Power (24VDC)	Red	22AWG
Return	Black	22AWG
Occupancy	Blue	22AWG
HVAC Wires		
HVAC Common	Green	22AWG
HVAC NO (Normally Open)	Brown/White	22AWG
HVAC NC (Normally Closed)	Brown	22AWG

All wires rated at 105° C, 600V insulation.
Class II wires are Teflon coated, for plenum applications.
HVAC wiring is Class I and Class II rated.

TROUBLESHOOTING

- **Lights Flickering**
  - Lamp has a bad connection.
  - Wires not secured firmly with wire connectors.
- **Lights do not turn ON**
  - Circuit breaker or fuse has tripped.
  - Lamp is burned out.
  - Lamp Neutral connection is not wired.
  - Low-voltage miswired. Verify wiring connections per appropriate Wiring Diagrams.
  - Line voltage miswired. Verify wiring connections per appropriate Wiring Diagrams.
- **Lights stay ON**
  - Constant motion. To Test: Adjust sensor; remove motion source. If unsatisfactory, move sensor.
- **Light turns ON too long**
  - Adjust sensor.

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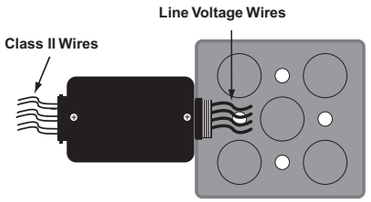
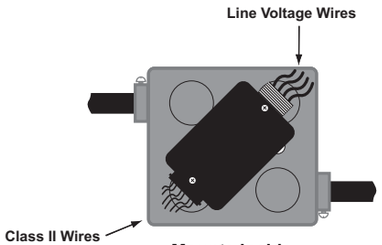
Figure 1



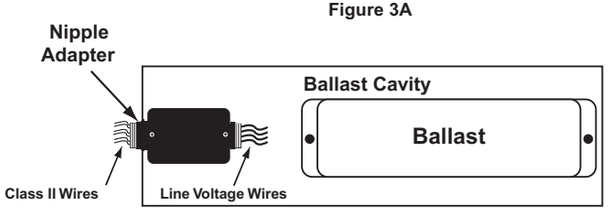
Mounts outside junction box

Figure 2
(if permitted by local codes)



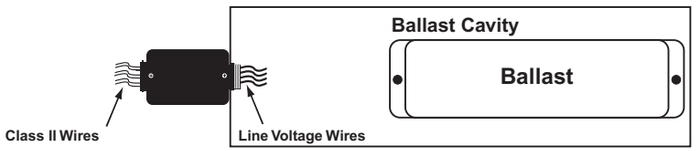
Mounts inside junction box

Figure 3A



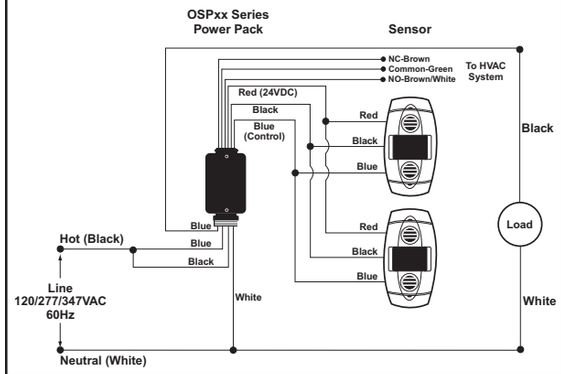
Mounts inside fixture

Figure 3B

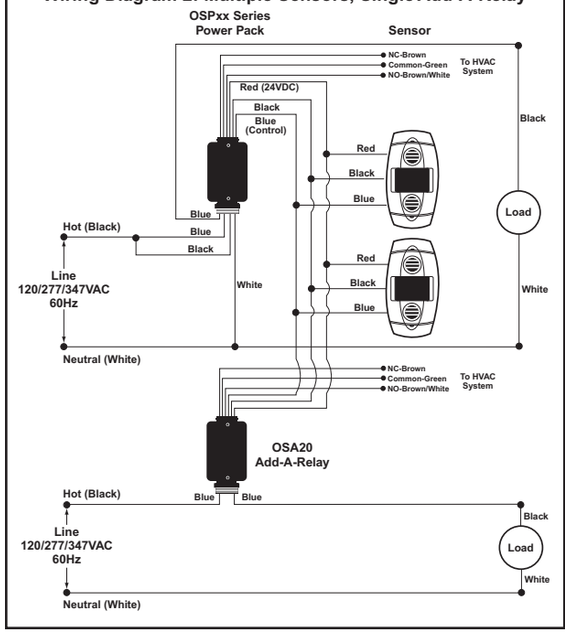


Mounts Outside fixture

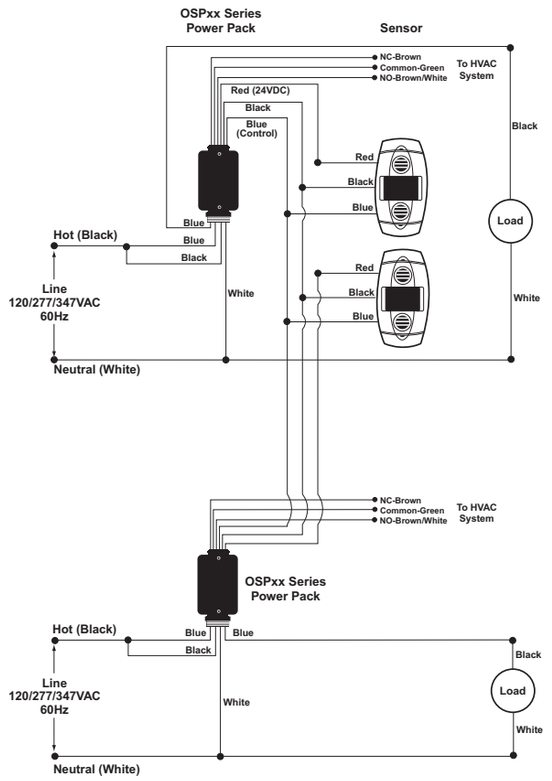
Wiring Diagram 1: Multiple Sensors, Single Power Pack



Wiring Diagram 2: Multiple Sensors, Single Add-A-Relay



Wiring Diagram 3: Multiple Sensor, Multiple Power Packs



NOTE: For Wiring Diagrams 1-3, the 347V Power Pack configuration is a separate device (OSP15-R30)

FCC COMPLIANCE STATEMENT (OSP20 ONLY)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2)This device must accept any interference received, including interference that may cause undesired operation.

FOR CANADA ONLY

For warranty information and/or product returns, residents of Canada should contact Leviton in writing at **Leviton Manufacturing of Canada Ltd to the attention of the Quality Assurance Department, 165 Hymus Blvd, Pointe-Claire (Quebec), Canada H9R 1E9** or by telephone at **1 800 405-5320.**

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. **For details visit www.leviton.com or call 1-800-824-3005.** 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.

For Technical Assistance Call: 1-800-824-3005 (U.S.A. Only) www.leviton.com

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