LOS2400

Smart Switch Sensor

Installation Manual

Also includes instructions for LOS2400H Hallway Sensor

RAB LIGHTING

How Does the LOS2400 Occupancy Sensor Work?

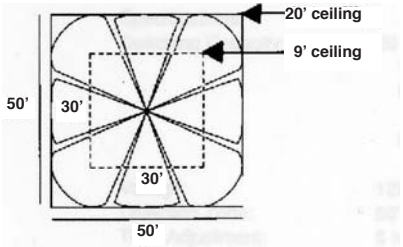
The LOS2400 sensor "sees" infrared heat changes caused by the motion of people within its detection zone and turns on lights automatically.

How long do the lights stay on?
Lights stay on as long as motion is detected. They turn off a short time after motion in the detection range stops. You can adjust this time from 6 to 15 minutes. Since the lights are only on when needed, and the sensor uses a negligible amount of power, the savings in energy costs are substantial.

How much motion is necessary to keep lights on?
A 6" wave of a hand or head tilt once every 6 to 15 minutes is sufficient to keep the lights on.

How do you adjust the sensor?
Time delay and sensitivity adjustments are located on the back of the unit. An LED indicator on the front panel shows when motion is detected and aids installation testing.

How large an area does the LOS2400 cover?
At a 9 foot mounting height, the maximum coverage is 2000 square feet. At a 20 foot mounting height, the maximum coverage is 2500 square feet. The detection pattern covers 360 degrees from the sensor location in the following pattern:



How much energy cost can be saved?

	Wattage Controlled by Sensor		
	1200W	**2400W**	**4500W**
25%	$150	$300	$560
50%	$300	$600	$1120
75%	$450	$900	$1685

Saving based on % of time space is unoccupied 12 hours/day, 260 days/year, @ $.08/kwh over a two year period.

Specifications:

Switching Capacity:	20 Amps 1.5 Horsepower Fluorescent: 2400w (120v), 4800w (277v)* Incandescent:, 4800w (277v)* 2400w (120v)
Voltage:	120 or 277 volts*
Detection Zone:	50' x 50' (360 degrees) w/20' ceiling
Time Adjustment:	6 to 15 minutes
Power Consumption:	250 micro amps
UL Listing:	Appliance Control, Specification Grade

*To switch 120 volts, the LOS2400/120 must be used.
*To switch 277 volts, the LOS2400/277 must be used.

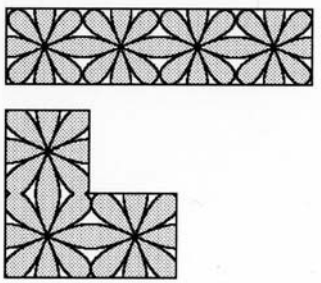
Selecting A Location

Locate the LOS2400 where it has an unobstructed view of the room, particularly the areas normally occupied by people.

If people can not see the sensor lens from their normal positions in the room, the sensor will not detect their presence.

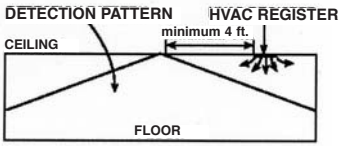
High cabinets, walls, columns, doors and other obstructions may limit the sensor's view of the entire room.
If obstructions can be moved the sensor will have a better view. If the obstructed areas are not normally occupied, the sensor will still see sufficient activity to operate properly.

Several sensors cover large or oddly shaped rooms



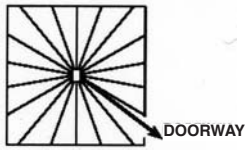
When Heating, Ventilating or Air Conditioning (HVAC) registers turn on they create turbulence which can cause the sensor to activate. It is important that the sensor and HVAC register be separated by at least 4'.

Avoiding HVAC Turbulence

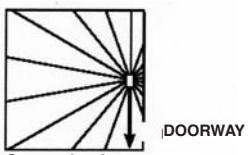


If the sensor's location gives it a view of other rooms or hallways, lights will be turned on when movement is detected in these adjacent areas. The sensor's detection zone may be restricted
by masking a portion of the lens.

Move sensor to eliminate detection through doorway



Sensor sees through doorway



Sensor's view is limited

Wiring:

Caution:
• TURN OFF ALL POWER BY REMOVING THE POWER FUSE OR TURNING OFF THE CIRCUIT BREAKER FOR YOUR SAFETY AND TO PREVENT DAMAGE TO THE UNIT.

• Please read this entire Installation Manual before proceeding.

• All wiring should comply with local electrical codes and requires a qualified electrician.

• Make sure the total lighting load connected to the LOS2400 does not exceed the following ratings:

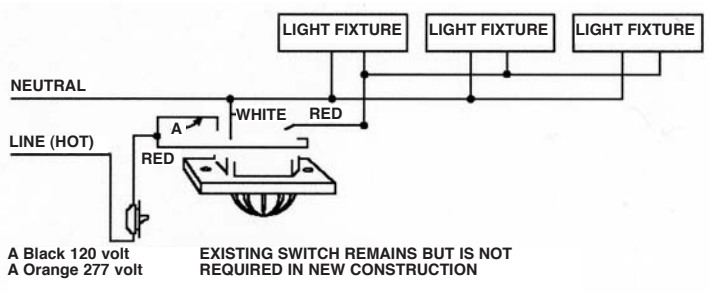
20 Amps
1.5 Horsepower
Fluorescent:
2400w (120v), 4800w (277v)
Incandescent:
2400w (120v), 4800w (277v)

To switch more wattage, install a relay to handle the load.

Make sure line voltage has not browned out below 110 volts. If voltage is not adequate, sensor will not operate properly.

1. Place sensor in circuit in front of all lights.
2. Connect as shown in wiring diagram below.
3. Twist on wire nuts. Secure with electrical tape.
4. Make Time and Sensitivity adjustments while power is off (see page 5)

Basic Wiring Diagram



A Black 120 volt
A Orange 277 volt

EXISTING SWITCH REMAINS BUT IS NOT REQUIRED IN NEW CONSTRUCTION

Adjustment

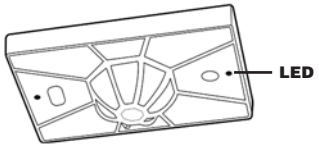
The unit will not turn off lights when power is initially applied until the time delay period (6 to 15 minutes) has passed. You may shorten this time to 30 seconds by inserting the ByPass key half way.

Detection Test

1. Walk to an area of the room where normal activity will occur. Remain motionless for 5 seconds. This 5 second period allows the Red LED Test Circuit to recharge. Move one arm until the LED blinks. This indicates that your movement has been detected.

2. Move to other areas. Repeat the test.

LED will blink when sensor detects movement



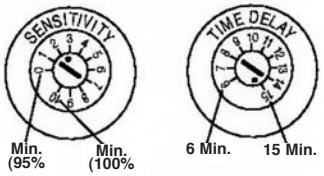
Time Adjustment

The LOS2400 allows adjustment of the delay time from 6 to 15 minutes.

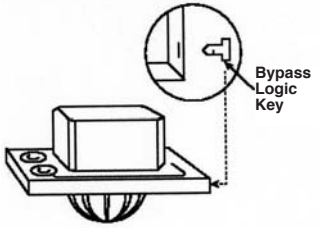
If no movement is detected for the time period selected, the lights turn off. The Time Adjustment is factory set for 12 minutes.

The Time should be reduced only in heavy traffic areas such as hallways, kitchens, copier rooms, etc. to achieve maximum energy savings.

Keep the time setting at maximum in large rooms (over 400 sf).



The time delay can be shortened to 30 seconds for testing by inserting the ByPass key half way.



Sensitivity Adjustment

Adjusting the Sensitivity control is not normally necessary. It can reduce detector sensitivity 5%. Less sensitivity may be desired for smaller rooms (less than 400 sf).

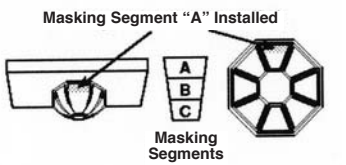
If the unit is being activated by HVAC or other infrared sources (other than people), reducing the sensitivity may help.

Masking The Lens

If the sensor's location gives it a view of other rooms or hallways, lights will be turned on when movement is detected in these adjacent areas. The sensor's detection zone may be restricted by covering a portion of the lens with the masking elements provided. Make sure the sensor is not "seeing" people in other rooms or hallways through open doorways. Mask the lens in the direction of the door.

Temperature Stabilization

If the sensor was in transit and subjected to extreme heat or freezing before installation it may take up to an hour for the sensor to reach room temperature and operate normally.



Maintenance and Repair

The LOS2400 requires no maintenance other than keeping the lens area clean and free of obstructions. Do not attempt to open or repair the unit. There are dangerous voltages inside the case and no user serviceable parts. For repair service, follow the instructions in the limited warranty section.

ByPass Key

In the unlikely event of unit failure, insert the ByPass key completely on the side of the unit. This will bypass all electronic circuitry and keep lights on all the time.

Temperature Variation:

This is a passive infrared sensor that detects changes in temperature. Dramatic changes in temperature can activate the lights.

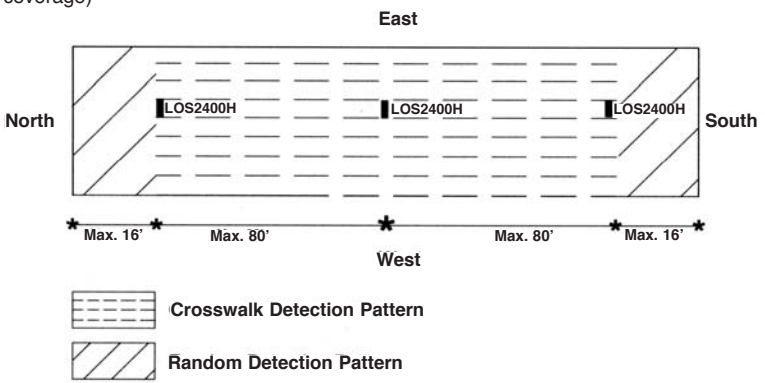
LOS2400H: Hallway Sensor

Application & Mounting Notes
The narrow end of the LOS2400H must be mounted in the direction shown in the diagram below.

The sensor is more sensitive to movement ACROSS its pattern than if a person walks directly toward the sensor. Crossing zones is best and the installer should keep this in mind when using any passive infrared technology.

The closer the movement is to the sensor, the SMALLER the movement is needed to trigger the sensor. The opposite is also true….if you are far away from the sensor it will take a LARGER movement to trigger the sensors.

Coverage Pattern
16' x 80' (sensor should ideally be mounted at 9' - 11' for maximum coverage)



Troubleshooting

Lights Turn On for Unknown Reasons

1. Housepets can trigger the sensor. Check sensor aiming to reduce nuisance triggering.
2. The sensor may turn on during voltage surges. Reset by turning power off for at least 10 seconds
3. A possible source of "mysterious" sensor activations is the sensor receiving strong local radio signals. Check for nearby CB, Ham, VHF radio transmitters or Cellular telephones, the sensor will not be permanently impaired by these signals.
4. Check all the Solutions mentioned under "Lights Turn On and Off".

Lights Do Not Turn Off

1. Make sure there is no motion in the room for at least 15 minutes. Stay completely out of the protection pattern to avoid activating the unit.

2. Check the room for possible sources of infrared energy that are within the view of the sensor. Look for air conditioners, heaters, fans, concentrated or reflected lights, moving equipment or machinery with heat venting fans (computers, copiers, etc.) Move the offending infrared source or mask the sensor lens facing that direction to avoid detection. Reducing sensitivity will also help.

Lights Do Not Turn On

1. Make sure there is no obstruction between sensor and area of activity.
2. Check that the bulbs and fixtures work. Check that the wiring exactly matches the wiring diagram.3. Check that power is on.
4. If the red LED blinks but the lights do not turn on, insert bypass key all the way into its slot. If the light switches on, the sensor is defective.
5. Increase sensitivity control to maximum.

Limited Warranty

Your LOS2400 will be replaced or repaired, at our option, if it proves to be defective in workmanship or materials within one year from the date of original purchase.

For repair or replacement, return the product freight prepaid and insured to the address below. The LOS2400 should be packed carefully. Please include your sales receipt and a description of the problem.

If your unit is out of warranty or the damage is unrelated to the original manufacture, return your unit directly to us with a check for $20.00 (made out to RAB Lighting). We will repair or replace your unit.

Under no circumstances shall we be liable for any incidental or consequential damages arising out of or in connection with the use or performance of this product or other indirect damages with respect to loss of property or revenue or cost of installation, removal or re-installation. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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