H–MOSS SENSORS
Troubleshooting Guide

HUBBELL®
Wiring Device-Kellems

HUBBELL®

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Smart Technologies for Smart Buildings

**H-MOSS® Occupancy Sensors combine innovative technologies for industry proven performance.**

Adaptive Technology

Adaptive Technology is a Hubbell breakthrough that delivers benefits to both building owners and occupants. The building owner achieves reduced energy costs, fewer adjustments and less maintenance, and the building occupant experiences fewer false-offs and disturbances.

Adaptive technology occupancy sensors use microprocessors that make all the decisions for setting adjustments. Internal software constantly monitors the controlled area and automatically adjusts the sensitivity and timer based on environmental history. This means that instead of manually adjusting the sensor for seasonal changes, modified airflow, furniture layout or occupancy pattern changes, the sensor automatically adjusts itself. These automatic adjustments eliminate the need for multiple manual adjustments by maintenance personnel or outside contractors. Hubbell offers adaptive technology throughout its product offering—wall switches, ceiling and wall mount sensors—in conjunction with dual technology, ultrasonic and passive infrared products.

How to Select the Right Technology for the Proper Application

Dual Technology
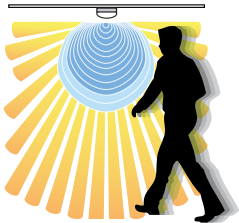
Dual technology occupancy sensors combine both passive infrared (PIR) and ultrasonic (US) technologies for maximum reliability. Because US and PIR need to both detect occupancy to turn lighting on, dual technology sensors minimize the risk of lights coming on when the space is unoccupied—false triggering. Continued detection by only one technology then keeps lighting on as necessary. Dual technology sensors offer the best performance for most applications.

Ultrasonic (US)
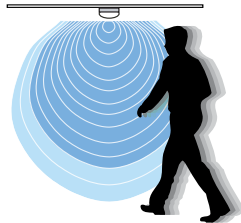
Ultrasonic (US) technology senses occupancy by bouncing sound waves (32 kHz - 45 kHz) off of objects and detecting a frequency shift between the emitted and reflected sound waves. Movement by a person or object within a space causes a shift in frequency, which the sensor interprets as occupancy. While US occupancy sensors have a limited range, they are excellent at detecting even minor motion such as typing and filing, and they do not require an unobstructed line of sight. This makes US technology sensors ideal for an application like an office with cubicles or a restroom with stalls.

Passive Infrared (PIR)

Passive infrared (PIR) technology senses occupancy by detecting the movement of heat emitted from the human body against the background space. Unlike US technology, PIR sensors require an unobstructed line of sight for detection. These sensors use a segmented lens, which divides the coverage area into zones. Movement between zones is then interpreted as occupancy. PIR sensors are ideal for detecting major motion (e.g. walking), and they work best in small, enclosed spaces with high levels of occupant movement.

Common H-MOSS Questions

Q Are H-MOSS sensors compatible with all ballasts?

A Yes, they are compatible with all ballasts, but program start ballasts are recommended for lamp longevity.

Q Why are Hubbell Adaptive Technology superior to other occupancy sensors?

A Install it and forget it. The most common objection to using occupancy sensors is the potential for call-backs to adjust the sensors.

Q Why do sensors need to adjust?

A Environmental conditions constantly change; climate control systems turn ON and OFF, background temperatures change with the seasons, and office furniture density and layout change over time. For proper operation, a manual-set sensor would need adjustment for each of these environmental changes. Adaptive Technology eliminates the ongoing maintenance required to have sensors operate reliably in the changing office environment.

Q What is inside Adaptive Technology sensors that allows them to learn?

A The Adaptive Technology chip: a small internal microprocessor that combines digital signal processing, control logic and adaptive algorithms (formulas).

Q Are Adaptive Technology sensors reliable? Have they been tested to confirm performance?

A Units have been in production since 1997 and reliability has been excellent.

Q Why are Dual Technology sensors superior to single technology sensors?

A Infrared sensors are relatively immune to false turn-ONs, but lack sensitivity to small motions at distances over 12 feet; ultrasonic sensors are noted for their sensitivity to small motions but can be susceptible to air currents from climate control systems which can cause false-ONs, typically at night. By combining the two sensing technologies, both can be used at their strongest: infrared to keep the lights OFF when unoccupied, ultrasonic to keep the lights ON when the room is occupied.

Q If the timer is accidentally left in the TEST mode (8 seconds for low voltage ceiling and wall sensors, and 10 seconds for wall switches), what does the sensor do?

A The Adaptive Technology sensors will exit the TEST mode automatically after 1 hour.

Q How are the sensors put into TEST mode?

A For the adaptive wall switches, AD/AP/AU1277 series, press and hold front press switch untill the lights turn OFF and come back ON, just then release button. The sensor is now set to a 10-second test time delay. For Adaptive Technology low-voltage ceiling, turn the time delay knob (the black knob located behind the lens retainer) fully clockwise, then fully counterclockwise. The sensor is now set to a 8 second time delay. For AD/AP/AU1277 and ATP/WS2000 series consult installation instructions located at www.hubbell-wiring.com.

Q Does Adaptive Technology address ultrasonic "false-ONs" from air currents?

A Yes. The air currents are continually analyzed and evaluated. The sensor adjusts its turn-ON threshold to float over the "spikes" of the air currents. If occupancy occurs during an air-conditioning spike, the sensor recognizes the difference between the two sources and turns the lights ON.

Q Does Adaptive Technology solve passive infrared "false-OFFs" that occur due to seasonal temperature changes?

A Yes. The signal to noise ratio is constantly analyzed. Adaptive Technology ceiling sensors automatically adjust to seasonal temperature changes (hot floors, cold walls).

Q If I get a "false-OFF" occurrence (lights turn OFF when area is occupied), what will the sensor do?

A Adaptive Technology wall switches and ceiling sensors consider false-OFF as a sensor performance error. The wall switch will increase the time delay to eliminate future false-OFFs. The ceiling sensors will increase both the time delay and the ultrasonic sensitivity by 6%.

Q Upon power up, how long does the sensor need to start working?

A Typically, two or three minutes. Lights are ON during this time.

Q What are factory timer settings?

A Adaptive Technology Wall Switches:
15 minutes (Adaptive)
Adaptive Technology Ceiling and Wall Sensors:
10 minutes

Q What is the warranty on the H-MOSS Occupancy Sensors products?

A There is a five year limited warranty on the H-MOSS Occupancy Sensor product line.

Q What is a "false-ON"?

A A "false-ON" is when the lights turn ON when there are no occupants in the intended area of coverage. "False-ONs" typically occur when the sensor detects a hallway passerby and turns the lights ON. The lights then stay ON for an entire timer cycle.

Q Do we have a solution for "false-ONs"?

A Choosing the correct technology sensor with the correct coverage pattern, and placing/aiming it correctly will inherently reduce "false-ONs." Adapting to false-ONs and PIR lens masking could be better.

Q How does the sensor adapt to "false-ONs"?

A If a minor motion signal is received and no major motion signal is seen within 5 seconds (passerby but no room entry, typically) the sensitivity of the dominant technology (the technology which sensed the passerby first) is reduced by 6%.

Q Do Hubbell H-MOSS sensors "fail safe" or fail with the lights ON?

A No manufacturer can guarantee that their sensor will fail to an ON state. There are too many variables and potential failure scenarios to guarantee that a product will fail with the lights ON.

Q Do H-MOSS sensors interfere with pacemakers?

A The power levels and transducer style (piezoelectric) we use has no known issues with pacemakers. The only precautions we have found regarding pacemakers and ultrasonic are for ultrasound imaging machines or certain ultrasonic dental equipment. Both use higher power transmitters and are operated in close proximity to the body.

Q Do H-MOSS sensors interfere with interactive whiteboards?

A There are four main technologies that interactive whiteboards use for marker tracking: IR scan, ultrasonic, resistive touch and electromagnetic touch. The only technology that will have interference issues is ultrasonic sensing. Ultrasonic sensing boards are predominantly made by Mimio, Panasonic, and Hitachi. The market share for ultrasonic boards is small and shrinking. The most common whiteboard technology used today is electromagnetic sensing and this has no interference issues with ultrasonic sensing. This is what market leaders SMART (61% market share) and Promethean (26% market share) use.

Q Do H-MOSS sensors interfere with hearing aids?

A There should be no issue with most modern hearing aids. Previous issues in the 80s and 90s resulted from improper hearing aid designs. The NEMA-sponsored study, conducted by David F. Henry, PhD and Barak Dar, "Effects of Ultrasonic Sensors on Hearing Aids" (February 2006), concluded: "After assessing 23 hearing aids representing the digital products of all major hearing aid manufacturers, just two hearing instruments were severely affected by ultrasonic occupancy sensor devices. One device, the ImpaCt DSR675 manufactured by AVR Sonovation, has not been in production for over four years. Newer hearing instruments from this manufacturer have exhibited no interference when exposed to the ultrasonic occupancy sensor signals. The second device, the Bravo, manufactured by Wide, is still in production. However, the manufacturer reports that they have developed a modification that can be made to the instrument that greatly reduces the susceptibility of the instrument to ultrasonic occupancy sensor signals." See the link below for further reading: http://www.aboutlightingcontrols.org/education/papers/ultrasonic_sensors.shtml.

Q Where can I download product drawings and installation instructions?

A Product drawings and installation instructions are available at www.hubbell-wiring.com.

Q Do Hubbell H-MOSS line voltage sensors, control units and add-a relays employ "zero arc point" switching?

A All Hubbell line voltage sensors (ceiling and wall switch), control units and add-a-relays employ "zero arc point" switching.

Q Can sensors see motion through glass walls or windows?

A No. Neither infrared nor ultrasonic technologies can sense motion through glass walls or windows.

Q Do the adjustment knobs move during self-adjusting?

A No, just the values change in the sensor's microprocessor.

Common Sensor Questions

Q Why have the adjustment knobs at all?

A They are factory-set and represent the starting point for the sensor to adapt from. The knobs still exist so that the sensor can be manually set for customer specific applications. When the application requires a non-adaptive sensor, DIP switches are provided to override the adaptive feature. Refer to sensor installation instructions for details.

Q Are Hubbell AARs and control units plenum rated?

A Yes. The AARs (add-a-relays) and control units are plenum rated.

Q A ceiling sensor was temporarily installed for 40 days. It is now being moved to a new location. Can the learned settings be erased and started over?

A Yes. Toggle DIP switch A4 to ON for two seconds, then back to OFF. The learning process will be reset.

Q If I set the green adjustment knob (ultrasonic sensitivity) of a dual technology sensor to zero, can the sensor operate as a passive infrared sensor?

A Yes. Set the DIP switch A2 to High Sensitivity (ON), B4 to Manual Sensitivity (ON) and set the green knob to zero. The dual tech is now a PIR sensor only. Same can be done for ultrasonic-only operation.

Q What is the equation to figure out the line of sight for the ATU2000C/RP/L when used in a hallway application?

A Use the following equation to figure out the line of sight for the ATU2000C/RP/L when used in a hallway application: 3200 divided by the (width of hallway in feet x height of hallway in feet) x 2 = total line of sight of ATU2000C/RP/L in feet.

Q Why do the ATD500C/RP/L, ATD1000C/RP/L, ATU500C/RP/L and ATU1000C/RP/L have 180˚ coverage patterns?

A This is done to maximize performance in smaller spaces like private offices and conference rooms. The 180° coverage allows you to position the sensor close to the entry while eliminating false-ONs from hallway traffic.

Q What is the longest distance a sensor can be from the control unit?

A It is recommended to not exceed 250 feet from the control unit to the farthest sensor, using 18-22 AWG copper wire.

Q What is the maximum mounting height for our low voltage ceiling and wall sensors?

A 12 feet maximum. The ATP120HB/RP can be mounted up to 30 feet.

Q Can the learned settings on the adaptive wall switch sensors be reset?

A Yes. For AD/AP/AU1277 series toggle DIP switch number 8 (top DIP switch) from OFF to ON, wait two seconds, then toggle back to the OFF position. This will restore the original factory settings. For AD/AP/AU2000 and ATP/WS2000 series consult installation instructions located at www.hubbell-wiring.com.

Q Can the line voltage OPTIMYZER high bay sensor control multiple fixtures?

A Yes, but the lens coverage is designed to correspond with most high bay fixtures. It is highly recommended to install one sensor per fixture to maximize coverage and savings because only lights with activity below them will be lit.

Q Who can I call with troubleshooting questions?

A Contact our technical service department at (475) 882-4820, available from 8am - 5pm EST or email us at techserv@hubbell.com.

Q Do you have three way line voltage wall switch sensors?

A Yes. The ATP2000x, ATP2004x, WS2000x and WS2004x series wall switch sensors can be wired as a true three way. Both three way switches need to be replaced with sensors.

Q I don't want to install an OPTIMYZER per light fixture. Are there any options?

A Yes. You can use the low voltage version of the OPTIMYZER with our CU300A control unit, or use the ATB120HB with the same CU300A.

Symptom: Light stays OFF after unit is installed

Possible Cause	Circuit breaker switch is in the OFF position.
Try	If in the OFF position, switch to the ON position.
Possible Cause	Sensor is wired incorrectly or there are defective wire splice/connections.
Try	Turn the power OFF. Ensure the sensor wiring is correct. Refer to the sensor wiring diagram, with the control unit installation instructions, located at www.hubbell-wiring.com. Check the integrity of all splices/connections at the same time. Turn the power ON.
Possible Cause	Improper operating voltage to the sensor from the control unit.
Try	With the power ON, disconnect the Red and Blue low voltage wires at the sensor. Touch the Red and Blue low voltage wires coming from the control unit together. When you touch wires together, the lights should come ON, and when you separate them, they should go OFF. If they do not, check the connections at the control unit end of the low voltage wiring. If connections are good, separate the Red and Blue low voltage wires at the control unit and touch them. When you touch the wires together, the lights should come ON, and when you separate them, they should go OFF. If that doesn't happen, replace control unit. If lights do come ON, replace wiring between sensor and control unit.
Possible Cause	If the sensor has the photocell feature (on sensors with "RP" suffix), the photocell may be holding the lights OFF.
Try	Remove the lens assembly. Turn the ambient light level control (blue knob) fully clockwise. Lights should turn ON. To set the photocell correctly, see installation instructions, located at www.hubbell-wiring.com.

Symptom: Light goes OFF when area is occupied

Possible Cause	Room is too large for the sensor's coverage pattern.
Try	Measure the room size and compare to the sensor's coverage pattern. If the room is larger than the coverage pattern, install additional sensors as needed.
Possible Cause	Sensor is improperly located to detect the motion typical of the area.
Try	Put sensor into TEST mode. This is done by removing the PIR lens assembly and turning the black timer knob fully clockwise, then fully counter-clockwise. Replace the lens assembly and test the area of coverage by simulating motion levels typical to the area in question. For example, walk in areas where sensor would normally see major motion and make small hand motions in areas where sensor would normally detect minor motion. During this test, watch LED motion indicators to determine if motion is being sensed. The PIR indicator is located behind the lens. The lens will illuminate red if the PIR sensor is seeing motion. The ultrasonic indicator/s are located on the ultrasonic grill area. These areas will turn green if the ultrasonic sensor is seeing motion. If "dead" areas exist, try to re-aim or relocate sensor. If that doesn't work, you may have to add additional sensors.
Possible Cause	Sensitivity adjusted to 0% (fully counter-clockwise).
Try	Remove the lens assembly. Adjust the ultrasonic sensitivity (green knob) to 50%. Adjust the PIR sensitivity (red knob) to 75%. These are the original factory settings.
Possible Cause	PIR lens is damaged.
Try	Inspect the lens. If it is damaged, replace sensor.

Symptom: Light stays ON after room is vacant and time delay expires

Possible Cause	Sensor detecting air flow from an HVAC duct.
Try	Test by taping a 4 **inch** square of paper to the end of a screwdriver. Hold the screwdriver (end with paper attached up) at the ceiling level next to the sensor. If the paper flutters, there may be an air-current interference problem. Relocate sensor to a location at least 6 feet from any HVAC duct. If the problem persists, the sensor can be switched into a strong air-compensation mode. Remove the lens assembly. Move DIP switch B1 to the ON position.
Possible Cause	For ultrasonic and dual technology sensors only: Sensors are placed too close together.
Try	Make sure the sensors are placed at least 20 feet apart. Relocate the sensors or change to a 180 degree sensor.
Possible Cause	Ultrasonic sensors of the same frequency are located in adjacent areas which are switched separately. This can cause cross-tripping.
Try	Change one of the sensors to a different frequency. Note: The lower the frequency the longer the range. Therefore, in hallways and large open areas 32kHz sensors should be used. In smaller offices and conference rooms, 40kHz sensors should be used.

Symptom: Light comes ON when room is vacant

Possible Cause	Sensor is being triggered by activity outside the coverage area, most commonly, hallway traffic.
Try	Install the appropriate mask under the PIR lens. There are masks included with each sensor. Refer to the installation instructions for the descriptions of mask usage.
Possible Cause	Ultrasonic sensor is detecting air flow from an HVAC duct.
Try	Test by taping a 4 **inch** square of paper to the end of a screwdriver. Hold the screwdriver (end with paper attached up) at the ceiling level next to sensor. If the paper flutters, there may be an air current interference problem. Relocate sensor to a location at least 6 **feet** from an HVAC duct. If problem persists, the sensor can be switched into a strong air compensation mode. Remove the lens assembly and move DIP switch B1 to the ON position.

Symptom: Light goes OFF when area is occupied

Possible Cause	Room is too large for the sensor's coverage pattern.
Try	Measure the room size and compare to the sensor's coverage pattern. If the room is larger than the coverage pattern, install additional sensor/s as needed.
Possible Cause	Sensor is improperly located to detect the motion typical of the area.
Try	AD/AP/AU1277 series place the sensor into TEST mode. This can be accomplished by pressing and holding the front press switch on push button models or the test button underneath the access cover on no button models. Hold the button in till the lights turn OFF, then turn back ON. Release the test button and test the area of coverage by simulating motion levels typical to the room. For example, walk in areas where the sensor would normally see major motion and make small hand motions in areas where sensor would normally detect minor motion. During this test, watch the LED motion indicator to determine if motion is being sensed. If the wall switch cannot provide adequate coverage, replace with a dual technology ceiling sensor. For AD/AP/AU2000 and ATP/WS2000 series consult installation instructions available at www.hubbell-wiring.com.
Possible Cause	PIR lens is damaged.
Try	Inspect the lens. Replace the sensor if damaged.
Possible Cause	Sensor is mounted at an improper height.
Try	Check that mounting height is between 42 and 54 inches. Relocate sensor if necessary.
Possible Cause	Sensor's field of view is blocked by an obstruction such as a file cabinet or other office furniture.
Try	Move the obstruction to an alternate location or replace wall switch with a ceiling sensor.

Symptom: Light stays OFF after unit is installed

Possible Cause	Circuit breaker switch is in OFF position.
Try	If LED is not blinking with motion, check the circuit breaker. If in the OFF position, switch into ON position.
Possible Cause	Sensor's service switch is in OFF position.
Try	If LED is not blinking with motion, remove control compartment cover. Move service switch to AUTO position.
Possible Cause	Defective wire splices/connections.
Try	If LED is not blinking with motion, turn power OFF and check wiring connections. When done turn power back ON.
Possible Cause	Sensor is wired incorrectly.
Try	If LED is not blinking with motion, shut power OFF and insure sensor wiring is correct: Ground wire to green sensor wire. Hot line voltage wire to black sensor wire. Hot load wire to red sensor wire. Note: The sensor must be properly grounded. It will not function properly without a good grounding connection. Turn power back ON when finished.
Possible Cause	Front press switch is in momentary OFF mode.
Try	If LED is blinking with motion and lights do not turn ON, depress front press switch and lights will come ON and resume AUTO mode.
Possible Cause	Photocell may be holding the lights OFF.
Try	AD/AP/AU1277 series check to see if photocell adjustment switch is hung up. Use small straight tip screwdriver to exercise switch. Toggle DIP switch number 8, from OFF (left) to ON (right) leave for two seconds, then move back to the OFF (left) position to restore factory settings. This will deactivate the photocell. For AD/AP/AU2000 and ATP/WS2000 series consult installation instructions available at www.hubbell-wiring.com.

Symptom: Light stays ON after room is vacant and time delay expires

Possible Cause	Sensor is being triggered by activity outside the coverage area, most commonly hallway traffic.
Try	Place sensor into TEST mode. For AD/AP/AU1277 series this can be accomplished by pressing and holding the front press switch on push button models or the test button underneath the access cover on no button models. Hold the button in till the lights turn OFF, then turn back ON. Release the test button. Check location of switch to determine if pattern extends out of desired coverage area. If sensor is detecting outside desired area, replace with a dual technology ceiling sensor. For AD/AP/AU2000 and ATP/WS2000 series consult installation instructions available at www.hubbell-wiring.com.
Possible Cause	Sensor is facing a hot or cold air source such as an HVAC vent or coffee maker that can cause a rapid temperature change.
Try	Replace with a dual technology ceiling sensor.

Symptom: Light comes ON when room is vacant

Possible Cause	Sensor is being triggered by activity outside coverage area, most commonly, hallway traffic.
Try	Place sensor into TEST mode. For AD/AP/AU1277 series this can be accomplished by pressing and holding the front press switch on push button models or the test button underneath the access cover on no button models. Hold the button in till the lights turn OFF, then turn back ON. Release the test button. Check location of switch to determine if pattern extends out of desired coverage area. If sensor is detecting outside desired area, replace with a dual technology ceiling sensor. For ATP/WS2000 series consult installation instructions available at www.hubbell-wiring.com.
Possible Cause	Sensor is facing a hot or cold air source such as an HVAC vent or coffee maker that can cause a rapid temperature change.
Try	Replace with a dual technology ceiling sensor.

Wireless Sensor Troubleshooting

Most of the problems experienced with wireless sensors are a result of the sensors not being linked correctly to the WLS1278x RF switch. The following will assist you in resetting the WLS1278x to factory defaults and linking the sensors correctly:

Resetting the WLS1278x RF switch to factory defaults

Press the front switch three times quickly and hold on the third tap (tap, tap, tap and hold). While holding the button on the switch, the lights will begin to flash. Hold button for a few ON-OFF cycles. Then quickly press the switch three more times (tap, tap, tap), do not hold on the last tap. The lights will cycle ON and OFF three or four times.

Confirm that the sensors are not linked to the WLS1278x RF switch

Press the light button a few times. It should no longer turn the lights ON and OFF.

Reprogram switch and sensor

Press and hold switch button until LED flashes on the switch, approximately 6 seconds. Then, press and hold the sensor light bulb button until the lights flash, approximately 6 seconds.

Place sensor in one minute N/A mode

Hold the sensor timeout button (farthest to the right) until all three LEDs blink, then release. Press and hold button again until all three LEDs go solid, then release. Sensor is now in one-minute TEST mode.
Turn the lights ON, if they are not already, by using the wall switch and place the sensor in a box to blind it. Lights should turn OFF in a minute. Remove sensor from the box. Lights should come back on.

Program additional sensors and daylight unit, if necessary.

It is recommended to return sensors back to the 15 minute default timeout period after testing.

Adaptive Technology

- Adaptive technology - "Install and forget" operation
- All digital sensing technology
- Dual 120/277V AC operation. No neutral required
- Auto/Manual ON operating modes
- No minimum load requirements
- Hard lens (dual technology, passive infrared)

- Zero arc point switching
- Built in photocell with manual super saver mode for daylight harvesting
- Bi-level switching or dual load control (AD, AP AU1277x2, 2N series)
- cULus

Adaptive Technology, Dual (Ultrasonic and Passive Infrared)

50/60Hz, 1000 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC

Description	Catalog Number	
	Ivory	White
Single Circuit; 1 Button for manual/auto control	**AD1277I1**	**AD1277W1**
Single Circuit; Auto control with no button	**AD1277I1N**	**AD1277W1N**
Dual Circuit; 2 Buttons for manual/auto control	**AD1277I2**	**AD1277W2**
Dual Circuit; Auto control with no button	**AD1277I2N**	**AD1277W2N**

AD1277W1   **AD1277W1N**
                  AD1277W2N

Adaptive Technology, Ultrasonic

50/60Hz, 400 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC

Description	Catalog Number	
	Ivory	White
Single Circuit; 1 Button for manual/auto control	**AU1277I1**	**AU1277W1**
Single Circuit; Auto control with no button	**AU1277I1N**	**AU1277W1N**
Dual Circuit; 2 Buttons for manual/auto control	**AU1277I2**	**AU1277W2**
Dual Circuit; Auto control with no button	**AU1277I2N**	**AU1277W2N**
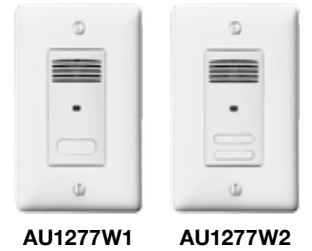
AU1277W1   **AU1277W2**

Adaptive Technology, Passive Infrared

50/60Hz, 1000 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC

Description	Catalog Number	
	Ivory	White
Single Circuit; 1 Button for manual/auto control	**AP1277I1**	**AP1277W1**
Single Circuit; Auto control with no button	**AP1277I1N**	**AP1277W1N**
Dual Circuit; 2 Buttons for manual/auto control	**AP1277I2**	**AP1277W2**
Dual Circuit; Auto control with no button	**AP1277I2N**	**AP1277W2N**
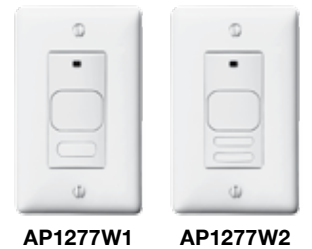
AP1277W1   **AP1277W2**
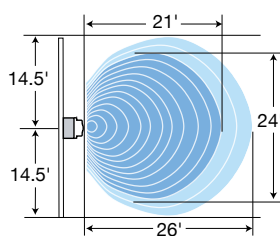
Wall Switches Coverage Patterns

Minor Motion: ■ Ultrasonic ■ PIR   **Major Motion:** ■ Ultrasonic ■ PIR
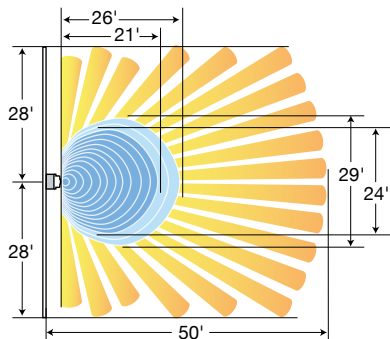
AD1277 Series   **AU1277 Series**   **AP1277 Series**
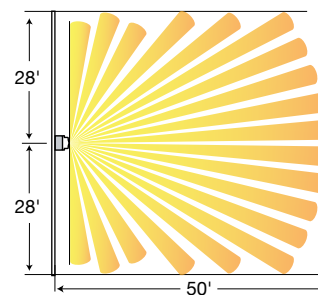
AD2000W1

AD2000W1N
AD2000W2N

AU2000W1

AU2000W2

AP2000W1

AP2000W2

Adaptive Technology

- Adaptive technology - "Install and forget" operation
- All digital sensing technology
- Dual 120/277V AC operation. No neutral required
- Auto/Manual ON operating modes
- No minimum load requirements
- Hard lens (dual technology, passive infrared)
- Steel mounting strap

- Zero arc point switching
- Built in photocell with manual super saver mode for daylight harvesting
- Bi-level switching or dual load control (2 or 2N suffix)
- Compatible with most LED and CFL
- cULus

Dual (Ultrasonic and Passive Infrared)

1000 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC, 50/60Hz.

		Single Circuit		Dual Circuit	
Description	Color	1 button for manual/auto control	Auto control with no button	2 buttons for manual/auto control	Auto control with no button
Dual (ultrasonic and passive infrared)	Black	AD2000BK1	AD2000BK1N	AD2000BK2	AD2000BK2N
	Gray	AD2000GY1	AD2000GY1N	AD2000GY2	AD2000GY2N
	Ivory	AD2000I1	AD2000I1N	AD2000I2	AD2000I2N
	Light Almond	AD2000LA1	AD2000LA1N	AD2000LA2	AD2000LA2N
	White	AD2000W1	AD2000W1N	AD2000W2	AD2000W2N

Ultrasonic

400 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC, 50/60Hz.

		Single Circuit		Dual Circuit	
Description	Color	1 button for manual/auto control	Auto control with no button	2 buttons for manual/auto control	Auto control with no button
Ultrasonic	Black	AU2000BK1	AU2000BK1N	AU2000BK2	AU2000BK2N
	Gray	AU2000GY1	AU2000GY1N	AU2000GY2	AU2000GY2N
	Ivory	AU2000I1	AU2000I1N	AU2000I2	AU2000I2N
	Light Almond	AU2000LA1	AU2000LA1N	AU2000LA2	AU2000LA2N
	White	AU2000W1	AU2000W1N	AU2000W2	AU2000W2N

Passive Infrared

1000 square foot coverage with photocell, 800W Incandescent, 1000W Fluorescent at 120V AC, 1800W Fluorescent at 277V AC, 50/60Hz.

|		Single Circuit		Dual Circuit	
Description	Color	1 button for manual/auto control	Auto control with no button	2 buttons for manual/auto control	Auto control with no button
Passive infrared	Black	AP2000BK1	AP2000BK1N	AP2000BK2	AP2000BK2N
	Gray	AP2000GY1	AP2000GY1N	AP2000GY2	AP2000GY2N
	Ivory	AP2000I1	AP2000I1N	AP2000I2	AP2000I2N
	Light Almond	AP2000LA1	AP2000LA1N	AP2000LA2	AP2000LA2N
	White	AP2000W1	AP2000W1N	AP2000W2	AP2000W2N

Wall Switches Coverage Patterns

Minor Motion: Ultrasonic ■ PIR ■   **Major Motion:** Ultrasonic ■ PIR ■
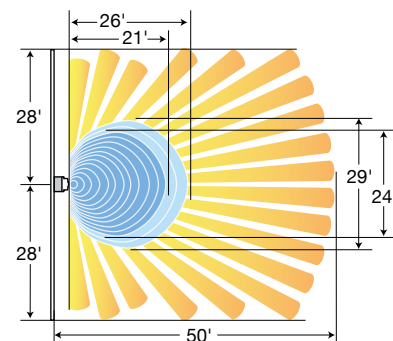
AD2000 Series
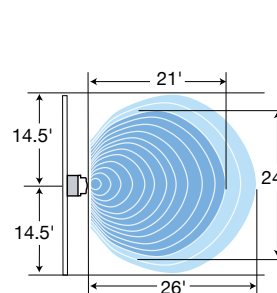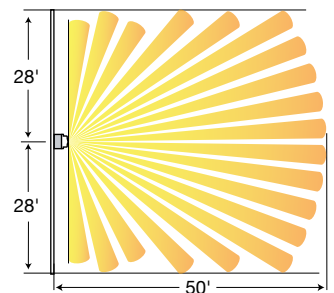
AU2000 Series

AP2000 Series

Adaptive Technology, Passive Infrared

- Adaptive technology - "Install and forget" operation
- Passive infrared technology
- Dual 120/277V AC operation, no neutral required
- Heavy duty relay (AT1277xx)
- Audible alarm before turning lights OFF (AT1277xx)

- 1200 sq. ft. coverage
- Built in photocell for daylight harvesting
- Wallplate included
- Steel mounting strap
- Compatible with most LED and CFL
- cULus

Description	Color	Standard	with Nightlight	with Neutral	with Nightlight and Neutral
High load adaptive wall switch, 1800W @ 120V AC and 4166W @ 277V AC	Ivory White	AT1277I AT1277W	– –	– –	– –
Adaptive auto-adjusting; selectable auto/manual ON operation; dual-voltage 120/277V; 3-way capable	Gray Ivory Light Almond White	ATP2000GY ATP2000I ATP2000LA ATP2000W	ATP2000NGY ATP2000NI ATP2000NLA ATP2000NW	– ATP2004I – ATP2004W	– ATP2004NI – ATP2004NW

AT1277W

Passive Infrared Wall Switches

- Passive infrared technology
- Manual adjustment time delay (20 sec. to 30 min.)
- Photocell (WS2000 series)
- No neutral required

- 1200 sq. ft. coverage
- Wallplate included
- Steel mounting strap
- Compatible with most LED and CFL
- cULus

| Description	Color	Standard	with Nightlight	with Neutral	with Nightlight and Neutral
Manual adjusting; selectable auto/manual ON operation; dual-voltage 120/277V; 3-way capable	Gray Ivory Light Almond White	WS2000GY WS2000I WS2000LA WS2000W	WS2000NGY WS2000NI WS2000NLA WS2000NW	– WS2004I – WS2004W	– WS2004NI – WS2004NW
Manual adjusting; auto-ON operation; 120V AC only	Ivory White	WS1000I WS1000W	WS1000NI WS1000NW	– –	– –
Manual adjusting; manual-ON operation; 120V AC only	Ivory White	WS1001I WS1001W	WS1001NI WS1001NW	– –	– –

ATP2000W

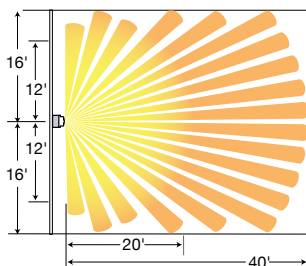**WS2000W**
WS1000W

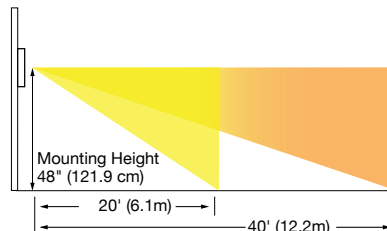### Wall Switches Coverage Patterns

Minor Motion: ■ PIR   Major Motion: ■ PIR
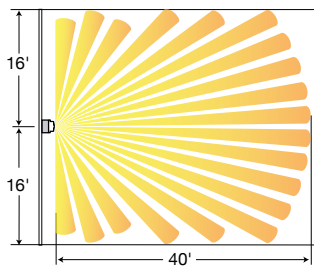
AT1277 Series
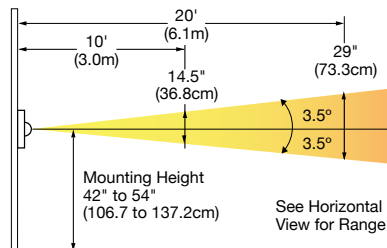
Vertical Coverage AT1277 Series

ATP2000, WS2000 Series
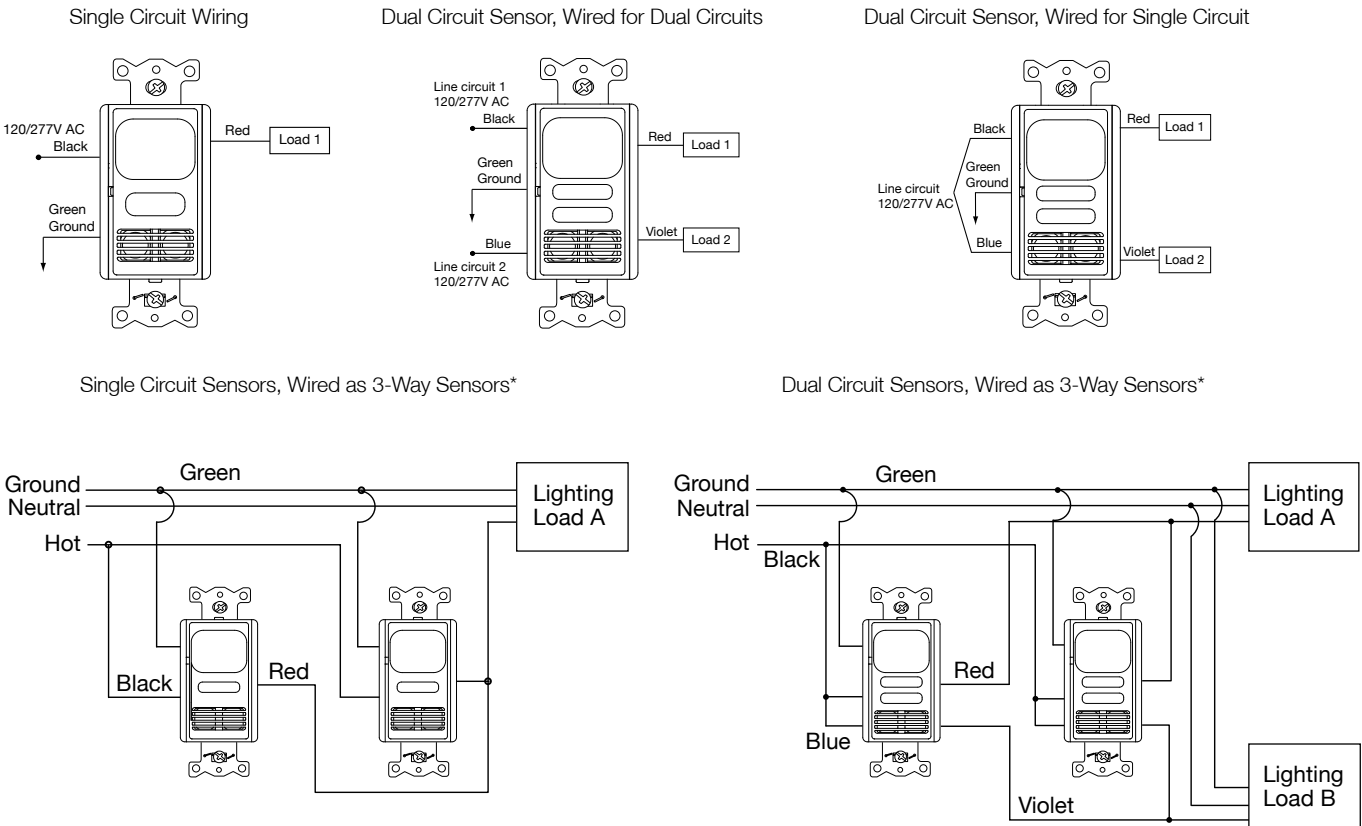
Vertical Coverage ATP2000, WS2000 Series

13

Adaptive Dual Technology Wall Switches
AD1277/2000 Series

Electrical

Power Supply	120/277V AC, 50/60Hz.
Load Capacity	
Incandescent	0 to 800 watts.
120V AC Ballast	0 to 1000 watts.
277V AC Ballast	0 to 1800 watts.
Agency Approvals	cULus Listed.

Physical

Housing	High impact plastic (UL 94-5V).
Lens	Dual element pyrometer and 12 element cylindrical hard lens.
Dimensions	Face 2.59"H x 1.73"W, 0.37"D (from wall out).
Mounting Height	42 to 54 inches above floor.

Environmental

Operating	32°F to 104°F (0°C to 40°C); 0% to 95% non-condensing relative humidity.

Controls

Time Delay	Digital, adaptive 4 to 30 minutes.
Ambient Light	Adjustable ambient light override, 10 to 500 foot candles.
Front Press Switch	Auto/OFF.
Sensitivity	Adaptive 0% to 100%.
Service Switch	Air gap OFF.

Sensing Indicator

Passive Infrared	Red LED.
Ultrasonic	Green LED.

Adaptive Technology Ultrasonic and PIR Wall Switches
AP1277/2000 and AU1277/2000 Series

Electrical

Power Supply	120/277V AC, 50/60Hz.
Load Capacity	
Incandescent	0 to 800 watts.
120V AC Ballast	0 to 1000 watts.
277V AC Ballast	0 to 1800 watts.
Agency Approvals	cULus Listed.

Physical

Housing	High impact plastic (UL 94-5V).
Lens	Dual element pyrometer and 12 element cylindrical hard lens (AP2000 only).
Dimensions	Face 2.59"H x 1.73"W, 0.37"D (from wall out).
Mounting Height	42 to 54 inches above floor.

Environmental

Operating	32° F to 104°F (0°C to 40°C); 0% to 95% non-condensing relative humidity.

Controls

Time Delay	Digital, adaptive 4 to 30 minutes. 20 minutes default.
Ambient Light	Adjustable ambient light override, 10 to 500 foot candles.
Front Press Switch	Auto/OFF.
Sensitivity	Adaptive 0% to 100%.
Service Switch	Air gap OFF.

Sensing Indicator

Passive Infrared	Red LED (AP series only).
Ultrasonic	Green LED (AU series only).

Wiring Schematic AD, AU, AP, 1277/2000 Series Wall Switch Sensors

Single Circuit Wiring

Dual Circuit Sensor, Wired for Dual Circuits

Dual Circuit Sensor, Wired for Single Circuit

Single Circuit Sensors, Wired as 3-Way Sensors*

Dual Circuit Sensors, Wired as 3-Way Sensors*

Note: *Load can not exceed the rating of one switch.
      Sensor is shipped with all DIP switches in the OFF position (factory default).

Wall Switches

Description	Color	Standard	with Nightlight	with Neutral	with Nightlight and Neutral
Adaptive auto-adjusting; selectable auto/manual ON operation; dual-voltage 120/277V; 3-way capable	Gray	ATP2000GY	ATP2000NGY		
	Ivory	ATP2000I	ATP2000NI	ATP2004I	ATP2004NI
	Light Almond	ATP2000LA	ATP2000NLA		
	White	ATP2000W	ATP2000NW	ATP2004W	ATP2004NW
Manual adjusting; selectable auto/manual ON operation; dual-voltage 120/277V; 3-way capable	Gray	WS2000GY	WS2000NGY		
	Ivory	WS2000I	WS2000NI	WS2004I	WS2004NI
	Light Almond	WS2000LA	WS2000NLA		
	White	WS2000W	WS2000NW	WS2004W	WS2004NW
Manual adjusting; auto-ON operation; 120V AC only	Ivory	WS1000I	WS1000NI		
	White	WS1000W	WS1000NW		
Manual adjusting; manual-ON operation; 120V AC only	Ivory	WS1001I	WS1001NI		
	White	WS1001W	WS1001NW		

Dimensions Inches (mm)

3.81 (96.8)
3.28 (83.3)
4.15 (105.4)
1.82 (46.2)
1.01 (25.6)
.61 (15.5)
#14 AWG WIRES, 6.0 (152) MIN. LONG
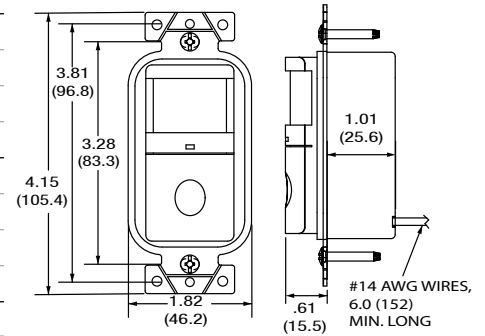
Specifications

Electrical	ATP/WS2000 Series	WS1000 Series
Power Supply	120/277V AC, 60Hz	120V AC, 60Hz
Load Capacity		
Incandescent	0 to 1000 watts	0 to 500 watts
120V Ballast	0 to 1000 watts	0 to 500 watts
277V Ballast	0 to 1800 watts	N/A
Agency Approvals	cUL Listed	UL Listed, cULus
Warranty	5 years	Certified 5 years

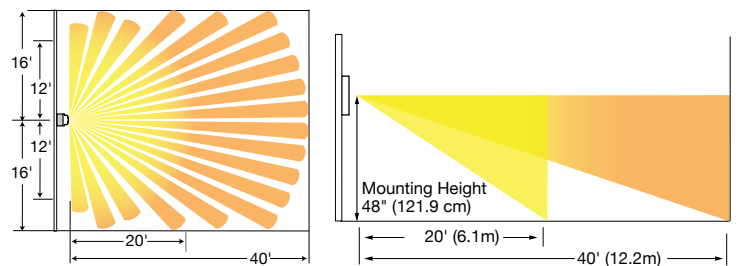| Physical	ATP/WS2000 and WS1000 Series
Housing	Flame retardant UL 94 V-0 ABS
Lens	Polyethylene
Dimensions	Face 2.59"H x 1.30"W, 0.61"D (from wall out)
Mounting Height	42 to 54 inches above floor

Sensing Indicator	ATP/WS2000 and WS1000 Series
Passive Infrared	Red LED

Environmental	ATP/WS2000 and WS1000 Series
Operating	32°F to 122°F (0°C to 50°C) with rate of change not exceeding 20°F (11°C) per hour; 20% to 90% non-condensing relative humidity
Storage	-40°F to 150°F (-40°C to 65°C); 20% to 90% non-condensing relative humidity

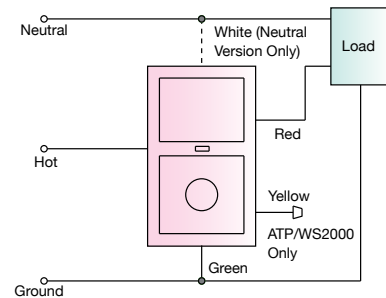| Controls	ATP/WS2000 Series	WS1000 Series
Time Delay	ATP: auto WS: Manual 20s - 30min	Manual 20 seconds to 30 minutes
Ambient Light	Digital, pushbutton, 10 to 500 foot candles	n/a
Front Press Switch	ON/OFF	ON/OFF
Service Switch	OFF (service) Vac (manual-ON) Occ (auto-ON)	OFF (service) ON (normal operation)

Coverage Patterns
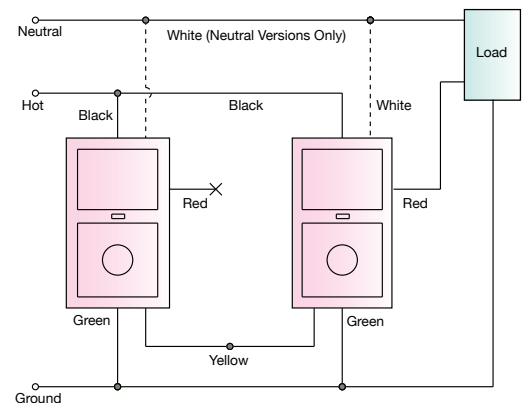
Minor Motion: ◼ PIR   **Major Motion:** ◼ PIR

16' 12' 12' 16'
20' 40'

Vertical Coverage

Mounting Height 48" (121.9 cm)
20' (6.1m)
40' (12.2m)

Wiring Schematics

Normal Wiring

Neutral
White (Neutral Version Only)
Load
Hot
Red
Yellow
ATP/WS2000 Only
Green
Ground

Sensors Wired as 3-Way Sensors* (ATP/WS2000 Only)

Neutral
White (Neutral Versions Only)
Load
Hot
Black
Black
White
Red
Red
Green
Green
Yellow
Ground

*Note: * Load can not exceed the rating of one switch.*

ATD2000C Series

ATD1000C/ ATD500C Series

ATU2000C Series

ATU1000C/ ATU500C Series

ATP1500C/ ATP600C Series

Adaptive Technology

- Adaptive technology - "Install and forget"
- All digital sensing technology
- Photocell for daylight harvesting and relay to interface with auxiliary systems such as HVAC (CRP models)
- Mounting base included with sensor

- Non-volatile memory settings retained after power outage
- Low voltage units: 24V DC, 33mA
- Line voltage units: 20A, 120-277V
- 32kHz (ATD/ATU500C and CRP - 40kHz)
- cULus

Dual (Ultrasonic and Passive Infrared)

Combines the excellent minor motion detection of ultrasonic with the outstanding passive infrared (PIR) long-range major motion detection.

| Description	Coverage	Color	Catalog Number
Low voltage sensor with photocell and isolated relay	2000 sq. ft. (360°)	Office White	**ATD2000CRP**
Low voltage sensor	2000 sq. ft. (360°)	Office White	**ATD2000C**
Line voltage sensor	2000 sq. ft. (360°)	Office White	**ATD2000CL**
Low voltage sensor with photocell and isolated relay	1000 sq. ft. (180°)	Office White	**ATD1000CRP**
Low voltage sensor	1000 sq. ft. (180°)	Office White	**ATD1000C**
Line voltage sensor	1000 sq. ft. (180°)	Office White	**ATD1000CL**
Low voltage sensor with photocell and isolated relay	500 sq. ft. (180°)	Office White	**ATD500CRP**
Low voltage sensor	500 sq. ft. (180°)	Office White	**ATD500C**

Ultrasonic

Excellent minor motion detection.

Description	Coverage	Color	Catalog Number
Low voltage sensor with photocell and isolated relay	2000 sq. ft. (360°)	Office White	**ATU2000CRP**
Low voltage sensor	2000 sq. ft. (360°)	Office White	**ATU2000C**
Line voltage sensor	2000 sq. ft. (360°)	Office White	**ATU2000CL**
Low voltage sensor with photocell and isolated relay	1000 sq. ft. (180°)	Office White	**ATU1000CRP**
Low voltage sensor	1000 sq. ft. (180°)	Office White	**ATU1000C**
Line voltage sensor	1000 sq. ft. (180°)	Office White	**ATU1000CL**
Low voltage sensor with photocell and isolated relay	500 sq. ft. (180°)	Office White	**ATU500CRP**
Low voltage sensor	500 sq. ft. (180°)	Office White	**ATU500C**

Passive Infrared

Outstanding long range major motion detection.

Description	Coverage	Color	Catalog Number
Low voltage sensor with photocell and isolated relay	1500 sq. ft. (360°)	Office White	**ATP1500CRP**
Low voltage sensor	1500 sq. ft. (360°)	Office White	**ATP1500C**
Line voltage sensor	1500 sq. ft. (360°)	Office White	**ATP1500CL**
Low voltage sensor with photocell and isolated relay	450 sq. ft. (360°)	Office White	**ATP600CRP**
Low voltage sensor	450 sq. ft. (360°)	Office White	**ATP600C**
Line voltage sensor	450 sq. ft. (360°)	Office White	**ATP600CL**

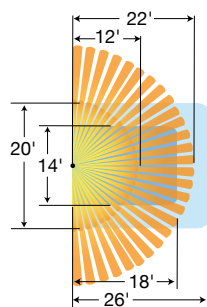## Ceiling Sensors Coverage Patterns

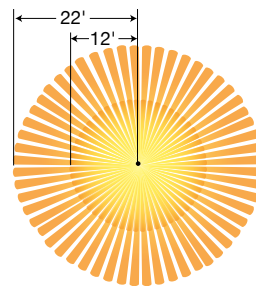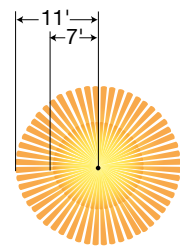**Minor Motion:** ■ Ultrasonic ■ PIR   **Major Motion:** ■ Ultrasonic ■ PIR
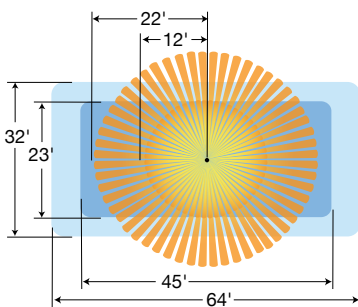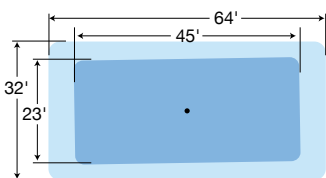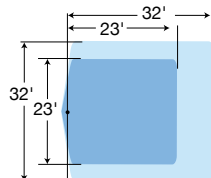
ATD2000C Series
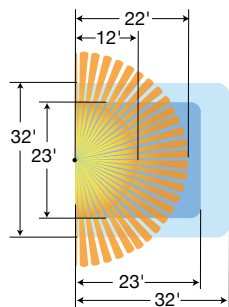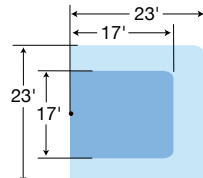
ATD1000C Series

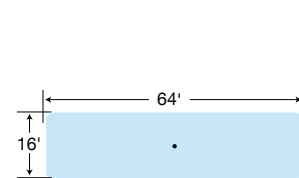**ATD500C Series**

ATP1500C Series

ATP600C Series

ATU2000C Series

ATU1000C Series

ATU500C Series

ATU2000C Series Hallway Application

Wall Mount Sensors and Accessories

Adaptive Technology Wall Mount Sensors

- Adaptive technology - "Install and forget" operation
- Swivel mounting bracket included for wall or ceiling mounting
- All digital sensing technology
- Compatible with most LED and CFL

- Photocell for daylight harvesting and relay interface with auxiliary systems such as HVAC (RP models)
- 24V DC, 33mA
- cULus

ATD1600W Series

Dual (Ultrasonic and Passive Infrared)

Description	Coverage	Color	Catalog Number
Low voltage sensor 32kHz with photocell and isolated relay	1600 sq. ft.	Office White	**ATD1600WRP**
Low voltage sensor 32kHz	1600 sq. ft.	Office White	**ATD1600W**

Passive Infrared

Description	Coverage	Color	Catalog Number
Low voltage sensor with photocell and isolated relay	1600 sq. ft.	Office White	**ATP1600WRP**
Low voltage sensor	1600 sq. ft.	Office White	**ATP1600W**
Low voltage sensor for aisle and high bay applications, with photocell and isolated relay	120 linear feet	Office White	**ATP120HBRP**
Low voltage sensor for aisle and high bay applications	120 linear feet	Office White	**ATP120HB**

ATP1600W, ATP120HB Series

Accessories

Control Units

The CU300 series provides 24V DC power supply for sensors or sensor/Add-A-Relay combinations The control units contain an internal relay for the control of an external load. Control units are plenum rated cULus Listed.

Description	Catalog Number
Automatic-ON operation, 120/277V AC, 50/60Hz for use with 1 to 4 ATD, ATU and ATP series ceiling/wall mount sensors	**CU300A**
Manual-ON operation, 120/277V AC, 50/60Hz for use with 1 to 4 ATD, ATU and ATP series ceiling/wall mount sensors	**CU300M**
Auto/Manual ON operation, 120/277V AC, 50/60Hz for use with 1 to 6 ATD, ATU and ATP series ceiling/wall mount sensors, heavy duty latching relay for reactive loads and plug-load control	**CU300HD**
Automatic-ON operation, 347V AC, 60Hz, for use with 1 to 3 ATD, ATU and ATP series ceiling and wall mount sensors	**CU347A**

CU300A(M), CU347A

CU300HD

Add-A-Relay

Hubbell AAR Add-A-Relay contains an internal relay for control of an external lighting load. The AAR requires a 24V DC power supply from the Hubbell CU series control unit. The AAR is typically used when: 1. It is desired to switch more than one circuit when occupancy is sensed. 2. The lighting load exceeds the maximum rating of the control unit.
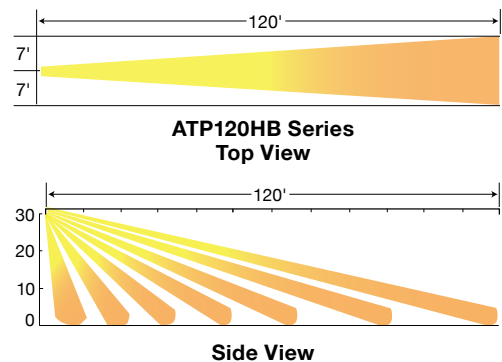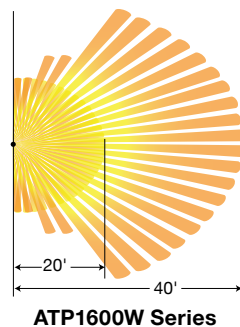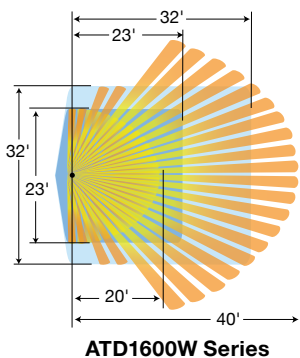
Description	Catalog Number
For use with CU series control units and Hubbell ATD, ATU and ATP series ceiling and wall mount sensors	**AAR**

AAR

Wall Mount Sensors Coverage Patterns

Minor Motion: ▉ Ultrasonic ▉ PIR **Major Motion:** ▉ Ultrasonic ▉ PIR

ATD1600W Series

ATP1600W Series

ATP120HB Series Top View

Side View

Adaptive Dual Technology, Ultrasonic and Passive Infrared Ceiling and Wall Mount Sensors
ATD, ATU, and ATP Series

Electrical

Power Requirements	24V DC nominal, 33mA from Hubbell CU series control unit
Isolated Relay	Normally open and normally closed
(sensors with RP suffix)	Terminals available
Agency Approvals	UL Listed

Physical — Ceiling Sensors

Housing	Flame retardant UL 94 V-0 ABS
Lens	Polyethylene
Dimensions	1.5"H x 4.5"D
Color	Office White
Mounting Height	8 to 12 feet

Physical — Wall Mount Sensors

Housing	Flame retardant UL 94 V-0 ABS
Lens	Polyethylene
Dimensions	6"H x 2"W x 1.5"D
Color	Office White
Mounting Height	8 to 12 feet, 8 to 30 feet (ATP120HB series)

Environmental

Operating	32°F to 104°F (0°C to 40°C) with rate of change not exceeding 20°F (11°C) per hour; 0% to 95% non-condensing relative humidity
Storage	-20°F to 150°F (-29°C to 65°C); 0% to 95% non-condensing relative humidity

Controls

Time Delay	Test (8 seconds), adaptive 8 to 40 minutes
Ambient Light	1 to 1000 foot candles
Sensitivity	Adaptive 0 to 100%

Sensing Indicators

Ultrasonic (ATD and ATU Series)	Green LED
Passive Infrared (ATD and ATP Series)	Red LED

Control Units and Add-A-Relay

## Control Units - CU300/347A Series

| Electrical	CU300A(M)	CU347A	CU300HD
Power Supply	120 to 277V AC, 50/60Hz	347V AC, 60Hz	100-277V AC, 50/60 Hz
Power Output	24V DC, 150mA	24V DC, 100mA	24V DC, 250mA
Load Capacity			
Incandescent	0 to 1800 watts	N/A	20A, 100-277V AC; 1HP @ 120V AC, 2HP @ 240/277V AC
120V Ballast	0 to 2400 watts	N/A	Motor Loads:
230V Ballast	N/A	N/A	1HP @ 120V AC
277V Ballast	0 to 5540 watts	N/A	2HP @ 240/277V AC
347V Ballast	N/A	0 to 5205 watts	
AT Sensor/AAR Capacity	1 to 4 combined	1 to 3 combined	1 to 6 combined
Agency Approvals	UL Listed, cULus Certified	UL Listed, cULus Certified	UL Listed, cULus Certified
Physical			
Housing	Flame retardant UL 94-5VA thermoplastic		Flame retardant UL 94-5VA thermoplastic
Dimensions	3.69"L x 2.33"W x 1.36"H		4.00"L x 3.4"W x 1.73"H
Color	Black		Black
Environmental			
Operating	32°F to 104°F (0°C to 40°C); 0% to 90% non-condensing relative humidity		-40°F to 149°F (-40°C to 65°C). Below 32°F (0°C) must use suitably rated non-metallic enclosure. 0% to 90% humidity, non-condensing
Storage	-20°F to 150°F (-29°C to 65°C); 0% to 90% non-condensing relative humidity		

Add-A-Relay - AAR

| Electrical		Physical	
Power Input	24V DC nominal, 33mA from Hubbell CU series control unit	Housing	Flame retardant UL 94-5V thermoplastic
		Dimensions	3.69"L x 2.33"W x 1.36"H
		Color	Black
Load Capacity			
Incandescent	0 to 1800 watts	**Environmental**	
120V Ballast	0 to 2400 watts		
230V Ballast	0 to 3680 watts	Operating	32°F to 104°F (0°C to 40°C); 0% to 90% non-condensing relative humidity
277V Ballast	0 to 5540 watts	Storage	-20°F to 150°F (-29°C to 65°C); 0% to 90% non-condensing relative humidity
347V Ballast	0 to 5205 watts		
Agency Approvals	UL Listed		

WL-Series Wireless Controls

Setup Procedure
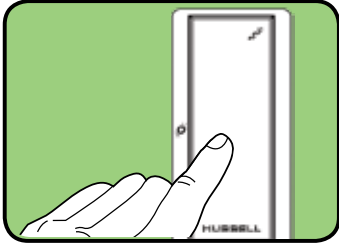
1) Press and hold switch for 6 seconds until LED flashes
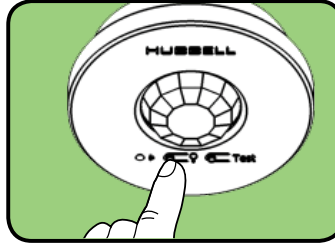
2) Press and hold for 6 seconds until lights flash to confirm pairing
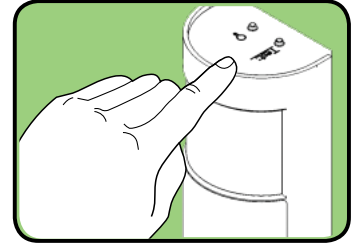
3) Repeat process for additional sensors

Ordering Information

Wireless Wall Switches

Description	Color	Catalog Number
8A Lighting, 3A Fan (1/10 HP motor, 120V AC only), Spec Grade Electronic switch 120–277V AC, No neutral wire required	Ivory White	WLS1278I WLS1278W
Accessory switch 120V AC	Ivory White	WLAS120I WLAS120W
Accessory switch 277V AC	Ivory White	WLAS277I WLAS277W

Compatible Transmitters: WLP series and WLDH sensors, or any Lutron® Clear Connect™ Enabled Sensor.

Wireless Control Unit

Description	Catalog Number
Wireless load control unit with isolated relay	WLC316R

Compatible Transmitters: WLP series and WLDH sensors, or any Lutron Clear Connect Enabled Sensor.

Wireless Ceiling Mount Sensor

Description	Coverage	Color	Catalog Number
Ceiling mount 360°	324-676 sq. ft.	White	WLP450C

Wireless Wall Mount Sensor

Description	Coverage	Color	Catalog Number
Wall mount 180°	3000 sq. ft.	White	WLP3000W
Corner mount 90°	2500 sq. ft.	White	WLP2500W
Hallway	Up to 150 linear feet	White	WLP150H

Compatible Controls: WLS1278xx switch, WLC316R control unit, or any Lutron Clear Connect Enabled Control Device.
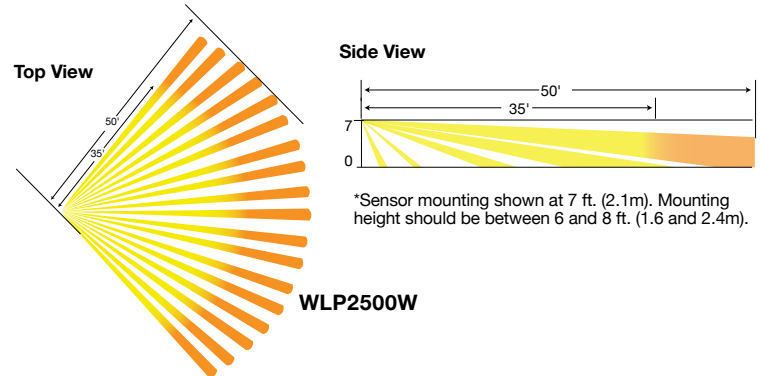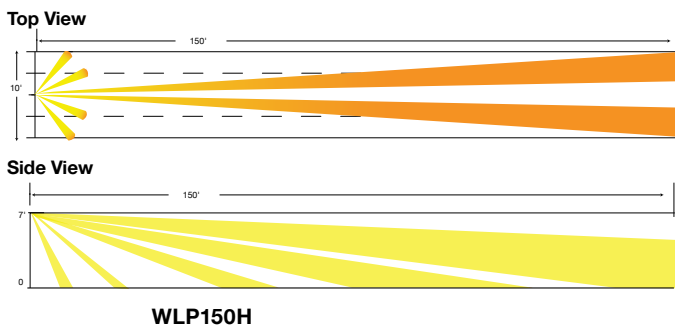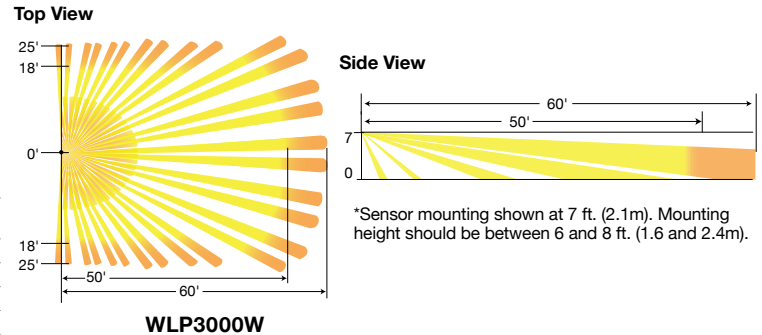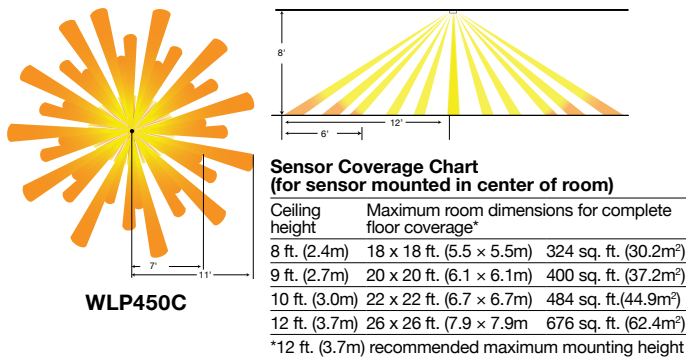
Wireless Daylight Sensor

Description	Color	Catalog Number
Daylight sensor 0–107,000 Lux (0-10,000 foot candles)	White	WLDH

Compatible Controls: WLS1278xx switch, WLC316R control unit, or any Lutron Clear Connect Enabled Control Device.

Coverage Patterns

Minor Motion: ▨ **Major Motion:** ▨

WLP450C

Sensor Coverage Chart
(for sensor mounted in center of room)

Ceiling height	Maximum room dimensions for complete floor coverage*	
8 ft. (2.4m)	18 x 18 ft. (5.5 × 5.5m)	324 sq. ft. (30.2m²)
9 ft. (2.7m)	20 x 20 ft. (6.1 × 6.1m)	400 sq. ft. (37.2m²)
10 ft. (3.0m)	22 x 22 ft. (6.7 × 6.7m)	484 sq. ft.(44.9m²)
12 ft. (3.7m)	26 x 26 ft. (7.9 × 7.9m	676 sq. ft. (62.4m²)

*12 ft. (3.7m) recommended maximum mounting height

Top View

Side View

Sensor mounting shown at 7 ft. (2.1m). Mounting height should be between 6 and 8 ft. (1.6 and 2.4m).

WLP3000W

Top View

Side View

WLP150H

Top View

Side View

Sensor mounting shown at 7 ft. (2.1m). Mounting height should be between 6 and 8 ft. (1.6 and 2.4m).

WLP2500W

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