

INSTRUCTIONS

BULLET® FIELD-ADJUSTABLE INSTALLATION

RAB®

RAB Lighting is committed to creating high-quality, affordable, well-designed and energy-efficient LED lighting and controls that make it easy for electricians to install and end users to save energy. We'd love to hear your comments. Please call the Marketing Department at 888-RAB-1000 or email: marketing@rablighting.com



IMPORTANT

READ CAREFULLY BEFORE INSTALLING FIXTURE. RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

RAB fixtures must be wired in accordance with the National Electrical Code and all applicable local codes. Proper grounding is required for safety. THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE INSTALLATION CODE BY A PERSON FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE PRODUCT AND THE HAZARDS INVOLVED.

WARNING: Make certain power is OFF before installing or maintaining fixture. No user serviceable parts inside.

CAUTION: For proper weatherproof seal, apply weatherproof silicone sealant around the edge of the Junction Box or Cover Plate. This is especially important with an uneven wall surface. Use silicone sealant or Teflon® tape around the thread of the arm.

WARNING: RISK OF ELECTRICAL SHOCK

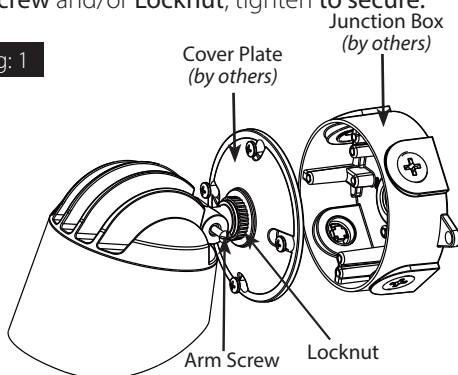
- Turn off electrical power at fuse or circuit breaker box before wiring fixture to the power supply.
- Verify that the supply voltage is correct. Connect fixture to a 120 volt, 60 Hz power source.
- Make sure all electrical and grounded connections are in accordance with the National Electrical Code and any applicable local code requirements.
- All wiring connections should be capped with UL listed wire connectors.

WALL MOUNTING *(Single Head)*

Mount to a weatherproof **Junction Box** (*by others*) and **Cover Plate** (*by others*) as shown in Fig. 1. Apply weatherproof silicone sealant around the edge of the **Junction Box** or **Cover Plate** where it meets the wall. This is especially important with an uneven wall surface.

1. Thread fixture into **Cover Plate**. Use silicone sealant or Teflon® tape around the thread of the **Arm**.
2. Connect wires as shown in the wiring diagram (Fig. 8). Use appropriate UL approved wire connectors as required by code to complete wiring with supply wires. Be careful not to pinch wires. **WARNING: To prevent wiring damage or abrasion, do not expose wiring to sharp objects.**
3. Aim **Fixture** in the desired direction by loosening the **Arm Screw** and/or **Locknut**, tighten to secure.

Fig: 1

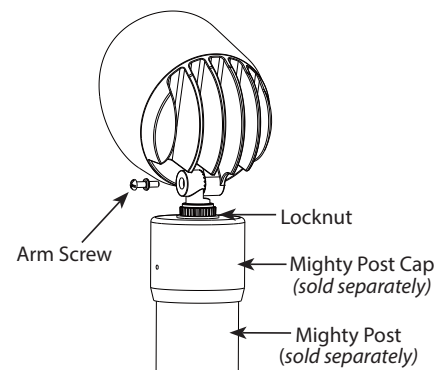


GROUND MOUNTING *(Single Head)*

Mount to a **Mighty Post** (*sold separately, RAB Cat# MP19*) as shown below, Fig. 2.

1. Thread **Fixture** into **Mighty Post Cap** (*sold separately*). Use silicone sealant or Teflon® tape around the thread of the arm.
2. Connect wires as shown in the wiring diagram (Fig. 8). Use appropriate UL approved wire connectors as required by code to complete wiring with supply wires. Be careful not to pinch wires. **WARNING: To prevent wiring damage or abrasion, do not expose wiring to sharp objects** Push all wires inside the **Mighty Post**.
3. Place **Mighty Post Cap** on the **Mighty Post**. Aim **Fixture** in the desired direction by loosening the **Arm Screw** and/or **Locknut**, tighten to secure.

Fig: 2



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FIELD ADJUSTMENT *(Single Head)*

Follow instructions to change the **Fixture Power (W)** and/or **Color Temperature (CCT)** from factory settings.

Power (Wattage) Selection:

This product is equipped with (W) Power output selection.

20/15/10W

12/9/6W

Color Temperature (CCT) Selection:

This product is equipped with 3000/4000/5000K (CCT) Color Temperature.

Factory Settings:

4000K / Maximum Power

1. Locate the **Selector Switch Cover** for Field-Adjustment on top of Housing as shown in Fig. 3, remove cover.
2. Select **Power (W)** and/or **Color Temperature (CCT)** by sliding the respective switch to the desired setting (Fig. 4).
3. Re-install **Selector Switch Cover**.

Fig: 3

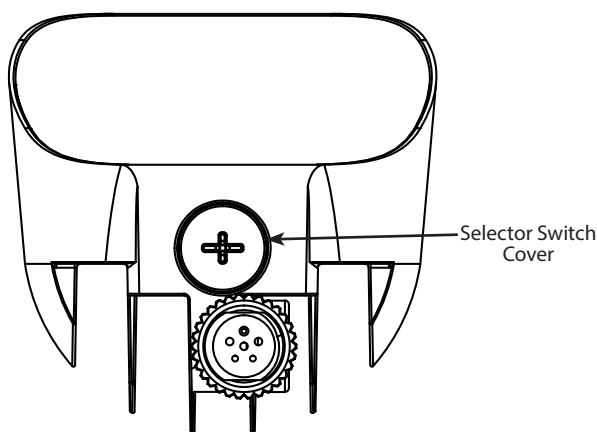
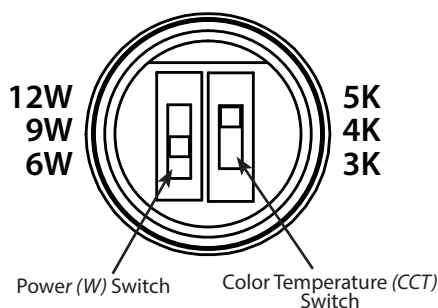


Fig: 4

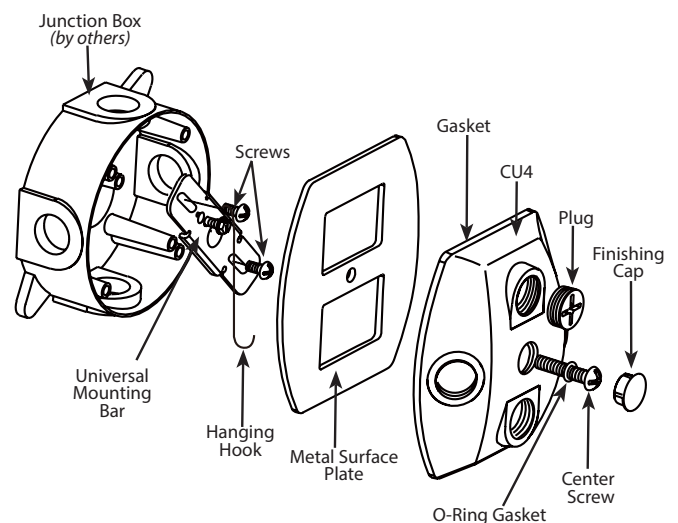


FIXTURE MOUNTING *(Double Head)*

Two **BULLET** heads come pre-wired and assembled on **CU4 Plate**, allowing for mounting on round, rectangular or octagonal surface or recessed **Junction Box** (by others). Apply weatherproof silicone sealant around the edge of the **Junction Box** or **CU4 Plate** where it meets the wall. This is especially important with an uneven wall surface.

1. Attach the **Universal Mounting Bar with Screws** (provided) to the **Junction Box**. In case of surface mount **Junction Box** use with the **Metal Surface Plate** (Fig. 5).
2. Use the 'S' shaped hands-free **Hanging Hook** to hold the **CU4 Plate** during wiring.
3. Bring power leads and **BULLET** head leads into **Junction Box**.
4. Strip off at least 1/2" of insulation from all leads and insert through openings in **Metal Surface Plate** (if used).
5. Attach ground wire to grounding screw on **Junction Box**. Complete wiring as shown in wiring diagram section.
6. Align **Gasket**, **CU4 Plate** and **Metal Surface Plate** (for use with surface mounted **Junction Box**) to ensure proper seal.
7. Tighten **Center Screw** (make sure **O-Ring Gasket** is on the screw) to attach **CU4 Plate** to the box. Check that the **Gasket** is fully sealed.
8. Insert plastic **Finishing Cap** in the center of the **CU4 Plate** for a weatherproof seal. Use silicone sealant on all plugs and unused conduit entries.
9. Aim **BULLET** heads in the desired direction and tighten

Fig: 5



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FIELD ADJUSTMENT *(Double Head)*

Follow instructions to change the **Fixture Power (W)** and/or **Color Temperature (CCT)** from factory settings.

Power (Wattage) Selection:

This product is equipped with (W) Power output selection.
40/30/20W
24/18/12W

Color Temperature (CCT) Selection:

This product is equipped with 3000/4000/5000K (CCT) Color Temperature.

Factory Settings:

4000K / Maximum Power

1. Locate the **Selector Switch Covers** for Field-Adjustment on Housing as shown in Fig. 6 and remove **Selector Switch Covers**.
2. Select **Power (W)** and **Color Temperature (CCT)** by sliding the respective switch to the desired setting (Fig. 7).
3. Re-install **Selector Switch Covers**.

Fig: 6

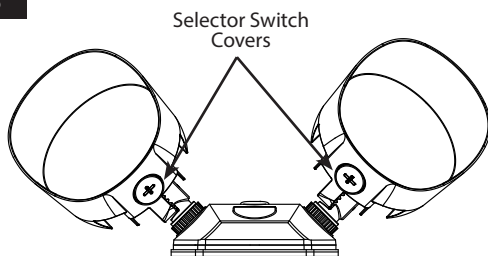
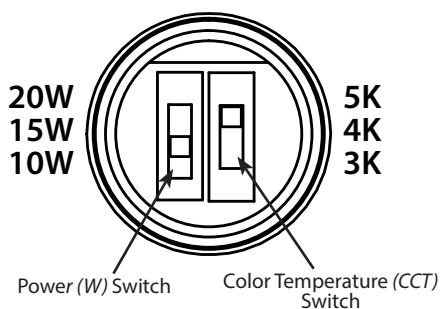


Fig: 7

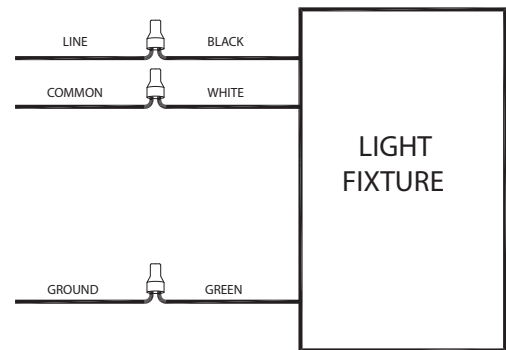


ON/OFF WIRING

Operates only at 120V, 60 Hz. Fixture can be dimmed with most forward phase incandescent dimmers. For list of compatible dimmers see www.rablighting.com.

1. Connect the black fixture lead to the **LINE** supply lead.
2. Connect the white fixture lead to the **COMMON** supply lead.
3. Connect the **GROUND** wire from fixture to supply ground.

Fig: 8



RAB

SMS SETTINGS AND OPERATION

Fig: 1

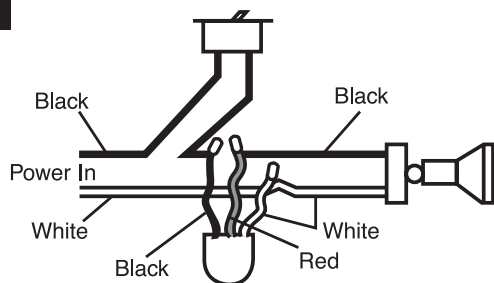


Fig: 2

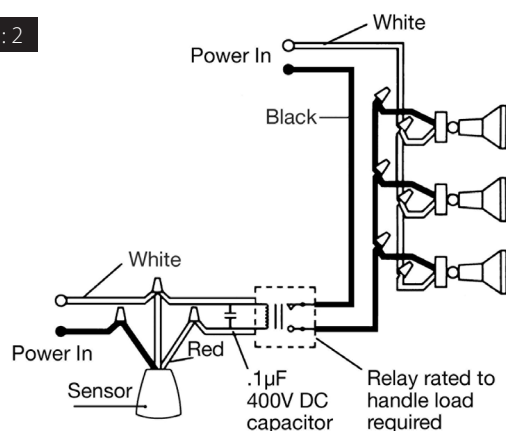
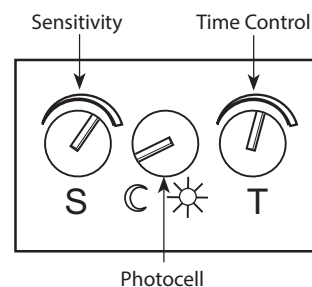


Fig: 3



Fig: 4



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PICKING A LOCATION

Location Considerations.

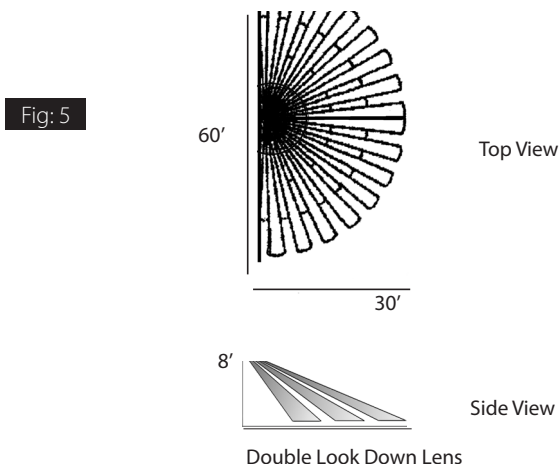
1. Choose a location from which the sensor can "see" all the paths of movement that will be illuminated by its lights.
2. Mini Sensor may be wall or ceiling mounted.
3. Sensor functions best when the direction of expected movement is across its detection pattern, not towards the sensor.
4. If wall mounting, locate 6-10' high for optimum range and detection. Lower mounting height will reduce range. Sensor must be below and as far as possible away from lights. If ceiling mounted be sure there are no lights below sensor.

DETECTION PATTERN

1. The sensor has a "Double Look Down" Lens with one "Look Out" zone and two "Look Down" zones, for excellent detection both at long and close range.
2. Detection extends out a maximum of 30 feet and is 180° wide.
3. To reduce the Detection Pattern length, aim the sensor down.
4. To reduce Detection Pattern width, mask the sides of the lens with the Lens Mask Kit provided or opaque weatherproof tape.
5. If sensor is mounted by a doorway at the top of stairs, be aware that the elevated mounting height may extend

DETECTION PATTERN (cont'd)

1. The sensors range with mounting height approx. 8 Feet.
2. As distance from the sensor increases, it will take more movement to be detected. For instance, at 10 feet, a half step will be enough, while at 30 feet, several steps will be necessary.



AIMING AND WALK TESTING

Test Period.

The sensor has a 3 minute Test Period which allows it to be aimed and walk tested day or night.

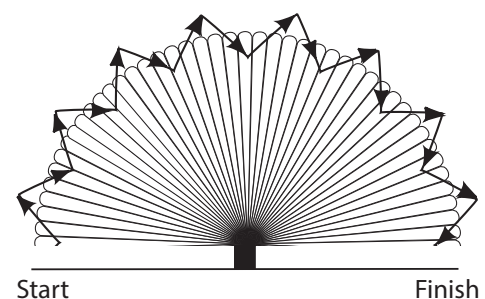
1. For the first 30 seconds, the lights will be turned on. During this time, test that all fixtures and lamps function properly..
2. For the next 3 minutes, the sensor will keep lights on for 5 seconds each time it detects movement in its Detection Zone. The sensor will change to Automatic Mode after the 3 minute Test Period.
3. If another 3 minute Test Period is desired, turn the power off for at least 10 seconds and back on again.

Walk Test.

The purpose of the Walk Test is to check and adjust the coverage pattern. Aim the sensor approximately to cover the area you desire.

1. Start outside the Detection Zone and walk across the zone until the lights go on. As distance from the sensor increases, it will take more movement to be detected. For instance, at 10 feet, a half step will be enough, while at 30 feet, several steps will be necessary as shown in Fig 8.
2. To reduce range, use the lens masks provided or tilt sensor down. Repeat steps #2 and #3 until you are satisfied with the coverage necessary.
3. The Time Control is factory set between 5-8 minutes. This period starts after the movement in the Detection Zone ceases. If less time is desired, turn the time control counterclockwise. For more time, turn the control clockwise.
4. The sensor is factory set for night only operation. To obtain full operation 24 hours per day, turn the Photocell Control fully clockwise to the sun symbol. Intermediate settings will allow the sensor to operate earlier or later at dusk.
5. Your sensor is ready for operation. See the Technical Tips pages if additional help is needed.

Fig: 6



INSTRUCTIONS

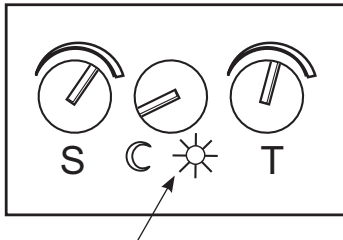
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CONTROL PANEL

Turn controls gently using the adjustment tool provided.
Do not force past stops.



Photocell

Turn to moon symbol for night only



Turn to sun symbol for 24 hour operation
(lights turn on night and day)

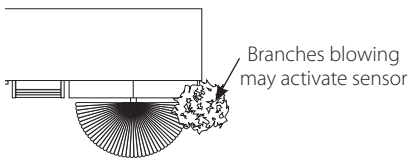


TECHNICAL TIPS

Lights Do Not Turn Off

1. Make sure sensor is not aimed at something that would move or change temperature such as waving branches, water, air conditioners, windows or heating vents - even on neighboring property. You can test for infrared sources in the area by placing a box or bag over the sensor. Put sensor into Test Mode. After the initial 30 seconds of the lights being on, lights should stay off. Wave your hand inside the bag in front of sensor. Lights should go on and then time out. If sensor operates properly when covered, check items 2-6.

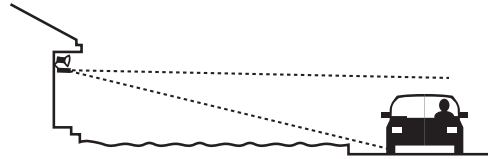
Problem: Sensor is triggered by unwanted movement or heat source.



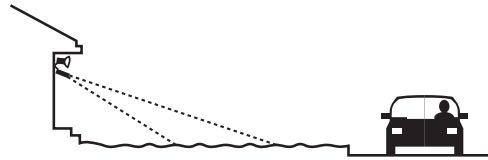
Solution: Tilt sensor or mask lens in the direction of the source as shown. Move sensor or source.

2. Make sure sensor is mounted firmly and does not move even slightly when touched. If it moves, tighten all screws.
3. Make sure that Mini Sensor is not mounted on an unstable object such as a tree or a pole that will move in the wind.
4. Was sensor wired hot? If so, circuitry may have been damaged.
5. Make sure sensor is not aimed within 30 feet of a road.

Problem: Passing cars activate sensor.



Solution: A 20' safety zone between the sensor and road is recommended to avoid activation from passing cars.

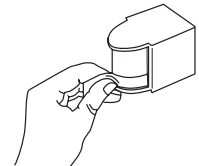


Walk Test.

The purpose of the Walk Test is to check and adjust the coverage pattern.

1. Aim the sensor approximately to cover the area you desire.

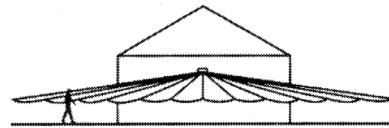
You may tilt sensor to not aim in the direction of the street or mask top of sensor lens to reduce range



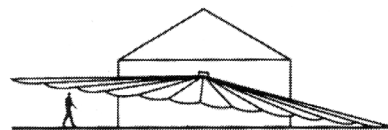
Make sure heat from lights is not triggering sensor. Make sure the sensor is below and as far as possible away from lights.

Check that the sensor is level from side to side and pointed at the area you desire. If unit is tilted, part of the Detection Zone may be high in the air over people's heads.

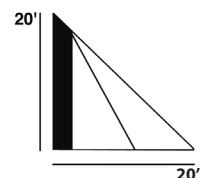
Solution: Position sensor exactly level from side to side.



Check that the sensor is not mounted too high. If mounted above 20 feet, much of the usable range will be lost.



Solution: Mounting at 5' to 8' allows maximum range.



INSTRUCTIONS

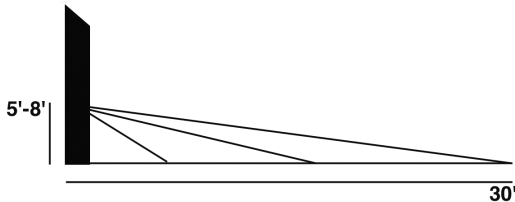
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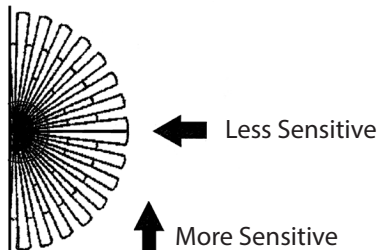
TECHNICAL TIPS (*cont'd*)

If sensor is painted, make sure there is no paint on the lens and that the lens paint mask is removed.



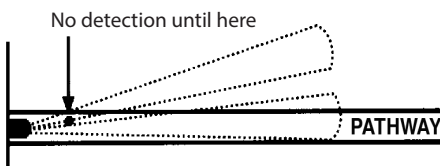
Range Appears Limited

1. Check that movement is not directly towards sensor. Sensor will see movement across its pattern more quickly. To fix, move the sensor.

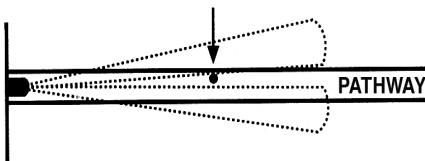


2. Check that movement far away and directly towards sensor is not entirely within one Detection Pattern finger.

Problem: Sensor will not detect until movement crosses from one finger into a second finger.



Solution: "Micro Adjust" sensor by tilting sensor 1/16". This small adjustment may move the zones to allow earlier detection.



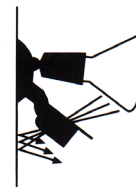
Lights Do Not Turn On

1. Check that lamps and fixtures work. Compare wiring to the Wiring Diagram in this manual. Check that the power is on.
2. If installing during daylight, remember that the sensor will provide a 3 minute Test Period after power is turned on. After 3 minutes, the sensor will switch to Automatic Mode and will not work during daylight if the Photocell Control is turned to or near the night only position (*fully counter clockwise to the moon symbol*). If you require another 3 minute Test Period, turn the power off for at least 10 seconds and back on again.
3. If you require the sensor to operate both in low level light and at night, turn the Photocell Control knob clockwise to the sun symbol.
4. Check that lights from other sources, such as adjacent porch lights, garden lights, streetlights or lights from inside the house are not in the sensor's view. See #1 under "Lights Turn Off Too Quickly".
5. Was sensor wired hot? If so, circuitry may have been damaged
6. If sensor is painted, make sure there is no paint on the lens and that the lens paint mask is removed.

Lights Turn Off Too Quickly

1. Check if sensor is being "tricked" by reflected light. If lights shine or reflect into the photocell, (*located behind the lens*), the unit will go on briefly and turn off thinking it is daytime.

Problem: Lights reflect into photocell or lights shine directly into photocell.



Solution: Adjust Photocell Control slightly clockwise, toward the sun symbol. This allows the sensor to function in brighter ambient light conditions. Alternatively, move the lights or mask the lens in the direction of the lights or reflections. If the problem persists, it may be necessary to increase the length of the sun shield over the sensor using weatherproof tape or some other material.

2. Check if "R" lamps, "A" lamps or self-ballasted PL lamps are being used in a non-enclosed lampholder that can be "seen" by the sensor. If so, switch to reflector PAR floodlight lamps or Quartz floods so the sensor is not affected by stray light. If using PAR floodlights, consider using lower wattage, energy saving lamps.

Self ballasted compact fluorescent lamps may cause the sensor to cycle on and off.

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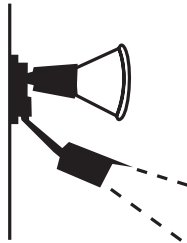
TECHNICAL TIPS (*cont'd*)

Lights Turn On and Off Incorrectly

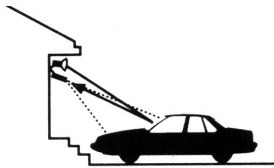
1. Make sure the sensor is installed on its own dedicated circuit free of motor loads such as HVAC equipment, kitchen appliances or garage door openers.
2. It is not recommended to wire sensors in parallel. More than one sensor wired together makes them difficult to troubleshoot. Disconnect multiple sensors and test separately.
3. Keep all people completely out of the detection pattern to make sure the sensor is not detecting them.
4. Make sure sensor is located below and as far as possible from its lights. Heat from the lights may trigger the sensor.



Solution: Move sensor below and away from the lights.



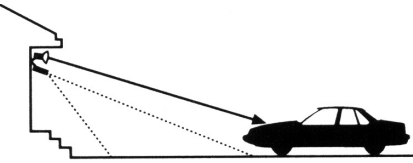
Make sure lights are not visible from or reflecting back into sensor. Check for white or reflective surfaces close to the sensor.



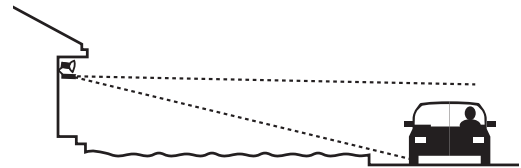
Solution: Aim sensor away from lights and reflective objects or mask the lens in the direction of the light or reflection.

5. Heavy rain, snow or high winds may activate the sensor occasionally

1. **Solution:** Reduce sensitivity control settings, mount in a more protected area and/or mask the lens if this is a constant problem.



2. Make sure sensor is not aimed within 30' of a road or sidewalk. Passing cars will activate sensor.



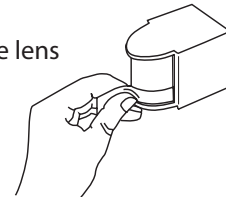
Solution: Mask the top of the lens to reduce Detection Pattern Length.

3. Self ballasted PL lamps may cause cycling (*on-off*).
4. Check solutions 1 through 5 under "Lights Do Not Turn Off" (*Pg. 6*).

Lights Turn On For Unknown Reasons

1. Lights may turn on occasionally during rain, snow and windstorms because the sensor is detecting changes in temperature. If this is a constant problem, mount the sensor in a more protected area.
2. Tilt the sensor lower - it may be seeing distant objects moving.
3. You may not be aware that animals have triggered sensor. Check sensor aiming to reduce nuisance triggering or mask the lower part of the lens with opaque weatherproof tape.

Masking the lens



4. The sensor may turn on occasionally during voltage surges.
5. A possible source of "mysterious" sensor activations are strong local radio signals. Check for nearby CB, Ham, VHF radio transmitters or Cellular telephones. The sensor may be activated, but will not be permanently impaired by these signals.
6. Check other solutions mentioned under on pages 7 & 8.

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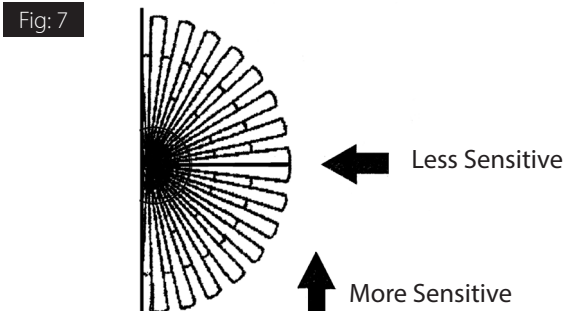


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ASSEMBLY AND WIRING

TURN OFF POWER BY REMOVING POWER FUSE OR TURNING OFF CIRCUIT BREAKER BEFORE INSTALLATION.

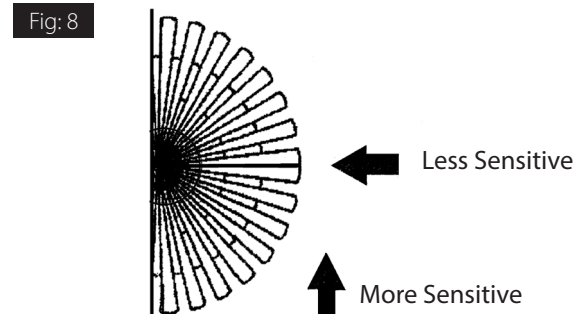
- Total lighting load must not exceed:
500W LED SMSBULLET at 120 Volts
5 Amps, 450 Watts LED at 120 Volts with 0.8pF driver
5 Amps, 300 Watts LED at 120 Volts with 0.5pF driver.
To switch more wattage, an electrician can install an additional relay.
- Line Carrier Remote Control Systems such as X-10, Leviton or Radio Shack are incompatible with sensors and cause false activations.
- Do not install on circuits feeding motor loads such as kitchen appliances, HVAC equipment, washer/ dryer or garage door openers.
- Sensor functions best when movement is across its detection pattern, not towards the sensor.
- Mount 6'-10' high for optimum range and direction as shown in Fig 7.



Two BULLET heads come pre-wired and assembled along with SMS500 sensor on CU4 plate, allowing for mounting on round, rectangular or octagonal surface or recessed boxes.

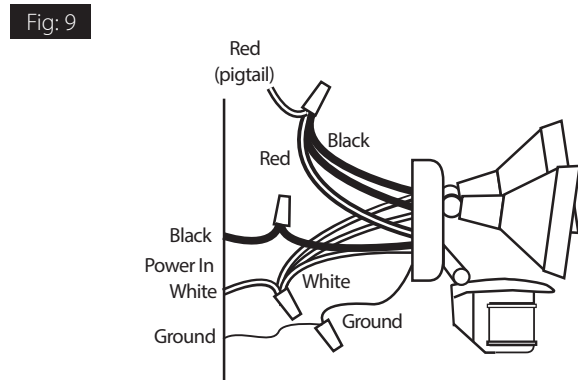
1. Connect the black fixture lead to the **LINE** supply lead as shown in Fig 2.
2. Connect the white fixture lead to the **COMMON** supply lead.
3. Connect the **GROUND** wire from fixture to supply ground.
4. Red pigtail is only used to switch remote or additional fixtures.

- Do not install on circuits feeding motor loads such as kitchen appliances, HVAC equipment, washer/ dryer or garage door openers.
- Sensor functions best when movement is across its detection pattern, not towards the sensor.
- Mount 6'-10' high for optimum range and direction as shown in Fig 8.



Two BULLET heads come pre-wired and assembled along with SMS500 sensor on CU4 plate, allowing for mounting on round, rectangular or octagonal surface or recessed boxes.

1. Connect the black fixture lead to the **LINE** supply lead as shown in Fig 9.
2. Connect the white fixture lead to the **COMMON** supply lead.
3. Connect the **GROUND** wire from fixture to supply ground.
4. Red pigtail is only used to switch remote or additional fixtures.



INSTRUCTIONS

BULLET® FIELD-ADJUSTABLE INSTALLATION



RAB Lighting is committed to creating high-quality, affordable, well-designed and energy-efficient LED lighting and controls that make it easy for electricians to install and end users to save energy. We'd love to hear your comments. Please call the Marketing Department at 888-RAB-1000 or email: marketing@rablighting.com

SENSOR SPECIFICATIONS

Model: 500 Watts Incandescent

100 Watts Fluorescent at 120 Volts

500W LED SMSBULLET at 120 Volts

5 Amps, 450 Watts LED at 120 Volts with 0.8pF driver

5 Amps, 300 Watts LED at 120 Volts with 0.5pF driver

Voltage: 120 Volts AC ONLY

Power Consumption: 1W

UL Listing: Raintight Photoelectric Switch Suitable for wet locations.

Time Adjustment: 5 seconds to 15 minutes

Quick Test Time: 5 second test time for fast installation. Works day or night.

Detection Zone: Full 180° by 30'

"No Hands" Auto Testing: Auto mode starts after 3 minutes of testing. No adjustment needed.

Built for Severe Conditions: Double weatherproofing for long life.

Photoelectric Control: Deactivates lights during daylight. Fully adjustable for 24 hour operation or custom applications.

Vandal Resistant Lens: Hard lens resists casual vandalism.

Case Construction: Precision molded Lexan®

Color Matched Lens: Dark lens with black units. White lens with white units.

Surge Protection: Withstands up to 3000 Volts

Manual Override: Double flip wall switch logic prevents activation by short power outages. Resets to auto at dawn. No extra wiring needed.

LED Detection Indicator: Glows red day and night for "on-guard" deterrence.

RF Immunity: Circuits fully shielded for maximum radio frequency immunity.

CLEANING & MAINTENANCE

CAUTION: Be sure fixture temperature is cool enough to touch. Do not clean or maintain while fixture is energized.

1. Clean lens & fixture with non-abrasive cleaning solution.
2. Do not open fixture to clean the LED. Do not touch the LED.
3. Keep leaves and debris out of hood.

TROUBLESHOOTING

1. Check that the line voltage at fixture is correct. Refer to wiring section.
2. Check the fixture is grounded properly.
3. If sensor is connected, check if it is working properly.

***Note:** These instructions do not cover all details or variations in equipment nor do they provide for every possible situation during installation, operation or maintenance.*



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