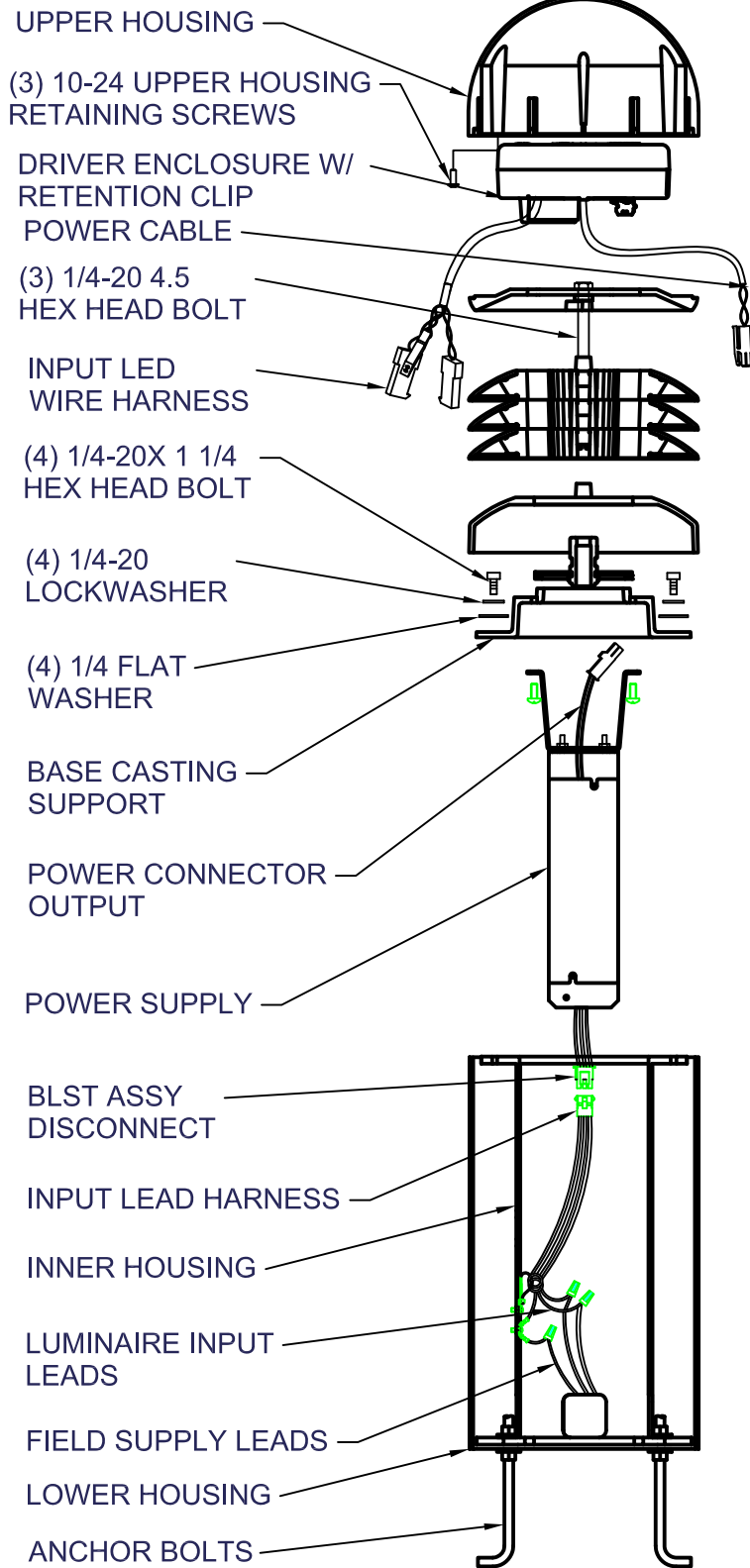


# INSTALLATION INSTRUCTIONS

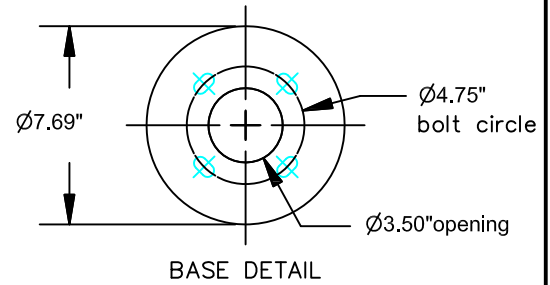
## BRM 832 & 836 LED BOLLARD WITH DEMAND RESPONSE

**IMPORTANT!** Be sure electrical power is off before installing luminaire.



### INSTALLATION PROCEDURE

1. To install luminaire, remove assembled luminaire from shipping container.
2. Be sure electrical power is turned off.
3. Loosen (3)10-24 upper housing retaining screws two full turns with a 1/8" ball driver. Rotate upper housing counterclockwise slightly and remove upper dome housing.
4. On the bottom side of driver enclosure press on spring clip with a flat head screwdriver and pull up on driver to gain access to wire way and proceed to disconnect harnesses from louvers.
5. Remove 1/4-20 screws & lock washers from the luminaire head assembly. The luminaire head assembly can now be lifted to expose quick disconnects. Disengage connection and place luminaire head assembly aside.
6. Remove (4) 1/4-20 hex head bolts, split lock washers & flat washers. Slide base casting, ballast assembly & gasket high enough to disconnect quick disconnects & set aside for now.
7. Slide lower housing off, exposing inner housing
8. Making sure field supply leads extend out of conduit an appropriate length, install inner housing onto anchor bolts. Level inner housing using leveling nuts & washers and tighten.
9. Splice field supply leads to luminaire input leads through 2" X 4" handhole.
10. Reinstall lower housing onto inner housing,
11. Connect ballast assembly quick disconnect to luminaire input lead harness and slide power supply assembly into inner housing and secure with (4) 1/4-20 bolts, flat & split washers
12. Reconnect quick disconnects & together and place luminaire head assembly back in proper location. Secure with proper 1/4-20 screws.
13. Reinstall LED louvers to the and make sure that all the connectors line up so that the LEDs in line.
14. Connect power supply cable to the single driver power cable and connect input cable to each of the louvers. Make sure that the connect is properly mated.
14. Reinstall upper housing and tighten (3)10-24 upper housing retaining screws. Luminaire installation is complete.
15. Energize luminaire.



# INSTALLATION INSTRUCTIONS

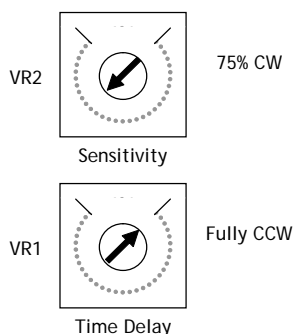
## SENITIVITY AND TIME DELAY AJUSTMENTS

The LED Driver Module regulates the intensity of the LEDs with a motion sensitive bi-level control. When motion is sensed, the LED intensity ramps to full intensity over 2 seconds. When motion is not sensed, the LEDs ramp down to low intensity over two minutes.

### Factory Setting Motion and Time Delay

Motion sensitivity is set at the factory at the 7:00 position (Fig .1), which is at a high range of sensitivity but can be increased if the customer believes it is necessary (see below). The Time Delay is set the 0 position (Fig.1) which will allow the LEDs to start dimming immediately after the motion is no longer detected.

### Default Potentiometers (Fig. 1)



### Adjusting Settings

The sensitivity of the motion sensor can be adjusted if required by the environment. If the bollard is at too high of a sensitivity setting, the bollard might be on high light level for extended periods of time. If the sensitivity is at too low of a setting the sensor might not acquire the occupant until they are too close for the bollard. Motion sensitivity is adjustable with potentiometer VR2 (fig.1). Turning the potentiometer clockwise increases sensitivity, turning the potentiometer counter-clockwise decreases sensitivity.

The Time Delay potentiometer can also be adjusted if it is required by the environment. The owner might feel like the bollard should stay on full brightness longer once the occupant has vacated the area. They can make this adjustment through the (VR1). The Time Delay potentiometer is set at zero time but can be increased up to 15 min to start the dimming cycle once there is no occupant detected. The time delay before ramping LEDs down when no motion is detected is adjustable with potentiometer VR1. Turning the potentiometer clockwise increases the delay, turning the potentiometer counter-clockwise decreases the delay.

In order to adjust the sensitivity, potentiometers are located on the driver's printed circuit board and can be adjusted with a #1 small flat head screw driver. Caution should be taken in handling the potentiometer.

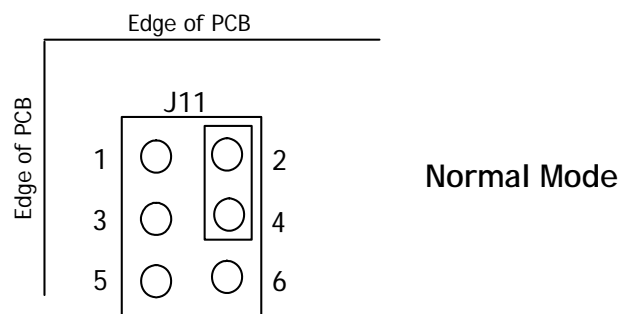
- Never Open the driver case in wet conditions
- Do Not touch any other components of the board
- Assemble the driver enclosure with the correct gaskets and screws in place

# INSTALLATION INSTRUCTIONS

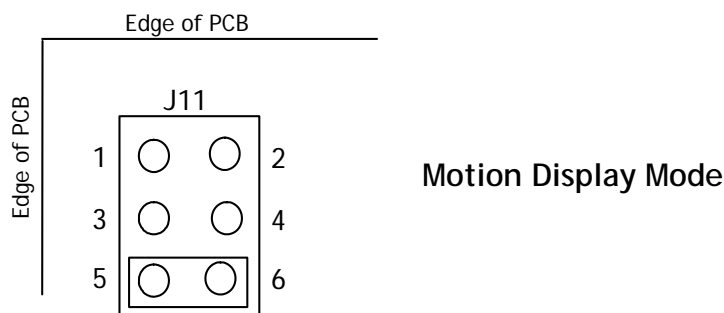
## Operation mode

### Normal Bi-level Operation Mode

A 6-pin header J11 located in the corner of the PCB can be used to select 4 different operating modes. When a jumper is installed between pins 2 and 4 of J11, normal mode is selected (fig. 2). Adjustments should be done in Normal Operation Mode.

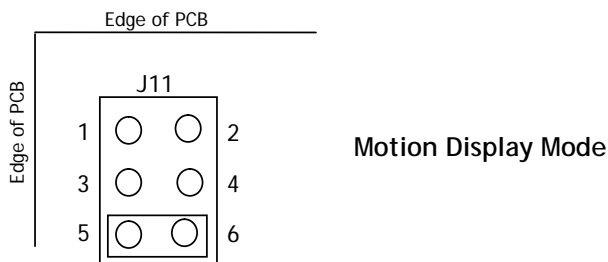


Installing a jumper between pins 5 and 6 of J11, places the controller in Motion Display Mode. In this mode, the LEDs quickly ramp up when motion is sensed and quickly ramp all the way off when no motion is sensed. The mode is useful for debugging sensitivity and motion detection.



### Sales Demonstration Mode

Installing two jumpers, one between pins 1 and 2, and the other between pins 5 and 6 of J11, places the controller in Demonstration Mode. In this mode, the LEDs ramp over 5 seconds, stay at maximum intensity for 5 seconds, ramp down over 5 seconds, and stay at minimum intensity for 5 seconds, and then repeat.



Health indicator DS1 blinks at a 1Hz rate and indicates the motion sensor status by its duty cycle. The duty cycle is 5% when motion is not detected and 95% when motion is detected. Note that the state of this indicator may not always match the state of the LEDs depending on the current operation mode, time delay, or egress lighting functions.

# INSTALLATION INSTRUCTIONS

## GUIDELINES FOR AVOIDING AND OVERCOMING INSTALLATION PROBLEMS WITH FALSE TRIPPING OF THE LED BOLLARD WITH DEMAND RESPONSE

Gardco's new LED Bollard with Demand Response is equipped with a sensitive Microwave Occupancy sensor. The microwave sensor works by transmitting high frequency (10.525Hz) X-band waves which bounce off an object and return to the sensor. The sensor then reads slight variance of the frequency from the change in its environment. This phenomenon is commonly referred as the Doppler principle, which is used for common applications such as police radar devices, weather radar, and automatic doors. Its ability to detect an occupant at great distances without the aid of an external lens makes it an ideal choice for a vandal resistance application. Although microwave sensors are widely used and are accurate, they can be false triggered do to environmental conditions. Here are a couple of suggestions to reduce false triggering the LED Bollard.

### 1. DO NOT INSTALL THE BOLLARD NEXT TO BUSHES OR LARGE PLANTS.

Our occupancy sensor is design to detect the frequency of human movement. Sometimes on windy days, shrubs and bushes can move in this manner which mimics the motion of a person's movement. Relocating or removing the low ground vegetation out of the range of the sensor detection will reduce the bollard to false trip in windy conditions to the high light level. *If the bollard does false trip, it has no affect on the Bollard's longevity but owners might be concerned about uniformity.*

### 2. CUT LOW HANGING BRANCHES FROM THE TANGENT FIELD

The occupancy sensor is designed to detect the average height person. Although a large tree trunk will not trip the occupancy sensor, low hanging branches might set the bollard on the high mode in windy conditions. Cutting low hanging branches in the bollard range will reduce false tripping.

### 3. AVOID INSTALLING THE BOLLARD NEXT TO VEHICLE TRAFFIC AREAS.

The occupancy sensor might be false tripped by slow moving vehicles. By avoiding placement of the bollard next to vehicle traffic, false tripping will be reduced. In some cases vehicular tripping of the occupancy on high may benefit installation because the road bollard will be on a high light level before the approaching occupant is within range.

### Suggestion for Reducing False Triggering

There is no single occupancy sensor on the market that will not false trip. Below are some steps that can be taken to reduce this annoyance. If the LED bollard is false triggered there are no long term effects on the product or the quality of light from the LEDs.

1. Remove or Cut away ground vegetation
2. Reduce the sensitivity of the motion detector
3. Redirect the motion sensor by repositioning the upper support casting