

# MONITORED THROUGH BEAM PHOTOELECTRIC SENSOR Model LMTBUL

## Introduction

The LiftMaster® Photoelectric Sensors provide non-contact monitored entrapment protection. For use with LiftMaster® UL Listed gate operators. The sensors are UL recognized components and meet UL 325 requirements. Monitored external entrapment protection devices **MUST** be installed at each Entrapment Zone. Refer to gate operator manual for compatibility with LMTBUL sensor.

## Specifications

**Max Range:** 90 ft. (27.4 m)

**Sensor Dimensions with Hood:** 2.29" W x 3.72" H x 2.76" D

**Cable Length:** 10 ft. (3 m)

**Operating Temperature:** -40°C to 65°C (-40°F to 149°F)

**Outdoor Rating:** Nema 4X

**Heater:** Thermostatically controlled, NOT recommended for solar applications



### Input Voltage:

Sensor: Black/red wires 6.8 VDC, 20mA

Heater: Green/white wires 10-40VDC or 8-28 VAC, 4 watts max., 170mA per pair @ 24 VDC/VAC, 340mA per pair @ 12 VDC/VAC

## **WARNING**

To prevent possible **SERIOUS INJURY** or **DEATH** from a closing gate or door:

- Read and follow **ALL** instructions.
- Be sure to **DISCONNECT ALL POWER** to the operator **BEFORE** installing the photoelectric sensors.
- The gate or door **MUST** be in the fully opened or closed position **BEFORE** installing the LiftMaster® Monitored Entrapment Protection device.
- Correctly connect and align the photoelectric sensor.
- Install the photoelectric sensor so that the center of the sensor window is **NO HIGHER** than 4-1/2" (11.4 cm) above the floor for door operators and 26" (66 cm) above grade for gate operators.
- Monitored external entrapment protection devices **MUST** be installed per the operator installation manual at each Entrapment Zone.
- The sensors **MUST** be mounted vertically.
- Test the gate operator and **ALL** photoelectric sensors monthly. Replace **ANY** damaged devices.
- **SAVE THESE INSTRUCTIONS.**



**WARNING:** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Carton Inventory

- Emitter with hood and bracket
- Receiver with hood and bracket
- Wire covers (2)
- Screws 8-32x3/8" (4)
- Screws 1/4"-20x1-1/4" (8)
- Lock nuts 1/4"-20 (4)
- Thread-locking screws 10-32x1" (4)
- M3 screw (2)
- Set screw 10-32x3/8" (2)
- 5/32 Allen key
- 3/32 Allen key

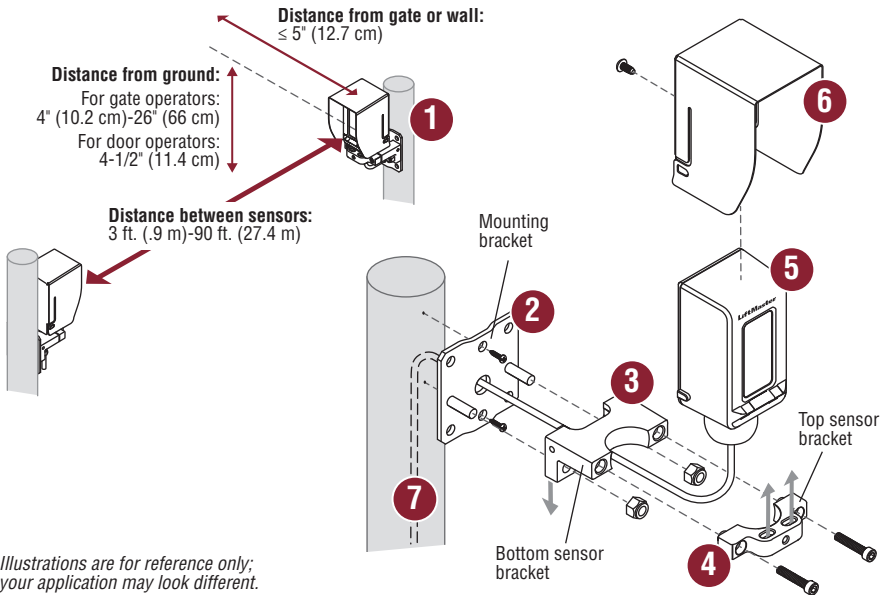
## Tools Needed

- Philips screwdriver
- 7/16" socket

## Installation

**IMPORTANT:** Disconnect ALL power to the operator.

1. Determine the mounting locations for the sensors following the measurements below. If installing multiple sensors in close proximity, mount the emitters on opposite sides to avoid crosstalk. The receiver and emitter can be identified by the labels on the back.
2. Attach the mounting bracket to the post with 1/4"-20 screws. Drill a hole in the post through the center hole in the bracket. **Optional:** If installing to a square post or flat surface, you may attach the sensor bracket directly to the post without using the mounting bracket.
3. Slide the bottom sensor bracket onto the studs of the mounting bracket and secure with 1/4"-20 lock nuts. **Make sure the bracket legs are facing down.**
4. Loosely attach the top sensor bracket with 10-32x1" thread-locking screws. **Make sure the slots are facing up.**
5. Place the sensor in the bracket and tighten the screws just enough to allow the sensor to rotate inside the bracket.
6. Slide the hood over the sensor until it snaps into place. Secure hood with the M3 screw.
7. Route wires through the center hole of the mounting bracket and into the post. **Optional:** Use conduit with NEMA 4X compatible 1/2"-14 NPT fitting (not provided).



# Wiring

**Sensor wiring (red and black wires):** Wire the photoelectric sensors (red [+] and black [-] wires) to the appropriate inputs on the operator or expansion board as shown.

**Heater wiring (green and white wires):**

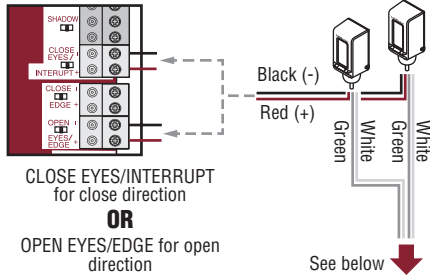
- OPTION 1 - Connect to the ACCESSORY POWER ON terminal on the control board (NOT polarity specific).
- OPTION 2 - Connect to an external 12V to 24V DC or AC power supply (not provided) with adequate current to power all sensors.
- OPTION 3 - For use with battery backup. Connect to ACCESSORY POWER ON and AUX RELAY terminals. Set AUX RELAY switches as shown. In this configuration, the heater will switch off during a power failure to extend the battery life.

DO NOT overload the accessory power output on the control board or the external power supply.

**NOTE: Heater feature is not recommended for ANY solar installations.**

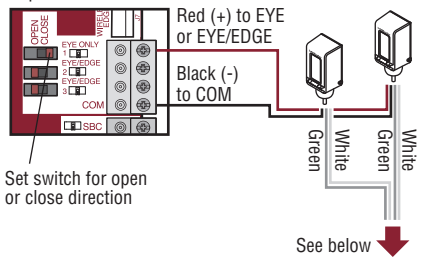
## Sensor Wiring

Control Board



OR

Expansion Board



## Heater Wiring

**OPTION 1**

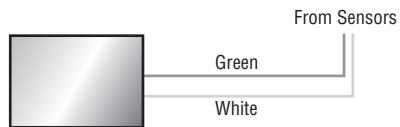
Control board  
ACCESSORY POWER ON  
Max. draw 500 mA



OR

**OPTION 2**

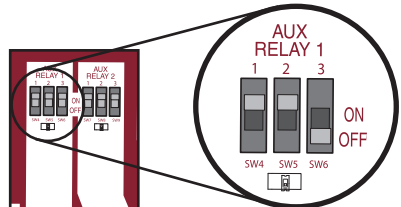
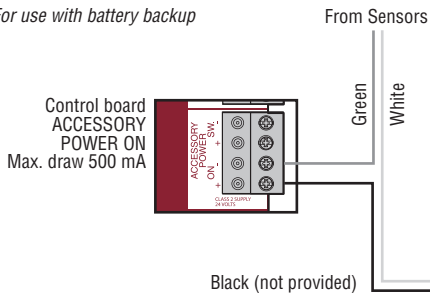
External 12V to 24V DC or AC power supply (not provided) with adequate current to power all sensors



OR

**OPTION 3**

For use with battery backup

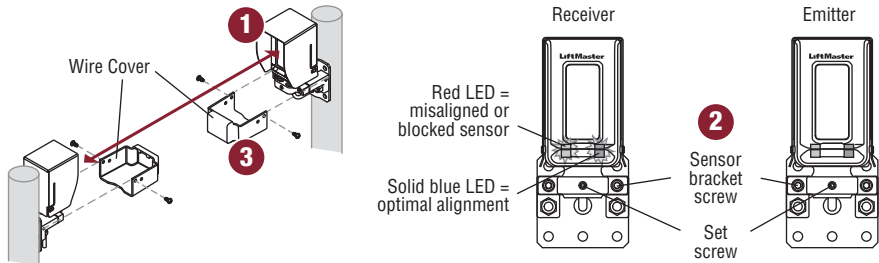


AUX RELAY will switch off during power failure

## Alignment

Reconnect power to the operator.

1. Align the sensors. The LEDs on the RECEIVER indicate alignment. The red LED indicates misalignment or blocked sensor. The blue LED indicates signal strength. Slow blinking indicates weak signal. Fast blinking indicates stronger signal. **Solid blue LED on the receiver indicates optimal alignment.** *NOTE: Solid blue LED on the EMITTER indicates the sensor is powered.*
2. When the sensors are optimally aligned, tighten the sensor bracket screws to secure the sensors in place (about 24in-lb of torque). For extra security, tighten with the set screw until it grips the sensor.
3. Place the wire covers onto the sensor brackets. Make sure the tabs on the wire cover slide into the slots on the sensor bracket. Secure the wire covers with 8-32x3/8" screws. Wire covers are NOT intended for use with conduit installations.



## Test

Test ALL installed sensors for proper operation. Place an obstruction in the path of the beam while the gate is in motion. The operator will reverse direction of the gate and then stop. If the gate does not stop and reverse, refer to *Troubleshooting* below. Perform the test with the obstruction in three locations:

- Halfway between the emitter and receiver
- Near the receiver
- Near the emitter

## Reset Range Mode

The sensors automatically adapt to the distance they are installed from each other. The installed range is saved to memory, optimizing performance for the installation environment. If the installation environment changes in a way that reduces the beam strength (longer range for example), it may be necessary to reset the sensors so they can learn the new environment.

To reset the sensors:

1. Disconnect power to the sensors for 5 seconds or longer (disconnect black and red wires or power down the operator).
2. Reconnect power to the sensors.
3. Block and clear the beam 10 times within 30 seconds of power up. The receiver may indicate the beam is blocked (solid red LED), but if the emitter and receiver are visually aligned, continue with the procedure.
4. The red and blue LEDs on the receiver will blink together rapidly for 2 seconds indicating sensors are reset.
5. The sensors will then learn the new installed range and save it to memory.