

# LMD-109

## Line Voltage Bi-Level Occupancy Sensor



### OVERVIEW

The LMD-109 is a line voltage occupancy sensor designed for OEM lighting fixture integration with 0-10V outputs to provide multi-mode bi-level dimming control.

This occupancy sensor employs an advanced High Frequency Doppler (HFD) sensing technology to provide superior sensing performance of minor motion like typing, writing, or reading. The HFD technology operates with high frequency radio waves which are capable of detecting the occupant's presence and movement without requiring unobstructed line-of-sight like a PIR sensor. Thus, the HFD sensor can detect through non-metallic material, such as plastic, glass, plywood or plaster board.

The Accu-Set digitalized potentiometers make setting the sensor easier, faster and more accurate than conventional analog ones. Four different sensitivity levels and control modes can be selected via DIP switch settings. An exclusive Hybrid Switching technology makes the LMD-109 perfect to control lighting with exceptionally high inrush current (HIC) during switching, such as having multiple LED lights connected in parallel.

The sensor comes with an ambient light sensor (ALS) to inhibit switching on the light if the ambient light level is higher than the threshold set.

### FEATURES

- High Frequency Doppler sensing technology
- 120/277 VAC line voltage operation
- 0-10V output for multi-mode bi-level dimming
- Hybrid switching for controlling loads with HIC
- Accu-Set potentiometer for quick and easy setting
- 4 levels of programmable HFD sensitivity settings
- 4 control modes selectable via DIP switch settings
- Ambient light sensor to inhibit unneeded lighting
- Low profile case for slim lighting fixture assembly

### APPLICATIONS

On/Off Switching Control

Bi-Level Dimming Control

The LMD-109 occupancy sensor can be assembled in an OEM fixture with 0-10V dimmable driver to control the light by sensing the presence of the occupant without requiring unobstructed line-of-sight.

NOTE: Do NOT mount the sensor behind a metal plate or within an enclosure surrounded by a metallic wall.

# LMD-109

## Line Voltage Bi-Level Occupancy Sensor

### OPERATION

The LMD-109 is a line voltage occupancy sensor featuring a hybrid switching contact output to control the power, and 0-10V to control the output level of connected lighting. The sensor will switch on the light when it detects the presence and movement of a moving object (human, or vehicle) within its coverage, and automatically shut off or dim the light to 30% after the delay time elapses. Different delay times and ambient light levels can be programmed by respective Accu-Set digital potentiometers. The combination of DIP switch #1 and #2 determines the HFD sensitivity, and switches #3 and #4 determine the control mode, as seen below.

### Control Modes

The sensor can be programmed via DIP switch setting to control the light in specific mode.

Mode	Day <sup>1</sup>	Night <sup>2</sup>	Remarks
<b>OSLATO</b>	Vac: OFF Occ: OFF	Vac: OFF Occ: ON-30%	Dim during Time-Off (TO) delay
<b>OSLA</b>	Vac: OFF Occ: OFF	Vac: 30% Occ: ON	Not applicable for fixture internal integration
<b>OSO</b>	Vac: 30% Occ: ON	Vac: 30% Occ: ON	For spaces require 24-hour lighting
<b>ON/OFF</b>	Vac: OFF Occ: OFF	Vac: OFF Occ: ON	For non-dimmable lighting

- ON/OFF** : ON-OFF Switching
- OSO** : Occupancy Sensing Only
- OSLA** : Occupancy Sensing at Low Ambient
- OSLATO** : Occupancy Sensing at Low Ambient with Time-Off
- Vac** : Vacant      **Occ** : Occupied

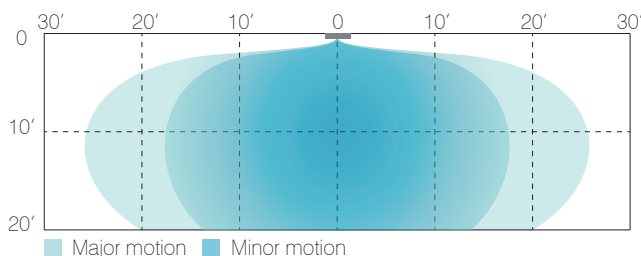
<sup>1</sup> While ambient light level is higher than the threshold.  
<sup>2</sup> While ambient light level is lower than the threshold.

### DETECTION PATTERN

Mounting Height	10 ft (3 m)	20 ft (6 m)
Coverage*	2,000 ft <sup>2</sup> (180 m <sup>2</sup> )	1,200 ft <sup>2</sup> (100 m <sup>2</sup> )

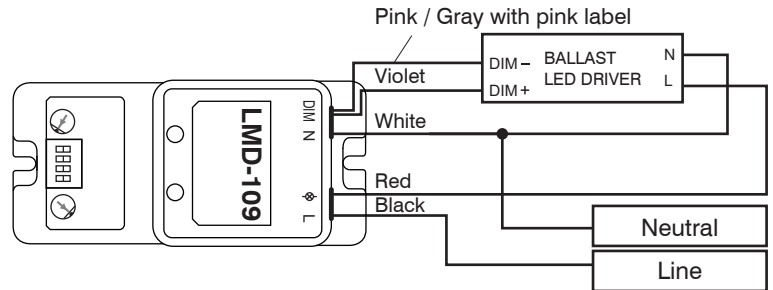
\*Sensitivity 100%

Side View



### Wiring Diagram

Basic wiring diagrams are included as below for reference. Consult with an IR-TEC team member if a more complex control is required.



### SPECIFICATIONS

Power supply	120/277VAC, 50/60 Hz
Maximum load @ -40°F~131°F (-40°C~55°C)	Incandescent/Halogen – 800/1200W(VA)@120/277V
	Fluorescent Ballast/CFL – 800/1200W(VA)@120/277V
	Ballast Electronic (LED) – 540/1200VA@120/277V
Maximum load @ 131°F~158°F (55°C~70°C)	Incandescent/Halogen – 500/750W(VA)@120/277V
	Fluorescent Ballast/CFL – 500/750W(VA)@120/277V
	Ballast Electronic (LED) – 500/750VA@120/277V
HFD sensitivity	25/50/75/100% selectable via DIP switch setting
Load switching	Zero-cross Hybrid-Switching
HIC protection	Max. 80A for 16.7msec.
Dim control	0-10V, non-isolated, max. 25 mA
Detection range	Up to 2,000 sq. ft @ 10 ft (180 sq. m. @ 3 m)
Mounting height	8 ~ 20 ft (2.4 ~ 6 m)
Ambient light level	7 level Accu-Set digital potentiometer
Delay time setting	T/1'/3'/5'/10'/20'/30', T=10 sec. for testing
Op. humidity	Max. 95% RH
Op. temperature	-40°F~158°F (-40°C~70°C)
Dimensions	H3.6"x W1.69"x D1.14" (H92 x W43 x D29mm)

# LMS-109

## Line Voltage Occupancy Sensor



### OVERVIEW

The LMS-109 is a line voltage occupancy sensor designed for OEM lighting fixture integration to provide occupancy sensing control. This occupancy sensor employs an advanced High Frequency Doppler (HFD) sensing technology to provide superior sensing performance of minor motion like typing, writing, or reading. The HFD technology operates with high frequency radio waves which are capable of detecting the occupant's presence and movements without requiring unobstructed line-of-sight like PIR sensors. Thus, the HFD sensor can detect through non-metallic material like plastic, glass, plywood or plaster board.

The Accu-Set digitalized potentiometers make setting the sensor easier, faster and more accurate than conventional analog ones. 4 levels of sensitivity can be selected via DIP switch settings to provide different coverage. An exclusive Hybrid Switching technology makes the LMS-109 perfect to control lighting with exceptionally high inrush current (HIC) during switching, such as multiple LED lights connected in parallel. The sensor comes with an ambient light sensor (ALS) to inhibit switching on the light if the ambient light level is higher than the threshold set.

### FEATURES

- High Frequency Doppler sensing technology
- 120/277 VAC line voltage operation
- Hybrid switching for controlling loads with HIC
- Accu-Set potentiometer for quick and easy setting
- 4 levels of programmable HFD sensitivity settings
- Ambient light sensor to inhibit unneeded light
- Low profile case for slim lighting fixture assembly

### APPLICATIONS

#### Lighting fixture integration

The LMS-109 occupancy sensor can be assembled in an OEM fixture to control the light by sensing the presence of the occupant without requiring unobstructed line-of-sight.

NOTE: Do NOT place the sensor behind a metal plate or within an enclosure surrounded by a metallic wall.

# LMS-109

## Line Voltage Occupancy Sensor

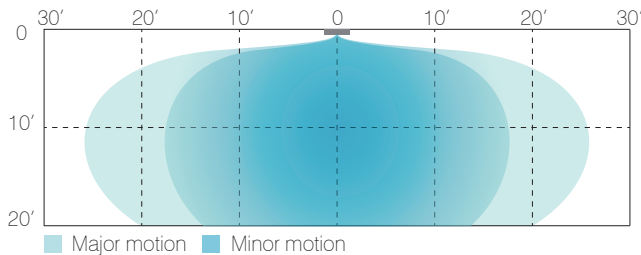
### OPERATION

The LMS-109 is a line voltage operating occupancy sensor with hybrid switching output to control the operation of connected load. The sensor will switch on the light when it detects the presence and movement of a moving object (human, or vehicle) within its coverage, and automatically shut off the light after the delay time elapses. Different delay times can be programmed by an Accu-Set digital potentiometer. An ambient light sensor is built-in to inhibit switching on the light when ambient light level is higher than the threshold set.

### DETECTION PATTERN

Mounting Height	10'	20'	
Coverage (sq. ft.)*	2,000	1,200	*Sensitivity 100%

Side View



### SPECIFICATIONS

Power supply	120/277VAC, 50/60 Hz
Maximum Load @ -40°F ~ 131°F (-40°C ~ 55°C)	Incandescent/Halogen – 800/1200W(VA)@120/277V
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Detection range	Up to 2,000 sq. ft. @ 10 ft
Mounting height	8 ~ 20 ft (2.4 ~ 6 m)
Ambient light level	7 level Accu-Set digital potentiometer
Delay time setting	T/1'/3'/5'/10'/20'/30', T=10 sec. for testing
Op. humidity	Max. 95% RH
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Dimensions	H3.6" x W1.69" x D1.14" (H92 x W43 x D29mm)

### Wiring Diagram

Various control modes may be achieved by different wiring connections. Basic wiring diagrams are included as below for reference. Consult with an IR-TEC team member if a more complex control is required.

