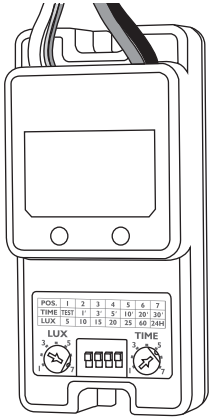
TRANS

LMD-109

Line Voltage Bi-Level Occupancy Sensor

INSTALLATION INSTRUCTIONS



Indoor dry location use only
Utilisation a L'interieur Uniquement

⚠ CAUTION

- **Risk of Electric Shock - Disconnect power supply before servicing.**
- **Open Type Photoelectric Switches.**

Install the sensor at least 1ft. away from any occupant.

⚠ PRUDENCE

- **Risque de choc électrique - Débranchez l'alimentation avant l'entretien.**
- **Ouvrir Type commutateurs optoélectroniques.**

IR-TEC hereby declares that the LMD-109 complies with Directive 2014/53/EU issued by the Commission of the European Community. The complete declaration of conformity is available on our website: www.irtec.com

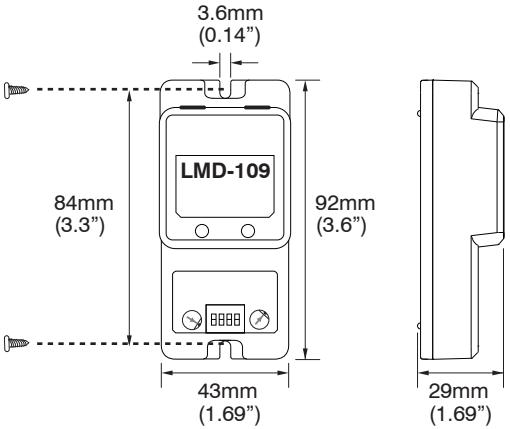
The frequency and maximum transmitted power in EU are listed as 5800 MHz: -11.28dBm.

OVERVIEW

The LMD-109 is a line voltage occupancy sensor designed for OEM lighting fixture integration with 0-10V output for bi-level dimming control. This occupancy sensor employs an advanced High Frequency Doppler (HFD) sensing technology to provide superior sensing performance of minor motion, such as typing, writing, or reading. The HFD technology is operating with high frequency radio waves which are capable of detecting the occupant's presence and movements 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 the sensor setting easier, faster and more accurate than the conventional analog ones. Four levels of sensitivity and control modes can be selected via DIP switch setting. An exclusive Hybrid Switching technology makes the LMD-109 perfect to control lighting with exceptionally high inrush current (HIC) during switching, such as multiple LED lightings 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.

DIMENSIONS



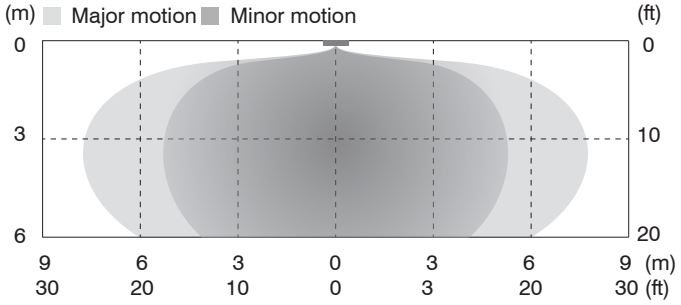
APPLICATION NOTES

- Avoid placing the sensor in an area surrounded with metallic wall which may block or absorb the radio wave. If possible, place the sensor to the opening as close as possible.
- Fluorescent light may cause interference to the HFD sensor operation, and result in lighting permanent on. If possible, avoid placing the HFD sensor within 1m (3ft.) of fluorescent light.
- Avoid sensor placement facing doors, corridors or exits as HFD sensor may detect the traffics at adjacent area.
- HFD sensors are best for use in areas with partitions and high dividers, or high level of minor motion activities.
- The HFD sensor is more sensitive to the movements "toward" than "across" the sensor, so ensure to place the sensor at the position "toward" the movements of occupant.

DETECTION PATTERN

Mounting Height	3 m (10 ft)	6 m (20 ft)
Coverage*	180 m² (2,000 ft²)	100 m² (1,200 ft²)

*Sensitivity 100%



Federal Communication Commission Interference Statement
FCC ID：NRIHS1X0900

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Industry Canada statement:
IC: 22993-X09HS1AC602

This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

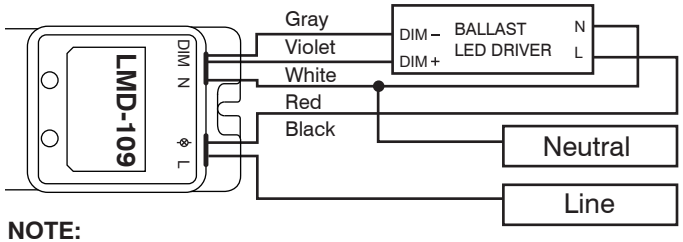
Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

www.irtec.com P/N: 058-10901-002 Printed in Taiwan
This product may be covered by one or more U.S. patents or patent applications.
Please visit www.irtec.com for more information.

IR-TEC International Ltd.
6 Rong An Road
Luzhu Taoyuan 338
TAIWAN

IR-TEC America, Inc.
590 W. Central Avenue Suite C
Brea, CA 92821
USA

WIRING DIAGRAM

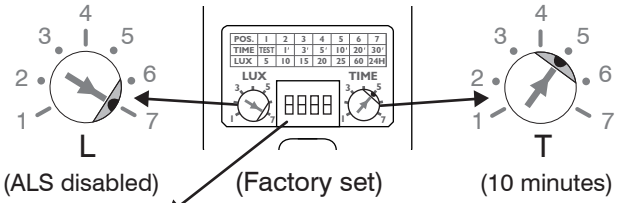


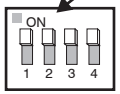
NOTE:

1. The driver/ballast MUST be 0-10V dimmable to achieve dimming control.
2. Ensure connection of LINE and NEUTRAL are not reversed to avoid damaging the sensor.
3. Ensure TOTAL isolation between DIM+/DIM- and GROUND to avoid damaging the sensor.
4. Conduct test with GROUND connected.

SENSOR SETTINGS

The LMD-109 features 4 different control modes selectable via combination DIP switch #3 and #4, and 4 levels of sensitivity set via combination DIP switch #1 and #2. The LMD-109 also provides 7 different light-Off delay time and daylight threshold settings via 2 Accu-Set digital potentiometers marked T and L respectively.





(Factory set)
SW1 & 2 (100% Sensitivity)
SW3 & 4 (OSLATO Mode)

Position	1	2	3	4	5	6	7
T (min.)	T*	1’	3’	5’	10’	20’	30’
L (lux)	5	10	15	20	25	60	24H

Factory Set

T - Delay Time

The potentiometer T sets the period of delay time that sensor will turn off the connected lights after the area is vacated.

L - Ambient Light Level

The potentiometer L sets the ambient light level that the sensor will activate occupancy sensing control.

Sensitivity - SW1 & 2

The sensitivity and detection pattern of HFD sensor may vary with the furniture placement, partition layout, wall material, and shape of the space. For example, the detection pattern will become long rectangular if sensor is placed in a long corridor. 4 levels of sensitivity can be set via combinations of DIP switch #1 and #2.

Sensitivity	100%	75%	50%	25%
DIP switch setting	ON-ON	ON-OFF	OFF-ON	OFF-OFF

Control Mode - SW3 & 4

The combination of DIP switch #3 and #4 determines the sensing control mode.

OSLATO : Occupancy Sensing at Low Ambient with Time-Off
OSLA : Occupancy Sensing at Low Ambient
OSO : Occupancy Sensing Only
ON/OFF : ON-OFF Switching

Mode	Control (LMD-109)
OSLATO ON-ON	1. While ambient lux is **higher** than the level set, light stays **OFF**. 2. While ambient lux is **lower** than the level set, and **occupancy detected**, switch the light **ON**. 3. Dim the light to **30%** after occupant leave and delay time elapses. 4. Turn **OFF** the lights when 10 minutes **TIME OFF** delay elapses. 5. When **occupancy detected** during **TIME OFF**, switch the light **ON**.
OSLA ON-OFF	1. While ambient lux is **higher** than the level set, light stays **OFF**. 2. While ambient lux is **lower** than the level set, dim the light to **30%** under vacancy. 3. While ambient lux is **lower** than the level set, and **occupancy detected**, switch the light **ON**. 4. Dim the light to **30%** after occupant leave and delay time elapses. **NOTE**: Not applicable for fixture internal integration.
OSO OFF-ON	1. Ambient light is disabled with this mode. 2. Dim the light to **30%** at **all time** under vacancy. 3. Switch the light to **ON** under occupancy. 4. Dim the light to **30%** after occupant leave and delay time elapses.
ON/OFF OFF-OFF	1. While ambient lux is **higher** than the level set, light stays **OFF**. 2. While ambient lux is **lower** than the level set, and **occupancy detected**, switch the light **ON**. 3. Turn **OFF** the light after occupant leave and delay time elapses.

TESTING

To verify sensor control function normal, please proceed with the instructions as below to conduct test;

1. Set the arrow of T (DELAY TIME) potentiometer pointing at position "1" (TEST) and other setting to the desired threshold.
2. Walk within the expected range at normal speed. The sensor will switch ON the light for 10 seconds whenever sensor detects the movement, and then switch OFF or DIM to 30% for 10 seconds as per the selected mode. The LED of sensor will also blink to indicate every motion detected.
3. After testing complete ensure to set the T potentiometer to the position of desired time. NOTE: The sensor will automatically control the light as per the selected mode with factory set time delay (10 minutes) if the T potentiometer has NOT been set to other position.

SPECIFICATIONS

Power supply	120/240/277VAC, 50/60 Hz		
Maximum load	120VAC	240VAC	277VAC
-Incandescent/Halogen	800/*500W(VA)	5A	1200/*750W(VA)
-Fluorescent Ballast/CFL	800/*500W(VA)	5A	1200/*750W(VA)
-Ballast Electronic (LED)	540/*500VA	5A	1200/*750VA
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, ±5%, non-isolated, max. 25 mA		
Detection range	Up to 180 sq. m. @ 3 m (2,000 sq. ft @ 10 ft)		
Mounting height	2.4 ~ 6 m (8 ~ 20 ft)		
Ambient light level	7 level Accu-Set digital potentiometer		
Delay time setting	T/1'/3'/5'/10'/20'/30' , T=10 sec. for testing		
TIME OFF delay	10 min., OSLATO mode only		
Op. humidity	Max. 95% RH		
Op. temperature	-40°C~70°C (-40°F~158°F)		
Dimensions	H92 x W43 x D29mm (H3.6"x W1.69"x D1.14")		

*Max load for operating temperature at 55°C~70°C (131°F~158°F)

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