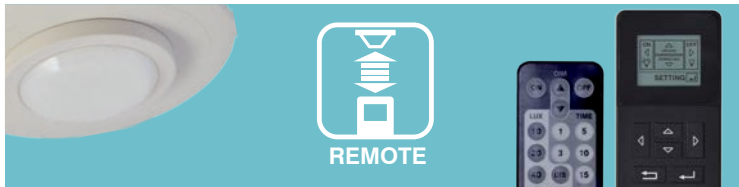# LRD-509 series

## Line Voltage SmartDIM Occupancy Sensor

**TRANS**



REMOTE

## OVERVIEW

The LRD-509 series member of the TRANS family is a two-way IR remote programmable line voltage switching occupancy sensor with 0-10V output for dimmable ballast or LED driver control. The sensor is capable of providing top-notch energy efficient lighting control in multiple modes with fully programmable multi-level high/low dim or SmartDIM control. SmartDIM is a state-of-the-art automatic dimming control technology developed by IR-TEC, which is capable of maintaining the overall ambient light level within the preset range through a smooth, flawless continuous dimming control to the connected lighting.

The sensor will turn on the connected lighting to the high dim or SmartDIM level as programmed when it detects the presence of an occupant or vehicle, and automatically dim the light down to the low level or shut off as programmed after the area is vacated for a period of time. An exclusive two-way handheld remote programmer allows you to configure sensor setting, or download the existing settings of the installed sensor from the floor. In addition, an exclusive Hybrid Switching technology makes the LRD-509 series perfect sensor to control a group of LED lightings with exceptionally high inrush current (HIC) while switching on.

Like all sensors in the TRANS family, the LRD-509 series is available with various mounting options and interchangeable lenses. This provides a second-to-none design and complete installation flexibility. The sensor is designed to operate in the coldest of environments, down to -40°F/°C.

## APPLICABLE REMOTE (order separately)

| Model | Description | Remarks |
|---|---|---|
| SRP-280 | TRANS Remote Programmer | Full functionality |
| URP-100 | User Remote | Manual ON/OFF/DIM TIME/LUX setting |

## FEATURES

- Omni-directional digital pyroelectric infrared sensor
- Digital data control ambient light sensor built-in
- 2-way IR remote programmable sensor setting
- Hybrid switching for controlling loads with HIC
- SmartDIM or multi-level high/low dim control
- Remote programmable SmartDIM level setting
- Up to 30 ft of remote programmable range
- Beeping or light flashing acknowledgement
- Available with a variety of mounting options
- Available with interchangeable lens options

## APPLICATION

☑ 0-10V Continuous Dimming Control

☑ 0-10V Multi-level Dimming Control

The LRD-509 series sensor can be used to provide occupancy sensing based, multi-mode, continuous dimming control by sensing the presence and movements of the occupant and the daylight available in the space. Specific control mode and sensor setting can be configured via the SRP-280 remote sensor programmer (optional). Within the maximum load allowed, one LRD-509 sensor can control up to 50 dimmable ballasts/drivers with sinking current less than 0.5mA each. Basic wiring diagram is included at next page for reference. Consult with an IR-TEC team member if a more complex control is required.

**IR-TEC**
*Specializing in Building Sensors*

## SmartDIM

SmartDIM is an exclusive continuous dimming control algorithm developed by IR-TEC to provide a smooth and flawless automatic dimming performance. The output of the controlled lighting will be constantly adjusted to maintain the overall ambient light level within the pre-programmed range by sensing the daylight available in the space.

## CONTROL MODES

The LRD-509 series can be programmed by SRP-280 to control the lighting in one of the following modes with various conditions as set. For more details of specific control mode, please visit www.irtec.com or contact an IR-TEC team member directly.

| Mode | Day[1] | Night[2] | Remarks |
|---|---|---|---|
| ON/OFF | Vac: OFF<br>Occ: ON/OFF* | Vac: OFF<br>Occ: ON | For non-dimmable lighting<br>*ALS enabled |
| OSO | Vac: LD<br>Occ: SD/HD | Vac: LD<br>Occ: SD/HD | LD: Low Dim, HD: High Dim<br>SD: SmartDIM |
| OSLA | Vac: OFF<br>Occ: SD/OFF | Vac: LD<br>Occ: SD/HD | |
| OSLATO | Vac: OFF<br>Occ: SD/OFF | Vac: LD*-OFF<br>Occ: SD/HD | *Low Dim during Time<br>Off delay |
| OFF | Vac: OFF<br>Occ: OFF | Vac: OFF<br>Occ: OFF | Light stays off |

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

[1] While ambient light level is higher than the threshold.
[2] While ambient light level is lower than the threshold.

## MOUNTING OPTIONS

The LRD-509x**X**x series can be mounted into the ceiling or integrated with an OEM lighting fixture. The mounting options are available by combining a specific mounting bracket (if applicable) from the chart below. The bracket will be shipped with the sensor when ordered with the respective code.

| Code | Mounting Option | Mounting Bracket |
|---|---|---|
| F | Fixture Integrated | --- |
| W | IP-66 Fixture Integrated | --- |
| E | Fixture External | EMB-500 |
| P | IP-66 Fixture External | PMB-500 |
| S | Ceiling Surface | SMB-500 |
| C | Junction Box | CMB-500 |

## LENS OPTIONS

The LRD-509xx**X** series is available with following lens options which provide different coverage at different mounting height (H). When adding the lens code, the lens is then automatically shipped with the sensor.

| | Lens | Shape | Mounting Height | | Coverage |
|---|---|---|---|---|---|
| A | Standard | Cone | 8~15 ft. | 2.4~4.5m | 2X height |
| B | Extra wide | Cone | 8~10 ft. | 2.4~3.0m | 6X height |
| C | High bay | Cone | 15~30 ft. | 4.5~9.0m | 3X height |
| D | Standard | Round | 8~20 ft. | 2.4~6.0m | 2X height |
| F | Extra wide | Dome | 8~20 ft. | 2.4~6.0m | 4X height |
| G | Aisle way | Arch | 8~40 ft. | 2.4~12.0m | 3X height |
| H | High bay | Dome | 30~50 ft. | 9.0~15.0m | 1X height |
| L | Long aisle | Arch | 8~10 ft. | 2.4~3.0 m | 6X height |

## WIRING DIAGRAM
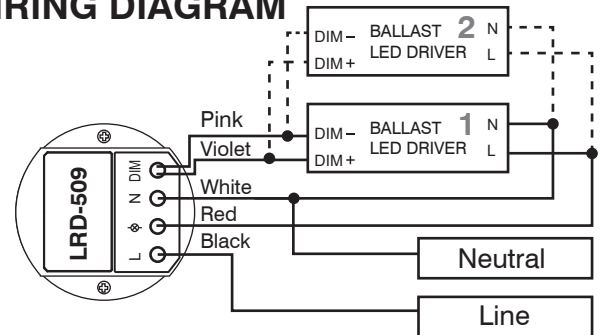


## SPECIFICATIONS

| | |
|---|---|
| Power supply | 120/277VAC, 50/60Hz |
| 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 |
| Infrared sensor | Omni-directional pyroelectric |
| Photo sensor | Digital ambient light sensor |
| HIC protection | Max. 80A for 16.7msec. |
| Dim control output | 0-10V, ±5%, isolated, max. 25mA |
| Detectable speed | 1~10 ft./sec. (0.3 ~ 3 m/sec.) |
| Mounting height | Subject to the lens type applied. |
| Detection range | Subject to the lens type and mounting height |
| Remote range | 33 ft. (10m) indoor, no backlight |
| Op. humidity | Max. 95% RH |
| Op. temperature | -40°F~158°F (-40°C~70°C) |
| Dimensions | Ø2.36"x H1.45" (Ø60 x H37mm) |