

# ON-LRD-509 series



## Line Voltage OS-NET Sensor

Flexibility ▪ Functionality ▪ Simplicity



### OVERVIEW

The ON-LRD-509 series is an OS-NET Sensor (ONS) packed with multiple sensing control functionalities including occupancy/vacancy sensing, daylight harvesting, bi-level StepDIM or continuous SmartDIM, and wireless mesh networking capability for top-notch intelligent lighting control.

The sensor not only controls the connected lighting in the programmed mode independently when it detects the presence of an occupant/vehicle or change of ambient light level, but also acts as a network node to broadcast the OS-NET command for group lighting activation wirelessly. All network setup, sensor grouping and setting; including sensing control scheme, delay times, ambient light level threshold, ramp up/fade down speed, sensitivity, burn-in duration...etc. can be configured via a 2-way handheld remote programmer from the floor.

Being a member of Omni ONS, this sensor can be flexibly integrated with an OEM luminaire, or mounted on the ceiling in a variety of options. Changeable lens options allow the sensor to be mounted at various heights with different detection patterns for all applications. With ON-LRD-509, you can effortlessly achieve energy efficient, code-compliant smart lighting control through a wireless sensor mesh network effortlessly deployed while installing the OS-NET enabled lighting.

### FEATURES

- Omni-directional digital pyroelectric infrared sensor
- Line voltage operation with wireless connectivity
- All functionalities in one and one for all controls
- 2-way IR remote programming tool for all settings
- Single device can be members of multiple groups
- Hybrid switching protects from high inrush current
- SmartDIM or high/low multi-level StepDIM control
- Exceptionally long range of remote programming
- Flexible fixture integration or ceiling mount options
- Multiple lens options allow broadest applications

### APPLICATION

#### ☒ Multiple Sensing Controls with 0-10V SmartDIM or Bi-level StepDIM

The ON-LRD-509 sensor can be flexibly integrated with OEM luminaire or mounted on the ceiling in a variety of options to provide multi-scheme occupancy/vacancy/daylight sensing, with continuous or multi-level dimming control to the connected lighting and the assigned groups via OS-NET wireless communication.

### APPLICABLE REMOTE (order separately)

Model	Description	Remarks
SRP-281	OS-NET Remote Programmer	Full functionality
URP-100	User Remote	Manual ON/OFF/DIM TIME/LUX setting

# ON-LRD-509 series

## Line Voltage OS-NET Sensor



### SENSING CONTROL SCHEMES

The ON-LRD-509 employs a top-notch digital passive infrared (PIR) sensor to detect the occupancy status within its range and control the connected light in one of the following schemes, while also transmits wireless command for lighting group activation control through mesh network. For more details of specific control, please visit [www.irtec.com](http://www.irtec.com) or contact an IR-TEC team member directly.

Mode	Status	Day*	Night*	Remarks
ON/OFF	Vacant	OFF	OFF	For non-dimmable lighting 'ALS enabled'
	Occupied	ON/OFF <sup>1</sup>	ON	
OSO	Vacant	LD	LD	LD : Low Dim, HD : High Dim SD : SmartDIM
	Occupied	SD/HD	SD/HD	
OSLA	Vacant	OFF	LD	Automatic low dim during vacant nighttime
	Occupied	SD/OFF	SD/HD	
OSLATO	Vacant	OFF	LD-OFF	Low dim during Time Off (TO) delay
	Occupied	SD/OFF	SD/HD	
DSVM	Vacant	OFF	HD-LD	Dusk - Virtual midnight : High Dim Virtual midnight - Dawn : Low Dim
	Occupied	OFF	HD-LD	
DSC	Vacant	OFF	SD/HD	Occupancy sensing is disabled, Daylight sensing control only
	Occupied	OFF	SD/HD	
VSC	Vacant	OFF	OFF	Press OS-NET Button to turn on the light, automatic shut-off
	Occupied	Manual	Manual	
OSB	Vacant	OFF	OFF/LD <sup>2</sup>	<sup>2</sup> As background lighting before the entire group area is vacant
	Occupied	OFF	SD/HD	
OFF	Vacant	OFF	OFF	Occupancy sensing enabled, but the light stays off all the time
	Occupied	OFF	OFF	

\*Day/Night: While ambient light level is higher/lower than the threshold set

**ON/OFF** : On-Off Switching    **OSO** : Occupancy Sensing Only

**OSLA** : Occupancy Sensing at Low Ambient

**OSLATO** : Occupancy Sensing at Low Ambient with Time-Off

**DSVM** : Daylight Sensing with Virtual Midnight    **DSC** : Daylight Sensing Control

**VSC** : Vacancy Sensing Control

**OSB** : Occupancy Sensing with Background    **OFF** : Light off all the time

### MOUNTING OPTIONS

The ON-LRD-509xX series can be mounted into the ceiling or integrated with an OEM luminaire. The mounting options are available by combining a specific mounting bracket from the table below. The bracket will be shipped with the device when ordered with the respective code.

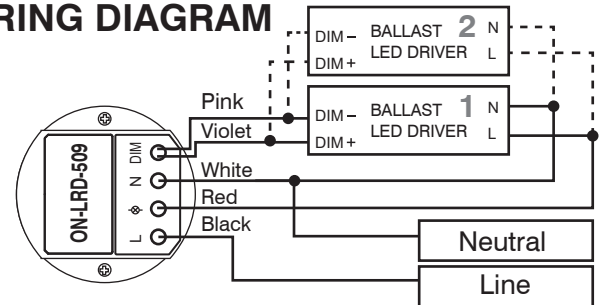
Code	Mounting Option	Mounting Bracket
<b>F</b>	Fixture Integrated	---
<b>W</b>	IP-66 Fixture Integrated	---
<b>E</b>	Fixture External	<b>EMB-500</b>
<b>P</b>	IP-66 Fixture External	<b>PMB-500</b>
<b>S</b>	Ceiling Surface	<b>SMB-500</b>
<b>C</b>	Junction Box	<b>CMB-500</b>

### LENS OPTIONS

The ON-LRD-509xX 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
<b>A</b>	Standard	Cone	8~15 ft.	2.4~4.5m	2X height
<b>B</b>	Extra wide	Cone	8~10 ft.	2.4~3.0m	6X height
<b>C</b>	High bay	Cone	15~30 ft.	4.5~9.0m	3X height
<b>D</b>	Standard	Round	8~20 ft.	2.4~6.0m	2X height
<b>F</b>	Extra wide	Dome	8~20 ft.	2.4~6.0m	4X height
<b>G</b>	Aisle way	Arch	8~40 ft.	2.4~12.0m	3X height
<b>H</b>	High bay	Dome	30~50 ft.	9.0~15.0m	1X height
<b>L</b>	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
Dim control	0-10V, ±5%, isolated, max 25mA
HIC protection	Max. 80A for 16.7msec.
Wireless protocol	Modified Zigbee Light Link (ZLL)
Radio frequency	2405~2480MHz
Number of channel	16ch
Radio range	*50/300 ft. @indoor/outdoor, open space
Radio power output	6.98dBm
Detectable speed	0.5~10 ft./sec. (0.15 ~ 3 m/sec.)
Mounting height	Subject to the lens applied
Detection range	As per lens applied and mounting height
Remote range	Typ. 33 ft (10 m), indoor with 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)

\*Actual radio range may differ depending on environmental conditions.

[www.irtec.com](http://www.irtec.com)

1-855-GO-IRTEC

DS-ON-LRD509-EN-LS\_V8 (2025-2)

**IR-TEC**  
Specializing in Building Sensors