PRODUCT BULLETIN

TRANS Occupancy Sensors with Bi-Level or Continuous Dimming Control

INTRODUCTION

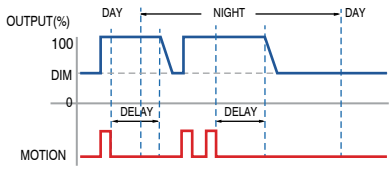
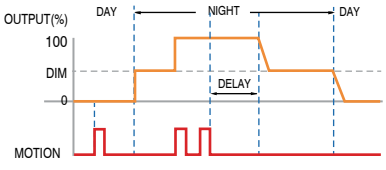
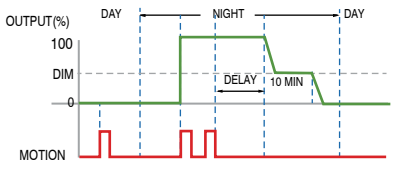
Occupancy sensor based bi-level or continuous dimming lighting control is becoming more popular due to its proven performance in energy savings, while still maintaining safe levels of light. To achieve maximum energy saving performance, selecting an occupancy sensor with dimming capabilities has become an important task for energy management professionals.

To fulfill the increasing demand for dimming control, IR-TEC offers a second-to-none wide range of occupancy sensors with multiple control modes manually selectable or remotely programmable. The following table highlights the TRANS occupancy sensors available with bi-level or continuous dimming control capabilities.

Sensor	Voltage	Output	Control	Application Notes
LOD-500S	120/277 VAC	SLV AO (0-10V)	Bi-Level	Available for lighting with 0-10V dimmable driver/ballast. Multiple control modes selectable via rotary DIP switch.
LOD-509S	120/277 VAC	SLV AO (0-10V)	SmartDIM	Available for lighting with 0-10V dimmable driver/ballast. Multiple control modes selectable via rotary DIP switch.
LRD-509S	120/277 VAC	SLV AO (0-10V)	SmartDIM	Available for lighting with 0-10V dimmable driver/ballast. Multiple control modes programmable via remote programmer.
BOA-516S	12-24 VDC	AO (0-10V)	Bi-Level	Available for lighting with 0-10V dimmable driver/ballast. Multiple control modes selectable via rotary DIP switch.
COS-516S	12-48 VDC	RDP	Bi-Level	Available for LED lighting with Constant Voltage (CV) driver. Multiple control modes selectable via rotary DIP switch.

Legends **SLV:** Switched Line Voltage **AO:** Analog Output (0-10V) **RDP:** Regulated DC Power

Following control charts indicate how the sensor will control the light under different control modes.

OSO	OSLA	OSMA	OSHA	OSLATO	OSMATO	OSHATO
						

OSO – Occupancy Sensing Only

The OSO mode can be applied in the spaces without daylight but requiring certain light level for safety, security or emergency purpose even under vacancy. Typical applications include underground parking garages, 24-hour operation warehouses, stairwells, internal public hallways...etc.

Sensor	Mode	Sensor Control Description
LOD-500S **BOA-516S** **COS-516S**	**OSO**	1. Ambient light sensing is disabled with this mode. 2. Dim the light to the low level as DIM set all time under vacancy. 3. Turn the light to full-ON per delay TIME set under occupancy.
LOD-509S	**OSO**	1. Ambient light sensing is disabled with this mode. 2. Dim the light to low-dim level at all time under vacancy. 3. SmartDIM the light to the level as DIM set per delay TIME set under occupancy.
LRD-509S	**OSO**	1. Ambient light sensing is disabled with this mode. 2. Dim the light to low-dim level at all time under vacancy. 3. SmartDIM the light to the desired level as set per delay TIME set under occupancy.

Space vacant
Light is at low-dim*

Occupant presence
Light auto ON at 100%
or SmartDIM**

Occupant leave - Delay time start
Light remains ON or SmartDIM**

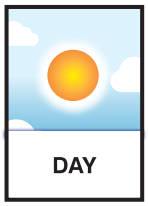
Delay time end
Light is at low-dim*

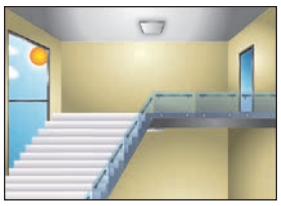
* If low dim is set at "0", the sensor will control the light as ON-OFF switching, bi-level control will be void.
** Continuous dimming control, only available with sensors featuring SmartDIM.

OSLA/OSMA/OSHA –
Occupancy Sensing at Low/Medium/High Ambient

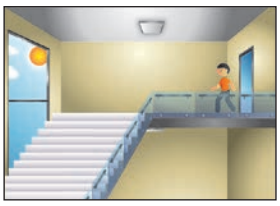
The above modes can be applied in the spaces with daylight available but requiring an automatic low level lighting when ambient light level is lower than the threshold. Typical applications include perimeter zones of parking structures, stairwells/hallways/restrooms/elevator lobbies with window…etc.

Sensor	Mode	Sensor Control Description
LOD-500S **BOA-516S** **COS-516S**	**OSLA** **OSMA** **OSHA**	1. While ambient light level is higher than 50/130/600 lux (LA/MA/HA), light stays off. 2. While ambient light level is lower than 20/80/500 lux (LA/MA/HA), dim the light to low level as DIM set under vacancy. 3. Turn the light to full-ON per delay TIME set under occupancy.
LOD-509S	**OSLA** **OSMA** **OSHA**	1. While ambient light level is higher than 50/80/130 lux (LA/MA/HA), light stays off. 2. While ambient light level is lower than 20/50/80 lux (LA/MA/HA), dim the light to low-dim level under vacancy. 3. SmartDIM the light to the level as DIM set per delay TIME set under occupancy.
LRD-509S	**OSLA**	1. While ambient light level is higher than the OFF-threshold set, light stays off. 2. While ambient light level is lower than the ON-threshold set, dim the light to low-dim level under vacancy. 3. SmartDIM the light to the desired level as set per delay TIME set under occupancy.

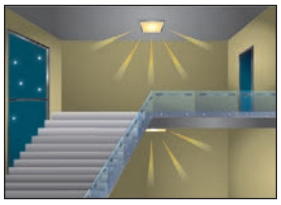




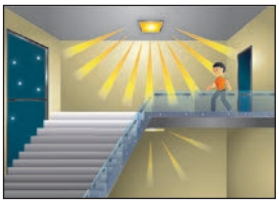
Space vacant
Light is OFF



Occupant presence
Light remains OFF

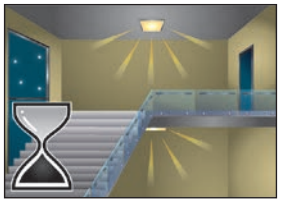


Space vacant
Light is at low-dim*



Occupant presence
Light auto ON at 100%
or SmartDIM**

Occupant leave - Delay time start
Light remains ON or SmartDIM**



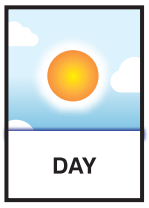
Delay time end
Light is at low-dim*

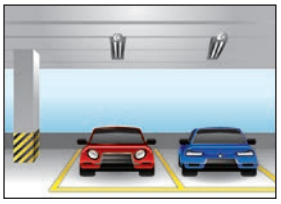
* If low dim is set at "0", the sensor will control the light as ON-OFF switching, bi-level control will be void.
** Continuous dimming control, only available with sensors featuring SmartDIM.

OSLATO/OSMATO/OSHATO –
Occupancy Sensing at Low/Medium/High Ambient with Time Off

The above modes can be used in the spaces with minor motions that the sensors may not be able to pick up all the time. The sensor provides a low level lighting to remind the occupants before shutting off the light. Typical applications include parking lots, private offices, reading/writing areas, reception rooms…etc.

Sensor	Mode	Sensor Control Description
LOD-500S **BOA-516S** **COS-516S**	**OSLATO** **OSMATO** **OSHATO**	1. While ambient light level is higher than 50/130/600 lux (LA/MA/HA), light stays off. 2. While ambient light level is lower than 20/80/500 lux (LA/MA/HA), light stays off under vacancy. Turn the light to full-ON per delay TIME set under occupancy. 3. When delay TIME elapses, dim the light to low level as DIM set for 10 minutes Time Off delay. 4. Turn the light to full-ON per delay TIME set if sensor detects occupancy during Time Off. Turn the light off if no occupancy detected during Time Off delay.
LOD-509S	**OSLATO** **OSMATO** **OSHATO**	1. While ambient light level is higher than 50/80/130 lux (LA/MA/HA), light stays off. 2. While ambient light level is lower than 20/50/80 lux (LA/MA/HA), light stays off under vacancy. SmartDIM to the level as DIM set per delay TIME under occupancy. 3. When delay TIME elapses, dim the light to low level for 10 minutes Time Off delay. 4. SmartDIM the light to the level as DIM set per delay TIME set if sensor detects occupancy during Time Off. Turn the light off if no occupancy detected during Time Off delay.
LRD-509S	**OSLATO**	1. While ambient light level is higher than the OFF-threshold, light stays off. 2. While ambient light level is lower than the ON-threshold, light stays off under vacancy. SmartDIM to high-dim level as set per delay TIME set under occupancy. 3. When delay TIME elapses, dim the light to low-dim level per Time Off delay set. 4. SmartDIM the light to high-dim level as set per delay TIME set if sensor detects occupancy during Time Off. Turn the light off if no occupancy detected during Time Off delay.





Space vacant
Light is off

Occupant presence
Light remains off

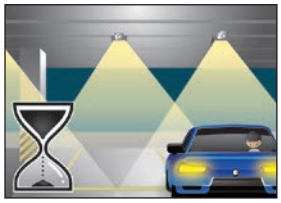
Space vacant
Light is off

Occupant presence
Light auto on at 100%
or SmartDIM**

Occupant leave - Delay time start
Light remains on or SmartDIM**

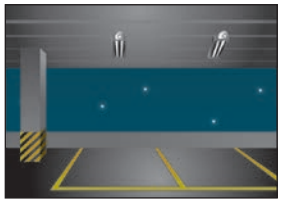
Delay time end - Time Off start
Light is at low-dim*

Occupant presence
Light auto on at 100%
or SmartDIM**



Occupant leave - Delay time start
Light remains on or SmartDIM**

Delay time end - Time Off start
Light is at low-dim*



Time Off end
Light auto off