A Simpler and Smarter

Wireless Lighting Control Solution

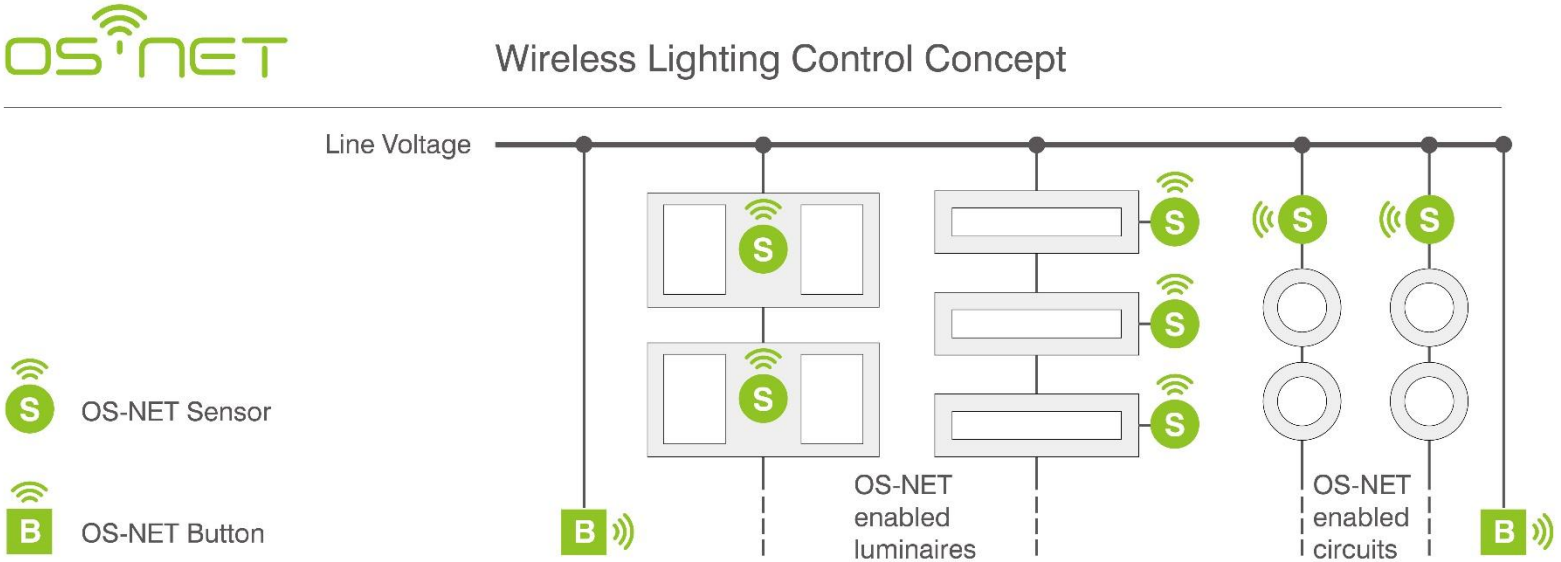
What is OS-NET ?

- An abbreviation of OccuSens Network, also an Occupancy Sensing Network
- A mesh network formed by a number of wirelessly linked occupancy sensors
- A solution packed with multiple sensing controls and networking capabilities
- A simple way for general lighting to feature smart control & IoT connectivity
- A cost effective solution for lighting industry to deliver more smart lightings

Core Concept of OS-NET

1. *Deploy an IoT-applicable mesh network through installing OS-NET enabled luminaires and lighting circuits*

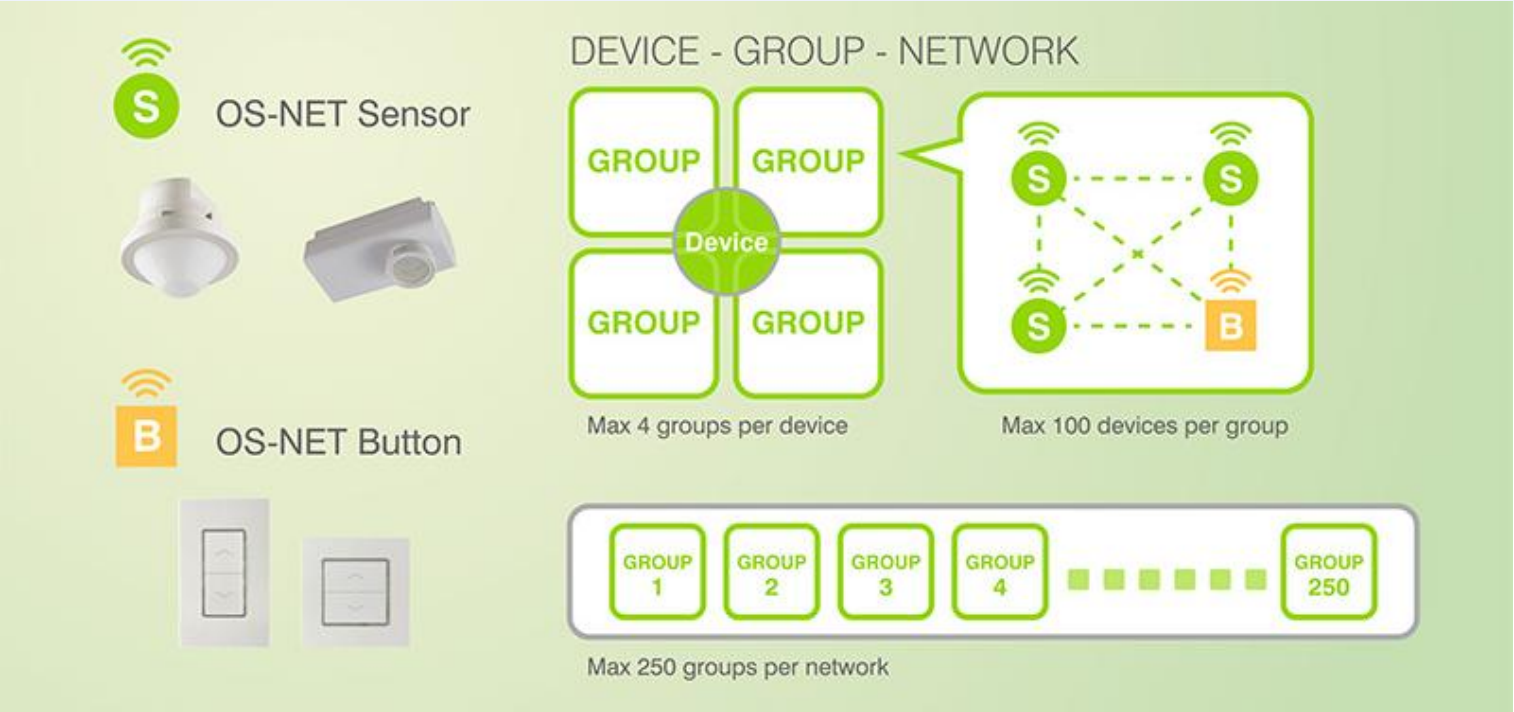
2. *Individual Sensing and Control with Group Activation*



How does OS-NET work ?

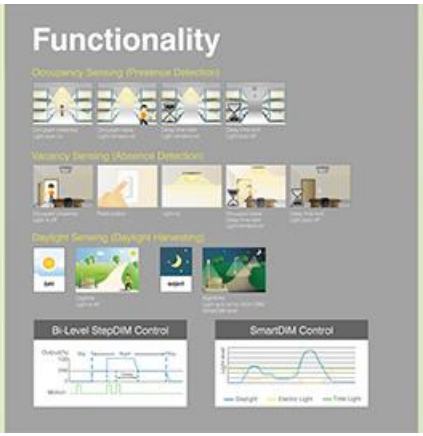
- OS-NET can be effortlessly deployed while installing the OS-NET enabled lighting system
- OS-NET is a ZigBee-based wireless mesh network formed by numerous OS-NET devices
- OS-NET is operating based on the concept “individual sensing control, group activation”

OS-NET Device – Group - Network



- Connect up to 250 control groups with each group maximum to 100 devices
- 1 device can be assigned as a member of up to 4 groups for multiple group control

Unsurpassed levels of
Flexibility, Functionality & Simplicity



- ***Flexibility:*** Multiple Mounting options for lighting fixture or circuit integration & Multiple Lens options for all lighting applications applied
- ***Functionality:*** Multi-Scheme occupancy, vacancy, and/or daylight sensing controls with on-off/bi-level StepDIM/continuous SmartDIM control by 0-10V/DALI
- ***Simplicity:*** 3 Easy Steps to achieve Smart Lighting

Unparalleled *Flexibility* of OS-NET

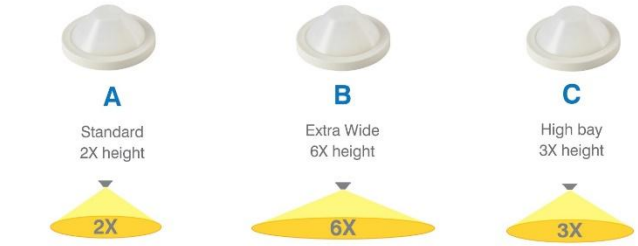
Flexibility

Flexible Mount

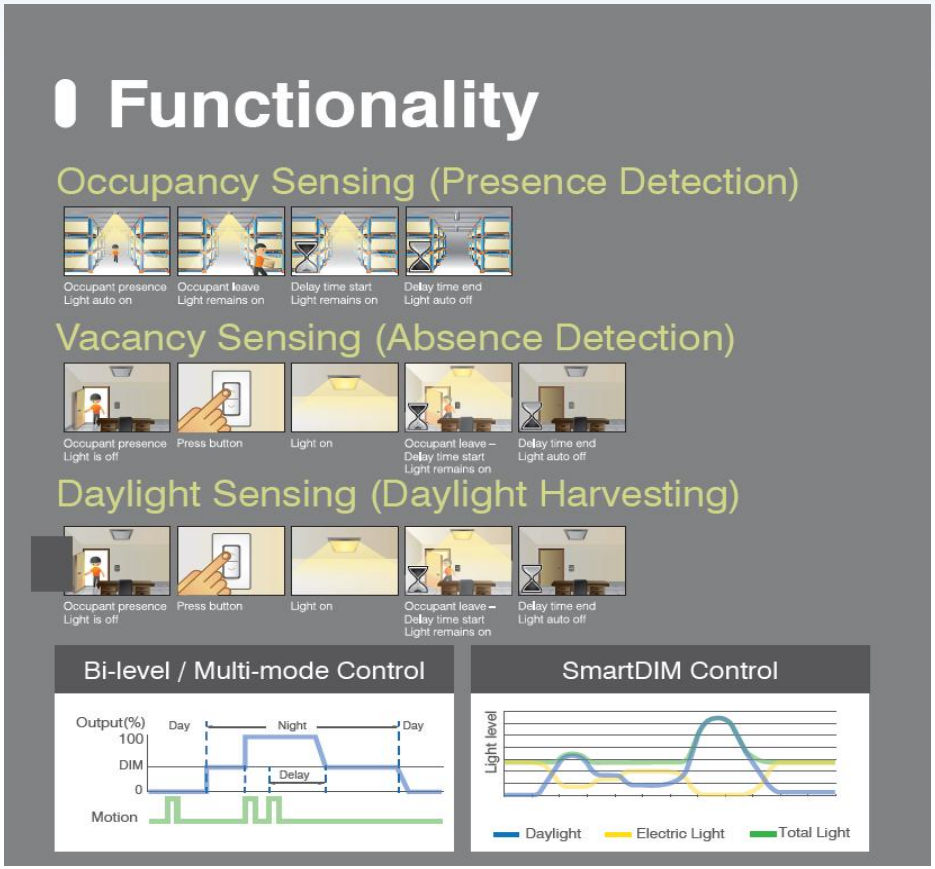
Fixture Integration

Ceiling Mount

Changeable Lens



Functionality of OS-NET



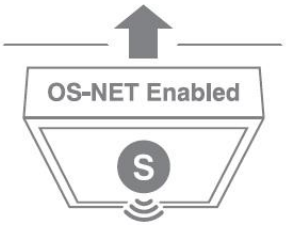
- Provide multi-scheme occupancy, vacancy and/or daylighting sensing control
- Support ON/OFF switching, Bi-Level StepDim, and SmartDim control by 0-10V/DALI

Simplicity of OS-NET

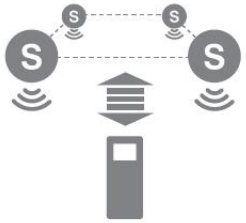
Simplicity

3 Easy Steps
to Achieve Smart Lighting

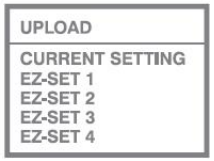
1 Install the OS-NET enabled luminaires and devices



2 Group all OS-NET devices to form the network



3 Set the desired sensing control scheme via remote



OS-NET Advantages

1. Enable smart control and IoT connectivity to every luminaire/circuit
2. Deploy the wireless mesh network while installing the lighting system
3. Widest integration and installation flexibility available in the industry
4. Require only an IR remote to setup the network/group/device control
5. A single device can be assigned as member of multiple control groups
6. Achieving sophisticated smart lighting control through simple device
7. No more exclusive PC based system management software needed
8. Available for different luminaires from different OEM manufacturers

OS-NET Devices

OS-NET Sensor (ONS)

Omni ONS

ON-LRD-509S
ON-BRD-510S
ON-MRD-510S
ON-MRD-514S

ON-LRD-609SA
ON-MRD-600SA

Model No.	Power Input	Control Output
ON-LRD-509S	120/230/277VAC	0-10V, Switched AC
ON-LRD-609SA	120/230/277VAC	0-10V, Switched AC
ON-BRD-510S	12-24VDC	0-10V, Digital Output
ON-MRD-510S	230VAC/DALI Bus	DALI Broadcast
ON-MRD-514S	DALI Bus	DALI Broadcast
ON-MRD-600SA	230VAC/DALI Bus	DALI Broadcast

- Fundamental sensing and control device of OS-NET solution.
- Contains all sensing and control functionalities with wireless connectivity.
- Can be luminaire integrated or ceiling mounted in various options.
- Interchangeable lenses offer different coverage at different mounting heights.
- All sensing, control and network settings can be done via remote programmer.
- Controls the connected lighting as programmed on an individual or group basis.

OS-NET Devices

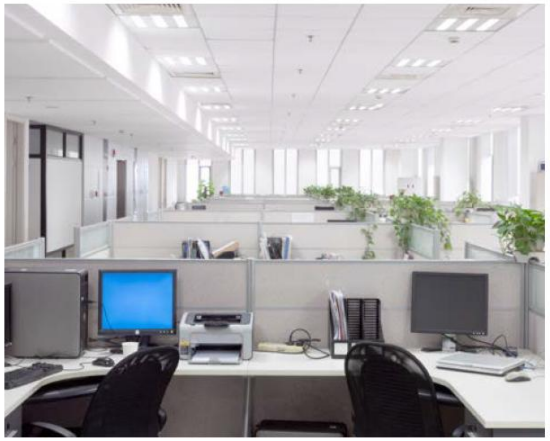
OS-NET Sensor (ONS)

Mini ONS

ON-MRD-124S

ON-MRD-210S
ON-LRD-209S

ON-MRD-200SP
ON-LRD-209SP
(IP65 rated,
Batten Mount)

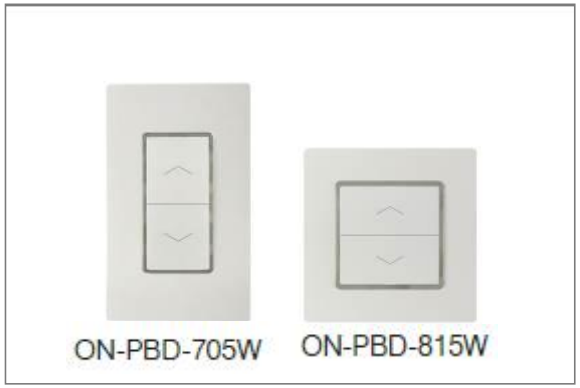


Model No.	Power Input	Control Output	Mounting
ON-MRD-124S	DALI Bus	DALI Broadcast	Luminaire integrated/ Ceiling recess mount
ON-MRD-210S	230VAC/DALI Bus	DALI Broadcast	Luminaire integrated
ON-LRD-209S	120/230/277VAC	0-10V, Switched AC	Luminaire integrated
ON-MRD-200SP	230VAC/DALI Bus	DALI Broadcast	IP65 Luminaire external (Batten Mount)
ON-LRD-209SP	120/230/277VAC	0-10V, Switched AC	IP65 Luminaire external (Batten Mount)

- Low profile OS-NET sensor with a small flat lens specially designed for office luminaire such as Troffer o side-lit LED panel light
- Same functionalitiy as Omin ONS
- Fixture integartion only
- Lens is not changeable

OS-NET Devices

OS-NET Button (ONB)



- Optional device of OS-NET solution.
- Designed to replace the existing wall switch.
- Provide manual control (on/off/dim) to the lighting of group assigned.
- Powered by general 120/230VAC/277V AC mains.
- Available for mounting into NEMA and EURO wall boxes.

Model No.	Power Input	Mounting
ON-PBD-705W	120-277VAC	NEMA
ON-PBD-815W	230VAC	EURO

OS-NET Programming Remote

OS-NET Remote

SRP-281

SRP-281 is a universal programming tool for configuring an entire OS-NET enable lghting system

- Network build-up
- OS-NET devices grouping setting
- Sensor control scheme and parameters setting

Sensing Control Schemes

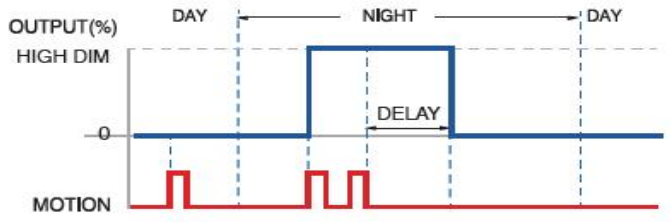
The following schemes are what IR-TEC sensors have to offer to satisfy today's lighting control needs.

OOS - On/Off Switching
OSO - Occupancy Sensing Only
OSLA/OSMA/OSHA - Occupancy Sensing at Low/Medium/High Ambient Light
OSLATO/OSMATO/OSHATO - Occupancy Sensing at Low/Medium/High Ambient Light with Time Off
OSB - Occupancy Sensing with Background Lighting
VSC - Vacancy Sensing Control
DSC - Daylight Sensing Control
DSVM - Daylight Sensing with Virtual Midnight

Sensing Control Schemes

OOS – On/Off Switching

This is a typical occupancy sensing control scheme, which is applicable in all types of area. The OOS mode can be applied in the spaces with or without daylight available.

Sensor Control Description	Control Chart
Lighting will be inhibited when the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, the controlled light will be turned on to HIGH DIM level or SmartDIM automatically once the sensor detects the presence of occupant, and turned off after the delay time elapsed.	

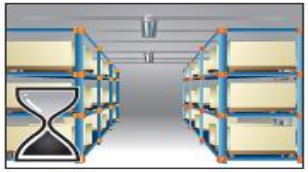
Space vacant
Light is off

Occupant presence
Light remains off

Space vacant
Light is off

Occupant presence
Light auto on to HIGH DIM/
SmartDIM**

Occupant leave - Delay time start
Light remains at HIGH DIM/
SmartDIM**

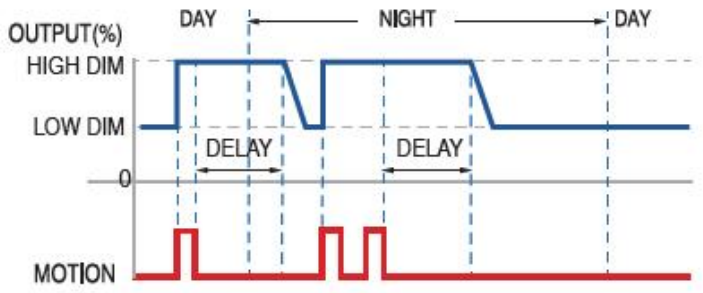


Delay time end
Light auto off

Sensing Control Schemes

OSO – Occupancy Sensing Only

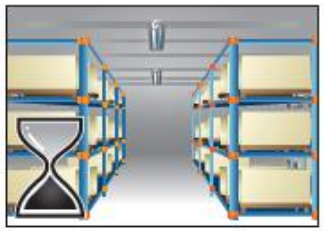
The OSO mode can be applied in the spaces without daylight but requiring certain light level for safety, security or emergency purpose even under vacancy. Typical applications include underground parking garages, 24-hour operation warehouses, stairwells, internal public hallways…etc..

Sensor Control Description	Control Chart
When space is vacant, the lights will be maintained at LOW DIM level. Whenever space is occupied, lighting output will be increased to HIGH DIM level or continuously regulated to maintain within the pre-set range by SmartDIM control.	

Space vacant
Light is at LOW DIM*

Occupant presence
Light auto on to HIGH DIM/
SmartDIM**

Occupant leave - Delay time start
Light remains at HIGH DIM/
SmartDIM**

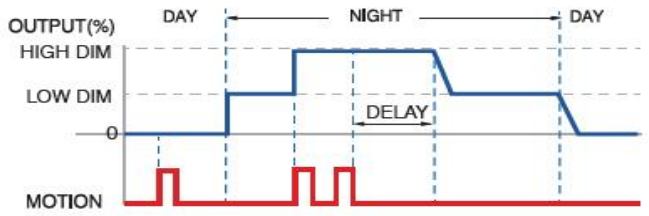


Delay time end
Light is at LOW DIM*

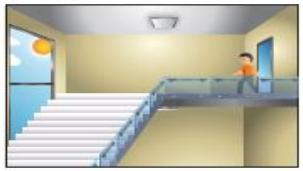
Sensing Control Schemes

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

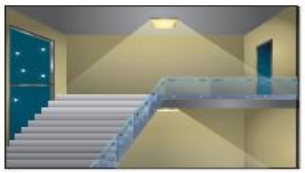
The OSLA/OSMA/OSHA control scheme can be applied in the spaces with daylight available but requiring an automatic low level lighting when ambient light level is lower than the threshold. Typical applications include perimeter zones of parking structures, stairwells/hallways/restrooms/elevator lobbies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

Sensor Control Description	Control Chart
Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, the sensor will automatically control the light at LOW DIM level. When sensor detects the presence of an occupant, lighting output will be increased to the HIGH DIM level or continuously regulated within the pre-set range by SmartDIM control. After the delay time elapsed, lighting output will be reduced to LOW DIM level or shut off if the ambient light is higher than the set threshold.	

Space vacant
Light is off



Occupant presence
Light remains off



Space vacant
Light is at LOW DIM*

Occupant presence
Light auto on to HIGH DIM/
SmartDIM**

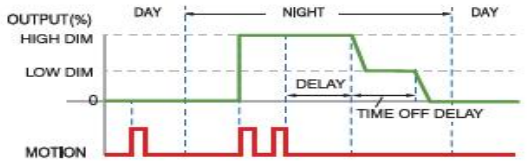
Occupant leave - Delay time start
Light remains at HIGH DIM/
SmartDIM**

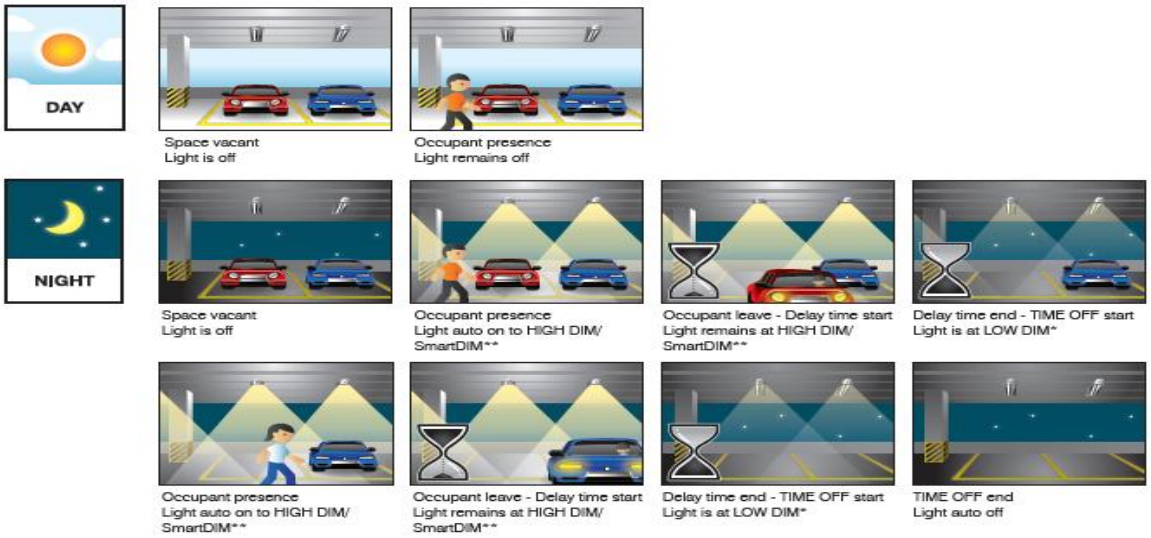
Delay time end
Light is at LOW DIM*

Sensing Control Schemes

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

The OSLATO/OSMATO/OSHATO control scheme 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..

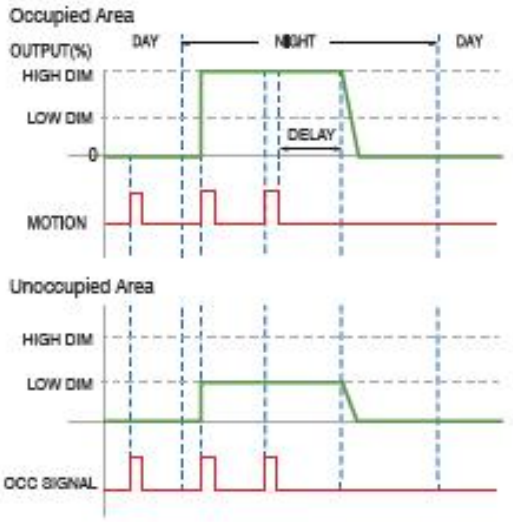
Sensor Control Description	Control Chart
Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, and any sensor detects the presence of occupant, lighting output will be increased to HIGH DIM level or continuously regulated to maintain overall lighting level within the pre-set range by SmartDIM control. After the delay time elapsed, lighting output will be reduced to Low Dim level for a period of TIME OFF delay before shut off.	

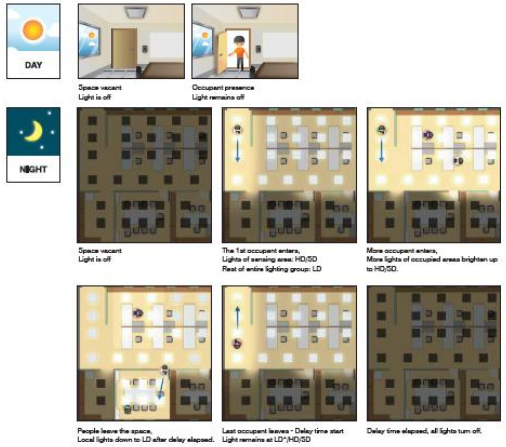


Sensing Control Schemes

OSB – Occupancy Sensing with Background Lighting

This is an advanced occupancy sensing control scheme that is suitable for open offices to provide background light level before the area of entire lighting group is vacant. This control scheme is only available with OS-NET devices.

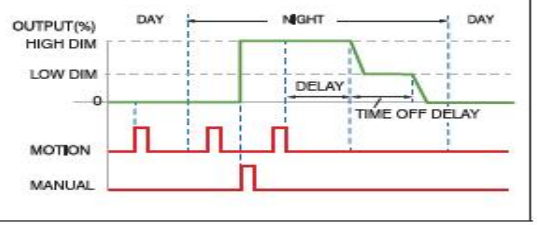
Sensor Control Description	Control Chart
Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold and the first occupant is detected by a grouped sensor, the output of sensor connected light will be increased to HIGH DIM level or continuously regulated within the pre-set range by SmartDIM control during occupancy, and the unoccupied areas of entire lighting group will brighten up to Low Dim level as background light. The entire lighting group turns off after the last person leaves and delay time elapsed.	



Sensing Control Schemes

VSC – Vacancy Sensing Control

The VSC is a vacancy sensing control scheme suitable for spaces that require users to manually turn on the light, and have the sensor turn off the light automatically. This control scheme is only available OS-NET devices.

Sensor Control Description	Control Chart
The occupant would have to press the OS-NET Button to turn on the lighting group assigned. The sensor will control the lights at HIGH DIM level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control. The sensor will control the connected lighting as per OSLATO.	


Space vacant
Light is off


Occupant presence
Light remains off


Press button
Light manual on to HIGH DIM/
SmartDIM**


Occupant leave - Delay time start
Light remains at HIGH DIM/
SmartDIM**


Delay time end - TIME OFF start
Light is at LOW DIM*


TIME OFF end
Light auto off


Press button
Light manual off


Occupant leave
Light remains off

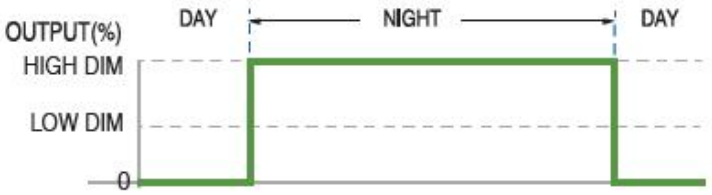

Next occupancy
Light remain off


Press button
Light manual on to HIGH DIM/
SmartDIM**

Sensing Control Schemes

DSC – Daylight Sensing Control

The DSC is a daylight sensing control scheme suitable for spaces that require automatic lighting whenever the ambient light is lower than the set threshold.

Sensor Control Description	Control Chart
The sensor will automatically turn on the light to HIGH DIM level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control when the ambient light level is lower than the set threshold, and automatically turn off the light when the ambient light level is higher than the set threshold.	

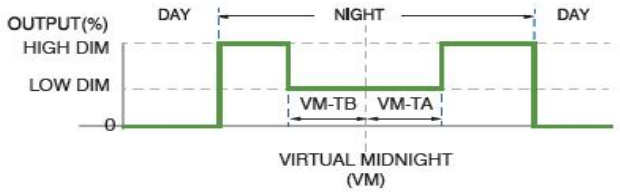
Light is off

Light auto on to HIGH DIM/ SmartDIM**

Sensing Control Schemes

DSVM – Daylight Sensing with Virtual Midnight

The DSVM is a daylight sensing control scheme suitable for outdoor spaces that require automatically dimming the light to a low level between a certain time before and after virtual midnight to achieve more energy savings.

Sensor Control Description	Control Chart
Lighting will be inhibited if the ambient light level is higher than the set threshold. When the ambient light level is lower than the set threshold, the sensor will turn the light to HIGH DIM level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control. Lighting output will be reduced to LOW DIM level from a certain time before virtual midnight to a certain time after.	

Light is off

Light auto on to HIGH DIM/ SmartDIM**

Light auto decrease to LOW DIM from a set time before midnight (VM-TB) to a set time after midnight (VM-TA)

Light auto increase to HIGH DIM/ SmartDIM** from VM-TA to daytime


Q&A