



Smart Lighting Control Solutions





Celebrating 40 years of Excellence

It has never been easy for a business to survive 40 years in treacherous market competition. Fortunately, IR-TEC could have such privilege to celebrate reaching this remarkable milestone with our sincere gratitude to our hard working staffs and supportive customers.

Herewith we are very pleased to present our latest IR-TEC Product Selection Guide for your information. Selecting the right products for smart lighting control can be challenging as different applications may require different product combinations. Therefore, we created this guide to try helping luminaire designers, lighting consultants, and system designers quickly select the right products for the ever-changing smart lighting requirements.

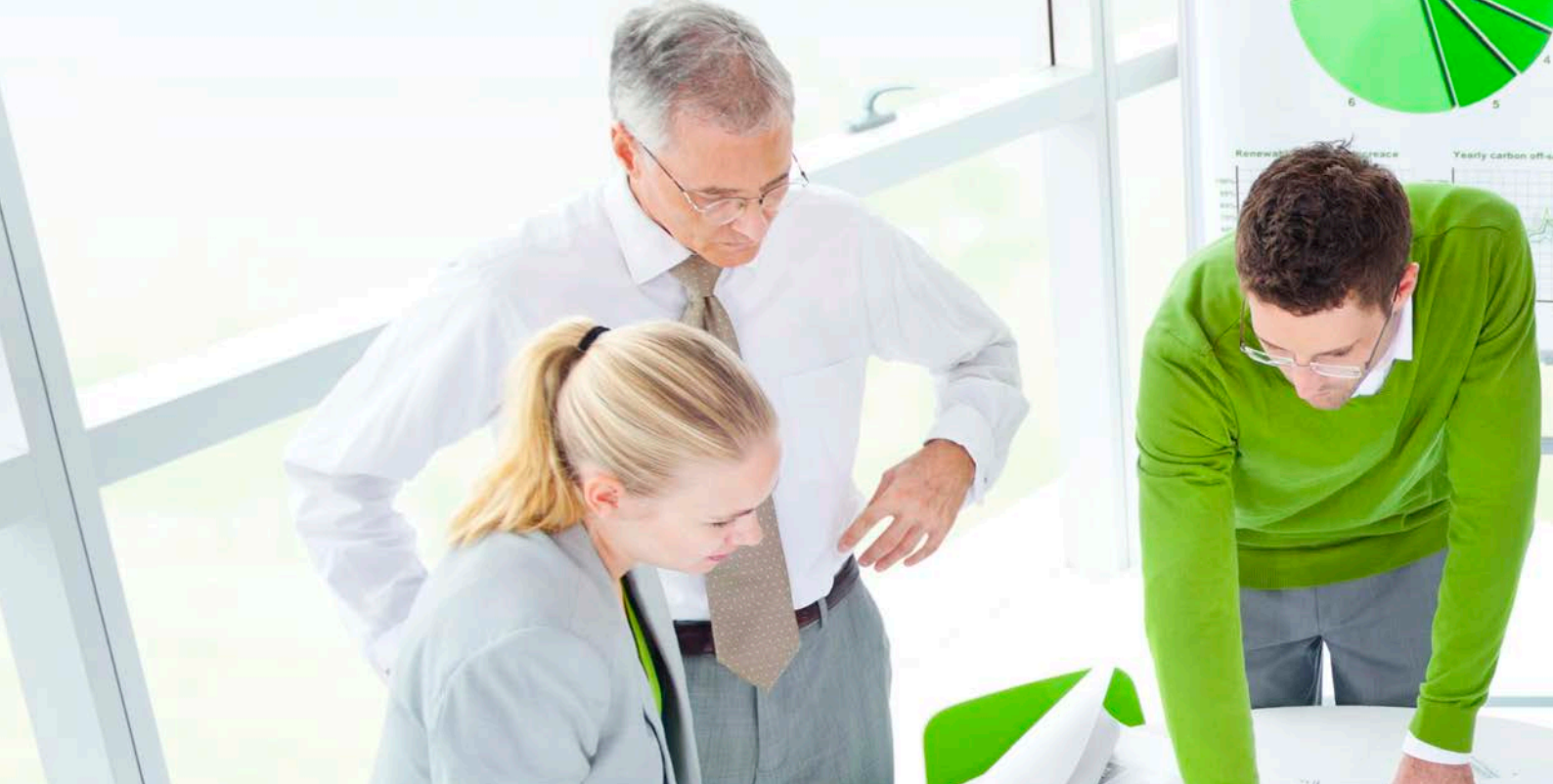
As usual, we categorized IR-TEC products into Network and Standalone Control Solutions. The section of Network Control Solution introduces system concept and devices of OS-NET, a simpler and smarter wireless lighting control solution featuring unsurpassed level of Flexibility, Functionality, and Simplicity. The section of Standalone Control Solution introduces a wide variety of occupancy and daylight sensors designed for general lighting controls of commercial and industrial environments.

All IR-TEC products are designed, manufactured, and tested by a professional team under a well-maintained ISO-9001 Quality Management System in a state-of-the-art ISO-14001 certified manufacturing facility in Taiwan. We cordially invite you to experience supreme product quality and service from IR-TEC, the premier specialist in building sensors with 40 years of excellence.

IR-TEC International Ltd.

A stylized, handwritten signature in black ink, appearing to read 'A.H.' with a flourish.

Andy Huang
Business Development Director



Enable Smart Lighting with Ease

Smart lighting control requires different sensor and control strategies to meet versatile requirements from facility management, users, and local authorities.

IR-TEC offers a wide range of sensor and control solutions with occupancy, vacancy, and daylight sensing control functionalities for providing automatic on/off, 0-10V or DALI dimming control. Whether for network or standalone control through OEM luminaire, lighting circuit or BMS integration, you can always count on IR-TEC products to enable smart lighting with ease.



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A Simpler and Smarter Wireless Lighting Control Solution



OS-NET is a truly innovative wireless occupancy sensing network solution sole developed by IR-TEC for lighting industry to enable smart lighting control with unsurpassed level of Flexibility, Functionality and Simplicity.

By simply installing the luminaires and/or lighting circuits integrated with OS-NET Sensors featuring multiple sensing control functionalities and wireless mesh networking capability, a wireless mesh network can be effortlessly deployed to enable sophisticated smart lighting control for commercial and industrial applications.

With easy and intuitive setting via a handheld remote programmer, all OS-NET devices can be programmed to execute smart sensing control on the connected lighting in an individual or group basis. If necessary, the installed OS-NET enabled lighting can be easily re-configured to provide different control or re-assigned to a new group by some simple remote operation.

OS-NET is not only a simple solution for OEM manufacturers to enable their luminaires with smart sensor control and wireless mesh network connectivity embedded, but also a cost effective solution to renovate the legacy lighting with energy efficient LED lighting featuring intelligent control.



All controls in one and one for all applications

Each OS-NET Sensor is packed with multiple sensing and control functionalities for fulfilling different control requirements. Specific control scheme can be easily set to provide sophisticated control for all networked luminaires without requiring complex wiring and complicated commissioning.

Deploy a wireless mesh network effortlessly

A ZigBee based wireless mesh network can be effortlessly deployed while installing the OS-NET enabled luminaires and lighting system within commercial and industrial environments. Establishing a wireless mesh network throughout the entire building can never be so easy.

Flexible fixture integration and mounting options

OS-NET Sensor can be flexibly integrated with OEM luminaires or mounted on the ceiling with multiple options. The unparalleled integration flexibility allows installing the OS-NET enabled lighting system in the same way as the conventional luminaires and occupancy sensors.

Single device can be assigned to multiple groups

A single OS-NET device can be assigned to be member of up to four groups. This feature allows multiple lighting groups to be activated simultaneously by the sensor located at the spot with multi-directional traffics. Advanced control setting enables pre-lighting or directional lighting.

Individual sensing control with group activation

When a grouped OS-NET Sensor detects the presence of occupant, it not only controls the connected luminaires as per scheme set, but also broadcasts occupancy status to other OS-NET Sensors of the group to activate the programmed controls respectively.

Hybrid Switching protects from inrush current

An advanced Hybrid Switching technology is employed to protect every OS-NET sensor from being damaged by high inrush current while switching on the LED driver. With Hybrid Switching technology, the service lifetime of OS-NET load switching device is thus guaranteed.

SmartDIM constant lighting control technology

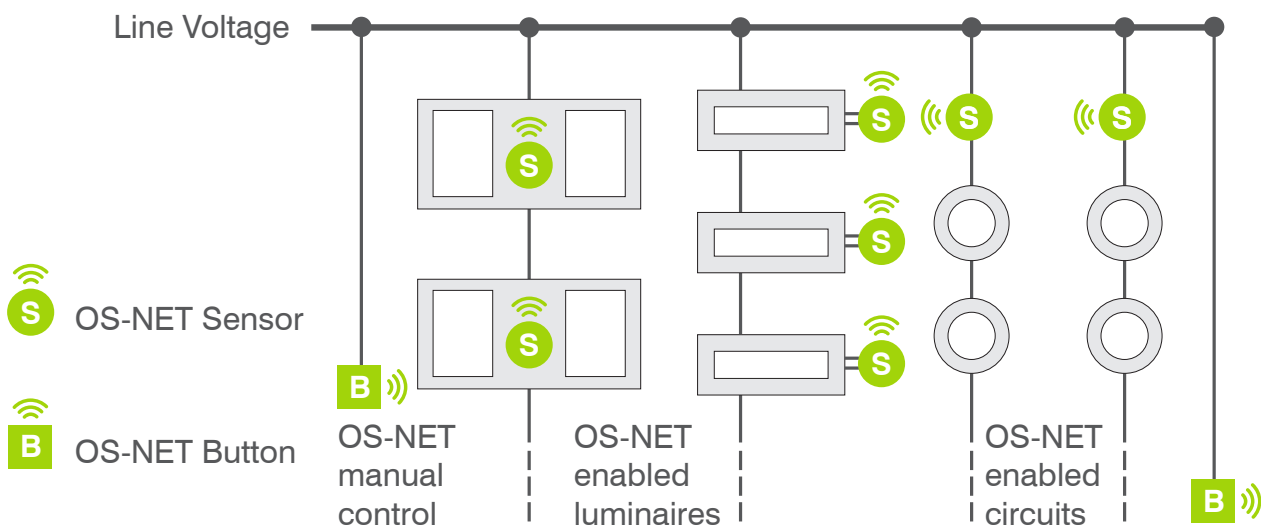
SmartDIM control can be individually programmed to achieve constant lighting. This advanced dimming control technology will continuously adjust the lighting output to maintain the overall lighting level within a preset range based on the occupancy status and ambient light level.

Easy and intuitive IR remote programming tool

Unlike many other network control solutions, OS-NET does not require any proprietary management software, operating APP or additional hardware to operate. All you need is just a 2-way IR remote handset to group the devices and link to the network, set the control scheme and parameters.



Decentralized Wireless Lighting Control



OS-NET Devices

An OS-NET system is formed by various types of OS-NET devices. Each OS-NET device not only provides its distinctive functionalities, but also operates as a node of wireless network to transmit, receive, and/or forward commands to other nodes. OS-NET devices mainly include OS-NET Sensors with different form factors for various applications and OS-NET Buttons for mounting into different type of wall boxes.

OS-NET Sensors					
M1	M2	M2P	T5	A6	Z7

OS-NET Buttons		
EURO	NEMA	

OS-NET Sensors

The OS-NET Sensors (ONS) are fundamental network devices of an OS-NET system. Each ONS is packed with multiple sensing and control functionalities, including occupancy/vacancy sensing, ambient light sensing, 0-10V or DALI control output, and wireless mesh networking capabilities required to achieve sophisticated smart lighting control. Followings are brief introductions of ONS with different form factors, detailed product information are available at www.irtec.com.

M1 ONS

The ONS with M1 form factor housing is a remote OS-NET Sensor unit designed for integrating with office luminaire or recess mounting on the ceiling via a 25mm (1") look down hole. Through plug-in connection with different power pack controllers, you can easily enable typical LED panel lighting or troffer luminaires powered by DALI/0-10V or typical LED driver with state-of-the-art wireless smart control capability.

M1 OS-NET Sensor

Model	Power Input	Control Output	Mounting
ON-MRD-124S	DALI bus	DALI	Luminair integrated, Ceiling recess mount



Power Pack Controller

Model	Power Input	Control Output	Remarks
PPU-100DP	240VAC	DALI	Manual control input available
PPU-109DA	240VAC	DALI, 0-10V, Switched live	



M2 ONS

The ONS with M2 form factor housing is a compact OS-NET Sensor designed for integrating with general commercial luminaire via a 25mm (1") look down hole.

Model	Power Input	Control Output	Mounting
ON-LRD-209S	120/230/277VAC	0-10V, Switched live	Luminaire integrated
ON-MRD-210S	230VAC/DALI bus	DALI	



M2P ONS

The ONS with M2P form factor housing is a compact OS-NET Sensor designed for assembly with general linear luminaires via a 1/2" knockout hole on the end cap.

Model	Power Input	Control Output	Mounting
ON-LRD-209SP	120/230/277VAC	0-10V, Switched live	1/2" knockout hole
ON-MRD-200SP	230VAC/DALI bus	DALI	



T5 ONS

The ONS with T5 form factor housing offers second-to-none flexibility for OEM luminaire integration and ceiling installation with multiple mounting and lens options.

Model	Power Input	Control Output	Mount	Lens
ON-BRD-510S	12-24VDC	0-10V, Digital output	F/W/E/P/S/C/R/L	A/B/C/D/F/G/H/L
ON-LRD-509S	120/230/277VAC	0-10V, Switched live		
ON-MRD-510S	230VAC/DALI bus	DALI		
ON-MRD-514S	DALI bus	DALI		



A6 ONS

The ONS with A6 form factor housing is an IP66 OS-NET Sensor designed for attaching to circular high bay luminaires and enabling with smart control capability. Multiple lens options are available for providing distinctive detection coverage.

Model	Power Input	Control Output	Mount	Lens
ON-LRD-609S	120/230/277VAC	0-10V, Switched live	A	A/B/C/D/F/G/H/L
ON-MRD-600S	230VAC/DALI bus	DALI		



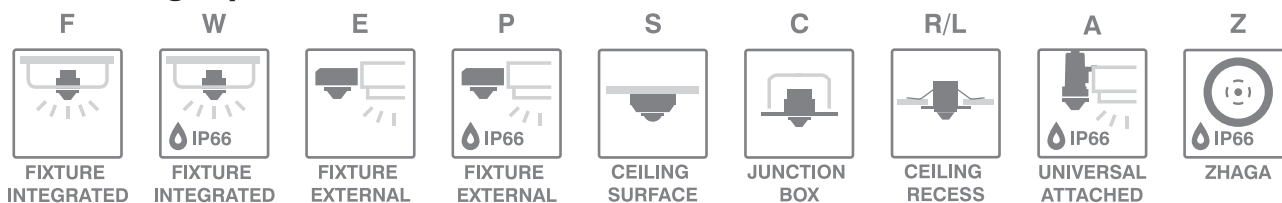
Z7 ONS

The ONS with Z7 form factor housing is an IP66 OS-NET Sensor designed for outdoor luminaire with Zhaga Book 18 socket. Multiple lens options are available for providing distinctive detection coverage at different mounting heights.

Model	Power Input	Control Output	Mount	Lens
ON-MRD-734S	Aux (+24V)	DALI	Z	A/B/C/D/F/G/H/L



Mounting Options



Lens Options



OS-NET Buttons

The OS-NET Buttons are optional network devices designed for providing manual on-off and/or dimming control to the associated lighting groups.

Available in two form factors for different wall boxes; the ON-PBD-815W is for mounting into standard EURO type wall box, the ON-PBD-70xW is for mounting into standard NEMA wall box.



ON-PBD-815W



ON-PBD-705W



ON-PBD-708W

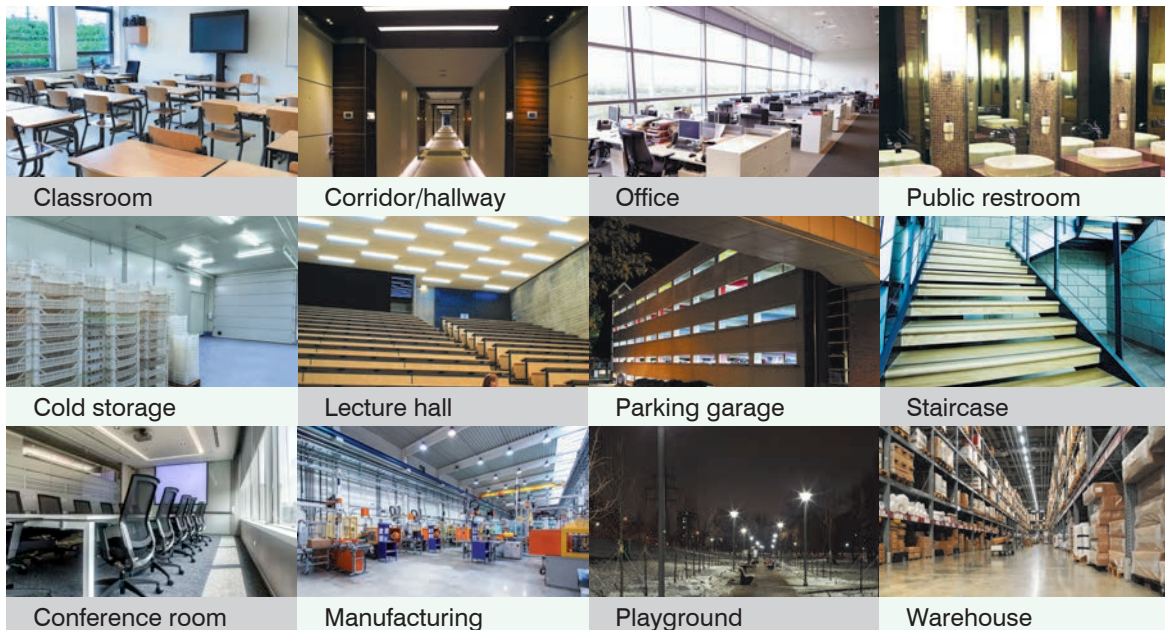
Model No.	Channel	Power Input	Mounting
ON-PBD-815W	1	230VAC	EURO wall box
ON-PBD-705W	1	120-277VAC	NEMA wall box
ON-PBD-708W	4	120-277VAC	NEMA wall box

OS-NET Remote

The SRP-281 is a universal programming tool for configuring an entire OS-NET enabled lighting system, including network build-up, devices grouping and linking to the network, setting sensor control scheme and parameters, and all other management associated tasks.





OS-NET Applications



Mounting Options

The OS-NET Sensors are designed for integrating with OEM luminaires and/or mounting on the ceiling for sensing presence, controlling light while also operating as network nodes. Following table highlights mounting brackets and accessories available for the OS-NET Sensors with T5 form factor. Detailed information is available on the mounting datasheet from www.irtec.com.

Mounting option	Code	Bracket #	Appearance	Application Description
Fixture Integrated	F	---		F-mount is the original form factor of T5 ONS for integrating with OEM luminaire through a 2" hole or mounting on ceiling with different brackets.
IP66 Fixture Integrated	W	---		W-mount is the original form factor of T5 ONS for IP66 fixture integration through a 51mm (2") hole or with a PMB-500.
Fixture External	E	EMB-500		The EMB-500 is a bracket for mounting the F-mount T5 ONS with indoor luminaire through a 1/2" hole.
IP66 Fixture External	P	PMB-500		The PMB-500 is a bracket for mounting the W-mount T5 ONS with IP66 luminaire through a 1/2" hole.
Ceiling Surface	S	SMB-500		The SMB-500 is a bracket for mounting the F-mount T5 ONS on the surface of luminaire and hard lid ceiling with or without junction box.
Junction Box	C	CMB-500		The CMB-500 is a bracket for mounting the F-mount T5 ONS with an octagonal or square junction box.
Ceiling Recess	R	RMB-500		The RMB-500 is a bracket for recess mounting the low voltage T5 ONS through a 70mm hole.
Ceiling Recess	L	LMB-500		The LMB-500 is a bracket for recess mounting the F-mount T5 ONS through a 70mm hole with a tool removable back cover for cable connection.

Accessories

Following accessories can be applied to extend or change sensor position for the OS-NET Sensor with E/P mount.

EJ-30F

30 mm extension joint



EJ-50F

50 mm extension joint






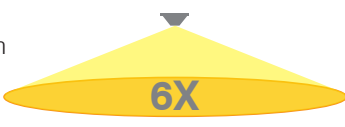











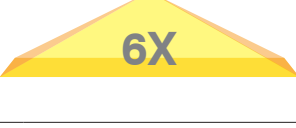
EL-40F

40 mm elbow joint



Lens Options

Every PIR sensor requires an optical lens to collect infrared energy emitted from human/vehicle. Lenses with different Fresnel segment designs provide different detection patterns and for different mounting heights. Following lenses are available for the OS-NET Sensors with T5, A6, and Z7 form factors. For more details, please refer the lens datasheet available from www.irtec.com.

Code	Lens	Coverage & Mounting Height	Feature and Application Notes
A	 Cone	2.4~4.5 m (8~15 ft) 	Lens A is a standard lens with 2X height coverage. It can be used to cover small to medium areas with major and walking motions.
B	 Cone	2.4~3.0 m (8~10 ft) 	Lens B is a wide angel lens with 6X mounting height coverage. It provides good detection to the major motions across the detection zones.
C	 Cone	4.5~9.0 m (15~30 ft) 	Lens C is a high bay lens with coverage up to 3X mounting height for using at warehouse or area up to 9m high.
D	 Round flat	2.4~6.0 m (8~20 ft) 	Lens D is a flat round lens with 2X height coverage. This lens provides better minor motion detection for using at office areas.
F	 Dome	2.4~6.0 m (8~20 ft) 	Lens F is a wide-angle lens with 4X height coverage ideal for general application. It has good picking up for major and minor motions.
G	 Arch	2.4~12.0 m (8~40 ft) 	Lens G is a universal aisle way lens with 3X height coverage ideal for aisle way detection. This lens can be rotated to align with the direction of aisle.
H	 Dome	9.0~15.0 m (30~50 ft) 	Lens H is a high bay lens with 1X height coverage. This diamond cut lens is specially designed for high bay application.
L	 Arch	2.4~3.0 m (8~10 ft) 	Lens L is a wide-angle lens with 6X height coverage designed for long corridor. This lens can be rotated to align with the direction of corridor.

NOTES

- Coverage data is based on walking across the detection zones at 25°C. Higher temperature or walking toward the sensor will result in smaller coverage.
- Mounting heights are recommended for obtaining optimal detection. Using at higher or lower is possible.
- Lens C/G/H may be used up to 12/15/18 m at the areas with motions of large objects, such as forklift or trucks. To use the sensor higher than the recommended maximum height, please first ensure that the sensor with specific lens can pick up the motion at desired mounting height.
- Lens G/L are not IP66 rated.

Standalone Control Solution

In addition to the state-of-the-art network control solution, IR-TEC also offers a wide range of occupancy, vacancy and daylight sensors for standalone lighting control of commercial and industrial environments.

Occupancy/Vacancy Sensors

Occupancy/vacancy sensors deliver maximum energy savings through automatically turning off or dimming the lights to a lower level at where and when lighting is not needed. IR-TEC offers a wide range of sensors with different form factors and functionalities for commercial and industrial lighting controls.

TRANS Occupancy Sensors

p 12



TRANS Vacancy Sensors

p 14



Luminaire Internal Occupancy Sensors

p 18



HVAC/BMS Control Occupancy Sensors p 20**Under Cabinet Occupancy Sensors** p 21

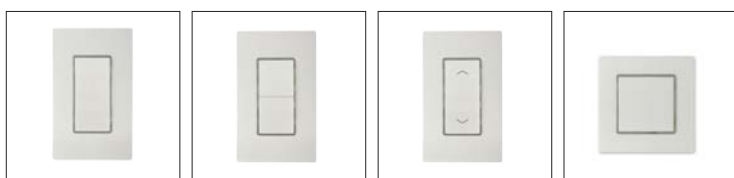
Daylight Sensors

IR-TEC offers numerous types of daylight sensors for controlling the lights by measuring the ambient light level. You can find the sensor not only for typical on/off switching, but also with SmartDIM capability via 0-10V control output.

TRANS Daylight Sensors p 22

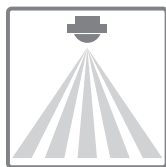
Power Pack Controller & Push Button

In addition to a wide range of sensor selection, IR-TEC also offers power packs and push buttons for achieving high level smart control while still maintaining occupant's comfort and controllability.

Power Pack Controllers p 24**Push Buttons** p 25

TRANS Occupancy Sensors

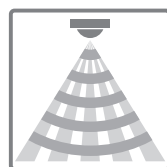
Originated from a second-to-none design concept “Interchangeable EMO”, IR-TEC has created numerous members to its TRANS sensor family. Today, TRANS occupancy sensors are available with various sensing technologies (PIR/HFD/DUO), distinctive electrical characteristics, versatile control functionalities, multiple mounting options, and different form factors for your selection.



TRANS-PIR



TRANS-HFD



TRANS-DUO

TRANS-PIR Occupancy Sensors

Passive Infrared (PIR) is the most popular and widely used occupancy sensing technology in the market. PIR sensor senses the presence and motions of occupant by detecting the change of infrared energy emitted from warm object (ex. human body or vehicle) in motion.

Every PIR sensor requires an optical lens, generally a plastic part with multiple segments called Fresnel lens, to collect the infrared energy to the sensing component. A Fresnel lens divides the detection coverage into multiple zones corresponding to the respective segments of concentric circles. Thus, lenses with different segments provide different detection patterns. In general, PIR sensor is more sensitive to the movements across the detection zones than toward the sensor. The closer the occupant is to the sensor, the better detection to the motion.

TRANS-PIR sensors with T5 form factor are renowned with multiple mounting and lens options. The sensors with M3, T5, A6, and Z7 form factors all feature multiple lens options. Page 16-17 highlight details of available mounting and lens options of specific sensor.

By means of control setting, TRANS-PIR sensors are available with “manual” and “remote” types. A universal 2-way IR remote programmer (SRP-280) and a slim-card remote (URP-100) can be used to configure most sensors modeled with the 2nd letter **R**. The sensors modeled with 2nd letter **B** are Bluetooth enabled, which can be wirelessly configured via the IR-TEC Sensor Config app available from App Store (iOS) or Google Play (Android).



M1 sensor



M2/M2P sensor



M3/M3P sensor



T5 sensor



A6 sensor



Z7 sensor



Remote



APP



TRANS-HFD Occupancy Sensors

High Frequency Doppler (HFD) sensing technology is different from Passive Infrared, it senses the presence and motions of occupant by detecting the frequency shift bouncing back from a moving object. HFD sensor provides better minor motion detection without requiring an unobstructed line-of-sight placement like PIR. TRANS-HFD occupancy sensor employs an advanced HFD radar module operating with very high frequency radio waves, thus making it suitable for applications like office with partitions, library with cubicles or restroom with stalls. All TRANS-HFD occupancy sensors are available with multiple mounting options.







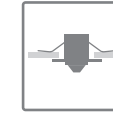




TRANS-DUO Occupancy Sensors







As no any single occupancy sensing technology is perfect, thus we created TRANS-DUO occupancy sensor to provide better reliability and performance by combining PIR and HFD sensing technologies into a low profile sensor housing. By utilizing the advantages of each single sensing technology with advanced processing logic from TRANS-PIR and TRANS-HFD sensors, TRANS-DUO occupancy sensor is ideal for most applications, as it not only provides superior sensing performance, but also greatly reduces the possibility of false activating caused by environmental interferences. TRANS-DUO occupancy sensor can be ordered to supply with specific lens to provide different PIR detection coverage.



Mounting Options

F	W	E	P	S	C	R/L	A	Z
								
FIXTURE INTEGRATED	FIXTURE INTEGRATED IP66	FIXTURE EXTERNAL	FIXTURE EXTERNAL IP66	CEILING SURFACE	JUNCTION BOX	CEILING RECESS	UNIVERSAL ATTACHED IP66	ZHAGA IP66

Lens Options

A	B	C	D	F	G	H	L
							
STANDARD 2X	EXTRA WIDE 6X	HIGH BAY 3X	STANDARD 2X	EXTRA WIDE 4X	AISLE WAY 3X	HIGH BAY 1X	LONG AISLE 6X



Remote setting sensors

Model No.	Tech	Control	Power	Output	HS	Dimming	Setting	Application	Appearance
MRD-124S	PIR ALS	DALI	DALI bus	DALI		StepDIM SmartDIM	IR remote	Luminaire integrated, Ceiling recess	
MRD-210S	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM SmartDIM	IR remote	Luminaire integrated	
LRS-202SP	PIR ALS	On-Off	120/230/277 VAC	SLV		N/A	IR remote	Batten mount External via M20, IP65	
LRS-209SP	PIR ALS	On-Off	120/230/277 VAC	SLV	•	N/A	IR remote		
MRD-200SP	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM SmartDIM	IR remote		
LRD-309S 	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	IR remote	Luminaire integrated	
LRD-309SP 	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	IR remote	Batten mount External via M20, IP66	
BBD-510S  	PIR ALS	On-Off & Dim	12-24VDC	IDC 0-10V		StepDIM SmartDIM	APP 	Luminaire integrated	
BRD-510S  	PIR ALS	On-Off & Dim	12-24VDC	IDC 0-10V		StepDIM SmartDIM	IR remote	F 	E 
LBD-509S  	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	APP 	W 	P 
LRD-509S  	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	IR remote	Ceiling mounted	
LRS-509S  	PIR ALS	On-Off	120/230/277 VAC	SLV	•	N/A	IR remote	S 	C 
LRS-508S  	PIR ALS	On-Off/ Manual-On*	230VAC	SLV	•	N/A	IR remote		
MBD-510S  	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM SmartDIM	APP 		
MRD-510S  	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM SmartDIM	IR remote		
MRA-514S  	PIR ALS	DALI	DALI bus	DALI-2		N/A	DALI	R 	L 
MRB-510S  	PIR ALS	BMS	12-24VDC	Modbus		N/A	Modbus		
HRD-600SP 	PIR ALS	On-Off & Dim	347/480VAC	SLV 0-10V		StepDIM SmartDIM	IR remote	Luminaire integrated External via M20, IP66	
LBD-609SA 	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	APP 	Luminaire integrated Universal attached IP66	
LRD-609SA 	PIR ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM SmartDIM	IR remote		
MRD-600SA 	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM SmartDIM	IR remote		
MRD-734SZ 	PIR ALS	DALI	AUX (+24V)/ DALI bus	DALI		StepDIM SmartDIM	IR remote	Zhaga book18 (type B), IP66	 new

Manual setting sensors
















Model No.	Tech	Control	Power	Output	HS	Dimming	Application	Appearance
MOD-510S  	PIR ALS	DALI	230VAC/ DALI bus	DALI		StepDIM	Luminaire integrated Ceiling mounted	F 
LOS-509S  	PIR ALS	On-Off	120/230/277 VAC	SLV	•	N/A		W 
LOS-505S  	PIR ALS	On-Off	120/230/277 VAC	IDC		N/A		E 
LVS-508N  	PIR	Manual-On*	230VAC	SLV	•	N/A		P 
COS-516S  	PIR ALS	On-Off & Dim	12-48VDC	RDP		StepDIM		S 
BOA-516S  	PIR ALS	On-Off & Dim	12-24VDC	0-10V		StepDIM		C 
BOA-517S  	PIR ALS	On-Off & Dim	12-24VDC	DO 0-10V		StepDIM		R 
BOS-515S  	PIR ALS	On-Off	12-24VAC/DC	IDC		N/A		L 
BOS-515N  	PIR	On-Off	12-24VAC/DC	IDC		N/A		
BOM-515S  	PIR ALS	BMS	12-24VDC	DO x 2		N/A		
LMS-509S 	HFD ALS	On-Off	120/230/277 VAC	SLV	•	N/A	Luminaire integrated Ceiling mounted	See page 16 for sensor appearances with different mounting options
LMD-509S 	HFD ALS	On-Off & Dim	120/230/277 VAC	SLV 0-10V	•	StepDIM		
BDS-610SS 	PIR HFD ALS	On-Off	12-24VDC	IDC		N/A	For occupancy sensing based lighting/BMS control	

*Push-button required for manual-on control, please see page 25 for more detail.

Legends **HS:** Hybrid switching **PIR:** Passive infrared **HFD:** High frequency doppler
ALS: Ambient light sensor **SLV:** Switched line voltage **IDC:** Isolated dry contact
DO: Digital output **RDP:** Regulated DC power
 : Multiple mounting options  : Multiple lens options

Mounting Options

All TRANS sensors with T5 form factor housing can be integrated with luminaire or ceiling mounted in various options with specific mounting bracket. Same mounting bracket can be used with different sensor series, disregard the sensing technology, power, control output, wiring connection and functionality.

Mounting option	Code	Bracket #	TRANS-PIR	TRANS-HFD	Application Description
Fixture Integrated	F	---			This is the original form factor of TRANS T5 sensor for integrating with OEM luminaire through a 2" hole or mounting on ceiling with different brackets.
IP66 Fixture Integrated	W	---		---	This is the original form factor of TRANS T5 sensor for IP66 fixture integration through a 51mm (2") hole or with a PMB-500.
Fixture External	E	EMB-500			The EMB-500 is a bracket for mounting the F-mount T5 sensor with indoor luminaire through a M20 hole.
IP66 Fixture External	P	PMB-500		---	The PMB-500 is a bracket for mounting the W-mount T5 sensor with IP66 luminaire through a M20 hole.
Ceiling Surface	S	SMB-500			The SMB-500 is a bracket for mounting the F-mount T5 sensor on the surface of luminaire and hard lid ceiling with or without junction box.
Junction Box	C	CMB-500			The CMB-500 is a bracket for mounting the F-mount T5 sensor with an octagonal or square junction box.
Ceiling Recess	R	RMB-500			The RMB-500 is a bracket for recess mounting the F-mount low voltage T5 sensor through a 70mm hole.
Ceiling Recess	L	LMB-500			The LMB-500 is a bracket for recess mounting the F-mount line voltage T5 sensor through a 70mm hole with a tool-removable back cover for cable connection.
Fixture Internal	I	IMB-500	---		The IMB-500 is a bracket for mounting the T5 HFD sensor within a luminaire or behind a diffuser.

Accessories

Following accessories can be applied to extend or change sensor position for the sensor with E/P mount.

EJ-30F

30 mm extension joint



EJ-50F

50 mm extension joint














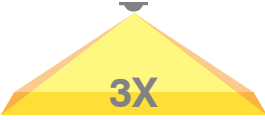



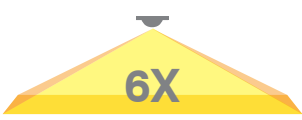
EL-40F

40 mm elbow joint



Lens Options

Following lens options are available for TRANS PIR and DUO sensors to provide different detection coverage at various mounting heights. For more details, please refer the lens datasheet available from www.irtec.com.

Code	Lens	Coverage & Mounting Height	Feature and Application Notes
A	 Cone	2.4~4.5 m (8~15 ft) 	Lens A is a standard lens with 2X height coverage. It can be used to cover small to medium areas with major and walking motions.
B	 Cone	2.4~3.0 m (8~10 ft) 	Lens B is a wide angel lens with 6X mounting height coverage. It provides good detection to the major motions across the detection zones.
C	 Cone	4.5~9.0 m (15~30 ft) 	Lens C is a high bay lens with coverage up to 3X mounting height for using at warehouse or area up to 9m high.
D	 Round flat	2.4~6.0 m (8~20 ft) 	Lens D is a flat round lens with 2X height coverage. This lens provides better minor motion detection for using at office areas.
F	 Dome	2.4~6.0 m (8~20 ft) 	Lens F is a wide-angle lens with 4X height coverage ideal for general application. It has good picking up for major and minor motions.
G	 Arch	2.4~12.0 m (8~40 ft) 	Lens G is a universal aisle way lens with 3X height coverage ideal for aisle way detection. This lens can be rotated to align with the direction of aisle.
H	 Dome	9.0~15.0 m (30~50 ft) 	Lens H is a high bay lens with 1X height coverage. This diamond cut lens is specially designed for high bay application.
L	 Arch	2.4~3.0 m (8~10 ft) 	Lens L is a wide-angle lens with 6X height coverage designed for long corridor. This lens can be rotated to align with the direction of corridor.

NOTES

- Coverage data is based on walking across the detection zones at 25°C. Higher temperature or walking toward the sensor will result in smaller coverage.
- Mounting heights are recommended for obtaining optimal detection. Using at higher or lower is possible.
- Lens C/G/H may be used up to 12/15/18 m at the areas with motions of large objects, such as forklift or trucks. To use the sensor higher than the recommended maximum height, please first ensure that the sensor with specific lens can pick up the motion at desired mounting height.
- Lens G/L are not IP66 rated.

Luminaire Internal Occupancy Sensors

Passive Infrared (PIR) technology based sensor requires unobstructed line-of-sight to detect the occupant's presence and motions. For the luminaire that requires sensor to be placed internally, PIR technology may not be an adequate sensing technology, but the High Frequency Doppler (HFD) instead. The HFD technology operates with high frequency radio waves that are capable of detecting the occupant's presence and movement through non-metallic material like plastic, glass, plywood or plaster board. IR-TEC offers a series of HFD occupancy sensors available for mounting inside the OEM fixtures and providing occupancy sensing based on/off switching or multi-mode, bi-level dimming control.



Product Matrix

Model	Setting	Tech	ALS	Power	Output	Control	Dimming	Application
LMS-109	Manual	HFD	●	120/230/277VAC	SLV	On-Off	N/A	Luminaire internal
LMD-109	Manual	HFD	●	120/230/277VAC	SLV, 0-10V	On-Off & Dim	StepDIM	Luminaire internal

Legends HFD: High frequency doppler ALS: Ambient light sensor SLV: Switched line voltage



LMS-109 Line Voltage Occupancy Sensor

The LMS-109 is a line voltage occupancy sensor designed for integrating with OEM luminaire internally to provide occupancy sensing based on/off switching control. This occupancy sensor utilizes the advanced High Frequency Doppler (HFD) technology which is capable of detecting the occupant's presence and movement through non-metallic enclosure, such as plastic cover or diffuser.

The Accu-Set digitalized potentiometers make the sensor setting easier, faster and more accurate than conventional analog ones. 4 levels of sensitivity can be selected via DIP switch settings to provide different coverage. An exclusive Hybrid Switching technology enables the LMS-109 to control lighting with exceptionally high inrush current (HIC) during switching, such as having multiple LED lights 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.



LMD-109 Line Voltage Bi-Level Occupancy Sensor

The LMD-109 is a line voltage occupancy sensor designed for OEM luminaire internal integration with 0-10V output to provide occupancy sensing based on/off switching or multi-mode, bi-level dimming control. This occupancy sensor utilizes the advanced High Frequency Doppler (HFD) technology which is capable of detecting the occupant's presence and movement through non-metallic enclosure, such as plastic cover or diffuser.

The Accu-Set digitalized potentiometers make the sensor setting easier, faster and more accurate than conventional analog ones. Four different sensitivity levels and control modes can be selected via DIP switch settings. An exclusive Hybrid Switching technology enables the LMD-109 to control lighting with exceptionally high inrush current (HIC) during switching, such as having multiple LED lights 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.



HVAC/BMS Control Occupancy Sensors

The OS-series is a series of wall and/or ceiling mount low voltage occupancy sensors employing single PIR or PIR+HFD dual technology in the same housing. These sensors can be applied to provide occupancy sensing outputs with adjustable delay time for Lighting, HVAC, and BMS controls.

The **OS-36x** sensor can be surface or recess mounted on the ceiling to provide 360° look-down occupancy detection. The **OS-550** series sensor can be mounted on the wall or ceiling with a multi-directional mounting bracket to provide horizontally/vertically adjustment of its 110° look-out occupancy detection.



OS-363
OS-361DT



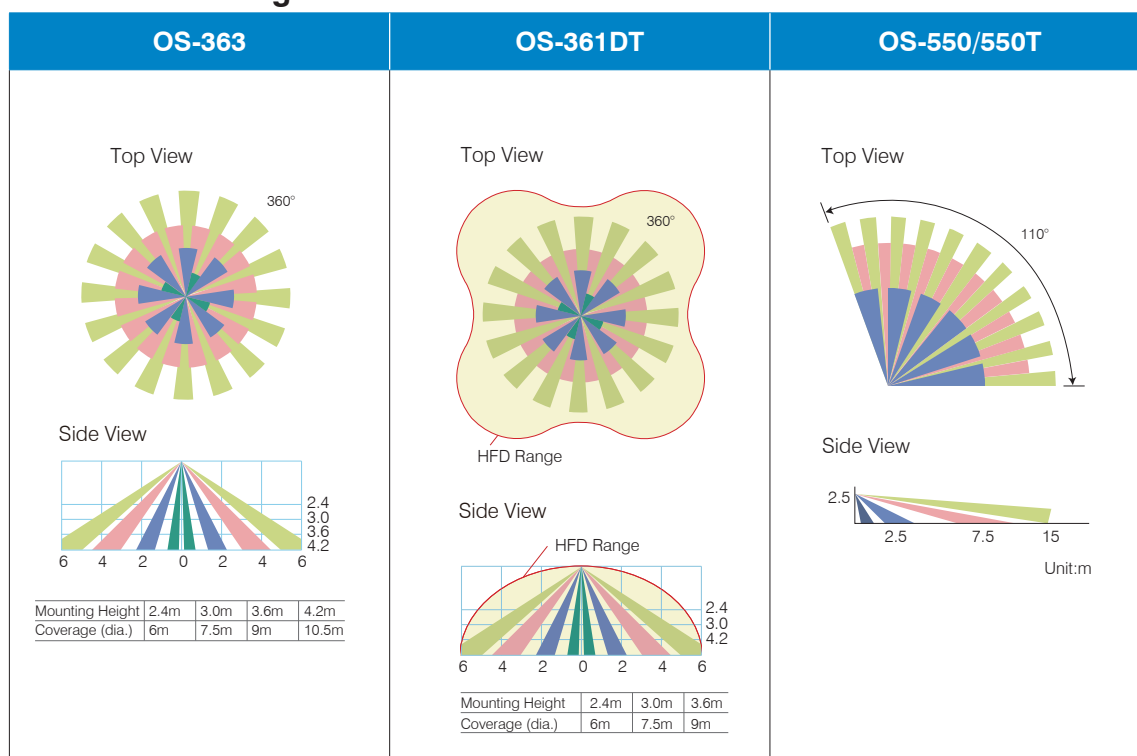
OS-550
OS-550T

Product Matrix

Model	Tech	Aux sensor	Power	Output	Mount
OS-363	PIR		24 VAC/DC	FCDC	Ceiling
OS-361DT	PIR+HFD		24 VDC	FADC	Ceiling
OS-550	PIR		24 VAC/DC	FCDC	Wall/Ceiling
OS-550T	PIR	Temp	24 VAC/DC	FCDC	Wall/Ceiling

Legends PIR: Passive infrared HFD: High frequency doppler ALS: Ambient Light Sensor
FCDC: Form C Dry Contac FADC: Form A Dry Contact

Detection Coverage



Under Cabinet Occupancy Sensors

IR-TEC offers a series of occupancy sensors specially designed for under-cabinet or under-shelf LED lighting control. The sensor combines a cutting edge passive infrared sensor with an advanced signal processor in a compact housing. Thanks to its low profile design, the sensor can be easily mounted under a cabinet or shelf to provide energy-efficient occupancy sensing based automatic LED lighting control.

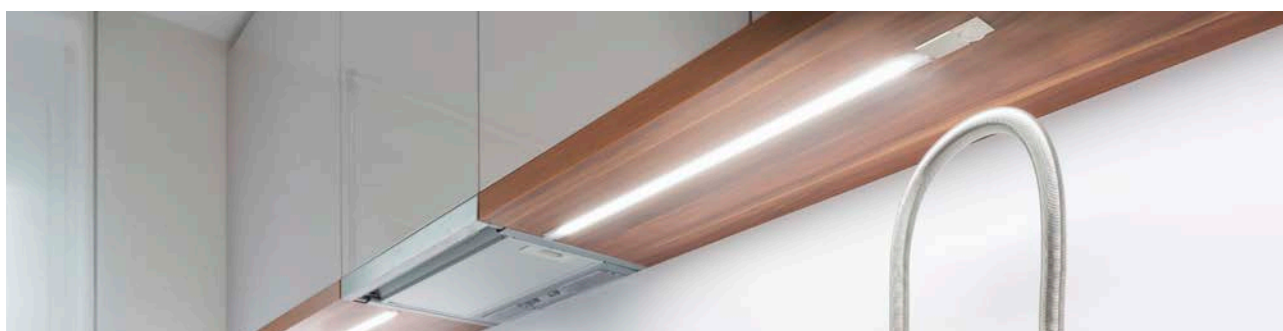
The POA-series provides 0-10V analog output to control the connected LED lighting in one of four different control modes selected by DIP switch setting. The POH-series features PWM control to regulate the DC power from a constant voltage LED driver to control the connected LED lighting in specific control mode.



POA-900



POH-946



Product Matrix

Model	Tech	ALS	Power	Driver	Control Description
POA-900	PIR	●	12-48 VDC	CC	The sensor offers 4 different control modes with 4 different delay times selectable via DIP switch setting. Refer to the datasheet for details about control mode.
POH-946MBW	PIR	●	12-48 VDC	CV	The sensor will inhibit the LED lighting when ambient light level is higher than 50 lux. When ambient light level is lower than 20 lux, the sensor will automatically dim the LED at 30% to provide a safety night light, and turn on the LED to 100% when it detects occupancy. The LED will be dimmed to 30% if no movement is detected within 5 minutes.
POH-946MCW	PIR	●	12-48 VDC	CV	The sensor will inhibit the LED lighting when ambient light level is higher than 50 lux. When ambient light level is lower than 20 lux, the sensor will automatically turn on the LED to 100% when it detects occupancy. If no movement is detected within 5 minutes, the sensor will dim the LED to 30% for 10 minutes. The LED will be switched off if no further movement is detected within 10 minutes.
POH-946MDW	PIR		12-48 VDC	CV	The sensor will turn on the LED with 100% power when it detects occupancy, and dim to 30% if no movement is detected within 5 minutes.
POH-946MEW	PIR		12-48 VDC	CV/CC	The sensor will turn on the LED with 100% power when it detects occupancy, and turn off if no movement is detected within 5 minutes.

TRANS Daylight Sensors











To provide delicate daylighting control with superior installation flexibility for today's sustainable buildings, IR-TEC redefined the daylight sensors by an industry leading design innovation - **Interchangeable EMO**.

This innovative design concept has helped creating the TRANS sensor family, which consists of numerous types of occupancy and daylight sensor featuring distinctive functionality and electrical characteristics for broad applications of energy efficient lighting control. All TRANS ceiling daylight sensors can be mounted in various options with specific mounting brackets.

Product Matrix









The table below outlines TRANS daylight sensors with available mounting options, description, specifications, feature, and output for product selection reference. For more details of specific sensor, please refer to the respective datasheet from www.irtec.com.

Model No.	Control	Setting	Power	Output	Dimming	Application
LPS-509S 	On-Off	Manual	120/230/277 VAC	SLV	N/A	7-level LUX and TIME selection Standalone on/off control
BED-500S 	On-Off & Dim	Remote	12-24 VDC	IDC 0-10V	StepDIM SmartDIM	SmartDIM control for continuous dimming, with wire leads
BED-510S 	On-Off & Dim	Remote	12-24 VDC	IDC 0-10V	StepDIM SmartDIM	SmartDIM control for continuous dimming, with terminal block
BPD-500S 	On-Off	Manual	12-24 VDC	IDC 0-10V	N/A	Provide IDC for on/off control and AO for BMS control, with wire leads
BPD-510S 	On-Off	Manual	12-24 VDC	IDC 0-10V	N/A	Provide IDC for on/off control and AO for BMS control, with terminal block
BPD-502S 	On-Off & Dim	Manual	12-24 VDC	IDC 0-10V	SmartDIM	Provide IDC for on/off switching and AO for SmartDIM control, with wire leads
BPD-512S 	On-Off & Dim	Manual	12-24 VDC	IDC 0-10V	SmartDIM	Provide IDC for on/off switching and AO for SmartDIM control, with terminal block

Legends SLV: Switched line voltage IDC: Isolated dry contact  : Multiple mounting options

Mounting Options

All TRANS daylight sensors can be mounted in various options with specific mounting bracket.

Mounting option	Code	Bracket #	Appearance	Application Description
Fixture Integrated	F	---		This is the original form factor of TRANS sensor for integrating with OEM luminaire through a 51mm (2") hole or mounting on ceiling with different brackets.
IP66 Fixture Integrated	W	---		This is the original form factor of TRANS Sensor for IP66 fixture integration through a 51mm (2") hole or with a PMB-500.
Fixture External	E	EMB-500		The EMB-500 is a bracket for mounting the F-mount TRANS Sensor with indoor luminaire through a 1/2" hole.
IP66 Fixture External	P	PMB-500		The PMB-500 is a bracket for mounting the W-mount TRANS Sensor with IP66 luminaire through a 1/2" hole.
Ceiling Surface	S	SMB-500		The SMB-500 is a bracket for mounting the F-mount TRANS Sensor on the surface of luminaire and hard lid ceiling with or without junction box.
Junction Box	C	CMB-500		The CMB-500 is a bracket for mounting the F-mount TRANS Sensor with an octagonal or square junction box on the ceiling.
Ceiling Recess	R	RMB-500		The RMB-500 is a bracket for recess mounting the low voltage TRANS Sensor through a 70mm hole.
Ceiling Recess	L	LMB-500		The LMB-500 is a bracket for recess mounting the F-mount line voltage sensor through a 70mm hole with a tool removable back cover for cable connection.

Accessories

(for E/P mount sensors)

EJ-30F

30 mm extension joint



EJ-50F

50 mm extension joint



EL-40F

40 mm elbow joint



Power Pack Controllers

Two models of low-profile power pack controller are available for connection with M1 SmartDALI Sensors to provide standalone or networked smart lighting control. A momentary push button can be connected to enable manual on/off and dimming control while allowing the sensor to automatically shut off the light after the area is vacated for a period of time.

Product Matrix

Model	Power Input	Control Output	Remarks
PPU-100DP	240VAC	DALI	Manual control input available
PPU-109DA	240VAC	DALI, 0-10V, Switched live	

PPU-100DP for DALI Control

The PPU-100DP is a low-profile DALI power supply unit for IR-TEC's SmartDALI sensor to provide standalone or networked smart lighting control. This device can also be used as a local DALI bus power source for typical DALI devices.

Through easy plug-in connection with the MRD-124S SmartDALI sensor, a cost effective occupancy or vacancy sensing based DALI lighting standalone control can be easily achieved via some easy and intuitive settings. A momentary push button input can be used for manual control while allowing the sensor to automatically shut off the light after the area is vacant for a period of time.



PPU-100DP

PPU-109DA for DALI/0-10V Control

The PPU-109DA is a low-profile, DALI/0-10V selectable power pack and controller designed to provide standalone or network based smart lighting control with the connection of IR-TEC's SmartDALI sensor. This device not only supplies DALI bus power for the operation of connected sensor, but also provides DALI or 0-10V output to control the integrated luminaire in response to the sensor detection.

Through easy plug-in connection with the MRD-124S SmartDALI sensor, a standalone occupancy/vacancy sensing based lighting control can be easily achieved. IR-TEC's exclusive Hybrid Switching technology is employed to protect the relay contacts from being fused by the inrush current generated while switching on the LED driver. A momentary push button input can be connected to enable manual on/off and dimming control while allowing the sensor to automatically shut off the light after the area is vacant for a period of time.



PPU-109DA

Push Buttons

Product Matrix

Model	Power Input	Pole	Control	Mounting
PBS-811W	---	1	Momentary contact	EURO wall box
PBS-721W	---	1	Momentary contact	NEMA wall box
PBS-722W	---	2	Momentary contact	NEMA wall box
PBD-720W	12-24VDC	1	0-10V, momentary contact	NEMA wall box

PBS-series Push Buttons

IR-TEC's PBS-series is a sleek, low profile push button switch designed to mount in a standard EURO or NEMA wall box. The switch provides low voltage momentary contact signal for a power pack or BMS to control the operation of electrical load manually by pressing the button. A screwless snap-on wall plate is supplied to create modern, high-end appearance for all kinds of commercial spaces.



PBS-811W, 1-pole



PBS-721W, 1-pole



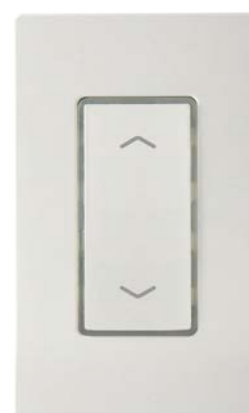
PBS-722W, 2-pole

PBD-series Push Button Dimmer Switch

IR-TEC's PBD-series is a single pole, low voltage push-button dimmer switch designed to mount into a standard NEMA wall box. This sleek, low profile switch provides a momentary contact signal for IR-TEC power pack to manually control the connected lighting, together with an adjustable 0-10V output to dim the connected light as desired through intuitive button operation.

A short press on the button will activate the manual on/off control signal, and a long press at upper/lower position of the button will increase/decrease 0-10V dimming control output. LED light bars will indicate the operational status and dim level while pressing the button. Pluggable type terminal block makes low voltage wiring connection quick and easy.

A screwless snap-on Decora wall plate is supplied to create a modern, high-end appearance for all kinds of commercial spaces.



PBD-720W

Appendix

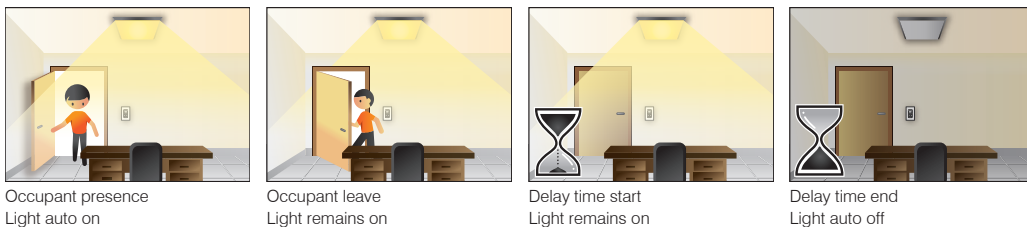
Lighting Control Strategies

Lighting control strategies refer to the types of **sensing** and **switching/dimming** control that will be used to meet the requirements. Applying proper control strategies is the key to deliver a successful lighting control project with high level of occupant satisfaction by taking their needs into account, while ensuring compliance with mandatory energy codes and maximum energy savings.

The following strategies are what IR-TEC sensors have to offer to satisfy today's lighting control needs. The first three (OSC, VSC, and DSC) refer to the types of sensing control, and the next three (OOS, BLC, and CDC) refer to the types of light switching/dimming control.

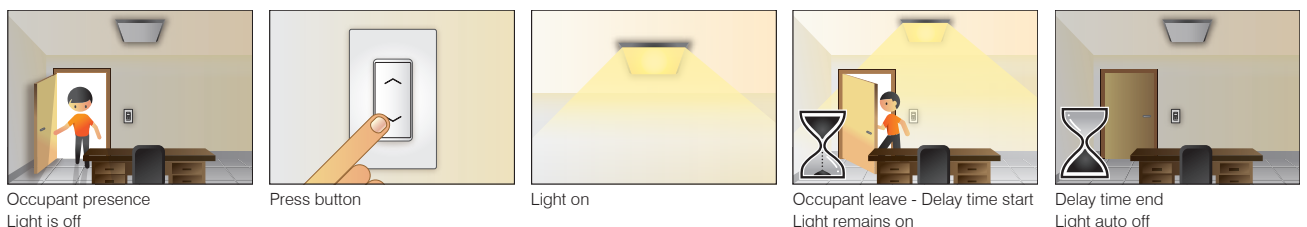
Occupancy Sensing Control (OSC)

Occupancy Sensing Control typically refers to the use of an **OCCUPANCY SENSOR** that will automatically turn lights on when it detects the presence of an occupant, and automatically turn lights off after the area is vacated for a period of time normally adjustable via setting. This control strategy is considered the most convenient and popular in many applications, especially the areas for public use, since the users never have to operate the control devices. Occupancy sensor may be described as “presence detector/sensor” in Europe.



Vacancy Sensing Control (VSC)

Vacancy Sensing Control typically refers to the use of a **VACANCY SENSOR** that will require the occupant to manually turn on the lights if needed, and sensor will automatically turn lights off after the area is vacant and delay time elapses. This strategy is proven with enhanced energy savings because occupants are less likely to turn the lights on when temporarily entering a space, or passing a corridor if certain light level is available. The latest energy codes in California, Title 24 requires using vacancy sensors in more spaces, especially the residential buildings. Vacancy sensor may be described as “absence detector/sensor” in Europe.

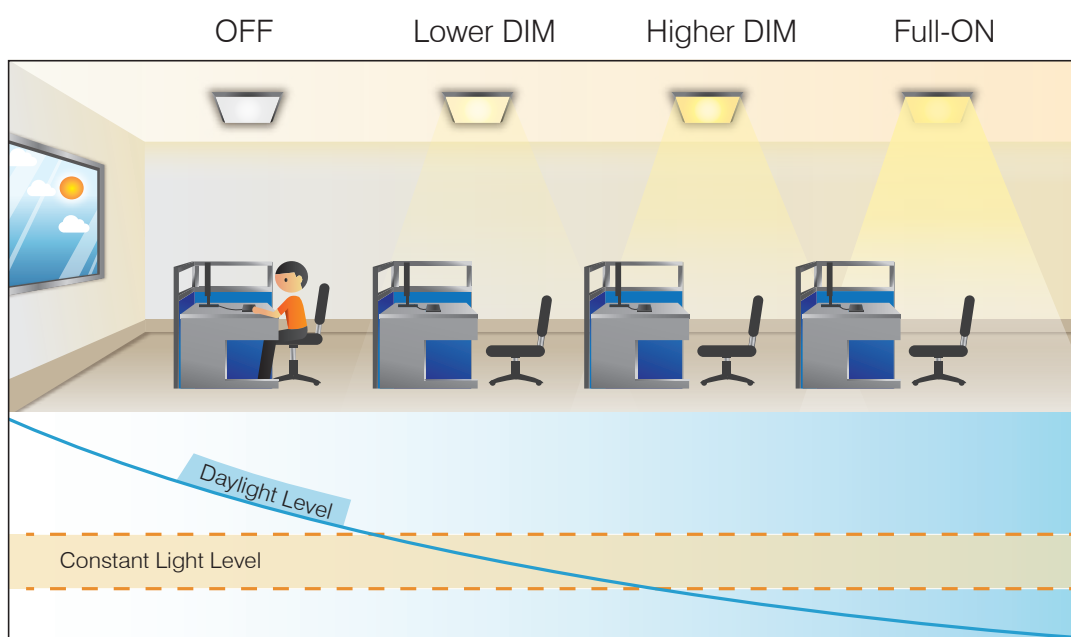


No energy saving solution will succeed if not fulfilling basic human needs.

Daylight Sensing Control (DSC)

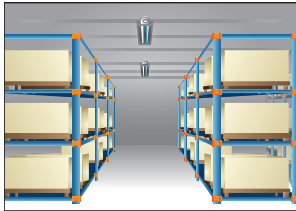
Daylight Sensing Control typically refers to the use of a **DAYLIGHT SENSOR** to inhibit or dim the electric lights in a daylight area by sensing the available natural light. The principle is simple, an ambient light sensor (ALS), some may refer it as photocell sensor, measures either the level of daylight contribution or the overall combined natural and electric light as the key component of dimming or switching the controlled lights in one or multiple zones to achieve an optimal lighting level based on pre-determined parameters.

The Daylight Sensing Control, some may refer to Daylight Harvesting, is an effective control strategy for spaces with ample daylight to save lighting energy up to 60%, and also increases the quality of visual environment. Other benefits of daylight sensing control including helps reduce operating cost while improving user satisfaction, meets the mandatory requirements of energy codes, and contributes to obtaining points in several LEED credits categories.



On/Off Switching (OOS)

On/Off switching has been a typical lighting control strategy commonly used in most applications. Most energy codes require automatic shutoff control to save energy unused in many spaces, most IR-TEC occupancy/vacancy and daylight sensors are designed, or can be set to switch on the electrical lights as needed, and automatically switch off when electrical lights are unneeded.



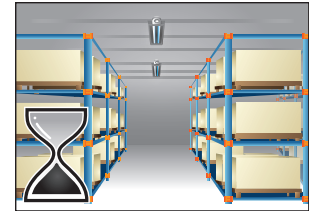
Space vacant
Light is off



Occupancy presence
Light auto on



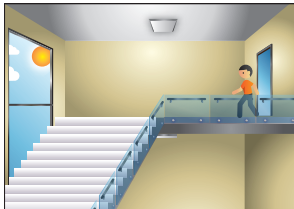
Occupant leave - Delay time start
Light remains on



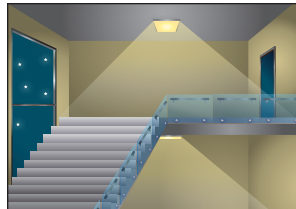
Delay time end
Light auto off

Bi-Level Control (BLC)

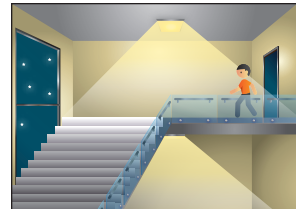
Bi-level control is an ideal control strategy with proven performance in energy savings, while still maintaining certain level of lighting for public safety and comfort. This control strategy requires using a bi-level occupancy/vacancy sensor that will keep the dimmable lighting at a low-dim level or non-dimmable lighting partial on during vacancy period or nighttime, instead of complete shutoff. IR-TEC offers variety types of occupancy sensors with various control modes selectable for bi-level control.



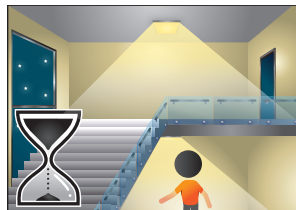
Light is off @day



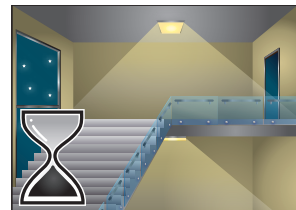
LOW DIM @night



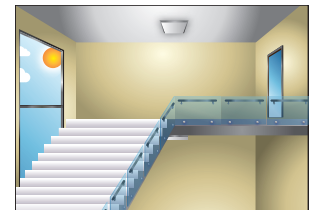
Occupant presence
HIGH DIM or 100% on



Occupant leave
Delay time start



Delay time end
LOW DIM @night



Light off @day

Continuous Dimming Control (CDC)

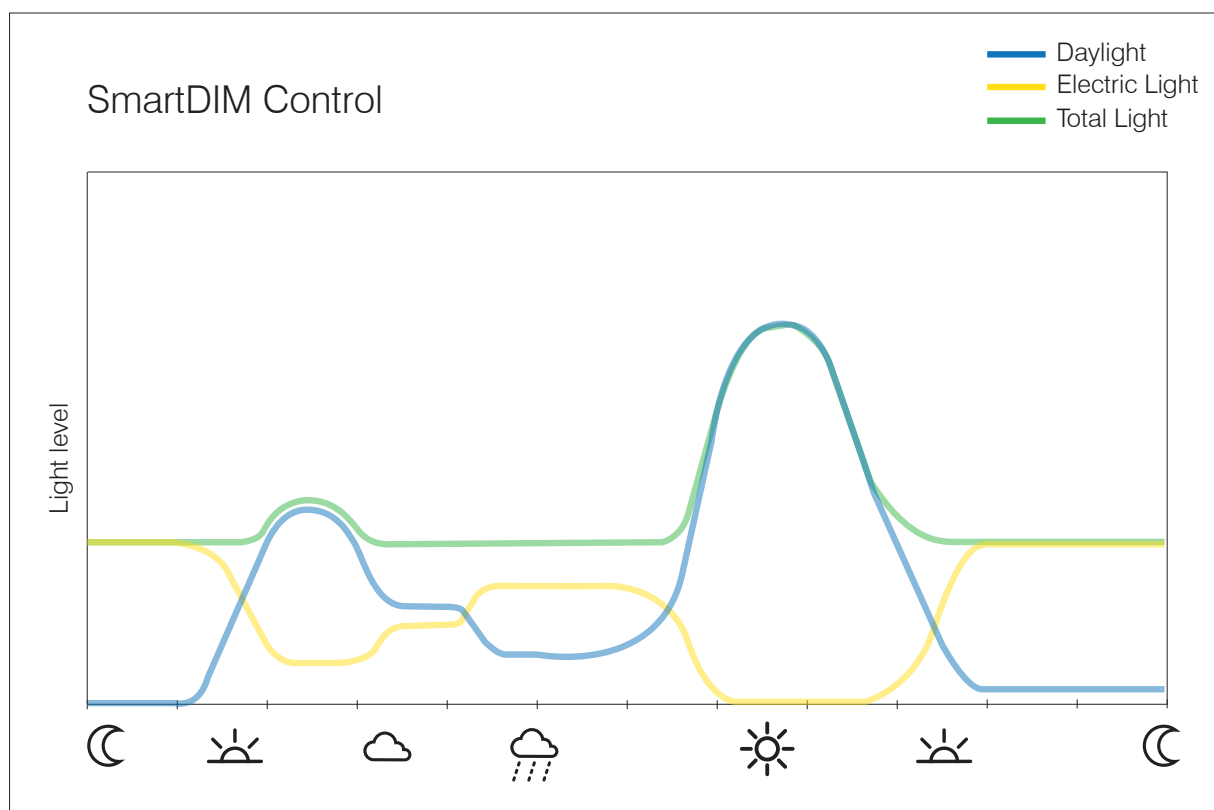
Continuous dimming is an advanced control strategy to achieve maximum energy savings for the lighting in the daylight zones. This strategy typically refers to the use of a sensor with CDC capability that will continuously adjust the lighting output to maintain the ambient light level within a pre-determined range, based on the amount of daylight available in the space. The latest energy codes require more lighting in the daylight zones to be controlled by continuous dimming. This control can only be achieved by using the sensors specially designed with continuous dimming capability.

What is SmartDIM?

SmartDIM is an exclusive dimming control algorithm developed by IR-TEC for the sensors with continuous dimming capability. It is specially designed to provide a smooth and flicker-less dimming performance to ensure occupant satisfaction while achieving maximum energy savings. In addition to the smooth dimming performance, IR-TEC's SmartDIM also helps extend the operational life of lighting fixture through dynamically adjusting the output of electrical lights at optimal level.

Benefits of SmartDIM Control

- **Achieve the highest level of energy savings**
- **Increase productivity and occupant comfort**
- **No compromise in safety while saving energy**
- **Comply with the latest building energy codes**
- **Help obtain the highest building sustainability**



Sensing Control Schemes

All IR-TEC sensors are designed with single or multiple sensing control schemes to meet versatile requirements of today's smart lighting control. This section describes how the sensor will control the light under different conditions with specific control scheme. The following pages describe the control schemes available with IR-TEC sensors.

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

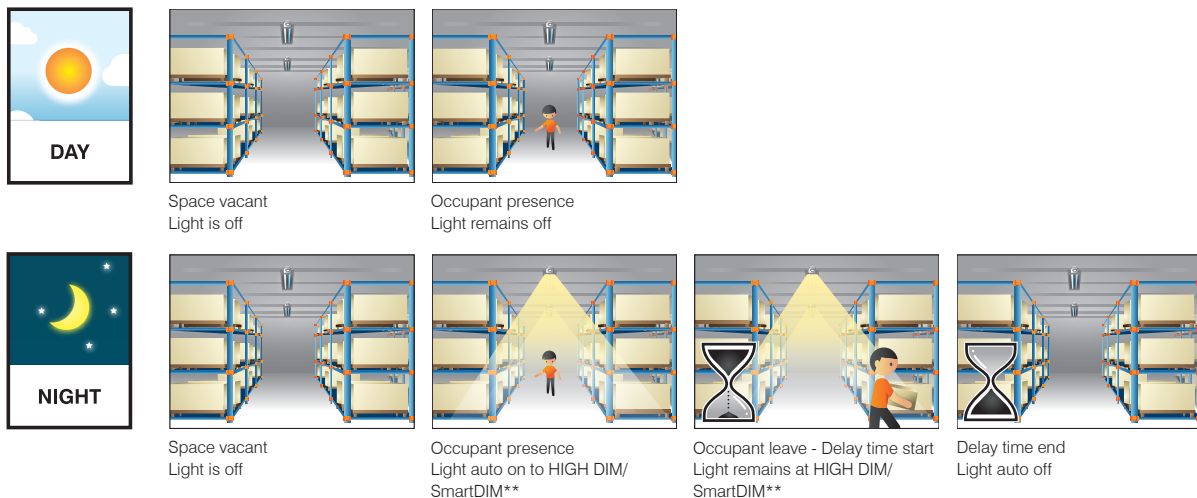
DSC - Daylight Sensing Control

DSVM - Daylight Sensing with Virtual Midnight

OOS – On/Off Switching

The OOS is a typical occupancy sensing control scheme that can be applied in most spaces with or without daylight available.

Sensor Control Description	Control Chart
<p>Lighting will be inhibited when the ambient light level is higher than the set threshold, regardless of occupancy or vacancy.</p> <p>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.</p>	

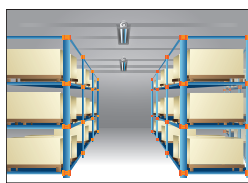


* If LOW DIM is set at "0%", the sensor will control the light as on-off switching, bi-level control will be void.
 ** Continuous dimming control, only available with sensors featuring SmartDIM.

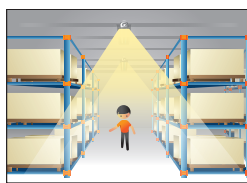
OSO – Occupancy Sensing Only

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..

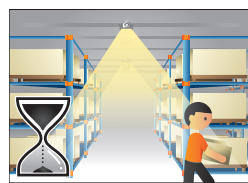
Sensor Control Description	Control Chart
<p>When space is vacant, the lights will be maintained at LOW DIM level.</p> <p>Whenever space is occupied, lighting output will be increased to HIGH DIM level or continuously regulated to maintain within the pre-set range by SmartDIM control.</p>	



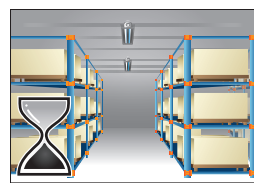
Space vacant
Light is at LOW DIM*



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



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

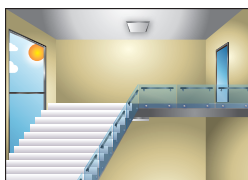


Delay time end
Light is at LOW DIM*

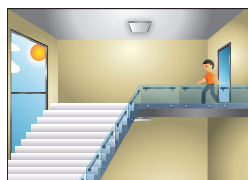
OSLA/OSMA/OSHA – Occupancy Sensing at Low/Medium/High Ambient

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.

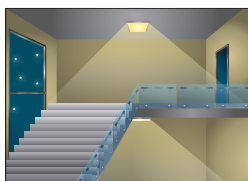
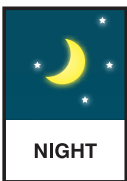
Sensor Control Description	Control Chart
<p>Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, the sensor will automatically control the light at LOW DIM level.</p> <p>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.</p>	



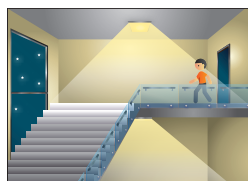
Space vacant
Light is off



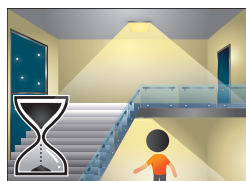
Occupant presence
Light remains off



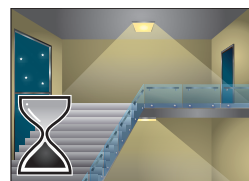
Space vacant
Light is at LOW DIM*



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



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

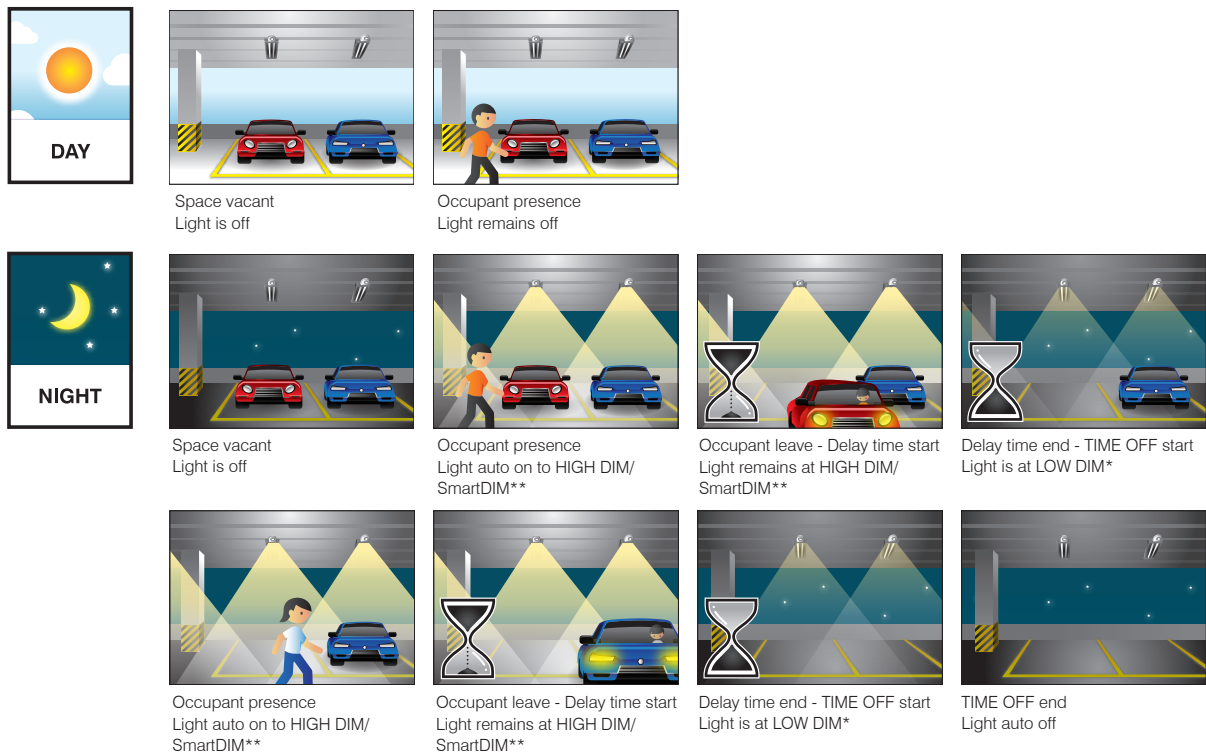


Delay time end
Light is at LOW DIM*

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
<p>Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy.</p> <p>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.</p> <p>After the delay time elapsed, lighting output will be reduced to Low Dim level for a period of TIME OFF delay before shut off.</p>	<p>The control chart shows the lighting output percentage over time. The y-axis represents OUTPUT(%) with levels for HIGH DIM, LOW DIM, and 0. The x-axis shows three periods: DAY, NIGHT, and DAY. A red line indicates MOTION events. A green line shows the resulting lighting output. During the first DAY period, motion triggers the light to turn on to HIGH DIM. At the start of the NIGHT period, the light turns off (0%). Motion during the NIGHT period triggers the light to turn on to HIGH DIM. After a DELAY period, the light transitions to LOW DIM. After a TIME OFF DELAY period, the light turns off (0%). At the start of the second DAY period, the light turns on to LOW DIM. At the end of the DAY period, the light turns off (0%).</p>

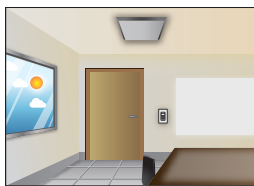
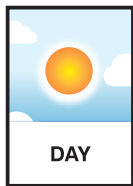


* If LOW DIM is set at "0%", the sensor will control the light as on-off switching, bi-level control will be void.
 ** Continuous dimming control, only available with sensors featuring SmartDIM.

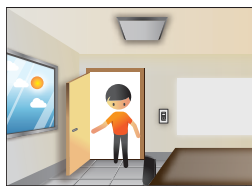
OSB – Occupancy Sensing with Background Lighting

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
<p>Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy.</p> <p>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.</p> <p>The entire lighting group turns off after the last person leaves and delay time elapsed.</p>	



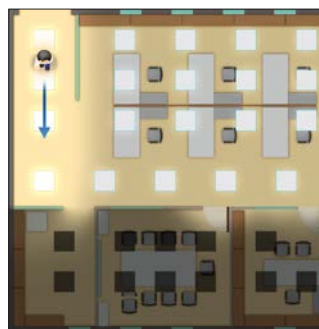
Space vacant
Light is off



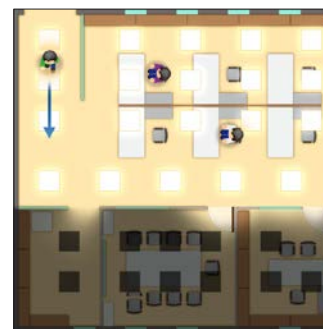
Occupant presence
Light remains off



Space vacant
Light is off



The 1st occupant enters,
Lights of sensing area: HD/SD
Rest of entire lighting group: LD



More occupant enters,
More lights of occupied areas brighten up to HD/SD.



People leave the space,
Local lights down to LD after delay elapsed.



Last occupant leaves - Delay time start
Light remains at LD*/HD/SD



Delay time elapsed, all lights turn off.

LD: Low Dim, HD: High Dim, SD: SmartDIM

* If LOW DIM is set at "0%", the sensor background lighting will be void.

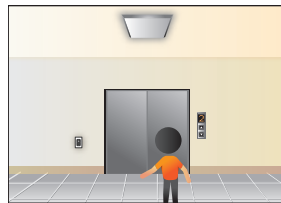
VSC – Vacancy Sensing Control

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.

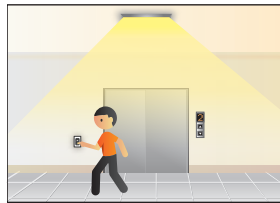
Sensor Control Description	Control Chart
<p>The occupant would have to press the OS-NET Button to turn on the lighting group assigned.</p> <p>The sensor will control the lights at HIGH DIM level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM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



Space vacant
Light is off



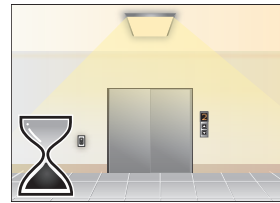
Occupant presence
Light remains off



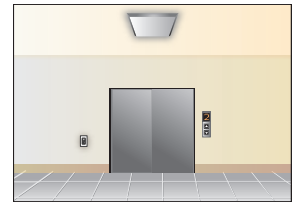
Press button
Light manual on to HIGH DIM/
SmartDIM**



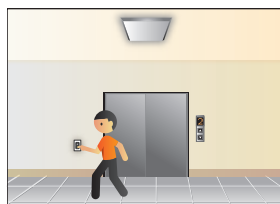
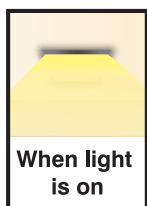
Occupant leave - Delay time start
Light remains at HIGH DIM/
SmartDIM**



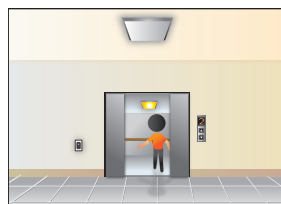
Delay time end - TIME OFF start
Light is at LOW DIM*



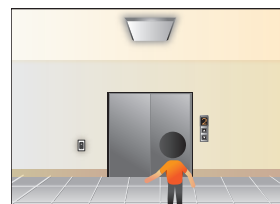
TIME OFF end
Light auto off



Press button
Light manual off



Occupant leave
Light remains off



Next occupancy
Light remain off



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

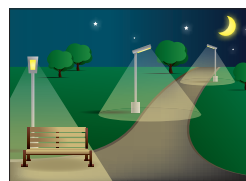
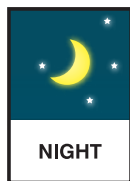
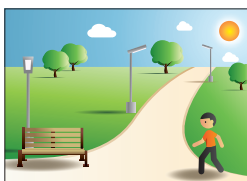
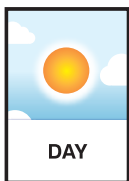
* If LOW DIM is set at "0%", the sensor will control the light as on-off switching, bi-level control will be void.

** Continuous dimming control, only available with sensors featuring SmartDIM.

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.

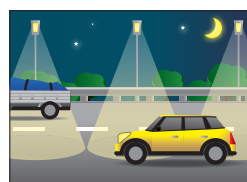
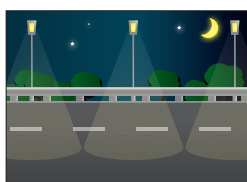
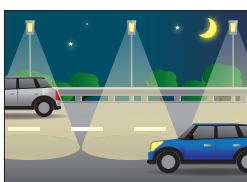
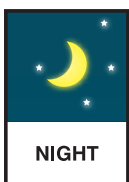
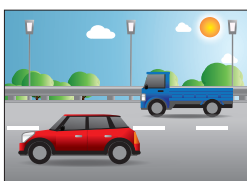
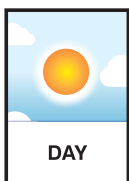
Sensor Control Description	Control Chart
<p>The sensor will automatically turn on the light to HIGH DIM level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control when the ambient light level is lower than the set threshold, and automatically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







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
<p>Lighting will be inhibited if the ambient light level is higher than the set threshold.</p> <p>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.</p> <p>Lighting output will be reduced to LOW DIM level from a certain time before virtual midnight to a certain time after.</p>	



Sensor Selection Index

Sensor Model			Power	Output	Tech	Setting	Sensing Strategy			Dimming Mode		Page
Type	Mount	Lens					Occ.	Vac.	Day.	SmartDIM	StepDIM	
ON-MRD-124S	---	---	DALI bus	DALI	PIR	IR remote	●	●	●	●	●	5
ON-LRD-209S	---	---	120/230/277VAC	SLV+0-10V	PIR	IR remote	●	●	●	●	●	
ON-MRD-210S	---	---	230VAC/DALI bus	DALI	PIR	IR remote	●	●	●	●	●	
ON-LRD-209SP	---	---	120/230/277VAC	SLV+0-10V	PIR	IR remote	●	●	●	●	●	
ON-MRD-200SP	---	---	230VAC/DALI bus	DALI	PIR	IR remote	●	●	●	●	●	
ON-BRD-510S	M	L	12-24VDC	DO+0-10V	PIR	IR remote	●	●	●	●	●	
ON-LRD-509S	M	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●	●	●	●	●	6
ON-MRD-510S	M	L	230VAC/DALI bus	DALI	PIR	IR remote	●	●	●	●	●	
ON-MRD-514S	M	L	DALI bus	DALI	PIR	IR remote	●	●	●	●	●	
ON-LRD-609S	A	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●	●	●	●	●	
ON-MRD-600S	A	L	230VAC/DALI bus	DALI	PIR	IR remote	●	●	●	●	●	
ON-MRD-734S	Z	L	Aux (+24V)	DALI	PIR	IR remote	●	●	●	●	●	
MRD-124S	---	---	DALI bus	DALI	PIR	IR remote	●			●	●	14
MRD-210S	---	---	230VAC/DALI bus	DALI	PIR	IR remote	●			●	●	
LRS-202SP	---	---	120/230/277VAC	SLV	PIR	IR remote	●					
LRS-209SP	---	---	120/230/277VAC	SLV	PIR	IR remote	●					
MRD-200SP	---	---	230VAC/DALI bus	DALI	PIR	IR remote	●			●	●	
LRD-309S	---	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●			●	●	
LRD-309SP	---	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●			●	●	
BBD-510S	M	L	12-24VDC	IDC+0-10V	PIR	APP 	●	▲		●	●	
BRD-510S	M	L	12-24VDC	IDC+0-10V	PIR	IR remote	●	▲		●	●	
LBD-509S	M	L	120/230/277VAC	SLV+0-10V	PIR	APP 	●			●	●	
LRD-509S	M	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●			●	●	
LRS-509S	M	L	120/230/277VAC	SLV	PIR	IR remote	●					
LRS-508S	M	L	230VAC	SLV	PIR	IR remote	●	△				
MBD-510S	M	L	230VAC/DALI bus	DALI	PIR	APP 	●			●	●	
MRD-510S	M	L	230VAC/DALI bus	DALI	PIR	IR remote	●			●	●	
MRA-514S	M	L	DALI bus	DALI-2	PIR	DALI	●					
MRB-510S	M	L	12-24VDC	Modbus	PIR	Modbus	●					
HRD-600S	P	L	347/480VAC	SLV+0-10V	PIR	IR remote	●			●	●	
LBD-609S	A	L	120/230/277VAC	SLV+0-10V	PIR	APP 	●			●	●	
LRD-609S	A	L	120/230/277VAC	SLV+0-10V	PIR	IR remote	●			●	●	
MRD-600S	A	L	230VAC/DALI bus	DALI	PIR	IR remote	●			●	●	
MRD-734S	Z	L	Aux (+24V)/DALI bus	DALI	PIR	IR remote	●			●	●	
MOD-510S	M	L	230VAC/DALI bus	DALI	PIR	Manual	●				●	
LOS-509S	M	L	120/230/277VAC	SLV	PIR	Manual	●					
LOS-505S	M	L	120/230/277VAC	IDC	PIR	Manual	●					
LOS-508N	M	L	230VAC	SLV	PIR	Manual		△				
COS-516S	M	L	12-48VDC	RDP	PIR	Manual	●				●	
BOA-516S	M	L	12-24VDC	0-10V	PIR	Manual	●				●	
BOA-517S	M	L	12-24VDC	0-10V+DO	PIR	Manual	●				●	
BOS-515S	M	L	12-24VAC/DC	IDC	PIR	Manual	●	▲				
BOS-515N	M	L	12-24VAC/DC	IDC	PIR	Manual	●	▲				
BOM-515S	M	L	12-24VDC	DO x 2	PIR	Manual	●					
LMS-509S	M	---	120/230/277VAC	SLV	HFD	Manual	●					
LMD-509S	M	---	120/230/277VAC	SLV+0-10V	HFD	Manual	●				●	
BDS-610S	S	L	12-24VDC	IDC	PIR+HFD	Manual	●	▲				
LMS-109	---	---	120/230/277VAC	SLV	HFD	Manual	●					18
LMD-109	---	---	120/230/277VAC	SLV+0-10V	HFD	Manual	●				●	

Sensor Model			Power	Output	Tech	Setting	Sensing Strategy			Dimming Mode		Page
Type	Mount	Lens					Occ.	Vac.	Day.	SmartDIM	StepDIM	
OS-363	---	---	24VAC/DC	FCDC	PIR	Manual	●	▲				20
OS-361DT	---	---	24VDC	FADC	PIR+HFD	Manual	●	▲				
OS-550	---	---	24VAC/DC	FCDC	PIR	Manual	●	▲				
OS-550T	---	---	24VAC/DC	FCDC	PIR	Manual	●	▲				
POA-900	---	---	12-48VDC	0-10V	PIR	Manual	●				●	21
POH-946MBW	---	---	12-48VDC	RDP	PIR	---	●				●	
POH-946MCW	---	---	12-48VDC	RDP	PIR	---	●				●	
POH-946MDW	---	---	12-48VDC	RDP	PIR	---	●				●	
POH-946MEW	---	---	12-48VDC	RDP	PIR	---	●					
LPS-509S		---	120/230/277VAC	SLV	ALS	Manual			●			22
BED-500S		---	12-24VDC	IDC+0-10V	ALS	Manual			●	●	●	
BED-510S		---	12-24VDC	IDC+0-10V	ALS	Manual			●	●	●	
BPD-500S		---	12-24VDC	IDC+0-10V	ALS	Manual			●			
BPD-510S		---	12-24VDC	IDC+0-10V	ALS	Manual			●			
BPD-502S		---	12-24VDC	IDC+0-10V	ALS	Manual			●	●		
BPD-512S		---	12-24VDC	IDC+0-10V	ALS	Manual			●	●		

△ denotes that vacancy control is available with IR-TEC's push button.

▲ denotes that vacancy control is available with IR-TEC's power pack.

Legends

PIR: Passive infrared

HFD: High frequency doppler

ALS: Ambient light sensor

SLV: Switched line voltage


IDC: Isolated dry contact

DO: Digital output

RDP: Regulated DC power

FCDC: Form C dry contact

FADC: Form A dry contact

 : Multiple mounting options

 : Multiple lens options

 - Mounting Options



F | Fixture Integrated



E | Fixture External



S | Ceiling Surface



R | Ceiling Recess



W | IP-66 Fixture Integrated



P | IP-66 Fixture External



C | Junction Box



L | Ceiling Recess

 - Lens Options



A | 2X Standard



D | 2X Standard



F | 4X Wide Angle



G | 3X Aisle Way



H | 1X High Bay

B | 6X Extra Wide

C | 3X High Bay

L | 6X Long Aisle

Code	A	B	C	D	F	G	H	L
M. Height (X)	2.4~4.5 m	2.4~3.0 m	4.5~9.0 m	2.4~6.0 m	2.4~6.0 m	2.4~12.0 m	9.0~15.0 m	2.4~3.0 m
Coverage	2X	6X	3X	2X	4X	3X	1X	6X

About IR-TEC



Premier Sensor and Control Solutions Specialist


Established in 1982, as a pioneer of infrared motion sensing technology in Taiwan, IR-TEC has committed itself to build a company stands for Innovation, Reliability, Technology, Efficiency, and Cooperation. After 40 years of continuous research and development, IR-TEC has made itself a renowned specialist of sensor and control solutions for smart lighting and HVAC controls.


All IR-TEC products are designed and manufactured by a professional team under a well-maintained ISO-9001 quality management system in a state-of-the-art ISO-14001 certified manufacturing facility. We cordially invite you to experience supreme product quality and excellent business service offered by IR-TEC, a business partner you can trust at all time.



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