



PUTTING A STOP TO ENERGY WASTE



MOTION AND LIGHTING
MANAGEMENT SENSORS
DESIGN AND APPLICATION GUIDE

THE GLOBAL SPECIALIST
IN ELECTRICAL AND DIGITAL BUILDING INFRASTRUCTURES

 **legrand**®

This document will help you in selecting, design, installing and commissionning a lighting management solution. It will also help you in defining and implementing the optimum lighting management solution for specific type of building space.



Our vision at Legrand is to provide products and services that make buildings more energy efficient.
We are committed to putting a stop to energy waste.



CONTENTS

p. 1 | Design steps for implementing motion & lighting management solutions

p. 16 | Application examples for specific building spaces

DESIGN STEPS FOR IMPLEMENTING MOTION & LIGHTING MANAGEMENT SOLUTIONS

Our wide range of switch sensors, comprising Motion and Lighting Management sensors, is designed to reduce the amount of time lighting is left on unnecessarily, for example if an area is unoccupied or if there is sufficient natural light.

Our Lighting Management sensors can be used to:

- **monitor the detection area for occupancy**
 - When a person is sensed the lighting is automatically switched on.

In case of sensors equipped with a built-in light level sensor, the lighting will be kept off when enough natural light is available.

- **control lighting** (up to 60% savings on lighting energy costs according to EN 15193).
 - When the area is vacated: the lighting is switched off after a preset time delay.
- **control HVAC circuits and roller blind circuits** (either via the sensor or a room controller).

In our range, you are sure to find the Motion or Lighting Management sensor that will suit any area and control your lighting efficiently.

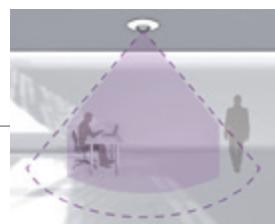
1 ASSESS THE SPACE CHARACTERISTICS



2 CHOOSE THE RIGHT SWITCH SENSOR



3 DEFINE THE BEST LOCATION



4 CONFIGURE THE SENSORS



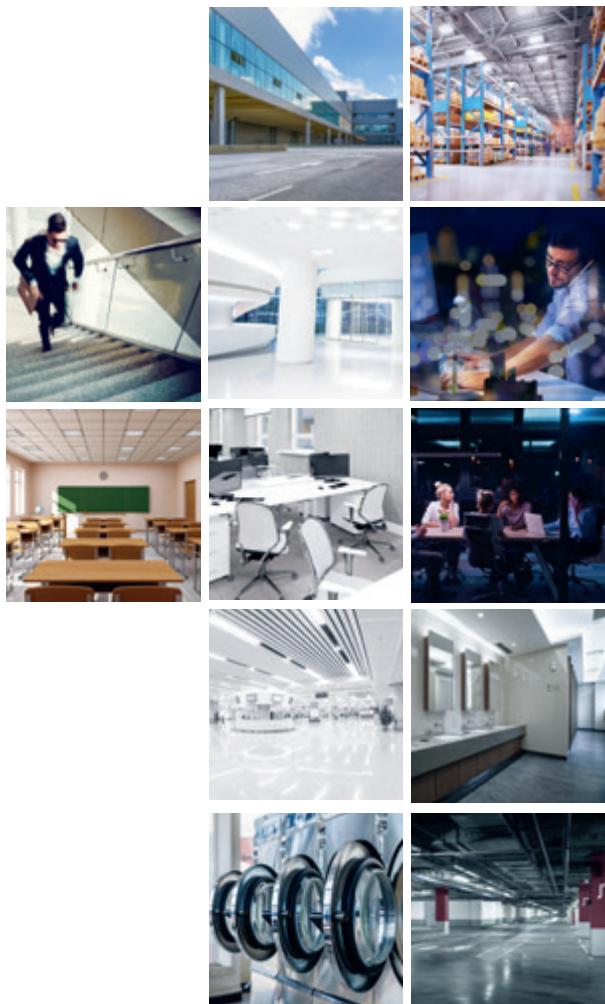
STEP 1

ASSESS THE SPACE CHARACTERISTICS

There is a dedicated solution for each area (type, configuration, activity, etc.). It is therefore essential to take the following criteria into account:

- room/space size and shape (number of m²)
- occupant activity and non-activity areas
- location of walls, doors and windows
- partition height and location
- ceiling height
- areas benefiting (or not) from natural light
- location of shelves, book cases, file cabinets, and large equipment
- large objects that would block or alter a sensor's coverage
- location of HVAC ducts and fans
- location of desk/workspace – orientation with regard to walls, partitions and other obstacles.
- climatic constraints (indoor/outdoor and Index Protection [IP] requirement)

To ensure you a perfect installation of the sensors and the best quality detection, here are some application examples:



P. 17
HALL ENTRANCE

P. 18
CORRIDORS

P. 19
STAIRWAY

P. 20
OPEN SPACE

P. 21
INDIVIDUAL OFFICE

P. 22
MEETING ROOM

P. 23
CLASSROOM

P. 24
RESTROOMS

P. 25
WAREHOUSE HIGH BAY

P. 26
UTILITY ROOM

P. 27
UNDERGROUND CAR PARK

P. 28
OUTDOOR PARKING



Special attention should be paid to high levels of vibration and/or air flow, extreme temperature conditions, and unusually low levels of activity because these issues may help identify the best technology solution

STEP 2

CHOOSE THE RIGHT SENSOR

Legrand has 2 categories of sensor according to the area concerned and the type of detection:

MOTION SENSORS

- For areas with little or no natural light.
- For passageways.
- Automatic switch-on according to whether or not there is motion and low light level, automatic switch-off after the delay.

LIGHTING MANAGEMENT SENSORS

- For areas with natural light.
- For work areas and passageways.
- Manual or automatic switch-on and automatic switch-off, according to whether or not there is anyone present and the natural light level.
- Dimming and HVAC/roller blind control for BUS sensors used with controllers.
- Can be adjusted using configuration tool.

MOTION SENSORS

For areas with little or no natural light

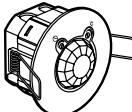
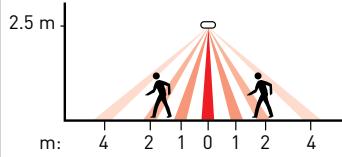
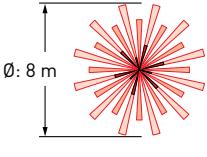
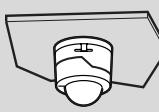
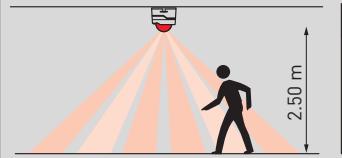
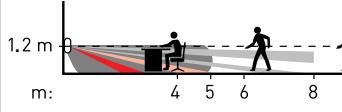
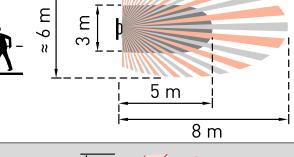
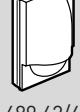
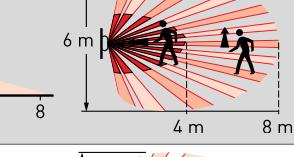
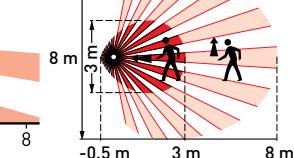
These sensors are particularly suitable for areas where there is no natural light, and for passageways such as bathrooms, corridors, equipment rooms, etc.

1 DETECTION TECHNOLOGY:

Passive infrared (PIR) technology

Passive infrared technology detects occupancy by reacting to infrared energy sources, such as a human body in motion.

2 COVERAGE PATTERNS

Cat.Nos	Installation type technology	Range	Detection area	Degree protection	Examples of application
 0 489 41/44*		8 m		IP 41	Corridor, stairways, restrooms, underground car park, etc.
 0 489 48**/49**					
 0 697 40/80	 	8 m	 	IP 55	Utility room, car park, cellar, outdoor etc.
 0 784 50		8 m	 	IP 40	Corridor, stairways, restrooms etc.
 0 489 42/45*	 	8 m	 	IP 42	Corridor, stairways, restrooms, utility room
 0 489 43/46*	 	8 m	 	IP 55	Utility room, car park, cellar, outdoor

* blister version - ** surface ceiling mounting version

STEP 2 _ CHOOSE THE RIGHT SENSOR

LIGHTING MANAGEMENT SENSORS

For areas with natural light

These sensors are particularly suitable for areas with natural light, whatever the type of building: shops, offices, healthcare buildings, recreation areas, warehouses or workshops, etc.

The sensors have built-in adjustable lux sensors:

- lighting Management sensors will keep the lighting switched off if there is sufficient natural light
- lighting Management sensors associated with room controllers will dim automatically while maintaining a pre-set lux level according to natural daylight and will control several lighting and ventilation circuits.

1 DETECTION TECHNOLOGY



Passive infrared (PIR) technology

Passive infrared technology detects occupancy by reacting to infrared energy sources, such as a human body in motion.

PIR detection + high density lens (HD)

Special lens designed to detect the slightest move.



Dual technology (DT)

Sensors that employ PIR + US sensing technologies are usually referred to as "dual technology".

Our Dual technology ensures maximum sensitivity and coverage in tough applications for optimum reliability and energy saving.



Microwave (MV) technology

Microwave technology detects occupancy by emitting waves and analysing bounced back waves.

2 PRODUCT FEATURES

2-1. Occupancy and vacancy detection

Vacancy/Occupancy mode selection

Most Legrand sensors can work using occupancy mode (by default) or vacancy mode.



Occupancy mode (presence mode) means that lights are automatically switched on or off according to occupancy.



Vacancy mode (absence mode) means that lights are manually switched on and automatically switched off according to vacancy.

Vacancy mode offers extra energy savings (up to 15 % more than occupancy mode)



OCCUPANCY MODE (AUTO ON/OFF)



Sensors will switch on lighting automatically when a person enters the room, and switch lighting off automatically when no movement is detected.

Application:

Energy saving and cost effective, can be used instead of a conventional switch.



VACANCY MODE (MANUAL ON/AUTO OFF)



Upon entering the room the person switches on the light as normal, but on leaving the sensor switches off the lighting automatically. Lights can also be switched off manually.

Application:

Commonly used for improved energy saving and to comply with regulations.

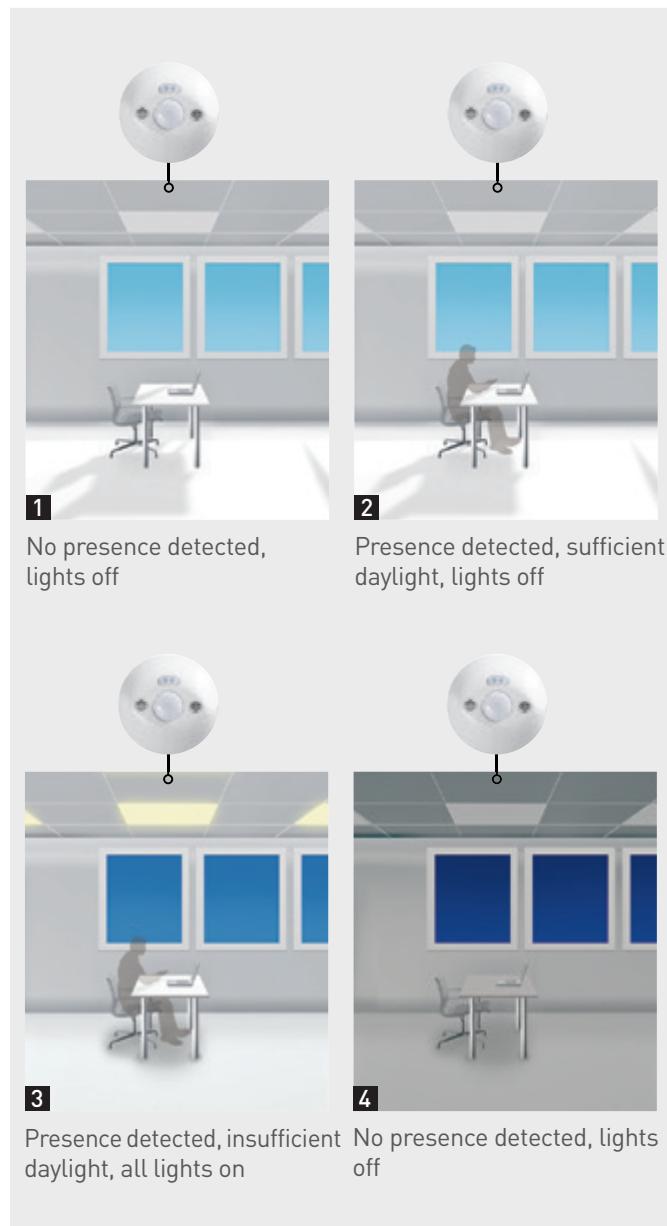
2-2. Daylight



Daylighting set point = Regulation

The light level feature keeps the lighting OFF when natural light levels rise above a pre-set level. This setting is adjustable and can be overridden. This function is enabled by default.

The measurement is continuous.



3 LOAD CONTROL



Switching Control

The sensors turn ON/OFF directly luminaires through cut-phases.

Zero-crossing point operation :

This technology helps to protect the sensor against inrush current.



Dimming Control

The sensors dim the light through a lighting control protocol :



The sensors send a low DC voltage to the 1-10 V ballast

- analogue
- hardwired
- unidirectional



The sensors send a digital signal to DALI ballasts which are power supplied from mains

- digital
- bidirectional
- open



Auxiliary output

The sensors provide additional output to control HVAC or ventilation



BUS connection

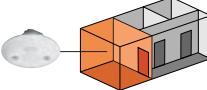
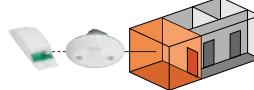
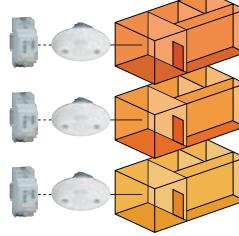
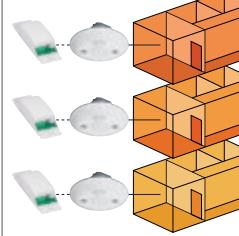
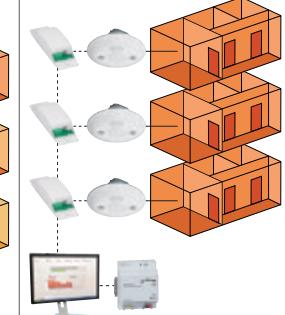
The sensors do not control directly loads but communicate with actuators through a field BUS and specific protocol:

- DALI
- SCS
- KNX

STEP 2 _ CHOOSE THE RIGHT SENSOR

4 STANDALONE SENSORS OR LIGHTING CONTROL SYSTEM

The choice of solution to control a building's lighting can be defined by a number of factors : functionality requirements, new building or retrofit, flexibility, ease of use, and of course budget.

STANDALONE --> hardwiring		SYSTEM --> digital addressing		
				
Room Single circuit	Room Multi circuits	Area Lighting control	Area Room control	Building Building control
Standalone Lighting sensors	Combination Bus lighting sensors + False ceiling controllers	DALI system	SCS system	KNX system
One single standalone occupancy sensor controlling directly lighting loads	One or several SCS bus occupancy sensors linked to one false ceiling controller with several outputs controlling each lighting loads	Flexible addressable DALI lighting installation composed of DALI occupancy sensors ordering through digital messages DALI ballasts to control their lighting loads	Fully addressable SCS installation composed of SCS occupancy sensors and SCS false ceiling controllers for lights, blinds, ventilation, providing scene control and optimized energy saving	Fully addressable building installations which have demanding lighting needs owing to change room configuration or where there is a need to re-configure or integrate the lighting system into a BMS
Configuration tool (ref 0 882 40) to be used in association with configuration app «Close Up»		MyHome Suite Configuration tool for installation with DIN actuators		ETS 5 Configuration tool

5 COVERAGE PATTERNS

5-1. Standalone lighting sensors

Cat.Nos	Installation type technology	Range	Detection area		Load control	Degree protection	Examples of application
0 488 07		8 m			I/O	IP 41	Hall, stairways etc.
0 489 53		9 m			DA LI I/O	IP 40	Open offices, individual offices, meeting rooms
0 489 54		9 m			I/O	IP 40	Open offices, individual offices, meeting rooms
0 488 17		2x12 m			I/O	IP 41	Long corridor
0 784 54 / 0 784 58* 5 740 47 / 5 740 09*		8 m			I/O	IP 41	Hall, stairways
0 489 17		15 m			I/o AUX	IP 42	Hall, stairways, very long areas, corridors
0 488 04		5 m			I/o AUX	IP 41	Individual office, restrooms etc.
0 489 14		12 m			I/o AUX	IP 42	Individual office
0 488 06		6 m (US) 5 m (PIR)			I/O	IP 20	Open offices, individual offices, meeting rooms, class rooms

* without neutral

STEP 2 _ CHOOSE THE RIGHT SENSOR

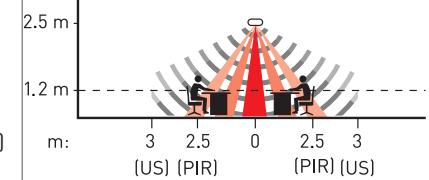
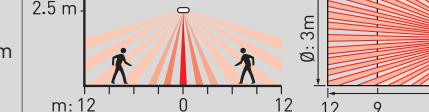
Cat.Nos	Installation type technology	Range	Detection area	Load control	Degree protection	Examples of application
0 489 16	PIR + US	7 m (US) 12 m (PIR)		I/O AUX	IP 42	Individual office, classroom, meeting room, restrooms etc.
0 784 52	PIR + US	8 m		I/O	IP 20	Individual office, classroom, meeting room, open plan office
0 489 55/56/57	MV	6x24 m		DA I/O	IP 40	Hall stairways, very long areas
0 489 59	PIR	40 m		I/O	IP 65	Warehouses, high ceiling areas
0 489 32	PIR	20 m		I/O	IP 55 IP 66 with cable gland	High ceiling areas (Warehouses, gymnasium)
0 489 33	PIR	18 m		I/O	IP 55	High ceiling areas (Warehouses, gymnasium) outdoor car park, cellar, laboratory
0 489 58	PIR	9 m		I/O	IP 65	Underground car park

5-2. BUS DALI lighting sensors

These DALI sensors are directly connecting on DALI bus to control groups of DALI ballast.

The DALI bus has to be powered by a DALI power supply (0 035 13/0 035 15) or by the DALI unit (0 488 76) offering also extra control outputs for ventilation and not DALI luminaires.

The configuration of DALI groups needs the use of the configuration tool (0 882 40) associated with the configuration app "Legrand Close Up".

Cat.Nos	Installation type technology	Range	Detection area	Load control	Degree protection	Example of application
0 489 35	PIR+US	6 m (US) 5 m (PIR)		BUS DALI*	IP 20	open space classroom
0 489 36	PIR	2x12 m		BUS DALI*	IP 41	corridor

*Networked control (unicast)

0 488 76 DALI unit:

Specifically designed to manage a room, the DALI unit allows several functions:

- power supply of DALI BUS (sensors and ballasts)
- 1 switching output (allowing to switch off DALI ballasts)
- 1 fan output
- 2 inputs for wired pushbutton connection

STEP 2 _ CHOOSE THE RIGHT SENSOR

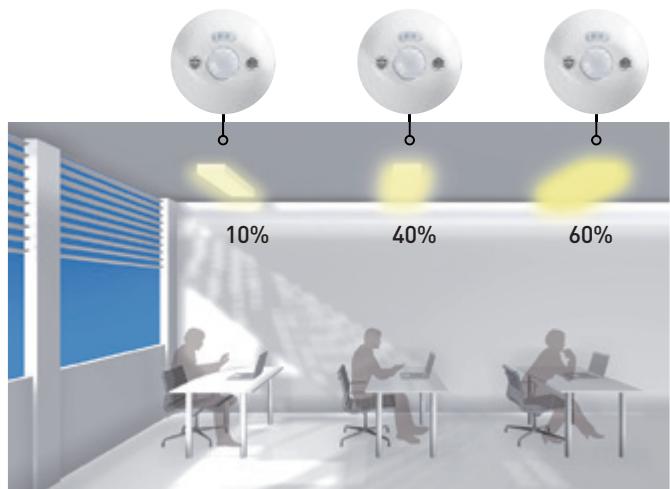
5-3. BUS SCS lighting sensors

Sensors can be combined with a room controller to manage a number of circuits in passageways with natural light, outdoors, damp areas or in work areas.

Combining a sensor and a room controller provides additional functions to:

- lighting management: on/off or dimming (DALI, 1-10 V, halogen/incandescent/LED).
Eg : dimming the window side (access to natural light) and the corridor side separately.
- your installation: blinds, heating, fan control, etc.

This combination makes your building flexible and gives you more energy savings (up to 15 % can be achieved with shutter control solution and up to 30 % thanks to heating control solution)



The daylight is unevenly distributed in an area

A sensor is combined with each row of luminaires and measures presence and light level.

The dimming controller regulates each row of luminaires and supplements the external light to obtain the required light level.

Cat.Nos	Installation type technology	Range	Detection area	Load Control	Degree protection	Examples of application	
0 488 20	PIR	8 m			BUS SCS	IP 41	Hall, restroom, changing room
0 488 34	PIR	15 m			BUS SCS	IP 55	Hall, stairways, very long areas
0 784 85 5 740 46	PIR	8 m			BUS SCS	IP 41	Restrooms, changing room
0 488 22	PIR+US	6 m (US) 5 m (PIR)			BUS SCS	IP 20	Individual office, meeting room, classroom
0 784 86 5 740 48	PIR+US	8 m			BUS SCS	IP 20	Individual office, meeting room, class room

These BUS SCS lighting sensors have to be associated with BUS SCS controllers to provide solutions for multi-circuits control and area management needs.

The association with BUS SCS false ceiling controller does not need configuration tool software:

Use case	Switching	Dimming	
		1-10 V	DALI*
1 lighting circuit in the same room	0 488 50	0 488 52	0 488 51
1 lighting circuit + fan output in the same room	0 488 50	0 488 52	0 488 51
2 lighting circuits in the same room	0 488 50	0 488 52	0 488 51
2 lighting circuits + 1 fan output in the same room	-	-	0 488 51
2 lighting circuits (2 inputs, 2 outputs) in 2 rooms	0 488 41	0 488 42	-
4 lighting circuits (4 inputs, 4 outputs) in 4 rooms	0 488 43	0 488 43	0 488 44
2 lighting circuits + 1 blind output + 1 fan output (4 inputs, 4 outputs) in the same room	0 488 47	0 488 47	-

Refer to the load table in the data sheet available online in the e-catalogue.

* Broadcast control

The association with BUS SCS DIN controllers needs to use the software configuration tool "MyHome Suite".

	Switching		Dimming		
	10 A	16 A	1-10 V	DALI	BT/TBT/UNIVERSAL
DIN SCS controllers	F411U2 F411/1NC	BWSW1003 002604	F413N 002612	F429	F416UI F418U2

Refer to the data sheets for load control capacity.

5-4. BUS KNX lighting sensor

BUS/KNX RANGE MEETS THE SPECIFIC NEEDS OF COMMERCIAL SECTOR BUILDING

Optimised energy consumption

Designed ideally for low consumption accredited constructions, KNX solutions provide optimum management of lifting, shutters, socket outlets and ventilation: combined with energy management and supervision solutions, these "Smart Grid Ready" solutions allow you to optimise operating procedures in your installation according to your consumption. Legrand therefore contributes to reducing a building's overall operating costs and meeting the requirements of LEED and BREEAM buildings, etc. (up to 23 LEED points thanks to KNX lighting management solution according to KNX association) so that you can provide a perfect response to your customers' energy performance requirements.

Increased comfort

Legrand BUS/KNX solutions have the ability to manage all types of light source (LEDs, DALI, 1-10 V ballasts, etc.) in response to different situations (daylight, presence/absence, dimming, scenarios) making the user's daily life easier by adapting to their needs and living/working habits.

Even greater flexibility

With simple programming, Legrand BUS/KNX solutions make it possible to reconfigure the installation in a building really easily: no need for additional wiring !

ENERGY PERFORMANCE AND OPERATING PERFORMANCE

A sustainable approach

Apart from simple ON/OFF and dimming controls, detectors provide access to the advanced automation functions required in any "green" building:

- stand-by.maintained dimming
- programmed lighting maintenance
- scenario triggering dependent on presence/absence, natural light levels or the time

Flexibility & Efficiency

- Detectors provide an installation with flexibility: their operation and programming can be adapted according to external parameters (over-consumption, alarm, etc.)
- Detectors constantly measure daylight levels. In combination with controllers they provide a better understanding of the detection area and makes it possible to adapt lighting in response to natural light levels.

Note: it is possible for there to be several dimming levels within a single space!

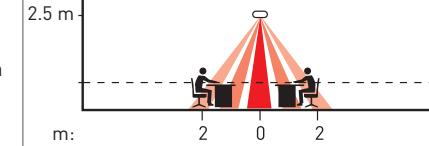
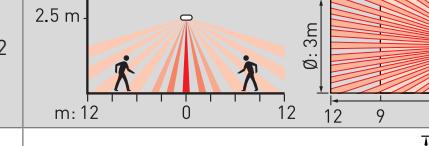
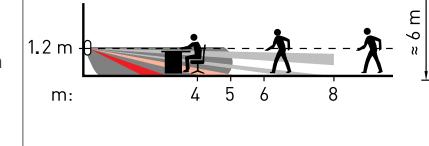
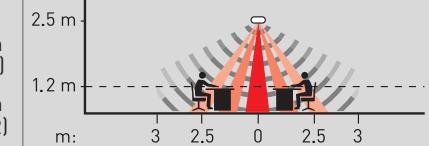
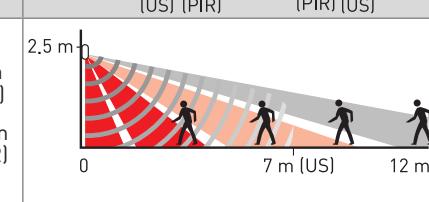
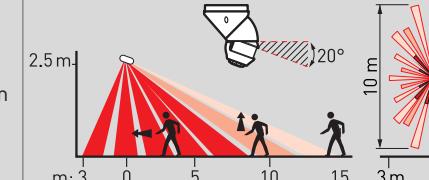
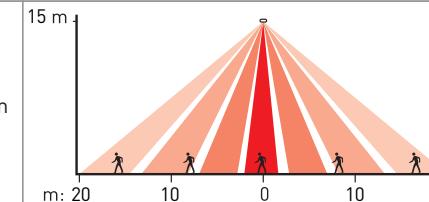
Supervision informations

KNX detectors provide any supervision system with useful key information:

- indication of presence
- load status and dimming level (as a %)
- light level in real time (in lux)

STEP 2 _ CHOOSE THE RIGHT SENSOR

5-4. BUS KNX lighting sensor (continued)

Cat.Nos	Installation type technology	Range	Detection area	Load control	Degree protection	Examples of application
0 489 22	PIR HD	5 m		BUS KNX	IP 20	Individual office, open office
0 489 19	PIR	2x12 m		BUS KNX	IP 41	Long corridors
0 784 93 5 740 37	PIR	6 m		BUS KNX	IP 41	Hall, stairways, long areas, corridors
0 489 18	PIR+US	6 m [US] 5 m [PIR]		BUS KNX	IP 20	Open offices, individual offices, meeting rooms, classrooms
0 489 20	PIR+US	7 m [US] 12 m [PIR]		BUS KNX	IP 42	Individual office, meeting room, classroom
0 489 21	PIR	18 m		BUS KNX	IP 55	High ceiling areas, warehouses
0 489 60	PIR	40 m		BUS KNX	IP 65	High ceiling areas, warehouses
0 489 61/62/63	Waves	6x24 m		BUS KNX	IP 40	Hall, stairways, very long areas

These bus KNX lighting sensors have to be associated with bus KNX controllers to provide lighting management solutions.

	Switching		Dimming		
	8 A	16 A	1-10 V	DALI	BT/TBT/UNIVERSAL
False ceiling KNX controllers			0 488 87	0 488 88 ⁽¹⁾	
DIN KNX controllers	0 026 61 0 026 62	0 026 80 0 026 81 0 026 82	0 026 88	0 026 63 ⁽¹⁾ 0 026 98 ⁽²⁾	0 026 86 0 026 87 0 026 54

Refer to the data sheets for load control capacity.

1: DALI broadcast control
2: DALI networked control

See the KNX brochure for optimized control through KNX manual units available in Legrand aesthetics range or for all KNX actuator solution

STEP 3

DEFINE THE BEST LAYOUT

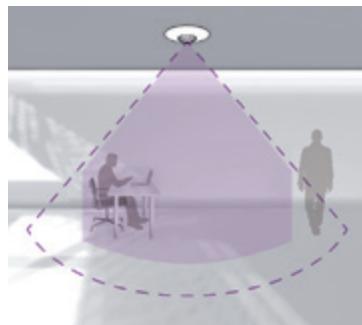
Whether it is a matter of work areas or passageways, the presence sensors must be chosen and positioned in line with the following recommendations:

1 WORK AREAS

These are areas in which people spend time, such as individual or open plan offices, meeting rooms, classrooms, etc.

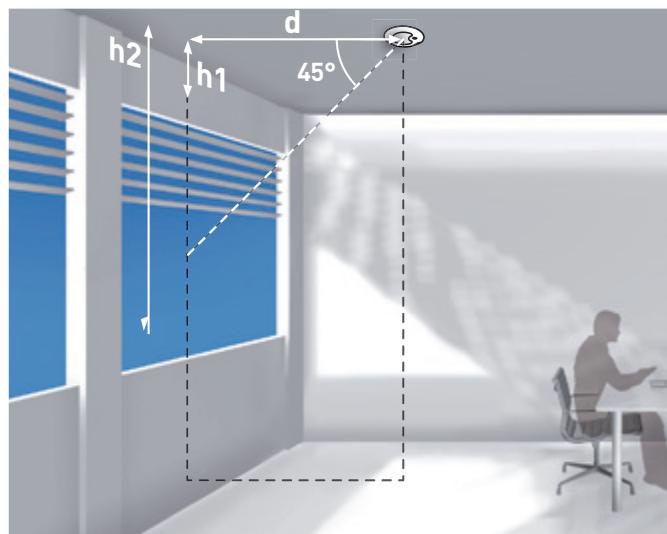
Positioning

For optimum detection, the sensor must have an unobstructed view (no obstacles in the sensor's detection field).



People who are seated must be completely within the area to be monitored, and preferably as close as possible to the sensor (the detection area for seated people is much smaller than that for people who are moving around).

In small spaces preference should be given to wall-mounted sensors placed in a corner. In large, open plan offices preference should be given to ceiling sensors (with their detection areas overlapping).

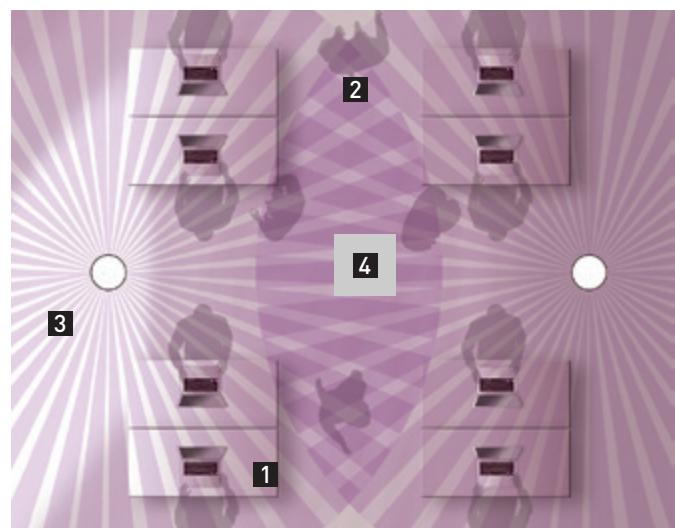


For optimum light level measurement, the sensor must be positioned between a minimum distance (to be determined) and 4 metres maximum from the source of natural light (large or small window, etc.). The ideal distance is calculated using the formula $d = (h_1 + h_2)/2$.

Recommendations

The sensors must not:

- be positioned less than 1 m from sources of heat or cold (radiators, air conditioning units, etc.) which could cause "false detection"
- have a luminous flux (luminaire, window) in direct view, to ensure correct measurement of the light level.



- 1- Seated person
2- Moving person
3- Window
4- Air conditioning unit



Dual technology detection should be given preference as it combines 2 detection technologies (IR + US), providing very reliable detection of people who are seated.

- Do not site in area where the ceiling is more than 4 m high.
- Do not install US sensors in places subject to interference from vibration.
- Do not install US sensors facing one another.



PIR high density detection is able to detect the slightest move also and it is adapted for working areas.

- PIR can be suitable where a defined detection pattern is required.
- Do not site in places where the temperature of the ambient air is similar to that of the human body.
 - Do not install IR sensors in area in which objects, furnitures or walls break the signal.

STEP 3 _ DEFINE THE BEST LAYOUT

2 PASSAGEWAYS

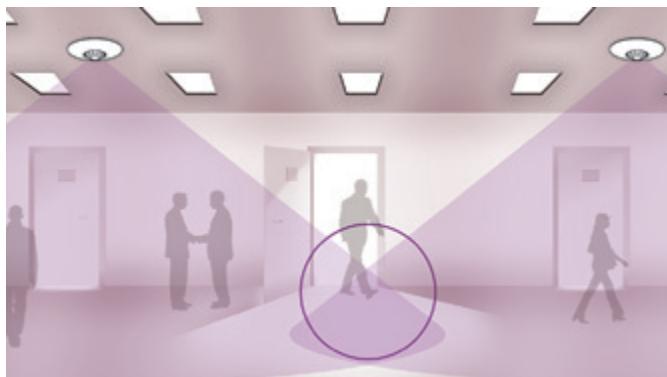
These are areas in which people “move around”, such as corridors, halls, stairways, archive areas, toilets, etc.

Positioning

For optimum detection, the sensor must have an unobstructed view (no obstacles in the sensor's detection field).

The following types of presence sensor can be used:

- for wall mounting, with an 180° detection area
- for ceiling mounting, with long range detection areas.



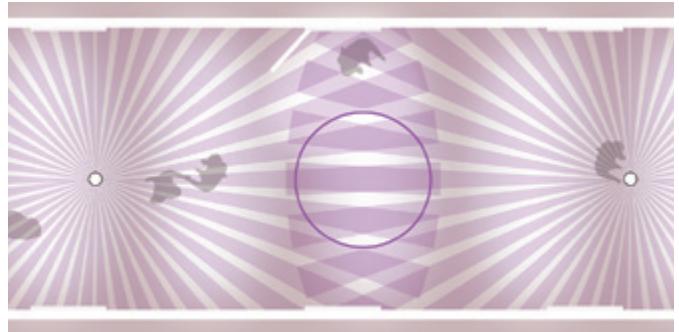
The detection areas in horizontal or vertical spaces where people move around must overlap, to avoid any blind spots.

The transverse detection performance is more important than the radial performance.

Recommendations

Access points (doors) must be fully covered by the detection areas.

The sensors must not have any luminous flux (luminaire, window) in direct view, to ensure correct measurement of the light level.



•  **PIR detection** should be given preference. It provides good detection performance for people moving around, with a long detection range.

- Do not site in places where the temperature of the ambient air is similar to that of the human body
- Do not install IR sensors in area in which objects, furnitures or walls break the signal
- Do not install in area where the occupants move around very little

 **Microwave detection** is sensitive to movement and is ideal for large spaces and areas that have an awkward shape or where fine motion detection is required.

- Avoid metallic objects directly in front of the sensor head.
- Do not fix the sensor to an unstable or vibrating surface.
- **Microwave sensors** can detect through glass, therefore careful consideration on location is needed in certain applications.

STEP 4

CONFIGURE THE SENSOR

Lighting Management sensors are factory pre-set. The configuration tool, Cat.No 0 882 40, can be used to configure the sensors with customised settings by sending and receiving data via infrared: easy set-up and maintenance guaranteed! The following functions can then be adjusted:

READING, VIEWING, MODIFICATION AND WRITING OF DETECTOR SETTINGS FOR EXAMPLE



Time delay

Each time there is a movement, a time delay – or inner clock – is restarted. The light stays on until this time delay has elapsed, as the space is considered to be occupied.

Recommendation:

10 to 15 minutes for work areas, 5 minutes for passageways.



Daylight setpoint

Value at which the load comes on if light level is below the light setting and goes off if it is above this threshold. The Daylight setpoint can be set up to a maximum of 1275 lux.

Recommendation:

passageway and corridors: 100 lux

stairways: 150 lux

offices: 300 - 500 lux.



Sensitivity

For each technology, the sensitivity setting is used to:

- reduce or increase the detection area
- reduce the disturbing effects of air currents, air conditioning and air flows from heating.

To set the sensitivity levels, go to the detection area and check that the sensor covers the strategic positions in the room (entrance door, desk).



PROCEDURE FOR CALIBRATION

In order to set this calibration, it is necessary to measure the surrounding light level. This measure can be done automatically by the luminosity cell of the configuration gateway or manually in using a luxmeter.

A wizard allows to follow early the different steps for regulating the electric light factor:

- switch off lights and open blinds before measuring surrounding light level
- switch on lights and close blinds before measuring a new time surrounding light level

SETTINGS FILE MANAGEMENT

To facilitate the configuration of all detectors of a site and the maintenance of them, the configuration tool offers powerful functionalities:

- recording configuration of all detectors of a site into a setting file.
- editing manually setting file off-line for later uploading into detectors.
- transfer of settings files by sending e-mail or using shared cloud platform.
- comparison of settings files for viewing deviations.

SELECTION OF OPERATING MODES FOR EXAMPLE



Occupancy (Auto ON/Auto OFF mode)

Automatic switch-on:

- on detection of presence if there is an insufficient natural level of light.

Automatic switch-off:

- if no presence is detected and at the end of the time delay set
- if there is a sufficient level of natural light (activated light regulation).

Any new detection causes an automatic switch on if there is insufficient light.



Vacancy (Manual ON/Auto OFF mode)

Manual switch-on, automatic switch-off:

- where no presence is detected and at the end of the time delay set.

Following switch-off, any new detection within a 30-second period will cause the device to be switched on automatically.

After 30 seconds, the device is switched on via a manual switch.



APPLICATION EXAMPLES

FOR SPECIFIC
BUILDING SPACES



HALL ENTRANCE



Switch-on must be triggered by a person passing and switch-off must be automatic after he/she has left, but only if there is insufficient natural light.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection as soon as the natural light level is insufficient.

Switch-off

Automatic when the area is no longer occupied after a time delay, or as soon as the natural light level is sufficient.

SPECIFIC REQUIREMENTS

Detection range suitable for large area with possibly several circuits to control.

SOLUTIONS

1



Cat.No 0 488 07

Stand-alone lighting sensor
PIR 360°
Range ø8 m
False-ceiling mounted
ON/OFF control
IP 41

OR

2



3

Cat.Nos 0 488 34 + 0 488 51

SCS lighting sensor + stand-alone room controller
PIR 180°
Side range 15 m
Surface wall mounted
2 x DALI dimming output (16 ballasts max)
1 fan output
IP 55

CORRIDORS



Switch-on must be triggered by a person passing and switch-off must be automatic after he/she has left, but only if there is insufficient natural light.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection as soon as the natural light level is insufficient.

Switch-off

Automatic when the area is no longer occupied after a time delay, or as soon as the natural light level is sufficient.

SPECIFIC REQUIREMENTS

Detection range suitable for long and strait area



For installation of 2 circuits:
1/3 luminaires is permanent,
controlled by a timer, the
other 2/3 are controlled by
motion sensors

SOLUTIONS

- 1 Use PIR corridor sensors to provide long range front detection & ensure the detection areas overlap so that occupants are not left in the dark.



Cat.No 0 489 41

Stand-alone motion sensor
PIR 360°
Range ø8 m
False-ceiling mounted
ON/OFF control
IP 41



2



Cat.No 0 489 17

Stand-alone lighting sensor
PIR 180°
Side range ø15 m
Surface mounted on a wall can be
mounted in/on a corner unsing accessory
ON/OFF control
IP 42



1



Cat.No 0 489 36

System DALI lighting sensor
PIR 2 x 180°
Side range 2 x 12 m
False-ceiling mounted
DALI bus control
IP 41

Using 100 lux & a 5 minute time delay will provide the right level of lighting and maximum energy savings.

STAIRWAY



Switch-on must be triggered by a person passing and switch-off must be automatic after he/she has left.



CONTROL REQUIREMENTS

Lighting switched on & off automatically with a motion sensor installed on each floor.

Switch-on

Automatic by presence detection as soon as the natural light level is insufficient.

Switch-off

Automatic when the area is no longer occupied, after time delay.

SPECIFIC REQUIREMENTS

Detection range suitable for area that have an awkward shape

SOLUTIONS

1

**Cat.No 5 740 47**

Stand-alone motion sensor
PIR 140°
Side range 8 m
Wall flush mounted
ON/OFF control
IP 41

OR

2

**Cat.No 0 489 55/56/57**

Stand-alone lighting sensor
MW 360°
Side range 22 x 6 m
False-ceiling mounted
ON/OFF or dimming control
DALI ballasts (30 max)
IP 40
Adjustable head to suit the detection pattern required

OPEN SPACE



The lighting must adapt to whether or not the office areas and aisles are occupied, while taking the natural light level into account.



CONTROL REQUIREMENTS

Lighting is switched on manually and switched off automatically or manually.

Switch-on

Manual via push-button.

Switch-off

- Gradual, as soon as the natural light level is sufficient.
- Automatic when the area in the open plan office is no longer occupied (after a time delay).
- Manual via push-button.

Lighting regulation

The amount of artificial lighting is adapted according to the natural light, so that a minimum lighting level is constantly maintained.

Note: users can adjust the light level to their own requirements using the push-button. Automatic management will take over again while the user is absent.

The area on the window side will thus have a lower level of artificial light than that on the opposite side.

SOLUTIONS

1



Cat.No 0 489 53

Stand-alone lighting sensor
PIR 360° miniature
Range ø9m
False-ceiling mounted
Dimming control
DALI ballasts (30 max)
IP 40

OR

1



Cat.No 0 489 35

System DALI lighting sensor
PIR + US 360°
Range ø8m
False-ceiling mounted
Dimming control
DALI bus
IP 20
Zones management for corridor/window sides with offset

2



The Dali bus has to be powered-on in using the power supply Cat.No 0 035 13 or 0 035 15.

SPECIFIC REQUIREMENTS

Discrete solution and possibly flexible to be easily adaptable for offices re-partitioning.

- 3 The push-button **Cat.No 5 739 87** can be used to control and dim lighting circuits manually.

INDIVIDUAL OFFICE



Switch-on and switch-off must be automatic according to whether or not the office is occupied and the natural light level.



CONTROL REQUIREMENTS

Lighting and fan are switched on manually and switched off automatically or manually.

Switch-on

Manual via push-button.

Switch-off

- As soon as the natural light level is sufficient.
- Automatic by detection that there is no-one present in the office (after time delay).
- Manual using the push-button.

SPECIFIC REQUIREMENTS

Detection technology suitable for very thin movement.

SOLUTIONS

- 1 Use dual-tech sensors to provide precise detection & avoid false switch-off.



Cat.No 0 488 06

Dual-tech sensor
360°
Range ø8 m
Manual ON-Auto OFF
Daylight control - 300 lux
IP 20 - Ceiling mounted



Cat.No 0 488 04

PIR sensor
360°
Range ø5 m
High density lens with fan control IP 41
Ceiling mounted

- 2 The push-button **Cat.No 5 720 31** can be used to control lighting circuits manually.



Using 350 lux & a 10 minute time delay combined with Vacancy detection will ensure maximum energy savings.

MEETING ROOM



Room occupants must be able to control and dim the light and also the blinds, screen and ventilation according to their requirements.



CONTROL REQUIREMENTS

Lighting and fan are switched on manually and switched off automatically or manually.

Switch-on

Manual via push-button or touch screen.

Switch-off

- Gradual, as soon as the natural light level is sufficient.
- Automatic by detection that there is no-one present in the meeting room (after time delay).
- Manual via push-button or touch screen.

Lighting regulation

The amount of artificial lighting is adapted according to the natural light, so that a minimum lighting level is constantly maintained.

Note: users can adjust the light level to their own requirements using the push-button. The area on the window side will thus have a lower level of artificial light than that on the opposite side.

The scenario push-buttons, remote control or touch screen can be used to activate projection, end of projection, full light, etc. scenarios. The ventilation will switch from ECO mode to COMFORT mode when the presence of a person is detected.

SPECIFIC REQUIREMENTS

Detection technology suitable for very thin movement.

SOLUTIONS

1



Cat.No 0 784 52

Dual-tech sensor
180°
Maximum range 8 m
Manual ON-Auto OFF
Daylight control - 300 lux
IP 20 - Wall-mounting

OR

2



Cat.Nos 0 488 22 + 0 488 47

System SCS lighting sensor +
system SCS room controller
PIR + US 360°
Range ø8 m
IP 20 - ceiling mounting
Multi-application:
- 2 x 1-10 V dimming outputs
- 1 blind output
- 1 fan output
Room controller fixed directly
to the false ceiling via cable
ducting

3

- 4 The push-button **Cat.No 5 739 87** can be used to control lighting circuits manually.

- 5 An additional remote control **Cat.No 0 882 31** can bring more flexibility for the occupants.

CLASSROOM

2 3 4



The lighting is dependent both on whether the areas are occupied and on differences in the natural light level in the classroom.

An additional manual control can be used to dim the lighting.



CONTROL REQUIREMENTS

Lighting is switched on manually and switched off automatically or manually.

Switch-on

Manual via push-button for the room and the board.

Switch-off

- As soon as the natural light level is sufficient.
 - Automatic when the area in the classroom is no longer occupied, after a time delay.
- Automatic switch-off of the board lighting is linked to that of the classroom lighting.
- Manual using the push-button.

Lighting regulation

The amount of artificial lighting is adapted according to the natural light, so that a minimum lighting level is constantly maintained.

Note: users can adjust the light level to their own requirements using the push-button.

Automatic management will take over again while the user is absent.

The area on the window side will thus have a lower level of artificial light than that on the opposite side.

SPECIFIC REQUIREMENTS

Detection technology suitable for very thin movement with possible zones management.

SOLUTIONS

1



Cat.No 0 489 16

Stand-alone lighting sensor
PIR + US 180°
Side range 12 m
Surface wall mounted
ON/OFF control - IP 42

OR

2



Cat.No 0 489 35

System DALI lighting sensor
PIR + US 360° - Range ø8 m
False-ceiling mounted
Dimming control
DALI bus - IP 20
Zones management for corridor/window sides with offset
The DALI bus has to be powered-on in using the power supply
Cat.No 0 035 13 or 0 035 15.

3



2

Cat.Nos 0 488 22 + 0 488 52

System SCS lighting sensor + stand alone room controller
PIR + US 360°
Range ø8 m
False-ceiling mounted
2 x 1-10 V dimming outputs
Room controller fixed directly to the false ceiling via cable ducting
IP 20
Zones management for corridor/window sides with offset

4

- 5 The push-button **Cat.No 5 720 31** can be used to control lighting circuits manually.

RESTROOMS



Switch-on and switch-off must be automatic according to whether or not the area is occupied and the natural light level.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection as soon as the natural light level is insufficient.

Switch-off

Automatic when the area is no longer occupied after a time delay.

SOLUTIONS

1



Cat.No 0 489 41

Stand-alone motion sensor
PIR 360°
Range ø8 m
False-ceiling mounted
ON/OFF control
IP 41

OR

2



Cat.No 5 740 47

Stand-alone lighting sensor
PIR 140°
Side range 8 m
Wall flush mounted
ON/OFF control
IP 41

WAREHOUSE HIGH BAY



Switch-on and switch-off must be automatic according to whether or not the area is occupied and the natural light level.

The sensor must have a detection range suitable for very high areas.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection.

Switch-off

Automatic when the area is no longer occupied after a time delay, or as soon as the natural light level is sufficient.

SOLUTIONS

1



Cat.No 0 489 33

Stand-alone motion sensor

PIR 360° + 270°

Range ø8 m + 18 m

Surface wall mounted

ON/OFF control

IP 55

Multi direction adjust bale head to optimize detection performance

OR

1



Cat.No 0 489 59

Stand-alone motion sensor

PIR 360°

Range ø40 m at 15 m height

False-ceiling or surface ceiling mounted

ON/OFF control

IP 65

Operating temperature from - 30 °C to + 35 °C

Two clip-on masking shields included to allow for precise masking of the detection shape

SPECIFIC REQUIREMENTS

Detection range suitable for very high bay and possibly withstands water projection and rigorous climatic condition.

UTILITY ROOM



Switch-on and switch-off must be automatic according to whether or not the area is occupied.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection.

Switch-off

Automatic when the area is no longer occupied after a time delay.

SOLUTIONS

1



Cat.No 0 489 42

Stand-alone motion sensor
PIR 140°
Side range 8 m
Surface wall mounted
ON/OFF control
IP 55

OR

2



Cat.No 0 697 40

Stand-alone motion sensor
PIR 360°
Range ø8 m
Surface wall or ceiling mounted
ON/OFF control
IP 55
Directional head to make sure lights switch on as soon as the door opens

UNDERGROUND CAR PARK



Switch-on and switch-off must be automatic according to whether or not the area is occupied.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection.

Switch-off

Automatic when the area is no longer occupied after time delay.

SPECIFIC REQUIREMENTS

Withstanding to water projection and rigorous climatic condition.

SOLUTIONS

1



Cat.No 0 489 48

Stand-alone motion sensor
PIR 360°
Range ø8 m
Surface ceiling mounted
ON/OFF control
IP 41

OR

2



Cat.No 0 489 58

Stand-alone lighting sensor
PIR 360°
Range ø16 m at 7 m height
Luminaire batten mounted
ON/OFF control
IP 55
Operating temperature from -30 °C to +35 °C

OUTDOOR PARKING



Switch-on and switch-off must be automatic according to whether or not the area is occupied and the natural light level. The sensor must withstand outdoor stresses.



CONTROL REQUIREMENTS

Lighting is switched on & off automatically.

Switch-on

Automatic by presence detection as soon as the natural light level is insufficient.

Switch-off

Automatic when the area is no longer occupied after a time delay.

SPECIFIC REQUIREMENTS

Withstanding to water projection and secure weather conditions.

SOLUTIONS

- 1 Use PIR sensors to provide a large coverage area in terms of length & width.

Cat.No 0 489 43

PIR outdoor motion sensor
360° coverage
Range 8 m
IP 55
For wall or ceiling mounting



OR

- 1



Cat.No 0 697 40

Adjustable PIR outdoor motion sensor
Directional head to make sure lights switch on as soon as the door opens
360°
Range ø8 m
IP 55
Surface-mounting, on wall or ceiling



FOLLOW US
ALSO ON

@ website: www.legrand.com

 www.youtube.com/legrand

 www.twitter.com/legrand



Head office

and International Department
87045 Limoges Cedex - France
Tel: + 33 (0) 5 55 06 87 87
Fax: + 33 (0) 5 55 06 74 55