Lighting Management solutions
Best practice guide for office buildings

PUTTING A STOP TO ENERGY WASTE
LIGHTING CONTROL BEST PRACTICE GUIDE FOR OFFICE BUILDINGS

With years of experience developing and producing lighting controls, Legrand has helped many organizations identify and implement energy saving lighting control systems. While every facility offers unique challenges, there are optimal solutions available that meet the needs of building owners as well as facility managers and occupants.

Legrand offers a comprehensive range of lighting control products encompassing several product lines: occupancy sensors, actuators, daylighting controls, and products for integrated control among multiple building systems. With these product resources and unsurpassed technical expertise, Legrand ensures that lighting professionals choose the right combination of products to achieve the control needs of today’s office buildings.

This Best Practice publication focuses on design, specification, and installation guidance for lighting management in commercial office buildings. It features applications that illustrate the best control practices for a variety of spaces. Each best practice considers the space use characteristics, occupant needs, lighting operation costs, energy savings and compliance with the requirements of most national standards.

For each of the examples given in this document, there is a recommended configuration method:
- Plug n’go: products automatically self-configure when powered up.
- Push n’ learn: configuration is done by hand (no tool required) by pressing the learn key on each product.
- Software suite: software-based configuration to meet functionally more advanced requirements.

The best practice for open office areas is dependent upon the building size and the owner’s needs. For small, single floor office buildings or an open office area in a leased space, occupancy sensors are a good strategy. For larger, owner occupied buildings, or multi-floor tenants, scheduling using actuators is recommended because one time clock can control lighting on multiple floors. Combining scheduling and occupancy sensors control offers the benefit and convenience of keeping lighting on during normal hours of operation, yet after hours allows occupancy based control for additional energy savings.

Each Best Practice includes:
- Description of application
- List of control needs
- Product solution
- Design considerations
- Lighting plan sketch
- Installation notes
- Wiring and installation diagrams
- Equipment schedule.
OFFICE BUILDING BEST PRACTICE GUIDE ROADMAP

The Best Practice Guide uses the office building layout above as a working key plan. Each space type in the floor plan has at least one lighting control best practice contained in the guide. Determine a best practice lighting control design for each building space by using the summary chart (next page) to find the solution that fits your space needs. Additional solutions are included for exterior lighting and for overall building-wide lighting control system design.

These best practice designs address typical control needs in common office spaces. Although not described in this guide, many other areas in an office building are ideal for lighting control including atriums, cafeterias, warehouses, exercise rooms, IT server rooms and more.
## SUMMARY OF BEST PRACTICES FOR LIGHTING CONTROL IN OFFICE BUILDINGS

<table>
<thead>
<tr>
<th>Space/application practice</th>
<th>Detection technology</th>
<th>Control strategy</th>
<th>Daylighting</th>
<th>Control</th>
<th>Scenarios</th>
<th>Type of loads</th>
<th>Motors control</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small conference room (1)</td>
<td>PIR</td>
<td>Vacancy sensing</td>
<td>yes</td>
<td>ON/OFF</td>
<td>no</td>
<td>LED</td>
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<td>Occupancy sensing</td>
<td>no</td>
<td>Dimming</td>
<td>no</td>
<td>1-10 V fluorescent, Eco halogen</td>
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<td>Dimming</td>
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<td>1-10 V fluorescent</td>
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<td>1-10 V fluorescent</td>
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<td>DALI</td>
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<td>yes</td>
<td>Dimming</td>
<td>no</td>
<td>DALI</td>
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<td>Cubicle</td>
<td>Dual tech</td>
<td>Vacancy sensing</td>
<td>no</td>
<td>ON/OFF</td>
<td>no</td>
<td>Fluorescent</td>
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<td>Hallway elevator (1)</td>
<td>Ultrasonic</td>
<td>Occupancy sensing</td>
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<td>ON/OFF</td>
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<td>Fluorescent</td>
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<td>no</td>
<td>Fluorescent</td>
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<td>Lobby</td>
<td>PIR &amp; Dual tech</td>
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<td>Dimming</td>
<td>yes</td>
<td>Halogen</td>
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<td>Restroom</td>
<td>Ultrasonic</td>
<td>Occupancy sensing</td>
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<td>ON/OFF</td>
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<td>Fluorescent</td>
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<td>Exterior</td>
<td>PIR</td>
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<td>yes</td>
<td>ON/OFF</td>
<td>no</td>
<td>HID lamps, fluorescent</td>
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<td>61</td>
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</table>
- Vacancy sensing
- ON/OFF control LED
- Daylighting

CONTROL NEEDS
1. Manual lighting control with automatic OFF based on occupancy
2. Manual ON by push-buttons

LIGHTING
Ceiling-mounted LED luminaires

APPLICATION DESCRIPTION
Space use: Meetings of small groups (e.g. project team)
Dimensions: 4 x 5 m = 20 m²
Ceiling height: 2.50 m
Windows: Along one wall providing view to exterior provided with horizontal blinds provided

SOLUTION
1. Ceiling-mounted PIR sensor
2. Room controller 2 outputs
3. Push-buttons
Vacancy sensing, ON/OFF control LED, daylighting

**DESIGN SOLUTION DESCRIPTION**

The push-button Cat.No 770 40 or push-button with LED indicator Cat.No 770 33 (Mosaic) or push-button Cat.No 572 030 square version or Cat.No 573 050 round version (Arteor) are used to turn ON/OFF manually the central light circuit (circuit 1) and the white board lights (circuit 3).

The PIR BUS sensor Cat.No 488 20 is mounted in the centre of the conference room for a full view. It turns all lights off when the room is not occupied. It turns the central lights OFF (circuit 1) when the lux set point is reached.

The room controller Cat.No 488 50 is fixed on the cable tray in the false ceiling.
INSTALLATION NOTES

1. Mount the BUS sensor Cat.No 488 20 in the centre of the room for a full view of the room. Mount the push-button Cat.No 770 40 or Cat.No 770 33 (Mosaic), 572 030 or 573 050 (Arteor) at the entrance of the room and near the white board.

2. Connect the BUS sensor and the push-button to the room controller Cat.No 488 50.

The connection between the BUS sensor Cat. No 488 20 and the room controller Cat.No 488 50 can be made with BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord.

3. Position the switch of the controller on position “n°1”. Daylight function will control circuit n°1 only. Please refer to instruction sheets for more details.

4. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for small conference rooms, use the mobile configurator Cat.No 882 30 to change sensor settings if needed [time, lux, sensitivity].
SMALL CONFERENCE ROOM

- Vacancy sensing
- ON/OFF control LED
- Daylighting

### EQUIPMENT SCHEDULE

#### LOCAL MANAGEMENT

<table>
<thead>
<tr>
<th>1st option</th>
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<th>Description</th>
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<tr>
<td>488 50</td>
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<td>Room controller 2 outputs 16 A</td>
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</tr>
<tr>
<td>488 20</td>
<td>1</td>
<td>Ceiling-mounted PIR BUS sensor 360 °</td>
<td></td>
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<tr>
<td>770 40</td>
<td>2</td>
<td>Push-button - Mosaic</td>
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<tr>
<td>572 030</td>
<td>2</td>
<td>Push-button square version Arteor</td>
<td></td>
</tr>
<tr>
<td>573 050</td>
<td>2</td>
<td>Push-button round version Arteor</td>
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### EQUIPMENT SCHEDULE

#### CENTRALIZED MANAGEMENT

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<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 41</td>
<td>1</td>
<td>BUS/SCS lighting room controller ON/OFF 2 outputs 16 A</td>
<td></td>
</tr>
<tr>
<td>488 20</td>
<td>1</td>
<td>Ceiling-mounted PIR BUS sensor 360 °</td>
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<tr>
<td>784 75</td>
<td>2</td>
<td>BUS lighting control unit 1-way - Mosaic</td>
<td></td>
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<tr>
<td>573 987</td>
<td>2</td>
<td>BUS lighting control unit - Arteor</td>
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</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
- Occupancy sensing
- Dimming control fluorescent 1-10 V
- ON/OFF control ECO halogen
- Automation control

CONTROL NEEDS
1. Automatic lighting control based on occupancy
2. Manual control over the 2 outputs (halogen lights + screen)
3. Occupancy-based control of fan system
4. Fully automatic-OFF

LIGHTING
Ceiling-mounted T5 luminaires, 1-10 V ballast
LED luminaires

APPLICATION DESCRIPTION
Space use: Meetings of small groups (e.g. project team)
Dimensions: 5x5 m = 25 m²
Ceiling height: 2.50 m
Windows: None

SOLUTION
1. Wall-mounted DUAL technology BUS sensor
2. BUS/SCS room controller 2 outputs for lights (1 for halogen & 1 for fluorescent) + 2 outputs for automation (1 for the fan + 1 for the screen)
3. Remote control
SMALL CONFERENCE ROOM

Occupancy sensing, dimming control fluorescent 1-10 V, ON/OFF control ECO halogen, automation control

DESIGN SOLUTION DESCRIPTION

The occupancy BUS sensor is used to automatically turn lights ON (circuit 1) & fan ON (circuit 3) when the conference room is occupied. The BUS sensor Cat.No 488 23 is mounted in the corner to prevent a view out the doorway that might otherwise result in false activation.

The remote control Cat.No 882 33 is used to turn halogen lights ON & OFF (circuit 3), to control the screen (circuit 2) and to dim manually the central lights (circuit 2).

All lights + the fan system are turned OFF when the room is not occupied.

The BUS/SCS room controller Cat.No 488 47 is mounted in the false ceiling on the cable tray.
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES

1. Mount the BUS sensor Cat.No 488 23 in the corner.
2. Connect the BUS sensor to the BUS/SCS room controller Cat.No 488 47 on input 4. The connection between the BUS sensor Cat.No 488 23 and the BUS/SCS room controller Cat.No 488 47 can be made with BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. Connect the 4 circuits to the BUS/SCS room controller.
3. Configure the remote control Cat.No 882 33 and the sensor to the room controller using the push & learn mode (see push & learn manual for more details).
4. The sensor is shipped with a factory pre-set time delay of 15 minutes, 300 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for small conference rooms, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
- Occupancy sensing
- Dimming control fluorescent 1-10 V
- ON/OFF control ECO halogen
- Automation control

### SMALL CONFERENCE ROOM

#### EQUIPMENT SCHEDULE
#### LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>488 47</td>
<td>1</td>
<td>BUS/SCS room controller 2 outputs ON/OFF or 1-10 V, 2 outputs for blinds or fans</td>
</tr>
<tr>
<td>488 23</td>
<td>1</td>
<td>Wall-mounted DUAL technology BUS sensor 180 °</td>
</tr>
<tr>
<td>882 33</td>
<td>1</td>
<td>IR remote control</td>
</tr>
</tbody>
</table>

**OPTION**
To maximise comfort a 4 scenarios control can be added.

Please refer to page 65 for more information (Centralized management)
CONTROL NEEDS
1. Turn lights manually ON and automatically OFF based on occupancy
2. Manual override with ON/OFF and dimming cap
3. Automatic dimming of lights according to daylight measurement

LIGHTING
Ceiling-mounted luminaires using T5, 1-10 V electronic ballasts
LED luminaires using 1-10 V electronic ballast

APPLICATION DESCRIPTION
Space use     Meetings, presentations (e.g. project team)
Dimensions    10 x 5 m = 50 m²
Ceiling height 2.50 m
Windows    Along one wall providing view to exterior

SOLUTION
1. Ceiling-mounted DUAL technology BUS sensor
2. BUS/SCS room controller 4 outputs for 1-10 V ballasts
3. Remote control
4. BUS push-button

- Vacancy sensing
- Dimming control fluorescent
  1-10 V
- ON/OFF control LEDs
- Daylighting
DESIGN SOLUTION DESCRIPTION

The BUS push-button Cat.No 784 72 (Mosaic) or Cat.No 573 987 (Arteor) is used to turn ON/OFF and dim manually the light circuit above the table (circuit 1 + 2).

The IR remote control Cat.No 882 31 is used to turn ON/OFF and dim manually the 2 light circuits.

The DUAL technology BUS sensor Cat.No 488 22 is mounted in the centre of the conference room for a full view. It turns all lights OFF when the room is not occupied. During occupied times the lights above the table (circuit 1) are automatically dimmed according to the daylight set point.

The BUS/SCS room controller Cat.No 488 43 is fixed on the cable tray in the false ceiling. Its 4 dimmable outputs respectively control the 4 light circuits, screen luminaires, white board luminaires and central luminaires on the windows side and central luminaires on the door side.
**INSTALLATION AND WIRING DETAILS**

**INSTALLATION NOTES**

1. Mount the BUS sensor Cat.No 488 22 in the centre of the room for a full view of the room. Mount the SCS push-button Cat.No 784 72 (Mosaic) or Cat.No 573 987 (Arteor) at the entrance to the room.

2. Connect the BUS sensor to the BUS/SCS room controller Cat.No 488 43. The connection between the BUS sensor Cat.No 488 22 and the BUS/SCS room controller Cat.No 488 23 can be made with BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. They are connected to the same input (No 3) as they control the same output (circuit 2). Connect the 4 circuits to the BUS/SCS room controller.

3. Configure the remote control Cat.No 882 31, the BUS sensor and the BUS push-button to the appropriate outputs of the BUS/SCS room controller.

   Please refer to push & learn manual for more details.

4. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for large conference rooms, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
LARGE CONFERENCE ROOM

- Vacancy sensing
- Dimming control fluorescent 1-10 V
- ON/OFF control LEDs
- Daylighting

EQUIPMENT SCHEDULE
LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 43</td>
<td>1</td>
<td>BUS/SCS dimming room controller 1-10 V, 4 outputs</td>
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<tr>
<td>488 22</td>
<td>1</td>
<td>Ceiling-mounted DUAL technology BUS sensor 360 °</td>
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<tr>
<td>784 72</td>
<td>1</td>
<td>BUS lighting control unit 2-way - Mosaic</td>
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<tr>
<td>573 987</td>
<td>1</td>
<td>BUS lighting control unit - Arteor</td>
</tr>
<tr>
<td>882 31</td>
<td>1</td>
<td>IR remote control</td>
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</tbody>
</table>

OPTION
To maximise comfort Cat.No 035 51 & 784 74 can be added. This combination provides control of all lighting circuits and ensures control of different scenarios.

Please refer to page 65 for more information (Centralized management)
- Vacancy sensing
- Dimming control fluorescent 1-10 V
- ON/OFF control ECO halogen
- Automation control
- Scenarios
- Daylighting

CONTROL NEEDS
1. Manually turn lights ON and automatically turn lights OFF based on occupancy
2. Manual override with ON/OFF capability
3. 2 scenarios
4. Manually raise ride of the screen

LIGHTING
Ceiling-mounted luminaires using, T5, 1-10 V
ECO halogen luminaires

APPLICATION DESCRIPTION
Space use: Meetings, presentations (e.g. project team)
Dimensions: 12 x 5 m = 60 m²
Ceiling height: 2.50 m
Windows: Along one wall providing view to exterior

SOLUTION
1. Ceiling-mounted DUAL technology BUS sensor
2. BUS lighting control 1-way push-button
3. BUS multifunction 2-way switch
4. BUS/SCS DIN dimming controller 4 outputs for 1-10 V ballasts
5. BUS/SCS DIN multi-application controller 2 outputs
6. Remote control
Vacancy sensing, dimming control fluorescent 1-10 V, ON/OFF control ECO halogen, automation control, scenarios, daylighting

**DESIGN SOLUTION DESCRIPTION**

The BUS/SCS DIN dimming controller Cat.No 026 12 has 4 dimmable outputs. It controls the 4 lighting circuits, controls luminaires (Dim) + screen luminaires [ON/OFF] + white board luminaires [ON/OFF]

4 BUS/SCS DIN multi-application controllers Cat.No 038 42 control 3 blinds motors & the screen motor.

The BUS multifunction control Cat.No 784 73 (Mosaic) or Cat.No 573 974 (Arteor) has 2 directions. It controls [up/down/stop] the screen and the blind motors.

The BUS lighting control Cat.No 784 75 (Mosaic) or Cat.No 573 987 (Arteor) is used to turn ON/OFF and dim manually the light circuit above the table circuit.

The remote control Cat.No 882 33 is used to:
- turn blinds up/down/stop.
- control 1 scenario ON/OFF (for example scenario on: video presentation: central lights are dimmed to 33%, screen is down, screen luminaires are OFF, blinds are half down) scenario OFF (screen is up, blinds are up, screen luminaires and central lights are dimmed automatically by the sensor according to available daylight).
- turn whiteboard lights ON/OFF.

The DUAL technology BUS sensor Cat.No 488 22 is mounted in the centre of the conference room for a full view. It turns all lights OFF when the room is not occupied. During occupied times the light above the table circuit is dimmed automatically according to daylight.
INSTALLATION NOTES

1. Mount the BUS sensor Cat.No 488 22 in the centre of the room for a full view of the room. Mount the BUS push-button Cat.No 784 75 (Mosaic) or Cat.No 573 987 (Arteor) at the entrance of the room. Mount the BUS multifunction control Cat.No 784 73 (Mosaic) or Cat.No 573 974 (Arteor) between the screen and blinds.

2. Mount BUS/SCS DIN multi-application controllers Cat.No 038 42 + BUS/SCS DIN dimming controller Cat.No 026 12 + BUS/SCS DIN power supply Cat.No 035 60 in a cabinet.

3. Connect all these devices together with the BUS/SCS cable Cat.No 492 31/32/33.

4. Configure the sensors, the controls and the controller using Legrand Lighting Management suite - pack 1 Cat.No 488 80.

5. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for large conference rooms, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
LARGE CONFERENCE ROOM

- Vacancy sensing
- Dimming control fluorescent 1-10 V
- ON/OFF control ECO halogen
- Automation control
- Scenarios
- Daylighting

EQUIPMENT SCHEDULE
LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tr>
<td>038 42</td>
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<td>BUS/SCS DIN multi-application controller 2 outputs</td>
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<tr>
<td>026 12</td>
<td>1</td>
<td>BUS/SCS DIN dimming controller 4 outputs 1-10 V</td>
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<td>488 22</td>
<td>1</td>
<td>Ceiling-mounted DUAL technology BUS sensor 360 °</td>
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<tr>
<td>784 75</td>
<td>1</td>
<td>BUS lighting control unit 1-way - Mosaic</td>
</tr>
<tr>
<td>573 987</td>
<td>1</td>
<td>BUS lighting control unit - Arteor</td>
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<td>035 60(*)</td>
<td>1</td>
<td>BUS/SCS DIN power supply 27 V 1200 mA</td>
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<tr>
<td>784 73</td>
<td>1</td>
<td>BUS multifunction control unit 2-way - Mosaic</td>
</tr>
<tr>
<td>573 974</td>
<td>1</td>
<td>BUS multifunction control unit - Arteor</td>
</tr>
<tr>
<td>882 33</td>
<td>1</td>
<td>IR remote control</td>
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</table>

OPTION
To maximise comfort Cat.No 035 51 & 784 74 can be added. This combination provides control of all lighting circuits and ensures control of different scenarios.

Please refer to page 65 for more information (Centralized management)

(*) This product can be shared.
PRIVATE OFFICES

- Vacancy sensing
- Dimming control fluorescent 1-10 V
- Daylighting

CONTROL NEEDS
Manual lighting control with automatic OFF based on occupancy

LIGHTING
Ceiling-mounted fluorescent luminaires with electronic ballast

APPLICATION DESCRIPTION
Space use: Open office activities such as reading, computer work
Dimensions: [3 x 5 m] x 2
Ceiling height: 2.50 m
Windows: Windows along one wall providing view to exterior

SOLUTION
1. Ceiling-mounted PIR technology sensor
2. BUS/SCS room controller 2 outputs for 1-10 V ballasts
3. BUS lighting control 1-way push-button
PRIVATE OFFICES

Vacancy sensing, dimming control fluorescent 1-10 V, daylighting

DESIGN SOLUTION DESCRIPTION
The BUS push-button Cat.No 784 75 (Mosaic) or Cat.No 573 987 (Arteor) controls and dims lights manually, in each office. The PIR BUS sensor Cat.No 488 20 is mounted at the centre of each office for a full view. It turns lights OFF when the office is not occupied. During occupied times lights are dimmed according to available daylight. The BUS/SCS room controller Cat.No 488 42 controls 2 circuits.
**INSTALLATION AND WIRING DETAILS**

Private offices: vacancy sensing.

**INSTALLATION NOTES**

1. Mount the BUS sensor Cat.No 488 20 in the centre of the room for a full view of the room. Mount the BUS push-button Cat.No 784 75 (Mosaic) or Cat.No 573 987 (Arteor) at the entrance of each office.

2. Connect the BUS sensor and the BUS push-button of office 1 to the BUS/SCS room controller Cat.No 488 42. The connection between the BUS sensor, BUS push-button and the BUS/SCS room controller can be made with BUS/SCS cable Cat.No 492/31/32/33 or RJ 45 patch cord. Connect them to input 1 and connect the light circuit 1 to output 1. Do the same for each office.

3. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for private offices, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
PRIVATE OFFICES

- Vacancy sensing
- Dimming control fluorescent 1-10 V
- Daylighting

EQUIPMENT SCHEDULE
LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT

<table>
<thead>
<tr>
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<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 A2</td>
<td>1</td>
<td>BUS/SCS room controller, 2 outputs 1-10 V</td>
</tr>
<tr>
<td>488 B2</td>
<td>2</td>
<td>Ceiling-mounted PIR BUS sensor 360 °</td>
</tr>
<tr>
<td>784 75</td>
<td>2</td>
<td>BUS lighting control unit 1-way - Mosaic</td>
</tr>
<tr>
<td>573 987</td>
<td>2</td>
<td>BUS lighting control unit - Arteor</td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
- Vacancy sensing
- Dimming control fluorescent 1-10 V
- Automation control
- Daylighting

CONTROL NEEDS
1. Automatic fan ON based on occupancy
2. Manual lights ON
3. Automatic dimming luminaire above desk
4. Manual control of blinds
5. Automatic OFF for lights and fan

LIGHTING
8 ceiling luminaires using T5 lamps and electronic ballast lamp. Electronic dimming ballasts (1 – 10V)

APPLICATION DESCRIPTION
Space use
Office activities such as reading, computer work

Dimensions
7 x 5 m

Ceiling height
2.50 m

Windows
View windows along one wall providing view to exterior with horizontal blinds provided

SOLUTION
1. DUAL technology BUS sensor
2. BUS/SCS room controller for fan control and dimming
3. BUS push-buttons
LARGE PRIVATE OFFICE

Vacancy sensing, dimming control fluorescent 1-10 V, automation control, daylighting

DESIGN SOLUTION DESCRIPTION

It is used to automatically turn the light and fan system OFF when the room is not occupied. It turns the fan ON upon occupancy. The DUAL SCS sensor Cat.No 488 22 measures available daylight and dims desk lights accordingly. The BUS push-button Cat.No 784 72 (Mosaic) or Cat.No 573 987 (Arteor) controls manually and dims light circuits \(1\) & \(2\). The BUS multifunction control Cat.No 784 71 (Mosaic) or Cat.No 573 974 (Arteor) is used to control blinds.
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES

1. Mount the BUS sensor Cat.No 488 22 at the centre of the room for a full view of the room. Mount the BUS push-button Cat.No 784 72 (Mosaic) or Cat.No 573 987 (Arteor) and the BUS multifunction control Cat.No 784 71 (Mosaic) or Cat.No 573 974 (Arteor) at the entrance of the room.

2. Connect the BUS sensor and the BUS push-button Cat.No 784 72 / 573 987 to the BUS/SCS room controller Cat.No 488 47 with the BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. They are connected to the same input (No 1). Connect the BUS multifunction control to the input (No 3). Connect the 4 power circuits to the BUS/SCS room controller.

3. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for large private offices, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
- Vacancy sensing
- Dimming control fluorescent 1-10 V
- Automation control
- Daylighting

**EQUIPMENT SCHEDULE**

**LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT**

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>488 22</td>
<td>1</td>
<td>Ceiling-mounted DUAL technology BUS sensor 360°</td>
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<tr>
<td>488 47</td>
<td>1</td>
<td>BUS/SCS room controller 2 outputs ON/OFF or 1-10 V, 2 outputs for blinds and fans</td>
</tr>
<tr>
<td>784 72</td>
<td>1</td>
<td>BUS lighting control unit 2-way - Mosaic</td>
</tr>
<tr>
<td>573 987</td>
<td>1</td>
<td>BUS lighting control unit - Arteor</td>
</tr>
<tr>
<td>784 71</td>
<td>1</td>
<td>BUS multifunction control unit 1-way - Mosaic</td>
</tr>
<tr>
<td>573 974</td>
<td>1</td>
<td>BUS multifunction control unit - Arteor</td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
CONTROL NEEDS
1. Manually turn lights ON and automatically OFF based on occupancy
2. Manual control and override
3. Occupancy-based of fan system control

LIGHTING
Compact fluorescent down lightings

APPLICATION DESCRIPTION
Space use: Meal preparation, eating, leisure activities
Dimensions: 5 x 7 m
Ceiling height: 2.50 m
Window: None
Window blinds: None

SOLUTION
1. Wall-mounted PIR sensor
2. Room controller 2 outputs
3. Push-button

- Occupancy sensing
- ON/OFF control fluorescent
- Automation control
- Daylighting
DESIGN SOLUTION DESCRIPTION
The PIR corner mount BUS sensor Cat.No 488 24 is used to automatically turn the lights & fan ON upon occupancy. Lights are turned OFF in response to daylight. When the room is not occupied lights and fan are automatically turned OFF. The sensor is mounted in the corner of the room, along the same wall as the door, so that detection outside the door does not occur. Overriding light is possible using the push-button Cat.No 770 40 (Mosaic) or Cat.No 572 030 / 573 050 (Arteor) located near the door. The room controller Cat.No 488 50 is fixed on the cable tray in the false ceiling.

KITCHEN

Occupancy sensing, ON/OFF control fluorescent, automation control, daylighting
**INSTALLATION NOTES**

1. Mount the BUS sensor Cat.No 488 24 in the corner of the room for a full view of the room. Mount the push-button Cat.No 770 40 (Mosaic) or Cat.No 572 030 / 573 050 (Arteor) at the entrance of the room.

2. Connect the BUS sensor to the room controller Cat.No 488 50 with the BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. Connect the push-button to the auxiliary input. Connect the 2 circuits (fan & lights) to the room controller. Position the switch on the controller Cat.No 488 50 on position "1": The daylight function will control the light circuit only. Please refer to instruction sheets for more details.

3. The sensor is shipped with a factory pre-set time delay of 15 minutes, 300 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for kitchens, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
- Occupancy sensing
- ON/OFF control fluorescent
- Automation control
- Daylighting

### EQUIPMENT SCHEDULE

#### LOCAL MANAGEMENT

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<thead>
<tr>
<th>1st option</th>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 24</td>
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<td>Wall-mounted PIR BUS sensor 180 °</td>
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<tr>
<td>488 50</td>
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<td>Room controller 2 outputs 16 A</td>
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<td>770 40</td>
<td>1</td>
<td>Push-button – Mosaic</td>
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<tr>
<td>572 030</td>
<td>1</td>
<td>Push-button square version – Arteor</td>
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<tr>
<td>573 050</td>
<td>1</td>
<td>Push-button round version – Arteor</td>
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#### CENTRALIZED MANAGEMENT

<table>
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<th>Cat.Nos</th>
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<td>Wall-mounted PIR BUS sensor 180 °</td>
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</tr>
<tr>
<td>488 47</td>
<td>1</td>
<td>BUS/SCS room controller 2 outputs ON/OFF or 1-10 V + 2 outputs for blinds and fans</td>
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</tr>
<tr>
<td>784 75</td>
<td>1</td>
<td>BUS lighting control 1-way – Mosaic</td>
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</tr>
<tr>
<td>573 987</td>
<td>1</td>
<td>BUS lighting control unit – Arteor</td>
<td></td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
- Vacancy sensing
- Dimming control DALI
- Daylighting

CONTROL NEEDS
1. Manual ON and Automatic OFF based on occupancy
2. Automatic dimming

LIGHTING
Ceiling mounted indirect luminaires using fluorescent lamp and DALI ballasts

APPLICATION DESCRIPTION
Space use: Open office activities including administration, clerical, filing, copy areas, finance, and engineering sales
Dimensions: Approx. 300 m²
Ceiling height: 2.50 m
Cubicle dimensions: 2.50 m x 2.50 m x 2.50 m
Windows: View windows along facade with horizontal blinds provided

SOLUTION
1. DUAL technology BUS sensors
2. BUS/SCS dimming room controller 4 outputs for DALI protocol
3. BUS push-buttons
Vacancy sensing, dimming control DALI, daylighting

**DESIGN SOLUTION DESCRIPTION**

Lights are manually turned ON by pressing the BUS multifunctional control Cat.No 784 73 (Mosaic) or Cat.No 573 974 (Arteor) located at the entrance of each zone. The DUAL technology BUS sensor Cat.No 488 22 covers 90 m² and assures adequate coverage (through partitions). Each zone is divided in 2 parts: close to the windows and further away from the windows. Each part is controlled by 2 DUAL technology BUS sensor Cat.No 488 22.

While the area is occupied the BUS sensor will hold the lighting ON and will dim automatically the associated circuit. After the area is vacated and after the sensor’s time delay expires, the BUS sensor will turn lights OFF.

Manual override is possible using the BUS multifunctional control (automatic dimming is disabled). The BUS/SCS room controller Cat.No 488 44 is fixed on the cable tray in the false ceiling.
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES
1. Mount the BUS sensor Cat.No 488 22 on a rigid, vibration-free surface. Mount the BUS multifunctional control Cat.No 784 73 (Mosaic) or Cat.No 573 974 (Arteor) at the entrance of the room.
2. Connect the BUS/SCS room controller Cat.No 488 44 to the BUS sensor and the BUS multifunctional control with the BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. Input 1 controls output 1.
3. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 500 lux for open offices, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
- Vacancy sensing
- Dimming control DALI
- Daylighting

**EQUIPMENT SCHEDULE**

**LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT**

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tbody>
<tr>
<td>488 22</td>
<td>4</td>
<td>Ceiling-mounted DUAL technology BUS sensor 360 °</td>
</tr>
<tr>
<td>488 44</td>
<td>1</td>
<td>BUS/SCS dimming room controller 4 outputs for DALI protocol</td>
</tr>
<tr>
<td>784 73</td>
<td>2</td>
<td>BUS multifunction control unit 2-way - Mosaic</td>
</tr>
<tr>
<td>573 974</td>
<td>2</td>
<td>BUS multifunction control unit - Arteor</td>
</tr>
</tbody>
</table>

**OPTION**

For maximum comfort you can add the daylight photocell Cat. No 488 28 placed it next to windows it will measure available daylight and will give this information to each sensor (open loop). Each sensor is commissioned to act according to this measurement. See photocell technical data sheet for more details.

Please refer to page 65 for more information (Centralized management)
- Time scheduling
- Dimming control DALI
- Daylighting

CONTROL NEEDS
1. Automatically turn pendant lights ON and OFF based on occupancy after hours and on weekends
2. Time scheduling, daylighting, manual switching

LIGHTING
Pendant mounted indirect/direct luminaires using T5 lamps, with DALI dimming ballasts.

APPLICATION DESCRIPTION
Space use: Open office activities including administration, clerical, filing, copy areas, finance, and engineering sales
Dimensions: approx. 600 m²
Ceiling height: 2.50 m
Windows: View windows along south facade with horizontal blinds provided
Window blinds: None

SOLUTION
1. BUS/SCS DIN dimming controller 8 outputs for DALI protocol
2. Zone management unit
3. Power supplies
4. BUS push-buttons
5. Lighting measurement cells
Design Solution Description

Lighting is controlled based on time schedules, manual control and daylighting. The zone management unit Cat.No 026 45 is used for automatically dimming 6 lighting zones based on available daylight. The 2 sensors Cat.No 488 20 are configured as daylight sensors only (detection function is disabled). They read the daylight level and provide the information to zone management unit Cat.No 026 45 and to DALI controller Cat.No 026 33. 3 lighting zones are raised or lowered accordingly to daylight level available in each zone (zone A = 1 + 4, zone B = 2 + 5, zone C = 3 + 6) and provide this information to zone management unit Cat.No 026 45 and to DIN DALI controller Cat.No 026 33. The light level of luminaires is raised or lowered accordingly.

After hours control is done through BUS push-buttons Cat.Nos 784 72 (Mosaic) or Cat.Nos 573 987 (Arteor). Lights are turned ON manually and remain ON for 30 minutes.
INSTALLATION NOTES

1. Mount the lighting measurement cells Cat.No 488 20 on the ceiling.
2. Mount the BUS push-buttons Cat.No 784 72 (Mosaic) or Cat.No 573 987 (Arteor) at the entrance of each zone.
3. Mount the BUS/SCS DIN power supplies Cat.Nos 035 60 & 035 64 + zone management unit Cat.No 026 45 + DIN DALI controller 8 outputs Cat.No 026 33 on a DIN rail.
4. Connect zone management unit + DIN DALI controller + BUS push-buttons + lighting measurement cell with BUS/SCS cable Cat.Nos 492 31/32/33.
5. Connect DALI ballast to DIN controller Cat.No 026 33 outputs.
6. Use software pack Cat.No 488 80 with the zone management unit Cat.No 026 45 to commission the lighting measurement cell, the DIN DALI controller, the BUS push-buttons. Please refer to Cat.No 488 80 instruction sheets for more details.
7. Use the software of zone management unit Cat.No 026 45 to commission automatic dimming conditions and to do the scheduling.
- Time scheduling
- Dimming control DALI
- Daylighting (open loop)

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 20</td>
<td>2</td>
<td>Lighting measurement cell</td>
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<tr>
<td>026 33</td>
<td>1</td>
<td>BUS/SCS DIN dimming controller 8 outputs for DALI protocol</td>
</tr>
<tr>
<td>784 72</td>
<td>2</td>
<td>BUS lighting control unit 2-way - Mosaic</td>
</tr>
<tr>
<td>573 987</td>
<td>2</td>
<td>BUS lighting control unit - Arteor</td>
</tr>
<tr>
<td>035 60(*)</td>
<td>1</td>
<td>BUS/SCS DIN power supply 27 V 1200 mA</td>
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<tr>
<td>035 64(*)</td>
<td>1</td>
<td>BUS/SCS DIN power supply for Cat.No 026 45</td>
</tr>
<tr>
<td>026 45(*)</td>
<td>1</td>
<td>Zone management unit</td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)

(*) This product can be shared.
- Vacancy sensing
- ON/OFF control fluorescent

CONTROL NEEDS
Vacancy based control of lights

LIGHTING
Direct fluorescent luminaires

APPLICATION DESCRIPTION
Space use: Office activities such as reading, writing, computer work
Dimensions: (2.50 x 2.50 m) x 4
Ceiling height: 2.50m

SOLUTION
1. DUAL technology automatic sensor
Vacancy sensing, ON/OFF control fluorescent

**DESIGN SOLUTION DESCRIPTION**
Ambient lighting is provided by ceiling mounted luminaires (as in an OPEN OFFICE p. 38). Here tasks/desk lights are controlled by an automatic switch located in a column. Desk lights are manually turned ON using the push-button included in the automatic switch. When the desk is not occupied, desk lights are automatically turned OFF.
INSTALLATION NOTES

1. Mount the automatic switch Cat.No 784 52 in the column to have a full view of the desk.
2. The sensor is shipped with pre-set time delay of 15 minutes, 300 lux and sensitivity at maximum.
   Please note that standard EN 15 193 recommends 500 lux for workstation, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
CUBICLE WORKSTATION

- Vacancy sensing
- ON/OFF control fluorescent

EQUIPMENT SCHEDULE

LOCAL MANAGEMENT

<table>
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<th>1st option</th>
<th>Quantity</th>
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<td>- Mosaic</td>
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<tr>
<td>574 049</td>
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<td>Automatic sensor DUAL technology 3-wire, 1000 W</td>
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<tr>
<td></td>
<td></td>
<td>- Arteor</td>
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</tbody>
</table>

Please refer to page 65 for more information (Centralized management)

(*) Use 1 output of Open Office (p. 38) DIN controller.

EQUIPMENT SCHEDULE

CENTRALIZED MANAGEMENT

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<thead>
<tr>
<th>2nd option</th>
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<td>Cat.Nos</td>
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<td>1</td>
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<td></td>
<td>8 outputs for DALI protocol</td>
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<td>784 86</td>
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<td>BUS automatic DUAL technology switch - Mosaic</td>
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<tr>
<td>574 048</td>
<td>1</td>
<td>BUS automatic DUAL technology switch - Arteor</td>
</tr>
</tbody>
</table>
CONTROL NEEDS
1. Automatically turn lights ON and OFF based on occupancy

LIGHTING
Compact fluorescent down lightings

APPLICATION DESCRIPTION
Space use General circulation
Corridor dimensions 30 x 2 m
Elevator/Lobby dimension 10 x 4 m
Ceiling height 2.50 m
Window None

SOLUTION
1. Ceiling-mounted ultrasonic sensors
2. Room controller with 2 outputs

- Occupancy sensing
- ON/OFF control fluorescent
- Secured lighting circuit
Occupancy sensing, ON/OFF control fluorescent, secured lighting circuit

DESIGN SOLUTION DESCRIPTION

Lighting in the corridor and elevator lobby is automatically turned ON and OFF based on occupancy using the US ceiling mount BUS sensor Cat.No 488 21, which has a coverage pattern that is designed specifically for angular corridors (ultrasonic).

Two different circuits power the controller for security reasons.

2 power circuits are connected to the room controller Cat.No 488 50. In the event of ordinary power loss on 1 circuit, 1 light circuit (out of 2) will thus remain ON.

If no presence is detected within 3 minutes after the initial detection, the sensor automatically switches OFF the light after the 3 minutes have elapsed.
1. Mount the BUS sensors Cat.Nos 488 21 on a rigid vibration-free surface all along the corridor, (12 metres distance between sensors).

2. Mount the room controller Cat.No 488 50 in the false ceiling. The connection between the BUS sensors and the room controller 2 outputs can be made with BUS/SCS cable Cat.No 492 31/32/33 or RJ 45 patch cord. Position the switch of the controller on position “φ”. The daylight function will control the 2 lighting circuits. Please refer to instruction sheets for more details.

3. The sensors are shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 100 lux for hallways/elevators, use the mobile configurator Cat.No 882 30 to change sensors settings if needed (time, lux, sensitivity).

**INSTALLATION AND WIRING DETAILS**

**INSTALLATION NOTES**

**Plug n’ go**
Configuration for connecting products to the BUS/SCS line
### 1st option

<table>
<thead>
<tr>
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<tr>
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<td>5</td>
<td>Ceiling-mounted ultrasonic BUS sensor 360 °</td>
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<tr>
<td>488 50</td>
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<td>Room controller 2 outputs 16 A</td>
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### 2nd option

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<td>Ceiling-mounted ultrasonic BUS sensor 360 °</td>
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<tr>
<td>026 00</td>
<td>2</td>
<td>BUS/SCS DIN controller 1 output ON/OFF</td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
CONTROL NEEDS
1. Manual ON and scheduled OFF during business hours
2. 2 separated lighting circuits. Some lights stay ON during office hours
3. Override for after hours, manual ON with timed OFF

LIGHTING
Compact fluorescent down lightings with compact fluorescent wall washers in elevator lobby, using electronic ballasts

APPLICATION DESCRIPTION
Space use: General circulation
Corridor dimensions: 30 x 2 m
Elevator/Lobby dimension: 10 x 4 m
Ceiling height: 2.50 m
Windows: None

SOLUTION
1. BUS/SCS DIN controllers
2. BUS push-buttons
3. Zone management unit
4. BUS/SCS power supplies

- Vacancy sensing
- ON/OFF control fluorescent
- Time scheduling
Vacancy sensing, ON/OFF control fluorescent, time scheduling

**DESIGN SOLUTION DESCRIPTION**

All lights have to stay ON from 8.00 am to 9.00 am (arrival time) and from 5.30 pm to 6.00 pm (departure time). During week-ends & public holidays all lights are OFF. During business hours some lights are permanently ON (circuit 1). During business hours (circuit 2) the other lights are manually turned ON using BUS push-buttons. They stay ON for 5 minutes.
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES

1. Mount the BUS push-buttons Cat.Nos 784 75 (Mosaic) or Cat.Nos 573 987 (Arteor) along the corridor.
2. Connect the BUS push-buttons to the BUS/SCS DIN controller Cat.No 026 00 with BUS/SCS cable Cat.No 492 31/32/33. Connect the circuits 1 & 2 to BUS/SCS DIN controllers Cat.Nos 026 00.
   These two DIN controllers are powered by 2 different circuits.
3. Connect the zone management unit Cat.No 026 45 to the BUS. BUS and zone management unit are powered by the 2 SCS DIN power supplies Cat.No 035 67 and power supply scheduler Cat.No 634 42.
   Mount the BUS power supply Cat.No 035 67 and zone management unit power supply Cat.No 634 42 on a rail.
4. Commission the zone management unit according to zone management unit programming documentation.

Configuration software suite
Configuration for connecting products to the BUS/SCS line
**HALLWAY/ELEVATOR**

- Vacancy sensing
- ON/OFF control fluorescent

### EQUIPMENT SCHEDULE
#### LOCAL MANAGEMENT

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<tr>
<td>035 67(*)</td>
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<td>BUS/SCS DIN power supply 27 V 500 mA</td>
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<tr>
<td>784 75</td>
<td>5</td>
<td>BUS lighting control unit 1-way - Mosaic</td>
</tr>
<tr>
<td>573 987</td>
<td>5</td>
<td>BUS lighting control unit - Arteor</td>
</tr>
</tbody>
</table>

(*) This product can be shared.
CONTROL NEEDS
1. Turn lights automatically on upon detection
2. Manual Override with ON/OFF and dimming cap from main desk
3. Lighting scenario control

LIGHTING
Pending halogen luminaires

APPLICATION DESCRIPTION
Space use: Main reception
Dimensions: approx. 300 m²
Ceiling height: 4 m
Windows: Alongside main entrance

SOLUTION
1. BUS DUAL technology sensors
2. BUS PIR sensors
3. BUS/SCS DIN dimming controllers
4. BUS/SCS touch screen

- Occupancy sensing
- Overriding
- Daylighting
Occupancy sensing, overriding, daylighting

**LIGHTING PLAN**

**DESIGN SOLUTION DESCRIPTION**

Lights are automatically turn on upon occupancy. Each sensor controls its own zone. During the day lights are dimmed automatically according to daylight and 500 lux are maintained at reception area, 100 lux in waiting area and stairs area. Lights are not turned off during working hours even though nobody is present, and 50 lux are maintained in the whole zone. For special events a dedicated lighting scenario can be easily launched. After working hours and during the week-end there are off.
INSTALLATION NOTES

1. Mount the SCS sensors Cat.Nos 488 22 and 488 20 in the false ceiling.
2. Mount the power supply Cat.No 035 60 and the two DIN dimming controllers Cat.No 026 22 an Cat.No 026 21 in the cabinet of the lobby.
3. Mount the multiple scenarios touch screen Cat.No 784 74 (Mosaic) or Cat.No 573 960 (Arteor) in the wall close to main reception.
4. Connect all these devices together with the BUS/SCS cable Cat.No 492 31/32/33.
5. Use software pack Cat.No 488 81 to commission the BUS sensor and the controllers and to set the dimming level. Please refer to Cat.No 488 81 instruction sheets for more details.
6. The sensors are shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum. Please note that standard EN 15 193 recommends 100 lux for lobby, use the mobile configurator Cat.No 882 30 to change sensors settings if needed (time, lux, sensitivity).
- Occupancy sensing
- Overriding
- Daylighting

**EQUIPMENT SCHEDULE**

**LOCAL MANAGEMENT**

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
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<tr>
<td>488 22</td>
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<tr>
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<td>Ceiling-mounted PIR BUS sensor 360 °</td>
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<td>026 21</td>
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<td>BUS/SCS DIN dimming controller halogen 1 output</td>
</tr>
<tr>
<td>026 22</td>
<td>1</td>
<td>BUS/SCS DIN dimming controller halogen 2 outputs</td>
</tr>
<tr>
<td>634 42*</td>
<td>1</td>
<td>Power supply for zone management unit</td>
</tr>
<tr>
<td>026 45*</td>
<td>1</td>
<td>Zone management unit</td>
</tr>
<tr>
<td>035 67*</td>
<td>1</td>
<td>BUS/SCS DIN power supply 27 V 500 mA</td>
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<tr>
<td>784 74</td>
<td>1</td>
<td>BUS/SCS multiple scenarios touch screen control - Mosaic</td>
</tr>
<tr>
<td>573 960</td>
<td>1</td>
<td>BUS/SCS multiple scenarios touch screen control - Arteor</td>
</tr>
<tr>
<td>488 81</td>
<td>1</td>
<td>Software pack 2</td>
</tr>
</tbody>
</table>


(*) This product can be shared.
CONTROL NEEDS
Automatically turn lights ON and OFF based on occupancy

LIGHTING
Recessed 1 x 4 luminaires using two T5 lamps and a two-lamp Electronic ballast

APPLICATION DESCRIPTION
Space use: Restroom
Dimensions: 3 x 7 with 2 x 1.50 alcove (each)
Ceiling height: 2.50 m
Windows: None
Window blinds: None

SOLUTION
1. Ceiling-mounted ultrasonic technology 2 outputs sensor
2. Room controller
DESIGN SOLUTION DESCRIPTION
An ultrasonic ceiling mount BUS sensor Cat.No 488 21 is mounted in each restroom, to turn lighting & fan ON when the restroom is occupied and OFF when vacant.
The BUS sensor can detect occupancy around stall partitions and other obstacles.
The BUS sensor Cat.No 488 21 is connected to a room controller Cat.No 488 50.
INSTALLATION NOTES

1. Mount room controller Cat.No 488 50 in the false ceiling on cable tray.
2. Mount BUS sensor Cat.No 488 21 on the centre of the room above stall partitions. Mount the BUS sensor on a rigid, vibration-free surface, at least 2 metres from supply air ducts.
3. The sensor is shipped with a factory pre-set time delay of 15 minutes, 500 lux and sensitivity at maximum.

Please note that standard EN 15 193 recommends 200 lux for restrooms, use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
### EQUIPMENT SCHEDULE

#### LOCAL MANAGEMENT

<table>
<thead>
<tr>
<th>1st option</th>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>488 21</td>
<td>1</td>
<td>Ceiling-mounted ultrasonic BUS sensor 360 °</td>
<td></td>
</tr>
<tr>
<td>488 50</td>
<td>1</td>
<td>Room controller 2 outputs 16 A</td>
<td></td>
</tr>
</tbody>
</table>

#### CENTRALIZED MANAGEMENT

<table>
<thead>
<tr>
<th>2nd option</th>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>488 21</td>
<td>1</td>
<td>Ceiling-mounted ultrasonic BUS sensor 360 °</td>
<td></td>
</tr>
<tr>
<td>488 47</td>
<td>1</td>
<td>BUS/SCS room controller 2 outputs ON/OFF or 1-10 V, 2 outputs for blinds and fans</td>
<td></td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)
- Time scheduling
- Photo sensor

**CONTROL NEEDS**
- Parking luminaires turn ON at dusk and OFF at 10 pm
- Parking luminaires security turn ON at dusk and OFF at dawn
- Bulkhead lights turn ON at dusk and OFF at dawn
- Entrance luminaires turn ON and OFF automatically with manual override

**LIGHTING**
- Building-mounted wall packs for perimeter security lighting,
- bollards for lighting walkways, recessed down lights lighting entrances and exits, and pole-mounted shoebox luminaires lighting parking lots

**APPLICATION DESCRIPTION**
- Space use: Exterior lighting control of building, parking lot, walkway and canopy lighting

**SOLUTION**
- Photo sensor ON/scheduled OFF using scheduler
All the exterior lighting and bulkhead lights (1 + 2 + 3) are turned ON at dusk using the photo cell of the sensor Cat.No 488 30 located at the corner of the building. One of the exterior light circuits (4) is scheduled to switch OFF at 10:00 pm in the evening. The other exterior lighting circuit (4) and bulkhead lights (3) remain ON all night for security reasons. They are turned OFF at 9:00 am. Entrance luminaires (5) are turned ON automatically upon detection with Cat.No 488 24.
**INSTALLATION NOTES**

1. Mount the BUS sensors Cat.Nos 488 30 at the entrance and at the corner of the building.
2. Mount the BUS sensor Cat.No 488 24 in the entrance corridor.
3. Mount the BUS/SCS DIN power supplies Cat.Nos 035 60, 035 64, and the zone management unit Cat.No 026 45 and BUS/SCS DIN controller Cat.No 026 02 in a cabinet.
4. Connect the circuit 1, 2, 3 and 4 to the BUS/SCS DIN controller.
5. Connect the BUS/SCS cable Cat.No 492 31/32/33 to the power supplies.
6. The sensors are shipped with a factory pre-set time delay of 15 minutes, 300 lux and sensitivity at maximum. Use the mobile configurator Cat.No 882 30 to change sensor settings if needed (time, lux, sensitivity).
- Time scheduling
- Photo sensor

### EQUIPMENT SCHEDULE
**LOCAL MANAGEMENT & CENTRALIZED MANAGEMENT**

<table>
<thead>
<tr>
<th>1st option</th>
<th>Cat.No</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>488 30</td>
<td>2</td>
<td>Corner mount PIR BUS sensor 270 °</td>
<td></td>
</tr>
<tr>
<td>488 24</td>
<td>1</td>
<td>Corner mount PIR BUS sensor 180 °</td>
<td></td>
</tr>
<tr>
<td>026 02</td>
<td>1</td>
<td>BUS/SCS DIN ON/OFF controller 4 outputs 16 A</td>
<td></td>
</tr>
<tr>
<td>035 64(*)</td>
<td>1</td>
<td>BUS/SCS DIN power supply for Cat.No 026 45</td>
<td></td>
</tr>
<tr>
<td>026 45(*)</td>
<td>1</td>
<td>Zone management unit</td>
<td></td>
</tr>
<tr>
<td>035 60(*)</td>
<td>1</td>
<td>BUS/SCS DIN power supply 27 V 1200 mA</td>
<td></td>
</tr>
</tbody>
</table>

Please refer to page 65 for more information (Centralized management)

(*) These products can be shared.
Building (individual) network communication

CONTROL NEEDS
1. Time clock scheduling of the whole building from Main Desk computers
2. Exterior lighting control via IP 55 sensor
3. Local & central switching dimming and override control of lighting (vacancy sensing) in large conference rooms, cubicles, open offices, private offices
4. Occupancy-based shut-off sensing (Occupancy sensing) control in small conference rooms, hallways, kitchen, restrooms
5. Control of blinds and fan

BUILDING REQUIREMENTS
Requires a zone management unit on each floor, linked to the lighting management BUS and LAN network. Each floor is controlled independently.
Main control of the whole building from the maintenance office.

APPLICATION DESCRIPTION
Single three story building with parking lot, walkway, building lighting and signs.
Electrical distribution main cabinet on each floor in core area.

SOLUTION
1. Lighting management Software suite on main PC
2. BUS/SCS sensors located in main rooms
3. Manual switches for turning lights manually ON or overriding
4. False ceiling or DIN mounting controllers to control lighting & fan & blinds
5. Zone management unit on each branch of the BUS/SCS. 1 per floor
Building (individual) network communication
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES

1. Design of your project using the software suite Cat.No 488 80. This software allows you to select your detector and controller products and create your project’s architecture. A project database is created with all the components necessary for your installation and the functional links between products.

2. Cabling of the products resulting from your project. The maximum length of each floor bus is 500 m. To extend this limit, it would be necessary to add extension modules, Cat.No 035 62. The maximum number of circuits for each branch of the bus (associated with the zone management unit) is 175.

3. Power supply to each branch of the bus. Addressing of all products in each branch via the Virtual Configurator software connected to the LAN. The installation is now operational.

4. Adjustment of the detector settings via the mobile configuration tool, Cat.No 882 30. Adjustment of the default detector parameters (delay, sensitivity, mode, lux, calibration). Refer to the technical data sheet for Cat.No 882 30 for more details.
CONTROL NEEDS

1. Floor scenarios
   - Certain lighting circuits switched on for the night watchman’s round, according to set times
   - All lighting circuits on a floor forced ON and forced OFF when carrying out lighting maintenance
   - Corridor lighting circuit switched on if there is at least one person present on that floor
   - Illumination of certain glazed outer walls of the building according to set times
   - One lobby circuit remains switched on in the evening from 17:00 to 22:00 on working days
   - Centralised control of meeting rooms from a touch screen

2. Monitoring
   - Viewing the status of luminaires throughout the building
   - Instant control of presence and the light level in each room
   - Management of lamp lifetimes

APPLICATION DESCRIPTION

Floor of 1500 m², comprising a lobby, two open spaces, conference rooms and individual offices
All the central controls for the building and the floor are done from the office in the lobby

SOLUTION

1. Recessed touch screen close to the reception office in the lobby
2. Software Pack 3 installed on the lobby office PC
3. SCS contact interface
4. Key switch
Configuration software suite
Configuration for connecting products to the BUS/SCS line
INSTALLATION NOTES

1. Fit all the controllers and their peripherals as indicated in all typical areas dealt with in this document.
2. Link all the controllers together via the BUS/SCS cable. The total length of the bus must not exceed 500 m.
3. Fit the BUS power supply in an electrical panel, ideally at the centre of the floor. The distance between the power supply and the furthest controller must not exceed 250 m.
4. In this same panel, install a zone management unit with its dedicated power supply and also an RJ45 connector for easy connection to the zone management unit. The scenario management is situated in the reception hall. To configure the touch screen, refer to the accompanying instructions.
5. A key switch in the maintenance staff office allows all the luminaires on a floor to be switched ON or OFF. It is connected to the SCS contact interface, Cat.No 035 53.
6. The floor is configured and saved using software suite Cat.No 488 82.
**CENTRALIZED MANAGEMENT**

**Ground Floor**

**EQUIPMENT SCHEDULE**

<table>
<thead>
<tr>
<th>Cat.Nos</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>784 74</td>
<td>1</td>
<td>BUS/SCS multiple scenarios touch screen control - Mosaic</td>
</tr>
<tr>
<td>573 960</td>
<td>1</td>
<td>BUS/SCS multiple scenarios touch screen control - Arteor</td>
</tr>
<tr>
<td>035 60</td>
<td>1</td>
<td>BUS/SCS DIN power supply 27 V 1200 mA</td>
</tr>
<tr>
<td>492 31/2/33</td>
<td>1</td>
<td>BUS/SCS cable</td>
</tr>
<tr>
<td>026 45</td>
<td>1</td>
<td>Zone management unit</td>
</tr>
<tr>
<td>634 42</td>
<td>1</td>
<td>BUS/SCS power supply for Cat.No 026 45</td>
</tr>
<tr>
<td>035 53</td>
<td>1</td>
<td>BUS/SCS DIN contact interface</td>
</tr>
<tr>
<td>784 73</td>
<td>1</td>
<td>3-position keyswitch - Mosaic</td>
</tr>
<tr>
<td>572 232</td>
<td>1</td>
<td>3-position keyswitch - Arteor</td>
</tr>
</tbody>
</table>

*All the references quoted:

- p.8 - Small conference room (1)
- p.12 - Small conference room (2)
- p.16 - Large conference room (1)
- p.24 - Private offices
- p.28 - Large private office
- p.32 - Kitchen
- p.36 - Open office
- p.48 - Hallway/elevator
- p.60 - Restroom

Use and monitoring of the software is done from the System Utilities and BM Visual software, included in software suite Cat.No 488 82.
Floor 1 & 2

CONTROL NEEDS
1. Floor scenarios
   • Some lighting circuits switched on to allow the night watchman to make his rounds
     This scenario is selected via a touch screen
   • All circuits on a floor switched on for cleaning for 1 ½ hours
     This scenario is selected via a touch screen
   • A centralised time switch for shutter control raises all awnings at the end of the day (to prevent any damage in the event of bad weather)
     This scenario is selected via a touch screen

FLOOR REQUIREMENTS
Floor of 1500 m², comprising open spaces, conference rooms, individual offices and corridors.
All the central controls for the floor are done by way of a touch screen located in the maintenance staff’s office

APPLICATION DESCRIPTION
1500 m² with corridor, open spaces, individual offices and meeting room

SOLUTION
1. Touch screen
2. Zone management unit
Centralized Management

Floor 1 & 2

Push n’ learn
Configuration for connecting products to the BUS/SCS line
INSTALLATION AND WIRING DETAILS

INSTALLATION NOTES

1. Fit all the controllers and their peripherals as indicated. Refer to pages 8, 12, 16, 24, 28, 32, 36, 48 and 60.
2. Link all the controllers together via the BUS/SCS cable. The total length of the bus must not exceed 500 m.
3. Fit the BUS power supply in an electrical panel, ideally at the centre of the floor. The distance between the power supply and the furthest controller must not exceed 250 m.
4. In this same panel, install a zone management unit with its dedicated power supply and also an RJ45 connector for easy connection to the zone management unit. The scenario management is situated in the corridor on that floor. To configure the touch screen, refer to the accompanying instructions.
5. In association with the scenario manager, a scenario module situated in the panel on the same floor allows scenarios to be created without difficulty.
CENTRALIZED MANAGEMENT

Floor 1 & 2

EQUIPMENT SCHEDULE

<table>
<thead>
<tr>
<th>Cat.No</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>784 74</td>
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</tr>
<tr>
<td>573 960</td>
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<td>BUS/SCS multiple scenarios touch screen control - Arteor</td>
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<tr>
<td>035 40</td>
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<td>BUS/SCS DIN power supply 27 V 1200 mA</td>
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<tr>
<td>492 31/32/33</td>
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<td>BUS/SCS cable</td>
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<tr>
<td>035 51</td>
<td>1</td>
<td>BUS/SCS DIN scenario module</td>
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<tr>
<td>026 45</td>
<td>1</td>
<td>Zone management unit</td>
</tr>
<tr>
<td>634 42</td>
<td>1</td>
<td>BUS/SCS power supply for Cat.No 026 45</td>
</tr>
</tbody>
</table>

* All the Catalogue Numbers quoted:
  - p.8 - Small conference room (1)
  - p.12 - Small conference room (2)
  - p.16 - Large conference room (1)
  - p.24 - Private offices
  - p.28 - Large private office
  - p.32 - Kitchen
  - p.36 - Open office
  - p.48 - Hallway/elevator
  - p.60 - Restroom

The configuration of all the products must be done without the use of a tool, by manually pressing the learn buttons on each controller, control and sensor. Refer to the push’n learn configuration sheets for more information.

This project may be saved, using the Virtual Configurator software.
Putting a stop to energy waste

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’.

Legrand offers two types of solutions and proposes related services to ensure that your lighting management project saves energy and helps the environment.

Switch sensors | BUS/SCS systems
---|---
1 output controls | room controllers
2 outputs | software & accessories
DIN controllers | Radio/Zigbee® accessories

**WHY IMPLEMENT LIGHTING MANAGEMENT?**

Lighting is a significant consumer of energy in commercial buildings.

- 20% of total site energy is consumed by lighting in commercial buildings.
- Lighting is the first electricity end-user in a commercial building with up to 40% electricity consumed*.

Each year, more organisations implement lighting management because they recognise its wide range of benefits:

- Energy savings
- Economic savings
- Code compliance
- Sustainability building practice

**REQUIREMENTS FOR IMPLEMENTING LIGHTING MANAGEMENT**

**Mandatory requirements**

Standards on energy savings

European Standard EN15193 provides a guideline for the energy performance of lighting systems. Legrand has chosen this standard as a basis to demonstrate the energy performance of its lighting solutions. This standard is widely recognized and provides a calculation methodology on energy savings according to the type of solution installed, the type of building and the type of room.

Putting a stop to energy waste

Legrand is committed to providing customers with comprehensive, transparent information on actual savings for its lighting management solutions: saving on energy + Green House Gas (GHG) emissions avoided. Look for this information in our best practice literatures.

**Voluntary programmes**

Green Building programmes

Green Building is an approach to building that considers the overall environmental impact of a building as well as the health and well-being of its occupants. Green Building programmes are voluntary, consensus-based programmes that provide guidelines. These programmes generally have an associated rating tool for assessing the environmental performance of the building and certifying its compliance with the standard. Green Building certification is awarded to differentiate sustainable building projects and give them credibility. Major Green Building programmes include LEED, BREEAM, HQE and GREEN STAR.

**HOW TO IMPLEMENT LIGHTING MANAGEMENT?**

**Lighting management strategies**

Lighting management strategies refer to the basic method that will be used to control lighting systems. This will include automatic operation of the lighting, taking into account the needs of the space’s occupants:

- Occupancy-based control
- Scheduled control
- Daylighting level control
- Vacancy-based control
- Dimming control

**Lighting management technologies**

Lighting management technologies refer to the actual device that will be used to implement a specific strategy and the method the device will use to operate (passive infrared, ultrasonic or dual technology sensors, timers or dimmers).

**PIR technology**
**Ultrasonic technology**
**Dual technology**

**LIGHTING MANAGEMENT PRODUCTS & SYSTEMS**

**Switch sensors**

1 output controls
2 outputs DIN controllers

**BUS/SCS systems**

room controllers software & accessories

Radio/Zigbee® accessories

**RELATED SERVICES**

**Local support**

Our sales representatives are available to assist with all aspects of a lighting management projects. Services include building walk-through, training, payback analysis reports and product demonstrations.

**Technical support**

Telephone technical support from our dedicated team offers personal guidance for application-related questions, installation assistance or troubleshooting.

**Field services**

Factory-trained assistance during the critical startup and commissioning stages to ensure optimal system performance. Don’t hesitate to contact us.

*Energy end-use distribution greatly varies depending on the activity of the building and across geographical and climate regions
(Source : Energy Information Administration, USA)