**LIGHTING CONTROLS**

Generally, lighting management will be carried out by presence and brightness detectors. The type, the number, the brightness, and time delay adjustment values ​​will be adapted to the premises and to the controlled lighting sources. Circuits will be properly subdivided so that only dark areas are lit during the day. All detectors must be adjustable by remote control.

**Principles of operation and material requirements**

**1- Traffic, Stairwells, Exteriors, Small Premises, Parking Management:**

Automatic operation by presence and light detector

**LC Plus 280°** wall-mounted detector of the brand **BEG LUXOMAT** or technically equivalent and will have the following characteristics:

Une image contenant vaisseau, vaisselle, arts de la table, bol

Description générée automatiquement

Degree / protection class: **IP54/Class II/CE**

Detection area: h=2,50 m: **16 m across, 9 m towards, 2 m vertical**

Switching power: **2000W cos φ 1/1000VA cos φ 0.5,** **LED 250W maxi**

Follow-up time: **15 s to 16 min or pulse /** Brightness: **2 to 2500 Lux**

Applications: **Outdoor**

Une image contenant intérieur, blanc

Description générée automatiquementTypical detector **PD3N-1C** for ceiling mounting (recessed or surface-mounted depending on the nature of the ceiling) of the **BEG LUXOMAT** brand or technically equivalent and will have the following characteristics:

Degree / protection class: **IP44, FC: IP54/Class II/CE**

Detection area: h=2,50 m: **Ø 10 m across, 6 m towards, 4 m activity seat**

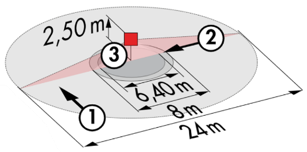
Switching power: **2300W cos φ 1/1150VA cos φ 0.5,** **LED 300W maxi**

Follow-up time: **30 s to 30 min or pulse /** Brightness: **10 to 2500 Lux**

Applications: **Toilets / Lockers rooms / Equipment rooms / Airlocks…**

Typical detector **PD4-M-1C + Slaves** in ceiling mounting (recessed or surface-mounted depending on the nature of the ceiling) of the **BEG LUXOMAT** brand or technically equivalent and will have the following characteristics:

Une image contenant intérieur, blanc, vaisselle, arts de la table

Description générée automatiquementDegree / protection class: **IP54 with base/Class II/CE**

Detection area: h=2,50 m: **Ø 24 m across, Ø 8 m towards, 6,40 m seat activity**

Switching power: **2300W cos φ 1/1150VA cos φ 0.5,** **LED 300W maxi**

Follow-up time: **30 s to 30 min or pulse /** Brightness: **10 to 2000 Lux**

Applications: **Porch**

**2- Management of offices, teaching rooms, study rooms, refectory, corridors, and stairwells:**

The lighting management will be based on **DALI2** technology, according to **IEC 62386** standard. The DALI bus will be used to connect luminaires and presence detectors via controllers or bus interfaces connected to the BMS. The management system will automatically dim the lighting to take account of natural light and allow the light sources to be switched off completely when unoccupied. This solution will offer the possibility of modulating the functions according to the specificities of each room and will have to be scalable to anticipate a possible extension to new installations. Each luminaire will be addressed individually, to report the status and faults of each device to the supervision system.

Through the components connected to the BUS, this solution will provide the following functions

2.1**- Management of Offices, Infirmary, Teachers' Room**

* Occupancy management by absence detection / Lighting variation, constant lighting threshold
* User" overrides by local BP
* Control of air renewal and temperature by information from presence sensors to the HVAC unit
* GTB link

2.2**- Management of teaching rooms, study rooms**

* Occupancy management by absence detection / Lighting variation, constant lighting threshold
* Lighting segmented into at least 3 groups: Window side, corridor side and blackboard side management
* User" overrides per local PB, at least 1 for the Classroom, 1 for the Blackboard
* Creation of a projection scenario: Switching off the blackboard lighting, lowering the room lighting to 10%.
* Control of air exchange and temperature by informing the HVAC package of presence sensors
* GTB link

2.3**- Refectory management**

* Occupancy management by presence detection / Lighting variation, constant lighting threshold
* Lighting segmented into at least 2 groups: Window side management, corridor side management
* Users" derogations by local BP, not accessible to the public
* Control of air exchange and temperature by information from presence sensors to the HVAC unit
* GTB link

2.4**- Management of Circulation, Halls and Stairwells**

* Management of occupancy by presence and luminosity detection
* Lowering to the minimum regulatory threshold in case of unoccupation
* In the stairwells, this solution will ensure level by level operation
* GTB link

The selected sensors will be **" Multi-Master "** on **DALI 2** protocol of **BEG LUXOMAT** brand or **technically equivalent** and will have the following technical characteristics:

* Multi-sensor **DALI** type **PDx-BMS-DALI2**

**DALI Multi-Master** technology according to **IEC 62386**, part **103**

Compatible with DALI 2 controllers according to **IEC 62386** part **101/103/304**. Section 0 provides information on room assignment and motion detection on the DALI bus according to **IEC 62386** part **303**. Section 1 provides the LUX values on the DALI bus according to **IEC 62386** part **304**. Parameterization is possible via a multi-master application controller from any manufacturer on **DALI 2** protocol.



**PD4N-BMS-DALI2-SM/FC**: Ø 24 m across, Ø 8 m towards, Ø 6,40 m seat activity

Applications: **Offices / Halls / Teaching and study rooms / Refectory**

**PD4N-BMS-DALI2-C SM/FC**: 40 x 5 m across, 20 x 3 m towards, Ø 8 m vertical

Applications: **Circulation**

**LC-Mini-120°-BMS-DALI2**: 12 m across, 3 m towards

Applications: **Stairs**

