**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- Small Premises Management:**

Automatic operation by presence and luminosity detector

Detector type **PD3N-1C** for ceiling mounting (flush-mounted or surface-mounted depending on the nature of the ceiling) of the brand **BEG LUXOMAT** or technically equivalent and will have the following characteristics:

Protection class: **SM: IP44, FC: IP23/Class II/CE**

Detection area h=2.50 m: **Ø 10 m across, Ø 6 m towards, Ø 4 m activity seat**

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

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

Applications: **Sanitary / Cloakrooms / Technical rooms / Airlocks...**

**2- Operating principles of the rooms:**

* Bathroom management

Automatic operation by presence and luminosity detector

* Orientation lighting management

Automatic operation by presence and luminosity detector. The beaconing will allow the nurse carrying out his rounds or the resident to bring an orientation light in case of detection

* Entrance lighting management

Semi-automatic operation by absence and luminosity detector. A push button, integrated in the detector, will allow the entrance lighting to be switched on manually and voluntarily. Only the extinction will be automatic

Detector type **PD9-M-1C-IP65-FC** for flush ceiling mounting, brand **BEG LUXOMAT** or technically equivalent, with the following characteristics:



Protection class: **Detection head: IP65/Class III/CE, Power supply IP20/Class II/CE**

Detection area h=2.50 m: **Ø 10 m across, Ø6 m towards, Ø4 m seated**

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

Follow-up time: **15 s to 30 min or pulse** / Brightness: **10 to 2000 Lux**

Application: **Showers**

Detector type **Indoor 140L** for wall flush mounting, installation height 1.10 m of the brand **BEG LUXOMAT** or technically equivalent and will have the following characteristics:



Protection class: **FM: IP20/Class II/CE,**

Detection zones h=1.10 m: **8 m across, 3 m towards**

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

Follow-up time: **15 s to 30 min or pulse** / Brightness: **10 to 2000 Lux**

Functions: **Beaconing / Night light.** Integrated **push button** for manual control of the lighting

Application: **Orientation lighting / Entrance lighting**

**3- Offices Management, Corridors, Stairwells and Lounges:**

An intelligent lighting management system will be installed in the premises concerned, ensuring that the light sources are completely switched off when not in use. The system will ensure the modularity of the installations, making it possible to easily modify the partitions, without having to intervene in the luminaires or the wiring, and will have to be scalable, making it possible to anticipate a possible extension to new installations. The principle will be based on an **addressable DALI BUS**. Commissioning and modifications will be carried out via dedicated programming software, connected locally, or via a WEB interface on the LAN or WLAN network and will be at the manufacturer’s expense.

At the customer’s request, the system will allow, via a supervision, a complete control of the installations, a visualization of the lighting status and the reception of information for maintenance. The system will be autonomous or can be linked to the BMS by interfacing the DALI protocol to the BACnet protocol.

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

3.1**- Office management**

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

3.2**- Circulation management**

* Occupancy management by presence and luminosity detection
* **Daytime operation**: By time circuit, during the hours of public occupation in the building, in case of unoccupation, the lighting of the corridors will be switched on at the minimum regulatory value. By presence detection, switching on at the set value. The lighting management system will also offer the possibility to create an intelligent operation of the corridors, thus saving energy. Only the occupied zone and the upstream zone will be switched on at the regulatory value, the other zones will remain at reduced power (10 / 20%)
* **Night operation**: By time circuit, outside the hours of public occupation in the building, the lighting of the corridors will be lowered to the minimum regulatory value, thus avoiding too much light entering the residents' rooms during the nurses' rounds
* In the stairwells, this solution will ensure level by level operation







3.3**- Lounge management**

* Occupancy management by absence detection / Lighting variation, constant lighting threshold
* Lighting segmented into at least 2 groups: Window side management, corridor side management
* User" overrides by local PB
* Creation of environment scenarios according to the activity carried out
* Control of air renewal by information from presence sensors to the HVAC unit

The system selected will be the **DALI-SYS** of the brand **BEG LUXOMAT** or **technically equivalent,** comprising the following characteristics:

* **DALI BUS power supply** type **PS-DALISYS-USB-REG**

230V AC / 16V DC DALI BUS / 210mA / 300 m BUS max

Up to 64 participants on the BUS (DALI luminaires / Multi-sensors / PB interface…)

8 control zones per power supply / 16 groups / 16 scenes

* **DALI router** type **ROUTER-DALISYS-REG** or **ROUTER-DALISYS-BACnet-REG** if attached to the BMS

5V DC power supply (power supply included)

LAN connection via ETHERNET

Up to 4 DALI power supplies connected via USB to one router / max. 100 routers per installation

* **4G WIFI LTE Router** type **LTE-ROUTER-RUT950-DALISYS**

Power supply from 230V AC mains sockets

Connection to the LAN network via Ethernet of DALI-SYS components and Ethernet switch

WIFI connection for the commissioning of the project by the builder

LTE connection with up 2 SIM cards for remote maintenance by the manufacturer

* **Supervision** type **VISTATION-DALISYS-REG**

5V DC power supply (power supply included)

LAN connection via ETHERNET

Visualization on plan, customized building

Remote control of lighting / Setting of user rights

* **DALI multi-sensors** type **PDx-DALISYS**

Power supply and communication via DALI BUS 16V DC



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

Applications: **Circulation**

**PD4N-DALISYS SM/FC:** Ø 24 m across, Ø 8 m towards, 6,40 m seated

Applications: **Meeting rooms / Halls**

**LC-plus-DALISYS:** 16 m across, 9 m towards, 2 m vertical

Applications: **Stairs**



* **DALI PB interface** type **BM-DALISYS-4W**

Power supply and communication via DALI BUS 16V DC

4 independently interfaceable binary inputs

Can be combined with all manufacturers’ pushbuttons

* **Relay Module Interface** type **RM-DALISYS-1C-REG**

Power supply and communication via DALI BUS 16V DC

Switching power: 3000W Cos ϕ = 1/1500VA Cos ϕ = 0.5 /300 W LED sources

