**LIGHTING CONTROLS**

Generally, lighting management will be carried out by presence and brightness detectors. The nature of the detectors, 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 light sensor

Typical 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…**

**2- Building Technical Management:**

The building will be equipped with a BMS allowing the control of different technical batches either by local, automatic, or centralized controls. The system will ensure the modularity of the installations, making it possible to easily modify the partitions, without having to intervene in the lighting or wiring, and will have to be scalable, making it possible to anticipate a possible extension to new installations. The principle will be based on a **KNX BUS**. Commissioning and modifications will be carried out via the dedicated “ETS” programming software, connected locally via a KNX/IP interface or via a WEB interface on the LAN or WLAN network and will be carried out by a KNX certified integrator. The system will allow, via a supervision, a complete control of the installations, a visualization of status and the reception of information for maintenance.

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

2.1**- Lighting Management**

A lighting management system will be installed in each room, allowing the light sources to be completely switched off when unoccupied or when there is sufficient natural light in the room. The system will be composed of ***presence sensors, digital switching*** or ***DALI dimming actuators*** depending on the nature of the luminaires, associated with local ***KNX push-button*** controls.

**Car Park Management**

* Occupancy management by presence and brightness detection
* Minimum dimming of lighting when an area is unoccupied, i.e., approximately 10% of the luminaire's power
* Switching on at the regulatory threshold by detecting the presence of a vehicle or person
* Lighting groups will be set up to control a maximum surface area of 500m².
* The lighting on each level can be forced on or off from the BMS

**Circulation and Staircase Management**

* Occupancy management by presence and luminosity detection
* Minimum dimming of lighting in case of unoccupied zone, i.e., about 10% of the luminaire power
* Switching on at the regulatory threshold by presence detection
* All corridors and stairwells can be forced to switch on or off from the BMS.

The **KNX** system selected will be of the brand **BEG LUXOMAT** or **technically equivalent,** comprising the following equipment

* **KNX power supply** type **PSN-230/640/30-KNX-REG**

230V AC / 30V DC BUS KNX / 640mA/ 1000m BUS max

Integrated choke to supply the bus with constant and stabilized current

Up to 64 participants on the KNX BUS (Multi-sensors / PB interfaces / Actuators…)

* **Switching actuator** “TOR” type **SA4/8/230/16/H/KNX REG**

Power supply via KNX BUS

Outputs: **4 (SA4)** or **8 (SA8) 16 A** switching outputs

Current measurement possible with actuator type **SA4/8-230/16/H/EM/KNX REG**



* **DALI/KNX Gateway** type **DA64-230/KNX REG**

Power supply 230V AC – Communication via KNX BUS

DALI BUS supply for 64 luminaires in 16 groups / 16 scenes

Support for **RGB** and **TW (Tunable White – DALI Type 8)**

* **KNX multi-sensor** type **PDx-KNX-BA/ST/DX**

Power supply and communication via KNX BUS



**PD4-KNX-C SM/FC/FM** (DX): 40 x 5 m across, 20 x 3 towards, Ø 8 m vertical

Applications: **Circulation**

**PD4-KNX SM/FC/FM** (BA-ST-DX): Ø 24 m across, Ø 8 m towards, Ø 6,40 m seated

Applications: **Parking, Halls**

**RC-plus 230 KNX** (DX): 20 m across, 6 m towards, 4 m vertical

Applications: **Stairs / Sass**

* **KNX Router and IP interface**

Power supply and communication via KNX BUS

Router **LK-IP/KNX-REG:** Enables the transfer of telegrams between different KNX segments via a LAN (IP)

**LAN-IF/KNX-REG** IP interface: Connection of a PC for addressing via LAN bus, programming, and diagnostics of KNX components

 