**LIGHTING CONTROLS**

The building will be equipped with a GTB allowing the control of various technical units either by local, automatic, or centralized controls. The system will ensure modularity of operation according to the activities carried out, conference, projection, etc., and should be scalable 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 programming software "ETS", 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 functions:

**1- Lighting management**

A lighting management system will be installed in each lecture theatre, 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 TOR*** or ***DALI dimming actuators*** depending on the nature of the luminaires, associated with a "***KNX***" type control panel

* Occupancy management by presence detection
* Dimming of lighting, constant light threshold
* Main lighting of the lecture hall divided into at least 2 groups: 1st day / 2nd day
* Lecturer lighting Management
* Board Management or screen lighting
* Override Management of the different lighting circuits (On / Off / Dimming)
* Lighting Scenarios Management (Conference, Projection...)
* Re-lighting in the event of a fire

**2- Air change management**

The air renewal of each room will be controlled automatically, considering the occupation of the room and the quality of the ambient air. Information on room occupancy will be sent to the HVAC package via **presence sensors** and information on air quality via a **VOC sensor** (Volatile Organic Compounds).

**3- Temperature management**

Each room will be equipped with a **temperature sensor** and a **presence sensor**, associated with a **weather station** and an **annual time circuit** according to the occupation of the building. The temperature of each room can be adapted to the information retrieved on the KNX bus (temperature increase in advance in case of extreme cold, reduced temperature at night…). By customer request, it will be possible, in each room, to increase or decrease the temperature set point by +/-2°C by means of the thermostat located locally.

**4- Shutter and sunshade management**

The control of the sunshades and roller shutters will be carried out automatically by the BMS or locally by **“KNX” type pushbuttons** located in each permanently occupied room (offices, meeting rooms…). The common areas will be controlled solely by the BMS. **A KNX weather station** will be connected to the system to control the brises soleil according to the weather outside.

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**



* **KNX blind actuator** type **SBA4-230/10/H/KNX REG**

Power supply via KNX BUS

Control of 4 AC motors 230 V max. 600 W



* **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 **PD4-KNX-SONT/DX**

Power supply and communication via KNX BUS

Area zone h=2.50m: Ø24 m oblique, Ø 8 m towards, Ø 6,40 m seated

Protection class IP20/Class 2/CE



* **KNX PB interface** type **BP-KNX-DX-4W**

Power supply and communication via KNX BUS

Up to 4 pushbuttons as imput

Can be combined with all manufacturers’ pushbuttons



* **KNX Weather Station** type **KNX-WTS-GPS**

Power supply and communication via KNX BUS

Wind, Rain, Dusk, Temperature and Light Sensors

* **VOC sensor** type **WS-VOC-HVAC-KNX**

Power supply and communication via KNX BUS

Temperature sensors, room thermostat, VOC sensor (Volatile Organic Compounds)

Humidity Sensor and CO2 Sensor

* **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

