5.2 Lighting controls

5.2.1 Options for control

There are a number of factors that need to be considered in any control system; these are the inputs to system, how the system controls the lighting equipment and what is the control process that decides how a particular set of inputs will impact on the lighting. Thus for a control system to work it must have:

- input devices: such as switches, presence detectors, timers and photocells
- control processes: these may consist of a simple wiring network through to a computer based control system
- controlled luminaires: the system may control luminaires in a number of ways, from simply switching them on and off to dimming the lamp and in more complex systems causing movement and colour changes.

5.2.2 Input devices

Manual inputs

These vary from simple switches used to turn the lights on though dimmer switches and remote control units that interface to a control system to lighting control desks that are used in theatres. The point of these units is to allow people to control the lighting and care is always needed in the application of such devices to ensure that users of the system can readily understand the function of any such control.

Presence detectors

Most presence detectors are based on passive infrared (PIR) detectors, however some devices are based on microwave or ultrasonic technology. PIR devices monitor changes in the amount of infrared radiation that they are receiving. The movement of people in a space will be detected by them and this can be signalled to a control system. Thus, if a device detects the presence of a person this can be used to signal the control system to switch the lights on, but if the device has not detected anybody for some time this can be used to signal that there is nobody there and that the lights can be turned off.

Timers

Most computerised control systems have timers built in so that they can turn the lighting on or off at particular times. However, there are also a large number of time switches available that can turn lamps on an off at given times. There are also timers used in street lighting that change the time that they switch at throughout the year so that the lamps are switched at dawn and dusk.

Photocells

There are many different types of photocell used to control lighting. The simplest to use are those which switch on at one illuminance value and switch off at another; these are commonly used to turn exterior lights on at dusk and off at dawn. Some photocells communicate the illuminance value to the central control system, which uses the information to adjust the lighting in some way. Some photocells are mounted on ceilings with shields around them so that they only receive light reflected from the working plane, this makes them act like luminance meters and provided the reflectance of the working plane remains constant they can be set up to follow the illuminance of that plane.