

## 1E. Open garage with passive IR detectors

### Dimmable HF operating devices, “Dynamic Lighting control” and four levels

#### Premises

If the garage is on several levels or designed as a multi-storey with openings to the outside, passive IR technology must be used. This also makes it possible to subdivide large garages into different areas to avoid lighting unused areas. This application shows subdivision into four different areas controlled separately.

At the entrance vehicles turn left or right and thereby light up the side and area in question. A disadvantage of IR detectors is that high vehicles may conceal the detector. Positioning of the detectors is very important.

#### Light sources

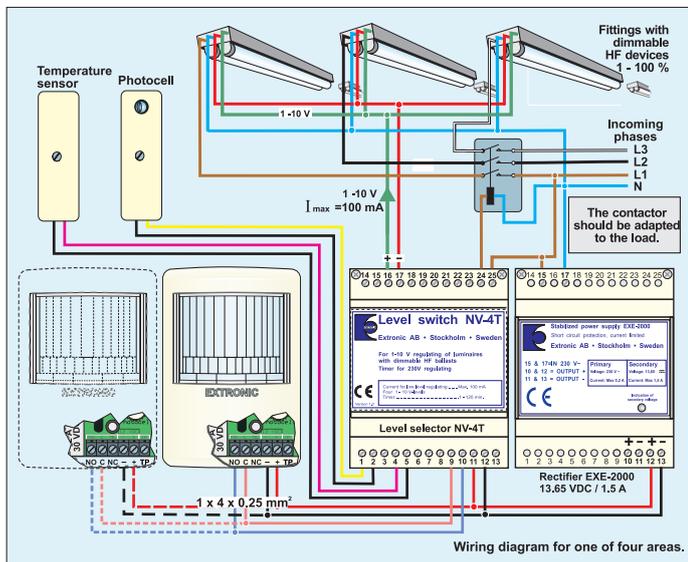
This application shows an example of fittings with dimmable HF operating devices.

#### Control system

With new buildings or renovations, when there is a possibility of selecting fittings with dimmable operating devices, installation should be in accordance with the principle of “Dynamic Lighting Control”. The technology can be used for control using both acoustic and IR detectors. See wiring diagram below. With the NV-4T, dimmable fluorescent-tube fittings can provide control on four light levels.

The most important advantages attained using Dynamic Control are as follows:

- Evenly distributed basic light without extra fittings, operating at a level of 100 per cent.
- The possibility of saving 20 - 25 per cent during operation.
- Lower working temperature in the fittings, resulting in a lower life.
- Fewer activations and less power supplied, reducing wear on the fluorescent powder and resulting in a longer life of the light sources.
- The possibility of avoiding adherence to the light-source manufacturers’ recommendations regarding burning times, thus drastically reducing the operating times and increasing the saving.



Thanks to a Light sensor, the lighting switches between a “day program” and a “night program” in NV-4T. In the daytime the light level is adjusted to about 80 per cent, and after onset of darkness the level is about 30 per cent in the event of presence. This means your eyes can more easily adjust to the light when entering and leaving the garage. The energy saving is furthermore about 20 per cent during daytime operation and about 70 per cent in the evening and night-time with the lighting activated. When the presence ceases (daytime and night-time) the lighting is first reduced to about 2 per cent of basic light, and after about 1 - 2 hours it is completely deactivated to eliminate no-load losses. **See diagram on next page!**

Installation of the detectors should be using the simplest possible cable, Type EKKX 1 x 4 x 0.25 mm<sup>2</sup>. All detectors should be connected in parallel with the rectifier EXE-2000, even if they form part of different areas.

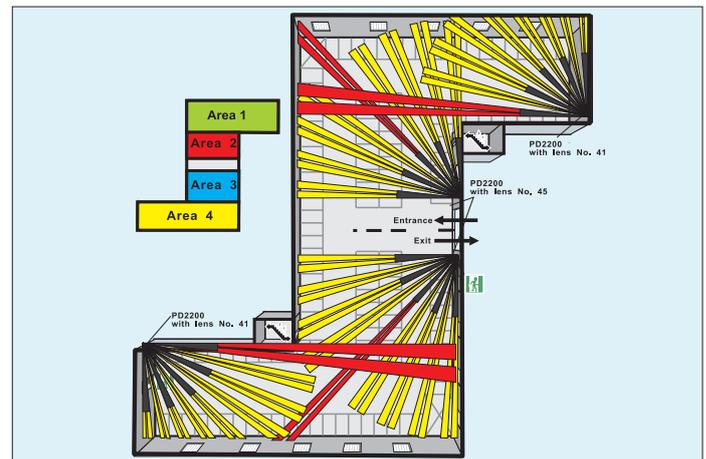
Regarding adjustment of the IR detectors one is referred to the manual enclosed with the detector.

#### Preheating function

In open car parks a temperature sensor is connected. Deactivation is blocked when the temperature is +5°C or lower. This means lighting stays activated at a level of 2 per cent.

#### Positioning of detectors

In this example the lenses have been replaced by Nos. 41 and 45. The range of these lenses is 41 and 58 m respectively and two long-distance fields of up to 83 m. The opening angle is 90°. This means they must be positioned in corners and in intercepting locations in front of entrances so that passage will be at 90° to the fields of detection. The example provides good insight into how to optimise positioning of the detectors. Unfortunately one all too often sees detectors mounted flat on the wall and aimed at doors and entrances, with the consequence that detection is considerably impaired.



| Product              | Order No.        |
|----------------------|------------------|
| IR detector PD-2200  | 13140            |
| Rectifier EXE-2000   | 18108            |
| Level selector NV-4T | 13171            |
| Light sensor LS-10   | 13100            |
| Temperature sensor   | 13171E           |
| Lens 41              | 13031 + Lens-No. |
| Lens 45              | 13031 + Lens-No. |

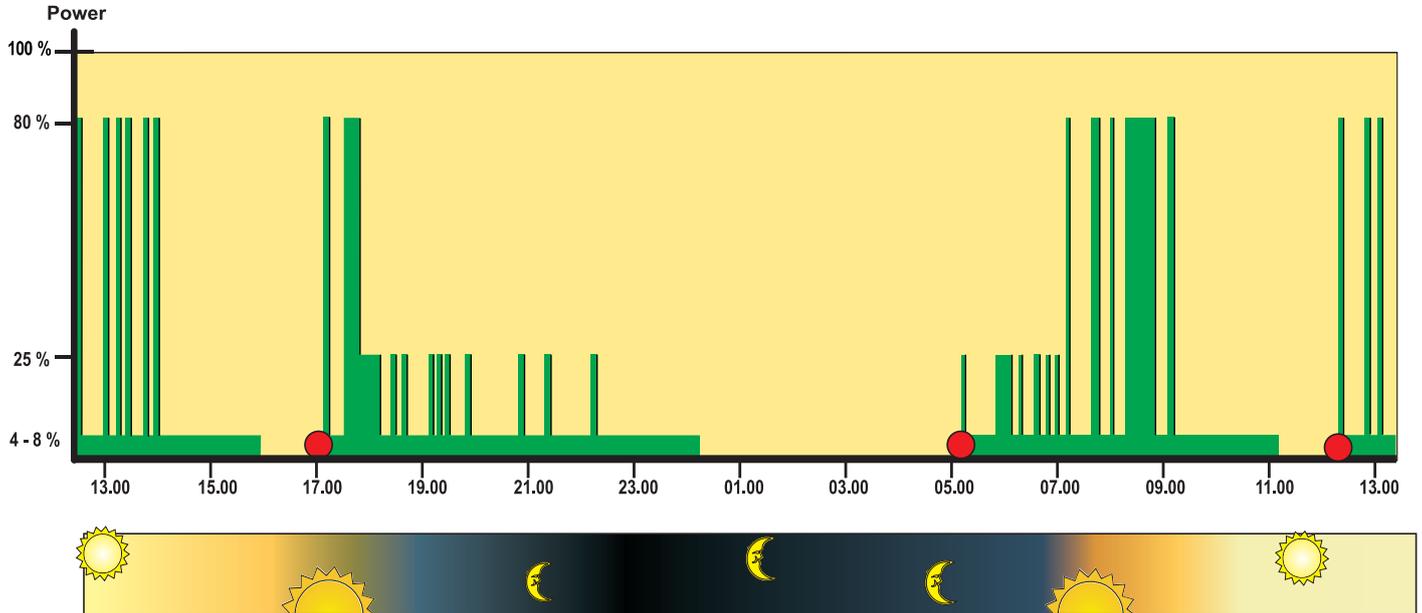
#### Information for current budget

| Product              | Maximum current consumption (mA) |
|----------------------|----------------------------------|
| IR detector PD-2200  | 25                               |
| Level selector NV-4T | 110                              |

1E

Daylight-related lighting control with NV-4T in garage

The yellow area represents energy consumption without lighting control. The green area represents energy consumption with daylight-related lighting control installed. The lighting is switched off completely 2 hours after presence is last detected. In this example it means the lighting is only switched on from cold three times over a 24-hour period.



Previous lighting control according to light source manufacturers' recommendations (yellow area shows energy consumption).

The lighting is switched off completely 2 hours after presence is last detected. In this example it means the lighting is only switched on from cold three times over a 24-hour period.

Dimming to base lighting level, around 2 per cent, whenever presence is not detected.

Lighting control using Extronic's innovation (green area shows energy consumption).

Permanently connected fittings for basic light of about 15 - 25 per cent power consumption (old approach).

