

Light-dependent Control

The **light-dependent control** reduces the brightness of illuminated advertising signs during the night (night-time dimming). There are two good reasons for a reduced brightness at night:

1. Energy savings

Reduced brightness means reduced power consumption, i.e. less energy is required. This may translate to a cost reduction of up to 30%.

2. Better legibility

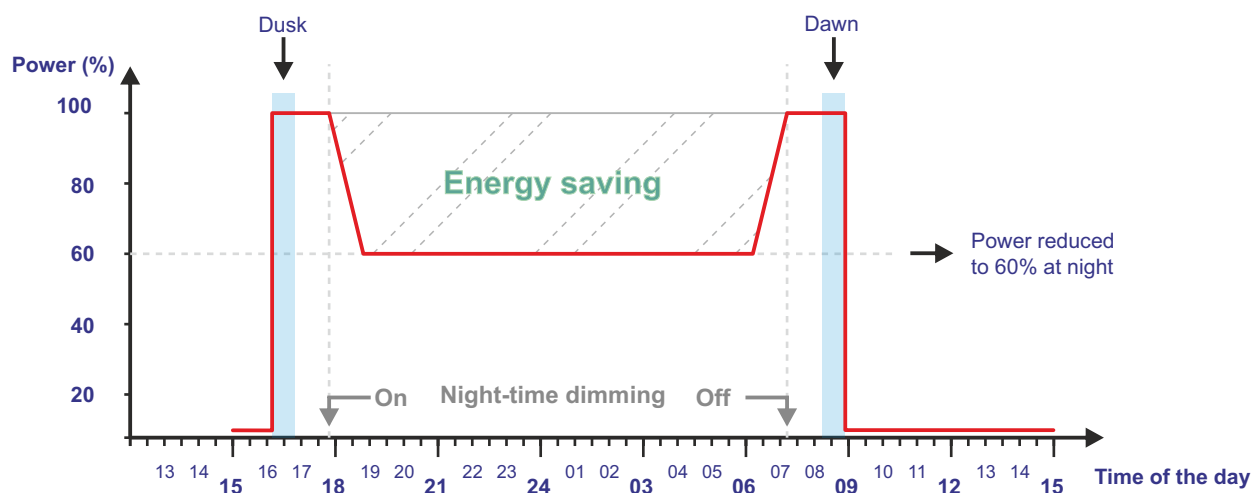
The brightness contrast between the illuminated sign and the environment is very different at daytime, twilight and nighttime.

At twilight, an illuminated advertising sign must shine bright to stand out against the relatively bright environment. At night, the same sign appears much brighter because the environment has become darker.

Such "outshining" signs are difficult to recognize, particularly when blue surfaces are involved. Night-time dimming prevents this outshining effect and enhances legibility.

The ***hansen*** light-dependent controllers are solely controlled by the ambient light. They are able to adapt to the different levels of residual brightness at night created, for example, by street lighting or other advertising signs. For example, a rural surrounding will be darker than a busy urban area.

Power consumption of an illuminated advertising sign with night-time dimming in the winter (21 December)



The above diagram shows the power consumption of an illuminated advertising sign over the course of a day:

- During daytime, the sign remains switched off.
- When dusk falls (here at 4:00 pm), the sign is switched on with full brightness.
- After dusk, the brightness is reduced to approx. 60%.
- This reduced brightness level is maintained throughout the night until the break of dawn.
- When dawn breaks, the sign starts to shine brighter.
- When the normal daylight level is reached, the sign is switched off.

Light-dependent Controller (TM)

Article no. 5 1201 120

The light-dependent control system (TM) consists of:

1. the controller in a plastic housing
2. the light sensor

Controller

The plastic housing contains a printed circuit board with electronic components, rotary switches, a potentiometer and several connecting terminals for the mains voltage, the brightness sensor and the control voltage.

Light sensor

The light sensor is a small electronic component (see picture on the right) which is sensitive to natural and artificial light. The sensor is hermetically sealed in a plastic housing and provided with a 1.5 m three-core connecting cable.

Operational behaviour

The controller supplies a voltage of 0–10 V at the output (terminals 1–4). This voltage can be used to dim electronic converters.

The magnitude of the voltage depends on:

- the ambient light level
- the controller settings

Independent of the light sensor, the controller can also be used as a permanent dimmer.

Installation and positioning

The controller can be installed inside the channel letters or inside the converter box or cabinet. It should be positioned close to the converters as the cable length between the controller and the converters must not exceed 10 m (unshielded cable).

Limit values:

- Max. connectable number of converters: 50
- Maximum 0–10 V control cable length:

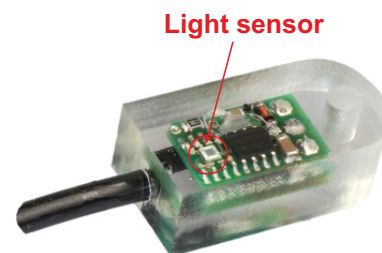
Between controller and converters:	approx. 10 m
- with shielded cable (e.g. Cat 7):	approx. 100 m
- Maximum sensor cable length:

The 1.5 m connecting cable must not be extended



Controller

Dimensions:
90 x 90 x 45 mm



Light sensor

Light sensor



Installing the light sensor

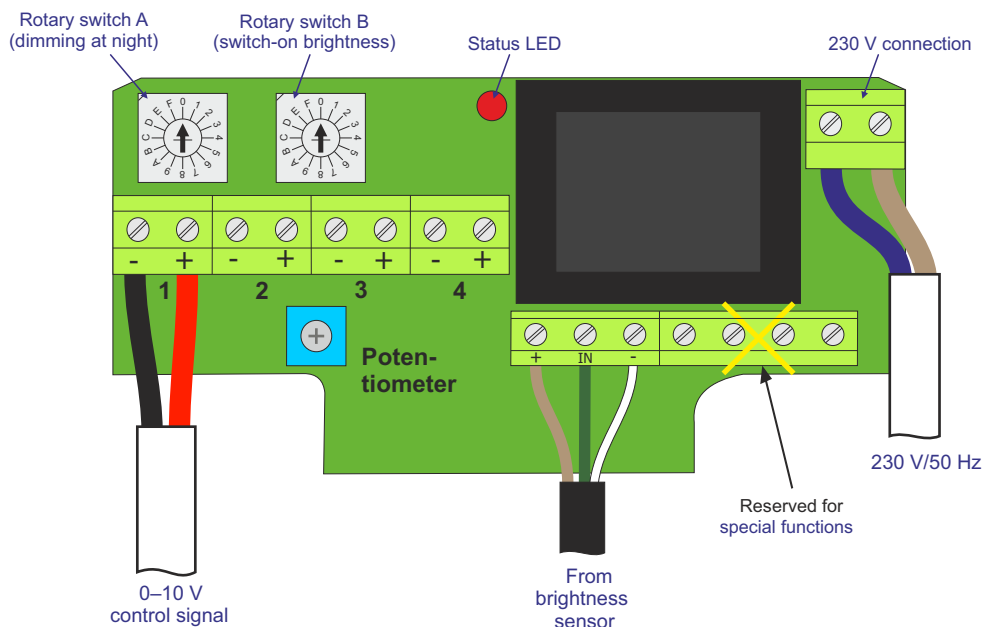
The light sensor is installed **outside** the illuminated sign.

The sensor must be positioned in such a way that any influence by other light sources such as street lamps is avoided and an unobstructed view to the sky is ensured.

The sensor cable must not be extended as this would result in an incorrect transmission of the data signals from the sensor to the controller.

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Rotary switch A

Defines the brightness of the sign at night.

In position **A** no dimming takes place. Position **9** = 90%, **8** = 80%, **7** = 70% of the maximum brightness, etc. In position **0** the sign remains completely dark.

The switch positions **B** to **F** are reserved for special functions.

Rotary switch B

Defines the ambient brightness level at which the sign will switch on in the evening. The same brightness level is used to switch off the sign in the morning.

In position **0** the switching takes place at a low brightness level (i.e. the sign is switched on later in the evening and switched off earlier in the morning).

The positions **1**, **2**, **3**, etc. increase the switch-on/switch-off brightness. Position **E** defines the highest ambient brightness level (i.e. the sign is switched on earlier in the evening and switched off later in the morning). In other words, turning the switch from **0...1...2...3** to **...E** will extend the time during which the sign remains switched on.

Test mode

Setting the **rotary switch A** to position **F** activates the test mode. The light sensor is now deactivated.

The **rotary switch B** can now be used to define the brightness or power with which the sign is operated, e.g. **0** = 0%, **1** = 10%, **9** = 90%, **A** = 100%.

Control voltage – terminals 1 and 2

Both terminal pairs can be used equally and in parallel. This is the standard connection for the control voltage.

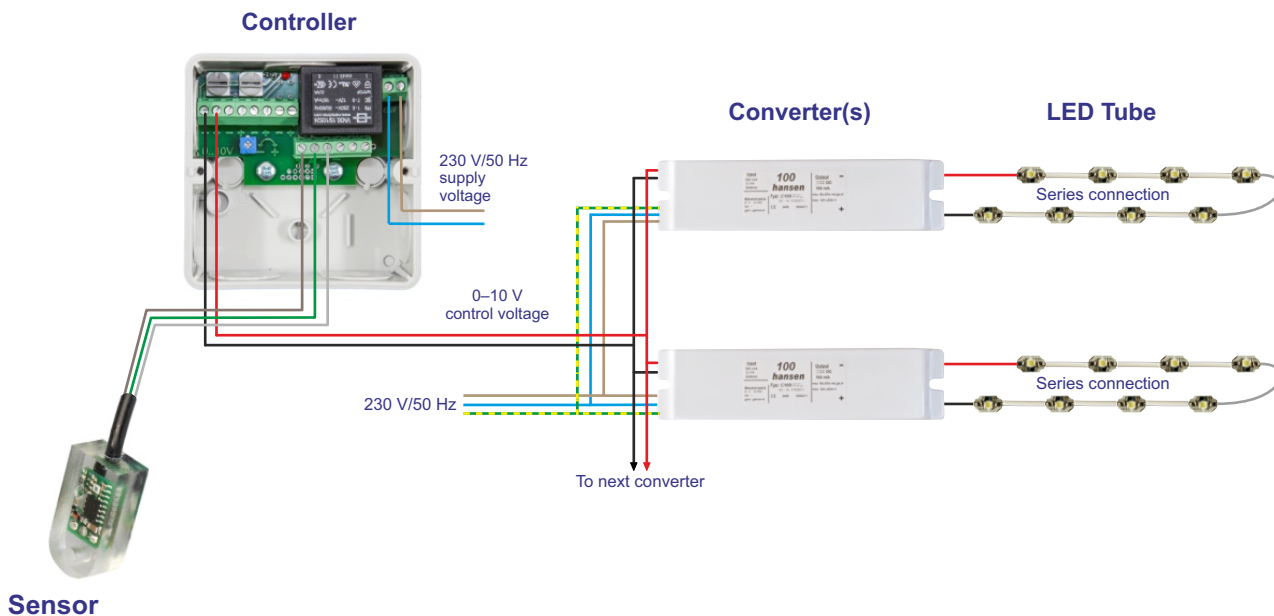
Control voltage – terminals 3 and 4 and potentiometer

Both terminal pairs can be used additionally when two zones of the sign are to be illuminated with a different brightness, for example when different colours are involved.

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Connection scheme for LEDs in series connection



Connection scheme for LEDs in parallel connection

