

LED - DIMMING OPTIONS

AUTONOMOUS DIMMING – No Wiring to Luminaire needed

This type of dimming needs to be specified at order stage. The LED drivers are pre-programmed in the factory. It may be possible to re-program on site afterwards, but access to luminaire/LED driver is required.

Programmable Driver / Part Night Dimming:

e.g. Osram AstroDim; Signify Dynadimmer. These drivers can be programmed to apply dimming at periods of low activity, e.g. Dim lights to 75% after midnight, and back to full power at 6am. Alternatively, dim lights to 75% after 11pm and to 50% after 2am, etc.

Note many Irish Local Authorities often require this on public roads, according to the following dimming profiles:

Profile U14 - Dim to 75% Output - 12 midnight to 6am.

Profile U15 - Dim to 67% Output - 12 midnight to 6am.

Profile U16 - Dim to 50% Output - 12 midnight to 6am.

CLO: (Constant Light Output or Constant Lumen Output)

Over time LEDs (and other light sources) produce less light due to degradation of the LED chip. To allow for this lighting designers typically 'overlight' at the beginning in order to have the correct maintained light levels at the end of life. However, by implementing CLO, a constant illumination level throughout the life of the luminaire can be achieved. Initially the LED light sources will be dimmed, and this dimming will reduce over the life of the LED. By the end of life period, there will be no dimming.

E.g. An LED module with L90 of 100,000 hours (ie. 90% lumen output after 100,000 hours usage), the driver is programmed so that the initial output is 90%, but over the 100,000 hour life the output power will gradually increase to 100%. This provides a constant light output over the lifetime. This will result in a 5% average energy saving over the lifetime (10% energy saving at the start and 0% energy saving at the end).

CLO Dimming can be operated on the same driver at the same time as other dimming methods.

CONTROLLED DIMMING – Wiring or Signal to Luminaire needed

This type of dimming requires a signal to the LED driver. The drivers receive a signal from a remote device like a PC, timer or sensor, and is usually carried over cables, but recently wireless options are also available.

DALI: (Digital Addressable Lighting Interface)

This is a manufacturer-independent standard, which allows interchangeability of drivers from various manufacturers. Each DALI Driver can be controlled via DALI controllers, computers equipped with appropriate software, or building management systems (BMS). This 2-way communication link can be used to check status of each driver (whether switched on/off/dimmed etc). It can also be used to change status for individual driver, all drivers or a group of drivers/luminaires. DALI typically requires 2 low voltage signal cables to each LED driver, but wireless methods are now also available.

Switch Dimming:

e.g. Osram StepDim, Signify LineSwitch. This allows a single pre-programmed dimming level and requires a single 230V signal cable to each driver.

1-10V Dimming/Analogue Dimming:

This allows variable dimming levels and requires 2 signal cables to each driver, supplying a 1-10V (or 0-10V) signal across the 2 cables. The dimming level is typically directly related to control voltage applied.

ENERGY SAVING:

With LED luminaires, dimming level is closely related to energy saving. i.e. 30% dimming provides approx 30% energy saving. However, at low light levels (typically below 20% light output) the energy savings might not be directly related.