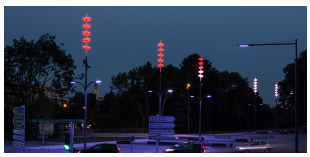
LED control: protocols with addresses



To separately control the LED output of every light, each light needs to have an address. Each luminaire do not answer to all sent orders to its address.

DMX: Digital Multiplexing

This is the best solution for controlling a dynamic lighting facility. It lets you integrate very different major independent light points with different behaviours fast.

The DMX protocol is based on digital addressing that allows very responsive control of up to 512 circuits. DMX addresses are colour-coded:

- Single colour: 1 DMX address
- Three-colour (RGB) light: 3 DMX addresses
- Four-colour (RGBW) light: 4 DMX addresses

Every light must be assigned an DMX address to which it responds. Existing technology categorizes addresses as :

- accessible switchs,
- addresses in the process of being assigned as products are installed,
- other more-advanced protocols such as RDM (Remote Device Management).

To ensure sufficient data throughput to control the lights, a special DMX-approved cable must be installed. This is an armoured trusted 2-wire cable. The installer must also comply with all applicable regulations.

The goal is to set up a dedicated WiFi or Ethernet system such as Artnet.

RDM, the improved version of DMX, provides feedback (a return signal) when an order is sent. This lets you know that the system is working and that all its components are compatible with the protocol.

DALI : Digital Addressable Lighting Interface

The digital technology used by DALI:

- individually controls 64 addressable lights that can be grouped into groups of 16,
- precisely controls luminous intensities and allows the light unit to be geolocated,
- maintains a 16-state log of lighting, control and management actions.

A DALI connection requires a 2-Phase connection. It can be set up as a bus or a star, or a combination of the two. Cables must be 1.5 mm² in section, and must not exceed 300 meters in length.

The Dali bus is 16V direct current (DC). Dali controls and supply can use the same cable.

Published on 12 April 2016

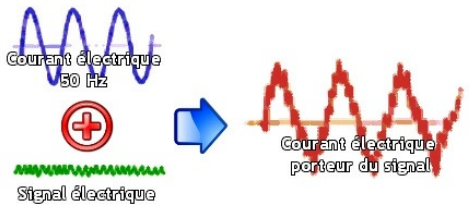
Category:
Power supplies & control systems

Tags:
control system - DALI - DMX - LED - LED technology - lighting - protocol

PDF generated on 15 July 2025

LED control: protocols with addresses

Powerline



Courant de signal courant porteur
(source : http://www.ant.developpement-durable.gouv.fr/spip.php?page=commentaire&id_article=7)

Many other control protocols have been developed by lighting manufacturers to address their own particular requirements. The most common solution, however, is via the powerline. This consists of adding a modulated sinusoidal signal to the 230V power supply.
This solution allows to specify the individual behaviour by address. It is very attractive because the wiring is so simple: the copper wires in the mains. The downside is, however, the loss of signal over long distances.