

LUMINAIRE LEVEL LIGHTING CONTROLS SERIES

Control Tech Terms

This guide outlines key terms and concepts you need to know in order to communicate effectively with all project stakeholders.

Let's get on the same page

With the rapid pace of change in the lighting and controls industry, it is easy to confuse the ever-expanding list of new terms, technologies, and concepts being applied to Luminaire Level Lighting Controls (LLLC).

Part 1: Understanding system components

Most lighting control systems have basic components in common. Understanding the discrete components will help you better understand the pros and cons of different systems available in the market.

Component	What it does	How it does it	Notes
Luminaire driver	Controls power to the luminaire and regulates dimming	Various control protocols; 0-10 volt, DALI, DMX	Not all LED fixtures come standard with dimming
Load controller	Sends commands and data from luminaire to the system	Wireless radio signal to gateway	Load may be luminaires, receptacles, or motors
Gateway or hub	Communicates wirelessly with lighting controls and other building systems	Radio frequency (RF), cellular, ethernet server	May be wired in very large systems or POE
System server	Provides a more robust computing platform for lighting controls and other building systems	Programmed through system computer software	Often required for advanced capabilities
Configuration tool	Allows users to program functionality of lighting controls	Users "configure" control methods to optimize performance	Can be an app, a computer application or a mix of proprietary hardware and software
Wall station	Allows users to send signals to the system and relevant luminaires	By manually pushing a button or touchscreen	Wall stations were formally just known as "switches" or "dimmers"

Part 2: Basic controls terminology

Once you understand the system components, it's easier to understand basic controls concepts and terminology.

Category	Phrase/concept	What's it doing
Sensors	Occupancy/vacancy	Detects room or space occupancy
	Photo sensing	Detects changes in light levels
Control methods	High-end trim (task-tuning)	Reduces initial maximum light output to target levels
	Occupancy/vacancy	Turns luminaires on when occupied, and down or off when nobody is present
	Daylight harvesting	Reduces luminaire output when natural daylight is present
Controls allocation	Zone or group	A collection of fixtures that are always controlled together the same way
	Scene	A collection of control zones with preset light levels that can be easily and repeatably selected

So it's on my network?

It is important to understand that, though the system is a network, it does not necessarily need to be on the building IT network. Many lighting systems operate on their own independent network.

Communication protocols and load control protocols

A communication protocol is a system of rules that allows two or more devices to transmit information. Common wireless examples include WiFi, bluetooth, Zigbee or cellular networks.

A load control protocol can be thought of as the actual content in the message being communicated. Examples include DALI, DMX512, proprietary digital protocols or 0-10 volts (analog).

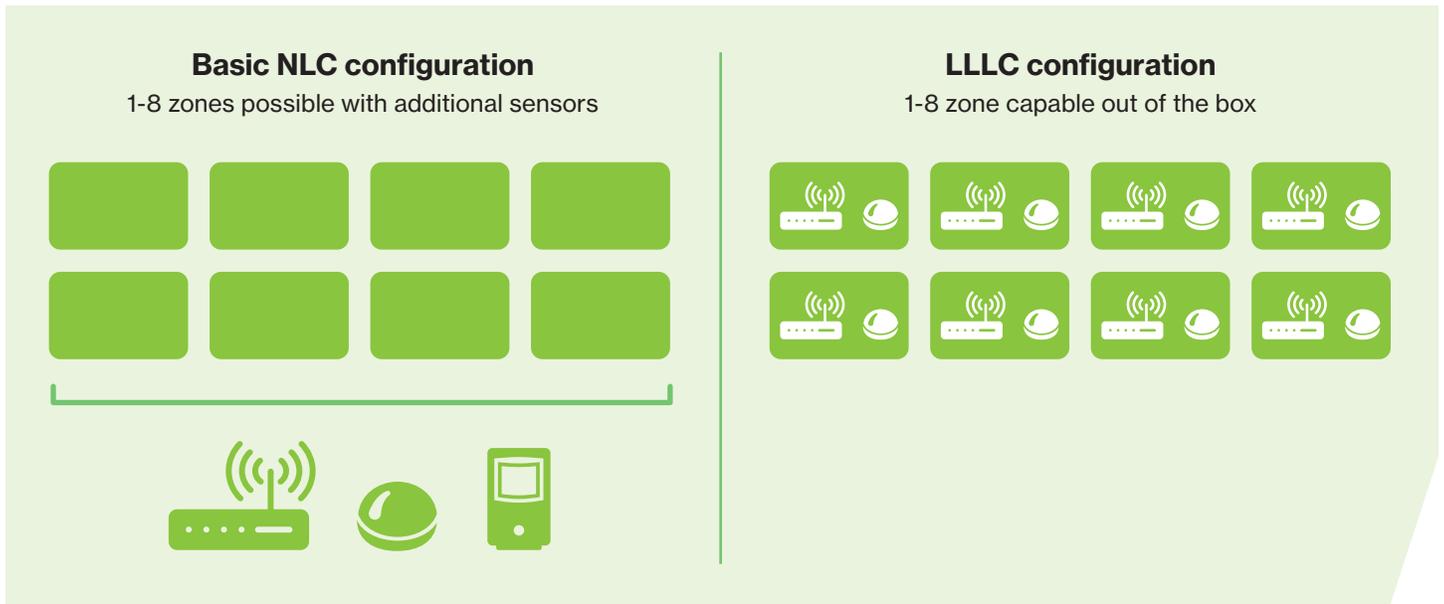


Part 3: What's the difference?

Now that you understand the basic components and concepts, we can take a closer look at the definitions of networked lighting controls (NLC) and luminaire level lighting controls (LLLC) and explain the primary ways in which these systems operate in commercial buildings.

A networked lighting controls (NLC) system is the combination of sensors, network interfaces, wall stations, and controllers that affect lighting changes to luminaires. In an NLC system configuration, there is a one-to-many relationship, in which one sensor controls many luminaires.

A luminaire level lighting controls (LLLC) system is a specific type of NLC system. Manufacturers are integrating NLC system components directly into individual luminaires, resulting in a one-to-one relationship with every light fixture capable of being controlled directly. Each luminaire is its own control zone or may be grouped into zones with multiple luminaires. This simplifies design, streamlines installation, and provides unparalleled flexibility for future space reconfigurations.



Both systems deploy the same control strategies to ensure code compliance, tenant comfort and sustained energy savings. Some products can be configured to operate in either mode.



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