Control system

An overview

A true modern day lighting control system that is faster, easier and without compromise

zencontrol, what's the difference?

"It just works"

Simplest building control on the market

- Works out of the box
- Removes complication
- Fixes contractor mistakes automatically
- Built using a "Just works" philosophy
- Simplest commissioning process

zencontrol is modern lighting control

- Full support and compliance for DALI and DALI-2
- Cloud connectivity for commissioning and monitoring
- Automatic commissioning of standard features
- Advanced programming and integration possible through web and mobile interfaces

zencontrol is modern lighting control, with fully compliant and certified DALI and DALI version 2 support as per IEC62386. Built upon a "just works" philosophy, zencontrol removes the complication associated with lighting control. Common issues associated with typical lighting control have been removed with the use of smart software and systems.

Industry issues and complications found in addressing, grouping and fault finding have been removed completely or drastically reduced. Integrating these features results in a system that can be delivered faster, with less risk and without compromise.

zencontrol delivers on the technology promise of the future with:

- Fast reliable lighting control
- Dramatically reduced commissioning
- Secure cloud connectivity
- Full DALI compliance

Fast

Commission and setup buildings faster with zencontrol. With zencontrol's *instant data technology,* you are in control. Using the cloud or app interface, up to date data is streamed quickly, dramatically reducing commissioning time.

Automatic

What is better than fast? Automatic. With zencontrol's automatic addressing, grouping, debugging and base build commissioning, many tasks are completed before the commissioning begins.

Multi-user

Smart data technology allows simultaneous multiple user access right down to a single light fitting. Multi-user technology allows quicker commissioning and better use of resources.

Grid view

Dramatically decrease building commissioning time by up to 100x with zencontrol Grid view. Quickly change device settings on thousands of devices in seconds. Cut and paste settings across floors, buildings or sites. It has never been quicker or easier.

Heuristic advice

zencontrol's advanced algorithms analyse the site and provides advice on potential issues, making it easier to identify problems, saving critical fault finding time.

Risk reduction

zencontrol reduces commissioning time and removes a lot of mundane tasks, therefore reducing the risk associated with using a building management system.

The zencontrol advantage

Control systems take a long time to set up and commission, the solution: zencontrol does all the hard parts.

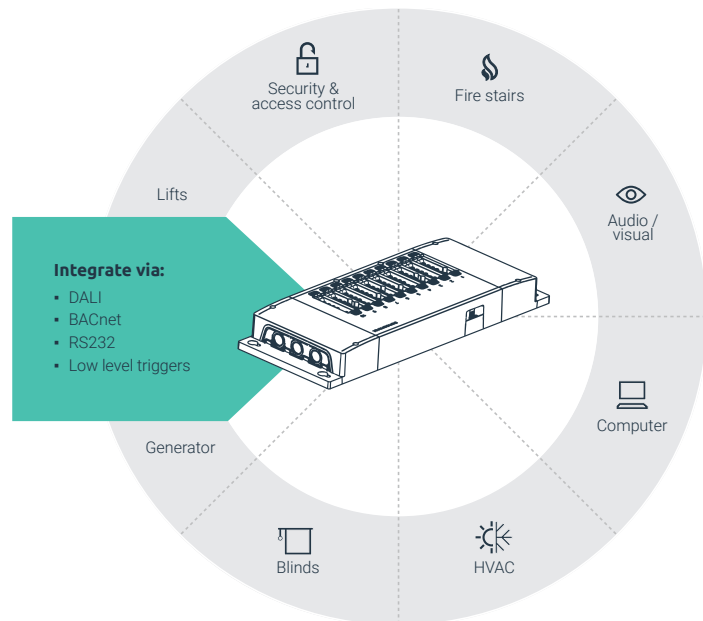| Task	Previously (conservative)	zencontrol
Random addressing	5 – 10 + mins / 64 fittings	Automatic
Scanning setting	2 – 10 mins depending on amount of data / 64 fittings	Automatic
Readdressing new devices	2 + mins	Automatic
Fixing address conflicts	2 + mins	Automatic
Setup of switches and sensors	5 + mins	Automatic
Grouping rooms	5 – 10+ mins / group	Automatic
Syncing data changes	1 – 10+ mins depending on what is written	Automatic

zencontrol

Integration

A modern building requires many building services to be connected.

zencontrol makes integration easy with several supported methods:

- RS232 connections
- Modbus over IP
- KNX over IP
- BACnet over IP (client and server)
- Volt free I/O (low level triggers)
- Cloud based API

Additionally, as BACnet, Modbus and KNX support is at the application controller level, no additional controller between the lighting control system and BMS is required. This reduces cost, increases speed and removes the risk of a single point failure.

Integrate via:
- DALI
- BACnet
- RS232
- Low level triggers

Security & access control

Lifts

Generator

Blinds

Fire stairs

Audio / visual

Computer

HVAC

Security

zencontrol takes security seriously and sets an unprecedented standard in lighting control.
Using outdated security implementations, other systems may not provide adequate protection now or into the future. Some systems use plain text UDP packets which allow for easy intrusion, while others are using encrypted multicast packets and obfuscation to keep you safe.

zencontrol sets the standard in security with the use of industry proven and backed TLS 1.2. Transport layer security is not just encryption, but a complete security layer which comprises of secure technologies such as SHA-2 (Secure Hash Algorithm 2) and AES (Advanced Encryption Standard). zencontrol has ensured correct use of TLS1.2 and uses ciphers including AES256-GCM over TCP/IP protocols. zencontrol security documentation is available on request.

Security by obscurity is not a secure practice.

Reliability

Fast and reliable data interaction is very important in today's control systems.
Guaranteeing that the data is fast and delivered reliably is critical to the well being of the building.

zencontrol is built on industry standard TCP/IP protocols rather than UDP. The zencontrol packet handlers ensure correct handshaking and closed loop acknowledgements ensuring lights are controlled when they need to be and without compromise.

Cloud

In today's era, remote monitoring, building control, multi-site management and fast interaction are becoming mandatory requirements for building management systems.

zencontrol Cloud is an enhancement to standard lighting control. While all zencontrol buildings can operate without a cloud connection, adding cloud control provides a faster and more manageable solution.

Designed to be highly scalable the zencontrol Cloud provides:

- Faster commissioning
- Advanced reporting
- Plan view
- Multi site management

- User management
- Secure remote maintenance
- Data security and data retention
- Installation verification reports

- Backup and restoration
- Power usage
- Third party API integration
- Emergency testing

Additionally, other features can easily be added and distributed from the cloud, which helps to future proof buildings as the industry requirements change.

Emergency testing

Emergency lighting is essential to illuminate work areas and escape routes when the power to normal lighting fails.

In most regions legislation demands that emergency lighting is regularly tested and maintained in full working order to ensure occupant safety should an emergency occur.

IEC62386 Part 202, DALI device type 1, is one of the only emergency standards that exists which:
- Is published as an international standard by a reputable body
- Is peer reviewed
- Has full testing specifications to which products can be certified as being compliant

zencontrol allows building owners to break the areas into tenancies and allow individual tenancies to manage and maintain their own records, while also being able to audit the records of all tenants.

zencontrol takes advantage of DALI compliant emergency lighting and can provide fast and correct testing.

Control

Daylight harvesting

Users requiring maximum energy savings can use natural light to offset artificial light usage. zencontrol employs several products and techniques which aid in reducing the setup time and increase the daylight linking accuracy.

Time based control / profiles

Changing the behaviour of lighting during different periods of the day is simple and easy with zencontrol. The building can be set up to change profiles at various times to meet the requirements of after hours, normal hours and holidays. Additionally, an installer can schedule tasks to occur based on the time or proximity to sunrise or sunset.
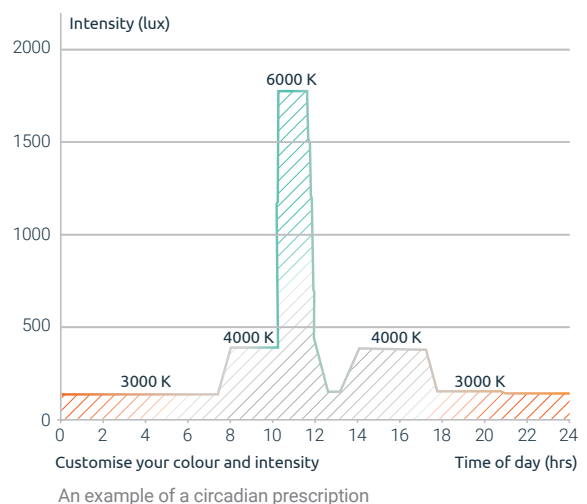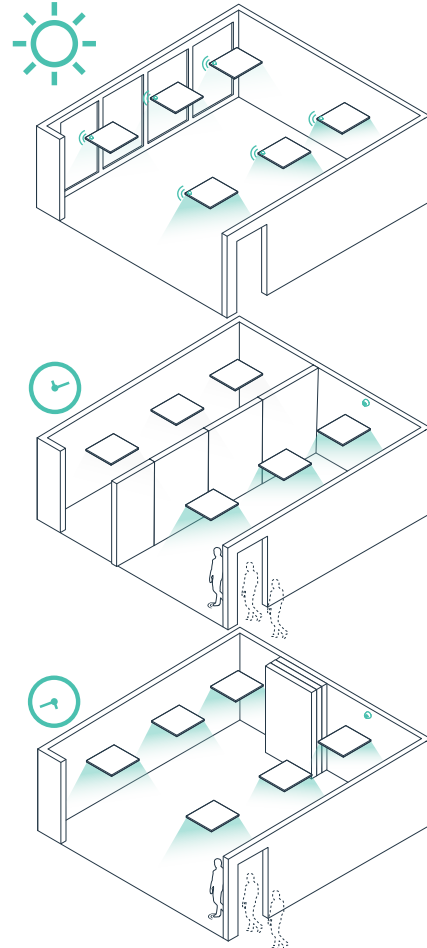
Event based logic

Changing how a room or area performs based on event logic, such as a room partition opening or closing, is easy with zencontrol's event based logic. Event based logic allows dynamic changes to the actions performed from switch and sensor activity, directly from events triggered through other logic input devices. In the room partitioning application, this means when dividers are open, switches and sensors control all lights and when closed, only those in their relevant area.

Circadian rhythm

Light colour and intensity play important roles in human physiology. Recent studies have shown that distinct colour temperatures and intensity can trigger the body to create serotonin or melatonin. The ability to adjust the colour and intensity of light can be used to trigger these hormones and positively affect building occupants.

zencontrol provides the ability to easily control light prescriptions in an environment to increase productivity and improve well being.

An example of a circadian prescription

C-Bus integration

Use C-Bus devices with the zencontrol systems easily with the C-Bus automation controller. Integration allows easy mapping of zencontrol objects to C-Bus events, or map C-Bus touch panels to control zencontrol rooms and devices.

Occupancy based control

zencontrol is designed for sensors, which allows simple, easy, and automatic setup of presence and absence control in basic installations. zencontrol supports up to 63 sensors per DALI line and is ready for smart DALI luminaries. With per fitting occupancy control and light level compensation, energy savings and comfort can be easily increased.

Debugging

Finding issues on site can be a cumbersome and time consuming task for any integrator. Use the zencontrol Cloud to monitor real-time, detailed traffic on multiple application controllers simultaneously from any location. Our debugging tools allow you to diagnose, action a response and get back to work quickly.

Scenes

Boardrooms, meeting spaces and other presentation areas commonly require the ability to change the lighting of individual or groups of luminaires to fit the requirements of the occupants. zencontrol supports easily configurable scenes and accessories.

Workstation control

Individual workstation control is gaining traction for employers looking to increase employee comfort. zencontrol personal USB interface is the perfect accessory to give employees individual room control without commissioning.

DALI and DALI-2

Full compliance with DALI standards ensures that our products function as expected to ensure a consistent experience through the systems life cycle.

zencontrol's automation and simple control is built on the functions and commands from the latest versions of the DALI standard. Full compliance with DALI standards ensures that connected devices function as expected to ensure a consistent experience through the system life cycle.

The zencontrol product range has been built for compliance with DALI and DALI version 2 (DALI-2) with DiiA certification.

DALI compliance is not just for zencontrol systems. With a compliant device, commissioning, set up and everyday usage is more consistent and more reliable on all DALI control systems.

New updates to the DALI standards provide
Provision for full compliance and operation of
- Input devices including sensors and switches
- Occupancy sensors
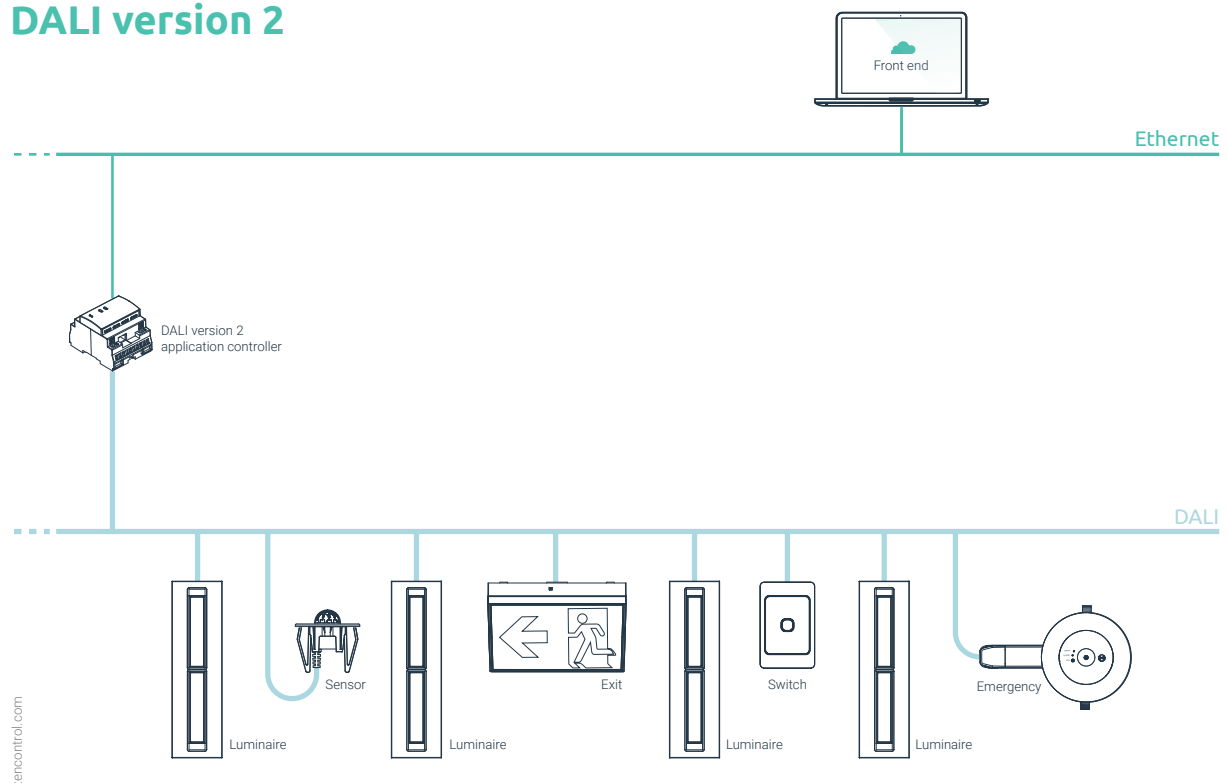- Light sensors
- Control system
- Power supplies

Additionally the updated standards provide
- Backwards compatibility with traditional DALI
- Full set of standards, test flows and test equipment and **certification**

Advantages of DALI-2
- Lower over-all costs
- Published under IEC62386
- Cross manufacture compatibility
- Simpler wiring - one line for lighting, emergency, switches and sensors
- Endorsed & compliant switch and sensor devices
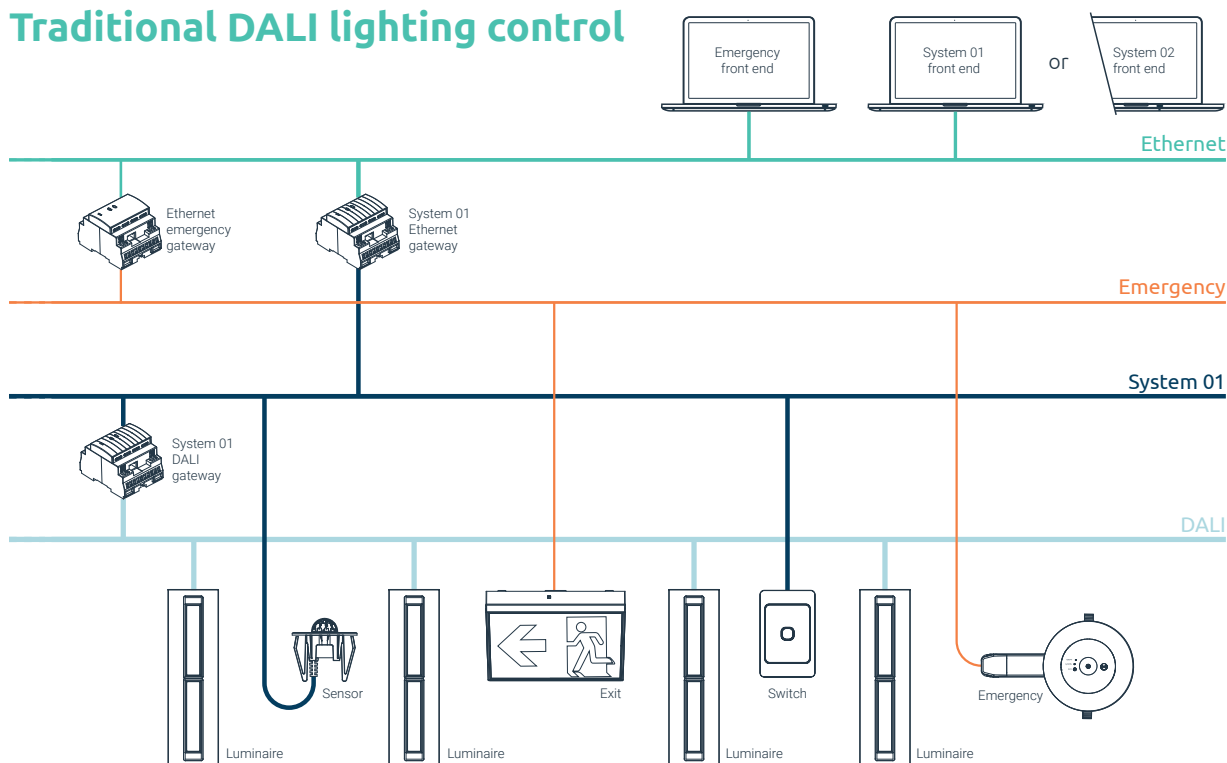- Certification of the control system component

DALI version 2

Front end

Ethernet

DALI version 2
application controller

DALI

Sensor

Exit

Switch

Emergency

Luminaire

Luminaire

Luminaire

Luminaire

The standards

IEC62386	Description
Part 101 ed 2	System components
Part 102 ed. 2	Control gear
Part 103 ed. 1	Control devices
Part 202	Self-contained emergency lighting (device type 1)
Part 207	LED modules (device type 6)
Part 209	Colour change
Part 216	Load referencing
Part 217	Thermal gear information
Part 218	Dimming curve selection
Part 219	Power measurement
Part 220	Emergency DC
Part 301	Particular requirements – Input devices – Push buttons
Part 302	Particular requirements – Input devices – Absolute input devices
Part 303	Particular requirements – Input devices – Occupancy sensor
Part 304	Particular requirements – Input devices – Light sensor
Part 305	Colour sensor (upgradeable)

Traditional DALI lighting control

Data security

Data security is a critical issue in many current lighting control systems. Most systems have poor data recovery plans and little to no software or physical security.

Many systems have data stored only on a single low cost pc often located in a plant room with a single log in for all users. Virus, crypto lockers, ransomware, theft or damage to this computer can result in loss of emergency test records and the inability to monitor or administrate the system.

zencontrol systems are stored on the cloud and follow industry standard security procedures

- Data is backed up
- Data is secured, both physically and digitally
- Hardware maintenance is managed
- Cloud services are spread amongst multiple fault tolerant remote servers.
- Changes are logged and audited
- Incorrect or malicious changes can be identified and rolled back

zencontrol's cloud based data storage and control means that head end PCs, though available, are not required. As information does not need to be stored locally the risk of compromise is greatly reduced. All details of site setup, test results and remote management can be accessed from any pc by approved agents.

Product range

Room controller

zencontrol room controller provides power distribution and automatic grouping via its 10 channel output. 10 SELV inputs allow the joining of rooms and manual lighting control. With support for up to three input power circuits the room controller can supply up to 3 x 10 A of resistive load. The room controller has a built-in DALI version 2 application controller, DALI power supply and system relay / emergency test contact.

DALI-2 PIR sensors

The DiiA DALI-2 certified zencontrol PIR and lux sensors are powered directly from the DALI line alongside mains powered DALI microwave and specialty sensors. All zencontrol sensors are compliant to IEC62386 - 303 and can be used with any compliant DALI application controller. 5 and 8 m PIR models also provide ambient light level detection and colour sensing (*with software upgrade*).

DALI-2 switch

zencontrol DALI-2 certified switch has been designed for mounting behind lighting control panels allowing the use of standard mains rated switches for DALI control. The switch is powered directly from the DALI line and has two configurable connections with either functioning as a switch input or LED indicator. DALI compliance to IEC62386 - 301 enables the DALI switch to be used with any compliant application controller.

DALI relay

zencontrol DALI relay suits the standard 35 mm DIN rail and can be mounted within a distribution board. The 10 A volt free mains rated relay output is rated for 40,000+ operations. DALI device type 7 compliant per IEC 62386 - 208 ensures compatibility across DALI control systems.

DALI-2 power supply

zencontrol DALI-2 certified power supply powers the DALI line with up to 235 mA of line loading at 16.5V. The supply is protected against short circuit, over voltage and thermal overload fault conditions. Distribution board mountable on standard 35mm Din rail provides simple mounting and installation. Compliance to DALI version 2 IEC 62386 - 101 ed. 2 helps ensure timings and signalling is robust and reliable.

DALI application controller

zencontrol application controller provides many of the same features as the room controller in a DIN mount package. An application controller can be used when all devices are to be controlled together, for lines of emergency fittings and applications where some manual commissioning is acceptable.

zencontrol