Dali & Light Management System

What is DALI

DALI stands for Digital Addressable Lighting Interface and is a protocol set out in the technical standard IEC 62386.

AG-DALI is a working group set up by leading manufacturers and institutions in the field of digital lamp/luminaire control to promote DALI technology and applications

The Digital Addressable Lighting Interface (DALI) is a digital protocol for the controlling of lighting in buildings, such as electrical ballasts and dimmers.

DALI was established as a successor for the still market dominating 0-10v and an open standard rival to Digital Signal Interface (DSI), on which it is based. DALI is standardized in accordance with International Electrotechnical Commission IEC 60929, standard for fluorescent lamp ballasts.

Each piece of operating equipment with a DALI interface can be communicated with over DALI individually. Using a bi-directional data exchange, a DALI controller can query and set the status of each light. As a standalone system, DALI can be operated with a maximum of 64 devices. Alternatively, DALI can be used as a subsystem via DALI gateways.

Advantages

â€¢Â Â Â DALI is an open standard not exclusively owned by a single company.

â€¢Â Â Â It requires only a pair of wires to form the bus for communication to all devices on a single DALI network.

â€¢Â Â Â Unlike other systems, such as high-speed RS485, it doesn't require the cabling is a "daisy-chain"; "stars" and "T's" are perfectly acceptable, giving the installers flexibility.

â€¢Â Â Â The DALI System is not defined as SELV (Separated Extra Low Voltage) and therefore can be run next to the mains carrying cables or a part of a multi-core cable that includes mains power.

â€¢Â Â Â The DALI signal has a high SNR (signal to noise ratio) which enables the signal to be exposed to a large amount of noise before the signal is destroyed.

â€¢Â Â Â The Baud (or transmission speed) of DALI is low (1200Hz) which reduces the need for Stub matching of the transmission lines and to reduce the complexity of the system.

â€¢Â Â Â The maximum number of devices on a DALI loop is 64, which is a manageable network size, smaller numbers may not be enough, while higher numbers become harder to commission and track.

â€¢Â Â Â DALI has Group and Scene Commands to reduce the amount of information which is sent over a DALI loop. The use of these commands reduce network latency and allow for all devices to react within the same time. An example is "Group 1 goto 100%" or "Recall Scene 1".

â€¢Â Â Â Because it uses Manchester encoding it doesn't matter which way around the signal cable is wired, this makes installation more foolproof.

Disadvantages

â€¢Â Â Â When addressed a DALI device is assigned a short address (a number from 0-63) which becomes its unique address on the bus. When Installers or commissioners don't arrange the addresses in the

devices in a logical order (for example following the flow of the building) replacement of faulty devices becomes confusing and time consuming.

•   Being restricted to 64 addresses (six bits), DALI cannot be used in large installations without using another technology to workaround the limitation.

•   Its slow communication speed (1200 bits per second) can mean a visible delay in large installations with a lot happening.

•   In Early models of some DALI Ballasts the DALI requirement for permanent memory was misinterpreted to mean EEPROM exclusively. This meant that every update to the fade rate or fade time for example was written to EEPROM. Moreover, no protection for the EEPROM lookup table was implemented, which exacerbated the problems caused by overwritten EEPROMS. The number of times an EEPROM can be rewritten is limited (200K - 10M times). In current generations of these DALI devices RAM is used in preference to EEPROM during normal operation, which has dramatically reduced the number of EEPROM writes and thus avoided problems with overwritten EEPROMs.

•   There are few affordable portable test tools available for DALI, Portable tools are available from a number of companies and they range from $200EU upwards.

•   The data has to run on mains-rated cable, with 600v isolation and at least a 1 mm cross-section rather than using a thinner data cable.

•   The maximum wire length is less than other digital dimming protocols like DMX512.

•   The volt-drop should be less than 2 volts from the start to the ends of the line thereby forcing disciplined planning by the installers.

•   Some features are patented (e.g. holding configuration in RAM), and can not used without paying licence fee.

DALI PRODUCTS:
•   **Electronic ballasts for fluorescent lamps**
•   **Electronic ballasts for HID lamps**
•   **Electronic ballasts for LED**
•   **Lighting Control Equipment**
•   **Electronic transformers for LV halogen lamps**
•   **Converters and Interfaces**
•   **Auxiliary Equipment (i.e. power supplies, emergency units et.c.)**
•   **DALI Applications Services**
DLM from OSRAM

What are light management systems from OSRAM?
The right light in the right amount at the right place and at the right time promotes our sense of well-being and stimulates us to be active. In addition to the technical and architectural aspects, light management systems (LMS) therefore play an important role in the holistic approach to planning high-quality lighting systems.
Light management systems detect and control different lighting levels and color mixes, so they give lighting a dynamic dimension. Automatic changes to the amount, color and direction of the light means that the lighting system can be controlled on a basis of demand – from daylight-dependent control and dynamic lighting applications to pushbutton selection of different lighting scenes.
light management systems can be easily assigned to the specific requirements of application:
Energy savings

Ever rising energy costs and increasing focus on climate protection are pushing the need for energy savings and more to the forefront. In applications with high energy consumption energy-efficient lighting solutions are playing an increasingly important role.
•   Light management systems for daylight-dependent and presence-dependent lighting
•   Light management systems with maintenance-free EnOcean radio technology
•   Sensors for non-systems-specific use

Ambience

Dynamic light grabs our attention and arouses our interest â€" with atmospheric color changes and daylight simulation with white light. Whether it's for a bar or a shop window display or an event, the intensity and the color of the light can be changed automatically or at the touch of a button to create the right effects for the particular application.

•Â Â Â Light management systems for dynamic RGB lighting
•Â Â Â Light management systems for daylight simulation

Scenes

Rooms that are used by different people for different purposes need more than just demand-based lighting â€" they need scene-oriented lighting.
OSRAM offers therefore the following solutions:
•Â Â Â Light management systems for multifunctional management of lighting groups and lighting scenes
•Â Â Â Simple manual dimming solutions