

Continuously networked light management up to Zone 1

Smart light across entire hazardous areas

In the process of digitalising industrial lighting technology, we must not forget to shine a light on hazardous areas. Integrated light management allows plant operators to save on energy costs and to implement predictive maintenance concepts that will prevent expensive downtimes. For digital networking in hazardous areas, R. STAHL now offers versions of the LED light fittings from their EXLUX series featuring DALI/DALI-2 interfaces. Customers can now purchase lighting systems certified according to IEC 62386 for bus-based control and monitoring of lighting technology up to Zone 1/21.



Image 1: R. STAHL is continuing to expand their range of products with DALI-2 interfaces for integrated light management up to Zone 1

In light of the significant advantages offered by digitally networked lighting systems, plant operators are increasingly opting to use bus-capable lighting technology that corresponds to the DALI – Digital Addressable Lighting Interface – standard. Intelligent light management enables the service life and fail-safety of lighting systems to be optimised, while ensuring that industrial premises are lit in a way that complies with directives and is perfectly adapted for the visual task to be performed. As an explosion protection specialist with extensive expertise in lighting technology, R. STAHL supports operators throughout the entire process,



THE STRONGEST LINK.

from planning and installation to programming and commissioning their digitally networked lighting systems. The Waldenburg-based expert is part of an exclusive group of suppliers who have developed suitable solutions for consistent digitalisation of lighting control and monitoring systems in hazardous areas. To ensure that lighting technology control options are also available in hazardous zones, the lighting systems must be connected to the control system via explosion-protected connections. This enables precise detection of errors, as well as automatic switching commands for presence- or daylight-dependent switching and dimming, and makes it possible to set up instruments for remote monitoring and establish a predictive maintenance regime.

New standard for light management

The DALI protocol supports data communication across all relevant building automation systems. DALI-2, the later evolution of the open digital interface standard, improves the manufacturer-independent interoperability of DALI components on the basis of the amended standard IEC 62386. To receive DALI-2 product certification, manufacturers must register with the Digital Illumination Interface Alliance (DiiA) and demonstrate the conformity of their products in standardised test procedures. DALI-2 standardises the functional spectrum of bidirectional control units such as buttons, switches, presence detectors and ambient light sensors. Manufacturer-specific special functions can all be deactivated together in standard mode. In this way, the DALI-2 standard makes it significantly easier to integrate external sensors for presence or daylight control. Additionally, the DALI-2 format makes new functions available for persistent data storage (NVM), device identification, light value detection and error diagnosis. In addition to automatically detecting switching states, error messages and brightness values, an hour meter supports predictive maintenance concepts. For safety and emergency lighting, the system monitors both the light fitting status and battery status. Data, settings and threshold values can also be managed using a web browser or smartphone app, enabling remote monitoring from any location.



THE STRONGEST LINK.



Image 2: EXLUX 6002/4 – highly efficient, explosion-protected LED devices for general lighting with DALI-2 interface

DALI networking in hazardous areas

To make the advantages of DALI networking available in hazardous areas as well, R. STAHL now offers a selection of its lighting products in versions with corresponding interfaces. Here, the focus is on EXLUX devices equipped with state-of-the-art LED technology for general and emergency lighting. The 6002/4 series linear luminaires certified for worldwide use in Zone 1/21 and 2/22 stand out thanks to their high energy efficiency and long service life. They achieve luminaire light outputs of up to 145 lm/W at a maximum power consumption of just 42 W – what's more, with a service life of over 100,000 operating hours at ambient temperatures up to +60 °C, they are particularly long-lasting. Models from the EXLUX 6009 series are available with fluorescent lamps or LED technology for use as emergency luminaires with integrated battery and DALI interface. The devices that have been approved for Zone 1 automatically check their functionality by performing weekly function tests and an annual rated operating time test. The operational measurement duration for the battery power supply can be changed from 1.5 h to 3.0 h. These light fittings are also designed to be extremely low-maintenance and long-lasting. As a result, the LED variant offers a service life of over 100,000 operating hours and features a battery power supply that can run in stand-by switching mode, continuous mode or switchable stand-by switching mode.



THE STRONGEST LINK.

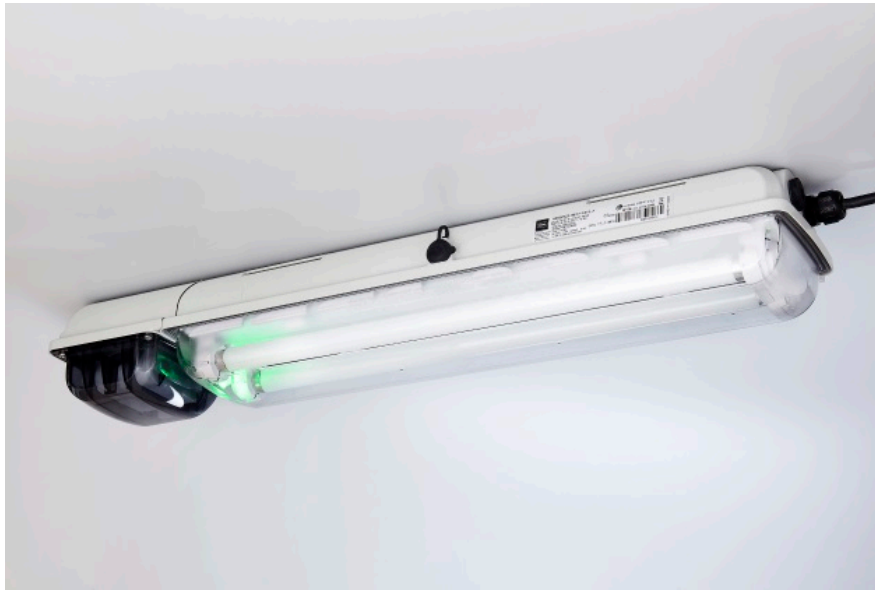


Image 3: For DALI-2 networked emergency lighting – the EXLUX 6009 with fluorescent lamps or LED technology

Synchronised switching and dimming

R. STAHL supplies its DALI light fitting variants as devices suitable for cabled networking using the DALI 24 V DC bus. Ex protected empty enclosures are available for installing a DALI master in a hazardous area. Per DALI bus, 64 actuators can be linked in various topologies. Every network can be integrated into the higher-level building automation system via a gateway. Unlike the conventional 1-to-10-V standard, bidirectional DALI communication can be used to transmit status and functional data to the bus master, as well as to transmit switching commands. The standardised DALI protocol allows the connected light fittings to be controlled individually, in groups or synchronously through the use of around 200 programmable commands. Different lighting levels and dimming behaviour for LEDs can be defined for every luminaire and light group. Using time control or via connected presence and daylight sensors, the light intensity is automatically adjusted to the operational processes and surrounding brightness.

Prospects

As a leading manufacturer of networked solutions for hazardous areas, R. STAHL continuously drives the development of digitalised lighting technology with DALI connections. To further this aim, their range of light fittings with DALI interfaces has been expanded to include additional device series. Soon, even the highly compact, extremely robust, temperature- and weather-resistant tubular light fitting 6036 and the incredibly lightweight and compact universal spotlight 6050/6 will be available in DALI versions. In addition, the company has announced the market launch of a DALI master for Zone 1, which can be used



THE STRONGEST LINK.

as a lighting control system and to evaluate sensor signals for presence and daylight detection. Furthermore, in the form of the Smart Lighting System, R. STAHL has developed a solution for hazardous areas that efficiently and automatically adjusts external lighting according to the ambient brightness, making a significant contribution to reducing light pollution.



Image 4: In development – an ex-protected DALI master.