LED solutions

**LED emergency lighting system**

Solutions for emergency lighting

TRIDONIC
LED emergency lighting system

**Light that makes people feel safe. At all times.**

A system is only as good as the weakest link of its chain. This is why we consider emergency lighting as a functional unity – from power supply to battery, from optimal use of the light source to easy integration into the lighting management and building management systems.

**The complete solution – for your emergency lighting**

Tridonic solutions for emergency lighting systems provide for safety in your building, even in case of a power failure.
All over the world, Tridonic is a synonym for excellent products and services associated with perfect light. The company is impressive with a clearly arranged portfolio that will meet any requirement. With LED/LED Drivers and lighting management as core competencies – and with a view to the integration of emergency lighting, we are the right partner for electronic component solutions and systems.
Everything from a single supplier
At Tridonic, the competencies of various disciplines merge. We can provide you with the entire portfolio for solutions in the fields of general and emergency lighting: LED Driver, LED modules, LED Light Engine, batteries and controls. This is what makes us a market leader in emergency lighting systems in Europe. Be assured: we can provide you with the components of escape sign luminaires, escape route lighting as well as anti-panic lighting that’s suitable for you – at the latest state of the art and in the reliable Tridonic quality that you have grown accustomed to.

Trust, but verify.
From development to production, we check even the most inconspicuous detail for reliability and efficiency. In operation, too, emergency lighting is given particular attention: our automatic monitoring and test equipment guarantees that standards and specifications are reliably met.

Power supply for emergency purposes
Various systems are eligible to supply emergency lighting installations with electricity in case of a power failure: separate battery, group battery, central battery, power generators or high-security mains.

Whether you opt for emergency lighting with decentralised separate battery solutions or for a group or central battery installation – with Tridonic components you will always be on the safe side. The comprehensive range comprises both LED Driver for group and central battery supply and single battery-supplied emergency lighting units.
When the general artificial lighting fails, orientation must still be ensured in buildings even for visitors. Accordingly, there are legal provisions governing the equipment and dimensioning of emergency lighting installations that will be activated when there is no mains voltage. According to international standards and in line with the relevant European Directives, emergency lighting is divided into safety lighting and secondary lighting.

With good reason
Emergency lighting protects people against panic and accidents.
Safety lighting
Safety lighting must provide for a minimum brightness level to avoid panic in buildings and to allow for hazardous procedures to be completed and equipment to be turned off safely. Escape routes and safety devices must be clearly recognisable, thus enabling people to leave the premises quickly. Safety lighting breaks down into anti-panic lighting, escape route lighting and safety lighting for high-risk workplaces.

Secondary lighting
Secondary lighting provides light in places where power failures will not cause any hazard, but where nevertheless work needs to be continued. For a limited period of time, it will assume the function of general lighting.

Anti-panic lighting
Anti-panic lighting is meant to avoid panic in case of a power failure and to enable the people in the building to clearly recognise escape routes. The required illuminance level in the defined area is at least 0.5 lux.

Escape route lighting
Escape route lighting allows for safety devices to be recognised clearly and used safely. Escape routes must be illuminated across a width of 2 m. In doing so, an illuminance level of at least 1 lux along the center line for a path width of one metre must be guaranteed.

According to the EN 1838 standard, the ratio of highest to lowest illuminance must not exceed 40:1 for anti-panic and escape route lighting. The required illuminance level must be reached after no longer than 60 seconds. 50 per cent of the illuminance level, however, must be reached already after 5 seconds. The rated service time is at least one hour.

Emergency lighting for high-risk workplaces
Emergency lighting for high-risk workplaces must reach 10 per cent of the illuminance level required for the respective tasks or at least 15 lux after a maximum switch-on delay of 0.5 seconds. The ratio between highest and lowest illuminance must not exceed 10:1.
LED emergency lighting system

**Controlled safety**
Function testing – manual or fully automatic
Light enables people to leave buildings safely, helps them to find their way round and reduces accident hazards. Accordingly, various national and international standards, regulations and directives govern the operator's responsibility for reliable operation of the respective installations. What is required here is regular testing and function monitoring.

Three ranges: BASIC, SELFTEST and PRO
For the function test of the emergency lighting installation, Tridonic disposes of a ballast solution that is adequate both in economic and functional terms for each individual application – from manual testing of individual installations in the BASIC range, via integrated automatic test functions (SELFTEST range) through to central monitoring of the entire emergency lighting system in the PRO range.

Tridonic emergency lighting LED Driver with automatic test functions meet various testing and inspection algorithms according to the IEC 62034 standard. In the process, a random generator controls the start of the test cycles, thus preventing all batteries from being discharged at the same time and avoiding potential safety gaps. To ensure the right moment for running the annual system test, the switching status of the luminaires is permanently monitored. Based on this information, the annual system test can automatically be run at times when the rooms are not in use.

Emergency lighting management
Owing to the DALI communication standard, Tridonic emergency lighting components of the PRO range can easily be integrated into a monitored lighting and emergency lighting system. Additionally, Tridonic complements the general benefits of a DALI system through special highlights, such as the patented easy addressing system and scalable control systems – from the compact control unit through to the PC software.
High efficiency LED’s are now the number one choice for use in emergency lighting applications. They are ideal for impressively efficient, and at the same time simple, emergency lighting solutions. Future-oriented solutions with perfectly matched components are generated from the combination of Tridonic’s many years of experience in the field of LED Driver and the company’s innovative LED light sources.

Solutions for application-specific use

EM powerLED emergency lighting control unit + LED emergency lighting modules

LEDs are ideally suited for use in escape sign, escape route and anti-panic luminaires. In this field, Tridonic offers a wide range of LED modules for emergency lighting operation that boast impressively high system efficiency. Optics that are optimised for the respective application guarantee high illuminance levels combined with extremely compact dimensions.
Solutions with separate integrated emergency lighting LED

**EM powerLED emergency lighting LED Driver + combined LED modules for general and emergency lighting**

For use in luminaires for general lighting, Tridonic can provide you with a wide range of LED modules. The modules of the EM range feature defined LED light points for emergency lighting operation – and accordingly an integrated emergency lighting function.

As these LEDs are addressed separately, reliability is increased even further, and ageing effects avoided. Direct integration also reduces wiring effort.
Universal solution for all LED modules

EM converter LED emergency lighting LED Driver + LED modules for general lighting
In the universal system, the LED modules that are also used for general lighting are switched by means of the emergency lighting control gear in case of an emergency.

This solution offers maximum flexibility: it is compatible with all LED modules and all LED gear components made by Tridonic and other manufacturers.

Combined solution for normal and emergency lighting operation

EM power LED emergency lighting control units for higher LED-power + LED modules for general lighting
The combined emergency lighting LED Driver EM powerLED (80 W lp, 50 W/45 W C, SR) LED emergency lighting control units are the ideal solutions for a cost-optimised structure of the emergency lighting installation. They integrate the LED Driver for mains operation (four channels) and the emergency lighting function (one channel) in one assembly.

LED Light Engine for emergency lighting operation maintained and non-maintained

LED Light Engine EM ready2apply
The EM ready2apply complete solution (BASIC, SELFTEST, PRO) is the ideal solution for simple emergency lighting design. Thanks to the fusion of the LED driver and the LED module in combination with a long-lasting lithium-iron phosphate (LiFePO₄) battery, the unit is immediately ready for use.
Tridonic offers a diverse range of complete emergency lighting solutions for separate battery-supplied emergency lighting installations – for different requirements and LED modules – that perfectly match the requirements of the various country-specific standards. Here you will find both entirely straightforward and highly sophisticated solutions. The range extends from cost-optimised through to high-end emergency lighting systems.

### Emergency Lighting Solutions by Tridonic

**Complete and standard-compliant**

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The specifications of the individual products are available at [www.tridonic.com/emergency](http://www.tridonic.com/emergency)
The EM powerLED high power range of combined units is the smart solution where cost optimised or feature driven emergency lighting is required. It integrates the LED driver for mains operation and emergency lighting into one unit. Drivers are available for all applications from low profile non-SELV units for use in linear and square luminaires to compact SELV units for use with downlights and decorative luminaires. Versions are available to cover Basic testing, Self-testing and DALI addressable and monitored testing installations.

The innovative PRO compact versions are true one for all products allowing lighting control and dimming alongside emergency testing with a single DALI address. The units are fully compatible with the main PREMIUM and EXCITE range of Tridonic mains LED Drivers and can be used seamlessly in any installation. Strain relief SR compact versions in conjunction with plug in remote battery offer an out of the box solution.

EM powerLED SELFTEST FX 45 W
Independent automatic self-testing
EM powerLED SELFTEST with its integrated automatic test functions is performing a weekly function test and an annual duration test independently. The test result is shown locally via a bi-colour status display LED.

EM powerLED PRO DIM 45 W
Central control and monitoring via DALI
The DALI addressable EM powerLED PRO combines both lighting control and automatic tested and monitored emergency lighting in one product.

EM powerLED BASIC FX SC LiFePO4 32 W
The combined emergency lighting LED driver is very compact and reduces wiring work.

At a glance: EM powerLED high power
- Combined functionality
- Small range for maximum coverage including selection of duration and power output
- Compact SELV and linear* non-SELV units
- Strain relief and embodiment versions of SELV units
- Basic, self-testing and PRO DALI versions
- Integrated simple corridorFUNCTION for BASIC versions
- ST versions with switchDIM
- PRO versions with a single DALI address for emergency and lighting control
- I SELECT 2 for easy and accurate current selection

* Only currently available in BASIC test versions
The characteristic features of Tridonic emergency lighting LED Driver are small dimensions and extremely flexible applications. Apart from the operation of powerful individual LED light points, they are also able to actuate several LED points with a lower individual rating. The entire range of Emergency lighting LED Driver has been designed for operation with environmentally friendly NiMH batteries. The unique intelligent multi-level charging circuit provides for quick and gentle charging of the batteries.

EM powerLED 1W and 2W may be used in maintained mode and in non-maintained mode. They are accordingly suited for both maintained operation in escape sign luminaires or for minimum lighting at night as well as in safety luminaires with a low to medium rating. EM powerLED is available with 1, 2 and 4 W.

EM powerLED BASIC 1–4 W
Compact and efficient
EM powerLED BASIC 1–4 W is a high-grade emergency lighting control unit offering maximum reliability for the operation of 1 to 2 LEDs in a row within minimum space (cross-section of 21 × 30 mm).

EM powerLED SELFTEST 1–4 W
Automatic testing and monitoring
EM powerLED SELFTEST 1–4 W works independently and automatically runs all function tests and annual system tests as well as the control of the batteries. The result is displayed by the two-coloured status LED.

EM powerLED PRO 1–4 W
Integration into a DALI system
The top high-tech product of the range – EM powerLED PRO 1–4 W – boasts unrestricted DALI compatibility and numerous impressive features, including the patented addressing system allowing for simple control of DALI emergency lighting control gear in any installation.

At a glance: EM powerLED low power

- Basic, Selftest and DALI-addressable versions
- Compact design with 1, 2 or 4 W output power
- Combined unit for mains and emergency lighting operation
- Maintained and non-maintained mode
- Various mounting options

The specifications of the individual products are available at www.tridonic.com/emergency
The rapid growth of LED technology within the lighting sector has created need for suitable emergency lighting systems for luminaires. Thanks to power control in emergency operation, the slim, transparent range of the EM converterLED product group offers utmost flexibility for a number of combinations of LED light sources with LED Drivers by Tridonic and other renowned manufacturers.

As a LED Driver for non-maintained mode, EM converterLED is used in combination with standard and dimmable LED Drivers. It is available as SELV and Non-SELV versions and with different functions. According to SELV classification, versions with a maximum output voltage of 54V, 97V and 250V are available.

New LiFePO4 battery generation

The entire EM converterLED group supports both commonly used NiCd and NiMH batteries and the latest generation of LiFePO4-based batteries. These products have a much longer life time of up to 100,000 hours, an 8-year guarantee and are environmentally friendly. Their high energy density enables smaller batteries, and subsequently more compact luminaire designs.
**EM converterLED**

**One housing format for all**

The housing concept for the EM converterLED range with fixed dimensions for length, width and height (179 × 30 × 21 mm) provides luminaire manufacturers with the possibility to scale and extend their luminaire ranges with different emergency lighting functions, without having to change the mechanical design and holes of their luminaires.

**Overview EM converterLED**

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EM converterLED BASIC offers fundamental emergency lighting functions for cost-optimised emergency lighting solutions. National test standards for emergency lighting applications are implemented manually; test results must be manually documented.

EM converterLED SELFTEST features a decentralised selftest function in compliance with national standards for emergency lighting applications. Typically, the test results will be displayed at the luminaire by means of a two-coloured LED; the results are documented manually.

EM converterLED PRO features a selftest function in compliance with national standards. The test procedures and test sequences as well as the documentation of test results are managed through a central DALI system.

**EM converterPACK ST UNV**

The EM converterPACK combines emergency lighting driver and battery in one housing. Existing luminaires can therefore easily be equipped for emergency lighting mode – without the need for a combo device or special driver. The housing with strain relief is easily mounted via a plug-in system and offers the option of loop-through wiring.

The specifications of the individual products are available at www.tridonic.com/emergency
As compared to fluorescent luminaires, LEDs boast high system efficiency – even at low ambient temperatures. They can be switched on and off as often as necessary, immediately producing full light output. These are ideal conditions for emergency lighting systems with their regular tests and monitoring routines. Due to its compact size, the environmentally friendly LED also offers more flexibility.

Module EMERGENCY (EM) feature an optic ideally matched to the respective application. In spite of its extremely compact size and highly energy-efficient operation, it thus guarantees illumination in conformity with applicable standards.

Module EM-ES
For escape sign luminaires
For uniform illumination of exit signs or escape signs, Tridonic offers convenient LED strips that make an excellent contribution to safety energy consumption of only 1W for over 50,000 hours. Different models are available for the various luminaires, with the length and number of LEDs varying. EM powerLED Emergency lighting LED Driver provide for reliable low power operation.
Module SLE, QLE EM, CLE EM and LLE EM are modules for general lighting fitted with additional separate LEDs for the emergency lighting function

Module SLE
LED modules of the latest generation
Due to the circular, compact design with powerful lumen packages, the Module SLE product range opens up a new dimension of flexibility.

The reliable LED module is suitable both for downlights and for spotlights with uniform light distribution. In interiors, colour temperatures of 3,000 K and 4,000 K as well as a colour rendering index CRI > 80 enhance lighting quality, while in outdoor areas the versions with 5,000 K and a CRI > 70 are particularly impressive on account of their high efficiency.

Module CLE EM, QLE EM and LLE EM
Flexible LED system solutions
By combining the octagonal, square and linear LED modules at will, it is very simple to integrate efficient LED technology into existing luminaire designs. At the same time, new design concepts can be implemented – regardless of the optic fitted, for LED system solutions are suitable for all systems, from wide-area luminaires to recessed luminaires. With their high colour rendering, warm white and intermediate colour temperatures, they are an equivalent alternative, in terms of quality, to traditional fluorescent lamps.

Another positive feature is their energy balance: excellent system efficiency of up to 155 lumens per watt results from the high energy efficiency of the LED modules and the perfectly matching LED Drivers. For emergency lighting operation, the respective emergency version of these modules is fitted with separate LED light points.

At a glance: LED modules with emergency lighting LEDs
- Minimum ageing of the emergency lighting LEDs
- Increased reliability
- Hardly any impact on normal lighting during function tests
- Easy wiring and full compatibility
- Independent from voltage and output of the main LEDs

The specifications of the individual products are available at www.tridonic.com/emergency
The proper function of an emergency lighting installation not only depends on reliable control gear – but, to a great extent, on the quality of the batteries used.

Due to continuous charging and high temperatures, the batteries used for emergency lighting installations are subject to demanding conditions during normal operation and they must provide full output at the times they are needed most urgently. Tridonic batteries have been specifically tested for this task, and have been designed for a service life of at least four years in maintained operation at high temperatures and constant charging.

Tridonic batteries have been developed and tested according to the most stringent standards applicable to emergency lighting installations.

**Batteries for any application**

For the wide range of emergency lighting LED Driver, all three NiCd, the more environmentally friendly NiMH and the long lasting LiFePO₄ batteries are offered. The charge controllers of these compatible devices were designed specifically for both technologies either with electronically regulated charging circuits or with the latest multi-level charge controllers to guarantee the least possible energy consumption combined with optimal battery service life.
At a glance: batteries by Tridonic

- High-grade batteries made by internationally renowned manufacturers
- High-temperature cells with long service life according to the latest battery technology
- NiCd for optimal efficiency
- NiMH for good energy density and small dimensions
- LiFePO₄ for long lifetimes and even further reduced dimensions

The specifications of the individual products are available at www.tridonic.com/emergency
LED emergency lighting system

**Engine EM ready2apply**
For anti-panic, escape route and spot illumination

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**EM ready2apply** represents a milestone in emergency lighting combining all of the components in a single small luminaire. Its flexible circuit technology enables a complete solution to be integrated in an extremely compact housing.

The user interchangeable optics provide maximum flexibility covering a wide range of emergency applications. The combination with an energy-optimised lithium iron phosphate (LiFePO₄) battery with a proven 8 years design life results in a high-quality product. A clever mounting concept saves valuable time during installation.
Engine EM ready2apply

For anti-panic, escape route and spot illumination

At a glance: Engine EM ready2apply

- LED emergency module suitable for direct installation in ceilings
- Complete set with integrated electronics, LED module, heat sink, optics and battery
- Includes click-in multi-lens option for anti-panic, escape route and spot illumination
- 1 or 3 h rated duration (separate variants)
- Plug-in Lithium Iron Phosphate battery with strain-relief
- Nominal life-time of 50,000 hours
- 5 years guarantee electronic (LED Driver)
- 3 years guarantee battery

The EM ready2apply combines high-quality LED technology, a compact housing and a long-life lithium iron phosphate battery in a complete solution for emergency lighting in the form of a complete luminaire.

With three interchangeable optics, EM ready2apply is ideally equipped for anti-panic lighting, for illuminating escape routes and for use as a spotlight. Thanks to the integrated installation aid this luminaire is quick and easy to install. The mounting depth of only 80 mm means that attractive emergency lighting can be provided even if space in the ceiling is restricted.
Simple control is the great advantage of the Tridonic emergency lighting system: installation is done quickly, and all tests are run automatically at the right time.

The x/e-touch emergency lighting concept by Tridonic offers an optimum solution for any application. It has been designed for small and large-networked emergency lighting systems with up to 3,000 emergency lighting LED Drivers. Additionally, it is possible to link the emergency lighting to a central monitoring system via Ethernet.

And the best part is: emergency lighting management based on x/e-touch can be scaled up and expanded almost at will. It is therefore extremely future-proof, and you can perfectly adjust the system to the respective requirements and needs. Maximum flexibility is achieved through the optional use of the control system for general lighting or emergency lighting. Upon commissioning, you can define the functionality of the panels yourself.
DALI x/e-touchPANEL 02
Basis for comprehensive emergency lighting management
The new x/e-touchPANEL 02 combines safety with comfort and flexibility: with an enlarged screen and higher resolution, up to 120 emergency lighting LED Drivers are now managed even more conveniently.

Keep a clear view conveniently
The 7-inch touch screen conveniently displays the emergency lighting systems. If an error occurs anywhere in the installation, it will be displayed clearly and visibly on the touch panel. Each individual component can be accessed at the press of button; a simple navigation system safely guides the user through control and management.

EM LINK
Efficiently linked emergency lighting
With a few mouse clicks, you can control more than 3,000 individually addressable emergency lighting LED Drivers: EM LINK links up to 25 x/e-touchPANEL 02 via Ethernet. The status of all devices can be monitored on a computer-aided basis. The test logs can be collected, stored and printed.

At a glance: DALI x/e-touchPANEL02
- Flexible control system for general and emergency lighting
- Two DALI circuits (120 DALI emergency lighting LED Drivers)
- IrDA, USB and Ethernet interface
- Two addresses for external status display
- Remote control via standard Internet browser or EM LINK software

The specifications of the individual products are available at www.tridonic.com/emergency
Automated emergency testing and reporting
Facilitate maintenance and centralised monitoring. Reporting of functionality and duration testing and failures.
At a glance: sceneCOM Controller
- Independent lighting control for up to 192 DALI devices on 3 DALI lines
- Simple configuration via WEB interface
- Comprehensive control of DALI circuit is possible
- Freely programmable daily planning with calendar function
- DALI emergency lighting test plan and monitoring (up to 50 emergency light devices)
- Corresponds to IEC 62034
- IP rating IP20
- For distribution board installation

Interfaces
- 3 DALI lines
- BACnet interface
- Terminals: Screw terminals

Functions
- Addressing wizard
- Presence linking
- Local and downloadable data backup
- Calendar
- Self-contained emergency luminaires
- Freely programmable shows
- RGB and Tunable White
- Scenes and zones
The Light
Into a connected future with light.

Tridonic is paving the way for networking. We will show you how you can develop smart luminaires based on our intelligent technologies, and improve your business at the same time. Our 1,700 experts are working on five continents to set new standards in intelligent networking lighting and exploit the opportunities that the Internet of Things offers for the lighting industry. In addition to our component solutions we offer a new LED system platform which can take far beyond mere illumination. We are taking light into a networked future. Come with us on this journey.

Supporting information and instruments:

- Data sheets at www.tridonic.com, under “Technical data”
- EM ready2apply tridonic.en
- TechPaper - Wichtigste Akkutypen tridonic.com