



Tridonic: Monitor LED Driver Lifetime Intelligently and Reliably

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Lifetime indicator for GEN4 drivers

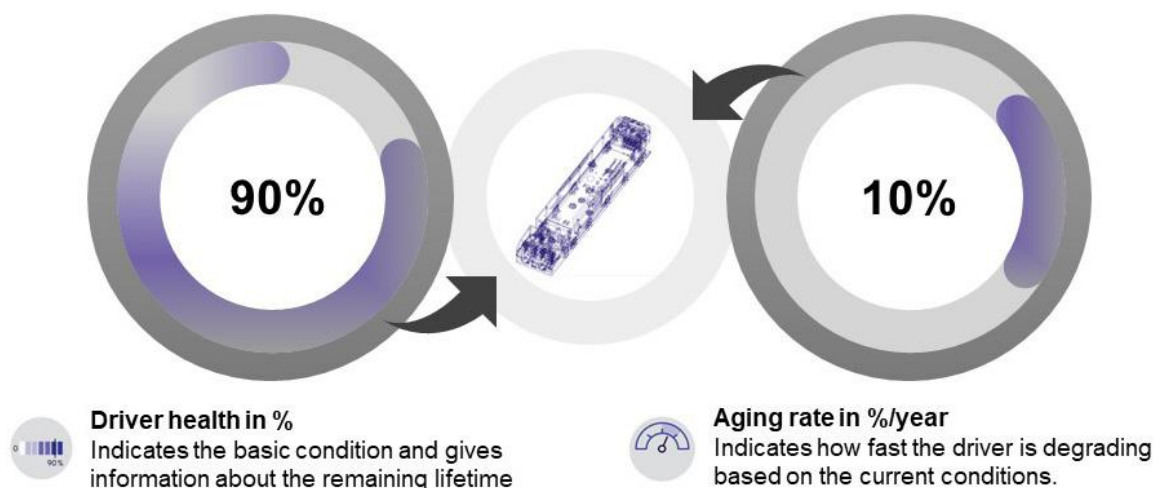


Figure 1: Tridonic's Lifetime Indicator provides information on the expected remaining lifetime of LED drivers. (Source: Tridonic)

LED lighting is considered durable and energy-efficient. However, the actual service life of an LED driver depends on the specific application and operating conditions of the luminaire, which influence component aging and therefore the remaining lifetime. For manufacturers and system integrators, the question is therefore how to reliably determine the actual condition of an LED driver and plan maintenance measures accordingly..

Why do data sheets provide only limited information about the lifetime of LED drivers?

The actual lifetime of an [LED driver](#) depends on the specific operating conditions. On average, a driver installed in an air-conditioned office ages significantly more slowly than an identical model used in a production environment with substantial temperature fluctuations (Fig. 2). Until now, installers and lighting designers have had to estimate the remaining lifetime of their systems based on data sheet specifications. However, these values often represent only minimum specifications and do not necessarily reflect the actual service life under real operating conditions.



Figure 2: High temperatures, e.g. in production environments, accelerate the aging of LED drivers compared to stable office conditions. (Source: Tridonic)

How can the actual lifetime of LED drivers be determined?

This is where Tridonic's Lifetime Indicator comes into play, providing insights into the lifetime of LED drivers in real-world applications. During operation, the Lifetime Indicator provides two key parameters: Aging Rate and Driver Health.

The Aging Rate indicates how quickly an LED driver ages per year under the current operating conditions and can be determined just a few minutes after installation. It is based on factors such as temperature, dimming level and switching cycles, which are recorded via lumDATA. The Driver Health parameter provides information about the current condition of the driver. Together, these two values provide a reliable indication of the LED driver's remaining lifetime.

Data output via software or app

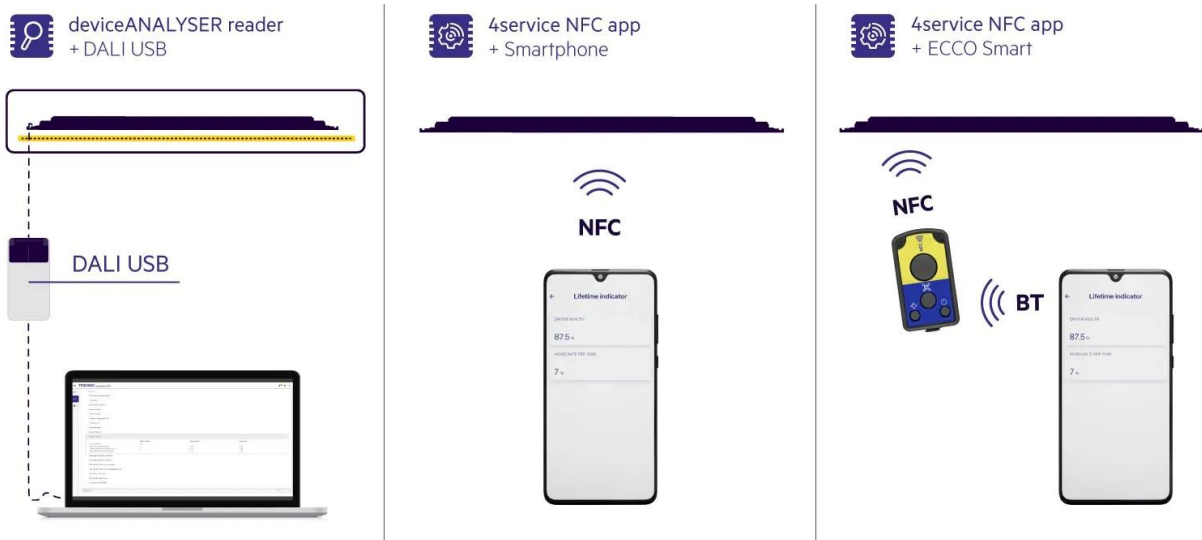


Figure 3: The Lifetime Indicator data can be read out contactlessly via NFC using the 4service NFC app or via a DALI connection using lighting control software on a PC. (Source: Tridonic)

What specific benefits does the Lifetime Indicator offer?

The Lifetime Indicator enables data-based decision-making. During the development phase, the Aging Rate helps luminaire manufacturers optimize thermal design and maximize the lifetime of LED drivers. During operation, the Lifetime Indicator facilitates the planning of efficient maintenance intervals. Maintenance and repair work can be scheduled in advance and carried out outside operating hours. This helps prevent unplanned failures of lighting systems and reduce downtime.

In addition, the Lifetime Indicator supports sustainable lighting concepts. The data obtained helps determine whether components should be maintained, upgraded, replaced or reused. This allows the use of resources and costs to be optimized.

Which LED drivers feature the Lifetime Indicator?

The Lifetime Indicator is integrated into Tridonic's fourth-generation lumDATA-enabled constant-current LED drivers. These include the [excite \(EXC\)](#) and premium (PRE) series, which are designed, for example, for linear and area lighting in office and industrial applications (Fig. 4).



Figure 4: Tridonic's fourth-generation constant-current LED drivers feature the integrated Lifetime Indicator. (Source: Tridonic)

Designed specifically for integration into office luminaires, the dimmable LC drivers of the excite series with NFC functionality feature a slim 16 mm metal housing and can be adjusted in 1 mA increments. With efficiencies of up to 95%, they cover a power range from 25 W to 150 W. The series is complemented by two fixed-output drivers rated at 40 W (output current 75–400 mA) and 60 W (output current 150–550 mA).

For more demanding environments, the premium series with non-SELV outputs is available. The 75 W, 105 W and 150 W models are designed for use in harsh industrial environments with elevated ambient temperatures, such as warehouses or factories. They offer an extended temperature range from -40 °C to +80 °C, surge voltage resistance of up to 4 kV, and efficiencies of up to 96%.

Further technical features of the GEN4 drivers with Lifetime Indicator include:

- Degree of protection: IP20
- Safety standards: EN 61347-1 and EN 61347-2-13
- Protection functions: overtemperature, short-circuit, overload and no-load protection
- Nominal lifetime: up to 100,000 hours

Manufacturer's warranty: up to 8 years (premium series)

With Generation 4, Tridonic offers compact and efficient LED drivers that provide greater transparency regarding driver condition and remaining lifetime through features such as the Lifetime Indicator.

The Value of Schukat

Schukat electronic carries LED drivers from various manufacturers, including [MEAN WELL](#), [Tridonic](#), [Recom](#), [Yingjiao](#), and others. The distributor stocks approximately 8,000 different types of power supplies and DC/DC converters in quantities suitable for production at its automated central warehouse in Monheim am Rhein.

In addition, Schukat provides fast and expert support through [direct points of contact](#) and offers a knowledgeable field service team to assist with selecting the right power supply products, answering customer-specific questions, and resolving issues on-site. Customers benefit from prompt processing of inquiries, the provision of data sheets and samples, as well as a range of delivery quantities—from samples to mass production.

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Schukat electronic Vertriebs GmbH is an international distributor and design-in partner for electronic parts and components. As an authorised partner of numerous leading manufacturers and around 250 other lines, Schukat offers expert project planning and logistics support, complemented by engineering services and complete solutions in areas such as power supply, thermal management and human machine interfaces (HMI) for around 10,000 B2B customers in 50 countries.

As a family-owned company based in Monheim am Rhein, Schukat has stood for continuity, short decision-making processes and partnership-based cooperation since 1964. Today, the company employs 150 people and 20 trainees and achieved a turnover of €127 million in 2023.

Schukat is certified according to DIN EN ISO 9001:2015 and offers complete traceability of delivered components with its traceability solution. In order to make the procurement process efficient and support customers from development to series production, the company also offers its customers digital services such as API interfaces, EDI, ECAD models, a reeling service, 24-hour delivery and housing modifications. The business model is complemented by consistent digitalisation, sustainability initiatives and a clear strategic focus on future-oriented markets such as industrial automation, medical technology, renewable energies and home automation.

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