



Colour
is our nature

Dimmable 12VAC LED Drivers

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eldoLED 12VAC technology focuses on general white lighting applications in both retrofit and new LED luminaires. In both markets, light quality, efficiency and lifetime are important elements. In addition, compatibility with existing infrastructure such as existing lamp form factor, transformers and dimmers is a key requirement for retrofit applications.

The 12VAC platform is highly scalable in both power and feature set. It is the basis for 5W, 8W and 10W drivers and is prepared for advanced features like taking in sensor inputs. The 'multiple group - single current source' approach is available as an option to enable dimming dependent colour temperature.

High efficiency and high power factor

In AC operation, eldoLED's 12VAC drivers run at a typical efficiency of around 85% (92% typ in DC operation). Most retrofit form factors are thermally constrained. Higher energy efficiency in these applications will lead to either lower operating temperatures with similar light output - increasing expected lifetime, or to similar operating temperatures with higher light output. The eldoLED 12VAC driver power factor is > 0.8 typical. Power factor is becoming a key parameter in many regulations. The higher power factor leads to lower apparent power - helping counter grid congestion.

No 'off' - no flicker

LEDs have a very fast response time, especially compared to incandescent bulbs. Where a halogen lamp will still emit a - to the human eye - stable light output at line cycles of 50-60Hz, an LED-based lamp at full on will show visible flicker in the 100-120Hz range. Dimming prolongs the 'off' periods with noticeably more flicker. eldoLED 12VAC solutions rely on Hybrid dimming technology. This means that the LED is on throughout the entire line cycle - no off means no flicker - even when dimming through triac or phase-cut dimmers.



5W 12VAC driver

Retrofit applications: transformers and dimmers

There is a lot of existing infrastructure in 12VAC applications. In terms of compatibility, LED-based lamps for retrofit applications need to be compatible with a wide variety of transformers - electronic as well as magnetic - and triac or phase-cut (leading and trailing edge) dimmers. The energy efficiency of LEDs means the load for the transformer and dimmers changes: a much lower and less resistive load. eldoLED 12VAC technology works well with most transformers and dimmers.

Robust thermal management

Thermal control is important in ensuring expected lifetimes. eldoLED 12VAC technology uses several methods to ensure electronics and LEDs maintain normal operating temperatures. The electronics have built-in over temperature protection. Optionally, an NTC thermistor can be used to accurately monitor system temperatures and control LED power. When needed, a graceful decrease of power (light output) will ensure that normal operating temperatures are respected.

Features

- LED current: 425mA - 1,000mA
- LED Vf: up to 13.2V
- Optional interface for occupancy sensor or daylight control device
- Dimming dependent colour temperature

Advantages

- Flicker-free dimming down to 10%
- Available in retrofit form factors
- Fast customization for customer-specific applications

Electrical data: input

- Line voltage: 11-15VAC
11-18VDC
- Maximum line current: 1A (10W)
- Line frequency: 50/60 Hz
- Efficiency: 85% (AC operation)
92% (DC operation)
- Power factor: 0.8

Electrical data: output

- Maximum power output: 5W, 8W, 10W
- Voltage output: typical 7-10VDC,
max. 13VDC
- LED output current range:
425mA - 1,000mA
- Independent LED groups: up to 2

Dynamic effects

- Hybrid HydraDrive
- Contrast ratio: > 100 : 1

Thermal data

- Life/MTBF at Ta +50°C:
MTBF: 700,000 hrs
Life expectancy: 35,000 hrs

Design choice

- LED topology:
2 LEDs in series:
Vf: 6.4V
Efficiency: 83%
Power factor: 0.89
3 LEDs in series:
Vf: 9.6V
Efficiency: 87%
Power factor: 0.84
4 LEDs in series:
Vf: 13.2V
Efficiency: 91%
Power factor: 0.8

Environmental ratings

- Ambient temperature range:
-20°C ... +50°C (-4°F ... +122°F)
- Storage ambient temperature:
-40°C ... +85°C (-40°F ... +185°F)
- Relative humidity: non-condensing

Compatibility

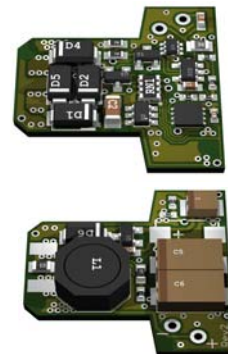
- For the most recent transformers compatibility list, go to www.eldoled.com/12VAC_compatibility



12VAC LED driver demo board with LEDs



10W 12VAC LED driver



5W 12VAC LED driver