

Light is our passion

20W DALI LED Driver with Smooth Dimming to 1%

ECOdrive

Programmable digital ECOdrive LED driver providing standard LED fixtures with the smoothest flicker-free dimming to 1% light output, delivering value to any application. The LED driver is compatible with the DALI lighting control protocol, and works seamlessly together with LED modules, controls and intelligent luminaire elements.

Features & benefits

Natural dimming	Dim to 1%, smooth brightness changes, excellent flicker performance, adaptable dimming curves, configurable minimum dimming level
Symbiosis	Seamless interoperability with LED modules, controls and in-luminaire intelligent devices
Programmable	Fine-tune your driver for any application
Performance	Universal input voltage range, low inrush current and total harmonic distortion (THD), high power factor and efficiency
Camera compatibility	Hybrid HydraDrive technology is proven to work in TV studios and security camera environments

Programming tools

Programming interface	TOOLbox pro (TLU20504)
Programming cable set	TOOLbox pro to LED driver, programming cable, 5pcs (TLC03051)
Programming software	FluxTool

Warranty

Warranty period	General Terms and Conditions
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Product offering



ECOdrive 240/A

P/N: EC0240A1

ECOdrive, 20W, DALI, 1 control channel, constant current, single output, side feed, long plastic

ECOdrive 240/A

P/N: EC0240A1-SP

ECOdrive, 20W, DALI, 1 control channel, constant current, single output, side feed, long plastic, single unit packaging

Order number configurator

Diagram illustrating the 12-bit digital data format structure:

- P/N**: 8 bits (EC0240A1)
- LED output current**: 4 bits (0000) followed by **mA**
- Dimming curve**: 4 bits (0000)
- Minimum dimming level**: 4 bits (0000) followed by **min**

P/N	LED driver part number. EC0240A1 for bulk packaging, EC0240A1-SP for single unit packaging.
LED output current	Enter value in 25mA increments, e.g. "725" for 725mA.
Dimming curve	"LOG" for logarithmic (default) "LIN" for linear
Minimum dimming level	Leave blank for default minimum dimming level of 1.0%. Specify in 0.1% increments, e.g. "10.5" for 10.5%.

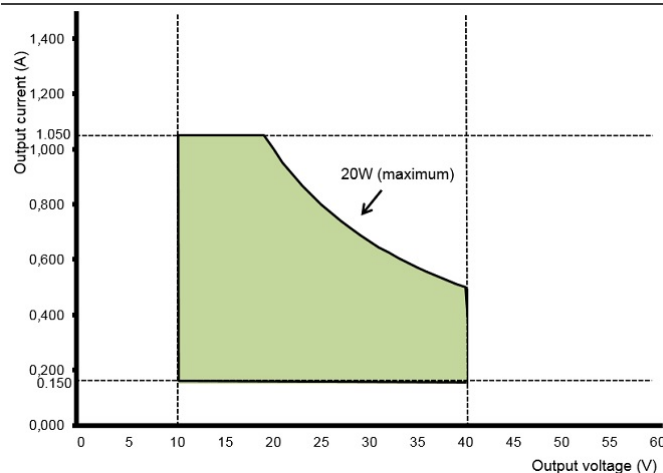
Input characteristics

Nominal input voltage range	220 - 240V (ENEC)
AC	
Absolute input voltage range	198 - 264V
AC	
Maximum input current	0.15A at 230V / 50Hz
Input frequency range	47 - 53Hz
Efficiency at full load	80%
Power factor at full load	> 0.95C
THD at full load	< 20%
Maximum inrush current	<1A ² s
Surge protection	2kV differential mode (DM) 2kV common mode (CM)
Maximum standby power	0.5W

Output characteristics

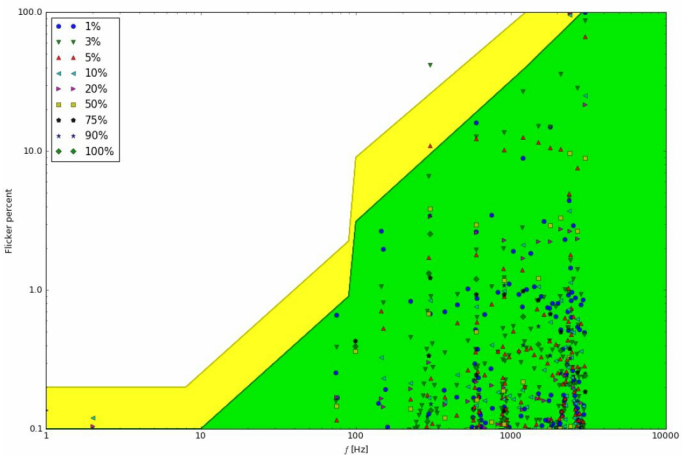
Maximum LED output power	20W
Number of LED outputs	1
LED output current range	150 - 1,050mA
LED output type	Programmable in 25mA increments within specified current range
LED output voltage range	10 - 40V
LED output tolerance	+/- 5%

Operating window



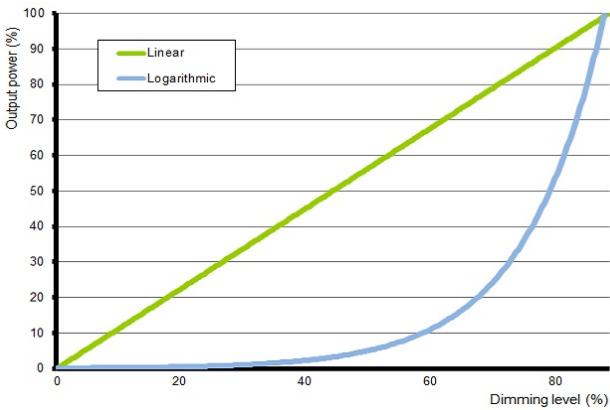
Typical flicker performance

Typical flicker percent as a function of frequency, measured across the dimming range. The results are overlaid with the low-risk (yellow) and no observable effect (green) levels as defined in IEEE P1789.



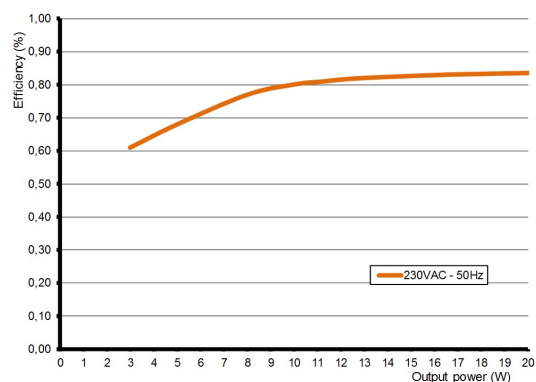
Control characteristics

Control channels	1
Dimming protocol	DALI
Dimming range	100% - 1%
Dimming curve options	- Logarithmic (default) - Linear
Required programming tools	TOOLbox pro and FluxTool
Dimming method	Hybrid HydraDrive



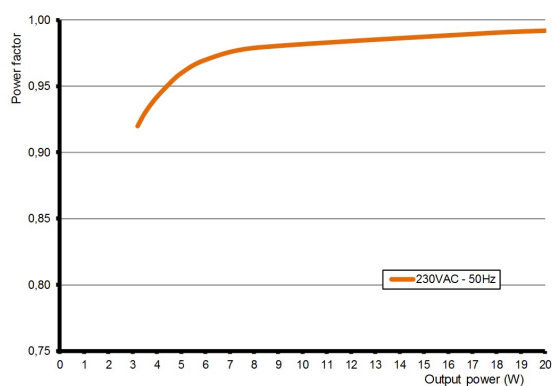
Typical efficiency vs load – 20W

Tested with connected LED load of 12 LEDs in series, programmed for 500mA and at 25 °C ambient temperature. The measurements below 20W were performed by dimming the light output.



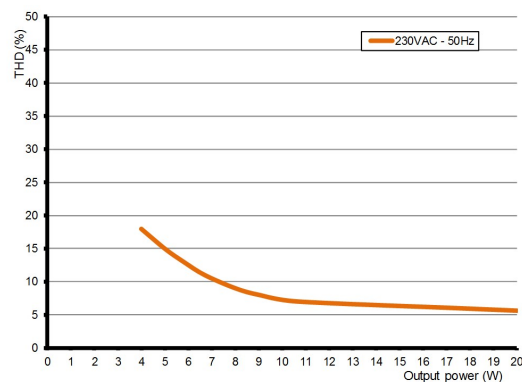
Typical power factor vs load – 20W

Tested with connected LED load of 12 LEDs in series, programmed for 500mA and at 25 °C ambient temperature. The measurements below 20W were performed by dimming the light output.



Typical THD vs load – 20W

Tested with connected LED load of 12 LEDs in series, programmed for 500mA and at 25 °C ambient temperature. The measurements below 20W were performed by dimming the light output.



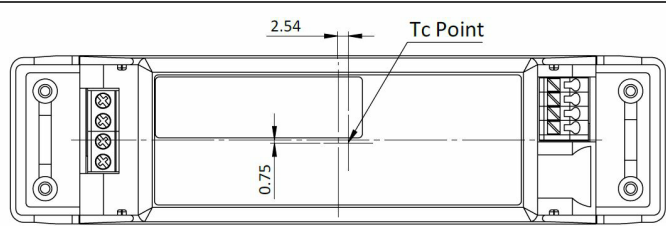
Environmental conditions

Operating ambient temperature (Ta) range	-20 °C to +50 °C for output current ≤900mA
	-20 °C to +43 °C for output current >900mA
Maximum operating case temperature (Tc max)	80 °C
Lifetime	50,000 hours at a maximum case temperature (Tc) of 80 °C

LED driver protection

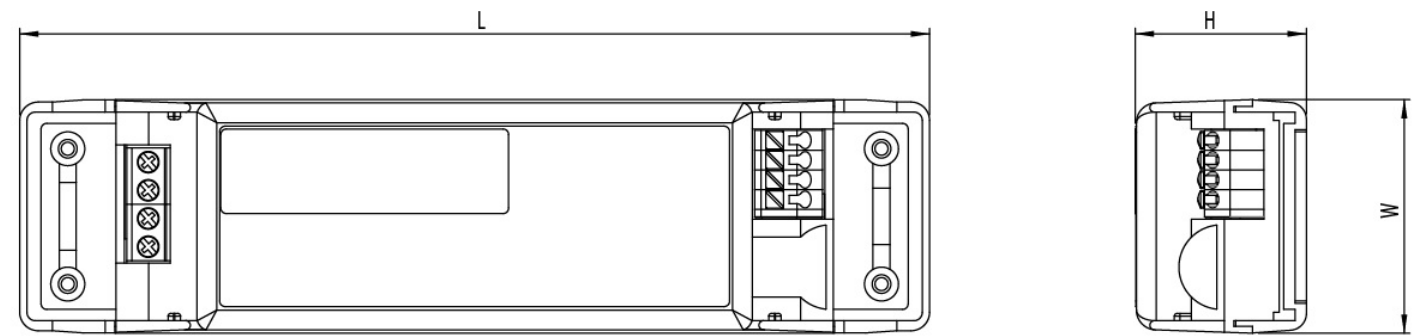
Thermal	The LED output current is decreased whenever the internal LED driver temperature exceeds factory preset temperature. The LED output current is increased again once the internal LED driver temperature drops below this internal temperature threshold. If the internal LED driver temperature continues to increase, despite a decrease in output current, the LED driver will shut down.
LED output short circuit	The LED output current is cut off whenever the LED driver detects a short-circuit. The LED driver will attempt a restart every 400ms after a short-circuit is detected.
LED output overload	The LED driver decreases the LED output current sequentially, until it reaches its maximum rated power, whenever a load that exceeds the LED driver's maximum rated power is connected to the LED output.
Reverse polarity	The LED driver will not yield any current if the polarity of the load on the LED output is reversed. This situation will not damage the LED driver but may damage the LED load.

Tc point location



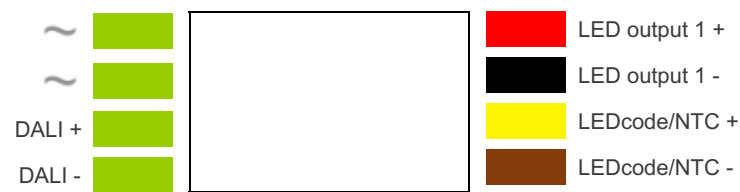
LED protection

Thermal protection LED	An external NTC thermistor, which is placed on a PCB near the LEDs, can be connected to the driver via the LEDcode/NTC terminals. The output current to the LEDs is then decreased by 75% whenever the NTC exceeds a maximum allowable temperature, which is specified by the user in the FluxTool software. The default NTC temperature limit is set to 70 °C.
Thermistor value	47kΩ
Suitable thermistors	leaded: Vishay, P/N: 238164063473 screw: Vishay, P/N: NTCASCWE3473J



LED driver mechanical details

Length (L)	typical: 160.0 mm / 6.30 inch maximum: 160.5 mm / 6.32 inch
Width (W)	typical: 41.5 mm / 1.63 inch maximum: 42.0 mm / 1.65 inch
Height (H)	typical: 30.5 mm / 1.20 inch maximum: 31.0 mm / 1.22 inch
3D files	IGS STEP
Weight	125 g
Please note that the illustration is generic for the housing type and that the connector type and quantity may be different per model.	



Input wiring specifications

Connector type	screw terminals TE-Connectivity 2-796683
Wire type	solid or stranded copper
Wire core cross section	0.05 - 3 mm² AWG 30 - 12
Wire strip length	9.0 mm / 0.35 inch

Output wiring specifications

Connector type	push-in terminals Wago 250 series
Wire type	solid or stranded copper
Wire core cross section	0.5 - 1.5 mm² AWG 20 - 16
Wire strip length	9.0 mm / 0.35 inch
Maximum remote mounting distance of LED load	For independent use: 2 m / 6.5 ft For in-fixture use: AWG 20 (0.52 mm²) - 14 m / 46 ft AWG 19 (0.65 mm²) - 18 m / 59 ft AWG 18 (0.82 mm²) - 22 m / 72 ft AWG 17 (1.04 mm²) - 28 m / 92 ft AWG 16 (1.31 mm²) - 36 m / 118 ft

Standards & compliance

ENEC safety	EN 61347-1 EN 61347-2-13
ENEC performance	EN 62384
Conducted emissions	EN 55015
Radiated emissions	EN 55015
Radio disturbance characteristics	EN 55022
Harmonic current emissions	EN 61000-3-2
Electrostatic discharge	EN 61000-4-2
RFE field susceptibility	EN 61000-4-3
Electrical fast transient	EN 61000-4-4
Surge immunity	EN 61000-4-5
Conducted radio frequency	EN 61000-4-6
Voltage dips	EN 61000-4-11
Electromagnetic immunity	EN 61547
DALI	EN 62386-101/102/207
Restriction of hazardous substances	RoHS2
SVHC-list substances	REACH Art.33

Certifications



Risk of electrical shock. May result in serious injury or death. Disconnect power before servicing or installing.



The LED driver may only be connected and installed by a qualified electrician. All applicable regulations, legislation, and building codes must be observed. Incorrect installation of the LED driver can cause irreparable damage to the LED driver and the connected LEDs.

Pay attention when connecting the LEDs: polarity reversal results in no light output and often damages the LEDs.



LED drivers are designed and intended to operate LED loads only. Powering non-LED loads may push the LED driver outside its specified design limits and is, therefore, not covered by any warranty.



eldoLED products are designed to meet the performance specifications as outlined at certain operating conditions in the data sheet. It is the responsibility of the fixture manufacturer to test and validate the design and operation of the system under expected and potential use cases, including faults.



Please observe voltage drop over long cable lengths. Longer cable lengths increase EMI susceptibility.

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