



Light
is our passion

50W 0-10V 'Dim to Dark' LED Driver

SOLOdrive

LED dimming made beautiful - SOLOdrive offers industry-best Natural Dimming to dark, with any dimmer, in any application. The SOLOdrive works seamlessly with LED modules, controls and intelligent luminaire elements.

Product offering



SOLOdrive 50L-M2Z0A

Part number (P/N)	SL50L-M2Z0A1
Product description	SOLOdrive, 50W, 0-10V, 1 control channel, constant current, 2x 55V output, side feed, long metal

Features & benefits

Natural dimming	Dim to dark, smooth brightness changes, excellent flicker performance, adaptable dimming curves, configurable minimum dimming level
LightShape	Dim to Warm: decrease colour temperature when dimming
LEDcode	Configurable design to work with most constant current LED modules and arrays, while providing a connection point to integrated peripheral controls
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 Hand-held, Touch-and-Go	PJ0035HH1
Programming jig	PJ0500L1
Programming software	FluxTool

Warranty

Warranty period	General Terms and Conditions
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Order number configurator

Standard	<p>SL50L-M2Z0A1 Part Number</p> <p> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> mA LED Output Current </p> <p> <input type="text"/><input type="text"/><input type="text"/> Dimming Curve </p> <p> <input type="text"/><input type="text"/> . <input type="text"/> min Minimum Dimming Level </p> <p> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> Start Up Performance </p>
Multi-Current	<p>SL50L-M2Z0A1 Part Number</p> <p> M C U R <input type="text"/><input type="text"/><input type="text"/> LED Output Current </p> <p> <input type="text"/><input type="text"/><input type="text"/> Dimming Curve </p> <p> <input type="text"/><input type="text"/> . <input type="text"/> min Minimum Dimming Level </p> <p> CH1 - <input type="text"/><input type="text"/><input type="text"/><input type="text"/> mA LED Output 1 </p> <p> CH2 - <input type="text"/><input type="text"/><input type="text"/><input type="text"/> mA LED Output 2 </p> <p> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> Start Up Performance </p>
LightShape	<p>SL50L-M2Z0A1 Part Number</p> <p> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> mA LED Output Current </p> <p> D T W <input type="text"/><input type="text"/><input type="text"/> LightShape Control Type </p> <p> <input type="text"/><input type="text"/><input type="text"/> Dimming Curve </p> <p> <input type="text"/><input type="text"/> - <input type="text"/><input type="text"/> K Gamut CCT </p> <p> <input type="text"/><input type="text"/> - <input type="text"/><input type="text"/> lm Gamut Lumen Output </p> <p> <input type="text"/><input type="text"/> - <input type="text"/><input type="text"/> K Path CCT </p> <p> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> Start Up Performance </p>
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LED output current, Standard	For models where output current is identical for all outputs. Enter value in 1mA increments, e.g. "811" for 811mA.
LED output current, Multi-Current	Output current different per output? Enter "MCUR" in LED output current and specify the differing currents in LED outputs 1 and 2. Note that cumulative current is limited.
LightShape control type	"DTW" stands for Dim to Warm
Dimming curve	"LOG" for logarithmic (default) "LIN" for linear "SLN" for soft-linear "SQU" for square
Minimum dimming level	Leave blank for default minimum dimming level of 0.1%. Specify in 0.1% increments, e.g. "10.5" for 10.5%.
Start-up performance	Enter "CA24" for improved start-up performance to comply with ENERGY STAR Luminaires v2.0 and the latest CA Title 24 standard, effective January 2017.
Gamut CCT	LightShape-specific option. Enter the LEDs' CCT as "XX-YY" where XX is LED output 1 and YY is LED output 2. Available options per output: 18, 20, 22, 25, 27, 30, 35, 40, 50, 57 and 65. E.g. "18-50" for 1800K on LED output 1 and 5000K on LED output 2. Default is 27-65
Gamut lumen output	Enter the lumen output range for LED output 1 and 2 as "XX-YY" where XX is LED output 1 and YY is LED output 2. Available range per output: from "01" for 100lm to "99" for 9900lm. E.g. "10-12" for 1000lm on LED output 1 and 1200lm on LED output 2.
Path CCT	Leave blank if Path CCT requires the same values as Gamut CCT. Or specify the Path CCT values as "XX-YY" where XX is LED output 1 and YY is LED output 2. Available options per output: 18, 20, 22, 25, 27, 30, 35, 40, 50, 57, 65. E.g. "18-50" for 1800K on LED output 1 and 5000K on LED output 2.

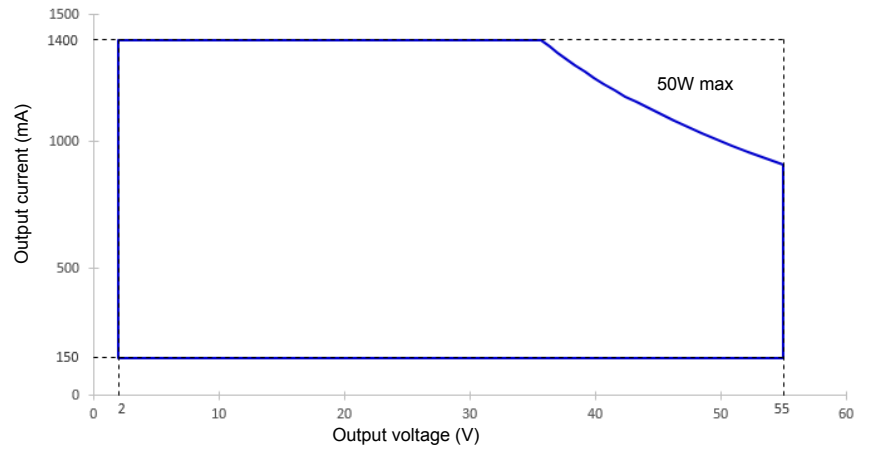
Input characteristics

Nominal input voltage range	120 - 277 VAC (UL)
Absolute input voltage range	108 - 305 VAC
Input frequency range	50 - 60 Hz
Maximum input current	0.7A @ 120 VAC 0.35A @ 230 VAC 0.3A @ 277 VAC
Efficiency at full load	85%
Power factor at full load	> 0.9
THD at full load	< 20%
Maximum inrush current	< 200mA ² s @ 120 VAC < 200mA ² s @ 230 VAC < 200mA ² s @ 277 VAC
Surge protection	2kV differential mode (DM) 2kV common mode (CM)
Maximum standby power	0.5W

Output characteristics

Maximum LED output power	50W
Number of LED outputs	2 (UL Class 2)
Programmable LED output current range	150 - 1400mA
LED output type	Programmable in 1mA increments within specified current range
LED output current tolerance	+/- 5% at programmed LED output current
LED output voltage range	2 - 55V

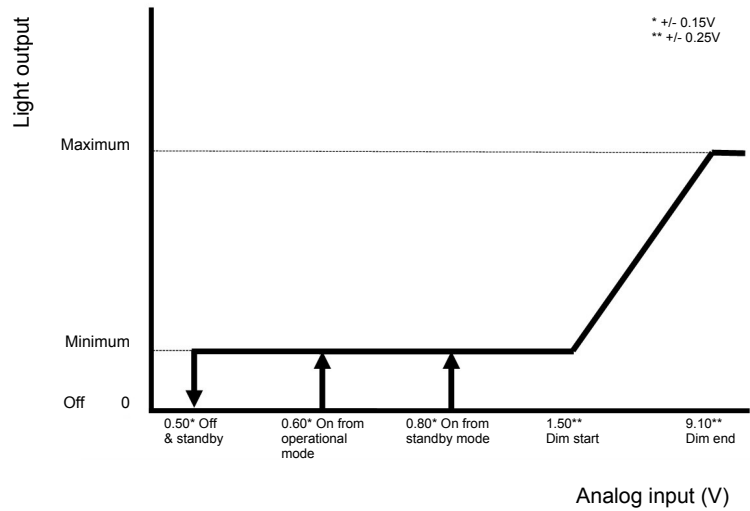
Operating window



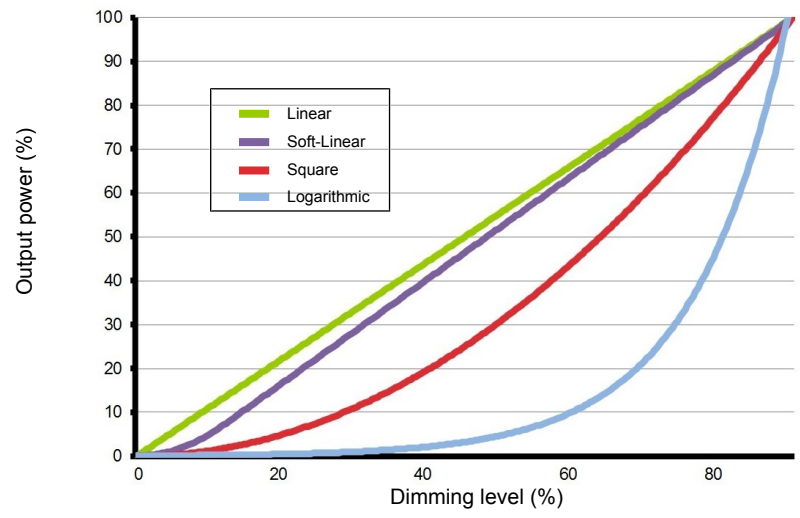
Control characteristics

Control channels	1
Control protocol	0-10V LEDcode
Dimming range	100% - 0.1%
Dimming curve options	Logarithmic (default) Linear Soft-Linear Square
LightShape	Dim to Warm, 2x pc-white
Dimming method	Hybrid HydraDrive
0-10V current draw	0.6mA
Time delay to standby	< 30s

0-10V dimming chart



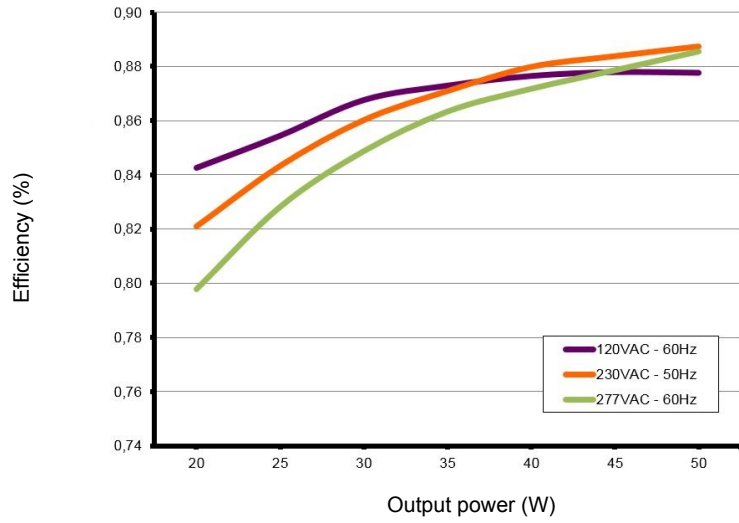
Dimming curves



Performance

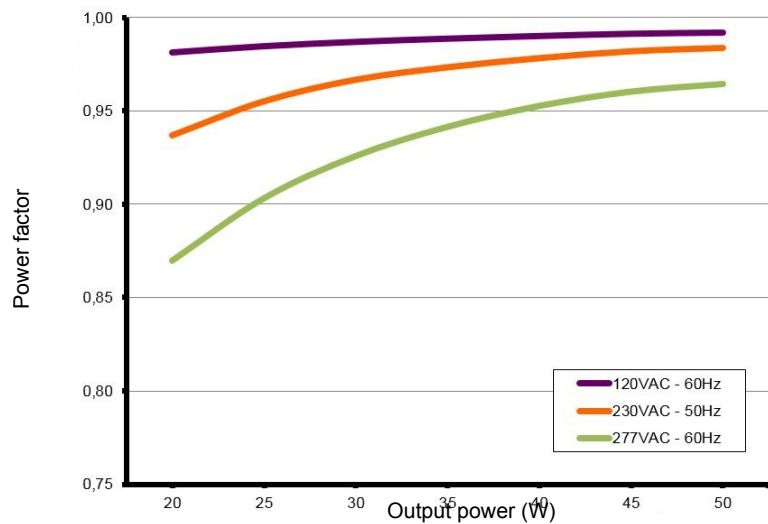
Typical efficiency vs load

Tested with a load on each LED output of 13 LEDs in series, programmed for 1400mA and at 25 °C ambient temperature. The measurements below 50W were performed by dimming the light output.



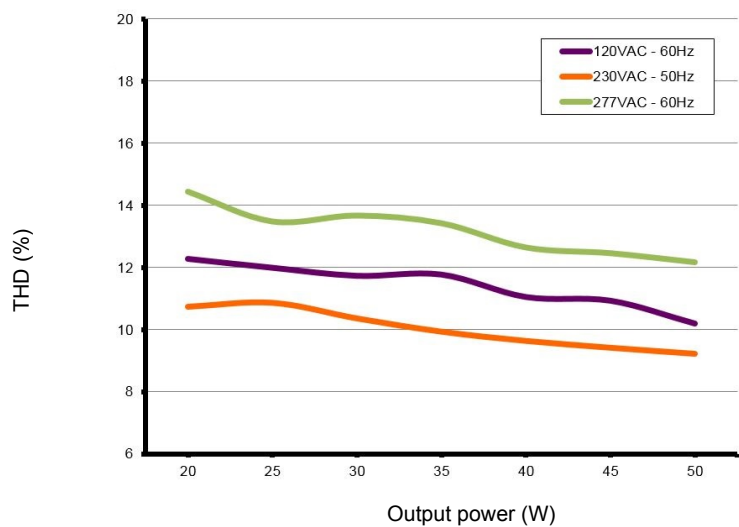
Typical power factor vs load

Tested with a load on each LED output of 13 LEDs in series, programmed for 1400mA and at 25 °C ambient temperature. The measurements below 50W were performed by dimming the light output.



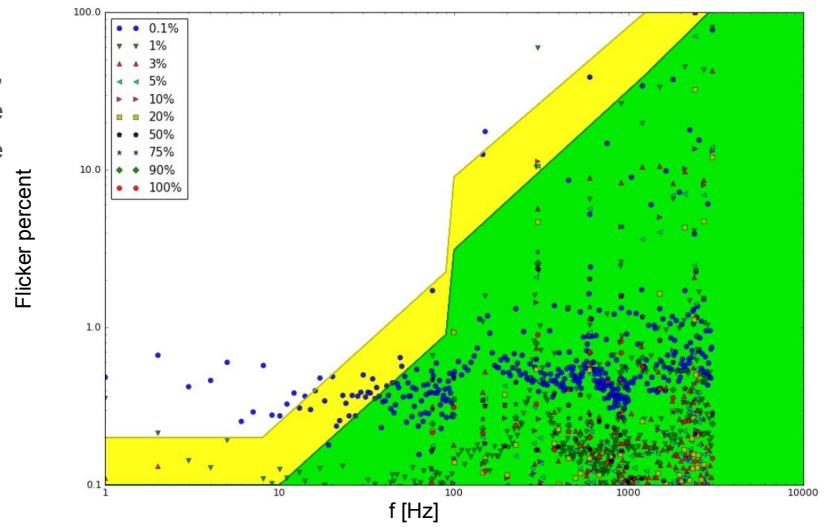
Typical THD vs load

Tested with a load on each LED output of 13 LEDs in series, programmed for 1400mA and at 25 °C ambient temperature. The measurements below 50W were performed by dimming the light output.



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.



Environmental conditions

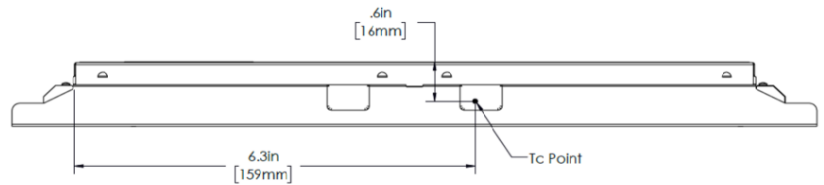
Operating ambient temperature (T_a) range -20 °C to +50 °C

Maximum operating case temperature (T_c max) 80 °C

Acoustic noise – steady state <24dBA (Class A)

Lifetime 50,000 hours at a maximum case temperature (T_c) of 79 °C

T_c point location



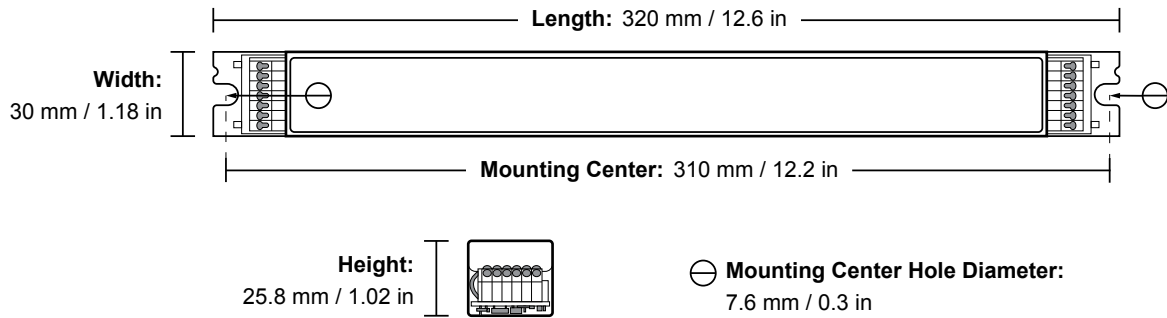
LED driver protection

Thermal	The LED output current is automatically decreased whenever the internal driver temperature exceeds a factory preset temperature. The LED output current is increased once the internal driver temperature drops below the preset temperature threshold. If the internal driver temperature continues to increase, despite a decrease in output current, the LED driver will eventually 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 open circuit	All LED outputs are turned off whenever the LED driver detects an open circuit on any one of the LED outputs. The LED driver will automatically attempt a restart every 400ms after an open circuit is detected.
LED output overload	The driver monitors the cumulative load across all LED outputs. Whenever this cumulative load exceeds the maximum output power rating of the LED driver, the output current on all LED outputs is sequentially scaled down until the cumulative load drops below the maximum output power rating of the LED driver.
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.

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



Weight	275 g
Mounting torque	Not to exceed 0.5Nm

3D Mechanical files for this product are available on the eldoLED website.

Packaging

Length x Width x Height	310 x 470 x 470 mm / 12.2 x 18.5 x 18.5 in
Weight (including products)	15.95 kg
Products per box	50 pcs

Connector layout



Input wiring specifications

Connector type	push-in terminals
Connector supplier and series	Wago 250 series
Wire type	solid copper
Wire core cross section	0.5 - 1.5mm ² / AWG 20 – 16
Wire strip length	9.0mm (11/32in)

Output wiring specifications

Connector type	push-in terminals
Connector supplier and series	Wago 250 series
Wire type	solid copper
Wire core cross section	0.5 - 1.5mm ² / AWG 20 – 16
Wire strip length	9.0mm (11/32in)
Maximum remote mounting distance of LED load	AWG 20 (0.52 mm ²) - 14 m / 46 ft AWG 19 (0.65 mm ²) - 18 m / 59 ft AWG 18 (0.82 mm ²) - 22 m / 72 ft AWG 17 (1.04 mm ²) - 28 m / 92 ft AWG 16 (1.31 mm ²) - 36 m / 118 ft

Automatic circuit breakers (MCB)

Maximum loading	MCB type	B10	B13	B16	C10	C13	C16
	Number of LED drivers	14	18	22	14	18	22

Standards and compliance

UL Listed, Class P	UL 1310 UL 8750 (Class 2 output)
Conducted emissions	FCC title 47 CFR part 15 class B
Radiated emissions	FCC title 47 CFR part 15 class B
Electrostatic discharge	EN 61000-4-2
ECOdesign 2019/2020: Controlgear + luminaire	Flicker for LED: Pst LM ≤ 1.0 at full-load Stroboscopic effect for LED: SVM ≤ 0.4 at full load
0-10V	IEC/EN 60929 annex E NOTE: From 0.6V to 10V eldoLED LED drivers comply with IEC/EN 60929 annex E. Below 0.6V eldoLED LED drivers comply with ABL 0-10V Design Spec v1.2 enabling standby mode. For detailed dimming characteristics see 0-10V response chart in Control Characteristics.
Surge protection	ANSI 62.41 1991 category B1: 2.5kV DM, 2.5kV CM @ 30 Ohm 0-10V input: 0.5 kV DM, 1 kV CM surge
Restriction of hazardous substances	RoHS3 (Directives 2011/65/EU-2015/863/EU)
SVHC-list substances	REACH Art.33

Certifications



Safety



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.



Product renderings and dimensional drawings are generic for the housing type. Product label, connector type and quantity may vary.

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