HYL-025D0500G097_DALI 2

Constant current LED driver
DALI Dimmable

Product description

- Dimmable Independent constant current LED Driver
- Adjustable output current between 150mA and 500mA via DIP switch
- Max. output power 25W
- Up to 87 % efficiency
- Power input on stand-by < 0.5 W
- Dimming range 1 – 100 %
- For luminaires of protection class I and protection class II
- Nominal life-time up to 50,000 h
- 5-year guarantee

Benefits

- Application-oriented operating window for maximum compatibility
- Best energy savings due to low stand-by losses and high efficiency
- Long lasting and high reliability
- Classic compact housing
- Suitable for emergency lighting units

Interfaces

- DALI （DT-6）
- SwitchDIM/PUSH Dim (with memory function)
- 0/1…10V DIM
- Terminal blocks: 45° push terminals

Applications

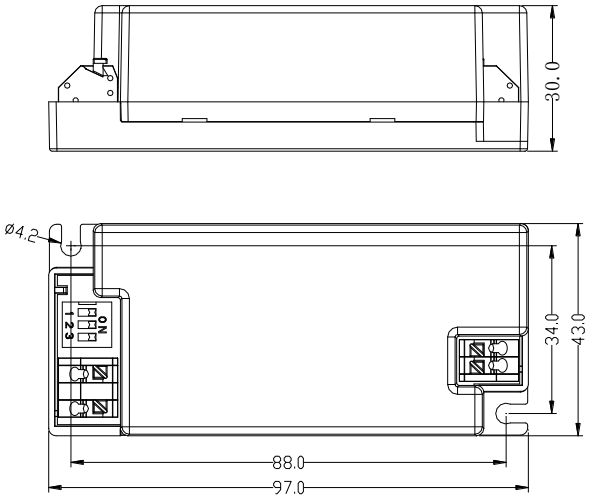
- Linear and area lighting
- Office – industrial – shop

Approval marks

In preparation, if not already printed on product label

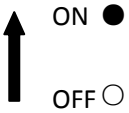
Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
DC voltage range	176 – 280 V
Mains frequency	0 / 50 / 60 Hz
Overvoltage protection	320 V AC, 48 h
Typ. current (at 230 V, 50 Hz, full load)	43 – 128 mA
Leakage current (at 230 V, 50 Hz, full load)	n.a
Max. input power	29W
Typ. efficiency (at 230 V / 50 Hz / full load)	87%
λ (at 230 V, 50 Hz, full load)	0.95
Typ. power input on stand-by	< 0.5W
Typ. input power in no-load operation	n.a①
In-rush current (peak / duration)	12A/148us
THD (at 230 V, 50 Hz, full load)	< 10 %
Time to light (at 230 V, 50 Hz, full load)	< 0.6 s
Time to light (DC mode)	< 0.3 s
Switchover time (AC/DC)	< 0.3 s
Turn off time (at 230 V, 50 Hz, full load)	< 20 ms
Output current tolerance	± 5 %②
Output LF current ripple (< 120 Hz)	< 5 %
Max. output voltage (no-load voltage)	60 V
Dimming range	1 – 100 %
Mains surge capability (between L – N)	1 kV
Mains surge capability (between L/N – PE)	n.a
Surge voltage at output side (against PE)	n.a



Units：mm

DIP Switch



Ordering data

Type	Packaging carton	Weight per pc.
HYL-025D0500G097	.-.	.-.

Specific technical data

Type	DIP Switch PIN 1	PIN 2	PIN 3	Output current (mA)	Min. forward voltage (V)	Max. forward voltage (V)	Min. output power (W)	Max. output power (W)	Typ. power consumption (at 230 V, 50 Hz, full load) (W)	Typ.current consumption (at 230 V, 50 Hz, full load)(A)
HYL-025D0500G097	●	●	●	500	3	50	1.5	25	28	0.128
	○	●	●	450	3	54	1.35	24	28	0.126
	●	○	●	400	3	54	1.2	22	25	0.113
	○	○	●	350	3	54	1.05	19	22	0.099
	●	●	○	300	3	54	0.9	16	19	0.085
	○	●	○	250	3	54	0.75	14	16	0.071
	●	○	○	200	3	54	0.6	11	12	0.057
	○	○	○	150	3	54	0.45	8	9	0.043

①Load switching on output side is safe but not permitted

②Valid at 100 % dimming level

ACCESSORIES

Product description

- Optional strain-relief set for independent applications
- Transforms the LED Driver into a fully class II compatible LED Driver (e.g. ceiling installation)

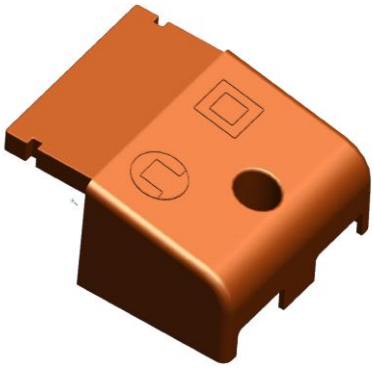


Figure 1

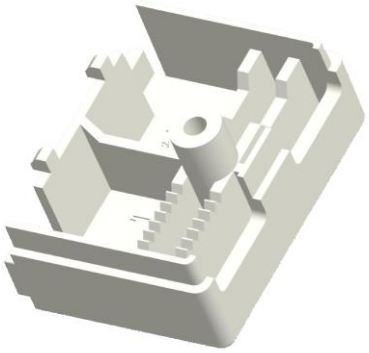


Figure 2

Ordering data

Type	Packaging carton	Weight per pc.	Figure
AWK068	-	-	1
AWK059	-	-	2

1. Standards

EN 55015
EN 61000-3-2
EN 61000-3-3
EN 61347-1
EN 61347-2-13
EN 62384
EN 61547
EN 62386-101 (according to DALI standard V2)
EN 62386-102
EN 62386-207
According to EN 50172 for use in central battery systems
According to EN 60598-2-22 suitable for emergency lighting installations

2. Thermal details and life-time

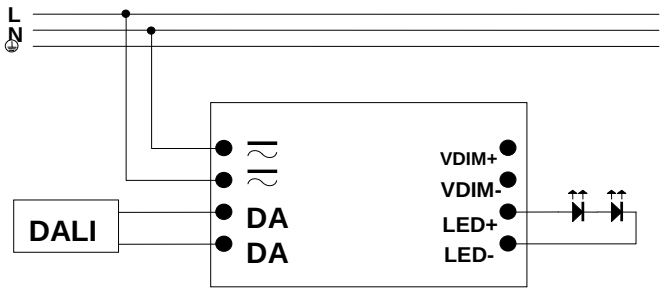
2.1 Expected life-time

Type	Output current	ta	40℃	45℃	50℃
HYL-025D0500G097	150-350 mA	tc	70℃	80℃	85℃
		Life-time	> 50,000 h	> 50,000 h	> 50,000 h
	> 300-500 mA	tc	75℃	85℃	
		Life-time	> 50,000 h	> 50,000 h	

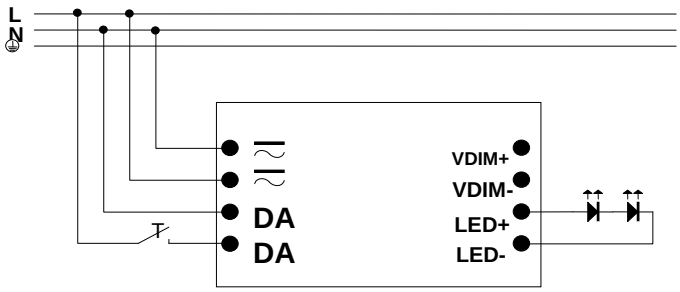
The LED Driver is designed for a life-time stated above under reference conditions and with a failure probability of less than 10%.
The relation of t_C to ta temperature depends also on the luminaire design.

3. Installation / wiring

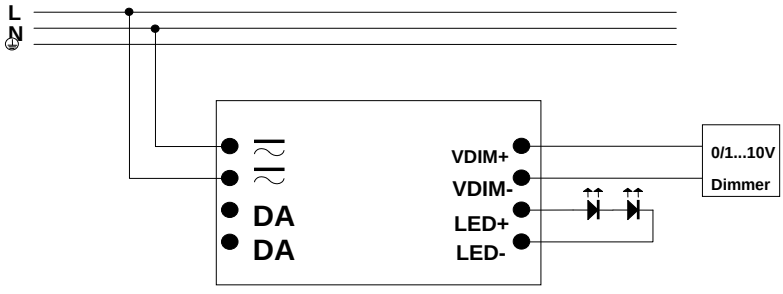
3.1 Circuit diagram



DALI Control



Switch DIM / Push DIM

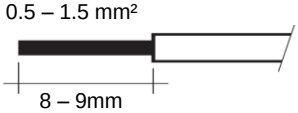


0-10V Dim

3.2 Wiring type and cross section

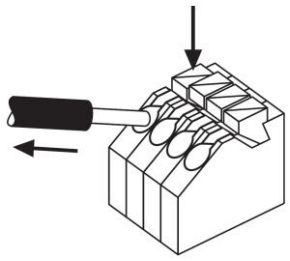
Solid wire with a cross section of 0.5 – 1.5 mm². Strip 8 – 9 mm of insulation from the cables to ensure perfect operation of terminals

Wire preparation:
0.5 – 1.5 mm²



3.3 Loose wiring

Press down the “push button” and remove the cable from front.



3.4 Wiring guidelines

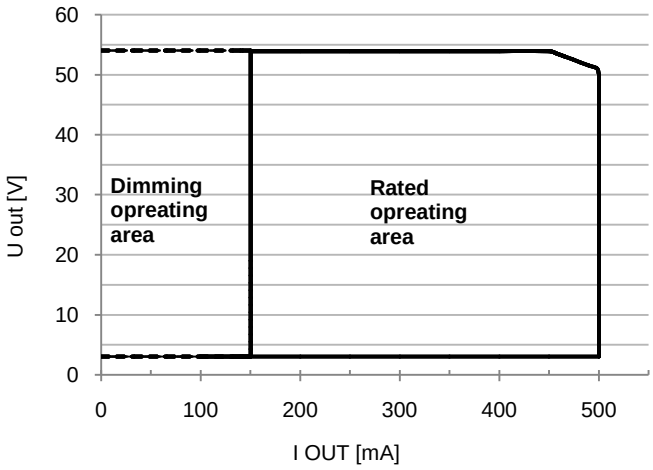
- The cables should be run separately from the mains connections and mains cables to ensure good EMC conditions.
- The LED wiring should be kept as short as possible to ensure good EMC. The max. secondary cable length is 2 m (4 m circuit), this applies for LED output.
- Secondary switching is permitted. But the secondary switch may damage the LED modules, so it is not recommended to do so.
- The LED Driver has no inverse-polarity protection on the secondary side. Wrong polarity can damage LED modules with no inverse-polarity protection.
- Wrong wiring of the LED Driver can lead to malfunction or irreparable damage.

3.5 Hot plugging

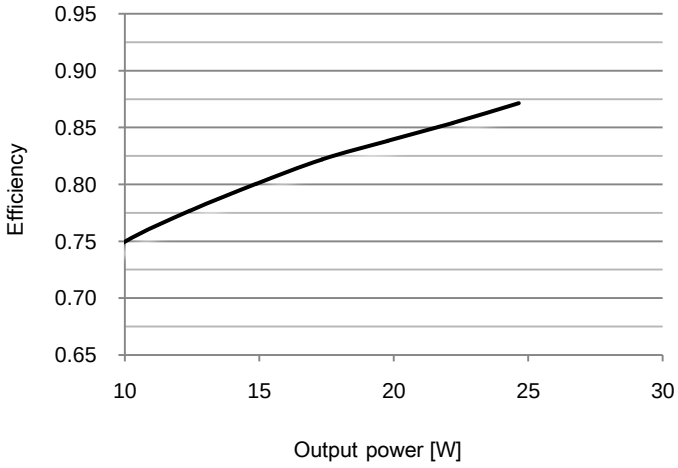
Hot plug-in is supported, but it may damage the LED modules due to residual output voltage is too high.

4. Electrical values

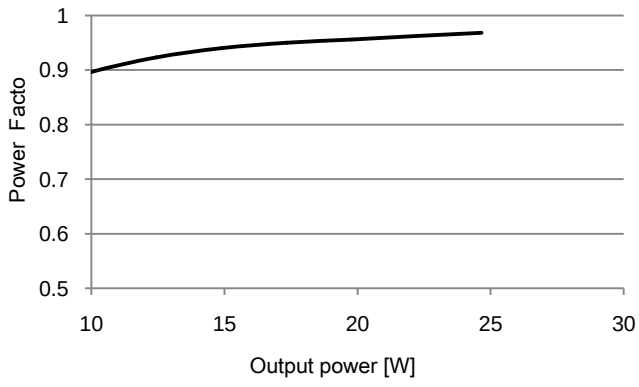
4.1 Typical Opreating Window



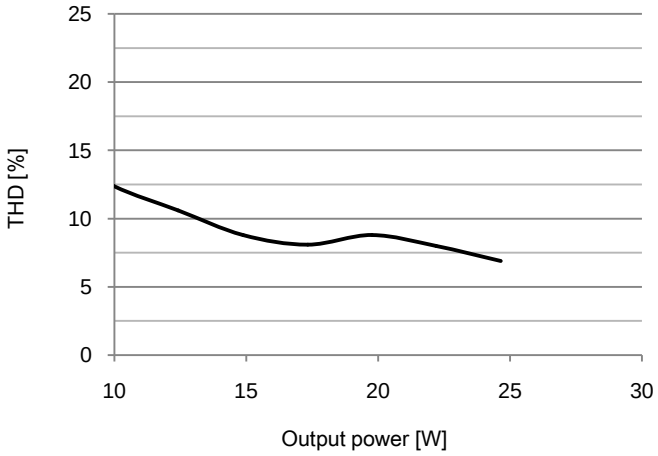
4.2 Efficiency vs load



4.3 Power Factor vs load



4.4 THD vs load



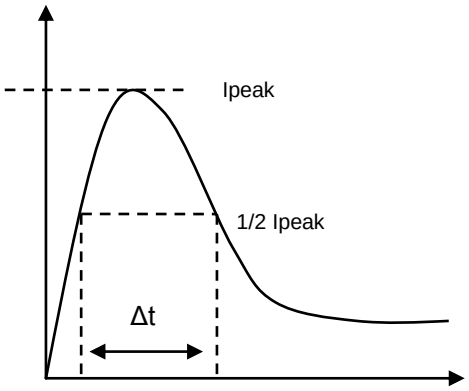
Note: In section“4.1 Typical Opreating Window”’ ,Make sure that the LED Driver is operated within the given window under all operating conditions. Special attention needs to be paid at dimming and DC emergency operation as the forward voltage of the connected LED modules varies with the dimming level, due to the implemented amplitude dimming technology. Coming below the specified minimum output voltage of the LED Driver may cause the device to shut-down.

4.5 Maximum loading of automatic circuit breakers

Type	Ipeak /Δt	circuit breaker (CB)	10 A	16 A	20 A	25 A
		CB-Typ				
HYL-025D0500G097	12A/148us	B	30	50	80	-

Data for Usupply = 230 VAC, mains impedance = 1 Ω

- In case of multi-polar CB the maximum number is reduced by 20 %
- The max. number may differ depending on CB manufacturer.
- Please consider the specifications of the manufacturer.
- Basically, CB with C-characteristics are recommended to be used in lighting groups.



Typical current - time profile when switching on

4.6 Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

	THD	3.	5.	7.	9.	11.
HYL-025D500G097	< 10	< 5	< 3	< 3	< 3	< 3

4.7 Dimming

Dimming range 1 % to 100 % Digital dimming value

Digital control with:

DALI signal: 16 bit Manchester Code

Speed 1 % to 100 % in 0.2 s

Programmable parameter:

Minimum dimming level

Maximum dimming level

Default minimum = 1 %

Programmable range 1 % ≤MIN ≤100 %

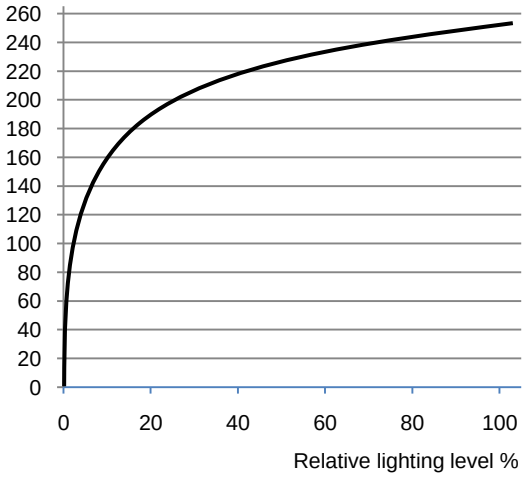
Default maximum = 100 %

Programmable range 100 % ≥MAX ≥1 %

Dimming curve is adapted to the eye sensitiveness.

Dimming is realized by amplitude dimming.

4.5 Dimming characteristics



Dimming characteristics as seen by the human eye

5. Interfaces / communication

5.1 Control input (DA/N, DA/L)

Digital DALI signal or switchDIM can be wired on the same terminals (DA/N and DA/L).The control input is non-polar for digital control signals (DALI). The control signal is not SELV. Control cable has to be installed in accordance to the requirements of low voltage installations. Different functions depending on each module.

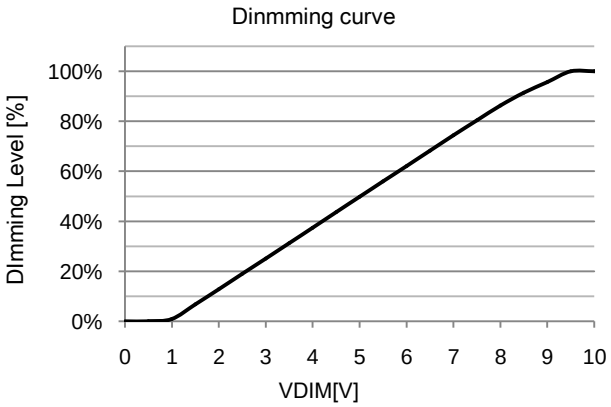
5.2 SwitchDIM (PushDIM)

Integrated switchDIM function allows a direct connection of a pushbutton for dimming and switching. Brief push (< 0.6 s) switches LED Driver ON and OFF. The dimming level is saved at power-down and restored at power-up. When the pushbutton is held, LED modules are dimmed. After repush the LED modules are dimmed in the opposite direction. In installations with LED Drivers with different dimming levels or opposite dimming directions (e.g. after a system extension), all LED Drivers can be synchronized to 50 % dimming level by a 10 s push.Use of pushbutton with indicator lamp is not permitted.

5.3 0 ... 10 V DIM

Control input (0 – 10 V)

Control input open	max. dimming leve
Control input short-circuited	min. dimming leve
Max. output source current	0.5mA
Max. permitted input voltage	- 1 ... +15 V
Voltage range dimming	0 – 10 V
Input voltage < 1 V	min. dimming level1
Input voltage > 10 V	max. dimming level1
Dimming range is	0-100%



6. Functions

6.1 Function: adjustable current

Adjustable output current between 150 and 500 mA via DIP switch.

6.2 Short-circuit behavior

In case of a short circuit on the output side (LED) the LED Driver switches off. After elimination of the short-circuit fault the LED Driver will recover automatically.

6.3 No-load operation

The LED Driver works in burst working mode to provide a constant output voltage regulation which allows the application to be able to work safely when LED string opens due to a failure.

6.4 Overload protection

If the output voltage range is exceeded the LED Driver will protect itself and LED may flicker. After elimination of the overload, the nominal operation is restored automatically.

6.5 Over temperature protection

The LED Driver is protected against temporary thermal overheating. If the temperature limit is exceeded, the Driver switch off.

It restarts automatically. The temperature protection is activated typically at 10 °C above tc max.

6.6 Software / programming

Programming of ECG is done via the DALI interface by using the Interface DALI USB and the PC Software. Tridonic DALI-USB Interface and Software masterCONFIGURATOR are recommended.

7. Miscellaneous

7.1 Isolation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production. According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 V DC for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal.The isolation resistance must be at least 2 MΩ. As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1500 V AC (or 1.414 x 1500 V DC).

7.2 Storage conditions

Environmental conditions: 5 % up to max. 85 %,not condensed(max. 56 days/year at 85 %)
Storage temperature: -40 °C up to max. +80 °C
The devices have to be acclimatized to the specified temperature range (ta)before they can be operated.

7.3 Additional information

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