

LEDGEAR[®] Specification

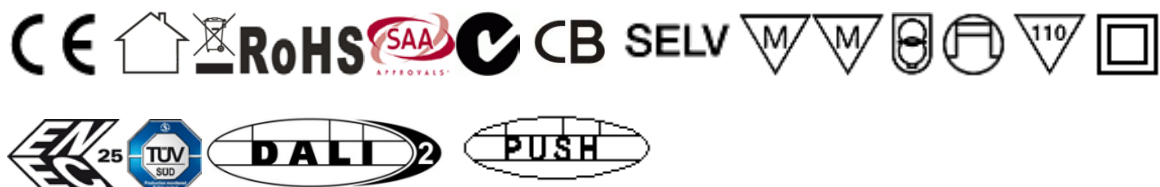
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GENERAL GUIDELINES

Colour temperature control technology is essential for Human Centric Lighting that supports wellbeing, brings health benefits and increases productivity – and on top, is a beautiful design element.

Kinglumi has a wide range of Tunable White luminaires, developed specifically for dimming and tuning of white colour. While the LEDGEAR[®] C7 & C8 Tunable white DALI DT8 LED drivers is the heart of tunable white lighting. It allows dimming and changing of color temperature through DALI-2 application controller or through two push-dim buttons. The driver works as a one address DT8 driver, or 2xDT6 in one address.

LEDGEAR[®] C7 & C8, are independent ECG, design with through wiring and super large wiring space, saving a lot of time and effort on the actual wiring work on site. Big push-fit looping connectors are quick to connect cables with, supporting also various wire thicknesses. Wires are secured to the driver with click-on cable clamps, and strain relief cover clicks on effortlessly securing the connections without any need for screws.



LED Electronic Looping Control Gear

DALI-2, Push-dim DT8 Constant Current 2Channel Output
With 14-42VDC 350mA-1100mA Adjustable Output Series



KINGLUMI CO.,LTD.

Product description

- For Tunable White as well as for 2-channel use (e.g. warm white/cool white lighting)
- DALI-2 Device Type 8(DT8 or DALI 209) and Push-DIM 2in1 dimming
- IEC 62386 Part 101,102(DALI-2), 207, 209 qualified and tested in DALI house
- DALI DT8 color type tc compliant , 3% to 100 % (DT8) dimming range
- Reliable, Class II, SELV according EN 61347
- Constant current output, selectable by DIP switches or programmed by DALI
- ENEC, CE, CB approved by TUV SUD, SAA, CTICK qualified
- Allows through wiring and equipped with super large wiring space
- Built-in AUX of 12V max. 100mA for lighting sensor with 3PINs plug-in connector
- $\pm 5\%$ output current accuracy(under maximum load)
- Permissible AC cable 0.75-2.5mm² wire gauge, 8~10mm PVC jacket diameter
- Protection for output open load, short circuits, over voltage and over temperature
- Built-in with permanent memory for DALI and Push-DIM, 100,000 times memory
- 90°C Maximum case operation temperature(tc-point ¹)
- Operating temperature ¹: -25°C ~ +50°C, the humidity: 20% ~ 85%
- Over 60,000 hrs nominal lifespan at tc=70°C
- Five-year factory guarantee and lifetime technical support ¹

¹ "Detailed data please refer to the " PARAMETERS" table .

Features & Benefits

Flexibility & Optimized Inventory

- Wattage selectable by 4xDIP switches, or by DALI programmed.
- Push-fit secondary terminals for LED module wires

Human Centric Design

- Easy & Quick connection with push-fit terminals and clip-on end cap for strain relief, super large wiring space
- Loop in & loop out function, max.2.5mm² cross section L,L,X,X,N, N,CS,CS,DA,DA,DA,DA stranded wire or solid wire

Suitable for Emergency Lighting

- Suitable for Central Emergency System, CBS (central battery system)
- 50/60Hz and 0Hz(for emergency system)
- Suitable for emergency escape lighting systems according to EN 50172, LEDGEAR[®] can work with emergency DC voltage input, such as work with backup or emergency LED drivers(batteries).

Housing Properties

- Casing: polycarbonate, white
- Type of protection IP20

Typical applications

- For Tunable White as well as for 2-channel use (e.g. warm white/cool white; direct/indirect lighting)
- For panel light, troffer and area light in office and education application
- For spot light and downlight in retail and hospitality applications

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PARAMETERS

MODEL		C850-421100DB
Output	Output voltage	14-42V(Output current≤900mA); 14-38V(Output current>900mA);
	Rated current	350 -1100mA (preselected 350mA)
	Maximum power	41.8W
	Current tolerance	±5%
	Ripple voltage ²	220mVp-p
	Ripple current	30mA p-p
	Line regulation	±1%
	Load regulation	±3%
	Flicker percentage ³	<3%
	Starting time	<500mS
	Turn off time	<2.0S
	Noise ⁴	<22dB
Input	Voltage	Rated:220-240V; Range:200-264V;
	Frequency	Rated:50-60Hz, 0Hz; Range:47-63Hz, 0Hz;
	Power factor	≥0.9; (Output power ≥ 15W)
	I-THD ⁵	<15% (Output power ≥ 15W)
	Efficiency ⁶	≥88%
	AC current	300mA max.
	Inrush current ⁷	35A
	Inrush current time	55uS
	Leakage current	<1mA
	ON/OFF switches cycle	>100,000
	Standby power	<0.5W
DALI & PUSH Control	Dimming control mode	PWM
	Dimming control type	DT8(2 channels dimming and color tuning)
	DALI Input Voltage	Rated:16V; Range:9.5-22.5V;
	DALI Input (Bus) Current	Rated:1.6mA; Range:1.5-1.7mA;
	PUSH Input Voltage	Rated:220-240Vac; Range:200-264Vac;
	PUSH Input Frequency	Rated:50-60Hz; Range:47-63Hz;
	Dimming Range	DALI-2: 2%-100%; Push-DIM: 3%-100%;
DALI Standard	IEC 62386-101: 2014, IEC 62386-102: 2014, IEC 62386-207: 2009, IEC 62386-209: 2009, DALI Part 150:2019	
Protection	Over current	Constant current limiting, recovers automatically after fault condition is removed
	Over voltage	Shut down output voltage, with auto-recovery or re-power on to recovery
	Over temperature	Shut down output voltage, recovers automatically after temperature goes down
	Short circuit	Constant current limiting, recovers automatically after fault condition is removed
Safety & EMC	Safety standards	EN61347-2-13; Design refer to TUV EN60950-1, TUV EN61347-1
	Withstand voltage	I/P-O/P:3KVac I/P-FG:1.5KVac O/P-FG: 500Vdc
	Isolation resistance	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500Vdc/25°C/75%RH
	EMC emission ⁸	EN55015B, EN55022 Class B, EN61000-3-2, EN61000-3-3
	EMC immunity	EN61000-4-2, EN61547, EN55024, EN-61000-4-5 Surge immunity Line-Earth: 2KV, L Line- N Line:1KV;

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Environment	Ambient temperature range ⁹		-25°C ~ +50°C
	Max. case temperature(tc) ¹⁰		90°C
	Relative humidity range		20% ~ 85%RH
	Storage temperature range		-30°C ~ +75°C
max. No. of PSUS(Driver supply unit) on miniature circuit breaker(MCB)	MCB TYPE A	10A	26pcs @ 36V,1100mA Output
		16A	42pcs @ 36V,1100mA Output
		20A	52pcs @ 36V,1100mA Output
	MCB TYPE B	10A	28pcs @ 36V,1100mA Output
		16A	45pcs @ 36V,1100mA Output
		20A	56pcs @ 36V,1100mA Output
	MCB TYPE C	10A	33pcs @ 36V,1100mA Output
		16A	52pcs @ 36V,1100mA Output
		20A	65pcs @ 36V,1100mA Output
	Lifetime(hrs)@tc=70°C		>60,000H
	MTBF [MIL-HDBK-217F(ta=25 °C)		489.6K Hrs min
	Glow wire test		850°C for 5S; 650°C for 30S
	Dimension L x W x H		200 x 73 x 29.8mm
Warranty years		5 years	
(*If demand other output voltage and output current, contact your sales consultant or contact us: www.kinglumi.com)			

“2” Ripple voltage is measured at 20MHz of bandwidth by using a 12” twisted pair-wire terminated with a 100nF & 47uF parallel capacitor.

“3” The flicker s test data of output current at input @230Vac with 36V output voltage, maximum output current..

“4” The noise of LED driver is defined as test data when driver tested in noise room with 50~60dB environment, and been hang in 1ft (305mm) inside chamber.

“5” Rated voltage input, rated output current, maximum output current.

“6” The typical efficiency is test data of output current at input @230Vac with 36V output voltage, maximum output current.

“7” The inrush current is test data of 230Vac input, cold start, measured at input current peak.

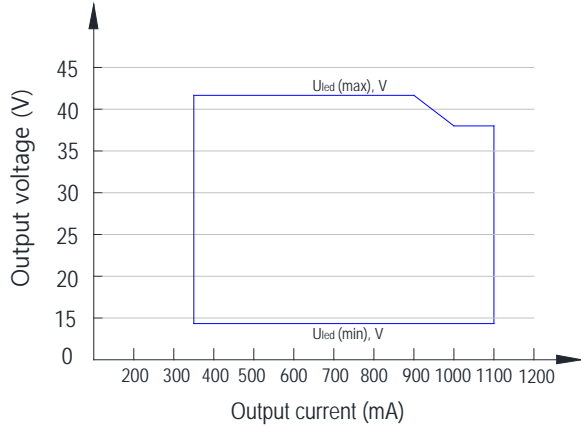
“8” The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC directive on the complete installation again.

“9” For other than independent use, higher ta of the control gear possible as long as highest allowed tc point temperature is not exceeded.

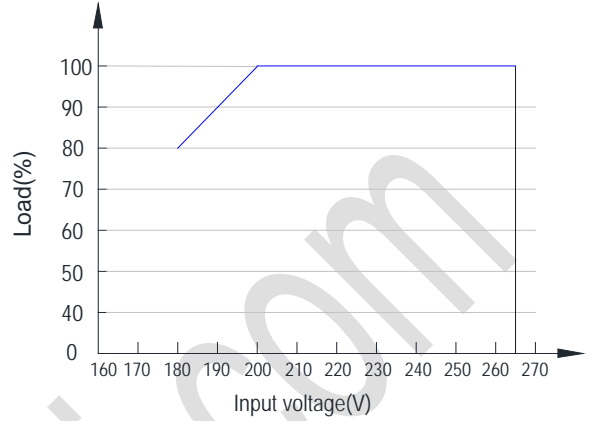
“10” The tc is defined as the highest permissible temperature which may occur on the outer surface of the power under normal operating conditions and at the rated voltage/current/power or the maximum of the rated voltage/current/power range, refer to “output power vs temperature” section.

DRIVER PERFORMANCE CURVE

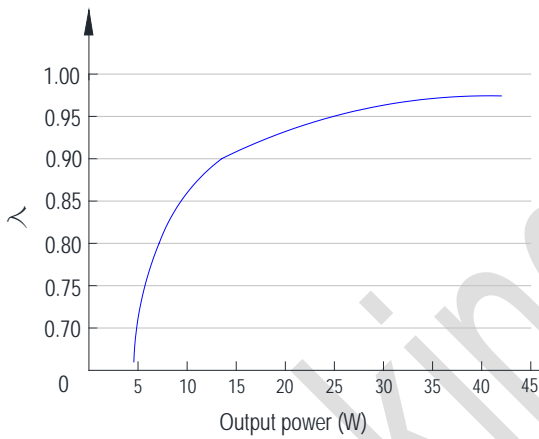
Operating window



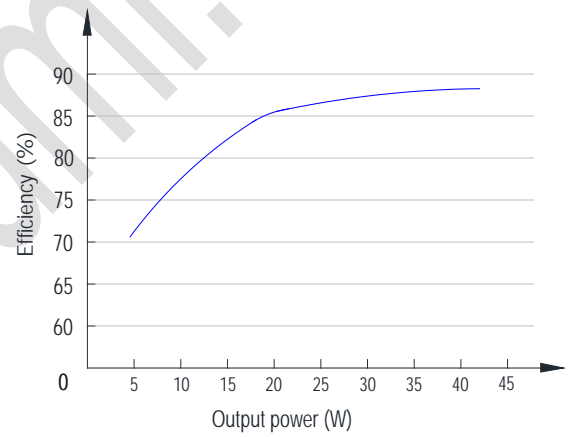
Typical load output



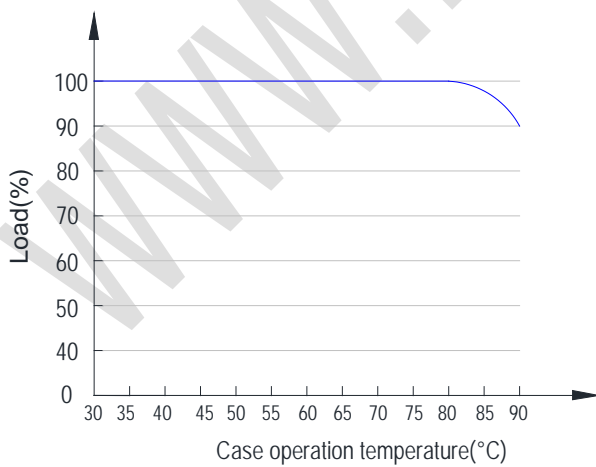
Typical power factor



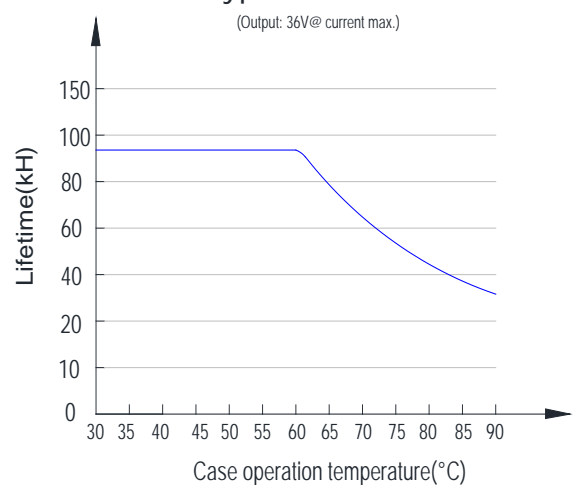
Typical efficiency



Typical case temperature(tc)



Typical lifetime



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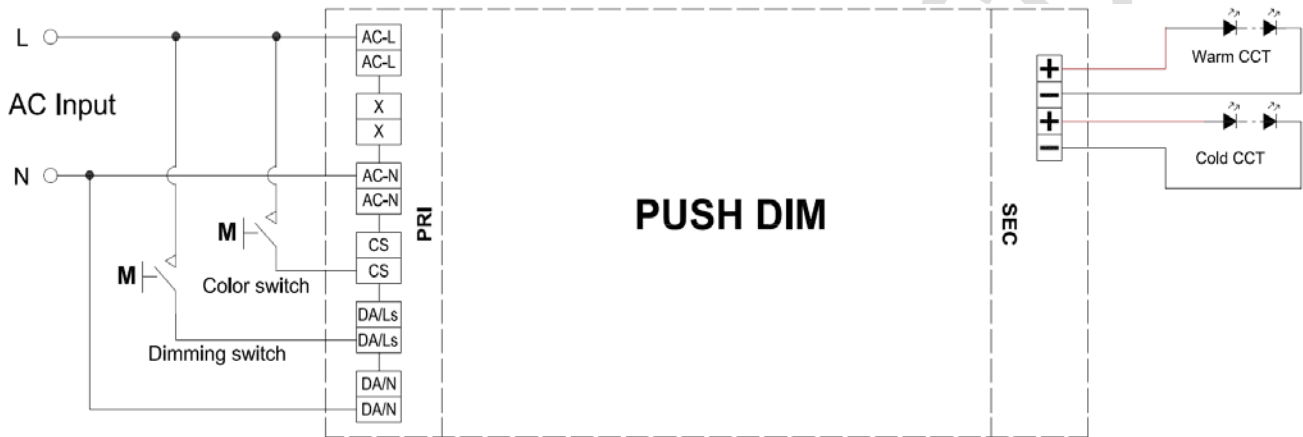
DIMMING OPERATION

Tunable white

- a) 2 channels output, it can directly work with 2 channels of warm white LED module and cool white LED module, and achieve the tunable white function.
- b) Only need single address for the tunable white control.
- c) DALI-2 Device Type 8(DT8 or DALI 209) and Push-DIM 2in1 dimming for tunable white control
- d) The tunable white function curve is designed according to DALI DT8 Tc color, but there might exist color and brightness consistency problem when control several luminaries at the same time

Push-DIM circuit diagram

PUSH-DIM, also known as Switch-Dim or Touch-Dim. To be able to make simple light management systems, the C8 driver also integrated PUSH-DIM Function. This makes it possible to dim and switch them directly with mains AC voltage using the PUSH control terminals (PUSH-DIM & CCT control).



Wiring and cable compensation

- a) Do not use more than 20pcs C8 driver in a single PUSH-DIM application (up to 20pcs C8 Driver can be controlled by one push-button). The greater the number of C8 series driver controlled imultaneously, the greater the risk of asynchronisms.
- b) The cable length between the push-button and the farthest C8 series driver may not be longer than 105 meters. Compensation measures must be applied for line lengths required to be more than 105 meters long (bell transformer, resistance).
- c) The push button can only be connected to the AC/L and PUSH terminals of the driver. It results in the short circuit if the Push Button is connected to the AC/N terminal.

Instructions

Push-dimming control(Dimming switch)

Operation	Action duration	Action
Ultra Short Press	<0.05 sec	Won't cause any action
Briefly Press	0.04-1.0 sec	Light ON/OFF
Press and hold at ON status	1.0-5.0 sec	Brightness Dimming down to 3%, or up to 100%
Press and hold at OFF status	1.0-5.0 sec	Brightness Dimming From 3% up to 100%
Long Press	>10.0 sec	Reset to factory settings(up to 100%)

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Note:

- a) Factory defaults 100% brightness, dimming level down to 3%.
- b) Built-in with permanent memory:
Light returns to the previous dimming level when switched off and on again, even at power failure.
- c) Synchronization of switching state and dimming direction:
For physical reasons, a PUSH-DIM system can work asynchronously; in other words, the switching state and dimming direction of the individual luminaires are different. The following steps are used to synchronize a PUSH-DIM system:
 1. Step: Press and hold (> 1.0 s) → All luminaires switch on
 2. Step: Press briefly (< 1.0 s) → All luminaires switch off
 3. Step: Press and hold (> 1.0 s) → All luminaires switch on and dim
- d) The PUSH-DIM wiring and the operator button must be rated for mains voltage (240V).
- e) Warning: Make sure the conduct core connected to PUSH terminal is not exposed, as it connected to the live wire.

Push-color(CCT) control(color switch)

Operation	Action duration	Action
Ultra Short Press	<0.04 sec	Won't cause any action
Briefly Press	0.04-1.0 sec	9 segment(2700-6500K): 2700K,3000K ,3500K,4000K,4500K,5000K,5500K,6000K,6500K
Press and hold at ON status	1.0-5.0 sec	CCT cycle(To the maximum or minimum),press again to change the direction.
Press and hold at OFF status	1.0-5.0 sec	Won't cause any action
Long Press and briefly press	1.0-5.0 sec to 0.04-1.0 sec	Reset to factory settings(2700-6500K): 4000k CCT
Long Press	>10.0 sec	Won't cause any action

Asynchronism

As a matter of principle, asynchronisms can occur with push-button operation in systems with more than one C8(DT8) driver. The higher the number of C8(DT8) Driver and the longer the control line length, the greater the chance of asynchronisms. In order to avoid lighting installations running asynchronously in practice, the permissible number of C8(DT8) series (20) and the total line length of 25 meters must be adhered to.

DALI 2 Dimming

The DALI logo, is only allowed to use for members of the DiiA. The LEDGEAR® C8 series is DALI-compliant to any DALI master or application controller if they bear the DALI logo.

Instructions

- a) Compatible with both DALI-2 application controller or DALI-I master, please make sure they also qualified and listed in the DiiA website.
- b) Connect the DALI signal to the DA1 and DA2 terminals (polarity-free)
- c) Addressing possible:
 - Individually (max. 64 IP addresses)
 - In groups (max. 16)
 - All together

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- d) The least dimming depth of DALI is of 2% * Iout.
- e) Built-in with permanent memory: light returns to the previous dimming level when switched off and on again, even at power failure.
- f) Supports star, tree, serial, parallel wiring ,but not supports ring wiring
- g) If the C8 series are not reacting to the command of the control unit. Please inspect the wiring; approx. 16 V DC must be applied to the DALI terminal of the C8 series.

DALI INPUT	MIN	TYP	MAX
High level	9.5V	16V	22.5V
Low level	-6.5V	0	6.5V

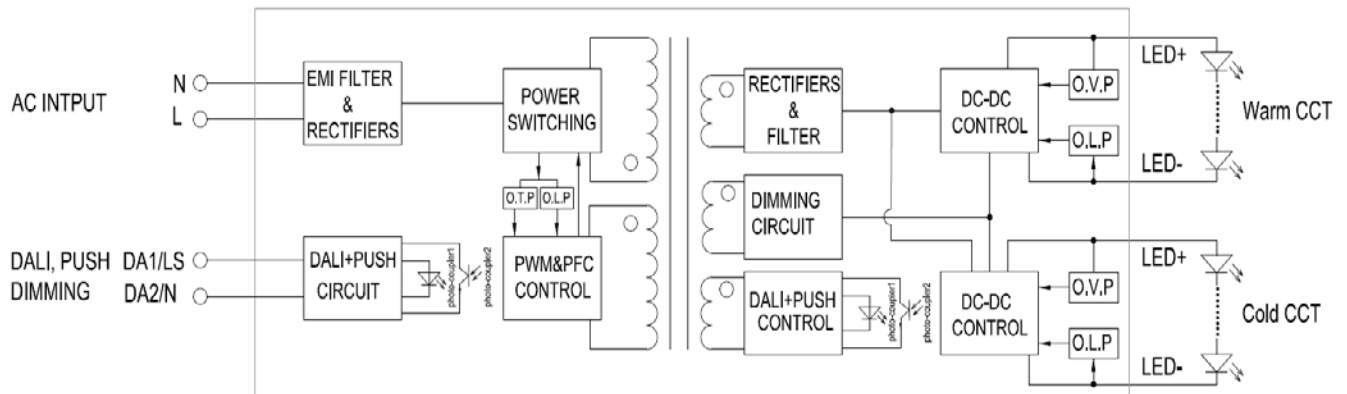
- h) DALI bus communication length and input wire diameter

Wire Diameter	DALI Bus Communication length
0.5 ² mm	100m Max.
0.75 ² mm	150m Max.
1.0 ² mm	200m Max.
≥1.5 ² mm	300m Max.

DIAGRAM&INSTALLATION MANUAL

Isolated circuit

Fly-back CV + DC-DC control



Insulation between circuits

Electric Insulation	Input	Output	Housing	DALI	PUSH
Input	X	Reinforced	Reinforced	Basic	Non
Output	Reinforced	X	Basic	Reinforced	Reinforced
Housing	Reinforced	Basic	X	Reinforced	Reinforced
DALI	Basic	Reinforced	Reinforced	X	Basic
PUSH	Non	Reinforced	Reinforced	Basic	X

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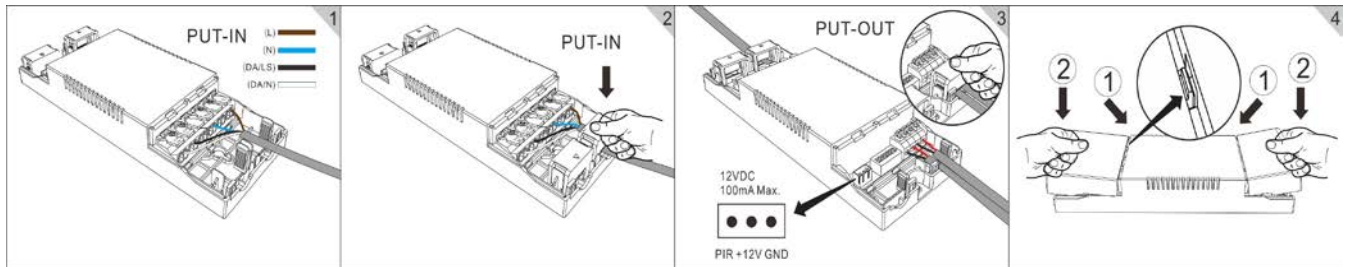
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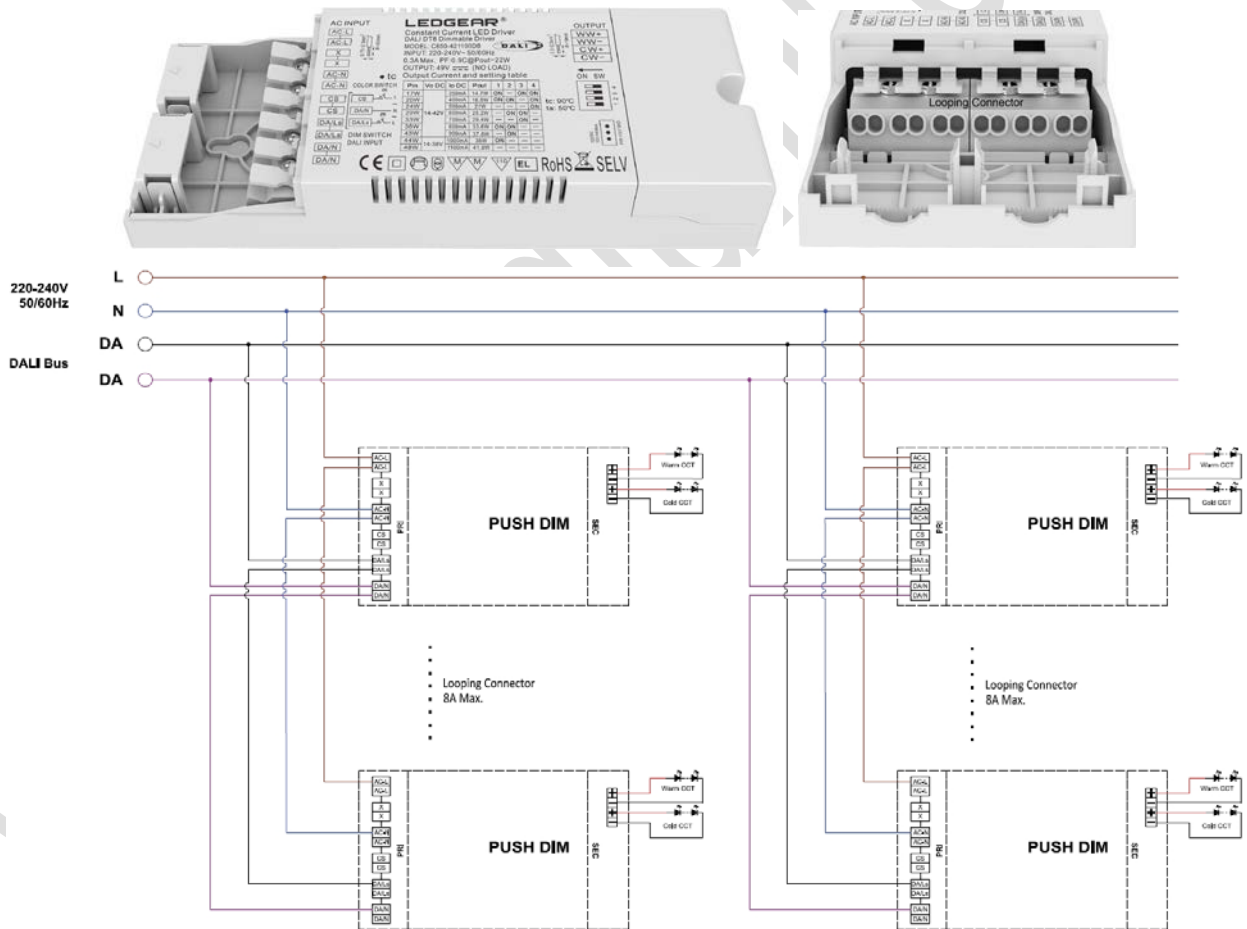
Release of the wiring

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



Looping Circuit diagram

These LEDGEAR® drivers provides "through wiring functions" at primary for the L,N input and DALI1,DALI2, which allows quick looping from driver to driver and save the installation labour.



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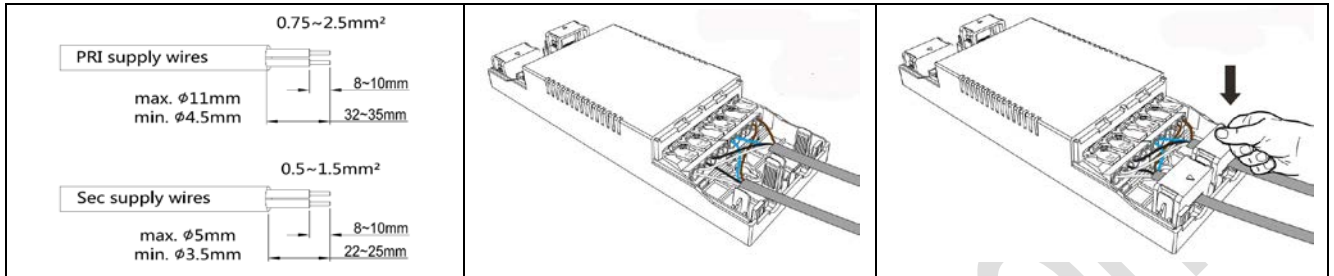
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Wiring type and cross section

The wiring can be in stranded wires with ferrules or solid with a cross section of 0.75–2.5 mm². Strip 8-10mm of insulation from the cables to ensure perfect operation of the push-wire terminals. Use one wire for each terminal connector only



Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behavior.
- Mains leads should be kept apart from LED Driver and other leads (ideally 10 – 30 cm distance).
- Incorrect wiring can damage LED modules.
- The wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc).

Miniature circuit breaker application

Total continuous current of the drivers and installation environment must always be considered and taken into calculations when installing drivers behind miniature circuit breaker(MCB).

Quantity of drivers(36V@1100mA Output) per miniature circuit breaker 16 A Type C

Based on inrush current I_{peak}	Typ. peak inrush current I_{peak}	1/2 value time, Δt	Calculated energy, $I_{peak}^2 \Delta t$
52pcs	35A	98uS	0.121A ² s
			<p>Example calculation of total drivers amount limited by continuous current: $n(I_{cont}) = (16 A (I_{nom}, t_a) / \text{“nominal mains current with full load”}) \times 0.65$. This calculation is an example according to recommended precautions due to multiple adjacent circuit breakers (> 9 MCBs) and installation environment ($t_a=30^\circ\text{C}$); variables may vary according to the use case. Both inrush current and continuous current calculations are based on "Schneider Acti9" series circuit breakers. More specific information in "Schneider Acti9" series circuit breaker documentation.</p>

NOTE ! Type B or C MCB's are strongly recommended to use with the LED driver.

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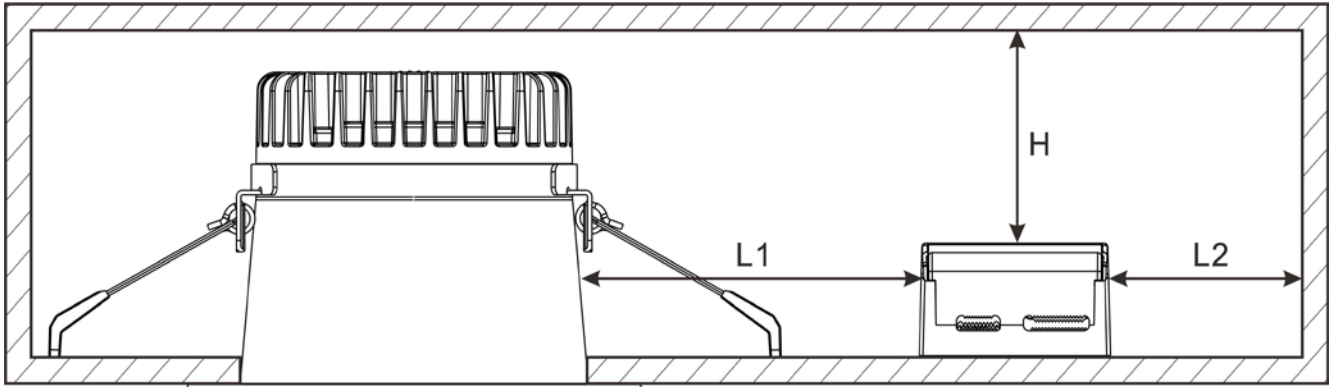
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Fixing conditions

Dry, acid-free, oil-free, fat-free. It is not allowed to exceed the maximum ambient temperature (ta) stated on the device. Minimum distances stated below are recommendations and depend on the actual luminaire. Is not suitable for fixing in corner.

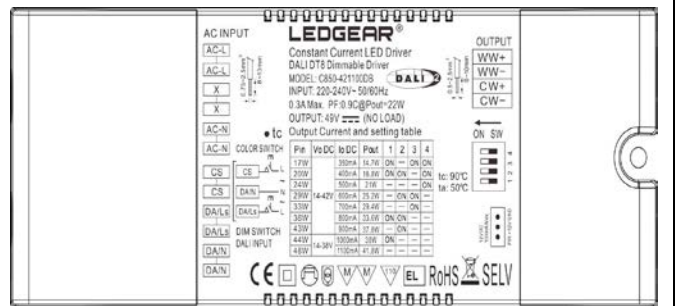


Model	Size	L1(min.)	L2(min.)	H(min.)
C850-421100DB		120mm	20mm	30mm

DIP Switch Table

LEDGEAR® C8 series is a multiple-stage constant current driver, selection of output current through DIP switch is exhibited below

Output			DIP Switch			
Voltage	Current	Power	1	2	3	4
14-42V	350mA	14.7W	ON	-	ON	ON
	400mA	16.8W	ON	ON	-	ON
	500mA	21W	-	-	-	ON
	600mA	25.2W	-	ON	ON	-
	700mA	29.4W	-	-	ON	-
	800mA	33.6W	ON	ON	-	-
14-38V	900mA	37.8W	-	ON	-	-
	1000mA	38W	ON	-	-	-
	1100mA	41.8W	-	-	-	-



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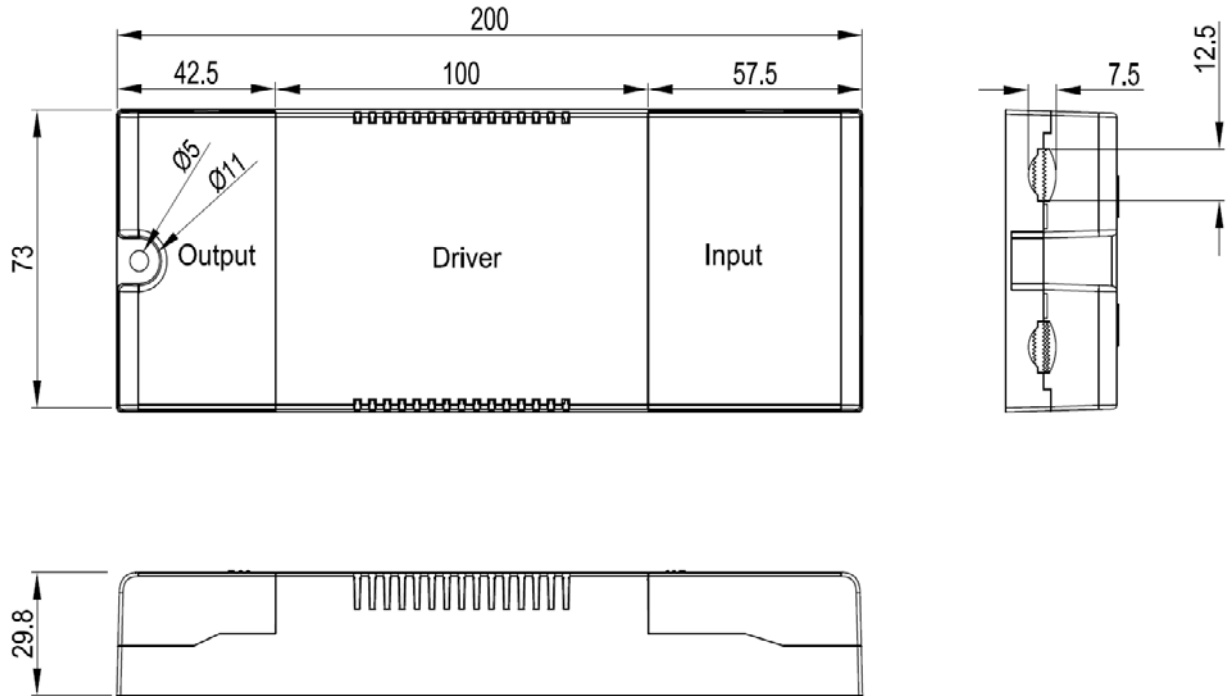
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MECHANICAL

Unit : mm



PACKAGING

Part Number	Dimension	Gross Weight	Net Weight	Qty/Carton
C850-421100DB	485x380x190mm	12kg	10.8kg	40pcs

LED Electronic Looping Control Gear

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VERSION #

#	MODIFICATIONS	Date.
1	Version 1	2020.9.8
2		
3		
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