INTERLIGHT
LED DRIVER DATASHEET

IL-DC9D & IL-DC13D

General Guidelines

The IL-DC9D and IL-DC13D drivers are designed to provide Phase-cut dimming. They are SELV independent control gear, with wide operating windows and easy installation for quick installation and fewer inventories.

These led drivers provide constant current with flicker free, and suitable for 4.6W-13.3W led modules and luminaires.

These leddrivers provide constant current with low flicker that compliant with the ErP 2024. 3 DIP switches equipped allows you to adjust the constant output current to work with different power led modules. It helps to reduce the inventory and faster to projects.

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FEATURES & BENEFITS

Independent constant current LED driver (SELV)
Multiple output current in one
Push-fit terminals and looping design
ErP 2024 & IEEE 1789 compliant
Flicker free and Smooth dimming
Large wiring space, transparent end cap
Compact housing permissible for 60mm cutout holes
Reliable, Class II
Long lifespan of 50,000 h with 5 year warrant

BENEFITS

Wide opinion windows less inventory
Flicker free, suitable for any applications with CCTV or video shooting
Compact housing for constrained installation conditions (small ceiling cut outs and low ceiling voids)
Fast and easy wiring with push-fit terminals and through wiring

PROTECTION

Over temperature
Short-circuit
Over current
Over voltage

HOUSING PROPERTIES

Casing: polycarbonate, white
Type of protection IP20
Push-in terminals
2 separate strain relief parts for input and output cables with highly robust clamps

TYPICAL APPLICATIONS

For spot light and downlight in retail and hospitality applications
For panel light, troffer and area light in office and education application

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Parameters

MODEL		IL-DC9D	IL-DC13D
Output	DC voltage range	30-38V	30-38V
	Rated current	120-220mA (selectable, preselected 180mA)	250-350mA (selectable, preselected 250mA)
	Maximum power	8.4W	13.3W
	Current tolerance	±5%	±5%
	Ripple voltage [2]	30mVp-p	30mVp-p
	Ripple current	20mAp-p	20mAp-p
	Line regulation	±3%	±3%
	Load regulation	±2%	±2%
	Output P_ST_LM [3]	<0.8	<0.8
	Output SVM [3]	<0.3	<0.3
	Starting time	<500mS	<500mS
	Turn off time	<1.0S	<1.0S
	Noise [4]	<22dB	<22dB
Input	Voltage	Rated:220-240Vac;	Range:198-264Vac;
	Frequency	Rated:50Hz;	Range:47-53Hz;
	Power factor	≥0.95; (Rated voltage input, rated max. current output conditions)	
	I-THD [1]	≤15%	
	Efficiency [5]	≥81%	≥82%
	AC current	60mA max.	85mA max.
	Inrush current [7]	3A	5A
	Inrush current time	30uS	45uS
	Leakage current	<1mA	
	ON/OFF switches cycle	>100,000	
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 (≥25W); Line-Earth:1KV, L Line- N Line:0.5KV(<25W)	
Environment	Ambient temperature range[9]	-20°C ~ +55°C	
	Max. case temperature(tc)[10]	75°C	80°C
	Relative humidity range	20% ~ 85%RH	
	Storage temperature range	-30°C ~ +80°C	
Connection	AC Connector	Looping Push-fit Terminals L, L, N, N; 0.75-2.5 mm^2 cross-section	

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Parameters

Max. No. of PSUS(Driver supply unit) on miniature circuit breaker(MCB)	MCB TYPE A	10A	108pcs @ full load	76pcs @ full load
		16A	173pcs @ full load	122pcs @ full load
		20A	216pcs @ full load	153pcs @ full load
	MCB TYPE B	10A	125pcs @ full load	88pcs @ full load
		16A	200pcs @ full load	141pcs @ full load
		20A	250pcs @ full load	176pcs @ full load
	MCB TYPE C	10A	133pcs @ full load	94pcs @ full load
		16A	213pcs @ full load	150pcs @ full load
		20A	266pcs @ full load	188pcs @ full load
Others	Dimming control mode		Trailing Edge Dimmable	Trailing Edge Dimmable
	Lifetime(hrs)@tc=55℃		> 50,000H	> 50,000H
	MTBF [MIL-HDBK-217F(ta=25℃)]		165.9K Hrs min.	167.5K Hrs min.
	Glow wire test		850°C for 5S; 650°C for 30S	
	Dimension L x W x H		86 x 52 x 30mm	
	Warranty years		5 years	
(*If demand other output voltage and output current, contact your sales consultant or contact us: https://www.koopmaninterlight.nl/nl)				

"[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 for frequencies of 200 Hz or below, input voltage 230Vac , at 100% output current level and 20% output current level with dimmer attached, output current ripple is defined as [(Imax- Imin)/(Imax + Imin)] * 100%, (CEC-400-2016-018-FS, Title 24 part 6 JA8).
"[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 1 ft (305mm) inside chamber.
"[5]" Rated voltage input, rated output current, maximum output current.
"[a]" The typical efficiency is test data of output current at input @230Vac with 36V output voltage, maximum output current.

"[]" 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.
"[a]" 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.

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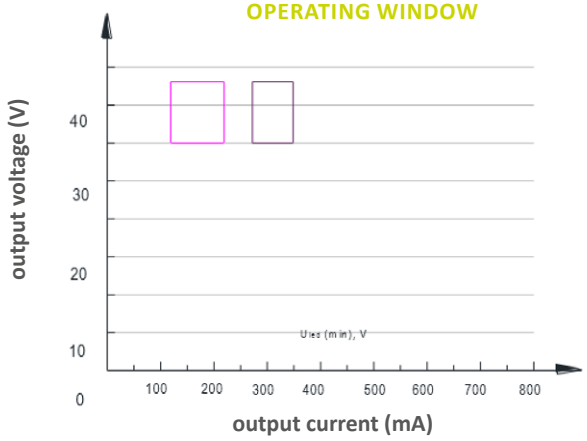
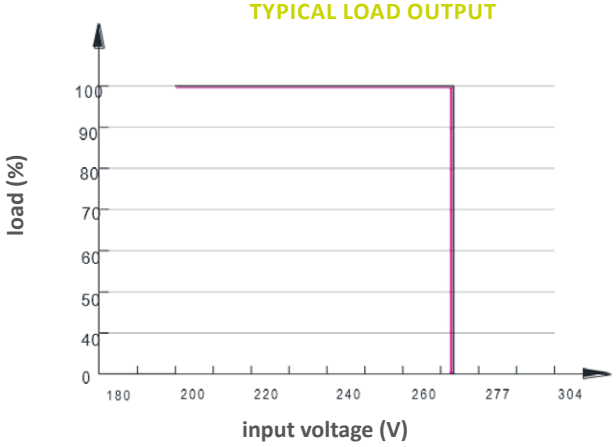
Driver performance curve

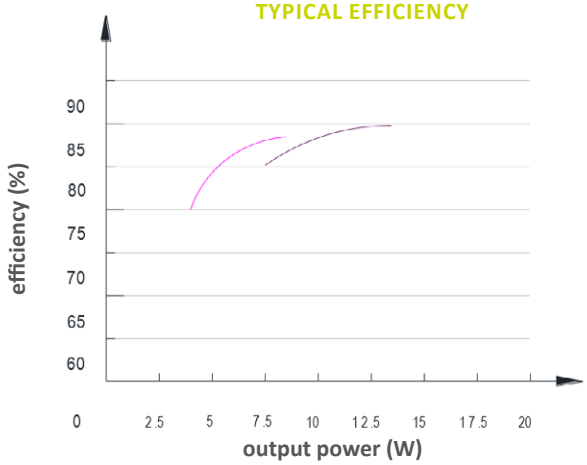
OPERATING WINDOW



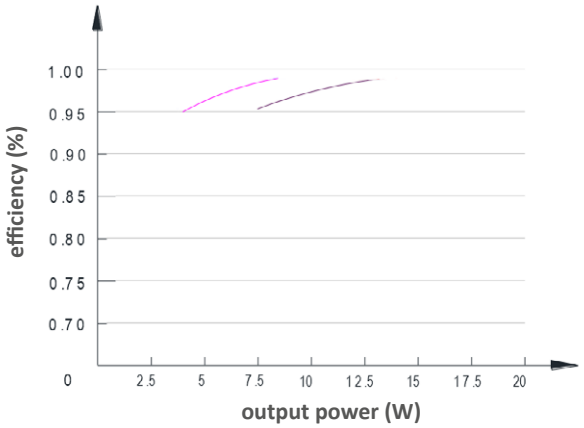
TYPICAL LOAD OUTPUT



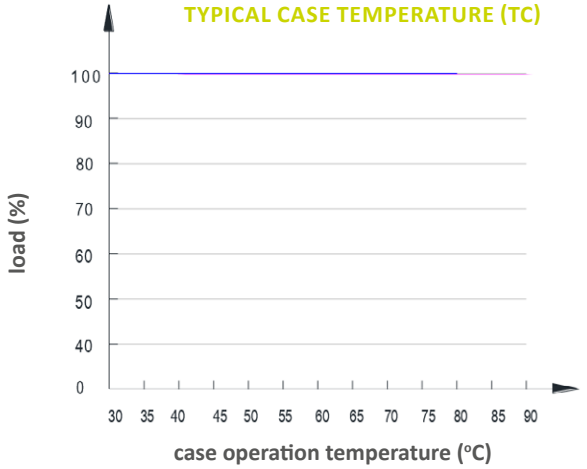
TYPICAL EFFICIENCY



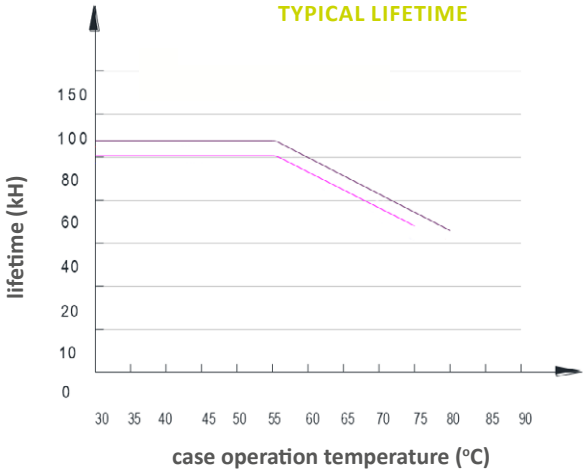
TYPICAL POWER FACTOR



TYPICAL CASE TEMPERATURE (TC)



TYPICAL LIFETIME



IL-DC9D
IL-DC13D

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IL-DC9D & IL-DC13D

DIAGRAM & INSTALLATION MANUAL

The IL-DC9D and IL-DC13D drivers provides “through wiring functions” at primary for the L and N input, which allows quick looping from driver to driver and save the installation labour.

LOOPING CIRCUIT DIAGRAM

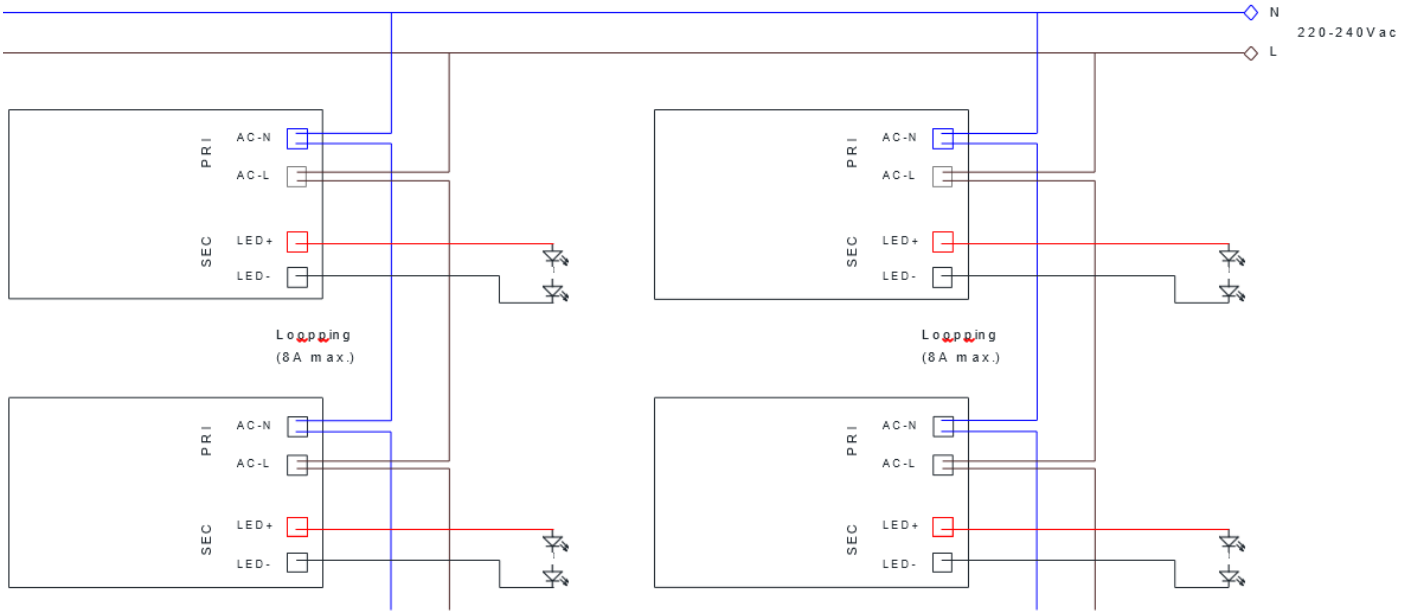

DIAGRAM & INSTALLATION MANUAL

The IL-DC9D and IL-DC13D driver is a multiple-stage constant current driver, selection of output current through DIP switch is exhibited below:

IL-DC9D			
Dip sw / Iout	1	2	3
120mA	-	-	-
140mA	-	-	ON
160mA	-	ON	ON
180mA	ON	-	-
200mA	ON	ON	-
220mA	ON	ON	ON

IL-DC13D			
Dip sw / Iout	1	2	3
250mA	-	-	-
280mA	-	-	ON
300mA	-	ON	ON
320mA	ON	ON	-
350mA	ON	ON	ON

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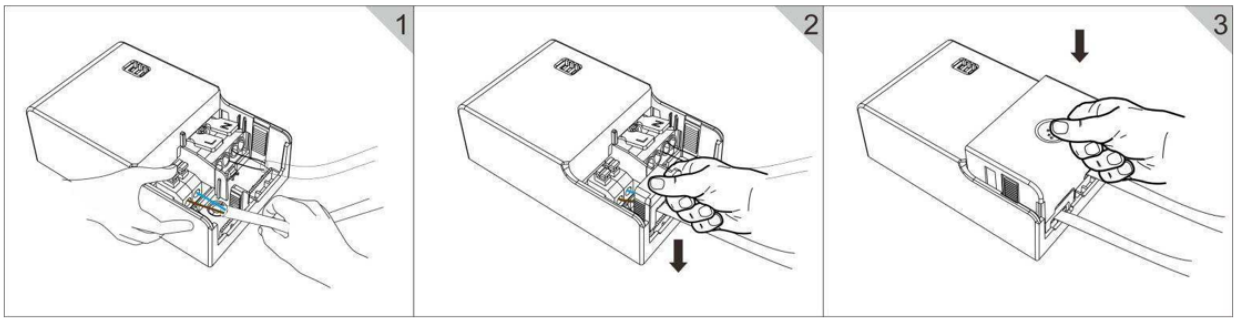
WIRING TYPE AND CROSS SECTION

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).
- Secondary switching is not permitted.

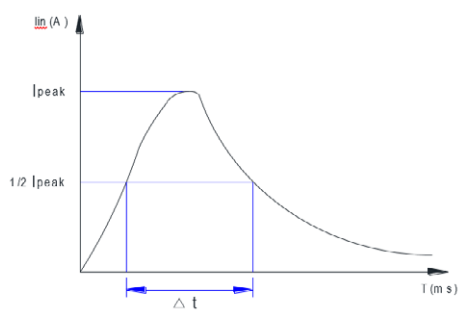


RELEASE OF THE WIRING

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

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 per miniature circuit breaker 16 A Type C

Based on inrush current Ipeak	**Typ. peak inrush current Ipeak**	**1/2 value time, Δt**	**Calculated energy, Ipeak ² Δt**
142pcs	5A	85uS	0.0021A²s
		Example calculation of total drivers amount limited by continuous current: n(Icont) = (16 A (Inom, ta) / “nominal mains current with full load”) x 0.75). This calculation is an example	
		according to recommended precautions due to multiple adjacent circuit breakers (> 9 MCBs) and installation environment (ta=30°C); variables may vary according to the use case.	

NOTE ! Type B or C MCB’s are strongly recommended to use with the LED driver.“Schneider Acti9” series circuit breaker documentation.

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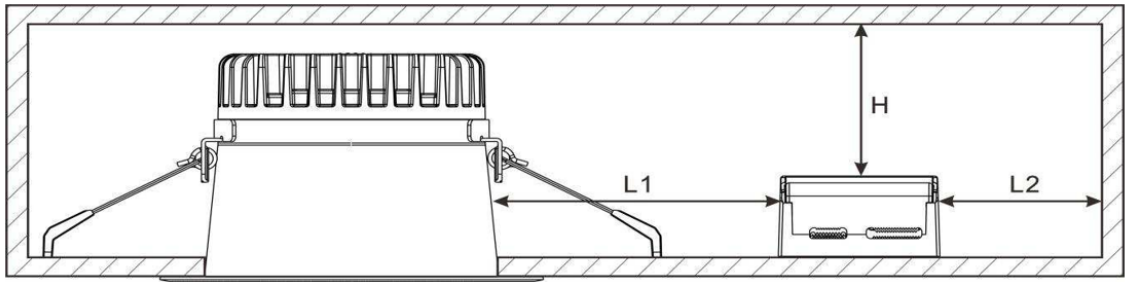
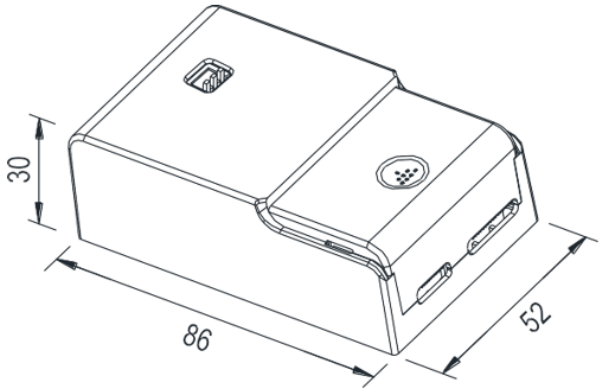
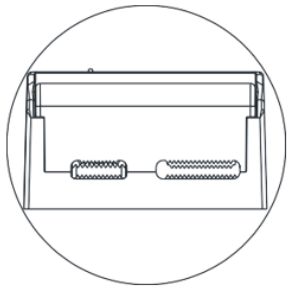
FIXING CONDITIONS & DIMENSIONS (MM)

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.



Size / Model	L1(min.)	L2(min.)	H(min.)
IL-DC9D	100mm	20mm	20mm
IL-DC13D	120mm	25mm	25mm





PACKAGING

Part Number	Dimension	Gross Weight	Net Weight	Qty/Carton
IL-DC9D	300 x 190 x 215mm	8.5kg	7.5kg	50pcs
IL-DC13D	300 x 190 x 215mm	8.5kg	7.5kg	50pcs

* This is typical value. Due to the driver is potted with silicon, which the potting weight is uncertainly, so the consistency of product weight can't be guaranteed. Expected ±5% weight deviation.

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