

LEDGEAR® Specification

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GENERAL GUIDELINES

Besides the 1-10V and Phase-cut dimming, the LEDGEAR® C4 and C5 housing also provide ON/OFF for option. They are independent control gear with clip-on strain-relief cap, and output current selectable for quick installation and fewer inventories.

These LED drivers provide constant current with flicker free, it is suitable for LED modules, input voltage 220-240Vac, output 24-40Vdc @250-1000mA, can be used as 6W-38W LED module driving engine.

3pcs 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. The push-fit terminals(2x2.5mm² Max.) help to reduce the installation time strain relief mechanical structure. DC cable is not included in the standard product, ask the sales before order!



LED Electronic Control Gear

ON/OFF Constant Current Output

With 24-40VDC 250mA-1000mA Adjustable Output Series

Product description

- ON/OFF LED constant current independent driver
- Output current selectable between 250 – 600mA(Preselected 250mA) & 650 – 1000mA(Preselected 650mA) to work with different power LED modules
- $\pm 5\%$ output current accuracy(under maximum load)
- 90°C Maximum case operation temperature(tc-point ¹)
- Built-in active PFC and passive NTC
- Pending certification: ENEC, CE, CB by TUV SUD, SAA, Ctick
- Reliable, Class II, SELV output according EN 61347
- Permissible AC cable 0.75-2.5mm² wire gauge, 3.5~10mm PVC jacket diameter
- Grow wire tested 650° for 30S and 850° for 5S
- Operating temperature ¹: -25°C ~ +50°C, the humidity: 20% ~ 85%
- Over 50,000 hrs nominal lifespan at tc=60°C
- Protection for output open load, short circuits, over voltage and over temperature
- 3-year(C428-40600B-F ,C445-401000B-F)& 5-year(C545-401000B-F) factory guarantee and lifetime technical support ¹

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

Features & Benefits

Flexibility & Optimized Inventory

- Both model covers wattages from 6W to 38W and differs in lifespan
- Wattage selectable by 3xDIP switches.
- 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
- Large wiring space
- Loop in and loop out function, max.2.5mm² cross section L, L, N, N stranded wire or solid wire
- Loose wiring inspection don't need to open the transparent end cap

Housing Properties

- Casing: polycarbonate, white housing but transparent end cap
- Type of protection IP20



Typical applications

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

LED Electronic Control Gear

ON/OFF Constant Current Output

With 24-40VDC 250mA-1000mA Adjustable Output Series

PARAMETERS

| MODEL | | C428-40600B-F | C445-401000B-F | C545-401000B-F |
|--------------|---|--|--|--|
| Output | DC voltage range | 24-40V | 24-40V(Output current≤0.9A) 24-38V(Output current>0.9A) | 24-40V(Output current≤0.9A) 24-38V(Output current>0.9A) |
| | Rated current | 250-600mA (selectable, preselected 250mA) | 650-1000mA (selectable, preselected 650mA) | 650-1000mA (selectable, preselected 650mA) |
| | Maximum power | 24W | 38W | 38W |
| | Current tolerance | ±5% | ±5% | ±5% |
| | Ripple voltage ² | 1000mVp-p | 1200mVp-p | 1200mVp-p |
| | Ripple current | 140mA _{p-p} | 160mA _{p-p} | 160mA _{p-p} |
| | Line regulation | ±2% | ±1% | ±1% |
| | Load regulation | ±3% | ±3% | ±2% |
| | Flicker percentage ³ | <3% | <3% | <3% |
| | Starting time | <500mS | <500mS | <500mS |
| | Turn off time | <1.0S | <1.0S | <1.0S |
| | Noise ⁴ | <20dB | <20dB | <20dB |
| Input | Voltage | Rated:220-240Vac; Range:198-264Vac; | | |
| | Frequency | Rated:50-60Hz; Range:47-63Hz; | | |
| | Power factor | ≥0.9; (Rated voltage input, rated current output conditions) | | |
| | I-THD | ≤15%; (Rated voltage input, rated current output conditions) | | |
| | Efficiency ⁵ | ≥87% | ≥86% | ≥87% |
| | AC current | 160mA max. | 250mA max. | 250mA max. |
| | Inrush current ⁶ | 20A | 32A | 32A |
| | Inrush current time | 36uS | 45uS | 45uS |
| | Leakage current | <1mA | <1mA | <1mA |
| | ON/OFF switches cycle | >100,000 | >100,000 | >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:3.75KVac | 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 ⁷ | 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 | | |
| Environment | Ambient temperature range ⁸ | -25°C ~ +50°C | -25°C ~ +45°C | -25°C ~ +50°C |
| | Max. case temperature (tc) ⁹ | 80°C | 90°C | 85°C |
| | Relative humidity range | 20% ~ 85%RH | 20% ~ 85%RH | 20% ~ 85%RH |
| | Storage temperature range | -30°C ~ +80°C | -30°C ~ +80°C | -30°C ~ +80°C |
| Connection | AC Connector | Looping Push-fit Terminals L, L, N, N; 0.75-2.5 mm ² cross-section | | Looping Push-fit Terminals L, L, N, N; 0.75-2.5 mm ² cross-section |
| | DC Connector | On request | On request | On request |
| | Output wire(type, length) | On request | On request | On request |

LED Electronic Control Gear

ON/OFF Constant Current Output

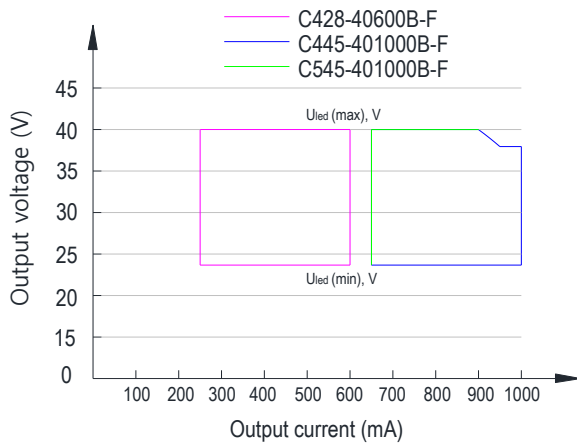
With 24-40VDC 250mA-1000mA Adjustable Output Series

| | | | | | |
|--|-------------------------------|-----|----------------------------|----------------------------|----------------------------|
| Max. No. of PSUS(Driver supply unit) on miniature circuit breaker(MCB) | MCB TYPE A | 10A | 37pcs @ full load | 27pcs @ full load | 27pcs @ full load |
| | | 16A | 60pcs @ full load | 43pcs @ full load | 43pcs @ full load |
| | | 20A | 75pcs @ full load | 54pcs @ full load | 54pcs @ full load |
| | MCB TYPE B | 10A | 40pcs @ full load | 26pcs @ full load | 26pcs @ full load |
| | | 16A | 65pcs @ full load | 42pcs @ full load | 42pcs @ full load |
| | | 20A | 81pcs @ full load | 52pcs @ full load | 52pcs @ full load |
| | MCB TYPE C | 10A | 47pcs @ full load | 30pcs @ full load | 30pcs @ full load |
| | | 16A | 75pcs @ full load | 48pcs @ full load | 48pcs @ full load |
| | | 20A | 94pcs @ full load | 60pcs @ full load | 60pcs @ full load |
| Others | Dimming control mode | | Non-dimming | Non-dimming | Non-dimming |
| | Lifetime(hrs)@tc=60°C | | > 60,000H | > 50,000H | > 70,000H |
| | MTBF [MIL-HDBK-217F(ta=25°C)] | | 190.8K Hrs min | 206.5K Hrs min | 268K Hrs min |
| | Glow wire test | | 850°C for 5S;650°C for 30S | 850°C for 5S;650°C for 30S | 850°C for 5S;650°C for 30S |
| | Dimension L x W x H | | 86 x 52 x 30mm | 86 x 52 x 30mm | 115 x 52 x 30mm |
| | Warranty years | | 3 years | 3 years | 5 years |
| (*If demand other output voltage and output current, contact your sales consultant or contact us: www.kinglumi.com) | | | | | |

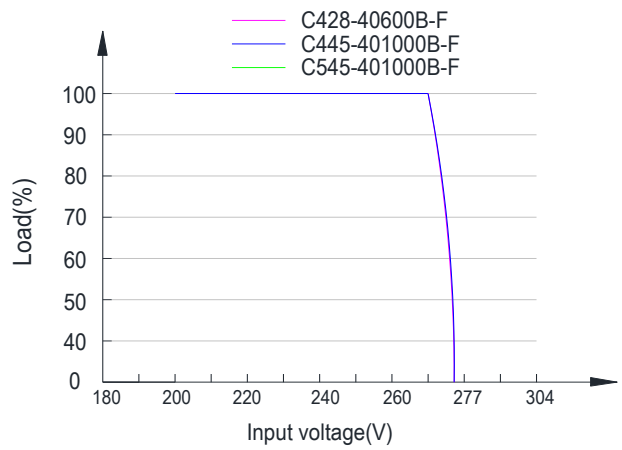
- “2” Ripple voltage is measured at 20MHz of bandwidth by using a 12” twisted pair-wire terminated with a 100nF & 47uF parallel capacitor.
- “3” The flicker for frequencies of 200 Hz or below, input voltage 230Vac, at 100% output current ripple is defined as $[(I_{max} - I_{min}) / (I_{max} + I_{min})] * 100\%$ (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 1ft (305mm) inside chamber.
- “5” The typical efficiency is test data of output current at input @230Vac with 36V output voltage, maximum output current.
- “6” The inrush current. is test data of 230Vac input, cold start, measured at input current peak.
- “7” 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.
- “8” For other than independent use, higher ta of the control gear possible as long as highest allowed tc point temperature is not exceeded.
- “9” 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

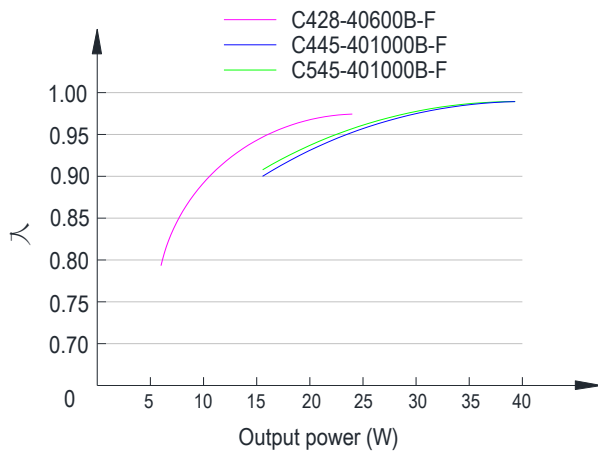
Operating window



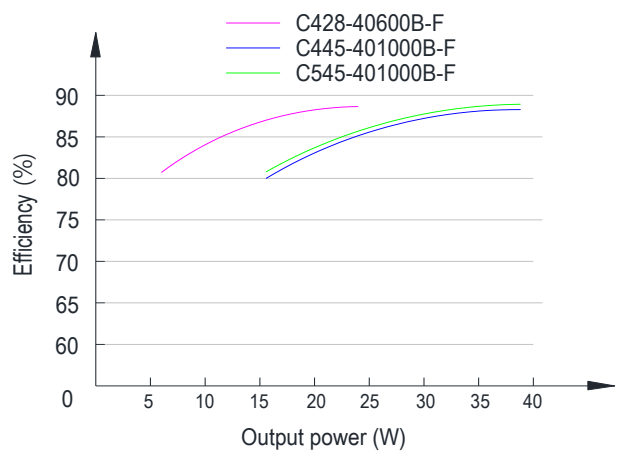
Typical load output



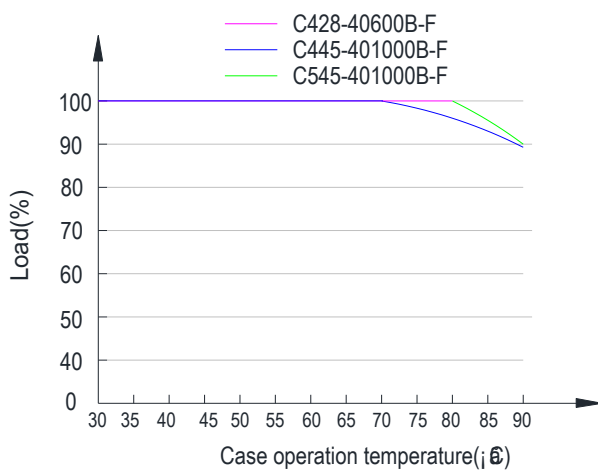
Typical power factor



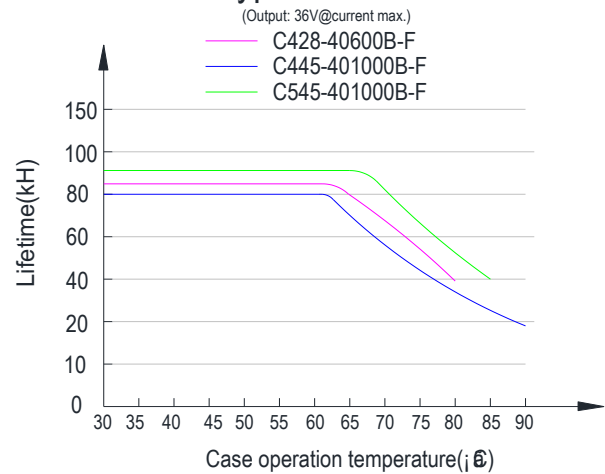
Typical efficiency



Typical case temperature(tc)



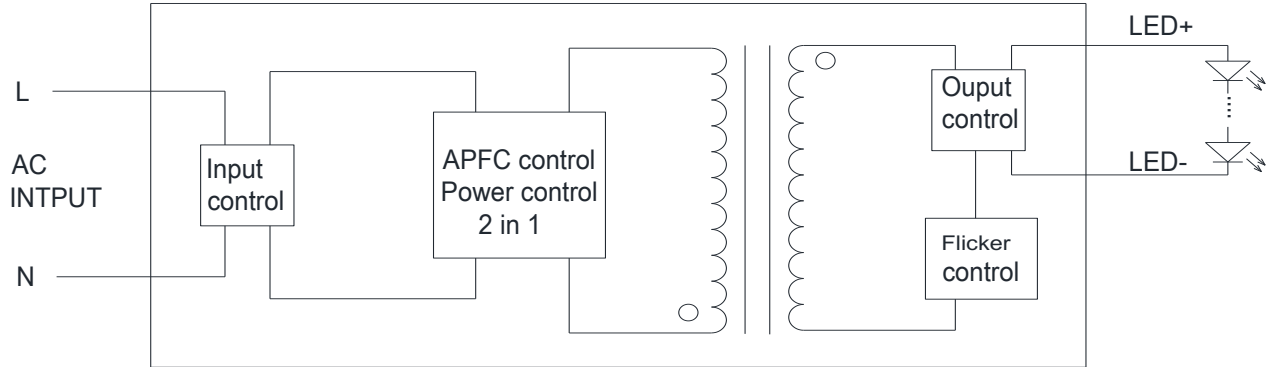
Typical lifetime



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 ON/OFF Constant Current Output
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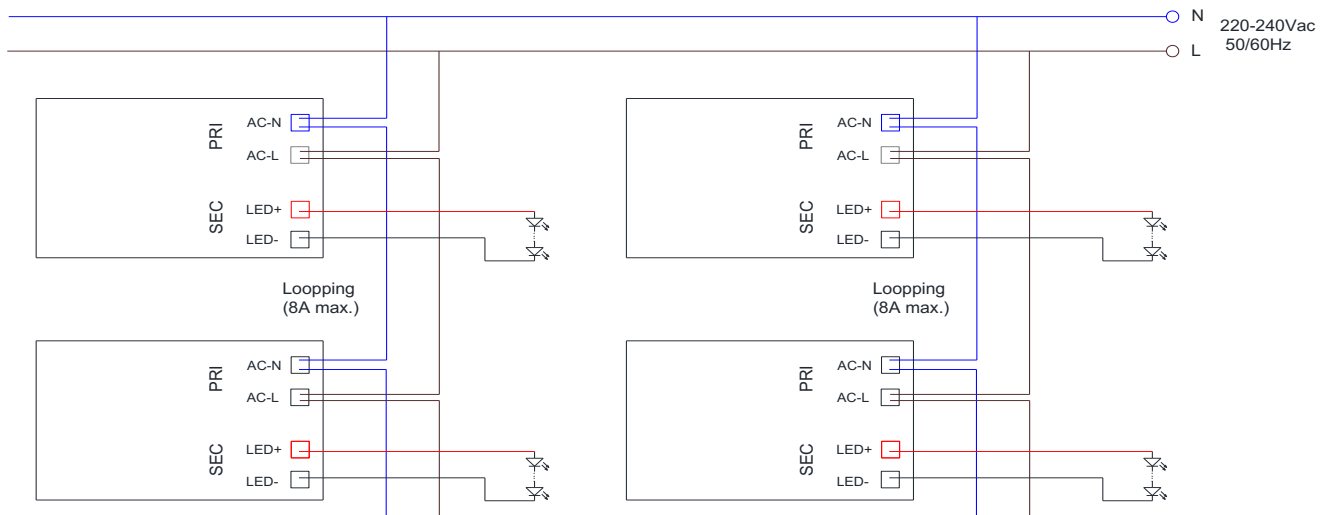
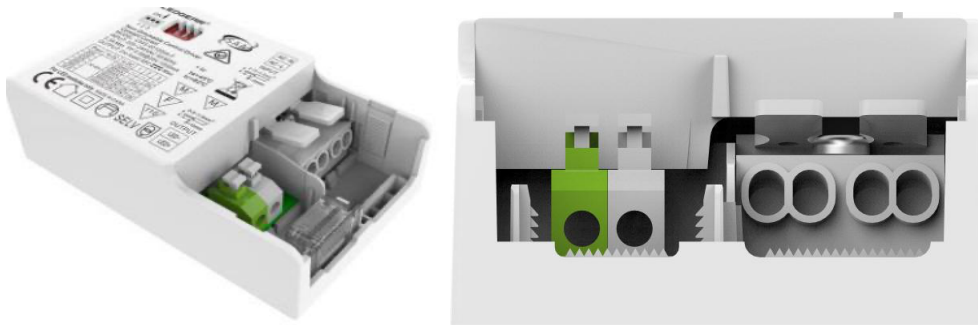
DIAGRAM & INSTALLATION MANUAL

Isolated flicker-free circuit (Fly-back)



Looping Circuit diagram

These LEDGEAR® 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.





LED Electronic Control Gear

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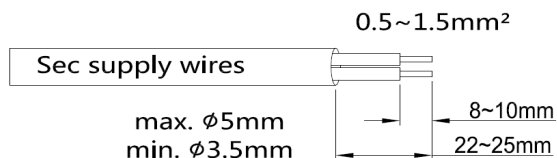
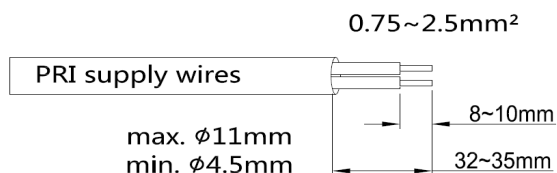
DIP Switch Table

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

|  | | | | C428-40600B-F; | | |  | | | |
|---|--|----|----|----------------|----------|--|---|----|----|--|
| DIP S.W. | | 1 | 2 | 3 | DIP S.W. | | 1 | 2 | 3 | |
| lout | | | | | lout | | | | | |
| 250mA | | - | - | - | 650mA | | - | - | - | |
| 300mA | | - | - | ON | 700mA | | - | - | ON | |
| 350mA | | - | ON | - | 750mA | | - | ON | - | |
| 400mA | | - | ON | ON | 800mA | | - | ON | ON | |
| 450mA | | ON | - | - | 850mA | | ON | - | - | |
| 500mA | | ON | - | ON | 900mA | | ON | - | ON | |
| 550mA | | ON | ON | - | 950mA | | ON | ON | - | |
| 600mA | | ON | ON | ON | 1000mA | | ON | ON | ON | |

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



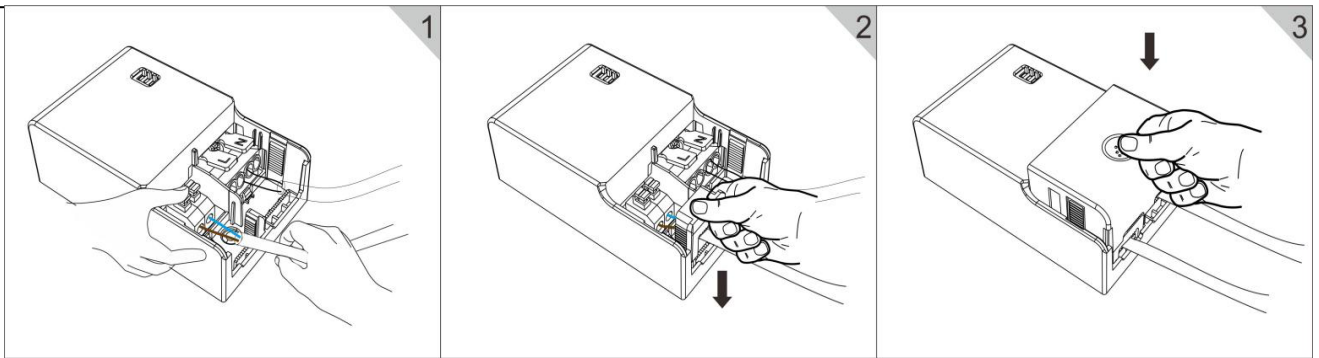
Wiring guidelines

- 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
- 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.)

LED Electronic Control Gear

ON/OFF Constant Current Output

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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 I_{peak} | Typ. peak inrush current I_{peak} | 1/2 value time, Δt | Calculated energy, $I_{peak}^2 \Delta t$ |
|---------------------------------------|--|--|---|
| 48pcs | 36A | 80uS | 0.104A ² s |
| | | <p>Example calculation of total drivers amount limited by continuous current: $n(I_{cont}) = (16 \text{ A} (I_{nom, ta}) / \text{“nominal mains current with full load”}) \times 0.75$. 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.

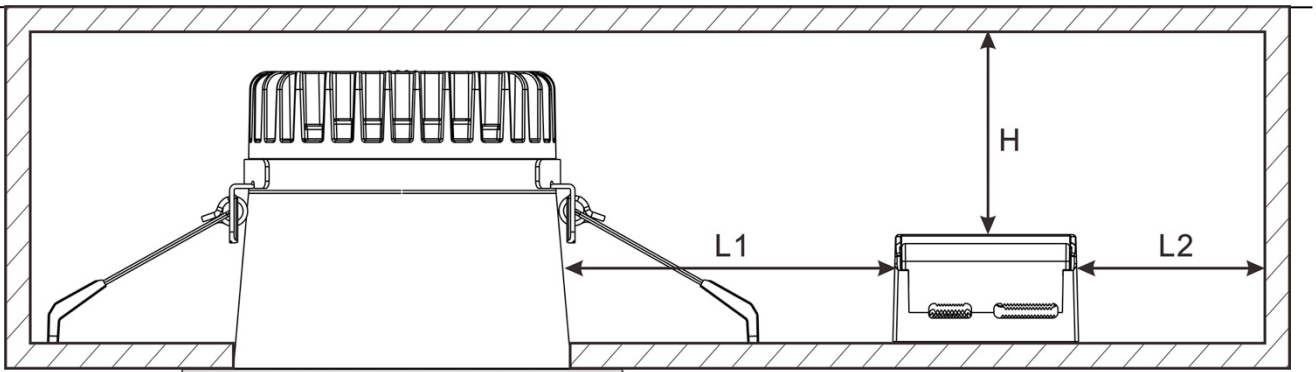
Fixing conditions

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

LED Electronic Control Gear

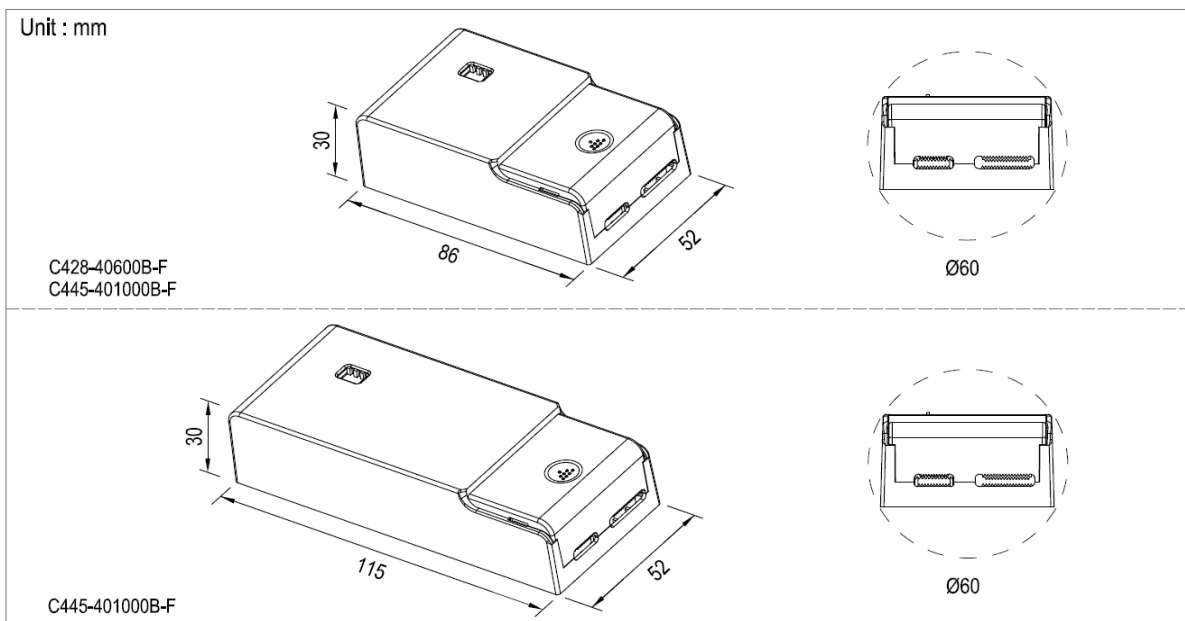
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| Model | Size | L1(min.) | L2(min.) | H(min.) |
|----------------|------|----------|----------|---------|
| C428-40600B-F | | 70mm | 20mm | 20mm |
| C445-401000B-F | | 120mm | 20mm | 30mm |
| C545-401000B-F | | 70mm | 20mm | 20mm |

MECHANICAL



PACKAGING

| Part Number | Dimension | Gross Weight | Net Weight | Qty/Carton |
|----------------|-------------------|--------------|------------|------------|
| C428-40600B-F | 300 x 190 x 215mm | 7.5kg | 6.5kg | 50pcs |
| C445-401000B-F | 300 x 190 x 215mm | 8kg | 7kg | 50pcs |
| C545-401000B-F | 300 x 265 x 265mm | 10kg | 8.5kg | 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 $\pm 6\%$ weight deviation.

ACCESSORIES

Extension Cable



| Order Code | One End | Another End | Length(mm) | Color |
|--------------|-------------------------|-----------------------|------------|-------|
| 1.05.06.0412 | DC5521 Female with lock | DC5521 Male with lock | 500 | Black |
| 1.05.06.0413 | DC5521 Female with lock | DC5521 Male with lock | 500 | White |
| 1.05.06.0414 | DC5521 Female with lock | DC5521 Male with lock | 1000 | Black |
| 1.05.06.0415 | DC5521 Female with lock | DC5521 Male with lock | 1000 | White |

Ways Splitter



| Order Code | One End | Another End | Length(mm) | Color |
|--------------|-----------------------|----------------------------|------------|-------|
| 1.05.06.0417 | DC5521 Male with lock | 2way DC5521 Male with lock | 575 | White |
| 1.05.06.0418 | DC5521 Male with lock | 3way DC5521 Male with lock | 575 | White |
| 1.05.06.0406 | DC5521 Male with lock | 4way DC5521 Male with lock | 100 | White |

Cable Adapters Convert



| Order Code | One End | Another End | Length(mm) | Color |
|--------------|-----------------------|-------------|------------|-------|
| 1.05.06.0303 | DC5521 Male with lock | FL4.14 Male | 30 | Black |

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| | | | | |
|--------------|-----------------------|-------------|----|-------|
| 1.05.06.0416 | DC5521 Male with lock | FL4.14 Male | 30 | White |
|--------------|-----------------------|-------------|----|-------|

Strip DC 5521 Female Connector



| Order Code | One End | Another End | Length(mm) | Color |
|--------------|--|-------------------------|------------|-------|
| 1.05.06.0420 | Strip 8mm of cord, and 30mm of the cables jacket | DC5521 Female with lock | 225 | Black |
| 1.05.06.0419 | Strip 8mm of cord, and 30mm of the cables jacket | DC5521 Female with lock | 225 | White |

LED Electronic Control Gear

ON/OFF Constant Current Output

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VERSION #

| # | MODIFICATIONS | Date. |
|----|-------------------------------------|------------|
| 1 | Version 1.0 | 2020.04.07 |
| 2 | Version 2.0 Add model : C428-40600B | 2020.9.10 |
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