

# CC LINEAR DIP SWITCH



## COMFORTLINE DIP SWITCH L-R2 120 V

**187061**

### Typical Applications

Built-in in linear luminaires for

- Office lighting
- Industry lighting

### ComfortLine DIP switch L-R2 120 V

- **SELECTABLE OUTPUT CURRENT VIA DIP SWITCH**
- **VERY LOW RIPPLE CURRENT: < 2%**
- **WIDE INPUT VOLTAGE RANGE: 120-240 V**
- **LONG SERVICE LIFE:  
UP TO 100,000 HRS.**
- **PRODUCT GUARANTEE: 5 YEARS**



## ComfortLine DIP switch L-R2 120 V

### Product features

- Linear casing shape

### Functions

- Selectable current output via DIP switch

### Electrical features

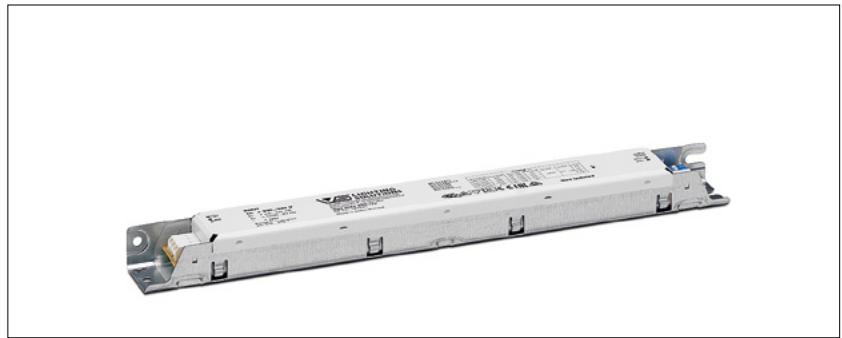
- Mains voltage: 120–240 V  $\pm 10\%$
- Mains frequency: 50–60 Hz
- Push-in terminals: 0.5–1.5 mm<sup>2</sup>
- Power factor at full load: 0.95
- Max. working voltage (U<sub>OUT</sub>): 250 V
- Secondary side switching of LED modules is not allowed.

### Safety features

- Protection against transient main peaks up to 1 kV (between L and N) and up to 2 kV (between L, N and PE)
- Electronic short-circuit protection
- Overload protection
- Protection against "no load" operation
- Degree of protection: IP20
- Protection class I

### Packaging units

Ref. No.	Packaging unit		Weight g
	Pieces per box	Boxes per pallet	
187061	30	64	169



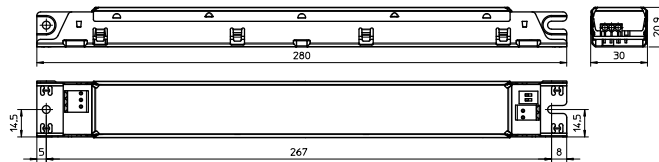
### Applied standards

- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 61000-3-2
- EN 62384
- EN 55015



### Dimensions

- Casing: M7.1
- Length: 280 mm
- Width: 30 mm
- Height: 20.9 mm



### Product guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage ([www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)). We will be happy to send you these conditions upon request.

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

# LED Drivers – ComfortLine DIP switch L-R2 120 V

## Electrical characteristics

Max. output W	Type	Ref. No.	Voltage 50–60 Hz V	Mains current mA	Inrush current A / $\mu$ s	Current output DC mA ( $\pm$ 5%)	Voltage output DC (V)	THD at full load % (230 V)	Efficiency at full load % (230 V)	Ripple 100 Hz %
42	ECXe 600.442	187061	120–240	390–200	28 / 232	450	35–93	< 14	> 91,5	< 2
						500	35–84			
						550	35–76			
						600	35–70			

## Maximum ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the drivers.

Ref. No.	Ambient temperature range		Operation humidity range		Storage temperature range		Storage humidity range		Max. operation temperature at $t_c$ point °C	Degree of protection
	°C min.	°C max.	% min.	% max.	°C min.	°C max.	% min.	% max.		
187061	-25	+60	5	60	-40	+85	5	95	+70	IP20

## Expected service life time

at operation temperatures at  $t_c$  point

Operation current	Ref. No. 187061	
All	60 °C	70 °C
hrs.	100,000	50,000

## DIP switch settings

Pin 1	Pin 2	Operation current (mA) 187061
OFF	OFF	450
ON	OFF	500
OFF	ON	550
ON	ON	600

## Product labels

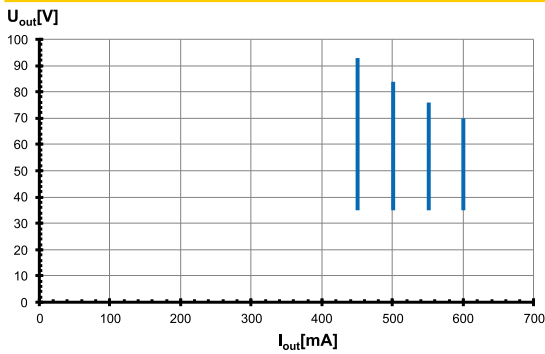
	<b>INPUT</b> $U_N = 120...240 V\sim$ $I_N = 390...200 mA$ $f_N = 50...60 Hz$ $\gamma = 0,95$	<b>LIGHTING SOLUTIONS</b> Vossloh-Schwabe Deutschland GmbH Hohe Steinert 8, D-58509 Lüdenscheid Electronic converter for LED <b>Type ECXe 600.442</b> Ref.-No. 187061 Made in Serbia (Europe)	EN 61347-1 EN 61347-2-13 EN 62384 EN 61547 EN 55015 EN 61000-3-2	<b>OUTPUT</b>																												
	<table border="1"> <thead> <tr> <th>Pin1</th> <th>Pin2</th> <th>I<sub>rated</sub> (mA)</th> <th>U<sub>rated</sub> (V)</th> <th>P<sub>rated</sub> (W)</th> <th>U<sub>out</sub> (V)</th> <th>t<sub>g</sub> (°C)</th> <th>t<sub>c</sub> (°C)</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>450</td> <td>35...93</td> <td>42</td> <td rowspan="4">&lt; 250</td> <td rowspan="4">-25...60</td> <td rowspan="4">75</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>500</td> <td>35...84</td> <td>42</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>550</td> <td>35...76</td> <td>42</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>600</td> <td>35...70</td> <td>42</td> </tr> </tbody> </table>			Pin1		Pin2	I <sub>rated</sub> (mA)	U <sub>rated</sub> (V)	P <sub>rated</sub> (W)	U <sub>out</sub> (V)	t <sub>g</sub> (°C)	t <sub>c</sub> (°C)	OFF	OFF	450	35...93	42	< 250	-25...60	75	ON	OFF	500	35...84	42	OFF	ON	550	35...76	42	ON	ON
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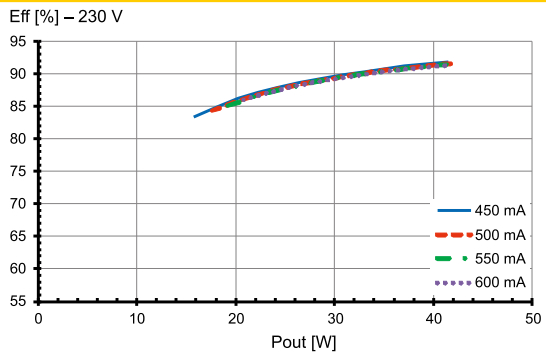
# LED Drivers – ComfortLine DIP switch L-R2 120 V

## Typ. performance graphs for 187061 / Type ECXe 600.442

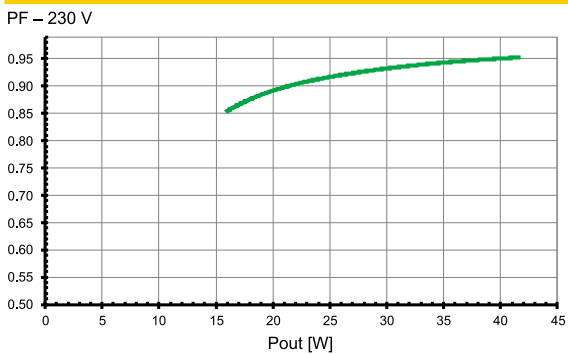
### Working area



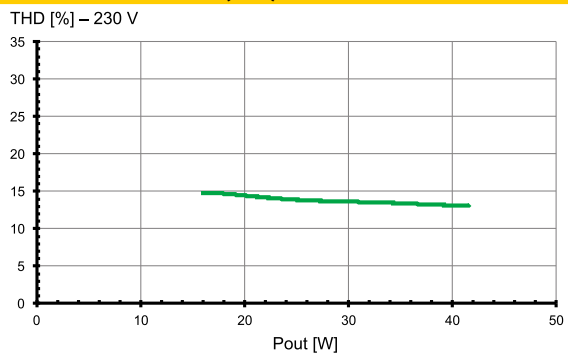
### Efficiency at 230 V



### Power factor at 230 V

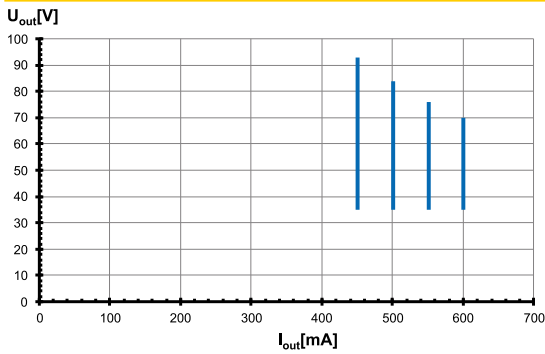


### Total harmonic factor (THD) at 230 V

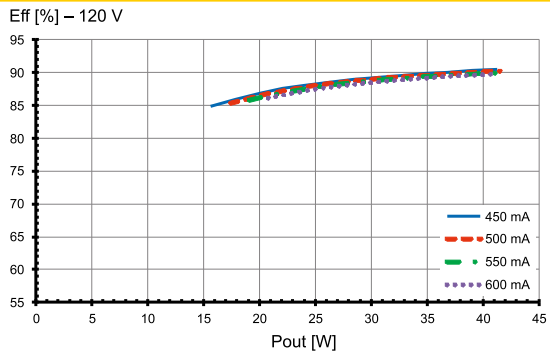


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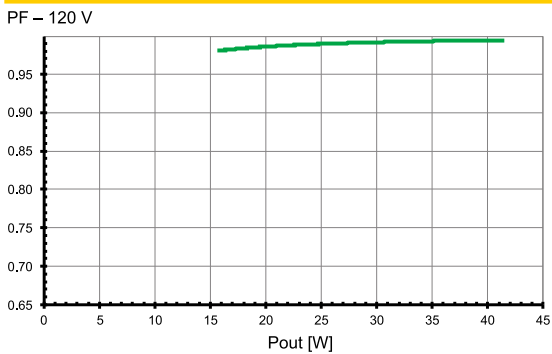
### Working area



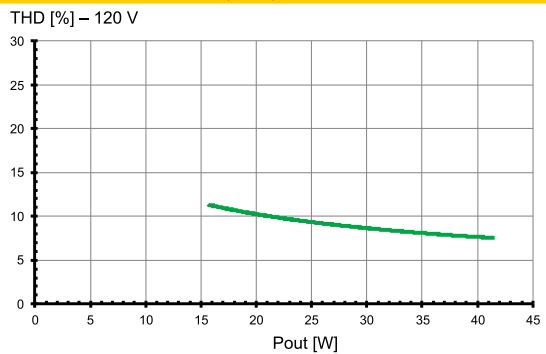
### Efficiency at 120 V



### Power factor at 120 V



### Total harmonic factor (THD) at 120 V



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## Safety functions

- Transient mains peaks protection:  
Values are in compliance with EN 61547  
(interference immunity).  
Surges between L-N: up to 1 kV  
Surges between L/N-PE: up to 2 kV
- Short-circuit protection: The control gears are protected against permanent short-circuit with automatic restart function.
- Overload protection: The control gears only work in range of rated output power and voltage problemfree.  
Please check before switch-on mains power supply that the selected LED load is suitable (see Electrical Characteristics on data sheet).
- No load operation: The control gear is protected against no load operation (open load).
- If any of the above mentioned safety functions will be triggered, disconnect the control gear from the power supply then find and eliminate the cause of the problem.

## Output voltage ( $U_{OUT}$ )

According to EN 61347-1,  $U_{OUT}$  indicates which voltage can occur at the output terminals directly or between the output terminals and the PE terminal of the LED driver. This value is given for non-insulated drivers. The used LED module must have an insulation voltage that is at least as high as the specified  $U_{OUT}$  voltage of the driver.

## Leakage current

Leakage currents are present in all electronic converters or luminaires with PE connection and must be observed especially when using non-insulated LED drivers.

The PCB surfaces of LED modules form a capacitance with grounded LED aluminum circuit boards, heat sinks or mounting plates. This leads to capacitive leakage currents between the connection poles of the LED (+ and -) and the PE terminal. These capacitances should be kept as small as possible, since they are responsible for a possible glowing or flickering of the LEDs in standby mode. In extreme cases, the maximum permissible leakage current of the luminaire according to EN 60598 paragraph 10.3 may be exceeded. The leakage current is also relevant when using RCD circuit breakers.

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## Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advices must be observed; non-observance can result in the destruction of the LED drivers, fire and/or other hazards.

### Mandatory regulations

- DIN VDE 0100
- EN 60598-1

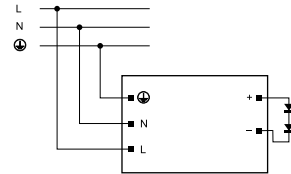
### Mechanical mounting

- Mounting position: Built-in: Any position inside a luminaire is allowed  
Independent application: Drivers are not allowed to use for independent applications
- Mounting location: LED drivers are designed for integration into luminaires or comparable devices.  
Installation in outdoor luminaires: degree of protection for luminaire with water protection rate  $\geq 4$  (e.g. IP54 required).
- Degree of protection: IP20
- Clearance: Min. 0.10 m from walls, ceilings and insulation
- Surface: Solid and plane surface for optimum heat dissipation required.
- Heat transfer: If the driver is destined for installation in a luminaire, sufficient heat transfer must be ensured between the driver and the luminaire casing.  
LED drivers should be mounted with the greatest possible clearance to heat sources.  
During operation, the temperature measure at the driver's  $t_c$  point must not exceed the specified maximum value.
- Fastening: Using M4 screws in the designated holes

### Electrical installation

- Connection terminals: Push-in terminals for rigid conductors with a section of 0.5–1.5 mm<sup>2</sup>; AWG20-16
- Stripped length: 8–9 mm
- Wiring: The mains conductor within the luminaire must be kept short (to reduce the induction of interference).  
Mains and lamp conductors must be kept separate and if possible should not be laid in parallel to one another.
- Polarity: Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.

- Secondary load: The sum of forward voltages of LED loads has to be within the tolerances which are mentioned in the table "Electrical Characteristics" in this data sheet.
- Wiring diagram:



### Selection of automatic cut-outs for VS LED drivers

- Dimensioning automatic cut-outs  
High transient currents occur when an LED driver is switched on because the capacitors have to load. Ignition of LED modules occurs almost simultaneously. This also causes a simultaneous high demand for power. These high currents when the system is switched on put a strain on the automatic conductor cut-outs, which must be selected and dimensioned to suit.
- Release reaction  
The release reaction of the automatic conductor cut-outs comply with VDE 0641, part 11, for B, C characteristics. The values shown in the following tables are for guidance purposes only and are subject to system-dependent change.
- No. of LED drivers  
The maximum number of VS LED drivers applies to cases where the devices are switched on simultaneously. Specifications apply to single-pole fuses. The number of permissible drivers must be reduced by 20% for multi-pole fuses. The considered circuit impedance equals 400 m $\Omega$  (approx. 20 m [2.5 mm<sup>2</sup>] of conductor from the power supply to the distributor and a further 15 m to the luminaire).

Type	Ref. No.	Automatic cut-out type and possible no. of VS drivers pcs.					
<b>Automatic cut-out type</b>		B 10 A	B 13 A	B 16 A	C 10 A	C 13 A	C 16 A
ECXe 600.442	<b>187061</b>	11	15	19	19	25	31

- To limit capacitive inrush currents the current carrying capacity of each circuit breaker (fuse) can be increased with the help of our ESB (Ref. No.: 149820, 149821, 149822) inrush current limiters.

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