CC COMPACT LEDSET

COMFORTLINE LEDSET C-R1

186650, 186664

Typical Applications
Built-in in compact luminaires for
- Shop lighting
- Downlights

LED⋈set 1

ComfortLine LEDSet C-R1

- **SELECTABLE OUTPUT CURRENT VIA LEDSET**
- **VERY LOW RIPPLE CURRENT: < 1%**
- **SELV**
- **LONG SERVICE LIFE: UP TO 100,000 HRS.**
- **PRODUCT GUARANTEE: 5 YEARS**

5 YEARS GUARANTEE

LIGHTING SOLUTIONS
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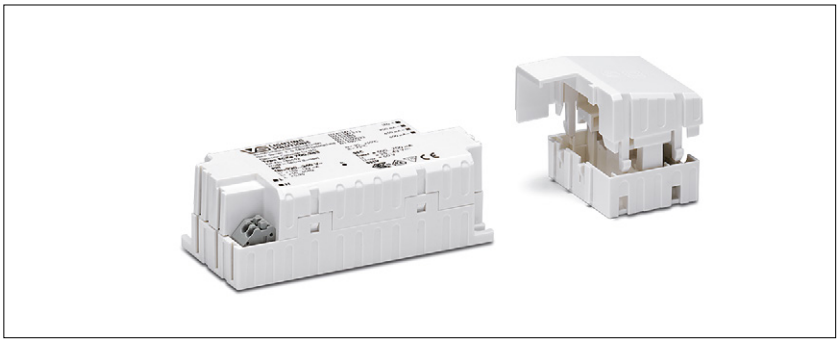
ComfortLine LEDSet C-R1



Product features
- Compact casing shape

Functions
- Selectable current output by secondary side LEDSet terminal.
- The output current can be freely adjusted between 150 mA and 1050 mA by using a resistor (according LEDSet standard).

Electrical features
- Mains voltage: 220–240 V ±10%
- Mains frequency: 50–60 Hz
- Push-in terminals: 0.2–1.5 mm²
- Power factor at full load: > 0.95
- Open circuit voltage ($U_{max.}$): 60 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)
- Electronic short-circuit protection
- Overload protection
- Overtemperature protection
- Protection against "no load" operation
- Degree of protection: IP20
- Protection class II
- SELV

Packaging units

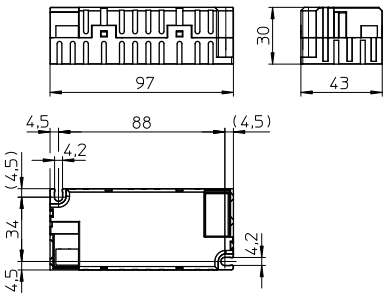
Ref. No.	Packaging unit		
	Pieces per box	Boxes per pallet	Weight g
186650	18	75	120
186664	18	75	125

186650

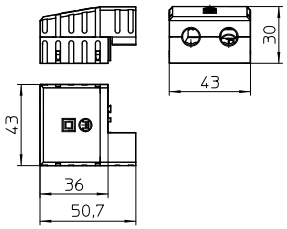
50 000 hours Min. Service Lifetime

Guarantee 5 years

Dimensions
- Casing: K33.1
- Length: 97 mm
- Width: 43 mm
- Height: 30 mm



Cord grip for K33.1
Available for independent operation
Contains two cord grips
Ref. No.: 186690



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

Current adjustment

LED set 1

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). We will be happy to send you these conditions upon request.

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Electrical characteristics

Max. output W	Type	**Ref. No.**	Voltage 50–60 Hz V	Mains current mA	Inrush current A / µs	Current output DC mA (± 5%)	Voltage output DC (V)	THD at full load % (230 V)	Efficiency at full load % (230 V)	Ripple 100 Hz %
39	ECXe 900.241	**186650**	220–240	205–190	21 / 274	150–900	25–43	12	> 90	0.5
45	ECXe 1050.251	**186664**	220–240	230–213	21 / 274	150–1050	25–43	12.5	> 90	0.5

Maximum ratings

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

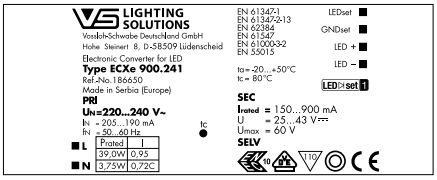
Ref. No.	Ambient temperature range		Operation humidity range		Storage temperature range		Storage humidity range		Max. operation temperature at t_c point	Degree of protection
	°C min.	°C max.	% min.	% max.	°C min.	°C max.	% min.	% max.	°C	
All types	–20	+50	5	95	–40	+80	5	95	+80	IP20

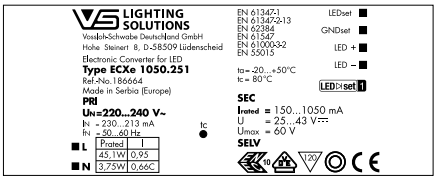
Expected service life time

at operation temperatures at t_c point

Operation current	Ref. No. 186650, 186664	
All	70 °C	80 °C
hrs.	100,000	50,000

Product labels





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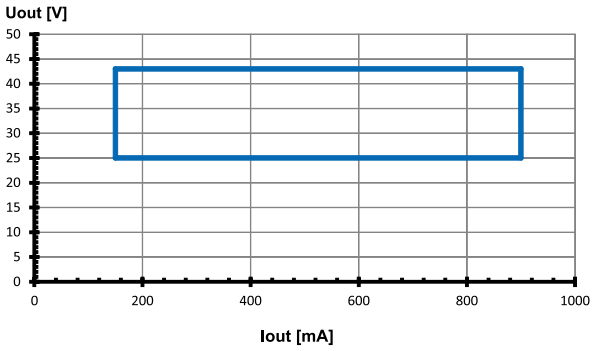
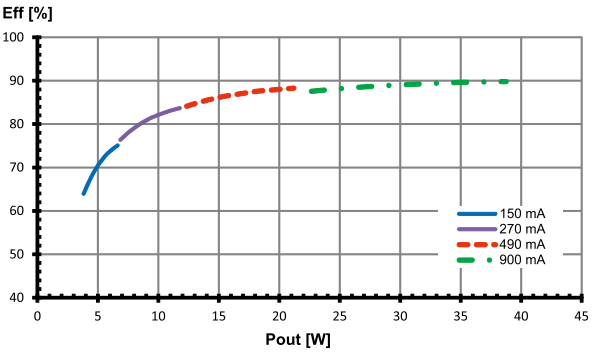
Typ. performance graphs for 186650 / Type ECXe 900.241

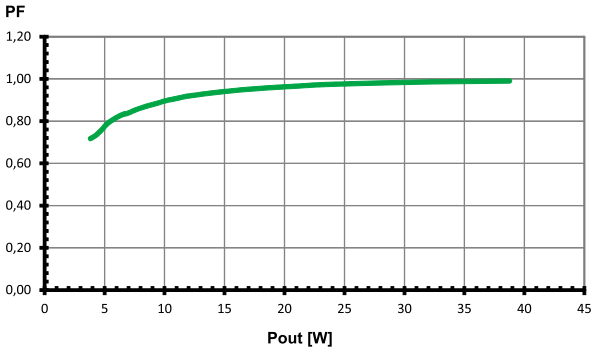
Working area



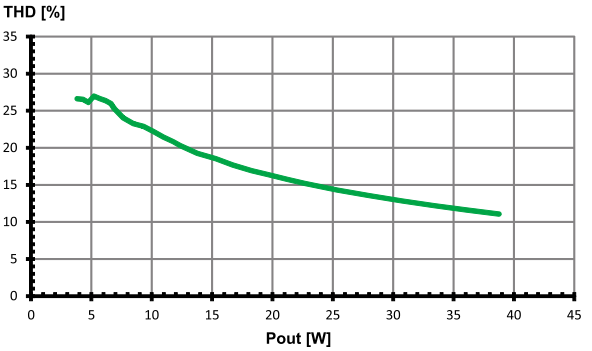
Efficiency



Power factor

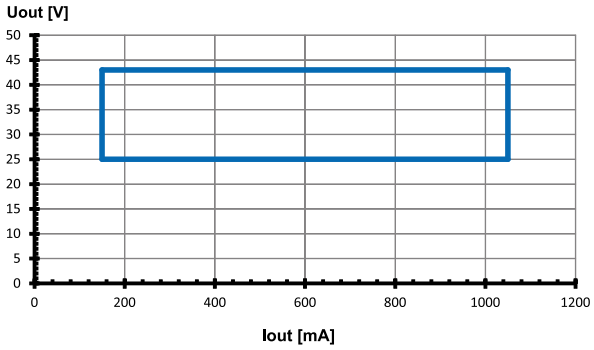


Total harmonic factor (THD)

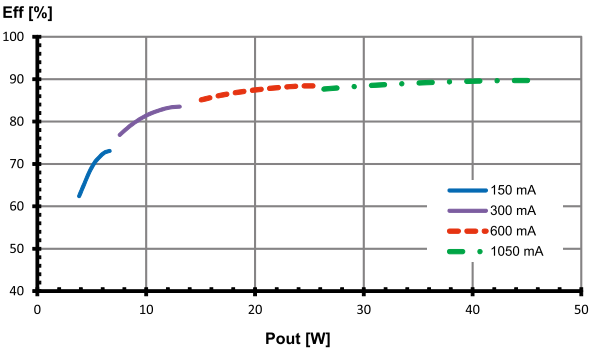


Typ. performance graphs for 186664 / Type ECXe 1050.251

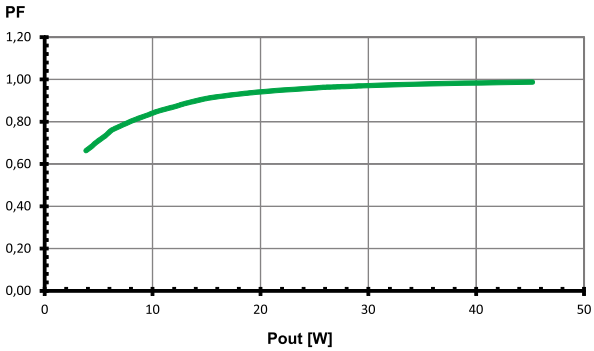
Working area



Efficiency



Power factor



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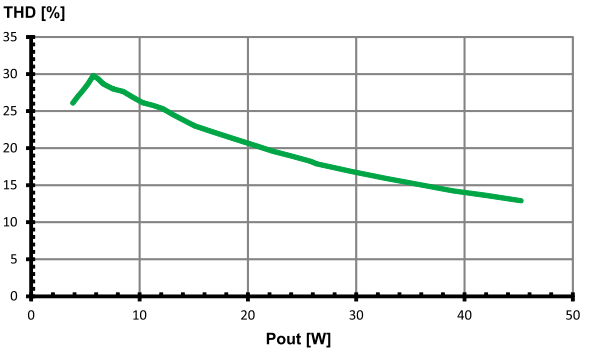

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Safety functions

- Transient mains peaks protection:
  Values are in compliance with EN 61547 (interference immunity).
  Surges between L–N: up to 1 kV
- Short-circuit protection: The control gear is protected against permanent short-circuit with automatic restart function.
- Overload protection: The control gear only works in range of rated output power and voltage problemfree (< 60 V DC).
  Please check before switch-on mains power supply that the selected LED load is suitable (see Electrical Characteristics on data sheet).
- Overheating: The control gear has overheating protection. In case of overheating the output current of the control gear will be reduced. After the temperature will drop below the critical temperature value, the output current rises again to the previously set value.
- 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.

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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

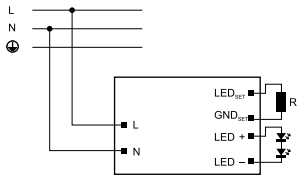
- DIN VDE 0100
- EN 60598-1

Mechanical mounting

- Mounting position: Built-in: Any position inside a luminaire is allowed
  Independent application: Drivers are allowed to use for independent applications with separate cord grip (Ref. No.: 186690).
- Mounting location: LED drivers are designed for integration into luminaires or comparable devices.
  Independent LED drivers do not need to be integrated into a casing.
  Installation in outdoor luminaires: degree of protection for luminaire with water protection rate ≥ 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
- Tightening torque: 0.2 Nm

Electrical installation

- Connection terminals: Push-in terminals for rigid or flexible conductors with a section of 0.2–1.5 mm²
- Stripped length: 8.5–10 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.
  Max. secondary side lead length: 0.8 m
- Polarity: Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Through-wiring: Is not allowed.
- Secondary load: The sum of forward voltages of LED loads is within the tolerances which are mentioned in the Electrical Characteristics on the data sheet.
- Parallel wiring: Parallel connection of LED loads is not allowed.
- 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 mΩ (approx. 20 m [2.5 mm²] 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.		
Automatic cut-out type B		B 10 A	B 13 A	B 16 A
ECXe 900.241	**186650**	14	18	22
ECXe 1050.251	**186664**	14	18	22
Automatic cut-out type C		C 10 A	C 13 A	C 16 A
ECXe 900.241	**186650**	23	30	37
ECXe 1050.251	**186664**	23	30	37

– To limit capacitive inrush currents the current carrying capacity of each circuit breaker (fuse) can be increased by a factor of 2.5 with the help of our ESB (Ref. No.: 149820, 149821, 149822) inrush current limiters.

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Choice of LEDSet Resistor

Output current selection:

- The output current can be adapted within the rated output current range
  - between 150 and 900 mA for ECXe 900.241 and
  - between 150 and 1050 mA for ECXe 1050.251.
- To change the output current it is necessary to use the correct LEDSet resistor. Values for different currents are figured out in the table below.
- The LEDSet resistor should have a maximum tolerance of 1%.
- Please refer to the electrical values and the operating window to see which combinations are possible.
- Output current / needed LEDSet resistor can be calculated as follows:
  I_{OUT} = 5V/Rset × 1000
  R_{set} = 5V/I_{OUT} × 1000
- If no LEDSet resistor is mounted (delivery condition) output current is less than nominal $I_{min.}$
- If LEDSet interface is short circuit output current is limitied to $I_{max.}$

Resistors		**ECXe 900.241**				**ECXe 1050.251**			
Nominal current	Resistor	LED output voltage		LED nominal output		LED output voltage		LED nominal output	
I_{rated}	R	U_{LED}		P_{rated}		U_{LED}		P_{rated}	
mA	kΩ	V min.	V max.	W min.	W max.	V min.	V max.	W min.	W max.
150	33.33	25	43	3.75	6.45	25	43	3.75	6.45
175	28.57	25	43	4.38	7.53	25	43	4.38	7.53
200	25.00	25	43	5.00	8.60	25	43	5.00	8.60
225	22.22	25	43	5.63	9.68	25	43	5.63	9.68
250	20.00	25	43	6.25	10.75	25	43	6.25	10.75
275	18.18	25	43	6.88	11.83	25	43	6.88	11.83
300	16.67	25	43	7.50	12.90	25	43	7.50	12.90
325	15.39	25	43	8.13	13.98	25	43	8.13	13.98
350	14.29	25	43	8.75	15.05	25	43	8.75	15.05
375	13.33	25	43	9.38	16.13	25	43	9.38	16.13
400	12.50	25	43	10.00	17.20	25	43	10.00	17.20
425	11.76	25	43	10.63	18.28	25	43	10.63	18.28
450	11.11	25	43	11.25	19.35	25	43	11.25	19.35
475	10.53	25	43	11.88	20.43	25	43	11.88	20.43
500	10.00	25	43	12.50	21.50	25	43	12.50	21.50
525	9.52	25	43	13.13	22.58	25	43	13.13	22.58
550	9.09	25	43	13.75	23.65	25	43	13.75	23.65
575	8.70	25	43	13.38	24.73	25	43	13.38	24.73
600	8.33	25	43	15.00	25.80	25	43	15.00	25.80
625	8.00	25	43	15.63	26.88	25	43	15.63	26.88
650	7.69	25	43	16.25	27.95	25	43	16.25	27.95
675	7.41	25	43	16.88	29.03	25	43	16.88	29.03
700	7.14	25	43	17.50	30.10	25	43	17.50	30.10
725	6.90	25	43	18.13	31.18	25	43	18.13	31.18
750	6.67	25	43	18.75	32.25	25	43	18.75	32.25
775	6.45	25	43	19.38	33.33	25	43	19.38	33.33
800	6.25	25	43	20.00	34.40	25	43	20.00	34.40
825	6.06	25	43	20.63	35.48	25	43	20.63	35.48
850	5.88	25	43	21.25	36.55	25	43	21.25	36.55
875	5.71	25	43	21.88	37.63	25	43	21.88	37.63
900	5.56	25	43	22.50	38.70	25	43	22.50	38.70
925	5.41	–	–	–	–	25	43	23.13	39.78
950	5.26	–	–	–	–	25	43	23.75	40.85
975	5.13	–	–	–	–	25	43	24.38	41.93
1000	5.00	–	–	–	–	25	43	25.00	43.00
1025	4.88	–	–	–	–	25	43	25.63	44.08
1050	4.76	–	–	–	–	25	43	26.25	45.15

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