LINEAR LED DRIVERS

ComfortLine – SELECTABLE CURRENT (OUTPUT TERMINAL)

186443, 186444, 186486, 186487, 186488, 186491, 186492, 186737

Typical Applications
Built-in in linear luminaires for
- Office lighting

ComfortLine – with selectable current

- **SELECTABLE OUTPUT CURRENT (OUTPUT TERMINAL)**
- **LINEAR SHAPE**
- **VERY LOW RIPPLE CURRENT**
- **LONG SERVICE LIFETIME: UP TO 100,000 HRS.**
- **PRODUCT GARANTUEE: 5 YEARS**

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ComfortLine LED Drivers – with Selectable Current

Product features
- Linear casing shape

Functions
- The required current output can be chosen by selecting the respective pin at the output terminal.

Electrical features
- Mains voltage: 220–240 V ±10% (allowed voltage range: 198–264 V)
- Mains frequency: 50–60 Hz
- Push-in terminals: 0.2–1.5 mm²
- Power factor at full load: > 0.97
- Max. operation voltage without load (U_{OUT}): 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
- Overtemperature protection
- Protection against "no load" operation
- Degree of protection: IP20
- Protection class I

Packaging units

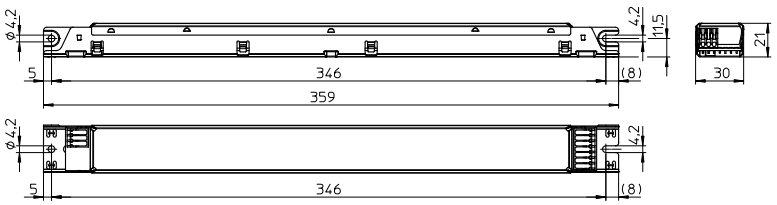
Ref. No.	Packaging unit		
	Pieces per box	Boxes per pallet	Weight g
186443	20	48	250
186444	20	48	227
186486	20	48	250
186487	20	48	250
186488	20	48	250
186491	20	48	250
186492	20	48	250
186737	20	48	235

IP20 · 0% NO LOAD OPERATION · 50 000 hours Min. Service Lifetime · Guarantee 5 years

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

IEEE1789-2015

Dimensions
- Casing: M10
- Length: 359 mm
- Width: 30 mm
- Height: 21 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). 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 %
27.5	ECXe 175.173	**186486**	220–240	150–140	24.4 / 242	125	155–220	15	> 90	< 1
33				175–165		150	130–220		> 91	
38.5				200–190		175	110–220		> 92	
40	ECXe 700.148	**186444**	220–240	200–190	25 / 250	350	57–114	11.5	> 90	< 1
				205–190		500	40–80		> 89	
				210–195		700	28–57		> 88	
44	ECXe 250.174	**186487**	220–240	220–205	24.4 / 242	200	112–220	13	> 93	< 1
47				230–220		225	104–208		> 92	
47				235–220		250	94–188		> 92	
46.8	ECXe 325.175	**186488**	220–240	235–220	24.4 / 242	275	85–170	17	> 91	< 1
46.8				235–220		300	78–156		> 91	
46.8				235–220		325	72–144		> 91	
77	ECXe 450.288	**186737**	220–240	390–355	31 / 270	350	100–220	14.4	> 94	< 1
84.8				420–385		400	100–212		> 94	
85.5				420–390		450	100–190		> 94	
79	ECXe 700.147	**186443**	220–240	400–370	30 / 285	350	120–225	16	> 94	< 1
84				420–390		500	80–170		> 93	
				420–390		700	60–120		> 92	
82.5	ECXe 425.178	**186491**	220–240	410–375	30.5 / 281	375	113–220	14.7	> 93	< 1
84.8				420–385		400	105–212		> 94	
85				420–390		425	100–200		> 94	
84.7	ECXe 650.179	**186492**	220–240	420–390	30.5 / 281	550	77–154	13.3	> 93	< 1
84.6				420–390		600	71–141		> 93	
85.1				420–390		650	65–131		> 93	

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 max.	
186585	–25	60	5	60	–40	+85	5	95	70	IP20
186586	–25	50							75	
186587	–25	50							65	
186588	–25	50							75	

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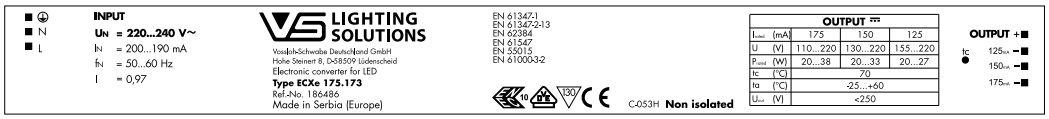
Expected service life time

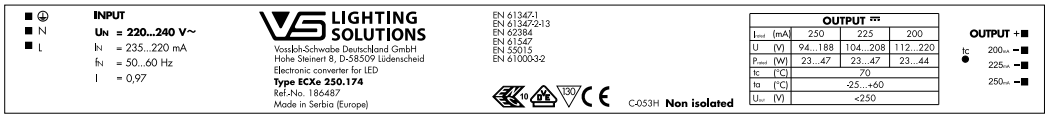
at operation temperatures at t_c point

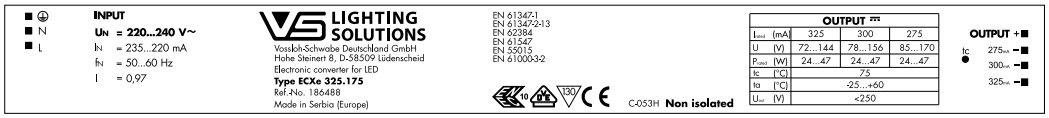
Ref. No. strom	Operation current (mA)	Temperature	Service life hrs.	Temperature	Service life hrs.
186443	350	70 °C	50,000	60 °C	100,000
	500	75 °C	50,000	65 °C	100,000
	700	80 °C	50,000	70 °C	100,000
186444	350	60 °C	50,000	50 °C	100,000
	500	65 °C	50,000	55 °C	100,000
	700	70 °C	50,000	60 °C	100,000
186486	125	55 °C	50,000	45 °C	100,000
	150	55 °C	50,000	45 °C	100,000
	175	55 °C	50,000	45 °C	100,000
186487	200	60 °C	50,000	50 °C	100,000
	225	60 °C	50,000	50 °C	100,000
	250	60 °C	50,000	50 °C	100,000

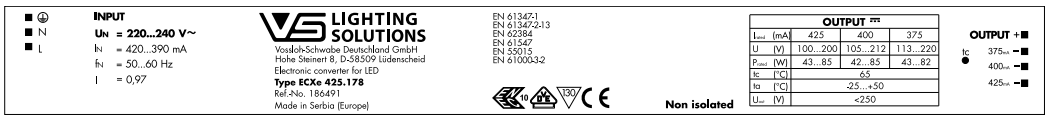
Ref. No. strom	Operation current (mA)	Temperature	Service life hrs.	Temperature	Service life hrs.
186488	275	60 °C	50,000	50 °C	100,000
	300	60 °C	50,000	50 °C	100,000
	325	60 °C	50,000	50 °C	100,000
186491	375	65 °C	50,000	55 °C	100,000
	400	65 °C	50,000	55 °C	100,000
	425	65 °C	50,000	55 °C	100,000
186492	550	65 °C	50,000	55 °C	100,000
	600	70 °C	50,000	60 °C	100,000
	650	70 °C	50,000	60 °C	100,000
186737	350	75 °C	50,000	65 °C	100,000
	400	75 °C	50,000	65 °C	100,000
	450	75 °C	50,000	65 °C	100,000

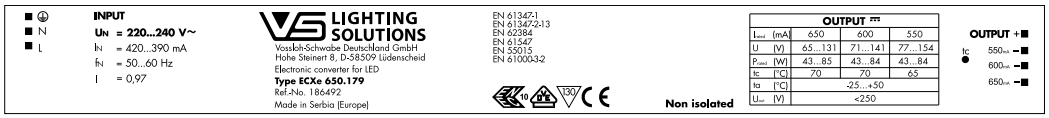
Product lables

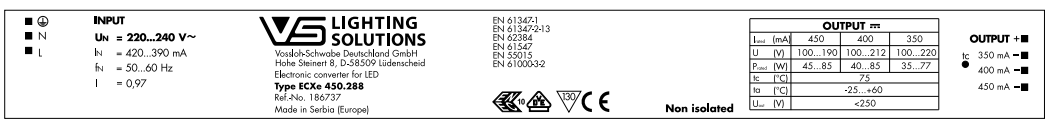












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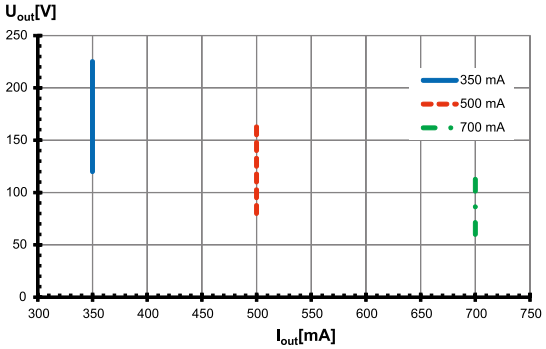
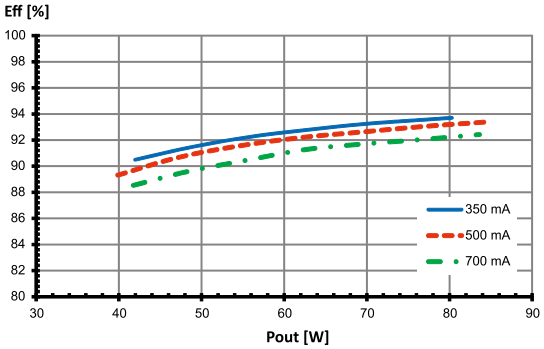
Typ. performance graphs for 186443 / Type ECXe 700.147

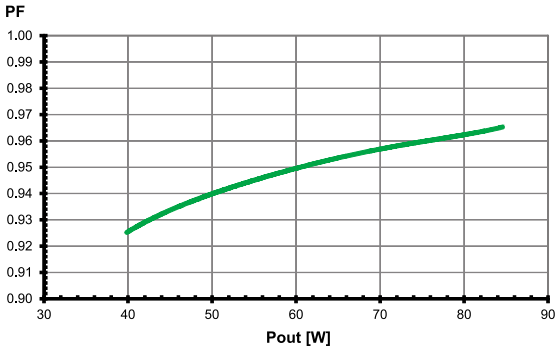
Working area



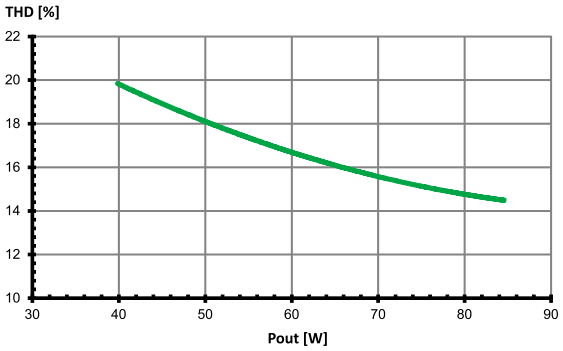
Efficiency



Power factor

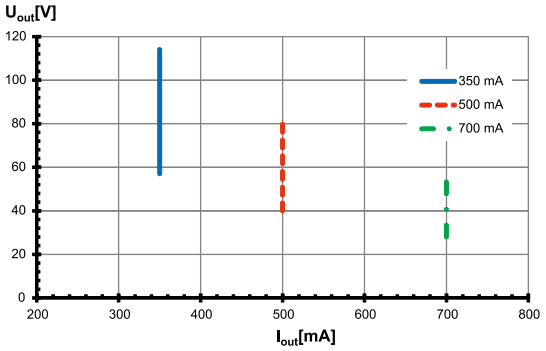


Total harmonic factor (THD)



Typ. performance graphs for 186444 / Type ECXe 700.148

Working area



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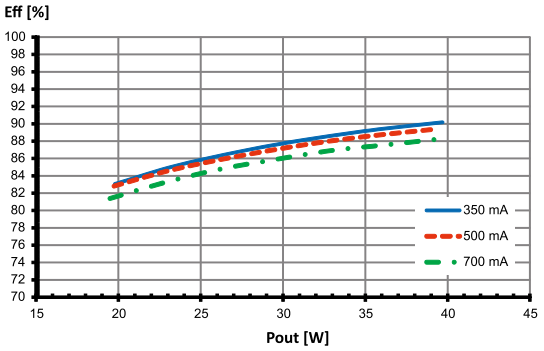
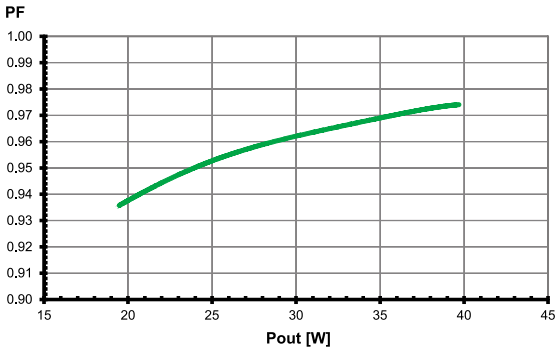
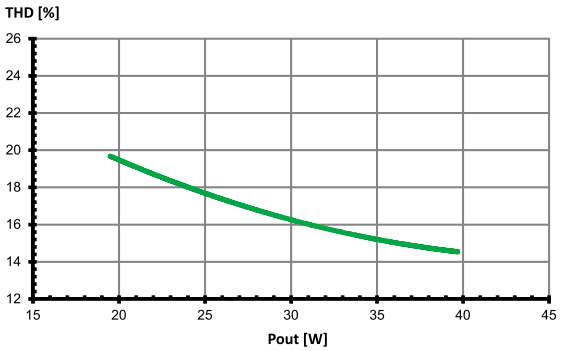


Power factor



Total harmonic factor (THD)



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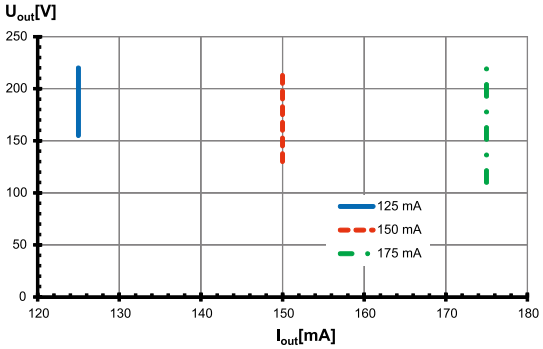
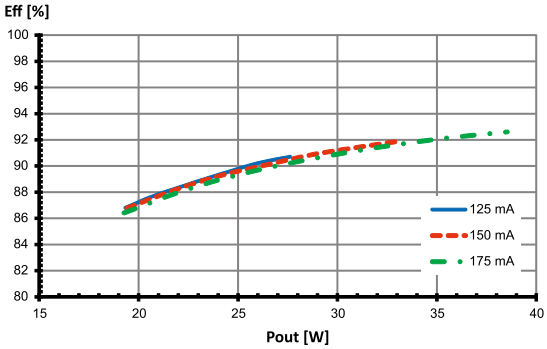
Typ. performance graphs for 186486 / Type ECXe 175.173

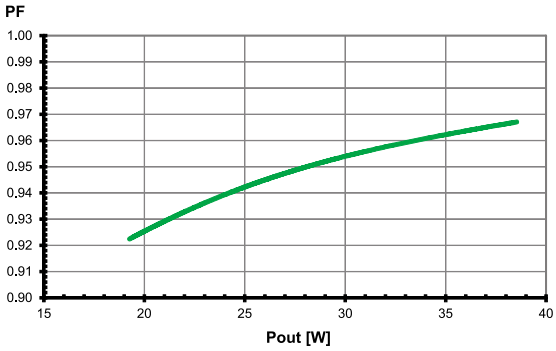
Working area



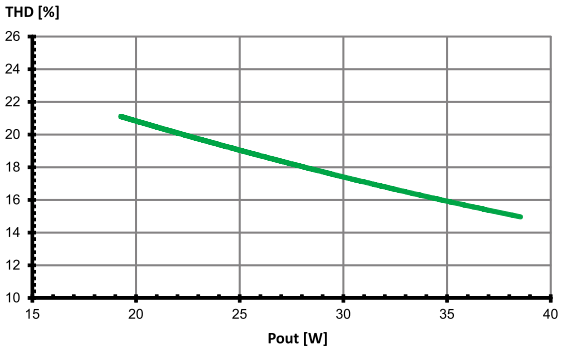
Efficiency



Power factor

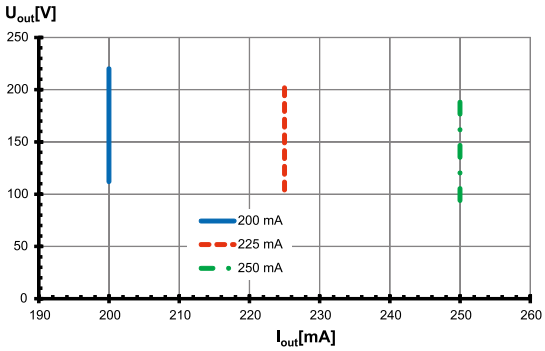


Total harmonic factor (THD)

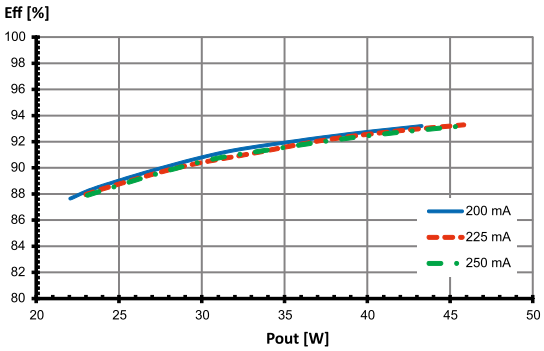


Typ. performance graphs for 186487 / Type ECXe 250.174

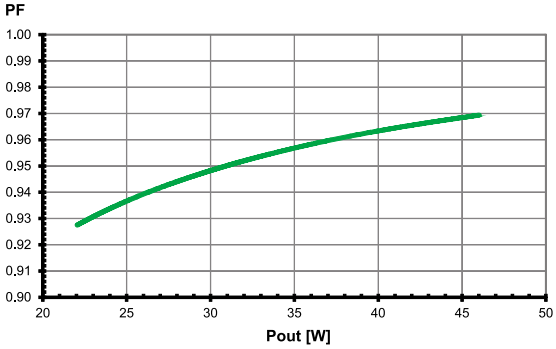
Working area



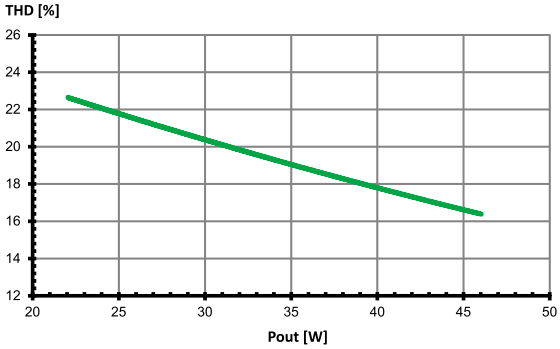
Efficiency



Power factor



Total harmonic factor (THD)



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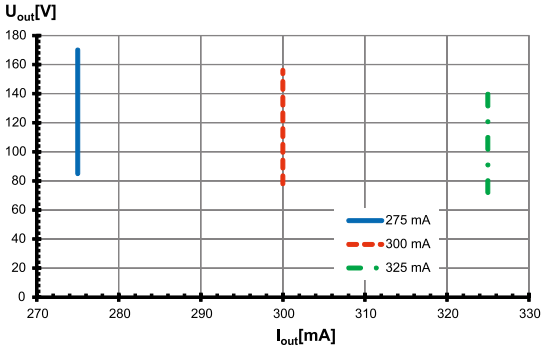
Typ. performance graphs for 186488 / Type ECXe 325.175

Working area



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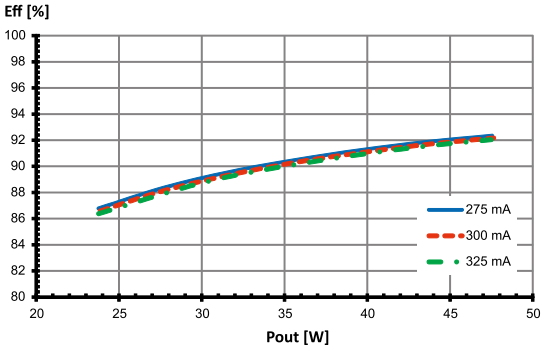
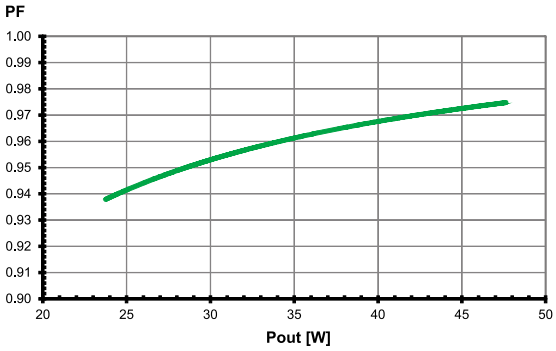
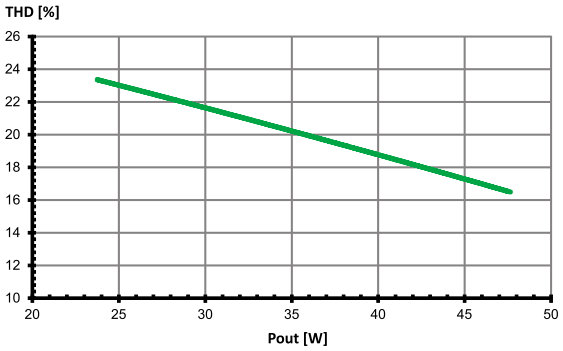


Power factor

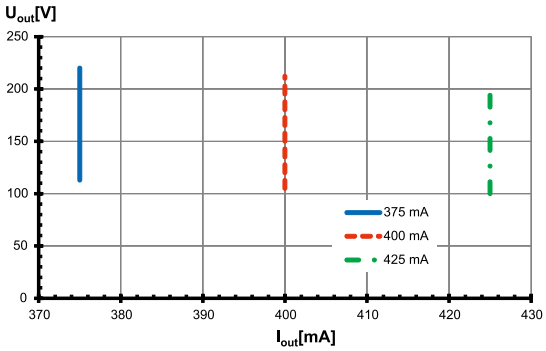


Total harmonic factor (THD)

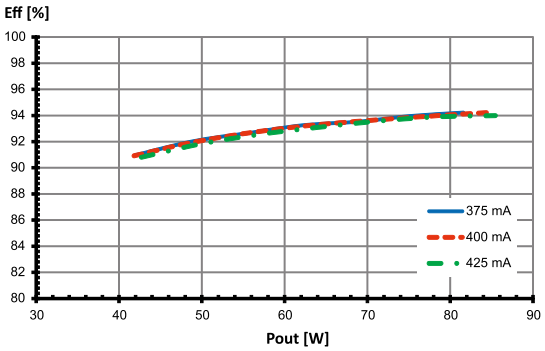


Typ. performance graphs for 186491 / Type ECXe 425.178

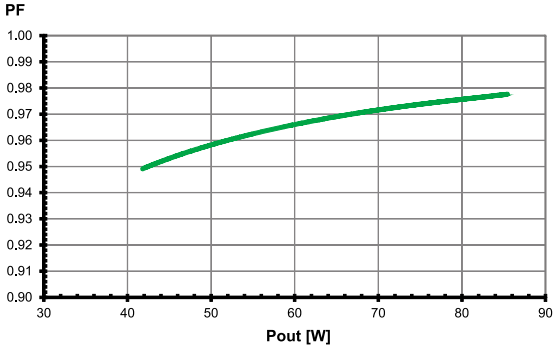
Working area



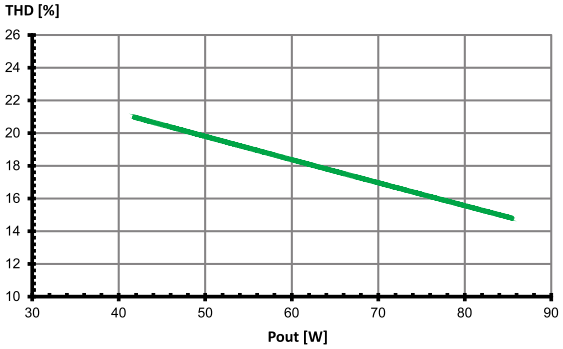
Efficiency



Power factor



Total harmonic factor (THD)



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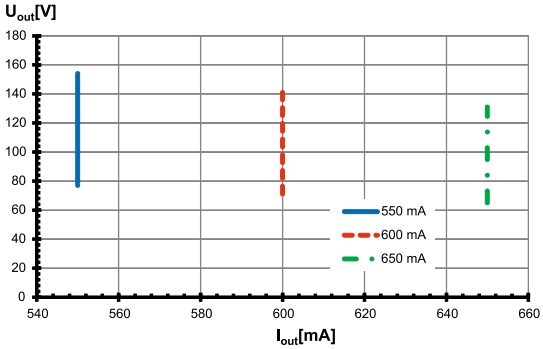
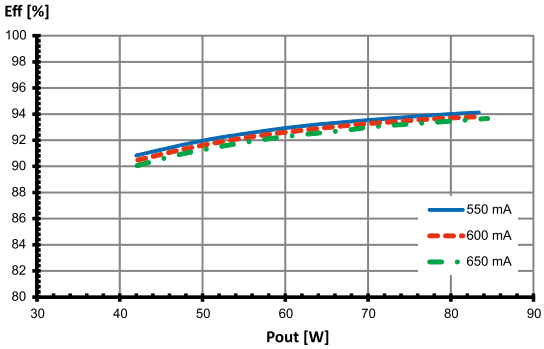
Typ. performance graphs for 186492 / Type ECXe 650.179

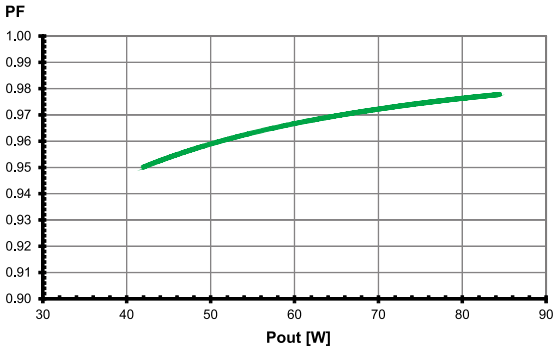
Working area



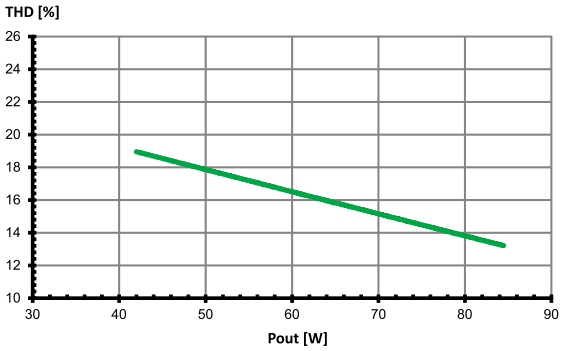
Efficiency



Power factor

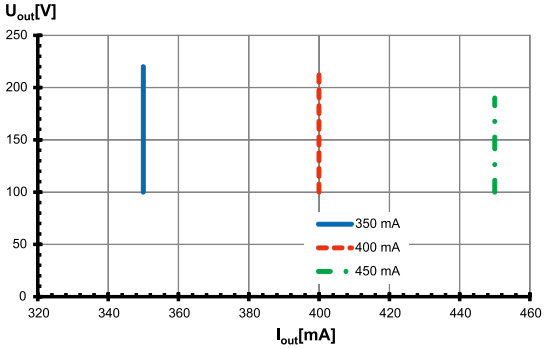


Total harmonic factor (THD)

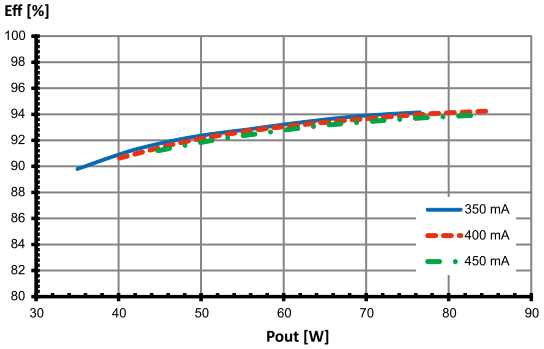


Typ. performance graphs for 186737 / Type ECXe 450.288

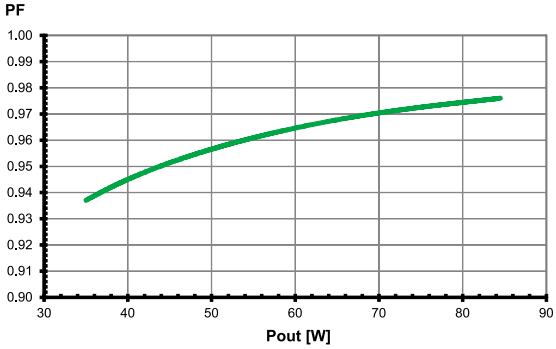
Working area



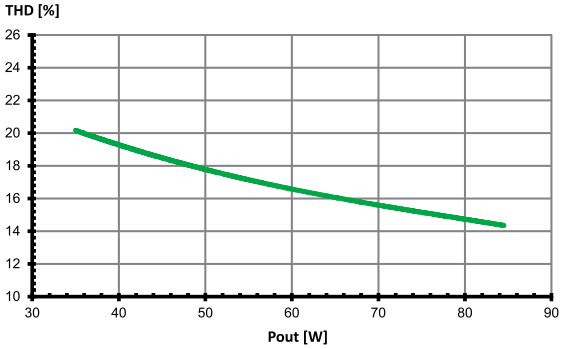
Efficiency



Power factor



Total harmonic factor (THD)



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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 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. 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 control gear will shut down. For restart switch of the mains for 1 min. and start again.
- 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

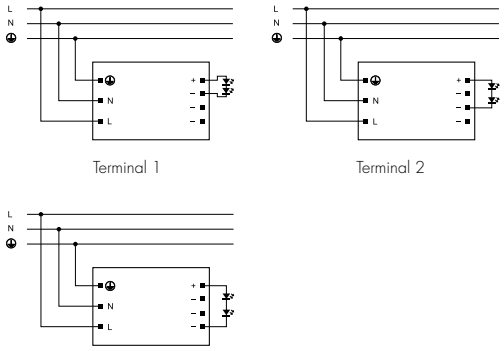
Mechanical mounting

- Mounting position: Built-in: Any position inside a luminaire is allowed
  Independent application: Drivers are not allowed to use for independent applications
- 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.
- 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.

- 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.					
		Cut-out type B			Cut-out type C		
		B 10 A	B 13 A	B 16 A	C 10 A	C 13 A	C 16 A
ECXe 700.147	**186443**	9	12	15	15	20	24
ECXe 700.148	**186444**	12	16	20	21	28	34
ECXe 175.173	**186486**	12	16	20	21	28	34
ECXe 250.174	**186487**	12	16	20	21	28	34
ECXe 325.175	**186488**	12	16	20	21	28	34
ECXe 425.178	**186491**	9	12	15	15	20	24
ECXe 650.179	**186492**	9	12	15	15	20	24
ECXe 450.288	**186737**	9	12	15	16	20	25

– 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-6K (Ref. No.: 149820) or ESB-16HS (Ref. No.: 149821) inrush current limiters.

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