

CC LINEAR DIP SWITCH



EASYLINE DIP SWITCH L GEN. 2

187585, 187586, 187587, 187588, 187589, 187590

Typical Applications

Built-in in linear luminaires for

- Office lighting
- Industry Lighting



EasyLine DIP switch L Gen. 2

- **SELECTABLE OUTPUT CURRENT VIA DIP SWITCH**
- **VERY LOW RIPPLE CURRENT: < 3%**
- **ENEC APPROVED**
- **LONG SERVICE LIFE:
UP TO 100,000 HRS.**
- **PRODUCT GUARANTEE: 5 YEARS**



EasyLine DIP switch L Gen. 2

Product features

- Linear casing shape

Functions

- Selectable current output via DIP switch

Electrical features

- Mains voltage: 220–240 V $\pm 10\%$
- Mains frequency: 50–60 Hz
- DC operation: 176–280 V, 0 Hz
- Push-in terminals: 0.5–1.5 mm²
- Power factor at full load: 0.95
- Max. working voltage (U_{OUT}): 250 V except 275 V for 187587
- Secondary side switching of LED modules is not allowed.

Safety features

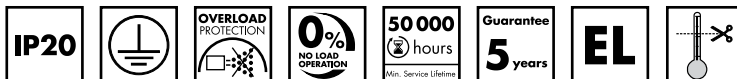
- Protection against transient main peaks up to 1 kV (between L and N) and up to 2 kV (between L, N and PE)
- Electronic short-circuit protection
- Overload protection
- Overtemperature protection
- Protection against "no load" operation
- Degree of protection: IP20
- Protection class I

Packaging units

Ref. No.	Packaging unit		
	Pieces per box	Boxes per pallet	Weight g
187585	30	144	97
187586	30	144	108
187587	30	120	142
187588	30	144	108
187589	30	120	146
187590	30	120	146

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.



Applied standards

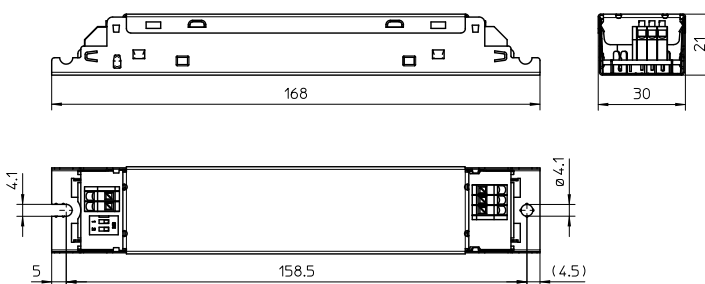
- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 61000-3-2
- EN 62384
- EN 55015



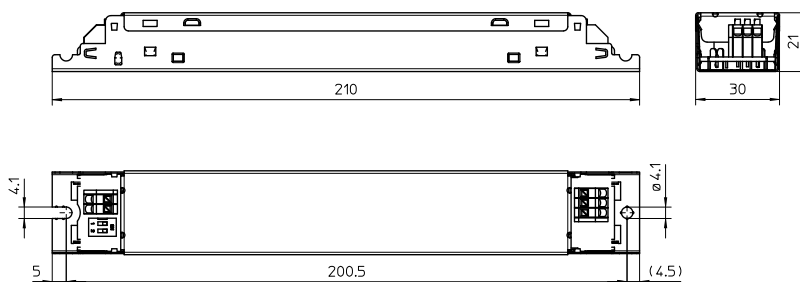
Dimensions

Ref. No.	Casing	Length mm	Width mm	Height mm
187585	M106	168	30	21
187586				
187588				
187587	M107	210	30	21
187589				
187590				

M106



M107



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Electrical characteristics

Max. output W	Type	Ref. No.	Voltage 50–60 Hz V	Mains current mA	Inrush current A / μ 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 %
26	ECXe 350.738	187585	220–240	230–190	24.5 / 310	200	40–130	<4	>93	<3
32.5						250				
39						300				
45.5						350				
38	ECXe 350.739	187586	220–240	330–280	26 / 330	200	90–190	<4	>95	<3
47.5						250				
57						300				
66.5						350				
48	ECXe 350.740	187587	220–240	420–360	34.6 / 346	200	120–240	<5	>95	<3
60						250				
72						300				
84						350				
45.5	ECXe 500.741	187588	220–240	330–280	26 / 330	350	40–130	<4	>94	<3
52						400				
58.5						450				
65						500				
63	ECXe 500.742	187589	220–240	450–385	34.6 / 342	350	90–180	<5	>95	<3
72						400				
81						450				
90						500				
71.5	ECXe 700.743	187590	220–240	460–395	34.6 / 340	550	40–130	<5	>95	<3
78						600				
84.5						650				
91						700				

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.		
187585	–25	+50	10	90	–40	+85	5	95	+75	IP20
187586									+75	
187587									+80	
187588									+75	
187589									+80	
187590									+80	

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LED Drivers – EasyLine DIP switch L Gen. 2

Operating Life

at operation temperatures at t_c point

Operation current	Ref. No.			
	187587, 187589, 187590	187585, 187586, 187588		
all types	80°C	70°C	75°C	65°C
hrs.	50.000	100.000	50.000	100.000

DIP switch settings

Pin 1	Pin 2	Operation current (mA)		
		187585, 187586, 187587	187588, 187589	187590
OFF	OFF	200	350	550
ON	OFF	250	400	600
OFF	ON	300	450	650
ON	ON	350	500	700

Product labels

INPUT
UN=220...240 V~
 IN=230...195mA~
 f_N=0/50/60 Hz
 λ = 0,85C...0,98
 Range of application DC 176...276 V
 IN=280...185mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 350.738
 Ref.-No. 187585

OUTPUT ---

Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	200	26	40...130
ON	OFF	250	32,5	40...130
OFF	ON	300	39	40...130
ON	ON	350	45,5	40...130

$t_c = 75^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 250V
Non isolated

INPUT
UN=220...240 V~
 IN=330...280mA~
 f_N=0/50/60 Hz
 λ = 0,92C...0,98
 Range of application DC 176...276 V
 IN=410...260mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 350.739
 Ref.-No. 187586

OUTPUT ---

Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	200	38	90...190
ON	OFF	250	47,5	90...190
OFF	ON	300	57	90...190
ON	ON	350	66,5	90...190

$t_c = 75^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 250V
Non isolated

INPUT
UN=220...240 V~
 IN=330...280mA~
 f_N=0/50/60 Hz
 λ = 0,9C...0,98
 Range of application DC 176...276 V
 IN=410...260mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 500.741
 Ref.-No. 187588

OUTPUT ---

Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	350	45,5	40...130
ON	OFF	400	52	40...130
OFF	ON	450	58,5	40...130
ON	ON	500	65	40...130

$t_c = 75^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 250V
Non isolated

INPUT
UN=220...240 V~
 IN=420...360mA~
 f_N=0/50/60 Hz
 λ = 0,91C...0,98
 Range of application DC 176...276 V
 IN=515...325mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 350.740
 Ref.-No. 187587

OUTPUT ---

Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	200	48	120...240
ON	OFF	250	60	120...240
OFF	ON	300	72	120...240
ON	ON	350	84	120...240

$t_c = 80^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 275V
Non isolated

INPUT
UN=220...240 V~
 IN=450...385mA~
 f_N=0/50/60 Hz
 λ = 0,91C...0,98
 Range of application DC 176...276 V
 IN=560...355mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 500.742
 Ref.-No. 187589

OUTPUT ---

Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	350	63	90...180
ON	OFF	400	72	90...180
OFF	ON	450	81	90...180
ON	ON	500	90	90...180

$t_c = 80^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 250V
Non isolated

INPUT
UN=220...240 V~
 IN=460...395mA~
 f_N=0/50/60 Hz
 λ = 0,91C...0,98
 Range of application DC 176...276 V
 IN=565...360mA~
 Made in China

Vossloh-Schwabe Deutschland GmbH
 Stuttgarter Straße 61/1, 73614 Schorndorf
 Electronic Converter for LED
Type ECXe 700.743
 Ref.-No. 187590

OUTPUT ---

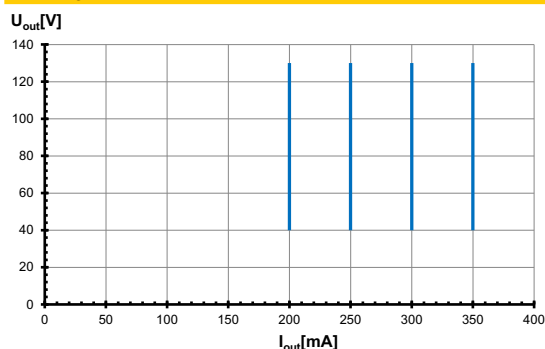
Pin1	Pin2	I _{rated} (mA)	P _{rated} (W)	U _{rated} (V)
OFF	OFF	550	71,5	40...130
ON	OFF	600	78	40...130
OFF	ON	650	84,5	40...130
ON	ON	700	91	40...130

$t_c = 80^\circ\text{C}$
 $t_a = -25...50^\circ\text{C}$
 U_{out max} = 250V
Non isolated

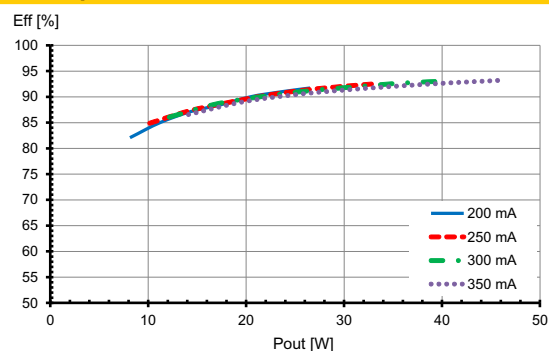
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Typ. performance graphs for 187585 / Type ECXe 350.738

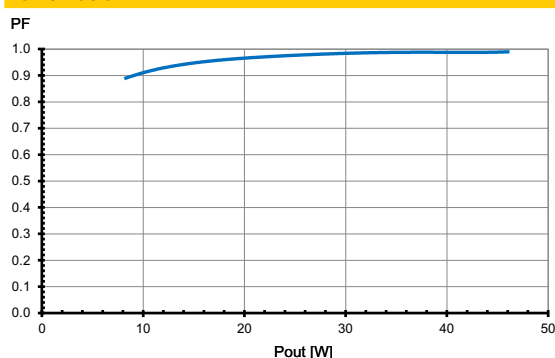
Working area



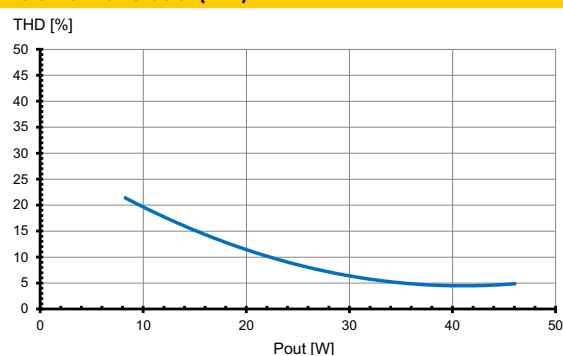
Efficiency



Power factor

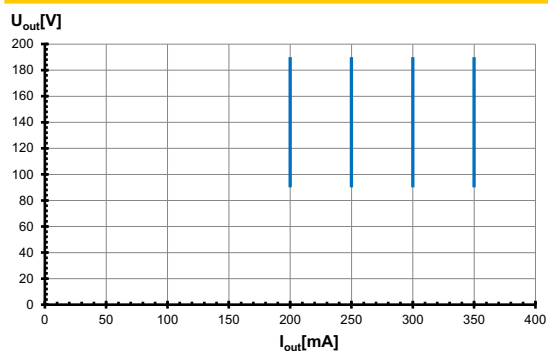


Total harmonic factor (THD)

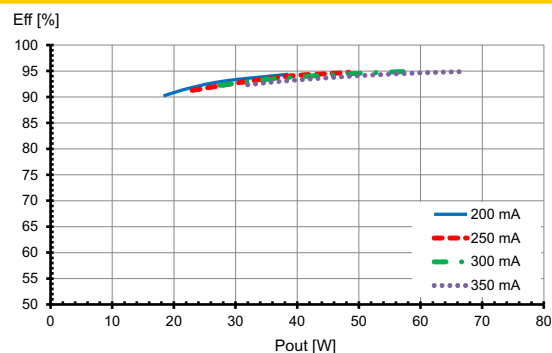


Typ. performance graphs for 187586 / Type ECXe 350.739

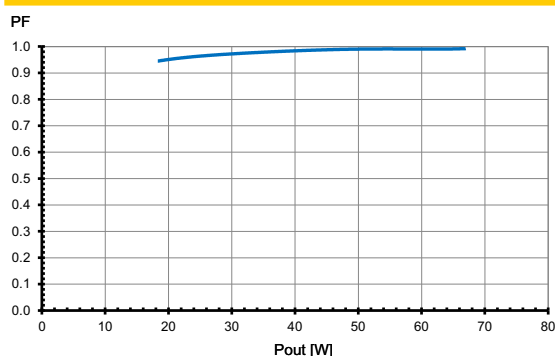
Working area



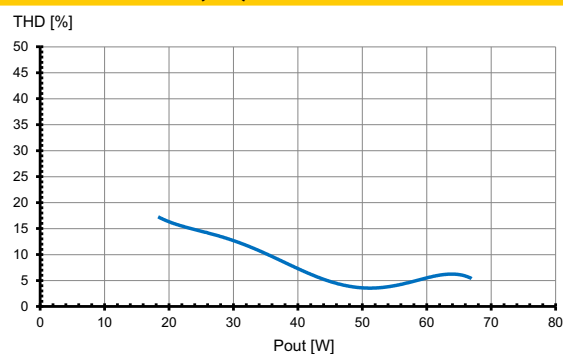
Efficiency



Power factor



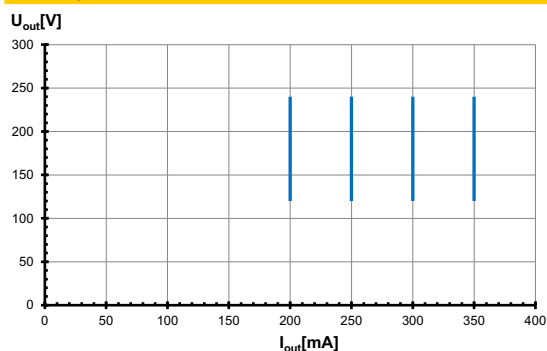
Total harmonic factor (THD)



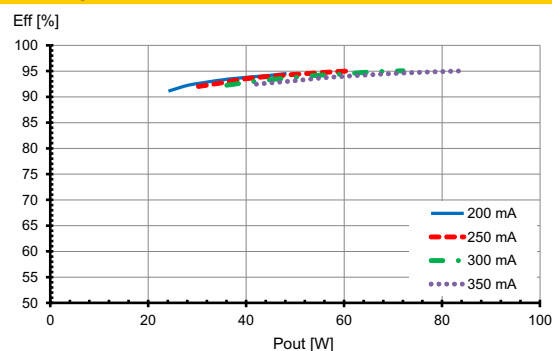
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Typ. performance graphs for 187587 / Type ECXe 350.740

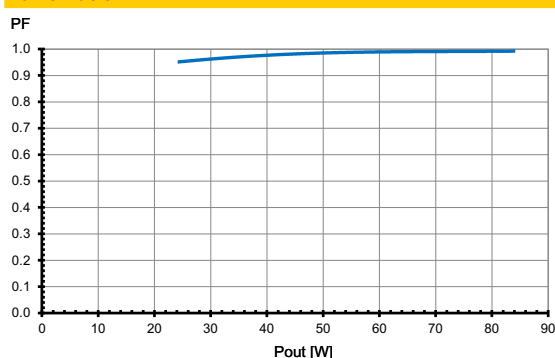
Working area



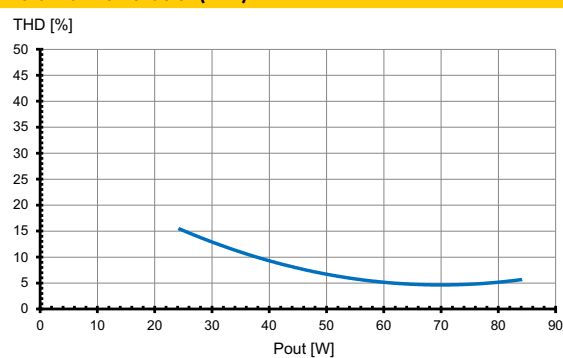
Efficiency



Power factor

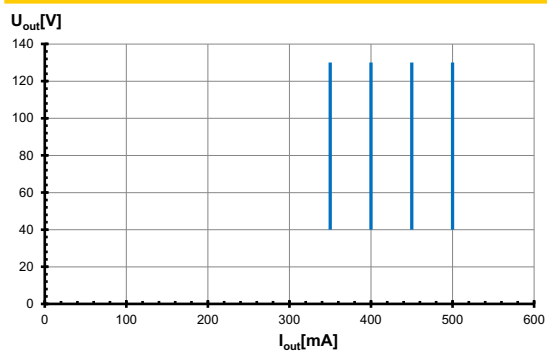


Total harmonic factor (THD)

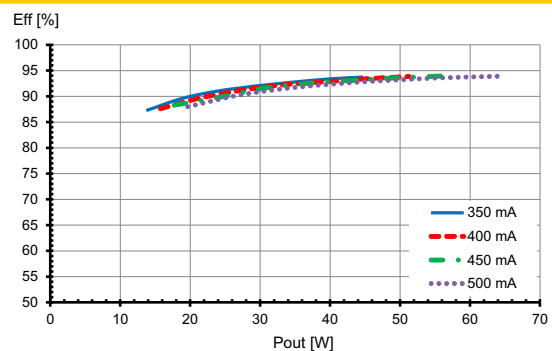


Typ. performance graphs for 187588 / Type ECXe 500.741

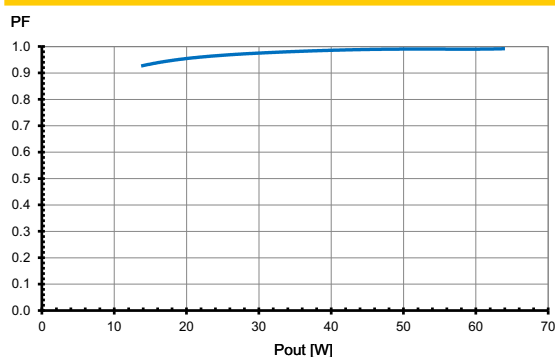
Working area



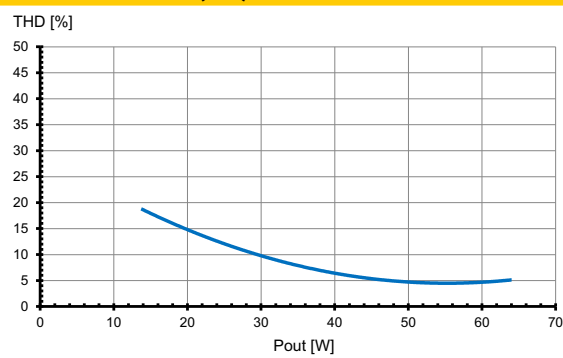
Efficiency



Power factor

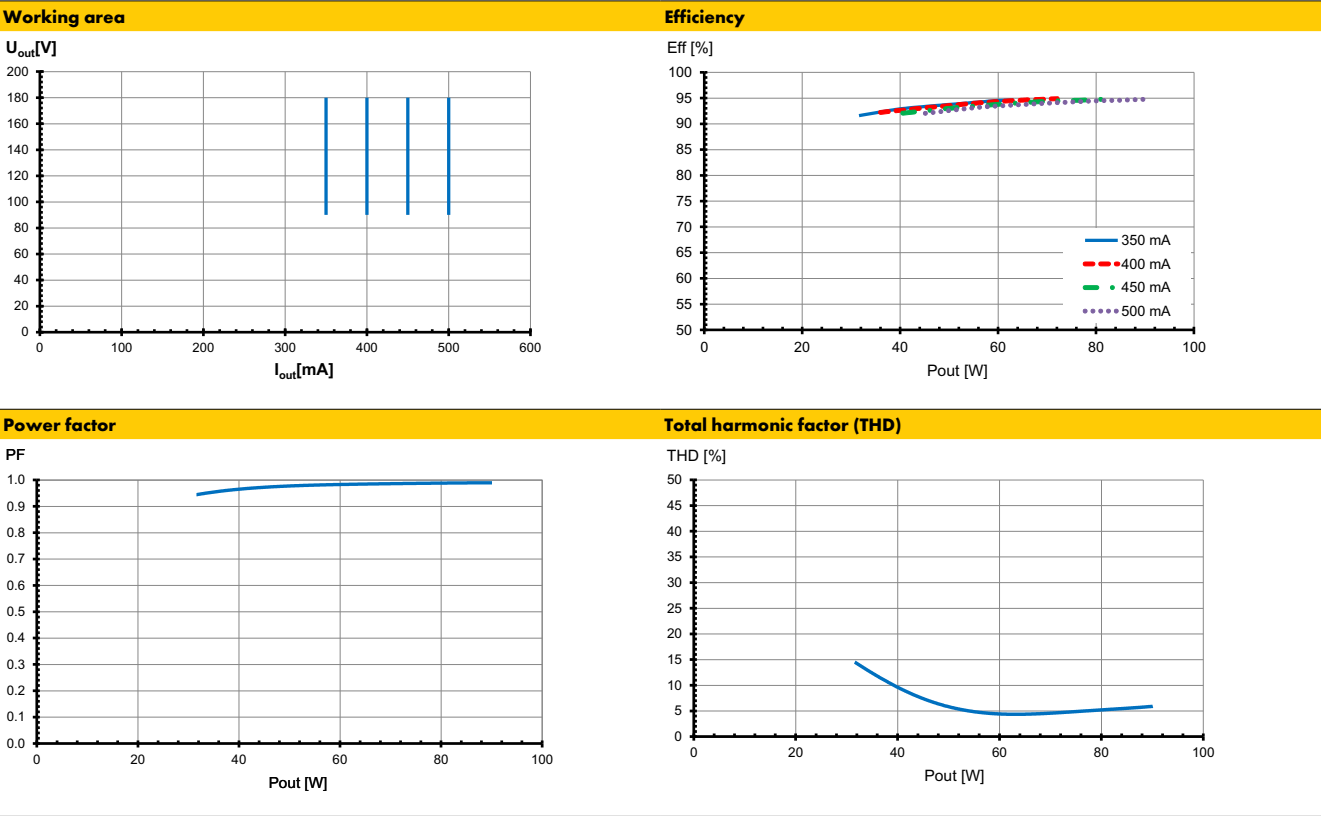


Total harmonic factor (THD)

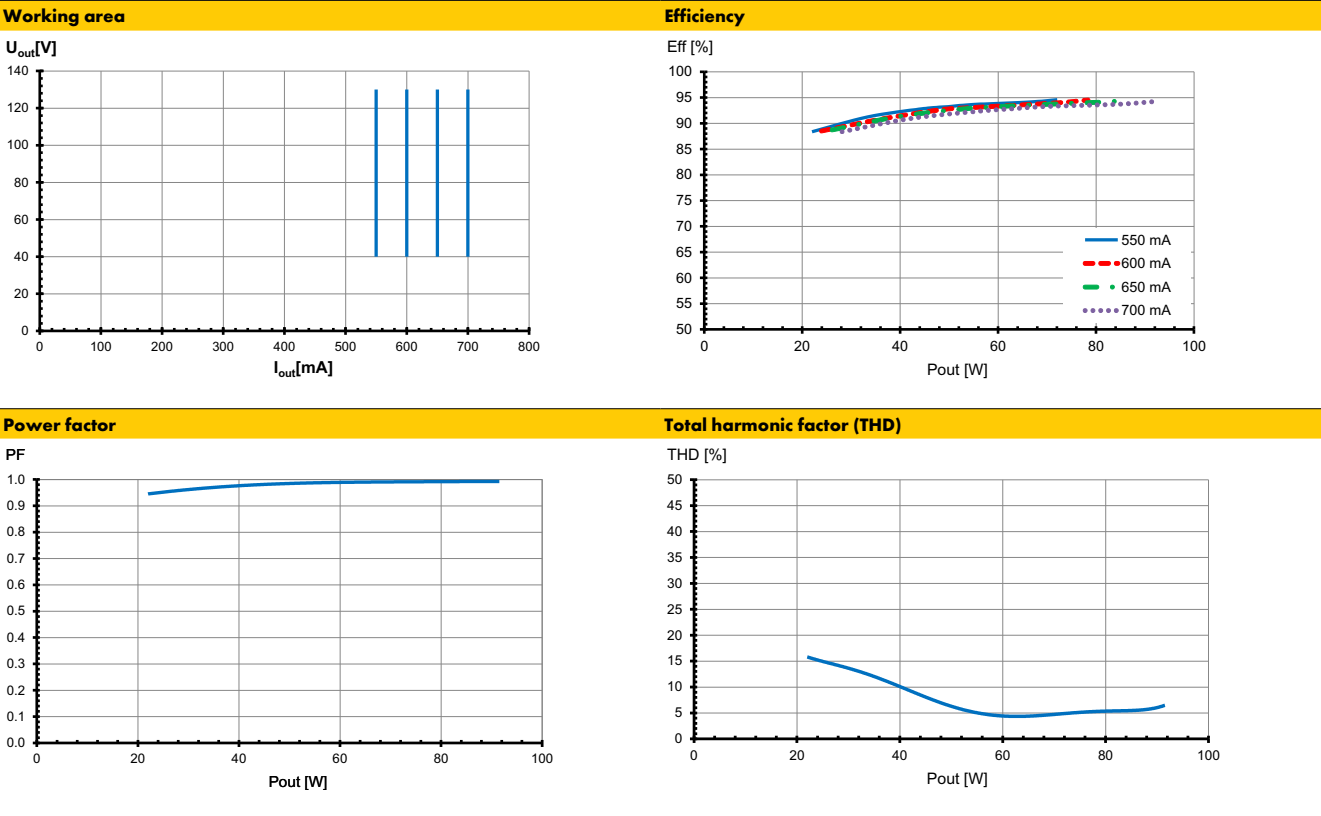


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Typ. performance graphs for 187589 / Type ECXe 500.742



Typ. performance graphs for 187590 / Type ECXe 700.743



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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.

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

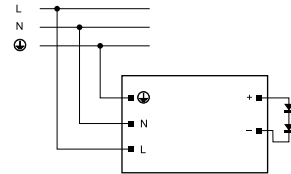
- Mounting position: Built-in: Any position inside a luminaire is allowed
Independent application: Drivers are not allowed to use for independent applications
- Mounting location: LED drivers are designed for integration into luminaires or comparable devices.
Installation in outdoor luminaires: degree of protection for luminaire with water protection rate ≥ 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 mm²
- 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 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 10 A	B 13 A	B 16 A	C 10 A	C 13 A	C 16 A
ECXe 350.738	187585	10	13	16	17	22	27
ECXe 350.739	187586	9	12	14	15	20	24
ECXe 350.740	187587	6	8	10	11	14	17
ECXe 500.741	187588	9	12	14	15	20	24
ECXe 500.742	187589	6	8	10	11	14	17
ECXe 700.743	187590	6	8	10	11	14	17

- 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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