

Ref: 38.015

Features:

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



Electrical characteristics	Power	21W - 42W
	Voltage 50-60 Hz (V)	220V - 240V
	Main current mA	215mA - 200mA
	Inrush current A / μ s	26A / 200A
	Current output DC mA (\pm 5%)	275mA / 700mA
	Voltage output DC (min-max "V")	30-153V
	THD %	<12.7%
	Efficiency at full load % (230V)	>91%
	Ripple 100 Hz	<1%
	Resistors	14.29k Ω (350mA) / 10.00k Ω (500mA) / 7.14k Ω (700mA)
Maximum ratings	Ambient temperature range $^{\circ}$ C min.	-25 $^{\circ}$ C
	Ambient temperature range $^{\circ}$ C max.	+50 $^{\circ}$ C
	Operation humidity range % min.	5%
	Operation humidity range % max.	60%
	Storage temperature range $^{\circ}$ C min.	-40 $^{\circ}$ C
	Ambient temperature range $^{\circ}$ C max.	+85 $^{\circ}$ C
	Storage humidity range % min.	5%
	Storage humidity range % max.	95%
	Max. operation temperature at t_c point $^{\circ}$ C	+60 $^{\circ}$ C
Degree of protection	IP20	
Expected service life time	Operation current Max.	50 $^{\circ}$ C - 60 $^{\circ}$ C
	Operation current hrs.	100,000h - 50,000h
Dimming	Dimmable	yes
	Light control / dimming	dimming interface DALI / PUSH
	DALI power supply integrated	no
	DALI power supply switchable	no
	Min. dimming level	3%
	Max. dimming level	100%
	PWM dimming frequency	2000Hz
Other	Dimension	359x30x21mm
	Casing shape	M10
	Weight	235g
	Guarantee	5 years

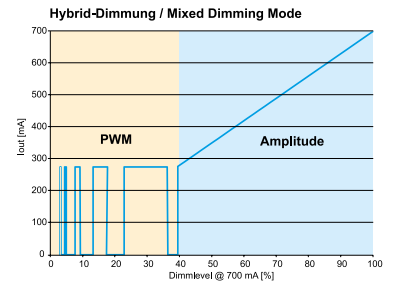


Dimming:

- Down to 275 mA the dimming is realized by amplitude dimming (see graphic). For dimming < 275 mA a PWM method at 2 kHz is used. IEEE 1789-15 will be observed.
- Max. dimming speed: 0.075 seconds.
- Dimming curve is adapted to the eye sensitiveness.

PUSH function characteristic:

- Just one key for dimming and ON/OFF
- Polarity- and phase-independent control.
- Control input with large working voltage range.
- Suitable for multi-layer control.
- Fully DC-compatible – no functional restrictions during DC operation.
- After disconnection from the primary voltage the ballast will reproduce the last stored lighting level.
- Soft start.
- Automatic recognition of DALI and PUSH signals.



PUSH operating voltage ranges during control signal input

LED driver type	ECXd 700.213, ECXd 700.214	All other DALI/PUSH ballasts
AC	220–240 V ±10%	10–230 V
DC	198–264 V	–
Failing to observe these working voltage ranges can lead to non-recognition of the signals; exceeding the maximum voltages can lead to the destruction of the data inputs.		

PUSH control signals (key activation)

Short push	(80 ms < t < 460 ms)	(0 ms < t < 500 ms)
	Is used to switch between ON/OFF lighting states. After the device is switched on, the last selected lighting level is restored and the next dimming direction will be upwards.	
Long push	(460 ms < t < 10 s)	(500 ms < t < ∞)
	Is used to dim upwards or downwards; a long push will change the dimming direction. Thus, a long push will reverse the dimming direction until the upper or lower limit is reached. If the light was off, a long push will switch it on and the dimmer will start at the lowest light intensity.	
Push to synchronise	(t > 10 s)	long – short – long
	Light is dimmed to the preset factory level and the next dimming direction will be upwards.	Starting situation: luminaires are switched off. The "long – short – long" combination first switches the lamp on, then off and finally on again, after which it gets gradually brighter. The EBs will be synchronised again after this procedure.
Synchronisation	Any 1-key dimmer that does not feature a central control module (as each ballast will have its own controls) can develop asynchronous behaviour (e.g. children might play with the key). The system will then be out of sync, i.e. some lamps will be on, others off or the dimming direction will differ from lamp to lamp.	
	Two methods of synchronisation can be used: <ul style="list-style-type: none"> • Push the key for more than 10 seconds, after which the light will be dimmed to a preset level and the next dimming direction will be upwards. • Start with a long push of the key so that all lamps are switched on. Follow with a short push to turn the system off. The system will now be resynchronised. 	

Measurements:

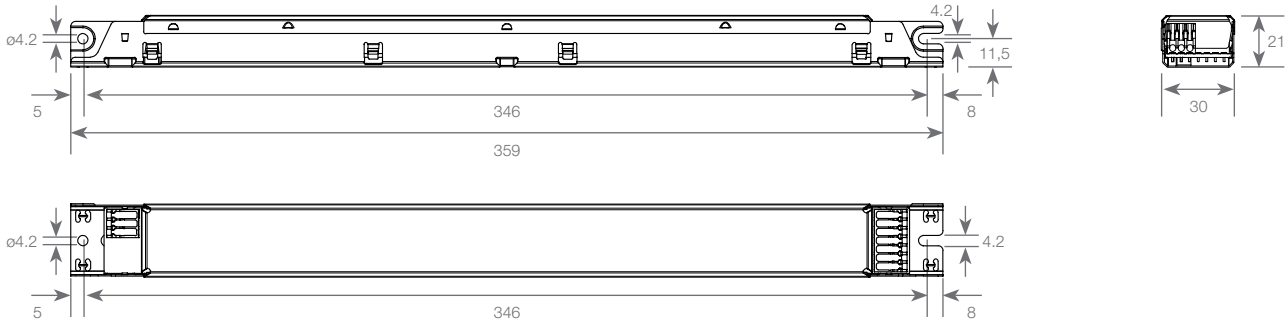
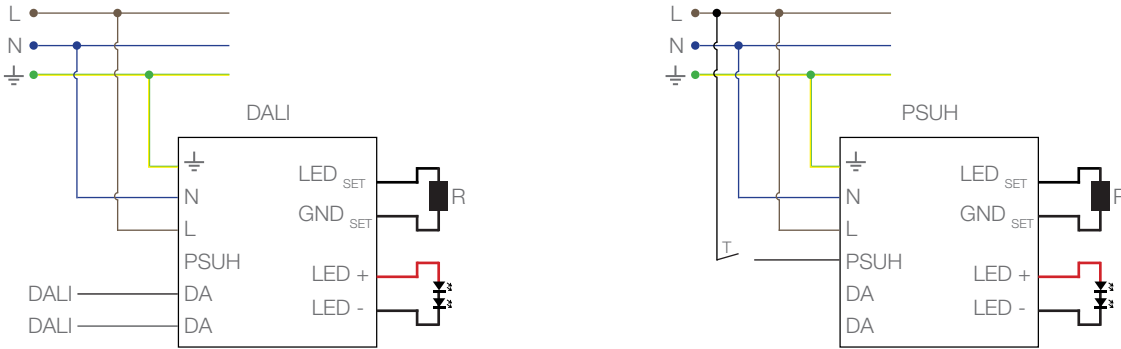
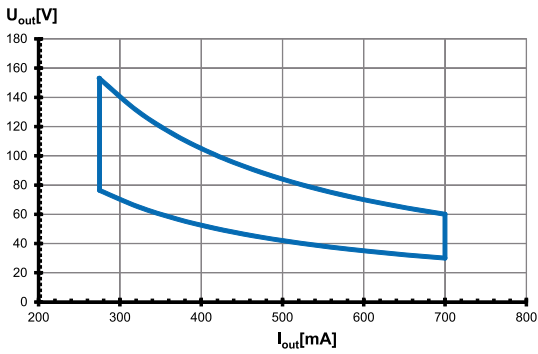


Diagram:

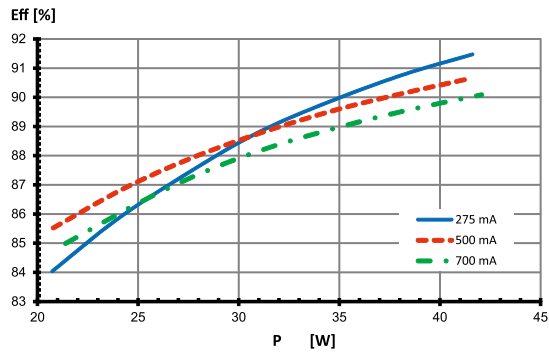


Type performance graphs / Type EDXe

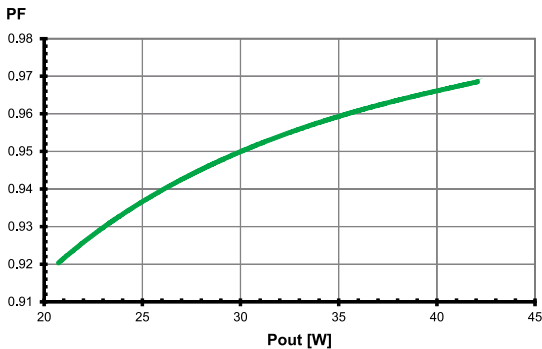
Working area



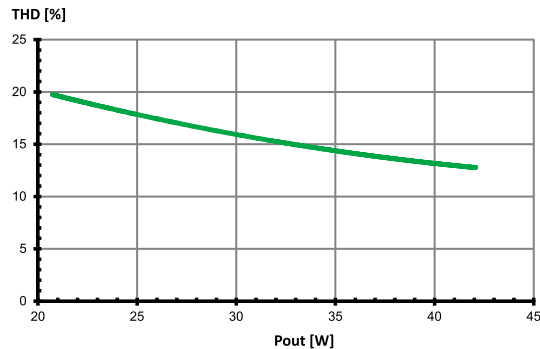
Efficiency



Power factor



Total harmonic factor (THD)



Assembly and Safety Information

Applied standards:

- EN 61347-1
- EN 61347-2-13
- EN 61547
- EN 61000-3-2
- EN 62384
- EN62386
- EN 55015

Mandatory regulations:

- DIN VDE 0100
- EN 60598-1

Safety functions

- **Transient main 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 main power supply that the selected led load is suitable (see Electrical Characteristics on data sheet).
- **Overheating:** The control gear has overheating protection acc. to IEC 61347-1 C 5e). In case of overheating the control gear will shut down. For restart switch of the mains for 1 min. and start again. In case of overheating the control gear will dimm down and if necessary shut down. After cooling the operating device will start again and dimm automatically to the last dimm level.
- **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.











Mechanical mounting:

- **Mounting position:**
 - Built-in: any position inside a luminaire is allowed.
 - Independent application: drivers are allowed to use for independent applicatons.
- **Mounting location:**
 - led drivers are designed for integration into luminaires or aomparable 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. 0.10m from walls, ceilings and insulation.
- **Surface:** solid and plane surface for optimum heat dissipation required.
- **Heat transfer:**
 - If the led drivers is destined for installation in a luminaire. Sufficient heat transfer must be ensured between the led driver and the luminaire casing.
 - Led drivers should be mounted with the greatest possible clearance to heat soucres. During operation, the temperature measure at the led 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 od 0.2 - 1.5mm².
- **Stripped length:** 8.5–10mm.
- **Wiring:** the main conductor within the luminaire must be kept short (to reduce the induction of interference). Main 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 voltagages of led loads is within the tolerances which are mentioned in the Electrical Characteristics on the data sheet.

Product labels:

<ul style="list-style-type: none"> • N • ~ • PUSH • DALI • do 	INPUT Un=220...240 V~ In = 215...200 mA fn = 50...60 Hz I = 0,95 Range of application DC 198...264V	 VS LIGHTING SOLUTIONS VosslohSchwebe Deutschland GmbH Hark-Straße 8, D-58509 Södingen Dimmable and current selectable electronic converter for LED Type ECxd 700.214 Ref.-No. 186565 Made in Serbia (Europe)	EN 61347:1 EN 61347-2-13 EN 62386 EN 61547 EN 55015 EN 61000-3-2	  	<table border="1"> <thead> <tr> <th colspan="2">OUTPUT</th> </tr> </thead> <tbody> <tr> <td>Rated [mA]</td> <td>225...700 mA max</td> </tr> <tr> <td>U [V]</td> <td>30...153 V</td> </tr> <tr> <td>Rated [W]</td> <td>21...42 W</td> </tr> <tr> <td>tc [°C]</td> <td>60</td> </tr> <tr> <td>ts [°C]</td> <td>-25...+50</td> </tr> <tr> <td>U_{in} [V]</td> <td><230</td> </tr> </tbody> </table>	OUTPUT		Rated [mA]	225...700 mA max	U [V]	30...153 V	Rated [W]	21...42 W	tc [°C]	60	ts [°C]	-25...+50	U _{in} [V]	<230	LEDset  GNDset  LED  LED- 
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