



## Assembly instructions for mounting and installing of electronic control-gear for LEDs

### Regulations

DIN VDE 0100	Regulations for erection of low voltage installations with nominal voltages up to 1000 V
EN 60598-1	Luminaries – part 1: General requirements and tests
EN 61347-1	Lamp control gear – part 1: General and safety requirements
EN 61347-2-13	Lamp control gear - Part 2-13: Particular requirements for DC or AC supplied electronic control gears for LED modules
EN 62384	DC or AC supplied electronic control gear for LED modules – Performance requirements
EN 61000-3-2	Electromagnetic Compatibility (EMC) – part 3: maximum values – main section part 2: maximum values for mains harmonics (device input current up to and including 16 A per conductor)
EN 55015	Maximum values and methods of measurement for RFI suppression in electrical lighting installations and similar electrical appliances
EN 61547	Installations for general lighting purposes – EMC immunity requirements

### Mechanical mounting of LED-control gears

Mounting	Built in application: - Any position inside a luminaire is allowed Independent application: - Drivers are allowed to use for independent applications
Clearance	Min. of 0.1 m from walls, ceiling's, insulation materials
Surface	Solid and smooth surface area for good heat dissipation required
Mounting In indoor Luminaires	Install according to EN 60598; keep away from heating sources and water.
Mounting In outdoor Luminaires	Degree of protection for the luminaries against water = 4 necessary (e. g. IP54)
Fastening	Using M4 screws for fastening in the designated holes
Heat transfer	Installation in a luminaire must ensure sufficient heat transfer between the control gear and the lamp housing. The control gear should have the maximum possible clearance to heat sources. During operation, the temperature measured at the tc point of the driver must not exceed the specified value.



## Safety functions

**Overheating** The control gear has overheating protection. In case of overheating the control gear will dim down and dim up after the temperature will drop below the specified maximum temperature.

**No Load operation** The control gear is protected against no load operation (open load)

**Short circuit protection** The control gear is protected against permanent short circuit with automatic restart function. Normal operation if the short circuit is fixed.

**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.**

**Overload protection** The control gear has overload protection due to limitation of DC output voltage <60V Please check before switch on main power supply that the selected LED load is suitable

**Protection against transient mains peaks** Values are in compliance with EN61547 (interference immunity)  
Surges between L/N up to 1kV  
Surges between L/N/PE not applicated



Marking for built-in electronic control gear with double or reinforced insulation

## Delivery conditions

**Output current** No LEDset resistor is mounted. Output current is less than nominal **I<sub>min</sub>**

## Additional features

**Output current selection** The output current can be adapted within the rated output current range between 300mA ... 900mA. To change the output current it is necessary to use the correct LEDset resistor. Values for different currents are figured out in the technical catalogue.  
The LEDset resistor should have a max. tolerance of 1%.

Please refer to the electrical values and the operating window to see which combinations are possible.

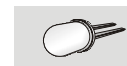
Output current / needed LEDset resistor can be calculated as follows:

$$I_{out} = \frac{5V}{R_{set}} \times 1000$$

$$R_{set} = \frac{5V}{I_{out}} \times 1000$$

If no LEDset resistor is mounted output current is less than nominal **I<sub>min</sub>**.

If LEDset interface is short circuit output current is limited to **I<sub>max</sub>**.



## Electrical installations

### Selection of automatic Cut-outs

**Release reaction** Release reaction of automatic cut-outs comply with VDE 0641, part 11 for B-, C-characteristics. The number of control gear in below table is recommended values as guidelines and can be varied depending on the respective circuit breaker system.

**No. of control gears** Maximum number of VS control gears apply in such cases where the devices are switched on simultaneously. Specifications apply to single-poled fuses. The number of permissible ballasts must be reduced by 20 % for multi-pole fuses. The considered circuit impedance equals 400 mΩ (approx. 20 m [1.5 mm<sup>2</sup>] of conductor from the power supply to the distributor and a further 15 m to the luminaire).

Inrush current		
LED-Driver	Inrush current [A]	Time 50% I <sub>peak</sub> [μs]
ECXe900.241	21	274
ECXe1050.251 *	21	274

\*Preliminary

Possible number of control gear						
LED Driver	Type of automatic cut-off					
	B 10 A	B 13 A	B 16 A	C 10	C 13 A	C 16 A
ECXe900.241	14	18	22	23	30	37
ECXe1050.251 *	13	18	22	23	30	37

\*Preliminary

**Through wiring** Through wiring is not allowed / not possible

**Conductor** Primary and secondary conductor cross section: min. 0.2 mm<sup>2</sup> and max. 1.5 mm<sup>2</sup>

Type	Cross section	Max. lead length of secondary conductor
ECXe900.241	0,2 mm <sup>2</sup>	0,8 m
	0,5 mm <sup>2</sup>	0,8 m
	0,75 mm <sup>2</sup>	0,8 m
	1,0 mm <sup>2</sup>	0,8 m
	1,5 mm <sup>2</sup>	0,8 m

**Connections** Push in terminals with release button

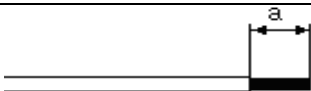
**Wiring** Primary wires must be as short as possible, and need to be separated between primary and secondary wiring.

**Secondary load** The sum of forward voltages of LED-loads are within the tolerance which is highlighted in Electrical information under U.

**Parallel connection** Connecting LED's in parallel at secondary side is not allowed

**Switching on and off** Switching on/off at secondary side is not allowed



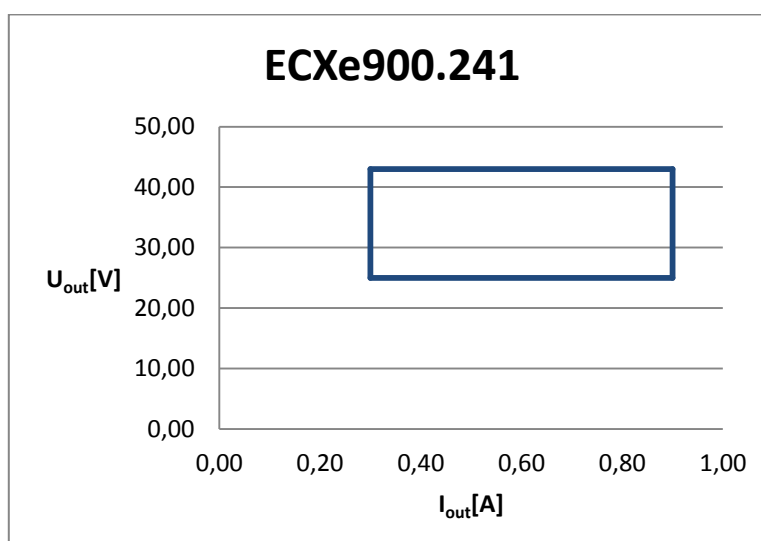
Lead Preparation	
a	8,5-10 mm
	

## Electrical information

Electronic control gear for LED's												
Type	Ref. no.	U <sub>N</sub>	Nominal Input current (I <sub>i</sub> depends on selected current)	U (with load, depends on selected current)	U <sub>out</sub>	P <sub>rated</sub> (depends on selected output current)	I <sub>rated</sub> Nominal output current Tolerance ±5%	t <sub>c</sub> Max	t <sub>a</sub> Min/Max-Ambient temperature	Protection class	Degree of protection	Weight
		[V]	[mA]	[V]	[V]	[W]	[mA]	[°C]	[°C]			[g]
ECXe 900.241	<b>186650</b>	220 – 240	195 – 179	25 – 43	<60	38,7	300 – 900	80	-20...+50°C	II	IP20	140
ECXe 900.241	<b>186694</b>	220 – 240	195 – 179	25 – 43	<60	38,7	300 – 900	80	-20...+50°C	II	IP20	150
ECXe 1050.251*	<b>186664</b>	220 – 240	228 – 210	25 – 43	<60	45,1	300 – 1050	80	-20...+45°C	II	IP20	140
ECXe 1050.251*	<b>186683</b>	220 – 240	228 – 210	25 – 43	<60	45,1	300 – 1050	80	-20...+45°C	II	IP20	150

\*Preliminary

## Operating Window LED-Driver



Mounting instruction for K33.1\_39W\_LEDset 20170427

ECXe900.241

ECXe1050.251





## Table Output current / Resistor value

Values are rounded to max. two decimal places

ECXe900.221					
Irated [mA]	R [kΩ]	ULED min. [V]	ULED max. [V]	Prated min. [W]	Prated max. [W]
300	16,67	25	43	7,50	12,90
325	15,39	25	43	8,13	13,98
350	14,29	25	43	8,75	15,05
375	13,33	25	43	9,38	16,13
400	12,50	25	43	10	17,20
425	11,76	25	43	10,63	18,28
450	11,11	25	43	11,25	19,35
475	10,53	25	43	11,88	20,43
500	10,00	25	43	12,50	21,50
525	9,52	25	43	13,13	22,58
550	9,09	25	43	13,75	23,65
575	8,70	25	43	13,38	24,73
600	8,33	25	43	15	25,80
625	8,00	25	43	15,63	26,88
650	7,69	25	43	16,25	27,95
675	7,41	25	43	16,88	29,03
700	7,14	25	43	17,50	30,10
725	6,90	25	43	18,13	31,18
750	6,67	25	43	18,75	32,25
775	6,45	25	43	19,38	33,33
800	6,25	25	43	20	34,40
825	6,06	25	43	20,63	35,48
850	5,88	25	43	21,25	36,55
875	5,71	25	43	21,88	37,63
900	5,56	25	43	22,50	38,70