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 suitable to use for independent applications
Clearance	Min. of 0.1 m from walls, celling'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 (see temperature stated on the label or Electrical information at page 5)

Additional mounting instructions for LED control gear

Safety functions

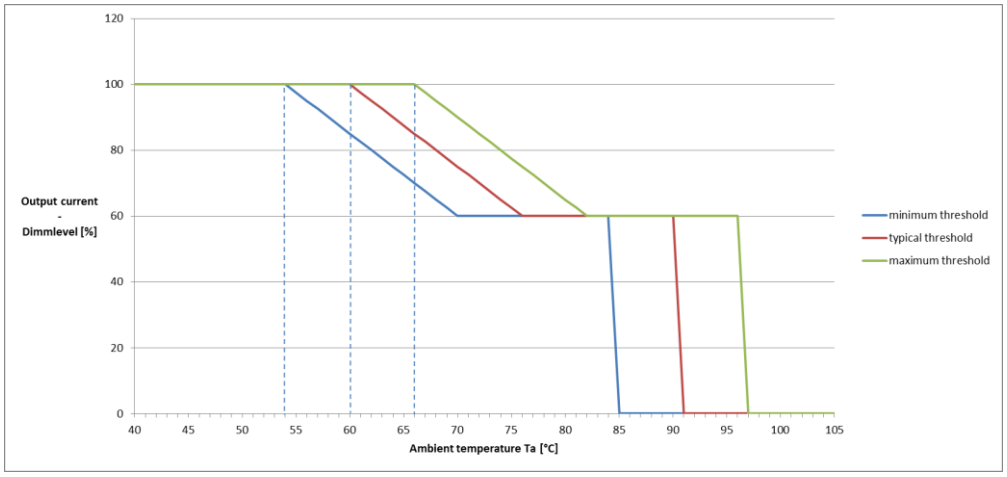
Overheating

OverheatingThe control gear has three overheating protection steps:

1st step – software protection:
At an ambient temperature of 60°C±10%, the output current duty cycle starts to decrease from 100% to 60%.

2nd step – hardware protection:
At an ambient temperature of 90°C±6°C, an over-temperature circuit turns off the device. When the temperature afterwards drops below a defined threshold, the device restarts automatically at a current level of 100%.

3rd step – internal over-temperature protection of output stage
At ambient temperatures higher than approximately 110°C, an internal protection of the output stage turns off the output current. When the temperature afterwards drops below a defined threshold, the device restarts automatically at a current level of 100%.



The ambient temperatures and the according thresholds in the diagram above are only valid for full power operation with cord-grip-cap mounted.

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 before start up the device. Short circuit during normal operation (disconnect load and make short circuit) will damage the device.

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.

Any kind of load change during operation not admissible.

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. LED driver will stop operating in case of overload.
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 up to 2kV

Dimming function

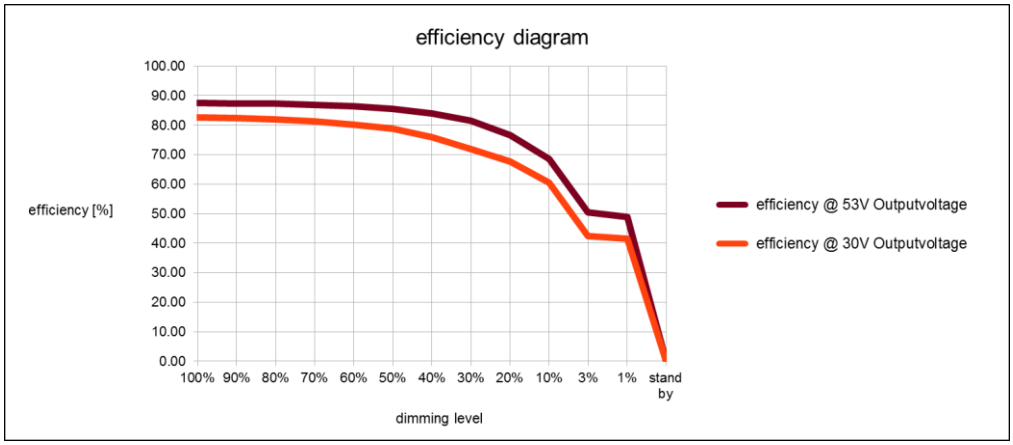
Phase cut dimming	Dimming from mains side by phase cutting dimmers is impermissible.
Dimming frequency	976 Hz
Dimming level	from 1 % (min.) to 100% (max.)
Push	Dimmable with usual push key. The PUSH function is only given at AC operation.
DALI	Complete implementation of the DALI - standard according to EN 62386-102 (control gear), EN 62386-207 (LED modules), addressable, memory store for scenes and groups, bidirectional communication.
Connection	During operation, either PUSH- or DALI-interface must be connected, to prevent driver from malfunction caused by disturbances (only valid for DALI-model).

Initial operation

Start-Up	The driver features an intelligent regulation, that adapts and calibrates itself to the used LED-voltage at first start-up. During this procedure, the LED-load can show flicker-effects. This procedure is also started, when the operating mode is changed from PUSH-operation to DALI operation and vice versa. When the LED module is changed, the driver will re-adjust itself after 20s of operation.

Efficiency diagram

Efficiency — The following diagram shows the driver's efficiency.



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

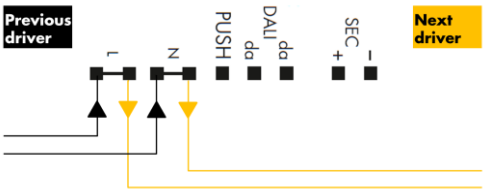
Maximum number of VS control gears apply in such cases where the devices are switched on simultaneously. Specifications apply to single-poled fuses. The number of permissible ballasts must be reduced by 20 % for multi-pole fuses. The considered circuit impedance equals 400 mΩ (approx. 20 m [1.5 mm²] of conductor from the power supply to the distributor and a further 15 m to the luminaire).

Possible number of control gear						
LED Driver	Type of automatic cut-off					
	B 10 A	B 13 A	B 16 A	C10	C 13 A	C 16 A
ECXd 700.064	31	41	50	38	49	61

Through wiring

Pins for L, N are doubled and internally connected about the wiring diagram to allow through wiring.

In case of through wiring, maximum allowed current per wire is 2A. No. of drivers in such installation is 8.



Conductor

Primary and secondary conductor cross section: min. 0.2 mm² and max. 1.5 mm²

Type	Cross section	Max. lead length of secondary conductor
ECXd700.064	0,2 mm²	0.8 m
	0,5 mm²	0.8 m
	0,75 mm²	0.8 m
	1,0 mm²	0.8 m
	1,5 mm²	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.

Cord grip

When used as an independent driver, it must be operated using the following cable-combinations:

No.	Combination	cable
1	Power supply cable without through-wiring and without dimming Secondary side cable	1 x H03VV-F 2x0.75mm² / 1 x H03VV-F 3x0.75mm² 1 x H03VV-F 2x0.75mm² / 1 x H03VV-F 4x0.75mm²
2	Power supply cable with through-wiring Secondary side cable	2 x H03VV-F 2x0.75mm² / 1 x H03VV-F 3x0.75mm² + 1 x H03VV-F 2x0.75mm² 1 x H03VV-F 2x0.75mm² / 1 x H03VV-F 4x0.75mm²
3	Power supply cable Interface cable Secondary side cable	1 x H03VV-F 2x0.75mm² / 1 x H03VV-F 3x0.75mm² 1 x H03VV-F 2x0.75mm² 1 x H03VV-F 2x0.75mm² / 1 x H03VV-F 4x0.75mm²

The screws of the cord grip must be alternately and evenly tightened.

Secondary load

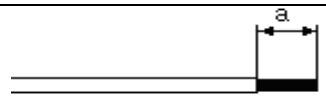
The sum of forward voltages of LED-loads are within the tolerance which is highlighted in Electrical information under USEC.

Parallel connection

connecting LED's in parallel at secondary side is not allowed

Switching on and off

Switching on/off at secondary side is allowed

Lead Preparation	
a	8,5-10 mm
	

Electrical information

Electronic control gear for LED's												
Type	Ref. no.	UPRI (V)	Nominal Input current (IPRI, depends on selected current) (mA)	USEC (with load, depends on selected current) (V)	USEC max. without load in V	PSEC max. (depends on selected output current) (W)	ISEC Nominal output current (mA)	tc max. (depends on selected output current) (°C)	ta Min/Max-Ambient temperature (°C)	Protec-tion class	Degree of protec-tion	Weight (g)
ECXd 700.064	**186308**	198 – 264 220 - 240	230 – 150 200 – 180	30 – 53	60	37	700 ±5%	75	-25…+50° C	II	IP20	200

Additional information

DC voltage operation:198...264V (DC voltage can be reduced to 176V for 2 hours.)