Light is OSRAM

LED drivers for emergency lighting (EL)

Up-to-date information for fitting makers for OSRAM LED-drivers for EL-fittings acc. to IEC 60598-2-22
This article provides you with updated information to **EL mark, DC fuse, information** to IEC 60598-2-22 and LED-drivers **and OSRAM conformities to EATON (CEAG) and INOTEC.**
LED luminaires used for general lighting as well as for emergency lighting have a continued high level of interest. To operate lighting reliably on central power systems, several points need to be noted.

EL quality mark on OSRAM LED drivers
Many of OPTOTRONIC constant-current LED drivers such as OTi DALI are suitable for DC operation (e.g. central emergency system) in compliance with IEC 61347-2-13, Annex J. They are tested in DC operation with regards to performance, safety, immunity and EMC which is proven by the EL mark.

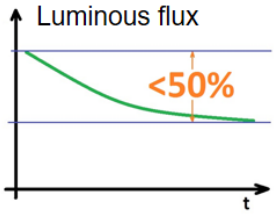
DC fuse in OSRAM LED drivers
Additionally, each OSRAM OPTOTRONIC INDOOR CONSTANT CURRENT and CONSTANT VOLTAGE with with the EL mark has an integrated DC fuse, thus fulfilling the safety requirements according to EN 61347-1 for the European market. Thanks to this internal fuse, the LED driver will be disconnected safely from the mains voltage in case a component fails. This fulfills the luminaire requirements of the standard EN 60598-2-22, chapter 22.7.3. The benefit for the luminaire manufacturer is that there is no need to build in an extra external DC fuse when using an OSRAM OPTOTRONIC with the EL mark.

Factory (Ex-Factory) setting of the OSRAM LED drivers

- Dimmable OSRAM INDOOR constant current LED drivers can detect DC voltage and are set to 15 % output current in DC operation (factory setting) to protect battery capacity. In cases where a higher output current is required, this preset DC value can be adjusted at any time, e.g. via DALI Magic and Tuner4Tronic (T4T), due to it is not locked.
- Non-dimmable OSRAM INDOOR Constant Current LED drivers (with EL symbol) are factory set to 100 % output current.
- OSRAM-OUTDOOR-Constant Current drivers (OT 4 DIM LT2) have, factory setting, no activated DC-detection. If DC-detection is activated via T4T, OT OUTDOOR automatically reduce to 75 % power. Additional current settings are possible via T4T if required.

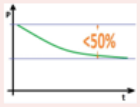
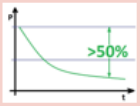
IEC 60598-2-22 (Standard for luminaires for emergency lighting)
In addition to the tests for the EL symbol, all OPTOTRONIC LED drivers are tested in accordance with IEC 60598-2-22 Chapter 22.18 to ensure reliable operation of the luminaires at an outdoor temperature of Ta of 70 °C within half the design period.

1. For the entire test of the EL-fitting at an ambient temperature Ta of 70 °C
2. In case of emergency, the luminous flux must not fall below 50 % within half the rated duration (e.g. 3 h → 1.5 h or 1 h → 30 min). The luminous flux at the start of emergency lighting operation is of great.



IEC 60598-2-22 (< 50 % luminous flux drop) is always complied, at an 15 % output current as ex-factory setting. If significantly higher output current values are required in the application especially with LED drivers with higher wattages the thermal reverse control must be taken into consideration. In the application it has to be tested that the luminous flux drop is compliant with IEC 60598-2-22 (max. 50 % luminous flux drop permitted).

For a better understanding an example of the thermal control behavior of OTi DALI 80/ 2A1 LT2 L:

	Output current at DC-operation in relation to the max.output current	Power with full LED-Module load	Power at 25 °C fitting ambient temperature	Power at 70 °C fitting ambient temperature	Thermal behaviour at fitting ambient temperature 25 °C → 70 °C	IEC 60598-2-22 (< 50 % light output fall fulfilled ?)
OTi DALI 80/2A1 LT2	**15 %** (DALI-value: 185) Ex factory	15 % von 80 W: **12 W**	12 W	12 W		Fulfilled
OTi DALI 80/2A1 LT2	**75 %** (DALI-value: 243)	75 % von 80 W: **60 W**	60 W	30 W		Fulfilled
OTi DALI 80/2A1 LT2	**100 %** (DALI-value: 254)	100 % von 80 W: **80 W**	80 W	30 W		**NOT** fulfilled

CONCLUSION: To comply with the "50 % condition" of IEC 60598-2-22, please observe the maximum output power indicated in the following table as an orientation value. Higher wattage LED drivers can thermally regulate back at higher ambient temperatures (reduction of the electrical LED current) and therefore do not emit more light /wattage from the luminaire than indicated in the following table, even if higher DALI values are set.

(The above condition applies of course ONLY to DC operation / emergency operation, not to normal operation: i.e. an OTi DALI 80 can of course be operated with a load of 80 W in normal operation).

OSRAM can only ever provide power data for the LED drivers. However, since DIN EN requires luminous flux values (lm), the luminaire manufacturer must measure the respective emergency luminaires (LED module and luminaire design dependent).

OSRAM conformities to EATON (CEAG) and INOTEC
Beyond fulfilling the EL norm EN 60598-2-22, chapter 22.18 (2008), it is important that LED drivers are compatible with leading central power system producers like EATON (CEAG) and INOTEC. This compatibility is crucial for the reliable operation of LED drivers in lighting installations with central or group battery systems.
In the Download area of each individual LED-driver, which is suitable for EL, you will find the conformity declarations to EATON (CEAG) and INOTEC. All relevant DC operating windows, switch-over times and standards can be found along with DALI commands, current output adjustments for the address module as well as inrush currents and currents of the individual LED drivers in normal operation mode as well as in no load conditions of DALI drivers. The norms and standards referred to are: DIN EN 62384/DIN EN 61347-2-13 (annex J)/DIN EN 55015 (measurement in AC and DC)/DIN EN 61000-3-2/DIN EN 61547/DIN EN 62386-101/-102/-207/-220. In the conformities are, as confirmed by EATON and INOTEC, always DALI driver combined with DALI address modules and ON/OFF driver combined with ON/OFF modules in order to achieve a high degree of compatibility and reliability of your emergency lighting systems. The basis for these extensive documents is a large number of reliable lighting installations working with OSRAM LED drivers.

Product family	Product name	Default value (ex faxtory) for output current at DC operation in relation to the max. output current	DC- level adjustable via	Max. permitted output wattage in DC- operation to comply IEC 60598-2-22 (drop of luminous flux < 50 %)		EAN
Constant Current-driver in linear shape						
DALI SELV	OTi DALI 35/220…240/700 LT2 L G2	15%	T4T	35 W	Lichtstromabfall immer < 50 %	4052899551763
	OTi DALI 50/220…240/1A4 LT2 L G2	15%	T4T	50 W	Lichtstromabfall immer < 50 %	4052899551787
	OTi DALI 80/220…240/1A6 LT2 L	15%	T4T	60 W	max. 60 W, sonst Lichtstromabfall > 50 %	4052899028074
	OTi DALI 80/220…240/2A1 LT2 L	15%	T4T	60 W	max. 60 W, sonst Lichtstromabfall > 50 %	4052899028050
DALI "non-isolated"	OTi DALI 35/220…240/400 D LT2 UF L (NFC)	15%	T4T	35 W	Lichtstromabfall immer < 50 %	4052899957022
	OTi DALI 75/220…240/700 D LT2 UF L (NFC)	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899957046
	OTi DALI 35/220…240/400 D NFC TW L	15%	T4T	35 W	Lichtstromabfall immer < 50 %	4052899990302
	OTi DALI 75/220…240/700 D NFC TW L	15%	T4T	75 W	Lichtstromabfall immer < 50 %	4052899990326
	OTi DALI 100/220…240/700 D NFC IND L	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899559516
	OTi DALI 150/220…240/1A0 D NFC IND L	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899559530
	OTi DALI 25/220…240/300 D NFC F L	15%	T4T	25 W	Lichtstromabfall immer < 50 %	4062172020749
	OTi DALI 35/220…240/400 D NFC F L	15%	T4T	35 W	Lichtstromabfall immer < 50 %	4062172020763
	OTi DALI 75/220…240/500 D NFC F L	15%	T4T	54 W	max. 54 W, sonst Lichtstromabfall > 50 %	4062172020787
	OTi DALI 35/220…240/400 D LT2 L (G3)	15%	T4T	35 W	Lichtstromabfall immer < 50 %	4052899494220
	OTi DALI 60/220…240/550 D LT2 L (G3)	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899494206
	OTi DALI 90/220…240/700 LT2 L (G3)	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899494244
	OTi DALI 90/220…240/1A0 LT2 L (G3)	15%	T4T	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899494268
OT FIT SELV	OT FIT 35/220…240/700 CS L G2	100%	bei AC/DC 100 %	35 W	Lichtstromabfall immer < 50 %	4052899522534
	OT FIT 55/220…240/1A0 CS L G2	100%	bei AC/DC 100 %	55 W	Lichtstromabfall immer < 50 %	4052899522558
	OT FIT 75/220…240/1A4 CS L G2	100%	bei AC/DC 100 %	75 W	Lichtstromabfall immer < 50 %	4052899522572
OT FIT "non-isolated"	OT FIT 35/220…240/400 D LT2 UF L (NFC)	100%	bei AC/DC 100 %	35 W	Lichtstromabfall immer < 50 %	4052899590960
	OT FIT 75/220…240/700 D LT2 UF L (NFC)	100%	bei AC/DC 100 %	52 W	max. 52 W, sonst Lichtstromabfall > 50 %	4052899590984
	OT FIT 100/220…240/700 D NFC IND L[10]	100%	bei AC/DC 100 %	100 W	Lichtstromabfall immer < 50 %	4052899990128
	OT FIT 150/220…240/1A0 D NFC IND L[10]	100%	bei AC/DC 100 %	150 W	Lichtstromabfall immer < 50 %	4052899990142
	OT FIT 35/220…240/350 D NFC L	100%	bei AC/DC 100 %	35 W	Lichtstromabfall immer < 50 %	4052899990166
	OT FIT 75/220…240/550 D NFC L	100%	bei AC/DC 100 %	68 W	max. 68 W, sonst Lichtstromabfall > 50 %	4052899990180
	OT FIT 25/220…240/300 D LT2 L	100%	bei AC/DC 100 %	25 W	Lichtstromabfall immer < 50 %	4052899990289
	OT FIT 35/220…240/350 D LT2 L	100%	bei AC/DC 100 %	35 W	Lichtstromabfall immer < 50 %	4052899478411
	OT FIT 75/220…240/550 D LT2 L	100%	bei AC/DC 100 %	75 W	Lichtstromabfall immer < 50 %	4052899478435
	OT FIT 120/220…240/750 D LT2 L	100%	bei AC/DC 100 %	80 W	max. 80 W, sonst Lichtstromabfall > 50 %	4052899497900
	OT FIT 30/220…240/125 D L	100%	bei AC/DC 100 %	30 W	Lichtstromabfall immer < 50 %	4052899222557
	OT FIT 45/220…240/200 D L	100%	bei AC/DC 100 %	45 W	Lichtstromabfall immer < 50 %	4052899590946
	OT FIT 50/220…240/250 D L	100%	bei AC/DC 100 %	50 W	Lichtstromabfall immer < 50 %	4052899222571
	OT FIT 50/220…240/300 D L	100%	bei AC/DC 100 %	50 W	Lichtstromabfall immer < 50 %	4052899462694
	OT FIT 50/220…240/350 D L	100%	bei AC/DC 100 %	50 W	Lichtstromabfall immer < 50 %	4052899222595
24 V- Constant Voltage- Treiber						
Indoor	OTi DALI 50/220…240/24 1…4 CH	15%	T4T	24 W	max. 24 W, sonst Lichtstromabfall > 50 %	4052899452916
	OTi DALI 80/220…240/24 1…4 CH	15%	T4T	24 W	max. 24 W, sonst Lichtstromabfall > 50 %	4052899452893
	OTi DALI 160/220…240/24 1…2 CH	15%	T4T	42 W	max. 42 W, sonst Lichtstromabfall > 50 %	4052899986305
	OTi DALI 50/220…240/24 TW	15%	T4T	24 W	max. 24 W, sonst Lichtstromabfall > 50 %	4052899490772
	OTi DALI 80/220…240/24 TW	15%	T4T	24 W	max. 24 W, sonst Lichtstromabfall > 50 %	4052899490758
	OTi DALI 160/220…240/24 TW	15%	T4T	42 W	max. 42 W, sonst Lichtstromabfall > 50 %	4052899986312
Constant-current drivers in compact shape					Lichtstromabfall immer < 50 %	
Constant-current drivers for outdoor					Lichtstromabfall immer < 50 %	

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