

Electronic control gears from OSRAM – innovative technology for energy-efficient lighting design

A perfect combination

Expect more than just components. Expect a perfectly matched system. As one of the world's leading suppliers in the lighting sector, OSRAM provides you with perfectly matched components: innovative LED drivers and LED modules.

Your benefits

- LED drivers and modules from a single source
- Maximum reliability in system operation
- Only one point of contact in all matters relating to lighting

High reliability today and in the future

Opting for ECGs and drivers from OSRAM is always the right decision – customers across the globe appreciate the reliability of our products as well as being able to save time and money. The highly reliable temperature and life-span specifications from OSRAM are particularly valued, with only minimal occurrences of failure even in thermally critical situations. This success is now continuing with the new OPTOTRONIC® LED drivers from OSRAM, which are being installed in an ever greater number of luminaires around the world and are convincing customers with their high flexibility and reliability. OSRAM OPTOTRONIC® Intelligent drivers, for example, are being increasingly used in trunking systems and industrial applications as their high reliability significantly reduces maintenance costs.

Research and development

Providing today what tomorrow needs. Continuous research and development on all OSRAM products promises innovative systems with additional user benefits. For example with LEDset, an innovative interface between OPTOTRONIC® Intelligent drivers and LED modules for the flexible specification of current values required by the modules. These and many other features help users (as well as the OEM and trade sectors) to minimize stock levels and luminaire types, use fewer components and significantly simplify luminaire handling.

Your benefits

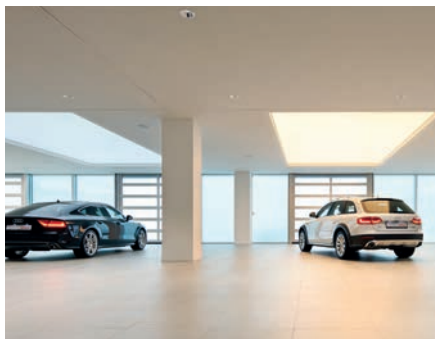
- Compliance with current regulations and, in certain cases, conformity with planned regulations
- Maximum energy efficiency in lighting solutions
- The use of standard protocols enhanced by globally unique features
- State-of-the-art technology
- OSRAM's proven quality, reliability and guarantee



Mandarin Gallery, Singapore



OSRAM Manufacturing, Berlin



Audi used car center, Munich/Eching



Central railway station in Warsaw

Fully guaranteed for up to 5 years*

Hundreds of thousands of customers place their trust in us, year after year. In return, we give them guarantees lasting many years. OSRAM LED drivers deliver maximum quality, enabling us to provide a full 3-year or 5-year guarantee depending on the respective LED driver family, LED module or light engine.

OSRAM's guarantees give you the level of safety you expect over a long period of time. And this is something you can rely on.

5 Year

OSRAM
Guarantee*

Your benefits

In the event of a failure within the guarantee period, OSRAM provides a replacement or credit note* for

- all failed LED modules
- all failed light engines
- all failed LED drivers

Excellent experience with 1 billion installed ECGs

Only those supplying maximum quality earn your trust. The performance of OSRAM ECGs is high, with up to 100,000 hours at a maximum failure rate of 10 %. Thanks to this excellent level of reliability, OSRAM ECGs are not only the choice of leading luminaire manufacturers but also of well-known major users across the world. OSRAM has continued to adhere to these principles for the development of the OPTOTRONIC® range of products – at T_c max. -10°C , the OPTOTRONIC® LED drivers even achieve a lifespan of up to 100,000 hours (10 % failure rate).

Due to their high flexibility and reliability, an increasing number of OPTOTRONIC® LED drivers are also being safely used in extreme temperature ranges.

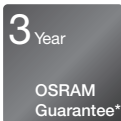
With a million ECGs sold per year, OSRAM receives complaints amounting to less than one-tenth of a percent. There are over 15 million registered OSRAM ECGs in the industrial, retail and public sectors – these figures speak for themselves.



* For conditions and details, go to www.ledvance.com/guarantee; see also page 7.04

Quality from a single source

OSRAM guarantee for LED drivers and LED light sources (light engines and LED modules) – extract from guarantee terms and conditions



LED drivers and LED light sources
(light engines and LED modules)

Guarantee Level 1

OSRAM guarantee

OSRAM offers a full 3-year guarantee on products from the series:

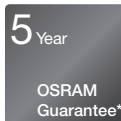
OTe...PC, OT 8/220-240/24,
OT 9/200-240/350 DIM,
OT 9/220-240/350, OT 18/220-240/700DIM,
OT 20/220-240/24 S, OT 75/120-277/24 E, OT 90/220-240/4X400,
OT 120...
and on
light engines & LED modules
PrevaLED® Core AC
PrevaLED® Linear AC
PrevaLED® COIN
VALUE Flex

The guarantee starts with commissioning of the corresponding OSRAM LED drivers and/or OSRAM LED light sources and ends no later than 42 months after the OSRAM product was manufactured.

Registration is not required.

For each product from the above-specified series that fails due to a material or manufacturing defect, a replacement or credit note will be provided as part of the guarantee service.

* The full conditions and details of guarantee level 1 can be found on the Internet at www.ledvance.com/guarantee



LED drivers and LED light sources
(light engines and LED modules)

Guarantee Level 2

OSRAM guarantee

OSRAM offers a full 5-year guarantee on products from the series:

OTI DALI..., OT DALI, OT FIT...,
OTe...CS/CS S, OT EASY..., OT...P... (except OT...PC), OT...3DIM
LT+E,
OT...4DIM LT2 E,
OT.../120-277/...2DIMLT P,
OT 15/220-240/12, OT 18/220-240/450,
OT 20/220-240/24, OT 50/220-240/24,
OT 75/220-240/24, OT 75/220-240/24 E
and on
light engines & LED modules LINEARlight Rigid, LINEARlight FLEX®,
BoxLED®, BackLED, PrevaLED® Value, PrevaLED® Linear 2,
PrevaLED® Linear Slim,
PrevaLED® Area, PrevaLED® Bar, and PrevaLED® Core
PrevaLED® Cube and PrevaLED® Core
OSRAM LMS components

The guarantee starts with commissioning of the corresponding OSRAM LED drivers and/or OSRAM LED light sources as well as OSRAM LMS components and ends no later than 66 months after the OSRAM product was manufactured.

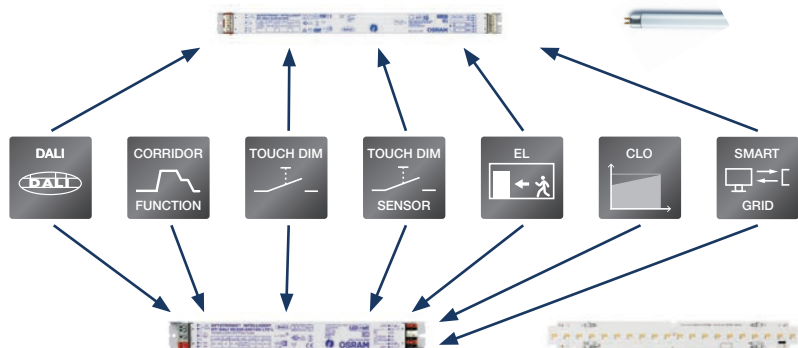
Registration is not required.

For each product from the above-specified series that fails due to a material or manufacturing defect, a replacement or credit note will be provided as part of the guarantee service.

* The full conditions and details of guarantee level 2 can be found on the Internet at www.ledvance.com/guarantee

OSRAM DALI technology

More functionality for DALI control gears



Wide diversity of control options

OSRAM DALI ECGs for fluorescent lamps and OSRAM DALI LED drivers can be controlled using options ranging from standard push-buttons or motion sensors to room-related DALI control units to bus systems across complete buildings. In addition, the DALI technology provides users with many useful and optionally adjustable functions that go far beyond the DALI standard.

Uniform functionality

OSRAM DALI ECGs for fluorescent lamps and OSRAM DALI LED drivers are controlled using the same OSRAM controller. This provides uniform functionality for DALI-controlled lighting installations. By means of the Building Management System (BMS) or the OSRAM DALI magic analysis tool, users and system integrators can program the optimal functionality for any specific application. Communication takes place via the DALI interface, using DALI-compliant commands to program the OSRAM-specific functions.



Optimized for the DALI standard

Due to their strict adherence to the DALI standard, OSRAM DALI ECGs and DALI LED drivers are used worldwide. They are renowned for their excellent compatibility with control gears and BUS systems from established providers. By means of the OSRAM DALI magic analysis and programming tool, OEMs or system integrators can use DALI-compliant commands to program or tune the appropriate DALI parameters and OSRAM-specific functions for a specific application. For many years now, OSRAM

DALI ECGs and DALI LED drivers have been operating reliably and energy-efficiently in numerous major DALI installations with over 10,000 devices.

DALI Edition 2

The new DALI standard in line with IEC 62386 (DALI Edition 2) has an extended protocol that also permits lighting control components such as sensors and couplers to be directly connected to the DALI line. Due to the fact that many control components can be powered directly via the DALI line, this simplifies installation and considerably cuts costs. DALI control components use a separate address area. This means the 64 DALI addresses remain usable for ECGs and LED drivers. DALI ECGs and LED drivers certified according to DALI Edition 2 have been tested for DALI compliance and interoperability using a standard, vendor-neutral test. Because they are downwards compatible, there are no problems using them to extend existing systems or as a replacement for older devices.

Extended areas of application

OSRAM DALI ECGs and OSRAM DALI LED drivers feature the following functions that supplement the DALI standard. These can be configured using Tuner4TRONIC® and DALI magic.



Directly adjustable lighting profile for maximum convenience and security

The corridor functionality available in all OSRAM DALI ECGs permits configuration of a lighting profile over up to 2 levels. This defines the extent to which brightness val-

ues are retained when a person leaves the room. The brightness values and levels can be modified at any time using Tuner4TRONIC® and DALI magic. The definition of brightness levels in stairwells is a typical area of application.



Easy switching and dimming of up to 20 DALI ECGs

In addition to the complete DALI functionality, OSRAM DALI ECGs support Touch DIM® operation. With Touch DIM®, standard push-buttons (suitable for mains power) can be used to switch and dim lighting and save a desired brightness value.



Presence- and daylight-dependent control without an additional control unit

Presence- and daylight-dependent lighting control can be implemented simply by using Touch DIM® LS/PD LI sensors in combination with up to 4 DALI ECGs. The desired brightness values can be saved by double-clicking a standard push-button. An automatic standby switch-off can be configured to respond to sufficient daylight.



Monitoring of operating parameters

OSRAM DALI control gears meet even the strictest of project requirements. To ensure optimum operation, values such as the current mains power input (energy consumption), lamp/module burn time, overvoltage and ECG operating temperature can be monitored.



Optional Power2LAMP efficiency modification (only with fluorescent lamp ECGs)

A further interesting supplementary function for both users and luminaire manufacturers is the optionally configurable Power2LAMP mode. If, for example, the DALI ECG (wattage-regulated ECG) is used in "ex-works" mode, a T5 energy-saver lamp is operated with approx. 10 % more wattage (e.g. a T5 EnergySaver 73 W is operated with 80 W lamp wattage) and users benefit from higher absolute luminous flux. Optionally, DALI ECGs can be set to the nominal wattage for EnergySaver lamps using the OSRAM DALI Wizard. This saves energy and enables a higher ambient temperature of the luminaire in certain applications.



Emergency light: optional DC voltage detection

In addition to DALI-compliant functions such as system failure level (disconnecting the control line), OSRAM DALI control gears feature the automatic detection of DC voltage supply. When DC voltage is detected, a pre-programmed luminous flux level between 0...100 % is implemented. The factory setting for the luminous flux level is 15 %. This luminous flux value can be additionally protected from inadvertent over-writing by setting a locking bit. The locking bit can be set either on the bus system or with OSRAM DALI magic.



CLO function (constant lumen output) with DALI LED drivers

Activating the CLO function enables constant luminous flux over the complete LED lifetime. This saves power at the required lighting level and also protects the LED modules throughout their service life. Although not activated as a factory setting, this function is pre-set to a starting value of 70 %, rising to 100 % over the lifetime of the LED modules. This is programmable over 4 levels.

Further optionally configurable functions

- Switching between logarithmic and linear dimming curves for the convenient mixing of light colors.
- To activate an automatic burn-in function with a 100 h meter, a flag can be set in the DALI ECGs for fluorescent lamps following relamping.



Wireless

Devices with NFC technology in combination with OSRAM Tuner4TRONIC® permit the contactless programming of OPTOTRONIC® during and after the manufacturing process.

The luminaire can also be configured within the lighting system without connecting mains voltage.

The customer's desired lighting profile can be configured by means of fast and reliable programming within the respective lighting installation.



Tuner4TRONIC®

Tuner4TRONIC® is a simple and intuitive programming tool. It can be used to individually configure DALI LED driver functions such as CLO and output current.

When using the **T4T service** module for the Windows® tablet, the necessary programming can be taken into the lighting installation.

A wide range of configurations can be quickly programmed without endangering the luminaire guarantee.

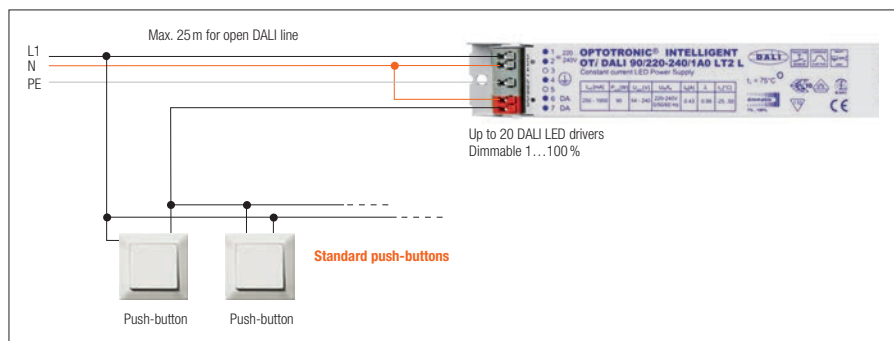


DALI magic hardware

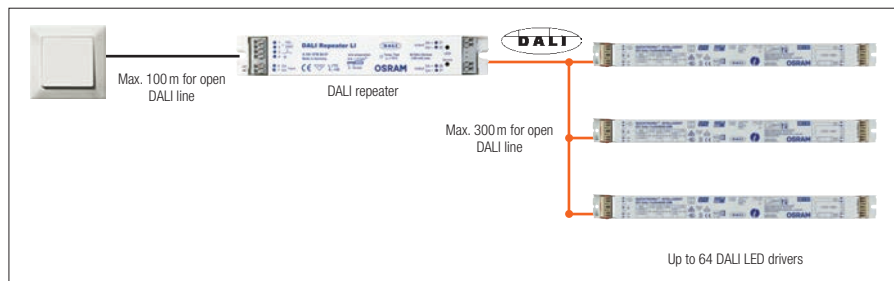


QTi DALI DIM – DALI or Touch DIM® in one unit

- Touch DIM® – dimming without dimmers through the direct connection of standard push-buttons or standard motion sensors



- Operation of up to 64 DALI LED drivers via repeaters



OPTOTRONIC®

Indoor LED drivers



OPTOTRONIC® – a key component for LED systems

LED drivers are a key component in LED solutions. The OPTOTRONIC® portfolio meets all the necessary requirements and provides the basis for applications with high-quality light, long life, exceptional reliability and attractive designs. Containing products with differing ranges of features, the portfolio offers the ideal LED driver for any specific application.

Depending on the application, customers can choose between the following OPTOTRONIC® families:






1. OPTOTRONIC® Linear – constant current LED driver
2. OPTOTRONIC® Compact – constant current LED driver
3. OPTOTRONIC® – constant voltage LED driver
4. ELEMENT – simple constant current LED driver

1. The most important features of OPTOTRONIC®

Linear constant current LED drivers

- All housings with 30x21 mm profile/new ultra-flat LED driver with only 30x11 mm profile
- OPTOTRONIC® Intelligent DALI window drivers are based on a digital platform and fully programmable
- 3 ON/OFF driver families:
 - OPTOTRONIC® Intelligent window driver
 - OPTOTRONIC® FIT, 3 selectable currents
 - OPTOTRONIC® FIT with fixed output current
- SELV and non-isolated versions: many possible combinations with each LED module

OPTOTRONIC® Linear LED driver portfolio

	 Dimmable (DALI): OPTOTRONIC® Intelligent window driver (SELV)	 Dimmable (DALI): OPTOTRONIC® Intelligent window driver (non-isolated)	 Not dimmable: OPTOTRONIC® Intelligent window driver (non-isolated)	 Not dimmable: OPTOTRONIC® FIT 3 selectable currents (SELV)	 Not dimmable: OPTOTRONIC® FIT Fixed output (non-SELV)
Dimming					
Comfort dimming AM+PWM	■	■			
Lowest dimming level	1 %	1 %			
DALI DT6	■	■			
Touch DIM®/Touch DIM® Sensor	■	■			
Corridor function	■	■			
DC operation					
Emergency lighting*	■	■	■	■	■
Fixed DC level			■ (on/off by current modulation)	■	■
Adjustable DC level	■ (by software)	■ (by software)			
Output current					
Adjustable	■ (by software and/or resistor)	■ (by software and/or resistor)	■ (by resistor)	■ (CS)	
Current tolerances [%]	≤ 5**	≤ 5	≤ 5	≤ 20	≤ 10
Ripple at 100 Hz [%]	< 1	< 10	< 10	< 7	< 10
Functions and performances					
Overtemperature protection	■	■	■	■	■
Energy efficiency	up to 91 %	up to 92 %	up to 92 %	up to 87 %	up to 90 %
CLO	■	■			
Stand-by losses [W]	< 0.5	< 0.3			
Input voltage range [V]	220-240	220-240	220-240	220-240	220-240
Permissible switching cycles	150000	150000	150000	150000	150000
Lifetime [h]***	100000	100000	100000	100000	100000
T _a range [°C]	-25...+50	-25...+50	-25...+50	-25...+50	-25...+50
Suitable for luminaire class****	I	I	I	I	I

* In line with IEC 61347-2-13

** Version with < 2 % available soon

*** Operation at max. T_a -10 K, maximum failure rate of 10 %

**** Special release for protection class II luminaires possible on request

AM = Amplitude modulation
 PWM = Pulse width modulation
 DT6 = DALI Device Type 6
 CS = Current setting, flexible
 CLO = Constant Lumen Output







2. The most important features of OPTOTRONIC®

Compact constant current LED drivers

- OPTOTRONIC® Intelligent DALI window drivers are based on a digital platform and are fully programmable
- 2 ON/OFF driver families:
 - OPTOTRONIC® FIT and OPTOTRONIC® ECO
 - 3 selectable currents
- OPTOTRONIC® ECO PC
 - Dimmable via phase-cut (10–100 %, depending on dimmer)
- Many possible combinations with LED modules

OPTOTRONIC® Compact LED driver portfolio

	 Dimmable (DALI): OPTOTRONIC® Intelligent DALI	 Fixed output: OPTOTRONIC® FIT 3 selectable currents***	 Fixed output: OPTOTRONIC® ECO	 Dimmable (PC): OPTOTRONIC® ECO Phase Cut
Dimming				
Comfort dimming AM+PWM	■			
Lowest dimming level	1 %			10 %
Type of dimming	■ DALI DT6			■ Trailing- or leading-edge phase control
Touch DIM®	■			
Corridor function	■			
DC operation				
Emergency lighting*	■	■		
Fixed DC level		■		
Adjustable DC level	■ (by software)			
Output current				
Adjustable	■ (by software and/or resistor)	■ (CS)	■ (CS)	
Current tolerances [%]	5	10	5	10
Ripple at 100 Hz [%]	<2	<5	<20...<30	<25...<35
Functions and performances				
Overtemperature protection	■	■	■	■
Connectable during operation	■	■		
CLO	■			
Stand-by losses [W]	<0.5			
Input voltage range [V]	220-240	220-240	220-240	220-240
Permissible switching cycles	150000	150000	100000	100000
Lifetime [h]**	100000	100000	100000	100000
T _a range [°C]	-20...+50	-20...+50	-20...+50	-20...+50
Suitable for protection class	I + II	I + II	I + II	I + II

* In line with IEC 61347-2-13

** Operation at max. T_a -10K, maximum failure rate of 10 %

*** Updated version with operating window

AM = Amplitude modulation
 PWM = Pulse width modulation
 DT6 = DALI Device Type 6
 CS = Current setting, flexible
 CLO = Constant Lumen Output

Ceiling installations with cable clamps

OPTOTRONIC® Compact from OSRAM for indoor use can easily be retrofitted with suitable cable clamps at any time. If an independent installation is required, the same driver can be used with the additional cable clamp. Simply order the appropriate cable clamp from OSRAM.



CABLE CLAMP A Style TL



CABLE CLAMP B Style TL



CABLE CLAMP B Style



CABLE CLAMP D Style

3. OPTOTRONIC® constant voltage LED drivers

For modular and flexibly scalable LED systems, constant voltage LED drivers with an output voltage of 12 V and 24 V in a wattage range of up to 240 W are the most suitable. In this product spectrum, OSRAM offers LED drivers with integrated control interface (DALI, 1...10 V, EASY) as well as with externally combinable control units (DALI, DMX, 1...10 V). Electrical isolation between the primary and secondary side (SELV, SELV-equivalent) and reversible overload, short-circuit and overtemperature protection mechanisms enable safe and reliable LED system installation.



OPTOTRONIC® OT 50/220-240/24

4. The most important features of ELEMENT – compact constant current LED drivers

- Simple, fixed current ON/OFF SELV driver family up to 60 W
- Suitable for LEDs with chip-on-board technology and discrete LEDs
- < 40 % ripple current
- < 30,000-hour lifespan
- Suitable for luminaire installation and separate mounting



ELEMENT LD 60/220...240/1A4

OPTOTRONIC®









Outdoor LED drivers

OPTOTRONIC® LED drivers for outdoor applications

Long life, low maintenance and high efficiency are very important for outdoor applications. OPTOTRONIC® LED drivers for outdoor applications fulfill these expectations and exploit the advantages of LED-based light sources. The high flexibility of these devices enables the optimal adaptation to required lighting conditions as well as the cost optimization of LED luminaire systems. Significant energy savings as well as a reduction of CO₂ emissions can be achieved thanks to the integrated dimming functions (depending on the device family). Because

of the large operating window (voltage/current) of these LED drivers, both OSRAM LED modules for outdoor applications (see page 6.110) as well as customer-specific LED modules can be operated. OSRAM sets new standards with integrated overvoltage protection for protection class I and II luminaires.

The following three constant current LED driver families are available for outdoor applications:

	ON/OFF	2DIM 	4DIM 
Product name	OT 700 P5	OT 2DIMLT2 P	OT 4DIMLT2 E
Output power	17–250 W	10–110 W	6–165 W
Output current	700 mA	105–800 mA 180–1250 mA/1400 mA	70–1050 mA
Isolation prim./sec.	Double	Double	Double
Surge voltage strength			
L - N	6 kV	6 kV	6 kV
L/N - Earth	6 kV	6 kV	8 kV
Dimming functionality			
 StepDIM	—	● ¹⁾	●
 AstroDIM	—	●	●
 AstroDIM (incl. presence detection)	—	● ¹⁾	●
 MainsDIM	—	—	●
 0-10V	—	●	—
 DALI	—	—	●
CLO function (constant lumen output)	—	●	●
LED module interface			
LEDset2	—	●	●
Programming software			
Tuner4TRONIC®	—	●	●
Programming tool			
DALI magic	—	—	●
OT Programmer	—	●	—

¹⁾ With external relay

Control interfaces/dimming possibilities

Stand-alone control



AstroDIM

AstroDIM provides multi-stage night-time power reduction based on an internal timer referenced to the power ON/OFF time. There is no need for an external control infrastructure. The unit automatically performs a dimming profile based on the predefined scheduled reference to the midpoint, which is calculated based on the power ON/OFF times.



Presence-controlled

In this dimming mode, the light output can be adjusted to the activity around each light point with an additional external sensor powered by the mains, regardless of the actual dimming level of the AstroDIM mode.

Group control



StepDIM

The StepDIM (bi-power) mode allows switching between two output levels, the "normal" mode and the "reduced load" mode, by means of an additional switched phase. In the "reduced load" mode, the driver reduces the light level and therefore the energy consumption. The light levels can be preprogrammed flexibly.



MainsDIM

This feature is mainly used in combination with magnetic ballasts for outdoor applications. The light output is reduced by lowering the mains voltage. The reduction of the mains voltage is applied by a controller in the distribution cabinet.

Network control



DALI

In DALI mode, the driver can be integrated into a light management system such as the OSRAM Street Light Control system. The standardized DALI interface enables bi-directional communication between the driver and the light management system, which means that stepless dimming, status requests and addressing of each individual luminaire are possible.



0-10V

With a 0-10V interface, the driver can be integrated into a light management system such as the OSRAM Street Light Control system. This uni-directional interface allows adjusting the light output of the system.

Additional energy-saving features



Constant lumen

To ensure the maintenance interval of the system, the light level must be achieved also at the end of the entire lifetime. Due to lumen depreciation of the light source over time, the system usually needs to be overpowered at the beginning, which leads to increased energy cost. This is not necessary by means of the constant lumen function as the operating output is adjusted continuously to compensate for the lumen loss.



LEDset2 + tuning factor

LEDset2 is a multi-vendor LED module interface which ensures optimal efficiency, a high level of reliability and the adaptability of the LED drivers to the latest LED technologies without reprogramming. In case the necessary light level falls between two lumen packages, it can be adjusted by the tuning factor. This allows further energy reduction and prevents unnecessary light pollution.






High overvoltage protection





With the OSRAM-developed EQUI connection, these drivers (depending on the OPTOTRONIC® family type) offer a high overvoltage protection up to 8 kV in common mode (6 kV in differential mode) for protection class I or II, protecting not only the LED driver, but also the connected module.



OPTOTRONIC® –
Constant voltage LED drivers 24 V



Product name	GTIN (EAN)	Hz	V _{IN}	V _{OUT}	W			
OT 6/200...240/24 CE	4008321113269	50 / 60	180...254 ²⁾	24 ⁴⁾	6 ⁹⁾	51	50	22
OT 8/200...240/24	4008321040169	50 / 60	180...254 ²⁾	24 ⁵⁾	8 ¹⁰⁾	80	40	22
OT 20/200...240/24	4050300618111	50 / 60	198...254 ²⁾	24 ⁵⁾	20 ¹¹⁾	109	50	35
OT 30/220...240/24 P	4052899043497	50 / 60	198...264 ³⁾	24 ⁶⁾	30 ¹²⁾	220	40	22
OT 50/220...240/24	405289905566	50 / 60	198...264 ³⁾	24 ⁷⁾	50 ¹³⁾	242	40	16
OT 50/220...240/24 P	4052899043510	50 / 60	198...264 ³⁾	24 ⁶⁾	50 ¹³⁾	220	40	22
OT 75/220...240/24	4050300817477	50 / 60	198...254 ²⁾	24 ⁵⁾	75 ¹⁴⁾	220	47	44
OT 80/220...240/24 P	4008321981684	50 / 60	198...264 ²⁾	24 ⁶⁾	80 ¹⁵⁾	250	50	34
OT 120/220...240/24 P	4008321981707	50 / 60	198...264 ²⁾	24 ⁶⁾	120 ¹⁶⁾	250	60	39
OT 240/220...240/24 P	4008321981721	50 / 60	198...264 ²⁾	24 ⁶⁾	240 ¹⁷⁾	250	80	39

Product name				protection class	IP	
OT 6/200...240/24 CE	-	-20...+50	Yes ¹⁾	II	IP65	20
OT 8/200...240/24	72	-20...+50	Yes ¹⁾	II	IP20	50
OT 20/200...240/24	-	-20...+45	Yes ¹⁾	II	IP20	20
OT 30/220...240/24 P	213	-25...+55	Yes ¹⁾	II	IP66	30
OT 50/220...240/24	-	-20...+45	Yes ¹⁾	II	IP20	20
OT 50/220...240/24 P	213	-25...+55	Yes ¹⁾	II	IP66	30
OT 75/220...240/24	180	-20...+50	Yes ¹⁾	II	IP20	10
OT 80/220...240/24 P	241	-25...+55	Yes ¹⁾	II	IP67	10
OT 120/220...240/24 P	241	-25...+55	Yes ¹⁾	I	IP67	10
OT 240/220...240/24 P	241	-25...+55	Yes ¹⁾	I	IP67	8

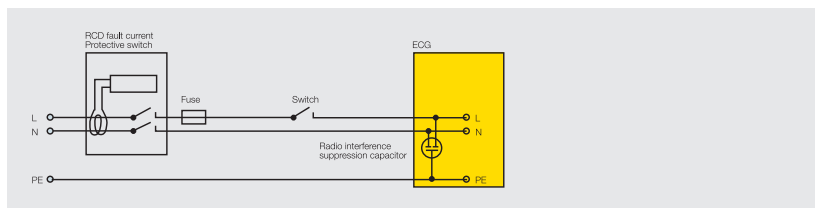
- 1) With OPTOTRONIC® dimmers
2) Permitted voltage range
3) V_{dc} / Permitted voltage range
4) ±0.8 V
5) ±1.0 V
6) +1.0/-0.5 V
7) +0.9/-0.5 V
8) ±5 %
9) Partial load 0.4...6 W
10) Partial load 0...8 W
11) Partial load 0.5...20 W
12) Partial load 0...30 W
13) Partial load 0...50 W
14) Partial load 0...75 W
15) Partial load 0...80 W
16) Partial load 0...120 W
17) Partial load 0...240 W

Product benefits

- Versatile scope of application due to output power range of up to 240 W
- Very high efficiency and reliability
- Constant luminous flux for very low and high temperatures due to Smart Power Supply

Areas of application

- Suitable for indoor and outdoor SELV installations
- Outdoor applications only in suitable luminaires
- Suitable for use in tight, flat luminaires or installation in suspended ceilings



The following installation and operating instructions have been included to help you get the most out of your electronic control gears.

Requirements

The requirements to be met by lighting systems with electronic control gears fall into the following categories:

1. Residual currents/residual current detector
2. Capacity for automatic cutouts/switch-on currents
3. ECGs in 3-phase operation (overvoltages/under-voltages/missing neutral conductor)
4. LED drivers in emergency lighting systems (voltage ranges and switch-on times)
5. Power factor/compensation
6. Permissible cable lengths
7. DALI ECGs with Touch DIM®/corridor function should not be operated on open DALI lines
8. Permissible switching cycles for LED drivers
9. Dimming operation
10. Luminaires with LED drivers
11. Ambient and control gear temperatures
12. LED drivers for outdoor luminaires
13. Wiring of LED drivers
14. Lifespan and reliability of LED drivers

For more detailed information, see the Technical Guides at www.osram.com/oem-download



1. Residual currents/residual current detector

Problem

For LED drivers with protective earth (PE), both the high short-duration inrush current and the small leakage current from the interference suppression capacitors in the electronic control gears can trigger the residual current detector.

Solution

- Distribute luminaires across 3 phases and use 3-phase circuit breakers
- Use surge-current-resistant, short-delay circuit breakers
- If permissible, use 30 mA RCDs

2. Capacity for automatic cutouts

On switch-on at peak voltage, the storage capacitors of electronic control gears cause a high but very brief current pulse.

OSRAM offers an inrush current limiter for some OPTOTRONIC® devices. The EBN-OS restricts the switch-on current, which means that a larger number of LED drivers can be connected to an automatic cutout.

When using the values given in the tables, please note the following:

- For LED driver operation, the load data relates to switching on at peak voltage
- If circuit breaker types have C characteristics, the number of permitted luminaires for LED driver operation can be increased by 70 % (as compared to B characteristics)
- Circuit breaker design:
The specified loading is for single-pole circuit breakers. When multi-pole circuit breakers (2-pole, 3-pole) are used, the number of permitted luminaires is reduced by 20 %.
- Circuit impedance:
The specified loading applies with reference to a line impedance of 800 mΩ (corresponding to a 15 m long cable with a diameter of 1.5 mm² from the distribution board to the first luminaire and a further distance of 20 m to the middle of the circuit; at a line impedance of 400 mΩ, the permitted values are reduced by 10 %, and by 20 % with 200 mΩ)



Max. permissible number of LED drivers on type B or C automatic circuit breakers

Product family	I max [A _{pk}]	T _H [μs]	Max. permissible number of OTs on an automatic circuit breaker			
			Type B 10 A	Type C 10 A	Type B 16 A	Type C 16 A
OTi DALI Linear SELV						
OTi DALI 35/220-240/700 LT2 L	32	100	18	31	30	51
OTi DALI 50/220-240/1A4 LT2 L	53	200	8	14	13	22
OTi DALI 80/220-240/2A1 LT2 L	53	200	8	14	13	22
OTi DALI 80/220-240/1A6 LT2 L	53	200	8	14	13	22
OTi DALI Linear non-isolated						
OTi DALI 60/220-240/550 D LT2 L	53	300	8	14	13	22
OTi DALI 90/220-240/1A0 LT2 L	53	200	8	13	13	22
OTi Linear non-isolated						
OTi 60/220-240/550 D LT2 L	53	200	8	14	13	22
OTi 90/220-240/1A0 D LT2 L	53	200	8	13	13	22
OT FIT Linear SELV						
OT FIT 35/220-240/700 CS L	24	230	17	29	28	48
OT FIT 50/220-240/1A0 CS L	24	230	17	29	28	48
OT FIT 80/220-240/1A6 CS L	53	230	8	14	13	22
OT FIT Linear non-isolated						
OT FIT 30/220-240/125 D L	Not relevant	Not applic.	35	59	56	95
OT FIT 50/220-240/250 D L	Not relevant	Not applic.	35	59	56	95
OT FIT 50/220-240/350 D L	Not relevant	Not applic.	35	59	56	95
OTi DALI Compact SELV						
OTi DALI 25/220-240/700 LT2	20	<100	40	50	80	136
OTi DALI 35/220-240/1A0 LT2	20	<100	33	56	55	94
OTi DALI 50/220-240/1A4 LT2 FAN	30	200	12	20	20	34
OT FIT Compact SELV						
OT FIT 15/220-240/350 CS	24	174	17	29	28	48
OT FIT 25/220-240/500 CS	24	174	17	29	28	48
OT FIT 35/220-240/700 CS	24	174	17	29	28	48
OT FIT 50/220-240/1A0 CS	24	174	17	29	28	48
OT ECO PC Compact SELV						
OTe 10/220-240/700 PC	< 5	100	55	93	85	145
OTe 13/220-240/350 PC	< 5	100	55	93	85	145
OTe 18/220-240/350 PC	< 5	100	55	93	85	145
OTe 18/220-240/500 PC	< 5	100	55	93	85	145
OTe 25/220-240/700 PC	< 7	100	40	68	65	110
OTe 35/220-240/700 PC	<10	250	30	51	50	85
OT ECO Compact SELV						
OTe 25/220-240/420 CS	< 16	100	30	51	50	85
OTe 25/220-240/700 CS	< 16	100	30	51	50	85
OTe 35/220-240/700 CS	< 16	100	15	25	25	43
OTe 35/220-240/700 CS S	< 16	100	28	48	44	75
OTe 35/220-240/1A0 CS	< 16	100	15	25	25	42
OTe 35/220-240/1A0 CS S	< 16	100	28	48	44	75
OTe 50/220-240/1A0 CS	< 16	100	15	25	25	43
OTe 50/220-240/1A4 CS	< 16	100	15	25	25	43
OTe 50/220-240/1A0 CS FAN	< 16	100	15	25	25	43

If MCBS with a C characteristic are used, the number of permitted LED drivers can be increased by 70%
 Circuit impedance: The specified loading applies with reference to a line impedance of 800 mΩ (corresponding to a 15 m long cable with a diameter of 1.5 mm² from the distribution board to the first luminaire and a further distance of 20 m to the middle of the circuit; at a line impedance of 400 mΩ, the permitted values are reduced by 10%, and by 20% with a line impedance of 200 mΩ)

Product family	Max. permissible number of OTs on an automatic circuit breaker					
	Type B 13 A	Type C 13 A	Type B 20 A	Type C 20 A	Type B 25 A	Type C 25 A
OTi DALI Linear SELV						
OTi DALI 35/220-240/700 LT2 L	24	41	37	63	46	79
OTi DALI 50/220-240/1A4 LT2 L	10	17	16	27	20	34
OTi DALI 80/220-240/2A1 LT2 L	10	17	16	27	20	34
OTi DALI 80/220-240/1A6 LT2 L	10	17	16	27	20	34
OTi DALI Linear non-isolated						
OTi DALI 60/220-240/550 D LT2 L	10	17	16	27	20	34
OTi DALI 90/220-240/1A0 LT2 L	10	17	16	27	20	34
OTi Linear non-isolated						
OTi 60/220-240/550 D LT2 L	10	17	16	27	20	34
OTi 90/220-240/1A0 D LT2 L	10	17	16	27	20	34
OT FIT Linear SELV						
OT FIT 35/220-240/700 CS L	22	39	35	60	43	75
OT FIT 50/220-240/1A0 CS L	22	39	35	60	43	75
OT FIT 80/220-240/1A6 CS L	10	17	16	27	20	34
OT FIT Linear non-isolated						
OT FIT 30/220-240/125 D L	45	77	70	118	87	148
OT FIT 50/220-240/250 D L	45	77	70	118	87	148
OT FIT 50/220-240/350 D L	45	77	70	118	87	148
OTi DALI Compact SELV						
OTi DALI 25/220-240/700 LT2	65	110	100	170	125	212
OTi DALI 35/220-240/1A0 LT2	44	76	68	117	85	146
OTi DALI 50/220-240/1A4 LT2 FAN	16	27	25	42	31	53
OT FIT Compact SELV						
OT FIT 15/220-240/350 CS	22	39	35	60	43	75
OT FIT 25/220-240/500 CS	22	39	35	60	43	75
OT FIT 35/220-240/700 CS	22	39	35	60	43	75
OT FIT 50/220-240/1A0 CS	22	39	35	60	43	75
OT ECO PC Compact SELV						
OTe 10/220-240/700 PC	69	117	106	181	132	226
OTe 13/220-240/350 PC	69	117	106	181	132	226
OTe 18/220-240/350 PC	69	117	106	181	132	226
OTe 18/220-240/500 PC	69	117	106	181	132	226
OTe 25/220-240/700 PC	52	89	81	137	101	171
OTe 35/220-240/700 PC	40	69	62	106	78	132
OT ECO Compact SELV						
OTe 25/220-240/420 CS	40	69	62	106	78	132
OTe 25/220-240/700 CS	40	69	62	106	78	132
OTe 35/220-240/700 CS	20	34	31	53	39	67
OTe 35/220-240/700 CS S	35	60	55	93	68	117
OTe 35/220-240/1A0 CS	20	34	31	52	39	65
OTe 35/220-240/1A0 CS S	35	60	55	93	68	117
OTe 50/220-240/1A0 CS	20	34	31	53	39	67
OTe 50/220-240/1A4 CS	20	34	31	53	39	67
OTe 50/220-240/1A0 CS FAN	20	34	31	53	39	67

The circuit breaker's rated current may not be exceeded.
Installations of 1.5 mm² may be protected with a max. 16 A circuit breaker.

Installation and operating instructions

Maximum permissible number of OPTOTRONIC® LED drivers on an automatic circuit breaker

LED drivers	I_p [A]	T_H [μs] mea- sured at 50 % I _{peak}	Maximum no. of LED drivers on circuit breakers 10 A 16 A
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OPTOTRONIC® constant current 350 mA

OT 9/200-240/350	15	170	30	48
OTe 25/220-240/2x350	16	20	50	70

ELEMENT LD constant current

ELEMENT LD 15/220-240/350	16	50	30	50
ELEMENT LD 20/220-240/500	16	50	35	60
ELEMENT LD 30/220-240/700	16	50	25	40
ELEMENT LD 38/220-240/900	16	50	20	25
ELEMENT LD 45/220-240/1A0	16	50	15	25
ELEMENT LD 60/220-240/1A4	16	50	15	20
ELEMENT LD 8/220-240/180	16	50	50	80

LED driver	I_p [A]	T_H [μs] mea- sured at 50 % I _{peak}	Maximum no. of LED drivers on circuit breakers 10 A 16 A
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OPTOTRONIC® constant voltage 12 V

OT 15/12 P	20	170	32	51
OT 30/12 P	30	170	13	21
OT 60/12 P	35	170	11	17
OT 120/12 P	40	300	6	10
OTe 15/220-240/12 P	17	15	— ¹⁾	— ¹⁾
OTe 30/220-240/12 P	26	370	— ¹⁾	— ¹⁾
OTe 60/110-277/12 E	15	200	7	12
	40	200	7	12
OTe 60/220-240/12 P	35	420	4	8
OTe 120/110-277/12 E	60	250	3	6
	100	250	3	6
OTe 120/220-240/12 P	22	35	3	6

OPTOTRONIC® constant voltage 24 V with DALI

OTi DALI 75/220-240/24 1...4CH	35.6	270	7	12
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OPTOTRONIC® constant voltage 24 V with 1...10 V

OT 80/24 DIM P	35	360	7	10
OT 120/24 DIM P	60	250	6	10
OT 240/24 DIM P	70	250	5	8

OPTOTRONIC® constant voltage 24 V

OT 6/200-240/24 CE	15	240	30	48
OT 8/200-240/24	15	240	30	48
OT 20/120-240/24 S	45	150	7	11
OT 30/220-240/24 P	23	270	13	21
OT 50/220-240/24	45	80	12	19
OT 50/220-240/24 P	22	270	12	19
OT 75/220-240/24	41	200	7	12
OT 75/220-240/24 E	41	200	7	12
OT 80/220-240/24 P	35	360	7	10
OT 120/220-240/24 P	60	250	6	10
OTe 120/220-240/24 E	70	300	3	5
OT 240/220-240/24 P	70	250	5	8



¹⁾ On request or in data sheet

Installation and operating instructions

Max. permissible number of OTs on an EBN-OS inrush current limiter

Product family	GTIN (EAN)	Max. permissible number of OTs on an automatic circuit breaker	Max. permissible number of OTs on an EBN-OS inrush current limiter
		Type B 16 A	Type B 16 A
OTi DALI Linear non-isolated			
OTi DALI 60/220-240/550 D LT2 L	4052899188662	13	40
OTi DALI 90/220-240/1A0 LT2 L	4008321867568	13	40
OTi Linear non-isolated			
OTi 60/220-240/550 D LT2 L	4052899188419	13	40
OTi 90/220-240/1A0 D LT2 L	4052899188556	13	40
OTi DALI Compact SELV			
OTi DALI 50/220-240/1A4 LT2 FAN	4052899919433	20	50



EBN-OS inrush current limiter

Installation and operating instructions

Max. permissible number of LED drivers on type B or C automatic circuit breakers

Product family	I max [A _{pk}]	T _H [μs]	Max. permissible number of OTs on an automatic circuit breaker						
			Type B10	Type C10	Type B16	Type B16 + EBN-OS	Type C16	Type B25	Type C25
OT 40/1A0 4DIMLT2 E	30	250	10	17	17	45	28	28	44
OT 60/1A0 4DIMLT2 E	55	230	7	12	12	30	20	20	32
OT 90/1A0 4DIMLT2 E	57	210	7	12	12	30	20	20	32
OT 165/1A0 4DIMLT2 E	62	330	4	8	8	15	14	14	21
OT 50/1A2 2DIMLT2 P	30	250	10	17	17	45	28	28	45
OT 50/800 2DIMLT2 P	30	250	10	17	17	45	28	28	45
OT 100/800 2DIMLT2 P	55	230	7	11	10	30	17	16	26
OT 110/1A4 2DIMLT2 P	55	230	7	11	10	30	17	16	26
OT 50/700 P 5	50	200	8	14	13	–	22	20	34
OT 100/700 P 5	100	200	4	7	7	–	12	12	19
OT 180/700 P 5	110	200	4	7	7	–	12	11	19
OT 250/700 P 5	65	200	6	10	9	–	15	15	23



Circuit impedance: The specified loading applies with reference to a line impedance of 800 mΩ (corresponding to a 15 m long cable with a diameter of 1.5 mm² from the distribution board to the first luminaire and a further distance of 20 m to the middle of the circuit; at a line impedance of 400 mΩ, the permitted values are reduced by 10 %, and by 20 % with a line impedance of 200 mΩ)

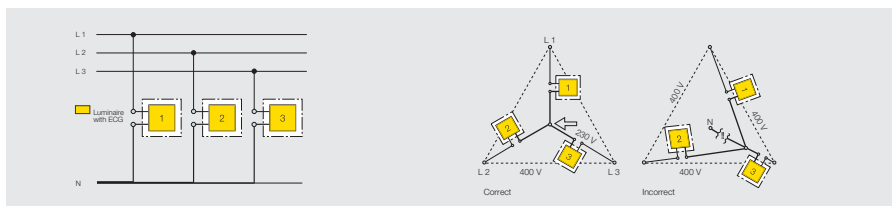
3. ECGs in 3-phase operation

Overvoltage/undervoltage/no neutral conductor

1. Check whether the line voltage is within the application range of the ECG (AC/DC range from 198 V to 254 V for example).
2. The mains connection should only be made to the luminaire terminal. For luminaires or luminaire groups in 3-phase circuits.
3. Make absolutely sure that the neutral conductor is correctly connected to all luminaires and that it is making proper contact.
4. Cables should only be connected or disconnected when no voltage is present.
5. For 3 x 230/240 V supply networks in triangular circuit arrangements, protection by way of common disconnection of the phase conductor is necessary.

Important

- In new systems, the loads must not be connected when the insulation resistance is measured with 500 V DC, as according to VDE 0100-600 Section 9, the test voltage is also applied between the neutral conductor (N) and all 3 external lines (L1, L2, L3). In existing systems, it is sufficient to conduct an insulation test between the external conductors (L1, L2, L3) and protective earth (PE) without disconnecting from the network. The neutral conductor (N) and protective earth (PE) must not be electrically connected in any way while this is being done. For this insulation measurement (500 V = to ☉), the neutral conductor disconnection terminal may only be opened after the line voltage has been disconnected.
- Make sure that the N conductor is correctly connected before putting the equipment into operation.
- During operation of the lighting system do not disconnect the N conductor under any circumstances.



The diagram above shows the wiring for luminaires or luminaire groups in 3-phase circuits and with a common neutral conductor. If the common neutral conductor is interrupted in a 3-phase star configuration and voltage is

present, then luminaires or groups of luminaires may be exposed to unacceptably high voltages and the electronic control gears may be destroyed.

4. LED drivers in emergency lighting systems with DC voltage

Permitted battery voltage	Upper limit	Lower limit
OTi DALI ²⁾	276 V ¹⁾	176 V
OTi ²⁾	276 V ¹⁾	176 V
OT FIT ²⁾	276 V ¹⁾	176 V
Switch-on times	Maintained Supply is switched from AC to DC	Non-maintained Emergency luminaires are switched on from cold
OTi DALI	0.2 s	0.3 s ³⁾ /0.6 s ⁴⁾
OTi	< 0.5 s	< 0.5 s
OT FIT	< 0.5 s	< 0.5 s

1) DC voltage or pulsed DC voltage (>198 V necessary for switch-on)
2) OTi DALI and OTi drivers (not dimmable) can detect DC voltage and adjust to 15 % output current. Positive with regard to battery capacity.
If higher output currents than 15 % (factory setting) are necessary for OTi DALI, these can be configured using DALI magic/Wizard or DALI magic/Tuner4TRONIC®.
3) Switch-on time (emergency lighting mode activated)
4) Switch-on time (at 230 V/50 Hz/full load in accordance with DALI standard) emergency lighting mode not activated



5. Power factor/compensation

The power factor λ for an electrical load is the ratio of the effective power (P_{eff} = voltage x effective current) to the apparent power (P_{app} = voltage x current). This value is affected both by the phase displacement cos φ between the current and the voltage and by the current distortion ε.

$$\lambda = \frac{P_{\text{eff}}}{P_{\text{app}}} = \varepsilon \cdot \cos \varphi$$

However, distortion in the sine-wave current supply occurs during the operation of electronic control gears. Generally speaking, these distortions are classified by integer multiples of the line frequency (harmonics).

The harmonic content of the line current is strictly controlled by national and international standards (IEC 61000-3-2).

OSRAM LED drivers have integrated active electronic harmonic filters for this purpose, which ensure a value for ε of more than 0.95 and therefore a power factor λ greater than 0.9 (exceptions are indicated).



6. Permissible cable lengths

OPTOTRONIC®

The maximum cable length between OPTOTRONIC® and the LED module depends on the type of cable, the currents carried, compliance with radio interference limit values and how the cable is routed. The following maximum cable lengths can be used as guidelines:

Max. permissible cable length	LED driver family	Typical LED driver type
10 m	OPTOTRONIC® constant voltage: 12V and 24 V	e.g. OT.../12 P/ OT... 24 DIM (P), QTi DALI 75/24
2 m	OPTOTRONIC® constant current	e.g. OT...350..., OTi DALI..., OTe
2 m	OPTOTRONIC® OUTDOOR: constant current	OT 4DIM
10 m	OPTOTRONIC® OUTDOOR: constant current	OT 2DIM
10 m	OPTOTRONIC® OUTDOOR: constant current	OT ... 700 P5
2 m	LEDset cables	

Cable routing

For reasons of interference suppression, the power cable should not be laid parallel to the casing and/or the secondary cable. This will avoid high-frequency coupling effects.

Measurement of secondary voltage

Standard multimeters with appropriate accuracy can be used.

7. DALI ECGs with Touch DIM®/corridor function should not be operated on open DALI lines

Due to an increasing number of questions about DALI installations where no DALI controller is (yet) connected, we recommend you short-circuit the (currently) open DALI lines in the sub-distribution cabinet to avoid unwanted switching/unsynchronized dimming.

Recommendation

In DALI installations where no DALI controller is (yet) connected, short-circuit the open DALI lines in the sub-distribution cabinet (also applies to installations where Touch DIM®/corridor mode operation is planned).

Reason

To avoid unwanted switching/unsynchronized dimming caused by electrical distortions/coupling into open DALI lines.

Technical background

Even low induced voltages can trigger the DALI Touch DIM® mode on the DALI input connector of the control gear and therefore cause different and unsynchronized dimming levels. This antenna effect depends on the length and location of the open DALI line. With open DALI lines of more than 10 m, we recommend short-circuiting the DALI line.

Reset in cases of error

If the DALI ECGs have already been triggered incorrectly, do the following:

- 1. Disconnect the mains power to the DALI ECGs and connect a DALI control unit (e.g. OSRAM DALI Repeater or OSRAM DALI MCU)
- 2. Reconnect the power: The DALI ECGs will detect the signal and switch back to DALI mode again
- 3. Interrupt the mains power again and disconnect the DALI control unit
- 4. Short-circuit the DALI line
- 5. Connect up the power again

Applies ONLY to DALI ECGs with Touch DIM®/corridor function.

8. Permissible switching cycles for LED drivers

OPTOTRONIC® constant current LED drivers and OSRAM LED modules are designed for at least 100,000 switching cycles. For OSRAM systems used in high switching cycle applications, such as in car parks, corridors, elevators and logistic areas, this ensures reliable operation over a period of at least 5 years based on approximately 50 switching cycles per day (i.e. approx. 18,000 switching cycles per year).

No. of switching cycles	LED driver	Comment
> 1,000,000	DALI LED driver OTi DALI...	DALI driver in standby mode, switching via DALI commands
> 150,000	DALI LED driver OTi DALI... Window driver OTi...	Switching on the mains side of the LED driver ON/OFF
> 150,000	LED driver with three current settings or a fixed output current OT FIT	Switching on the mains side of the LED driver ON/OFF
> 100,000	OT ECO OTe...	Switching on the mains side of the LED driver ON/OFF

In-house tests at OSRAM have shown that even significantly higher switching cycles can be achieved without failure of an OSRAM LED driver or OSRAM LED module.

Another benefit of the LED light solution is the fact that – in contrast to fluorescent lamp solutions – no “burn-in” time is required: LED modules immediately achieve the full luminous flux.

For applications with particularly high switching cycle requirements, OSRAM recommends DALI LED drivers which are permanently operated in standby mode (permanent power supply voltage) and switched exclusively via DALI commands (DALI command 0 = 0 % luminous flux and DALI command 254 = 100 % luminous flux or any other luminous flux required). Since the DALI LED drivers remain in standby mode, ON/OFF switching on the primary side is no longer required. This ensures that inrush current peaks have no negative effect on the service life of either the DALI LED driver or the LED module. This operating mode enables more than 1,000,000 switching cycles.

Another user-friendly option for corridors and storage areas is to define a lower dimming setting of 5 to 10 % which provides orientation in the room. This means that the illumination level will only be increased when a person or a forklift truck enters the corridor or the storage area.



Possible DALI solution for applications in corridors: DALIeco with activated corridor function (2 changing lighting values)



Installation and operating instructions

9. Dimming operation

– OPTOTRONIC® provides the following interfaces for dimming: 1...10 V, DALI, phase-cut dimmer. The minimum dimming value depends on the type of device. Constant voltage LED drivers can be extended using appropriate DIM modules (page 7.34 ff).

10. Luminaires with LED drivers

The following general points apply to luminaires with LED drivers:

- The temperature limits of the LED drivers regarding ambient temperature and measuring point temperature on the device must not be exceeded (see 11. Ambient and control gear temperatures).
- The maximum permissible radio interference suppression values (EN 55015) must not be exceeded. Make sure the protective conductor and the function earth are correctly connected. Running the lamp cables and protective conductor together (e.g. NYM cables) may lead to problems due to high-frequency interference.

11. Ambient and control gear temperatures

The temperature ranges specified for the relevant control gear must be maintained to enable the LED driver to operate reliably. Generally speaking, lower operating temperatures can extend the life of LED drivers. When LED drivers are built into luminaires, the measuring point temperature T_c on the casing is the crucial parameter. The maximum permissible value specified for the device must not be exceeded.

12. LED drivers for outdoor luminaires

The following LED drivers were specially designed for outdoor applications: OT 2DIM, OT 4DIM and OT...E and OT...P. They are specially equipped for such applications; for example, they are protected against moisture, AC voltage peaks and vibrations (wind load, rail vehicles).

13. Wiring of LED drivers

Parallel connection of OPTOTRONIC® LED drivers (with the exception of OT 50/220-240/24 E and OT 75/220-240/24 E) is not permitted on the secondary side. Series connection of OPTOTRONIC® LED drivers to increase the voltage or for voltage matching is not permitted on the secondary side unless specifically indicated in the data sheet.

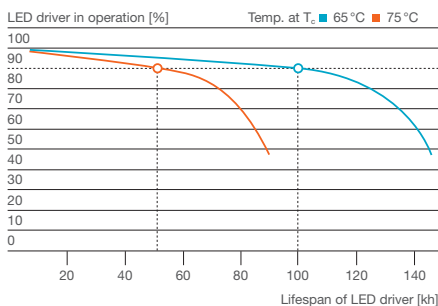
Lamp-side switching or dimming is not permitted.

14. Lifespan and reliability of LED drivers

The lifespan of OPTOTRONIC® LED drivers is dependent on the lifespan of the electrical components used and their individual electrical and thermal loads. Each OPTOTRONIC® LED driver is marked with a so-called T_c point. To ensure reliable operation, the temperature at the T_c point should not exceed the defined maximum temperature. This will also ensure that OPTOTRONIC® LED drivers typically achieve a rated life of 50,000 hours at a maximum failure rate of 10 %.

If you install an LED driver outside of a luminaire, please make sure that it is not located too close to a source of heat. Otherwise there is a risk of overheating. The exponential dependency between lifespan and temperature means that the life of an LED driver can be extended when it is always operated below the defined maximum temperature at the T_c point. As a rule of thumb, you can expect to double the lifespan of an OPTOTRONIC® LED driver if the temperature maintained at the T_c point is 10 °C lower than the maximum permissible temperature. The following graphic shows the typical lifespan of an OPTOTRONIC® LED driver at different T_c temperatures (with a nominal service life of 50,000 hours and a maximum T_c temperature of 75 °C).

Expected lifespan of an OPTOTRONIC® LED driver



Special applications, such as operation in corrosive atmospheres, strong vibrations, impermissible voltage conditions etc., may necessitate further protective measures.

● 1

● 2

○ 3

● 4

○ 5

● 6

● 7

120

240V

DA

DA

OPTOTRONIC® INTELLIGENT

OTi DALI 80/220-240/2A1 LT2 L

Constant current LED Power Supply

I_{load} [mA]	P_{loss} [W]	U_{out} [V]	U_{out}/V_f	U_{out}/V_f	λ	T_j [°C]
1000-2100	80	20 - 54	220-240V	0.41	0.95	-25...45
50/50/50Hz						

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

○ 25

● 26

● 27

SEC

U_{OUT} = 60V

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

○ 25

● 26

● 27

SEC

U_{OUT} = 60V

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

○ 25

● 26

● 27

SEC

U_{OUT} = 60V

OTi DALI 35/220...240/700 LT2 L

OTi DALI 50/220...240/1A4 LT2 L

OTi DALI 80/220...240/1A6 LT2 L

OTi DALI 80/220...240/2A1 LT2 L

● 1

● 2

○ 3

● 4

○ 5

● 6

● 7

220

240V

DA

DA

OPTOTRONIC® INTELLIGENT

OTi 90/220-240/1A0 LT2 L

Constant current LED Power Supply

I_{load} [mA]	P_{loss} [W]	U_{out} [V]	U_{out}/V_f	U_{out}/V_f	λ	T_j [°C]
250-1000	80	54 - 240	220-240V	0.43	0.99	-25...50
50/50/50 Hz						

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

● 25

● 26

● 27

SEC

U_{OUT} = 220V

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

● 25

● 26

● 27

SEC

U_{OUT} = 220V

OTi DALI 60/220...240/550 D LT2 L

OTi DALI 90/220...240/1A0 LT2 L

● 1

● 2

○ 3

● 4

220

240V

DA

DA

OPTOTRONIC® INTELLIGENT

OTi 60/220-240/550 D LT2 L

Constant current LED Power Supply

I_{load} [mA]	P_{loss} [W]	U_{out} [V]	U_{out}/V_f	U_{out}/V_f	λ	T_j [°C]
120 - 550	80	54 - 240	220-240V	0.30	0.95	-25...60
50/50/50 Hz						

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

● 25

● 26

● 27

SEC

U_{OUT} = 220V

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

● 25

● 26

● 27

SEC

U_{OUT} = 220V

OTi 60/220...240/550 D LT2 L

OTi 90/220...240/1A0 D LT2 L

● 1

● 2

○ 3

● 4

○ 5

● 6

● 7

120

240V

DA

DA

OPTOTRONIC®

OT FIT 35/220-240/700 CS L

Constant current LED Power Supply

I_{load} [mA]	P_{loss} [W]	U_{out} [V]	U_{out}/V_f	U_{out}/V_f	λ	T_j [°C]
1000	700	35	220-240V	0.20	0.95	-25...50
0 - 6	800	50	220-240V	0.18	0.95	-25...50
7	500	25	220-240V	0.16	0.95	-25...50
50/50/50Hz						

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

○ 25

● 26

● 27

SEC

U_{OUT} = 60V

LED+ ● 21

LED- ● 22

LEDset ● 23

LED-aux ● 24

○ 25

● 26

● 27

SEC

U_{OUT} = 60V

OT FIT 35/220...240/700 CS L

OT FIT 50/220...240/1A0 CS L

OT FIT 80/220...240/1A6 CS L



Wiring diagrams for LED drivers

- 1 = 220V
- 2 = 240V
- 3 =

OPTOTRONIC®

OT FIT 30/220-240/125 D L

Constant current LED Power Supply

$t_a = 75^\circ\text{C}$

I_{load} [mA]	P_{load} [W]	U_{load} [V]	U_{in} [V]	U_{out} [V]	I_{out} [A]	λ	t_a [°C]
125	27	54-218	220-240V	220-240V	0.14	0.95	-15...50

LED

● 21

● 22



OT FIT 30/220...240/125 D L

OT FIT 50/220...240/250 D L

OT FIT 50/220...240/350 D L

OPTOTRONIC® INTELLIGENT

OTi DALI 35/220-240/1A0 LT2

Constant Current LED Power Supply

I_{load} [mA]	P_{load} [W]	U_{load} [V]	U_{in} [V]	U_{out} [V]	I_{out} [A]	λ	t_a [°C]
350 - 1050	35	15-54	220-240V	220-240V	0.18	0.95	-20...50

PRU

220V

240V

● 1

● 2

○ 3

DA

● 4

DA

● 5

LED

● 21

● 22

● 23

LED

● 24

U-OUT = 60V

Rset

LED

● 21

● 22

● 23

LED

● 24

U-OUT = 60V

Rset

LED

● 21

● 22

● 23

LED

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U-OUT = 60V

Rset

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U-OUT = 60V

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U-OUT = 60V

Rset

LED

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LED

● 24

U-OUT = 60V

OPTOTRONIC® OTe 35/220-240/700 CS
Constant Current LED Power Supply

I _{out} [mA]	P _{out} [W]	U _{out} [V]	U _{in} / f _{in}	I _{in} [A]	t _a [°C]	λ
500	13-27	27-54		0.18		
600	16-32	27-54	220-240V	0.18	20...+55	0.85C-0.95
700	19-35	27-54	50/60Hz	0.20		
700	19-37	27-54		0.22	20...+50	



OTe 35/220...240/700 CS
OTe 35/220...240/1A0 CS
OTe 50/220...240/1A0 CS
OTe 50/220...240/1A4 CS
OTe 50/220...240/1A0 CS FAN

OPTOTRONIC® Power Supply
OTe 35/220-240/700 CS S

I _{out} [mA]	P _{out} [W]	U _{out} [V]	U _{in} / f _{in}	I _{in} [A]	t _a [°C]	λ
500	13-27	27-54		0.18		
600	16-32	27-54	220-240V	0.18	20...+50	0.85C-0.95
700	19-35	27-54	50/60Hz	0.20		
700	19-37	27-54		0.22	20...+45	



OTe 25/220...240/420 CS
OTe 25/220...240/700 CS
OTe 35/220...240/700 CS S
OTe 35/220...240/1A0 CS S

