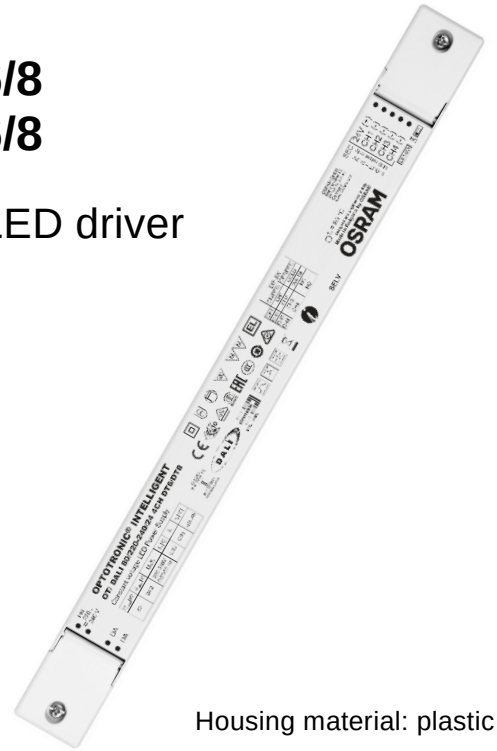
Light is OSRAM

OTi DALI 50/220-240/24 4CH DT6/8
OTi DALI 80/220-240/24 4CH DT6/8

24 V Multi-channel Constant Voltage LED driver
Dimmable range 0/0,1% - 100%



Housing material: plastic, white

* image for information purpose only

Benefits

Long lasting and high reliability.
DALI-2 DT6 and DT8 features in one driver.
DT6: 1 – 4 independent channels.
DT8: TW applications.
Self-configuring channels.
High efficiency in slim form factor.
Patent pending flicker-free dimming until 0,1%.

Applications

Hospitality, cove lighting, shops.
Suitable for indoor CLASS I and CLASS II luminaires.

L	346 mm	Total length
B	32 mm	Width
H	22 mm	Height

Approvals

When not printed on product label, they are under evaluation.

Product Features

- DT6: 1 to 4 self-configuring DALI channels
- DT8 selectable by dip-switch or T4T
- Lamp Failure detection
- CLASS II independent housing
- Smart Power Supply
- SELV, Vout: 24,2 V
- t_a range -20…+45°C
- Overload/Over temperature and Short circuit protection
- Dimmable via DALI interface
- Very low min dimming level: 0,1%
- Mains voltage: 220–240 V_{ac} / 176–276 V_{dc}
- 50’000 h lifetime at max t_C*
- 5 years guarantee*
- IP20 independent housing (cable clamp)
- Output wire length up to 50 m
- Double button Touch DIM compatibility
- Emergency lighting compatibility

*10% cumulated failure, 24 h = 14 h ON, 10 h Standby

Electrical specification

	Item	Value		Unit	Remarks / Condition	
INPUT	Nominal line voltage	220 – 240		V		
	Mains line frequency	0 / 50 / 60		Hz		
	AC voltage range	198 – 264		V	Max 350 V for 2 h. Auto switch off > 280 V_{ac}	
	DC voltage range	176 – 276		V		
	Nominal current	50 W: 0,24 80 W: 0,39		A	Typical @ full load, 230 V_{ac}, 50 Hz	
	Total Harmonic Distortion (THD)	< 5		%	Full load, 230 V_{ac}, 50 Hz, see graphs	
	Power factor λ	> 0,95			Full load, 230 V_{ac}, 50 Hz, see graphs	
	ECG Efficiency	50 W: 92 80 W: 93		%	Typical, Full load, 230 V_{ac}, 50 Hz, see graphs	
	Power loss in stand-by mode	< 500		mW	230 V_{ac}, 50 Hz. Typical 350 mW	
	Protection Class	II				
	Suitable for fixtures with prot. Class	I / II				
	Inrush current	50 W: 41 A_{pk} / 150 µs 80 W: 46 A_{pk} / 190 µs			Full Load, 240 V_{ac}, Cold Start Duration = 50% / 50% I_{pk}	
	Max. units per circuit breaker:	50 W	80 W	Model		
	Max. ECG no. on circuit breaker 10 A (B)	13	9		B-Type is underusing thermal protection	
	Max. ECG no. on circuit breaker 16 A (B)	21	15			
	Max. ECG no. on circuit breaker 25 A (B)	33	23			
	Max. ECG no. on circuit breaker 10 A (C)	22	15		C-Type is the preferable MCB choice	
	Max. ECG no. on circuit breaker 16 A (C)	36	25			
	Max. ECG no. on circuit breaker 25 A (C)	56	39			
	Max. ECG no. on circuit breaker 10 A (D)	29	17		D-Type is underusing short-circuit protection	
	Max. ECG no. on circuit breaker 16 A (D)	46	28			
OUTPUT	Nominal voltage	24,2		V		
	Voltage accuracy	± 2		%		
	Voltage ripple	< 1		V_{pp}	@ 100 Hz, full load. Typical < 500 mV_{pp}	
	Nominal output power	50 W: 0 – 50 80 W: 0 – 80		W	Power factor, harmonics and EMI guaranteed between:	50 W: 18 – 50 80 W: 30 – 80
	Device power loss	50 W: 4 80 W: 6		W	Full load, 230 V_{ac}, 50 Hz, Typical	
	Maximum power	50 W: 50 80 W: 80		W	Smart Power to manage up to Pout_max + 25% Full load on one channel only is allowed	
	Minimum load for channel autodetection	0,25		W	One single SEU is typically detected	
	DC Output power (EL)	15		%		
	Galvanic isolation	SELV				
DIMMING	Dimming interface	DALI 2.0			Proper DALI diagnostics with a min. load of 9% (4.5 / 7.5 W) per channel and dimming > 3 %	
	Dimming range	0,1 – 100		%	Dali dimming steps (0 – 254)	
	Dimming method	PWM				
	TLA (Flicker and strobe effects)	P_{ST} < 1 SVM < 0,4		-	For every dimming condition (n.a. < 1%) Extended SVM metrics (10 kHz).	
	Galvanic Isolation	Basic / Double			Basic DALI to Primary / Double DALI to Secondary	
ENVIRONMENTAL	Ambient temperature range	-20…+45		°C		
	Max. temperature at T_c test point	50 W: 70 80 W: 85		°C	Measured on t_c point indicated of the prod label, t_a not exceeded	
	Max. case temperature in fault condition	115		°C		
	Storage temperature range	-40…+85		°C		
	Permitted rel. humidity during operation	5 – 85		%	Not condensing	
	Surge capability (L vs N)	1		kV	L/N according to EN 61547	
	Environmental rating	Indoor				
	IP protection class	IP 20				
	Mains switching cycles	> 100000		cycles		
	Expected ECG lifetime	30000		h	@ t_a = 45°C, t_c MAX and 10% failure rate, always ON	
		50000		h	@ t_a = 45°C, t_c MAX and 10% failure rate, 14 h ON and 10 h stand-by per day	
		100000		h	@ t_c - 10°C and 10% failure rate, 14 h ON and 10 h stand-by per day	

	Item	Value	Unit	Remarks / Condition
	No-load proof	Yes		Auto recovery
	Overheating protection	Yes		Auto recovery
	Overload protection	Yes		Auto recovery + Smart Power
	Short-circuit protection	Yes		Auto recovery
DIMENSIONS	Height	22	mm	
	Length	346	mm	Overall including fixing brackets
	Width	32	mm	
	Mounting holes interaxis	303	mm	
	Casing material	Plastic		White
	Type of connection	Screw terminals		0,2 – 1,5 mm²
	Wire preparation length	6 / 5	mm	Input / output terminals

Protection

Over temperature, Overload, Short-circuit, Input overvoltage, Output overvoltage. Reversible.

Full load on one-channel-only operation is allowed.

DIP switch for DT6 or DT8 selection

– Input wires cross section: 0,5 – 2,5 mm²

– Output wires cross section 0,2 – 1,5 mm²

– Wire peeling: input 6 mm, output 5 mm

LED wire length

The wire length from the ECG to the LED module can reach 50 m.

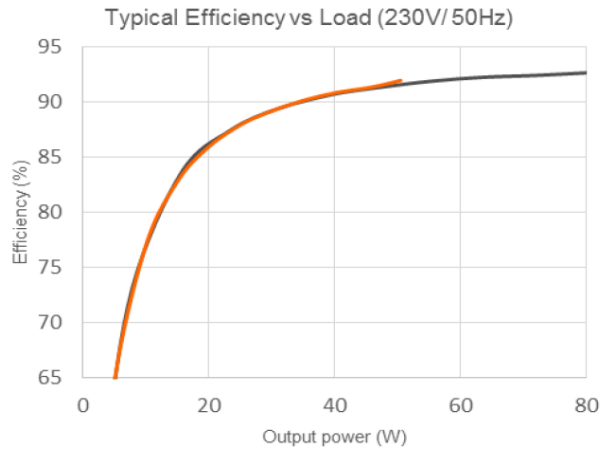
Below matrixes show the maximum LED load power according to cable length and section, at 25°C.

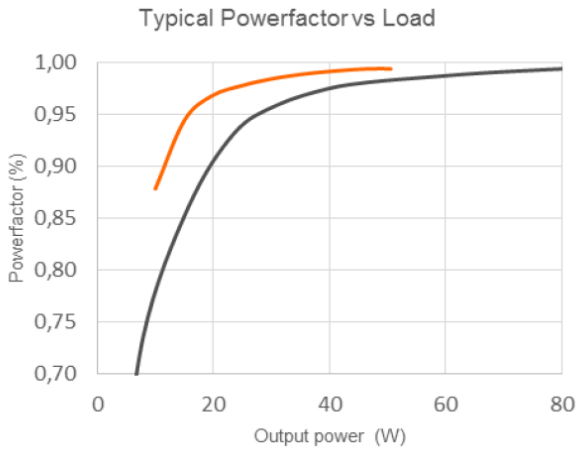
The proper wire section will ensure that the LED module input voltage is at least 23 V in the single-load worst condition.

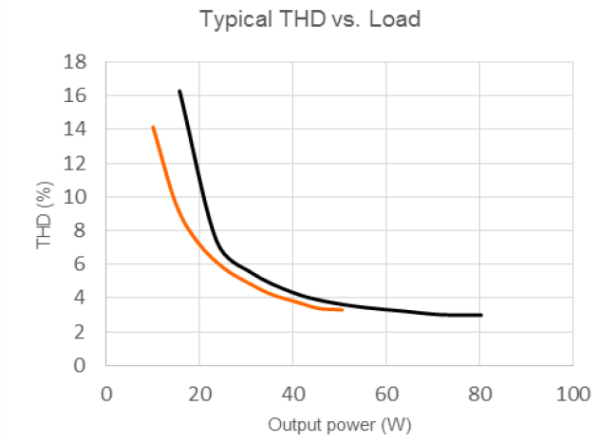
V_{out} 24,2V / nominal 50 W			Cable length [m]					
	AWG	mm²	**5**	**10**	**20**	**30**	**40**	**50**
Cable section	**18**	**0.75**	50	50	29	19	15	12
	17	**1**	50	50	39	26	19	16
	16	**1.5**	50	50	50	39	29	23
	14	**2.5**	50	50	50	50	48	39
	12	**4**	50	50	50	50	50	50

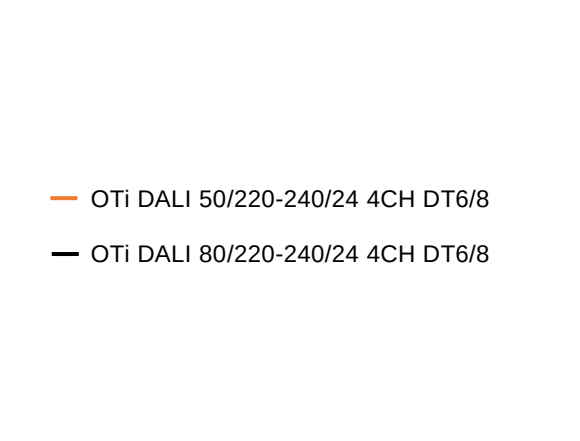
V_{out} 24,2V / nominal 80 W			Cable length [m]					
	AWG	mm²	**5**	**10**	**20**	**30**	**40**	**50**
Cable section	**18**	**0.75**	80	58	29	19	15	12
	17	**1**	80	78	39	26	19	16
	16	**1.5**	80	80	58	39	29	23
	14	**2.5**	80	80	80	64	48	39
	12	**4**	80	80	80	80	77	62
	10	**6**	80	80	80	80	80	80

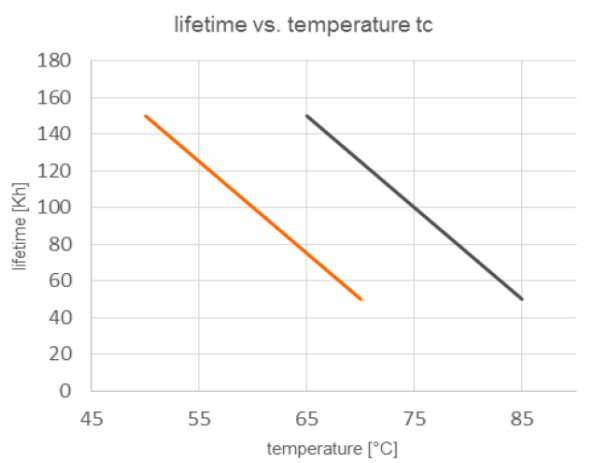
Values are indicative. Each connection may increase total voltage drop.

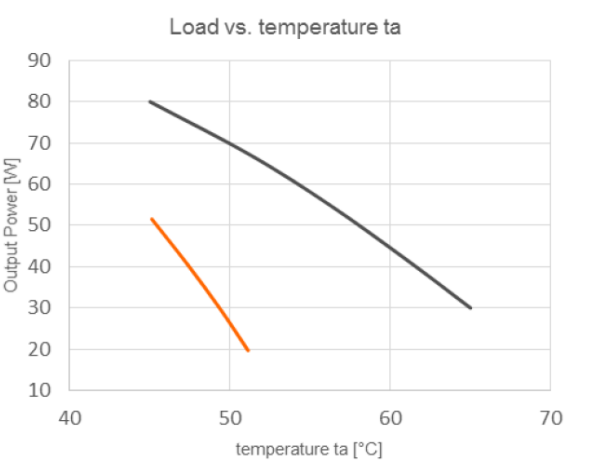

Typical Efficiency vs Load (230V/ 50Hz)
Efficiency (%)
95
90
85
80
75
70
65
0
20
40
60
80
Output power (W)


Typical Powerfactor vs Load
Powerfactor (%)
1,00
0,95
0,90
0,85
0,80
0,75
0,70
0
20
40
60
80
Output power (W)


Typical THD vs. Load
THD (%)
18
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
Output power (W)


OTi DALI 50/220-240/24 4CH DT6/8
OTi DALI 80/220-240/24 4CH DT6/8

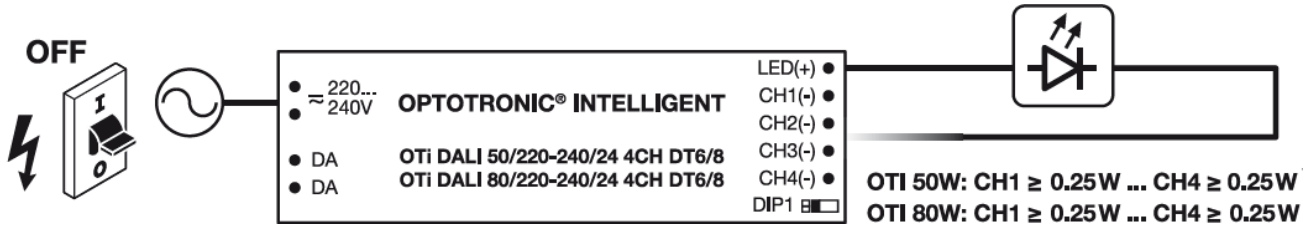

lifetime vs. temperature tc
lifetime [Kh]
180
160
140
120
100
80
60
40
20
0
45
55
65
75
85
temperature [°C]


Load vs. temperature ta
Output Power [W]
90
80
70
60
50
40
30
20
10
40
50
60
70
temperature ta [°C]

Channel addressing procedure (DT6)

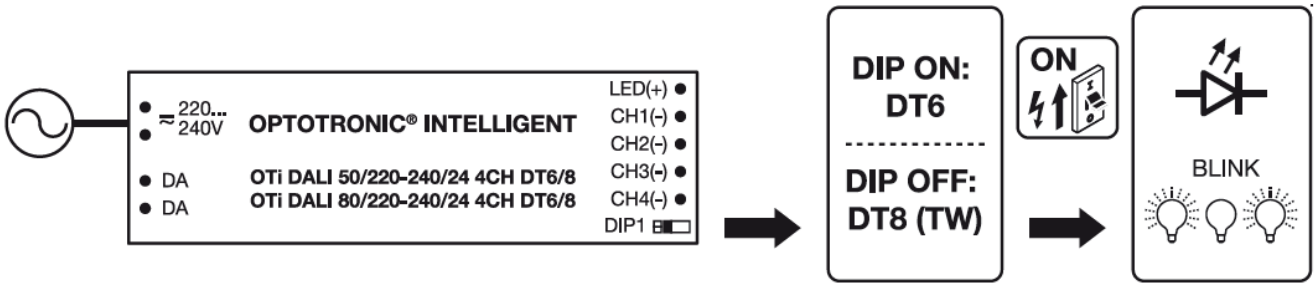
AUTO ADDRESSING ON FIRST POWER UP

The ECG performs auto-channel-detection on first power up when set to DT6 operation (dip-switch: on).



1. Connect the LED loads to the desired channels from 1 to 4.
2. Select “Device Type” to with the dip-switch: DIP-SW ON: DT6 (default) – DIP-SW OFF: DT8 TW

   DT8 TW allows using only CH1 (Cold) and CH2 (Warm) outputs

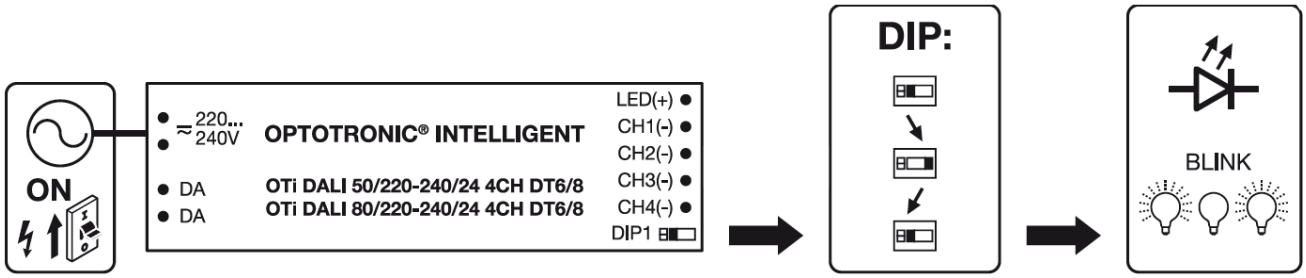


3. Connect the ECG to the mains: the LED loads start blinking.
4. After blinking stops, a DALI address has been assigned to each detected load.

Notes: There is no need to connect the first load to CH1, nor to fill sequentially the terminals: the addresses will be assigned orderly just according to the detected loads, e.g. connecting to CH2 and CH4 will generate two DALI addresses. The outputs not connected to any load during the autodetect phase will stay off and won’t get a DALI address.

ADDRESSING ERROR FIXING OR RESET

Every time the driver recognizes a dip-switch operation (from ON to OFF or vice-versa) it resets its channel configuration. In case DT6 addressing is newly required, the autodetection sequence can be restarted. In order to recognize the change, the driver must be active (powered, not stand-by) during or after each dip-switch operation.



For instance, in order to reconfigure the driver for a new DT6 load configuration, after connecting or disconnecting new loads, move the dip-switch from ON to OFF, then from OFF to ON, during power-on or powering on after each operation.

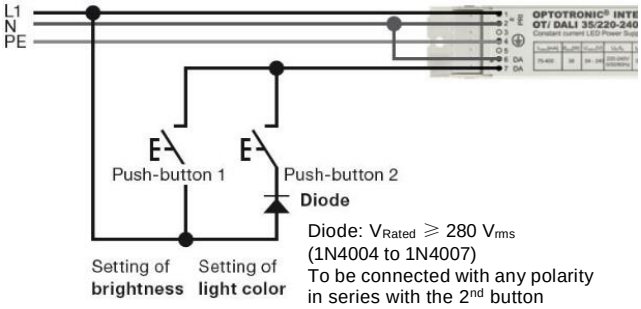
Driver programming

Connecting the drivers to OSRAM T4T tool (dip-switch override) allows the following programming options:

- Autodetected independent 1 to 4 channels DT6 – One address per channel (factory default).
- Preset fixed independent 1 to 4 channels DT6 – One address per channel.
- One DALI address, DT8 tunable white (TW).
- One DALI address, DT6 4 synchronized channels (SYNC).
- *Touch DIM, 1-4 synchronized channels (DT6 default with 1, 3 or 4 channels, 1st push-button only).
- Touch DIM, 2 synchronized channels.
- *Touch DIM, 2 independent channels (DT6 default with 2 channels, 1st and 2nd push-button use).
- *Touch DIM TW (DT8 default, 1st push-button for brightness and 2nd push-button for color).
- Touch DIM, Dim to Warm.
- Corridor function, 4 synchronized channels (SYNC).

*: These are factory default configuration modes and do not require initial DALI programming by T4T, they are simply used and kept once the external buttons are recognized (5 s without DALI frames after last turn-on). All the other operating modes need specific programming by DALI connection and T4T application.

Single and double Touch DIM



This driver supports single and double button Touch DIM operation. The 2nd button must be connected in parallel with the 1st by means of a diode.
As per factory default configuration, they are used:
- The 1st button to control the dimming level.
- The 2nd button to change the color mixing (DT8 TW) or the second channel level (DT6 independent).

Additional information

- The Touch DIM input voltage ranges from 10 Vac to 264 Vac, and has single insulation from mains.
- DALI and Touch DIM must never be used at the same time: control is achieved either with DALI controller or with the Touch DIM function (self-recognized).
- Up to 20 ECGs can be controlled via direct push-button use. The number of push-buttons is limited by the sum of the overall cable length between switch(es) and the connected ECGs: maximum length should not exceed 25 m. In case of longer distances, a small transformer or a DALI repeater must be used to overcome line capacitance; this transformer cannot be used in case of rectified second button usage.
- For additional features, the button operation can be configured by means of the T4T application.

Touch DIM operation

The following item-list briefly describes the use of push-button for brightness control (1, 2 or SYNC CH):
- Switching the lamp on/off: Short Press (< 0,5 s).
- Dimming: Long Press (> 0,5 s); the dimming direction is changed with each press.
- Store reference value: double-click (press twice within 0,4 s) while lamp is *On* → Switch to *Mode 2*.
- Delete reference value: double-click while lamp status is *Off* → Switch to *Mode 1*.
- Long Press while lamp status off: the lamp is switched on at the minimum dimmer setting and faded up until the push-button is released.

In case of Color Control (2nd button operation in DT8 TW), operation is similarly replicated but for color:

- Short Press: sets the color temperature to mid of scale and the shift direction to warmer.
- Long Press: shifts color; the shifting direction is changed with each press.
- Double Press: sets *Mode 2* for color if lamp is on, or *Mode 1* if lamp is off (color blink confirmation).

Operating Modes

- Mode 1: the switch-on value is always the last brightness/color before the lighting was switched off.
- Mode 2: the switch-on value is the value stored by double clicking (default mode).

Re-synchronization

In case of many ECGs connected to the same Touch DIM buttons, there is a chance that an ECG will operate out of synchronism with the others (different on/off state, dimming level or color).
To have all of them back in synchronism, just apply a Long – Short – Long sequence, and in case apply a double-click afterwards to store a new common reference level. Short press on PB2 re-synchronize color.

Programming

Several parameters of Touch DIM can be programmed by T4T, for instance the Corridor Function, dimming limits, fading times, enable/disable functions, etc.

Light sensors

The Touch DIM system enables using Presence Sensors and/or Light Sensor directly connected to the DALI terminals. For such an application, please refer to OSRAM on-line documentation and catalogue.

Remarks

- **Product performances below minimal load condition**: the output power is still generated if the total load is below the minimum output power (18 W for OTI DALI 50 and 30 W for OTi DALI 80, on single channel or distributed in different channels), without any safety risk, but performances regarding THD, EMI, etc. are not guaranteed. See typical operation window graph for details.
- **Output short circuit protection**: short circuit current is limited without damaging the unit. The short circuit protection is self-restoring.
- **Output overload protection**: in case of overload (< 125%), the device automatically dims down the output to keep the average power within 50 W (for OTi DALI 50) or 80 W (for OTi DALI 80) and let the LED load warm-up. When the load exceeds the 125% of maximum nominal output power, the LED load will blink to manifest a fault condition, till the short circuit limit (> 200%).
- **Input over voltage protection**: driver is capable of having input of max 350 V for 2 hours. To prevent damages to the unit, driver performs auto switch off when input voltage is > 280 V_{ac}, therefore driver operation in this abnormal condition is not guaranteed. The over voltage protection is self-restoring.
- **Lamp failure detection**: minimum load per channel that doesn't trigger open circuit detection is 4.5 W (for OTi DALI 50) or 7.5 W (for OTi DALI 80).
- **No load operation**: do not put a switch between ECG and load.
- **Over temperature protection**: the driver is protected against temporary overheating, so it automatically dims down when t_c is exceeded, and eventually turns off. The protection is self-restoring.

- **Emergency lighting:** this LED power supply is suitable for emergency lighting fixtures acc. to EN 60598-2-22, with emergency output factor EOFI = 0,24 for OTi DALI 50 and EOFI = 0,15 for OTi DALI 80 (default values, programmable up to EOFI = 1 with P_{max} 12 W) and related duration time of 10 h at least. Function in emergency is ensured up to t_a = 80°C and t_c = 96°C.
- **Recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU:** separate control gear must be disposed of, in accordance with WEEE, at certified waste disposal companies. For this purpose, recycling centers and take-back systems (CRSO) collection points are available in the trade or at private disposal companies that accept separate control gears free of charge. In this way, raw materials are conserved, and materials are recycled.

Standards

EN 61347-1
EN 61347-2-13
EN 61547
EN 61000-3-2
EN 60598-2-22
EN 62384
EN 62346

Ordering information

Product name	EAN 10	EAN 40	Pieces / Box
OTi DALI 50/220-240/24 4CH DT6/8	4062172177900	4062172177917	20
OTi DALI 80/220-240/24 4CH DT6/8	4062172177924	4062172177931	20

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