

# PHILIPS

LED Transformers

Datasheet



## LED Transformers

### LED Transformer 150W 24VDC TD 220-240V

#### Product description

Philips full-electronic constant voltage DALI LED Transformers are designed to operate dimmable 24VDC LED solutions used for linear accent lighting in general applications such as hotel rooms, restaurants and retail displays. These state-of-the-art drivers offer a high degree of controllability, either via the digital DALI protocol or via Touch and Dim mains voltage control and are specifically designed to ensure the highest performance with maximum robustness combined with a long lifetime.

#### Benefits

- SELV operating voltages, ensuring safety even if wiring or LED boards become damaged
- Energy savings through high efficiency
- Ultimate robustness, offering peace of mind and lower maintenance costs
- Easy to design-in and install
- Long lifetime

#### Features

- DALI 2 control interface
- Touch and Dim interface
- Independent use for Insulation Class II application
- Global approbations and certifications
- Stable output voltage
- Wide ambient temperature range
- Protection against overpower and overvoltage
- Output short-circuit shutdown feature with automatic restart

#### Applications

Retail display lighting, linear accent lighting and refrigerated display lighting

- Shelf lighting
- Cove lighting
- Facade accent lighting
- Coolers and freezers

## Electrical input data

Specification item	Value	Unit	Condition
Rated input voltage range	220 ... 240	Vac	Performance range
Rated input voltage range	198 ... 264	Vac	Operational safety range
Rated input frequency	50 ... 60	Hz	Performance range
Rated input frequency	45 ... 66	Hz	Operational safety range
Rated input current	0.79	A	230Vac, @ rated output power
Rated input power	173.8	W	230Vac, @ rated output power
Power factor	0.98		230Vac, @ rated output power.
Total harmonic distortion	8	%	230Vac, @ rated output power.
Efficiency (typ)	91	%	230Vac, @ rated output power.
Rated input voltage DC range	186 ... 250	Vdc	Performance range
Rated input voltage DC range	168 ... 275	Vdc	Operational safety range
Rated input current DC range	≤ 0.90	Adc	Performance range
Standby power	0.5	W	

## Electrical output data

Specification item	Value	Unit	Condition
Regulation method	Constant Voltage		Rated output voltage = 24VDC
Output voltage range	22.8 ... 25.2	Vdc	@ output current range 1.88 ... 6.25A
Output current range	0.5 ... 6.25	Adc	
Output voltage ripple	< 240	mV <sub>pp</sub>	
Rated output power	150	W	
Line regulation	< 1	%	
Load regulation	< 5	%	
Turn-on delay	< 1	s	With Integrate engine 24VDC module at rated output power
Output voltage rise time	≤ 30	ms	
Hold-up time	≥ 10	ms	

## Electrical data controls input

Specification item	Value	Unit	Condition
Control method	DALI, Touch and Dim *		DALI certification status: please visit <a href="http://www.digitalilluminationinterface.org/products">www.digitalilluminationinterface.org/products</a>
Dimming range	1 ... 100	%	Based on PWM, f > 2kHz
Isolation controls input to output	Double		Acc. IEC61347-1

\* Note: when using Touch and Dim, do not combine with constant-current type LED drivers in the same controller/switch.

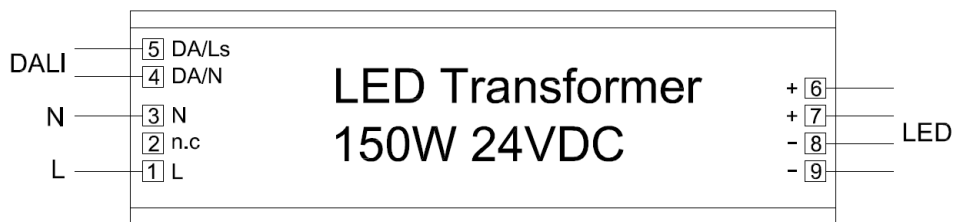
## Logistical data

Specification item	Value
Product name	LED Transformer 150W 24VDC TD 220-240V
EOC	871869978179800
Logistic code 12NC	9290 022 00706
Pieces per box	10

## Wiring & Connections

Specification item	Value	Unit	Condition
Input wire cross-section	0.75 ... 2.5 / 18 ... 14	mm <sup>2</sup> / AWG	Screw connection, solid and stranded wire
Input cable diameter	3.3 ... 8.0	mm	
Input wire strip length	6 ... 7	mm	
Output wire cross-section *	0.5 ... 2.5 / 20 ... 14	mm <sup>2</sup> / AWG	Screw connection, solid and stranded wire
Output cable diameter	2.0 ... 5.0	mm	
Output wire strip length	6 ... 7	mm	
Control wire cross-section	0.75 ... 2.5 / 18 ... 14	mm <sup>2</sup> / AWG	Screw connection, solid and stranded wire
Control cable diameter	3.3 ... 8.0	mm	
Control wire strip length	6 ... 7	mm	
Maximum output cable length	2.5	m	CISPR15: between driver and LED module

\*: For independent application: minimum wire cross section = 0.75mm<sup>2</sup> / 18AWG for output current > 2A  
Maximum connector fastening torque: 0.4Nm

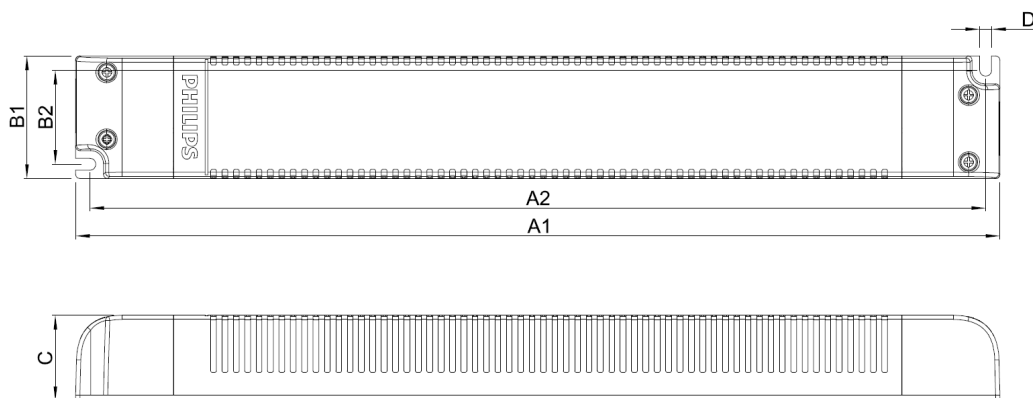


## Insulation

Insulation (acc. IEC61347-1)	Mains	LED	DALI
Mains		SELV (double)	Basic
LED	SELV (double)		Double
DALI	Basic	Double	

## Dimensions and weight

Specification item	Value	Unit	Condition
Length (A1)	325.0	mm	
Width (B1)	43.0	mm	
Height (C1)	30.0	mm	
Fixing hole distance (A2)	315.0	mm	Fixing hole diameter (D): 4.2 mm
Fixing hole distance (B2)	33.0	mm	
Weight	555	gram	



## Operational temperatures and humidity

Specification item	Value	Unit	Condition
Driver ambient temperature	-20 ... +50	°C	At rated output power. Higher ambient temperature allowed as long as Tcase-max is not exceeded.
Tcase-min	-20	°C	
Tcase-max	+85	°C	Max. steady-state Tcase
Tcase-life	+80	°C	For rated driver lifetime
Maximum housing temperature	110	°C	In case of failure
Relative humidity	10 ... 90	%	Non-condensing
Ingress Protection *	IP20		
Noise and hum	≤ 20	dB(A)	

\*: The LED Transformer is primarily intended for independent use. It must not be exposed including but not limited to snow, water and ice or any other chemical agent which may have an adverse affect on driver operation and performance. Exposure may lead to driver failure. It is the luminaire manufacturer's / installer's responsibility to prevent exposure.

## Storage temperature and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-20 ... +80	°C	
Relative humidity	5 ... 95	%	Non-condensing

## Lifetime

Specification item	Value	Unit	Condition
Rated driver lifetime	50,000	hours	$T_{case} \leq T_{case-life}$ . Maximum failures = 10%. See graph.

## Features

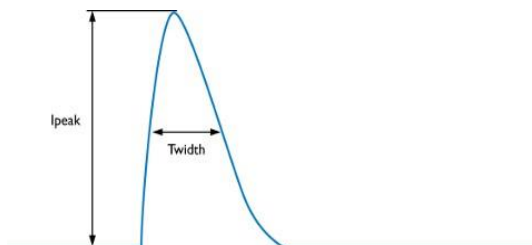
Specification item	Value	Remark	Condition
Open load protection	Yes		$U_{out}$ (open circuit) = 31V max.
Short-circuit protection	Yes		Hiccup mode, automatic recovering
Overpower protection	Yes		Automatic recovering
Overheating protection	Yes		Automatic recovering
Hot wiring	Yes		
Suitable insulation class applications	II		Per IEC60598

## Certificates and standards

Specification item	Value
Approval marks	CE / ENEC / MM / 110 / Double-insulated / Independent / SELV / DALI 2 / CCC / RCM / KC /EL

## Inrush current

Specification item	Value	Unit	Condition
Inrush current $I_{peak}$ (typ)	123	A	Input voltage 230Vac
Inrush current $T_{width}$ (typ)	100	$\mu s$	Input voltage 230Vac
Max. recommended number of drivers	8	pcs	MCB 16A B type, mains impedance $200m\Omega + 400\mu H$



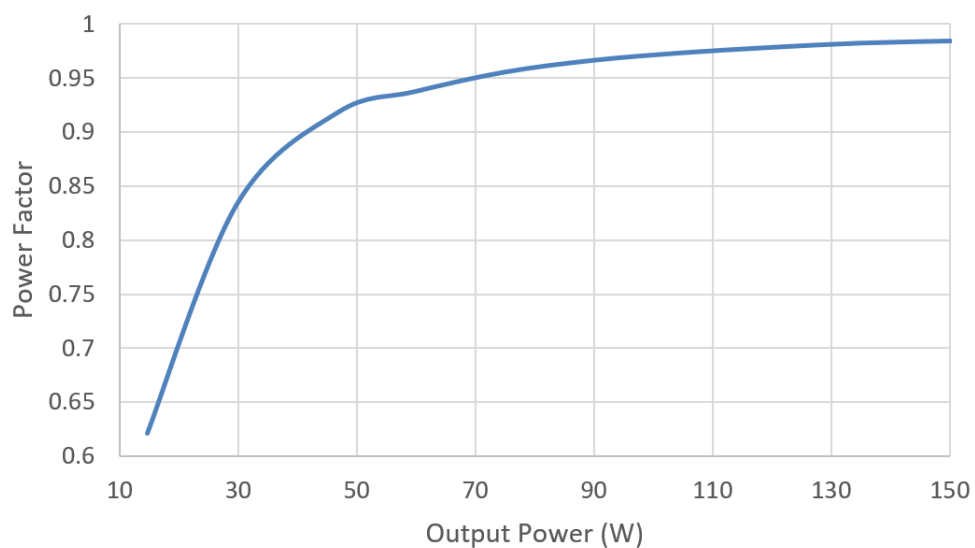
MCB	Rating	
B	6A	37%
B	10A	63%
B	13A	81%
B	16A	<b>100%</b>
B	20A	125%
B	25A	156%
C	6A	63%
C	10A	104%
C	13A	135%
C	16A	170%
C	20A	208%
C	25A	260%
D	6A	125%
D	10A	104%
D	13A	135%
D	16A	170%
D	20A	208%

\* : please check that cable cross sectional area corresponds with MCB rating and type

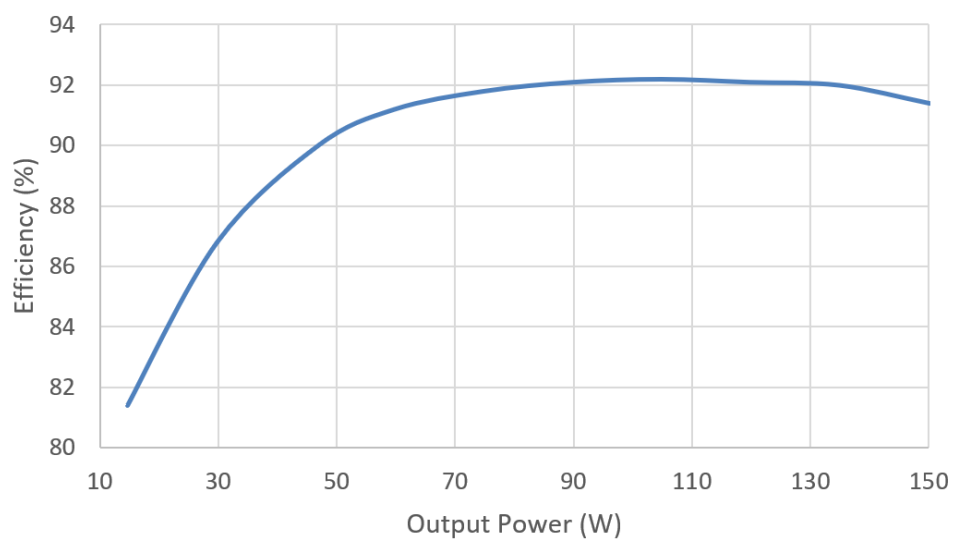
## Surge immunity

Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	1 / 0.5	kV / kA	L-N, acc. IEC61000-4-5, 2 Ohm, 1.2/50us, 8/20us
DALI control surge immunity (diff. mode)	1 / 0.5	kV / kA	DA - DA, acc. IEC61000-4-5, 2 Ohm, 1.2/50us, 8/20us

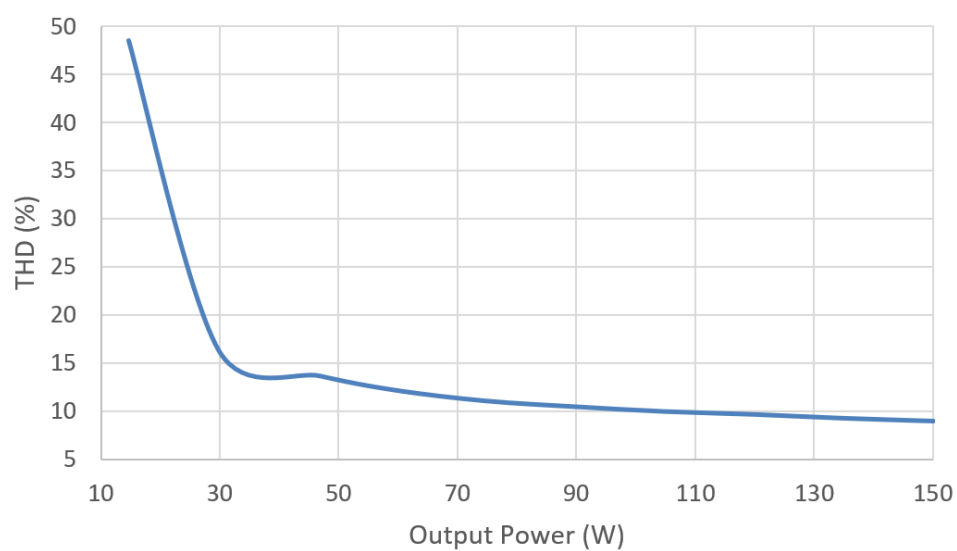
**Power factor versus output power**



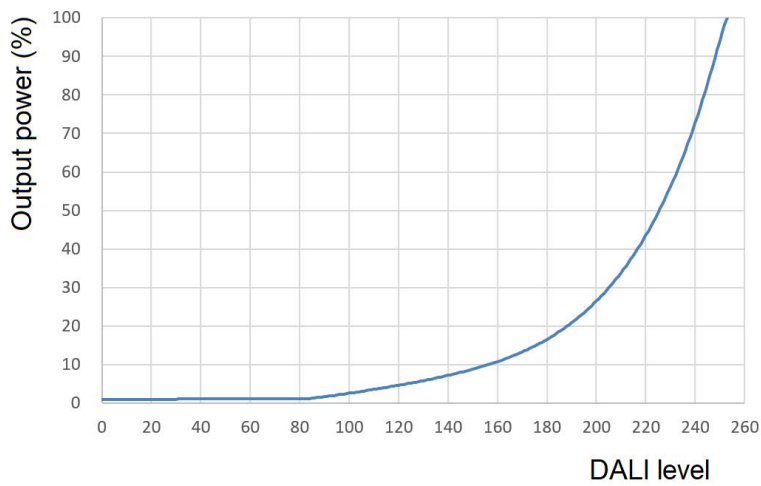
**Driver efficiency versus output power**



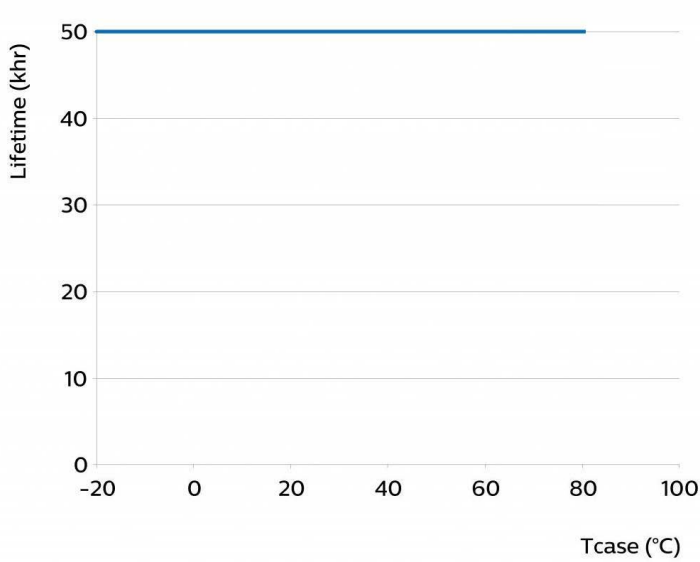
**Input current THD versus output power**



Output power versus DALI level



Driver lifetime versus Tc temperature



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