PHILIPS

LED Transformers



Datasheet

LED Transformers

LED Transformer 100W 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-ofthe-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

Application

Retail display lighting, linear accent lighting and refrigerated display lighting

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

March 2022

Electrical input data

Specification item	Value	Unit	Condition
Rated input voltage range	220...240	V_{ac}	Performance range
Rated input voltage range	198...264	V_{ac}	Operational safety range
Rated input frequency	50...60	Hz	Performance range
Rated input frequency	45...66	Hz	Operational safety range
Rated input current	0.53	A	230Vac, @ rated output power.
Rated input power	116.6	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	V_{dc}	Performance range
Rated input voltage DC range	168...275	V_{dc}	Operational safety range
Rated input current DC	≤ 0.62	A_{dc}	Performance range
Standby power	0.5	W	

Electrical output data

Specification item	Value	Unit	Condition
Regulation methode	Constant Voltage		Rated output voltage = 24VDC
Output voltage range	22.8...25.2	V_{dc}	@ output current range 1.25 ... 4.17A
Output current range	0.1...4.17	A_{dc}	
Output voltage ripple	< 240	mV_{pp}	
Rated output power	100	W	
Line regulation	< 1	%	
Load regulation	< 5	%	
Turn-on delay	< 1	s	With Integrade 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 www.digitalilluminationinterface.org/products
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.

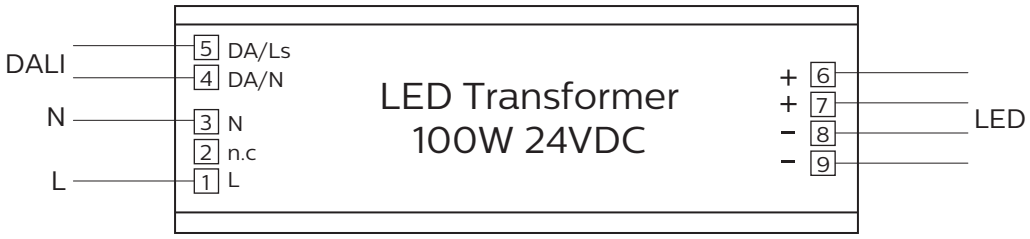
Logistical data

Specification item	Value
Product name	LED Transformer 100W 24VDC TD 220-240V
EOC	871869978177400
Logistic code 12NC	9290 022 00606
Pieces per box	10

Wiring & Connections

Specification item	Value	Unit	Condition
Input wire cross-section	0.75...2.5 / 18...14	mm^2 / 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^2 / 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^2 / 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^2 / 18AWG for output current > 2A
Maximum connector fastening torque: 0.4Nm

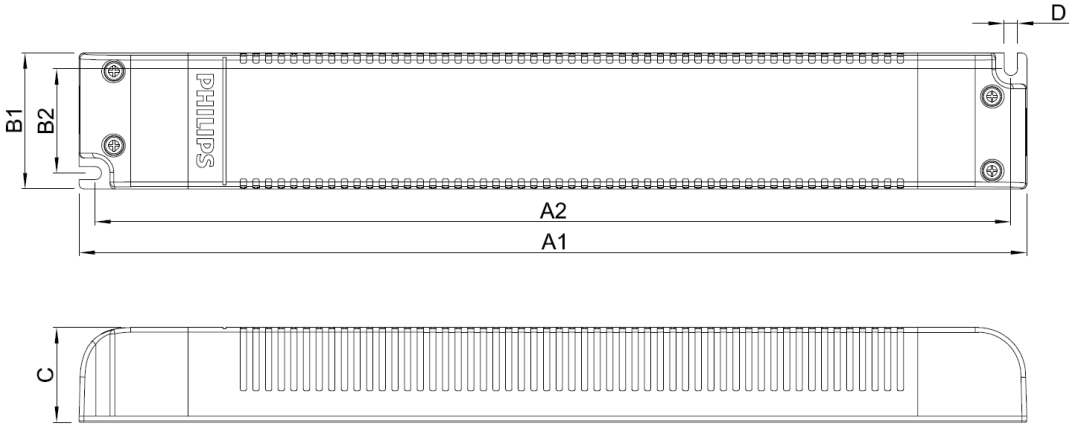


Insulation

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)	300.0	mm	
Width (B1)	43.0	mm	
Height (C)	30.0	mm	
Fixing hole distance (A2)	290.0	mm	Fixing hole diameter (D): 4.2 mm
Fixing hole distance (B2)	33.0	mm	
Weight	460	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 T_{case}
Tcase-life	+85	°C	For rated driver lifetime
Maximum housing temperature	110	°C	In case of a failure
Relative humidity	10...90	%	Non-condensing
Ingress Protection*	IP20		
Noise and hum	≤ 20	dB(A)	

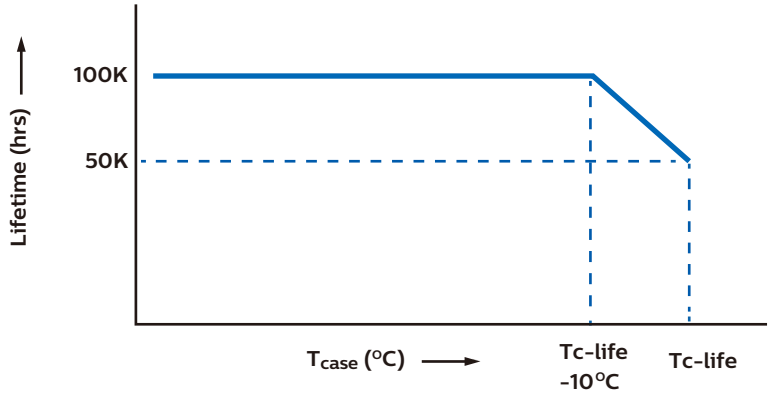
*: The LED Transformer is primarily intended for independent use. It must not be exposed including but not limited to snow, water and ice or any other chemical agent which may have an adverse affect on driver operation and performance. Exposure may lead to driver failure. It is the luminaire manufacturer's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

Storage temperature and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-25...+80	°C	
Relative humidity	5...95	%	Non-condensing

Lifetime

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



Features

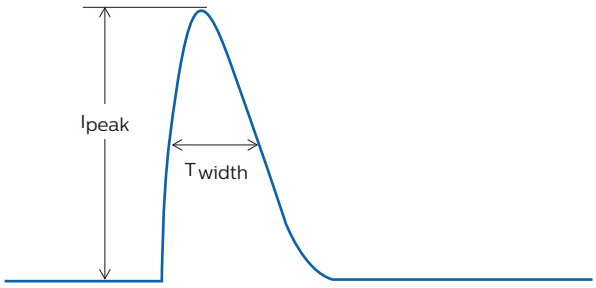
Specification item	Value	Remark	Condition
Open load protection	Yes		U_{out} (open circuit) = 31V max.
Short-circuit protection	Yes		Hiccup mode, automatic recovering
Overpower protection	Yes		Automatic recovering
Overheating protection	Yes		Automatic recovering
Hot wiring	Yes		
Suitable insulation class 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)	43	A	Input voltage 230V_{ac}
Inrush current T_{width} (typ)	200	µs	Input voltage 230V_{ac}
Max. recommended number of drivers	12	pcs	MCB 16A B type, mains impedance 200mΩ + 400µH



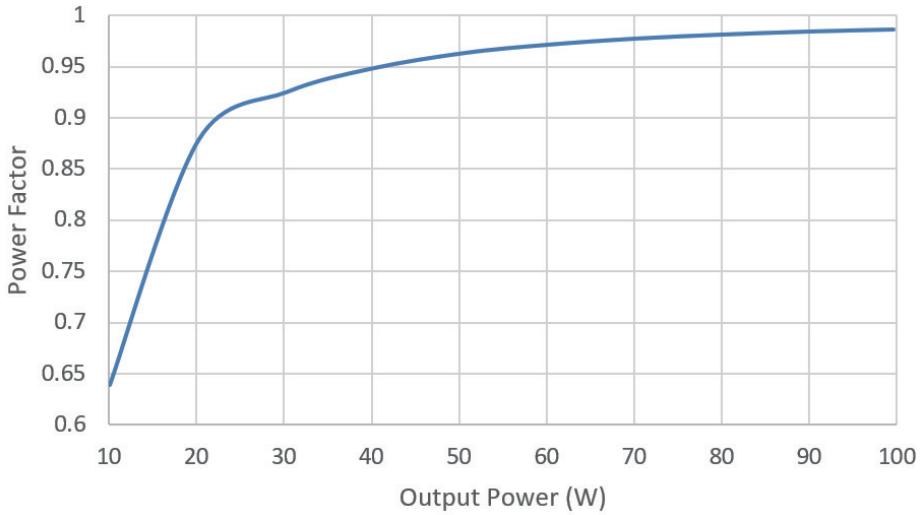
MCB	Rating	Relative number of LED drivers
B	6A	37%
B	10A	63%
B	13A	81%
B	16A	100%
B	20A	125%
B	25A	156%
C	6A	63%
C	10A	104%
C	13A	135%
C	16A	170%
C	20A	208%
C	25A	260%
D	6A	125%
D	10A	104%
D	13A	135%
D	16A	170%
D	20A	208%

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

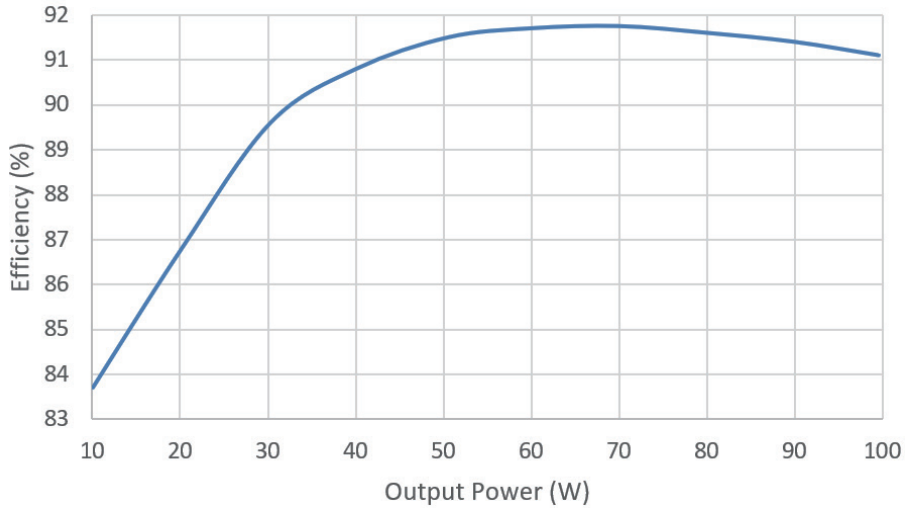
Surge immunity

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

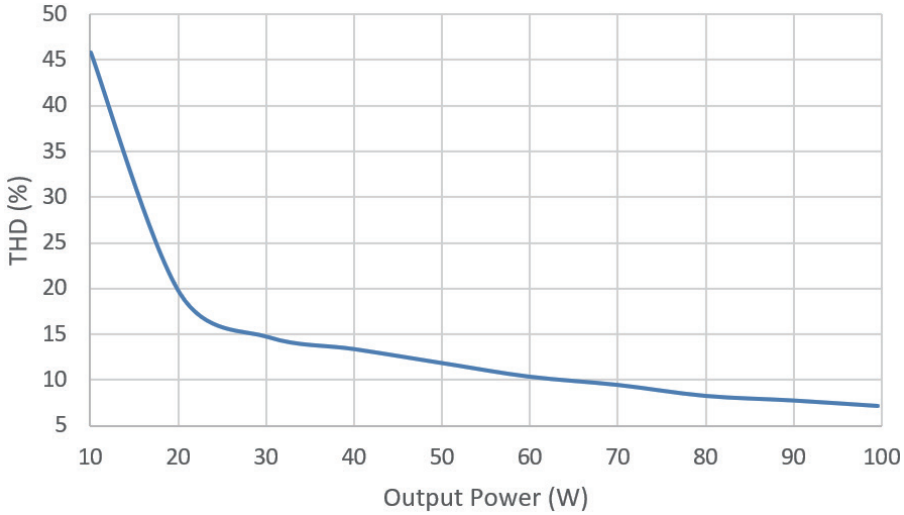
Power factor versus output power



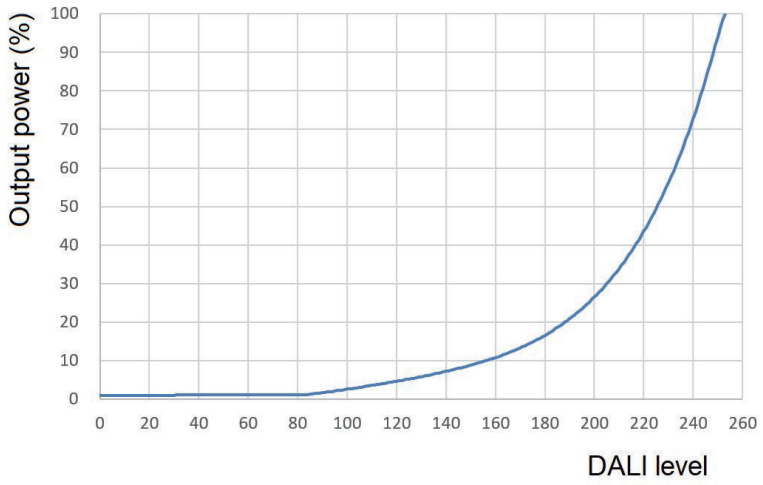
Driver efficiency versus output power



Input current THD versus output power



Output power versus DALI level



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