

# PHILIPS

LED Transformers

Datasheet



## LED Transformers

### LED Transformer 20W 24VDC 120-277V

#### Product description

Philips full-electronic constant voltage LED Transformers are designed to operate 24VDC LED solutions used in general applications such as refrigerated display lighting, retail display lighting and linear accent lighting. They 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
- Wide input voltage range
- Long lifetime

#### Features

- Stable output voltage
- Wide ambient temperature range
- Protection against overpower and overvoltage
- Output short-circuit shutdown feature with automatic restart
- Compliant with California Title 24 technical requirements

#### 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	120 ... 277	Vac	Performance
Rated input voltage range	108 ... 305	Vac	Operational safety
Rated input frequency	50 ... 60	Hz	Performance
Rated input frequency	45 ... 66	Hz	Operational safety
Rated input current	0.2/0.1/0.09	A	120/230/277Vac, @ rated output power
Rated input power	23.6/23/23.1	W	120/230/277Vac, @ rated output power
Power factor	0.99/0.98/0.96		120/230/277Vac, @ rated output power.
Total harmonic distortion	13.5/12/11	%	120/230/277Vac, @ rated output power.
Efficiency (typ)	84/87/87	%	120/230/277Vac, @ rated output power.

## 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 0.5 ... 0.83A
Output current range	0.1 ... 0.83	A	
Output voltage ripple	< 2	V <sub>pp</sub>	
Rated output power	20	W	
Line regulation	< 1	%	
Load regulation	< 3	%	
Turn-on delay	< 0.5	s	With Integrate engine 24VDC module at rated output power
Output voltage rise time	≤ 60	ms	
Hold-up time	≥ 40	ms	

## Logistical data

Specification item	Value
Product name	LED Transformer 20W 24VDC 120-277V
Order code	740719 00
Logistic code 12NC	9290 021 05580
Pieces per box	20

## Wiring & Connections

Specification item	Value	Unit	Condition
Input wire cross-section	0.75 ... 2.5 / 18 ... 14	mm <sup>2</sup> / AWG	Solid and stranded wire
Input cable diameter	3.3 ... 8	mm	
Input wire strip length	6 ... 7	mm	
Output wire cross-section	0.5* ... 2.5 / 20 ... 14	mm <sup>2</sup> / AWG	Solid and stranded wire
Output cable diameter	2 ... 5	mm	
Output wire strip length	6 ... 7	mm	
Strain relief screw max. torque	0.36/0.5	lb-ft/Nm	
Connector screw max. torque	0.36/0.5	lb-ft/Nm	
Maximum output cable length	8/2.5	ft/m	CISPR15/FCC47CFR15 Class A: between driver and LED module



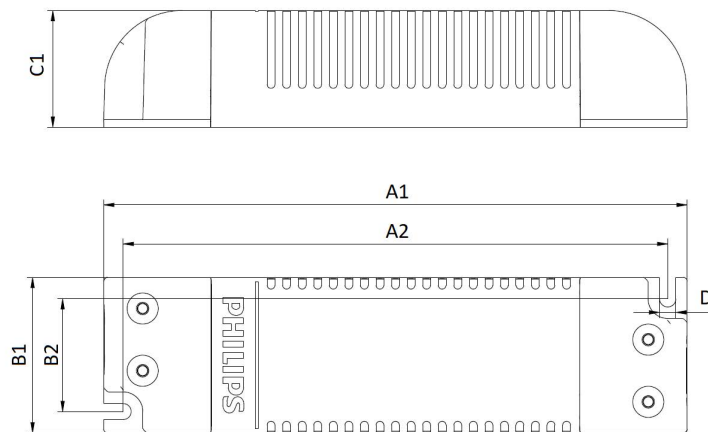
\*: For IEC, CCC compliance:  
 minimum output wire cross section area ≥ 0.5mm<sup>2</sup> for output current ≤ 2A.

## Insulation

Insulation	Mains	LED
Mains		SELV (double)
LED	SELV (double)	

## Dimensions and weight

Specification item	Value	Unit	Condition
Length (A1)	150.0	mm	
Width (B1)	40.0	mm	
Height (C1)	30.0	mm	
Fixing hole distance (A2)	140.0	mm	Fixing hole diameter (D): 4.2 mm
Fixing hole distance (B2)	29	mm	
Weight	75/2.7	gram/oz	



## Operational temperatures and humidity

Specification item	Value	Unit	Condition
Driver ambient temperature	-20 ... +45	°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	+85	°C	For rated driver lifetime
Maximum housing temperature	110	°C	In case of failure
Relative humidity	10 ... 90	%	Non-condensing
Ingress Protection *	20		
Noise and hum/Sound rating	≤20/Class A	dB	

\*: 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 ... +85	°C	
Relative humidity	5 ... 95	%	Non-condensing

## Lifetime

Specification item	Value	Unit	Condition
Rated driver lifetime	50,000	hours	Tcase ≤ Tcase-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	I and II		Per IEC60598

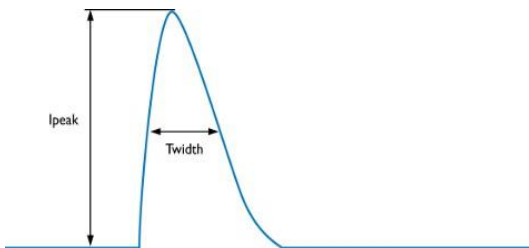
## Certificates and standards

Specification item	Value
Approval marks	CE / ENEC / F / CCC / RCM / MM / 110 / Double-insulated / Independent / c-UL / UL class 2 / SELV/ RoHS

## Inrush current

Specification item	Value	Unit	Condition
Inrush current $I_{peak}$ and $T_{width}$ (typ)	5.9/200	A/ $\mu$ s	Input voltage 120Vac
Inrush current $I_{peak}$ and $T_{width}$ (typ)	11.1/250	A/ $\mu$ s	Input voltage 230Vac
Inrush current $I_{peak}$ and $T_{width}$ (typ)	16.1/180	A/ $\mu$ s	Input voltage 277Vac

Max. recommended number of drivers	60	pcs	Input voltage 120Vac, fuse/MCB 16A
Max. recommended number of drivers	48	pcs	Input voltage 230Vac, fuse/MCB 16A
Max. recommended number of drivers	40	pcs	Input voltage 277Vac, MCB 16A B type



- Specified inrush current values at 230Vac applies for mains impedance of  $200m\Omega + 400\mu H$
- Specified inrush current values at 120Vac and 277V applies for mains impedance of  $150m\Omega + 20\mu H$
- $T_{width}$  specified at 50% of  $I_{peak}$
- Driver is compliant per NEMA 410

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

### 120VAC

MCB/fuse	Rating	Recommended number of drivers*
B,C	6A	22
B,C	10A	37
B,C	13A	48
B,C	16A	60
B,C	20A	75
B,C	25A	93

### 230VAC

MCB/fuse	Rating	Recommended number of drivers*
B,C	6A	19/30
B,C	10A	30/50
B,C	13A	39/65
B,C	16A	48/81
B,C	20A	60/100
B,C	25A	75/125

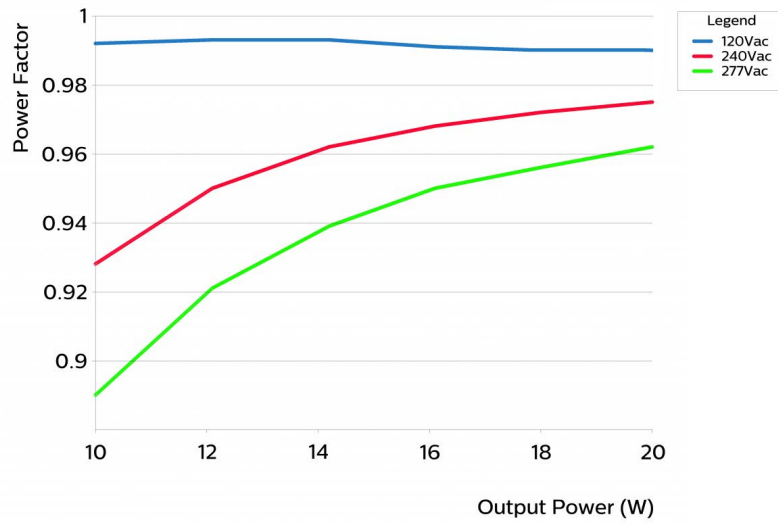
### 277VAC

MCB	Rating	Recommended number of drivers*
B,C	6A	16/25
B,C	10A	25/41
B,C	13A	32/54
B,C	16A	40/68
B,C	20A	50/83
B,C	25A	62/104

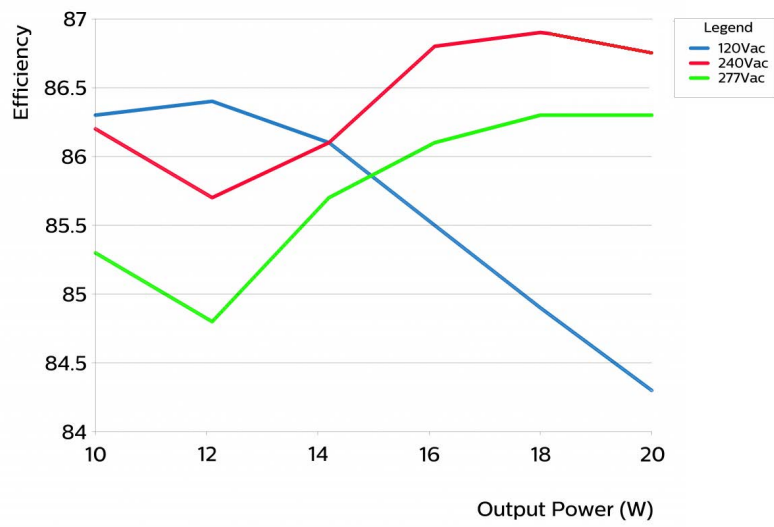
## Surge immunity

Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	1	kV	L-N, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (diff. mode)	1.5	kV	L-N, acc. ANSI/IEEE C62.41.1, combination wave, 2 Ohm
Mains surge immunity (diff. mode)	6	kV	L-N acc. ANSI/IEEE C62.41.1, ring wave, 30 Ohm

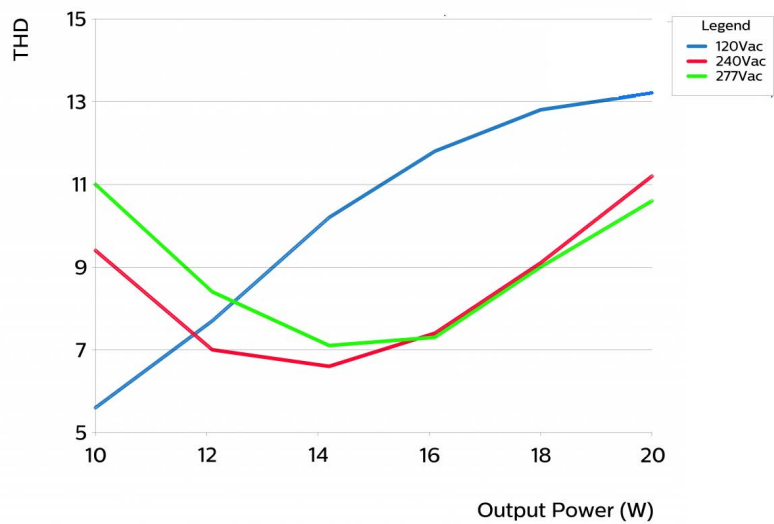
### Power factor versus output power



### Efficiency versus output power

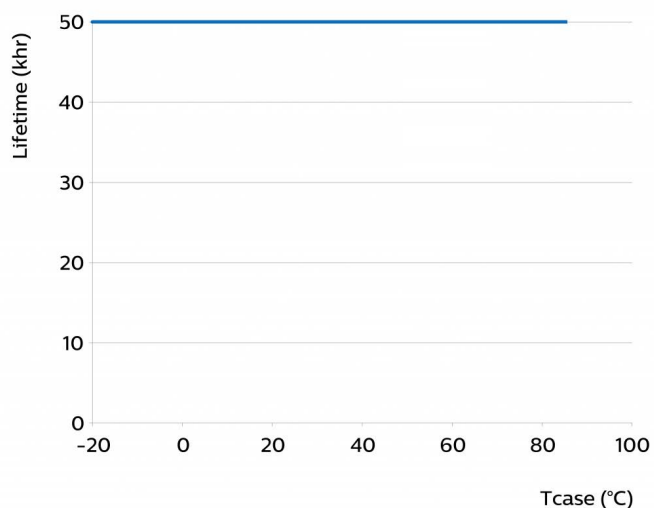


### THD versus output power



## Driver lifetime versus Tc temperature

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