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	Adc	
Output voltage ripple	< 2	V_{pp}	
Rated output power	20	W	
Line regulation	< 1	%	
Load regulation	< 3	%	
Turn-on delay	< 0.5	s	With Integrade 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	24

Wiring & Connections

Specification item	Value	Unit	Condition
Input wire cross-section	0.75 ... 2.5 / 18 ... 14	mm^2 / 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^2 / AWG	Solid and stranded wire
Output cable diameter	2 ... 5	mm	
Output wire strip length	6 ... 7	mm	
Maximum output cable length	2.5/8	m/ft	CISPR15/FCC47CFR15 Class A: between driver and LED module

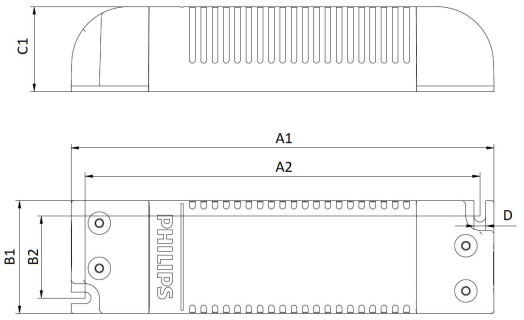
*: For IEC, CCC compliance:
minimum output wire cross section area ≥ 0.5mm^2 for output current ≤ 2A.

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 responsibity 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.

Driver touch current / earth leakage current

Specification item	Value	Unit	Condition
Touch current (ins. Class II)	0.55	mA peak	Acc. IEC60598-1, at 277V/60Hz
Earth leakage current	0.28	mA rms	Acc. UL, at 277V/60Hz

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

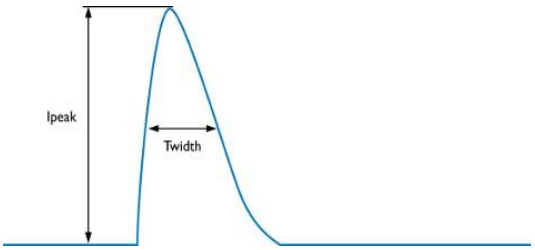
Certificates and standards

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/us	Input voltage 120Vac
Inrush current I_{peak} and T_{width} (typ)	11.1/250	A/μs	Input voltage 230Vac
Inrush current I_{peak} and T_{width} (typ)	16.1/180	A/μs	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 200mΩ + 400μH
- Specified inrush current values at 120Vac and 277V applies for mains impedance of 150mΩ + 20μH
- 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

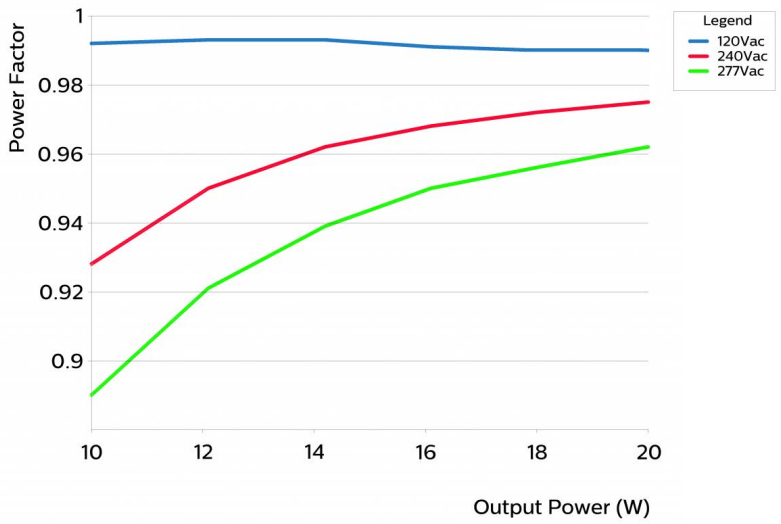
277VAC

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

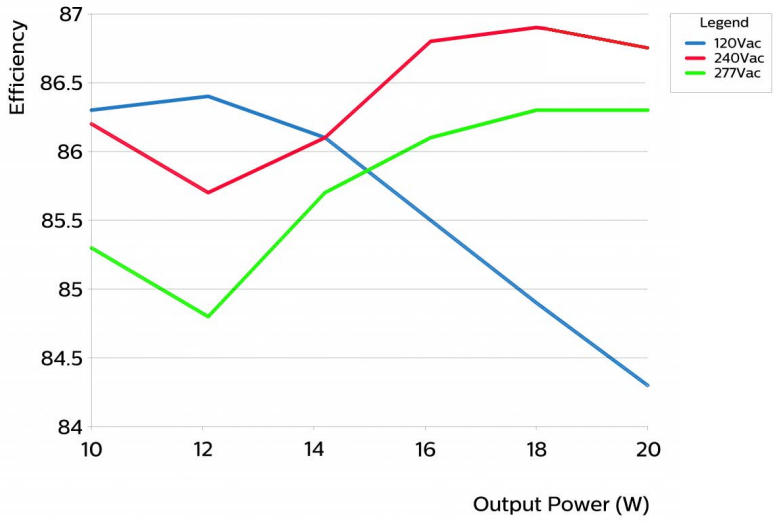
Surge immunity

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

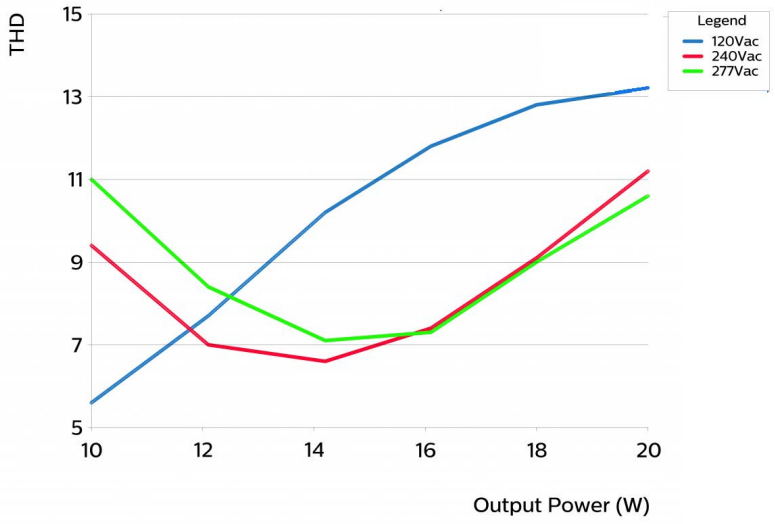
Power factor versus output power



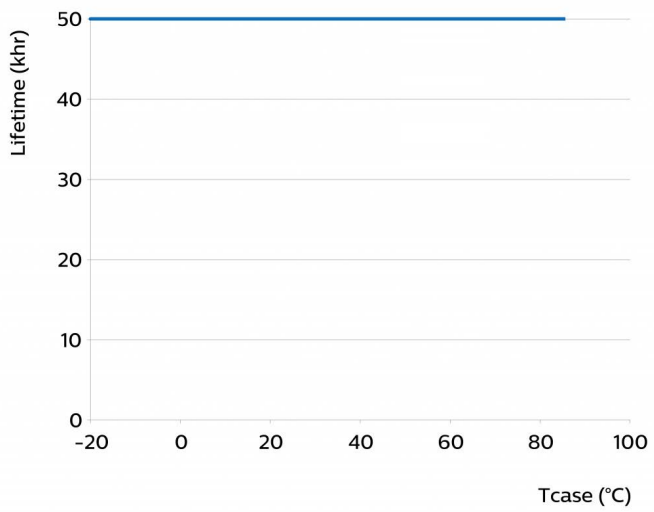
Efficiency versus output power



THD versus output power



Driver lifetime versus Tc temperature



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