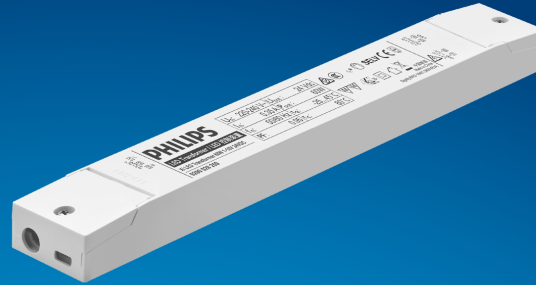


# PHILIPS

## Xitanium

### LED Transformers



## Datasheet

### Xitanium LED Transformer 60W 1-10V 24VDC

9290 028 25980

Philips fully-electronic constant voltage 1-10V 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 controllability via the 1-10V protocol. They are specifically designed to ensure the highest performance with maximum robustness combined with a long lifetime.

#### Benefits

- SELV operating voltage, 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
- Extremely slim design, enabling integration in narrow cabinets
- Long lifetime

#### Features

- 1-10V and PWM control interface incl. dim to OFF
- Independent use for Insulation Class II application
- Stable output voltage
- Wide ambient temperature range
- Protection against overpower and overvoltage
- Output short-circuit shutdown feature with automatic restart
- Global approbations and certifications

#### Application

- 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	202...254	V <sub>ac</sub>	Performance range
Rated input voltage	230	V <sub>ac</sub>	
Rated input frequency range	47...63	Hz	Performance range
Rated input current	0.3	A	@ rated output power @ rated input voltage
Max. input current	0.35	A	@ rated output power @ minimum performance input voltage
Rated input power	68.2	W	@ rated output power @ rated input voltage
Power factor	0.99		@ rated output power @ rated input voltage
Total harmonic distortion	6	%	@ rated output power @ rated input voltage
Efficiency	88	%	@ rated output power @ rated input voltage
Input voltage AC range	198...264	V <sub>ac</sub>	Safety operational range
Input frequency AC range	45...66	Hz	Safety operational range
Isolation input to output	SELV		

## Electrical output data

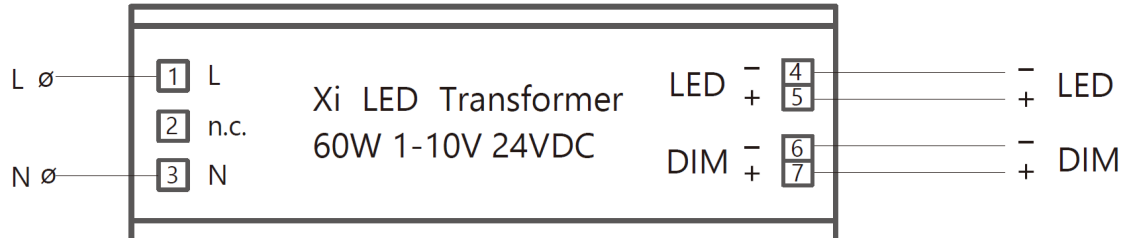
Specification item	Value	Unit	Condition
Regulation method	Constant Voltage		
Output voltage	24	V <sub>dc</sub>	Output voltage range: 22.8 ... 25.2VDC @ output current range 1.25 ... 2.5A
Output voltage max.	26	V	
Output current	0...2.5	A	
Output voltage ripple	≤ 240	mV <sub>pp</sub>	
Output power	0...60	W	
Line regulation	≤ 1	%	
Load regulation	≤ 2	%	
Turn-on delay	≤ 0.5	s	With Integrate engine 24VDC module at rated output power
Output voltage rise time	≤ 50	ms	
Hold-up time	≥ 10	ms	

## Electrical data controls input

Specification item	Value	Unit	Condition
Control method	0-10V, 1-10V, PWM		1-10V input: 100uA current source. PWM dimming input signal duty cycle and frequency: 0 ... 99%. 0.25 ... 2kHz. Input voltage amplitude: 3 ... 10V
Dimming range	1...100	%	Based on 0-10V/1-10V and PWM dimming; incl. dim-to-off. Output voltage duty cycle and frequency: 1%-100%, 1.38kHz
Isolation controls input to output	Double		acc. IEC61347-1

## Wiring and Connections

Specification item	Value	Unit	Type
Input wire cross-section	0.75...1.5 / 16...18	mm <sup>2</sup> / AWG	Solid / stranded wire
Input wire strip length	6...7	mm	
Output wire cross-section	0.75...1.5 / 16...18	mm <sup>2</sup> / AWG	Solid / stranded wire
Output wire strip length	6...7	mm	
Control wire cross-section	0.5...1.5 / 16...20	mm <sup>2</sup> / AWG	Solid / stranded wire
Control wire strip length	6...7	mm	
Maximum cable length	1	m	Total cable length between driver and LED modules per CISPR15

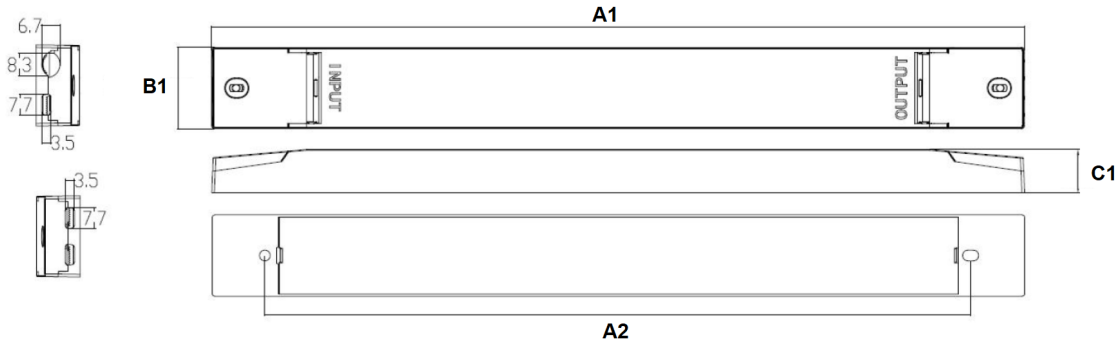


## Insulation

Insulation per IEC61347-1	Mains	LED	1-10V
Mains		SELV	Basic
LED	SELV		Double
1-10V	Basic	Double	

## Dimensions and weight

Specification item	Value	Unit	Tolerance (mm)
Length (A1)	300	mm	
Mounting hole distance (A2)	260.4	mm	
Width (B1)	30	mm	
Height (C1)	16	mm	
Mounting hole diameter (D1)	4.2	mm	
Weight	200	gram	



## Logistical data

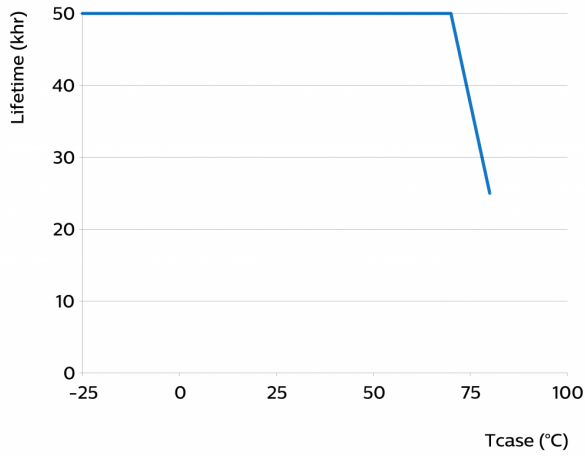
Specification item	Value
Product name	Xitanium LED Transformer 60W 1-10V 24VDC
EOC	692234191771400
Logistic code 12NC	9290 028 25980
EAN1 (GTIN)	6922341917714
Pieces per box	20

## Operational temperatures and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-25...+45	°C	Higher ambient temperature allowed as long as T <sub>case-max</sub> is not exceeded
T <sub>case-max</sub>	80	°C	Maximum temperature measured at T <sub>case-point</sub>
T <sub>case-life</sub>	70	°C	Measured at T <sub>case-point</sub>
Maximum housing temperature	130	°C	In case of a failure, inherent by design
Relative humidity	10...90	%	Non-condensing

## Lifetime

Specification item	Value	Unit	Condition
Driver lifetime	50,000	hours	Measured temperature at Tcase-point is Tcase-life. Maximum failures = 10%



## Storage temperature and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-25...+85	°C	
Relative humidity	5...95	%	Non-condensing

## Programmable features

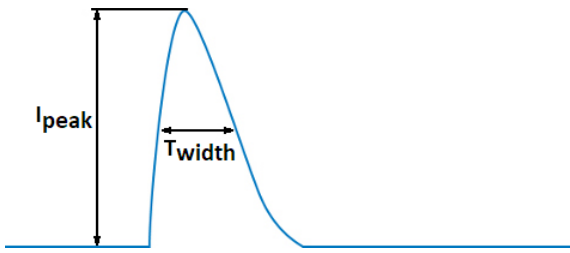
Specification item	Available	Default setting	Condition
1-10V	Yes	ON	Controllable per 0-10V and 1-10V. Incl. dim-to-off.

## Features

Specification item	Value	Condition
Open load protection	Yes	Uout (open circuit) = 26V max.
Short circuit protection	Yes	Hiccup mode, automatic recovering
Over power protection	Yes	Automatic recovering
Hot wiring	Yes	
Suitable for fixtures with protection class	II	per IEC60598
Overtemperature protection	No	

## Inrush current

Specification item	Value	Unit	Condition
Inrush current $I_{peak}$	7	A	Input voltage 230V
Inrush current $T_{width}$	600	$\mu$ s	Input voltage 230V, measured at 50% $I_{peak}$
Drivers / MCB 16A type B	$\leq 29$	pcs	Indicative value



MCB	Rating	Relative number of LED drivers
B	4A	25%
B	6A	40%
B	10A	63%
B	13A	81%
B	16A	100% (stated in datasheet)
B	20A	125%
B	25A	156%
B	32A	200%
B	40A	250%
C	4A	42%
C	6A	63%
C	10A	104%
C	13A	135%
C	16A	170%
C	20A	208%
C	25A	260%
C	32A	340%
C	40A	415%

## Surge immunity

Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	2	kV	L-N acc. IEC61000-4-5, 2 Ohm
Mains surge immunity (comm. mode)	2	kV	L/N - 1-10V acc. IEC61000-4-5, 12 Ohm
Control surge immunity (diff. mode)	1	kV	1-10V +/-, acc. IEC61000-4-5, 2 Ohm

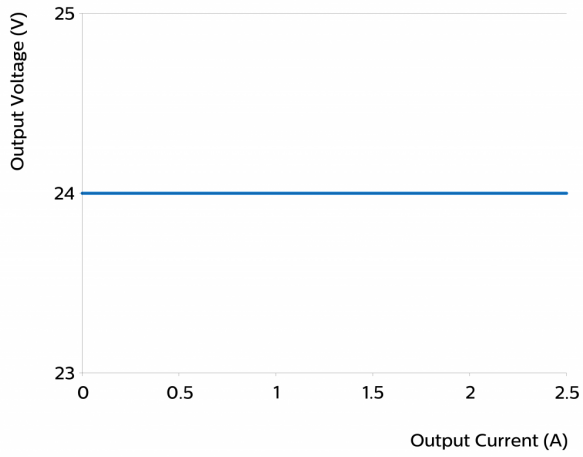
## Application Info

Specification item	Value
Approval marks	CCC / CE / Double-insulated / ENEC / F-mark / Independent / MM / RCM / SELV
Ingress Protection classification (IP)	20
Noise and hum dB(A)	20
Application	Indoor Constant Voltage
Mounting Type	Independent

## Graphs

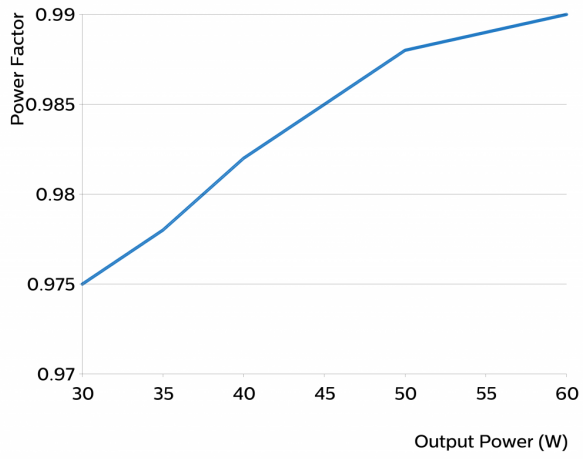
### Operating window

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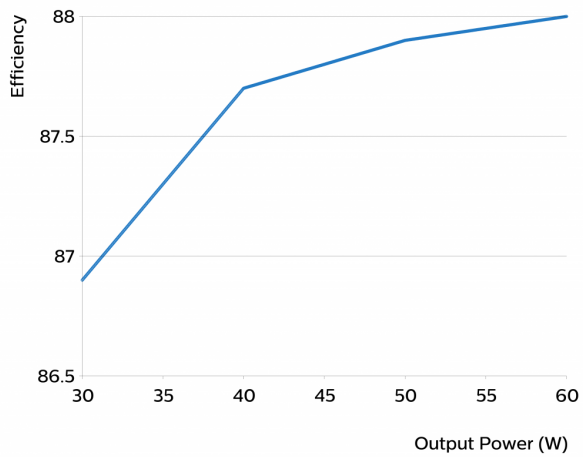
### Power factor versus output power

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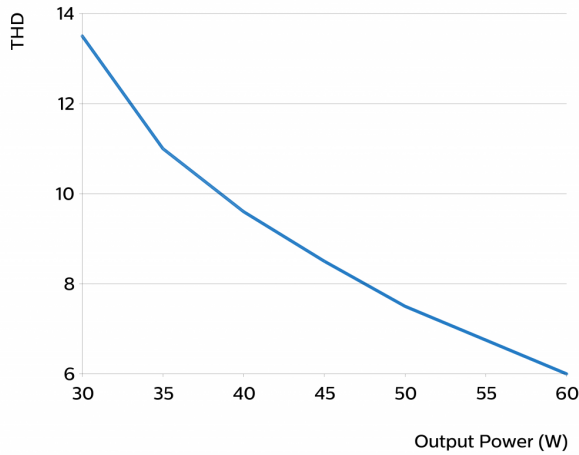


### Efficiency versus output power

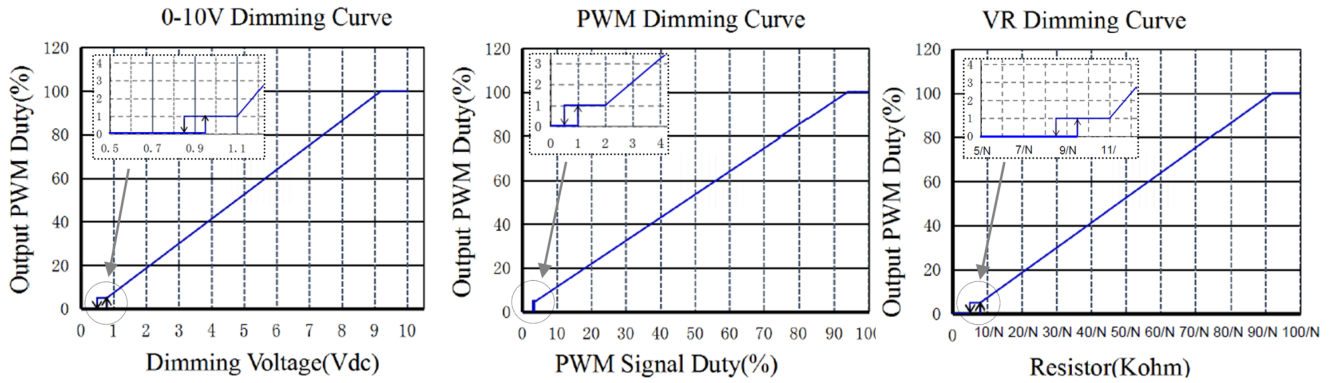
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## THD versus output power



## I<sub>out</sub> as function of 1-10V interface



## Notes

### Ingress Protection (IP):

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.

Mains input cable and LED output cable :  
supported cable diameter range = 3.3 ... 8mm

Control input cable:  
supported cable diameter range = 2.5 ... 8mm

Resistance dimming via 1-10V interface for one up to N drivers is supported:  
Corresponding resistance value R = 0-100/N in kilo-Ohm where N = amount of drivers to be dimmed



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