

PHILIPS

Xitanium

LED driver



Datasheet

LED Transformers

Xi LED Transformer 60W 1-10V 24VDC

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
- 2% output voltage ripple
- Long lifetime 50k hours

Features

- Built in and 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

Electrical Input Data

| Specification item | Value | Unit | Condition |
|---------------------------|-------------|------|--|
| Rated input voltage range | 220 ... 240 | Vac | Performance |
| Rated input voltage range | 198 ... 264 | Vac | Operational safety |
| Rated input frequency | 50 ... 60 | Hz | Performance |
| Rated input frequency | 45 ... 66 | Hz | Operational safety |
| Rated input current | 0.30 | A | 230Vac, @ rated output power |
| Max. input current | 0.35 | A | @ rated output power, @ min. input voltage |
| Rated input power | 68.2 | W | 230Vac, @ rated output power |
| Power factor | 0.95 | | 230Vac, @ rated output power |
| Total harmonic distortion | 10 | % | 230Vac, @ rated output power |
| Efficiency | 86.0 | % | @ rated output power @ rated input voltage |
| Standby power | 0.5 | W | |

Electrical Output Data

| Specification item | Value | Unit | Condition |
|--------------------------|------------------|-----------------|---|
| Regulation method | Constant Voltage | | |
| Output voltage | 24 | V _{dc} | Output voltage range: 22.8 ... 25.2VDC @ output current range 1250...2500mA |
| Output current | 125...2500 | mA | |
| Output voltage ripple | ≤ 2 | % | ≤ 480 mV _{pp} |
| Output power | 3.0...60.0 | W | |
| Line regulation | ≤ 1 | % | |
| Load regulation | ≤ 2 | % | |
| Turn-on delay | ≤ 0.5 | s | |
| Output voltage rise time | ≤ 50 | ms | |
| Hold-up time | ≥ 10 | ms | |

Electrical data controls input

| Specification item | Value | Unit | Condition |
|--------------------|-----------------------|------|--|
| Control method | 1-10V (0-10V) dimming | | 0-10Vdc, Port source current 0.1mA typical |
| | PWM dimming | | PWM Signal dimming Duty: 0- 99%,0.25KHz-2KHz, Voltage amplitude:3-10V |
| | Resistance dimming | | 0-100/N Kohm (N=driver quantity for synchronized dimming operation) |
| Dimming range | 1...100 | % | Output duty:1%-100%,1.38KHz, Dim-to-off |

Logistical Data

| Specification item | Value |
|---------------------|------------------------------------|
| Product Name | Xi LED Transformer 60W 1-10V 24VDC |
| Logistics Code 12NC | 929002825906 |
| Pieces per Box | 50 |

Wiring & Connections

| Specification item | Value | Unit | Condition |
|-----------------------------|--------------------------|-----------------------|--|
| Input wire cross-section | 0.75 ... 1.5 / 18 ... 16 | mm ² / AWG | Solid and stranded wire |
| Input wire strip length | 6 ... 7 | mm | |
| Output wire cross-section | 0.75 ... 1.5 / 18 ... 16 | mm ² / AWG | Solid and stranded wire |
| Output wire strip length | 5 ... 6 | mm | |
| DIM wire cross-section | 0.5 ... 1.5 / 20 ... 16 | mm ² / AWG | Solid and stranded wire |
| DIM wire strip length | 5 ... 6 | mm | |
| Maximum output cable length | 1.0 | m | CISPR15: between driver and LED module |



*: Shown values apply to independent application.

Maximum connector fastening torque: 0.5Nm.

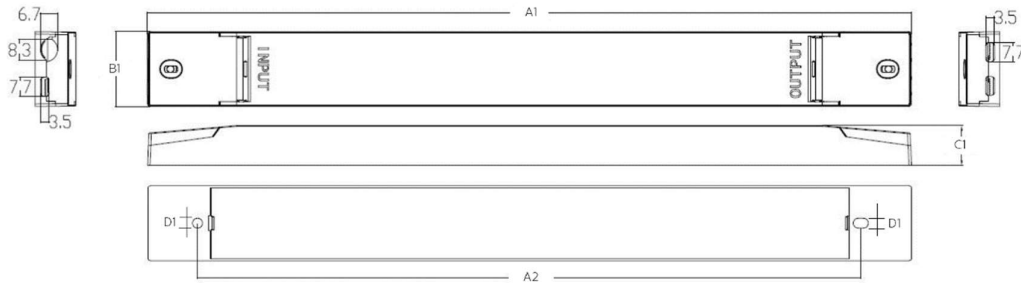
For some Dimming application case might get negative EMC margin, Philips recommends adding an external ring core at DIM side to avoid the EMC issue with your application condition. Ring core dimension: 17.5X28.5X9.5; dim cable 2 rounds

Insulation

| Insulation | Mains | LED | 1-10V |
|------------|---------------|---------------|--------|
| Mains | | SELV (double) | Basic |
| LED | SELV (double) | | Double |
| 1-10V | Basic | Double | |

Dimensions and weight

| Specification item | Value | Unit | Condition |
|---------------------------|-------|------|----------------------------------|
| Length (A1) | 300 | mm | |
| Width (B1) | 30 | mm | |
| Height (C) | 16 | mm | |
| Fixing hole distance (A2) | 260.4 | mm | Fixing hole diameter (D1:) 4.1mm |
| Weight | 213 | gram | |



Operational Temperature and Humidity

| Specification item | Value | Unit | Condition |
|-----------------------------|-------------|------|--|
| Driver ambient temperature | -25 ... +45 | °C | At rated output power. Higher ambient temperature allowed as long as T _{case} -max is not exceeded. |
| T _{case} - min | -25 | °C | |
| T _{case} - max | +90 | °C | Max. steady-state T _{case} |
| T _{case} - life | -25 ... +80 | °C | For rated driver lifetime |
| Maximum housing temperature | 130 | °C | In case of a failure |
| Relative humidity | 10 ... 90 | % | Non-condensing |
| Ingress Protection* | IP20 | | |
| Noise and hum | ≤ 20 | dB | ≤ 24dB at dimming |

*: 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 effect 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 | -25 ... +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

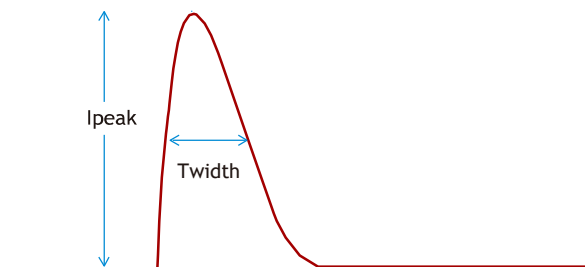
| Specification item | Value | Remark | Condition |
|--|-------|--------|-------------------------------------|
| Open Load Protection | Yes | | U_{out} (open circuit) = 26V max. |
| Short-Circuit Protection | Yes | | Hiccup mode, automatic recovering |
| Overpower Protection | Yes | | Automatic recovering |
| Overheating Protection | No | | |
| Hot Wiring | Yes | | |
| Suitable Insulation Class Applications | II | | per IEC60598 |

Certificates and standards

| Specification item | Value |
|--------------------|--|
| Approval mark | CE / ENEC / CCC / RCM / MM / SELV / UKCA |

Inrush current

| Specification item | Value | Unit | Condition |
|------------------------------------|-----------|------|---|
| Inrush Current I_{peak} (typ) | 26.1 | A | Input voltage 230V |
| Inrush Current T_{width} (typ) | 186 | us | Input voltage 230 V, measured at 50% height |
| Max. Recommended Number of Drivers | ≤ 23 | pcs | Input voltage 230V |



| MCB | Rating | Relative number of LED drivers* |
|-----|--------|---------------------------------|
| B | 6A | 37% |
| B | 10A | 63% |
| B | 13A | 81% |
| B | 16A | 100% |
| B | 20A | 125% |
| B | 25 A | 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

Driver touch current

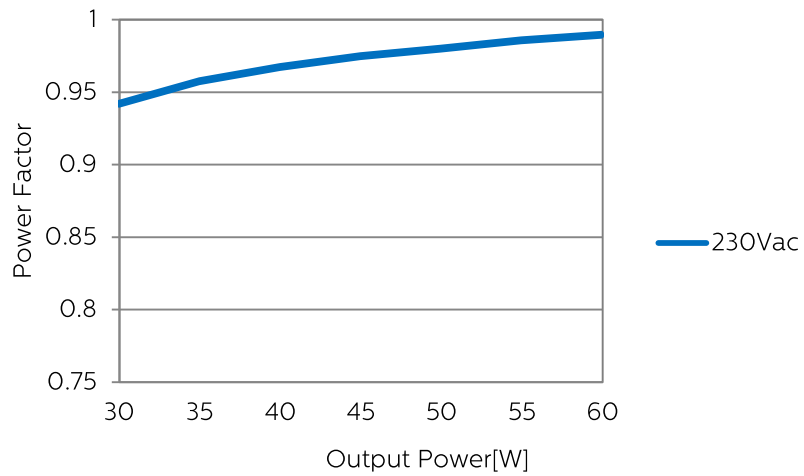
| Specification item | Value | Unit | Condition |
|--------------------|-------|-------------|---|
| Touch current | < 0.7 | mA_{peak} | Acc. IEC61347-1 at 240Vac 60Hz LED module contribution not included |

Surge immunity

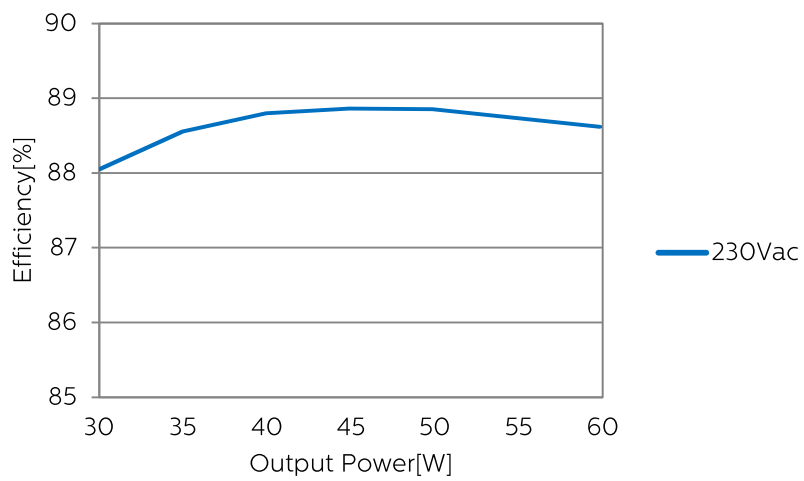
| Specification item | Value | Unit | Condition |
|-----------------------------------|-------|------|-----------------------------------|
| Mains surge immunity (diff. mode) | 1 | kV | L-N acc. IEC61000-4-5. 2 Ohm |
| Mains surge immunity (com. mode) | 2 | kV | L/N-PE, acc. IEC61000-4-5. 12 Ohm |

Graphs

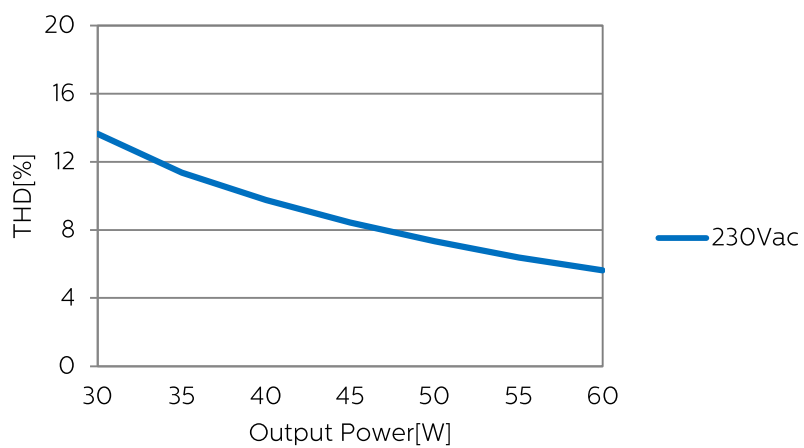
Power factor versus output power



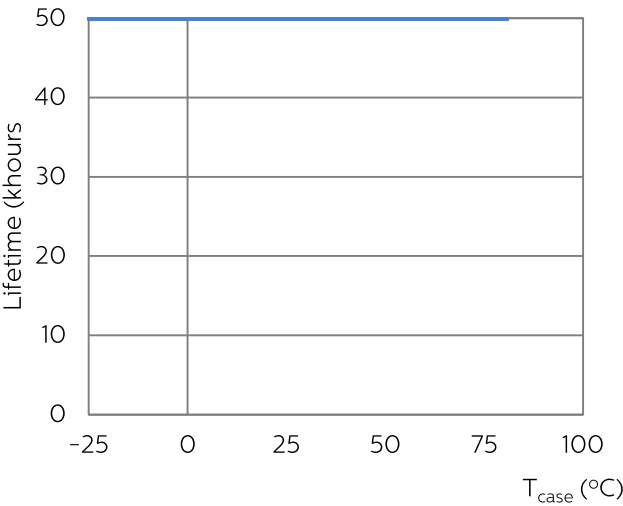
Efficiency versus output power



THD versus output power

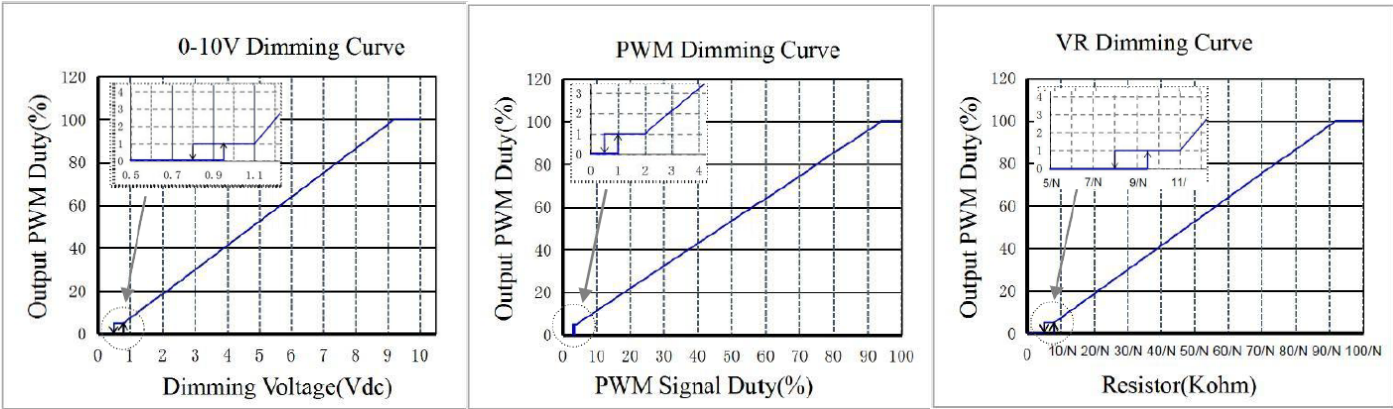


Driver lifetime versus Tc temperature



Driver output versus dimming voltage

Driver output versus dimming voltage



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