# PHILIPS

## Xitanium

### LED driver

## Datasheet

# Xitanium FULL Prog LED Xtreme drivers, Class I only

## Xitanium FULL PROG 35W1000 NLD C150 Xt

**Xitanium FULL Prog LED Xtreme drivers**

Philips Xitanium Full Programmable LED drivers are specifically designed to deliver the highest performance, protection and configurability. The portfolio offers both central and standalone dimming protocols further increasing the energy savings and $CO_2$ reductions achieved with LED lighting. The Xtreme technology ensures maximum robustness and protection combined with a very long lifetime.

In this product family Philips introduces new drivers in a compact form factor with state-of-the-art features, which offer high value for both OEM customers and end-users. The products can replace the existing programmable outdoor LED drivers and will bring significant improvement in programming, assembly into a luminaire and electrical performance.

### Benefits

- Ultimate robustness, offering peace of mind and lower maintenance costs
- Fully programmable LED-drivers designed for the new digital and connected lighting world
- Extended diagnostics via MultiOne
- Easy to design-in, configure and install for Class I applications
- Energy savings through high efficiency and via multiple dimming options

### Features

- High surge protection (CM/DM)
- Long lifetime and robust protection against moisture, vibration and temperature
- Configurable operating windows (AOC)
- Multiple control interfaces: DALI or 1-10V, LineSwitch
- Autonomous dimming via integrated DynaDimmer
- Thermal protection for driver and for module (MTP)
- Constant Light Output (CLO)
- Adjustable Start-up Time (AST)
- Adjustable Light Output (ALO)
- End-Of-Life indicator (EOL)

### Application

- Road and street lighting
- Area lighting
- Industrial lighting

September 2016

## Electrical input data

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Nominal input voltage | 220...240 | $V_{ac}$ | performance range |
| Nominal input frequency | 50...60 | Hz | |
| Nominal input current | 0.2 | A | @230V @ full load |
| Max. input current | 0.22 | A | @ minimum input voltage AC |
| Input voltage | 230 | $V_{ac}$ | |
| Nominal input power | 42 | W | @230V @ full load |
| Power factor | ≥ 0.96 | | @ full load. See graph. |
| Total harmonic distortion | ≤ 14 | % | @ full load. See graph. |
| Efficiency | 84 | % | @230V @ full load |
| Input voltage AC | 198...264 | $V_{ac}$ | Operational range |
| Input frequency AC | 45...66 | Hz | Operational range |
| Standby power | 0.45 | W | |
| Isolation Input to Output | SELV | | |

## Electrical output data

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Regulation method | Constant Current | | |
| Output voltage | 20...60 | $V_{dc}$ | |
| Output voltage max. | 120 | V | Peak voltage at open load |
| Output current | 0.07...1 | A | Full output current setting |
| Output current min programmable | 100 | mA | |
| Output current min dimming | 70 | mA | |
| Output current tolerance | ± 3 | % | |
| Output current ripple LF | ≤ 5 | % | Ripple = peak / average |
| Output current ripple HF | ≤ 20 | % | |
| Output power | 4...36 | W | Full output |

## Electrical data controls input

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Control method | DALI, Dynadimmer, LineSwitch | | Output current amplitude dimming |
| Dimming range | 7...100 | % | DALI acc. IEC62386-101, -102 Ed. 2.0 |
| Galvanic Isolation | SELV | | |

## Logistical data

| Specification item | Value |
|---|---|
| Product name | Xitanium FULL PROG 35W1000 NLD C150 Xt |
| Order code | 871829175643900 |
| Logistic code 12NC | 9290 008 84606 |
| EAN3 | |
| Pieces per box | 12 |

## Wiring & Connections

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Input wire cross-section | 0.5...2.5 | mm² | WAGO804, solid / stranded wire |
| | 12...20 | AWG | WAGO804, solid / stranded wire |
| Input wire strip length | 10...11 | mm | |
| Output wire cross-section | 0.3...1.5 | mm² | WAGO805, solid / stranded wire |
| | 16...24 | AWG | WAGO805, solid / stranded wire |
| Output wire strip length | 9...10 | mm | |
| Maximum cable length | 20000 | mm | Total length of wiring including LED module, one way |
| Maximum NTC output cable length | 0.6 | m | |

LED +
LED -
NTC COMM
NTC SIG
GND
DALI
DALI
LineSwitch
Neutral
Line

LED DRIVER
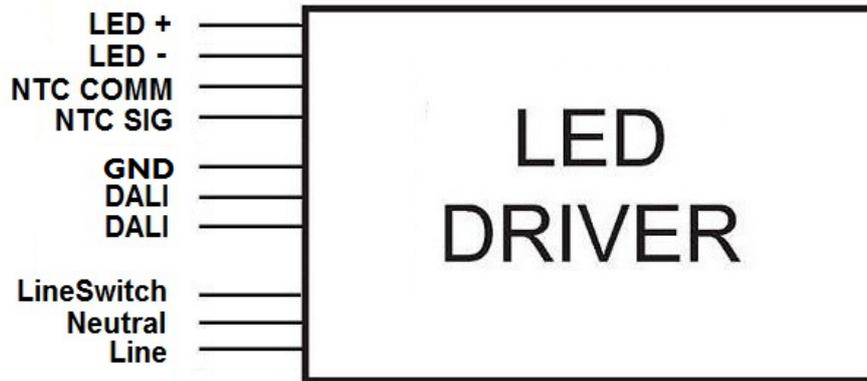
## Insulation

| Insulation | Mains | LineSwitch | GND | DALI | LED+NTC |
|---|---|---|---|---|---|
| **Mains** | | No | Re-inforced | Basic | SELV |
| **LineSwitch** | No | | Re-inforced | Basic | SELV |
| **GND** | Re-inforced | Re-inforced | | Re-inforced | Re-inforced |
| **DALI** | Basic | Basic | Re-inforced | | Double |
| **LED+NTC** | SELV | SELV | Re-inforced | Double | |

## Dimensions and weight

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Length (A1) | 150 | mm | |
| Width (B1) | 90 | mm | |
| Width (B2) | 70 | mm | |
| Height (C1) | 40 | mm | |
| Fixing hole diameter (D1) | 4.5 | mm | |
| Fixing hole distance (A2) | 133.6 | mm | |
| Weight | 770 | gram | |
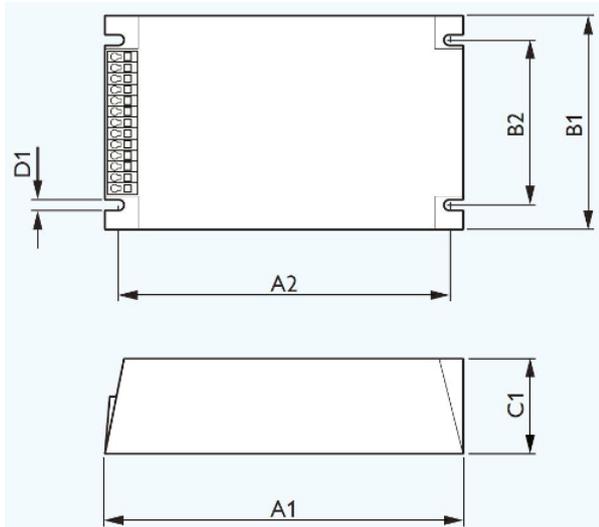
## Operational temperatures and humidity

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Ambient temperature | -30...+60 | °C | Higher ambient temperature allowed as long as Tcase-max is not exceeded. |
| Starting Ambient temperature | -40...+60 | °C | |
| Tcase-max | 90 | °C | Maximum temperature measured at $T_{case}$-point |
| Tcase-life | 75 | °C | Measured at $T_{case}$-point |
| Maximum housing temperature | 130 | °C | In case of a failure |
| Relative humidity | 10...90 | % | Non-condensing |

## Storage temperature and humidity

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Ambient temperature | -40...+80 | °C | |
| Relative humidity | 5...95 | % | Non-condensing |

## Lifetime

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Driver lifetime | 100,000 | hours | Measured temperature at $T_{case}$-point is $T_{case}$-life. Maximum failures = 10% |
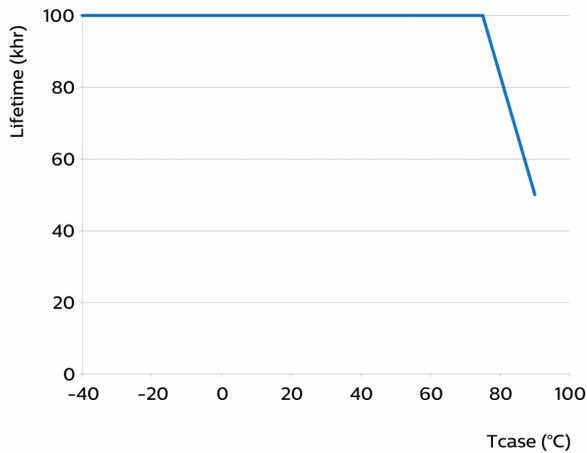


## Programmable features

| Specification item | Value | Remark | Condition |
|---|---|---|---|
| Set output current (AOC) | Programmable | See Design-in guide. | Default output current: = 700 mA |
| LED module temperature derating (MTP) | Yes | | |
| Constant Lumen Over Lifetime (CLO) | Yes | | |
| Diagnostics | Yes | | |
| Adjustable Light Output ALO | Yes | | |
| LineSwitch | Yes | | |
| Adjustable Start-up Time AST | Yes | | |
| Integrated Dynadimmer | Yes | | |
| End Of Life indicator | Yes | | |

## Features

| Specification item | Value | Remark | Condition |
|---|---|---|---|
| Open load protection | Yes | | Automatic recovering |
| Short circuit protection | Yes | | Automatic recovering |
| Over power protection | Yes | | Automatic recovering |
| Hot wiring | No | | |
| Suitable for fixtures with protection class | I | | per IEC60598 |
| Over temperature protection driver | Yes | | Automatic recovering |
| Overheating protection | Yes | | Automatic recovering |

## Certificates and standards

| Specification item | Value |
|---|---|
| Approval marks | CB / CE / ENEC / VDE-EMV |
| Ingress Protection classification | 20 |

## Inrush current

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Inrush current $I_{peak}$ | 6 | A | Input voltage 230V |
| Inrush current $T_{width}$ | 800 | µs | Input voltage 230V, measured at 50% $I_{peak}$ |
| Drivers / MCB 16A type B | ≤ 25 | pcs | |
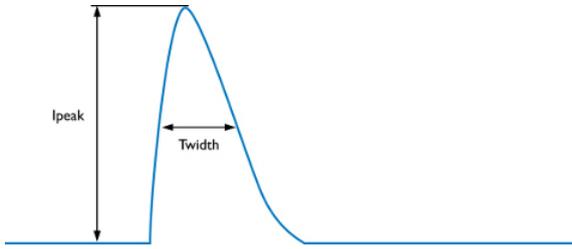


**Maximum recommended number of drivers per MCB**

| MCB Rating | B | C |
|---|---|---|
| 10A | 16 | 26 |
| 13A | 20 | 34 |
| 16A | 25 | 42 |
| 20A | 31 | 52 |
| 25A | 39 | 65 |

## Driver touch current

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Typical touch current | < 0.34 | mA peak | Acc. IEC61347-1. LED module contribution not included |

## Surge immunity

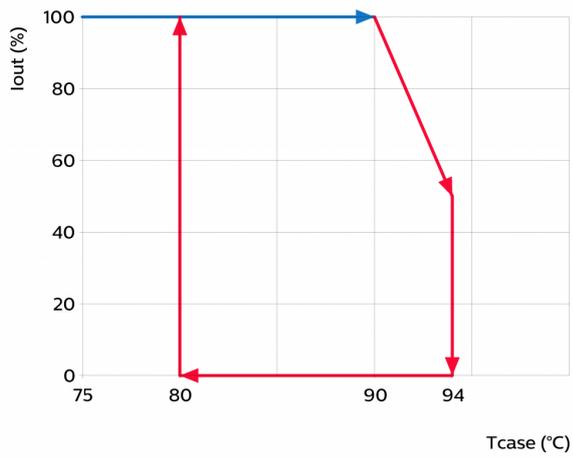| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Mains surge immunity (diff. mode) | 4 | kV | L-N, Ls-L, Ls-N, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us |
| Mains surge immunity (comm. mode) | 10 | kV | L/N - GND, acc. IEC61000-4-5. 12 Ohm 1.2/50us,8/20us |
| Control surge immunity (diff. mode) | 0.9 | kV | DALI - DALI, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us |
| Control surge immunity (comm. mode) | 6 | kV | DALI - GND, acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us |
| DALI surge immunity (comm. mode) | 10 | kV | L/N - DALI acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us |

## Additional information

| Specification item | Default setting | Remark | Condition |
|---|---|---|---|
| AOC | 700 | mA | |
| LineSwitch | ON | | |
| ALO | OFF | | |
| CLO | OFF | | |
| MTP | ON | | |
| Dynadimmer | OFF | | |
| AST | OFF | | |
| EOL | OFF | | |

**Graphs**

**Operating window**
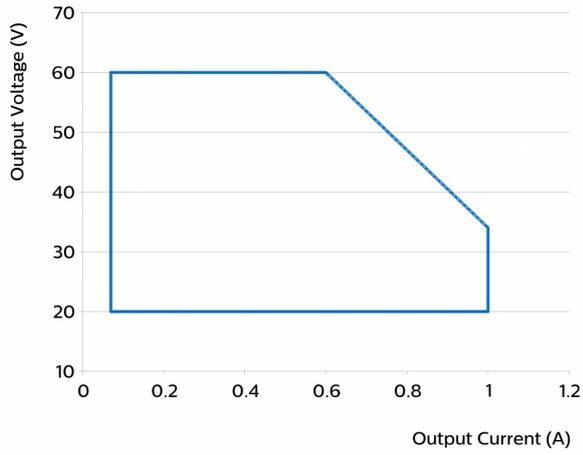


**Thermal Guard**



**Mains Guard**



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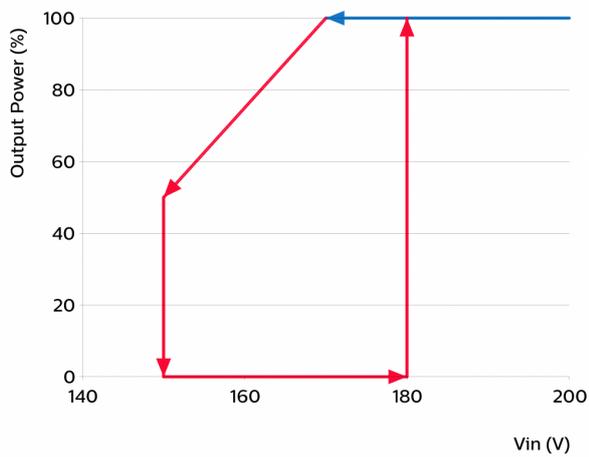
## Power factor versus output power
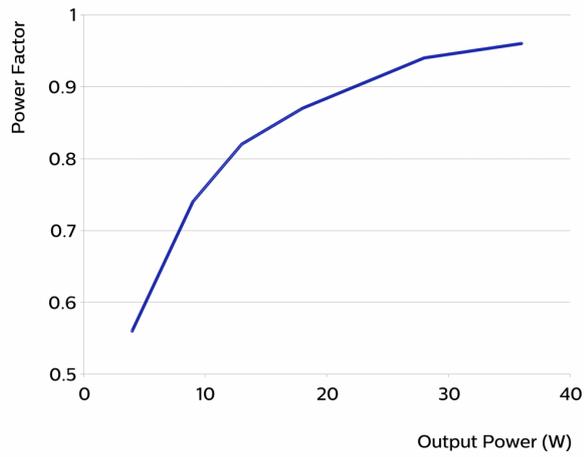


## Efficiency versus output power



## THD versus output power



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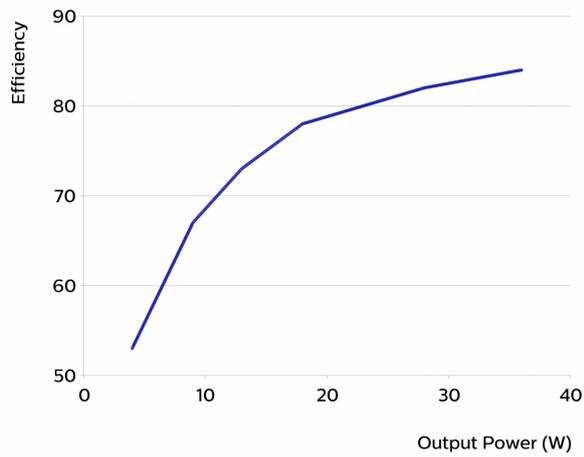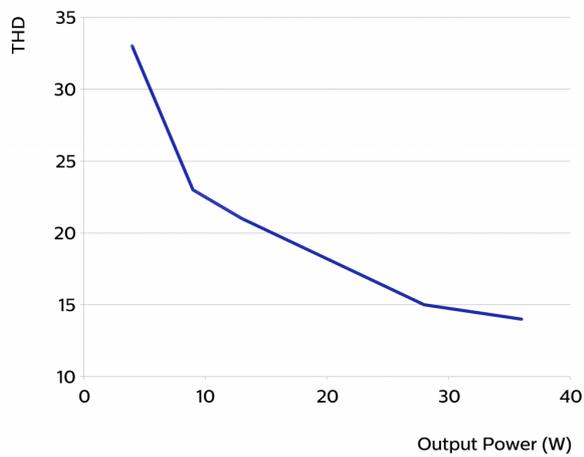
**Notes**

Driver GND terminal only allowed to be connected to protective earth.