PHILIPS

Xitanium

LED driver

Datasheet

# Xitanium FULL Prog LED Xtreme drivers

## Xi FP 70W 0.3-1.0A NLD C150 230V sXt

### 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 and Class II 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, 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

November 2015

## Electrical input data

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Rated input voltage | 220…240 | $V_{ac}$ | |
| Rated input frequency | 50…60 | Hz | |
| Rated input current | 0.38 | A | @230V @ max. rated output power |
| Max. input current | 0.4 | A | @ minimum input voltage AC |
| Input voltage | 230 | $V_{ac}$ | |
| Rated input power | 79 | W | @230V @ max. rated output power |
| Power factor | ≥ 0.99 | | @ full load. See graph. |
| Total harmonic distortion | ≤ 9 | % | @ full load. See graph. |
| Efficiency | 88 | % | @230V @ max. rated output power |
| Input voltage AC | 198…264 | $V_{ac}$ | Operational range |
| Input frequency AC | 45…66 | Hz | Maximum performance range |
| Standby power | 0.8 | W | |

## Electrical output data

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Regulation method | Constant Current | | |
| Output voltage | 30…100 | $V_{dc}$ | |
| Output voltage max. | 180 | V | Peak voltage at open load |
| Output current | 70…1000 | mA | Configurable output current range |
| 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…70 | W | |

## Electrical data controls input

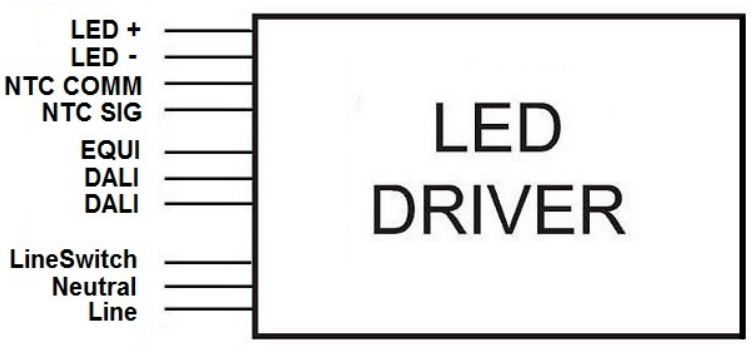
| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Control method | DALI-LineSwitch-Dynadim | | DALI acc. IEC62386-101, -102 Ed. 2.0 |
| Dimming range | 7…100 | % | Output current amplitude dimming |

## Logistical data

| Specification item | Value |
|---|---|
| Product name | Xi FP 70W 0.3-1.0A NLD C150 230V sXt |
| Order code | 871869652103800 |
| Logistic code 12NC | 9290 009 91406 |
| EAN3 | 8718696521045 |
| Pieces per box | 12 |

## Wiring & Connections

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Input wire cross-section | 0.5…2.5 | $mm^2$ | WAGO804, solid wire |
| | 12…20 | AWG | WAGO804, solid wire |
| Input wire strip length | 10…11 | mm | |
| Output wire cross-section | 0.3…1.5 | $mm^2$ | WAGO805, solid / stranded wire |
| | 16…24 | AWG | WAGO805, solid / stranded wire |
| Output wire strip length | 9…10 | mm | |
| Maximum output cable length LED+ and LED- | 20 | m | Total length of wiring including LED module, one way |

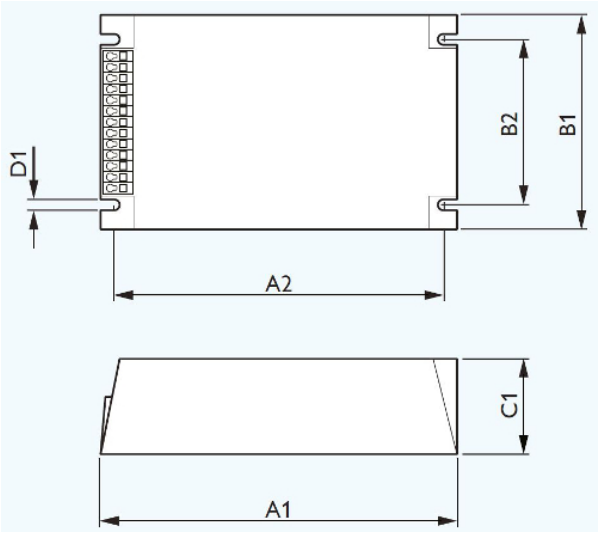



## Insulation

| Insulation | Mains | LineSwitch | EQUI | DALI | LED + NTC |
|---|---|---|---|---|---|
| **Mains** | | No | Double | Basic | Double |
| **LineSwitch** | No | | Double | Basic | Double |
| **EQUI** | Double | Double | | Double | Double |
| **DALI** | Basic | Basic | Double | | Double |
| **LED + NTC** | Double | Double | Double | Double | |

## Dimensions and weight

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Length (A1) | 150 | mm | |
| Width (B1) | 90 | 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 |
|---|---|---|---|
| Driver 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 | 50khrs, 90% surv. |
| Tcase-life | 75 | °C | 100khrs, 90% surv. Measured at $T_c$-point |
| Maximum housing temperature | 130 | °C | In case of a failure |
| Relative humidity | 10…90 | % | Non-condensing |

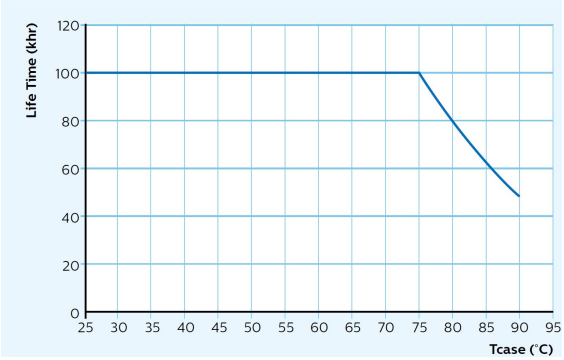
## Storage temperature and humidity

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Ambient temperature | -30…+50 | °C | |
| Relative humidity | 10…90 | % | Non-condensing |

## Lifetime

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

Lifetime versus Tcase




## 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

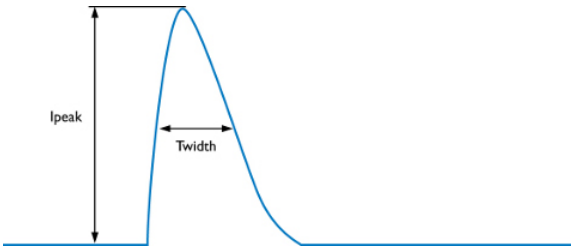
| Specification item | Value | Remark | Condition |
|---|---|---|---|
| Open load protection | Yes | | Automatic recovering |
| Short circuit protection | Yes | | Automatic recovering |
| Over power protection | Yes | | Automatic recovering |
| Hot wiring | No | | |
| Suitable for luminaire insulation class | I and II | | Acc. IEC60598-1 |
| Over temperature protection driver | Yes | | Automatic recovery, dimming at Tc=90°C, shutdown at Tc=94°C, resume at Tc=80°C |
| Overheating protection | Yes | | Automatic recovering, NTC types: Murata: 10kOhm, NCP18XH103J03RB Vishay: 15kOhm, 2381 615 54153 Murata: 15kOhm, NCP15XW153E03RC |

## 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 | |




| MCB | Rating | Relative number of LED drivers |
|---|---|---|
| B | 10A | 63% |
| B | 13A | 81% |
| B | 16A | 100% (stated in datasheet) |
| B | 20A | 125% |
| B | 25A | 156% |
| C | 10A | 104% |
| C | 13A | 135% |
| C | 16A | 170% |
| C | 20A | 208% |
| C | 25A | 260% |

## 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

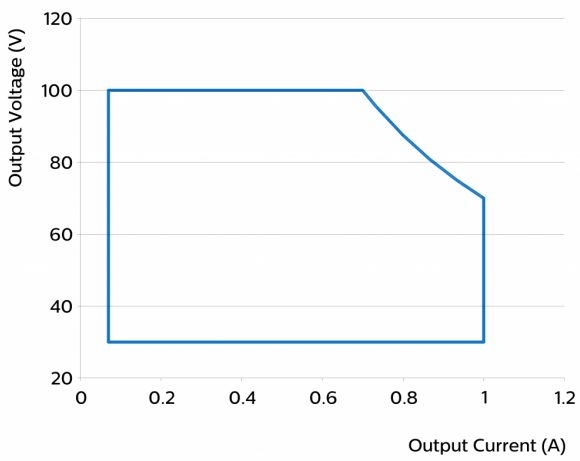
| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Mains surge immunity (diff. mode) | 6 | kV | L-N, Ls-L, Ls-N, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us |
| Mains surge immunity (comm. mode) | 8 | kV | L/N/Ls-GND, acc. IEC61000-4-5. 12 Ohm 1.2/50us,8/20us |
| Control surge immunity (diff. mode) | 1 | kV | DALI, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us |
| Control surge immunity (comm. mode) | 2 | kV | DALI-GND, acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us |

## Additional information

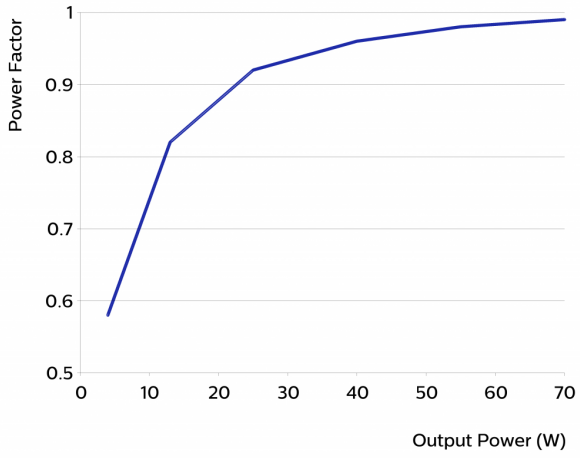
| Specification item | Value | Unit | Condition |
|---|---|---|---|
| AOC | 700 | mA | |
| LineSwitch | ON | | |
| ALO | OFF | | |
| CLO | 100 | % | |
| MTP | ON | | |
| Dynadimmer | OFF | | |
| AST | OFF | | |
| EOL | OFF | | |

## Graphs

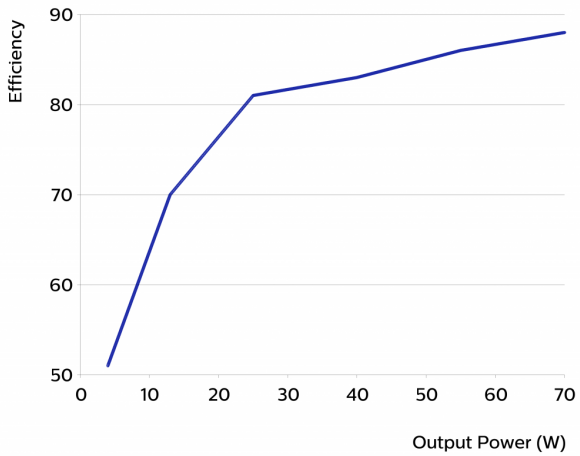
### Operating window



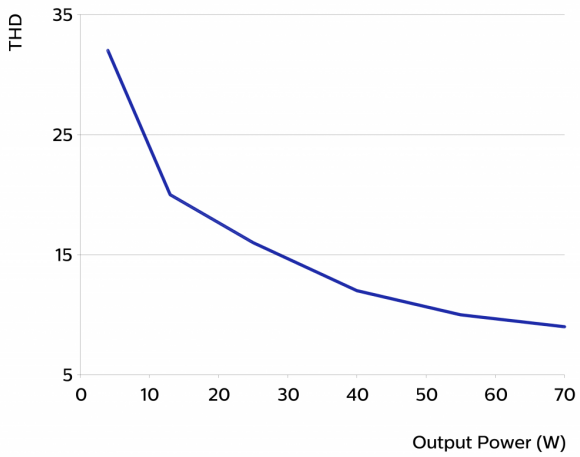

### Power factor versus output power



## Efficiency versus output power




## THD versus output power




©2015 Koninklijke Philips Electronics N.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights. Data subject to change.

Date of release: November 5, 2015

**www.philips.com/technology**