

# PHILIPS

## Xitanium

### LED driver



## Datasheet

# Xitanium FULL Prog LED Xtreme drivers

Xi FP 75W 0.3-1.0A SNLDAE 230V C133 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<sub>2</sub> 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 insulation Class I and Class II applications
- Energy savings through high efficiency and via multiple dimming options

#### Features

- High surge immunity (CM/DM)
- Long lifetime and robust protection against moisture, vibration and temperature
- Configurable operating windows (AOC)
- Multiple control interfaces: DALI, AmpDim, 1-step and 3-step LineSwitch
- Autonomous dimming via integrated DynaDimmer
- Adjustable thermal protection for driver (DTL, on select models) and LED 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
- Tunnel lighting
- Industrial lighting

## 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          | 0.34      | A               | @ rated output power @ rated input voltage               |
| Max. input current           | 0.4       | A               | @ rated output power @ minimum performance input voltage |
| Rated input power            | 84        | W               | @ rated output power @ rated input voltage               |
| Power factor                 | 0.99      |                 | @ rated output power @ rated input voltage               |
| Total harmonic distortion    | 8         | %               | @ rated output power @ rated input voltage               |
| Efficiency                   | 92.5      | %               | @ rated output power @ rated input voltage               |
| Rated input voltage DC range | 186...250 | V <sub>dc</sub> | Performance range                                        |
| Rated input current DC range | ≤ 0.48    | A <sub>dc</sub> | Performance range                                        |
| Input voltage AC range       | 80...264  | V <sub>ac</sub> | Safety operational range                                 |
| Input frequency AC range     | 45...66   | Hz              | Safety operational range                                 |
| Input voltage DC range       | 168...275 | V <sub>dc</sub> | Safety operational range                                 |
| Standby Power                | 0.45      | W               |                                                          |
| Isolation input to output    | Double    |                 |                                                          |

## Electrical output data

| Specification item              | Value            | Unit            | Condition                        |
|---------------------------------|------------------|-----------------|----------------------------------|
| Regulation method               | Constant Current |                 |                                  |
| Output voltage                  | 35...108         | V <sub>dc</sub> |                                  |
| Output voltage max.             | 150              | V               | Maximum voltage at open load     |
| Output current                  | 0.07...1.05      | A               |                                  |
| Output current min programmable | 300              | mA              |                                  |
| Output current min dimming      | 70               | mA              |                                  |
| Output current tolerance        | ± 3              | %               |                                  |
| Output current ripple LF        | ≤ 4              | %               | Ripple = peak / average @ < 1kHz |
| Output current ripple HF        | ≤ 4              | %               |                                  |
| Output power                    | 2.5...75         | W               |                                  |

## Electrical data controls input

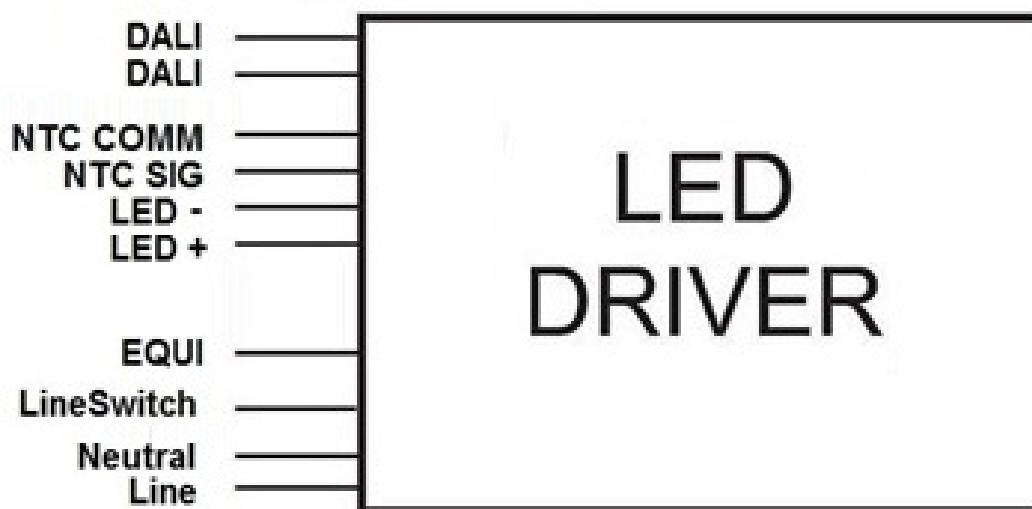
| Specification item | Value                                                               | Unit | Condition                                                                                 |
|--------------------|---------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------|
| Control method     | AmpDim, DALI, Dynadimmer, LineSwitch 3-step, LineSwitch single-step |      | Output current amplitude dimming                                                          |
| Dimming range      | 10...100                                                            | %    | DALI acc. IEC62386-101, -102 Ed. 2.0; LineSwitch: Vlow: < 160Vac<br>Vhigh: 170 ... 264Vac |
| Galvanic Isolation | Double                                                              |      |                                                                                           |

## Logistical data

| Specification item | Value                                   |
|--------------------|-----------------------------------------|
| Product name       | Xi FP 75W 0.3-1.0A SNLDAE 230V C133 sXt |
| Order code         | 871869675569300                         |
| Logistic code 12NC | 9290 014 08506                          |
| Pieces per box     | 12                                      |

## Wiring & Connections

| Specification item              | Value     | Unit            | Condition                                            |
|---------------------------------|-----------|-----------------|------------------------------------------------------|
| Input wire cross-section        | 0.2...1.5 | mm <sup>2</sup> | WAGO250 (3.5 mm), solid / stranded wire              |
|                                 | 16...24   | AWG             | WAGO250 (3.5 mm), solid / stranded wire              |
| Input wire strip length         | 8.5...9.5 | mm              |                                                      |
| Output wire cross-section       | 0.2...1.5 | mm <sup>2</sup> | WAGO250 (3.5 mm), solid / stranded wire              |
|                                 | 16...24   | AWG             | WAGO250 (3.5 mm), solid / stranded wire              |
| Output wire strip length        | 8.5...9.5 | mm              |                                                      |
| Dimming wire cross-section      | 0.2...1.5 | mm <sup>2</sup> | WAGO250 (3.5 mm), solid / stranded wire              |
|                                 | 16...24   | AWG             | WAGO250 (3.5 mm), solid / stranded wire              |
| Dimming wire strip length       | 8.5...9.5 | mm              |                                                      |
| Maximum cable length            | 600       | mm              | Total length of wiring including LED module, one way |
| Maximum NTC output cable length | 0.6       | m               |                                                      |

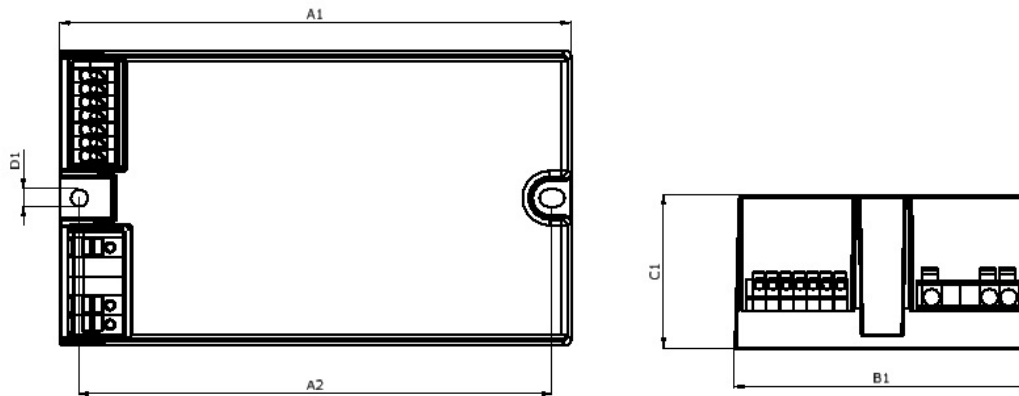


## Insulation

| Insulation | Mains  | EQUI   | LED + NTC | LineSwitch | DALI   |
|------------|--------|--------|-----------|------------|--------|
| Mains      |        | Double | Double    | NA         | Basic  |
| EQUI       | Double |        | Basic     | Double     | Double |
| LED + NTC  | Double | Basic  |           | Double     | Double |
| LineSwitch | NA     | Double | Double    |            | Basic  |
| DALI       | Basic  | Double | Double    | Basic      |        |

## Dimensions and weight

| Specification item        | Value | Unit | Condition |
|---------------------------|-------|------|-----------|
| Length (A1)               | 133   | mm   |           |
| Width (B1)                | 77    | mm   |           |
| Height (C1)               | 40    | mm   |           |
| Fixing hole diameter (D1) | 4.2   | mm   |           |
| Fixing hole distance (A2) | 122   | mm   |           |
| Weight                    | 550   | gram |           |



## Operational temperatures and humidity

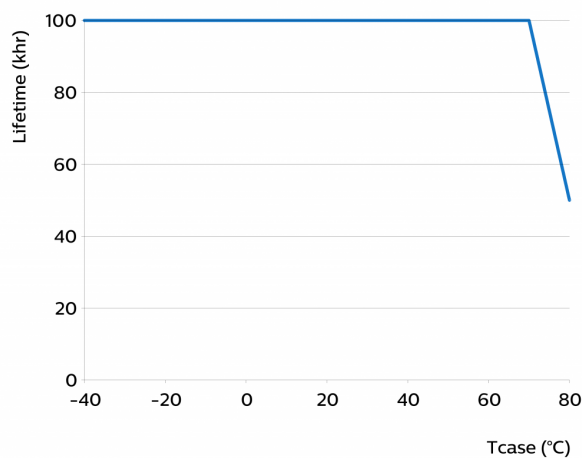
| Specification item          | Value     | Unit | Condition                                                                |
|-----------------------------|-----------|------|--------------------------------------------------------------------------|
| Ambient temperature         | -40...+55 | °C   | Higher ambient temperature allowed as long as Tcase-max is not exceeded. |
| Tcase-max                   | 80        | °C   | Maximum temperature measured at T <sub>case</sub> -point                 |
| Tcase-life                  | 70        | °C   | Measured at T <sub>case</sub> -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.<br>Maximum failures = 10% |



## Programmable features

| Specification item                    | Value                   | Remark               | Condition                                                                 |
|---------------------------------------|-------------------------|----------------------|---------------------------------------------------------------------------|
| Set output current (AOC)              | Programmable, SimpleSet | See Design-in guide. | Default output current: = 700 mA                                          |
| LED module temperature derating (MTP) | Yes                     |                      |                                                                           |
| Driver Temperature Limit (DTL)        | Yes                     |                      |                                                                           |
| Constant Lumen Over Lifetime (CLO)    | Yes                     |                      |                                                                           |
| DC emergency dimming (DCemDIM)        | Yes                     |                      | Default: AOC = 15%. EOFx = 10 ... 60%. No external DC rated fuse required |
| Diagnostics                           | Yes                     |                      |                                                                           |
| Adjustable Light Output (ALO)         | Yes                     |                      |                                                                           |
| Ampdim                                | Yes                     |                      |                                                                           |
| LineSwitch single-step                | Yes                     |                      |                                                                           |
| LineSwitch 3-step                     | Yes                     |                      |                                                                           |
| Adjustable Start-up Time (AST)        | Yes                     |                      |                                                                           |
| Integrated Dynadimmer                 | Yes                     |                      | 5-step, light turn-off possible                                           |
| End Of Life indicator                 | Yes                     |                      |                                                                           |

## Features

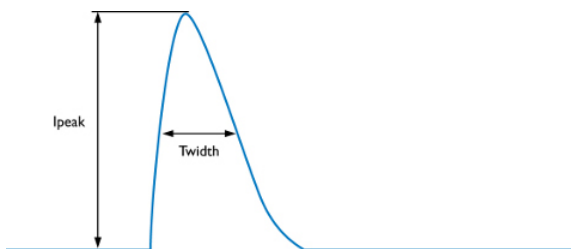
| Specification item                          | Value    | Remark | Condition            |
|---------------------------------------------|----------|--------|----------------------|
| Open load protection                        | Yes      |        | Automatic recovering |
| Short circuit protection 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

## Certificates and standards

| Specification item                     | Value                     |
|----------------------------------------|---------------------------|
| Approval marks                         | CB / CCC / CE / EL / ENEC |
| Ingress Protection classification (IP) | 20                        |

## Inrush current

| Specification item         | Value     | Unit    | Condition                                      |
|----------------------------|-----------|---------|------------------------------------------------|
| Inrush current $I_{peak}$  | 43        | A       | Input voltage 230V                             |
| Inrush current $T_{width}$ | 260       | $\mu s$ | Input voltage 230V, measured at 50% $I_{peak}$ |
| Drivers / MCB 16A type B   | $\leq 10$ | 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%                           |

## Driver touch current / protective conductor current

| Specification item                                  | Value | Unit    | Condition                                             |
|-----------------------------------------------------|-------|---------|-------------------------------------------------------|
| Typical touch current (ins. Class II)               | 0.28  | mA peak | Acc. IEC61347-1. LED module contribution not included |
| Typical protective conductor current (ins. Class I) | 0.2   | mA rms  | Acc. IEC61347-1. LED module contribution not included |

## Surge immunity

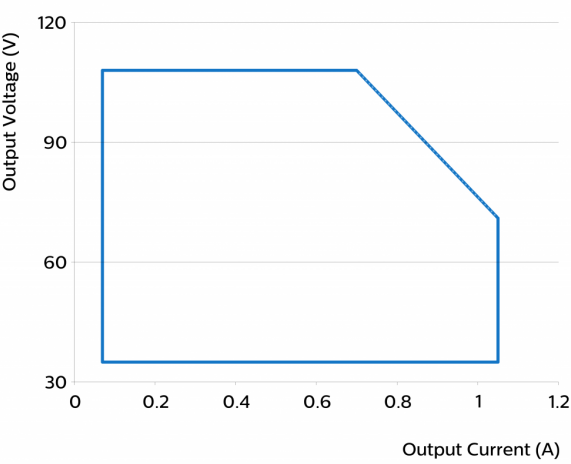
| Specification item                  | Value | Unit | Condition                                                                       |
|-------------------------------------|-------|------|---------------------------------------------------------------------------------|
| Mains surge immunity (diff. 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)   | 10    | kV   | L/N/Ls - EQUI 10kV acc. EN61547; 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us, 8/20us |
| Control surge immunity (diff. mode) | 0.9   | kV   | DALI, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us                                |
| Control surge immunity (comm. mode) | 6     | kV   | DALI - EQUI acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us                         |
| DALI surge immunity (comm. mode)    | 6     | kV   | DALI - L/N/Ls acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us                       |

Additional information

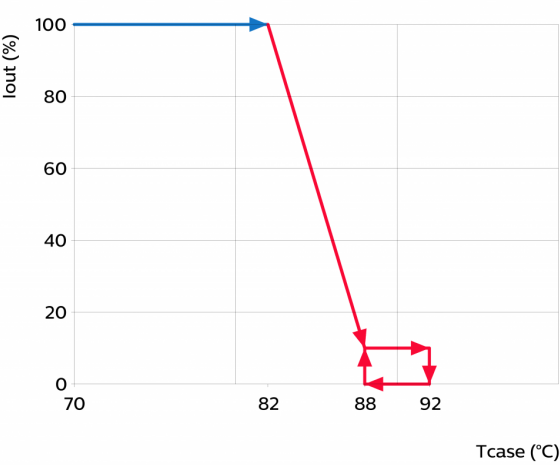
| Specification item | Default setting | Remark | Condition |
|--------------------|-----------------|--------|-----------|
| AOC                | 700             | mA     |           |
| LineSwitch         | ON              |        |           |
| CLO                | OFF             |        |   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

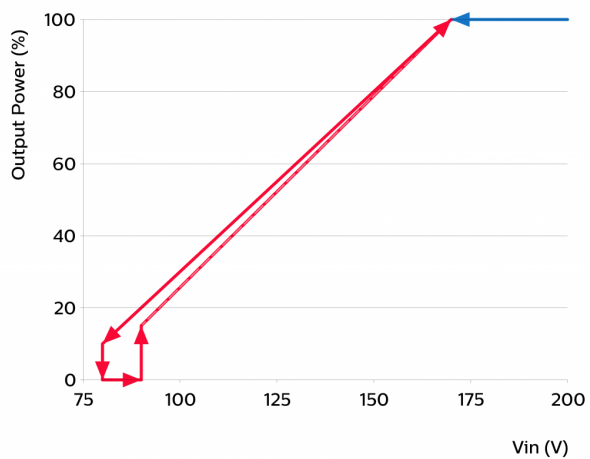
Graphs

Operating window

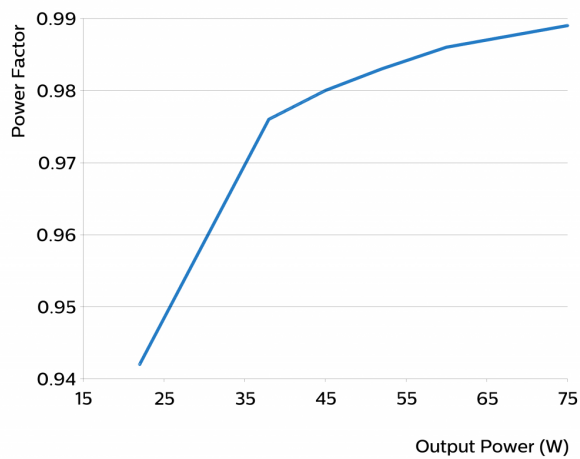


Thermal Guard

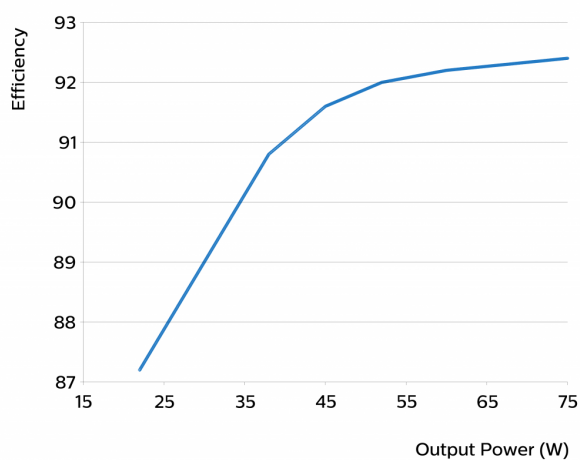




#### Power factor versus output power

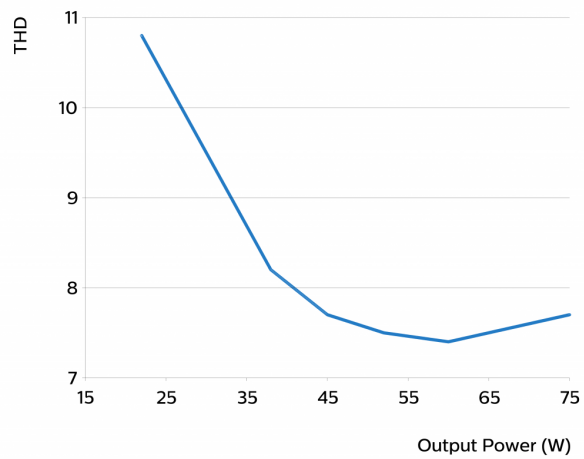


#### Efficiency versus output power





## THD versus output power



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