xitanium

Datasheet

# Xitanium FULL Prog LED Xtreme drivers

Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt
9290 040 04106




### 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

## Application

- Road and street lighting
- Area lighting
- Tunnel lighting
- Industrial lighting

## Features

- High surge protection (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) and LED module (MTP)
- Constant Light Output (CLO)
- Adjustable Start-up Time (AST)
- Adjustable Light Output (ALO)
- End-Of-Life indicator (EOL)
- Communication through mains via coded commands
- Compliant per DALI Part 251/252/253 (select models)

## Logistical data

| Specification item | Value |
|---|---|
| Product name | Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt |
| EOC | 872110305998700 |
| Logistic code 12NC | 9290 040 04106 |
| EAN1 (GTIN) | 8721103059987 |
| EAN3 (box) | 8721103059994 |
| Pieces per box | 20 |
| Weight | 190 gram |

## Electrical input data

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Rated input voltage range | 202...254 | $V_{ac}$ | Performance range |
| Rated input voltage | 230 | $V_{ac}$ | |
| Rated input frequency | 47...63 | Hz | Performance range |
| Rated input current | 0.2 | A | @ rated output power @ rated input voltage |
| Max. input current | 0.21 | A | @ rated output power @ minimum performance input voltage |
| Rated input power | 46.0 | W | @ rated output power @ rated input voltage |
| Power factor | 0.99 | | @maximum output power @ rated input voltage |
| Total harmonic distortion | 7 | % | @ rated output power @ rated input voltage |
| Efficiency | 88.2 | % | @ rated output power @ rated input voltage @ max. Iout |
| Rated input voltage DC | 186...250 | $V_{dc}$ | Performance range |
| Rated input current DC | 0.01...0.15 | $A_{dc}$ | Performance range |
| Input voltage AC | 80...264 | $V_{ac}$ | Safety operational range; see MainsGuard graph |
| Input frequency AC | 45...66 | Hz | Safety operational range |
| Input voltage DC | 168...275 | $V_{dc}$ | Safety operational range |
| Standby Power (no load) | 0.44 | W | |
| Isolation input to output | SELV | | |

## Electrical output data

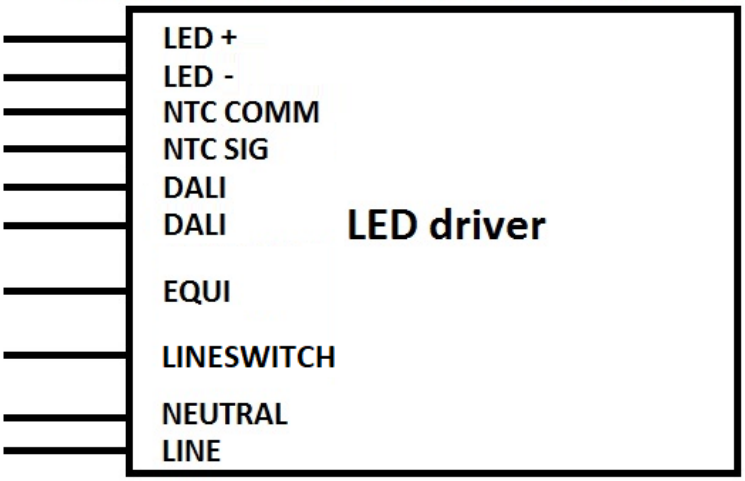
| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Regulation method | Constant Current | | |
| Output voltage | 20...54 | $V_{dc}$ | |
| Output voltage max. | 60 | V | Maximum voltage at open load |
| Output current | 70...1050 | mA | |
| Output current min programmable | 300 | mA | |
| Min output current | 70 | mA | |
| Output current tolerance ± | 3 | % | @full load |
| Output current ripple LF | ≤ 4 | % | Ripple = peak / average @ < 3kHz |
| Output current ripple HF | ≤ 4 | % | |
| Output $P_{st}^{LM}$ | ≤ 0.3 | | In entire operating window |
| Output SVM | ≤ 0.3 | | In entire operating window |
| Output power | 1.4...40.0 | W | |

## Control interfaces

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Control method | AmpDim, Coded Mains, DALI, Dynadimmer, LineSwitch, LineSwitch 3-step | | Output current amplitude dimming. Please refer to design-in guide at www.philips.com/oem for more controllability details. |
| Dimming range | 10...100 | % | For latest DALI certification status please visit www.digitalilluminationinterface.org/products; LineSwitch: Vlow: < 160Vac Vhigh: 170 ... 264Vac |
| Isolation controls input to output | Double | | acc. IEC61347-1 |

## Wiring and Connections

| Specification item | Value | Unit | Type |
|---|---|---|---|
| Input wire cross-section | 0.5...1.5 / 20...16 | mm² / AWG | solid / stranded wire |
| Input wire strip length | 8.5...9.5 | mm | |
| Output wire cross-section | 0.5...1.5 / 20...16 | mm² / AWG | solid / stranded wire |
| Output wire strip length | 8.5...9.5 | mm | |
| Control wire cross-section | 0.5...1.5 / 20...16 | mm² / AWG | solid / stranded wire |
| Control wire strip length | 8.5...9.5 | mm | |
| Maximum cable length | 0.6 | m | CISPR15: between driver and LED module |
| Maximum NTC output cable length | 0.6 | m | |

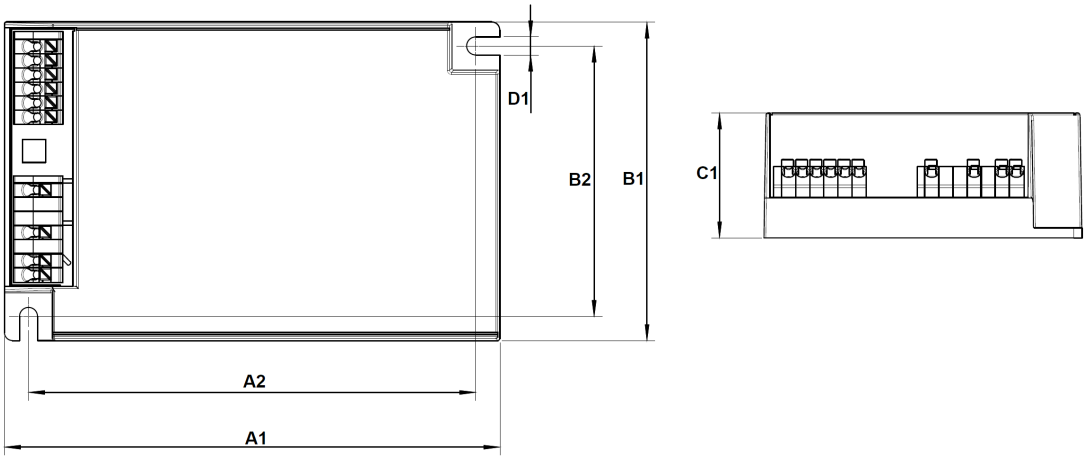



## Isolation

| Insulation per IEC61347-1 | Mains + LineSwitch | EQUI | LED + NTC | DALI |
|---|---|---|---|---|
| Mains + LineSwitch | - | Double | SELV | Basic |
| EQUI | Double | - | Basic | Double |
| LED + NTC | SELV | Basic | - | Double |
| DALI | Basic | Double | Double | - |

## Dimensions and weight

| Specification item | Value | Unit | Tolerance (mm) |
|---|---|---|---|
| Length (A1) | 123 | mm | |
| Mounting hole distance (A2) | 111 | mm | |
| Width (B1) | 79 | mm | |
| Width (B2) | 67 | mm | |
| Height (C1) | 31 | mm | |
| Mounting hole diameter (D1) | 4.5 | mm | |
| Weight | 190 | gram | |

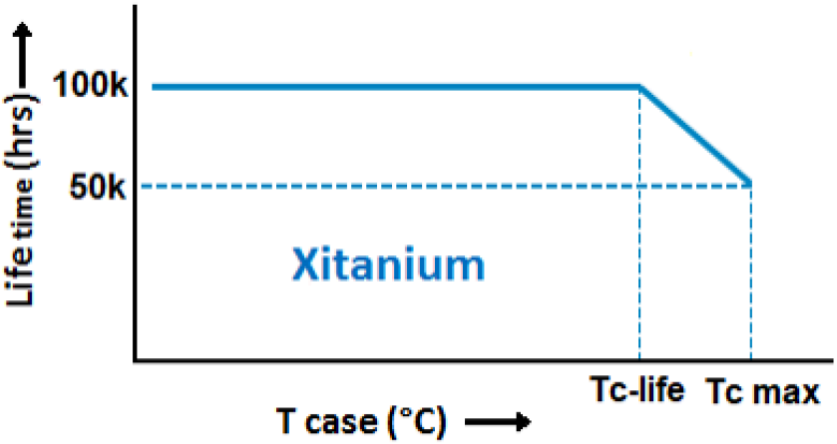



## Operational temperatures and humidity

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Ambient temperature | -40...+55 | °C | Higher ambient temperature allowed as long as Tcase-max is not exceeded |
| Tcase-max | 85 | °C | Maximum temperature measured at $T_{case}$-point |
| Tcase-life | 75 | °C | Measured at $T_{case}$-point |
| Maximum housing temperature | 120 | °C | In case of a failure, inherent by design |
| Relative humidity | 10...90 | % | Non-condensing |

## Lifetime

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




Maximum failures = 10%

| Temperature [°C] | Lifetime | Unit | Condition |
|---|---|---|---|
| 85 | 50000 | hr | |
| 80 | 71000 | hr | |
| 75 | 100000 | hr | Temperature measured @Tc point |
| 70 | >100000 | hr | |
| 65 | >100000 | hr | |

## Storage temperature and humidity

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Ambient temperature | -40...+85 | °C | |
| Relative humidity | 5...95 | % | Non-condensing |

## Programmable features

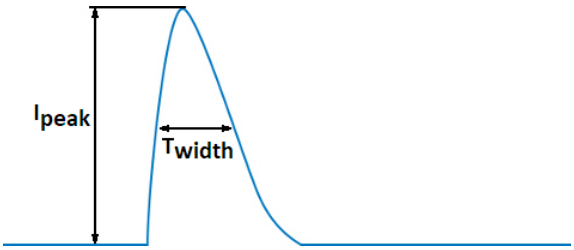
| Specification item | Available | Default setting | Condition |
|---|---|---|---|
| Set Adjustable Output Current (AOC) | Programmable, SimpleSet | 700 mA | |
| LED Module Temperature Protection (MTP) | Yes | OFF | |
| Driver Temperature Limit (DTL) | Yes | ON | |
| Adjustable Light Output (ALO) | Yes | OFF | |
| Constant Light Output (CLO) | Yes | OFF | |
| Adjustable Start-up Time (AST) | Yes | 1 s | |
| Integrated Dynadimmer | Yes | OFF | 5-step, light turn-off possible |
| LineSwitch single-step | Yes | ON | |
| LineSwitch 3-step | Yes | OFF | |
| AmpDim | Yes | OFF | |
| Min Dim Level (%) | Yes | 10 % | |
| DC emergency (DCemDim) | Yes | ON | Default: AOC = 15%. EOFx = 10 ... 60%. No external DC rated fuse required. Internal fuse rating: T5A 250VAC/DC. |
| End Of Life indicator (EOL) | Yes | OFF | |
| Coded Mains | Yes | OFF | |
| OEM Write Protection (OWP) | Yes | OFF | |
| Luminaire Info (DALI part 251) | Yes | | |
| Luminaire maintenance (DALI part 253) | Yes | | |

## Non-programmable features

| Specification item | Value | 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 |
| Overtemperature protection | Yes | Automatic recovering |
| Energy metering (DALI part 252) | Yes | Accuracy = 10% |
| Diagnostics (DALI part 253) | Yes | |
| Diagnostics via Signify tool | Yes | |

## Inrush current

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Inrush current | 18 | A | Input voltage 230V |
| Inrush peak width | 280 | µs | Input voltage 230V, measured at 50% height |
| Drivers / MCB 16A type B @230V AC | ≤ 30 | pcs | Input voltage 230V |




Please refer to the driver design in guide if you use other MCB-types.

If several mini circuit breakers are used directly side-by-side (without distance pieces

a correction factor of 80% has to be applied to the rated current

## Driver touch current / protective conductor current / earth leakage current

| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Typical Touch Current (ins. Class II) | 0.24 | mA peak | Acc. IEC61347-1. LED module contribution not included |
| Typical Protective Conductor Current (ins. Class I) | 0.17 | mA rms | Acc. IEC60598-1. LED module contribution not included |

## Surge immunity

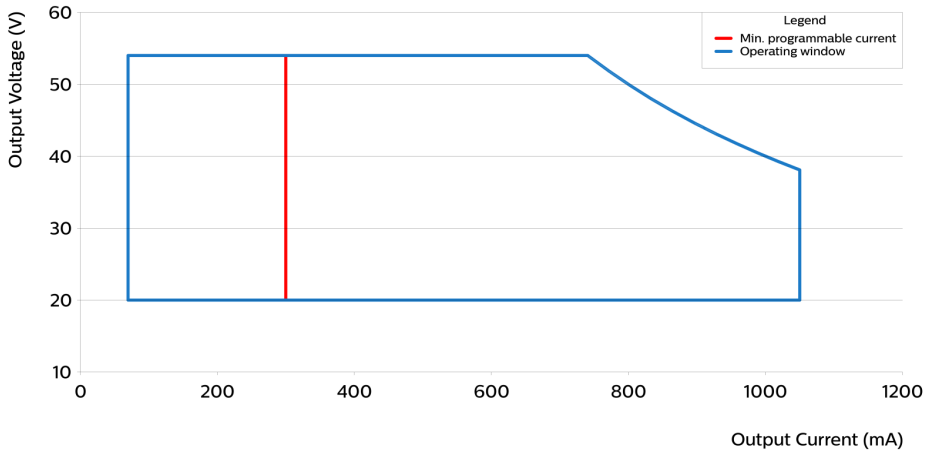
| Specification item | Value | Unit | Condition |
|---|---|---|---|
| Mains surge immunity (diff. mode) | 6 | kV | L-N, Ls-L, Ls-N, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us |
| Mains surge immunity (comm. mode) | 10 | kV | L/N/Ls - EQUI 10kV acc. EN61547; 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us,8/20us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

## Application Info (Approbation)

| Specification item | Value |
|---|---|
| Approval marks and Certifications | CCC / CE / DALI 2 / Double-insulated Built-In / EAC / EL / ENEC / RCM / SELV / UA / WEEE |
| Ingress Protection classification (IP) | 20 |
| Application | Outdoor |
| Mounting Type | Built-in |

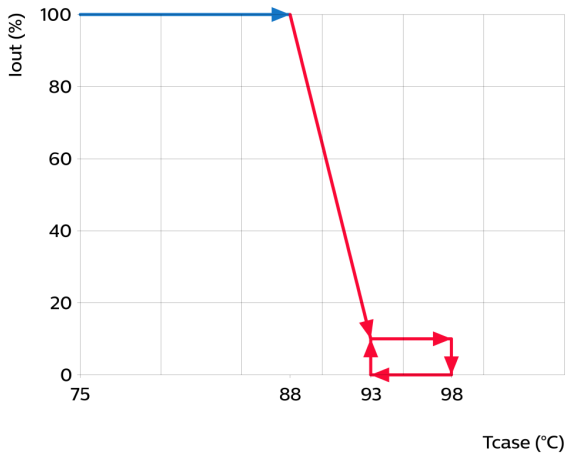
## Graphs

## Operating window

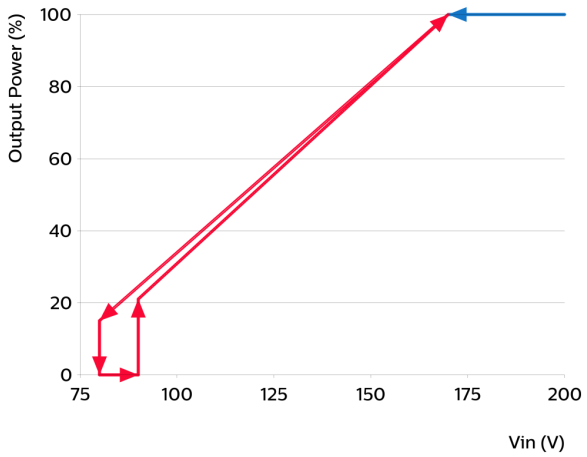



| Type | Output current (mA) | Min. output voltage (V) | Max. output voltage (V) | Max. output power (W) |
|---|---|---|---|---|
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 300 | 20 | 54 | 16.2 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 350 | 20 | 54 | 18.9 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 400 | 20 | 54 | 21.6 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 450 | 20 | 54 | 24.3 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 500 | 20 | 54 | 27 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 550 | 20 | 54 | 29.7 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 600 | 20 | 54 | 32.4 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 650 | 20 | 54 | 35.1 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 700 | 20 | 54 | 37.8 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 750 | 20 | 53 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 800 | 20 | 50 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 850 | 20 | 47 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 900 | 20 | 44 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 950 | 20 | 42 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 1000 | 20 | 40 | 40 |
| Xi FP 40W 0.3-1.0A SNLDAE 230V C123 sXt | 1050 | 20 | 38 | 40 |

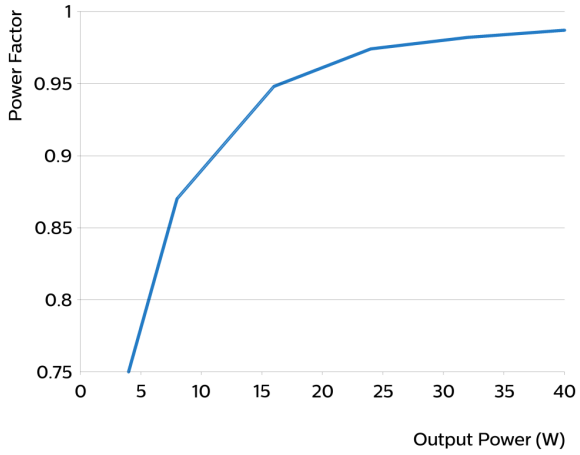
## Thermal Guard



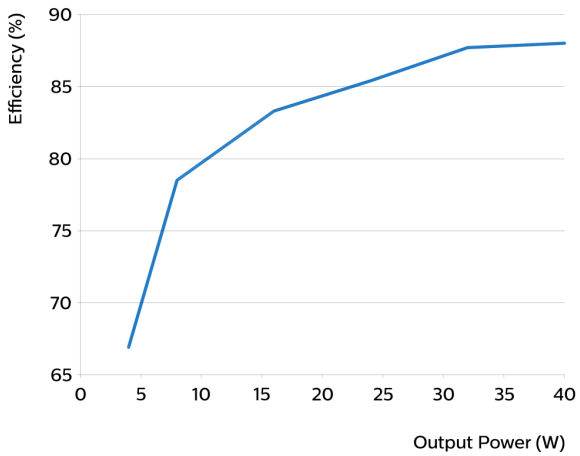

## Mains Guard



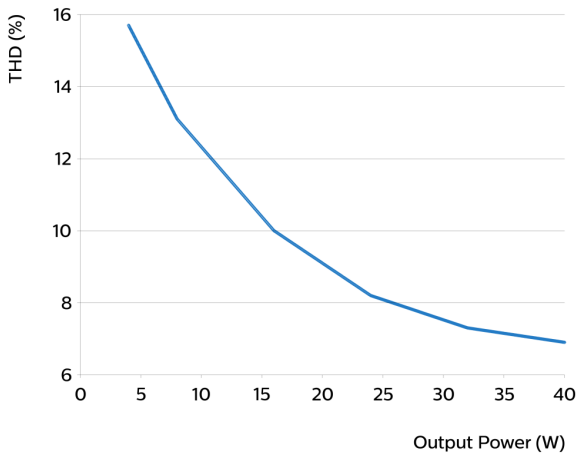

## Power factor versus output power



## Efficiency versus output power




## THD versus output power




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