

# PHILIPS

## Xitanium

### LED driver



## Datasheet

# Xitanium FULL Prog LED Xtreme dual-channel drivers

Xi FP 330W 2:0.2-0.75A SNDAE 230V C240 sXt

### Xitanium FULL Prog LED Xtreme dual-channel drivers

Philips Xitanium Full Programmable dual-channel 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 CO2 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 dual-channel drivers 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. One of the key features is SimpleSet<sup>®</sup>, an easy and fast way to configure the driver in a production environment, without the need to power the driver. Another key feature is dual-channel operation, enabling operation at higher output currents.

#### 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 SimpleSet<sup>®</sup> and 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

- SimpleSet<sup>®</sup>, wireless configuration interface
- High surge immunity (CM/DM)
- Long lifetime and robust protection against moisture, vibration and temperature
- Dual-channel outputs which can be connected in parallel for higher output current
- Configurable operating windows (AOC)
- Multiple control interfaces: DALI, AmpDim
- Autonomous dimming via integrated DynaDimmer
- Suitable for central DC operation (DCemDim)
- 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)

#### 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	1.56	A	@ rated output power @ rated input voltage
Max. input current	1.77	A	@ rated output power @ minimum performance input voltage
Rated input power	356	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	≤ 93.4	%	@ rated output power @ rated input voltage
Rated input voltage DC range	186...250	V <sub>dc</sub>	Performance range
Rated input current DC range	≤ 1.12	A <sub>dc</sub>	Performance range
Input voltage AC range	198...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	0.5	W	
Isolation input to output	Double		

## Electrical output data

Data below applies to each separate output channel

Specification item	Value	Unit	Condition
Regulation method	Constant Current		
Output voltage	100...300	V <sub>dc</sub>	
Output voltage max.	350	V	Maximum voltage at open load
Output current	0.05...0.75	A	Per channel
Output current min programmable	200	mA	
Output current min dimming	50	mA	
Output current tolerance	± 3	%	
Output current ripple LF	≤ 4	%	Ripple = peak / average
Output current ripple HF	≤ 4	%	
Output power	5...165	W	Per channel

## Electrical data controls input

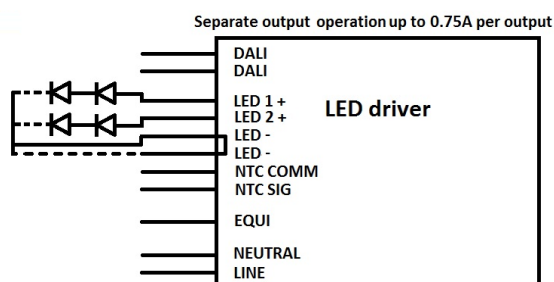
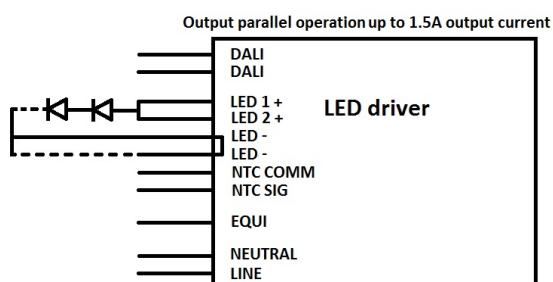
Specification item	Value	Unit	Condition
Control method	AmpDim, DALI, Dynadimmer		Output current amplitude dimming
Dimming range	10...100	%	DALI acc. IEC62386-101 Ed.2.0, -102 Ed. 2.0
Galvanic Isolation	Double		

## Logistical data

Specification item	Value
Product name	Xi FP 330W 2:0.2-0.75A SNDAE 230V C240 sXt
Order code	871869677517200
Logistic code 12NC	9290 014 08306
Pieces per box	4

## 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	2500	mm	Total length of wiring including LED module, one way
Maximum NTC output cable length	0.6	m	

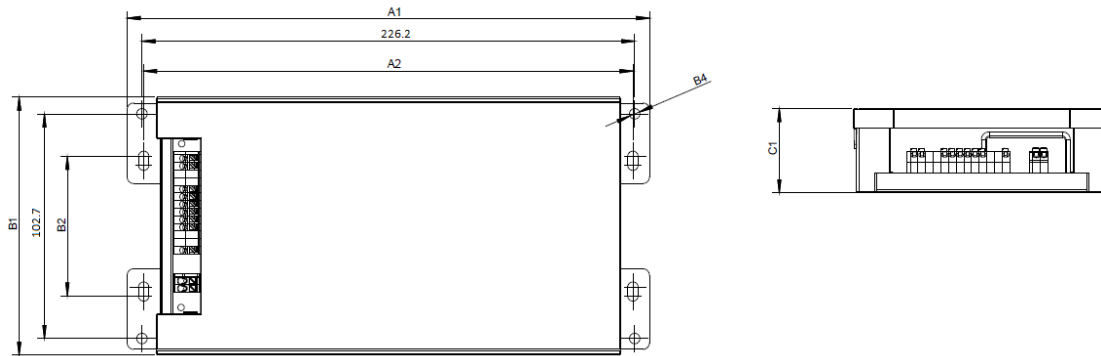


## Insulation

Insulation	Mains	EQUI	LED + NTC	DALI
Mains		Double	Double	Basic
EQUI	Double		Basic	Double
LED + NTC	Double	Basic		Double
DALI	Basic	Double	Double	

## Dimensions and weight

Specification item	Value	Unit	Condition
Length (A1)	239.7	mm	
Width (B1)	118	mm	
Width (B2)	63.8	mm	
Height (C1)	38	mm	
Fixing hole diameter (D1)	4.8	mm	
Fixing hole distance (A2)	224.6	mm	
Weight	1700	gram	



## Operational temperatures and humidity

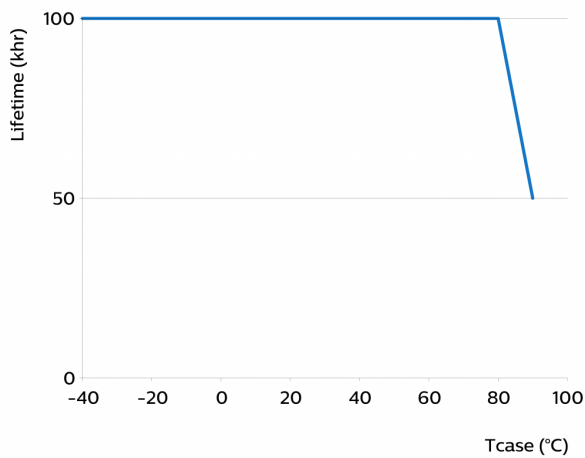
Specification item	Value	Unit	Condition
Ambient temperature	-40...+55	°C	Higher ambient temperature allowed as long as T <sub>case-max</sub> is not exceeded.
T <sub>case-max</sub>	90	°C	Maximum temperature measured at T <sub>case</sub> -point
T <sub>case-life</sub>	80	°C	Measured at T <sub>case</sub> -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...+90	°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, 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%. EOF(x) range: 10 ... 60%. No external DC rated fuse required
Diagnostics	Yes		Full diagnostics
Adjustable Light Output (ALO)	Yes		
Ampdim	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

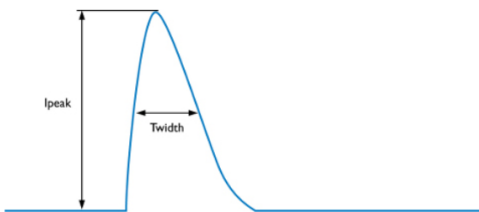
Specification item	Value
Approval marks	CB / CCC / CE / EL / ENEC
Ingress Protection classification	20

## Inrush current

Specification item	Value	Unit	Condition
Inrush current $I_{peak}$	13	A	Input voltage 230V
Inrush current $T_{width}$	1320	$\mu s$	Input voltage 230V, measured at 50% $I_{peak}$
Rec. number of drivers / MCB 16A type B	$\leq 7$	pcs	Based on inrush current
Rec. number of drivers / MCB 16A type C, D	$\leq 9$	pcs	Based on steady-state input current @ rated output power

MCB type	Rating	Relative number of drivers (based on inrush)
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%

MCB	Rating	Number of drivers (based on rated output power)
C	10A	5
C	13A	7
C	16A	9
C	20A	11
C	25A	14
D	10A	5
D	13A	7
D	16A	9
D	20A	11
D	25A	14



Fusing information:

This driver is equipped with a SoftStart inrush current limiter. As a consequence, the limit on the number of drivers connected to an MCB/melting fuse is based on either the aggregate inrush current or the steady-state input current and defined by whatever limit is reached first.

## Driver touch current / protective conductor current

Specification item	Value	Unit	Condition
Typical touch current (ins. Class II)	$< 0.6$	mA peak	Acc. IEC61347-1. LED module contribution not included
Typical protective conductor current (ins. Class I)	$< 0.45$	mA rms	Acc. IEC61347-1. LED module contribution not included

## Surge immunity

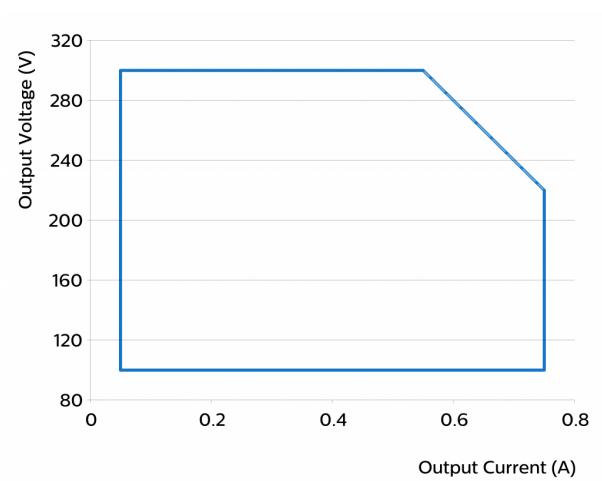
Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	6	kV	L - N acc. IEC61000-4-5, 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (comm. mode)	10	kV	L/N - EQUI: 10kV acc.EN61547, 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us, 8/20us, open DALI interface
Control surge immunity (diff. mode)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

## Additional information

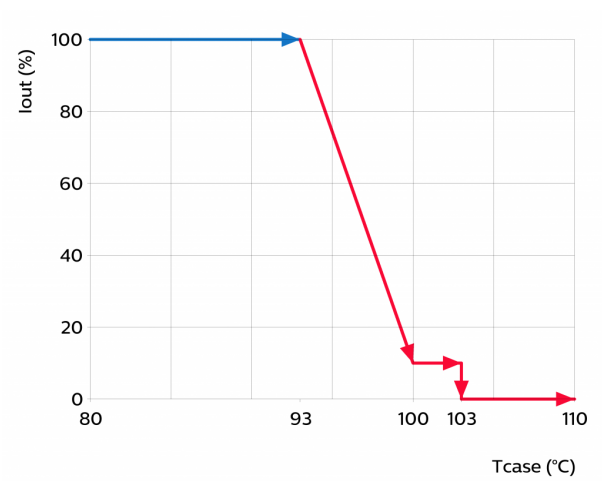
Specification item	Default setting	Remark	Condition
AOC	700	mA	
CLO	OFF		
MTP	OFF		
Dynadimmer	OFF		
EOL	OFF		

Graphs

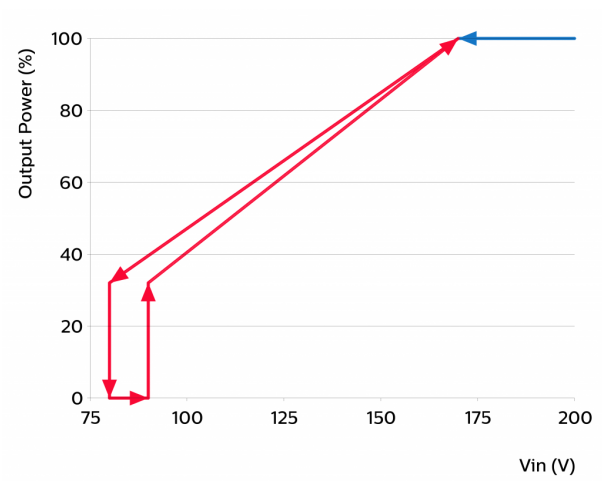
Operating window



Thermal Guard

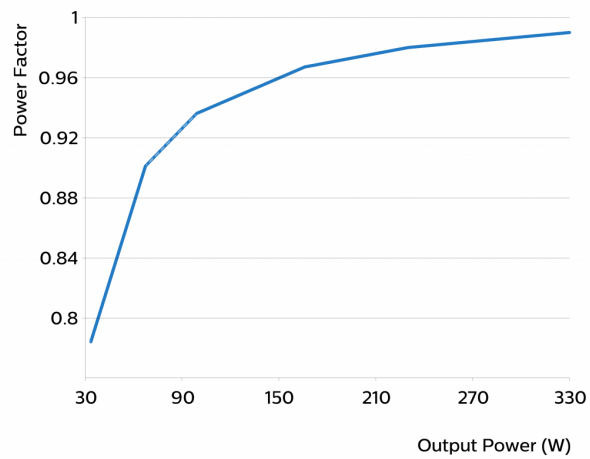


Mains Guard



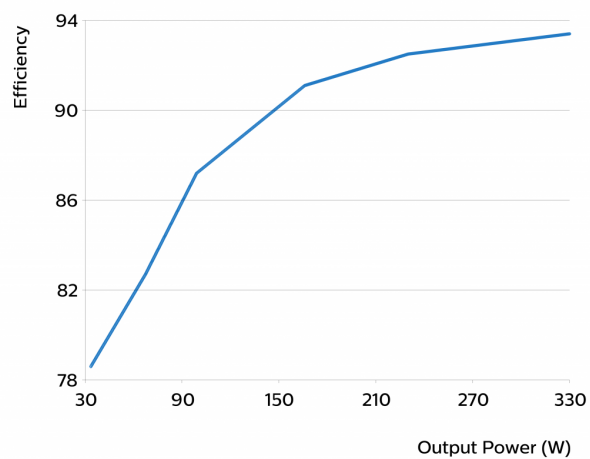
### Power factor versus output power

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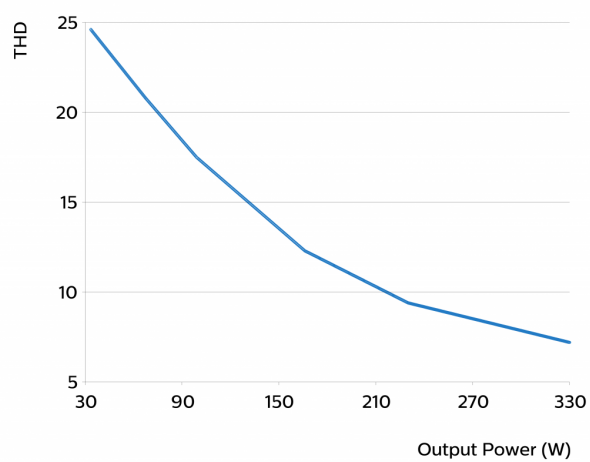
### Efficiency versus output power

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### THD versus output power

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## Notes

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Important information about dual-channel operation:

- Both outputs share a common minus (LED - terminal)
- Both channels are allowed to be put in parallel to increase output current up to 1.5A
- Outputs cannot be connected in series
- Configured output current (AOC) applies to both channels simultaneously
- Output loading in Watt of the channels is allowed to be unequal
- Minimum recommended input wiring cross section area: 0.75mm<sup>2</sup>
- Minimum recommended output wiring cross section area: 0.5mm<sup>2</sup> up to 1.0A
- Minimum recommended output wiring cross section area: 0.75mm<sup>2</sup> above 1.0A



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