xitanium

Datasheet

Xitanium FULL Prog LED Xtreme drivers

Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt
9290 028 52206

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 220W 0.2-1.0A SNLDAE 230V C170 sXt
EOC	871951430138200
Logistic code 12NC	9290 028 52206
EAN1 (GTIN)	8719514301382
EAN3 (box)	8719514301399
Pieces per box	9
Weight	975 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	1.03	A	@ rated output power @ rated input voltage
Max. input current	1.2	A	@ rated output power @ minimum performance input voltage
Rated input power	240.0	W	@ rated output power @ rated input voltage
Power factor performance range	0.99		@ rated output power @ rated input voltage
Total harmonic distortion	20	%	@ rated output power @ rated input voltage
Total harmonic distortion, best value	4.3	%	@ maximum output power
Efficiency	93.5	%	@ rated output power @ rated input voltage @ max. Uout
Rated input voltage DC	186...250	V_{dc}	Performance range
Rated input current DC	0.81	A_{dc}	Performance range
Input voltage AC	80...264	V_{ac}	Safety operational range
Input frequency AC	45...66	Hz	Safety operational range
Input voltage DC	168...275	V_{dc}	Safety operational range
Standby Power (no load)	0.45	W	
Isolation input to output	Double		

Electrical output data

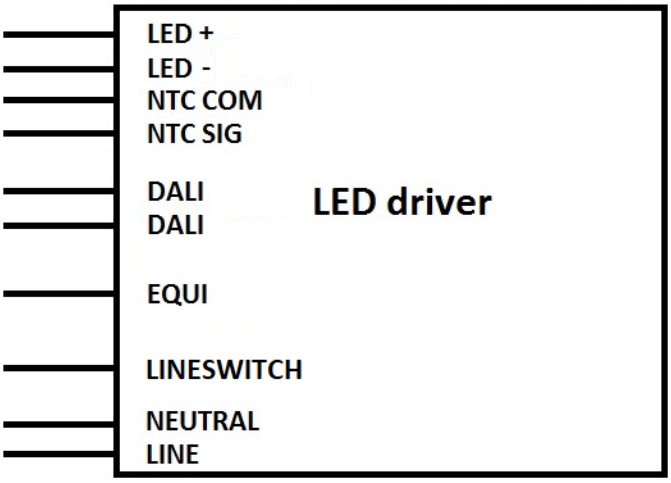
Specification item	Value	Unit	Condition
Regulation method	Constant Current		
Output voltage	125...350	V_{dc}	
Output voltage max.	430	V	Maximum voltage at open load
Output current	70...1050	mA	
Output current min programmable	200	mA	
Min output current	70	mA	
Output current tolerance ±	3	%	@full load
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	8.8...220.0	W	

Control interfaces

Specification item	Value	Unit	Condition
Control method	AmpDim, 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	2.5	m	CISPR15: between driver and LED module
Maximum NTC output cable length	0.6	m	

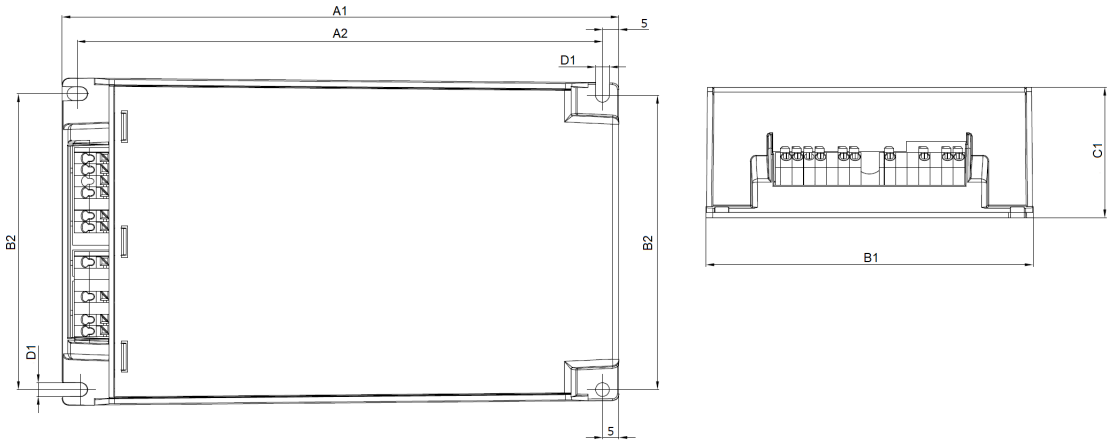


Isolation

Insulation per IEC61347-1	Mains + LineSwitch	EQUI	LED + NTC	DALI
Mains + LineSwitch	-	Reinforced	Reinforced	Reinforced
EQUI	Reinforced	-	Basic	Reinforced
LED + NTC	Reinforced	Basic	-	Reinforced
DALI	Reinforced	Reinforced	Reinforced	-

Dimensions and weight

Specification item	Value	Unit	Tolerance (mm)
Length (A1)	170	mm	
Mounting hole distance (A2)	160	mm	
Width (B1)	100	mm	
Width (B2)	90	mm	
Height (C1)	40	mm	
Mounting hole diameter (D1)	4.2	mm	
Weight	975	gram	

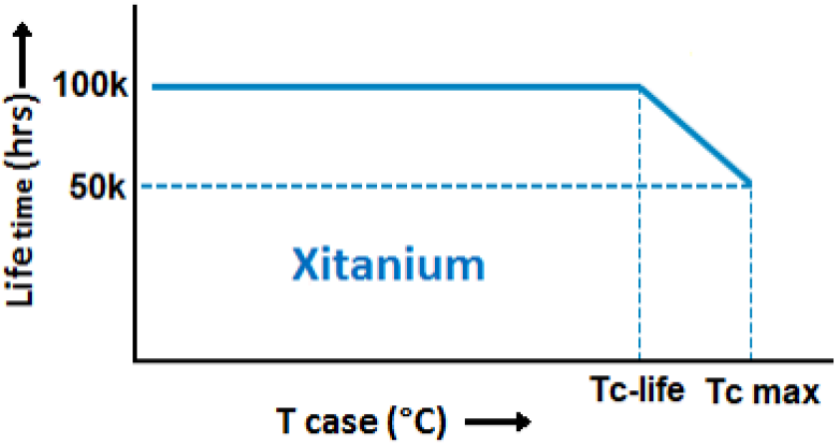


Operational temperatures and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-40...+55	°C	Higher ambient temperature allowed as long as Tcase-max is not exceeded
Tcase-max	90	°C	Maximum temperature measured at T_{case}-point
Tcase-life	80	°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. Maximum failures = 10%



Maximum failures = 10%

Temperature [°C]	Lifetime	Unit	Condition
90	50000	hr	
85	71000	hr	
80	100000	hr	Temperature measured @Tc point
75	>100000	hr	
70	>100000	hr	

Storage temperature and humidity

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

Programmable features

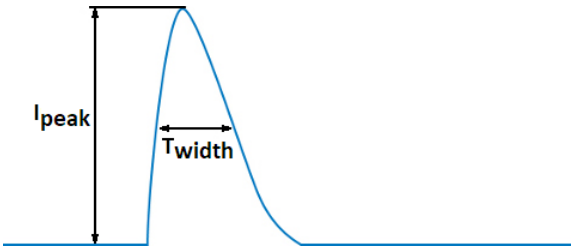
Specification item	Available	Default setting	Condition
Set Adjustable Output Current (AOC)	Programmable, SimpleSet	700 mA	
LED Module Temperature Protection (MTP)	Yes	OFF	
Driver Temperature Limit (DTL)	Yes	ON	
Adjustable Light Output (ALO)	Yes	OFF	
Constant Light Output (CLO)	Yes	OFF	
Adjustable Start-up 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: T6.3A 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		

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
Inrush Limiter type	SoftStart	
Energy metering (DALI part 252)	Yes	Accuracy = 10%
Diagnostics (DALI part 253)	Yes	

Inrush current

Specification item	Value	Unit	Condition
Inrush current	11.5	A	Input voltage 230V
Inrush peak width	1320	µs	Input voltage 230V, measured at 50% height
Drivers / MCB 16A type B / Fuse 16A	15	pcs	Based on rated full output power



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 piece

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)	0.28	mA peak	Acc. IEC61347-1. LED module contribution not included
Typical Protective Conductor Current (ins. Class I)	0.2	mA rms	Acc. IEC60598-1. LED module contribution not included

Surge immunity

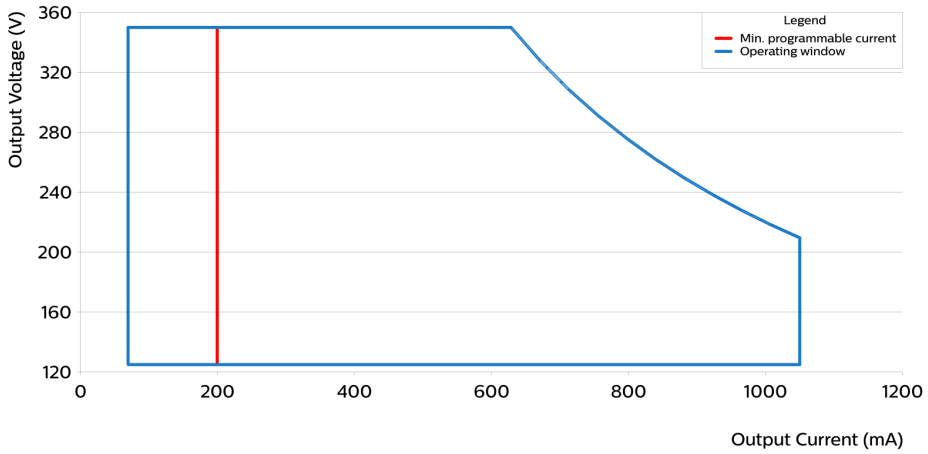
Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	6	kV	L-N, Ls-L, Ls-N, acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (comm. mode)	10	kV	L/N/Ls - EQUI 10kV acc. EN61547; 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us,8/20us
Control surge immunity (diff. mode)	1	kV	DALI - 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
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 / UA / WEEE
Ingress Protection classification (IP)	20
Application	Outdoor
Mounting Type	Built-in

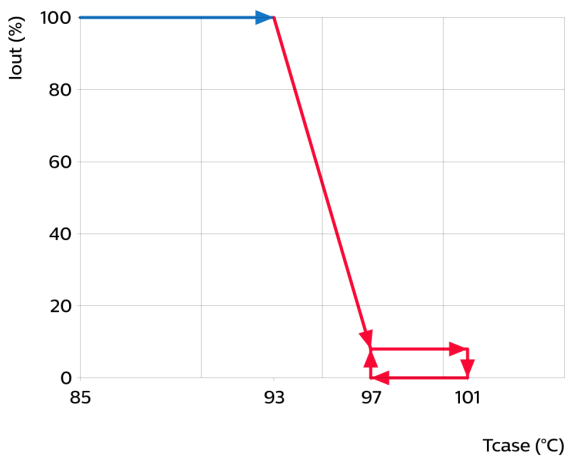
Graphs

Operating window

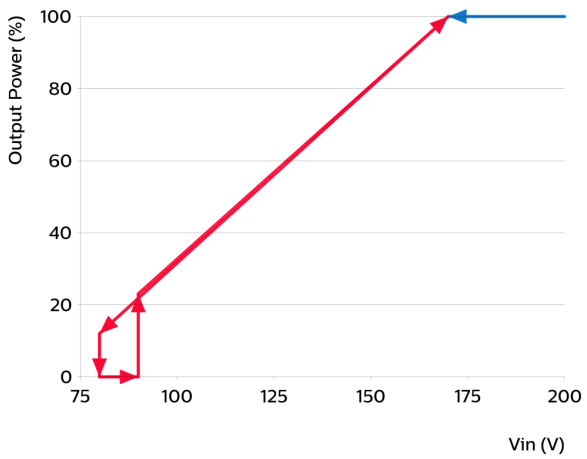


Type	Output current (mA)	Min. output voltage (V)	Max. output voltage (V)	Max. output power (W)
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	200	125	350	70
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	250	125	350	87.5
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	300	125	350	105
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	350	125	350	122.5
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	400	125	350	140
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	450	125	350	157.5
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	500	125	350	175
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	550	125	350	192.5
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	600	125	350	210
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	650	125	338	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	700	125	314	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	750	125	293	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	800	125	275	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	850	125	258	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	900	125	244	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	950	125	231	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	1000	125	220	220
Xi FP 220W 0.2-1.0A SNLDAE 230V C170 sXt	1050	125	209	220

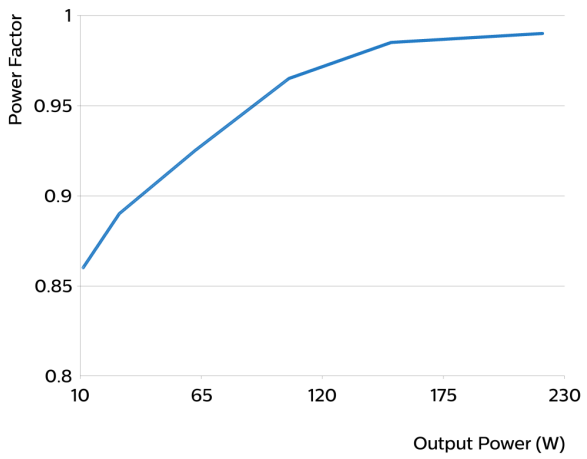
Thermal Guard



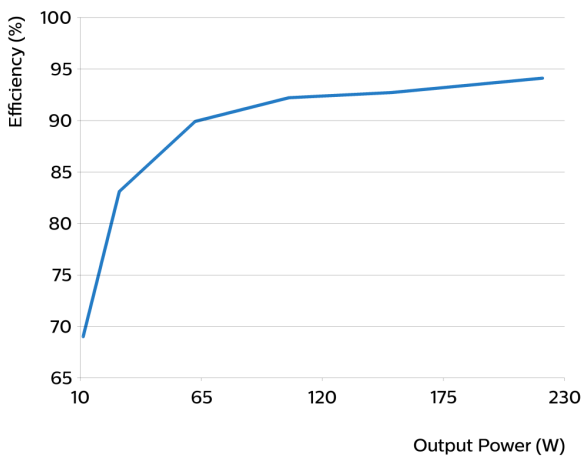
Mains Guard



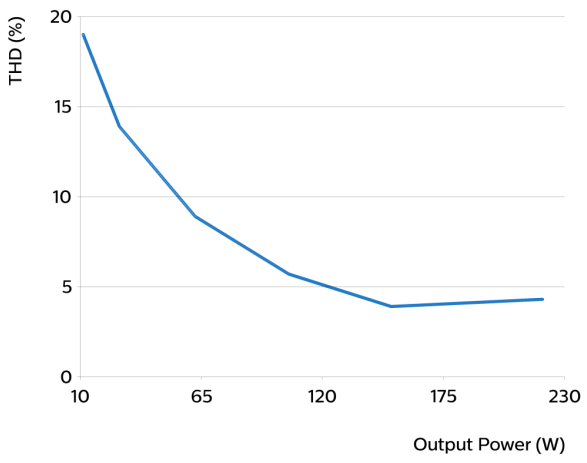
Power factor versus output power



Efficiency versus output power



THD versus output power



Notes

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

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