PHILIPS

Xitanium

LED driver

Datasheet

Xitanium LED Xtreme drivers – Sensor Ready

Xi SR 165W 0.2-0.7A SNEMP 230V C170 sXt

9290 016 63106

Simplifying connectivity solutions with sensors and controls

Philips LED Xtreme Sensor Ready drivers are ideal for use with sensors applied in outdoor and industrial management systems. With its dual integrated power supplies it is easy to power sensors and wireless modules directly from the driver. The driver also features integrated energy metering related to these management systems from the SR Certified partner program and is D4i compliant. This program with key management and sensor vendors ensures that certified sensors and controllers work seamlessly with the Xitanium SR driver.

Benefits

- Sensor Ready concept, ideal for use with sensors applied in outdoor and industrial management systems
- Dual integrated power supplies to power sensors and wireless radios directly from the driver, open spec for all OEMs, simplifying integration of sensors into the luminaire
- 75-110W C150 and 165W C170 versions: low inrush current due to IntelliStart, a driver-integrated feature enabling a high amount of drivers per MCB
- High-accuracy integrated power metering
- Certified per DIIA intra-luminaire standard D4i

Features

- Integrated ~15VDC DA current source power supply based on DALI-2
- Integrated 24VDC/3W auxiliary power supply
- Highly accurate power metering, accessible over DALI
- SimpleSet®, wireless configuration interface
- High surge immunity (CM/DM)
- Long lifetime and robust protection against moisture, vibration and temperature
- Configurable operating windows (AOC)
- Autonomous dimming via Integrated DynaDimmer
- Suitable for central DC operation (DCemDim)
- 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)
- OEM Write Protection (OWP)

Application

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

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 range	47…63	Hz	Performance range
Rated input current	0.78	A	@ rated output power @ rated input voltage
Max. input current	0.94	A	@ rated output power @ minimum performance input voltage
Rated input power	183	W	@ rated output + Vaux power @ rated input voltage
Power factor	0.99		@ rated output power @ rated input voltage
Total harmonic distortion	6	%	@ rated output power @ rated input voltage
Efficiency	92.5	%	@ rated output power @ rated input voltage
Rated input voltage DC range	186…250	V_{dc}	Performance range
Rated input current DC range	≤ 0.62	A_{dc}	Performance range
Input voltage AC range	80…264	V_{ac}	Safety operational range, see MainsGuard graph
Input frequency AC range	45…66	Hz	Safety operational range
Input voltage DC range	168…275	V_{dc}	Safety operational range
Standby Power	0.5	W	Excl. consumption by sensors connected to the SR bus and/or 24VDC auxiliary supply
Isolation input to output	Reinforced		

Electrical output data

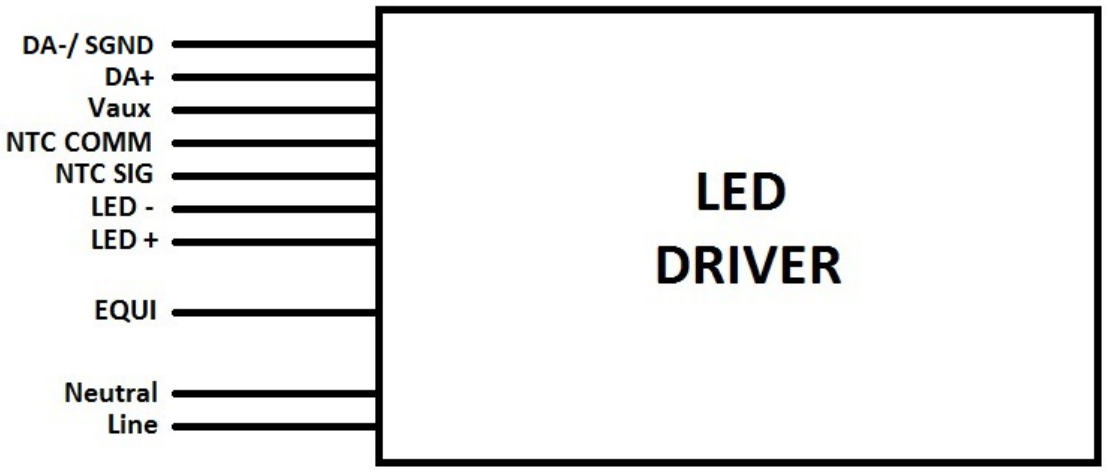
Specification item	Value	Unit	Condition
Regulation method	Constant Current		
Output voltage	100…300	V_{dc}	
Output voltage max.	350	V	Maximum voltage at open load
Output current	0.2…0.7	A	
Output current min programmable	200	mA	
Output current min dimming	55	mA	
Output current tolerance	± 5	%	@ Tcase_life
Output current ripple LF	≤ 4	%	Ripple = peak / average @ < 3kHz
Output current ripple HF	≤ 6.5	%	
Output P_{st}^{LM}	≤ 0.05		
Output SVM	≤ 0.01		
Output power	16.5…165	W	

Electrical data controls input

Specification item	Value	Unit	Condition
Control method	Dynadimmer, SR		Output current amplitude dimming
Dimming range	10…100	%	Acc. D4i. See www.digitalilluminationinterface.org/d4i/certification.html
Isolation controls input to output	Suppl.		acc. IEC61347-1

Wiring and Connections

Specification item	Value	Unit	Condition
Input wire cross-section	0.5…1.5	mm^2	WAGO250 (3.5 mm), solid / stranded wire
	14…24	AWG	WAGO250 (3.5 mm), solid / stranded wire
Input wire strip length	8.5…9.5	mm	
Output wire cross-section	0.5…1.5	mm^2	WAGO250 (3.5 mm), solid / stranded wire
	14…24	AWG	WAGO250 (3.5 mm), solid / stranded wire
Output wire strip length	8.5…9.5	mm	
Control wire cross-section	0.5…1.5	mm^2	WAGO250 (3.5 mm), solid / stranded wire
	14…24	AWG	WAGO250 (3.5 mm), solid / stranded wire
Control wire strip length	8.5…9.5	mm	
Maximum cable length	1500	mm	CISPR15: wiring lenght between driver and LED module
Maximum NTC output cable length	0.6	m	

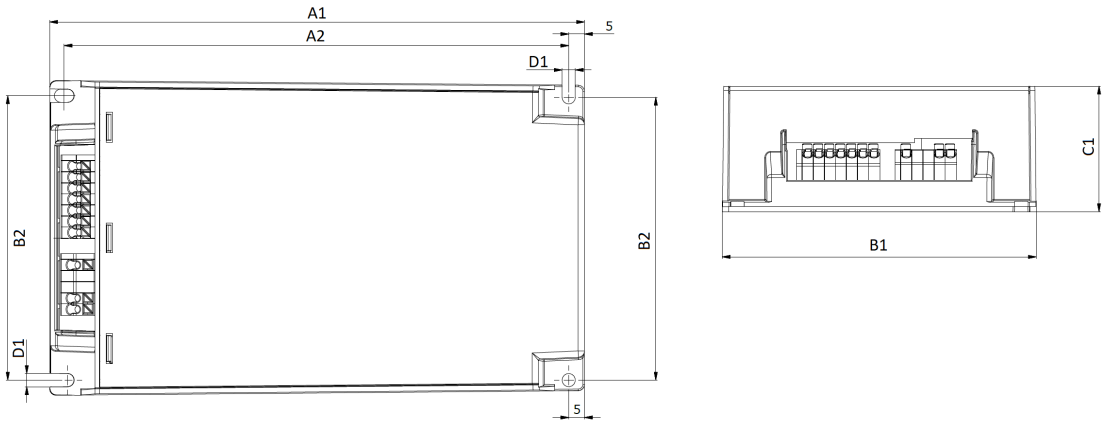


Insulation

Insulation per IEC61347-1	Mains	EQUI	LED + NTC	DA + Vaux
Mains		Reinforced	Reinforced	Reinforced
EQUI	Reinforced		Basic	Basic
LED + NTC	Reinforced	Basic		Supplementary
DA + Vaux	Reinforced	Basic	Supplementary	

Dimensions and weight

Specification item	Value	Unit	Condition
Length (A1)	171	mm	
Width (B1)	101	mm	
Width (B2)	90	mm	
Height (C1)	41	mm	
Fixing hole diameter (D1)	4.2	mm	
Fixing hole distance (A2)	160	mm	
Weight	960	gram	



Logistical data

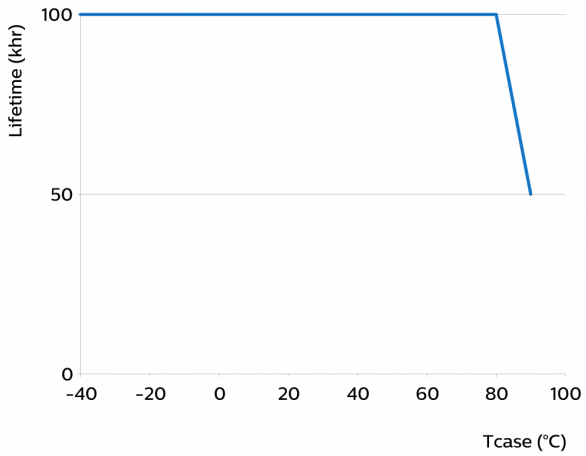
Specification item	Value
Product name	Xi SR 165W 0.2-0.7A SNEMP 230V C170 sXt
EOC	871869966500500
Logistic code 12NC	9290 016 63106
EAN1 (GTIN)	8718699665005
Pieces per box	9

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%



Storage temperature and humidity

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

Programmable features

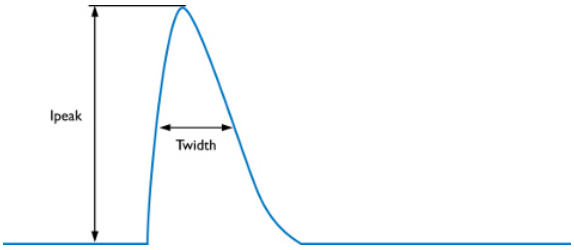
Specification item	Available	Default setting	Condition
Set Adjustable Output Current (AOC)	Programmable, SimpleSet	700 mA	
LED Module Temperature Protection (MTP)	Yes	OFF	
Driver Temperature Limit (DTL)	Yes	ON	
Constant Lumen Over Lifetime (CLO)	Yes	OFF	
Adjustable Light Output (ALO)	Yes	OFF	
Adjustable Light Output (ALO) min level	Yes	OFF	
Adjustable Start-up Time (AST)	Yes	1000 ms	
Integrated Dynadimmer	Yes	OFF	5-step, light turn-off possible
Minimum dim level	Yes	10 %	
DC emergency dimming (DCemDim)	Yes	ON	Sensor commands accepted, EOF(x) range: 10 ... 60%. No external DC rated mains fuse required
Dimming support at DC operating	Yes	OFF	
End of life indicator (EOL)	Yes	OFF	
OEM OverWrite Protection (OWP)	Yes	OFF	
SR PSU	Yes	ON	
Luminaire Info	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
Energy metering	Yes		Accuracy 0.5W at standby, +/-1 % at full power
Diagnostics	Yes		
Auxiliary Power Supply (Vaux)	Yes		

Inrush current

Specification item	Value	Unit	Condition
Initial inrush current I_{peak}	11.5	A	Input voltage 230V
Initial inrush current T_{width}	100	µs	Input voltage 230V, measured at 50% I_{peak}
Subsequent inrush current I_{peak}	6.2	A	Input voltage 230V
Subsequent inrush current T_{width}	2.2	ms	Input voltage 230V, measured at 50% I_{peak}
Drivers / MCB 16A type B/C	≤ 14	pcs	Indicative value



MCB/fuse	Rating	Max. recommended number of LED drivers
B/C	4A	3
B/C	6A	5
B/C	10A	8
B/C	13A	11
B/C	16A	14
B/C	20A	17
B/C	25A	22
B/C	32A	28
B/C	40A	34

Driver touch current / protective conductor current

Specification item	Value	Unit	Condition
Typical Touch Current (ins. Class II)	0.35	mA peak	Acc. IEC61347-1. LED module contribution not included
Typical Protective Conductor Current (ins. Class I)	0.25	mA rms	Acc. IEC60598-1. LED module contribution not included

Surge immunity

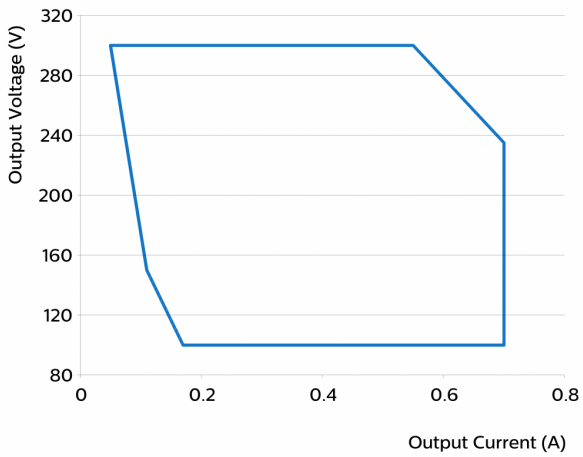
Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	6	kV	L-N acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (comm. mode)	10	kV	L/N - EQUI 10kV acc. EN61547; 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us,8/20us
Control surge immunity (diff. mode)	0.03	kV	DA - DA acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Control surge immunity (comm. mode)	4	kV	DA/Vaux - EQUI: 4kV acc. IEC61000-4-5. 12 Ohm 1.2/50us,8/20us

Application Info

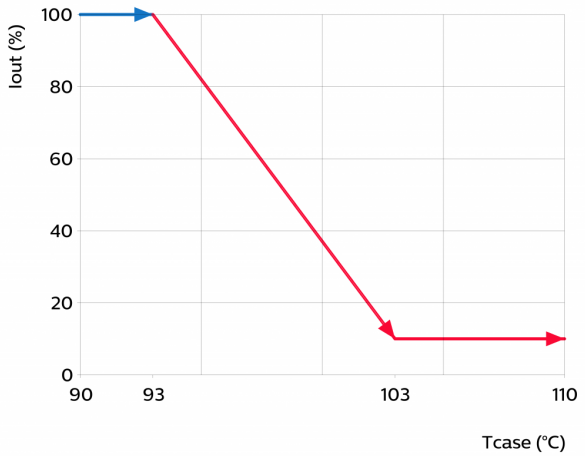
Specification item	Value
Approval marks	CB / CE / EL / ENEC
Ingress Protection classification (IP)	20

Graphs

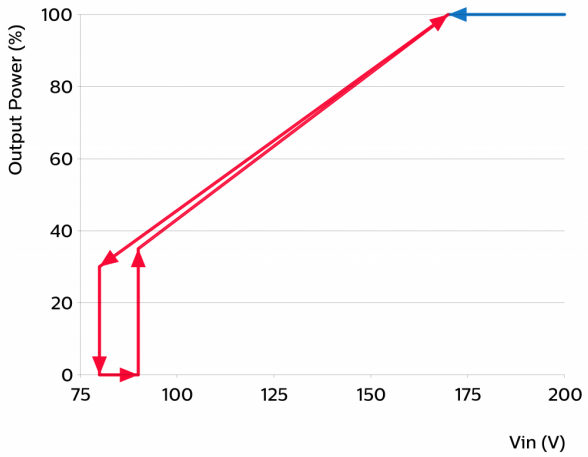
Operating window



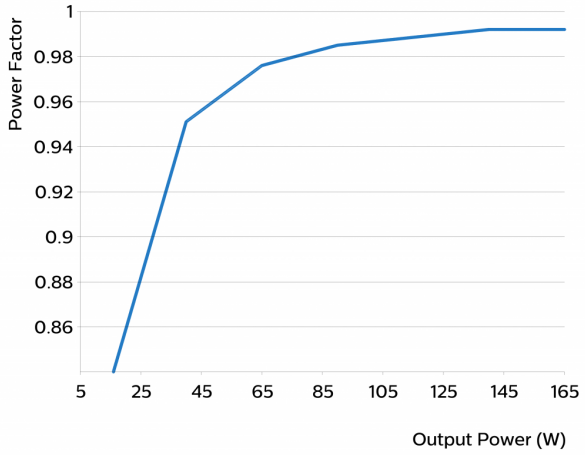
Thermal Guard



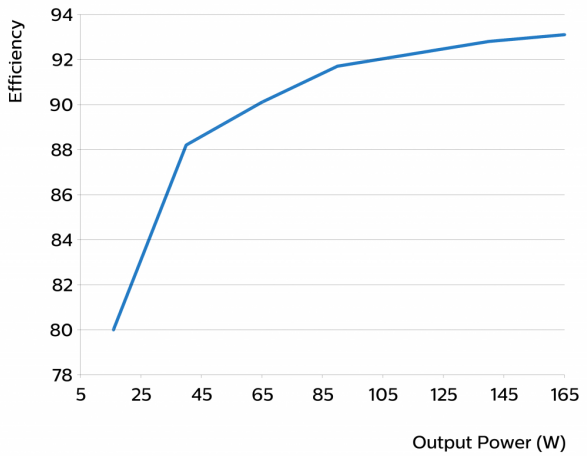
Mains Guard



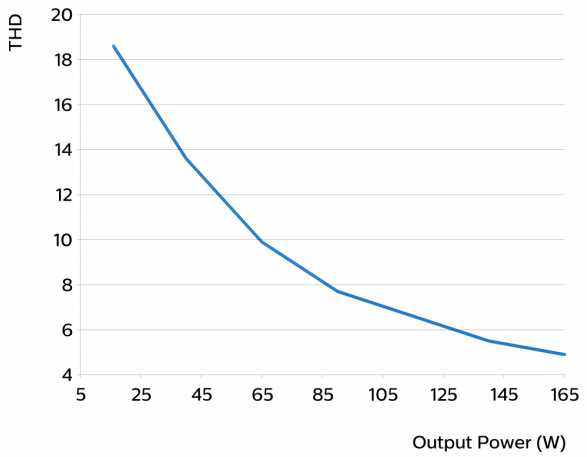
Power factor versus output power



Efficiency versus output power



THD versus output power



Notes

Important info about dual power supplies:

1: DA power supply and Vaux supply are short-circuit proof.

2: The DA supply is specified with a guaranteed supply current of 52mA and a maximum supply current of 60mA. Voltage is depending on loading and will vary between 12 and 20VDC. The DA supply is turned on by factory default and can be switched off through MultiOne software.

3: Auxiliary supply Vaux supplies 24VDC and is able to deliver 3W average power. Peak power capacity is 10W with 25% duty cycle (T=5.2ms). This supply cannot be switched off.

4: DA supply and Vaux share the same common negative terminal

5: Do not connect multiple Vaux supplies in parallel.

Inrush current & fusing:

1: Subsequent driver inrush current is limited by randomly switching on at mains voltage zero crossing (IntelliStart).

2: Max. number of drivers per MCB/melting fuse is based on aggregate steady-state input current.

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