PHILIPS

Xitanium

LED driver

Datasheet

Xitanium LED Xtreme drivers – Sensor Ready

Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt

9290 029 52506

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. This program with key management and sensor vendors ensures that certified sensors and controllers work seamlessly with the Xitanium SR driver.

Features

- Integrated Bus Power Supply for sensors and radios (DALI part 250)
- Integrated 24VDC auxiliary power supply (DALI Part 150)
- Memory Bank 1 Extension / Luminaire Data (DALI part 251)
- Highly accurate energy reporting (DALI Part 252)
- Diagnostics & Maintenance data (DALI part 253)
- SimpleSet®, wireless configuration interface
- High surge immunity (CM/DM)
- Long lifetime and robust protection
- Configurable operating windows (AOC)
- Autonomous dimming via Integrated DynaDimmer
- Suitable for central emergency 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)
- OEM Write Protection (OWP)

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
- Low inrush current due to IntelliStart, a driver-integrated feature enabling a high amount of drivers per MCB (on select models)
- High-accuracy integrated power metering
- Certified per DIIA intra-luminaire standard D4i

Application

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

June 2024

Logistical data

Specification item	Value
Product name	Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt
EOC	872016917721500
Logistic code 12NC	9290 029 52506
EAN1 (GTIN)	8720169177215
EAN3 (box)	8720169177222
Pieces per box	20
Weight	180 gram

Electrical input data

Specification item	Value	Unit	Condition
Rated input voltage range	220…240	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	0.25	A	@ rated output power @ minimum performance input voltage
Rated input power	48.0	W	@ rated output + Vaux power @ rated input voltage
Power factor performance range	≤ 0.98		@ rated output power @ rated input voltage
Total harmonic distortion	10	%	@ rated output power @ rated input voltage
Efficiency	90.5	%	@ rated output power @ rated input voltage @ max. Uout
Rated input voltage DC	186…250	V_{dc}	Performance range
Rated input current DC	0.1…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)	0.3	W	Excl. consumption by sensors connected to the DA bus and/or 24VDC auxiliary supply
Isolation input to output	Double		

Electrical output data

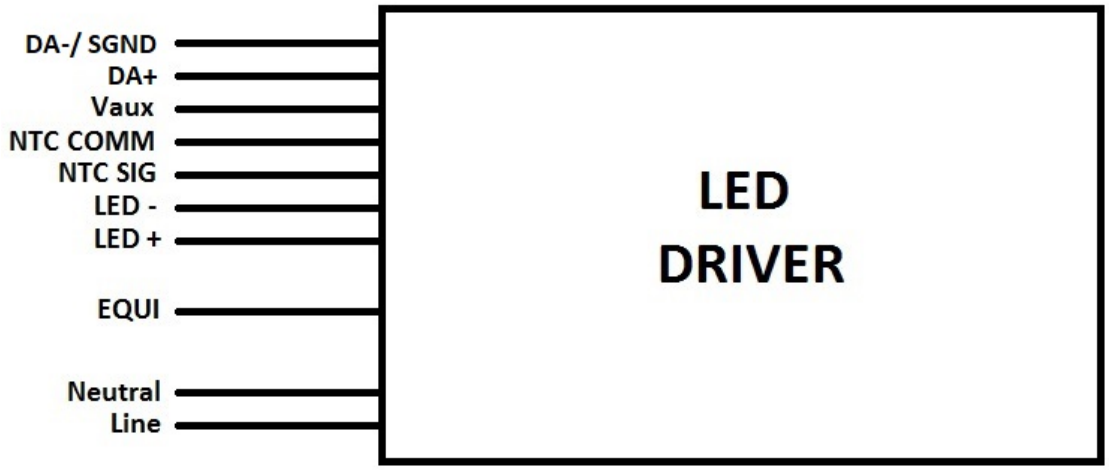
Specification item	Value	Unit	Condition
Regulation method	Constant Current		
Output voltage	20…77	V_{dc}	
Output voltage max.	90	V	Maximum voltage at open load
Output current	50…1050	mA	
Output current min programmable	200	mA	
Min output current	50	mA	
Output current tolerance ±	5	%	@full load
Output current ripple LF	≤ 1	%	Ripple = peak / average, < 3kHz
Output current ripple HF	≤ 4	%	
Output P_{st}^{LM}	≤ 0.3		In entire operating window
Output SVM	≤ 0.1		In entire operating window
Output power	1.0…40.0	W	
Minimum performance output power	11	W	Power factor > 0.9 and THD < 20%

Control interfaces

Specification item	Value	Unit	Condition
Control method	Dynadimmer, SR		Output current amplitude dimming. Please refer to design-in guide at www.philips.com/oem for more controllability details.
Dimming range	10…100	%	Acc. D4i. See www.digitalilluminationinterface.org/products
Isolation controls input to output	Supplementary		acc. IEC61347-1
SR Power Supply max voltage.	22.5	V	
SR output current	52	mA	
SR Power Supply max current source	60	mA	

Wiring and Connections

Specification item	Value	Unit	Type
Input wire cross-section	0.5…1.5 / 20…16	mm^2 / AWG	solid / stranded wire
Input wire strip length	8.5…9.5	mm	
Output wire cross-section	0.5…1.5 / 20…16	mm^2 / AWG	solid / stranded wire
Output wire strip length	8.5…9.5	mm	
Control wire cross-section	0.5…1.5 / 20…16	mm^2 / AWG	solid / stranded wire
Control wire strip length	8.5…9.5	mm	
Maximum cable length	1.5	m	CISPR15: between driver and LED module
Maximum NTC output cable length	0.6	m	

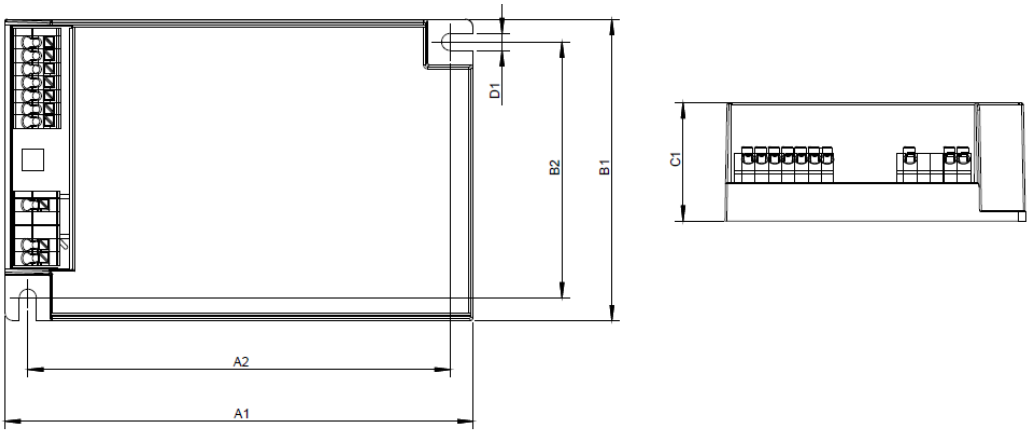


Isolation

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

Dimensions and weight

Specification item	Value	Unit	Tolerance (mm)
Length (A1)	123	mm	± 0.3
Mounting hole distance (A2)	111	mm	± 0.2
Width (B1)	79	mm	± 0.3
Width (B2)	67	mm	± 0.2
Height (C1)	31	mm	± 0.2
Mounting hole diameter (D1)	4.5	mm	± 0.1
Weight	180	gram	

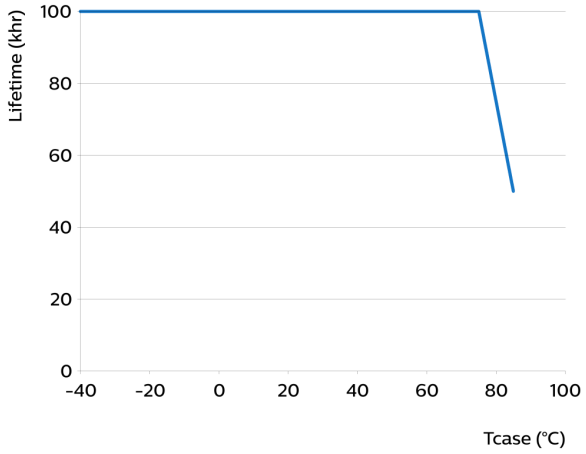


Operational temperatures and humidity

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. 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

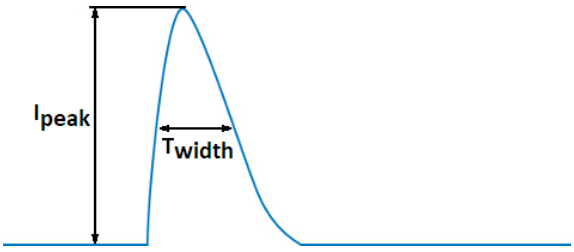
Specification item	Available	Default setting	Condition
Set Adjustable Output Current (AOC)	Programmable, SimpleSet	700 mA	
LED Module Temperature Protection (MTP)	Yes	OFF	
Driver Temperature Limit (DTL)	Yes	ON	
Adjustable Light Output (ALO)	Yes	OFF	
Adjustable Light Output (ALO) min level	Yes	OFF	
Constant Light Output (CLO)	Yes	OFF	
Adjustable Start-up Time (AST)	Yes	1 s	
Integrated Dynadimmer	Yes	OFF	5-step, light turn-off possible
Min Dim Level	Yes	10 %	
DC emergency (DCemDim)	Yes	ON	Sensor commands accepted, EOF(x) range: 10 ... 60%. No external DC rated mains fuse required. Internal fuse rating: T5A 250VAC/DC.
DALI control supported at DC operation	Yes	OFF	
End Of Life indicator (EOL)	Yes	OFF	
OEM Write Protection (OWP)	Yes	OFF	
DALI Power Supply (DALI part 250)	Yes	ON	
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
+24V Auxiliary Power Supply (DALI part 150)	Yes		24VDC
Energy metering (DALI part 252)	Yes		Accuracy 0.5W at standby, +/-1 % at full power
Diagnostics (DALI part 253)	Yes		
Diagnostics via Signify tool	Yes		

Inrush current

Specification item	Value	Unit	Condition
Inrush current	24.6	A	Input voltage 230V
Inrush peak width	159.5	µs	Input voltage 230 V, 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)	0.35	mA peak	Acc. IEC61347-1. LED module contribution not included
Typical Protective Conductor Current (ins. Class I)	0.27	mA rms	Acc. IEC60598-1. LED module contribution not included

Surge immunity

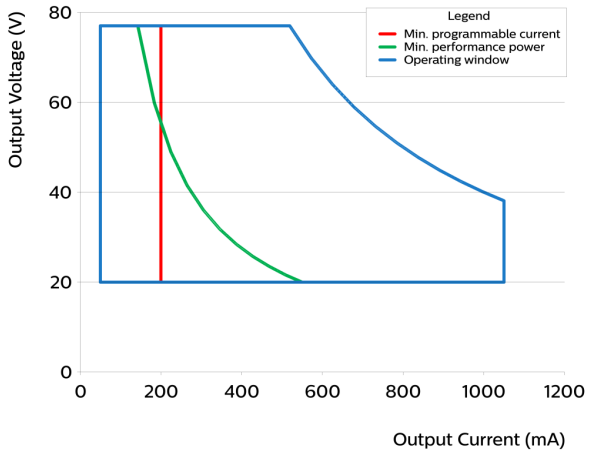
Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	6	kV	L-N acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (comm. mode)	10	kV	L/N - EQUI 10kV acc. EN61547; 8kV acc. IEC61000-4-5, 12 Ohm 1.2/50us,8/20us
Control surge immunity (diff. mode)	0.03	kV	DA+ - DA- acc.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

Application Info (Approbation)

Specification item	Value
Approval marks and Certifications	CCC / CE / D4i / Double-insulated Built-In / EAC / EL / ENEC / RCM / SELV / SR / UKCA / WEEE
EMI standards	
Ingress Protection classification (IP)	20
Application	Outdoor
Mounting Type	Built-in

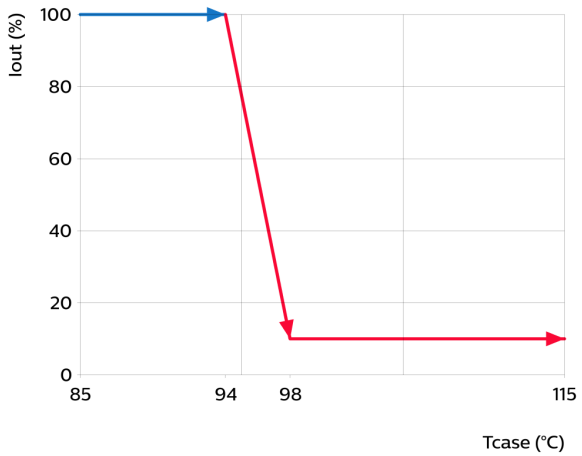
Graphs

Operating window

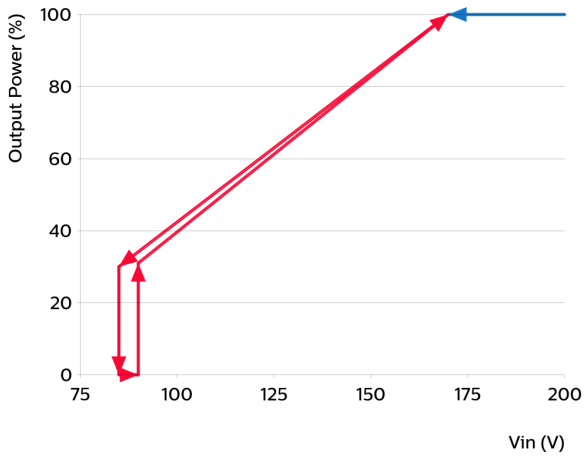


Type	Output current (mA)	Min. output voltage (V)	Max. output voltage (V)	Max. output power (W)
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	200	20	77	15.4
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	250	20	77	19.25
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	300	20	77	23.1
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	350	20	77	26.95
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	400	20	77	30.8
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	450	20	77	34.65
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	500	20	77	38.5
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	550	20	72	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	600	20	66	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	650	20	61	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	700	20	57	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	750	20	53	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	800	20	50	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	850	20	47	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	900	20	44	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	950	20	42	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	1000	20	40	40
Xi SR 40W 0.2-1.0A SNEMP 230V C123 sXt	1050	20	38	40

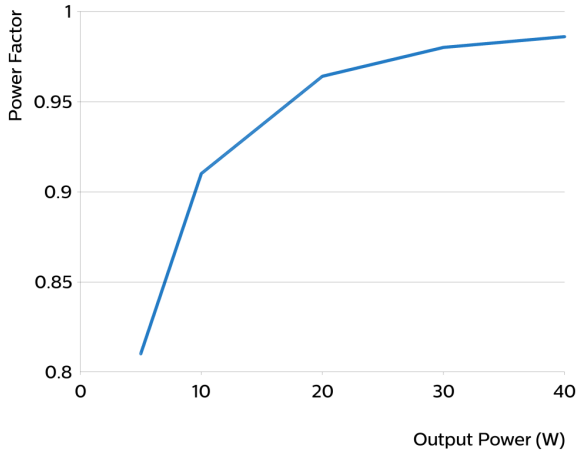
Thermal Guard



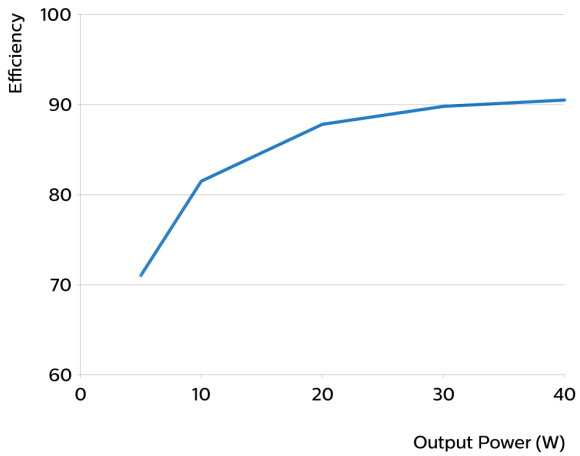
Mains Guard



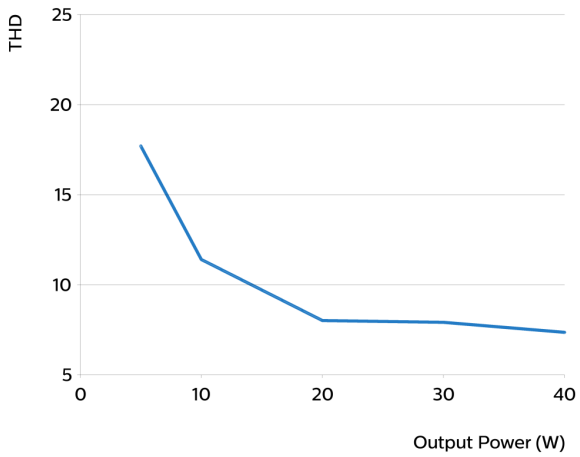
Power factor versus output power



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 12V 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.

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