PHILIPS

Xitanium

LED driver

Datasheet

Xitanium LED drivers – DALI SELV

Xitanium 20W R 0.15-0.5A 54V TD/I

9290 028 01106

Enabling future-proof LED technology

Xitanium LED drivers are designed to operate LED solutions for general lighting applications. Reliability is enhanced by features that protect the connected LED module, e.g. hot wiring, reduced ripple current and thermal derating. Most drivers feature central DC operation. In the coming years LEDs will continue to increase in efficiency, creating challenges for OEMs. With Xitanium LED drivers, flexibility in luminaire design is assured thanks to an adjustable output current. Application-oriented operating windows offer stable lumen output and light quality levels that specifiers and architects demand. The adjustable output current also enables operation of various LED PCB solutions from different manufacturers.

Features

- Configurable operating windows (AOC) via DALI or with LEDset
- Corridor Mode (CM)
- Touch & Dim (TD)
- OEM Write Protection (OWP)
- Luminaire Data (DALI part 251)

Benefits

- High reliability underpinned by 5 year warranty
- Future-proof flexibility - application-oriented operating windows enable LED generation and complexity management
- Compatibility - can also be used for other manufacturers' modules or OEMs' own PCB designs

Application

- Retail
- Office

April 2024

Logistical data

Specification item	Value
Product name	Xitanium 20W R 0.15-0.5A 54V TD/I
EOC	871951425106900
Logistic code 12NC	9290 028 01106
EAN1 (GTIN)	8719514251069
EAN3 (box)	8719514251076
Pieces per box	18

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	50…60	Hz	Performance range
Rated input current	0.11	A	@ rated output power @ rated input voltage
Rated input power	23.0	W	@ rated output power @ rated input voltage
Power factor performance range	≥ 0.9 C		@ rated output power @ rated input voltage@ rated output power @ rated input voltage
Total harmonic distortion	20	%	@ rated output power @ rated input voltage
Efficiency	88.0	%	@ rated output power @ rated input voltage @ max. Uout
Rated input voltage DC	186…250	V_{dc}	Performance range
Rated input current DC	≤ 0.13	A_{dc}	Performance range
Input voltage AC	198…264	V_{ac}	Operational range
Input frequency AC	45…66	Hz	Operational range
Input voltage DC	168…275	V_{dc}	Operational range
Standby Power (no load)	0.43	W	
Isolation input to output	SELV		

Electrical output data

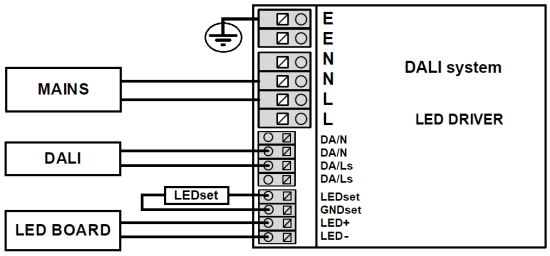
Specification item	Value	Unit	Condition
Regulation method	Constant Current		
Output voltage	24…54	V_{dc}	
Output voltage max.	60	V	Maximum output voltage (rms)
Output current	150…500	mA	Full output operating window
Output current min programmable	150	mA	
Min output current	7.5	mA	
Output current tolerance ±	8	%	@full load
Output current ripple LF	≤ 4	%	Ripple = peak / average, < 3kHz
Output P_{st}^{LM}	≤ 0.3		
Output SVM	≤ 0.1		
Output power	6.5…20.0	W	

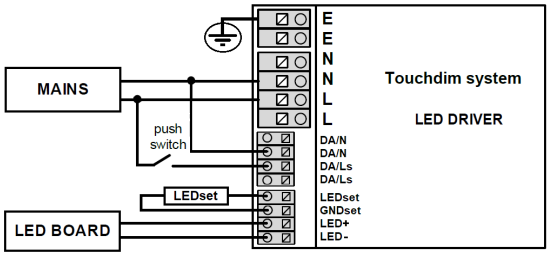
Control interfaces

Specification item	Value	Unit	Condition
Control method	DALI, Touch & Dim (TD)		See design-in guide at www.philips.com/oem for more controllability details.
Dimming range	5…100	%	Default range
Isolation controls input to output	Basic		acc. IEC61347-1

Wiring and Connections

Specification item	Value	Unit	Type
Input wire cross-section	0.75…2.5 / 18…14	mm^2 / AWG	solid / stranded wire
Input wire strip length	10…11	mm	
Output wire cross-section	0.5…1.5	mm^2 / AWG	solid / stranded wire
Output wire strip length	8.5…9.5	mm	
Control wire cross-section	0.5…1.5	mm^2 / AWG	solid / stranded wire
Control wire strip length	8.5…9.5	mm	
Maximum cable length	2	m	Total length of wiring including LED module, one way
Loop Through	Input & Control		



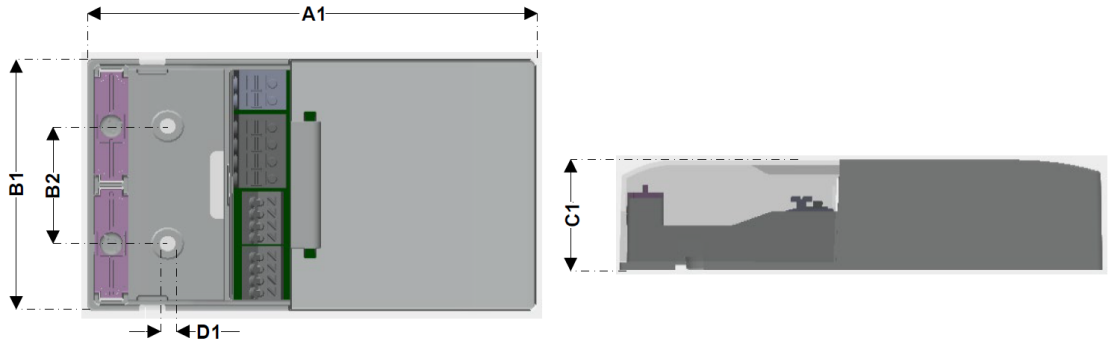


Isolation

Insulation per IEC61347-1	Input	Output	DALI	LEDset
Input	-	SELV	Basic	Reinforced
Output	SELV	-	Basic	Reinforced
DALI	Basic	Basic	-	Reinforced
LEDset	Reinforced	Reinforced	Reinforced	-

Dimensions and weight

Specification item	Value	Unit	Tolerance (mm)
Length (A1)	127.6	mm	
Width (B1)	74	mm	
Width (B2)	34.5	mm	
Height (C1)	30	mm	
Mounting hole diameter (D1)	4.1	mm	
Weight	150	gram	
Housing color	White (RAL 9016)		

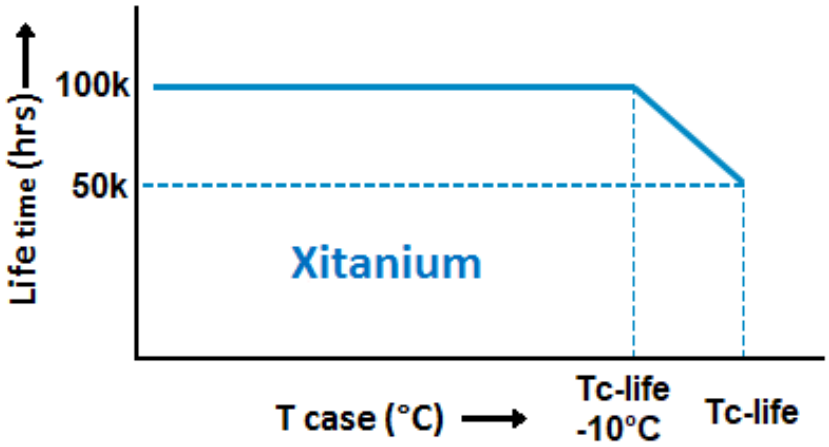


Operational temperatures and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-20…+50	°C	Higher ambient temperature allowed as long as Tcase-max is not exceeded
Tcase-max	70	°C	Maximum temperature measured at T_{case}-point
Tcase-life	60	°C	Measured at T_{case}-point
Maximum housing temperature	110	°C	In case of a failure, inherent by design
Relative humidity	10…90	%	Non-condensing

Lifetime

Specification item	Value	Unit	Condition
Driver lifetime	50,000	hours	Measured temperature at Tcase-point is Tcase-life. Maximum failures = 10%



Maximum failures = 10%

Temperature [°C]	Lifetime	Unit	Condition
70	25000	hr	
65	35000	hr	
60	50000	hr	Temperature measured @Tc point
55	>50000	hr	
50	>50000	hr	

Storage temperature and humidity

Specification item	Value	Unit	Condition
Ambient temperature	-25…+85	°C	
Relative humidity	5…95	%	Non-condensing

Programmable features

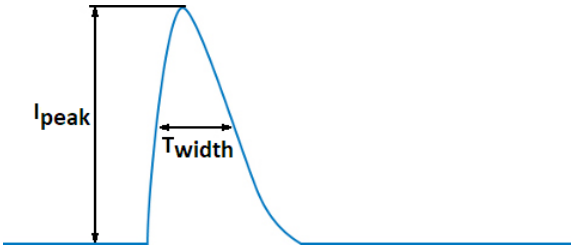
Specification item	Available	Default setting	Condition
Set Adjustable Output Current (AOC)	LEDset, Programmable	150 mA	
Adjustable Light Output (ALO)	No		
Constant Light Output (CLO)	No		
Touch & Dim (TD)	Yes	ON	
Corridor Mode	Yes	OFF	Default: Default: T1=55s, T2=12s, T3=30min
Min Dim Level	No		
DC emergency (DCemDim)	Yes	ON	
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

Inrush current

Specification item	Value	Unit	Condition
Inrush current	6.7	A	Input voltage 230V
Inrush peak width	27	µs	Input voltage 230 V, measured at 50% height
Drivers / MCB 16A type B	≤ 40	pcs	Input voltage 230V230



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)	0.7	mA peak	Acc. IEC61347-1. LED module contribution not included

Surge immunity

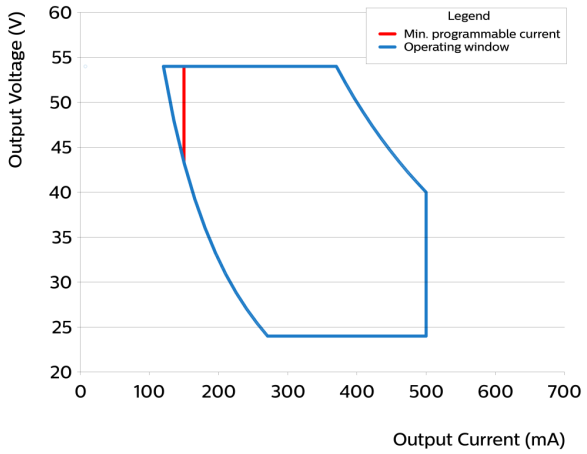
Specification item	Value	Unit	Condition
Mains surge immunity (diff. mode)	1	kV	L- N Acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Mains surge immunity (comm. mode)	2	kV	L/N - PE Acc. IEC61000-4-5. 12 Ohm, 1.2/50us, 8/20us
Control surge immunity (diff. mode)	1	kV	DALI/TD - DALI-TD Acc. IEC61000-4-5. 2 Ohm, 1.2/50us, 8/20us
Control surge immunity (comm. mode)	2	kV	DALI/TD - PE, DALI - L/N 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 / EAC / EL / ENEC / RCM / SELV / UA
Ingress Protection classification (IP)	20
Noise and hum dB(A)	20
Application	Indoor Point
Mounting Type	Independent

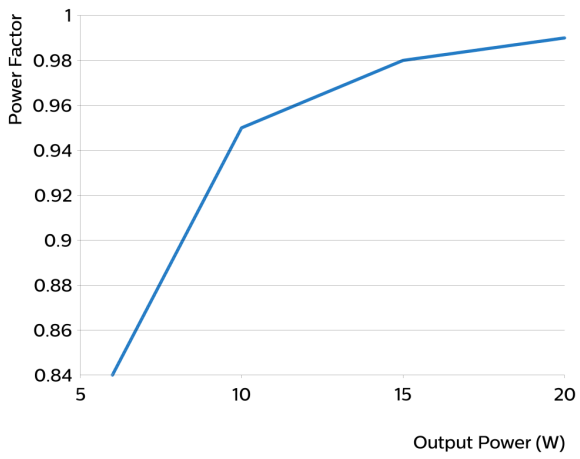
Graphs

Operating window

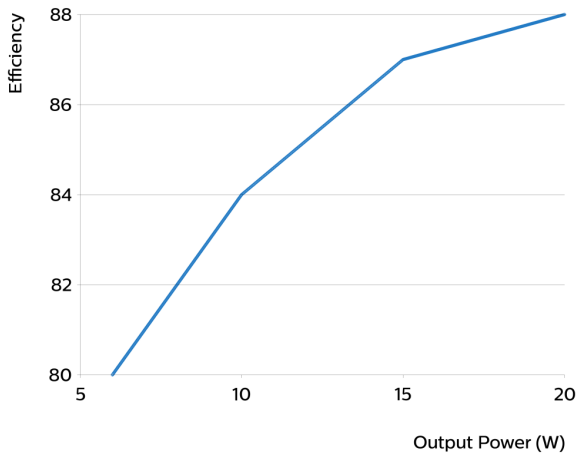


Type	Output current (mA)	Min. output voltage (V)	Max. output voltage (V)	Max. output power (W)
Xitanium 20W R 0.15-0.5A 54V TD/I	150	43	54	8.1
Xitanium 20W R 0.15-0.5A 54V TD/I	200	32	54	10.8
Xitanium 20W R 0.15-0.5A 54V TD/I	250	26	54	13.5
Xitanium 20W R 0.15-0.5A 54V TD/I	300	24	54	16.2
Xitanium 20W R 0.15-0.5A 54V TD/I	350	24	54	18.9
Xitanium 20W R 0.15-0.5A 54V TD/I	400	24	50	20
Xitanium 20W R 0.15-0.5A 54V TD/I	450	24	44	20
Xitanium 20W R 0.15-0.5A 54V TD/I	500	24	40	20

Power factor versus output power



Efficiency versus output power



THD versus output power