

PHILIPS

Xitanium

LED driver



Xitanium 70W 0.2-0.7A LS 12-24V DC input off-grid dual-channel constant-current LED driver

Philips Xitanium DC input off-grid drivers are specifically designed to deliver high performance and configurability in battery-powered off-grid applications. The portfolio offers both a central and a standalone dimming protocol, further increasing the energy savings and CO₂ reductions achieved with LED lighting. The Xitanium technology ensures maximum robustness combined with a very long lifetime.

Benefits

- Ultimate robustness, offering peace of mind and lower maintenance costs
- Easy to design-in, configure and install for insulation Class III applications
- Energy savings through high efficiency and via multiple dimming options
- Suitable for use with standard 12 and 24V batteries
- Protection against deep discharge of batteries

Features

- Long lifetime and high application robustness
- Adjustable Output Current (AOC)
- PWM interface for external dimming
- Single-step autonomous dimming via configurable LumiStep
- Thermal protection for the LED module (MTP)
- Configurable via HyperTerminal
- Dual-channel output

Applications

- Residential areas
- City centres
- Street lighting
- Parks
- Small stadiums
- Security lighting

Electrical input data

Specification item	Value	Unit	Condition
Rated input voltage range V_{bat}	12 ... 24	Vdc	Performance range
Rated input voltage range V_{bat}	10.5 ... 32	Vdc	Operational range
Input undervoltage lockout V_{bat}	9.5	Vdc	Restart at 10.5Vdc
Rated input current range	0.75 ... 6.34	Adc	@ output power range @ rated input voltage range
Max. input current	7.7	Adc	@ rated output power @ minimum performance input voltage
Inrush peak current and width	30/20	$A_p/\mu s$	@ 24Vdc, 50% pulse time width
Rated input power	77	W	@ rated output power @ rated input voltage
Driver efficiency	92	%	@ rated output power @ rated input voltage
Input-output insulation	None		

Electrical output data

Specification item	Value	Unit	Condition
Regulation method	Constant Current		Dual output channel operation
Output voltage per channel	40 ... 100	Vdc	$V_{bat} = 24Vdc$
	25 ... 100	Vdc	$V_{bat} = 12Vdc$
Output voltage max.	110	V	Peak voltage at open load
Output current	250/300/350/450/480/500/515/600/650/700	mA	See important remark at page 5
Output current tolerance	± 5	%	
Output current ripple HF	≤ 150	mA_{pp}	100 ... 150kHz range
Output power range	8 ... 35	W	per output channel

Electrical data controls input

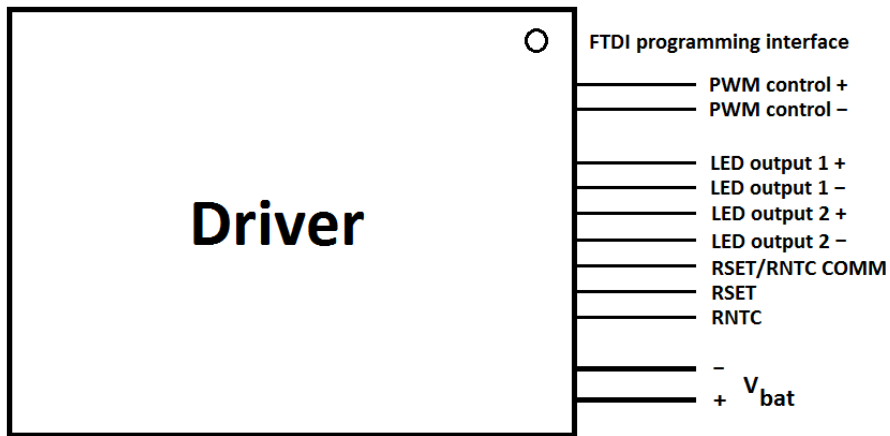
Specification item	Value	Unit	Condition
Control method	LumiStep		Output current amplitude dimming
	External PWM		$V_{control} = 3.3 \dots 5.0V$, $f = 250Hz$. Response time: 2s
Dimming range	10 ... 100%	%	
Galvanic insulation	None		

Logistical data

Specification item	Value
Product name	Xitanium 70W 0.2-0.7A LS 12-24V
Order code EOC	872790092560900
Logistic code I2NC	9290 006 12003
Pieces per box	6

Wiring & Connections

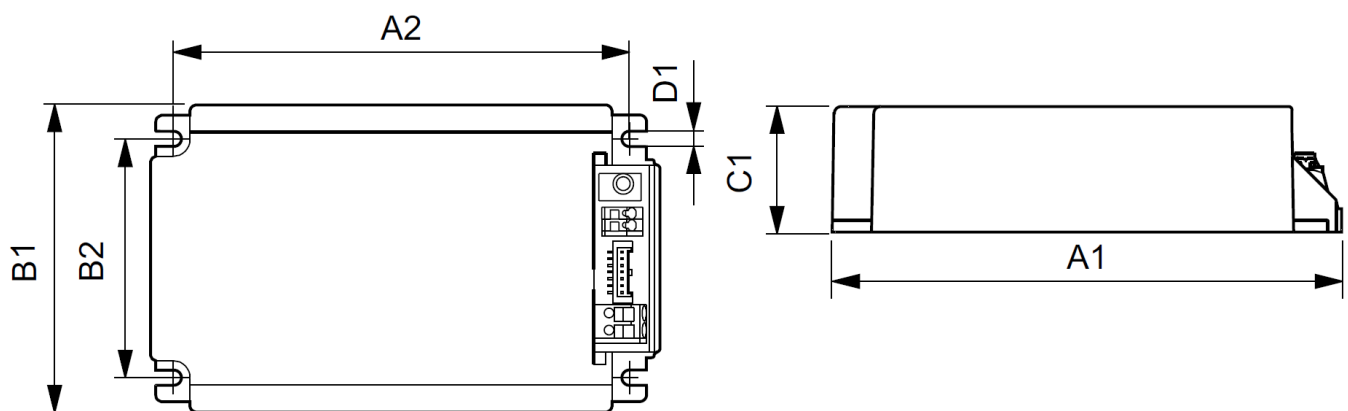
Specification item	Value	Unit	Condition
Battery input wire cross-section	0.5 ... 2.5	mm^2	WAGO 804, solid / stranded wire; 2.5 mm^2 recommended
	22 ... 12	AWG	
Input wire strip length	10 ... 11	mm	
PWM control input wire cross-section	0.5 ... 1.5	mm^2	WAGO 250, solid / stranded wire
	22 ... 14	AWG	
Input wire strip length	8.5 ... 9.5	mm	
Programming interface	3.5mm	"mini jack"	Cable type FTDI TTL-232R-3V3-AJ TTL-USB
Output connection	JST	-	Connector type: JST BM07B-PASS-TFT (LF)(SN) Connector counterpart Housing: PAP-7-V-S Connector counterpart Contacts: SPHD-002T-P0.5
Maximum NTC output cable length	0.6	m	



Insulation	Inputs	Chassis	LED output 1	LED output 2	NTC	RSET
Inputs		Basic	None	None	None	None
Chassis	Basic		Basic	Basic	Basic	Basic
LED output 1	None	Basic		None	None	None
LED output 2	None	Basic	None		None	
NTC	None	Basic	None	None		None
RSET	None	Basic	None	None	None	

Dimensions and weight

Specification item	Value	Unit	Condition
Length (A1)	149.6	mm	
Width (B1)	90	mm	
Height (C1)	36.8	mm	
Fixing hole diameter (D1)	4.5	mm	Mounting screw: M4
Fixing hole distance (A2)	134	mm	
Fixing hole distance (B2)	70		
Weight	228	gram	



Operational temperatures and humidity

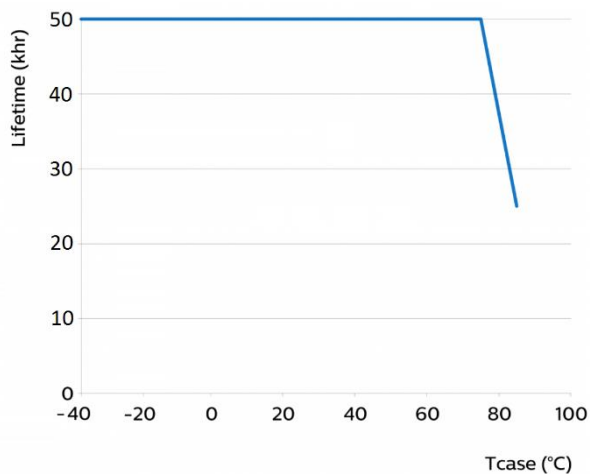
Specification item	Value	Unit	Condition
Driver ambient operational temperature	-20 ...+65	°C	At rated output power. Higher ambient temperature allowed as long as Tcase-max is not exceeded.
Tcase-max	85	°C	Maximum temperature measured at Tcase-point
Tcase-life	75	°C	Measured at Tcase-point
Maximum housing temperature	120	°C	In case of failure
Relative humidity	10 ... 90	%	Non-condensing
Ingress Protection	20		

Storage temperature and humidity

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

Lifetime

Specification item	Value	Unit	Condition
Driver lifetime	50,000	hours	Tcase ≤ Tcase-life. See graph. Maximum failures = 10%



Features

Specification item	Programmable	Remark	Default setting
LumiStep	Yes	Single-step, light turn-off possible	Disabled
Adjustable Output Current (AOC)	No	Discrete steps possible, see page 2 and 5	700mA (open RSET interface)
Module Temperature Protection (MTP)	No	NTC type: Vishay 15kOhm p/n NTCS0805E3153GMT	Permanently enabled. Threshold value: 2536 Ohm

Features

Specification item	Value	Remark	Condition
Reversed input polarity protection	Yes		
Open load protection	Yes		Automatic recovering
Short circuit protection	Yes		Automatic recovering
Over power protection	Yes		Output will shut down, no recovery
Overheating protection	Yes		
Hot wiring	No		
Suitable for luminaire insulation class	III		Per IEC60598

Certificates and standards

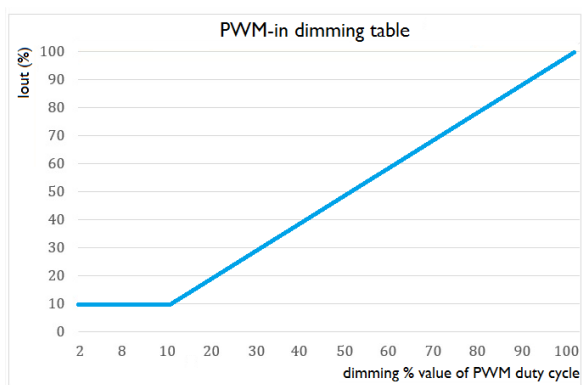
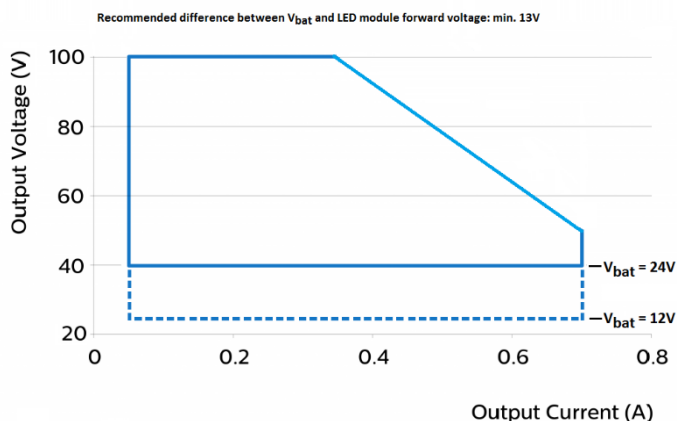
Specification item	Value
Approval marks	CE / ENEC UL / CSA

Surge immunity

Specification item	Value	Unit	Condition
Surge immunity (comm. mode)	0.5	kV	Input/output - chassis

Graphs

Operating window & dimming



Important design-in and application notes:

1: This driver can only be set at following discrete output currents with corresponding RSET values as shown below. The set output current value applies to both output channels simultaneously. The use of inbetween resistance values may lead to instable driver operation and is not recommended. The RSET resistor must be connected to driver terminals RSET and RSET/RNTC COMM. Required power rating of this resistor is 0.125 ... 0.25W. Maximim distance between RSET resistor and driver is 0.6m.

RSET (k-Ohm)	Output current (mA)
0.27	250
0.56	300
0.91	350
2.2	450
2.7	480
3.3	500
3.6	515
8.2	600
18	650
infinite (open)	700

2: The prescribed NTC must be connected to driver terminals RNTC and RSET/RNTC COMM. A 15 kilo-Ohm fixed-value dummy resistor with 0.125 ... 0.25W power rating may be used as substitute if MTP functionality is not required. If the RNTC interface is left open then the driver will not start up. Maximim distance between the NTC and driver is 0.6m.

3: The forward voltage of the connected LED module must remain within the specified operating window limits under all operating conditions. Otherwise, the driver will shut down.

4: Both LED output channels need to be loaded. If either output is left open then the driver will shut down. Output loading in Watt of the two output channels is allowed to be unequal.

5: Both LED output channels have their own separate plus and minus connections. It is not allowed to combine/connect the two LED output channels with one another. The output channels are neither allowed to be connected in parallel nor in series.

6: It is not allowed to combine the RSET/RNTC COMM connection with either LED output channel minus connection.

7: Please refer to Appendix B of the Philips Fortimo LED LLM Design-in guide for further driver configuration details. Philips MultiOne software does not support configuration of this driver. Philips does not offer the JST output connection cable for this driver; this component needs to be sourced from a third party.



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Date of release: February 27, 2019 v2

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