



Data sheet

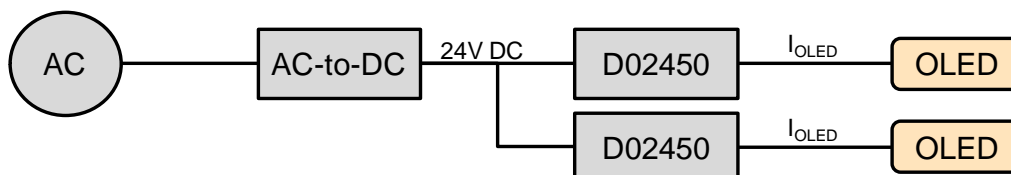
**Philips Lumiblade Driver
D02450 N PCBK**

9254.000.05000

Version 20130506

Description

An important architecture to power OLEDs is a two-stage architecture using an AC-to-DC converter to set an intermediate voltage (24V DC) and a low-voltage driver stage converting the 24V to the required OLED current.



The Philips Lumiblade Driver D02450 N PCBK is a low-voltage driver or DC-to-DC OLED current source with 24V input and 150-500mA adjustable DC current output in steps of 25mA. A short protection circuit is implemented to guarantee a low operating temperature under all operating conditions. A typical use cases with two D02450 drivers is shown in the figure.

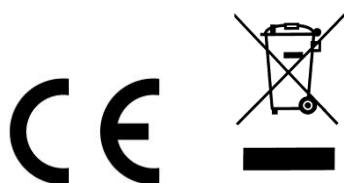
Standards compliance and sustainability

Philips Lumiblade products are environmentally friendly by avoiding the use of hazardous materials and by providing efficient illumination.

This product is RoHS (EU Directive 2011/65/EU) compliant.

The product is compliant with the following standards and regulations:

- IEC61347-2-13
- EN55015: 2006 + A1:2007 + A2:2009
- EN61547: 2009
- FCC 47 CFR Part 15 Subpart B / October 2011
- ICES-003 Issue 5 Aug.2012 (ITE)



This product has CQC approval (no.: CQC13004090717).



System setup

Lumiblade Driver D02450 N PCBK is designed for the usage with several kinds of Philips Lumiblade Panels and Tiles. The input side has to be connected to a 24V power supply as shown in figure 1. A double input enables easy parallel connection of multiple Lumiblade Drivers D02450 N PCBK to one AC-to-DC converter. The input current of the driver is limited to 5A. Hence, at full load the maximum number of drivers may not exceed 10.

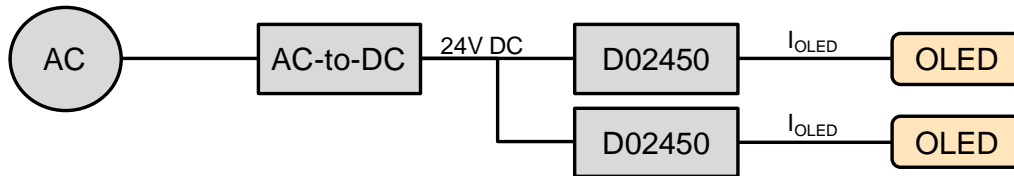


Figure 1: System setup of Philips Driver D02450 N PCBK

The driver is designed to drive one OLED Panel that is connected to the output side.

	description	remark
indoor/outdoor	indoor	
protection class	class III	IEC61140
voltage	SELV	
housing color	black	
housing material	PC+ABS	
RoHS conform	yes	2011/65/EU

Environmental

Storage conditions

	unit	min	typ.	max	remark
temperature	°C	-25	20	60	
relative humidity	%	5	70	85	
dew			none		

Transport conditions

	unit	min	typ.	max	remark
temperature	°C	-25	20	60	
relative humidity	%	5	70	85	
dew			none		

Operating conditions

	unit	min	typ.	max	remark
temperature	°C	-10	20	40	
relative humidity	%	5	70	85	
dew			none		

Mechanical dimensions and mounting instruction

	unit	min	typ.	max	remark
dimension, <i>x</i>	mm		50		
dimension, <i>y</i>	mm		60		
dimension, <i>d</i>	mm		11.5		
weight	g				
input connectors power (2 input channels)			WAGO 2060-402		marked with + and -
input connectors control			WAGO 2060-403		not used / not connected
conductor size (solid or fine stranded)	mm ²	0.34		0.75	
AWG	-	24		18	
OLED connector			Molex PicoBlade 0532610571		
weight	g	20.2	20.4	20.6	

The driver can be mounted with two M3 screws. The screw openings are located in two corners of the driver.

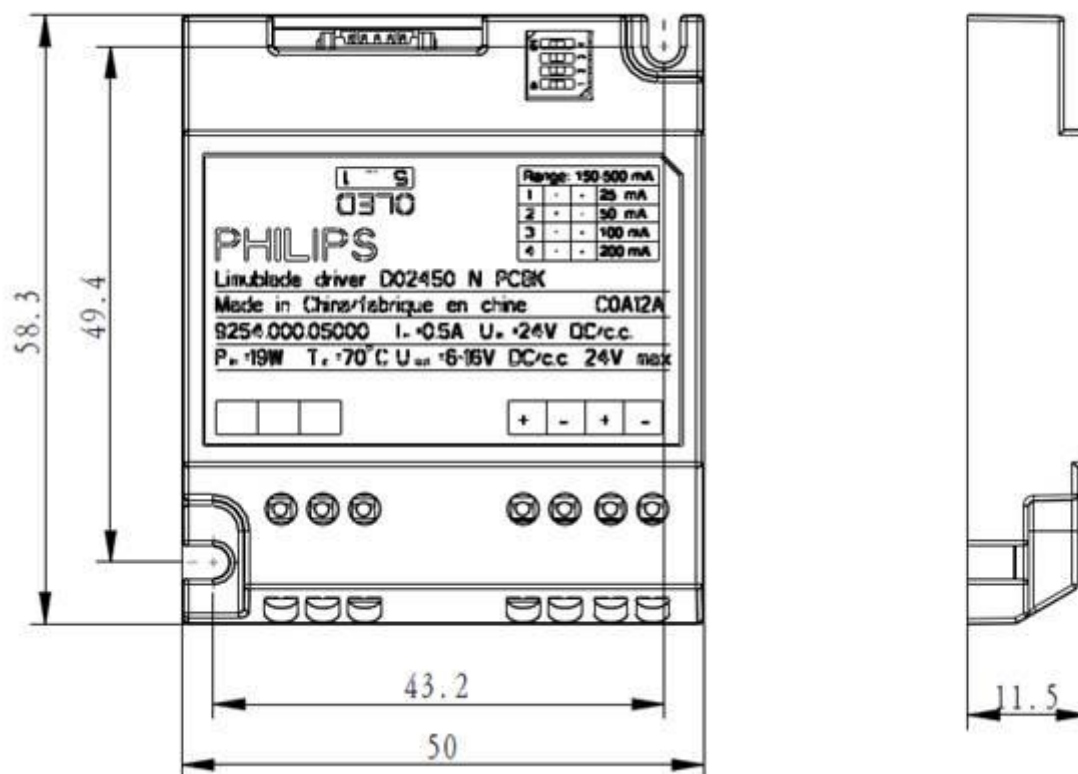


Figure 2: Mechanical dimension of driver D02450 N PCBK

Characteristics

Symbol	Parameter	Condition	Min	Typ.	Max	Unit
U_{in}	Input voltage	Normal operation	21.6	24	26.4	V
I_{in}	Input current	Normal operation			500	mA
U_{OLED}	OLED voltage	Normal operation	6		18	V
I_{OLED}	OLED current	Normal operation	150		500	mA
$U_{OLED, short}$	Shorted OLED voltage	Short detection limit	4.7	5.0	5.8	V
P_{OLED}	OLED power	Normal operation			9	W
P_{in}	Input power	Normal operation			10	W
$t_{lifetime}$	Life time (Ta= 30C)			40000		h

Absolute maximum ratings

Symbol	Parameter	Condition	Min	Typ.	Max	Unit
U_{in}	input voltage	Normal operation			26.4	V
I_{in}	input current	Multi-devices			5	A
U_{OLED}	OLED voltage	Open circuit			24	V

Functional Description

The driver is easy to use. It will start working after applying 24V at input. The OLED can be connected via a connector.

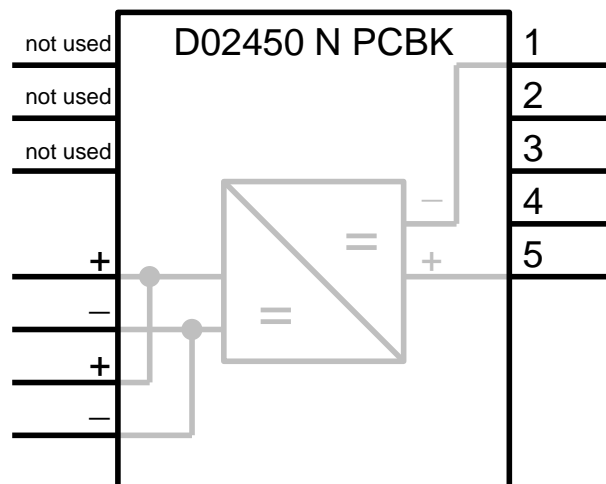


Figure 3: Port assignment of driver D02450 N PCBK

The output current can be set by the DIP switches between 150mA and 500mA. The current can be set in steps of 25 mA.

During normal operation a current is fed to the OLED panel resulting in an OLED forward voltage $U_{OLED} = U_{OLED,normal}$.

In the case an OLED panel fault occurs, e.g. a short, the OLED forward voltage U_{OLED} drops to $U_{\text{OLED}} = U_{\text{OLED,short}}$. This voltage drop is detected by the internal failure detection circuit. After some time has passed and a threshold value has been reached, the internal protect circuit is triggered. The driver stops working until the fault is removed and the driver will be reset after reenergized input.

switch 1 25 mA	switch 2 50 mA	switch 3 100 mA	switch 4 200 mA	I_{OLED} in mA
on	on	on	on	150
off	on	on	on	175
on	off	on	on	200
off	off	on	on	225
on	on	off	on	250
off	on	off	on	275
on	off	off	on	300
off	off	off	on	325
on	on	on	off	350
off	on	on	off	375
on	off	on	off	400
off	off	on	off	425
on	on	off	off	450
off	on	off	off	475
on	off	off	off	500
off	off	off	off	500

Table 1: Current setting of driver D02450 N PCBK

The figure below shows an example how the driver is connected to the power supply unit (PSU) and the OLED. Multiple drivers can be easily connected to one PSU, because the drivers have two input power channels.

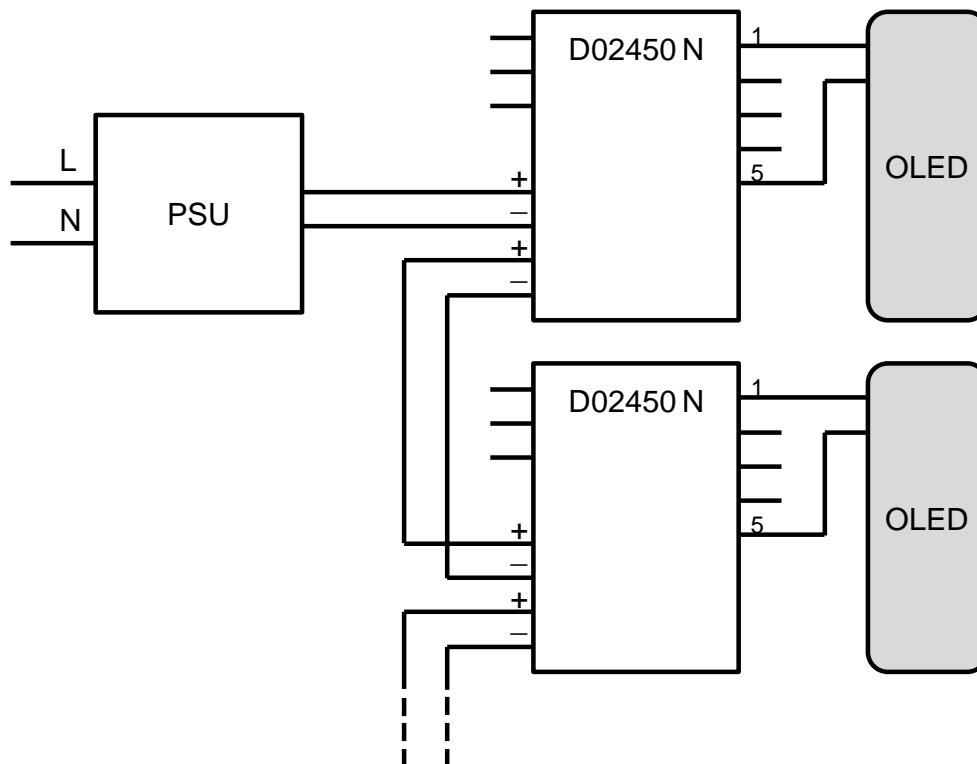


Figure 4: Wiring example for multiple drivers D02450 N PCBK connected to one PSU

Application Information

Driver requirements

In general, a normal 24V power supply can be used as first stage. Please confirm the output power and voltage before connect to the driver. Make sure that the power supply is suitable for the driver and that the driver offers SELV isolation.

OLED connection

Make sure that the OLED Panel is only connected with its connector to one output socket of OLED. Make sure the OLED connector is compliant with the driver. Make sure the driver output current matches the current required by the OLED. Do not over power the OLEDs. Do not connect or disconnect OLED while driver is powered.

Compatible Products

Driver D02450 N PCBK can be used with the following Philips Lumiblade Panels:

10NC	Product name
9254.000.032	Philips Lumiblade Panel GL26
9254.000.033	Philips Lumiblade Panel GL55
9254.000.034	Philips Lumiblade Panel GL46
9254.000.035	Philips Lumiblade Panel GL30

Using driver D02450 N PCBK with OLEDs GL350 (9254.000.016, 9254.000.019 & 9254.000.027) or with GL350 REV2 (9254.000.09100), the maximum output current may not be higher than 400mA (short detection issue risk at higher currents)!

Power Supply Units

The following AC-to-DC converters can be used as power supply unit at the input of Lumiblade driver D02450 N:

Manufacturer	Product name
Philips	LEDINTA0024V41FO (4435-290.30411)
Philips	LED Power Driver 60W – 24V (9317.006.209)
XPpower	VEP15US24
EREA	14PU06

Product Identifier & Naming

10NC	Product name
9254.000.05000	Philips Lumiblade Driver D02450 N PCBK