

DKL SERIES

Darkfield lights




















Generally used to illuminate objects from camera axis with a small angle, emphasizing small cracks, lines and reliefs of the piece to be inspected and also eliminating the brightness and shadows. This series of direct light darkfields is specially thought for providing a huge amount of light to highlight edges and possible variations in height when taking photographs.

► Technical specifications¹

Lighting model	DKL1813A	DKL2418A	DKL3223A	DKL4130A	DKL5650B
					
Dimensions	188x188x13	240x240x13	337x337x13	394x394x13	570x570x10
Inner Ø	130	180	230	300	500
RWD (mm)	<10	<15	<20	<20	<20
Weight	340g	430g	930g	1180g	
IP rating	IP40	IP40	IP40	IP40	IP40
Mounting holes	8 x ø4ITHRU	8 x ø4ITHRU	8 x ø4ITHRU	8 x ø5ITHRU	8 x ø4.5ITHRU
Connection (Type C/P/S)	2P with flying leads. L= 180mm BN = +24V ±3% BU = 0V	2P with flying leads. L= 180mm BN = +24V ±3% BU = 0V	2P with flying leads. L= 180mm BN = +24V ±3% BU = 0V	2P with flying leads. L= 180mm BN = +24V ±3% BU = 0V	2P with flying leads. L= 180mm BN = +24V ±3% BU = 0V
Modifiers²					
Accessories³					
Driver iBlueDrive⁴	inline LP / SE	inline ST00	N/A	N/A	inline ST00
iBlueDrive connection	3P aerial male inline connector. L= 150mm. PIN 1 = +24V ±8% PIN 2 = 0V PIN 3 = Control ⁵	3P aerial male inline connector. L= 150mm. PIN 1 = +24V ±8% PIN 2 = 0V PIN 3 = Control ⁵	N/A	N/A	3P aerial male inline connector. L= 150mm. PIN 1 = +24V ±8% PIN 2 = 0V PIN 3 = Control ⁵
iBlueDrive power cable (Not-included)	VCC Series	VCC Series	N/A	N/A	VCC Series
iBlueDrive accessories³			N/A	N/A	

► Instantaneous consumption⁶ (max.)

*WT

Lighting model	DKL1813A	DKL2418A	DKL3223A	DKL4130A	DKL5650B		
TYPE C 24VDC		5W	7.6W	20W	27W	21W	-470C
		5W	7.6W	20W	27W	21W	-525C
		5W	5W	18W	20W	15W	-630C
		2.9W	5.3W	12W	19W	12W	-850C
TYPE P D _{max} = 1/2 Ton max= 60s		6.4W	9.5W	25W	34W	21W	-400P
		6.4W	9.5W	25W	34W	21W	-W00P
TYPE S D _{max} = 1/10 Ton max= 2ms		1320mA/32W	1585mA/38W	5280mA/127W	7040mA/169W	3695mA/89W	-400S
		1320mA/32W	1585mA/38W	5280mA/127W	7040mA/169W	3695mA/89W	-470S
		825mA/20W	990mA/24W	3300mA/79W	4400mA/106W	2310mA/89W	-525S
		880mA/21W	1585mA/38W	3520mA/84W	5630mA/135W	3695mA/89W	-630S
		1045mA/25W	1880mA/45W	4180mA/100W	6690mA/161W	4390mA/105W	-850S
		1320mA/32W	1585mA/38W	5280mA/127W	5630mA/135W	880mA/21W	-W00S
TYPE i⁷ 		6.2W[29W/3.4W]	9.1W[44W/4.8W]	N/A	N/A	21W[96W/11W]	-400i
		5.7W[29W/3.9W]	8.3W[44W/5.7W]	N/A	N/A	19W[96W/13W]	-470i
		4.8W[15W/2.8W]	7W[22W/3.9W]	N/A	N/A	16W[96W/8.5W]	-525i
		9.1W[29W/6.2W]	13W[44W/9.1W]	N/A	N/A	31W[96W/21W]	-630i
		8.4W[29W/4.8W]	12W[44W/7.0W]	N/A	N/A	28W[96W/11W]	-850i
		6.2W[29W/3.4W]	9.1W[44W/4.8W]	N/A	N/A	21W[96W/11W]	-W00i

N/A= Not available

(1) Environmental specifications and iconography legend in additional annex Z4.

(2) Please, consult the code before ordering (additional annex Z4.2).

(3) Accessories are not-included. More information in accessories section.

(4) inLine technical drawing and specifications in additional annex Z3.1.

(5) iBlueDrive control input wiring specifications in additional annex Z2.1.

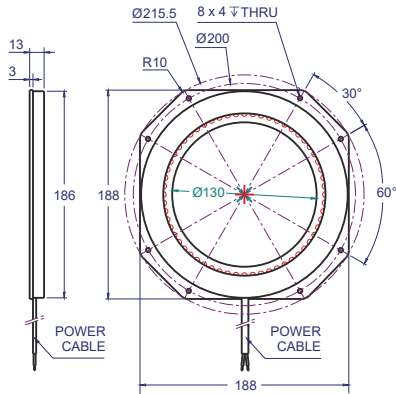
(6) Bear in mind that consumption table is only to be used as a guide. To refer to real values, please, consult product label when purchasing.

(7) Values of maximum instantaneous consumption of 'Type i' lighting systems in Powered mode (Strobe mode / Continuous mode)



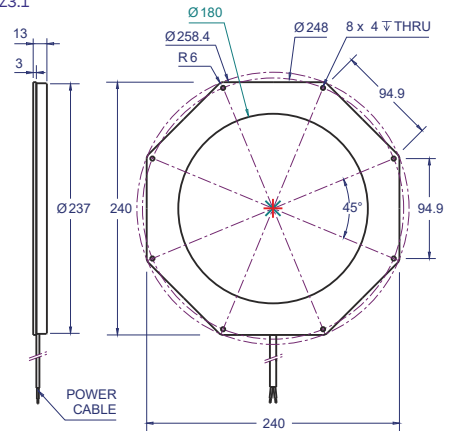
DKL SERIES

* In the iBlueDrive version, the aerial cable integrates the inLine driver LP or ST01, more info in additional annex Z3.1

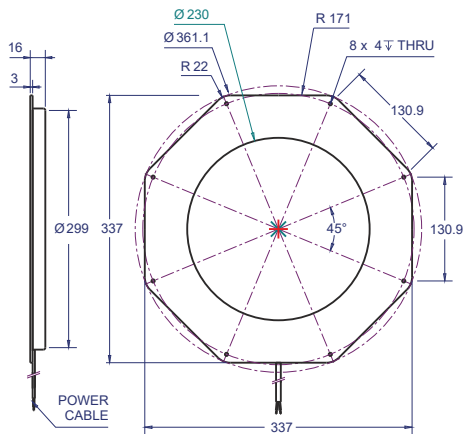


DKL1813A-E01A

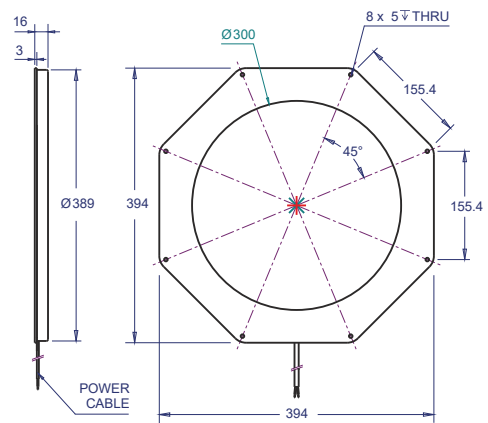
* In the iBlueDrive version, the aerial cable integrates the inLine driver ST00, more info in additional annex Z3.1



DKL2418A-E00B

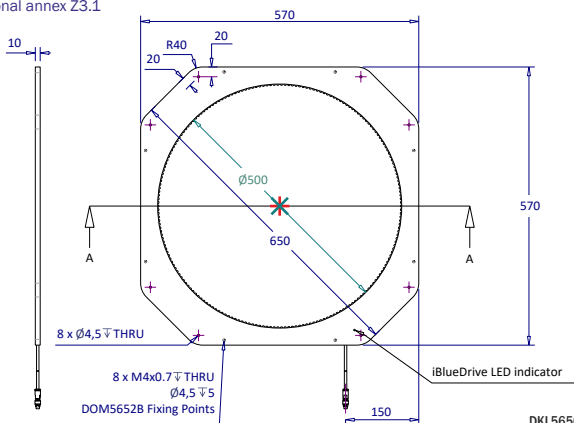


DKL3223A-E00B



DKL4130A-E00B

* In the iBlueDrive version, the aerial cable integrates the inLine driver ST00, more info in additional annex Z3.1



DKL5650B-E01

All units in millimeters, if not indicated.



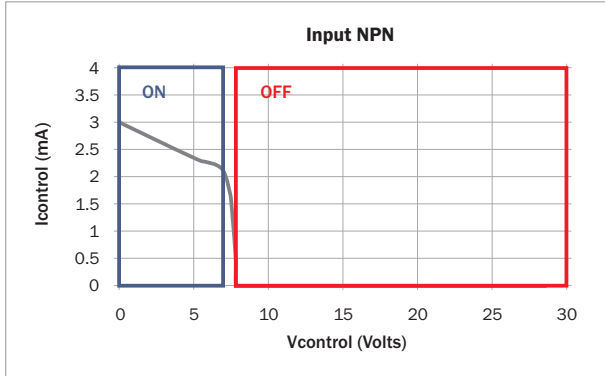
Example of DKL captured image



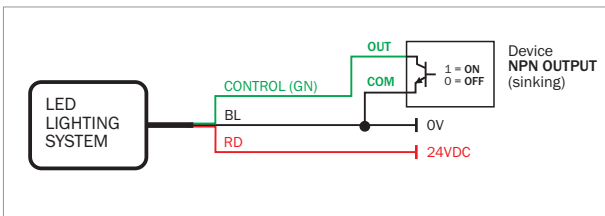
► Z1.1 - Control input NPN/PNP for 'Type C' lighting systems of DOL, PLA (PLA0513A and PLA1026A), PLC, PRC (PRC0604C and PRC0606B), PRH and PRK series.

■ NPN model (by default)

NPN chart of Vcontrol (Volts) vs Icontrol (mA)



NPN wiring for ON/OFF mode

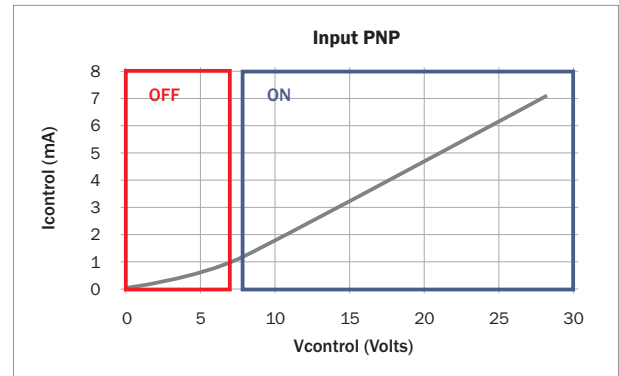


Electrical specifications

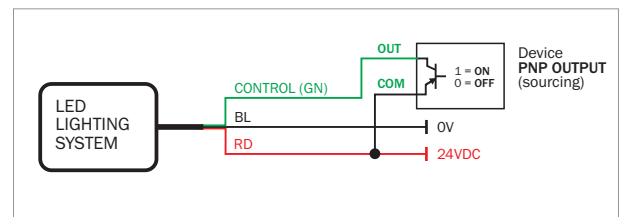
0V to +6.8V	Light ON
+7.2V to +24V	Light OFF
Working conditions	25°C, VIN = 24V
Connection	Direct to a NPN output
Delay from OFF to ON state	<5 µs
Delay from ON to OFF state	<5 µs
Bias voltage in control input	7.9V
Input impedance	7K9 Ω

■ PNP model (lighting systems with PNP modifier =/P)

PNP chart of Vcontrol (Volts) vs Icontrol (mA)



PNP wiring for ON/OFF mode



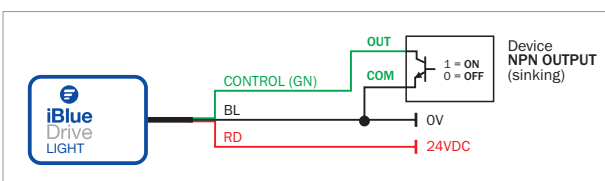
Electrical specifications

0V to +6.8V	Light OFF
+7.2V to +24V	Light ON
Working conditions	25°C, VIN = 24V
Connection	Direct to a PNP output
Delay from OFF to ON state	<5 µs
Delay from ON to OFF state	<5 µs
Bias voltage in control input	0V
Input impedance	4K Ω
Compliance	IEC1131-2 Type 1, 2 and 3

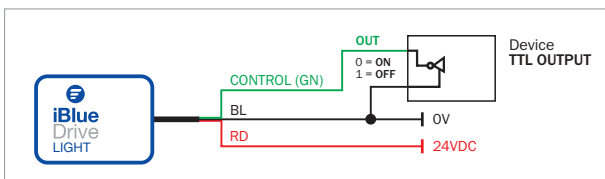
► Z2.1 - iBlueDrive control input wiring

All iBlueDrive products come together with a quick-start guide for connection and working conditions. Refer to iBlueDrive Manual for extended information.

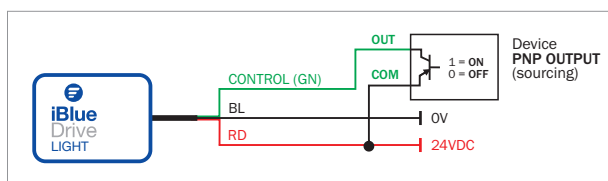
NPN wiring for strobe or ON/OFF mode



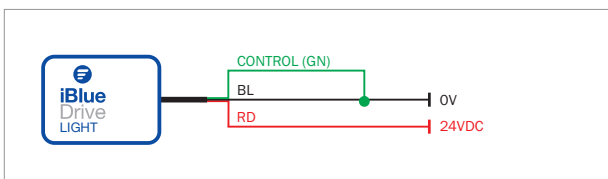
TTL wiring for strobe or ON/OFF mode



PNP wiring for strobe or ON/OFF mode



Wiring for continuous mode



► Z2.2 - iBlueDrive Accessories legend

Icon			
Description	Accessory to configure iBlueDrive devices: iBlueDrive Box / iBlueDrive USB	iBlueDrive optocoupler	iBlueDrive potentiometer
Serie/Product	VTA0005A, VTA0006A / VTA0007A	VTA0020A	VTA0030B

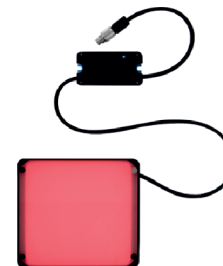
► Z3.1 - Driver inline

Driver on the aerial connector cable for iBlueDrive and continuous type equipment.

The driver is placed in the cable that connects the lighting with the connector, it contains the control electronics of the device and is used when it is not possible to integrate it inside the lighting in both iBlueDrive and continuous types. Functionally, there is no difference between lightings with inLine or integrated driver.

The inline driver is in charge of managing the power of the device, therefore it is advisable to fix it to a metal structure to improve the heat dissipation that it produces.

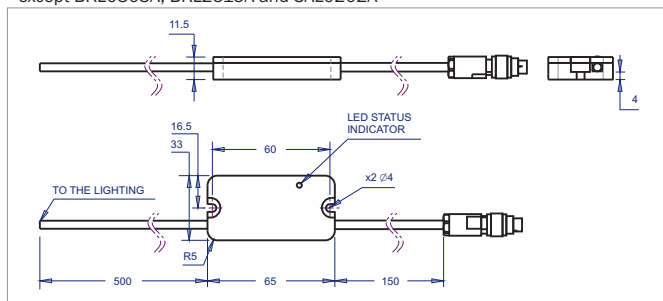
There are 6 different models of inline drivers and each of them is used with a particular lighting model, depending on its power needs or environment in which it will be used.



Standard (St00)

Standard driver used in most of the equipment with external driver both in continuous type and iBlueDrive.

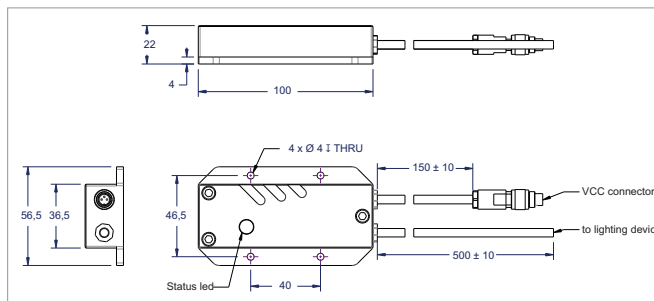
Used in ALD, ALS, ALU, ALW, AUB, BKC, BKL* , DKL, DOM0906A, DOM1410A, DOM1613A, DOM2414A, PLA, PLD, PLU, PRF (iBlueDrive) , PRY, SAC, SAL*.
*except BKL0303A, BKL2515A and SAL0202A



Standard IP67 (St01)

IP67 standard driver used in most of the devices with external driver in both continuous type and iBlueDrive that require IP65/IP67 protection.

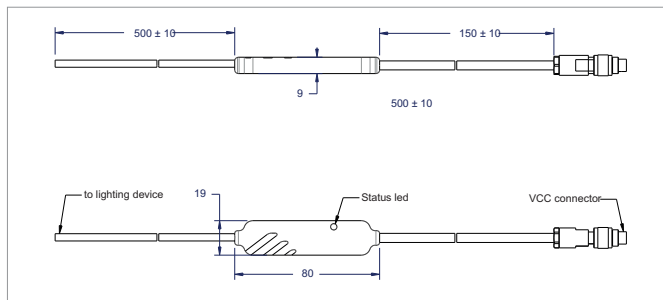
Used in BKL* , DOM0906A, DOM1410A, DOM1613A, DOM2414A, PRD0500B.
*except BKL0303A and BKL2515A



Low Power (LP)

Low power driver used in most of the equipments that have external driver both in continuous type and iBlueDrive that require less power.

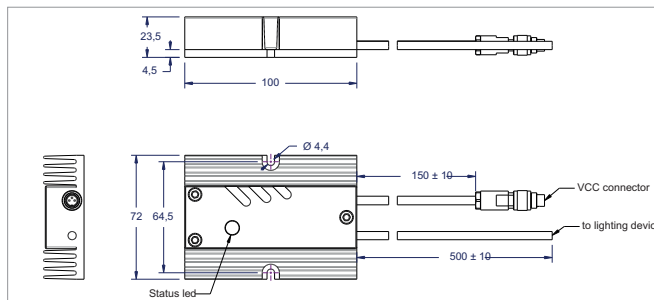
Used in PRF (continuous), BKL0303A, PRA0818A, PRD0200A and SAL0202A.



High power driver

High power driver used in most of the equipments that have external driver both in continuous type and in iBlueDrive that require more power.

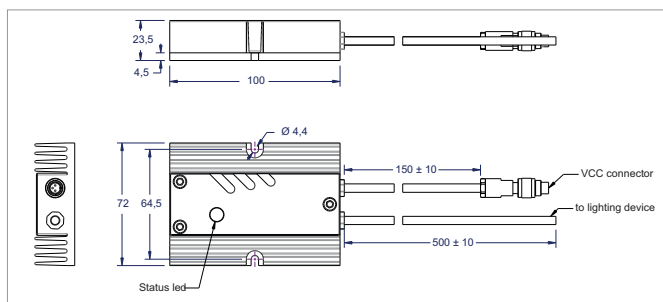
Used in DOM1613A.



High Power IP67(HP01)

High power driver used in most of the equipments that have external driver both in continuous type and iBlueDrive that require more power and IP65/IP67 protection.

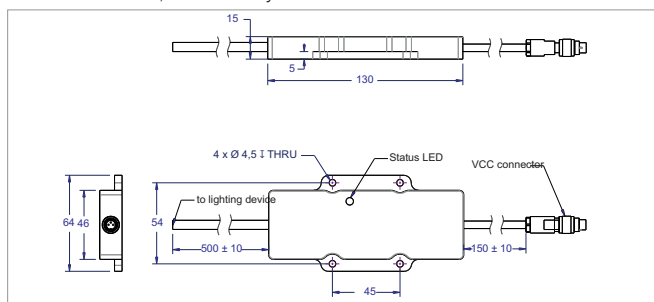
Used in DOM1613A.



Multisector (SE)

Driver used in most of the equipments that have external driver in iBlueDrive type in its multisectorial versions (both RGB and 4 sectors).





Used in DKL1813A, DOM0906A y DOM1410A





WARNING!: In continuous and powered mode, clamp driver to a metal surface for heat dissipation. In Strobe mode is not required, but recommended.













► Z4.1 - Environmental Specifications

Max. Operating Humidity	85% non-condensing
Operating Temperature	0 - 40°C
Storage Temperature	0 - 60°C
Housing material	Anodized aluminium
Standards	   






► Z4.2 - Modifiers legend

icon	Description	Code
	Narrow angle of emission	/AN
	Medium angle of emission (default)	/AM
	Wide angle of emission	/AW
	Diffuse emission	/AD
	Polarizer filter	/FPL
	Diffuser filter	/FDR
	Backlight hole of 42mm	/H
	Backlight hole of 65mm	/H1
	Dome hole of 46mm	/CC1
	Dome hole of 40mm	/CC2
	IP Rating = IPxx = Ip65 / IP67	/65 / 67
	PNP input model	/P
	50mm focal Length	/F1
	150mm focal Length	/F2
	Infinite focal Length	/F3
	Lighting by sectors = 4 sectors	/4S


► Z4.3 - Accessories legend

icon	Description	Serie
	Power cable/s	VCB, VCC, VCD Series
	Other cable/s	VCU, VCL
	Strobe and RGB controller/s	VST, VSC Series
	Polarizer filter	VPF, VPC
	Diffuser filter	VDF
	Collimater filter on x axis, y axis or both	VCF
	Darkfield converter	VRF
	Protector filter	VPT
	Heat dissipator	VHD
	Fixing bracket	VBA, VBB, VBC Series








► Z4.4 - Technical drawings legend

icon	Description
	Optical axis
	Viewing window dimensions
	Lighting elements
	Light emission center
	Lighting surface dimensions




► Z4.5 - Colours & Wavelegths legend

icon	Wavelength	Colour	Code
	365nm	UV-	-365
	400nm	UV	-400
	470nm	BLUE	-470
	525nm	GREEN	-525
	630nm	RED	-630
	850nm/880nm	IR	-850/-880
		WHITE	-W00
		RGB	-RGB

► Z4.6 - Types of lighting legend

icon	Description
	Radial lighting
	'Darkfield' lighting effect. Low angle illumination
	Backlight illumination
	'Cloudy day' lighting effect
	'Bright field' lighting effect
	Projector lighting
	Axial lighting

► Z4.7 - Types of light legend

icon	Description
	Direct light
	Diffuse light
	Ultra-diffuse light



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