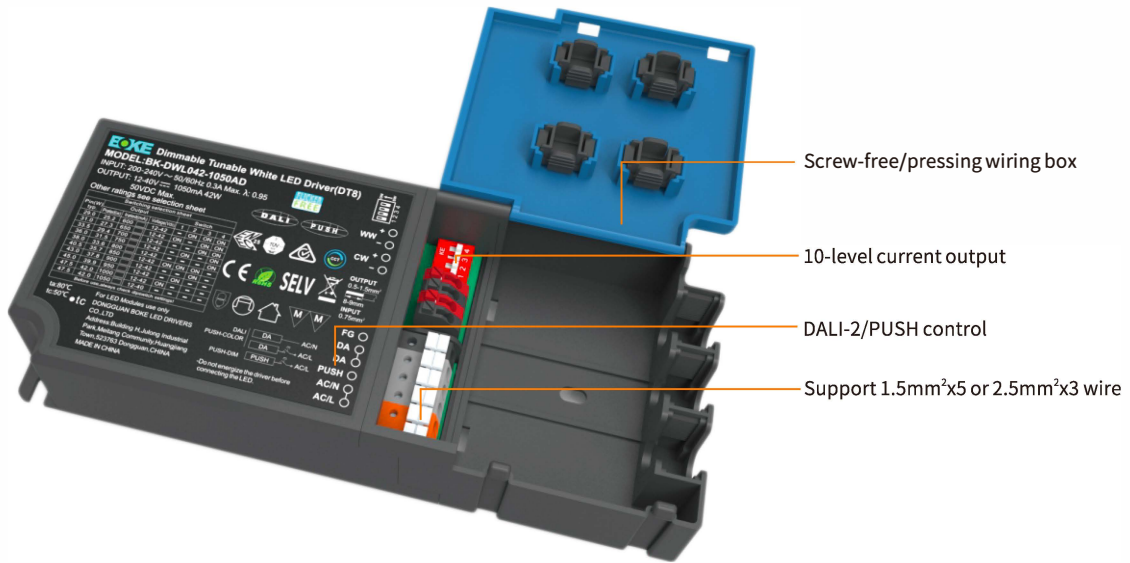


**Constant current independent color temperature driver
DWL Series suffix D(DALI-2 + PUSH-DIM + PUSH-CCT)**



Features

- Support DALI-2+PUSH-CCT control
- 10-level current output can be realized through DIP-switch, easier to adjust the luminaire power
- Soft dimming and flicker-free at any brightness, meets the new requirements of ErP certification
- Using HPC patented technology, at any dimming level, the current output between drivers is the same
- Dimming range 1%~100%, output current accuracy 1%
- Standby power input<0.5W, meets the requirements of ErP certification
- High PF, high efficiency, low THD
- Screw-free and pressing type strain relief, easier install
- Support 1.5mm²x5 or 2.5mm²x3 wire
- Intelligent LED hot-plug protection function
- SELV and Class II design, suitable for use outside of the light
- Passed ENEC-TUV,CE,RCM,CCC,DALI-2 and other certifications
- IP20 protection grade, indoor use
- Nominal life-time up to 100,000 h
- 5-year guarantee

Interfaces

- DALI-2(DALI-2 DT8)
- PUSH(PUSH-DIM)
- PUSH(PUSH-CCT)

Functions

- PUSH-CCT with memory function(PUSH)
- Support central emergency application (dimming normal in DC input)
- Support self-contained emergency application
- Protective features (short-circuit, overload,no-load, hot plug-in protection)

Suitable for lights

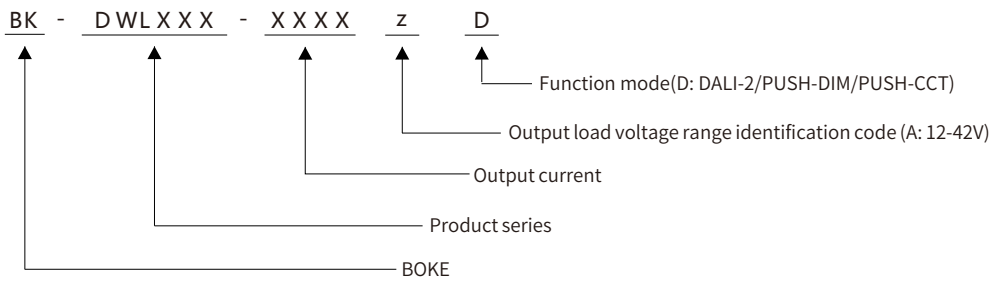
- Suitable for lights with independent drivers such as downlights, spotlights, panel lights, etc
- Not suitable for lights with built-in drivers

Typical applications

- LED indoor lighting
- LED office lighting
- LED commercial lighting



Model coding rules of DWL series



Order selection table of DWL series(just suffix D, 42-60W)

Model	Input voltage	Output power	Output voltage	Output current	Dimension	Article number
BK-DWL042-1050AD	200-240VAC	42.0W	12-42VDC	0.60-1.05A	L173.0*W75*H30mm	B-DWL042-HA0100AD
BK-DWL060-1500AD	200-240VAC	63.0W	12-42VDC	1.05-1.55A	L191.5*W75*H30mm	B-DWL060-HA0101AD
BK-DWL060-2000AD	200-240VAC	62.0W	12-42VDC	1.55-2.00A	L191.5*W75*H30mm	B-DWL060-HA0100AD

Technical data

Product model	BK-DWL042-1050AD
Output parameters	
Regulation method	Constant Current
Rated output current	0.6-1.05A
Rated output voltage	12-42V
Rated output power	42W Max
Output current adjustment	DIP S.W(10 levels)
Output current ripple LF	±2%
Output current accuracy	±1%
Linear regulation	±1%
Load regulation	±1%
No load output voltage	50V
Flicker-free(typical)	Modulation depth =0.089% (100 Hz), Pst LM = 0.01, SVM = 0.002,(The above parameters are obtained from testing the panel lights)
Input parameters	
Rated input voltage	200-240VAC 200-240VDC
Rated input voltage	180-264VAC 180-264VDC
Input voltage shock	<380 VAC, 1 h
Input current	<0.3A (AC input)
Input frequency	47-63Hz
Input power factor	>0.95 (230V AC & Full load)
Input THD	10% (230V AC & Full load)
Efficiency(typical)	89% (230V AC & Full load)
In-rush current	8.25A peak ,206us duration(50 % Ipeak), see the description below for details
Start/Switchover/Turn off	<0.6s(AC start),<0.6s(DC start),<0.3s(AC/DC switchover),<0.5s(Turn off)
Switching cycles	> 50,000 switching cycles
Power consumption	Full load(Pmax):42W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A
Safety	
Withstand voltage	I/P-O/P:3750V AC, I/P-DALI: 500V AC.
Mains surge capability	L-N:2KV
Leakage current	<0.7mA (230V AC & Full load)
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH
Control interface	
DALI dimming port	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA
PUSH dimming port	Voltage range: 180-264V 47/63Hz
1-10V 3in1 dimming port	N/A
Auxiliary power supply	N/A
Dimming range	1-100%
Dimming drive mode	AM(amplitude modulation)
Emergency support	
Central emergency system	Supported(dimming normal in DC input)
Self-contained emergency	Supported
Environment & Life time	
Operating temperature	Ta=-20-50°C
Case temperature	Tc=85°C
Operating humidity	5-85% RH, not condensed
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed
IP grade	IP20
MTBF	500,000H,MIL-HDBK-217F(25°C)
Life-time	Nominal life-time up to 100,000 h, see the description below for details
Vibration resistant	10~500Hz,5G 12min./1cycle,period for 72min. each along X,Y,Z axes
Acoustic Noise	<25dB(30cm, Full load)
Environmental protection	RoHS
Certifications and standards	
Certified	ENEC-TUV, RCM, EMC, CE, CCC, DALI-2
Safety	EN61347-1, EN61347-2-13, EN62384
EMC	EN55015, EN61000-3-2, EN61000-3-3, EN61000-4-2,3,4,5,6,8,11, EN61547
DALI-2	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2), IEC 62386-209(DALI-2)
EL	N/A
RF	N/A

Remarks

- 1.By default, all parameter are measured at 230V AC input, full load and 25°C of ambient temperature.
- 2.The driver can not be installed inside the light. when the driver is used with the light, the EMC of the whole light needs to be tested.

Technical data

Product model	BK-DWL060-1500AD	BK-DWL060-2000AD	
Output parameters			
Regulation method	Constant Current	Constant Current	
Rated output current	1.05-1.55A	1.55-2A	
Rated output voltage	12-42V	12-42V	
Rated output power	63W Max	62W Max	
Output current adjustment	DIP S.W(10 levels)	DIP S.W(10 levels)	
Output current ripple LF	±2%	±2%	
Output current accuracy	±1%	±1%	
Linear regulation	±1%	±1%	
Load regulation	±1%	±1%	
No load output voltage	50V	50V	
Flicker-free(typical)	Modulation depth =0.040% (100 Hz), Pst LM = 0.015, SVM = 0.01, (The above parameters are obtained from testing the panel lights)		
Input parameters			
Rated input voltage	200-240VAC 200-240VDC		
Rated input voltage	180-264VAC 180-264VDC		
Input voltage shock	<380 VAC, 1 h		
Input current	<0.45A (AC input)		
Input frequency	47-63Hz		
Input power factor	>0.95 (230V AC & Full load)		
Input THD	10% (230V AC & Full load)		
Efficiency(typical)	90% (230V AC & Full load)		
In-rush current	11.4A peak, 190us duration(50 % Ipeak), see the description below for details		
Start/Switchover/Turn off	<0.6s(AC start), <0.6s(DC start), <0.3s(AC/DC switchover), <0.5s(Turn off)		
Switching cycles	> 50,000 switching cycles		
Power consumption	Full load(Pmax):66W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A		
Safety			
Withstand voltage	I/P-O/P:3750V AC, I/P-DALI: 500V AC.		
Mains surge capability	L-N:2KV		
Leakage current	<0.7mA (230V AC & Full load)		
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH		
Control interface			
DALI dimming port	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA		
PUSH dimming port	Voltage range: 180-264V 47/63Hz		
1-10V 3in1 dimming port	N/A		
Auxiliary power supply	N/A		
Dimming range	1-100%		
Dimming drive mode	AM(amplitude modulation)		
Emergency support			
Central emergency system	Supported(dimming normal in DC input)		
Self-contained emergency	Supported		
Environment & Life time			
Operating temperature	Ta=-20-50°C		
Case temperature	Tc=85°C		
Operating humidity	5-85% RH, not condensed		
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed		
IP grade	IP20		
MTBF	500,000H, MIL-HDBK-217F(25°C)		
Life-time	Nominal life-time up to 100,000 h, see the description below for details		
Vibration resistant	10~500Hz, 5G 12min./1cycle, period for 72min. each along X,Y,Z axes		
Acoustic Noise	<25dB(30cm, Full load)		
Environmental protection	RoHS		
Certifications and standards			
Certified	ENEC-TUV, RCM, EMC, CE, CCC, DALI-2		
Safety	EN61347-1, EN61347-2-13, EN62384		
EMC	EN55015, EN61000-3-2, EN61000-3-3, EN61000-4-2,3,4,5,6,8,11, EN61547		
DALI-2	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2), IEC 62386-209(DALI-2)		
EL	N/A		
RF	N/A		

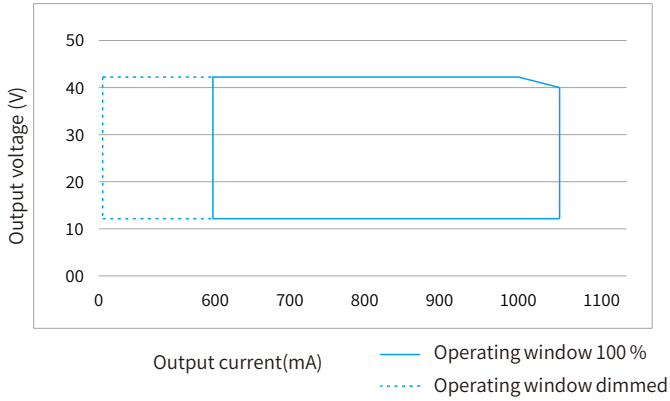
Remarks

1. By default, all parameter are measured at 230V AC input, full load and 25°C of ambient temperature.
2. The driver can not be installed inside the light. when the driver is used with the light, the EMC of the whole light needs to be tested.

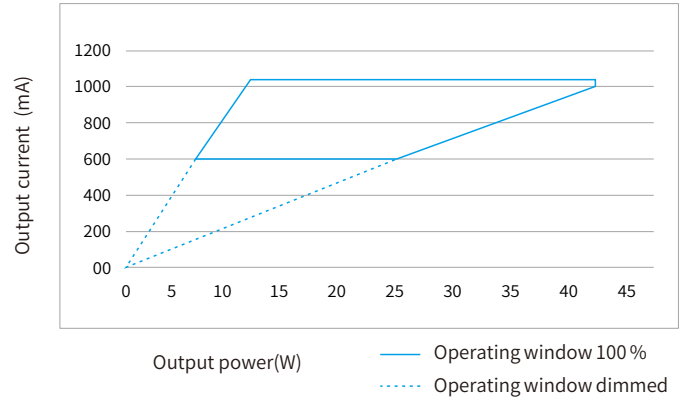
Electrical values

BK-DWL042-1050AD

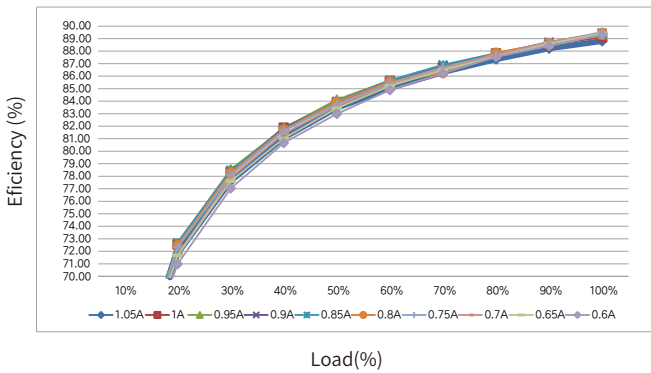
Operating window



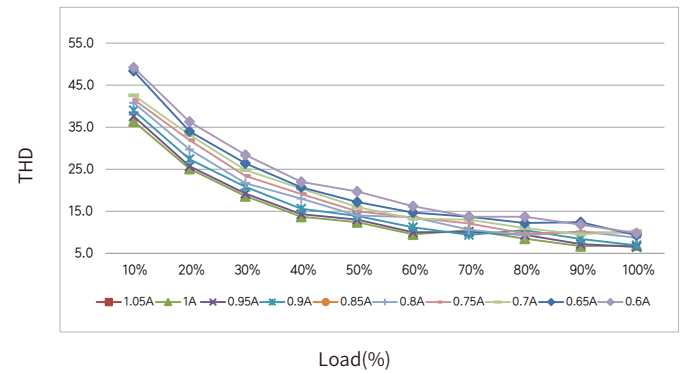
Operating window



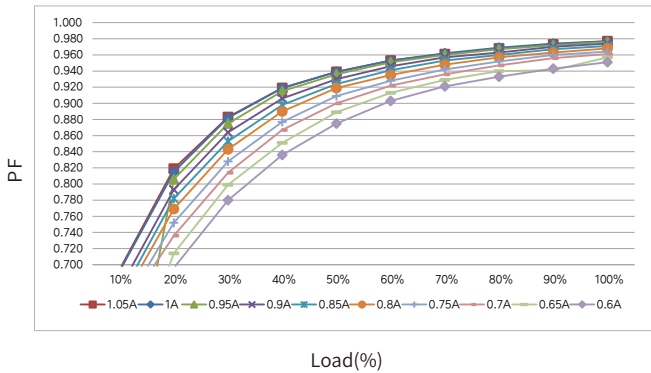
Efficiency vs load



THD vs. Load

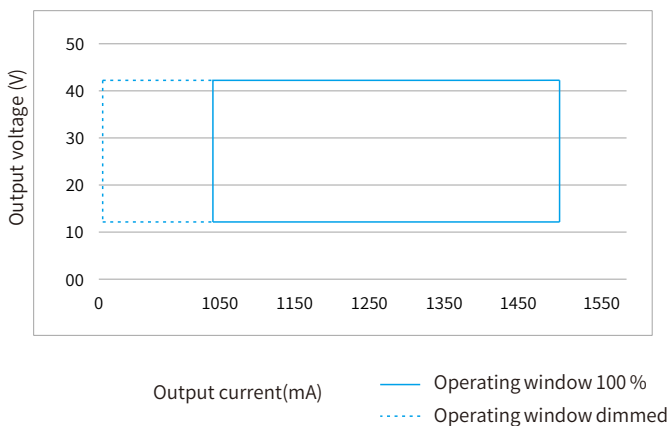


Power factor vs. Load

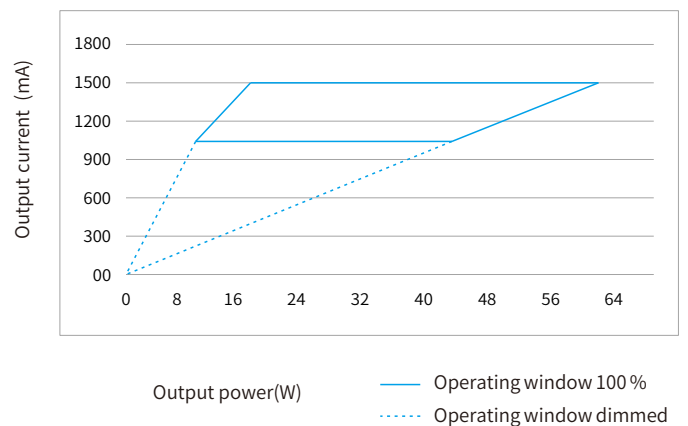


BK-DWL060-1500AD

Operating window

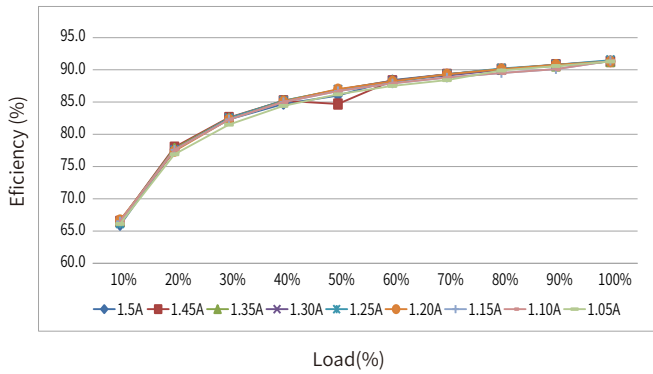


Operating window

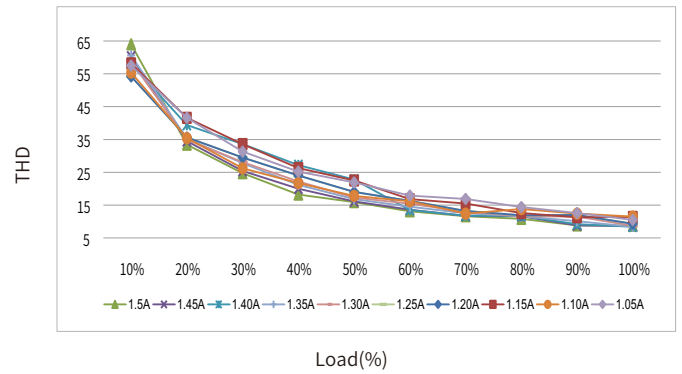


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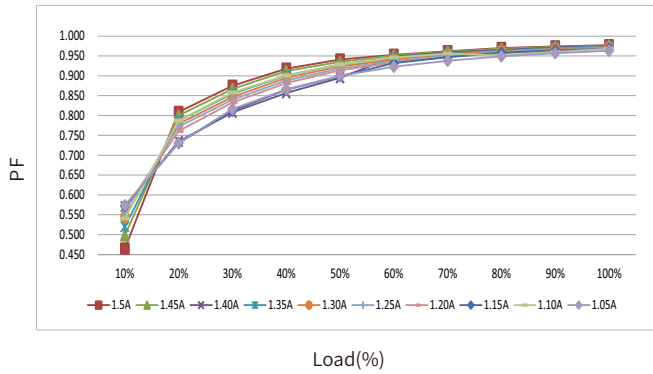
Efficiency vs load



THD vs. Load

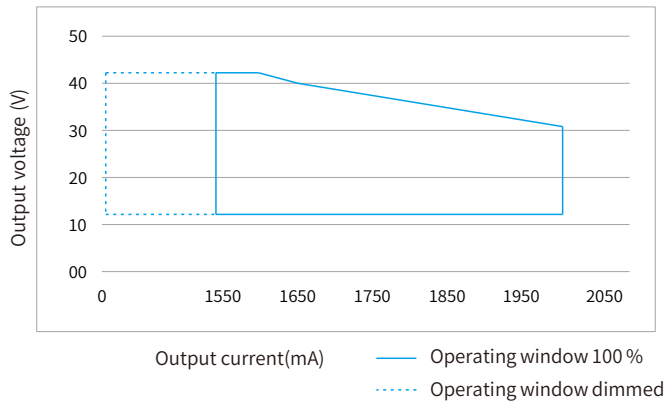


Power factor vs. Load

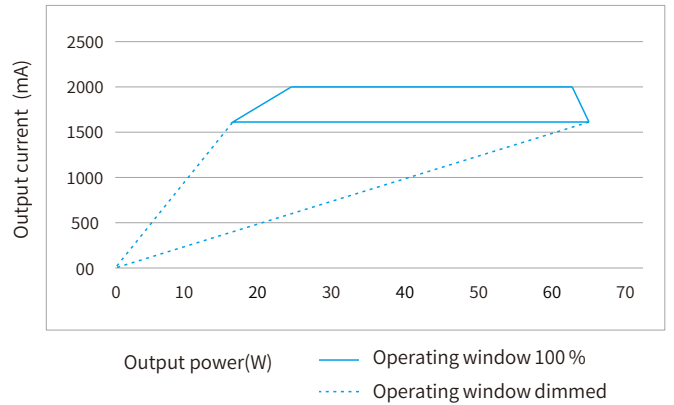


BK-DWL060-2000AD

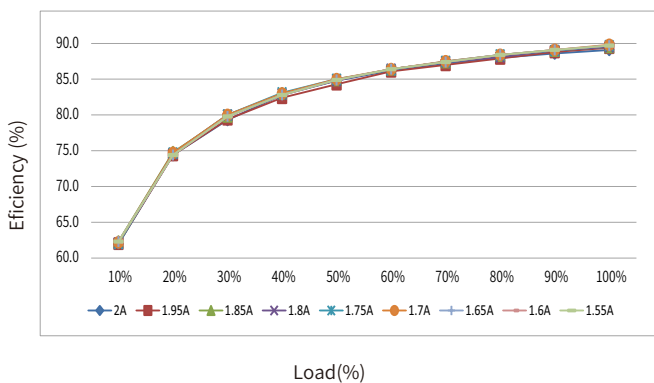
Operating window



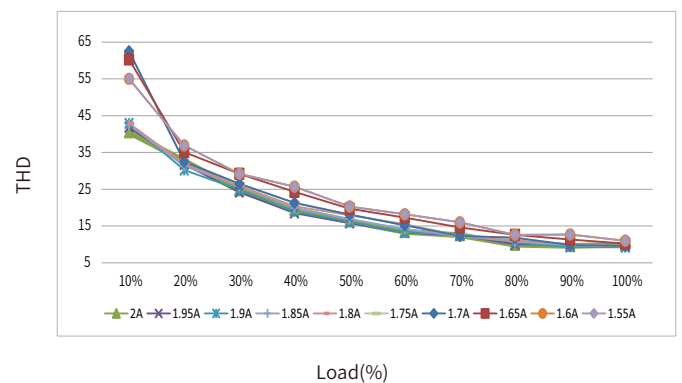
Operating window



Efficiency vs load

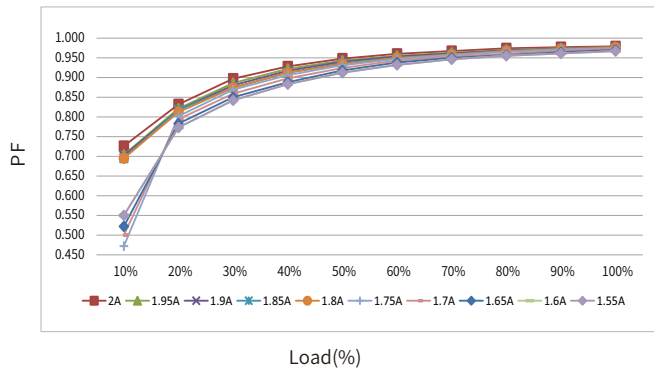


THD vs. Load



BK-DWL060-1500AD(Continue)

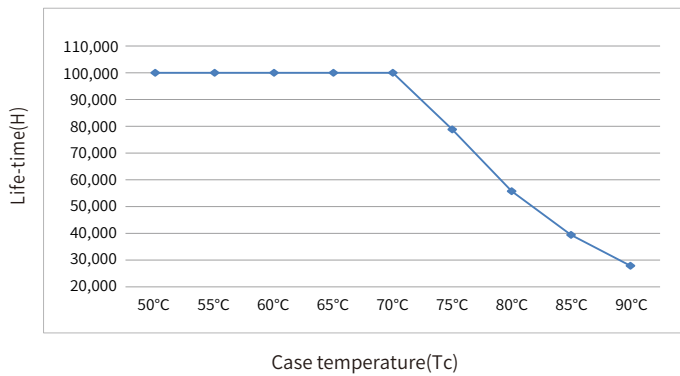
Power factor vs. Load



Expected life-time

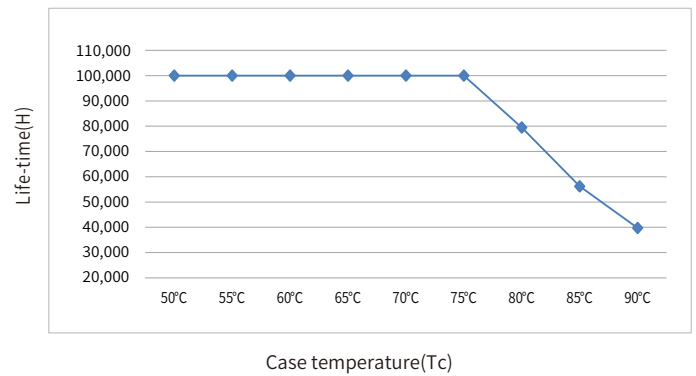
BK-DWL042-1050AD

Life-time vs. case temperature



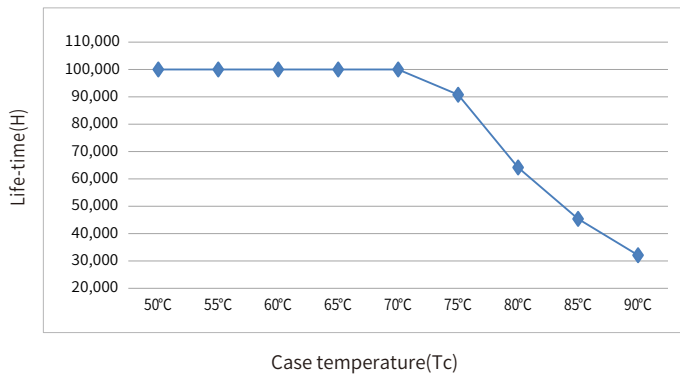
BK-DWL060-1500AD

Life-time vs. case temperature



BK-DWL060-2000AD

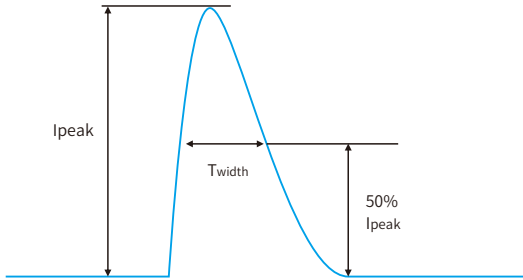
Life-time vs. case temperature



-The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
 - The relation of tc to ta temperature depends also on the luminaire design.

Surge

Model	Ipeak	Twidth	Condition	Relative number of MCB														
				B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
BK-DWL042-1050AD	8.25A	206us	AC 230V, Full load, Cold start, Ta ≤ 30°C, MCB is not installed side by side	33pcs	43pcs	52pcs	65pcs	82pcs	33pcs	43pcs	52pcs	65pcs	82pcs	33pcs	43pcs	52pcs	65pcs	82pcs
BK-DWL060-1500AD	11.4A	190us		22pcs	29pcs	36pcs	45pcs	56pcs	22pcs	29pcs	36pcs	45pcs	56pcs	22pcs	29pcs	36pcs	45pcs	56pcs
BK-DWL060-2000AD	11.1A	188us		23pcs	30pcs	36pcs	45pcs	57pcs	23pcs	30pcs	36pcs	45pcs	57pcs	23pcs	30pcs	36pcs	45pcs	57pcs



Remarks

- The number of drives mounted under different MCBs in the table is the maximum value. Please do not exceed this number during installation.
- Calculation uses typical values from ABB series S200 as a reference.
- Different brands and models of miniature circuit breakers, the number of drives mounted will be slightly different.
- If the ambient temperature of the MCB installation exceeds 30°C or multiple MCBs are installed side by side, the number of drives mounted will be reduced and the calculation needs to be recalculated.
- Electrician's usually consider Type B for household lighting and Type C for commercial lighting application.

Functions

Output short-circuit behaviour

- In case of a short-circuit at the LED output ,the LED output is switched off.
- After restart of the LED driver ,the output will be activated again.
- The restart can either be done via mains reset or via interface (DALI, PUSH-DIM).

Output no-load operation

- The LED driver will not be damaged in no-load operation.
- The output will be deactivated and is therefore free of voltage.
- If a LED load is connected the device has to be restarted before the output will be activated again.
- The restart can either be done via mains reset or via interface (DALI, PUSH-DIM).

Output overload protection

- If the output voltage range is exceeded the LED driver turns off the LED output.
- After restart of the LED driver the output will be activated again.
- The restart can either be done via mains reset or via interface (DALI, PUSH-DIM).

Output hot plug-in

- Plug the LED into the output of the powered driver. For protection LED, the LED will not on, The device has to be restarted.
- This can be done via mains reset or via interface (DALI).

Tunable white functionality

- This driver have 2 output channels used to control the intensity and temperature of white colour as well known as "Tunable White" .
- These drivers respond to DALI type 8 (DT8) commands, which in practice means that they only have 1 common address for both output channels .
- The tunable white level of intensity and colour temperature can be set either with a DALI command or by PUSH switch control.
- The driver will operate correctly once tunable white LED module parameters are programmed to the driver. Use the DALI tools for the parameter setting.
- The higher the brightness, the wider the color temperature range can be obtained.

DIP-switch & output current

Label

BK-DWL042-1050AD

Pin	Irated	Voltage	1	2	3	4
29.0W	600mA	42VDC		ON	ON	ON
31.0W	650mA	42VDC	ON	--	ON	ON
33.5W	700mA	42VDC	--	--	ON	ON
36.0W	750mA	42VDC	--	ON	--	ON
38.0W	800mA	42VDC	--	--	--	ON
40.5W	850mA	42VDC	ON	ON	ON	ON
43.0W	900mA	42VDC	--	--	ON	--
45.0W	950mA	42VDC	--	ON	--	--
47.5W	1000mA	42VDC	ON	--	--	--
47.5W	1050mA ★	40VDC	--	--	--	--

BK-DWL060-1500AD

Pin	Irated	Voltage	1	2	3	4
50.0W	1050mA	42VDC	--	ON	ON	ON
52.0W	1100mA	42VDC	ON	--	ON	ON
54.5W	1150mA	42VDC	--	--	ON	ON
57.0W	1200mA	42VDC	--	ON	--	ON
59.5W	1250mA	42VDC	--	--	--	ON
61.5W	1300mA	42VDC	ON	ON	ON	--
64.0W	1350mA	42VDC	--	--	ON	--
66.5W	1400mA	42VDC	--	ON	--	--
69.0W	1450mA	42VDC	ON	--	--	--
70.5W	1500mA ★	42VDC	--	--	--	--

BK-DWL060-2000AD

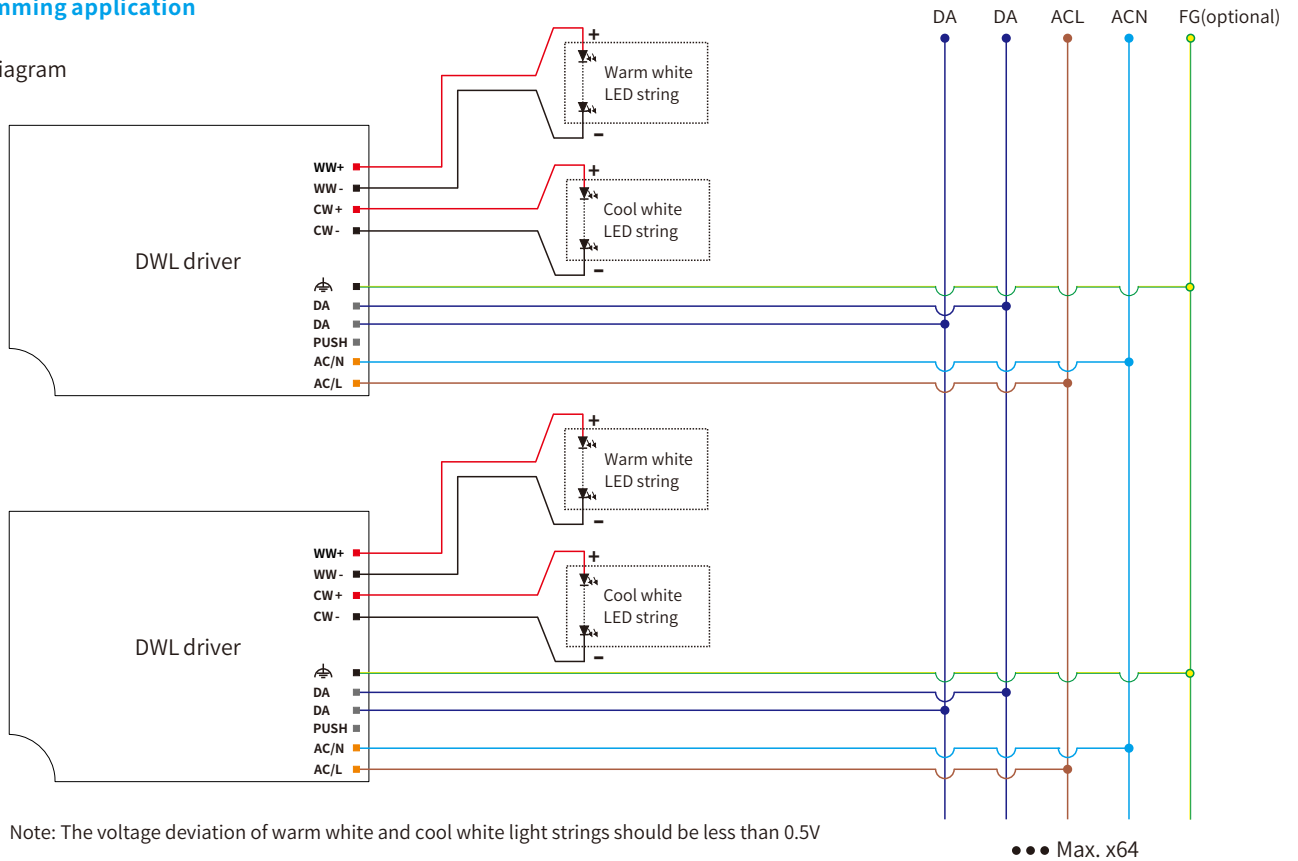
Pin	Irated	Voltage	1	2	3	4
73.0W	1550mA	42VDC		ON	ON	ON
72.0W	1600mA	40VDC	ON	--	ON	ON
74.5W	1650mA	40VDC	--	--	ON	ON
73.0W	1700mA	38VDC	--	ON	--	ON
71.0W	1750mA	36VDC	--	--	--	ON
71.0W	1800mA	35VDC	ON	ON	ON	--
71.0W	1850mA	34VDC	--	--	ON	--
71.0W	1900mA	33VDC	--	ON	--	--
71.0W	1950mA	32VDC	ON	--	--	--
70.5W	2000mA ★	31VDC	--	--	--	--

Remarks:

- ★ It means that this item is the factory default current.
- It means that this channel is OFF.

DALI dimming application

Wiring diagram



Activating DALI control mode

- After installation according to the wiring diagram of DALI control application, the driver will automatically switch to the DALI control mode after receiving any DALI command.

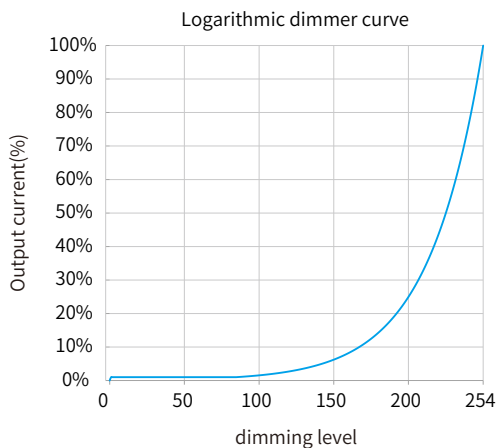
Remarks:

- Standard DALI control line voltage range: 9.5V to 22.5V, type 16V.
- The two DALI control lines polarity-reversible.
- Max. 64 DALI drivers per DALI control line.
- The maximum distance length of the DALI control line is 300m at 2×1.5mm².
- DALI bus can be wired together with any mains voltage cables, but separate wiring is recommended.

Wiring distance vs cable size

Cable size	Distance
2×0.50mm ²	max.100m
2×0.75mm ²	max.150m
2×1.00mm ²	max.200m
≥2×1.50mm ²	max.300m

Dimming curve

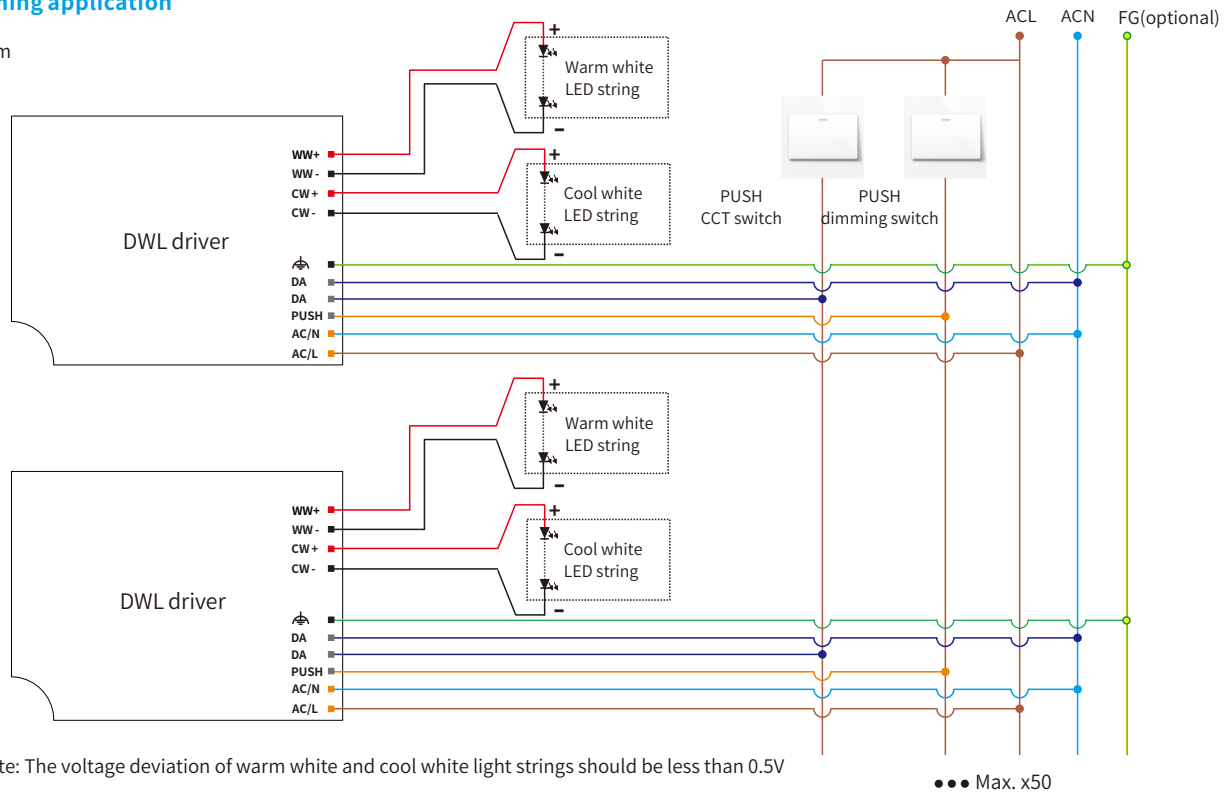


Remarks:

The dimming curve can be selected by DALI configuration. The default is logarithmic dimming curve.

PUSH dimming application

Wiring diagram



Activating PUSH control mode

- After installation according to the wiring diagram of PUSH-DIM control application, short press the PUSH dimming switch(PUSH-DIM port) 5 times within 3 seconds, the driver will automatically switch to PUSH control mode.

PUSH dimming switch operating instructions

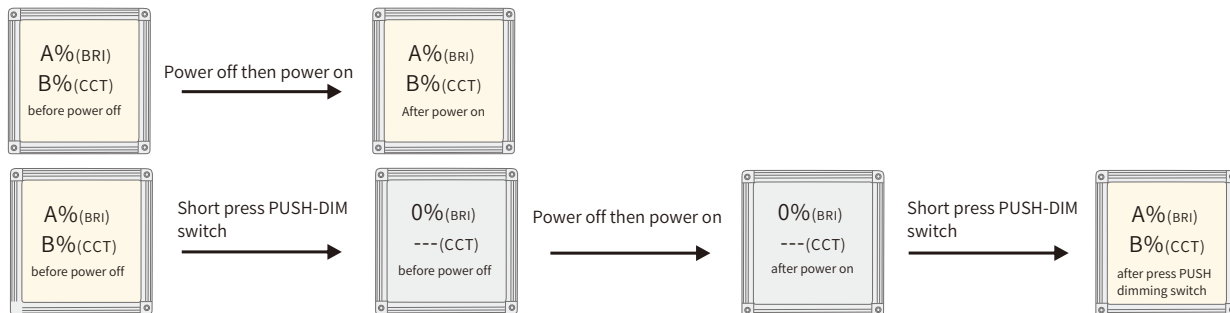
- Turn on or turn off: short press PUSH dimming switch for 0.2-1s.
- Stepless dimming : long press PUSH dimming switch for 1-6s, Press again to switch dimming directions.

PUSH CCT switch operating instructions

- Switch CCT level: short press PUSH CCT switch for 0.2-1s, 9 levels of preset CCT can be switched.
- Stepless CCT adjustment: long press CCT PUSH switch for 1-6s, Press again to switch CCT adjustment directions.

Power on status:

- After power on, the light state will be the same as the last dimming level and the last CCT level.
- If the light is on before the power is turned off, after turning the power back on, the brightness will be the same as the last time, and the color temperature will be the same as the last time.
- If the light is off before the power is turned off, the light will be turned off after the power is turned back on. You need to press the PUSH-DIM dimming switch for a short time to turn on the light. The brightness after lighting will be the same as the last time, and the color temperature will be the same as the last time.



Multiple lights synchronize control operation

method 1:

- Step 1: long press the PUSH-DIM switch, confirm each light is on.
- Step 2: short press the PUSH-DIM switch, confirm each light is off.
- Step 3: long press the PUSH-DIM switch, confirm each light is from darkest to brightest and all the lights are synchronous.

method 2:

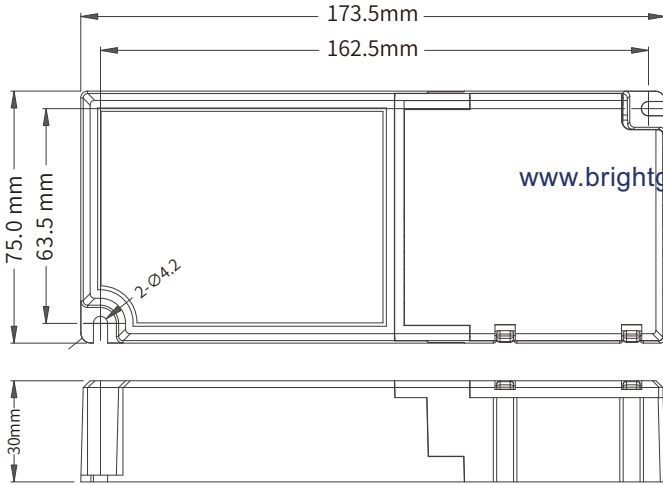
- Long press the PUSH-DIM dimming switch for more than 15s, all drivers will output 100% brightness and the color temperature is natural white (middle of color temperature range).

Installation

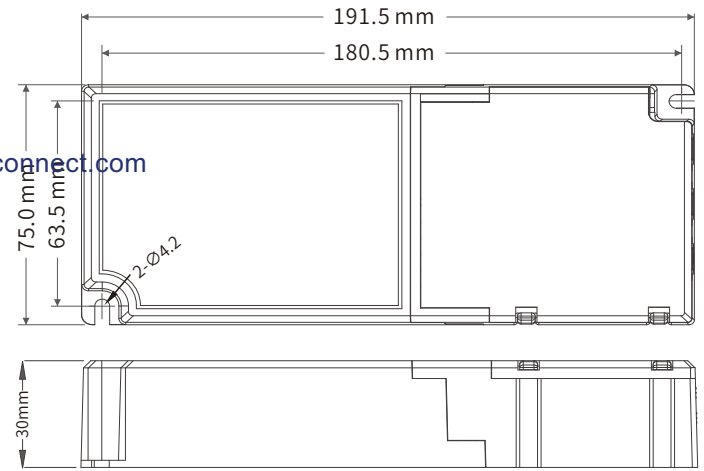
Mechanical dimensions

Unit:mm

DWL042



DWL060

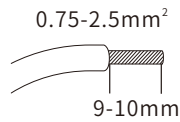


www.brightgreenconnect.com

INPUT

Pin Numbering	function	colour
1	FG	black
2	DA	gray
3	DA	gray
4	PUSH	gray
5	ACN	Orange
6	ACL	Orange

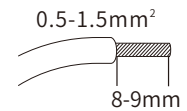
Input wire



OUTPUT

Pin Numbering	function	colour
1	WW+	red
2	WW-	black
3	CW+	red
4	CW-	black

Output wire



Installation note

Hot plug-in

- Hot plug-in is not supported due to residual output voltage of > 0 V.
- If a LED load is connected the device has to be restarted.
- This can be done via mains reset or via interface (DALI).

Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behaviour.
- Mains leads should be kept apart from LED Driver and other leads (ideally 5 – 10 cm distance)
- Max. length of output wires is 2 m.
- Incorrect wiring can damage LED modules.

Mounting screw specifications and torque

- Max. torque at the clamping screw: 0.5 Nm / M4

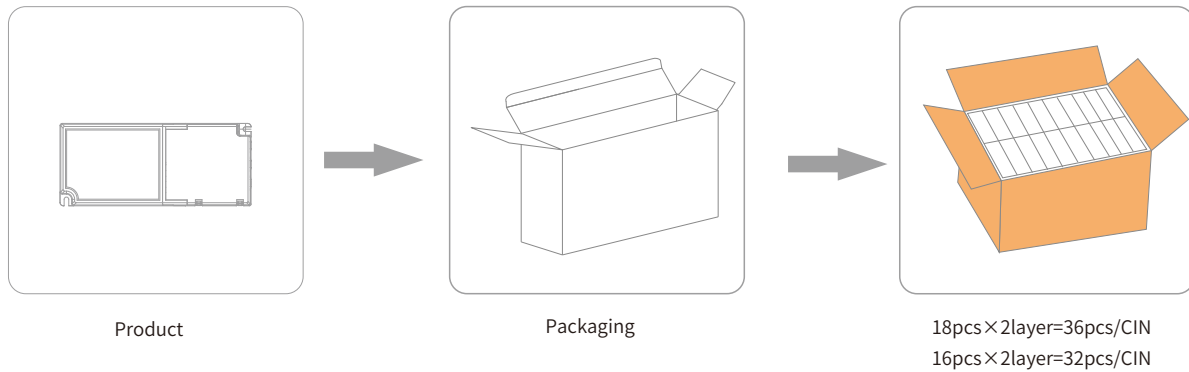
LED module

- The voltage deviation of warm white and cool white light strings should be less than 0.5V

Replace LED module

1. Mains off
2. Remove LED module
3. Wait for 5 seconds
4. Connect LED module again

Packaging



Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
DWL042	L173*W75*H30mm	225g	L185*W38*H80mm	L390*W365*H180mm	36pcs	8.10kg	10.0kg
DWL060	L191.5*W75*H30mm	255g	L225*W38*H82mm	L465*W325*H185mm	32pcs	8.20kg	10.2kg

Additional information

1. This product can only be used outside the light body, Can not be used inside of the light, and it must be used within the specified working environment.
2. The life and MTBF of the product are for reference only, and do not represent a warranty statement. If the drive has been turned on, there is no warranty.
3. For more information, please send an email to info@powerboke.com.

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