

Features

- Output flick-free, meets the new requirements of ErP certification
- IP65 design for indoor installation.
- High PF, high efficiency, low THD
- Withstand 380VAC high voltage short-time shock
- Startup time <0.5s
- Aluminum metal housing design
- SELV and Class I design, suitable for use inside of the light
- Compliance with CE,ENEC,UKCA,RCM,CCC certifications.
- Nominal life-time up to 100,000 h
- 5-year guarantee

Functions

- 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)

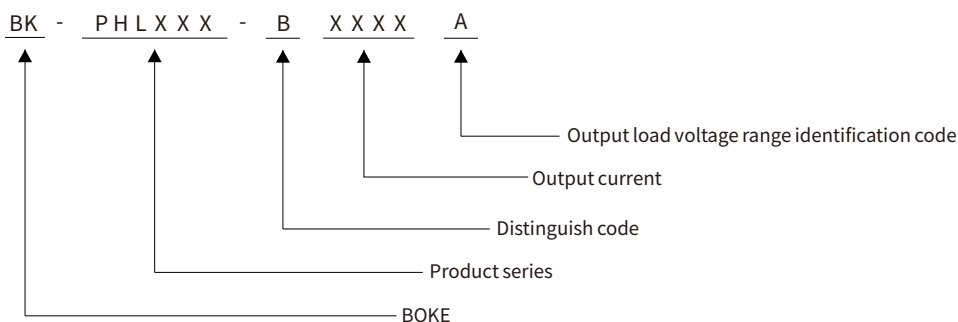
Suitable for lights

- Suitable for lights with indoor or humid environment, such as projection lamps, industrial and mining lamps, floodlights, courtyard lamps, etc
- Suitable for rail transit line lights and other lighting fixtures

Typical applications

- LED Industrial lighting
- LED rail-transit lighting
- LED Subway station lighting

Model coding rules of PHL series



Model list

Model	Input voltage	Output power	Output voltage	Output current	Dimension	Certifications
BK-PHL022-BxxxxA	200-240VAC/DC	22.8W MAX.	28-38/40/42VDC	0.25-0.6A	L107*W43.5*H34mm	CE,ENEC,UKCA,RCM,CCC
BK-PHL040-BxxxxA	200-240VAC/DC	42W MAX.	28-38/40/42VDC	0.55-1.1A	L122*W43.5*H34mm	CE,ENEC,UKCA,RCM,CCC
BK-PHL060-BxxxxA	200-240VAC/DC	62.7W MAX.	28-38/40/42VDC	1.05-1.65A	L133*W56*H34mm	CE,ENEC,UKCA,RCM,CCC

Technical data

Product model	BK-PHL022-B0500A	BK-PHL022-B0550A	BK-PHL022-B0600A	
Output parameters				
Regulation method	Constant Current	Constant Current	Constant Current	
Rated output current range	0.25-0.5A	0.55A	0.6A	
Rated output voltage range	28-42VDC	28-40VDC	28-38VDC	
Rated output power	21W Max	22W Max	22.8W Max	
Output current adjustment	Fixed output	Fixed output	Fixed output	
Output current ripple LF	±2%	±2%	±2%	
Output current accuracy	±5%	±5%	±5%	
Linear regulation	±5%	±5%	±5%	
Load regulation	±5%	±5%	±5%	
No load output voltage	50VDC			
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.163%,Flicker index(IEEE 1789)=0.000,Pst LM = 0.000, SVM = 0.002, (The above parameters are obtained from testing the panel lights)			
Input parameters				
Rated input voltage range	200-240VAC 200-240VDC			
Input voltage range	180-264VAC 200-264VDC			
Input votage shock	<380 V AC			
Input current	<0.13A (Rated input voltage)			
Input frequency	0/50/60Hz			
Input PF/Input DF	PF:0.98,DF: 0.98,see the electrical values below for details			
Input THD	6.5%,see the electrical values below for details			
Efficiency(Max)	87.5%,see the electrical values below for details			
In-rush current	9.2A peak ,280us duration(50 % Ipeak), see the description below for details			
Start/Switchover/Turn off	<0.5s(AC start),<0.5s(DC start),<0.3s(AC/DC switchover),<0.5s(Turn off)			
Switching cycles	> 50,000 switching cycles			
Power consumption	Full load(Pin):26.1W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A			
Safety				
Withstand voltage	I/P-O/P:3750VAC,I/P-FG:1750VAC,O/P-FG:500VAC			
Mains surge capability	L-N:2KV,L-FG/N-FG:4KV(Performance criterion:B),L-N:4KV,L-FG/N-FG:6KV(optional)			
Leakage current	0.6mA (230V AC & Full load)			
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH			
Control interface				
DALI dimming port	N/A			
pushDIM dimming port	N/A			
1-10V 3in1 dimming port	N/A			
Auxiliary power supply	N/A			
Dimming range	N/A			
Dimming drive mode	N/A			
Emergency support				
Central emergency system	Supported(dimming normal in DC input)			
Self-contained emergency	Supported			
Environment & Life time				
Operating temperature	Ta=-30-60°C			
Case temperature	Tc=90°C			
Operating humidity	5-85% RH, not condensed			
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed			
IP grade	IP65/IP67(Optional)			
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, Normal operation)			
Environmental protection	RoHS			
Certifications and standards				
Certification	CE,ENEC,UKCA,RCM,CCC,EL			
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	N/A			
EL	Compatible IEC 61347-2- 13 Annex J , compatible with EN 60598-2-22 and EN 50172			
RF	N/A			

Remarks

1.By default, all parameter are measured at 230VAC input, full load and 25°C of ambient temperature.

Technical data

Product model	BK-PHL040-B1000A	BK-PHL040-B1050A	BK-PHL040-B1100A	
Output parameters				
Regulation method	Constant Current	Constant Current	Constant Current	
Rated output current range	0.55-1A	1.05A	1.1A	
Rated output voltage range	28-42VDC	28-40VDC	28-38VDC	
Rated output power	42W Max	42W Max	41.8W Max	
Output current adjustment	Fixed output	Fixed output	Fixed output	
Output current ripple LF	±2%	±2%	±2%	
Output current accuracy	±5%	±5%	±5%	
Linear regulation	±5%	±5%	±5%	
Load regulation	±5%	±5%	±5%	
No load output voltage	50VDC			
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.248%,Flicker index(IEEE 1789)=0.000,Pst LM = 0.000, SVM = 0.005, (The above parameters are obtained from testing the panel lights)			
Input parameters				
Rated input voltage range	200-240VAC 200-240VDC			
Input voltage range	180-264VAC 200-264VDC			
Input votage shock	<380 V AC			
Input current	<0.25A (Rated input voltage)			
Input frequency	0/50/60Hz			
Input PF/Input DF	PF:0.99,DF: 0.99,see the electrical values below for details			
Input THD	5%,see the electrical values below for details			
Efficiency(Max)	90%,see the electrical values below for details			
In-rush current	15.5A peak ,262us duration(50 % Ipeak), see the description below for details			
Start/Switchover/Turn off	<0.5s(AC start),<0.5s(DC start),<0.3s(AC/DC switchover),<0.5s(Turn off)			
Switching cycles	> 50,000 switching cycles			
Power consumption	Full load(Pin):47W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A			
Safety				
Withstand voltage	I/P-O/P:3750VAC,I/P-FG:1750VAC,O/P-FG:500VAC			
Mains surge capability	L-N:2KV,L-FG/N-FG:4KV(Performance criterion:B),L-N:4KV,L-FG/N-FG:6KV(optional)			
Leakage current	0.6mA (230V AC & Full load)			
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH			
Control interface				
DALI dimming port	N/A			
pushDIM dimming port	N/A			
1-10V 3in1 dimming port	N/A			
Auxiliary power supply	N/A			
Dimming range	N/A			
Dimming drive mode	N/A			
Emergency support				
Central emergency system	Supported(dimming normal in DC input)			
Self-contained emergency	Supported			
Environment & Life time				
Operating temperature	Ta=-30-60°C			
Case temperature	Tc=90°C			
Operating humidity	5-85% RH, not condensed			
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed			
IP grade	IP65/IP67(Optional)			
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, Normal operation)			
Environmental protection	RoHS			
Certifications and standards				
Certification	CE,ENEC,UKCA,RCM,CCC,EL			
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	N/A			
EL	Compatible IEC 61347-2- 13 Annex J , compatible with EN 60598-2-22 and EN 50172			
RF	N/A			

Remarks

1.By default, all parameter are measured at 230VAC input, full load and 25°C of ambient temperature.

Technical data

Product model	BK-PHL060-B1500A	BK-PHL060-B1550A	BK-PHL060-B1650A	
Output parameters				
Regulation method	Constant Current	Constant Current	Constant Current	
Rated output current range	1.05-1.5A	1.55A	1.6-1.65A	
Rated output voltage range	28-42VDC	28-40VDC	28-38VDC	
Rated output power	63W Max	62W Max	62.7W Max	
Output current adjustment	Fixed output	Fixed output	Fixed output	
Output current ripple LF	±2%	±2%	±2%	
Output current accuracy	±5%	±5%	±5%	
Linear regulation	±5%	±5%	±5%	
Load regulation	±5%	±5%	±5%	
No load output voltage	50VDC			
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.299%,Flicker index(IEEE 1789)=0.000,Pst LM = 0.000, SVM = 0.006, (The above parameters are obtained from testing the panel lights)			
Input parameters				
Rated input voltage range	200-240VAC 200-240VDC			
Input voltage range	180-264VAC 200-264VDC			
Input votage shock	<380 V AC			
Input current	<0.355A (Rated input voltage)			
Input frequency	0/50/60Hz			
Input PF/Input DF	PF:0.97,DF: 0.98,see the electrical values below for details			
Input THD	7.5%,see the electrical values below for details			
Efficiency(Max)	90%,see the electrical values below for details			
In-rush current	25.5A peak ,320us duration(50 % Ipeak), see the description below for details			
Start/Switchover/Turn off	<0.5s(AC start),<0.5s(DC start),<0.3s(AC/DC switchover),<0.5s(Turn off)			
Switching cycles	> 50,000 switching cycles			
Power consumption	Full load(Pin):69.6W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A			
Safety				
Withstand voltage	I/P-O/P:3750VAC,I/P-FG:1750VAC,O/P-FG:500VAC			
Mains surge capability	L-N:2KV,L-FG/N-FG:4KV(Performance criterion:B),L-N:4KV,L-FG/N-FG:6KV(optional)			
Leakage current	0.6mA (230V AC & Full load)			
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70% RH			
Control interface				
DALI dimming port	N/A			
pushDIM dimming port	N/A			
1-10V 3in1 dimming port	N/A			
Auxiliary power supply	N/A			
Dimming range	N/A			
Dimming drive mode	N/A			
Emergency support				
Central emergency system	Supported(dimming normal in DC input)			
Self-contained emergency	Supported			
Environment & Life time				
Operating temperature	Ta=-30-60°C			
Case temperature	Tc=90°C			
Operating humidity	5-85% RH, not condensed			
Storage temp./humidity	-40-80°C, 5-85% RH, not condensed			
IP grade	IP65/IP67(Optional)			
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, Normal operation)			
Environmental protection	RoHS			
Certifications and standards				
Certification	CE,ENEC,UKCA,RCM,CCC,EL			
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	N/A			
EL	Compatible IEC 61347-2- 13 Annex J , compatible with EN 60598-2-22 and EN 50172			
RF	N/A			

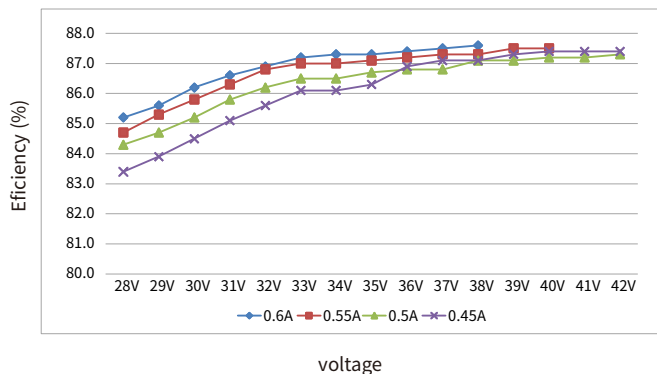
Remarks

1.By default, all parameter are measured at 230VAC input, full load and 25°C of ambient temperature.

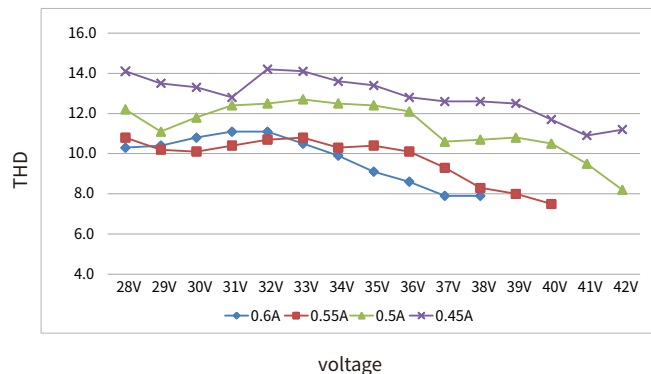
Electrical values

BK-PHL022-B

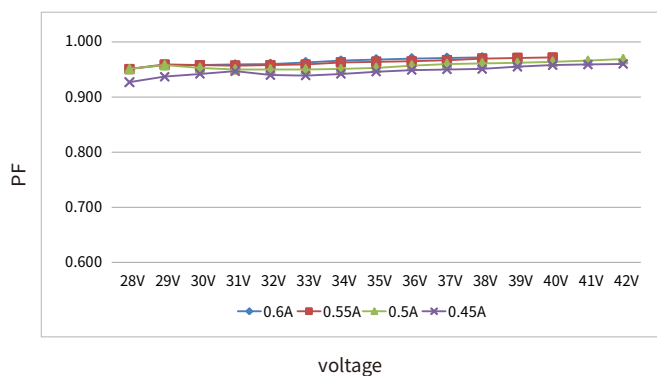
Efficiency vs voltage



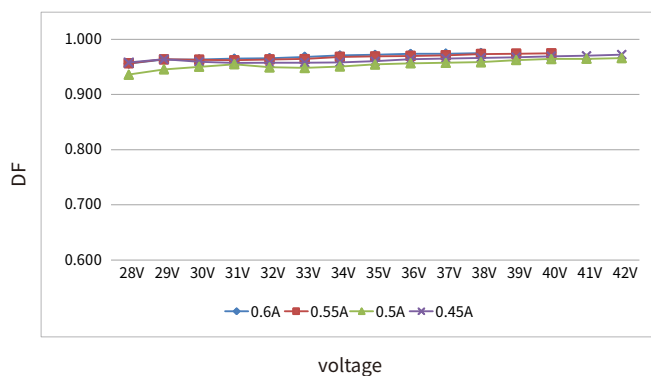
THD vs. voltage



Power factor vs. voltage

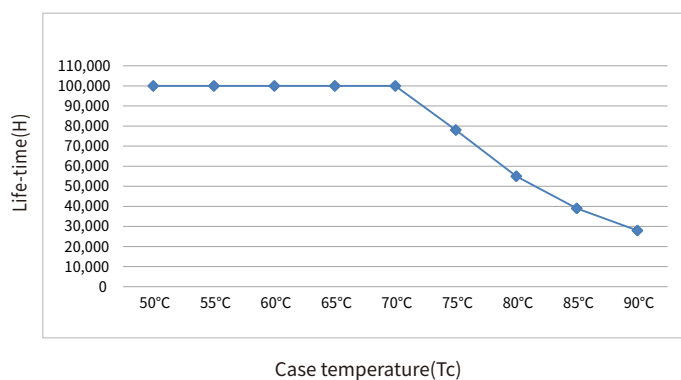


Displacement factor vs. voltage



Expected life-time

Life-time vs. case temperature

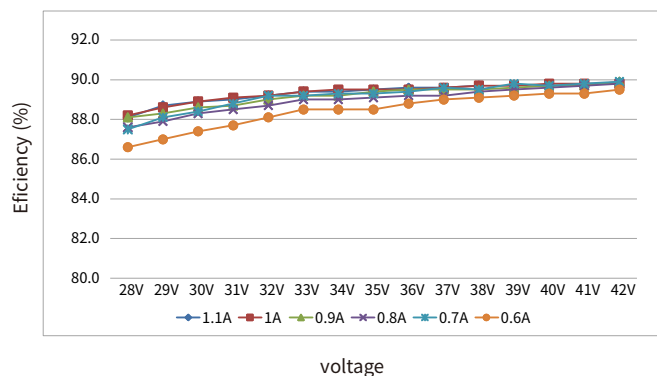


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of t_c to t_a temperature depends also on the luminaire design.

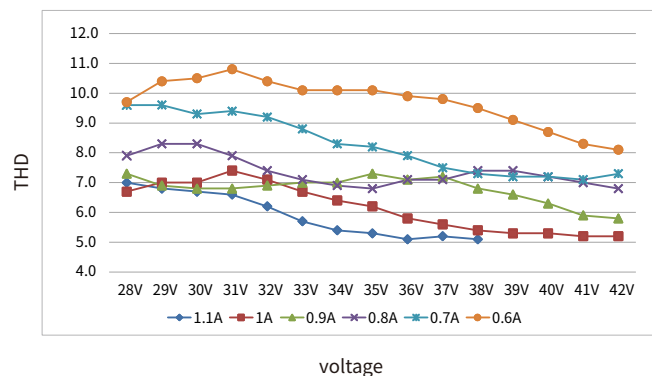
Electrical values

BK-PHL040-B

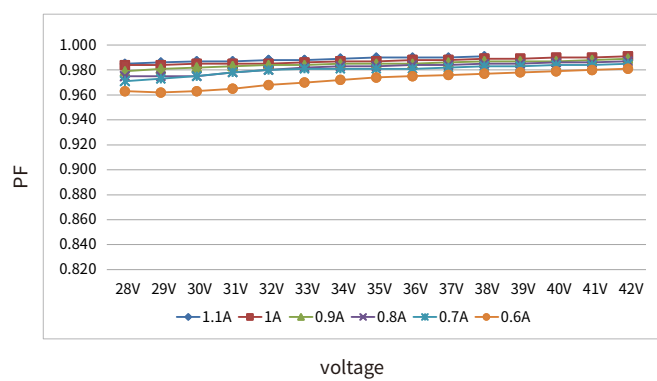
Efficiency vs. voltage



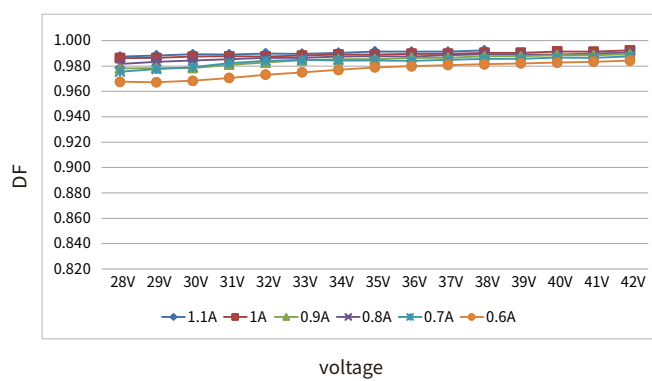
THD vs. voltage



Power factor vs. voltage

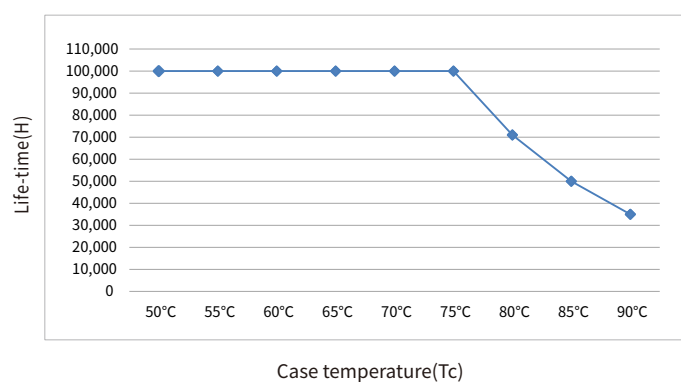


Displacement factor vs. voltage



Expected life-time

Life-time vs. case temperature

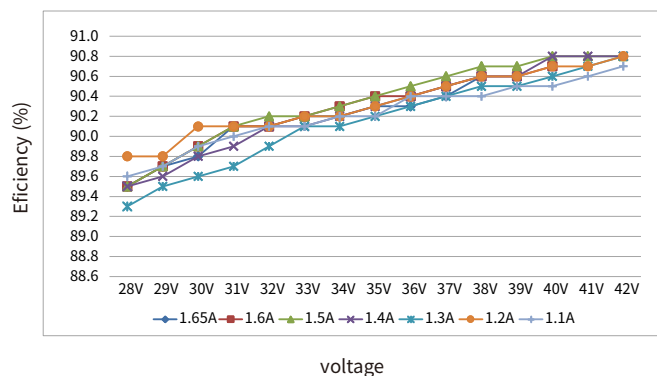


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of t_c to t_a temperature depends also on the luminaire design.

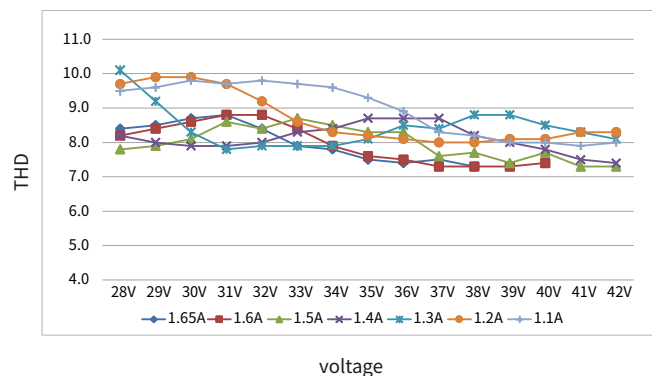
Electrical values

BK-PHL060-B

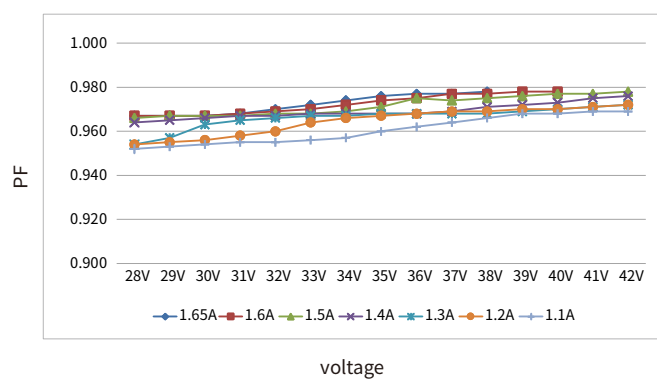
Efficiency vs. voltage



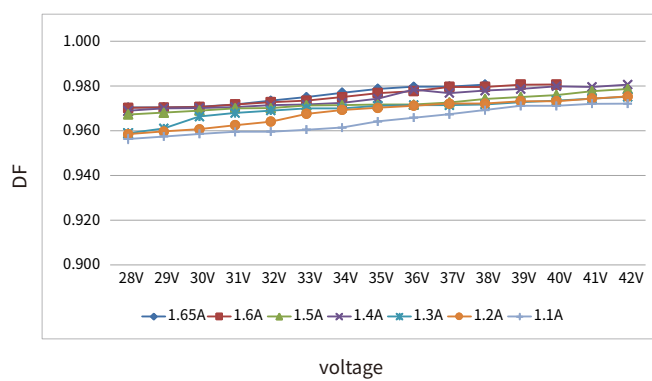
THD vs. voltage



Power factor vs. voltage

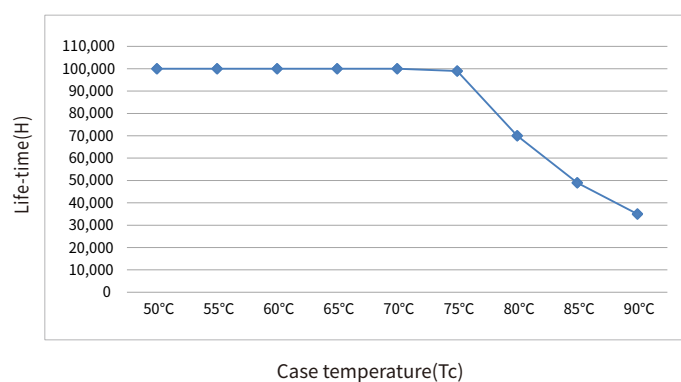


Displacement factor vs. voltage



Expected life-time

Life-time vs. case temperature



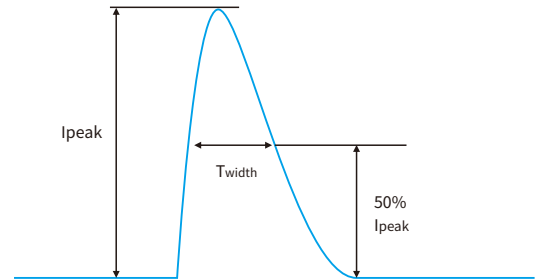
- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of t_c to t_a temperature depends also on the luminaire design.

Surge

Model	Ipeak	Twidth	Condition	Relative number of MCB/pcs														
				B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
BK-PHL022-B	9.2A	280us	AC 230V,Full load, Cold start,Ta≤30°C, MCB is not installed side by side	26	34	41	52	65	43	56	69	86	108	65	85	105	131	164
BK-PHL040-B	15.5A	262us		17	22	27	33	42	28	36	45	56	70	38	49	61	76	95
BK-PHL060-B	25.5A	320us		8	10	13	16	20	13	17	21	27	33	26	33	41	51	64

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

- Output short-circuit will not damage the driver.
- After removing the short circuit fault, the driver will automatically resume output.

Output no-load operation

- Output no-load will not damage the driver.
- Please turn off the driver first if you need to connect the LED load.

Insulation between circuits

Isolation	Input	Output	Case
Input	-	Double	Basic
Output	Double	-	Basic
Case	Basic	Basic	-

Label

BK-PHL022-B0600A

INPUT		BOKE Constant Current LED Driver		OUTPUT	
MODEL: BK-PHL022-B0600A					
☐ ACL (Brown)	INPUT: 200-240V~50/60Hz 0.13A Max.	 IP65 	 FLICKER FREE 	☐ LED- (Black)	☐
☐ ACN (Blue)	λ : 0.85C-0.95			☐ LED+ (Red)	☐
☐  (Green/Yellow)	OUTPUT: 28-38V= 600mA 22.8W Max. 50VDC Max. For LED Modules use only MADE IN CHINA www.bokedriver.com				
				S/N: _____	

BK-PHL040-B1100A

INPUT		BOKE Constant Current LED Driver		OUTPUT	
MODEL: BK-PHL040-B1100A					
☐ ACL (Brown)	INPUT: 200-240V~50/60Hz 0.25A Max.	 IP65 	 FLICKER FREE 	☐ LED- (Black)	☐
☐ ACN (Blue)	λ : 0.85C-0.95			☐ LED+ (Red)	☐
☐  (Green/Yellow)	OUTPUT: 28-38V= 1100mA 41.8W Max. 50VDC Max. For LED Modules use only MADE IN CHINA www.bokedriver.com				
				S/N: _____	

BK-PHL060-B1650A

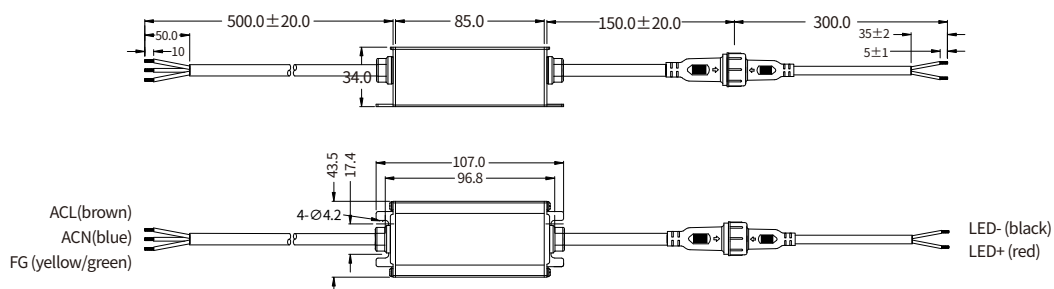
INPUT		BOKE Constant Current LED Driver		OUTPUT	
MODEL: BK-PHL060-B1650A					
☐ ACL (Brown)	INPUT: 200-240V~50/60Hz 0.355A Max.	 IP65 	 FLICKER FREE 	☐ LED- (Black)	☐
☐ ACN (Blue)	λ : 0.9C-0.95			☐ LED+ (Red)	☐
☐  (Green/Yellow)	OUTPUT: 28-38V= 1650mA 62.7W Max. 50VDC Max. For LED Modules use only MADE IN CHINA www.bokedriver.com				
				S/N: _____	

Installation

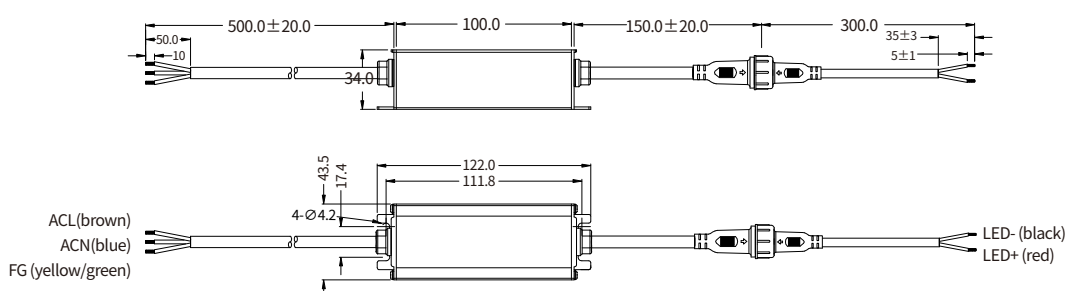
Mechanical dimensions

Unit:mm

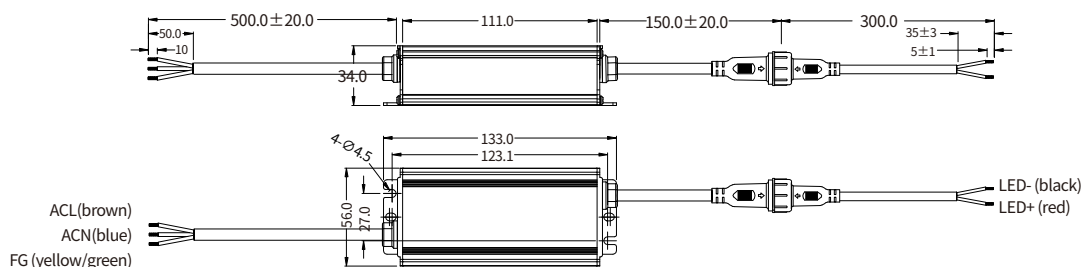
BK-PHL022-B



BK-PHL040-B



BK-PHL060-B



INPUT

Function	Colour	Wire specification
ACL,ACN,FG	brown,blue,yellow/green	1.0mm ² *3;H05RN-F;500V;Rubber wire;The outer skin is black, and the inner package is brown, blue, yellow / green three core wire.

OUTPUT

Function	Colour	Wire specification
LED-,LED+	black,red	0.75mm ² *2;H05RN-F;500V;Rubber wire;The outer skin is black, and the inner package is red and black two core wire.

Installation note

Hot plug-in

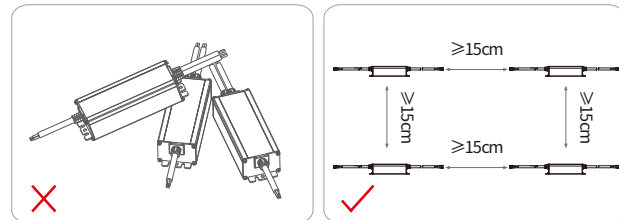
- Hot plug-in is not supported due to residual output voltage of $> 0\text{ V}$.

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.

Installation requirements

- The driver should be installed in a dry, acid-free, oil-free, fat-free environment.
- The installation ambient temperature of the drive shall not exceed the value of T_a at any time.
- The temperature of the mounting surface of the driver should be lower than 40°C
- The driver should keep a certain distance from the heating stuff (such as the lamp radiator).



Please do not stack the products. The distance between two products should be $\geq 15\text{cm}$ so as not to affect heat dissipation and the lifespan of the products.

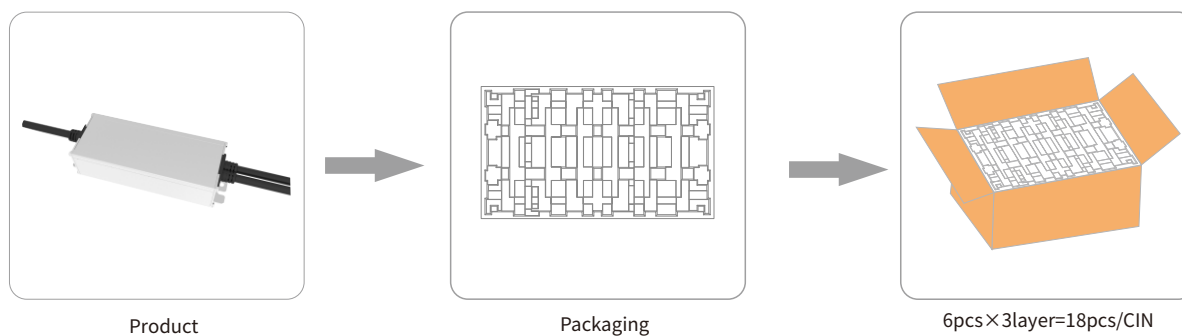
Mounting screw specifications and torque

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

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
PHL022-B	L107*W43.5*H34mm	316g	L520*W295*H62mm	L530*W310*H230mm	18pcs	5.69kg	7.32kg
PHL040-B	L122*W43.5*H34mm	370g	L520*W295*H62mm	L530*W310*H230mm	18pcs	6.66kg	8.32kg
PHL060-B	L133*W56*H34mm	446g	L520*W295*H62mm	L530*W310*H230mm	18pcs	8.03kg	9.62kg

Additional information

1. The life and MTBF of the product are for reference only, and do not represent a warranty statement.
2. For more information, please send an email to info@bokedriver.com.