

Constant current independent driver
WQL(S) Series suffix WCN(Casambi Wireless+EL+CLO+NFC programmable)



Features

- Integrated Casambi wireless module for the Casambi wireless ecosystem
- Support Casambi Wireless Long Range(LR) mode network
- Support advanced functions such as EL,CLO
- The output current and more functions of the driver can be realized through the NFC interface
- Supports quick construction of Casambi networks with up to 250 devices
- Casambi wireless mesh networking, stable work
- Using HPC patented technology, at any dimming level, the brightness of the lights is the same
- Soft dimming and flicker-free at any brightness
- Support for over-the-air firmware updates with Casambi APP
- High PF, high efficiency, low THD
- Optional Junction box: support up to 2.5mm² cable and loop-through function
- Screw-free and pressing type strain relief, supports thicker cables and is easier to install
- Independent input and output strain relief, stronger wiring
- Intelligent LED hot-plug protection function
- SELV and Class II design, suitable for use outside or inside of the luminaires
- Compliance with CE,EL and other certifications
- 5.5-year guarantee

Functions

- Support central emergency application
- Support self-contained emergency application
- Casambi Wireless control system
- Emergency lighting(EL)
- Constant light output function(CLO)
- Programming via NFC(EasySet)
- Protective features (short-circuit,no-load,overload,over temperature, hot plug-in protection)

Suitable for lights

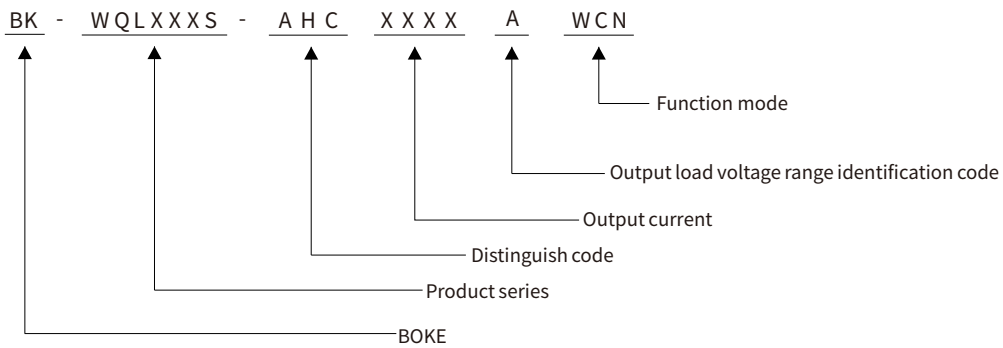
- Suitable for lights with independent drivers such as downlights, spotlights, panel lights, etc
- It is necessary to evaluate the chamber temperature of the light when it is used in the built-in

Typical applications

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



Model coding rules of WQL(S) series



Function list

Model	Suffix	DIP switch	EL (DC input)	Wireless dimming	Advanced functions			Device Configuration
				Casambi Wireless	AOC	EL (configurable)	CLO	NFC interfaces
BK-WQL042S-AHC	WCP	√	√	√				
	WCN		√	√	√	√	√	√

*The description in this specification is only applicable to the products with the suffix WCN and the model are WQL042S-AHC.

Series and model list

Model	Input voltage	Output power	Output voltage	Output current	Dimension
BK-WQL042S-AHC1050AWCP	200-240VAC/DC	42W MAX.	6-54VDC	0.3-1.05A	L97.5*W44*H23.4mm(Built-in) L137.5*W44*H23.4mm(Independent)
BK-WQL042S-AHC1050AWCN	200-240VAC/DC	42W MAX.	6-54VDC	0.1-1.05A	L97.5*W44*H23.4mm(Built-in) L137.5*W44*H23.4mm(Independent)

*The description in this specification is only applicable to the products with the suffix WCN and the model are WQL042S-AHC.

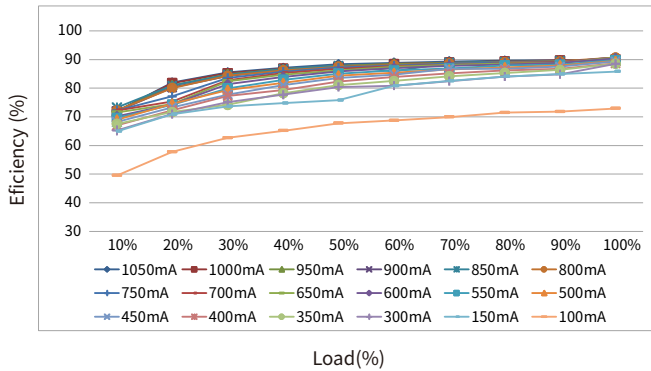
Technical data

Product model	BK-WQL042S-AHC1050AWCN
Output parameters	
Regulation method	Constant Current
Rated output current range	0.1-1.05A,see the operating window for details
Rated output voltage range	6-54VDC,see the operating window for details
Rated output power	42W Max,see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple(typ.)	±5%(@>250mA)(100Hz), ±10%(@≤250mA)(100Hz)
Output current accuracy	±5%(@>250mA), ±10%(@≤250mA)
Linear regulation	±5%
Load regulation	±5%
No load output voltage	59VDC
Flicker-free(typ.)	Flickering percent(IEEE 1789)=0.324%(100Hz), Flicker index(IEEE 1789)=0.001(100Hz), Pst LM = 0.072, SVM = 0.011, (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 180-264VDC
Input voltage shock	<380 V AC
Input current	<0.24A (Rated input voltage)
Input frequency	0/50/60Hz
Input PF/Input DF(typ.)	PF: 0.97,DF:0.98 , see the electrical values below for details
Input THD(typ.)	9% , see the electrical values below for details
Efficiency(typ.)	90.5% , see the electrical values below for details
In-rush current(typ.)	2.02A peak ,70us duration(50 % Ipeak), see the description below for details
Start/Switchover/Turn off(typ.)	0.7s(AC start),0.7s(DC start),0.3s(AC/DC switchover),0.5s(Turn off)
Switching cycles	> 100,000 switching cycles
Power consumption	Full load(Pin):46.4W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A
Safety	
Withstand voltage	I/P-O/P(LED):3750V AC
Mains surge capability	L-N:2KV(Performance criterion:B)(90°/270° , 5 times each with an interval of 60s)
Leakage current(typ.)	0.67mA
Isolation resistance	I/P-O/P:100MΩ/500Vdc/25°C/70%RH
Wireless features	
Control system	Casambi Ready
Bluetooth version	Bluetooth 5.3
Transmission power	+8 dBm Max.
Reception sensitivity	-96 dBm
Frequency range	2.402 – 2.480 GHz
Dimming output	
Dimming range	0.1%-100%(Minimum current:1mA)
Dimming drive mode	AM(amplitude modulation)
Emergency support	
Central emergency system	Supported
Self-contained emergency	Supported
Environment & Life time	
Operating temperature	Ta=-20-50/55/60°C,see the operating temperature for details
Case temperature	Tc=85°C
Operating humidity	5-85% RH, non-condensing
Storage temp./humidity	-40-80°C, 5-85% RH, non-condensing
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, Normal operation)
Environmental protection	RoHS
Certifications and standards	
Certification	CE, EL
Safety	EN 61347-1,EN 61347-2-13,EN 62493
EMC	EN IEC 55015,EN 61547,EN IEC 61000-3-2,EN 61000-3-3,ETSI EN 301 489-1,ETSI EN 301 489-17,ETSI EN 301 489-3
EL	Compatible IEC 61347-2-13 Annex J, compatible with EN 60598-2-22 and EN 50172
RF	EN 62479,EN 50663,ETSI EN 300 328,ETSI EN 300 330

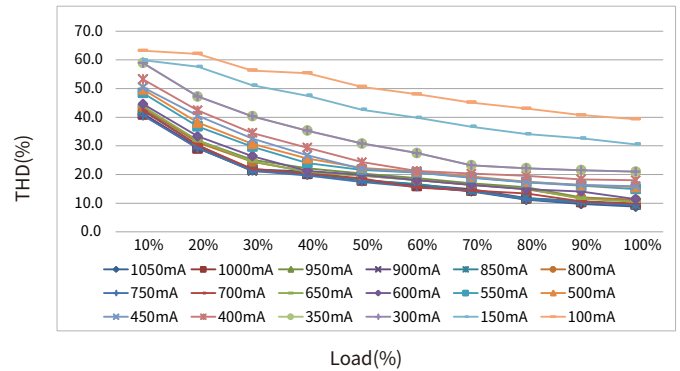
Electrical values

BK-WQL042S-AHC

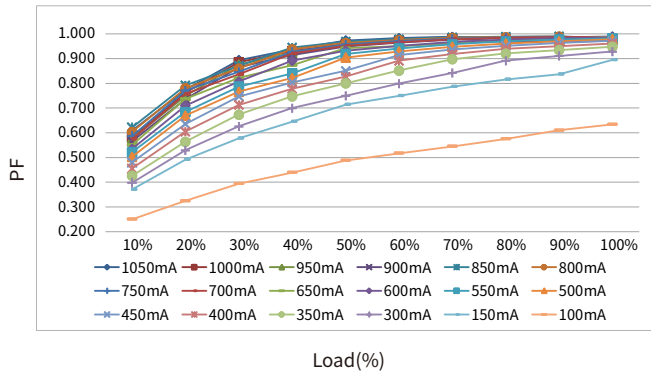
Efficiency vs load



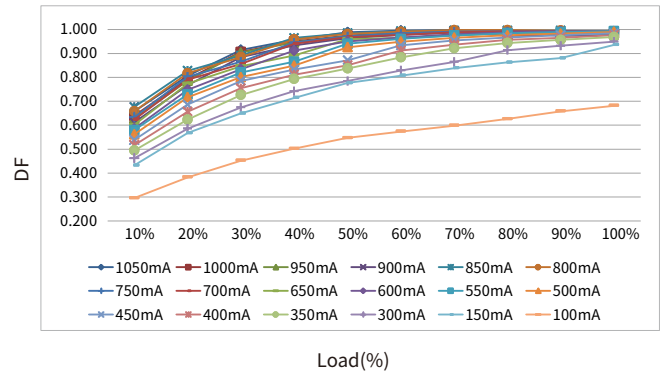
THD vs. Load



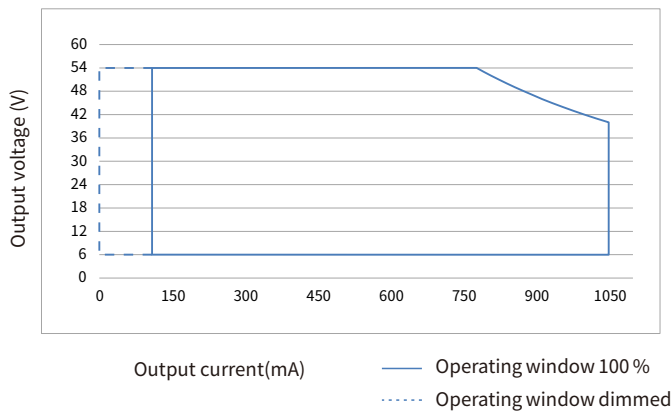
Power factor vs. Load



Displacement factor vs. Load



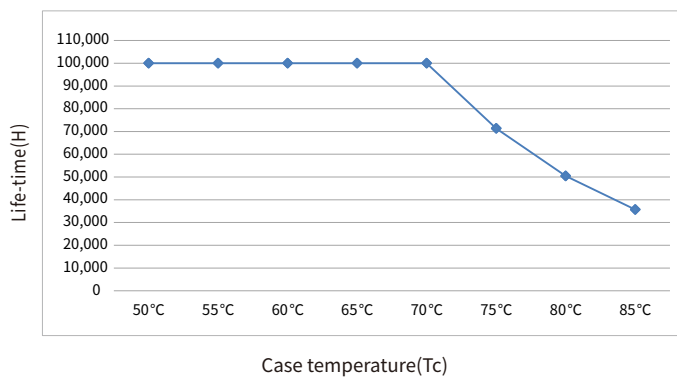
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 6-54V, the current range is 100-1050mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 42W.

Expected life-time

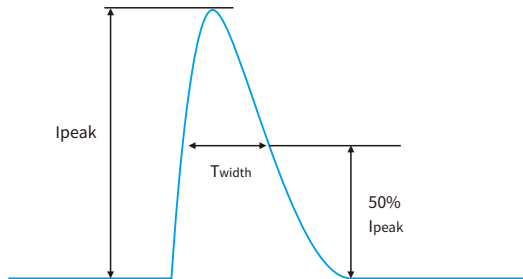
Life-time vs. case temperature



- 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-WQL042S-AHC	2.02A	70us	AC 230V,Full load, Cold start,Ta≤30°C, MCB is not installed side by side	38	50	62	77	96	38	50	62	77	96	38	50	62	77	96	



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.

Output overload protection

- The LED driver turns off the output if the output voltage range is exceeded.
The output will be activated again after restart the LED driver .

Output hot plug-in protection

- This function is used to prevent LED light that are far below the driver's no-load voltage burnout when hot plugged into a powered driver output.
- This function can be enabled or disabled through the programming interface.
If enabled, when the LED light is connected to the powered driver, the LED light will not light up, you can restart the drive to restore normal.
If disabled, when the LED light is connected to the powered driver, the LED light will turn on or off according to the current brightness level.
- Please refer to the parameters configure in the "Device configuration" section for information on whether the default factory settings are enabled.
- Factory default Enabled or not please check the "Device configuration" section .

- Note:

When the hot plug-in protection is enable, the following applications may not achieve the expected effect:

1. When the output of the driver is connected to the color temperature switch:
When the switch is used to change the color temperature, the hot plug-in protection of the driver will be triggered, and the LED will not be lit.
2. When the LED driver is used in conjunction with a self-contained (independent) emergency control device:
Use the self-check test switch of the emergency control device to test the emergency function and when exiting the emergency mode, the driver's hot plug-in protection will be triggered and the LED will not be lit.

The above two application drivers should turn off the hot plug-in protection function in order to achieve good working results.

Output over temperature

- When the operating temperature exceeds the set over temperature protection value of the internal circuit of the power supply, the power supply enters protection states such as output derating, output hiccup or output shutdown. After the external temperature is normal, restart and resume operation.

Driver restart method

There are two ways to restart the driver:

- Through the AC input: disconnect the AC of the driver and power it again.

Adjustable output current (AOC)

- The output current of the driver can be adjusted within a certain range, and can be selected through the EasySet configuration software.

Constant light output (CLO)

- The luminous flux of a LED decreases constantly over the life-time.
- The CLO function ensures that the emitted luminous flux remains stable. For that purpose the LED current will increase continuously over the LED life-time.
- In EasySet configuration it is possible to select a start value (in percent) and an expected life-time. The LED driver adjusts the current afterwards automatically.

Emergency lighting (EL)

- The driver works normally under DC input.
- When the driver is applied in DC input, the positive pole of the DC cable should be connected to the ACL/DC+ terminal, and the negative pole of the DC cable should be connected to the ACN/DC- terminal. If the connection is reversed, the driver will not be damaged, but it will affect the EL function normal work.
- The output response action after DC input can be set through the EasySet configuration software.
Setting 1: When DC input, the output of the driver remains unchanged, and the dimming function responds normally.
Setting 2 (default): When DC input, the output of the driver jumps to the set brightness of 15%, and the dimming function is invalid.

Configuration programming (EasySet)

- The programming configuration of the driver is realized using the BOKE EasySet programming suite and through the driver's NFC interface.
- Please see the "Device configuration" section.
- More information about the EasySet programming suite can be found at www.bokedriver.com.

Insulation between circuits

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

Label

BK-WQL042S-AHC

BOKE

Dimmable Constant Current LED Driver

MODEL: BK-WQL042S-AHC1050AWCN

Input: 200-240V $\approx$ 0/50/60Hz 0.24A Max. λ :0.3C-0.9S

Output: 6-54V $\approx$ 100-1050mA 42W Max. 59VDC Max.

For LED Modules use only

BOKE Drivers Co.,Ltd. www.bokedriver.com

MADE IN CHINA

ACL/DC+

ACN/DC-

wire prep.

0.5-1.5mm²

(Built-in)

0.75-1.5mm²

(Independent)

Preparation for

input and output

8-9mm

CE

tc

tc:85°C

SELV

110

CLO

EasySet

Ta

Po(W)

Io(mA)

45°C

≤42

≤1050

50°C

≤36

≤950

60°C

≤30

≤700

LED+

LED-

Operating temperature & output current

Tc	Ta	Po(W)	Io(mA)
85°C	45°C	≤42	≤1050
	50°C	≤36	≤950
	60°C	≤30	≤700

Optional accessories (See the parts specification for details)

+

Model: BK-BAS014B

Wiring type:

Loop-in and loop-out

→

size(mm)

30.0

106.0

57.5

Cable diameter limit

φ2-φ12.5mm

The allowable diameter of the input cable sheath is 2-12.5mm

Input wire:

0.75-2.5mm²

10mm

25mm

Max.: 12.5mm

φ2-φ6mm

The allowable diameter of the output cable sheath is 2-6mm

Output wire

0.5-1.0mm²

8mm

12mm

Max.: 6mm

Attention: This accessory needs to be purchased separately.

NFC scanning area

✗ Error scanning mode

✓ Correct scanning mode

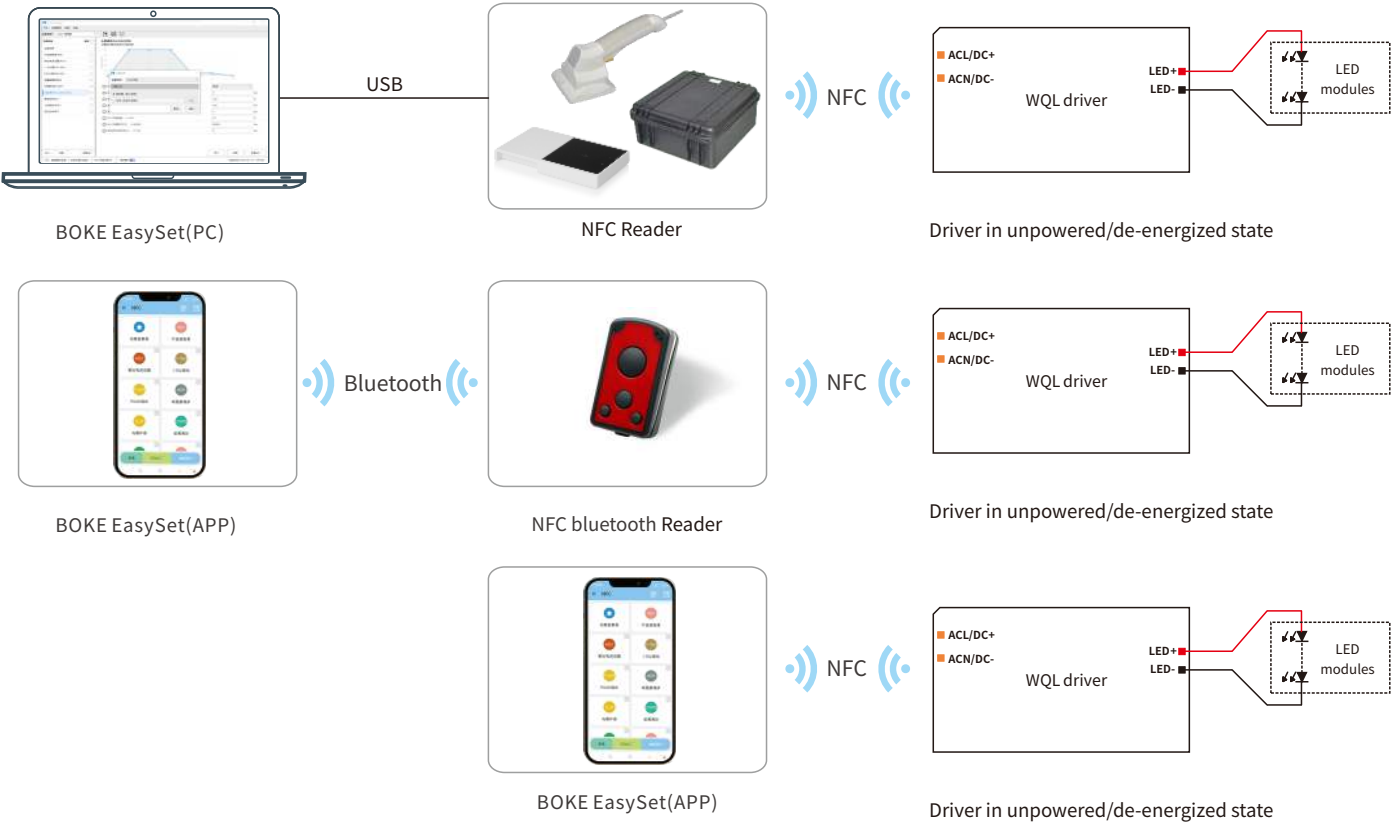
info@bokedriver.com

www.bokedriver.com

REV 1.1

P6

Device configuration



Software download(PC&mobile)



PC:Windows7/Windows10/Windows1132bit/64bit;
Mobile:Androidsystem≥6.0, iossystem≥14.0.

Configure tools and software

Type	Name	Brand	Name	BOKE EasySet minimum version(PC)	BOKE EasySet minimum version(APP)
Programmer	NFC desktop Reader	FEIG	CPR30+	V1.0.0	-
	NFC handheld Reader	FEIG	ID ISC-PRH101-USB	V1.2.2	-
	NFC Bluetooth Reader	FEIG	ID ECCO Smart HF-BLE	-	V1.0.0
	NFC batch Reader Kit	FEIG	RF-LRM1002-300/300 Kit	V1.3.4	-
Software	PC Software	BOKE	BOKE EasySet	V1.0.0	-
	APP	BOKE	BOKE EasySet	-	V1.0.0

Parameters configure

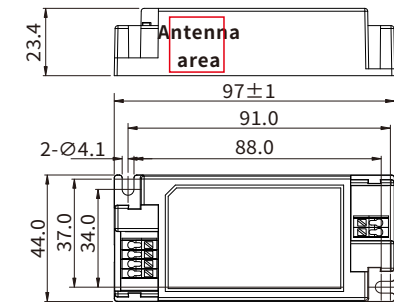
Configuration items	Factory settings	Parameter configuration	Read/Wirte
Product information	-	NO	Read Only
Adjustable output current(AOC)	Activated	YES	Read/Wirte
Emergency lighting(EL)	Activated	YES	Read/Wirte
Constant light output(CLO)	Deactivated	YES	Read/Wirte
Hot plug-in protection(HPP)	Deactivated	YES	Read/Wirte
Run-time(RT)		NO	Read Only
Other parameters		YES	

Note: The default factory mode of emergency lighting is derated mode, and the emergency brightness is 15%

Mechanical Specification

Unit:mm

BK-WQL042S(built-in)

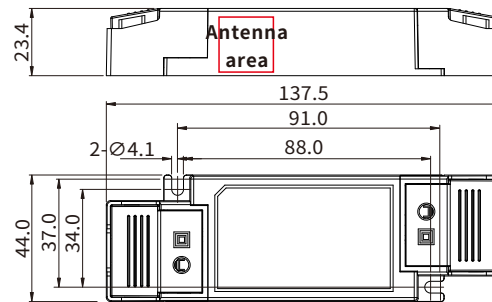


INPUT

numbering	function	colour
1	ACL/DC+	grey
2	ACN/DC-	grey

Input wire
0.5-1.5mm²(Built-in)
0.75-1.5mm²(Independent)

BK-WQL042S(independent)

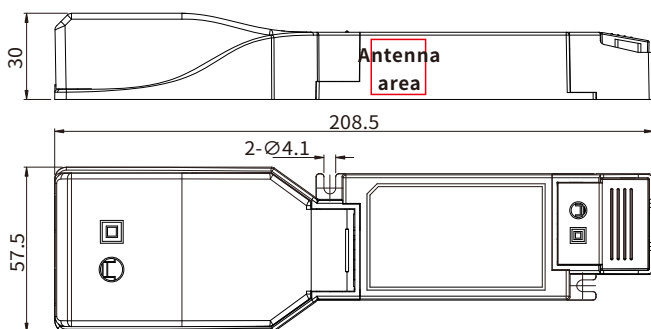


OUTPUT

numbering	function	colour
1	LED+	red
2	LED-	black

Output wire
0.5-1.0mm²

BK-WQL042S(optional accessory)



INPUT

Numbering	function	colour
1	ACN	white
	ACN	white
2	E	white
	E	white
3	ACL	white
	ACL	white

Input wire
0.75-2.5mm²

OUTPUT

Numbering	function	colour
1	LED+	red
2	LED-	black

Output wire
0.5-1.0mm²

Adaptive Casambi network specification

- The driver supports use in both Evolution networks and Classic networks(recommend to use Evolution networks).
- Evolution networks support up to 250 nodes, while Classic networks support up to 127 nodes.
- Supports Casambi wireless Long Range (LR) mode network,supports LR device have longer coverage in all network modes.

Installation note

Hot plug-in

- When the function is not enabled, 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.
- Restart can be achieved by re-powering the driver through the control interface.

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).
- Incorrect wiring can damage LED modules.

Replace LED module

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

Installation requirements

- The driver should preferably be installed in an environment without metal obstacles or without materials that severely weaken RF signals.
- Please do not place the driver in an environment completely surrounded by metal parts, as radio signals cannot pass through metal.
- The distance between driver should not exceed 40 meters; if there are partitions in between, the distance may be shortened, as shown in Figure 1.
- If there are many wireless communication devices (such as WiFi, or other Bluetooth devices) around the driver, the connection distance between two nodes will be greatly affected.
- Do not route cables near the antenna area of the driver (such as high-voltage input lines, LED power lines) to avoid signal interference.
- The driver should be kept at a certain distance from the ground; the recommended spacing should be $\geq 100\text{cm}$ to avoid signal interference, as shown in Figure 2.
- The driver should be kept at a certain distance from large metal objects; the recommended spacing should be $\geq 15\text{cm}$ to avoid signal interference, as shown in Figure 3.
- The driver should be kept at a certain distance from beams, walls, etc.; the recommended spacing should be $>15\text{cm}$ to avoid signal interference, as shown in Figure 4.
- The communication signal range of the driver depends on the surrounding environment, such as light fixtures, building structures, furniture, or people. Communication testing should be conducted during installation.

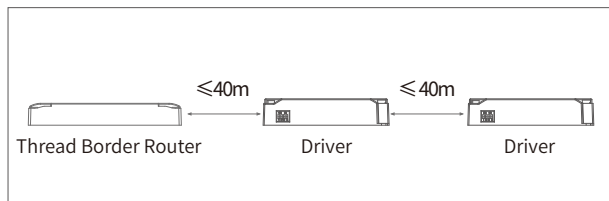


Figure 1

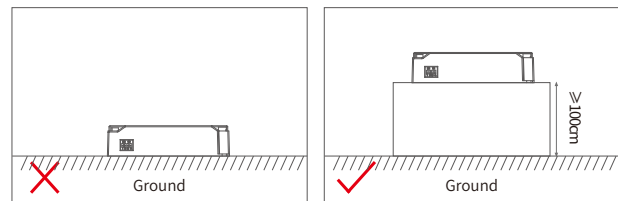


Figure 2

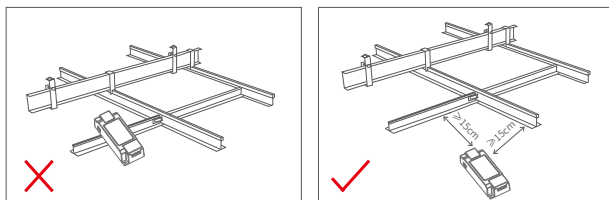


Figure 3

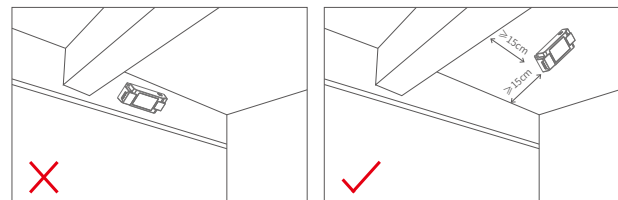


Figure 4

- The driver should be installed in a dry, acid-free, oil-free, fat-free environment.
- The ambient temperature of the driver should not exceed the value of T_a at any time.
- The driver should be lower than the temperature of T_a .
- The installation environment of the driver must comply with its supported IP protection level.
- The driver should be kept at a certain distance from the heating body (such as the luminaire radiator), and the recommended interval distance should be $\geq 7\text{cm}$, as shown in Figure 5.
- A certain distance should be maintained between the driver, and the recommended distance should be $\geq 15\text{cm}$ to avoid affecting the heat dissipation and service life of the product, as shown in Figure 6.

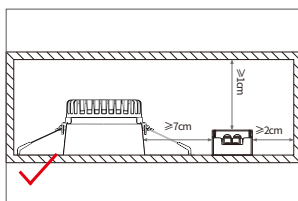


Figure 5

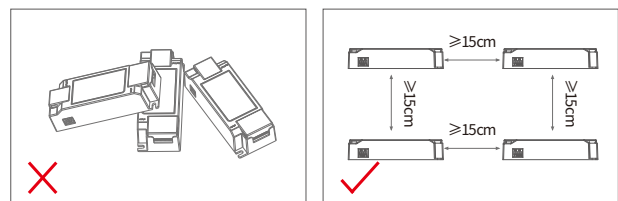


Figure 6

Packaging



Product

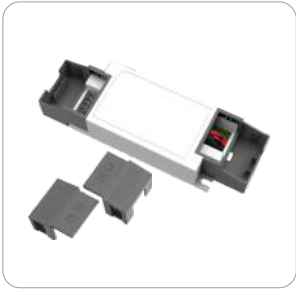


Packaging



20pcs×2boxes=40pcs/CTN

Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
WQL042S(bilt-in)	L97.5*W44*H23.4mm	100g	L210*W122*H94mm	L265*W230*H115mm	40pcs	4.00KG	5.12KG



Product



Packaging



20pcs×2boxes=40pcs/CTN

Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
WQL042S(independent)	L137.5*W44*H23.4mm	118g	L288*W161*H94mm	L340*W305*H115mm	40pcs	4.72KG	5.85KG

Additional information

- When the driver is used as an internal power supply for luminaires, re-evaluation of performance including temperature rise, conducted interference, radiated interference, surge immunity and electrostatic discharge (ESD) are required due to differences in luminaire structure and wiring. Ensure compliance with practical application requirements and stable & reliable operation of the driver.
- Unless otherwise specified, all specifications and parameters are measured under conditions of 230VAC input, 50Hz, full load and ambient temperature of 25°C.
- Product service life and MTBF values are for reference only and do not constitute a warranty statement.
- BOKE reserves the final right to interpret the above parameters. For further information, please send an email to info@bokedriver.com.
- The above information is subject to change without prior notice. Please ensure you use the latest version of the datasheet.