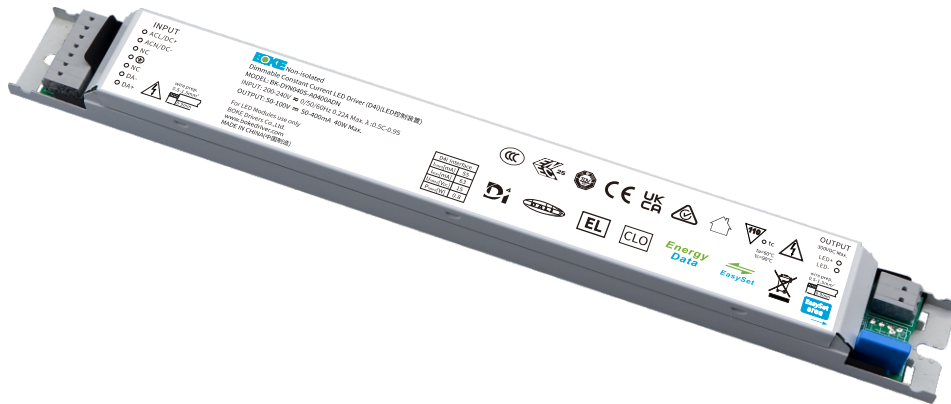


Non-isolated constant current linear dimmable driver DYN(S) Series suffix DN(DALI-2 DT6+D4i+EnergyData+EL+CLO +DALI programmable+NFC programmable)



Features

- Input and output non-isolated
- Support DALI-2 DT6+D4i dimming mode
- Quickly install the sensor and the wireless control module through the D4i interface
- Input AC and output DC power metering
- Support EnergyData function and energy-reporting reading (DALI Part 252)
- Support luminaire data reading (DALI Part 251), support diagnostics-maintenance reading (DALI Part 253)
- Support advanced functions such as EL, CLO
- The output current programming can be realized through the DALI interface or NFC interface
- Support 20 units/batch, batch programming
- Suitable for emergency lighting acc. to EN 50172
- Soft dimming and flicker-free at any brightness, meets the new requirements of ErP certification
- Using HPC patented technology, at any dimming level, the brightness of the luminaires is the same
- Dimming range 1~100%
- Standby power input < 0.5W, meets the requirements of ErP certification
- High PF, high efficiency, low THD
- Suitable for built-in use of Class I lamps
- Compliance with CE, ENEC, UKCA, RCM, CCC, DALI-2, EL, D4i and other certifications
- Compliance with Zhaga Book 13/24/25 standards
- IP20 protection grade, indoor use
- Nominal life-time up to 100,000 h
- 5.5-year guarantee

Interfaces

- DALI-2 D4i(DALI-2 DT6+Part 250,251,252,253)

Functions

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

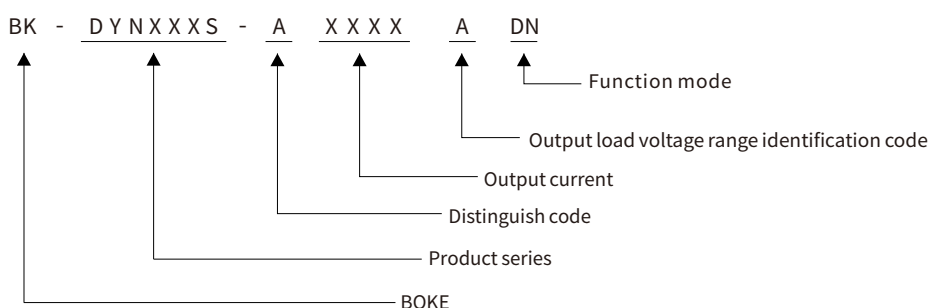
Suitable for lights

- Suitable for linear lights, tri-proof lights, floor lights, bracket lights and other linear or ultra-thin lights etc.

Typical applications

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

Model coding rules of DYN(S) series



Function list

Model	Suffix	DIP switch	Wired dimming	Advanced functions					Device configuration	
			DALI-2	EnergyData	D4i	AOC	EL	CLO	DALI interfaces	NFC interfaces
BK-DYN040S-A	DP	√	√	√	√	√	√	√	√	
BK-DYN080S-A	DN		√	√	√	√	√	√	√	√

*The description in this specification is only applicable to the products with the suffix DN and the model are DYN040S-A,DYN080S-A.

Model list

Model	Input voltage	Output power	Output voltage	Output current	Dimension
BK-DYN040S-A0400ADP BK-DYN040S-A0400ADN	200-240VAC/DC	40W MAX.	50-250VDC	0.05-0.4A	L280*W30*H21mm
BK-DYN080S-A1050ADP BK-DYN080S-A1050ADN	200-240VAC/DC	80.85W MAX.	50-250VDC	0.1-1.05A	L360*W30*H21mm

*The description in this specification is only applicable to the products with the suffix DN and the model are DYN040S-A,DYN080S-A.

Technical data

Product model	BK-DYN040S-A0400ADN
Output parameters	
Regulation method	Constant current
Rated output current range	0.05-0.4A, see the operating window for details
Rated output voltage range	50-250VDC, see the operating window for details
Rated output power	40W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±8%(58kHz)
Output current accuracy	±5%
Linear regulation	±5%
Load regulation	±5%
No load output voltage	300VDC
Flicker-free(typ.)	Flickering percent(IEEE 1789)=1.096%(100Hz), Flicker index(IEEE 1789)=0.002(100Hz), Pst LM = 0.006, 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 180-264VDC
Input voltage shock	<380 V AC
Input current	<0.226A (Rated input voltage)
Input frequency	0/50/60Hz
Input PF/Input DF(typ.)	PF: 0.97, DF:0.97, see the electrical values below for details
Input THD(typ.)	9% , see the electrical values below for details
Efficiency(typ.)	91.5% , see the electrical values below for details
In-rush current(typ.)	13.625A peak ,260us duration(50 % Ipeak), see the description below for details
Start/Switchover/Turn off	<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(typ.)	Full load(Pin):43.7W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A
Safety	
Withstand voltage	I/P-FG:1750VAC, I/P-DA:1500VAC, O/P-DA:1500VAC
Mains surge capability	L-N:2KV, L-FG/N-FG:2KV(90°/270°, 5 times each with an interval of 60s)(Performance criterion:B)
Leakage current(typ.)	0.55mA
Isolation resistance	I/P-FG:100MΩ/500Vdc/25°C/70%RH
Control interface	
DALI dimming port	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA
D4i dimming port	Voltage range: 13-17V, current range: 55-63mA, power:0.8W
pushDIM dimming port	N/A
Auxiliary power supply	N/A
Dimming range	1%-100% (Minimum current:4mA)
Dimming drive mode	AM(amplitude modulation)
Emergency support	
Central emergency system	Supported
Self-contained emergency	Supported
Environment & Life time	
Operating temperature	Ta=-20-60°C
Case temperature	Tc=90°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	
Compliance certification	CE, ENEC, UKCA, RCM, CCC, EL, DALI-2, D4i
Safety	GB/T 19510.1, GB/T 19510.213, EN61347-1, EN61347-2-13, EN62384
EMC	GB/T 17743, GB17625.1, 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), DALI part 250, 251, 252, 253
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, 50Hz, full load and 25°C of ambient temperature.

Technical data

Product model	BK-DYN080S-A1050ADN
Output parameters	
Regulation method	Constant current
Rated output current range	0.1-1.05A, see the operating window for details
Rated output voltage range	50-250VDC, see the operating window for details
Rated output power	80.85W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	± 7% (56kHz)
Output current accuracy	± 5%
Linear regulation	± 5%
Load regulation	± 5%
No load output voltage	300VDC
Flicker-free (typ.)	Flickering percent (IEEE 1789) = 1.189% (100Hz), Flicker index (IEEE 1789) = 0.002 (100Hz), Pst LM = 0.033, SVM = 0.001, (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	<0.44A (Rated input voltage)
Input frequency	0/50/60Hz
Input PF/Input DF (typ.)	PF: 0.98, DF: 0.99, see the electrical values below for details
Input THD (typ.)	9% , see the electrical values below for details
Efficiency (typ.)	93.5% , see the electrical values below for details
In-rush current (typ.)	24.06A peak, 298us duration (50 % Ipeak), see the description below for details
Start/Switchover/Turn off	<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 (typ.)	Full load (Pin): 86.5W, No load (Pno): N/A, On stand-by (Psb): <0.5W, Network stand-by (Pnet): N/A
Safety	
Withstand voltage	I/P-FG: 1750VAC, I/P-DA: 1500VAC, O/P-DA: 1500VAC
Mains surge capability	L-N: 2KV, L-FG/N-FG: 2KV (90°/270°, 5 times each with an interval of 60s) (Performance criterion: B)
Leakage current (typ.)	0.52mA
Isolation resistance	I/P-FG: 100MΩ/500Vdc/25°C/70%RH
Control interface	
DALI dimming port	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA
D4i dimming port	Voltage range: 13-17V, current range: 55-63mA, power: 0.8W
pushDIM dimming port	N/A
Auxiliary power supply	N/A
Dimming range	1%-100% (Minimum current: 10.5mA)
Dimming drive mode	AM (amplitude modulation)
Emergency support	
Central emergency system	Supported
Self-contained emergency	Supported
Environment & Life time	
Operating temperature	Ta = -20-60°C
Case temperature	Tc = 90°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	
Compliance certification	CE, ENEC, UKCA, RCM, CCC, EL, DALI-2, D4i
Safety	GB/T 19510.1, GB/T 19510.213, EN61347-1, EN61347-2-13, EN62384
EMC	GB/T 17743, GB17625.1, 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), DALI part 250, 251, 252, 253
EL	Compatible IEC 61347-2-13 Annex J, compatible with EN 60598-2-22 and EN 50172
RF	N/A

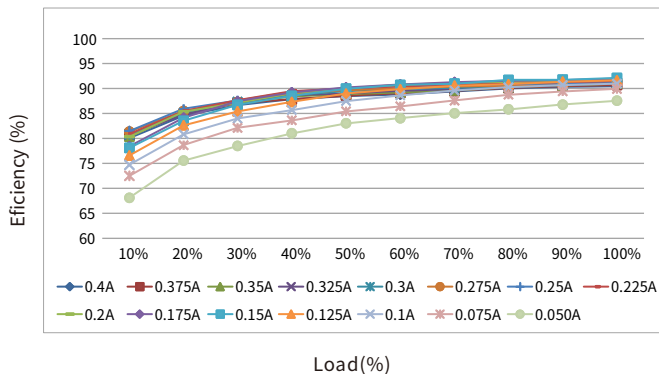
Remarks

1. By default, all parameter are measured at 230VAC input, 50Hz, full load and 25°C of ambient temperature.

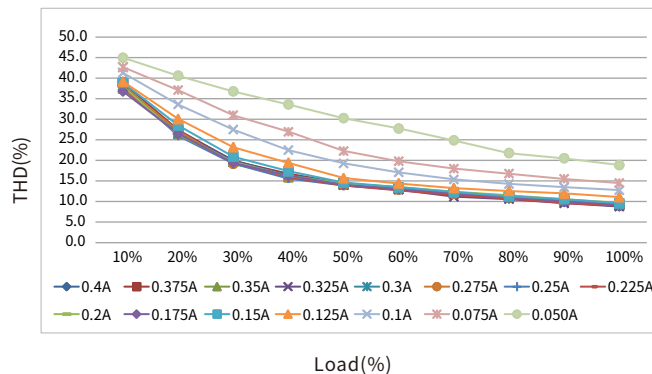
Electrical values

BK-DYN040S-A

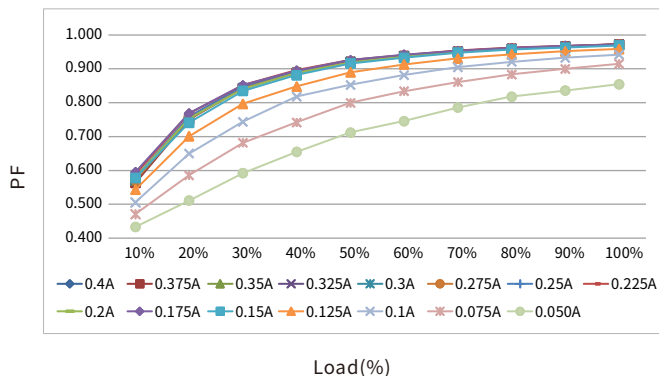
Efficiency vs. Load



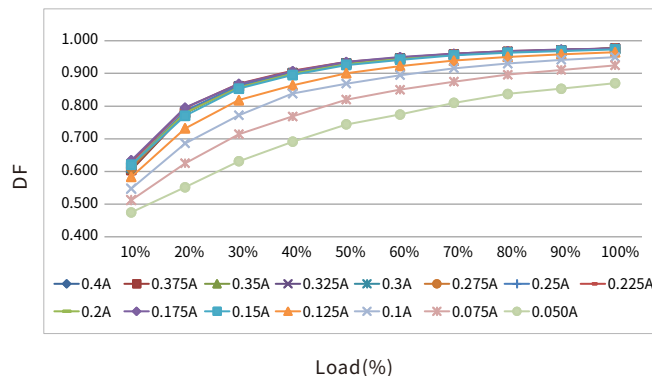
THD vs. Load



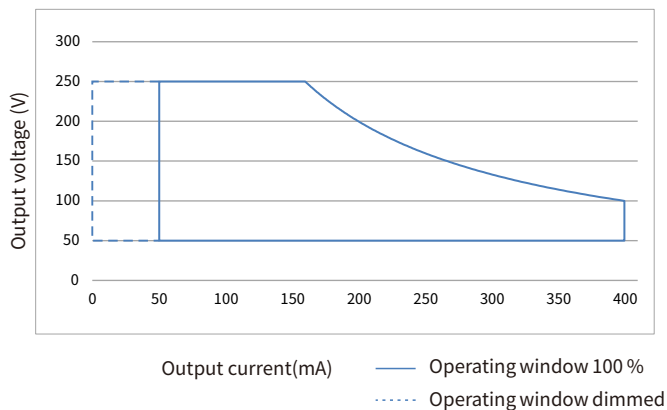
Power factor vs. Load



Displacement factor vs. Load



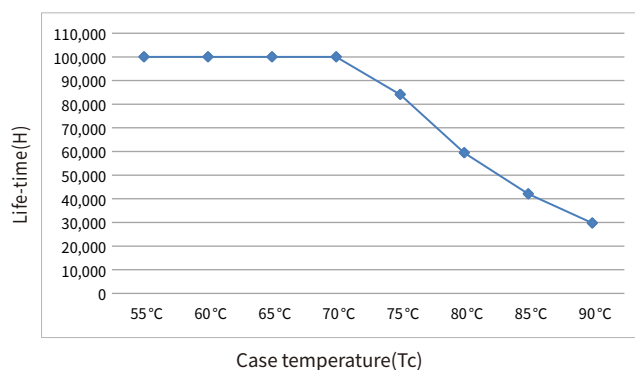
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 50-250V, the current range is 50-400mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 40W.

Expected life-time

Life-time vs. case temperature

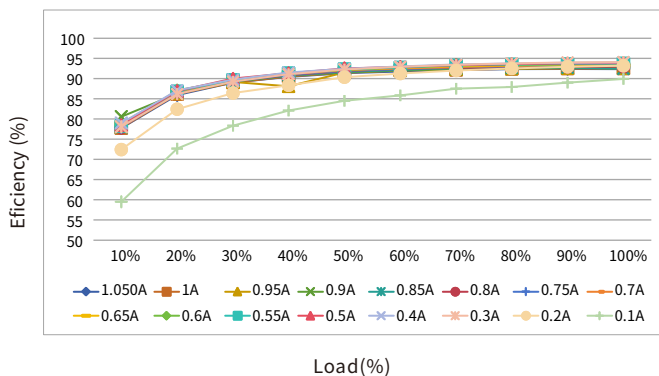


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

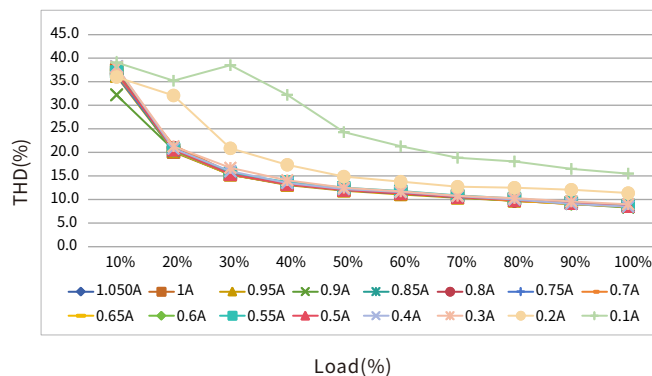
Electrical values

BK-DYN080S-A

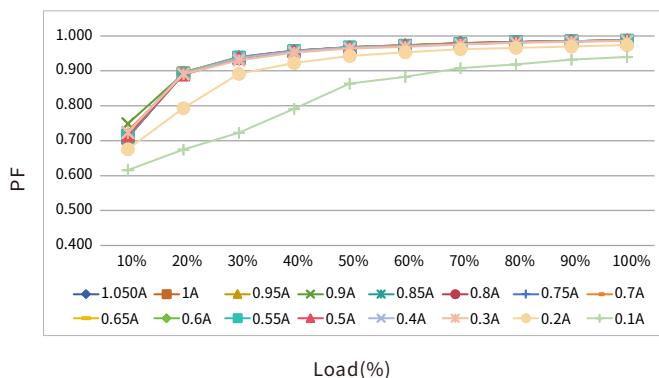
Efficiency vs. Load



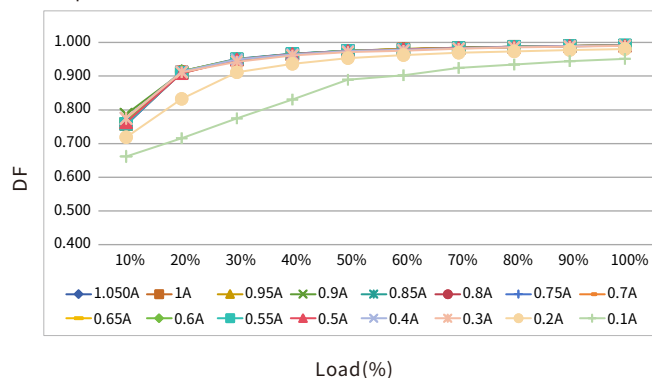
THD vs. Load



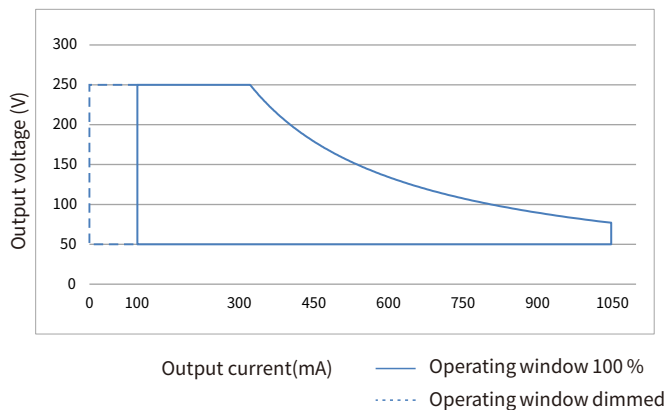
Power factor vs. Load



Displacement factor vs. Load



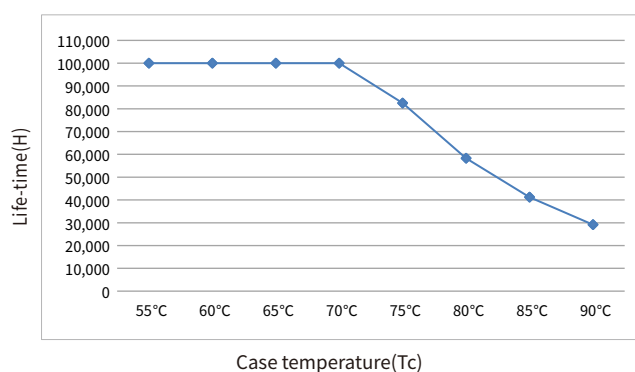
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 50-250V, 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 80.85W.

Expected life-time

Life-time vs. case temperature



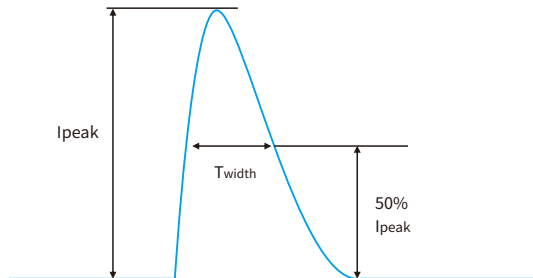
- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

Surge

Model	Ipeak	Twidth	Condition	Relative number of MCB														Unit: pcs
				B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
BK-DYN040S-A	13.625A	260us	AC 230V,Full load, Cold start,Ta≤30°C, MCB is not installed side by side	19	25	31	39	48	32	42	52	65	81	41	53	66	82	103
BK-DYN080S-A	24.06A	298us		9	12	15	18	23	15	20	24	31	38	20	26	32	41	51

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 over temperature

- When the operating temperature exceeds the over temperature protection point inside the power supply IC, the power supply enters protection state 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.
- Through dimming interface. DALI: send "OFF" command first, then send "MAX" command.

Adjustable output current (AOC)

- The output current of the driver can be adjusted within a certain range, 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 DALI 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	DALI
Input	-	-	Basic	Basic
Output	-	-	Basic	Basic
Case	Basic	Basic	-	Basic

Label

BK-DYN040S-A

INPUT

- ACL/DC+
- ACN/DC-
- NC
- Ⓢ
- NC
- DA-
- DA+

wire prep. 0.5-1.5mm²

BOKE Non-isolated
Dimmable Constant Current LED Driver (D4i)(LED控制装置)
MODEL: BK-DYN040S-A0400ADN
INPUT: 200-240V $\approx$ 0.50/60Hz 0.22A Max. λ : 0.5C-0.95
OUTPUT: 50-250V $\approx$ 50-400mA 40W Max.

D4i Interface	
I _{load} (mA)	55
I _{load} (mA)	63
U _{load} (V _{dc})	15
P _{load} (W)	0.8

For LED Modules use only
BOKE Drivers Co., Ltd.
www.bokedriver.com
MADE IN CHINA(中国制造)

CC 25 10V CE UK Ⓢ 110 0 tc 110 0 tc ts=60°C tc=90°C

OUTPUT
3000DC Max.
LED+
LED-
wire prep. 0.5-1.5mm²

Energy Data EasySet

BK-DYN080S-A

INPUT

- ACL/DC+
- ACN/DC-
- NC
- Ⓢ
- NC
- DA-
- DA+

wire prep. 0.5-1.5mm²

BOKE Non-isolated
Dimmable Constant Current LED Driver(D4i)(LED控制装置)
MODEL: BK-DYN080S-A1050ADN
INPUT: 200-240V $\approx$ 0.50/60Hz 0.44A Max. λ : 0.5C-0.95
OUTPUT: 50-250V $\approx$ 100-1050mA 80.85W Max.

D4i Interface	
I _{load} (mA)	55
I _{load} (mA)	63
U _{load} (V _{dc})	15
P _{load} (W)	0.8

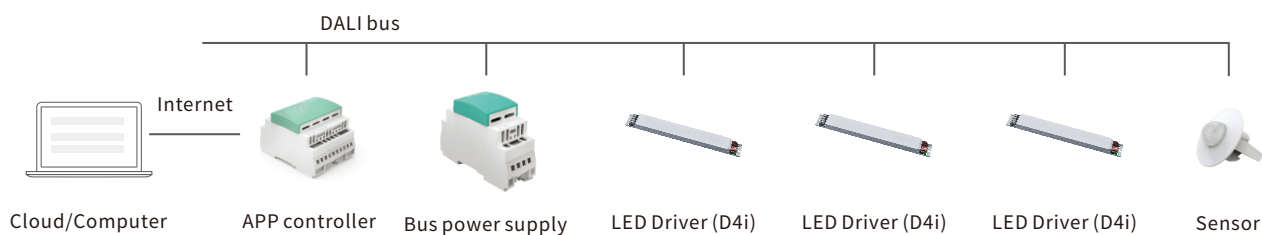
For LED Modules use only
BOKE Drivers Co., Ltd.
www.bokedriver.com
MADE IN CHINA(中国制造)

25 10V CE UK Ⓢ 110 0 tc 110 0 tc ts=60°C tc=90°C

OUTPUT
3000DC Max.
LED+
LED-
wire prep. 0.5-1.5mm²

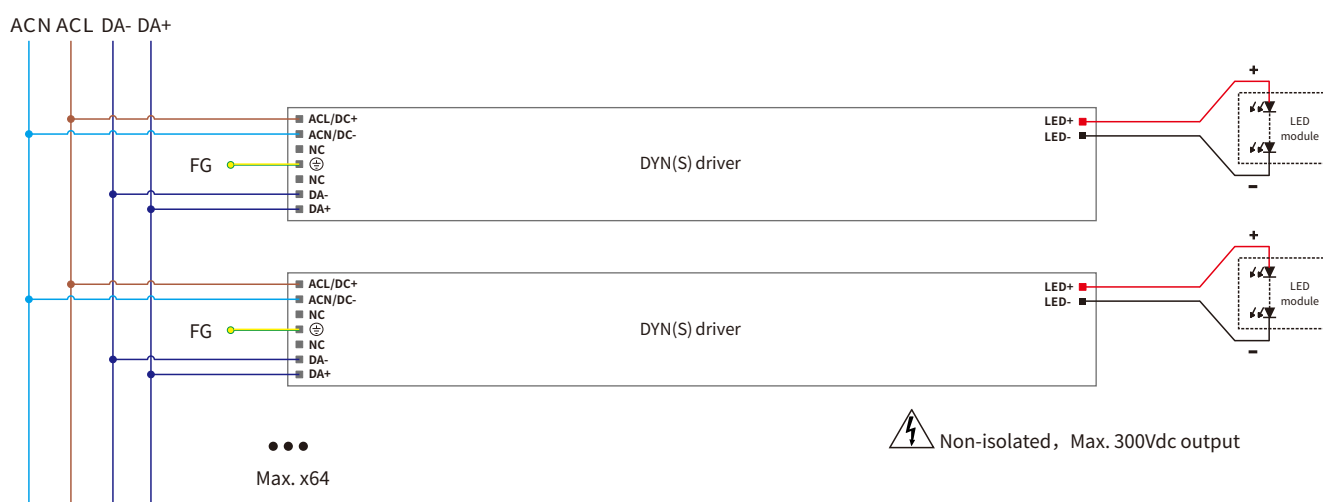
Energy Data EasySet

D4i controller application 1 (bus mount application)



- The application controller can obtain the relevant data of DALI Part 250.251.252.253 of the D4i driver through the D4i specification, such as energy information, luminaire information, operation information, etc.
- When the D4i driver is mounted to the DALI bus application,
 - If the bus has mounted bus power, you need to turn off the bus power inside all D4i drivers!
 - If the bus has no bus power mounted, you can turn on the internal bus power for up to 4 D4i drivers!
- The bus power inside the D4i driver is enabled by default at the factory.

Wiring diagram



Remarks:

- Standard DALI control line voltage range: 9.5V to 22.5V, type 16V.
- When D4i is enabled, the positive and negative terminals of the DALI port must be distinguished.
- When D4i is disabled, there is no need to distinguish the positive and negative terminals between the two DALI ports.
- Max. 64 DALI drivers per DALI control line.
- The maximum distance length of the DALI control line is 300m at $2 \times 1.5\text{mm}^2$.
- DALI bus can be wired together with any mains voltage cables, but separate wiring is recommended.
- The configuration parameters of the driver can be set through the DALI configuration tool or DALI application controller during installation, such as setting device address, group address, power-on level, bus-failure level, scene level, fade time, dimming curve, etc.

Power-on level:

- When the driver is in DALI-2 dimming mode, the factory default level after each power-on is the brightest.
- The power-on level can be set through the DALI configuration tool or DALI application controller during installation, and can be set to memory or fixed any brightness (such as off, darkest, 50%, etc.).

Note: The recommended setting for the default factory power-on level of the DALI-2 driver is the brightest in the DALI-2 standard.

Please refer to the table below

Cable size	Distance
$2 \times 0.50\text{mm}^2$	max.100m
$2 \times 0.75\text{mm}^2$	max.150m
$2 \times 1.00\text{mm}^2$	max.200m
$\geq 2 \times 1.50\text{mm}^2$	max.300m

D4i dimming application 2 (intelligent lighting application)



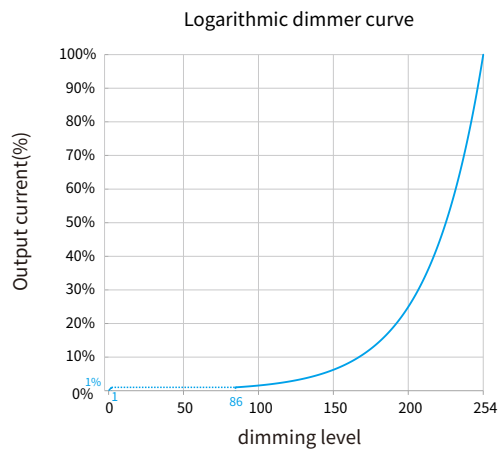
D4i controller options are:

- Zigbee to DALI controller
- Bluetooth to DALI controller
- DALI+ wireless node
- occupy sensor
- light sensor

- The D4i controller is powered by the D4i driver and must comply with the DALI Part 351 specification.

- The bus power inside the D4i driver must be turned on, and it can be set through the DALI configuration tool, and it is turned on by default.

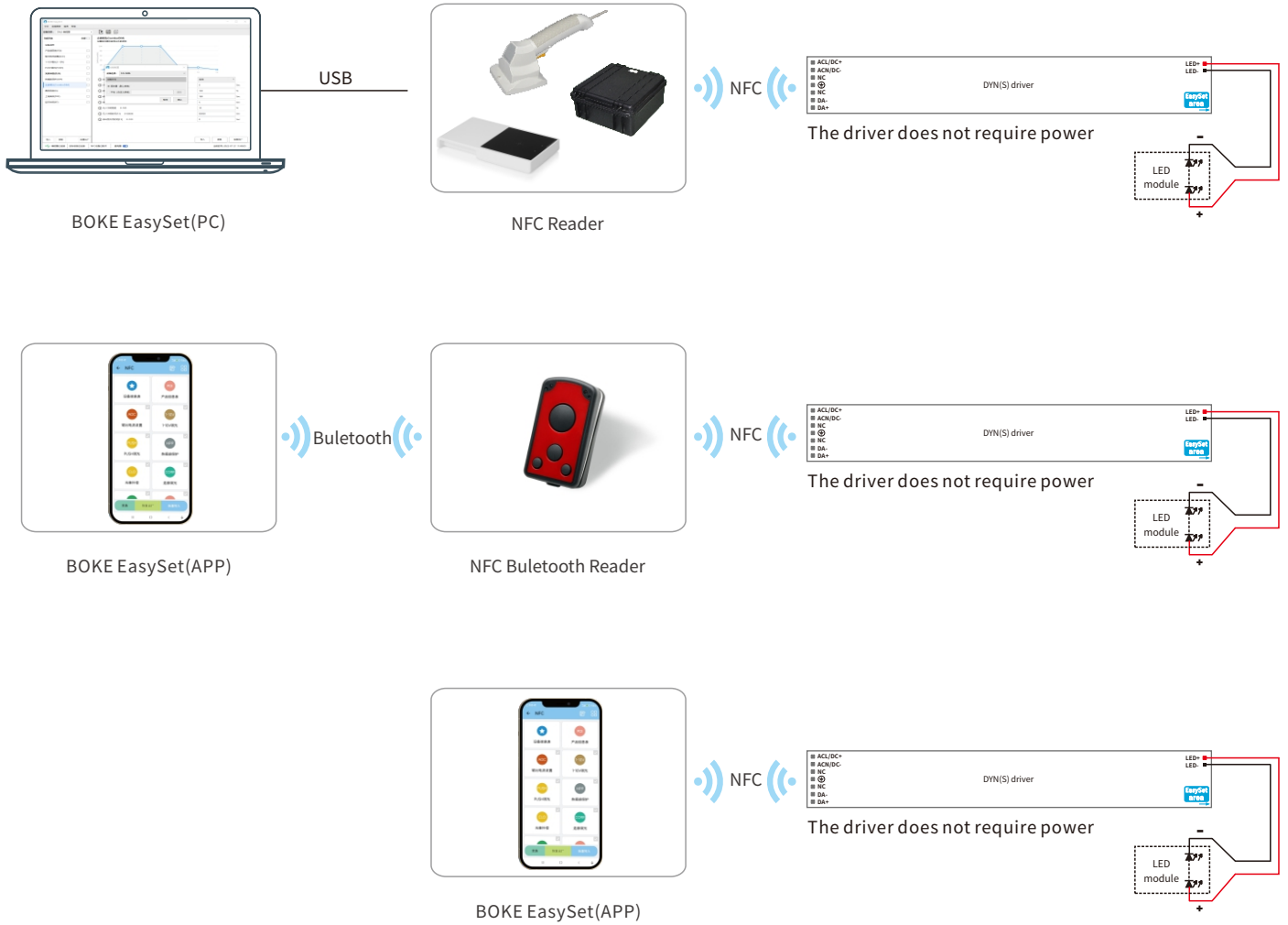
Dimming curve



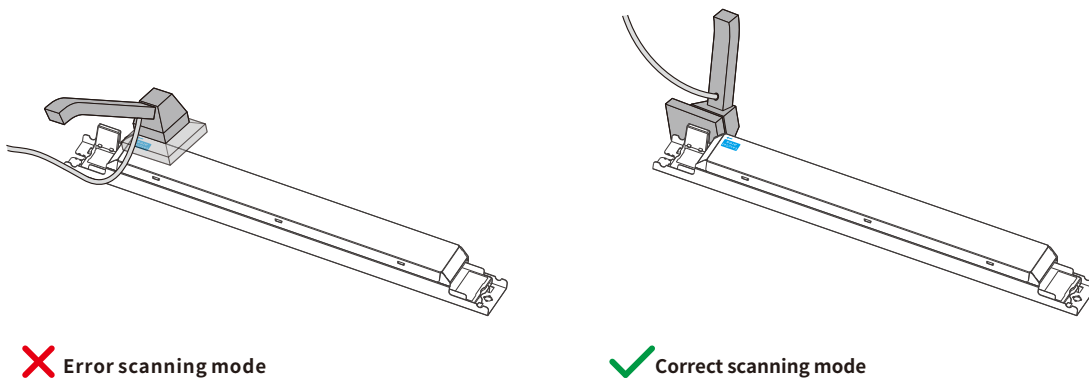
Remarks: The dimming curve can be selected by DALI configuration. The default is logarithmic dimming curve.

Device configuration

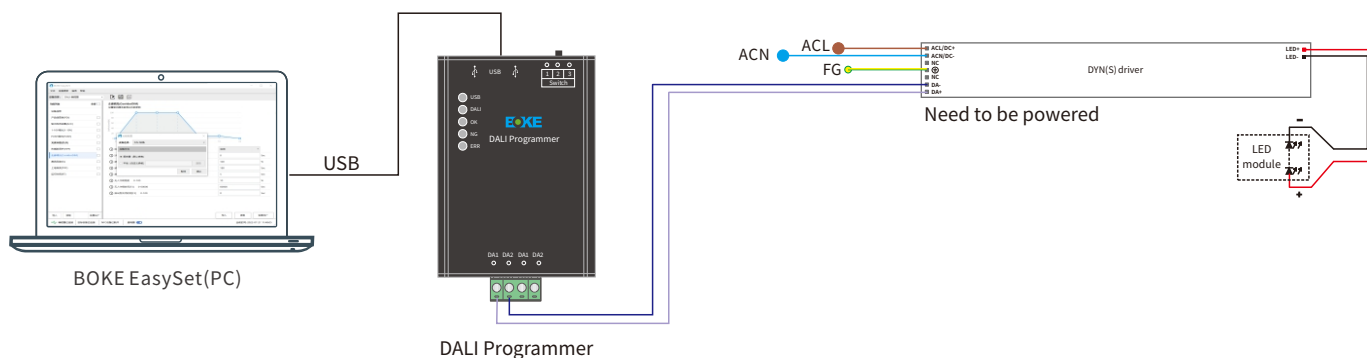
Optional 1:



NFC scan area



Optional 2:



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	-
	DALI programmer	BOKE	BK-CS01-SDL	V1.0.0	-
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
Power-on fadeing(POF)	Deactivated	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
DALI Bus power(BPS)	Activated	YES	Read/Wirte
DALI Address(DA)	Activated	YES	Read/Wirte
DALI basic parameters(DP)	Activated	YES	Read/Wirte
DALI scene setting(DS)	Activated	YES	Read/Wirte
Other parameters		YES	

Note: 1.The default factory mode of emergency lighting is derated mode, and the emergency brightness is 15%.

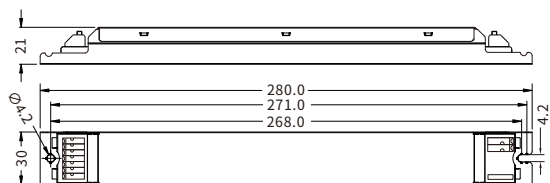
2.The DALI bus power supply is enabled by default at the factory.

Mechanical Specification

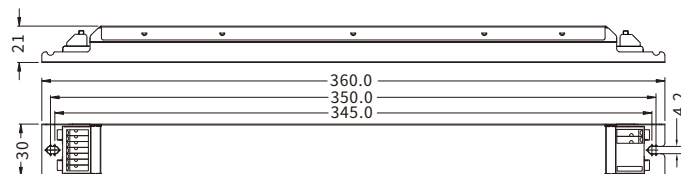
Size

Unit:mm

DYN040S-A



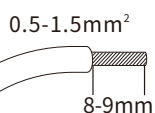
DYN080S-A



INPUT

numbering	function	colour
1	ACL/DC+	grey
2	ACN/DC-	grey
3	NC	grey
4	FG	grey
5	NC	grey
6	DA	grey
7	DA	grey

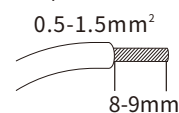
Input wire



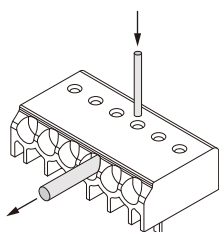
OUTPUT

numbering	function	colour
1	LED+	grey
2	LED-	grey

Output wire



Loosen wire through twisting and pulling or using a Ø1mm release tool



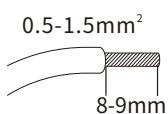
Optional terminal



INPUT

numbering	function	colour
1	ACL/DC+	grey
2	ACN/DC-	grey
3	NC	grey
4	FG	grey
5	NC	grey
6	DA	grey
7	DA	grey

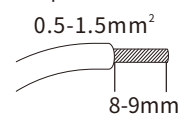
Input wire



OUTPUT

numbering	function	colour
1	LED+	red
2	LED-	black

Output wire



Installation note

Hot plug-in

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

Installation requirements

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

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.

Replace LED module

1. Mains off
2. Wait more than 15 seconds
3. Remove LED module
4. Connect LED module again

Packaging



Product



Packaging



20pcs*2boxes=40pcs/CTN

10pcs*2boxes=20pcs/CTN

Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
BK-DYN040S-A	L280*W30*H21mm	183g	L300*W213*H78mm	L315*W220*H175mm	40pcs	7.32KG	8.54KG
BK-DYN080S-A	L360*W30*H21mm	258g	L380*W110*H78mm	L395*W240*H100mm	20pcs	5.16KG	5.55KG

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.