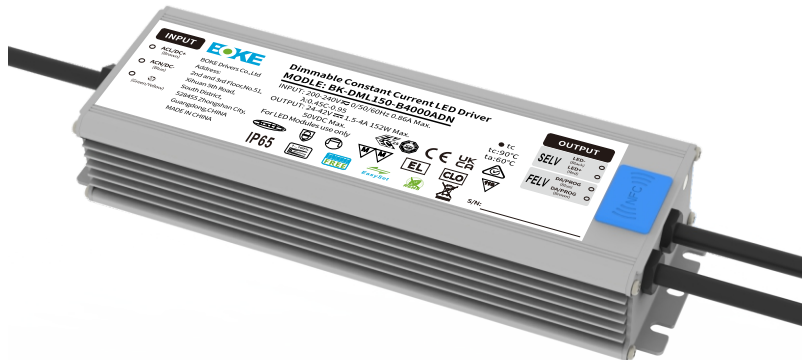


Constant current independent dimmable driver

DML Series suffix DN(DALI-2+CLO+DALI programmable+NFC programmable)



Features

- Support DALI-2 dimming mode
- Support advanced functions such as CLO
- The output current of the driver can be programming through the DALI interface and the NFC interface
- High PF, high efficiency, low THD
- Dimming range 1%~100%, output current accuracy 2%
- 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 lights is the same
- Suitable for working at -20~60°C
- Aluminum metal housing design
- Power input on stand-by < 0.5 W, compatible with ERP.
- LED hot-plug in protection function.
- IP65 design for indoor installation.
- Compliance with CE, ENEC, UKCA, RCM, DALI-2, CCC, EL certifications.
- Nominal life-time up to 100,000 h
- 5-year guarantee

Interfaces

- DALI-2(DALI-2 DT6)

Functions

- Support central emergency application (dimming normal in DC input)
- Support self-contained emergency application
- Constant light output function(CLO)
- Programming via DALI (EasySet)
- Programming via NFC (EasySet)
- Protective features (short-circuit, overload, no-load, hot plug-in protection)

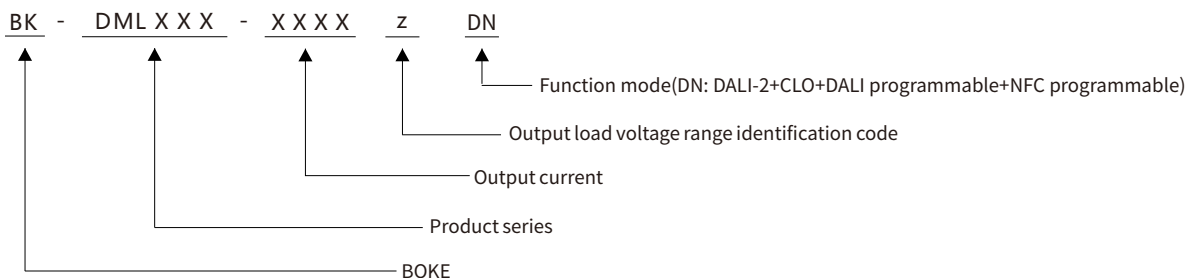
Suitable for lights

- 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 DML series



Function list

Model	Suffix	Wired dimming	Advanced functions		Device Configuration	
		DALI-2	AOC	CLO	DALI interfaces	NFC interfaces
BK-DML022-B BK-DML040-B BK-DML060-B BK-DML080-B BK-DML150-B	DP	√	√	√	√	
	DN	√	√	√	√	√

* The description in this specification is only applicable to the products with the suffix DN and the model are DML022-B,DML040-B,DML060-B,DML080-B and DML150-B.

Model list

Model	Input voltage	Output power	Output voltage	Output current	Dimension	Certifications
BK-DML022-B0600ADP	200-240VAC/DC	22.8W MAX.	12-38/40/42VDC	0.1-0.6A	L137*W43.5*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML022-B0600ADN	200-240VAC/DC	22.8W MAX.	12-38/40/42VDC	0.1-0.6A	L137*W43.5*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML040-B1100ADP	200-240VAC/DC	42W MAX.	12-38/40/42VDC	0.4-1.1A	L143*W56*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML040-B1100ADN	200-240VAC/DC	42W MAX.	12-38/40/42VDC	0.4-1.1A	L143*W56*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML060-B1650ADP	200-240VAC/DC	63W MAX.	12-38/40/42VDC	0.6-1.65A	L160*W56*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML060-B1650ADN	200-240VAC/DC	63W MAX.	12-38/40/42VDC	0.6-1.65A	L160*W56*H34mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML080-B2200ADP	200-240VAC/DC	84W MAX.	12-38/40/42VDC	0.8-2.2A	L160*W68*H38mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML080-B2200ADN	200-240VAC/DC	84W MAX.	12-38/40/42VDC	0.8-2.2A	L160*W68*H38mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML150-B4000ADP	200-240VAC/DC	152W MAX.	24-38/40/42VDC	1.5-4A	L197*W68*H38mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL
BK-DML150-B4000ADN	200-240VAC/DC	152W MAX.	24-38/40/42VDC	1.5-4A	L197*W68*H38mm	CE,ENEC,UKCA,RCM,DALI-2,CCC,EL

* The description in this specification is only applicable to the products with the suffix DN and the model are DML022-B,DML040-B,DML060-B,DML080-B and DML150-B.

Technical data

Product model	BK-DML022-B0600ADN
Output parameters	
Regulation method	Constant Current
Rated output current range	0.1-0.6A
Rated output voltage range	12-42VDC
Rated output power	22.8W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±2%
Output current accuracy	±2%
Linear regulation	±1%
Load regulation	±1%
No load output voltage	50VDC
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.21%, Flicker index(IEEE 1789)=0.000, Pst LM = 0.009, 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	<0.14A (Rated input voltage)
Input frequency	0/50/60Hz
Input PF/Input DF	PF:0.97,DF:0.97,see the electrical values below for details
Input THD	7.5%, see the electrical values below for details
Efficiency(Max)	86.5%,see the electrical values below for details
In-rush current	3.55A peak ,188us 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	> 50,000 switching cycles
Power consumption	Full load(Pin):26.4W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A
Safety	
Withstand voltage	I/P-O/P:3750VAC,I/P-FG:1750VAC,O/P-FG:500VAC ,I/P-DALI: 1500V AC ,O/P-DALI: 1500V AC.
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	0.62mA (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
pushDIM dimming port	N/A
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=-20-60°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
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,DALI-2,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	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)
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-DML040-B1100ADN
Output parameters	
Regulation method	Constant Current
Rated output current range	0.4-1.1A
Rated output voltage range	12-42VDC
Rated output power	42W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±2%
Output current accuracy	±2%
Linear regulation	±1%
Load regulation	±2%
No load output voltage	50VDC
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.33%, Flicker index(IEEE 1789)=0.000, Pst LM = 0.058, SVM = 0.007, (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:0.98,DF:0.98,see the electrical values below for details
Input THD	7.5%, see the electrical values below for details
Efficiency(Max)	87.5%,see the electrical values below for details
In-rush current	4.06A peak ,178us 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	> 50,000 switching cycles
Power consumption	Full load(Pin):48.3W, 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 ,I/P-DALI: 1500V AC ,O/P-DALI: 1500V AC.
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	0.48mA (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
pushDIM dimming port	N/A
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=-20-60°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
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,DALI-2,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	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)
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-DML060-B1650ADN
Output parameters	
Regulation method	Constant Current
Rated output current range	0.6-1.65A
Rated output voltage range	12-42VDC
Rated output power	63W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±1%
Output current accuracy	±2%
Linear regulation	±1%
Load regulation	±2%
No load output voltage	50VDC
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.07%, 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	<0.37A (Rated input voltage)
Input frequency	0/50/60Hz
Input PF/Input DF	PF:0.97,DF:0.97,see the electrical values below for details
Input THD	8.5%, see the electrical values below for details
Efficiency(Max)	88.5%,see the electrical values below for details
In-rush current	6.25A peak ,160us 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	> 50,000 switching cycles
Power consumption	Full load(Pin):71.2W, 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 ,I/P-DALI: 1500V AC ,O/P-DALI: 1500V AC.
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	0.45mA (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
pushDIM dimming port	N/A
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=-20-60°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
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,DALI-2,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	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)
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-DML080-B2200ADN
Output parameters	
Regulation method	Constant Current
Rated output current range	0.8-2.2A
Rated output voltage range	12-42VDC
Rated output power	84W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±1%
Output current accuracy	±2%
Linear regulation	±1%
Load regulation	±2%
No load output voltage	50VDC
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.12%, 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 voltage shock	<380 V AC
Input current	<0.55A (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	8% ,see the electrical values below for details
Efficiency(Max)	89.5%,see the electrical values below for details
In-rush current	8.25A peak ,176us 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	> 50,000 switching cycles
Power consumption	Full load(Pin):93.9W, 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 ,I/P-DALI: 1500V AC ,O/P-DALI: 1500V AC.
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	0.59mA (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
pushDIM dimming port	N/A
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=-20-60°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
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,DALI-2,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	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)
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-DML150-B4000ADN
Output parameters	
Regulation method	Constant Current
Rated output current range	1.5-4A
Rated output voltage range	24-42VDC
Rated output power	152W Max, see the operating window for details
Output current adjustment	EasySet Programming
Output current ripple LF	±1%
Output current accuracy	±1%
Linear regulation	±1%
Load regulation	±1%
No load output voltage	50VDC
Flicker-free(typical)	Flickering percent(IEEE 1789)=0.062%, 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	<320 V AC@1H,380V Output off
Input current	<0.86A (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	5% ,see the electrical values below for details
Efficiency(Max)	91%,see the electrical values below for details
In-rush current	36.28A peak ,445us 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	> 50,000 switching cycles
Power consumption	Full load(Pin):168W, No load(Pno): N/A, On stand-by(Psb) : <0.5W, Network stand-by(Pnet) : N/A
Safety	
Withstand voltage	I/P-O/P:3000VAC,I/P-FG:1500VAC,O/P-FG:500VAC ,I/P-DALI: 1500V AC ,O/P-DALI: 1500V AC.
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	Voltage range: 9.5-22.5V, typical 16V, interface current consumption: 1.8mA
pushDIM dimming port	N/A
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=-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
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,DALI-2,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	IEC 62386-101(DALI-2), IEC 62386-102(DALI-2), IEC 62386-207(DALI-2)
EL	Compatible IEC 61347-2- 13 Annex J , compatible with EN 60598-2-22 and EN 50172
RF	N/A

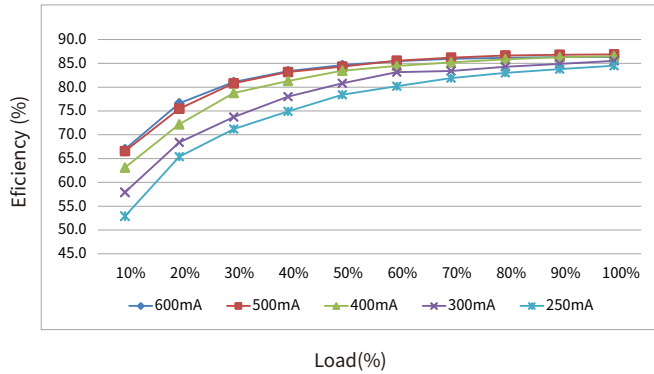
Remarks

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

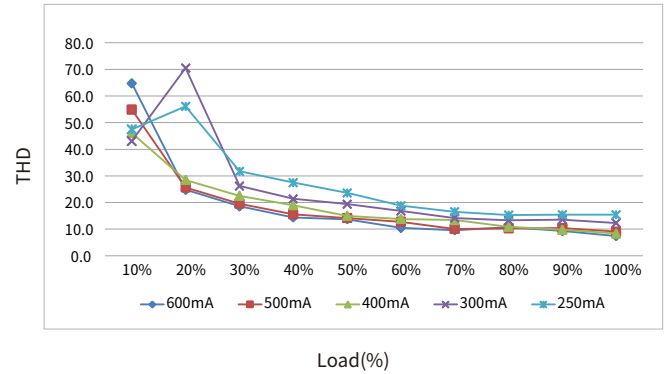
Electrical values

BK-DML022-B

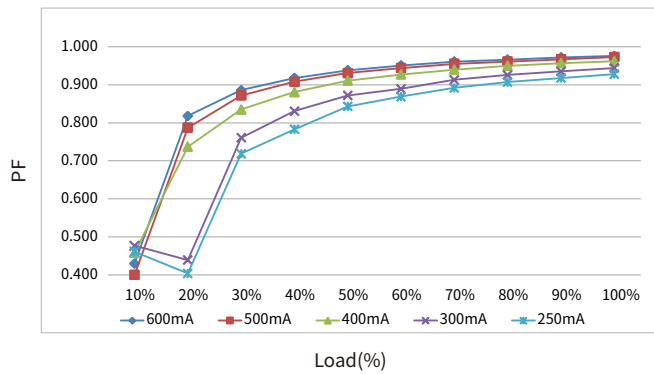
Efficiency vs load



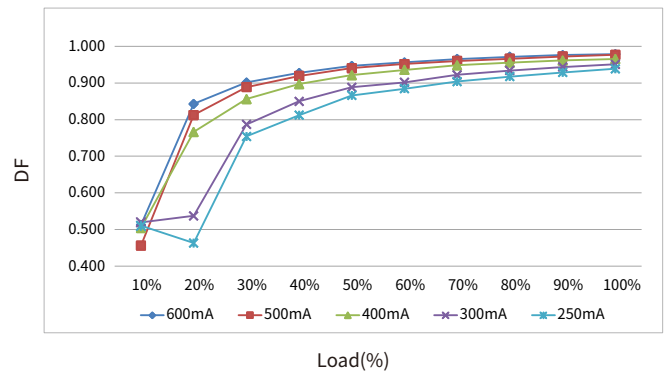
THD vs. Load



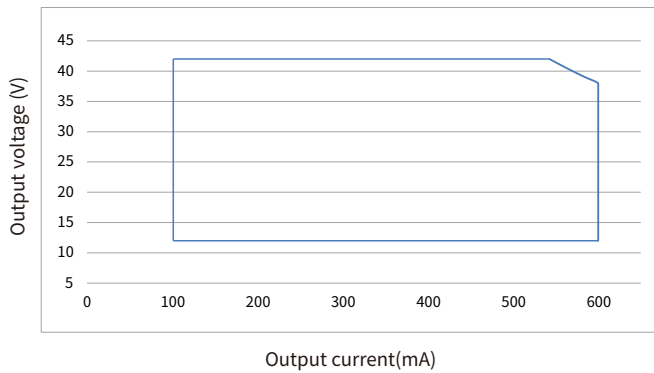
Power factor vs. Load



Displacement factor vs. Load



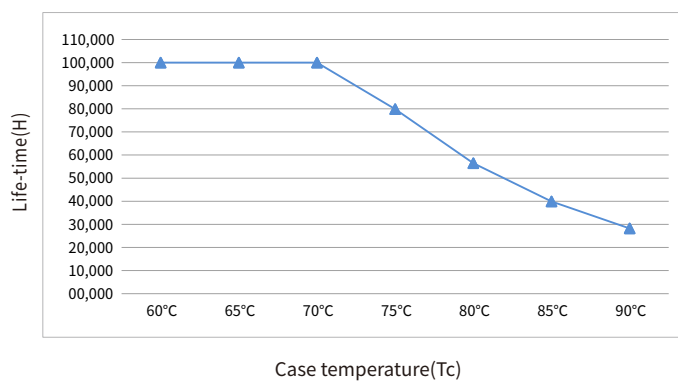
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 12-42V, the current range is 100-600mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 22.8W.

Expected life-time

Life-time vs. case temperature

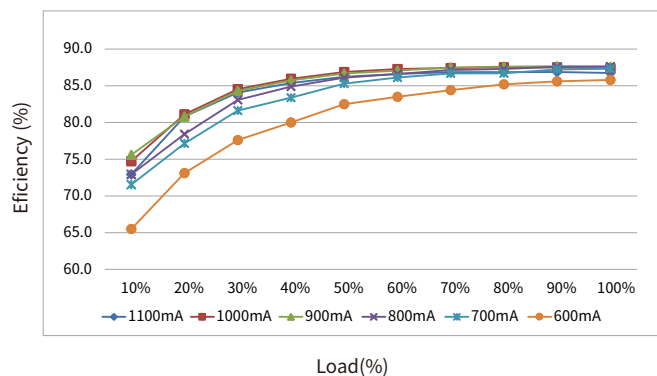


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

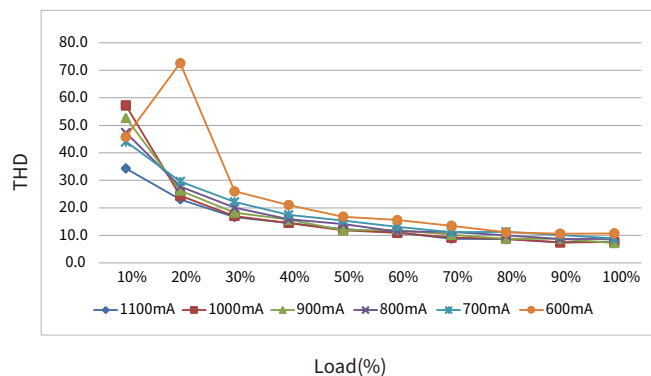
Electrical values

BK-DML040-B

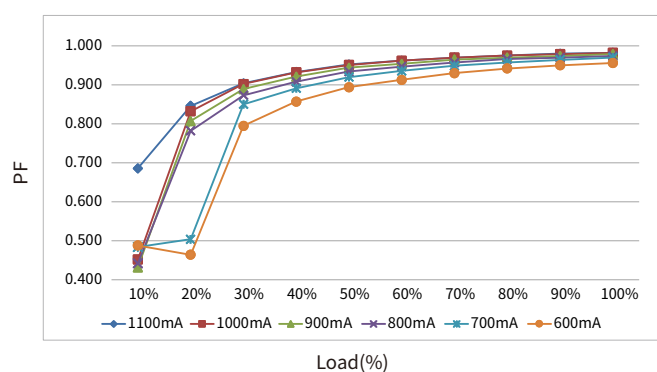
Efficiency vs load



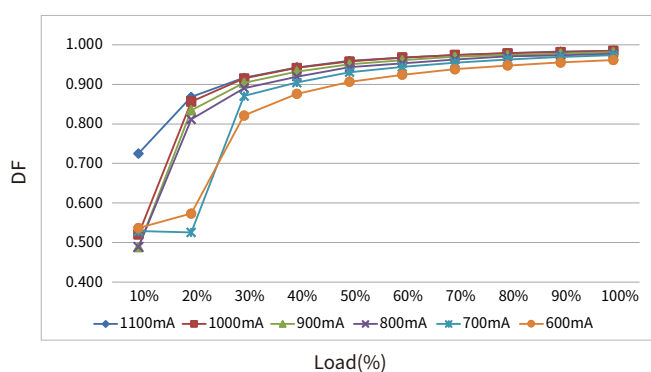
THD vs. Load



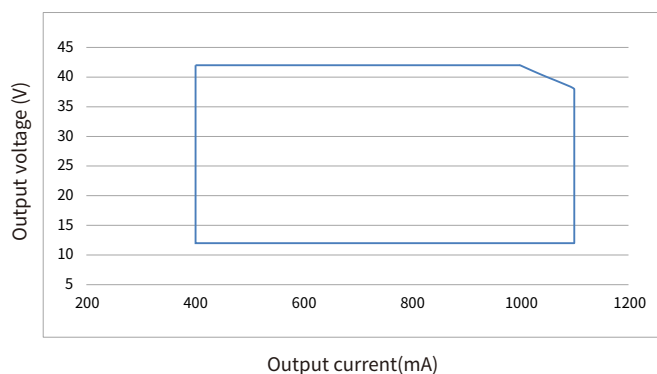
Power factor vs. Load



Displacement factor vs. Load



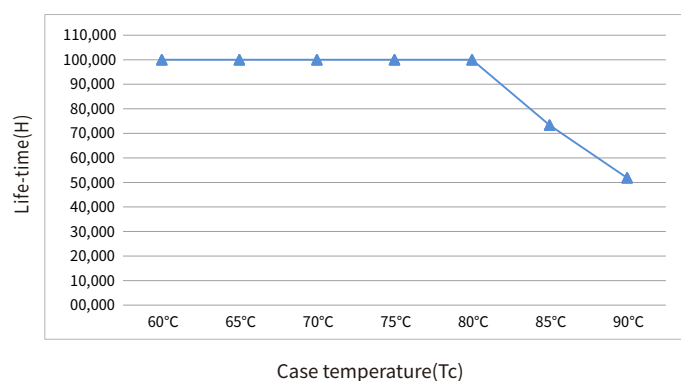
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 12-42V, the current range is 400-1100mA, 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

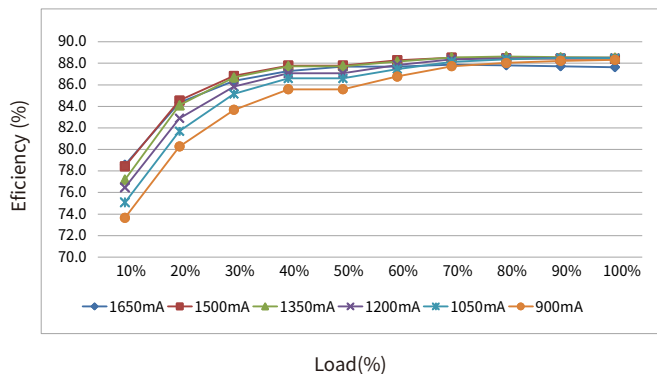


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

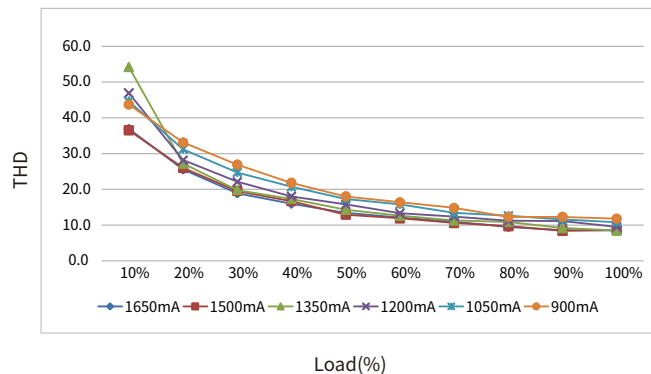
Electrical values

BK-DML060-B

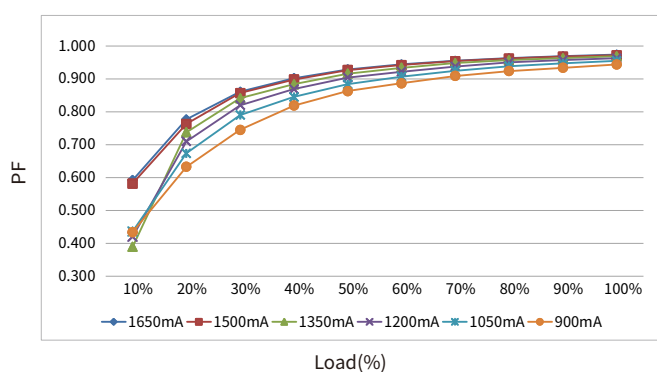
Efficiency vs load



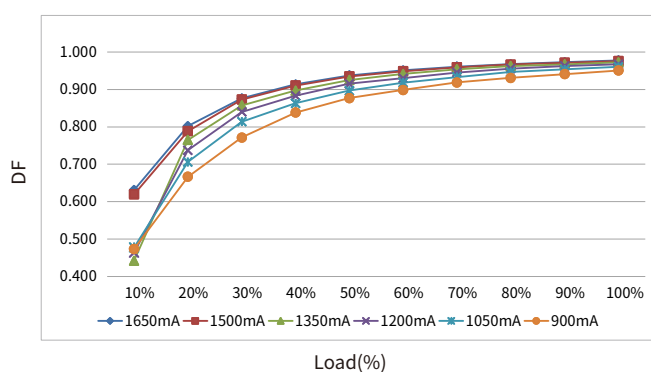
THD vs. Load



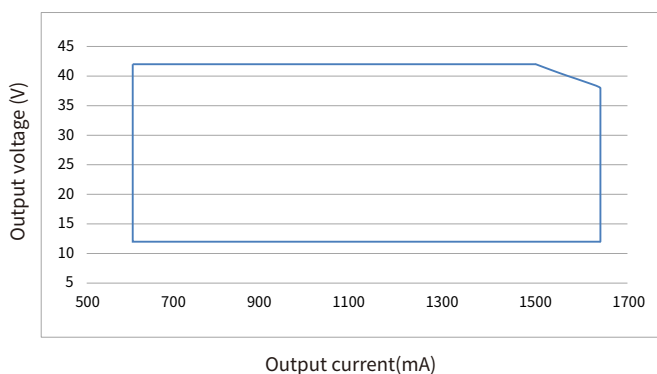
Power factor vs. Load



Displacement factor vs. Load



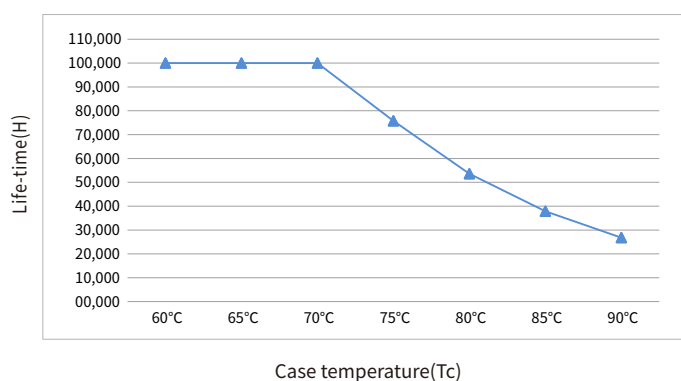
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 12-42V, the current range is 600-1650mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 63W.

Expected life-time

Life-time vs. case temperature

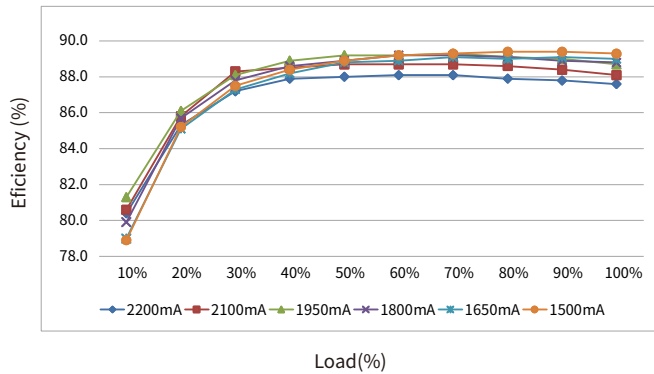


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

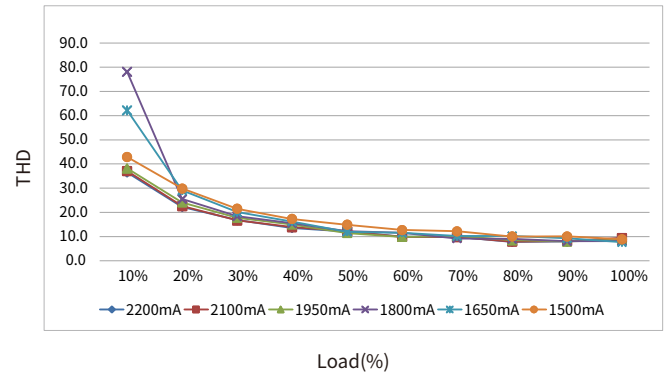
Electrical values

BK-DML080-B

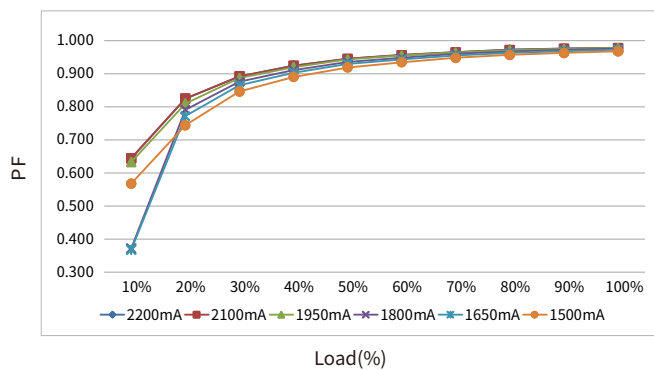
Efficiency vs load



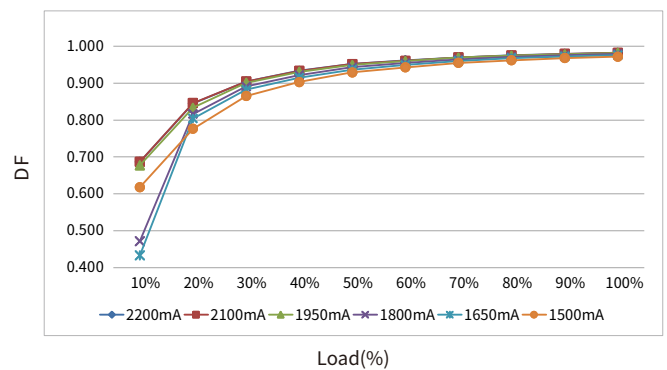
THD vs. Load



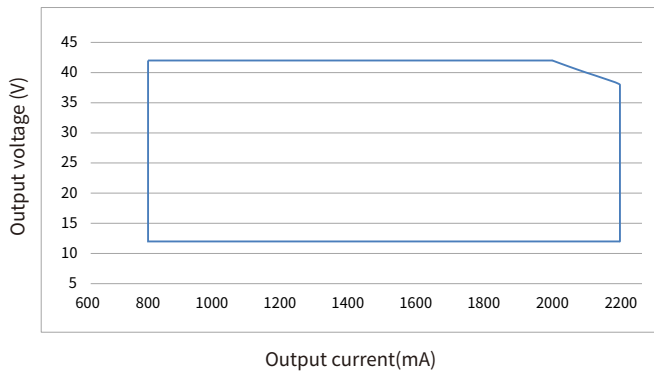
Power factor vs. Load



Displacement factor vs. Load



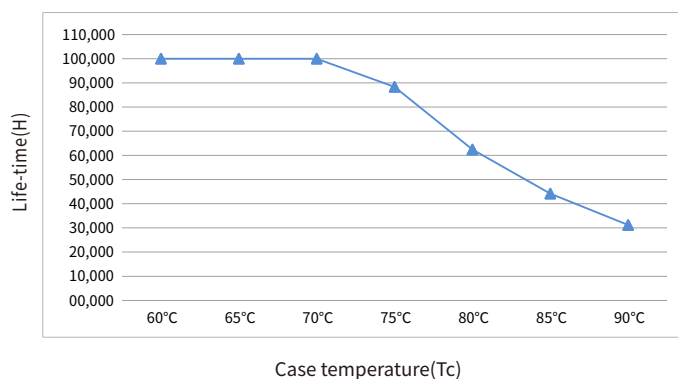
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 12-42V, the current range is 800-2200mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 84W.

Expected life-time

Life-time vs. case temperature

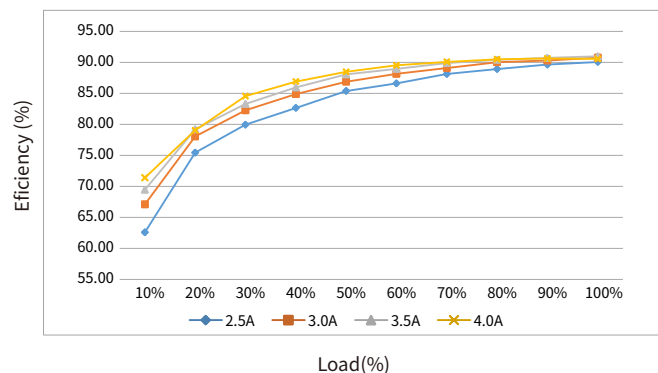


- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

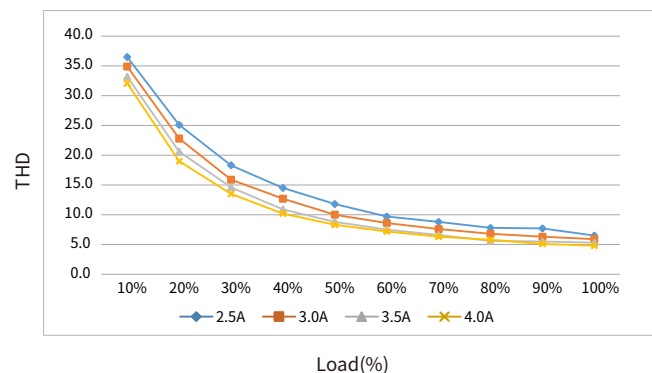
Electrical values

BK-DML150-B

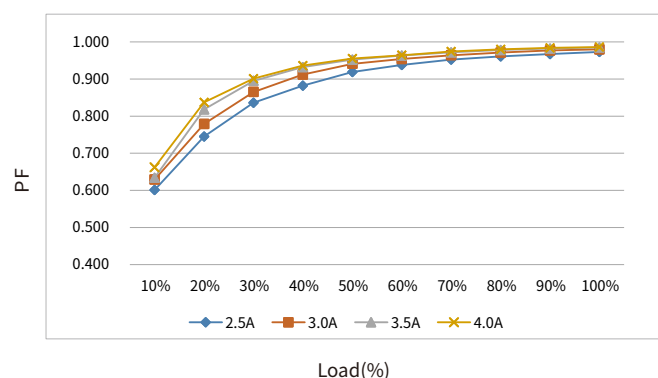
Efficiency vs load



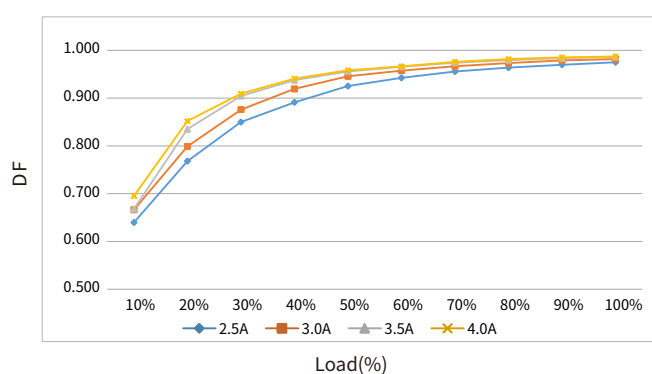
THD vs. Load



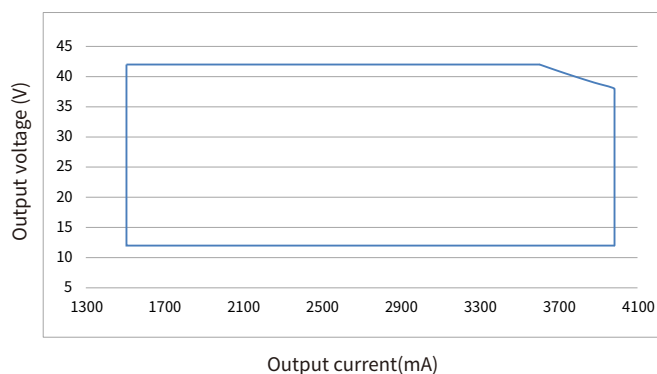
Power factor vs. Load



Displacement factor vs. Load



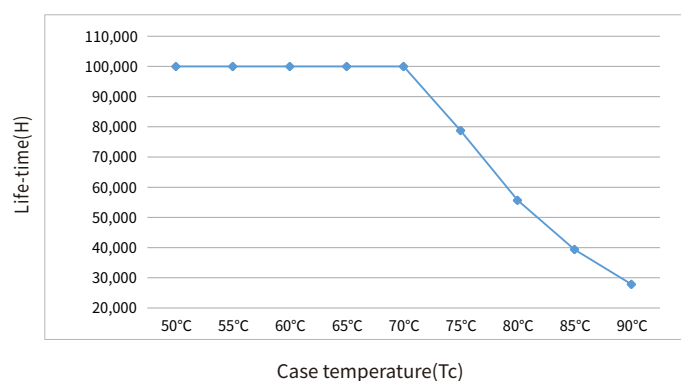
Operating window



- Output voltage x output current = output power
- The minimum current step is 1mA, the minimum voltage step is 1V, the voltage range is 12-42V, the current range is 1500-4000mA, and the voltage and current can be set arbitrarily under the premise that the output power does not exceed 152W.

Expected life-time

Life-time vs. case temperature



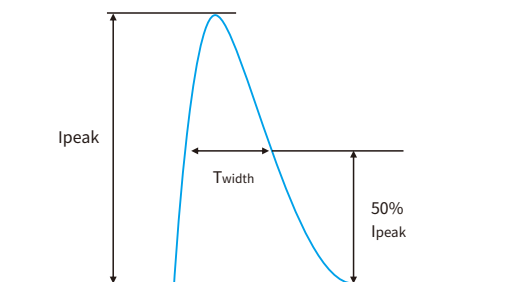
- The life-time of the LED driver is shown in the figure above (calculated based on the 90% survival rate).
- The relation of tc to ta temperature depends also on the luminaire design.

Surge

Model	I _{peak}	T _{width}	Condition	Relative number of MCB														
				B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
BK-DML022-B	3.55A	188us	AC 230V, Full load, Cold start, T _a ≤ 30°C, MCB is not installed side by side	68	88	108	135	169	68	88	108	135	169	68	88	108	135	169
BK-DML040-B	4.06A	178us		37	48	59	74	92	37	48	59	74	92	37	48	59	74	92
BK-DML060-B	6.25A	160us		25	33	40	50	63	25	33	40	50	63	25	33	40	50	63
BK-DML080-B	8.25A	176us		19	25	30	38	48	19	25	30	38	48	19	25	30	38	48
BK-DML150-B	36.28A	445us		3	5	6	7	9	6	8	9	12	14	9	12	15	19	23

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

In the following two cases, the LED driver will automatically turn off the output to protect the LED:

- When the driver is powered on first and the LED is connected later.
- When the driver is powered on, disconnected and connected again.

The output will be activated again after restart of the LED driver.

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.

Configuration programming (EasySet)

- The programming configuration of the driver is realized using the BOKE EasySet programming suite and through the driver's DALI interface or 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	DALI
Input	-	Double	Basic	Basic
Output	Double	-	Basic	Basic
Case	Basic	Basic	-	Basic

Label

BK-DML022-B

INPUT		BOKE Dimmable Constant Current LED Driver		OUTPUT	
MODEL: BK-DML022-B0600ADN INPUT: 200-240V $\approx$ 0/50/60Hz 0.14A Max. λ : 0.45C-0.95 OUTPUT: 12-42V $\approx$ 0.1-0.6A 22.8W Max. 50VDC Max. For LED Modules use only MADE IN CHINA		110 EL DALI 1...100% CLO IP65 tc:90°C ta:60°C tc EasySet FLICKER FREE RoHS S/N:		DA/PROG (Brown) ☐ DA/PROG (Blue) ☐ LED+ (Red) ☐ LED- (Black) ☐	

BK-DML040-B

INPUT		BOKE Dimmable Constant Current LED Driver		OUTPUT	
MODEL: BK-DML040-B1100ADN INPUT: 200-240V $\approx$ 0/50/60Hz 0.25A Max. λ : 0.45C-0.95 OUTPUT: 12-42V $\approx$ 0.4-1.1A 42W Max. 50VDC Max. For LED Modules use only MADE IN CHINA		110 EL DALI 1...100% CLO IP65 tc:90°C ta:60°C tc EasySet FLICKER FREE RoHS S/N:		DA/PROG (Brown) ☐ DA/PROG (Blue) ☐ LED+ (Red) ☐ LED- (Black) ☐	

BK-DML060-B

INPUT		BOKE Dimmable Constant Current LED Driver		OUTPUT	
MODEL: BK-DML060-B1650ADN INPUT: 200-240V $\approx$ 0/50/60Hz 0.37A Max. λ : 0.45C-0.95 OUTPUT: 12-42V $\approx$ 0.6-1.65A 63W Max. 50VDC Max. For LED Modules use only MADE IN CHINA		DALI EL IP65 1...100% CLO tc:90°C ta:60°C tc EasySet FLICKER FREE RoHS S/N:		DA/PROG (Brown) ☐ DA/PROG (Blue) ☐ LED+ (Red) ☐ LED- (Black) ☐	

BK-DML080-B

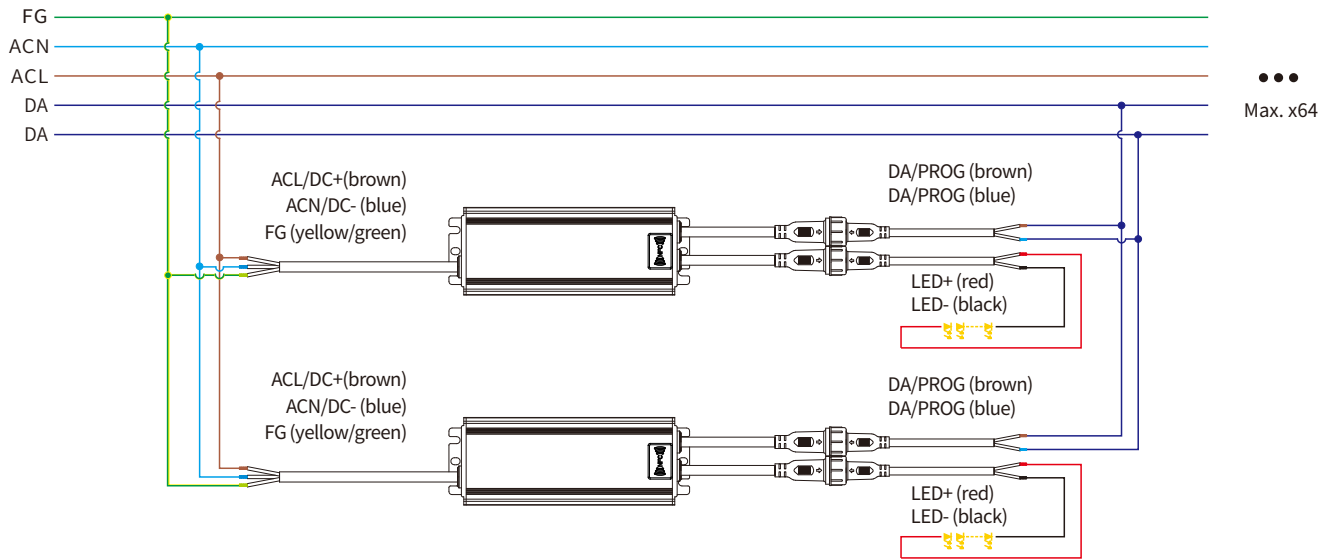
INPUT		BOKE Dimmable Constant Current LED Driver		OUTPUT	
MODEL: BK-DML080-B2200ADN INPUT: 200-240V $\approx$ 0/50/60Hz 0.55A Max. λ : 0.45C-0.95 OUTPUT: 12-42V $\approx$ 0.8-2.2A 84W Max. 50VDC Max. For LED Modules use only MADE IN CHINA BOKE Drivers Co.,Ltd. Address: 2nd and 3rd Floor, No.51, Xihuan 5th Road, South District, 528455 Zhongshan City, Guangdong, CHINA		DALI EL IP65 1...100% CLO tc:90°C ta:60°C tc EasySet FLICKER FREE RoHS S/N:		DA/PROG (Brown) ☐ DA/PROG (Blue) ☐ LED+ (Red) ☐ LED- (Black) ☐	

BK-DML150-B

INPUT		BOKE Dimmable Constant Current LED Driver		OUTPUT	
MODEL: BK-DML150-B4000ADN INPUT: 200-240V $\approx$ 0/50/60Hz 0.86A Max. λ : 0.45C-0.95 OUTPUT: 24-42V $\approx$ 1.5-4A 152W Max. 50VDC Max. For LED Modules use only MADE IN CHINA BOKE Drivers Co.,Ltd Address: 2nd and 3rd Floor, No.51, Xihuan 5th Road, South District, 528455 Zhongshan City, Guangdong, CHINA		DALI EL IP65 1...100% CLO tc:90°C ta:60°C tc EasySet FLICKER FREE RoHS S/N:		LED- (Black) ☐ LED+ (Red) ☐ DA/PROG (Blue) ☐ DA/PROG (Brown) ☐	

DALI dimming application

Wiring diagram



Activating DALI dimming mode

- After installation according to the wiring diagram of DALI dimming 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 $2 \times 1.5\text{mm}^2$.
- 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.

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

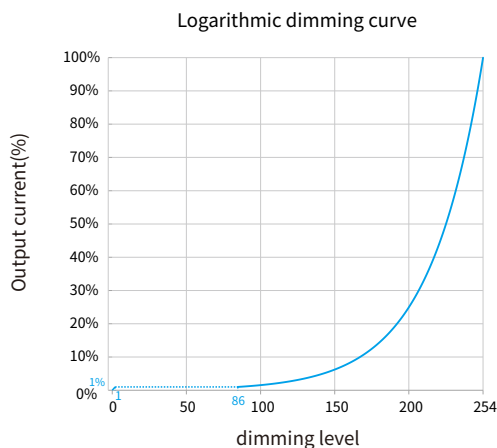
Power-on level :

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.

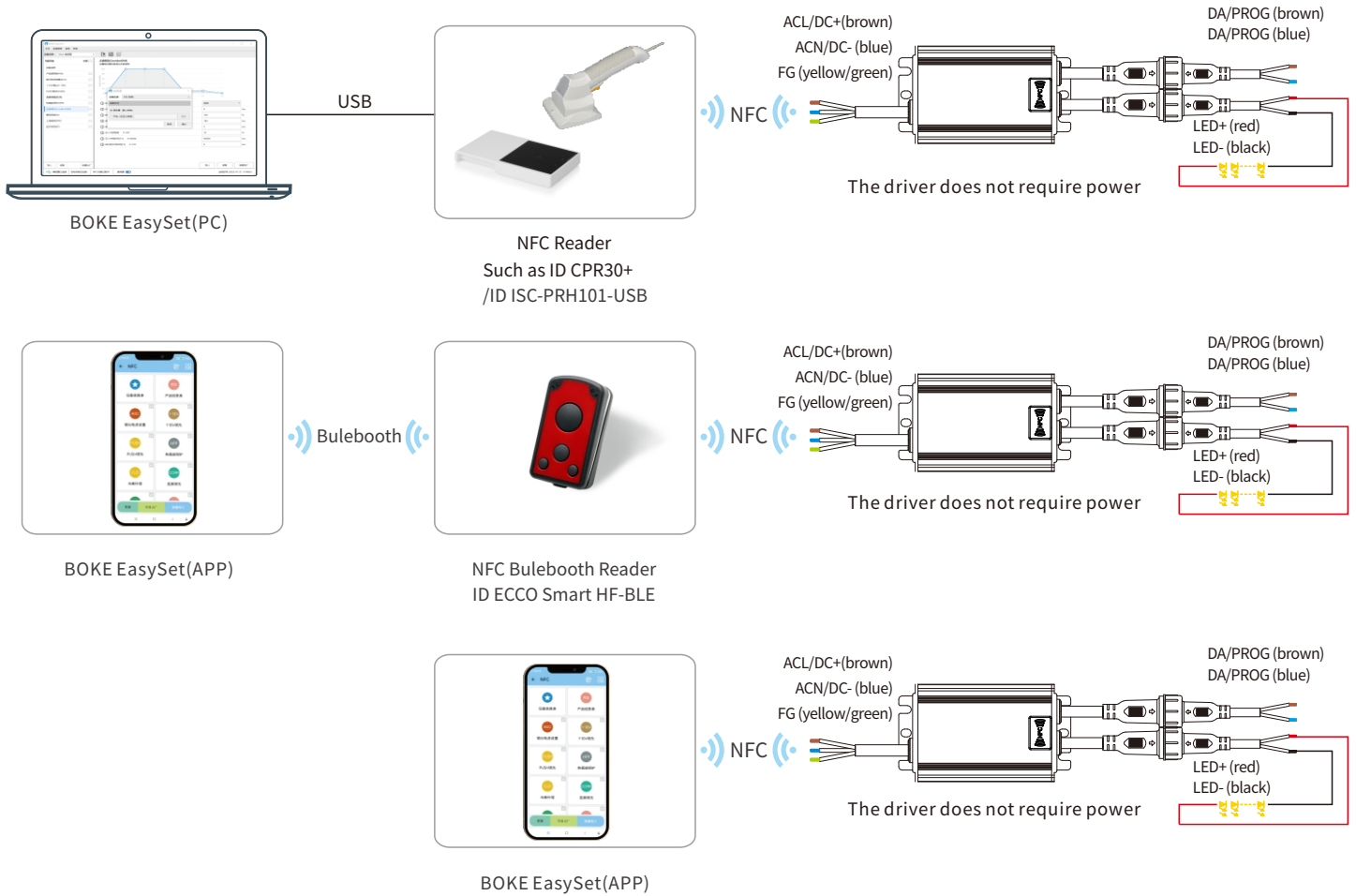
Dimming curve



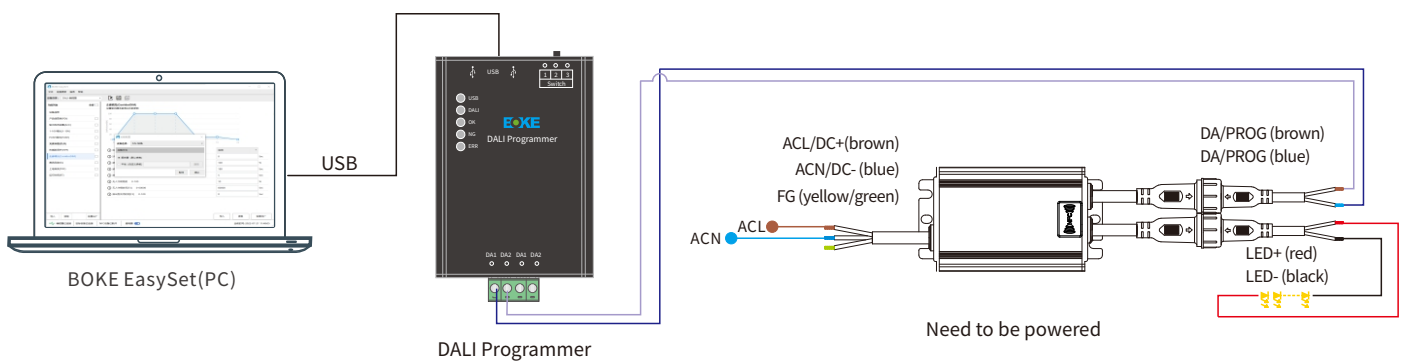
Remarks: The dimming curve can be selected by DALI configuration. The default is logarithmic dimming curve.

Device configuration

Optional 1:



Optional 2:



Software download(PC&mobile)



Note: PC supports Windows 7/Windows 10/Windows 11 32bit/64bit;
The phone needs to have NFC function

Device configuration

Configure tools and software

Type	Name	Brand	Name	BOKE EasySet minimum version	
				PC	APP
Programmer	NFC desktop Reader	FEIG	CPR30+	V1.1.0	-
	NFC handheld Reader	FEIG	ID ISC-PRH101-USB	V1.2.2	-
	NFC Bluetooth Reader	FEIG	ID ECCO Smart HF-BLE	-	V1.0.0
	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

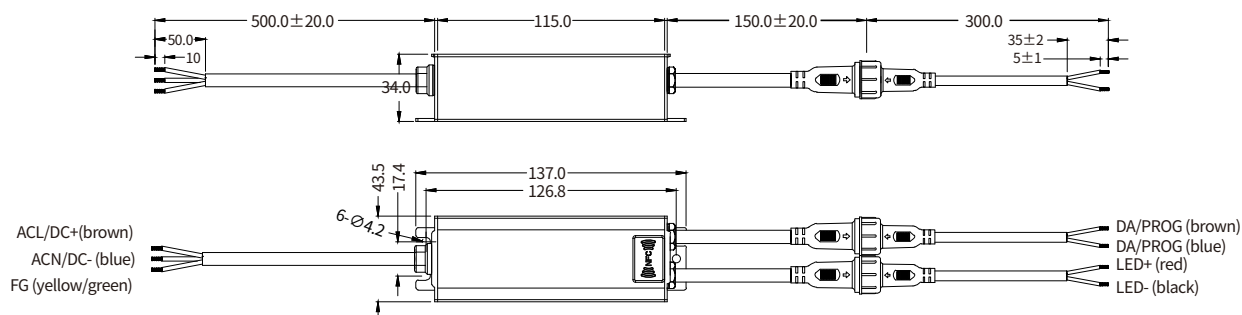
Configuration items	Factory settings	Parameter configuration	Read/Wirte
Product information	-	NO	Read Only
Adjustable output current(AOC)	Activated	YES	Read/Wirte
Constant light output function(CLO)	Deactivated	YES	Read/Wirte
Hot plug-in protection(HPP)	Deactivated	YES	Read/Wirte
Running time		NO	Read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

Installation

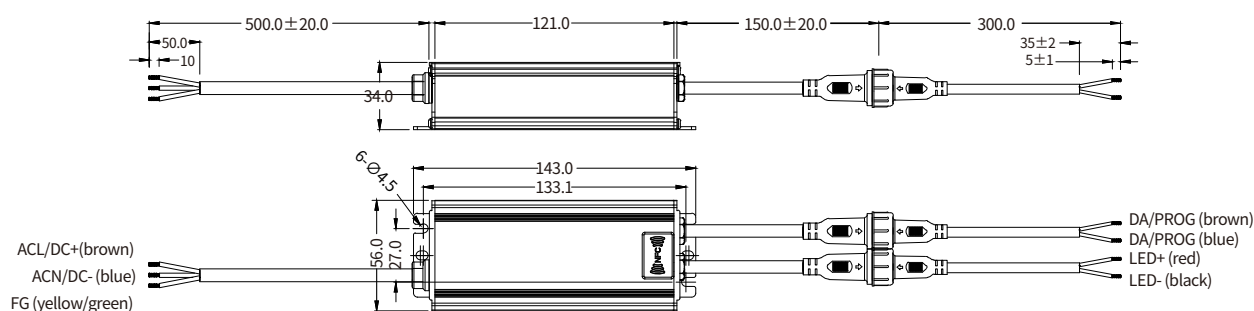
Mechanical dimensions

Unit:mm

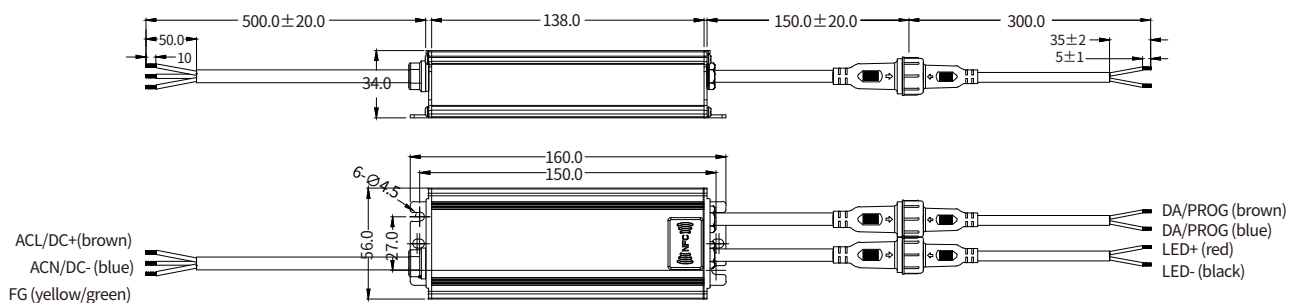
DML022-B



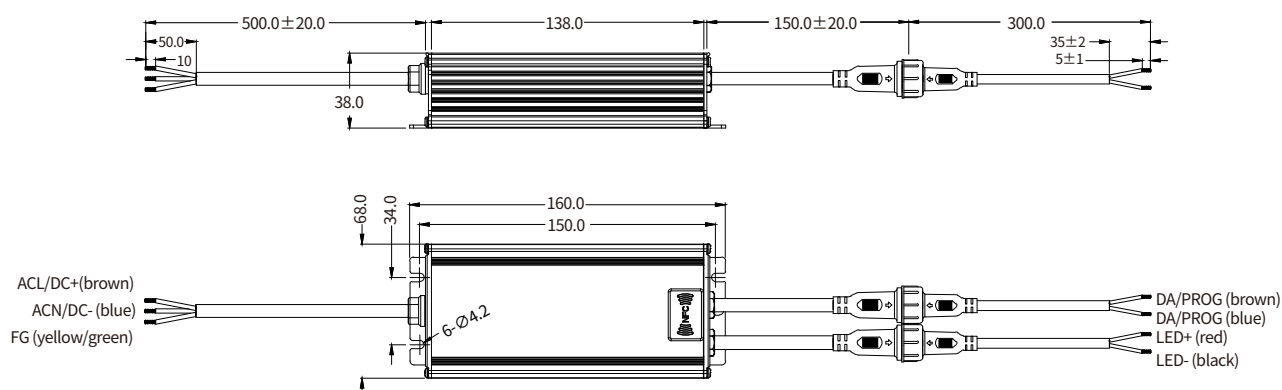
DML040-B



DML060-B



DML080-B

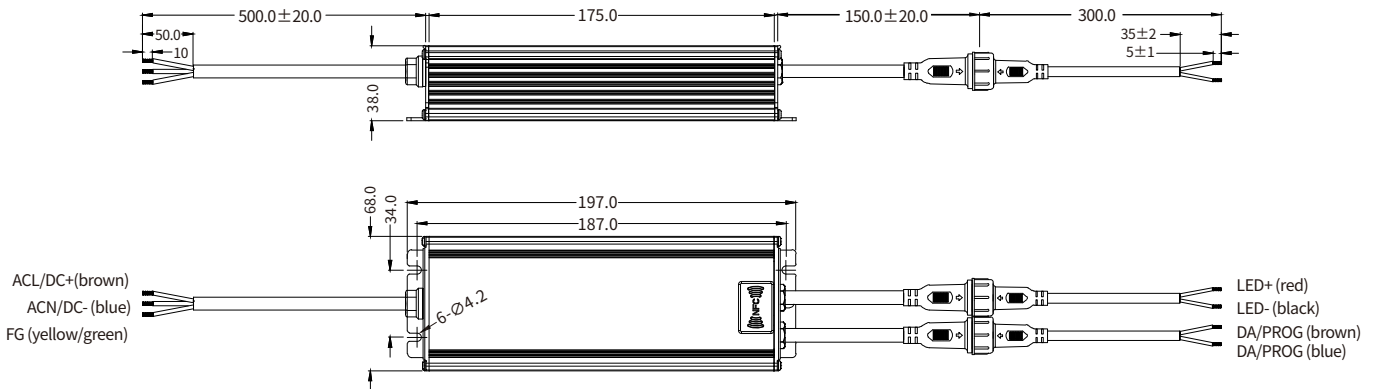


Installation

Mechanical dimensions

Unit:mm

DML150-B



INPUT

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

Dimming interface

Function	Ccolour	Wire specification
DA/PROG,DA/PROG	brown,blue	0.75mm ² *2; H05RN-F; Rubber wire,The outer skin is black, and the inner package is brown and blue two core wire.

OUTPUT

Function	Colour	Wire specification
LED-,LED+	black,red	0.75mm ² *2; H05RN-F; 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 V.
- If a LED load is connected the device has to be restarted.
- Restart can be achieved by re-powering the driver or executing a on/off command (action) through the control 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. lenght of output wires is 2 m.
- Incorrect wiring can damage LED modules.

Installation requirements

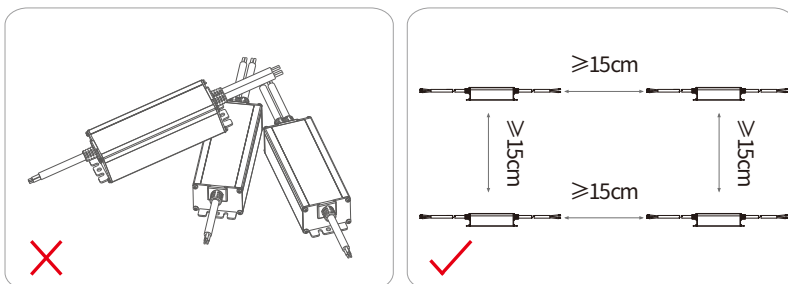
- The driver should be installed in a dry, acid-free, oil-free, fat-free environment.
- The installation ambient temperature of the drive shall not exceed the value of Ta at any time.
- The temperature of the mounting surface of the driver should be lower than 40°C
- The driver should keep a certain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

Mounting screw specifications and torque

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

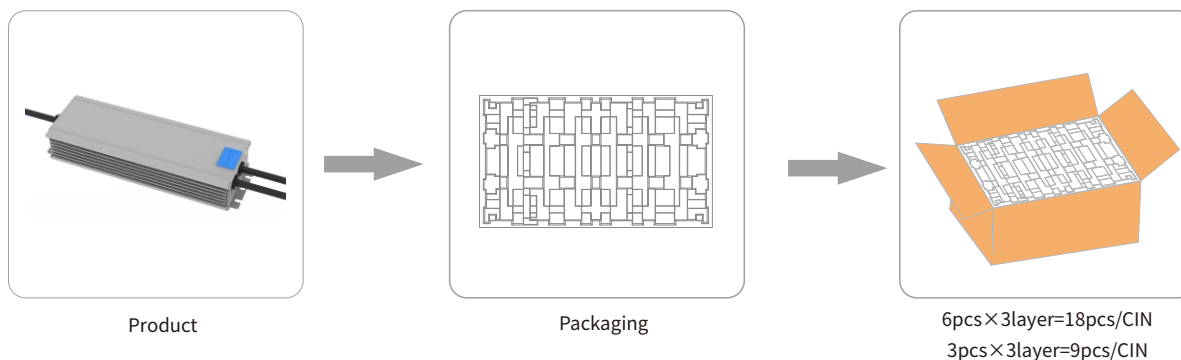
Replace LED module

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



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.

Packaging



Model	Product size	Weight	Packaging size	Carton size	Qty/carton	N.W	G.W
DML022-B	L137*W43.5*H34mm	400g	L520*W295*H62mm	L530*W310*H230mm	18pcs	7.20kg	8.70kg
DML040-B	L143*W56*H34mm	480g	L520*W295*H62mm	L530*W310*H230mm	18pcs	8.64kg	10.2kg
DML060-B	L160*W56*H34mm	507g	L520*W295*H62mm	L530*W310*H230mm	18pcs	9.13kg	10.6kg
DML080-B	L160*W68*H38mm	727g	L520*W295*H62mm	L530*W310*H230mm	9pcs	6.54kg	8.15kg
DML150-B	L197*W68*H38mm	970g	L520*W295*H62mm	L530*W310*H230mm	9pcs	8.73kg	10.0kg

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.