Product Datasheet

The global certified BLD-500-C is a dual stage D4i/DALI2 LED driver. 10kV surge protection level, 100khour long life and 7-year warranty provide high confidence to luminaire users. It supports high accuracy energy report and all D4i related requirement. NFC programming makes driver setting easier for users. All around protections including digital OTP with auto-recovery secure 24hour non-stop operation for luminaires.

☑ Horticultural ☑ Stadium ☑ Flood ☑ Harbor ☑ UV

Features

- Supply Voltage: 90-305Vac or 127-420Vdc, 186-250Vdc with EL Mark
- Great Surge Immunity 10kV
- D4i/DALI2.0 Comply with IEC62386-101,102,150,207,250,251,252,253
- Integrated 16Vdc Bus Power Supply
- ±1% Energy Report Accuracy
- Dim Off with 0.5W Standby Power
- 24V 3W (10W Transient Peak) Aux-Power
- 100,000Hour Life @ Tc=75℃
- 7 Year Warranty @ Tc<=75℃
- Airset™ NFC Programmability
- EL Mark with Programmable EOFx
- Dim Off with 0.5W Standby Power
- UL Class P, ENEC/CB/CCC SELV Output
- Global Certified Model Available
- Safety according to EN 61347-1, 61347-2-3, 61347-2-13, 62384

Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max
BLD-500-C160-ARZ	90~305Vac or 127-420Vdc	500 W	188-417Vdc	1200mA	1600mA
BLD-500-C210-ARZ		500 W	143-294Vdc	1700mA	2100mA
BLD-500-C320-ARZ		500 W	94-209Vdc	2400mA	3200mA
BLD-500-C420-ARZ		500 W	71-147Vdc	3400mA	4200mA
BLD-500-C560-ARZ		500 W	54-119Vdc	4200mA	5600mA
BLD-500-C11A-ARZ		500 W	27-56Vdc	9000mA	11000mA

Z=	U	V	S	S#NNNNGL	W	D
Input Cable	3 pin UL cable with ground	3 pin UL cable with ground	3 pin VDE cable with ground	3 pin Global cable with ground	3 pin VDE cable with ground	2 pin VDE cable without ground
Output Cable	2 pin UL cable without Ground	3 pin UL cable with ground	2 pin VDE cable without ground	2 pin Global cable without ground	3 pin VDE cable with ground	2 pin VDE cable without ground
Certified Input Voltage Range	UL Listed Class P FCC 120-277Vac	UL Listed Class P FCC 120-277Vac	ENEC CB RCM CCC Class I 220-277Vac	UL Recognized 120-277Vac ENEC CB RCM Class I 220-277Vac	ENEC CB RCM Class I 220-277Vac	Class II 120-277Vac

Note: 1. Add suffix –D00000 to indicate the D4i model without 24Vaux.

2. Add suffix –DAX000 to indicate the D4i model with 24Vaux.

3. See the **Output Operation Range Section** for programmable model details.

Technical Data

Input Voltage	90~305Vac or 127-420Vdc
Input Frequency	47～63Hz
Power Factor	>0.95@60-100%load, refer to PF vs. Load curve
THD	<15%@60-100%load, refer to THD vs. Load curve
Input Current	4.5Amax@120Vac & Full-Load, 2.7Amax@220Vac & Full-Load
Inrush Current	See Inrush Current Section in the datasheet
Leakage Current	0.75MIU max @277Vac 60Hz, UL8750 0.7mA max @240Vac 50/60Hz, IEC60598-1
Input Under Voltage	Shut down and auto-restart
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Current Accuracy	±2%Io
Ripple Current	Ip-p:5%Io max
Setup Time	1.2s max
Overshoot	10% Io max & LED Load
Output Over Voltage	120% Vomax, typ.
Short Circuit	Auto recovery. The output recovers when short is removed.
Over Temperature	Lower the output current when Tc≧105±10℃; Auto Recovery When Tc≦70±10℃
Operating Temperature	Case Temperature Tc=-40℃～+90℃； 10%RH～100%RH
Storage Temperature	-40℃～+85℃； 5%RH～100%RH
MTBF	≥280,000 hours, 75℃ case temperature (MIL-HDBK-217F)
Lifetime	≥100,000 hours, 75℃ case temperature, refer to life vs. Tc curve
Case Temperature	90℃ max, marked in the Tc point of label
Dimension	240 x 90 x 41.5 by mm (body), 267x 90 x 41.5 by mm (endcaps included)
Net Weight	1600g
Packing	See Package Information Section in the datasheet

Notes: Unless specified, all the test results are measured in 25℃ room temperature.

Safety/EMC Compliance

Safety Standards	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012/1310	Power units other than class 2 / Class 2 power units
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement for d.c. or a.c. supplied electronic control gear for LED modules
IEC 62384	DC or AC supplied electronic control gear for LED modules - Performance requirements
IEC 55015/FCC Part 15	Conducted emission test & radiated emission test; ANSI C63.4:2009 Class B
IEC 61000-3-2	Harmonic current emissions; Class C
IEC 61000-3-3	Voltage fluctuations & flicker
IEC 61000-4-2	Electrostatic discharge (ESD): 8 kV air discharge, 4 kV contact discharge
IEC 61000-4-3	Radio frequency electromagnetic field susceptibility test (RS)
IEC 61000-4-4	Electrical fast transient (EFT)
IEC 61000-4-5	Surge immunity test
IEC 61000-4-6	Conducted radio frequency disturbances test (CS)
IEC 61000-4-8	Power frequency magnetic field test
IEC 61000-4-11	Voltage dips
IEC 61547	Electromagnetic immunity requirements applies to lighting equipment

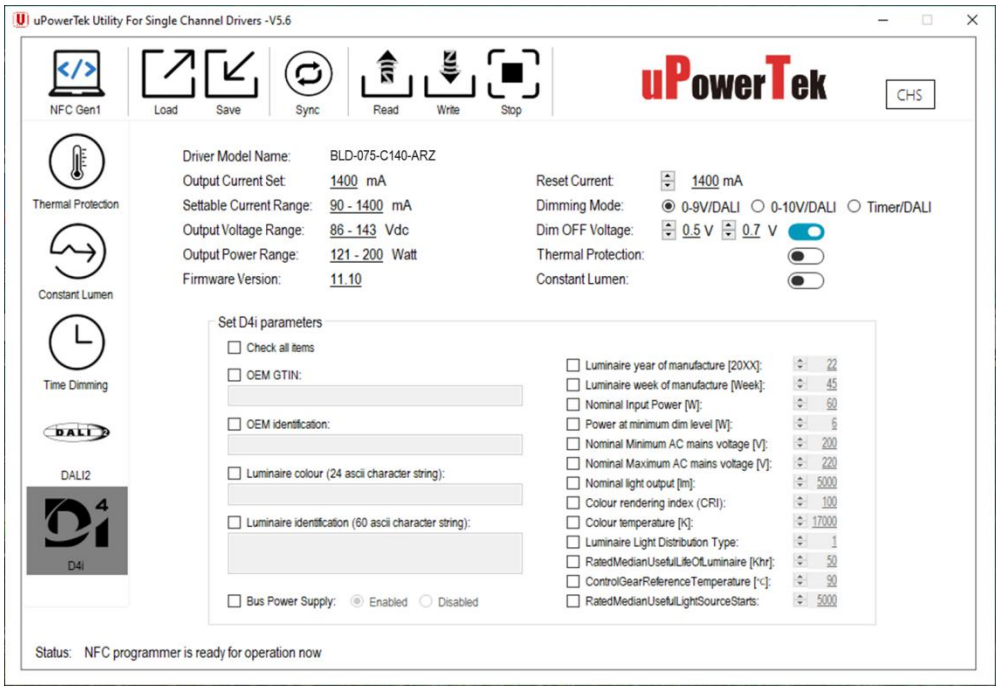
Dimming

Parameter	Min.	Typ.	Max.
DALI Interface Standard		IEC62386-101,102,150,207,250,251,252,253	
Dimming Range	10%	Logarithmic (default)	100%
DA1,DA2 High Level	9.5V	16V	22.5V
DA1,DA2 Low Level	-6.5V	0	6.5V
DA1,DA2 Current	0		2mA
Bus Power Supply Voltage	12Vdc	16Vdc	20Vdc
Bus Power Supply Current	52mA	-	60mA
Auxiliary Power Voltage	21.6V	24V	26.4V
Auxiliary Power	3W	-	4W
Auxiliary Power Endurance @6W	3.8ms/6ms	-	4.5ms/6ms
Auxiliary Power Endurance @10W	1.8ms/6ms	-	2.2ms/6ms
Bus Power Supply Current	52mA	-	60mA
Fast Dimming On-Off Transition		300ms	
Fast Dimming 10-100% Io Transition		70ms	

Programming

- **Programmable Functions**

  uPowerTek LED drivers offer a range of configurable functions to meet specific lighting requirements. The Output Current, Dimming Mode, Dim Off/On Voltage Threshold, and Timer Dimming can be set as basic programming functions. Constant Lumen Output (CLO) can also be customized to ensure consistent light performance. Additionally, depending on the different product model numbers, users can benefit from programming Thermal Protection by external NTC (with extra cable), DALI/D4i Features, and DMX addressing.



uPowreTek Programming Software Interface

- **Required Equipment**

  To program uPowerTek LED drivers, users will need specific equipment based on their preferred method. For NFC wireless programming, users can use a smartphone with either IOS or Android, the uPowerTek NFC Programmer, or the FEIG NFC Programmers. These tools ensure a seamless and efficient setup process, realizing precise customization of the LED driver settings.

NFC Programmer V1

NFC Programmer V2

FEIG NFC Programmer

Android or iPhone

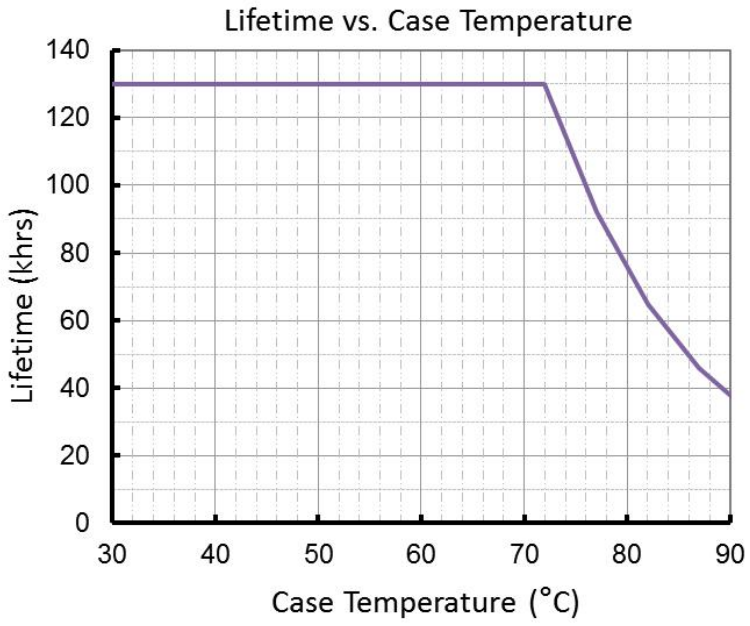
- **Connection Guide**

  This guide provides simple connection diagrams to help users understand the programming system. For more detailed operating instructions, including step-by-step procedures and additional configurations, please visit our website. You can download the comprehensive user manual and necessary software from the following link: https://www.upowertek.com/download-2/.

Wireless Programming

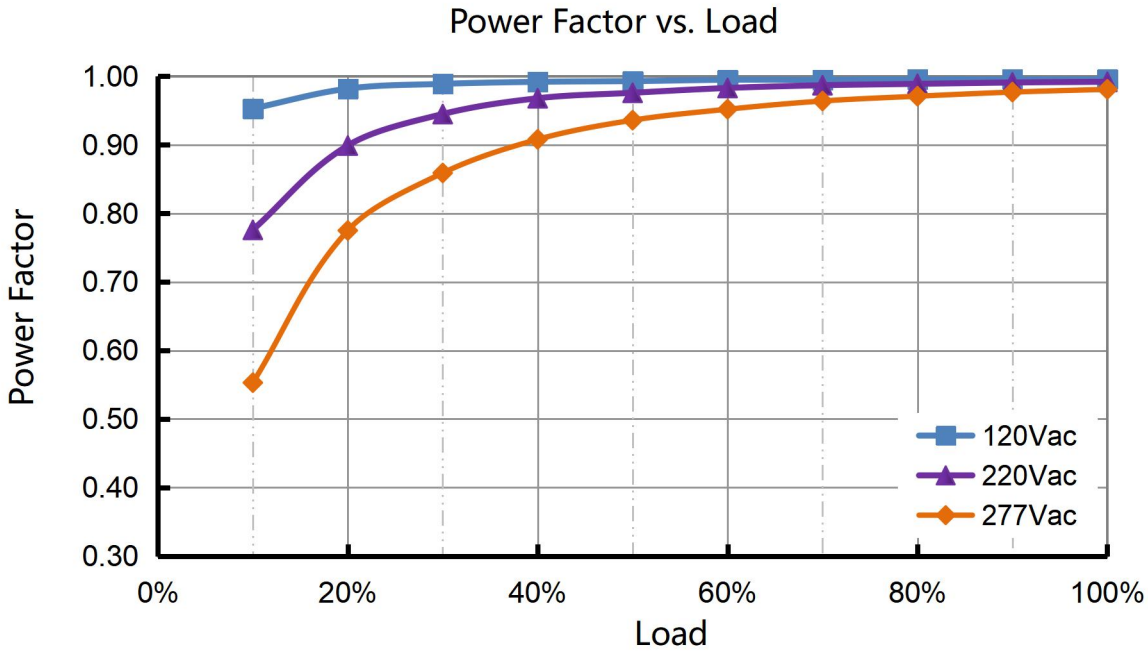
Cellphone Programming

Lifetime vs. Case Temperature

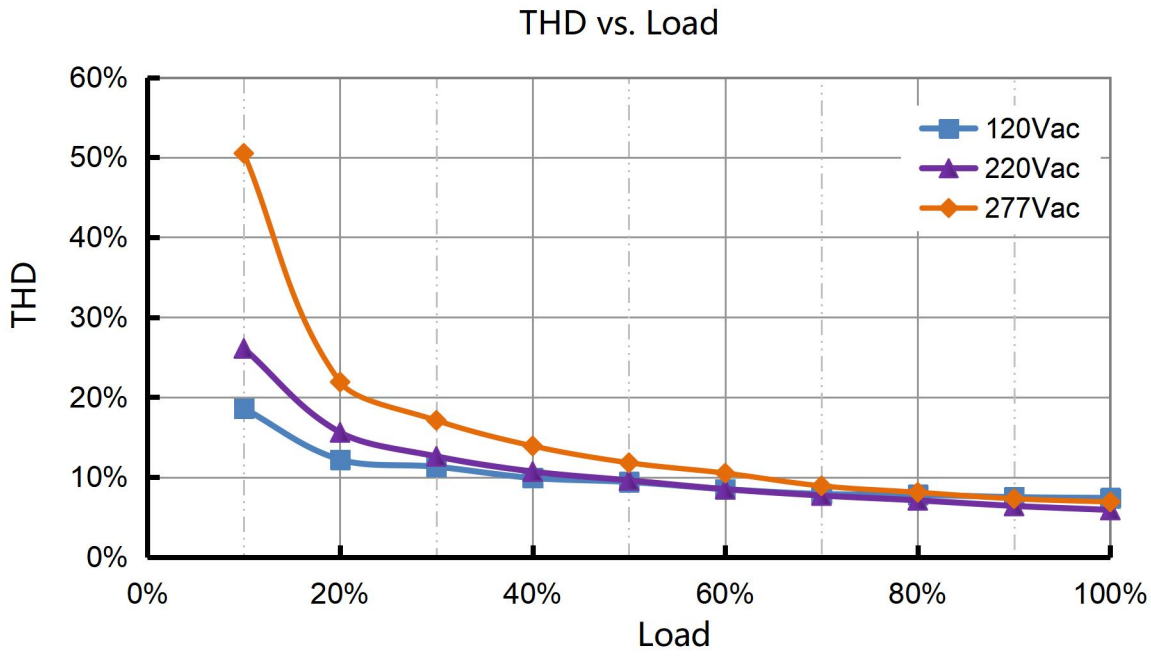


(End of Life: Maximum Failure Rate=10%)

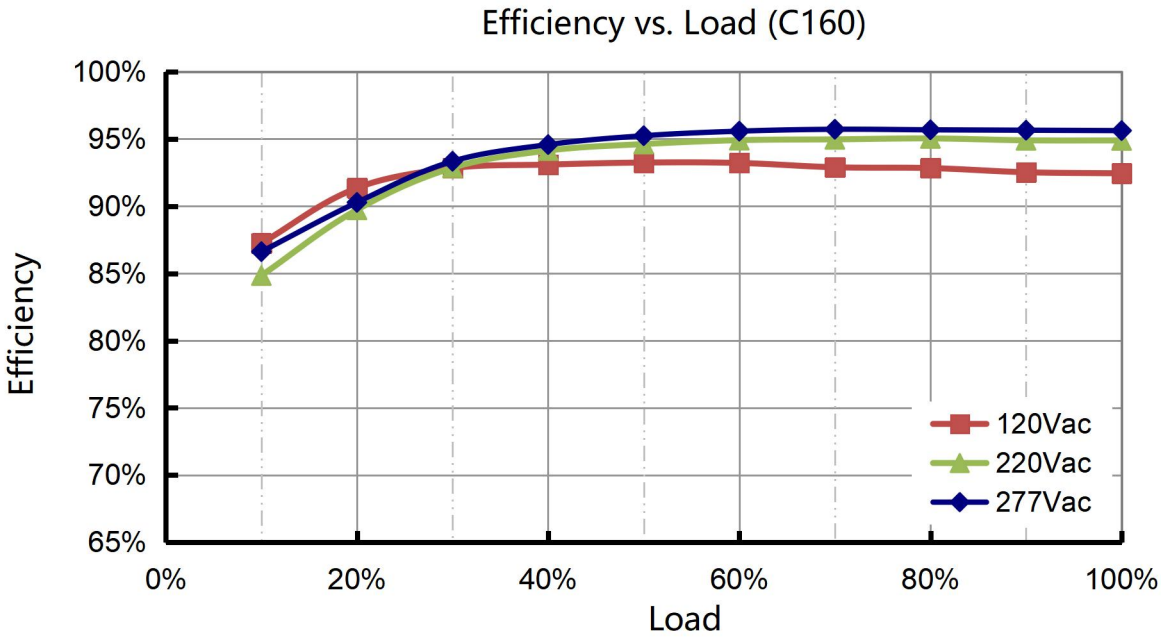
Power Factor vs. Load

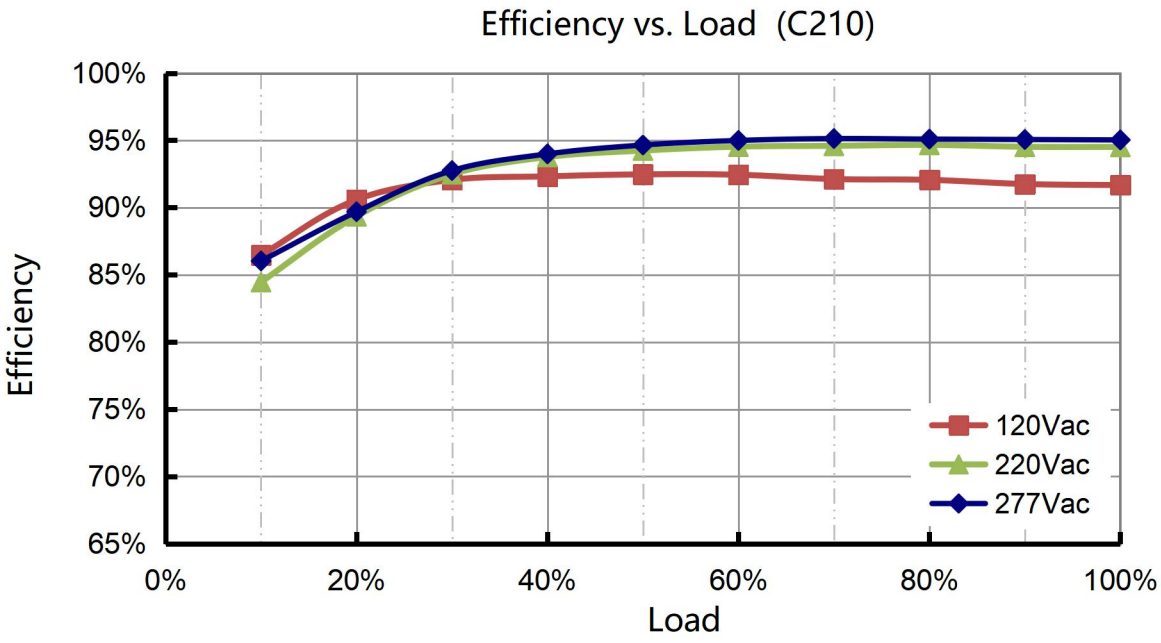


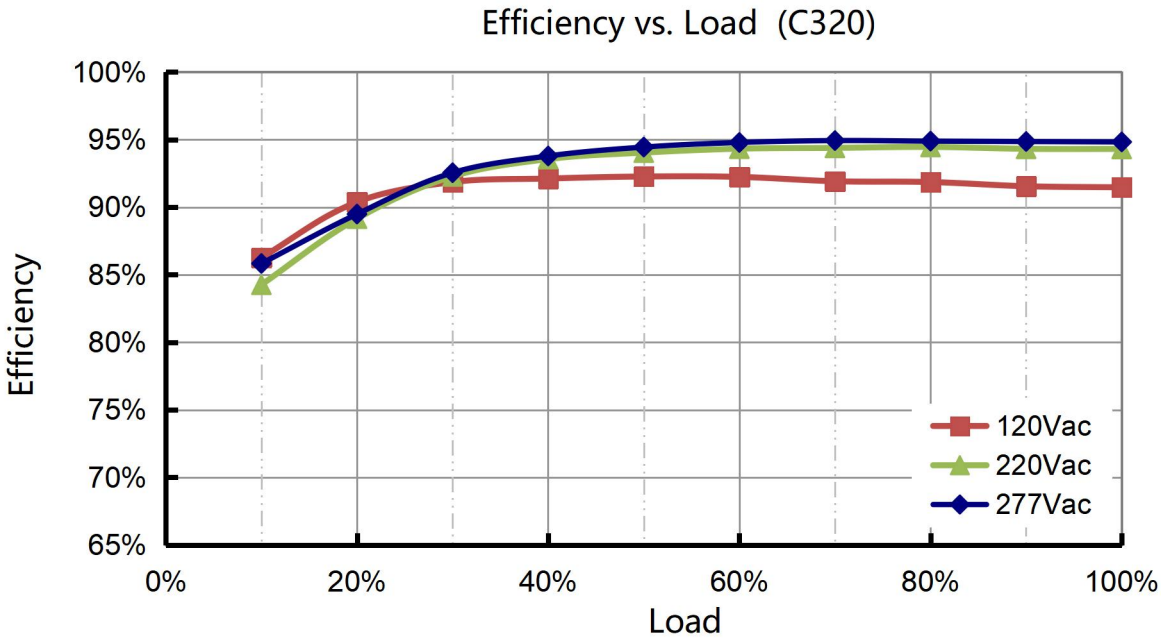
THD vs. Load

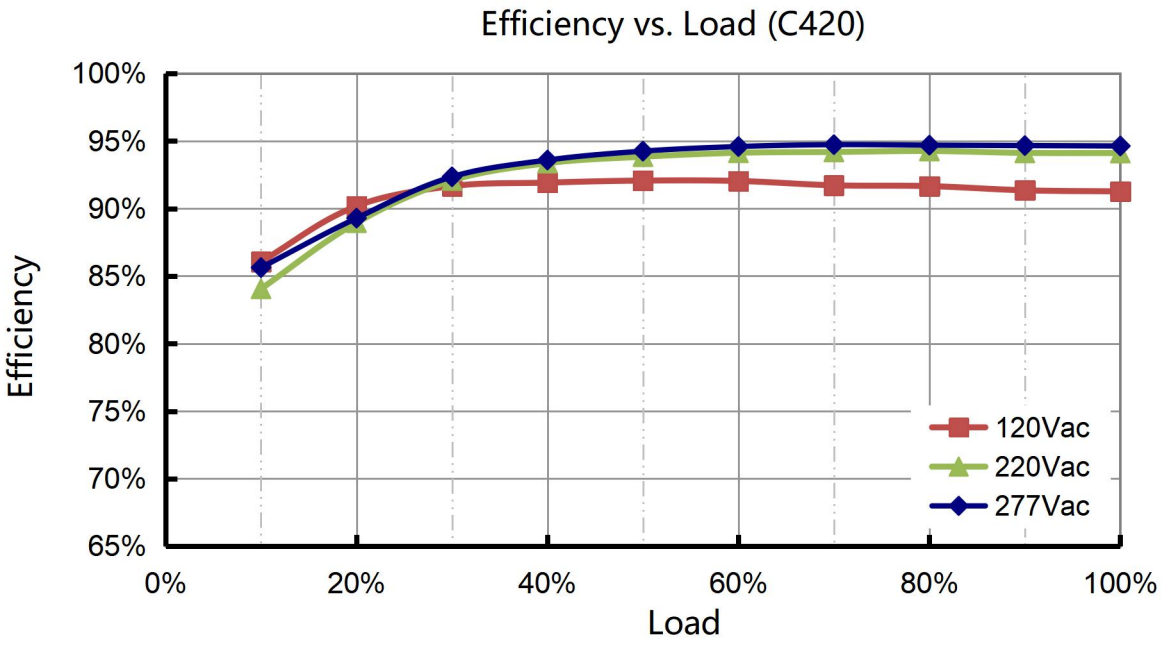


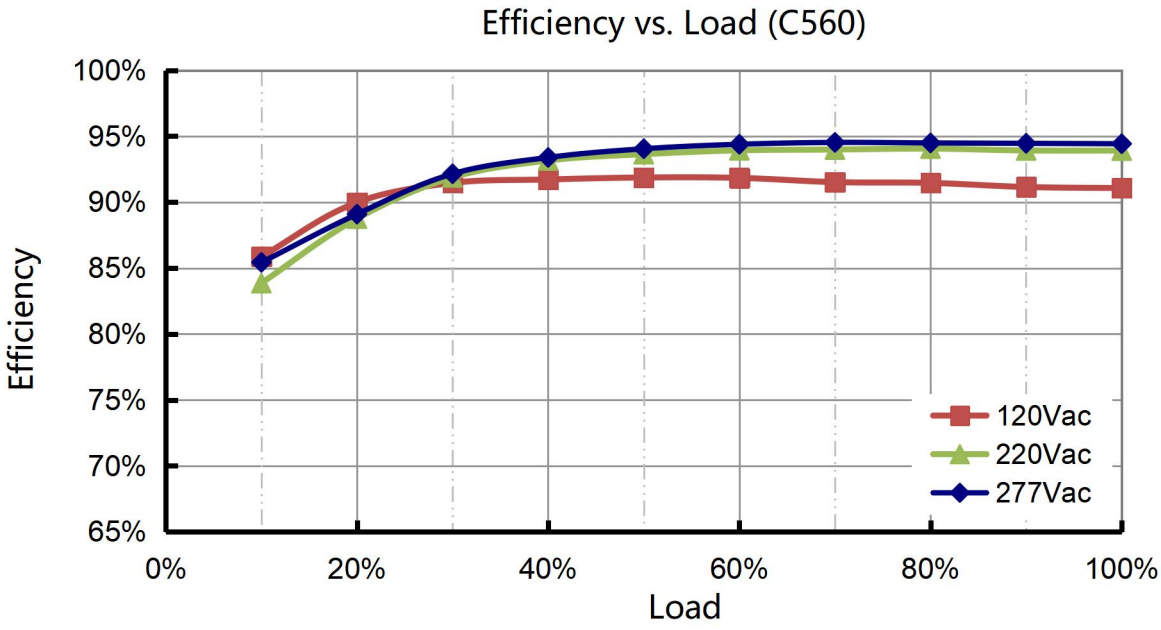
Efficiency vs. Load

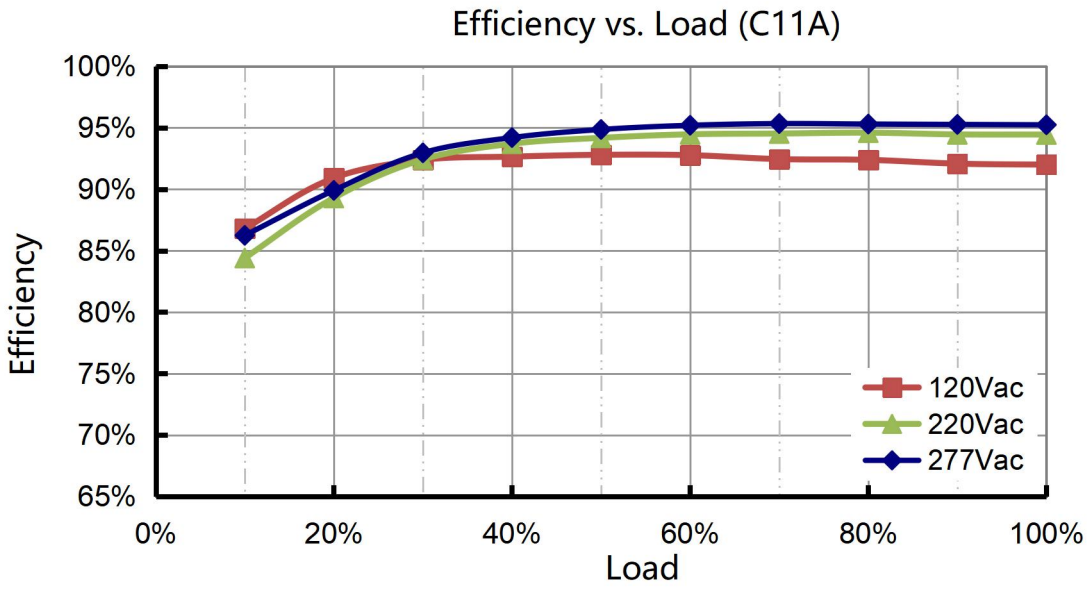



Efficiency vs. Load (C210)
Efficiency
100%
95%
90%
85%
80%
75%
70%
65%
0%
20%
40%
60%
80%
100%
Load
120Vac
220Vac
277Vac

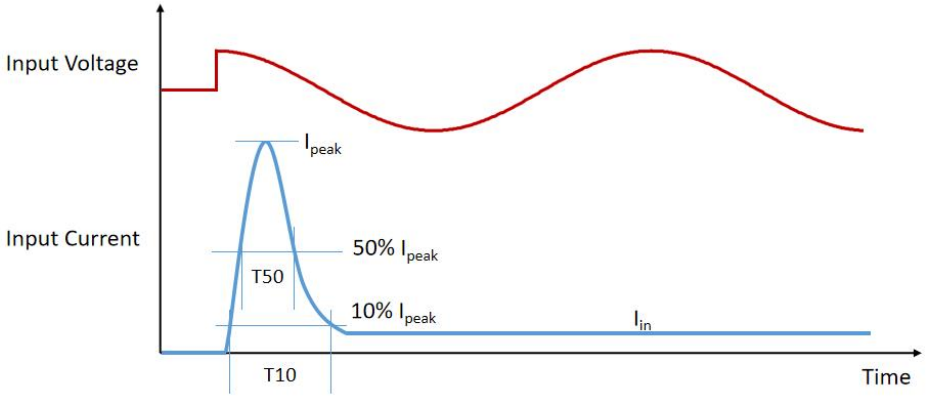

Efficiency vs. Load (C320)
Efficiency
100%
95%
90%
85%
80%
75%
70%
65%
0%
20%
40%
60%
80%
100%
Load
120Vac
220Vac
277Vac


Efficiency vs. Load (C420)
Efficiency
100%
95%
90%
85%
80%
75%
70%
65%
0%
20%
40%
60%
80%
100%
Load
120Vac
220Vac
277Vac


Efficiency vs. Load (C560)
Efficiency
100%
95%
90%
85%
80%
75%
70%
65%
0%
20%
40%
60%
80%
100%
Load
120Vac
220Vac
277Vac



Inrush Current



Input Voltage	I_{peak}	10% -10% T10 Duration	50% -50% T50 Duration
120Vac	18.0A	5.4ms	2.1ms
220Vac	30.8A	5.2ms	2ms
277Vac	42.2A	5ms	1.9ms

- **MCB Suggestion**

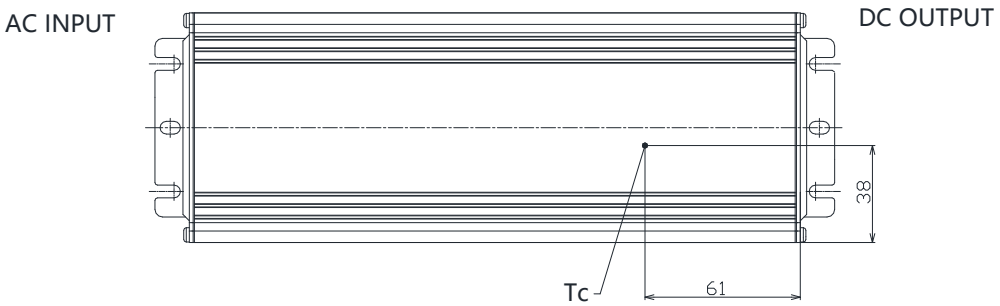
Type	B10	B16	B25	B32	C10	C16	C25	C32	D10	D16	D25	D32
Driver Quantity	1	2	3	4	2	3	5	7	3	5	8	10

Note: Calculated with MCB S200 series manufactured by ABB at 220Vac Input condition

Dielectric Strength

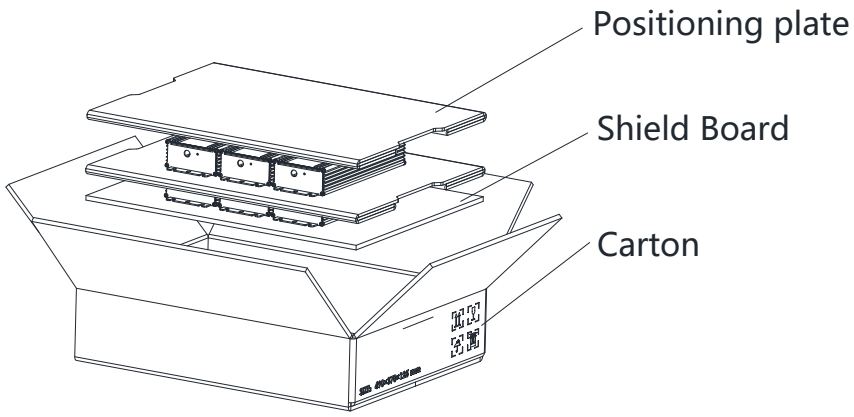
Unit: Vac	Input	Output	Dimming	Case
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming	3750	1554	-	1554
Case	1554	1554	1554	-

Tc Point



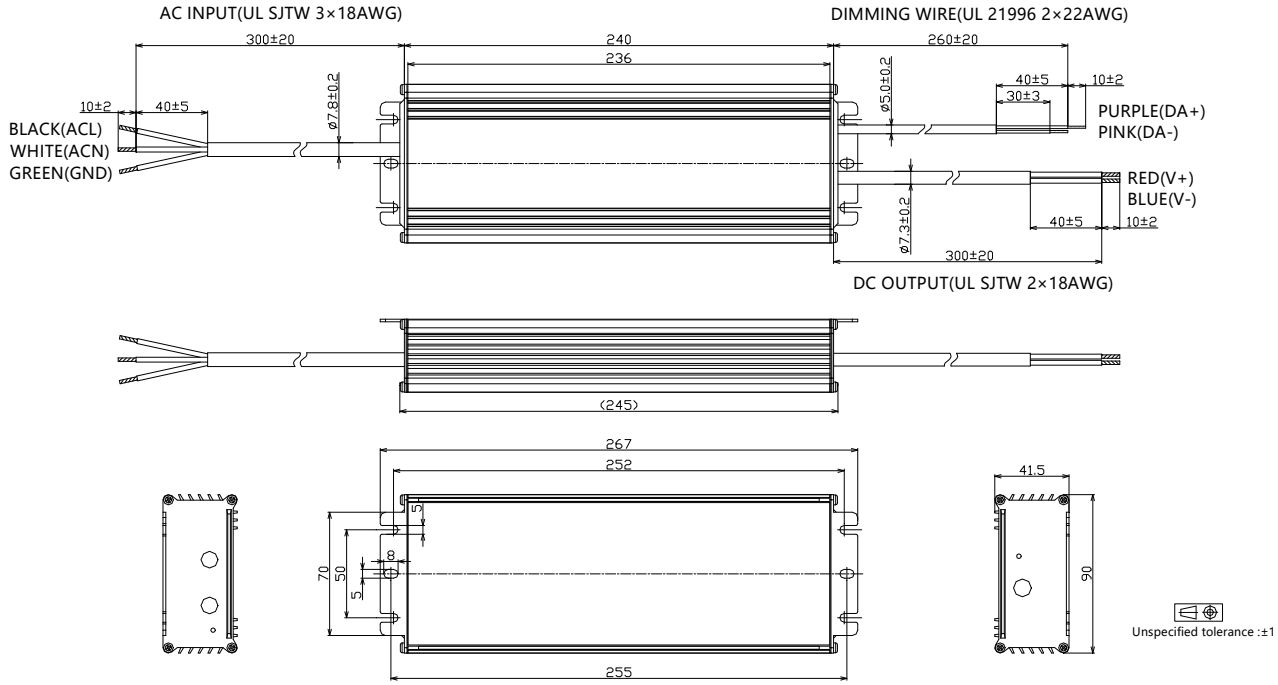
Packaging Information

Typical Carton Dimension(L×W×H)	490×370×125 mm
Positioning plate	2pcs/carton
Shield Board	1pcs/carton
LED Drivers/LED	6pcs/carton
Net Weight	9.6 kg/carton
Gross Weight	10.6 kg/carton

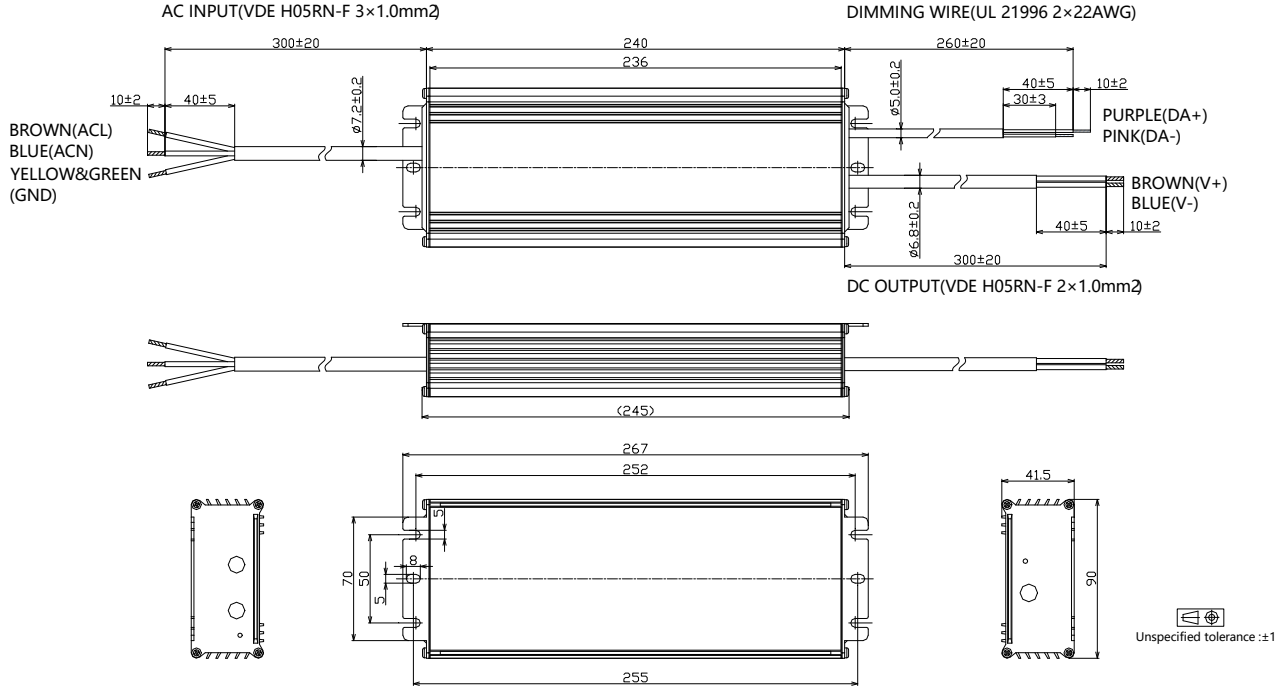


■ Mechanical Design

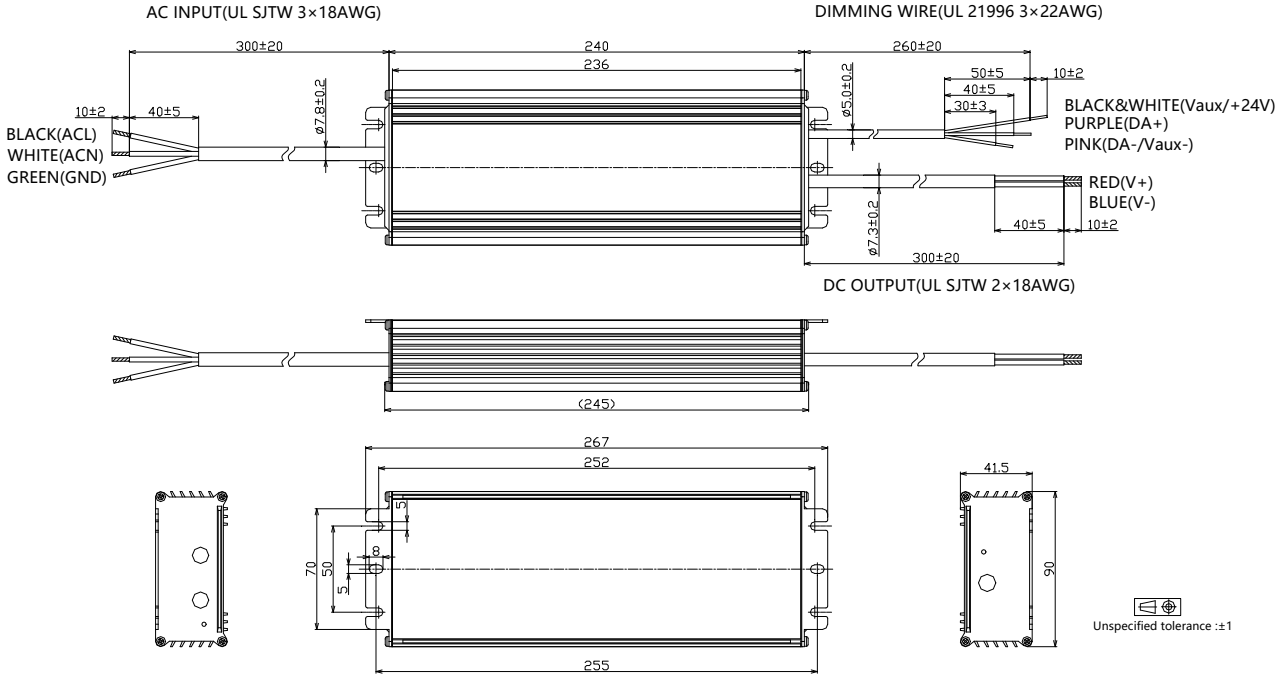
- **BLD-500-Cxxx-ARU-D00000 (UL Cable)**



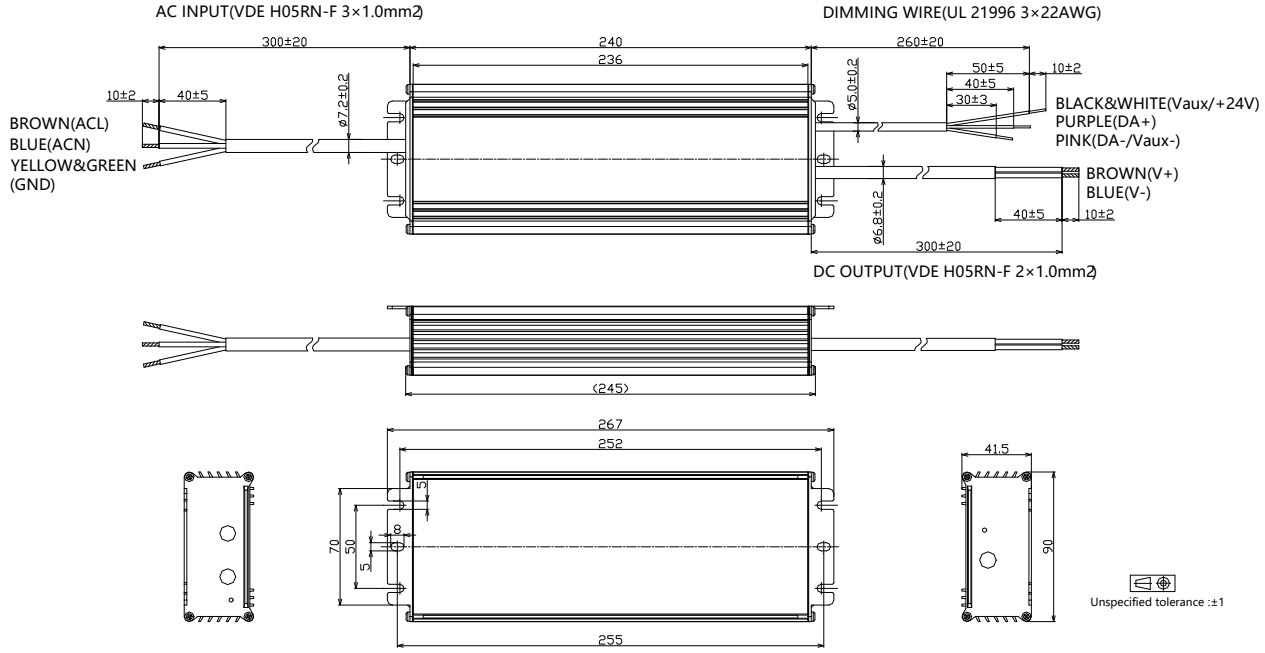
- **BLD-500-Cxxx-ARS-D00000 (VDE Cable)**



- **BLD-500-Cxxx-ARU-DAX000 (UL Cable)**



- **BLD-500-Cxxx-ARS-DAX000 (VDE Cable)**



Output Operation Range

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C160	1600	500	188	313	160
	1550	500	194	323	155
	1500	500	200	333	150
	1450	500	207	345	145
	1400	500	214	357	140
	1350	500	222	370	135
	1300	500	231	385	130
	1250	500	240	400	125
	1200	500	250	417	120
	1100	458	250	417	120
	1000	417	250	417	120
	…	…	…	…	…
	120	50	250	417	120

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C210	2100	500	143	238	210
	2000	500	150	250	200
	1900	500	158	263	190
	1800	500	167	278	180
	1700	500	176	294	170
	1600	471	176	294	170
	1500	441	176	294	170
	1400	412	176	294	170
	1300	382	176	294	170
	1200	353	176	294	170
	1100	324	176	294	170
	1000	294	176	294	170
	…	…	…	…	…
	170	50	176	294	170

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C320	3200	500	94	157	320
	3100	500	97	162	310
	3000	500	100	167	300
	2900	500	104	173	290
	2800	500	107	179	280
	2700	500	111	185	270
	2600	500	116	193	260
	2500	500	120	200	250
	2400	500	125	209	240
	2200	458	125	209	240
	2000	417	125	209	240
	…	…	…	…	…
	240	50	125	209	240

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C420	4200	500	71	119	420
	4100	500	73	122	410
	4000	500	75	125	400
	3900	500	77	128	390
	3800	500	79	132	380
	3700	500	81	135	370
	3600	500	83	139	360
	3500	500	86	143	350
	3400	500	88	147	340
	3300	485	88	147	340
	3200	471	88	147	340
	3100	456	88	147	340
	3000	441	88	147	340
	2900	426	88	147	340
	2800	412	88	147	340
	2700	397	88	147	340
	2600	382	88	147	340
	…	…	…	…	…
	340	50	88	147	340

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C560	5600	500	54	89	560
	5400	500	56	93	540
	5200	500	58	96	520
	5000	500	60	100	500
	4800	500	63	104	480
	4600	500	65	109	460
	4400	500	68	114	440
	4200	500	71	119	420
	4000	476	71	119	420
	3800	452	71	119	420
	3600	429	71	119	420
	…	…	…	…	…
	420	50	71	119	420

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C11A	11000	500	27	45	1100
	10500	500	29	48	1050
	10000	500	30	50	1000
	9500	500	32	53	950
	9000	500	33	56	900
	8500	472	33	56	900
	8000	444	33	56	900
	7500	417	33	56	900
	…	…	…	…	…
	900	50	34	56	900

Revision History

Revision	Date	Contents
A	2023-06-01	1. First release
B	2023-07-14	1. Update cable selection table in Model List Section
C	2023-10-08	1. EL mark with programmable EOFx added
D	2024-07-25	1. Fast dimming description added 2. Power factor, THD, efficiency curves updated by 10-100% load range 3. MCB usage and driver quantity section added 4. Inrush current data updated