



Product Datasheet

The global certified BLD-810-C is an extremely high efficiency smart LED driver for grow lights. 100khour long life and 7-year warranty provide high confidence to luminaire users. NFC and cable programming are both available for users. All around protections including digital OTP (internal and external by NTC) with auto-recovery secure non-stop operation for luminaires. Customized active daisy chain, master mode and button design greatly ease the design for horticultural usage.



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■ Features

- Absolute Supply Voltage: 100-305Vac or 127-420Vdc, 380Vac for 2 hours
- Horticultural Customized Endcap
- 95% Efficiency Max.
- Low Inrush Current
- Programmable Hot Swap
- 100,000Hour Life @ Tc=75°C
- 7 Year Warranty @ Tc<=75°C
- NFC or Cable Programmability and Isolated Dimming
- +/-2% Output Current Accuracy
- Isolated 0-10V/PWM/Time/DALI2.0/DMX/RDM Dimmable
- Dim Off with 0.5W Standby Power
- 12V 300mA Auxiliary Power to Power Controllers and Fans
- UL Class P, ENEC/CB/CCC SELV Output
- Global Certified Model Available
- Safety according to EN 61347-1, 61347-2-3, 61347-2-13, 623847

■ Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max
BLD-810-C18A-XYZ	100-305Vac	810 W	30-56Vdc	14.5A	18A
BLD-810-C860-XYZ	100-305Vac	810 W	56-133Vdc	6A	8.6A
BLD-810-C600-XYZ	100-305Vac	810 W	80-190Vdc	4.2A	6A
BLD-810-C420-XYZ	100-305Vac	810 W	114-286Vdc	2.8A	4.2A
BLD-810-C280-XYZ	100-305Vac	810 W	171-421Vdc	1.9A	2.8A

XY=	Dimming Method	Programmable	12Vaux	Dim-off
NN	-	-	-	-
DN	0-10V/PWM/Time	Cable	-	No Dim-off as default status, programmed to have Dim-off
EN	0-10V/PWM/Time	Cable	300mA	√
TR	Time/Set Current	NFC Wireless	-	-
DR	0-10V/PWM/Time	NFC Wireless	-	No Dim-off as default status, programmed to have Dim-off
ER	0-10V/PWM/Time	NFC Wireless	300mA	√
AR	DALI2.0	NFC Wireless	-	√
MR	DMX512 + RDM	NFC Wireless	-	√

Z=	U	V	S	S#NNNNG	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 with 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

810W, 120-277Vac Input, Long Life High Quality Driver

■ Technical Data

Input Voltage	100-305Vac or 127-420Vdc, 380Vac for 2 hours
Input Frequency	47~63Hz
Power Factor	>0.9@60-100%load, refer to PF vs. Load curve
THD	<15%@70-100%load, refer to THD vs. Load curve
Input Current	7.5Amax@120Vac & Full-Load, 3.3Amax@277Vac & 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 for programmable model, ±5%Io for non-programmable model
Ripple Current	Ip-p:5%Io max
Setup Time	2.1s max
Overshoot	10% Io max & LED Load
Output Over Voltage	110% Vomax, typ.
Short Circuit	Auto recovery. The output recovers when short is removed.
Over Temperature	Lower the output current when $T_c \geq 105 \pm 10^\circ\text{C}$; Auto Recovery When $T_c \leq 70 \pm 10^\circ\text{C}$
Auxiliary Power (Vaux)	12V+/-5%, 300mA max
Operating Temperature	Case Temperature $T_c = -40^\circ\text{C} \sim +90^\circ\text{C}$; 10%RH~100%RH
Storage Temperature	$-40^\circ\text{C} \sim +85^\circ\text{C}$; 5%RH~100%RH
MTBF	$\geq 320,000$ hours, 75°C case temperature (MIL-HDBK-217F)
Lifetime	$\geq 100,000$ hours, 75°C case temperature, refer to life vs. T_c curve
Case Temperature	90°C max, marked in the T_c point of label
Dimensions (Standard)	13.22x3.54x1.63 by inch (body), 14.29x3.54x1.63 by inch (endcaps included) 336x 90 x 41.5 by mm (body), 363 x 90 x 41.5 by mm (endcaps included)
Net Weight	2600g
Packing	See Package Information Section in the datasheet

Notes: Unless specified, all the test results are measured in 25°C 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

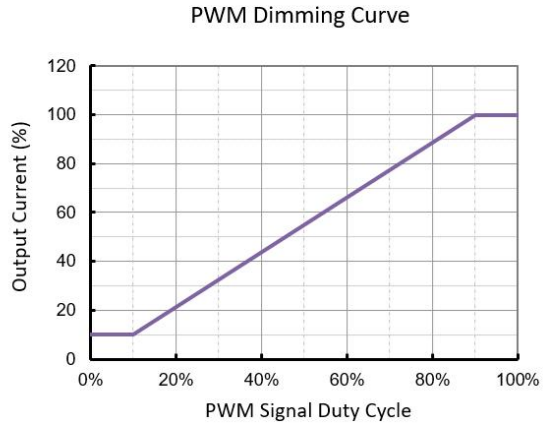
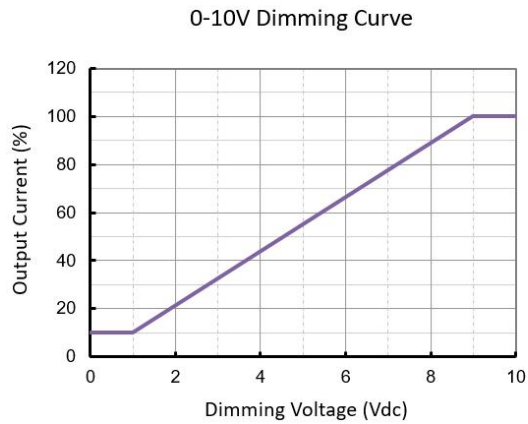
Dimming

Parameter	Min.	Typ.	Max.
Vdim Sourcing Current	100uA	150uA	200uA
Vdim Allowed Input Voltage	-20 V		20 V
0-10V Dimming Range	10% (Vdim=1V)	Linear	100% (Vdim=9~10V)
PWM Dimming Range	10% (Duty=10%)	Linear	100% (Duty=90-100%)
Default Dim off Threshold	0.4V or 4%	0.5V or 5%	0.6V or 6%
Default Dim off Threshold	0.6V or 6%	0.7V or 7%	0.8V or 8%
PWM High	3.8V		9V
PWM Low	0V		0.6V
PWM Frequency	300Hz		2kHz
DALI Interface Standard	IEC62386, part 101,102,207		
DA1,DA2 High Level	9.5	16	22.5
DA1,DA2 Low Level	-6.5	0	6.5
DA1,DA2 Current	0		2mA
DMX+ & DMX- Voltage	-6V		6V
DMX to Ground Resistance	25Mohm		
Logic 0/1 (DMX+ to DMX-) Threshold		0.2V	
Communication Baud Rate		250kbps	
Fast Dimming ^[1] On-Off Transition		300ms	
Fast Dimming 10-100% Io Transition		70ms	

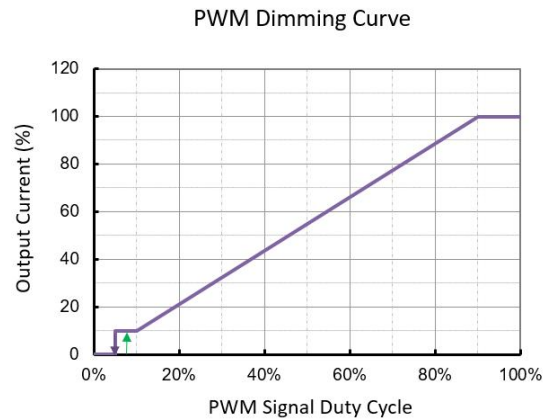
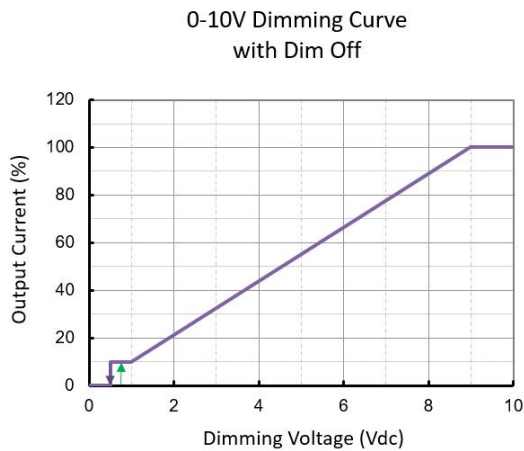
Notes [1]: Fast dimming feature is only available by models with -FD0000 suffix.

- Default Dimming Curves

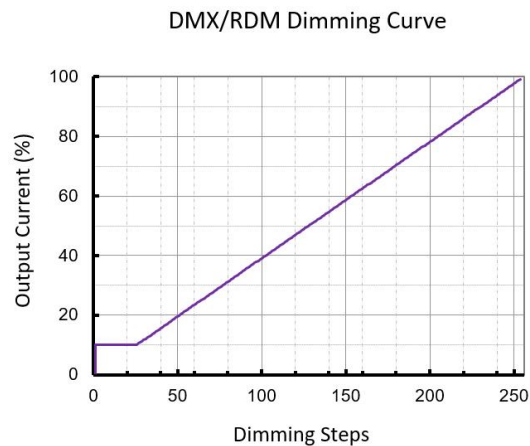
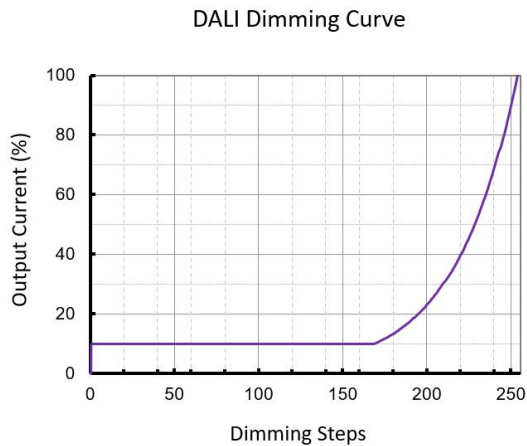
a. 0-10V dimming without dim-off



b. 0-10V dimming with dim-off



c. DALI and DMX dimming curves

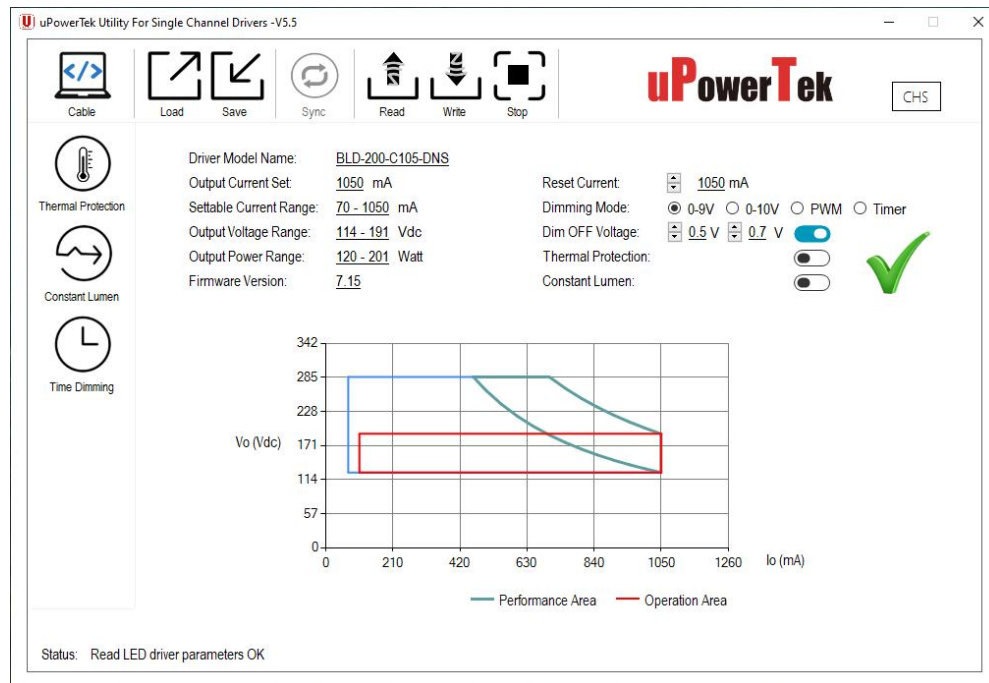


Note: Both DALI and DMX dimming curves can be customized to be linear or logarithmic as default.

■ 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 wired programming, the uPowerTek Cable Programmer is essential. 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.



Cable Programmer



NFC Programmer V1



NFC Programmer V2



FEIG NFC Programmer



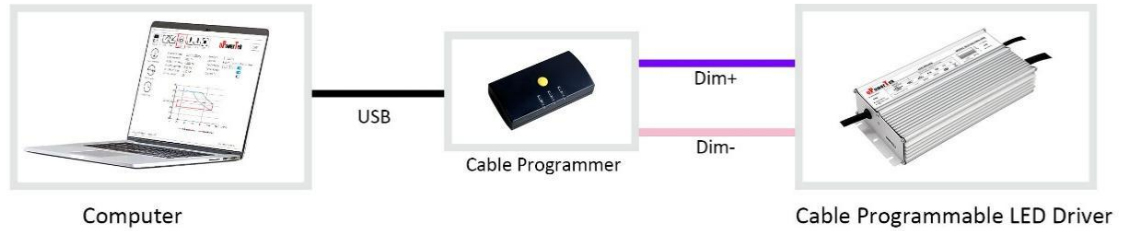
Android or iPhone

810W, 120-277Vac Input, Long Life High Quality Driver

- 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/>.



Wired Programming

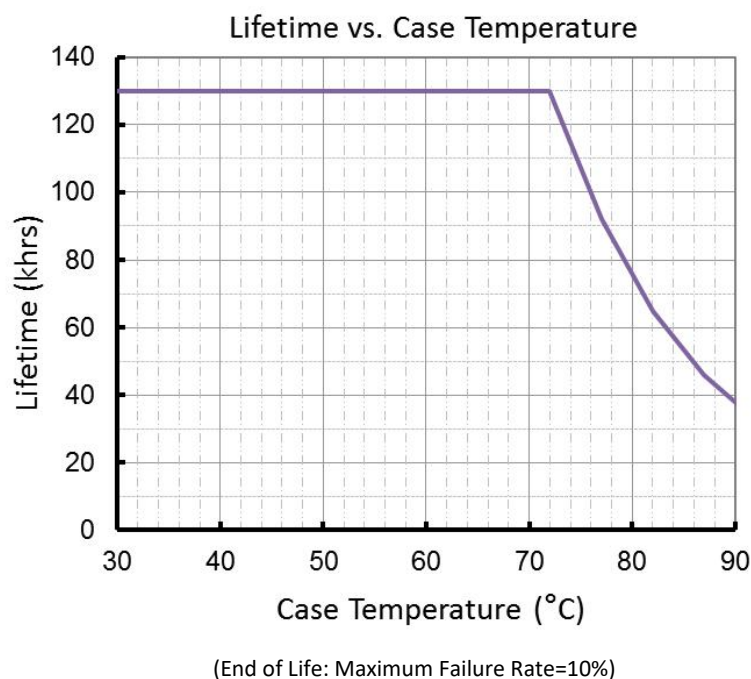


Wireless Programming

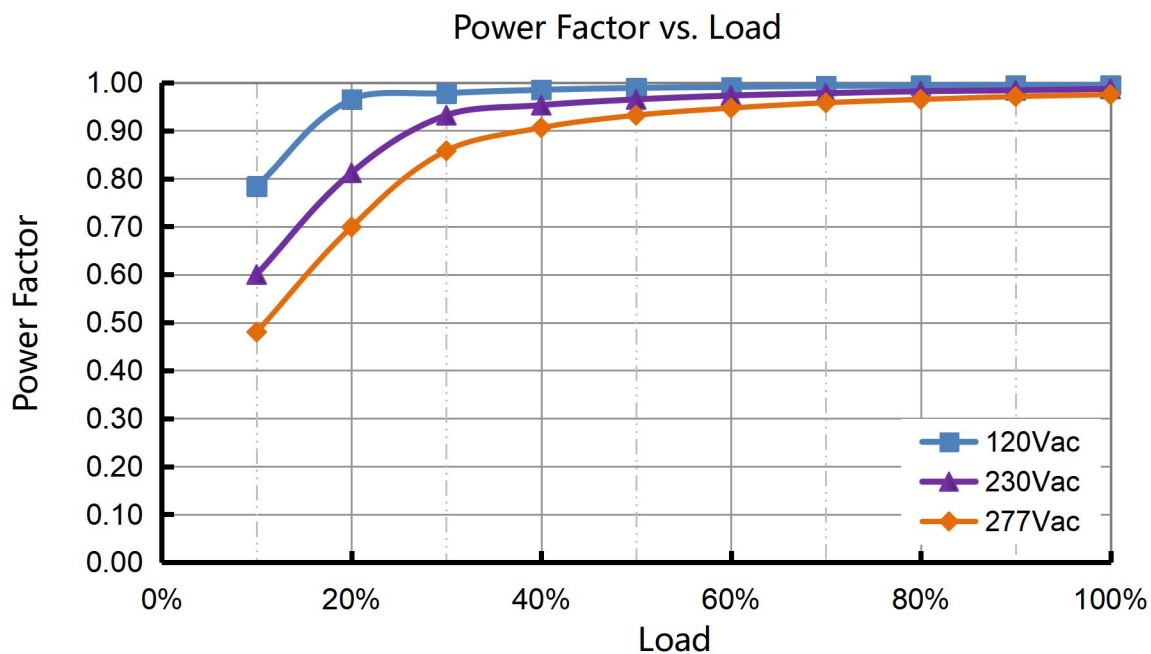


Cellphone Programming

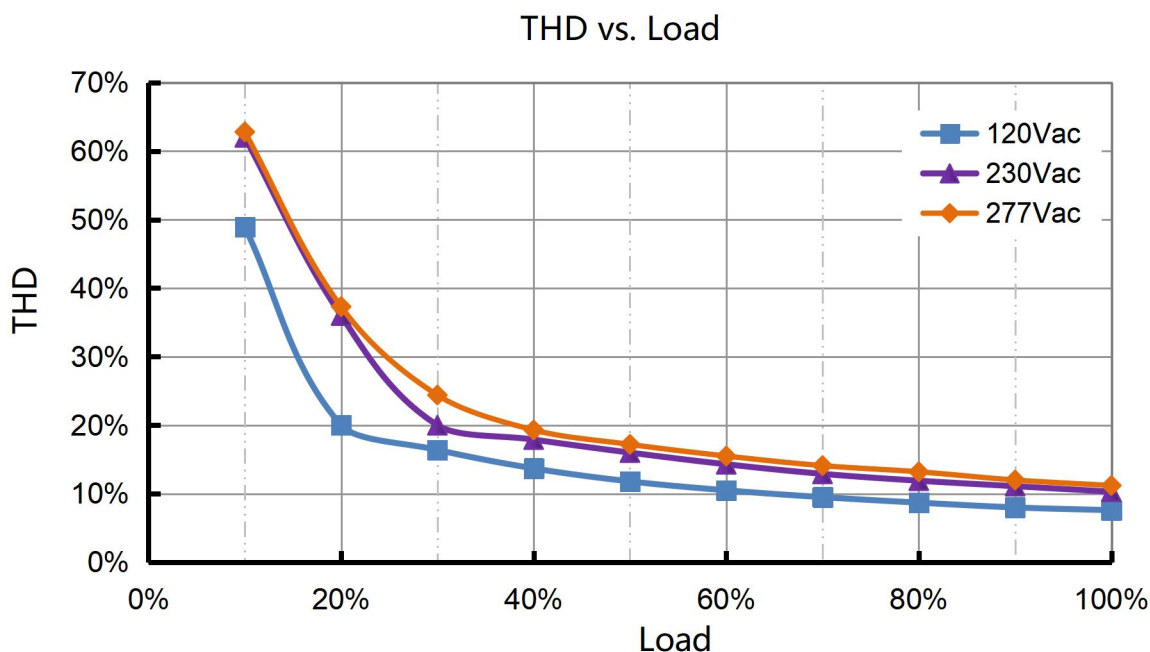
■ Lifetime vs. Case Temperature



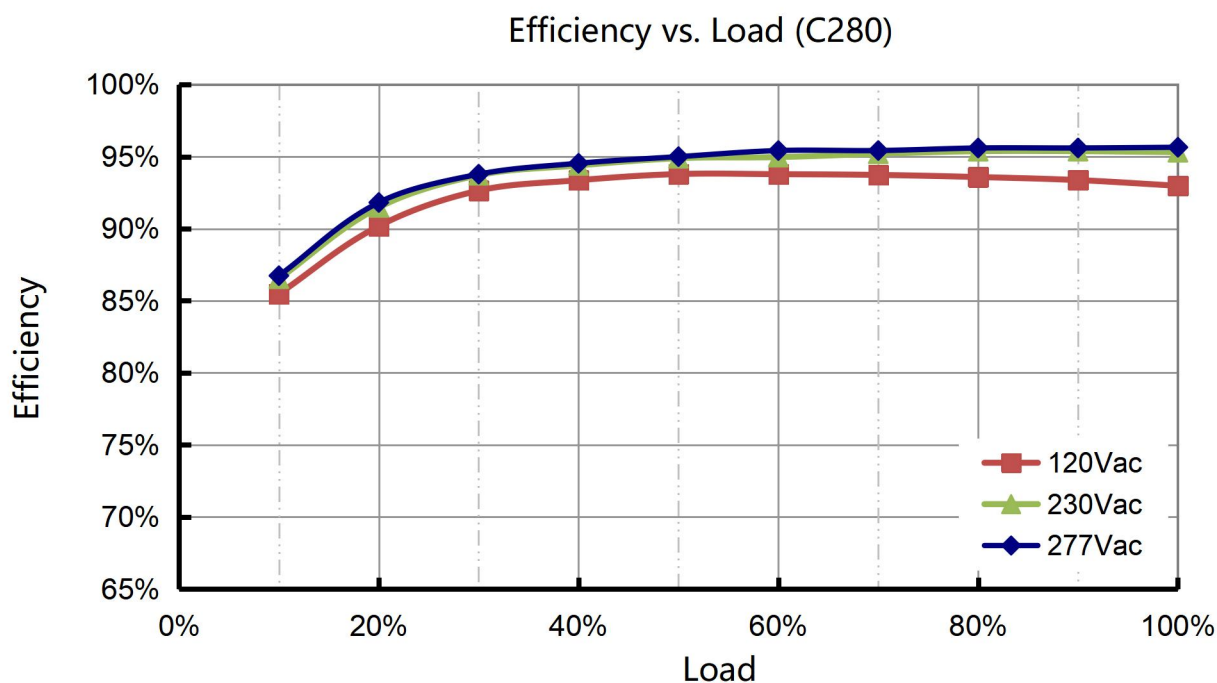
■ Power Factor vs. Load



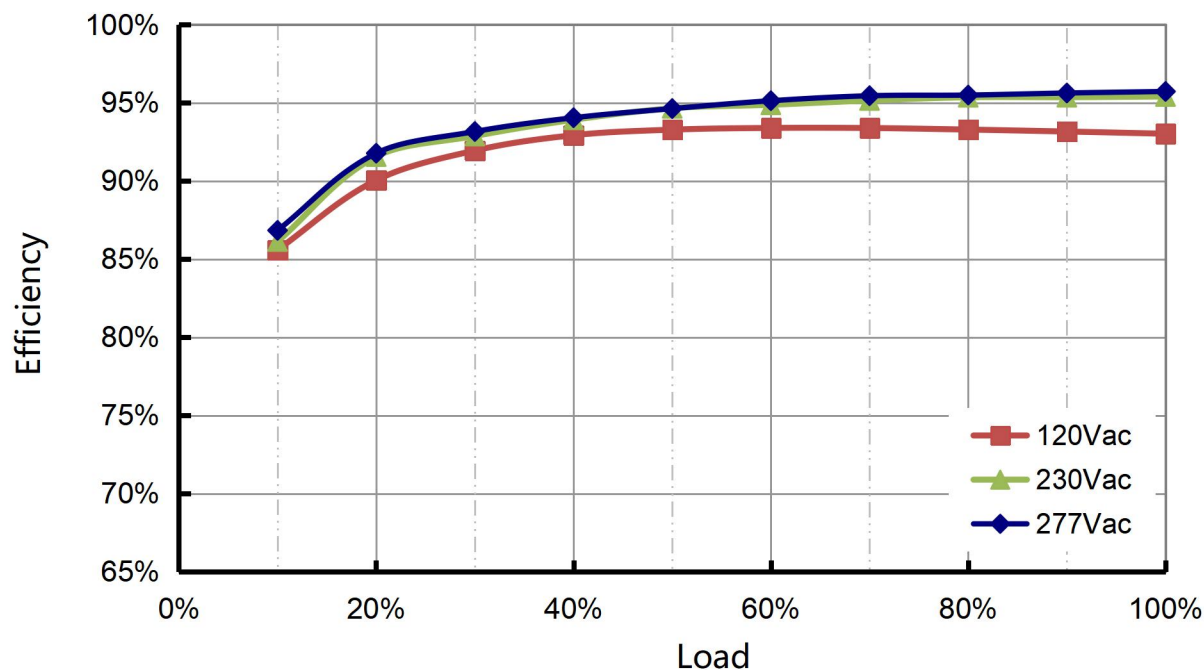
■ THD vs. Load



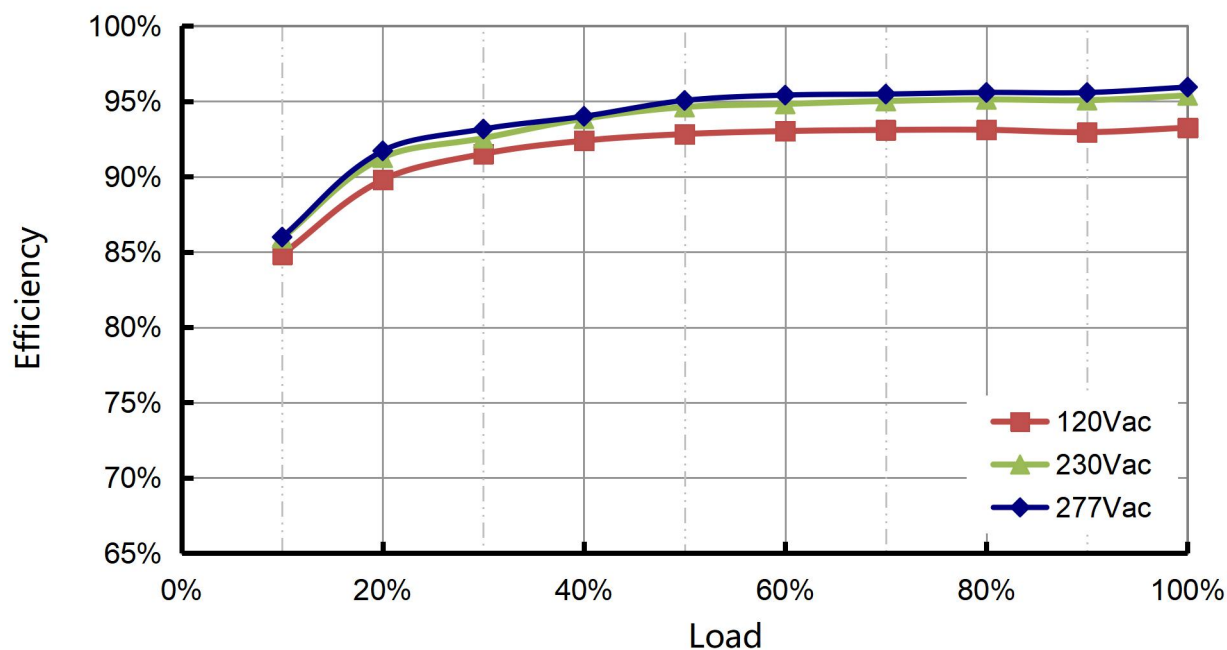
■ Efficiency vs. Load



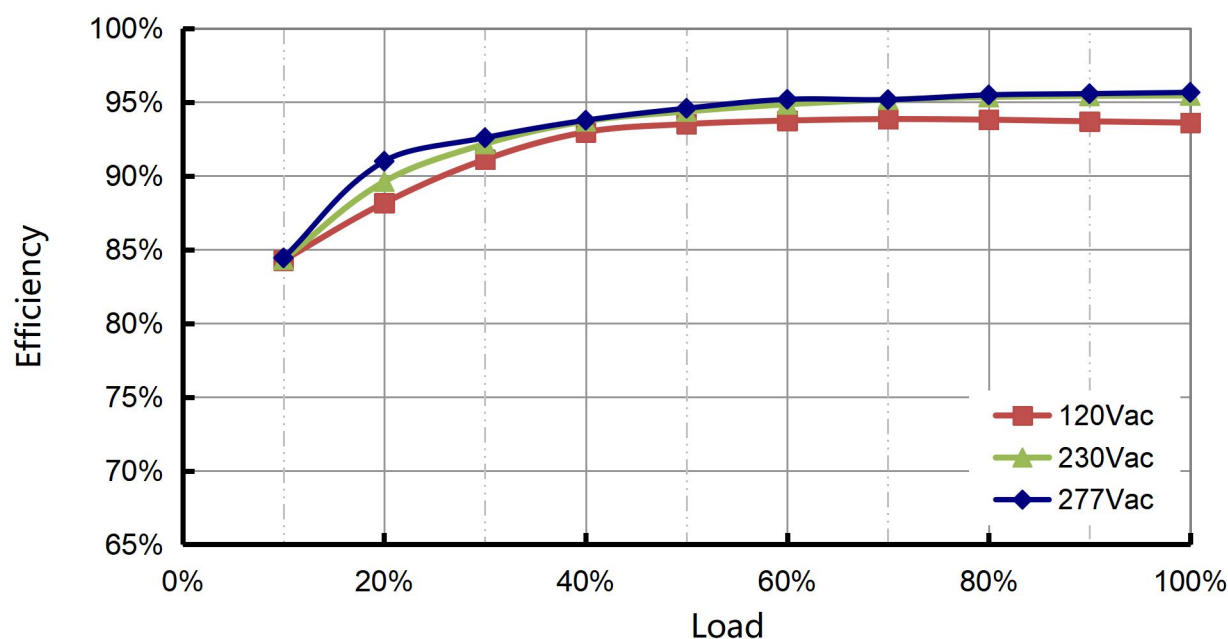
Efficiency vs. Load (C420)



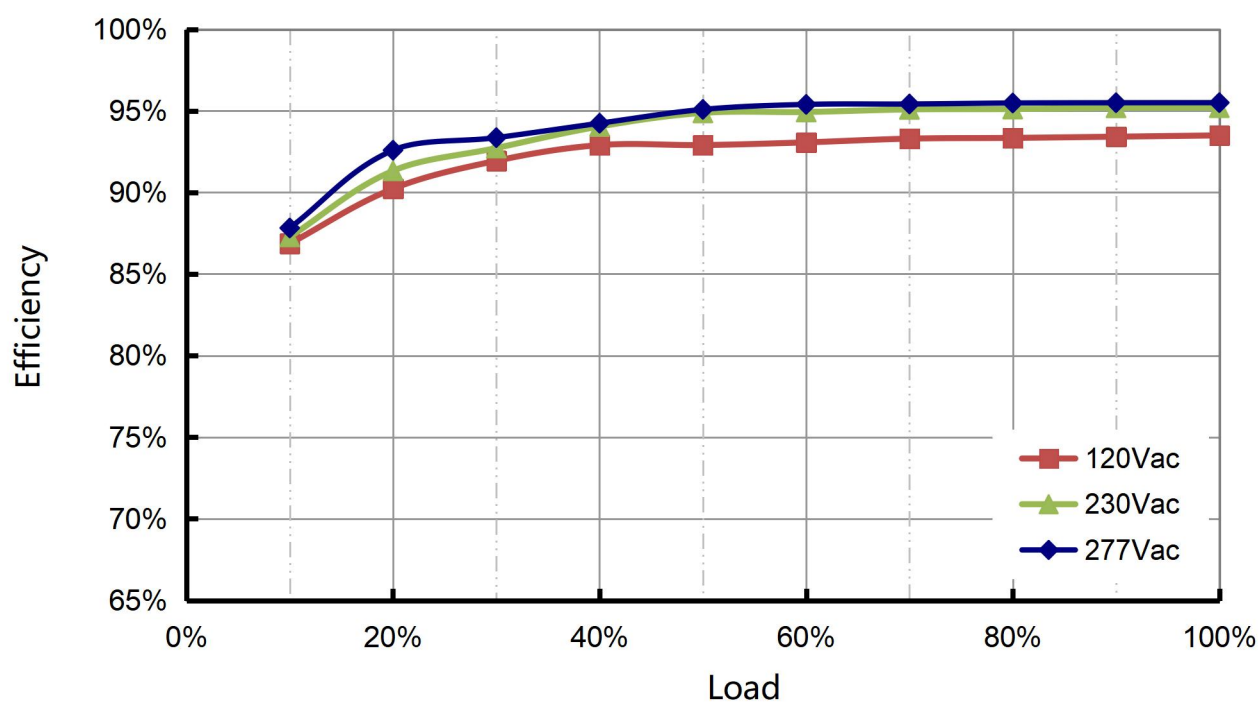
Efficiency vs. Load (C600)



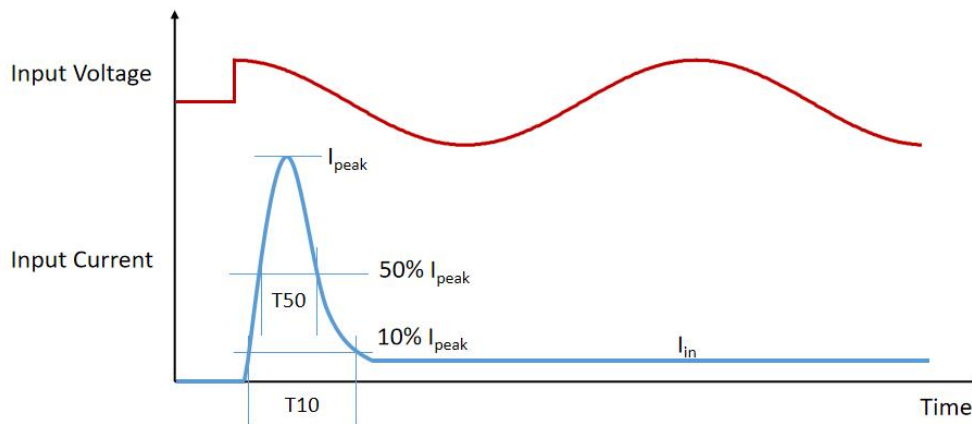
Efficiency vs. Load (C860)



Efficiency vs. Load (C18A)



■ Inrush Current



Input Voltage	I_{peak}	10% -10% T10 Duration	50% -50% T50 Duration
120Vac	3A	67ms	16ms
220Vac	5A	70ms	17ms
277Vac	8A	70ms	17ms

- MCB Suggestion

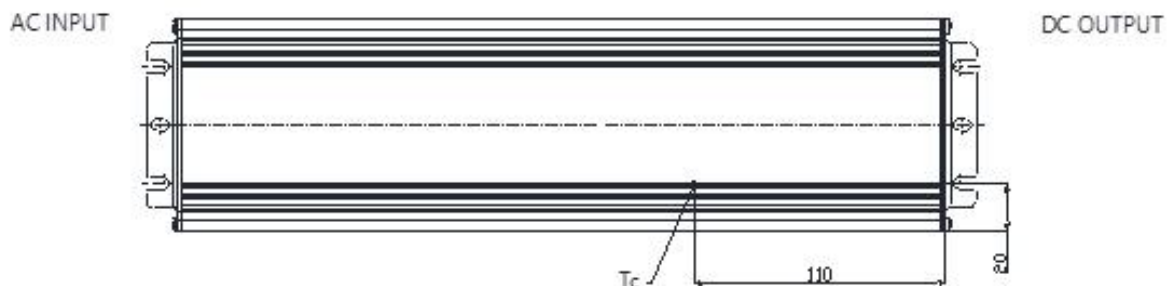
Type	B10	B16	B25	B32	C10	C16	C25	C32	D10	D16	D25	D32
Driver Quantity	1	2	3	4	1	2	4	5	2	3	5	6

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

■ Dielectric Strength

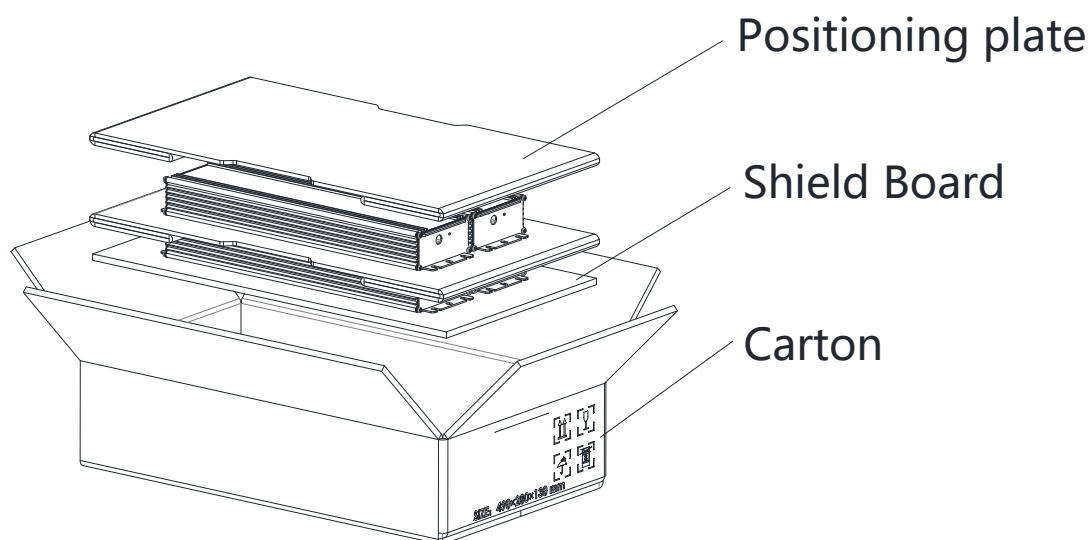
Unit: Vac	Input	Output	Dimming	Case
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming	3750	1554	-	1554
Case	1554	1554	1554	-

Tc Point



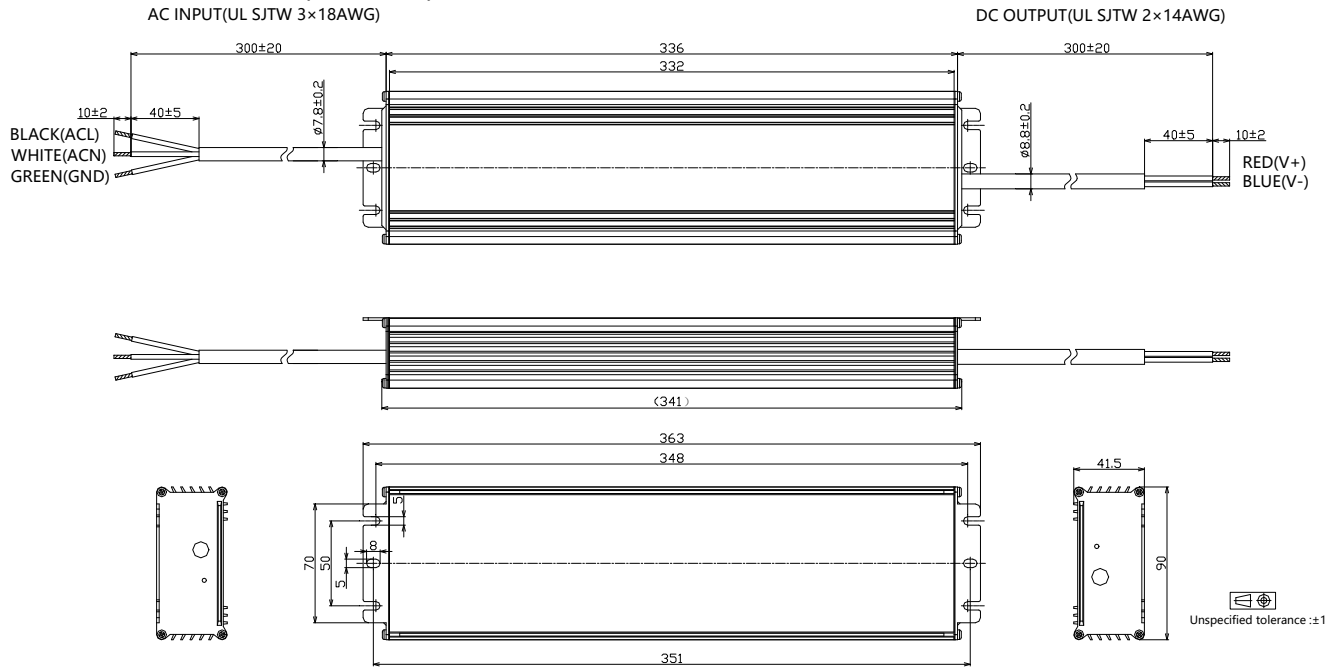
Packaging Information

Typical Carton Dimension(L×W×H)	490×280×130 mm
Positioning plate	2pcs/carton
Shield Board	1pcs/carton
LED Drivers/LED	4pcs/carton
Net Weight	9.6kg/carton
Gross Weight	10.2 kg/carton

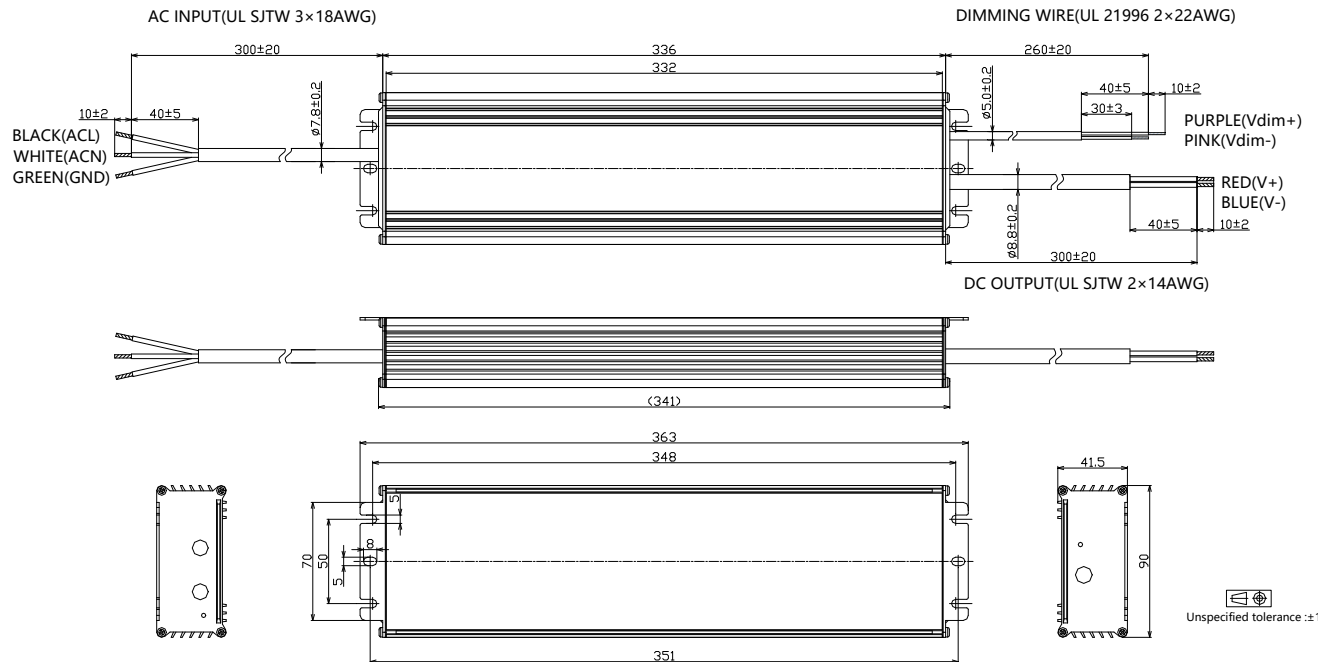


Mechanical Design

- BLD-810-Cxxx-NN/TRU (UL Cable)

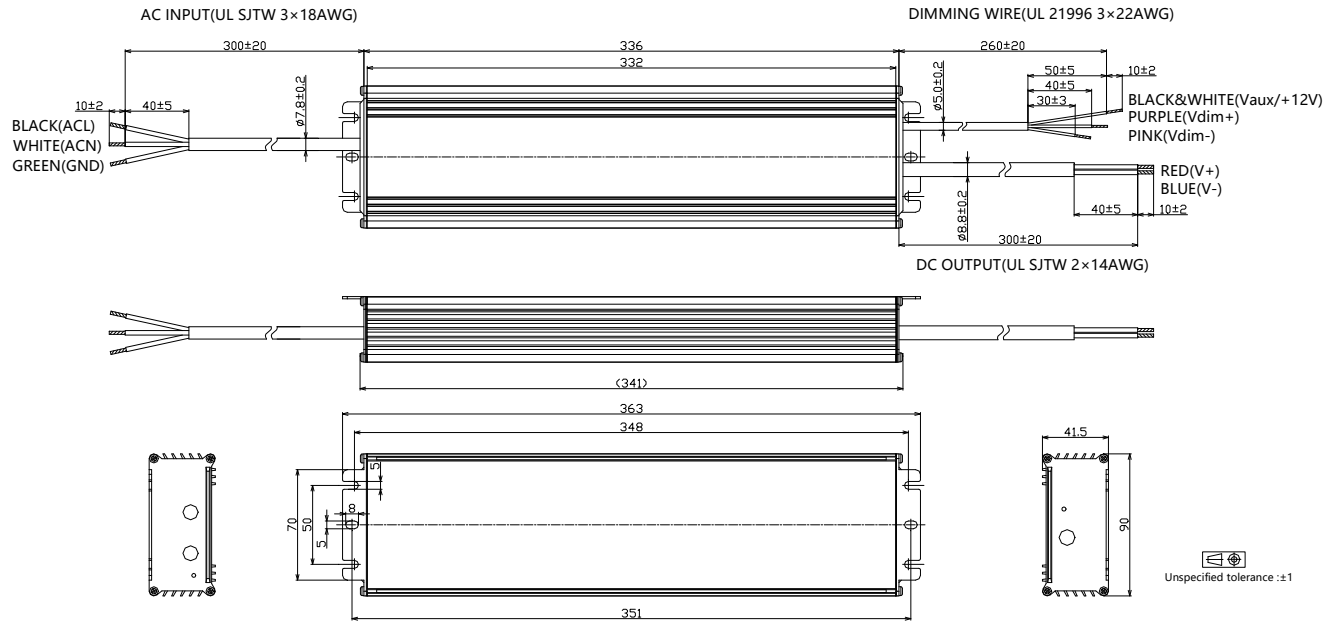


- BLD-810-Cxxx-DN/DRU (UL Cable)

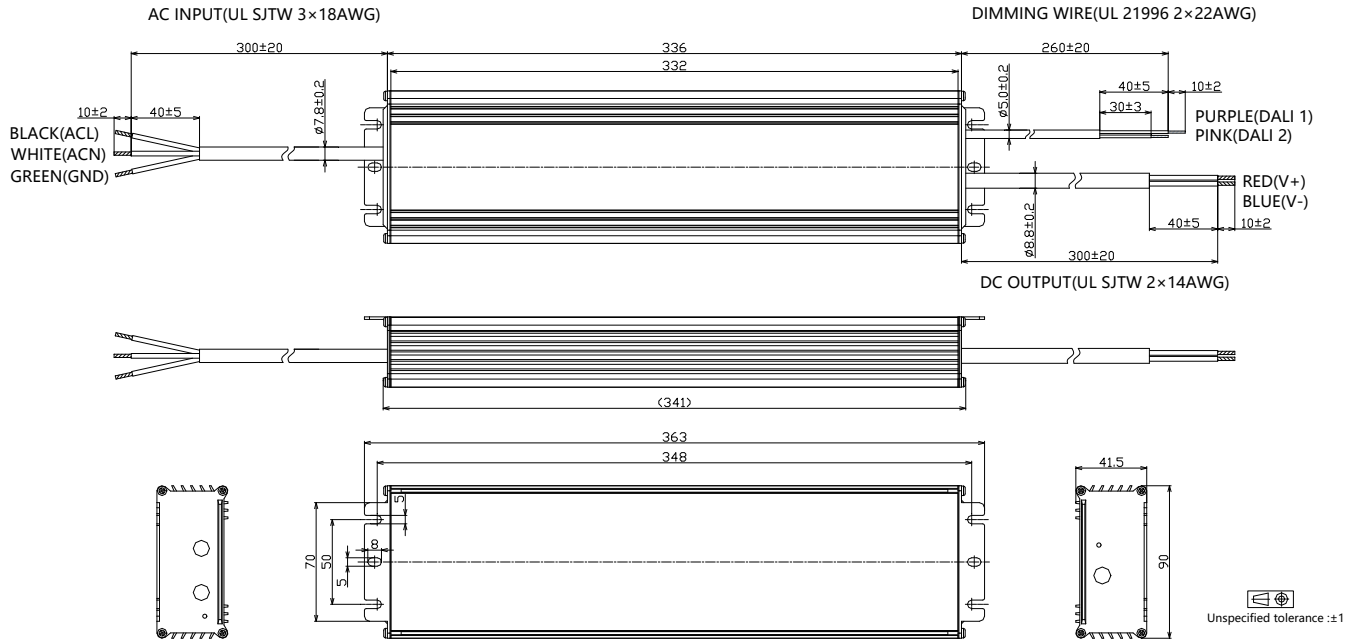


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-ERU (UL Cable)

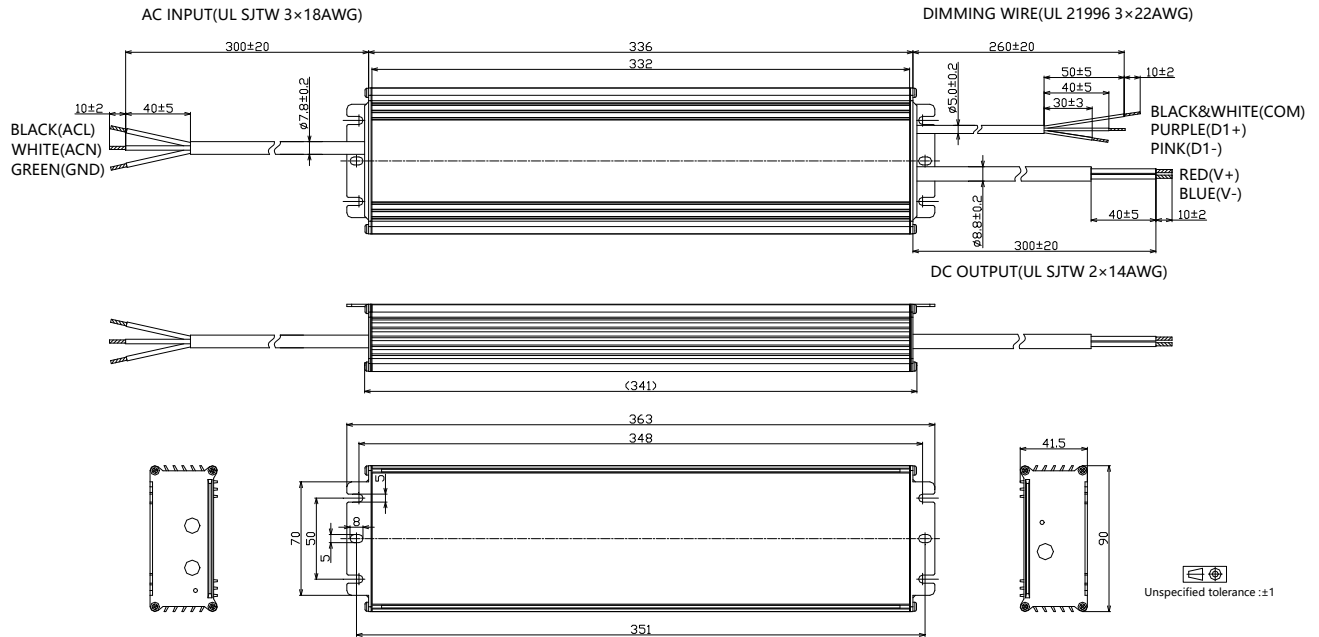


- BLD-810-Cxxx-ARU (UL Cable)

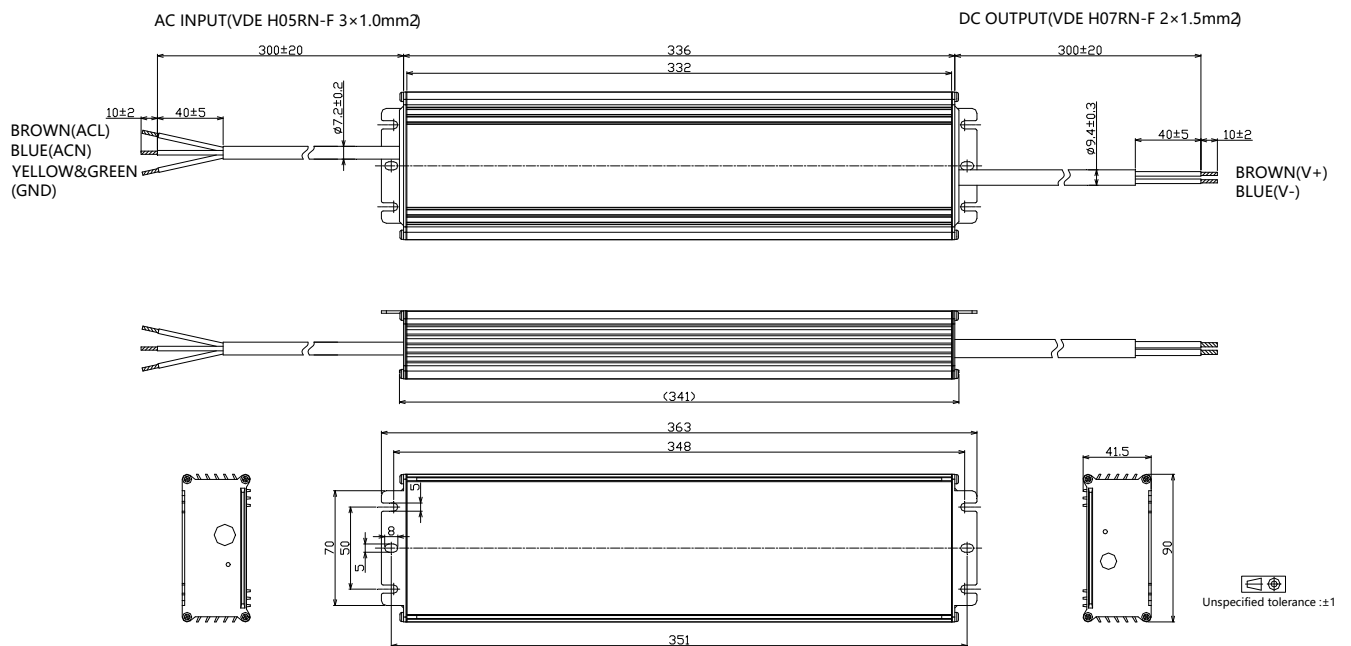


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-MRU (UL Cable)

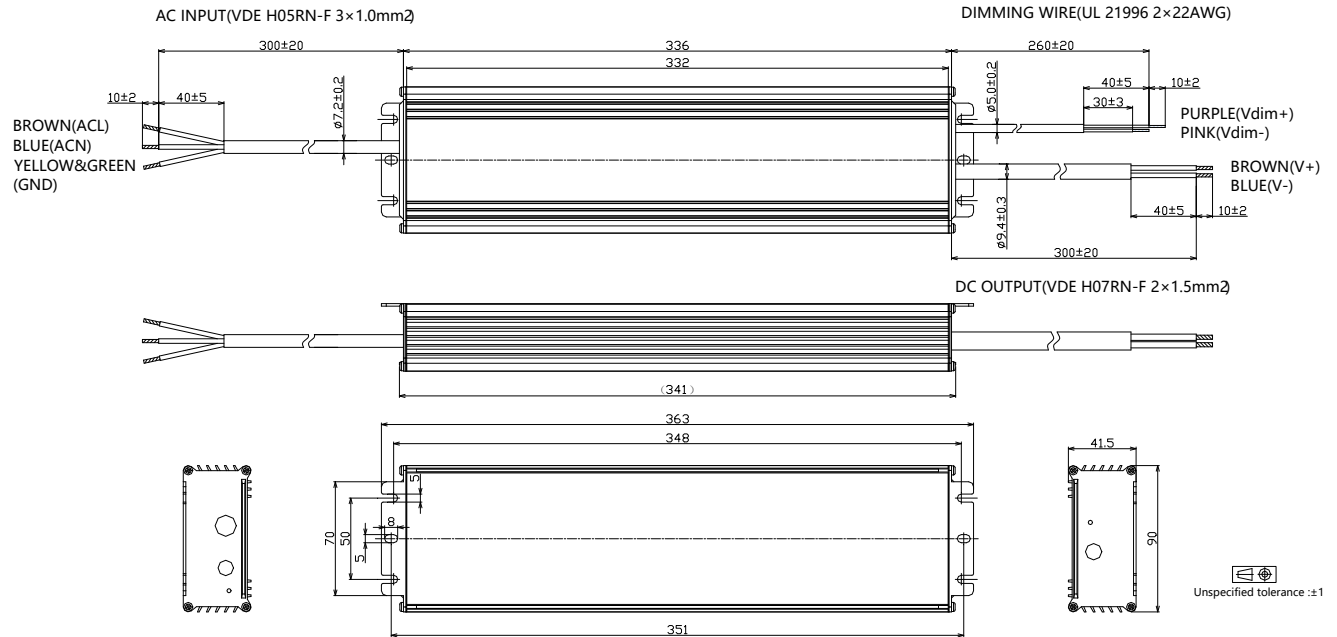


- BLD-810-Cxxx-NN/TRS (VDE CABLE, MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

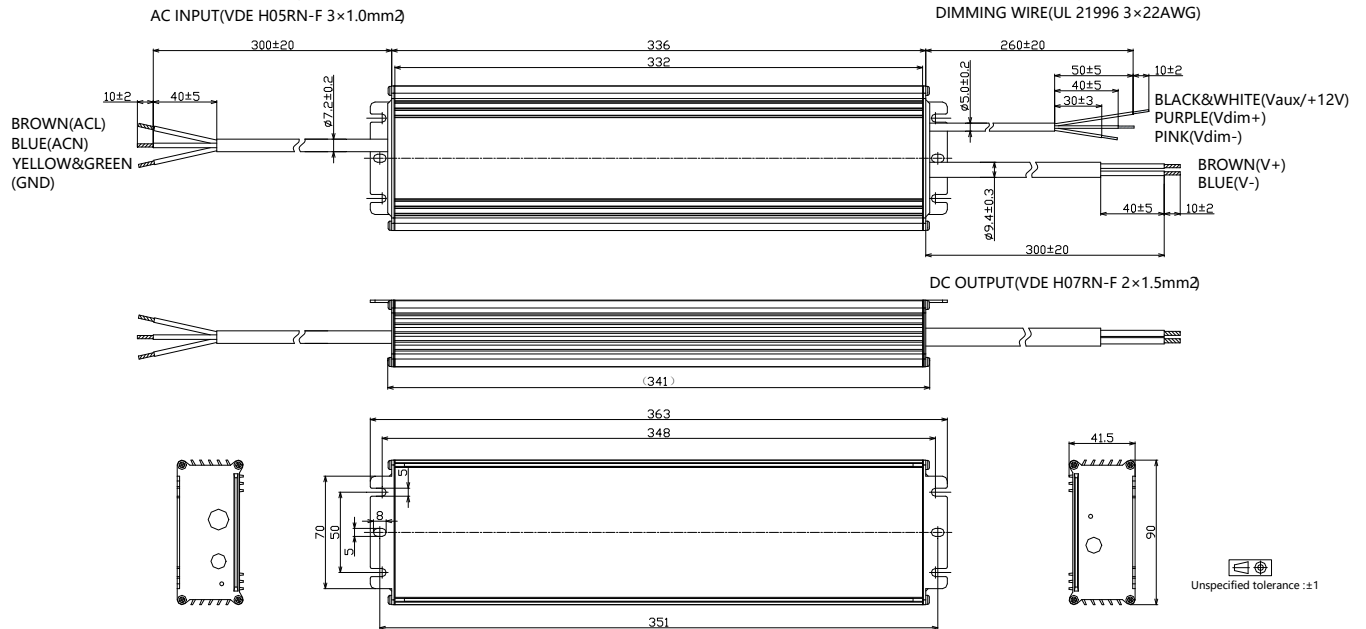


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-DN/DRS (VDE CABLE, MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

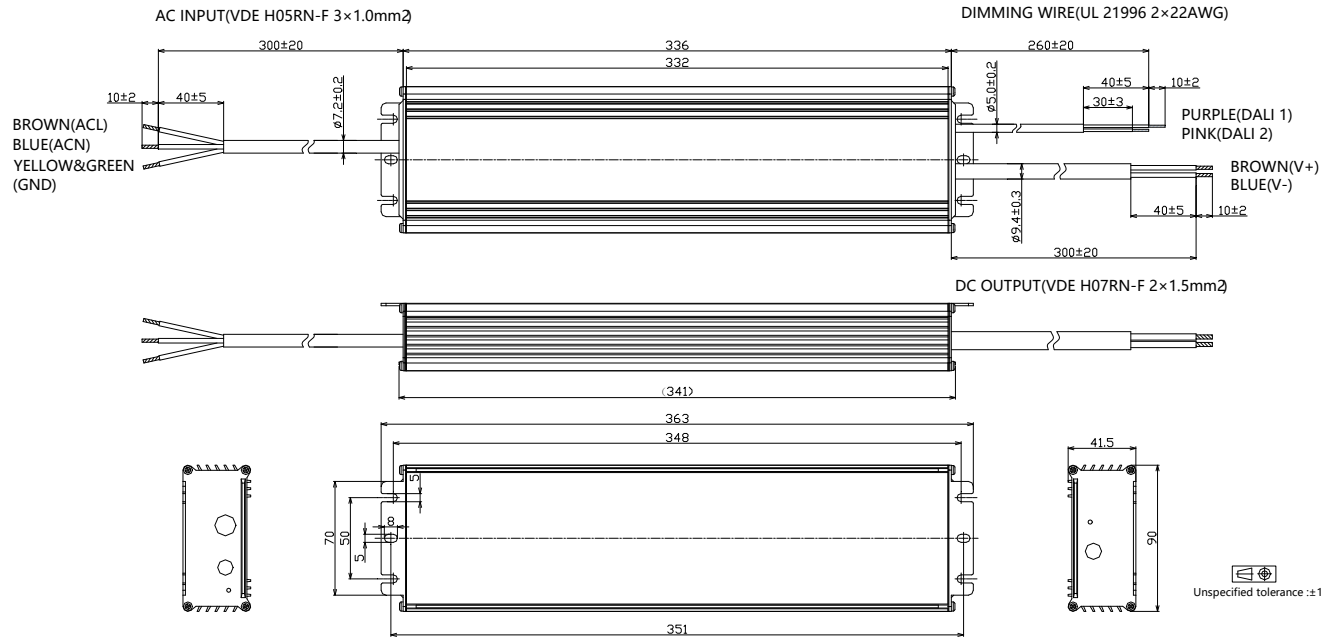


- BLD-810-Cxxx-EN/ERS (VDE CABLE, MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

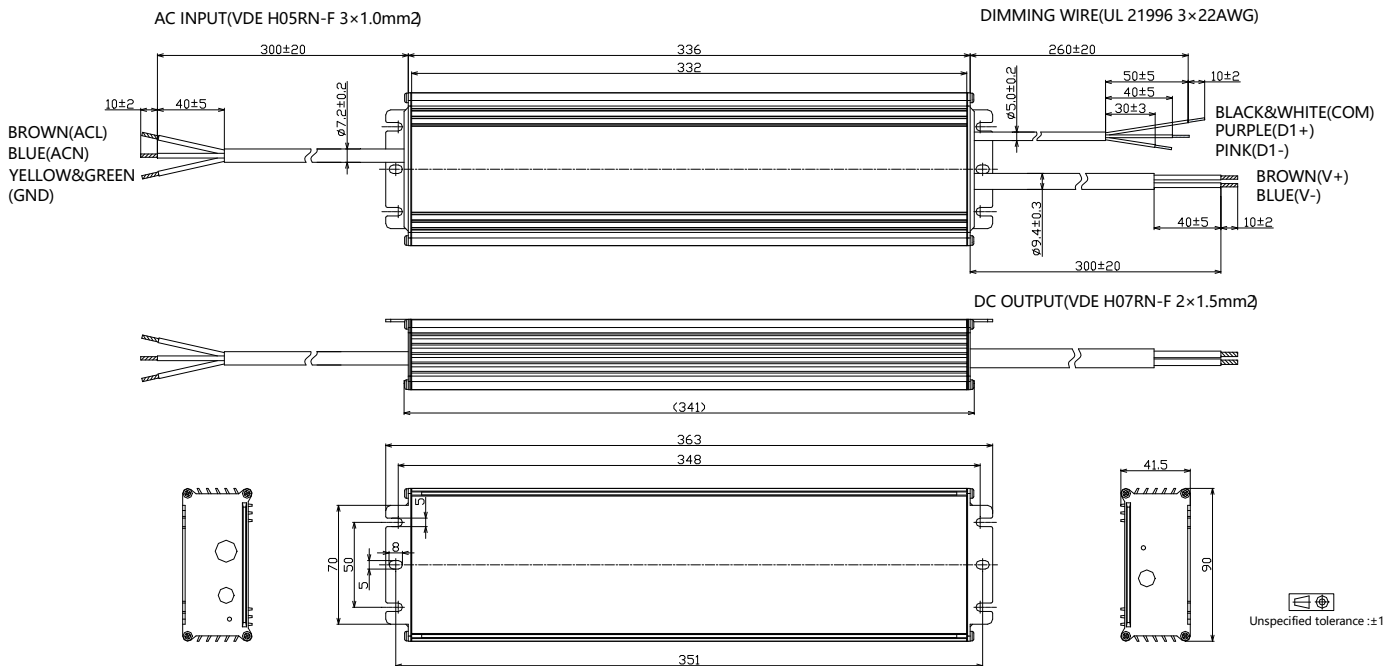


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-ARS (VDE CABLE, MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

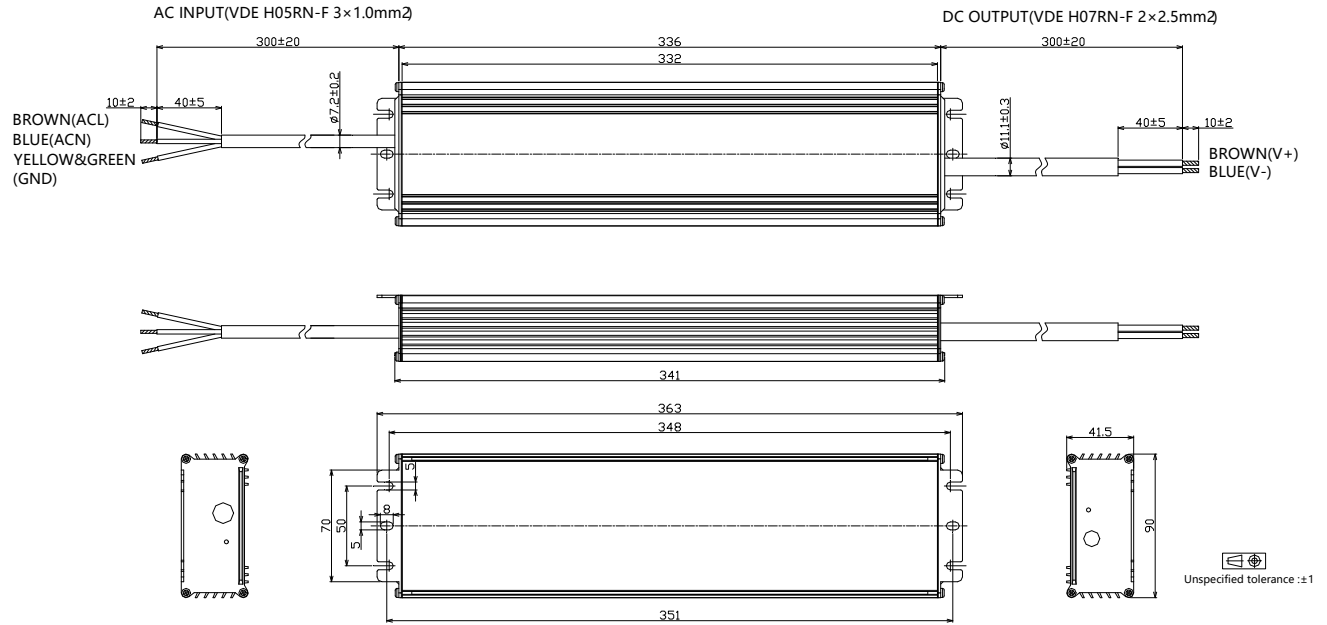


- BLD-810-Cxxx-MRS (VDE CABLE, MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

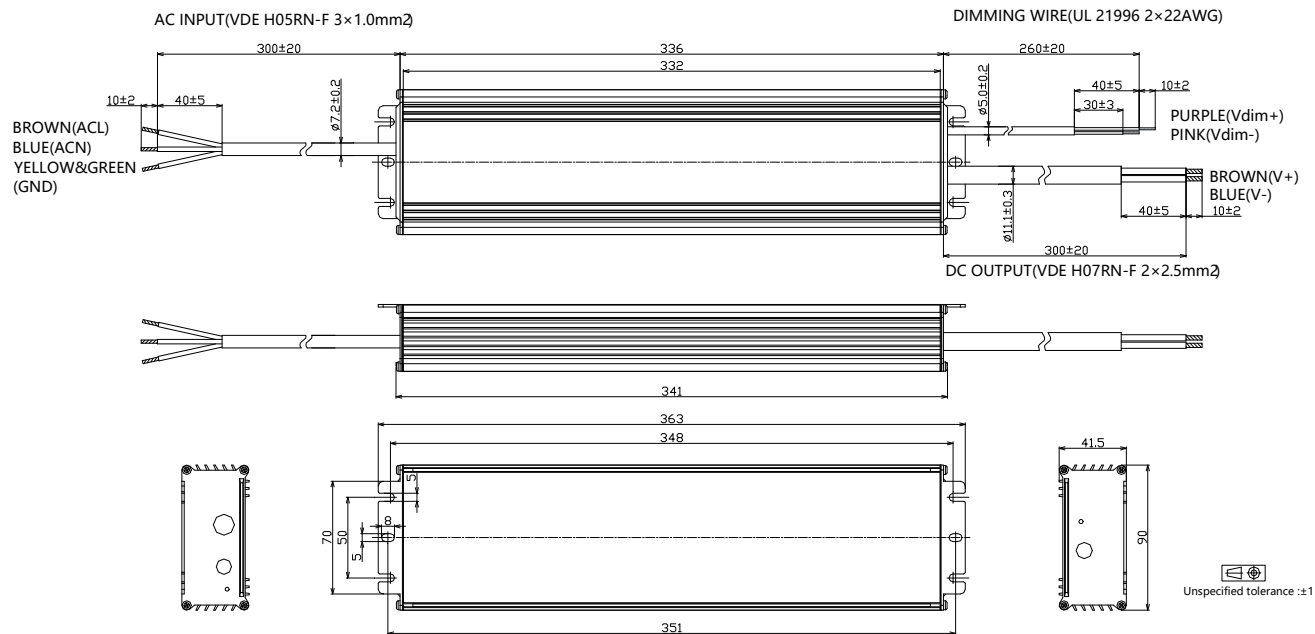


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-NN/TRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

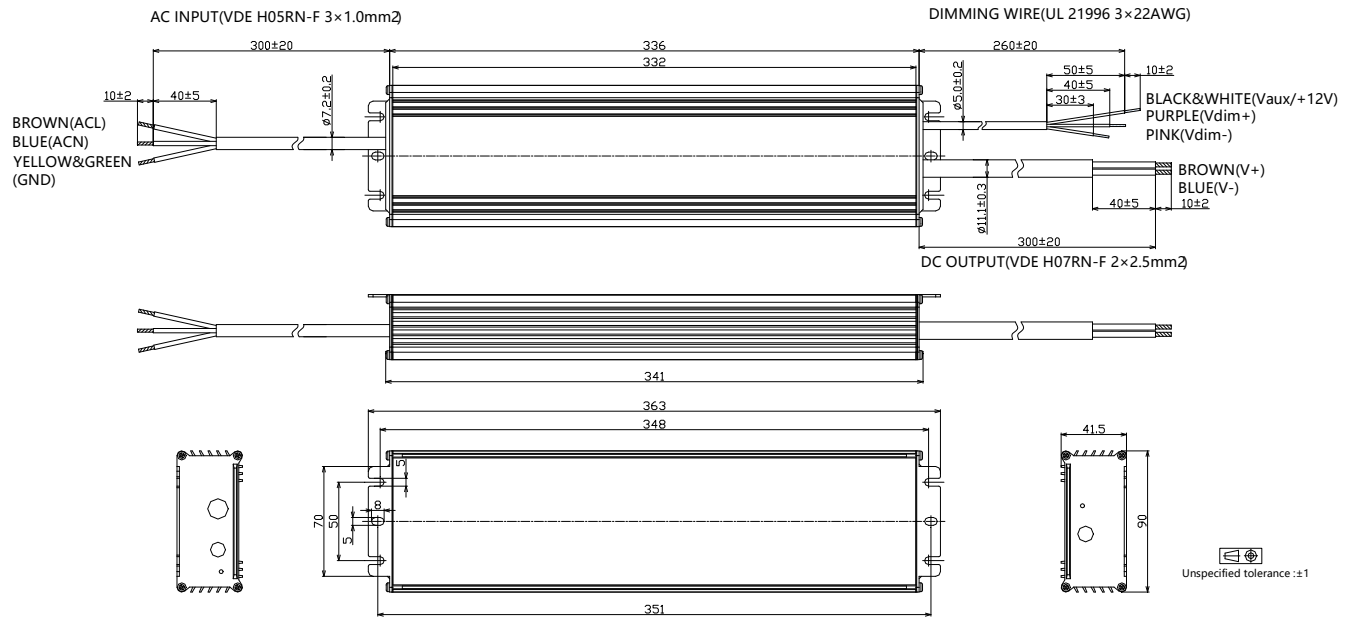


- BLD-810-Cxxx-DN/DRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

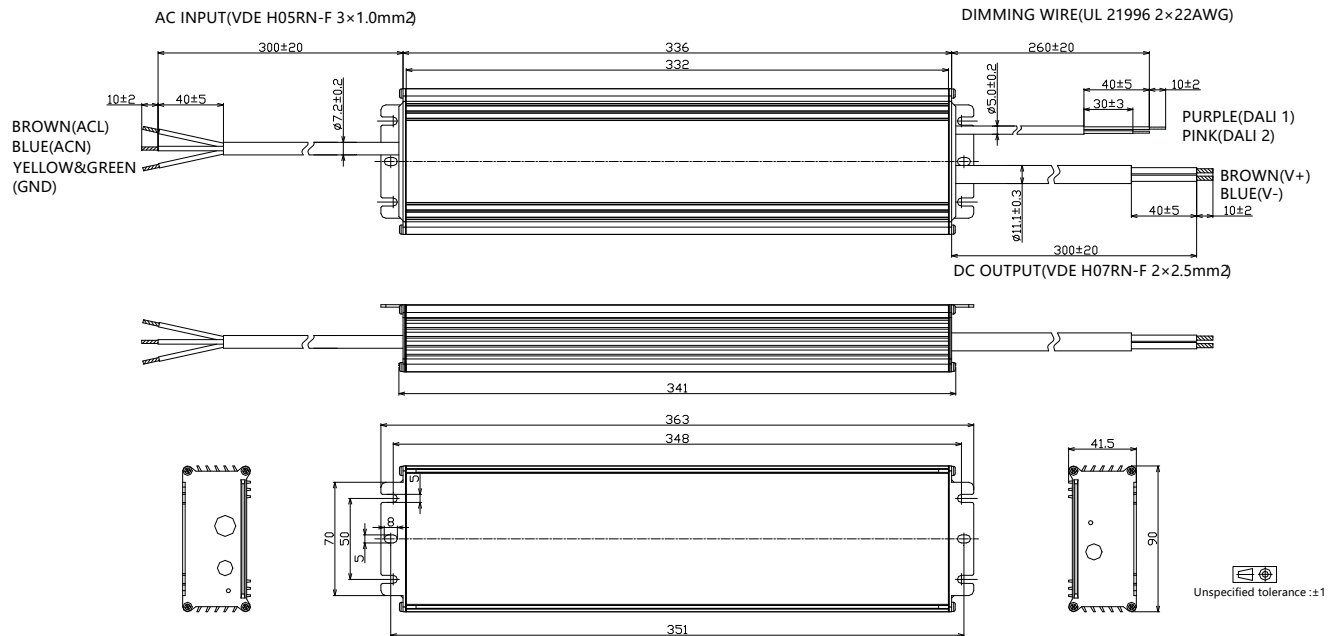


810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-EN/ERS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

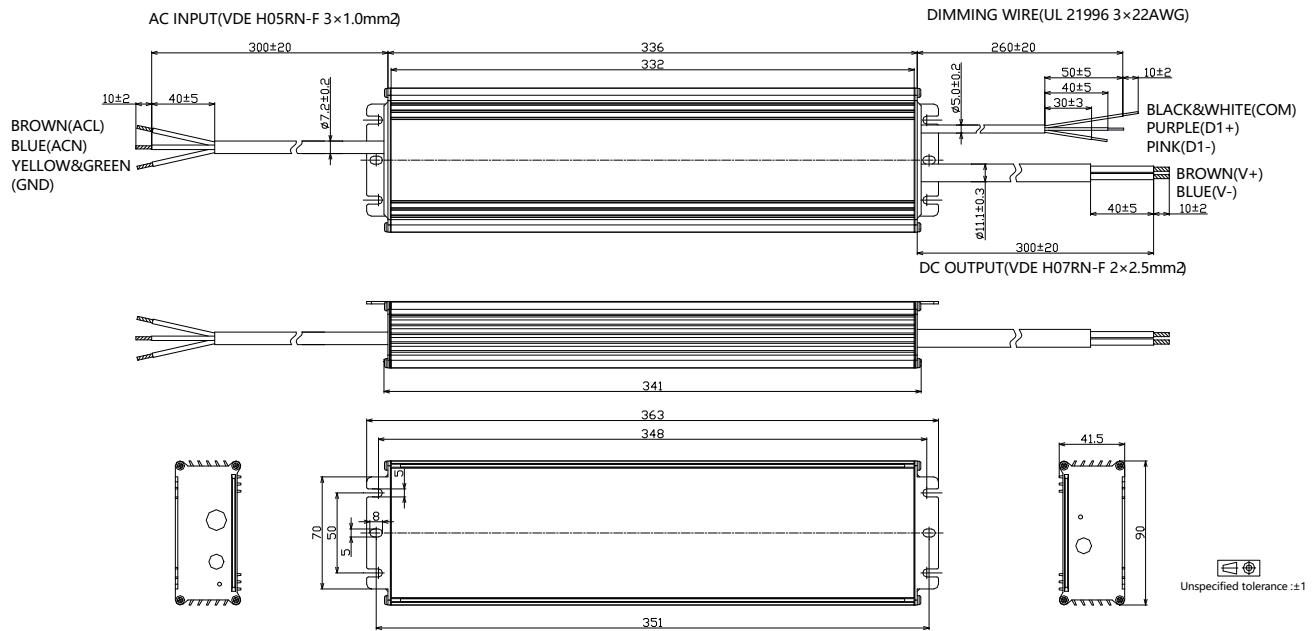


- BLD-810-Cxxx-ARS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)



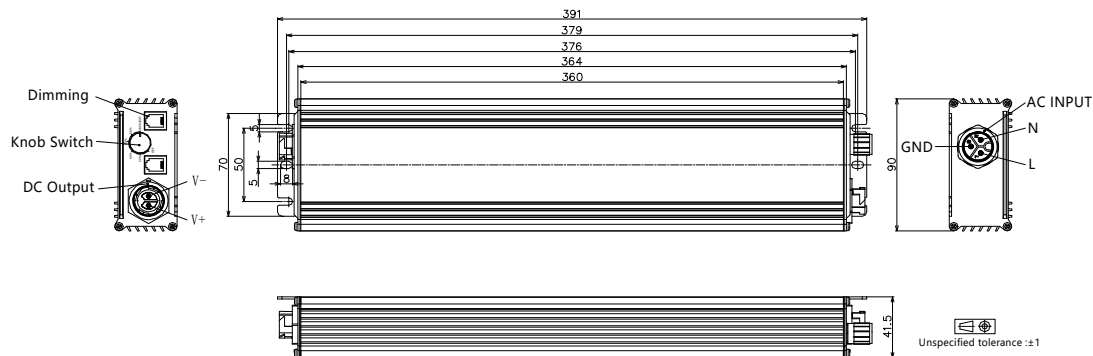
810W, 120-277Vac Input, Long Life High Quality Driver

- BLD-810-Cxxx-MRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)



810W, 120-277Vac Input, Long Life High Quality Driver

- Customized Functional End Cap Version

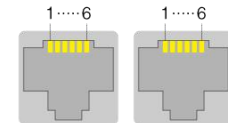


- Add suffix #abcd00 to the end of part number to indicate different configuration. Please refer to product application note AN06 or contact with us for more like **active daisy chain, master mode and button dimming** etc.

Item	Value Definition	Description
Input	a	F: M19 waterproof connector P: C14 plug N: Same cable as standard version
Output	b	F: M19 waterproof connector, 2 pin N: Same cable as standard version
Dimming	c	F: M12 waterproof connector R: RJxx (xx=25,14,12,11) connector x 2 S: 3.5mm multi-media plug N: Same cable as standard version
Knob	d	K: Knob with steps B: Knob without steps N: No knob

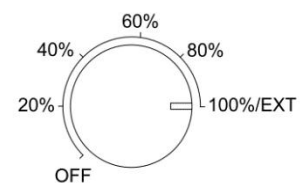
- RJ25 Pin Description (can be customized according to control system)

Pin	Description
1,6	12V Aux-power
2,5	Dim+
3,4	Dim-/RTN



- Knob Description

Position	Description
100%/EXT	If there is no external control, 100% output. If there is external control, output is controlled by external signal.
Off,20%,40%,60%,80%	External signal invalid.



■ 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)
-C18A	18000	810	30	45	1800
	17000	810	30	48	1700
	16000	810	30	51	1600
	15000	810	32	54	1500
	14500	810	34	56	1450
	14000	782	34	56	1450
	12000	670	34	56	1450
	10000	559	34	56	1450
	...	...	...	...	...
	1450	81	34	56	1450

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C860	8600	810	56	93	860
	8500	810	56	94	850
	8400	810	57	95	840
	8200	810	59	98	820
	8000	810	60	100	800
	7800	810	62	103	780
	7600	810	63	105	760
	7400	810	65	108	740
	7200	810	67	111	720
	7000	810	69	114	700
	6800	810	71	118	680
	6600	810	73	121	660
	6400	810	75	125	640
	6200	810	77	129	620
	6000	810	80	133	600
	5800	773	80	133	600
	5600	747	80	133	600
	...	...	...	...	...
	600	80	80	133	600

810W, 120-277Vac Input, Long Life High Quality Driver

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C600	6000	810	80	133	600
	5800	810	83	138	580
	5600	810	86	143	560
	5400	810	89	148	540
	5200	810	92	154	520
	5000	810	96	160	500
	4800	810	100	167	480
	4600	810	104	174	460
	4400	810	109	182	440
	4200	810	114	190	420
	4000	762	114	190	420
	3800	724	114	190	420
	3600	686	114	190	420
	3400	648	114	190	420
	3200	610	114	190	420
	...	...	...	...	...
	420	80	114	190	420

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C420	4200	810	114	190	420
	4100	810	117	195	410
	4000	810	120	200	400
	3900	810	123	205	390
	3800	810	126	211	380
	3700	810	130	216	370
	3600	810	133	222	360
	3500	810	137	229	350
	3400	810	141	235	340
	3300	810	145	242	330
	3200	810	150	250	320
	3100	810	155	258	310
	3000	810	160	267	300
	2900	810	166	276	290
	2800	810	171	286	280
	2700	771	171	286	280
	2600	743	171	286	280

810W, 120-277Vac Input, Long Life High Quality Driver

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C280	2800	810	171	286	280
	2700	810	178	296	270
	2600	810	185	308	260
	2500	810	192	320	250
	2400	810	200	333	240
	2300	810	209	348	230
	2200	810	218	364	220
	2100	810	229	381	210
	2000	810	240	400	200
	1900	810	253	421	190
	1800	758	253	421	190
	1700	716	253	421	190
	...	...	...	...	...
	190	80	253	421	190

Revision History

Revision	Date	Contents
F	2022-03-22	1. Index page added 2. Reduced dimming interface sourcing current 3. DALI 2.0 compatibility added 4. Programming instruction added 5. Inrush current data added 6. Tc point position indication added 7. Dielectric strength level added 8. Packaging information added 9. Mechanical design change with dimming cable color 10. Revision history added
G	2022-05-28	1. Model C420 operation range updated. 2. Model C280 added.
H	2022-12-14	1. DMX dimmable models mechanical design updated
I	2023-07-14	1. Update cable selection table in Model List Section
J	2023-09-15	1. Update model selection table with -DN,-EN,DR models 2. Startup time updated
K	2024-07-12	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