

Product Datasheet



The global certified BLD-1K1-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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1000W, 120-277Vac Input, Long Life High Quality Driver

■ Features

- Absolute Supply Voltage: 100-305Vac
- 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 61347-1,61347-2-13, 62384

■ Model List

Model Number	Input Voltage Range	Max Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max
BLD-1K1-C21A-XYZ	100-180Vac 180-305Vac	800 W 1000 W	30-55Vdc	18A	21A
BLD-1K1-C860-XYZ			70-167Vdc	6A	8.6A
BLD-1K1-C600-XYZ			100-238Vdc	4.2A	6A

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#NNNGL	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	Class I 120-277Vac	UL Recognized Class I 120-277Vac	Class I 120-277Vac	Class II 120-277Vac

1000W, 120-277Vac Input, Long Life High Quality Driver

■ Technical Data

Input Voltage	100-305Vac
Input Frequency	47~63Hz
Power Factor	>0.9@60-100%load, refer to PF vs. Load curve
THD	<15%@60-100%load, refer to THD vs. Load curve
Input Current	5.2Amax@220Vac & Full-Load, 4Amax@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 10kV, line to ground 6kV, 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	369x 90 x 41.5 by mm (body), 396 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

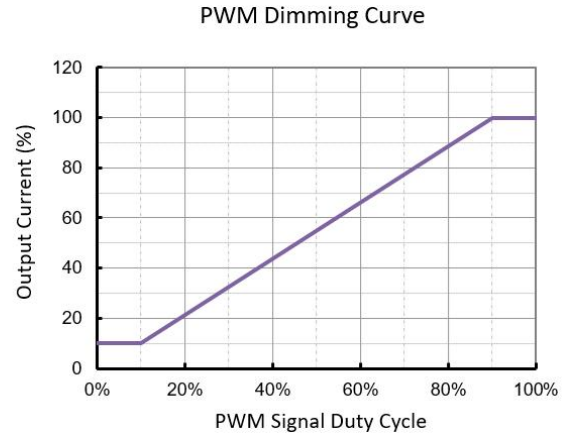
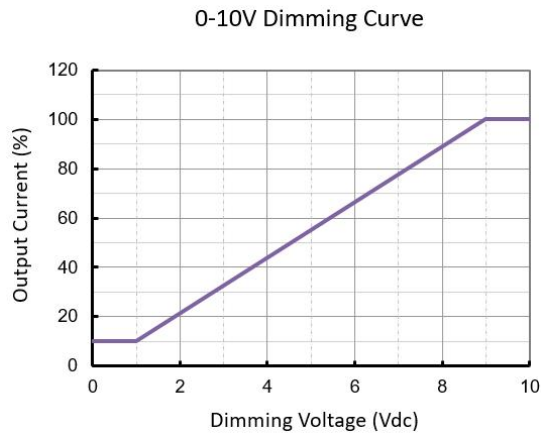
Safety Standards	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012/1310	Power units other than class 2 / Class 2 power units
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement 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

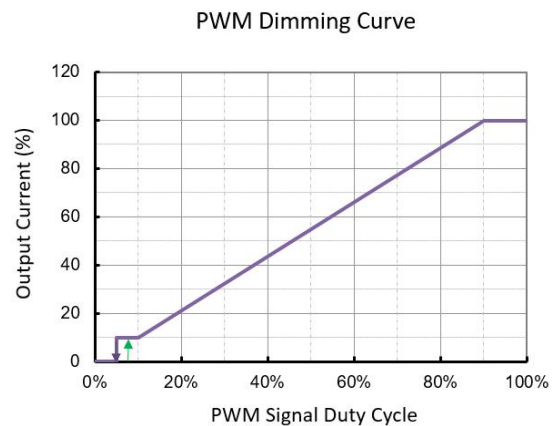
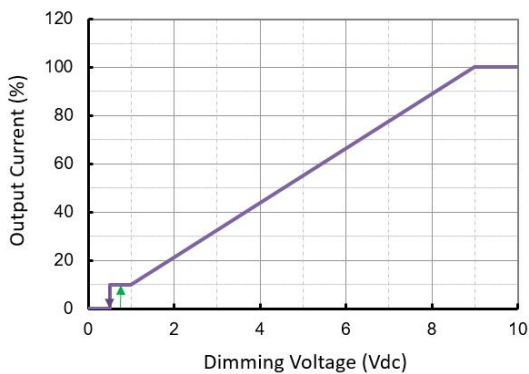
Parameter	Min.	Typ.	Max.
Vdim Sourcing Current	100uA	150uA	200uA
Vdim Allowed Input Voltage	-20 V		20 V
0-10V Dimming Range	10% (Vdim=1V)	Linear	100% (Vdim=9~10V)
PWM Dimming Range	10% (Duty=10%)	Linear	100% (Duty=90-100%)
Default Dim off Threshold	0.4V or 4%	0.5V or 5%	0.6V or 6%
Default Dim off Threshold	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.

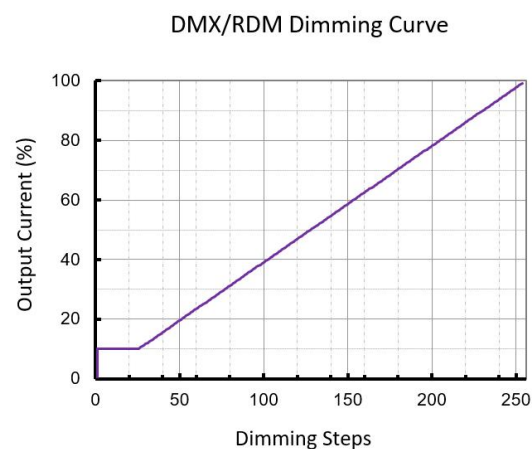
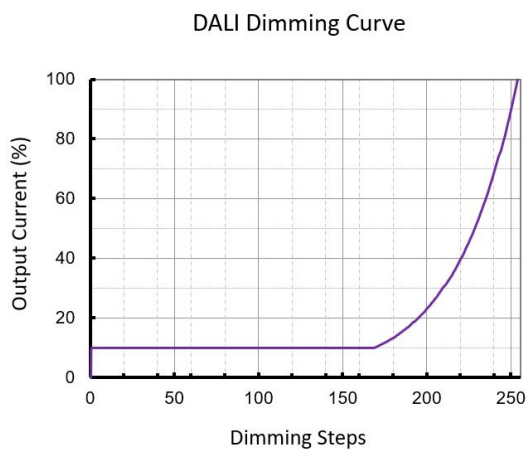
- **Default Dimming Curves**
a. 0-10V dimming without dim-off



b. 0-10V dimming with dim-off
 0-10V Dimming Curve
 with Dim Off



c. DALI and DMX dimming curves

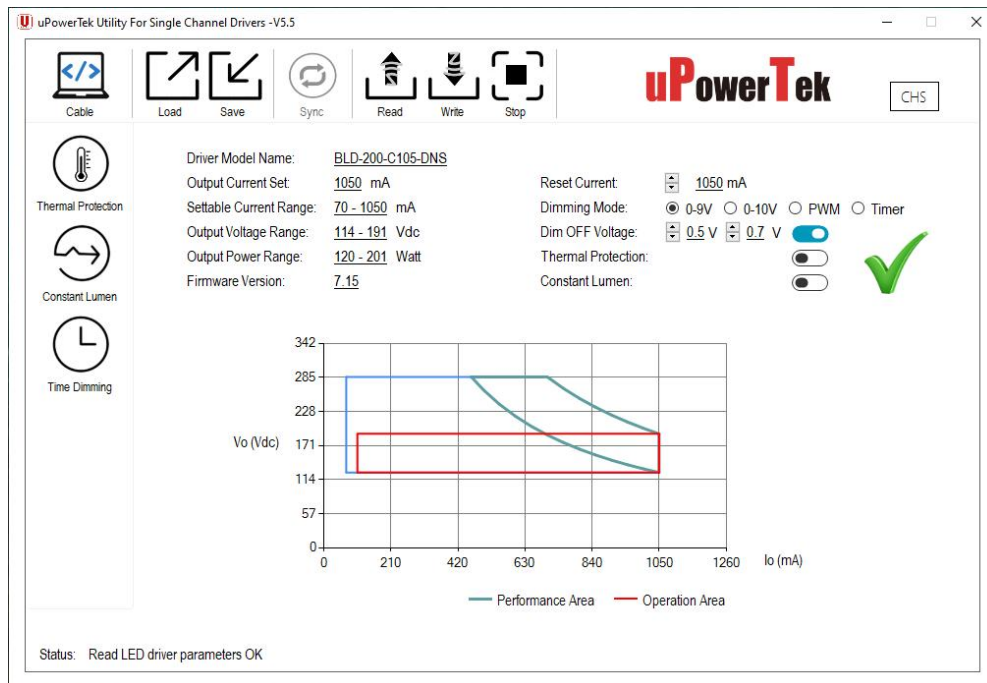


Note: Both DALI and DMX dimming curves can be customized to be linear or logarithmic as default.

■ 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



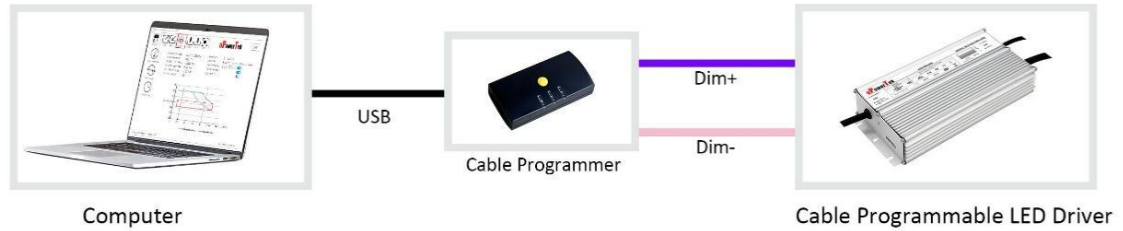
Android or iPhone

1000W, 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

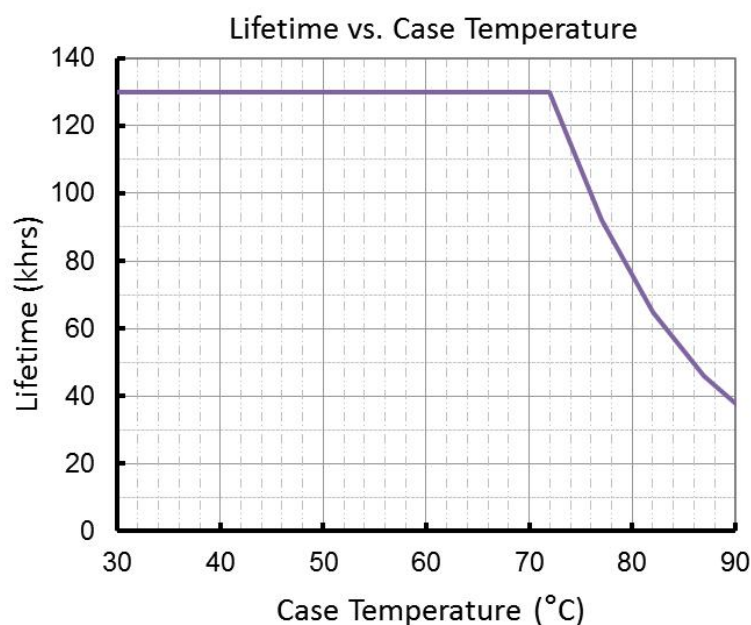


Wireless Programming



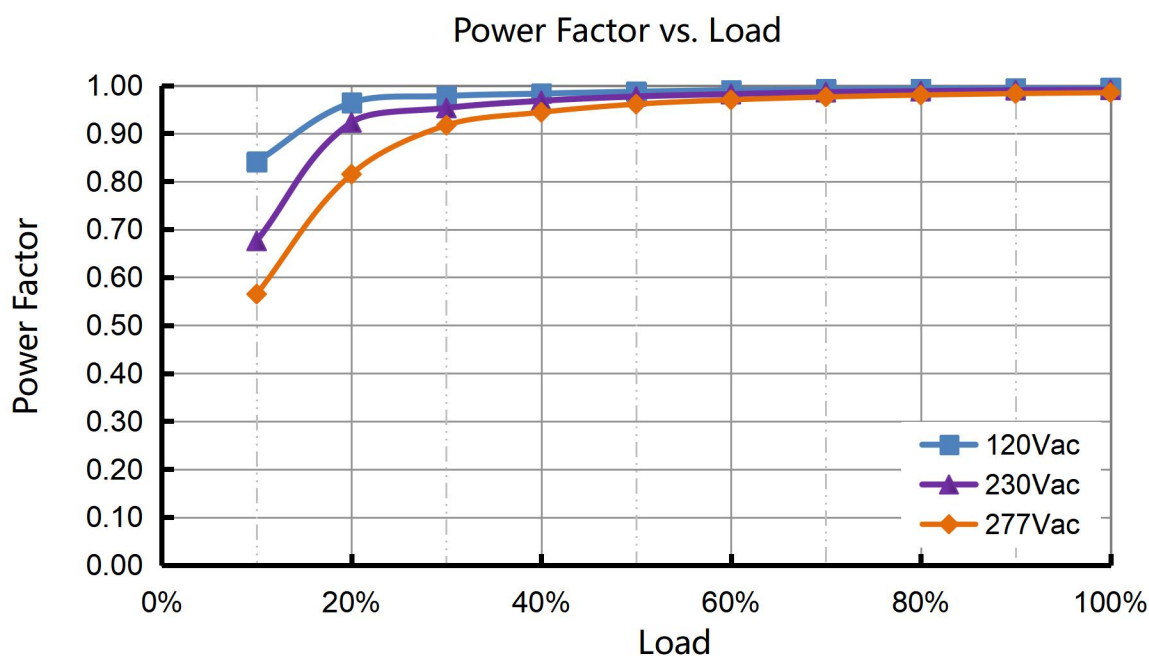
Cellphone Programming

■ Lifetime vs. Case Temperature

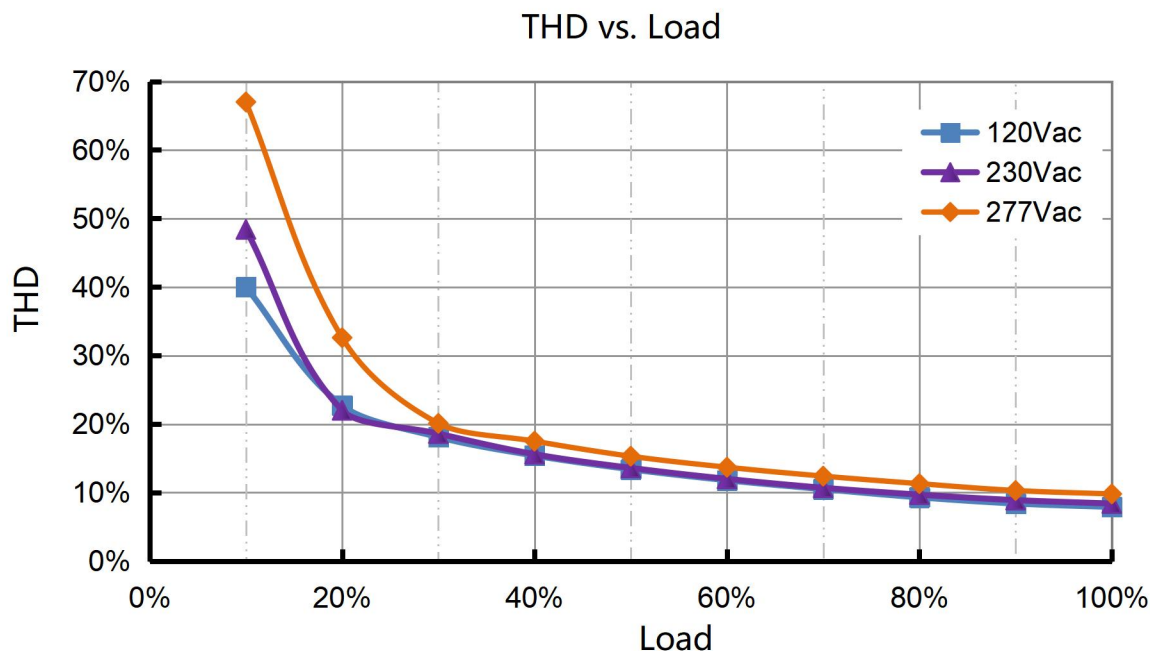


(End of Life: Maximum Failure Rate=10%)

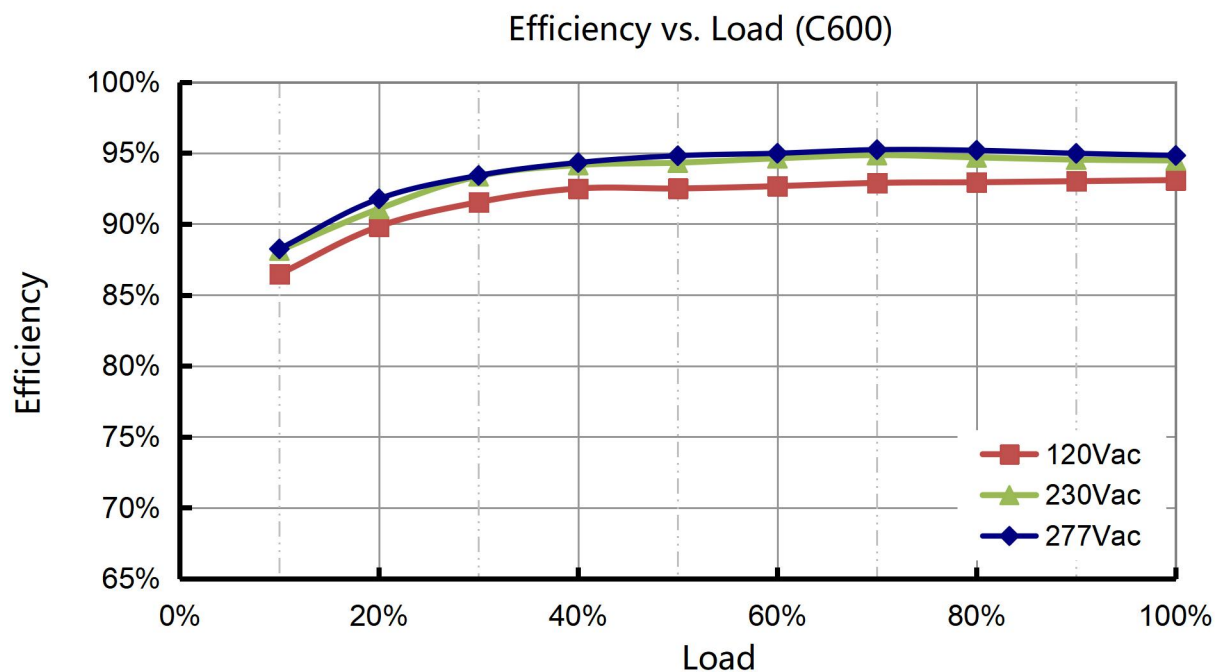
■ Power Factor vs. Load



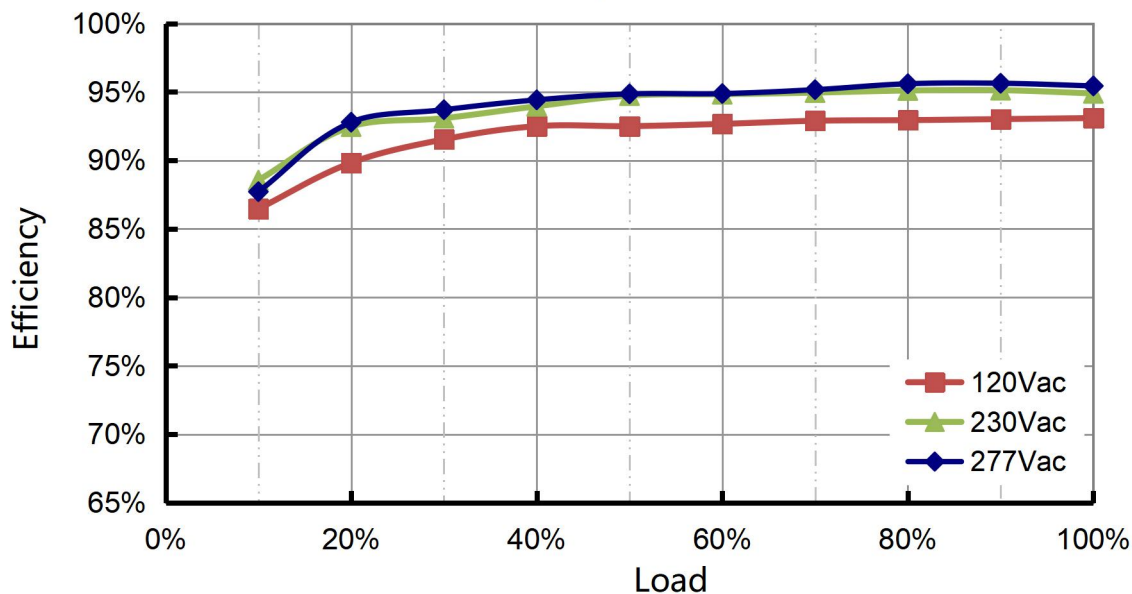
■ THD vs. Load



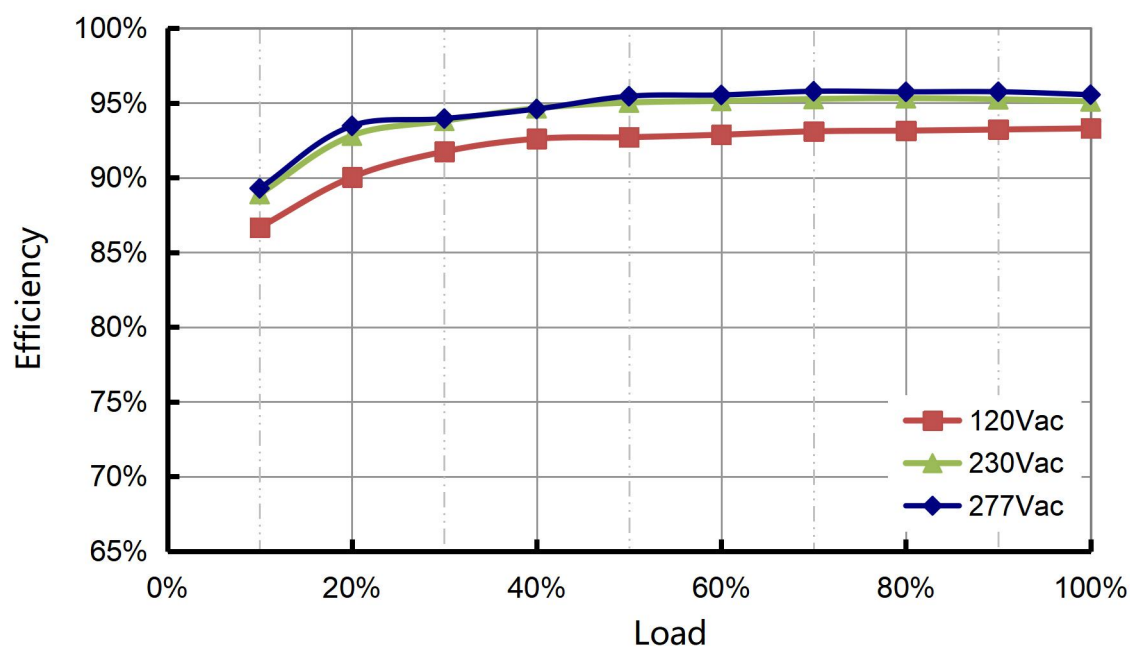
■ Efficiency vs. Load



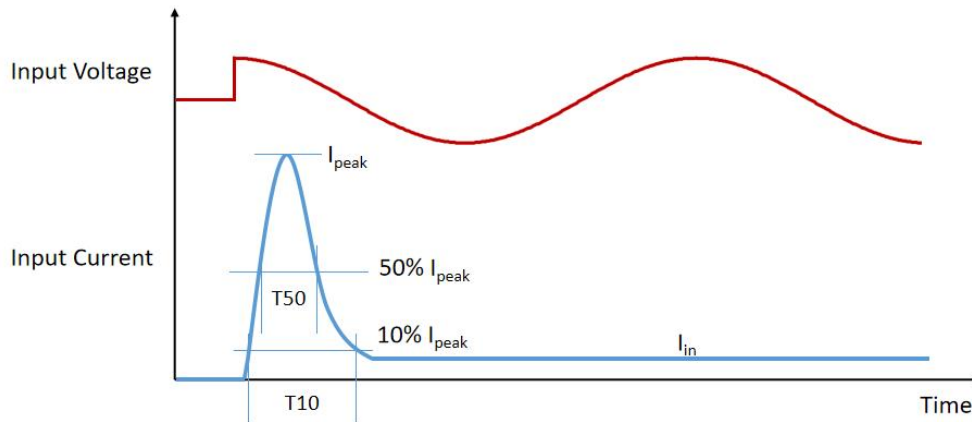
Efficiency vs. Load (C860)



Efficiency vs. Load (C21A)



■ 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

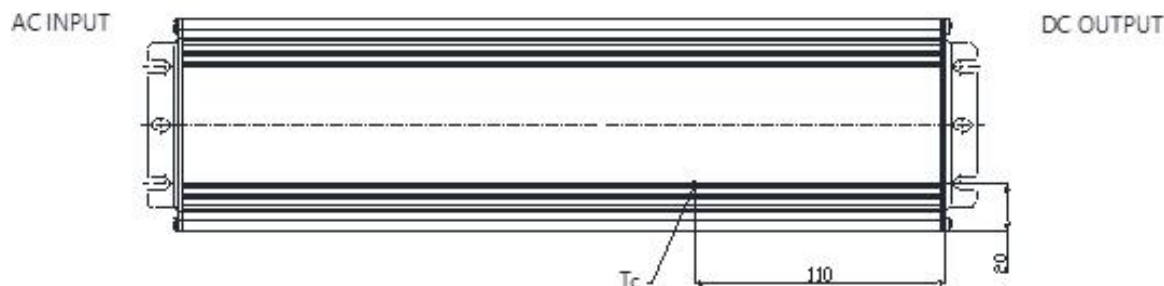
Type	B10	B16	B25	B32	C10	C16	C25	C32	D10	D16	D25	D32
Driver Quantity	1	1	3	4	1	2	3	4	1	2	4	5

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

■ Dielectric Strength

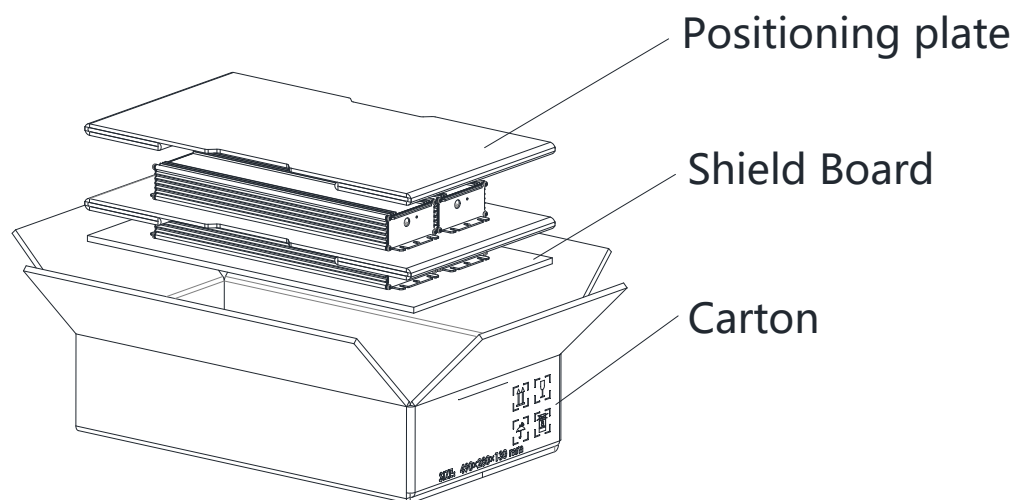
Unit: Vac	Input	Output	Dimming	Case
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming	3750	1554	-	1554
Case	1554	1554	1554	-

■ Tc Point



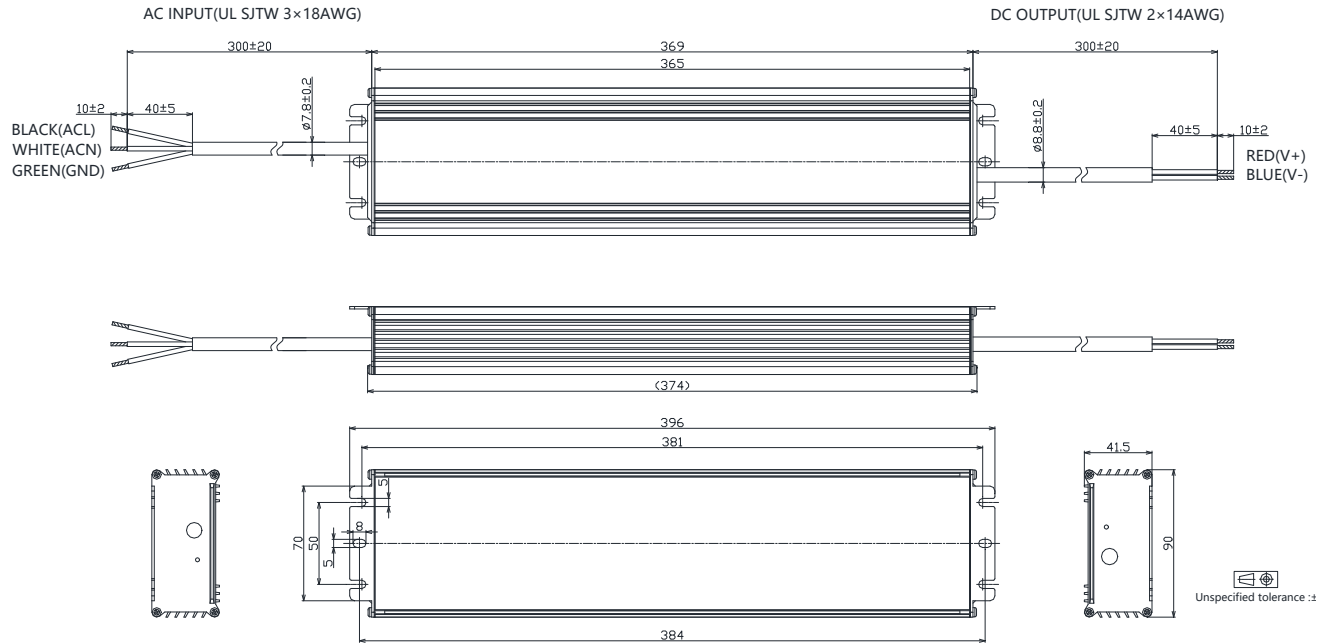
■ Packaging Information

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	10.2kg/carton
Gross Weight	10.8 kg/carton

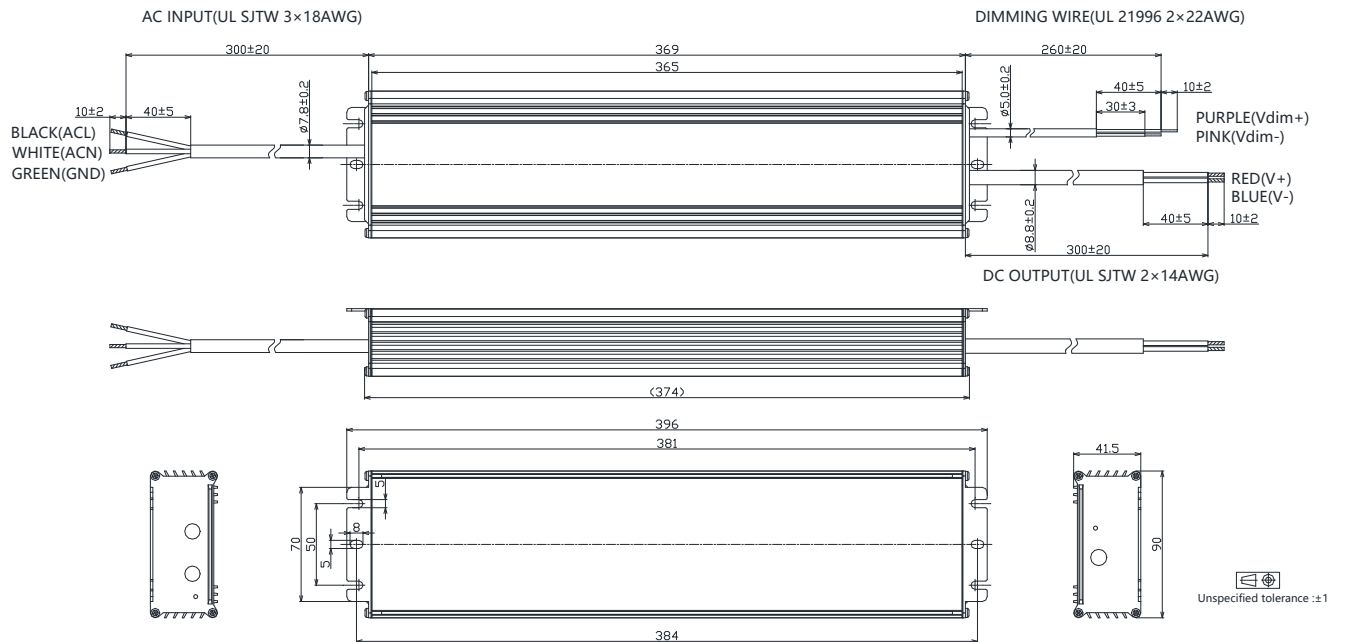


Mechanical Design

- BLD-1K1-Cxxx-NNU/TRU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

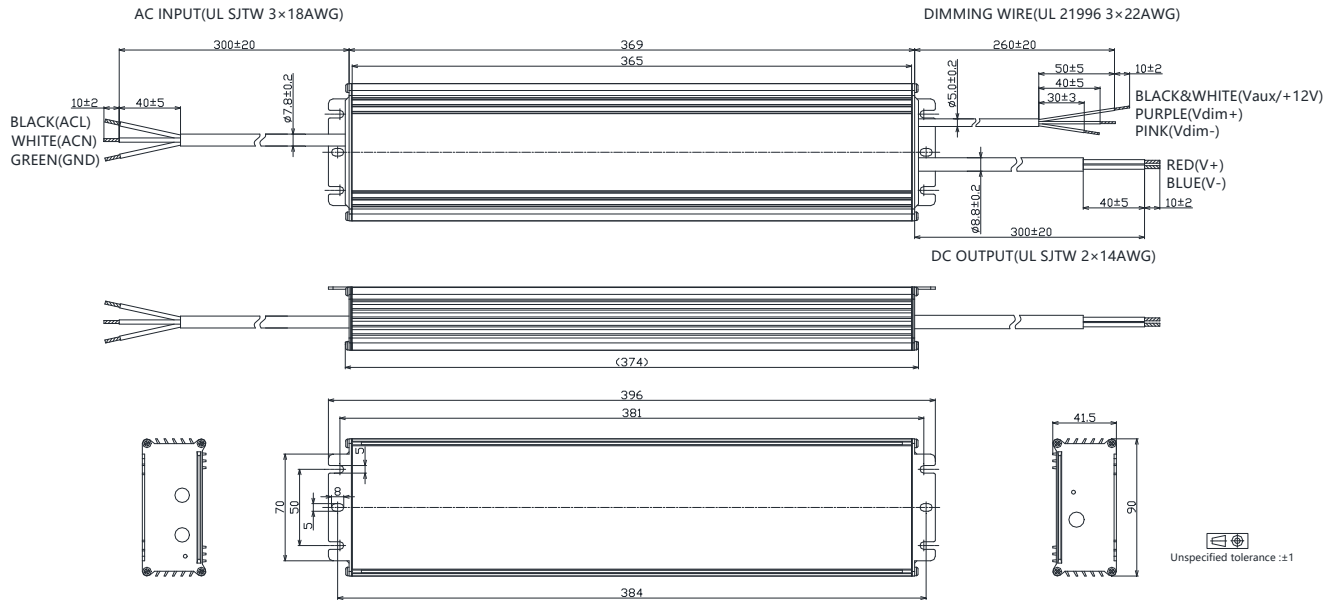


- BLD-1K1-Cxxx-DNU/DRU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

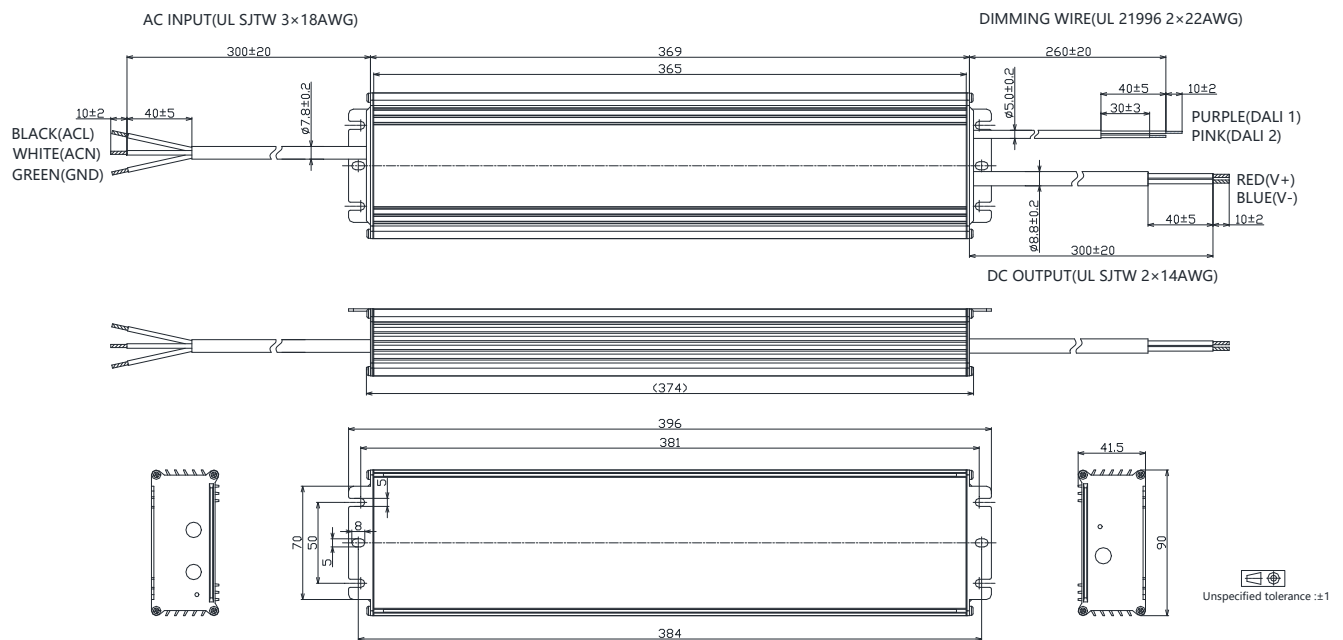


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-ENU/ERU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

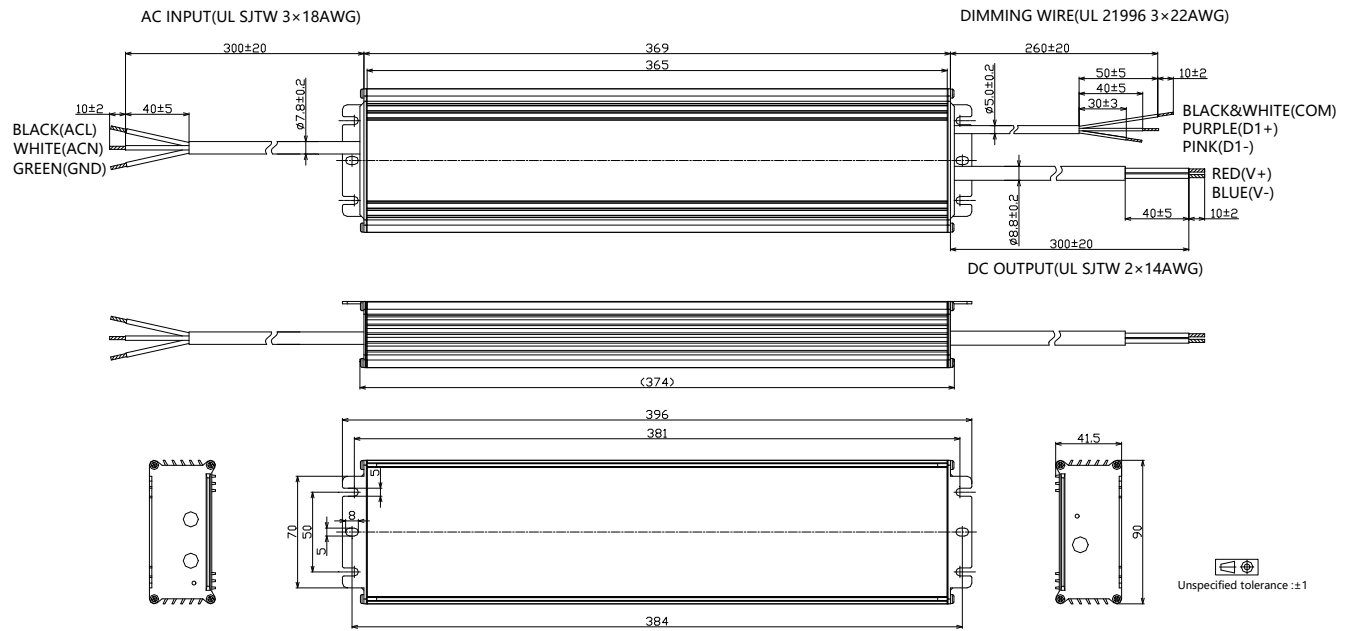


- BLD-1K1-Cxxx-ANU/ARU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

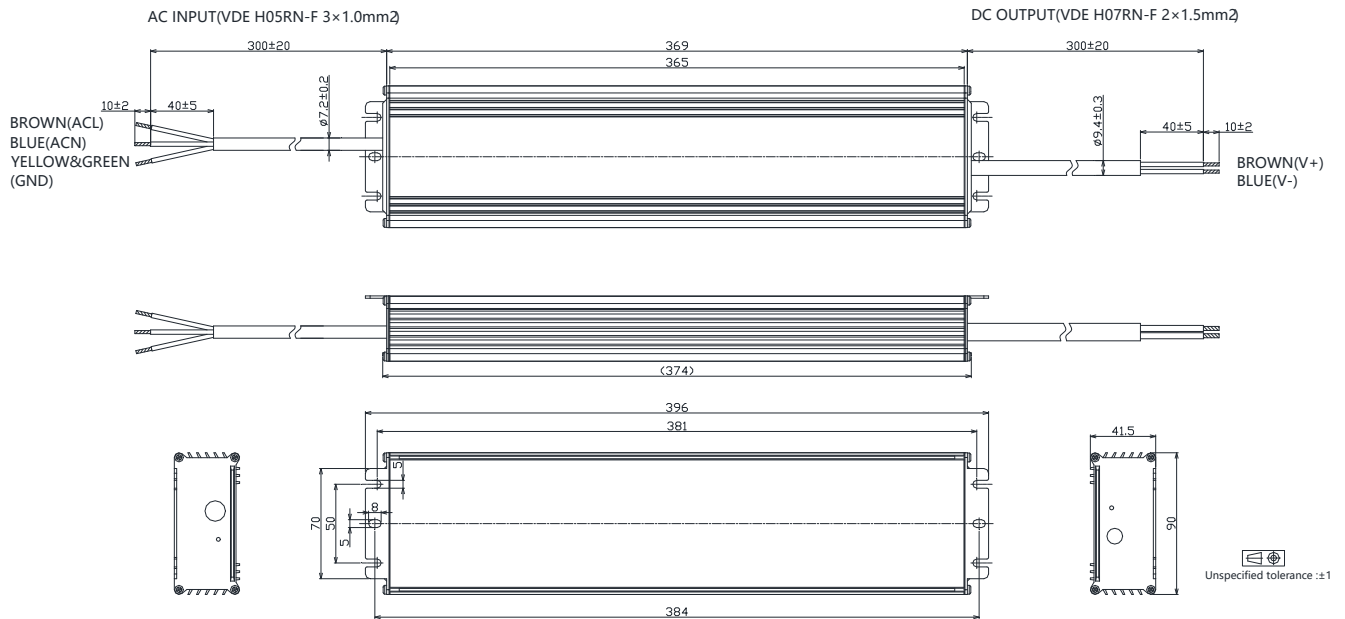


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-MRU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

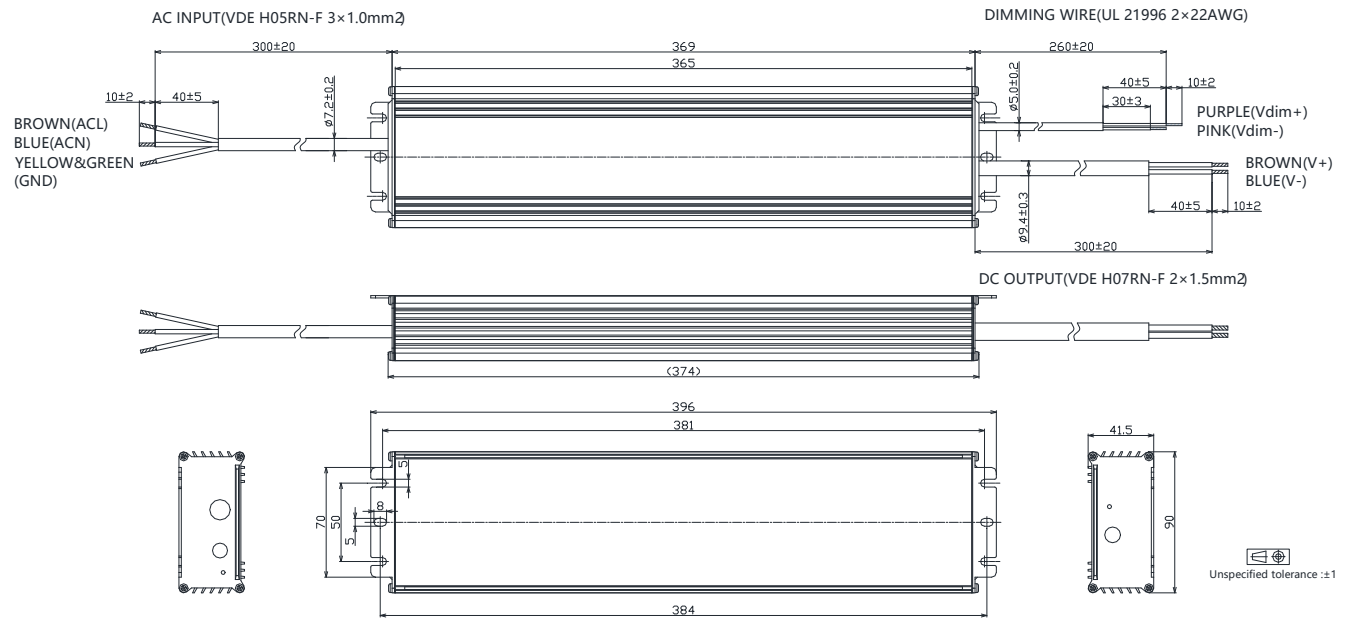


- BLD-1K1-Cxxx-NNS/TRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

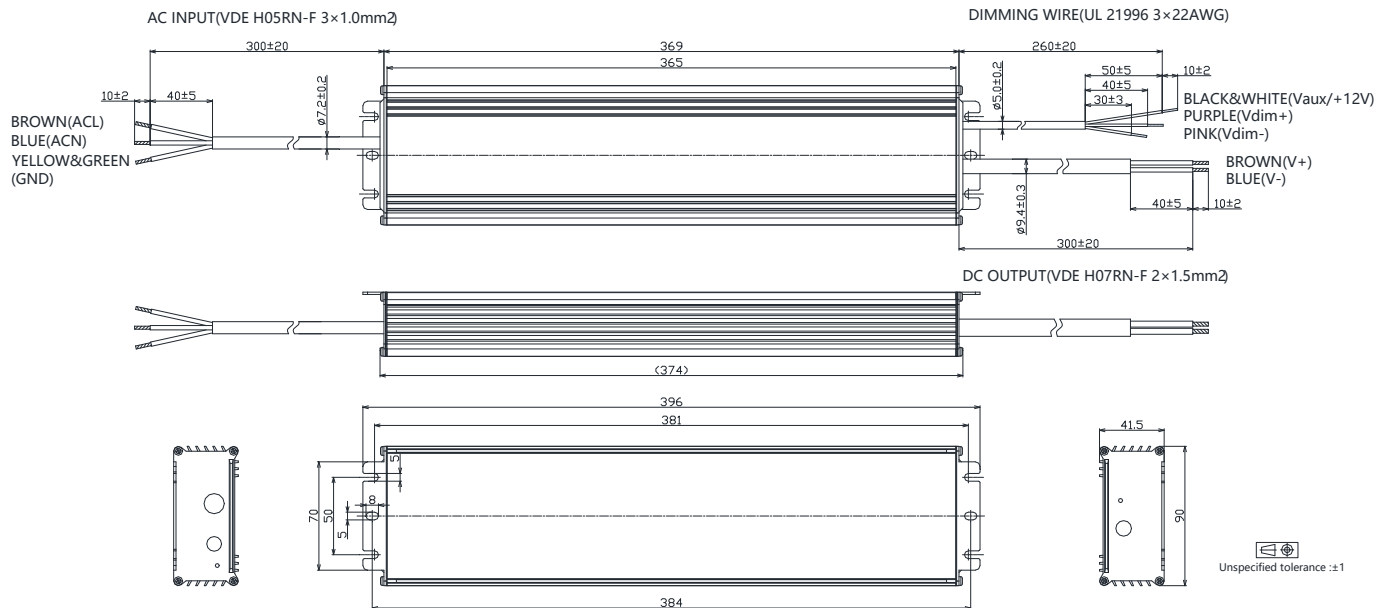


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-DNS/DRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

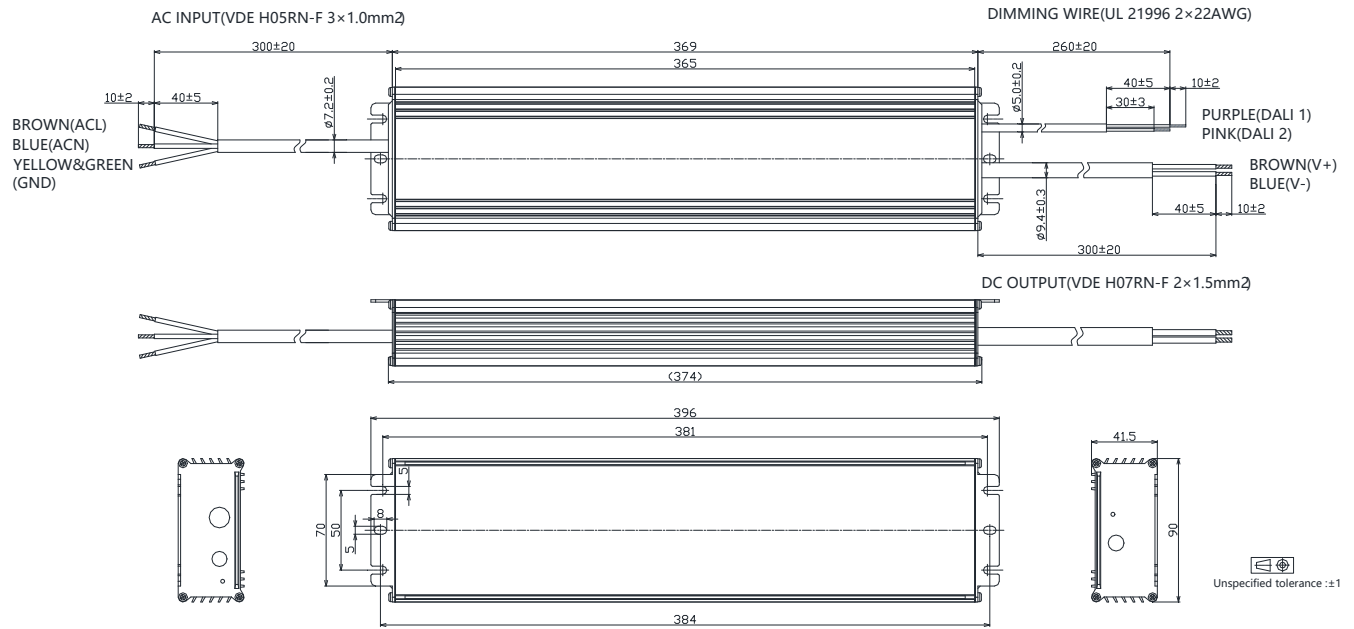


- BLD-1K1-Cxxx-ENS/ERS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

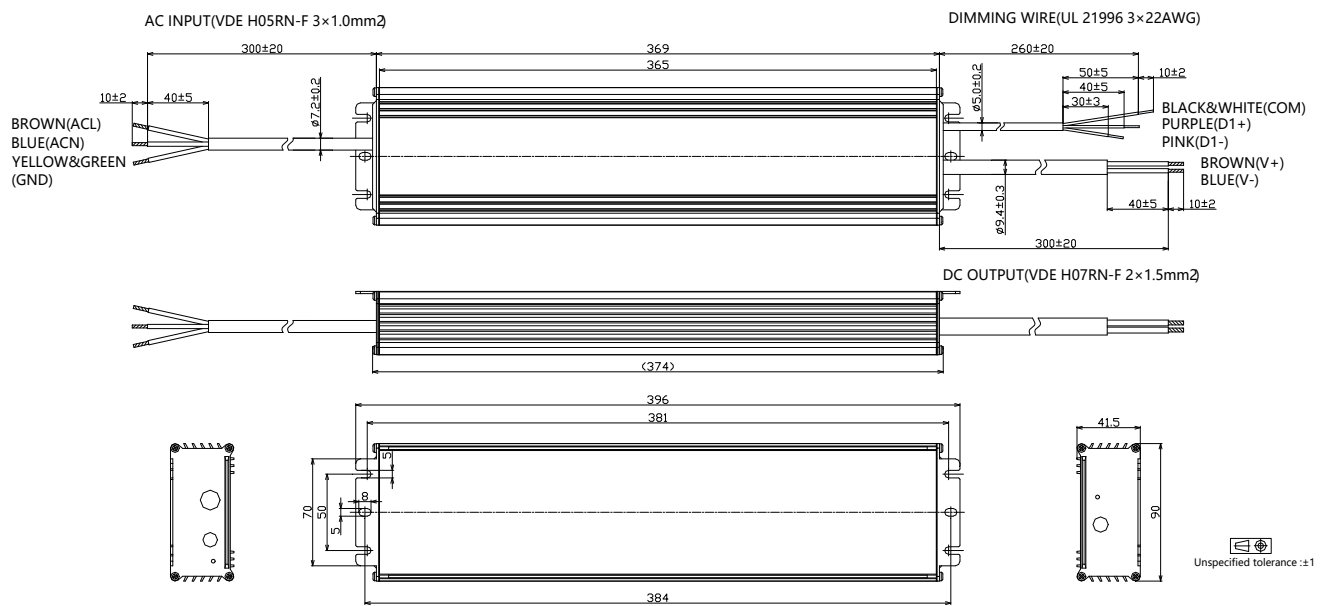


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-ANS/ARS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

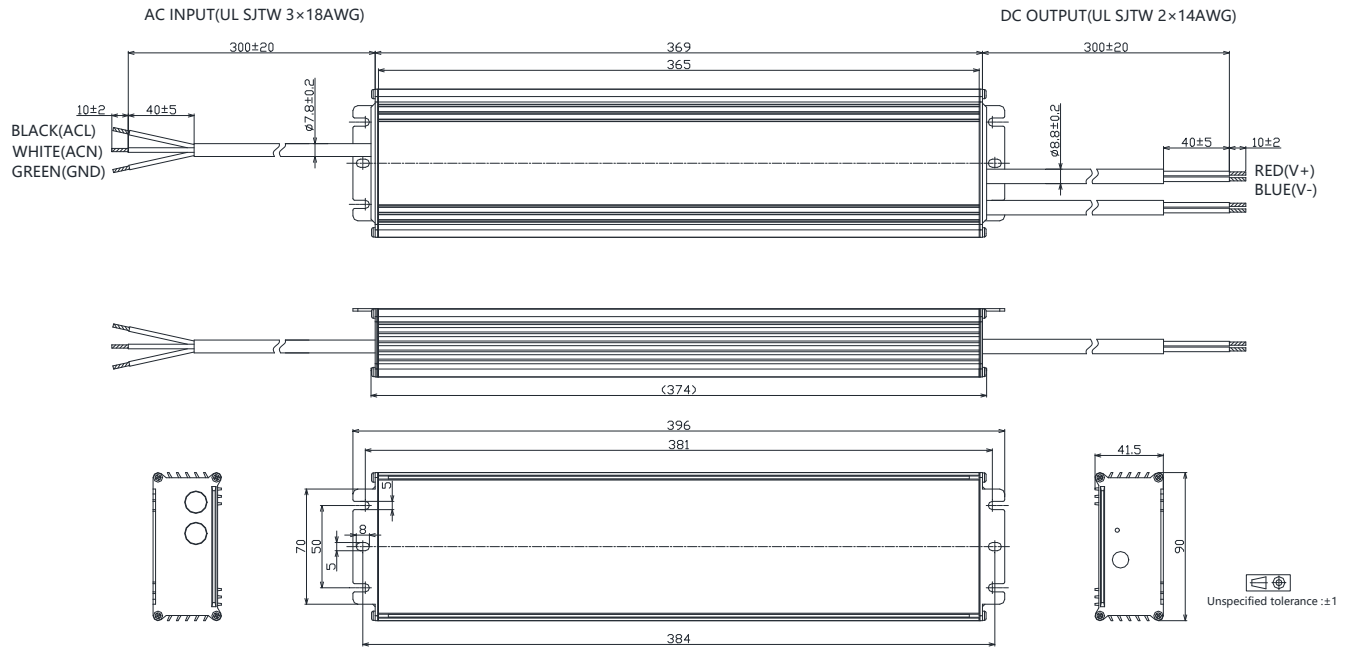


- BLD-1K1-Cxxx-MRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

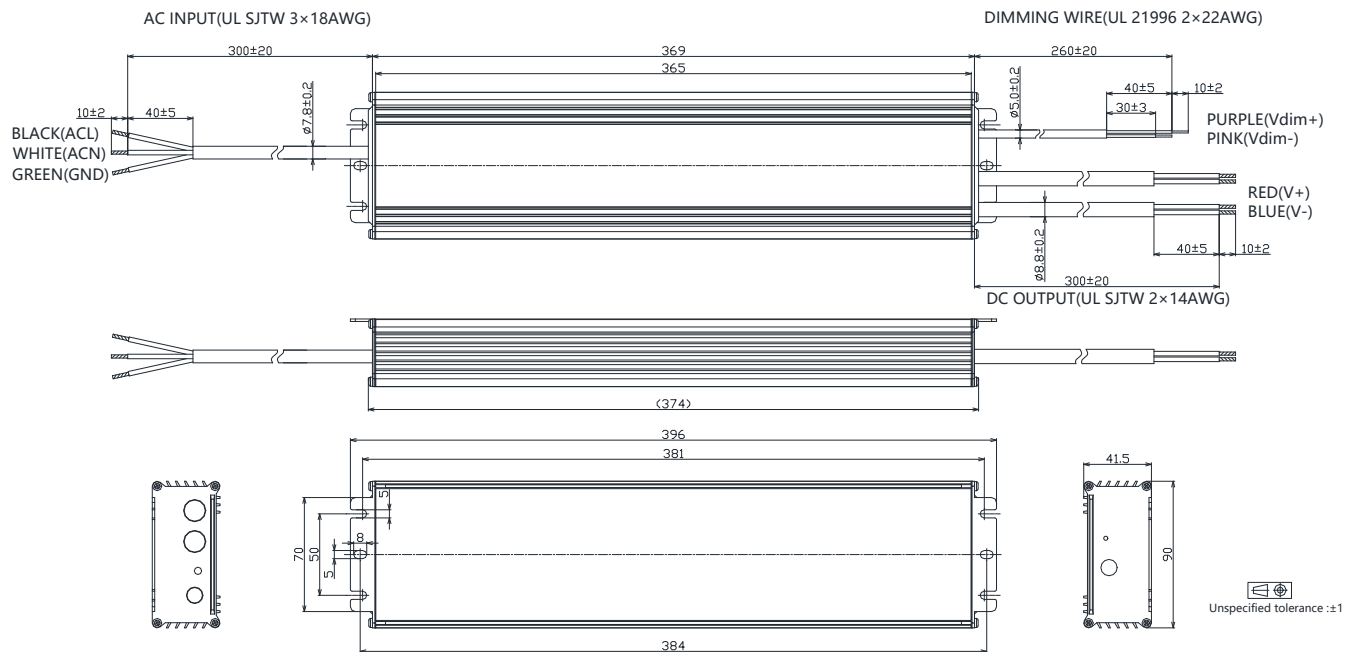


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-NNU/TRU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

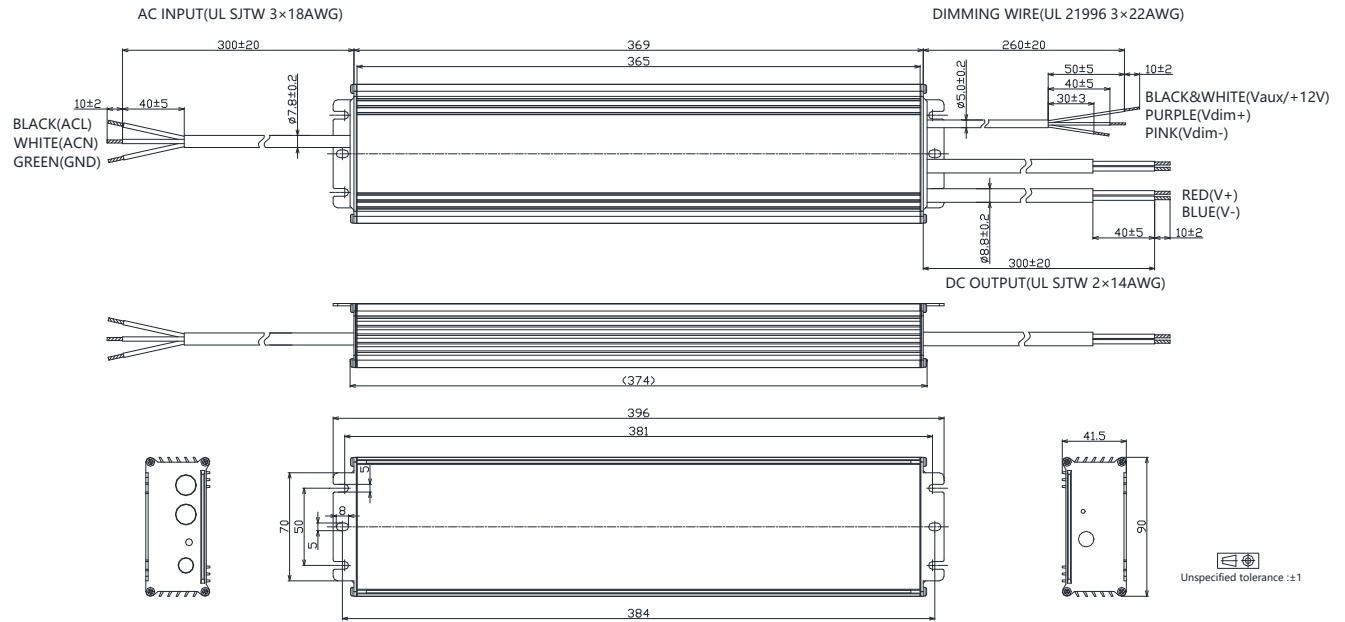


- BLD-1K1-Cxxx-DNU/DRU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

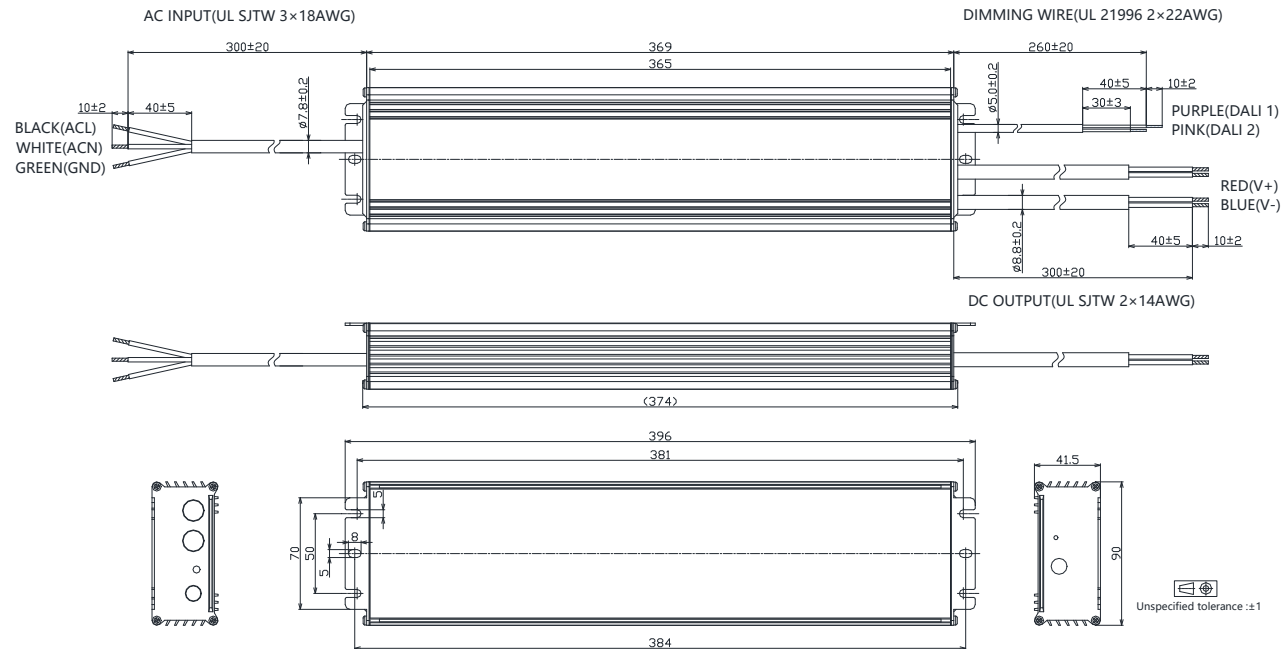


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-ENU/ERU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

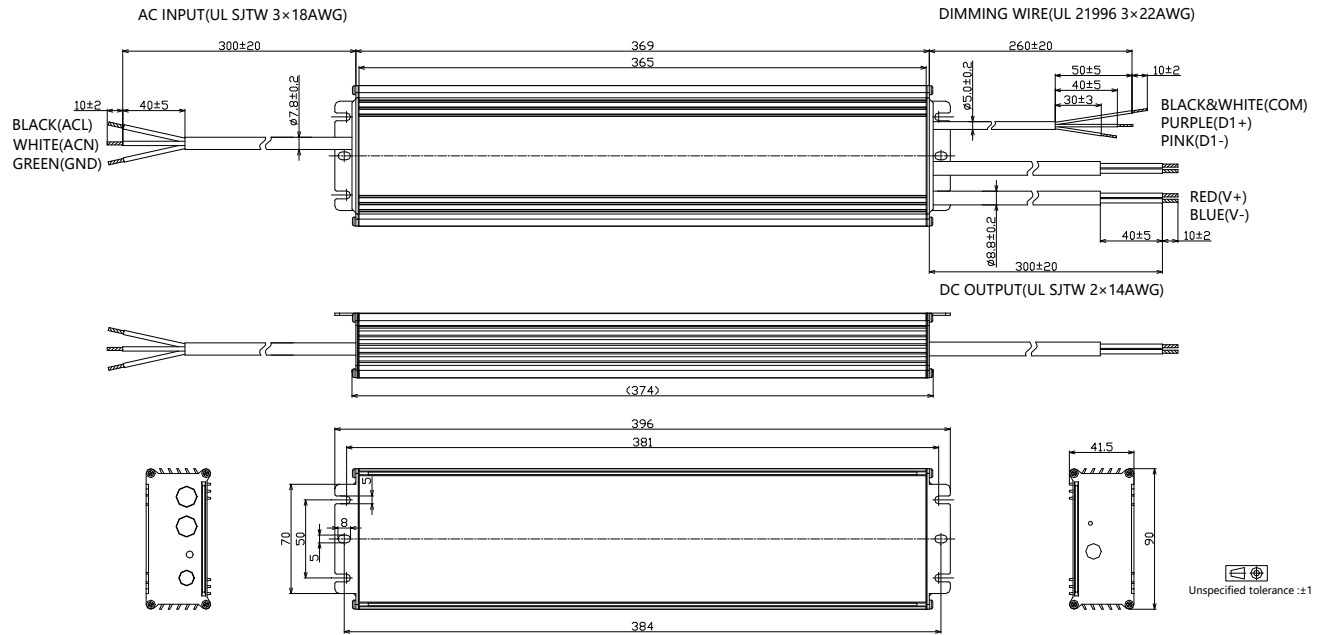


- BLD-1K1-Cxxx-ANU/ARU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

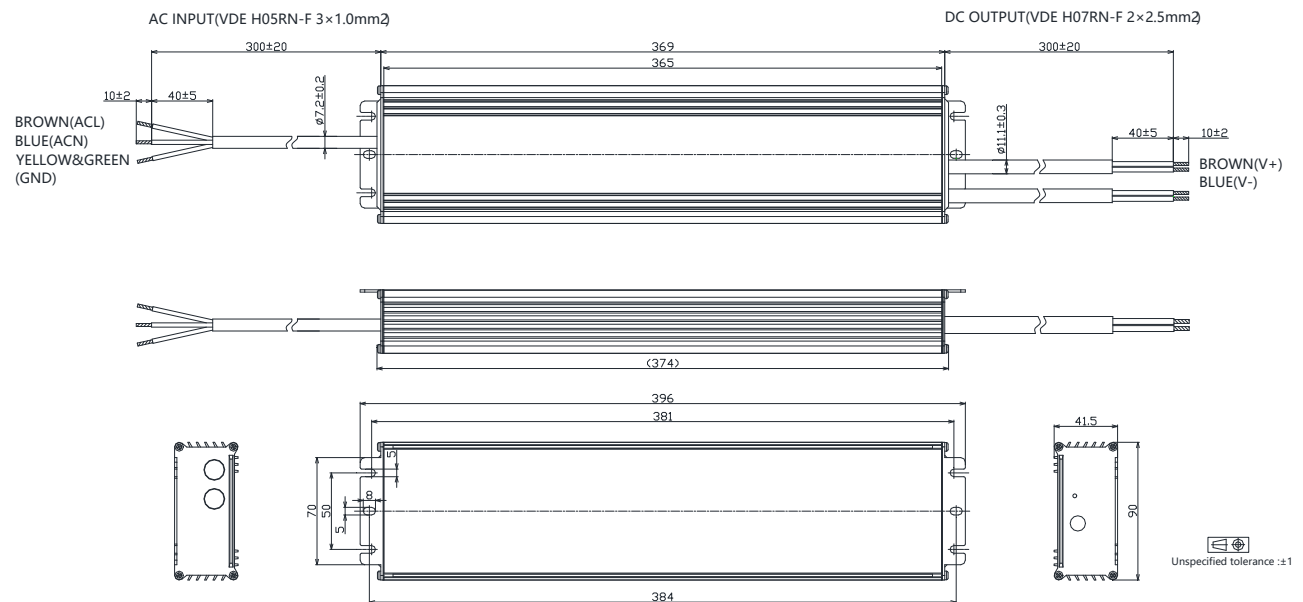


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-MRU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

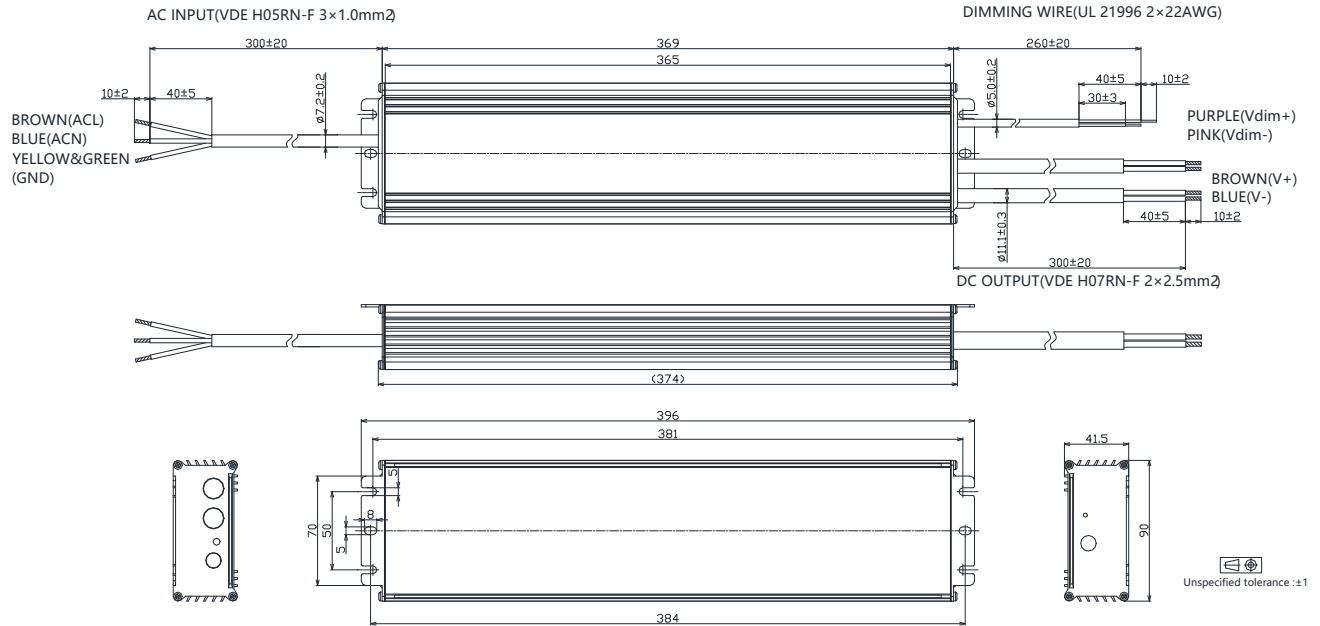


- BLD-1K1-Cxxx-NNS/TRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

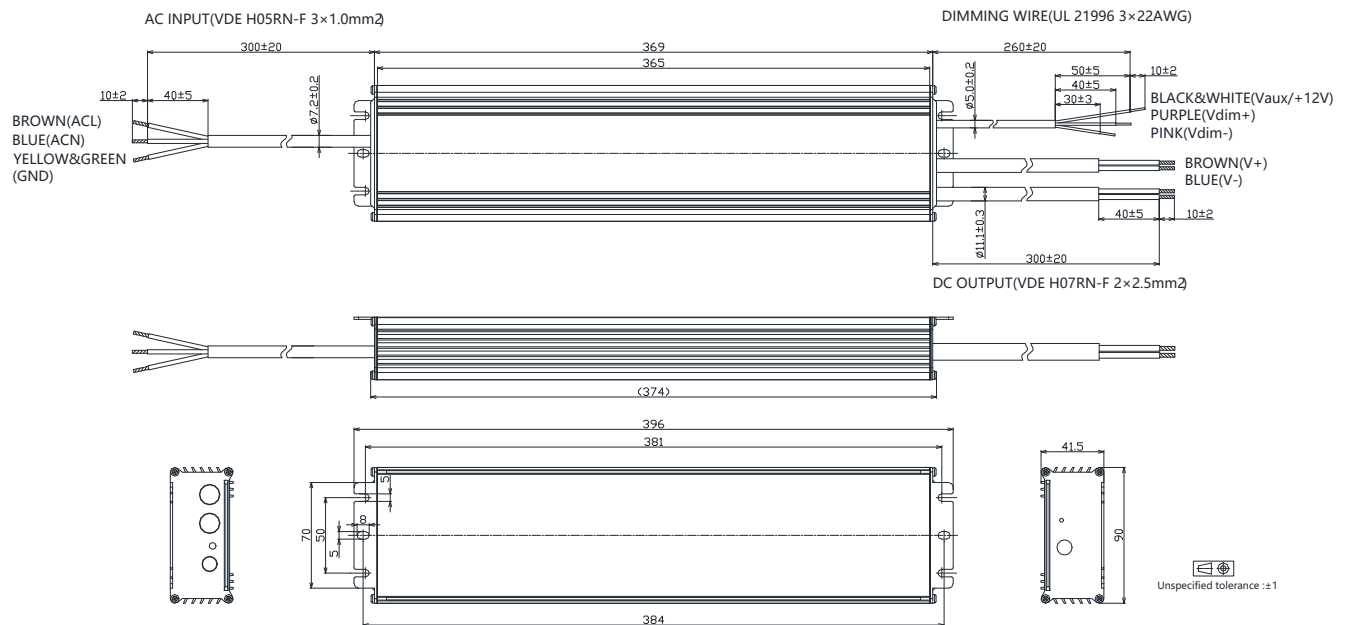


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-DNS/DRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

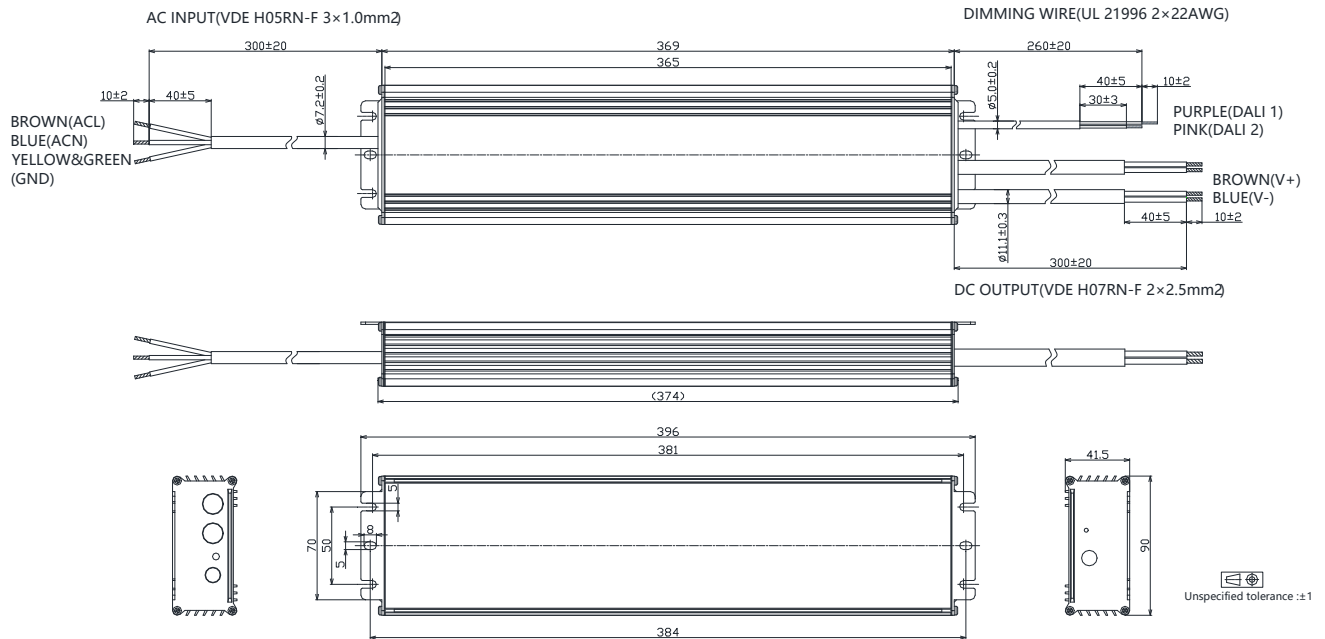


- BLD-1K1-Cxxx-ENS/ERS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

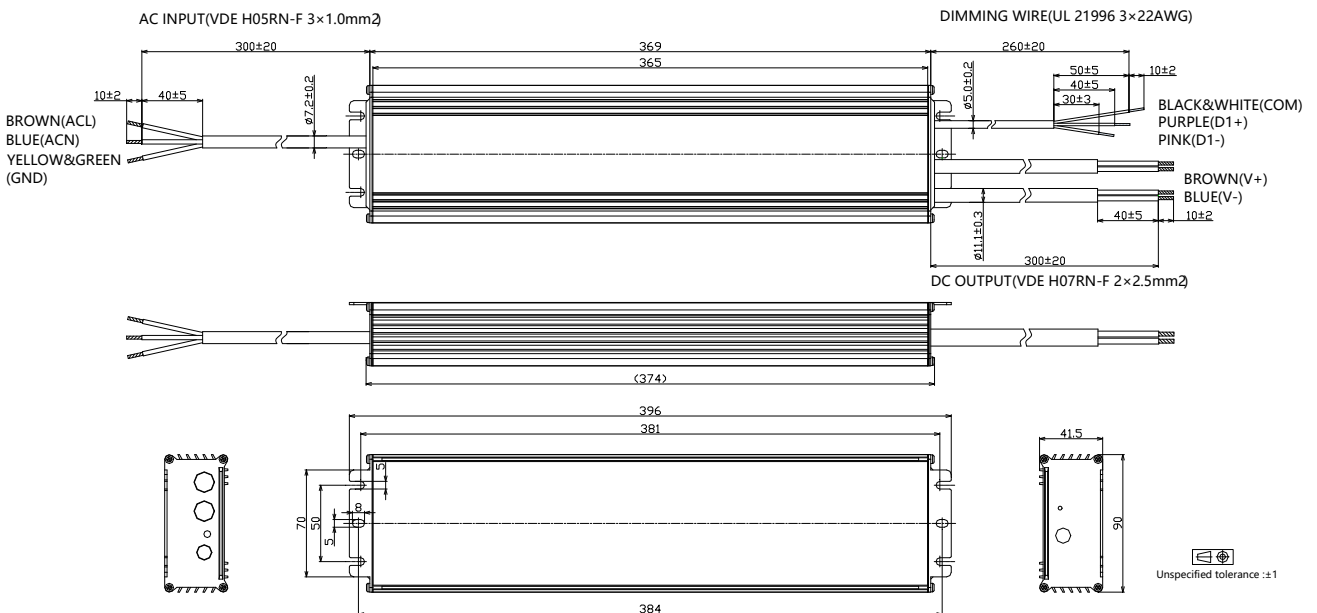


1000W, 120-277Vac Input, Long Life High Quality Driver

- BLD-1K1-Cxxx-ANS/ARS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

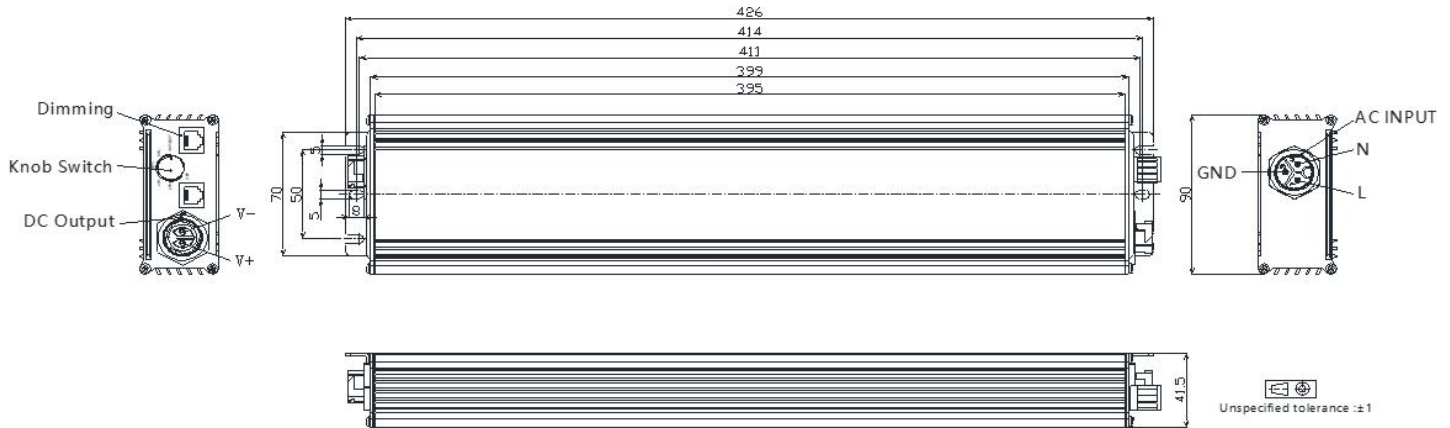


- BLD-1K1-Cxxx-MRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)



1000W, 120-277Vac Input, Long Life High Quality Driver

- Customized Functional End Cap Version

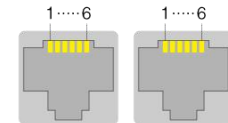


- Add suffix #abcd00 to the end of part number to indicate different configuration. Please refer to product application note AN06 or contact with us for more like **active daisy chain, master mode and button dimming** etc.

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

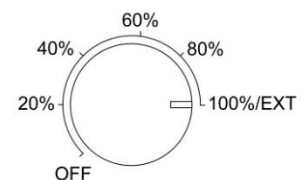
- RJ25 Pin Description (can be customized according to control system)

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)
-C21A	21000	1000	30	48	2100
	20500	1000	30	49	2050
	20000	1000	30	50	2000
	19500	1000	31	51	1950
	19000	1000	32	53	1800
	18500	1000	32	54	1800
	18000	990	33	55	1800
	17500	963	33	55	1800
	17000	935	33	55	1800
	16500	908	33	55	1800
	...	...	...	...	...
	1800	99	33	55	1800

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C860	8600	1000	70	116	860
	8500	1000	71	118	850
	8400	1000	71	119	840
	8200	1000	73	122	820
	8000	1000	75	125	800
	7800	1000	77	128	780
	7600	1000	79	132	760
	7400	1000	81	135	740
	7200	1000	83	139	720
	7000	1000	86	143	700
	6800	1000	88	147	680
	6600	1000	91	152	660
	6400	1000	94	156	640
	6200	1000	97	161	620
	6000	1000	100	167	600
	5800	967	100	167	600
	5600	933	100	167	600
	...	...	...	...	...
	600	100	100	167	600

1000W, 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	1000	100	167	600
	5800	1000	103	172	580
	5600	1000	107	179	560
	5400	1000	111	185	540
	5200	1000	115	192	520
	5000	1000	120	200	500
	4800	1000	125	208	480
	4600	1000	130	217	460
	4400	1000	136	227	440
	4200	1000	143	238	420
	4000	952	143	238	420
	3800	905	143	238	420
	3600	857	143	238	420
	...	...	...	...	...
	420	100	143	238	420

■ Revision History

Revision	Date	Contents
C	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
D	2022-12-14	1. DMX dimmable models mechanical design updated
E	2023-07-14	1. Update cable selection table in Model List Section
F	2023-09-15	1. Update model selection table with -DN,-EN,DR models 2. Startup time updated
G	2024-7-12	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