

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
- 0-10V/PWM/Time/DALI2.0/RS485 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 (Note 1)	Output Voltage (Note 2)	Full Power Settable Current Min	Full Power Settable Current Max	Certification
BLD-1K1-C21A-XYZ	100-305Vac	1000 W	30-55Vdc	18A	21A	UL/FCC/CE/RoHs
BLD-1K1-C860-XYZ	100-305Vac	1000 W	70-167Vdc	6A	8.6A	
BLD-1K1-C600-XYZ	100-305Vac	1000 W	100-238Vdc	4.2A	6A	

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

Z = **U**, UL cable with ground wire (green) **S**, VDE cable/Class I **D**, VDE cable/Class II

Note: 1. The load has to be **no more than 800W** when input voltage is less than 180Vac
2. See the **Output Operation Range Section** for programmable model details

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	1mA max @277Vac 60Hz, UL8750, 0.75mA max @220Vac 50Hz, IEC61347-1
Input Under Voltage	Shut down and auto-restart
Surge Protection	Line to line 4kV, line to ground 4kV, 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	1.2s 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	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 Standard	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012	Power units other than class 2
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
EMI Standards	Description
IEC 55015	Conducted emission test & radiated emission test
IEC 61000-3-2	Harmonic current emissions; Class C
IEC 61000-3-3	Voltage fluctuations & flicker
FCC Part 15	ANSI C63.4:2009 Class B
EMS Standards	Description
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

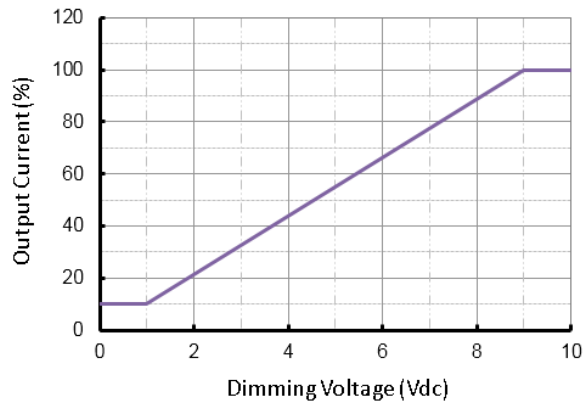
■ Dimming

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%)
Dim off threshold	0.4V or 4%	0.5V or 5%	0.6V or 6%
Dim on threshold	0.6V or 6%	0.7V or 7%	0.8V or 8%
PWM High	3.8V		10V
PWM Low	0V		0.6V
PWM Frequency	300Hz		2kHz
External PWM Controller Current Sinking Capability	300uA		
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

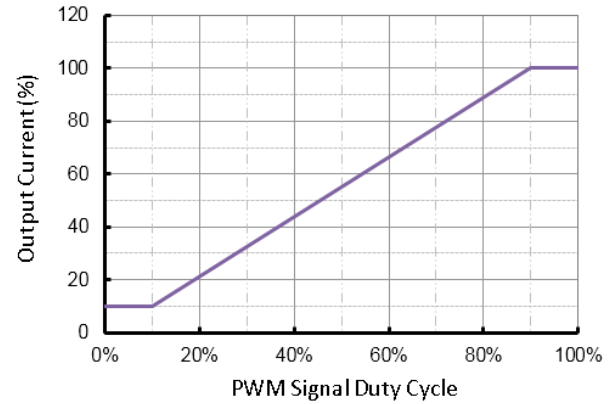
- Dimming Curve

a. Without dim-off

0-10V Dimming Curve

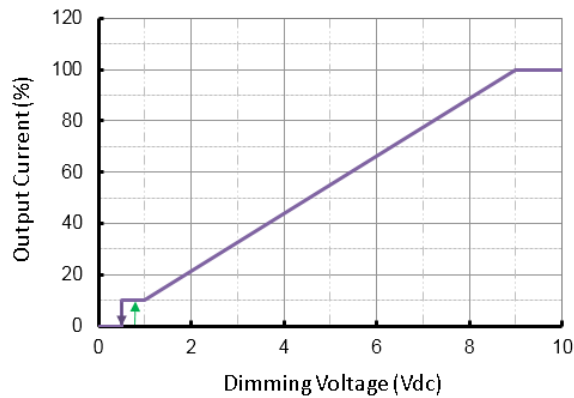


PWM Dimming Curve

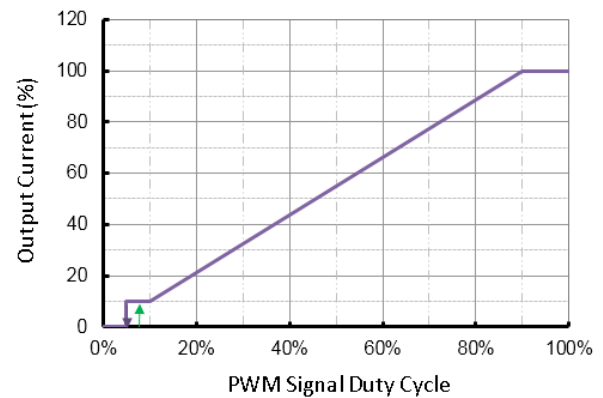


b. With dim-off

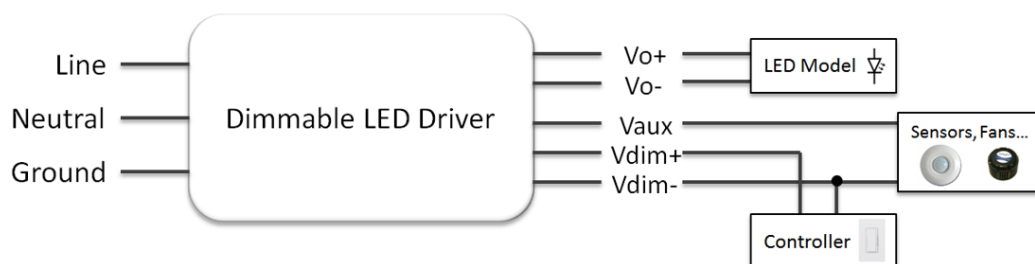
0-10V Dimming Curve



PWM Dimming Curve



- Dimming Wiring

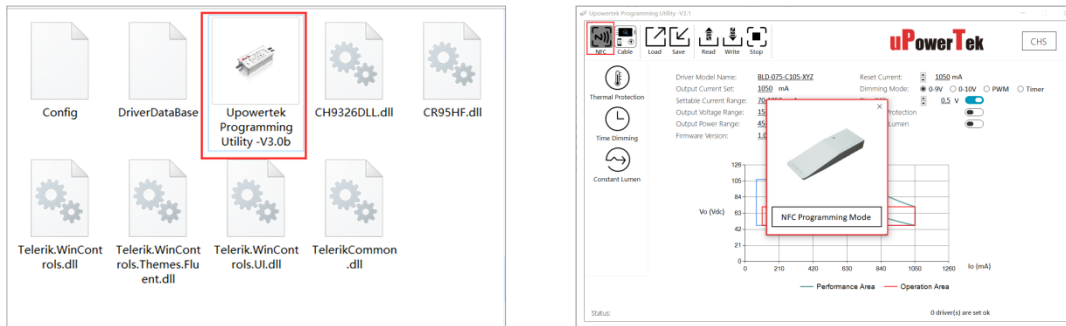


■ Programming

- NFC Programming by PC/Laptop

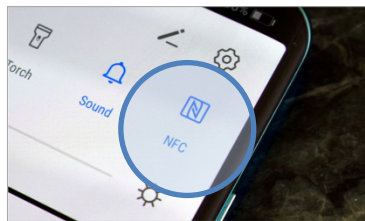


- Download PC Software at <https://www.upowertek.com/download-2/>
- Click Upowertek Programming Utility.exe
- The GUI start and notify you the programming mode (cable programming or NFC programming)
- Click "NFC" button if it's not NFC programming mode.



- NFC Programming by Smartphone

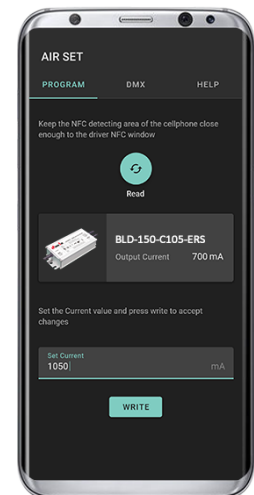
- Download Android APP at <https://www.upowertek.com/download-2/>
- Only available on Android cellphone (iPhone is not supported)
- The cellphone should have NFC function and make sure it is enabled.



- Turn on NFC switch of cellphone, then open the APP by icon below.



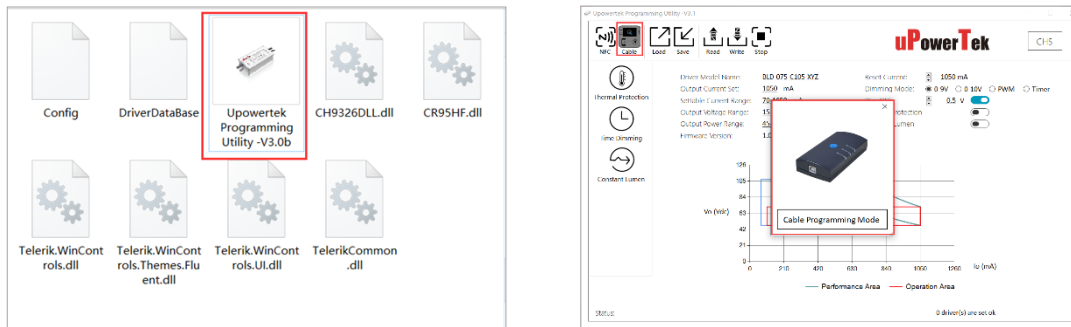
uPowerTek
Airset



- Cable Programming



- Download PC Software at <https://www.upowertek.com/download-2/>
- Click Upowertek Programming Utility.exe
- The GUI start and notify you the programming mode (cable programming or NFC programming)

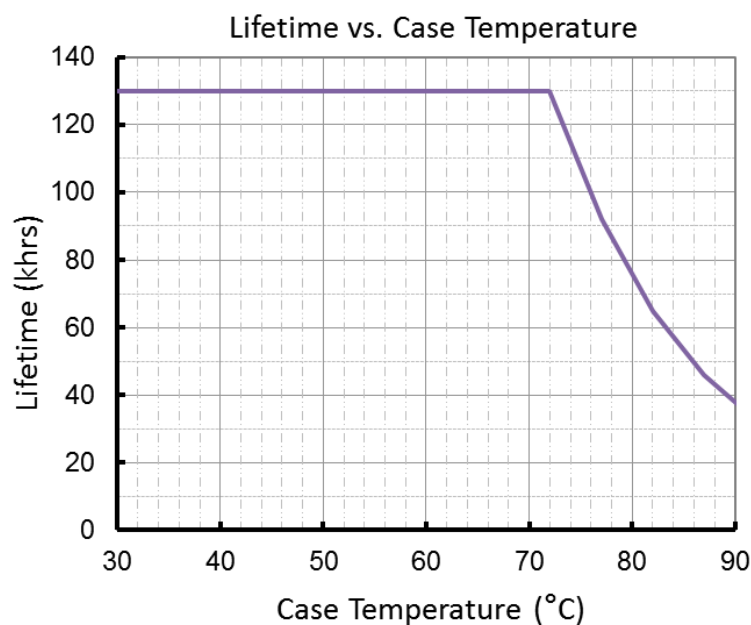


- Click "Cable" button if it's not cable programming mode.
- Connect the Vdim+ and Vdim- wires to the right ones (the same color) of the programmer.

- Please contact with us for product user manual and more information such as:

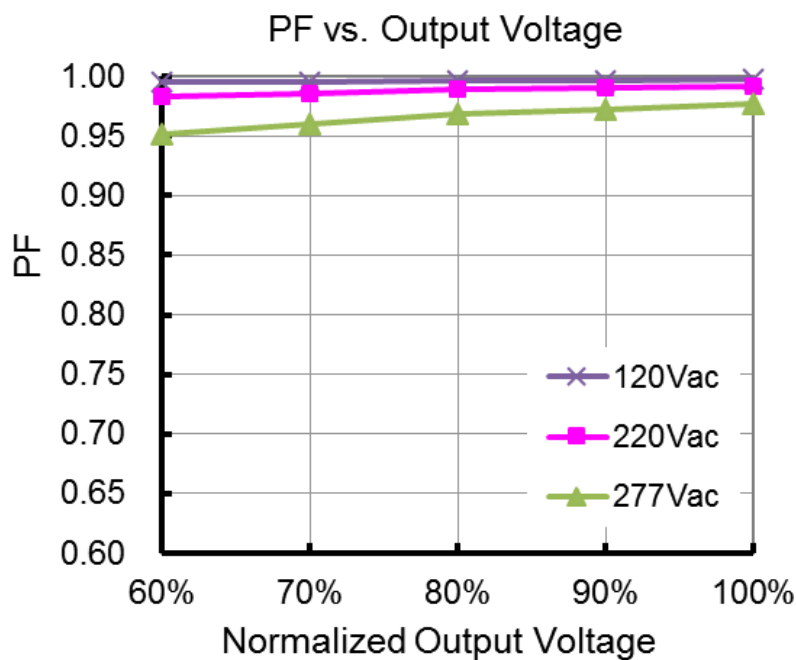
- Output Lumen Compensation
- Luminaire Thermal Protection by External NTC (with extra cable)
- Dimming Curve Customization (dim off threshold, minimum dimming level, maximum dimming voltage etc.)
- Adjustable Startup Time
- Time Dimming (adaptive mid-night, percentage, etc.)
- Customized Control Protocol

■ Lifetime vs. Case Temperature

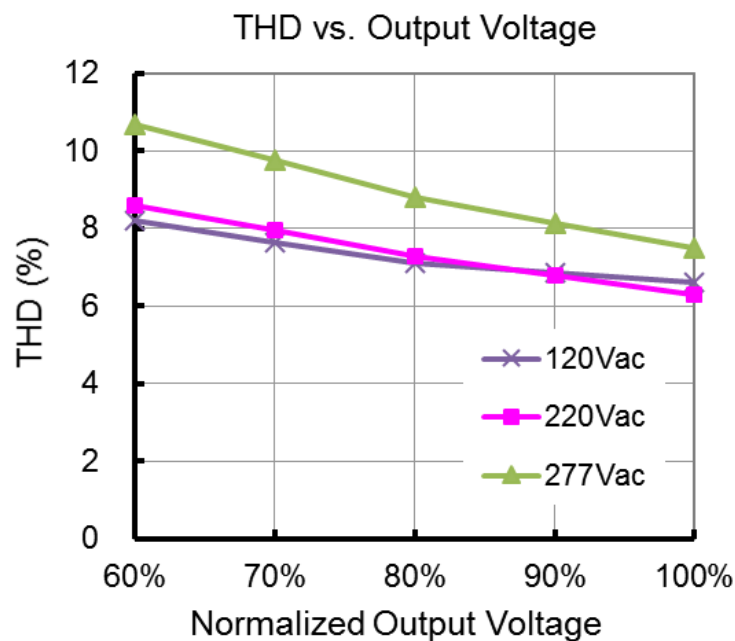


(End of Life: Maximum Failure Rate=10%)

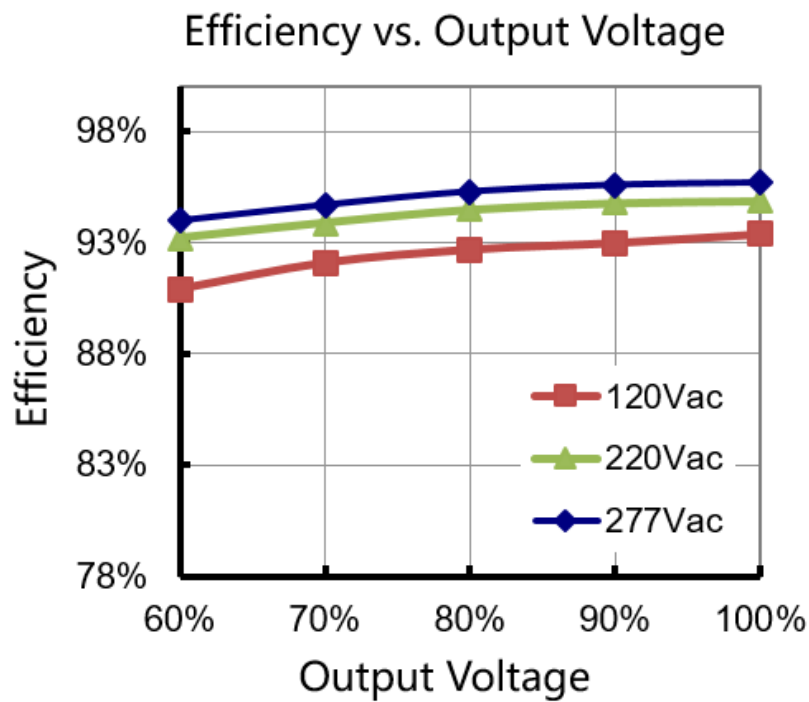
■ Power Factor vs. Load



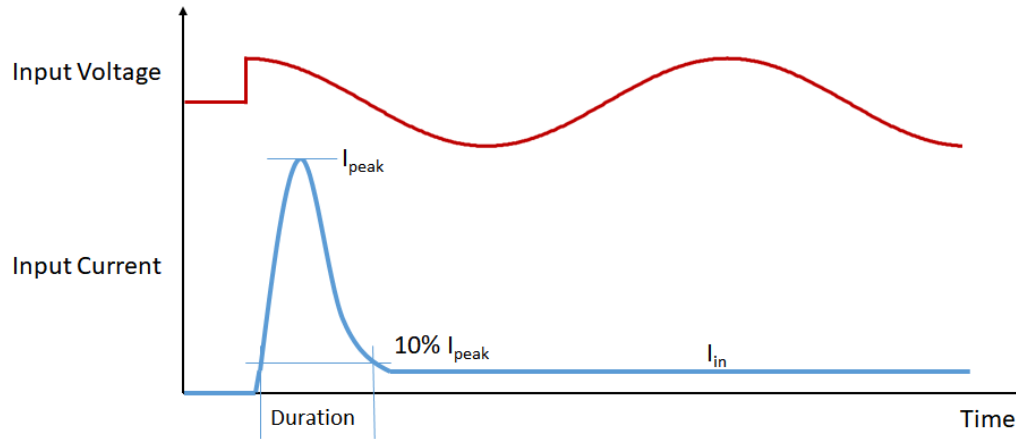
THD vs. Load



Efficiency vs. Load (Io set to 18A)



Inrush Current



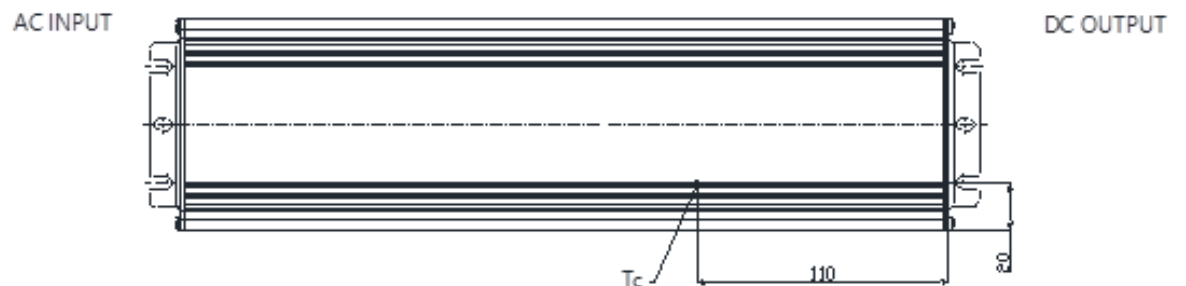
Input Voltage	I_{peak}	Duration
120Vac	3A	60mS
220Vac	5A	70mS
277Vac	8A	70mS

Please contact with us for MCB calculation and waveforms.

Dielectric Strength

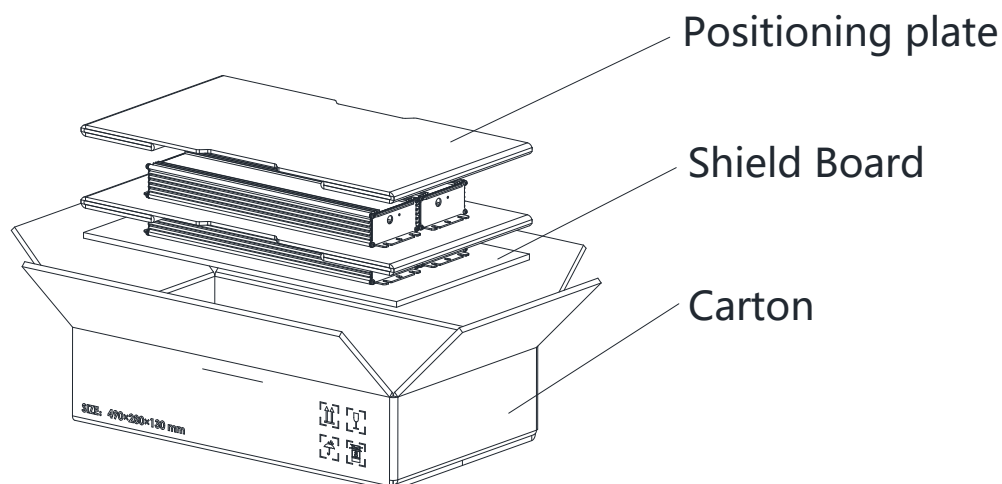
Unit: Vac	Input	Output	Dimming	Case
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming	3750	1554	-	1554
Case	1554	1554	1554	-

Tc Point



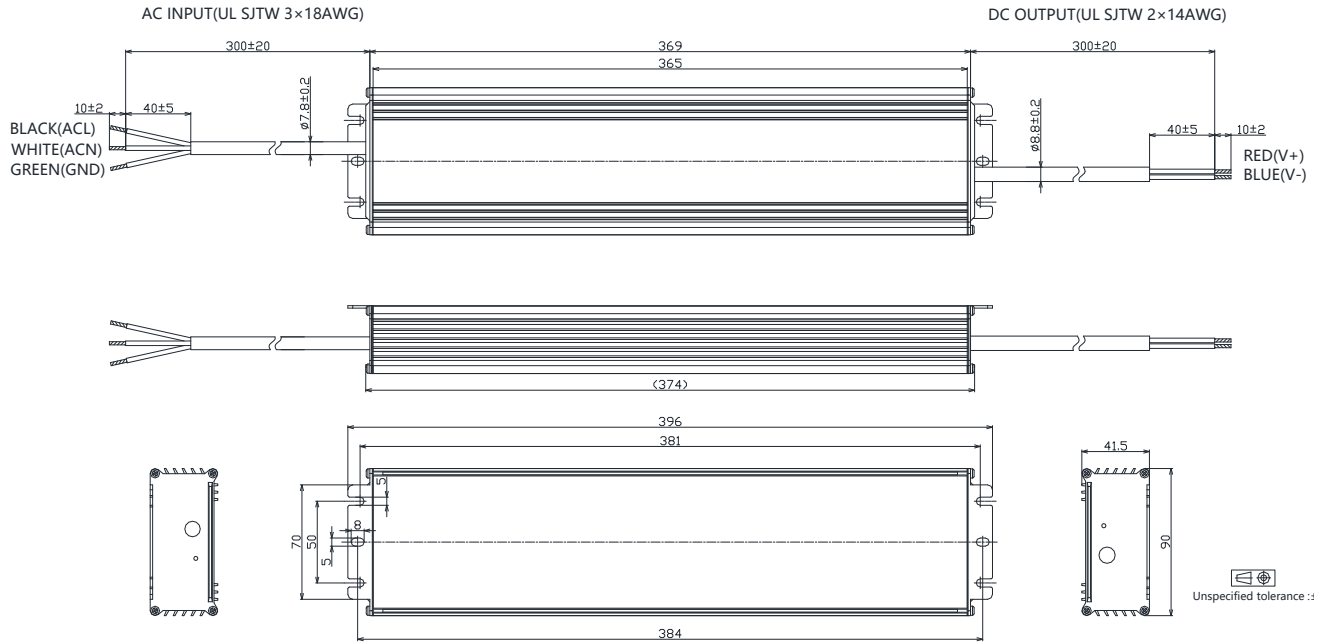
■ Packaging Information

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

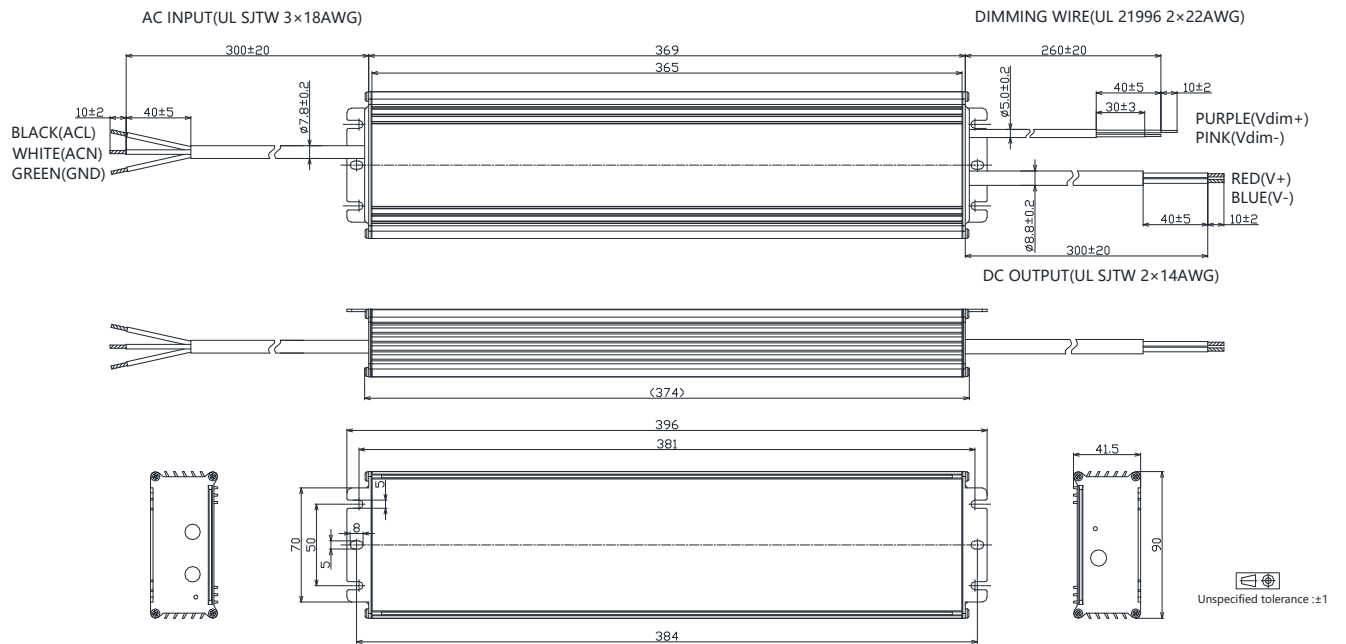


Mechanical Design

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

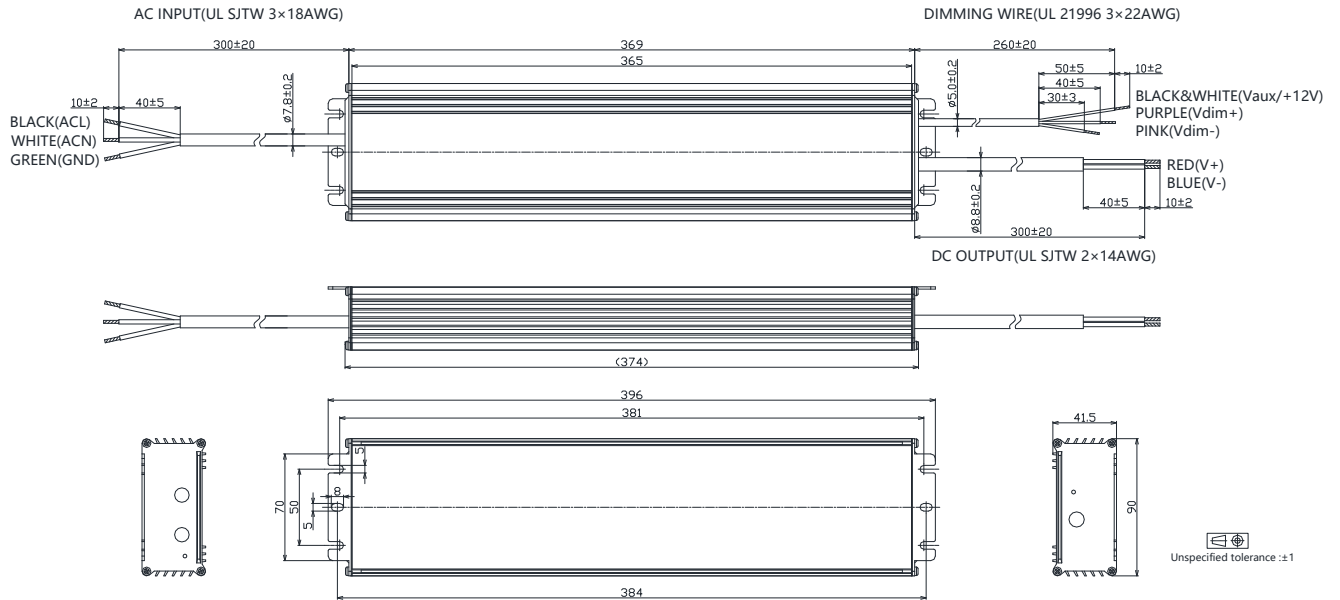


BLD-1K1-Cxxx-DNU/DRU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

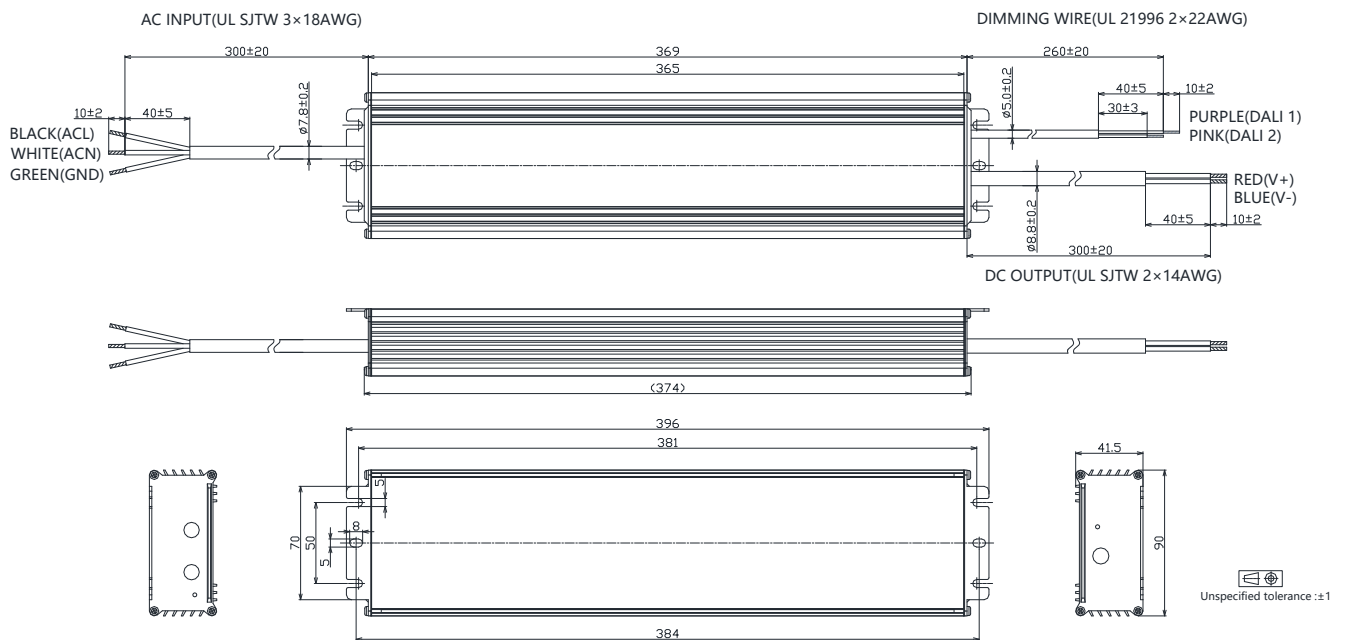


1000W, 120-277Vac Input, Long Life High Quality Driver

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

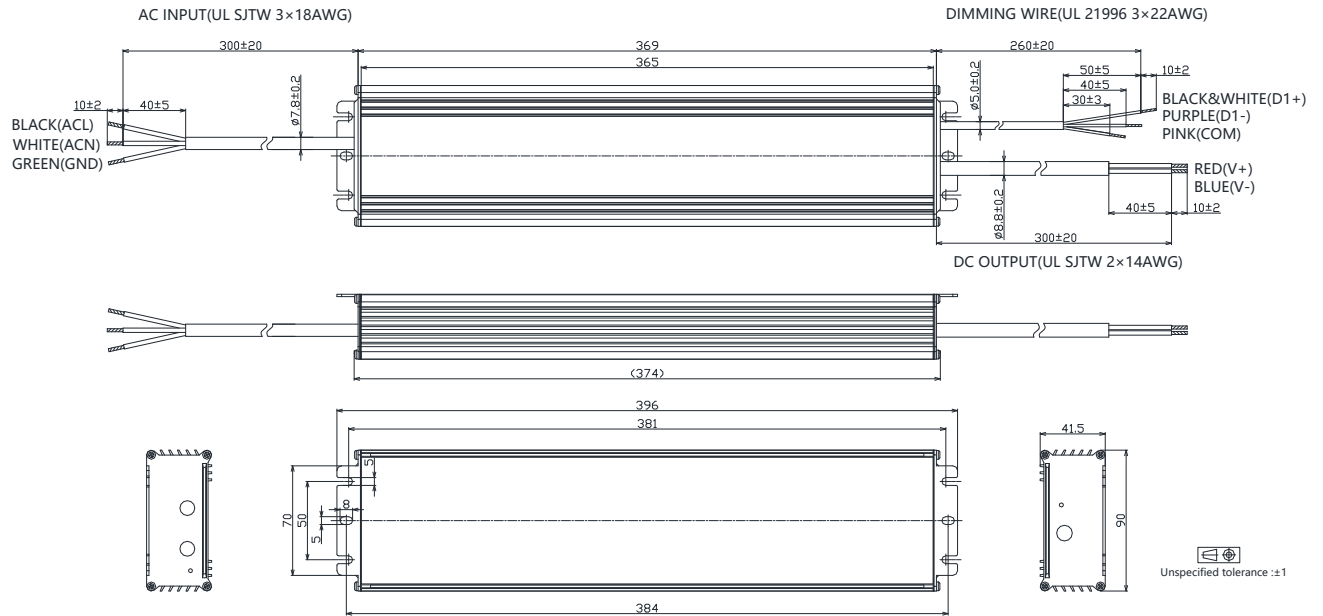


- BLD-1K1-Cxxx-ANU/ARU (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

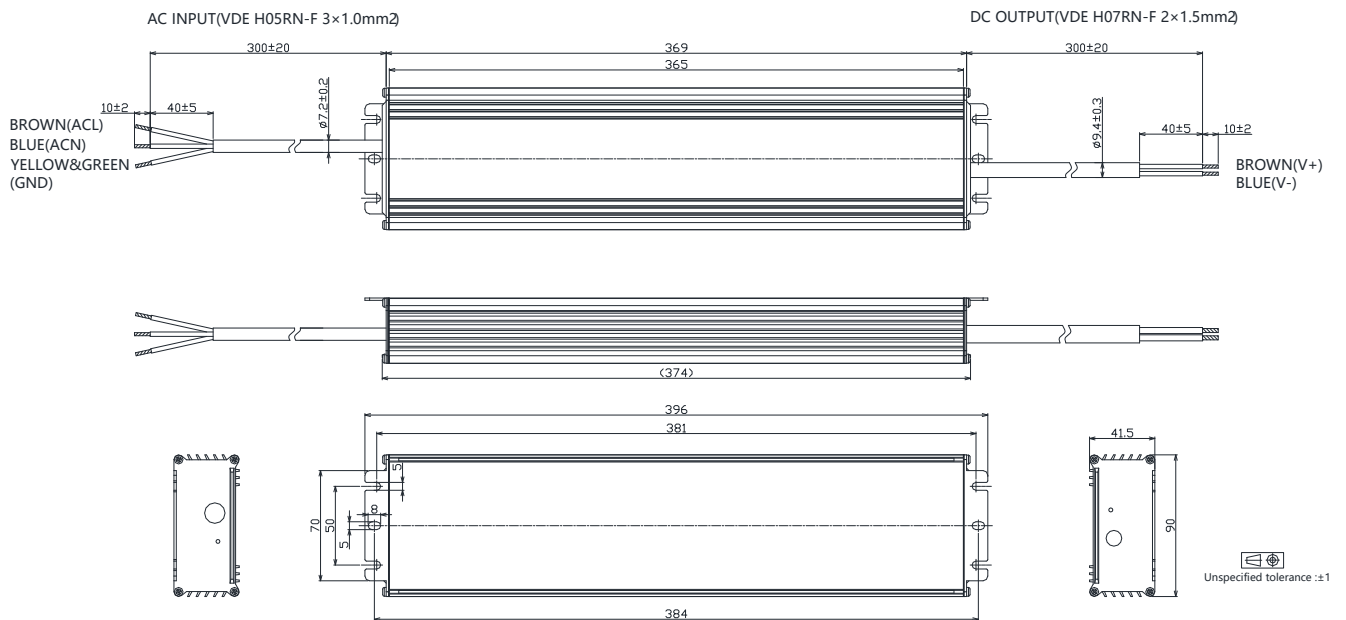


1000W, 120-277Vac Input, Long Life High Quality Driver

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

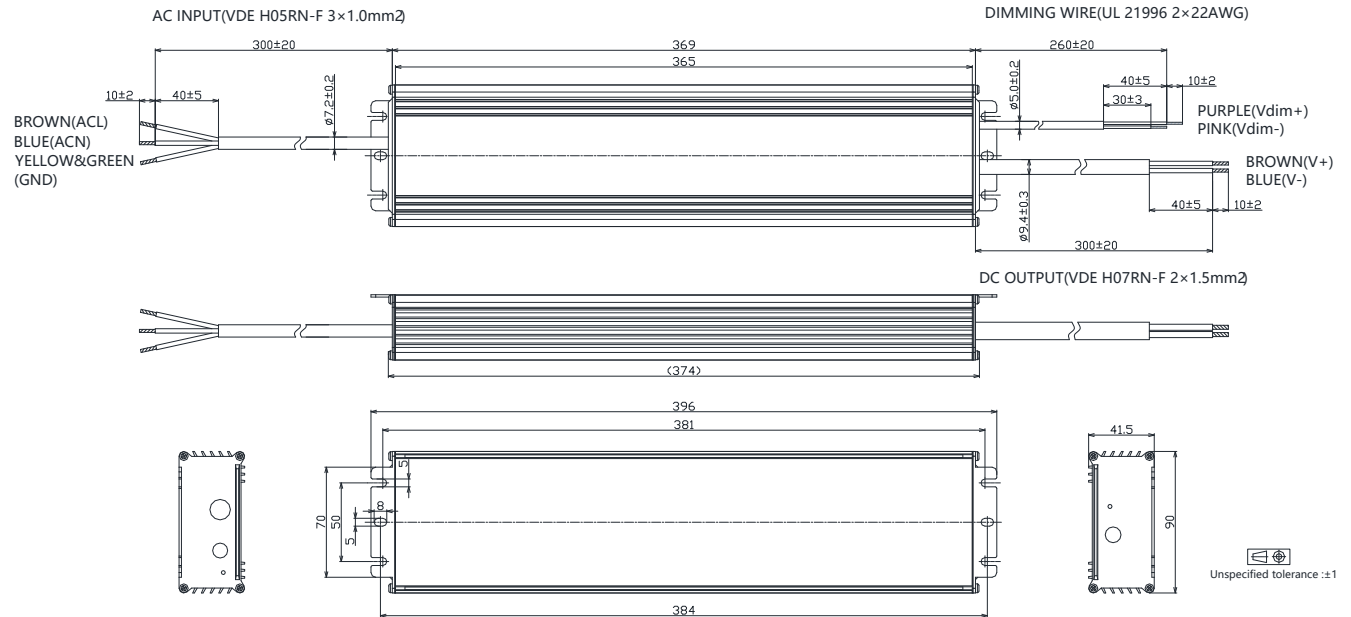


- BLD-1K1-Cxxx-NNS/TRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

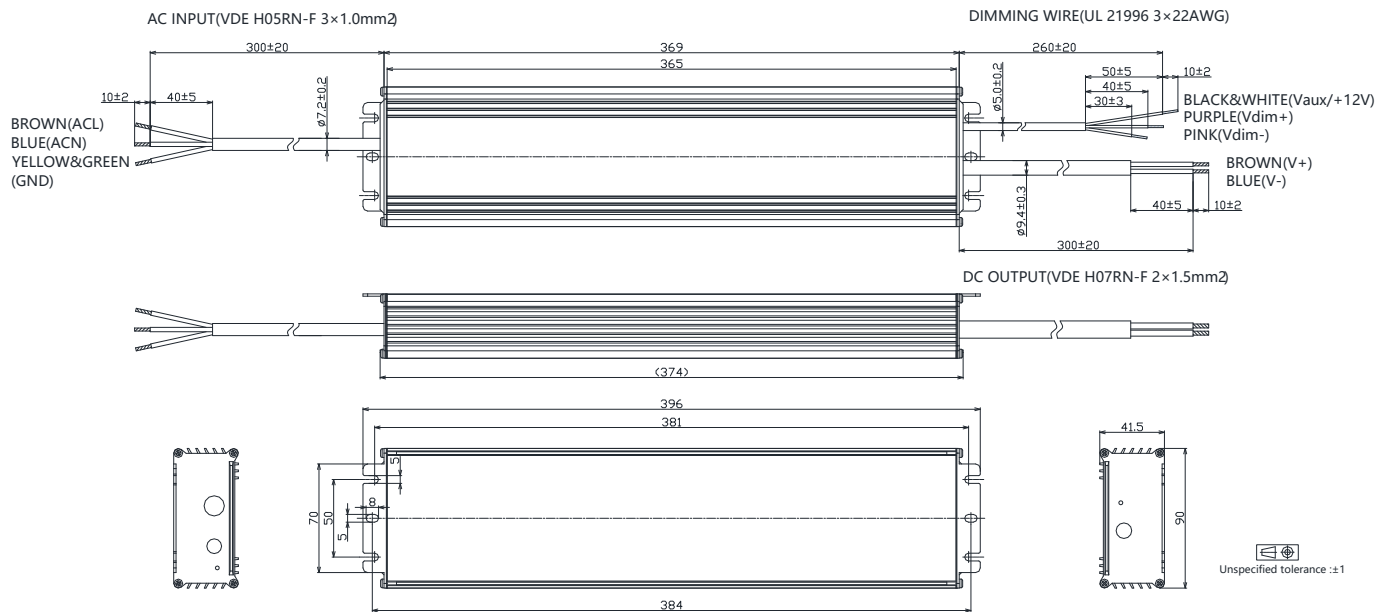


- BLD-1K1-Cxxx-DNS/DRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

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

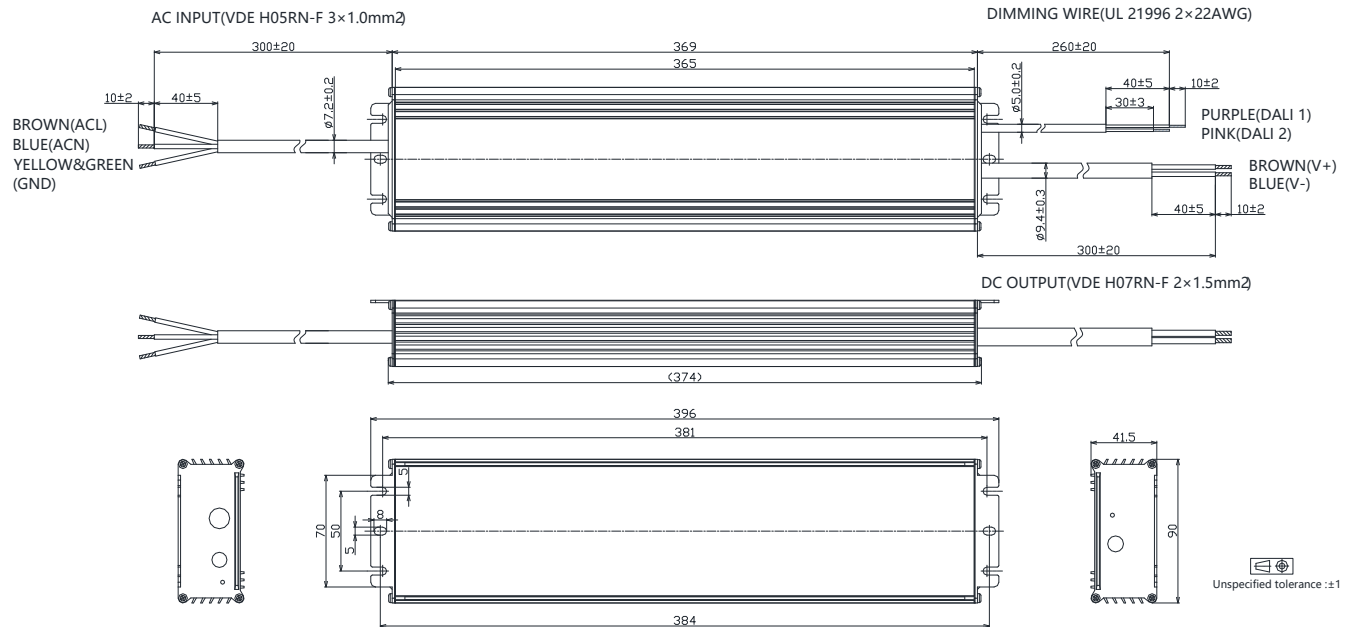


- BLD-1K1-Cxxx-ENS/ERS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

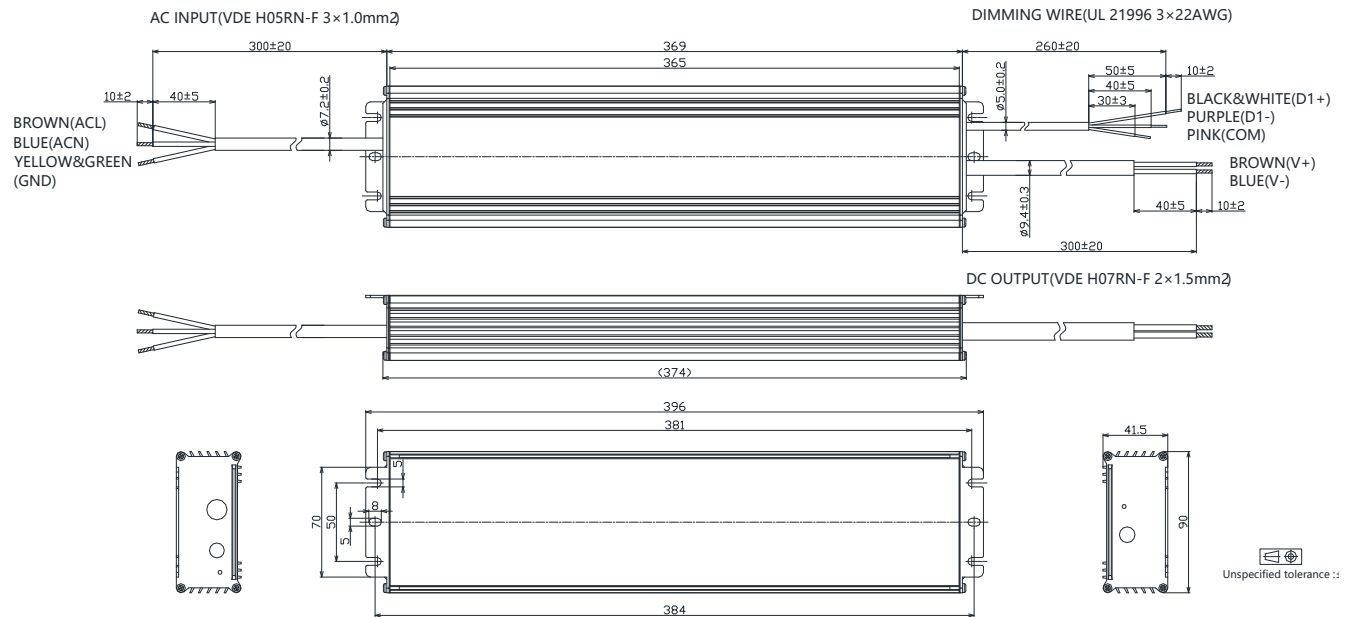


- BLD-1K1-Cxxx-ANS/ARS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

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

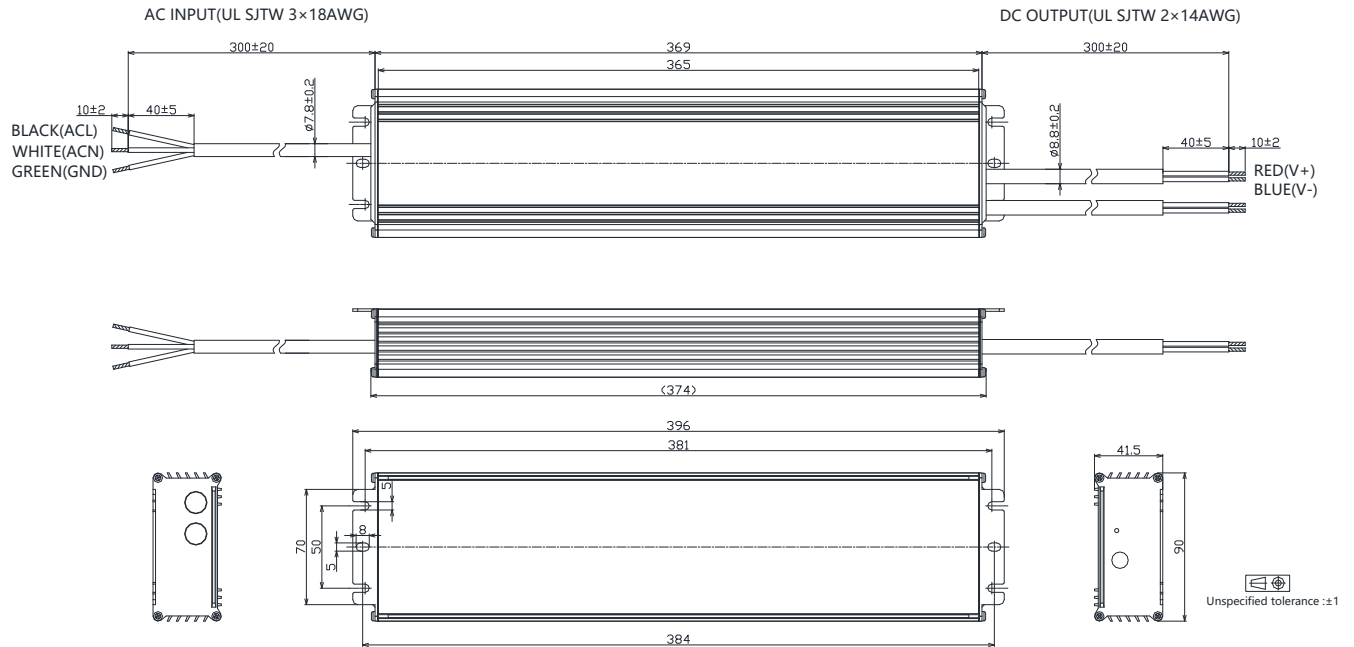


BLD-1K1-Cxxx-MRS (MODELS WITH HIGHER THAN 60V OUTPUT VOLTAGE)

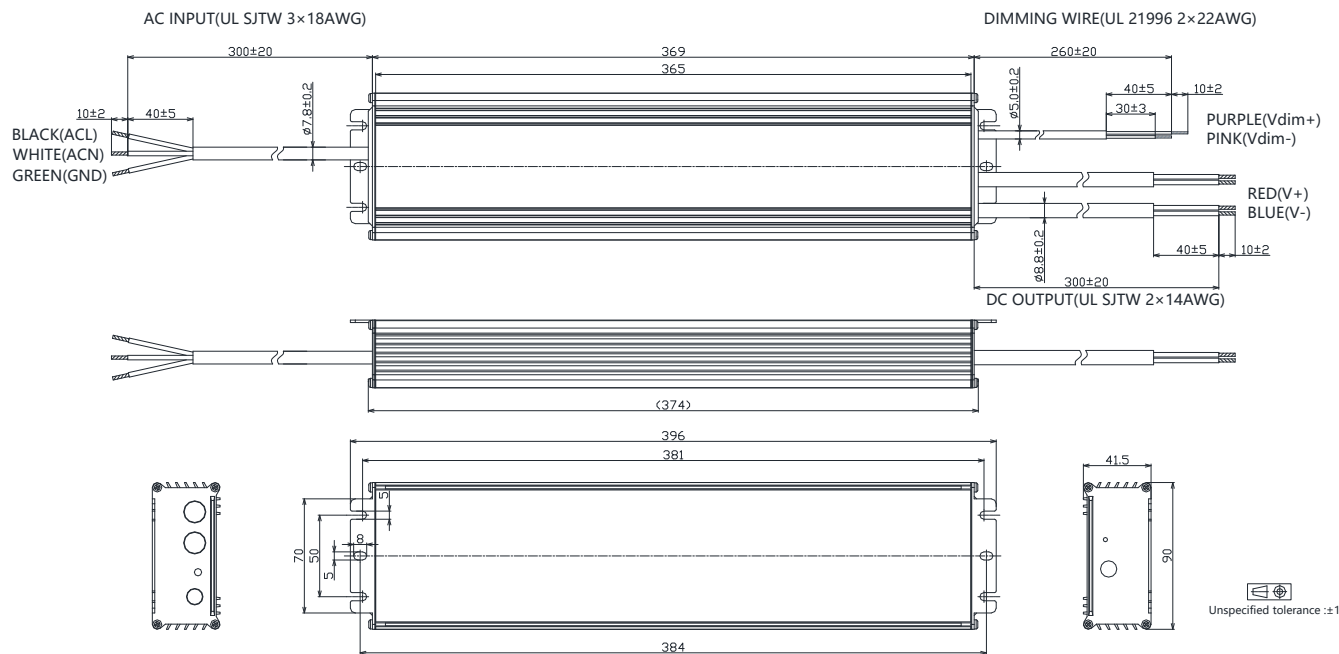


1000W, 120-277Vac Input, Long Life High Quality Driver

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

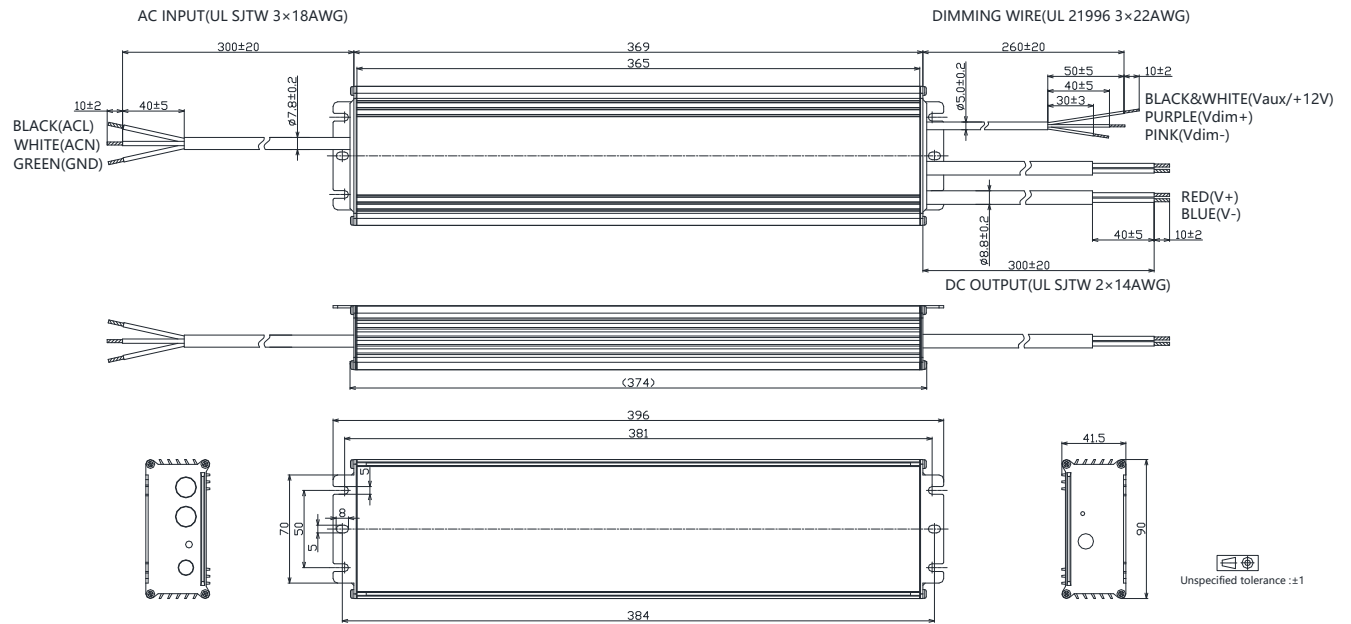


- **BLD-1K1-Cxxx-DNU/DRU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)**

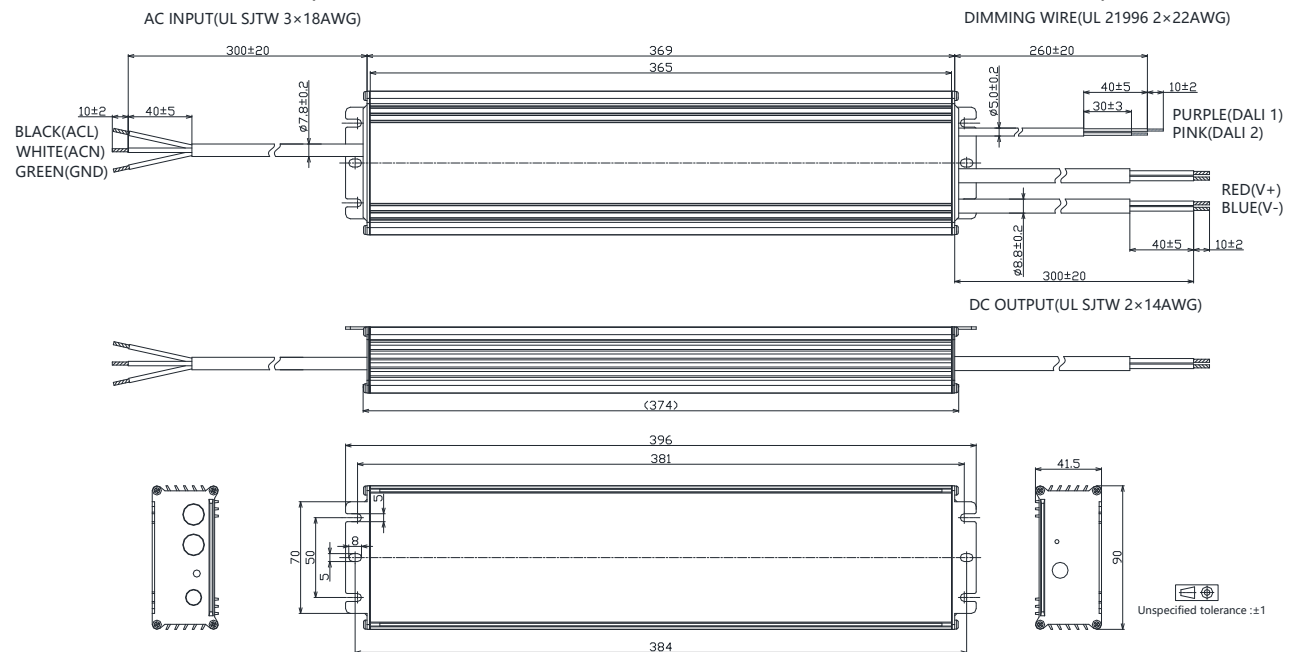


1000W, 120-277Vac Input, Long Life High Quality Driver

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

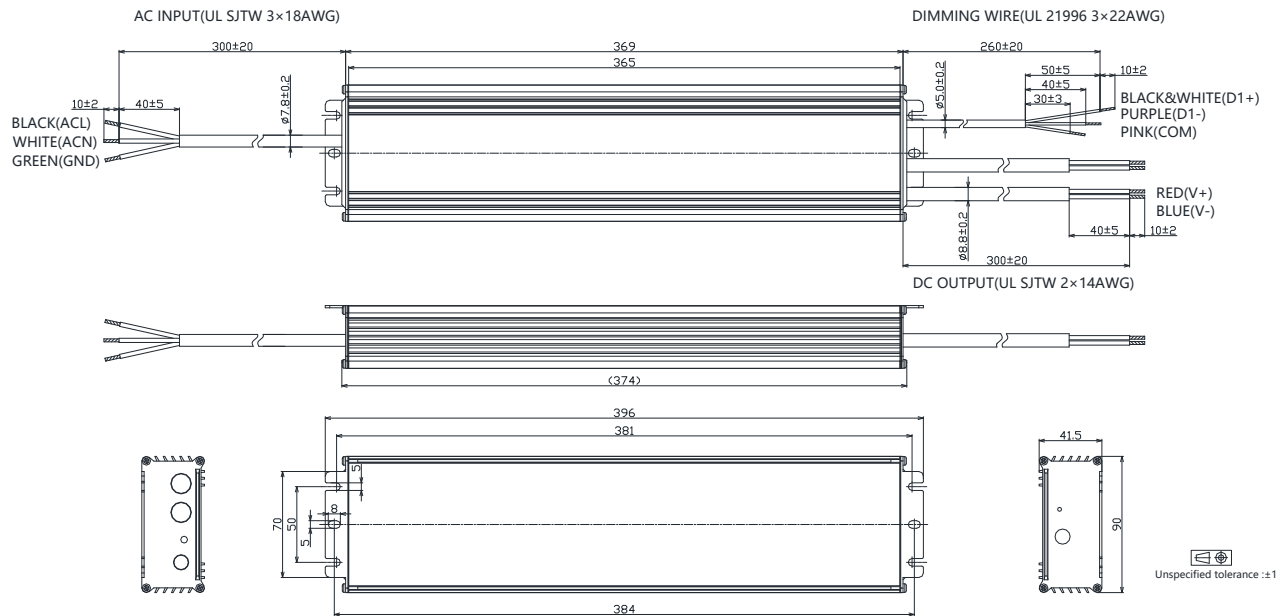


- BLD-1K1-Cxxx-ANU/ARU (UL CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

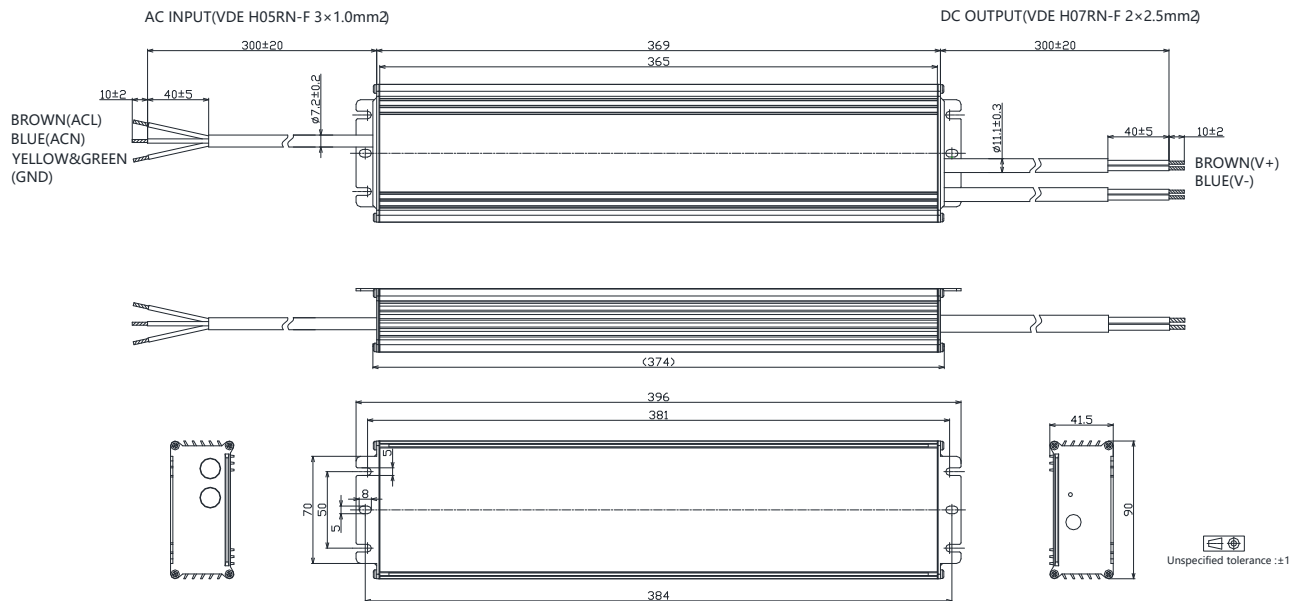


1000W, 120-277Vac Input, Long Life High Quality Driver

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

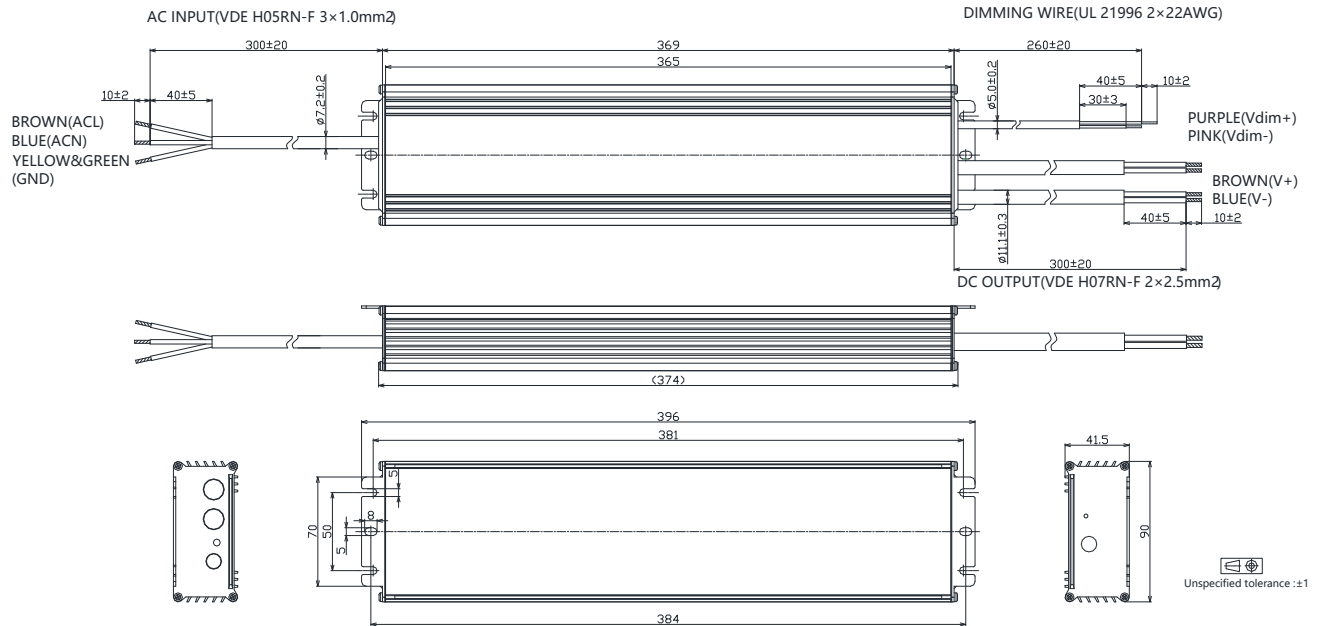


- BLD-1K1-Cxxx-NNS/TRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

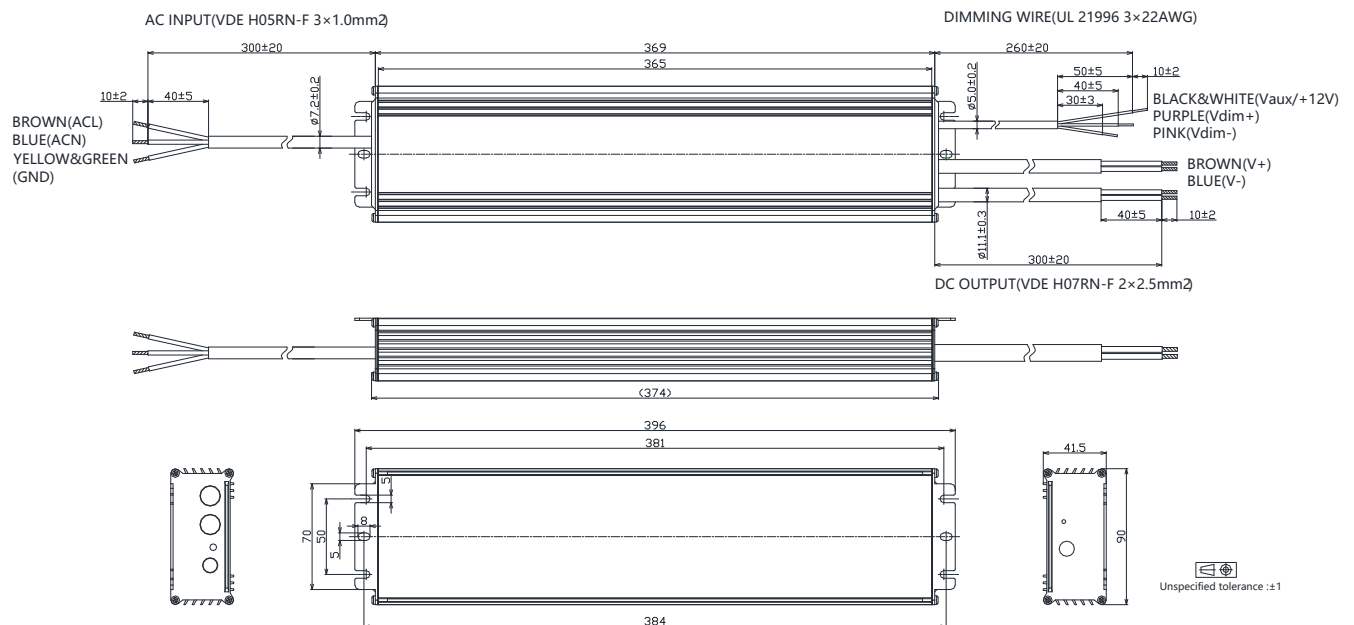


1000W, 120-277Vac Input, Long Life High Quality Driver

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

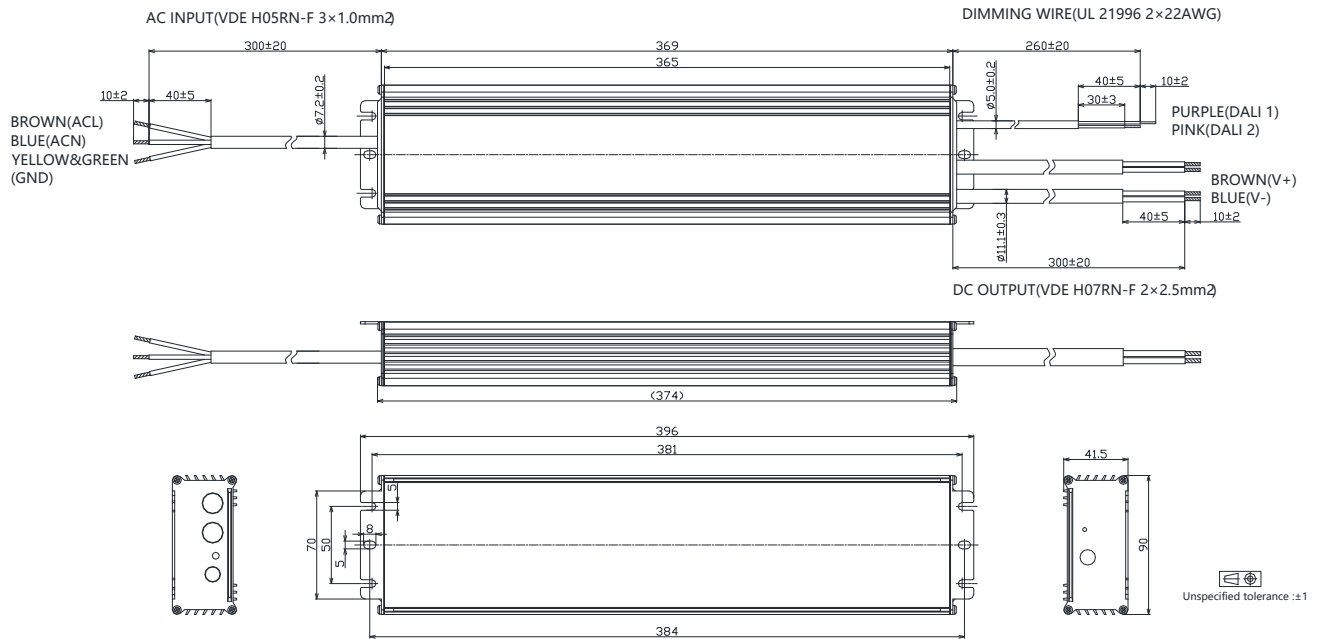


- BLD-1K1-Cxxx-ENS/ERS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)

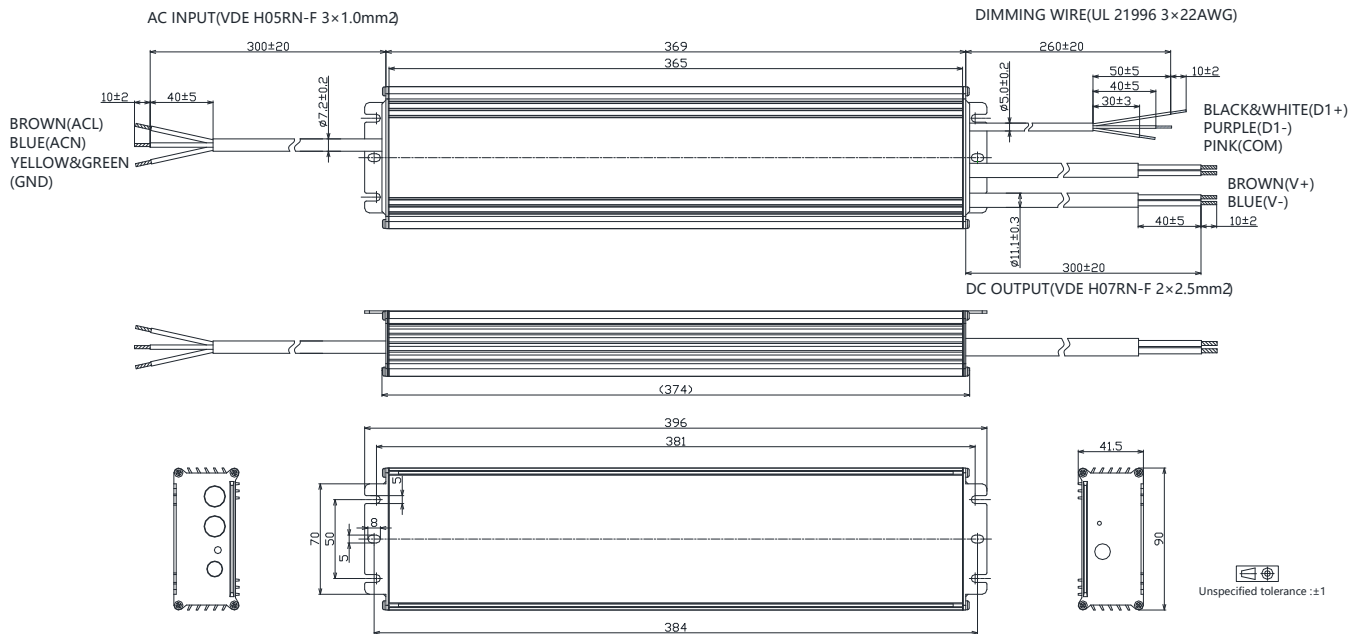


1000W, 120-277Vac Input, Long Life High Quality Driver

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

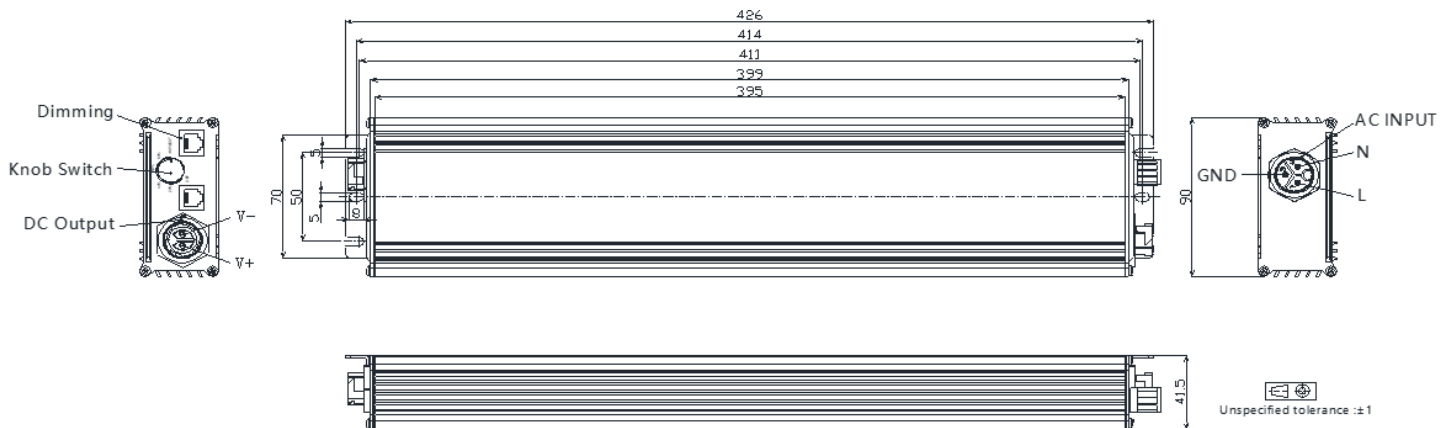


- BLD-1K1-Cxxx-MRS (VDE CABLE, MODELS WITH LESS THAN 60V OUTPUT VOLTAGE)



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

- Customized Functional End Cap Version

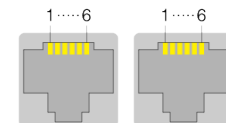


- Add suffix #abcd00 to the end of part number to indicate different configuration. Please refer to product application note AN06 or contact with us for more like **active daisy chain, master mode and button dimming** etc.

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

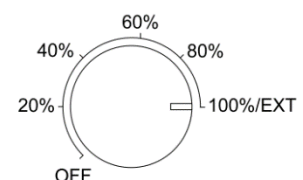
- RJ25 Pin Description (can be customized according to control system)

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