

96W, 200-277Vac Input Constant Voltage LED Driver

■ Features

- Supply Voltage: 176-305Vac or 127-420Vdc, 380Vac for 2 hours
- Great Surge Immunity 10kV
- PWM Output Frequency >1kHz
- 100,000Hour Life @ Tc=75C
- 5 Year Warranty @ Tc<=80C
- 0-10V/PWM/DALI /Push (Switch) /DMX (RDM) Dimmable
- 2% Minimum Dimming Output
- Dim Off with 0.5W Standby
- 12V 300mA Auxiliary Power to Power Controllers and Fans (Optional)
- Class II Model Available
- UL Class P, ENEC/CB/CCC SELV Output
- Safety according to EN 61347-1, 61347-2-3 61347-2-13, 62384



■ Application

- Strip lights, Landscape lights, Bay lights, Street lights, Tunnel lights, Flood lights

■ Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Output Current Min	Output Current Max	Certification
BCD-096-V012-XYZ	176 ~ 305 Vac	96 W	12V	0	8A	UL/FCC/CB/ENEC/CCC/BIS/RCM/PSE
BCD-096-V024-XYZ	176 ~ 305 Vac	96 W	24V	0	4A	
BCD-096-V036-XYZ	176 ~ 305 Vac	96 W	36V	0	2.67A	
BCD-096-V048-XYZ	176 ~ 305 Vac	96 W	48V	0	2A	

XY=	Dimming Method	Programmable	12Vaux	Dim-off Power
NN	-	-	-	-
DN	0-10V	-	-	<1.5W
EN	0-10V	-	v	<0.5W
AN	DALI	-	-	<1.5W
MR	DMX	Set Address	-	<1.5W

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

Add suffix -NV0000 to indicate this product when ordering

Note: Dimmable Drivers Do NOT Support Switching DCDC Regulator as Load

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■ Technical Data

Input Voltage	176~305Vac or 127V-420Vdc, 380Vac for 2 hours
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	0.95Amax@120Vac & Full-Load, 0.48Amax@220Vac & Full-Load
Inrush Current	65A peak, 1.2ms duration, <0.25A2s@230Vac, Cold Start 70A peak, 1.3ms duration, <0.5A2s@277Vac, Cold Start
Leakage Current	1mA max @277Vac 60Hz, UL8750,0.75mAmax @220Vac 50Hz, IEC61347-1
Input Under Voltage	Shut down and auto-restart
Input Over Voltage	*Optional: Shutdown @320Vac
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Voltage Accuracy	±3%Vo
Setup Time	1.2s max.
Overshoot	10% Vo, max.
Output Over Current	120% Io, typ.
Short Circuit	Auto recovery. The output recovers when short is removed.
Over Temperature	Turn off the output when $T_c \geq 105 \pm 10^\circ\text{C}$; Auto Recovery When $T_c \leq 70 \pm 10^\circ\text{C}$
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	10.72x1.41x1.18 by inch (body), 11.33x1.41x1.18 by inch (endcaps included) 272.4x36x30 by mm (body), 288.0x36x30 by mm (endcaps included)
Net Weight	650g
Packing	TBD

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

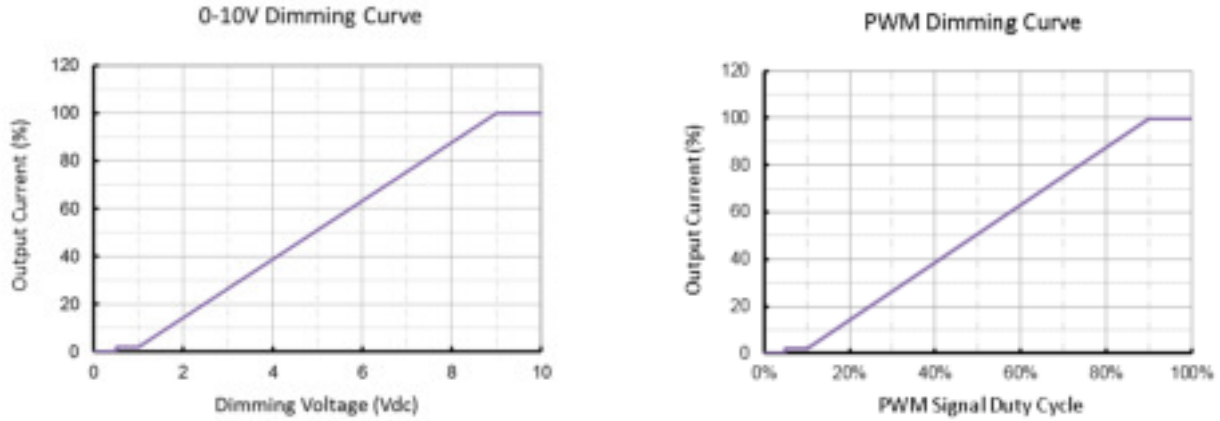
■ Dimming

Parameter	Min.	Typ.	Max.
Vdim Sourcing Current	200uA	300uA	450uA
Vdim Allowed Input Voltage	-20 V		20 V
0-10V Dimming Range	2% (Vdim=1V)	Linear	100% (Vdim=9~10V)
PWM Dimming Range	2% (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	3V		10V
PWM Low	0V		0.6V
PWM Frequency	300Hz		2kHz

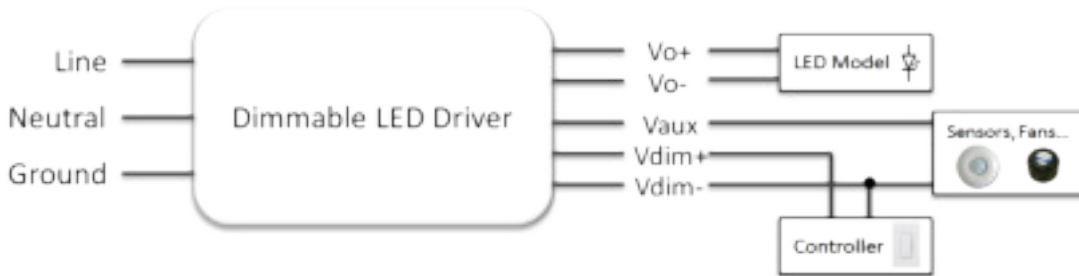
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External PWM Controller Current Sinking Capability	300uA		
DALI Interface Standard	IEC62386		
DA1,DA2 High Level	9.5	16	22.5
DA1,DA2 Low Level	-6.5	0	6.5
DA1,DA2 Current	0		2mA

Dimming Curve

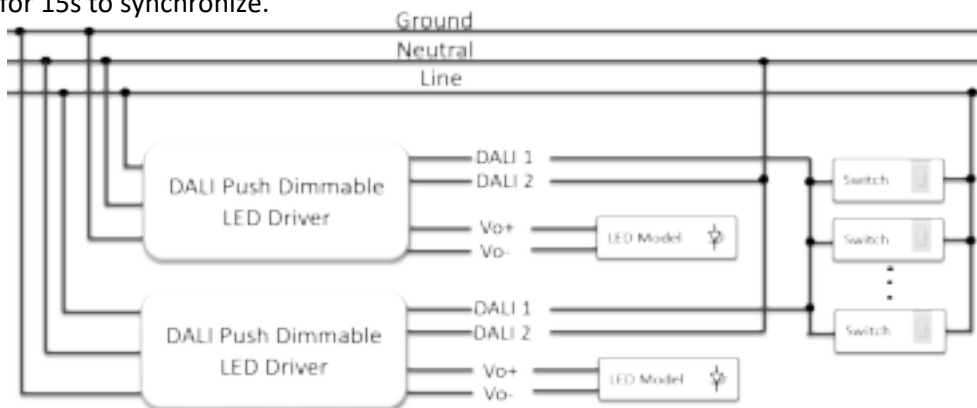


Dimming Wiring



Push (Switch) Dim

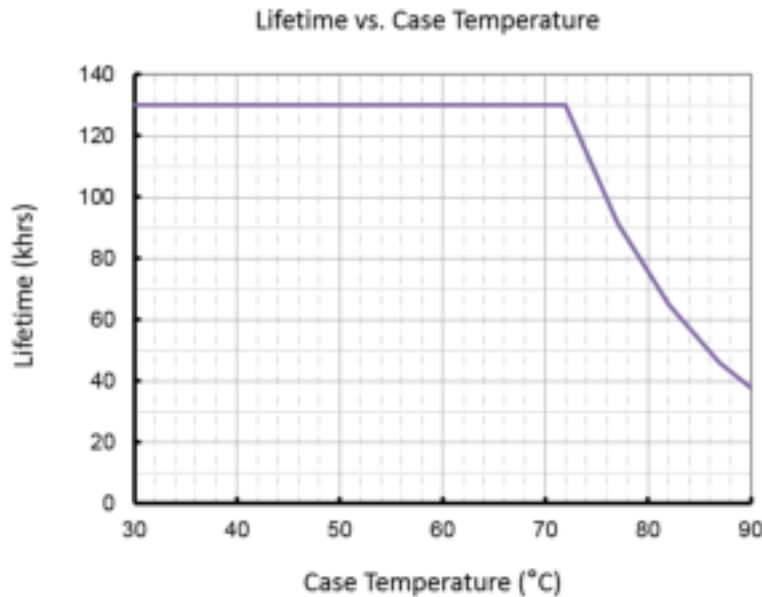
A short press (50-600 ms) switches the device on or off
 A long press (> 600 ms) fades the connected operating device alternately up and down (between 2 and 100%).
 Up and down slew rate is 20%/s.
 Long push for 15s to synchronize.



■ **Safety/EMC Compliance**

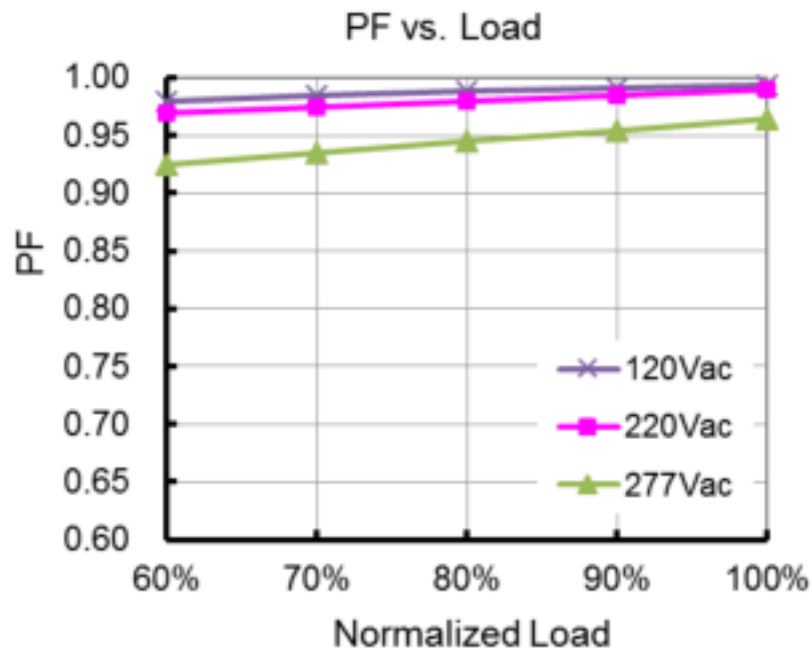
Safety Standard	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1310	Class 2 power units
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement for d.c. or a.c. supplied electronic control gear for LED modules
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

■ **Lifetime vs. Case Temperature**

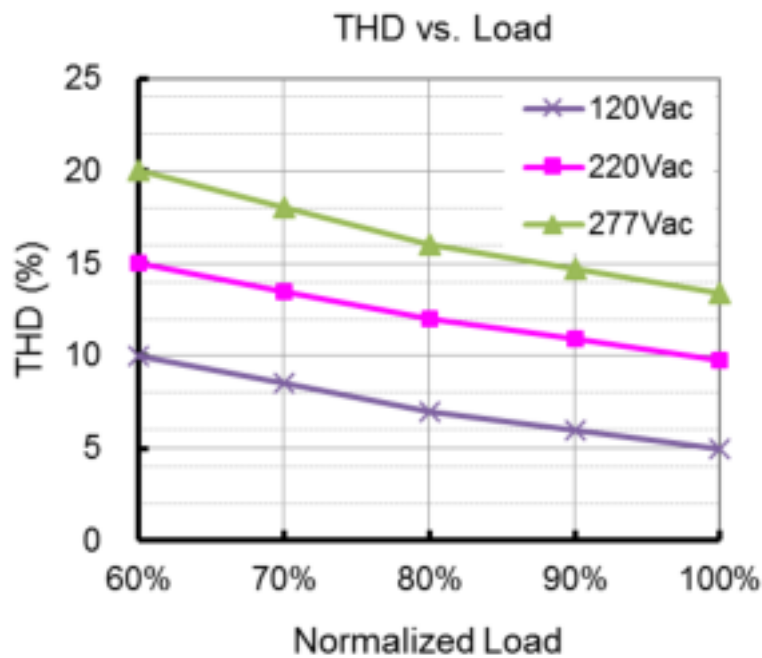


(End of Life: Maximum Failure Rate=10%)

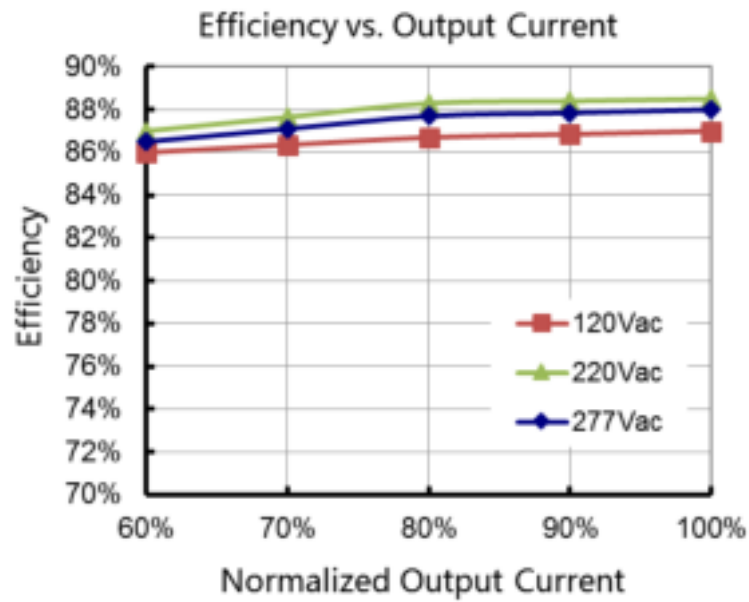
■ Power Factor vs. Load



■ THD vs. Load

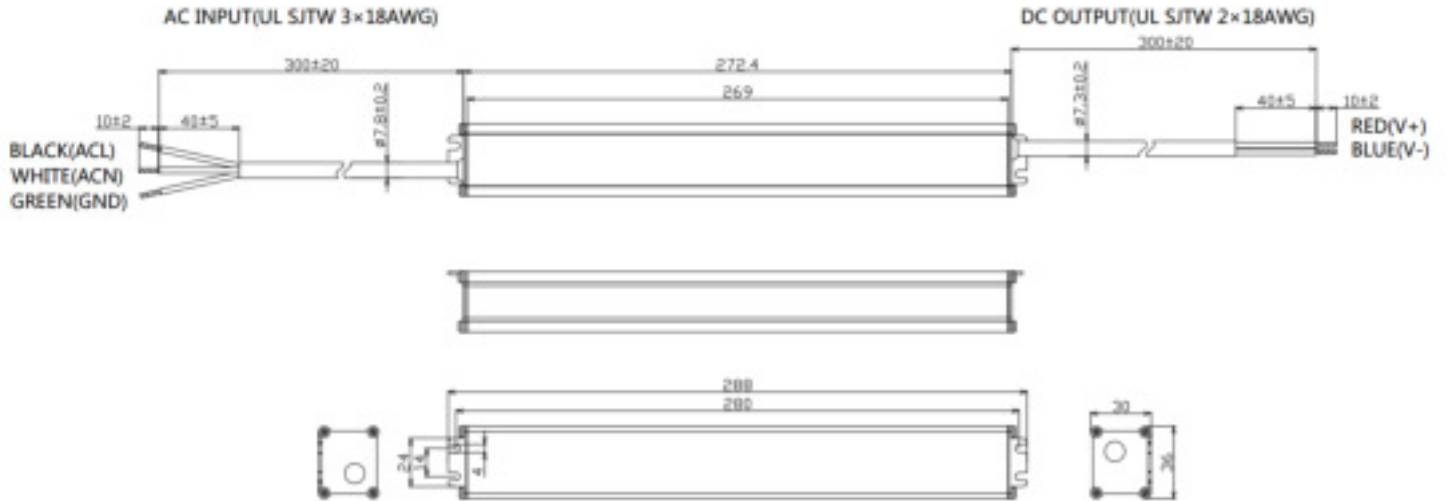


■ Efficiency vs. Load (24V Model)



■ Mechanical Design

- BCD-096-Vxxx-NN/TNU (UL Cable)

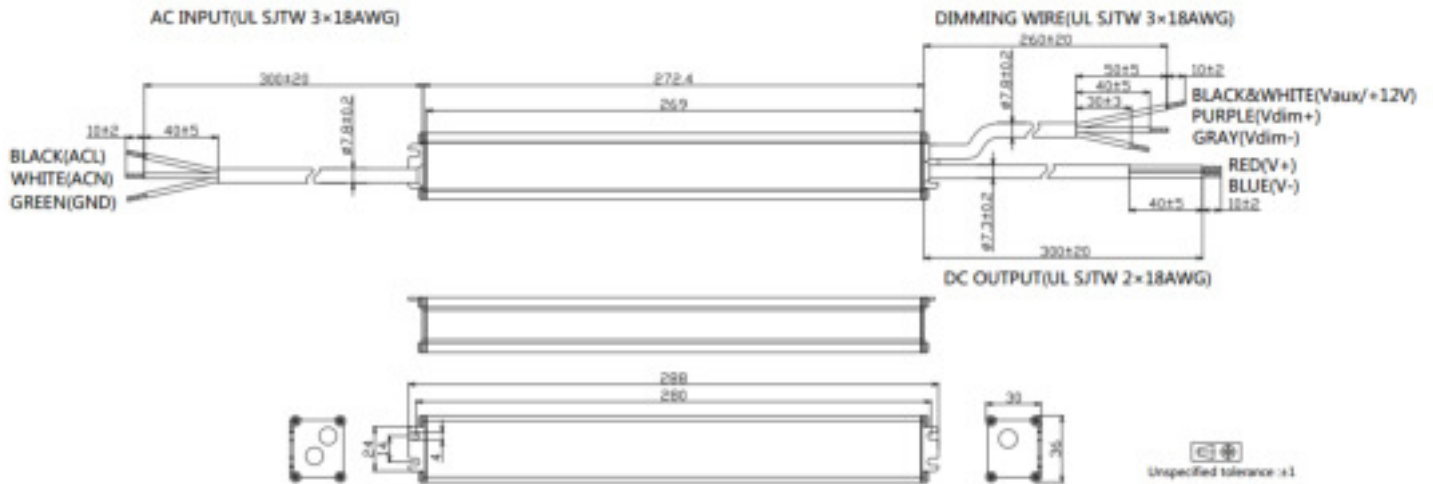


- BCD-096-Vxxx-DNU (UL Cable)



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- BCD-096-Vxxx-ENU (UL Cable)

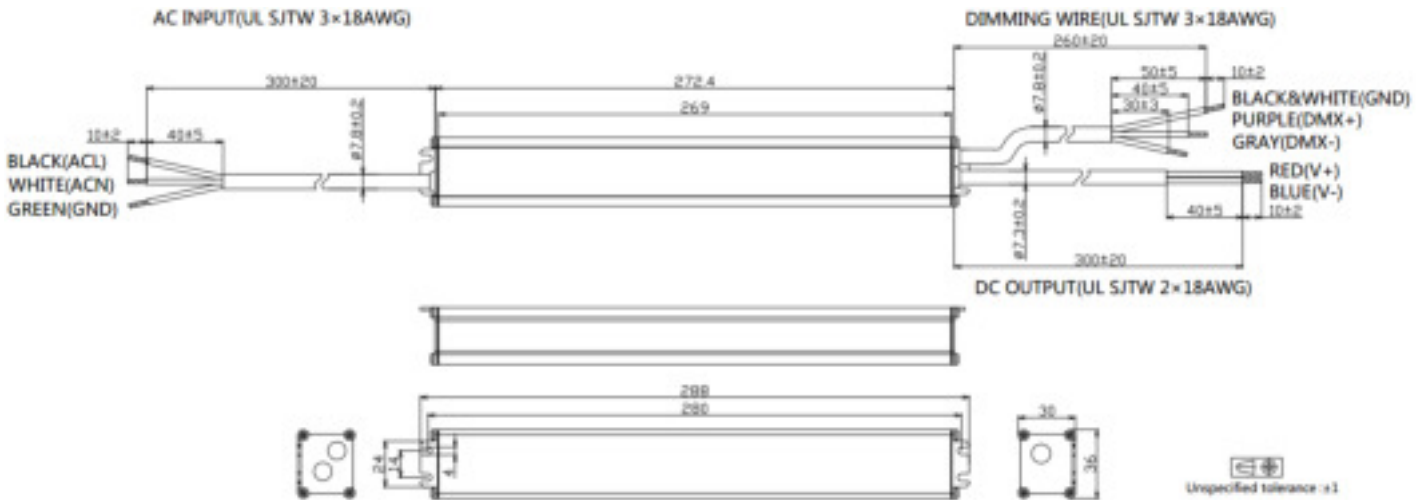


- BCD-096-Vxxx-ANU (UL Cable)

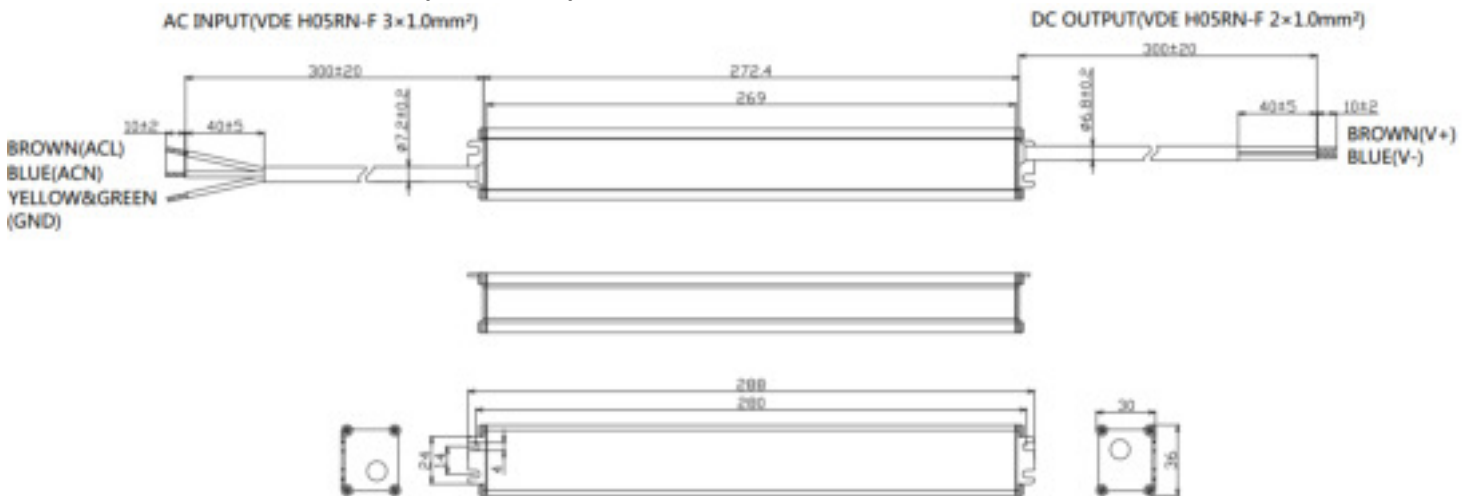


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- BCD-096-Vxxx-MNU (UL Cable)

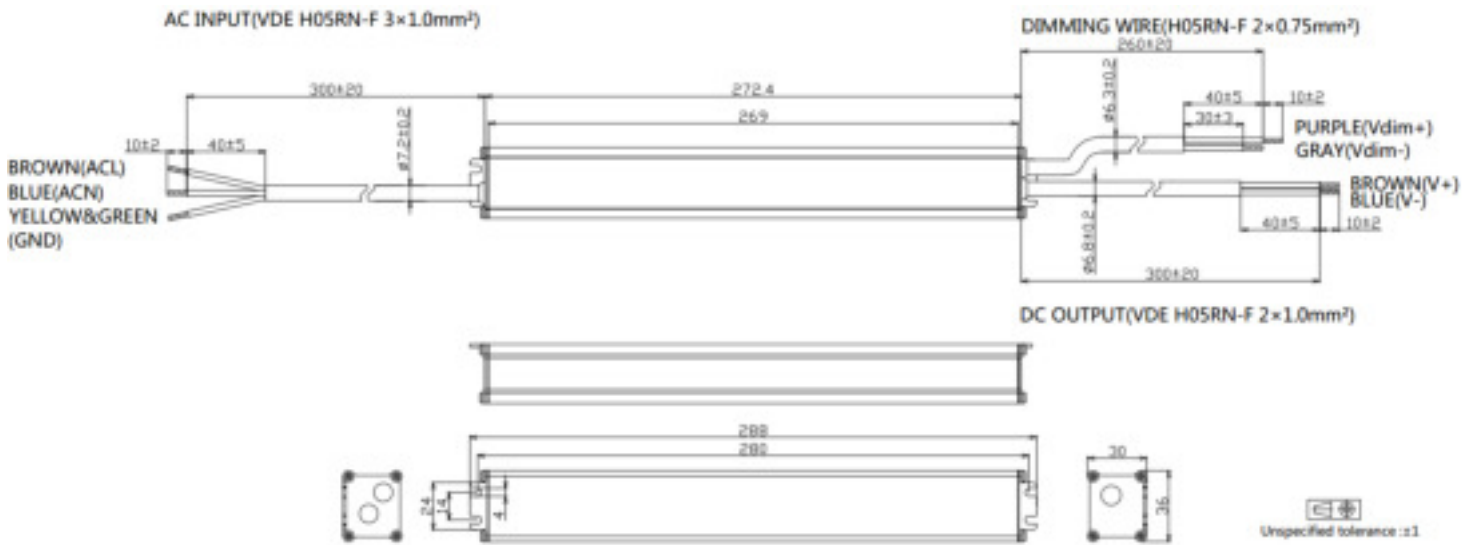


- BCD-096-Vxxx-NN/TNS (VDE Cable)

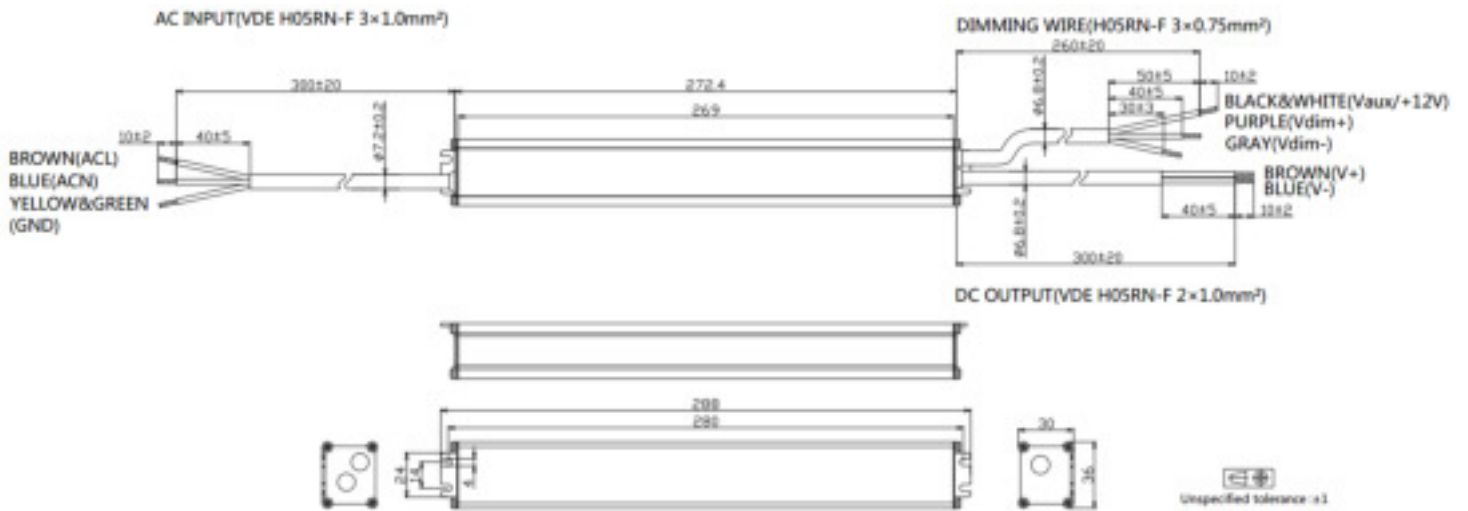


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- BCD-096-Vxxx-DNS (VDE Cable)

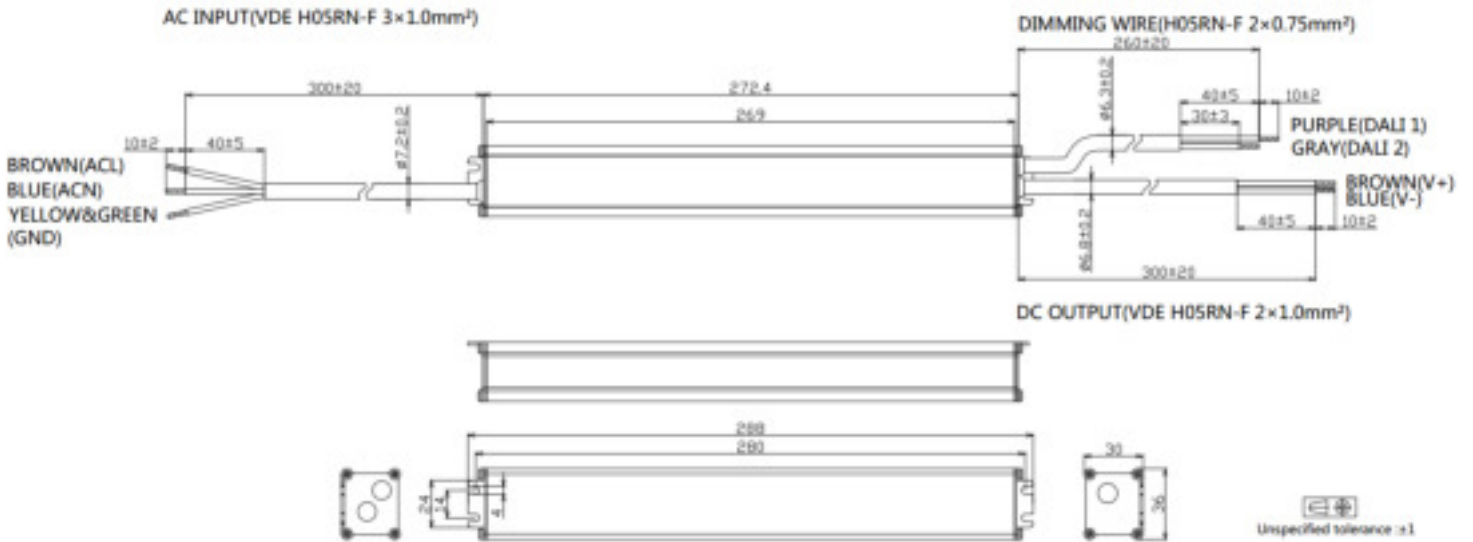


- BCD-096-Vxxx-ENS (VDE Cable)



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- BCD-096-Vxxx-ANS (VDE Cable)



- BCD-096-Vxxx-MNS (VDE Cable)

