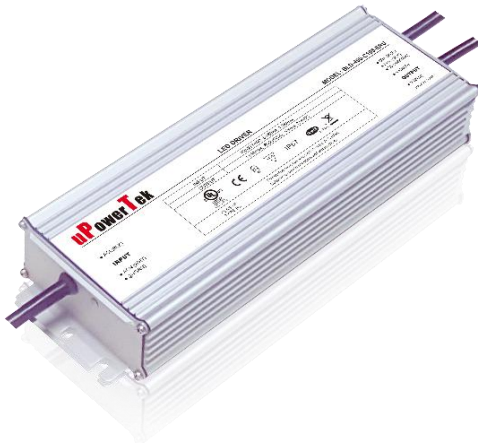


## Product Datasheet



The global certified BLD-400-V series is a dual stage high efficiency smart LED driver. 2% minimum level and high frequency PWM output provides strobe flicker free user experience. 100khour long life and 7-year warranty provide high confidence to luminaire users. It supports not only traditional dimming control, but also DALI2.0, DMX and RS485 protocols. All around protections including digital OTP, SCP and OCP with auto-recovery secure 24hour non-stop operation for luminaires.

- Strip
- Light box
- Signage
- Bath
- Swimming



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### 400W, 100-277Vac Input, Dimmable Constant Voltage LED Driver

#### ■ Features

- Supply Voltage: 90-305Vac, 380Vac for 2 hours
- Great Surge Immunity 10kV
- 4kHz PWM Output Frequency
- 100,000Hour Life @ Tc=75°C
- 7 Year Warranty @ Tc<=75°C
- 0-10V/PWM/DALI2.0/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)
- -60°C Ambient Operation (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

#### ■ Model List

| Model Number     | Input Voltage Range | Output Power | Output Voltage | Output Current Min | Output Current Max |
|------------------|---------------------|--------------|----------------|--------------------|--------------------|
| BLD-400-V024-XYZ | 90 ~ 305 Vac        | 400 W        | 24V            | 0                  | 16.7A              |
| BLD-400-V048-XYZ | 90 ~ 305 Vac        | 400 W        | 48V            | 0                  | 8.3A               |

| XY= | Dimming Method | Programmable      | 12Vaux | Dim-off Power |
|-----|----------------|-------------------|--------|---------------|
| NN  | -              | -                 | -      | -             |
| DN  | 0-10V+PWM      | -                 | -      | <0.5W         |
| EN  | 0-10V+PWM      | -                 | √      | <0.5W         |
| AN  | DALI2.0+PUSH   | -                 | -      | <0.5W         |
| MR  | DMX+RDM        | NFC (Set Address) | -      | <0.5W         |

| Z=                            | U                                      | V                                      | S                                    | S-GLB000  | 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<br>FCC<br>120-277Vac | UL Listed Class P<br>FCC<br>120-277Vac | ENEC CB RCM<br>Class I<br>220-277Vac | UL Recognized<br>120-277Vac<br>ENEC CB RCM<br>Class I<br>220-277Vac | Class I<br>120-277Vac       | ENEC CB<br>Class II<br>220-277Vac |

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

**400W, 100-277Vac Input, NFC Programmable Constant Voltage LED Driver**
**■ Technical Data**

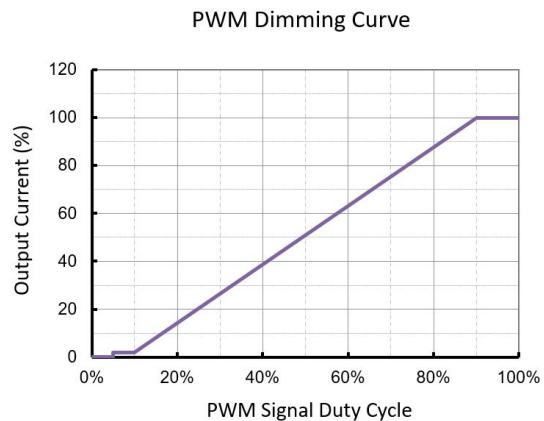
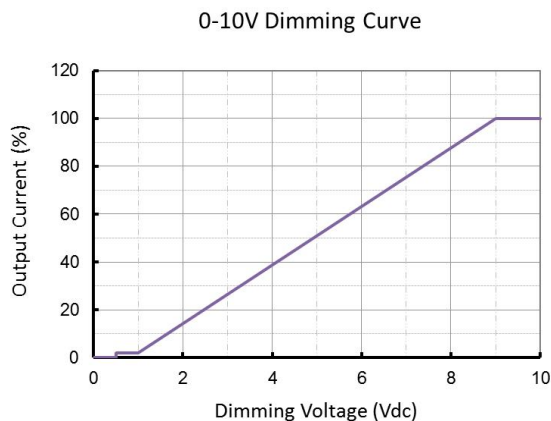
|                       |   |
|-----------------------|---|
| Input Voltage         | 90~305Vac, 380Vac for 2 hours   |
| Input Frequency       | 47~63Hz   |
| Power Factor          | >0.9@60-100%load, refer to PF vs. Load curve  |
| THD                   | <15%@60-100%load, refer to THD vs. Load curve   |
| Input Current         | 3.6Amax@120Vac & Full-Load,<br>2.0Amax@220Vac & Full-Load   |
| Inrush Current        | See Inrush Current Section in the datasheet   |
| Leakage Current       | 0.75MIU max @277Vac 60Hz, UL8750<br>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  |
| Voltage Accuracy      | ±3%Vo   |
| Voltage Ripple        | Vp-p:5%Vo max   |
| Setup Time            | 1.2s max.   |
| Output 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 $T_c \geq 105 \pm 10^\circ\text{C}$ ;<br>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°C~+85°C; 5%RH~100%RH  |
| MTBF                  | ≥280,000 hours, 75°C case temperature (MIL-HDBK-217F)   |
| Lifetime              | ≥100,000 hours, 75°C case temperature, refer to life vs. Tc curve   |
| Case Temperature      | 90°C max, marked in the Tc point of label   |
| Dimensions            | 8.82x3.54x1.63 by inch (body), 9.88x3.54x1.63 by inch (endcaps included)  |
| 24V 48V Model         | 224 x 90 x 41.5 by mm (body), 251 x 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°C room temperature.

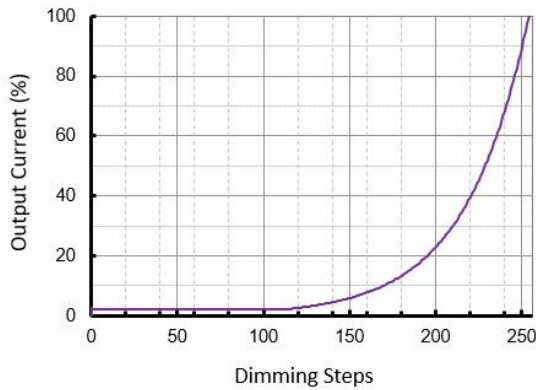
## ■ Dimming

| Parameter  | Min.                       | Typ.       | Max.                |
|--|----------------------------|------------|---------------------|
| Vdim Sourcing Current                              | 100uA                      | 150uA      | 200uA               |
| 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   | 9.5V                       | 10V        | 10.5V               |
| PWM Low  | 0V                         |            | 0.6V                |
| PWM Frequency                                      | 1kHz                       |            | 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                 |
| DMX+ & DMX- Voltage                                | -6V                        |            | 6V                  |
| DMX to Ground Resistance                           | 25Mohm                     |            |                     |
| Logic 0/1 (DMX+ to DMX-) Threshold                 |                            | 0.2V       |                     |
| Communication Baud Rate                            |                            | 250kbps    |                     |

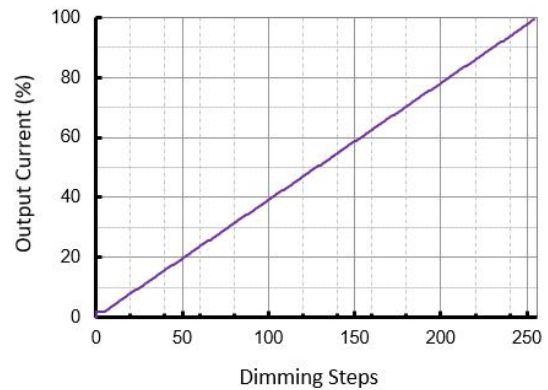
### - Default Dimming Curves



DALI Dimming Curve

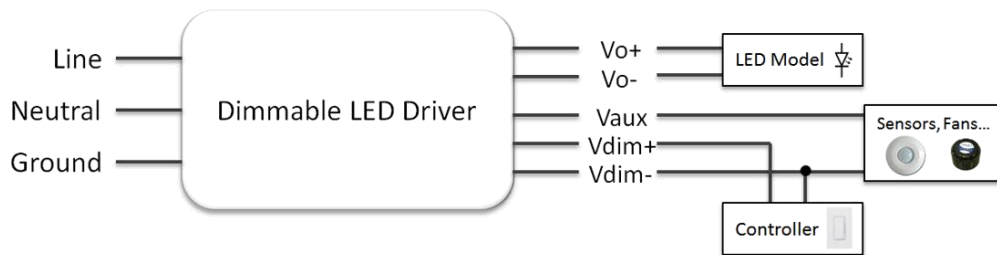


DMX/RDM Dimming Curve



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

### - Dimming Wiring

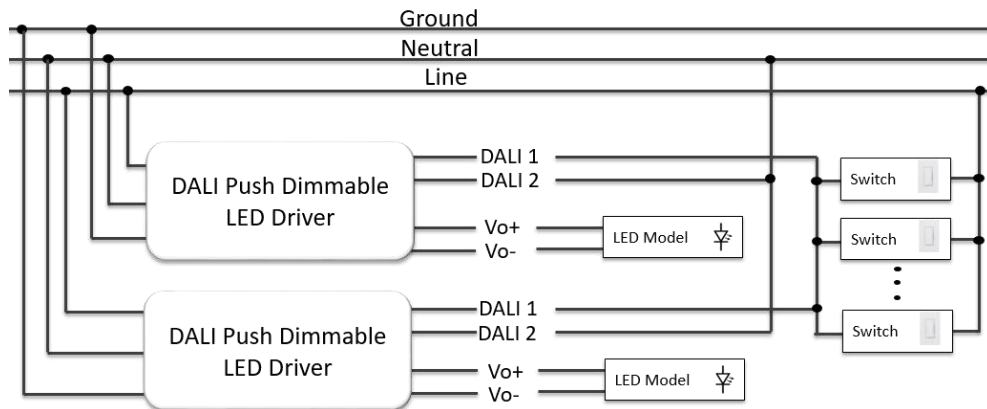


### - Push (Switch) Dim

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%Io/second.

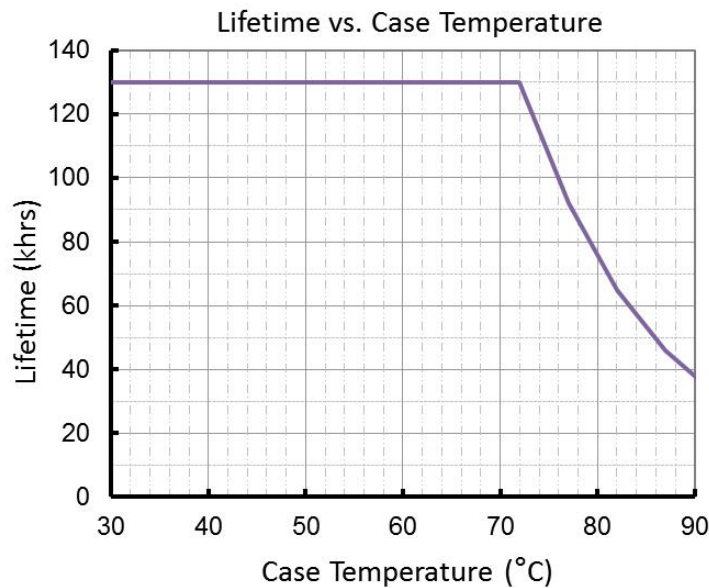
Long push for 15s to synchronize.



■ Safety/EMC Compliance

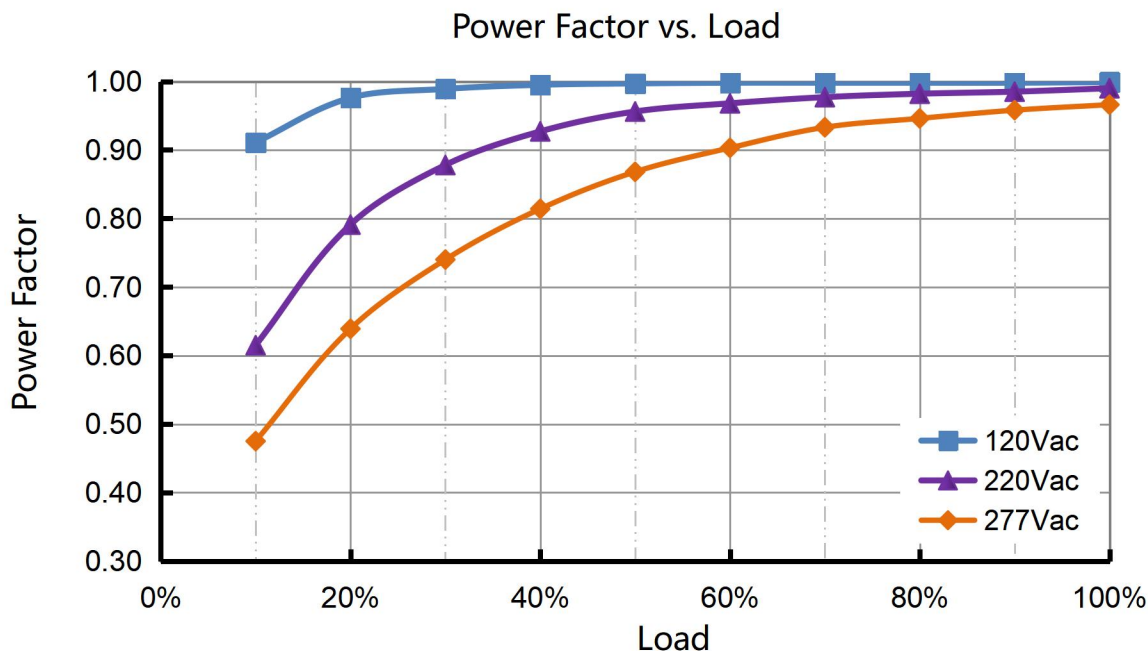
| Safety Standards | Description   |
|------------------|---|
| UL8750           | Light emitting diode(LED) equipment for use in lighting products  |
| UL1012           | Power units other than class 2  |
| IEC 61347-1      | Lamp control gear Part 1: general and safety requirements   |
| IEC 61347-2-13   | Lamp control gear Part 2-13: particular requirement for d.c. or a.c. supplied electronic control gear for LED modules |
| IEC 62384        | DC or AC supplied electronic control gear for LED modules - Performance requirements                                  |
| EMC 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   |
| 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

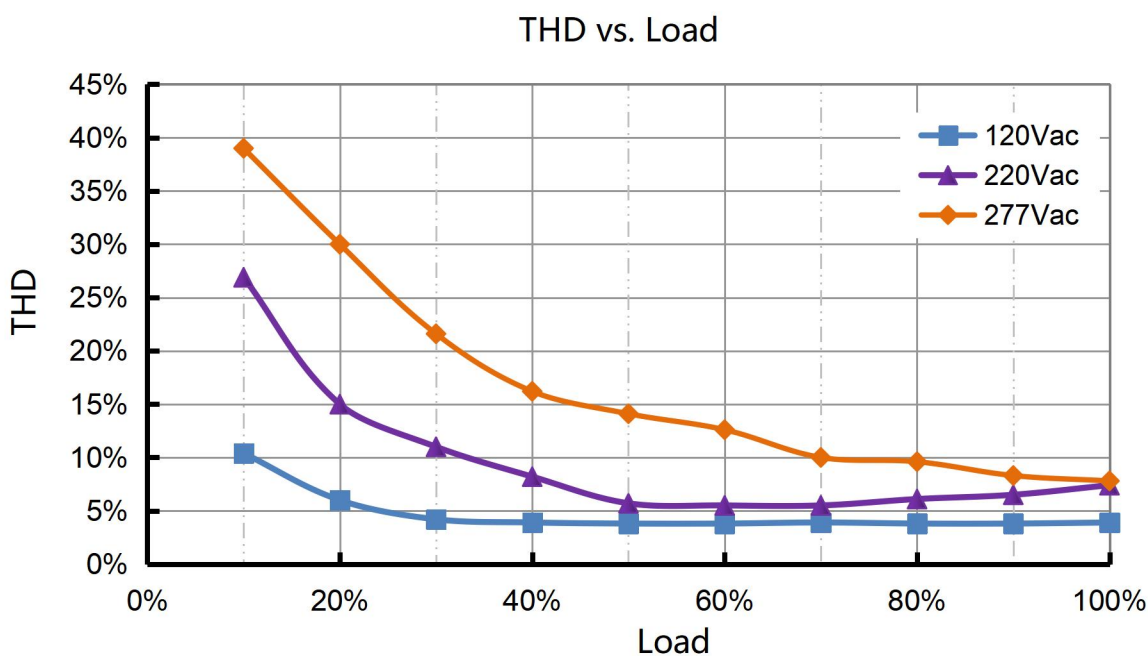


(End of Life: Maximum Failure Rate=10%)

## ■ Power Factor vs. Load

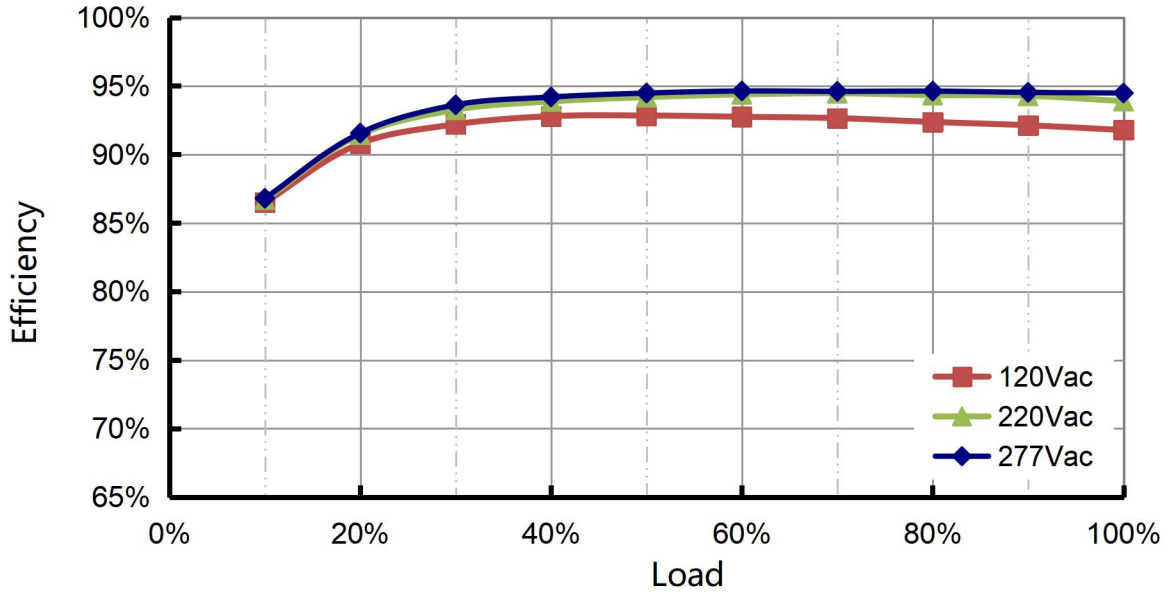


## ■ THD vs. Load

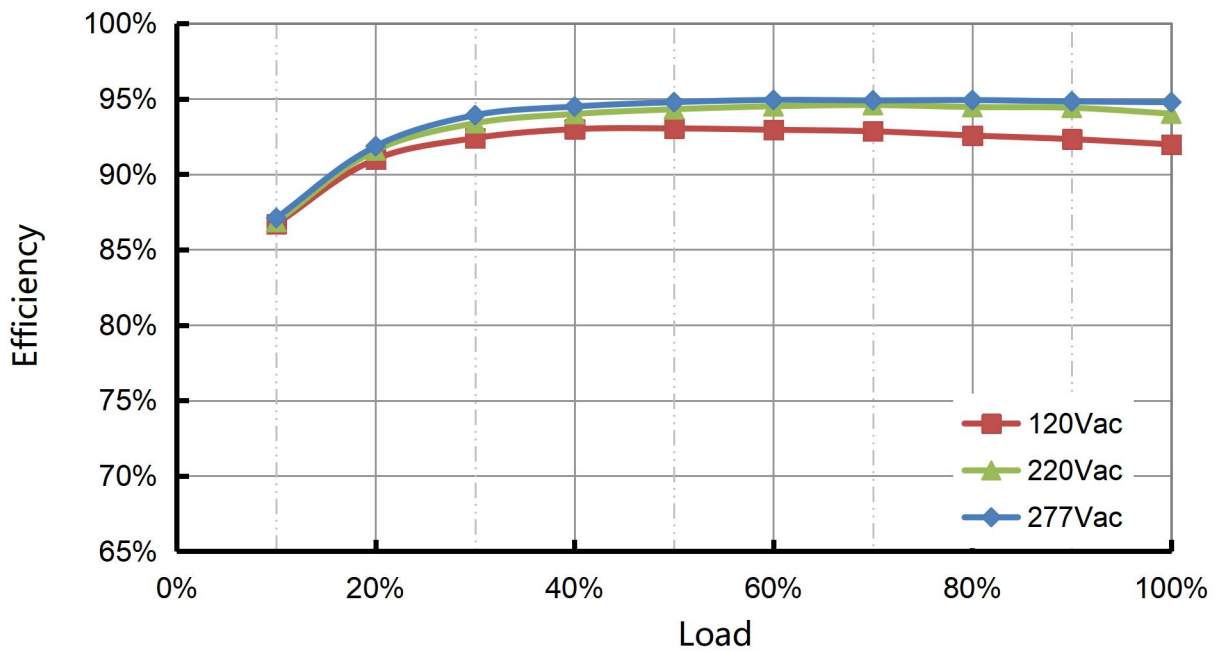


## ■ Efficiency vs. Load

Efficiency vs. Load (V024)

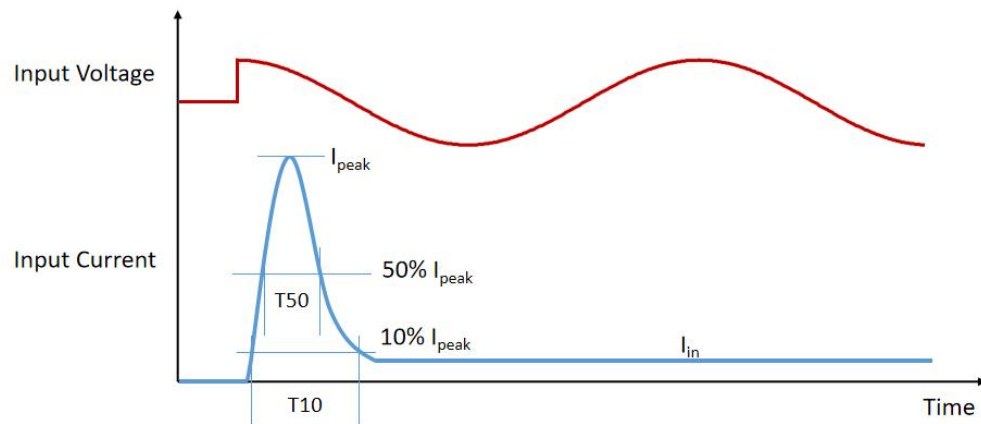


Efficiency vs. Load (V048)





## Inrush Current



| Input Voltage | $I_{peak}$ | 10% -10% T10 Duration | 50% -50% T50 Duration |
|---------------|------------|-----------------------|-----------------------|
| 120Vac        | 18.0A      | 5.32mS                | 2.1ms                 |
| 220Vac        | 30.8A      | 5.24mS                | 2ms                   |
| 277Vac        | 42.2A      | 5.08mS                | 1.9ms                 |

## - MCB Suggestion

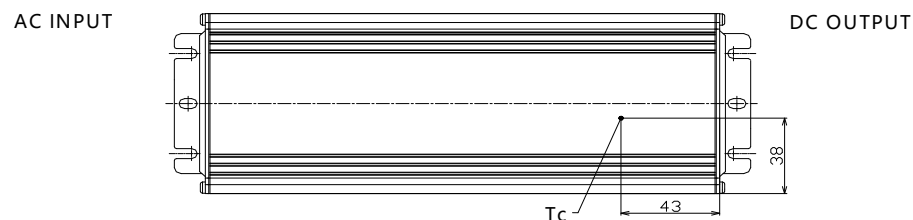
| Type            | B10 | B16 | B25 | B32 | C10 | C16 | C25 | C32 | D10 | D16 | D25 | D32 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Driver Quantity | 1   | 2   | 3   | 4   | 2   | 3   | 5   | 7   | 4   | 6   | 10  | 12  |

Note: Calculated with MCB S200 series manufactured by ABB at 230Vac Input condition

## Dielectric Strength

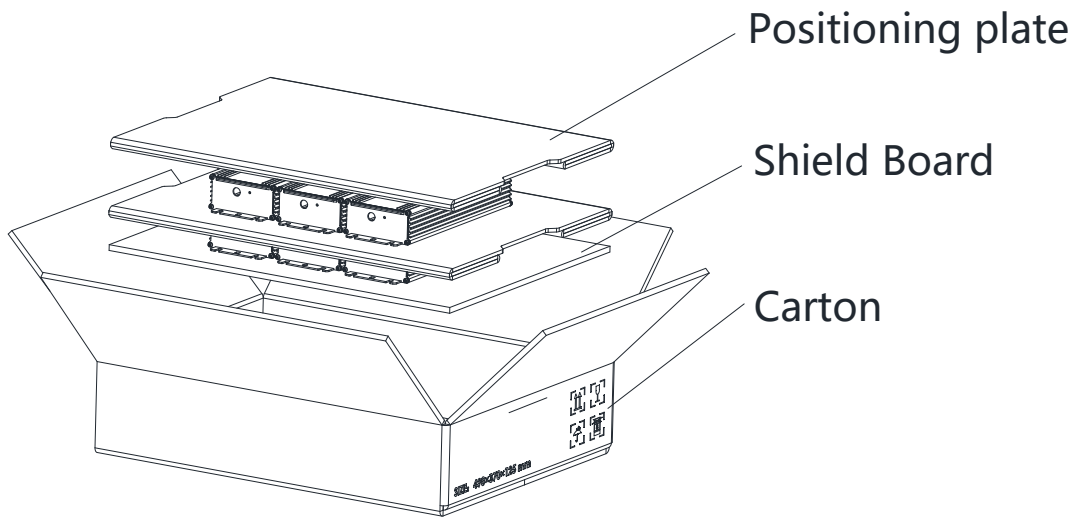
| Unit: Vac | Input | Output | Dimming | Case |
|-----------|-------|--------|---------|------|
| Input     | -     | 3750   | 3750    | 1554 |
| Output    | 3750  | -      | -       | 1554 |
| Dimming   | 3750  | -      | -       | 1554 |
| Case      | 1554  | 1554   | 1554    | -    |

## Tc Point



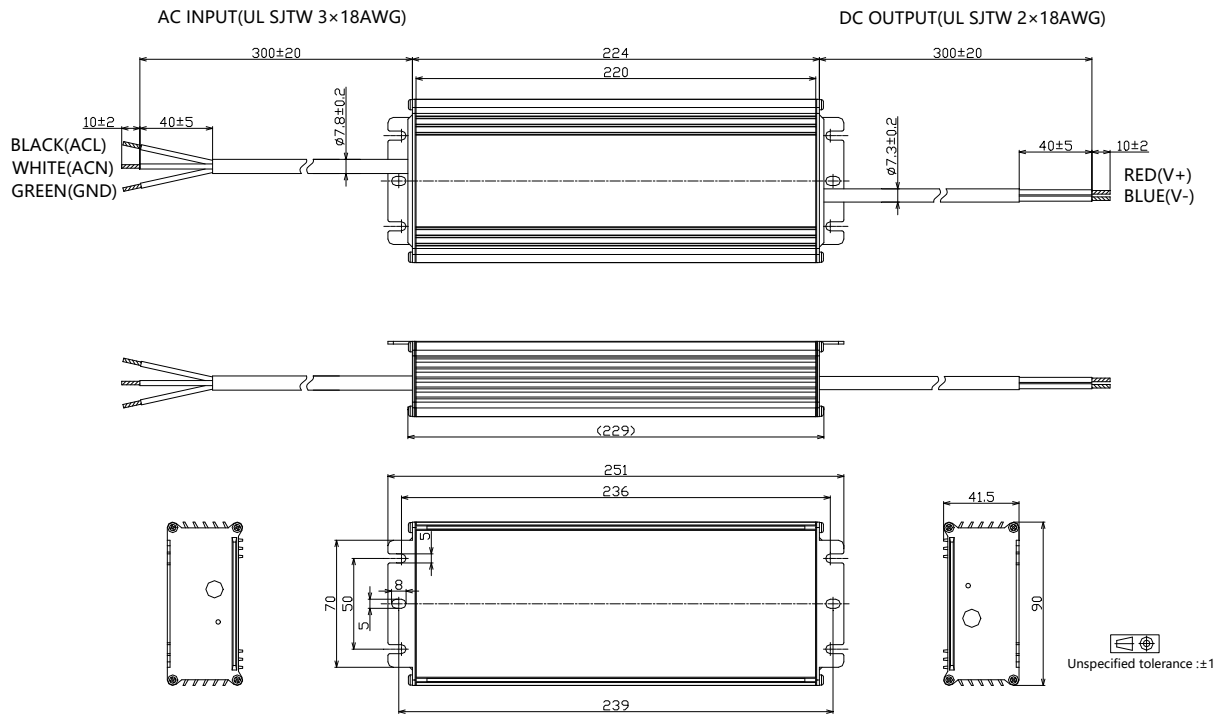
**■ Packaging Information**

|                                 |                |
|---------------------------------|----------------|
| 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                      | 10.1 kg/carton |
| Gross Weight                    | 11.1 kg/carton |

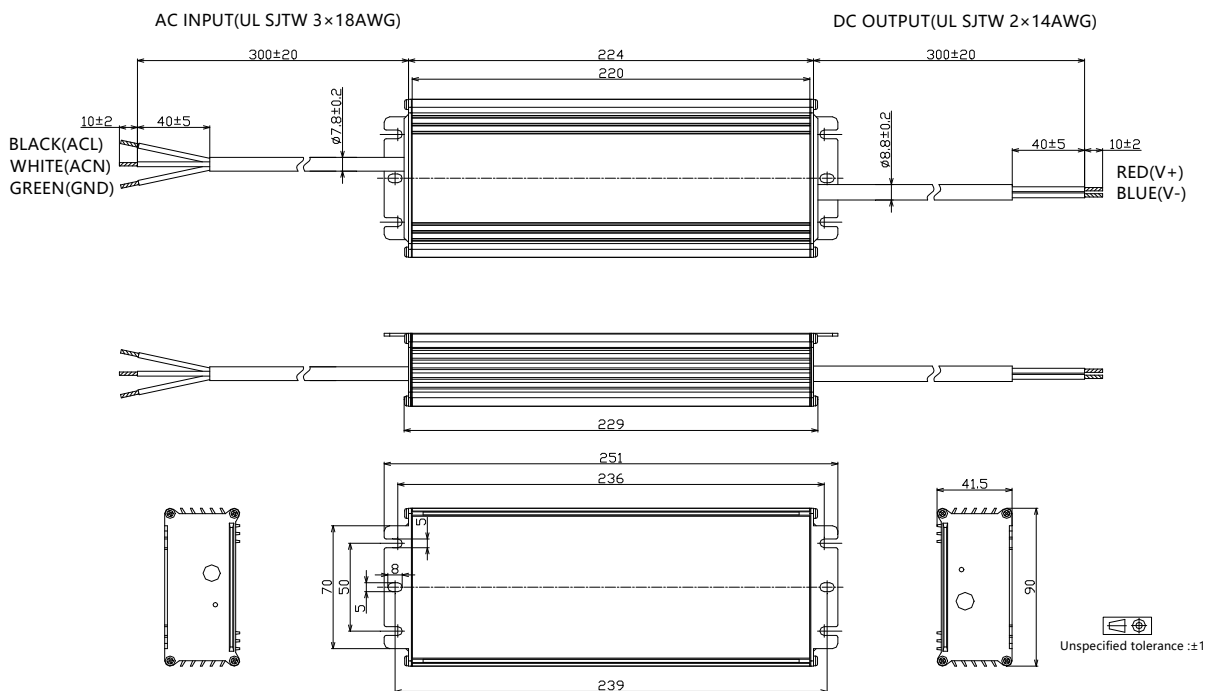


## Mechanical Design

### BLD-400-Vxxx-NNU (UL Cable) 48V model

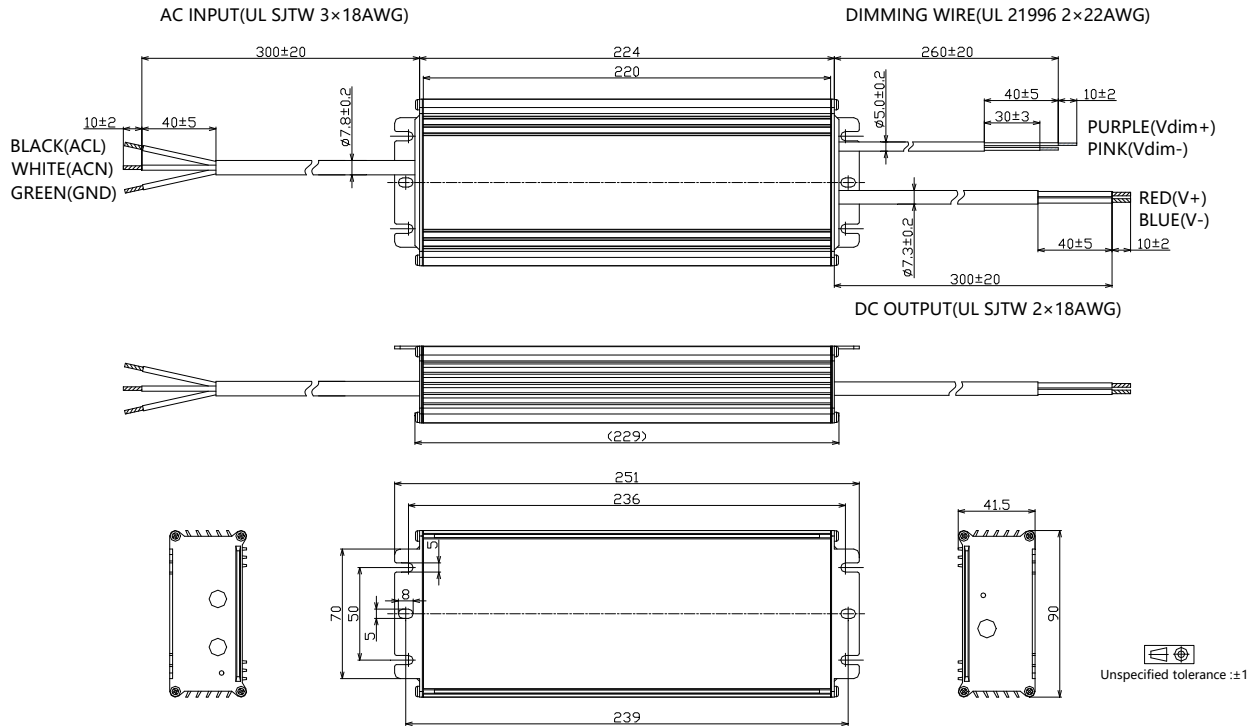


### BLD-400-Vxxx-NNU (UL Cable) 24V model

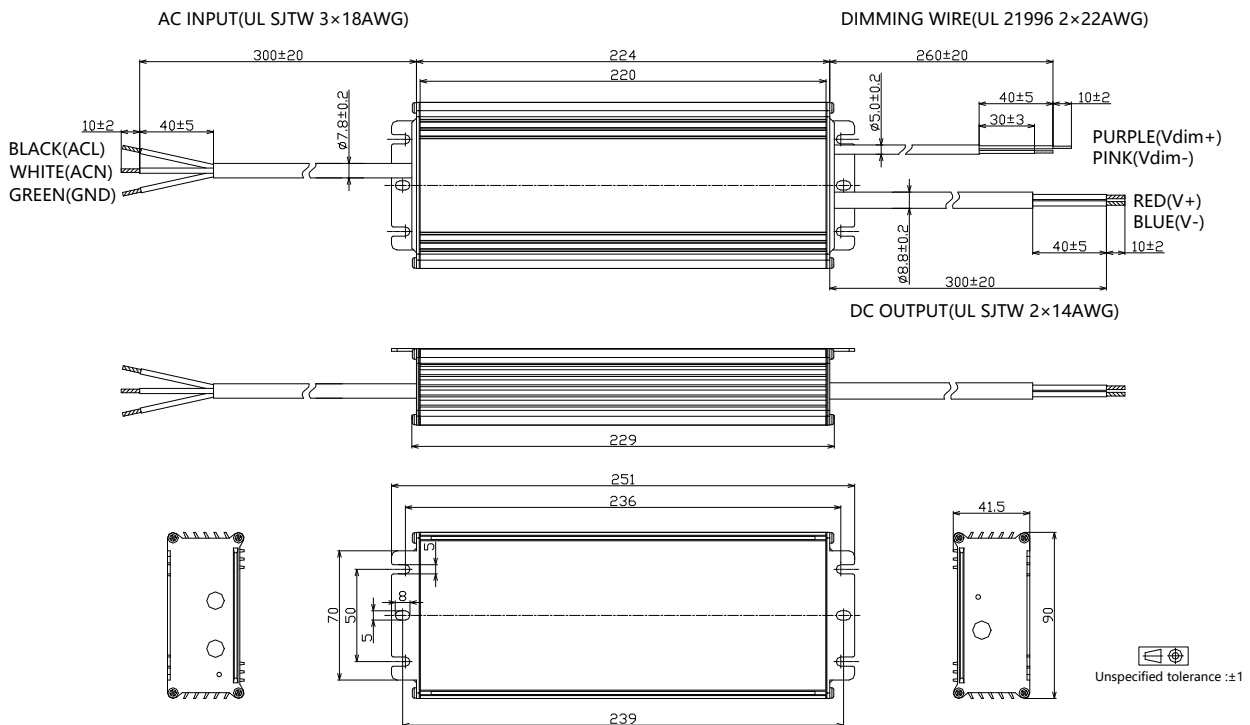


## 400W, 100-277Vac Input, NFC Programmable Constant Voltage LED Driver

### - BLD-400-Vxxx-DNU (UL Cable) 48V model

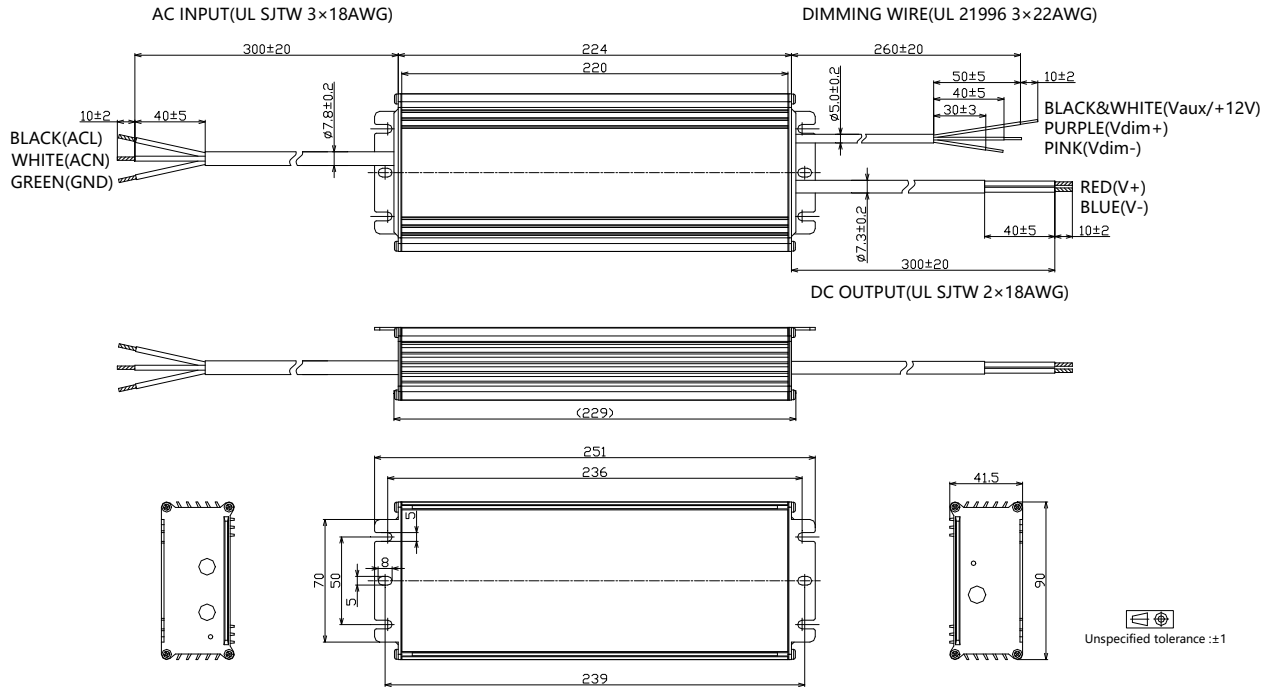


### - BLD-400-Vxxx-DNU (UL Cable) 24V model

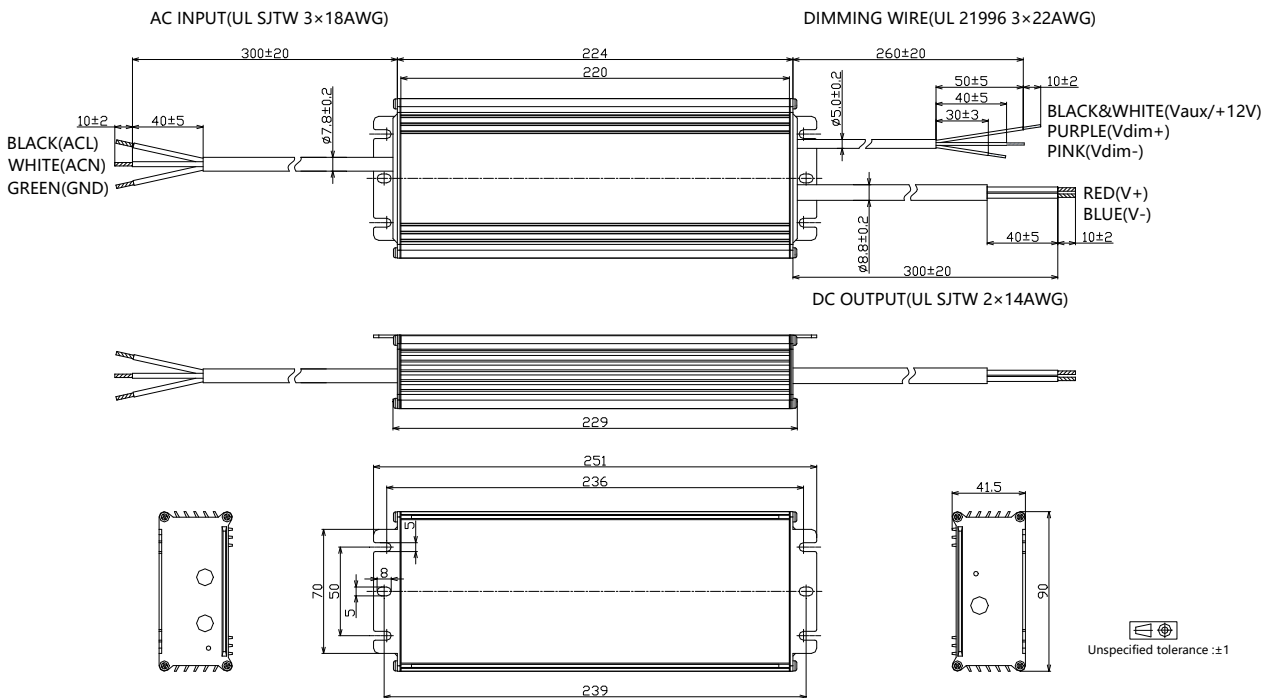


## 400W, 100-277Vac Input, NFC Programmable Constant Voltage LED Driver

### - BLD-400-Vxxx-ENU (UL Cable) 48V model

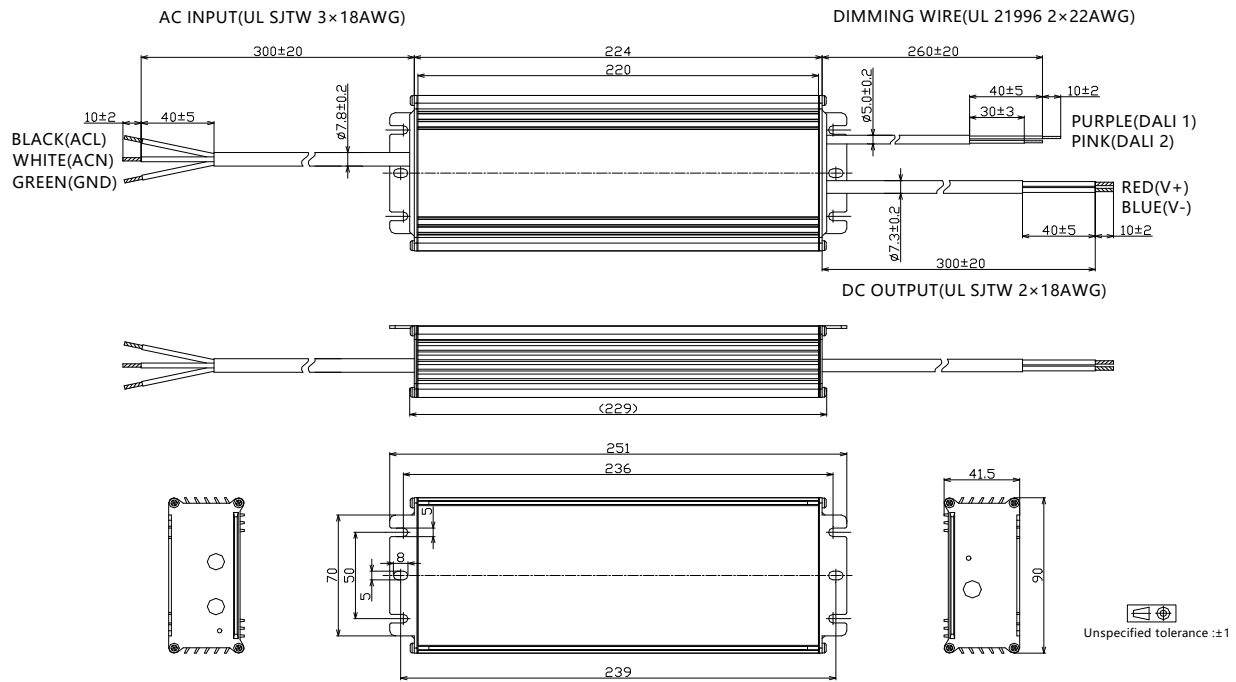


### - BLD-400-Vxxx-ENU (UL Cable) 24V model

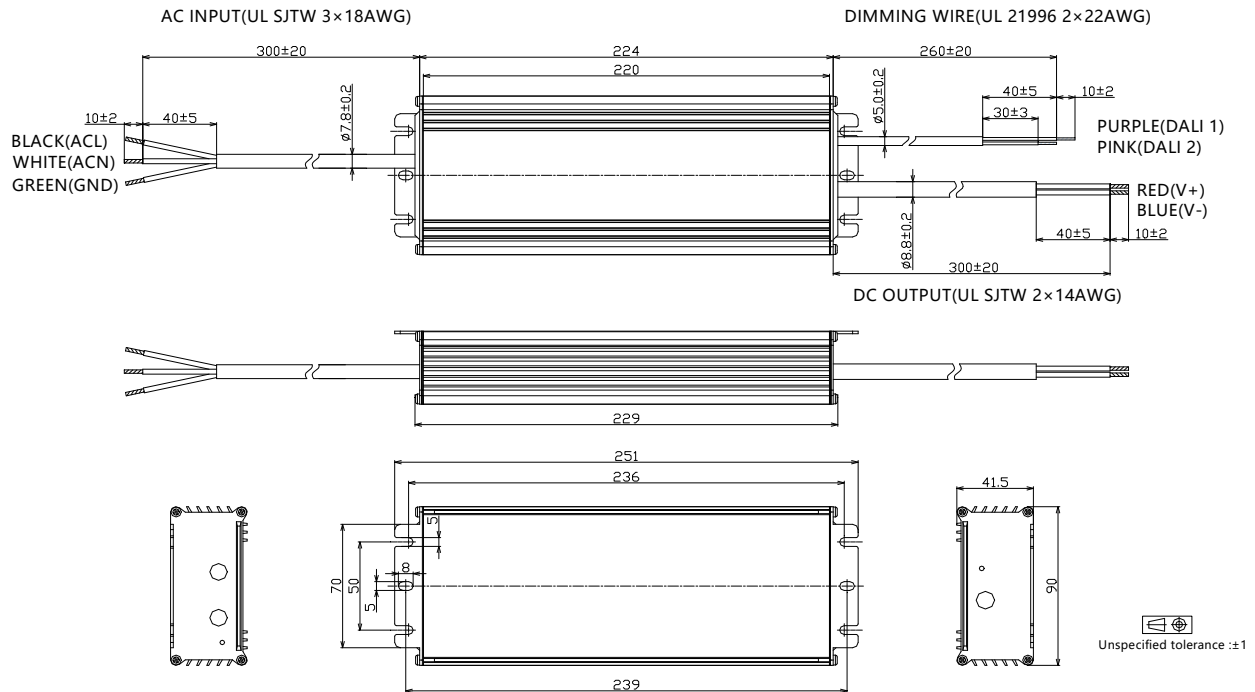


## 400W, 100-277Vac Input, NFC Programmable Constant Voltage LED Driver

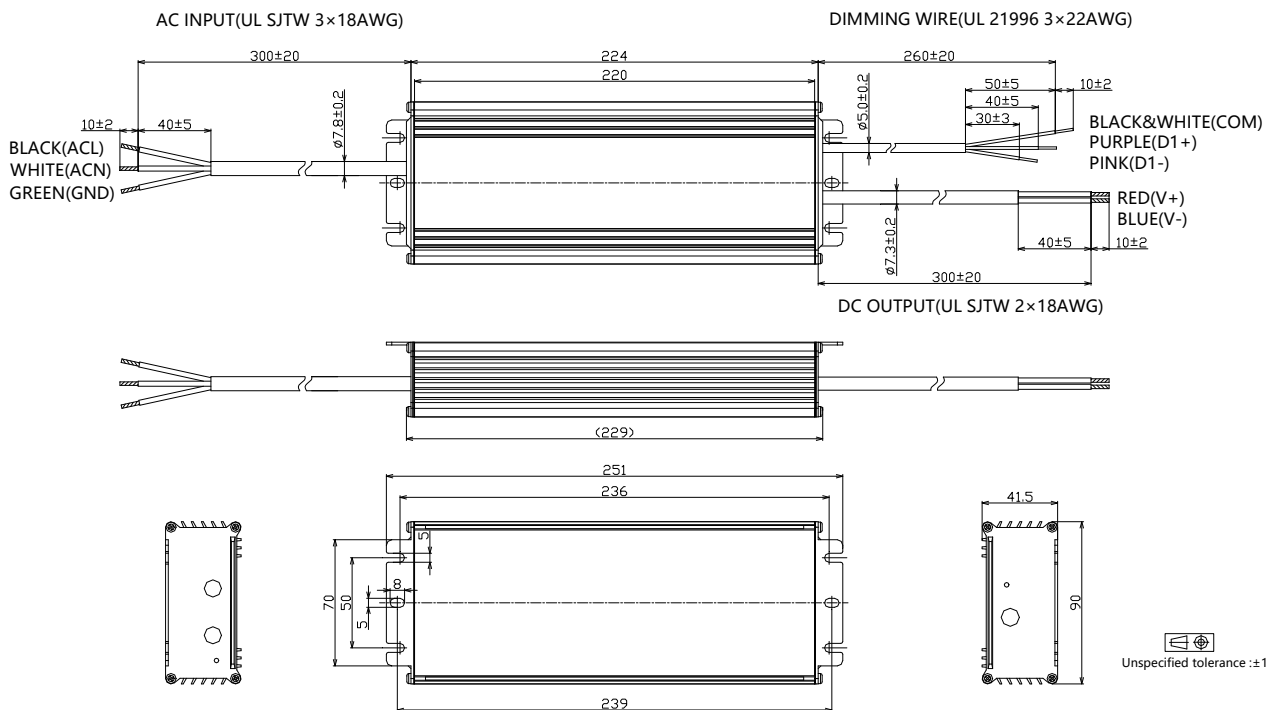
### - BLD-400-Vxxx-ANU (UL Cable) 48V model



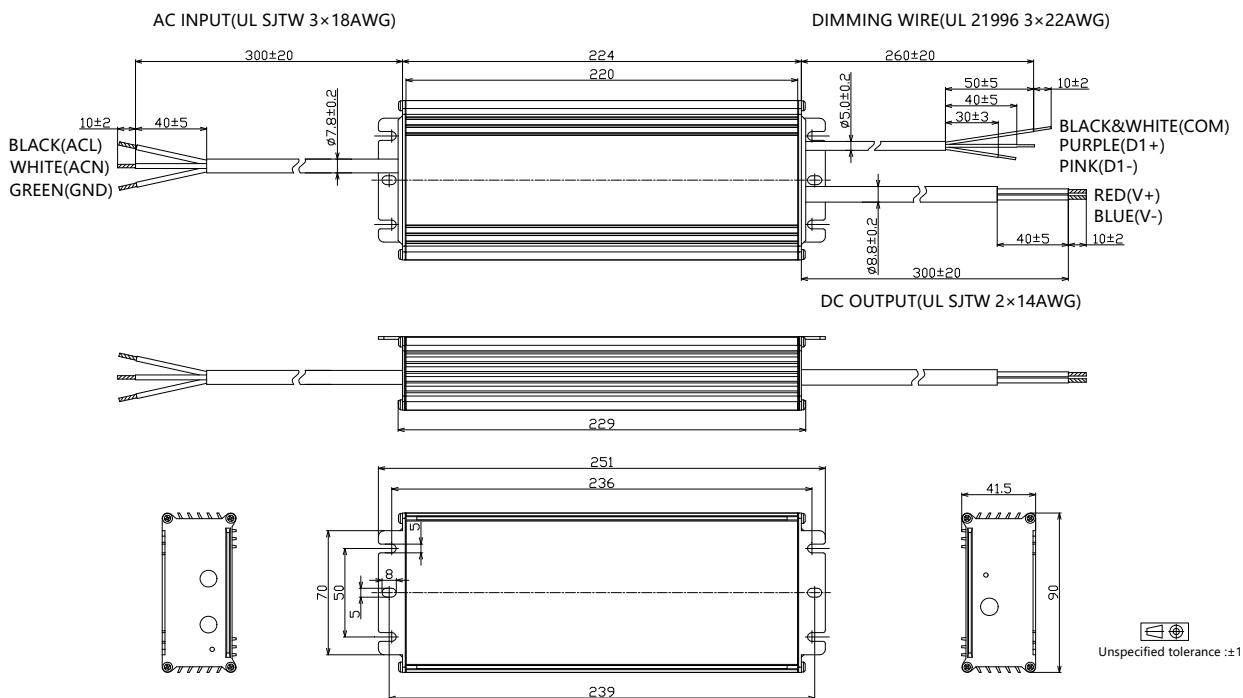
### - BLD-400-Vxxx-ANU (UL Cable) 24V model



#### - BLD-400-Vxxx-MRU (UL Cable) 48V model

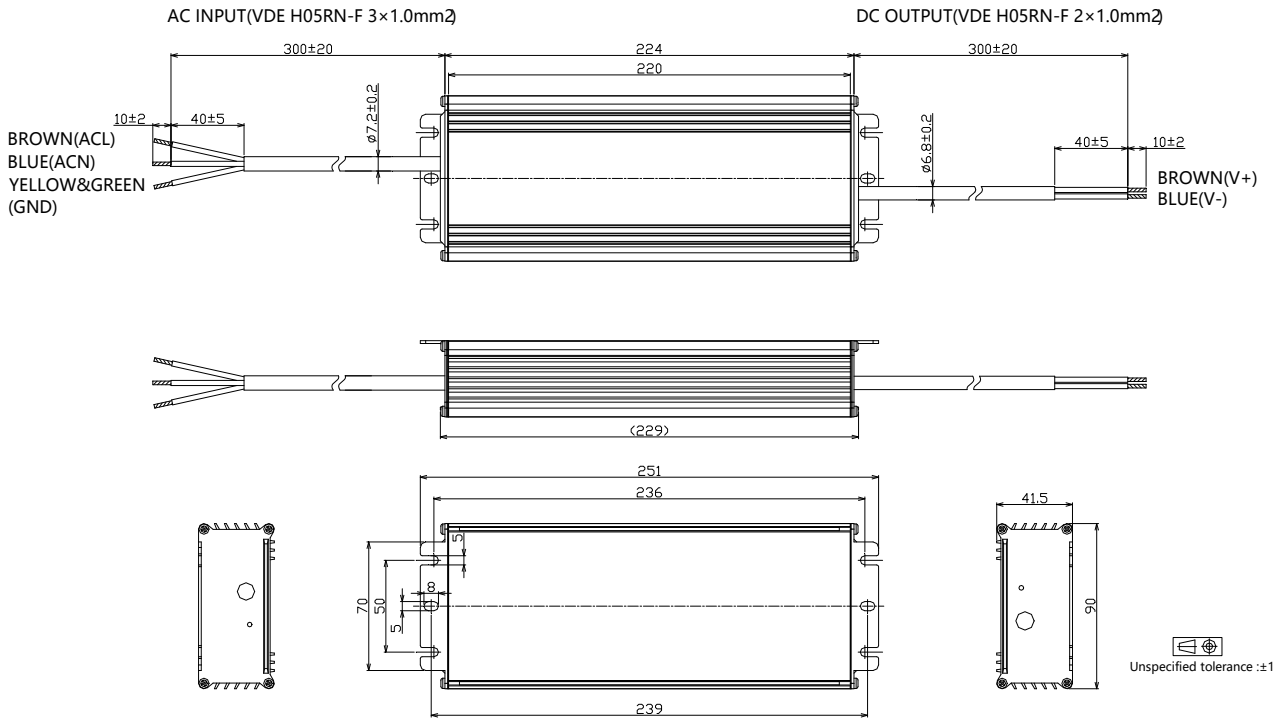


#### - BLD-400-Vxxx-MRU (UL Cable) 24V model

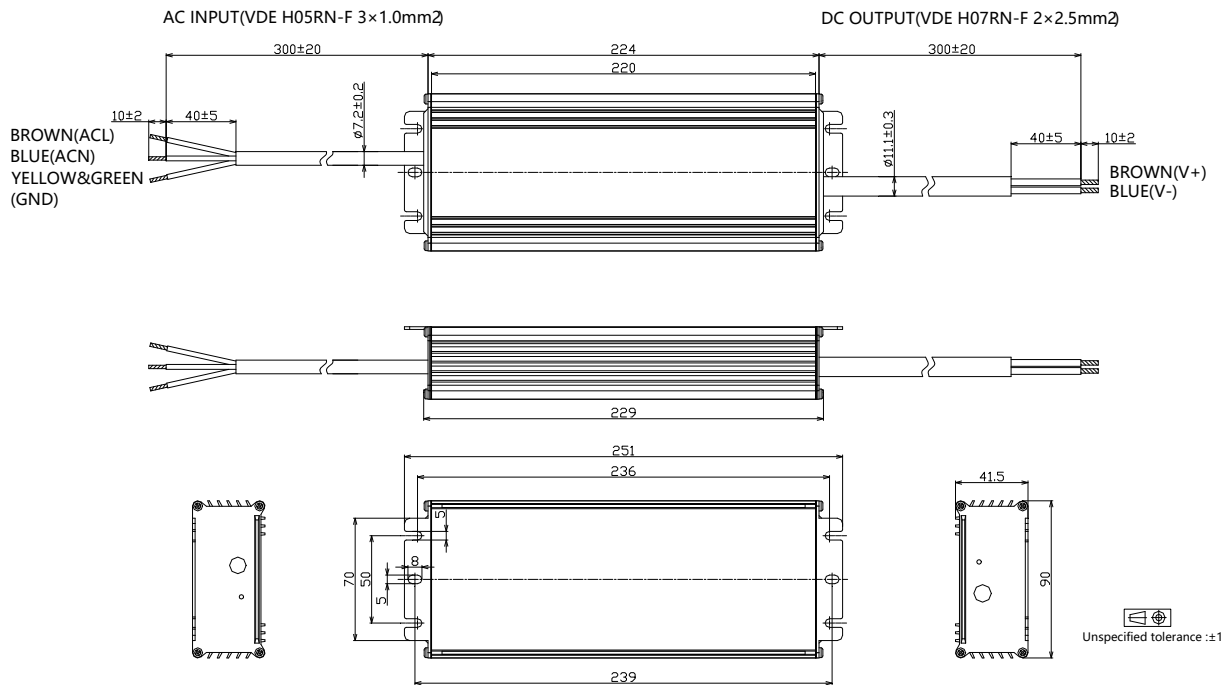


## 400W, 100-277Vac Input, NFC Programmable Constant Voltage LED Driver

### - BLD-400-Vxxx-NNS (VDE Cable) 48V model

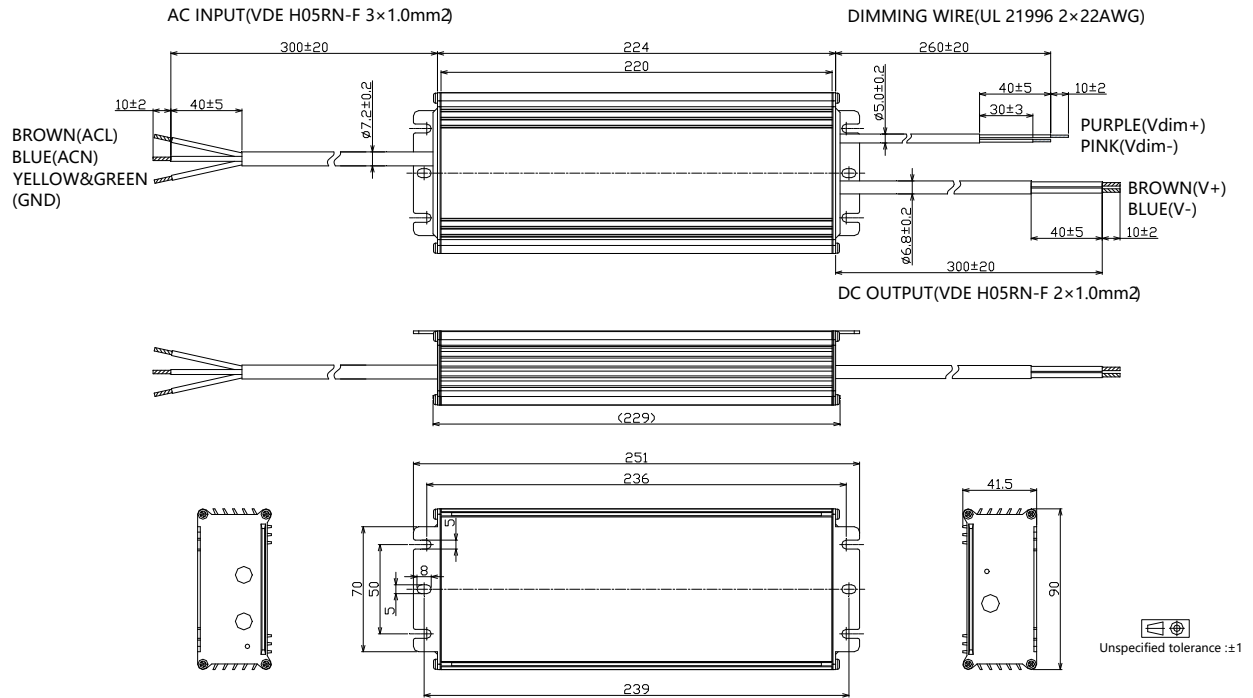


### - BLD-400-Vxxx-NNS (VDE Cable) 24V model

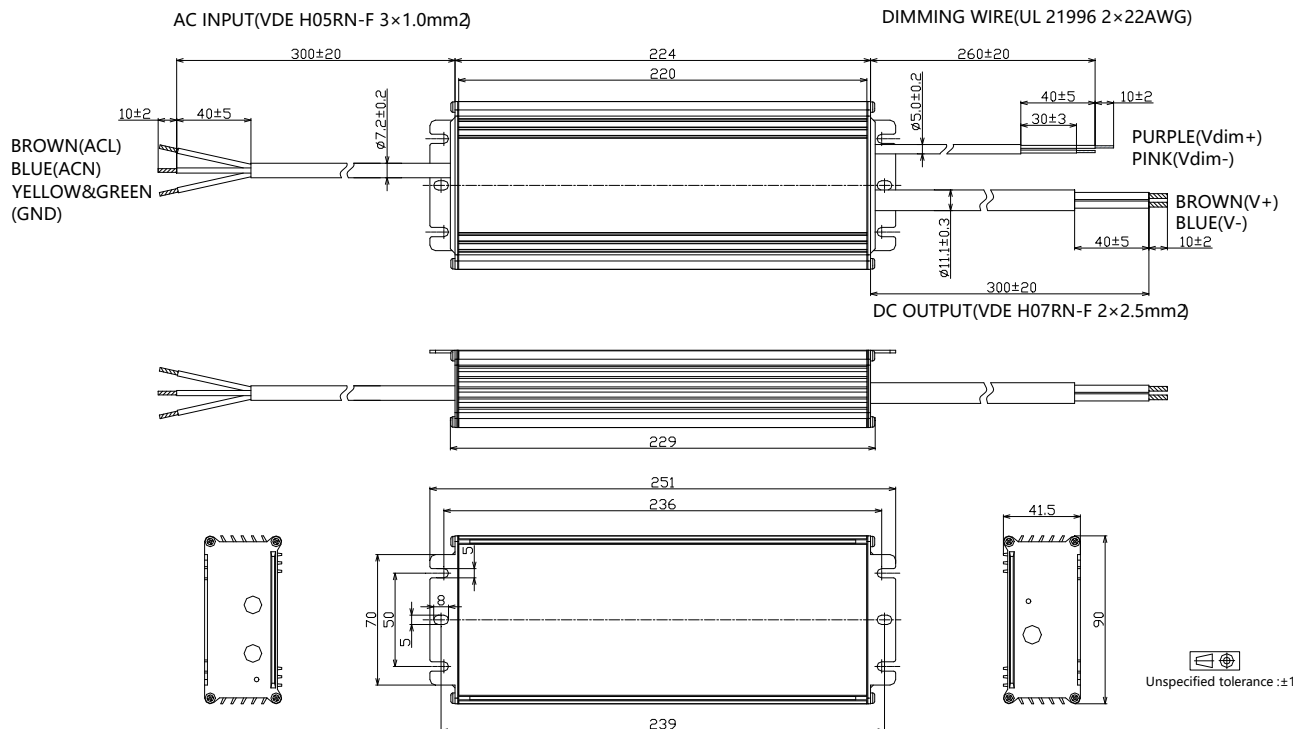




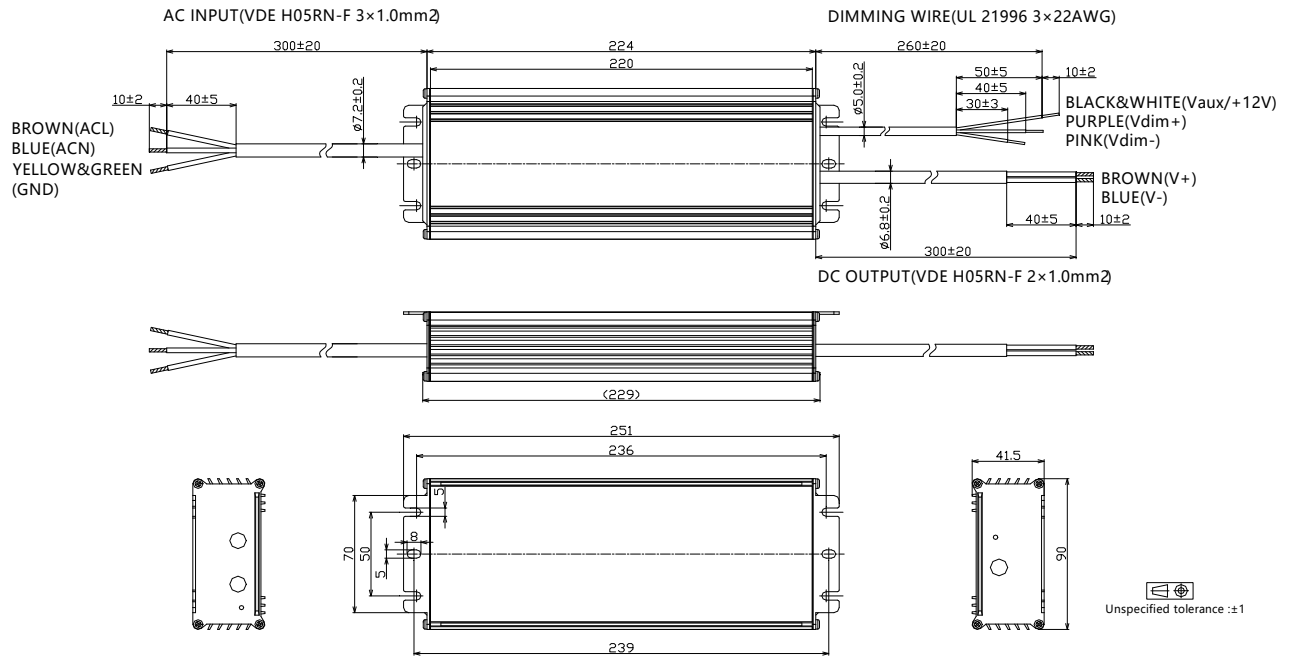
**- BLD-400-Vxxx-DNS (UL Cable) 48V model**



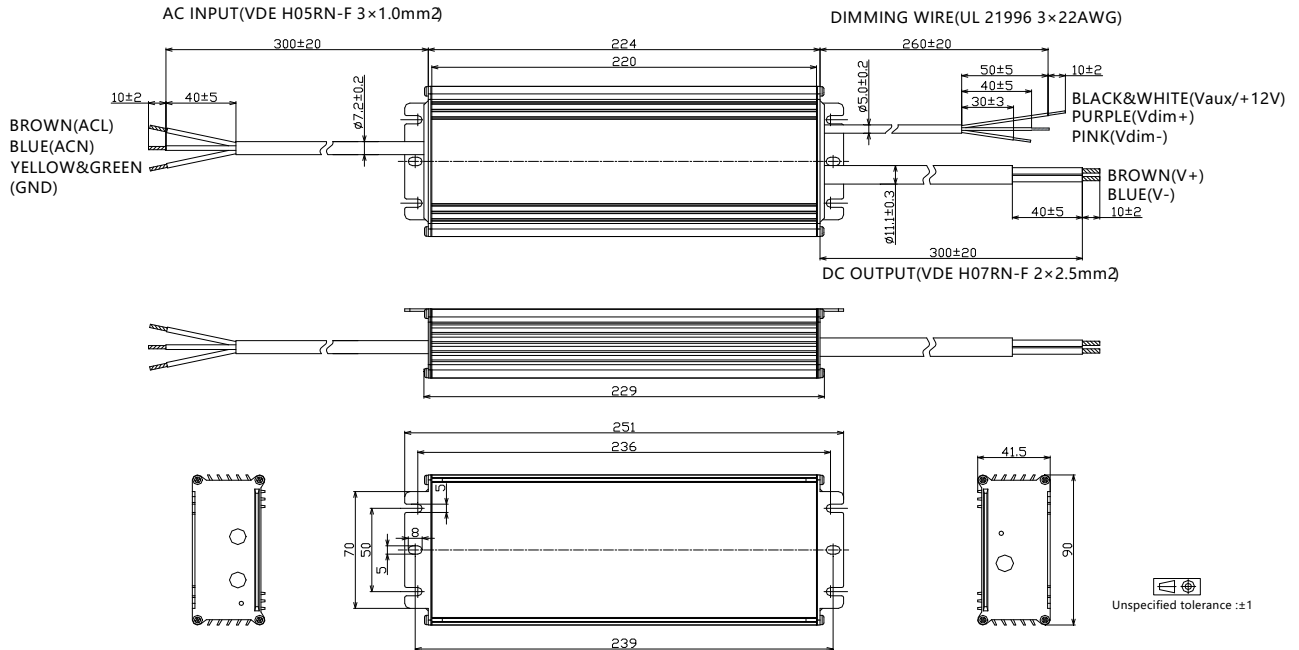
**- BLD-400-Vxxx-DNS (UL Cable) 24V model**



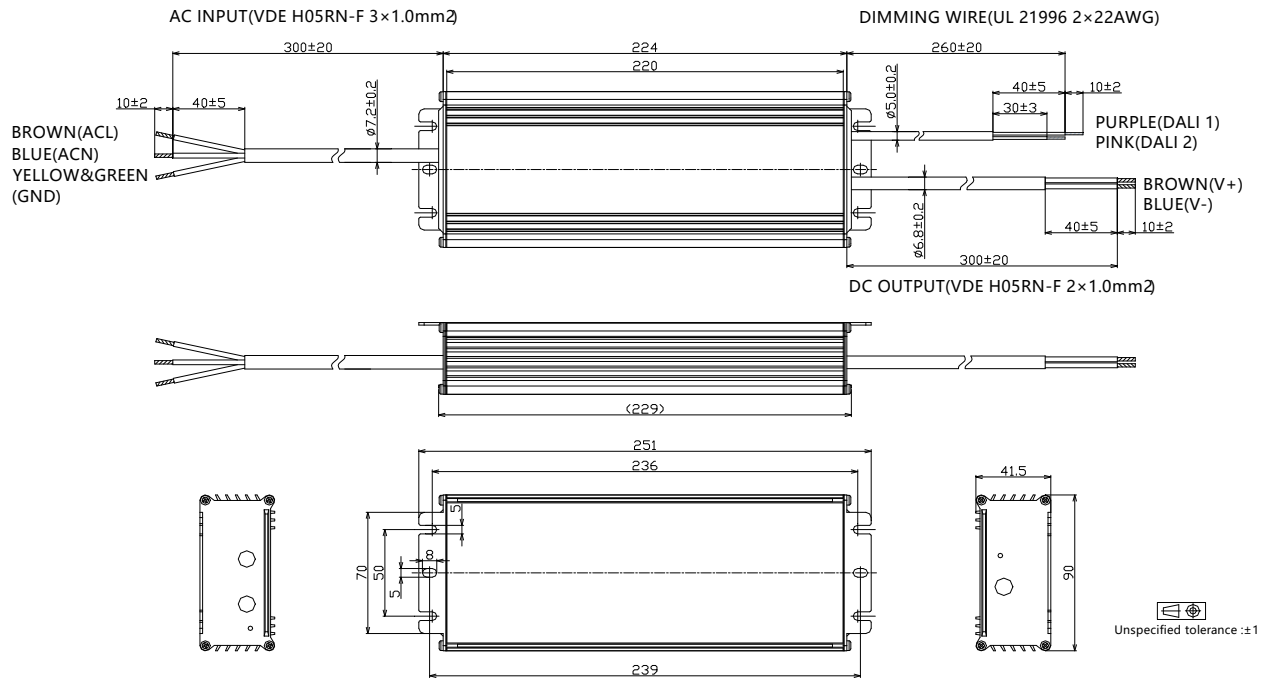
#### - BLD-400-Vxxx-ENS (VDE Cable) 48V model



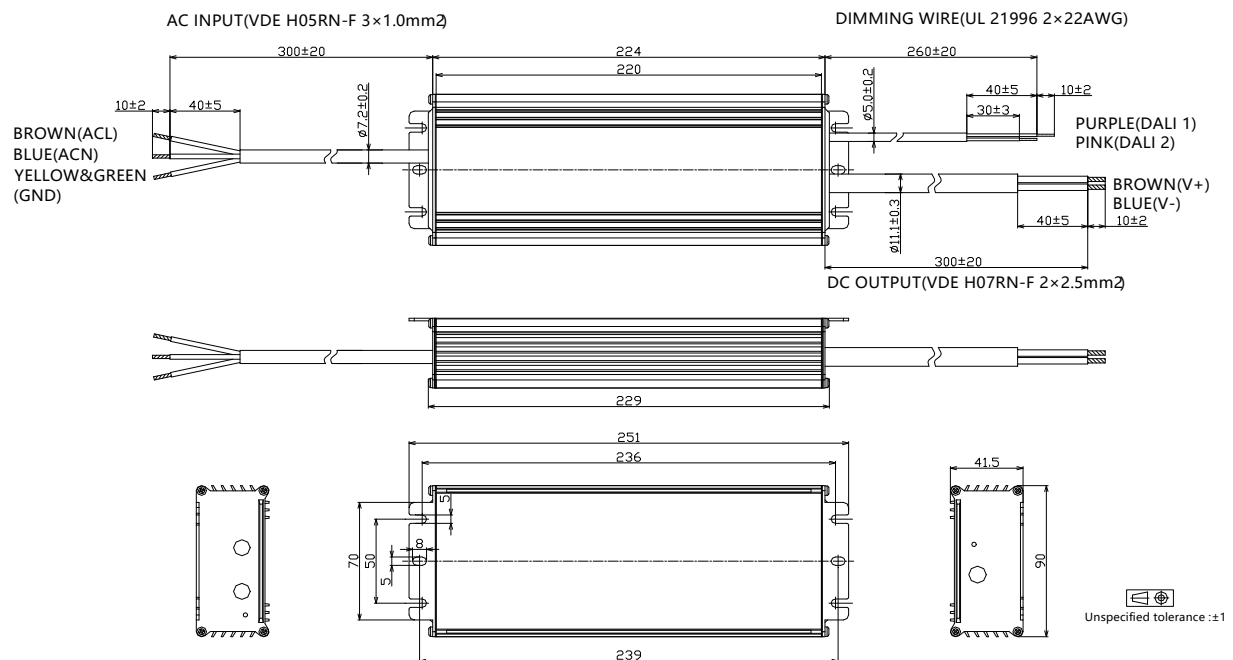
#### - BLD-400-Vxxx-ENS (VDE Cable) 24V model



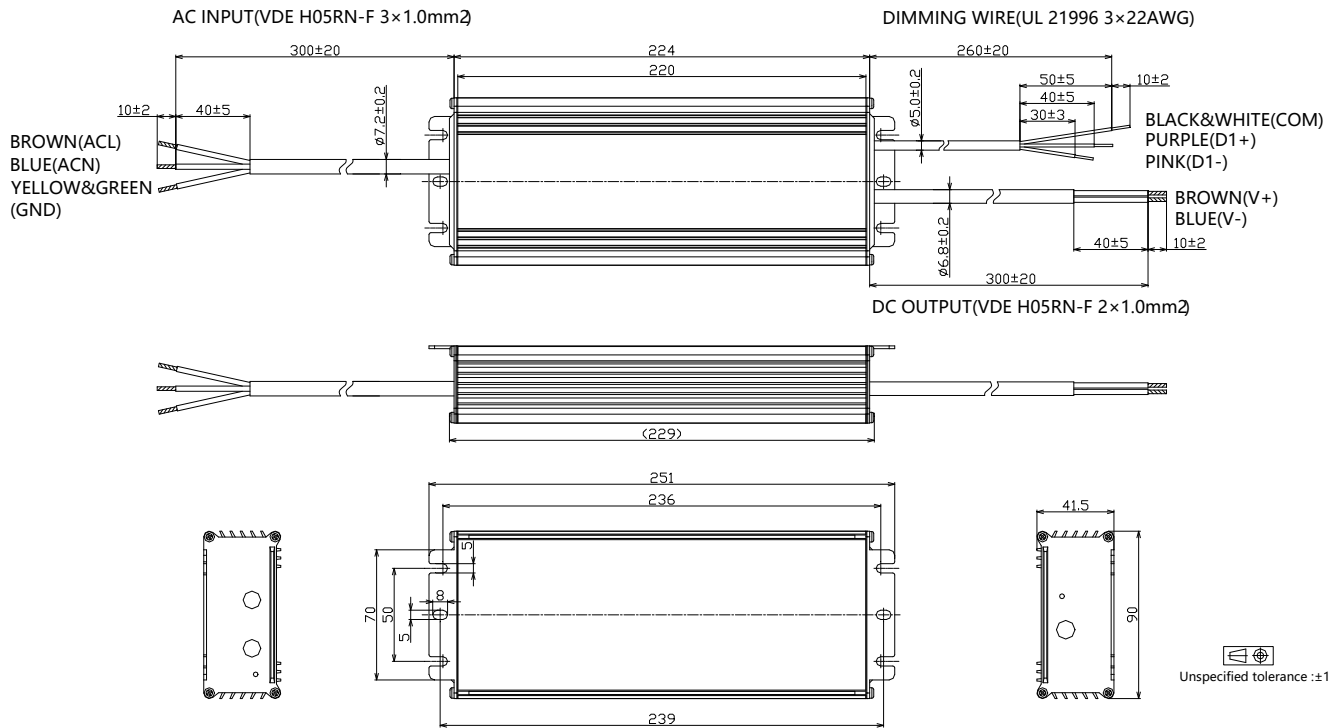
#### - BLD-400-Vxxx-ANS (VDE Cable)48V model



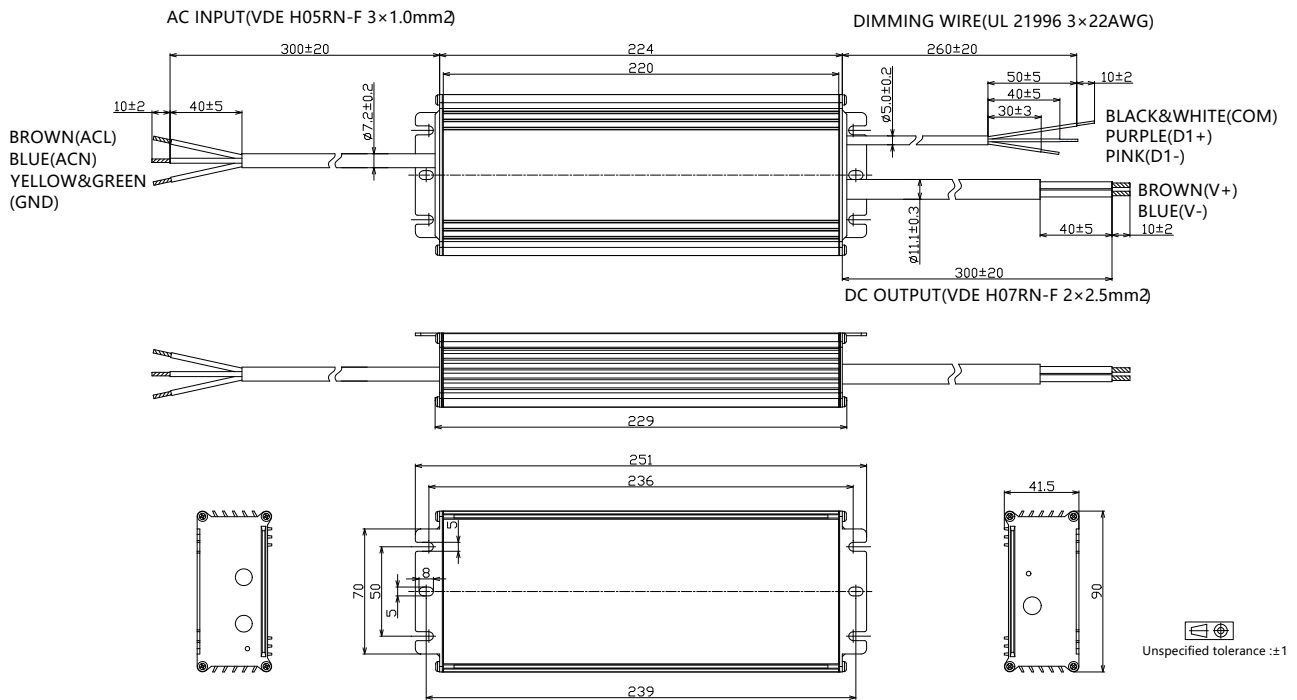
#### - BLD-400-Vxxx-ANS (VDE Cable) 24V model



#### - BLD-400-Vxxx-MRS (VDE Cable) 48V model



#### - BLD-400-Vxxx-MRS (VDE Cable) 24V model



## ■ Revision History

| Revision | Date       | Contents  |
|----------|------------|---|
| K        | 2022-03-22 | <ol style="list-style-type: none"><li>1. Index page added</li><li>2. Reduced dimming interface sourcing current</li><li>3. DALI 2.0 compatibility added</li><li>4. Inrush current data added</li><li>5. Tc point position indication added</li><li>6. Dielectric strength level added</li><li>7. Packaging information added</li><li>8. Mechanical design change with dimming cable color</li><li>9. Revision history added</li></ol> |
| L        | 2022-12-15 | <ol style="list-style-type: none"><li>1. DMX dimmable models mechanical design updated</li></ol>  |
| M        | 2023-07-14 | <ol style="list-style-type: none"><li>1. Update cable selection table in Model List Section</li></ol>   |
| N        | 2024-02-28 | <ol style="list-style-type: none"><li>1. 12V model removed</li></ol>  |
| O        | 2024-4-11  | <ol style="list-style-type: none"><li>1. Push and PWM dimming description updated.</li></ol>  |
| P        | 2024-8-23  | <ol style="list-style-type: none"><li>1. Power factor, THD, efficiency curves updated by 10-100% load range</li><li>2. MCB usage and driver quantity section added</li><li>3. Inrush current data updated</li></ol>   |