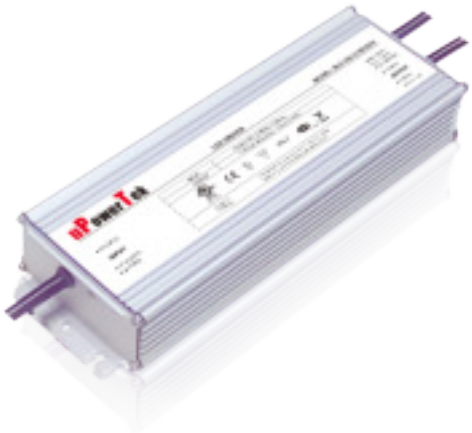
**320W, 200-480Vac Input, NFC Programmable LED Driver**

## Features

- Supply Voltage: 180-528Vac or 250-740Vdc
- Great Surge Immunity 10kV
- 100,000Hour Life @ Tc=75℃
- 7 Year Warranty @ Tc<=75℃
- Airset™ NFC Programmability
- +/-2% Output Current Accuracy (Programmable Model)
- 0-10V/PWM/Time/DALI/DMX (Optional) Dimmable
- Dim Off with 1.5W Standby Power
- 12V 300mA Auxiliary Power to Power Controllers and Fans (Optional)
- UL Class P, ENEC/CB/CCC SELV Output
- Safety according to EN 61347-1, 61347-2-3 61347-2-13, 62384



## Application

- Bay lights, Pole lights, Stadium lights

## Model List (See appendix for more details about the operation range)

| Model Number | Input Voltage Range | Output Power | Output Voltage | Full Power Settable Current Min | Full Power Settable Current Max | Certification |
|---|---|---|---|---|---|---|
| TLD-320-C140-XYZ | 180-528Vac | 320 W | 137-305Vdc | 1050mA | 1400mA | UL/FCC/CE |
| TLD-320-C210-XYZ | 180-528Vac | 320 W | 91-229Vdc | 1400mA | 2100mA | UL/FCC/CE |
| TLD-320-C420-XYZ | 180-528Vac | 320 W | 46-114Vdc | 2800mA | 4200mA | UL/FCC/CE |
| TLD-320-C700-XYZ | 180-528Vac | 320 W | 27-64Vdc | 5000mA | 7000mA | UL/FCC/CE |

| XY= | Dimming Method | Programmable | 12Vaux | Dim-off |
|---|---|---|---|---|
| NN | - | - | - | - |
| EN | 0-10V | - | √ | √ |
| TR | Time | √ | - | - |
| ER | 0-10V/PWM/Time | √ | √ | √ |
| AN | DALI | - | - | √ |
| MR | DMX | √ | - | √ |

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

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## ■ Technical Data

| | |
|---|---|
| Input Voltage | 180-528Vac or 250-740Vdc |
| 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 | 1.3Amax@277Vac & Full-Load,<br>0.75Amax@480Vac & Full-Load |
| Inrush Current | 65A peak, 1.2ms duration, <0.25A2s@277Vac, Cold Start<br>70A peak, 1.3ms duration, <0.5A2s@480Vac, Cold Start |
| Leakage Current | 1mA max @277Vac 60Hz, UL8750,0.75mA max @240Vac 50Hz, IEC61347-1 |
| Input Under Voltage | Shut down and auto-restart |
| Surge Protection | Line to line 6kV, line to ground 10kV, IEC 61000-4-5 |
| Current Accuracy | ±5%Io |
| Ripple Current | Ip-p:5%Io max |
| Setup Time | 1.2s max |
| Overshoot | 10% Io max & LED Load |
| Output Over Voltage | 120% Vomax, typ. |
| Short Circuit | Auto recovery. The output recovers when short is removed. |
| Over Temperature | Lower the output current when Tc≧105±10℃; Auto Recovery When Tc≦70±10℃ |
| Auxiliary Power (Vaux) | 12V+/-5%, 300mA max |
| Operating Temperature | -40℃～+70℃； 10%RH～100%RH |
| Storage Temperature | -40℃～+85℃； 5%RH～100%RH |
| MTBF | ≥280,000 hours, 75℃ case temperature (MIL-HDBK-217F) |
| Lifetime | ≥100,000 hours, 75℃ case temperature, refer to life vs. Tc curve |
| Case Temperature | 90℃ max, marked in the Tc point of label |
| Dimensions | 9.29x3.54x1.63 by inch (body), 10.35x3.54x1.63 by inch (endcaps included) |
| | 236x 90 x 41.5 by mm (body), 263 x 90 x 41.5 by mm (endcaps included) |
| Net Weight | 1600g |
| Packing | 10pcs/Carton/19.2kg, 490x370x345 by mm |

Notes: Unless specified, all the test results are measured in 25℃ 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 | 200uA | 300uA | 450uA |
| 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 | 3V | | 10V |
| PWM Low | 0V | | 0.6V |
| PWM Frequency | 300Hz | | 2kHz |
| 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 |

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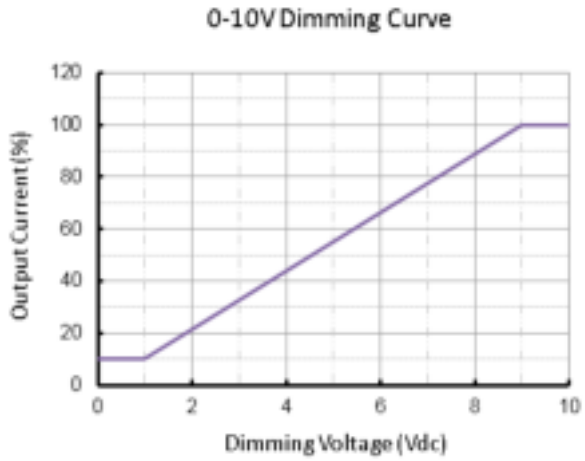
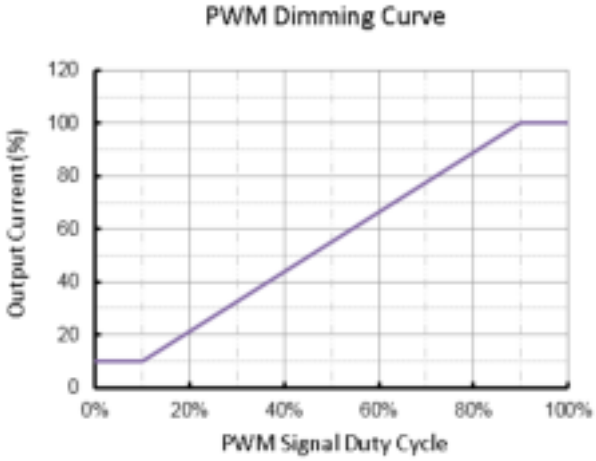
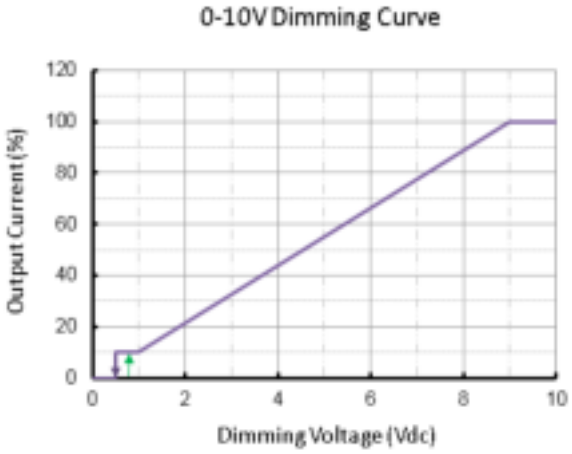
- **Dimming Curve**

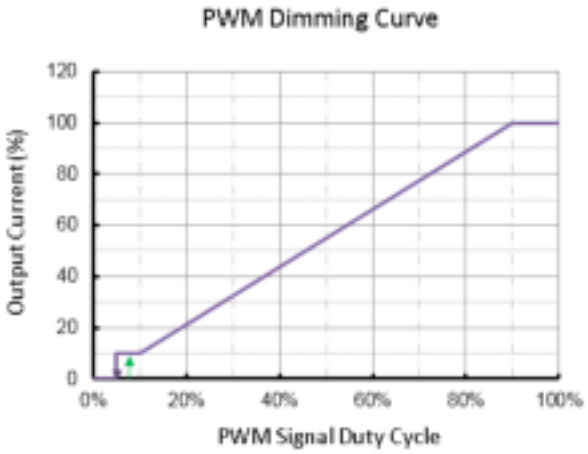
**a. Without dim-off**



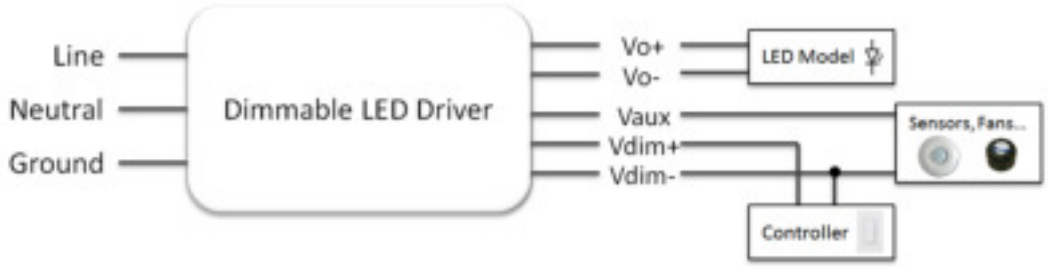




**b. With dim-off**




- **Dimming Wiring**

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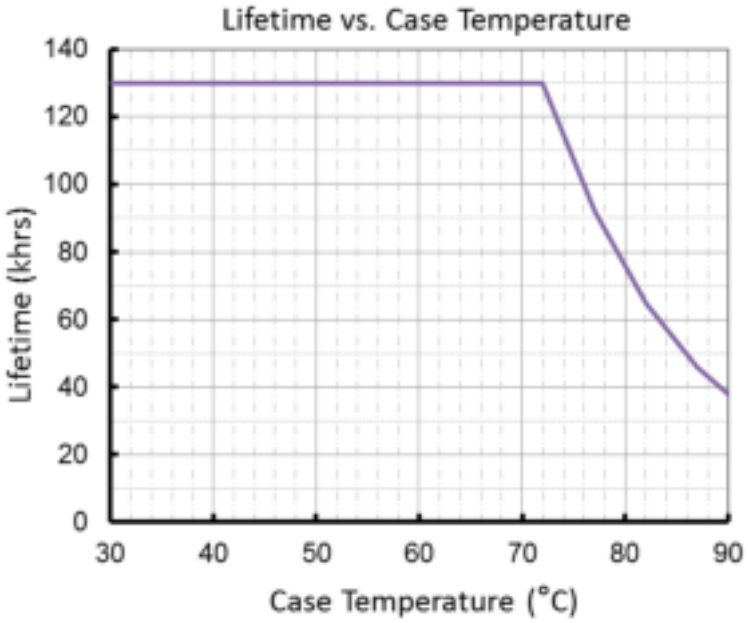
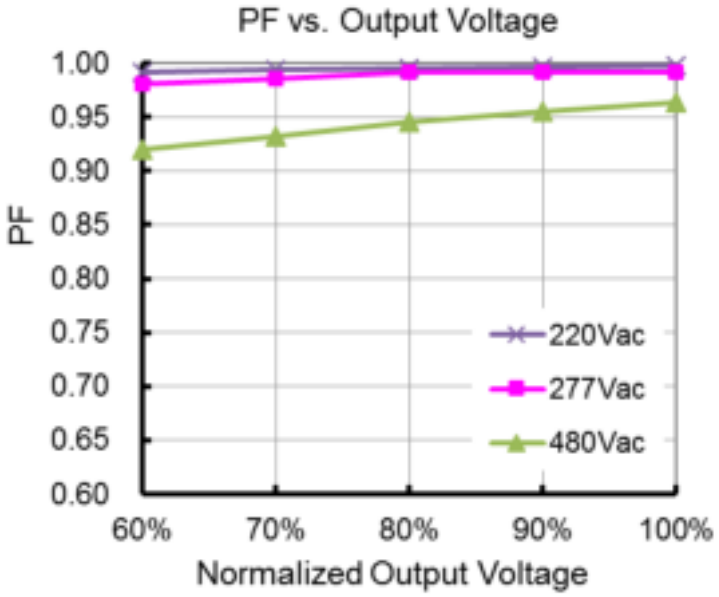
## ■ Lifetime vs. Case Temperature

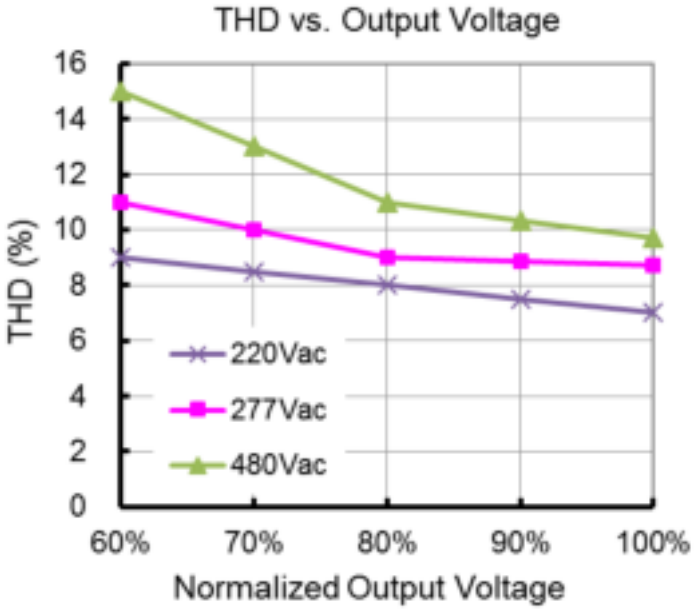



(End of Life: Maximum Failure Rate=10%)

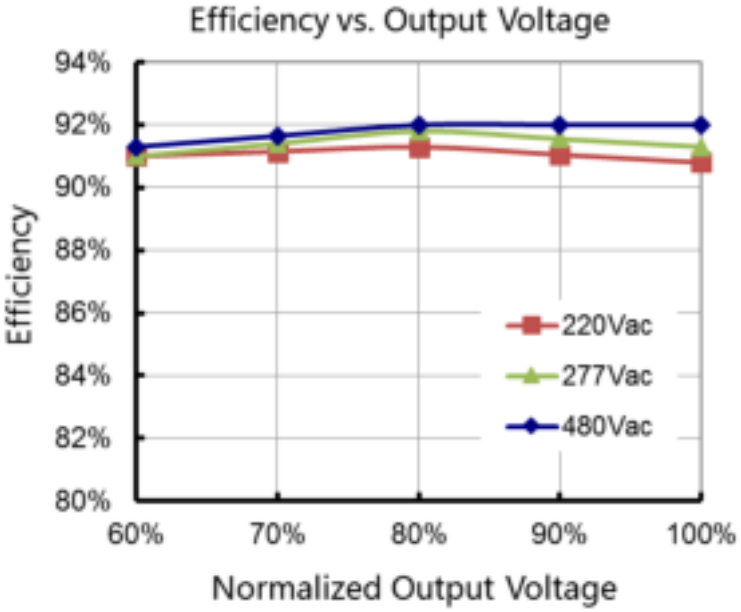
## ■ Power Factor vs. Load



## ■ THD vs. Load

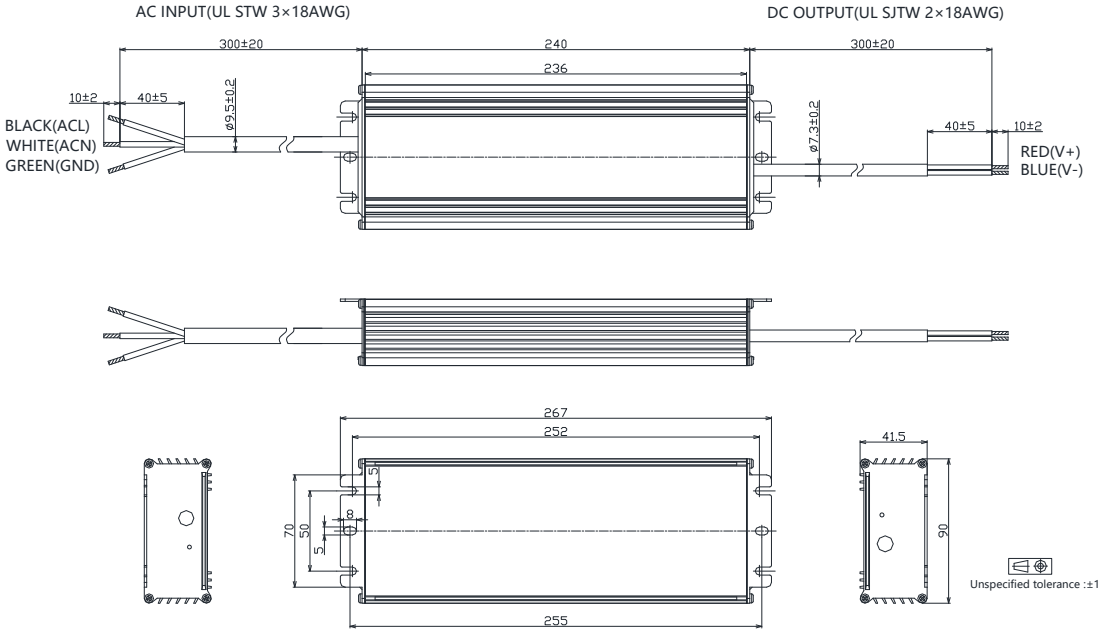



## ■ Efficiency vs. Load (2.1A Model)

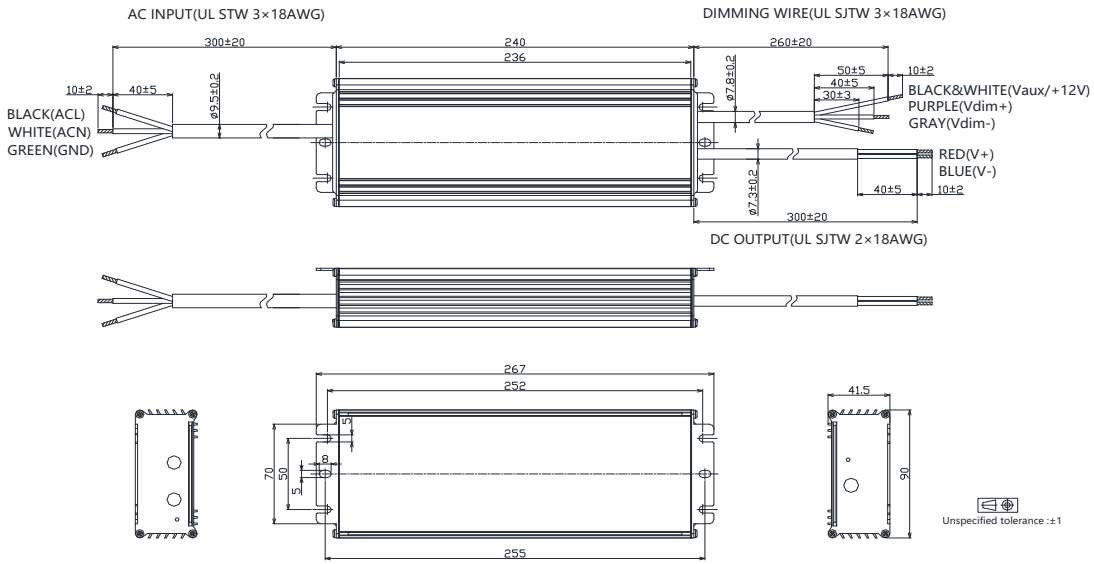


## ■ Mechanical Design

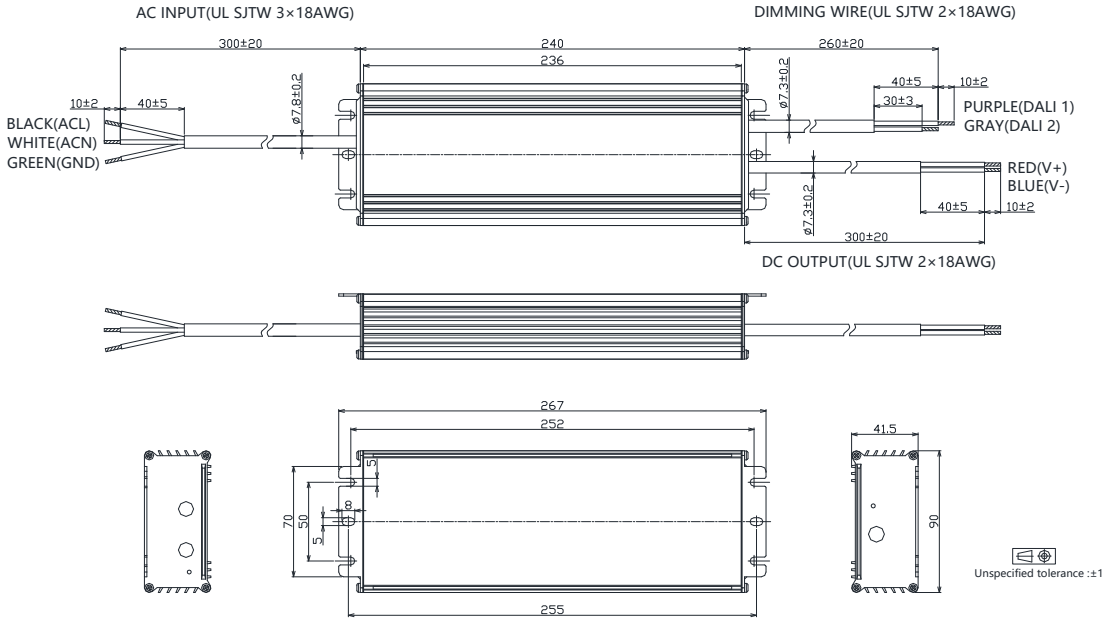
- **TLD-320-Cxxx-NN/TRU (UL Cable)**



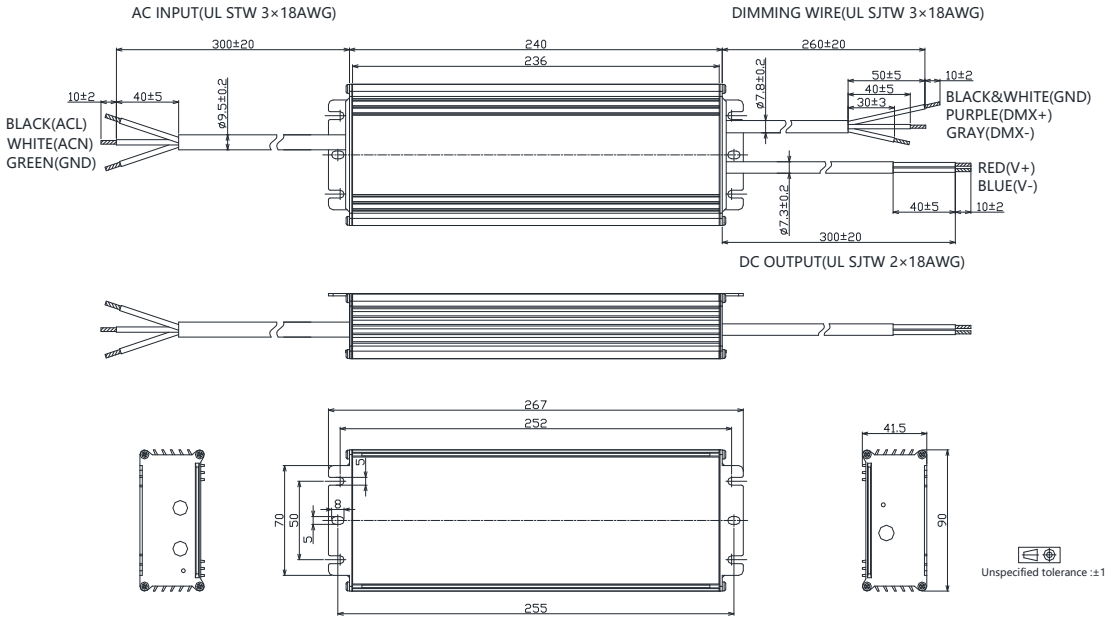

- **TLD-320-Cxxx-ERU (UL Cable)**



- **TLD-320-Cxxx-ARU (UL Cable)**




- **TLD-320-Cxxx-MRU (UL Cable)**



## ■ Appendix – Operation Range

| Model | Typical Set Output Current (mA) | Max Output Power (W) | Output Voltage Min (V) | Output Voltage Max(V) | Minimum Dimming Current (mA) |
|---|---|---|---|---|---|
| -C140 | 1400 | 320 | 137 | 229 | 140 |
| | 1300 | 320 | 148 | 246 | 130 |
| | 1200 | 320 | 160 | 267 | 120 |
| | 1100 | 320 | 175 | 291 | 110 |
| | 1050 | 320 | 183 | 305 | 105 |
| | 1000 | 305 | 183 | 305 | 105 |
| | 950 | 290 | 183 | 305 | 105 |
| | 900 | 274 | 183 | 305 | 105 |
| | 850 | 259 | 183 | 305 | 105 |
| | 800 | 244 | 183 | 305 | 105 |
| | 750 | 229 | 183 | 305 | 105 |
| | 700 | 213 | 183 | 305 | 105 |
| | … | … | … | … | … |
| | 105 | 32 | 183 | 305 | 105 |

| Model | Typical Set Output Current (mA) | Max Output Power (W) | Output Voltage Min (V) | Output Voltage Max(V) | Minimum Dimming Current (mA) |
|---|---|---|---|---|---|
| -C210 | 2100 | 320 | 91 | 152 | 210 |
| | 2000 | 320 | 96 | 160 | 200 |
| | 1900 | 320 | 101 | 168 | 190 |
| | 1800 | 320 | 107 | 178 | 180 |
| | 1700 | 320 | 113 | 188 | 170 |
| | 1600 | 320 | 120 | 200 | 160 |
| | 1500 | 320 | 128 | 213 | 150 |
| | 1400 | 320 | 137 | 229 | 140 |
| | 1300 | 297 | 137 | 229 | 140 |
| | 1200 | 274 | 137 | 229 | 140 |
| | 1100 | 251 | 137 | 229 | 140 |
| | 1000 | 229 | 137 | 229 | 140 |
| | … | … | … | … | … |
| | 140 | 32 | 137 | 229 | 140 |

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| Model | Typical Set Output Current (mA) | Max Output Power (W) | Output Voltage Min (V) | Output Voltage Max(V) | Minimum Dimming Current (mA) |
|---|---|---|---|---|---|
| -C420 | 4200 | 320 | 46 | 76 | 420 |
| | 4100 | 320 | 47 | 78 | 410 |
| | 4000 | 320 | 48 | 80 | 400 |
| | 3900 | 320 | 49 | 82 | 390 |
| | 3800 | 320 | 51 | 84 | 380 |
| | 3700 | 320 | 52 | 86 | 370 |
| | 3600 | 320 | 53 | 89 | 360 |
| | 3500 | 320 | 55 | 91 | 350 |
| | 3400 | 320 | 56 | 94 | 340 |
| | 3300 | 320 | 58 | 97 | 330 |
| | 3200 | 320 | 60 | 100 | 320 |
| | 3100 | 320 | 62 | 103 | 310 |
| | 3000 | 320 | 64 | 107 | 300 |
| | 2900 | 320 | 66 | 110 | 290 |
| | 2800 | 320 | 69 | 114 | 280 |
| | 2700 | 309 | 69 | 114 | 280 |
| | … | … | … | … | … |
| | 280 | 32 | 69 | 114 | 280 |

| Model | Typical Set Output Current (mA) | Max Output Power (W) | Output Voltage Min (V) | Output Voltage Max(V) | Minimum Dimming Current (mA) |
|---|---|---|---|---|---|
| -C700 | 7000 | 320 | 27 | 46 | 700 |
| | 6800 | 320 | 28 | 47 | 680 |
| | 6600 | 320 | 29 | 48 | 660 |
| | 6400 | 320 | 30 | 50 | 640 |
| | 6200 | 320 | 31 | 52 | 620 |
| | 6000 | 320 | 32 | 53 | 600 |
| | 5800 | 320 | 33 | 55 | 580 |
| | 5600 | 320 | 34 | 57 | 560 |
| | 5400 | 320 | 36 | 59 | 540 |
| | 5200 | 320 | 37 | 62 | 520 |
| | 5000 | 320 | 38 | 64 | 500 |
| | 4800 | 307 | 38 | 64 | 500 |
| | 4600 | 294 | 38 | 64 | 500 |
| | 4400 | 282 | 38 | 64 | 500 |
| | 4200 | 269 | 38 | 64 | 500 |
| | … | … | … | … | … |
| | 500 | 32 | 38 | 64 | 500 |

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