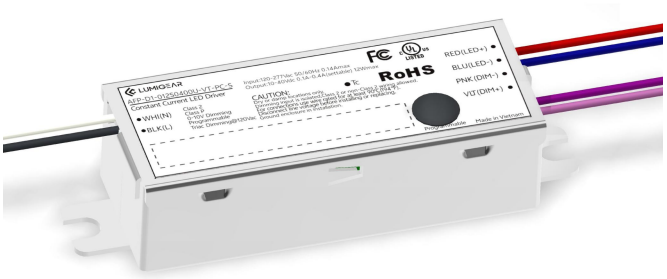
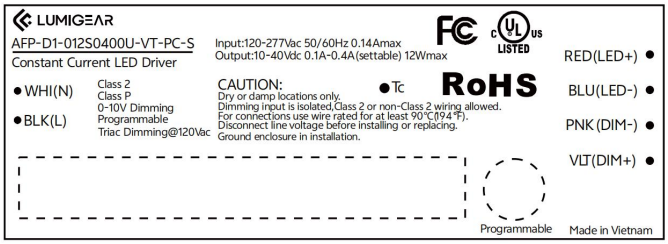
# AFP-D1-012S0400U-VT-PC-X

12w Programmable, 1% dimming, TRIAC+0~10V, Constant Current Series






## Features & Benefits

- Universal AC input voltage(120-277VAC)
- High power density design, white aluminum sheet metal case
- Comply with phase cut dimming and isolated 0-10V dimming, dim down to true 1%
- Suitable for indoor use
- Flicker free, excellent camera compatibility
- UL Class2, Class P
- Combination Wave 2KV, Ringwave 2.5KV
- Operating temperature: -25℃~+50℃

**Programmable feature:**

- Output current(1ma step)
- Dim to off, min dimming level
- Programmable conduction angles with turn-on & turn-off for triac & elv
- Dimming curve: Log/linear/customer
- Otp mode: Foldback mode, linear decrease mode
- Over load protection
- Dimming fade time

## Model List

| Model Name | Rated Input Voltage | Max Output Power(Total) | Output Current(Total) | Rated Output Voltage | Efficiency | Dimension |
|---|---|---|---|---|---|---|
| AFP-D1-012S0400U-VT-PC-X | 120-277VAC | 12W max. | 100-400mA | 10-40VDC | 84% | 87*27.5*20.3mm/ 3.4*1.1*0.8 in. . |

## Optional Function

Side feed and bottom feed

## Approvals

TRIAC 0/1-10 V c UL us LISTED CLASS P

## Model name code

AFP-D1 - 012S 0400 U – VT – PC - X

① ② ③ ④ ⑤ ⑥ ⑦

| | | |
|---|---|---|
| ① | Series | AFP Series |
| ② | Output power | Maximum output power: 12W |
| ③ | Output current(max) | Maximum output current: 400mA |
| ④ | Input voltage | 120-277VAC |
| ⑤ | Dimming Control | Triac&0-10V |



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| | | |
|---|---|---|
| ⑥ | Programmable | USB-PC |
| ⑦ | Feed | S= side feed<br>B= bottom feed |



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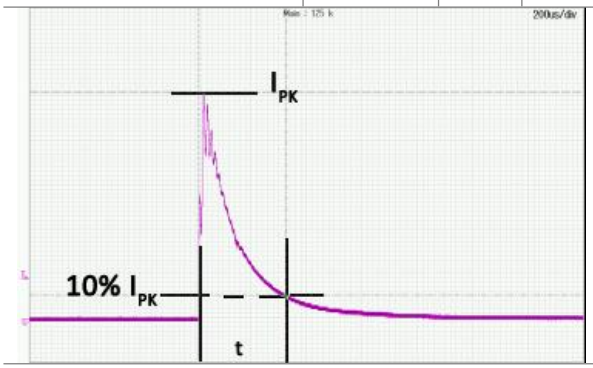
# Specification:

| Parameters | Symbols | Test Conditions / Comment | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **INPUT** | | | | | | |
| Input Voltage | $V_{IN}$ | | 108 | | 305 | $V_{AC}$ |
| Rated Input Voltage | $V_{IN\ RATED}$ | | 120 | | 277 | $V_{AC}$ |
| | $V_{IN\ RATED\_TRIAC}$ | Phase Cut Dimming | | 120 | | $V_{AC}$ |
| Input Frequency | $f_{line}$ | | 47 | 50/60 | 63 | Hz |
| Input Current | $I_{IN}$ | Full Load, $V_{IN}$ = 120$V_{AC}$ | | | 0.14 | A |
| Inrush Current | $I_{INRUSH}$ | Cold Start, $V_{IN}$ = 277$V_{AC}$ | | | 18 | A |
| Leakage Current | $I_{Leakage}$ | $V_{IN}$ = 277$V_{AC}$ 60Hz | | | 0.75 | mA |

Number of Drivers per MCB(Circuit Breaker)

| MCB type | B10 | C10 | D10 | B13 | C13 | D13 | B16 | C16 | D16 | B20 | C20 | D20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120$V_{AC}$ | 26 | 43 | 66 | 34 | 56 | 85 | 42 | 70 | 105 | 52 | 87 | 132 |
| 277$V_{AC}$ | 15 | 25 | 50 | 19 | 32 | 65 | 24 | 40 | 81 | 30 | 50 | 101 |




| Input Voltage | Inrush Current | t(us)10%-10% |
|---|---|---|
| 120VAC | 8.0A | 254 |
| 277VAC | 15.8A | 208 |
| 347VAC | NA | NA |

## General Characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| Power Factor | PF | 30-100% load, $V_{IN}$ = 120$V_{AC}$ | 0.9 | | | PF |
| | | 60-100% load, $V_{IN}$ = 277$V_{AC}$ | 0.9 | | | |
| Total Harmonic Distortion | THD | 30-100% load, $V_{IN}$ = 120$V_{AC}$ | | | 20 | % |
| | | 60-100% load, $V_{IN}$ = 277$V_{AC}$ | | | 20 | % |
| Turn On Delay Time | $T_{on\_delay}$ | Cold Start, Without Dimmer | | | 0.5 | S |
| Efficiency | $\eta_{120V}$ | Full load, $V_{IN}$ =120VAC, $I_{OUT}$=300mA, Steady state | 82 | 84 | | % |
| | $\eta_{277V}$ | Full load, $V_{IN}$ =277VAC, $I_{OUT}$=300mA, Steady state | 81 | 83 | | % |

PF CURVE -TBD

THD CURVE -TBD

## OUTPUT



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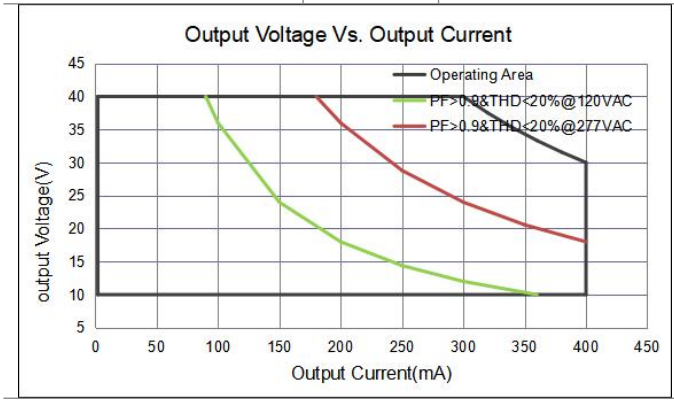
| | | | | | | |
|---|---|---|---|---|---|---|
| Output Current Tolerance | t | $I_{OUT}$=(40-100%)$I_{MAX}$ | | | 5 | % |
| | | $I_{OUT}$=(25-39%)$I_{MAX}$ | | | 7 | % |
| Output Current Range | $I_{OUT}$ | | 1 | | 400 | mA |
| Line Regulation | $V_{OUT-LINE}$ | | | | 1 | % |
| Load Regulation | $I_{OUT-LOAD}$ | $V_{OUT}$ from MIN. to MAX. | | | 5 | % |
| Ripple Current | $I_{OUT-RIPPLE}$ | Full Load, (Iomax-Iomin)/(Iomax+Iomin) | | | 10 | % |
| Output Current Overshoot | $I_{OVERSHOOT}$ | Turning Power ON | | | 10 | % |




## Programming

| NO. | Item | Default Setting |
|---|---|---|
| 1 | Output current(1mA step) | See"Model list" for each model |
| 2 | Dim to off(0-10V) | Enable |
| 3 | Min Dimming Level | 1% |
| 4 | 0-10V Dimming curve: Log/linear/customer dim curves | See "0~10V or Resistor Dimming" section |
| 5 | Over Temperature Protection: Foldback mode, Linear decrease mode | See "Protection" section |
| 6 | Over load protection | See "Protection" section |
| 7 | Fade time | 10mS |
| Programming Interface | PGT-USB-TPAC-A |  |
| Programming Cables | PGT-USB-AUDIO |  |

## 0~10V or Resistor Dimming

The 0~10V or resistor dimming can be used to dim the output current via a standard commercial wall dimmer (0~10$V_{DC}$) or an external control voltage source (0~10$V_{DC}$) or external resistor.

| | | | | | | |
|---|---|---|---|---|---|---|
| Dimming Curve | Selectable: Log/linear/customer, Default linear curve. please see "Dimming curve". | | | | | |
| Absolute Maximum Voltage on 0~10V Pin | $V_{DIM}$ | | | | 50 | $V_{AC}$ |
| Source Current on 0~10V Dimming Pin | $I_{DIM}$ | | | 200 | | uA |



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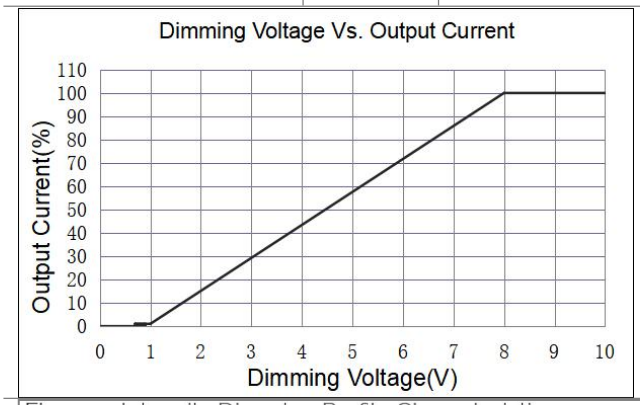
| | | | | | | |
|---|---|---|---|---|---|---|
| Light On | $V_{DIM-on}$ | Programmable | | 0.9 | | V |
| Light Off | $V_{DIM-off}$ | Programmable | | 0.7 | | V |
| Dimming Voltage for Full Bright | $V_{DIM-MAX}$ | Programmable | | 8 | | V |
| Standby power | $P_{STANDBY}$ | Light Off | | | 0.5 | W |



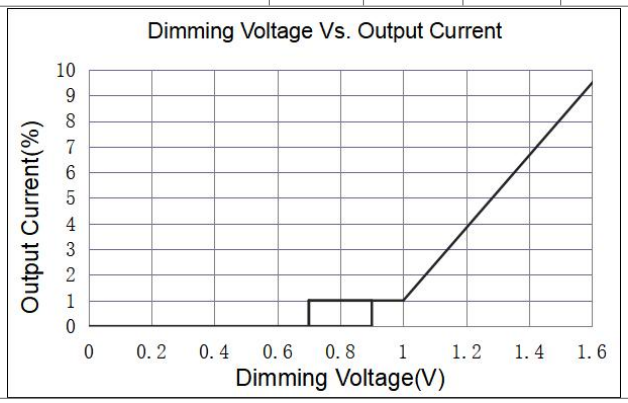
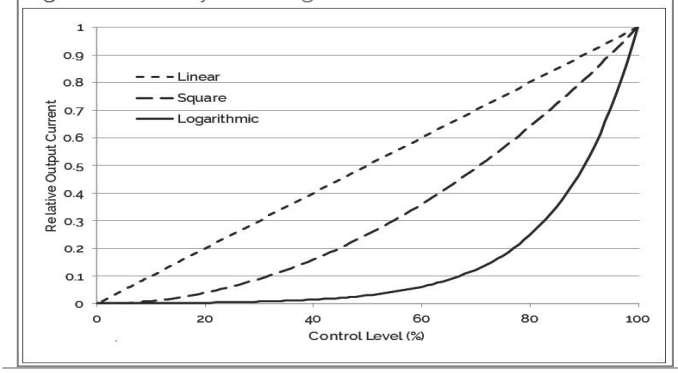




Figure 1: Intensity Dimming Profile Characteristics




## Triac Dimming

The unit is compatible With Leading-edge and Trailing-edge Dimmer.

| | | | | | | |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{IN-TRIAC\ DIM}$ | | | 120 | | $V_{AC}$ |
| Suggest Load Range | $P_{Suggest}$ | $V_{IN}$ = 120 $V_{AC}$ | 60 | | 100 | % |

## Protection

| | | | | | | |
|---|---|---|---|---|---|---|
| Over Voltage Protection | $V_{OVP}$ | The unit will recover automatically after fault conditions is removed. | | 60 | | V |
| Over Temp. Protection | $T_{OTP}$ | Current foldback at hotspot greater than $T_{OTP}$ | | 95 | | ℃ |
| Over load protection | $P_{OLP}$ | Programmable.<br>Output current will decrease when output power reach $P_{OLP}$ | 5 | | 14 | W |
| OLP tolerance | $t_{OLP}$ | | 100 | | 110 | % |
| Short Circuit Protection | The unit will recover automatically after fault conditions is removed. | | | | | |



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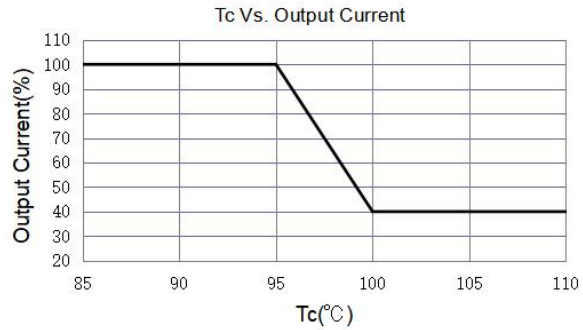
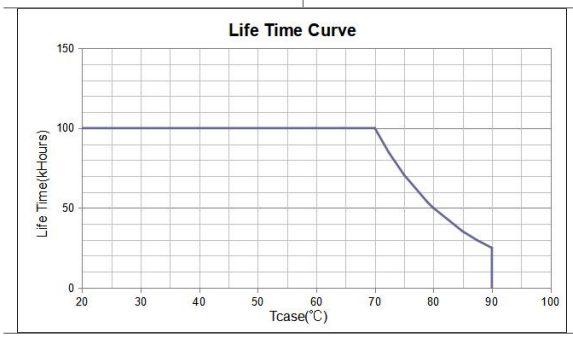



## Environment

| | | | | | | |
|---|---|---|---|---|---|---|
| Storage Temperature | $T_{Storage}$ | Humidity: 5% RH to 95% RH | -40 | - | +85 | ℃ |
| Ambient Operating Temperature | $T_a$ | | -25 | - | +50 | ℃ |
| Max. Case Temperature | $T_c$ | Hot spot on case | | | 90 | ℃ |
| Operating Relative Humidity | $H_a$ | Non-Condensing | 10 | | 90 | % |
| Acoustic Noise | | Measured from 1 m w/o dimmer. | | | 24 | dBA |
| Cooling | Convection Cooling | | | | | |
| IP Rating | Dry and damp UL approved | | | | | |

## Others

| | | | | | | |
|---|---|---|---|---|---|---|
| Life Time | $T_{Life}$ | Full Load, 80℃ case temperature, | 50 | | | kHrs |
| MTBF | $T_{MTBF}$ | Full Load, 25℃ ambient temperature | 200 | | | kHrs |
| Net Weight | $W_{NET}$ | | | 75 | | g |
| Warranty | 5 Years Warranty at $T_c$ ≤80℃ | | | | | |
| Flicker | IEEE 1789, title 24 | | | | | |




## Safety Compliance

| | |
|---|---|
| CUL/UL | UL8750, CAN/CSA-C22.2 No. 250.13 |
| LVD | EN61347 |

## Electromagnetic Compliance

| EMC Requirements | Standard | Conditions |
|---|---|---|
| EMI Emissions | FCC Title 47 Part 15 | Class B at $120V_{AC}$, Class A at $277V_{AC}$ |
| Voltage Fluctuations and Flicker | IEC61000-3-3 | |



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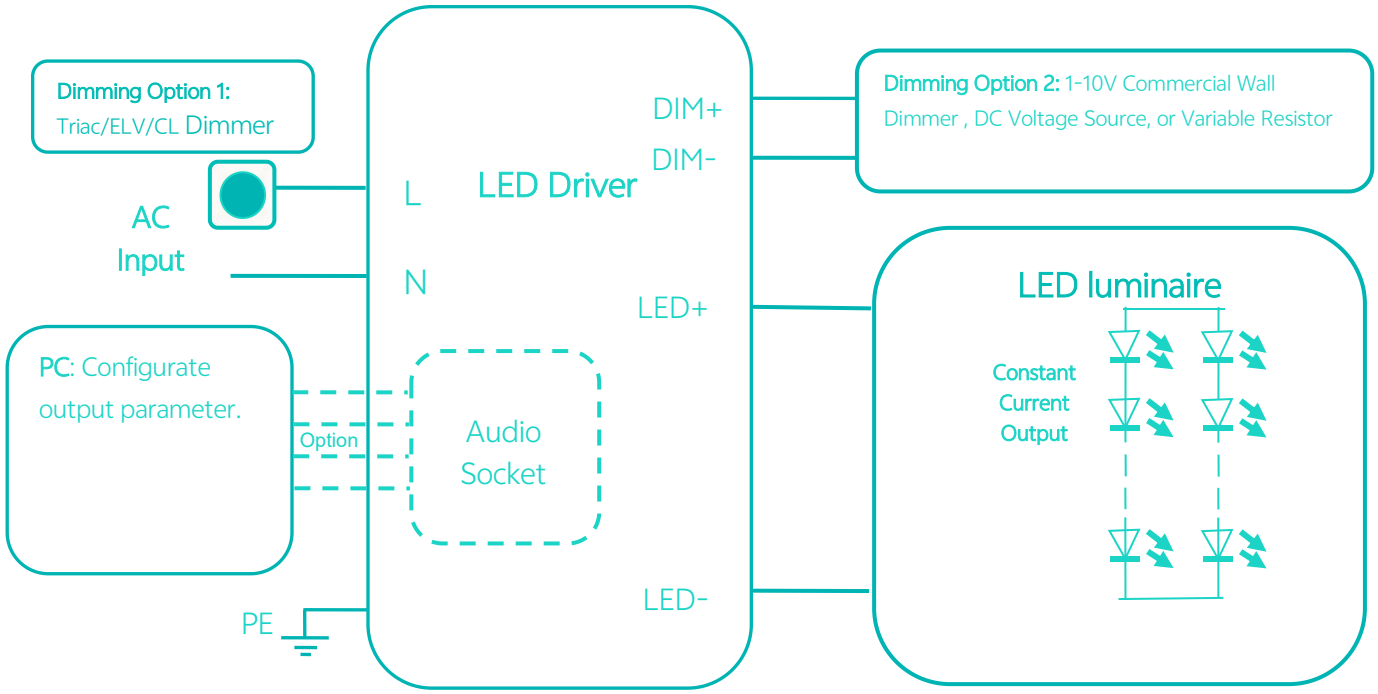
| | | |
|---|---|---|
| Immunity Compliance | IEC 61000-4-2 | ±8kV air Discharge, ±6kV Contact Discharge |
| | ANSI/IEEE C62.41-2002 | ± 2kV Common and Differential Mode, test at 2 Ω, 5 strikes/1minute interval (40 total strikes) |
| | ANSI/IEEE C62.41.1-2002 | 2.5kV Ring Wave, test at 30Ω 7 Strikes/1 minute interval, Common and Differential mode, 56 total strikes |
| | IEC 61000-4-11 | >95% dip, 5 period; 30% dip, 25 periods; 95% reduction, 250 periods |
| | IEC 61000-4-4 | ± 2kV Direct couple to Line input, 5kHz repitition rate, 15mS duration, 300mS period. 7 coupling paths, 1 minute per path (14 total combinations) |

Note: Unless otherwise specified, all the above parameters are measured at ambient temperature of 25℃ and rated voltage.

## Compatible Phase Cut Dimmers:

| No. | Mfg. | Model | Remark | No. | Mfg. | Model | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Lutron | MACL-153M | | 12 | Leviton | 1B34L1 | |
| 2 | Lutron | LGCL-153PL | | 13 | Leviton | IPL06 | |
| 3 | Lutron | GLU12-F23622 | | 14 | Leviton | SureSlide 6633 | |
| 4 | Leviton | 111506 | | 15 | Leviton | IPE04 | |
| 5 | Lutron | GLV-600 | | 16 | Leviton | IPL06-102 | |
| 6 | Lutron | D-600P | | 17 | Lutron | DVCL-153P | |
| 7 | Lutron | DVLV-600P | | 18 | Legrand | LSLV603 | |
| 8 | Lutron | MALV-600 | | 19 | Legrand | RHCL453P | |
| 9 | Lutron | NT-1000 | | 20 | Lutron | 1K35O2 | |
| 10 | Lutron | SLV-600P | | 21 | Lutron | DV-600P | |
| 11 | Lutron | MA-600 | | | | | |

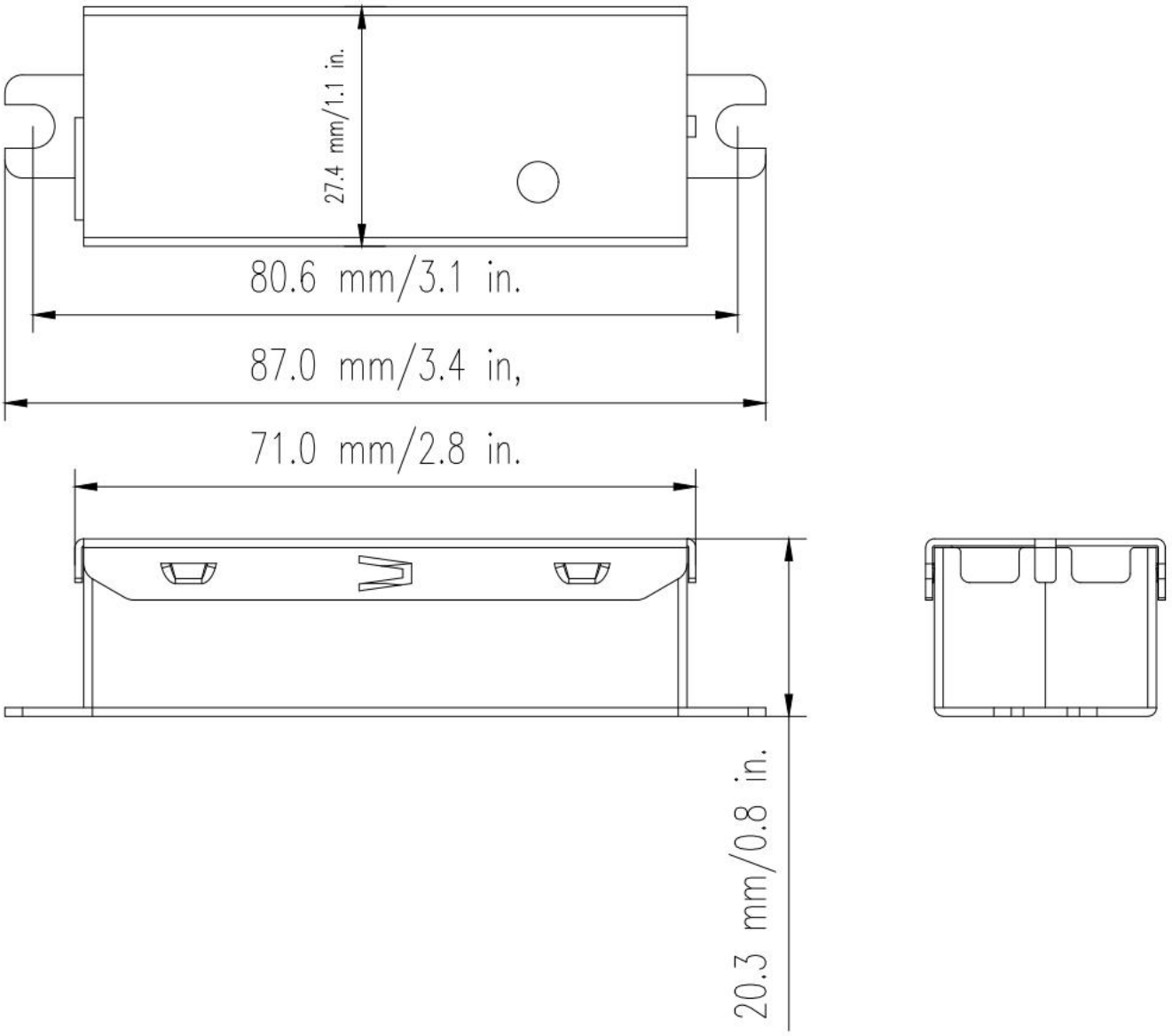
## Typical Application




## Packaging

| Driver quantity (pcs) | Layer | Weight (kg) | Outer dimensions of Carton L*W*H(mm) |
|---|---|---|---|
| 80 | 10 | 12.5 | L365*W340*H270 |

## Mechanical Drawing:



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