

## 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

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

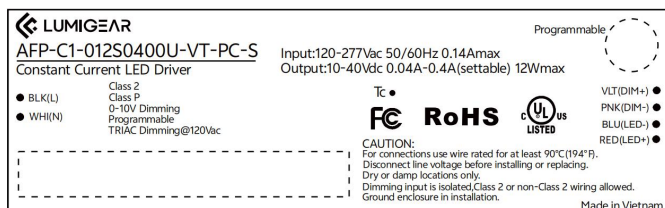
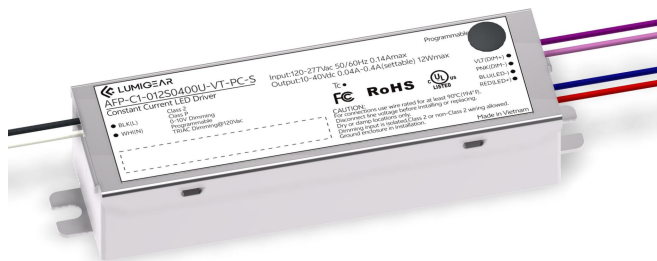
Over load protection

Dimming fade time

UL Class2, Class P

Combination Wave 2KV, Ringwave 2.5KV

Operating temperature: -25°C~+50°C



## Model List

| Model Name               | Rated Input Voltage | Max Output Power(Total) | Output Current(Total) | Rated Output Voltage | Efficiency | Dimension                                                  |
|--------------------------|---------------------|-------------------------|-----------------------|----------------------|------------|------------------------------------------------------------|
| AFP-C1-012S0400U-VT-PC-S | 120-277VAC          | 12W max.                | 40-400mA              | 10-40VDC             | 85%        | 112*31*23mm/4.4*1.2*0.9 in.<br>98*31*23 mm/3.8*1.2*0.9 in. |

## Optional Function

Side feed and bottom feed

## Approvals

TRIAC

0/1-10 V



CLASS P

## Model name code

|        |   |     |   |      |   |   |    |   |    |   |   |
|--------|---|-----|---|------|---|---|----|---|----|---|---|
| AFP-C1 | - | 012 | S | 0400 | U | - | VT | - | PC | - | X |
| ①      |   | ②   | ③ | ④    | ⑤ |   | ⑥  |   | ⑦  |   | ⑧ |

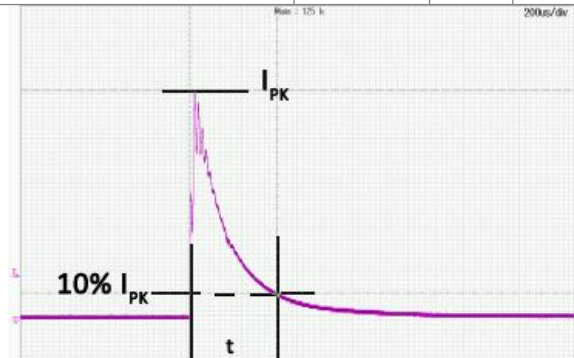
|   |                     |                                |
|---|---------------------|--------------------------------|
| ① | Series              | Architecture FlexFit Series    |
| ② | Output power        | Maximum output power: 12W      |
| ③ | Output Channel      | Single channel                 |
| ④ | Output current(max) | Maximum output current: 400mA  |
| ⑤ | Input voltage       | 120-277VAC                     |
| ⑥ | Dimming Control     | Triac&0-10V                    |
| ⑦ | Programmable        | USB-PC                         |
| ⑧ | Feed                | S= side feed<br>B= bottom feed |

## Specification:

| Parameters | Symbols | Test Conditions / Comment | Min | Typ | Max | Units |
|------------|---------|---------------------------|-----|-----|-----|-------|
|------------|---------|---------------------------|-----|-----|-----|-------|

### INPUT

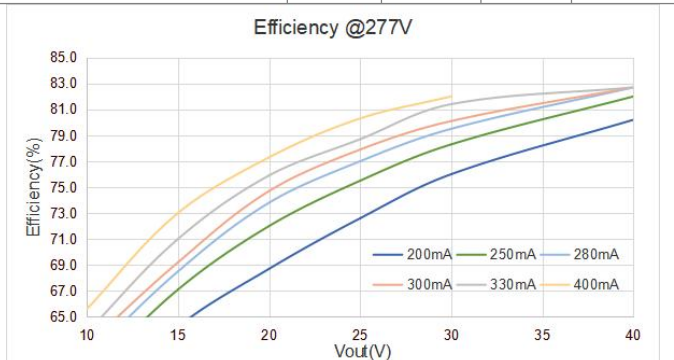
|                                            |                        |                                                 |     |       |      |          |
|--------------------------------------------|------------------------|-------------------------------------------------|-----|-------|------|----------|
| 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, $V_{IN} = 120V_{AC}$                 |     |       | 0.14 | A        |
| Inrush Current                             | $I_{INRUSH}$           | Cold Start, $V_{IN} = 277V_{AC}$                |     |       | 18   | A        |
| Leakage Current                            | $I_{Leakage}$          | $V_{IN} = 277V_{AC}$ 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 |     |       |      |          |
|                                            | 120V <sub>AC</sub>     | 26 43 66 34 56 85 42 70 105 52 87 132           |     |       |      |          |
|                                            | 277V <sub>AC</sub>     | 15 25 50 19 32 65 24 40 81 30 50 101            |     |       |      |          |

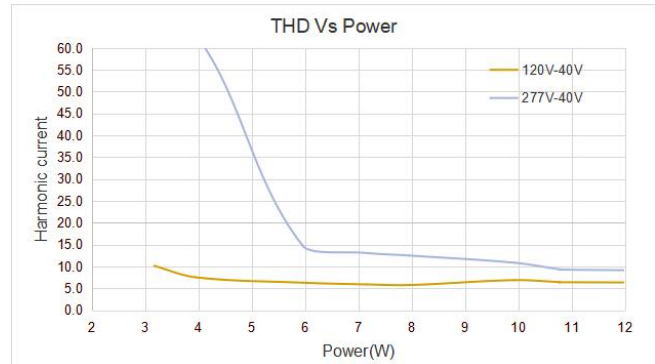
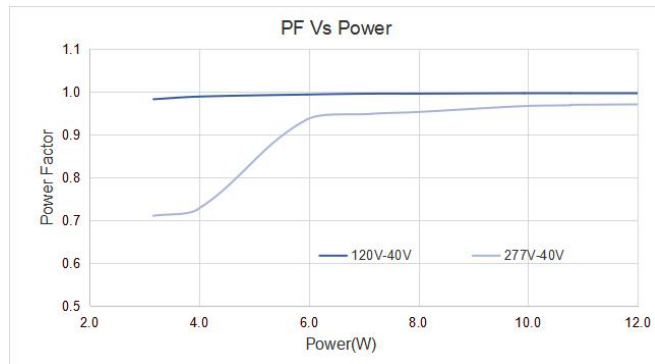


| Input Voltage | Inrush Current | t(us)10%-10% |
|---------------|----------------|--------------|
| 120VAC        | 8.0A           | 254          |
| 277VAC        | 15.8A          | 208          |
| 347VAC        | NA             | NA           |

### General Characteristics

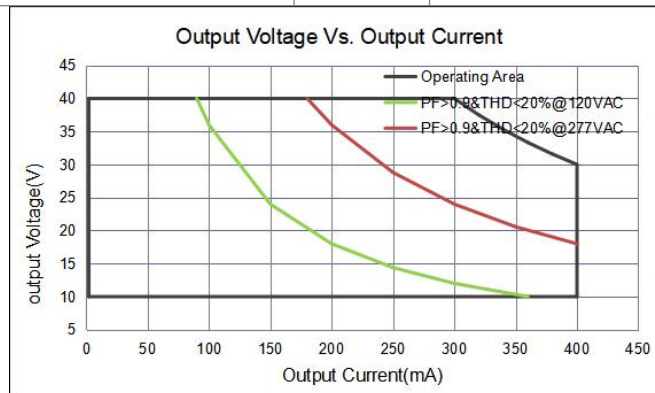
|                           |                 |                                                                |     |     |    |
|---------------------------|-----------------|----------------------------------------------------------------|-----|-----|----|
| Power Factor              | PF              | 30-100% load, $V_{IN} = 120V_{AC}$                             | 0.9 |     | PF |
|                           |                 | 60-100% load, $V_{IN} = 277V_{AC}$                             | 0.9 |     |    |
| Total Harmonic Distortion | THD             | 30-100% load, $V_{IN} = 120V_{AC}$                             |     | 20  | %  |
|                           |                 | 60-100% load, $V_{IN} = 277V_{AC}$                             |     | 20  | %  |
| Turn On Delay Time        | $T_{on\_delay}$ | Cold Start, Without Dimmer                                     |     | 0.5 | S  |
| Efficiency                | $\eta_{120V}$   | Full load, $V_{IN}=120V_{AC}$ , $I_{OUT}=300mA$ , Steady state | 83  | 85  | %  |
|                           | $\eta_{277V}$   | Full load, $V_{IN}=277V_{AC}$ , $I_{OUT}=300mA$ , Steady state | 81  | 83  | %  |





## OUTPUT

|                          |                  |                                                            |     |  |     |    |
|--------------------------|------------------|------------------------------------------------------------|-----|--|-----|----|
| Output Current Tolerance | t                | $I_{OUT} = (40-100\%) I_{MAX}$                             |     |  | 5   | %  |
|                          |                  | $I_{OUT} = (10-39\%) I_{MAX}$                              |     |  | 7   | %  |
| Output Current Range     | $I_{OUT}$        |                                                            | 0.4 |  | 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, $(I_{OMAX} - I_{OMIN}) / (I_{OMAX} + I_{OMIN})$ |     |  | 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:<br>Foldback mode, Linear decrease mode | See "Protection" section                |
| 6   | Over load protection                                                | See "Protection" section                |
| 7   | Fade time                                                           | 10mS                                    |

## 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 (0~10V<sub>DC</sub>) or an external control voltage source (0~10V<sub>DC</sub>) or external resistor.

|                                       |                                                                                               |                                 |     |     |                 |
|---------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------|-----|-----|-----------------|
| Dimming Curve                         | Selectable: Log/linear/customer, Default setting is linear curve. please see "Dimming curve". |                                 |     |     |                 |
| Absolute Maximum Voltage on 0~10V Pin | V <sub>DIM</sub>                                                                              |                                 |     | 300 | V <sub>AC</sub> |
| Source Current on 0~10V Dimming Pin   | I <sub>DIM</sub>                                                                              |                                 | 200 |     | uA              |
| Light On                              | V <sub>DIM-on</sub>                                                                           | Programmable                    | 0.9 |     | V               |
| Light Off                             | V <sub>DIM-off</sub>                                                                          | Programmable                    | 0.7 |     | V               |
| Dimming Voltage for Full Bright       | V <sub>DIM-MAX</sub>                                                                          | Programmable                    | 8   |     | V               |
| Leakage Voltage                       | V <sub>Leak_rms</sub>                                                                         | Voltage between DIM- and Ground |     | 20  | V <sub>AC</sub> |
| Standby power                         | P <sub>STANDBY</sub>                                                                          | Light Off                       |     | 0.6 | W               |

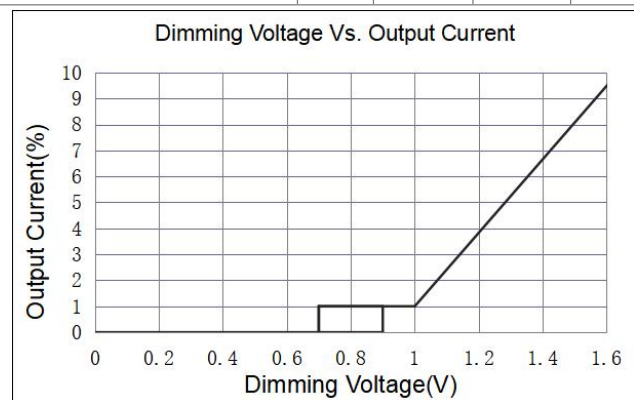
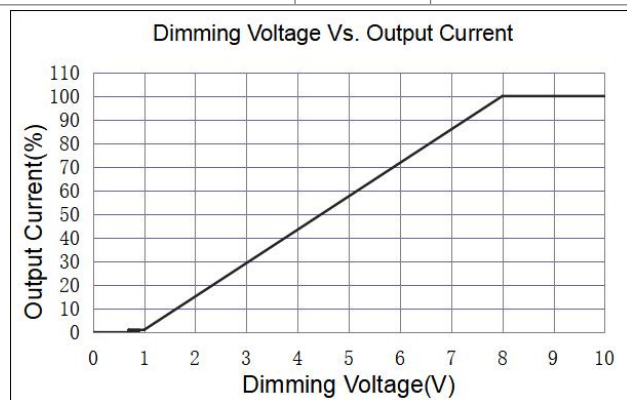
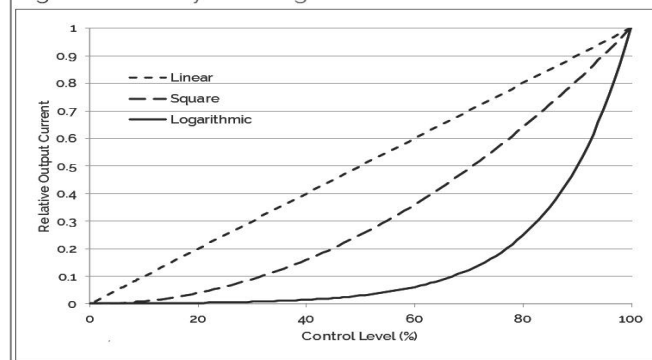


Figure 1: Intensity Dimming Profile Characteristics



## Triac Dimming

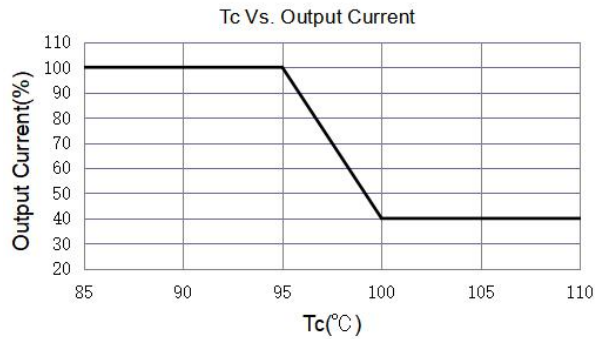
The unit is compatible With Leading-edge and Trailing-edge Dimmer.

|                    |                           |                                       |     |     |                 |
|--------------------|---------------------------|---------------------------------------|-----|-----|-----------------|
| Input Voltage      | V <sub>IN-TRIAC DIM</sub> |                                       | 120 |     | V <sub>AC</sub> |
| Suggest Load Range | P <sub>Suggest</sub>      | V <sub>IN</sub> = 120 V <sub>AC</sub> | 60  | 100 | %               |

## Protection

|                         |                  |                                                                                        |    |    |    |
|-------------------------|------------------|----------------------------------------------------------------------------------------|----|----|----|
| Over Voltage Protection | V <sub>OV</sub>  | The unit will recover automatically after fault conditions is removed.                 | 60 |    | V  |
| Over Temp. Protection   | T <sub>OTP</sub> | Current foldback at hotspot greater than T <sub>OTP</sub>                              | 95 |    | °C |
| Over load protection    | P <sub>OLP</sub> | Programmable.<br>Output current will decrease when output power reach P <sub>OLP</sub> | 6  | 15 | W  |

|                          |                                                                        |     |     |   |
|--------------------------|------------------------------------------------------------------------|-----|-----|---|
| OLP tolerance            | $t_{OLP}$                                                              | 100 | 110 | % |
| Short Circuit Protection | The unit will recover automatically after fault conditions is removed. |     |     |   |

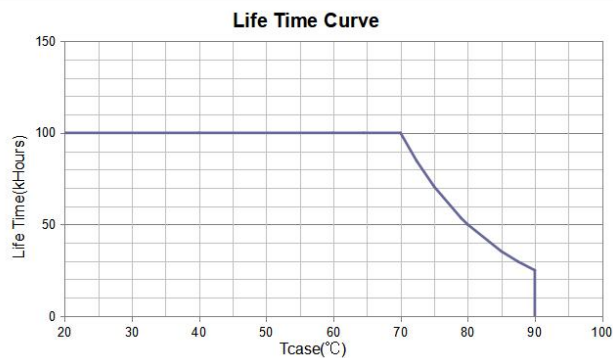


## Environment

|                               |                          |                               |     |   |     |     |
|-------------------------------|--------------------------|-------------------------------|-----|---|-----|-----|
| Storage Temperature           | $T_{Storage}$            | Humidity: 5% RH to 95% RH     | -40 | - | +85 | °C  |
| Ambient Operating Temperature | $T_a$                    |                               | -25 | - | +50 | °C  |
| Max. Case Temperature         | $T_c$                    | Hot spot on case              |     |   | 90  | °C  |
| 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°C case temperature,   | 50  |     |  | kHrs |
| MTBF       | $T_{MTBF}$                                      | Full Load, 25°C ambient temperature | 200 |     |  | kHrs |
| Net Weight | $W_{NET}$                                       |                                     |     | 135 |  | g    |
| Warranty   | 5 Years Warranty at $T_c \leq 80^\circ\text{C}$ |                                     |     |     |  |      |
| Flicker    | IEEE 1789, title 24                             |                                     |     |     |  |      |



## Safety Compliance

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

## Electromagnetic Compliance

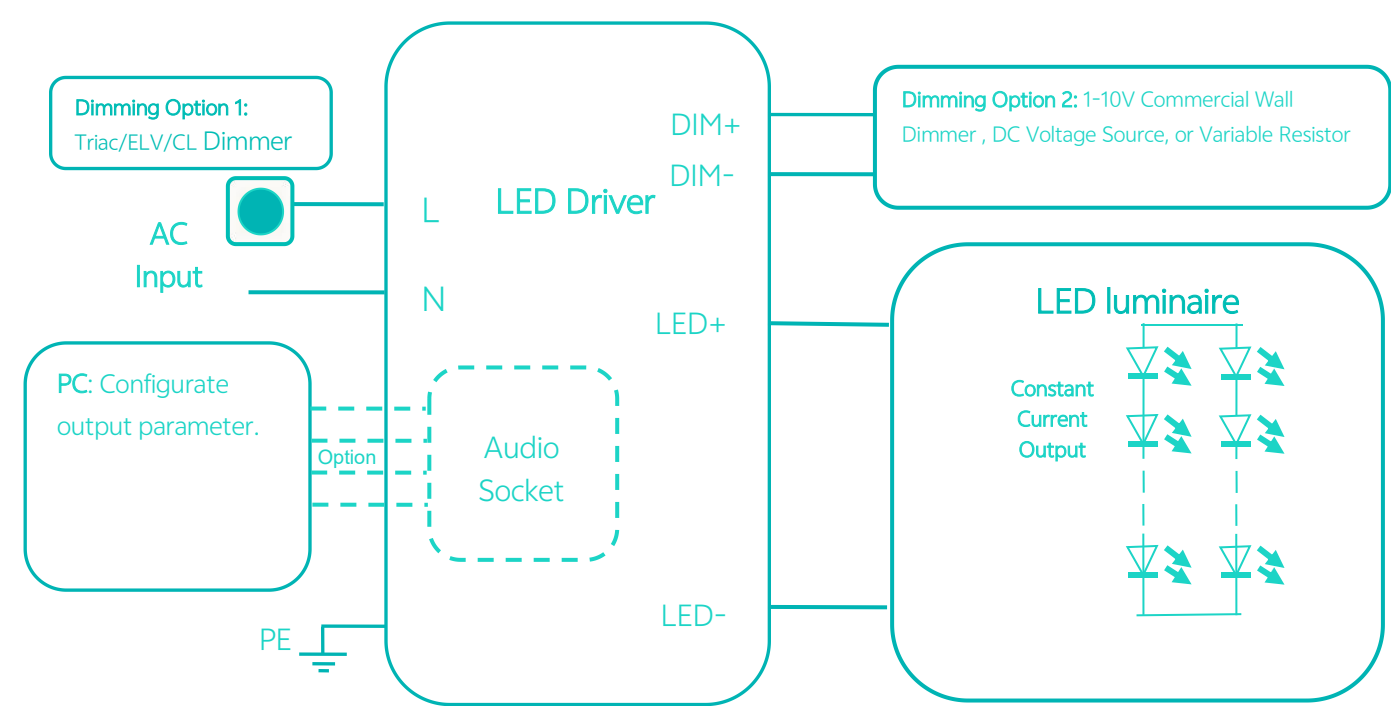
| EMC Requirements                 | Standard                | Conditions                                                                                                                                        |
|----------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| EMI Emissions                    | FCC Title 47 Part 15    | Class B at 120V <sub>AC</sub> , Class A at 277V <sub>AC</sub>                                                                                     |
| Voltage Fluctuations and Flicker | IEC61000-3-3            |                                                                                                                                                   |
| 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 30 Ω 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 repetition 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°C 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<br>L*W*H(mm) |
|-----------------------|-------|-------------|-----------------------------------------|
| 80                    | 10    | 12.5        | L365*W340*H270                          |

## Mechanical Drawing:

