



**ZORANTECH**  
卓然照明

## 30W DALI dimming constant voltage waterproof led driver



### ■ Features

- Constant Voltage (C.V.) output
- Built-in active PFC function, High efficiency up to 88%
- Input voltage/Full range(up to 305VAC)
- Protections:Short circuit/Over voltage/Over load/Over temperature
- THD≤15%, Dimming range:0-100% or 10-100%
- Comply with DALI V0 IEC60929 and DALI V1 V2 IEC62386 standards
- Noise free,flicker free,5 years warranty
- OEM & ODM, no MOQ, Support customization

### ■ Applications

- LED outdoor lighting
- LED strip light
- LED kitchen light
- LED wall washer light
- LED underground light
- LED tunel light
- LED garden lights
- LED line light
- LED stage lights
- LED Spot light

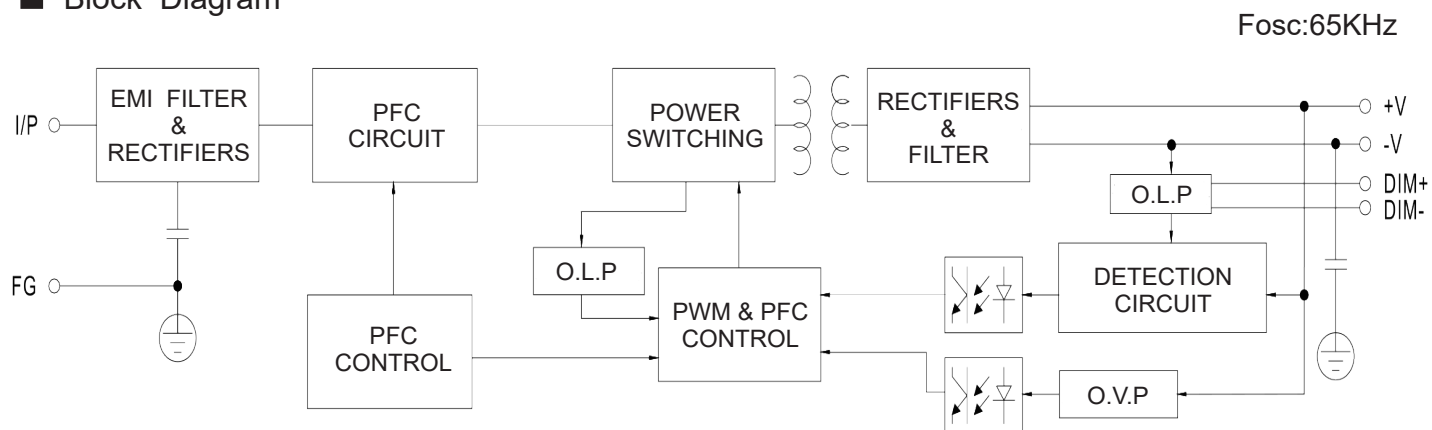
### ■ Description

The DALI constant voltage series produced by Zoran Technology is an AC-to-DC dimming driver.operates from 90~305VAC and offers models with different rated voltage ranging ~between 12V/24V/36V/48V/54V/60V etc. Thanks to the high efficiency up to 88%, with the fanless design, the entire series is able to operate for -40~ +80℃ case temperature under free air convection. It can be widely matched with all European dimmers and lighting control systems, Australian mainstream dimmers and lighting control systems, such as: Philips, Osram, Lutron, Leviton and Tridonic dimmers and systems, flicker free,achieve perfect soft dimming.

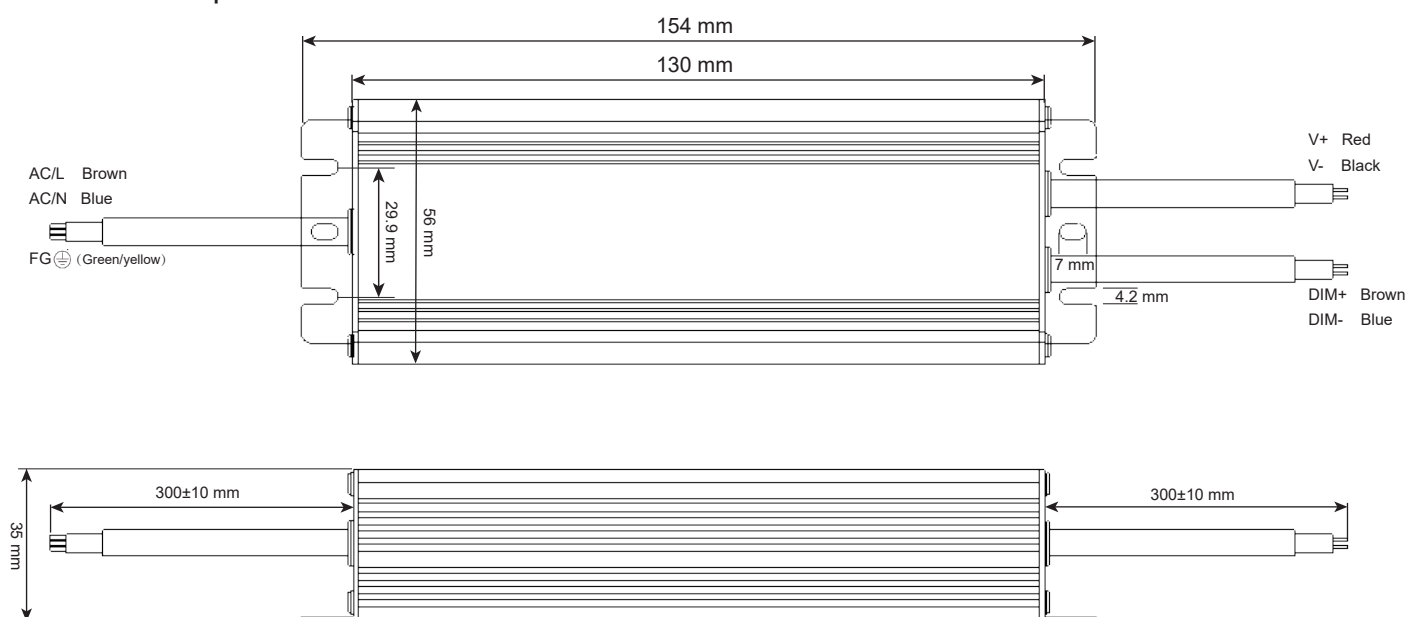
## ■ Electrical Specification

| MODEL        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ZR-HVM12ND-30W                                                                                                             | ZR-HVM24ND-30W | ZR-HVM36ND-30W | ZR-HVM48ND-30W | ZR-HVM54ND-30W |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|
| Output       | Output Voltage <small>  Note.1</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12 VDC                                                                                                                     | 24 VDC         | 36 VDC         | 48 VDC         | 54 VDC         |
|              | Opout Current <small>  Note.2</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2500 mA                                                                                                                    | 1250 mA        | 830 mA         | 630 mA         | 560 mA         |
|              | Rated Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 30 W                                                                                                                       | 30 W           | 30 W           | 30 W           | 30 W           |
|              | Voltage Tolerance <small> Note.4</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ±3%                                                                                                                        | ±3%            | ±3%            | ±3%            | ±3%            |
|              | Auxiliary output(customizable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 12VDC                                                                                                                      | 12VDC          | 12VDC          | 12VDC          | 12VDC          |
|              | Setup,Rise Time <small>  Note.6</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 500ms,100ms/115VAC  500ms,100ms/230VAC                                                                                     |                |                |                |                |
|              | Hold Up Time <small>  (Typ.)</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10ms/115VAC  230VAC                                                                                                        |                |                |                |                |
| Input        | Rate Voltage <small>  Note.5</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 90~265VAC  OR  100-277VAC                                                                                                  |                |                |                |                |
|              | Frequency Rance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 48-62Hz                                                                                                                    |                |                |                |                |
|              | Power Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PF≥0.98/115VAC  PF≥0.96/230VAC  PF≥0.95/265VAC at full load                                                                |                |                |                |                |
|              | THD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | THD≤15%(Bipolar)                                                                                                           |                |                |                |                |
|              | Full load Efficiency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ≥85%                                                                                                                       | ≥85%           | ≥86%           | ≥86%           | ≥86%           |
|              | AC Current <small>  (Typ.)</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.3A/115VAC  0.15A/230VAC  0.13A/265VAC                                                                                    |                |                |                |                |
|              | Input signal <small>  (Typ.)</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DALI or PUSH dim                                                                                                           |                |                |                |                |
|              | No-load power consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ≤1.0W                                                                                                                      |                |                |                |                |
| Protection   | Over Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 95-108%                                                                                                                    |                |                |                |                |
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Protection type:Constant current limiting,recoveres automatically after fault condition is removed                         |                |                |                |                |
|              | Over Load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ≤120% Recoveres automatically after fault condition is removed                                                             |                |                |                |                |
|              | Short Circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Hiccup Mode,Recoveres automatically after fault condition is removed                                                       |                |                |                |                |
|              | Over Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Protection type:Shut down O/P voltage,re-power on to recover                                                               |                |                |                |                |
|              | Over Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Shut down O/P voltage,re-power on to recover                                                                               |                |                |                |                |
| Environmen   | Working Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Tcase=-40~+80 ℃ (Refer to “Derating curve”)                                                                                |                |                |                |                |
|              | Max Case Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Tcase=+90 ℃                                                                                                                |                |                |                |                |
|              | Working Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20-95%RH non-condensing                                                                                                    |                |                |                |                |
|              | Storage TEMP. Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -40~+80 ℃  10-95%RH                                                                                                        |                |                |                |                |
|              | TEMP. Coefficient                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ±0.03%/℃ (0-50 ℃ )                                                                                                         |                |                |                |                |
| Safety & EMC | Safe Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | U8750,CSA C22.2 No.250.13-12;ENEC AS/NZS IEC EN61347-1;AS/NZS IEC EN61347-2-13 independent EN62348;GB19510.14 IP65 or IP67 |                |                |                |                |
|              | DALI Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Compliance to IEC-62386-101,102,207(only to YD/ND series)                                                                  |                |                |                |                |
|              | Withstand Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I/P-O/P:3.75KVAC  I/P-FG:2.0KVAC  O/P-FG:1.0KVAC                                                                           |                |                |                |                |
|              | Isolation Resistance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | I/P-O/P,I/P-FG,O/P-FG:100M ohms/500VDC/25 ℃ /70%RH                                                                         |                |                |                |                |
|              | EMC Emission                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Compliance to EN55015,EN61000-3-2 Class C(≥60% load);EN61000-3-3;GB17743;GB17625.1                                         |                |                |                |                |
|              | EMC Immunity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Compliance to EN61000-4-2,3,4,5,6,8,11;EN61547 heavy industry level(surge 4KV)                                             |                |                |                |                |
| Others       | Dimension                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | L 154*W 56*H 35 mm                                                                                                         |                |                |                |                |
|              | Weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 500g                                                                                                                       |                |                |                |                |
|              | Packing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 30pcs/15.5kg/ctn                                                                                                           |                |                |                |                |
| Note         | 1.All parameters Not specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2.Ripple&Noise are measured at 20MHz of bandwidth by using a 12"twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3.Tolerance: includes set up tolerance, line regulation and load regulation.<br>4.The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufactures must re-qualify EMC Directive on the complete installation again.<br>5.Please refer to the product warranty on Zoran Technology website <a href="http://www.zorantech.com">http://www.zorantech.com</a> .<br>6.If you need other special parameters, please contact our customer service for consultation! |                                                                                                                            |                |                |                |                |

## Block Diagram

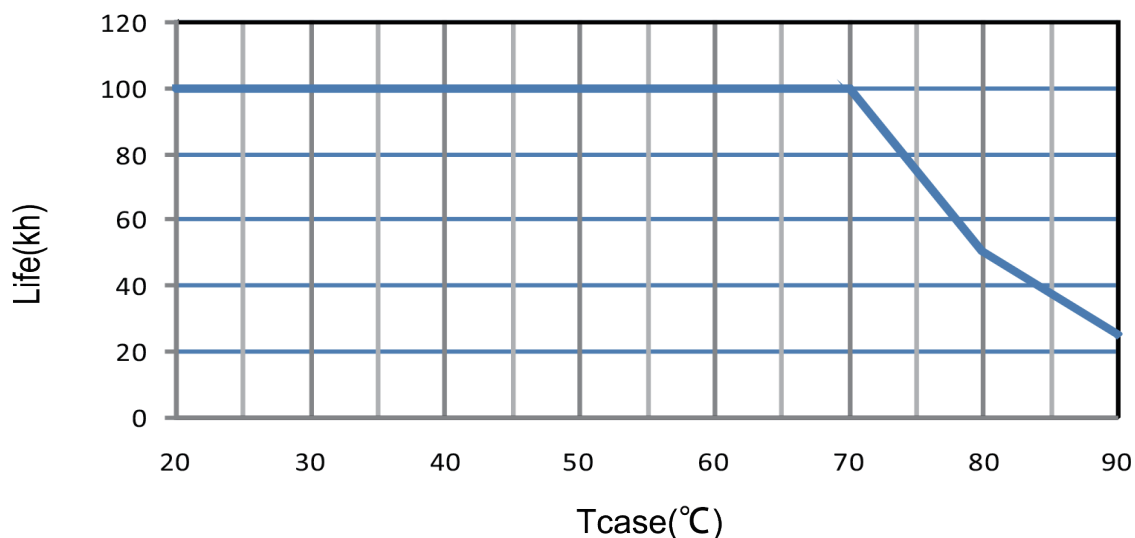


## Mechanical Specification

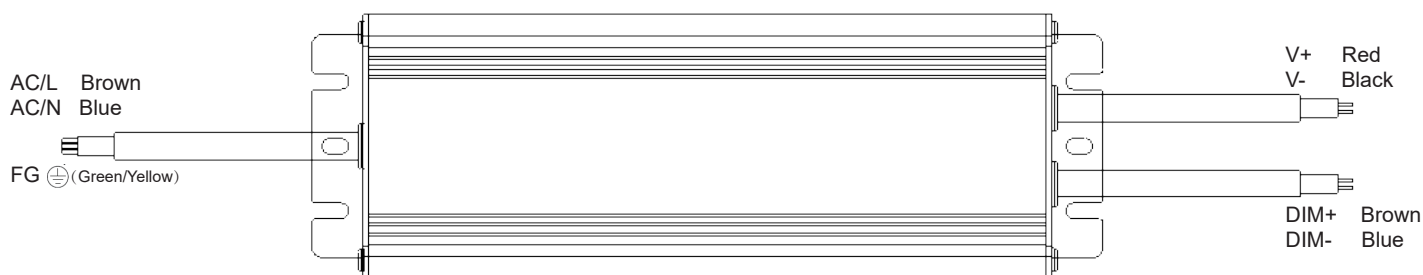


- ※ The yellow-green wire at the input is the ground (FG), the brown wire is the AC phase wire(L), and blue wire is the AC neutral wire (N);
- ※ The brown wire at the output is the positive dimming signal (DIM+) and the blue wire is the dimming signal negative (DIM-), the red wire is the positive output voltage(V+) and black wire is the negative output voltage(V-);
- ※ In addition, the length and thickness of the input and output lines can be customized according to customer requirements. Please contact Zoran Customer Service for details;

## Life



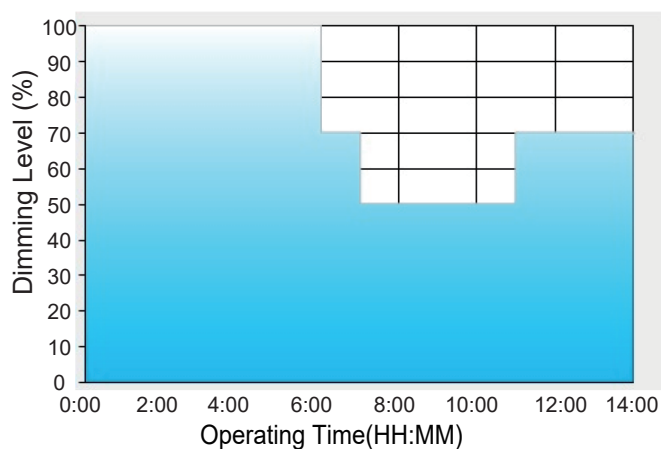
## ■ Dimming Operation



### ※ DALI Interface

- Add DALI signal between DA+ and DA- ;
- DALI protocol 16 groups and 64 addresses ;
- Can set any output current to boot ;

### ◎ D01-Type: the profile recommended for residential lighting



Set up for D01-Type in Smart time dimming software program:

|          | T1    | T2    | T3    | T4   |
|----------|-------|-------|-------|------|
| TIME **  | 06:00 | 07:00 | 11:00 | ---- |
| LEVEL ** | 100%  | 70%   | 50%   | 70%  |

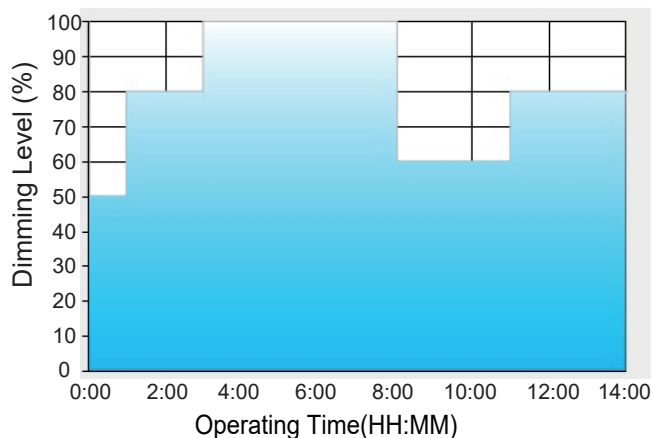
\*\* : Time matches Operating Time in the diagram whereas LEVEL matches Dimming level.

Example: If a residential lighting application adopts D01-Type, when turning on the power supply at 6:00pm, for instance:

- [1] The power supply will switch to the constant current level at 100% starting from 6:00pm.
- [2] The power supply will switch to the constant current level at 70% in turn, starting from 0:00am, which is 06:00 after the power supply turns on.
- [3] The power supply will switch to the constant current level at 50% in turn, starting from 1:00am, which is 07:00 after the power supply turns on.
- [4] The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.

The constant current level remains till 8:00am, which is 14:00 after the power supply turns on.

### ◎ D02-Type: the profile recommended for street lighting



Set up for D02-Type in Smart time dimming software program:

|          | T1    | T2    | T3    | T4    | T5   |
|----------|-------|-------|-------|-------|------|
| TIME **  | 01:00 | 03:00 | 08:00 | 11:00 | ---- |
| LEVEL ** | 50%   | 80%   | 100%  | 60%   | 80%  |

\*\* : Time matches Operating Time in the diagram whereas LEVEL matches Dimming level.

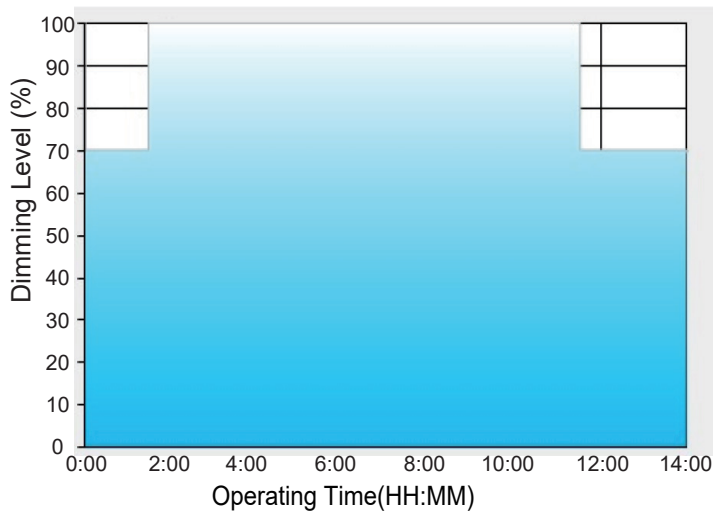
Example: If a street lighting application adopts D02-Type, when turning on the power supply at 5:00pm, for instance:

- [1] The power supply will switch to the constant current level at 50% starting from 5:00pm.
- [2] The power supply will switch to the constant current level at 80% in turn, starting from 6:00pm, which is 01:00 after the power supply turns on.
- [3] The power supply will switch to the constant current level at 100% in turn, starting from 8:00pm, which is 03:00 after the power supply turns on.
- [4] The power supply will switch to the constant current level at 60% in turn, starting from 1:00am, which is 08:00 after the power supply turns on.
- [5] The power supply will switch to the constant current level at 80% in turn, starting from 4:00am, which is 11:00 after the power supply turns on.

The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.



☉ D03-Type: the profile recommended for tunnel lighting :



Set up for D03-Type in Smart time dimming software program:

|          | T1    | T2    | T3   |
|----------|-------|-------|------|
| TIME **  | 01:30 | 11:00 | ---- |
| LEVEL ** | 70%   | 100%  | 70%  |

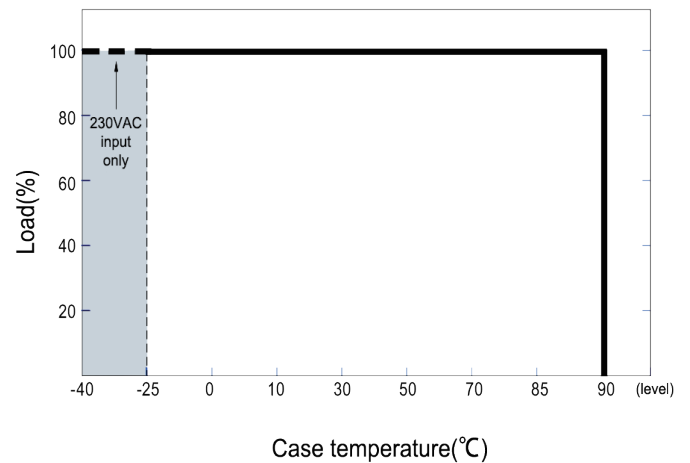
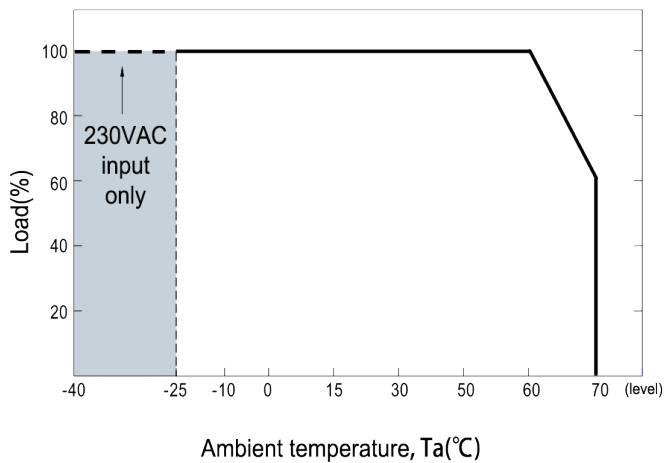
\*\* : Time matches Operating Time in the diagram whereas LEVEL matches Dimming level.

Example: If a residential lighting application adopts D03-Type, when turning on the power supply at 4:30pm,for instance:

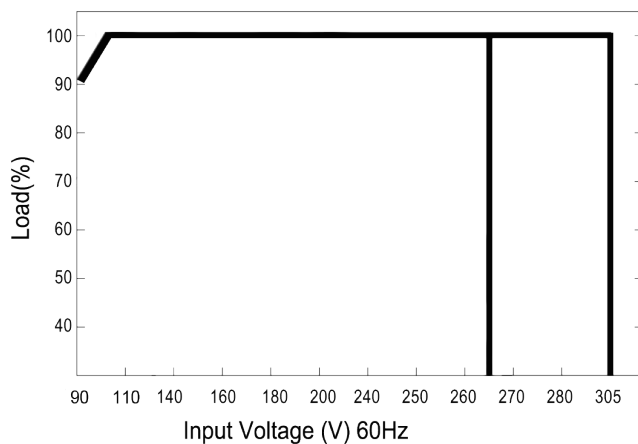
- [1] The power supply will switch to the constant current level at 70% starting from 4:30pm.
- [2] The power supply will switch to the constant current level at 100% in turn,starting from 6:00pm,which is 01:30 after the power supply turns on.
- [3] The power supply will switch to the constant current level at 70% in turn,starting from 5:00am,which is 11:00 after the power supply turns on.  
The constant current level remains till 6:30am ,which is 14:00 after the power supply turns on.



### Output load VS Temperature



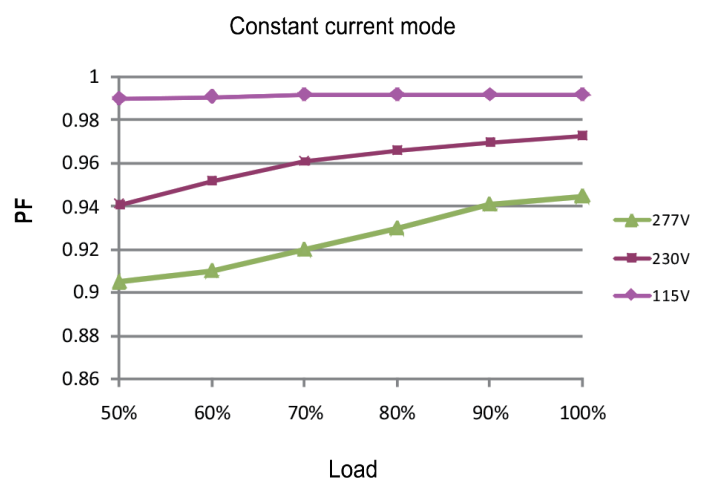
### Static characteristic curve



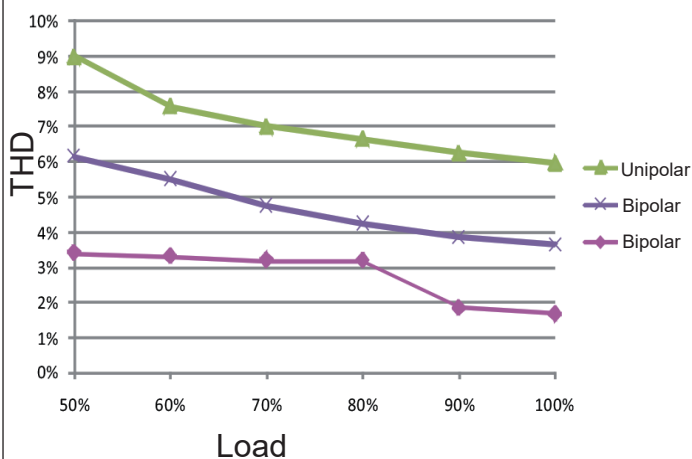
※ Derating output at low input voltage

### PF characteristic curve

※ Tcase at 80°C



### THD characteristic curve



### Efficiency VS Load

