



**Features**

- Wide input range 180 ~ 528VAC
- Constant Power mode output
- Metal housing with Class I design
- Built-in active PFC function
- Function options: output adjustable via potentiometer; 3 in 1 dimming (dim-to-off) ; Smart timer dimming
- Typical lifetime>50000 hours
- 5 years warranty

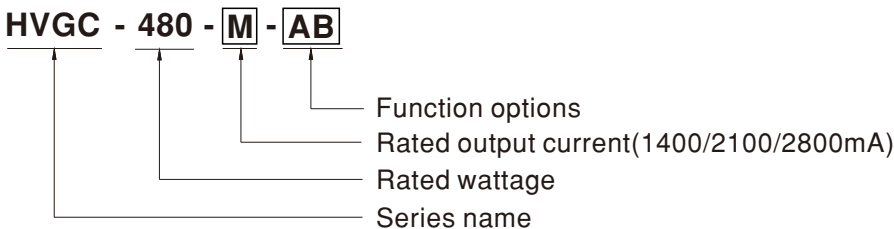
**Applications**

- Harbor lighting
- LED high-bay lighting
- Parking space lighting
- LED fishing lamp
- Type “HL” for use in Class I , Division 2 hazardous (Classified) location.

**Description**

HVGC-480 series is a 480W LED AC/DC driver featuring the constant power mode and high voltage output. HVGC-480 operates from 180~528VAC and offers models with different rated current ranging between 1400mA and 3500mA. Thanks to the high efficiency up to 94.5%, with the fanless design, the entire series is able to operate for -40°C~+90°C case temperature under free air convection. The design of metal housing and IP67 ingress protection level allows this series to fit both indoor and outdoor applications. HVGC-480 is equipped with various function options, such as dimming methodologies, so as to provide the optimal design flexibility for LED lighting system.

**Model Encoding**



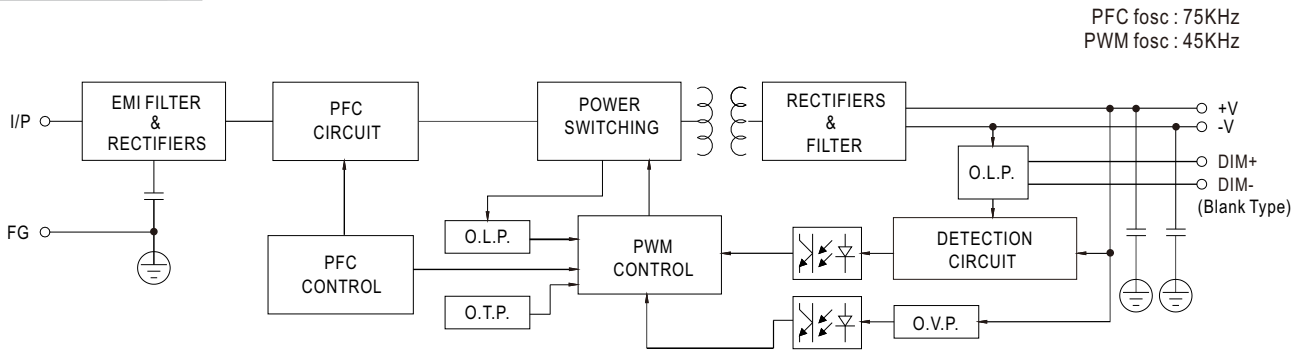
| Type  | IP Level | Function   | Note       |
|-------|----------|--|------------|
| AB    | IP65     | Standard constant power output with 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance) and built-in potentiometer. | In Stock   |
| Blank | IP67     | Io and Vo fixed.   | By request |
| D2    | IP67     | Built-in Smart timer dimming and programmable function.  | By request |
| Dx    | IP67     | Built-in Smart timer dimming function by user request.   | By request |
| ADA   | IP67     | ADA IP65 DALI control technology with Io Adjustable via build-in Potentiometer   | By request |



**SPECIFICATION**

| MODEL                             |  | HVGC-480-L-□   | HVGC-480-M-□ | HVGC-480-H-□ |
|-----------------------------------|--|--|--------------|--------------|
| OUTPUT                            | RATED CURRENT  | 1400mA   | 2100mA       | 2800mA       |
|                                   | RATED POWER  | 480W   | 480W         | 480W         |
|                                   | CONSTANT CURRENT REGION <small>Note.2</small>  | 137 ~ 343V   | 92 ~ 228.5V  | 68 ~ 171.5V  |
|                                   | FULL POWER CURRENT RANGE   | 1400~1750mA  | 2100~2625mA  | 2800~3500mA  |
|                                   | OPEN CIRCUIT VOLTAGE (max.)  | 350V   | 240V         | 180V         |
|                                   | CURRENT ADJ. RANGE(Typ.)   | 700~1750mA   | 1050~2625mA  | 1400~3500mA  |
|                                   | CURRENT RIPPLE   | 5.0% max. @rated current   |              |              |
|                                   | CURRENT TOLERANCE  | ±5%  |              |              |
| SET UP TIME <small>Note.4</small> | 500ms/230VAC, 347VAC, 480VAC   |  |              |              |
| INPUT                             | VOLTAGE RANGE <small>Note.3</small>  | 180 ~ 528VAC 254VDC ~ 747VDC<br>(Please refer to "STATIC CHARACTERISTIC" section)  |              |              |
|                                   | FREQUENCY RANGE  | 47 ~ 63Hz  |              |              |
|                                   | POWER FACTOR (Typ.)  | PF ≥ 0.98 / 230VAC, PF ≥ 0.98 / 277VAC, PF ≥ 0.97 / 347VAC, PF ≥ 0.96 / 400VAC, PF ≥ 0.95 / 480VAC at full load<br>(Please refer to "Power Factor Characteristic" section) |              |              |
|                                   | TOTAL HARMONIC DISTORTION  | THD < 20% (@ load ≥ 50% at 230VAC/277VAC/347VAC/400VAC/480VAC input<br>(Please refer to "TOTAL HARMONIC DISTORTION (THD)" section)   |              |              |
|                                   | EFFICIENCY (Typ.)  | 94.5%  | 94.5%        | 94.5%        |
|                                   | AC CURRENT (Typ.)  | 1.52A / 347VAC 1.11A / 480VAC  |              |              |
|                                   | INRUSH CURRENT(Typ.)   | COLD START 40A(t <sub>width</sub> =1100μs measured at 50% I <sub>peak</sub> ) at 480VAC; Per NEMA 410  |              |              |
|                                   | MAX. NO. of PSUs on 16A CIRCUIT BREAKER  | 2 unit(circuit breaker of type B) / 4 units(circuit breaker of type C) at 480VAC   |              |              |
| LEAKAGE CURRENT                   | <0.75mA / 480VAC   |  |              |              |
| PROTECTION                        | SHORT CIRCUIT  | Constant current limiting, recovers automatically after fault condition is removed   |              |              |
|                                   | OVER VOLTAGE   | 351 ~ 381V   | 241 ~ 257V   | 181 ~ 193V   |
|                                   | OVER TEMPERATURE   | Shut down output voltage, re-power on to recovery  |              |              |
| ENVIRONMENT                       | WORKING TEMP.  | T <sub>case</sub> =-40 ~ +90°C (Please refer to "OUTPUT LOAD vs TEMPERATURE" section)  |              |              |
|                                   | MAX. CASE TEMP.  | T <sub>case</sub> =+90°C   |              |              |
|                                   | WORKING HUMIDITY   | 20 ~ 95% RH non-condensing   |              |              |
|                                   | STORAGE TEMP., HUMIDITY  | -40 ~ +80°C, 10 ~ 95% RH non-condensing  |              |              |
|                                   | TEMP. COEFFICIENT  | ±0.03%/°C (0 ~ 60°C)   |              |              |
|                                   | VIBRATION  | 10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes  |              |              |
| SAFETY & EMC                      | SAFETY STANDARDS   | UL8750 (type"HL"), CSA C22.2 No. 250.13-14, ENEC EN61347-1, EN61347-2-13 independent, EN62384, IP65 or IP67, EAC TP TC 004 approved  |              |              |
|                                   | WITHSTAND VOLTAGE  | I/P-O/P:3.75KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC   |              |              |
|                                   | ISOLATION RESISTANCE   | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH   |              |              |
|                                   | EMC EMISSION   | Compliance to EN55015, EN61000-3-2 Class C (@ load ≥ 50%); EN61000-3-3, FCC Part 15 class B, EAC TP TC 020   |              |              |
|                                   | EMC IMMUNITY   | Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level (surge immunity Line-Earth 4KV, Line-Line 2KV), EAC TP TC 020  |              |              |
| OTHERS                            | MTBF   | 286.1K hrs min. Telcordia SR-332(Bellcore) ; 72.9K hrs min. MIL-HDBK-217F (25°C)   |              |              |
|                                   | DIMENSION  | 262*125*43.8mm (L*W*H)   |              |              |
|                                   | PACKING  | 2.72Kg;4pcs/11.45Kg/0.55CUFT   |              |              |
| NOTE                              | <ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 347VAC input, rated current and 25°C of ambient temperature.</li> <li>Please refer to "DRIVING METHODS OF LED MODULE".</li> <li>De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</li> <li>Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.</li> <li>The driver 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 manufacturers must re-qualify EMC Directive on the complete installation again.</li> <li>This series meets the typical life expectancy of &gt;50,000 hours of operation when T<sub>case</sub>, particularly t<sub>c</sub> point (or TMP, per DLC), is about 80°C or less.</li> <li>Please refer to the warranty statement on MEAN WELL's website at <a href="http://www.meanwell.com">http://www.meanwell.com</a></li> <li>To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED driver can only be used behind a switch without permanently connected to the mains.</li> <li>The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</li> </ol> |  |              |              |

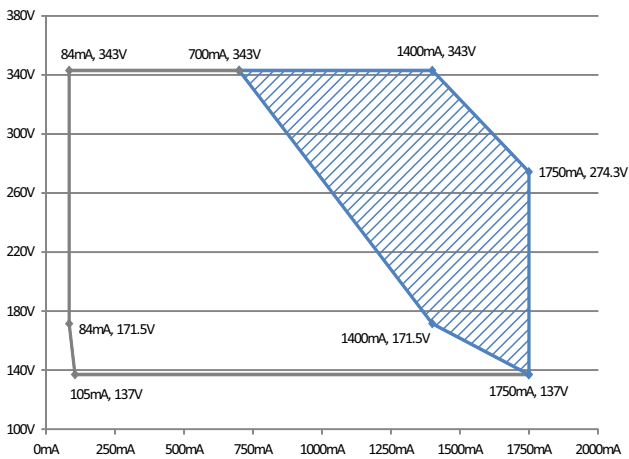
## ■ BLOCK DIAGRAM



## ■ DRIVING METHODS OF LED MODULE

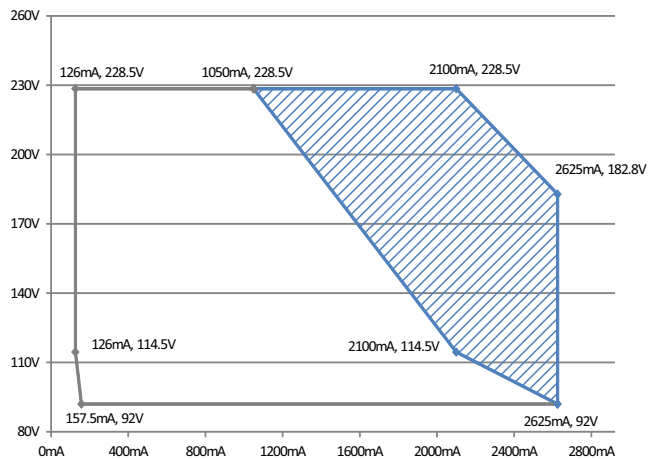
※ I-V Operating Area

◎ HVGC-480-L



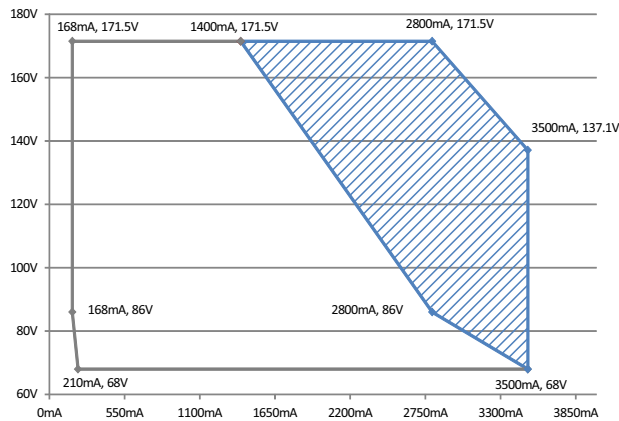
▨ Recommended High Performance Region □ Allowed Operational Region

◎ HVGC-480-M



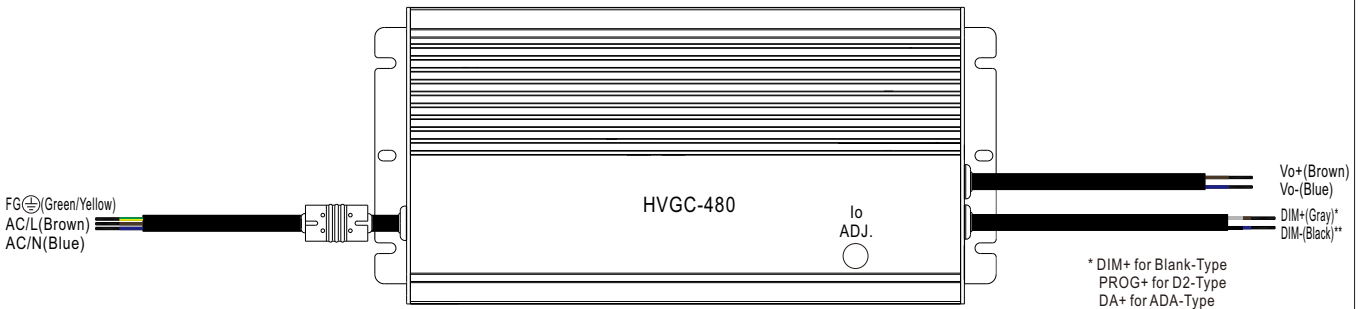
▨ Recommended High Performance Region □ Allowed Operational Region

◎ HVGC-480-H



▨ Recommended High Performance Region □ Allowed Operational Region

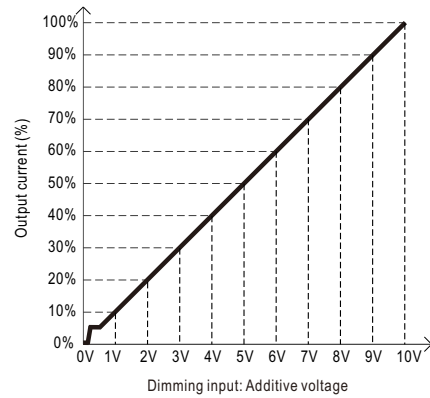
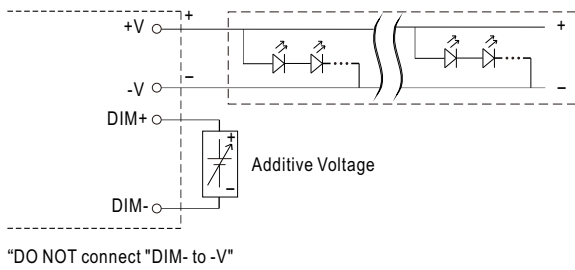
## ■ DIMMING OPERATION



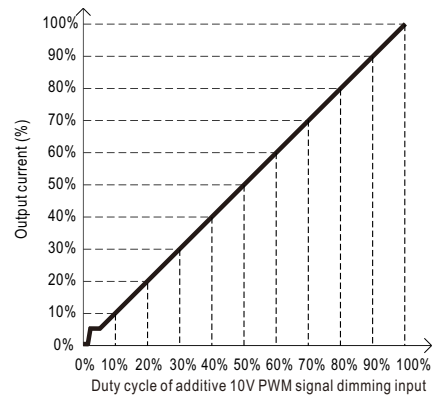
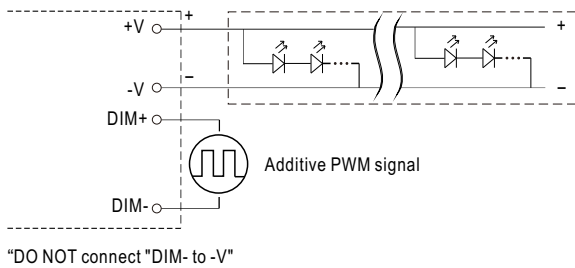
### ※ 3 in 1 dimming function (for AB-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100 $\mu$ A (typ.)

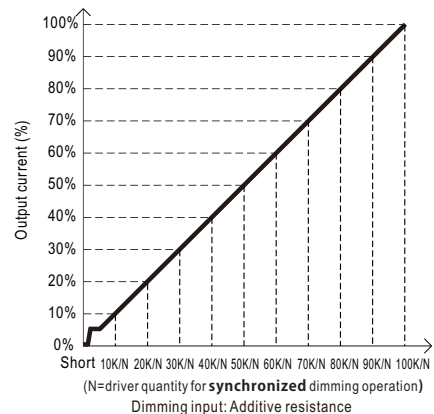
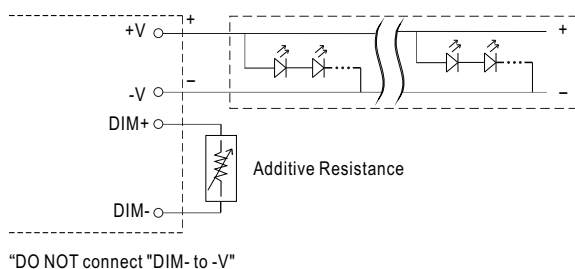
#### ◎ Applying additive 0 ~ 10VDC



#### ◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



#### ◎ Applying additive resistance:



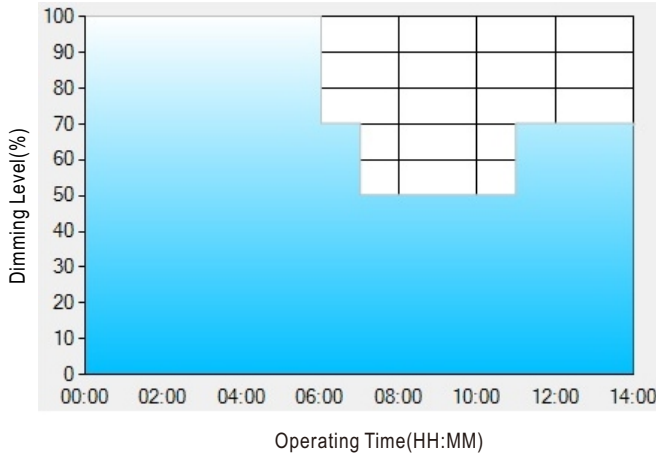
Note : 1. Min. dimming level is about 6% and the output current is not defined when 0% < I<sub>out</sub> < 6%.

2. The output current could drop down to 0% when dimming input is about 0k $\Omega$  or 0Vdc, or 10V PWM signal with 0% duty cycle.

※ **Smart timer dimming function (for Dxx-Type by User definition)**

MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours. 3 dimming profiles hereunder are defined accounting for the most frequently seen applications. If other options may be needed, please contact MEAN WELL for details.

Ex : ☉ D01-Type: the profile recommended for residential lighting



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

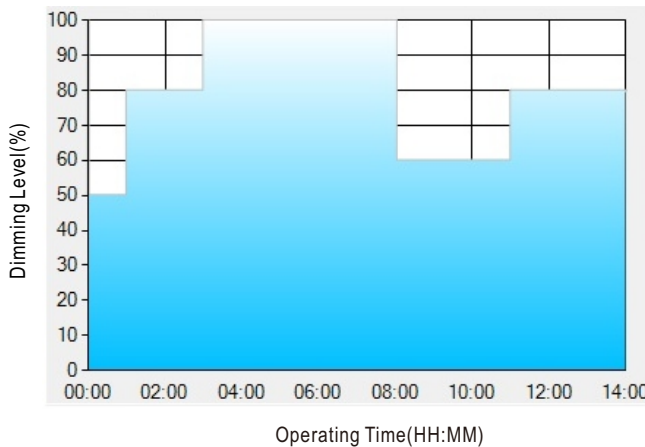
|         | T1    | T2    | T3    | T4  |
|---------|-------|-------|-------|-----|
| TIME**  | 06:00 | 07:00 | 11:00 | --- |
| LEVEL** | 100%  | 70%   | 50%   | 70% |

\*\* : 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.

Ex : ☉ D02-Type: the profile recommended for street lighting



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

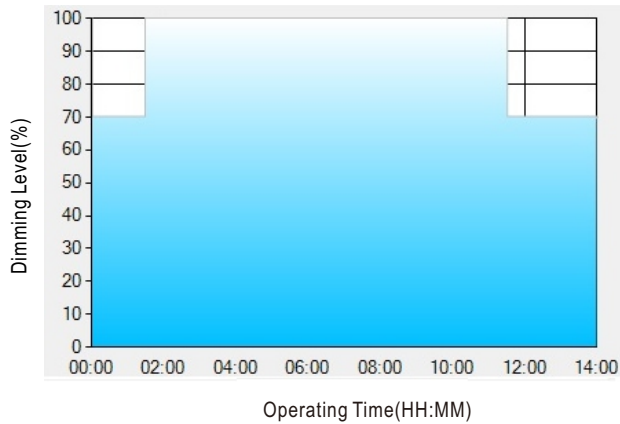
|         | T1    | T2    | T3   | T4    | T5  |
|---------|-------|-------|------|-------|-----|
| TIME**  | 01:00 | 03:00 | 8:00 | 11:00 | --- |
| LEVEL** | 50%   | 80%   | 100% | 60%   | 80% |

\*\* : 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.

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



Set up for D03-Type in Smart timer 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 tunnel 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.

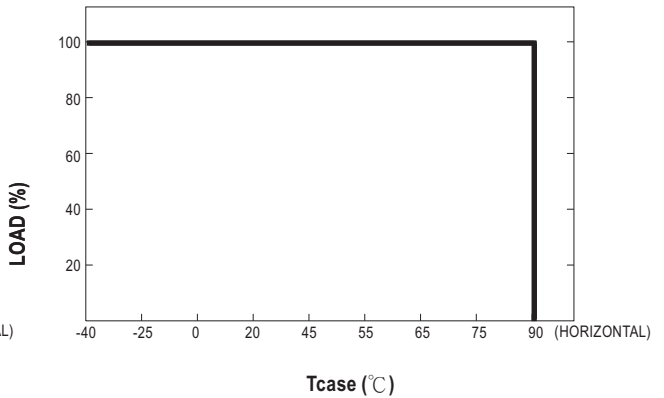
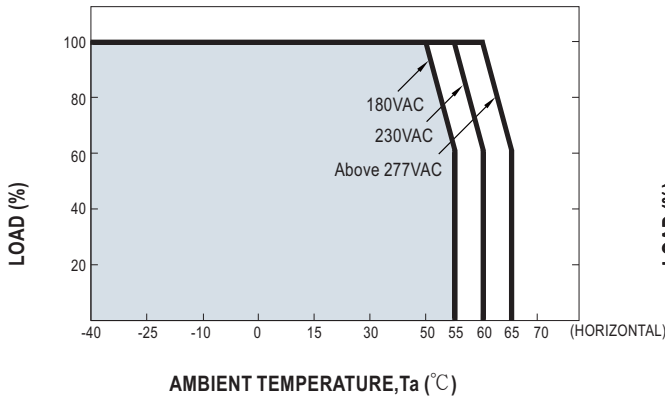
[3] The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.

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

※ **DALI interface(primary side; for ADA-Type)**

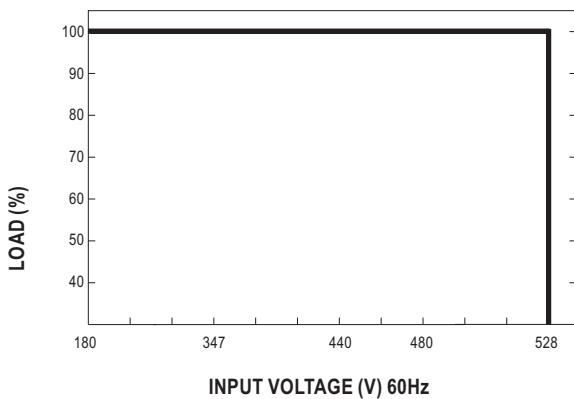
- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 6% of output.

### OUTPUT LOAD vs TEMPERATURE

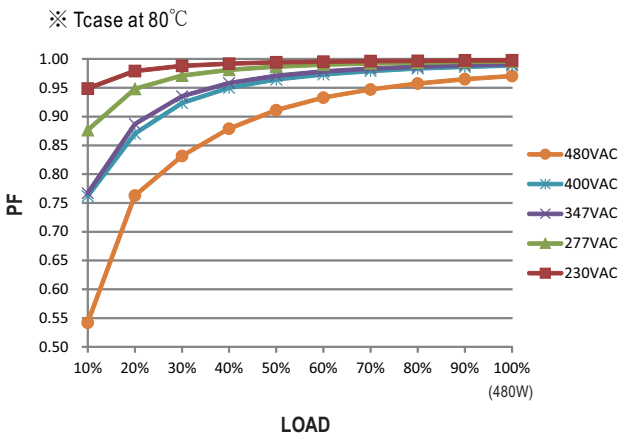


If HVGC-480 operates in Constant Power mode with the rated current, the maximum workable Ta is 55°C (Typ. 230VAC)

### STATIC CHARACTERISTIC

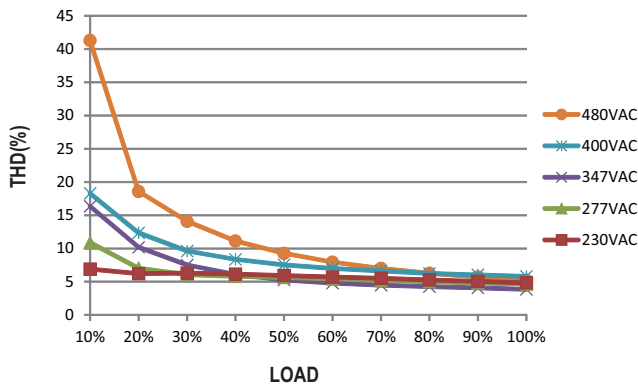


### POWER FACTOR (PF) CHARACTERISTIC



### TOTAL HARMONIC DISTORTION (THD)

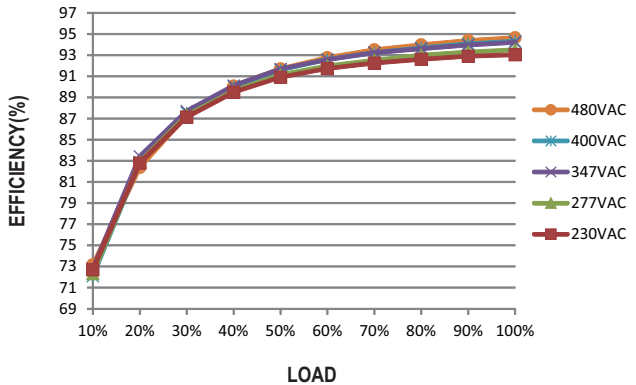
※ L Model, Tcase at 80°C



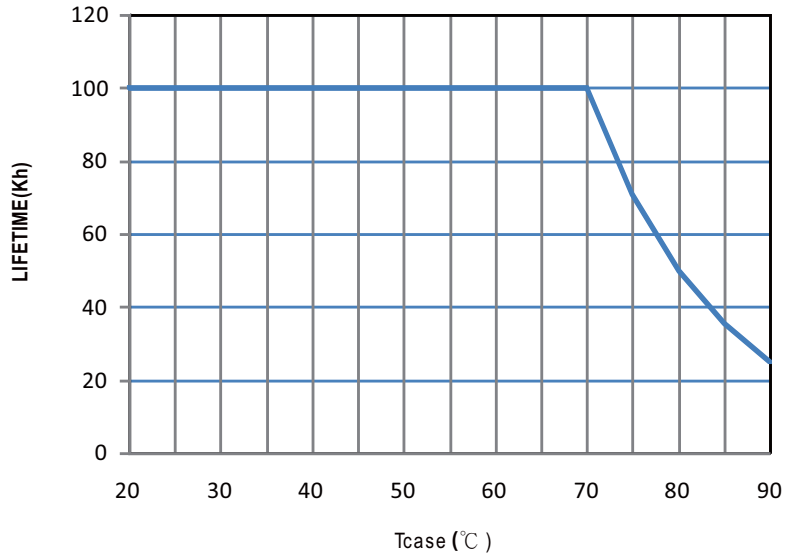
### EFFICIENCY vs LOAD

HVGC-480 series possess superior working efficiency that up to 94.5% can be reached in field applications.

※ L Model, Tcase at 80°C



■ LIFE TIME

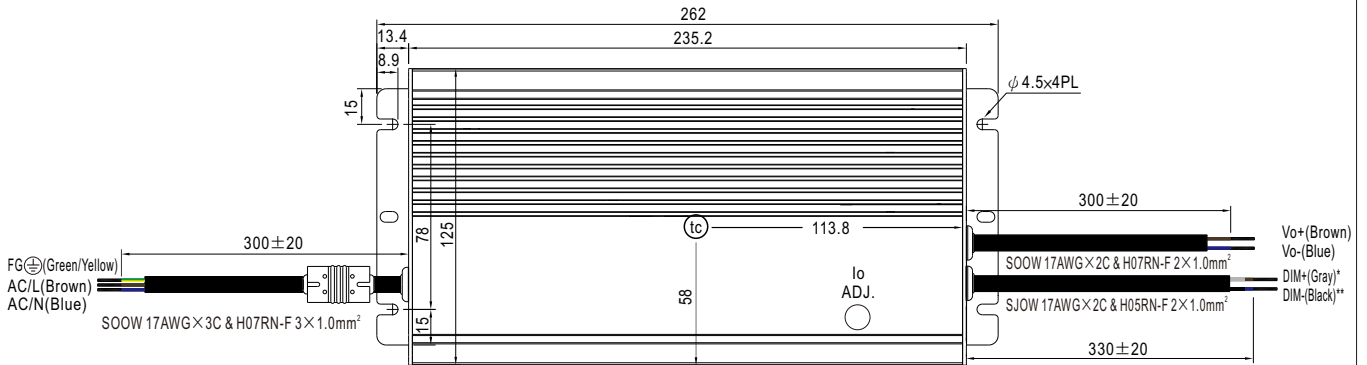




**MECHANICAL SPECIFICATION**

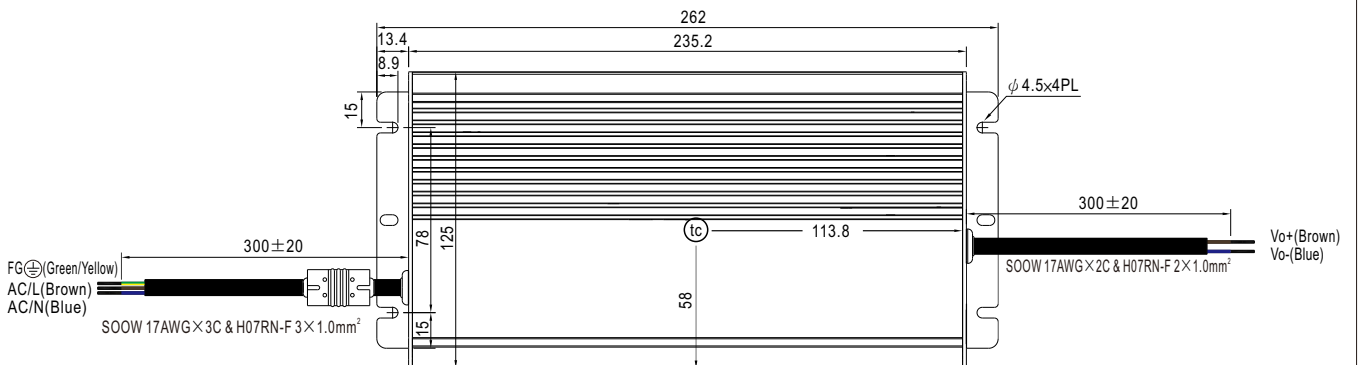
Case No. 251 Unit:mm

※AB-Type



•  $t_c$  : Max. Case Temperature

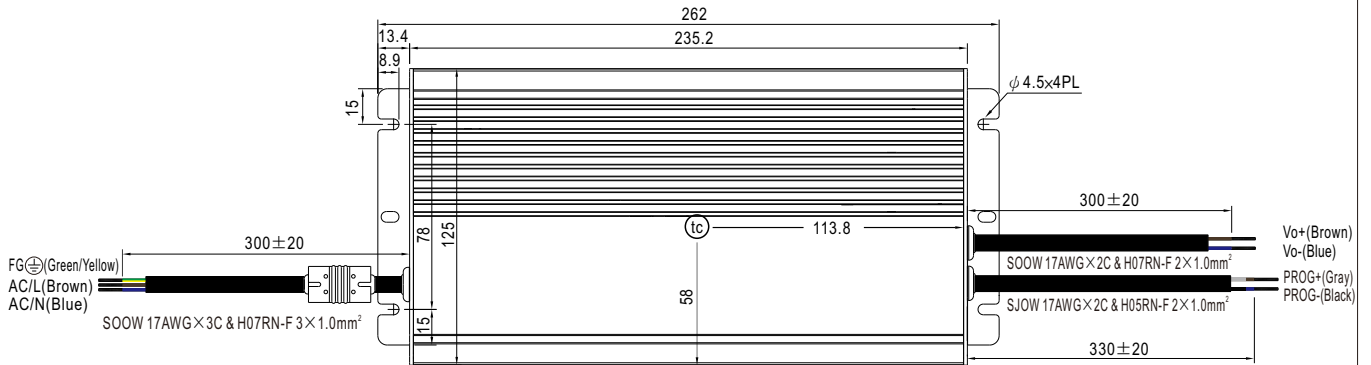
※Blank-Type



•  $t_c$  : Max. Case Temperature

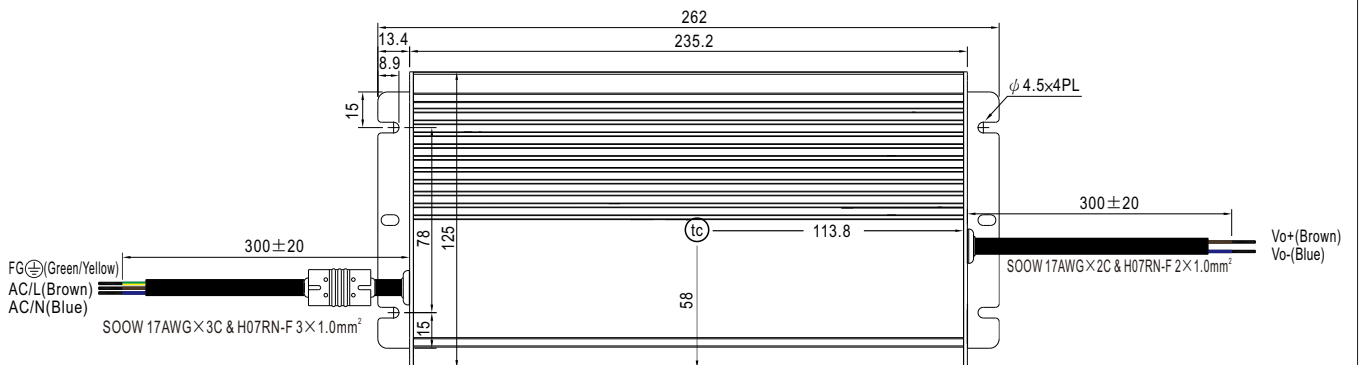
## MECHANICAL SPECIFICATION

### ※D2-Type



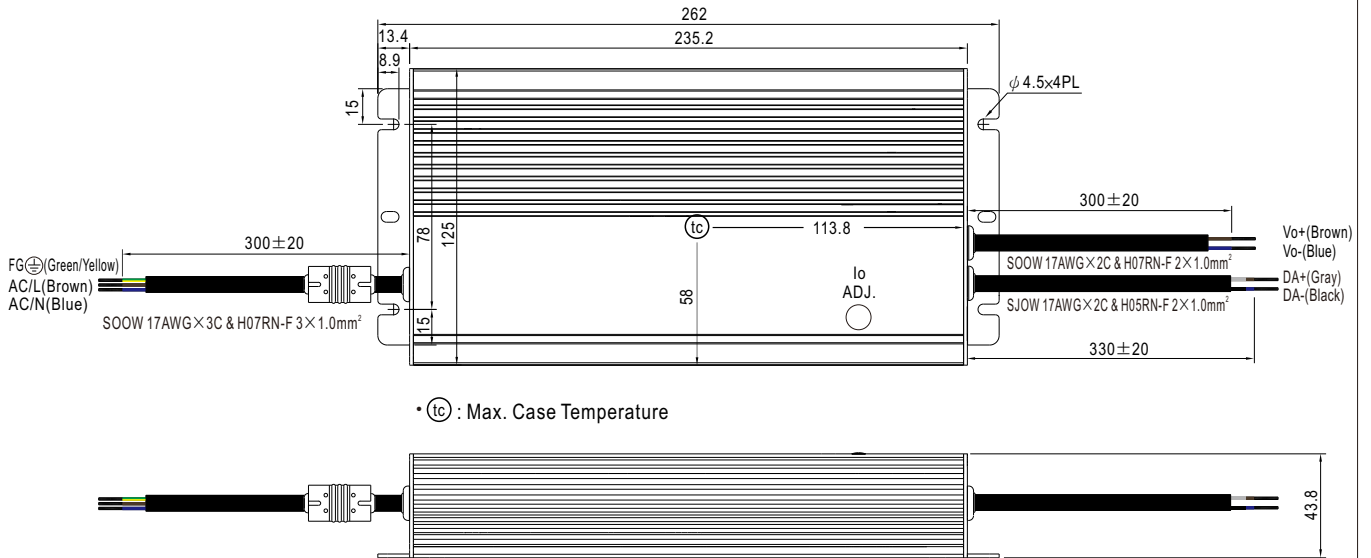
•  $t_c$  : Max. Case Temperature

### ※Dx-Type



•  $t_c$  : Max. Case Temperature

※ADA-Type



■ INSTALLATION MANUAL

Please refer to : <http://www.meanwell.com/manual.html>