HVGC-480 series

480W Constant Power Mode LED Driver

User's Manual

(for ADA-Type only)

Type HL

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.

GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

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℃~+90℃ 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

HVGC - 480 - M - AB

- AB — Function options
- M — Rated output current(1400/2100/2800mA)
- 480 — Rated wattage
- HVGC — Series name

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	IP65	ADA IP65 DALI control technology with Io Adjustable via built-in potentiometer.	By request

480W Constant Power Mode LED Driver

HVGC-480 series

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 Note.2	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 Note.4	500ms/230VAC, 347VAC, 480VAC		
INPUT	VOLTAGE RANGE Note.3	180 ~ 528VAC 254VDC ~ 747VDC (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 (Please refer to "Power Factor Characteristic" section)		
	TOTAL HARMONIC DISTORTION	THD< 20% (@ load≧50% at 230VAC/277VAC/347VAC/400VAC/480VAC input (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_{width}=1100μs measured at 50% I_{peak}) 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
		Shut down output voltage, re-power on to recovery		
	OVER TEMPERATURE	Shut down output voltage, re-power on to recovery		
ENVIRONMENT	WORKING TEMP.	Tcase=-40 ~ +90℃ (Please refer to "OUTPUT LOAD vs TEMPERATURE" section)		
	MAX. CASE TEMP.	Tcase=+90℃		
	WORKING HUMIDITY	20 ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 60℃)		
	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 BS EN/EN61347-1, BS EN/EN61347-2-13 independent, BS EN/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℃/ 70% RH		
	EMC EMISSION	Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@ load≧50%); BS EN/EN61000-3-3, FCC Part 15 class B, EAC TP TC 020		
	EMC IMMUNITY	Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN61547, light industry level (surge immunity Line-Earth 4KV, Line-Line 2KV), EAC TP TC 020		
OTHERS	MTBF	932.9K hrs min. Telcordia SR-332(Bellcore) ; 74K hrs min. MIL-HDBK-217F (25℃)		
	DIMENSION	262*125*43.8mm (L*W*H)		
	PACKING	2.72Kg;4pcs/11.45Kg/0.55CUFT		

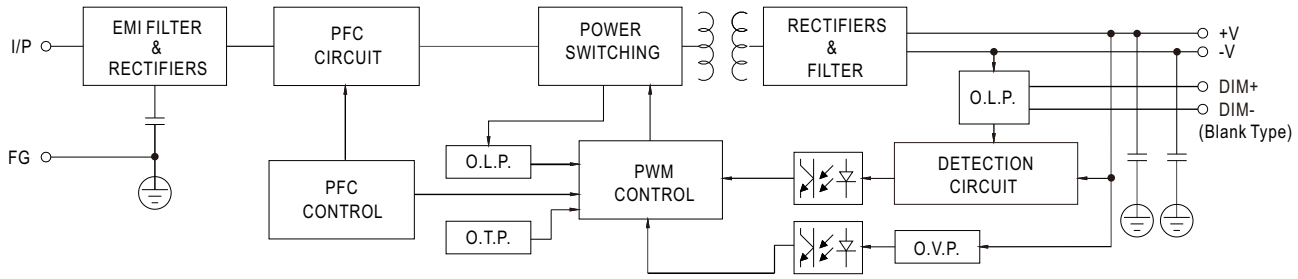
NOTE

1. All parameters NOT specially mentioned are measured at 347VAC input, rated current and 25℃ of ambient temperature.
2. Please refer to "DRIVING METHODS OF LED MODULE".
3. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.
4. 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.
5. 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. (as available on https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf)
6. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (tc) point (or TMP, per DLC), is about 80℃ or less.
7. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com
8. 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.
9. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
10. For any application note and IP water proof function installation caution, please refer our user manual before using. https://www.meanwell.com/Upload/PDF/LED_EN.pdf
11. For A/AB type need to consider build in using to comply with Type HL application.
12. This product is intended for North America and EU lighting equipment application. Please contact your MEAN WELL sales if you have other using.

※ Product Liability Disclaimer：For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ BLOCK DIAGRAM

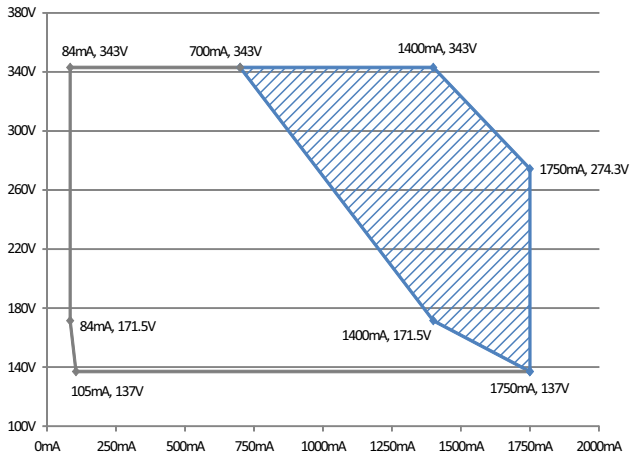
PFC fosc : 75KHz
PWM fosc : 45KHz



■ DRIVING METHODS OF LED MODULE

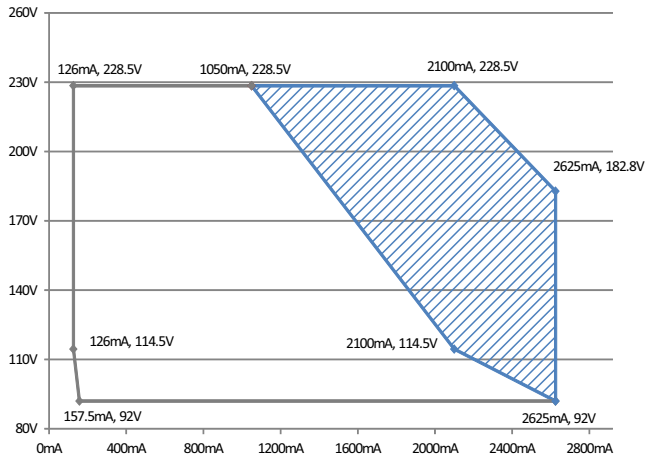
※ I-V Operating Area

◎ **HVGC-480-L**



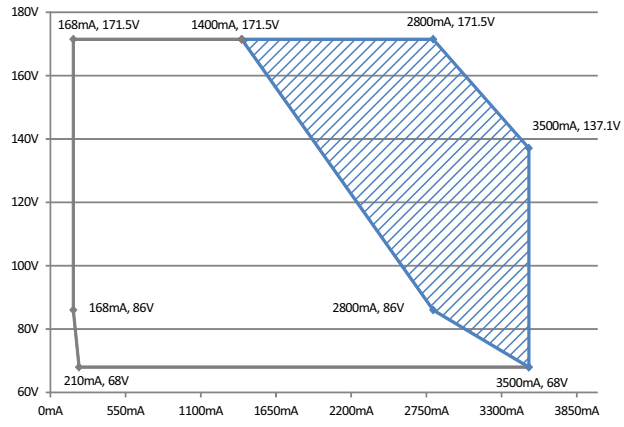
Recommended High Performance Region Allowed Operational Region

◎ **HVGC-480-M**



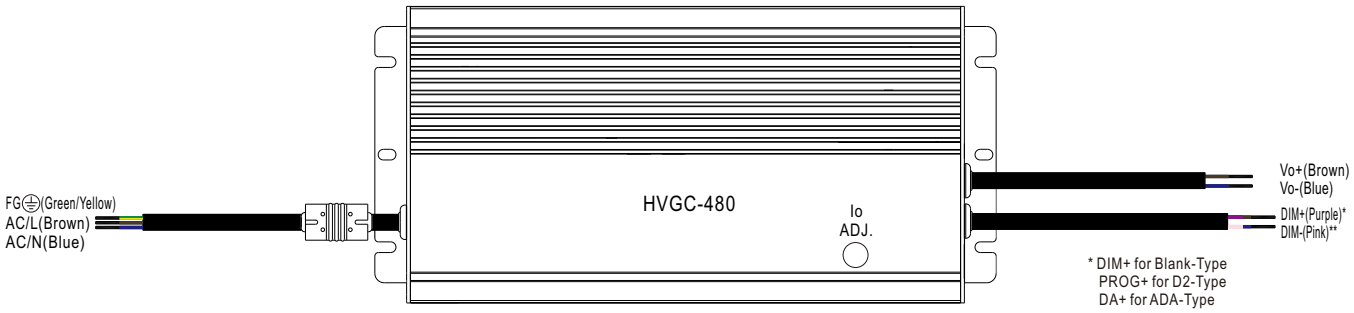
Recommended High Performance Region Allowed Operational Region

◎ **HVGC-480-H**



Recommended High Performance Region Allowed Operational Region

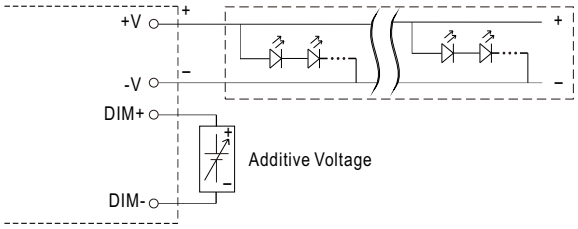
■ DIMMING OPERATION



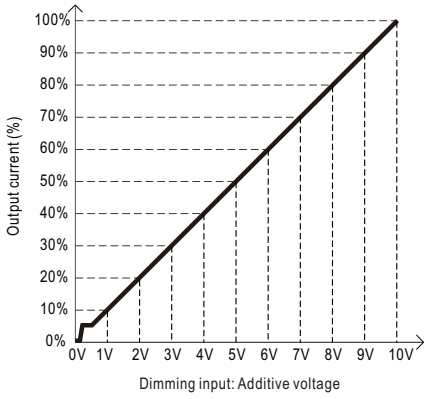
※ 3 in 1 dimming function (for AB-Type)

- 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: 100μA (typ.)

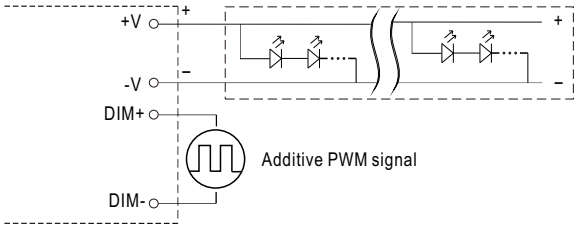
◎ Applying additive 0 ~ 10VDC



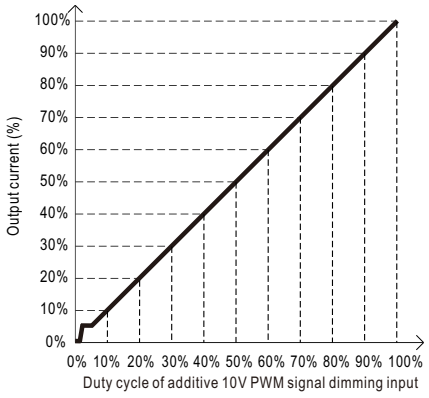
"DO NOT connect "DIM- to -V"



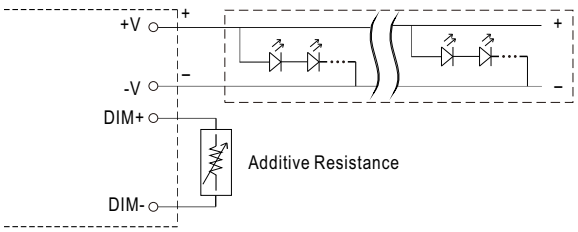
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



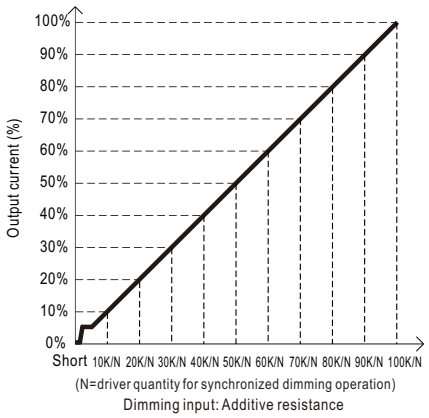
"DO NOT connect "DIM- to -V"



◎ Applying additive resistance:



"DO NOT connect "DIM- to -V"

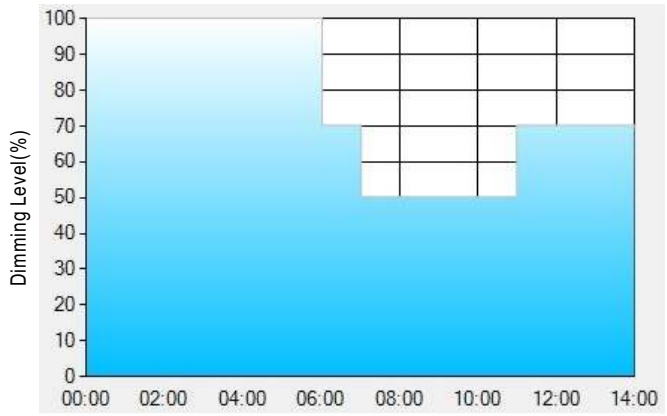


Note : 1. Min. dimming level is about 6% and the output current is not defined when 0%< Iout<6%.
2. The output current could drop down to 0% when dimming input is about 0kΩ or 0Vdc, or 10V PWM signal with 0% duty cycle.

※ **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:

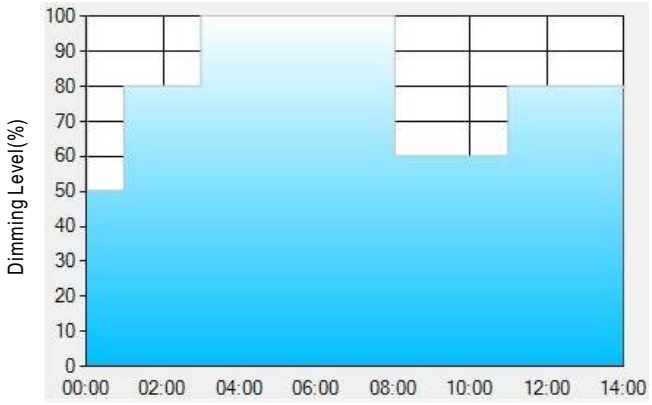
[1] The power supply will switch to the constant current level at 100% starting from 6:00pm.

[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.

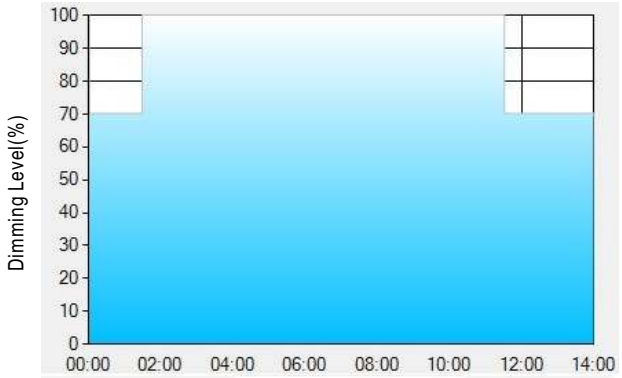
[2] The power supply will switch to the constant current level at 80% in turn, starting from 6:00pm, which is 01:00 after the power supply turns on.

[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:

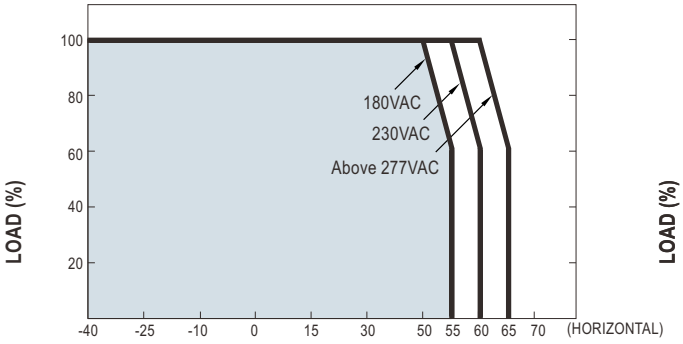
	T1	T2	T3
TIME**	01:30	11:00	---
LEVEL**	70%	100%	70%

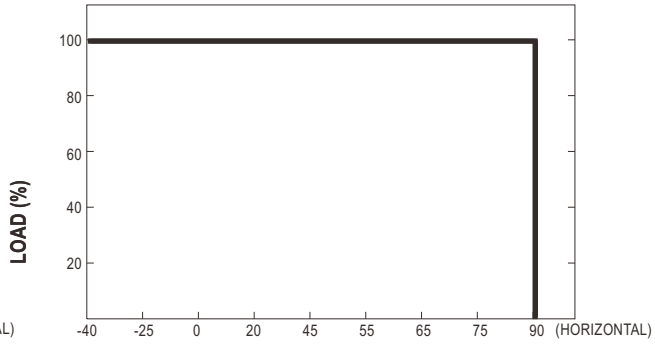
**: TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.
Example: If a tunnel lighting application adopts D03-Type, when turning on the power supply at 4:30pm, for instance:
[1] The power supply will switch to the constant current level at 70% starting from 4:30pm.
[2] The 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.

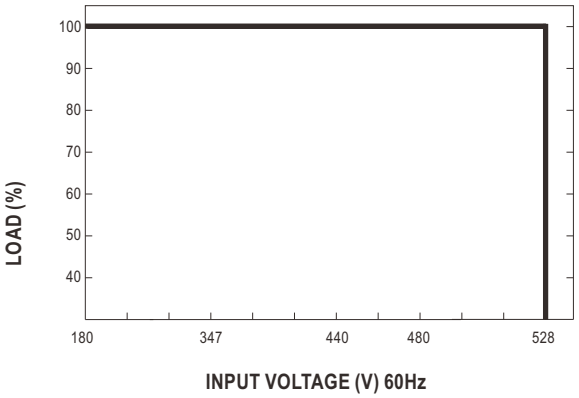
OUTPUT LOAD vs TEMPERATURE





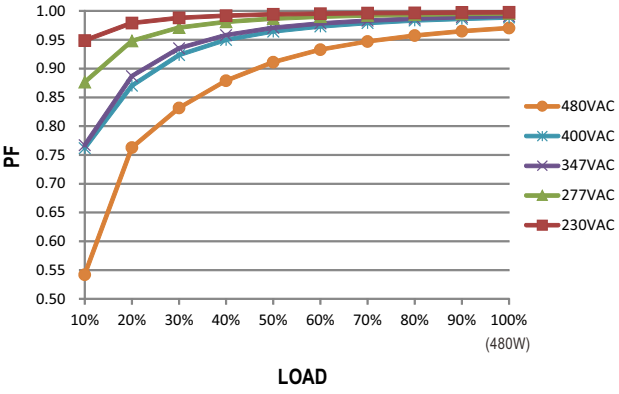
If HVGC-480 operates in Constant Power mode with the rated current, the maximum workable Ta is 55℃(Typ. 230VAC)

STATIC CHARACTERISTIC



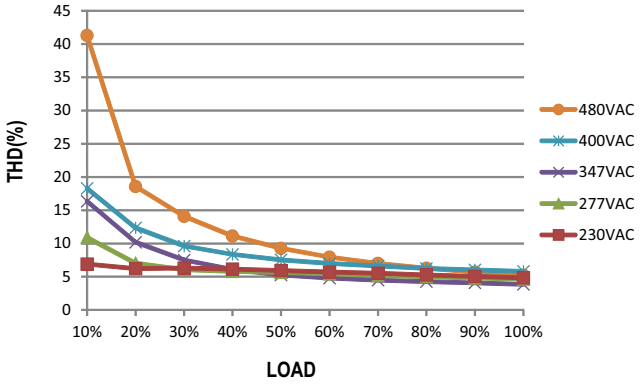
POWER FACTOR (PF) CHARACTERISTIC

※ Tcase at 80℃



TOTAL HARMONIC DISTORTION (THD)

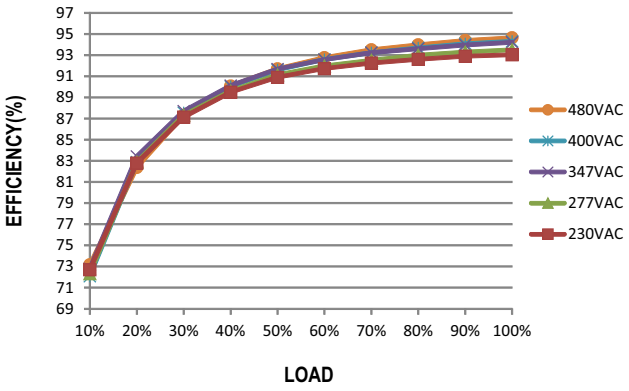
※ L Model, Tcase at 80℃



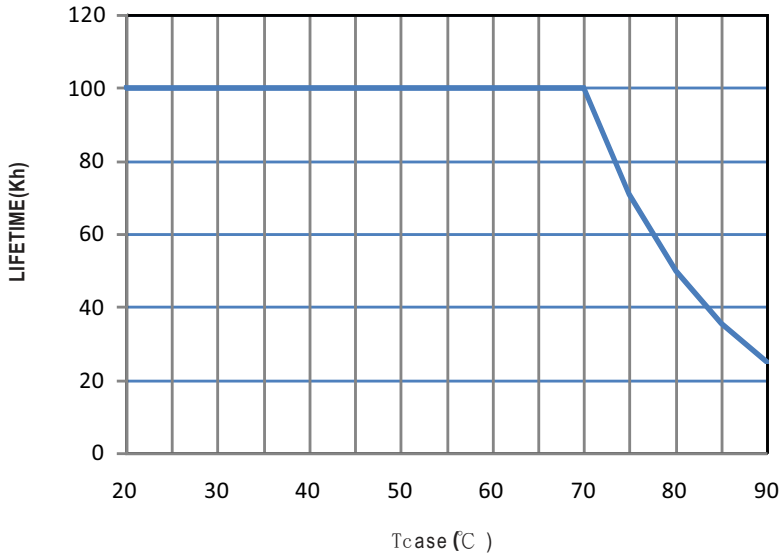
EFFICIENCY vs LOAD

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

※ L Model, Tcase at 80℃



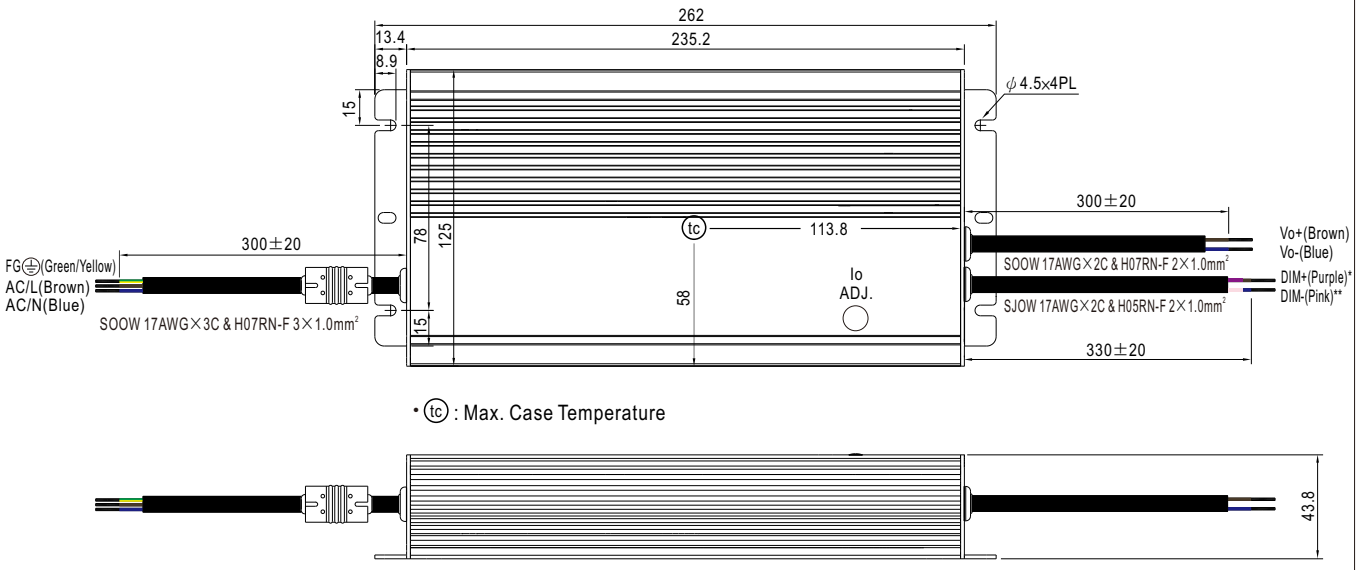
■ LIFE TIME



■ MECHANICAL SPECIFICATION

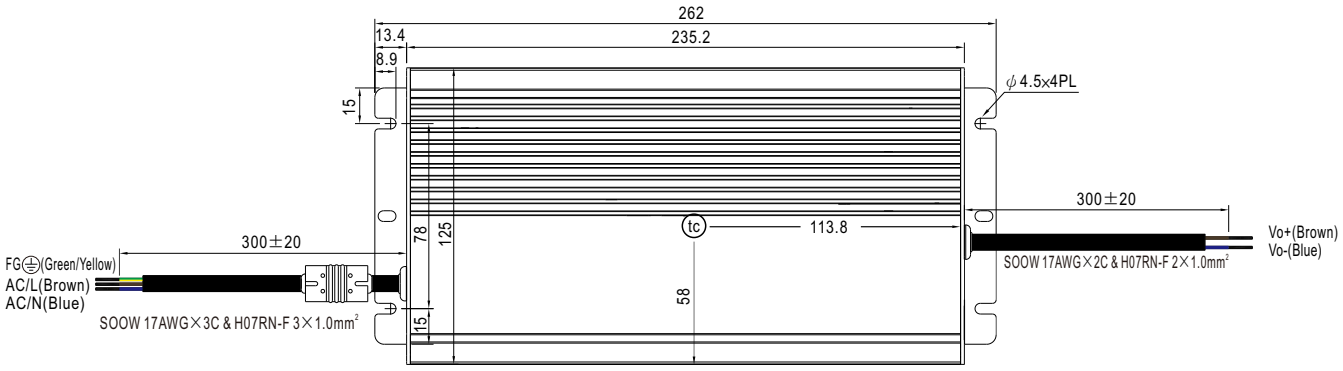
Case No. 251 Unit:mm Tolerance:±1

※AB-Type

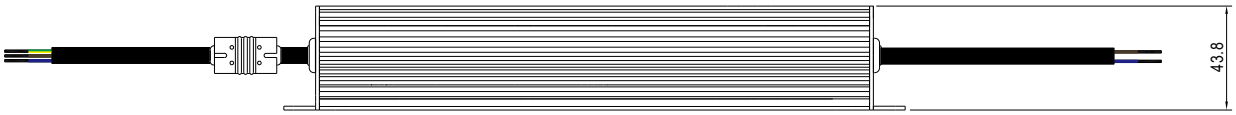


• tc : Max. Case Temperature

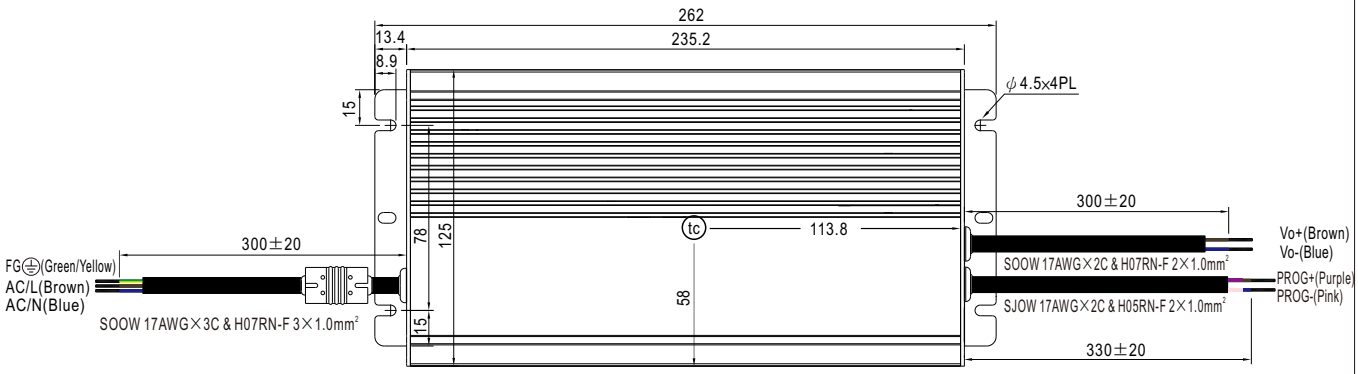
※Blank-Type



• tc : Max. Case Temperature

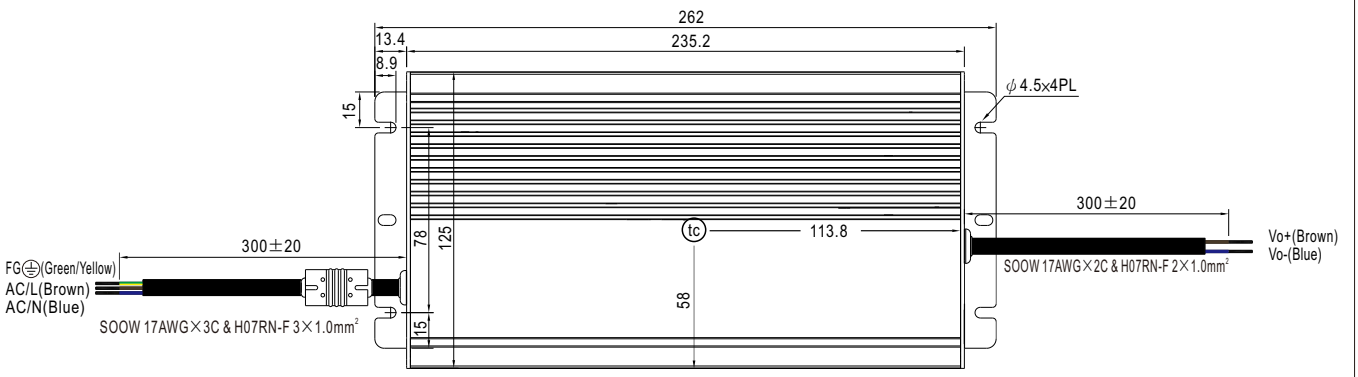


※D2-Type

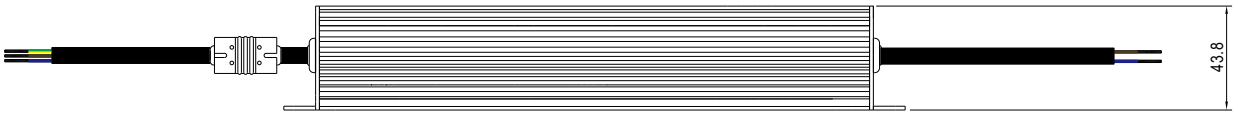


• tc : Max. Case Temperature

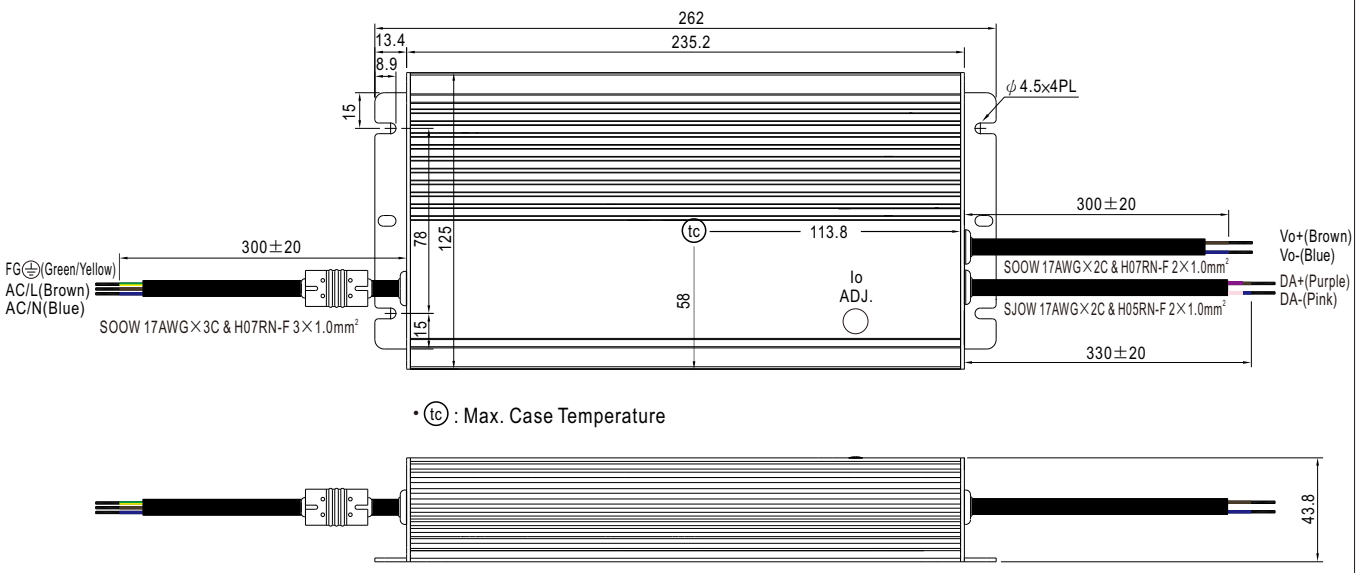
※Dx-Type



• tc : Max. Case Temperature



※ADA-Type



• tc : Max. Case Temperature

■ INSTALLATION MANUAL

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