320W Single Output LED Power Supply

# HVGC-320 series

IP65 IP67 Type HL

## Features

- Constant current design
- Wide input range 180 ~ 528VAC
- Built-in active PFC function
- High efficiency up to 94%
- -40℃ ~ +70℃ wide operating range
- Fanless design, cooling by free air convection
- Three in one dimming function (0~10Vdc or PWM signal or resistance)
- IP67 / IP65 design for indoor or outdoor installations
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Withstand 5G vibration test
- Suitable for dry / damp / wet location
- Type "HL" for use in class Ⅰ, Division 2 hazardous(Classified) location luminaires
- 5 years warranty (Note.10)

## Applications

- LED high-bay lighting
- Parking space lighting
- LED fishing lamp
- LED greenhouse lighting
- Class Ⅰ, Division 2 hazardous(Classified) location luminaires

## Description

HVGC-320 series is a high performance 320W AC-to-DC constant current mode LED power supply featuring the high input voltage ranging from 180VAC through 528VAC. The working efficiency is up to 94%. The fully-potted silicone and the aluminum case facilitate the heat dissipation. HVGC-320 is thus able to work at the temperature between -40℃ and +70℃ under free air convection. This series can withstand surge up to 4KV (EN61000-4-5) and is approved for IP65/IP67 protection level. These attributes all make HVGC-320 perfectly fit the indoor/outdoor LED lighting application requiring remarkable reliability.

## Model Encoding

**HVGC-320-1400A**

- A → Function mode option
  - A: Standard model, IP65, Io adjustable through built-in potentiometers.
  - B: Standard model, IP67, 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)
- 1400 → Output current
- 320 → Output wattage
- HVGC → Series name

## SPECIFICATION

| MODEL | | HVGC-320-700□ | HVGC-320-1050□ | HVGC-320-1400□ | HVGC-320-1750□ | HVGC-320-2100□ | HVGC-320-2800□ | HVGC-320-3500□ |
|---|---|---|---|---|---|---|---|---|
| OUTPUT | RATED CURRENT | 700mA | 1050mA | 1400mA | 1750mA | 2100mA | 2800mA | 3500mA |
| | RATED POWER | 300W | 320W | 320W | 320W | 320W | 320W | 320W |
| | CONSTANT CURRENT REGION Note.3 | 214 ~ 428V | 152.4 ~ 304.8V | 114.3 ~ 228.6V | 91.4~182.8V | 76.2 ~ 152.4V | 57 ~ 114.3V | 45.7 ~ 91.4V |
| | OPEN CIRCUIT VOLTAGE (max.) | 442V | 311V | 234V | 187V | 156V | 118V | 94V |
| | CURRENT ACCURACY | ±5% | | | | | | |
| | RIPPLE & NOISE (max.) Note.2 | 2Vp-p | 1.5Vp-p | 1Vp-p | 1Vp-p | 1Vp-p | 1Vp-p | 1Vp-p |
| | CURRENT ADJ. RANGE | Adjustable for A-Type only (via built-in potentiometer) | | | | | | |
| | | 350~700mA | 525~1050mA | 700~1400mA | 875~1750mA | 1050~2100mA | 1400~2800mA | 1750~3500mA |
| | LINE REGULATION | ±1% | ±1% | ±1% | ±1% | ±1% | ±1% | ±1% |
| | SETUP, RISE TIME Note.5 | 500ms, 150ms /230Vac 400ms,150ms/347VAC/480VAC at full load ; B type 500ms, 150ms/230Vac 500ms,150ms/347VAC/480Vac at 95% load | | | | | | |
| | HOLD UP TIME (Typ.) | 18ms at full load 480VAC / 347VAC | | | | | | |
| INPUT | VOLTAGE RANGE Note.4 | 180 ~ 528VAC 254VDC ~ 747VDC | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | |
| | POWER FACTOR (Typ.) | PF≧0.98/230VAC, PF≧0.97/277VAC, PF≧0.95/347VAC, PF≧0.93/480VAC at full load (Please refer to "Power Factor Characteristic" curve) | | | | | | |
| | TOTAL HARMONIC DISTORTION | Total harmonic distortion will be lower than 20% when output loading is 50% or higher at 230VAC / 277VAC / 347VAC / 480VAC | | | | | | |
| | EFFICIENCY (Typ.) | 94% | 94% | 94% | 94% | 94% | 93.5% | 93.5% |
| | AC CURRENT (Typ.) | 1.1A / 347VAC 0.8A / 480VAC | | | | | | |
| | INRUSH CURRENT(Typ.) | COLD START 50A($t_{width}$=920μs measured at 50% $I_{peak}$) at 480VAC | | | | | | |
| | 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, recovers automatically after fault condition is removed | | | | | | |
| | OVER VOLTAGE | 445 ~ 455V | 320 ~ 351V | 240 ~ 263V | 192 ~ 210V | 160 ~ 175V | 120 ~ 131V | 96 ~ 105V |
| | | Protection type : Shut down o/p voltage with re-power on to recovery | | | | | | |
| | OVER TEMPERATURE | Shut down o/p voltage, recovers automatically after temperature goes down | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -40 ~ +70℃ (Refer to "Derating Curve") | | | | | | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +80℃, 10 ~ 95% RH | | | | | | |
| | 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. 250.12-13, IP65 or IP67 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 FCC Part 15 Subpart B | | | | | | |
| | EMC IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level (surge 4KV), criteria A | | | | | | |
| OTHERS | MTBF | 141.2K hrs min. MIL-HDBK-217F (25℃) | | | | | | |
| | DIMENSION | 262*90*43.8mm (L*W*H) | | | | | | |
| | PACKING | 2Kg; 8pcs/17Kg/0.92CUFT | | | | | | |

**NOTE**

1. All parameters NOT specially mentioned are measured at 347VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf parallel capacitor.
3. Please refer to "DRIVING METHODS OF LED MODULE".
4. Derating may be needed under low input voltages. Please check the static characteristics for more details.
5. 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 manufacturers must re-qualify EMC Directive on the complete installation again.
6. Refer to warranty statement.
7. To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED power supply can only be used behind a switch without permanently connected to the mains.



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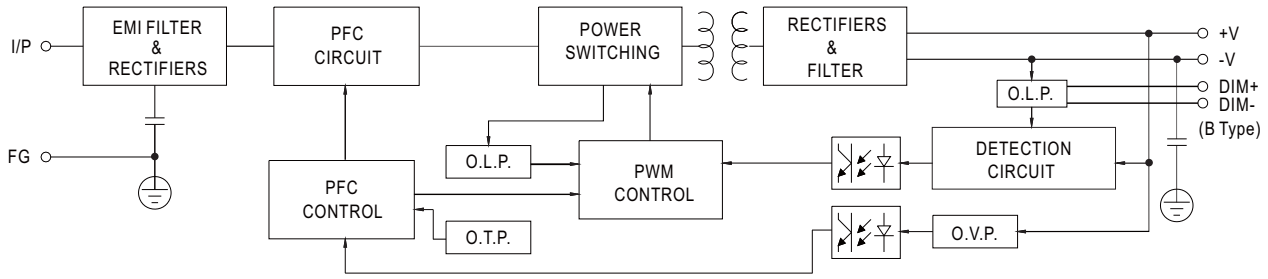
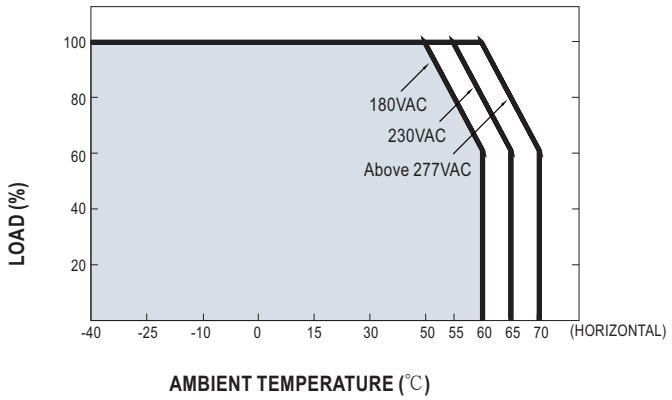
## Block Diagram

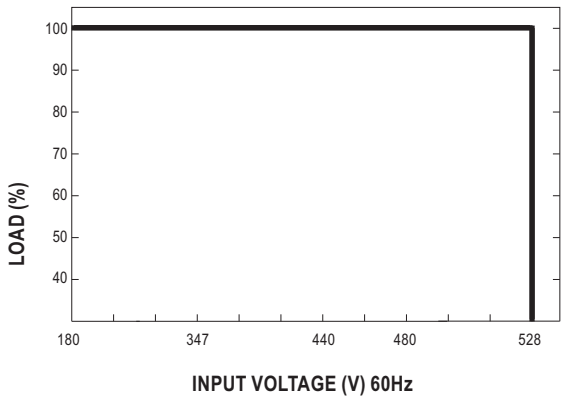
PFC fosc : 45KHz
PWM fosc : 50KHz



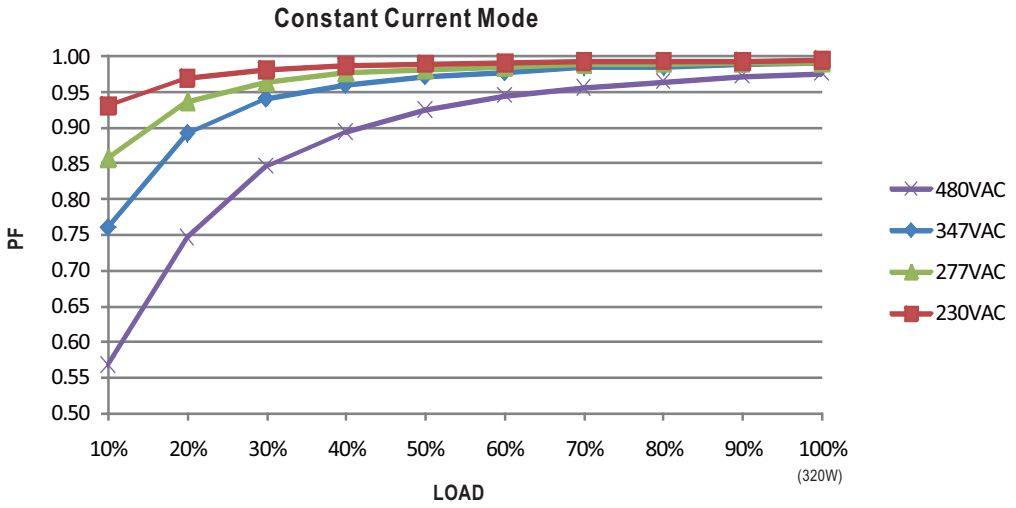

## Derating Curve




## Static Characteristics




## Power Factor Characteristic



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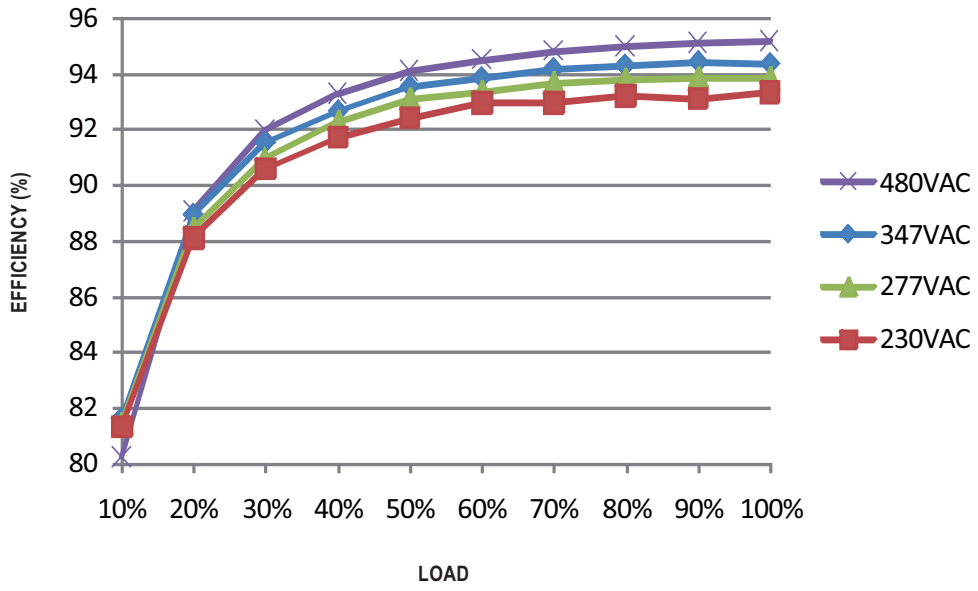
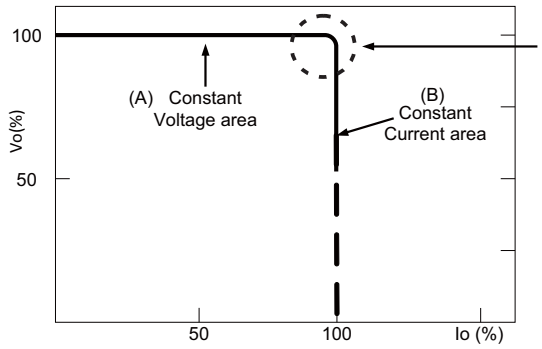
## ■ EFFICIENCY vs LOAD (HVGC-320-1050 Model)

HVGC-320 series possess superior working efficiency that up to 94% can be reached in field applications.




## ■ DRIVING METHODS OF LED MODULE

There are two major kinds of LED drive methods, "direct drive" and "with LED driver".
Mean Well's LED power supply with C.C characteristic can be operated at "constant current mode C.C" to directly drive the LEDs.




Typical LED power supply I-V curve

In the constant current region, the highest voltage at the output of the power supply depends on the configuration of the end systems.
Should there be any compatibility issues, please contact MEAN WELL.



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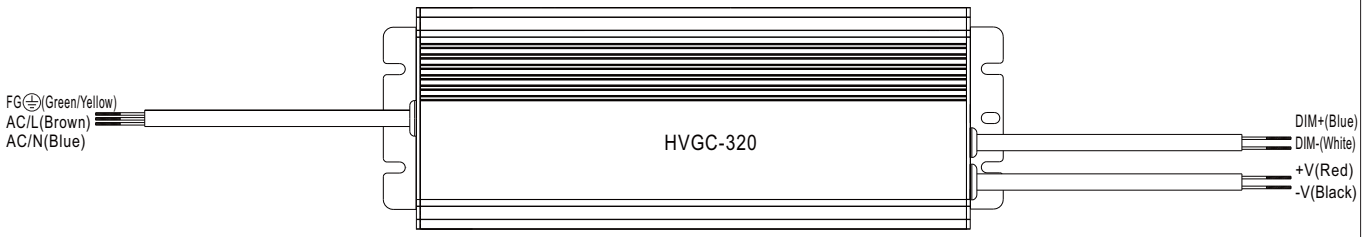
## ■ DIMMING OPERATION (for B Type only)




※ Built-in 3 in 1 dimming function, IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistance or 0 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-.

※ Please DO NOT connect "DIM-" to "-V".

※ Reference resistance value for output current adjustment (Typical)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Resistance value | Single driver | Short | 10KΩ | 20KΩ | 30KΩ | 40KΩ | 50KΩ | 60KΩ | 70KΩ | 80KΩ | 90KΩ | 100KΩ | OPEN |
| | Multiple drivers (N=driver quantity for synchronized dimming operation) | Short | 10KΩ/N | 20KΩ/N | 30KΩ/N | 40KΩ/N | 50KΩ/N | 60KΩ/N | 70KΩ/N | 80KΩ/N | 90KΩ/N | 100KΩ/N | ----- |
| Percentage of rated current | | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 95%~108% |

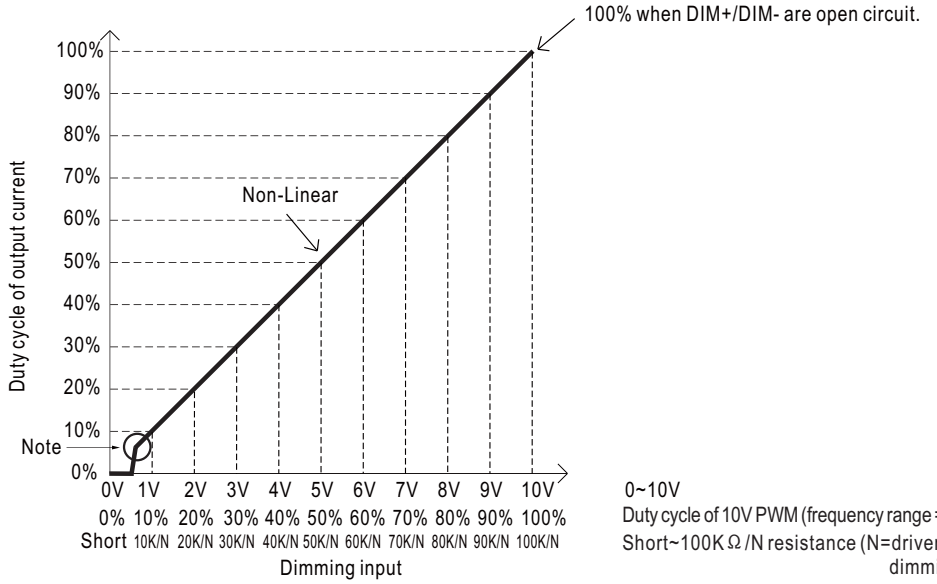
※ 0 ~ 10V dimming function for output current adjustment (Typical)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimming value | 0V | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 8V | 9V | 10V | OPEN |
| Percentage of rated current | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 95%~108% |

※ 10V PWM signal for output current adjustment (Typical): Frequency range :100Hz ~ 3KHz

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Duty value | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | OPEN |
| Percentage of rated current | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 95%~108% |

◎ Dimming Characteristic




0~10V
Duty cycle of 10V PWM (frequency range = 100~3KHz)
Short~100KΩ/N resistance (N=driver quantity for synchronized dimming operation )

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



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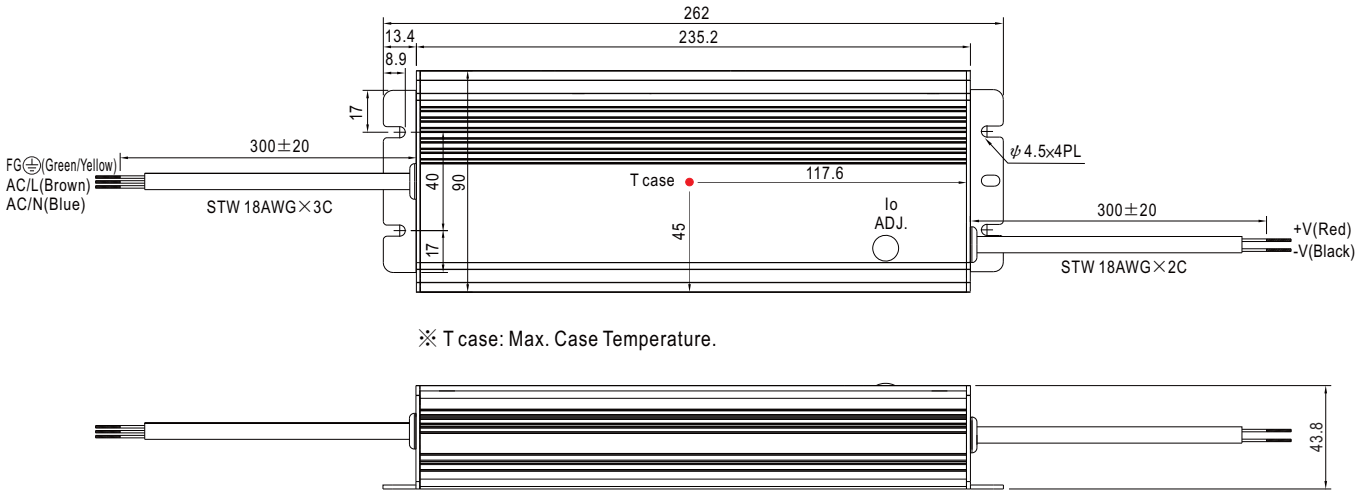
## ■ Mechanical Specification

Case No. 228 Unit:mm

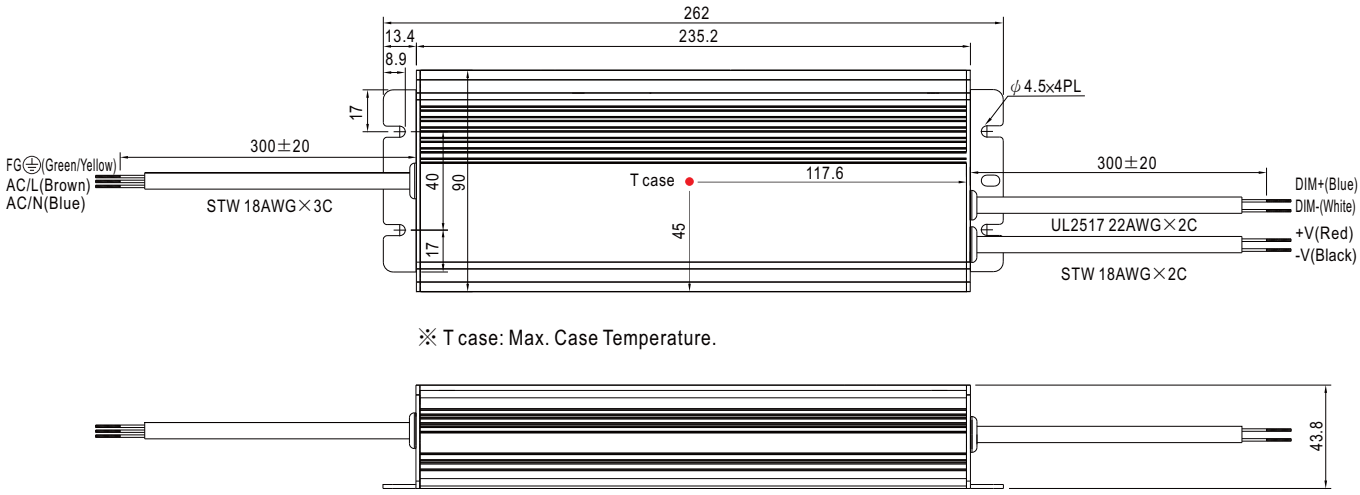
**A-Type:(HVGC-320-_A)**




※ T case: Max. Case Temperature.

※ IP65 rated. Output voltage and constant current level can be adjusted through internal potentiometer.
(Can access by removing the rubber stopper on the case.)

**B-Type:(HVGC-320-_B)**




※ T case: Max. Case Temperature.

## ■ Installation Manual

Please refer to : http://www.meanwell.com/webnet/search/InstallationSearch.html



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