



## ■ Features :

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- High efficiency up to 93.5%
- Protections: Short circuit / Over current / Over voltage / Over temperature
- OCP point adjustable through internal potentiometer
- IP67 / IP65 design for indoor or outdoor installations
- Suitable for dry / damp / wet locations
- 5 years warranty, Tc70°C 40000hrs



HBG-160-60 ☐ Blank : IP67 rated. Cable for I/O connection.

A : IP65 rated. Output constant current level can be adjusted through internal potentiometer.

B : IP67 rated. output constant current lever can be adjusted through output cable with 1-10V,PWM signal and Resistance

E(option) : IP67 rated. Can be fixed by steel support.

## SPECIFICATION

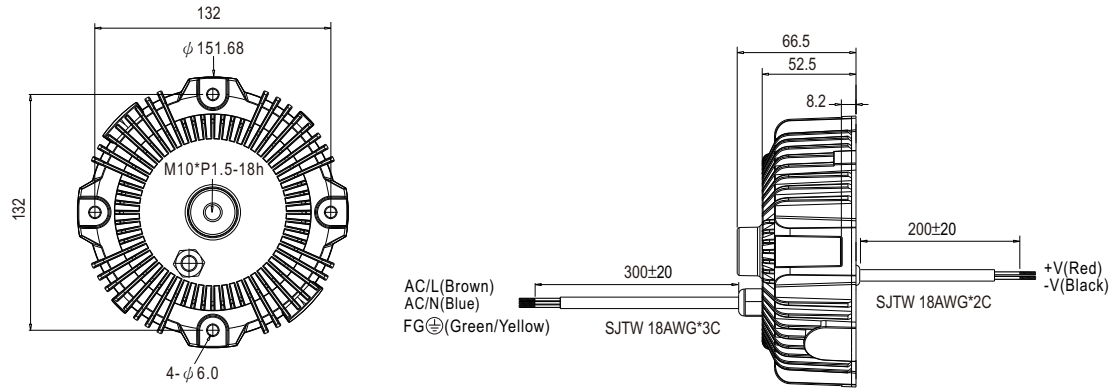
| MODEL        | HBG-160-24 <input type="checkbox"/>           | HBG-160-36 <input type="checkbox"/>                                                                               | HBG-160-48 <input type="checkbox"/> | HBG-160-60 <input type="checkbox"/> |
|--------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| OUTPUT       | DC VOLTAGE                                    | 24V                                                                                                               | 36V                                 | 48V                                 |
|              | CONSTANT CURRENT REGION <small>Note.4</small> | 14.4 ~ 24V                                                                                                        | 21.6 ~ 36V                          | 28.8 ~ 48V                          |
|              | RATED CURRENT                                 | 6.5A                                                                                                              | 4.4A                                | 3.3A                                |
|              | RATED POWER                                   | 156W                                                                                                              | 158.4W                              | 158.4W                              |
|              | RIPPLE & NOISE (max.) <small>Note.2</small>   | 200mVp-p                                                                                                          | 300mVp-p                            | 300mVp-p                            |
|              | CURRENT ADJ. RANGE                            | Can be adjusted by internal potentiometer A type only                                                             |                                     |                                     |
|              |                                               | 3.9 ~ 6.5A                                                                                                        | 2.6 ~ 4.4A                          | 1.98 ~ 3.3A                         |
|              | VOLTAGE TOLERANCE <small>Note.3</small>       | ±2.0%                                                                                                             |                                     | 1.6 ~ 2.6A                          |
|              | LINE REGULATION                               | ±0.5%                                                                                                             |                                     |                                     |
|              | LOAD REGULATION                               | ±1.0%                                                                                                             |                                     |                                     |
| INPUT        | SETUP, RISE TIME <small>Note.6</small>        | 2500ms, 200ms / 115VAC at full load                                                                               | 1200ms, 200ms / 230VAC at full load |                                     |
|              | HOLD UP TIME (Typ.)                           | 12ms at full load                                                                                                 | 115VAC/230VAC                       |                                     |
|              | VOLTAGE RANGE <small>Note.5</small>           | 90 ~ 305VAC                                                                                                       | 127 ~ 431VDC                        |                                     |
|              | FREQUENCY RANGE                               | 47 ~ 63Hz                                                                                                         |                                     |                                     |
|              | POWER FACTOR (Typ.)                           | PF>0.98/115VAC, PF>0.95/230VAC, PF>0.92/277VAC at full load (Please refer to "Power Factor Characteristic" curve) |                                     |                                     |
|              | EFFICIENCY (Typ.)                             | 92%                                                                                                               | 92%                                 | 93%                                 |
|              | AC CURRENT (Typ.)                             | 1.7A / 115VAC                                                                                                     | 0.78A / 230VAC                      | 0.7A / 277VAC                       |
|              | MAX.LED DRIVE NUMBER ON MCB C TYPE 16A        | 15units@230VAC                                                                                                    |                                     |                                     |
| PROTECTION   | INRUSH CURRENT (Typ.)                         | COLD START 65A(twidth=425μs measured at 50% Ipeak) at 230VAC                                                      |                                     |                                     |
|              | LEAKAGE CURRENT                               | <0.75mA / 277VAC                                                                                                  |                                     |                                     |
|              | OVER CURRENT <small>Note.4</small>            | 95 ~ 108%                                                                                                         |                                     |                                     |
|              |                                               | Protection type : Constant current limiting, recovers automatically after fault condition is removed              |                                     |                                     |
| ENVIRONMENT  | OVER VOLTAGE                                  | 28 ~ 34V                                                                                                          | 41 ~ 47V                            | 54 ~ 62V                            |
|              |                                               | Protection type : Shut down o/p voltage with auto-recovery or re-power on to recovery                             |                                     |                                     |
|              | OVER TEMPERATURE                              | 100°C ±10°C (RTH2)                                                                                                |                                     |                                     |
| SAFETY & EMC |                                               | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down                       |                                     |                                     |
|              | WORKING TEMP.                                 | -40 ~ +60°C (Refer to "Derating Curve")                                                                           |                                     |                                     |
|              | WORKING HUMIDITY                              | 20 ~ 95% RH non-condensing                                                                                        |                                     |                                     |
|              | STORAGE TEMP., HUMIDITY                       | -40 ~ +80°C, 10 ~ 95% RH                                                                                          |                                     |                                     |
|              | TEMP. COEFFICIENT                             | ±0.03%/°C (0 ~ 50°C)                                                                                              |                                     |                                     |
| OTHERS       | VIBRATION                                     | 10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes                                           |                                     |                                     |
|              | SAFETY STANDARDS                              | UL8750, CSA C22.2 No.250.13-12, EN61347-1, EN61347-2-13 approved, design refer to EN60950                         |                                     |                                     |
|              | WITHSTAND VOLTAGE                             | I/P-O/P:3.75KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC                                                                      |                                     |                                     |
|              | 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 (≥60% load) ; EN61000-3-3                                              |                                     |                                     |
| NOTE         | EMC IMMUNITY                                  | Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level (surge 4KV), criteria A                     |                                     |                                     |
|              | MTBF                                          | 252.3Khrs min. MIL-HDBK-217F (25°C)                                                                               |                                     |                                     |
|              | DIMENSION                                     | Refer to mechanical specification                                                                                 |                                     |                                     |
|              | PACKING                                       | 1.52Kg; 8pcs/13.16Kg/1.5CUFT                                                                                      |                                     |                                     |

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Constant current operation region is within 60% ~100% rated output voltage, and the output power must be more than 60% rated output power.  
This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.
5. Derating may be needed under low input voltages. Please check the static characteristics for more details.
6. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
7. 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.

# Mechanical Specification

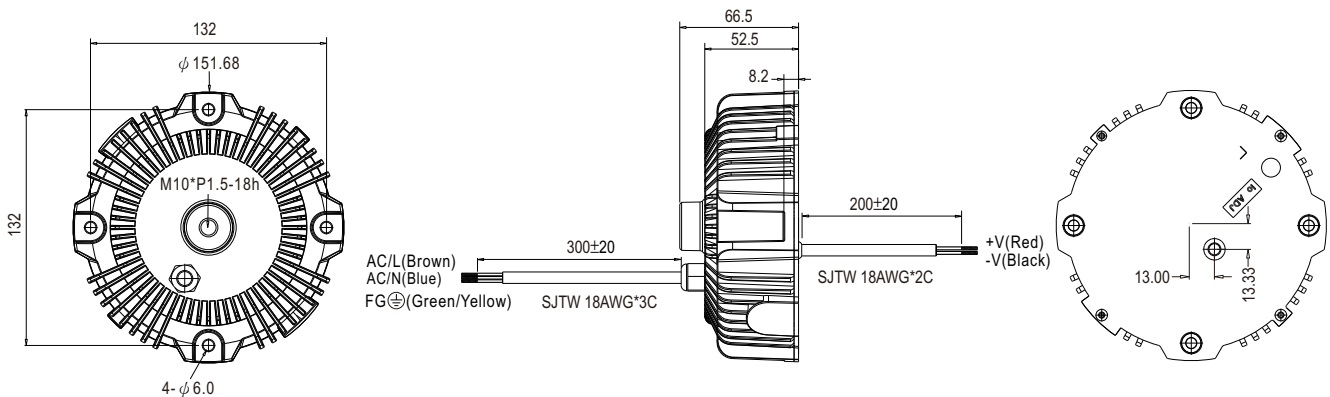
Case No.211 Unit:mm

## Blank:(HBG-160)



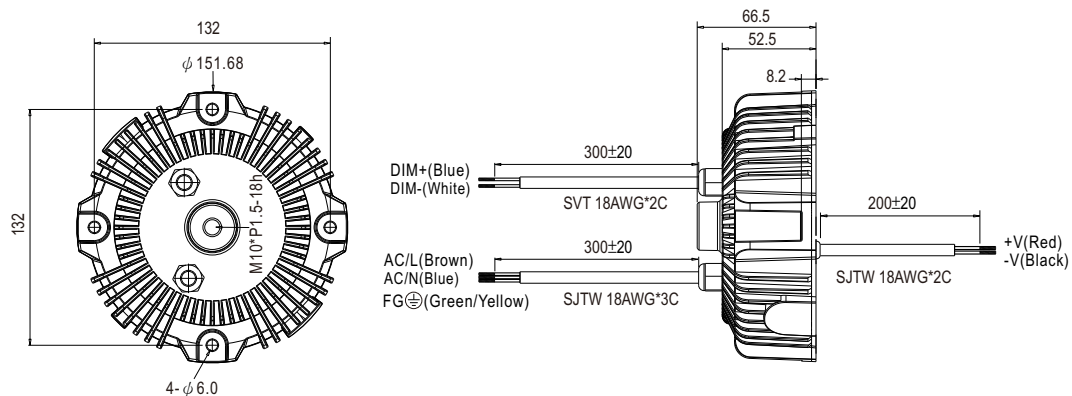
※IP67 rated. Cable for I/O connection.

## A type:(HBG-160-\_A)

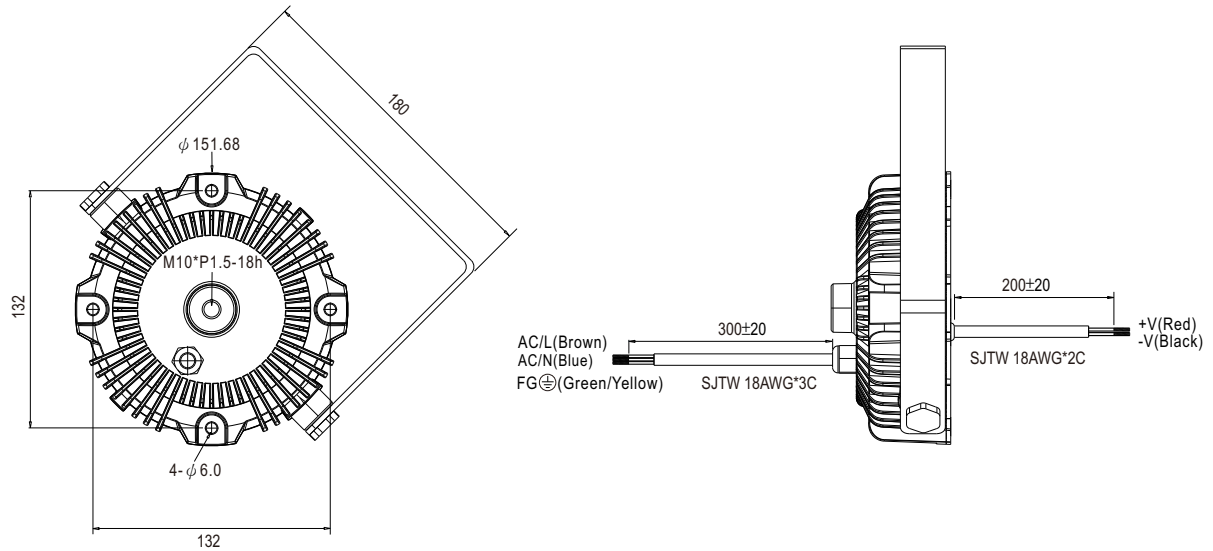


※IP65 rated. Output constant current level can be adjusted through internal potentiometer.

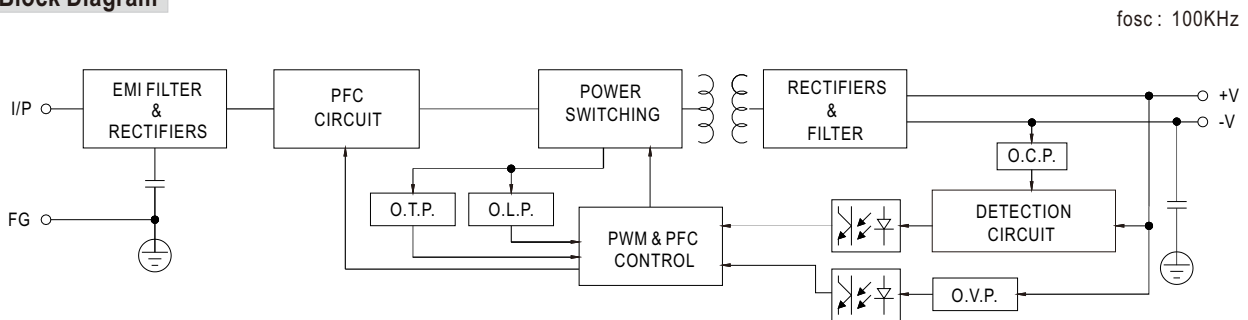
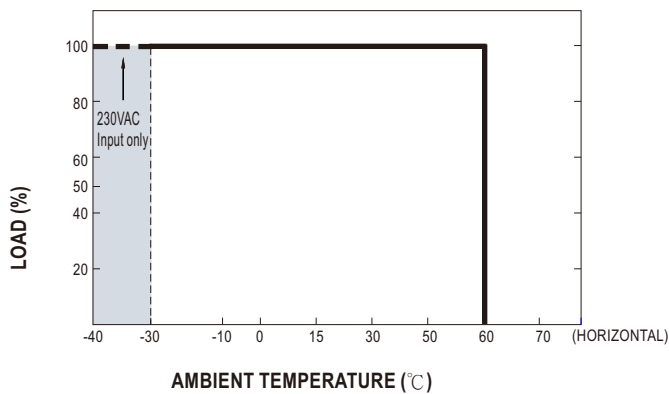
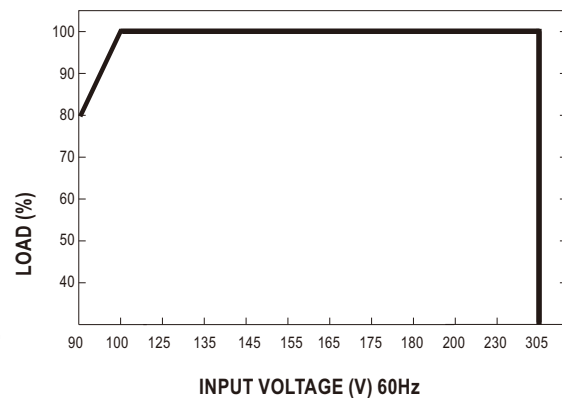
## B type:(HBG-160-\_B)



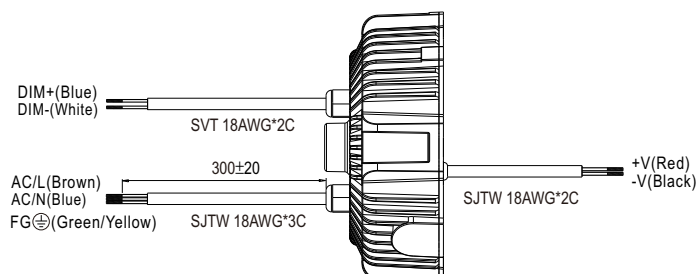
※IP67 rated. output constant current lever can be adjusted through output cable with 1-10V,PWM signal and Resistance

**E type(option):(HBG-160\_E)**


※IP67 rated. Can be fixed by steel support.

**Block Diagram**

**Derating Curve**

**Static Characteristics**


### ■ 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 1 ~ 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                                                              | 10KΩ   | 20KΩ   | 30KΩ   | 40KΩ   | 50KΩ   | 60KΩ   | 70KΩ   | 80KΩ   | 90KΩ   | 100KΩ   | OPEN     |
|-----------------------------|----------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----------|
|                             | Multiple drivers<br>(N=driver quantity for synchronized dimming operation) | 10KΩ/N | 20KΩ/N | 30KΩ/N | 40KΩ/N | 50KΩ/N | 60KΩ/N | 70KΩ/N | 80KΩ/N | 90KΩ/N | 100KΩ/N | -----    |
| Percentage of rated current |                                                                            | 10%    | 20%    | 30%    | 40%    | 50%    | 60%    | 70%    | 80%    | 90%    | 100%    | 95%~108% |

※ 1 ~ 10V dimming function for output current adjustment (Typical)

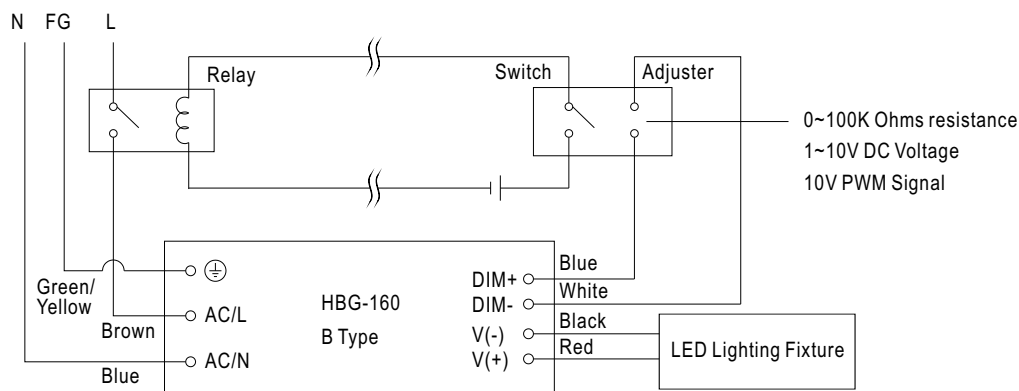
| Dimming value               | 1V  | 2V  | 3V  | 4V  | 5V  | 6V  | 7V  | 8V  | 9V  | 10V  | OPEN     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|----------|
| Percentage of rated current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |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

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

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

※ Using the built-in dimming function on B-type model can't turn the lighting fixture totally dark. Please refer to the connection method below to achieve 0% brightness of the lighting fixture connecting to the LED power supply unit.

※ Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.

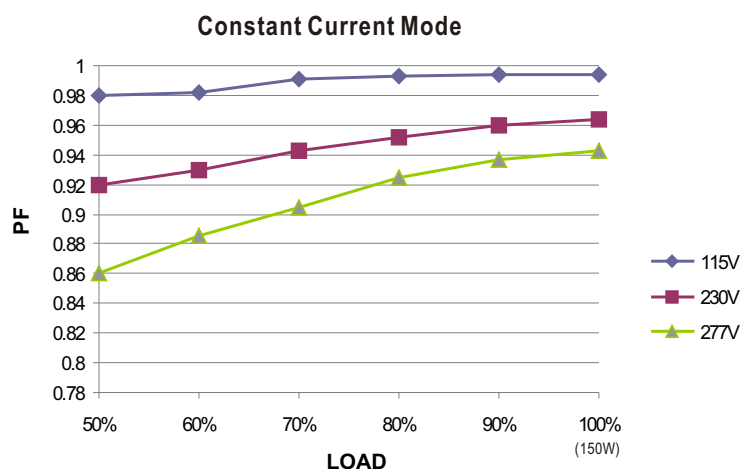


Using a switch and relay can turn ON/OFF the lighting fixture.

1. Output constant current level can be adjusted through output cable by connecting a resistance or 1~10Vdc or 10V PWM signal between DIM+ and DIM-.

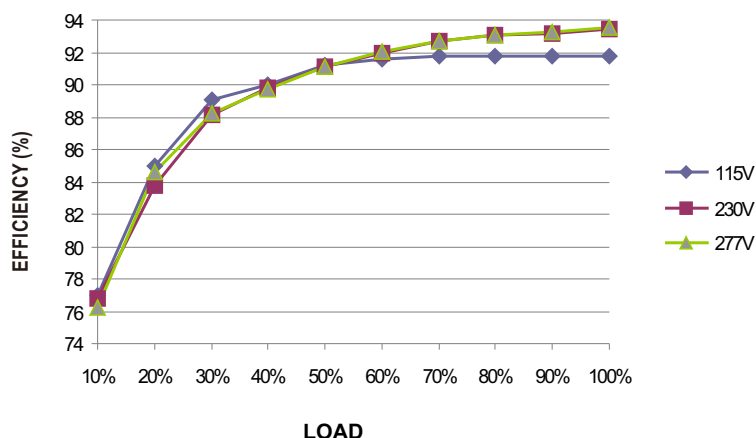
2. The LED lighting fixture can be turned ON/OFF by the switch.

## Power Factor Characteristic



## EFFICIENCY vs LOAD(48V Model)

HBG-160 series possess superior working efficiency that up to 93% can be reached in field applications.

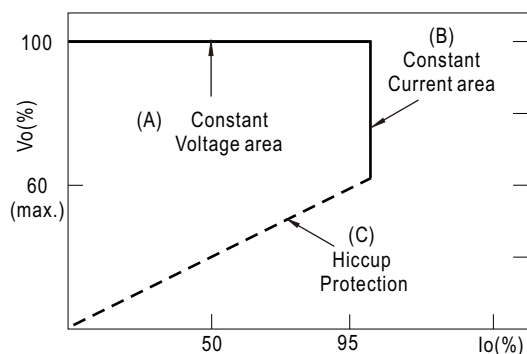


## DRIVING METHODS OF LED MODULE

There are two major kinds of LED drive method "direct drive" and "with LED driver".

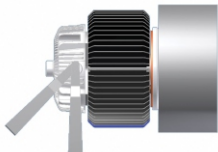
A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.

Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode (with LED driver, at area (A) and CC mode (direct drive, at area (B)).



Typical LED power supply I-V curve

# ■ INSTALLATIONS

|                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| Hanger                                                                            | Chain                                                                             | Spot Light                                                                        | High Bay Light                                                                     | Stage Light                                                                         |