MEAN WELL HBG-200 Series Constant Voltage Constant Current LED Driver Owner's Manual

Contents

HBG-200 Series Constant Voltage Constant Current LED Driver

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Product Information:

The HBG-200 series is a 200W Constant Voltage + Constant Current LED Driver. It is designed for DA type only and has an IP65 IP67 rating. The LED driver supports DALI.

Model: HBG-200-36

Model: HBG-200-48

DC Voltage: 36V

DC Voltage: 48V

Constant Current Region: 21.6 ~ 36V (for HBG-200-36)

Constant Current Region: 28.8 ~ 48V (for HBG-200-48)

Rated Current: 5.5A (for HBG-200-36)

Rated Current: 4.1A (for HBG-200-48)

Rated Power: 198W (for HBG-200-36)

Rated Power: 196.8W (for HBG-200-48)

Ripple & Noise (max.): 250mVp-p

Current Adjustment Range: Adjustable for A-Type and AB-Type (via built-in potentiometer)

Line Regulation

Load Regulation

Setup, Rise Time: 2500ms, 200ms /115VAC

Setup, Rise Time: 500ms, 200ms /230VAC

Hold Up Time (Typ.): 12ms /115VAC, 230VAC

Voltage Range: 90 ~ 305VAC, 127~417VDC

Frequency Range: 47 ~ 63Hz

Power Factor: PF>0.98/115VAC, PF>0.95/230VAC, PF>0.92/277VAC@full load

Total Harmonic Distortion: THD< 20%(@load60%/115VC,230VAC; @load75%/277VAC)

Efficiency (Typ.): 92% (for HBG-200-36)

Efficiency (Typ.): 93% (for HBG-200-48)

AC Current (Typ.): 1.9A / 115VAC (for HBG-200-36)

AC Current (Typ.): 1A / 230VAC (for HBG-200-48)

Inrush Current (Typ.): 0.9A / 277VAC

Max. No. of PSUs on 16A Circuit Breaker: 4 units (circuit breaker of type B) / 7 units (circuit breaker of type C) at 230VAC

Leakage Current

No Load / Standby Power Consumption

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Product Usage Instructions:

1. Make sure to read the user manual before using the HBG-200 series LED driver.
2. Ensure that the LED driver is suitable for the specific application and LED lighting system.
3. Connect the input power source to the LED driver using the specified voltage range (90 ~ 305VAC, 127~417VDC).
4. Connect the LED load to the output terminals of the LED

driver.

5. For models HBG-200-36 and HBG-200-48, adjust the constant current region within the specified range (21.6 ~ 36V for HBG-200-36 and 28.8 ~ 48V for HBG-200-48) using the built-in potentiometer.
6. Ensure that the total load connected to the LED driver does not exceed the rated power (198W for HBG-200-36 and 196.8W for HBG-200-48).
7. Take note of the ripple & noise specification (max. 250mVp-p) to ensure proper operation of the LED lighting system.
8. Consider the line regulation and load regulation factors for stable performance of the LED driver.
9. Follow the setup and rise time specifications (2500ms, 200ms /115VAC or 500ms, 200ms /230VAC) for reliable operation.
10. Refer to the hold up time specification (12ms /115VAC, 230VAC) to ensure uninterrupted power supply to the LED system.
11. Pay attention to the power factor (PF) characteristic for efficient energy usage.
12. Observe the total harmonic distortion (THD) specification to maintain good power quality.
13. Check the efficiency rating (92% for HBG-200-36 and 93% for HBG-200-48) for optimal performance.
14. Consider the AC current and inrush current specifications for proper circuit breaker sizing.
15. Take note of the maximum number of PSUs allowed on a 16A circuit breaker to prevent overload.
16. Ensure that the leakage current and no load/standby power consumption are within acceptable limits.

(for DA type only)

SELV IP65 IP67

(CCC optional)

Type HL

Features

- Constant Voltage + Constant Current mode output
- Circular metal housing with class I design
- Built-in active PFC function
- IP67 / IP65 rating for indoor or outdoor installations
- Function options: output adjustable via potentiometer; 3 in 1 dimming; DALI
- Typical lifetime>50000 hours
- 5 years warranty

Applications

- LED high/low bay lighting
- LED canopy lighting
- LED stage lighting
- LED spot lighting
- Outdoor architectural lighting system
- Type “HL” for use in Class I, Division 2 hazardous (Classified) location.

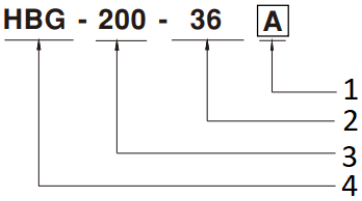
GTIN CODE

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

Description

HBG-200 series is a 200W AC/DC LED driver featuring the circular shape design. It operates from 90~305VAC and offers the dual modes constant voltage and constant current output models with different rated voltage between 36Vand 60V. Thanks to the high efficiency up to 93.5%,with the fanless design, the entire series is able to operate for -40°C ~ +85°C case temperature under free air convection. The design of metal housing and IP67/1P65 ingress protection level allows this series to fit both indoor and outdoor applications. HBG-200 is equipped with various function options, such as dimming methodologies, so as to provide the optimal design flexibility for LED lighting system.

Model Encoding



1. Function mode option
2. Rated output voltage(36/48/60V)
3. Rated wattage
4. Series name

Type	IP Level	Function	Note
Blank	IP67	Io fixed.	In Stock
A	IP65	Io adjustable through built-in potentiometer.	In Stock
B	IP67	3 in 1 dimming function (0-10Vdc, 10V PWM signal and resistance)	In Stock
AB	IP65	Io adjustable through built-in potentiometer with 3 in 1 dimming function	In Stock
DA	IP67	DALI control technology.	In Stock

SPECIFICATION

MODEL		**HBG-200-36 □**	**HBG-200-48 □**	**HBG-200-60 □**
OUTPUT	**DC VOLTAGE**	36V	48V	60V
	CONSTANT CURRENT REGION Note.2	21.6 ~ 36V	28.8 ~ 48V	36 ~ 60V
	RATED CURRENT	5.5A	4.1A	3.3A
	RATED POWER	198W	196.8W	198W
	RIPPLE & NOISE (max.) Note.3	250mVp-p	250mVp-p	350mVp-p
	CURRENT ADJ. RANGE	Adjustable for A-Type and AB-Type (via built-in potentiometer)		
		3.3 ~ 5.5A	2.46 ~ 4.1A	1.98 ~ 3.3A
	VOLTAGE TOLERANCE Note.4	±2.0%		
	LINE REGULATION	±0.5%		
	LOAD REGULATION	±1.0%		
	SETUP, RISE TIME Note.6	2500ms,200ms /115VAC 500ms,200ms /230VAC		

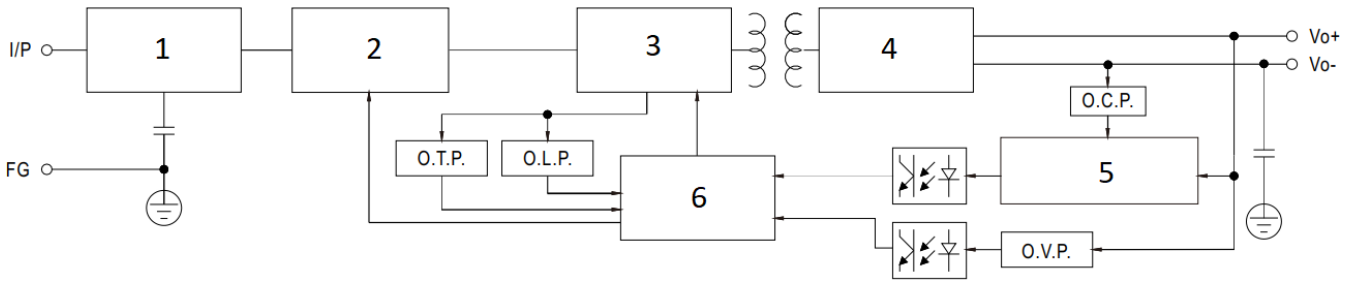
	HOLD UP TIME (Typ.)	12ms /115VAC, 230VAC		
INPUT	**VOLTAGE RANGE Note.5**	90 ~ 305VAC 127~417VDC (Please refer to “STATIC CHARACTERISTIC” section)		
	FREQUENCY RANGE	47 ~ 63Hz		
	POWER FACTOR	PF>0.98/115VAC, PF>0.95/230VAC, PF>0.92/277VAC@full load (Please refer to “POWER FACTOR (PF) CHARACTERISTIC” section)		
	TOTAL HARMONIC DISTORTION	THD< 20%(@load≧60%/115VC,230VAC; @load≧75%/277VAC) (Please refer to “TOTAL HARMONIC DISTORTION(THD)” section)		
	EFFICIENCY (Typ.)	92%	93%	93.5%
	AC CURRENT (Typ.)	1.9A / 115VAC 1A / 230VAC 0.9A / 277VAC		
	INRUSH CURRENT (Typ.)	COLD START 85A(twidth=600μs measured at 50% Ipeak) at 230VAC; Per NEMA 410		
	MAX. No. of PSUs on 16A CIRCUIT BREAKER	4 units (circuit breaker of type B) / 7 units (circuit breaker of type C) at 230VAC		
	LEAKAGE CURRENT	<0.75mA / 277VAC		
	NO LOAD / STAND BY POWER CONSUMPTION	Standby power consumption <0.5W for B/AB/DA-Type Blank/A-Type please refer to Note.8		
PROTECTION	**OVER CURRENT**	95~108%		
		Constant current limiting, recovers automatically after fault condition is removed		
	SHORT CIRCUIT	Hiccup mode or constant current limiting, recovers automatically after fault condition is removed		
	OVER VOLTAGE	41 ~ 47V	54 ~ 62V	65 ~ 75V
		Shut down o/p voltage with auto-recovery or re-power on to recovery		
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down		
ENVIRONMENT	**WORKING TEMP.**	Tcase=-40 ~ +85℃ (Please refer to “ OUTPUT LOAD vs TEMPERATURE” section)		
	MAX. CASE TEMP.	Tcase=+85℃		
	WORKING HUMIDITY	20 ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)		

	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.250.13-12,ENEC BS EN/EN61347-1,BS EN/EN61347-2-13 independent, BS EN/EN62384; GB19510.14, GB19510.1; EAC TP TC 004,IP65 or IP67 approved
	DALI STANDARDS	Compliance to IEC62386-101, 102, 207 for DA type only
	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℃/ 70% RH
	EMC EMISSION	Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@load≧60%) ; BS EN/EN61000-3-3; GB17625.1, GB17743,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**	2042.7K hrs min. Telcordia SR-332 (Bellcore) ;207.4K hrs min. MIL-HDBK-217F (25℃)
	DIMENSION	Refer to mechanical specification
	PACKING	1.53Kg; 8pcs/13.8Kg/1.61CUFT

NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature. 2. Please refer to “DRIVING METHODS OF LED MODULE”. 3. Ripple & noise are measured at 20MHz of bandwidth by using a 12″ twisted pair-wire terminated with a 0.1 uf & 47uf parallel capacitor. 4. Tolerance : includes set up tolerance, line regulation and load regulation. 5. De-rating may be needed under low input voltages. Please refer to “STATIC CHARACTERISTIC” sections for details. 6. Length of set up time is measured at cold first start. Turning ON/OFF the driver may lead to increase of the set up time. 7. 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. 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. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (tc) point (or TMP, per DLC), is about 70°C or less. 10. Please refer to the warranty statement on MEAN WELL’s website at **http://www.meanwell.com** 11. 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). 12. 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** ※ Product Liability Disclaimer : For detailed information, please refer to **https://www.meanwell.com/serviceDisclaimer.aspx**

BLOCK DIAGRAM

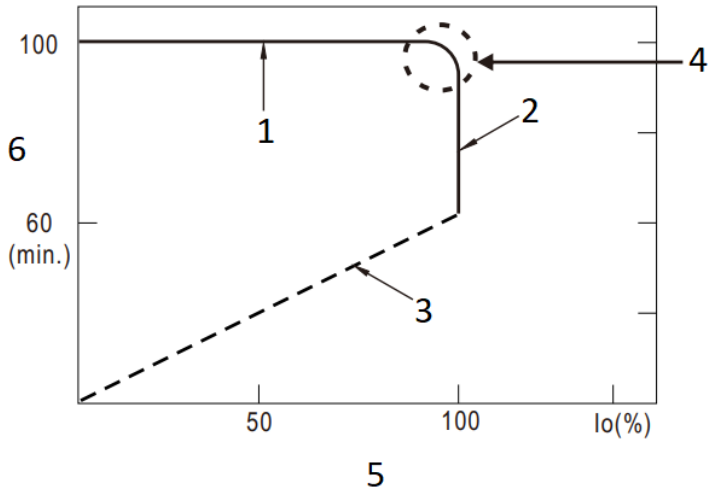
fosc : 100KHz



1. EMI FILTER & RECTIFIERS
2. PFC CIRCUIT
3. POWER SWITCHING
4. RECTIFIERS & FILTER
5. DETECTION CIRCUIT
6. PWM & PFC CONTROL

DRIVING METHODS OF LED MODULE

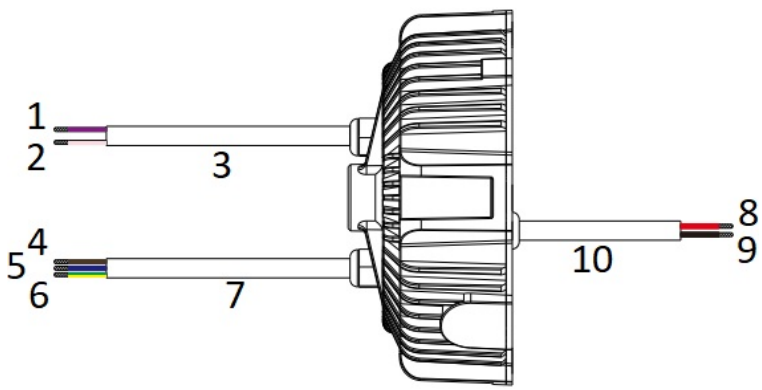
※ This series is able to work in either Constant Current mode (a direct drive way) or Constant Voltage mode (usually through additional DC/DC driver) to drive the LEDs.



1. (A)
   Constant Voltage area
2. (B)
   Constant Current area
3. (C)
   Hiccup Protection
4. In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.
   Should there be any compatibility issues, please contact MEAN WELL.
5. Typical output current normalized by rated current (%)
6. Vo(%)

DIMMING OPERATION

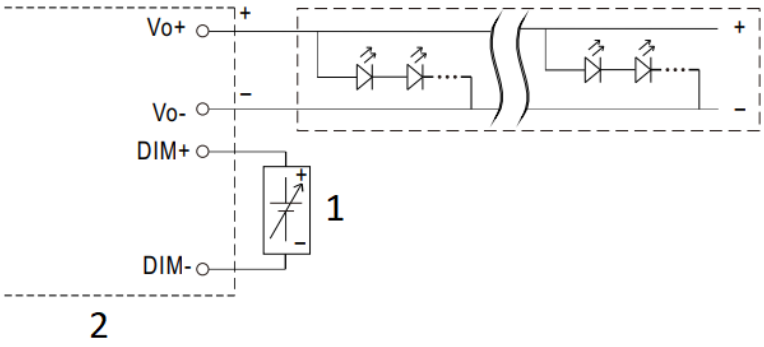
* DIM+ for B/AB-Type
DA+ for DA-Type
* *DIM- for B/AB-Type
DA- for DA-Type



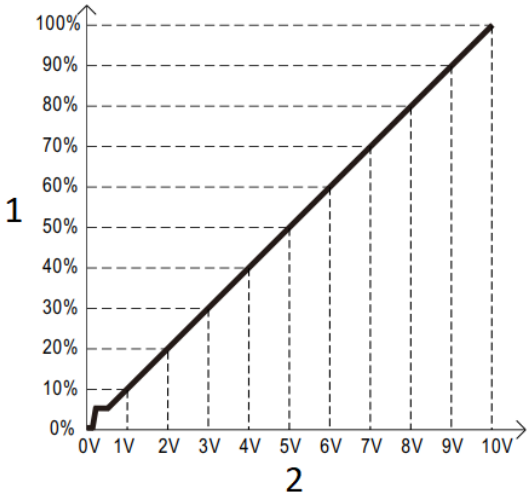
1. *DIM+(Purple)
2. **DIM-(Pink)
3. SVT 18AWG*2C
4. AC/L(Brown)
5. AC/N(Blue)
6. FG ⏚ (Green/Yellow)
7. SVT 18AWG*2C
8. Vo+(Red)
9. Vo-(Black)
10. SJTW 18AWG*2C

※ **3 in 1 dimming function (for B/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: 100A (typ.)

◎ Applying additive 0 ~ 10VDC

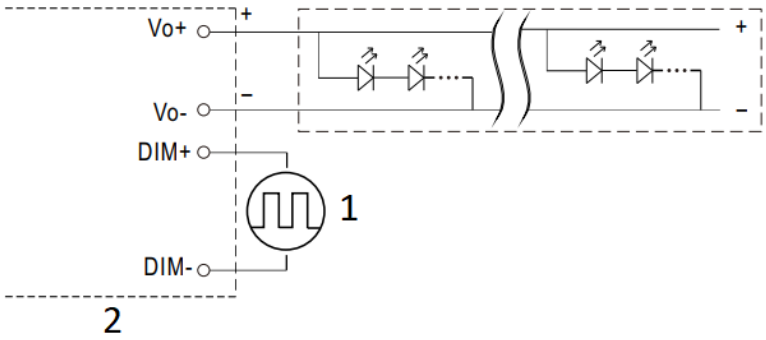


1. Additive Voltage
2. “DO NOT connect “DIM- to -V”

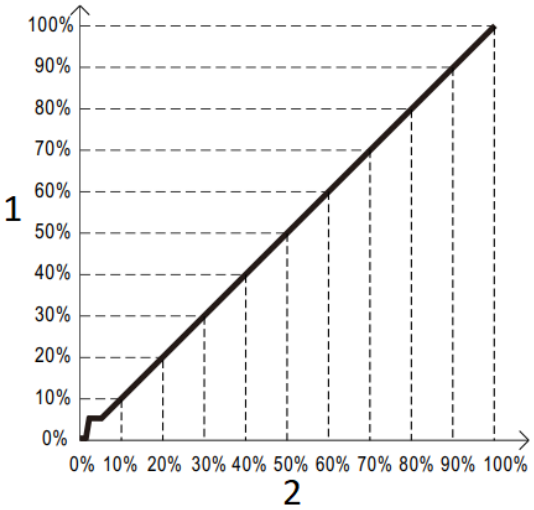


1. Output current (%)
2. Dimming input: Additive voltage

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

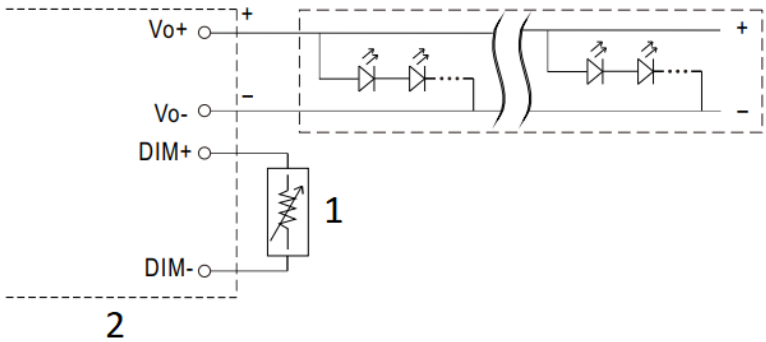


1. Additive PWM signal
2. “DO NOT connect” DIM- to -V”

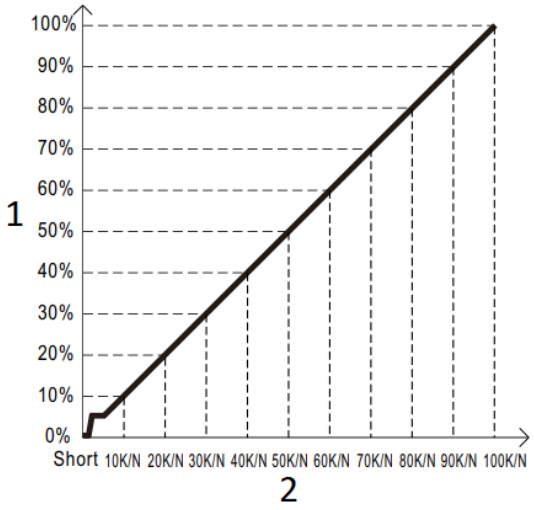


1. Output current (%)
2. Duty cycle of additive 10V PWM signal dimming input

◎ ◎ Applying additive resistance:



1. Additive Resistance
2. “DO NOT connect” DIM- to -V”

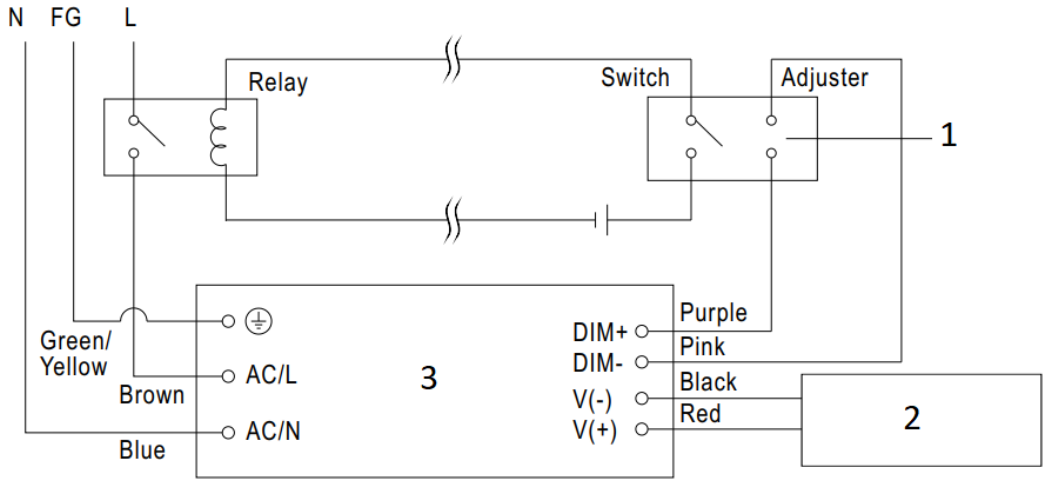


1. Output current (%)
2. (N=driver quantity for synchronized dimming operation)
   Dimming input: Additive resistance

Note :

1. Min. dimming level is about 8% and the output current is not defined when 0%< Iout<8%.
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.

Note: In the case of turning the lighting fixture down to 0% brightness, please refer to the configuration as follow, or please contact MEAN WELL for other options.



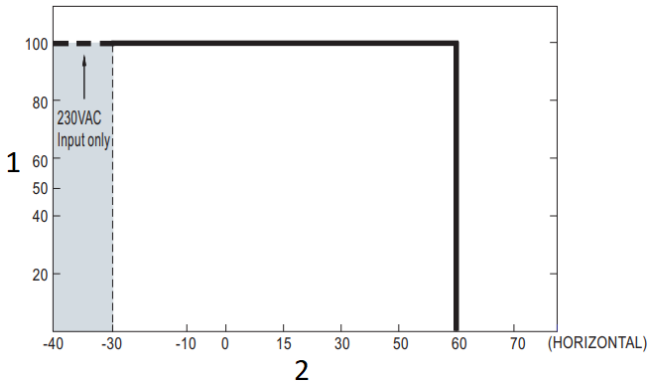
1. 10K/N~100K/N Ohms resistance
   1~10V DC Voltage
   10V PWM Signal
2. LED Lighting Fixture
3. HBG-200
   B-Type

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

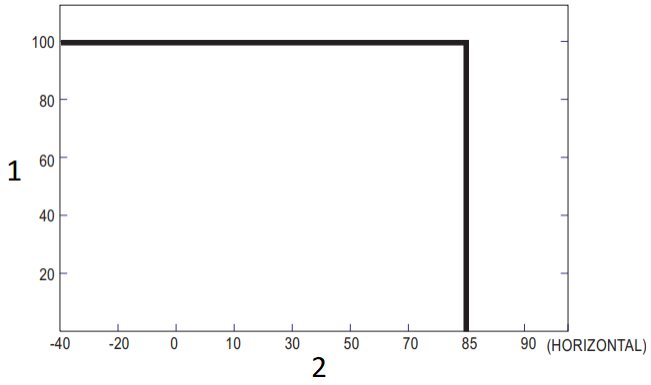
※ DALI Interface (primary side; for DA-Type)

- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 8% of output.

■ OUTPUT LOAD vs TEMPERATURE(Note.11)

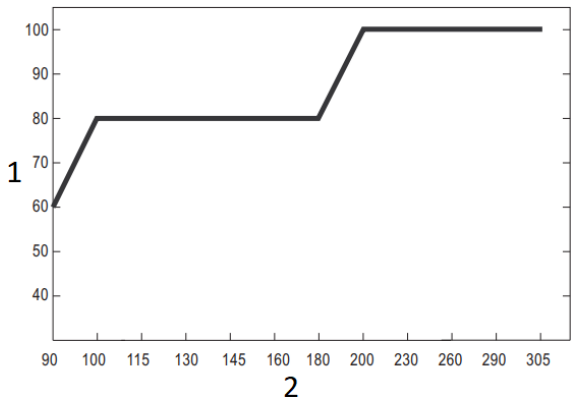


1. **LOAD (%)**
2. **AMBIENT TEMPERATURE (°C)**



1. **LOAD (%)**
2. **Tcase (°C)**

■ STATIC CHARACTERISTIC

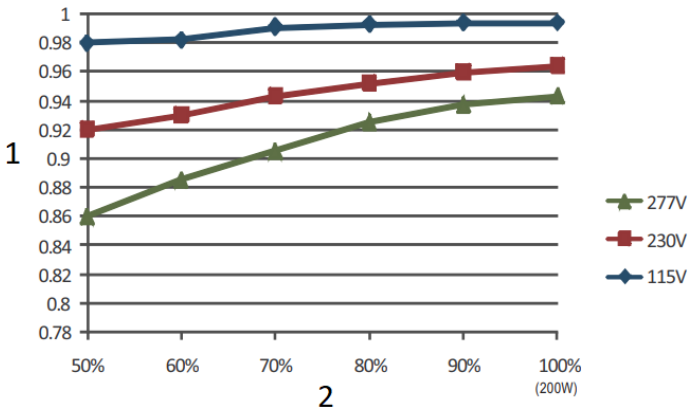


1. **LOAD (%)**
2. **INPUT VOLTAGE (V) 60Hz**

※ De-rating is needed under low input voltage.

■ POWER FACTOR (PF) CHARACTERISTIC

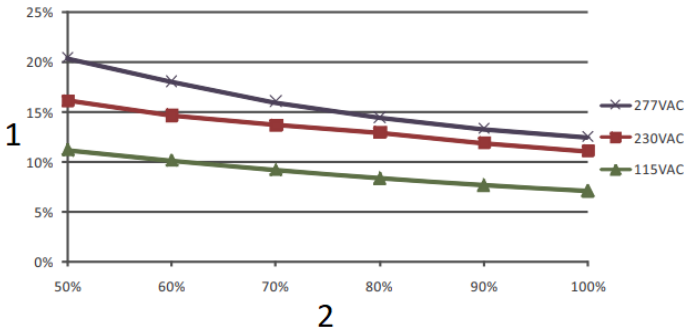
※ Tcase at 75°C



1. **PF**
2. **LOAD**

■ TOTAL HARMONIC DISTORTION (THD)

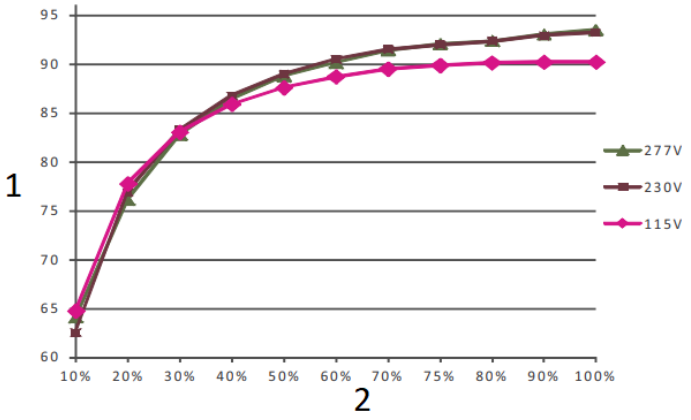
※ 48V Model, Tcase at 75°C



1. **THD**
2. **LOAD**

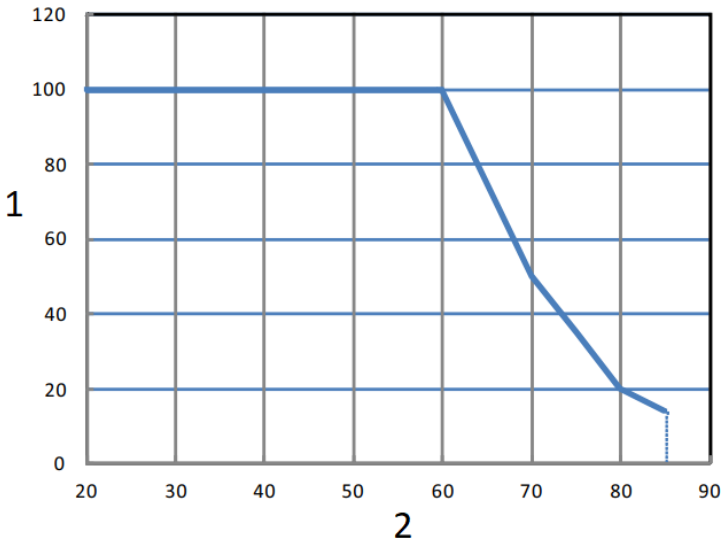
■ EFFICIENCY vs LOAD

HBG-200 series possess superior working efficiency that up to 93.5% can be reached in field applications.
※ 48V Model, Tcase at 75°C



1. **EFFICIENCY(%)**
2. **LOAD**

LIFETIME

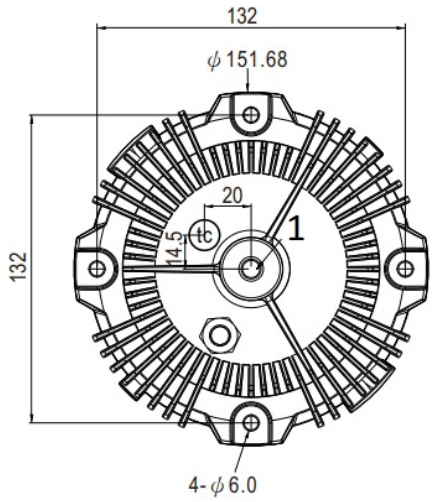


1. **LIFETIME(Kh)**
2. Tcase (℃)

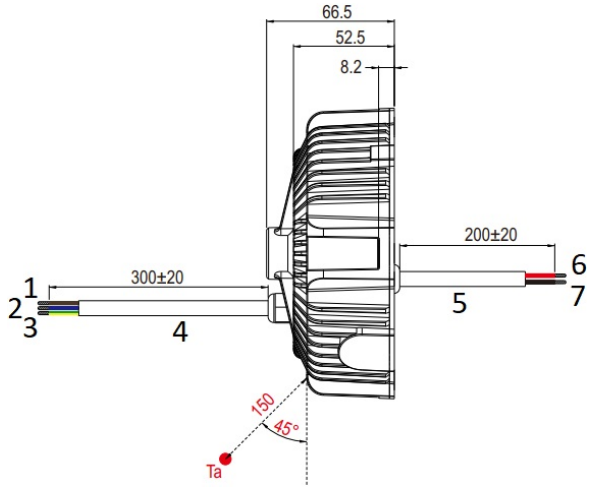
MECHANICAL SPECIFICATION

Case No.211 Unit:mm

※ Blank-Type



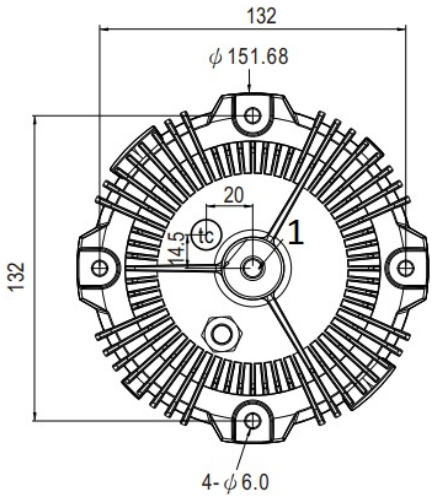
1. M10*P1.5-18h



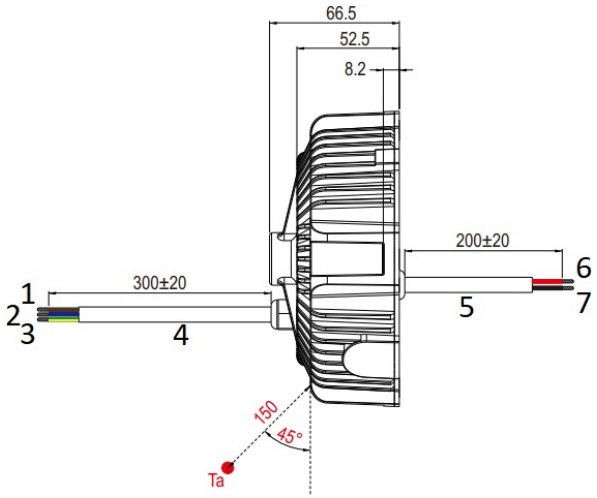
1. AC/L(Brown)
2. AC/N(Blue)
3. FG ⏚ (Green/Yellow)
4. SJTW 18AWG*3C
5. SJTW 18AWG*2C
6. Vo+(Red)
7. Vo-(Black)

- (tc) : Max. Case Temperature.(case temperature measured point)
- Ta: Ambient Temperature measured point

※ A-Type



1. M10*P1.5-18h



1. AC/L(Brown)
2. AC/N(Blue)
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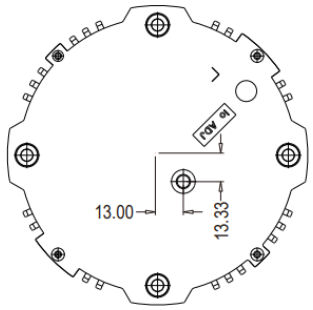
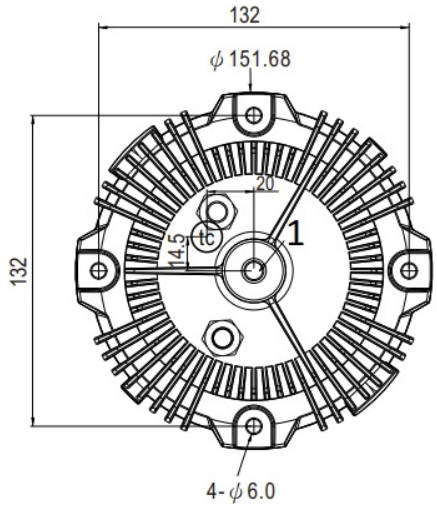


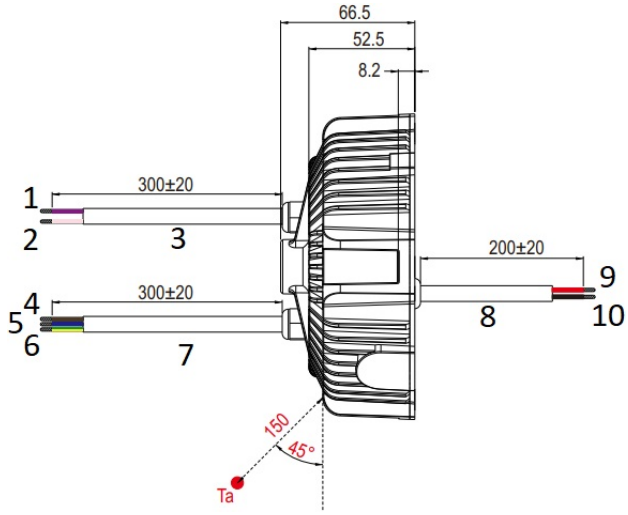
- ⓣⓒ : Max. Case Temperature.(case temperature measured point)
- Ta: Ambient Temperature measured point

※ B/DA-Type



1. M10*P1.5-18h

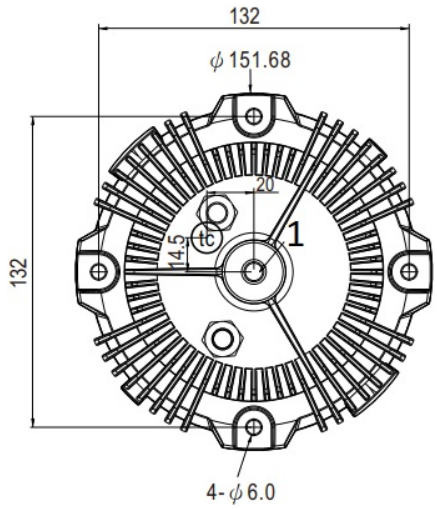
* DIM+ for B-Type
DA+ for DA-Type
* *DIM- for B-Type
DA- for DA-Type



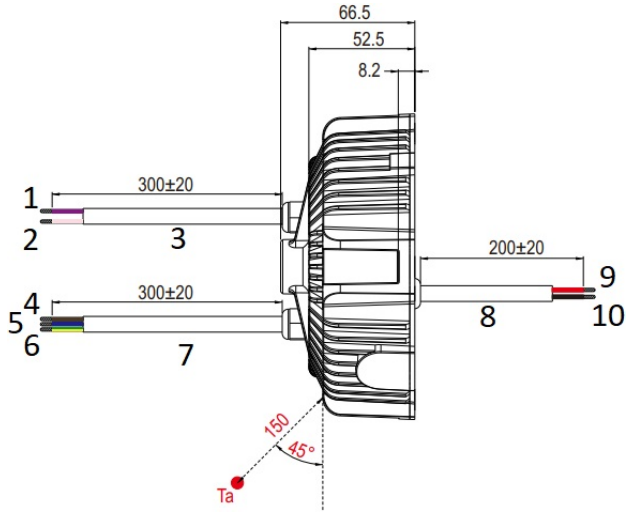
1. *DIM+(Purple)
2. **DIM-(Pink)
3. SVT 18AWG*2C
4. AC/L(Brown)
5. AC/N(Blue)
6. FG ⏚ (Green/Yellow)
7. SJTW 18AWG*3C
8. SJTW 18AWG*2C
9. Vo+(Red)
10. Vo-(Black)

- (tc) : Max. Case Temperature.(case temperature measured point)
- Ta: Ambient Temperature measured point

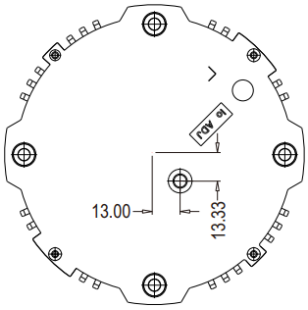
※ AB-Type



1. M10*P1.5-18h



1. *DIM+(Purple)
2. **DIM-(Pink)
3. SVT 18AWG*2C
4. AC/L(Brown)
5. AC/N(Blue)
6. FG ⏚ (Green/Yellow)
7. SJTW 18AWG*3C
8. SJTW 18AWG*2C
9. Vo+(Red)
10. Vo-(Black)



- (tc) : Max. Case Temperature.(case temperature measured point)
- Ta: Ambient Temperature measured point

INSTALLATIONS

		
Hanger	**Chain**	**High Bay Light**

Caution

※ Please inspect the appearance of the driver if the package is damaged. There should not be any cracks.
※ Please do not drop or bump the driver.
※ All screws including the suspension screw should be paired with a spring washer and locked tight.
※ The entire luminaire, including the driver, should be limited to 10Kg or less.
※ The luminaire should be cautiously protected from damage due to shock throughout packaging and transportation.
※ Please thoroughly follow the preceding cautionary notes to prevent the luminaire from falling, leading to injuries.

INSTALLATION MANUAL

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

File Name:HBG-200-SPEC 2022-03-16

Documents / Resources

	MEAN WELL HBG-200 Series Constant Voltage Constant Current LED Driver [pdf] Owner's Manual HBG-200 Series Constant Voltage Constant Current LED Driver, HBG-200 Series, Constant Voltage Constant Current LED Driver, Constant Current LED Driver, Current LED Driver, LED Driver, Driver