

GLHP-060 series

60W Programmable Constant Current with Constant Power Output LED Driver



Features:

- Ultra high input voltage range: 249-528VAC
- Constant current with Constant power output design with adjustable output current
- Output current adjustable via infrared controller or software interface
- Built-in active PFC function
- Protections: Short Circuit / Over Voltage / Over Temperature
- Cooling by free air convection
- Surge immunity: Differential Mode - 4kV, Common Mode - 6kV
- Dimming 3 in 1 (0-10V, PWM, Time dimming) function for M version
- IP67 design for indoor and outdoor applications
- Suitable for dry/damp/wet locations



Application:

- LED architecture lighting
- Industrial lighting
- Flood lighting
- Roadway lighting



DESCRIPTION

With 249 to 528V AC input, GLHP series is designed for ultra high voltage market (277Vac/347Vac/480Vac), it's especially suitable for North America industrial electrical network. GLHP is configurable constant current LED driver with high reliability, Monitored by an infrared based programming device, the fully programmed drivers offer all dimming options and a wide range of output current in a single driver, which deliver maximum flexibility with customized operating settings and intelligent control options for OEMs, as one driver can be programmed for many different luminaire designs. GLHP provides built-in timer dimming schedules further increasing the energy savings and CO2 reductions achieved with LED lighting. It also help clients to improve the management of logistics and stock.

MODEL INFORMATION

MODEL NUMBER	OUTPUT POWER [W]	OUTPUT VOLTAGE RANGE [VDC]	OUTPUT CURRENT ADJUSTABLE RANGE [A]	FULL POWER OUTPUT CURRENT ADJUSTABLE RANGE FOR [A]	DEFAULT SETTING	TYPICAL EFFICIENCY	POWER FACTOR	
							277VAC	480VAC
GLHP-060X036	60	20 ÷ 36	0.21 ÷ 2.10	1.67 ÷ 2.10	20 ÷ 36VDC / 1.67A	86%	0.98	0.91
GLHP-060X062	60	20 ÷ 62	0.14 ÷ 1.40	0.97 ÷ 1.40	20 ÷ 57VDC / 1.05A	86%	0.98	0.91
GLHP-060X090	60	45 ÷ 90	0.10 ÷ 0.95	0.67 ÷ 0.95	45 ÷ 85VDC / 0.70A	83%	0.98	0.91

Notes:

	X = R	X = M
1.	Example: GLHP-060R036 Programmable, output current adjustable via infrared controller, time dimming	Example: GLHP-060M036 Programmable, output current adjustable via infrared controller, time dimming; dimmable (0-10V, PWM)
2.	Output current adjustable range with constant power at max output power.	
3.	All specifications are measured at 25°C ambient temperature if no specific note.	

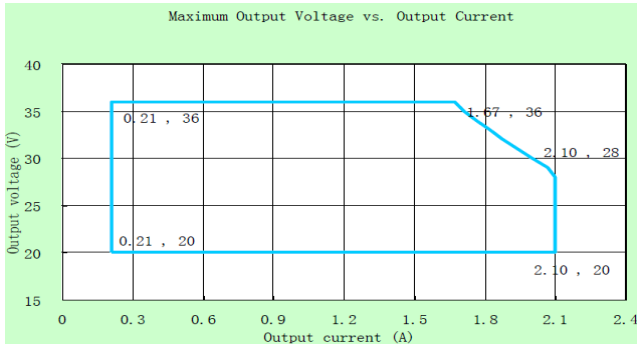
GLHP-060 series

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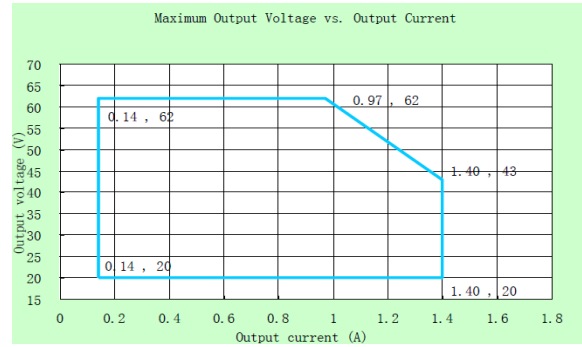


© OPERATING AREA I-V

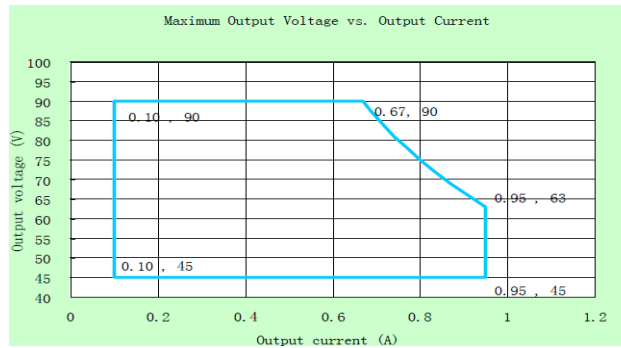
GLHP-060X036



GLHP-060X062



GLHP-060X090



© INPUT SPECIFICATIONS

PARAMETER	Min.	Typ.	Max.	Notes
INPUT VOLTAGE	249VAC	277 ÷ 480VAC	528VAC	-
INPUT FREQUENCY	47Hz	50/60Hz	63Hz	-
LEAKAGE CURRENT	-	-	0.75mA	480VAC/50Hz
INPUT AC CURRENT	-	-	0.80A	277 ÷ 480VAC, full load
INRUSH CURRENT	-	-	75A	480VAC, full load
POWER FACTOR	0.90	-	-	277 ÷ 480VAC, full load
THD	-	-	25%	480VAC, 80 ÷ 100% load
THD	-	-	20%	277 ÷ 347VAC, 80 ÷ 100% load

GLHP-060 series

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Ⓢ OUTPUT SPECIFICATIONS

PARAMETER	Min.	Typ.	Max.	Notes
OUTPUT CURRENT TOLERANCE	-5% I _{SET}	-	+5% I _{SET}	Full load
OUTPUT CURRENT SETTING RANGE (I_{SET})				
GLHP-060X036	0.21A	-	2.10A	-
GLHP-060X062	0.14A	-	1.40A	-
GLHP-060X090	0.10A	-	0.95A	-
OUTPUT CURRENT SETTING RANGE WITH CONSTANT POWER				
GLHP-060X036	1.67A	-	2.10A	-
GLHP-060X062	0.97A	-	1.40A	-
GLHP-060X090	0.67A	-	0.95A	-
TOTAL OUTPUT CURRENT RIPPLE (PK-PK)	-	-	20%	480VAC & full LED load, ripple is different with difference LED load
STARTUP OVERSHOOT CURRENT	-	-	10%	277 ÷ 480VAC, full LED load
NO LOAD OUTPUT VOLTAGE				
GLHP-060X036	-	-	45V	-
GLHP-060X062	-	-	75V	-
GLHP-060X090	-	-	105V	-
LINE REGULATION	-	-	1%	25°C ± 10°C ambient temperature, input voltage changes from 277VAC to 480VAC
LOAD REGULATION	-	-	3%	25°C ± 10°C ambient temperature, 480VAC input load changes from 50% to 100%
TURN-ON DELAY TIME	-	-	3s	277 ÷ 480VAC, full load

Ⓢ GENERAL SPECIFICATIONS

PARAMETER	Min.	Typ.	Max.	Notes
EFFICIENCY AT 277VAC				
GLHP-060X036				25°C ambient temperature, full load
I _o = 1.67A	84%	86%		
I _o = 2.10A	83%	85%		
GLHP-060X062				
I _o = 1.05A	85%	86%	-	
I _o = 1.40A	84%	86%		
GLHP-060X090				
I _o = 0.70A	82%	84%		
I _o = 0.95A	82%	84%		
EFFICIENCY AT 347VAC				
GLHP-060X036				25°C ambient temperature, full load
I _o = 1.67A	84%	86%		
I _o = 2.10A	84%	85%		
GLHP-060X062				
I _o = 1.05A	84%	86%	-	
I _o = 1.40A	84%	86%		
GLHP-060X090				
I _o = 0.70A	82%	82%		
I _o = 0.95A	82%	82%		

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PARAMETER	Min.	Typ.	Max.	Notes
EFFICIENCY AT 480VAC				
GLHP-060X036 I _o = 1.67A	84%	86%		25°C ambient temperature, full load
I _o = 2.10A	83%	85%		
GLHP-060X062 I _o = 1.05A	84%	86%	-	
I _o = 1.40A	84%	86%		
GLHP-060X090 I _o = 0.70A	81%	83%		
I _o = 0.95A	81%	83%		
MTBF	-	200 000 hours	-	480VAC, 80% load (MIL-HDBK-217F)
LIFETIME	-	50 000 hours	-	480VAC, 100% load, 70°C case temperature
OPERATING CASE TEMPERATURE FOR SAFETY T_{c_s}	-40°C	-	+85°C	-
OPERATING CASE TEMPERATURE FOR SAFETY T_{c_w}	-40°C	-	+70°C	-
STORAGE TEMPERATURE	-40°C	-	+85°C	Humidity: 10% to 95% RH
DIMENSIONS (L x W x H)	207 x 68 x 39mm			-
NET WEIGHT	900 ± 50g / pc.			-
PACKAGE (L x W x H)	490 x 360 x 140mm; 10pcs/ctn			-

© DIMMING

PARAMETER	Min.	Typ.	Max.	Notes	
0-5V / 0-10V ABSOLUTE MAXIMUM VOLTAGE ON THE V_{DIM} (+) PIN	-	5V / 10V	-	-	
0-5V / 0-10V SOURCE CURRENT ON THE V_{DIM} (+) PIN	-	-	2mA	-	
DIMMING OUTPUT RANGE	GLHP-060X036 GLHP-060X062 GLHP-060X090	10% I _{MAX}	-	100% I _{MAX}	I _{MAX} = 2.10A I _{MAX} = 1.40A I _{MAX} = 0.95A
	GLHP-060X036 GLHP-060X062 GLHP-060X090	0.21A 0.14A 0.10A		2.10A 1.40A 0.95A	-
RECOMMENDED DIMMING RANGE FOR 0-5V	0V	-	5V	-	
RECOMMENDED DIMMING RANGE FOR 0-10V	0V	-	10V	Default 0-10V / 10V PWM Dimming	
PWM_{IN} HIGH LEVEL	9.7V	-	10.3V		
PWM_{IN} LOW LEVEL	0V	-	0.3V		
PWM_{IN} FREQUENCY RANGE	250Hz	-	1000Hz		
PWM_{IN} DUTY CYCLE	1%	-	99%		

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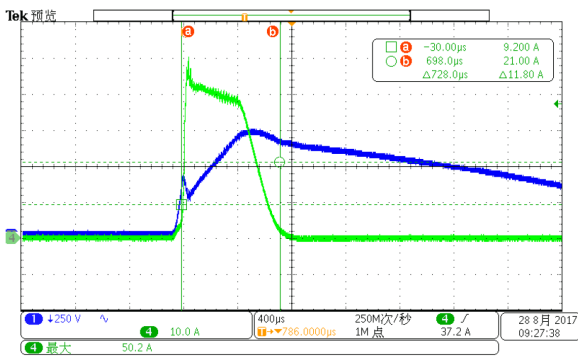


◎ SAFETY & EMC STANDARDS

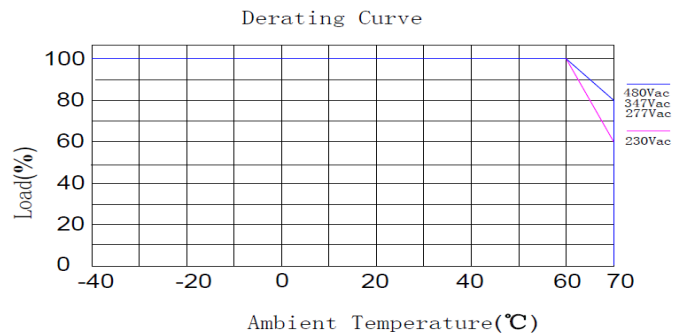
SAFETY CATEGORY	Standards
UL/cUL	UL8750, CSA C22.2 No.250.13-12
EMI Category	Standards
FCC PART 15	ANSI C63.4 Class B This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired operation.
EMS Category	Standards
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 4 kV, line to earth 6 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Note: This LED driver meets the EMC specifications above, but EMC performance of luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

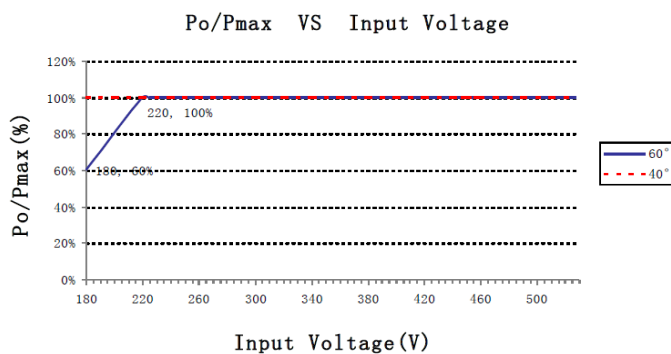
◎ INRUSH CURRENT WAVEFORM



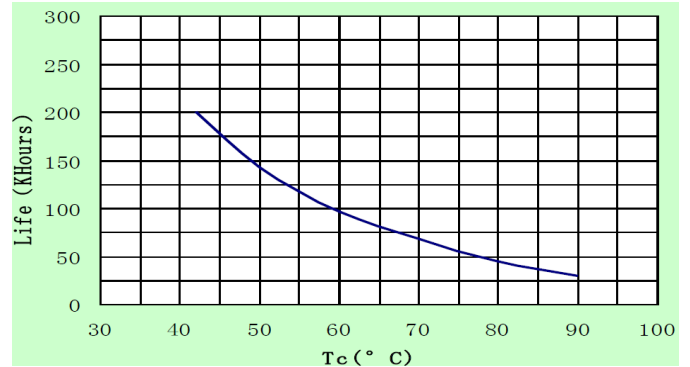
◎ DERATING CURVE



◎ P_O / P_{MAX} vs. INPUT VOLTAGE CURVE



◎ LIFETIME vs. CASE TEMPERATURE CURVE

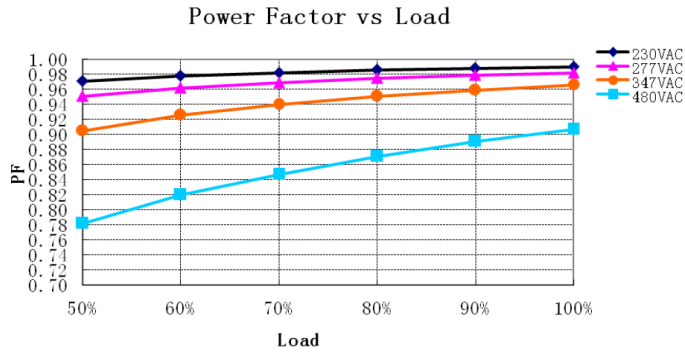


GLHP-060 series

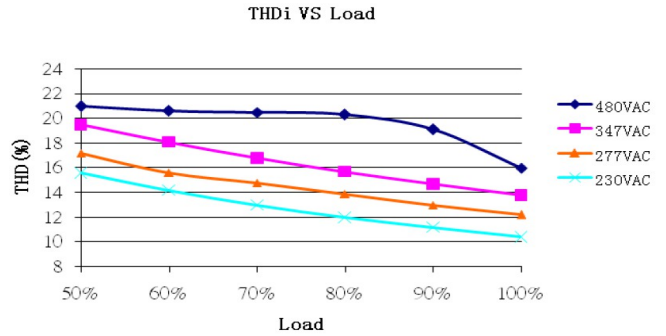
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© POWER FACTOR vs. LOAD CURVE



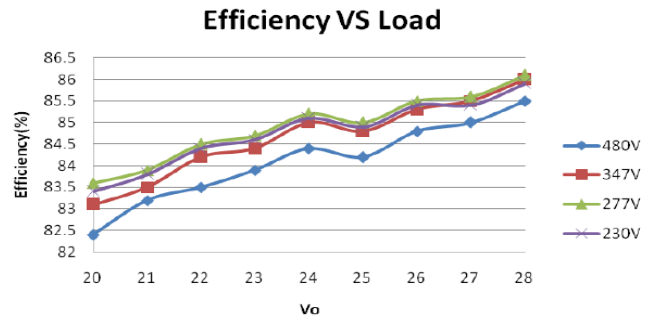
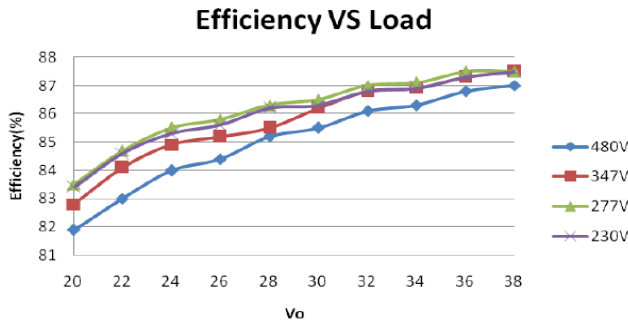
© THD vs. LOAD CURVE



© EFFICIENCY vs. LOAD CURVE

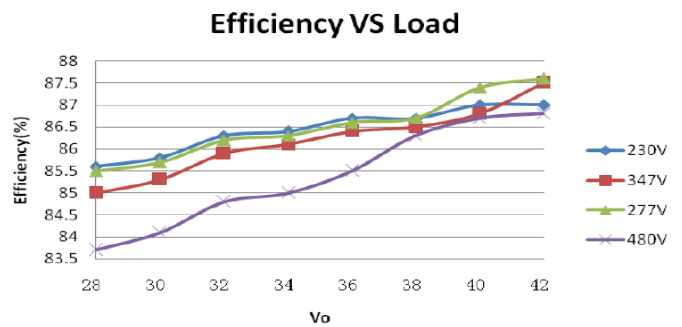
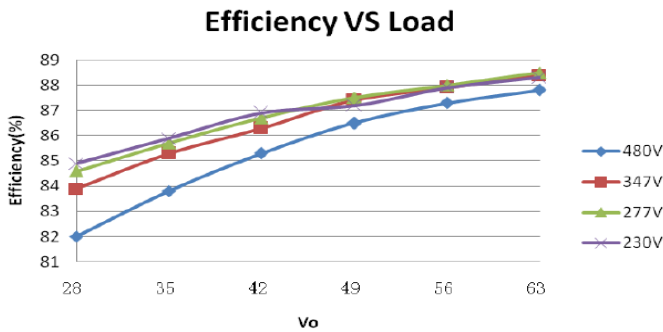
GLHP-060X036 (I = 1.67A)

GLHP-060X036 (I = 2.10A)



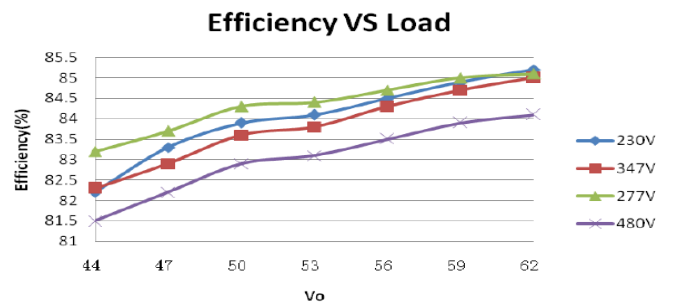
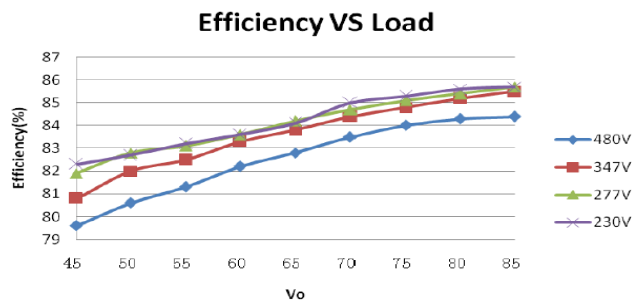
GLHP-060X062 (I = 1.05A)

GLHP-060X062 (I = 1.40A)



GLHP-060X090 (I = 0.70A)

GLHP-060X090 (I = 0.95A)



GLHP-060 series

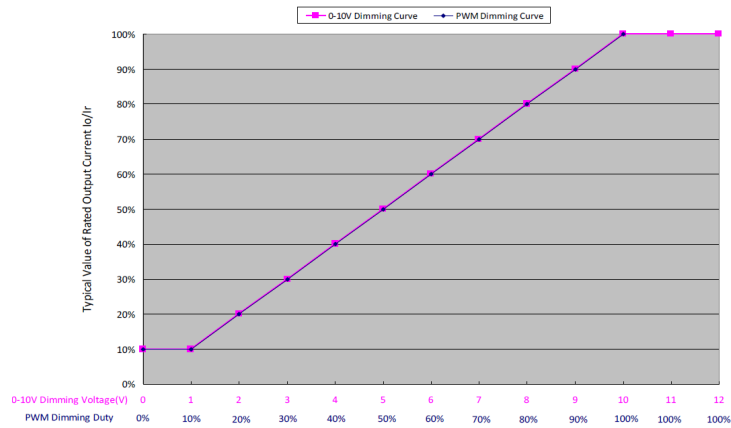
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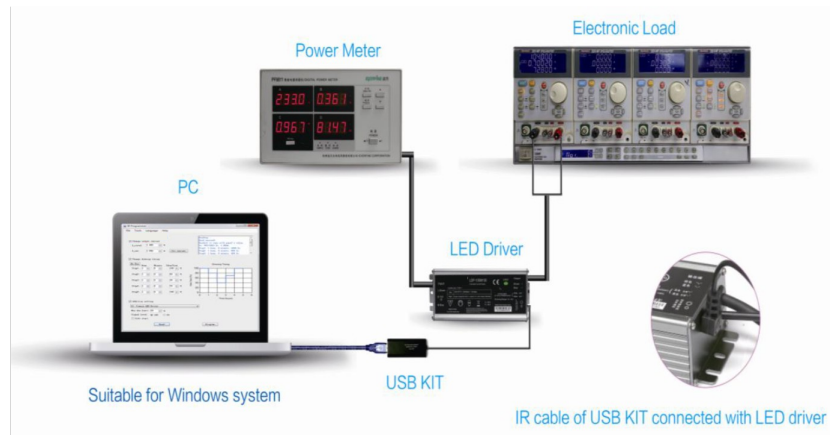
© PROTECTIONS

PARAMETER	NOTES
OVER TEMPERATURE PROTECTION	Decreases output current, returning to normal operation after over temperature is removed. The max. Derating could be 30%.
SHORT CIRCUIT PROTECTION	Constant current mode and auto recovery. No damage will occur when output is under short circuit condition. The output shall return to normal operation when the fault condition is removed.
OVERT VOLTAGE PROTECTION	Run into protection mode when output voltage exceeds limit and return to normal operation when the fault condition is removed.

© 0-10V / PWM DIMMING



© PROGRAMMING CONNECTION

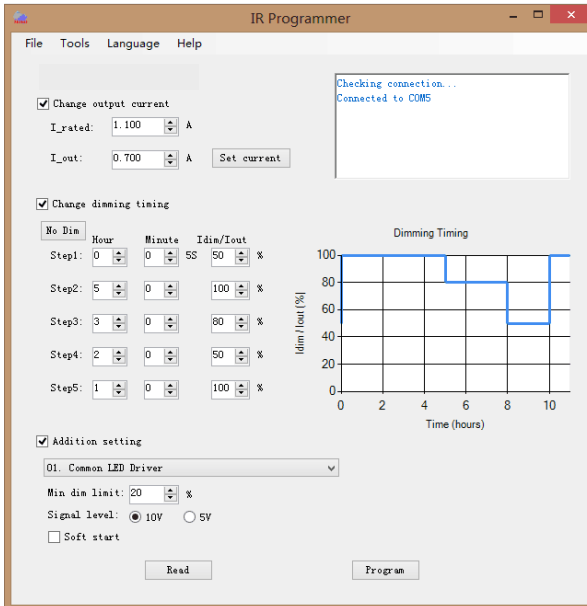


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© PROGRAMMING GUIDE and SOFTWARE INTERFACE



Programming by software:

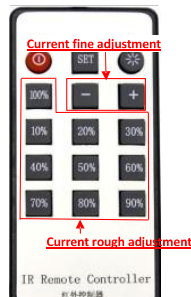
- 1) Read existing setting of the driver
- 2) Change output current
- 3) Set time dimming schedules
- 4) Additional setting:

- set min. Dim. Value
- set signal level can be 5V or 10V
- set soft start

© USING INFRARED CONTROLLER TO RESET OUTPUT CURRENT



Insert the signal terminal into the bigger hole at the driver output side



IR remote controller

Operation instruction:

- 1) Insert cable terminal of the infrared controller into the infrared communication port, which is at DC output side of the driver.
- 2) Press "ON" key to power on the controller.
- 3) Within 10s interval press a function key to adjust output current to the percentage of max delivered current:

- "10%-100%": Percentage of maximum output current of driver
- "+/-": Fine adjustment of output current, increase/decrease 1% each time is pressed
- "ON": Power on controller
- "OFF": Set minimum output current of driver
- "SET": No function

Warning:

- Please do not hold "+" key to avoid over power protection and unstable output
- Each step of operation should be done within 10s interval, otherwise the controller is powered of automaticcaly

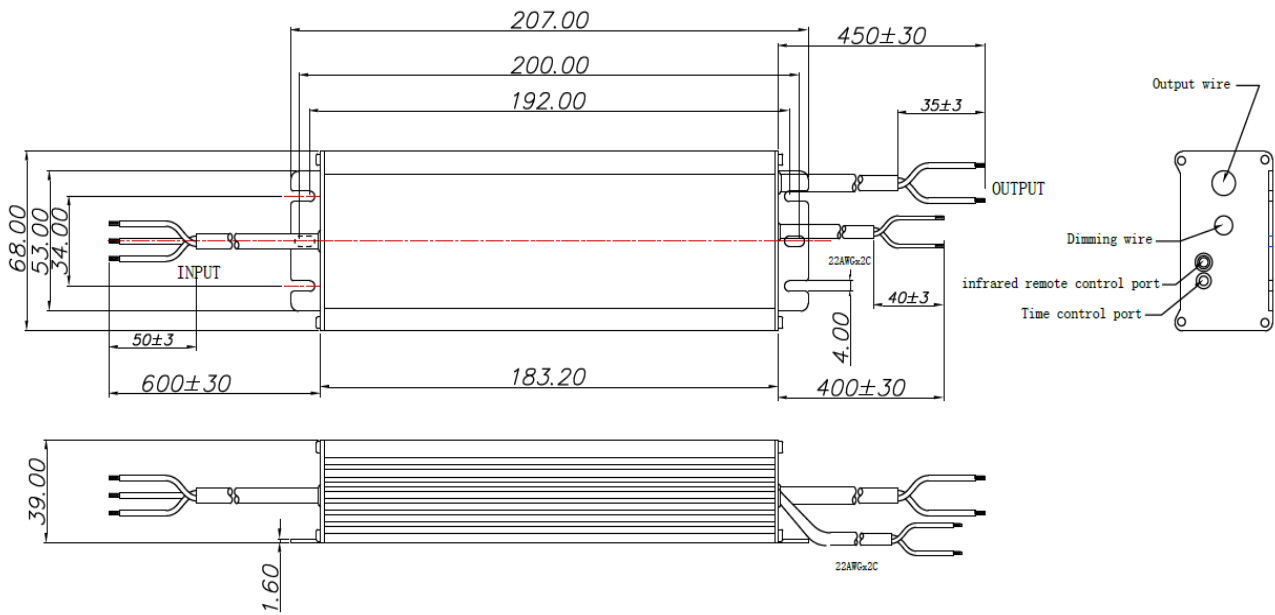
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© MECHANICAL SPECIFICATIONS

GLHP-060M type



Note: GLHP-060R type has no dimming wire.

WIRE	SPECIFICATION
INPUT	UL SJTW 3x18AWG, l = 600mm
OUTPUT	UL SJOW 2x18AWG, l = 450mm
DIMMING	22AWG 2C, l = 400mm