20W Power Unit for LED Lighting

HLL20-1836/xx-yy, HLL20-3064/xx-yy

Introduction

The HLL10, HLL20 and HLL100 series of LED Power Modules are true constant current regulated drivers for LEDs. Unlike standard power supplies, which deliver a fixed voltage to the output, the Hirel's LED Power Units are designed to vary the output voltage as required, to deliver a constant current to the LEDs, reliably and with stability. They are the ideal choice for respectively powering 10W, 20W and 100W LED lighting applications involving all types of high-brightness, high-power LED packages and LED arrays. These series exhibit high efficiency and require no external current limiting resistor or additional heat sink for operation.

Features

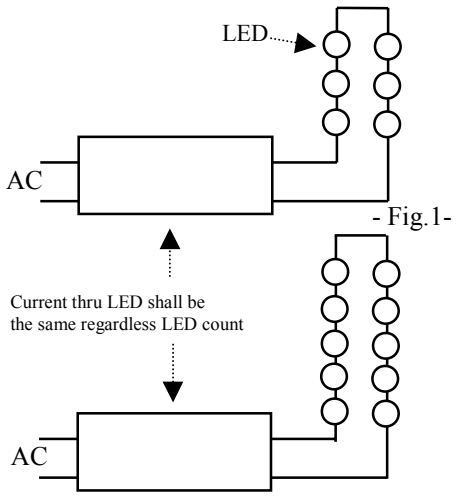
- HLL20 powers & controls 1-3W rated LEDs (350mA-700mA)
- AC input 100V and 220V (50-60Hz)
- Ultimate in flexibility and compatibility for controlling LEDs
- Adjustable current (set by potentiometer)
- Adaptable to any string combination
- Strings directly and simply connected to outputs
- Output open and short-circuit protection
- High efficiency of 82-85%
- Output current regulation +/- 5%

Typical Applications

- Solar and landscape lighting
- Architectural lighting systems
- Track lighting
- Theatrical/production lighting systems
- Point of sale lighting
- Desk and reading lamps
- Signal and marker lighting
- Flashing and strobe lighting
- Cabinet and display case lighting
- Signs and channel letters
- Various fixtures & systems
- Etc…

Application Information

HLL20 power supply series offers several options allowing for use with many types of LEDs and in a variety of operating modes. With for example 1-3W rated white LED elements, the total power of 20W MAX could be delivered to the LED array through the constant current control. Input is AC100V or AC220V depending on model. The electrical efficiency is 82-85%, satisfactorily high for lighting application.

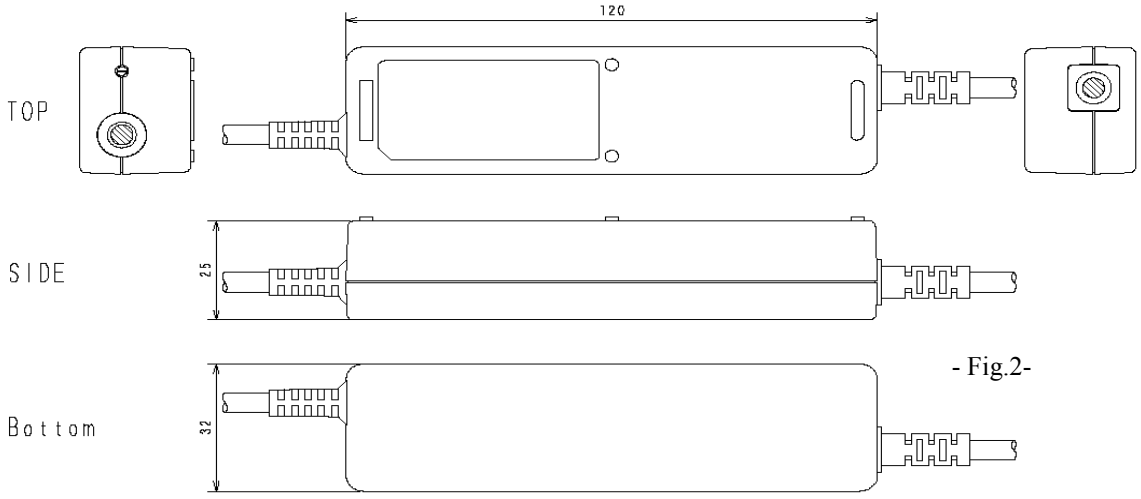


- Fig.1-

Specifically, when the LED device count, connected in series, is 6-10, HLL20-1836/xx-yy should be used.
When LED device count is 10-18, HLL20-3064/xx-yy should be used.
xx specifies max output current (example 07 for 700mA - HLL20-1836/07)
yy: 01 AC input 100V 02 AC input 240V
yyG specifies Rohs compliance
As well known, LED devices need to be fed by constant current for stable lighting.
With HLL20 a constant current value is set with built-in trimmer (refer to Fig.3). Once set, HLL20 outputs the set constant current through LED device chain, regardless of device number as illustrated in figure 1.
Numbers "-1836" and "-3064" show the range of available output DC voltage range, the nominal center voltage being 24V, 48V respectively.

Briefly, fewer LED devices with higher current (+700mA) in the chain will require HLL20-1836/xx-yy, vice versa.

Physical Dimension (in mm)



- Fig.2-

How to install

Fix HLL20 on the thermally conductive wall in the lighting equipment using a metal band as illustrated in Fig.3.
Take care that AC switch shall be on/off'ed only after LED devices are connected to output leads of HLL20 (Red lead →top anode of the LED chain)
To set current, turn on AC switch after all connections complete, and turn the trimmer clockwise to the desired brightness (or current value).

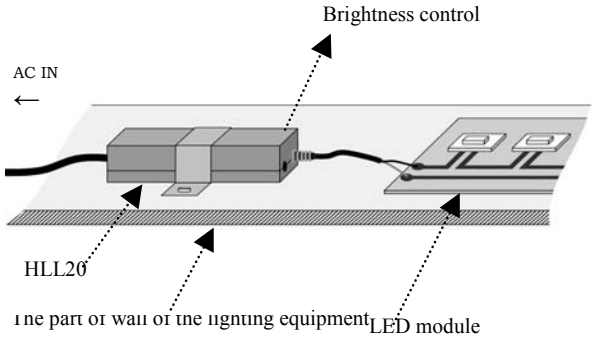


Fig.3 How to install

Electrical characteristics

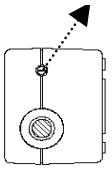
Item	Condition	Value			Unit
		MIN	TYP	MAX	
Input voltage	AC 47 - 63Hz yy-01 Model	90	100	110	V
	AC 47 - 63Hz xx-02 Model	220	240	260	
Input current	Output voltage 0.7(HLL20-1836) 0.35(HLL20-3064)			400	mA
Output voltage **HLL20-1836**	Output voltage = 0.7A	18		36	V
HLL20-3064	Output voltage = 0.35A	30		64	V
Output voltage for open output	Output voltage = 0			41	V
Output Current Adjust	By potentiometer (screw)	0		100	%
		60		1042	mA
Output Current Regulation		100	350	700	mA
	At 220V	0.14	028	1.01	%
Ripple voltage at the output	Output voltage = 0.7A(-1836)		200		mV
	Output voltage = 0.35A(-3064)		200		

-Note- 1. Surrounding temperature 40°C MAX
2. Care should be taken to insure 40°C MAX avoiding heat from LED's.
3. Other characteristics remain the same for AC input 240V model.

Safety

Design is intended to satisfy/meet the safety regulations.
Upon request the formal application to safety regulation will be discussed.

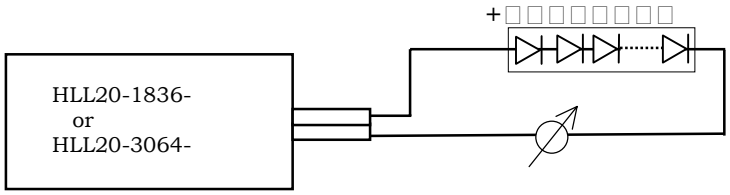
Output current set screw



Current setting

The screw is supposed to be set at the end of counter clock wise rotation when delivered from factory.
Make sure, however, that the screw is really at the end of counter clockwise rotation before you turn on LED's.

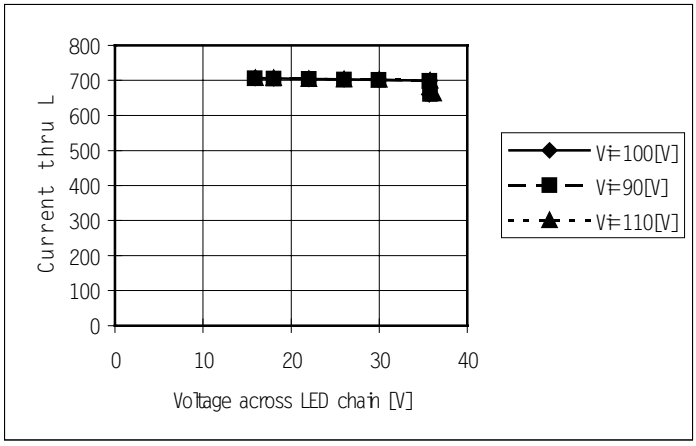
Place a current meter (1A MAX) as illustrated below in figure 4 to set the current.
If current does not reach the desired level at the right end of the rotation, you may try to decrease LED devices by 1.



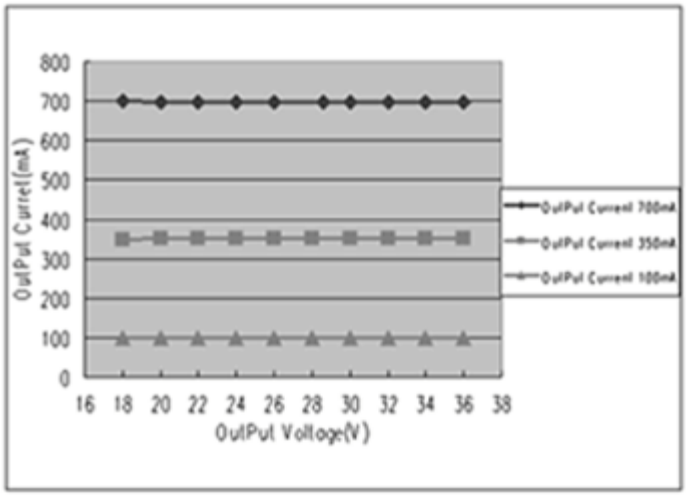
- Fig.4-

Reference

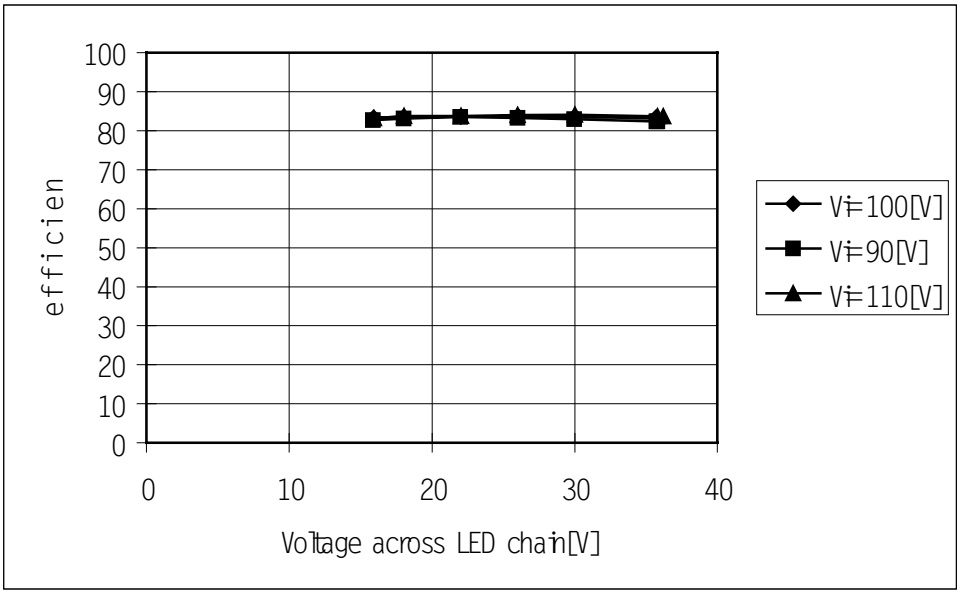
Load Characteristics at 100V AC



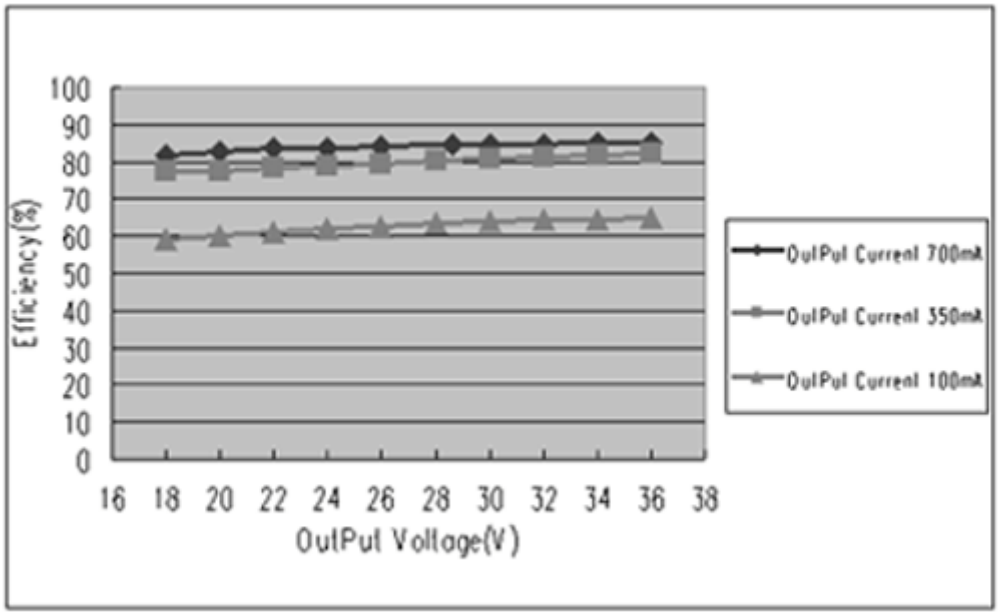
Load Characteristics at 220V AC



Efficiency at 100V AC



Efficiency at 220V AC



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