

# PLN-60 Series

60W IP64 Single Output Power Supply



Case: 8014AV  
181 x 61.5 x 35 mm

## Features

- Universal AC input / Full range (up to 295VAC)
- High Efficiency up to 89%
- Protections: Short circuit / Over current / over voltage / Over Temperature
- Cooling by free air convection
- Built-in constant current limiting circuit with adjustable OCP level
- Built-in active PFC function
- Fully isolated plastic cup with IP64 level
- Pass LPS
- Class 2 power unit
- 100% full load burn-in test
- High Reliability
- Suitable for LED lighting and moving sign applications
- Suitable for dry / damp locations
- Compliance to worldwide safety regulations for lighting
- 2 years warranty



## Specification

INPUT	<b>Voltage</b>	90 ~ 295VAC 127 ~ 417VDC						
	<b>Frequency</b>	47 ~ 63 Hz						
	<b>Power Factor</b>	PF>0.92/115VAC, PF>0.9/230VAC, PF>0.9/277VAC at full load (please refer to "Power Factor Characteristic" curve)						
	<b>Total Harmonic Distortion</b>	THD <20% when output loading $\geq$ 75% at 115VAC/230VAC input and output loading $\geq$ 80% at 277VAC input						
	<b>AC Current (Typ.)</b>	0.8A/115VAC	0.4A/230VAC	0.3A/277VAC				
	<b>Max. number of PSUs on a 16A circuit breaker</b>	32 units (circuit breaker of type B) / 32 units (circuit breaker of type C) at 230VAC						
	<b>Inrush Current (Typ.)</b>	Cold start 35A (twidh=45 $\mu$ s measured at 50% Ipeak) at 230VAC						
	<b>Leakage Current</b>	<0.75mA/240VAC						
OUTPUT	<b>MODEL No.</b>	<b>PLN-60-12</b>	<b>PLN-60-15</b>	<b>PLN-60-20</b>	<b>PLN-60-24</b>	<b>PLN-60-27</b>	<b>PLN-60-36</b>	<b>PLN-60-48</b>
	<b>DC Voltage</b>	12V	15V	20V	24V	27V	36V	48V
	<b>Constant Current Region</b>	8.4 ~ 12V	10.5 ~ 15V	14 ~ 20V	16.8 ~ 24V	18.9 ~ 27V	25.2 ~ 36V	33.6 ~ 48V
	<b>Rated Current</b>	5A	4A	3A	2.5A	2.3A	1.7A	1.3A
	<b>Rated Power</b>	60W	60W	60W	60W	62.1W	61.2W	62.4W
	<b>R&amp;N</b>	2Vp-p	2.4Vp-p	1.8Vp-p	2.7Vp-p	2.7Vp-p	3.6Vp-p	4.6Vp-p
	<b>Efficiency</b>	85%	86%	87.5%	87%	88%	89%	89%
	<b>Voltage Adjust. Range</b>	11.5 ~ 13V	14.5 ~ 16.2V	19.5 ~ 22V	24 ~ 26V	25 ~ 30V	32.5 ~ 39V	43.6 ~ 51.8V
	<b>Current Adjust. Range</b>	3% ~ -25% can be adjusted by internal potentiometer SVR2						
	<b>Voltage Tolerance</b>	$\pm$ 10.0%	$\pm$ 10.0%	$\pm$ 10.0%	$\pm$ 10.0%	$\pm$ 10.0%	$\pm$ 10.0%	$\pm$ 10.0%
	<b>Line Regulation</b>	$\pm$ 3.0%	$\pm$ 3.0%	$\pm$ 3.0%	$\pm$ 3.0%	$\pm$ 3.0%	$\pm$ 3.0%	$\pm$ 3.0%
	<b>Load Regulation</b>	$\pm$ 5.0%	$\pm$ 5.0%	$\pm$ 5.0%	$\pm$ 5.0%	$\pm$ 5.0%	$\pm$ 5.0%	$\pm$ 5.0%
	<b>Setup Rise Time</b>	500ms/230VAC 3000ms/115VAC at full load						
PROTECTION	<b>Over Current</b>	95~110% Constant Current limiting, recovers automatically after fault condition is removed						
	<b>Short Circuit</b>	Hiccup mode, recovers automatically after fault condition is removed						
	<b>Over Voltage</b>	13.8 ~ 16V	17.5 ~ 21V	23 ~ 28V	28 ~ 32V	31 ~ 35V	41 ~ 46V	54 ~ 60V
		Protection type: Shut down o/p voltage, re-power on to recover						
ENVIRONMENT	<b>Over Temperature</b>	Shut down o/p voltage, recovers automatically after temperature goes down						
	<b>Working Temperature</b>	-30 ~ +50 °C (Refer to "Derating Curve" section)						
	<b>Working Humidity</b>	20 ~ 95% RH non-condensing						
	<b>Storage Temperature</b>	-40 ~ +80 °C, 10 ~ 95%RH						
	<b>Temp Coefficient</b>	$\pm$ 0.03%/°C (0 ~ 50°C)						
SAFETY & EMC	<b>Vibration</b>	10 ~ 500Hz, 2G 12 min./1cycle, period for 72 min. each along X, Y, Z axes						
	<b>Safety Standards</b>	UL879, UL 1310, UL8750, CSA C22.2 No. 207-M89(except for 48V), TUV EN61347-1, EN61347-2-13 independent, CAN/CSA C22.2 No. 223-M91 (except for 48V), CSA C22.2 No. 250.0-0B(except for 48V), EAC TP TC 004,GB19510.1,GB19510.14,IP64, J61347-1, J61347-2-13 approved; design refer to UL60950-1						
	<b>Withstand Voltage</b>	I/P-O/P:3.75VAC I/P-FG:2KVAC O/P-FG:0.5KVAC						
	<b>Isolation Resistance</b>	I/P-O/P: 100M Ohms/500VDC/25°C/70% RH						
	<b>EMC Emission</b>	Compliance to EN55015, EN61000-3-2 Class C ( $\geq$ 75% load); EN61000-3-3;GB17743 and GB17625.1, EAC TP TC 020						
OTHERS	<b>EMC Immunity</b>	Compliance to EN61000-4-2,3,4,5,6,8, 11, EN55024,EN61547, light industry level, criteria A; EAC TP TC 020						
	<b>M.T.B.F.</b>	497.8Khrs min. MIL-HDBK-217F (25°C)						
	<b>Packing</b>	0.5Kg;24pcs/13Kg/0.75CUFT						

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 °C of ambient temperature.
2. Ripple and noise are measured at 20MHz of bandwidth by using 12" twisted pair-wire terminated with a 0.1 $\mu$ f & 47 $\mu$ f parallel capacitor.
3. Tolerance: includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the static characteristics for more details.
5. Output voltage can be adjusted through the SRV1 on the PCB; limit of output constant current level can be adjusted through the SRV2 on the PCB.
6. Direct connection to LEDs is suggested but is not suitable for using additional drivers.
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 power supply can only be used behind a switch without permanently connected to the mains.
9. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude greater than 2000m (6500ft).

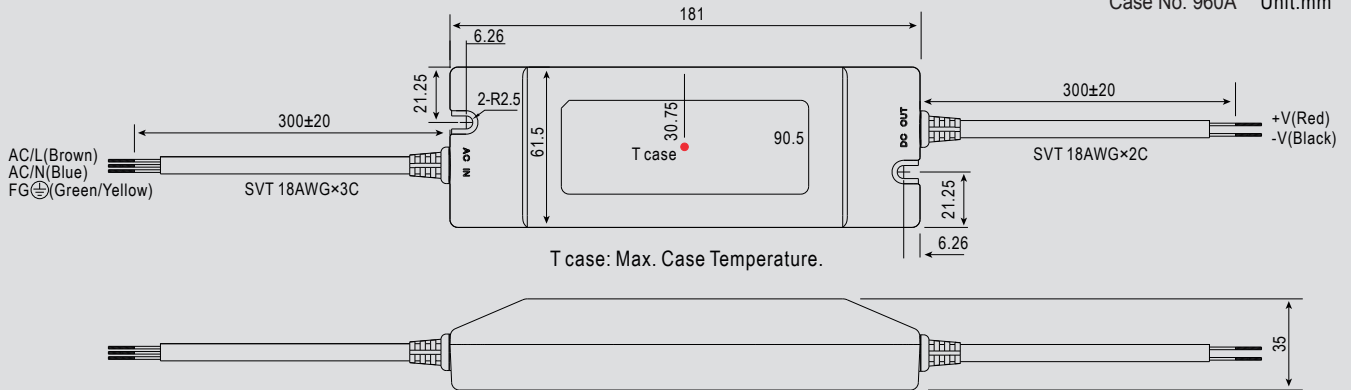
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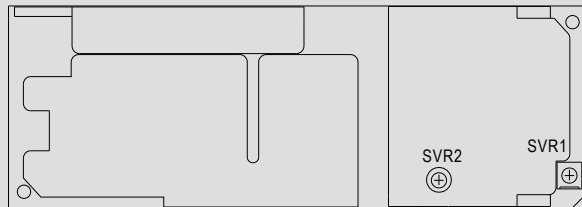


## Mechanical Specification

Case No. 960A Unit:mm



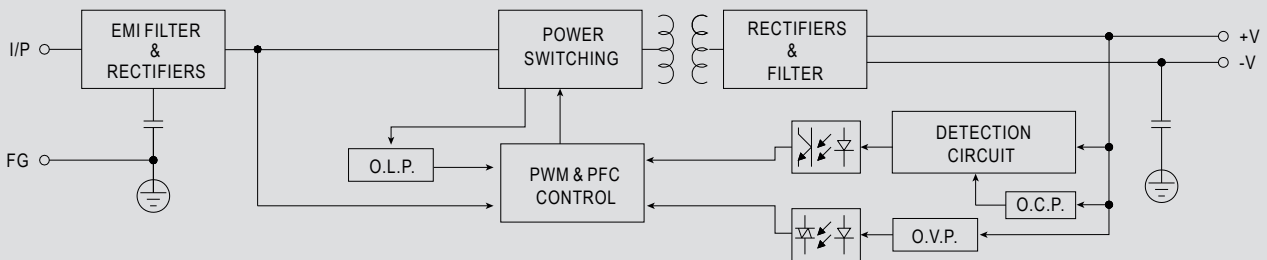
Output voltage and current adjustment : remove the upper case and adjust through SVR1 & SVR2 shown in the diagram.



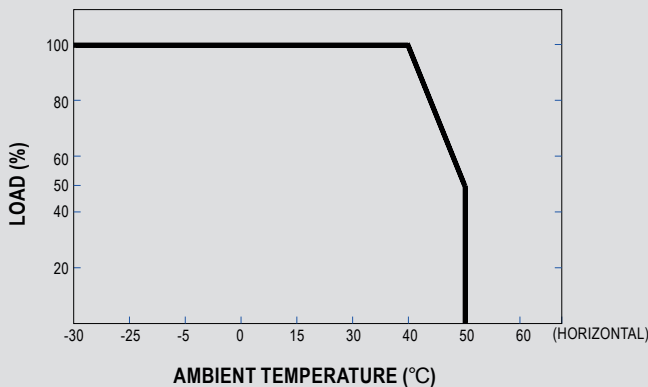
SVR1	Output voltage adjustment
SVR2	Output current adjustment

## Block Diagram

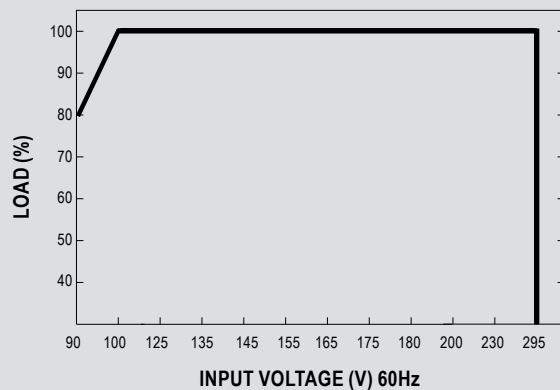
fosc : 90KHz(115VAC)  
120KHz(230VAC)



## Derating Curve



## Static Characteristic

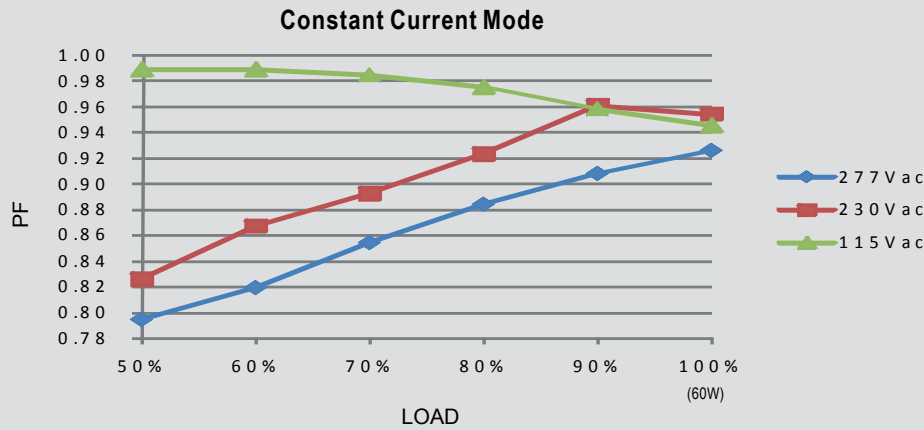


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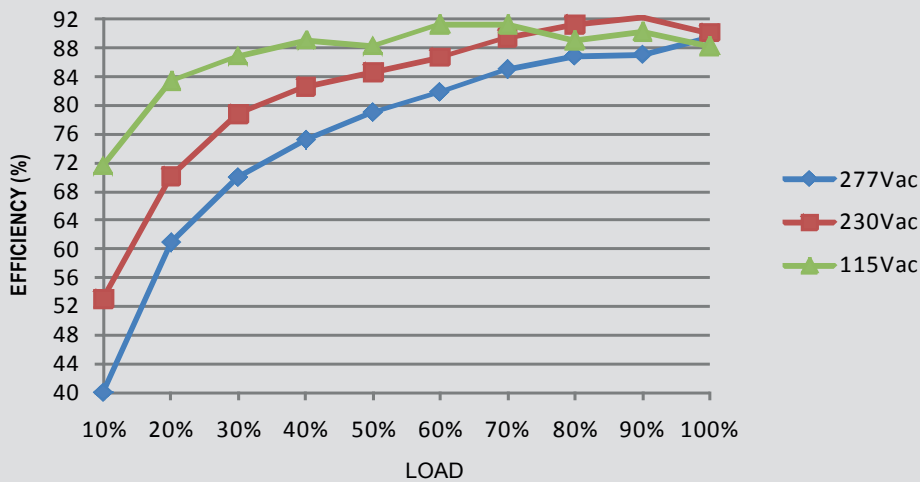


## Power Factor Characteristic



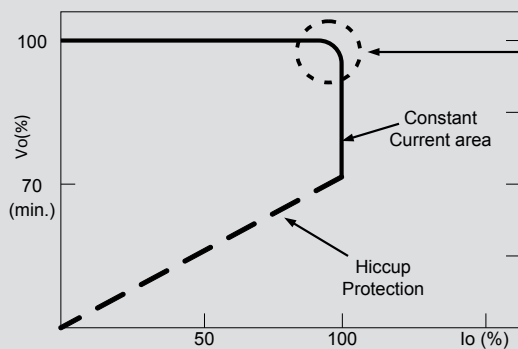
## Efficiency vs Load (48V Model)

PLN-60 series possess superior working efficiency that up to 89% can be reached in field applications.



## Driving Methods of LED Module

This LED power supply is suggested to work in constant current mode area (CC) to drive the LEDs.



Typical LED power supply I-V curve

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 Sunpower.