



## Features :

- Universal AC input / Full range (up to 295VAC)
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit with adjustable OCP level
- Fully isolated plastic case with IP64 level
- Built-in active PFC function
- IP64 design for indoor or outdoor installations
- Pass LPS
- UL1310 Class 2 power unit
- 100% full load burn-in test
- High reliability
- Suitable for LED lighting and moving sign applications (Note.2)
- Compliance to worldwide safety regulations for lighting
- 2 years warranty



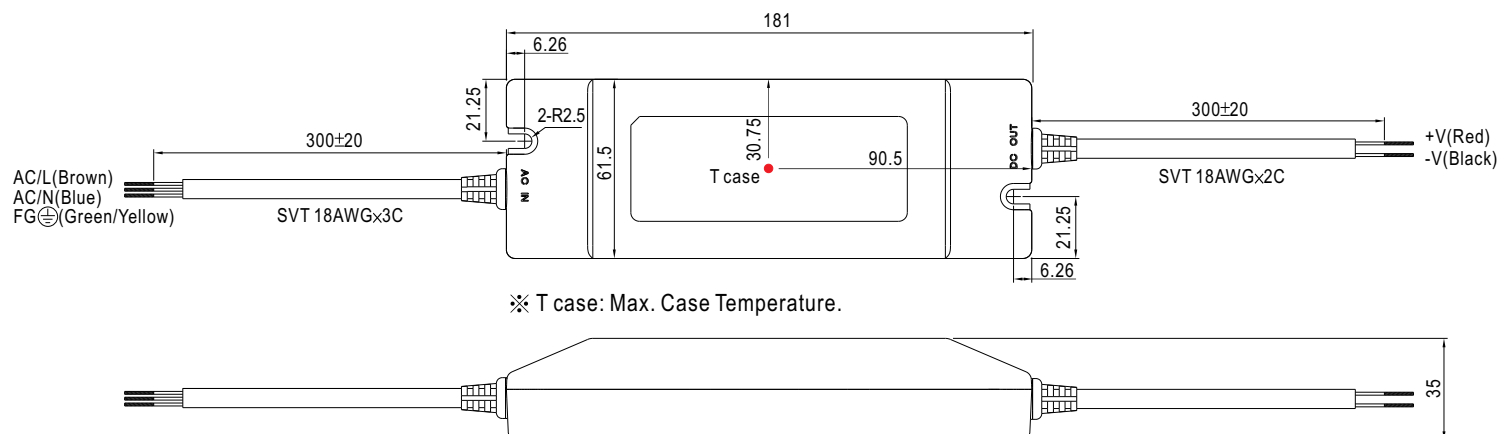
## SPECIFICATION

| MODEL        |  | PLN-45-12  | PLN-45-15    | PLN-45-20  | PLN-45-24 | PLN-45-27   | PLN-45-36  | PLN-45-48    |
|--------------|--|--|--------------|------------|-----------|-------------|------------|--------------|
| OUTPUT       | DC VOLTAGE   | 12V  | 15V          | 20V        | 24V       | 27V         | 36V        | 48V          |
|              | CONSTANT CURRENT OPERATION VOLTAGE <small>Note.6</small> | 9 ~ 12V  | 11.25 ~ 15V  | 15 ~ 20V   | 18 ~ 24V  | 20.25 ~ 27V | 27 ~ 36V   | 36 ~ 48V     |
|              | RATED CURRENT  | 3.8A   | 3A           | 2.3A       | 1.9A      | 1.7A        | 1.25A      | 0.95A        |
|              | CURRENT RANGE  | 0 ~ 3.8A   | 0 ~ 3A       | 0 ~ 2.3A   | 0 ~ 1.9A  | 0 ~ 1.7A    | 0 ~ 1.25A  | 0 ~ 0.95A    |
|              | RATED POWER  | 45.6W  | 45W          | 46W        | 45.6W     | 45.9W       | 45W        | 45.6W        |
|              | RIPPLE & NOISE (max.) <small>Note.2</small>              | 2Vp-p  | 2.4Vp-p      | 1.8Vp-p    | 2.7Vp-p   | 2.7Vp-p     | 3.6Vp-p    | 4.6Vp-p      |
|              | VOLTAGE ADJ. RANGE <small>Note.5</small>                 | 11.5 ~ 13V   | 14.5 ~ 16.2V | 19.5 ~ 22V | 24 ~ 26V  | 25 ~ 30V    | 32.5 ~ 39V | 43.6 ~ 51.8V |
|              |  | Can be adjusted by internal potentiometer SVR1   |              |            |           |             |            |              |
|              | CURRENT ADJ. RANGE <small>Note.5</small>                 | 3% ~ -25%. Can be adjusted by internal potentiometer SVR2  |              |            |           |             |            |              |
|              | VOLTAGE TOLERANCE <small>Note.3</small>                  | ±10%   |              |            |           |             |            |              |
|              | LINE REGULATION  | ±3.0%  |              |            |           |             |            |              |
| INPUT        | LOAD REGULATION  | ±5.0%  |              |            |           |             |            |              |
|              | SETUP TIME   | 1500ms / 230VAC 3000ms / 115VAC at full load   |              |            |           |             |            |              |
|              | VOLTAGE RANGE <small>Note.4</small>                      | 90 ~ 295VAC 127 ~ 417VDC   |              |            |           |             |            |              |
|              | FREQUENCY RANGE  | 47 ~ 63Hz  |              |            |           |             |            |              |
|              | POWER FACTOR (Typ.)                                      | PF>0.92/115VAC, PF>0.9/230VAC, PF>0.9/277VAC at full load (Please refer to "Power Factor Characteristic" curve)  |              |            |           |             |            |              |
|              | EFFICIENCY (Typ.)  | 83.5%  | 85%          | 86.5%      | 86.5%     | 86.5%       | 87.5%      | 87.5%        |
|              | AC CURRENT (Typ.)  | 0.55A/115VAC 0.25A/230VAC  |              |            |           |             |            |              |
|              | INRUSH CURRENT (max.)                                    | 40A/230VAC   |              |            |           |             |            |              |
| PROTECTION   | LEAKAGE CURRENT  | <0.75mA / 240VAC   |              |            |           |             |            |              |
|              | OVER CURRENT   | 95 ~ 110%  |              |            |           |             |            |              |
|              | SHORT CIRCUIT  | Protection type : Constant current limiting, recovers automatically after fault condition is removed   |              |            |           |             |            |              |
|              | OVER VOLTAGE   | Hiccup mode, recovers automatically after fault condition is removed.  |              |            |           |             |            |              |
|              | OVER TEMPERATURE   | 13.8 ~ 16V 17.5 ~ 21V 22.8 ~ 25V 28 ~ 32V 31 ~ 35V 41 ~ 46V 54 ~ 60V   |              |            |           |             |            |              |
| ENVIRONMENT  |  | Protection type : Shut down o/p voltage, re-power on to recover  |              |            |           |             |            |              |
|              | WORKING TEMP.  | 95°C ±10°C (TSW1) detect on heatsink of power transistor   |              |            |           |             |            |              |
|              | WORKING HUMIDITY   | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down  |              |            |           |             |            |              |
|              | STORAGE TEMP., HUMIDITY                                  | -30 ~ +50°C (Refer to "Derating Curve")  |              |            |           |             |            |              |
|              | TEMP. COEFFICIENT  | 20 ~ 95% RH non-condensing   |              |            |           |             |            |              |
| SAFETY & EMC | VIBRATION  | -40 ~ +80°C, 10 ~ 95% RH   |              |            |           |             |            |              |
|              | SAFETY STANDARDS   | ±0.03%/°C (0 ~ 50°C)   |              |            |           |             |            |              |
|              | WITHSTAND VOLTAGE  | 10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes  |              |            |           |             |            |              |
|              | ISOLATION RESISTANCE                                     | UL879, UL8750, UL1310 Class 2, TUV EN61347-1, EN61347-2-13 independent CAN/CSA C22.2 No. 223-M91(except for 48V); J61347-1, J61347-2-13, IP64 approved |              |            |           |             |            |              |
|              | EMC EMISSION   | I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC  |              |            |           |             |            |              |
| OTHERS       | EMC IMMUNITY   | I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH   |              |            |           |             |            |              |
|              | MTBF   | Compliance to EN55015, EN61000-3-2 Class C (≥ 75% load) ; EN61000-3-3  |              |            |           |             |            |              |
|              | DIMENSION  | Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level, criteria A  |              |            |           |             |            |              |
| NOTE         | PACKING  | 497.8Khrs min. MIL-HDBK-217F (25°C)  |              |            |           |             |            |              |
|              |  | 181*61.5*35mm (L*W*H)  |              |            |           |             |            |              |

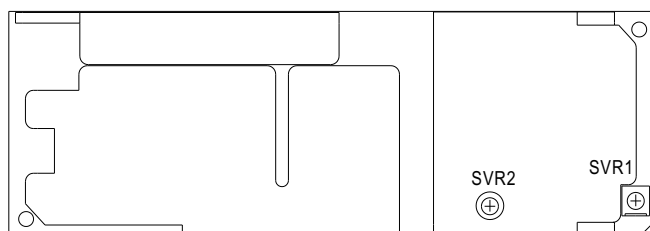
1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltage. Please check the static characteristics for more details.
5. Output voltage can be adjusted through the SVR1 on the PCB ; limit of output constant current level can be adjusted through the SVR2 on the PCB.
6. Constant current operation region is within 75% ~ 100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.
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.
8. Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.

## Mechanical Specification

Case No.960A Unit:mm

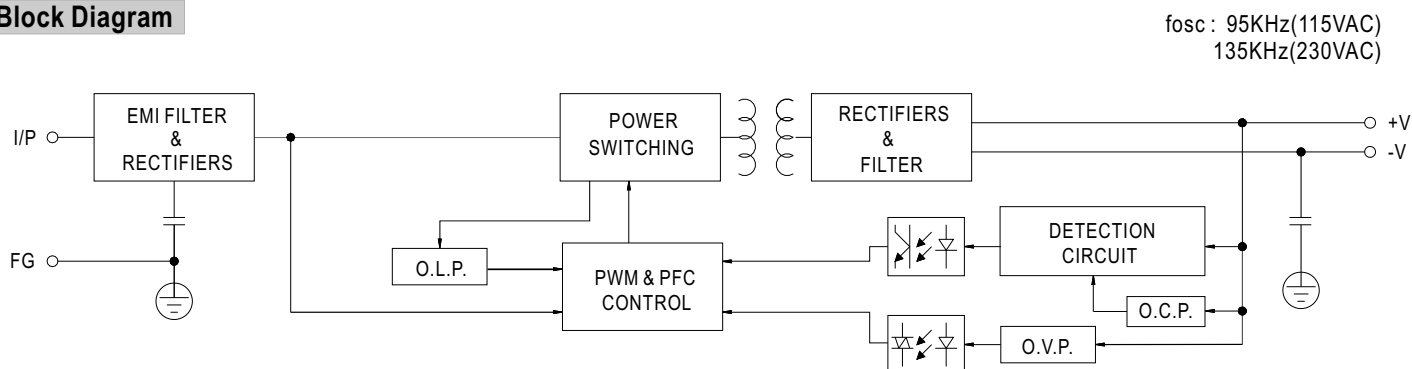


Output voltage and current adjustment : remove the upper case and adjust through SVR1 & SVR2 shown in the diagram.

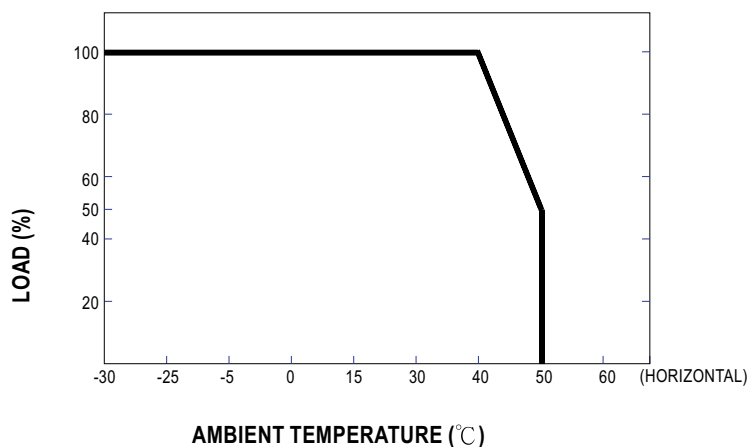


|      |                           |
|------|---------------------------|
| SVR1 | Output voltage adjustment |
| SVR2 | Output current adjustment |

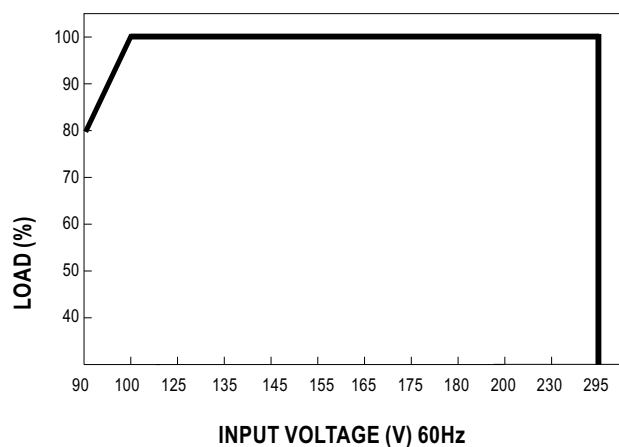
## Block Diagram



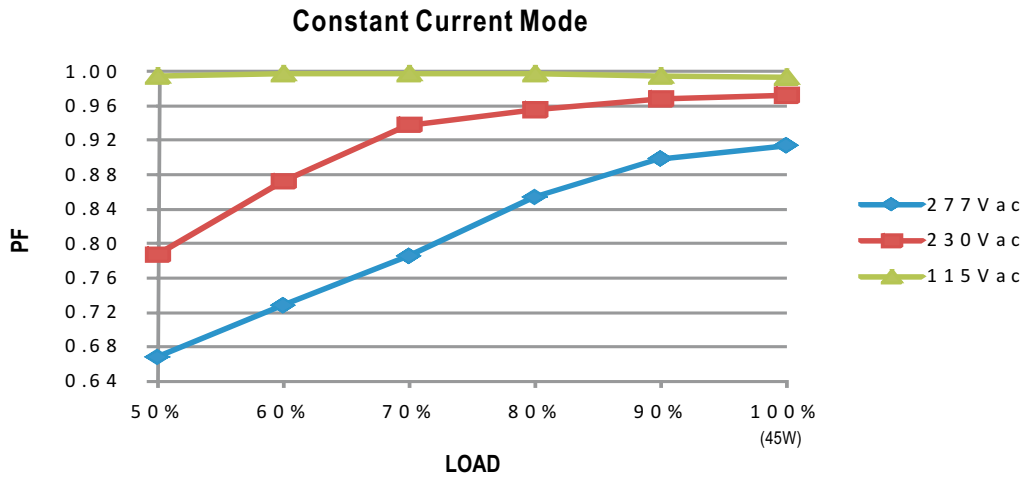
## Derating Curve



## Static Characteristics

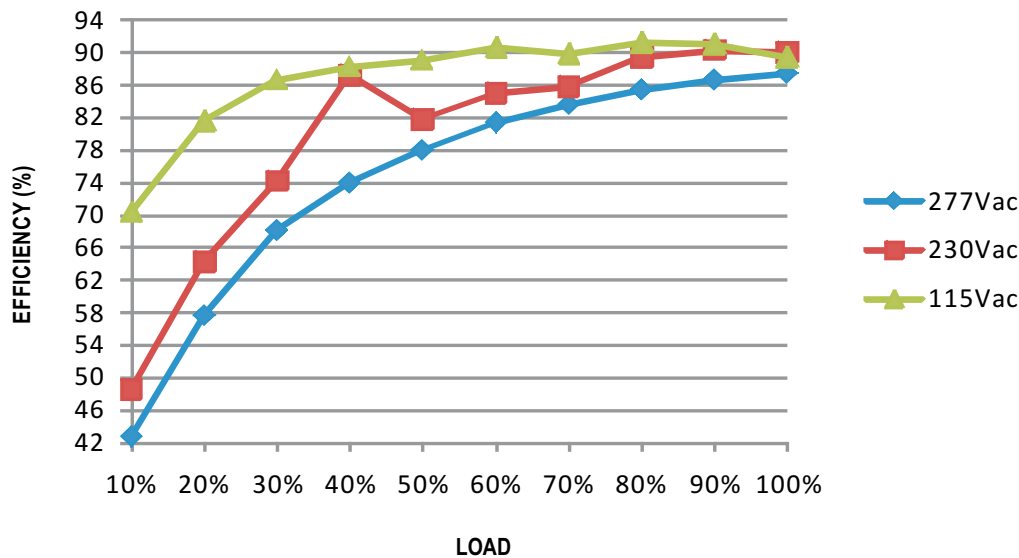


## Power Factor Characteristic



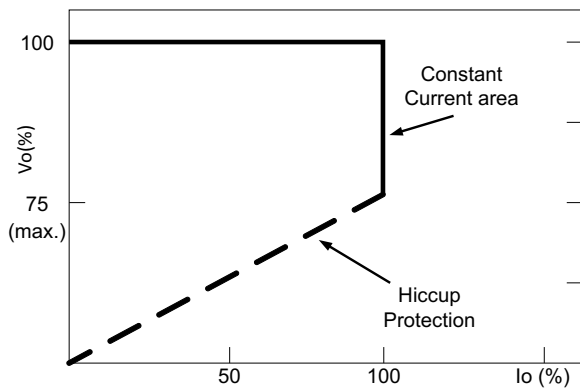
## EFFICIENCY vs LOAD (48V Model)

PLN-45 series possess superior working efficiency that up to 87.5% 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