# 90W Single Output Switching Power Supply

# LPF-90 series

## Features :

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- High efficiency up to 91%
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Cooling by free air convection
- Fully isolated plastic case
- Fully encapsulated with IP67 level (Note.6)
- Class Ⅱ power unit, no FG
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- Suitable for dry / damp / wet locations
- 3 years warranty

TAIWAN EXCELLENCE 2012

SELV IP67 ( for 48V,54V only) ( except for 48V,54V )

## SPECIFICATION

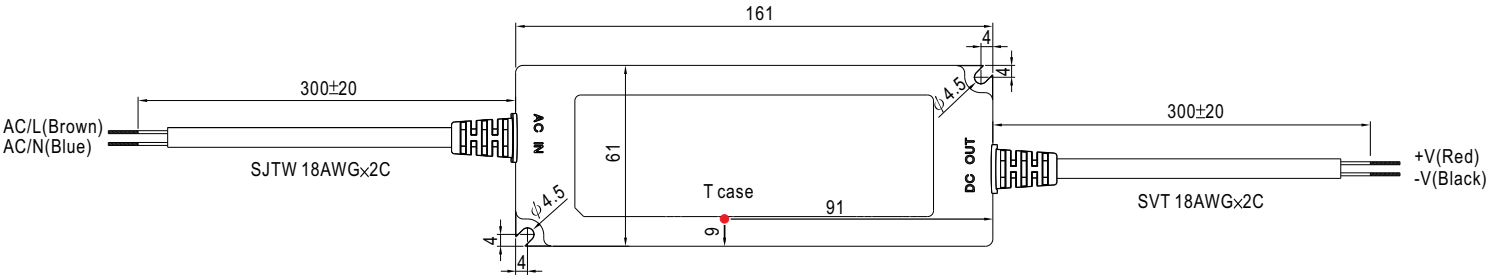
| MODEL | | LPF-90-15 | LPF-90-20 | LPF-90-24 | LPF-90-30 | LPF-90-36 | LPF-90-42 | LPF-90-48 | LPF-90-54 |
|---|---|---|---|---|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | 15V | 20V | 24V | 30V | 36V | 42V | 48V | 54V |
| | CONSTANT CURRENT REGION Note.4 | 9 ~ 15V | 12 ~ 20V | 14.4 ~ 24V | 18 ~ 30V | 21.6 ~ 36V | 25.2 ~ 42V | 28.8 ~ 48V | 32.4 ~ 54V |
| | RATED CURRENT | 5A | 4.5A | 3.75A | 3A | 2.5A | 2.15A | 1.88A | 1.67A |
| | RATED POWER | 75W | 90W | 90W | 90W | 90W | 90.3W | 90.24W | 90.18W |
| | RIPPLE & NOISE (max.) Note.2 | 150mVp-p | 150mVp-p | 150mVp-p | 200mVp-p | 200mVp-p | 200mVp-p | 200mVp-p | 200mVp-p |
| | VOLTAGE TOLERANCE Note.3 | ±4.0% | ±4.0% | ±4.0% | ±4.0% | ±4.0% | ±4.0% | ±4.0% | ±4.0% |
| | LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | LOAD REGULATION | ±1.5% | ±1.0% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME Note.7 | 2000ms, 80ms / 115VAC at full load | | 1000ms, 80ms / 230VAC at full load | | | | | |
| | HOLD UP TIME (Typ.) | 16ms/230VAC | | 16ms/115VAC at full load | | | | | |
| INPUT | VOLTAGE RANGE Note.5 | 90 ~ 305VAC | | 127 ~ 431VDC | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | POWER FACTOR (Typ.) | PF>0.97/115VAC, PF>0.96/230VAC, PF>0.95/277VAC at full load (Please refer to "Power Factor Characteristic" curve) | | | | | | | |
| | EFFICIENCY (Typ.) | 89% | 90% | 90.5% | 91% | 91% | 91% | 91% | 91% |
| | AC CURRENT (Typ.) | 0.95A / 115VAC | | 0.5A / 230VAC | | 0.4A / 277VAC | | | |
| | INRUSH CURRENT(Typ.) | COLD START 70A/230VAC | | | | | | | |
| | LEAKAGE CURRENT | <0.75mA / 277VAC | | | | | | | |
| PROTECTION | OVER CURRENT Note.4 | 95 ~ 108% | | | | | | | |
| | | Protection type : Constant current limiting, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 18 ~ 21V | 23 ~ 27V | 28 ~ 34V | 34 ~ 38V | 41 ~ 46V | 47 ~ 53V | 54 ~ 60V | 59 ~ 65V |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | |
| | OVER TEMPERATURE | 90℃ ±10℃ (RTH2) | | | | | | | |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -40 ~ +70℃ (Refer to "Derating Curve") | | | | | | | |
| | 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, EN61347-1, EN61347-2-13 independent, J61347-1, J61347-2-13, IP67 approved ; Design refer to UL60950-1, TUV EN60950-1 | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:3.75KVAC | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH | | | | | | | |
| | EMC EMISSION | Compliance to EN55015, EN61000-3-2 Class C (≧60% load) ; EN61000-3-3 | | | | | | | |
| | EMC IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, EN55024, light industry level(surge 2KV), criteria A | | | | | | | |
| OTHERS | MTBF | 301.6Khrs min. MIL-HDBK-217F (25℃) | | | | | | | |
| | DIMENSION | 161*61*36mm (L*W*H) | | | | | | | |
| | PACKING | 0.7Kg;20pcs/15Kg/0.73CUFT | | | | | | | |

**NOTE**

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ 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. Constant current operation region is within 60% ~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.
5. Derating may be needed under low input voltages. Please check the static characteristics for more details.
6. Suitable for indoor use or outdoor use without direct sunlight exposure. Please avoid immerse in the water over 30 minutes.
7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
8. 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.

## ■ Mechanical Specification

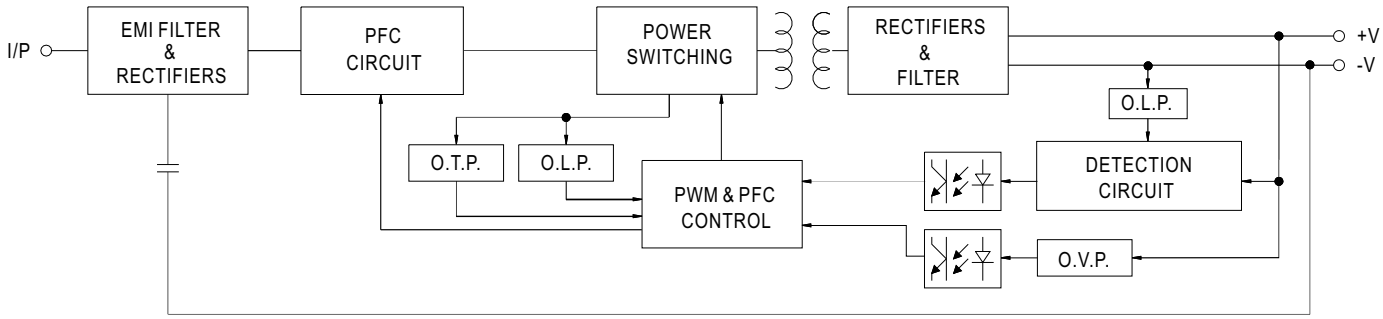
Case No.LPF-90A Unit:mm



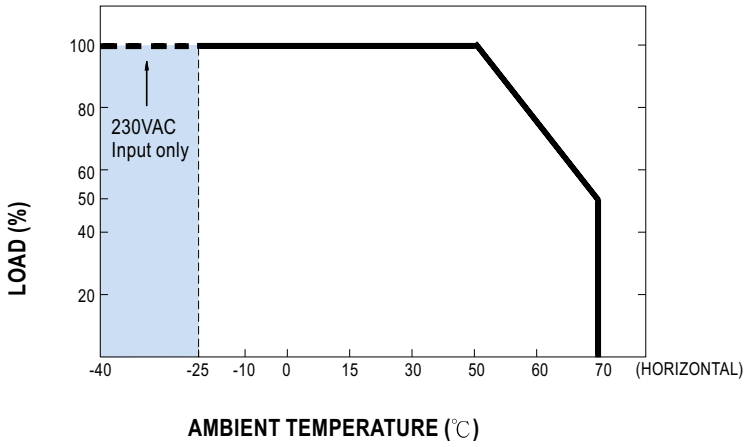

※ T case: Max. Case Temperature.


## ■ Block Diagram

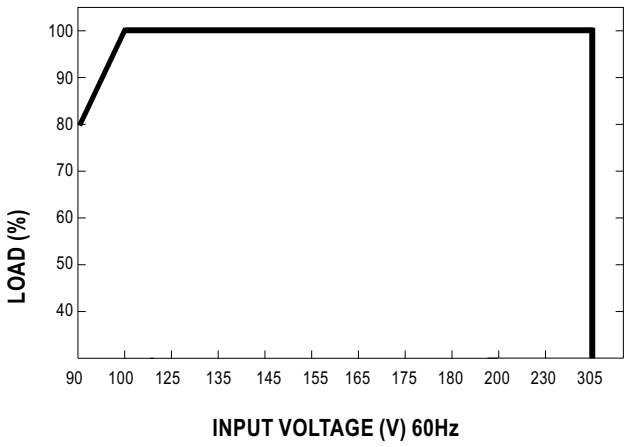
fosc : 100KHz



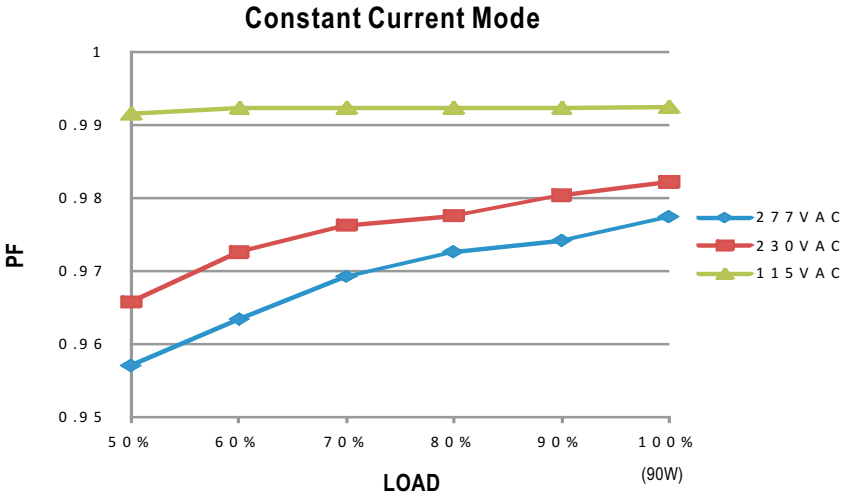

## ■ Derating Curve




## ■ Static Characteristics

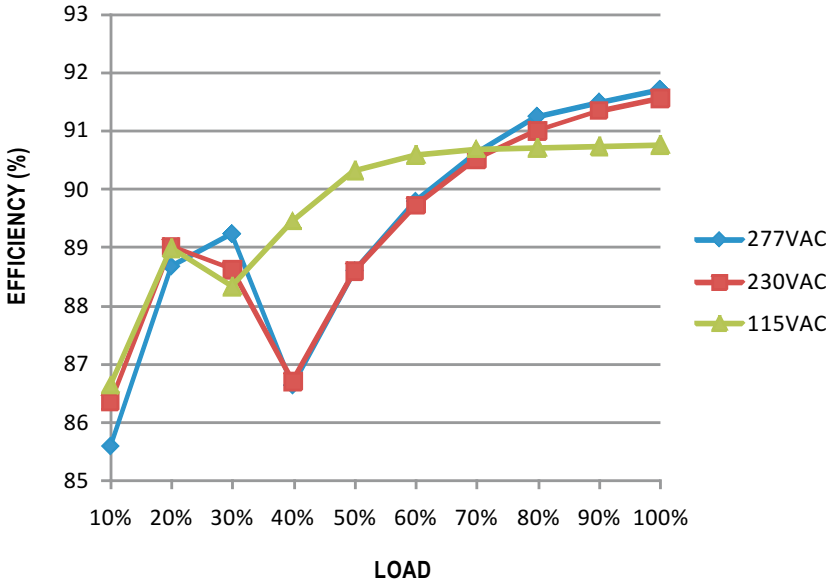


## ■ Power Factor Characteristic



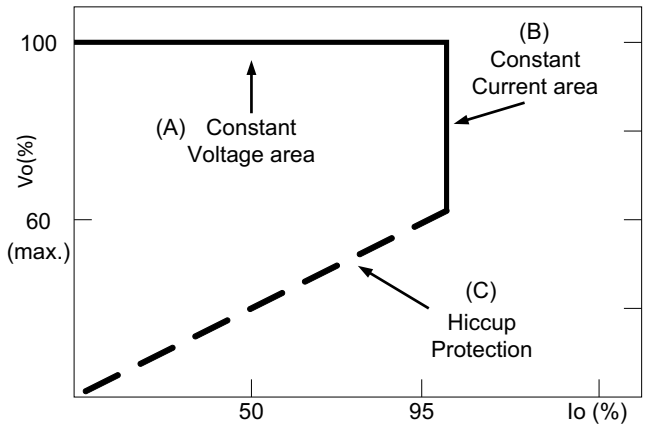

## ■ EFFICIENCY vs LOAD (48V Model)

LPF-90 series possess superior working efficiency that up to 91% can be reached in field applications.




## ■ DRIVING METHODS OF LED MODULE

There are two major kinds of LED drive method "direct drive" and "with LED driver".
A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.
Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode (with LED driver, at area (A) and CC mode (direct drive, at area (B).




Typical LED power supply I-V curve