



## ■ Features :

- Universal AC input / Full range (up to 305VAC)
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Built-in active PFC function
- Cooling by free air convection
- Fully isolated plastic case with IP30 level (Note.8)
- Class II power unit, no FG
- Class 2 power unit
- IP67(optional , model NO. : LPF-16-12 P)
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- Suitable for dry / damp locations(wet location for LPF-16-12 P)
- 5 years warranty



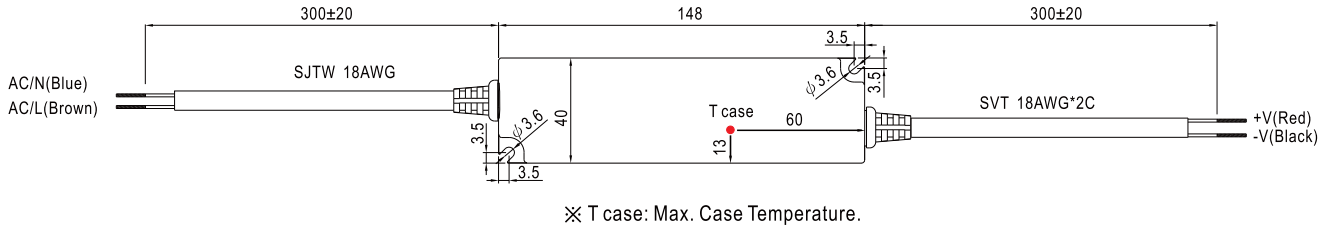
## SPECIFICATION

| MODEL        |                                | LPF-16-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | LPF-16-15  | LPF-16-20 | LPF-16-24  | LPF-16-30  | LPF-16-36  | LPF-16-42  | LPF-16-48  | LPF-16-54  |
|--------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|------------|------------|------------|------------|------------|------------|
| OUTPUT       | DC VOLTAGE                     | 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 15V        | 20V       | 24V        | 30V        | 36V        | 42V        | 48V        | 54V        |
|              | CONSTANT CURRENT REGION Note.4 | 6.6 ~ 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8.25 ~ 15V | 11 ~ 20V  | 13.2 ~ 24V | 16.5 ~ 30V | 19.8 ~ 36V | 23.1 ~ 42V | 26.4 ~ 48V | 29.7 ~ 54V |
|              | RATED CURRENT                  | 1.34A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1.07A      | 0.8A      | 0.67A      | 0.54A      | 0.45A      | 0.39A      | 0.34A      | 0.3A       |
|              | RATED POWER                    | 16.08W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 16.05W     | 16W       | 16.08W     | 16.2W      | 16.2W      | 16.38W     | 16.32W     | 16.2W      |
|              | RIPPLE & NOISE (max.) Note.2   | 150mVp-p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 150mVp-p   | 150mVp-p  | 150mVp-p   | 200mVp-p   | 250mVp-p   | 250mVp-p   | 250mVp-p   | 350mVp-p   |
|              | VOLTAGE TOLERANCE Note.3       | ±4.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ±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%      | ±0.5%      |
|              | LOAD REGULATION                | ±2.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ±1.5%      | ±1.0%     | ±0.5%      | ±0.5%      | ±0.5%      | ±0.5%      | ±0.5%      | ±0.5%      |
|              | SETUP, RISE TIME Note.6        | 1500ms, 80ms / 115VAC at full load 1500ms, 80ms / 230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |            |            |            |            |            |            |
| INPUT        | HOLD UP TIME (Typ.)            | 16ms at full load 230VAC / 115VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |            |            |            |            |            |            |
|              | VOLTAGE RANGE Note.5           | 90 ~ 305VAC 127 ~ 431VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |            |            |            |            |            |            |
|              | FREQUENCY RANGE                | 47 ~ 63Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |           |            |            |            |            |            |            |
|              | POWER FACTOR (Typ.)            | PF>0.97/115VAC, PF>0.95/230VAC, PF>0.92/277VAC at full load (Please refer to "Power Factor Characteristic" curve)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |            |            |            |            |            |            |
|              | EFFICIENCY (Typ.)              | 84%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 84%        | 86%       | 86%        | 86%        | 86%        | 86%        | 86%        | 86%        |
|              | AC CURRENT                     | 0.4A / 115VAC 0.25A / 230VAC 0.2A/277VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |            |            |            |            |            |            |
|              | INRUSH CURRENT (Typ.)          | COLD START 45A(twidth=200μs measured at 50% Ipeak) at 230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |           |            |            |            |            |            |            |
| PROTECTION   | LEAKAGE CURRENT                | <0.75mA / 240VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |           |            |            |            |            |            |            |
|              | OVER CURRENT Note.4            | 95 ~ 108%<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |            |            |            |            |            |            |
|              | SHORT CIRCUIT                  | Hiccup mode, recovers automatically after fault condition is removed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |           |            |            |            |            |            |            |
|              | OVER VOLTAGE                   | 15 ~ 18V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17.5 ~ 21V | 23 ~ 27V  | 28 ~ 35V   | 34 ~ 40V   | 41 ~ 49V   | 46 ~ 54V   | 54 ~ 63V   | 59 ~ 66V   |
|              | OVER TEMPERATURE               | 100°C ± 5°C (TSW1) Detect on U2<br>Protection type : Shut down o/p voltage, recovers automatically after temperature goes down                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |           |            |            |            |            |            |            |
| ENVIRONMENT  | WORKING TEMP.                  | -35 ~ +70°C (Refer to "Derating Curve")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |            |            |            |            |            |            |
|              | WORKING HUMIDITY               | 20 ~ 95% RH non-condensing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |           |            |            |            |            |            |            |
|              | STORAGE TEMP., HUMIDITY        | -40 ~ +80°C, 10 ~ 95% RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |            |            |            |            |            |            |
|              | TEMP. COEFFICIENT              | ±0.03%/°C (0 ~ 50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |           |            |            |            |            |            |            |
|              | VIBRATION                      | 10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |            |            |            |            |            |            |
| SAFETY & EMC | SAFETY STANDARDS               | UL8750, CSA C22.2 No. 250.0-08, EN61347-1, EN61347-2-13 independent, EN62384, J61347-1, J61347-2-13 approved, IP67 (optional) ; 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°C/ 70% RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |           |            |            |            |            |            |            |
|              | EMC EMISSION                   | Compliance to EN55015; EN61000-3-2 Class C (≥ 50% load) ; EN61000-3-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |           |            |            |            |            |            |            |
| OTHERS       | EMC IMMUNITY                   | Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level(surge 2KV), criteria A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |           |            |            |            |            |            |            |
|              | MTBF                           | 473.3Khrs min. MIL-HDBK-217F (25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |           |            |            |            |            |            |            |
|              | DIMENSION                      | 148*40*32mm (L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |           |            |            |            |            |            |            |
|              | PACKING                        | 0.21Kg; 40pcs/9.4Kg/1.02CUFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |           |            |            |            |            |            |            |
| NOTE         |                                | <ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. Constant current operation region is within 50% ~ 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.</li> <li>5. Derating may be needed under low input voltages. Please check the static characteristics for more details.</li> <li>6. 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.</li> <li>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.</li> <li>8. Suitable for indoor use.</li> </ol> |            |           |            |            |            |            |            |            |

### Mechanical Specification

Case No. : LPF-16A

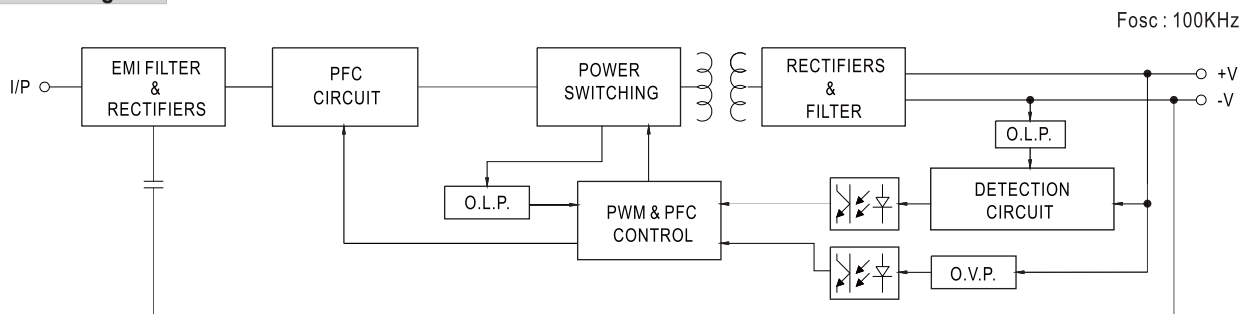
Unit:mm



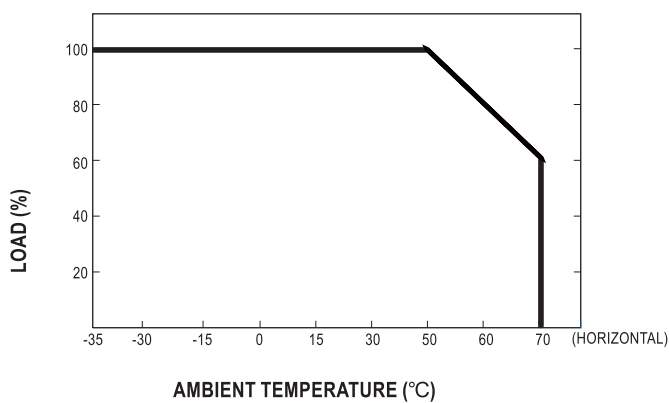
### Recommend Mounting Direction



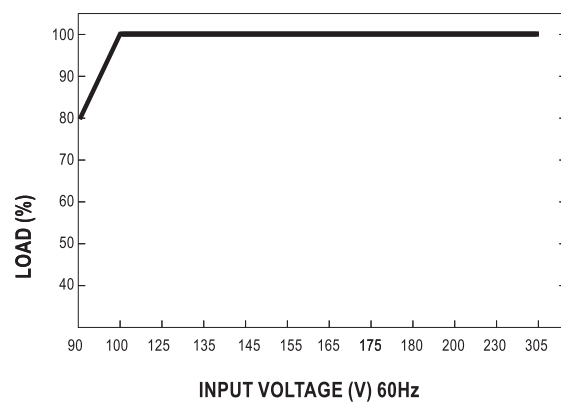
### Block Diagram



### Derating Curve

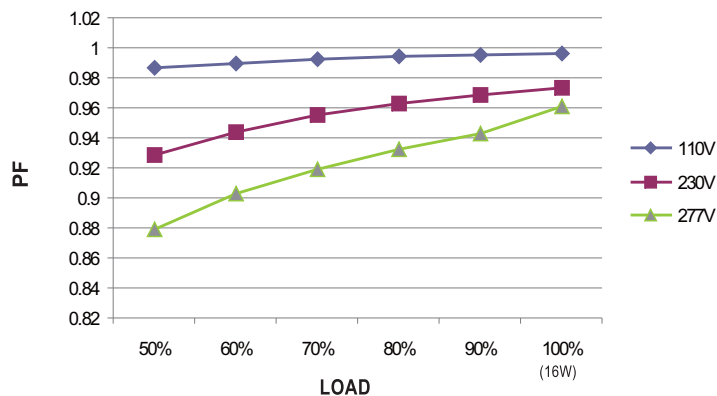


### Static Characteristics



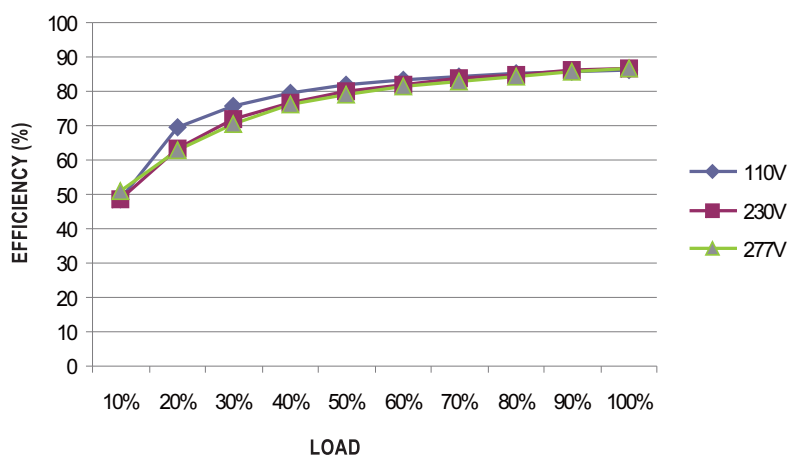
### Power Factor Characteristic

#### Constant Current Mode



### EFFICIENCY vs LOAD (48V Model)

LPF-16 series possess superior working efficiency that up to 86% can be reached in field applications.

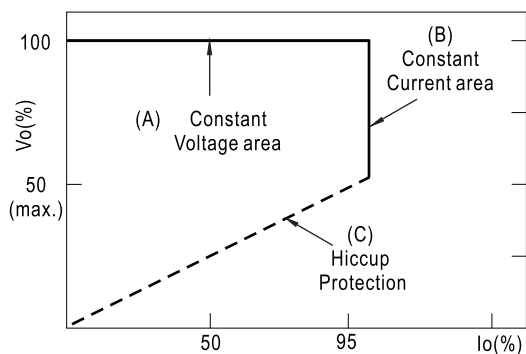


### DRIVING METHODS OF LED MODULE

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