



■ Features :

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- High efficiency up to 90%
- Protections: Short circuit / Overload / 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
- Built-in 3 in 1 dimming function (1~10Vdc or PWM signal or resistance)
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- Suitable for dry / damp locations
- 3 years warranty

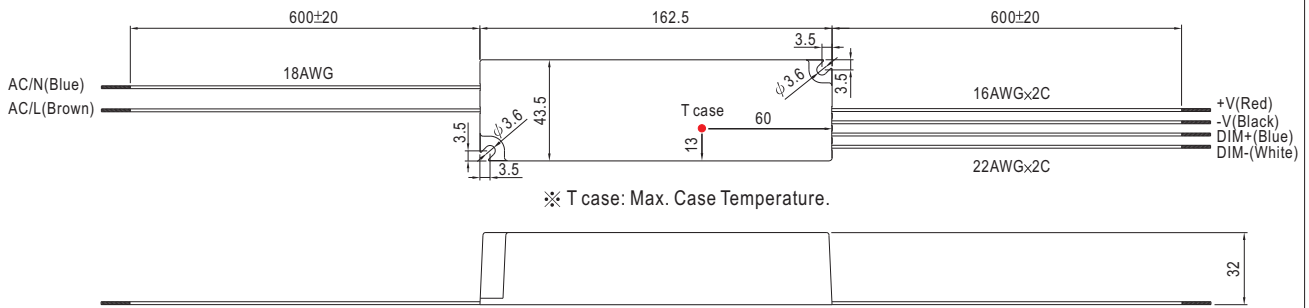
SPECIFICATION



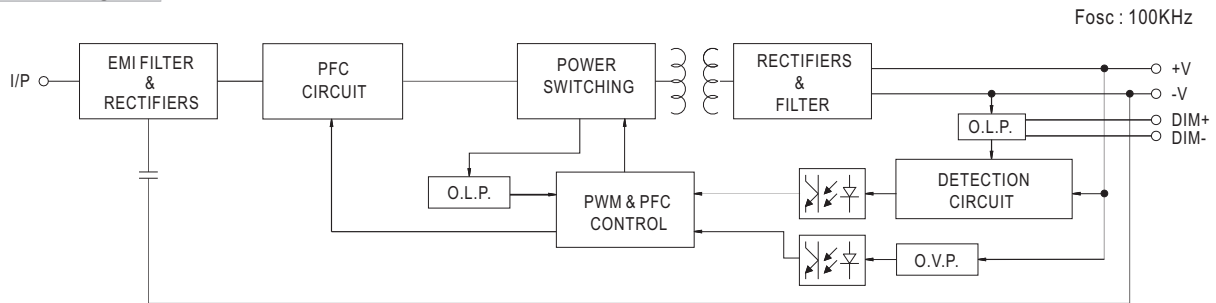
| MODEL               | LPF-60D-12  | LPF-60D-15  | LPF-60D-20 | LPF-60D-24 | LPF-60D-30 | LPF-60D-36 | LPF-60D-42 | LPF-60D-48 | LPF-60D-54 |            |
|---------------------|---|---|------------|------------|------------|------------|------------|------------|------------|------------|
| OUTPUT              | DC VOLTAGE  | 12V   | 15V        | 20V        | 24V        | 30V        | 36V        | 42V        | 48V        | 54V        |
|                     | CONSTANT CURRENT REGION Note.4  | 7.2 ~ 12V   | 9 ~ 15V    | 12 ~ 20V   | 14.4 ~ 24V | 18 ~ 30V   | 21.6 ~ 36V | 25.2 ~ 42V | 28.8 ~ 48V | 32.4 ~ 54V |
|                     | RATED CURRENT   | 5A  | 4A         | 3A         | 2.5A       | 2A         | 1.67A      | 1.43A      | 1.25A      | 1.12A      |
|                     | RATED POWER   | 60W   | 60W        | 60W        | 60W        | 60W        | 60.12W     | 60.06W     | 60W        | 60.48W     |
|                     | 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.7   | 1000ms, 80ms / 115VAC at full load 1000ms, 80ms / 230VAC  |            |            |            |            |            |            |            |            |
| HOLD UP TIME (Typ.) | 16ms at full load 230VAC / 115VAC   |   |            |            |            |            |            |            |            |            |
| INPUT               | 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.)   | 86%   | 87%        | 88%        | 89%        | 90%        | 90%        | 90%        | 90%        | 90%        |
|                     | AC CURRENT (Typ.)   | 0.8A / 115VAC 0.4A / 230VAC   |            |            |            |            |            |            |            |            |
|                     | INRUSH CURRENT (Typ.)   | COLD START 75A/230VAC   |            |            |            |            |            |            |            |            |
|                     | LEAKAGE CURRENT   | <0.75mA / 240VAC  |            |            |            |            |            |            |            |            |
| PROTECTION          | 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 ~ 17V  | 17.5 ~ 21V | 23 ~ 27V   | 28 ~ 35V   | 34 ~ 40V   | 41 ~ 49V   | 46 ~ 54V   | 54 ~ 63V   | 59 ~ 66V   |
|                     |   | Protection type : Shut down and latch off o/p voltage, re-power on to recover                                     |            |            |            |            |            |            |            |            |
|                     | OVER TEMPERATURE  | 90°C ±10°C (RTH2)<br>Protection type : Shut down o/p voltage, re-power on to recover                              |            |            |            |            |            |            |            |            |
| ENVIRONMENT         | WORKING TEMP.   | -40 ~ +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, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes   |            |            |            |            |            |            |            |            |
| SAFETY & EMC        | SAFETY STANDARDS Note.6   | UL8750, EN61347-1, EN61347-2-13 independent, 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°C / 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  | 396.7Khrs min. MIL-HDBK-217F (25°C)   |            |            |            |            |            |            |            |            |
|                     | DIMENSION   | 162.5*43.5*32mm (L*W*H)   |            |            |            |            |            |            |            |            |
|                     | PACKING   | 0.45Kg; 32pcs/15.4Kg/0.73CUFT   |            |            |            |            |            |            |            |            |
| 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 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.</li> <li>5. Derating may be needed under low input voltages. Please check the static characteristics for more details.</li> <li>6. Suitable for indoor use or outdoor use without direct sunlight exposure. Please avoid immerse in the water over 30 minutes.</li> <li>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.</li> <li>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.</li> </ol> |   |            |            |            |            |            |            |            |            |

### Mechanical Specification

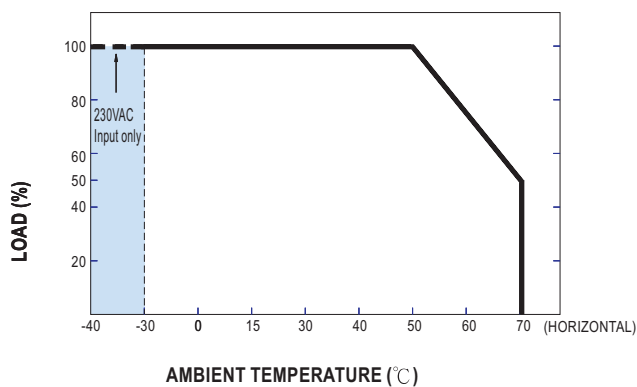
Case No. LPF60A Unit:mm



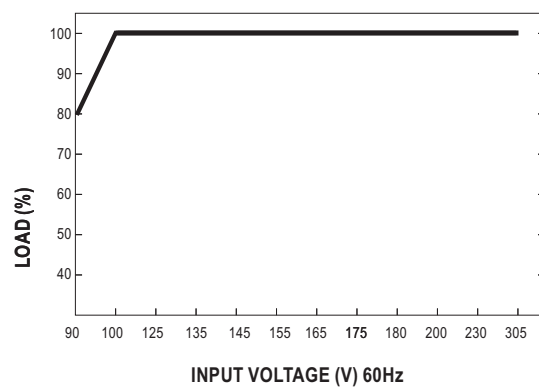
### Block Diagram



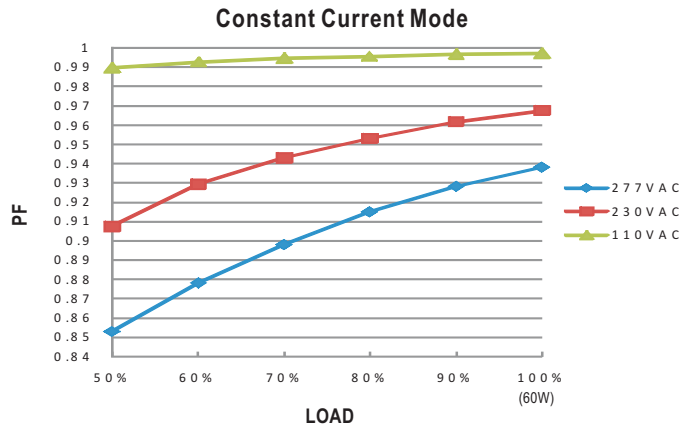
### Derating Curve



### Static Characteristics

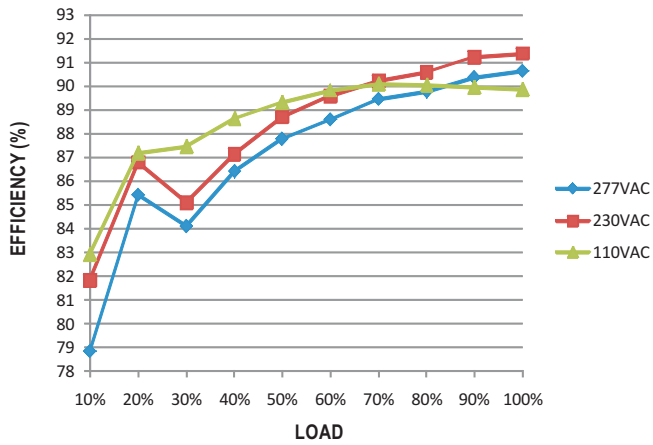


### Power Factor Characteristic



### EFFICIENCY vs LOAD (48V Model)

LPF-60D series possess superior working efficiency that up to 90% can be reached in field applications.

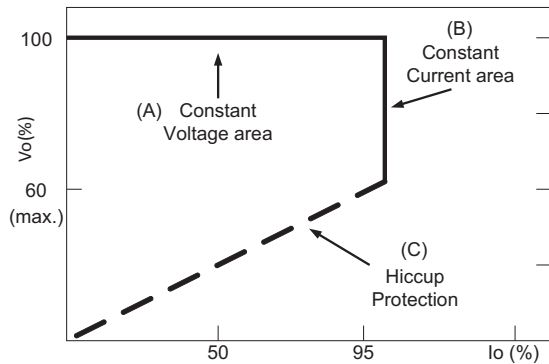


### DRIVING METHODS OF LED MODULE

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

### ■ DIMMING OPERATION



※ Built-in 3 in 1 dimming function, output constant current level can be adjusted through output cable by 1 ~ 10Vdc, 10V PWM signal or resistance between DIM+ and DIM-.

※ Please DO NOT connect "DIM-" to "-V".

※ Reference resistance value for output current adjustment (Typical)

| Resistance value | 10KΩ | 20KΩ | 30KΩ | 40KΩ | 50KΩ | 60KΩ | 70KΩ | 80KΩ | 90KΩ | 100KΩ | OPEN      |
|------------------|------|------|------|------|------|------|------|------|------|-------|-----------|
| Output current   | 10%  | 20%  | 30%  | 40%  | 50%  | 60%  | 70%  | 80%  | 90%  | 100%  | 100%~108% |

※ 1 ~ 10V dimming function for output current adjustment (Typical)

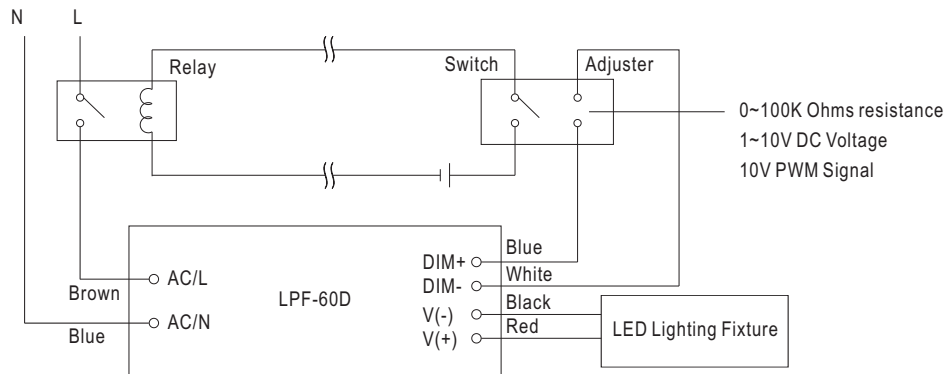
| Dimming value  | 1V  | 2V  | 3V  | 4V  | 5V  | 6V  | 7V  | 8V  | 9V  | 10V  | OPEN      |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----------|
| Output current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 100%~108% |

※ 10V PWM signal for output current adjustment (Typical): Frequency range : 100HZ ~ 3KHz

| Duty value     | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | OPEN      |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----------|
| Output current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 100%~108% |

※ Using the built-in dimming function on LPF-60D can't turn the lighting fixture totally dark. Please refer to the connection method below to achieve 0% brightness of the lighting fixture connecting to the LED power supply unit.

Dimming connection diagram for turning the lighting fixture ON/OFF :



Using a switch and relay can turn ON/OFF the lighting fixture.

1. Output constant current level can be adjusted through output cable by connecting a resistor or 1~10Vdc or 10V PWM signal between DIM+ and DIM-.
2. The LED lighting fixture can be turned ON/OFF by the switch.