

## Features :

- Universal AC input / Full range(up to 277VAC)
- 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
- Class II power unit, no FG
- Small and compact size
- 100% full load burn-in test
- High reliability,low cost
- Suitable for built-in applications of LED lighting
- 2 years warranty

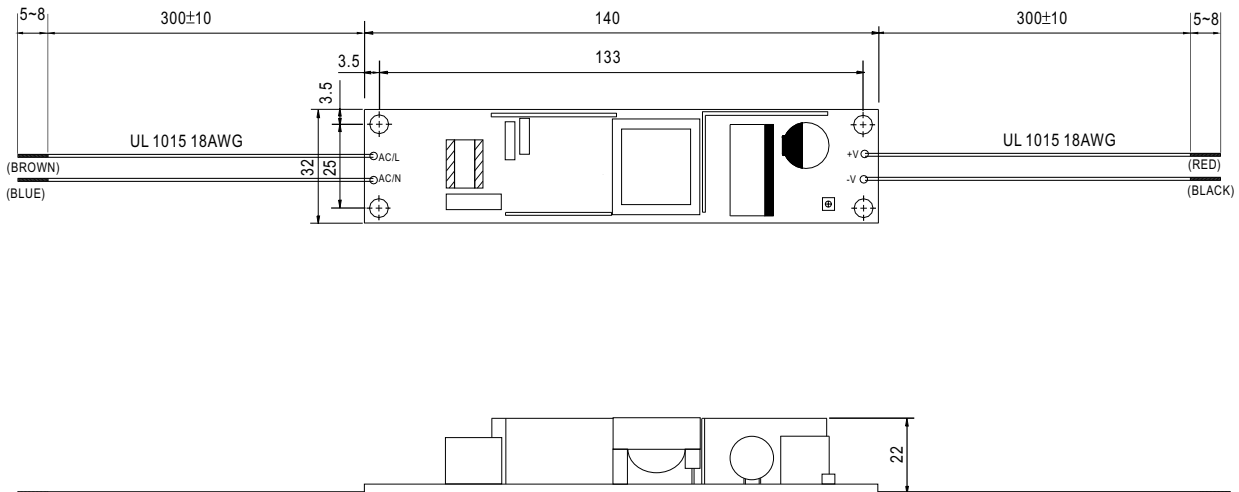


## SPECIFICATION

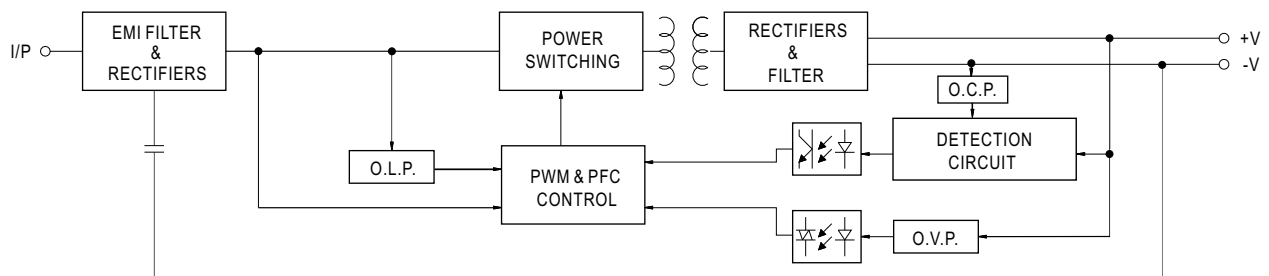
| MODEL        |                              | PLP-20-12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PLP-20-18  | PLP-20-24 | PLP-20-36 | PLP-20-48 |
|--------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|-----------|-----------|
| OUTPUT       | DC VOLTAGE                   | 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 18V        | 24V       | 36V       | 48V       |
|              | LED OPERATION VOLTAGE Note.5 | 9 ~ 12V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 13.5 ~ 18V | 18 ~ 24V  | 27 ~ 36V  | 36 ~ 48V  |
|              | RATED CURRENT                | 1.6A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.1A       | 0.8A      | 0.55A     | 0.42A     |
|              | CURRENT RANGE                | 0 ~ 1.6A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0 ~ 1.1A   | 0 ~ 0.8A  | 0 ~ 0.55A | 0 ~ 0.42A |
|              | CURRENT ADJ. RANGE           | 75% ~ 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |           |           |
|              | RATED POWER                  | 19.2W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 19.8W      | 19.2W     | 19.8W     | 20.2W     |
|              | RIPPLE & NOISE (max.) Note.2 | 2.5Vp-p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3.0Vp-p    | 3.0Vp-p   | 3.0Vp-p   | 3.8Vp-p   |
|              | VOLTAGE TOLERANCE Note.3     | ±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |           |           |           |
|              | LINE REGULATION              | ±3.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |           |           |           |
|              | LOAD REGULATION              | ±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |           |           |           |
|              | SETUP, RISE TIME             | 2300ms, 200ms / 230VAC 3000ms, 200ms / 115VAC at full load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |           |           |
| INPUT        | VOLTAGE RANGE Note.4         | 90 ~ 277VAC 127~392VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |           |           |           |
|              | FREQUENCY RANGE              | 47 ~ 63Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |           |           |
|              | POWER FACTOR                 | PF≧0.9 at 75~100% load, 115VAC/230VAC;PF≧0.9 at 85~100% load 277VAC (Please refer to "Power Factor Characteristic" curve)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |           |           |
|              | EFFICIENCY(Typ.)             | 80%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 81%        | 82%       | 83%       | 83.5%     |
|              | AC CURRENT                   | 0.4A/115VAC 0.2A/230VAC 0.15A/277VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |           |           |           |
|              | INRUSH CURRENT(max.)         | 40A/230VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |           |           |
|              | LEAKAGE CURRENT              | 0.5mA / 240VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |           |           |           |
| PROTECTION   | OVER CURRENT Note.5          | 95 ~ 110%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |           |           |           |
|              |                              | 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                 | 14 ~ 16V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19 ~ 22V   | 27 ~ 34V  | 41 ~ 46V  | 54 ~ 60V  |
|              |                              | Protection type : Shut off o/p voltage, clamping by zener diode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |           |           |           |
| ENVIRONMENT  | OVER TEMPERATURE             | 110°C±10°C (TSW1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |           |           |           |
|              |                              | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |           |           |           |
|              | WORKING TEMP.                | -30 ~ +60°C (Refer to "Derating Curve")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |           |           |           |
|              | WORKING HUMIDITY             | 20 ~ 90% RH non-condensing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |           |           |
|              | STORAGE TEMP., HUMIDITY      | -40 ~ +80°C, 10 ~ 95% RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |           |           |           |
|              | TEMP. COEFFICIENT            | ±0.06%/°C (0 ~ 50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |           |           |           |
| SAFETY & EMC | VIBRATION                    | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |           |           |           |
|              | SAFETY STANDARDS             | TUV EN61347-1, EN61347-2-13, UL8750,CSA C22.2 No. 250.0-08 approved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |           |           |
|              | 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(≧75% load); EN61000-3-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |           |           |           |
| OTHERS       | EMC IMMUNITY                 | Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, light industry level, criteria A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |           |           |           |
|              | MTBF                         | 643.6Khrs min. MIL-HDBK-217F (25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |           |           |
|              | DIMENSION                    | 140*32*22(L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |           |           |           |
| NOTE         | PACKING                      | 0.12kg;60pcs/9.2kg/0.62CUFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |           |           |           |
|              |                              | <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. Derating may be needed under low input voltage, please check the static characteristic for more details.</li> <li>5. 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.</li> <li>6. 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>7. Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.</li> </ol> |            |           |           |           |

### Mechanical Specification

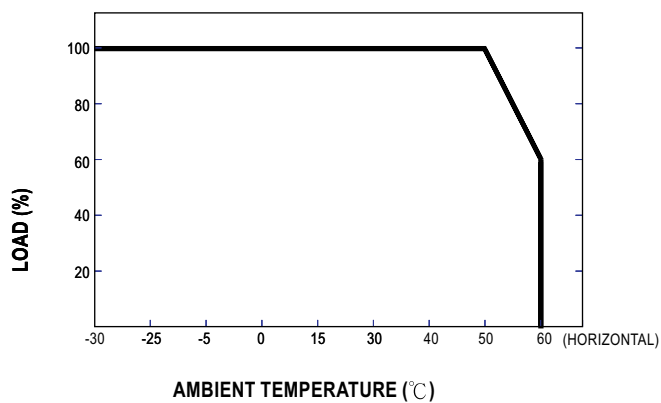
Unit:mm



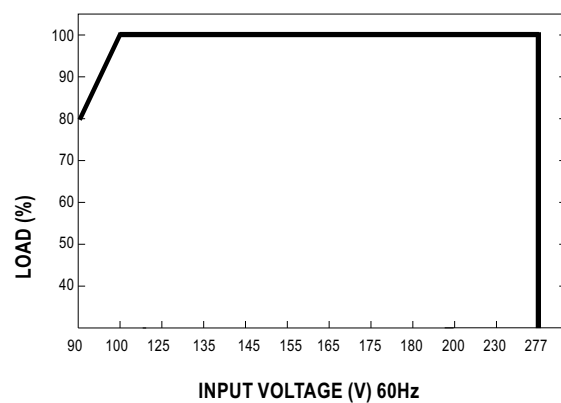
### Block Diagram



### Derating Curve



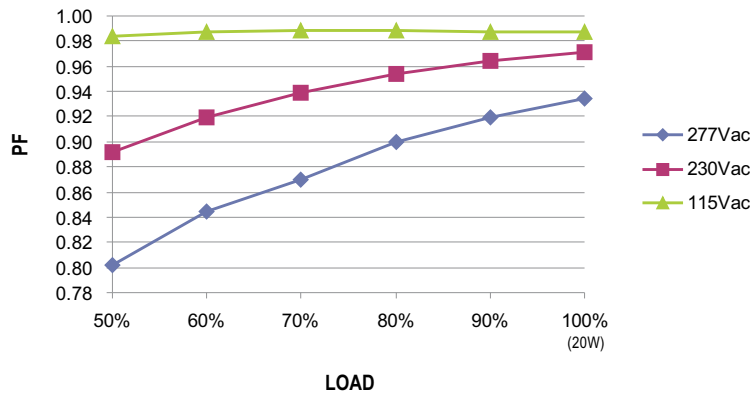
### Static Characteristics



### Power Factor Characteristic

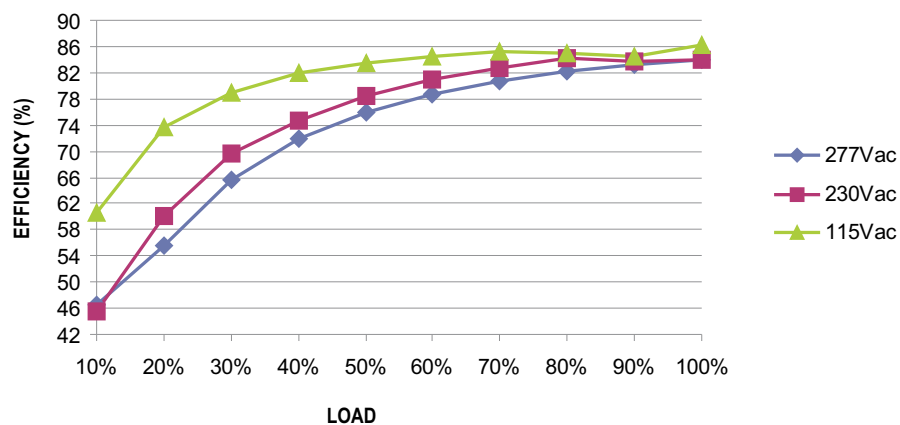
Power factor will be higher than 0.9 when output loading is 75% or higher.

#### Constant Current Mode



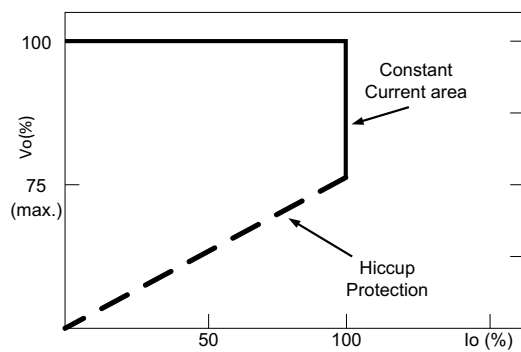
### EFFICIENCY vs LOAD (48V Model)

PLP-20 series possess superior working efficiency that up to 83.5% 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