# 40W Single Output Programmable LED Driver

- NFC technology programmable output current
- Wide input voltage 90 to 305VAC, 47 to 63Hz
- Over Voltage / Short Circuit / Over Temperature Protection
- High efficiency (up to 90.5%), active power factor correction
- Building-in dimming function ( 0~10V/ PWM/ Timer )
- IP67 waterproof rating, fully isolated
- Comply to worldwide safety regulations for lighting
- Cooling by free air convection
- Suitable for LED lighting & moving sign applications, for dry / damp / wet locations

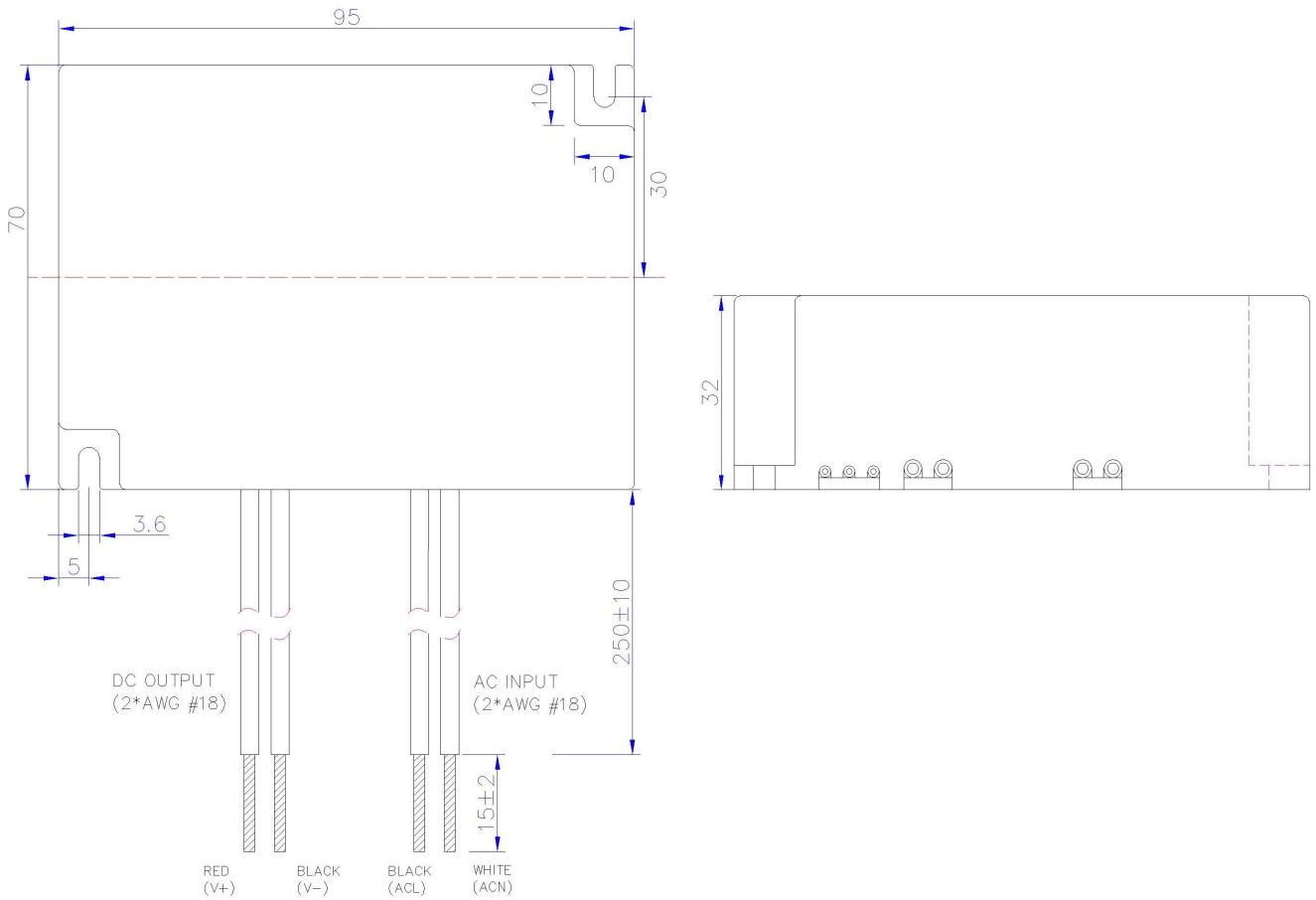
Approvals: c UL us CE IP67 RoHS CB

## SPECIFICATION

| Part Number | | PL040C024-040SP | PL040C040-068SP | PL040C068-114SP |
|---|---|---|---|---|
| OUTPUT | CONSTANT POWER OUTPUT VOLTAGE RANGE | 24-40 V | 40-68 V | 68-114 V |
| | WORKING VOLTAGE RANGE | 14.4-40 V | 24-68 V | 40.8-114 V |
| | PROGRAMMABLE CONSTANT CURRENT REGION(A) Note.4 | 0.67-1.67 A | 0.4-1 A | 0.24-0.59 A |
| | RATED POWER | 40 W | | |
| | RIPPLE & NOISE(max.) Note.2 | 3.0%Vo | | |
| | CURRENT TOLERANCE Note.3 | ±5.0% | | |
| | LINE REGULATION | ±1.0% | | |
| | LOAD REGULATION | ±3.0% | | |
| | SETUP, RISE TIME(Typ.) Note.7 | <2.0s/ 115VAC at full load <1.0s / 230VAC | | |
| INPUT | VOLTAGE RANGE Note.5 | 90 ~ 305 VAC | | |
| | FREQUENCY RANGE | 47 ~ 63 Hz. | | |
| | POWER FACTOR(Typ.) | PF>0.99/115VAC, PF>0.95/230VAC at full load ( Please refer to “Power Factor Characteristic” curve ) | | |
| | EFFICIENCY (@110V) | 85% | 87% | 88.5% |
| | EFFICIENCY (@220V) | 87% | 89% | 90.5% |
| | AC CURRENT(Typ.) | 0.4A/115VAC 0.2A/230VAC | | |
| | INRUSH CURRENT(Typ.) | COLD START 35A ( Twidth=270us measured at 50% Ipeak ) at 230VAC | | |
| | LEAKAGE CURRENT | <0.75mA/277VAC | | |
| PROTECTION | OVER CURRENT Note.4 | 95 ~ 108% | | |
| | | Protection type: Constant current limiting, recovers automatically after fault condition is removed | | |
| | SHORT CURRENT | Hiccup mode, recovers automatically after fault condition is removed | | |
| | OVER VOLTAGE | 1.4Vo | 1.4Vo | 1.4Vo |
| | | Protection type: Hiccup mode, recovers automatically after fault condition is removed | | |
| | OVER TEMP. | Hiccup mode, recovers automatically after fault condition is removed | | |
| ENVIRONMENT | WORKING TEMP. | -35 ~ +70℃ (Refer to “Derating Curve”) | | |
| | WORKING HUMIDITY | 10 ~ 100% RH non-condensing | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 5 ~ 100% RH | | |
| | TEMP. COEFFICIENT | ±0.03%℃ (0~50℃) | | |
| | VIBRATION | 10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes | | |
| SAFETY & EMC | SATETY STANDARDS Note.6 | UL8750, UL1012, CSA-C22.2 No.107.1, EN61347-1, EN61347-2-13 | | |
| | WITHSTAND VOLTAGE | I/P – O/P: 3.75kVAC | | |
| | ISOLTATION RESISTANCE | I/P – O/P: 100M Ohms / 500VDC /25℃ / 70% RH | | |
| | EMC EMISSION | Compliance to EN55015, EN61000-3-2 Class C (≥60% load); EN61000-3-3 | | |
| | EMC IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, EN55024, light industry level (surge 2kV), criteria A | | |
| OTHERS | MTBF Note.11 | 200 khrs min. | | |

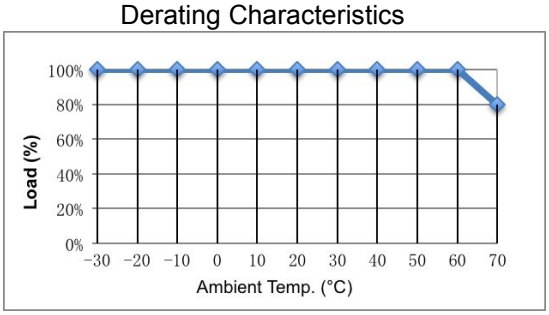
| | | |
|---|---|---|
| | **DIMENSIION (L*W*H)** | 95*70*32 mm 3.7*2.8*1.3 inch |
| | **PACKING** | 0.34kg |
| **NOTE** | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance: includes set up tolerance, line regulation & load regulation.<br>4. Please refer to "DRIVING METHODS OF LED MODULE".<br>5. Derating may bee needed under low input voltages. Please check the static characteristics for details.<br>6. Suitable for indoor use or outdoor use without direct sunlight exposure. Please avoid immerse in the water over 30 minutes.<br>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.<br>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 manufactures must re-qualify EMC DIRECTIVE on the complete installation again.<br>9. Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.<br>10. To fulfill requirements of the latest ERP regulation for lighting fixtures, this LED power supply can only be used behind switch without permanently connected to the mains.<br>11. Measured at 120V input, 80% load, MIL-HDBK-217F (25℃). | |

## Mechanical Specification

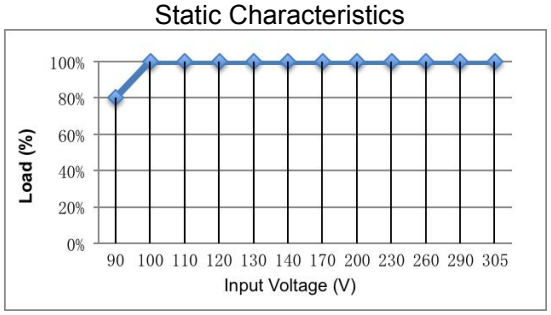



## Derating Curve

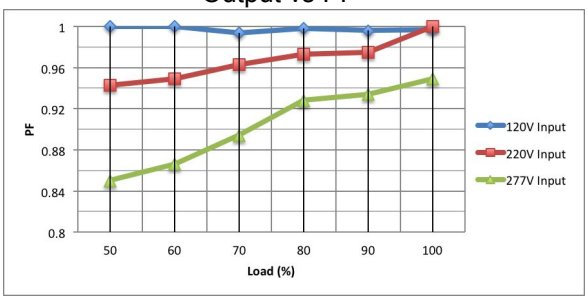
Derating Characteristics



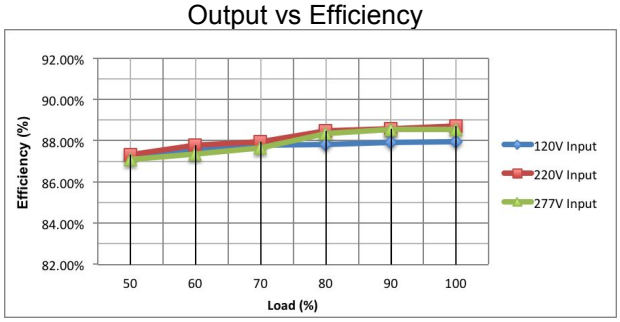

Static Characteristics



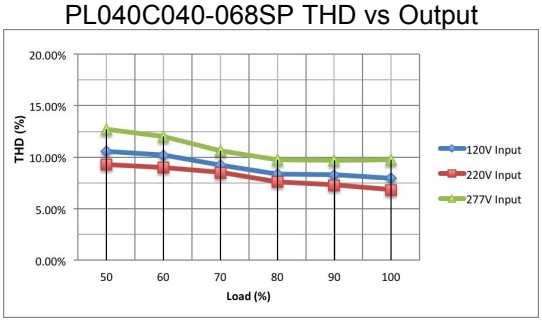
PL040C040-068SP
Output vs PF




PL040C040-068SP
Output vs Efficiency



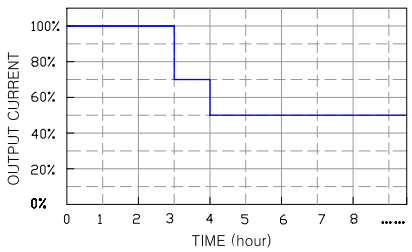

PL040C040-068SP THD vs Output




## Dimming Function

### TIMER Dimming

TIMER DIMMING



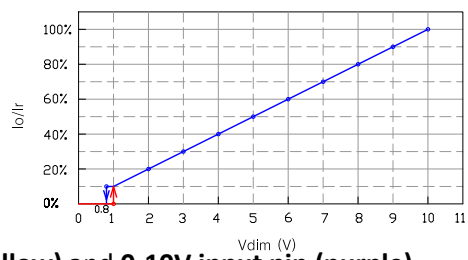

**NOTE:**

1. The dimming time can be customized according to different orders.

### 0-10V Analog Dimming

| | |
|---|---|
| **Input Dimming Voltage** | 0-10V |
| **Input Source Current** | 0-10mA |

Io/Ir vs Vdim




**NOTE:**

1.If the dimming function is not used, short **10V output pin (yellow)** and **0-10V input pin (purple)**.

2. Io is actual output current and Ir is rated current without dimming control.

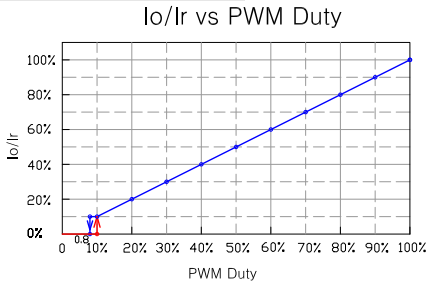
3. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold, proximally 50% of the max. output voltage for any given mode.

4. The output will be shut down when the diming signal decrease to 0.8V, and will stay 0 until the diming signal rise up to 1V, it will then return to 10%Ir.

5. Do not connect the **GND of dimming (green)** to the output. Otherwise, the LED driver can not work normally.

## PWM Dimming

| | | |
|---|---|---|
| **PWM Signal** | 10 V | Purple wire vs Green wire |
| **Input Max Current** | 10 mA | |
| **PWM Frequency** | 0.5 ~ 3 kHz | |
| **PWM Pulse Width** | 10%~100% | |




**NOTE:**

1. Pulse width less than 10% will cause the driver working unsteadily.
2. Green wire is the GND wire.

## NFC Programmable


**NOTE:**

1. The NFC controller can modulate the output current from 40% to 100% rated value.
2. The NFC dimming is a way of non-contact process, therefore much safer compared to traditional ones.
3. Power devices can be programmed with the output current even if it's powered off.