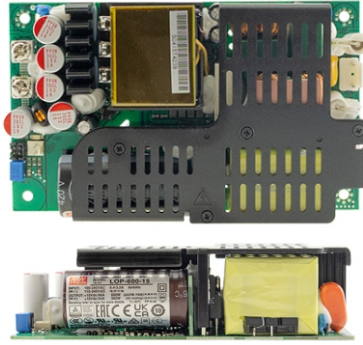
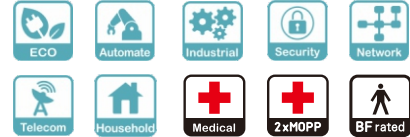
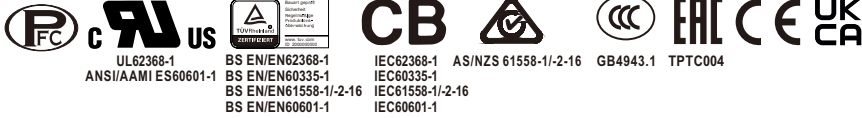




User's Manual



## Features

- MEAN WELL Patent Number: ZL 202223277512.1
- 5"×3" compact size with **low profile** (12V: 35mm, 15~54V: 33.5mm)
- 80~264Vac input with PFC, No load power consumption<0.5W
- **Global certificates in multi-fields** (ITE 62368-1, Medical 60601-1, Household 60335-1, Industrial 61558-1/-2-16)
- **150%peak** load @ 3s
- **400W** convection, **600W** with FAN **23CFM** forced-cooled
- Suitable for **Class I** or **Class II** installations
- Over voltage category **III** (**OVC III**)
- **-40 ~ +80°C** wide range operation temperature
- High efficiency up to 95%
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Extremely low leakage current, **2 x MOPP**, suitable for **BF** medical applications
- Operating altitude up to **5000 meters**
- Built-in 12V/0.5A for external FAN
- Built-in Remote sense
- 3 years warranty

## Applications

- Industrial automation machinery/ control system
- Security system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Network equipment
- Telecom devices
- Power sourcing equipment of PoE
- Home automation
- Medical devices

## GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

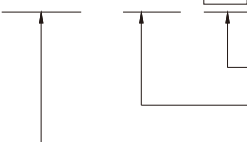
## Description

The LOP-600 is a 600W highly reliable, energy-efficient, low-profile open frame type power supply. With a high power density of 30.3W/in<sup>3</sup> within the standard size of 5" x 3", it features a universal input voltage range of 80~264VAC, making it suitable for global applications. The series offers a comprehensive selection of standard voltages, including 12V/15V/18V/24V/27V/36V/48V/54V, and comes in a complete range of models.

The main features of the LOP-600 include: low standby power (<0.5W), high efficiency (up to 95%), capable of providing 400W under natural air cooling and 600W with an additional fan. It has a 150% @ 3 seconds overload capacity, a wide operating temperature range of -40 to +80°C, compliance with OVCIII, suitable for Class I (with FG) or Class II (without FG) systems. The product has obtained multiple safety certifications, including 62368-1/60601-1/61558-1/60335-1, and is designed to meet 2xMOPP and extremely low touch leakage current <70 μA, making it suitable for BF class medical devices. With high product safety and excellent EMC performance, it is versatile and applicable in various fields such as ITE, medical, industrial control, home automation and more. It is a cost-effective slim open frame type power supply.

## Model Encoding

LOP - 600 - 12



Output voltage (12V/15V/18V/24V/27V/36V/48V/54V)  
Rated wattage  
Series name



## 600W 5"×3" Low Profile Open Frame Power Supply

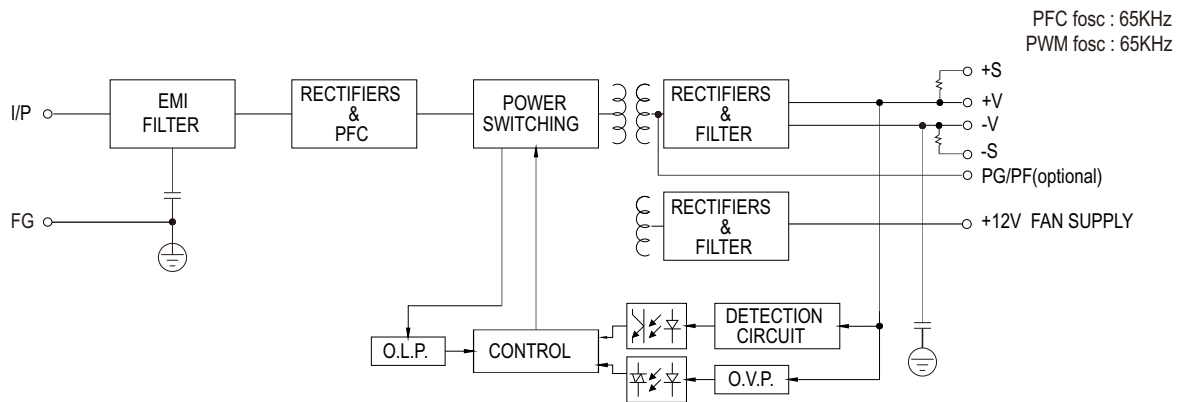
## LOP-600 series

| SPECIFICATION                      |             | LOP-600-12                                                                                                                                                                                  | LOP-600-15   | LOP-600-18   | LOP-600-24   | LOP-600-27   | LOP-600-36   | LOP-600-48   | LOP-600-54   |
|------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OUT PUT                            |             |                                                                                                                                                                                             |              |              |              |              |              |              |              |
| DC VOLTAGE                         |             | 12V                                                                                                                                                                                         | 15V          | 18V          | 24V          | 27V          | 36V          | 48V          | 54V          |
| CURRENT                            | Peak(3sec.) | 75A                                                                                                                                                                                         | 60A          | 50A          | 37.5A        | 33.3A        | 25A          | 18.8A        | 16.7A        |
|                                    | 23CFM       | 50A                                                                                                                                                                                         | 40A          | 33.3A        | 25A          | 22.3A        | 16.7A        | 12.5A        | 11.2A        |
|                                    | Convection  | 30A                                                                                                                                                                                         | 24A          | 20A          | 16.7A        | 14.8A        | 11.1A        | 8.3A         | 7.4A         |
| RATED POWER                        | Peak(3sec.) | 900W                                                                                                                                                                                        | 900W         | 900W         | 900W         | 899.1W       | 900W         | 902.4W       | 901.8W       |
|                                    | 23CFM       | 600W                                                                                                                                                                                        | 600W         | 599.4W       | 600W         | 602.1W       | 601.2W       | 600W         | 604.8W       |
|                                    | Convection  | 360W                                                                                                                                                                                        | 360W         | 360W         | 400.8W       | 399.6W       | 399.6W       | 398.4W       | 399.6W       |
| RIPPLE & NOISE (max.)      Note.2  |             | 120mVp-p                                                                                                                                                                                    | 150mVp-p     | 180mVp-p     | 200mVp-p     | 200mVp-p     | 250mVp-p     | 250mVp-p     | 250mVp-p     |
| VOLTAGE ADJ. RANGE (MAIN OUTPUT)   |             | 11.4~12.6V                                                                                                                                                                                  | 14.3~15.8V   | 17.1~18.9V   | 22.8~25.2V   | 25.6 ~ 28.4V | 34.2 ~37.8V  | 45.6 ~50.4V  | 52 ~58V      |
| VOLTAGE TOLERANCE      Note.3      |             | ±3.0%                                                                                                                                                                                       | ±3.0%        | ±3.0%        | ±2.0%        | ±1.0%        | ±1.0%        | ±1.0%        | ±1.0%        |
| LINE REGULATION                    |             | ±0.5%                                                                                                                                                                                       | ±0.5%        | ±0.5%        | ±0.5%        | ±0.5%        | ±0.5%        | ±0.5%        | ±0.5%        |
| LOAD REGULATION                    |             | ±1.0%                                                                                                                                                                                       | ±1.0%        | ±1.0%        | ±1.0%        | ±1.0%        | ±1.0%        | ±1.0%        | ±1.0%        |
| SETUP, RISE TIME                   |             | 1000ms, 50ms/230VAC      1500ms, 50ms/115VAC at full load                                                                                                                                   |              |              |              |              |              |              |              |
| HOLD UP TIME (Typ.)                |             | 12ms@400W load , 8ms@600W load                                                                                                                                                              |              |              |              |              |              |              |              |
| INPUT                              |             |                                                                                                                                                                                             |              |              |              |              |              |              |              |
| VOLTAGE RANGE      Note.4          |             | 80 ~ 264VAC      113 ~ 370VDC                                                                                                                                                               |              |              |              |              |              |              |              |
| FREQUENCY RANGE                    |             | 47 ~ 63Hz                                                                                                                                                                                   |              |              |              |              |              |              |              |
| POWER FACTOR                       |             | PF>0.95/230VAC    PF>0.98/115VAC at full load                                                                                                                                               |              |              |              |              |              |              |              |
| EFFICIENCY (Typ.)                  |             | 93%                                                                                                                                                                                         | 93.5%        | 94%          | 94%          | 95%          | 95%          | 95%          | 95%          |
| AC CURRENT (Typ.)                  |             | 6.4A/115VAC      3.2A/230VAC                                                                                                                                                                |              |              |              |              |              |              |              |
| INRUSH CURRENT (Typ.)              |             | COLD START 40A/115VAC      80A/230VAC                                                                                                                                                       |              |              |              |              |              |              |              |
| LEAKAGE CURRENT                    |             | Earth leakage current < 500μA(rms) @ 264VAC , touch current < 70μA(rms) @ 264VAC                                                                                                            |              |              |              |              |              |              |              |
| PROTECTION                         |             |                                                                                                                                                                                             |              |              |              |              |              |              |              |
| OVERLOAD                           |             | 105 ~ 150% rated output power, Protection type : Hiccup after 3 sec, recovers automatically after fault condition is removed                                                                |              |              |              |              |              |              |              |
| OVER VOLTAGE                       |             | 13.2 ~ 15.6V                                                                                                                                                                                | 16.5 ~ 19.5V | 19.8 ~ 23.4V | 26.4 ~ 31.2V | 29.7 ~ 35.1V | 39.6 ~ 46.8V | 52.8 ~ 62.4V | 59.4 ~ 67.5V |
|                                    |             | Protection type : Shut down o/p voltage, re-power on to recover                                                                                                                             |              |              |              |              |              |              |              |
| OVER TEMPERATURE                   |             | Protection type : Shut down o/p voltage, recovers automatically after temperature goes down or re-power on to recover                                                                       |              |              |              |              |              |              |              |
| FUNCTION                           |             |                                                                                                                                                                                             |              |              |              |              |              |              |              |
| EXTERNAL FAN SUPPLY                |             | 12V@0.5A for driving a fan (23CFM) / 12V@0.2A for without fan;<br>Tolerance -15% ~+15% at main output 20% rated current                                                                     |              |              |              |              |              |              |              |
| REMOTE SENSE                       |             | The remote sensing compensates voltage drop on the load wiring up to 0.5V                                                                                                                   |              |              |              |              |              |              |              |
| POWER GOOD / POWER FAIL (optional) |             | 500ms>PG>10ms ; The TTL signal goes high with 10ms to 500ms delay after power set up ;<br>The TTL signal goes low at least 1ms before Vo below 90% of rated value; TTL(0 ~ 1V), TTH(2 ~ 5V) |              |              |              |              |              |              |              |
| ENVIRONMENT                        |             |                                                                                                                                                                                             |              |              |              |              |              |              |              |
| WORKING TEMP.                      |             | -40 ~ +80°C (Refer to "Derating Curve")                                                                                                                                                     |              |              |              |              |              |              |              |
| WORKING HUMIDITY                   |             | 20 ~ 90% RH non-condensing                                                                                                                                                                  |              |              |              |              |              |              |              |
| STORAGE TEMP., HUMIDITY            |             | -40 ~ +85°C, 10 ~ 95% RH non-condensing                                                                                                                                                     |              |              |              |              |              |              |              |
| TEMP. COEFFICIENT                  |             | ±0.03%/°C (0 ~ 50°C)                                                                                                                                                                        |              |              |              |              |              |              |              |
| VIBRATION                          |             | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes                                                                                                                                |              |              |              |              |              |              |              |

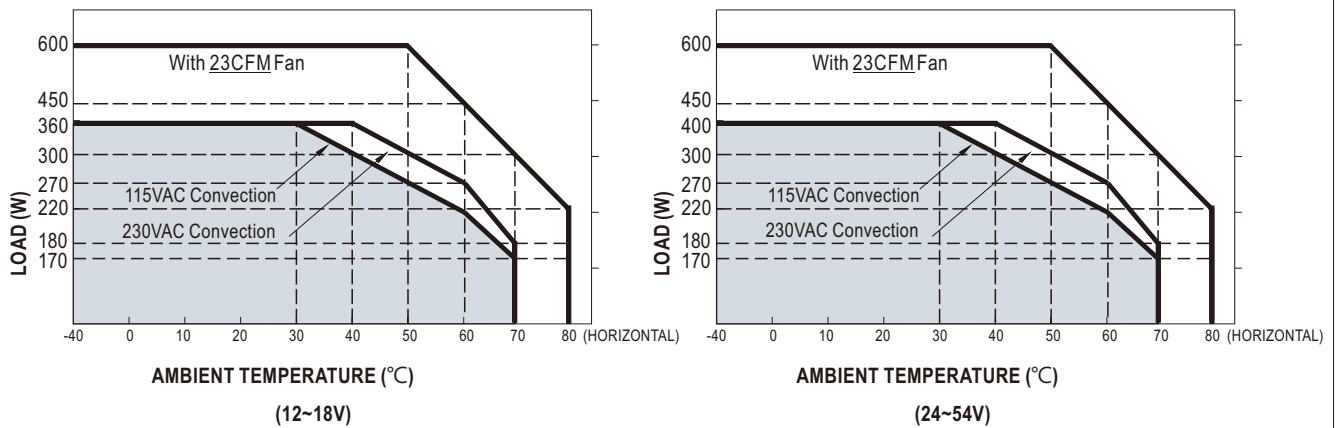


| SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                 | LOP-600-12                                       | LOP-600-15 | LOP-600-18 | LOP-600-24                                                                                       | LOP-600-27 | LOP-600-36 | LOP-600-48 | LOP-600-54 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------|------------|--------------------------------------------------------------------------------------------------|------------|------------|------------|------------|
| SAFETY & EMC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                 | Note.5                                           |            |            |                                                                                                  |            |            |            |            |
| SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CB IEC62368-1, IEC60335-1, IEC61558-1/-2-16, IEC60601-1;<br>TUV BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16, BS EN/EN60601-1(3.2 Version);<br>UL UL62368-1, ANSI / AAMI ES60601-1(3.2 Version) ;<br>CCC GB4943.1 ; RCM AS/NZS 61558-1/-2-16; EAC TPTC 004 approved. |                                                  |            |            |                                                                                                  |            |            |            |            |
| ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP                                                                                                                                                                                                         |                                                  |            |            |                                                                                                  |            |            |            |            |
| OVER VOLTAGE CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | IEC/EN 61558-1/-2-16(OVC III, altitude up to 2000M )<br>IEC/EN/UL 62368-1 (OVC II, altitude up to 5000M )<br>IEC/EN 60335-1 (OVC II, altitude up to 5000M )<br>IEC/EN 60601-1 (OVC II, altitude up to 4000M )                                                                   |                                                  |            |            |                                                                                                  |            |            |            |            |
| PROTECTIVE EXTRA-<br>LOW VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IEC/EN61558-2-16 (SELV, 12~48V )<br>IEC/EN/UL 62368-1 (SELV / ES1, 12~48V )                                                                                                                                                                                                     |                                                  |            |            |                                                                                                  |            |            |            |            |
| WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC                                                                                                                                                                                                                                       |                                                  |            |            |                                                                                                  |            |            |            |            |
| ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C/ 70% RH                                                                                                                                                                                                                       |                                                  |            |            |                                                                                                  |            |            |            |            |
| EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Parameter                                                                                                                                                                                                                                                                       | Standard                                         |            |            | Test Level / Note                                                                                |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted & Radiated                                                                                                                                                                                                                                                            | BS EN/EN55032(CISPR32)<br>BS EN/EN55011(CISPR11) |            |            | Class I : Class B , Class II : Class A                                                           |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 | BS EN/EN55014(CISPR32)                           |            |            | Class I : Class B                                                                                |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Harmonic Current                                                                                                                                                                                                                                                                | BS EN/EN61000-3-2                                |            |            | Class A                                                                                          |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Voltage Flicker                                                                                                                                                                                                                                                                 | BS EN/EN61000-3-3                                |            |            | -----                                                                                            |            |            |            |            |
| EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | BS EN/EN55035,BS EN/ EN61000-6-2                                                                                                                                                                                                                                                |                                                  |            |            |                                                                                                  |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Parameter                                                                                                                                                                                                                                                                       | Standard                                         |            |            | Test Level /Note                                                                                 |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ESD                                                                                                                                                                                                                                                                             | BS EN/EN61000-4-2                                |            |            | Level 4, 15KV air ; Level 4, 8KV contact                                                         |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Radiated Susceptibility                                                                                                                                                                                                                                                         | BS EN/EN61000-4-3                                |            |            | Level 3, 10V/m( 80MHz~2.7GHz )<br>Table 9, 9~28V/m( 385MHz~5.78GHz )                             |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EFT/Burest                                                                                                                                                                                                                                                                      | BS EN/EN61000-4-4                                |            |            | Level 3, 2KV                                                                                     |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Surge                                                                                                                                                                                                                                                                           | BS EN/EN61000-4-5                                |            |            | Level 4, 4KV/Line-FG ; 2KV/Line-Line                                                             |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted                                                                                                                                                                                                                                                                       | BS EN/EN61000-4-6                                |            |            | Level 3, 10V                                                                                     |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Magnetic Field                                                                                                                                                                                                                                                                  | BS EN/EN61000-4-8                                |            |            | Level 4, 30A/m                                                                                   |            |            |            |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Voltage Dips and interruptions                                                                                                                                                                                                                                                  | BS EN/EN61000-4-11                               |            |            | >95% dip 0. 5 periods, 100% dip 1 periods, 30% dip 25 periods,<br>>95% interruptions 250 periods |            |            |            |            |
| OTHERS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                 |                                                  |            |            |                                                                                                  |            |            |            |            |
| MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1963.2K hrs min. Telcordia SR-332 (Bellcore) ; 310.9K hrs min. MIL-HDBK-217F (25°C)                                                                                                                                                                                             |                                                  |            |            |                                                                                                  |            |            |            |            |
| DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 12V: 127*76.2*35mm (L*W*H) , 15~54V: 127*76.2*33.5mm (L*W*H)                                                                                                                                                                                                                    |                                                  |            |            |                                                                                                  |            |            |            |            |
| PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.48Kg; 24pcs/13.7Kg/1.10CUFT                                                                                                                                                                                                                                                   |                                                  |            |            |                                                                                                  |            |            |            |            |
| NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                 |                                                  |            |            |                                                                                                  |            |            |            |            |
| 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μF & 47μF parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Derating may be needed under low input voltages. Please check the derating curve for more details.<br>5. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on <a href="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a> )<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |                                                                                                                                                                                                                                                                                 |                                                  |            |            |                                                                                                  |            |            |            |            |

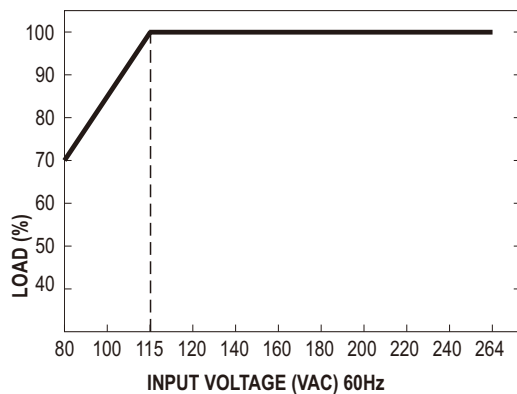
## Block Diagram



## Derating Curve

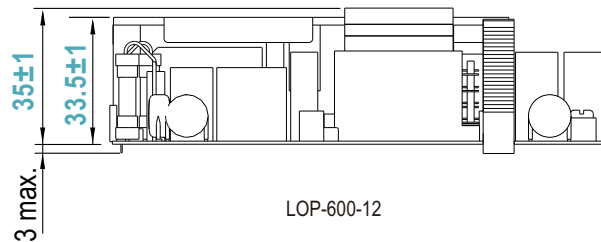
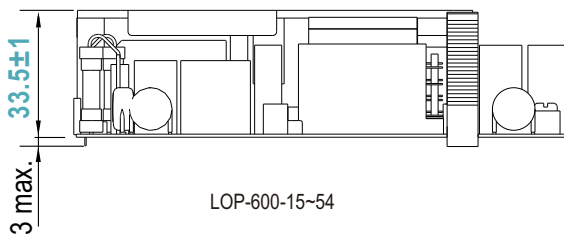
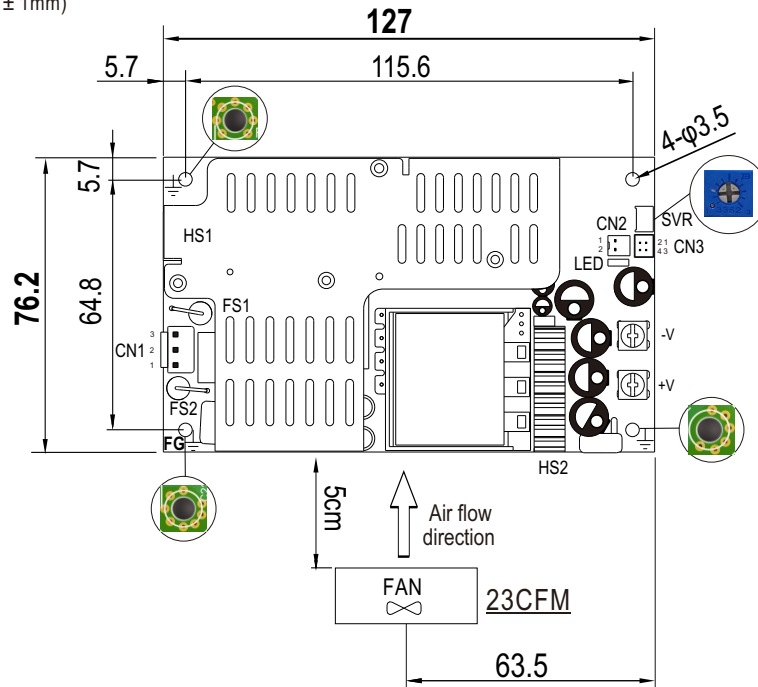


## Output Derating VS Input Voltage



## Mechanical Specification

(Unit: mm , tolerance  $\pm 1$ mm)



AC Input Connector (CN1) : JST B3P-VH or equivalent

| Pin No. | Assignment | Mating Housing        | Terminal                       |
|---------|------------|-----------------------|--------------------------------|
| 1       | AC/L       | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 2       | No Pin     |                       |                                |
| 3       | AC/N       |                       |                                |

FAN Connector(CN2) : TKP 8812-2 or equivalent

| Pin No. | Assignment | Mating Housing         | Terminal               |
|---------|------------|------------------------|------------------------|
| 1       | DC COM     | TKP 2502 or equivalent | TKP 8811 or equivalent |
| 2       | +12Vaux    |                        |                        |

DC Output Connector

| Assignment | Output Terminals                                                  |
|------------|-------------------------------------------------------------------|
| -V         | M3.5 Pan HD screw in 2 positions<br>Torque to 8 lbs-in(90cNm)max. |
| +V         |                                                                   |

Function Connector(CN3): TKP DH2I-2X2 or equivalent

| Pin No. | Assignment   | Mating Housing        | Terminal          |
|---------|--------------|-----------------------|-------------------|
| 1       | -R.S         | TKP DH2 or equivalent | TKP or equivalent |
| 2       | +R.S         |                       |                   |
| 3       | DC COM       |                       |                   |
| 4       | PG(optional) |                       |                   |

Note:

Class I System: Mounting holes marked with  $\perp$  have to be connected to safety earth.

Class II System: Unnecessary to connect with safety earth.

⚠ HS1,HS2 cannot be shorted

## Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>