



600W Single Output with PFC Function

**HRP-600N** series



AS/NZS 62368.1



UL62368-1



EN62368-1



TPTC004



IEC62368-1



Automate



Industrial



Network



Telecom



Security

## ■ Features

- Universal AC input / Full range
- Built-in active PFC function, PF>0.94
- 250% peak power capability
- High efficiency up to 89%
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in cooling fan ON-OFF control
- Built-in DC OK signal
- Built-in remote sense function
- 5 years warranty

## ■ Applications

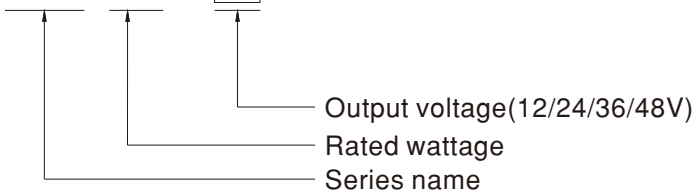
- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Diagnostic or biological facilities
- Test or measurement systems
- Telecommunication equipment

## ■ Description

HRP-600N is a 600W single output type AC/DC power supply. This series operates for 85~264VAC input voltage and offers the models with the DC output mostly demanded from the industry. Each model is cooled by the built-in fan with fan ON-OFF control, working for the temperature up to 70°C. Moreover, HRP-600N provides 250% short-duration peak power for motor applications and electromechanical loads requiring much higher power during start-up.

## ■ Model Encoding

HRP - 600N - 24

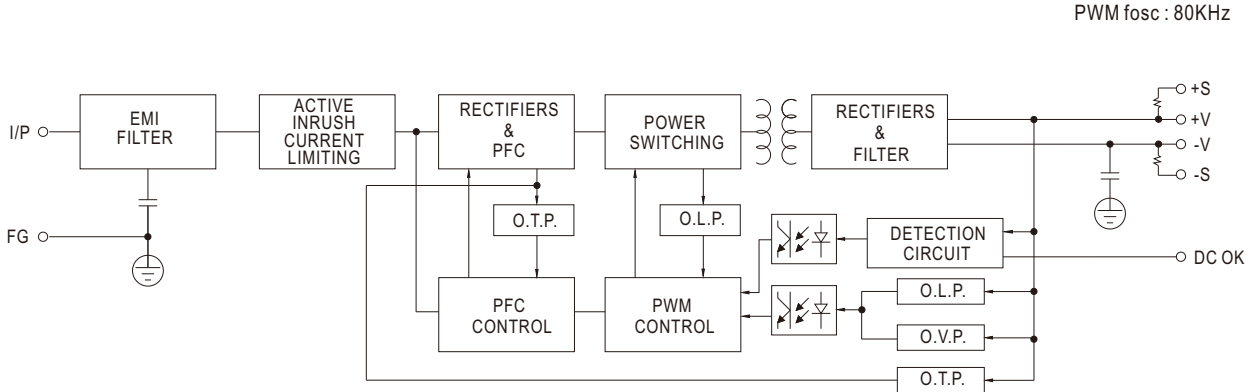




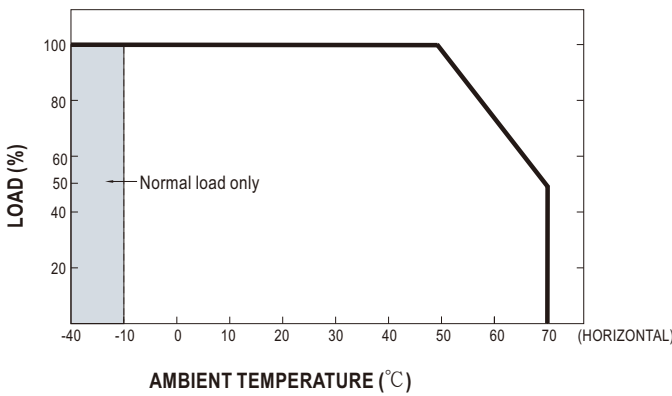
**SPECIFICATION**

| MODEL                          |   | HRP-600N-12   | HRP-600N-24  | HRP-600N-36    | HRP-600N-48                            |  |
|--------------------------------|---|---|--|----------------|--|--|
| OUTPUT                         | DC VOLTAGE  | 12V   | 24V  | 36V            | 48V                                    |  |
|                                | RATED CURRENT   | 53A   | 27A  | 17.5A          | 13A                                    |  |
|                                | CURRENT RANGE   | 0 ~ 53A   | 0 ~ 27A  | 0 ~ 17.5A      | 0 ~ 13A                                |  |
|                                | RATED POWER   | 636W  | 648W   | 630W           | 624W                                   |  |
|                                | RIPPLE & NOISE (max.) Note.2  | 200mVp-p  | 150mVp-p   | 200mVp-p       | 240mVp-p                               |  |
|                                | VOLTAGE ADJ. RANGE  | 10.2 ~ 13.8V  | 21.6 ~ 28.8V   | 28.8 ~ 39.6V   | 40.8 ~ 55.2V                           |  |
|                                | VOLTAGE TOLERANCE Note.3  | ± 1.0%  | ± 1.0%   | ± 1.0%         | ± 1.0%                                 |  |
|                                | LINE REGULATION   | ± 0.3%  | ± 0.2%   | ± 0.2%         | ± 0.2%                                 |  |
|                                | LOAD REGULATION   | ± 0.5%  | ± 0.5%   | ± 0.5%         | ± 0.5%                                 |  |
|                                | SETUP, RISE TIME  | 1800ms, 50ms/230VAC    3600ms, 50ms/115VAC at full load   |  |                |  |  |
| HOLD UP TIME (Typ.)            | 16ms/230VAC    16ms/115VAC at full load   |   |  |                |  |  |
| INPUT                          | VOLTAGE RANGE Note.4  | 85 ~ 264VAC    120 ~ 370VDC   |  |                |  |  |
|                                | FREQUENCY RANGE   | 47 ~ 63Hz   |  |                |  |  |
|                                | POWER FACTOR (Typ.)   | PF>0.94/230VAC    PF>0.98/115VAC at full load   |  |                |  |  |
|                                | EFFICIENCY (Typ.)   | 88%   | 88%  | 89%            | 89%                                    |  |
|                                | AC CURRENT (Typ.)   | 7.6A/115VAC    3.6A/230VAC  |  |                |  |  |
|                                | INRUSH CURRENT (Typ.)   | 35A/115VAC    70A/230VAC  |  |                |  |  |
| LEAKAGE CURRENT                | <1.5mA / 240VAC   |   |  |                |  |  |
| PROTECTION                     | OVERLOAD  | Normally works within 105 ~ 200% rated output power for more than 5 seconds and then shut down o/p voltage, re-power on to recover<br>Constant current limiting for output power >280% rated for more than 5 seconds and then shut down o/p voltage, re-power on to recover |  |                |  |  |
|                                | OVER VOLTAGE  | 14.4 ~ 16.8V  | 30 ~ 34.8V   | 41.4 ~ 48.6V   | 57.6 ~ 67.2V                           |  |
|                                | OVER TEMPERATURE  | Shut down o/p voltage, recovers automatically after temperature goes down<br>Protection type : Shut down o/p voltage, re-power on to recover  |  |                |  |  |
| FUNCTION                       | DC OK SIGNAL  | PSU turn on : 3.3 ~ 5.6V ; PSU turn off : 0 ~ 1V  |  |                |  |  |
|                                | FAN CONTROL (Typ.)  | Load 35 ± 15% or RTH2 ≥ 50°C Fan on   |  |                |  |  |
| ENVIRONMENT                    | WORKING TEMP.   | -40 ~ +70°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, 5G 10min./1cycle, 60min. each along X, Y, Z axes  |  |                |  |  |
|                                | OPERATING ALTITUDE Note.6   | 5000 meters   |  |                |  |  |
| SAFETY & EMC (Note 5)          | SAFETY STANDARDS  | UL62368-1, TUV EN62368-1, EAC TP TC 004, AS/NZS 62368.1 approved  |  |                |  |  |
|                                | WITHSTAND VOLTAGE   | I/P-O/P:3KVAC    I/P-FG:2KVAC    O/P-FG:0.5KVAC   |  |                |  |  |
|                                | 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   | EN55032  |                | Class B                                |  |
|                                |   | Radiated  | EN55032  |                | Class B                                |  |
|                                |   | Harmonic current  | EN61000-3-2  |                | Class A                                |  |
|                                |   | Voltage Flicker   | EN61000-3-3  |                | -----                                  |  |
|                                | EMC IMMUNITY  | EN55035 , EN61000-6-2(EN50082-2)  |  |                |  |  |
|                                |   | Parameter   | Standard   |                | Test Level / Note                      |  |
|                                |   | ESD   | EN61000-4-2  |                | Level 3, 8KV air; Level 2, 4KV contact |  |
|                                |   | RF field  | EN61000-4-3  |                | Level 3, 10V/m                         |  |
|                                |   | EFT/ Burst  | EN61000-4-4  |                | Level 3, 2KV                           |  |
|                                |   | Surge   | EN61000-4-5  |                | Level 4, 4KV/Line-FG; 2KV/Line-Line    |  |
| Conducted                      |   | EN61000-4-6   |  | Level 3, 10V   |  |  |
| Magnetic Field                 |   | EN61000-4-8   |  | Level 4, 30A/m |  |  |
| Voltage Dips and Interruptions | EN61000-4-11  |   | 95% dip 0.5 periods, 30% dip 25 periods, 95% interruptions 250 periods |                |  |  |
| OTHERS                         | MTBF  | 452.04K hrs min.    Telcordia TR/SR-332 (Bellcore) ;    191.26K hrs min.    MIL-HDBK-217F (25°C)  |  |                |  |  |
|                                | DIMENSION   | 218*105*61.5mm (L*W*H)  |  |                |  |  |
|                                | PACKING   | 1.39Kg;8pcs/12.1Kg/1.58CUFT   |  |                |  |  |
| NOTE                           | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>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.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>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="http://www.meanwell.com">http://www.meanwell.com</a> )</p> <p>6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p> |   |  |                |  |  |

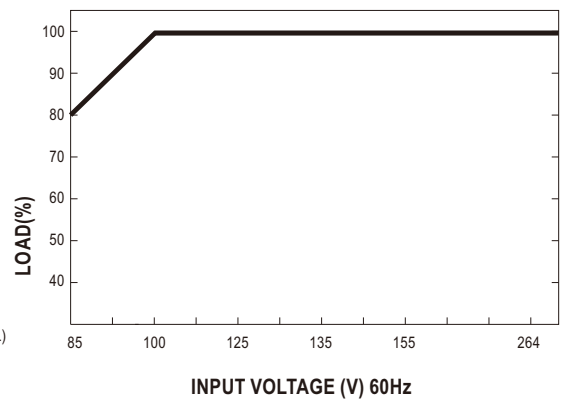
### Block Diagram



### Derating Curve



### Output Derating VS Input Voltage



### Function Manual

#### 1. Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.

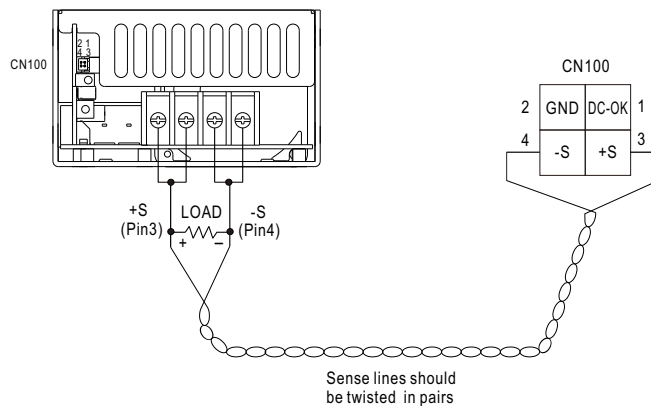


Fig 1.1

### 2.DC-OK Signal

DC-OK signal is a TTL level signal. High when PSU turns on.

| Between DC-OK(pin3) and GND(pin5) | Output Status |
|-----------------------------------|---------------|
| 3.3 ~ 5.6V                        | ON            |
| 0 ~ 1V                            | OFF           |

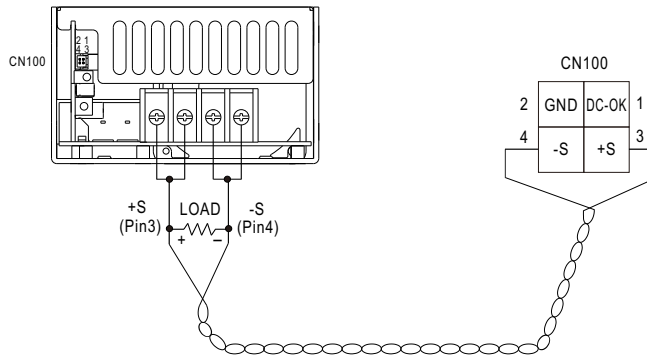


Fig 2.1

Sense lines should be twisted in pairs

### 3.Peak Power

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} \leq P_{rated}$$

$$\text{Duty} \frac{t}{T} \times 100\% \leq 35\%$$

$$t \leq 5 \text{ sec}$$

$P_{av}$  : Average output power (W)

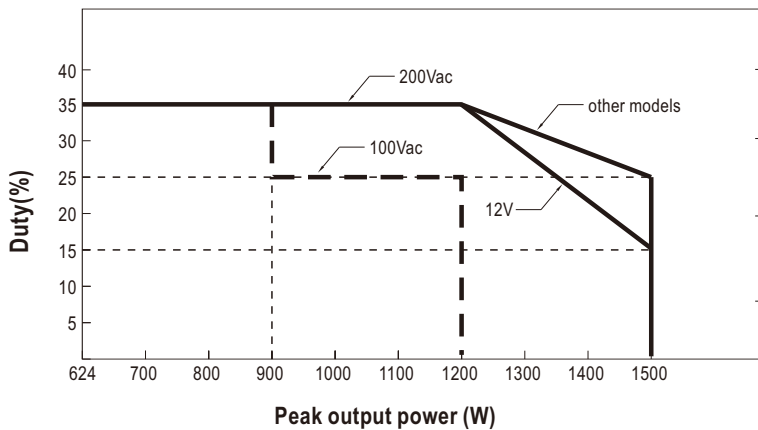
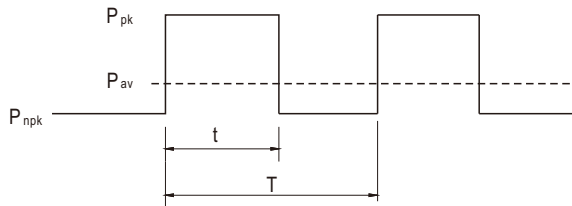
$P_{pk}$  : Peak output power (W)

$P_{npk}$  : Non-peak output power(W)

$P_{rated}$  : Rated output power(W)

$t$  : Peak power width(sec)

$T$  : Period(sec)



**For example (12V model) :**

$V_{in} = 100V$      $\text{Duty}_{max} = 25\%$

$P_{av} = P_{rated} = 636W$

$P_{pk} = 1200W$

$t \leq 5 \text{ sec}$

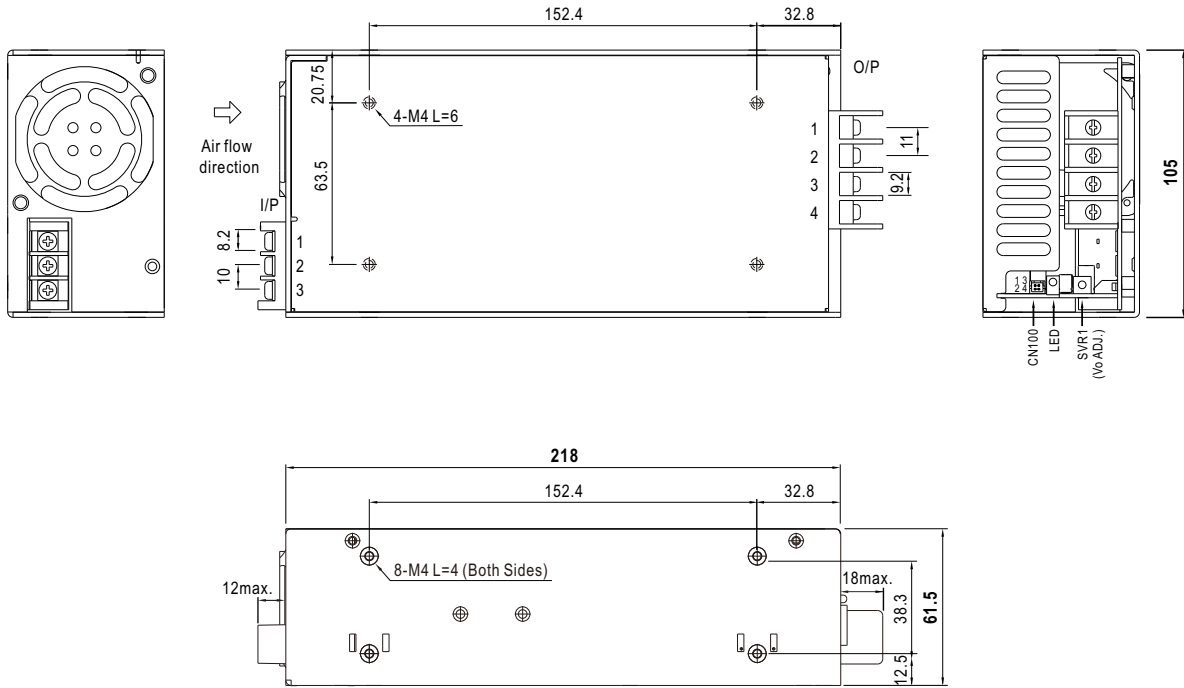
$T \geq 20 \text{ sec}$

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} = \frac{1200 \times 5 + P_{npk} (20-5)}{20} \leq 636W$$

$$P_{npk} \leq 448W$$

## Mechanical Specification

Case No. 977A Unit:mm



### AC Input Terminal Pin No. Assignment

| Pin No. | Assignment |
|---------|------------|
| 1       | AC/L       |
| 2       | AC/N       |
| 3       | FG $\perp$ |

### DC Output Terminal Pin No. Assignment

| Pin No. | Assignment |
|---------|------------|
| 1~2     | -V         |
| 3~4     | +V         |

### Connector Pin No. Assignment(CN100) : HRS DF11-4DP-2DS or equivalent

| Pin No. | Assignment | Mating Housing             | Terminal                    |
|---------|------------|----------------------------|-----------------------------|
| 1       | DC-OK      | HRS DF11-4DS or equivalent | HRS DF11-**SC or equivalent |
| 2       | GND        |                            |                             |
| 3       | +S         |                            |                             |
| 4       | -S         |                            |                             |

## Installation Manual

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