



600W Single Output with PFC Function

**HRP-600N** series



User's Manual



## ■ 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

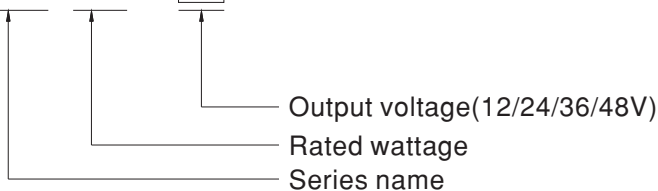
- Industrial automation machinery
- Industrial control system
- Mechanical and electrical equipment
- Diagnostic or biological facilities
- Test or measurement systems
- Telecommunication equipment

## ■ 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**





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## SPECIFICATION

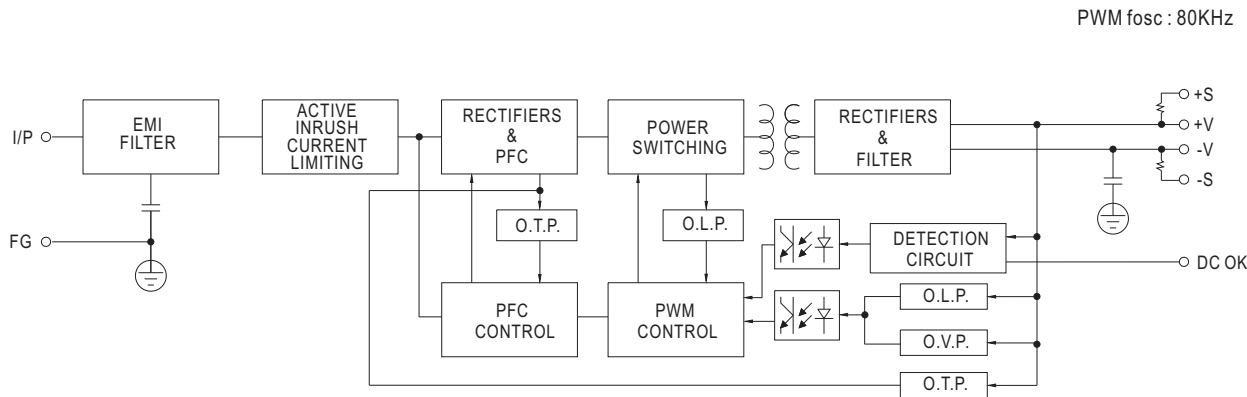
MODEL		HRP-600N-12		HRP-600N-24		HRP-600N-36		HRP-600N-48		
OUTPUT	DC VOLTAGE		12V		24V		36V		48V	
	RATED CURRENT		53A		27A		17.5A		13A	
	CURRENT RANGE		0 ~ 53A		0 ~ 27A		0 ~ 17.5A		0 ~ 13A	
	RATED POWER		636W		648W		630W		624W	
	RIPPLE & NOISE (max.) <small>Note.2</small>		200mVp-p		150mVp-p		200mVp-p		240mVp-p	
	VOLTAGE ADJ. RANGE		10.2 ~ 13.8V		21.6 ~ 28.8V		28.8 ~ 39.6V		40.8 ~ 55.2V	
	VOLTAGE TOLERANCE <small>Note.3</small>		± 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 <small>Note.4</small>		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							
			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	
			Protection type : Shut down o/p voltage, re-power on to recover							
FUNCTION	OVER TEMPERATURE		Shut down o/p voltage, recovers automatically after temperature goes down							
	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							
	WORKING TEMP.		-40 ~ +70°C (Refer to "Derating Curve")							
ENVIRONMENT	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 <small>Note.6</small>		5000 meters							
	SAFETY STANDARDS		UL62368-1, TUV BS EN/EN62368-1, EAC TP TC 004, AS/NZS 62368.1 approved							
SAFETY & EMC <small>(Note 5)</small>	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		BS EN/EN55032			Class B		
			Radiated		BS EN/EN55032			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(BS EN/EN50082-2)							
			Parameter		Standard			Test Level / Note		
			ESD		BS EN/EN61000-4-2			Level 3, 8KV air; Level 2, 4KV contact		
			RF field		BS EN/EN61000-4-3			Level 3, 10V/m		
			EFT/ Burst		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, 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		1.39Kq:8pcs/12.1Kq/1.58CUFT								



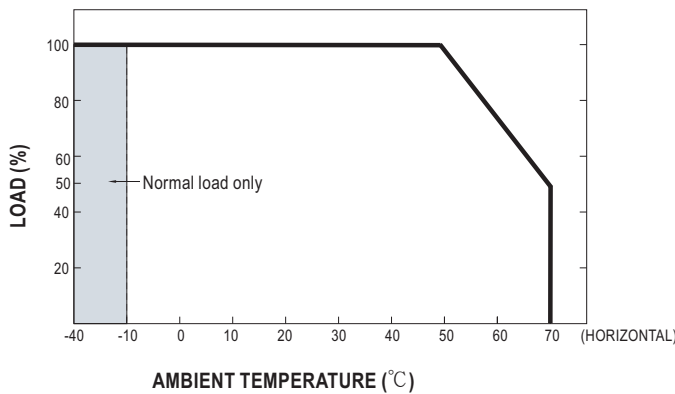
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# HRP-600N series

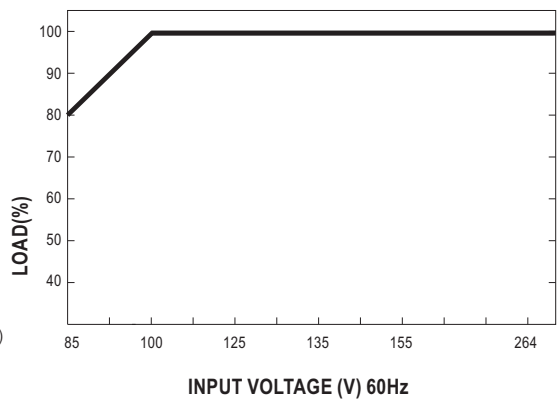
## ■ Block Diagram



## ■ 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.

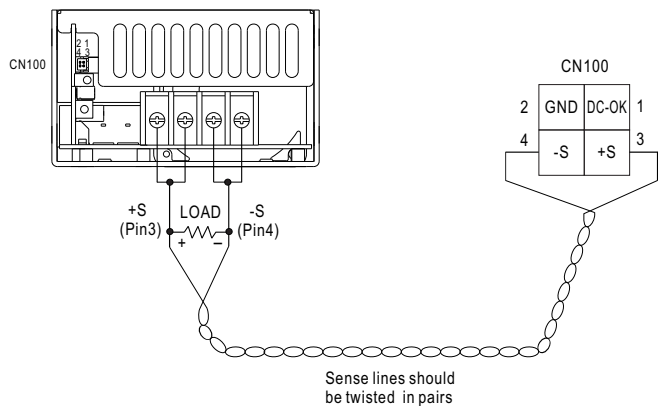


Fig 1.1

## 2.DC-OK Signal

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

Between DC-OK(pin1) and GND(pin2)	Output Status
3.3 ~ 5.6V	ON
0 ~ 1V	OFF

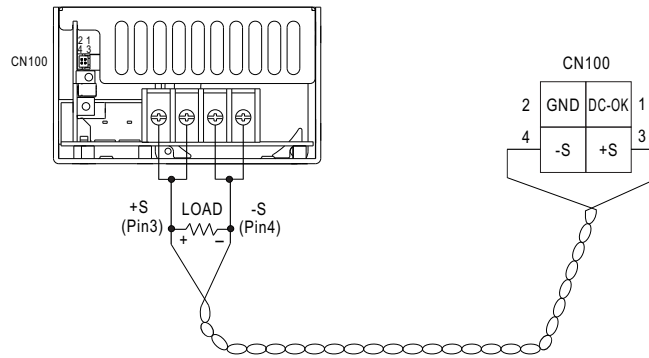


Fig 2.1

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)

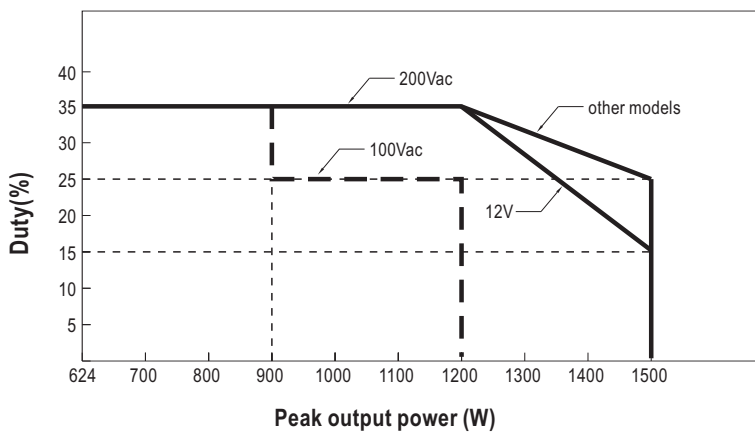
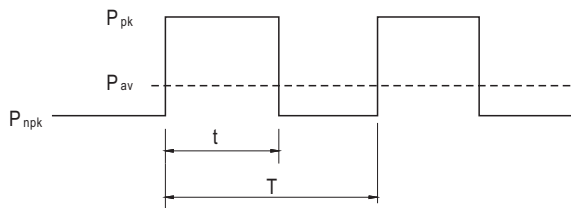
$P_{pk}$  : Peak output power (W)

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

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

$t$  : Peak power width(sec)

$T$  : Period(sec)



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

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

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

$P_{pk} = 1200W$

$t \leq 5 \text{ sec}$

$T \geq 20 \text{ sec}$

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

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

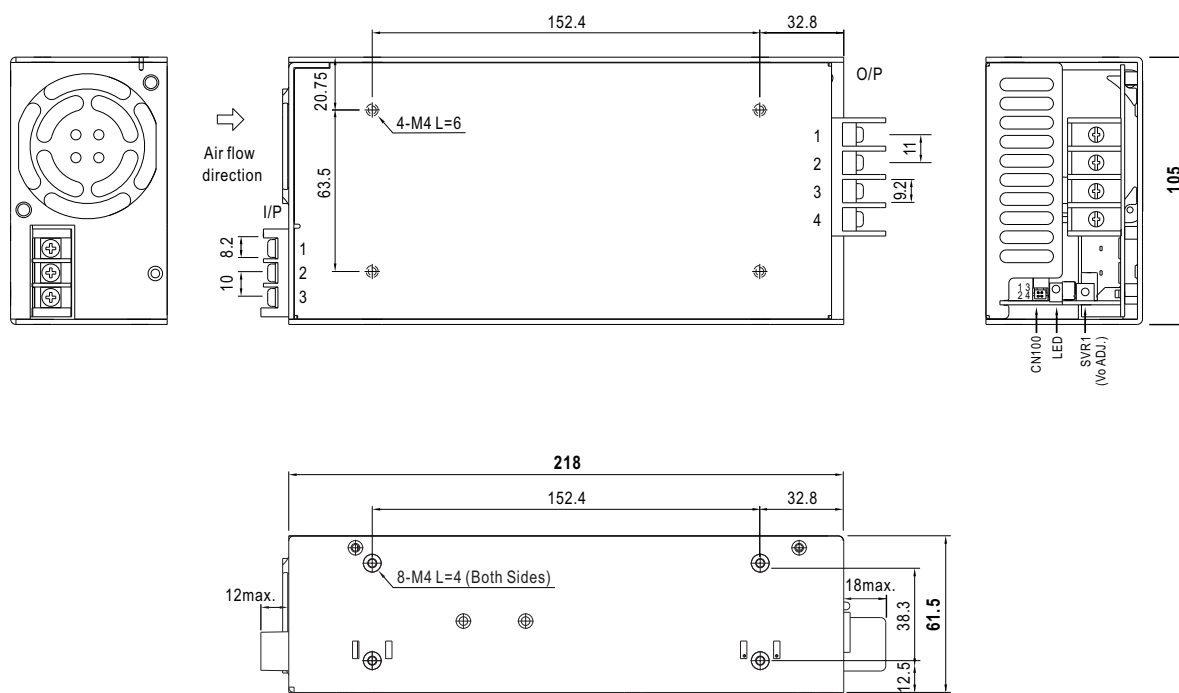


### 600W Single Output with PFC Function

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## ■ Mechanical Specification

Case No. 977A Unit:mm



### AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG $\underline{\underline{\equiv}}$

### 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>