300W Single Output with PFC Function

HRP-300N series

User's Manual

AS/NZS 62368.1 UL62368-1 BS EN/EN62368-1 TPTC004 IEC62368-1

Automate Industrial Network Telecom Security

Features

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- 250% peak power capability
- High efficiency up to 89%
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 1U low profile 41mm
- 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

GTIN CODE

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

Description

HRP-300N is a 300W 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℃. Moreover, HRP-300N provides 250% short-duration peak power for motor applications and electromechanical loads requiring much higher power during start-up.

Model Encoding

HRP - 300N - 24

- 24 — Output voltage(12/24/36/48V)
- 300N — Rated wattage
- HRP — Series name

SPECIFICATION

MODEL		HRP-300N-12	HRP-300N-24	HRP-300N-36	HRP-300N-48
OUTPUT	DC VOLTAGE	12V	24V	36V	48V
	RATED CURRENT	27A	14A	9A	7A
	CURRENT RANGE	0 ~ 27A	0 ~ 14A	0 ~ 9A	0 ~ 7A
	RATED POWER	324W	336W	324W	336W
	RIPPLE & NOISE (max.) Note.2	120mVp-p	150mVp-p	250mVp-p	250mVp-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	1000ms, 50ms/230VAC 2500ms, 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>0.95/230VAC PF>0.99/115VAC at full load			
	EFFICIENCY (Typ.)	88%	87%	88%	89%
	AC CURRENT (Typ.)	3.5A/115VAC 1.8A/230VAC			
	INRUSH CURRENT (Typ.)	35A/115VAC 75A/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			
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down			
FUNCTION	DC OK SIGNAL	PSU turns on : 3.3 ~ 5.6V ; PSU turns off : 0 ~ 1V			
	FAN CONTROL (Typ.)	Load 35±15% or RTH2≧50℃ Fan on			
ENVIRONMENT	WORKING TEMP.	-40 ~ +70℃ (Refer to "Derating Curve")			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃ , 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)			
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes			
SAFETY & EMC (Note 5)	SAFETY STANDARDS	UL62368-1, TUV BS EN/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℃ / 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	1529.4K hrs min. Telcordia SR-332 (Bellcore) ; 201.4K hrs min. MIL-HDBK-217F (25℃)			
	DIMENSION	199*105*41mm (L*W*H)			
	PACKING	0.9Kg;15pcs/14.5Kg/0.84CUFT			

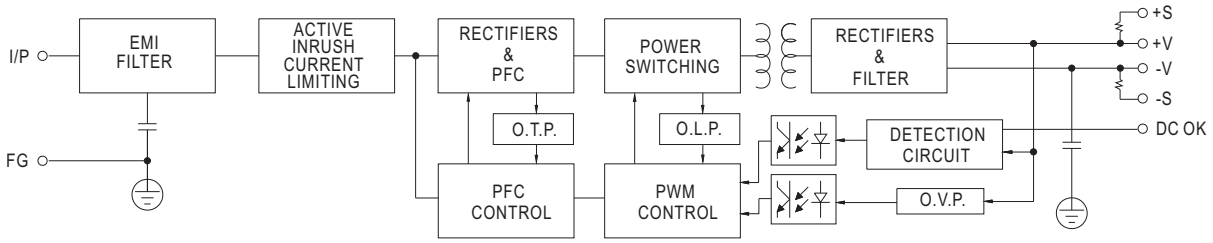
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μF & 47 μF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
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 https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf)
6. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

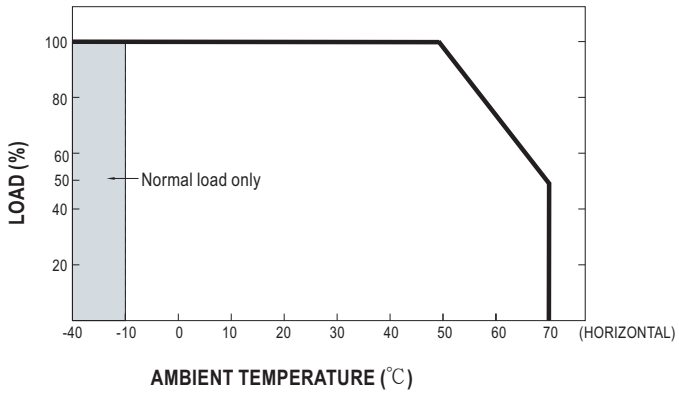
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ Block Diagram

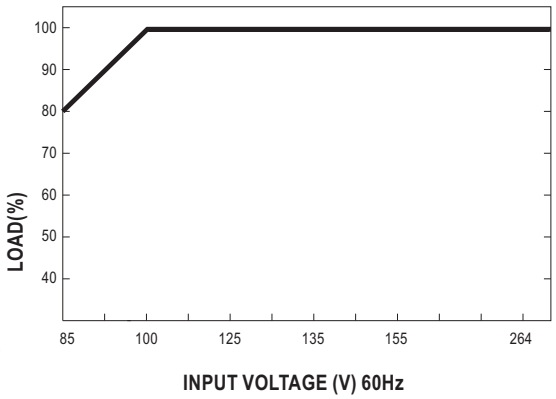
PWM fosc : 70KHz



■ 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.

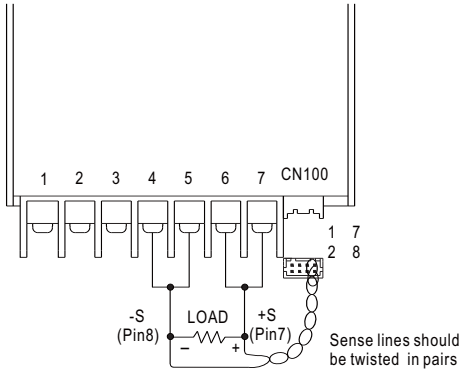


Fig 1.1

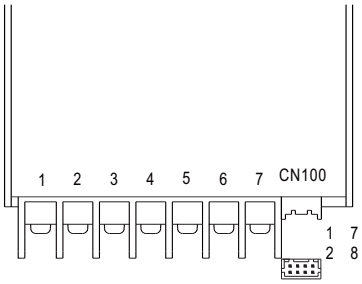
CN100

1	NC	DC-OK	GND	+S	7
2	NC	NC	NC	-S	8

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



CN100

1	NC	DC-OK	GND	+S	7
2	NC	NC	NC	-S	8

Fig 2.1

3.Peak Power

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

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

$t \leqslant 5$ sec

P_{av} : Average output power (W)

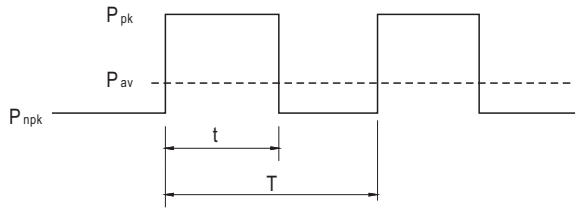
P_{pk} : Peak output power (W)

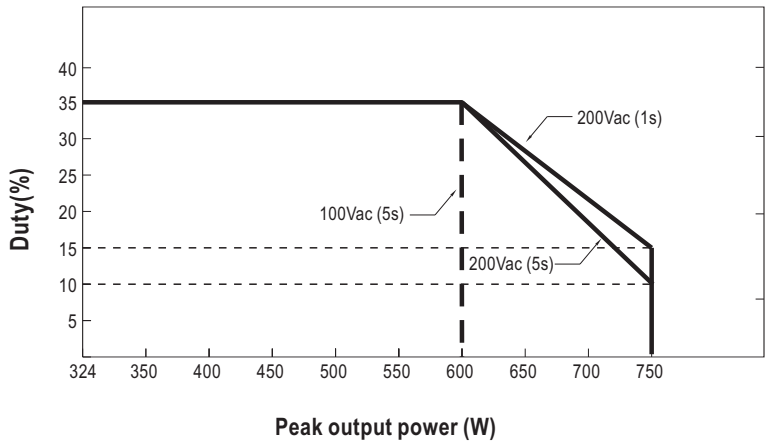
P_{npk} : Non-peak output power (W)

P_{rated} : Rated output power (W)

t : Peak power width (sec)

T: Period (sec)





For example (12V model) :

Vin = 100V Duty_max = 35%

P_{av} = Prated = 324W

P_{pk} = 600W

$t \leqslant 5$ sec

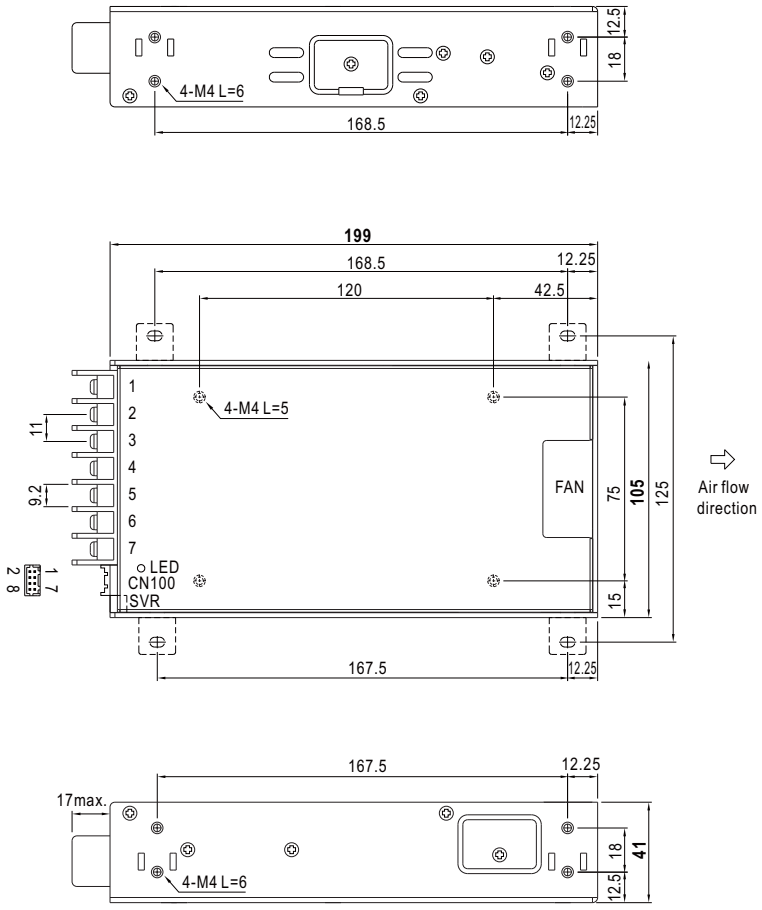
$T \geqslant 14.29$ sec

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} = \frac{600 \times 5 + P_{npk}(14.29-5)}{14.29} \leqslant 324W$$

$P_{npk} \leqslant 175.4W$

■ Mechanical Specification

Case No.980A Unit:mm



Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4,5	DC OUTPUT -V
2	AC/N	6,7	DC OUTPUT +V
3	FG ⏚		

Connector Pin No. Assignment (CN100) :
HRS DF11-08DP-2DS or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,4,6	NC	HRS DF11-8DS or equivalent	HRS DF11-**SC or equivalent
3	DC-OK		
5	GND		
7	+S		
8	-S		

■ Installation Manual

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