

HWS600P

## SPECIFICATIONS(1/2)

A238-01-01A

ITEMS		MODEL	HWS600P	HWS600P	HWS600P
			-24	-36	-48
1	Nominal Output Voltage	V	24	36	48
2	Average Output Current	A	25	16.7	12.5
3	Peak Output Current (*1)	100VAC	40.5	27	20
		200VAC	83	55.5	41.5
4	Average Output Power	W	600	601.2	600
5	Peak Output Power (*1)	100VAC	972	972	960
		200VAC	1992	1998	1992
6	Efficiency (Typ.) (*2)	100VAC	84	84	84
		200VAC	87	87	87
7	Input Voltage Range (*3)	-	85 - 265VAC (47 - 63Hz) or 120 - 330VDC		
8	Input Current(100/200VAC)(Typ) (*2)	A	7.2/3.7		
9	Inrush Current(Typ) (*4)	-	20A at 100VAC, 40A at 200VAC		
10	PFHC	-	Designed to meet IEC61000-3-2		
11	Power Factor(100/200VAC)(Typ) (*2)	-	0.99/0.94		
12	Output Voltage Range	V	19.2 - 26.4	28.8 - 39.6	38.4 - 52.8
13	Maximum Ripple & Noise (*5)	0≤Ta≤70°C	150	200	350
		-10≤Ta<0°C	200	250	400
14	Maximum Line Regulation (*6)	mV	96	144	192
15	Maximum Load Regulation (*7)	mV	144	216	288
16	Temperature Coefficient	-	Less than 0.02% / °C		
17	Over Current Protection (*8)	100VAC	41.3-	27.5-	20.4-
		200VAC	84.6-	56.6-	42.3-
18	Over Voltage Protection (*9)	V	27.6 - 32.4	41.4 - 48.6	55.2 - 64.8
19	Hold-up Time(Typ) (*10)	-	20ms		
20	Leakage Current (*11)	-	Less than 0.75mA. 0.2mA(Typ) at 100VAC / 0.44mA(Typ) at 230VAC		
21	Remote Sensing	-	-		
22	Remote ON/OFF control	-	Possible		
23	Monitoring Signal	-	PF(Open Collector Output)		
24	Parallel Operation	-	Possible (2 units Max)		
25	Series Operation	-	Possible		
26	Operating Temperature (*12)	-	-10 - +70°C (-10 - +50°C:100%,+70°C:50%)		
27	Operating Humidity	-	10 - 90%RH (No dewdrop)		
28	Storage Temperature	-	-30 - +85°C		
29	Storage Humidity	-	10 - 95%RH (No dewdrop)		
30	Cooling	-	Forced Air By Blower Fan 80x1, Exhaust		
31	Withstand Voltage	-	Input - FG : 2.5kVAC (20mA), Input - Output : 3kVAC (20mA) Output - FG: 500VAC (100mA), Output-CNT: 100VAC(100mA) for 1min		
32	Isolation Resistance	-	More than 100MΩ Output - FG : 500VDC More than 10MΩ Output -CNT : 100VDC at 25°C and 70%RH		
33	Vibration	-	At no operating, 10 - 55Hz (Sweep for 1min) 19.6m/s <sup>2</sup> Constant, X,Y,Z 1hour each		
34	Shock (In package)	-	Less than 196.1m/s <sup>2</sup>		
35	Safety (*13)	-	Approved by UL60950-1, CSA60950-1, EN60950-1, EN50178 Designed to meet DENAN		
36	Line DIP	-	Designed to meet SEMI-F47 (200VAC Line only)		
37	Conducted Emission (*14)	-	Designed to meet EN55011/EN55022-B, FCC-B, VCCI-B		
38	Radiated Emission (*14)	-	Designed to meet EN55011/EN55022-B, FCC-B, VCCI-B		
39	Immunity	-	Designed to meet IEC61000-4-2(Level 2,3), -3(Level 3), -4(Level 3), -5(Level 3,4), -6(Level 3), -8(Level 4), -11		
40	Weight(Typ.)	-	1.6kg		
41	Size (W x H x D)	mm	100 x 82 x 165 ( Refer to Outline Drawing )		

**HWS600P**

## SPECIFICATIONS(2/2)

A238-01-02

ITEMS	MODEL	HWS600P -24	HWS600P -36	HWS600P -48
<p>*Read instruction manual carefully, before using the power supply unit.</p> <p>=NOTES=</p> <p>*1. Operating time at peak output is less than 5sec, duty is less than 35%. For details, refer to peak output condition.(A238-01-04_) When the peak output more than 5 sec is continued, the output is shut down, manual reset (CNT reset or Re power on).</p> <p>*2. At 100/200VAC, Ta=25°C and average output power.</p> <p>*3. For cases where conformance to various safety specs (UL, CSA, EN) are required, to be described as 100 - 240VAC(50/60Hz).</p> <p>*4. First inrush current. Not applicable for the inrush current to Noise Filter for less than 0.2ms.</p> <p>*5. Measure with JEITA RC-9131A probe, Bandwidth of scope :100MHz. At average output power.</p> <p>*6. 85 - 265VAC , constant load.</p> <p>*7. No load-Average load, constant input voltage.</p> <p>*8. OCP circuit will shut the output down, manual reset (CNT reset or Re power on).</p> <p>*9. OVP circuit will shut the output down, manual reset (CNT reset or Re power on).</p> <p>*10. At 100/200VAC , nominal output voltage and average output current.</p> <p>*11. Measured by the each measuring method of UL,CSA,EN and DENAN(at 60Hz), Ta=25°C.</p> <p>*12. Ratings - Derating at standard mounting. Refer to output derating curve.(A238-01-03_) - Load (%) is percent of average output power or average output current, whichever is greater.</p> <p>*13. As for DENAN, designed to meet at 100VAC.</p> <p>*14. At Ta=25°C and average output power.</p>				

**HWS600P**

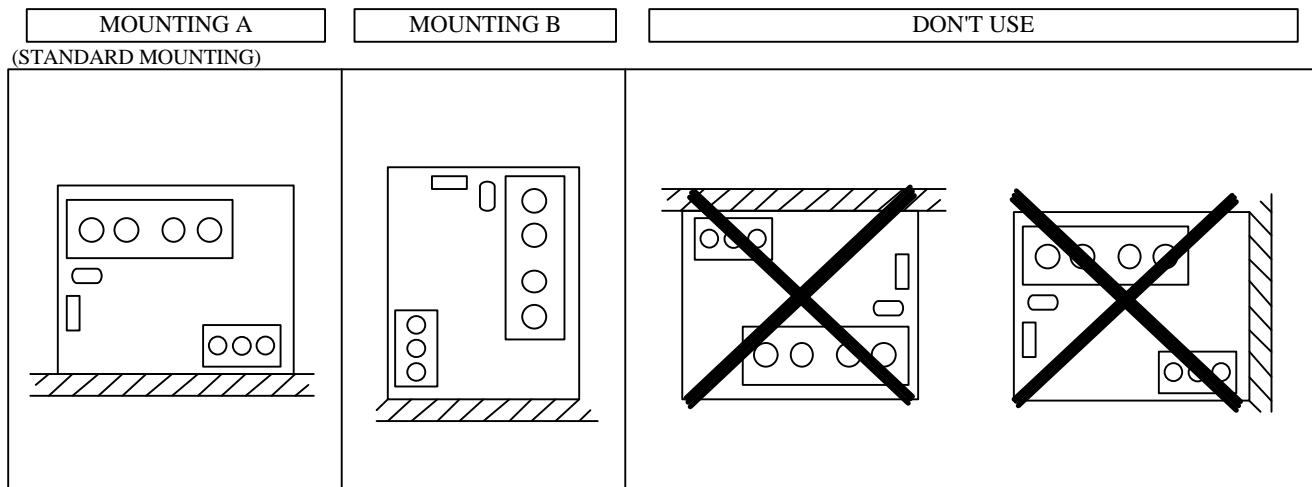
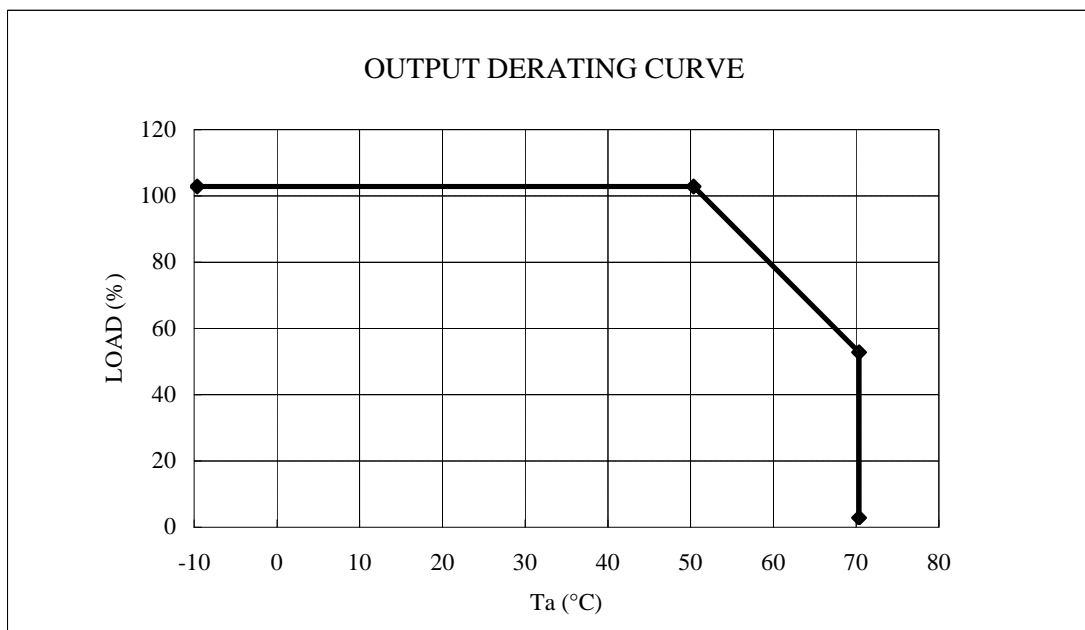
OUTPUT DERATING

A238-01-03

Ta(°C)	LOAD(%)	
	MOUNTING A	MOUNTING B
-10 ~+50	100	
70	50	

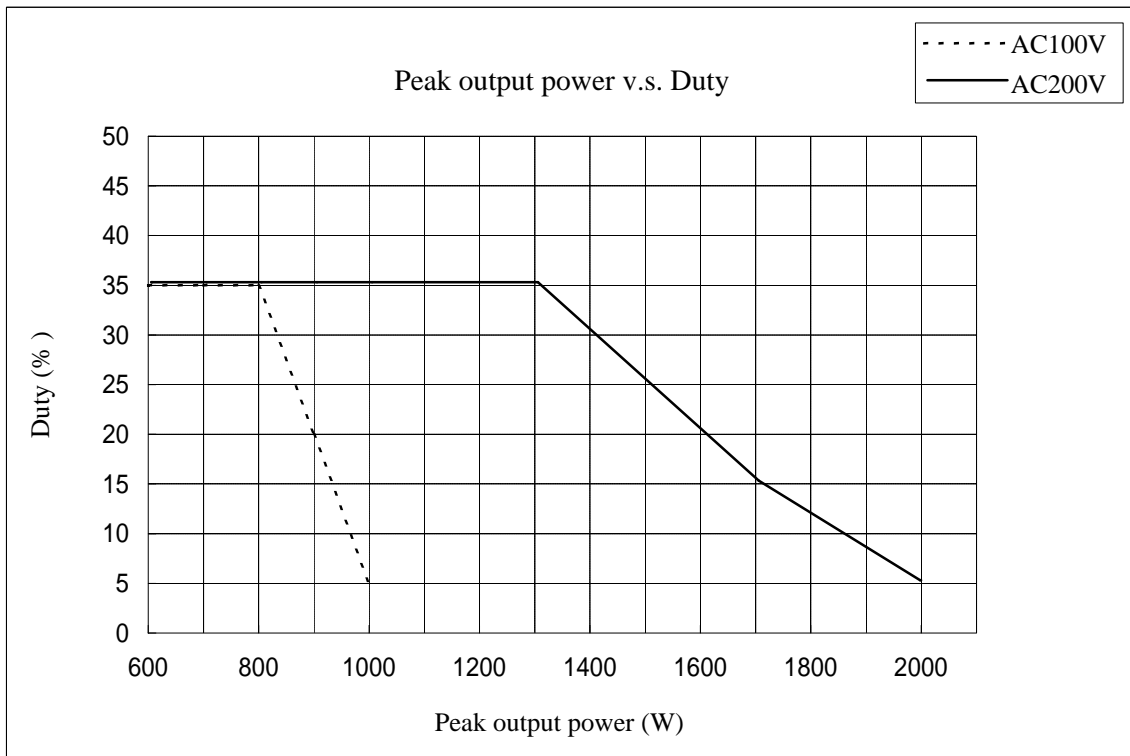
(\* ) Load(%) is percent of average output power or average output current.  
 For example, load 100% refers to following condition when output is 24V model.  
 24[V], 25[A]

(\* ) Peak output current does not need derating.



PEAK OUTPUT CONDITION

A238-01-04



**Peak output power**

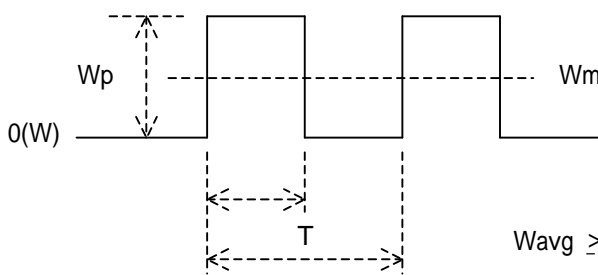
Use this product so that relationship among Duty, average output power ( $W_m$ ) and peak output power ( $W_p$ ) satisfy conditions defined by expression below.

This product must be used less than average output power of specification ( $W_{avg}$ ).

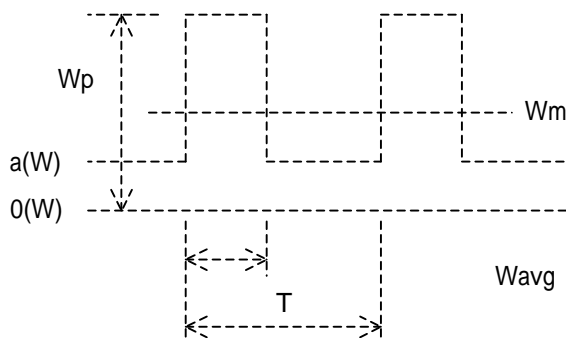
Also operating duration at peak output power should be less than 5 sec.

$$\text{Duty} = \frac{\text{Pulse width}}{T} \times 100 (\%) \leq 5 (\text{sec})$$

- $W_p$  : Peak output power (W)
- $W_{avg}$  : Average output power of Specification (W)
- $W_m$  : Average output power (W)
- $t_p$  : Pulse width of peak output power (sec)  
(Operating time at peak output)
- $T$  : Period (sec)
- Duty : The duty is pulse width of peak output power of one period (%)



$$W_{avg} \geq W_m = \frac{W_p \times t_p}{T}$$



$$W_{avg} \geq W_m = \frac{(W_p - a) \times t_p}{T} + a$$