HWS150A/HD

SPECIFICATIONS

A259-01-01/HD-A

	ITEMS / MODEL			HWS150A -3/HD	HWS150A -5/HD	HWS150A -12/HD	HWS150A -15/HD	HWS150A -24/HD	HWS150A -48/HD
1	Nominal Output Voltage		V	3.3	5	12	15	24	48
2	Maximum Output Current		A	30	30	13	10	6.5	3.3
3	Maximum Output Power		W	99.0	150.0	156.0	150.0	156.0	158.4
4	Efficiency (Typ.) (*1)	100VAC	%	82	85	85	86	88	89
		200VAC	%	84	87	88	89	90	91
5	Input Voltage Range (*2)		-	85 - 265VAC (47 - 63Hz) or 120 - 370VDC					
6	Input Current (Typ.) (*1)		A	1.3/0.65	1.9/0.95				
7	Inrush Current (Typ.) (*1)(*3)		-	14A at 100VAC, 28A at 200VAC, Ta=25°C, Cold Start					
8	PFHC		-	Designed to meet IEC61000-3-2					
9	Power Factor (Typ.) (*1)		-	0.96/0.89	0.98/0.93				
10	Output Voltage Range		V	2.97 - 3.96	4.0 - 6.0	9.6 - 14.4	12.0 - 18.0	19.2 - 28.8	38.4 - 52.8
11	Maximum Ripple & Noise	0≤Ta≤71°C	mV	120	120	150	150	150	200
	(*4)	-10≤Ta<0°C	mV	160	160	180	180	180	240
12	Maximum Line Regulation (*5)		mV	20	20	48	60	96	192
13	Maximum Load Regulation (*6)		mV	40	40	96	120	150	240
14	Temperature Coefficient		-	Less than 0.02% / °C					
15	Over Current Protection (*7)		A	31.5 ≤	31.5 ≤	13.6 ≤	10.5 ≤	6.82 ≤	3.46 ≤
16	Over Voltage Protection (*8)		V	4.13 - 4.95	6.25 - 7.25	15.0 - 17.4	18.8 - 21.8	30.0 - 34.8	55.2 - 64.8
17	Hold-up Time (Typ.) (*1)		-	20ms					
18	Leakage Current (*9)		-	Less than 0.5mA. 0.2mA (Typ) at 100VAC / 0.4mA (Typ) at 230VAC					
19	Remote Sensing		-	Possible					
20	Parallel Operation		-	-					
21	Series Operation		-	Possible					
22	Operating Temperature (*10)		-	-10 to +71°C (-10 to +50°C:100%, +60°C:60%, +71°C:20%) Guarantee Start up at -40 to -10°C					
23	Operating Humidity		-	30 to 90%RH (No Condensing)					
24	Storage Temperature		-	-40 to +85°C					
25	Storage Humidity		-	10 to 95%RH (No Condensing)					
26	Cooling		-	Convection Cooling					
27	Withstand Voltage		-	Input - FG : 2kVAC (20mA), Input - Output : 3kVAC (20mA) Output - FG : 500VAC (20mA) for 1min					
28	Isolation Resistance		-	More than 100MΩ at 25°C and 70%RH Output - FG : 500VDC					
29	Vibration (*11)		-	At no operating, 10 - 55Hz (Sweep for 1min) 19.6m/s^2 Constant, X,Y,Z 1hour each. Designed to meet MIL-STD-810F 514.5 Category 4, 10					
30	Shock		-	Less than 196.1m/s^2 Designed to meet MIL-STD-810F 516.5 Procedure I, VI					
31	Safety		-	Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1 (Expire date of 60950-1 : 20/12/2020) Designed to meet Den-an Appendix 8 at 100VAC only.					
32	Line DIP		-	Designed to meet SEMI-F47 (200VAC Line only)					
33	Conducted Emission (*12)		-	Designed to meet EN55011/EN55032-B, FCC-B, VCCI-B					
34	Radiated Emission (*12)		-	Designed to meet EN55011/EN55032-B, FCC-B, VCCI-B					
35	Immunity (*12)		-	Designed to meet IEC61000-6-2 IEC61000-4-2, -3, -4, -5, -6, -8, -11					
36	Weight (Typ)		-	470g					
37	Size (W x H x D)		mm	37 x 82 x 160 (Refer to Outline Drawing)					

*Read instruction manual carefully, before using the power supply unit.

=NOTES=

*1. At 100VAC/200VAC, Ta=25°C, nominal output voltage and maximum output power.
*2. For cases where conformance to various safety specs (UL, CSA, EN) are required, to be described as 100 - 240VAC(50 - 60Hz).
*3. Not applicable for the inrush current to Noise Filter for less than 0.2ms.
*4. Measure with JEITA RC-9131B probe, Bandwidth of scope :100MHz.
*5. 85 - 265VAC, constant load.
*6. No load-Full load, constant input voltage.
*7. Constant current limit and Hiccup with automatic recovery. Avoid to operate at over load or short circuit condition.
*8. OVP circuit will shut down output, manual reset (Re power on).
*9. Measured by the each measuring method of UL, CSA, EN and Den-an (at 60Hz), Ta=25°C.
*10. Output Derating
- Derating at standard mounting. Refer to OUTPUT DERATING CURVE (A259-01-02/HD-_).
- Load (%) is percent of maximum output power or maximum output current, do not exceed its derating of maximum load.
- For conditions of start up at -40°C to -10°C, refer to derating curve (A259-01-03/HD-_).

*11. Category 4 exposure levels : Track transportation over U.S. highways, Composite two-wheeled trailer.
*12. The power supply is considered a component which will be installed into a final equipment.
The final equipment should be re-evaluated that it meets EMC directives.

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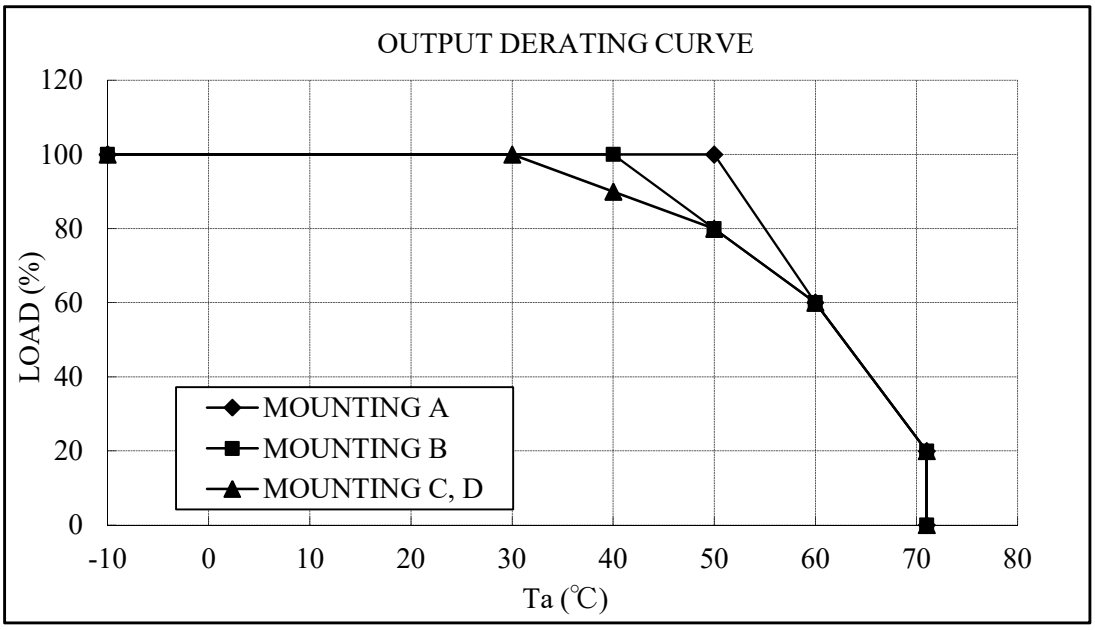
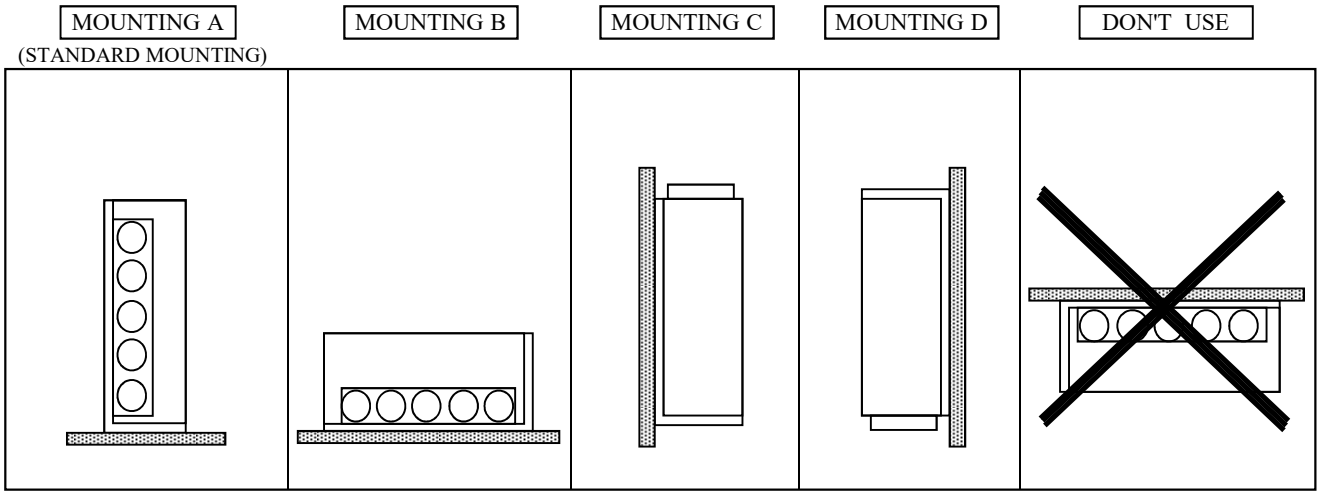
OUTPUT DERATING

A259-01-02/HD

Ta (°C)	LOAD (%)		
	MOUNTING A	MOUNTING B	MOUNTING C, D
-10 - +30	100	100	100
40	100	100	90
50	100	80	80
60	60	60	60
71	20	20	20





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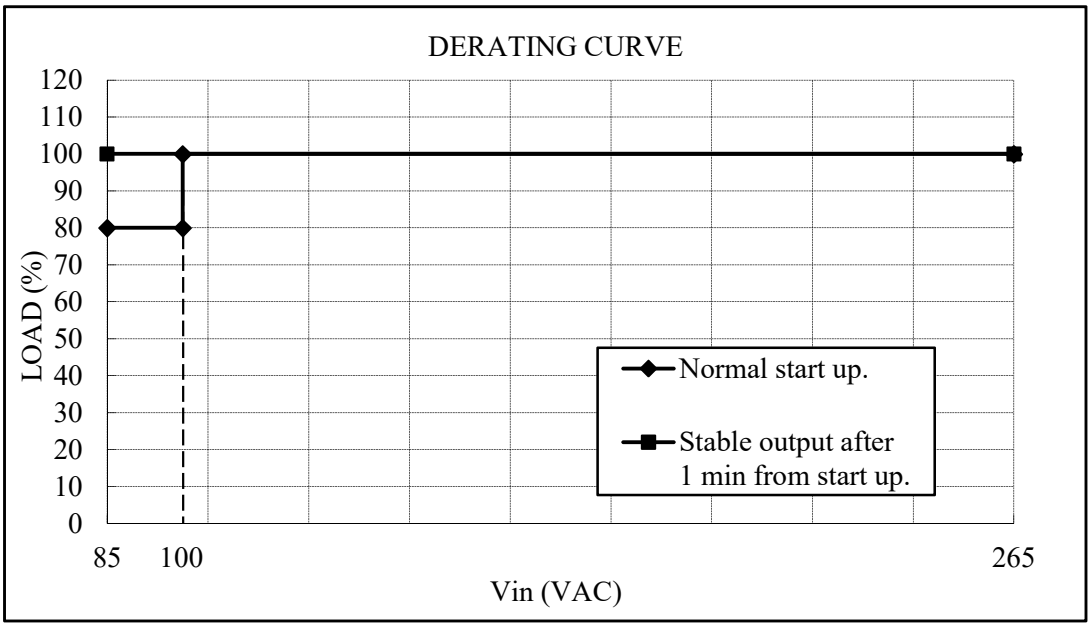
DERATING TO START UP AT Ta : -40 to -10℃

A259-01-03/HD

Input Voltage : Vin (VAC)	LOAD (%)	
	Normal start up.	Stable output after 1 min from start up.
85 ≤ Vin < 100	80	100
100 ≤ Vin ≤ 265	100	100



=NOTES=

*At Ta : -40 to -10°C.

*Input voltage : Not gradual start up.

*Do not use the load that is constant current mode.

*Avoid forced air cooling. It is assumed that inside of power supply is heated by self-heating within 1 minutes.

*No condensing.

*Pay attention to above items before using the unit. Incorrect usage could lead to unstable output voltage.