

**HWS150A/A**

SPECIFICATIONS

A259-01-01/A-A

| ITEMS |                         | MODEL           | HWS150A<br>-3/A | HWS150A<br>-5/A | HWS150A<br>-12/A | HWS150A<br>-15/A | HWS150A<br>-24/A | HWS150A<br>-48/A |  |   |
|-------|-------------------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|--|---|
| 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)(*3)        | -               |                 |                  |                  |                  |                  | 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)(*4)        | -               |                 |                  |                  |                  |                  | 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≤70°C       | mV              | 120             | 120              | 150              | 150              | 150              | 200  |   |
|       |                         | (*5) -10≤Ta<0°C | mV              | 160             | 160              | 180              | 180              | 180              | 240  |   |
| 12    | Maximum Line Regulation | (*6)            | mV              | 20              | 20               | 48               | 60               | 96               | 192  |   |
| 13    | Maximum Load Regulation | (*7)            | mV              | 40              | 40               | 96               | 120              | 150              | 240  |   |
| 14    | Temperature Coefficient | -               | -               |                 |                  |                  |                  |                  | Less than 0.02% / °C   |   |
| 15    | Over Current Protection | (*8)            | A               | 31.5 ≤          | 31.5 ≤           | 13.6 ≤           | 10.5 ≤           | 6.82 ≤           | 3.46 ≤   |   |
| 16    | Over Voltage Protection | (*9)            | 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         | (*10)           | -               | -               |                  |                  |                  |                  |  | 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   | (*11)           | -               | -               |                  |                  |                  |                  |  | -10 to +70°C (-10 to +50°C:100%, +60°C:60%, +70°C:20%)              |
| 23    | Operating Humidity      | -               | -               |                 |                  |                  |                  |                  | 30 to 90%RH (No Condensing)  |   |
| 24    | Storage Temperature     | -               | -               |                 |                  |                  |                  |                  | -30 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)<br>Output - FG : 500VAC (20mA) for 1min   |   |
| 28    | Isolation Resistance    | -               | -               |                 |                  |                  |                  |                  | More than 100MΩ at 25°C and 70%RH Output - FG : 500VDC   |   |
| 29    | Vibration               | -               | -               |                 |                  |                  |                  |                  | At no operating, 10 - 55Hz (Sweep for 1min)<br>19.6m/s <sup>2</sup> Constant, X,Y,Z 1hour each.  |   |
| 30    | Shock                   | -               | -               |                 |                  |                  |                  |                  | Less than 196.1m/s <sup>2</sup>  |   |
| 31    | Safety                  | -               | -               |                 |                  |                  |                  |                  | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1 (Expire date of 60950-1 : 20/12/2020) UL508, CSA C22.2 No.107.1-01.<br>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)            | -               | -               |                 |                  |                  |                  |                  | 520g   |   |
| 37    | Size (W x H x D)        | mm              | -               |                 |                  |                  |                  |                  | 42 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. Output derating needed when input voltage less than 90VAC. Refer to OUTPUT DERATING CURVE (A259-01-02/A- ).
- \*4. Not applicable for the inrush current to Noise Filter for less than 0.2ms.
- \*5. Measure with JEITA RC-9131B probe, Bandwidth of scope :100MHz.
- \*6. 85 - 265VAC, constant load.
- \*7. No load-Full load, constant input voltage.
- \*8. Constant current limit and Hiccup with automatic recovery.  
Avoid to operate at over load or short circuit condition.
- \*9. OVP circuit will shut down output, manual reset (Re power on).
- \*10. Measured by the each measuring method of UL, CSA, EN and Den-an (at 60Hz), Ta=25°C.
- \*11. Output Derating  
- Derating at standard mounting. Refer to OUTPUT DERATING CURVE (A259-01-02/A- ).  
- Load (%) is percent of maximum output power or maximum output current, do not exceed its derating of maximum load.
- \*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/A

| Ta (°C)   | LOAD (%)   |                  |
|-----------|------------|------------------|
|           | MOUNTING A | MOUNTING B, C, D |
| -10 - +30 | 100        | 100              |
| 50        | 100        | 60               |
| 60        | 60         | 35               |
| 70        | 20         | 10               |

\*Refer to dotted line for output derating curve, when input voltage range is "85≤Vin<90" for the MOUNTING A.

