承认书

SPECIFICATION FOR APPROVAL

Part No. HWT-403V8A-2S-PS
Description:
Revision: 1.
Customer.
Customer Approval No. :

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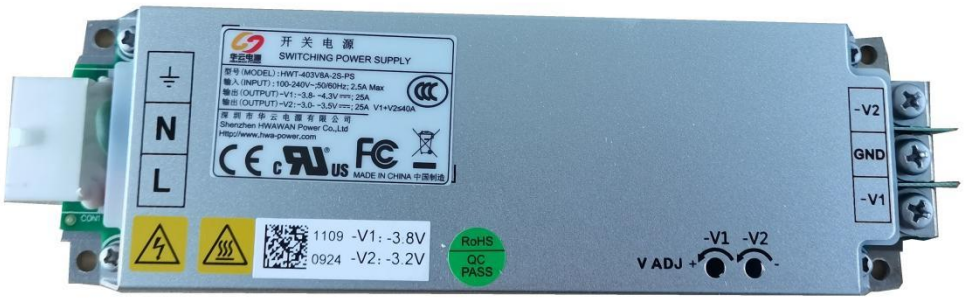
HWT-403V8A-2S-PS

Power Supply product with dual outputs

HWT-403V8A-2S-PS is a High-efficiency power supply with dual outputs,Rated output:-V1:-3.8V/20A，-V2:-3.2V/20A,designed for LED display products.The power supply has the following characteristics:

- Small size：174mm*50mm*19mm(L*W*H)
- Light weight : ≤260g
- High efficiency：86.5%(@Input: 230VAC, Outputs: full load)
- Small Leakage current：<0.5mA
- Output voltage -V1 can be adjusted from -3.8V to -4.3V
- Output voltage -V2 can be adjusted from -3.0V to -3.5V
- EMI standard: EN55032 CLASS B
- Wide operating temp. range：-40～+70℃(+50℃ ～+70℃ linear de-rated, referring to fig. 1)
- Wide Input voltage range：90VAC～264VAC
- Power factor： ≥0.95
- Cooling mode：conduction cooling
- Output over-voltage protection
- Output over-current protection
- Output short-circuit protection
- Over temperature protection
- Compliance with UL, CE, CCC, FCC,CB certifications

Product Picture



NOTES：

1. The final installation environment of the product needs to meet the environment where the heat sink is simulated. (Refer to fig. 4 for the aluminum radiator size.)

2. The indicators in this specification are the results of testing under the recommended environment. That is, the power supply must be installed on a heat sink with the size of 300*300*3mm.

safety rule

High voltage	**Power input port with high voltage, cannot be touched by hand （Port d'entrée d'alimentation à haute tension, ne peut pas être touché à la main）**
Warning	**The power supply is a product with large leakage current. Please ground reliably before powering on.When install the product, the metal enclosure needs to be reliably earthed, and the earthing connection is to be evaluated in the end installation.（L'alimentation est un produit avec un fort courant de fuite. Veuillez mettre à la terre de manière fiable avant de mettre sous tension）**
High voltage	**It is strictly forbidden to carry out high voltage and alternating current operation under thunderstorms（Il est strictement interdit d'effectuer des opérations à haute tension et à courant alternatif sous des orages）**

1. Specifications

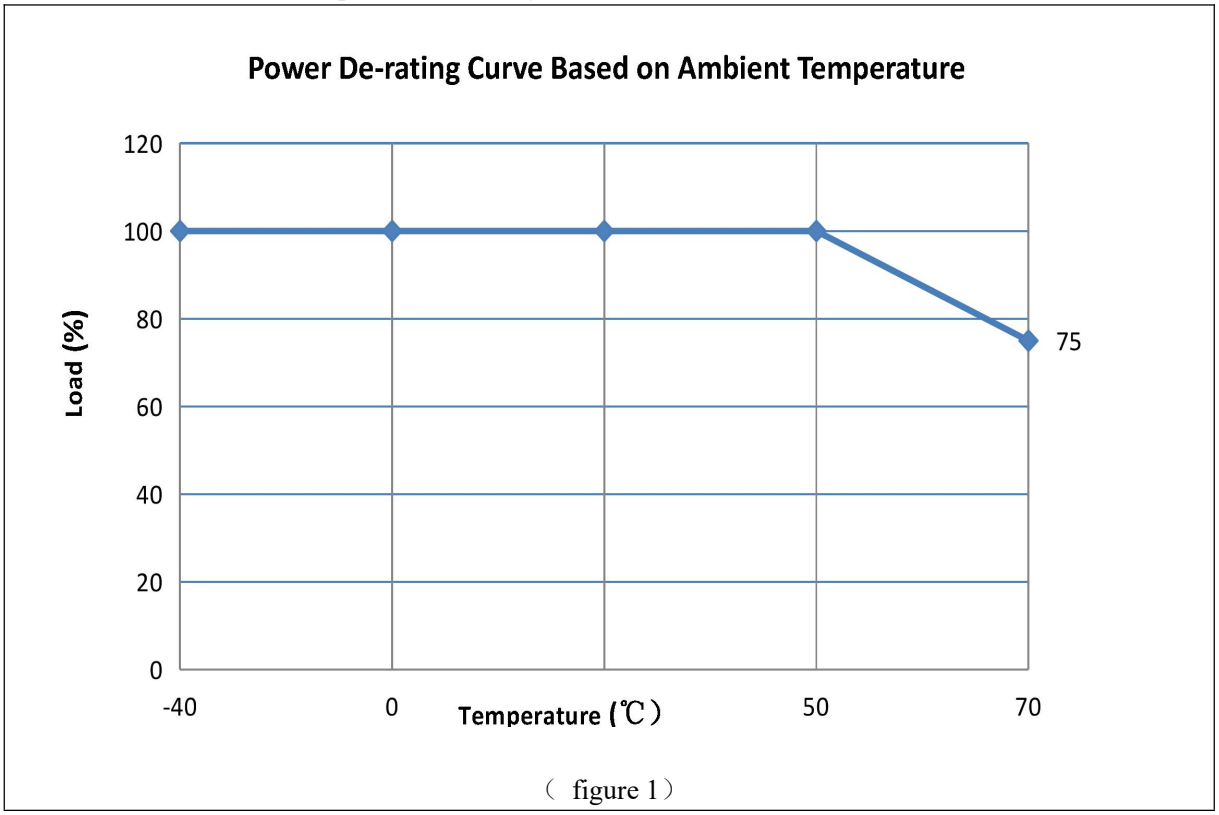
Environmental Requirements					
Parameter	**Min.**	**Typ.**	**Max.**	**Unit**	**Remark**
Operating Temperature	-40	-	+70	℃	Full load @-40℃~+50℃. +50℃ ~+70℃ linear de-rating by 1.25% per degree Celsius.
Storage Temperature	-40	+25	90	℃	/
Humidity	5	/	95	%	Relative humidity, no condensing
Altitude	0	/	5000	m	/
Cooling	/	/	/	/	conduction cooling

Input Characteristics					
Parameter	**Min.**	**Typ.**	**Max.**	**Unit**	**Remark**
Input Voltage Range	90	110/220	264	Vac	/
Input Voltage Frequency	47	50/60	63	Hz	/
Power Factor	0.95	/	/	/	@220Vac,full load
Input Inrush Current	/	/	60	A	@220Vac,full load/cold state
AC Input Mode	/	Single phase input（L、N）	/	/	/

Output Characteristics						
Parameter		**Min.**	**Typ.**	**Max.**	**Unit**	**Remark**
Output Voltage Range	-V1	-3.8	-3.8	-4.3	Vdc	The output voltage -V1 is adjustable
	-V2	-3.0	-3.2	-3.5	Vdc	The output voltage -V2 is adjustable. The voltage difference between -V2 and -V1 must be at least 0.6V
Output Voltage Setpoint	-V1	X-0.05	X	X+0.05	Vdc	'X' is the typical value set according to customer's request.
	-V2	Y-0.05	Y	Y+0.05	Vdc	'X' is the typical value set according to customer's request.
Output Current	-V1	0	/	25	A	Full voltage input range (see Figure 1, Figure 2) The total output current of the two channels is 40A maximum
	-V2	0	/	25		
Load Regulation		/	/	±1	%	Rated voltage input, load changing from min. to max.
Output voltage accuracy		/	/	±2	%	Universal input, full load
Line Regulation		/	/	±0.5	%	Full range of input voltage, full load
Ripple and Noise （Vpeak-peak）	-V1	/	/	250	mV	Full range of input voltage & load condition, with one 0.1μF film capacitor and one 10μF high frequency electrolyte capacitor in parallel with the end of sensor lines. Use twisted pair with length of 30±2cm as the sensor lines. Oscilloscope band width shall be set to 20MHz, and need to remove the probe cap and ground clamp.
	-V2	/	/	150		

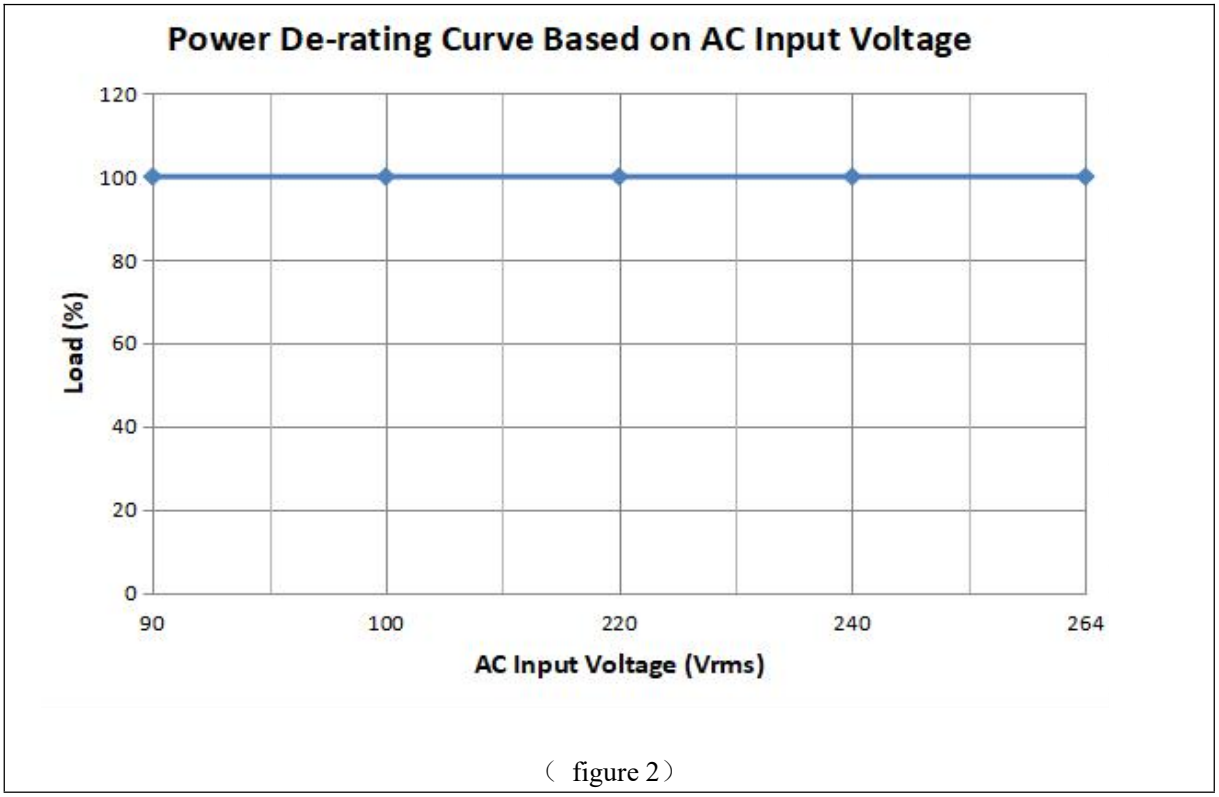
HWT-403V8A-2S-PS Output Graphs

1) Load-ambient temperature de-rating curve



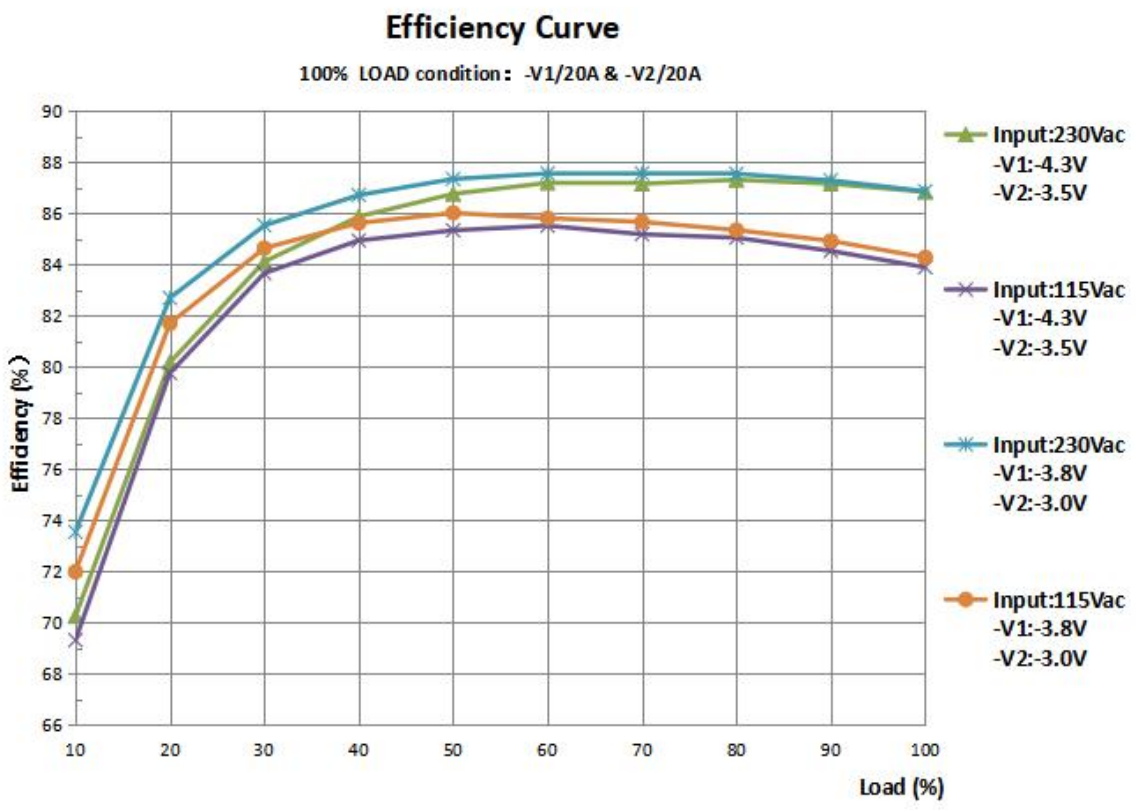
（ figure 1）

2) load - Input voltage de-rating curve



（ figure 2）

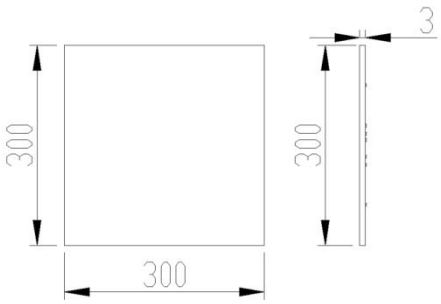
3 ）Efficiency Curve



（ figure 3）

4）Installation requirement

In order to meet the requirement of the de-rating curves and the performance of the whole machine, the actual installation requires that the bottom of the chassis be tightly close to the heat-dissipating aluminum plate or to the case of the system of the same size (the recommended size of the heat-dissipating plate is shown in Figure 4, the unit is mm). In order to optimize heat dissipation, the surface of the aluminum plate must be smooth and coated with thermal grease, and the power supply must be installed on the center of the aluminum plate.



Aluminum Radiator Size

（ figure 4）

1. Specifications

Miscellaneous					
Parameter	**Min.**	**Typ.**	**Max.**	**Unit**	**Remarks**
Efficiency	85.5	86.5	/	%	@ 25℃, 230Vac input, Outputs:-V1:-3.8V/20A, -V2:-3.2V/20A.
Dynamic response 1	/	/	±5	%	Load variation: 25%-50%-25% or 50%-75%-50% Rate: 1A/us, Period: 5ms
Dynamic response 2	/	/	±10	%	Load variation: 5%-100%-5% Rate: 1A/us, Period: 4ms
Temperature coefficient	/	/	±0.02	%/℃	Universal input, full load
Turn On Delay Time	/	/	2	S	Full range of input voltage & load condition
Over/under shoot @ start -up/shutdown	/	/	±10	%	Full range of input voltage & load condition
Rise Time	/	/	100	ms	Rated input, full load
Capacitive loading	/	/	20,000	μF	For LED display product, we recommend that the extra electrolyte capacitor's value should be not less than 2,200μF for per 10A output current.

Protections						
Parameter		**Min.**	**Typ.**	**Max.**	**Unit**	**Remarks**
Output Over Voltage Protection	-V1	-4.5	/	-5.5	V	Hiccup Mode
	-V2	-3.7	/	-4.3	V	Latch-off
Output Over Current Protection	-V1	45	/	70	A	Hiccup Mode (-V2 with no load)
	-V2	30	/	40	A	Hiccup Mode (-V1 with little load)
Output Short-circuit Protection		/	/	/	/	Long-term short-circuit endurable. Auto recovery
Over Temperature Protection		90	/	110	℃	The center of the upper cover

1. Specifications

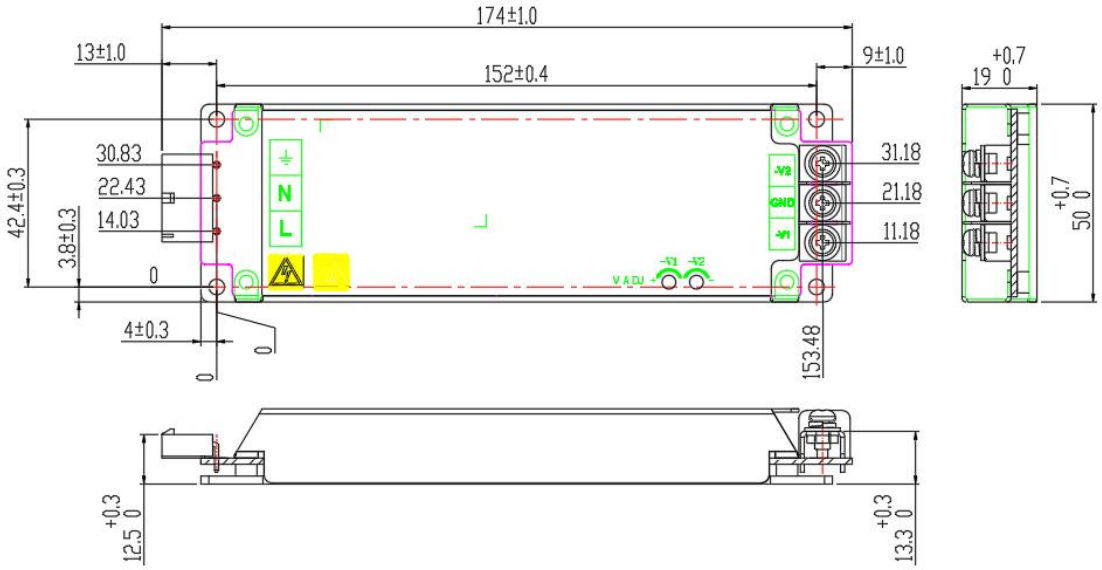
EMC and other parameters			
Item	**Level**		**Standard**
CE	CLASS B		EN55032
RE	CLASS B		EN55032
SURGE	Input	level B(1.2/50us) line-line ： 1kV line-PGND：2kV	IEC61000-4-5
ESD	level B Contact discharge：±4kV, Air discharge：±8kV		IEC61000-4-2
CS	LEVEL 3；level A；10V		IEC61000-4-6
RS	Level 3 ；level A； 10V/m		IEC61000-4-3
Immunity to Electrical Fast Transient	±2kv，LEVEL 3，level B		IEC61000-4-4
Voltage fluctuation and Flicker	Pst≤1.0, Plt≤0.65, dc≤3%,dmax≤4% the value of d(t) during a voltage change shall not exceed 3% for more than 200ms		IEC61000-3- 3
Harmonic Current Emission	CLASS A		IEC61000-3- 2 [6]
Audible Noise	45dB(A)		Test distance:1m
MTBF	≥100,000hrs @ half load/25℃		
Electrolytic capacitor life	10 years (test at 25℃), rated input, rated output		
Vibration	Frequency 1-4Hz, acceleration spectral density 0.0001g^2/Hz. Frequency 4-100Hz, acceleration spectral density 0.01g^2/Hz. Frequency 100-200Hz, acceleration spectral density 0.001g^2/Hz. Total rms acceleration: 0.781Grms. Test axis Direction: 3 axes. Test time: 30 min per axis.		
Shock	Half sine wave. Peak acceleration: 300m/s^2. Pulse width: 6ms. Axis Direction: 6 directions. 3 shocks on each direction.		
Odor	No peculiar and deleterious odor		

Insulation rating		
Parameter	**Requirement**	**Remark**
Input - Output	4242Vdc/10mA//1min	No flashover or breakdown
Input - Chassis	2500Vdc/10mA//1min	
Output - Chassis	500Vdc/10mA//1min	
Leakage Current	＜0.5 mA	240Vac/50Hz Input
Grounding Resistance	＜0.1 Ω	Test condition: 40A/2mins
Insulation Resistance	@ Normal atmospheric pressure, relative humidity: 90% Testing voltage: 500V dc Insulation of primary-secondary, primary-ground, secondary-ground shall not be less than 10MΩ	

2. Mechanical

Mechanical specifications	
Length (mm)	174 ± 1.0
Width (mm)	50 -0/+0.7
Height (mm)	19 -0/+0.7
Weight（g）	≤260

Dimensions and mounting holes - terminal coordinates



Definition and Installation Notes for Input Terminal and Output Terminal

Name	Function	Maximum Torque	Wiring Diameter
Input Terminal	⏚	N/A	18AWG min.
	N		
	L		
Output Terminal	-V2	12kgf.cm	According to the actual situation
	GND		
	-V1		