DESCRIPTIONS

600W, AC/DC Enclosed Switching Power Supply



RoHS

FEATURES

- Universal 80 - 277VAC or 110 - 390VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency, active PFC
- Standard DIN-Rail mounting
- DC_OK, remote sense compensation function
- 350% peak power
- Output short circuit, over-current, over-voltage protection, over-temperature protection
- Operating altitude up to 5000m

APPLICATIONS

- Industrial

Selection Guide

Certification	Part No.	Cooling Method	Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (uF)
--	AEF600-2B-12P3	Forced cooling	636	12V/53A	10.2-13.8	90	40000
	AEF600-2B-24P3		648	24V/27A	21.6-28.8	90	10000
	AEF600-2B-36P3		630	36V/17.5A	28.8-39.6	90	6000
	AEF600-2B-48P3		624	48V/13A	40.8-55.2	90	4000

Note:

1. *Under any conditions, the total power of the product should not exceed the rated power. When the output voltage is increased, the total output power cannot exceed the rated output power, when the output voltage is decreased, the output current cannot exceed the rated output current;
2. The product picture is for reference only. For details, please refer to the actual product.

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range	Rated input (Certified voltage)		100	--	240	VAC
		AC input		80	--	277	VAC
		DC input		110	--	390	VDC
	Input Voltage Frequency	Rated input (Certified voltage)		50	--	60	Hz
		AC input		47	--	63	
	Input Current	Rated input (Certified voltage)		--	--	7.5	A
		115VAC		--	--	7.5	
		230VAC		--	--	3.5	
	Inrush Current	115VAC	Cold start	--	--	20	
		230VAC		--	--	40	
	Start-up Delay Time	230VAC		--	--	1.8	s
	Input Fuse	Built-in fuse		--	16	--	A
	Power Factor	115VAC		--	0.99	--	--
		230VAC		--	0.95	--	
	Hot Plug			Unavailable			
Output Specifications	Output Voltage Accuracy	Full load range		--	±1	--	%
	Line Regulation	Rated load		--	±0.3	--	
	Load Regulation	0% - 100% load		--	±0.5	--	
	Minimum Load			0	--	--	
	Ripple & Noise①	20MHz bandwidth (peak-to-peak value)	12V	--	100	200	mV
			24V	--	100	150	
			36V	--	100	200	
			48V	--	100	240	
	Stand-by Power Consumption	115VAC /230VAC input		--	--	5.0	W
	Temperature Coefficient			--	±0.03	--	%/℃
	Hold-up Time	115VAC /230VAC, rated load		--	16	--	ms
	Peak Power②	100VAC≤Input voltage < 200VAC		--	--	1200	W
		200VAC≤Input voltage≤277VAC		--	--	2100	
		Duty(running time/periodic time*100%)		Refer to the peak power curve			
	Short Circuit Protection③	The short circuit disappear, recovery after PUS restart		Constant current 380% Io(typ) continuous 2s, output voltage turn off			
	Peak Power Protection③	constant voltage output overload	100VAC≤Input voltage < 200VAC	105% P_{rated} < Pout≤1200W, constant voltage output to maintain more than 5s, output voltage turn off, self-recover after PUS restart			
			200VAC≤Input voltage≤ 277VAC	105% P_{rated} < Pout≤2100W, constant voltage output to maintain more than 5s, output voltage turn off, self-recover after PUS restart			

Output Specifications	Peak Power Protection③		Constant current limit		Constant current value 380% Io(typ) limit, constant current output to maintain more than 5s, output voltage turn off, self-recover after PUS restart			
	Over-voltage Protection		12V		≤16VDC (Output voltage turn off or clamp)			
			24V		≤35VDC (Output voltage hiccup or clamp)			
			36V		≤ 47VDC (Output voltage hiccup or clamp)			
			48V		≤ 60VDC (Output voltage hiccup or clamp)			
	Over-temperature Protection④		230VAC, rated load	Over-temperature protection start	100	--	--	℃
				Over-temperature protection release	80	--	100	
General Specifications	Isolation	Input - ⏚	Electric strength test for 1min., leakage current <5mA		1500	--	--	VAC
		Input-output			4000	--	--	
		Output - ⏚			1500	--	--	
	Insulation Resistance	Input - ⏚	Environment temperature: 25 ±5℃ Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC		100	--	--	MΩ
		Input-output			100	--	--	
		Output - ⏚			100	--	--	
	Leakage Current		240VAC, 60Hz	Touch current	<0.1mA (RMS)			
				Earth leakage current	<0.75mA (RMS)			
	Operating Temperature				-40	--	85	℃
	Storage Temperature				-40	--	85	
	Storage Humidity		Non-condensing		--	--	95	%RH
	Operating Humidity				--	--	95	
	Power Derating		Operating temperature derating	+50℃ to +85℃	2.5	--	--	%/℃
			Input voltage derating	80VAC - 85VAC	2	--	--	%/VAC
				85VAC-100VAC	1.33	--	--	
	Safety Class				CLASS I			
	MTBF		MIL-HDBK-217F@25℃		≥300,000 h			
Environmental Characteristics	Low Temperature Working		-40℃		GB2423.1, IEC60068-2-1			
	High Temperature Working		+85℃		GB2423.2, IEC60068-2-2			
	Low Temperature Storage		-40℃		GB2423.1, IEC60068-2-1			
	High Temperature Storage		+85℃		GB2423.2, IEC60068-2-2			
	Sinusoidal Vibration		10 - 500Hz, 5g, three directions of X, Y, Z axis		GB2423.10, IEC60068-2-6			
	Temperature Shock		-40℃ to +85℃		GB2423.22, IEC60068-2-14			

	Temperature Cycle	-40℃ to +50℃	GB2423.22, IEC60068-2-14
	Hot and Humid	+85℃, 85%RH	GB2423.50, IEC60068-2-67
	High Temperature/ Low-pressure Synthetical Test		GB/T 2423.26
Mechanical Specifications	Case Material	Metal (AL1100, SGCC)	
	Dimensions	203.10mm x 101.60mm x 40.60mm	
	Weight	1000g (Typ.)	
	Cooling Method	Forced air convection, 35±15% Io or Ta≥50℃, starting fan	

Note:

1. ①The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor,
2. ②The operation temperature range of maximum output peak power: -40℃ to 50℃ (-40℃ to -10℃ need to heat engine), The derating from +50℃ to +85℃ should be performed according to the temperature coefficient. For peak power operation refer to the peak power curve in" Product Characteristic Curve". The duty of the peak power cannot exceed the "peak power curve" shows the maximum duty corresponding to the peak power of operation. The peak power cannot exceed the maximum upper limit.
3. ③After the short circuit protection and peak power protection are triggered, the power supply is advised to cool down and power on again. The cooling time is calculated according to the formula of peak power. When the maximum output peak power ranges from +50℃ to +75℃, the derating must be based on the temperature coefficient. The power triggering peak power protection at +75℃ to +85℃ is 105% $P_{rated} < P_{out} < 725W$.
4. ④Over-temperature protection starts at 100℃ as the internal temperature of product, which is triggered by heavy load, the ambient temperature for over-temperature protection is 80℃.

Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 150K - 30MHz		CLASS B
		RE	CISPR32/EN55032 30MHz - 1GHz		CLASS B
		Harmonic current	IEC/EN61000-3-2		CLASS A
	Immunity (EMS)	ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV		perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m		perf. Criteria A
		EFT	IEC/EN61000-4-4 ±4KV		perf. Criteria A
		Surge	IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV		perf. Criteria A
		CS	IEC/EN61000-4-6 0.15 - 80MHz 10Vr.m.s		perf. Criteria A
		MS	IEC/EN61000-4-8 30A/m		perf. Criteria A
		Voltage variations*	IEC61000-6-2/IEC61000-4-11	70% Un, 25/30 cycle(50/60Hz) 40% Un, 10/12 cycle(50/60Hz) 0% Un, 1 cycle	perf. Criteria B

Note:

1. perf. Criteria:

A: The equipment shall continue to operate as intended without operator intervention;

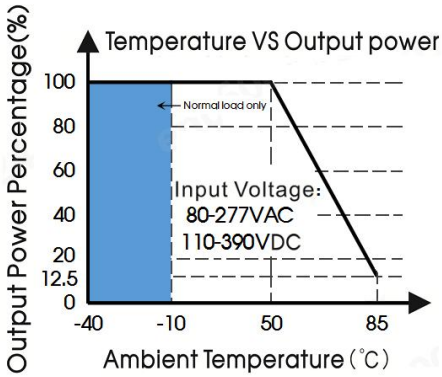
B: After the test, the equipment shall continue to operate as intended without operator intervention;

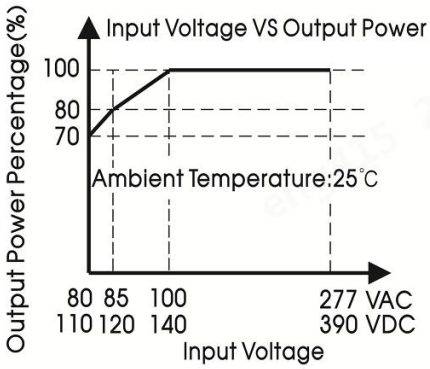
2. *Un is the maximum input nominal voltage.

Functional Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Functional Specifications	DC OK Signal	All input voltage range, all load range	PSU on	3.3	--	5.6	VDC
			PSU off	0	--	1	
	Remote Sense	S- (CON2) and S+ (CON3) of the terminal (CON) are remote compensation function pins connected to both ends of the output load (S+ is connected to Vo+, S- is connected to Vo-).		--	--	500	mV
	LED Signal	Main output status indication	Normal output	Green On			

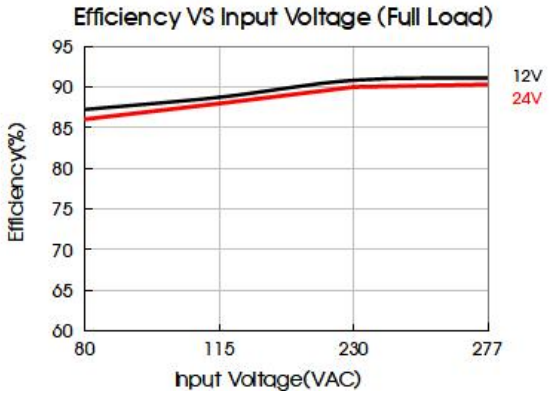
Characteristic Curve

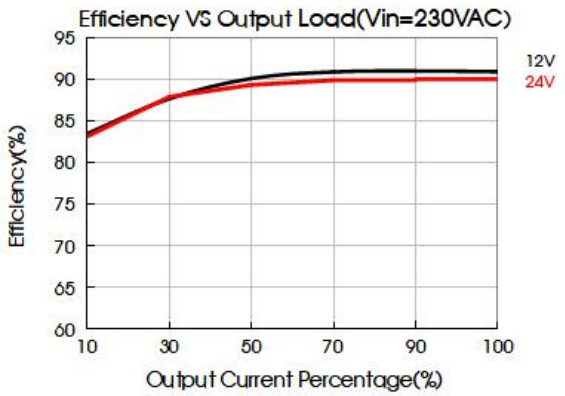




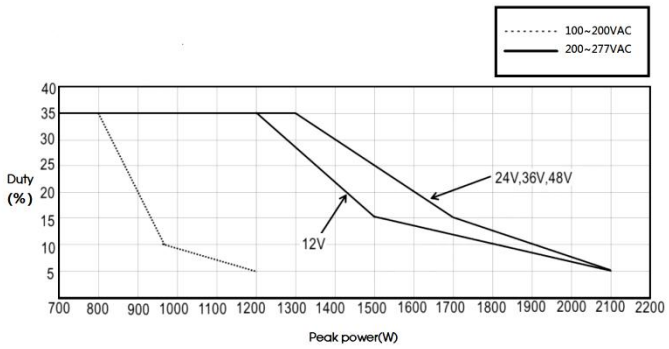
Note: 1. With an AC input voltage between 80-100VAC and a DC input between 110-140VDC the output power must be derated as per the temperature derating curves;

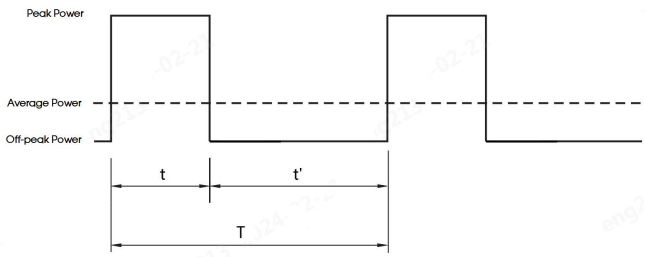
2. This product is suitable for applications using forced air cooling.





Peak power curve:





Peak power computational formula:

$$P_{av} = \frac{P_{pk} * t + P_{npk} * t'}{T} \le P_{rated}$$

$$\frac{t}{T} \le Duty_max$$

Duty=t/T*100%, P_{av} is average power(W), P_{pk} is peak power(W), t is peak power time(s), P_{npk} is off-peak power(W), t' is off-peak power time(s), T is total periodic time(s)

Take the 12V output as an example:

$Vin = 200VAC \quad Duty_max = 15\%$

$P_{av} = P_{rated} = 636W$

$P_{pk} = 1500W$

$t \le 5\,sec$

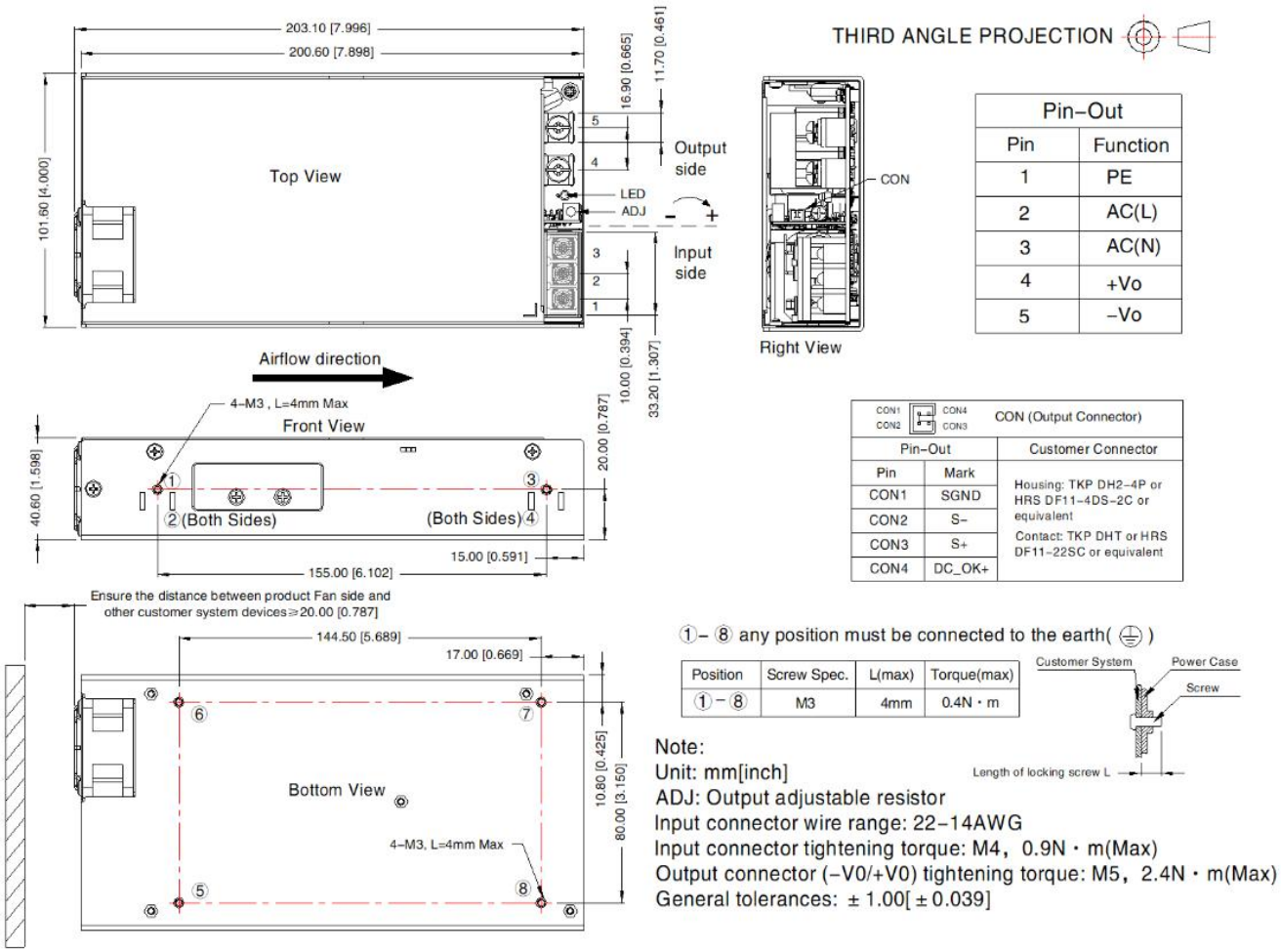
$$T \ge \frac{5\,sec}{15\%} \ge 33.3\,sec$$

$$P_{npk} \le \frac{T * P_{av} - t * P_{pk}}{T - t}$$

$P_{npk} \le 483.3W$

For 200VAC input, peak power 1500w, peak power time 5s, its the maximum duty is 15%, total periodic time at least 33.3s needed, the maximum off-peak power is 483.3W and power time at least 28.3s, average power 636W.

Dimensions and Recommended



Pin–Out	
Pin	Function
1	PE
2	AC(L)
3	AC(N)
4	+Vo
5	–Vo

CON (Output Connector)

Pin–Out		Customer Connector
Pin	Mark	Housing: TKP DH2–4P or HRS DF11–4DS–2C or equivalent Contact: TKP DHT or HRS DF11–22SC or equivalent
CON1	SGND	
CON2	S–	
CON3	S+	
CON4	DC_OK+	

① – ⑧ any position must be connected to the earth(⏚)

Position	Screw Spec.	L(max)	Torque(max)
① – ⑧	M3	4mm	0.4N · m

Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Input connector wire range: 22–14AWG
Input connector tightening torque: M4, 0.9N · m(Max)
Output connector (–V0/+V0) tightening torque: M5, 2.4N · m(Max)
General tolerances: ± 1.00[± 0.039]

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% RH with nominal input voltage and rated output load;
2. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
7. The output voltage can be adjusted by the ADJ, clockwise to increase;
8. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing." /" ATTENTION: Double pôle/fusible sur le neutre. Débrancher lalimentation avant lentretien;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should install the test sample in a 1mm thick, 360mm long, 360mm wide metal iron plate test.