

ZAM-1000-Bxx Series

1000W, AC/DC Enclosed Switching Power Supply

DESCRIPTIONS

ZAM-1000-Bxx series is one of enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, high efficiency, high reliability and reinforced insulation. These converters offer excellent EMC performance and meet UL/IEC/EN62368, GB4943 standards.



CE EN62368-1 Report RoHS

FEATURES

- Universal 90 - 264VAC or 130 - 390VDC Input voltage
- Operating ambient temperature range: -30°C to +70°C (-40°C start-up available)
- High I/O isolation test voltage up to 4000VAC
- High efficiency up to 92%
- Output short circuit/over-current/over-voltage, over-temperature protection
- Operating altitude up to 5000m
- LED indicate the power on

APPLICATIONS

- Industrial control

Selection Guide

Certification	Part No*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range(V)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN	ZAM-1000-B12	999.6	12V/83.3A	11.4-13.2	90	40000
	ZAM-1000-B15	1000.5	15V/66.7A	14.25-16.5	90	20000
	ZAM-1000-B24	1000.8	24V/41.7A	22.8-26.4	92	10000
	ZAM-1000-B36	997.2	36V/27.7A	34.2-39.6	92	6000
	ZAM-1000-B42	999.6	42V/23.8A	39.7-45.5	92	4000
	ZAM-1000-B48	998.4	48V/20.8A	45.6-52.8	92	4000
	ZAM-1000-B54	999	54V/18.5A	51.3-56.7	92	3000

Note:
 1. Use suffix "Q" for bottom conformal coating. The product picture is for reference only. For details, please refer to the actual product.
 2. *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.

ZAM-1000-Bxx Series

1000W, AC/DC Enclosed Switching Power Supply

Specifications

Product Specifications	Item	Operating Conditions	Min.	Typ.	Max.	Unit		
Input Specifications	Input Voltage Range	Rated input (Certified voltage)	100	--	240	VAC		
		AC input	90	--	264			
		DC input	130	--	390	VDC		
	Input Voltage Frequency	Rated input (Certified voltage)	50	--	60	Hz		
		AC input	47	--	63			
	Input Current	Rated input (Certified voltage)	--	12	--	A		
		115VAC	--	12	--			
		230VAC	--	7.5	--			
	Inrush Current	Cold start	115VAC	--	35	--		
			230VAC	--	55	--		
	Start-up Delay Time	115VAC/230VAC, rated load, room temperature		--	--	1.5	s	
	Input Fuse	Built-in fuse		--	25	--	A	
	Input Under-voltage Protection	Under-voltage protection start (Input voltage drops from high to low)		65	--	80	VAC	
Under-voltage protection release (Input voltage rises from low to high)		73	--	87				
Hot Plug			Unavailable					
Output Specifications	Output Voltage Accuracy	Full load range		--	±1	--	%	
	Line Regulation	Rated load		--	±0.5	--	%	
	Load Regulation	0% - 100% load		--	±0.5	--		
	Minimum Load			0	--	--		
	Ripple & Noise	(peak-peak value)	20MHz bandwidth	12/15V	--	--	240	mV
				24V	--	--	240	
				36/42/48/54V	--	--	360	
	Temperature Coefficient			--	±0.03	--	%/°C	
	Hold-up Time	115VAC/230VAC, rated load		10	12	--	ms	
	Short Circuit Protection	Recovery time <10s after the short circuit disappear.		Hiccup, continuous, self-recover				
	Over-current Protection	230VAC, rated load		125% - 300% Io, hiccup, self-recover after the over-current disappear				
Over-voltage Protection	12V output		≤18VDC (Hiccup, self-recover)					
	15V output		≤24.5VDC (Hiccup, self-recover)					
	24V output		≤33.6VDC (Hiccup, self-recover)					
	36V output		≤48.6VDC (Hiccup, self-recover)					
	42/48V output		≤63VDC (Hiccup, self-recover)					
	54V output		≤70VDC (Hiccup, self-recover)					

ZAM-1000-Bxx Series

1000W, AC/DC Enclosed Switching Power Supply

Output Specifications		Over-temperature Protection	230VAC, rated load	12/15/24/36/48V	--	--	75	°C
			load	42/54V	--	--	85	
General Specifications	Isolation	Input- ⊕	Electric strength test for 1min., leakage current <5mA		2000	--	--	VAC
		Input - output			4000	--	--	
		Output- ⊕			1250	--	--	
	Insulation Resistance	Input- ⊕	Ambient temperature: 25 ± 5°C Relative humidity: < 95%RH, no condensation Test voltage: 500VDC		100	--	--	MΩ
		Input-output			100	--	--	
		Output- ⊕			100	--	--	
	Operating Temperature				-30	--	+70	°C
	Start-up Temperature				-40	--	+70	
	Storage Temperature				-40	--	+85	
	Operating Humidity		Non-condensing		--	--	95	%RH
	Storage Humidity		Non-condensing		--	--	90	
	Power Derating	+45°C to +70°C		12V	3	--	--	% / °C
		+50°C to +70°C		Others	2.5	--	--	
		90VAC - 100VAC			3	--	--	% / VAC
	Leakage Current		240VAC, 60Hz	Touch current	--	--	0.5	mA
Safety Class				CLASS I				
MTBF		MIL-HDBK-217F@25°C		≥ 300,000 h				
Functional Specifications	DC_OK Signal		All input voltage range, all load range	PSU on	3.3	--	5.6	VDC
				PSU off	0	--	1	
	LED Signal		Main output status indication	Normal output	Green on			
	Remote Sense		S- (Pin3) and S+ (Pin4) of the terminal (CN1) are remote compensation function pins connected to both ends of the output load (S+ is connected to Vo+, S- is connected to Vo-).					
Remote Control Switch		RC- (Pin5) and RC+ (Pin6) of the terminal (CN1) are the pins of the remote control switch function, and external voltage is required when used (RC+ is connected to Vout, RC- is connected to GND).						
		All input voltage range, all load range	Power on	0	--	0.8	VDC	
			Power off	4	--	10		
Mechanical Specifications	Case Material		Metal (AL5052, SGCC)					
	Dimension		187.50mm x 127.00mm x 40.50mm					
	Weight		990g (Typ.)					
	Cooling Method		Forced air cooling					

- Note: 1. The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor
 2. When the product works at a low temperature of -40°C, it can start-up at half-load. Please consult our FAE for specific application.
 3. When the remote control switch pin is left floating, the power supply is on.
 4. The product is in jump-cycle mode with light load, the fan exists in start or stop state, and this state disappears after 10% Io.

ZAM-1000-Bxx Series

1000W, AC/DC Enclosed Switching Power Supply

Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032	150K - 30MHz	CLASS A		
		RE	CISPR32/EN55032	30MHz - 1GHz	CLASS A		
	Immunity (EMS)	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV		perf. Criteria A	
		RS	IEC/EN61000-4-3	10V/m			
		EFT	IEC/EN61000-4-4	±4KV			
		Surge	IEC/EN61000-4-5	line to line ±2KV/line to PE ±4KV			
		CS	IEC/EN61000-4-6	0.15 - 80MH, 10Vr.m.s			
		PFMF	IEC/EN61000-4-8	30A/m			
		Voltage variations*	IEC61000-6-2/IEC61000-4-11	70% Un, 25/30 cycle(50/60Hz) 40% Un, 0/12 cycle(50/60Hz) 0% Un, 1 cycle		perf. Criteria B	
	Short interruptions*	IEC61000-6-2/IEC61000-4-11	0% Un, 250/300 cycle(50/60Hz)		perf. Criteria C		

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;
 C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions and (or) information stored in non-volatile memory or protected by backup batteries should not be lost.
 2. *Un is the maximum input nominal voltage.

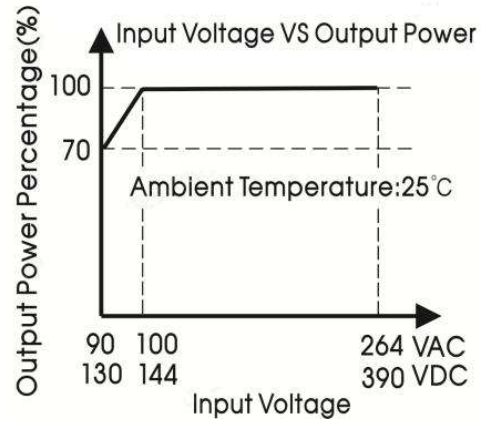
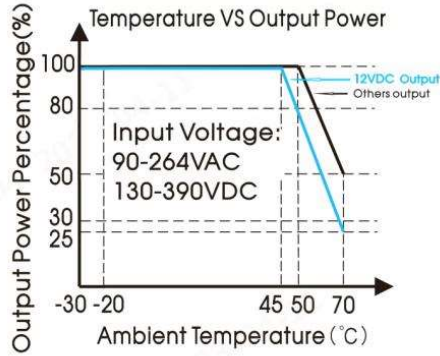
Environmental Characteristics

Item	Operating Conditions	Standard
Low Temperature Working	-30℃	GB2423.1, IEC60068-2-1
High Temperature Working	+70℃	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, 2g, 60 minutes in each direction of X, Y, Z axis	GB2423.10, IEC60068-2-6
Temperature Shock	-30℃ to +70℃	GB2423.22, IEC60068-2-14
Temperature Cycle	-25℃ to +70℃	GB2423.22, IEC60068-2-14
Hot and Humid	+70℃, 85%RH	GB2423.50, IEC60068-2-67
Packaging Drop	1m, one corner, three edges and six sides	GB2423.8, IEC68-2-32

ZAM-1000-Bxx Series

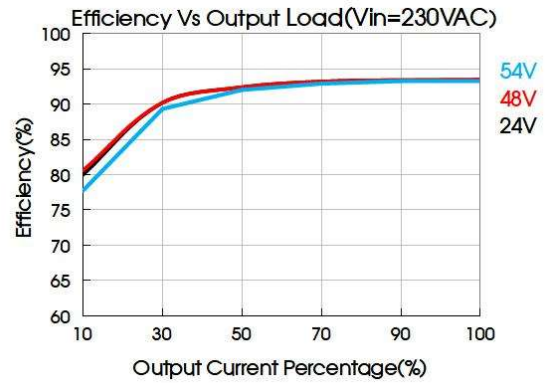
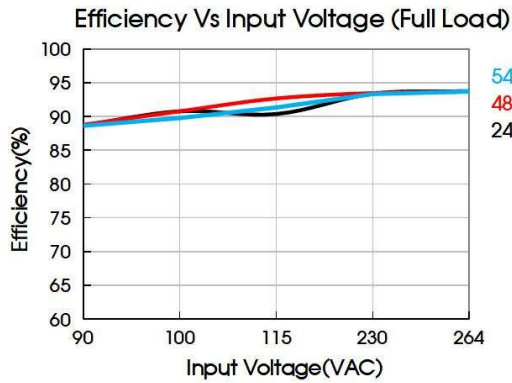
1000W, AC/DC Enclosed Switching Power Supply

Characteristic Curve



Note: 1. With an AC input voltage between 90-100VAC and a DC input between 130-144VDC the output power must be derated as per the temperature derating curves;

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



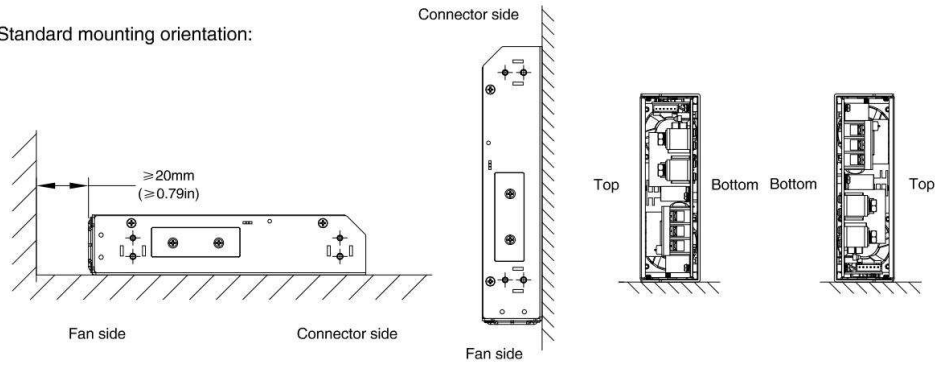
ZAM-1000-Bxx Series

1000W, AC/DC Enclosed Switching Power Supply

Installation Diagram

Installation Method

Standard mounting orientation:

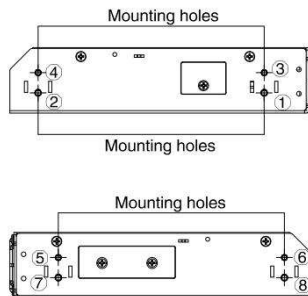


Note: The fan panel cannot be blocked by other objects, and a distance of at least 20mm must be maintained, otherwise it will affect the heat dissipation and performance of the power module.

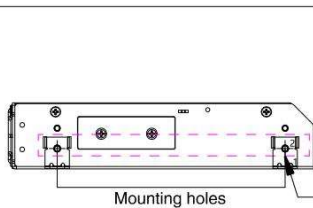
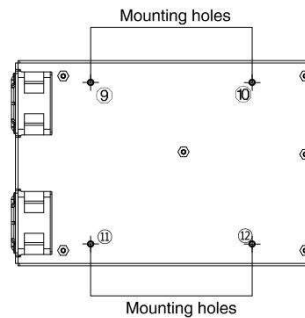
Position of mounting holes:

Installation position	Screw specification	L(max)	Torque(max)	Client	Case
① - ②	M4	4mm	0.9N · m		
⑦ - ⑧					
③ - ⑥	M3	4mm	0.4N · m		
⑨ - ⑫	M3	3mm	0.4N · m		

Side view

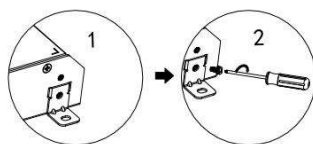
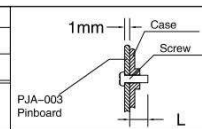


Bottom view



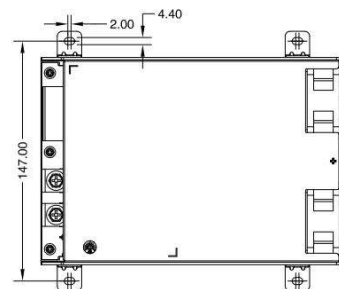
PAA-003 Pinboard

Accessory	Name	Number
1	PAA-003 Pinboard	4
2	M4 screw	4
Parameter	L(max)=4mm Torque(max)=0.9N · M	



Installation steps:

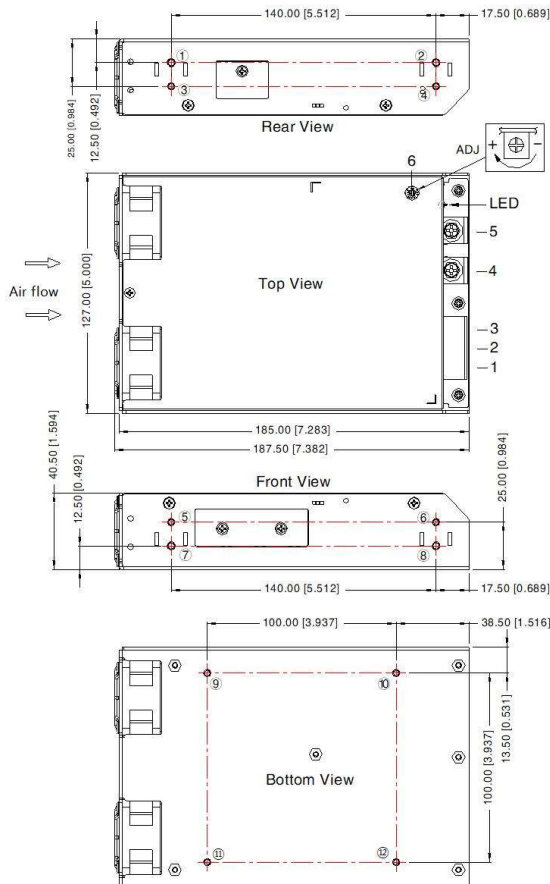
1. Install the Pinboard in the position shown in Figure 1 and align the card position.
2. Use a screwdriver to install the M4 screw to the position as shown in Figure 2.



ZAM-1000-Bxx Series

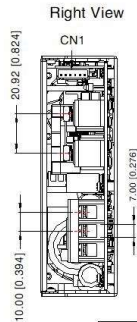
1000W, AC/DC Enclosed Switching Power Supply

Dimensions and Recommended



THIRD ANGLE PROJECTION

Pin-Out	
Pin	Mark
1	AC(L)
2	AC(N)
3	\oplus
4	-Vo
5	+Vo
6	ADJ Output adjustable resistor



CN1		Pin-Out	Customer Connector
Pin	Mark		
1	DC_OK Signal		Connector: JST XHP or equivalent Terminal: JST SXH-001T or equivalent
2	DC_OK GND		
3	-S		
4	+S		
5	RC-		
6	RC+		

Position	Screw Spec.	L(max)	Torque(max)	Customer System	Power Case
①-②	M4	4mm	0.9N · m		Screw
⑦-⑧					
③-⑥	M3	4mm	0.4N · m		
⑨-⑫	M3	3mm	0.4N · m		

Connector wires range:

Pro. No	Input connector	Output connector	Customer output Spade terminal
12V	16-14AWG	4AWG	Max 13.00[0.512] 5.30[0.209]
15V		6-4AWG	
24V		8-4AWG	Max 7.00[0.276]
36V		12-6AWG	
48V/54V		14-6AWG	
Screw/torque	M4, Max 0.9N · m	M5, Max 1.6N · m	

Note:

Unit: mm[inch]

General tolerances: $\pm 1.00[\pm 0.039]$

LED: Output status indicator LED

Note:

- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity <75%RH with nominal input voltage and rated output load;
- The room temperature derating of $5^\circ\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
- All index testing methods in this datasheet are based on our company corporate standards;
- In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- The out case needs to be connected to PE (\oplus) of system when the terminal equipment in operating;
- The output voltage can be adjusted by the ADJ, clockwise to increase;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
- The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment.
- Packaging bag number: 58220353V