DESCRIPTIONS

30W, AC-DC Converter



RoHS

3 Years Warranty

CE Report EN62368-1

UKCA Report BS EN62368-1

FEATURES

- Specific power supply designing for smart grid
- Ultra-wide 85 - 305VAC and 88- 430VDC input voltage range
- Ultra-wide operating ambient temperature range: -40℃ to +85℃
- High reliability, low output ripple & noise
- EMI performance meets CISPR32/EN55032 CLASS B
- Immunity meets electricity standard Level 4
- Meets impulse voltage requirements of 1.2/50us 5KV
- Safety according to UL/IEC62368

APPLICATIONS

- smart grid
- smart power transmission and substations

Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current	Output Voltage Adjustable Range ADJ (V)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
EN/BS EN	AO30-03E	19.8W	3.3V/6000mA	2.97-3.63	77	30000
	AO30-05E	30W	5V/6000mA	4.5-5.5	82	30000
	AO30-12E		12V/2500mA	10.8-13.2	86	15000
	AO30-15E		15V/2000mA	13.5-16.5	87	12000
	AO30-24E	31.2W	24V/1300mA	21.6-26.4	88	2000

Note: 1.*AO30-24E-QQ with double-faced conformal coating.
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		AC input		85	--	305	VAC
			DC input		88	--	430	VDC
	Input Frequency				47	--	440	Hz
	Input Current		115VAC		--	--	750	mA
			230VAC		--	--	450	
	Inrush Current		115VAC		--	15	--	A
			230VAC		--	30	--	
	Contact Leakage Current		277VAC		0.3mA RMS max.			
	Hot Plug				Unavailable			
Output Specifications	Output Voltage Accuracy		0% - 100% load	3.3V, 5V output	--	±2	--	%
				Other output	--	±1	--	
	Line Regulation		Rated load	3.3V, 5V output	--	±0.8	--	
				Other output	--	±0.4	--	
	Load Regulation		0% - 100% load		--	±1	--	
	Ripple & Noise*		100MHz bandwidth (peak-to-peak value)		--	50	120	mV
	Stand-by Power Consumption				--	--	0.5	W
	Temperature Coefficient				--	±0.02	--	%/℃
	Short Circuit Protection				Hiccup, continuous, self-recovery			
	Over-current Protection				≥120%Io, self-recovery			
	Over-voltage Protection		3.3VDC output		≤5.25V	Output voltage hiccup or clamp		
			5VDC output		≤7V			
			12VDC output		≤16V			
			15VDC output		≤20.3V			
			24VDC output		≤32.4V			
	Minimum Load				0	--	--	%
	Start-up Delay Time				--	500	1000	ms
	Hold-up Time		115VAC input, Io=100%		--	40	--	ms
			230VAC input, Io=100%		--	160	--	
General Specifications	Isolation	Input - output	Electric Strength Test for 1min., leakage current <10mA		4000	--	--	VAC
		Input - PE	Electric Strength Test for 1min., leakage current <5mA		2000	--	--	
		Output - PE	Electric Strength Test for 1min., leakage current <20mA		500	--	--	
	Insulation Resistance	Input - output	500VDC		100	--	--	MΩ
		Input - PE						

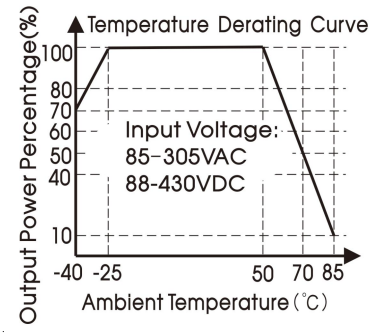
General Specifications		Output - PE					
	Impulse Withstand Voltage	Input - output	5KV, 1.2/50 us Impulse voltage				
		Input - PE					
	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-40	--	+85	
	Storage Humidity			--	--	90	%RH
	Altitude			--	--	5000	m
	Switching Frequency			--	65	--	kHz
	Power Derating	-40℃ to -25℃		2	--	--	%/℃
		5 years design life	Natural air cooling	+50℃ to +70℃	2.5	--	--
				+70℃ to +85℃	2.66	--	--
			Forced cooling wind speed ≥ 0.7m/s	+65℃ to +70℃	8	--	--
				+70℃ to +85℃	2	--	--
		3 years design life	Natural air cooling	+55℃ to +70℃	2	--	--
				+70℃ to +85℃	2.66	--	--
			Forced cooling wind speed ≥ 0.7m/s	+65℃ to +70℃	2	--	--
				+70℃ to +85℃	3.33	--	--
		85VAC - 100VAC			1.33	--	--	%/VAC
		277VAC - 305VAC			0.72	--	--	
		2000m-5000m			5	--	--	%/Km
	Safety Class				CLASS I		
	MTBF		MIL-HDBK-217F@25℃		> 300,000 h		
Mechanical Specifications	Dimension		105.00 x 50.00 x 30.00 mm				
	Weight		110g (Typ.)				
	Cooling method		Free air convection				

Note: *The "Tip and barrel method" is used for ripple and noise test, with a 0.1uf ceramic capacitor & 100uf parallel capacitor to measure at 100MHZ bandwidth.

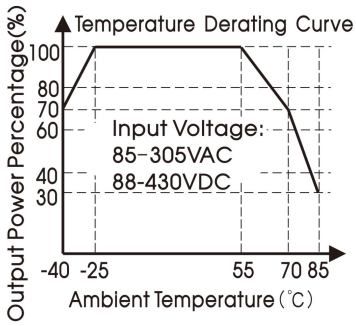
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS B	
		RE	CISPR32/EN55032 CLASS B	
	Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/ Air ±15KV	Perf. Criteria B
		RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
		EFT	IEC/EN61000-4-4 ±4KV	Perf. Criteria B
		Surge	IEC/EN61000-4-5 Line to line ±2KV/ line to ground ±4KV	Perf. Criteria B
		CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A
		Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11 100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	Perf. Criteria B

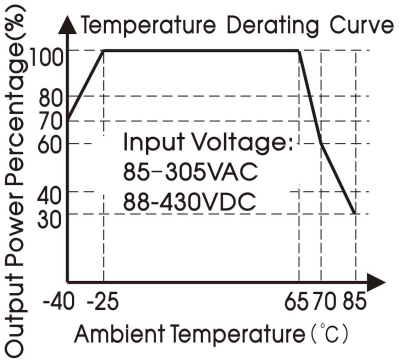
Product Characteristic Curve



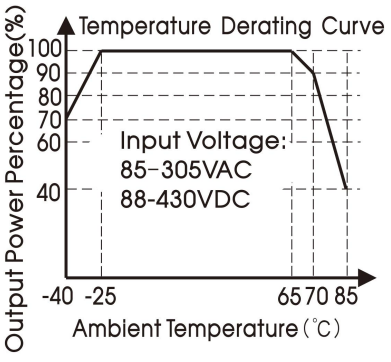
Natural air cooling 5 years design life



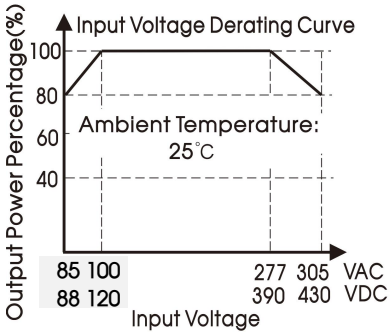
Natural air cooling 3 years design life

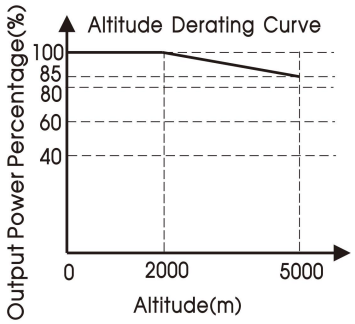


Forced cooling 5 years design life



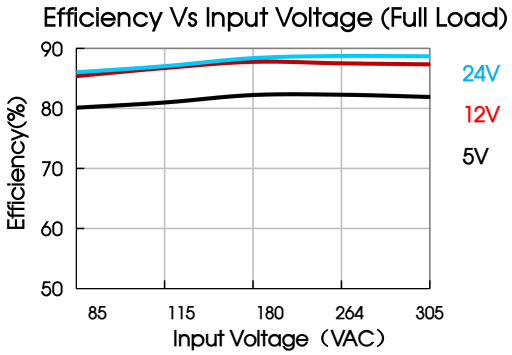
Forced cooling 3 years design life

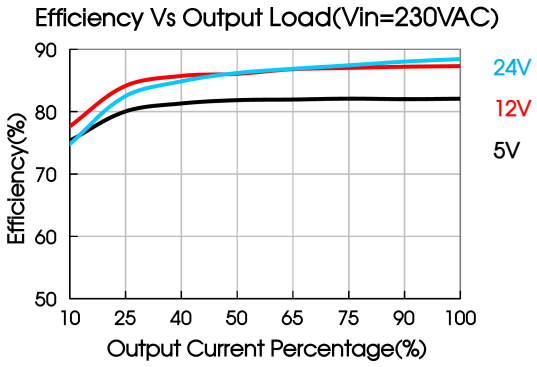




Note: ① With an AC input between 85-100VAC/277-305VAC and a DC input between 88-120VDC/390-430VDC, the output power must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling;





Design Reference

1. Typical application

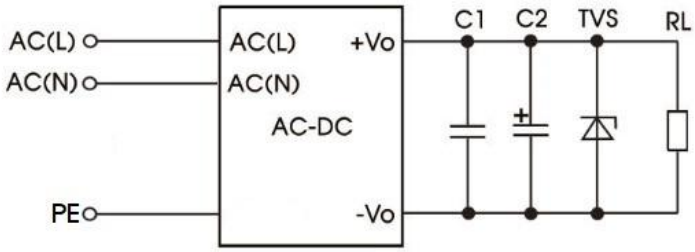


Fig. 1: Typical circuit diagram

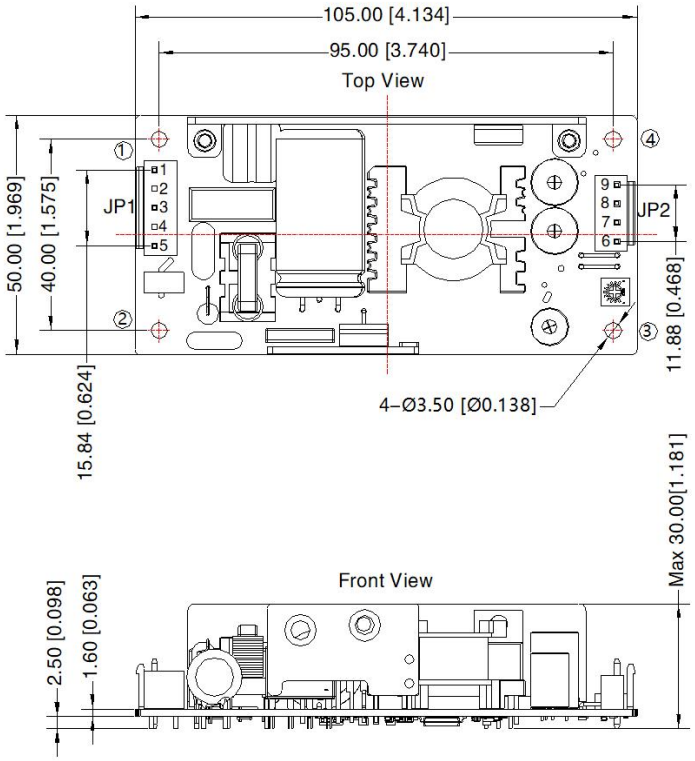
Part no.	C1	C2	TVS
AO30-03E	0.1μF/50V	100μF/50V	SMBJ7.0A
AO30-05E			SMBJ7.0A
AO30-12E			SMBJ20A
AO30-15E			SMBJ20A
AO30-24E			SMBJ30A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

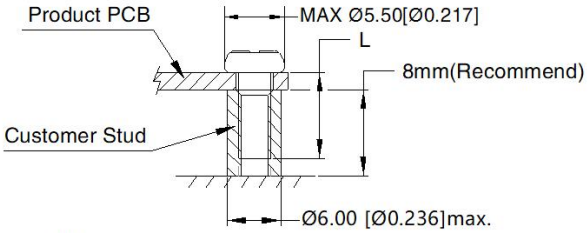
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Pin–Out			
Connectors	Pin	Mark	Client Connectors
JP1	1	PE	Housing: JST VHR Contact:JSTSVH–21T–P1.1 or equivalent
	2	No Pin	
	3	AC(N)	
	4	No Pin	
	5	AC(L)	
JP2	6	+Vo	Housing: JST VHR Contact: JSTSVH–21T–P1.1 or equivalent
	7	+Vo	
	8	–Vo	
	9	–Vo	

Position	Screw Spec.	L(Recommend)	Torque(max)
①—④	M3	6mm	0.4N・m



Note:
Unit: mm[inch]
General tolerances: ± 0.50[± 0.020]
The layout of the device is for reference only, please refer to the actual product

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
2. All index testing methods in this datasheet are based on our company corporate standards;
3. We can provide product customization service, please contact our technicians directly for specific information;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
6. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.