

ACEW30W-xxV



FEATURES

- Wide 176 - 528VAC and 248 - 746VDC input voltage range
- Working available with any two phases
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4000VAC
- Up to 88% efficiency
- Output short circuit, over-current, over-voltage protection
- EMI performance meets CISPR32 / EN55032 CLASSB
- 3 years warranty

DESCRIPTION

Compact 30W AC-DC Power Converter With Wide AC/DC Input, High Efficiency, And Reinforced Isolation.

MODEL NUMBERING

ACEW30W-xxV



SELECTION GUIDE

Product Model	DC Voltage (Vdc)	Rated Current (mA)	Rated Power (W)	Efficiency at 230VAC(%) Typ.	Max. Capacitive Load(uF)
ACEW30W-03V	3.3	6000	19.8	82	15000
ACEW30W-05V	5	6000	30	84	15000
ACEW30W-09V	9	3340	30.06	85	8200
ACEW30W-12V	12	2500	30	85	4700
ACEW30W-15V	15	2000	30	85	3300
ACEW30W-24V	24	1250	30	86	1500
ACEW30W-48V	48	625	30	88	820

INPUT

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	AC input	176	--	528	VAC
	DC input	248	--	746	VDC
Input Frequency		47	--	63	Hz
Input Current	230VAC	--	--	0.5	A
	380VAC	--	--	0.35	A
Inrush Current	230VAC	--	35	--	A
	380VAC	--	60	--	A
Leakage Current	480VAC/50Hz	0.5mA RMS Max.			
Recommended External Input Fuse		3.15A/500V, slow-blow, required			

Remarks: This product does not support hot plug

OUTPUT

Parameter	Operating Conditions		Min.	Typ.	Max.	Units
Output Voltage Accuracy	3.3V		--	±3.0	--	%
	5V/9V/12V/15V/24V/48V		--	±2.0	--	%
Line Regulation Rate	Full load	3.3V	--	±1.0	--	%
		5V/9V/12V/15V/24V/48V	--	±0.5	--	%
Load Regulation Rate	0% -100% load	3.3V	--	±2.0	--	%
		5V/9V/12V/15V/24V/48V	--	±1.0	--	%
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	80	150	mV
Stand-by Power Consumption	230VAC		--	--	0.3	W
	380VAC		--	--	0.5	W
Temperature Drift Coefficient			--	±0.02	--	%/°C
Short Circuit Protection			Hiccup, continuous, self-recover			

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Over-current Protection		$\geq 110\%I_o$, self-recover			
Over-voltage Protection	3.3/5VDC output	$\leq 7.5\text{VDC}$ (Clamp or hiccup)			
	9/12VDC output	$\leq 16\text{VDC}$ (Clamp or hiccup)			
	15VDC output	$\leq 25\text{VDC}$ (Clamp or hiccup)			
	24VDC output	$\leq 35\text{VDC}$ (Clamp or hiccup)			
	48VDC output	$\leq 60\text{VDC}$ (Clamp or hiccup)			
Minimum Load		0	--	--	%
Hold-up Time	230VAC input	--	45	--	ms
	380VAC input	--	120	--	ms

Note: * The "parallel cable" method is used for ripple and noise test.

GENERAL CHARACTERISTIC

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Electric Strength Test for 1min., leakage current $< 5\text{mA}$	4000	--	--	VAC
Working Temperature		-40	--	+85	$^{\circ}\text{C}$
Storage Temperature		-40	--	+85	$^{\circ}\text{C}$
Storage Humidity		--	--	95	%RH
Soldering Temperature	Wave-soldering	$260 \pm 5^{\circ}\text{C}$; time: 5 - 10s			
	Manual-welding	$360 \pm 10^{\circ}\text{C}$; time: 3 - 5s			
Switching Frequency		--	65	--	kHz
Power Derating	+55 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$	3	--	--	%/ $^{\circ}\text{C}$
	+70 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$	1.33	--	--	%/ $^{\circ}\text{C}$
Safety Standard		IEC/EN/BS EN 62368-1 safety approval; Design refer to IEC/EN61558-1			
Safety Class		CLASS II			
MTBF		MIL-HDBK-217F@25 $^{\circ}\text{C}$ > 950,000 h			

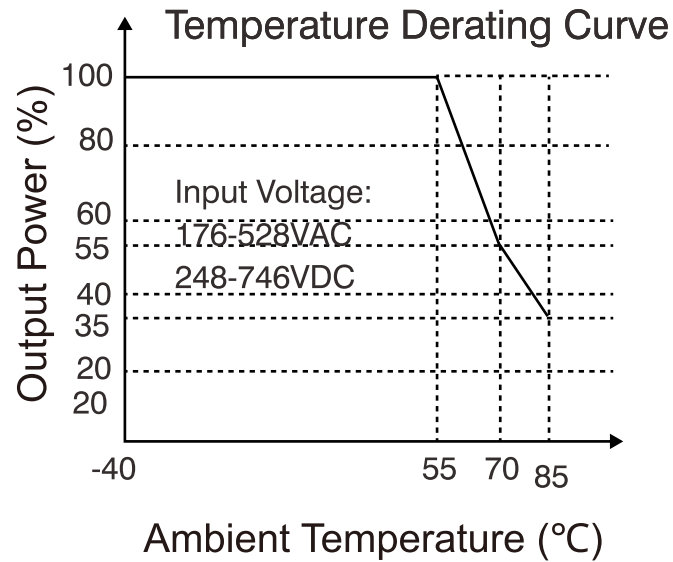
PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Black flame retardant and heat resistant plastic (UL94V-0)
Overall dimensions	70.00 × 48.00 × 30.00 mm
Weight	152g(Typ.)
Cooling mode	Natural air cooling

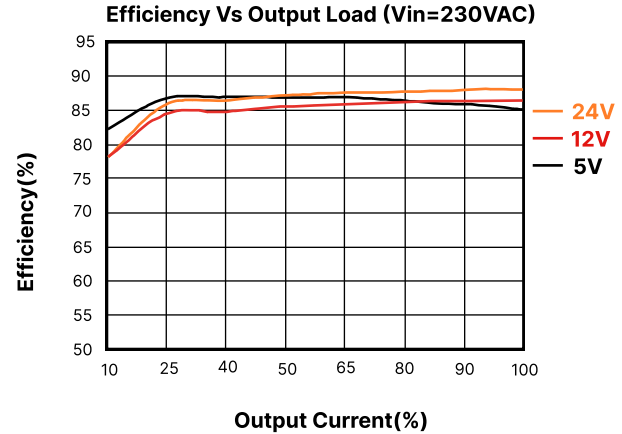
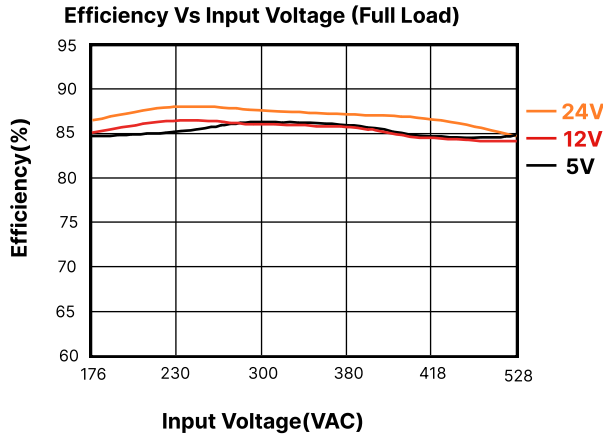
EMC CHARACTERISTICS

Parameter	Category	Content	
EMI	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV perf. Criteria A
		IEC/EN61000-4-4	±4KV (See Fig. 1 for typical application circuit, See Fig. 2, Fig. 3 for recommended circuit) perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ±2KV (See Fig.1 for typical application circuit) perf. Criteria A
		IEC/EN61000-4-5	line to line ±4KV (See Fig. 2 for recommended circuit) perf. Criteria A
		IEC/EN61000-4-5	line to line ±2KV/line to PE ±4KV (See Fig. 3 for recommended circuit) perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11	0%, 70% perf. Criteria B

PRODUCT CHARACTERISTIC CURVE



Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult RHENXV.



CIRCUIT DESIGN AND APPLICATION

1. Typical application

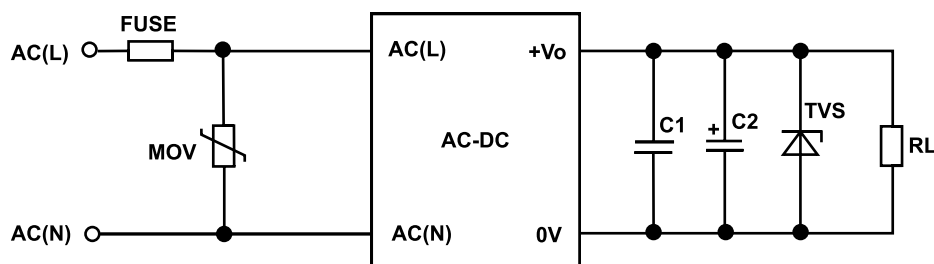


Fig. 1: Typical circuit diagram

Part No.	FUSE	MOV	C1	C2	TVS
ACEW30W-03V	3.15A/500V, slow-blow, required	S14K550	1uF/50V	330uF/25V	SMBJ7.0A
ACEW30W-05V				330uF/25V	SMBJ7.0A
ACEW30W-09V				220uF/25V	SMBJ12A
ACEW30W-12V				220uF/25V	SMBJ20A
ACEW30W-15V				220uF/35V	SMBJ30A
ACEW30W-24V				220uF/35V	SMBJ30A
ACEW30W-48V				10uF/63V	SMBJ64A

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 are commended suppressor diode to protect the application in case of a converter failure.

2. EMC compliance recommended circuit

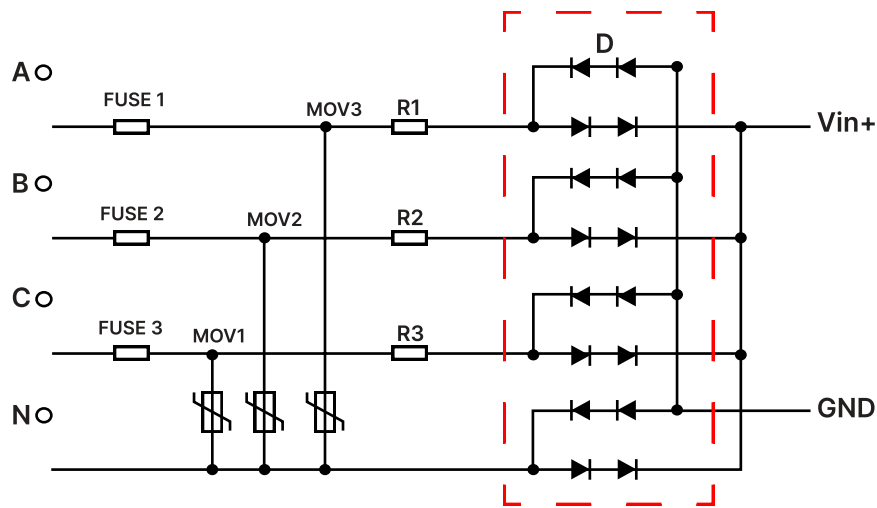


Fig. 2: Line to line ±4KV EMC application circuit with higher requirements

Component Type	Recommended Value
MOV1/MOV2/MOV3	S20K550
D	2A/1000V
R1, R2, R3	12Ω/5W (wire-wound resistor)
FUSE1/FUSE2/FUSE3	3.15A/500V, slow-blow, required

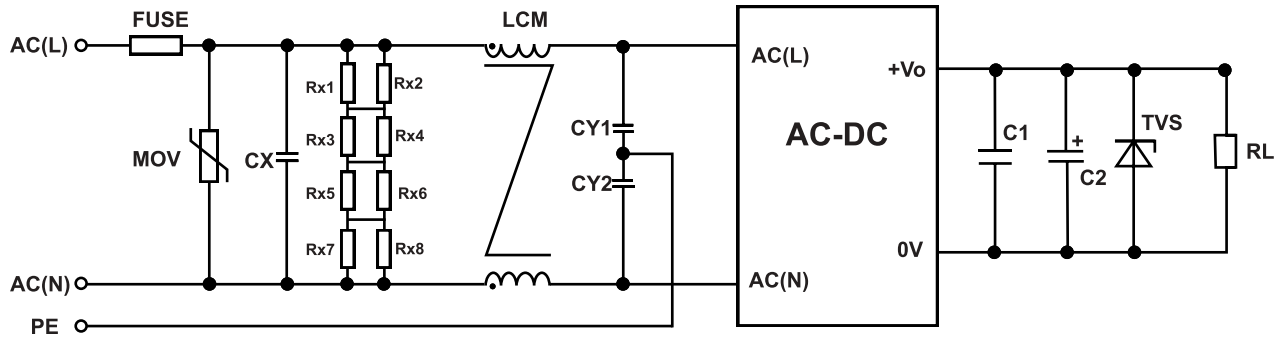
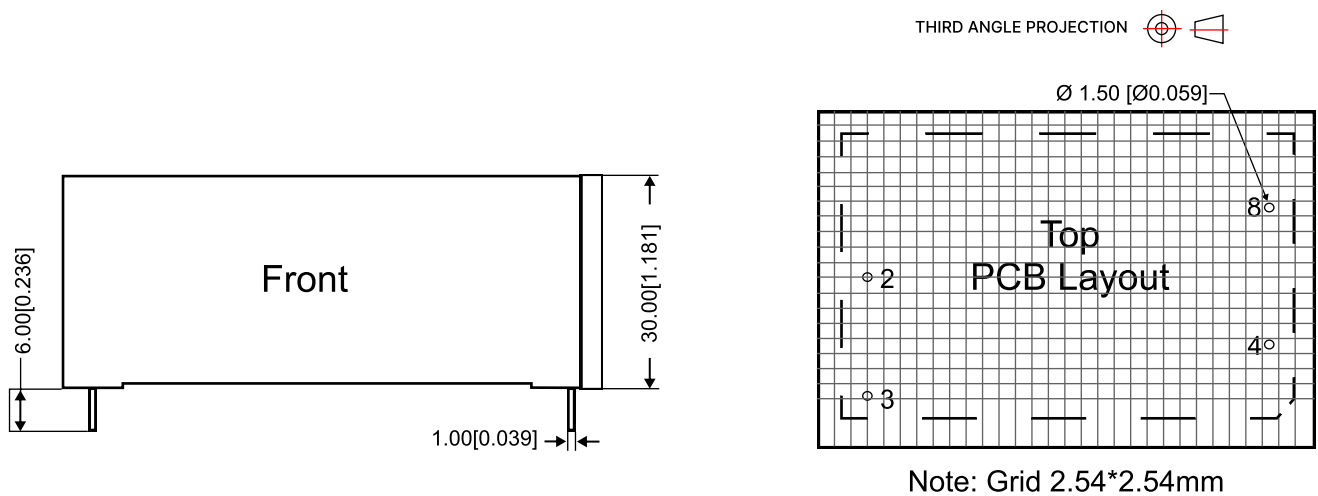


Fig. 3: Recommended circuit for class I equipment

Component Type	Recommended Value
FUSE	3.15A/500V, slow-blow, required
MOV	S14K550
CX	0.1uF/480VAC
CY1/CY2	1nF/400VAC
LCM	10mH

Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6/Rx7/Rx8 is the bleeder resistance of CX, and the recommended resistance value is <2.5MΩ.

DIMENSIONS AND INSTALLATION



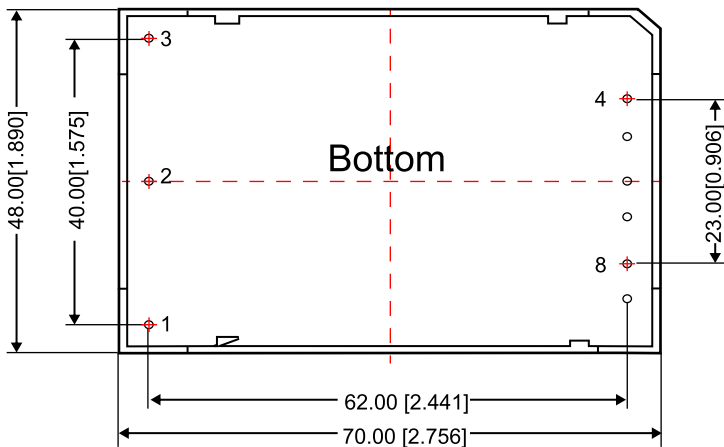


Table 3: Pin Function Table

Pin	Function
1	No Pin
2	AC (N)
3	AC (L)
4	+Vo
8	0V

Note:

Unit:mm [inch]

Pin diameter tolerances:±0.10[±0.004]

General Tolerances:±0.50[±0.020]

NOTE

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity <75% with nominal input voltage and rated output load;
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;