DESCRIPTIONS

10W，AC-DC Converter





RoHS

CE Report EN62368-1

UKCA Report BS EN62368-1

FEATURES

- Ultra-low, ultra-wide input voltage: 21.6-305VAC and 18-430VDC
- Operating ambient temperature range: -40℃ to +85℃
- High I/O isolation test voltage up to 4000VAC
- Up to 81% efficiency
- Output short circuit, over-current, over-voltage protection
- 5000m altitude application

APPLICATIONS

- Low voltage switch
- Industrial
- Power
- Instrumentation
- Communication
- Civil applications

Selection Guide

Certification	Part No.	Output Power (W)	Nominal Output Voltage and Current(Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	APD10-2WB-05	10.00	5V/2000mA	76	5000
	APD10-2WB-09	9.90	9V/1100mA	78	3600
	APD10-2WB-12	9.96	12V/830mA	80	2000
	APD10-2WB-15	10.05	15V/670mA	80	820
	APD10-2WB-24	10.08	24V/420mA	81	400

Note:1. Use suffix " D4" for Din-Rail mounting.

2.Note: The product picture is for reference only.For details, please refer to the actual product.

Specifications

Specifications	Item		Operating Conditions	Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range		AC input	21.6	--	305	VAC
			DC input	18	--	430	VDC
	Input Frequency			47	--	63	Hz
	Input Current		24VDC/24VAC	--	--	0.6	A
			115VAC	--	--	0.35	
			230VAC	--	--	0.25	
	Inrush Current		115VAC	--	25	--	
			230VAC	--	40	--	
	Leakage Current		277VAC/50Hz	0.1mA RMS Max.			
	Recommended External Input Fuse			2A/300V, slow-blow, required			
	Hot Plug			Unavailable			
Output Specifications	Output Voltage Accuracy			--	±2	--	%
	Line Regulation		Full load	--	±0.5	--	
	Load Regulation		0%-100% load	--	±1	--	
	Ripple & Noise*		20MHz bandwidth (peak-to-peak value)	--	--	100	mV
	Stand-by Power Consumption		230VAC	--	--	0.5	W
	Temperature Coefficient			--	±0.02	--	%/℃
	Short Circuit Protection			Hiccup, continuous, self-recovery			
	Over-current Protection			≥110% Io, self-recovery			
	Over-voltage Protection		5VDC Output	≤7.5VDC (Output voltage Hiccup)			
			9VDC Output	≤15VDC (Output voltage Hiccup)			
			12VDC/15VDC Output	≤20VDC (Output voltage Hiccup)			
			24VDC Output	≤35VDC (Output voltage Hiccup)			
	Minimum Load			0	--	--	%
	Hold-up Time		115VAC input	--	8	--	ms
			230VAC input	--	40	--	
General Specifications	Isolation	Input-output	Electric Strength Test for 1min., leakage current <5mA	4000	--	--	VAC
	Insulation Resistance		At 500VDC	100	--	--	MΩ
	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-40	--	+85	
	Storage Humidity			--	--	95	%RH
	Soldering Temperature		Wave-soldering	260 ± 5℃; time: 5 - 10s			
			Manual-welding	360 ± 10℃; time: 3 - 5s			

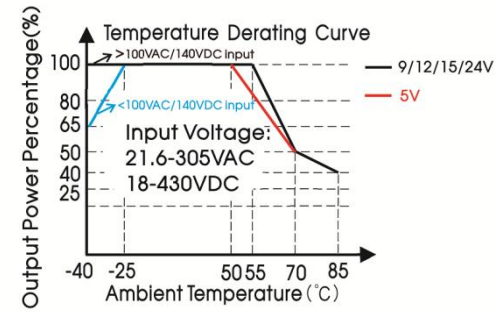
General Specifications	Power Derating	-40℃ to -25℃ (< 100VAC/140VDC input)		2.33	--	--	%/℃
		+50℃ to +70℃	5V	2.5	--	--	
		+55℃ to +70℃	9V/12V/15V/24V	3.33	--	--	
		+70℃ to +85℃		0.66	--	--	
		24VAC - 85VAC		0.66	--	--	%/VAC
		85VAC - 100VAC		1.33	--	--	
		18VDC - 24VDC		1.67	--	--	
		24VDC - 100VDC		0.39	--	--	
		100VDC - 140VDC		0.5	--	--	
		2000m - 5000m		6.67	--	--	%/Km
	Safety Class			CLASS II			
	MTBF	MIL-HDBK-217F@25℃		>300,000 h			
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)					
	Dimension	Horizontal package		55.00 x 45.00 x 21.00 mm			
		D4 Din-Rail mounting		96.10 x 54.00 x 34.10 mm			
	Weight	Horizontal package/D4 DIN-rail package		65g (Typ.)/155g (Typ.)			
	Cooling method	Free air convection					

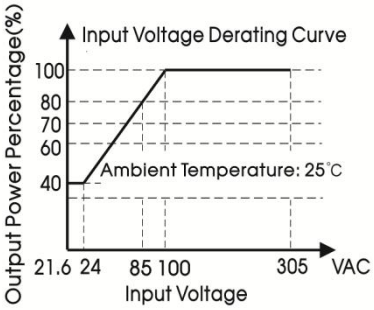
Note: *The "parallel cable" method is used for ripple and noise test.

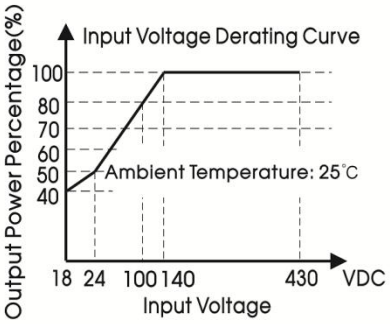
Electromagnetic Compatibility (EMC)

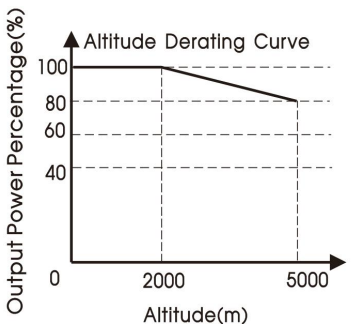
Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 CLASS A	
			CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
	Immunity (EMS)	RE	CISPR32/EN55032 CLASS A	
			CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
		ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV	perf. Criteria B
		RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
		EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
			IEC/EN61000-4-4 ±4KV (See Fig. 3 for recommended circuit)	perf. Criteria B
		Surge	IEC/EN61000-4-5 line to line ±1KV	perf. Criteria B
			IEC/EN61000-4-5 line to line ±1KV/line to PE ±1KV (See Fig. 3 for recommended circuit)	perf. Criteria B
		CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
		Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

Characteristic Curve

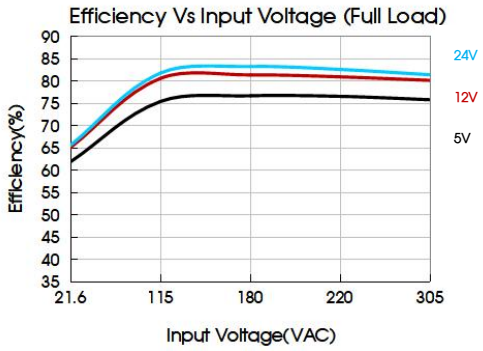


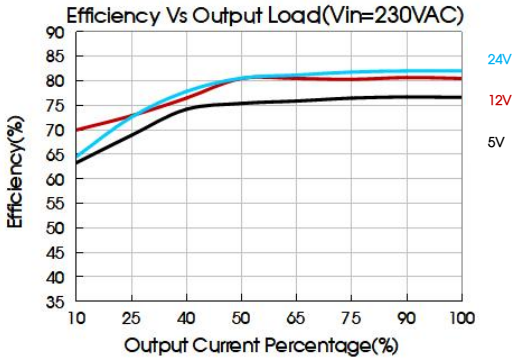






Note: ① With an AC input between 21.6-100VAC and a DC input between 18-140VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling.





Design Reference

1. Typical application

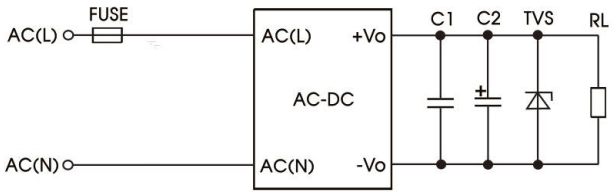


Fig. 1: Typical circuit diagram

Part No.	FUSE	C1	C2	TVS
APD10-2WB-05	2A/300V, slow-blow, required	1uF/50V	220uF/16V	SMBJ7.0A
APD10-2WB-09			100uF/25V	SMBJ12A
APD10-2WB-12			100uF/25V	SMBJ20A
APD10-2WB-15			100uF/25V	SMBJ20A
APD10-2WB-24			100uF/35V	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.

2. EMC compliance recommended circuit

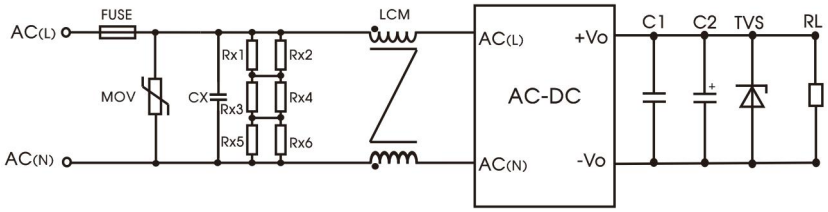


Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CX	0.33uF/310VAC
LCM	25uH/2A
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1MΩ/150VDC.	

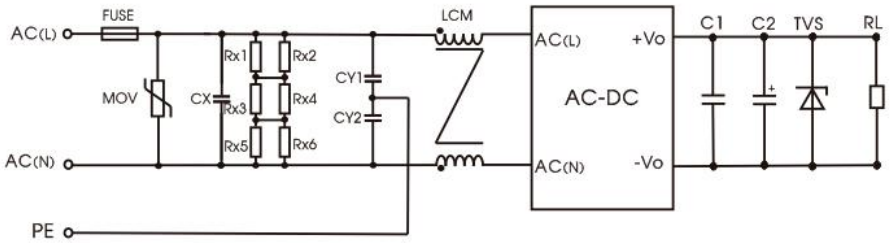
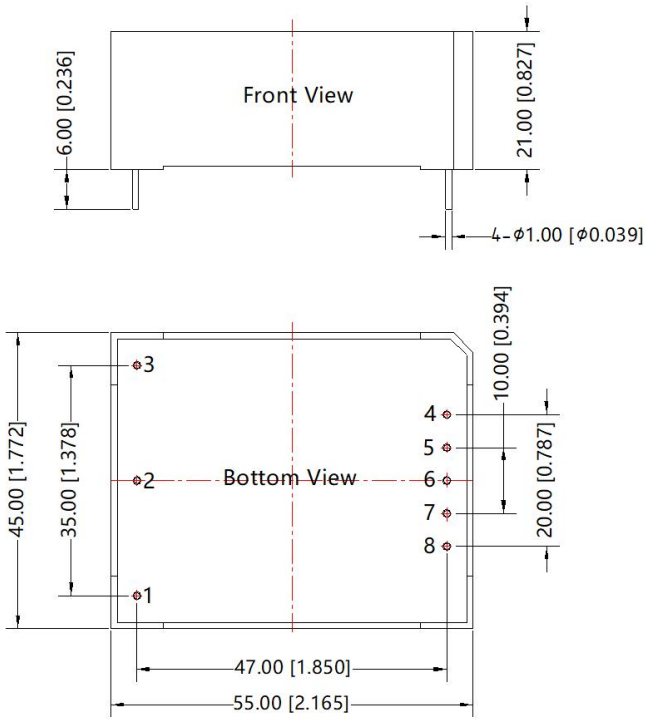


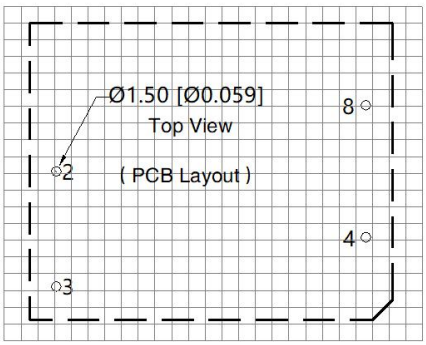
Fig. 3: Recommended circuit for class I equipment

Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1000pF/400VAC
CX	0.33uF/310VAC
LCM	25uH/2A
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1MΩ/150VDC.	

Dimensions and Recommended

THIRD ANGLE PROJECTION



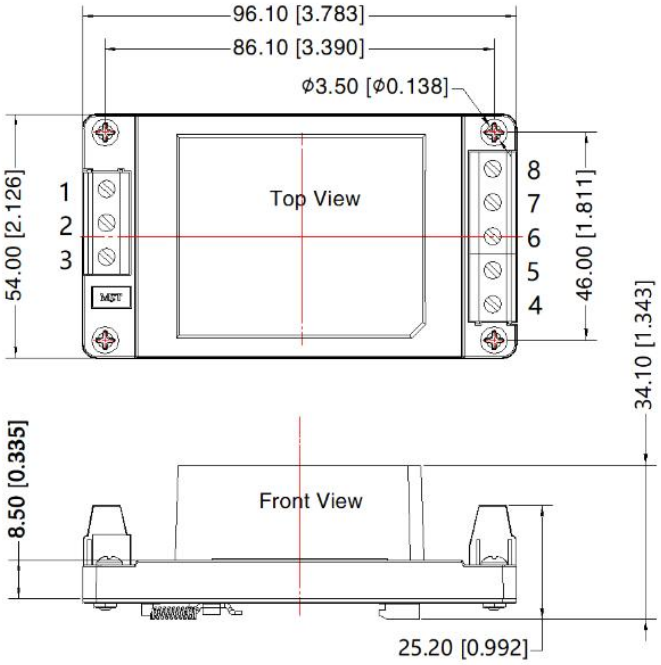


Note: grid 2.54*2.54mm

Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]

Pin-Out	
Pin	Mark
1	No Pin
2	AC(N)
3	AC(L)
4	+Vo
5	No Pin
6	No Pin
7	No Pin
8	-Vo

D4 Dimensions



THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
Unit: mm[inch]
Mounting rail: TS35,rail needs to connect safety ground
Wire range: 24–12AWG
Tightening torque: Max 0.4N · M
General tolerances: ± 1.00[± 0.039]

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℃, 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;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
7. 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.