AC/DC Converter
PVA75-27B13

MORNSUN®

75W isolated AC-DC converter with ultra-wide, ultra-high 85 - 900VAC input for coalmine

RoHS

FEATURES

- Specially designed for electrical equipment in coal mining industry
- Ultra-wide 85 - 900VAC input voltage range
- Industrial grade operating temperature: -25℃ to +70℃
- High I/O isolation test voltage of 4000VAC
- High reliability, high efficiency, low ripple & noise
- Output short circuit, over-current and over-voltage protection
- Immunity EFT: ±4KV perf, Surge: ±2KV perf. Criteria B

PVA75-27B13 is a special power supply designed for customers who provide electrical equipment for coal mining industry to meet the requirements of safety in providing power supply, easy mounting and technology innovation etc. It features ultra-wide input voltage range from 85 to 900VAC which covers 127/220/380/660VAC used in coal mining industry, high isolation voltage, excellent EMS performance, multiple protections and high efficiency. They are widely used in monitoring and security sectors of coal mining industry.

Selection Guide

Part No.	Output Power		Nominal Output Voltage and Current (Vo/Io)		Efficiency at 330VAC (%) Typ.	Capacitive Load (μF) Max.
	Vo	BAT	Vo/Io1	BAT/Io2		
PVA75-27B13	54W	20.5W	13.5V/0-4A	9-13.5V/1.5A	83	800

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		85	--	900	VAC
Input Current	127VAC	--	--	1.2	A
	330VAC	--	--	0.8	
	660VAC	--	--	0.5	
Inrush Current	330VAC	--	80	--	
	660VAC	--	140	--	
	900VAC	--	180	--	
External Input Fuse		3A/1000VAC, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range		--	±2	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	330VAC		--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	150	mV
Stand-by Power Consumption	900VAC, Io1=0, Io2=0		--	--	4	W
Temperature Coefficient			--	±0.02	--	%/℃
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			≥110%Io, hiccup, self-recovery			
Over-voltage Protection			≤18VDC (output voltage clamp or hiccup)			
Minimum Load			0	--	--	%
Start-up Delay Time			--	2	3	s
Hold-up Time**	Room temperature, Full load	330VAC input	--	40	--	ms
		660VAC input	--	80	--	

Note: * The "Tip and barrel method" is used for ripple and noise test, please refer to PV Converter Application Notes for specific information;
** Delay Time is tested over the full input voltage and the full output load range (The cooling-time between input power-off and power-on again is greater than 15s).

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric Strength Test for 1min., leakage current ≤3mA	4000	--	--	VAC
Insulation Resistance		500VDC	50	--	--	MΩ
Operating Temperature			-25	--	+70	℃
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Power Derating		-25℃ to -10℃	2.6	--	--	%/℃
		+50℃ to +70℃	2.0	--	--	
		85VAC-100VAC	2.0	--	--	%/VAC
		850VAC-900VAC	0.3	--	--	
		2000m - 5000m	10	--	--	%/Km
Altitude			--	--	5000	m
Switching Frequency			--	65	--	kHz
MTBF		MIL-HDBK-217F@25℃	≥300,000 h			

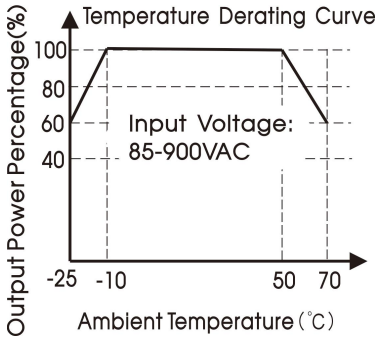
Mechanical Specifications

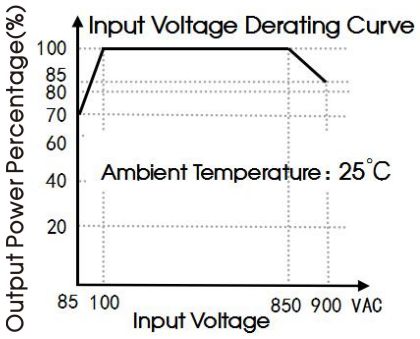
Dimensions	170.03 x 100.03 x 39.60mm
Weight	385g (Typ.)
Cooling Method	Free air convection

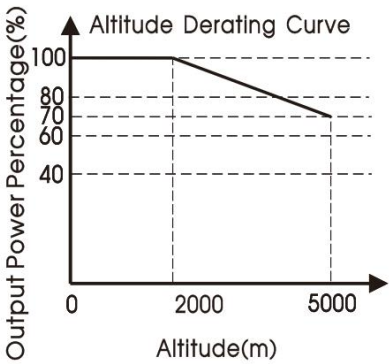
Electromagnetic Compatibility (EMC)

Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV	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	perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A

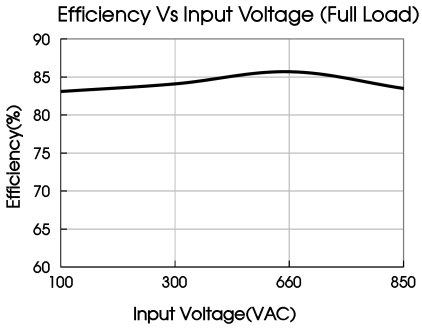
Product Characteristic Curve

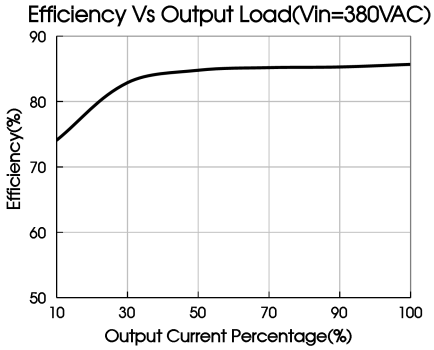






Note: ① With an input between 85 - 100VAC/850 -900VAC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.





Design Reference

1.Typical application

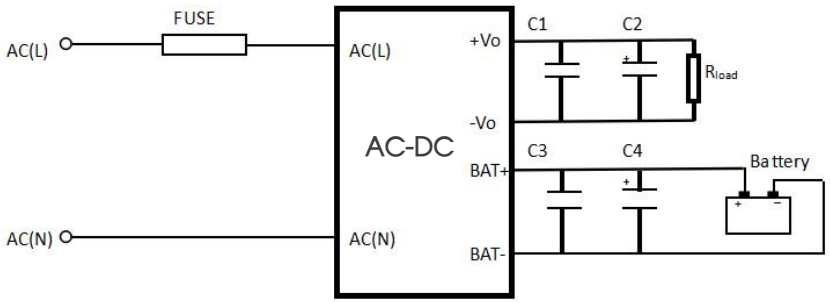


Fig. 1

Model	FUSE	C1/C3	C2/C4
PVA75-27B13	3A/1000VAC, required	1uF/25V	10uF/25V

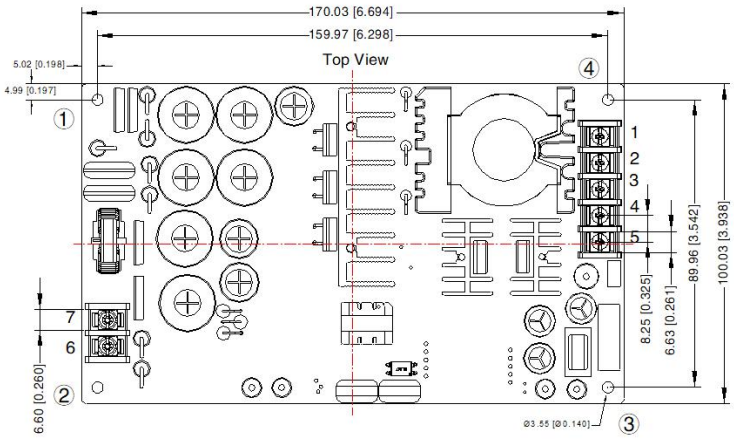
Output Filter Components:

1. 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.
2. R_{load}: the main output load, Battery: the auxiliary backup battery.

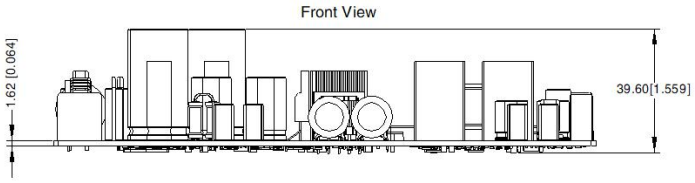
2. For more information Please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

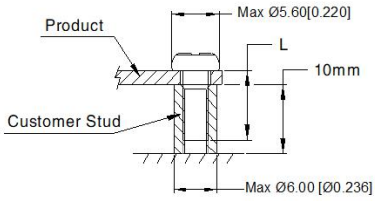
THIRD ANGLE PROJECTION



Pin–Out	
Pin	Mark
1	NC
2	BAT–
3	BAT+
4	–Vo
5	+Vo
6	AC(N)
7	AC(L)



Position	Screw Spec	L(Recommend)	Recommended Torque
① – ④	M3	6mm	0.4N · m ± 10%



Note:
Unit: mm[inch]
General tolerances: ± 1.00[± 0.039]
Input, Output connector wire range: 16–14AWG
Input, Output connector recommended torque: M3, 0.5N · m ± 10%
The layout of the device is for reference only, please refer to the actual product

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220464;
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.

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