

150W 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 - 850VAC input voltage range
- Industrial grade operating temperature: -25°C to +70°C
- High I/O isolation test voltage of 4000VAC
- High reliability, high efficiency, long lifespan
- Output short circuit, over-current and over-voltage protection
- Immunity, EFT/Surge: ±4KV perf. Criteria B
- Ultra-wide input Inrush Current: ≤25A

PVA150-27Bxx series 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 850VAC 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)	Output Voltage Adjustable Range(V) *	Efficiency at 330VAC (%) Typ.	Capacitive Load (μF) Max.
PVA150-27B24	150	24V/6.25A	21.6-26.4	87	1500
PVA150-27B28		28V/5.36A	25.2-30.8		1200
PVA150-27B35		35V/4.3A	31.5-38.5		800

Note: * During output voltage regulation, the load must be ≥10%.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		85	--	850	VAC
Input Current	127VAC	--	--	3.8	A
	330VAC	--	--	1.8	
	660VAC	--	--	1.0	
Inrush Current	660VAC	--	--	25	
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	All load range	--	±2	--	%	
Line Regulation	Rated load	--	±1	--		
Load Regulation	0% - 100% load	--	±1	--		
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	200	mV	
Temperature Coefficient		--	±0.02	--	%/°C	
Short Circuit Protection		Hiccup, continuous, self-recovery				
Over-current Protection		≥110%Io, hiccup, self-recovery				
Over-voltage Protection	24V output	≤35VDC (Output voltage clamp or hiccup or turn off)				
	28V output	≤40VDC (Output voltage clamp or hiccup or turn off)				
	35V output	≤45VDC (Output voltage clamp or hiccup or turn off)				
Minimum Load		0	--	--	%	
Hold-up Time	Room temperature, full load	330VAC input	--	50	--	ms
		660VAC input	--	300	--	
Start-up Delay Time		--	--	2	s	

Note: * The "Tip and barrel method" is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation	Input - PE	Electric Strength Test for 1min., leakage current $\leq 5\text{mA}$	3000	--	--	VAC
	Input - output	Electric Strength Test for 1min., leakage current $\leq 3\text{mA}$	4000	--	--	
	Output- PE	Electric Strength Test for 1min., leakage current $\leq 5\text{mA}$	1000	--	--	
Insulation Resistance	500VDC		$\geq 100 \times 10^6$			Ω
Operating Temperature			-25	--	+70	$^{\circ}\text{C}$
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Power Derating	-25 $^{\circ}\text{C}$ to -10 $^{\circ}\text{C}$		2.6	--	--	%/ $^{\circ}\text{C}$
	+50 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$		2.0	--	--	
	85VAC-100VAC		3.3	--	--	%/ VAC
	800VAC-900VAC		0.4	--	--	
Switching Frequency			--	65	--	kHz
MTBF			MIL-HDBK-217F@25 $^{\circ}\text{C}$ $\geq 300,000$ h			

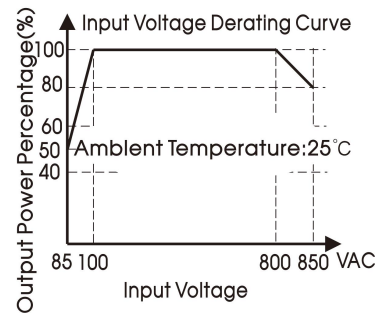
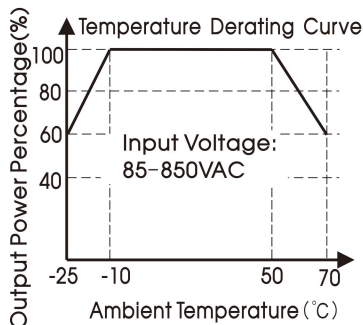
Mechanical Specifications

Case Material	metal
Dimensions	199.00 x 110.00 x 55.00mm
Weight	840g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 4\text{kV}$	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line $\pm 2\text{KV}$ /line to ground $\pm 4\text{KV}$	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A

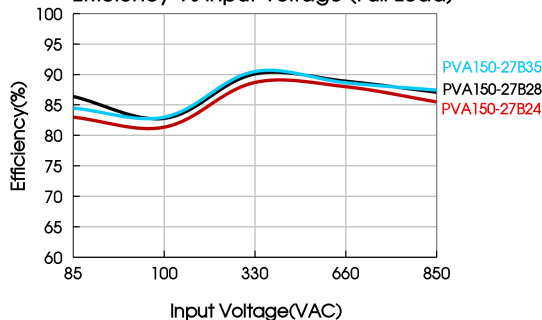
Product Characteristic Curve



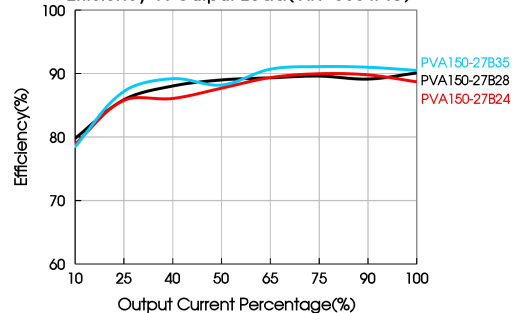
Note: ① With an input between 85 - 100VAC/800 - 850VAC, the output power must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Efficiency Vs Input Voltage (Full Load)

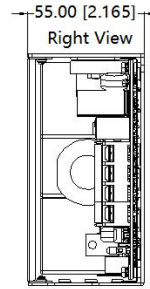
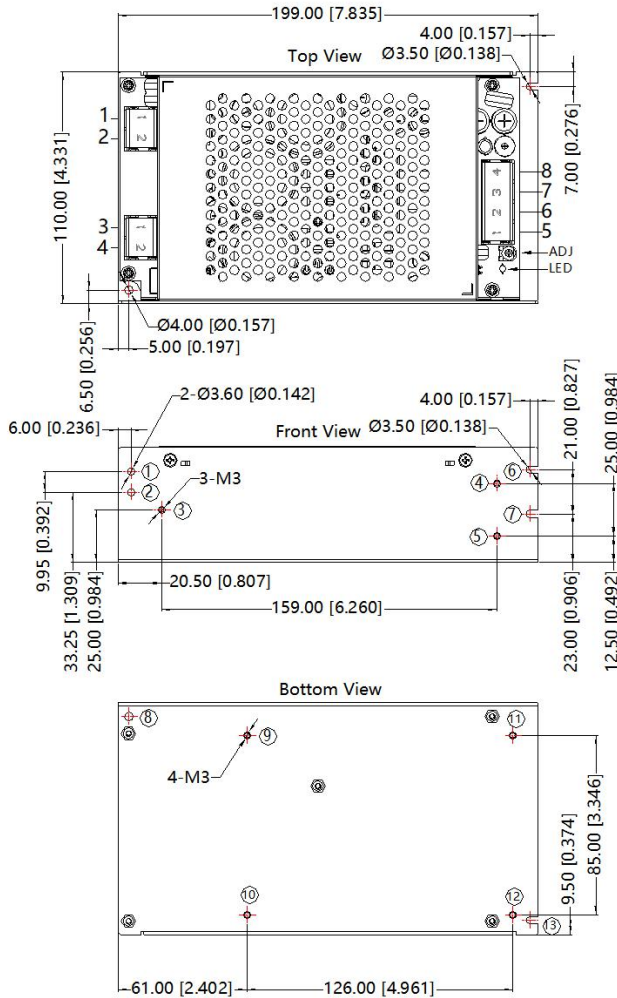


Efficiency Vs Output Load (Vin=330VAC)



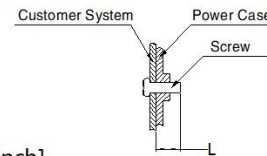
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



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

Position	Screw Spec.	L(max)	Torque(max)
③-⑤	M3	3mm	0.4N·m
⑨-⑫	M3	3mm	0.4N·m



Note:
 Unit: mm[inch]
 Wire range: 22-12AWG
 Connector torque: M3.5 , 0.8N.m
 General tolerances: ±1.00[±0.039]
 ①-③ any position must be connected to PE

- Note:
- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220110;
 - Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load;
 - All index testing methods in this datasheet are based on our company corporate standards;
 - 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";
 - Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
 Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com