

Open Frame



Size: 5in x 3in x 1.58in

Enclosed Case



Size: 5in x 3.41in x 1.97in

Enclosed Case with Top Fan



Size: 5in x 3.41in x 1.97in

Enclosed Case with Side Fan



Size: 5.83in x 3.15in x 1.60in

OPTIONS

- Package Type
-Open Frame or Enclosed
- Protection Type
-Class I or II
- Fan Type
-Top Fan or Side Fan
- Fan Speed
-Fixed or Variable
- Conformal Coating

FEATURES

- 85~264VAC Input Voltage
- Adjustable Output Voltage
- 3000VAC Reinforced Insulation
- Power Good
- Low Leakage Current
- Low Standby Power
- Remote ON/OFF
- 3 Years Warranty
- Conformal Coating Available
- Input Protection
- Over Voltage, Over Load, Over Temperature, and Short Circuit Protection
- Protection Class I or II
- RoHS Compliant
- REACH Compliant
- Open Frame or Enclosed Package Available
- Top or Side Fan Available with Fixed or Variable Fan Speed
- Designed to Meet IEC/EN/UL 60950-1, 62368-1 Safety Standards

APPLICATIONS

- Industrial
- Datacom
- IPC
- Automation
- Measurement
- Telecom

DESCRIPTION

The PSIAC450 series of AC/DC power supplies offers up to 450 watts of output power in an open frame or enclosed case. This series consists of adjustable single output models with a wide input voltage range of 85~264VAC. Features of this series include low leakage current and standby power, remote ON/OFF, top or side fan, and input protection as well as over voltage, over load, and short circuit protection. This series is both RoHS and REACH compliant, and it is designed to meet IEC/EN/UL 60950-1, 62368-1 safety standards. Please contact factory for ordering details.

MODEL SELECTION TABLE

Fan Connector Models

Model Number ⁽¹⁾	Input Voltage Range	Output Voltage	Output Current			Ripple & Noise	No Load Input Power	Max. Capacitive Load	Output Power			Efficiency
			Natural Convection	Conduction Cooling	Forced Air 21 CFM External Fan				Forced Air Cooling	Conduction Cooling	Natural Convection	
PSIAC450-12Sx (Y)	85~264VAC (120~370VDC)	12VDC	20.8A	23.3A	37.5A	250mVp-p	0.3W	31250µF	450W	280W	250W	91%
PSIAC450-15Sx (Y)		15VDC	16.6A	18.6A	30.0A	300mVp-p	0.5W	20000µF	450W	280W	250W	92%
PSIAC450-24Sx (Y)		24VDC	13.3A	14.55A	18.75A	240mVp-p	0.5W	7820µF	450W	350W	320W	93%
PSIAC450-28Sx (Y)		28VDC	11.4A	12.5A	16.1A	280mVp-p	0.5W	5750µF	450W	350W	320W	93%
PSIAC450-36Sx (Y)		36VDC	8.9A	9.72A	12.5A	360mVp-p	0.5W	3500µF	450W	350W	320W	93%
PSIAC450-48Sx (Y)		48VDC	6.65A	7.3A	9.4A	480mVp-p	0.5W	1960µF	450W	350W	320W	94%
PSIAC450-53Sx (Y)		53VDC	6.05A	6.6A	8.55A	530mVp-p	0.5W	1600µF	450W	350W	320W	94%

MODEL SELECTION TABLE

Top & Side Fan Models

Model Number ⁽²⁾	Input Voltage Range	Output Voltage	Output Current	Ripple & Noise	No Load Input Power	Max. Capacitive Load	Output Power	Efficiency
			Forced Air Internal Fan				Forced Air Cooling	
PSIAC450-12SEz	85~264VAC (120~370VDC)	12VDC	37.5A	250mVp-p	0.4W	31250μF	450W	91%
PSIAC450-15SEz		15VDC	30A	300mVp-p	0.8W	20000μF		92%
PSIAC450-24SEz		24VDC	18.75A	240mVp-p	0.8W	7820μF		93%
PSIAC450-28SEz		28VDC	16.1A	280mVp-p	0.8W	5750μF		93%
PSIAC450-36SEz		36VDC	12.5A	360mVp-p	0.8W	3500μF		93%
PSIAC450-48SEz		48VDC	9.4A	480mVp-p	0.8W	1960μF		94%
PSIAC450-53SEz		53VDC	8.55A	530mVp-p	0.8W	1600μF		94%

SPECIFICATIONS

All specifications are based on 25°C, 230VAC Input, and Full Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION		TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS							
Input Voltage Range	AC Input		85		264	VAC	
	DC Input		120		370	VDC	
Input Frequency	AC Input		47		63	Hz	
Input Current	100VAC, Full Load				5.8	A	
	240VAC, Full Load				2.4		
No Load Input Power	230VAC		See Table				
Leakage Current	264VAC				300	µA	
Power Factor			0.95				
Input Inrush Current	230VAC				100	A	
Input Protection	Internal Fuse In Line and Neutral		T6.3A/250VAC				
OUTPUT SPECIFICATIONS							
Output Voltage			See Table				
Initial Set Voltage Accuracy	230VAC, Full Load		-1.0		+1.0	%	
Line Regulation	Low Line to High Line at Full Load		-0.2		+0.2	%	
Load Regulation	No Load to Full Load		-0.5		+0.5	%	
	10% Load to 90% Load		-0.4		+0.4		
Voltage Adjustability	Maximum output deviation is inclusive of remote sense		-8		+8	%	
Output Power ⁽³⁾	Forced Air Cooling	All			450	Watts	
	Conduction Cooling, 230VAC	12VDC Output & 15VDC Output			280		
		Other Models			350		
	Natural Convection, 230VAC	12VDC Output & 15VDC Output			250		
		Other Models			320		
Output Current			See Table				
Minimum Load				0		%	
Ripple & Noise (20MHz bandwidth)	With a 1µF/25V 1206 X7R MLCC	12VDC Output Models		250		mVp-p	
		15VDC Output Models		300			
	With a 1µF/50V 1206 X7R MLCC	24VDC Output Models		240			
		28VDC Output Models		280			
		25VDC Output Models		360			
		48VDC Output Models		480			
With a 0.1µF/100V 1206 X7R MLCC	53VDC Output Models		530				
Transient Response	Load step from 50~75% change at 2.5A/µs	Peak Deviation		3		%Vout	
		Recovery Time		600		µs	
Start-Up Time					2000	ms	
Rise Time				30		ms	
Hold Up Time	115VAC, Full Load			14		ms	
Temperature Coefficient			-0.02		+0.02	%/°C	
Standby Power Supply	Always present when AC supplied		5V at 2000mA				
Fan Power Supply	Fixed fan speed function		12V at 500mA				
REMOTE ON/OFF							
Main Output Remote Control	Positive Logic Referenced to “-Control” *Standby power always present	Main Power ON	Open or 3~12VDC				
		Main Power OFF	Short or 0~1.2VDC				
		Input Current of Control	-0.5		1	mA	
PROTECTION							
Short Circuit Protection	Protection Level 1 (nominal)		Continuous, Automatic Recovery				
	Protection Level 2 (instantaneous high current)		Latch				
Over Load Protection	% of maximum Iout rated; Hiccup Mode		115		155	%	
Over Voltage Protection	% of Vout(nom); Latch mode		110		135	%	
Over Temperature Protection	Internal Thermistor; Latch Mode		110		125	°C	
ENVIRONMENTAL SPECIFICATIONS							
Operating Temperature	With derating	Fan Connector Models	-40		+85	°C	
		Top & Side Models	-40		+80		
Storage Temperature	Fan Connector Models Top & Side Models		-40		+85	°C	
			-40		+80		
Operating Altitude	With derating				5000	m	
Relative Humidity	Non-Condensing		5		95	%RH	
Shock			IEC60068-2-27				
Vibration			IEC60068-2-6				
MTBF	MIL-HDBK-217F Ta=25°C, Full Load			409,300		Hours	

SPECIFICATIONS

All specifications are based on 25°C, 230VAC Input, and Full Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
GENERAL SPECIFICATIONS						
Efficiency			See Table			
Switching Frequency	230VAC, Full Load	15VDC Output Models		75		kHz
		Other Models		65		
Isolation Voltage	1 minutes (Reinforced Insulation)	Input to Output	3000			VAC
		Input (Output) to F.G.	2000			
Isolation Resistance	500VDC		0.1			GΩ
Main Output Power Good Signal	Referenced to “GND”	Power Good	Low			
		Power Off	Open Collector			
PHYSICAL SPECIFICATIONS						
Weight	Fan Connector Models	Open Frame	16.29oz (462g)			
		Enclosed Case	17.77oz (504g)			
	Top Fan Models		18.48oz (524g)			
	Side Fan Models		19.47oz (552g)			
Dimensions (L x W x H)	Fan Connector Models	Open Frame	5in x 3in x 1.58in (127mm x 76.2mm x 40.1mm)			
		Enclosed Case	5in x 3.41in x 1.97in (127mm x 86.6mm x 50mm)			
	Top Fan Models		5in x 3.41in x 1.97in (127mm x 86.6mm x 50mm)			
	Side Fan Models		5.83in x 3.15in x 1.60in (148.2mm x 80mm x 40.6mm)			
SAFETY CHARACTERISTICS						
Safety Approvals	IEC/EN/UL 60950-1, 62368-1 ⁽⁵⁾		CB: UL (Demko)			
EMI ⁽⁴⁾	EN55011, EN55032, and FCC Part 15	Conducted	Class B			
		Radiated	Class A			
Harmonic Currents	EN61000-3-2	Full Load	Class A and D			
Voltage Flicker	EN61000-3-3					
ESD	EN61000-4-2	Air ±15kV and Contact ±8kV	Perf. Criteria A			
Radiated Immunity	EN61000-4-3	3V/m	Perf. Criteria A			
Fast Transient	EN61000-4-4	±2kV	Perf. Criteria A			
Surge	EN61000-4-5	DM ±1kV and CM ±2kV	Perf. Criteria A			
Conducted Immunity	EN61000-4-6	20 Vr.m.s	Perf. Criteria A			
Power Frequency Magnetic Field	EN61000-4-8	30A/m	Perf. Criteria A			
Dip and Interruptions	EN61000-4-11 and EN55024					
Protection Class	No Suffix		Class I			
	"B" Suffix		Class II			

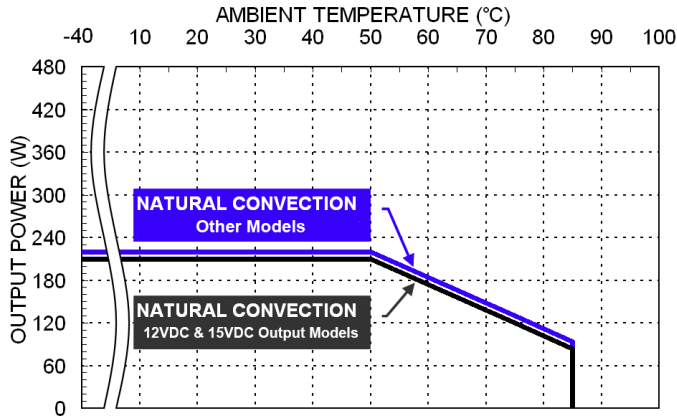
NOTES

- "x" in fan connector model numbers indicate either open frame or enclosed frame. "x" can either be "A" for open frame or "E" for enclosed case. No suffix on the model number indicates fan connector with fixed fan speed control. Add "Y" suffix to model number to indicate fan connector with variable fan speed control. Ex. PSIAC450-12SEY
- "z" in top & side fan model numbers indicate fan type options. The fan options are as follows. Please note that top and side fan options are available for **enclosed models only**.
F1: Fixed Fan Speed, Top Fan
F2: Fixed Fan Speed, Side Fan
Y1: Variable Fan Speed, Top Fan
Y2: Variable Fan Speed, Side Fan
- Please refer to the derating curve for detailed rating.
- For optimum EMI performance, the power supply should be mounted to a metal plate grounded to all 4 mounting holes of the power supply. To comply with safety standards, this plate must be properly grounded to protective earth.
- This product is Listed to applicable standards and requirements by UL.

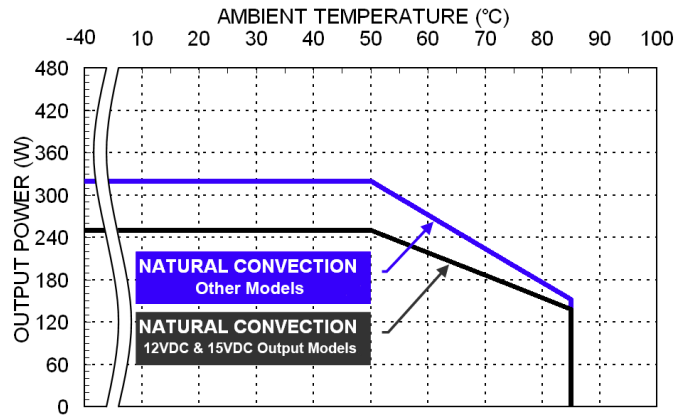
*Due to advances in technology, specifications subject to change without notice.

DERATING CURVES

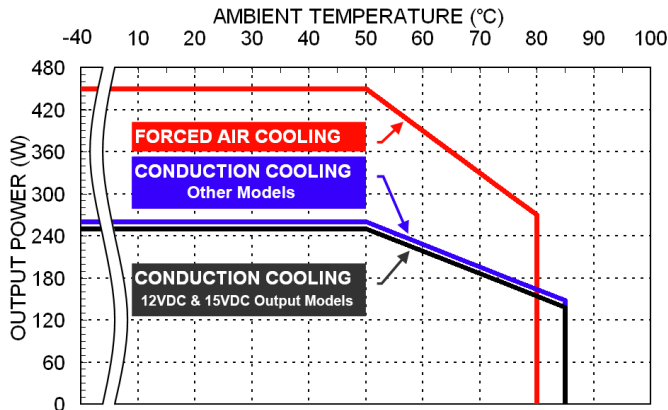
Derating Curve vs. Ambient Temperature
Vin=115VAC & Natural Convection



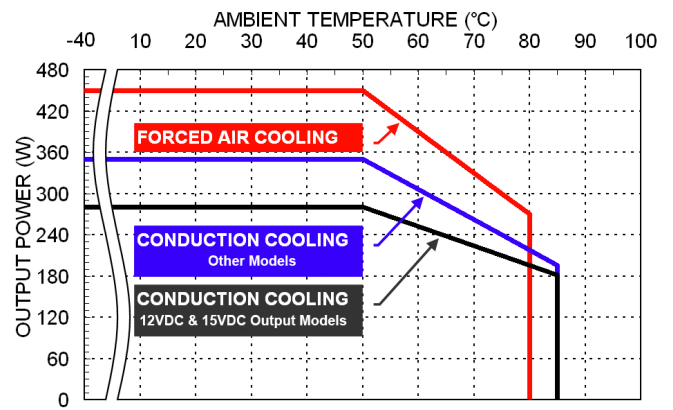
Derating Curve vs. Ambient Temperature
Vin=230VAC & Natural Convection



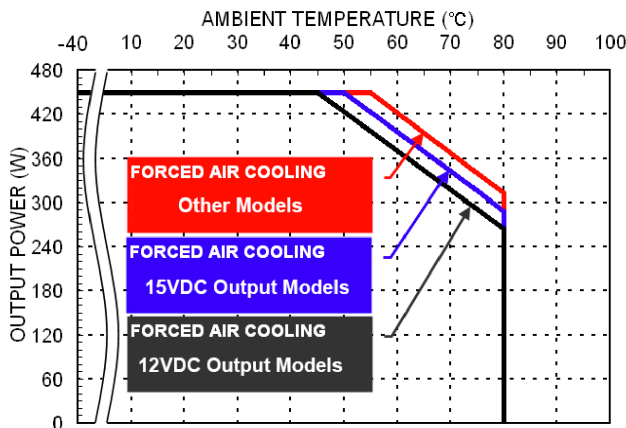
Derating Curve vs. Ambient Temperature
Vin=115VAC and Conduction Cooling tested by 43x 24.8x0.12cm plate
Forced Air Cooling with 21CFM (External Fan)



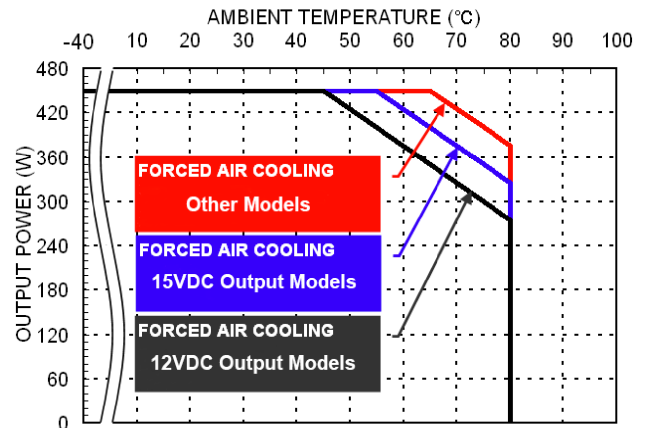
Derating Curve vs. Ambient Temperature
Vin=230VAC and Conduction Cooling tested by 43x24.8x0.12 plate
Forced Air Cooling with 21CFM (External Fan)



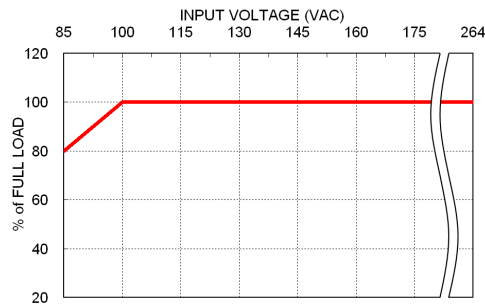
Derating Curve vs. Ambient Temperature
Vin=115VAC and Forced Air Cooling (Internal Fan)



Derating Curve vs. Ambient Temperature
Vin=230VAC and Forced Air Cooling (Internal Fan)

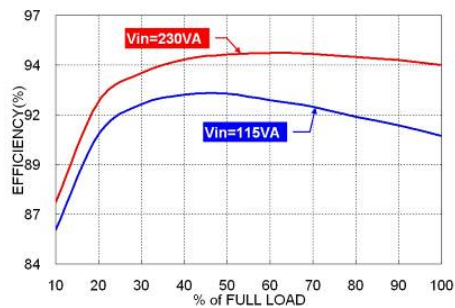


Derating Curve vs. Input Voltage

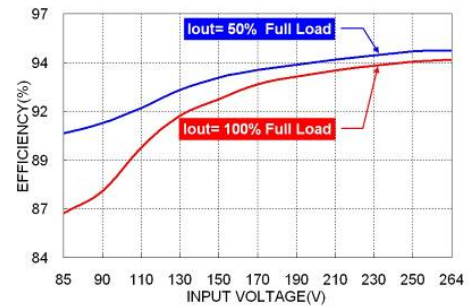


EFFICIENCY GRAPHS

Efficiency vs. Output Load
24VDC Output Models with Forced Air Cooling

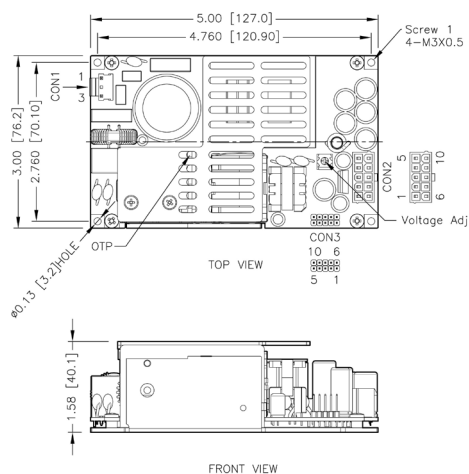


Efficiency vs. Input Voltage
24VDC Output Models with Forced Air Cooling



MECHANICAL DRAWINGS

Fan Connector Models-Open Frame



CONNECTORS

CON1-Input Connector

Pin 1	Line
Pin 3	Neutral

Mates with

Molex housing: **09-50-8031**

Molex crimp terminals: **2478,6838,45570**

CON2-Output Connector

Pin 1,2,3,4,5	+Vout
Pin 6,7,8,9,10	-Vout

Mates with

Molex housing: **39-01-2105**

Molex crimp terminals: **5555,45750**

CON3-Aux Connector

Pin 1	+Fan	Pin 6	-Fan (GND)
Pin 2	+V Sense	Pin 7	-V Sense
Pin 3	+Control	Pin 8	-Control (GND)
Pin 4	+PG	Pin 9	No Pin
Pin 5	+Standby	Pin 10	-Standby (GND)

Mates with

Molex housing: **90143-0008**

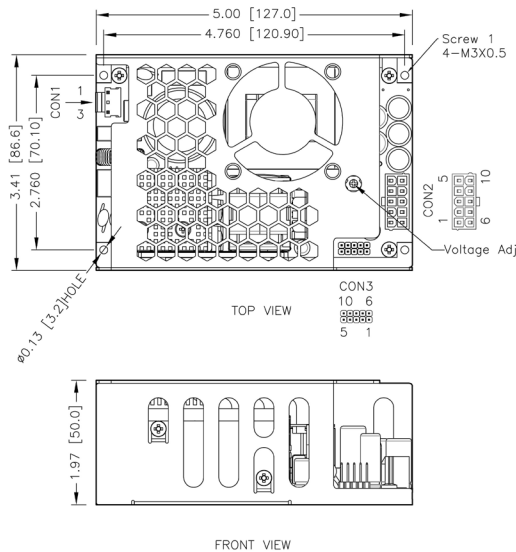
Molex crimp terminals: **90119**

*Either one of four screw holes can be considered as PE connection for CLASS I application

Notes

- All dimensions in inch [mm]
- Tolerance: x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
- Screw 1 locked torque: MAX 5.2kgf-cm/0.51N.m

Fan Connector Models-Enclosed Case



*Either one of the four screw holes can be considered as PE connection for CLASS I application

Notes:

1. All dimensions in inch [mm]
2. Tolerance: $x.xx \pm 0.02$ [$x.x \pm 0.5$]
 $x.xxx \pm 0.01$ [$x.xx \pm 0.25$]
3. Screw locked torque: MAX 5.2kgf-cm/0.51N.m

CONNECTORS

CON1-Input Connector

Pin 1	Line
Pin 3	Neutral

Mates with

Molex housing: **09-50-8031**
Molex crimp terminals: **2478,6838,45570**

CON2-Output Connector

Pin 1,2,3,4,5	+Vout
Pin 6,7,8,9,10	-Vout

Mates with

Molex housing: **39-01-2105**
Molex crimp terminals: **5556,45750**

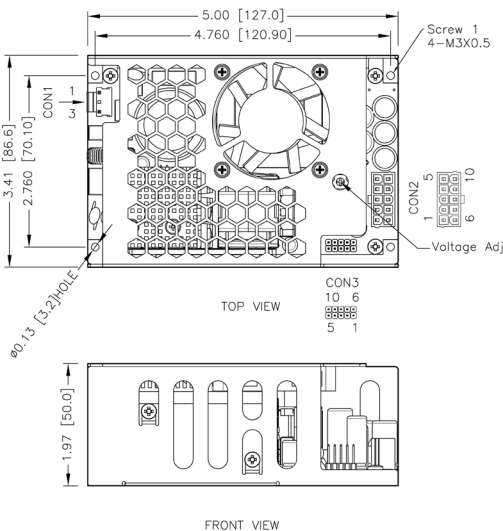
CON3-Aux Connector

Pin 1	+Fan	Pin 6	-Fan (GND)
Pin 2	+V Sense	Pin 7	-V Sense
Pin 3	+Control	Pin 8	-Control (GND)
Pin 4	+PG	Pin 9	No Pin
Pin 5	+Standby	Pin 10	-Standby (GND)

Mates with

Molex housing: **90143-0008**
Molex crimp terminals: **90119**

Top Fan Models



*Either one of four screw holes can be considered as PE connection for CLASS I application

Notes:

1. All dimensions in inch [mm]
2. Tolerance: $x.xx \pm 0.02$ [$x.x \pm 0.5$]
 $x.xxx \pm 0.01$ [$x.xx \pm 0.25$]
3. Screw 1 locked torque: Max 5.2kgf-cm/0.51N.m
4. FAN dimensions: 50x50x10mm; Air flow: 11.4 CFM
5. The fan's life is shorter than power supply and has only 2 year warranty.

CONNECTORS

CON1-Input Connector

Pin 1	Line
Pin 3	Neutral

Mates with

Molex housing: **09-50-8031**
Molex crimp terminals: **2478,6838,45570**

CON2-Output Connector

Pin 1,2,3,4,5	+Vout
Pin 6,7,8,9,10	-Vout

Mates with

Molex housing: **39-01-2105**
Molex crimp terminals: **5556,45750**

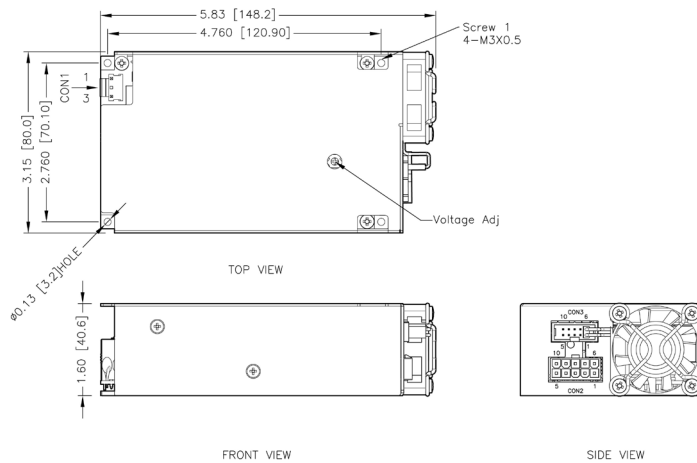
CON3-Aux Connector

Pin 1	+Fan	Pin 6	-Fan (GND)
Pin 2	+V Sense	Pin 7	-V Sense
Pin 3	+Control	Pin 8	-Control (GND)
Pin 4	+PG	Pin 9	No Pin
Pin 5	+Standby	Pin 10	-Standby (GND)

Mates with

Molex housing: **90143-0008**
Molex crimp terminals: **90119**

Side Fan Models



CONNECTORS

CON1-Input Connector

Pin 1	Line
Pin 3	Neutral

Mates with

Molex housing: **09-50-8031**

Molex crimp terminals: **2478,6838,45570**

CON2-Output Connector

Pin 1,2,3,4,5	-Vout
Pin 6,7,8,9,10	+Vout

Mates with

Molex housing: **39-01-2105**

Molex crimp terminals: **5556,45750**

CON3-Aux Connector

Pin 1	+Fan	Pin 6	-Fan (GND)
Pin 2	+V Sense	Pin 7	-V Sense
Pin 3	+Control	Pin 8	-Control (GND)
Pin 4	+PG	Pin 9	No Pin
Pin 5	+Standby	Pin 10	-Standby (GND)

Mates with

Molex housing: **90143-0008**

Molex crimp terminals: **90119**

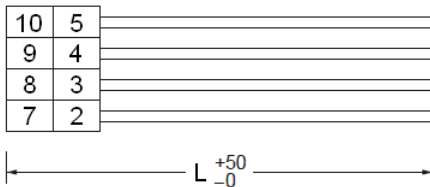
*Either one of four screw holes can be considered as PE connection for CLASS I application.

Notes:

1. All dimensions in inch [mm]
2. Tolerance: x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
3. Screw 1 locked torque: MAX 5.2kgf-cm/0.51N.m
4. FAN dimension: 40x40x10mm; Airflow: 9.5 CFM
5. The fan's life is shorter than power supply and has only 2 years warranty

OPTIONAL PARTS

7N-0265-F:

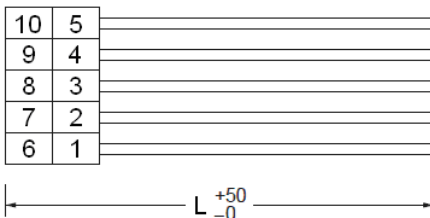


CON3 Housing

Pin 2	+V Sense	gray	26AWG
Pin 3	+Control	orange	26AWG
Pin 4	+PG	blue	26AWG
Pin 5	+Standby	red	22AWG
Pin 7	-V Sense	green	26AWG
Pin 8	-Control (GND)	brown	26AWG
Pin 9	No wire	---	---
Pin10	-Standby (GND)	black	22AWG

Length (L): 500mm typical

7N-0266-F:



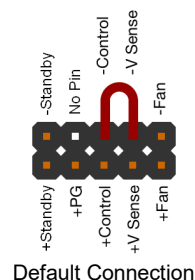
CON3 Housing

Pin 1	+Fan	yellow	26AWG
Pin 2	+V Sense	gray	26AWG
Pin 3	+Control	orange	26AWG
Pin 4	+PG	blue	26AWG
Pin 5	+Standby	red	22AWG
Pin 6	-Fan (GND)	brown	26AWG
Pin 7	-V Sense	green	26AWG
Pin 8	-Control (GND)	brown	26AWG
Pin 9	No wire	---	---
Pin10	-Standby (GND)	black	22AWG

Length (L): 500mm typical

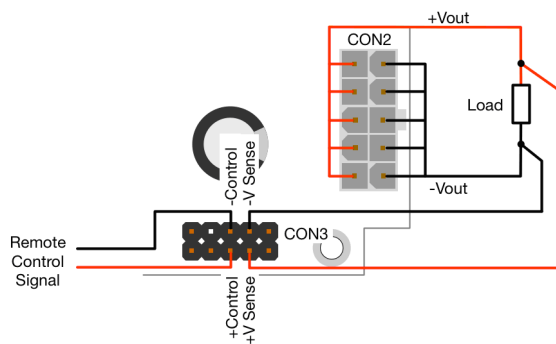
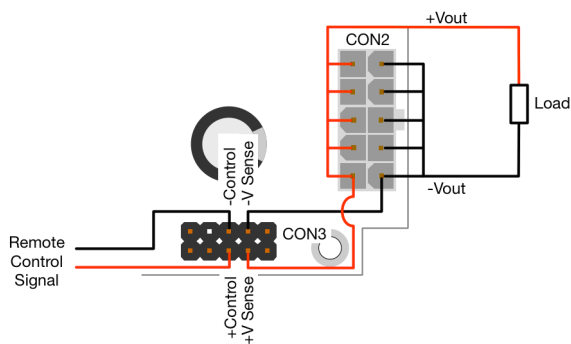
OUTPUT SENSING

Output sensing function can be applied via connecting wires on CON3. Initially, Pin 7 and Pin 8 are shorted by a jumper set as default, shown on the right.



But if remote control function is to be used, the jumper on Pin 7 and Pin 8 should be removed. Since sense pins should not be left open for module stability, please follow connections shown below.

Recommended output sensing connections



MODEL NUMBER SETUP

PSIAC	450	-	12	S	A	Y	B	R
Series Name	Output Power		Output Voltage	Output Quantity	Package Type	Fan Option (See Note 1)	Protection Class	Conformal Coating
			12: 12VDC	S: Single	A: Open Frame	Blank: Fan Connector with Fixed Fan Speed Control Y: Variable Fan Speed Control F1: Top Fan, fixed fan speed F2: Side Fan, fixed fan speed Y1: Top Fan, variable fan speed Y2: Side fan, variable fan speed	Blank: Class I B: Class II	Blank: None R: Conformal Coating
			15: 15VDC		E: Enclosed Case			
			24: 24VDC					
			28: 28VDC					
			36: 36VDC					
			48: 48VDC					
			53: 53VDC					

NOTES

1. Please note, top and side fan options are only available for enclosed case models.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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