

## Wall Industries, Inc.

### PSAK1500 SERIES

90~264VAC (127~370VDC) Input  
1500 Watts Output Power  
Single Output, Active PFC  
AC/DC Switching Power Supplies



#### FEATURES

- Single Output
- Internal Ball Bearing Fan
- RoHS Compliant
- Universal AC Input
- Active PFC
- Programmable Output Voltage (30% ~ 105%)
- Programmable Output Current (40% ~ 105%)
- High Efficiency up to 90%
- +5V / 0.5A Auxiliary Output
- Intelligent LED Indicators
- 1.5U Profile, High Power Density 10.8W/in<sup>3</sup>
- Forced Current Sharing at Parallel Operation
- Power OK Signal (Power Good, Logic Low)
- Remote ON/OFF, Remote Sense Function
- Protection: Over Voltage, Over Load, Over Temperature, Short Circuit Protection, and Fan Failure

#### DESCRIPTION

The PSAK1500 series of AC/DC switching power supplies offers 1500 Watts of output power in a 11.02" x 5.00" x 2.50" enclosed case. This series has a universal input voltage range of 90~264VAC (127~370VDC) and single outputs of 12, 15, 24, 27, and 48VDC. Standard features include high efficiency up to 90%, active power-factor-correction, programmable output voltage and output current, remote on/off, remote sense, power OK signal, and internal ball bearing fan. This series also has over voltage, short circuit, over load, and over temperature protection. All models are RoHS compliant and have UL/cUL, TUV, and CE safety approvals.

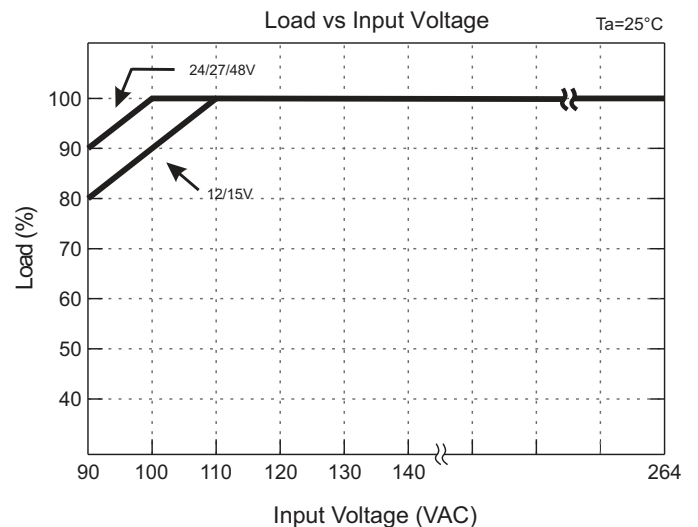
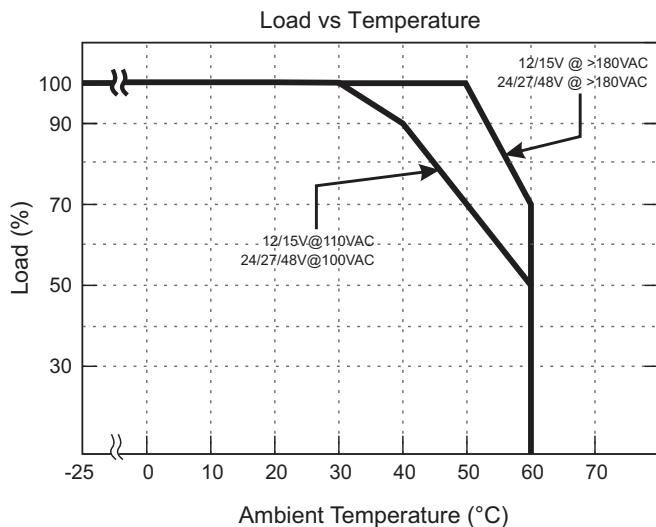
<b>SPECIFICATIONS: PSAK1500 Series</b>		
All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted. We reserve the right to change specifications based on technological advances.		
<b>INPUT SPECIFICATIONS</b>		
Input Voltage Range ( <i>see note 3</i> )	90 ~ 264VAC (127 ~ 370VDC)	
Input Frequency	47 ~ 63Hz	
AC Current	18A typ. @ 115VAC; 9A typ. @ 230VAC	
Inrush Current	30A typ. @ 115VAC; 45A typ. @ 230VAC	
Power Factor (typical)	EN61000-3-2 (0.99 @ 115VAC, 0.98 @ 230VAC and full load)	
<b>OUTPUT SPECIFICATIONS</b>		
Output Voltage	See Table	
Output Power	1500W	
Output Voltage Adjustability	±5.0% typical adjustment by potentiometer (VR1)	
Voltage Tolerance ( <i>see note 2</i> )	±1.0%	
Load Regulation	±0.5%	
Line Regulation	±0.5%	
Output Current	See Table	
Ripple & Noise ( <i>see note 1</i> )	150mVp-p max.	
Setup, Rise Time	800ms at full load, 200ms at full load	
Hold-Up Time	20ms typ. @ 230VAC and full load	
Temperature Coefficient	±0.02% / °C (0 ~ 50°C)	
<b>PROTECTION</b>		
Short Circuit Protection (SCP)	yes	
Over Voltage Protection (OVP)	Variable OVP, 120% ±5% Vout. Protection Type: Latch-style (recovery after reset AC power ON or inhibit)	
Over Load Protection (OLP)	105% ~ 110% rated output power Protection type: Constant current limiting. Latch-style (recovery after reset AC power ON or inhibit)	
Over Temperature Protection (OTP)	80±5°C Protection type: Shutdown output voltage (auto-recovery after temperature goes down)	
<b>FUNCTIONS</b>		
Auxiliary Power	5V @ 0.5A (±3%)	
Remote ON/OFF Control ( <i>see page 6</i> )	External switch or NPN transistor to turn ON / OFF	
Remote Sense	yes	
Power OK Signal ( <i>see page 6</i> )	Open drain signal low when PSU turns on. Max. sink current: 20mA, Max. drain voltage: 40V	
Output Voltage Trim ( <i>see page 5</i> )	Adjustment of output voltage is between 30 ~ 105% of rated output	
Output Current Trim ( <i>see page 5</i> )	Adjustment of output current is between 40 ~ 105% of rated output	
Parallel (Current Sharing) ( <i>see note 4</i> )	yes	
<b>GENERAL SPECIFICATIONS</b>		
Efficiency	See Table	
Withstand Voltage	Input to Output	3000VAC (for 1 minute)
	Input to FG	1500VAC (for 1 minute)
	Output to FG	500VAC (for 1 minute)
Isolation Resistance	100MΩ @ 500VDC (input to output, input to FG, output to FG)	
Leakage Current	< 2.5mA @ 240VAC	
<b>ENVIRONMENTAL SPECIFICATIONS</b>		
Working Temperature	-20°C to +60°C (see derating curve)	
Storage Temperature	-40°C to +85°C	
Working Humidity	20% to 90% RH (non-condensing)	
Storage Humidity	10% to 95% RH	
Vibration	Compliance to IEC 68-2-6, IEC 68-2-24	
Cooling	Controlled by power rating and temperature (internal ball bearing fan)	
<b>PHYSICAL SPECIFICATIONS</b>		
Weight, Packing	7.05 lbs (3200 g); 6pcs/19.2kg/0.98 CUFT	
Dimensions (L x W x H) ( <i>see page 4</i> )	11.02 x 5.00 x 2.50 inches (280 x 127 x 63.5 mm)	
<b>SAFETY &amp; EMC (<i>see note 5</i>)</b>		
Safety Standards	UL60950-1, 2 <sup>nd</sup> Edition, TUV EN60950-1: 2006+A11 Approved	
EMI Conduction & Radiation	EN55022: 2006 Class B	
Harmonic Current	EN61000-3-2: 2006 Class A, EN61000-3-3: 1995+A1: 2001+A2: 2005	
EMS Immunity	EN61204-3: 2000, EN55024: 1998+A1: 2001+A2: 2003 light industry level, criteria A	

MODEL SELECTION TABLE						
Model Number	Input Voltage <sup>(3)</sup> Range	Output Voltage	Output Current	Output <sup>(1)</sup> Ripple & Noise	Output Power	Efficiency
PSAK-1500-12	90 ~ 264 VAC (127 ~ 370 VDC)	12 VDC	125A	150mVp-p	1500W	87%
PSAK-1500-15	90 ~ 264 VAC (127 ~ 370 VDC)	15 VDC	100A	150mVp-p	1500W	88%
PSAK-1500-24	90 ~ 264 VAC (127 ~ 370 VDC)	24 VDC	62.5A	150mVp-p	1500W	89%
PSAK-1500-27	90 ~ 264 VAC (127 ~ 370 VDC)	27 VDC	55.5A	150mVp-p	1500W	89%
PSAK-1500-48	90 ~ 264 VAC (127 ~ 370 VDC)	48 VDC	31.3A	150mVp-p	1500W	90%

**NOTES**

1. Ripple & noise is measured at 20MHz bandwidth by using a 12" twisted pair-wire terminated with a 0.1µF capacitor and a 47µF capacitor in parallel.
2. Tolerance includes set up tolerance, line regulation, and load regulation.
3. For voltages near the low end of the input voltage range, see the derating curve for the power supply output rating.
4. When in parallel operation only one unit might operate if the total output load is less than 5% of the rated load condition.
5. The power supply is considered a component which will be installed into final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

**DERATING CURVES**

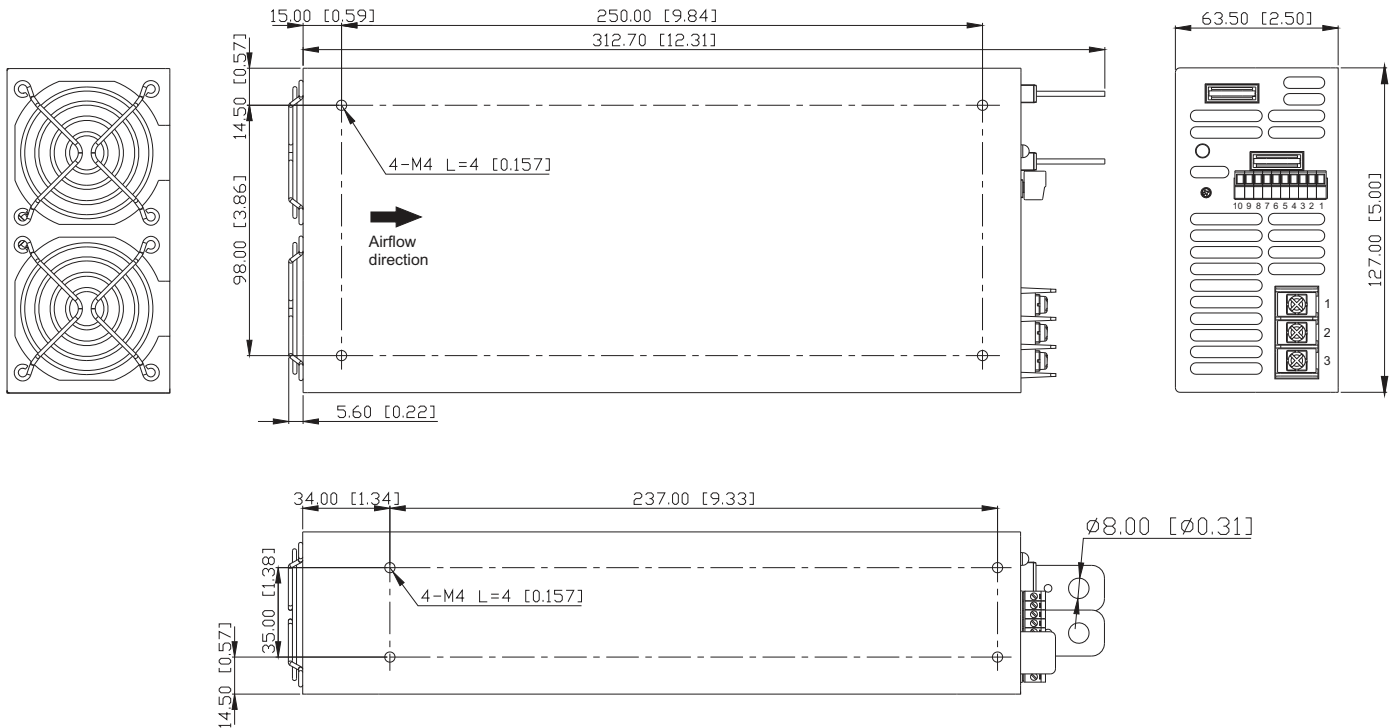


**LED STATUS**

Green LED	LED Signal	Status
Solid		Power OK
Slow Blink		Power Standby
Red LED	LED Signal	Status
Fast Blink		Over Voltage Protection ( OVP )
Solid		Over Load Protection ( OLP )
		Output Shorted Circuit Protection ( SCP )
		Under Voltage Protection ( UVP )
Slow Blink		Over Temperature Protection ( OTP )
Intermittent Blink		Fan Failure
Interlace Blink		Power Failure

**MECHANICAL DRAWING**

Unit: mm [inches]

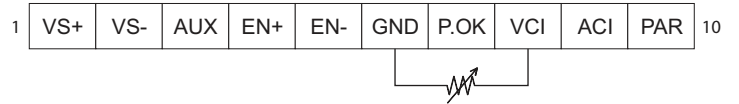
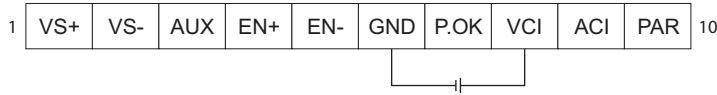
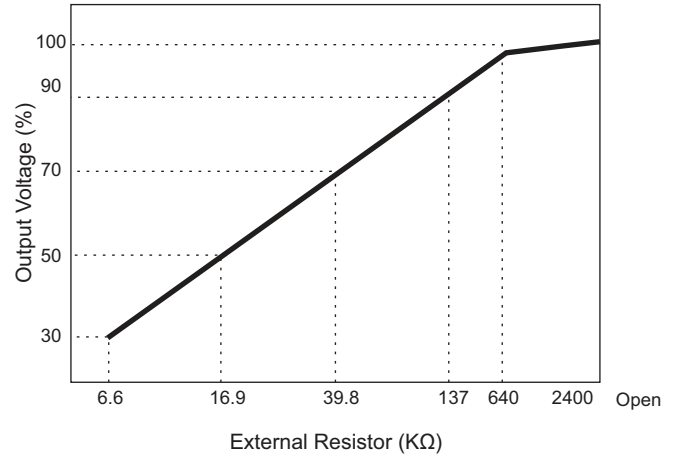
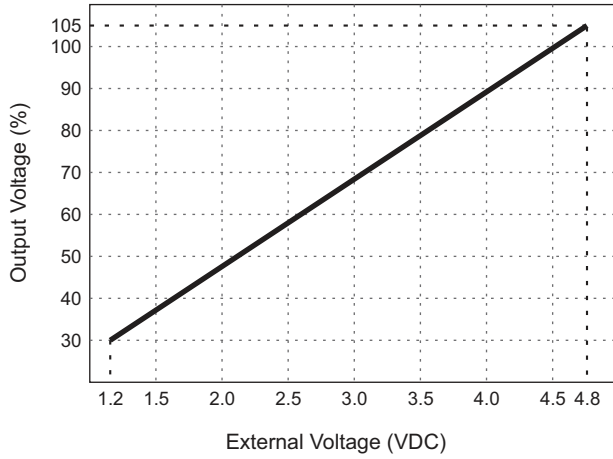


AC Input Terminal Pin Number Assignment	
Pin No.	Assignment
1	AC(L)
2	AC(N)
3	

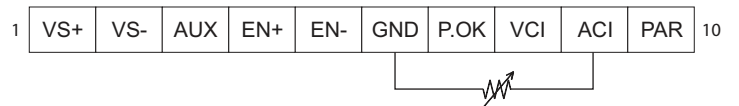
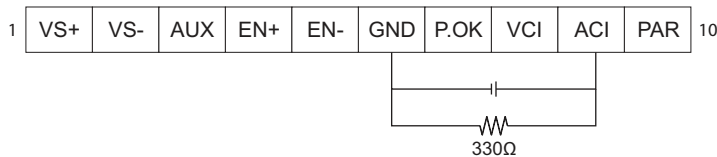
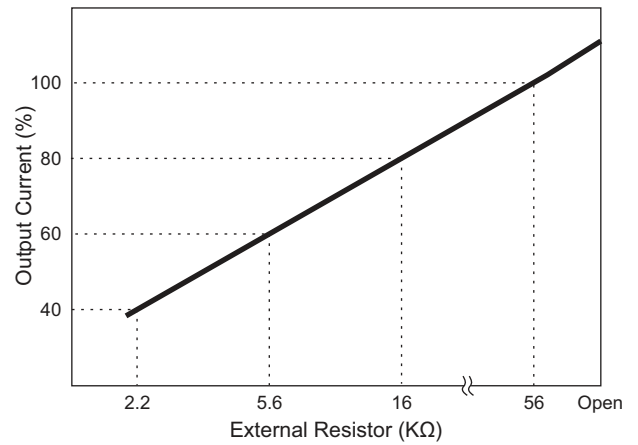
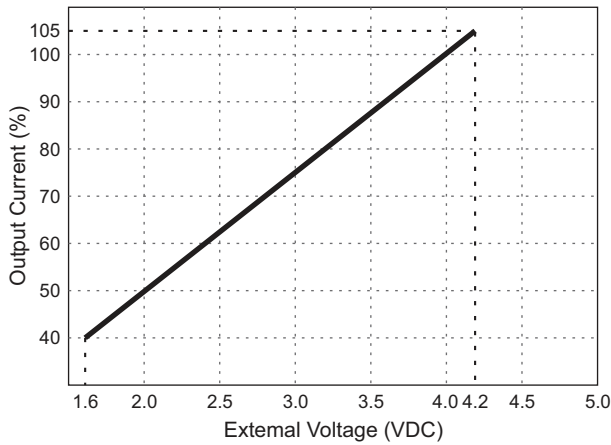
Control Pin Number Assignment		
Pin No.	Assignment	Description
1	VS+	Remote voltage sense (+)
2	VO+	Local output voltage sense (+)
3	AUX	+5V / 0.5A Auxiliary power
4	EN+	Inhibit ON/OFF (+)
5	EN-	Inhibit ON/OFF (-)
6	GND	Ground
7	P.OK	Power OK
8	VCI	V Program
9	ACI	I Program
10	PAR	Parallel operation current share

**FUNCTIONS**

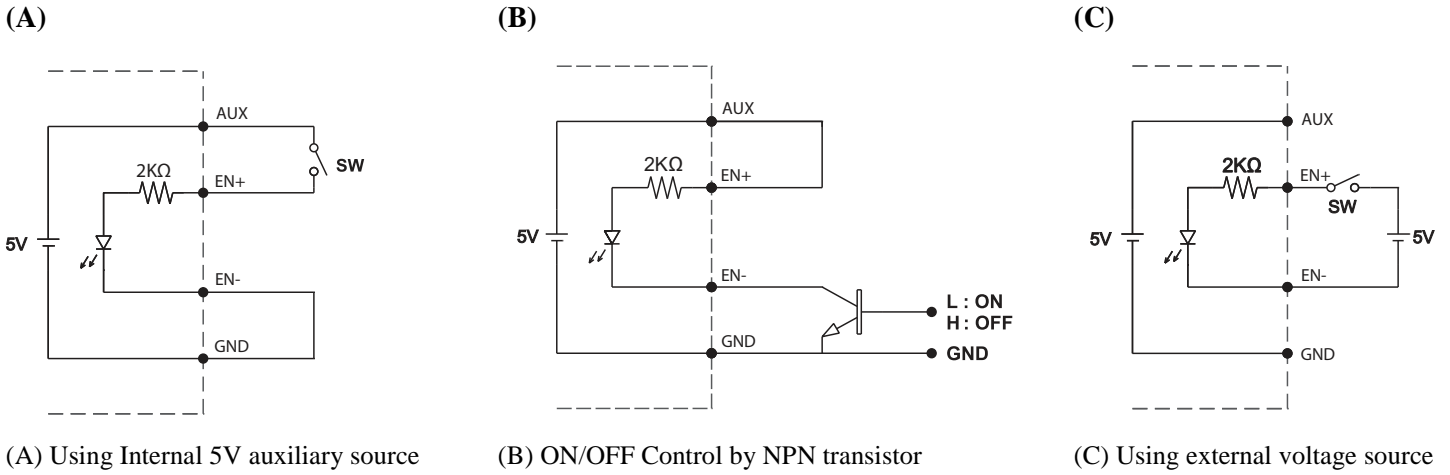
**1. Output Voltage Trim**



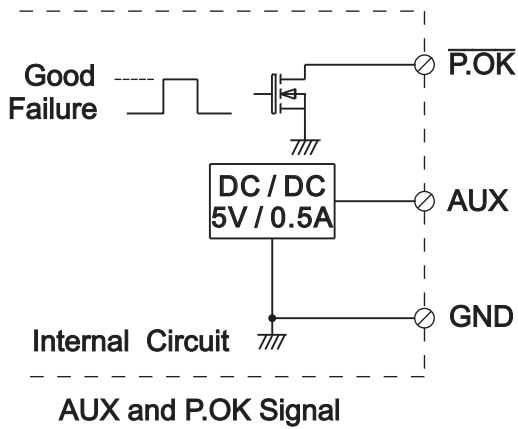
**2. Output Current Trim**



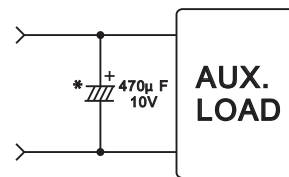
**3. Remote ON/OFF**



**4. Power OK Signal**



- \* Place an additional capacitor to have a better performance of auxiliary power operation.
- \* The grounding of "AUX" power should be connected to "GND" port. If "V-" is connected as Ground, make sure to short the GND and V- ports.

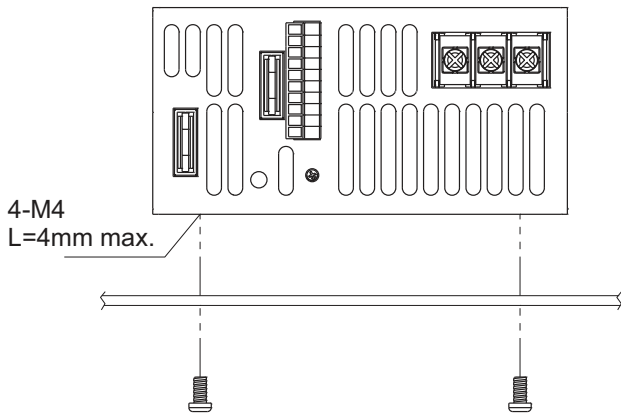


**INSTALLATION INSTRUCTIONS**

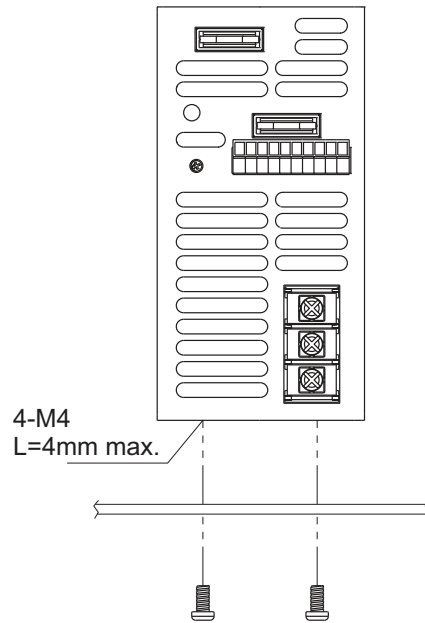
**1. Mounting Directions**

1.1 Recommended standard mounting methods:

(A)



(B)



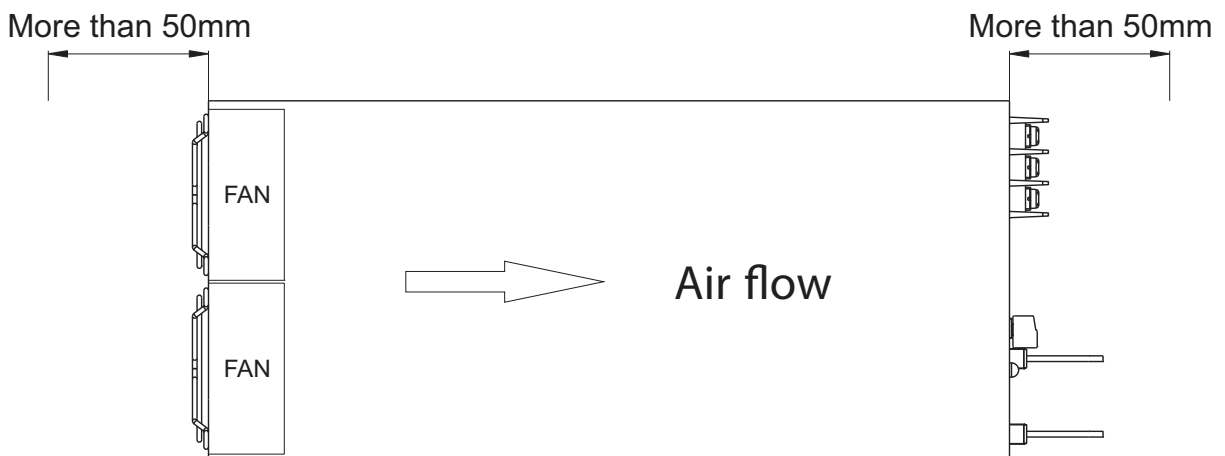
**2. Mounting Method**

2.1 There are ventilating holes on the front and back side panels. Do not obstruct; allow at least 50mm for airflow.

2.2 The maximum allowable penetration of the screws is 4mm. Incomplete threading should not be penetrated.

2.3 Recommended torque of mounting screw:

M4 screw: 1.27N • m (13.0kgf • cm)



## 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 ISO9001-2008 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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