

Wall Industries, Inc.

PSAQF120 SERIES

90~264VAC (120~370VDC) Input
180W with 18CFM Fan, 120W Convection Cooling
PFC Function, Single Output
AC/DC Switching Power Supplies



Type O



Type U



Type C



Type DN

FEATURES

- Single Output
- RoHS Compliant
- PFC Function > 0.95
- Low Ripple and Noise
- 180W with 18CFM Fan
- High Efficiency up to 93%
- 120W with Free Air Convection
- Optional I/O Connectors Available (Type A or Type B)
- Short Circuit, Over Power, and Over Voltage Protection
- Universal Input Voltage Range: 90~264VAC (120~370VDC)
- 4 Mechanical Options Available: Open Frame, U-Chassis, Enclosed Case, and DIN Rail



A TYPE	B TYPE

DESCRIPTION

The PSAQF120 series of AC/DC switching power supplies offers up to 180W of output power with 18CFM fan and up to 120W with free air convection. All models have a single output and a universal input. Some features include 4000VAC I/O isolation, PFC function > 0.95, and efficiency up to 93%. These supplies also have UL/cUL and CE safety approvals and are RoHS compliant. All models are protected against short circuit, over power, and over voltage conditions. Models are available in open frame (Type O), U-Chassis (Type U), enclosed case (Type C), and DIN rail (Type DN) designs.

SPECIFICATIONS: PSAQF120 Series

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.

INPUT SPECIFICATIONS

Input Voltage Range	90 ~ 264VAC or 120 ~ 370VDC (80 ~ 274VAC or 110 ~ 390VDC with derating)
Input Frequency	47 ~ 63Hz
Input Current (Full Load)	< 2.0A max. @ 115VAC, < 1.0A max @ 230VAC
Inrush Current (< 2ms)	< 30A max @ 115VAC, < 60A max @ 230VAC
Power Factor	PF > 0.99 @ 115VAC and full load; PF > 0.95 @ 230VAC and full load

OUTPUT SPECIFICATIONS

Output Voltage	See Table
Output Power	See Table
Voltage Accuracy	±2%
Voltage Adjustability	See Table
Line Regulation (LL – HL)	±1%
Load Regulation	±1%
Output Current	See Table
Ripple & Noise (<i>see Note 3</i>)	See Table
Minimum Load	0%
Maximum Capacitive Load	See Table
Hold-up Time (<i>see Note 4</i>)	15ms min.

PROTECTION

Over Power Protection	Auto-recovery
Over Voltage Protection	Auto-recovery (> 125% Vout)
Short Circuit Protection	Auto-recovery

GENERAL SPECIFICATIONS

Switching Frequency	100KHz
Efficiency	See Table
Isolation Voltage	4000VAC (input to output) 2000VAC (input to FG) 500VAC (output to FG)
Leakage Current	< 0.5mA max

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-25°C to +70°C (with derating)
Storage Temperature	-25°C to +85°C
Humidity	95% RH
Temperature Coefficient	±0.03%/°C (0 ~ 50°C)
Vibration	10~500Hz, 2G 10 min./1 cycle, 60 min. each along X, Y, and Z axes.
Cooling Method	Free air convection / 18 CFM Fan
MTBF	> 120,000 hours @ 25°C (MIL-HDBK-217F, Notice 1)

PHYSICAL SPECIFICATIONS

Weight	O Type: 9.88oz (280g) U Type: 13.47oz (382g) C Type: 14.11oz (400g) DN Type: 14.29oz (405g)
Dimensions (L x W x H)	O Type: 5.0 x 3.0 x 1.16 inches (127.0 x 76.2 x 29.5 mm) U Type: 5.0 x 3.24 x 1.5 inches (127.0 x 82.2 x 38.1 mm) C Type: 5.0 x 3.24 x 1.5 inches (127.0 x 82.2 x 38.1 mm) DN Type: 5.0 x 3.24 x 1.5 inches (127.0 x 82.2 x 38.1 mm)

SAFETY & EMC

Agency Approvals	CE, UL/cUL 60950-1
EMI (Conducted & Radiated Emission)	EN 61000-6-3, EN 55022 class B
EMS (Noise Immunity)	EN 55024

MODEL SELECTION TABLES

Open Frame Models (Type O)										
Model Number ⁽¹⁾	Input Voltage	Output Voltage	Max. Output Current		Max. Output Power		Voltage Adj. Range	Ripple & Noise ⁽³⁾	Max Capacitive Load	Efficiency
			Convection	18 CFM Fan	Convection	18 CFM Fan				
PSAQF120O-3.3S	90 ~ 264VAC (120 ~ 370VDC)	3.3 VDC	20A	30A	66W	99W	3.14 ~ 3.46VDC	50mVp-p	80,000µF	87%
PSAQF120O-5S		5 VDC	20A	30A	100W	150W	4.75 ~ 5.25VDC	50mVp-p	80,000µF	89%
PSAQF120O-12S		12 VDC	10A	15A	120W	180W	11.4 ~ 13.2VDC	50mVp-p	0 ~ 40,000µF	90%
PSAQF120O-15S		15 VDC	8A	12A	120W	180W	13.5 ~ 16.5VDC	50mVp-p	20,000µF	90%
PSAQF120O-24S		24 VDC	5A	7.5A	120W	180W	22.8 ~ 26.4VDC	100mVp-p	0 ~ 20,000µF	93%
PSAQF120O-48S		48 VDC	2.5A	3.75A	120W	180W	45.6 ~ 52VDC	100mVp-p	0 ~ 1,200µF	93%

U-Chassis Models (Type U)										
Model Number ⁽¹⁾	Input Voltage	Output Voltage	Max. Output Current		Max. Output Power		Voltage Adj. Range	Ripple & Noise ⁽³⁾	Max Capacitive Load	Efficiency
			Convection	18 CFM Fan	Convection	18 CFM Fan				
PSAQF120U-3.3S	90 ~ 264VAC (120 ~ 370VDC)	3.3 VDC	20A	30A	66W	99W	3.14 ~ 3.46VDC	50mVp-p	80,000µF	87%
PSAQF120U-5S		5 VDC	20A	30A	100W	150W	4.75 ~ 5.25VDC	50mVp-p	80,000µF	89%
PSAQF120U-12S		12 VDC	10A	15A	120W	180W	11.4 ~ 13.2VDC	50mVp-p	0 ~ 40,000µF	90%
PSAQF120U-15S		15 VDC	8A	12A	120W	180W	13.5 ~ 16.5VDC	50mVp-p	20,000µF	90%
PSAQF120U-24S		24 VDC	5A	7.5A	120W	180W	22.8 ~ 26.4VDC	100mVp-p	0 ~ 20,000µF	93%
PSAQF120U-48S		48 VDC	2.5A	3.75A	120W	180W	45.6 ~ 52VDC	100mVp-p	0 ~ 1,200µF	93%

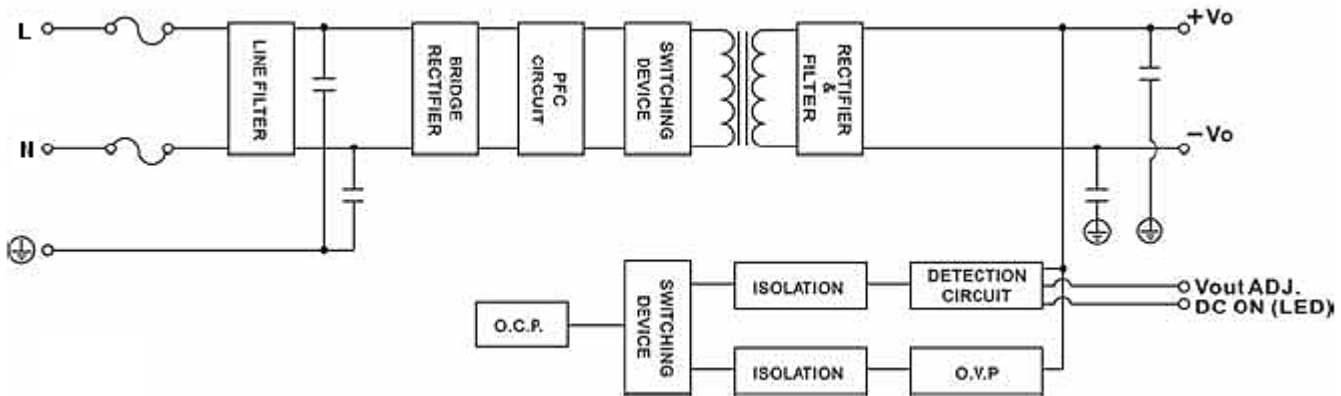
Enclosed Case Models (Type C)										
Model Number ⁽¹⁾	Input Voltage	Output Voltage	Max. Output Current		Max. Output Power		Voltage Adj. Range	Ripple & Noise ⁽³⁾	Max Capacitive Load	Efficiency
			Convection	18 CFM Fan	Convection	18 CFM Fan				
PSAQF120C-3.3S	90 ~ 264VAC (120 ~ 370VDC)	3.3 VDC	20A	30A	66W	99W	3.14 ~ 3.46VDC	50mVp-p	80,000µF	87%
PSAQF120C-5S		5 VDC	20A	30A	100W	150W	4.75 ~ 5.25VDC	50mVp-p	80,000µF	89%
PSAQF120C-12S		12 VDC	10A	15A	120W	180W	11.4 ~ 13.2VDC	50mVp-p	0 ~ 40,000µF	90%
PSAQF120C-15S		15 VDC	8A	12A	120W	180W	13.5 ~ 16.5VDC	50mVp-p	20,000µF	90%
PSAQF120C-24S		24 VDC	5A	7.5A	120W	180W	22.8 ~ 26.4VDC	100mVp-p	0 ~ 20,000µF	93%
PSAQF120C-48S		48 VDC	2.5A	3.75A	120W	180W	45.6 ~ 52VDC	100mVp-p	0 ~ 1,200µF	93%

DIN Rail Models (Type DN)										
Model Number ⁽¹⁾	Input Voltage	Output Voltage	Max. Output Current		Max. Output Power		Voltage Adj. Range	Ripple & Noise ⁽³⁾	Max Capacitive Load	Efficiency
			Convection	18 CFM Fan	Convection	18 CFM Fan				
PSAQF120DN-3.3S	90 ~ 264VAC (120 ~ 370VDC)	3.3 VDC	20A	30A	66W	99W	3.14 ~ 3.46VDC	50mVp-p	80,000µF	87%
PSAQF120DN-5S		5 VDC	20A	30A	100W	150W	4.75 ~ 5.25VDC	50mVp-p	80,000µF	89%
PSAQF120DN-12S		12 VDC	10A	15A	120W	180W	11.4 ~ 13.2VDC	50mVp-p	0 ~ 40,000µF	90%
PSAQF120DN-15S		15 VDC	8A	12A	120W	180W	13.5 ~ 16.5VDC	50mVp-p	20,000µF	90%
PSAQF120DN-24S		24 VDC	5A	7.5A	120W	180W	22.8 ~ 26.4VDC	100mVp-p	0 ~ 20,000µF	93%
PSAQF120DN-48S		48 VDC	2.5A	3.75A	120W	180W	45.6 ~ 52VDC	100mVp-p	0 ~ 1,200µF	93%

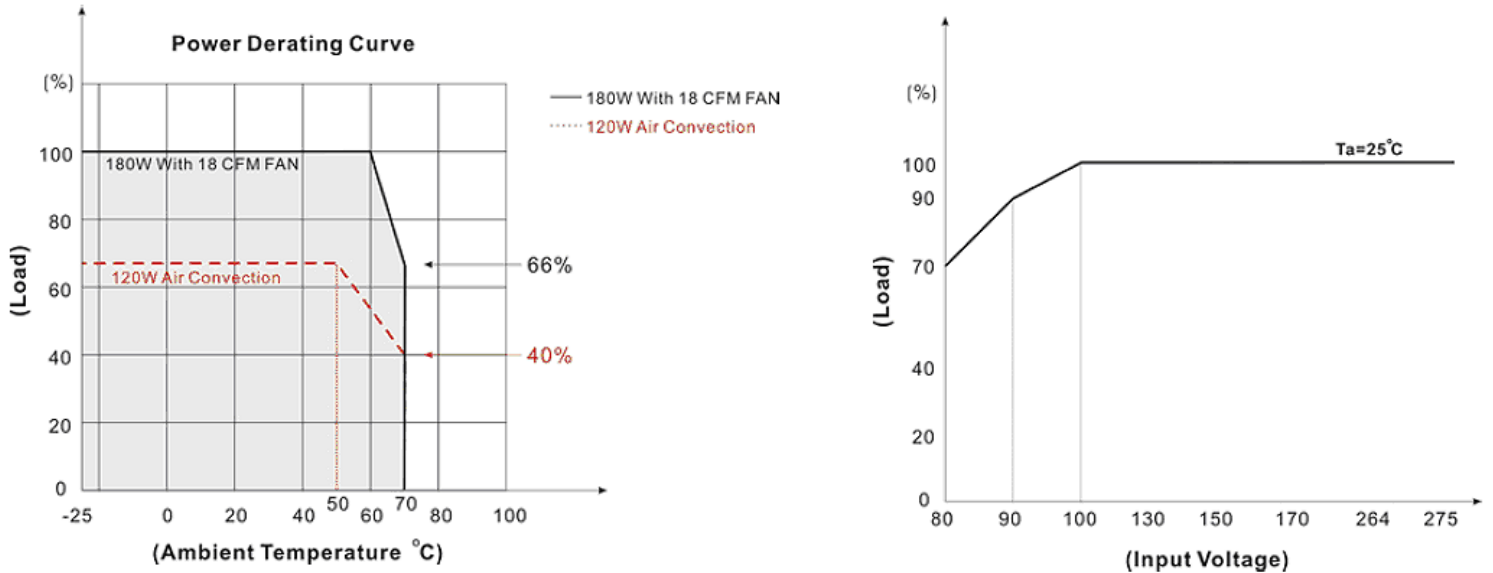
NOTES

1. Optional I/O Connectors: For **A type** add the suffix “-A” to the part number and for **B type** add the suffix “-B” to the part number
 Ex: PSAQF120O-12S-A (See page 9).
2. 4 mechanical options available: open frame (Type O), U-Chassis (Type U), enclosed case (Type C), and DIN rail (Type DN).
3. Ripple & Noise is measured at 20MHz bandwidth with a 0.1µF and 47µF ceramic capacitors in parallel across the output.
4. Hold-up time is measured at 90% Vout.

BLOCK DIAGRAM



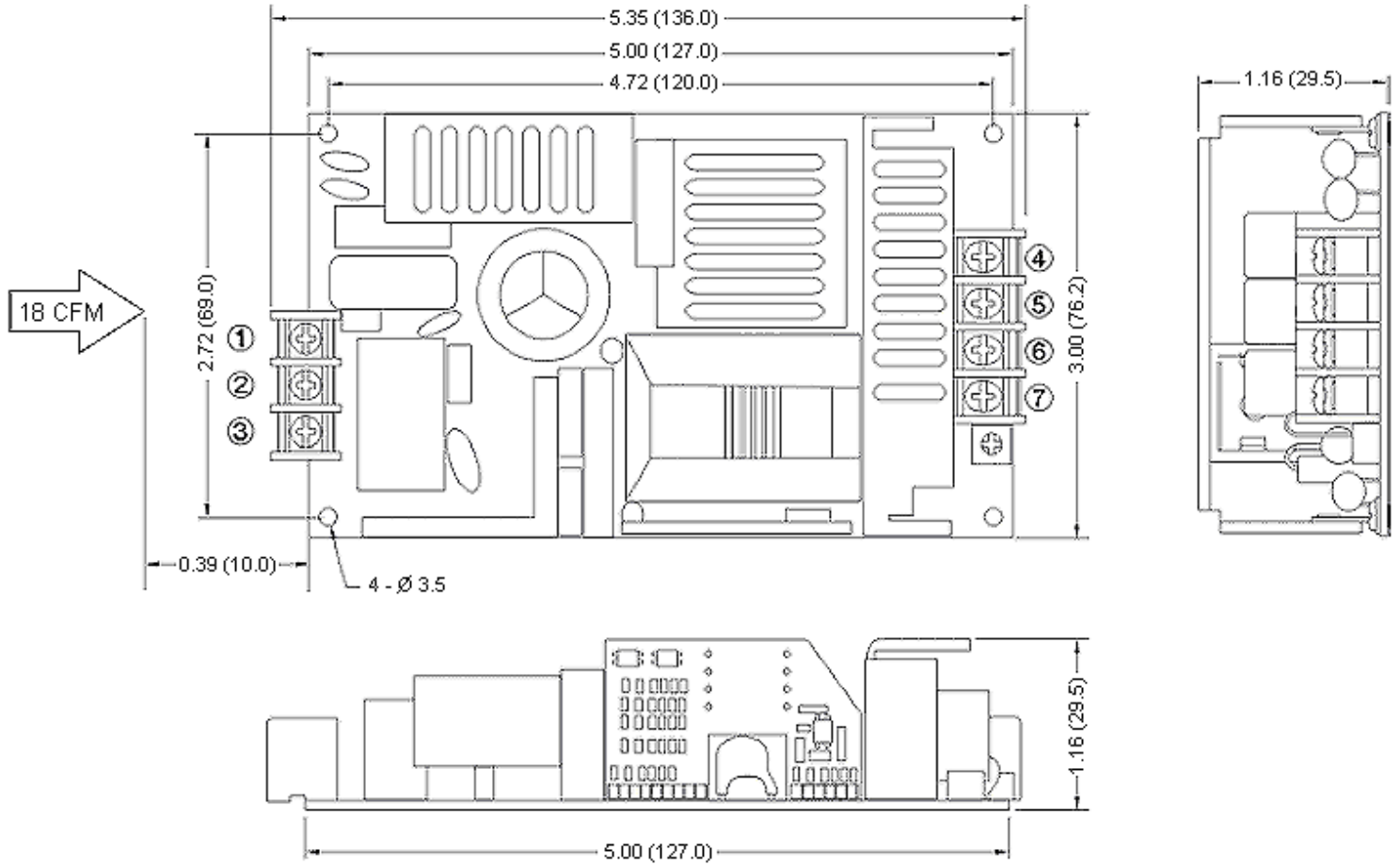
DERATING CURVES



MECHANICAL DRAWINGS

Open Frame Models (O Type): 5.0 x 3.0 x 1.16 inches

Unit: inches (mm)

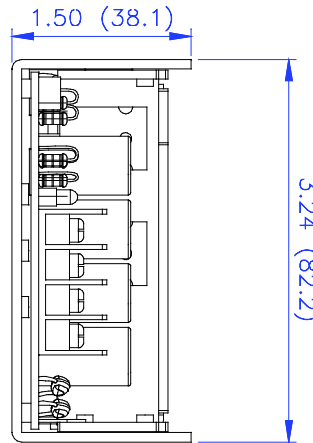
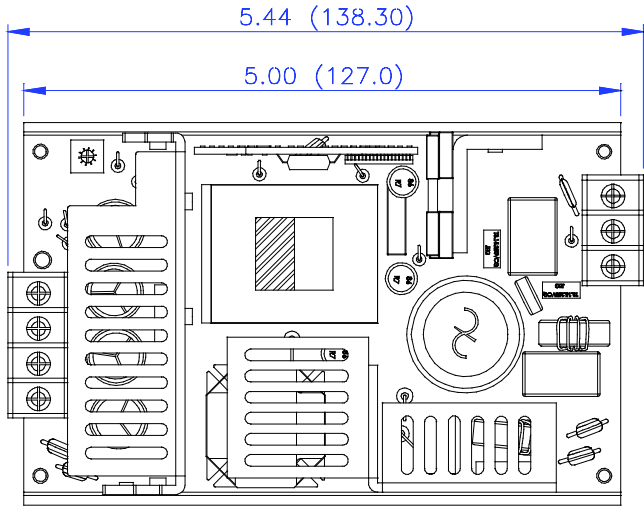


PIN CONNECTIONS	
PIN	SINGLE OUTPUT
1	AC IN (L)
2	AC IN (N)
3	FG
4	+DC OUT
5	+DC OUT
6	-DC OUT
7	-DC OUT

Tolerance: ±0.5mm

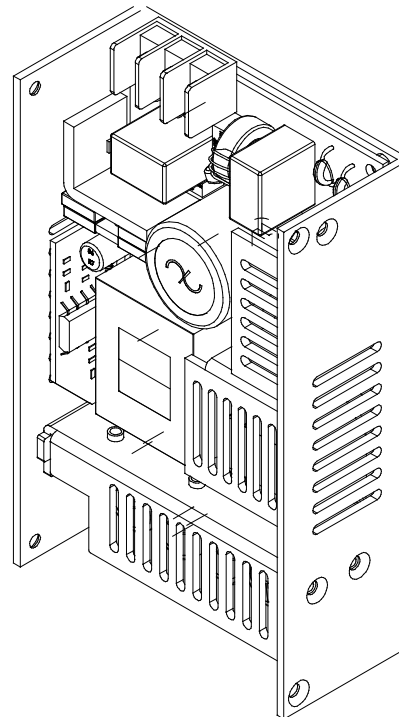
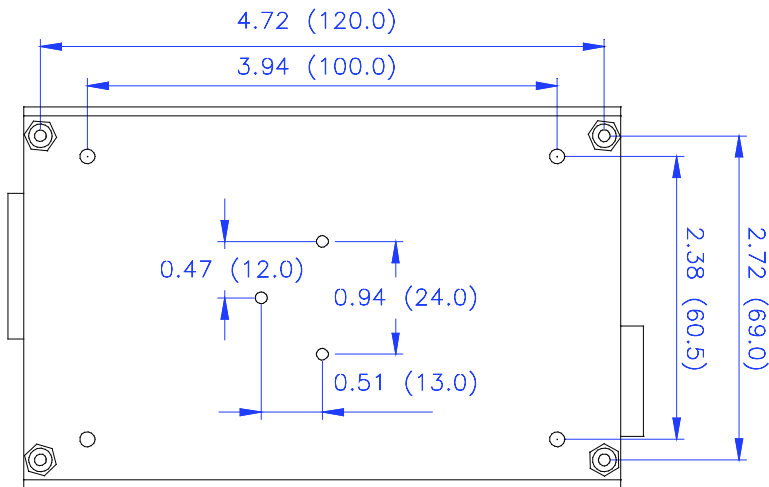
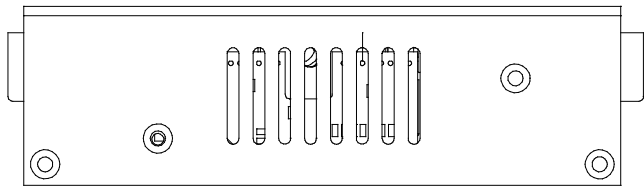
U-Chassis Models (U Type): 5.0 x 3.24 x 1.5 inches

Unit: inches (mm)



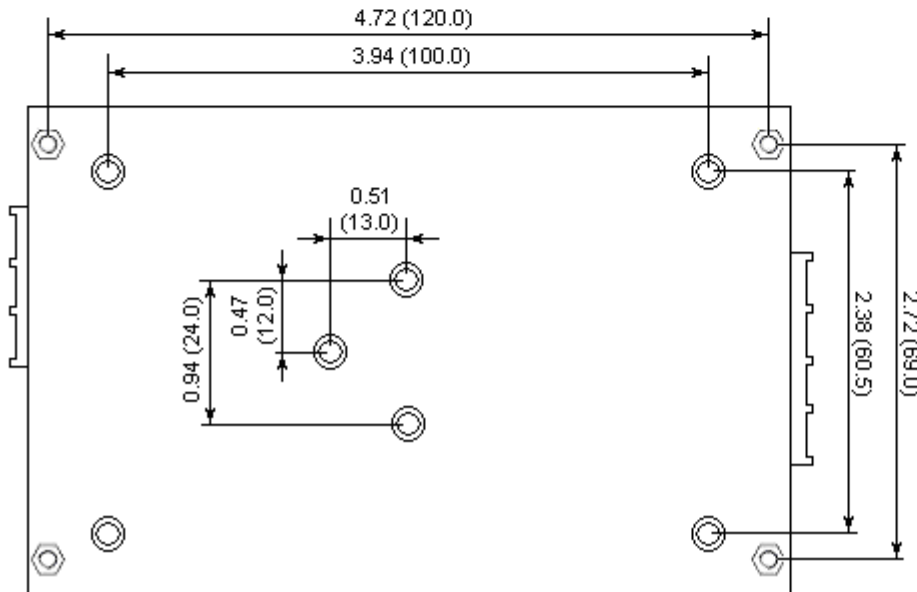
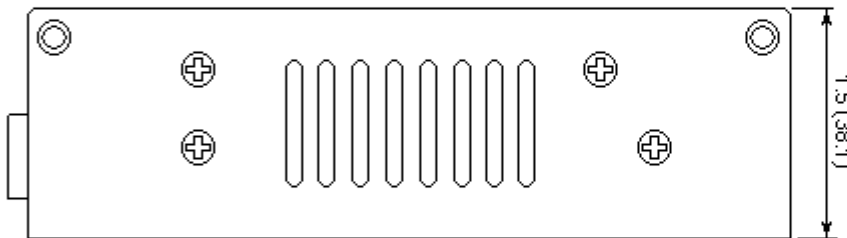
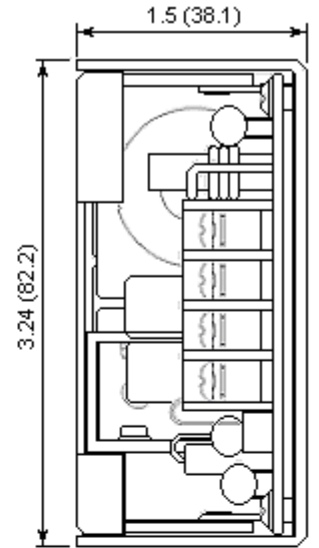
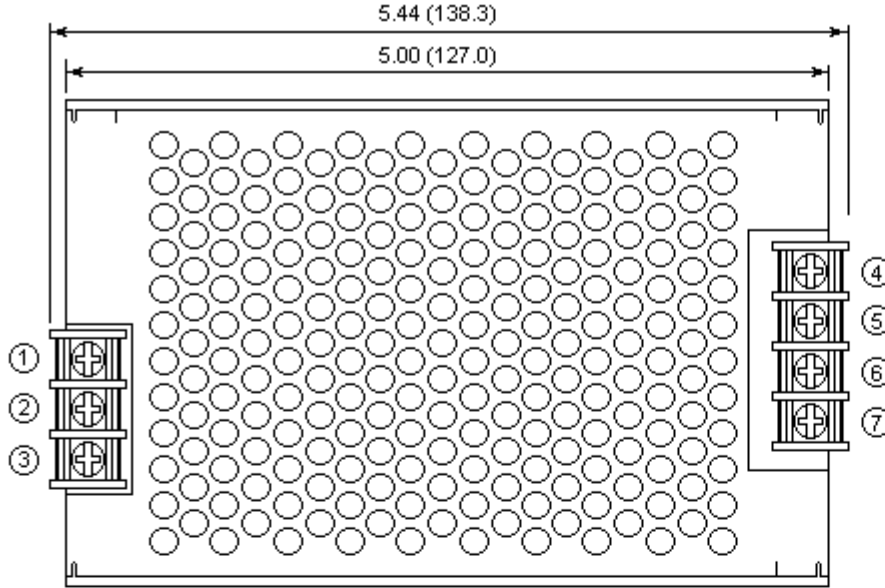
PIN CONNECTIONS	
PIN	SINGLE OUTPUT
1	AC IN (L)
2	AC IN (N)
3	FG
4	+DC OUT
5	+DC OUT
6	-DC OUT
7	-DC OUT

Tolerance: ±0.5mm



Enclosed Case Models (C Type): 5.0 x 3.24 x 1.5 inches

Unit: inches (mm)

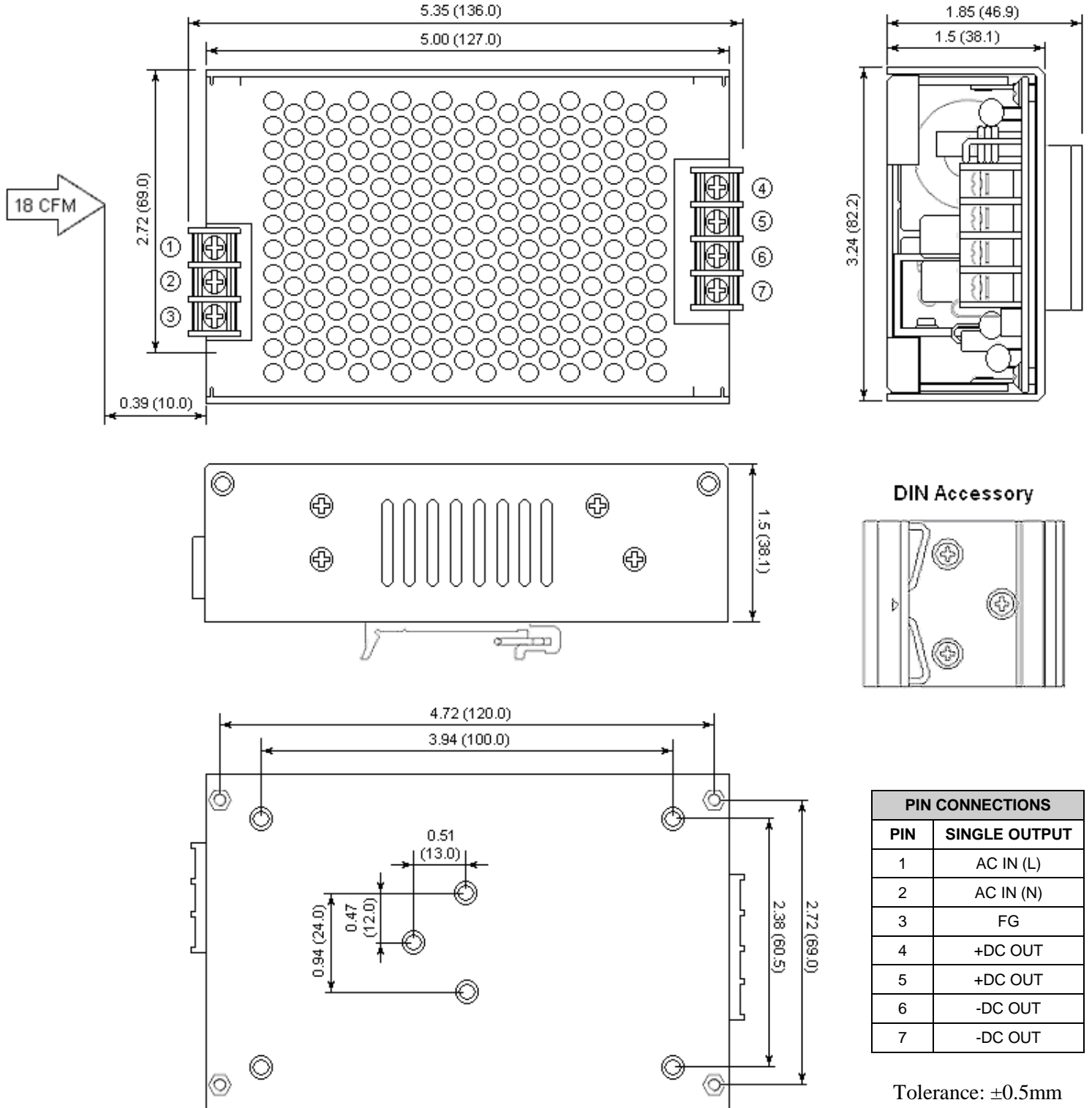


PIN CONNECTIONS	
PIN	SINGLE OUTPUT
1	AC IN (L)
2	AC IN (N)
3	FG
4	+DC OUT
5	+DC OUT
6	-DC OUT
7	-DC OUT

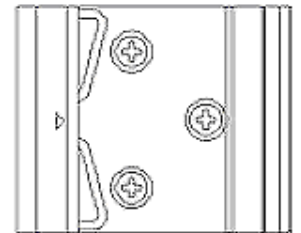
Tolerance: ± 0.5 mm

DIN Rail Models (DN Type): 5.0 x 3.24 x 1.5 inches

Unit: inches (mm)



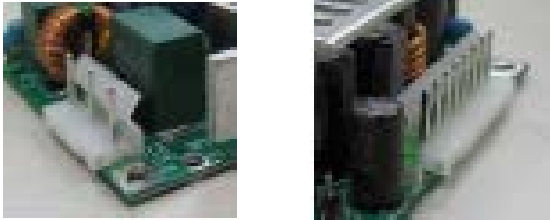
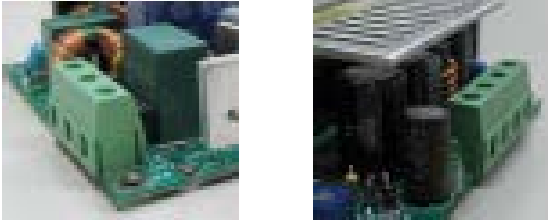


DIN Accessory



PIN CONNECTIONS	
PIN	SINGLE OUTPUT
1	AC IN (L)
2	AC IN (N)
3	FG
4	+DC OUT
5	+DC OUT
6	-DC OUT
7	-DC OUT

Tolerance: ± 0.5 mm

I/O CONNECTOR OPTIONS

A TYPE	B TYPE																												
																													
																													
<table border="1" style="margin: auto;"> <thead> <tr style="background-color: #cccccc;"> <th colspan="2">PIN CONNECTIONS</th> </tr> <tr> <th>PIN</th> <th>SINGLE OUTPUT</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AC IN (L)</td> </tr> <tr> <td>2</td> <td>AC IN (N)</td> </tr> <tr> <td>3</td> <td>FG</td> </tr> <tr> <td>4 ~ 7</td> <td>+DC OUT</td> </tr> <tr> <td>8 ~ 11</td> <td>-DC OUT</td> </tr> </tbody> </table>	PIN CONNECTIONS		PIN	SINGLE OUTPUT	1	AC IN (L)	2	AC IN (N)	3	FG	4 ~ 7	+DC OUT	8 ~ 11	-DC OUT	<table border="1" style="margin: auto;"> <thead> <tr style="background-color: #cccccc;"> <th colspan="2">PIN CONNECTIONS</th> </tr> <tr> <th>PIN</th> <th>SINGLE OUTPUT</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AC IN (L)</td> </tr> <tr> <td>2</td> <td>AC IN (N)</td> </tr> <tr> <td>3</td> <td>FG</td> </tr> <tr> <td>4 ~ 5</td> <td>+DC OUT</td> </tr> <tr> <td>6 ~ 7</td> <td>-DC OUT</td> </tr> </tbody> </table>	PIN CONNECTIONS		PIN	SINGLE OUTPUT	1	AC IN (L)	2	AC IN (N)	3	FG	4 ~ 5	+DC OUT	6 ~ 7	-DC OUT
PIN CONNECTIONS																													
PIN	SINGLE OUTPUT																												
1	AC IN (L)																												
2	AC IN (N)																												
3	FG																												
4 ~ 7	+DC OUT																												
8 ~ 11	-DC OUT																												
PIN CONNECTIONS																													
PIN	SINGLE OUTPUT																												
1	AC IN (L)																												
2	AC IN (N)																												
3	FG																												
4 ~ 5	+DC OUT																												
6 ~ 7	-DC OUT																												
<p>Note: The max current on each output pin is 7A. To avoid exceeding this, it is recommended to share the load amongst the output pins.</p>																													
<p><i>Note: For A type add the suffix "-A" to the part number and for B type add the suffix "-B" to the part number (Ex: PSAQF1200-12S-A).</i></p>																													

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:

<u>Phone:</u>	☎ (603)778-2300
<u>Toll Free:</u>	☎ (888)587-9255
<u>Fax:</u>	☎ (603)778-9797
<u>E-mail:</u>	sales@wallindustries.com
<u>Web:</u>	www.wallindustries.com
<u>Address:</u>	37 Industrial Dr. Exeter, NH 03833