



SF60/61P & SFU60/61P Series

Date: 12/17/18

50 - 63 Watt AC - DC Power Supply, Open Frame or U-Channel
UL, EN, IEC 60950-1 2nd Edition, RoHS 2 Compliant

Rev: 080118

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The SF60/61P & SFU60/61P Series open frame switch mode power supply offers 50 - 63 Watts convection cooled output in a 3" x 5" size, with UL/CUL, IEC, and EN 60950-1, 2nd Edition safety approvals. It is offered as an open frame or U-chassis, with input configuration options, and single, dual, triple and quad-output options.

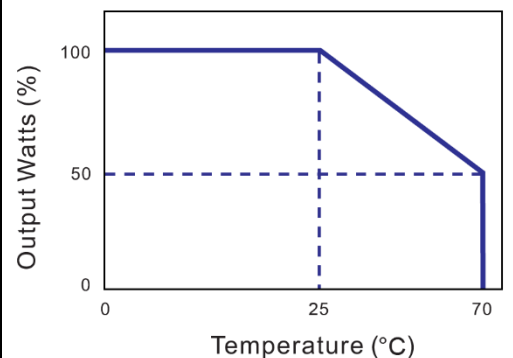


Input Voltage	90 to 264 Vac
Input Frequency	47 to 63 Hz
Input Current (Low Line)	1.6 A Typ. at 100 Vac
Input Current (High Line)	0.6 A Typ. at 240 Vac
Safety Ground Leakage Current	0.75 mA Max. at 240 Vac, Full Load
Output Voltage & Current	See Table on Page 2
Over-Voltage Protection	112 - 132%
Over-Current Protection	110 - 150%
Temperature Coefficient	± 0.04% / °C Max.
Transient Response	50% Load Change at 110 Vac Input: 4 ms Max.
Efficiency	Single Output: 65 - 80% Typ. Multi-Output: 70% Typ.
No Load Power Consumption	5.5 Watts Typ.
Line Regulation	± 1% Max. at Full Load
Load Regulation	± 2 - 7% Max. at 230 Vac
Start-Up Time	2 s Max.
Hold-Up Time	12 ms Min.
Withstanding Voltage	Primary to Secondary: 4,242 Vdc Primary to Ground: 2,121 Vdc
Inrush Current	33 A Max. @ 100 Vac, 25°C Cold Start 79 A Max. @ 240 Vac, 25°C Cold Start
Mean Time Between Failure	100,000 Hrs. Min. (MIL-HDBK-217F, Full Load at 25°C)
Operating Temperature	See Derating Curve
Storage Temperature	-40 to 85°C
Weight	SF60/61: 250 g Typ. SFU60/61: 385 g Typ.
Industry Compliance	Directive 2011/65/EU (RoHS 2)
EMI Requirements	Meets Conduction and Radiation Limits of: FCC Part 15 Class B, CISPR-32 Class B, EN 55032 Class B
Safety Compliance	UR/cUR (UL 60950-1:2 nd Ed.), TUV (EN 60950-1:2006/A2:2013), CE, CB (IEC 60950-1:2005/A2:2013), CCC (3-pin input only)

Features:

- Universal Input 100 - 240 Vac
- Convection Cooled
- Internal EMI Filter
- Over-Voltage, Over-Current, and Short Protection
- 100% Burn-In
- RoHS 2 Compliant

Derating Curve



Derate Linearly from 100% at 25°C to 50% at 70°C



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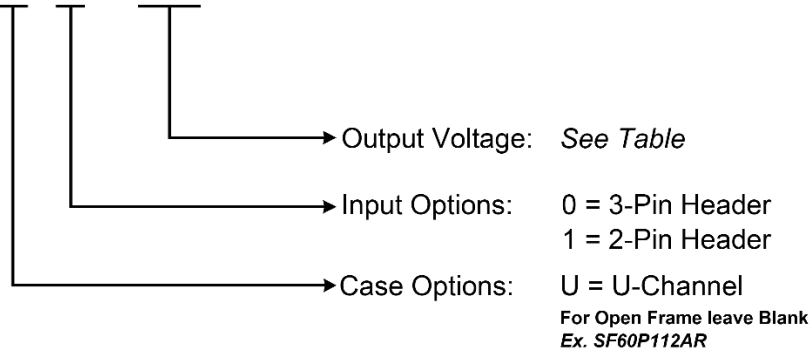
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Output Voltage and Current Table: Single Output

Model Number ¹	Output Voltage	Output Current <i>Limited to Output Power</i> ²	Ripple & Noise (mV P-P) ³	Output Power
SF_6_P1__AR	3 – 4 Vdc	12.50 – 16.66 A	66	50 W
SF_6_P1__AR	5 Vdc	11 A	60	55 W
SF_6_P1__AR	6 – 8 Vdc	7.50 – 10.00 A	80	60 W
SF_6_P1__AR	11 – 13 Vdc	4.84 – 5.72 A	130	63 W
SF_6_P1__AR	14 – 16 Vdc	3.93 – 4.50 A	150	63 W
SF_6_P1__AR	17 – 20 Vdc	3.15 – 3.71 A	200	63 W
SF_6_P1__AR	21 – 27 Vdc	2.33 – 3.00 A	250	63 W
SF_6_P1__AR	28 – 33 Vdc	1.91 – 2.25 A	300	63 W

SF□6□P1□□AR



Notes:

1. Available Configurations:

Output Voltage	SF60P1__AR (PCB w. 3-Pin Input)	SF61P1__AR (PCB w. 2-Pin Input)	SFU60P1__AR (U-Bracket w. 3-Pin Input)	SFU61P1__AR (U-Bracket w. 2-Pin Input)
3 – 4 Vdc	✓			
5 Vdc	✓		✓	
6 – 8 Vdc	✓			
11 – 13 Vdc	✓	✓		✓
14 – 16 Vdc	✓		✓	
17 – 20 Vdc	✓			
21 – 27 Vdc	✓	✓	✓	✓
28 – 33 Vdc	✓			

2. To find Output Current:

$$\text{Output Current} = \text{Max Power} \div \text{Output Voltage}$$

Example: Output Current for SF100P1R124R (24 Vdc Output, 3-Pin input, PCB)

$$\text{Output Current} = 100 \text{ W} \div 24 \text{ V}$$

$$\text{Output Current} = 4.17 \text{ A}$$

3. Measured w/ 0.1 μF ceramic capacitor & 47 μF electrolytic capacitor in parallel and a 20 MHz Bandwidth-limited scope.



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Specification subject to
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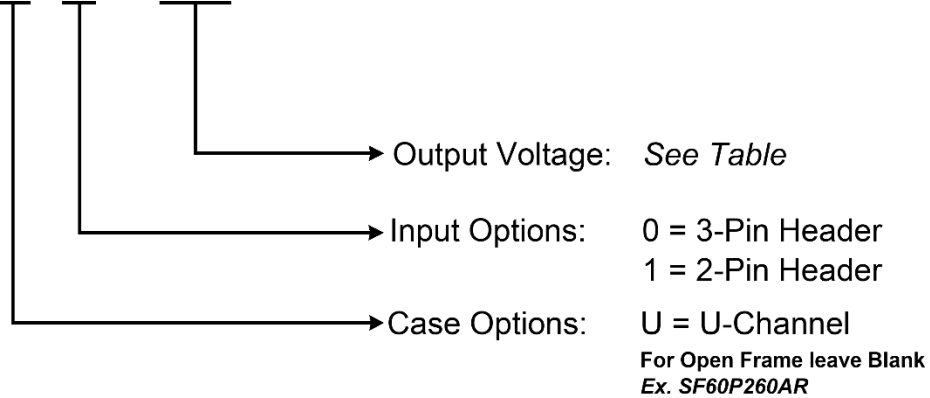
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Output Voltage and Current Table: *Dual Output*

Model Number ¹	Output Voltage	Output Current <i>Limited to Output Power</i> ²	Ripple & Noise (mV P-P) ³	Output Power
SF_6_P250AR	V1: 5 Vdc	0.7 – 7.0 A	50	63 Watts
	V2: 12 Vdc	0.3 – 3.0 A	120	
SF_6_P254AR	V1: 5 Vdc	0.7 – 7.0 A	50	63 Watts
	V2: 24 Vdc	0.4 – 2.0 A	240	

SF□6□P2□□AR



Notes:

1. Available Configurations:

Output Voltage	SF60P2__AR (PCB w. 3-Pin Input)	SF61P254AR (PCB w. 2-Pin Input)	SFU60P2__AR (U-Bracket w. 3-Pin Input)	SFU61P250AR (U-Bracket w. 2-Pin Input)
V1: 5 Vdc V2: 12 Vdc	✓		✓	✓
V1: 5 Vdc V2: 24 Vdc	✓	✓		

2. Total (combined) Output Voltage/Current cannot exceed Output Power.
(Voltage #1 x Current #1) + (Voltage #2 x Current #2) ≤ Max. Power (Watts)

3. Measured w/ 0.1 μF ceramic capacitor & 47 μF electrolytic capacitor in parallel and a 20 MHz Bandwidth-limited scope.



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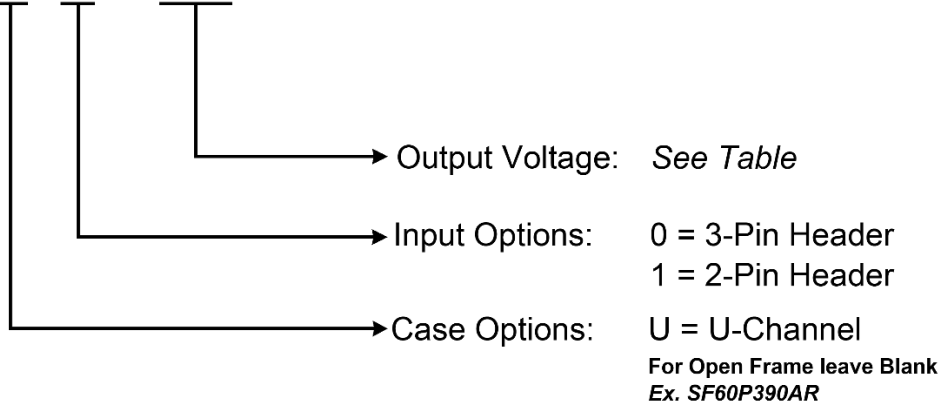
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Output Voltage and Current Table: Triple Output

Model Number	Output Voltage	Output Current <i>Limited to Output Power²</i>	Ripple & Noise (mV P-P) ³	Output Power
SF60P377AR ¹	V1: 5 Vdc	0.6 – 6.0 A	50	63 Watts
	V2: 12 Vdc	0.3 – 3.0 A	120	
	V3: -5 Vdc	0.0 – 0.8 A	50	
SF_6_P370AR	V1: 5 Vdc	0.6 – 6.0 A	50	63 Watts
	V2: 12 Vdc	0.6 – 3.0 A	120	
	V3: -12 Vdc	0.0 – 0.8 A	120	
SF60P388AR ¹	V1: 5 Vdc	1.2 – 6.0 A	50	63 Watts
	V2: 24 Vdc	0.4 – 2.0 A	240	
	V3: 12 Vdc	0.0 – 0.8 A	120	
SF60P390AR ¹	V1: 5 Vdc	0.6 – 6.0 A	50	63 Watts
	V2: 10 Vdc	0.2 – 2.0 A	100	
	V3: -10 Vdc	0.0 – 1.0 A	100	

SF□6□P3□□AR



Notes:

1. Available with 3-Pin Input Header and PCB Configuration *Only*.
2. Total (combined) Output Voltage/Current cannot exceed Output Power.
(Voltage #1 x Current #1) + (Voltage #2 x Current #2) + (Voltage #3 x Current #3) ≤ Max. Power (Watts)
3. Measured w/ 0.1 μF ceramic capacitor & 47 μF electrolytic capacitor in parallel and a 20 MHz Bandwidth-limited scope.



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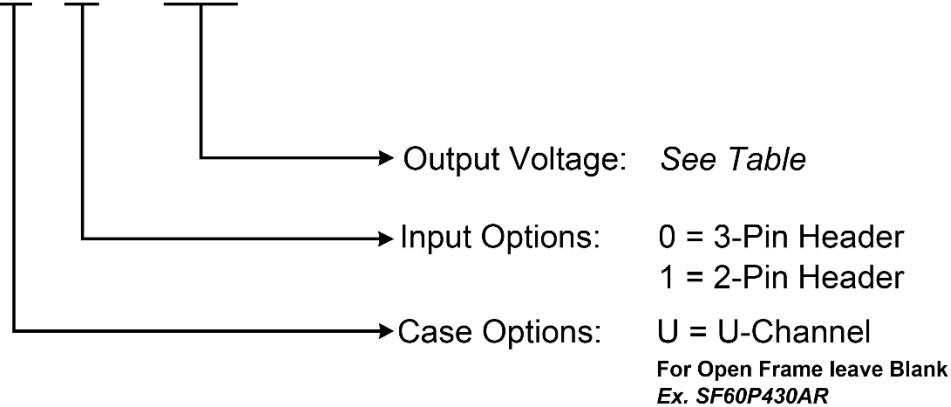
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Output Voltage and Current Table: Quad Output

Model Number	Output Voltage	Output Current <i>Limited to Output Power²</i>	Ripple & Noise (mV P-P) ³	Output Power
SF_6_P430AR	V1: 5 Vdc	0.6 – 6.0 A	50	63 Watts
	V2: 12 Vdc	0.3 – 3.0 A	120	
	V3: -12 Vdc	0.0 – 0.8 A	120	
	V4: -5 Vdc	0.0 – 0.8 A	50	
SF60P435AR ¹	V1: 5 Vdc	1.2 – 6.0 A	50	63 Watts
	V2: 12 Vdc	0.6 – 3.0 A	120	
	V3: -12 Vdc	0.0 – 0.8 A	120	
	V4: 24 Vdc	0.0 – 0.8 A	240	

SF□6□P4□□AR



Notes:

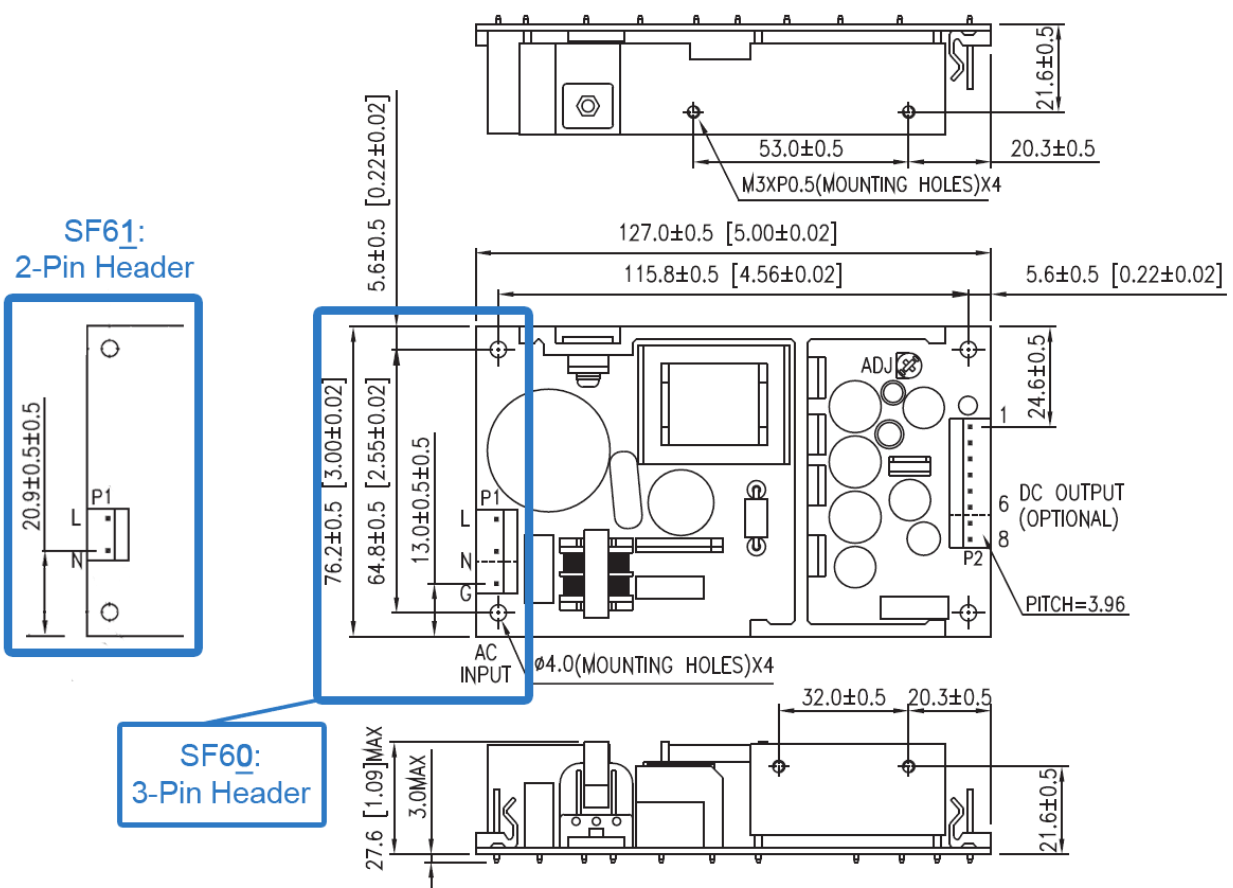
1. Available with 3-Pin Input Header and PCB Configuration Only.
2. Total (combined) Output Voltage/Current cannot exceed Output Power.
 $(Voltage \#1 \times Current \#1) + (Voltage \#2 \times Current \#2) + (Voltage \#3 \times Current \#3) + (Voltage \#4 \times Current \#4) \leq Max. Power (Watts)$
3. Measured w/ 0.1 μ F ceramic capacitor & 47 μ F electrolytic capacitor in parallel and a 20 MHz Bandwidth-limited scope.



Mechanical Specification (mm [in])

SF6_P_ _ _AR: PCB Style

Pin Connection 6-Pin / 8-Pin Header								
Output Model	Pin							
	1	2	3	4	5	6	7	8
Single (6-Pin)	+V	+V	+V	Rtn	Rtn	Rtn		
Dual (6-Pin)	V2	V1	V1	Com	Com	N/C		
Triple (6-Pin)	V2	V1	V1	Com	Com	V3		
Quad (8-Pin)	V2	V1	V1	Com	Com	V3	V4	V4



- **Input Connector Mating:**
 - 3-Pin Header: Molex Housing 09-50-3051 and Molex 2478 Series Crimp Terminals

- **Output Connector Mating:**
 - 6-Pin Header: Molex Housing 09-50-3061 and Molex 2478 Series Crimp Terminals
 - 8-Pin Header (Quad-Output): Molex Housing 09-50-3081 and Molex 2478 Series Crimp Terminals



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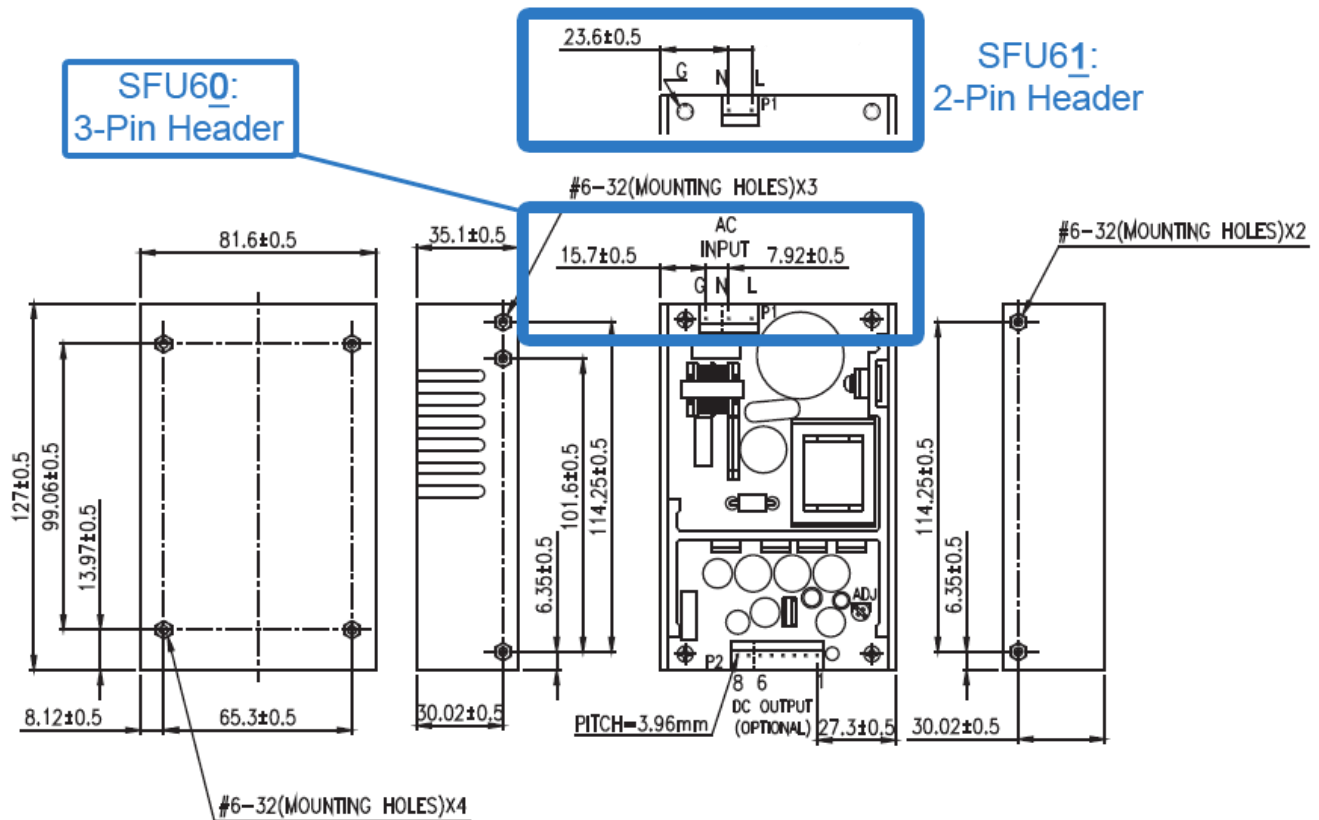
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Mechanical Specification (mm [in]) Continued

SFU6_P_ _AR: U-Channel Style

Pin Connection 6-Pin / 8-Pin Header								
Output Model	Pin							
	1	2	3	4	5	6	7	8
Single (6-Pin)	+V	+V	+V	Rtn	Rtn	Rtn		
Dual (6-Pin)	V2	V1	V1	Com	Com	N/C		
Triple (6-Pin)	V2	V1	V1	Com	Com	V3		
Quad (8-Pin)	V2	V1	V1	Com	Com	V3	V4	V4



- **Input Connector Mating:**
 - 2-Pin Header: Molex Housing 09-50-3051 and Molex 2478 Series Crimp Terminals

- **Output Connector Mating:**
 - 6-Pin Header: Molex Housing 09-50-3061 and Molex 2478 Series Crimp Terminals
 - 8-Pin Header (Quad-Output): Molex Housing 09-50-3081 and Molex 2478 Series Crimp Terminals