

# Switching Power Supplies

## Custom Adaptations and Special Applications

A few examples from simple modifications to complete ground-up design, for optimizing a supply's application to fitting a system's need

**Need:** Interface to your system

**Solution:** Virtually any connector system you choose

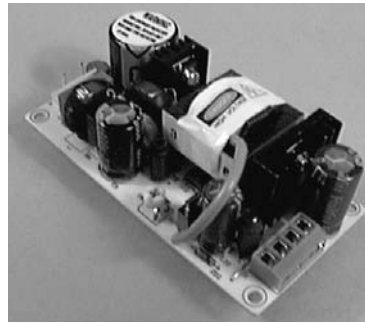
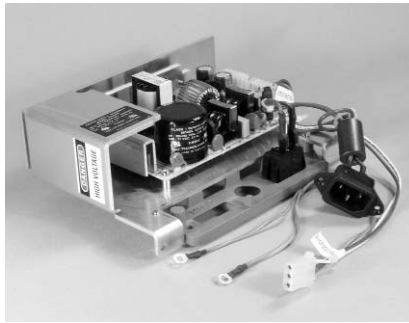


**Need:** Option to make a desk-top stationary

**Solution:** Simple low cost brackets for screw-down

**Need:** Integrate supply into system packaging

**Solution:** Complete module with custom sheet metal, molding, harnesses, input and switch module

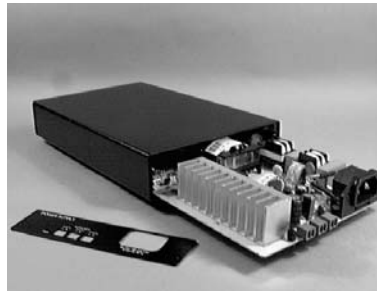


**Need:** UL2601, Medical supply with horizontal input access after installation

**Solution:** 36 Watts 2 x 4 inch PCB with Euro block termination

**Need:** High current at continuous high temperature, no fan, closed case to be stacked; very limited convection

**Solution:** 100 Watts continuous at 70°C in 1 inch height

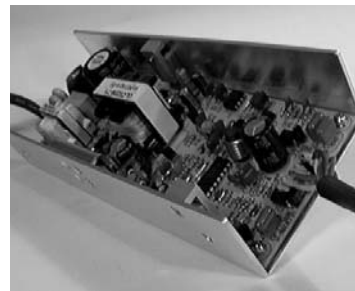
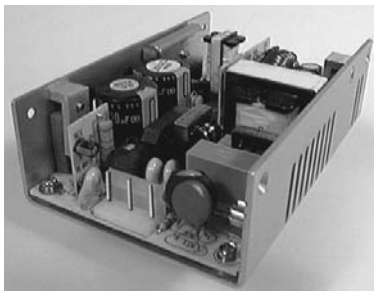


**Need:** Attractive low cost, very rugged case

**Solution:** Custom extrusion and end panels, to be used as external module

**Need:** High current, high temperature, to drive large thermal print head

**Solution:** 3 x 5 inch, 70°C operation with 36A peak current without shut-down; full overload and thermal protection



**Need:** Wide temperature (outdoor) power supply and battery charger

**Solution:** 0 - 80°C integrated power supply/ separate battery charger/ with all sensing and status logic outputs

We're interested in exploring your needs, through adapting the standard designs in the following pages, or defining and developing new designs together with you. Further, to name just a few, we design supplies with combined AC/ DC input, can provide LED and or logic signals for any function, any sort of input surge protection, and overall power ratings through 500 Watts.

# Switching Power Supplies

## External Wall Plug-In

### 10 Watt Power Strip



56 x 44 x 27.5 mm

Output Volts DC	Current min-max	Part Number
3V	0-2.00A	SP10003
5V	0-1.60A	SP10005
6V	0-1.30A	SP10006
7.5V	0-1.33A	SP10007
9V	0-1.11A	SP10009
12V	0-0.83A	SP10012
15V	0-0.66A	SP10015
18V	0-0.56A	SP10018
24V	0-0.42A	SP10024
27V	0-0.37A	SP10027
33V	0-0.30A	SP10033
40V	0-0.25A	SP10040

**ANY output voltage available from 5VDC to 40VDC**

**Any output connector available**

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 70 % typical at full load  
 Overcurrent, short circuit protected  
 Working temperature: 50°C at full load  
 Approvals: UL, c-UL, CE, T Mark  
 FCC Class B, CSPR 22 Class B

### 10 Watt 90° Wall Plug-in



74 x 49 x 40.5 mm

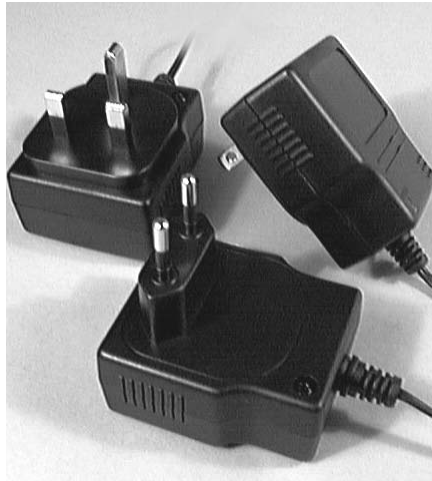
Output Volts DC	Current	Part Number*
5V	0-2.00A	SP10105
6V	0-1.50A	SP10106
7.5V	0-1.30A	SP10107
9V	0-1.20A	SP10109
12V	0-1.00A	SP10112
15V	0-0.80A	SP10115
18V	0-0.60A	SP10118
24V	0-0.40A	SP10124

\* For euro plug and wide input, add suffix E to part number

**Any output connector available**

Efficiency: 70% typical at full load  
 Overvoltage, short circuit protected  
 Working temperature 40°C at full load  
 Approvals/ Input Voltage: North America 2 blade plug:  
 UL, C-UL; 90-132VAC, 47-63Hz  
 Euro plug: TUV, CE; 90-264VAC,  
 FCC Class B, CSPR 22 Class B

### 15 Watt Wall Plug-in



65 x 55 x 34.1 mm

Output Volts DC	Current Min-Max	Part Number
3	0 - 3.30A	SP15103
5	0 - 2.00A	SP15105
6	0 - 1.67A	SP15106
7.5	0 - 1.33A	SP15107
9	0 - 1.33A	SP15109
12	0 - 1.25A	SP15112
13.5	0 - 1.11A	SP15113
15	0 - 1.00A	SP15115
18	0 - 0.83A	SP15118
24	0 - 0.62A	SP15124
27	0 - 0.56A	SP15127
33	0 - 0.45A	SP15133
40	0 - 0.37A	SP15140
48	0 - 0.31A	SP15148

**ANY output voltage available from 3VDC to 50VDC**  
 \*add suffix B for British plug or E for Euro plug

**Any output connector available**

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 70% typical at full load  
 Short circuit protected  
 Working temperature 50°C at full load  
 Approvals: North America: UL/ C-UL;  
 UK & Europe: TUV/ BS/ S/ CE  
 FCC Class B, CSPR 22 Class B

### 20 and 24 Watt

84 x 56 x 50 mm

Output Volts DC	Current Max 20 Watt/24 Watt	Part Number 20 Watt/24 Watt
5	3.50A/4.00A	SP20105 SP24105
6	2.50A/3.50A	SP20106 SP24106
7.5	2.50A/3.00A	SP20107 SP24107
9	2.00A/2.50A	SP20109 SP24109
12	1.60A/2.00A	SP20112 SP24112
15	1.30A/1.60A	SP20115 SP24115
18	1.00A/1.30A	SP20118 SP24118
24	0.80A/1.00A	SP20124 SP24124

**ANY output voltage available from 3VDC to 50VDC**  
 \*add suffix B for British plug or E for Euro plug

### 10 to 24 Watts Universal Plug

True Universal Wall Plug-in

World-Wide Body with Snap-in Interchangeable Plugs



78 x 50 x 40 mm

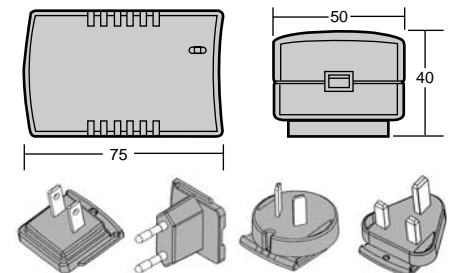
Output Volts DC	Current Max/Part Number	
3.3	2.00	SP10K03
5	2.00	SP10K05
6	1.66	SP10K06
7	1.43	SP10K07
9	1.11	SP10K09
12	1.25	SP15K12
12	2.00	SP24K12
13.5	1.15	SP15K13
13.5	1.46	SP20K13
13.5	1.77	SP24K13
15	1.27	SP20K15
15	1.60	SP24K15
18	1.05	SP20K18
18	1.33	SP24K18
24	0.79	SP20K24
24	1.00	SP24K24

**ANY output voltage available from 3VDC to 24VDC**

**Any output connector available**

\* To Order, K Designates Kit With Lock-In Plugs For US, UK, Europe & Australia Or for single plugs, change K to: U for Us Plug, B for British, E for Europe, A for Australia Or specify any combination. Plugs may be ordered separately

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 70% typical at full load  
 Overvoltage, short circuit protected  
 Working temperature 40°C at full load  
 Approvals: UL/ c-UL/ TUV/ CE  
 FCC Class B, CSPR 22 Class B



TECHNOLOGIES INC.  
 HICKSVILLE, NEW YORK

264 Duffy Avenue, Hicksville, New York 11801 • Tel. (516) 433-1313 • Fax: (516) 433-1457 • E-mail: sales@apxonline.com  
 Website: www.apxtechnologies.com • www.apxonline.com

Call, fax or e-mail for detailed data sheets or, if you have a need you don't see, give us your needs.

# Switching Power Supplies

## External Desk-Top

### 12 Watt Mini Desk-Top



74 x 46 x 25.5 mm

Output Volts DC	Current Min-Max	Part Number
5	0 - 2.50	SP12805
6	0 - 2.00	SP12806
7	0 - 1.75	SP12807
9	0 - 1.33	SP12809
12	0 - 1.00	SP12812
15	0 - 0.80	SP12815
18	0 - 0.67	SP12818
24	0 - 0.50	SP12824

**ANY output connector available**

**Available with IEC320-C14, 3 blade grounded input**

Input Voltage: 90-264VAC, 47-63Hz  
Efficiency: 65% typical at full load  
Overcurrent, short circuit protected  
Working temperature 40°C at full load  
Approvals: UL, c-UL, TUV, CE, T  
FCC Class B, CSPR 22 Class B

### 25 Watts, Multiple Output



110 x 60 x 34 mm

output Volts DC	Current Min-Max	Part Number
+5	0.2 - 2.00	SP25950
+12	0.1 - 1.00	SP25950
+5	0.2 - 2.50	SP25951
-12	0.1 - 0.80	SP25951
+5	0.2 - 2.00	SP25970
+12	0.1 - 1.00	SP25970
-12	0 - 0.20	SP25970

**ANY output connector available**

Overcurrent, Short circuit protected  
Working temperature 40°C at full load  
Approvals: UL, c-UL, TUV, CE, CB, T  
FCC Class B, CSPR 22 Class B

### 15 Watt Flexport Multi Input Style



91 x 38 x 36 mm

Output Volts DC	Current Min-Max	Part Number
3	0 - 4.00	SP15903
5	0 - 2.40	SP15905
6	0 - 2.00	SP15906
7.5	0 - 1.60	SP15907
9	0 - 1.66	SP15909
12	0 - 1.25	SP15912
13.5	0 - 1.11	SP15913
15	0 - 1.00	SP15915
18	0 - 0.83	SP15918
24	0 - 0.62	SP15924
27	0 - 0.56	SP15927
36	0 - 0.42	SP15936
40	0 - 0.37	SP15940
48	0 - 0.31	SP15948

**ANY output voltage available from 3VDC to 48VDC**

**ANY output connector available**

Note: SP15905 SPECIFIES IEC320-C-14 INPUT  
Change to SP15805 for IEC320-C8  
Change to SP15605 for IEC320-C6  
Change to SP15905CP for Cord and Plug

Input Voltage: 90-264VAC, 47-63Hz  
Efficiency: 75% typical at full load  
Overcurrent, short circuit protected  
Working temperature 50°C at full load  
Approvals: UL, c-UL, TUV, CE, CB  
FCC Class B, CSPR 22 Class B

### 24 Watt 106 x 65 x 30 mm

Output Volts DC	Current min-max	Part Number
5V	0-3.00A	SP24905
6V	0-3.33A	SP24906
7.5V	0-2.66A	SP24907
9V	0-2.44A	SP24909
12V	0-2.00A	SP24912
13.5V	0-1.77A	SP24913
15V	0-1.60A	SP24915
18V	0-1.33A	SP24918
24V	0-1.00A	SP24924
27V	0-0.89A	SP24927
33V	0-0.73A	SP24933
40V	0-0.60A	SP24940
48V	0-0.50A	SP24948

**ANY output voltage available from 5VDC to 48VDC**

**ANY output connector available**

Input Voltage: 90-264VAC, 47-63Hz  
Efficiency: 75% typical at full load  
Overvoltage, short circuit protected  
Working temperature 50°C at full load  
Approvals: UL, c-UL, TUV, CE, CB, (EN60950) NEED TO  
CHECK FCC Class B, CSPR 22 Class B

### 36 Watt Output Single & Dual Outputs



119 x 58 x 36 mm

Output Volts DC	Current min-max	Part Number
<b>Single Output</b>		
3.3V	0-5.00A	SP36803
5V	0-5.00A	SP36805
6V	0-4.50A	SP36806
7.5V	0-4.00A	SP36807
9V	0-3.50A	SP36809
12V	0-3.00A	SP36812
13.5V	0-2.60A	SP36813
14V	0-2.50A	SP36814
15V	0-2.40A	SP36815
18V	0-2.00A	SP36818
24V	0-1.50A	SP36824
30V	0-1.20A	SP36830
48V	0-0.75A	SP36848
<b>Dual Output</b>		
+3.3V	.25-2.50A	SP36803
+12V	.25-1.00A	SP36803
+3.3V	.25-2.50A	SP36803
+15V	.25-1.00A	SP36803
+5V	.25-2.50A	SP36805
+12V	.25-1.00A	SP36805
+5V	.25-2.50A	SP36805
+15V	.25-1.00A	SP36805
+5V	.25-2.50A	SP36805
+24V	.25-0.50A	SP36812
+12V	.25-1.80A	SP36812
-12V	.25-0.50A	SP36812
+12V	.25-1.80A	SP36912
-5V	.25-1.00A	SP36912

**ANY output connector available**

Input Voltage: 90-264VAC, 47-63Hz  
Efficiency: 75% typical at full load, 70% > 7.5VDC output  
Overvoltage protected  
Overcurrent protected, short circuit protected  
Working temperature 40°C at full load  
Approvals: UL, c-UL, TUV, CE  
FCC Class B, CSPR 22 Class B

**Input Option:**



**2 pin IEC320-C8  
p/n SP368xx**

**Available with IEC320-C14,  
3 blade grounded input:  
change p/n to SP369xx;**



# Switching Power Supplies

## External Desk-Top

### 45-50 Watt Output Single Output



146 x 76 x 43 mm

Output Volts DC	Current min-max	Part Number
<b>Single Output*</b>		
2V	0-8.00A	SP45902
3V	0-8.00A	SP45903
5V	0-8.00A	SP45905
6V	0-7.00A	SP45906
7.5V	0-5.60A	SP45907
8V	0-5.62A	SP45908
9V	0-5.00A	SP45909
12V	0-3.75A	SP45912
13.5V	0-3.33A	SP45913
15V	0-3.00A	SP45915
18V	0-2.77A	SP45918
24V	0-2.08 A	SP45924
27V	0-1.85 A	SP45927
33V	0-1.51 A	SP45933
40V	0-1.25 A	SP45940
48V	0-1.04 A	SP45948

ANY output voltage available from 2VDC to 50VDC,  
single outputs Remote sensing available

Any output connector available

### 60 Watt Output

146 x 76 x 43 mm

Output Volts DC	Current min-max	Part Number
5V	0-10.00A	SP60905
6V	0-9.16A	SP60906
7.5V	0-7.33A	SP60907
9V	0-6.50A	SP60909
12V	0-5.00A	SP60912
13.5V	0-4.44A	SP60913
15V	0-4.00A	SP60915
18V	0-3.33A	SP60918
24V	0-2.50A	SP60924
27V	0-2.22A	SP60927
33V	0-1.82A	SP60933
40V	0-1.50A	SP60940
48V	0-1.25A	SP60948

ANY output voltage available from 5VDC to 50VDC

Any output connector available

### Specifications SP45 through SP60

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 83% typical at full load  
 Overcurrent, short circuit protected  
 Working temperature 50°C at full load  
 Approvals: UL, c-UL, TUV, CE, CB  
 FCC Class B, CSPR 22 Class B  
 Remote sensing available

### UL 2601-1 Medical Approval Single Output



Output Volts DC	Current min-max	Part Number
2	0-10.00A	SM50902
3	0-8.00A	SM50903
5	0-8.00A	SM50905
6	0-7.00A	SM50906
7.5	0-5.60A	SM50907
9	0-5.00A	SM50909
12	0-3.75A	SM50912
15	0-3.00A	SM50915
18	0-2.77A	SM50918
24	0-2.08A	SM50924
27	0-1.85A	SM50927
33	0-1.51A	SM50933
40	0-1.25A	SM50940
48	0-1.04A	SM50948

ANY single output voltage available

### UL 2601-1/UL 1950\* Multiple Outputs

Output Volts DC	Current min-max	Part Number
<b>Dual Output*</b>		
+3.3V	.5-5.00A	SX*42960
+12V	.2-2.00A	
+5V	.5-5.00A	SX*42950
+12V	.2-2.00A	
+5V	.5-5.00A	SX*42953
+15V	.2-1.50A	
+5V	.5-5.00A	SX*42954
+24V	.1-1.00A	
+3.3V	.5-5.00A	SX*42959
+5V	.1-2.00A	
+5V	.5-5.00A	SX*42962
-24V	.1-1.00A	
+12V	.5-5.00A	SX*42956
-12V	.2-1.00A	
+15V	.5-5.00A	SX*42957
-15V	.2-1.00A	
<b>Triple Output</b>		
+3.3V	.5-5.00A	SX*42980
+12V	.2-2.00A	
-5	0-0.80A	
+5V	.5-5.00A	SX*42977
+12V	.2-2.00A	
-5V	0-0.80A	
+5V	.5-5.00A	SX*42970
+12V	.2-2.00A	
-12V	0-0.80A	
+5V	.5-5.00A	SX*42974
+15	2-2.00A	
-15	0-0.80A	
5V	.5-5.00A	SX*42976
+24V	.1-1.00A	
-24V	0-500A	
5V	.5-5.00A	SX*42979
+24V	.1-1.00A	
-12V	0-0.80A	

\*X Signifies Approval Type:  
 For UL1950, Substitute S.  
 For UL 2601, Substitute M.

### 60 Watt Output Reduced Size



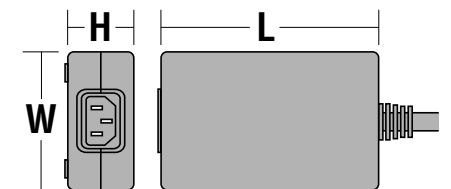
118 x 52 x 32.5 mm  
Multiple Output 121 X 61 X 35

Output Volts DC	Current min-max	Part Number
3V	0-6.60A	SP60403
5V	0-6.00A	SP60405
6V	0-5.83A	SP60406
7.5V	0-4.66A	SP60407
8V	0-5.00A	SP60408
9V	0-4.44A	SP60409
12V	0-4.16A	SP60412
13.5	0-4.07A	SP60413
15V	0-3.67A	SP60415
18V	0-3.33A	SP60418
24V	0-2.50A	SP60424
27V	0-2.22A	SP60427
33V	0-1.82A	SP60433
40V	0-1.50A	SP60440
48V	0 - 1.25A	SP60448
<b>Dual Output*</b>		
+5	.50 - 7.00A	SP60455
-5	.20 - 1.00A	
+5	.56 - 3.00A	SP60450
+12	.50 - 2.50A	
+5	.50 - 5.00A	SP60451
+12	.50 - 2.00A	
+5	.50 - 5.00A	SP60464
-12	.50 - 2.00A	
+5	.50 - 5.00A	SP60453
+15	.50 - 1.60A	
+5	0.50 - 5.00A	SP60454
+24	0.20 - 1.00A	

ANY single output voltage available  
 from 3VDC to 50VDC,

Any output connector available

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 83% typical at full load  
 Overcurrent, short circuit protected  
 Working temperature 50°C at full load  
 Approvals: UL, c-UL, TUV, CE, CB  
 FCC Class B, CSPR 22 Class B  
 Remote sensing available



# Switching Power Supplies

## External Desk-Top

### New 80 watt



168 x 78.5 x 44.5 mm

Output Volts DC	Current min-max	Part Number
<b>Single Output</b>		
3V	0-16.60A	SP80903
5V	0-12.00A	SP80905
6V	0-10.83A	SP80906
7.5V	0-8.66A	SP80907
8V	0-9.37A	SP80908
9V	0-8.33A	SP80909
12V	0-6.66A	SP80912
13.5V	0-5.92A	SP80913
15V	0-5.33A	SP80915
18V	0-4.44A	SP80918
24V	0-3.33A	SP80924
27V	0-2.96A	SP80927
33V	0-2.42A	SP80933
40V	0-2.00A	SP80940
48V	0-1.60A	SP80948
<b>Dual Output</b>		
3.3V	.5-7.00A	SP80959
+5V	.1-3.00A	
3.3V	.5-7.00A	SP80960
+12V	.1-2.75A	
5V	.5-7.00A	SP80950
+12V	.3-3.00A	
5V	.5-7.00A	SP80953
+15V	.1-3.00A	
5V	.5-7.00A	SP80954
+24V	.2-2.00A	
+5V	.5-7.00A	SP80955
-24V	.2-2.00A	
<b>Triple Output</b>		
+3.3V	.3-7.00A	SP80980
+12V	.1-3.00A	
-5V	.1-0.80A	
+5V	.5-7.00A	SP80977
+12V	.1-3.00A	
-5V	.1-0.80A	
+5V	.5-7.00A	SP80970
+12V	.1-3.00A	
-12V	.1-0.80A	
+5V	.5-7.00A	SP80974
+15V	.1-3.00A	
-15V	.1-0.50A	
+5V	.5-7.00A	SP80976
+24V	.1-2.00A	
-24V	.1-0.50A	
+5V	.5-7.00A	SP80979
+24V	.1-2.00A	
-12V	.1-0.50A	

**Any single output voltage available from 3VDC to 48VDC**

**Optional on-off switch**

**Any output connector available**

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 83% typical at full load  
 Overvoltage, overcurrent, short circuit protected  
 Working temperature 50°C at full load  
 Approvals: UL, c-UL, TUV, CE, CB  
 FCC Class B, CSPR 22 Class B  
 Remote sensing available

### 130 Watts PFC High Power External



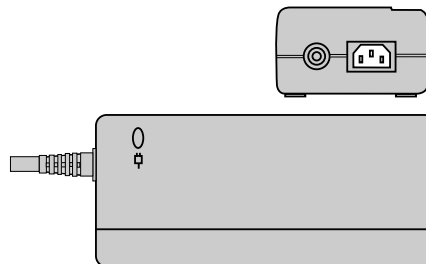
196 x 88 x 50.5 mm

Output Volts DC	Current Min-Max	Total Power Watts	Part Number Single Output
3	0 - 33.30A	100	SP130903
5	0 - 26.00A	130	SP130905
6	0 - 21.60A	130	SP130906
8	0 - 16.25A	130	SP130908
9	0 - 14.40A	130	SP130909
12	0 - 10.83A	130	SP130912
13	0 - 9.63A	130	SP130913
15	0 - 8.67A	130	SP130915
18	0 - 7.22A	130	SP130918
24	0 - 5.41A	130	SP130924
27	0 - 4.81A	130	SP130927
33	0 - 3.94A	130	SP130933
40	0 - 3.25A	130	SP130940
48	0 - 2.71A	130	SP130948
<b>Dual Output*</b>			
+3.3	.50 - 20.00A	83.4	SP130960
+12	.20 - 2.00A		
+5	.50 - 20.00A	130	SP130950
+12	.20 - 2.00A		
+5	.50 - 20.00A	130	SP130953
+15	.20 - 2.00A		
+5	.5 - 20.00A	130	SP130954
+24	.10 - 2.00A		

**ANY single output voltage available from 3VDC to 48 VDC**

**Any output connector available**

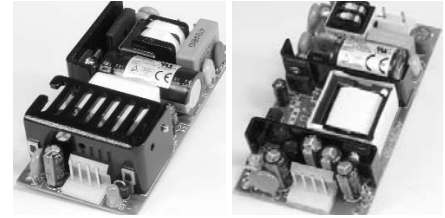
Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 80% minimum at full load  
 Overvoltage protected  
 Overcurrent protected, short circuit protected  
 Working temperature 50°C at full load  
 Approvals: UL, c-UL, TUV, CE  
 FCC Class B, CSPR 22 Class B



## Open Frame

### 10, 15, 20 Watt Open Frame

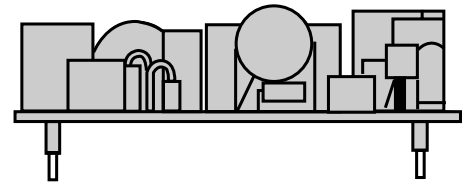
Conventional PCB or Pluggable Module



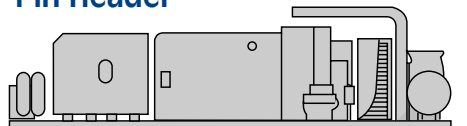
Output Volts DC	Current Min-Max	Part Number:	
		Pin Header	Pluggable
<b>10 Watt</b>			
3.3	0 - 2.50A		SFP10103
5	0 - 2.00A		SFP10105
12	0 - 0.83A		SFP10112
15	0 - 0.67A		SFP10115
24	0 - 0.42A		SFP10124
<b>15 Watt</b>			
3.3	0 - 3.00A		SFP15103
5	0 - 3.00A		SFP15105
12	0 - 1.25A		SFP15112
15	0 - 1.00A		SFP15115
24	0 - 0.63A		SFP15124
<b>20 Watt</b>			
3.3	0 - 4.40A	SF15103	SFP15103
5	0 - 4.40A	SF15105	SFP15105
12	0 - 1.80A	SF15112	SFP15112
15	0 - 1.40A	SF15115	SFP15115
24	0 - 0.92A	SF15124	SFP15124

Input Voltage: 90-264VAC, 47-63Hz  
 Efficiency: 80% typical at full load  
 Overcurrent, short circuit protected  
 Working temperature 45°C at full load  
 Approvals: UL, c-UL, TUV, CE  
 FCC Class B, CSPR 22 Class B

### Pluggable



### Pin Header



WATTS	PLUGGABLE	PCB, PIN HEADERS
10	2.56" x 1.77" x .91" 65 x 45 x 23 mm	
15	2.75" x 1.89" x .984" 69.9 x 48 x 25 mm	
20	3.5" x 2" x .8" 88.6 x 50.8 x 20.32 mm	3.5" x 2" x .8" 88.6 x 50.8 x 20.32 mm