

Single & Multi Output Switchers

100-300 Watts PF Series



THE **XP**ERTS IN POWER

- CE Marked LVD
- 1 to 5 Outputs
- Power Factor Corrected
- 85-264 VAC Universal Input
- Regulated Outputs
- Medical Approved Versions
- Remote Sensing Provided

Specification

Input

- | | |
|--------------------------------|-----------------------------------|
| <i>Input Voltage</i> | • 85-264 V AC |
| <i>Input Frequency</i> | • 47-63 Hz |
| <i>Inrush Current</i> | • 30 A max at 230 VAC |
| <i>Power Factor/ Harmonics</i> | • 0.9 min at 230 VAC, EN61000-3-2 |

Output

- | | |
|----------------------------|---|
| <i>Hold Up Time</i> | • 20 ms min at 110 VAC at full load |
| <i>Output Voltage</i> | • See Table |
| <i>Voltage Adjustment</i> | • $\pm 5\%$ min on outputs 1, 2 & 3 PF300, on outputs 1 & 2 only on others, (-15%, +5% on PF150 & PF225 UM42 & UM43 models) |
| <i>Line Regulation</i> | • 0.5% on all outputs |
| <i>Load Regulation</i> | • 1% or better on all outputs, except semi-regulated output 2 models 5% (10-100% load change) |
| <i>Remote Sense</i> | • Compensates for up to 250 mV loss on outputs 1 & 2 PF300, output 1 only PF225, single output models only PF150 |
| <i>Ripple & Noise</i> | • 1% pk-pk 20 MHz bandwidth |
| <i>Overload Protection</i> | • 110% rated load current outputs 2-5, PF150 outputs 3 & 4 only, auto recovery |
| <i>Over Power</i> | • PF150 165 watts, PF225 250 watts, PF300 340 watts |
| <i>Overvoltage</i> | • 120-150% V1. Shuts down all outputs, recycle power to restart |

General

- | | |
|--------------------------------|--|
| <i>Temperature Coefficient</i> | • 0.02%/°C all outputs |
| <i>Efficiency</i> | • 68-80% depending on model |
| <i>Isolation</i> | • 4250 VDC Input to Output, 2150 VDC Input to Ground PF300
5656 VDC Input to Output, 3535 VDC Input to Ground PF150 & PF225 |
| <i>Switching Frequency</i> | • 80 kHz |
| <i>Leakage Current</i> | • P version <300 μ A earth leakage N.C., <100 μ A patient leakage (floating o/p) |
| <i>MTBF</i> | • 100,000 hours to MIL-HDBK-217E at 25 °C ground benign |

Environmental

- | | |
|------------------------------|--|
| <i>Operating Temperature</i> | • 0 °C to +50 °C, derate 2.5%/°C above 50 °C (70 °C max) PF150 & PF225 |
| <i>Storage Temperature</i> | • -40 °C to +85 °C, |
| <i>Thermal Protection</i> | • Shutdown protects against fan failure/ excessive ambient temperature PF300 |

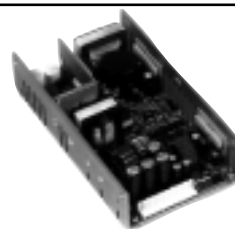
EMC & Safety

- | | |
|-------------------------|--|
| <i>Safety Approvals</i> | • EN60950, IEC950, UL1950, CSA22.2 No. 234/950, EN60601-1 & UL2601-1 (PF150 & PF225) |
| <i>Immunity EMC</i> | • IEC801-1, -2, -3, -4, -5
• EN55011/22 Class B radiated & conducted emissions, EN61000-3-2. EN55011/22 Class A radiated & conducted - P versions |

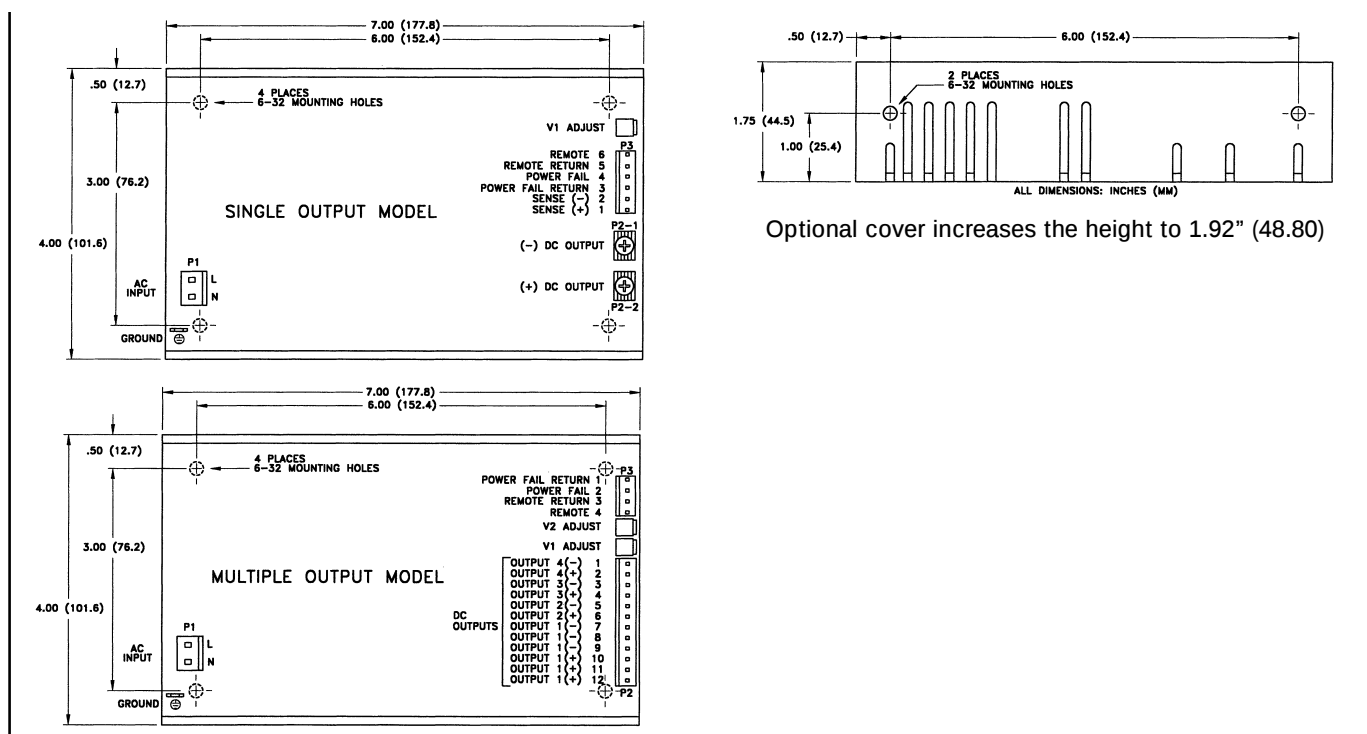
OUTPUT VOLTAGE & CURRENT RATINGS				PF
Output 1	Output 2	Output 3	Output 4	Model Number
+3.0-3.3 V/15 A	+5 V/5 A	+12 V/2 A	-12 V/2 A	PF150PM41
+5 V/15 A	+3.0-3.3 V/5 A	+12 V/2 A	-12 V/2 A	PF150PM42
+5 V/15 A	+3.0-3.3 V/5 A	+15 V/2 A	-15 V/2 A	PF150PM43
+5 V/15 A	-5.2 V/5 A	+12 V/2 A	-12 V/2 A	PF150PM44
+5 V/15 A	-5.2 V/5 A	+15 V/2 A	-15 V/2 A	PF150PM45
+5 V/15 A	+12 V/5 A	+12 V/2 A	-12 V/2 A	PF150PM46
+5 V/15 A	+12 V/5 A	+15 V/2 A	-15 V/2 A	PF150PM47
+5 V/15 A	+24 V/3 A ⁽⁷⁾	+12 V/2 A	-12 V/2 A	PF150PM11
+5 V/15 A	+24 V/3 A ⁽⁷⁾	+15 V/2 A	-15 V/2 A	PF150PM12
+5 V/15 A	+12 V/5 A ⁽⁷⁾	+5 V/2 A	-12 V/2 A	PF150PM31
+5 V/15 A	+15 V/5 A ⁽⁷⁾		-15 V/2 A	PF150PM32
+15 V/5 A	-15 V/5 A			PF150PM33
+12 V/7.5 A	-12 V/5 A			PF150PM21
+15 V/5 A	-15 V/5 A			PF150PM22
+5 V/15 A	+12 V/6 A			PF150PM23
+5 V/15 A	+24 V/3 A ⁽⁷⁾			PF150PM01
3.0-3.3 V/30 A				PF150PS03
5 V/30 A				PF150PS05
12 V/12.5 A				PF150PS12
15 V/10 A				PF150PS15
24 V/6.25 A				PF150PS24
28 V/5.4 A				PF150PS28
*30 V/5 A				PF150PS30
48 V/3.1 A				PF150PS48

Notes

1. Free air convection cooling: 100 watts max output power.
2. Baseplate cooling: 125 watts max output power with 1 sq. ft 0.09" aluminium baseplate.
3. 300 LFM forced air cooling: 150 watts max output power.
4. * By connecting output 1 & 2 in series.
5. Consult office for alternate output configurations.
6. Optional cover, add suffix '-C' to model number. Optional isolated outputs, add suffix '-I' to model number.
7. Output 2 semi regulated (not adjustable).
8. 10% min load on output 1 required to achieve specified regulation on other outputs.
9. Outputs 1 & 2 adjustable $\pm 5\%$ (not semi regulated output 2 models - See Note 7).



Mechanical Details



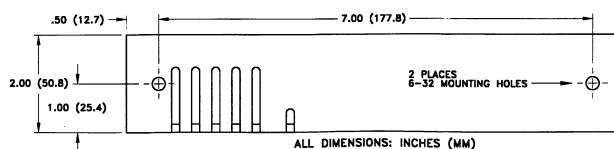
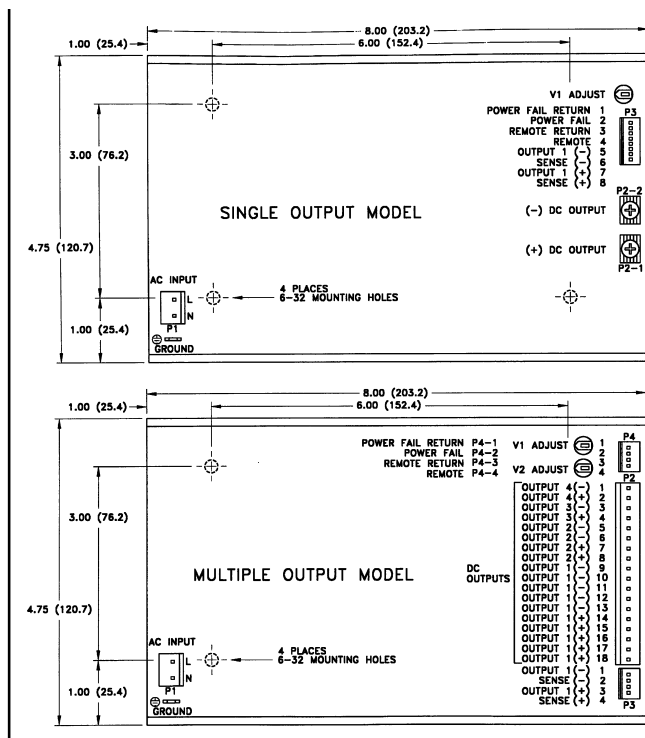
OUTPUT VOLTAGE & CURRENT RATINGS

Output 1	Output 2 ⁽¹⁾⁽¹⁰⁾	Output 3 ⁽¹⁾⁽¹⁰⁾	Output 4	Model Number
+3.0-3.3 V/25 A	+5 V/8 A	+12 V/2 A	-12 V/2 A	PF225PM41
+5 V/25 A	+3.0-3.3 V/8 A	+12 V/2 A	-12 V/2 A	PF225PM42
+5 V/25 A	+3.0-3.3 V/8 A	+15 V/2 A	-15 V/2 A	PF225PM43
+5 V/25 A	-5.2 V/8 A	+12 V/2 A	-12 V/2 A	PF225PM44
+5 V/25 A	-5.2 V/8 A	+15 V/2 A	-15 V/2 A	PF225PM45
+5 V/25 A	+12 V/8 A	+12 V/2 A	-12 V/2 A	PF225PM46
+5 V/25 A	+12 V/8 A	+15 V/2 A	-15 V/2 A	PF225PM47
+5 V/25 A	+24 V/5 A ⁽⁷⁾	+12 V/2 A	-12 V/2 A	PF225PM11
+5 V/25 A	+24 V/5 A ⁽⁷⁾	+15 V/2 A	-15 V/2 A	PF225PM12
+5 V/25 A	+12 V/8 A		-12 V/2 A	PF225PM31
+5 V/25 A	+15 V/6 A		-15 V/2 A	PF225PM32
+12 V/10 A	-12 V/8 A			PF225PM21
+15 V/10 A	-15 V/6 A			PF225PM22
+5 V/25 A	+12 V/8 A			PF225PM23
+5 V/25 A	+24 V/5 A ⁽⁷⁾			PF225PM01
3.0-3.3 V/45 A				PF225PS03
5 V/45 A				PF225PS05
12 V/18.8 A				PF225PS12
15 V/15 A				PF225PS15
24 V/9.4 A				PF225PS24
28 V/8 A				PF225PS28
* 30 V/6 A				PF225PS30
48 V/4.7 A				PF225PS48

Notes

1. All outputs 1 & 2 are derated 20% when convection cooled.
2. Free air convection cooling: 150 watts maximum output power.
3. 300 LFM forced air cooling: 225 watts maximum output power.
4. * By connecting output 1 & 2 in series.
5. Consult office for alternate output configurations.
6. Optional cover, add suffix '-C' to model number. Optional isolated outputs, add suffix '-I' to model number.
7. Output 2 semi regulated (not adjustable).
8. Option '-P' version (patient connected), provides unit with a <100 μ A leakage current.
9. 10% min load on output 1 required to achieve specified regulation on other outputs.
10. Outputs 1 & 2 adjustable $\pm 5\%$ (not semi regulated output 2 models - See Note 7).

Mechanical Details



Optional cover increases the height to 2.15" (54.60)

P1 Connector kits available

OUTPUT VOLTAGE & CURRENT RATINGS

Output* 1	Output* 2	Output* 3	Output 4	Output 5	Model Number
+5 V/40 A	+24 V/4 A (6 A pk)	+12 V/6 A	-5 V/1 A	-12 V/2 A	PF300PM51-C
+5 V/40 A	+12 V/8 A (12 A pk)	-12 V/6 A	-5 V/1 A	+24 V/2 A	PF300PM52-C
+5 V/40 A	+12 V/8 A (12 A pk)	+24 V/3 A	-15 V/1 A	+15 V/2 A	PF300PM53-C
+5 V/40 A	+24 V/4 A (6 A pk)	24 V/3 A	-12 V/1 A	+12 V/2 A	PF300PM54-C
+24 V/8 A	+12 V/8 A (12 A pk)	+5 V/6 A	-15 V/1 A	+15 V/2 A	PF300PM55-C
+24 V/8 A	+24 V/4 A (6 A pk)	+5 V/6 A	-15 V/1 A	+15 V/2 A	PF300PM56-C
+24 V/8 A	+5 V/8 A	+12 V/6 A	-5 V/1 A	-12 V/2 A	PF300PM58-C
+5 V/8 A	+3.3 V/12 A		+12 V/2 A	-12 V/2 A	PF300PM40-C
+5 V/40 A	+12 V/8 A (12 A pk)	-5 V/5 A		-12 V/2 A	PF300PM41-C
+5 V/40 A	+24 V/4 A (6 A pk)	+12 V/6 A		-12 V/2 A	PF300PM42-C
+5 V/40 A	+24 V/4 A (6 A pk)	+15 V/4 A		-15 V/2 A	PF300PM43-C
+24 V/8 A	+12 V/8 A (12 A pk)	+5 V/6 A		-12 V/2 A	PF300PM44-C
+5 V/40 A	-5.2 V/12 A	+12 V/6 A		-12 V/2 A	PF300PM45-C
+24 V/8 A	+12 V/8 A (12 A pk)		-12 V/1.5 A	5 V/2 A	PF300PM46-C
+24 V/8 A	+12 V/8 A	+5 V/10 A		-12 V/2 A	PF300PM49-C
+5 V/40 A	+12 V/8 A (12 A pk)	-12 V/6 A			PF300PM31-C
+5 V/40 A	+12 V/8 A (12 A pk)	+24 V/3 A			PF300PM32-C
+5 V/40 A	+15 V/6 A (8 A pk)	-15 V/4 A			PF300PM33-C
+12 V/16 A	-12 V/8 A (12 A pk)	+5 V/6 A			PF300PM34-C
5 V/40 A	+3.3 V/12 A		+12 V/2 A		PF300PM36-C
+5 V/40 A	+24 V/24 A (6 A pk)				PF300PM21-C
+12 V/16 A	-12 V/8 A (12 A pk)				PF300PM22-C
+15 V/13 A	-15 V/6 A (10 A pk)				PF300PM23-C
+24 V/8 A	-24 V/4 A (6 A pk)				PF300PM24-C
5 V/60 A					PF300PS05-C
12 V/25 A					PF300PS12-C
15 V/20 A					PF300PS15-C
24 V/12 A					PF300PS24-C

Notes

1. This product is intended for use in I.T. equipment to be used in residential, commercial or light industrial installations.
2. Remote sense terminals may be used to compensate for cable losses up to 250 mV. The use of a twisted pair is recommended, as well as decoupling capacitor CD 0.1-10 μ F/A connected across the load side.
3. Each output can deliver its full rated current but total output power must not exceed 300 watts.
4. A minimum load of 10% on output 1 will assure proper regulation of all other outputs.
5. Peak current on output 2 is available for 10 s max with a 20% duty cycle.
6. 500 LFM forced air, directed at or across the top of the perforated cover (optional) is required.
7. Peak to peak output ripple and noise is measured directly at the output terminals of the power supply, without the use of the probe ground lead or retractable tip, 20 MHz bandwidth.
8. The power supply has been safety approved and final testing using a DC dielectric strength test. The use of an AC source for this test will result in breakdown and damage to internal components and should not be used.

* Outputs 1, 2 & 3 adjustable $\pm 5\%$ min.

Mechanical Details