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RoHS Compliant

Features

- RoHS lead-solder-exempt compliant
- Greater than 1 million hours demonstrated MTBF
- Active Power Factor Correction (PFC) meets EN61000-3-2
- Dual main outputs provide 3.3V and 5V for mixed-mode applications
- Single-wire current sense on outputs V1 and V2
- Remote sense on outputs V1 and V2
- Overtemperature, overload, and overvoltage protection
- Available with metric or SAE mountings
- Isolated V3 and V4 can be used as positive or negative outputs

Description

The PerFormanCe Power PFC250 Series combines Power Factor Correction (PFC) with wide-range outputs to meet the requirements of data communications and industrial controls. The PFC250-4530 and PFC250-4350 provide high current +3.3V and +5V on a single platform to support mixed-mode, high-speed digital circuitry.

Power-One's unique dual-converter architecture combines high reliability with exceptional regulation. All models feature remote sense on outputs V1 and V2 to provide independent compensation of output cable losses. Other standard features include independent current sharing on V1 and V2, thermal shutdown, and remote inhibit. Airflow of 300 linear feet per minute (LFM) is required to deliver the full power density of 3.0 watts per cubic inch. The PerFormanCe Power PFC250 meets international safety requirements and is CE Marked to the Low Voltage Directive.

Single-Output Model Selection

MODEL	OUTPUT VOLTAGE	ADJUSTMENT RANGE	MAXIMUM OUTPUT CURRENT (NOTE 1)	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE %p-p (NOTE 2)	INITIAL SETTING ACCURACY
PFC250-1003	3.3V	3.15V to 3.45V	50A	0.5%	0.8%	1%	3.28V to 3.32V
PFC250-1005	5V	4.5V to 5.5V	50A	0.5%	0.8%	1%	4.98V to 5.02V
PFC250-1012	12V	10.8V to 13.5V	23A	0.5%	0.8%	1%	11.94V to 12.06V
PFC250-1015	15V	13.5V to 18.3V	18.3A	0.2%	1.0%	1%	14.92V to 15.08V
PFC250-1024	24V	21.6V to 26.4V	10.5A	0.5%	0.8%	1%	23.88V to 24.12V
PFC250-1048	48V	46.0V to 56.0V	6A	0.5%	1.0%	1%	47.52V to 48.48V

NOTES: 1) Output currents ratings are expressed with 300 LFM forced air.
2) Maximum peak-to-peak noise expressed as a percentage of output voltage, 20 MHz bandwidth.

Multiple-Output Model Selection – 250W with 300 LFM Forced-Air Cooling
Isolated V3 and V4 can be used as Positive or Negative Outputs

MODEL	OUTPUT VOLTAGE	ADJUSTMENT RANGE	OUTPUT CURRENT	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE %p-p (NOTE 1)	INITIAL SETTING ACCURACY
	+5V	5.0V to 5.5V	40A	0.5%	1%	1%	4.98V to 5.02V
PFC250-4000	+12V	10.8V to 13.2V	10A	0.5%	1%	1%	11.94V to 12.06V
(Note 2)	12V	10.8V to 13.2V	6A	0.5%	7%	1%	11.94V to 12.06V
	5V	5.0V to 5.5V	3A	0.5%	2%	1%	4.98V to 5.02V
	+5V	5.0V to 5.5V	40A	0.5%	1%	1%	4.98V to 5.02V
PFC250-4001	+12V	10.8V to 13.2V	10A	0.5%	1%	1%	11.94V to 12.06V
(Note 2, 4)	12V	10.8V to 13.2V	6A	0.5%	7%	1%	11.75V to 12.06V
	12V	10.8V to 13.2V	3A	0.5%	7%	1%	11.75V to 12.06V
	+5V	5.0V to 5.5V	40A	0.5%	1%	1%	4.98V to 5.02V
PFC250-4004	+12V	10.8V to 13.2V	10A	0.5%	1%	1%	11.94V to 12.06V
(Note 3, 4)	15V	13.5V to 16.5V	6A	0.5%	7%	1%	14.70V to 15.30V
	15V	13.5V to 16.5V	3A	0.5%	7%	1%	14.70V to 15.30V
	+3.3V	3.15V to 3.45V	40A	0.5%	1.5%	1%	3.28V to 3.32V
PFC250-4350	+5V	5.0V to 5.5V	20A	0.5%	1%	1%	5.00V to 5.04V
(Note 2, 4)	12V	10.8V to 13.2V	6A	0.5%	7%	1%	11.75V to 12.06V
	12V	10.8V to 13.2V	3A	0.5%	7%	1%	11.75V to 12.06V
	+5V	5.0V to 5.5V	40A	0.5%	1%	1%	4.98V to 5.02V
PFC250-4530	+3.3V	3.15V to 3.45V	20A	0.5%	1.5%	1%	3.28V to 3.32V
(Note 2, 4)	12V	10.8V to 13.2V	6A	0.5%	7%	1%	11.75V to 12.06V
	12V	10.8V to 13.2V	3A	0.5%	7%	1%	11.75V to 12.06V

NOTES: 1) Maximum peak-to-peak expressed as a percentage of output voltage, 20 MHz bandwidth.
2) Total current available from V1 + V2 is 40 amperes, total current available from V3 + V4 is 6.6 amperes.
3) Total current available from V1 + V2 is 40 amperes, total current available from V3 + V4 is 6.0 amperes.
4) One adjustment pot is provided for both V3 and V4 outputs. One-to-one tracking is provided on V3 and V4 when equally loaded.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

Input Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Input Voltage - AC	Continuous input range.	85		264	VAC
Input Frequency	AC Input.	47		63	Hz
Brown Out Protection	Lowest AC input voltage that regulation is maintained with full rated loads.	80			VAC
Hold-up Time	After last AC line peak at 250 watts.	20			ms
Input Current	85 VAC at full rated load.			4.5	ARMS
Input Protection	Non-user serviceable internally located AC input line fuse.				
Inrush Surge Current	Internally limited by thermistor. Vin = 230 VAC, one cycle, 25°C.			35	APK
Power Factor	Per EN61000-3-2.	0.95			W/VA
Operating Frequency	Switching frequency of main output transformer. Switching frequency of secondary transformer. Switching frequency of Power Factor Correction circuit.		129 70 60		kHz

Output Specifications

PARAMETER	CONDITIONS/DESCRIPTION		MIN	NOM	MAX	UNITS
Efficiency	Full rated load, 110 VAC. Varies with distribution of loads among outputs.		65	75		%
Minimum Load, V1	Minimum load required to maintain regulation on V2	Single output models All other models	0 4			Amps
Minimum Load, V3	Minimum load required to maintain regulation on V4	Single output models PFC250-4000 All other models	N/A 1.25 0.6			Amps
Ripple and Noise	Full load, 20 MHz bandwidth.		See Model Selections			
Output Power	300 LFM forced-air cooling.				250	Watts
Overshoot /Undershoot	Output voltage overshoot/undershoot at turn-on.				0	%
Regulation	Varies by output. Total regulation includes: line changes over the specified input range, changes in load starting at 20% load and changing to 100% load.		See Model Selections			
Transient Response	Recovery time to within 1% of initial set point due to a 25% step load from any load setting from minimum to maximum load.			500		µs
Turn-on Delay	Time required for initial output voltage stabilization.			2		Sec
Turn-on Rise Time	Time required for output voltage to rise from 10% to 90%.			20		ms

Interface Signals and Internal Protection

PARAMETER	CONDITIONS/DESCRIPTION		MIN	NOM	MAX	UNITS
Overvoltage Protection	Latch style overvoltage protection. Available on all single output models and V1, V2, and V3 on all multiple-output models.	3.3V output, V1 3.3V output, V2 5V output, V1, V2 12V output, V1, V2 15V output, V1 24V output, V1 48V output, V1	4.1 4.2 6.0 14.0 18.3 27.0 60.0		4.65 4.2 6.4 16.0 19.8 30.7 70.0	V
Overload Protection	Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition.					
Overtemperature Protection	System shutdown due to excessive internal temperature, automatic reset.					
Output Good	TTL compatible signal. Signal is high when V1 output is within 5% of nominal. Signal shall remain low for 20 milliseconds following loss of Output Good.	3.3V 5V	3.16 4.75			V
Input Power Fail Warning	TTL compatible logic signal. Time before regulation dropout due to loss of input power. May be used as independent PSOK signal in redundant applications.		5			ms
Current Share	Accuracy of shared current with up to 6 parallel units. Single-wire current share on V1 and V2 with return via vegative (-) Sense return. Minimum current share load is 6A or 50W, whichever is smaller.				10	%
Remote Sense	Available on V1 and V2. Total voltage compensation for cable losses with respect to the main output.				250	mV
Inhibit	Output voltage is inhibited by application of external high (5V) signal.					
Standby Power	Available with fan option versions only (+5VDC).				100	mA

Safety, Regulatory, and EMI Specifications

PARAMETER	CONDITIONS/DESCRIPTION		MIN	NOM	MAX	UNITS
Agency Approvals	UL1950. CSA 22.2 NO. 234/950. EN60950 (TÜV).			Approved		
Dielectric Withstand Voltage	Input to Output per EN60950.		2600			VDC
Electromagnetic Interference	FCC CFR title 47 Part 15 Sub-Part B - Conducted. EN55022 / CISPR 22 Conducted.		B B			Class
ESD Susceptibility	Per EN61000-4-2, level 4.		8			kV
Radiated Susceptibility	Per EN61000-4-3, level 3.		10			V/M
EFT/Burst	Per EN61000-4-4, level 4.		± 4			kV
Input Transient Protection	Per EN61000-4-5 level 3.	Line-to-Line Line-to-Ground	1 2			kV
Insulation Resistance	Input-to-Output.			10		MΩ
Leakage Current	Per EN60950, 264 VAC.				1500	µA

Environmental Specifications

PARAMETER	CONDITIONS/DESCRIPTION		MIN	NOM	MAX	UNITS
Altitude	Operating. Non-Operating.				10k 40k	ASL Ft. ASL Ft.
Operating Temperature	 Derate linearly above 50°C by 2.5% per °C.	At 100% load: At 50% load:	0		50 70	°C °C
Storage Temperature			-55		85	°C
Temperature Coefficient	0°C to 70°C (after 15 minute warmup).			± 0.02	± 0.05	%/°C
Relative Humidity	Non-Condensing.		5		95	%RH
Shock	Peak acceleration.				20	GPK
Vibration	Random vibration, 10 Hz to 2 kHz, 3 axes.				6	GRMS

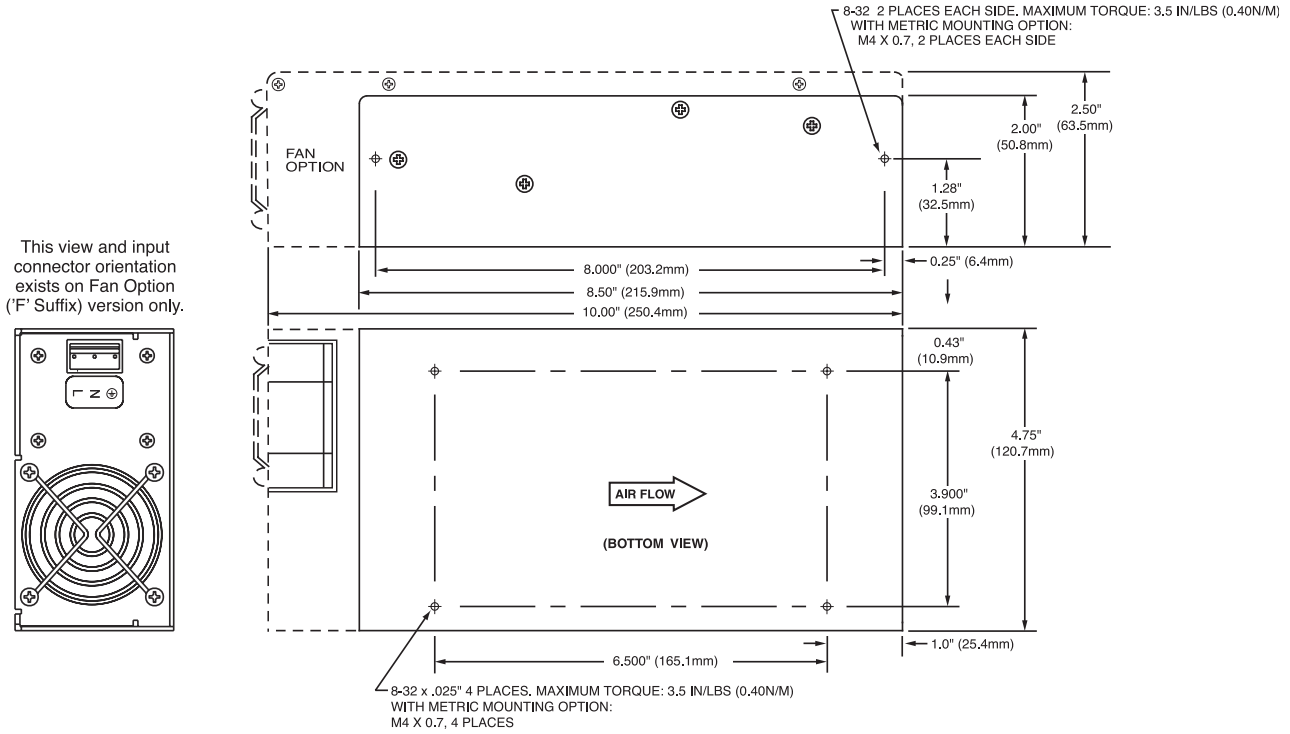
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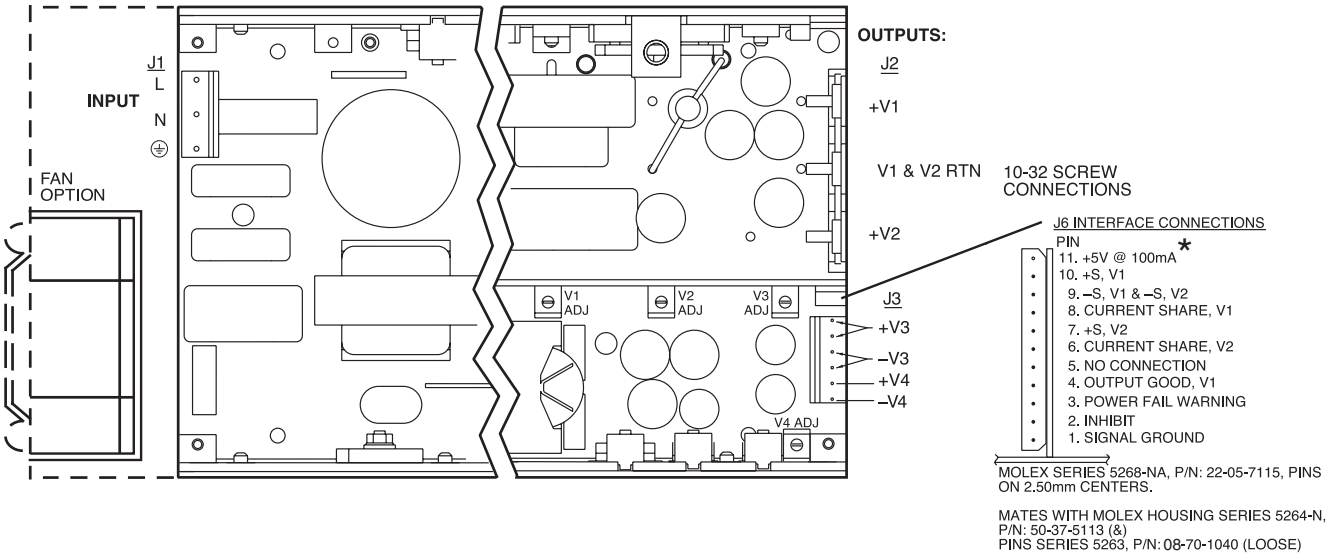
DESCRIPTION	NOTES	SIZE IMPACT
Metric Mounting	Add “M” as a suffix to the model number to order chassis with M4 x 0.7 mounting inserts.	8.50" x 4.75" x 2.00" (215.9mm x 120.7mm x 50.8mm)
Fan	Add “F” as a suffix to the model number to order integral fan. Adds 1.5” (38.1mm) to overall length and 0.5” (12.7mm) to height.	10.00” x 4.75” x 2.50” (250.4mm x 120.7mm x 63.5mm)

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

Overall Size: 8.50" x 4.75" x 2.00" (215.9mm x 120.7mm x 50.8mm)
Overall Length With Fan: 10.00" (250.4mm)
Weight: 2.75 lb (1.25 kg)





CONNECTOR	MOLEX SERIES	HOUSING	PIN SERIES	PINS (LOOSE)	PINS (CHAIN)	WIRE GAUGE
J1	41695	09-50-8051	6838	08-50-0189	08-50-0187	18-20AWG
	41695	09-50-8051	2478	08-50-0106	08-50-0105	18-20AWG
	2139	09-50-3051	2478	08-50-0106	08-50-0105	18-20AWG
J3	41695	09-50-8061	6838	08-50-0189	08-50-0187	18-20AWG
	41695	09-50-8061	2478	08-50-0106	08-50-0105	18-20AWG
	2139	09-50-3061	2478	08-50-0106	08-50-0105	18-20AWG
J6 *	5264-N	50-37-5113	5263	08-70-1040	08-70-1039	22-28AWG

Chassis: 0.063" (1.6mm) Aluminum Alloy, With Clear Finish

* NOTE: THE +5V @ 100mA STANDBY POWER OUTPUT (J6-11) IS AVAILABLE ONLY ON UNITS WITH THE FAN OPTION.

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