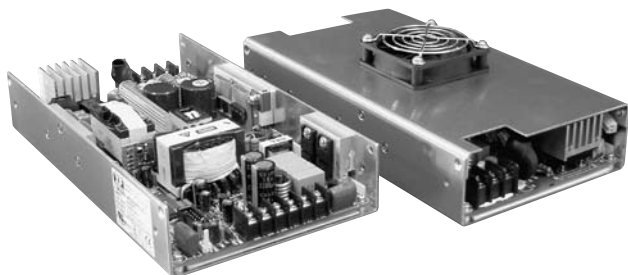


JPS250 Series



- 200 W with Convection Cooling
- High Efficiency - up to 88%
- Meets 1U, Low Profile Requirements
- AC OK & DC OK Signals
- Zero Voltage Switching Technology
- Remote On/Off & Remote Sense
- Current Share

Specification

Input

Input Voltage	• 90-264 VAC (170-370 VDC)
Input Frequency	• 47-63 Hz
Input Current	• 2.75 A/1.40 A max at 115 VAC/230 VAC
Inrush Current	• 30 A at 115 VAC, 60 A at 230 VAC
Power Factor	• 0.99 typical
Earth Leakage Current	• 2.0 mA max 264 VAC/60 Hz
Input Protection	• Internal 5 A, 250 V fuse

Output

Output Voltage	• See tables
Output Voltage Trim	• $\pm 10\%$ on output 1 only
Initial Set Accuracy	• At 60% rated load $\pm 1\%$ on V1 & V2, $\pm 5\%$ on V3 & V4
Minimum Load	• Single output models: No minimum load required. Multi-output models, see note 4
Start Up Delay	• 2 s typical
Start Up Rise Time	• 80 ms typical
Hold Up Time	• 20 ms min at low line & rated load
Line Regulation	• $\pm 0.5\%$ at rated load across input voltage range
Load Regulation	• $\pm 1\%$ for single output models & V1 & V2 of multi-output models, $\pm 5\%$ for V3 & V4
Transient Response	• 4% max deviation, recovery to within 1% in 500 μ s for a 25% load change
Ripple & Noise	• $\pm 1\%$ max pk-pk, 20 MHz BW
Overvoltage Protection	• 115-140% on single outputs & V1 of quad output models, recycle input to reset
Overtemperature Protection	• Shuts down at $+110^\circ\text{C}$, auto recovery measured internally
Overload Protection	• 110-130% of max rated load on all O/Ps, trip & restart (Hiccup mode), auto recovery
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• $\pm 0.05\%/^\circ\text{C}$
Remote Sense	• Compensates for up to 0.5 V drop
Remote On/Off	• On = Logic Low or Open, Off = Logic High
Current Share	• Single wire current sharing on single output models & V1 & V2 of multi-output models (4 supplies can be paralleled)
Fan Output	• 5 V model: 5 V at 390 mA, 24 V model: 24 V at 80 mA, all other models: 12 V at 112 mA

General

Efficiency	• Up to 88%
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 120 kHz typical for PFC and PWM
Power Density	• 4.96 W/in ³
Signals	• AC OK, DC OK, Remote On/Off (see control and supervisory signals)
MTBF	• 255 kHrs per MIL-HDBK-217F at $+25^\circ\text{C}$

Environmental

Operating Temperature	• 0°C to $+70^\circ\text{C}$, (see derating curve) Full power to $+50^\circ\text{C}$
Cooling	• 250 W with 18 CFM airflow 200 W convection cooling
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -20°C to $+85^\circ\text{C}$
Operating Altitude	• 3000 m
Vibration	• 2 g, 10 Hz to 55 Hz, 3 mins/cycle for 30 mins each axis

EMC & Safety

Emissions	• EN55022, level B conducted FCC 20780, level B conducted
Harmonic Currents	• EN61000-3-2
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Safety Approvals	• EN60950-1:2001, UL60950-1, CSA C22.2 No. 60950-1-03, CE Mark LVD

Models and Ratings

JPS250 - Single Output **XP**

Output Power ⁽¹⁾	Output Voltage	Output Current		Ripple & Noise Pk-Pk	Efficiency	Model Number ⁽²⁾
		Convection-cooled	18 CFM			
225 W	5 V	36.0 A	45.0 A	50 mV	83%	JPS250PS05C†^
250 W	12 V	17.0 A	21.0 A	120 mV	86%	JPS250PS12C†^
	15 V	13.5 A	17.0 A	120 mV	87%	JPS250PS15C†^
	24 V	8.5 A	10.4 A	200 mV	88%	JPS250PS24C†^
	48 V	4.3 A	5.2 A	200 mV	88%	JPS250PS48C†^

Notes

1. Maximum power with 18 CFM forced air is 250 W, or 200 W with convection cooling.

2. For non-current share version delete suffix 'C' from model number.

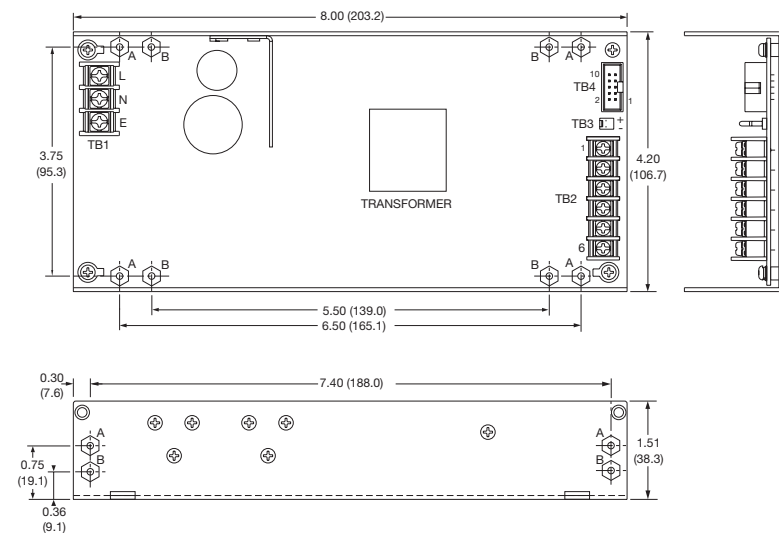
† Available from Farnell. See pages 204-206.

^ Available from Newark. See pages 207-208.

Mechanical Details

All dimensions are in inches (mm) Tolerance: ± 0.03 (0.8) max Weight: 1.65 lbs (750 g) approx.

All models (except JPS250PS05)



PIN CONNECTIONS			
Pin	TB2		TB4
	JPS250PS05	All other models	All models
1	+5 V	+V	Signal 0 V
2	+5 V	+V	DC OK
3	0 V	+V	AC OK
4	0 V	0 V	Remote On/Off
5	0 V	0 V	+Sense
6	0 V	0 V	-Sense
7	+5 V		Current Share ⁽⁶⁾
8	+5 V		N/C
9			N/C
10			N/C

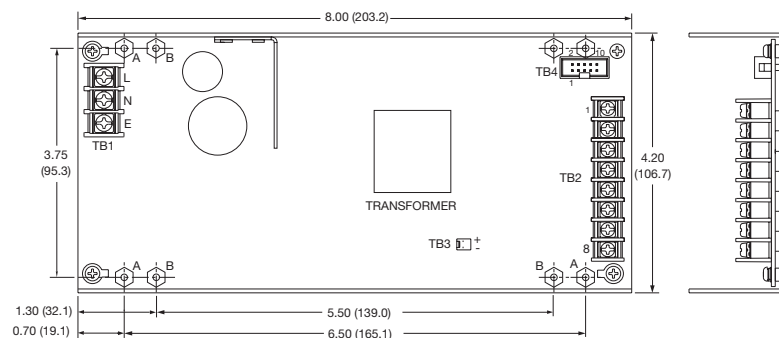
Notes:

- TB3 is for fan, with Molex 5045-02A or equivalent.
- TB1 (AC input) and TB2 (DC output) are terminal blocks.
- TB4 signal connector is Molex 70246-10 or equivalent.
- Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.
- Fan/Cover option available, order part number:
 5 V models: JPS250 F/CVR 5†^
 12, 15 & 48 V models: JPS250 F/CVR†^
 24 V models: JPS250 F/CVR 24†^
 Or add suffix '-E' to model number to receive unit with cover fitted.
- For current share operation connect signal 0 V (pin 1) between units and current share (pin 7) between units. For non 'C' models pin 7 (single wire parallel) is not used.

Fixing Holes:

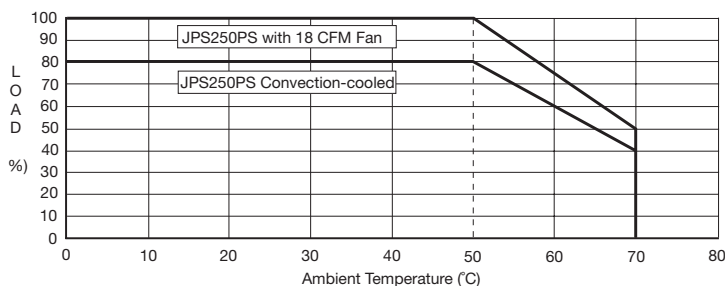
- A = #6-32 screw mounting holes
 B = M3 x 0.5 screw mounting holes

JPS250PS05



Application Notes

Derating Curve



Signals

- To turn off the output, apply 5 V to the remote On/Off.
- AC OK is a TTL signal which goes LOW when input falls below 60 VAC at rated load.
- DC OK is a TTL signal which goes LOW when PSU is in an overcurrent condition, overvoltage condition, disabled or when output falls out of regulation.
- For AC OK and DC OK signals, source current is 1 mA, sink current is 6 mA.

Models and Ratings

JPS250 - Multi Output **XP**

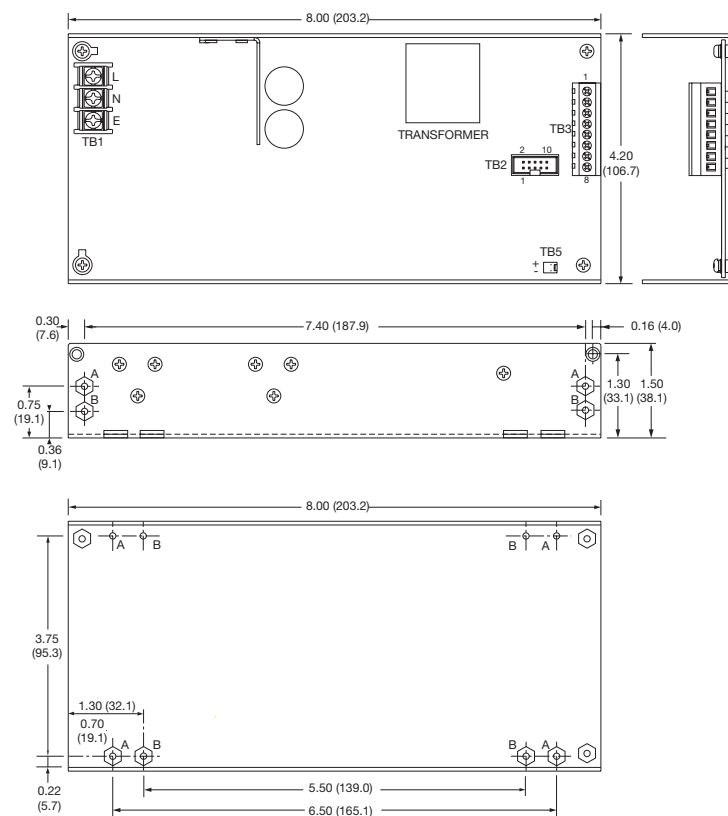
Output 1			Output 2			Output 3			Output 4			Model Number ^(2,3)
Output V1	Conv. Cooled	Max 18 CFM	Output V2	Conv. Cooled	Max 18 CFM	Output V3	Conv. Cooled	Max 18 CFM	Output V4	Conv. Cooled	Max 18 CFM	
3.3 V	16.0 A	20 A	5 V	12 A	20 A	12 V	5 A	6 A	-12 V	1 A	2 A	JPS250PQ46†^
5.0 V	17.5 A	30 A	12 V	7 A	8 A	-12 V	2 A	3 A	-5 V	1 A	2 A	JPS250PQ41†^
5.0 V	20.0 A	25 A	12 V	4 A	6 A	24 V	2 A	3 A	-12 V	1 A	2 A	JPS250PQ47†^
5.0 V	20.0 A	25 A	15 V	3 A	5 A	24 V	2 A	3 A	-15 V	1 A	2 A	JPS250PQ48†^

Notes

- Maximum power with 18 CFM forced air is 250 W, or 200 W with convection cooling.
 - For current share option add suffix 'C' to model number.
 - Current share models are built to order.
 - All models require 2 A minimum load on V1. On V2, JPS250PQ46 requires 1 A and JPS250PQ41 requires 0.5 A.
- † Available from Farnell. See pages 204-206. ^ Available from Newark. See pages 207-208.

Mechanical Details

All dimensions are in inches (mm). Tolerance: ± 0.03 (0.8) max. Weight: 1.65 lbs (750 g) approx.



Fixing Holes:

- A = #6-32 screw mounting holes
B = M3 x 0.5 screw mounting holes

PIN CONNECTIONS - TB2				
Pin	PQ41	PQ46	PQ47	PQ48
1	+5 V +S	+3.3 V +S	+5 V +S	+5 V +S
2	+5 V PS ⁽⁶⁾	+5 V -S	+5 V PS ⁽⁶⁾	+5 V PS ⁽⁶⁾
3	+12 V +S	+3.3 V PS ⁽⁶⁾	+12 V +S	+15 V +S
4	DC OK	DC OK	DC OK	DC OK
5	+12 V -S	+5 V +S	+12 V -S	+15 V -S
6	+5 V -S	+3.3 V -S	+5 V -S	+5 V -S
7	+12 V PS ⁽⁶⁾	+5 V PS ⁽⁶⁾	+12 V PS ⁽⁶⁾	+15 V PS ⁽⁶⁾
8	Remote On/Off	Remote On/Off	Remote On/Off	Remote On/Off
9	AC OK	AC OK	AC OK	AC OK
10	0 V	0 V	0 V	0 V

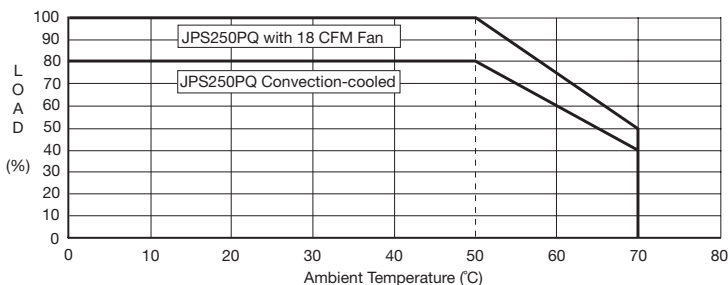
PIN CONNECTIONS - TB3				
Pin	PQ41	PQ46	PQ47	PQ48
1	+5 V	+12 V	+5 V	+5 V
2	+5 V	-12 V	+5 V	+5 V
3	0 V	+5 V	0 V	0 V
4	0 V	+5 V	0 V	0 V
5	0 V	0 V	0 V	0 V
6	-5 V	0 V	-12 V	-15 V
7	-12 V	0 V	+24 V	+24 V
8	+12 V	0 V	+12 V	+15 V
9		+3.3 V		
10		+3.3 V		

Notes:

- TB5 is for fan with Molex 5045-02A or equivalent.
- TB1 (AC input) and TB3 (DC output) are terminal blocks.
- TB2 signal connector is Molex 70246-10 or equivalent.
- Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.
- Fan/Cover option available, order part number:
PQ41, PQ46 & PQ47: JPS250 F/CVR† PQ48: JPS250 F/CVR 24†
or add suffix '-E' to model number to receive unit with cover fitted.
- PS - Single wire parallel on 'C' models only.
No connection on standard models.

Application Notes

Derating Curve



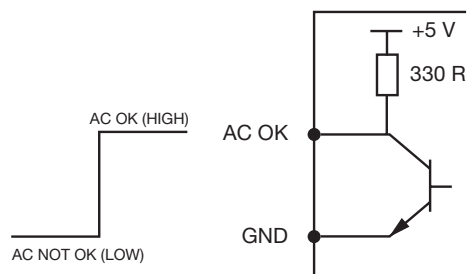
Signals

- To turn off the output, apply 5 V to the remote On/Off.
- AC OK is a TTL signal which goes LOW when input falls below 60 VAC at rated load.
- DC OK is a TTL signal which goes LOW when PSU is in an overcurrent condition, overvoltage condition, disabled or when output falls out of regulation.
- For AC OK and DC OK signals, source current is 1 mA, sink current is 6 mA.

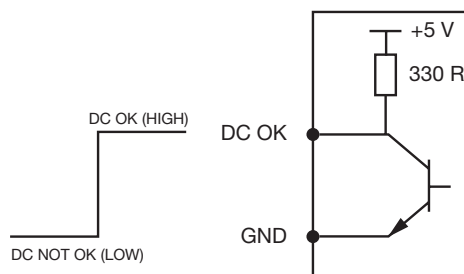
Control & Supervisory Signals

JPS250 **XP**

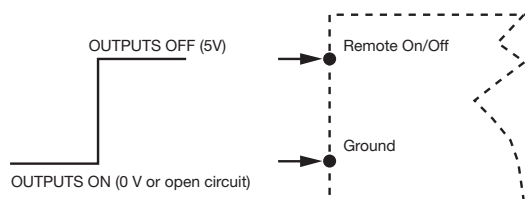
AC OK Signal



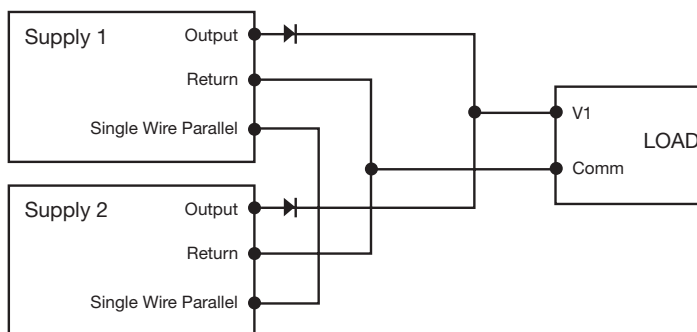
DC OK Signal



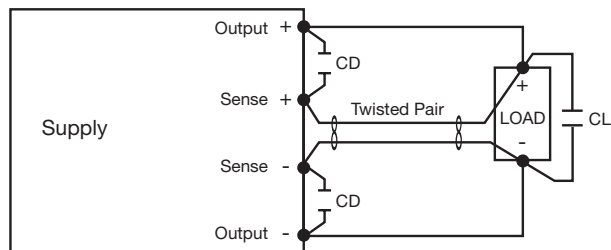
Remote On/Off Control (Inhibit)



Parallel Connection Utilizing Optional Current Share



Remote Sense Connection

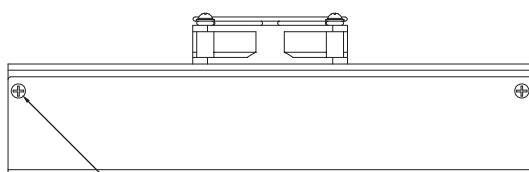
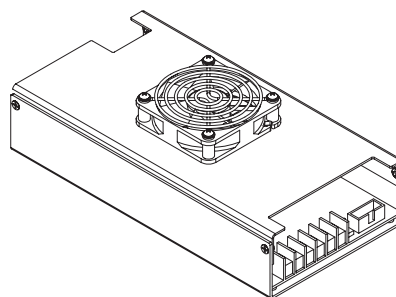
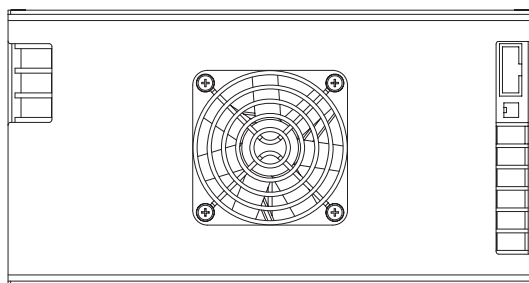


Notes:

1. CD is 0.1 μ F ceramic capacitor.
2. CL is 47 μ F electrolytic capacitor.

JPS250 Fan/Cover Option

See mechanical details notes for information on how to order.



4 x M3 x 6 C/S head fixing screws
in existing countersunk holes

