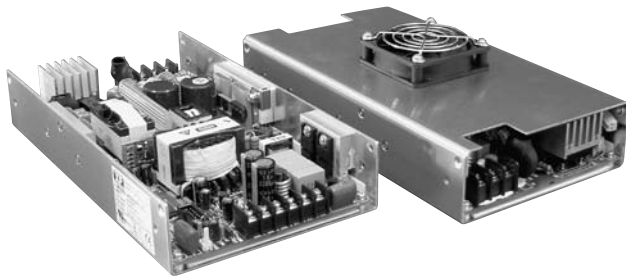


JPS250/350 Series



- 200 W / 300 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
- 3 Year Warranty

Specification

Input

Input Voltage	• 85-264 VAC (170-370 VDC)
Input Frequency	• 47-63 Hz
Input Current	• 2.75 A/1.40 A max at 115 VAC/ 230 VAC (JPS250) • 4.5 A/2.2 A max at 115 VAC/230 VAC (JPS350)
Inrush Current	• 30 A at 115 VAC, 60 A at 230 VAC
Power Factor	• 0.9 typical
Earth Leakage Current	• 3.0 mA max 264 VAC/60 Hz
Input Protection	• Internal T5 A, 250 VAC fuse (JPS250) • Internal T6.3 A, 250 VAC fuse (JPS350)

Output

Output Voltage	• See tables
Output Voltage Trim	• $\pm 10\%$ on output 1 only (VR1)
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 (JPS250) • 100 ms typical (JPS350)
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, 15 MHz bandwidth, see note 2 under model tables
Overvoltage Protection	• 115-140% on single outputs & V1 of quad output models, recycle input to reset
Overtemperature Protection	• Shuts down at +110 °C, auto recovery, measured internally
Overload Protection	• 110-130% of max rated load on all O/Ps, auto recovery
Short Circuit Protection	• Trip and restart (Hiccup mode), auto recovery
Temp. 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	• Current share on single output models & V1 & V2 of multi-output models (4 supplies can be paralleled)
Fan Output	• See mechanical notes for ordering information

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	• 125 kHrs to MIL-HDBK-217F at +50 °C, GB (JPS250) • 146 kHrs to MIL-HDBK-217F at +50 °C, GB (JPS350)

Environmental

Operating Temperature	• 0 °C to +70 °C, (see derating curve) • Full power to +50 °C
Cooling	• 250 W with 18 CFM airflow (JPS250) • 200 W convection cooling (JPS250) • 350 W with 18 CFM airflow (JPS350) • 300 W convection cooling (JPS350)
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -20 °C to +85 °C
Operating Altitude	• 2000 m
Vibration	• 2 g, 10 Hz to 55 Hz, 30 mins each axis

EMC & Safety

Emissions	• EN55022, level B conducted • FCC 20780, level B conducted
Harmonic Currents	• EN61000-3-2
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
Dips and Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
Safety Approvals	• EN60950-1, UL60950-1, • CSA C22.2 No. 60950-1, CE Mark LVD

Models and Ratings

JPS250 - Single Output **XP**

Output Power ⁽¹⁾	Output Voltage	Output Current		Ripple & Noise Pk-Pk	Model Number ⁽³⁾
		Convection-cooled	18 CFM		
225 W	5 V	36.0 A	45.0 A	50 mV	JPS250PS05C†^
250 W	12 V	17.0 A	21.0 A	120 mV	JPS250PS12C†^
	15 V	13.5 A	17.0 A	120 mV	JPS250PS15C†^
	24 V	8.5 A	10.4 A	200 mV	JPS250PS24C†^
	48 V	4.3 A	5.2 A	200 mV	JPS250PS48C†^

Notes

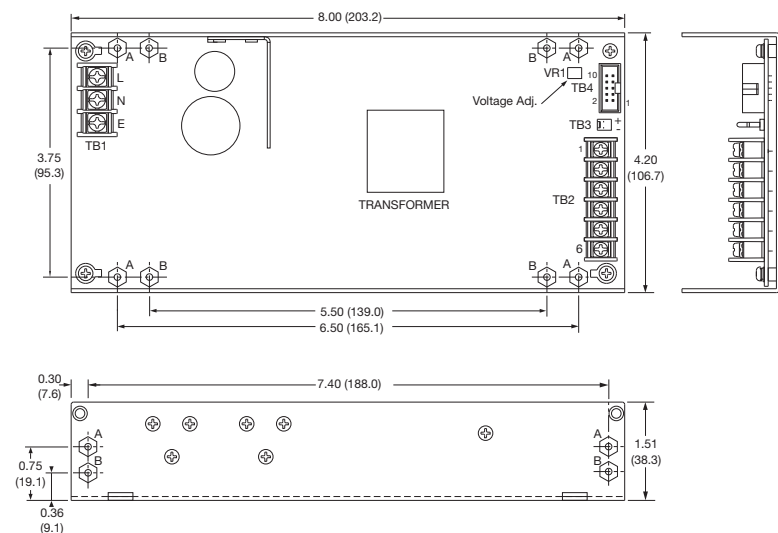
- Maximum power with 18 CFM forced air is 250 W, or 200 W with convection cooling.
- Ripple and noise measured over 15 MHz bandwidth with a 0.47 μF capacitor.
- For non-current share version delete suffix 'C' from model number.

† Available from Farnell. See pages 266-269.

^ Available from Newark. See pages 270-272.

Mechanical Details

All models (except JPS250PS05)



Pin	PIN CONNECTIONS		
	TB2	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 ⁽⁵⁾
8	+5 V		N/C
9			N/C
10			N/C

Notes

- TB3 is for fan, with Molex 5045-02A or equivalent.
5 V model: 5 V at 390 mA, 24 V model: 24 V at 80 mA, all other models: 12 V at 112 mA
- TB1 (AC input) and TB2 (DC output) are terminal blocks.
- TB4 signal connector is Molex 70246-10 or equivalent.
- 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 fan cover fitted. 4.2 x 8 x 2.48 (106.7 x 203.2 x 62.9).
- For current share operation connect current share (pin 7) between units. For non 'C' models pin 7 (current share) is not used.
- Input and output terminal screw tightening torque 9 lbs-in (1.0 Nm) maximum.

Fixing Holes:

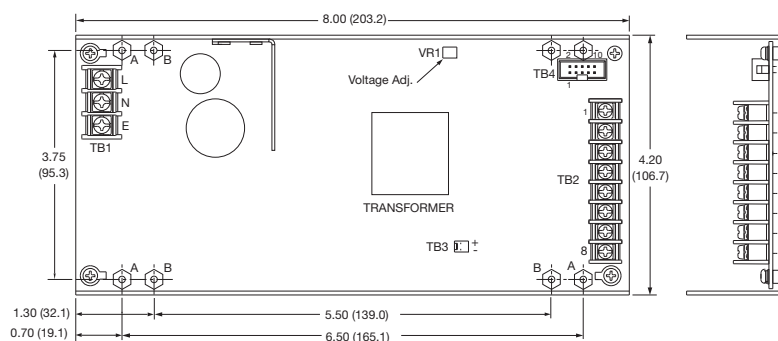
A = #6-32 screw mounting holes
B = M3 x 0.5 screw mounting holes
Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.

All dimensions are in inches (mm)

Tolerance: ±0.03 (0.8) max

Weight: 1.65 lbs (750 g) approx.

JPS250PS05



Models and Ratings

JPS250 - Multi Output **XP**

Output 1			Output 2			Output 3			Output 4			Model Number ⁽⁹⁾
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	JPS250PQ46C
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	JPS250PQ41C
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	JPS250PQ47C
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	JPS250PQ48C

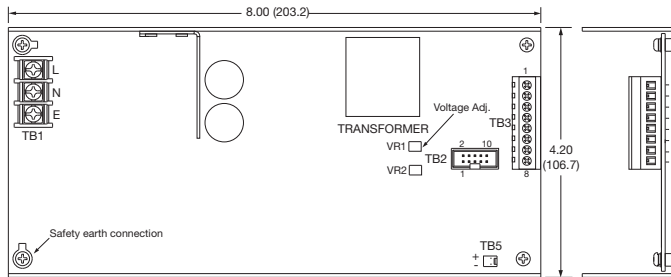
Notes

- Maximum power with 18 CFM forced air is 250 W, or 200 W with convection cooling.
- Ripple and noise measured over 15 MHz bandwidth with a 0.47 µF capacitor.
- For non current share option delete suffix 'C' from model number.
- All models require 2 A minimum load on V1. On V2, JPS250PQ46 requires 1 A and JPS250PQ41 requires 0.5 A.

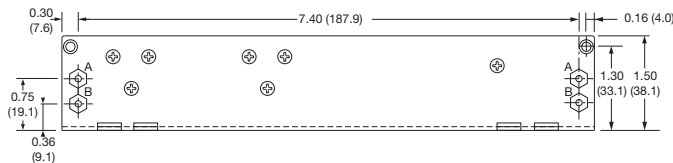
† Available from Farnell. See pages 266-269.

^ Available from Newark. See pages 270-272.

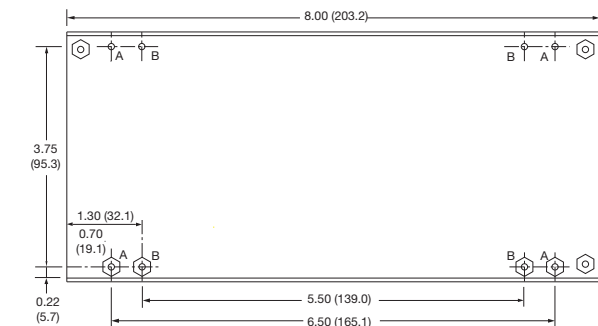
Mechanical Details



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		



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 ⁽⁵⁾	+5 V -S	+5 V PS ⁽⁵⁾	+5 V PS ⁽⁵⁾
3	+12 V +S	+3.3 V PS ⁽⁵⁾	+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 ⁽⁵⁾	+5 V PS ⁽⁵⁾	+12 V PS ⁽⁵⁾	+15 V PS ⁽⁵⁾
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



Notes

- TB5 is for fan with Molex 5045-02A or equivalent. 12 V at 112 mA.
- TB1 (AC input) and TB3 (DC output) are terminal blocks.
- TB2 signal connector is Molex 70246-10 or equivalent.
- 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 fan cover fitted.
4.2 x 8 x 2.48 (106.7 x 203.2 x 62.9).
- PS - Current share on 'C' models only.
No connection on standard models.
- VR2 is for production setting only.
- Input terminal screw tightening torque 9 lbs-in (1.0 Nm) maximum.
- Output terminal screw tightening torque 4 lbs-in (0.45 Nm) maximum.

Fixing Holes:

A = #6-32 screw mounting holes
B = M3 x 0.5 screw mounting holes
Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.

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



Models and Ratings

JPS350 - Single Output **XP**

Output Power	Output Voltage	Output Current		Ripple & Noise Pk-Pk ⁽²⁾	Model Number ⁽¹⁾
		Convection-cooled	18 CFM		
315 W	5 V	54.0 A	63.0 A	50 mV	JPS350PS05C†^
350 W	12 V	25.0 A	30.0 A	120 mV	JPS350PS12C†^
	15 V	20.0 A	24.0 A	120 mV	JPS350PS15C†^
	24 V	13.0 A	15.0 A	200 mV	JPS350PS24C†^
	48 V	6.5 A	7.3 A	200 mV	JPS350PS48C†^

Notes

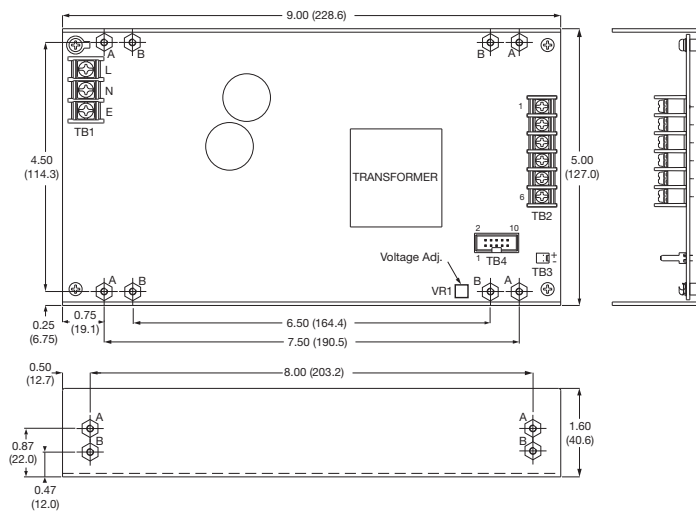
- For non-current share version delete suffix 'C' from model number.
- Ripple and noise measured over 15 MHz bandwidth with a 47 µF electrolytic capacitor and 0.47 µF ceramic capacitor.

† Available from Farnell. See pages 266-269.

^ Available from Newark. See pages 270-272.

Mechanical Details

All models (except JPS350PS05)



PIN CONNECTIONS			
Pin	TB2		TB4
	JPS350PS05	All other models	All models
1	+5 V	+V	N/C
2	+5 V	+V	N/C
3	0 V	+V	+Remote sense
4	0 V	0 V	DC OK
5	0 V	0 V	-Remote sense
6	0 V	0 V	N/C
7	+5 V		Current Share ⁽³⁾
8	+5 V		Remote On/Off
9			AC OK
10			0 V

Notes

- TB3 is for fan, with Molex 5045-02A or equivalent. 12 V at 112 mA (except JPS350PS05, 5 V at 390 mA).
- TB1 (AC input) and TB2 (DC output) are terminal blocks.
- TB4 signal connector is Molex 70246-10 or equivalent.
- Fan cover option available, order part number:
5 V models: JPS350 F/CVR 5†^
All other models: JPS350 F/CVR†^
Alternatively, add suffix '-E' to model number to receive fan cover fitted to the unit 4.95 x 8.92 x 2.48 (127.0 x 228.6 x 62.9).
- For current share operation, connect current share (pin 7) between units. For non 'C' models pin 7 is not used.
- Input and output terminal screw tightening torque 9 lbs-in (1.0 Nm) maximum.

Fixing Holes:

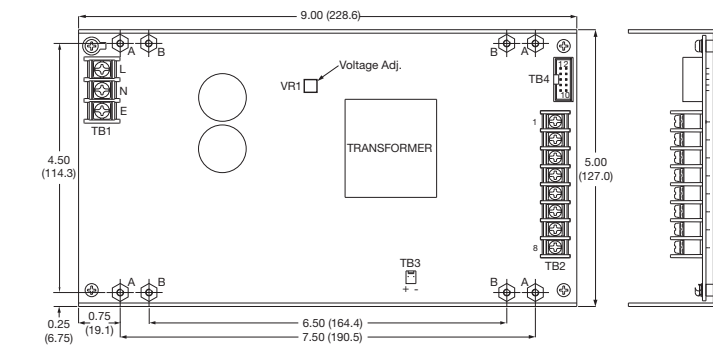
A = #6-32 screw mounting holes
B = M3 x 0.5 screw mounting holes
Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.

All dimensions are in inches (mm)

Tolerance: ±0.03 (0.8) max.

Weight: 2.12 lbs (960 g) approx.

JPS350PS05



Models and Ratings

Output 1			Output 2			Output 3			Output 4			Model Number
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	20 A	35 A	5 V	20 A	35 A	12 V	4.5 A	6 A	-12 V	1.0 A	3 A	JPS350PQ46C
5.0 V	25 A	35 A	12 V	10 A	14 A	-12 V	2.0 A	3 A	-5 V	1.0 A	2 A	JPS350PQ41C
5.0 V	25 A	35 A	12 V	6 A	8 A	24 V	3.0 A	4 A	-12 V	2.0 A	3 A	JPS350PQ47C
5.0 V	25 A	35 A	15 V	5 A	7 A	24 V	3.0 A	4 A	-15 V	1.6 A	3 A	JPS350PQ48C

Notes

- Maximum power is 350 W with 18 CFM forced air or 300 W with convection cooling.
- Ripple and noise measured over 15 MHz bandwidth with a 47 µF electrolytic capacitor and 0.47 µF ceramic capacitor.

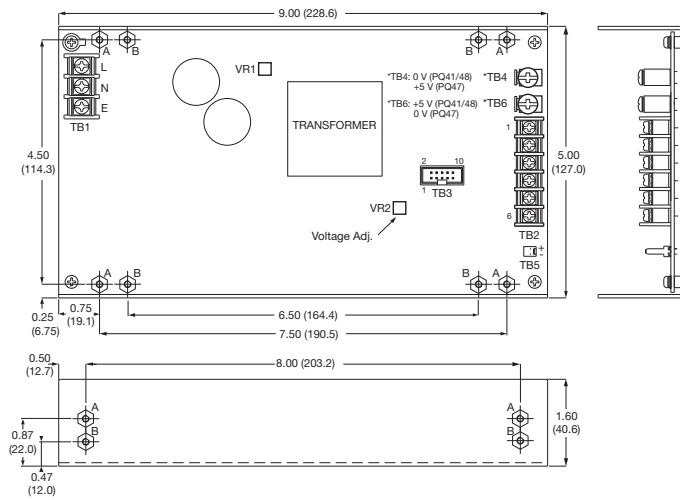
† Available from Farnell. See pages 266-269.

- For non current share version delete suffix 'C' from model number.
- All models require 2 A minimum load on V1. On V2, JPS350PQ46 requires 1 A, PQ41 requires 0.5 A and PQ47/48 requires 2 A.
- JPS350PQ46 requires 22 CFM max. OVP on V2 (5 V output) not V1.

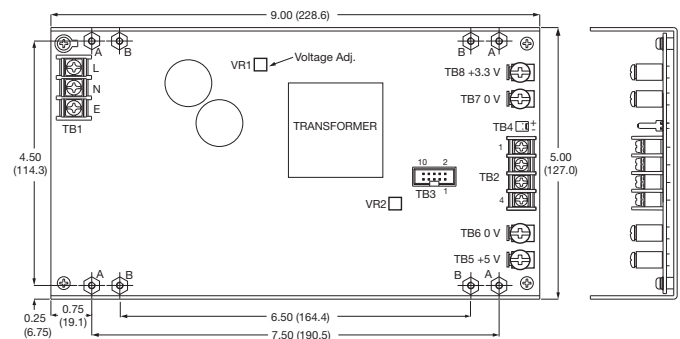
^ Available from Newark. See pages 270-272.

Mechanical Details

JPS350PQ41/47/48



JPS350PQ46



PIN CONNECTIONS - TB2				
Pin	PQ41	PQ46	PQ47	PQ48
1	-12 V	0 V	-12 V	-15 V
2	-5 V	+12 V	+24 V	+24 V
3	0 V	-12 V	0 V	0 V
4	0 V	0 V	0 V	0 V
5	0 V		0 V	0 V
6	+12 V		+12 V	+15 V

PIN CONNECTIONS - TB3				
Pin	PQ41	PQ46	PQ47	PQ48
1	+5 V +S	+5 V +S	+5 V +S	+5 V +S
2	+5 V PS ⁽⁶⁾	+5 V PS ⁽⁶⁾	+5 V PS ⁽⁶⁾	+5 V PS ⁽⁶⁾
3	+12 V +S	+3.3 V +S	+12 V +S	+15 V +S
4	DC OK	DC OK	DC OK	DC OK
5	+12 V -S	+3.3 V -S	+12 V -S	+15 V -S
6	+5 V -S	+5 V -S	+5 V -S	+5 V -S
7	+12 V PS ⁽⁶⁾	+3.3 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

Notes

- TB5 (PQ41/47/48) and TB4 (PQ46) is for fan with Molex 5045-02A or equivalent, PQ47/PQ48 24 V at 100 mA, PQ41/PQ46 12 V at 200 mA.
- TB1 (AC input) and TB2 (DC output) are terminal blocks.
- TB3 signal connector is Molex 70246-10 or equivalent.
- Fan cover option available, order part number:
PQ41, PQ46: JPS350 F/CVR†^ PQ48 & PQ47: JPS350 F/CVR 24.
Alternatively, add suffix '-E' to model number to receive fan cover fitted to the unit. 4.95 x 8.92 x 2.48 (127.0 x 228.6 x 62.9).
- PS - Current share on 'C' models only.
No connection on standard models.
- VR2 is for production setting only.
- Input and output terminal screw tightening torque 9 lbs-in (1.0 Nm) maximum.

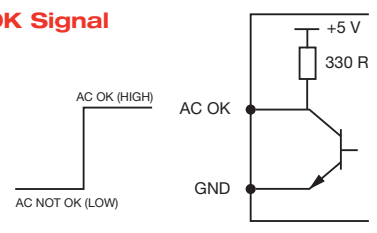
Fixing Holes:

- A = #6-32 screw mounting holes
- B = M3 x 0.5 screw mounting holes
- Maximum mounting screw penetration is 0.16 (4.0) from chassis outer surface.

All dimensions are in inches (mm)
Tolerance: ±0.03 (0.8) max.
Weight: 2.12 lbs (960 g) approx.

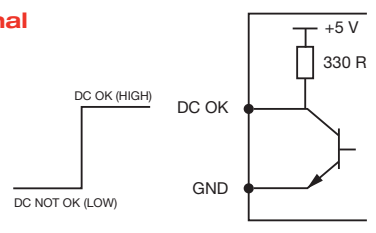
Control & Supervisory Signals

AC OK Signal



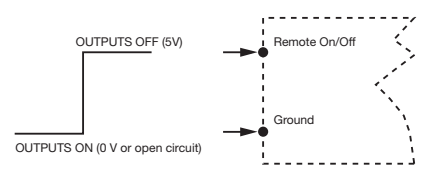
AC OK is a TTL signal which goes LOW when input falls out of specification. Source current is 1 mA, sink current is 6 mA.

DC OK Signal



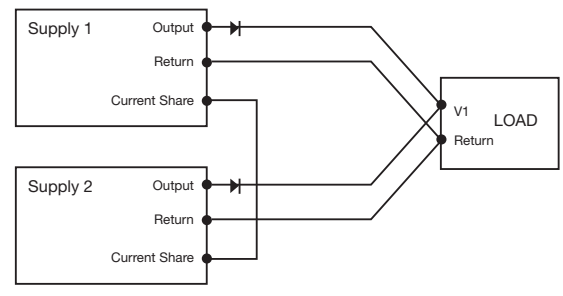
DC OK is a TTL signal which goes LOW when PSU is in an overcurrent condition, overvoltage condition, disabled or when output falls out of regulation. Source current is 1 mA, sink current is 6 mA.

Remote On/Off Control (Inhibit)

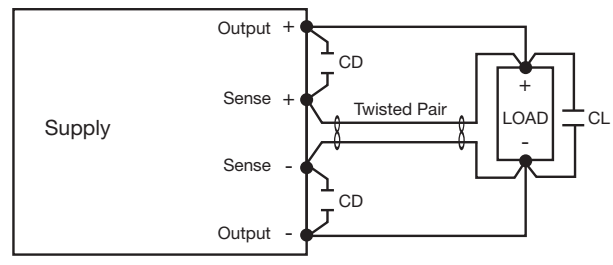


To turn off the output, apply 5 V to the remote On/Off.

Parallel Connection Utilizing Optional Current Share

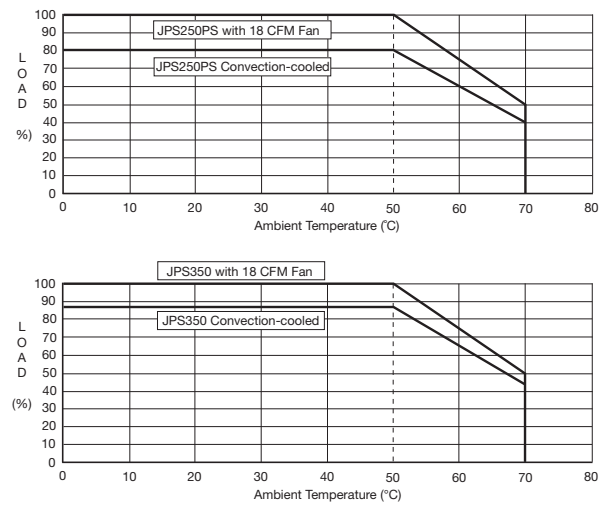


Remote Sense Connection



- Notes:**
1. CD is 0.1 μ F ceramic capacitor.
 2. CL is 47 μ F electrolytic capacitor.

Derating Curve



Cover Option

See mechanical details notes for ordering information.

