

JPS250 Series Application Note

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Section 1: Introduction

The JPS250 Series Switching Power Supply is a single output switcher that utilizes Zero Voltage / Zero Current topology to allow efficient operation, small size and quite operation. The Supplies offer 250 watt operation with 18 cfm airflow and 200 watt convection cooled operation.

Features Include:

- Ideal for 1U High / Low Profile Applications
- Active Power Factor Correction for EN61000-3-2 Compliance
- Greater than 80% Efficiencies
- World-Wide Safety Approvals
- Class B Emissions
- Full Featured Control and Status Signals

Section 2: Safety Agency Approvals

UL 1950	Approved
CSA 22.2 # 234	
TUV EN60950	Approved
CE Mark	Filed

Section 3: Emission Standards

FCC	20780 Level B
CISPR	EN55022 Class B
EN61000-3-2	Pass
EN61000-4-2 level 4 (ESD Susceptibility)	8 kv
EN61000-4-3 level 3 (Radiated Susceptibility)	10 V/M
EN61000-4-4 level 3 (EFT / Burst)	±2kv
EN61000-4-5 class 3 (Input Transient Protection)	1 kV line to line
	2 kV Line to Ground



Section 4: Input Specifications

· · · · · ·	Universal Input (85-264 VAC)
	on @ 82 VAC / off @ 80 VAC
Inrush Current30a	@ 115 VAC / 60a @ 230 VAC max
Nominal Input Current2	.75a @ 115 VAC / 1.4a @ 230 VAC
VDC Input Range	170 370 VDC
Hold-up Time	20ms minimum
Input Protection	Single 5A Fuse
Power Factor	
Leakage Current	<700uA

Section 5: Output Specifications

Output Power	250 Watts
Minimum Load Required	n/a
Line Regulation	±0.5% maximum
Load Regulation	±1% maximum
Set-Point Tolerance	±1%
Adjustment Range via trim pot	±10%
Ripple & Noise	
Transient Response	4% max deviation,
	<500 s recovery with 25% load change
Over Voltage Protection	115-140% of nominal, recycle AC
Over Current Protection	115-140% of nominal, auto recovery
Over Temperature Protection	standard

			Output Currents:			
	Maximum	Output	with	Convection		
Model	Power ⁽¹⁾	Voltage	18 CFM	Cooled		
JPS250PS05	225 W	5 V	45.0 A	36.0 A		
JPS250PS12	250 W	12 V	21.0 A	17.0 A		
JPS250PS15	250 W	15 V	17.0 A	13.5 A		
JPS250PS24	250 W	24 V	10.4 A	8.5 A		
JPS250PS48	250 W	48 V	5.2 A	4.3 A		

Table 1: Output Voltages & Currents

Section 6: General Specifications

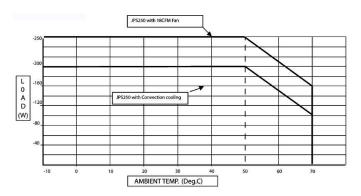
Efficiency	>80% Typical (see characteristic curves)
Power Density	4.9w per in ³
MTBF	>200,000 Hours per MILHDBK 217F
Withstand Voltage	3000 VAC Input to Output
	1500 VAC Input to Ground
	500 VAC Output to Ground

Model	Eff.%	Voltage	Current
JPS250PS05*	81.5 - 84.9	4.94-4.95	45 A*
JPS250PS12	82.6 - 85.1	11.973-	21 A
		11.976	
JPS250PS15	83 - 85.5	14.856-	17 A
		14.862	
JPS250PS24	83 - 87	23.977-	10.4 A
		23.977	
JPS250PS48	83.6 - 87.4	47.915-	5.2 A
		47.904	

^{* 225} Watts Maximum Power for 5v output model

Section 5: Environmental Specifications

Operating Temperature	0-50°C
De-Rating	See De-Rating Curves (Table 3)
Cooling	18cfm for 250 W operation
Storage Temperature	-20 / +85°C
Temperature Coefficient	±0.05% / °C
Humidity (non-condensing)	5-95%
Altitude10,0	00 Feet Maximum for 250 Watt Operation



* De-Rate 5v output model 10%



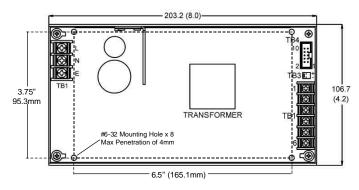
Section 6: Mechanical Specification

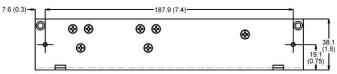
 Description
 U-Frame Construction

 Size
 8 x 4.2 x 1.5" (203.2 x 106.7 x 38.1mm)

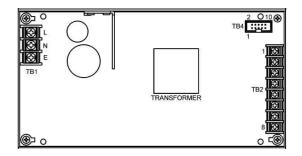
 Weight
 900g

Mechanical Drawing for all models other than JPS250PS05





Mechanical Drawing for JPS250PS05 (requires more terminals for output current)



TB2 PIN Assignments: TB2 terminal block connections are for the output Voltage and current and are defined as follows:

TB2	1	2	3	4	5	6	7	8
JPS250PS05	+5V	+5V	GND	GND	GND	GND	+5V	+5V
JPS250PS12, 15, 24, 48	+V	+V	+V	GND	GND	GND	N/C	N/C

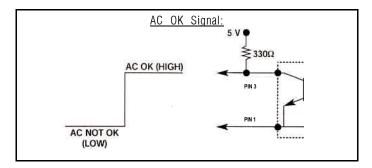
TB3 PIN Assignments: TB3 connection is for 12v @ 300ma fan output (not available on the JPS250PS05). Pin 1 is +12v, Pin 2 is Return. Mating Connector is Molex 5045-02A or equivalent.

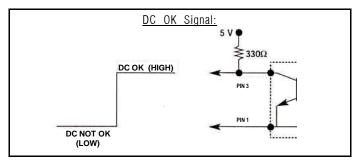
TB4 Pin Assignments: TB4 connections are for Control and Supervisory Signals. Mating Connector is 70246-10

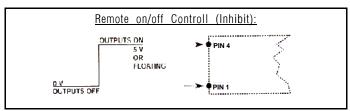
1	2	3	4	5	6	7	8	9	10
GND	DC OK	AC OK	Enable	+Sense	-Sense	Current Share	N/C	N/C	N/C

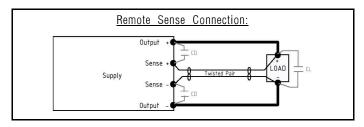


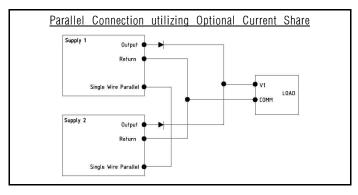
Section 7: Control & Supervisory Signals





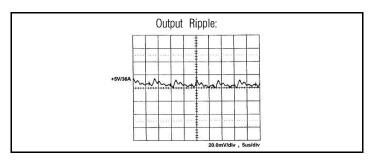


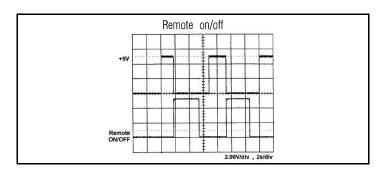


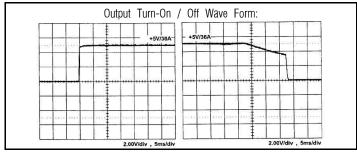


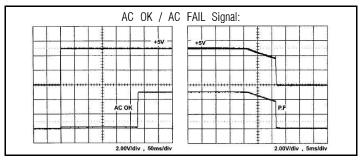


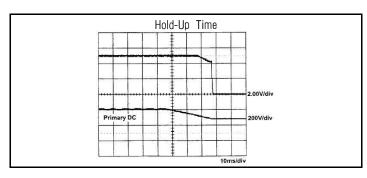
Section 10: Charcteristic Curves JPS250PS05

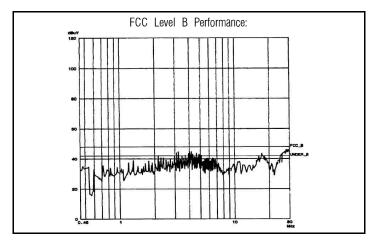


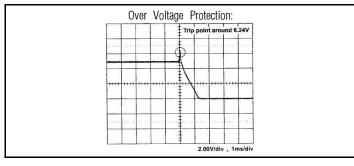


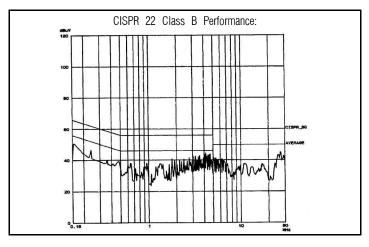


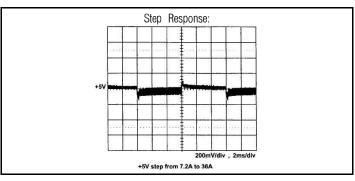






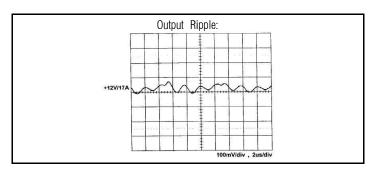


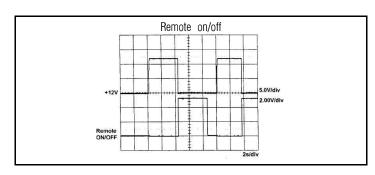


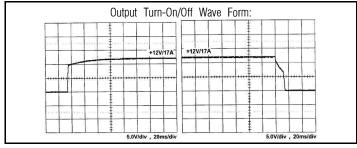


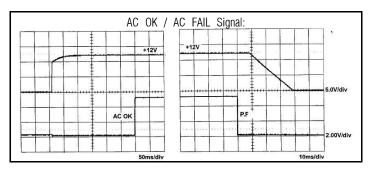


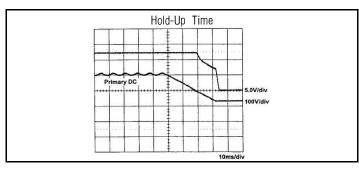
Section 10: Charcteristic Curves JPS250PS12

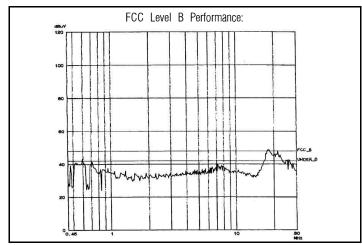


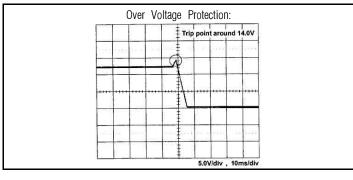


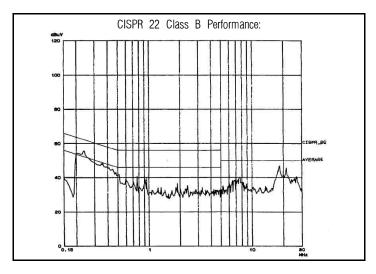


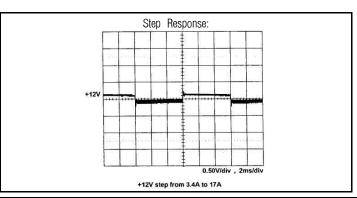






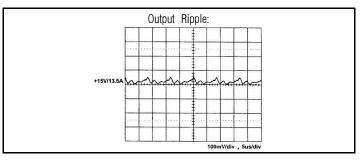


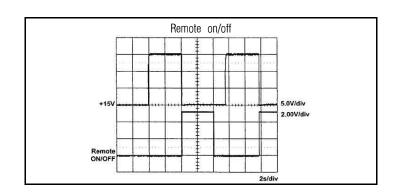


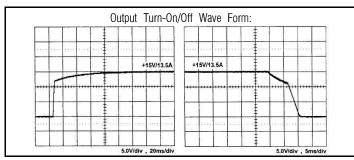


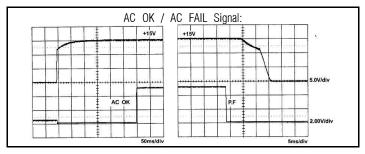


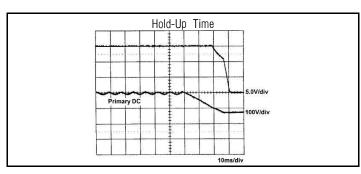
Section 10: Charcteristic Curves JPS250PS15

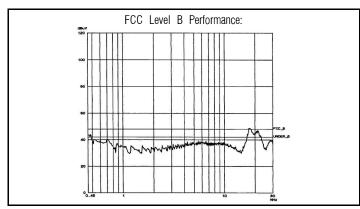


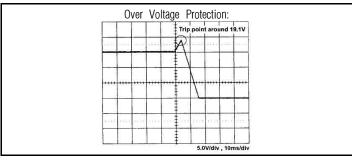


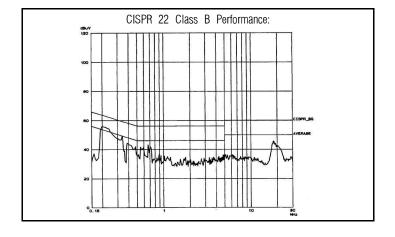


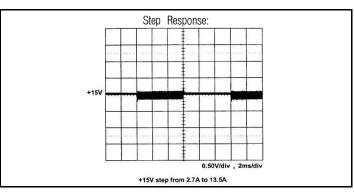






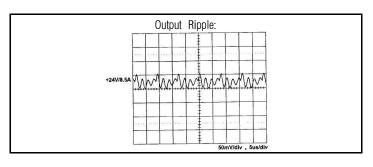


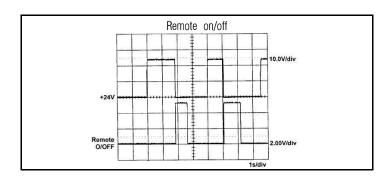


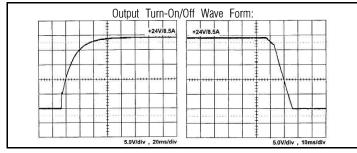


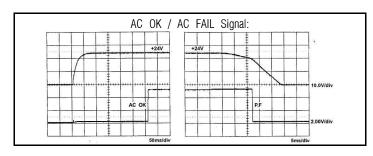


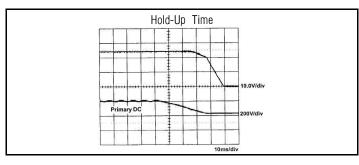
Section 10: Charcteristic Curves JPS250PS24

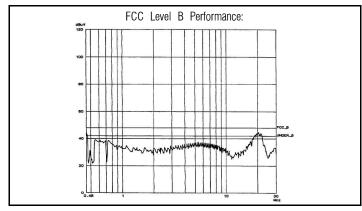


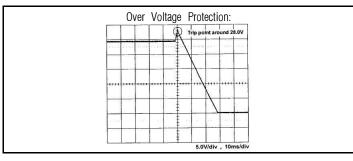


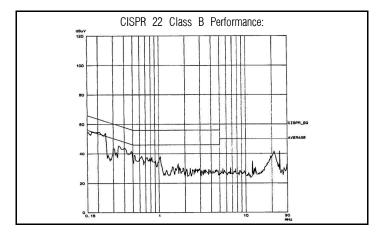


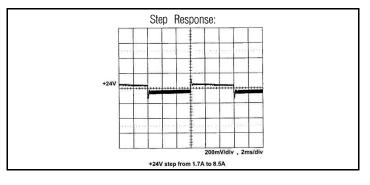






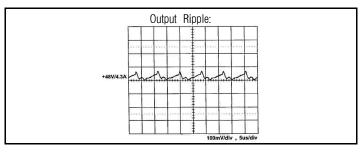


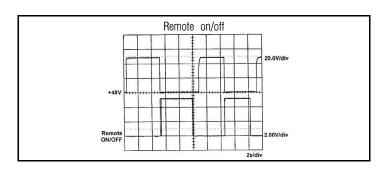


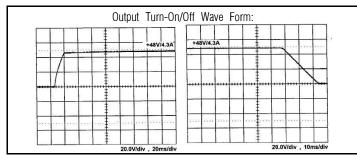


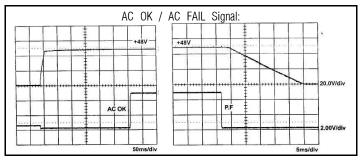


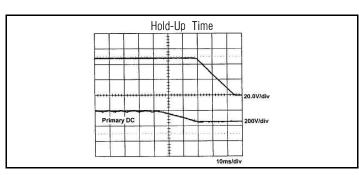
Section 10: Charcteristic Curves JPS250PS48

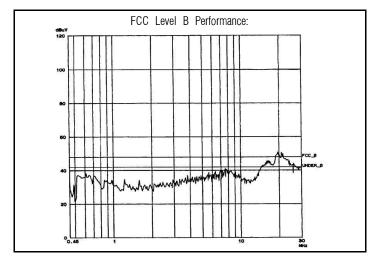


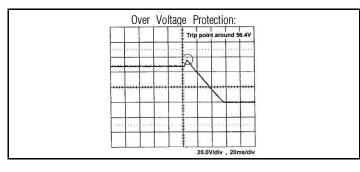


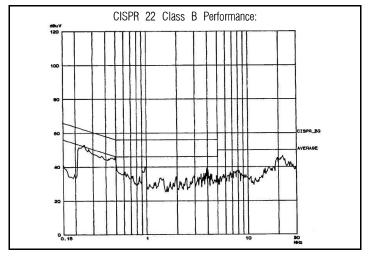


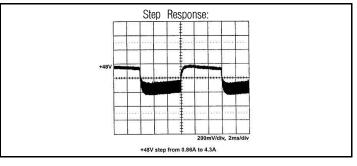






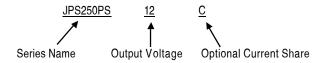








Section 11: Part Numbering & Options



All Models come standard with the current share option. Orders for supplies without current share are built to order.

Section 12: Warranty Statement

XPIQ INC. continually strives to build the highest quality power supplies available. XPIQ INC. offers this limited warranty in the event a defect occurs with a XPIQ INC. power supply.

This limited warranty covers switching power supplies and DC/DC converters purchased from XPIQ INC. for a period of 12 months from the date of delivery. XPIQ INC. guarantees that power supplies shall be free of manufacturer's defects. The warranty is applicable to the original purchaser only and is nontransferable. This warranty will be void if any original parts have been changed or any attempt to repair a nonworking power supply has been made by anyone other than authorized XPIQ INC. personnel. This warranty is void if the power supply was used in a manner other than the specified operations range or was used in an application not intended for the power supply. This warranty is void if the power supply is altered or modified.

If a defect occurs during the warranty period, the unit(s) must be returned in accordance with the attached return policy. A copy of the original invoice or other proof of purchase must accompany the returned unit(s). XPIQ INC. reserves the right to repair or replace, at our option, any defective power supply within the warranty period. XPiQ Inc. is under no obligation to repair or replace power supplies that have components blown out by use of excessive loads or input conditions beyond the stated range of the power supply specification.

Except as specifically stated in this warranty, or in the written sales agreement between XPIQ INC. and its client, there are no other warranties, expressed or implied, but not limited to, of merchantability or fitness for a particular purpose. In no event shall XPIQ INC. be liable for loss of profit or benefits, indirect, special, consequential or other similar damages, arising out of any breach of warranty or otherwise.