

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment				
Product Category CCN:	QQGQ2, QQGQ8				
Test Procedure:	Component Recognition				
Product:	Power Supply, Built-In AC/DC				
Model/Type Reference:	ESP4 , ESP6 Series (See General Production Information 2 for details)				
Rating(s):	Model	Input		Output (DC)	
		V	A	Hz	Max W
	ESP4BXXXX	100-240	10	47-63	400
	ESP4CXXXX	100-240	10	47-63	600
	ESP6CXXXX	100-240	11	47-63	600
	ESP6DXXXX	100-240	11	47-63	1000
Standards:	UL60950, Third Edition (2000) CAN/CSA-C22.2 No. 60950-00, Third Edition (2000)				
Applicant Name and Address:	POWER ONE INC 740 CALLE PLANO CAMARILLO CA 93012				
This Report includes the following parts, in addition to this cover page:					
1. Specific Inspection Criteria					
2. Specific Technical Criteria					
3. Clause Verdicts					
4. Critical Components					
5. Test Results					
6. National Differences					
7. Enclosures					

This is to certify that representative samples of the products covered by this Test Report have been investigated by Underwriters Laboratories Inc. ('UL') in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Issue Date: 2004-08-02

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Report Reference #

E131905-A4-UL-1

Test Report By:


Reviewed By:

Linus Park
Lead Engineering Associate

George Daverin
Staff Engineer
Underwriters Laboratories Inc.

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SPECIFIC TECHNICAL CRITERIA

UL 60950 Safety of information technology equipment				
Report Reference No: E131905-A4-UL-1				
Compiled by: Linus Park				
Reviewed by: George Daverin				
Date of issue: 2004-08-02				
Standards: UL60950, Third Edition (2000) CAN/CSA-C22.2 No. 60950-00, Third Edition (2000)				
Test procedure: Component Recognition				
Non-standard test method: N/A				
Test item description: Power Supply, Built-In AC/DC				
Trademark: None				
				
Model and/or type reference: ESP4 , ESP6 Series (See General Production Information 2 for details)				
Rating(s):				
	Model	Input		Output (DC)
		V	A	Hz Max W
	ESP4BXXXX	100-240	10	47-63 400
	ESP4CXXXX	100-240	10	47-63 600
	ESP6CXXXX	100-240	11	47-63 600
	ESP6DXXXX	100-240	11	47-63 1000

Particulars: test item vs. test requirements

Equipment mobility: for building-in
Operating condition: continuous
Mains supply tolerance (%): +6%, -10%
Test for IT power systems: No
IT testing, phase-phase voltage (V): N/A
Class of equipment: Class I (earthed)
Mass of equipment (kg): Less than 18 kg
Protection against ingress of water: IP X0

Possible test case verdicts:

- test case does not apply to the test object: N / A
- test object does meet the requirement: Pass
- test object does not meet the requirement: Fail (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Test Report
- "(see appended table)" refers to a table appended to the Test Report
- Throughout the Test Report a point is used as the decimal separator

General Product Information:																																									
CA1.0	Report Summary																																								
CA1.1	N/A																																								
CB1.0	Product Description																																								
CB1.1	Model ESP Series is a switching component power supply which can be configured to different output ratings. The output rating depends on the module that is installed. It has 4 or 6 slot option.																																								
CC1.0	Model Differences																																								
CC1.1	<p>All models are identical apart from the 4 or 6 slot option, and the combination of the output modules and the secondary windings of transformers T5 and T6. The secondary winding to output module 70 is constructed from tin plated copper and also forms part of the inductor SR1.</p> <p>NOMENCLATURE:</p> <p>Typical Model Designation:</p> <p>ESP4 C 1234 - 07 I II III IV V</p> <p>Where:</p> <p>I - Model Series: ESP4, ESP6</p> <p>II - Maximum Total Output Power: B = 400 W C = 600 W D= 1000 W</p> <p>III - Output Module:</p> <table><thead><tr><th>Nominal</th><th>V</th><th>Range</th><th>I Max</th></tr></thead><tbody><tr><td>1 =</td><td>5 V</td><td>3 to 5.6 V</td><td>30 A</td></tr><tr><td>2 =</td><td>12 V</td><td>5 to 13 V</td><td>20 A</td></tr><tr><td>3 =</td><td>18 V</td><td>8 to 20 V</td><td>15 A</td></tr><tr><td>4 =</td><td>24 V</td><td>12 to 28 V</td><td>12 A</td></tr><tr><td>5 =</td><td>24 V</td><td>10 to 28 V</td><td>3 A</td></tr><tr><td></td><td>24 V</td><td>10 to 28 V</td><td>3 A</td></tr><tr><td>6 =</td><td>5 V</td><td>3 to 5.6 V</td><td>10 A</td></tr><tr><td></td><td>24 V</td><td>10 to 28 V</td><td>3 A</td></tr><tr><td>70 =</td><td>5 V</td><td>1.45 to 5.6 V</td><td>80 A</td></tr></tbody></table> <p>IV - May be a dash, or letter C for custom models</p> <p>V - Options Suffix: - X = May be followed by a dash (-) and suffix letters and/or numbers denoting non-safety-critical options (Unless described otherwise in the report) such as, but not limited to, Mains Power Fail signal; Global Enable; Global Inhibit; Bias Supply Voltage.</p>	Nominal	V	Range	I Max	1 =	5 V	3 to 5.6 V	30 A	2 =	12 V	5 to 13 V	20 A	3 =	18 V	8 to 20 V	15 A	4 =	24 V	12 to 28 V	12 A	5 =	24 V	10 to 28 V	3 A		24 V	10 to 28 V	3 A	6 =	5 V	3 to 5.6 V	10 A		24 V	10 to 28 V	3 A	70 =	5 V	1.45 to 5.6 V	80 A
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CD1.0	Additional Information	
CD1.1	N/A	
CE1.0	Technical Considerations	
CE1.2	The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tmra) of:	50
CE1.3	The power supply means are:	Pluggable A
CE1.4	The product is intended for use on the following systems:	TN, TT
CF1.0	Engineering Conditions of Acceptability	
CF1.1	For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:	
CF1.2	The following Production-Line tests are conducted for this product:	Electric Strength
CF1.3	The end-product Electric Strength Test is to be based upon a maximum working voltage of:	286 Vrms, 420 Vpk
CF1.4	The following secondary output circuits are ELV:	are SELV and exceed 240 VA for Modules 2, 3, 4 and 70.
CF1.11	The power supply terminals and/or connectors are:	Not investigated for field wiring Not investigated for field wiring
CF1.12	The maximum investigated branch circuit rating is:	20 A
CF1.13	The investigated Pollution Degree is:	2
CF1.15	Proper bonding to the end-product main protective earthing termination is:	Required
CF1.18	The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C):	T2, T3, L1, L3, L4, L5 and L6 employ Electrical Insulation System designated Class A
CF1.19	The following end-product enclosures are required:	Fire

Declaration of Conformity

CE MARKING

We, **Power-One, Inc., 740 Calle Plano, Camarillo, CA. 93012 USA**
declare under our sole responsibility that the products;

Power Supply Model: ESP4 and ESP6 model series

to which this declaration relates, is/are in compliance with the following document(s):

Quality Standard(s): **ISO 9001, EN 29001**

Directive: **DIR 73/23/EEC, Low Voltage Directive**

Product Safety Standard(s): **IEC 60950:1999 and EN 60950:2000**
(CB report with all National Differences considered)

These component level power supplies are intended exclusively for inclusion within other equipment by an industrial assembly operation or by professional installers per the Installation Instructions provided with the power supplies. The power supply is considered Class I and must be connected to a reliable earth grounding system.



(Manufacturer)

Camarillo, Ca.

(Place)

2 September 2003

(Date)

Robert P. White Jr.
Product Safety Manager