

# Ref. Certif. No.

# US-25920-A1-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE **CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC** 

### **CB TEST CERTIFICATE**

Product Produit

Name and address of the applicant Nom et adresse du demandeur

Name and address of the manufacturer Nom et adresse du fabricant

Name and address of the factory Nom et adresse de l'usine

Note: When more than one factory, please report on page 2 Note: Lorsque il y plus d'une usine, veuillez utiliser la 2<sup>ème</sup> page

Ratings and principal characteristics Valeurs nominales et caractéristiques principales

Trademark (if any) Marque de fabrique (si elle existe)

Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur

Model / Type Ref. Ref. De type

Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire,, peuvent être indiqués sur la 2ème page

A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la

As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat

This CB Test Certificate is issued by the National Certification Body Ce Certificat d'essai OC est établi par l'Organisme National de Certification





Signature:

UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK

UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN

UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2015-11-04 Original Issue Date: 2015-09-01

Jolanta M. Wroblewska

Switching Power Supply Series

**CERTIFICAT D'ESSAI OC** 

XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES

XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES

**XP POWER INC** 990 BENECIA AVE US SUNNYVALE CA 94085-2804 UNITED STATES

Additional Information on page 2 Input: 100-240 Vac, 50/60 Hz, 16.5 A Output: See Test Report for details



HPD1K5PSXX See Page 2

Additionally evaluated to EN 60950-1:2006 /A11:2009 /A1:2010 /A12:2011 /A2:2013;National Differences specified in the CB Test Report.

Additional Information on page 2 IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1, IEC 60950-1(ed.2);am2

E139109-A138-CB-2 issued on 2015-11-03



Ref. Certif. No.

# US-25920-A1-UL

Model Details:

HPD1K5PSXX Where XX can be 24, 42 or 48. May also be provided with additional suffix "SF" indicating Single Fuse.

Factories: XP POWER (KUNSHAN) LTD 230 BIN JIANG NAN RD ZHANGPU TOWN KUNSHAN JIANGSU 215321 CHINA

XP POWER (VIETNAM) CO LTD LOT D - 4Q - CN MY PHUOC 3 INDUSTRIAL PARK BEN CAT DISTRICT BINH DUONG VIET NAM

XP POWER PLC HORESHOE PARK PANGBOURNE RG87 JW UNITED KINGDOM

Additional Information:

The original report was modified to include the following changes/additions:

- Added New Models HPD1K5PS42 and HPD1K5PS48
- Added Model Differences
- Moved Electrical Ratings from Additional Information to Model Differences.
- Revised Table 1.5.1 by adding Power Transformer T2 (10006304) and Output Inductors L7, L8, L10, L11
- (10017991) for New Power Supplies.
- Added Enclosure Diagrams 4-19 and 4-20 for New Power Transformer T2 (10006304) and Output Inductors L7, L8, L10, L11 (10017991).
- Deleted Miscellaneous Enclosure 7-01 (Ratings Table).
- Added the following Alternate Cooling Fans:
- 1. AVC, Type DV Series (DB04028B12U-088)
- 2. Delta Electronics, Type FFB0412SHN-AF00
- 3. Sunonwealth, Type PMD1204PQB1 Series

## Additional information (if necessary) Information complémentaire (si nécessaire)



- UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
  - UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
  - UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
  - UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

Date: 2015-11-04 Original Issue Date: 2015-09-01

For full legal entity names see www.ul.com/ncbnames lander / h. W.

Jolanta M. Wroblewska

Signature:



Test Report issued under the responsibility of:



TEST REPORT IEC 60950-1 Information technology equipment - Safety - Part 1: General requirements			
E139109-A138-CB-2			
2015-08-28			
40			
UL San Jose			
455 E. Trimble Rd., San Jose, CA, 95131-1230, USA			
XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES			
IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013			
CB Scheme			
N/A			
IEC60950_1F			
SGS Fimko Ltd			
Dated 2014-02			

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

#### General disclaimer

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

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Test item description	Switching Power Supply Series
Trade Mark:	XP
Manufacturer:	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES
Model/Type reference:	HPD1K5PSXX. Where XX can be 24, 42 or 48. May also be provided with additional suffix "SF" indicating Single Fuse.
Ratings:	Input: 100-240 Vac, 50/60 Hz, 16.5 A
	Output: See Model Differences for details

Issue Date: 2015-08-28

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Testir	ng procedure and testing location:	
[]	CB Testing Laboratory	
	Testing location / address:	
[]	Associated CB Test Laboratory	
	Testing location / address	
	Tested by (name + signature):	
	Approved by (name + signature):	
[]	Testing Procedure: TMP/CTF Stage 1	
	Testing location / address	
	Tested by (name + signature):	
	Approved by (name + signature):	
[]	Testing Procedure: WMT/CTF Stage 2	
	Testing location / address	
	Tested by (name + signature):	
	Witnessed by (name + signature):	
	Approved by (name + signature):	
[x]	Testing Procedure: SMT/CTF Stage 3 or 4	
	Testing location / address:XP Power LLC, 156 TUSTIN CA 92780,	41 RED HILL AVE, SUITE 100, USA
	Tested by (name + signature): Rodney Reyes	Rodney Reyes
	Approved by (name + signature): Tac Pham	Taulan
	Supervised by (name + signature) .: Walid Beytoughan	Wal. ABTON
[]	Testing Procedure: RMT	
	Testing location / address	
	Tested by (name + signature):	
	Approved by (name + signature):	
	Supervised by (name + signature) .:	
LIST O	f Attachments	
Nation	hai Differences (0 pages)	
Enclos	sures (8 pages)	
Sumn Unless TUST	nary Of Testing s otherwise indicated, all tests were conducted at XP Powe IN CA 92780, USA.	er LLC, 15641 RED HILL AVE, SUITE 10
Í	Tests performed (name of test and test clause)	<b>Testing location / Comments</b>

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Guide Information Page - Maximum Output Voltage, Current, and Volt Ampere Measurement (1.2.2.1)

Input: Single-Phase (1.6.2)

Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)

Capacitance Discharge (2.1.1.7)

SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)

Protective Bonding I (2.6.3.4, 2.6.1)

Humidity (2.9.1, 2.9.2, 5.2.2)

Determination of Working Voltage; Working Voltage Measurement (2.10.2)

Thin Sheet Material (2.10.5.9, 2.10.5.10, 2.10.5.6)

Transformer and Wire /Insulation Electric Strength (2.10.5.13)

Heating (4.5.1, 1.4.12, 1.4.13)

Ball Pressure (4.5.5, 4.5)

Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)

Electric Strength (5.2.2)

Component Failure (5.3.1, 5.3.4, 5.3.7)

Abnormal Operation (5.3.1 - 5.3.9)

Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)

Power Supply Output Short-Circuit/Overload (5.3.7)

## Summary of Compliance with National Differences:

Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: AT, BE, BG, BY, CA, CH, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IT, JP, KR, NL, NO, PL, PT, RO, SE, SG, SI, SK, UA, US

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

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**Copy of Marking Plate** The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

XP Power www.xppower.com **AL**us 😥 

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Test item particulars :	
Equipment mobility	for building-in
Connection to the mains	To be determined in end-use product
Operating condition	continuous
Access location	To be determined in end-use product
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	+10%, -10%
Tested for IT power systems	Yes
IT testing, phase-phase voltage (V)	230
Class of equipment	Class I (earthed)
Considered current rating of protective device as part of the building installation (A)	20A
Pollution degree (PD)	PD 2
IP protection class	IP X0
Altitude of operation (m)	5000
Altitude of test laboratory (m)	less than 2000
Mass of equipment (kg)	3
Possible test case verdicts:	
- test case does not apply to the test object:	N / A
- test object does meet the requirement:	P(Pass)
- test object does not meet the requirement:	F(Fail)
Testing:	
Date(s) of receipt of test item	2015-07-02
Date(s) of Performance of tests	2015-10-03
General remarks:	
"(see Enclosure #)" refers to additional information ap "(see appended table)" refers to a table appended to Throughout this report a point is used as the decimal	opended to the report. the report. separator.
Manufacturer's Declaration per Sub Clause 4.2.5 c	of IECEE 02:
The application for obtaining a CB Test Certificate inc declaration from the Manufacturer stating that the sar representative of the products from each factory has	Yes cludes more than one factory and a nple(s) submitted for evaluation is (are) been provided
When differences exist, they shall be identified in the	General Product Information section.
Name and address of Factory(ies): XP POWEF 990 BENEC US SUNNYVAI UNITED ST	R INC CIA AVE LE CA 94085-2804 FATES

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XP POWER (KUNSHAN) LTD 230 BIN JIANG NAN RD ZHANGPU TOWN KUNSHAN JIANGSU 215321 CHINA

XP POWER (VIETNAM) CO LTD LOT D - 4Q - CN MY PHUOC 3 INDUSTRIAL PARK BEN CAT DISTRICT BINH DUONG VIET NAM

XP POWER PLC HORESHOE PARK PANGBOURNE RG87 JW UNITED KINGDOM

#### **GENERAL PRODUCT INFORMATION:**

#### **Report Summary**

The original report was modified on 2015-11-03 to include the following changes/additions: Amendment 1:

- Added New Models HPD1K5PS42 and HPD1K5PS48

- Added Model Differences

- Moved Electrical Ratings from Additional Information to Model Differences.

- Revised Table 1.5.1 by adding Power Transformer T2 (10006304) and Output Inductors L7, L8, L10, L11 (10017991) for New Power Supplies.

- Added Enclosure Diagrams 4-19 and 4-20 for New Power Transformer T2 (10006304) and Output Inductors L7, L8, L10, L11 (10017991).

- Deleted Miscellaneous Enclosure 7-01 (Ratings Table).

- Added the following Alternate Cooling Fans:
- 1. AVC, Type DV Series (DB04028B12U-088)
- 2. Delta Electronics, Type FFB0412SHN-AF00
- 3. Sunonwealth, Type PMD1204PQB1 Series

#### **Product Description**

The product is a component AC-DC power supply for building-in, with an adjustable output voltage from 0-48 Vdc. The power supply is provided with an overall metal enclosure, incorporating primary and SELV components.

The main PWB is secured to the chassis bottom by multiple machine screws. An insulating sheet is installed between PWB and chassis, wrapped around the board assembly, covering the sides and extending over the top. The control PWB is mounted vertically on the side of the main PWB and secured by multi-pin soldering.

The unit is provided with 2 cooling fans mounted internally behind the rear panel acting as fan guard.

#### Model Differences

All models in the HPD1K5PSXX series are identical with exception to the Power Transformer (T2) and

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Output Inductors (L7,L8,L10,L11) and secondary components/circuitry that allow for different output voltage ratings. See below for Model Ratings:

Model Output Power 240VAC)	Output Voltage	Max. Output Current	Max. Output Power	Max. Output Current	Max.
	Range (Vdc)	(A) (100-180VAC)	(W) (100-180VAC)	(A) (180-240VAC) (	W) (180-
HPD1K5PS24	3-24	50	1200	62.5	
HPD1K5PS42 1500	2 42	28.6	1200	35	
HPD1K5PS48 1500	3 0-48	25	1200	31.25	

Stand-by Output for all models: 5Vdc, 1A.

#### **Additional Information**

This CB Report is a reissue and upgrade of CBTR Ref. No. E139109-A138-CB-1, CB Test Certificate Ref. No. US-23679-UL. Based on previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, it has been determined that the product complies with the standard. All required testing was carried out under the original investigation. No testing was required to upgrade the report to IEC 60950-1, Second Edition, Amendment 2

Suffix "SF" indicates single fuse provided in the line side of the primary.

The required clearance values have been assessed for suitability up to 5000 m elevation (1.48 correction factor as per IEC 60664-1, Table A2).

The need for the additional testing and evaluation shall be determined in the end product investigation.

Licenses older than 3 years to be provided by the manufacturer upon request.

The marking plate is representative of all models in the report.

#### **Technical Considerations**

- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C at 100% of rated output load and 70°C at 50% of rated output load. --
- The means of connection to the mains supply is: for building-in, to be determined in the end-product.
- According to IEC60664-1, Table A2, required Clearances have been adjusted by multiplying the clearance at sea level by a factor of 1.48 for operating at an altitude of 5000 meters. The correction factor is based on barometric pressure of 70kPa and Overvoltage Category II. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance. No other additional requirements were considered at this time as they are not explicitly addressed in 600950-

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1. --

#### **Engineering Conditions of Acceptability**

When installed in an end-product, consideration must be given to the following:

- The equipment may be provided with a fuse in both the Line and Neutral of the primary circuit. The need for a marking warning service person of the hazards associated with neutral fusing shall be considered in the end-product. --
- The following Production-Line tests are conducted for this product: Earthing Continuity, Electric Strength --
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 241 Vrms, 352 Vpk, Primary-SELV: 240 Vrms, 690 Vpk, --
- The following secondary output circuits are SELV: All outputs --
- The following secondary output circuits are at hazardous energy levels: DC Output Buss --
- The power supply terminals and/or connectors are: Not investigated for field wiring --
- The maximum investigated branch circuit rating is: 20 A --
- The investigated Pollution Degree is: 2 --
- Proper bonding to the end-product main protective earthing termination is: Required --
- An investigation of the protective bonding terminals has: Not been conducted. The suitability of the protective bonding terminal shall be evaluated in the end system., --
- The following input terminals/connectors must be connected to the end-product supply neutral: AC-N, neutral terminal is provided as part of the input terminal block, however the unit is for building and compliance shall be determined in the end product., --
- 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): L1, L2, L4, L5, L6, L7, L8, T1(Bias), T2(Power), T1 (Drive), T3 (Drive), T4 (Current). T5 (Current) are Class F (155°C), --
- The following end-product enclosures are required: Electrical, Mechanical, Fire, --
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: L6 (124°C), T2 (123°C), L7 (113°C), L8 (115°C), --
- Fans: The fan provided in this sub-assembly is not intended for operator access. Compliance shall be determined in the end product. --

Abbreviations used in the report:			
- normal condition	N.C.	- single fault condition	S.F.C
- operational insulation	OP	- basic insulation	BI
<ul> <li>basic insulation between parts of opposite polarity:</li> </ul>	BOP	- supplementary insulation	SI
- double insulation	DI	- reinforced insulation	RI
Indicate used abbreviations (if any)			